BALLISTIC MISSILE DEFENSES AND U.S. NATIONAL SECURITY

SUMMARY REPORT

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FUTURE SECURITY STRATEGY STUDY

#469

Acknowledgments

This report is a summary of work performed by a Study Team whose members were: Mr. Fred S. Hoffman, Director; Mr. Leon Sloss, Deputy Director; Mr. Fritz Ermarth; Mr. Craig Hartsell; Mr. Frank Hoeber; Dr. Marvin King; Mr. Paul Kozemchak; Lt. Gen. C. J. LeVan, USA (Ret.); Dr. James J. Martin; Mr. Marc Millot; Mr. Lawrence O'Neill; and Dr. Harry Sauerwein. The work of the Study Team has been reviewed by a Senior Policy Review Group consisting of Professor John Deutch; Dr. Charles Herzfeld; Mr. Andrew W. Marshall; Dr. Michael May; Professor Henry S. Rowen; General John Vogt, USAF (Ret.); Ambassador Seymour Weiss; Mr. Albert Wohlstetter; and Mr. James Woolsey. Supporting papers have been contributed by Mr. Craig Hartsell, Dr. James J. Martin, Mr. John Baker, Lt. Gen. C. J. LeVan, Mr. Douglas Hart, Mr. Marc Millot, Dr. David S. Yost, Mr. Leon Sloss, and Mr. Frank Hoeber.

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Responsibility for the views expressed herein rests with the Study Team.

Preface

President Reagan has directed an "effort to define a long-term research and development program...to achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles...." The President noted that the achievement of the ultimate goal was a "formidable technical task" that would probably take decades, and that "as we proceed we must remain constant in preserving the nuclear deterrent...maintaining a solid capability for flexible response...pursue real reductions in nuclear arms...(and) reduce the risk of a conventional military conflict escalating to nuclear war by improving our nonnuclear capabilities."

Two studies assisted in that effort: (1) the Defensive Technologies Study (DTS) to review the technologies relevant to defenses against ballistic missiles and recommend a specific set of long-term programs to make the necessary technological advances, and (2) the Future Security Strategy Study (FSSS) to assess the role of defensive systems in our future security strategy. The implications for defense policy, strategy, and arms control were addressed by two FSSS teams: an interagency team led by Mr. Franklin C. Miller, and a team of outside experts led by Mr. Fred S. Hoffman. This is a report on the results of the work of the team of outside experts. The work was done under the auspices of the Institute for Defense Analyses at the request of the Office of the Under Secretary of Defense for Policy to assist the interagency team.

This report and its conclusions do not necessarily represent the views of the Department of Defense or the Institute for Defense Analyses.

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SUMMARY REPORT

A. MAJOR CONCLUSIONS AND RECOMMENDATIONS

The Strategic Need for Defensive Systems

1. *U.S. national security requires vigorous development of technical opportunities for advanced ballistic missile defense systems.*

- Effective U.S. defensive systems can play an essential role in reducing reliance on threats of massive destruction that are increasingly hollow and morally unacceptable. A strategy that places increased reliance on defensive systems can offer a new basis for managing our long-term relationship with the Soviet Union. It can open new opportunities for pursuing a prudent defense of Western security through both unilateral measures and agreements. The Soviets have often used arms negotiations to pursue competitive military advantage. The Soviet Union is likely to cooperate in pursuing agreements that are mutually beneficial *only* if it concludes that it cannot accomplish its present political goals because it faces Western firmness and ability to resist coercion.

- Technologies for ballistic missile defenses, together with those for precise, effective, and discriminate nuclear and nonnuclear offensive systems, are advancing rapidly. They can present opportunities for resisting aggression and deterring conflict that are safer and more humane than exclusive reliance on the threat of nuclear retaliation.

- A satisfactory deterrent requires a combination of more discriminating and effective offensive systems to respond to enemy attacks plus defensive systems to deny the achievement of enemy attack objectives. Such a deterrent can counter the erosion of confidence in our alliance guarantees caused by the adverse shifts in the military balance since the 1960s.

- Readiness to deploy advanced ballistic missile defense systems is a necessary part of a U.S. hedge against the increasingly ominous possibility of one-sided Soviet deployment of such systems. Such a Soviet deployment, superimposed on the present nuclear balance, would have disastrous consequences for U.S. and allied security. Clearly this possibility, especially in the near term, also requires precautionary measures to enhance the ability of our offensive forces to penetrate defenses.

The Preferred Path to the President's Goal: Intermediate Options

2. *The new technologies offer the possibility of a multilayered defense system able to intercept offensive missiles in each phase of their trajectories.* In the long term, such systems might provide a nearly leakproof defense against large ballistic missile attacks. However, their components vary substantially in technical risk, development lead time, and cost, and in the policy issues they raise. Consequently, partial systems, or systems with more modest technical goals, may be feasible earlier than the full system.

3. *Such "intermediate" systems may offer useful capabilities.* The assessment in this study of the utility of intermediate systems is necessarily tentative, owing to the current lack of specificity in systems design, effectiveness and costs. Nevertheless, it indicates that, given a reasonable degree of success in our R&D efforts, intermediate systems can strengthen deterrence. They will greatly complicate Soviet attack plans and reduce Soviet confidence in a successful outcome at various levels of conflict and attack sizes, both nuclear *and nonnuclear.* Even U.S. defenses of limited capability can deny Soviet planners confidence in their ability to destroy a sufficient set of military targets to satisfy enemy attack objectives, thereby strengthening deterrence. Intermediate defenses can also reduce damage if conflict occurs. The combined effects of these intermediate capabilities could help to reassure our allies about the credibility of our guarantees.

4. *A flexible research and development (R&D) program designed to offer early options for the deployment of intermediate systems, while proceeding toward the President's ultimate goal, is preferable to one that defers the availability of components having a shorter development lead time* in order to optimize the allocation of R&D resources for development of the "full system."

- Intermediate defense systems can help to ameliorate our security problems in the interim while full systems are being developed.

- The full-system approach involves higher technical risk and higher cost. On the other hand, an approach explicitly addressing the utility of intermediate systems offers a hedge against the possibility that nearly leakproof defenses may take a very long time, or may prove to be unattainable in a practical sense against a Soviet effort to counter the defense.

- The deployment of intermediate systems would also provide operational experience with some components of later, more comprehensive, and more advanced defense systems, increasing the effectiveness of the development effort.

5. We have considered several possible intermediate options:

- *Anti-Tactical Missile (ATM) Options*

  Deployment of an anti-tactical missile (ATM) system is an intermediate option that might be available relatively early. The system might combine some advanced mid-course and terminal components identified by the Defensive Technologies Study with a terminal underlay. The advanced components, though developed initially in an ATM mode, might later play a role in continental United States (CONUS) defense. Such an option addresses the pressing military need to protect allied forces as well as our own, in theaters of operations, from either nonnuclear or nuclear attack. It would directly benefit our allies as well as ourselves. Inclusion of such an option in our long-range R&D program on ballistic missile defenses should reduce allied anxieties that our increased emphasis on defenses might indicate a weakening in our commitment to the defense of Europe. We can pursue such a program option *within ABM Treaty constraints*. Such a course is therefore consistent with a policy of deferring decisions on modifying or withdrawing from the treaty.

- *Intermediate CONUS Options*

  Intermediate capabilities may also have important applications in CONUS, initially to defend critical installations such as C^3I nodes. As the defense system is thickened, it also will add to Soviet uncertainties in targeting, even in large-scale attacks, thereby enhancing deterrence. Depending on rates of progress in the R&D program, a two-phase defense of high effectiveness against moderate threats might comprise both endoatmospheric and exoatmospheric components employing space-based sensors and ground-based interceptors. These intermediate components would be the lower tiers in a full multilayered system.

- *Limited Boost-Phase Intercept Options*

  Some intermediate options may provide useful near-term leverage on Soviet plans and programs even if they prove unable to meet fully sophisticated Soviet responses. An early boost-phase intercept system with capability against large rockets similar to those that are an important part of Soviet forces may be one example. Such an option could impose costs on the Soviets and increase their incentive to move toward an offensive posture that is more stable and less threatening. A definitive assessment of the utility of such options must specify their technological and political feasibility, timing, and cost, and the ease with which they can be countered.

6. Pursuit of the President's goal, especially if it is interpreted solely in terms of the full, nearly leakproof system, will raise questions about our readiness to defend against other threats, notably that of air attack by possible advanced bombers and cruise missiles. An appropriate response to such questions will require an early and comprehensive review of air defense technologies, leading to the development of useful systems concepts.

Defensive Systems and Stability of Deterrence

7. Deployment of defensive systems can increase stability, but to attain this goal we must design our offensive and defensive forces properly; especially, we must not allow them to be vulnerable. In combination with other measures, defenses can contribute to reducing the prelaunch vulnerability of our offensive forces. To increase stability, defenses must themselves avoid high vulnerability, must be robust in the face of enemy technical or tactical countermeasures, and must compete favorably in cost with expansion of the Soviet offensive force.

8. As currently assessed, some boost-phase intercept systems and other space-based components pose serious policy problems, because of engagement time constraints. Space-based components may also be highly vulnerable to Soviet boost-phase intercept systems, or antisatellite (ASAT) systems. It will be imperative to design systems which are not themselves subject to rapid attack. Alternative approaches need to be developed in the R&D program that permit safe arrangements for the operation of the defensive system.

Soviet Policies, Initiative, and Responses

9. *The common assumption that the decision to initiate widespread deployment of ballistic missile defense systems rests with the United States alone is completely unjustified.* Soviet history, doctrine, and programs all indicate that the Soviets are likely (and better prepared than we) to initiate a widespread antiballistic missile (ABM) deployment whenever they deem it to their advantage.

10. The long-term course of Soviet military policy plans and programs is uncertain in detail, but unless there is a major change in their political goals, the Soviets are highly likely to continue to aim at being able to defeat any combination of external enemies.

- The Soviets will almost certainly continue to maintain and upgrade their large air defenses and to conduct programs for R&D and modernization of their ballistic missile defenses. These activities will increasingly create uncertainty about the ability of U.S. missile forces to penetrate without countermeasures, and about the possibility of a sudden (open) or gradual (clandestine) Soviet breakout from the ABM Treaty constraints. The importance of such uncertainty is intensified because of the substantial Soviet investments in air defense and passive defenses of elements of the Soviet military and government. Even without violating ABM Treaty constraints, the Soviets will probably deploy a substantial ATM defense, exacerbating our problems in theaters of operations and making them more difficult to correct.

- On the other hand, if the Soviets believe that a Western deployment of defenses will substantially improve the West's capability to resist attack or coercion, they will try to prevent a Western deployment through political means or arms negotiations.

- If the United States deploys defensive systems, the Soviets will probably seek to maintain their offensive threat through a set of measures that will depend on their assessment of the defenses and their own technological options. Depending on the defense effectiveness and leverage, such a response may not fully restore Soviet offensive capabilities.

- If, over time, the Soviets become convinced that the West has the resolve and ability to block Soviet achievement of their long-term goals of destabilization and domination of other states, they may move from their present political/military policies to become more willing to agree to reducing the nuclear threat, through a combination of mutual restrictions on offensive forces and deployment of defensive systems.

B. SUPPORTING RATIONALE

President Reagan's directive to assess the role of defensive systems has required the FSSS to consider the relation of these systems to our strategic objectives and to Soviet programs and policy. The role of intermediate defensive systems has been a major focus of our study.

1. *The Need for Defensive Systems in our Security Strategy*

There is a broad consensus that reliance on nuclear retaliatory threats raises serious political and moral problems, particularly in contingencies where the enemy use of force has been constrained. Technologies for defensive systems and those for extremely precise and discriminating attacks on strategic targets have been advancing very rapidly. (Many technologies are common to both functions.) Together they offer substantial promise of a basis for protecting our national security interests, and those of our allies, that is more humane and more prudent than sole reliance on threats of nuclear response. The case for increasing the emphasis on defensive programs in our national security strategy rests on several grounds, in addition to the broad, long-term objectives mentioned by the President in his March 23 speech:

- The massive increase in Soviet power at all levels of conflict is eroding confidence in the threat of U.S. nuclear response to Soviet attacks against our allies. A continuation of this erosion could ultimately undermine our traditional alliance structure.

- If the Soviet Union persists in the buildup of nuclear offensive forces, for the next decade and beyond the United States may not wish to restore, by offensive means alone, a military balance consistent with our strategic needs. Soviet willingness and ability to match or overmatch increases in U.S. nuclear forces suggest that while additions to our forces are needed to maintain the continued viability of our nuclear deterrent, such additions alone may not preserve confidence in our alliance guarantees.

- The public in the United States and other Western countries is increasingly anxious about the danger of nuclear war and the prospects for a supposedly unending nuclear arms race. Those expressing this anxiety, however, frequently ignore the fact that the U.S. nuclear stockpile has been declining, both in numbers and in megatons, while Soviet forces have increased massively in both. A U.S. counter to the Soviet buildup that emphasized increases in U.S. nuclear stockpiles would exacerbate public anxieties.

- Arms agreements, despite widespread Western hopes for them, have to date failed to prevent growing instability in the balance—and the deterioration—in the Western position relative to the East. Offensive force limitation agreements, originally associated in the U.S. arms control strategy with the ABM Treaty, have failed to restrain the Soviet offensive buildup; *de facto* reductions in the explosive yield and size of U.S. strategic nuclear stocks have not prevented vast increases in the size and destructiveness of the Soviet stockpile.

- Rapidly advancing technologies offer new opportunities for active defense deployment against ballistic missile attack that did not exist when, over a decade ago, the United States abandoned plans for defense deployments against nuclear attack. Technologies for sensing and discrimination of targets, directing the means of intercept, and destroying targets have created the possibility of a system of layered defenses that would pose successive, independent barriers to penetrating missiles. There has been improvement in some (not all) aspects of defense vulnerability. Given successful outcomes to development programs and robustness in the face of Soviet countermeasures, such defenses would permit only a very small proportion of even a very large attacking ballistic missile force to reach target. Such defenses might also offer high leverage in competing with offensive responses.

2. *Ballistic Missile Defenses in the Soviet Union*

The Soviets maintain a high level of activity in programs relevant to defenses against nuclear attack including:

- Active programs for modernizing deployed air and ballistic missile defense systems which together give them the basis for a very rapid deployment of widespread ballistic missile defenses, if they decide to ignore ABM Treaty obligations completely and openly.

- Large and diverse R&D programs in areas of technology for advanced ballistic missile and air defense systems.

- A space launch capacity significantly greater than our own, if not as sophisticated.

A substantial Soviet lead in deployed defensive systems, superimposed on their growing offensive threat against our nuclear offensive forces, could destroy the stability of the strategic balance.

The decision to initiate widespread deployment of ballistic missile defenses does not rest with the United States alone. The common assumption that it does is completely unjustified. The Soviets give every appearance of preparing for such a deployment whenever they believe they will derive significant strategic advantage from doing so. Their activities include some that are questionable under the ABM Treaty. Unless the public is aware and kept aware of Soviet activities in this area, the United States will probably be blamed for initiating "another round in the arms race." The state of U.S. preparedness to deploy capable defenses will be an important element in the Soviets' assessment of their own options. Active U.S. R&D programs on advanced defensive systems can assist in deterring a Soviet deployment designed to exploit an asymmetry in their favor.

3. *Alternative Paths to the President's Objective*

The path to the President's ultimate objective may be designed to go directly toward the ultimate objective of a full, multilayered system that offers nearly leakproof defenses against very large offensive forces. Under some conditions such a path might be an optimal use of limited R&D resources, concentrating first on those technologies that present the greatest difficulty and require the greatest lead times.

Alternatively, R&D programs might be designed to provide earlier options for the deployment of intermediate systems, based on technologies that can contribute to the ultimate objective, as such systems become technically feasible and offer useful capabilities. Such a path toward the President's ultimate goal might generate earlier funding demands to support deployment of intermediate systems and would require early treatment of some of the policy issues. Also, at least one variant considered in our report, an ATM deployment for theaters of operations, could be undertaken without modification of the ABM Treaty.

The principal benefits of an R&D path providing options for earlier, partial deployments are:

- Possibilities for an early contribution to improving the deteriorating military balance.
- Its explicit provision of a hedge against the risks inherent in a program where each of a large number of demanding technological goals must be met in order to realize any useful result at all.
- The likelihood that early deployments of parts of the ultimate system may also prove to be the most effective path to achieving such a system; early operational experience with some system elements can contribute useful feedback to the development process.

4. *Intermediate Defensive Systems, Soviet Strategy, and Deterrence*

Fundamentally, the choice between the two paths depends on the utility of intermediate systems in meeting our national security objectives. In the discussion of ballistic missile defenses that preceded the U.S. proposal of the ABM Treaty, opponents of such defenses argued that the utility of widespread defense deployments should be judged in terms of their ability to protect population from large attacks aimed primarily at urban-industrial areas. Because of the destructiveness of nuclear weapons, nearly leakprook defenses are required to provide a high level of protection for population against such attacks. Moreover, opponents at that time also divided our strategic objectives into two categories: deterrence of war and limiting damage if deterrence failed. They relegated defenses exclusively to the second objective and ignored the essential complementarity between the two objectives. Consequently, they assigned defenses no role in deterrence.

We have reexamined this issue, and we conclude that defenses of intermediate levels of capability can make critically important contributions to our national security objectives. *In particular, they can reinforce or help maintain deterrence by denying the Soviets confidence in their ability to achieve the strategic objectives of their contemplated attacks as they assess a decision to go to war.* By strengthening deterrence *at various levels of conflict*, defenses can also contribute valuable reassurance to our allies.

Deterrence rests on the Soviets' assessment of their political/military alternatives. This, in turn, depends on their objectives and style in planning for and using military force. It also depends on their estimates of the effectiveness of weapons and forces on both sides. Soviet assessments on these matters may differ sharply from our own. Specifically, the past behavior of the Soviets suggests they credit defensive systems with greater capability than we do. If true, this will increase the contribution of defensive systems to deterrence.

Because of the long lead times, assessment of the strategic role of defenses also requires very long-term projections about the nature of the Soviet state. While such projections cannot be made with confidence, there is no current basis for projecting a fundamental change in the Soviet attitude toward external relations. We consider below the possibility that appropriate management by the West of its long-term relations with the Soviets might induce a fundamental change. Desirable as this goal is, the most probable projection for the foreseeable future is that they will continue to set a high priority on their ability to control, subvert, or coerce other states as the basis for their foreign relations. In this case, military power will continue to play a major role for the Soviets, and many present elements of style in the application of that power can be expected to persist:

- Domination of the Eurasian periphery is a primary strategic objective. The Soviets' preferred mode in exploiting their military power is to apply it to deter, influence, coerce—in short, to control—other states, if possible without combat. But the ability to so apply this power depends on strength in actual combat.

- The Soviet objective in combat is victory, defined as survival of the Soviet state and military power (with as little damage as possible) and the imposition of the Soviet will on opponents. Soviet doctrine and practice contemplate limited war, viewed in terms of Soviet ability to impose limitations on opponents for Soviet strategic advantage.

- Soviet plans unite the roles of various elements of military forces in a coherent strategic architecture, embracing offense, defense, and combined arms in various theaters of operations. Destruction of an enemy is subordinate to the achievement of the goal of victory. The Soviets' concept for use of strategic offensive and defensive capability is, consequently, to deter attacks by U.S. intercontinental forces, to separate the United States from its allies in the Eurasian periphery, and to limit damage in the event that U.S. offensive forces are used against the Soviet Union.

- Uncertainty is a dominant factor in all combat, creating an unlimited demand for superiority in forces. Soviet planners seek ways to control uncertainty but, faced with uncertainty over which they cannot exercise a high degree of control, Soviet military action may be deterred. Uncertainties are particularly important in technically complex interactions between offense and defense.

Such a view of military force and its political applications may appear inconsistent with Soviet threats of inevitable apocalyptic destruction in the event of war at any level—but such threats are intended to play on the fears of the Western public. While very great destruction might in fact result from Soviet attacks, the discussion above suggests that the Soviets give priority to military targets. In the absence of defenses, their massive offensive forces make it possible for them to attack large numbers of targets, including urban-industrial targets as well as high-priority military targets.

Whether they would conduct such attacks from the outset or withhold attacks against urban-industrial targets to deter U.S. retaliation must be a matter of conjecture. In any case, intermediate levels of defense capability might deny them the ability to destroy with high confidence all of their high-priority targets and force them to concentrate their attack on such targets, diverting weapons that might otherwise be directed against cities. Moreover, if defenses can deny the Soviets confidence in achievement of their military attack objectives, this will strengthen deterrence of such attacks. Thus, to the extent that such attacks are necessary to overall Soviet plans, defenses can help deter lower levels of conflict.

5. *The Military Utility of Intermediate Defensive Systems*

Defensive systems affect attack planning in a variety of ways, depending on the characteristics and effectiveness of the defenses, the objectives of the attack, and the responses of the defense and offense to the measures adopted by the other side.

Any defense system can be overcome by an attack large enough to exhaust the intercept capability of the defense. The size of attack against which the defense is designed is therefore one major characteristic of a defensive system. The cost of expanding the defense to deal with a given increase in the size and cost of the offense is a measure of the leverage of the defense. Another characteristic is its effectiveness—its probability of destroying an offensive missile.

If the defense has sufficiently high capacity, effectiveness, and leverage, it can of course essentially preclude attacks. Such defenses may result from the R&D programs pursuant to the President's goal, but it is more likely that the results will be more modest. Even a modest level of effectiveness—for example, a kill probability of 0.5 for each layer of a four-layer defense—yields an overall "leakage" rate of only about 6 percent for an attack size that does not exceed the total intercept capacity of the various layers. Such a leakage rate is, of course, sufficient to create catastrophic damage in an attack of, say, 5,000 reentry vehicles (RVs) aimed at cities. It would mean 300 RVs arriving at targets—sufficient to destroy a very large part of our urban structure and population even if distributed in a nonoptimal fashion from the point of view of the offense.

Against an extensive military target system, however, with an attack objective of destroying large fractions of specific target sets (such as critical C^3I facilities) with high confidence, such a leakage rate would be totally inadequate for the offense. The more specific the attack objectives and the higher the confidence required by the offense, the greater the leverage exacted by the defense. For example, in the previous four-layer case, if the defense required a high-confidence penetration against a specific target, it would need to fire at least 30 RVs to a single target since the defense firing doctrine is unknown to the attacker. As these are expected-value calculations, an attacker would have to double or triple the above values to attain high confidence in killing a specific target. Clearly an attacking force of 5,000 RVs that could destroy a very large military target system in the absence of defenses would be totally inadequate to achieve high confidence of destruction of a large fraction of a defended target set amounting to hundreds of targets. Yet, this is precisely what is required to achieve the strategic objectives of a large-scale nuclear attack.

The situation is even more dramatic in the case of limited attacks on restricted target systems, intended to achieve a decisive strategic advantage while continuing to deter further escalation of the level of nuclear attack. Such attacks would be precluded entirely by defenses of the sort discussed, would deny the attacker's confidence in the outcome, or would require a level of force inconsistent with limiting the level of violence, while depleting the attacker's inventory available for other tasks.

Offense and defense have a rich menu of responses from which they can choose. These include fractionation of payload to increase the number of warheads for a given missile force, the use of decoys, and the use of preferential offense or defense tactics. The outcome of the contest is likely to be uncertain to both sides so long as the defense keeps pace with additions to offensive force size by expanding its intercept capacity and upgrading its critical subsystems. Uncertainty about the offense-defense engagement itself contributes to deterrence of attack by denying confidence in the attack outcome.

We have considered the effect of introducing defenses in hypothetical representative military situations, taking account of what we know of Soviet objectives and operational style in combat. In their doctrine, the Soviets stress operations designed to bring large-scale conflict to a quick and decisive end, at as low a level of violence as is consistent with achievement of Soviet strategic aims. To achieve this objective in a conflict involving NATO, a major aspect of their operations is intense initial attacks on critical NATO military targets in the rear, particularly those relevant to NATO's theater nuclear capabilities and air power. Such attacks (including those in the nonnuclear phase of combat) are intended to contribute to Soviet goals at that level, to reduce NATO's ability and resolve to initiate nuclear attacks if the nonnuclear defense fails to hold, and to assist in nuclear preemption of a NATO nuclear attack. High confidence in degrading NATO air power is also essential to support utilization of Soviet operational maneuver groups designed to disrupt NATO rear areas.

The Soviets plan to use a wide variety of means to accomplish this task. Tactical ballistic missiles (TBMs) are taking an increasing role in this mission during the initial stages of either nuclear or nonnuclear combat as their accuracy increases and the sophistication of high-explosive warheads increases. Inability to destroy critical target systems would cast doubt on the feasibility of the entire Soviet attack plan, and so contribute to deterrence of theater combat, nuclear or nonnuclear.

In the event of imminent or actual large-scale conflict in Europe, another high-priority Soviet task would be to prevent quick reinforcement and resupply from the United States.

Early and obvious success in this respect, by demonstrating the hopelessness of resistance, might abort European resistance altogether or end a conflict in its very early stages. In the absence of defenses, the Soviets might attempt this task by nonnuclear tactical ballistic missile attacks on reception facilities in Europe. The Soviets could also accomplish this task with higher confidence by means of quite limited nuclear attacks on such facilities in Europe and on a restricted set of force projection targets in CONUS.

While the risk of provoking large-scale U.S. response to nuclear attacks on CONUS might be unacceptable to the Soviets, they might also feel that—given the stakes, the risks of escalation if conflict in Europe is prolonged, and the strength of their deterrent to U.S. initiation of a large-scale nuclear exchange—the *relative* risks might be acceptable if the attack size were small enough and their confidence of success sufficiently high. Without defenses, very small numbers of ballistic missiles could in fact achieve high confidence in such an attack. However, an intermediate ballistic missile defense deployment of moderate capabilities could force the Soviets to increase their attack size radically. This would reduce or eliminate the Soviets' confidence that they could achieve their attack objectives while controlling the risks of a large-scale nuclear exchange. The role of intermediate defenses in large-scale nuclear attacks has already been discussed at the beginning of this section.

Soviet response to prospective or actual defense deployments by the United States also will have longer-run aspects. The Soviets' initial reaction will be to assess the nature, effects, and likelihood of a U.S. defense deployment. Barring fundamental changes in their conception of their relations to other states and their security needs, they will seek to prevent such a deployment through manipulation of public opinion or negotiations over arms agreements. (We consider the possibility of a fundamental change in Soviet political/military objectives in the discussion of arms agreements below.)

If the Soviets fail to prevent the deployment of defenses, they will assess their alternative responses in the light of the strategic architecture discussed above, the effectiveness and leverage of the U.S. ballistic missile defenses, and other relevant U.S. offensive and defensive capabilities (e.g., air defense). If the new defensive technologies offer sufficient leverage against the offense and they cannot prevent the West from deploying defensive systems, the Soviets may accept a reduction in their long-range offensive threat against the West, which might be reflected in arms agreements. In this case, they would probably seek to compensate by increasing their relative strength in other areas of military capability. Their current program emphases suggest that they would be more likely to respond with a continuing buildup in their long-range offensive forces. However, such a buildup would not necessarily be sufficient to maintain their current level of confidence in the achievement of the strategic objectives of those forces.

6. *Managing the Long-Term Competition with the Soviet Union*

Current Soviet policy on arms agreements is dominated by the Soviet Union's attempt to derive unilateral advantage from arms negotiations and agreements, by accepting only arrangements that permit continued Soviet increases in military strength while using the negotiation process to inhibit Western increases in military strength. There is no evidence that Soviet emphasis on competitive advantage over mutual benefit will change in the near future, unless a fundamental change occurs in the Soviet Union's underlying foreign policy objectives. Such a change might be induced in the long run by a conviction among Soviet leaders that the West was able and resolved to block the Soviet Union's attempts to extend its power and influence by reliance on military strength. If such a change occurred, the possibilities for reaching much more substantial arms agreements might increase. In that event, it might also be possible to reach agreements restricting offensive forces so as to permit defensive systems to diminish the nuclear threat. Soviet belief in the seriousness of U.S. resolve to deploy such defenses might itself contribute to such a change.

7. *Defenses and Stability*

Deployment of defensive systems can increase stability, but to attain this we must design our offensive and defensive forces properly—and, especially, we must not allow them to be vulnerable. In combination with other measures, defenses can contribute to reducing the prelaunch vulnerability of our offensive forces. To increase stability, defenses must themselves avoid high vulnerability, must be robust in the face of enemy technical or tactical countermeasures, and must compete favorably in cost terms with expansion of the Soviet offensive force. A defense that was highly effective for an attack below some threshold but lost effectiveness very rapidly for larger attacks might decrease stability if superimposed on vulnerable offensive systems. Boost-phase and midcourse layers may present problems of both vulnerability and high sensitivity to attack size. Nevertheless, if this vulnerability can be limited through technical and tactical measures, these layers may constitute very useful elements of properly designed multilayered systems where their sensitivity is compensated by the capabilities of other system components.

8. *A Perspective on Costs*

We do not yet have a basis for estimating the full cost of the necessary research program nor the cost of systems development or various possible defensive deployment options. It is clear, however, that costs and the tradeoffs they require would present important issues for defense policy. While not insignificant, total systems costs would be spread over many years. There is no reason at present to assume that the potential contributions of defensive systems to our security would not prove sufficient to warrant the costs of deploying the systems when we are in a better situation to assess their costs and benefits.

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(U) This report (1) reviews relevant existing or ongoing Government and contractor assessments of the role of defensive systems in our national security strategy, (2) defines critical crisis or conflict contingencies in which defensive systems may play a key role, (3) defines alternative future military postures that include a variety of defensive system configurations, (4) assesses the role of defensive systems in various contingencies, including their effect in deterring conflict, restraining intensification and

20. (Continued)

destructiveness of conflict if it occurs (particularly in reducing incentives to use nuclear weapons), and improving the outcome for the United States and its allies, (5) tests the sensitivity of assessments to variations in the effectiveness of defensive systems and the size and sophistication of the threat, and (6) identifies key issues and required actions under a policy of increasing emphasis on defensive systems in our national security, including alternative objectives for such systems, force structure trade-offs, issues in relations with our allies, and issues in relations with our adversaries including arms negotiations.

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(U) Responsibility for the views expressed herein rests with the Study Team.

PREFACE

(U) President Reagan has directed an "effort to define a long-term research and development program...to achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles....." The President noted that the achievement of the ultimate goal was a "formidable technical task" that would probably take decades, and that "as we proceed we must remain constant in preserving the nuclear deterrent...maintaining a solid capability for flexible response...pursue real reductions in nuclear arms...(and) reduce the risk of a conventional military conflict escalating to nuclear war by improving our nonnuclear capabilities."

(U) Two studies assisted in that effort: (1) the Defensive Technologies Study (DTS) to review the technologies relevant to defenses against ballistic missiles and recommend a specific set of long-term programs to make the necessary technological advances, and (2) the Future Security Strategy Study (FSSS) to assess the role of defensive systems in our future security strategy. The implications for defense policy, strategy, and arms control were addressed by two FSSS teams: an interagency team led by Mr. Franklin C. Miller, and a team of outside experts led by Mr. Fred S. Hoffman. This is a report on the results of the work of the team of outside experts. The work was done under the auspices of the Institute for Defense Analyses at the request of the Office of the Under Secretary of Defense for Policy to assist the interagency team.

(U) This report and its conclusions do not necessarily represent the views of the Department of Defense or the Institute for Defense Analyses.

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GLOSSARY

ABM	Antiballistic Missile
ALCM	Air-Launched Cruise Missile
APOD	Aerial Port of Debarkation
ASAT	Antisatellite
ASW	Antisubmarine Warfare
ATBM	Anti-Tactical Ballistic Missile (same as ATM)
ATM	Anti-Tactical Missile
AWACS	Airborne Warning and Control System
BMD	Ballistic Missile Defense
BPI	Boost-Phase Intercept
C^3	Command, Control, and Communications
C^3I	Command, Control, Communications, and Intelligence
CEP	Circular Error Probable
CONUS	Continental United States
CY	Calendar Year
DEW	Distant Early Warning
DOD	Department of Defense
DTS	Defensive Technologies Study
ECM	Electronic Countermeasures
ELV	Expendable Launch Vehicle
EMT	Equivalent Megatonnage
FSSS	Future Security Strategic Study
FY	Fiscal Year
FYDP	Five-Year Defense Plan
GLCM	Ground-Launched Cruise Missile
HEL	High-Energy Laser
HLLV	Heavy-Lift Launch Vehicle
ICBM	Intercontinental Ballistic Missile
IDA	Institute for Defense Analyses
INF	Intermediate Nuclear Forces
IOC	Initial Operational Capability
IR	Intermediate Range
IRBM	Intermediate-Range Ballistic Missile
LV	Launch Vehicle

MAD	Mutual Assured Destruction
MIRV	Multiple Independently Targetable Reentry Vehicle
MOB	Main Operating Base
MRASM	Medium-Range Air-to-Surface Missile
MRBM	Medium-Range Ballistic Missile
NATO	North Atlantic Treaty Organization
NCA	National Command Authorities
OMG	Operational Maneuver Group
OTHB	Other-the-Horizon Backscatter Radar
Penaid	Penetration Aid
POM	Program Objectives Memorandum
POMCUS	Prepositioning of Materiel Configured to Unit Sets
R&D	Research and Development
RISOP	Red Integrated Strategic Offensive Plan
RV	Reentry Vehicle
SAC	Strategic Air Command
SAM	Surface-to-Air Missile
SDLV	Shuttle-Derivative Launch Vehicle
SEA	Southeast Asia
SIOP	Single Integrated Operations Plan
SLBM	Submarine-Launched Ballistic Missile
SLCM	Sea-Launched Cruise Missile
SLOC	Sea Lines of Communication
SRBM	Short-Range Ballistic Missile
SSBN	Fleet Ballistic Missile Submarine (Nuclear Powered)
START	Strategic Arms Reduction Talks
SUAWACS	Soviet Union Airborne Warning and Control System
SWA	Southwest Asia
TBM	Tactical Ballistic Missile
TOA	Total Obligational Authority
TPS	Thermal Protection System
U.S.	United States
USA	United States Army
USAF	United States Air Force
USSR	Union of Soviet Socialist Republics
WP	Warsaw Pact

SUMMARY REPORT

A. MAJOR CONCLUSIONS AND RECOMMENDATIONS

THE STRATEGIC NEED FOR DEFENSIVE SYSTEMS

1. (U) U.S. national security requires vigorous development of technical opportunities for advanced ballistic missile defense systems.

- Effective U.S. defensive systems can play an essential role in reducing reliance on threats of massive destruction that are increasingly hollow and morally unacceptable. A strategy that places increased reliance on defensive systems can offer a new basis for managing our long-term relationship with the Soviet Union. It can open new opportunities for pursuing a prudent defense of Western security through both unilateral measures and agreements. The Soviets use arms negotiations to pursue competitive military advantage. The Soviet Union is likely to cooperate in pursuing agreements that are mutually beneficial only if it concludes that it cannot accomplish its present political goals because it faces Western firmness and ability to resist coercion.

- Technologies for ballistic missile defenses, together with those for precise, effective, and discriminate nuclear and nonnuclear offensive systems, are advancing rapidly. They can present opportunities for resisting aggression and deterring conflict that are safer and more humane than exclusive reliance on the threat of nuclear retaliation.

- A satisfactory deterrent requires a combination of more discriminating and effective offensive systems to respond to enemy attacks plus defensive systems to deny the achievement of enemy attack objectives. Such a deterrent can counter the erosion of confidence in our alliance guarantees caused by the adverse shifts in the military balance since the 1960s.

- Readiness to deploy advanced ballistic missile defense systems is a necessary part of a U.S. hedge against the increasingly ominous possibility of a one-sided Soviet deployment of such systems. Such a Soviet deployment, superimposed on the present nuclear balance, would have disastrous consequences for U.S. and allied security. Clearly this possibility, especially in the near term, also requires precautionary measures to enhance the ability of our offensive forces to penetrate defenses.

THE PREFERRED PATH TO THE PRESIDENT'S GOAL: INTERMEDIATE OPTIONS

2. ([illegible]) The new technologies offer the possibility of a multilayered defense system able to intercept offensive missiles in each phase of their trajectories. In the long term, such systems might provide a nearly leakproof defense against large ballistic missile attacks. However, their components vary substantially in technical risk, development lead time, and cost, and in the policy issues they raise. Consequently, partial systems, or systems with more modest technical goals, may be feasible earlier than the full system.

3. (U) Such "intermediate" systems may offer useful capabilities. The assessment in this study of the utility of intermediate systems is necessarily tentative, owing to the current lack of specificity in systems design, effectiveness and costs. Nevertheless, it indicates that, given a reasonable degree of success in our research and development (R&D) efforts, intermediate systems can strengthen deterrence. They will greatly complicate Soviet attack plans and reduce Soviet confidence in a successful outcome at various levels of conflict and attack sizes, both nuclear and nonnuclear. Even U.S. defenses of limited capability can deny Soviet planners confidence in their ability to destroy a sufficient set of military targets to satisfy enemy attack objectives, thereby strengthening deterrence. Intermediate defenses can also reduce damage if conflict occurs. The combined effects of these intermediate capabilities could help to reassure our allies about the credibility of our guarantees.

4. [(S)] A flexible R&D program designed to offer early options for the deployment of intermediate systems, while proceeding toward the President's ultimate goal, is preferable to one that defers the availability of components having a shorter development lead time in order to optimize the allocation of R&D resources for development of the "full system."

- Intermediate defense systems can help to ameliorate our security problems in the interim while full systems are being developed.

- The full-system approach involves higher technical risk and higher cost. On the other hand, an approach explicitly addressing the utility of intermediate systems offers a hedge against the possibility that nearly leakproof defenses may take a very long time, or may prove to be unattainable in a practical sense against a Soviet effort to counter the defense.

- The deployment of intermediate systems would also provide operational experience with some components of later, more comprehensive, and more advanced defense systems, increasing the effectiveness of the development effort.

5. (U) We have considered several possible intermediate options:

- <u>Anti-Tactical Missile (ATM) Options</u>

  Deployment of an anti-tactical missile (ATM) system is an intermediate option that might be available relatively early. The system might combine some advanced midcourse and terminal components identified by the Defensive Technologies Study with a terminal underlay that might result from a Patriot upgrade. The advanced components, though developed initially in an ATM mode, could later play a role in continental United States (CONUS) defense. Current plans to upgrade Patriot would begin to provide limited ATM capability before 1990. Such an option addresses the pressing military need to protect allied forces as well as our own, in theaters of operations, from either nonnuclear or nuclear attack. It would directly benefit our allies as well as ourselves. Inclusion of such an option in our long-range R&D program on ballistic missile defenses should reduce allied anxieties that our increased emphasis on defenses might indicate a weakening in our commitment to the defense of Europe. We can pursue such a program option <u>within ABM Treaty constraints</u>. Such a course is therefore consistent with a policy of deferring decisions on modifying or withdrawing from the treaty.

- <u>Intermediate CONUS Options</u>

Intermediate capabilities may also have important applications in CONUS, initially to defend critical installations such as C^3I nodes. As the defense sys-system is thickened, it also will add to Soviet uncertainties in targeting, even in large-scale attacks, thereby enhancing deterrence. Depending on rates of progress in the R&D program, a two-phase defense of high effectiveness against moderate threats might comprise both endoatmospheric and exoatmospheric components employing space-based sensors and ground-based interceptors. These intermediate components would be the lower tiers in a full multilayered system.

- <u>Limited Boost-Phase Intercept Options</u>

Some intermediate options may provide useful near-term leverage on Soviet plans and programs even if they prove unable to meet fully sophisticated Soviet responses. An early boost-phase intercept system with capability against large rockets similar to those that are an important part of Soviet forces may be one example. Such an option could impose costs on the Soviets and increase their incentive to move toward an offensive posture that is more stable and less threatening. A definitive assessment of the utility of such options must specify their technological and political feasibility, timing, and cost, and the ease with which they can be countered.

6. (U) Pursuit of the President's goal, especially if it is interpreted solely in terms of the full, nearly leak-proof system, will raise questions about our readiness to defend against other threats, notably that of air attack by

possible advanced bombers and cruise missiles. An appropriate response to such questions will require an early and comprehensive review of air defense technologies, leading to the development of useful systems concepts.

DEFENSIVE SYSTEMS AND STABILITY OF DETERRENCE

7. (U) Deployment of defensive systems can increase stability, but to attain this goal we must design our offensive and defensive forces properly; especially, we must not allow them to be vulnerable. In combination with other measures, defenses can contribute to reducing the prelaunch vulnerability of our offensive forces. To increase stability, defenses must themselves avoid high vulnerability, must be robust in the face of enemy technical or tactical countermeasures, and must compete favorably in cost with expansion of the Soviet offensive force.

8. (S) As currently assessed, some boost-phase intercept systems and other space-based components pose serious policy problems. Because of engagement time constraints, in boost-phase intercept systems the decision to fire must, in effect, be predelegated to a computer. This is especially serious for Excalibur, which involves detonation in space of a nuclear device, and for other weapons that might produce serious unintended damage over foreign territory or might deplete our intercept capability in response to false alarms. Excalibur also requires that we place nuclear explosives in orbit, which could be criticized as violating the treaty banning "weapons of mass destruction" in outer space. Space-based components may also be highly vulnerable to Soviet boost-phase intercept systems, or anti-satellite (ASAT) systems. It will be imperative to design systems which are not themselves subject to rapid attack. Alternative approaches need to be developed in the R&D program that permit safe arrangements for the operation of the defensive system.

SOVIET POLICIES, INITIATIVES, AND RESPONSES

9. (U) The common assumption that the decision to initiate widespread deployment of ballistic missile defense systems rests with the United States alone is completely unjustified. Soviet history, doctrine, and programs all indicate that the Soviets are likely (and better prepared than we) to initiate a widespread antiballistic missile (ABM) deployment whenever they deem it to their advantage.

10. (U) The long-term course of Soviet military policy plans and programs is uncertain in detail, but unless there is a major change in their political goals, the Soviets are highly likely to continue to aim at being able to defeat any combination of external enemies.

- The Soviets will almost certainly continue to maintain and upgrade their large air defenses and to conduct programs for R&D and modernization of their ballistic missile defenses. These activities will increasingly create uncertainty about the ability of U.S. missile forces to penetrate without countermeasures, and about the possibility of a sudden (open) or gradual (clandestine) Soviet breakout from the ABM Treaty constraints. The importance of such uncertainty is intensified because of the substantial Soviet investments in air defense and passive defenses of elements of the Soviet military and government. Even without violating ABM Treaty constraints, the Soviets will probably deploy a substantial ATM defense, exacerbating our problems in theaters of operations and making them more difficult to correct.

- On the other hand, if the Soviets believe that a Western deployment of defenses will substantially improve the

West's capability to resist attack or coercion, they will try to prevent a Western deployment through political means or arms negotiations.

- If the United States deploys defensive systems, the Soviets will probably seek to maintain their offensive threat through a set of measures that will depend on their assessment of the defenses and their own technological options. Depending on the defense effectiveness and leverage, such a response may not fully restore Soviet offensive capabilities.

- If the result of defense deployments is to reduce the offensive threats against the United States and the Soviet Union, the Soviets may at some time give even greater weight to general-purpose forces in their overall strategy. Such a situation would increase the importance of strengthening Western capabilities.

- If, over time, the Soviets become convinced that the West has the resolve and ability to block Soviet achievement of their long-term goals of destabilization and domination of other states, they may move from their present political/military polfcies to become more willing to agree to reducing the nuclear threat, through a combination of mutual restrictions on offensive forces and deployment of defensive systems.

U.S. DECLARATORY POLICY

11. (S) U.S. declaratory policy on the President's initiative should stress:

- Soviet activities in the area of ballistic missile defenses. The serious questions these activities raise about Soviet adherence to the ABM Treaty and Soviet readiness to deploy widespread defenses should be publicized as early as possible. This will anticipate Soviet efforts to shift to us the onus for any departure from existing ABM Treaty constraints.

- A comprehensive statement of our long-range strategic goals. This should embrace offensive and defensive systems, and their relation to our general-purpose forces and to the long-term management of our relations with the Soviet Union.

- The contribution of intermediate defensive systems to deterrence and other U.S. objectives.

- The relevance of defensive systems to our allies, directly in the form of ATM options and indirectly through strengthening deterrence.

- A continued U.S. desire to reach agreements to reduce the nuclear threat, increase the prudence of our potential response to aggression, and provide a more suitable long-term basis for relations with the Soviet Union consistent with our interests and those of our allies. We should call attention to the role of defenses in reducing future sensitivity to certain verification difficulties.

B. SUPPORTING RATIONALE

(U) President Reagan's directive to assess the role of defensive systems has required the FSSS to consider the relation of these systems to our strategic objectives and to Soviet programs and policy. The role of intermediate defensive systems has been a major focus of our study.

1. The Need for Defensive Systems in our Security Strategy

(U) There is a broad consensus that reliance on nuclear retaliatory threats raises serious political and moral problems, particularly in contingencies where the enemy use of force has been constrained. Technologies for defensive systems and those for extremely precise and discriminating attacks on strategic targets have been advancing very rapidly. (Many technologies are common to both functions.) Together they offer substantial promise of a basis for protecting our national security interests, and those of our allies, that is more humane and more prudent than sole reliance on threats of nuclear response. The case for increasing the emphasis on defensive programs in our national security strategy rests on several grounds, in addition to the broad, long-term objectives mentioned by the President in his March 23 speech:

- The massive increase in Soviet power at all levels of conflict is eroding confidence in the threat of U.S. nuclear response to Soviet attacks against our allies. A continuation of this erosion could ultimately undermine our traditional alliance structure.

- If the Soviet Union persists in the buildup of nuclear offensive forces, for the next decade and beyond the United States may not wish to restore, by offensive means alone, a military balance consistent with our strategic needs. Soviet willingness and ability to match or overmatch increases in U.S. nuclear forces suggest that while additions to our forces are needed to maintain the continued viability of our nuclear deterrent, such additions alone may not preserve confidence in our alliance guarantees.

- The public in the United States and other Western countries is increasingly anxious about the danger of nuclear war and the prospects for a supposedly unending nuclear arms race. Those expressing this anxiety, however, frequently ignore the fact that the U.S. nuclear stockpile has been declining, both in numbers and in megatons, while Soviet forces have increased massively in both. A U.S. counter to the Soviet buildup that emphasized increases in U.S. nuclear stockpiles would exacerbate public anxieties.

- Arms agreements, despite widespread Western hopes for them, have to date failed to prevent growing instability in the balance--and the deterioration--in the Western position relative to the East. Offensive force limitation agreements, originally associated in the U.S. arms control strategy with the ABM Treaty, have failed to restrain the Soviet offensive buildup; _de facto_ reductions in the explosive yield and size of U.S. strategic nuclear stocks have not prevented vast increases in the size and destructiveness of the Soviet stockpile.

- Rapidly advancing technologies offer new opportunities for active defense deployment against ballistic missile attack that did not exist when, over a decade ago, the United States abandoned plans for defense deployments against nuclear attack. Technologies for sensing and discrimination of targets, directing the means of intercept, and destroying targets have created the possibility of a system of layered defenses that would pose successive, independent barriers to penetrating missiles. There has been improvement in some (not all) aspects of defense vulnerability. Given successful outcomes to development programs and robustness in the face of Soviet countermeasures, such defenses would permit only a very small proportion of even a very large attacking ballistic missile force to reach target. Such defenses might also offer high leverage in competing with offensive responses.

2. Ballistic Missile Defenses in the Soviet Union

(U) The Soviets maintain a high level of activity in programs relevant to defenses against nuclear attack including:

- Active programs for modernizing deployed air and ballistic missile defense systems which together give them the basis for a very rapid deployment of widespread ballistic missile defenses, if they decide to ignore ABM Treaty obligations completely and openly.

- Large and diverse R&D programs in areas of technology for advanced ballistic missile and air defense systems.

- A space launch capacity significantly greater than our own, if not as sophisticated.

(U) A substantial Soviet lead in deployed defensive systems, superimposed on their growing offensive threat against our nuclear offensive forces, could destroy the stability of the strategic balance.

(U) The decision to initiate widespread deployment of ballistic missile defenses does not rest with the United States alone. The common assumption that it does is completely unjustified. The Soviets give every appearance of preparing for such a deployment whenever they believe they will derive significant strategic advantage from doing so. Their activities include some that are questionable under the ABM Treaty. Unless the public is aware and kept aware of Soviet activities in this area, the United States will probably be blamed for initiating "another round in the arms race." The state of U.S. preparedness to deploy capable defenses will be an important element in the Soviets' assessment of their own options. Active U.S. R&D programs on advanced defensive systems can assist in deterring a Soviet deployment designed to exploit an asymmetry in their favor.

3. <u>Alternative Paths to the President's Objective</u>

~~(S)~~ The path to the President's ultimate objective may be designed to go directly toward the ultimate objective of a full, multilayered system that offers nearly leakproof defenses against very large offensive forces. Under some conditions such a path might be an optimal use of limited R&D resources, concentrating first on those technologies that present the greatest difficulty and require the greatest lead times.

~~(S)~~ In addition, by deferring deployments into the indefinite future, advocates of such a path may hope that we can defer difficult issues, such as the need for modifying or withdrawing from existing treaties that constrain defense development, testing, and deployments, the resource trade-offs necessary to pay for the ultimate deployments, the need for air defense, and the effects on the interests of our allies. Any hope of deferring such issues is likely to prove delusory, however, because of the size of the R&D resource commitment necessary to make credible progress toward this demanding technical goal. Skeptics are unlikely to accept the proposition that we will determine our positions on these matters only after spending many billions on the R&D program. And, by deferring defense deployments, this choice defers the benefits we might derive from intermediate defenses during the intervening and difficult period.

(S) Alternatively, R&D programs might be designed to provide earlier options for the deployment of intermediate systems, based on technologies that can contribute to the ultimate objective, as such systems become technically feasible and offer useful capabilities. Such a path toward the President's ultimate goal might generate earlier funding demands to support deployment of intermediate systems and would require early treatment of some of the policy issues. Also, at least one variant considered in our report, an ATM deployment for theaters of operations, could be undertaken without modification of the ABM Treaty.

(C) The principal benefits of an R&D path providing options for earlier, partial deployments are:

- Possibilities for an early contribution to improving the deteriorating military balance.

- Its explicit provision of a hedge against the risks inherent in a program where each of a large number of demanding technological goals must be met in order to realize any useful result at all.

- The likelihood that early deployments of parts of the ultimate system may also prove to be the most effective path to achieving such a system; early operational experience with some system elements can contribute useful feedback to the development process.

4. <u>Intermediate Defensive Systems, Soviet Strategy, and Deterrence</u>

(U) Fundamentally, the choice between the two paths depends on the utility of intermediate systems in meeting our national security objectives. In the discussion of ballistic missile defenses that preceded the U.S. proposal of the ABM

Treaty, opponents of such defenses argued that the utility of widespread defense deployments should be judged in terms of their ability to protect population from large attacks aimed primarily at urban-industrial areas. Because of the destructiveness of nuclear weapons, nearly leakproof defenses are required to provide a high level of protection for population against such attacks. Moreover, opponents at that time also divided our strategic objectives into two categories: deterrence of war and limiting damage if deterrence failed. They relegated defenses exclusively to the second objective and ignored the essential complementarity between the two objectives. Consequently, they assigned defenses no role in deterrence.

(U) We have reexamined this issue, and we conclude that defenses of intermediate levels of capability can make critically important contributions to our national security objectives. In particular, they can reinforce or help maintain deterrence by denying the Soviets confidence in their ability to achieve the strategic objectives of their contemplated attacks as they assess a decision to go to war. By strengthening deterrence at various levels of conflict, defenses can also contribute valuable reassurance to our allies.

(U) Deterrence rests on the Soviets' assessment of their political/military alternatives. This, in turn, depends on their objectives and style in planning for and using military force. It also depends on their estimates of the effectiveness of weapons and forces on both sides. Soviet assessments on these matters may differ sharply from our own. Specifically, the past behavior of the Soviets suggests they credit defensive systems with greater capability than we do. If true, this will increase the contribution of defensive systems to deterrence.

(U) Because of the long lead times, assessment of the strategic role of defenses also requires very long-term projections about the nature of the Soviet state. While such projections cannot be made with confidence, there is no current basis for projecting a fundamental change in the Soviet attitude toward external relations. We consider below the possibility that appropriate management by the West of its long-term relations with the Soviets might induce a fundamental change. Desirable as this goal is, the most probable projection for the foreseeable future is that they will continue to set a high priority on their ability to control, subvert, or coerce other states as the basis for their foreign relations. In this case, military power will continue to play a major role for the Soviets, and many present elements of style in the application of that power can be expected to persist:

- Domination of the Eurasian periphery is a primary strategic objective. The Soviets' preferred mode in exploiting their military power is to apply it to deter, influence, coerce--in short, to control--other states, if possible without combat. But the ability to so apply this power depends on strength in actual combat.

- The Soviet objective in combat is victory, defined as survival of the Soviet state and military power (with as little damage as possible) and the imposition of the Soviet will on opponents. Soviet doctrine and practice contemplate limited war, viewed in terms of Soviet ability to impose limitations on opponents for Soviet strategic advantage.

- Soviet plans unite the roles of various elements of military forces in a coherent strategic architecture, embracing offense, defense, and combined arms in various theaters of operations. Destruction of an enemy is subordinate to the achievement of the goal of victory. The Soviets' concept for use of strategic offensive and defensive capability is, consequently, to deter attacks by U.S. intercontinental forces, to separate the United States from its allies in the Eurasian periphery, and to limit damage in the event that U.S. offensive forces are used against the Soviet Union.

- Uncertainty is a dominant factor in all combat, creating an unlimited demand for superiority in forces. Soviet planners seek ways to control uncertainty but, faced with uncertainty over which they cannot exercise a high degree of control, Soviet military action may be deterred. Uncertainties are particularly important in technically complex interactions between offense and defense.

(U) Such a view of military force and its political applications may appear inconsistent with Soviet threats of inevitable apocalyptic destruction in the event of war at any level--but such threats are intended to play on the fears of the Western public. While very great destruction might in fact result from Soviet attacks, the discussion above suggests that the Soviets give priority to military targets. In the absence of defenses, their massive offensive forces make it possible for them to attack large numbers of targets, including urban-industrial targets as well as high-priority military targets.

(U) Whether they would conduct such attacks from the outset or withhold attacks against urban-industrial targets to deter U.S. retaliation must be a matter of conjecture. In any case, intermediate levels of defense capability might deny them the ability to destroy with high confidence all of their high-priority targets and force them to concentrate their attack on such targets, diverting weapons that might otherwise be directed against cities. Moreover, if defenses can deny the Soviets confidence in achievement of their military attack objectives, this will strengthen deterrence of such attacks. Thus, to the extent that such attacks are necessary to overall Soviet plans, defenses can help deter lower levels of conflict.

5. <u>The Military Utility of Intermediate Defensive Systems</u>

(U) Defensive systems affect attack planning in a variety of ways, depending on the characteristics and effectiveness of the defenses, the objectives of the attack, and the responses of the defense and offense to the measures adopted by the other side.

(U) Any defense system can be overcome by an attack large enough to exhaust the intercept capability of the defense. The size of attack against which the defense is designed is therefore one major characteristic of a defensive system. The cost of expanding the defense to deal with a given increase in the size and cost of the offense is a measure of the leverage of the defense. Another characteristic is its effectiveness--its probability of destroying an offensive missile.

(U) If the defense has sufficiently high capacity, effectiveness, and leverage, it can of course essentially preclude attacks. Such defenses may result from the R&D programs pursuant to the President's goal, but it is more likely that the results will be more modest. Even a modest level of effectiveness--for example, a kill probability of 0.5 for each layer of a four-layer defense--yields an overall "leakage" rate of only about 6 percent for an attack size that does not exceed the total intercept capacity of the various layers. Such a leakage rate is, of course, sufficient to create catastrophic damage in an attack of, say, 5,000 reentry vehicles (RVs) aimed at cities. It would mean 300 RVs arriving at targets--sufficient to destroy a very large part of our urban structure and population even if distributed in a nonoptimal fashion from the point of view of the offense.

(U) Against an extensive military target system, however, with an attack objective of destroying large fractions of specific target sets (such as critical C^3I facilities) with high confidence, such a leakage rate would be totally inadequate for the offense. The more specific the attack objectives and the higher the confidence required by the offense, the greater the leverage exacted by the defense. For example, in the previous four-layer case, if the defense required a high-confidence penetration against a specific target, it would need to fire at least 30 RVs to a single target since the defense firing doctrine is unknown to the attacker. As these are expected-value calculations, an attacker would have to double or triple the above values to attain high confidence in killing a specific target. Clearly an attacking force of 5,000 RVs that could destroy a very large military target system in the absence of defenses would be totally inadequate to achieve high confidence of destruction of a large fraction of a defended target set amounting to hundreds of targets. Yet, this is precisely what is required to achieve the strategic objectives of a large-scale nuclear attack.

(U) The situation is even more dramatic in the case of limited attacks on restricted target systems, intended to achieve a decisive strategic advantage while continuing to deter further escalation of the level of nuclear attack. Such attacks would be precluded entirely by defenses of the sort discussed, would deny the attacker's confidence in the outcome, or would require a level of force inconsistent with limiting the level of violence, while depleting the attacker's inventory available for other tasks.

(U) Offense and defense have a rich menu of responses from which they can choose. These include fractionation of payload to increase the number of warheads for a given missile force, the use of decoys, and the use of preferential offense or defense tactics. The outcome of the contest is likely to be uncertain to both sides so long as the defense keeps pace with additions to offensive force size by expanding its intercept capacity and upgrading its critical subsystems. Uncertainty about the offense-defense engagement itself contributes to deterrence of attack by denying confidence in the attack outcome.

(S) We have considered the effect of introducing defenses in hypothetical representative military situations, taking account of what we know of Soviet objectives and operational style in combat. In their doctrine, the Soviets stress operations designed to bring large-scale conflict to a quick and decisive end, at as low a level of violence as is consistent with achievement of Soviet strategic aims.

(S) The Soviets plan to use a wide variety of means to accomplish this task. Tactical ballistic missiles (TBMs) are taking an increasing role in this mission during the initial stages of either nuclear or nonnuclear combat as their accuracy increases and the sophistication of high-explosive warheads increases.

Inability to destroy critical target systems would cast doubt on the feasibility of the entire Soviet attack plan, and so contribute to deterrence of theater combat, nuclear or nonnuclear.

(S) In the event of imminent or actual large-scale conflict in Europe, another high-priority Soviet task would be to prevent quick reinforcement and resupply from the United States.

(S) While the risk of provoking large-scale U.S. response to nuclear attacks on CONUS might be unacceptable to the Soviets, they might also feel that--given the stakes, the risks of escalation if conflict in Europe is prolonged, and the strength of their deterrent to U.S. initiation of a large-scale nuclear exchange--the <u>relative</u> risks might be acceptable if the attack size were small enough and their confidence of success sufficiently high. Without defenses, very small numbers of ballistic missiles could in fact achieve high confidence in such an attack. However, an intermediate ballistic missile defense deployment of moderate capabilities could force the Soviets to increase their attack size radically. This would reduce or eliminate the Soviets' confidence that they could achieve their attack objectives while controlling the risks of a large-scale nuclear exchange. The role of intermediate defenses in large-scale nuclear attacks has already been discussed at the beginning of this section.

(~~S~~) Soviet response to prospective or actual defense deployments by the United States also will have longer-run aspects. The Soviets' initial reaction will be to assess the nature, effects, and likelihood of a U.S. defense deployment. Barring fundamental changes in their conception of their relations to other states and their security needs, they will seek to prevent such a deployment through manipulation of public opinion or negotiations over arms agreements. (We consider the possibility of a fundamental change in Soviet political/military objectives in the discussion of arms agreements below.)

(U) If the Soviets fail to prevent the deployment of defenses, they will assess their alternative responses in the light of the strategic architecture discussed above, the effectiveness and leverage of the U.S. ballistic missile defenses, and other relevant U.S. offensive and defensive capabilities (e.g., air defense). If the new defensive technologies offer sufficient leverage against the offense and they cannot prevent the West from deploying defensive systems, the Soviets may accept a reduction in their long-range offensive threat against the West, which might be reflected in arms agreements. In this case, they would probably seek to compensate by increasing their relative strength in other areas of military capability. Their current program emphases suggest that they would be more likely to respond with a continuing buildup in their long-range offensive forces. However, such a buildup would not necessarily be sufficient to maintain their current level of confidence in the achievement of the strategic objectives of those forces.

6. Managing the Long-Term Competition with the Soviet Union

(U) Current Soviet policy on arms agreements is dominated by the Soviet Union's attempt to derive unilateral advantage from arms negotiations and agreements, by accepting only arrangements that permit continued Soviet increases in military strength while using the negotiation process to inhibit Western increases in military strength. There is no evidence that Soviet emphasis on competitive advantage over mutual benefit will change in the near future, unless a fundamental change occurs in the Soviet Union's underlying foreign policy objectives. Such a change might be induced in the long run by a conviction among Soviet leaders that the West was able and resolved to block the Soviet Union's attempts to extend its power and influence by reliance on military strength. If such a change occurred, the possibilities for reaching much more substantial arms agreements might increase. In that event, it might also be possible to reach agreements restricting offensive forces so as to permit defensive systems to diminish the nuclear threat. Soviet belief in the seriousness of U.S. resolve to deploy such defenses might itself contribute to such a change.

7. Defenses and Stability

(U) Deployment of defensive systems can increase stability, but to attain this we must design our offensive and defensive forces properly--and, especially, we must not allow them to be vulnerable. In combination with other measures, defenses can contribute to reducing the prelaunch vulnerability of our offensive forces. To increase stability, defenses must themselves avoid high vulnerability, must be robust in the face of enemy technical or tactical countermeasures, and must compete favorably in cost terms with expansion of the Soviet offensive force. A defense that was highly effective for an attack below some threshold but lost effectiveness very rapidly for larger attacks might decrease stability if superimposed on vulnerable offensive systems. Boost-phase and midcourse layers may present problems of both vulnerability and high sensitivity to attack size. Nevertheless, if this vulnerability can be limited through technical and tactical measures, these layers may constitute very useful elements of properly designed multi-layered systems where their sensitivity is compensated by the capabilities of other system components.

8. A Perspective on Costs

(U) We do not yet have a basis for estimating the full cost of the necessary research program nor the cost of systems development or various possible defensive deployment options. It is clear, however, that costs and the trade-offs they require would present important issues for defense policy. While not insignificant, total systems costs would be spread over many years and the peak expenditures would not occur until well in the future. There is no reason at present to assume that the potential contributions of defensive systems to our security would not prove sufficient to warrant the costs of deploying the systems when we are in a better situation to assess their costs and benefits.

I. THE PRESIDENT'S INITIATIVE--ITS STRATEGIC CONTEXT

(U) On March 23, in a nationally televised speech from the White House, President Reagan offered the American people a vision of a new approach to security, based not on the threat of nuclear retaliation but on the idea of defending against a nuclear attack.

> Would it not be better to save lives than to avenge them?...What if free people could live secure in the knowledge that their security did not rest upon the threat of instant U.S. retaliation to deter a Soviet attack; that we could intercept and destroy strategic ballistic missiles before they reached our own soil or that of our allies?

(U) In the speech, the President recognized that strategic defenses would not dominate the strategic balance overnight. However, this did not dissuade him from moving toward that goal.

> I know this is a formidable technical task, one that may not be accomplished before the end of this century. Yet current technology has attained a level of sophistication where it is reasonable for us to begin this effort....

(U) The President concluded his remarks on ballistic missile defense (BMD) by directing "a comprehensive and intensive effort to define a long-term research and development (R&D) program to begin to achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles...to search for ways to reduce the danger of nuclear war." Nevertheless, he clearly understood that the road to this ultimate goal would be long and uncertain. The President recognized that, in the interim, the United States would have to "remain constant in preserving the nuclear deterrent and maintaining a solid capability for flexible response," and "reduce the risk of a conventional military conflict escalating to nuclear war by improving our nonnuclear capabilities."

(U) The President referred to the need to pursue new technological developments that offer the prospect of highly effective defenses. Rapidly developing technologies also offer revolutionary increases in the precision and accuracy of offensive systems and the prospect of achieving our strategic goals at greatly reduced levels of unintended damage to civilians. Together, such developments hold substantial possibilities for meeting the President's objective of "reducing the danger of nuclear war" while securing our interests and protecting our allies against continued Soviet efforts to destabilize, coerce, divide, and control other countries.

(U) National Security Decision Directive No. 85, signed by the President on March 25 and released to the public, confirmed his policy to "decrease our reliance on the threat of retaliation by offensive nuclear weapons and to increase the contribution of defensive systems to our security and that of our allies." To consider the full range of political, military, and technical issues associated with a United States strategy incorporating increased emphasis on defense, the President further ordered the initiation of several high-level studies, including one "to be completed on a priority basis to assess the roles that ballistic missile defense could play in future security strategy of the United States and our allies." National Security Study Directive 6-83, outlined below, elaborated on this basic scheme and constitutes the specific directive under which this study was undertaken.

A. THE OBJECTIVES AND SCOPE OF THE STUDY

(C) [

] We have assumed a need to look at least 20 to 30 years ahead. This charge also suggests a need to define future security strategy. That strategy is almost certain to change over this period of time; indeed, the President's initiative calls for major change.

(C) The nature of the strategic reorientation called for in the President's speech is clear: "Increased reliance on defensive systems and decreased reliance on offensive nuclear systems." This suggests a need to consider not just ballistic missile defenses, but also some combination of:

- Improved defenses against nuclear forces of all kinds;
- Reductions or limits on offensive nuclear forces; and
- Improved nonnuclear forces.

(U) We were asked to consider "the role of defenses both in deterring attack and in defending the United States and allied territory and forces." This suggests defense can play a role in deterrence, and assessing that role provides a major theme of this study.

(U) Thus, the scope of this study, as we have defined it, includes all defenses, not just BMD. It addresses political and budgetary consequences as well as military implications of the strategic reorientation.

B. WHY A STRATEGIC REORIENTATION NOW?

(U) The general public, in the United States and other Western countries, is increasingly anxious about the danger of nuclear war, and about the prospect of a seemingly unending nuclear arms race. Concerns have also been voiced about the heavy reliance the United States places on nuclear weapons for its security at a time when it no longer holds a nuclear advantage. The President's question--"Must we live indefinitely under the threat of nuclear war?"--is being asked more and more by people of diverse political views. Critics are concerned with both the morality and the prudence of so heavy a reliance on nuclear retaliation for our security.

(U) There has been an erosion of U.S. strategy. A system of alliances has been the keystone of U.S. foreign policy since World War II. Many factors are weakening that system. A major factor has been the political impact of a massive and relentless buildup of Soviet military power, unmatched by the West. This situation has gradually undermined confidence in the ability of the United States to protect its allies by extending deterrence to attacks against them. In the absence of offsetting changes, the altered military balance may be expected to further erode the credibility of a massive U.S. nuclear response as the Soviets exploit their political opportunities. Because of this trend, the alliance structure which the United States has helped to sustain for 30 years is in serious danger.

(U) The continuing Soviet efforts in defense against air or missile attack provide an additional reason for reconsidering this role in our own posture. The Soviets currently conduct large-scale R&D programs in advanced technologies relevant to

BMD and are modernizing their deployments of air and missile defenses. Soviet strategists have traditionally given greater emphasis than their U.S. counterparts to civil, air, ballistic missile, and other defense components. They allot a far higher proportion of their spending to defenses than does the United States, even as they carry out their massive buildup in offensive forces. The Soviets have exploited the latitude for deployment and R&D under the Antiballistic Missile (ABM) Treaty; indeed, it is an open question whether they have exceeded that latitude. At the same time, the United States has declined to deploy any ABM system and has allowed its R&D program to languish.

(U) By upgrading and modernizing the already extensive Soviet air defense network and the Moscow ABM complex, the Soviets have acquired the potential for an extremely rapid deployment of a widespread ABM system--whenever they choose to withdraw from the ABM Treaty. The United States could not now match such a Soviet breakout with a deployment of its own. Moreover, when, as we expect, the Soviets make a widespread deployment of the SA-X-12, they will obtain a significant anti-tactical ballistic missile (ATBM)* capability. If augmented by acquisition data in ways that are feasible for them, this ATBM might achieve a limited capability against submarine-launched and intercontinental ballistic missiles (SLBMs and ICBMs). The deployment of the SA-X-12 would not itself violate the ABM Treaty, but its deployment would contribute to the Soviet breakout potential.

(U) Whether or not the United States deploys a BMD, it appears that the Soviets will be ready and able to do so, rapidly, whenever they so choose. Their long-range R&D programs in technologies relevant to advanced ABM capabilities are large and active--larger than our own in some areas, although they are probably behind us in the critical areas of sensing and information processing. Soviet space launch capability and recent levels of launch activity are greater than our own.

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*(U) Same as anti-tactical missile (ATM) in Summary Report.

(U) In sum, the Soviets have the capacity for both significant near-term ABM deployments and a long-term program aimed at advanced ABM capabilities. There is every reason to believe that, whenever they deem the capabilities of such systems sufficient against the threats they expect, the Soviets will deploy the systems. This would be particularly likely if they doubt that a U.S. response to their deployment is likely to be forthcoming. The choice between worlds with and without ABM systems is not a choice the United States can make unilaterally.

(U) The United States cannot restore a military balance consistent with our strategic needs by offensive means alone. The Soviets appear both willing and able to increase the size and destructiveness of their forces to match or outpace increases in U.S. offensive forces. Inclusion of defenses in the U.S. response to the Soviet buildup will make it possible to achieve our objectives with a smaller stockpile of nuclear weapons than a policy of relying on offense alone, which should help in mobilizing public support for our efforts. Changes in our posture must not only improve our forces but do so in ways that erode the utility of the massive Soviet investment in offensive forces, as well as offer inducements for responses that are less threatening and destabilizing.

(U) Arms agreements, on which many have placed high hopes in the past, have not prevented the Soviet nuclear buildup. The utility of further efforts to improve our security through arms control agreements will depend on shifts in Soviet political objectives that appear highly unlikely within the foreseeable future, or on changes in Western policies and defense activities that confront the Soviets with new incentives to negotiate genuinely stabilizing agreements.

(U) Defensive technologies appear to offer new opportunities that did not exist a decade ago. Extraordinarily rapid developments have occurred in areas of technology that contribute to ballistic missile defense, including sensing and discriminating targets, directing the means of intercept, and destroying targets. These developments have substantially changed the kinds of defense systems we may be able to deploy in the future. The possibility of a system of layered defenses that would pose successive, independent barriers to penetrating missiles offers, in principle, the prospect of defenses that might permit only a very small proportion of an attacking force to reach target. Such a defense might also "compete" with the offense on relatively favorable terms. If the ratio of the costs of offsetting changes in defense and offense favors the defense, it can be said to have "leverage."

(U) The threat of indiscriminate destruction is an unsatisfactory basis for the future development of U.S. security strategy. It has resulted in unwarranted pessimism about both the utility of increasing Western military strength and the prospects for countering Soviet pressures with proportionate Western responses. The President recognized this when he asked: "Would it not be better to save lives than avenge them?" He answered in two parts. First, he called for means to render "nuclear weapons impotent and obsolete." However, the net effect of defenses against ballistic missiles should not be to make the world safe for other forms of Soviet military aggression. To that end, the second part of the President's answer was:

> ...to take steps to reduce the risk of a conventional military conflict escalating to a nuclear war by improving our nonnuclear capabilities. America does possess--now--the technologies to attain very significant improvements in the effectiveness of our conventional, nonnuclear forces. Proceeding boldly with these new technologies, we can significantly reduce any incentive that the Soviet

Union may have to threaten attack against the United States and its allies.

(U) A persistent obstacle to the formulation of strategy within the Western alliance is the widespread delusion that the requirements of deterrence can be divorced from those of an effective defense of Western interests. The worsening East-West military balance has increased the need to recognize that defense and deterrence are directly related and that Western forces and strategies should reflect this reality. In combining the technologies of precision and discrimination with those of defense, the President envisioned a clear evolutionary shift in U.S. strategy:

- Away from the use of suicidal threats and apocalyptic bluffs to deter Soviet attacks.

- Toward the deterrence of war by the credible promise to use improved U.S. forces that can limit the harm that would be done to our own as well as adversary societies, and to discriminate between civilians and legitimate military targets.

(U) President Reagan's vision continues the evolution of past U.S. nuclear policy. At no point has it been U.S. policy to leave the President with the choice of suicide or surrender. The President's speech extends the search of prior administrations for credible options to deter Soviet attacks on the United States or its allies. The threat to destroy Soviet cities is increasingly incredible, even in reprisal for a Soviet nuclear attack on the United States. This President, like past presidents, seeks the means to reduce U.S. reliance on nuclear bluffs and increase NATO's ability to meet nonnuclear aggression on its own terms. In like manner, defenses against ballistic missiles can shift the burden of escalation to the attacker.

(U) Making our weapons more precise and discriminate not only significantly increases their effectiveness against military targets. It also enables them to do significantly less collateral damage to civilians. With the technologies the President spoke of, U.S. offensive forces would be able to meet a dual criterion: to hit what we aim at but only what we aim at, limiting collateral damage.

(U) Improvements in our ability to destroy what we aim at and only what we aim at with nonnuclear weapons offer the prospect both of radically increasing the effectiveness of a U.S. nonnuclear response to Soviet nonnuclear aggression (reducing our need to rely on nuclear threats as a deterrent to such aggression), and reducing the indiscriminate destructiveness of nonnuclear conflict if it occurs. Secretary Weinberger had this in mind when he stated in his interview with Richard Halloran, published in the September 1983 issue of Omni, that the greater the accuracy and smartness of our conventional weapons, "the more you can pinpoint vital targets and have a much higher confidence that they can be destroyed."

(U) The ability to respond to aggression with highly effective attacks against enemy military capabilities, while avoiding the high levels of collateral damage associated with current strategic offensive forces, is critically important in efforts to limit escalation. This, in turn, is vital to our ability to maintain coherence in Alliance strategy in the face of Soviet efforts to divide the Western coalition by playing on anxieties about the risks inherent in resisting Soviet political and military pressures.

(U) Precise and discriminate offensive forces and defenses against attack complement one another. Even if we have the means, a proportionate Soviet response to a precise and discriminant U.S. strike is less probable as long as our people are hostage to Soviet revenge. Nor can U.S. defenses against direct attack fully meet U.S. strategic requirements. Offensive forces are needed to deny the Soviets their military objectives and raise the cost to them of going to war.

C. THE RELEVANCE OF INTERMEDIATE CAPABILITIES

1. Uncertainties in the Achievement of Our Ultimate Defense Goals

(U) A combination of technical and strategic uncertainties makes it impossible to say when or whether we can reach the ultimate goal. Even if it falls short of the goal, however, an R&D program is likely to offer the option of defenses with intermediate levels of capability.

(U) While recent advances in critical areas of technology have improved the outlook for ballistic missile defense, the achievement of a very highly effective, high-leverage BMD requires major additional advances beyond the current state of the art. The outcome of our long-range R&D efforts will determine how far and how fast we are able to move toward the President's ultimate goal. As with any long-range R&D program, that outcome is highly uncertain.

(U) In addition to the technical uncertainties, the rate and extent of progress toward the ultimate goal will depend on strategic factors and policy choices that are also uncertain. Soviet policies, programs, and technical developments can be a critical factor in the outcome. The Soviets might pursue a variety of alternative paths, guided by internal factors, or as a response to our own efforts. They could compete with the defense through additional and technically responsive efforts to improve the penetrativity of offensive ballistic missiles; they might increase development efforts in other types of offensive systems; they might concentrate on building their own defense (indeed, they are well ahead of the United States in currently deployable BMD systems); they might increase the resources they allocate to both strategic offense and defense; or they might prefer to reallocate from strategic forces to further strengthen their conventional force capability.

(U) The technical and strategic difficulties vary considerably among the components of a full, multilayered, highly effective, high-leverage BMD system. Thus it is likely that an R&D program could yield some intermediate deployment options earlier than the full system. As we will discuss below, some of these intermediate options could have very important utility. These possibilities give rise to broadly different alternative paths for pursuing the President's initiative.

2. Alternative Paths for Pursuit of the President's ABM Defense Initiative

(~~S~~) The immediate policy issues associated with pursuit of the objectives stated by President Reagan in his March 23 speech depend on the choice made between broadly different paths toward his ultimate goal. Two major variants can be summarized as follows:

Path (1). Pursue a program designed to provide a highly effective, essentially "leakproof" defense against intercontinental ballistic missiles when the technical basis for such a defense becomes feasible. Because such a system will require dramatic advances over the current state of the art in several technical areas, for a considerable period into the future U.S. "action" would be confined to long-range R&D activities. By the same token, the date at which such a capability would become available, its cost, and the probability of success cannot be assessed reliably at present. In this variant, there would be no intermediate programs resulting in fielded defenses until the technology for the highly effective system was in hand.

Path (2). Pursue the capabilities sought as in Path (1), but identify intermediate system deployments that could nevertheless serve important national interests; pursue opportunities for such deployments when they become technically feasible.

(~~S~~) Consideration of resource constraints further defines the alternatives. Either can be pursued at various resource levels. If Path (1) were chosen at a modest level of long-range R&D funding over the next five years, one could argue that many of the difficult political, military, and strategic issues associated with a policy of increased emphasis on defensive systems could be deferred until decisions have to be made on substantial program issues. At that time, presumably, the alternatives could be better assessed, in light of information acquired during the long-range R&D program. Such a "minimalist" pursuit of the President's objective would be likely to raise questions concerning the credibility of the actions taken as an implementation of a major presidential initiative. It also would postpone into the indefinite future any benefits from movement toward a goal that the President has identified as important to our security. Many, including both proponents and opponents of the effort, will assert that modest pursuit of so ambitious a technical objective will never achieve its result; a majority may therefore oppose such an approach.

(~~S~~) To preclude such criticisms, Path (1) might also be pursued at a much higher level of long-range R&D funding. Such a course would raise serious trade-off issues. In effect, given realistic assumptions about overall resource constraints, it would mean foreclosing intermediate defense opportunities in a number of areas in favor of uncertain capabilities for the distant future.

(U) Such an allocation would probably fall hardest on defense options that might offer substantial movement toward accomplishing the President's goal. Moreover, while it is possible to argue in principle that we could defer considering the many associated policy issues, pending the resolution of technical uncertainties, very high funding levels would make such a position untenable in practice. It would not be possible to explain and defend an expensive, highly visible program without immediately taking positions on such issues as how we would pay for the defensive systems, the objective and nature of offensive forces when powerful defenses have been deployed, defense of the interests and territory of our allies, the need for air defenses of comparable capability (possibly also of civil defenses), the requirement to withdraw from or modify existing arms agreements, and the prospects for achieving new accords conducive to our national security objectives.

(S) Path (2) couples pursuit of the President's ultimate goal with a search for intermediate deployments that provide ballistic missile defenses if they can (a) contribute to our security in important ways, and (b) move us closer to the President's goal. Depending on the timing and nature of the intermediate deployments, this alternative may pose substantial demands on defense resources within the planning horizon, and may precipitate a number of policy issues that will require immediate resolution.

(S) Identification and analysis of these issues, where possible, is a major purpose of this report. Our ability to specify defensive system options and analyze the issues they pose is limited by the current lack of reliable descriptions of alternative defensive systems that would be adequate as a basis for assessing cost and effectiveness. In this report, therefore, we discuss intermediate-type BMD alternatives in qualitative terms, with occasional illustrative quantitative analyses. A more precise specification of alternative deployment options would be a necessary first step if some form of Path (2) is chosen.

(~~S~~) In sum, a program aimed exclusively at a deployment to meet the ultimate goal of defenses against nuclear attack can offer the option of deferring difficult policy issues, but only if its pace is so modest as to cast doubt on the seriousness of the initiative. Pursuit of such a program at a substantial level of effort will probably precipitate early confrontation of the policy issues related to deployment decisions and may foreclose options for intermediate deployments that could otherwise help meet pressing security requirements.

(~~S~~) On the other hand, a program to deploy strategically relevant intermediate capabilities as they become technologically feasible can contribute to national security while moving toward the President's ultimate goal. In fact, such an approach may be more effective in moving toward that goal by providing operational experience with parts of the system. This option would generate earlier funding demands to support deployment and would require earlier treatment of some policy issues, but it could be designed to defer decisions on issues related to the ABM Treaty for at least several years. Finally, whether or not we aim at intermediate deployment, pursuit of the President's initiative requires that we consider the utility of less than leakproof defenses because of the extreme uncertainty that we will be able to attain such an objective.

3. The Contribution of Defenses to Deterrence

(U) Traditionally, U.S. defense planners have thought of defenses primarily as a means of limiting damage. This study examines the ways in which defenses might also reinforce deterrence. We considered how various defenses increase the uncertainties associated with nuclear attack planning, and how they might reinforce deterrence because attack planners must deal with defenses on the basis of conservative assumptions of their effectiveness.

(U) The Soviets have traditionally assigned great importance to defenses and they respect the U.S. technological capabilities; we examined the consequences for deterrence of their taking a U.S. defense program seriously. In particular, we focused our efforts on the following intermediate capabilities:

- Defenses against small attacks on the continental United States (CONUS);
- Defenses against larger attacks on U.S. strategic targets, including forces and associated command, control, communications, and intelligence (C^3I); and
- Defenses against tactical ballistic missiles in overseas theaters.

(U) We analyze the utility of defenses in supporting deterrence in terms of (a) the effectiveness of the defense, (b) how that effectiveness is perceived by the target planners of potential aggressors, (c) the ways in which planners perceive attack priorities and establish damage criteria, and (d) the inventory of offensive forces at the aggressor's disposal. In light of these factors, the impact of defenses on deterrence was examined in terms of probable Soviet responses, alternative defensive programs, the allocation of United States defense resources, arms control, stability, foreign policy issues, and space launch requirements. The examination ends with a series of conclusions and policy recommendations.

II. SOVIET OBJECTIVES, POLICIES, RESPONSES

(U) Any assessment of a major reorientation in U.S. strategy must take into account the strategic objectives and policies of the Soviet Union and Soviet responses to our own initiatives. This is particularly applicable for an examination of the effectiveness of defenses in improving the stability of deterrence. An analysis of a new emphasis on defense in U.S. strategy must consider the impact of U.S. strategic defense capabilities on Soviet perceptions of the strategic balance and must anticipate plausible and likely Soviet measures to counter our defensive actions.

(U) Below are outlined the enduring elements of Soviet global strategy and competitive style. Next, the likely Soviet responses to U.S. BMD programs are analyzed. Finally, the implications for U.S. policy are discussed.

(~~C~~) The 20- to 30-year time period required for the emergence of effective new BMD capabilities raises serious obstacles to forecasting the kind of Soviet Union, strategic competition, adversary force posture, and global environment we would be dealing with when those capabilities actually appeared. The nature of the Soviet Union and its militaristic, hegemonial approach to internal and external affairs are probably the most stable elements of the equation. The structure of the East-West competition, of force postures, and of the global environment, especially U.S. alliances, is quite volatile by comparison.

A. ENDURING ELEMENTS OF SOVIET STRATEGY AND COMPETITIVE STYLE

(U) As long as the Soviet party-state system remains intact, it will have a highly conflictual image of international relations. It will regard its relations with the outside world as a form of war. The Soviet system regards security as a function of control over potential sources of insecurity--that is, other actors within and without. Those not under control are objectively hostile. The pursuit of security is the expansion of control. These elements of outlook, as much as any surviving millenial content of Marxism-Leninism, oblige the Soviet state to pursue expansionist and hegemonial aims.

(U) In matters of power, there is either advance or retreat, perhaps interrupted by tactical pauses. There is no inherent stability. Among competitors, compromise, accommodation, and negotiation are a means of struggle or of winning time for struggle. They are not a means of attaining a fundamental stabilization of the relationship.

(U) These attitudes would encumber Soviet consideration of any concept for "terminally" stabilizing the strategic competition, whether it were based on offensive or defensive strategic capabilities. The same attitudes would encourage the Soviets to seek stabilization of a part of the competition as a temporary means of holding ground where they feared setbacks. In their view of the dynamics of military technical competition, the Soviets tend to expect one side or the other to acquire meaningful military advantages. Although there may be a sense in which the technologies of two competitors "converge" to parity of a sort, by the time that parity emerges new factors are offering advantage.

(U) Since its birth, the Soviet Union has been governed by men who believed, although with fluctuating intensity and sense of urgency, that power relations between the USSR and its principal adversaries were moving toward some critical--even ultimate--test, dictated by the nature of the competition, the adversaries, history itself. Ouite apart from their alarmist propaganda on the danger of war directed at the West, current Soviet leaders exhibit real concern of this sort. They anticipate that the remainder of the 1980s will be a period of heightened and increasingly dangerous competition, as they pursue historically mandated missions and the United States seeks to turn back the tide.

(U) The style of Soviet military strategy and planning in this environment is characterized by the unity of things that Western thinking tends to separate: war and peace, war-fighting and deterrence, offense and defense, elements of armed power, theaters of action.

(U) The desired mode of using military power is to deter, to influence, to intimidate, in quest of Soviet control. But always there is the real danger of war. Military planning must be constantly preoccupied with the prospect of actual conflict. Power for nonviolent power politics emanates from real war-waging power.

(U) The core and essence of useful military power is offensive. Defensive military capabilities, strategic or tactical, are essentially an aid to the offense. The fact that the Soviets have, since World War II, devoted far more attention to strategic defense than has the United States should not be regarded as evidence of a "defensive mentality." The Soviets believe that providing, as best one can, for the survival of the state and its military power against the offensive forces of the adversary is required of any rational strategy.

(U) Offensive capabilities are also an aid to the defense (e.g., counterforce). But ultimately the capability to achieve security through imposing and maintaining control demands the projection of offensive power. Presently, in the Soviets' strategic doctrine, and reflected in their force posture, the most important offensive capabilities are the combined-arms and strategic bombardment forces by which they can dominate the immediate periphery of Eurasia around them. Even their intercontinental nuclear strike forces are, in a strategic sense, supportive of that offensive power.

(U) In Soviet strategic thinking the objective of conflict is victory. Victory is always a combination of self-defense (survival) and imposition of one's own will, vis-à-vis some sensible objective, on the enemy. This may or may not require the destruction of the enemy, which is a means, not an end. Thus, their propaganda to the contrary, Soviet doctrine does not abhor the notion of limited conflict, even limited nuclear conflict. Conflict limitations are a function of what Soviet strength can impose on U.S. behavior. Soviet force posture and exercises show ever more inherent adaptability to various scenarios of limited war.

(U) At all significant levels of military strength, certainly at the strategic level, power lies in combinations of weapons, forces, doctrines, tactics, leadership, and morale. Offensive and defensive capabilities combine. Strategic power is a function of many arms, theaters, operations. Some one element may be decisive; all are needed to effect a final decision.

(U) From these principles, which took basic shape in the early 1960s, the Soviets have erected a coherent strategic architecture to govern the evolution of doctrine, force posture, and operational plans. In geopolitical terms, the most fundamental aims of this strategic architecture are (a) to dominate the regions around the periphery of the USSR, and (b) to negate the credibility or utility of U.S. intercontinental nuclear guarantees.

(U) Strategic offensive nuclear forces are a vital part of this architecture. Strategic theater forces (e.g., SS-20) are part of theater dominance in peace and war. Intercontinental forces serve several purposes in sequence: (a) to deter U.S. use of its intercontinental forces in defense of allies, (b) to help cut the United States off from Eurasia through interdictive strikes, and (c) to limit damage from major U.S. attacks on the Soviet homeland. Similarly, strategic defenses contribute to both the offensive and the defensive parts of the strategic architecture, by protecting the power-projection base and helping the Soviet national entity survive major attack. Understanding this architecture is important because its preservation will be a vital goal of any Soviet response to U.S. strategic defenses, or, for that matter, any other U.S. military initiatives.

(U) Uncertainty dominates all conflict and war situations. In operational terms, this means that there can never be a real superfluity of advantage or superiority. Self-limiting ordinances apply only to the extent that declining marginal returns to effort in one sector of military activity may command a shift of resources to another to maximize capability for conflict.

(U) Military uncertainty, almost by definition, plays an ambiguous role in determining the efficacy of deterrence in Soviet thinking. Because of it, under pressure to act, the Soviets may see effective ways to use force otherwise precluded by crude or quantitative force relationships--for example, through deft operations, deception, or disruptive effects. On the other hand, in the absence of strong pressures to act, military uncertainty can deter military action that might seem attractive on the basis of an "expected value" assessment. In Soviet eyes, offense-defense interactions are especially fraught with uncertainty because technical performance uncertainties are large, and are magnified by the intervention of will and decision.

B. SOVIET RESPONSES TO U.S. STRATEGIC DEFENSE PROGRAMS

(U) The attitudes and precepts sketched above are deeply ingrained and institutionalized in the Soviet strategic decision system. They would, therefore, heavily influence the way the Soviets respond to increased U.S. efforts to develop and deploy strategic defenses.

(U) The first and continuing response would be evaluative. The Soviets will constantly ask what the United States is really seeking to accomplish and what the likely results are. In addition to the expected technical intelligence and projection effort, the Soviets will devote considerable attention to estimating the strategic sense and political viability of U.S. programs. They will watch to see whether a major program on BMD is actually accompanied by the other elements of a true strategic defense architecture, such as air defenses, civil defenses, and offensive counterforce capabilities. They respect our technical wizardry and constantly suspect us of great subterfuges; but they also see us as given to irrational fads and slogans making little real strategic sense to them, and having poor staying power.

(U) The Soviet political response has already begun: a sustained propaganda effort to discredit prospective U.S. efforts as fueling the arms race, increasing the danger of war, and revealing a U.S. desire to reestablish American strategic superiority. The current line is highly tuned to current political conditions, particularly U.S. and European controversies on nuclear systems and arms control. This tuning will no doubt continue.

(U) Soviet arms control lines will also respond, as they have been responding already. As cheaply as possible, the Soviets will seek to use arms control proposals and negotiations (e.g., prohibition on weapons in space) as a means to block U.S. programs with minimal impact on Soviet programs.

(U) In terms of weapons and force structure development, the Soviets will probably go to great lengths to keep the offense-defense strategic architecture they have evolved over the last two decades intact in the face of prospective new U.S. strategic defenses.

(U) First, they will seek to assure that their nuclear strike capability can penetrate defenses, through such means as suppression of defense, hardening and proliferation of offensive vehicles, saturation with decoys, evasion through underdefended corridors, or even surreptitious attack modes.

(U) Second, they will tend to the survivability and counterforce tasks that spring from a conviction that the U.S. defensive capability might well be used as an adjunct to a preemptive or first-strike attack.

(U) Third, they will seek to keep their own strategic defenses as robust as they can against the demands of improving U.S. offensive capabilities and the standards of advancing U.S. defensive technology.

(U) How the Soviets allocate their resources among these tasks over time will be a function of their assessment of the technical paths the United States is following, the interactive effects of <u>both</u> sides' offense and defense capabilities, and the promise of technical paths open to the Soviet side. We cannot guess the exact nature of the balance the Soviets will strike decades in advance. We can say with some confidence, however:

- (S) They will strive as best they can for the combination of intercontinental offensive (especially counterforce) and defensive capabilities that gives them [redacted] the ability of the Soviet Union to survive as a nation, and to continue fighting even if the United States launches major attacks.

- (U) Although the Soviets see a large set of strategic military targets in the United States (and worldwide) which their offensive forces ought to cover, they do not have an iron notion of strategic offensive force "sufficiency" in penetrating weapons, above which their forces are superfluous and below which they are too weak to be useful. This means that they could (but not necessarily would) adjust their strategic architecture to a new combination of more comprehensive and effective defenses along with a more limited, effective offensive capability for countermilitary missions and intimidation.

- (U) As the Soviets look ahead at the evolving shape of the strategic competition, they will be quite uncertain at any point as to where they should concentrate their resources. They will very likely have to spread their resources over many sectors of offense penetration, survivability, and defenses, constraining their ability to advance in any subset of technologies and stressing the total system. This stress may oblige them to consider arms control approaches that are more genuine and mutually restraining than arms control approaches that are unilateral and manipulative.

(U) Finally, the Soviets will ask whether and how, if at all, the emerging offensive-defensive equation really affects their ability to project power on the ground near their borders. They will adapt their general-purpose land-combat forces accordingly; for example, if faced with ATBM defenses, by trying to make the offensive power associated with their general-purpose forces less dependent on missile strikes.

(U) So long as the U.S. alliance/security commitment structure remains intact, the Soviet ability to project power throughout Eurasia is the crux of the strategic balance. Should the United States acquire a new combination of strategic defensive and offensive capabilities to nullify Soviet theater force advantages on terms consistent with U.S. survival in a major war, then the strategic dominance the Soviets have so laboriously constructed since the early 1960s will have been overturned. In Soviet eyes, as well as by strategic logic, such a shift in the balance would require either decisive U.S. advantages in strategic defensive technology that left the United States effectively defended as a war-waging entity (even if not invulnerable) and the Soviet Union highly vulnerable, or an elaborate combination of strategic offensive, defensive, and general-purpose force improvements on the part of the United States and its allies.

(U) The key point is that the Soviets will probably respond to U.S. strategic defense programs on a great variety of fronts, not all of them related directly to the strategic offensive-defensive axis. At the same time, we must realize that they will probably be acting to increase their military power on these fronts whether we deploy defensive systems or not. The necessity to deal with the intrusion of new U.S. defensive capabilities, or the prospect thereof, will be costly and will possibly detract from the Soviets' efforts to achieve their core objectives.

(U) It is possible that the Soviet Union might respond to U.S. strategic defensive programs in the short run by sharply stepping up its efforts to dominate the regions on its periphery it has long sought to control, before the United States could alter the strategic balance in the long run. The Soviets are now pursuing a cautious, low-risk policy to that end against the backdrop of their present strategic power. It is unlikely that U.S. defensive programs alone would precipitate a change of Soviet policy toward greater aggressiveness. But a sense of rising immediate opportunity in Europe, the Middle East, or Asia, plus the sense that those opportunities might be fleeting, plus shifts in the Soviet leadership, could produce such change.

C. IMPLICATIONS FOR U.S. POLICY

(U) The Soviet perspective on the military-technical and strategic competition has implications for U.S. policy not only in the obvious sense that we are dealing with the Soviet Union and its peculiar characteristics. The Soviet Union has already become powerful enough to force responsive behavior, such as our current force modernizations, on the United States, unless we wish to opt out of the competition or accept the consequences of an inferior status.

(U) From a Soviet perspective, the military-technical and strategic competitions are a continuing process, not a race to definable or stable end points. As a competitor, the United States must decide its policies regarding strategic defense in terms of a protracted and not easily predictable stream of political, technical, and military effects. The question is not where we want to end up, but what kind of a competitor we believe we must be, as long as the competition and the adversary are as we believe them to be.

(U) In view of the nature of our Soviet competitor and the extended security commitments that will, presumably, continue to be the essence of U.S. security and strategy, it is very hard to see the kind of peacekeeping or deterrent stability sought by the United States emerging from a parity of military strength, because the Soviet Union and the United States do not have symmetry of aims and geopolitical position. Rather, stability congenial to U.S. security and interests will more likely have to rest on military advantages, inevitably transient and therefore necessarily renewable or supplantable in a long-term competition, until the nature of that competition changes on largely political grounds. Those military advantages will have to exist in both the forward defense and the strategic-intercontinental dimensions of our strategy.

(U) Given genuine technical uncertainties and inevitable perceptual uncertainties about the effectiveness of strategic defenses, it seems highly unlikely that strategic defenses (certainly not BMD alone) can recreate the kind of advantages once associated with U.S. strategic superiority--namely a highly vulnerable Soviet Union and a virtually invulnerable United States--even though the United States could acquire significant advantages in strategic defense per se. Rather, stabilizing U.S. advantages are more likely to be found in a totality of innovations across force elements and over time:

- All defenses: missile, air, and civil
- Strategic defenses and offensive forces
- Intercontinental and theater forces
- Conventional and nuclear forces.

(U) The challenge is not simply one of having to do everything at once, but of designing a strategy for competition that stresses the Soviet strategic architecture as the Soviets have systematically stressed ours. A multiplicity of pressures must be applied to Soviet doctrine, force posture, decision processes, and resource base. In peacetime competition the Soviets must be deprived of the easy options to develop massively credible intercontinental and theater offensive capabilities they have had until now. In crisis or conflict they must be confronted with multiple action-inhibiting uncertainties if they cannot be deterred by action-precluding certainties.

(U) The Soviet perspective reminds us of the importance of time. The long term and its expected character are very important. But, so is the short term. Politically and, if possible, in concrete military ways, our initiatives must respond to the stress placed upon our strategy of security through protection of allies, before the stress makes that strategy unviable.

III. THE ROLE OF DEFENSES IN U.S. SECURITY STRATEGY

(~~C~~) New technologies offer the possibility of a multilayered defense system able to intercept offensive missiles in each phase of their trajectories. In the long term such systems might provide a nearly leakproof defense against large ballistic missile attacks. However, their components vary substantially in technical risk, development lead time, and cost, and in the policy issues they raise. Consequently partial systems or systems with more modest technical goals may be feasible earlier than the full system.

(U) This study suggests that "intermediate capabilities"--components of the full multilayered defenses deployed when they are proven technically feasible and if they are deemed militarily relevant--may have strategic utility for the United States. Our assessment of the utility of intermediate capabilities is necessarily tentative owing to the current lack of specificity in systems design, effectiveness, and costs. Nevertheless, it indicates that intermediate systems can strengthen deterrence. They may greatly complicate Soviet attack plans and reduce Soviet confidence in a successful outcome at various levels of conflict and attack size, both nuclear <u>and nonnuclear</u>. Even defenses of limited capability can deny Soviet planners confidence in their ability to destroy a sufficient set of military targets to satisfy their attack objectives, thereby strengthening deterrence. Intermediate capabilities can also limit damage if conflict occurs. The combined effects of these capabilities could help to reassure our allies about the credibility of our guarantees; some capabilities are directly relevant to their defense needs.

(U) This chapter discusses the concept of a full multilayered defense against ballistic missiles, examines the general role of BMD in military contingencies, analyzes the strategic utility of intermediate capabilities deployed for CONUS and NATO defense, and develops a set of time-phased objectives in which relatively early deployments of intermediate capabilities might gradually grow into a full multilayered defense.

A. BURDEN IMPOSED ON OFFENSIVE STRIKE PLANNING BY DEFENSES--THE ROLE OF UNCERTAINTY*

(U) A multilayer defense concept confronts an attacker with the specter of losing most of his damage-creation capability because (1) only a small fraction of the attack "leaks" through the defenses, and (2) his ability to predict what will be damaged is sharply degraded.

(U) The first point is exemplified by a four-layer system, wherein each layer has the ability to destroy half the reentry vehicles (RVs). In this situation, of rather modest defense performance capability, only 6 percent of the attack will get through to the target! Thus, for a force of 5,000 RVs, only 300 would theoretically leak through. Relative to past estimates for defended or undefended situations, this is a markedly small return on the attacker's investment. On the second point, the defense attrition from a multilayer defense system may provide a near-random destruction of the attacking force, leaving the attacker unable to ensure that even this low number of leakers will arrive on particular targets or classes of targets. Thus, even the impact of 300 RVs in the above example could not be delivered with any reasonable confidence against specific

*(U) A more detailed analysis of this subject is contained in Appendix A.

military target sets. (In this case, the price of 90 percent confidence in the delivery of <u>one</u> warhead on a specific target would be the launching of 35 warheads.)

(U) Of course, against population targets the leakage of 300 RVs would be devastating. In this latter situation the defenses would have to do much better. However, the nature of the controlling mathematics indicates that a multilayer defense system will always have a finite leakage as long as none of the individual layers has a unity kill capability, in which case a multilayer defense would not be needed.

(U) When confronted with such a defense construct, an offense planner needs to find a way to defeat or avoid the above defense characteristics. An initial listing of such possibilities would include:

- An increase in the attack size
- Attacking targets preferentially
- Increasing the numbers of RVs per booster
- Deploying light exoatmospheric decoys
- Negating the boost-phase layer by direct attack on the system or by deploying boosters that complete ICBM operation prior to being attacked.

(U) In order to discuss the above possibilities quantitatively, it is necessary to postulate a generic multilayer defense system and to assign values to its critical functional characteristics. Such a four-layer system (recognizing the possibility of more limited systems with fewer layers) would be composed of:

- <u>Boost-Phase Intercept (BPI) Layer</u> -- (U) A satellite system is designed to negate the attacking ballistic missiles while the booster is burning. Presumably such a booster kill eliminates the entire booster payload. It is assumed that the boost-phase system has the numbers and lethal range to provide a specific probability of kill (P_k) against each booster. If there are not enough such satellites so that some boosters are not attacked, then the overall P_k of this layer is, on the average, reduced.

- Midcourse Layer -- (U) Intercept weapons are carried on long-range defense missiles toward the incoming weapons, and intercepts occur above the atmosphere at long ranges from CONUS. Against intercontinental ballistic missiles (ICBMs), a four-layer defense construct has two such intercept opportunities against every threatening object due to the relatively long exoatmospheric attack flight times. If the attacker deploys decoys or other objects made to resemble RVs, the defense must attempt to discriminate these accompanying objects from the RVs. If some of the objects cannot be discriminated and thus appear to be RVs, they must, together with the real RVs, be intercepted by the midcourse defense missiles. Thus, against credible decoys the defense missiles are "wasted" and the defense system missile inventory will be prematurely exhausted. Both the midcourse defense missiles employ "hit-to-kill" nonnuclear weapons.

- Terminal Defense -- (U) This final defense layer operates in the high endoatmospheric region and employs a homing defense interceptor with a nonnuclear warhead. It is presumed that the exoatmospheric decoys that may be used against the midcourse layers are not required in a terminal defense intercept attempt, in part because of the presence of the early atmosphere.

[(~~S~~)] For the case of a four-layer system with an assumed P_k for each layer of 0.8, Table 1 presents the increases in RVs leaking through due to increasing attack sizes. The attack consists of only RVs, and the defense is either fixed or allowed to properly inventory the layers against an increasing attack size. In the latter situation each layer is allowed to grow in proportion to the attack so as to keep the ability to attack every target presented to the defense layer(s).

TABLE 1. (U) RV LEAKERS

[~~SECRET~~]

Attack Size (Number of RVs)	Defense Constraints	
	Fixed Number of Kills	Responsive Capability
5,000 (Design Point)	8	8
10,000	5,008	16
15,000	10,008	24

[(~~S~~)] As shown, the value of increasing attack sizes is significant if the defense cannot or does not increase in proportion to the attacker growth. If the defense can and does respond, the increase in leakers against this very capable four-layer system is miniscule. These sensitivities preclude the attacker from confidently responding with increased attack sizes because the defense can grow in response and dependence on assumptions about the defense P_k.

(S) Additionally, the performance of both defense and attack is highly sensitive to properly estimating the actual P_ks obtained. Taking the above 15,000-RV attack and using a layer P_k of 0.7, the number of leakers grows from the above 24 to about 122. For more limited defense deployments where perhaps only a three-layer system was available, then for the 5,000-RV design case the RV leakage would increase from 8 to 40. Such an increase may not be overwhelming for an attack against a military target structure, but it would be a major increase if population centers were to be the object of the attack.

(S) Alternatively, the attacker could consider a preferential attack where his attack is centered on targets covered by only a portion of the defense. In such a case the attacker could expect a much higher leakage and thus more nearly an attainment of his (more limited) objectives. The boost-phase and the first midcourse intercepts occur in a manner that provides a nearly uniform defense of CONUS; they are not readily subject to preferential leakage against some physical subset of CONUS targets. However, both the second midcourse intercept and the terminal defenses have limited coverage and can be attacked separately.

(S) As an example, assume that the second midcourse coverage was separated into eight nonoverlapping defense zones. Leakage through this layer was assumed to fall on the small-footprint terminal system in a uniform manner. Table 2 presents the results of such a preferential attack, using the above attack of 5,000 RVs against a four-layer system with a P_k of 0.8 per layer.

~~SECRET~~

TABLE 2. (U) EFFECT OF PREFERENTIAL ATTACKS

[~~SECRET~~]

Fraction of CONUS Attacked	Leakage of RVs
All (Uniform)	8
1/2	104
1/4	152
1/8	176

[(~~S~~)] As shown by Table 2, very large increases in leakage are possible under a concentratec attack. However, for many military target structures this prospect may still not be satisfactory to the attacker. Additionally, the above estimate does not consider fairly standard defense responses such as preferential defense, inventory increases by the defender to desensitize himself from such tactics, and techniques to prevent the attacker from effective counting (which is the root of preferential attacks). If the attack were also preferential against the terminal defense layer, it would be expected that the attacker could insure attainment of his objectives only at the cost of severely limiting his damage objectives.

[(~~S~~)] The attacker can increase the numbers of RVs per booster to increase the total attack and avoid the cost and time to generate a large increase in the ICBM forces. As technology seems to allow increased accuracies, it is reasonable

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to expect that these smaller RVs could still endanger the military target structure as well as the population centers. In order to maximize the penetration probability, it is also possible that lightweight exoatmospheric decoys could be added to the force to prematurely exhaust the midcourse defense system. Table 3 presents such a case, where the defense inventories against a presumed number of attacking RVs and decoys. The attacker then fractionates his attack exactly at the defense's chosen design point or splits his load out between RVs and decoys in a way that maximizes leakage.

TABLE 3. (U) DEFENSE CAPABILITY AGAINST RV FRACTIONATION

SECRET

(1,000-Booster Attack, P_K per Layer = 0.8)

Defense Posture	Attack	RV Leakers
Designed for 3000 RVs and 20,000 decoys	Selects same split of RVs and decoys	5
"	Selects optimum attack (1864 RVs & 31,363 decoys)	106
"	5,000-RV attack	8
"	10,000-RV attack	61
"	25,000-RV attack	141

[(S)] As would be expected, at the defense design point there are very few leakers. Selecting his best RV/decoy mix, the attacker gains a factor-of-20 increase in leakers, but the absolute level is modest.

[(S)] An alternative approach of more RVs per booster is shown for three levels of fractionation. The 5,000-RV loadout is the design point threat except that no decoys and all RVs are loaded out. The attacker does slightly better than the above design point case in this situation but still not very well. Doubling the RVs per booster increases his leakage by a factor of about eight. Further fractionation to 25 RVs per booster increases the leakage attained by another factor of about two. Thus this all-RV attack produces more leakers than the best RV/decoy mix attack without any attendant risk of fielding decoys that might be discriminated by the defense with catastrophic results. Observe that the leakers are still modest considering the on-launcher attack strength of the attacker.

[(S)] To explore the gain and loss possibilities with the use of exoatmospheric decoys, Table 4 presents an example based on the previously discussed design point conditions of 1,000 boosters loaded out with decoys to maximize leakage. These decoys are 10 percent of the weight of an RV and, while light, are possibly credible to even the most sophisticated defense sensors. Three defense design points are considered with varying defense inventories. The middle defense inventory of 5,544 missiles is the same as the above design point where the defense assumes that the attack will consist of 3,000 RVs and 20,000 decoys on launcher. The larger number assumes the defense will design against an attack that selects 2,000 RVs and 30,000 RVs and increases the needed defense inventory. The last case is where the defense inventories against an attacker decision to

TABLE 4. (U) EFFECT OF ATTACKER'S DEPENDENCE ON EXOATMOSPHERIC DECOYS (ATTACKER SELECTS OPTIMUM RV/DECOY MIX)

[SECRET]

(Four-Layer Defenses, P_k per Layer = 0.8, Decoys = 10% RV Weight)

(1,000-Booster Attack, Maximum of 5 RVs Each)

Defense Design Point	RV Leakage		
	Decoys 100%/50% Credible	Decoys Not Credible	All RVs (No Decoys)
7,696 Missiles	39/1.9	1.9	27
5,544 Missiles	106/3.0	3.0	21
3,392 Missiles	232/6.6	4.3	14

deploy 4,000 RVs and 10,000 RVs. Thus the effect of limiting the defense deployment can be explored.

[(S)] For all the defense design cases, the attack selects a responsive attack to maximize the number of leakers. However, the attacker must and does decide to load out assuming that the decoys he loads out are credible; that is, each will draw defense missile attack as well as an RV. Thus the attacker can estimate the number of leakers being shown, assuming that the decoys are 100 percent credible. These are the values used previously in this discussion. However, if the defense can attain an ability to reject every other decoy (i.e., 50 percent credibility), then the defense can sharply reduce the leakers; as shown in Table 4, the number of leakers would be sharply lower than even in an all-RV attack. Note that a reduction in the credibility of the decoys to 50 percent is almost the same as the decoys' being completely discriminable--that is, totally lacking credibility.

(~~S~~) What is happening in the above situation is that the noncredible decoys are not attacked and the defense can concentrate the intercept opportunities on the RVs. This sensitivity is well known in the U.S. offense and defense community and is at least consistent with the observed lack of decoys in the U.S. offensive forces.

(~~S~~) An obvious approach to degradation of a multiple-layer defense is the elimination of the boost-phase layer of the defense (Table 5). This will greatly increase the sensitivity of the other layers to numbers in the attack. To illustrate this aspect of a multilayer defense system, the defense is designed on the assumption of full operation of the boost-phase layer. As discussed above, assume credible decoy inventories are depleted against the attack, with the results as previously shown. With the boost phase eliminated and without any response by the defense, the number of leakers jumps sharply by a factor of about 25, from 106 leakers to 2,725 leakers. The source of this increase is the defender's shortage of missiles to cope with the extra attacking targets due to the loss of the boost phase. However, if the terminal defense layer is fully inventoried (leaving the midcourse defense missiles at the original values), then the number of leakers is brought back down to essentially the original values. Thus the effect of the loss or limitations in the boost-phase system is largely controlled by the decision to respond or not to respond.

TABLE 5. (U) DENIAL OF BOOST-PHASE LAYER

~~SECRET~~

(P_k per Layer = 0.8, Decoys = 10% of RV Weight, 5,520 Midcourse Missiles)

(1,000 Boosters, Maximum of 5 RVs per Booster)

Defense Design	Defense Posture	Leakers (TD Missiles)
With Boost-Phase Defense Layer	Design Point	106 (24 Missiles)
With Boost-Phase Layer Eliminated	No Response	2,725 (24 Missiles)
"	Increase Terminal Defense Inventory	110 (2550 Missiles)

B. THE ROLE OF DEFENSES IN MILITARY CONTINGENCIES

1. Representative Military Situations as a Context for Analysis

(U) An analysis of a number of representative military situations was undertaken in order to provide a specific analytic framework within which to examine and illustrate the role of defenses in deterrence. Four steps were involved in the analysis. First, a set of related crises and conflict situations were defined in outline form, including alternative escalation branches. The second step in the analysis identified and prioritized major U.S. and allied military targets that could benefit from defense against Soviet ballistic missiles. The third step examined the contribution that BMD alternatives could make to denial of Soviet strategic objectives in crises or conflict, and thus, the contribution of defenses to deterrence. Illustrative cases of BMD deployments were analyzed for Central Europe and CONUS. Finally, the fourth step considered potential operational counters to U.S. BMD deployments and the net effect on the Soviet Union's confidence in achieving its war aims and thus on deterrence.

(U) In Sections III-C and III-D we present a summary of the results of this analysis. In the remainder of this section the contingency analysis is outlined.*

2. <u>Soviet Strategic Objectives and War Aims in a Range of Military Situations</u>

(S) [

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[(S)] In a major nonnuclear war with the United States and its allies, the Soviet Union would have three strategic objectives. First, it would seek to break up the NATO Alliance and extend its political control to Western Europe through a combination of:

*(U) More detailed analyses are contained in Appendixes B through E.

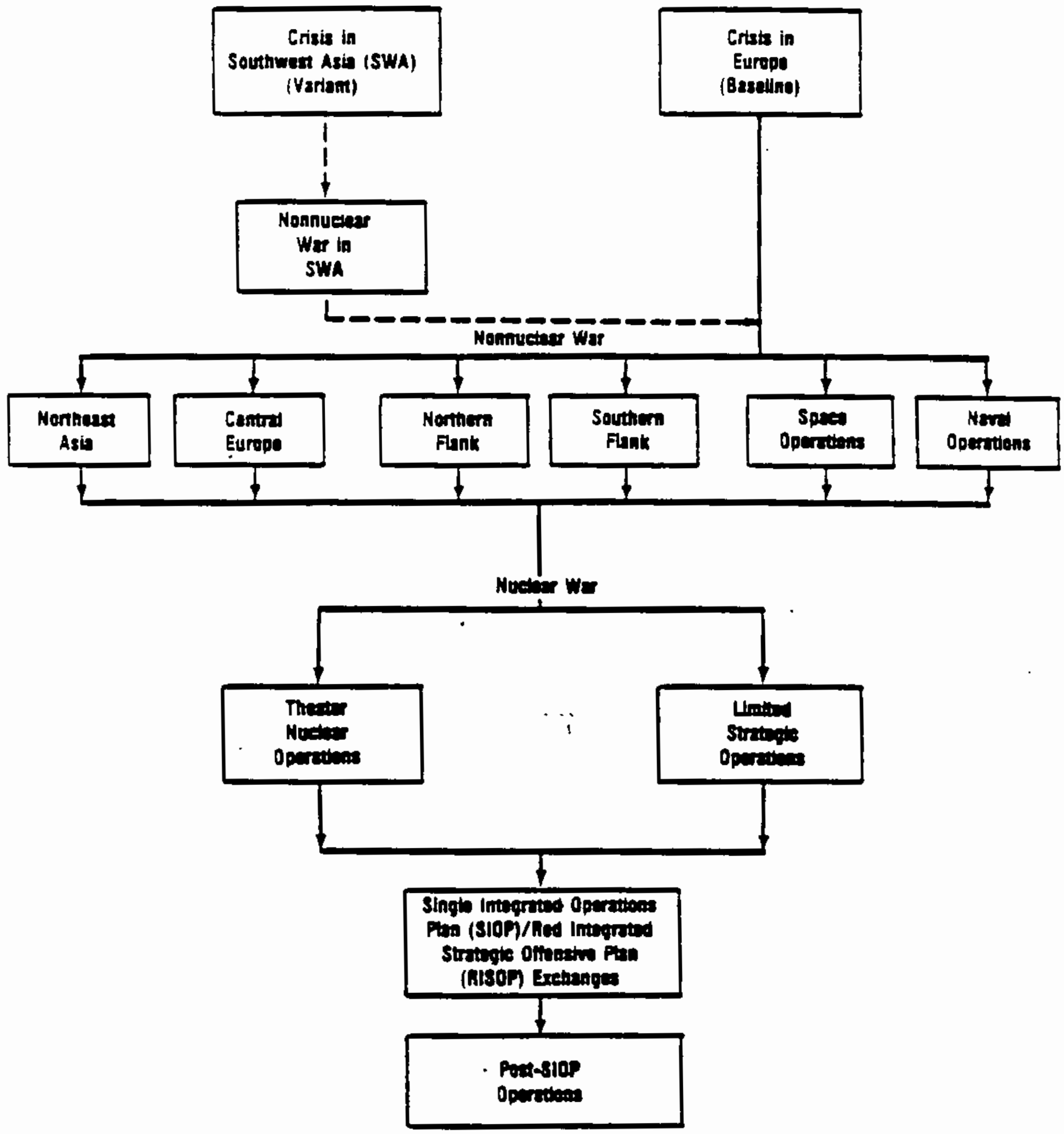

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FIGURE 1. (U) OUTLINE OF CONTINGENCIES

- (~~S~~) Rapid, decisive nonnuclear air and ground operations to cause the collapse of NATO's defenses and secure Soviet territorial objectives.

- (~~S~~) Threats of widespread nuclear war to deter NATO first use of nuclear weapons and coerce individual NATO countries into neutrality or surrender.

- (~~S~~) Concerted nonnuclear attacks on NATO's theater nuclear forces, to destroy or neutralize NATO's in-theater nuclear attack capability.

(~~S~~) A second Soviet strategic objective in nonnuclear war would be to protect Soviet territory and the adjacent fleet ballistic missile submarine (SSBN) operating areas (e.g., Barents Sea, Sea of Okhotsk, Bering Sea, Norwegian Sea). Military operations and coercive threats in Northeast Asia and on NATO's northern and southern flanks would be important in this regard, as would operations against U.S. and allied naval forces. [

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(~~S~~) In limited nuclear war (confined to overseas theaters or including limited attacks on superpower homelands), the Soviet strategic objectives would not change fundamentally from those in nonnuclear war. In general or large-scale nuclear war, the Soviet strategic objectives would be to emerge from the war as the dominant political, economic, and military power in the world, and to employ nuclear weapons rapidly and decisively so as to significantly diminish the power of the United States.

(U) The United States and its allies want to deter the Soviet Union from causing or exploiting crises, from carrying out armed aggression, and from escalating a conflict, should one start. Ballistic missile defenses can contribute to all of these deterrent goals in several ways. First, such defenses can reduce the Soviets' confidence in achieving their strategic goals rapidly and decisively at any level of conflict, nonnuclear or nuclear. Second, deterring Soviet attacks in overseas theaters, which this study argues is an important purpose for ballistic missile defenses, contributes also to deterring general nuclear war and large-scale nuclear attacks on the United States, because of the way that both Soviet objectives in and the escalation paths to general nuclear war are strongly related to Soviet objectives associated with conflict in overseas theaters. Finally, to the extent that the Soviets cannot be confident of achieving their strategic objectives through warfare, they will be circumspect about causing or exacerbating crises, at least those involving the United States and its allies.

(U) Ballistic missile defenses can contribute most to deterrence by operating on the following characteristics of Soviet nonnuclear and nuclear military planning:

- (U) The Soviets' perceived need for high confidence in achieving their political-military goals before committing military forces to action.

- (U) The Soviets' perceived need to achieve these goals rapidly and decisively, in order to maintain control over operational timelines. A Soviet inability to conclude a war rapidly and decisively could threaten not only their basic strategy for war but also the very foundations of the Soviet regime.

(U) As is discussed below, ballistic missile defenses could also contribute to deterrence by reducing the Soviet capability to use coercive threats against U.S. allies.

(U) The role of ballistic missile defenses in deterrence is, then, to deny the Soviets confidence in achieving their strategic objectives in wartime; specifically, to:

- (U) Deny the Soviets confidence in achieving their political-military war aims rapidly and decisively, in both theater conflict and intercontinental nuclear war.

- (U) Reinforce and exacerbate Soviet fears of a long, destructive war in which the operational and political control of the Soviet leadership is in jeopardy.

- (U) Undercut Soviet escalation dominance, so that neither the Soviet Union nor the United States and its allies perceive clear, confident Soviet advantage at any level of conflict.

[(~~C~~)] U.S. ballistic missile defenses cannot, over the next two decades, assume the entire burden of deterrence, and they may never be able to do so. But survivable ballistic missile defenses, in concert with effective general-purpose forces and survivable theater and strategic nuclear offensive forces, can significantly enhance deterrence beyond what can be achieved with offensive forces alone. Deterrence can be fortified by limited BMD deployments that could provide significant protection to military targets.

(U) Ballistic missile defenses can deny the Soviets confidence in their ability to rapidly and decisively achieve war aims by increasing the survivability of U.S. and allied general-purpose and nuclear forces and their C^3I. The Soviets would face the prospect of fighting against coherent elements of U.S. and allied forces for an extended period. Since Soviet military strategy clearly places considerable weight on defenses, presumably the Soviets would also accord considerable weight to U.S. defenses when making decisions about whether to initiate or expand a conflict.

(U) Ballistic missile defenses can deny the Soviets confidence in decisively achieving their war aims with the use of only limited force. BMD raises the level of force the Soviets must assemble and commit before initiating conflict, because it increases the number of ballistic missile warheads required for high-confidence (i.e., offense-conservative) targeting and attacks. Ballistic missile defenses tend to compel the Soviets to focus on extreme contingencies when considering the initiation of war--to commit themselves to a large war or to no war. Defenses reinforce the deterrent effect of the general specter of a long, destructive war.

(U) Ballistic missile defenses can also undercut Soviet efforts to coerce U.S. allies. Such defenses can reassure these allies of U.S. security guarantees in several ways, particularly if the defenses protect allied territory. Defenses enhance deterrence generally, which contributes to reassurance. If they reduce the Soviets' confidence in successfully carrying out military operations at the highest levels of escalation, their ability to dominate the escalation process will be decreased. Moreover, defenses can contribute directly to allied reassurance. BMD may reduce the "hair-trigger" nature of U.S. and NATO theater nuclear responses by avoiding situations in which the West is driven to use its theater nuclear forces early or lose them. Defenses also provide alternatives to nuclear responses for dealing with conventional or (potentially) chemical ballistic missile attacks, while the linkage with U.S. nuclear forces and the option for first use is still maintained.

(U) Defenses need not have the near-zero leakage character required for protection of population in order to make substantial contributions to deterrence, as illustrated below.

C. INTERMEDIATE DEFENSE OPTIONS FOR CONUS

[(~~S~~)] The component elements required by an ultimate four-layer CONUS defense system, highly capable against a massive and responsive threat,* are unlikely to be all available before the year 2000. The various defense elements are in widely varying stages of technological maturity. In essence, some layers originally selected as part of a full multilayer system are plausible candidates for intermediate deployment. The types of systems discussed below are included for illustrative purposes only; the study takes no position on specific systems.

1. Terminal Defense Deployment Option

[(~~S~~)] The necessary terminal defense elements are (1) a mobile, high endoatmospheric homing interceptor employing a nonnuclear warhead and (2) an aircraft-borne optical acquisition and tracking sensor. [

] Such large "terminal defense" footprints are not possible with conventional terminal defense systems, and they greatly increase the efficiency of defense.

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*(~~S~~) As defined in the Defensive Technologies Study (DTS), a "hot" ICBM with a very fast burn, very low-altitude burnout.

(S) Preliminary estimates of the performance of such an intermediate deployment for protection of military sites are promising. The large coverage provided per defense unit and the nature of the two key defense elements limits the size of the deployments required; the lack of large fixed and targetable ground installations denies the offense the ready use of defense suppression attacks. For specific high-value targets, the terminal defense is able to use salvo launches with the above footprints or employ a shoot-look-shoot firing doctrine over smaller footprints. In both cases, the expected leakage would be low, forcing a major increase in attack size if the attacker's targeting goals are to be obtained. In all cases, the last intercept altitude is inherently high enough to preclude major ground damage to soft targets in case the attacker employs salvage fuzing.

(S) As this system would only operate within the atmosphere, the canonical countermeasures of lightweight decoys are of little significance, especially if military targets are being protected. Nevertheless, there are theoretical classes of decoys (at least for ICBMs) that might survive and retain credibility long enough within the upper atmosphere to drive down the defense footprint sizes or increase the consumption of defense missiles. [

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(S) The above terminal defense elements all require technology advances, but they are in areas that can be brought to fruition relatively quickly. On the basis of the Defensive Technologies Study (DTS) findings, an aggressive R&D program could allow the necessary technology for the terminal interceptors and the optical sensor airplane to be developed and demonstrated by 1989 or 1990, thus providing options for deployment in the mid-1990s.

2. Terminal Plus Midcourse Defense Deployment Option

[(S)] The addition of a midcourse exoatmospheric interceptor layer to the above defense has been considered as a likely intermediate deployment option. In this application, the midcourse layer, which is also mobile and nonnuclear, would depend on the airborne optical sensor for launch data. The aircraft positions required for terminal defense operation may have to be moved forward to provide more time, or the sensor range may have to be increased to enable timely exoatmospheric intercepts beyond the operating range of the terminal defense system, or both. The large footprints obtained with a midcourse layer and the reduced leakage due to employing an additional layer markedly increase the defense performance. The midcourse layer also provides nearly CONUS-wide coverage, not achievable with the terminal defense layer alone.

[(S)] The midcourse defense layer, by intercepting exoatmospherically, must face the issue of lightweight replica decoys. One approach is to place the discrimination sensors on board a high-altitude aircraft. The function would be the same as that accomplished by the discrimination satellites in the ultimate system identified by the DTS. While such aircraft will increase the cost of the midcourse layer, they may be able to defeat early generations of midcourse decoys or other penetration devices, even though post-boost vehicle (PBV) observation would not be possible. This issue of discrimination (and reduced-cost midcourse missile systems) is the central question, and uncertainty from the defender's as well as the attacker's perspective (see Chapter VI) is the central development risk of such a midcourse layer. Due to the discrimination question, midcourse-layer technical risk and development prospects are similar to those discussed above under terminal defense.

3. <u>Possible Application of an Intermediate Defense Deployment</u>

(~~S~~) The above defense deployments, with suitable data processing and command, control, and communication (C^3) capabilities, could provide intermediate options for defense of military assets in CONUS such as silos, Strategic Air Command (SAC) bases, C^3 nodes, mobilization bases, and key war-supporting installations such as sea lines of communication (SLOC) support facilities.

4. <u>Possibility of an Intermediate Boost-Phase Layer</u>

(~~S~~) The DTS has concentrated on the ultimate solution, including a boost-phase intercept layer which is capable of operating effectively against a responsive enemy. The prime enemy response opportunities appear to be: rapid-burn boosters to complete booster functions prior to the earliest possible attack by a satellite-borne boost-phase system employing beam weapons; or direct attack on the system's critical space assets such as the sensor and beam weapon platforms. A new rapid-burn booster force would essentially require the Soviets to replace their entire ICBM inventory with a substantially different force. While this could indeed be accomplished, it would take time and a major commitment of resources. A possible Soviet antisatellite system to attack boost-phase defense satellites will also take time and resources. The antisatellite system may be as technically stressing as the satellite-borne boost-phase layer itself.

(S) On the basis of the above arguments and the uncertain availability of some of the conceptual boost-phase systems, it is natural to ask what could be accomplished with less-than-ultimate boost-phase defense layers employing more limited technologies. This is encouraged in part by the realization that some of the boost-phase approaches employ technologies that do not raise such policy problems as requiring the use of nuclear weapons. Whether there are attractive intermediate boost-phase technologies or whether those presently identified, such as hypervelocity guns, are credible is unresolved.

(S) In addition to avoiding the nuclear weapons issue, there are other advantages to a system that could be available in time to be useful against ballistic missile forces such as those the Soviets rely on today (e.g., the SS-18). If the technology could support the deployment of such a layer well before the end of the century, it would force the Soviets to reconsider a major segment of their planned ICBM and SLBM force in that period. [

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This projection assumes the Soviets are unconstrained by arms agreements and expand their forces along current trends.

FIGURE 2. (U) PERCENTAGES OF RVs ON LIQUID VERSUS SOLID BOOSTERS

(U) If the technology is not available on this time scale, it must then compete as an alternate solution for the ultimate DTS concept. It is a recommendation of this study that an exploration of this intermediate boost-phase layer be conducted to consider whether there is indeed such a technology at all and, if there is, to assess the technical feasibility, cost-effectiveness against Soviet countermeasures, and policy implications of intermediate candidates. It is also necessary to assess the implications of a comparable Soviet layer for U.S. ballistic missiles.

5. <u>The Utility of an Intermediate Boost-Phase Intercept Layer</u>

a. <u>Current Projections of Soviet Ballistic Missile Forces</u>. (U) The utility of an intermediate boost-phase intercept (BPI) layer depends in part on what the Soviets will do if we continue to do nothing to defend ourselves against their long-range ballistic missiles.

(S) The utility of an intermediate BPI layer varies approximately with the number of RVs on "slow" ballistic missiles. The shorter the booster and post-boost vehicle (PBV) burnout times and altitudes, the lower the probability of intercept by the defense's first layer. The Soviets' liquid-fueled ICBMs are slower and more vulnerable than their corresponding solid-fueled boosters. Therefore, to a first approximation, the utility of an intermediate BPI option is proportional to the ratio of the number of Soviet nuclear weapons on liquid-fueled boosters to the total number on long-range liquid and solid boosters.

(S) [ ]

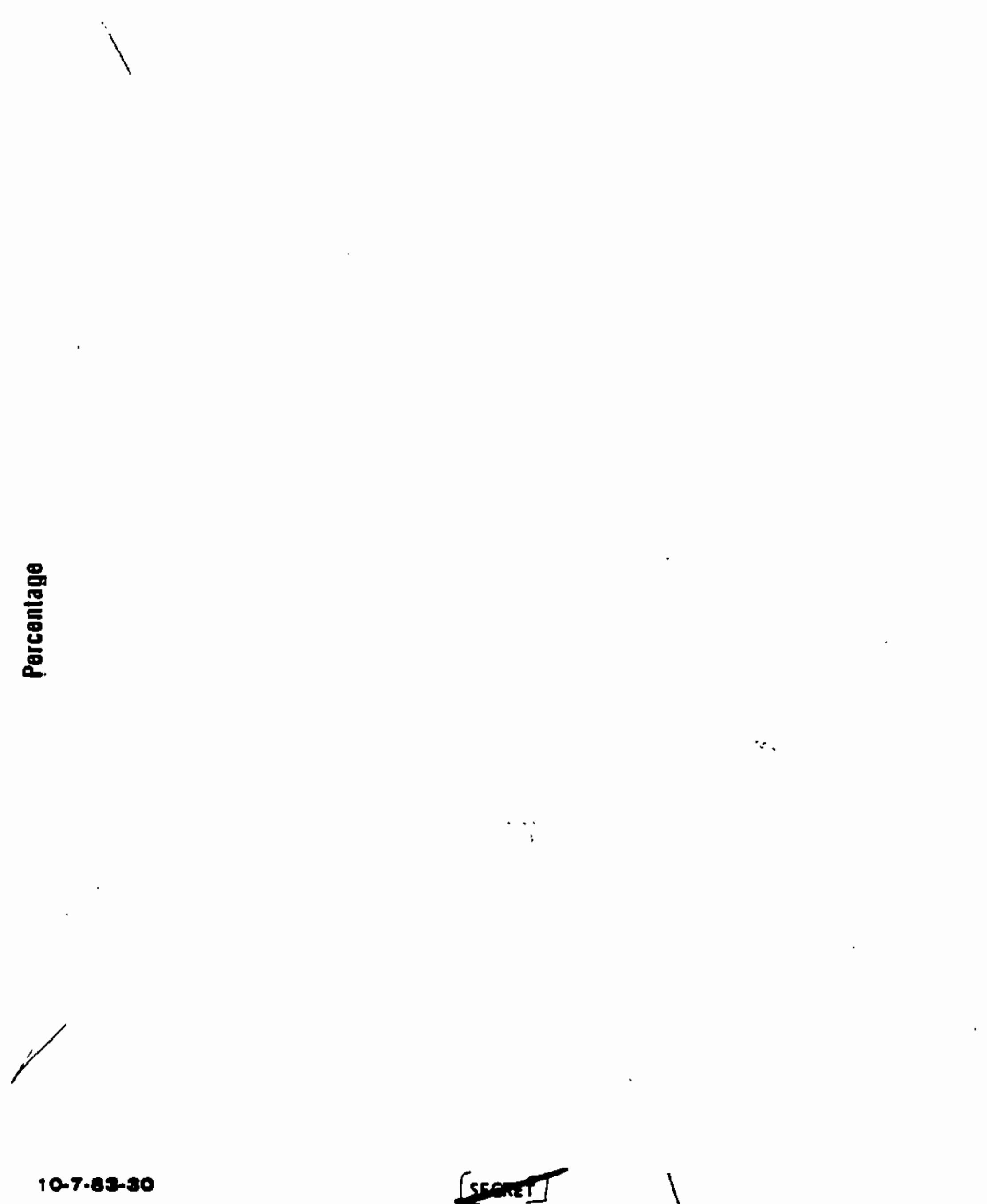

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FIGURE 3. (U) SOVIET BALLISTIC MISSILE PROJECTIONS – UNCONSTRAINED BASE CASE

(~~S~~)

(~~S~~)

(~~S~~) The projected proportion of liquid to total (liquid and solid) ICBM boosters in the Soviet inventory between now and the year 2000 may depend on the outcomes of the Strategic Arms Reduction Talks/Intermediate Nuclear Forces (START/INF) negotiations, subsequent Soviet choices among their ICBM modernization programs, and the Soviet response to MX and its basing,

1.

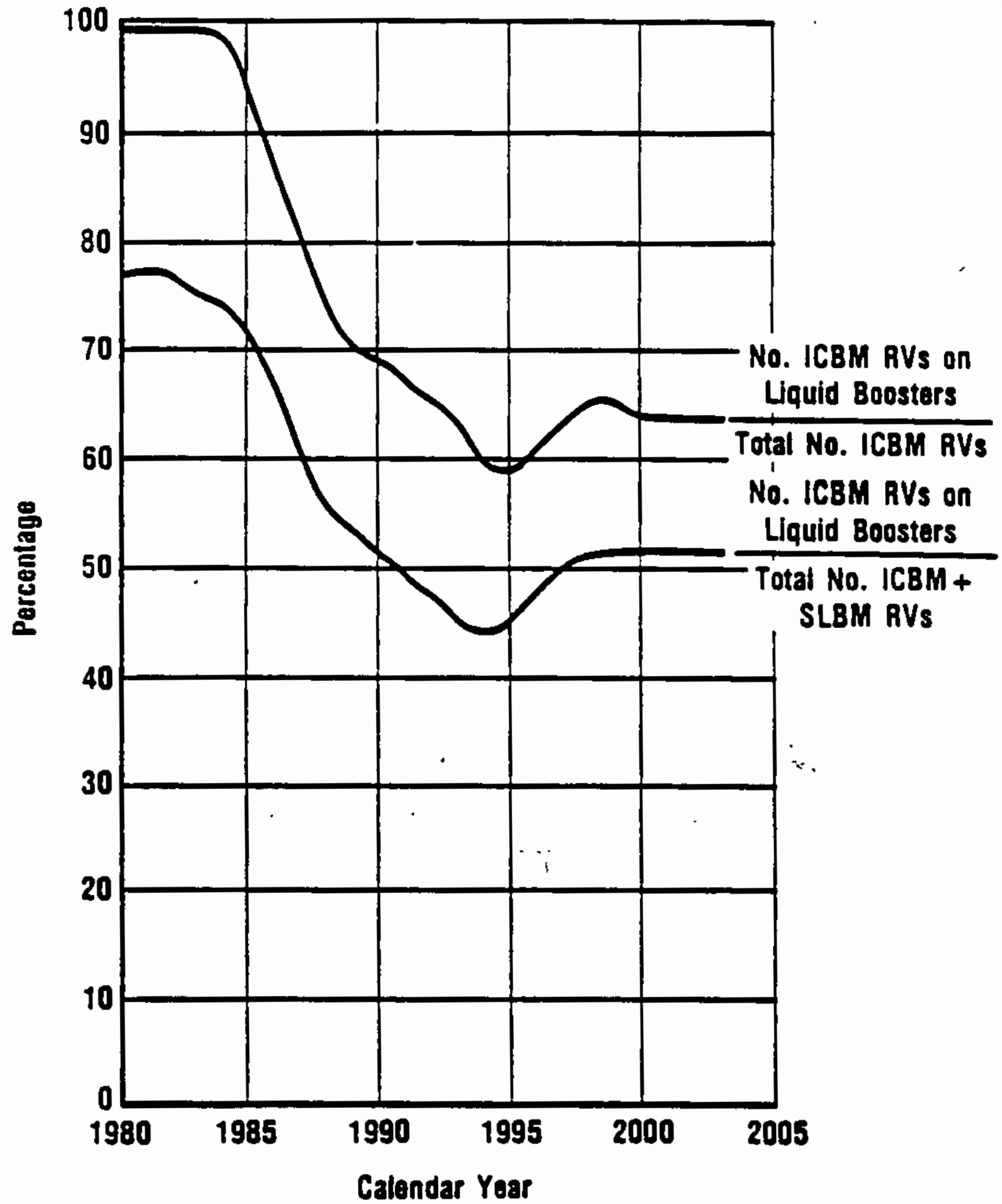

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FIGURE 4. (U) SOVIET BALLISTIC MISSILE PROJECTIONS - UNCONSTRAINED BASE CASE

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TABLE 6. (U) ALTERNATIVE SOVIET ICBM FORCE PROJECTIONS--1993

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[redacted]

(S) The preceding assessment underestimates the utility of an intermediate BPI option, [redacted]

(S) [redacted]

(S) [redacted] The crucial question is how quickly the Soviets can field a force of 2000 fast-burn ICBM boosters and associated PBVs, if they are pressed to counter an intermediate BPI option. Unless and until the Soviets develop "hotter" boosters, their current and projected generations of liquid- and solid-fueled ICBMs, SLBMs, and intermediate-range/medium-range ballistic missiles (IR/MRBMs) (SS-20 class follow-ons) may have great difficulty getting past an intermediate BPI layer, if we have one. Thereafter, the utility of an intermediate BPI option will vary with

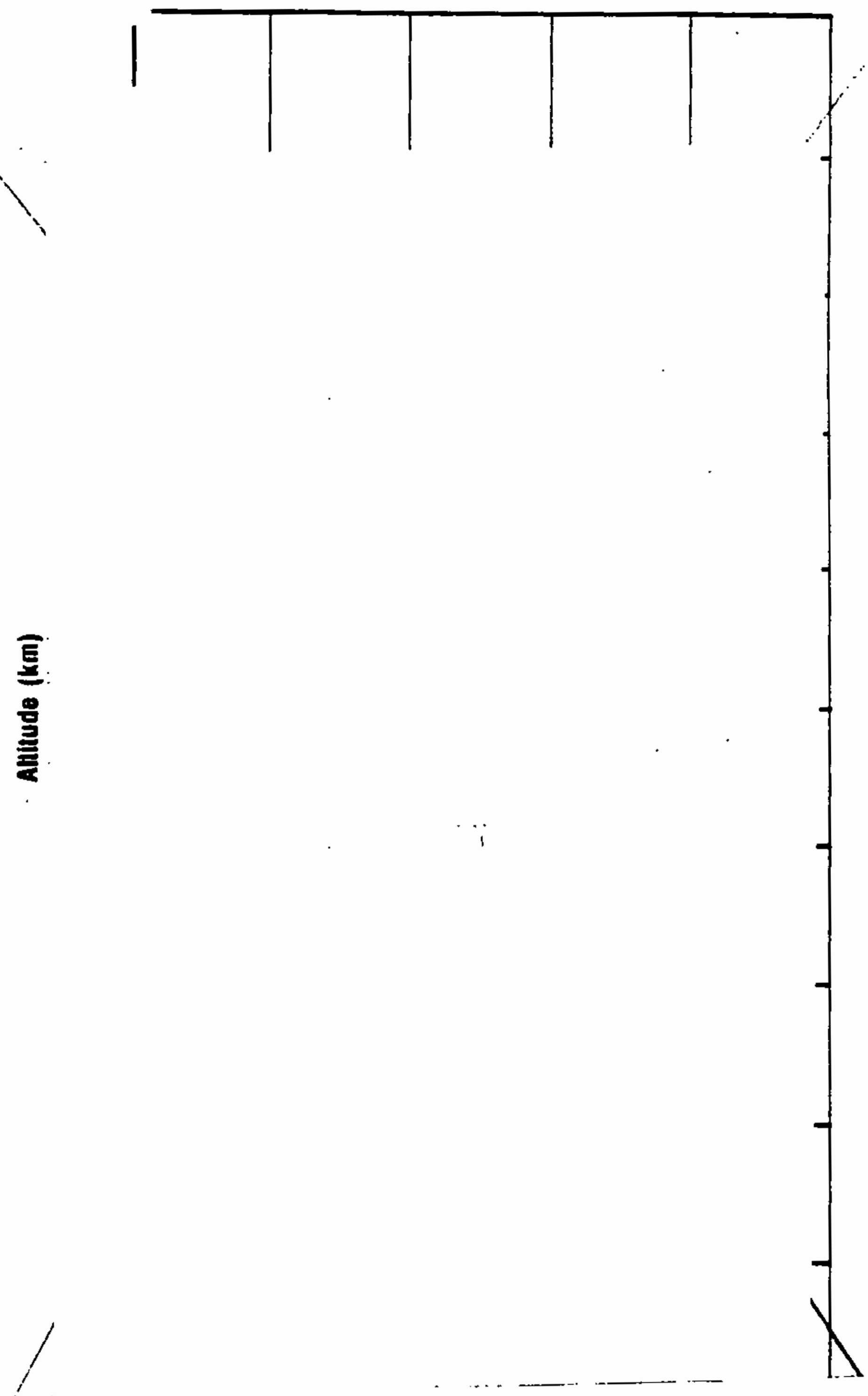

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FIGURE 5. (U) TRENDS IN SOVIET BOOSTER PERFORMANCE

the proportion of RVs on slow- versus fast-burn ballistic missiles.

(S) If we can have an intermediate boost-phase intercept layer by the middle to late 1990s, we may be able to obsolesce 50 percent or more of the projected additional $30-50 billion investment by the Soviets in their current ICBM force [ ] We may also be able to drive the Soviets to ICBMs that cost them more per nuclear weapon and that present less of a threat to population.

b. <u>The Strategic Rationale for an Intermediate BPI Option</u>. (S) It is to the advantage of the United States that the Soviets try to counter our intermediate BPI options, even though we do not want them to succeed. It is in the U.S. interest for the Soviets to have as few nuclear weapons as possible and to make those they do have more precise and more discriminate than they currently are and are predicted to be. For example, in order to build a solid-fueled ICBM force that burns out low enough to evade a BPI layer, the Soviets may be forced to reduce the throwweight, thus decreasing the yield of their nuclear weapons by a factor of two to five or more. In order to make their new, smaller nuclear weapons at least as militarily effective as their current larger ones, they need to decrease their current operational circular errors probable (CEPs) by one-third or more. Even if they succeed in substantially reducing the effectiveness of our intermediate BPI, the result is favorable to the United States. The <u>un</u>intended damage that the United States would suffer from in a limited attack directed only at military targets could be significantly reduced as compared to the damage that would occur with current Soviet forces. It should be noted that this estimate assumes the worst (which is not entirely likely): the Soviets completely counter <u>all</u> our defenses, not just the boost-phase intercept layer. In order to have this beneficial impact the

TABLE 7. (U) ILLUSTRATIVE PROJECTED SOVIET ICBM INVESTMENTS
(CIRCA 2000)

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effectiveness of the U.S. defenses need only be sufficient to induce the Soviets to change their current ICBM modernization programs. Certain arms agreements might complement these limited defenses and reinforce our preferred changes in Soviet nuclear forces.

(~~S~~) In the past, the United States could not have the benefit of the kind of defense systems we now foresee. For example, the "Gilpatric Study," done for the President by former Secretary of Defense McNamara on ways to save at least 80 percent of the U.S. population in the event of a massive (5000 Mt or more) indiscriminate Soviet attack, did <u>not</u> consider a BPI layer in a multilayer system. BPI and BMD were treated as substitutes, rather than complements. Multilayer defenses may not be easily penetrated even though the individual layers are less than perfect. To do so, the Soviets would need a very large force of ICBMs different from the kind they now build. How different depends on a detailed net assessment that remains to be done of our defense options, Soviet ballistic missiles, and associated modernization programs.

(~~S~~) Table 8 illustrates the estimates of the percentage change in the equivalent megatonnage (EMT) per booster (EMT = $NY^{2/3}$ is a measure of the area damaged by the blast from N nuclear weapons with yield Y) and the percentage change in the average investment cost per RV per booster and per kilogram of throwweight, if an intermediate BPI option forces the Soviets to replace their current liquid-fueled (i.e., SS-18/MOD 4 and subsequent types) and solid-fueled (i.e., SS-X-24, SS-X-25, and subsequent types) with the fast-burn ICBM hypothesized by the DTS Red Team.

(~~S~~) An intermediate boost-phase intercept system may: drive the Soviets to 40 percent fewer RVs per booster; impose costs on the Soviets by raising their average investment costs

TABLE 8. (U) ILLUSTRATIVE SOVIET ICBM CHARACTERISTICS

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per booster by 100-300 percent or more if the Soviets go to fast-burn <u>mobile</u> ICBMs; and <u>decrease</u> the unintended damage to the United States by 50 percent or more.

(~~S~~) The additional investment in ICBMs the Soviets require to counter our intermediate BPI options may be more than twice as much as the amount we project them to spend if we do nothing. And the force it buys them may still be vulnerable to more-capable BPI systems. How the marginal costs to the Soviets to counter our BPI intermediate options compare with the marginal costs to the United States to respond remains to be determined.

D. ANTI-TACTICAL BALLISTIC MISSILE DEFENSE FOR NATO EUROPE

1. <u>The Threat</u>

(~~S~~) One possible intermediate capability examined by the study relates to defense against ATBM. An ATBM capability might be achieved by a number of means, including upgrading the Patriot system, using one or two elements of the BMD system identified in an ATBM application, or some combination of Patriot with components of the BMD system such as the optical aircraft. None of these approaches are endorsed, as the study takes no position on specific systems. However, an ATBM could improve deterrence and defense in overseas theaters, particularly NATO Europe.

(~~S~~) The Soviets are currently deploying a new family of mobile, short-range tactical ballistic missiles (SRBMs) and the well-publicized longer-range ballistic missile, the SS-20. The new family replaces the Frog, Scud, and Scaleboard systems with the SS-21, SS-23, and SS-22,

[ ]

[(~~S~~)] [

(~~S~~) [ ]

2. Soviet ATBM

(~~S~~) It is important to note that the Soviets have long upgraded their tactical air defenses [surface-to-air missiles (SAMs)] and air defense surveillance radars to have a suspected capability against strategic ballistic systems and a demonstrated capability against tactical ballistic systems. Recent examples are the SA-10 and SA-X-12 tactical air defense SAMs and the Pechora radars.

(~~S~~) To the extent Soviet systems are developed for tactical applications such as homeland air defense, there is no treaty violation that can be readily identified. Presumably, this would be true of similar Western defenses in NATO. An additional factor to consider is the overall BMD capability, which is achieved if and when a number of these tactical components are integrated into a total system. The capability of the whole could exceed the sum of the components. A rapid upgrade for "Soviet ABM Treaty breakout" could result. This might prove difficult to verify as a violation in that the components are at least advertised as tactical and thus arguably immune to ABM Treaty provisions.

3. Current U.S. ATBM Defense

(S) Currently, the Army is pursuing a limited program to provide the Patriot with what is described as a self-defense capability against SRBMs. Since Patriot's air defense is critical to halting a Soviet offensive, the self-defense upgrade is a vital initiative. The program consists essentially of a software revision to accommodate the kinematics of a tactical ballistic missile intercept. [ ]

4. Possible Improved ATBM Systems

(S) A tactical ATBM defense could provide the United States with a means to:

- Deal with the rapidly growing SRBM threat to Europe
- Defend against the SS-20
- Initiate an intermediate program without violating the ABM Treaty.

(S) A second-phase Patriot upgrade has been addressed in a limited manner by the system's prime contractor. This additional effort would make major hardware changes to the system and possibly upgrade the current missile or add a new missile. A homing interceptor, such as is being considered for the terminal ABM system, could provide an effective nonnuclear capability for the ATBM, and might be a candidate. [

] However, this proposal has not been adequately evaluated by the Army, nor has it been compared against other possible ATBM system concepts. However, a Patriot upgrade is only one ATBM option and is perhaps less promising than direct application of more-advanced technology to a new system. Therefore, the study's utilization of Patriot in this discussion is for illustrative purposes only. While favoring a Patriot self-defense upgrade, this report does not endorse specific ATBM systems.

(~~S~~) A major uncertainty is associated with achieving nonnuclear kill against the TBM warhead spectrum--i.e., nuclear, chemical, and improved conventional. For example, a low-yield Patriot nuclear warhead would be effective but poses significant political, operational, and cost problems. [

] The chemical warhead provides a particularly difficult intercept problem, currently not solved.

(~~S~~) A "tactical" airborne optical adjunct is often suggested. It has been investigated by the Army, but only in an ABM role. Such a capability to provide long-range search and detection would allow a maximum Patriot upgrade against TBMs, to include the SS-20 class, and to maximize the footprints. If such a system is effective against the SS-20, it probably will have some effectiveness against at least some of the SLBM and ICBM systems.

5. Results of The Campaign Analysis

(S) Our analysis shows that at least four types of U.S./NATO operations are critical to deny Soviet strategic objectives in the representative military situations--U.S. and allied counterair operations, reinforcement of overseas theaters from CONUS, countering Soviet nonnuclear or nuclear attacks on U.S. or NATO strategic and theater nuclear forces, and countering Soviet operations directed against U.S. and allied C^3I capabilities. In the case of a Soviet attack against NATO Europe, theater ballistic missile defenses can contribute to denying Soviet strategic objectives by defending some or all of the NATO installations associated with these operations, as shown in Table 9.

(S) Several ATBM "laydowns" were postulated for the defense of NATO's central region. Notional Soviet attacks against these systems were calculated in order to roughly quantify the leverage that NATO could achieve by defending key target sets against a ballistic missile attack.

(S) Three ATBM variants were explored for the purpose of calculating the Soviet "entry price" in terms of conventional and nuclear warheads against a discrete set of NATO targets.

(S) [

] Soviet writings usually portray airfields as prime candidates for ballistic missile attack.

TABLE 9. (U) SOVIET THEATER TARGETING PRIORITIES

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(S) In the analysis all Soviet ballistic missiles were assumed to have a 0.85 system reliability. A nuclear warhead arriving on target was assumed to destroy that target.

(S) The one-tier defense system employs terminal defense interceptors fired on the basis of targeting data provided by an airborne optical platform. The coverage provided consists of a large number of moderate-footprint zones which generally do not overlap. This design permits the Soviets to preferentially target among the zones and supports the selection of the exhaustion attack assumed. A two-tiered defense adds a mid-course defense layer to the above system. These missiles provide large-area defense with redundant coverage, allowing a larger amount of preferential defense, which limits the value of a preferential attack. Because of this consideration, an attack on the two-tier defense was assumed to be a "leakage" attack.

(S) Based on the above, the defense inventories were sized as follows (including provision for 0.75 reliability of BMD interceptors):

- One-tier:
- Two-tier (2 percent leakage):

[redacted]

- Two-tier (12 percent leakage):

[redacted]

(S) [redacted]

(S) [redacted] Soviet doctrine has increasingly stressed the need to win at the lowest level of violence. A single-tier ATBM complicates the Soviets' achievement of their strategic goals and increases the uncertainty they face in contemplating crossing not only the nuclear threshold, but also (and more importantly) the war/no-war threshold.

TABLE 10. (U) NUMBER OF ATTACKING TBM WARHEADS

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(~~S~~) The two-tier variants provide much greater protection and pose major dilemmas for the Soviets.

As noted in Table 9, a number of other high-priority NATO targets confront the Soviet target planner. To the extent that ballistic missile assets are preferentially used to overcome ATBM-protected targets [redacted] other equally important, time-critical targets are left unattended until refire missiles are available for use. This would impose major uncertainties on the Soviet theater commander in transitioning from conventional to nuclear operations.

(~~S~~) To further illustrate the deterrent contributions of ballistic missile defenses, consider the role that an ATBM system in Europe can play in denying Soviet confidence in utilizing the "Operational Maneuver Group" (OMG). [redacted]

(~~S~~) The Soviet operational concept entails the employment of Division-sized and perhaps Army-sized OMGs with the goal of preventing NATO from organizing a coherent defense in depth. [redacted]

(~~S~~) The success of such a bold operational strategy depends greatly on a number of important variables, the most critical of which appears to be the Soviets' winning the counter-air campaign at an early stage. The effective commitment of OMGs early in a theater-wide campaign presupposes a successful counterair operation against NATO to reduce the chance of air attacks on OMGs prior to, during, and after insertion.

(~~S~~) The role of modern Soviet tactical ballistic missiles (TBMs--SS-21s, SS-22s, and SS-23s) is critical to winning the air battle, to effectively commiting OMGs, and to maintaining a viable threat of nuclear escalation. Indeed, the advent of a conventional single-shot kill capability with TBMs further enhances the importance of these systems for Soviet achievement of operational flexibility. Denying the Soviets this important time-urgent capability, or at the very least creating substantial Soviet uncertainty about TBM effectiveness through some level of BMD deployment, would gravely affect the Soviets' planning assumptions surrounding the execution of their theater campaign strategy.

(~~S~~) To be sure, alternatives to TBMs exist. They include cruise missiles, a greater dependence on aircraft, and special operations forces; but none is wholly satisfactory in meeting the <u>time-urgent</u> requirements associated with the counterair operation and deep penetrations into NATO's rear areas. Each alternative imposes serious timing constraints of sufficient consequence to at least add uncertainty to a conservatively oriented planning process. Indeed, it may serve NATO well to steer the Soviet Union in the direction of slower-reacting threats,

(U) In sum, the Soviets and their allies have invested heavily in TBMs and structured their theater warfare plans around the ballistic missile. Forcing the Soviets into non-preferred postures and operational patterns is likely to foster hesitancy and caution in the Pact's theater planning process. The deterrent effect of steering the Soviets in Western-preferred directions should stand as a major objective in deploying a European-based ATBM system.

6. <u>Soviet Counters to ATBM Deployments</u>

(U) The Defensive Technologies Study has addressed potential Soviet technological counters to U.S. BMD systems. There are operational counters that should be considered as well. Some of these potential counters are examined briefly in this section, as are the operational or economic difficulties they would entail for the Soviets.

(U) First, consider Soviet counters to U.S. ATBM deployments overseas--adding more TBMs, attacking a smaller set of U.S. or allied targets, employing cruise missiles or aircraft, using unconventional warfare forces, or deploying a Soviet ATBM system.

(C) The most direct Soviet counter to a U.S. ATBM system would be to add more tactical ballistic missiles or TBM reentry vehicles to the inventory. This is not, however, without economic and operational costs to the Soviets. Soviet acquisition of additional TBM launchers to increase significantly the number of missiles in the first salvo would be a major investment, requiring additional launcher production, increased ground force manpower, and a greater logistics tail. [ ]

(C) Another alternative open to the Soviets would be to attack a smaller target set with ballistic missiles, and use aircraft, cruise missiles, or unconventional warfare forces against the targets not covered by TBMs. Because of the reduction in high-priority targets attacked with missiles, the Soviets would have reduced confidence in successfully carrying out critical operations, [

]

(U) Finally, the Soviets' deployment of their own ATBM system, which may take place independently of whether the United States deploys an ATBM, would not significantly improve Soviet capabilities for such operations as air support to the OMG or preemption of NATO nuclear use.

(U) It should be noted that similar operational and economic considerations apply to potential Soviet counters against U.S. BMD deployments that protect military targets in CONUS. Because of the number of penetrating reentry vehicles needed to successfully attack military targets in CONUS, increasing the number of ICBM or SLBM warheads in their inventory entails substantial investments for the Soviets, even against a defense that does not have near-zero leakage. On the other hand, greater Soviet reliance on bombers or cruise missiles to attack high-priority military targets in CONUS also entails significant investments, reduces the speed and decisiveness of the attack against time-urgent targets (if the United States deploys adequate warning systems against advanced-technology cruise missiles), and reduces the Soviet capability to preempt the U.S. use of strategic forces.

E. TIME-PHASED OBJECTIVES

(~~C~~) This section develops a set of time-phased objectives for BMD R&D and deployments, as a means of showing how defenses that are less than perfect might serve important political-military purposes at an early stage and, if technology allows it, grow eventually into a near-zero-leakage population defense. While the discussion is not an attempt to define the technical components of a BMD system phased over time, it illustrates phased objectives with advanced-technology constructs for the BMD system.

(U) BMD objectives proceed from the less ambitious to the more ambitious, measured in terms of one or more of the following system characteristics:

- Time period for implementation of measures pursuant to achieving a specific objective.
- Cost of these implementation measures.
- Consistency of these measures with the ABM Treaty.
- Technical risk associated with achieving a specific objective.

(~~S~~) Four major phases are envisioned:

A. The first phase carries out R&D in the 1980s intended to exert arms control leverage on the Soviets, hedge against a Soviet BMD breakout, and lead to U.S. BMD deployments in the later phases.

B. The second phase, beginning in the late 1980s or early 1990s, consists of a series of objectives associated with the defense of military targets in overseas theaters against tactical ballistic missiles (TBM). ATBM defense is consistent with the provisions of the ABM Treaty.

C. The third phase consists of objectives related to defense of military targets in CONUS, plus defense of some populated areas against limited attacks.

D. The fourth phase, beginning sometime in the 21st century, provides for a high-confidence defense of population and a transition to a nuclear posture less dependent on offensive nuclear striking power.

(U) These objectives could apply equally to air defenses. Indeed, a comprehensive program of defenses is required to meet the stated objectives.

(~~S~~) <u>Phase A: Leverage and Hedges (R&D--1980s)</u>

<u>Objective 1</u>--(~~S~~) [redacted] The United States would combine BMD R&D and arms control efforts intended to deter a Soviet breakout from the ABM Treaty in which the USSR deploys widespread defenses, to encourage negotiated modifications of the ABM Treaty, and to provide incentives for the Soviets to move away from ballistic missiles with large boosters. Our BMD R&D would be directed toward achieving the deployment objectives set forth below; R&D supporting early U.S. ATBM and boost-phase intercept capabilities against current-generation threats may be especially important for achieving Objective 1. It appears generally that R&D on advanced-technology ballistic missile defenses can be performed up to the point of engineering development without modifying the ABM Treaty.

(S) <u>Phase B: Protection of Military Targets Overseas Against Nuclear or Nonnuclear Attack (1990s)</u>

<u>Objective 2</u>--(S) Provide at least a partial defense of military targets overseas against tactical ballistic missile attacks. As indicated in Sections III-C and III-D of this report, defense of U.S. and NATO tactical air bases, air defenses, tactical C^3I, and reinforcement facilities [e.g., prepositioned overseas materiel configured in unit sets (POMCUS) stocks, air and sea ports of debarkation] can exert important leverage for denying the Soviets high confidence of achieving their war aims. [redacted]

(S) <u>Phase C: Protection of Military Targets Plus Limited Population Defense (1990s)</u>

<u>Objective 3</u>--(S) Provide high-confidence defense of critical military targets from limited attacks. An initial BMD deployment in CONUS or ATBM deployment overseas might protect a limited number of key targets [redacted] from "cheap shots," accidental launches, or third-party attacks. Population centers within the defense footprint would also be afforded some protection.

<u>Objective 4</u>--(S) Deny the Soviets the capability to meet their full military targeting objectives without a major expansion or modernization of their forces. The systems supporting Objective 2 would be thickened to protect hardened or mobile military targets against larger, more sophisticated attacks.

The number of targets protected would be expanded, while ensuring that the most critical targets are given highest priority for protection. These might include C^3I, force-projection airfields and ports, MX sites, and mobile intercontinental ballistic missile (ICBM) deployment areas. Collocated population centers would also be afforded some protection.

Objective 5--(~~S~~) Expand the protection associated with Objective 4 to a larger number of military targets (and collocated population centers) in CONUS with ABM and other defensive measures. This might be done by continued expanding and thickening of a terminal defense. The lower midcourse layer could be enhanced with an airborne optical system. Once an upper midcourse layer was in place, utilizing a satellite system for RV discrimination and battle management, there would be further protection of targets, population as well as military.

Objective 6--(~~S~~) Complement and reinforce arms control agreements. This objective is a bridge between the later Phase D (population defense), and Phase C (protection of military targets in CONUS). The extent to which it more closely fits one or the other depends upon the timing of the BMD deployments and their effectiveness relative to the threat. Objective 6 would seek to reduce the uncertainties associated with limits on offensive missile systems, reinforce these offensive limits by providing hedges against major violations or abrogation of agreements, and provide the Soviets with incentives to move toward less threatening offensive missile postures (reductions, smaller missiles, etc.).

(~~S~~) Phase D: High-Confidence Defense of Population (21st Century)

Objective 7--(~~S~~) Transition to a posture less dependent on offensive nuclear striking power. BMD deployments that move strongly in the direction of a low-leakage population defense, coupled with changes in the U.S. offensive nuclear force posture, would be consistent with this objective. Examples could include deployment of an early boost-phase intercept system (designed to counter the current generation of Soviet ballistic missiles) and the upper portion of a midcourse intercept layer.

Objective 8--(~~S~~) Achieve high confidence of near-zero-leakage defense of population. This is the broadest, technically most difficult objective. An advanced boost-phase intercept layer would be a BMD deployment directed toward Objective 8. Evolution of the various layers of the BMD system to keep pace with advances in the Soviet ballistic missile threat would also further this objective.

IV. AIR DEFENSE

(U) Improvements to air defenses will be essential to complement modern ballistic missile defense systems, particularly in view of current Soviet bomber and cruise missile development.

A. BACKGROUND

(U) Over the past two decades, as ballistic missiles became the predominant threat against North America, the United States and Canada systematically reduced North American air defense capabilities. Consequently, there are now critical deficiencies in the ability to detect and defend against bomber and cruise missile attack.

(U) The stated objectives of the current U.S.-Canadian air defense plan are limited; i.e., to provide tactical warning and attack characterization, to limit damage to strategic retaliatory forces and C^3 nodes, and to control peacetime access to continental airspace.

(~~S~~) The fact that our current air defense philosophy has been centered on warning and surveillance has led to improvement programs for these missions. Available interceptor forces and associated C^3 are sized only to maintain airspace sovereignty. Augmentation by tactical air F-15 and other interceptor forces during crisis, depending upon availability, would provide some capability to defend against other than all-out attacks.

(S) Some improvements in U.S. air defenses are planned, particularly in warning capabilities. Deployment of the over-the-horizon backscatter radar (OTHB) will aid significantly in detecting the advanced airborne threat in the area of its coverage, which is generally limited to the East and West.

Ground-based surveillance coverage to the South is essentially nonexistent. Airborne Warning and Control System (AWACS) assets are planned primarily for tactical use but, if available, could be deployed on warning to augment the planned CONUS surveillance system. However, due to their limited numbers, sustainability of an AWACS airborne surveillance deployment would be difficult.

(S) CONUS-based interceptors could be used for air defense. However, it must be noted that the availability of these assets might well be limited in that there will probably be simultaneous competitive demands for them (e.g., NATO reinforcement).

(S) While both the Army and the Marines have surface-to-air missile (SAM) units stationed in CONUS, there are no SAM forces dedicated to the CONUS air defense mission. The number of units is small and, depending on timing, the availability is uncertain (e.g., there is competition with other mission requirements).

(U) In sum, the CONUS air defense capability is not impressive. This must be more than apparent to the Soviet planners.

B. THE THREAT

(~~S~~) The deemphasis of CONUS air defense was predicated on a Soviet shift in procurement from bombers (circa 1950) to the predominant reliance on ICBMs and SLBMs in the current time frame. In the absence of a deployed BMD, it was rationalized that a CONUS defense against a limited air-supported threat, other than that described earlier, was not needed.

(~~S~~) The current CONUS threat is considered to be presented primarily by the older Soviet bombers. Bear and Bison bombers would probably be committed in an attack on North America in a force of less than the total gross inventory [redacted] The employment of Backfire against CONUS targets has been controversial. Backfire has the capability to reach all or some of North America, depending on combinations of such factors as staging, in-flight refueling, and flight profile. On range (one-way) missions, with recovery in friendly territory, it is capable of hitting targets anywhere in the United States, even if not refueled. While the long-range bomber forces, including the controversial Backfire, provide for only approximately [redacted] percent of the Soviet weapon delivery capability, they constitute possibly as much as [redacted] percent of the total megatonnage carried by the Soviet Triad.

(~~S~~) Improvements to the Soviet bomber forces are predicted to occur in the mid-to-late 1980s. A new swing-wing bomber aircraft, the Blackjack, has been identified. It also is logical to expect the Soviets to develop and deploy improved, longer-range cruise missiles to complement or replace existing systems. [redacted]

C. SOVIET RESPONSES

(S) If the United States initiates a large-scale effort to provide defense against ballistic missiles, it would appear that one readily attainable Soviet counter would be to return to a strategy based upon much greater use of aircraft and cruise missiles. Even if long-range ballistic missiles remain their primary forces for U.S. attack, bombers and cruise missiles could be used as a force option capable of a precursor attack of such proportions as to seriously degrade our capabilities. This force would differ significantly in sophistication and capability from those faced by the CONUS defenses of the 1950s.

(S) The expansion of homeland defenses continues to be a high-priority Soviet effort. This is demonstrated, for example, by the current SA-10 deployments and the SA-X-12 development. It has been estimated that the Soviets have invested about $150 billion and more than 500,000 personnel in homeland defense. As a result, the Soviets enjoy a significant lead in this area--not necessarily in technology but certainly in the possession of a robust defense infrastructure.

(S) The Soviets currently possess the technology and are pursuing a set of bomber and cruise missile developments which could provide the basis for the rapid deployment of such forces in the near term. Whether or not the Soviet leadership believes that a truly effective ballistic missile defense could be achievable by the United States, the threat of such a system --coupled with the current lack of U.S. air defenses--could lead the Soviets to pursue the heavier deployment of bombers and cruise missiles.

D. CONCLUSIONS

(S) During the technology phase leading to a defense deployment decision, indications of a Soviet bomber/cruise missile counterinitiative must be monitored. A decision to implement a CONUS air defense program to counter the Soviet redirected initiatives would be a logical result if the Soviets adopted such an approach, but it would clearly add to total costs of strategic defense. However, the costs of a modern air defense system may be substantially less than those of the BMD system and less than those historically incurred if near-term advanced-technology solutions are available.

(S) Other options of lesser magnitude, designed to reduce the Soviet perception of the effectivess of their revised force structure, might be possible (e.g., increase the number of tactical forces dedicated to CONUS defense and further improvement of the warning and ground environment facilities). However, this, in turn, could create problems with our allies, particularly in NATO. They would perceive a lessened U.S. commitment of tactical air unless additional tactical forces were procured.

(U) In sum, the Soviet perception of the U.S. air defense must be one of an area of weakness to be exploited if needed.

Exploitation of this weakness can be managed at the initiative of the Soviets and, without a U.S. response, could lessen the value of a BMD deployment.

V. THE ROLE OF DEFENSIVE SYSTEMS IN MANAGING THE LONG-TERM COMPETITION WITH THE SOVIET UNION: ARMS CONTROL ISSUES

A. THE EAST-WEST COMPETITION AND ARMS AGREEMENT

(U) We must approach our security relations with the Soviet Union as a continuing process over the long term, a process in which we strive to protect our interests and those of our allies while avoiding conflict with the Soviet Union.

(U) This process involves some elements of common interest shared by East and West. Both East and West share a desire to avoid war, and particularly large-scale nuclear war, both seek to reduce the potential destructiveness of war if it should occur, and both would like to avoid needless expenditures on military forces. But the foreseeable future will continue to be dominated by competition for power and influence for as long as Soviet political objectives are to destabilize, dominate, or coerce other states.

(U) In the management of this competitive process, both unilateral actions and negotiations over arms agreements with the Soviet Union can, in principle, play a part. However, the underlying competition where our interests clash with Soviet political objectives will establish limits to the contribution of arms agreements to U.S. national security. In particular, the Soviets will continue to try to use arms negotiation with the West to improve their military situation by inhibiting Western efforts to redress the military balance.

(~~S~~) The competition between the United States and the Soviet Union arises from political-military objectives that conflict over a wide range of international affairs, as well as from asymmetrical geopolitical situations. The United States seeks to cooperate for mutual security with a coalition of independent allies, many of whom do not possess nuclear weapons and rely on the United States for support and for a guarantee against nuclear threats and attacks, but who concurrently exert pressure for arms control agreements even where such agreements might be inconsistent with their desire for U.S. support. The Soviets rule over and seek to expand a repressive empire beset with many internal tensions and instabilities and with adversarial states on many of their borders. They have regarded our mutual security arrangements as obstacles to the spread of their influence and ideology, and have sought to defeat them through coercion, attempts to erode the unity of the Western coalition, and occasional recourse to military force. In order to inhibit Western efforts to strengthen military capabilities for response to Soviet threats and attacks, the Soviets have played on public anxiety in Western countries over the destructiveness of nuclear war, and on the widespread Western desire for agreements regulating nuclear weapons.

(U) Under the circumstances, it is not surprising that arms negotiations have failed to achieve the ends intended by the United States. As many have noted, the results have been in many ways the reverse of those sought. Existing treaties and understandings are focused on securing the ability of each side to inflict massive and indiscriminate damage in retaliatory attacks. They neither reduce the destructiveness of nuclear war if it comes nor reduce the inventories of nuclear weapons. In many respects, they have added to the cost of achieving our security objectives and the difficulty of maintaining stable deterrent forces.

(U) Moreover, the course of military programs in the Soviet Union has been very different from that in the West over the period of detente and arms control. Far from declining in size and destructiveness, the Soviet nuclear inventory has increased dramatically in both respects, absolutely and in relation to Western forces. The massive Soviet investment in military forces over this period has increased the threat to Western security over the entire spectrum of conflict. In particular, it has left a significant portion of U.S. nuclear retaliatory forces vulnerable to Soviet attack. Continued adherence to the provisions of the SALT I and II agreements on offensive forces will not reduce that vulnerability; rather, these arrangements permit the problem to intensify. Furthermore, the ABM Treaty effectively forecloses one promising set of solutions to the problem, based on active defense of our strategic retaliatory forces against ballistic missile attack, while the need for verification complicates solutions based on small, mobile missiles.

(U) Neither sincerity about the desire for progress in arms control nor greater cleverness in drafting negotiating positions appears likely to achieve the arms control objectives of the West. And persistence is a negotiating trait that is much more characteristic of the Soviets than the West. The fact is that the West has not provided, in terminology the Soviets understand, the "objective circumstances" that offer incentives to the Soviet Union to conclude agreements on matters of mutual interest rather than pursue their interests in conflict with those of the West.

(U) A better management of our long-term competition with the Soviets, one that realizes the benefits of cooperation where possible, requires a combination of Western unilateral actions designed to provide incentives for agreement on matters of mutual interest, readiness to negotiate, and resolute and effective resistance to Soviet efforts when they seek to undermine Western interests. An increased emphasis on defensive systems can assist in providing such incentives.

B. LONG-TERM INTERACTIONS IN FORCE PLANNING

(~~C~~) Whatever Soviet propaganda may assert in efforts to demoralize the West, Soviet military planning is not devoted to slaughtering Western civilians but to the pursuit of Soviet objectives in peacetime and crises through the coercive use of military threats and to the survival of the Soviet system in war with the least possible damage while achieving Soviet war aims. (In fact, East and West alike show a common interest in limiting damage to their respective societies, contrary to popular perceptions found in the Western press). Soviet pursuit of these objectives in the event of war may, depending on the constellation of opposing forces and the strategic situation, inflict grave damage on the West, but that is partly under the control of the West.

(~~C~~) The Soviets' response to a Western deployment of defenses against strategic attack may or may not assign overriding priority to overwhelming such forces by increases in their offensive forces. They will increase offensive capabilities if they believe such efforts are consistent with their overall military goals, the terms of the competition between offense and defense favor such efforts, and they represent an appropriate use of the resources involved.

(~~S~~) At least initially, the Soviets may well respond to U.S. deployment of ABM defense by accelerating their offensive buildup. At any rate, they are likely to say this is their intent, in order to discourage us from deploying defenses. The credibility of such a declaratory policy and the question of whether pursuit of such a policy would negate defensive efforts depends on the leverage of the defense. It is important to note, however, that the Soviets themselves have always placed great emphasis on defenses--a policy that would be unlikely if they believed that those defenses were irrelevant to the advancement of Soviet security. They may well be unconvinced, therefore, that it is feasible to negate defenses by adding to offense.

(S) Whatever the United States does, the Soviets may well opt, for their own reasons and on the basis of their technical and strategic assessment, to increase their already substantial emphasis on defense against strategic attack. Certainly, they have been willing to spend very substantial resources on defenses that we have viewed as marginally to moderately effective, but that have not so far faced us with a barrier that precluded offensive strikes. They may have sought protection against a threat from China and may be moved to increase their defenses for this reason if the Chinese threat increases.

(S) They are likely to try to put the political onus for a reopening of the ABM Treaty on the United States, over the long term (if they are convinced they cannot use negotiations to stop a U.S. BMD program). Nevertheless, they may be willing to explore with us the implications of defenses for limitations of nuclear arms, by either implicit or explicit agreement. One important implication is that defensive systems can increase the stability of the strategic balance if offensive systems are brought to much lower levels than at present. They can do this by protecting offensive forces against attack. They can also decrease the sensitivity of elements of the target system (that might be subject to strategic attack) to uncertainties related to cheating should an agreement be negotiated.

(S) This last factor is likely to assume increasing importance in the future if both sides move in the direction of small, mobile offensive systems in order to deal with the vulnerability--due to increasingly precise offensive threats --of larger missiles that must be protected in fixed basing modes. Such systems are likely to be inherently more difficult to observe, posing substantial verification problems for any attempt to reach arms control agreements that reduce force levels.

(~~S~~) Appropriately designed defense systems can also provide incentives for the Soviets to move away from maintaining or increasing those strategic offensive systems that pose the greatest threats to stability and greatly enlarge the destructive potential of the massive Soviet nuclear forces, such as their very large liquid-booster missile systems. Even the initiation of U.S. development of what appear to the Soviets to be potentially effective boost-phase intercept systems (to which liquid ICBMs are especially vulnerable) may cause them to accelerate their planning to reduce reliance on such systems in their future deployments.

(~~S~~) Finally, technology offers the potential for both much more effective defenses and much more precise, effective, and discriminating offensive systems. The specific outcome of these developments, taken together, cannot now be predicted, but it appears in many respects to be preferable to the present situation, in which both sides rely on weapons that will inevitably result in massive and indiscriminate destruction if they are used on a large scale, unopposed by effective defenses. Such future possibilities would represent a revolution in military technology comparable to the development of nuclear weapons. While we cannot disinvent nuclear weapons, such technical developments might reduce their role in military planning, and could reduce the importance of large and indiscriminately destructive nuclear weapons. The pursuit of new technologies, far from destabilizing the arms race, appears to offer a prospect for changing the military equation in ways conducive both to the objectives of arms control and to the negotiability of useful arms agreements.

(~~S~~) To conclude, we need to distinguish between hopes and realistic expectations. We may hope for formal arms control agreements designed to regulate and manage the U.S.-Soviet relationship. Based on the historical record, the prospects are not promising. Conversely, however, it is realistic for us to expect the Soviet Union to temper its actions if it perceives the United States to be a serious competitor, particularly in the military arena. An attempt to do so, of course, lies at the heart of President Reagan's defense program. Accordingly, a practical and serious program of relatively near-term defenses against nuclear attack, coupled with a longer-range program designed to exploit superior U.S. technology (a matter which the Soviets have always taken seriously), could induce the Soviets to moderate and shift the emphasis on aspects of their strategic offensive programs.

(~~S~~) If the West can steadily maintain its resolve and ability to resist Soviet coercion, fundamental changes could gradually occur in the political objectives that underlie Soviet foreign relations. Such changes could provide a basis for significant reductions in the nuclear threat through a combination of unilateral measures and agreements, and could someday even lead to formal agreements codifying that shift. Even in the absence of such agreements, the shift itself would be very much in the U.S. national interest.

C. EXISTING AGREEMENTS AND CURRENT NEGOTIATIONS

(U) Several existing treaties and current negotiations are important to consideration of strategic defenses.

1. ABM Treaty

(~~S~~) The ABM Treaty allows only research and advanced development, short of flight testing, of mobile ABM systems and components (missile interceptors, their launchers and radars). Fixed, land-based ABM systems and components can be developed, tested, and produced. Deployments of regional defenses by fixed systems are limited to 100 interceptors, 100 launchers, and 6 radar complexes for a national capital defense or 20 radars for an ICBM silo field defense. These limits do not allow flight testing of any of the layers (boost phase, midcourse, or terminal) of a typical global ABM system in forms close to their mobile, tactical configurations. Table 11 summarizes an analysis of potential constraints on a global, multilayered ABM system by ABM Treaty provisions.

(~~S~~) Because ATBM, ASAT, and air defense systems (not tested in an ABM mode and presumably with limited ABM capability) are not limited by the treaty and because fixed ABM systems can be flight tested, most elements of a global system could be validated through flight testing as follows:

- Boost-phase intercept; as an ASAT (or perhaps air defense)

- Midcourse Intercept
  - -- Surveillance, discrimination, and track; as an adjunct to a fixed land-based radar
  - -- Interceptor; from a fixed land-based launcher

- Terminal Intercept
  - -- Surveillance, discrimination, and track; as an adjunct to a fixed land-based radar
  - -- Interceptor; from a fixed land-based launcher or as an ATBM.

TABLE 11. (U) ANALYSIS OF POTENTIAL CONSTRAINTS ON A GLOBAL, MULTILAYERED ABM SYSTEM BY ABM TREATY PROVISIONS (including Protocol of 1974)

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TABLE 11. (Continued)

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(S) However, if the United States chose this route to begin development of a global ABM, the Soviet Union could be expected to take maximum propaganda advantage while perhaps initiating similar actions if it had not already done so.

2. Outer Space Treaty

(C) The Outer Space Treaty bans placing nuclear weapons or other kinds of weapons of mass destruction in orbit. Thus, [ ] systems could not be tested or deployed in orbit without withdrawing from this treaty. Other directed-energy weapon systems probably would not be considered weapons of mass destruction and would not be limited by this treaty.

3. Limited and Threshold Test Ban Treaties

(S) These treaties ban nuclear testing in the atmosphere, oceans, and space and limit underground test to yields of not more than 150 kt. Flight testing of [ ] and perhaps even underground testing of close-to-tactical configurations with higher yields would be precluded without withdrawing from these treaties.

4. Offensive Arms Interim Agreement (SALT I) and SALT II Treaty

(C) Neither of these agreements is formally in force. The Interim Agreement expired October 3, 1977, and the SALT II Treaty has not been ratified by either side. However, both sides have continued to abide by the limits of the Interim Agreement and both have made unilateral statements that they would not take any actions which undercut the limits of the SALT II Treaty. Thus, these agreements are currently constraining the offensive forces of both sides, although probably not to the extent that either side is foregoing any significant offensive force option it finds desirable. If either or both sides go forward with a significant ABM system, it is very questionable whether these agreements would continue to have any constraining effect.

(U) At the time of the signing of the ABM Treaty and the Interim Agreement, the United States stated that if an offensive agreement providing for more comprehensive limitations was not reached the United States might may find it necessary to withdraw from the ABM Treaty.

5. START and INF Negotiations

(~~C~~) Each of these negotiations is considering reductions in offensive forces--intercontinental-range forces in the case of START and intermediate-range forces in the case of INF. These offensive forces are among those that a strategic defense would have to counter. The context for these negotiations at the present time includes the constraints of the ABM Treaty. If that treaty is changed and strategic defenses become a possibility, the context for the negotiations will change. This could have positive or negative effects both on the environment for strategic defenses and on negotiations that would depend on the policies and actions of the United States and the Soviet Union. For example, if both sides agreed to move toward defense dominance, they might also agree to constrain offenses. On the other hand, disagreement on defenses might lead to reluctance to enter into offensive arms agreements.

D. RESPONDING TO ARMS CONTROL ISSUES THAT ARISE OUT OF STRATEGIC DEFENSIVE SYSTEMS

(U) If the United States begins to move forward with a strategic defense initiative, it will be necessary to address various arms control issues. In the near term only tactical responses (as opposed to long-term resolutions) will be needed. However, the public responses must be carefully formulated because support for the defense initiative will depend strongly on the official public statements.

(U) In the following paragraphs, the issue is stated in the form of a question. The suggested response presents the information needed as the basis for developing maximum support for a proposed strategic defense initiative.

Issue: (~~C~~) What will happen to the ABM Treaty?

Response: (~~C~~) The ABM Treaty need not be modified until engineering development programs are begun. In the meantime, research and advanced development can go forward, and discussions with the Soviets concerning potential modifications to the treaty can be initiated. If the United States decides to develop strategic defenses and the Soviets will not agree to modify the treaty, the United States will be forced to withdraw.

Issue: (~~C~~) Will a U.S. R&D program violate the spirit if not the letter of the ABM Treaty?

Response: (~~C~~) An agreement where one party honors the "spirit" while the other party honors the letter of the agreement is not an equitable agreement. The Soviets abide at most by the letter of an agreement and take advantage of any ambiguities. The United States must precisely consider the letter of any agreement with the Soviets and closely monitor compliance. Otherwise, we will give the Soviets an unfair advantage.

Issue: (C) Will a strategic defense initiative rule out any possibility of a START agreement?

Response: (C) No. Both sides have large numbers of offensive forces. Even if it should be decided to deploy strategic defenses, offenses could still perform their deterrence function even at reduced levels. Reduced and balanced offensive forces would support limited deployments of defensive forces.

Issue: (C) Should weapons be kept out of space? Will this lead to a space arms race? Should ASAT be banned?

Response: (C) The Soviets have already developed and deployed an ASAT. It is not obvious that mankind will be better off by confining potential warfare to the surface of the earth. And even if warfare in space is not banned, space arms, like other forces, can be controlled by agreement.

Issue: (C) Will a strategic defense initiative lead to abrogation of the Limited Test Ban and Threshold Test Ban Treaties?

Response: (C) Probably not. There is a chance that directed-energy weapons driven by nuclear explosives may prove to be desirable, and some modifications to one or the other of the treaties may be desirable. However, this has not yet been determined. There are alternative directed-energy weapons if it is decided that these treaties should not be changed.

Issue: (C) Will a strategic defense initiative inevitably exacerbate the arms race?

Response: (C) No. It could lead to a slowdown in the arms race by giving incentives to both sides to control both offensive and defensive arms. Defenses can make certain offenses less desirable, and after defenses reach desired levels of effectiveness they need not be improved further if offenses are constrained.

Issue: (C) Will the Soviets react very negatively to a strategic defense initiative, perhaps jeopardizing all arms control negotiations?

Response: (C) The Soviets can be expected to respond negatively in their public declarations, as they do to all U.S. military initiatives, in hopes of influencing the United States to unilaterally abandon such initiatives. However, their ultimate response could be positive if they conclude that a move toward more dependence on strategic defenses is also in their interest. Traditional Soviet interest in homeland defense would support such a positive response.

E. INCENTIVES FOR FUTURE ARMS CONTROL NEGOTIATIONS AND AGREEMENTS

(C) A U.S. strategic defense initiative could provide the Soviets one of several incentives for arms control negotiations and agreements. If the Soviets saw a serious U.S. initiative as one that would be difficult or expensive for them to counter (e.g., through offensive improvements) or as one that would be difficult or expensive for them to match (through deployment of a similar system), they would be likely to try to use arms control to constrain the United States. Thus, they would have an incentive to limit strategic defenses either by reaching additional agreements on unlimited strategic arms (e.g., ASAT), or by attempting to induce the United States to continue to abide by or tighten the ABM Treaty, or both. In areas of strategic defense where they currently have a lead (e.g., air defense and ASAT), they could be expected to attempt to freeze-in their lead. It seems unlikely, however, that they would believe that the United States could catch and pass them in major aspects of strategic defense in a short period of time.

(~~C~~) Another response the Soviets might make to what they perceived as an undesirable U.S. strategic defense initiative could be to accept limits on certain offensive systems in exchange for limits on the defensive system that counters them. For example, MIRVed ICBMs and perhaps SLBMs might be reduced to low levels in exchange for a ban on boost-phase intercept defenses. Similarly, air defense reductions might be matched against bomber and cruise missile reductions.

(~~C~~) If the Soviets decided that a move toward strategic defense dominance and away from strategic offense dominance was in their interest, they might accept limits on offenses with relatively higher, but still constrained, levels of strategic offenses. In this case they might eventually agree to large reductions in offensive forces, a relaxation in the limits of the ABM Treaty, and high but equal limits on air defenses, ASAT, and perhaps even civil defense and certain antisubmarine warfare (ASW) (e.g., within an agreed distance of a side's coast). However, they can be expected to attempt to charge the United States the maximum price to reach such agreements even if they plan to eventually agree.

VI. STRATEGIC STABILITY AND STRATEGIC DEFENSE*

A. U.S.-SOVIET COMPETITION AND STRATEGIC STABILITY

(U) Strategic stability, as defined by Western strategists, has two aspects. Crisis stability is a condition in which neither side sees an advantage in striking first to avoid losing the ability to retaliate. Arms race stability is a condition in which the pace and scope of research and development and the process of modernizing each side's strategic arsenal does not threaten to give one side a decisive advantage.

(U) Strategic stability must be considered in light of the diametrically opposed positions and interests of the United States and the Soviet Union. The United States, while amenable to peaceful change, is fundamentally prepared to accept the existing world order. It is essentially a defensive or *status quo* power. The Soviet Union, on the other hand, seeks to radically alter the present international order by coercion, support of revolution, and aggression when necessary. While both superpowers desire to avoid nuclear conflict, past behavior of the Soviets indicates that they see violence and military force to be legitimate means of achieving their political objectives. They do not seek stability as we define it, and their willingness to use force, when they deem it appropriate, increases the risk of war. Between the two superpowers, then,

*(U) An analysis of this subject, undertaken in support of the study, is contained in Appendix F.

strategic stability is not now and probably can never be a static condition. The Soviet Union seeks military advantage as the principal means of pursuing its basic policy; if strategic stability is to be maintained, it will require U.S. counteraction. Thus, strategic stability is a dynamic condition.

B. THE CURRENT SOVIET THREAT TO STRATEGIC STABILITY

(U) The Soviet Union, by its substantial military effort, has already begun to undermine strategic stability. The scope and pace of its strategic offensive force programs increasingly threaten the U.S. ability to retaliate, undermining our deterrent, and jeopardizing both crisis and arms race stability. The equally worrisome BMD effort of the Soviets raises uncertainties about their willingness to adhere to the restrictions of the ABM Treaty. This has the potential to seriously destabilize the current strategic situation if left unchecked by U.S. action. To allow the Soviets to obtain and capitalize upon a substantial advantage in BMD might eventually destroy strategic stability. At this stage, a vigorous U.S. BMD program designed to counter the effect of Soviet BMD efforts should be seen in part as a means of deterring a Soviet breakout from the Treaty.

(U) Strategic stability is being undermined by the Soviet Union's offensive buildup as well as its BMD program. Indeed, the former is presently the more serious problem. As a result of the Soviets' unrelenting increase in strategic offensive forces, the credibility of the U.S. deterrent has become less and less viable. In particular, the "extended deterrent"--the U.S. threat to employ strategic nuclear forces in defense of our allies--is increasingly called into question. One reason we are now examining the potential deterrent role of strategic defense in general, and BMD in particular, is our concern that continued reliance on strategic offensive forces alone is unlikely to enhance stability or prevent the further erosion of extended deterrence.

C. STRATEGIC STABILITY AND STRATEGIC DEFENSE--GENERAL

(U) As is explained in greater detail elsewhere in this report, strategic defenses and BMD can contribute to deterrence by fostering uncertainty on the part of potential attack planners that a nuclear strike against the United States could achieve its required military objectives. Such defenses could improve crisis stability by creating substantial disincentives to the initiation of nuclear attacks. It must be noted, however, that such defenses could also furnish a new stimulus for competition between defense and offense. Given the fact that the Soviet Union is already vigorously pursuing BMD, this new competition will occur, to some degree, irrespective of U.S. action. Moreover, it is not clear that this competition is necessarily destabilizing, since reliable, decisive advantages in penetrativity or RV destruction will not be easy to obtain as defenses are deployed, offensive forces improve, and the relevant technologies mature.

D. INTERMEDIATE DEPLOYMENTS, EVOLVING BMD, AND STRATEGIC STABILITY

(~~C~~) In the near term, BMD deployments could present potential problems for strategic stability. For example, if the Soviets deploy a space-based BPI with a self-defense capability before the United States, they may seek to prevent the United States from deploying a similar system by threats to shoot it down or by actually doing so. If the Soviets were able to achieve a substantial edge in deployment, we might be hard pressed to counter such action. Even if the Soviet deployment were not capable of countering a large-scale U.S. attack, such a U.S. threat might become even less credible than it is today.

The net effect in this case might be to seriously undermine deterrence and strategic stability, at least as perceived by the United States.

(~~S~~) Conversely, if the United States were able to deploy a self-defended space-based BMD capable of dealing with a limited missile attack, it could improve our deterrent. Soviet attack planning would be complicated and the outcome of their nuclear strikes more uncertain. If, however, we also decided to shoot down a Soviet BMD capability as it is deployed, this action would probably precipitate a severe crisis. Presumably they would perceive our system to be only the first step toward a much more capable BMD, which would negate the effectiveness of the Soviet offensive force. At the same time, our refusal to allow them a comparable BMD would leave the Soviet Union open to attack. It is unlikely that the Soviets would allow the substantial strategic advantages they now enjoy to be decreased so radically if they could prevent it.

(U) On the other hand, as both sides deploy space-based BMD and other strategic defenses of increasing capability, strategic stability could be strengthened. In a multilayered system an attack on any one layer would not so radically alter the strategic balance as to drastically improve the prospects that a missile attack would achieve its military objectives. Indeed, each layer is likely to be designed and inventoried so as to hedge against the prospect of some failure of the other layers. Successful attack on a layered defense would be difficult. Surviving elements could still severely impair the effectiveness of a missile attack. This greatly complicates attack planning. Crisis stability would therefore be enhanced.

(~~C~~) Another aspect of an intermediate BMD capability must be considered. If such systems are not coupled with other actions designed to improve the survivability of strategic forces, crisis stability could be diminished. Intermediate defense would clearly be more effective in dealing with a "ragged" retaliatory response than with a first strike. If the limited BMD is not itself highly survivable, and if it is not accompanied by other methods of reducing vulnerability--for example, mobile missiles--an attacker might concentrate an attack on those vulnerable forces, overwhelm the limited defense, and destroy a proportion of the vulnerable forces sufficient to substantially increase the effectiveness of the initial attacker's defense against the ragged retaliation.

(~~S~~) There is some question of having a "surge" capability for reconstitution of a battle-damaged force. This possibility seems to imply the start of a battle in space. With the rate at which speed-of-light weapons could destroy each other, a surge capability might have to be incredibly large to be useful. This might not be the case against kinetic-energy threats, however. Presently, the uncertainties appear to be so great as to preclude predicting how many systems might be stockpiled for replenishment--especially in the face of the very high cost of the systems. The concept is worth further study, however, as it might make a space-based BMD more robust, and less vulnerable (or "brittle") to certain kinds of responsive threats. It would also contribute to strengthening arms race and crisis stability.

(~~S~~) Strategic defense will not change the nature of deterrence for many years. The process will be gradual. For some time the uncertainties associated with the deployment of a limited BMD, for example, will not be sufficient to completely negate the threat of retaliation that now constitutes the core of our deterrent. However, with or without BMD, the credibility of a deterrent based on the threat of massive retaliation will continue to decrease. Strategic defenses, including BMD, can improve the credibility of deterrence as improvements in the effectiveness of defenses steadily increase, adding uncertainties to the calculations of offensive planners and disincentives to the initiation of nuclear attacks.

(C) Arms race stability could become less of a problem as progressively improved BMD capabilities are deployed over time. Admittedly, the initial offense-defense competition might offer temporary breakthroughs in penetration or RV destruction. But, as the tactical problems become better understood and the relevant technologies mature, the arms competition should become more stable, if the United States maintains programs at least as vigorous as the Soviet Union's.

E. STRATEGIC STABILITY AND NUCLEAR WEAPONS IN SPACE*

(U) Some proposed BPI defenses use nuclear explosive energy--but as a power source, not for destruction. However, the Atomic Energy Act of 1954 and the Outer Space Treaty, as well as common judgments about the reactions of the public, the Congress, our allies, and potential Soviet propaganda, indicate that such systems will be regarded as nuclear weapons in space.

(S) One way around the problem with the Treaty on Outer Space that has been suggested is the "pop-up," or rapid launch, of such a system only when and if international tensions indicate the need (at which time the United States might be prepared to abrogate the treaty). In many ways attractive, this option nevertheless appears to have an impact on strategic stability.

(S) [ ]

*(U) A more detailed analysis of this subject is contained in Appendix I.

(~~S~~) Moreover, such a "pop-up" system would require a large missile launch force. While the satellites might be carried by a small mobile missile, would it be based for rapid launch? If not, it might not be deployed rapidly enough. On the other hand, a concentrated set of missiles with prompt launch potential would make a tempting Soviet first-strike objective. In crisis, it would present its own threat stability.

(~~S~~) Finally, since these nuclear-powered BPI options are likely to be considered nuclear weapons in space, they will have to be recovered when they are obsolete or considered no longer reliable, in, say, 10 or 20 years. Other systems might be left there or commanded to self-destruct (perhaps by deorbitting in a burn-up mode)--this would not be possible with the nuclear-powered satellites. With the aging of the nuclear-powered systems, accidents might occur that could cause a crisis, such as the reentry of such a satellite onto Soviet territory.

(~~S~~) For treaty and political reasons, nuclear BPI systems are likely to be considered "nuclear weapons in space." The option of only deploying such a system in a rapid surge during tension presents problems for crisis stability. However, the great risks and possible instabilities, as well as practical launch difficulties, make this option problematic and subject to further study.

VII. FOREIGN POLICY ISSUES*

A. INTRODUCTION

(~~S~~) There is a well-established set of assumptions about how various other nations are likely to respond to a major new U.S. BMD initiative. For the purpose of discussion, we will call this the "conventional wisdom." It is held by many in the political and opinion-making communities and is based on known views in other nations regarding strategy and arms control and on reactions to past U.S. BMD programs, such as Safeguard and Sentinel. We believe that the "conventional wisdom" reflects the most likely, if not the most logical, response of foreign nations to a U.S. BMD program. That response will generally be negative unless the U.S. Government takes action to shape reactions in more favorable ways.

(~~S~~) The current environment of public opinion abroad, particularly in Europe and Japan, is increasingly antinuclear, and the negative attitudes evinced tend to focus on the United States. Any new U.S. BMD initiative will have to contend with intense and widespread foreign expressions of discomfort and opposition to such a program. Further, these sentiments will be whipped up and influenced by the Soviet Union's active propaganda apparatus. This environment will not be easily altered--even by the best efforts of the U.S. Government. Foreign

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*(U) Analyses of this subject, undertaken in support of the study, are contained in Appendixes G and H.

resistance to U.S. BMD will be strong, at least initially, and is likely to continue. The effect of the "conventional wisdom" on foreign attitudes may persist well after these views are "proved" wrong to the satisfaction of the U.S. Government or even of national security policymakers abroad.

(S) Much has changed since the late 1960s, however, when the last major debate about ABM occurred. The "conventional wisdom" is based on a set of underlying assumptions that may no longer be valid. An appealing case can be made today for placing greater emphasis on strategic defense, including BMD. To make that case requires directly addressing key assertions of the "conventional wisdom." This section points out the most important of these assertions and suggests some responses that can be used and actions that the U.S. Government could take to support a new emphasis on defense in U.S. strategy. In addition, the alliance problems of technology transfer and the need for consultations associated with a U.S. strategy emphasizing defense are noted and discussed.

B. THE CONVENTIONAL WISDOM: ASSERTIONS AND RESPONSES

Assertion:

1. (S) "There is a fear in many countries that BMD will provoke an accelerated arms race. The Soviet Union will exploit this fear and seek to place the onus on the United States for accelerating the 'arms race'."

Response:

(S) Soviet BMD-related programs are now proceeding at a rapid pace and are ahead of the United States in many significant areas. The Soviets have pushed up to, and many would argue beyond, the limits of the ABM Treaty in these programs.

In particular, they have created a production base that would permit rapid deployment of a widespread ABM system if they so chose. At the same time, the United States declined to take full advantage of its rights under the treaty; indeed, our BMD R&D has languished. [

]

[(~~S~~)] The Soviets will almost certainly exploit the widespread fear that BMD will provoke an accelerated arms race by focusing on U.S. programs and even on U.S. discussion of BMD options. Simultaneously, they will continue and perhaps even accelerate their own efforts. It is essential that the United States inform the public here and in other countries about the full scope of Soviet BMD-related programs, to put this widespread fear of an accelerated arms race into perspective and to focus public concern on the Soviet Union's current programs, rather than the prospective BMD efforts of the United States. If a U.S. BMD program is needed, it can then be more readily justified to the public in terms of a real Soviet threat of superiority in BMD.

Assertion:

2. [(~~S~~)] "Concerns have been expressed that if both the United States and the Soviet Union are well defended, this would result in the decoupling of U.S. strategic forces from defense of Europe."

Response:

(S) Defenses deployed over the near to middle term will not be effective enough to completely negate the threat of U.S. offensive nuclear force employment in support of West European defense. Therefore, for some years, even with U.S. and Soviet BMD, U.S. strategic forces will continue to support deterrence. To the extent that the United States deploys a BMD of even limited effectiveness, however, the credibility of U.S. willingness to employ strategic forces should be enhanced. While this point should not be overemphasized in the near term, defenses in CONUS should play a role in bolstering extended deterrence. Moreover, while a Soviet BMD system will impose uncertainty on U.S. attack planners and complicate the targeting of our strategic forces, it will not immediately negate the threat those forces pose to the Soviet Union.

(S) Defenses, particularly an ATBM, may also strengthen deterrence in Europe by their ability to disrupt the Soviet conventional offensive. Missile attacks are an important aspect of this attack plan; to the extent that an ATBM can deal with the missile attack, it can deprive Soviet attack planners of high confidence that a conventional offensive will succeed in achieving its military objectives. In this way, the uncertainties generated by an ATBM would clearly contribute to the deterrence of aggression in Europe.

Assertion:

3. (S) "The British and French will be particularly concerned that Soviet 'responses' to a U.S. ABM 'initiative' will invalidate their deterrent forces or make it far more complex and costly to maintain them. China will have similar concerns."

Response:

(~~S~~) British and French nuclear planners are presumably well aware of current and projected Soviet BMD programs, and are already contemplating countermeasures. These actions are taking place now, in response to the evolving Soviet threat, fully aside from U.S. BMD efforts. As the Soviet BMD program is well under way, it seems that the problems of maintaining adequate French, British, and Chinese deterrent forces will continue to increase in complexity and cost, regardless of U.S. BMD programs.

(~~S~~) Indirectly, a U.S. BMD improves the survivability and efficacy of these states' nuclear forces. Because the U.S. BMD would require the Soviets to concentrate more nuclear warheads on the United States to assure penetration and required damage expectancies, the other nuclear powers may see a decrease in the Soviet nuclear threat to them.

Assertion:

4. (~~S~~) "Other nuclear-armed states will be relatively unaffected as their concerns are regional; they are not a threat to the major powers."

Response:

(~~S~~) This is not entirely true. Admittedly, even a limited U.S. BMD would probably be capable of dealing with the smaller nuclear arsenals of those countries. However, U.S. boost-phase intercept (as well as an ATBM) might be capable of defending foreign countries against missile attacks as well. This could lessen the value of such weapons to potential proliferators, thereby reducing the threat of proliferation overall. If regional nuclear concerns are affected by BMD, it is likely to have a positive, stabilizing effect.

<u>Assertion</u>:

5. (~~S~~) "There will be widespread concern about any threat to the ABM Treaty regime, seen as the most successful example of arms control to date. In addition, many states will be concerned about any threat to the outer-space treaty and the test ban regime. In the case of the latter, it will be argued that failure to progress with a Limited Test Ban Treaty could increase pressure for nuclear proliferation on the grounds that the major powers are not making progress in controlling vertical proliferation."

<u>Response</u>:

(~~S~~) It has been pointed out above in this report, and throughout the course of the FSS Study, that the principal threat to the viability of the ABM Treaty today is the Soviet BMD program. Indeed, a vigorous U.S. BMD program may be the best method of preserving that treaty's viability, for it may be the only way to hedge against a Soviet treaty breakout and thereby dissuade the Soviets from that course. Thus far, the record of Soviet BMD efforts severely diminishes the credibility of arguments that the treaty is a successful example of arms control. It is important that the public be informed of these facts, to correct the false impression of the treaty as a model of success in the achievement of arms control.

(~~S~~) Many states will be concerned about the threat BMD systems may present to the outer-space and limited test ban treaties. Here again, however, it is Soviet efforts that pose the threat today, by forcing the United States to seriously consider BMD responses.

(~~S~~) Arguments that BMD will undermine the nonproliferation regime are largely specious. Decisions to "go nuclear" are generally far more a question of regional security than a response to great-power nuclear weapons programs. Moreover, as pointed out above, certain BMD systems (especially BPI and locally deployed ATBM) may increase regional security by protecting potential victims of local nuclear aggression from missile attack, thereby negating possible advantages that nuclear forces would otherwise give to potential proliferators.

C. CONSULTATIONS

(~~S~~) Consultations with U.S. allies on BMD must be handled with the utmost care to successfully alleviate the problems and counter the perceptions noted above. The U.S. Government must be thoroughly aware of allied anxieties, based largely on the "conventional wisdom" outlined above, and able to deal with these issues with a straightforward but carefully considered approach. In addition, we must be prepared to accept the idea that strategic defense will be treated with some skepticism, and perhaps even rejected, by some of our allies. Certainly the allies should be consulted before official announcements (and one hopes before any leaks) regarding major shifts in our BMD policy that might raise questions about the ABM Treaty. In particular, decisions regarding ATBM should be preceded by close consultations with those allies that would potentially be affected by such a program. To minimize the prospects of premature speculation about U.S. Government policies on the part of either group, it would be prudent to conduct these consultations in parallel with, or immediately following the initiation of, similar consultations with the Congress.

D. TECHNOLOGY TRANSFER

(S) In considering an ATBM for the defense of our allies, the United States must be concerned with the problem of technology leakage to the Soviet bloc. This is particularly relevant for an ATBM utilizing the most advanced and sensitive technologies--for example, a "top-down" approach incorporating technologies developed for a BMD program, such as airborne optical sensors. A major breach in the technical security of a joint ATBM program based on this technology could have a serious impact on the overall effectiveness of our strategic BMD. Consequently, any technology-sharing arrangements with our allies to develop an ATBM must incorporate the strictest security.

VIII. THE COST OF GOING INTO ORBIT*

(U) Most BPI BMD concepts involve putting large masses into orbit in the early 21st century. Current technology, and available systems, for launching these orbiters are

- Inadequate in lift capability for any system now proposed, except possibly Excalibur
- Very expensive--$1500/lb and up, orbited (to low earth orbit, due east; inclinations and higher altitudes of orbits decrease capacity and thus increase the cost per pound).

(U) Current technology offers two choices:

1. The Space Shuttle, which offers the economies of reusability if demand can make adequate use of Shuttle turnaround times and lifetimes. In fact, the Shuttle has not yet reached an economical launch rate. Moreover, the 3:1 orbiter-to-payload weight ratio is justified only if the experimental man-in-space aspects are charged not to individual missions but to national overhead.

*(U) A more detailed analysis of this subject is contained in Appendix I.

2. Expendable launch vehicles (ELVs), which trade off potential savings from reuse for great flexibility in launch planning and demand response.

A. FUTURE RESPONSES

(~~S~~) Continued projections of possible demand (other than for BMD) have led to projections of two generations of conceptual launch vehicles (LVs), with alternative solutions to capacity and cost problems, and recoverable/expendable trade-offs. In general, these fall in three categories:

1. Shuttle derivatives (SDLVs)

2. Larger ELVs

3. Heavy-lift launch vehicles (HLLVs) that could be recoverable (not by manned flight, but they could carry manned capsules) if the BPI system should prove to require manned functions in space.

(U) These "paper" LVs show, from several sources, certain general characteristics:

<u>SDLVs and ELVs</u>

- 1990s, $600-1000/lb
- 2-3 x present 65,000-lb lift
- circa $10 billion R&D

<u>HLLVs</u>

- 2000s (very large ones), $100-200/lb
- 4-7 x present lift
- $25-30 billion R&D.

(S) The HLLV depends for its full realization on certain technological advances. It has been recommended that certain technology programs be funded in FY85-89 to hedge against lead time to match that of beam weapons, assuming a decision in the early 1990s for an initial operational capability (IOC) of [ ] The key elements are improved thermal protection systems (TPS) and high-energy fuels. The total cost of this 5-year technology program is estimated at $1-2 billion.

1. BPI Requirements

(S) The lift required for Excalibur (the smallest payload) would be only the present or a somewhat improved Shuttle capacity; nonnuclear systems would require large HLLVs.

(S) As for the numbers required, present estimates are for [ ] satellites in orbit. This will vary with the threat, obsolescence and replacement requirements, and, of course, technology and concept evolution.

(S) Launch choices will also be affected by launch rates (costs of rapid launch versus risks of delay, stability arguments, etc.).

2. Total Costs

(S) Using the above data and allowing for [ ] and other system components, we find:

- For [ ]

- For nonnuclear systems, with an HLLV, $75-100 billion, or up to 20 percent of total other costs.

B. NUCLEAR WEAPONS IN SPACE

(U) The nuclear explosive energy in Excalibur is used as a power source, not for destruction. However, the Atomic Energy Act of 1954 as well as common judgments about the reactions of the public, the Congress, our allies, and potential Soviet propaganda, indicate that Excalibur will be regarded as a nuclear weapon in space.

(~~S~~) Since we have postulated that Excalibur payloads will--must--be considered nuclear weapons in space, it follows that they will have to be recovered when they are obsolete or considered no longer reliable, in, say, 10 or 20 years. Other systems might be left there (littering space is a separate issue), or commanded to self-destruct (perhaps by deorbiting in a burn-up mode), but surely this would not be salable for Excalibur.

Moreover, the value of the nuclear material recovered might pay for the cost of recovery, though that is certainly not a controlling consideration.

C. RATE OF LAUNCH

(U) How rapidly a system should be deployed is not necessarily a simple question. One criterion might be to launch as the devices come off the production line and are certified for deployment. But rate of production is controllable within a wide range, so this may beg the question.

(U) On the one hand, since we must assume we may be in a race with the Soviets, and we may not in the next century have high confidence in our intelligence on an item to which the Soviets may give a high cover-and-deception priority, we may want to deploy as rapidly as possible, lest the Soviets deny us the capability. Rapid deployment may add to costs--in multiple launch pads, in facilities for rapid production of both satellites and launch vehicles, and (conceivably) in stockpiling satellites and boosters until we are ready (if we believe we can wait).

(U) On the other hand, we might wish to go more slowly. The period might appear to be one of relative political stability, and we might not wish to disturb that stability by an apparently precipitous act. We could argue that we could afford to save money! We might opt for a more "normal" deployment time (initial to full operational capability), say, three or four years, a plausible production time.

D. CONCLUSIONS

- (~~S~~) Costs of launch can in 20 years or so be reduced to 20 percent of the other costs of a BPI BMD.

- (~~S~~) The HLLV appears to be the system of choice if a heavy beam weapon is chosen, or if enough smaller satellites can be packed in and launched into satisfactory (coplanar) orbits from one booster.

- (~~S~~) HLLV lead times appear to be consistent with an early-1990s decision to deploy a BPI system beginning in 2005-2010.

- (~~S~~) The FY85-89 costs of technology hedges to protect an HLLV initial operational capability of 2005 appear to be modest (4-8 percent) of the cost of exploratory R&D on PBI (and layered) BMD systems. These hedges should be funded if the BPI R&D is.

- (~~S~~) An HLLV or alternative launch system might come into being in 20 years or so for other space missions, but this possibility should not enter into BMD planning.

- (~~S~~) Excalibur "warheads" would eventually have to be recovered, perhaps in detachable modules. Nuclear materials reuse might cover the capsule recovery costs.

- (~~S~~) The trade-offs between rapid launch of BPI satellites, in order to precede the Soviets rather than possibly be stopped by them, and launching more slowly in order to economize and possibly to be less politically destabilizing, will require further study. The choice may also be affected by the political environment at the time.

IX. RESOURCE CONSIDERATIONS

A. SOVIET AND AMERICAN INVESTMENT IN STRATEGIC DEFENSE

(U) In the past, the case against any limited defense of the United States in the event of a Soviet ballistic missile attack has rested on the contention that if the Soviets always do their best in responding to a U.S. program, limited U.S. defenses will not work--even if we add to them. Defenses can always be overwhelmed in theory and were, therefore, essentially irrelevant to deterrence. By this line of reasoning, the only hope to deter attacks on our cities, it was argued, was our power to destroy theirs. Therefore, it is held that U.S. security required an arms control accord strictly limiting ABMs in order to keep the respective populations of our countries hostage to each other's nuclear weapons.[*]

(U) In adhering to a policy of assured destruction, we expected the amount of money spent on strategic defense against missiles and bombers to be small relative to the total spent on strategic forces or the defense budget as a whole. Our past strategic spending reflects this trend, but Soviet spending does not (Fig. 6).

*(S)

(SECRET/NOFORN).

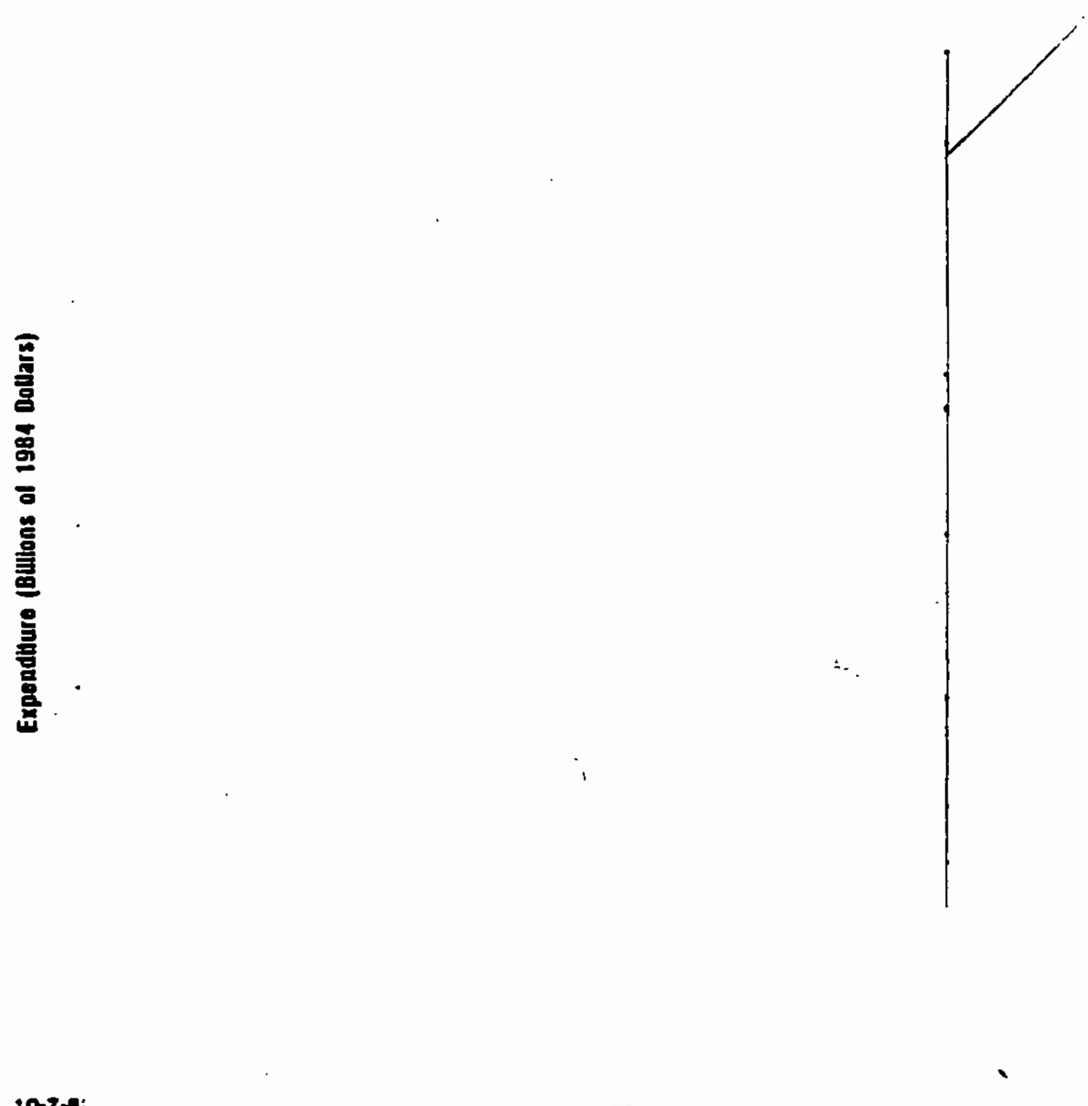

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FIGURE 6. (U) U.S. AND SOVIET STRATEGIC SPENDING IN BILLIONS OF 1984 DOLLARS

(U.S. FY 1984 TOA Dollars, Soviet CY 1984 Estimated Outlays)

(U) During the 1970s, the United States spent less than 2 percent of its total defense budget and less than 10 percent of its total strategic budget on strategic defense. The Soviet Union, in contrast, spent more on strategic defense than the United States did on strategic offense and defense combined. Cumulative Soviet spending on strategic defense was almost six times that of the United States; cumulative Soviet spending on offense and defense was more than half a trillion dollars and more than three times that of the United States; and the cumulative Soviet total defense budget exceeded that of the United States by more than half a trillion dollars. If the Soviets continue at this pace, they will outspend the United States on strategic defense at the rate of more than the total U.S. defense budget every 10 years, and the trends are projected to get worse (Figs. 7, 8).

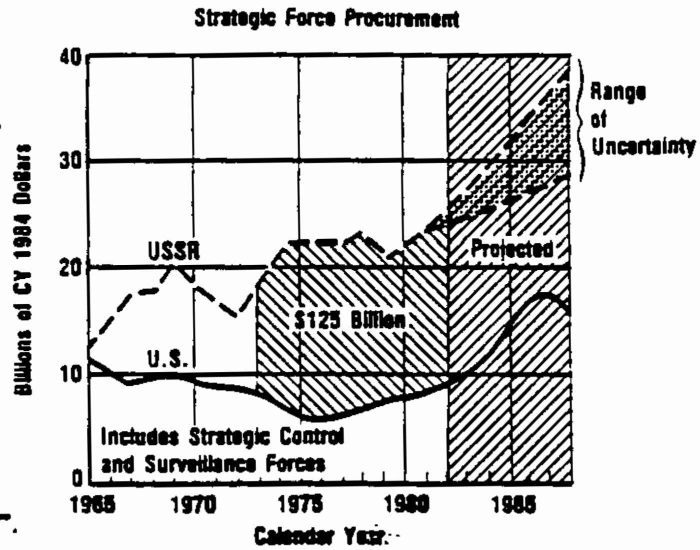
(U) These comparisons are not meant to suggest that the United States ought to compete with the Soviet Union by outspending it. On the contrary, we need not and should not. What this discussion and the appended charts are meant to show is that if the defense budget is an accurate reflection of Soviet strategic policy, the Soviets clearly do not adhere to mutual assured destruction (MAD). Should the United States then be undefended against nuclear attack? Spending trends indicate that the Soviets believe in the utility of strategic defenses and suggest that the United States must reconsider their viability as well. The cost of doing so is not exorbitant.

B. THE COST OF U.S. STRATEGIC DEFENSES

(U) A multitier, low-leakage BMD system will cost some billions of dollars per year. However, future costs are very uncertain because much of the required technology is well beyond the current state of the art and because the types and quantities of elements that would make up such a system are

Offense

U.S.	Soviets
MX	SS-17 Mod
B-1B	SS-18 Mod
ATB	SS-19 Mod
Cruise Missiles	New Solid
Trident	Blackjack Bomber
	Cruise Missiles
	Typhoon



Defense

U.S.	Soviets
AWACS/F-15	ABM-1C
P-MALS	SH-8
	SA-10
	SA-X-12 (ATBM)
	ASAT
	Peripheral Radar Enhancement
	Passive Programs
	Low Altitude Air Defense Interceptors
	SUAWACS

Other

U.S.	Soviets
Directed Energy Programs	Space Boosters
	Directed Energy Programs

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FIGURE 7. (U) STRATEGIC MOMENTUM COMPARISON

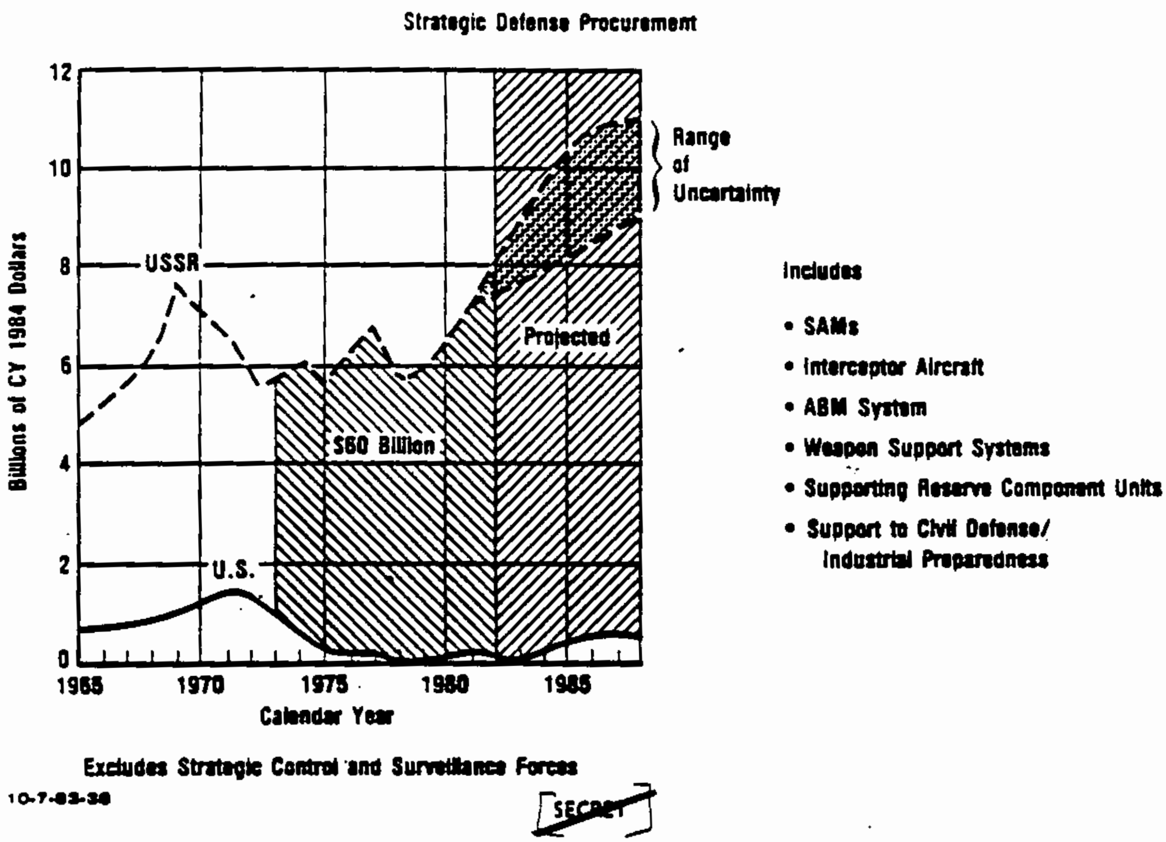

FIGURE 8. (U) STRATEGIC DEFENSE COST COMPARISON

very speculative at this time. However, based upon some alternative BMD systems that have been postulated, the acquisition cost of a multitier, low-leakage BMD system would probably be several hundred billions of dollars (today's dollars). "Ballpark" estimates indicate an acquisition cost of $200-600 billion, distributed over at least 12 years.

(~~S~~) These estimates are very uncertain. The lower end of the range is optimistic and would probably require a technological "breakthrough." Some of the factors that greatly affect cost are the types of defensive systems employed, the threats assumed, targets defended, leakage accepted, and self-defense capabilities of space segments. Operation and support costs are also very uncertain and are driven largely by the system's orbital life.

(~~C~~) Although the cost of a BMD system would be unprecedented, the total costs would be spread over a number of years and would probably not consume an indefensible share of the defense budget in any one year. To illustrate this point, Fig. 9 compares possible funding profiles for $400 billion and $600 billion acquisition programs (R&D and Investment exclusive of a "Technology Program") with the total defense budget projected at a 3 percent annual growth rate. The peak funding in FY 2000 is 9-18 percent of the total defense budget in FY 2000, depending on whether the cost is $400 or $600 billion and on which 3 percent growth curve is assumed.

(~~C~~) Even if the strategic programs other than BMD were continued at the average $27 billion per year projected for the next five years, the total strategic program, including BMD in FY 2000, would be 15-24 percent of the total defense budget. While this is a higher percentage of the defense budget than the 8-10 percent projected for the next five years, it is less than the spending for the strategic program for the years from

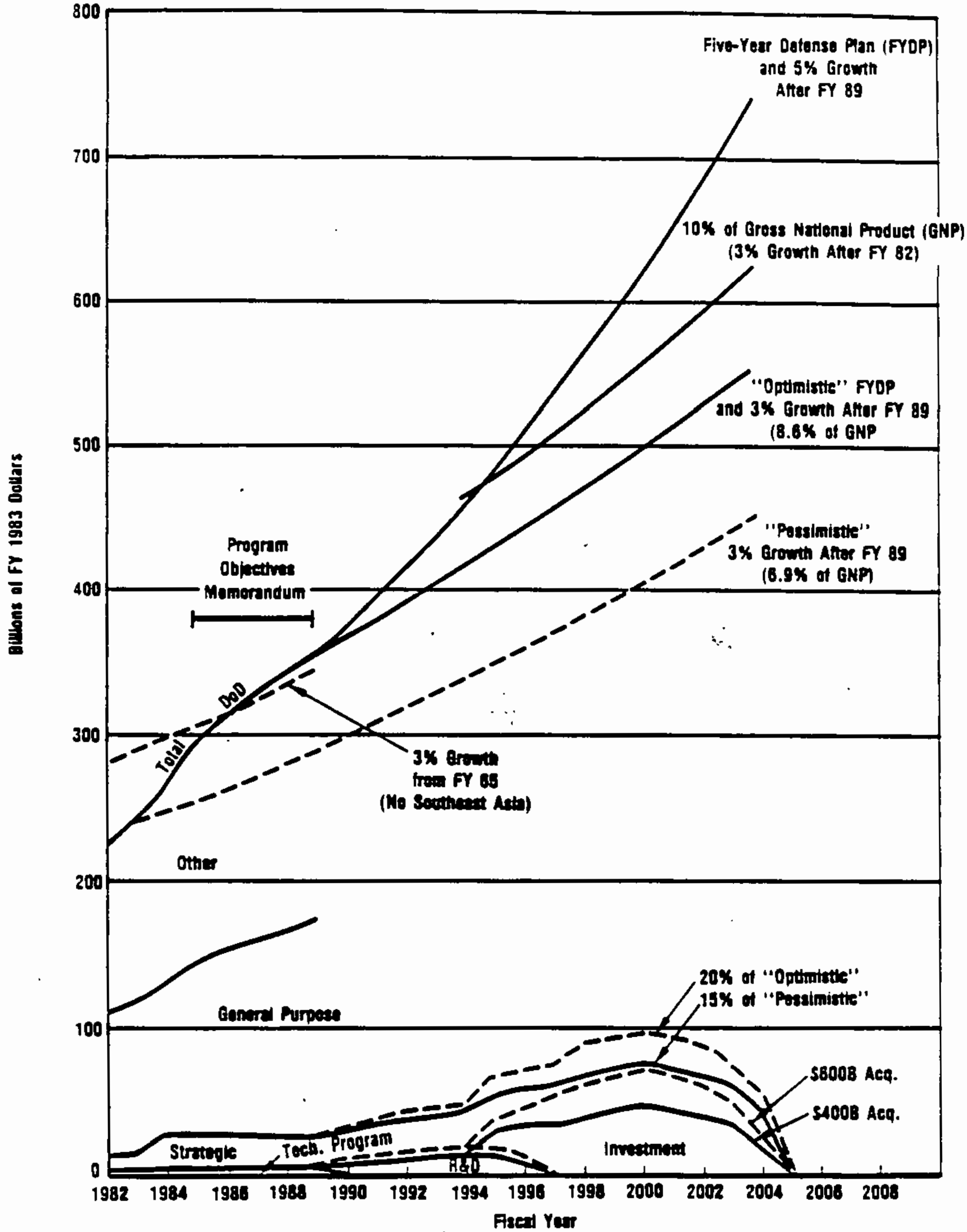

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FIGURE 9. (U) POSSIBLE FUNDING PROFILES, $400 BILLION AND $600 BILLION ACQUISITION PROGRAMS

FY 1957 to FY 1961, which was 25-27 percent of the defense budget.

X. CONCLUSIONS

A. THE ROLE OF DEFENSIVE SYSTEMS IN NATIONAL SECURITY STRATEGY

1. (U) U.S. national security requires active pursuit of technological opportunities for advanced ballistic missile defense systems. If continued advances in technology offer the future option of highly effective defenses against ballistic missiles, a prudent national security posture requires that the United States be prepared to deploy them. Such defenses could:

- Continue movement toward a safer and more humane deterrent strategy than one based solely on the threat of massive and indiscriminate destruction in retaliation for aggression.

- Counter the erosion, over time, of the existing, purely offensively oriented policy of deterrence as a basis for our mutual security strategy, in the face of the changes that have occurred in the strategic balance since the 1960s.

- Serve as a hedge against the possibility of Soviet deployment of highly effective BMD systems in the future.

2. (C) It is essential to understand the relevance and utility of intermediate defense systems. The achievement of President Reagan's ultimate objective of a defense that could intercept and destroy all ballistic missiles lies in the distant

future, and it depends on the resolution of technical and strategic uncertainties. Intermediate defenses:

- May be the result of partial success in meeting the technological objectives of our long-range R&D program or a consequence of powerful Soviet responses. Without an appreciation of the utility of defenses of intermediate capability, the long-range R&D program will appear to be a very expensive and highly risky gamble.

- Can be technically available earlier than the ultimate defense. Since we have urgent needs to strengthen our posture and stabilize the strategic balance before the end of the century, possible contributions from intermediate systems can be important.

- Would provide an additional element of response to possible Soviet withdrawal from the ABM Treaty and deployment of a widespread ABM system; such a capability can thereby reduce Soviet incentives to engage in such an act.

3. (U) <u>Our analysis suggests that intermediate defense systems can make important contributions to several national security objectives</u>.

- They can strengthen the stability of deterrence by denying the achievement of Soviet military objectives at various levels of conflict. Even relatively modest levels of defense capability, as compared to those required for high levels of population protection, can be highly effective in denying a Soviet planner confidence in the achievement of his attack goals. If those goals require the destruction of hundreds or thousands of military targets, then defenses that cannot be easily suppressed can exert great leverage in terms of offensive forces required to achieve military targeting objectives with high confidence.

- During crisis or conflict, defenses can reduce the attractiveness of strategically decisive, limited attacks on relatively small sets of critically important targets (e.g., C^3I or force projection facilities) by raising the force requirements or denying confidence of success.

- By limiting damage to the West in the event of conflict, defenses can decrease the Soviets' confidence in their ability to control the level of conflict in order to deter us from responding to attacks limited in geography or size.

- Intermediate defense systems can have the effect of adding to the credibility of U.S. threats to use offensive nuclear capabilities in defense of allies. Thus, they could contribute to the endurance of our Alliance commitments.

- In the event that deterrence fails, intermediate defenses can significantly improve the outcome for the West.

(C) The prospective utility of intermediate defenses is sufficient to warrant provision in our long-range R&D program for efforts to provide for such options while moving toward the ultimate objective.

4. (U) The Soviet force structure response to U.S. defense deployments is uncertain and will depend on the Soviets' assessment of their options with regard to a number of choices.

- In the absence of a major change in the Soviets' political objectives and their military strategy, they will continue to set a high priority on the maintenance of a substantial offensive threat against the United States and our allies, as well as on heavy strategic defenses. Whether they will further seek to completely offset the effects of U.S. ballistic missile defense deployments and whether they will do this by increasing their ballistic missile forces, by resorting to technical or tactical countermeasures or by reorienting their forces to emphasize other offensive threats, will depend on the effectiveness and leverage of the U.S. defenses and the cost and effectiveness of the various Soviet options.

- Effective long-term competition in terms of military strength is a necessary condition for a basic change in underlying Soviet political and military objectives. Such a change is unlikely within the foreseeable future. In the absence of such a change, the Soviets are likely to set higher priority on achieving competitive advantage over the West than on the goal of mutual reduction in nuclear threats.

- If Soviet pursuit of unilateral advantage is effectively blocked by Western competition for the foreseeable future, the Soviets might become more willing to reach accommodation for mutual benefits such as reducing the nuclear threat, and they might be more willing to accept a situation in which offensive forces on both sides were restricted and defenses were offered substantial protection from nuclear attack.

B. DEVELOPMENT STRATEGY FOR DEFENSIVE SYSTEMS

1. (~~S~~) Our development strategy should be designed to provide flexible options for deployment of useful intermediate systems as a hedge against technological uncertainties of the full multilayered system and strategic uncertainties during the period before the full capability will be feasible. In many cases such capabilities appear to be useful elements in an eventual full system; what is required is somewhat earlier development funding than would be warranted by a development strategy optimized to achieve no deployment before the availability of the full system. In many cases, moreover, early deployments of elements of a full system could provide operational experience that would result in earlier and perhaps lower-cost development and deployment of the full system.

2. (~~S~~) An ATBM system suitable for deployment in theaters of operation is an intermediate deployment option of particular interest. Elements of technologies that are candidates for an ultimate full ABM system appear to offer, in combination with a Patriot system upgrade, highly capable defenses against the family of tactical ballistic missiles currently being deployed by the Soviet Union. Such missiles are a growing and currently unanswered element of the Soviet threat in nonnuclear and theater nuclear conflict. The development and deployment could be conducted within the constraints of the current ABM Treaty and could provide a means for developing subsystems also applicable to BMD. Parallel development of an ATBM along with an advanced BMD R&D program could help allay concerns that allies were being left vulnerable while the superpowers acquired defenses.

3. (~~S~~) Consideration should be given to a boost-phase intercept system that offers capability at least against Soviet solid- and liquid-fueled ICBMS and expected similar follow-on

systems, if it can be available early and is not excessively vulnerable to attack by the Soviets. Such a system could have merit even if it did not offer high potential effectiveness against responsive Soviet threats such as fast-burn solid-propellant missiles. Proposed systems should be evaluated in terms of the costs they would impose on the Soviets by accelerating the obsolescence of systems that are a major part of their present and projected missile forces, and in terms of the incentives they offer the Soviets to move away from particularly dangerous and destabilizing elements of their forces.

4. (~~S~~) Future deployment of highly effective BMD systems or the increased prospect of such a deployment will probably increase the already substantial Soviet emphasis on the development and deployment of various forms of air-breathing offensive systems, including advanced cruise missiles. Our development programs should assure that the technologies to provide warning and effective defense against such air-breathing threats are being pursued at a pace commensurate with the development of the threat and of our ABM program. The design and costing of air defenses to deter or deny this Soviet option require early definition to support ABM planning and decisions. A policy that gives a major new emphasis to defense also will have to consider passive defense, antisatellite defenses, and ASW.

C. POLICY ISSUES RELATED TO DEFENSIVE SYSTEM CHARACTERISTICS

1. (~~C~~) Crisis stability is a major concern in the design of our present and future strategic posture. On balance, we have found no reason to believe that defenses that are not themselves vulnerable to attack will necessarily increase crisis instability. It has been argued that heavy, or low-leakage, defenses might be taken as preparation for a first strike. If such defenses are deployed only by the United

States, they might appear to create dominance and obviate the pressures for such a strike. A unilateral Soviet defensive advantage, however, might create severe instabilities. Neither case appears the most likely over the long term. It is more likely that both powers would deploy strategic defenses. If such defenses are two-sided, the uncertainties they introduce for each side should help to deter first strikes. However, crisis instability can arise from the vulnerability of offensive forces. If area defenses are established without substantially reducing the vulnerability of offensive forces, they might increase crisis instability, particularly if the defenses are "brittle" against large attacks. Since boost-phase intercept and early midcourse layers may have this characteristic, this issue should be an element in the criteria for assessing the design of multilayer defensive systems. If, however, reduction in offensive system vulnerability is also a criterion of the defense deployment, there appear to be substantial opportunities for complementarity between defensive systems and other measures to decrease vulnerability and improve crisis stability by the addition of defenses.

2. (~~S~~U) The vulnerability of space-based elements of defensive systems, particularly those in low earth orbits, appears to be a major problem in the design of advanced, multilayer defenses. Since attacks on such elements would produce no collateral damage on earth and might confer great strategic advantage in a crisis, they might constitute tempting targets. Space-based platforms for boost-phase or early midcourse intercepts would also each be capable of destroying many other space platforms, essentially instantaneously if they employed directed-energy weapons. Without an ability to protect space-based platforms or to retaliate in a suitable fashion, a defense system heavily dependent on them would be highly unstable in a crisis, and probably unsuitable for deployment. Without detracting from the seriousness of this problem, it is worth noting

that assessments of future weapons systems almost always oversimplify the operational problems of using them. If the past is a guide, the problem may be less stark than we now conceive it.

(~~S~~) Vulnerability might also present problems during the deployment of such systems. If the Soviets believed such a U.S. deployment would give the United States a substantial strategic advantage, they might attack such systems with an ASAT, or, if they had also begun to deploy, they might attack our systems preemptively during deployment with their space-based intercept systems. The problem of vulnerability is not confined to space-based intercept systems; our other satellites would also be vulnerable to Soviet space-based intercept systems as well as earth-based ASATs. It is essential, therefore, to keep pace with Soviet technology both for attacking and protecting space systems.

3. (~~S~~) Boost-phase intercept systems present other serious policy problems as well. Any boost-phase intercept system will require near-instantaneous response to be effective. Predelegation of authority to employ the system--in effect to a computer--involves a radical change in U.S. policy. This raises a particularly sensitive issue if the BPI involves a nuclear device like Excalibur that orbits over the Soviet Union and could be fired over Soviet territory as a result of a false alarm. In a climate of opinion like the present one, it is doubtful that the United States would deploy such a system. The defense development program should carefully assess alternatives that do not depend on boost-phase systems. If such assessments reveal that defense effectiveness depends critically and uniquely on boost-phase systems and on X-ray lasers in particular, consideration should be given to development without deployment, but with preparation for a relatively fast deployment in the event of

a significant deterioration in the climate of international relations to keep pace with Soviet readiness to deploy a similar system. If the use of such systems for early midcourse intercept offers significant capability while relaxing the requirements for predelegation, for peacetime orbiting of nuclear explosives, and for firing over the Soviet Union, consideration should be given to avoiding boost-phase intercept in favor of such a system.

4. (~~S~~) Arms race stability is also a major concern in the design of our present and future strategic posture. It is not apparent that a U.S. BMD program will undermine arms race stability; indeed, a stronger U.S. program may well be the best means of returning to a more stable situation. Currently, Soviet BMD-related efforts threaten the viability of the ABM Treaty; a vigorous U.S. BMD program could deter the Soviets from abrogating it. It is partially the current Soviet programs in BMD and the Soviet offensive buildup that are leading the United States to consider the viability of strategic defense. To restore arms race stability, it is necessary for the United States to substantially increase the priority and funding of BMD research and development.

D. OTHER POLICY ISSUES RELATED TO IMPLEMENTATION OF THE PRESIDENT'S INITIATIVE

1. (~~S~~) No significant BMD capability can be deployed without major modification to or withdrawal from the ABM Treaty. (As already indicated, an ATBM program can be deployed within treaty constraints.) It may be possible to proceed with BMD research and development programs over the next several years within the legal constraints of the treaty. Nevertheless, a large, expensive, and visible development program to pursue the President's initiative is likely to raise questions about U.S. intent concerning the treaty. Preparation to respond to such

questions should indicate that a range of alternatives is under consideration for future action--possible modifications or withdrawal--and should make the point that such alternatives will not have to be acted upon until the technology programs have advanced considerably and more is known about the future strategic situation. Some possible systems components (e.g., Excalibur) would raise issues related to the Treaty on Outer Space and the Threshold Test Ban Treaty. R&D planning should clearly identify the point at which treaty issues will arise (e.g., large-yield tests).

(S) Recent Soviet proposals to reopen negotiations on antisatellite arms control also have a bearing on BMD. The United States needs to consider such negotiations cautiously and with the following points in mind: (a) a ban on ASAT weapons could preclude boost-phase defense components, as many of the boost-phase intercept concepts being considered have an intrinsic ASAT capability; (b) a U.S. ASAT can be an important deterrent to Soviet deployment of BMD components in space, or a means to counter such deployment (or deployment of space-based BMD defenders).

2. (S) Domestic and foreign support for a new U.S. initiative emphasizing defense will be importantly influenced by perceptions of whether the United States or the Soviet Union is initiating a new round of arms competition. Unless the United States is prepared to publicize Soviet BMD-related activities since the ABM Treaty has been in effect, the onus for threatening the treaty regimes is likely to fall on the United States. If we wait until a new ABM initiative is announced to begin to reveal the extent of Soviet ABM programs, such an effort will appear to be self-serving. If possible, the United States should not be seen as attacking the treaty but defending it. Thus a major thrust of the effort should be to persuade the public that the Soviet Union, not the United

States, has endangered the treaty. In addition, the full extent and intensity of Soviet strategic defense programs must be explained.

3. (S) <u>While the financial costs of a full, multi-layered defense system will be high, the outlays will be spread over years, and the major costs will not commence soon</u>. The major outlays will come at a time when the total defense budget, even at modest rates of growth, will be substantially higher than today. If intermediate deployments are to be made, they will occur sooner but are likely to involve substantially lower costs than the full system. Nevertheless, if such options are to be exercised, they will impose the need to consider trade-offs within the defense budget, particularly in the next several years. This will force tough policy choices, e.g., strategic offense versus strategic defense, strategic forces versus general-purpose forces. As we note above, there also is an important trade-off in the short term between the resources devoted to long-range R&D on systems that might be deployed after the year 2000 and intermediate capabilities that might be deployed sooner.

E. ISSUES FOR FURTHER ANALYSIS TO SUPPORT THE PRESIDENT'S INITIATIVE

1. (S) <u>Net Assessment</u>. A net assessment should be undertaken of U.S. and Soviet BMD technologies to include the more conventional types of ABM that could be deployed in the relative near term, as well as more advanced systems. Part of this study should assess those technologies in the context of various military contingencies.

2. (U) <u>Cost-Exchange Ratios</u>. An assessment needs to be undertaken of the relative costs at the margin of various U.S. BMD deployments and Soviet offensive responses. This should

take into account likely Soviet-style responses. One element of such a study should be to explore U.S. "cost-imposing" strategies.

3. (~~C~~) Air Defenses. There is an urgent need for a study of the requirements and costs of air defenses that might be required to accompany a BMD program so as to forestall Soviet use of bombers and cruise missiles to offset a U.S. BMD. Defenses against advanced bombers and cruise missiles (including SLCMs) should be covered. Urgency stems from the need to respond to questions about an attack and defense at the time an ABM program is announced.

4. (~~S~~) Early Boost-Phase. Further study is required of the potential for an early boost-phase missile defense capability that could be effective against current Soviet ICBMs and SLBMs in the 1990s. Such a study should examine the pros and cons of basing in space versus basing on land with the option for subsequent space deployment if political-military conditions were to change.

5. (~~S~~) ASAT and Satellite Vulnerability. There is a need for more detailed technical and policy assessment of the interaction between BMD systems employing boost-phase and midcourse defenses and various ASAT concepts, including a technical assessment of the possibilities for denying such a deployment and for countering such denial capabilities, the implications for stability, and the impact of various arms control arrangements that might affect those capabilities.

6. (~~S~~) Arms Control Measures. Many of the systems being considered for defense against ballistic missiles involve deployment of weapons in space (which the Soviets have proposed banning), at least one of the systems (the Excalibur concept) is contrary to the treaty banning nuclear weapons in space, and

all of the systems except ATBM are contrary to the existing ABM Treaty. Therefore, even the discussion of these measures will raise questions concerning our intentions about the current structure of arms control agreements. In order to reply to these questions in an aggressive way, and to avoid conceding the arms control initiative and the political advantages accruing to the Soviets from that, we should undertake a serious study of a system of arms control accords which would meet the following criteria:

- Benefit us in the strategic balance
- Make war less likely
- Be consistent with greater emphasis on defense (and thus reduce the destructiveness of war if it should occur)
- Be verifiable
- Avoid potential for breakout
- Provide incentives for the Soviets to agree.

(~~S~~) The relation between our desired arms control structure and our posture decisions should be worked out in such a way that the Soviets will be worse off if they do not agree than if they agree. The <u>anticipation</u> of an arms control agreement should never be an excuse for "going slow" on a program, for that tactic concedes the benefits of an agreement to the Soviets without our obtaining any concessions in return.

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BALLISTIC MISSILE DEFENSES AND U.S. NATIONAL SECURITY (U)

Volume II
APPENDIXES (U)

Fred S. Hoffman, *Study Director*

October 1983

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destructiveness of conflict if it occurs (particularly in reducing incentives to use nuclear weapons), and improving the outcome for the United States and its allies, (5) tests the sensitivity of assessments to variations in the effectiveness of defensive systems and the size and sophistication of the threat, and (6) identifies key issues and required actions under a policy of increasing emphasis on defensive systems in our national security, including alternative objectives for such systems, force structure trade-offs, issues in relations with our allies, and issues in relations with our adversaries including arms negotiations.

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FUTURE SECURITY STRATEGY STUDY

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(U) This report is a summary of work performed by a Study Team whose members were: Mr. Fred S. Hoffman, Director; Mr. Leon Sloss, Deputy Director; Mr. Fritz Ermarth; Mr. Craig Hartsell; Mr. Frank Hoeber; Dr. Marvin King; Mr. Paul Kozemchak; Lt. Gen. C.J. LeVan, USA (Ret.); Dr. James J. Martin; Mr. Marc Millot; Mr. Lawrence O'Neill; and Dr. Harry Sauerwein. The work of the Study Team has been reviewed by a Senior Policy Review Group consisting of Professor John Deutch; Dr. Charles Herzfeld; Mr. Andrew W. Marshall; Dr. Michael May; Professor Henry S. Rowen; General John Vogt, USAF (Ret.); Ambassador Seymour Weiss; Mr. Albert Wohlstetter; and Mr. James Woolsey. Supporting papers have been contributed by Mr. Craig Hartsell, Dr. James J. Martin, Mr. John Baker, Lt. Gen. C.J. LeVan, Mr. Douglas Hart, Mr. Marc Millot, Dr. David S. Yost, Mr. Leon Sloss, and Mr. Frank Hoeber.

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(U) Responsibility for the views expressed herein rests with the Study Team.

PREFACE

(U) President Reagan has directed an "effort to define a long-term research and development program...to achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles...." The President noted that the achievement of the ultimate goal was a "formidable technical task" that would probably take decades, and that "as we proceed we must remain constant in preserving the nuclear deterrent...maintaining a solid capability for flexible response...pursue real reductions in nuclear arms...(and) reduce the risk of a conventional military conflict escalating to nuclear war by improving our nonnuclear capabilities."

(U) Two studies assisted in that effort: (1) the Defensive Technologies Study (DTS) to review the technologies relevant to defenses against ballistic missiles and recommend a specific set of long-term programs to make the necessary technological advances, and (2) the Future Security Strategy Study (FSSS) to assess the role of defensive systems in our future security strategy. The implications for defense policy, strategy, and arms control were addressed by two FSSS teams: an interagency team led by Mr. Franklin C. Miller, and a team of outside experts led by Mr. Fred S. Hoffman. This is a report on the results of the work of the team of outside experts. The work was done under the auspices of the Institute for Defense Analyses at the request of the Office of the Under Secretary of Defense for Policy to assist the interagency team.

(U) This report and its conclusions do not necessarily represent the views of the Department of Defense or the Institute for Defense Analyses.

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GLOSSARY

ABM	Antiballistic Missile
ACE	Allied Command Europe
ALCM	Air-Launched Cruise Missile
AOA	Airborne Optical Adjunct
AOS	Airborne Optical System
ARD	Arbeitsgemeinschaft der Oeffentrechtlichen Rundfunkanstalten der Bundesrepublik Deutschland
ASAT	Antisatellite
ASW	Antisubmarine Warfare
ATBM	Anti-Tactical Ballistic Missile (same as ATM)
ATM	Anti-Tactical Missile
BMD	Ballistic Missile Defense
BPI	Boost-Phase Intercept
C^3	Command, Control, and Communications
C^3I	Command, Control, Communications, and Intelligence
CDU	Christlich-Demokratische Union
CENTCOM	Central Command
CONUS	Continental United States
CSU	Christlich-Soziale Union
CVBG	Aircraft Carrier Battle Group
DEW	Directed-Energy Weapon
DOD	Department of Defense
DPA	Deutsche Presse-Agentur
DSAT	Defensive Satellite
EASTPAC	Eastern Pacific
ECM	Electronic Countermeasures
ELV	Expendable Launch Vehicle
FAZ	Frankfurter Allgemeine Zeitung
FBIS	Foreign Broadcast Information Service
FDP	Freie Demokratische Partei
FEL	Free-Electron Laser
FOC	Final Operational Capability
FSSS	Future Security Strategy Study
FSTS	Future Space Transportation System
GEO	Geosynchronous Earth Orbit
G-I-UK	Greenland-Iceland-United Kingdom
GLCM	Ground-Launched Cruise Missile

HLLV	Heavy-Lift Launch Vehicle
ICBM	Intercontinental Ballistic Missile
IDA	Institute for Defense Analyses
INF	Intermediate Nuclear Forces
IOC	Initial Operational Capability
IR	Infrared
IRBM	Intermediate-Range Ballistic Missile
IR&D	Independent Research and Development
IRM	Intermediate-Range Missile
JPRS	Joint Publications Research Service
LEO	Low Earth Orbit
LOC	Line of Communication
LO^{2}HC	Liquid Oxygen Hazardous Cargo
LRINF	Long-Range Intermediate Nuclear Forces
LTBT	Limited Test Ban Treaty
LV	Launch Vehicle
LWIR	Long-Wavelength Infrared
MAO	Major Attack Option
MC1	First Midcourse Layer
MC2	Second Midcourse Layer
MIRV	Multiple Independently Targetable Reentry Vehicle
M.P.	Member of Parliament
MRBM	Medium-Range Ballistic Missile
MWIR	Medium-Wavelength Infrared
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NCA	National Command Authorities
NNK	Nonnuclear Kill
NPB	Neutral Particle Beam
OMG	Operational Maneuver Group
OTHB	Over-the-Horizon Backscatter Radar
P-2	Pershing II
PACOM	Pacific Command
Penaid	Penetration Aid
POMCUS	Prepositioning of Materiel Configured to Unit Sets
R&D	Research and Development
RISOP	Red Integrated Strategic Offensive Plan
ROK	Republic of Korea
RV	Reentry Vehicle
SAC	Strategic Air Command
SALT	Strategic Arms Limitation Talks
SAM	Surface-to-Air Missile
SDLV	Shuttle-Derivative Launch Vehicle
SEP	Selective Employment Plan

SHAPE	Supreme Headquarters, Allied Powers Europe
SIOP	Single Integrated Operations Plan
SLBM	Submarine-Launched Ballistic Missile
SLCM	Sea-Launched Cruise Missile
SLOC	Sea Lines of Communication
SNA	Soviet Naval Aviation
SPD	Sozialdemokratische Partei Deutschlands
SPS	Satellite Power System
SRB	Solid Rocket Booster
SRBM	Short-Range Ballistic Missile
SSBN	Fleet Ballistic Missile Submarine (Nuclear Powered)
SSM	Surface-to-Surface Missile
SSME	Space Shuttle Main Engine
SSN	Nuclear-Powered Attack Submarine
START	Strategic Arms Reduction Talks
SWIR	Short-Wavelength Infrared
TBM	Tactical Ballistic Missile
TD	Terminal Defense
TLAM	Theater Land Attack Missile
TLAM/N	Theater Land Attack Missile/Nuclear
TNF	Tactical Nuclear Force
TTBT	Threshold Test Ban Treaty
U.S.	United States
USAF	United States Air Force
USN	United States Navy
USSR	Union of Soviet Socialist Republics
UV	Ultraviolet
WESTPAC	Western Pacific
WP	Warsaw Pact
ZDF	Zweites Deutsches Fernsehen

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APPENDIX A

MULTIPLE-LAYER DEFENSES

Craig Hartsell

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APPENDIX A

MULTIPLE-LAYER DEFENSES

Craig Hartsell

A. INTRODUCTION

(U) A multiple-layer defense is one in which an attacking vehicle must pass sequentially through a number of layers of defense intercept attempts, one at a time. The desirable characteristic of such a defense is in terms of the progressive reduction in the penetration probability due to attrition from each layer and the ability to force the attacking vehicle to run a gauntlet of defense layers with different characteristics that stress the attacker in different ways. Additionally, the attacker may find that this "defense in depth" precludes many or most of the normal countermeasure options and tactics that might be used to degrade individual defense layers if they were to operate in a stand-alone manner. It is the purpose of this appendix to highlight how such a defense might operate and the nature of its sensitivities to different potential failure modes, both from the points of view of the defender and of the attacker.

B. A BASIC LEAKTHROUGH MODEL OF A LAYERED DEFENSE

(U) The probability that an attacker can survive an attempt to penetrate a layered defense is as follows:

$$\text{No. of Leakers} = \text{No. of attackers} \times (1-P_k)^{\text{No. of Layers}},$$

where P_k is the probability that an attacker will be destroyed or killed while attempting to penetrate a layer. Note that in this formulation all the layers are presumed to have the same P_k. The term $(1-P_k)$ is the probability that an attacker will survive a defense layer.

(U) As the number of layers is the exponent and $(1-P_k)$ is expected to be much less than one, the number of leakers would be expected to be a small fraction of the number of attackers. If, for example, the P_k for each layer is 0.8, the following table presents the effect of increasing the number of defense layers:

Number of Defense Layers	Number of Leakers per Attacker
1	20.0%
2	6.0%
3	0.8%
4	0.16%

(U) As expected, increasing the number of layers reduces the leakage rate to very small values. For defense of military targets, this severe drop in leakage might deny the attackers goals, as in many cases the number of targets that must be destroyed is large and the targets are normally fungible, so that to leave a few surviving is not to accomplish the job. This is distinct from population centers in which destruction of a small number of targets accomplishes a high fraction of the objective and the centers are normally not considered to be fungible. Thus, while a layered defense can theoretically limit the leakers to a very small fraction, which is perhaps satisfactory for military targets, it has not traditionally been considered satisfactory in the defense of population centers.

(U) It should be observed that for the above equation to be correct, the intercept events--that is, the repeated attempts to kill an incoming target--must be statistically independent. That is, the operation at any layer cannot be dependent on the preceding layer or intercept attempts. This is actually very difficult to insure for any layered defense, especially when common sensor systems are used for more than one layer. Additionally, the above equation assumes that each layer has enough kill capability or missiles to attack each incoming weapon. If this is not true, there will be a number of attackers that cannot be intercepted in a layer, creating an increased leakage rate. The assumption for this part of the analysis is that the defense is operating fully inventoried for the attack.

(U) A more thorough parametric presentation of the argument shown in the above table is given in Fig. A-1. It is seen that the largest reductions in leakage with increasing numbers of layers occur at modest levels of P_k per layer. In the region of interest where P_k is above 0.7, the gains per additional layer are modest. Remember, however, that the goal of this layered defense is to drive the leakage down as close to zero as possible. In this context, more is better. To explore this effect further, Fig. A-2 presents the reduction in leakage relative to a single-layer defense. Here, as discussed above, there is little difference between a three- or four-layered

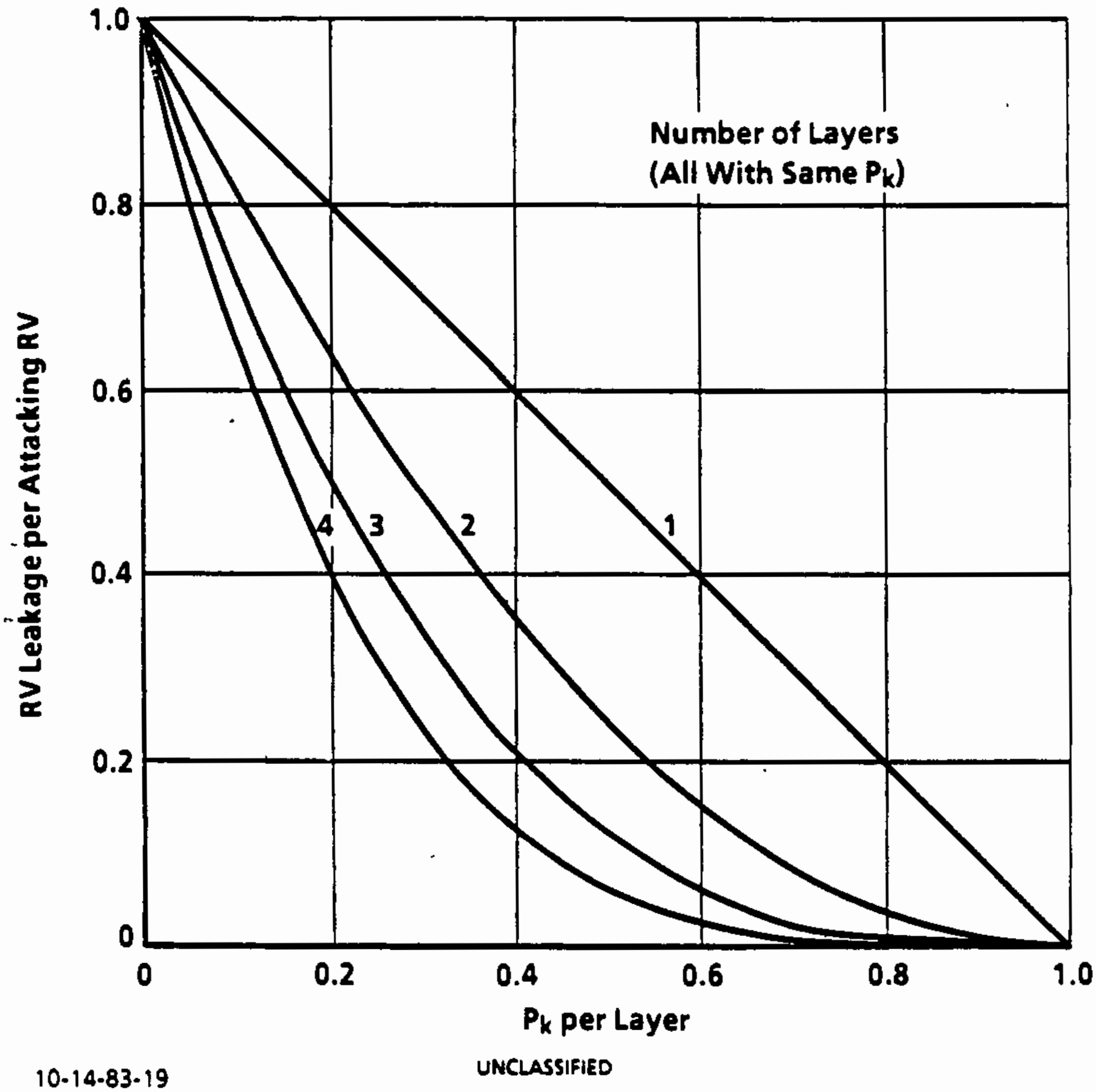

FIGURE A-1. (U) EFFECT OF NUMBER OF LAYERS ON LEAKAGE

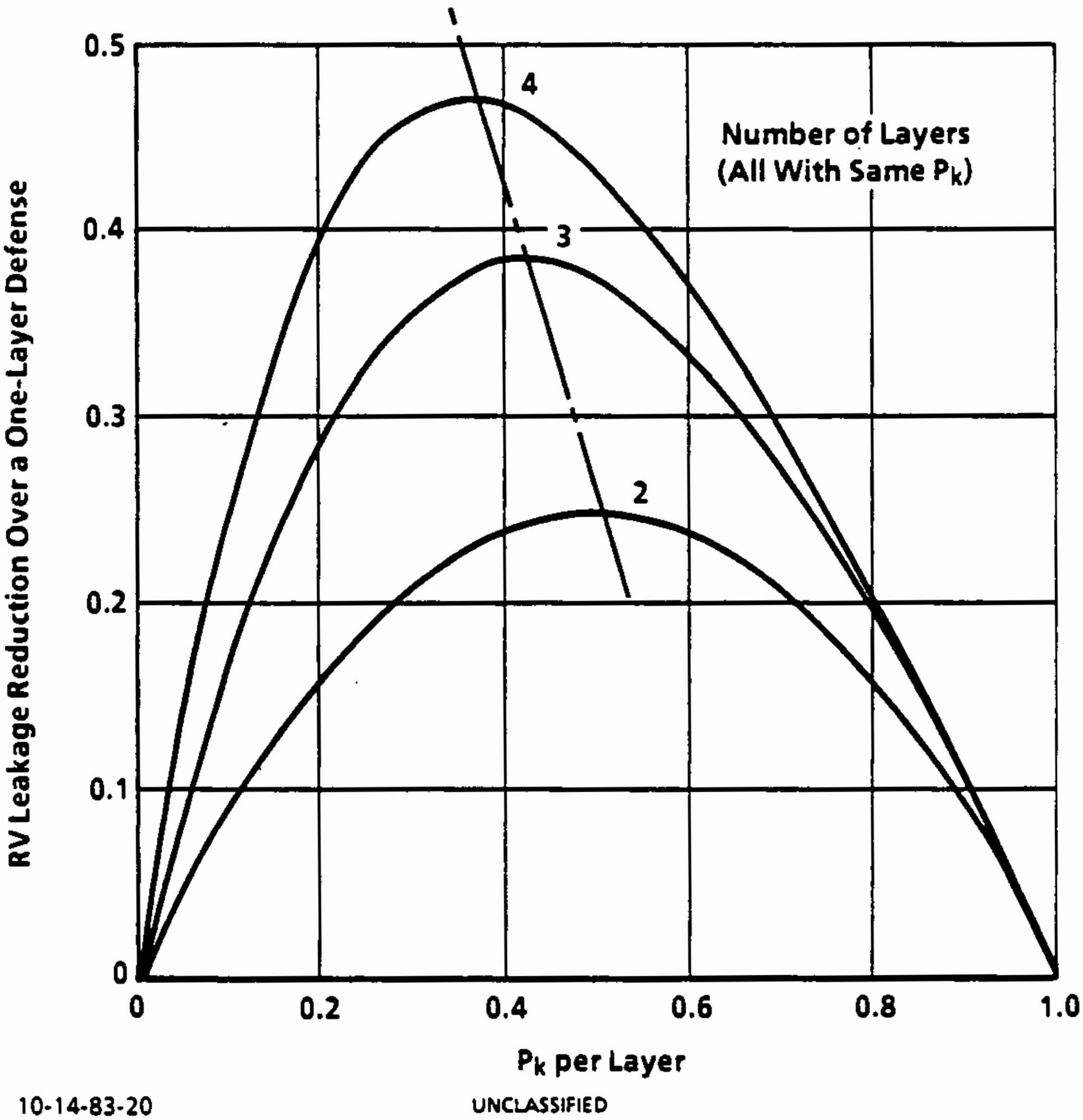

FIGURE A-2. (U) RELATIVE GAIN OVER SINGLE-LAYER DEFENSES defense when the P_k per layer is above 0.8 or so. That is, it is the very high P_k that is controlling the answer--not the number of layers. The larger number of layers is desired to assist when the individual P_k per layer cannot be adequately increased, where such increases are fragile, or where there are limitations on the number of interceptors.

(U) Setting a goal of percentage leakthrough values, Fig. A-3 presents the layer P_k required. For the lower leakages values, large increases in the number of layers have only a modest effect in reducing the required layer P_k. For cases where relatively high leakage rates can be accepted, increasing the numbers of layers results in sharply lowered requirements of P_k per layer.

(U) Converting to leakage expressed in absolute values, the above sensitivities can be expressed in terms of the attackers' viewpoint. At a leakage of 100 reentry vehicles (RVs), a very satisfactory result for most military target structures, Fig. A-4 indicates the very great attack size increases needed to cope with modest uncertainties in defense performance. In this instance, for a four-layer defense an attacker with 5,000 RVs, wishing to shield the results from a 10 percent uncertainty in layer P_k, would need to increase his force to over 10,000 RVs. Alternatively, if, by depending on attacks on the defense, a layer could be negated, then with the original attack of 5,000 RVs he could shield the results from such an error by increasing the attack to over 12,000 RVs. If the defense is designed to allow these small numbers of leakers, increases in the attack size are an almost futile response to the defense. Elimination of a single layer (going from 4 to 3) would modestly increase the number of leakers. The insensitivity of defenses of this caliber to loss of a single layer or to attack size increases is reflected in the above figures and

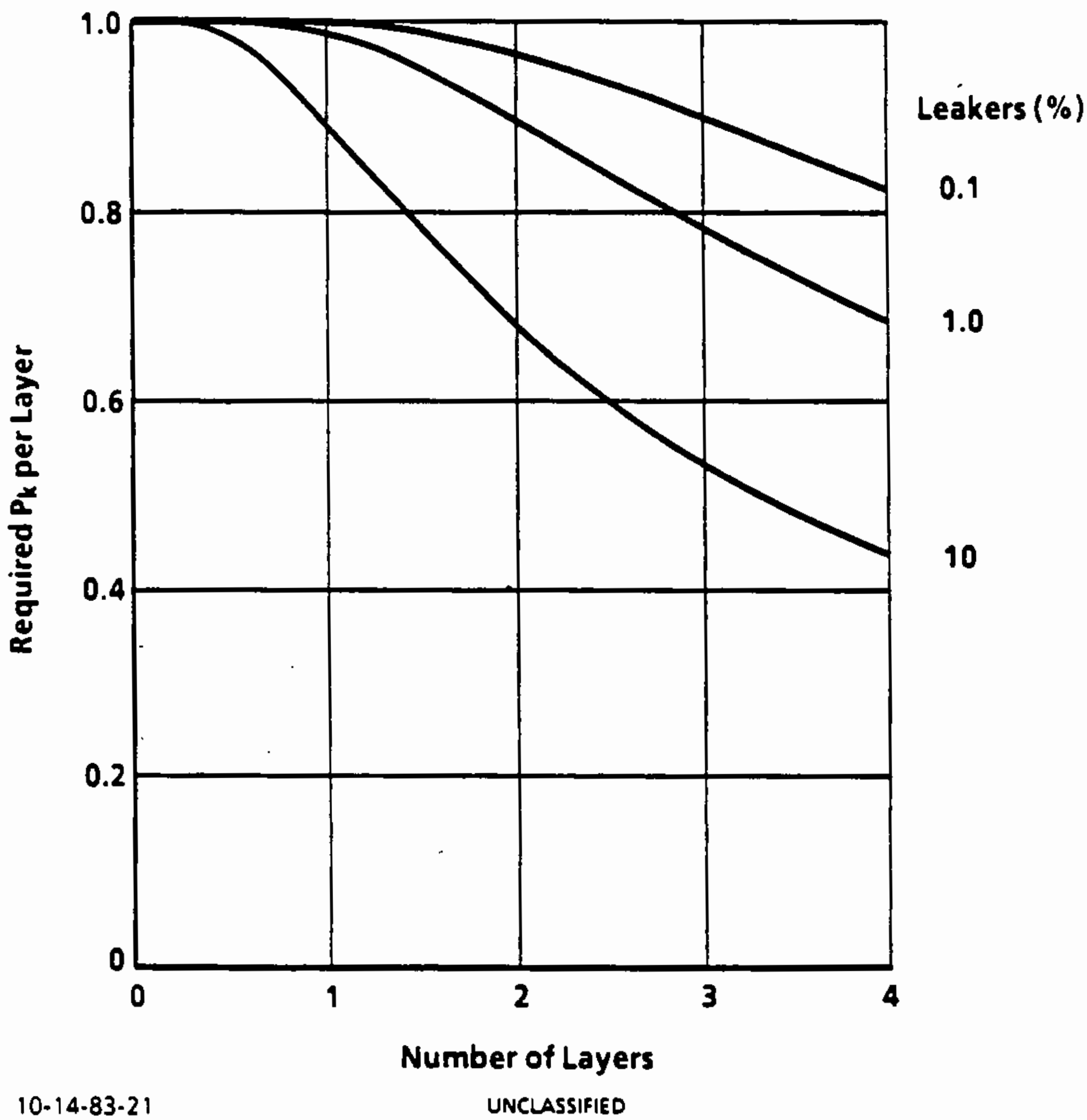

FIGURE A-3. (U) P_k PER LAYER TO OBTAIN A SELECTED LEAKAGE

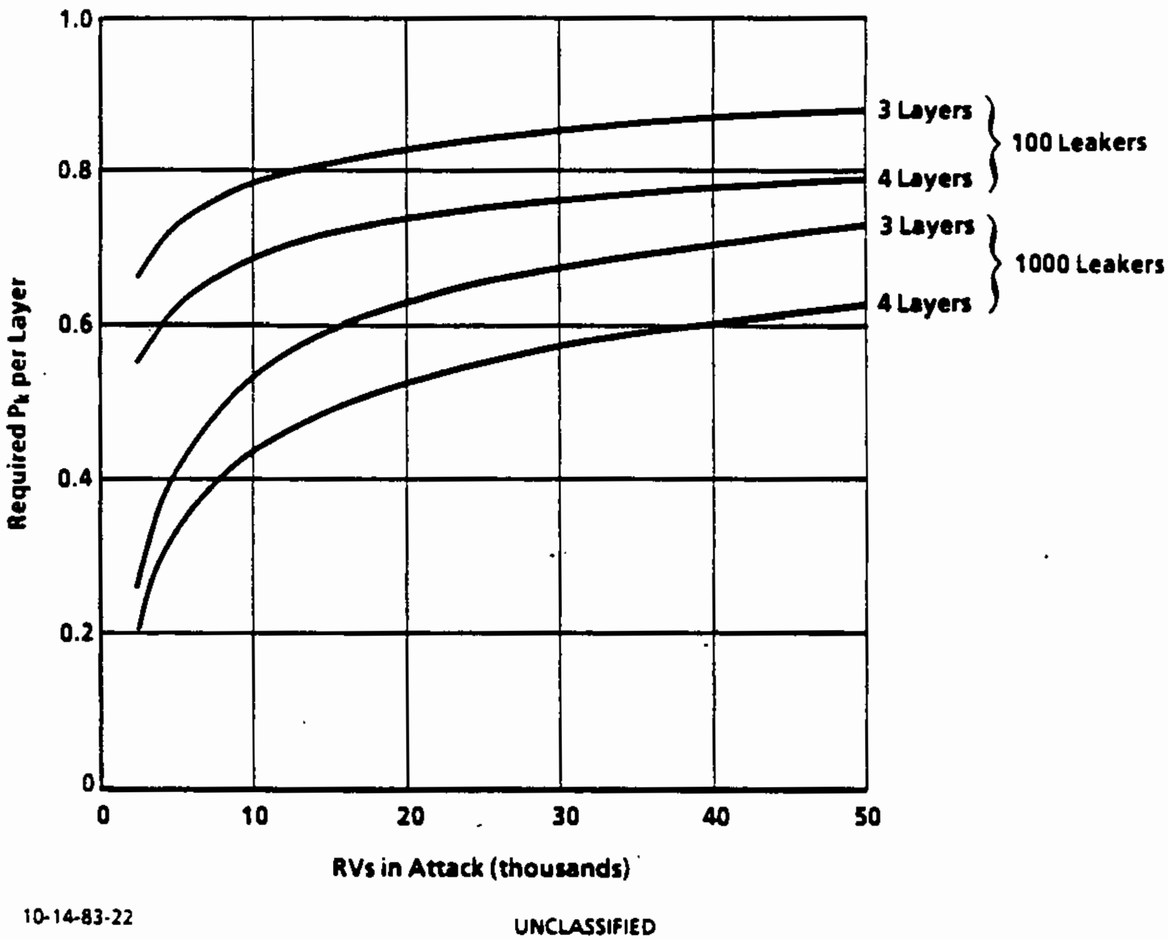

FIGURE A-4. (U) EFFECT OF LOSING A LAYER ON THE P_k REQUIREMENTS is a natural result of a multilayer defense where relatively high single-layer P_Ks are presumed.

C. EFFECT ON THE NUMBER OF DEFENSE MISSILES REQUIRED

(U) The multilayer defense systems discussed above have been presumed to have, at all times, the correct number of defense missiles deployed for each layer (except the boost-phase layer, which does not employ missiles). As an example, a four-layer defense system wherein all layers have the same P_K is shown in Fig. A-5. The defense missiles required, for each layer and cumulatively, are shown. For any situation, the first mid-course defense layer (MC1) has the largest number of missiles required, and each succeeding layer requires smaller and smaller numbers of defense missiles. As the figure is in terms of defense missiles per threat RV, it can be seen that cumulatively fewer defense missiles are required per attacker as the layer P_K is increased. For P_Ks above about 0.8, only about a quarter as many defense missiles are required as RVs. This is obviously the result of the boost-phase layer where missiles are attacked rather than RVs. Finally, in this circumstance, the number of second midcourse (MC2) and terminal defense (TD) missiles is vanishingly small. All of these effects are, of course, exceedingly favorable for the defense.

(U) For the above case, but where the boost-phase defense layer does not exist or does not attrite the attackers, the demand for defense missiles is quite different, as shown in Fig. A-6. Now, one MC1 missile is required for every attacking RV, and the following layers also require increased numbers of missiles. The requirement of one MC1 missile per RV does not change with P_K variations. However, the requirement for the other missiles (MC2 and TD) still falls sharply as layer P_Ks are increased. In the region where P_Ks are above 0.8, the number of MC2 plus TD missiles is quite small, and the main

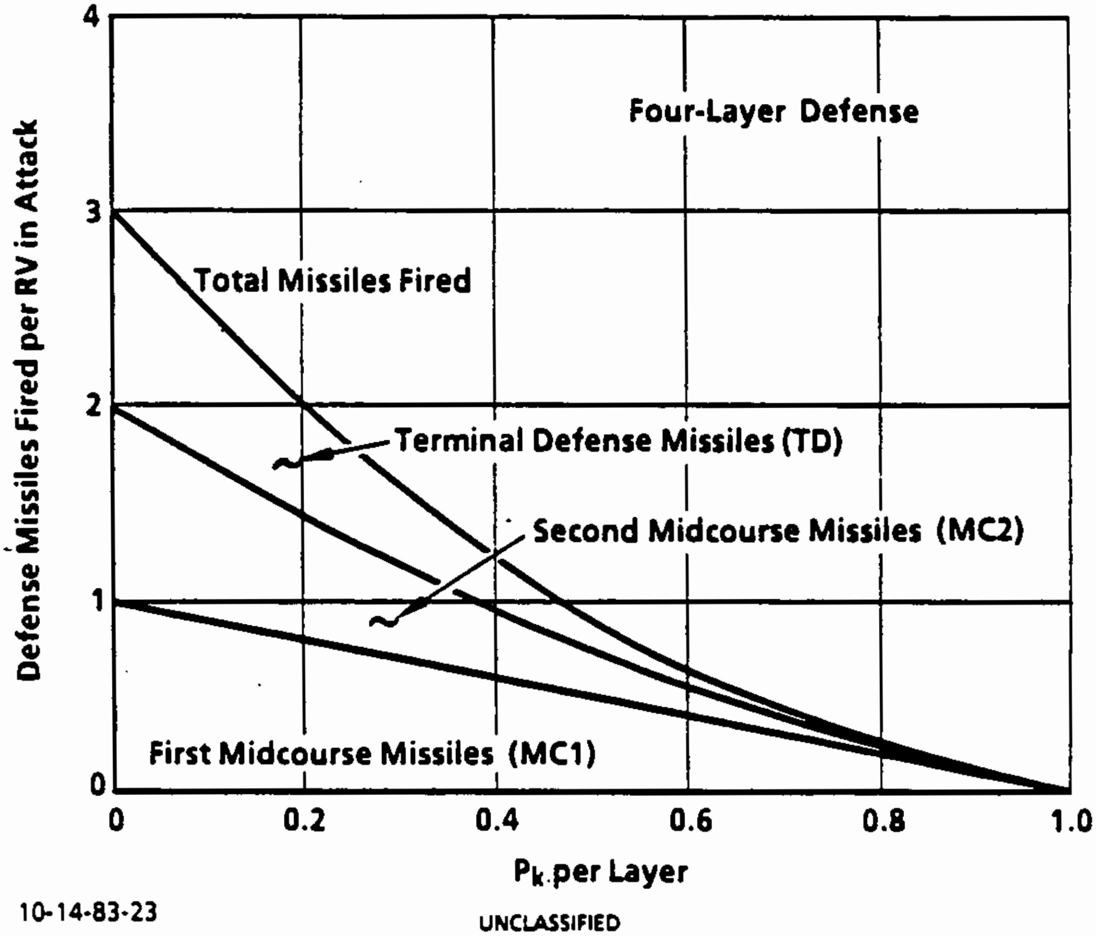

FIGURE A-5. (U) EFFECT OF LAYER P_k ON THE MISSILES REQUIRED

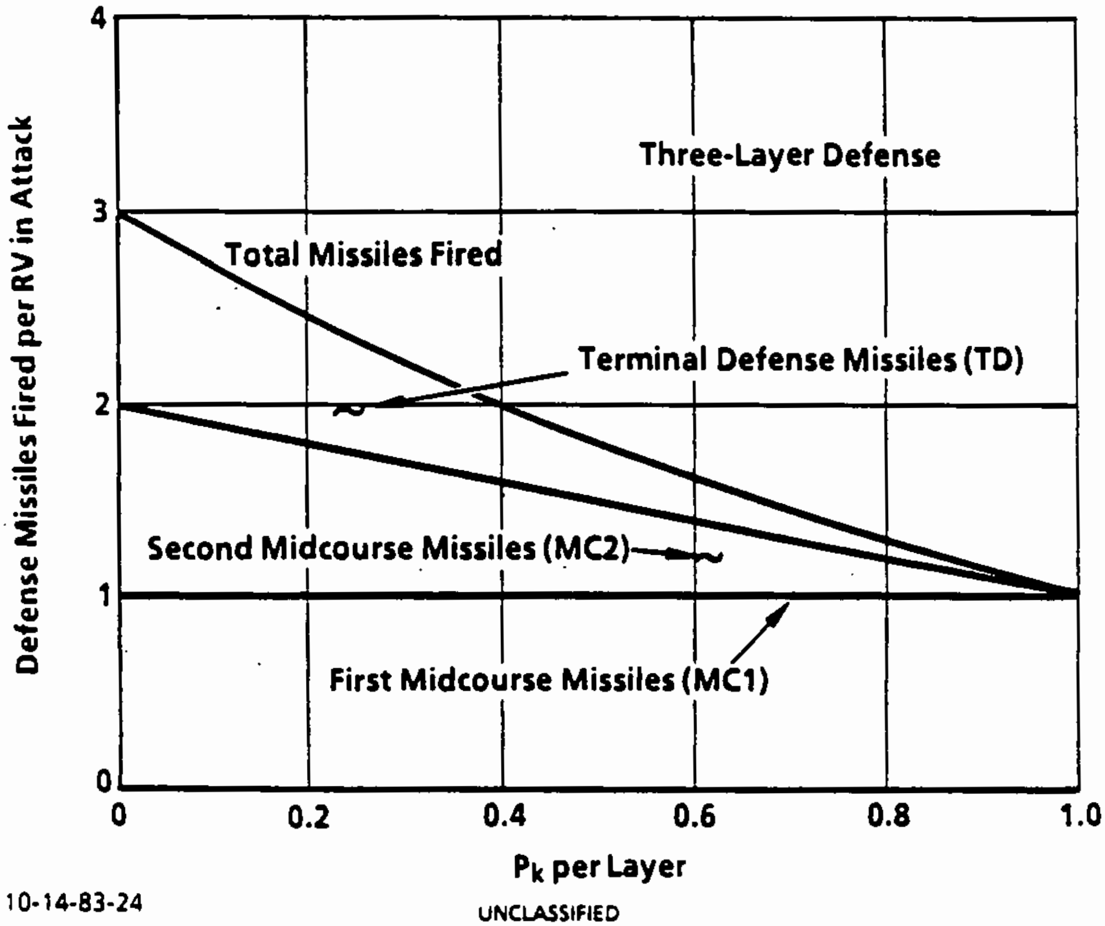

FIGURE A-6. (U) EFFECT OF THE LOSS OF THE BOOST-PHASE LAYER ON MISSILES REQUIRED burden falls on the first midcourse defenses. Thus, the loss of the boost-phase layer loads the first midcourse layer, both in terms of missiles consumed and, as will be discussed later, in terms of discrimination problems.

(U) As discussed above, the missile requirements are sensitive to the performance of the boost-phase layer. With the three lower layers at a P_k of 0.8, Fig. A-7 presents the sensitivity to the boost-phase layer P_k. Only a low boost-phase P_k performance (a P_k of less than 0.3) is required to hold the cumulative number of defense missiles fired per RV to less than one. For a boost-phase P_k of the same as the other layers (0.8) brings down the number of missiles per RV to almost 0.2.

D. EFFECT OF EXCHANGING RVs FOR DECOYS

(U) The classical argument against all forms of exoatmospheric intercept systems, such as the MC1 and MC2 layers, is that the attacker will load out his boosters with large numbers of lightweight but credible objects that must be intercepted. The defense will be unable to inventory so as to be able to attack each object, and unacceptable numbers of RVs will thus be allowed to get through and vitiate the defense effectiveness. The defenders usually argue that they will be able to discriminate and prevent this occurrence. The factual elements of decoys and discrimination tend to get lost somewhere between the underlying physical laws, the difficulty of the offense in building and deploying decoys that are provably perfect, and the defense requirements as a function of the mission; i.e., defense of military targets versus defense of population centers.

(U) The present defense construct is sufficiently different from that discussed in the past that a sensitivity analysis will be used to indicate the basic nature of the debate and what some of the offense and defense difficulties might be. It

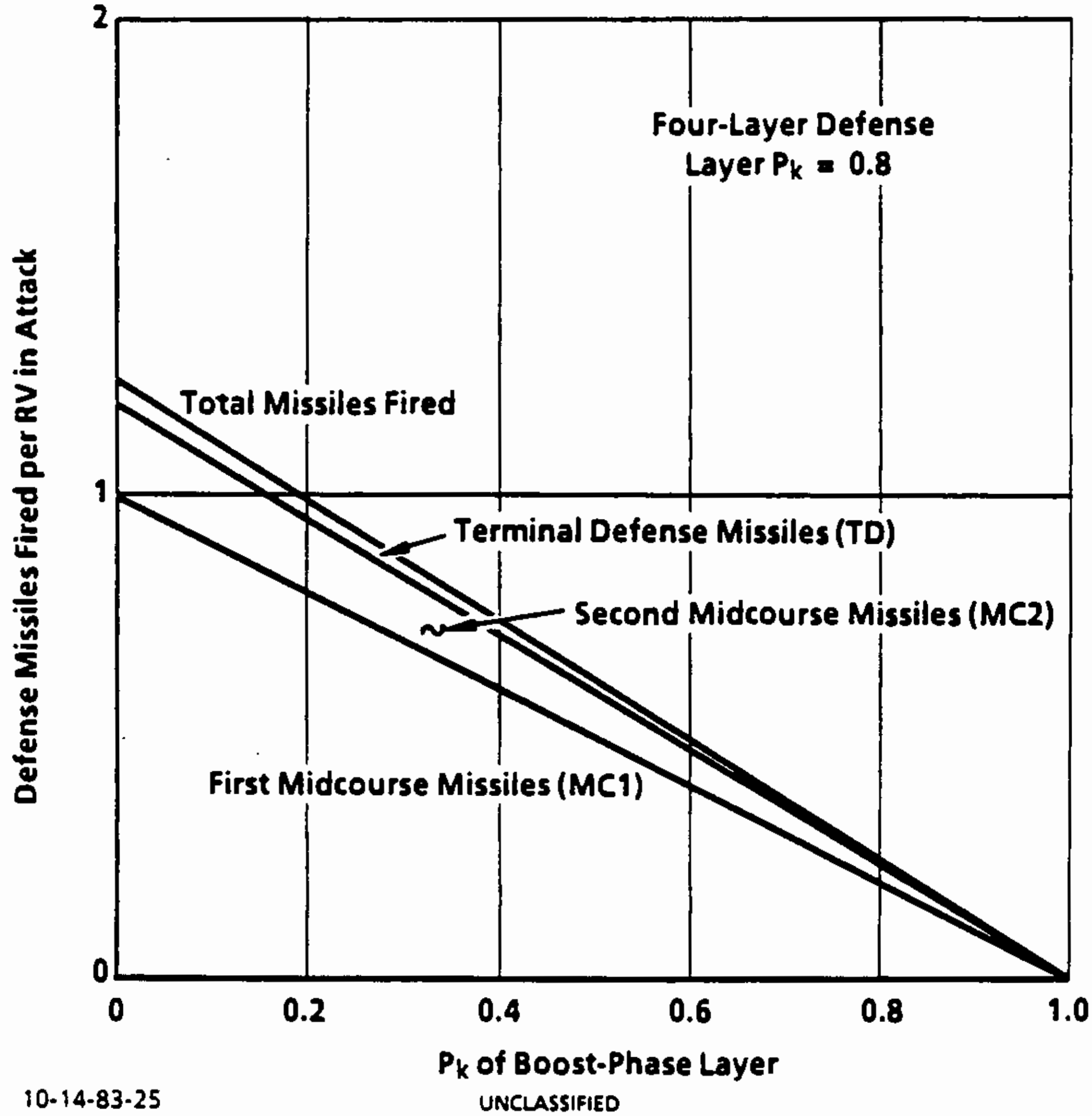

FIGURE A-7. (U) EFFECT OF THE BOOST-PHASE LAYER P_k ON MISSILES REQUIRED is presumed that addition of defense missiles is possible and practical so that the defense is not faced with fixed forces and an infinite attack. The issue of affordability of defense missiles is indeed a central issue, especially for the MC1 missiles as shown previously, and efforts are under way to lower the incremental cost of deploying such missiles. The reality of defining the lightest fully credible exoatmospheric decoy will be avoided, and a decoy will be described in terms of a percentage of the RV weight. Additionally, the effect of such a numerical selection will be varied around a judgment call that a 10 percent decoy might be fully credible and demand an intercept attempt by MC1 and or MC2. On the other hand, it is assumed that a direct hit will remove the object from attack by a succeeding layer. Finally, the terminal defense operating within the atmosphere is not required to intercept any of the exoatmospheric decoys, only the RVs. This, in effect, says that there are no credible endoatmospheric decoys in the exoatmosphere decoy threat that get through the outer layers, and the defense has a perfect "trash" filter for all but RVs.

(U) For a selected attack size (1,000 boosters), the attacking boosters can carry up to 5 RVs each or 5000 RVs total. The attacker is allowed to replace the RVs with decoys. The attack could then vary from 1 RV plus decoys up to 5 RVs and no decoys per booster. The defense in the face of this offense flexibility will have to decide on where to inventory the system. Both parties correctly determine that the decoys selected will indeed draw a defense missile. For the initial calculation, the defense presumes that on the average there will be 3 RVs per booster and that 2 RVs will be replaced with 10 percent decoys. Additionally, the defense and the offense both assume that a four-layer $P_k = 0.8$ system will be fielded.

(U) The effect of changes in the attack loadout is shown in Fig. A-8, which presents the attained leakage versus the

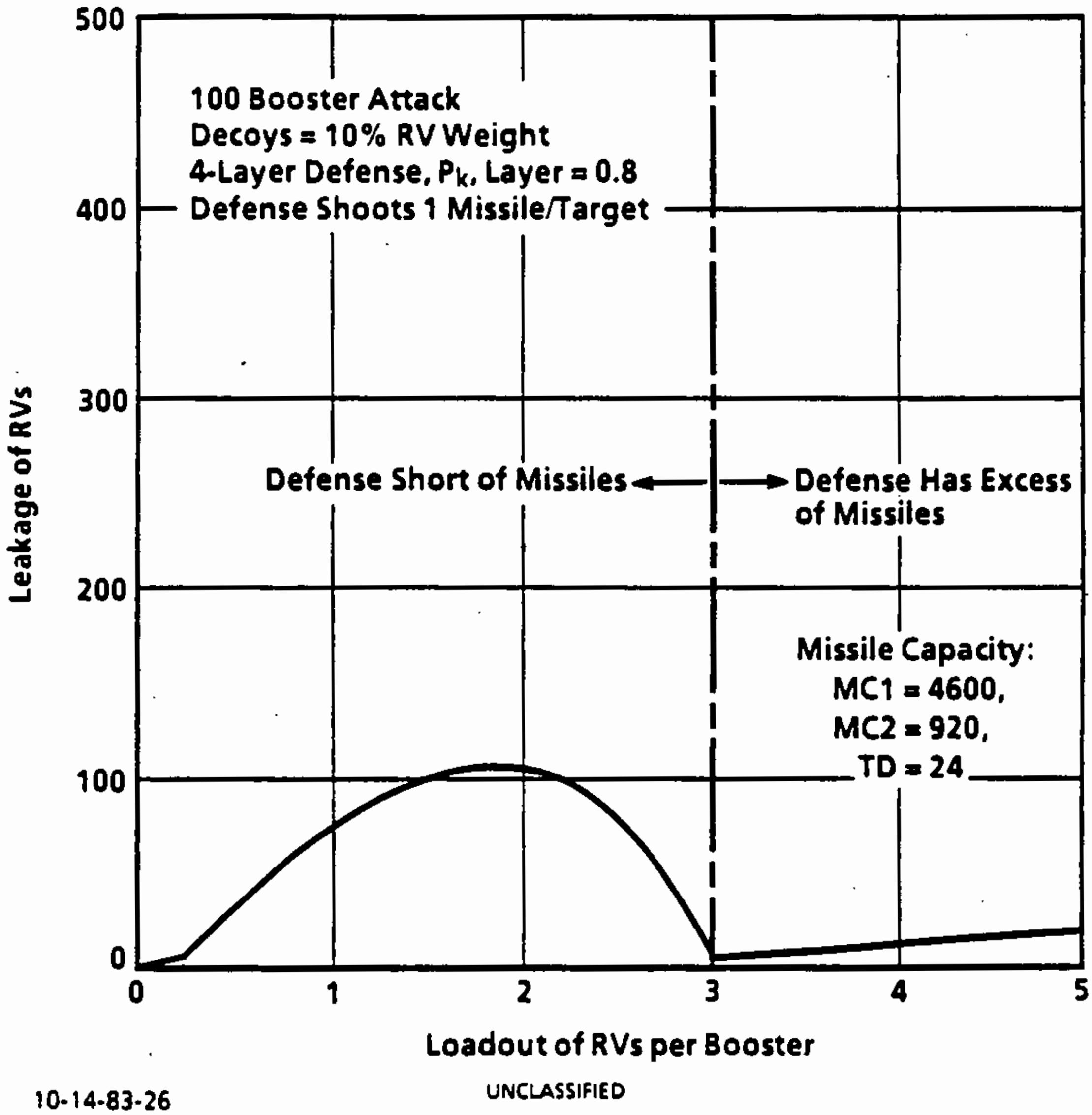

FIGURE A-8. (U) EFFECT OF A DECOYED ATTACK ON RV LEAKAGE (CREDIBLE DECOYS) number of RVs loaded out. For the situation where the offense loads out exactly where the defense is designed (3 RVs), there are slightly less than 5 leakers. While this is a significant number for attacks against population targets, the number is very small against almost all military target classes. However, if the offense loads out more RVs than three (and thus the defense has a surplus of defense missiles), the chart shows the increase in leakers to about 20 due to the defense doctrine of only firing one missile against each credible object. In this situation, the defense is unable to gain value from being overinventoried or is unable to establish that the attack has fewer objects and more RVs in time to take advantage of the information.

(U) In the case where the attacker loads out more decoys and fewer RVs, there is an increase in the number of leakers to about 100, as the defense is underinventoried and some RVs and objects are not attacked. If this offloading is pushed below about 2 RVs per booster, the number of leaking RVs drops, as even though the defense is not intercepting many of the objects, the object clouds contain fewer and fewer RVs. It could be argued that a defense that cannot enforce fewer than about 100 leaking RVs (2 percent out of 5000) is not all that effective against attacks on military target sets. Certainly, for attacks against silos, this performance for an antiballistic missile (ABM) system is almost unheard of. For the layer P_k of 0.8, the defense missile requirements at the design point are 4600, 920, and 24 for MC1, MC2, and TD elements, respectively. The design point of 3 RVs and 20 decoys demands, as pointed out earlier, very large numbers of MC1 defense missiles. In a similar vein, the TD defense missile inventories are almost nonexistent. Of course, to cover the entire continental United States (CONUS) with either MC2 or TD missiles, enough missiles will be needed to handle the leakers. The attack inherent in the above analysis is a uniform attack where the defense inventory is assumed to be properly placed so as to intercept the leakers. Thus, the numbers of MC2 and TD missiles actually deployed would depend on their footprints relative to the spatial distribution of the targets to be defended--an analysis that is beyond the present scope.

(U) The above discussion on Fig. A-8 presumes that the exoatmospheric decoys are perfectly credible, and thus every one must, if possible, be shot at by MC1 and MC2 defense missiles. However, note that the attacker presumes that the decoys are credible and they are not; even if they are only 50 percent credible, the result is that the RV leakage falls from about 100 to about 5, a catastrophic reduction. This issue of offense/defense confidence will be covered in more detail later.

(U) The above analysis centered around a defender's decision to deploy missiles--assuming that the attacker would place, on the average, 3 RVs on each booster. Figure A-9 presents design point selections of 2, 3, and 4 RVs. By designing against fewer RVs and thus more decoys in the attack, the number of leakers is greatly reduced at the cost of much higher inventories of defense missiles. Designing against a 2-RV (and 30-decoy) attack instead of a 3-RV (and 20-decoy) attack increases the defense missile inventory requirements by a factor of about 1.39. However, most of this increase is in MC1 defense missiles. The other point worth noting is the very small demand for TD defense missiles. While this small inventory is caused by the previous highly effective layers, it is also not possible to deploy such limited numbers of missiles because of the relatively small-coverage footprints available, as discussed previously.

(U) Figure A-10 presents the effect of changes in the layer P_ks for the defense deployment, fixed presuming a P_k of

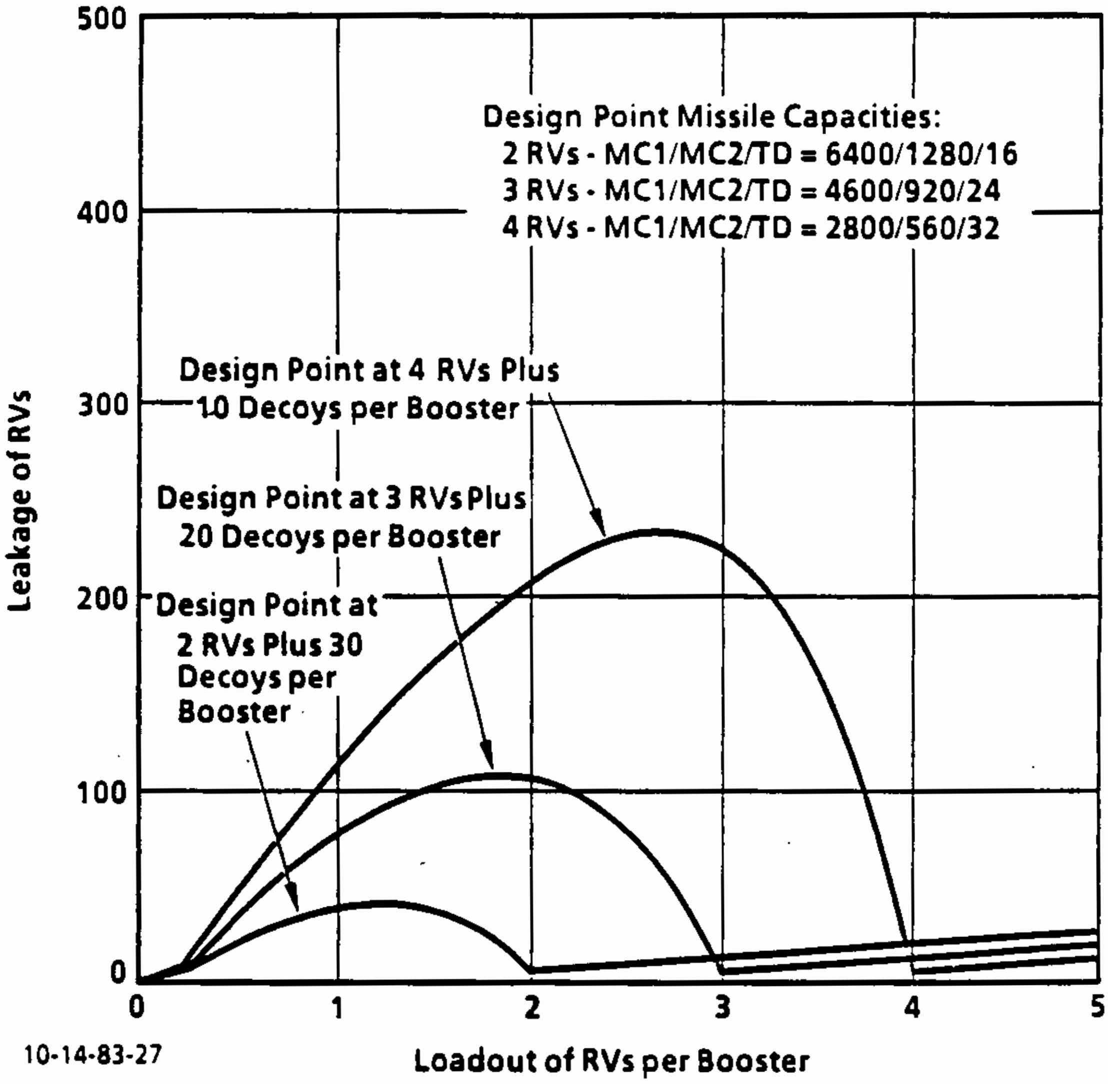

FIGURE A-9. (U) EFFECT OF CHANGING THE DEFENSE DESIGN POINTS

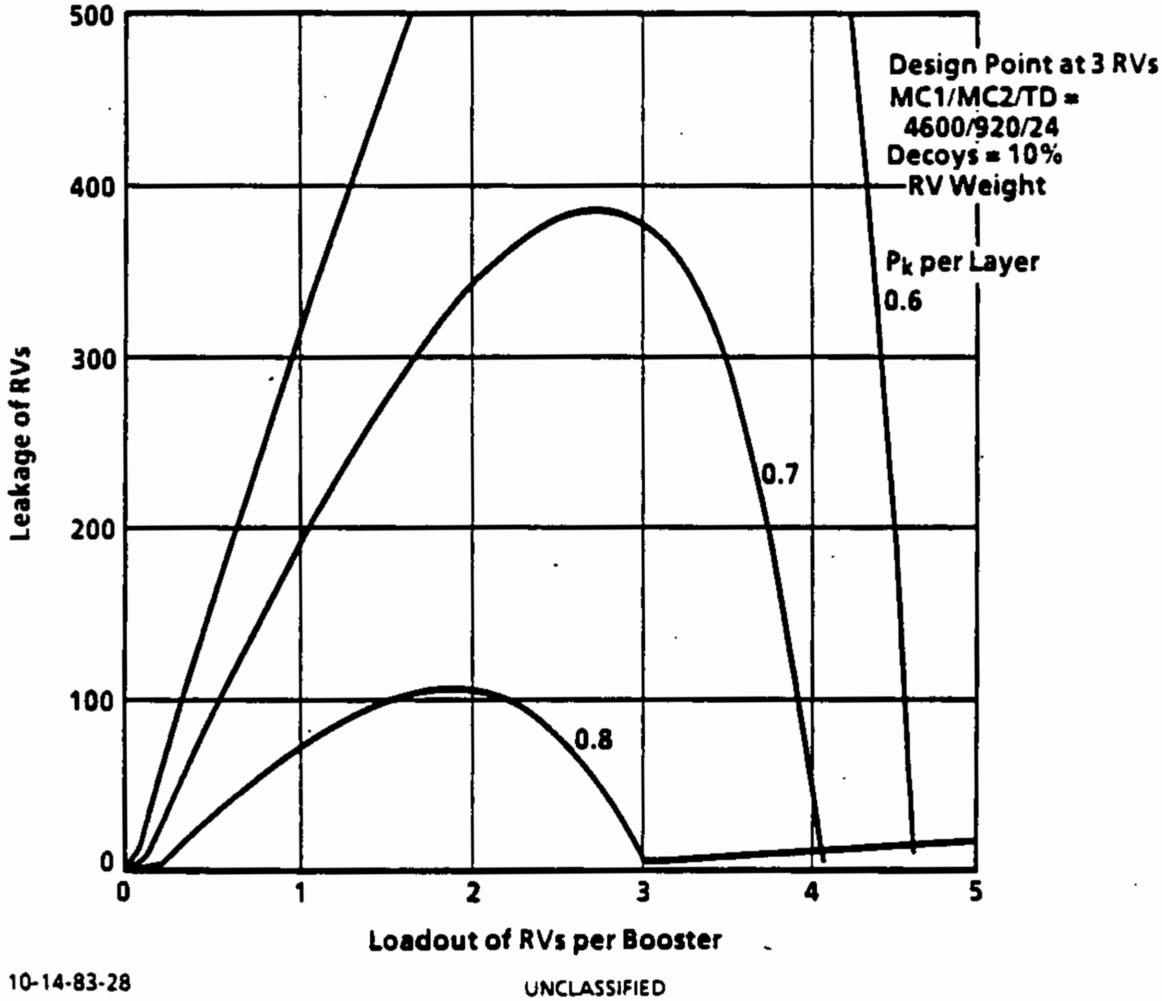

FIGURE A-10. (U) EFFECT OF P_k PER LAYER ON LEAKAGE (FOUR-LAYER DEFENSE)

0.8. The underinventorying of the defense leads to a high-leakage defense. Thus, it will be necessary to increase the design point inventory to desensitize the system to error in estimating layer P_K.

(U) Returning to the base design case of 3 RVs (and 20 decoys), the effect of credible lighter-weight decoys that need to be intercepted is shown in Fig. A-11. Decreasing the decoy weights from 10 percent to 5 percent almost triples the maximum number of leakers. This extreme sensitivity can be countered by larger design point missile deployment. Without some defense response, this performance sensitivity to the exact offense decoy capability might be unsustainable.

(U) As previously pointed out, the design point requirements for TD missiles is very small but subject to a significant increase merely to stockpile the various individual defense sites due to the small footprints available. For instance, if there were 200 TD sites nationally and two missiles per site, a minimum deployment might be on the order of 400 missiles, a far cry from the two-digit number that came from the leakage analysis.

(U) Figure A-12 presents the effect of increasing the number of terminal defense missiles on RV leakage, with all other missiles fixed at the design point values. Increases in the TD missiles sharply decrease the leakage until there is one TD missile for every RV leaking through the midcourse defense layers. As the exoatmospheric decoys do not persist as credible targets once the upper atmosphere is encountered, the terminal defense inventory is only driven by the RVs that have survived the exoatmospheric defenses. As before, if the defense is limited to shooting only against each RV, the leakage bottoms out as shown (the solid "shoot 1 per RV" lines). However, because of the small numbers that need to be engaged, the

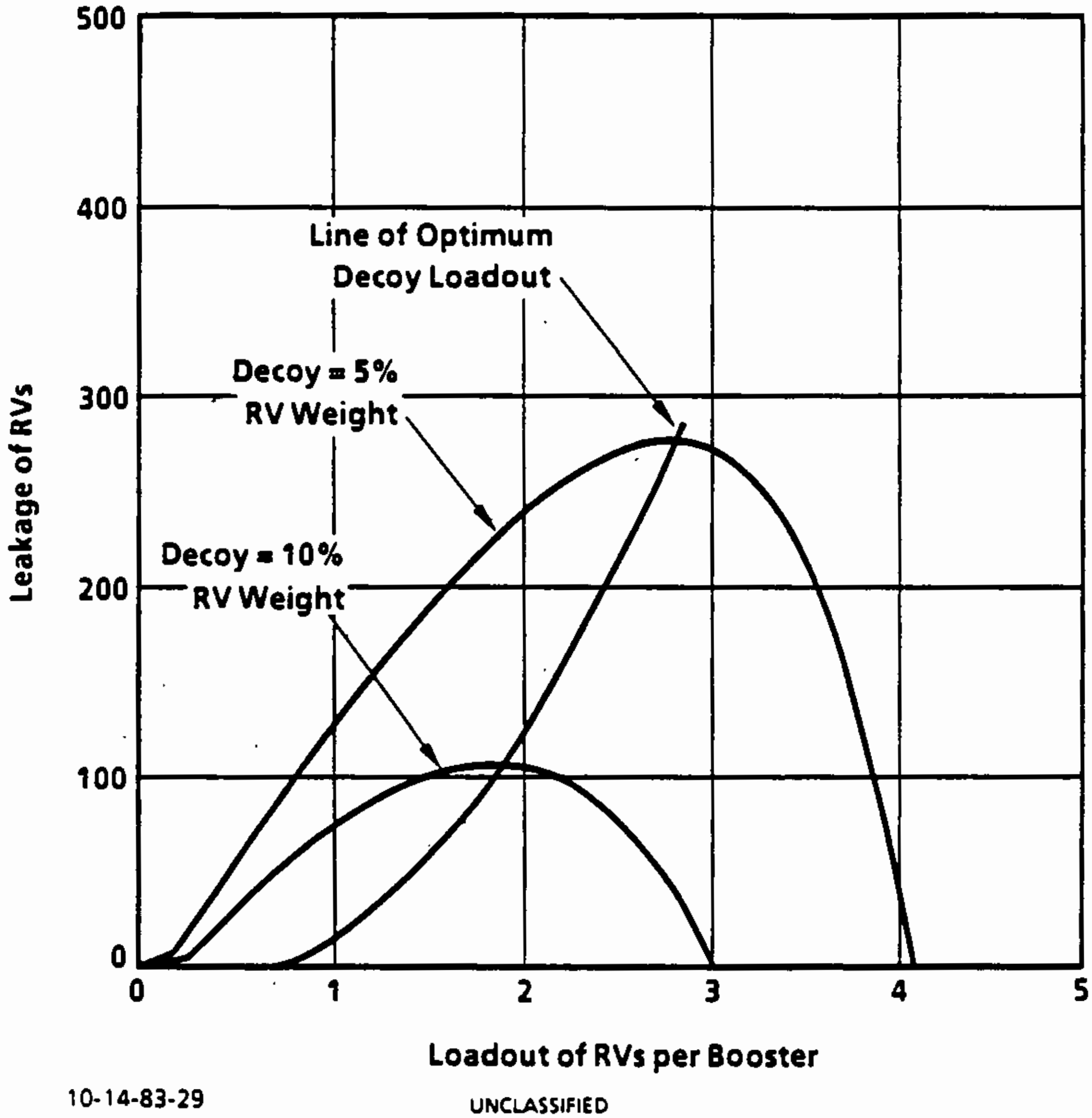

FIGURE A-11. (U) EFFECT OF LIGHTER-WEIGHT BUT PERFECTLY CREDIBLE EXOATMOSPHERIC DECOYS

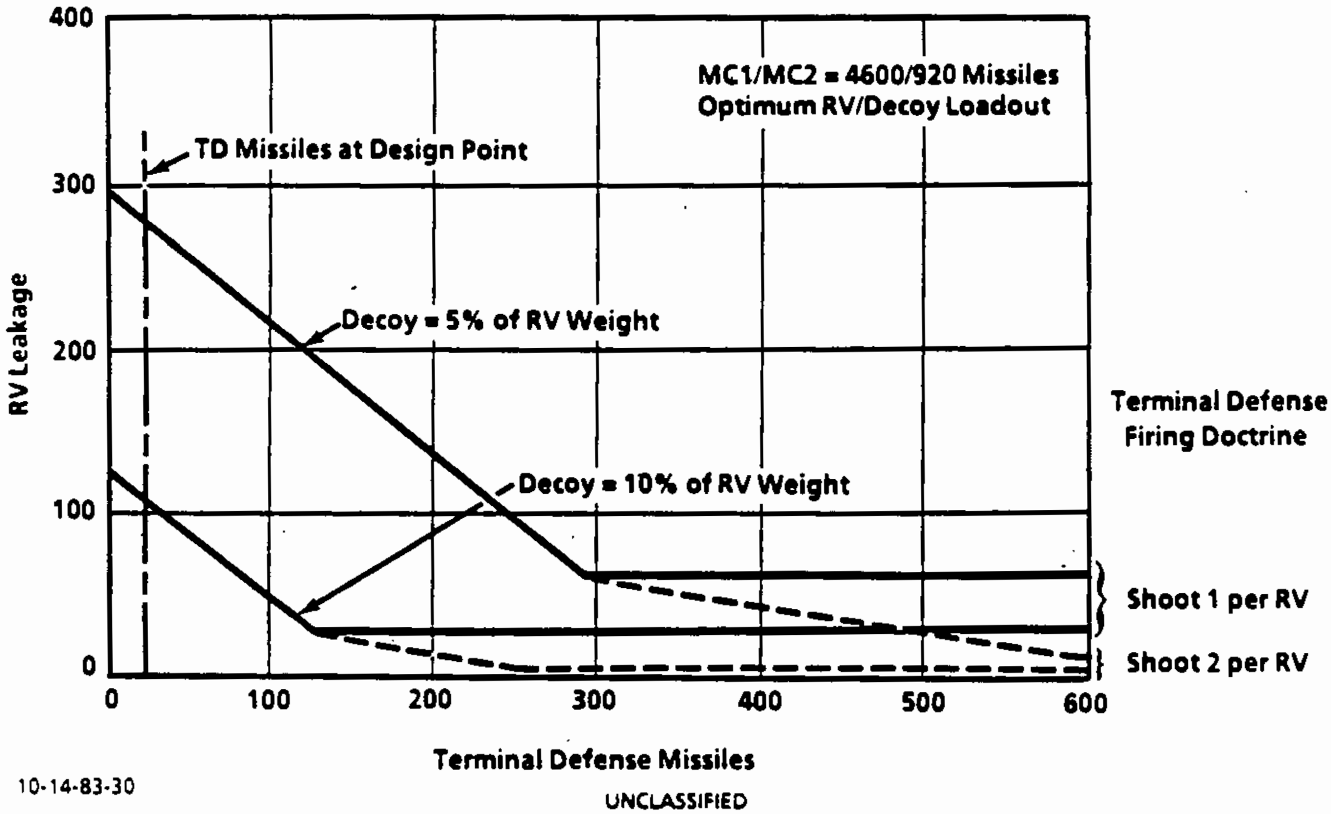

FIGURE A-12. (U) EFFECT OF ADDITIONAL TERMINAL DEFENSE MISSILES TO REDUCE RV LEAKAGE terminal defense inventory could be increased to allow a firing doctrine of shooting twice against each leaker, as shown by the dashed lines. The particular curve assumes that the "shoot two" doctrine only begins when each leaker has been engaged by a "shoot one" firing doctrine. This may not be enforceable in a real engagement, where the defense may have to decide on the numbers of defense missiles to deploy long before the engagement begins (neglecting considerations of preferential defense). However, assuming this switch to a "shoot two" firing doctrine, the leakage rates are reduced to very small values with modest levels of defense missiles. Finally and most importantly, the effect of reduced-weight decoys, previously shown to sharply increase leakage, is offset with reasonable increases in the terminal defense missile stockpile for either firing doctrine. Numerically, about 200 extra missiles bring the 5 percent decoys down to below the leakage value originally attained with 10 percent decoys.

(U) The other aspect of decoyed attacks that is necessary to consider is the attacker's perspective of the gain/loss and risk/reward aspects of decoyed attacks. All of the above results assume that decoys deployed by the attacker, whatever their assumed weight, are credible and that each would be credible to the defender. That is, the defense will shoot at each object, be it an RV or a decoy, with equal likelihood. If there are more objects than defense missiles, only a pro rata share of the RVs will be attrited. Figure A-13 presents the leakage from an optimum decoyed attack as a function of the defense design point. That is, once the defense deploys, the attacker responds with an RV/decoy mix to maximize the number of leakers. The results are extremely sensitive to the defense assumption. As the defense design point moves toward an all-RV attack (which minimizes the defense requirements for missiles), the attacker can swamp the defense with decoys as shown previously, if, of course, they are credible decoys. If, however,

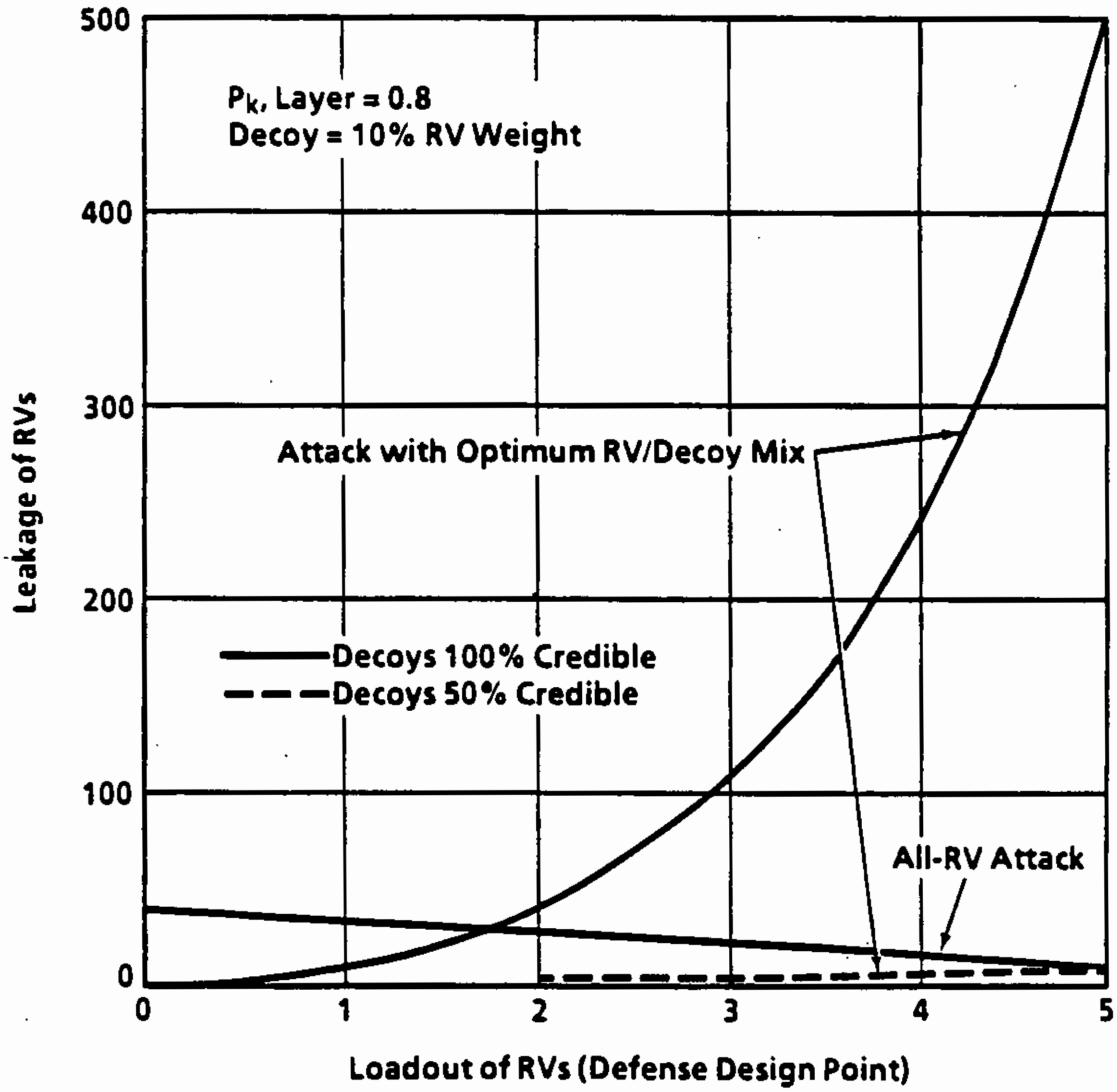

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FIGURE A-13. (U) EFFECT OF IMPERFECT DECOYS the decoys are not in fact perfect, the attacker's removal of RVs in order to deploy decoys has a negative effect on the leakage. In order to show the sensitivity, a specific case where the decoys, while deployed assuming perfect credibility, turn out to be only 50 percent credible. That is, half of the decoys are discriminated and thus not shot at by the defense. The result of this level of imperfection is catastrophic to the attacker, and indeed the attacker does less well than if he had gone to an all-RV attack in the first place.

E. EFFECT OF LOSS OF BOOST-PHASE LAYER

(U) Most of the preceding assumes that a four-layer defense system is operating with an equal P_k per layer for all four layers. In this section the capability of the boost-phase layer will be varied, the capability of the other layers being fixed as before. Going back to the design point analysis, Fig. A-14 presents the sensitivity of leakage to reduced values of boost-phase performance. With the number of defense missiles fixed, there is a large increase in leakage as the boost-phase layer P_k declines from the design value. At the attacker's optimum loadout of decoys and RVs, a change of boost-phase layer P_k from 0.8 to 0.7 increases the leakage by a factor of about three. At the design point itself the ratio is above 60! At the very least, the boost-phase layer P_k would always be relatively uncertain, and such sensitivities, if uncompensated, would deny the attainment of any confidence in the defense performance. The defender can come at these sensitivities from the point of view of attacker uncertainty in the use of decoys and then convert the problem to an all-RV attack. Alternatively, the defender can attempt to inventory against the loss of the boost-phase layer, as shown in Fig. A-15. For the situation shown, increasing the inventory against an optimum decoyed attack is effective in decreasing the leakage. If single-shot-per-RV terminal defenses are employed, increasing

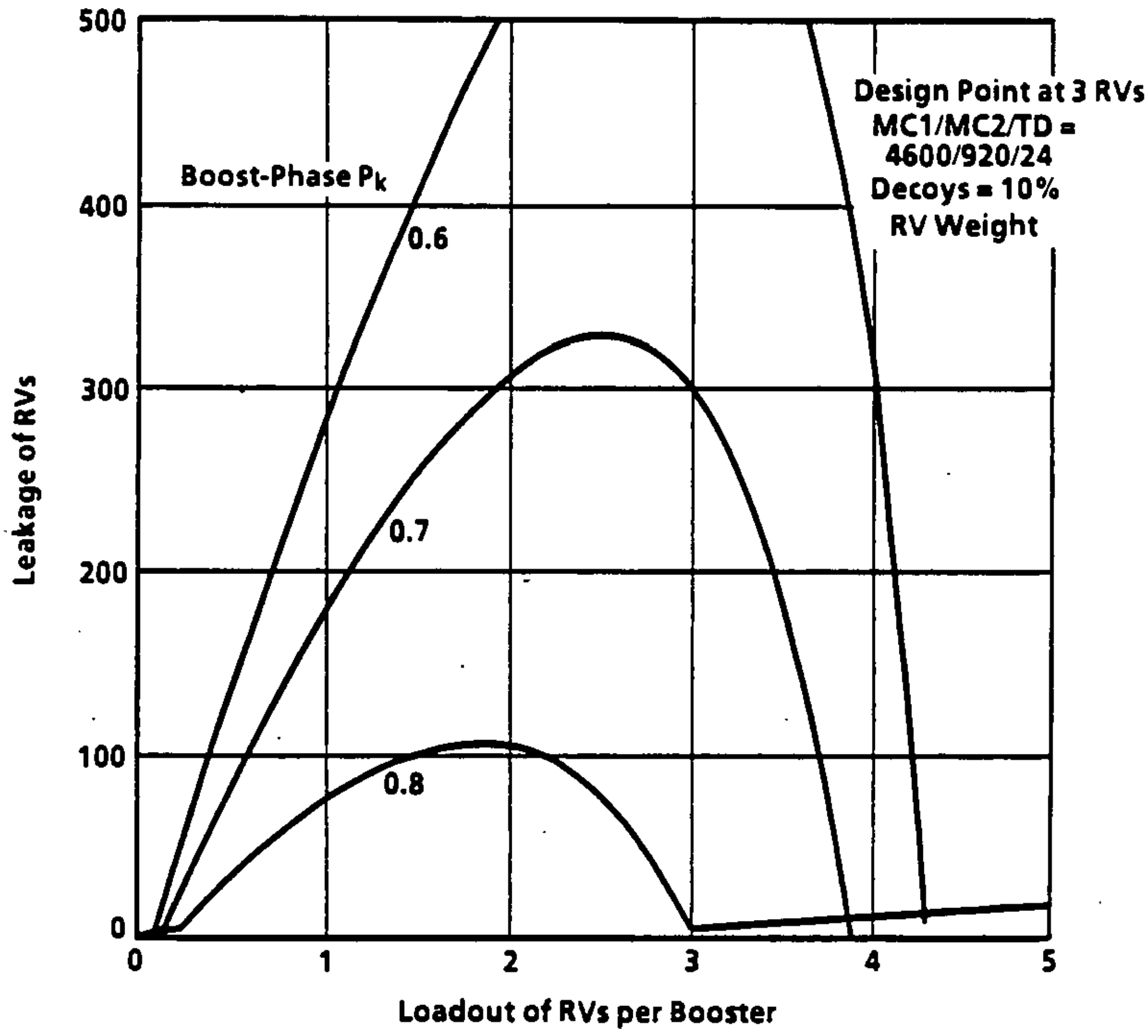

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FIGURE A-14. (U) EFFECT OF DEGRADED BOOST-PHASE LAYER PERFORMANCE

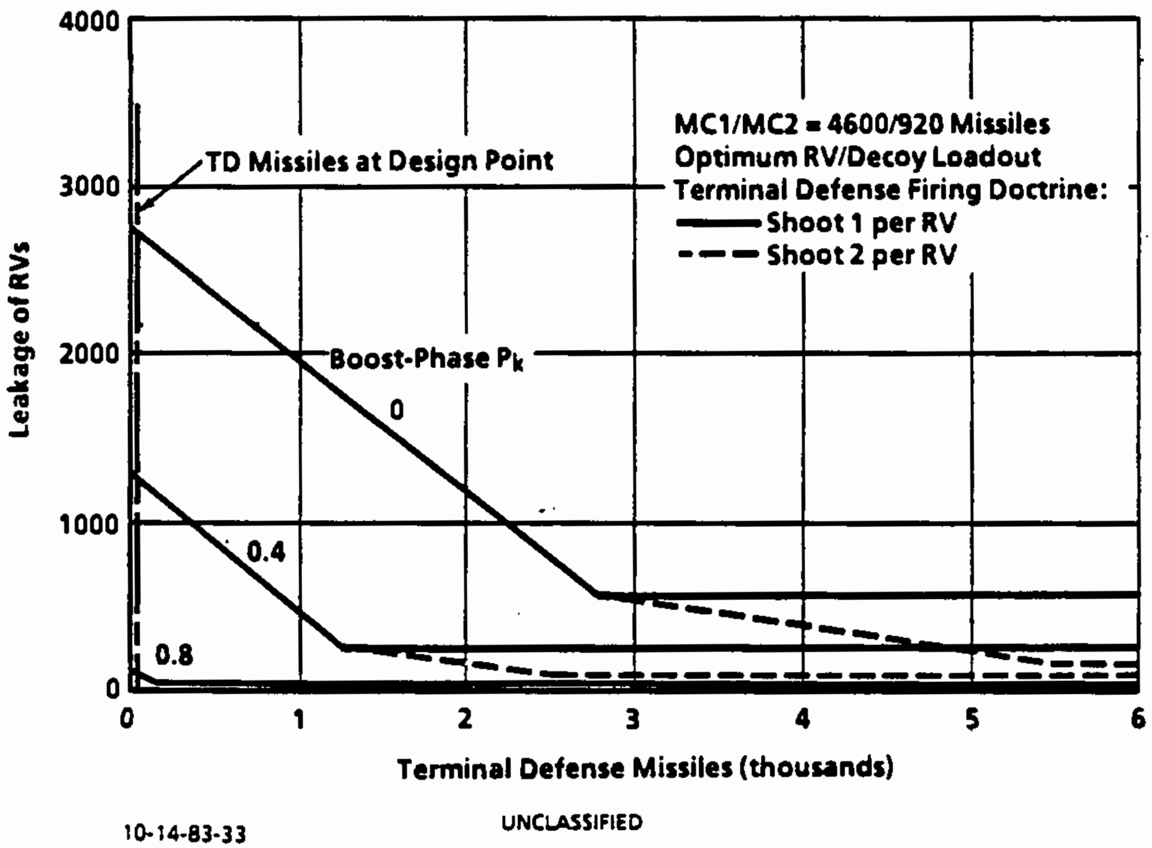

FIGURE A-15. (U) EFFECT OF ADDITIONAL TERMINAL DEFENSE MISSILES ON LEAKAGE DUE TO LOSS OF BOOST-PHASE LAYER the terminal missiles from about 24 (the design requirement) to about 400, the minimum reasonable deployment based on spatial needs must be increased to about 2700 missiles where the boost-phase layer was totally negated. This would bring the leakers down from about 2700 to about 500. Further increases in terminal defense missiles to about 5500, allowing two defense missile shots per RV, would reduce the leakage down about 100 RVs.

F. EFFECT OF ATTACKS WITH INCREASED NUMBER OF RVs

(U) Instead of depending on decoys with their attendant uncertainties, the attacker could move to increased RV fractionation. Figure A-16 shows the effect of such fractionation and the effect of increasing the number of terminal defense missiles in compensation. Increasing the number of terminal defense missiles from 24 to about 200 suppresses the increased leakage due to fractionation from 5 RVs per booster to about 23 RVs per booster. Note that the leakage has increased also, but this change is controlled to a relatively modest increase from under 10 to about 40 in the face of a 4.6-fold increase in RVs. If this were unsatisfactory, it would be necessary to move to shooting two terminal defense missiles against each RV, with an attendant increase in missiles required by the defense. Beyond a fractionation of 23 RVs per booster, it would be necessary to increase the number of defense missiles further.

(U) An alternative approach would be to increase the number of boosters, with fewer RVs per booster. As long as the layers continue to operate as assumed, Fig. A-17 indicates that only the shift in the RV mix is possible as the number of leakers is unchanged.

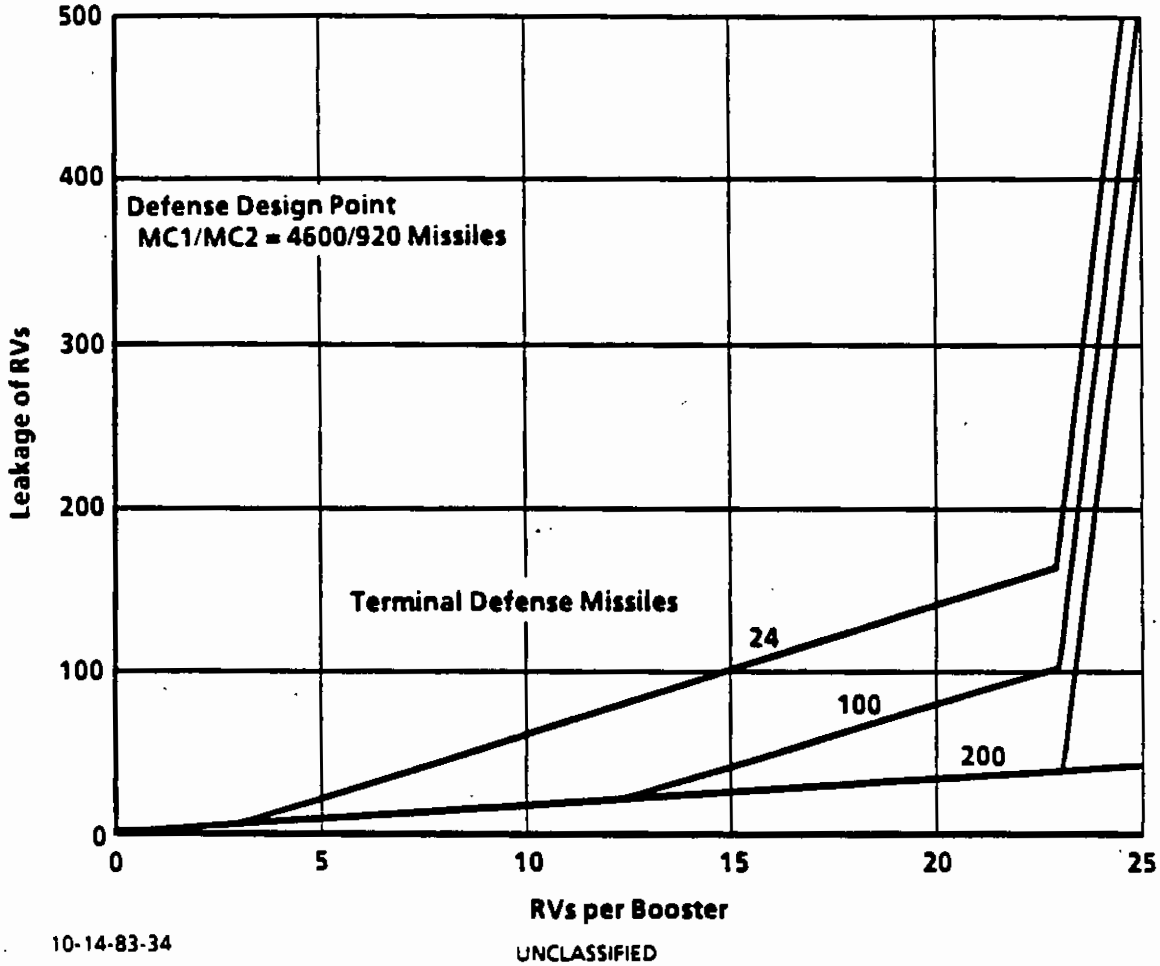

FIGURE A-16. (U) EFFECT OF RV FRACTIONATION ON LEAKAGE (ALL-RV ATTACK)

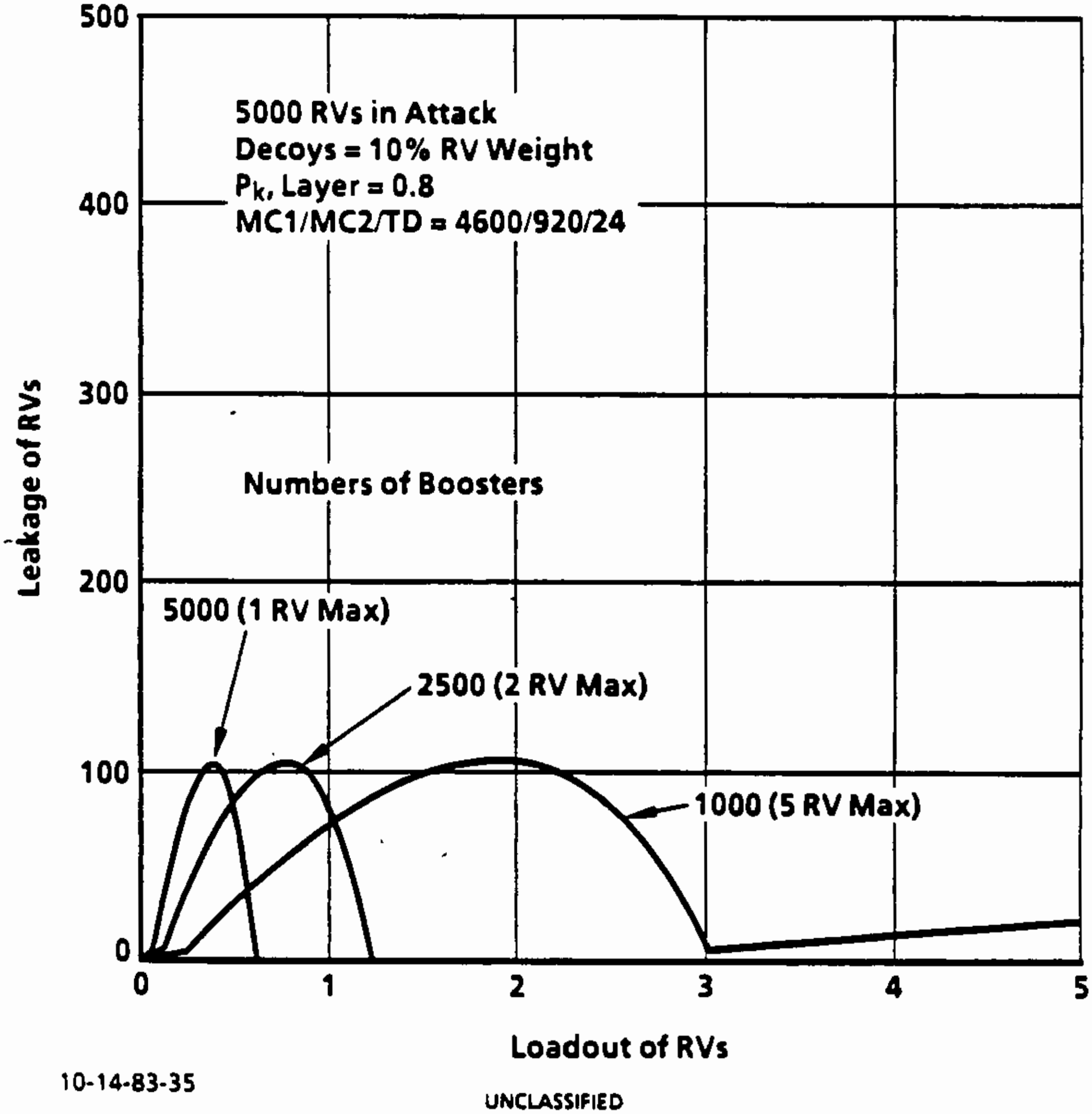

FIGURE A-17. (U) EFFECT OF INCREASING BOOSTERS ON LEAKAGE (CONSTANT TOTAL RVs)

G. EFFECT OF PREFERENTIAL ATTACKS

(U) The preceding discussion has presumed a uniform attack and a uniform defense of CONUS. For the type of defense being considered, it is possible to construct a preferential attack inasmuch as the MC2 and TD defense sites have limited, i.e., non-CONUS-wide, coverage. For purposes of exposition, divide CONUS into eight distinct and separate MC2 coverage zones and place 50 TD coverage zones within each MC2 zone. In this situation, the zones are presumed not to have any overlap, and the attacker could, in principle, select any MC2 zone or zones to concentrate his attack capability. For this estimate the TD zones within any MC2 zone are considered to be uniformly attacked. Figure A-18 presents the leakage attained by the attacker as a function of the concentration of the attack. Depending on the inventory of TD missiles assumed, the gain from going preferential varies. In the case where the TD is reasonably inventoried at two per TD zone, there is a factor-of-five gain in concentrating on one out of eight MC2 zones. While the possibility is not addressed herein, the defense could, of course, attempt to enforce preferential defense to reduce the above advantage. Assuming that previous analysis of preferential offense and defense applies, it might be estimated that there is a factor of two between uniform/uniform and preferential/preferential attacks and defense.

H. A PRELIMINARY ESTIMATE OF THE NEED FOR A BOOST-PHASE LAYER IN A FOUR-LAYER DEFENSE CONSTRUCT

(U) Assuming that the defense was adequately inventoried with defense missiles and the attacker adopted an all-RV attack posture, then Fig. A-19 presents defense missile requirements as a function of the attack size, depending on whether a boost-phase layer is available. Without a boost-phase layer, it takes 1.24 defense missiles for every threat RV. With a boost-phase

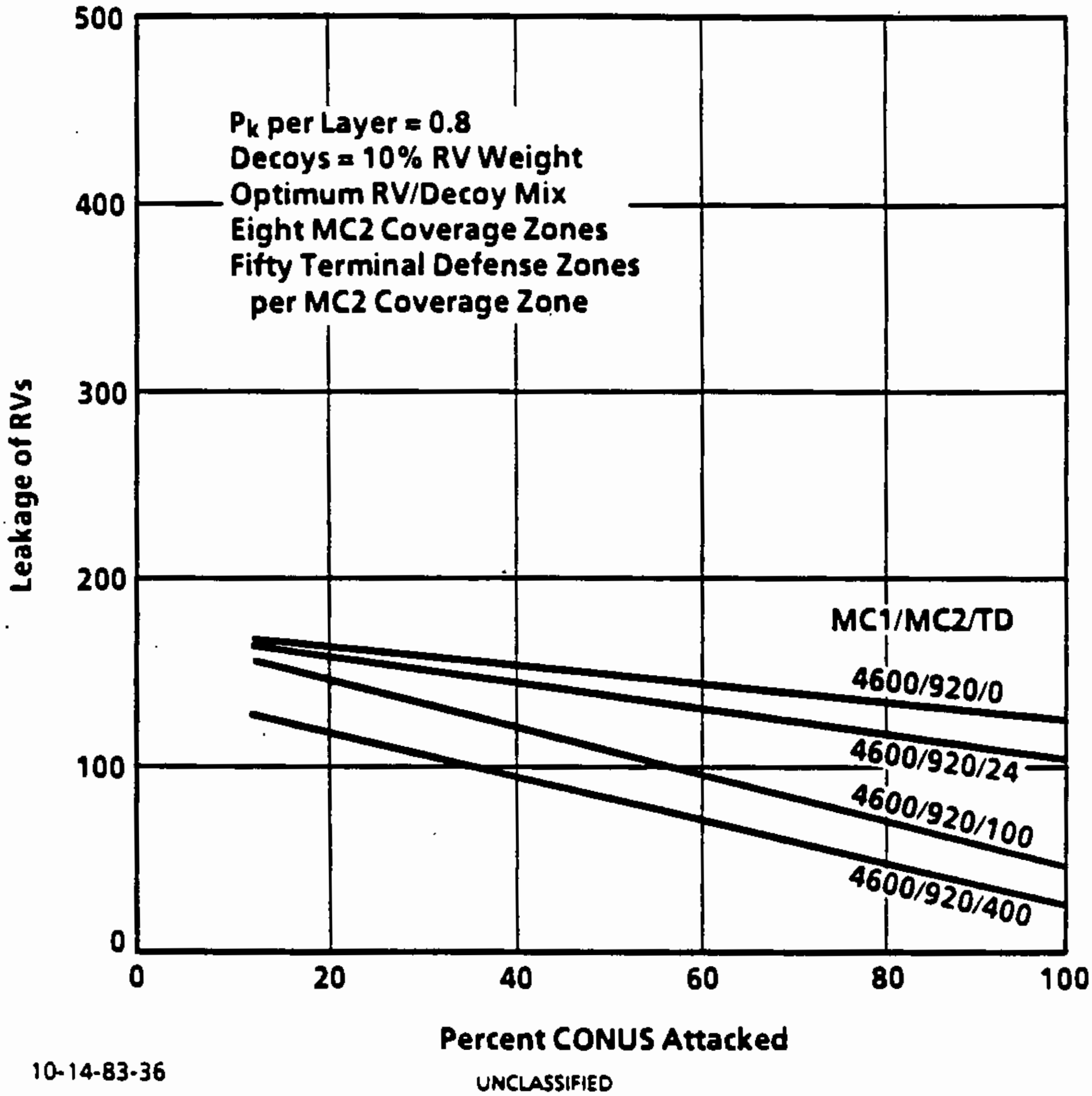

FIGURE A-18. (U) EFFECT OF PREFERENTIAL ATTACK AND UNIFORM DEFENSE

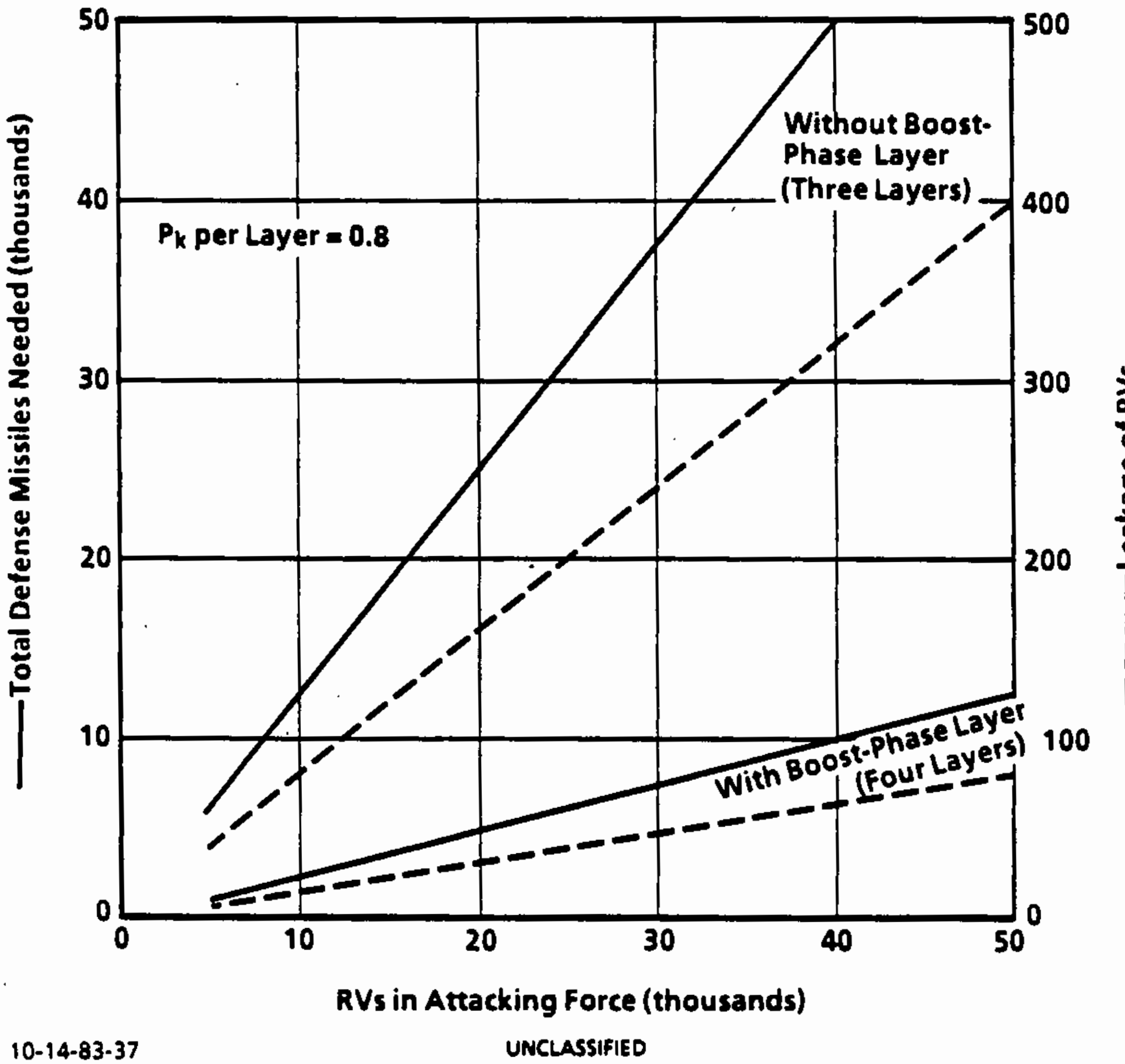

FIGURE A-19. (U) EFFECT OF LARGE ATTACK SIZES ON A MULTILAYER SYSTEM layer, the ratio is 0.25; e.g., it takes one defense missile for every attacking RV. The ratio of without to with boost phase is 5, or $1/(1-P_k)$. Viewing the situation in a different way, a system without a boost-phase layer must compete against the attacker by deploying 1.24 defense missiles for every RV deployed. A system with a boost-phase layer is only required to deploy about 1/4 defense missile for every RV deployed.

(U) From the point of view of leakage, a system without a boost-phase layer allows about 0.8 percent leakage and a system with a boost-phase layer allows about 0.16 percent. Both are exceedingly low values for any target set except for popu-tion defenses. On an absolute-number basis of 50 leakers, a system without a boost-phase layer could handle up to about 6000 RVs, and a system with a boost-phase layer could handle up to about 31,000 RVs. The former value is roughly the entire Soviet capability today, and the latter value is a typical projection of an unconstrained Soviet growth by the turn of the century.

(U) Figure A-20 presents the previous missile/RV balance except for showing the influence of increasing the layer P_k from 0.8 to 0.9. On the basis of defense missiles required, the reduction in missiles required is modest in the case where there is no boost-phase layer. This is due to the previously analyzed requirement for a first-layer missile for every RV when there is no boost-phase layer ahead of the missile-type defense systems. On the other hand, there is a large reduction in leakage due to the compounding effect of high P_ks. Taking the above example of 50 leakers, the leakage is 0.8 percent when the P_k is 0.8 and 0.1 percent when the P_k is 0.9. Thus, the reality of such an estimate is an overwhelming problem to an attacker if he should decide to inventory against such a system.

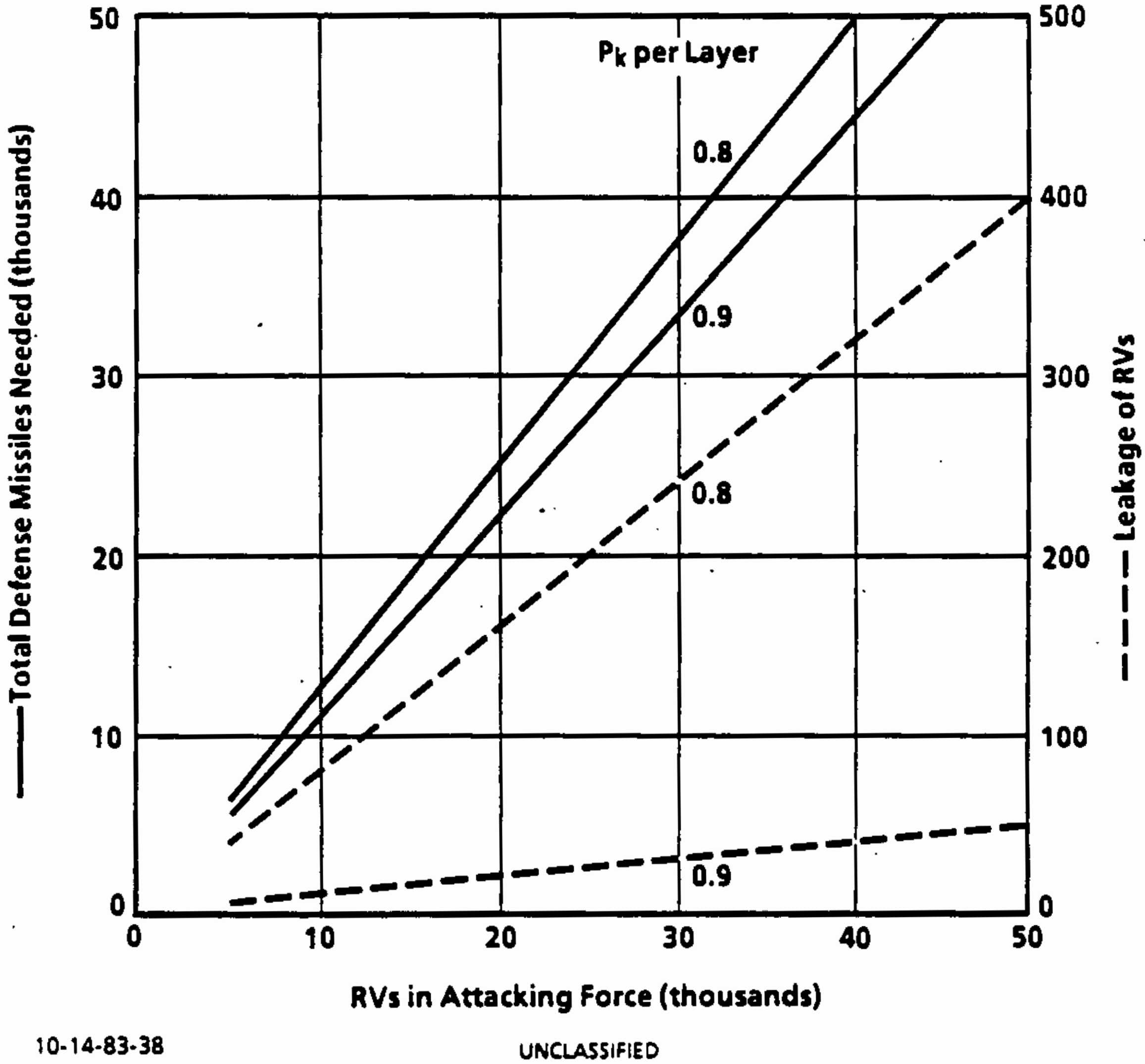

FIGURE A-20. (U) EFFECT OF P_k IMPROVEMENT ON A MULTILAYER SYSTEM (WITHOUT BOOST-PHASE LAYER)

APPENDIX B

MILITARY CONTINGENCIES TO SUPPORT BMD ANALYSIS

J.J. Martin

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APPENDIX B

MILITARY CONTINGENCIES TO SUPPORT BMD ANALYSIS

J.J. Martin

A. INTRODUCTION

(U) This appendix develops representative military situations to support analysis of ballistic missile defense (BMD) issues. In general, the contingency analysis uses a target-oriented approach, consisting of the following steps:

- Definition in outline form of a baseline conflict situation and variants, covering theater and intercontinental warfare cases that are important for purposes of analyzing BMD issues.

- Development of strategic context, military objectives, Blue/Red campaign concepts, and an image of key operations at a modest level of detail, sufficient to establish credibility and military realism.

- Identification of key U.S. and allied forces and installations for potential BMD protection.

- Performance of first-order effectiveness analysis of alternative BMD configurations, geographic coverages, and protection levels to establish operational implications and sensitivity to Soviet counters.

(U) This appendix deals with the first two points, definition and development of the baseline and variant contingencies. In carrying out this process, the level of detail has been guided by two considerations. First, the purpose of the contingencies is to aid in identifying important U.S. and allied forces and installations for possible BMD protection, and to support analysis of the operational benefits of such protection. Thus, many important aspects of prewar mobilization and wartime operations are treated only cursorily or not at all if they do not contribute to the purpose of the analysis in a fundamental way. Second, for those contingency aspects that are treated, the amount of detail has been kept relatively sparse, in keeping with the time available for analysis and the level of detail of other elements of the analysis.

(U) The baseline contingency described below consists of a crisis in Europe that results in nonnuclear war between the United States and the Soviet Union in a number of overseas theaters, escalates to theater nuclear war and limited strategic operations, continues to escalate to large-scale intercontinental exchanges, and concludes with a period of post-SIOP operations. The military situation in each major geographic region is described below in terms of:

- Initial military conditions when conflict starts in the region.

- Operational concepts for each side.

- Brief description of the major operations during nonnuclear conflict.

- Brief description of the major operations during nuclear conflict.

B. OVERVIEW OF BASELINE CONTINGENCY AND VARIANTS

(U) Figure B-1 provides an overview of the baseline contingency and some variants. The baseline contingency starts with a crisis in Europe that results in a Warsaw Pact nonnuclear attack on NATO's central region and northern and southern flanks. China remains neutral in this war, but the Soviets and their North Korean allies initiate nonnuclear operations against the United States and its allies in Northeast Asia. The nonnuclear war also involves heavy fighting at sea worldwide, and U.S. and Soviet operations against each other's space-based assets.

(U) On D+7, NATO decides to make first use of nuclear weapons in Europe, but is preempted by a Soviet theater-wide nuclear attack against military targets in Europe. At the same time, the Soviets initiate nuclear use in Northeast Asia and against U.S. and allied forces at sea. A period of combined nonnuclear and nuclear operations in overseas theaters ensues. On D+9, due to loss of much of its theater nuclear force, the United States makes limited use of strategic forces (bombers, some ICBMs) to support theater operations.

(U) The theater war expands to U.S. limited nuclear attacks against bomber bases and SS-20 deployment areas in the Soviet Union. The USSR responds on D+12 with a large-scale intercontinental attack against targets in the United States, and the United States executes a Single Integrated Operations Plan (SIOP) [major attack option (MAO)] against military targets. A period of post-SIOP general-purpose and nuclear operations follows in selected overseas theaters, with continued nuclear operations against U.S. and Soviet territory.

(U) The following is a summary of key events in the baseline contingency:

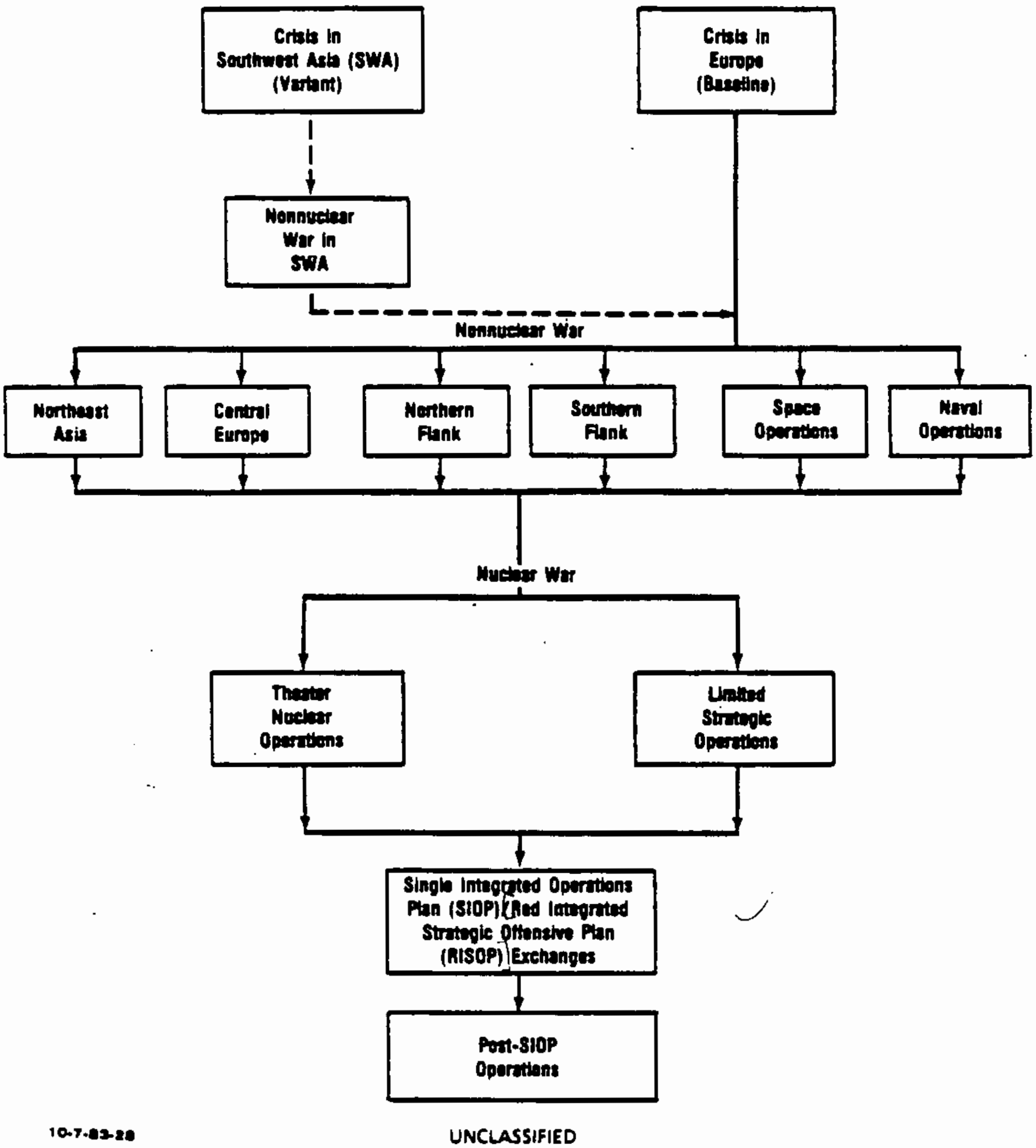

FIGURE B-1. (U) OUTLINE OF CONTINGENCIES

D-4	Soviet/WP full mobilization begins.
D-2	U.S./NATO full mobilization begins.
D-Day	Soviet/WP forces initiate nonnuclear operations in Europe and at sea; North Korean and Soviet nonnuclear operations begin in Asia, focused largely on Northeast Asia.
D+7	NATO decides to make first use of nuclear weapons but is preempted by Soviet/WP nuclear attack in Europe; Soviets initiate nuclear use in Asia and at sea.
D+9	United States initiates limited strategic operations.
D+12	SIOP/RISOP exchange occurs, followed by period of post-SIOP operations

(U) The next section contains a more detailed description of the baseline contingency, followed by a section describing some variants from the baseline contingency, including:

- Crisis and conflict begin in the Persian Gulf region, with supporting U.S. and allied operations from Turkey.

- Crisis and conflict begin in Northeast Asia, then escalate to worldwide war (an unlikely development, but one that poses serious strategic maldeployment problems for the United States).

- Variant on U.S. strategy for intercontinental war. The baseline contingency assumes that U.S. use of force in the post-SIOP period would be directed toward selected overseas theaters as well as the Soviet homeland; the variant considers a U.S. strategy for post-SIOP operations that provides minimal to no support for overseas operations.

(U) The baseline contingency and its variants are necessarily notional in many respects, since they must cover the early 1990s for anti-tactical ballistic missile (ATBM) deployments using current technology, as well as cover the 1995-2010 time frame for advanced-technology ballistic missile defenses. It is assumed in the contingency analysis that many aspects of future conflict will be invariant over time, notably the basic Soviet approach to warfare, the general size and location of U.S. and allied forces and installations that might be accorded BMD protection, and the fundamentals of U.S. and NATO military strategy (except for ballistic missile defenses).

C. BASELINE CONTINGENCY

1. Crisis In Europe

(U) A prolonged period of economic hardship in the Soviet Union and East Europe, combined with continued Soviet measures to suppress popular movements for greater independence, results in unrest and revolt in East Europe in the 1990s. These popular movements in East Europe are aided and abetted by the West, especially by the Federal Republic of Germany. As a result, the crisis deepens. The NATO nations and the Soviet Union put their naval forces on a wartime, forward-deployed footing as the crisis develops, but each side avoids full-scale mobilization, for different reasons. The United States and other NATO countries are concerned not to exacerbate the crisis further; the Soviet Union concludes that war is inevitable and puts into effect its strategic deception and short-warning mobilization plans.

(U) As a result, U.S./allied and Soviet/allied naval forces have had three weeks of mobilization before D-Day. In Europe, Warsaw Pact (WP) ground and air forces start full mobilizaton on D-4; NATO ground and air forces begin mobilization on D-2, 48 hours before the WP attack. In Asia, similar mobilization timelines occur, the Soviet Union encouraging a North Korean attack on the Republic of Korea simultaneously with the WP attack in Europe. The United States and NATO begin dispersing nuclear weapons in Europe and Asia to field locations on D-2.

2. Nonnuclear War

a. General. (U) On D-Day, WP forces attack NATO forces in Europe, North Korea attacks South Korea, the Soviets initiate hostilities against U.S. and allied naval forces worldwide, and the Soviets execute air raids and special-forces operations against U.S. bases in the Pacific.

(U) Countries are aligned generally in accordance with peacetime alliances. All NATO nations, including France, honor their commitments to NATO; Japan, South Korea, the Philippines, Australia, and New Zealand fight on the side of the United States. China is neutral, but tilted toward the West. The WP nations fight on the side of the USSR, although the Soviets must devote substantial forces to rear-area security in East Europe; North Korea and Vietnam fight with the Soviet Union.

(U) The force allocations for Blue and Red are in accordance with current capabilities and allocation priorities for worldwide conflict, in which both sides give priority to Europe. The order of battle for each side is in accordance with current programs and projections, except that each side's ballistic missile defenses vary according to the alternatives to be examined in this study.

(U) Because the crisis originated in Europe, and the worldwide conflict imposes heavy demands on both Blue and Red forces, there are no major military operations in Southwest Asia in the baseline contingency.

(U) At the start of the war, in-place ground forces are generally in wartime positions, naval forces are deployed forward, but reinforcements have not yet arrived in the areas of conflict.

(U) More specifically, in Europe, NATO in-theater ground forces are deployed forward to their general defense positions, tactical aircraft are dispersed to available dispersal bases, and naval forces are in their general war positions. Warsaw Pact ground and air forces are forward-deployed in accordance with intelligence estimates, consistent with full-scale mobilization starting at D-4. Soviet and other WP naval forces are at sea in their general war positions, seeking maximum D-Day strike effectiveness against U.S. and allied aircraft carrier battle groups (CVBGs).

(U) In Asia, U.S. and South Korean ground and air forces are deployed forward and dispersed in accordance with general war plans. North Korean ground forces are massed on the Republic of Korea (ROK) border, and tactical air forces are at advanced readiness. Soviet ground and air forces are in general-war, dispersed positions; Soviet forces on the Sino-Soviet border are maintained in those positions. U.S. P-3 aircraft squadrons are dispersed, and the Aleutians have been reinforced by the U.S. Marine Corps.

(U) Three U.S. CVBGs are operating in mutual support in Northeast Asia; two more are in the Eastern Pacific (EASTPAC), enroute to the Western Pacific (WESTPAC). U.S. nuclear-powered attack submarines (SSNs) are dispersed to wartime operating locations. Soviet surface ships and some submarines are deployed to protect nuclear-powered fleet ballistic missile submarine (SSBN) operating areas in the Sea of Okhotsk and the Bering Sea; other Soviet submarines and some surface ships are seeking positions for D-Day strikes on U.S. CVBGs.

b. Europe--Central Region. (U) The Warsaw Pact objectives are: to disrupt NATO mobilization and delay U.S. reinforcements; to seize and occupy Central Europe in 15-20 days; to defeat the principal NATO forces east of the Rhine before they can be reinforced; and to protect the Soviet homeland from U.S. and NATO attacks. Key elements of WP strategy to achieve these objectives include: strategic deception operations; early intense nonnuclear air and missile strikes in Europe; high-speed combined arms operations; coercion of individual NATO countries with nuclear threats; and preemption of NATO efforts to initiate nuclear war. For the Warsaw Pact forces this offensive strategy translates into the following operational concepts:

- Intense nonnuclear air and missile strikes to destroy or neutralize NATO nuclear forces, tactical air, and command, control, communications, and intelligence (C^3I).

- Echeloned ground-force operations to open and exploit avenues for high-speed advances.

- Use of operational maneuver groups to neutralize NATO nuclear forces and seize other key objectives in NATO's rear.

- Use of special-operations forces against NATO nuclear forces, C^3I, and other priority targets.

(U) NATO's objectives are: to use whatever force is necessary to cause the Warsaw Pact to cease its aggression and withdraw; and to limit damage to the NATO countries through a combination of air and ballistic missile defenses, offensive strike and ground operations, and control of escalation. Major elements of NATO strategy include: forward defense in the eastern part of the Federal Republic of Germany; control of the airspace over West Europe and as deep into East Europe as feasible; early reinforcement with air and ground forces from the United States; and first use of nuclear weapons if necessary to achieve NATO's objectives. Operational concepts underlying this strategy include the following:

- Early, intense counterair campaign involving nonnuclear strikes on WP air bases and air defense operations intended to extract heavy attrition from WP air raids.

- Nonnuclear interdiction of WP rear echelons and choke points.

- Use of high-technology weapons to inflict heavy attrition on WP ground forces in the close-in battle.

- Counteroffensive operations to cut WP lines of communication (LOCs) and make flanking attacks on rear echelons.

- Airlift of Reforger units to marry up with prepositioned materiel (POMCUS) stocks in Europe; early tactical air reinforcement from CONUS.

(U) Several military operations will, in combination, have decisive impact on the outcome of the nonnuclear conflict in Central Europe. The air battle during the first few days of the war is particularly important in this regard. A necessary but not sufficient condition for NATO to prevail is that NATO dominate the air battle from the outset. Conversely, if the Warsaw Pact is to achieve early seizure of Central Europe, it must dominate the air battle from the outset. Failure of the Pact to achieve early superiority in the air does not, however, imply WP defeat; it probably means an extended nonnuclear conflict, with increasing difficulties for the Pact but still reasonable prospects for victory.

(U) In addition to dominating the air battle, NATO must also: defeat first-echelon WP forces in the close-in battle without giving much ground; defeat or neutralize WP operational maneuver groups (OMGs) seeking to penetrate to NATO's rear; and keep the pressure off forward ground forces by successfully delaying and attriting WP rear echelons with the air interdiction campaign. To achieve these objectives, and to prevail in the initial air battle, NATO must also successfully carry out the planned reinforcement of tactical air and ground-force units.

(U) In the event the conflict escalates to nuclear war, another critical operation will be the substantial WP efforts to destroy or neutralize NATO theater nuclear weapons, delivery systems, and C^3I during nonnuclear conflict, using air and missile attacks, Spetsnaz (Soviet special-purpose forces) agents, special-operations forces, and operational maneuver groups.

c. Europe--Northern Flank. (U) Warsaw Pact objectives on NATO's northern flank are directed primarily toward securing Soviet SSBN operating areas in the Barents Sea and protecting the Kola Peninsula from sea-based or land-based strikes. A secondary objective is to support central front operations by making flanking attacks through Denmark. The WP strategy is to prevent NATO reinforcement of Norway, deny NATO use of air bases and ports in Norway, gain positive control over Norwegian air bases and ports through ground, air, and special forces operations, and seize Denmark through amphibious operations.

(U) Key operational concepts supporting this strategy include early air strikes and special-forces operations against Norwegian and Danish air bases and ports, intended to disrupt reinforcement and deny NATO their use for support of Norwegian Sea operations. The WP could try to seize major P-3 tactical air bases in Norway with airlifted forces and amphibious operations, seeking to hold them until Soviet ground forces could link up. In any event, Soviet ground forces would initiate operations on D-Day in northern Norway through Finnmark and, most likely, through northern Finland and Sweden. There would also be amphibious operations against Denmark (and possibly Southern Sweden) using WP forces from the Baltic Sea area.

(U) NATO's objectives are to restore the territorial integrity of the Scandanavian countries, to maintain antisubmarine warfare (ASW) and other sea-control operations from Norwegian bases, and to protect the flank of Central Europe. To achieve these objectives, NATO strategy calls for: rapid mobilization of Norwegian and Danish air and ground-force reserves; reinforcement of Norway and Denmark with ground and tactical air units of the Allied Command Europe (ACE) Mobile Force and selected units from Britain, Canada, the United States (U.S. Marine Corps), and Germany (in Denmark); and defense of Norway in the northern provinces. Supporting operational concepts include ground operations at the heavily fortified Troms defense line (about 500 km from the Soviet border), marrying overseas reinforcements with POMCUS stocks in Norway, air defense of bases in Norway and Denmark, and air-ground operations to defeat amphibious attacks.

(U) To prevail on the northern flank in nonnuclear operations, the Warsaw Pact must successfully carry out two critical operations:

1. The early special-forces and air-strike campaign to disrupt the NATO reinforcement process and seize temporary control of key bases in Norway.

2. The Soviet ground campaign to link up with airlifted forces and consolidate control over key bases in Norway.

d. Europe--Southern Flank. (U) Warsaw Pact objectives in NATO'S southern region are to protect the southern USSR from NATO strikes and to destroy or neutralize U.S. and NATO naval forces in the Mediterranean Sea. To achieve these objectives, WP strategy calls for: early air and missile strikes on key bases in Turkey and Greece; strikes on CVBGs; early operations to secure the Black Sea exits (the Dardanelles, the Sea of Marmora, and the Bosporus); and ground-force operations to consolidate gains around the Black Sea exits, to secure other parts of Turkey and Greece, and eventually to force Italy to surrender. The important WP operational concepts are:

- Use of special-operations forces, airborne units, and air and missile strikes to neutralize major air bases, air defenses, and C^3I facilities in Greece and Turkey, in order to deny NATO air superiority in the region.

- Coordinated air, surface-ship, and submarine attacks on CVBGs in the Mediterranean.

- Special-operations forces, amphibious landings, and airborne operations to secure the Dardanelles and the Bosporus.

- Echeloned Bulgarian and Soviet ground-force operations in northwest Turkey and Greece to consolidate the WP hold on the Black Sea exits; Soviet ground-force operations in eastern Turkey; subsequent ground-force operations in Greece and Italy.

(U) NATO's objectives on the southern flank are to preserve or restore the territorial integrity of the NATO nations, protect U.S. and NATO naval forces in the Mediterranean, and maintain a base of operations in eastern Turkey to support operations in Southwest Asia if necessary to protect NATO's strategic interests in that region. The NATO strategy is: to conduct counterair operations to maintain air superiority over Greece and Turkey; to position CVBGs initially in the western Mediterranean and move them eastward as air superiority is gained over Turkey, Greece, and the eastern Mediterranean; and to carry out defensive ground operations in mountain regions of Greece and Turkey.

(U) NATO's operational concepts are as follows:

- Early reinforcement of tactical air with units from the United Kingdom.

- Use of AWACS, air defenses and strikes on Soviet/WP air bases to achieve air superiority over Greece and Turkey and to provide land-based early warning and air defense support of fleet operations.

- Initial fleet operations in the western Mediterranean, fighting forward to the eastern Mediterranean with ASW, surface operations, and fleet air defense. Upon reaching suitable operating areas in the eastern Mediterranean, provide carrier-based air support to operations in Greece and Turkey.

- Mobilization of Greek and Turkish ground forces to defend forward areas in northern Greece, northwestern Turkey, and eastern Turkey, where the terrain favors the defense.

(U) There are two critical operations on the southern flank--the air superiority battle over Greece and Turkey and the naval campaign for sea control of the eastern Mediterranean. NATO achievement of air superiority over land is a necessary but not sufficient condition for sea control of the eastern Mediterranean. WP operations against the Dardanelles and Bosporus can succeed only if the Warsaw Pact denies air superiority to NATO, achieves at least local air superiority over the Black Sea exits, and reinforces this region with ground forces from Bulgaria in a timely way.

e. Northeast Asia. (U). The Soviet objectives in Northeast Asia are: to protect the Soviet homeland from attack; to protect SSBN operating areas; to isolate Japan from the West and force its neutrality or surrender; and to keep China neutral if not tilted toward the Soviet Union. Key elements of Soviet strategy in the Asia-Pacific region in nonnuclear war include early and repeated air attacks and special operations against major U.S. and Japanese bases and forces ashore; destruction or neutralization of U.S. CVBGs; air defense of Soviet territory; air and ASW operations to control Soviet SSBN operating areas; prevention of U.S. reinforcement and logistics support to Northwest Asia; support to North Korean operations; maintenance of a coercive force posture against China; and readiness to preempt upon indications that the United States is preparing to use nuclear weapons against Soviet forces or territory.

(U) Supporting this strategy are a number of important Soviet operational concepts. Critical to successful Soviet operations is an early campaign to destroy or neutralize U.S.

and allied land-based tactical air capabilities, nuclear weapons, surveillance and C^3I nodes, airlift termini, and P-3 bases. This involves air strikes, complemented by special-operations forces and submarine-launched cruise missiles, against forces and bases in Japan, Korea, the Philipines, Guam, the Aleutians, and other islands west of Hawaii. North Korean ranger-commando forces would support these operations in Korea. Equally critical for the Soviets are coordinated air, surface, and submarine attacks on U.S. CVBGs. Another key operational concept for the Soviets is disposition of air, surface, and submarine units to exercise sea control in the Sea of Japan, the Sea of Okhotsk, and the Bering Sea, to protect both the approaches to the Soviet Union and SSBN operating areas. A related concept is amphibious and airborne landings to control Hokkaido, an operation for which the Soviets may have a growing capability. If the war becomes protracted, Soviet interdiction of military sea lines of communication (SLOCs) to Northeast Asia would grow in importance.

(U) U.S. objectives in Northeast Asia are: to defend the approaches to CONUS, Alaska, Hawaii, Guam, and the U.S. Pacific territories; to defend Japan and Korea; and to secure the associated lines of communications (LOCs). The strategy is to reinforce U.S. forward-deployed air, ground, and naval forces, conducting defensive operations until a sufficient number of CVBGs are assembled to operate in high-threat environments. The strategy then shifts to offensive naval and air operations to control the Sea of Japan and its airspace, and then to air and cruise-missile strikes to destroy or neutralize Soviet threats to Japan and Korea. On the Korean peninsula, the United States will support South Korean forces, seeking to stabilize the battle (preferably forward to Seoul), and then to restore the territorial integrity of South Korea.

(U) The following operational concepts support this strategy:

- Prior to hostilities, movement of Marine Corps units and air defenses to provide additional protection of the Aleutians (surveillance and P-3 base) and other key islands (e.g., Guam).

- Mining and SSN barrier operations to control the exits from the Sea of Japan.

- Air defense and tactical air/cruise-missile strikes to establish air superiority over Korea and Japan.

- Sea control operations in EASTPAC and WESTPAC, especially along SLOCs and in CVBG operating areas.

- Counter-C^3 operations to destroy or neutralize Soviet capabilities to locate CVBGs.

- Joint USAF/USN strike operations, supported by special-forces operations, to destroy or neutralize Soviet air power (especially long-range air), naval support facilities, C^3I, and air defenses in the USSR (principally in the Vladivostok and Petropavlovsk regions) and in Vietnam.

- High-firepower ground and air counteroffensive in Korea to stop North Korean forces during the first few days of the war, permitting redeployment of some tactical aircraft to Japan.

- If conditions permit later in the war, joint Japanese/ U.S. amphibious operations against Sakhalin.

(U) The outcome of nonnuclear conflict in Northeast Asia depends critically upon several operations. The first is the battle for air superiority over Japan; prevailing in this battle is a necessary condition for the United States to preserve strike assets, C^3I, and logistics support, and probably to ensure Japan's continued participation in the war. A second necessary condition for a favorable outcome is that the United States prevail in what might be termed the "long-range air battle" in East Asia. This consists of Soviet air, cruise-missile, and nonnuclear ballistic missile attacks on U.S. air bases throughout the Western Pacific; U.S. strikes on Soviet air bases with land-based tactical air, carrier-based tactical air, B-52s carrying nonnuclear munitions, and cruise missiles; and the attrition imposed by each side's defenses. Closely related to this long-range air battle is the outcome of the Soviet air and submarine campaign to destroy or neutralize U.S. CVBGs and of the U.S. ASW campaign (using P-3s and SSNs) to destroy or neutralize the Soviet submarine threat to CVBGs.

(U) In general war, the air-ground battle on the Korean peninsula is not likely to have decisive influence on the theater-wide outcome, but preservation of Korea as a U.S. operating base is important because it is the primary forward base for U.S. nuclear strike forces. Moreover, denying Soviet use of the Korean peninsula is important for U.S. and Japanese efforts to control the Sea of Japan.

f. Naval Operations. (U) The foregoing paragraphs addressed naval operations in the Mediterranean Sea and the Pacific Ocean. North Atlantic operations are discussed in this section.

(U) Soviet objectives in the North Atlantic are to protect the Soviet homeland from attack, to protect the SSBN operating areas in the Norwegian and Barents Seas, and to delay or neutralize U.S. reinforcements and logistics supplies to Europe. The Soviet strategy to accomplish these objectives is to establish an outer defense perimeter at the Greenland-Iceland-United Kingdom (G-I-UK) gap for defense in depth of Soviet territory and SSBN havens, to secure the land flanks of the Norwegian Sea by denying Norway and Iceland as effective bases of operations for NATO, to destroy or neutralize U.S. CVBGs, and to interdict the North Atlantic SLOCs once these other operations have been successful.

(U) Key operational concepts for the Soviets in the North Atlantic include:

- Submarine barrier operations in the G-I-UK gap.
- Coordinated air and submarine attacks on CVBGs approaching the G-I-UK gap or operating in the Norwegian Sea.
- Air strikes, special operations, airborne/amphibious operations, and (in Norway) ground-force invasion to deny bases in Iceland and Norway to the United States.
- Air, surface, and subsurface naval operations to defend SSBNs in the northern Norwegian Sea and the Barents Sea.
- Air defense of the Kola Peninsula.

(U) U.S. objectives in the North Atlantic are to protect the approaches to the United States, to protect military SLOCs to Europe, and to support NATO operations on the northern flank. The strategy is to achieve U.S. control of the G-I-UK gap with an ASW campaign, to marshal a sufficient number of CVBGs to fight their way into the Norwegian Sea [supported by cruise-missile and land-based air strikes on Soviet naval aviation (SNA) bases], and to reinforce the defenses of Iceland and Norway.

(U) U.S. operational concepts underlying this strategy include:

- SSN and P-3 operations to control the G-I-UK gap, both to facilitate CVBG and SSN operations north of the gap, and to attrit Soviet submarines seeking to interdict North Atlantic SLOCs.

- Counter-C^3I operations to deny the Soviets targeting information on CVBGs and other naval forces.

- A combination of fleet air defense and nonnuclear strikes on SNA bases to counter the air threat to CVBGs. During the early stage of the war, strikes on SNA bases would be carried out by submarine-launched cruise missiles, land-based tactical aircraft in Europe, and possibly B-52s with nonnuclear munitions.

- Convoy operations to protect the SLOCs.

(U) Critical operations in the North Atlantic include the submarine/antisubmarine battle to control the G-I-UK gap, and the CVBG efforts to operate north of the gap in support of NATO's northern flank and in support of SLOC protection operations.

g. Space Operations. (U) Soviet objectives in space in a war occurring in the 1990s or later would be to destroy or neutralize U.S. space-based BMD components, to destroy or neutralize U.S. surveillance, intelligence, and communications satellites, and to protect Soviet military satellites. The Soviet strategy would be to initiate operations against space-based systems at the onset of war, as part of a coordinated campaign to degrade U.S. and allied defenses and C^3I. Operational concepts underlying this strategy include:

- Antisatellite (ASAT) operations against low earth-orbiting satellites and, as Soviet capabilities permit, against satellites in synchronous orbit.

- Ground-based attacks on or interference with U.S. satellites, using jamming or (as capabilities permit) more advanced means, such as lasers or particle beams.

- Direct nonnuclear attacks on satellite ground stations (sabotage, special-operations forces, air and missile attacks in overseas theaters).

- Cover and deception to degrade the capabilities of surviving U.S. surveillance and intelligence satellites.

(U) U.S. objectives are similar to those of the Soviets: to destroy or neutralize Soviet surveillance, intelligence and communications satellites, to destroy or neutralize Soviet space-based BMD components (if they exist), and to protect U.S. military satellites. The U.S. strategy probably would be to withhold space operations initially in an effort to persuade the Soviets to leave space in sanctuary; if the Soviets initiated space operations, the United States would respond with the means available to it. Operational concepts in nonnuclear war include ASAT operations, ground-based interference or attacks on Soviet satellites, and cover and deception operations. The United States would probably place high priority on destroying or neutralizing Soviet ocean surveillance satellites.

3. Nuclear War

a. General. (U) Soviet objectives in nuclear war include protection of Soviet territory from attack, execution of decisive nuclear attacks in support of Soviet military operations worldwide, and emergence of the Soviet Union as the dominant political, economic, and military power after the war. Soviet strategy for achieving these objectives in nuclear war includes the following major elements:

- Preemption of nuclear use by Soviet enemies--that is to say, launch of Soviet nuclear strikes upon indications that the United States or other enemies are preparing to initiate the use of nuclear weapons.

- Large-scale use of nuclear force, to have high confidence of achieving the desired mission objectives.

- Integrated conventional-chemical-nuclear operations in major theaters (including ocean theaters), aimed at securing Soviet general-purpose political and military objectives in these theaters.

- Intercontinental nuclear strikes aimed at the elimination of the United States as a major political-economic-military power.

- Offensive nuclear strikes, combined with active and passive defense of the Soviet Union. Passive defenses include: hardening of military facilities, C^3I installations, and selected industrial facilities; dispersal of political and military leaders; and civil defense measures.

(U) A number of important operational concepts underwrite this Soviet strategy, including the following:

- The Soviets do not make the distinction between strategic and theater nuclear weapons that is made in the West. The Soviets will use homeland-based nuclear forces (including systems with an intercontinental capability) against theater targets. They will also regard as "strategic" any nuclear attack on Soviet territory, regardless of the basing of the attacking weapons. Whether limited attacks on Soviet territory with theater nuclear forces would result in Soviet escalation to nuclear attacks on CONUS is problematic and depends on many factors. It is clear, however, that the Soviets have made provision for theater nuclear operations of their own, without simultaneously carrying out intercontinental nuclear attacks.

- Priority targets for Soviet nuclear attacks in overseas theaters and CONUS are generally as follows:

  -- Nuclear-capable forces and weapons
  -- C^3I
  -- Major groupings of general-purpose forces
  -- Ballistic-missile and air defenses
  -- Political-administrative centers
  -- War-supporting industries.

- Population per se is not targeted by the Soviets, but targets in or near cities would be attacked, and the Soviets probably would not take measures to reduce collateral damage if these measures interfered with the accomplishment of military missions.

- While the Soviets prefer to conclude nuclear war quickly and decisively, they also make preparations for fighting a protracted nuclear war.

- The Soviets make provisions for a substantial reserve of theater nuclear and intercontinental forces.

(U) U.S. objectives in nuclear war are to control escalation while achieving required missions, to limit damage to the United States and its allies, and to emerge from the war with greater political, economic, and military power than the Soviet Union. Major elements of U.S. strategy for nuclear war include:

- Provision of a range of nuclear options that vary in size, geographic coverage, and type of target.

- First use of nuclear weapons in overseas theaters if required to achieve U.S. and allied political-military objectives.

- Heavy dependence on offensive nuclear striking power to achieve U.S. objectives in nuclear war (possibly shifting in the future to include greater reliance on defensive systems).

- Use of intercontinental nuclear forces primarily to achieve U.S. homeland-to-homeland objectives, with U.S. theater commanders supported largely by theater nuclear forces under their operational control.

(U) Important U.S. operational concepts for nuclear war are as follows:

- Provision of a range of nuclear options that observe various escalation boundaries; limited support to theater operations by intercontinental forces.

- Population <u>per se</u> is not targeted, although many targets are in or near heavily populated areas. The United States makes efforts to control collateral damage, particularly in limited nuclear strikes and in cases where nuclear weapons might be used on friendly territory.

- Priority targets for U.S. theater nuclear and intercontinental nuclear forces include:

  -- Nuclear strike forces and weapons
  -- Ballistic-missile and air defenses
  -- C^3I facilities
  -- Soviet leadership targets
  -- War-supporting industry
  -- Other military targets.

- The U.S. operational concept envisions that, if a general war involved use of nuclear weapons, there would be a period of nonnuclear conflict, followed by a period of theater nuclear operations, perhaps including limited use of intercontinental nuclear forces. If efforts to control escalation failed, the war could escalate to large-scale SIOP/[RISOP] intercontinental nuclear exchanges, perhaps followed by a period of post-SIOP operations.

- Provision of a nuclear reserve force.

b. Limited Nuclear War. (U) Limited nuclear war can occur in two forms--nuclear conflict limited to overseas theaters, including the oceans (i.e., no nuclear attacks on U.S. or Soviet homelands) or limited nuclear attacks on U.S. and Soviet territory. The Soviets clearly have made preparations for nuclear war limited to overseas theaters, although such a theater nuclear war could be unlimited from a theater perspective (many hundreds of weapons, no limits on classes of targets or countries attacked). The Soviets probably would not engage in limited strategic operations or tolerate limited U.S. nuclear attacks on Soviet territory for very long before making large-scale nuclear attacks on the United States. Actual Soviet behavior could, however, be affected by many factors, and it is possible that, faced with grim alternatives, the Soviets might engage in limited nuclear attacks on the United States, especially if they could gain substantial military benefits. Such a case should, therefore, be considered in the contingency analysis.

(U) In a nuclear war limited to overseas theaters, the following would be critical operations:

- Nonnuclear and nuclear attacks on each side's theater nuclear forces and weapons in Europe and Asia, including attacks conducted during the nonnuclear phase of conflict. These operations will determine the theater nuclear assets available for use in nuclear war.

- NATO use of selective employment plans (SEPs) against Warsaw Pact air bases, ground forces, and C^3I. Note that, if Soviet territory is not attacked, the Pacific Command (PACOM) has few critical targets for theater nuclear operations.

- Soviet and WP execution of large-scale nuclear attacks throughout the European and Asia-Pacific theaters. The Soviets will make every effort to execute these attacks preemptively.

- Nuclear operations at sea, especially Soviet air and submarine nuclear attacks on CVBGs.

- Continued general-purpose air, ground, and naval operations in a nuclear environment, to achieve the U.S. and

Soviet theater objectives described in the foregoing section on nonnuclear war.

(U) As noted above, the Soviets would use long-range bombers, intermediate-range ballistic missiles (IRBMs), and perhaps ICBMs based in the Soviet Union to support a nuclear war limited to overseas theaters; they would also use older submarine-launched ballistic missiles (SLBMs) (i.e., those on Yankee SSBNs) for this purpose. The United States could also use some long-range bombers and possibly some SLBMs or ICBMs to support theater nuclear operations. In the case of nuclear conflict limited to overseas theaters, these homeland-based systems would not attack targets in the other side's homeland (this is simply a matter of how we have defined the cases, not a judgment about constraints each side would observe in nuclear conflict).

(U) A second case of interest in connection with limited nuclear war is one in which one or both sides make limited attacks on targets in the other side's homeland, using theater nuclear or intercontinental nuclear forces. Limits in this case would be by attack size, type of target attacked, and, perhaps, type of nuclear delivery systems used or their basing. In this second case, nuclear operations would in all likelihood also be carried out against targets in overseas theaters.

(U) The following are examples of limited nuclear attacks on homeland targets. Although the attacks would be small, they could have important impact on conflict outcomes, especially in overseas theaters.

- Targets in CONUS:

  -- The National Command Authorities (NCA) and other leadership targets (e.g., the Joint Chiefs of Staff in the Pentagon command post).

-- Airfields and and ports that are major embarkation points for overseas reinforcement.
-- U.S. military satellite launch and ground-control facilities.
-- Communication nodes on the ground.

- Targets in the USSR:

-- Antisatellite (ASAT) launch and ground control facilities.
-- Ground components of the Soviet ocean surveillance system.
-- Other military satellite launch and ground control facilities.
-- Soviet naval aviation (SNA) main operating bases in critical regions (e.g., the Kola Peninsula or Northeast Asia).

c. SIOP/RISOP Exchanges. (U) If the war escalates to large-scale homeland-to-homeland nuclear attacks involving execution of SIOP MAOs and corresponding Soviet nuclear attacks, the following are operations or situations that would have critical impact on postexchange conditions in the United States and the Soviet Union:

- Survival or reconstitution of nuclear reserves and other remaining nuclear forces, to provide an ability to conduct further attacks:

-- ICBMs (including reloads and silo refurbishment capabilities).
-- SSBNs and SLBMs surviving ASW operations.
-- Long-range bombers that survive, recover, and reconstitute.

-- Theater nuclear forces, including tactical aircraft, CVBGs, and cruise-missile ships and submarines.

- Survival or reconstitution of a coherent C^3I system to provide an ability to direct homeland recovery efforts, further military operations, and war termination negotiations:

  -- National Command Authorities.
  -- Communications.
  -- Surveillance, intelligence and warning systems, including overseas ground-based, airborne, or sea-based systems.

- Survival or reconstitution of the ability to withstand further homeland attacks:

  -- Ballistic-missile and air defenses
  -- Passive defenses (dispersal, evacuation, expedient hardening of critical assets).

- Political and social conditions in the United States and the USSR affecting the will to fight and the balance between inward-directed recovery activities and outward-directed political-military activities.

d. Post-SIOP Operations. (U) Whether a nuclear war would continue beyond SIOP/RISOP exchanges is, of course, highly uncertain. But the Soviets devote some planning and apparently some resources to capabilities for continued military operations in the post-exchange period, and the United States has recently begun to make preparations for post-SIOP operations. Critical military operations in the post-SIOP period, if there is one, include the following:

- General-purpose and nuclear operations to control vital political-economic regions overseas, notably Western Europe, Japan, and the oil regions of Southwest Asia.
- General-purpose and nuclear operations to control or deny access to overseas recovery resources, including SLOCs and the land LOCs to Europe and Southwest Asia.
- Nuclear operations against critical targets in CONUS and the USSR, especially nuclear force reserves and C^3I.
- Military operations related to China are a possibility, if China has been brought into the war by this time--Soviet operations against Chinese nuclear forces, leadership targets, and general-purpose forces; U.S. operations to support China.

D. VARIANTS FROM THE BASELINE CONTINGENCY

(U) This section discusses briefly three variants from the baseline contingency that may pose some additional considerations for BMD analysis:

1. General war starts in Southwest Asia and Turkey.

2. General war starts in Northeast Asia.

3. U.S. strategy in the post-SIOP period uses all available military assets for defense of CONUS and operations against the Soviet homeland, with little or no continued support to overseas theaters.

1. <u>Southwest Asia/Turkey Variant</u>

(U) In the crisis period, civil anarchy in Iran results in a request by the Iranian Government for Soviet military assistance. The Soviets send forces into northern Iran. The United States responds by deploying Central Command (CENTCOM) forces to the Persian Gulf region, including southern Iran, and by reinforcing in Turkey. The initial U.S. entry into Iran is unopposed, but the crisis escalates to fighting between U.S. and Soviet forces in the Persian Gulf region. Unrest and revolt in Eastern Europe is aided by the Federal Republic of Germany, further exacerbating the crisis and leading to a major WP invasion of Western Europe. At this point the variant contingency begins to merge with the baseline contingency.

(U) At the start of the conflict in Southwest Asia, countries are aligned as follows: Iran is split, with rival factions favoring the United States or the Soviet Union; Afghanistan, Ethiopia, and the Peoples Democratic Republic of Yemen side with the Soviet Union; Turkey, Egypt, Saudi Arabia, and Oman permit U.S. use of bases in their countries; other NATO nations support the U.S. actions but initially are not belligerents; China is neutral.

(U) The crisis builds up long enough that the Soviets mobilize on D-35, and the United States mobilizes on D-30. This results in the following D-Day disposition of forces in Southwest Asia and Turkey:

- For the United States--Air Force units deployed to Turkey; Air Force tactical air, Airborne Warning and Control System, Strategic Air Command projection force, and CVBGs deployed to Southwest Asia; U.S. Marine Corps units ashore in Iran at Bandar Abbas and Chah Bahar;

Army airborne units ashore in Iran at Abadan; other Army units enroute.

- For the Soviet Union--Surface action groups and submarines in Arabian Sea, Indian Ocean, and Mediterranean Sea; Soviet naval aviaton reinforced on the periphery of Southwest Asia and Black Sea; theater aviation reinforced in Transcaucasus and Turkestan military districts; ground forces from Transcaucasus and Turkestan military districts in northern Iran and massed on Iranian border.

(U) The Soviet objective is to achieve political control of Iran and its oil by installing a puppet regime. The strategy is to conduct high-speed military operations to reach the Persian Gulf before U.S. ground forces can be fully reinforced. Operational concepts underlying this Soviet strategy in nonnuclear war include the following:

- Carry out a ground invasion of Iran along multiple axes.

- Conduct counterair and ground-support air operations to support the high-speed advance of Soviet troops.

- Destroy or neutralize U.S. CVBGs and theater land attack missile (TLAM) ships and submarines.

- Interdict air and sea LOCs that support U.S. forces.

- Engage and defeat U.S. ground forces.

- Be prepared to preempt U.S. efforts to use nuclear weapons.

(U) The U.S. objectives are to deter further Soviet advances into Iran, to counter these advances if they occur, and to maintain Western control over Persian Gulf oil. The U.S. strategy is to threaten to impose costs on the Soviets that exceed the benefits the Soviets perceive in controlling Iran. The following operational concepts underly U.S. strategy:

- Interdiction of Soviet axes of advance and LOCs in northern Iran.

- Engagement of Soviet ground forces approaching southern Iran.

- Control of SLOCs to the Persian Gulf.

(U) The following operations will have critical impact on the outcome of the Southwest Asia campaign:

- Soviet counterair campaign against air bases in Turkey and the Middle East/Persian Gulf region that support U.S. operations.

- The Soviet air, surface, and submarine campaign against U.S. CVBGs.

- The U.S. air interdiction campaign in northern Iran.

- Ground-force engagements in southern Iran.

(U) As war became imminent in Europe, the United States would be forced to disengage air, ground, and naval forces in Southwest Asia and redeploy them to Europe (some naval forces would redeploy to Northeast Asia). The Soviets, too, would probably choose to slow the pace of operations in Southwest Asia, redeploy some forces to the European theater, and use the remainder of their Southwest Asia forces for holding actions. The Soviets would also be seeking opportunities to interfere with the U.S. process of redeploying forces to Europe and Northeast Asia. Thus, as the conflict expanded to general war, operations associated with disengaging in Southwest Asia would become critical.

2. Northeast Asia Variant

(U) A war between the United States and the Republic of Korea, on the one hand, and the Democratic Peoples Republic of Korea, on the other, is unlikely to escalate to conflict between the United States and Soviet Union, let alone to worldwide war. Nevertheless, should such an escalation occur after the United States had substantially completed its planned mobilization of forces for a limited Korean contingency, there would be a significant strategic maldeployment of U.S. forces. How, if at all, U.S. ballistic missile defenses can support U.S. operations during the period of redeployment for a major war in Europe must be considered. This potential problem arises because U.S. tactical aircraft (e.g., F-111s), ground forces, and CVBGs earmarked for Europe are scheduled to deploy to Korea in the event of a limited Northeast Asia contingency when Europe is apparently quiet.

3. U.S. Strategy Variant in Intercontinental War

(U) The baseline contingency indicates that important U.S. nuclear and general-purpose operations in support of overseas theaters would be carried out during execution of SIOP Major Attack Options and as part of post-SIOP operations. A variant U.S. strategy is one in which minimal support with nuclear weapons would be provided to overseas theaters, once the war escalated to intercontinental exchanges. Such a strategy would, for example, provide no strategic-force support to theater operations and might keep all theater land attack missiles/ nuclear (TLAM/N) and platforms as part of the Nuclear Reserve Force. The implications for BMD issues of such a shift in U.S. strategy as a general war moved to intercontinental exchanges should be considered.

APPENDIX C

THE IMPACT OF AN ADVANCED U.S. BMD SYSTEM ON THE SOVIET BASELINE OFFENSIVE THREAT TO CONUS, AND POTENTIAL USSR COUNTERMEASURES

John Baker

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APPENDIX C

THE IMPACT OF AN ADVANCED U.S. BMD SYSTEM ON THE SOVIET BASELINE OFFENSIVE THREAT TO CONUS, AND POTENTIAL USSR COUNTERMEASURES

John Baker

(U) The deployment of an advanced, multilayered ballistic missile defense (BMD) system capable of protecting the continental United States (CONUS) with little or no "leakage" would confront the USSR with a major strategic problem. Such ballistic missile defenses would present a severe obstacle to the Soviet strategic missile force's ability to perform its assigned wartime missions.

(U) The USSR might consider four different options using its offensive forces to counter a sophisticated U.S. BMD system. They are:

1. Negate the BMD system's effectiveness

2. Pay the "buy-in" price required to reach their CONUS targets

3. Circumvent the BMD system by using air-breathing strategic strike systems

4. Make the BMD system irrelevant by achieving victory in the theaters by using only nonnuclear means.

The technical countermeasures to a BMD system that are associated with the first option are outside the purview of this appendix. Instead, this paper will analyze how a U.S. BMD system would impact on the projected baseline Soviet strategic offensive threat, and what types of indirect countermeasures the Soviets could adopt to offset an effective U.S. BMD system.

A. THE SOVIET BASELINE THREAT AGAINST CONUS BMD

(U) Existing projections of Soviet strategic force trends indicate that through the 1980s a growing proportion of the total number of deliverable nuclear weapons against CONUS targets will be ballistic missile reentry vehicles. This results from the current and projected Soviet MIRVed missile programs. By 1990 less than 10 percent of Soviet nuclear weapons potentially targeted against CONUS will be bomber-delivered, despite the expected Soviet deployment of the Blackjack bomber and an air-launched cruise missile (ALCM) during this decade. To a large degree this situation reflects the primacy historically accorded to long-range ballistic missiles by the Soviets. Consequently, a highly effective BMD system defending CONUS would directly threaten the military utility of almost the entire strategic offensive force projected for the USSR.

(U) Estimates of how the USSR would employ its current force structure against a highly effective U.S. BMD defense are very sensitive to the degree of "leakage" assumed for the defense system. If an essentially leakproof BMD system is postulated, the USSR would have little to gain by launching a missile strike against CONUS. Nonetheless, a missile launch might occur anyway as a result of differing Soviet perceptions concerning the actual effectiveness of the U.S. BMD system. The USSR might consider retargeting a substantial proportion of its intercontinental ballistic missile (ICBM) and submarine-launched ballistic missile (SLBM) force against various elements of the U.S. BMD system seeking to find an unrevealed vulnerability that would negate or degrade its effectiveness.

(U) The other alternative available to the Soviets would be to pay the "buy-in" price that the U.S. BMD system might exact. By increasing their level of effort in terms of projected ballistic missile reentry vehicles (RVs) the Soviets could hope to overwhelm the entire defense system. Given the assumed effectiveness of the CONUS defenses, it probably would not be an easy or economical task for the USSR. In addition, resources devoted to this uncertain objective would compete with programs aimed at developing threat systems that might circumvent the defenses. Alternatively, in light of such defenses, the USSR could simply attempt to maximize the limited effectiveness of its strategic missile forces by concentrating on a limited number of the CONUS target set.

(U) An essentially leakproof BMD system based on a multilayered intercept capability will not be attained overnight. Therefore, it is prudent to consider how Soviet targeting and force-structure plans could be affected by an initial U.S. BMD that was not leakproof. For purposes of analysis, the impacts of three levels of warhead leakage are considered: 10, 50, and 100 RVs arriving on separate targets. It is assumed also that by relying on preferential targeting the Soviets are able to choose which CONUS targets their RVs have a high probability of penetrating to and destroying.

(U) In the absence of a BMD system covering CONUS, Soviet targeting priorities were previously postulated to be:

- Nuclear-capable forces and weapons
- Command, control, communications, and intelligence (C^3I)
- Major groupings of general-purpose forces
- Ballistic-missile and air defense

- Political-administrative centers
- War-supporting industries.

Deployment of a BMD system defending CONUS would affect Soviet targeting priorities, depending on the number of missile reentry vehicles that Soviet planners believe will reach their targets. Assuming that only 10 RVs will penetrate with high confidence compels Soviet planners to direct them against the most critical targets in the CONUS target structure.

(U) Under such severe constraints, targeting these few weapons against U.S. strategic offensive force targets would have little real effect. Instead, strategic command and control targets in CONUS would be the most important targets because destruction of even single targets could seriously disrupt U.S. strategic force operations. The specific value of destroying these targets would depend on whether they could survive long enough during the attack to perform their primary mission, and whether more survivable alternatives existed. In addition, eliminating selected elements of the strategic communications network and intelligence support system could also have great effect, at least temporarily, if early in a conflict. Few other CONUS targets would be of such individual criticality to be included in such a limited strike. The one exception would be the destruction of in-port nuclear-powered fleet ballistic missile submarines (SSBNs) in the event of a Soviet surprise attack.

(U) Assuming that a much higher level of Soviet RVs can penetrate to their CONUS targets significantly expands the range of target types the USSR might want to attack, although the need to concentrate on critical targets is not eliminated. With 50 weapons arriving on target, Soviet planners can consider targets other than selected C^3I assets. The main addition would be selected elements of the U.S. strategic offensive forces. Lacking the capability to destroy large numbers of individual targets, the Soviets might target the [ ] launch control centers controlling the projected deployment of 100 Peacekeeper ICBMs. Destruction of strategic bombers, even if dispersed in relatively small numbers, would offer relatively high-payoff targets as compared to individual ICBM launchers. Once again, if the U.S. strategic force is not generated, then the USSR would find even more attractive targets in terms of SSBN bases and bomber main operating bases.

(U) Knowing that up to 100 weapons will reach their destinations with high confidence, Soviet planners could further expand the target list to be attacked. Launch control centers for MIRVed Minuteman III ICBMs would become more attractive targets. Dispersed strategic bomber bases also would increase in value as targets. Selected elements of new target sets, including nuclear storage/production facilities and major general-purpose force targets, might be worth consideration. Their destruction could support the theater-level conflicts and serve to hedge against a protracted world war. Nonetheless, even with 100 weapons, the capability of the Soviet baseline strategic forces to fulfill their wartime objectives would be undercut dramatically by highly effective missile defenses for CONUS.

B. INDIRECT SOVIET COUNTERMEASURES AGAINST CONUS BMD

(U) Faced with an effective defense against its strategic missile forces, the USSR has few alternative means for striking CONUS-based targets. Outside of exotic threat possibilities such as nuclear "suitcase" bombs, the sole option available to it for circumventing a CONUS BMD system is to place greater emphasis on air-breathing strategic strike systems. These would include mainly:

- Strategic bombers armed with air-launched ballistic and cruise missiles

- Sea-launched cruise missiles aboard submarines

- The use of Cuba as a launch platform for medium bombers, tactical aircraft, or ground-launched cruise missiles.

Two major problems exist in terms of the USSR's placing greater reliance on air-breathing systems to meet its strategic targeting needs. First is the problem of implementing such a major change in the Soviet strategic force structure. As noted earlier, strategic bombers comprise less than 10 percent of the projected Soviet intercontinental force inventory. Although there are indicators that the USSR is interested in rejuvenating its intercontinental-range bomber force, a major shift to bomber forces would be a difficult, costly, and time-consuming task.

(U) Soviet production of large numbers of air- or sea-launched cruise missiles (ALCMs or SLCMs) also will require some time. Basing large numbers of cruise missiles at sea can be facilitated by the conversion of many existing Soviet submarines into cruise-missile launch platforms. This would still be a time-consuming process and could carry a substantial opportunity cost in terms of lost strategic or sea control capabilities. Finally, deployment of various nuclear systems in Cuba would present difficult political problems for the USSR, although covert stockpiling or rapid forward deployment might be possible.

(U) The second major problem for the Soviets is whether air-breathing systems offer sufficient military utility as substitutes for Soviet ballistic missile forces. On balance, the air-breathing systems exhibit significant shortcomings compared to ballistic missile systems in terms of many Soviet military requirements. These requirements include:

- Military effectiveness. Soviet bombers and cruise missiles probably would have comparable effectiveness in destroying enemy targets, but their lengthy flight-time reduces their usefulness against time-critical targets.

- Survivability. Soviet bomber forces presently are not maintained on ground-alert status. Soviet cruise missile submarines would be exposed to U.S. open-ocean antisubmarine warfare capabilities while patrolling off American coasts.

- Costs. Stationing large numbers of cruise missile submarines off U.S. coasts is an expensive operation. Bomber force training and support similarly is costly compared to ICBMs.

Other difficulties can be noted, including those associated with reliable command and control and the fact that such a large-scale shift is contrary to long-standing Soviet institutional interests and traditions.

(U) The major military shortcoming of relying on air-breathing systems is the lengthy amount of time-to-target required, even for forward-deployed systems. Soviet ICBMs and SLBMs threaten to destroy CONUS targets within 8 to 25 minutes, while the air-breathing systems' flight times are measured in hours. Even if launched from close-in locations, Soviet SLCM strikes will require about an hour to reach coastal targets, and 2 to 3 hours for Strategic Air Command missile and bomber bases located in central CONUS. Launch from normal SSBN patrol areas would add another hour of flight time. By comparison, strategic bombers launched from the USSR would require about 8 to 10 hours to reach CONUS, and it would take about a week for cruise-missile submarines to make the trip from Soviet home ports. If they could be employed from forward bases, the transit time for Soviet systems would be reduced substantially.

(U) The main shortcoming of Soviet reliance on air-breathing systems as substitutes would be their inability to effectively counter time-critical targets such as strategic C^3I assets and generated strategic nuclear forces. Cruise missiles and bombers could effectively strike other important CONUS targets such as military bases, sealift ports, and various nonmilitary targets. Air-breathing systems also threaten the U.S. ability to conduct protracted nuclear operations, since they can destroy withheld missile launchers, some surviving C^3I targets, and bases necessary for strategic reconstitution.

(U) The currently planned U.S. strategic air defense force would be fairly inadequate against any significant upgrade in the Soviet air-breathing threat to CONUS. American air defenses are primarily oriented toward peacetime control of CONUS airspace and the provision of wartime warning rather than an effective wartime defense. The ground-based radar and command, control, and communications facilities are vulnerable to early destruction in a conflict. Only limited numbers of Airborne Warning and Control System (AWACS) aircraft and F-15 interceptors are presently planned for CONUS air defense. An effective CONUS BMD system, however, would improve the survivability of much of the air defense system. This might create an incentive for the Soviets to use some of the few penetrating RVs or initial SLCM strikes to destroy important links in the North American Air Defense (NORAD) system, such as the over-the-horizon backscatter (OTHB) radars, to enhance the penetrability of follow-on air-breathing attacks.

(U) Given the absence of effective air defenses, the United States would need to be concerned with certain contingencies such as a precursor nuclear strike on important strategic

C^3I and air defense targets by Soviet air-breathing systems. A Soviet surprise attack using SLCMs would need to be launched from the submarines' regular patrol stations to avoid giving any early warning. Defending against such contingencies would require a large U.S. investment in strategic defensive forces to complement any CONUS BMD system. The United States might turn to space-based sensors for warning against SLCM attacks, or rely on preferential allocation of air defense assets to ensure the survivability of selected high-value CONUS targets.

(U) To summarize, the deployment of an effective CONUS BMD system will fundamentally undermine the military utility of the Soviet strategic missile forces. A major shift to air-breathing systems will be difficult for the Soviets and will not provide an effective substitute for the existing Soviet strategic capability based on ballistic missiles. At the same time any significant increase in the Soviet strategic air-breathing threat, such as new cruise-missile submarines, will require major U.S. investments in strategic air defenses in order to deny the USSR any means for circumventing the CONUS BMD system.

APPENDIX D

THE ROLE OF ANTI-TACTICAL BALLISTIC MISSILE (ATBM) DEFENSE

C.J. LeVan

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APPENDIX D

THE ROLE OF ANTI-TACTICAL BALLISTIC MISSILE (ATBM) DEFENSE

C.J. LeVan

A. THE THEATER

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(S) The Soviet SRBMs have possessed for some time the capability to deliver a severe nuclear and chemical first strike. However, accuracies have been generally inadequate for the effective use of conventional munitions. [

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(S) The SRBMs are organic to the Soviet divisions, combined-arms armies, and fronts. [

] Their primary employment will probably be in support of military operations; i.e., to attack military targets. However, in that many of these targets are collocated with, or in the vicinity of, population and economic centers, a corollary damage threat to NATO will exist.

(S) The SS-20 IRBM presents, in terms of both defensive system design and policy implications, a unique and difficult threat. [

] It is being produced in quantity to provide a reload capability. It can be assumed that the SS-20 force would be used to attack targets of strategic importance within NATO or the theater of operations. Such targets might include: the political and military command, control, and communications (C^3) and leadership; strategic systems of the United Kingdom, France, and China; nuclear forces and facilities; war-support industry; and others, i.e., a NATO target set similar in nature to those commonly associated with an ICBM attack on the continental United States (CONUS).

B. EVOLUTIONARY ATBM BASE

(~~S~~) Currently the Army is pursuing a limited program to provide the Patriot with what is described as a self-defense capability against the SRBMs. The program consists essentially of a revision of software to accommodate the kinematics of a tactical ballistic missile intercept. [redacted]

(~~S~~) [redacted]

(~~S~~) A second-phase Patriot anti-tactical ballistic missile (ATBM) upgrade has been addressed in a cursory manner by the contractor. This additional effort would make major hardware changes to the system and would upgrade the current missile or conceivably add a new missile. [redacted]

[ ] This second-phase proposal has not been adequately evaluated by the Army, nor has it been compared against other possible longer-term ATBM system concepts. Given funding and time, it is possible to provide hardware changes to Patriot to improve its ATBM capability within an existing set of technical and cost uncertainties.

(~~S~~) A major uncertainty is associated with achieving nonnuclear kill (NNK) against the tactical ballistic missile (TBM) warhead spectrum; i.e., nuclear, chemical, and improved conventional. A low-yield Patriot nuclear warhead would be effective but poses significant political, operational, and cost problems. [

] The chemical warhead of the nuclear-armed TBM provides a particularly difficult NNK problem, currently not solved.

(~~S~~) An appealing upgrade of the Patriot ATBM capability would be one that could be developed as a tactical adjunct, mobile for ready deployment, and one of sufficient capability [

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(~~S~~) An airborne optical adjunct (AOA) or system (AOS) is often suggested; however, normally in conjunction with the broader ballistic missile defense (BMD) problem and as a BMD system component. [

] The SS-20 is in one sense the saddle point, or capability seam, between tactical system upgrades or BMD downgrades for the ATBM role. If a system is effective against the SS-20, it possibly will have some effectiveness against at least some of the submarine-launched ballistic missile (SLBM) and ICBM systems. [

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C. POLICY IMPLICATIONS

(S) The Soviets have long upgraded their tactical air defenses [surface-to-air missiles (SAMs)] and air defense surveillance radars to have a suspected capability against strategic ballistic systems and a demonstrated capability against tactical ballistic systems. [

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(S) In that such systems are developed for tactical applications such as homeland air defense, there is no treaty violation that can be readily verified. An additional factor is the capability achieved if and when a number of these tactical components are integrated into a total system. The capability of the whole could exceed that of the components. A rapid upgrade or "BMD breakout" could result. Again, this would be difficult to verify in that the components are at least advertised as tactical and treaty immune.

(S) A tactical ATBM defense could provide the United States with a means to:

- Deal with the rapidly growing short-range ballistic missile threat to Europe.
- Defend against the SS-20.
- Initiate an intermediate program without violating the ABM Treaty.

(~~S~~) The tactical need for such an upgrade is obvious. The current U.S. counter to the SS-20 is to deter by introducing an improved theater nuclear force into NATO, specifically the ground-launched cruise missile (GLCM) and the Pershing II. [redacted] Furthermore, achieving NATO acceptance of the GLCM and Pershing II deployments has been and remains difficult.

(~~S~~) Our NATO allies have long been concerned that the United States and the USSR would deploy national ballistic missile defenses--leaving them exposed. The advent of the SS-20 system in growing numbers and well-tailored for European attack, and probably viewed as their major ballistic missile threat, rather than the ICBM, undoubtedly has reinforced this concern. Deployment of some NATO defensive capability against the SS-20 is considered critical if the United States is to pursue a space-based ICBM defense program, to provide assurance that we remain committed to the Alliance. A tactical ATBM evolution could provide such a capability as an orderly, paced program. A near-term effort, although limited, is under way in the Patriot program and could serve as the basis for evolution.

(~~S~~) Current U.S. Army plans provide for Patriot forward defenses as well as rear-area defenses in the Federal Republic of Germany. It is hoped that the forward defenses will be part of a NATO-wide forward defense belt. The rear-area defenses will include air bases, nuclear storage, C^3, etc. In that these are priority Warsaw Pact (WP) targets, the Patriot defenses add to the overall ballistic attack deterrence and promote stability. Other Patriot systems in the CONUS force structure could be deployed to areas other than NATO to accomplish the same objectives during crisis periods.

(~~S~~) As the ATBM system evolves via either Patriot Phase II or some other alternative to the AOS addition phase, other NATO critical targets could be provided varying degrees of defense against the longer-range ballistic systems such as the SS-20. These could include the critical C^3 nodes of Supreme Headquarters, Allied Powers Europe (SHAPE) and some of the NATO national leadership that is near the SHAPE nodes. Many of the WP critical targets are located in the vicinity, or in populated areas, which would receive some corollary defense.

APPENDIX E

EMPLOYMENT OF SOVIET BASELINE THREAT CAPABILITIES AND INDIRECT COUNTERMEASURES AGAINST THEATER TARGETS DEFENDED BY BMD

Douglas Hart

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APPENDIX E

EMPLOYMENT OF SOVIET BASELINE THREAT CAPABILITIES AND INDIRECT COUNTERMEASURES AGAINST THEATER TARGETS DEFENDED BY BMD

(U) A ballistic missile defense (BMD) system covering Blue theater targets will probably have the effect of forcing the Soviets to adopt one or more of the response options examined below. Each of these choices involves operational penalties and resource tradeoffs. The policy implications and the direction in which Soviet military technology is pushed by the "forcing function" of theater BMD should be major considerations in judging the potential utility of such a system.

(U) The following discussion of Soviet responses is not intended as an exhaustive listing of possible Soviet counters to theater BMD. It is illustrative of both the range of options open to the USSR, and the related penalties associated with each basic approach. The Soviet countermeasures examined are more in the operational than the technical realm, although each one tends to emphasize certain types of weapon technology. When the discussion specifies neither conventional nor nuclear conflict it should be considered applicable to both types of warfare.

A. BRUTE FORCE

(U) The most direct Soviet response to theater BMD would be to overwhelm Blue defenses with more reentry vehicles (RVs) than they can handle. This approach could very well appeal to Soviet notions of military expediency, and it seems to be the kind of effort for which the Soviet military-industrial complex is best suited. The operational and resource costs of this option, however, would be substantial.

(U) Assuming an effective theater BMD, the Soviets might have to deploy several times the number of warheads in their surface-to-surface missile (SSM) force at any given time. The quickest and cheapest way to do this would be by increasing the number of refires allocated to each launcher. This approach, however, would require salvo attacks, during which time-urgent targets could disperse or complete their missions before the defense were overcome. A major expansion of SSM refires also entails procuring a resupply vehicle for each refire as well as augmenting the large missile and nuclear logistic system, which is both manpower intensive and dependent upon specialized equipment. Without such auxiliary expenditures, reloads could not be readied and brought to the launchers fast enough to generate the warhead densities required to overwhelm theater BMD.

(U) The tactics associated with saturating theater BMD with SSM salvos are also nontrivial. Most, if not all, Soviet SSM launchers in an army or front will have to launch repeatedly against a static target set. The attack will require a complicated shoot-move-reload-shoot-move sequence in order to minimize the vulnerability of the launchers due to their firing signatures. The frequent launches required to overcome a theater BMD would allow at least target localization, and heighten the threat of area barrage by Blue offensive systems. Elaborate and costly automated command and control systems would be required in order to achieve the coordination necessary to compress the time of the attack to an acceptable level. These tactical difficulties would also apply, albeit probably to a lesser extent, to Soviet operational-strategic systems.

(U) Should the Soviets attempt to deploy enough launchers to attack Western anti-tactical ballistic missile (ATBM) systems in a single wave, massive force structure outlays would be required. Not only would firing unit infrastructure, manpower, and equipment levels expand dramatically, but the logistic tail for the firing units (which is as large as or larger than the units themselves) would also have to increase proportionately. If historical Soviet practices regarding SSMs are any guide, assimilating this force-structure expansion could take years.

(U) With respect to nuclear conflict, dramatically increasing the number of warheads deployed in Eastern Europe would create major security problems for the USSR. The Soviet Union has always displayed a penchant for positive command and control of nuclear weapons, especially in the forward areas where Soviet nuclear stockpiles are shrouded in ambiguity and deception. Increasing such holdings by the amounts needed to overwhelm a Blue BMD system in a single volley or several volleys would heighten the visibility and thus the vulnerability of Soviet nuclear weapons in Eastern Europe.

(U) Finally, a major increase in the number of tactical, operational-tactical, and operational-strategic launchers, in conjunction with the firing tactics required to defeat a theater BMD system, will add significantly to Western warning of hostile intent. In order to set up a massive SSM strike and retain some level of poststrike survivability, Soviet launch and support units must leave their garrisons and move to hide positions in the field early in the prehostilities phase of a conflict--simply because the projected force is so large, and preparation for a coordinated attack is a rather time-consuming process.

B. SELECTIVE "BUY-IN"

(U) In the absence of a major SSM force expansion, a BMD system covering Blue theater targets forces the Soviets to act as if they were conducting operations with a much smaller force of SSMs than they actually have. The Soviets must be much more discriminate in choosing candidate Blue targets for SSM attack, if they want any significant level of certainty of destruction or disruption from such attacks. Since the Soviet "buy-in" price in terms of warheads will be significantly higher per target when facing a Blue BMD system, SSM strike planning and execution will be dominated by two major considerations:

1. The Soviets will probably attempt to use their SSMs against targets which threaten the SSMs themselves and other means of conventional and nuclear delivery (i.e., aircraft and cruise missiles).

2. The Soviets will also probably husband SSMs for nuclear delivery roles in some proportion to the effectiveness of Blue's BMD, their notion of the likelihood or imminence of escalation, and the success of other means of conventional delivery.

(U) In terms of target priorities, Soviet SSMs in an ATBM environment will probably be employed against a deck prioritized like the one listed below.

1. ATBM components (if they can be acquired)

2. Air defense components

3. Command and control nodes

4. Stationary or semimobile nuclear-related targets.

To the extent that Blue does not attend to auxiliary defensive measures in conjunction with BMD, the Soviets will exploit such weakness by targeting their ground-based components with SSMs, thus using SSMs to enhance the effectiveness of other delivery systems.

(U) There are several important implications involved in the Soviets' adopting a "lower profile" for their SSMs. The Soviets must adjust to a significantly diminished role for SSMs in their ground-force operations. The direction and pace of their tactical SSM programs, toward conventional strike and terminal guidance, will be challenged by theater BMD, and SSMs may, depending upon the effectiveness of the defenses, revert (or remain) in an almost exclusively nuclear role. This situation will impact upon both Soviet conventional and nuclear operations.

(U) Presumably the Soviets will remain interested in winning a war at the lowest possible level of violence, whether faced with theater BMD or not. Certainly conventional campaigns are possible with a reduced role for SSMs, but they will be increasingly difficult to plan and execute along the lines currently envisioned by the Soviet military. For example, the insertion and maintenance of operational maneuver groups (OMGs) behind enemy lines requires dedicated air support. In a theater BMD environment Soviet aircraft will be forced to do most of their own defense suppression, which will remove aircraft from critical OMG support missions.

(U) On the nuclear level, decreased reliance on SSMs makes it much more difficult to preempt enemy use of nuclear weapons. SSMs currently have the highest probability to penetrate of all Soviet ground and air force delivery systems. By dampening this capability, theater BMD will inject major uncertainties into Soviet nuclear planning. Finally, Soviet nuclear strike tactics, using SSMs to cut corridors for ingressing nuclear strike aircraft in enemy air defenses, will have to be substantially revised.

(U) These problems would not be substantially alleviated by using cruise missiles and submarine-launched ballistic missiles (SLBMs) as substitutes for ballistic SSMs. Soviet cruise missiles are many years away from achieving accuracies sufficient for conventional missions. Since they are vulnerable to advanced air defense, cruise missiles must be employed in large numbers and thus lack the flexibility of ballistic missiles. The slow time-to-target of cruise missiles prevents their use in a preemptive role against time-urgent targets.* Finally, SLBMs are inaccurate compared to ballistic missiles and vulnerable to theater BMD.

C. THE INDIRECT APPROACH

(U) The Soviets could decide to conduct preliminary anti-BMD operations early in a conflict by using Spetsnaz (Soviet special-purpose forces) units, helicopter assault units, saboteurs, or in-place agents as an indirect means of restoring the utility of their SSMs. The difficulty here is really one of imponderables. The Soviets must weigh the advantages such an approach has against the fundamental uncertainties it creates.

(U) The advantages lie in the porous nature of Western societies, which allows the emplacement of agents and sabotage teams in peacetime and during prehostilities. The chaos in the rear areas during the initial hours and days of a war will also

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*(U) Soviet acquisition of stealth technology would alleviate this difficulty and make preemptive strikes with cruise missiles more feasible.

aid in the insertion of Spetsnaz and other units borne by helicopters and fixed-wing aircraft to search for and destroy land-based BMD components. With Spetsnaz teams performing the target-acquisition mission, aircraft using standoff weapons or cruise missiles could attack BMD system components.

(U) On the other hand, Blue theater BMD could be protected by a combination of dedicated security teams and mobility. Vital components could be made air or sea mobile. While these efforts would not thwart all Soviet indirect attacks, what level of confidence can the Soviets assign to such operations? At what point can a Soviet front commander expect his SSMs to be able to penetrate to their targets? How will he know the level of degradation suffered by Blue's defenses at any given time? Special-purpose units are obviously a difficult threat to counter completely, but they are also a difficult problem for planners to assimilate into strike timetables.

D. EMULATION

(U) Deployment by the Soviets of their own theater-oriented BMD system is another possible response to Blue theater BMD. For the USSR, however, emulation only solves half of its problems. An effective Soviet ATBM capability would significantly increase the prelaunch survivability of Soviet SSMs but would not solve the problem of their postlaunch survivability created by Blue BMD.

(U) In an environment characterized by theater BMD deployed by both sides, the advantages appear to flow to the defense. In an attempt to conquer Central Europe, for example, the Warsaw Pact would need to move its BMD envelope forward with advancing maneuver units. Displacing BMD components and moving them forward degrades the capability of the defensive screen and makes the individual components more vulnerable to attack. NATO, on the other hand, should be able to position most of its BMD components for a defensive effort so that limited mobility to insure survivability is the only reason for displacement.

(U) None of the foregoing is meant to argue that the Soviets would not deploy theater BMD if faced with Blue acquisition of such a system. It is highly likely that the USSR would field a similar system as soon as possible. However, given current Soviet operational planning for theater war, theater BMD is a necessary but hardly sufficient condition for conducting offensive operations against an enemy force protected by BMD.

E. SUMMARY

(U) There are numerous Soviet countermeasures for a theater BMD deployment. The fact that the Soviets have multiple response options vis-à-vis Blue BMD, however, does not mean that the system has little utility. Any approach to countering theater BMD carries with it operational penalties and resource trade-offs for the USSR. The effects of pushing the Soviets in one direction or another, with respect to operational concepts and military technology, must be assessed in order to determine the utility of theater BMD. If, as it appears from this preliminary analysis, effective theater BMD would slow Soviet option enhancement, inject major uncertainties into planning for theater war, and significantly degrade the effectiveness of the USSR's premier instrument of preemption, the cost of the effort (in policy and material terms) may be worth paying.

APPENDIX F

STRATEGIC DEFENSE AND STRATEGIC STABILITY

Marc Dean Millot

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APPENDIX F

STRATEGIC DEFENSE AND STRATEGIC STABILITY

Marc Dean Millot

A. INTRODUCTION

(U) Strategic stability, as defined by Western strategists, consists of two aspects: "crisis" stability and "arms race" stability.

(U) Crisis stability is a condition in which neither side perceives an advantage in striking first in order to avoid losing the ability to retaliate. Arms race stability is a condition in which the pace and scope of research and development and the process of modernizing each side's strategic arsenal does not threaten to give one side a decisive advantage. Overall, strategic stability is a state of affairs in which the nuclear postures and programs of neither superpower create anxieties on the part of either side's national decision-makers about the viability of their nuclear position.

(U) Strategic stability must be considered in light of the basic national interests of the two superpowers and the nature of technological advancement as it relates to strategic weaponry. Because of their fundamental difference in political outlook and intentions, strategic stability between the United States and the Soviet Union is not a static condition. The United States is essentially a status quo oriented, defensive power satisfied with the basic configuration of the international system. The Soviet Union is vitally interested in changing the status quo, by force if necessary and when appropriate, and has proven itself to be a basically aggressive power. Between the two superpowers, then, strategic stability is not now, and probably cannot be, a static condition. The Soviet Union seeks military advantage as the principal means of pursuing its basic policy; if strategic stability is to be maintained, it will require U.S. counteraction. Thus, strategic stability is a dynamic condition.

B. ARMS RACE STABILITY AND TECHNOLOGICAL INNOVATION

(U) The inevitable impact of technological innovation on the process of replacing and modernizing strategic forces also causes the concept of strategic stability to be necessarily dynamic. While technology may, in theory, be amenable to some form of control, the reality of the U.S.-Soviet rivalry would seem to indicate that the prospects for such control are limited. Moreover, arms race stability is closely linked to crisis stability. Improvements of one side's strategic forces not adequately countered by the other can lead the latter side to doubt its own ability to retaliate and lead it to consider preemptive action more seriously.

(U) Arms race stability depends on the actions of both involved parties. It is possible to maintain stability at a low level of "arms race" competition--if both sides do not engage in potentially destabilizing deployments or research and development (R&D) programs. If either party does engage in these activities, however, the other must respond. In this case, stability can be maintained, but it is fragile. But if one party engages in these activities and the other refuses to respond adequately, strategic instability is the sure result.

(U) Because of the competitive nature of U.S.-Soviet relations, the first kind of equilibrium is probably impossible. And considering the pace and nature of technological innovation, and cyclical requirements to replace and modernize strategic systems, the second type of stability will be fragile. But instability is the inevitable product of the third case--where one power proceeds with new programs and the other declines to follow suit.

(U) The second form of arms competition can promote a stable strategic situation if neither side seems to be near a revolutionary breakthrough in military capability which would give it a decisive advantage in either defense or offense. But it is the nature of innovation that such breakthroughs are always a potential outcome. Deliberate national decisions to completely seal off such possibilities and instead concentrate exclusively on marginal improvements are largely impossible. Military research programs are, after all, established for the explicit purpose of pushing forward the state of the art. An attempt to hamstring the scientific-technical community would be likely to stifle the innovation process itself and could threaten stability as the side with self-imposed unilateral constraints fell behind in military R&D. Moreover, while a decision to incorporate the new technologies does not necessarily follow from the process of innovation, it would be uncharacteristic for military establishments not to press for them. There are strong and natural pressures to incorporate both "breakthroughs" and substantial improvements on existing technologies into the strategic forces of both sides.

(U) R&D is a natural component of the strategic balance and of strategic stability because of the requirement to replace systems, but its pace and direction are pushed by concerns that a potential adversary might otherwise gain some decisive advantage. Unless arms control can halt the innovation process, it can never entirely solve this problem. By closing off certain technical approaches to acquiring particular strategic capabilities, arms control may mitigate the risk of destabilizing breakthroughs. At some point, however, other technical approaches to acquiring the same strategic capabilities, which have not been closed off, will become feasible. The process of technological innovation, then, is an inevitable aspect of the arms competition.

(U) If both sides maintain vigorous R&D programs but refrain from incorporating the resulting potential capabilities into their strategic forces until they are convinced that the other is about to (or has begun to) incorporate a similar capability, this will clearly enhance arms race stability. However, in assessing the other's developing capabilities and R&D programs, each side will still feel compelled to keep apace of the other. Moreover, because it takes at least a decade to bring major weapons systems into the strategic arsenal, decisions about what capabilities to incorporate into the strategic forces cannot be deferred to some indefinite "last minute" when the other side is about to do so. This further complicates each side's assessment of the other's intent and impels conservative planners to assume that national decisions to deploy emerging capabilities will be taken well before they become wholly apparent to outsiders.

(U) The above discussion would seem to indicate that each party's R&D program is essentially a response to the other's, and that mutual concerns that the other will gain a decisive advantage in the area of technology under scrutiny drive the programs of each. This is not true, of course, as political objectives also influence this process. If both parties' international political objectives were essentially defensive or status quo oriented, some agreement to stem this technological "race" would be logical and probably fairly stable. Whatever military technological competition did persist would be likely to remain at a fairly low level of intensity and might be largely the indirect result of basic research or innovation in nonmilitary areas. Military research establishments might well be much reduced in size, expertise, and technical capacity.

(U) If either power is essentially aggressive and intent on altering the status quo, however, there is little hope for this type of arms control agreement--to restrain technological innovations or to forego the incorporation of improved capabilities into the strategic forces. An aggressive power is unlikely either to willingly deprive itself of the technological infrastructure required to develop new capabilities, or to decline opportunities to improve the vital instruments of its aggression. As noted above, if it is allowed to pursue these avenues of research and development alone, it would be uncharacteristic of the aggressive power not to incorporate into its military arsenal capabilities which offer the promise of a decisive strategic advantage. To the extent that it does enter into agreements aimed at mitigating the technology race, the aggressive power's motivation is not likely to be altruistic. Rather, its intent would be to limit the adversary's R&D program in the area of technology proscribed by the agreement and to foster a more benign assessment on the part of that power regarding the aggressive power's intentions. This has largely been the Soviet Union's approach, particularly with regard to ballistic missile defense (BMD) and the Antiballistic Missile (ABM) Treaty.

(U) To maintain strategic stability in this case, the defensive power must maintain a strong R&D program and develop credible potential responses to the aggressive power's possible introduction of new capabilities. Arms control to close off certain technical approaches to particular aspects of the strategic balance may be useful adjuncts to the defensive power's pursuit of stability, but only if they are accompanied by a credible ability to adequately counter an abrogation of the treaty. Such an ability may be the only means to deter a breakout. Moreover, while an agreement may close off one area of strategic weaponry, others will open up. The defensive power must turn its R&D to those areas so as to deprive the aggressive power of decisive advantages in those areas. Strategic stability can be maintained in this case, but the defensive power must attend to it constantly in order to protect the fragile balance. In many ways, the United States has failed to incorporate these concepts into its policies toward BMD and the ABM Treaty.

C. STRATEGIC DEFENSE AND THE STRATEGY OF MUTUAL ASSURED DESTRUCTION

(U) Until recently, the mainstream of official declaratory U.S. strategic policy has held that strategic defense, and particularly BMD, undermines strategic stability. Crisis stability, in this way of thinking, was equated with possession of a secure retaliatory strategic nuclear force, a force capable of wreaking unacceptable damage on the Soviet Union (defined in terms of very high levels of urban-industrial damage) even after a determined Soviet first strike against those forces. In the U.S. view, so long as the United States could retain the secure retaliatory force, the Soviets would see no advantage in initiating a nuclear attack on the United States. More importantly, it was seen as destabilizing for either side to have the capability to deny the other's "second-strike" capacity. An ability, for example, to deny the Soviets their second-strike capability, it was felt, would increase the prospects that they would strike first in a crisis, because Soviet forces could inflict the most damage on the United States before they were seriously diminished by a U.S. attack.

(U) To maintain stability, as defined by this concept of mutual assured destruction, the United States for long limited its own possession of highly accurate warheads (capable of destroying Soviet missiles in their silos) to numbers far below those necessary to deny the Soviets a second-strike capacity. Similarly, the United States largely denied itself adequate strategic defenses of all types (air, civil, and missile) except antisubmarine warfare, as these were seen to reduce the potential damage of the Soviet second-strike force. Efforts to obtain these forces were largely characterized in the United States as leading the Soviets to believe that we were pursuing a "first-strike" capability--a combination of offensive and defensive means to deny the Soviets an ability to retaliate. To enhance crisis stability under the concept of mutual assured destruction, the United States obtained neither the highly accurate warheads in sufficient numbers to threaten the overall survivability of the Soviet missile force nor the strategic defenses required to mitigate the consequences of a Soviet strike. To bolster arms race stability, the United States did not engage in highly active R&D programs to further improve or seek such capabilities.

D. SOVIET STRATEGIC PROGRAMS AND THEIR IMPACT ON STABILITY

(U) The Soviets' efforts to improve their strategic offensive and defensive forces were not similarly restrained, an indication that they did not follow the above U.S. approach. They actively pursued (and have largely obtained) both a technical capability to destroy most U.S. strategic missiles in their silos and the capacity to somewhat limit the consequences of a U.S. attack against themselves with a variety of strategic defenses. However, so long as Soviet capabilities were deemed to fall short of denying the United States the ability to wreak unacceptable damage, we did not respond with vigorous offensive or defensive programs along the same lines as the Soviets--largely for fear of exacerbating an arms race.

(U) Today, Soviet strategic offensive and defensive efforts have served to severely undermine the credibility of the U.S. deterrent force based on assured destruction. While the threat of unacceptable damage may remain a viable response to nuclear aggression against the United States, it is increasingly incredible as a means of underwriting U.S. security commitments overseas. The extended nuclear deterrent is questioned here by our Allies, and most importantly, possibly by the Soviets themselves. The U.S. failure to adequately counter Soviet strategic offensive and defensive force improvements, out of a laudable reluctance to provoke a crisis or an arms race (based on the assumption of mutual assured destruction), may nevertheless be leading to a situation of strategic instability. In critical areas of the strategic balance, the Soviets have or are gaining important and, they may believe, potentially decisive advantages.

(U) Therefore, considerations of the role of strategic defenses in strategic stability must take into account our assessment of the current state of that stability. In many respects the strategic situation today is unstable. With regard to arms race stability, the Soviet Union appears to be attempting to achieve superiority in certain potentially decisive areas; crisis stability has also been affected, as the Soviets now have capabilities superior to our own in several key aspects of the strategic balance.

(U) By its substantial efforts, undertaken at a high cost to domestic consumption and capital investment, the Soviet Union has already seriously undermined strategic stability. The scope and pace of Soviet programs in strategic offensive forces increasingly threaten the U.S. land-based missile force and the U.S. ability to retaliate for a Soviet first strike, dilute the credibility of the U.S. extended deterrent, and jeopardize crisis stability. The equally worrisome Soviet BMD effort, including the questionable Soviet willingness to adhere to ABM Treaty restrictions, has adversely affected arms race stability and has the potential to seriously impact on crisis stability if left unchecked by U.S. action.

E. THE STRATEGIC DEFENSE BALANCE

(U) The current state of the U.S.-Soviet balance in strategic defense in general, and BMD in particular, is a prime example of how the strategic situation can become unstable if one side pushes ahead in some potentially critical area while the other deliberately lags behind. In contrast to the almost total lack of air defense in the United States, the Soviets currently have an extensive, formidable, and improving air defense network of radars, surface-to-air missiles (SAMs), and interceptors. The Soviet civil defense program is far more advanced than our own, particularly in its protection of the political, military, and control infrastructure. The Soviets have taken full advantage of their deployment and R&D rights under the ABM Treaty (some would argue they have clearly gone beyond the treaty's bounds), while the United States has declined to exercise its deployment rights and allowed its BMD program to languish.

(U) It is important to recognize that current Soviet deployments and R&D efforts in strategic defense may have already undermined strategic stability, or threaten to quite soon. At the very least, the Soviets do appear to be pursuing the development of strategic defensive capabilities (including BMD) that would severely constrain the effectiveness of U.S. strategic forces and substantially diminish our confidence that those forces could continue to be able to achieve their objectives if employed against either military or urban industrial targets.

F. THE NEED TO RESTORE STRATEGIC STABILITY

(U) The most important policy question facing national leaders with regard to a U.S. BMD program is probably not "Do strategic defenses undermine strategic stability?" That question is largely irrelevant, given the Soviet effort. At this point, current and prospective Soviet BMD capabilities are a real threat to strategic stability; indeed, the Soviets now have a deployable capacity to break out of the ABM Treaty constraints significantly superior to our own. The most vital question is how, when the Soviet Union is already actively pursuing such defenses, the United States can make the situation more stable. The answers seems to be, in part, that U.S. pursuit of a strategic defensive program might be our most effective contribution to strategic stability.

(U) To bring strategic stability back into balance, it is necessary to reestablish some equilibrium in strategic defense. The United States must have a BMD program, and an increased potential to deploy a BMD system comparable to the Soviet Union's. If the United States is prepared to deploy a BMD system in response to a Soviet ABM Treaty breakout, we may be able to deter such a Soviet action. This would have a positive effect on arms race stability for the present, although it would not address the other important threats to strategic stability presented by the overall Soviet strategic buildup.

(U) It has been pointed out elsewhere in this study that the current dominance of offensive nuclear forces in U.S. deterrent thinking is reaching the end of its utility as a deterrent. A "defense emphasis" may address the current and evolving U.S. security problem in a far more productive manner. The loss of U.S. strategic offensive superiority and the low probability of reattaining it suggest that any U.S. attempt to regain the international position enjoyed from the end of World War II to the late 1960s by a buildup in strategic offensive forces alone is probably a dead-end approach. The Soviets can at least match, and probably surpass, the U.S. expansion in this area, given the central direction of Soviet politics and resource allocation. Further, the history of U.S.-Soviet arms negotiations does not suggest that arms control can substantially reduce the Soviet offensive threat. Moreover, the current U.S. reliance on offensive nuclear forces to effect deterrence has forced us into a policy where we admit the likely prospect of national destruction to defend vital national interests. The offensive nuclear threat is increasingly incredible to ourselves, our allies, and potentially our adversaries as well. It is least credible as a threat to deter aggression against our allies, a key U.S. responsibility since the late 1940s.

G. THE IMPACT OF STRATEGIC DEFENSES ON STRATEGIC STABILITY

(U) If it is agreed that our reliance on strategic offensive forces and the threat of retaliation has reached a point of increasingly marginal returns in terms of enhancing deterrence (indeed, it may now be delivering negative returns, in that our continued reliance on offensive forces is becoming incredible), the United States should consider the potential impact on deterrence of emphasizing defensive strategic systems. Can these defenses enhance strategic stability?

(U) As is discussed elsewhere in this study in great detail, the principal effect of strategic defenses, and of BMD in particular, is to replace deterrence by the threat of retaliation with deterrence by denial of objectives. The basic role of strategic defenses in this method of effecting deterrence--"strategic denial"--is to maximize an enemy attack planner's uncertainty and pessimism regarding the probability of a militarily successful attack. In the strategy of denial, the objectives of a BMD system are: first, to impose the most conservative possible attack assumptions on enemy target planning by increasing the uncertainty that particular targets or target sets can be destroyed with the allocation of a given number of warheads to those targets or sets; and second, to thereby force an allocation of warheads so high that the attack is deemed not to be cost-effective, thus creating a sense of extreme pessimism in the mind of a potential aggressor that such an attack could be justified militarily.

(U) Such a system could contribute to strategic stability. By diminishing a potential attacker's confidence that his initial nuclear strike would achieve its military objectives, and by vastly increasing the allocation of nuclear forces required to obtain a reasonable chance of achieving those goals, the prospects that such an attack would ever occur are substantially decreased. Put another way, for the defender, the possession of a BMD system provides increased assurance that strategic forces are survivable, decreasing pressures to strike preemptively. Moreover, this capacity to enhance crisis stability is not limited to a near-perfect or leakproof BMD. A system of less effectiveness should still present sufficient uncertainties to discourage a conservative attack planner.

(U) Ballistic missile defenses improve the survivability of a retaliatory capability and thus decrease an aggressor's incentive to strike first. In so doing they may enhance crisis stability. However, in theory at least, BMD could undermine stability if only one side possessed such a system. A BMD, in particular one of limited effectiveness, would have increased capabilities against a second strike, which would probably be diminished in numbers and less coordinated in its execution than a first strike. If the possessor of the BMD system had or was perceived to have "first-strike" intentions, the side not possessing the BMD might feel pressured to strike first instead in a crisis.

(U) The situation confronting the United States is similar to the one outlined above. The Soviet Union is currently capable of deploying a BMD, while the United States cannot. Soviet strategic doctrine has always stressed the value of preemptive (first-strike) attacks. If the Soviets alone were to deploy a BMD, crisis stability would be severely threatened.

(U) For these reasons, it must be recognized that, while in the near-term a U.S. BMD R&D program may have the effect of deterring a Soviet breakout of the ABM Treaty, in the long run either or both superpowers may see this technology as a means of influencing the current overall U.S.-Soviet strategic balance. The eventuality of BMD deployments is a likely prospect. It must be recognized that a competition in defensive armaments and between offensive and defensive systems may arise and be with us for some period of time.

(U) Strategic defenses and BMD can contribute to deterrence by fostering uncertainty on the part of potential attack planners that a nuclear strike against the United States could achieve its required military objectives. Such defenses could improve crisis stability by creating substantial disincentives to the initiation of nuclear attacks. It must be noted, however, that such defenses also could furnish a new stimulus for competition between defensive and offensive technologies. Given the fact that the Soviet Union is already vigorously pursuing BMD, this new competition will occur to some degree, irrespective of U.S. action. However, it is not obvious that this competition is inevitably destabilizing, since decisive and reliable advantages in penetrativity or reentry vehicle destruction will not be easy to obtain as defenses are deployed and the relevant technologies mature.

H. THE PROCESS OF DEPLOYING STRATEGIC DEFENSES

(U) The process of deploying strategic defenses (particularly certain types of space-based BMD) and their effect on strategic stability requires further examination. An oft-voiced concern is that the first in space with a BMD will immediately obtain a decisive strategic advantage. It is feared that an assessment by one side that it is about to lose the "race for space," and that its opponent is about to deploy a space-based BMD, will precipitate a crisis. In the worst variant of this scenario, the losing side, having decided that the utility of its strategic deterrent is about to vanish, will be pressured to strike preemptively at least against the enemy BMD launch facilities. If the attacker perceives that such a "limited" strike is likely to result in nuclear retaliation, the attacker may widen the scope of his first strike to include a much broader target array. The result is a highly destructive, massive central nuclear exchange.

(U) For example, if the Soviets deploy a space-based BPI with a self-defense (or antisatellite) capability before the United States, they may seek to prevent the United States from deploying a similar system by threatening to shoot it down, or by actually doing so. If the Soviets were able to achieve a substantial edge in their defensive deployment, we might be hard-pressed to counter such action. Even if the Soviet deployment were not capable of countering a large-scale U.S. attack, such a U.S. threat might become even less credible than it is today. The net effect in this case might be to seriously undermine deterrence and crisis stability, at least as perceived by the United States, because presumably the Soviets would be more willing to engage in coercive activities.

(U) Conversely, if the United States were able to deploy a self-defended space-based BMD capable of dealing with a limited missile attack, that could improve our deterrent. Soviet attack planning would be complicated and the outcome of Soviet nuclear strikes more uncertain. If, however, we also decided to shoot down a Soviet BMD capability as it was being deployed, this action would probably precipitate a severe crisis. Presumably, the Soviets could perceive our system to be only the first step toward a much more capable BMD that would eventually negate completely the effectiveness of their offensive force. At the same time, our refusal to allow them a comparable BMD would leave the Soviet Union open to attack. It is unlikely that the Soviets would allow the substantial strategic advantages they now enjoy to be decreased so radically if they could prevent it. [ ]

(U) Despite the above "worst-case" scenarios, the pressures to strike preemptively would depend largely on an assessment by the United States or the Soviet Union that the other's new BMD would be effective enough to entirely, or very largely, negate the threat of a missile attack. However, it is unlikely that initial defensive deployments will present such a threat. The initial deployment of BMD is more likely to result in moderate defensive capabilities. These moderate deployments would seem more likely to provoke improvements in the penetrativity of offensive forces and the development of countermeasures that exploit the inevitable vulnerabilities of these early BMD systems than to provoke an apocalyptic first strike. Moreover, the initial BMD deployment of one side will most assuredly initiate, or more likely redouble, the other's efforts to follow suit.

I. INTERMEDIATE BMD DEPLOYMENTS AND STRATEGIC STABILITY

(U) Strategic defense will not immediately change the current nature of offense-oriented deterrence, based on a threat of retaliation (countervalue or counterforce). The process will be gradual. For some time the uncertainties associated with the deployment of a limited BMD, for example, will not be sufficient to completely negate the threat of retaliation, which now constitutes the core of our deterrent. Initial BMD deployments will not necessarily create conditions of crisis instability. However, with or without BMD, the credibility of a deterrent based on the threat of massive retaliation--assured destruction--will continue to decrease. Strategic defenses, including BMD, can improve the credibility of deterrence as improvements in their effectiveness steadily increase, adding uncertainties to the calculations of offensive planners and disincentives to initiate nuclear attacks.

(~~C~~) Another aspect of an intermediate BMD capability must be considered. If such systems are not coupled with other actions designed to improve the survivability of strategic forces, crisis stability could be diminished. Intermediate defenses would clearly be more effective against a "ragged" retaliatory response than a first strike. If the limited U.S. BMD is not itself highly survivable and if it is not accompanied by other methods of reducing vulnerability (for example, mobile missiles), an attacker might concentrate an attack on those vulnerable forces, overwhelm the limited defense, and destroy a proportion of the vulnerable force sufficient to substantially increase the effectiveness of the initial attacker's defense against the ragged retaliation. Just as strategic defense implies attention to civil and air defense, and to antisubmarine warfare, so defense emphasis should incorporate passive defenses of strategic forces and their associate command, control, communications, and intelligence (C^3I).

(S) Nuclear explosive-powered boost-phase intercept (BPI) defenses, such as the proposed Excalibur, pose special problems for strategic stability. Any systems incorporating nuclear explosives as a power source are likely to be viewed as "weapons of mass destruction" and in contradiction with the Outer Space Treaty. This problem is discussed in the main body of the report. Excalibur-type systems might also jeopardize crisis stability. For example, the system can only defend itself by detonating its nuclear device and thus destroying itself. A BPI layer made up of Excalibur-type satellites might be vulnerable to some kind of attack that forces the defense to activate and hence self-destruct. Following an attack on the BPI layer, the enemy ICBM attack on the continental United States would commence. [

] Furthermore, any BPI would require extensive predelegation of authority to fire at "threats." The use of nuclear explosive-powered satellites plus such predelegation requires further study to determine its impact on strategic stability.

(S) There is some question of having a "surge" capability for reconstitution of a battle-damaged force. This possibility seems to imply the start of a battle in space. With the rate at which speed-of-light weapons could destroy each other, a surge capability might have to be incredibly large to be useful. This might not be the case against kinetic-energy threats, however. At present, various uncertainties preclude predicting how many systems might be stockpiled for replenishment. The concept is worth further study, however, as it might make a space-based BMD more robust and less vulnerable or "brittle" to certain types of responsive threats. It would also contribute to strengthening arms race and crisis stability.

J. LONG-TERM COMPETITION IN STRATEGIC DEFENSES--THE IMPACT ON STRATEGIC STABILITY

(U) For some time, a competition between the United States and the Soviet Union in their strategic defenses and between their strategic offensive and defensive forces will operate. Each will attempt to develop and deploy more and more "leak-proof" defenses. Each will similarly attempt to improve the penetrativity of its offensive forces against the other's defense. So long as a high degree of uncertainty regarding the success of a potential attack can be maintained, crisis stability will be enhanced. Arms competition, however, will not become stable until the problems of technology and tactics of offense-defense interaction are well understood by both sides, and each becomes convinced that no revolutionary breakthrough in offensive penetrativity appears highly likely. If one side obtains a revolutionary offensive capability at this stage of otherwise fairly capable defenses, or a similar capability in defense before both sides' defenses are fairly capable, a severe crisis could ensue. But, with the passage of time, this prospect will become less likely--if both sides pursue fairly substantial R&D programs. If one side declines to vigorously pursue its R&D, however, the risk of destabilization will be prolonged. With time, this risk will also increase as the effect of a potential breakthrough becomes more serious for the side declining to retain a serious R&D effort.

(U) The deployment by both sides of space-based directed-energy weapons for BMD is also sometimes presented as seriously undermining crisis stability. If these were deployed so as to be capable of both destroying the opposing space-based BMD and dealing with a subsequent missile attack, a "hair trigger" situation might be presented. The side that struck first could simultaneously strip away its adversary's defense and obtain a decisive superiority in self-defense. In this scenario pressures to strike first would be at the absolute limit of acuteness.

(U) This case, however, seems highly implausible. First, neither side would be likely to deploy such space-based systems, to the exclusion of all other BMD. The attack against one layer would not negate the whole system. Each layer is likely to be designed with a "cushion" of excess capacity to provide insurance against exactly this kind of "catastrophic failure." Furthermore, although directed-energy weapons strike with the speed of light (which minimizes the prospect that an individual target can successfully evade destruction), technical and operational countermeasures to reduce vulnerability to directed-energy weapons (DEW) are likely to be conceived and would very likely be incorporated into space-based BMD in the above-mentioned environment. Finally, to destroy a portion of the space-based defense significant enough to undermine the capability of the entire layer is likely to be difficult. A less-than-perfect attack against an enemy DEW space-based BMD would almost certainly invite instantaneous retaliation by the surviving DEW systems against the attacking systems. To attack an enemy's space-based BMD with your own BMD may be to somewhat disarm your own capability to defend against missile attack as well. Given the above discussion, it would seem that a case can be made that a potential attacker could not have high confidence that his attack on the enemy BMD would meet its objectives. Deterrence by uncertainty would extend to these areas as well.

K. STRATEGIC DEFENSE AND EXTENDED DETERRENCE

(U) BMD systems are unlikely to be obtained by only one side. It is more plausible to expect that both the United States and the Soviet Union will eventually deploy such defenses, and that these will at least be perceived by both sides to be of approximately equal effectiveness. Eventually, this could have an important impact on extended deterrence. For some time, though, the threat of retaliation, as it is conceived by U.S. allies, will continue to support deterrence. The first limited defenses will not immediately enhance uncertainties to the point where the threat of offensive nuclear strikes becomes irrelevant. Nevertheless, over time, the gradual improvement in defensive systems capabilities relative to the offense would substantially negate the offensive threat. In this perspective, even moderately effective BMD systems would fundamentally alter the nature of extended deterrence as it exists today.

(U) Today, the "linkage" of U.S. strategic forces to West European defense is basically the threat of a massive U.S. strategic nuclear attack against the Soviet Union. Without going into an extended discussion, this threat is deemed incredible because the Soviets today can retaliate with equal devastation. To paraphrase Paul Nitze, our strategic deterrent has been deterred. But from the West European perspective, this is not entirely true (although West Europeans too feel great anxiety about the credibility of our current strategic deterrent). To them there is another operative aspect to the deterrent: because Europe cannot now be defended at the conventional or theater nuclear level, if West Europe is to be defended, ultimately NATO relies on U.S. strategic nuclear weapons. Their use would mean a holocaust for both the United States and the Soviet Union. A potential aggressor simply cannot risk their use. To the West Europeans, this risk should deter a conservative potential aggressor--as the Soviets are seen to be.

(U) The possession of BMD on both the U.S. and Soviet sides changes this situation rather fundamentally, from the perspective of the West Europeans. In their way of thinking about deterrence, if both sides have BMD, a potential aggressor is more likely to feel that the risks that a war in Europe will escalate to the strategic nuclear level have been substantially decreased. This is particularly true as the strategic defensive systems increase in effectiveness and so long as both sides emphasize countermilitary targeting. The United States could not be certain that its military objectives would be achieved by a strategic nuclear attack on the Soviet Union, particularly a strategic attack option limited to affect the European theater, and would very likely be deterred from such action. Moreover, an all-out U.S. countervalue attack against a Soviet BMD could still be countered by a similar Soviet strike against the United States and would also have very little military strategic value. Even though the United States might be more willing to employ strategic forces on behalf of Western Europe with a BMD than without, the deployment of a (more or less) equally capable Soviet BMD would tend to cancel out that willingness. Moreover, the risk of holocaust (because ultimately, if the United States is to defend Europe, it depends on strategic nuclear weaponry) is largely negated by the BMD (because a strategic nuclear attack will fail to achieve its objectives). To the potential attack planner, the risk of such a U.S. use of strategic offensive forces has substantially decreased. To the conservative attack planner, the effect of this uncertainty is far less serious than before. To our European allies, the U.S. strategic deterrent is effectively decoupled from the defense of Western Europe, and a war in Europe is seen to become more likely.

(~~S~~) With both sides having BMD, the conventional balance in Europe once again comes to the fore. However, if BMD and anti-tactical ballistic missile (ATBM) defense can limit the effectiveness of the Soviet missile attack against NATO prior to, during, and after the insertion of operational maneuver groups (OMGs), and to the extent that such missile operations are seen by Soviet planners to be critical to the success of their offensive in Europe, BMD/ATBM can contribute to a strategy of denying enemy objectives by increasing enemy uncertainty even at the conventional level. This effect is the logical replacement for the old deterrent (based on the threat of strategic nuclear retaliation) to Soviet aggression in Europe. BMD can contribute to extended deterrence, not because it will make us less unwilling to use strategic forces in European defense (if the Soviets have BMD it probably will not, although it may cause the Soviets to feel less sure that we will not employ strategic forces), but because it can extend the uncertainties that a potential attack will meet its military objectives from the strategic realm to the European theater.

(U) The role of conventional forces for deterrence and defense in Western Europe will have to be reexamined in light of strategic defenses, but the above point is more important for the purposes of this study.

L. DETERRENCE AND ASSURED DESTRUCTION

(U) Another long-term issue sometimes raised is whether equally capable U.S. and Soviet BMD systems would favor the Soviet Union because a U.S. threat to target Soviet cities would be even less credible than it is today, while the Soviets could continue to threaten a smaller but still substantial portion of the U.S. population. In this way of thinking, the Soviet Union would be favored because its threat to our population (while less than before BMD) would remain credible to our leadership, while our threat to their population (which was never as credible to them) would evaporate.

(U) Since the Soviets have never agreed to the concept of mutual assured destruction, and their targeting reflects a bias toward military targets, it is not apparent that equally capable BMD systems would favor them--that we would be more deterred than they. If a U.S. BMD can substantially increase Soviet uncertainty about achieving the military objectives of their attack and deter them from undertaking such attacks, and if the United States is essentially a defensive power uninterested in changing the status quo by force, it would seem that the United States would have the net advantage.

M. CONCLUSION

(U) In the long run, strategic stability can be improved by strategic defenses, especially BMD, but its maintenance will continue to require appropriate U.S. actions to counter Soviet efforts to gain meaningful strategic advantages. Strategic stability will continue to be a dynamic condition.

APPENDIX G

POLICY IMPLICATIONS OF WEST EUROPEAN REACTIONS TO THE MARCH 1983 U.S. PROPOSALS FOR BALLISTIC MISSILE DEFENSE

David S. Yost

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EXECUTIVE SUMMARY

(U) The proposals for ballistic missile defense (BMD) that President Reagan announced in March 1983 evoked primarily negative reactions in Western Europe.

(U) Eleven principal negative reactions stand out: (1) the U.S. failure to consult or even advise its allies prior to the President's speech was deplored; (2) the United States appeared to be initiating an arms race in BMD and space warfare; (3) the U.S. proposals seemed to threaten arms control, including the Strategic Arms Reduction Talks (START) and intermediate nuclear forces (INF) negotiations and the Antiballistic Missile (ABM) Treaty, without suggesting a convincing alternative arms control concept; (4) the U.S. proposals were perceived as technically infeasible and financially wasteful or prohibitively costly; (5) Soviet countermeasures, both offensive and defensive, were judged capable of negating the proposed new U.S. BMD systems; (6) the U.S. proposals were seen as likely to promote destabilization, mutual U.S.-Soviet fears of preemptive attack, and ultimately war; (7) Western Europe was viewed as potentially subject to the United States in a superpower condominium; (8) the construction of U.S.-Soviet BMD was interpreted as likely to reinstate the significance of conventional force balances; (9) it was feared that the United States might adopt a "Fortress America" posture and abandon Western Europe to Soviet domination or war limited to Europe; (10) appeals to American and Soviet critics of the U.S. proposals were made; and (11) it was noted that the U.S. proposals condemned punitive deterrence as immoral but offered no practical and timely alternative.

(U) Positive reactions consisted partly of unenthusiastic denials of some of the negative reactions. In addition, the moral superiority of defensive strategies and the special and potentially benign character of competition in defensive systems were noted. Positive reactions appear to have been muted because of long-standing West European antipathies to BMD and because of such circumstantial factors as the U.S. failure to consult, the United States' assuming a role susceptible to being perceived as initiating a new round of the arms race, the President's condemnation of existing NATO strategy as immoral, the President's statement that defensive systems could be perceived as "fostering an aggressive policy," and the President's having focused international attention on proposals perceived as being of uncertain technical feasibility and undetermined strategic and political implications.

(U) Policy implications in six areas stand out:

1. The low level of West European awareness of Soviet BMD activities and West European vulnerability to Soviet ballistic missile attack both suit Soviet political-military strategies for victory through intimidation in Europe.

2. The justifications for negative West European reactions to various types of U.S. BMD programs differ, but the key issues concern the requirements for extended deterrence and strategic stability.

3. Damage-limiting requirements in Western Europe go beyond U.S. space-based BMD proposals to include anti-tactical missiles (ATM), air defenses, and civil defenses.

4. Key ATM issues remain technological credibility, military rationales, and alliance cohesion.

5. Despite some fragmentary evidence of West European interest in defensive and damage-limiting strategies, prospects for Western Europe's accepting U.S. proposals for a defensive reorientation of Western strategy depend on seven preconditions, which amount to convincing Western Europe of the following points: (a) the United States favors real consultations and partnership, making active defenses for Western Europe a priority approximating defense of the United States; (b) competition in defensive measures would be a better basis for security than mutual vulnerability; (c) active defenses such as BMD and ATM are technically feasible; (d) active defenses are worth their high cost; (e) active defenses do not necessarily imply "war-fighting;" (f) active defenses need not ruin all hopes for arms control; (g) active defenses need not preclude peaceful developments in East-West relations, which the United States favors.

6. The possibility that British and French nuclear forces would be rendered less effective raises four principally intra-alliance issues.

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APPENDIX G

POLICY IMPLICATIONS OF WEST EUROPEAN REACTIONS TO THE MARCH 1983 U.S. PROPOSALS FOR BALLISTIC MISSILE DEFENSE

A. SOURCES AND CAVEATS

(U) This paper is based on published and interview sources. The published sources are primarily newspaper and newsmagazine articles, principally from Britain, France, and the Federal Republic of Germany, plus selected parliamentary documents and books and journal articles published in those countries. The newspaper clipping files and library indexes of the following research institutions were thoroughly examined: the International Institute for Strategic Studies (London), the Stiftung Wissenschaft und Politik (Ebenhausen, near Munich), and the Deutsche Gesellschaft fuer Auswaertige Politik (Bonn). In addition, all the relevant translations from the Joint Publications Research Service (JPRS) and the Foreign Broadcast Information Service (FBIS) were consulted, as well as all the West European comments and reactions reported in the U.S. press and reproduced in the Department of Defense's daily Current News in March and April 1983.

(U) The interview sources are naturally less comprehensive, and must appear less reliable, since the conventions of conducting candid interviews preclude direct attribution. This is particularly true of government officials; but even privately employed scholars and specialists prefer not to be cited by name regarding topics that are potentially controversial. I have, however, repeatedly interviewed West European scholars and officials regarding BMD and air defense issues since 1980. A high proportion of the interviewees have been officials in planning departments or in other policy-oriented offices (e.g., air defense or arms control) of the defense and foreign ministries of Britain, France, and West Germany, and at NATO headquarters in Brussels. The nongovernmental interviewees include some of Western Europe's most highly regarded strategic commentators.

(U) This research furnished the basis for an article published in fall 1982, "Ballistic Missile Defense and the Atlantic Alliance," in International Security. This article is referred to from time to time in this paper, since it provides background information regarding established views in Western Europe regarding BMD. In addition, this paper may be seen as a follow-up to the fall 1982 article in that several West European interviewees expressed second thoughts about the long-term political prospects for BMD and other damage-limiting measures after reading the final draft of the article in the summer of 1982 or the published version in the fall.

(U) This paper therefore draws on interviews conducted in June-September 1982 regarding BMD and air defense issues as well as interviews in April 1983 and July-August 1983 subsequent to the March 1983 proposals. It is important to stress how small the sample of BMD and air defense interviewees has been (a major topic in only about 25 interviews). Interview sources constitute the main source of evidence for some positive judgments as to prospects for Western Europe's eventually endorsing a reorientation of alliance strategy in the direction of a greater emphasis on defensive and damage-limitng capabilities and usable, nonsuicidal offensive options. The interview sources favoring such a reorientation of alliance strategy are a minority. The possibility that they amount to an unrepresentative sample should be kept in mind to counterbalance the fairly extensive attention given to their views in Section E of this paper, Policy Implications. The essentially descriptive analysis in Sections C and D, Negative and Positive Reactions, is naturally on a firmer empirical foundation than Section E's exploration of policy implications.

B. THE MARCH 1983 U.S. BMD PROPOSALS

(U) President Reagan outlined the proposals in general terms in a speech on March 23, 1983. Key passages follow, with the references to allies underscored:

> ...I have become more and more deeply convinced that the human spirit must be capable of rising above dealing with other nations and human beings by threatening their existence...
>
> If the Soviet Union will join with us in our effort to achieve major arms reduction we will have succeeded in stabilizing the nuclear balance. Nevertheless it will still be necessary to rely on the specter of retaliation--on mutual threat, and that is a sad commentary on the human condition.
>
> Would it not be better to save lives than to avenge them? Are we not capable of demonstrating our peaceful intentions by applying all our abilities and our ingenuity

to achieving a truly lasting stability? I think we are--indeed, we must!

...Let me share with you a vision of the future which offers hope. It is that we embark on a program to counter the awesome Soviet missile threat with measures that are defensive. Let us turn to the very strengths in technology that spawned our great industrial base and that have given us the quality of life that we enjoy today.

Up until now we have increasingly based our strategy of deterrence upon the threat of retaliation. But what if free people could live secure in the knowledge that their security did not rest upon the threat of instant U.S. retaliation to deter a Soviet attack; that we could intercept and destroy strategic ballistic missiles before they reached our own soil or that of our allies?

I know this is a formidable technical task, one that may not be accomplished before the end of this century. Yet, current technology has attained a level of sophistication where it is reasonable for us to begin this effort...

In the meantime, we will continue to pursue real reductions in nuclear arms, negotiating from a position of strength that can be insured only by modernizing our strategic forces. At the same time, we must take steps to reduce the risk of a conventional military conflict escalating to nuclear war by improving our nonnuclear capabilities. America does possess--now--the technologies to attain very significant improvements in the effectiveness of our conventional, nonnuclear forces. Proceeding boldly with these new technologies, we can significantly reduce any incentive that the Soviet Union may have to threaten attack against the United States or its allies.

As we pursue our goal of defensive technologies, we recognize that our allies rely upon our strategic offensive power to deter attacks against them. Their vital interests and ours are inextricably linked--their safety and ours are one. And no change in technology can or will alter that reality. We must and shall continue to honor our commitments.

I clearly recognize that defensive systems have limitations and raise certain problems and ambiguities. If paired with offensive systems, they can be viewed as fostering an aggressive policy and no one wants that.

But with these considerations firmly in mind, I call upon the scientific community who gave us nuclear weapons to turn their great talents to the cause of mankind and world peace: to give us the means of rendering these nuclear weapons impotent and obsolete.

Tonight, consistent with our obligations under the ABM Treaty and recognizing the need for close consultation with our allies, I am taking an important first

> step. I am directing a comprehensive and intensive effort to define a long-term research and development program to begin to achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles. This could pave the way for arms control measures to eliminate the weapons themselves. We seek neither military superiority nor political advantage. Our only purpose--one all people share--is to search for ways to reduce the danger of nuclear war. (New York Times, March 24, 1983)

(U) Although the President provided no details as to specific technical systems, senior Administration officials the same evening said, "the program might involve such technologies as lasers, microwave devices, particle beams and projectile beams" which "in theory could be directed from satellites, airplanes or land-based installations to shoot down missiles in the air." (New York Times, March 24, 1983). On March 25, the President's science adviser, George A. Keyworth, said that such defenses are "more likely to emerge in the form of land-based laser systems" than satellite-based lasers or, implicitly, the other technical possibilities that had been mentioned. (Washington Post, March 26, 1983)

(U) On March 27, Secretary of Defense Caspar Weinberger responded to criticisms based on the President's not having mentioned defenses against bombers and cruise missiles: "The defensive systems the President is talking about are not designed to be partial. What we want to try to get is a system which will develop a defense that is thoroughly reliable and total." (Baltimore Sun, March 28, 1983)

(U) On March 28, the White House made public the text of National Security Decision Directive no. 85, signed March 25,

1983. Key portions follow, with passages of particular interest to Western Europe underscored:

> It is my policy to take every opportunity to reduce world tensions and enhance stability. Our efforts to achieve significant reductions in strategic offensive forces and to eliminate LRINF land based missiles are one approach to that aim. However, it is my long range goal to go beyond this. I would like to decrease our reliance on the threat of retaliation by offensive nuclear weapons and to increase the contribution of defensive systems to our security and that of our allies. To begin to move us toward that goal, I have concluded that we should explore the possibility of using defensive capabilities to counter the threat posed by nuclear ballistic missiles.
>
> I direct the development of an intensive effort to define a long term research and development program aimed at an ultimate goal of eliminating the threat posed by nuclear ballistic missiles. These actions will be carried out in a manner consistent with our obligations under the ABM Treaty and recognizing the need for close consultations with our allies.
>
> In order to provide the necessary basis for this effort, I further direct a study be completed on a priority basis to assess the roles that ballistic missile defense could play in future security strategy of the United States and our allies. (Defense Daily, March 29, 1983)

C. NEGATIVE REACTIONS

(U) Negative reactions overwhelmed positive ones in quantity and in intensity of emotion. The principal negative reactions can be summarized as follows:

1. Preoccupied with domestic concerns and insensitive to the international implications, the United States failed to consult or even advise its allies before making these proposals.
2. The United States unilaterally initiated another round in the "arms race," a step consistent with a pattern

of dangerous and erratic rhetoric and behavior under President Reagan.

3. The U.S. proposals reveal an attitude harmful to general prospects for arms control and to specific negotiations such as START and INF, threaten arms control accomplishments such as the ABM Treaty, and offer no realistic hope for a new basis for arms control.
4. The U.S. proposals are technically infeasible, incapable of alleviating Western Europe's vulnerability, and excessively costly and wasteful.
5. The inevitable Soviet reactions to the U.S. proposals will produce a more dangerous situation for the U.S. and its allies.
6. The more dangerous situation could lead to a complete destabilization of the existing deterrence system and thus war, with both superpowers tempted to preempt as the United States develops a possible "first-strike" option.
7. Even if nuclear war could be avoided, Western Europe might be subordinated to the United States in a reconfirmed and strengthened superpower condominium.
8. A mutual negation of nuclear deterrence may lead to a reinstatement of conventional forces, with a disequilibrium unfavorable to Western Europe and likely to lead to war.

9. The proposals could well lead to the United States' adopting a "Fortress America" posture and decoupling U.S. security interests from Western Europe, leaving all of Europe vulnerable to Soviet domination, or to war limited to Europe.
10. The American and Soviet critics of the U.S. proposals are essentially correct, and West European governments should dissociate themselves from the Reagan administration's BMD proposals.
11. The U.S. proposals condemn the existing system of deterrence as immoral, but offer no practical alternative in the near or medium term.

(U) Although these eleven points have been isolated in the interests of specificity, they are obviously closely interrelated. Most newspaper editorials and other critical commentators combined several in expressing doubts, misgivings, regrets, and alarm at the proposals. Each of the eleven points merits further discussion.

1. <u>The United States Failed to Consult or Advise</u>

(U) While the irritations arising from the U.S. failure to consult or advise the West Europeans may be a transitory problem unrelated to the substance of the proposals, it undoubtedly influenced initial West European reactions and will probably continue to mark their views. Several interviewees said their government had not been consulted, and that the proposals were a total surprise. "Reagan consulted no one here, and apparently virtually no one in the U.S. government either." (West German)

"I was at the Nuclear Planning Group meeting at Villamoura, Portugal, on March 23. Caspar Weinberger showed up late, and apologized for his delay with the excuse that he had been seeing the President about the speech planned for that night. Joseph Luns, the Secretary-General, asked Weinberger to tell us about the speech. Weinberger said some things, but failed to say anything about the Star Wars BMD plan." (West German)

(U) As the Frankfurter Allgemeine Zeitung editorial noted, "The allies are telling themselves that it is even almost harder now than in Carter's time to anticipate what will come next." (FAZ, March 28, 1983, in FBIS, March 28, 1983, p. J1) Perhaps the strongest statement deploring the U.S. failure to consult and take the preoccupations of its allies into account, despite the repeated references to close alliance consultations in the U.S. proposals themselves, came from the French Foreign Minister, Claude Cheysson:

> ...I think that it is not good that the United States makes its conclusions known without taking the preoccupations of the allies sufficiently into account. ...Allow me to choose two provocative examples which both concern American positions in the strategic area. The first example, the declaration made in 1981--and then denied--on the possibility of a nuclear conflict 'limited to Europe.' That is a grave perspective for Europeans because it separates, divides the defense of Europe and that of the United States; to speak of a nuclear conflict limited to Europe is to put Western Europe in a position of disequilibrium in relation to the powerful military apparatus in Eastern Europe. The second example is the recent speech in which the President of the United States announced that it would be possible, between now and the year 2000, to intercept all the missiles of the opposing camp thanks to new technologies. There again, do you think that it consisted of remarks suited to the circumstances? The perspective is distant, and it becomes harder to explain to Belgians, Germans, Dutch, and Italians that they should place in their

> gardens the counter to the SS-20 since, at the same time, you tell them that soon the SS-20s will be easily and assuredly intercepted.
> (Cheysson, "Diplomatie: l'empreinte française," Politique Internationale, no. 20, Summer 1983, pp. 13-14)

(U) Closely related to the annoyance that the United States failed to consult regarding proposals of fundamental strategic significance was a feeling that the President's motives were geared to domestic political purposes, with no sensitivity to the international implications.

> Within just a few days President Reagan has sent the Soviets highly contradictory signals. This can be explained in part by domestic policy reasons. Since Kissinger, however, nobody in Washington has apparently been thinking about foreign aspects.
> (Carl Weiss on Hamburg ARD television, March 30, 1983, in FBIS, March 31, 1983, pp. J13-J14)

(U) Several interviewees and published commentaries attributed the President's proposals to his difficulties with the Congress over defense spending and to the need to counter the "freeze" movement and the Roman Catholic bishops with a more moral strategy. (Examples include the Guardian editorial of March 25, 1983, the FAZ editorial of March 28, 1983, and the Economist of March 26, 1983.) As Dr. Hans Ruehle, Director of the Planning Staff in West Germany's Ministry of Defense, put it,

> ...Ronald Reagan took the bull by the horns as he attempted to contain his current difficulties with a growing nuclear freeze movement and the heavy criticism of his large defense budget by offering a vision attractive enough to make all the objections to his policy appear as petty griping and, in view of the dimension of the challenge, ultimately as "un-American."
> (Ruehle article in Christ und Welt, Rheinischer Merkur, April 1, 1983)

2. The United States Is Initiating Another Arms Race

(U) Even newspaper articles that were essentially descriptive were given headlines that implied U.S. initiative in "starting an arms race" or stimulating East-West confrontation: e.g., "U.S.-Soviet relations hit by weapons call" (Financial Times, March 28, 1983); and "'Impudent lies' of Reagan denounced by Andropov" (Daily Telegraph, March 28, 1983).

(U) This is not entirely surprising, since most West Europeans assume that U.S. mastery of the relevant technologies excels that of the USSR and that the United States has taken the "first step" in previous "rounds" of the "arms race"--e.g., multiple independently targetable reentry vehicles (MIRVs). Moreover, President Reagan placed the United States in the position of being the initiating actor by making his speech and calling attention to his plans for the United States, with no discussion of past and current Soviet activities in this domain in his speech.

(U) Newspaper editorials were therefore unrestrained in placing the blame on the United States for starting a new and unnecessary arms race in space-based defensive systems:

> ...the Americans are now exploiting technology not because it is needed but simply because it is there. (Guardian editorial, March 31, 1983)
>
> People are calling for the arms race to be halted, not for it to be diverted into new directions--which is what would assuredly be the result of such a move. (London Times editorial, March 25, 1983)
>
> It will be hard to explain to mankind, which is becoming increasingly fearful of nuclear weapons, that the plans [of President Reagan] promise hope, as the President maintains; the suspicion will much rather immediately

> arise that the United States is beginning another round of the arms race that will be even more expensive than all previous ones, that will create even more terrible horrors and that in the end will spoil all attempts by politicians to halt the arms spiral.
> (Sueddeutsche Zeitung editorial entitled "Ronald Reagan's Horror Vision," March 25, 1983, in FBIS, March 25, 1983, p. J5)

Similar sentiments--the United States accused of precipitating a new round in the "arms race"--were expressed by Professor David Holloway of the University of Edinburgh (Washington Post, April 3, 1983), in Der Spiegel (April 4, 1983), and in the Rhein-Zeitung of Koblenz (March 25, 1983).

(U) A number of media sources saw the BMD proposals as consistent with a pattern of dangerously unpredictable rhetoric and behavior on the part of the Reagan administration.

> It is now becoming lamentably clear that the Reagan administration remains as alarming as ever.
> For a few months after Mr. George Shultz joined the team as Secretary of State last summer, the volume control on the right-wing rhetoric started to be turned down, and it looked as though a larger measure of calm rationality would be applied to some of the most contentious issues facing American policy-makers.
> But in the past few weeks the right-wing rhetoric has been wrenched right up again, culminating in President Reagan's defence speech on Wednesday night. So far from retracting any of his Manichean views about Russia being the focus of evil in the modern world, he seems incapable of tempering these views in the cause of better relations with Congress and with America's allies.
> (Emphasis added; Ian Davidson in Financial Times, March 28, 1983)

> Ronald Reagan frightens ordinary people. Some grow fearful when the President unleashes his rag-bag of adjectives upon 'the evil Soviet empire.' Some grow fearful when the incoherence of Washington policymaking hints at simple human inadequacy in the Oval Office, where the buttons of life or global extinction reside. There is a widespread perception that, whether by grotesque misdesign or by hapless accident, this American Administration is likelier than any of its predecessors to stumble over the threshold of nuclear war. And now,

> almost randomly, towards the end of yet another television session, Mr. Reagan prepared the world for a future of lasers, microwave systems and particle beams in outer space. 'Star Wars,' says Senator Edward Kennedy. 'Terrifying,' says Senator Mark Hatfield. What can the old man in the White House be thinking of? (Emphasis added; Guardian editorial, March 25, 1983)

(U) In the same vein, although U.S. officials made it clear that Lt. Gen. Daniel O. Graham's High Frontier project is "a concept to look at but not the basis for the President's objectives" (Defense Daily, March 25, 1983), several West European sources described the High Frontier project as the key foundation for the President's BMD proposals and portrayed Gen. Graham as an isolated right-wing strategist, taken seriously by few observers. "No one in the strategic elite on either side of the Atlantic gave even a tinker's dam for 'Danny' and his ideas--until that memorable 23rd of March 1983." (Hans Ruehle article in Christ und Welt, Rheinischer Merkur, April 1, 1983) (See also Der Spiegel, April 4, 1983.)

(U) Other European publications described Edward Teller as the source of the President's BMD proposals, employing such adjectives as "bizarre," "ludicrous," "obsessed," and "monomaniac." (Peter Pringle in The Observer, March 27, 1983) The general impression conveyed by such coverage was captured in the following sentence: "Foreign Office officials have tactfully declined to regard what he [President Reagan] had to say as amounting to proposals." (Daily Telegraph, March 30, 1983)

3. The U.S. Proposals Threaten Arms Control

Several British and West German editorials and commentators deplored the BMD proposals as revelatory of an attitude unfavorable to negotiation and hostile to arms control agreements with the USSR. Christoph Bertram, a former Director of the International Institute for Strategic Studies and now a senior political editor at Die Zeit, wrote that

> While Reagan's announcement does not have any immediate military consequences and does not mean a turning away from the current doctrine of deterrence for a long time to come, there are already political consequences which endanger prospects for successful arms control agreements between the East and West.
>
> Reagan's initiative is bound to increase doubts in Moscow about whether the Soviet Union should engage in serious negotiations with the current administration. The 'Star Wars' initiative came only a few days after a speech in which Reagan had implored American church leaders not to overlook 'the aggressive instincts of an evil power' in the nuclear debate and to unequivocally side with the good. Thus, in his response in Pravda, the Soviet party boss rightly said that one must question what Reagan's concept of international relations actually is...
>
> However, if this happened, the foundation for the arms control business would have developed cracks as far as the Soviets are concerned, and their readiness for compromise in Geneva would decline even more. After all, why should they be the ones to pay the price for yielding if the American armament forces are not checked? (Emphasis added; Die Zeit, April 1, 1983)

(Similar criticisms of U.S. "dishonesty" regarding arms control, owing to a benighted quest for military supremacy, were made by Ian Davidson, Financial Times, March 28, 1983; by Theo Sommer in Die Zeit, April 8, 1983; and in Guardian editorials, March 25 and 31, 1983.)

(U) Other arms-control-based criticisms deplored the timing of President Reagan's BMD proposals, given the already uncertain prospects of the ongoing START and INF negotiations and the sensitive political situation regarding possible INF deployments. Labour Party leader Michael Foot said the BMD proposals "could have a sudden, immediate and tragic impact on the arms control discussions now taking place in Geneva." (Speech on March 28, 1983, in FBIS, March 28, 1983, pp. 01-02) (Similar views--lamenting the potential effects on START and INF--were expressed in a London _Times_ editorial, March 25, 1983; by Ian Davidson in the _Financial Times_, March 28, 1983; by Christoph Bertram in _Die Zeit_, April 1, 1983; and by Carl Weiss on Hamburg ARD television, March 30, 1983, FBIS, March 31, 1981, p. J14.) One Labour Member of Parliament (M.P.) argued that the harm the BMD proposals would do to the cause of arms control would ultimately outweigh any START and INF agreements concluded.

> If that [INF and START agreements in Geneva] were to be achieved, the significance would be far outweighed by President Reagan's intentions, which were clearly signalled in his 'Star Wars' speech last March, to escalate the nuclear arms race in a new and dangerously destabilising manner by the militarisation of space. The development of microwave, particle beams, and lasers as ABM systems opens a new dimension of nuclear warfare. Can that be consistent with a genuine intention to seek nuclear disarmament?
> (Michael Meacher, Labour M.P., in _House of Commons Official Report, Parliamentary Debates_ (Hansard), vol. 46, no. 25, Wednesday, July 20, 1983, p. 424)

(U) U.S. Government officials supplemented President Reagan's statement that his proposals would be "consistent with our obligations under the ABM Treaty" with an explanation that the treaty specified that an "ABM system" is "defined as the kind of interceptor missile under development in the late 1960s and the radars and launchers associated with such technology." (_Los Angeles Times_, March 25, 1983) In addition, as British Prime Minister Thatcher noted, "The anti-ballistic missile agreement does not affect research." (Cited in Guardian, March 30, 1983.)

(U) Nonetheless, several sources described the BMD proposals in themselves as clear violations of the ABM Treaty's prohibition of space-based systems (e.g., David Adamson in the Daily Telegraph, March 30, 1983). More restrained observers stated that fulfillment of the President's proposals would "represent the overthrow of the foundation of existing arms control agreements." (Ian Davidson in Financial Times, April 18, 1983) (Similar views were expressed in a Financial Times editorial, March 31, 1983; in a London Times editorial, March 25, 1983; and by Michel Faure in Libération, March 25, 1983.) Christoph Bertram accused the President of deliberately initiating a process likely to overthrow a keystone of past arms control efforts:

> This treaty is the most important and most comprehensive arms control agreement ever concluded between the two world powers. Though Reagan denies that he wants to abrogate it, he is deliberately starting something that is bound to result in its abrogation.
> (Bertram in Die Zeit, April 1, 1983)

(U) French newspapers such as Le Matin (associated with the Socialist Party) and L'Humanité (the Communist Party organ) on March 25 deplored what they perceived as a U.S. intention to violate the 1967 Outer Space Treaty as well as the ABM Treaty. French Defense Minister Charles Hernu also referred to both treaties in expressing concern that the U.S. BMD proposals could lead to

> ...a new arms race, adding to that which already exists, and could result in dismantling the 1967 treaty on the

> demilitarization of space and the 1972 treaty on the limitation of anti-missile weapons.
> (Hernu cited in Luc Tinseau, Rapport fait au nom de la Commission de la Défense Nationale et des Forces Armées sur le projet de loi (no. 1452) portant approbation de la programmation militaire pour les années 1984-1988, no. 1485 (Paris: Assemblée Nationale, May 1983), p. 95)

(U) Finally, it should be noted that West European critics also rejected the arms control design that President Reagan included in his BMD proposals. As noted in Section B, on March 23 the President said that "to achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles ... could pave the way for arms control measures to eliminate the weapons themselves." (New York Times, March 24, 1983) On March 25, the President added that

> I'm quite sure that whatever time it would take, and whatever President would be in the White House when maybe 20 years down the road somebody does come up with an answer, I think that that would then bring to the fore the problem of, 'all right, why not now dispose of all these weapons, since we've proven that they can be rendered obsolete?'
> (Press conference transcript in New York Times, March 26, 1983)

(U) Secretary of Defense Caspar Weinberger, elaborating on the President's proposals, suggested that BMD "could enhance the chances for a deep reduction in offensive arms, by eliminating the threat that would be posed by weapons maintenance in violation of an arms reduction agreement." (Weinberger article in Baltimore Sun, April 5, 1983) Undersecretary of Defense for Policy Fred Iklé offered a similar reflection: "If nuclear weapons must remain forever invincible, then arms control could never lead to low levels of nuclear offensive arms since, in a world without defenses, a few hidden weapons could mean a decisive military advantage." (Iklé article in Washington Post, March 27, 1983)

(U) West European critics dismissed the idea that BMD could lead to restraint or actual reductions in U.S.-Soviet competition in offensive arms, and asserted that maintenance, improvement, and expansion of offensive arsenals in order to overcome defenses would be far more likely. David Fairhall of the Guardian characterized the U.S. design for fewer offensive forces through BMD as

> a nice fairy tale, but little more... will the prospect of both superpowers being let loose in a race to perfect missile defences somehow persuade them that their present fears about the other side's offensive missiles are, after all, misplaced?
> (Guardian, March 25, 1983)

Ian Davidson of the Financial Times contended that President Reagan's vision is "not likely to lead to a world without nuclear weapons" but is "tailor-made to lead to the pairing of defensive and offensive systems, which he [the President] admits is destabilizing." (March 28, 1983) (The Frankfurter Rundschau of March 25 also called attention to the President's statement that defensive and offensive systems together "can be viewed as fostering an aggressive policy.")

(U) In short, the arms control design included in the U.S. BMD proposals was rejected as dangerously naive and ridiculously circuitous by West European critics. David Fairhall of the Guardian asked, "...why not cancel out both sides' offensive forces by the same factor of 60 or 80 percent through the much simpler, cheaper process of mutual reductions?" (March 25, 1983; a similar view was articulated in the Guardian editorial of the same date.)

4. The U.S. Proposals are Technically Infeasible and Financially Wasteful

(U) The theme of technical infeasibility came up more frequently in interviews than in published sources, with several interviewees using the same 10 percent figure cited in the New York Times of March 26: "A senior British official said no matter how successful it was, it would be useless if even 10 percent of Soviet missiles got through." In other words, the United States and Western Europe in particular will remain vulnerable. "Four nuclear weapons would always get through and destroy half of the Federal Republic." (West German) "You would have instability unless you had a watertight system. If you have leakage, you're back in the deterrence through retaliation picture again. Four warheads could destroy a large city." (West German) On the other hand, a London Times editorial (critical of the U.S. proposals on other grounds) judged that the United States could probably meet the technical challenges by the end of the century:

> Such [technical] obstacles are presumably not insuperable. Few scientists doubt that given time, money and effort, they can be overcome. President Reagan is talking in terms of the turn of the century and the Americans have already declared that the space shuttle will be used on some of its military launches to test the complicated aiming and tracking equipment necessary. The engineering problems do not therefore in themselves diminish President Reagan's confidence.
> (March 25, 1983)

(U) As far as specific systems were concerned, the highest-level government official who appears to have published an opinion is Dr. Hans Ruehle, the head of the Planning Staff in Bonn's Defense Ministry. Ruehle noted that the U.S. BMD proposals went beyond more typical designs of BMD systems such as terminal defense with low-yield nuclear warheads and exoatmospheric nonnuclear kill mechanisms:

> The option preferred by Reagan entails a procedure in which the enemy offensive missiles are destroyed already in their boost phase. Missiles are actually most vulnerable during this phase of their flight. However, this procedure can no longer be carried out with anti-missile missiles, but only with space-based beam weapons, in particular with laser weapons. There does exist an extensive literature on the possibilities of developing such weapons, but it can be taken as certain that producing them in the 20th Century still is highly unlikely. If we try not to let ourselves be overwhelmed by the science fiction quality of many of the designs, then what remains for the present is only the possibility of guiding land-based laser beams via a space reflector against incoming missiles.
> (Ruehle article in Christ und Welt, Rheinischer Merkur, April 1, 1983)

Interviewees stated that space-based antisatellite systems would be easier to devise than space-based BMD, and that the survivability of any space-based system was doubtful. Interviewees generally felt the U.S. BMD proposals were technically premature.

(U) The financial objections were partly based on an assumption that expenditures for BMD would contribute to a futile action-reaction competition in offense and defense systems. "The laser billions, in this miserable world, could be better spent." (Guardian editorial, March 25, 1983) In addition, it was argued that the United States could "not only be bewitched into spending large sums on a brand new arsenal of weapons of unproven value, but could also be lulled into a false sense of security by devices that would have to operate perfectly at the time of an enemy attack." (Peter Pringle in The Observer, March 27, 1983)

(U) Christoph Bertram argued that the United States simply could not afford to implement the BMD proposals; the cost would be prohibitive, even if the technology were available.

> No money is there. If this new technology is to be properly tested and developed, much greater expenditures than the $1 billion envisaged for it in the new U.S. defense budget would be necessary. However, where are these funds to come from? Reagan will have had a hard fight to save the military budget from cuts by the U.S. Congress in any event. The day he delivered his television speech, the House of Representatives made cuts of $9 billion which now have to be approved by the Senate. Even if the concept were realistic, there is no money to implement it.
> (Bertram article in Die Zeit, April 1, 1983)

5. Soviet Reactions Will Negate U.S. BMD

(U) Several closely related criticisms of the U.S. BMD proposals focused on Soviet reactions that, it was presumed, would inevitably be provoked, and thus create a more dangerous situation for the United States and its allies.

(U) Some observers started from the premise that Soviet motives in accepting the 1972 ABM Treaty were similar to those of the United States--i.e., seeking stability through mutual vulnerability:

> In time Washington convinced Moscow that defensive systems really are dangerous and in 1972 the two nations signed the ABM treaty outlawing large-scale defensive systems... the Soviet leaders ... seem to have accepted the relationship of mutual vulnerability to retaliatory strikes as an objective condition that they must live with.
> (University of Edinburgh Professor David Holloway in Washington Post, April 3, 1983)

> There is no doubt the Soviet Government is alarmed by the reopening of what was thought to be one of the few settled problems in the superpowers' strategic relationship. Andropov's arguments reflect the once common Soviet-American belief that ABM systems, if perfected by one side, could destroy the balance of terror.
> (Mark Frankland in The Observer, March 27, 1983)

(U) From this premise of U.S.-Soviet concord on the undesirability of defenses, it is a simple step to asserting that the United States is initiating a new round in the "arms race" and forcing the USSR to follow with inevitable emulation: "...if the U.S. goes down this road, the Soviet Union will also." (Ian Davidson, Financial Times, March 28, 1983)

> By spending much, much more, by building and building again, we can at last make the world safe for mankind. No more knife-edge deterrence. Simple defence.
>
> It will not, alas, be like that. The solemn, saddening logic of the nuclear arms race over thirty years is that anything one superpower can do, the other superpower can do later. Thus the uncanny balance of weapon types on both sides. If lasers and particle beams, three or four decades on, should provide America with an ABM screen at a cost beyond imagining, then Russia too will construct its own screens and both sides will throw more billions into finding ways through them.
> (Emphasis added; Guardian editorial, March 25, 1983)

(U) Comparable interpretations acknowledged that the Soviets are already quite active in BMD research and development, but contended that the U.S. BMD proposals will provoke intensified Soviet efforts, accelerate an arms race in BMD the USSR might win, and promote the development of relatively inexpensive countermeasures:

> Or perhaps last week's presidential speech was merely a soothing cover for a more cynical but realistic calculation, that the Russians are bent on developing more advanced ABM systems anyway. Pentagon analysts have often suggested as much in pointing to Soviet research

> in phased-array radars, high-energy lasers and charged-particle beams.
>
> We can rest assured that whatever the Russians were doing, they will now match the U.S. effort with massive resources of their own.
> (Emphasis in original; David Fairhall in The Guardian, March 25, 1983)

> In the Soviet Union as well as the United States, work has been underway for years on interceptor or killer satellites, laser beams and other means with which the enemy's space vehicles and ballistic missiles could be destroyed in the event of hostilities. Reagan's appeal is new only in that it would expand the project and newly formulate a nuclear strategy and the dimension of the challenge to the Soviet Union. Since the President now must count on increased activities by the other superpower, we wonder what prompted him to make this dramatic appeal to America's scientists and technicians.
> (Emphasis added; Augsburger Allgemeine, March 25, 1983, in FBIS, March 25, 1983, p. J6)

> President Reagan has proclaimed the arms race in space... in view of the consistent US underestimate of Soviet military-scientific achievement over the last 40 years, why does he think the US can win a space arms race?
> (Lord Wayland Kennet, letter to the London Times, March 25, 1983)

(U) Several interviewees asked why the United States would seek to encourage Soviet BMD efforts, and expressed doubt as to whether the United States could sustain BMD research and development as consistently as the USSR, given probable cyclical changes in the U.S. political decision-making structure. Robert O'Neill, an Australian who is currently Director of the International Institute for Strategic Studies in London, suggested that the USSR will be "even more disposed than now to countering each American move with one of its own." (O'Neill cited by Peter Osnos in Washington Post, March 30, 1983) Christoph Bertram suggested that

> ...even if the necessary technology were available and could reliably operate in the midst of exploding nuclear

> weapons, the Soviets would presumably develop cheaper and more reliable counterweapons even before the American defense system was operational.
> (Bertram article in Die Zeit, April 1, 1983)

(For a similar view as to cheap and inevitable Soviet countermeasures, see the London Times editorial of March 25, 1983.)

(U) The comparable reaction of national delegations at NATO headquarters in Brussels was summed up as follows:

> One initial reaction at NATO to President Reagan's 23 March speech on future 'defensive technologies' was that every new technical weapon--offensive or defensive--tends rather soon to breed an effective counter-weapon. Therefore it is asked how the US, whatever new anti-missile techniques it is able to develop, can long keep the USSR from developing similar counter-techniques, which could then rapidly negate the whole US effort and enormous investment that would probably be required. Two obvious Soviet skills prompted such a remark in NATO this week: one is the Soviet technical capacity demonstrated by its space program; the other is Moscow's adeptness so far in stealing technical secrets from the Western side.
> (Emphasis in original; report in the Brussels-based publication, The Western World, a newsletter on Western Security and NATO, vol. 3, no. 11, March 25, 1983, p. 2)

6. Destabilization and Mutual Fears of Preemptive Attack Could Cause War

(U) This argument carries the preceding criticism a step further. Some West European observers simply stated rather vaguely that the BMD proposals contained "destabilizing elements" [German Social Democratic Party (SPD) disarmament specialist Egon Bahr in FBIS, March 24, 1983, P. J1] or that their influence "would be destabilizing, contributing to uncertainty and suspicion." (London Times editorial, March 25, 1983) French Defense Minister Charles Hernu offered a similarly imprecise judgment as to the risk of instability:

> The imbalance which this new weapon would create would be likely to create tensions... The real question which must be asked is in fact the following: Is the system of future ABM missiles desirable? The world's top experts doubt that the deployment of this new defense system would make it possible to produce a more stable world situation than the one now guaranteed by the nuclear balance. That is why I tend to think that President Reagan is taking a risk by proposing this system. (Emphasis added; Hernu interview in Paris-Match, April 22, 1983, p. 55)

(U) Most sources, published as well as interviews, were more specific in describing a situation of mutual fear of preemptive attack in which either the United States or the Soviet Union could execute a "first strike" or provoke the other side into preemptive attack in order to forestall perceived "first-strike" temptations.

> The reason why defensive ABM systems can be destabilising as President Reagan admitted, is that 'if they are paired with offensive systems, they can be viewed as fostering an aggressive policy.' If one superpower gets an effective defensive system before the other, it might believe it could launch an attack with impunity; the very attempt to acquire such a capability on a large scale looks like an aggressive policy, raising the spectre of pre-emptive attack by the other side. (Ian Davidson, Financial Times, March 28, 1983)

> In any case, in the short term, the prospects outlined in Mr. Reagan's speech are even more destabilizing: would not the side which was first to find the 'defense ray' be tempted to use its nuclear weapons, being sure of impunity? That was certainly why the two superpowers agreed in 1972 to ban the extension--and for the United States the installation--of a missile-based anti-missile defense. Will directional energy weapons take over?
> (Le Monde editorial, March 25, 1983)

(U) Similar views--equating superpower propensity to first-strike temptations and preemption--appeared in the Guardian editorial of March 25, 1983, and in an article by Hans-Joachim Nimtz, Frankfurter Neue Presse, April 9, 1983. The interview sources who articulated this view drew little or no distinction between the intentions and policies of the United States and the Soviet Union. "It would be a new arms race. Each side would have to make a worst case assessment of its own BMD's effectiveness, rating it low, and a worst case assessment of the other's, rating it high. Each side would attribute the other side high effectiveness, and tensions would increase. Each side could feel forced to preempt before it's too late, because of this problem of timing." (West German)

(U) Edwina Moreton, a member of the editorial staff of the Economist in London, published a similarly impartial and apolitical assessment just before the President made his speech of March 23:

> A successfully developed satellite-based laser weapon could conceivably be used defensively to shoot down incoming enemy missiles. But if such a weapon were ever deployed it would also shoot the legs out from under the principle of stability through deterrence. Unlike an ABM system constructed for hard-site missile defence, a space-based ABM would by its nature be able to protect not only missiles, but also cities from enemy attack. Any state with the ability to protect its own weapons and population centres from attack could launch a first strike at enemy targets with impunity.
> (Moreton, "Untying the Nuclear Knot," in Gerald Segal, Edwina Moreton, Lawrence Freedman, and John Baylis, Nuclear War and Nuclear Peace, London: Macmillan, 1983, p. 72)

(U) Only a minority of the critical sources identified the USSR as the superpower more likely to strike first in a situation of uncertainty and instability presumed to arise during a process of competitive BMD deployments by both the United States and the USSR. As David Watt, Director of the Royal Institute of International Affairs in London, put it,

> The trouble is that we cannot be certain that the Russians would display similar squeamishness...if they managed to solve the problem of shooting down American rockets with certainty before the Americans solved the problem of shooting down Soviet ones. In conventional situations when there has been no external constraint, such as Afghanistan or Eastern Europe, Soviet behaviour has been brutal...
>
> the perfect ABM would be extremely destabilising. If one superpower possessed it and the other did not (a situation which in any case could not last more than a year or two) then one superpower would have the whiphand --which is all right if it's us, not so good if it's them.
>
> (Emphasis added; Watt article in the London Times, April 8, 1983)

The conservative newspaper Die Welt editorialized that, "To forestall American superiority in the future, they [the Soviets] could be tempted to use their current [offensive] superiority that has been gained during detente." (FBIS, March 25, 1983, p. J6)

(U) Serge Maffert of the Paris newspaper Le Figaro was apparently alone in speculating that the U.S. BMD proposals were intended to promote an economic destabilization of the USSR:

> For a certain number of the President's close advisers, the Soviet Union is about to experience an economic collapse that could bring down the regime itself... the United States might use economic weapons to give a supplementary and sufficiently strong push to bring about destabilization... To force the USSR into a star wars-style arms race would, they think, have a catastrophic effect on its economy.
>
> (Le Figaro, March 25, 1983)

7. Western Europe May Be Subordinated to the United States in a Superpower Condominium

(U) This criticism was a rather secondary theme, but it should not be slighted. The feeling that Europe has lost control over its own destiny has come to the fore periodically in the past, with a sense of resentment regarding dependence on the United States. BMD systems devised and controlled by the United States could be perceived as underlining once again Western Europe's technical and military dependence on the United States, with counterproductive political effects. As might be expected, French sources were the most explicit in deploring the risk of Western Europe's being subordinated to the United States in a strengthened superpower condominium over the two halves of Europe:

> In placing the responsibility for defense on advanced space-based technologies, Washington is excluding medium powers from the future, for they will be incapable of participating in this new type of arms race. This means that, if the new project were pursued, one of its first consequences would be to dangerously reinforce the policy of blocs. If in fact the way Ronald Reagan has indicated were followed, the abandonment of deterrence policy and the extreme sophistication of defense arms in the future would leave the two superpowers alone in facing each other, with the other countries, for lack of means, in the role of protectorates of one camp or the other. This is something Europeans cannot be happy about. (Philippe Marcovivi in Le Quotidien de Paris, March 25, 1983)

> If, by way of precaution, the two powers maintained their vast panoply of missiles and bombers, would there not be two arms races, the current one and that which would result from the space rivalry? ... This unilateral mastery--even bilateral, whether competitive or complementary--of space would lead to a form of hegemony which the rest of the world can scarcely accept, even if its purpose is imposing non-war between the two superpowers. (General Pierre-Marie Gallois, "Scoutisme et KGB: Refléxions sur la candeur des Occidentaux," Politique Internationale, no. 20, Summer 1983, pp. 234-5)

The Swiss Neue Zuercher Zeitung, in its summary of West German reactions to the U.S. BMD proposals, also noted concern regarding Europe's potential dependence and subordination:

> The press commentaries [in West Germany] often talk about how Reagan's idea for the future is indeed attractive at first glance, but on the whole sceptical tones tend to predominate. The fear is expressed that the costly development of the desired laser technology will ring in a new round in the arms race and, besides that, definitely militarize outer space. A number of commentaries raise the question of Europe's fate in terms of Reagan's new vision of strategy. Does his design ultimately mean the total dependence of defense policy on American technology, or even an American departure from Europe?
> (Emphasis added: Neue Zuercher Zeitung, March 27, 1983)

8. Conventional Imbalances Would Threaten Western Europe

(U) One West German interviewee expressed this argument as follows: "Western Europe will lose its U.S. ICBM protection when the USSR develops BMD, and conventional war will then become more attractive for the Soviets." Probably the highest-level European official to articulate this assessment publicly was French Defense Minister Charles Hernu:

> Sanctuarizing still more the two superpowers, it would accentuate the effects in Europe of the disequilibrium in conventional forces.
> (Hernu cited in Luc Tinseau, Rapport fait au nom de la Commission de la Défense Nationale et des Forces Armées sur le projet de loi (no. 1452) portant approbation de la programmation militaire pour les années 1984-1988, no. 1485 (Paris: Assemblée Nationale, May 1983), p. 95)

(U) Some sources described the prospect as a return to the situation of the 1930s, with war in Europe made more probable by the neutralization of offensive nuclear weapons. For example, David Watt, the Director of the Royal Institute of International Affairs in London, argued that

> if both superpowers lose the capacity to destroy each other we are back to the 1930s and an era in which regional conflict forever threatens to escalate into conventional war on global levels... In 40 years fear of nuclear weapons has done more to undermine war as an instrument of policy than anything else in the history

> of mankind. Remove that fear and we are back where we started.
> (David Watt article in the London Times, April 8, 1983)

(U) Ten months before President Reagan made his BMD proposals, in May 1982, a French analysis of BMD implications advanced a comparable conclusion, with nuclear conflict at low levels nonetheless still seen as possible:

> If each of the two superpowers obtained such a system, one would be led to a simple reciprocal neutralization of strategic arms... One would return to the situation of 1939, and the balance of conventional forces would regain all its meaning... In its current state of affairs, the result would be the disappearance of deterrence from the fact of the West's weakness in conventional materiel, and war would again be possible, if not probable, on the European continent. It would probably be nuclear on the battlefield and its environment.
> (Georges Outrey, "Missiles et anti-missiles," Défense Nationale, May 1982, pp. 28-29)

(U) The thrust of several commentaries was captured in Der Spiegel's declaration that "Such a development--Europe as ersatz conventional battleground of the great powers--could not be tolerated by the West European allies of the U.S." (April 4, 1983) (Similar views were expressed in editorials in Le Monde and the Koblenz Rhein-Zeitung, both on March 25, and by General Pierre-Marie Gallois in Paris-Match, April 8, 1983.)

(U) It should be noted that this criticism assumes that the BMD proposals are technically feasible, or that their implementation would at least be perceived as sufficiently technically credible by both superpowers, whatever the operational uncertainties in practice. This criticism therefore directly contradicts the fourth in this paper's list, which contended, among other things, that the proposals were either technically infeasible or financially prohibitive. If the proposals are in fact technically infeasible or too costly to realize, neither neutralization of offensive strategic forces by BMD nor any consequent reinstatement of meaningful conventional force imbalances need be feared.

9. <u>The United States Could Adopt a "Fortress America" Posture and Abandon Western Europe to Soviet Domination or War Limited to Europe</u>

(U) Interview sources elaborated on a theme Peter Osnos reported in the <u>Washington Post</u>: "'If you have this protection for yourselves,' a senior British diplomat observed, 'defending Europe becomes harder to justify." (March 30, 1983) Interviewees confirmed that the BMD proposals were seen as a possible unintended signal for long-term trends tending to isolate U.S. security from that of Western Europe. "The 'star wars' speech was interpreted as maybe an intention to reduce risks to the U.S. and withdraw the guarantee. Why should the U.S. continue to run the risks of getting involved in a strategic nuclear war if it's no longer necessary to have U.S. troops on the front line in West Germany to help protect the U.S.? If the U.S. guarantee no longer existed, Western Europe would have to accommodate to the USSR." (West German)

(U) A few interviewees added that they were all the more inclined to favor this interpretation of U.S. motives because they associated the BMD proposals with American conservatives reputed to favor U.S. troop withdrawals and other reductions in U.S. commitments to European security. Specious as the linkage may be, some interviewees connected U.S. discussions of troop withdrawals to the BMD proposals. Incidentally, Edward Teller has been quoted as holding that "We need to be in a situation where we are not subject to nuclear blackmail, where no matter how other conflicts come out we can at least be safe at home, without allies." (Time, April 4, 1983, p. 11)

(U) The basic concept noted by all interviewees, though not all endorsed it as a probable outcome, was one of "superpower bilateralism leading to a withdrawal of the U.S. guarantee to Europe." (French) In other words, the BMD proposals were seen as promoting capabilities that would break the unity and equality of risk-sharing between Western Europe and North America believed to reside in universal vulnerability to ballistic missile attack. If the United States could protect North America without running risks in Europe, the Americans could eventually be tempted to withdraw from Western Europe, with all of Europe then falling under Soviet domination. Alternatively, withdrawal of the U.S. strategic nuclear guarantee without withdrawal of U.S. forces could lead to war limited to Europe, with the United States able to prevent any extension of war to the intercontinental level:

> ...President Reagan's vision of an infallible antiballistic missile system is an appalling one. It separates the United States from her allies, of course, because it raises the possibility of a war in Europe from which the Americans could stand aloof.
> (David Watt article in London Times, April 8, 1983)

> Even conservative circles in Europe fear a separate 'Euro-strategic balance.' This would represent a potential temptation to the USA to in fact play with the idea of a limited nuclear war, which would not touch 'Fortress America.' Reagan's latest plans to develop an

effective anti-missile defensive belt move in this direction.
(Pierre Simonitsch article in Frankfurter Rundschau, March 31, 1983)

The opponents of [INF] counterarmament might ask: Doesn't this prove that America, which will be secure behind its defensive wall, actually wants to confine nuclear war to Europe? In so doing, they certainly will pass off Reagan's concept as reality, as Oskar Lafontaine--with the quickness of someone already convinced of it--did early this week at the Young Socialists National Congress. The Soviets will eagerly add grist to the mills. Washington, Andropov said in Pravda, wanted to turn the European countries into 'nuclear hostages.'
(Christoph Bertram article in Die Zeit, April 1, 1983)

'I fear this will be an issue that could become extremely divisive between the Europeans and the U.S. because it is tending toward Fortress America,' said British Colonel Jonathan Alford of the International Institute for Strategic Studies in London. 'The proposal intends to put a bubble over the U.S. and that would be followed by a bubble over the Soviet Union. If we can't threaten to strike the Soviet Union, we Europeans are going to be out in the cold.'
(Time, April 4, 1983, p. 13)

10. American and Soviet Critics of the U.S. Proposals are Correct

(U) This may appear to be a minor point, and not a substantive criticism of the U.S. proposals in its own right, but one of the negative reactions was to appeal to American or Soviet criticisms as accurate. West European critics felt their arguments reinforced if they could cite American or Soviet authorities with similar views.

(U) A bit of anecdotal evidence as to the standing in European eyes of these American and Soviet authorities regarding BMD prior to the March 1983 proposals may be inferred from a colloquium the Institut Français des Relations Internationales sponsored in 1981. The theme of the colloquium was "Science and Disarmament." Four of the U.S. contributors--Wolfgang Panofsky, Jack Ruina, Kosta Tsipis, and Paul Doty--referred to the ABM Treaty as a major accomplishment of arms control to be preserved, as did the sole Soviet participant, General Mikhail Milstein. No participant of any nationality recommended revisions or abrogation of the ABM Treaty. (For details, see Pierre Lellouche, ed., La science et le désarmement, Paris: Institut Français des Relations Internationales, 1981.)

(U) Several U.S. critics of the March 1983 proposals were cited by name--e.g., Sidney Drell in Der Spiegel (April 4, 1983) and Jeremy Stone in the Frankfurter Allgemeine Zeitung (March 26, 1983). The article by Anthony Lewis in the New York Times (which cited Jerome Wiesner and concluded that "it's really a declaration of a new cycle in the arms race") was reproduced in the London Times (March 30, 1983).

(U) Interview sources referred in particular to the reported skepticism of Dr. James P. Wade, Principal Deputy Under Secretary of Defense for Research and Engineering. (Wade's Congressional testimony in 1981 and 1982 was recalled in such U.S. publications as Air Force, May 1983, and National Journal, April 9, 1983.) Richard Garwin was also mentioned by interviewees: "There are so many arguments against BMD. One can only hope that U.S. interest in it will fade away. Garwin destroyed Teller on the subject on German television." (West German)

(U) Labour party leader Michael Foot emphasized the American critics of the BMD proposals to justify his own disapproval,

> Don't let anyone accuse me of being anti-American because I criticise the President's latest contribution to the space-age arms race. To expose the true nature of the horrific fantasies behind his words may be the most pro-American stance we can take. And I am glad to say that many sober, imaginative warnings have already been let loose on the other side of the Atlantic.
> (Emphasis added; Foot speech on March 28, 1983, in FBIS, March 28, 1983, p. Ol)

(U) When the President's Commission on Strategic Forces released its report in April, European observers contrasted its recommendations with the BMD proposals made in March:

> This general approach contrasts starkly with President Reagan's penchant for either instant solutions to U.S. perceived military weakness, as in his demands for massive increases in defence spending, or end-of-the-rainbow recipes, as in his recent Star Wars speech.
>
> Almost in passing the Scowcroft commission dismisses the idea that safety lies in the urgent pursuit of anti-ballistic missile defences. On the contrary, far from being able to look forward to a brave new world without nuclear weapons, the U.S. must keep its arsenal in trim in case the Russians step up their anti-ballistic missile defences.
> (Emphasis added; Ian Davidson in Financial Times, April 18, 1983)

(U) A few European sources concluded that the Soviet accusations against President Reagan--i.e., that he would like to achieve first-strike capability against the USSR--were correct. Christoph Bertram, for example, wrote that

> Theoretically, a situation would be conceivable in which a missile defense system would not affect the strategic stability between the two superpowers--if both countries were in a position to implement such a system in the same way and at the same time. However, the Soviets are afraid that the Americans would finish first--long before them--and that they then would no longer be deterred by Soviet nuclear weapons. For this reason, Andropov also accused Reagan of striving for a first-strike capability against the Soviet Union. For him, Reagan's dream is further confirmation that the United States is aiming at superiority. As far as the president himself is concerned, this is not actually wrong.

> He would like to have superiority, and he in fact regards technology as the triumph of the West. He recently again claimed that America's nuclear superiority 20 years ago led to the peaceful settlement of the Cuban crisis.
> (Emphasis added; Bertram article in Die Zeit, April 1, 1983)

(U) The last sentence of Bertram's statement should perhaps be explained. The West Europeans who believe that nuclear superiority is unattainable or meaningless reject interpretations of the 1962 Cuban crisis that attribute its resolution to U.S. nuclear superiority at the time; they prefer interpretations that explain the outcome as owing to U.S. conventional force superiority in the Caribbean or Soviet restraint. Endorsing the political and operational utility of nuclear superiority could have unwelcome consequences for the arms control and strategic stability theories generally favored in Western Europe, so perceived signs of U.S. interest in superiority are often deplored as destabilizing.

(U) The logical conclusion of the association with the U.S. and Soviet critics of the President's BMD proposals is that West European governments and publics must dissociate themselves from the U.S. administration in this respect. Depriving the BMD proposals of legitimacy will implicitly oblige the United States to reconsider.

> What are the consequences for the Europeans? It is not enough to throw up one's hands and again deplore the erratic U.S. presidents. Success at the Geneva negotiations as well as compensating for the unbearable Soviet nuclear advantage if these negotiations fail are in the interests of the European allies. They--but above all the former and new federal [German] governments--have managed to ensure that a negotiable proposal is on the table in Geneva. They cannot afford to see political opportunities openly

> gambled away through the thoughtless words of a president. Counterarmament will still confront them with painful decisions. In this respect, they require a clear and plausible concept of how deterrence and arms control in West Europe are to be credibly tied together. <u>If America stutters, the Europeans must formulate this concept</u>.
>
> The new proposals in Geneva have actually not ended the political controversy over counterarmament--as the Easter marches during the next few days will show. By talking big, Ronald Reagan has given new impetus to the nuclear fears in Europe. <u>It would be a step toward a clear-cut European position if we were to dissociate ourselves in a measured but firm manner</u>.
> (Emphasis added: Christoph Bertram article in <u>Die Zeit</u>, April 1, 1983)

> More than ever the truth is underlined--<u>the superpowers have not got super brains. The remedy must come from some of the smaller countries which can speak out more wisely and imaginatively</u>. The Labour Party undertakes that responsibility all the more so because our own government shows no sign of discharging its duty on this greatest-of-all question.
> (Emphasis added: Michael Foot speech on March 28, 1983, in FBIS, March 28, 1983, p. Q2)

11. <u>The U.S. Proposals Condemn Punitive Deterrence as Immoral But Offer No Practical and Timely Alternative</u>

(U) This criticism was expressed more frequently in interviews than in published sources. Hans Ruehle, the head of the Planning Staff in West Germany's Defense Ministry, probably came closer than anyone else to publicly articulating this objection to the U.S. BMD proposals:

> ...there might be less positive consequences from the fact that the American President combined his proposal with explicit criticism of the basic assumptions and means of the existing security system. That alters nothing of the fact that he deems it necessary to maintain the present means of deterrence for a transitional period of at least twenty years. By his attesting a general offensive character to atomic missiles and therefore depicting them as dangerous and destabilizing, Reagan has in this respect adopted in essential points the critique of the opponents of [INF] modernization in

> Europe and has thus hampered the political implementation of this program.
> (Emphasis added; Ruehle article in Christ und Welt, Rheinischer Merkur, April 1, 1983)

(U) The criticism was implicit as well in certain statements by West German Defense Minister Manfred Woerner and Bavarian Minister-President Franz-Josef Strauss, who strongly emphasized the necessity to rely for the next 10 or 15 years or so on existing policies for deterrence and arms control:

> Woerner feels Reagan's strategy 'attempts to orient more strongly toward defense considerations while employing the technical possibilities available in the next century.' The U.S. President's ideas would not become effective in military practice until the end of this century at the earliest, 'even if research work is carried out as intensively as possible.' 'They represent no solution for the security problems that Europe and the Western World have today and will have tomorrow.
> 'We will therefore probably have to continue living during the next 10-15 years with the current strategy of deterrence based on a broad spectrum of conventional and nuclear weapons.' Woerner feels 'that we can also prevent a war in Europe during the decades up to the end of the century.' However, this presupposes that the West will not weaken in its defense efforts. Reagan's strategic considerations 'must not weaken our efforts to achieve disarmament agreements--balanced disarmament agreements in all weapons sectors,' emphasized Woerner.
> (Emphasis added; Woerner in Deutsche Presse-Agentur (DPA) interview on March 24, 1983, in FBIS, March 25, 1983, p. J1)

> ...it is necessary to prevent dangerous propaganda from implying that this would render superfluous the implementation of the dual decision which, after all, is supposed to be completely carried out by 1985. [sic] This is so because from 1985 Europeans will be vulnerable to strategic blackmail and the decline in the credibility of U.S. deterrence will begin. Considering the unpredictability of technical development and its positive and negative possibilities, no one can tell at this time whether by the year 2000 things will have turned out to be as forecast by Reagan's visionary utterances. It's not as if one can fold one's hands on one's lap and lock the topic of security away in a drawer.
> (Emphasis added; interview with Strauss in Die Welt, March 27, 1983, in FBIS, March 29, 1983, p. J11)

(U) Interview sources were more emphatic. "It makes no sense to label the current strategy as immoral; but the President condemned it as immoral, even though we have to live with it for 20 or 30 years more, and maybe much longer." (West German) "It was and will be devastating in Western Europe. If you say offensive weapons are immoral, you support the peace movement and the bishops. But deterrence by threat of offensive retaliation has been part of the human condition ever since primitive societies, and we have no other choice but to stick with it." (West German) "It is dangerous to imply that defensive capabilities are at hand. It raises false expectations concerning the present and future value of the deterrence system. We have stability now through mutual vulnerability." (West German)

D. POSITIVE REACTIONS

(U) The published evidence and interview sources suggest that most of the positive reactions to the U.S. BMD proposals were fairly cautious and unenthusiastic denials of some key propositions of the critics of the BMD proposals. Only two truly positive arguments in favor of the proposals were advanced, and these by only a relatively small number of commentators. These two interrelated positive arguments stress (a) the moral superiority of a defensively oriented strategy and (b) the idea that defensive competition is more praiseworthy than offensively oriented arms racing. Why positive reactions were so muted appears partly attributable to the circumstances of the March 1983 BMD proposals.

1. <u>Unenthusiastic Denials of Critical Arguments</u>

(U) British Prime Minister Margaret Thatcher endorsed the idea of research on BMD, denied that there was any intent to violate the ABM Treaty, and in a single statement qualified the accusation that the United States had failed to consult:

> On consultations, none. We were informed it [President Reagan's speech] was going to be made. There is a fantastic amount of research to be done... I think it is very justifiable to continue to make that research... The anti-ballistic missile agreement does not affect research.
> (Cited in the <u>Guardian</u>, March 30, 1983.)

Incidentally, this statement is the only one that refers to U.S. notification in advance of the BMD proposals. Interview sources speculated that Mrs. Thatcher might have been alone or part of a very small handful of West Europeans to have received prior notice of the BMD proposals; and she rather pointedly noted that this notice did not consist of consultations.

(U) Another example of somewhat unenthusiastic endorsement of the BMD proposals was the conviction that the technical challenges of devising effective BMD would prevent any destabilization of the existing deterrence system. "I doubt if a BMD competition would necessarily be destabilizing. There are so many nuclear weapons, and I doubt if really watertight defenses can be built." (West German) "BMD won't change the situation. There are plenty of redundant nuclear weapons to overwhelm defenses and penetrate. Stability will probably still be secure." (British)

(U) Similarly, a French analysis published in May 1982 concluded that space-based BMD would be of such uncertain effectiveness and so vulnerable to countermeasures that it "would not fundamentally modify the strategy of nuclear deterrence between the superpowers." (Georges Outrey, "Missiles et anti-missiles," Défense Nationale, May 1982, p. 29)

(U) The closest any published statement came to describing the BMD proposals as essentially deterrence-as-usual rather than implying potentially fundamental change was the British government announcement that it welcomed the President's proposals as an "indication of American determination to remain wholly effective." (Cited in the Guardian, March 26, 1983.)

(U) Other critical arguments were also disputed--e.g., those focusing on the risk of the United States' placing its own security in a special category through BMD and thus (a) decoupling from Western Europe and (b) increasing prospects for conventional or nuclear war limited to Europe. The Economist noted that U.S. officials "were careful to reassure such European allies as were bothered by the president's rather distant proposal that it was not a step towards the abandonment of the defence of Europe." (March 26, 1983) West German officials made the most emphatic denials.

> The Federal Government [of Germany] regards it as 'self-evident' that President Reagan's ideas 'must also take into account Europe's legitimate defense interests.'
> Sudhoff said that the U.S. plans were 'dreams for the future,' and that for the next 10 to 15 years there would be no change in the present strategy. He said that as far as these considerations, which extend to the end of the present century, are concerned, 'I believe we will have to leave that to developments.' He indicated

> that it was not to be expected that Reagan's ideas would influence the Geneva disarmament negotiations on medium-range weapons.
> (Emphasis added; Hamburg DPA dispatch, March 25, 1983, in FBIS, March 25, 1983, p. J5)

> For the intermediate powers this will mean that it will be necessary to retain a mixed system of conventional armament and nuclear means of delivery. It will mean that European security will be just as great as that of the United States because of U.S. invulnerability, with the proviso that the alliance is fully capable of functioning. This must not mean, however, that small and medium wars in Europe will be considered wageable again.
> (Emphasis added; interview with Bavarian Minister-President Franz-Josef Strauss in Die Welt, March 27, 1983, in FBIS, March 29, 1983, p. J11)

2. The Moral Superiority of Defensive Strategies

(U) West German observers stressed the possible moral advantages of a defensive strategy over a retaliatory, punitive, and threat-oriented strategy. Dr. Hans Ruehle, head of the West German Defense Ministry's Planning Staff, elaborated on this theme at unusual length:

> There should be no doubt that Reagan's conceptions of a nonnuclear defense option are capable of greatly weakening the public's growing criticism on the ethical-moral aspects of mutual threats with nuclear weapons of mass destruction. The superior moral quality of a position which refuses to meet one threat with a counterthreat--by the motto: to give measure for measure--is indisputable as far as that goes. The consolidating effect of such an option on the discussion of security policy in Western societies is accordingly to be valued highly. In this way, the antagonism that has developed between, on the one hand, the security policy of governments, and, on the other, the fears of the population that this policy endangers both peace and Western security could be mitigated at least to a substantial degree.
>
> Reagan's proposal assumes political weight through the linking of the moral vision with the prospect of its technical feasibility in conjunction with the concrete research programs in the current defense budget. No one in the Alliance will be able to resist the suggestive effect of a strategy with purely defensive means. The awareness of standing together for the better cause now too with the strategy of higher moral value could

> further strengthen the cohesion in the Alliance. (Emphasis added; Ruehle article in Christ und Welt, Rheinischer Merkur, April 1, 1983)

(U) Other references to the moral superiority of defensive weapons over offensive ones were briefer, but included observers as prominent as West German Defense Minister Manfred Woerner.

> ...such a technology would naturally be a considerable moral improvement in the position because it would demonstrate our role as defenders. Threat wouldn't be set against threat any more because the threat of the adversary would simply become ineffective. (Woerner on Mainz ZDF television, March 24, 1983, in FBIS, March 25, 1983, p. J4)

> Reagan's vision of developing a strategic defensive force to guard against the competing world power, the Soviet Union, and its first-strike capabilities meets today's deeply rooted need of mankind to eliminate threat as a means for securing one's own security. (Ruediger Moniac in Die Welt, March 25, 1983)

> [In Rome] The Christian Democratic Party daily [Il] Popolo spoke of technology for peace in Reagan's defensive plans and said his speech constituted a first formal and public American commitment to mobilize technological leadership to free the world from a strategy of "guaranteed reciprocal destruction." (FBIS, March 28, 1983, p. L1)

3. The Special Benign Character of Defensive Arms Competition

(U) Whether this point constitutes an argument truly distinct from the idea of the moral superiority of defensive strategies is debatable. The point was nonetheless set forth as a separate argument in favor of the U.S. BMD proposals:

> That the better space-based system of strategic defense could lead to a new arms race cannot be dismissed out of hand. But a competition for the best defensive conception should be appraised differently from the previous arms race. Who would have dared to dream a few days ago that the two superpowers could be outbidding each other financially and organizationally to develop the most effective strategic defense concept? (Emphasis added; Hans Ruehle article in Christ und Welt, Rheinischer Merkur, April 1, 1983)

> We would be doing Reagan an injustice if we implied that he was just outlining a science fiction novel to avoid making unpleasant decisions on topical problems. It is known that this month Washington will make concrete proposals for the Geneva negotiations. Actually, we can only welcome the fact that the same President who is accused not only by the East of having an almost insatiable appetite for increasingly effective [offensive] weapons, is trying to break away from the devilish arms spiral in the East and West.
> (Emphasis added; Duesseldorf Rheinische Post, March 25, 1983, in FBIS, March 25, 1983, p. J5)

> On the question of whether the arms race will not be further intensified as a result of the development of new radiation technology and the possible military exploitation of space, [West German Defense Minister Manfred] Woerner replied, 'I cannot exclude this.' A decisive point would be, however, that the arms race would then take place in a purely defensive sector, that is to say, there would be a 'race to see who could produce the best defensive weapons.' That could not be harmful.
> (Emphasis added; DPA dispatch, March 24, 1983, in FBIS, March 25, 1983, p. J1)

(U) Woerner also stated that "The Soviets cannot feel threatened by the West's defensive weapons because they are only ready for use to defend against Soviet missiles," and that "a world based exclusively on defensive weapons would be more secure." (DPA dispatch, March 24, 1983, in FBIS, March 25, 1983, p. J1). Although the latter proposition is theoretically quite defensible, most West European critics doubted that a world without offensive weapons would in fact follow from a competition in defensive weapons and judged a mix of offensive and defensive systems more probable. Woerner himself is reported to have expressed a somewhat different view later in the same day: "...you could try to create security without nuclear missiles, although within limits." (Woerner on Mainz ZDF television, March 24, 1983, in FBIS, March 25, 1983, p. J4)

Woerner's statement that the "Soviets cannot feel threatened by the West's defensive weapons" was, as noted in Section C, vulnerable to President Reagan's observation that defensive systems can--if "paired with offensive systems"--"be viewed as fostering an aggressive policy."

(U) It might be noted that virtually all these positive reactions, including the unenthusiastic denials of the negative reactions, derive from conservative sources--Mrs. Thatcher, spokesmen of the CDU/CSU-led government in West Germany, Italian Christian Democrats, or conservative newspapers such as Die Welt.

4. Circumstantial Factors

(U) The relatively unenthusiastic character of even the positive West European reactions to the U.S. BMD proposals may be partially explained by the circumstances and manner in which they were presented. The U.S. failure to consult, even while proclaiming U.S. interest in close consultations and concern for allied interests, unsettled and annoyed even conservative and essentially sympathetic Europeans. Reactions probably would not have been substantively different if prior consultations had taken place, but the abruptness of the surprise was not conducive to the preparation of supportive arguments.

(U) If consultations had taken place, West Europeans might well have recommended that at least four features of the proposals be altered to improve prospects for a less negative public reaction:

1. The President should not have cast the United States in a role susceptible to being perceived as initiating

a new round of the arms race. This perception--the root of many of the negative reactions--could have been diluted, if not avoided, by calling public attention to the magnitude of Soviet BMD research and development efforts since the ABM Treaty was signed in 1972, including various possible violations of that agreement. No allusion to this or to related Soviet space warfare activities was featured in the President's speech, unfortunately. This facilitated a perception of U.S. initiatives in BMD and space warfare forcing the USSR to react, at a time when the converse is the truth.

2. The President should not have condemned the existing strategy of deterrence as immoral, when the West has no choice but to continue to uphold it for at least two decades, if not longer. It would have been more suitable to describe the existing strategy as necessary and moral, but only temporary, in that a better and even more moral strategy is foreseeable in the future. The condemnation of the existing strategy as immoral was perceived by several interviewees as a gratuitous stimulus to the antinuclear protest movements, and of no benefit to those Europeans trying to defend NATO and its strategy of "flexible response."

3. The President should not have included the paragraph in his speech about defensive systems possibly "fostering an aggressive policy" in conjunction with offensive

systems. Rather than serving to disarm critics, it provided them with a weapon they used repeatedly and effectively. While the critics would undoubtedly have made the same argument if the paragraph had been omitted, it would have lacked Presidential authority. It would have been better to focus the stress more thoroughly on reducing offensive arms and building defensive ones.

4. The President should not have made such a dramatic surprise statement about technological options that may be some 17 years distant and that are associated with people perceived to be (however unfairly) advocates of implausible schemes. This made the concepts of BMD, damage-limiting, and active defenses seem less responsible and serious to a large number of people--an effect precisely contrary to what the President presumably intended. If no solution is likely to be available until the year 2000, why make a media event of the initiation of research--casting the United States in the role of the engine of the arms race with proposals of uncertain technical feasibility and undetermined strategic and political implications?

(U) These circumstantial factors helped to make reactions to President Reagan's BMD proposals less positive--and even more negative--than they might have been. While European reactions to U.S. BMD initiatives would have been predominantly negative even if these factors were changed as suggested here, one understands why a sympathetic French interviewee judged that "Reagan's speech harmed the cause of BMD, both here in Europe and in the United States." These factors help to explain why Dr. Hans Ruehle, head of the Planning Staff in Bonn's Defense Ministry, concluded his article on the U.S. proposals as follows:

> All in all, even well-wishing European observers are left with mixed feeling about Reagan's proposal. People knew that a concept of strategic defense was sensible, necessary and to be expected. Yet now that it is here, there are difficulties in coming out for it with verve. (Ruehle article in Christ und Welt, Rheinischer Merkur, April 1, 1983)

E. POLICY IMPLICATIONS AND ISSUES

(U) Sections C and D provided an analytical description of West European reactions to the U.S. BMD proposals of March 1983. The principal policy implications and issues in European-American security relations that may well arise from these reactions and proposals may be grouped under six headings:

1. Soviet BMD activities and their potential role in overall Soviet political-military strategies toward Western Europe and the United States
2. Possible types of U.S. BMD programs and implications for extended deterrence
3. The breadth of the requirements of a damage-limiting strategy in Western Europe, and some of the unanswered questions raised by the U.S. BMD proposals
4. Specific issues associated with anti-tactical missiles (ATM)

5. The political prospects of Western Europe's accepting possible U.S. proposals for a reorientation of Western strategy in the direction of greater emphasis on defensive and damage-limiting measures and on nonsuicidal and discriminate offensive options

6. The political and military implications of British and French strategic nuclear forces possibly being rendered less effective.

(U) This list is obviously not definitively comprehensive. Arms control, for example, will only be discussed in passing under point 5. I have already published some information and ideas regarding several of these topics in the fall 1982 International Security article, "Ballistic Missile Defense and the Atlantic Alliance." In order to avoid repetition, I will refer the reader to specific passages in this article for background on some issues. This paper is an attempt to carry forward the work recorded in the article, with further reflections and findings.

1. Soviet BMD Activities and Political-Military Strategies

(U) The general West European perception of Soviet BMD activities revealed through reactions to the U.S. BMD proposals of March 1983 may be characterized as follows: even though the Soviet Union was frequently (and correctly) attributed a higher level of BMD research investment than the United States (as in the Le Monde editorial of March 25), West European observers tended to assume (a) that the USSR had adopted a mutual vulnerability theory of strategic stability in adhering to the 1972

ABM Treaty and (b) that the USSR would respond to the new U.S. "arms race" challenge in BMD most effectively, devising counter-measures to U.S. defenses as well as comparable defenses.

(U) U.S. analysts have increasingly recognized that the Soviet leadership may well have had three motives in adhering to the ABM Treaty quite at variance with endorsement of a principle of mutual vulnerability: (a) leaving U.S. ICBMs and other hardened targets unprotected so that their counterforce and damage-limiting objectives could be pursued, if necessary, with fewer impediments; (b) slowing down and hampering U.S. BMD research and development efforts; and (c) gaining time for Soviet BMD technological capabilities to equal and surpass those of the United States. If these motives did figure in Soviet decision-making regarding the ABM Treaty, they would appear to have been based on shrewd judgments about Western strategic preferences (i.e., attribution to the USSR of similar mutual vulnerability concepts) that would combine with Western funding and bureaucratic decision-making patterns under an arms control regime to hinder and retard U.S. BMD research and development efforts. The official U.S. assessment for at least two years has been that, if the ABM Treaty were abrogated, the USSR would be in a better position to rapidly deploy an operational BMD system.

(U) Nonetheless, in all the evidence reviewed, only a single West European reaction to the U.S. BMD proposals disputed the common assumption that Soviet motives in signing the ABM

Treaty were oriented toward stability through mutual vulnerability. This isolated reaction was provided by Dr. Hans Ruehle, head of the Planning Staff in Bonn's Ministry of Defense:

> As for Soviet acceptance of this system of strategic stability, those who postulated an inexorable East-West adaptation--and later identity--of military strategies in the nuclear age considered their views fully confirmed after the Soviets had signed the ABM Treaty. However, even then this euphoria was unjustified, since the Soviet Union signed the treaty not because it had adopted American strategic thinking, but rather because it feared the American lead in the area of antiballistic missile technology. It needed time to catch up or even pull ahead. The ABM Treaty gave it this time.
>
> Although the ABM treaty remains in force today and the strategy of 'mutual assured destruction' is still a foundation of Western security policy, in the course of time the number of those who believe the Soviet Union thinks in the same strategic categories as the West has rapidly declined. Contributing to this has been not only the Soviet buildup of an oversized potential of offensive nuclear weapons that is clearly not oriented to strategic stability, but also--and especially--the construction of an effective civil defense system--which runs counter to the overall system--the intensive testing in the area of conventional and nuclear antimissile technology as well as Western findings on the state of Soviet research on the uses of outer space for defending against hostile offensive missiles.
> (Emphasis added; Ruehle article in Christ und Welt, Rheinischer Merkur, April 1, 1983)

(U) Just as isolated as this assessment of Soviet motives in adhering to the ABM Treaty were judgments suggesting that the USSR might choose to abrogate the treaty, propose revisions, or prepare for a "breakout" without formal abrogation. The widespread assumption is that the Soviets would be reacting to U.S. BMD initiatives, and the March 1983 proposals may well have reinforced this assumption. Only three commentators made a point of underlining the seriousness of Soviet efforts in technologies required for space-based BMD:

> The Soviet Union has been operating for a fairly long time already with all the ingredients for developing an analogous system.
> (Hans Ruehle article in Christ und Welt, Rheinischer Merkur, April 1, 1983)

> The Soviets, on their side, have certainly been studying the military uses of space lasers since long before the Reagan Administration took over.
> (Brian Crozier, former Director of the Institute for the Study of Conflict, London, letter to the London Times, April 12, 1983)

> The Soviets are also working on such a system. The difference between West and East is that the West announces in advance that it may have a system that might be ready for use 20 years from now, whereas the East cloaks this with secrecy.
> (Interview with Franz-Josef Strauss in Die Welt, March 27, 1983, in FBIS, March 29, 1983, p. J11)

(U) The SA-12 situation also suggests how limited is West European awareness of Soviet BMD activities. Although several U.S. publications have referred to the SA-12 as a potential violation of the ABM Treaty and possibly capable of intercepting the Pershing IIs planned for deployment in West Germany (e.g., a Wall Street Journal editorial on March 25, a Jack Anderson column in the Washington Post on April 5, and an Aviation Week and Space Technology item on May 23), apparently not a single European publication of prominence (at least none that I could locate) mentioned the SA-12 in reacting to the U.S. BMD proposals. Similarly, interview sources also seemed surprisingly unaware of the SA-12, with only two exceptions--one French, one German.

(U) In short, the overall situation of West European awareness of Soviet BMD activities is well-suited to Soviet purposes. The USSR enjoys considerable credibility in accusing the United States of starting a dangerous new "arms race" and threatening the ABM Treaty in particular and strategic stability and world peace in general in an irrational and reckless quest for military superiority and a "first-strike" capability against the USSR. The Soviets had prepared this line in order to better manage Western public perceptions of potential U.S. BMD efforts well before the President's BMD proposals of March 23, 1983. (For a recent example, see the vigorous Tass dispatch of March 15, 1983, by Vladimir Bogachev, "The ABM Treaty and Stability," in the Foreign Media edition of Current News, March 23, 1983, pp. 10-11).

(U) Although the Soviet interest in effective defensive systems is certainly profound, it is probable that the USSR would prefer to avoid an intense BMD competition with the United States for the indefinite future. The longer such an intense competition can be delayed, the more time the USSR will have to gain superiority in BMD technology and infrastructure for practical exploitation, if necessary. More important, however, is the fact that delaying an intense and visible BMD competition facilitates Soviet political-military strategy toward the United States and Western Europe. It serves Soviet interests if the Western alliance remains without BMD. The USSR would prefer to achieve political dominance through intimidation--i.e., convincing public opinion in the West as a whole that there is no alternative to negotiation with the USSR and, ultimately, accommodation.

(U) BMD and other damage-limiting measures could in theory be much more direct counters to Soviet intimidation efforts than existing strategic concepts, which may well be too heavily dependent on threats to escalate to indiscriminate levels of nuclear destruction. If Western opinion could be persuaded that BMD and other damage-limiting measures could significantly reduce vulnerability to Soviet retaliation, key elements of Soviet political-military strategy for victory without war could be indefinitely frustrated. Soviet operational strategies for victory through war would be partly countered as well; deterrence would be strengthened as Soviet uncertainties about the feasibility of successful attacks were increased and as Soviet options were directly denied.

(U) The widespread European conviction that the USSR can respond most effectively to what is perceived as a new U.S. "arms race" challenge thus represents an asset for Soviet political-military strategy for victory without war. This conviction reinforces related ideas--i.e., that Soviet military power is virtually invincible, that any nuclear conflict with the USSR would almost certainly be suicidal, that "arms racing" against the USSR is futile, and that there is no alternative to detente, negotiation, and arms control. Broad West European support for these ideas tends to create a consensus within the alliance that tends to isolate the United States. The United States can only challenge this consensus at the risk of appearing interested in an "arms race" and East-West confrontation.

(U) It therefore seems obvious that the United States will have to reveal more information about Soviet BMD activities and general Soviet political-military strategies if the United States intends to seek a reorientation of Western strategy in the direction of greater attention to defensive and damage-limiting measures and nonsuicidal and discriminate offensive options. Before the political prospects in Western Europe for such a reorientation are considered, three other topics must be considered: West European perceptions regarding extended deterrence and BMD, the breadth of damage-limiting requirements in Western Europe, and anti-tactical missile (ATM) issues.

2. Types of U.S. BMD Programs and Extended Deterrence

(U) Different types of U.S. BMD programs could, depending on their purposes, have different implications for extended deterrence. These implications are scarcely obvious, since U.S. as well as West European observers have different assumptions as to the requirements for credible extended deterrence. These disagreements, which divide Americans as well as Europeans, may be illustrated by considering contrasting assessments of extended deterrence credibility in four cases: (a) virtually no BMD, (b) ICBM defenses, (c) limited U.S. homeland area defenses, and (d) extensive U.S. homeland defenses.

(U) The first case is the simplest, since it approximates the current situation. West Europeans are generally pleased that the United States is not in a special category of security by being less vulnerable to ballistic missile attack. Doubts about whether the United States would truly honor its extended deterrence commitments, owing to its near-total vulnerability to Soviet retaliation, have--with the exception of the French --been expressed more often by Americans (e.g., Henry Kissinger) than by West Europeans. Most West Europeans judge that the incalculable risks for the USSR are credible enough that aggression will be deterred, and that deterrence could probably be readily restored in a crisis situation.

(U) ICBM defenses remain relatively uncontroversial in Western Europe, in comparison to area defenses. West European interviewees expressed the view that, as one put it, "Western Europe has a strong interest in the credible coupling of U.S. strategic nuclear forces, and U.S. ICBM survivability. Perhaps BMD will be necessary for that purpose." (West German) "But it would look like war-fighting if you went beyond ICBM defenses." (British)

(U) Manfred Woerner, who has since become West Germany's Defense Minister, four years ago affirmed the importance of survivable U.S. ICBMs for extended deterrence and strategic stability.

> Only survivable ICBMs fill the NATO requirement of keeping open the options of first and selective use of nuclear weapons... There is thus a 'legitimate' European stake in the maintenance by the United States of a survivable force of ICBMs... The prospect that the U.S. administration could adopt a 'launch on assessment' or 'launch under attack' doctrine with respect to its vulnerable Minuteman ICBMs can only be disquieting. Such doctrines represent but marginal improvements over a 'launch on warning' concept, and in any event portend a highly unstable situation susceptible to accident and error.
> (Woerner, "SALT II: A European Perspective," Strategic Review, Summer 1979, p. 13)

(U) While these views favoring survivable ICBMs--and therefore perhaps also ICBM defense, if necessary--are no doubt shared by other Europeans, most Europeans appear to dispute the significance of U.S. ICBM vulnerability for European security. Christoph Bertram, for example, argues that the risks of U.S. retaliation will remain so enormous that extended deterrence will remain credible, even though the world has, in his view, reached

> the end of the age of invulnerability and the dawning of that vulnerability... Analysts and politicians alike should...ask if they have not tended to oversophisticate what is, after all, the rather primitive notion of nuclear deterrence: that an enemy will be prevented from attack by the credible threat of devastating nuclear retaliation. Practitioners and experts alike have perhaps fallen victim to the temptation of overrefining the essentially unrefinable.
> (Bertram article in Washington Post, December 5, 1982)

(U) Other Europeans have argued that the uncertainties in any ICBM vulnerability calculation make the very premise of any politically significant increased vulnerability dubious, given the existence of other retaliatory forces. The West Europeans who dispute the significance of ICBM vulnerability for extended deterrence generally oppose any changes in the ABM Treaty regime as destabilizing, as Christoph Bertram's example suggests. (See his statements in support of various negative reactions noted in Section C.)

(U) Limited U.S. homeland area defenses seem still to be perceived in much the same way as described in my fall 1982 International Security article (pp. 153-154, 156). The principal extended deterrence argument for limited area defenses, as set forth by Jan Lodal, is that the United States could threaten to use nuclear weapons with greater credibility, since the United States could parry any limited Soviet retaliation and the USSR would probably hesitate to make a response virtually indistinguishable from all-out nuclear war. West Europeans seem to reject this argument even more emphatically than in the past, basing their rejection partly on the familiar "arms race," "destabilization," and "confining a nuclear war to Europe" arguments.

(U) In addition, West European interviewees placed still greater stress on the likelihood that limited U.S. homeland area defenses would lead to limited Soviet homeland area defenses, which would negate the limited strategic options which are critical to the credibility of U.S. extended deterrence commitments. "The Soviets would be happy to have BMD at that level, because it would neutralize the limited strategic options of the United States and cut off extended deterrence." (French) "If the Soviets got BMD like that, there would go the U.S. limited employment options and extended deterrence. The Soviet Union would have virtually won in Europe. NATO would be back to massive retaliation, which is just not credible." (West German)

(U) Extensive U.S. homeland defenses have been advocated by a number of Americans in the past, and the March 1983 U.S. proposals were interpreted in Western Europe as a call for such defenses. The essential extended deterrence argument here is that a U.S. government able to directly protect America from

Soviet retaliation is far more likely to be able to deter Soviet aggression and adventurism because its offensive options would be usable without quasi-suicidal risks. Guarantees could, in other words, be more readily honored. Advocates of extensive defenses sometimes also recommend U.S. strategic superiority and clear escalation dominance, in order to be able to exert escalation control in any conflict the USSR might be tempted to initiate. This posture would minimize self-deterrence and command Soviet caution, making implausible any Soviet theory of victory.

(U) Some Europeans might welcome U.S. pursuit of such a posture. One West German interviewee, for example, said that "NATO strategy is critically dependent upon the perceived American willingness and capability to sustain nuclear escalation. That U.S. willingness and capability will increasingly lose its logical and psychological plausibility in the absence of U.S. superiority." Similarly, Franz-Josef Strauss, the Bavarian Minister-President and leader of the Christian Social Union (CSU) that helps to compose the current CDU/CSU-FDP governing coalition in West Germany, expressed the view that U.S. guarantees would be more credible if the vulnerability of the U.S. homeland were eliminated and the United States again enjoyed its historic condition of invulnerability:

> In this connection, I would like to say that we are very much interested in the Americans achieving invulnerability through such a defense system because as a result, the credibility of their intercontinental missile deterrent would be even greater and more infallible than it is today.

> It is necessary to make allowances for the American mentality in this context as well. The Americans tipped the scales in World War I with an Expeditionary Corps, having suffered relatively few losses. It was the Americans who decided World War II in the European and Pacific theaters, with greater losses. Yet in both cases no bomb or grenade hit America and not a shingle fell off any roof.
>
> For centuries it has been different for us Europeans. We have been subjected to many wars. Always alive within us is the awareness: If war breaks out, our people, our country, are in direct danger.
>
> For the Americans--if I may be allowed to say--it means a secular reorientation, it means a conversion from the invulnerability of the homeland and its population to total vulnerability, to the possibility of being harmed, the possibility of the destruction of their own territory, their own cities, their own industry, and their own people.
>
> (Emphasis added; interview with Franz-Josef Strauss in Die Welt, March 27, 1983 in FBIS, March 29, 1983, p. J12)

(U) These views appear, however, to be in the minority. Most interviewees as well as most of the published literature expressed the negative reactions documented in Section C of this paper: i.e., fear of the United States' adopting a "Fortress America" posture and abandoning Western Europe to Soviet domination or to a war limited to Europe; fear of reckless U.S. behavior since the vulnerability of the U.S. homeland would no longer restrain the U.S. government (and, once again, the perceived likelihood that war would then be limited to Europe); fear of a new and uniquely dangerous "arms race" with the USSR, which could lead directly to East-West confrontation and war (with Europe bearing a major portion of destruction) or to an indefinitely unstable U.S.-Soviet nuclear balance, which could be upset at any time as both superpowers increasingly perceived incentives for a "first strike," given the high stakes and rapid decision-making involved in space-based BMD.

(U) Moreover, most Europeans also reject the idea that U.S. escalation dominance is attainable, or would reinforce extended deterrence in meaningful ways. The most common European objection to the concept of escalation dominance is that the levels of destructiveness involved in intercontinental nuclear war are so high that relative degrees of counterforce superiority are irrelevant. According to this school of thought, limited counterforce options in "flexible response" and escalation control would be feasible for NATO because of mutual fear of uncontrollable escalation, not because of either side's escalation dominance through counterforce superiority or secure reserve forces for threatening countervalue targets. Even wide disparities in prompt counterforce potential can therefore be tolerated without endangering crisis stability or extended deterrence, while the pursuit of defenses (particularly BMD) would be destabilizing.

(U) In short, the overall and predominant West European attitude to U.S. BMD programs--despite a certain willingness to tolerate ICBM defenses--is that they pose grave risks to East-West stability and extended deterrence. West Europeans generally prefer the existing offense-oriented system of deterrence through mutual vulnerability, because--it is believed--both the United States and the USSR are constrained from considering policies that might endanger European security. West Europeans have always favored nuclear employment strategies that imply early escalation to intercontinental use--not because they wish to involve the U.S. homeland in nuclear war, they hasten to reassure Americans, but because this will most assuredly deter the USSR.

(U) The West European belief in stability through East-West mutual vulnerability constitutes a major obstacle to any reorientation of Western strategy towards a greater emphasis on defensive and damage-limiting measures. Carrying out such a re-orientation would imply convincing West Europeans that U.S. BMD programs can promote more credible extended deterrence. One way in which this argument might be strengthened is to make it clear to what extent U.S. BMD programs could help to establish defenses for allies as well as prospectively strengthening U.S. strategic nuclear guarantees.

3. <u>Damage-Limiting Requirements in Western Europe</u>

(U) Despite the various references to close consultations and allied interests in President Reagan's March 1983 BMD speech and in other articulations of the U.S. BMD proposals, it appears that the United States has not yet clearly specified any ways in which BMD programs could help in the direct defense of Western Europe.

(U) The clearest example of this is the prevailing uncertainty as to whether a partially space-based BMD system could defend against Soviet missiles such as the SS-20. A draft report about the U.S. BMD proposals, discussed in Copenhagen by the scientific and technical committee of the North Atlantic Assembly in June 1983, stated that the proposed BMD system could "create a dangerous and divisive current within the alliance, since the projected system would not be deployable against theater weapons such as the SS-20." (Aviation Week and Space Technology, June 20, 1983, p. 28) Similarly, Bavarian leader Franz-Josef Strauss stated that

> One must not hope that this will make IRMs [presumably intermediate range missiles] or even tactical TNF [presumably tactical nuclear forces] superfluous; because for them there is certainly no defense system in sight involving laser beams and other electronic or other chemical-physical possibilities.
> (Interview with Strauss in Die Welt, March 27, 1983, in FBIS, March 29, 1983, p. J11)

(U) In contrast, one West German interviewee expressed confidence that a partially space-based BMD system would be able to intercept an SS-20 as readily as an ICBM or SLBM; the SS-20 is, after all, almost as big as a Minuteman, and its boost phase of flight is probably comparable to that of ICBMs and SLBMs. However, he added, "the Soviets have many other systems with which to attack Europe." Similarly, Dr. Hans Ruehle of the West German Defense Ministry's Planning Department also judged that the proposed space-based system could intercept the SS-20, but called attention to the lower-range nuclear and conventional threats:

> If then, as is to be supposed, both superpowers were to go the road marked out by Reagan, then their territories would become invulnerable, and that means to become sanctuaries, while Europe, even in developing an analogous defense system, would be rid of only a few of its security worries. In such a case, protection against Soviet ballistic missiles--the SS-20, for example--would be guaranteed, yet Soviet cruise missiles, short-range missiles and low-flying bombers could not be prevented from penetrating into the West. Moreover, the whole conventional armament would again acquire an importance reminiscent of prenuclear times. Truly not a particularly agreeable perspective, given the existing conventional imbalance in favor of the Soviet Union.
> (Emphasis added; Ruehle article in Christ und Welt, Rheinischer Merkur, April 1, 1983)

(U) The United States should, it appears, make clear to West European governments which parts of the direct threat to Western Europe could be countered by a partially space-based BMD. The USSR is capable of launching ICBMs and SLBMs against Western Europe, and effectively countering these systems would eliminate part of the threat to Western Europe. Whether the partially space-based BMD could intercept the SS-20 and SS-22 should be specified, as well as whether modern shorter-range systems (SS-21 and SS-23) and the still-deployed predecessors of all these systems (SS-4, SS-5, Scaleboard, Scud, Frog) would be vulnerable. Similarly, whether a partially space-based system could eventually intercept aircraft and cruise missiles should be clarified.

(U) If the new strategic BMD systems cannot intercept all these delivery means (which seems likely to be the case), the United States might consider outlining a policy for countering these delivery means with improved air defenses and anti-tactical missiles (ATM). These active defenses might form part of a broad reorientation of Western strategy away from highly destructive retaliatory threats without significant defenses toward a strategy with greater attention to usable and discriminate nuclear and conventional offensive forces and significant damage-limiting capabilities suited to plausible contingencies.

(U) The damage-limiting requirements across the board for the security of the alliance would then include the space-based BMD systems launched and operated by the United States, ATM systems based in Europe (and possibly at sea and in the United

States as well), strengthened air defenses in Western Europe and North America, civil defenses, and offensive capabilities of sufficient flexibility, discrimination, endurance, and magnitude to permit escalation control, intra-war deterrence, and satisfactory conflict termination. While all of these topics deserve serious analysis, ATM is of greatest relevance to the BMD focus of this paper.

4. Anti-Tactical Missile (ATM) Issues

(U) The linkage between ballistic missile threats and NATO's inadequate air defenses has yet to be fully explored. Interview sources suggest that air defenses were deliberately underfunded and run down in several West European countries beginning in the late 1950s and early 1960s, when the Soviet medium/intermediate-range ballistic missile (M/IRBM) threat became serious. Because BMD was judged probably technically infeasible and too expensive, a policy of relying on deterrence through the offensive retaliatory capability of the United States was adopted.

(U) ATM has not received serious public discussion in Western Europe since U.S. Secretary of Defense Robert McNamara raised the issue in Nuclear Planning Group meetings in 1967 and 1968. (For details, see my fall 1982 International Security article, pp. 144-146.) The candidate ATM system was the SAM-D, which has since become Patriot. The European recommendation against developing an ATM capability played a role in the eventual decision to drop the ATM requirement, and to redirect Patriot toward air defense roles alone. Interview sources have added that another political factor explaining the decision to drop the ATM requirement from Patriot was arms control--i.e., the United States wanted to avoid giving any impression that a violation of the ABM Treaty might occur.

(U) This historical background must be kept in mind in examining ATM issues. ATM is already fully associated with past BMD debates, and the "arms race" and "destabilization" and other arguments favored by critics of U.S. BMD initiatives would almost certainly be deployed if U.S. interest in ATM received sufficient public attention in Western Europe to become a political issue.

(U) The six principal ATM issues discussed in the fall 1982 International Security article (pp. 159-172) have not changed significantly in the past year. Allied skepticism about the technical feasibility of ATM appears, for example, to have remained significant--at least as far as upgrading Patriot is concerned. Indeed, the reactions provoked by the U.S. BMD proposals of March 1983 suggest that West European confidence in the effectiveness of Soviet offensive and defensive countermeasures to BMD is profound. Similarly, the ABM Treaty's political importance as an insurance of mutual vulnerability and stability was also revealed in the reactions to the March 1983 proposals, and this fact would also affect ATM deliberations. The various possible effects of ATM on INF modernization now seem more remote but still cannot be ruled out.

(U) A further reflection can be offered with respect to military rationales for ATM. Additional interviews suggest that very few Europeans are giving much attention to practical operational issues. The vulnerability of airfields, nuclear storage sites, munitions and fuel sites, C^3 installations, etc., to nonnuclear ballistic missile attack is an unwelcome fact. The typical reaction of West European interviewees is on the lines of "What you say is true, but we have a political air defense. Our assessment of detente and Soviet intentions is such that we are prepared to run these risks." (West German) More unusual was a French observer's comment that one of the positive lessons of the Falklands War was the necessity to improve ATM defenses for ships, which might provide a windfall of relevant research for land-based ATM. Again, the more typical reaction is to assert that aircraft could survive a nonnuclear attack on airfields by SS-21s, SS-22s, and SS-23s by scrambling aloft on warning--with no analysis of where the aircraft and crews are to go for refueling and reloading and how they are to receive orders if their airfields and C^3 sites have been attacked.

(U) The alliance cohesion issues associated with ATM now appear more complicated than indicated in the fall 1982 International Security article (pp. 165-166). In conjunction with the obvious issue of the general West European suspicion of defensive strategies as implying "war-fighting" rather than simply retaliatory deterrence, it should be noted that the absence of ATM could become a political issue in the United States and U.S.-European relations. That is, why should the

United States keep forces in Western Europe if the Europeans won't cooperate in devising a defense for them?

(U) Another alliance cohesion issue is participation by the West Europeans in BMD and ATM programs. Senior U.S. officials have reportedly said that "benefits from the antiballistic missile research might be shared with the Europeans." (Science, April 8, 1983, p. 171) Apparently the only West European reaction to this possibility was a comment by West German Defense Minister Manfred Woerner:

> [Question] Research programs are being mapped out in the United States. Will the Federal Republic join in or make its own contribution?
> [Answer] I believe that this would unduly strain every individual European nation. I can imagine, however, that one could partake in something like that in a European framework. That must be discussed. We still live in the Federal Republic on the basis of today and tomorrow's defense methods. Therefore, we must try to safeguard peace for the next decade in the current way. (Woerner interview on Mainz ZDF television, March 24, 1983, in FBIS, March 25, 1983, pp. J4-J5)

(U) Aside from secondary issues of technology transfer, licenses, etc., the cooperation and participation arrangements could also lead to more politically and strategically substantive issues of defining requirements in relation to threat assessments, institutional and command arrangements, and priorities of protection. All could become subjects of disagreement among the allies.

5. Prospects for Western Europe's Accepting a Defensive Reorientation of Western Strategy

(U) The broad reorientation of Western strategy in which the March 1983 BMD proposals might figure may be defined simply. Rather than relying heavily on punitive threats of nuclear retaliation and lacking significant active defenses, the United States and its allies might develop (a) conventional and nuclear capabilities capable of discriminate employment in key plausible contingencies and (b) active defenses and other damage-limiting measures to improve prospects for sustaining movement toward development of nonsuicidal military options.

(U) It appears that the United States would have to satisfy at least seven preconditions before Western Europe could be persuaded to accept such a defensive and damage-limiting strategy:

1. In contrast to U.S. behavior in making the March 1983 BMD proposals, the United States would have to engage in real consultations at the highest levels to convince the Europeans that the U.S. regards them as valued partners in a joint enterprise. A Presidential salesmanship effort would be required at the outset, and the reorientation would have to remain a high-level preoccupation for several years. Too many major initiatives appear to Europeans to be devised in great detail and in secrecy in Washington. In their view, before Europeans have any opportunity to participate in the formulation of such initiatives, the United States presents them on a take-it-or-leave-it basis. However unfair this European impression is to U.S. policymakers, it is a political factor--i.e., a precondition--that would face such a truly fundamental shift in strategic concepts as moving toward defenses and

damage-limiting. If such a move were presented as a unilateral dictum of the United States, with the defense of the U.S. homeland the supreme priority, Europeans would react negatively. If the United States wishes to retain allied cohesion, active defenses for Western Europe will have to be accorded a priority approximating defense of the U.S. homeland, and true partnership in key areas will be required.

2. The United States would have to convince large numbers of West Europeans that active defenses would not have all the negative consequences listed in Section C of this appendix. While it would probably help to hold sincere consultations and make it clear that active defenses for Western Europe would be accorded a priority approximating that of the defense of the U.S. homeland, a very basic obstacle to change is the conviction of many Europeans--probably a large majority in decision-making elites--that the pursuit of defenses would be more dangerous than preserving mutual vulnerability. "Today both sides are vulnerable enough to understand that a big war would be absurd. Mutual vulnerability is a better basis for security than an arms race in defensive means; it makes it clear that there's no benefit in war." (West German) Indeed, despite the election of a CDU/CSU-FDP government, the Egon Bahr vision of viewing the whole situation as a problem of managing mutual vulnerability in a "security

partnership" between East and West still enjoys considerable currency beyond the SPD and beyond West Germany. Defensive measures are thus branded "confrontational" and threats to detente--as are new offensive forces, for that matter.

3. The United States would have to convince Western Europe that the active defenses proposed are truly technically feasible. As one West German interviewee said, "I would favor defensive systems at all levels if I was sure they were feasible. I support the existing offensive strategy only because it's the only choice. But a credible ATM system is probably 15 years away." In addition, interviewees confirmed the importance of nonnuclear kill (NNK) for public acceptance. (The other well-known advantages of NNK are discussed in the fall 1982 International Security article, p. 160.)

4. The United States would have to convince Western Europe to spend the money that active defenses would cost, at a time when European governments are reluctant to pay for new conventional weapons technologies and have had a mixed performance record with defense spending goals such as the 3 percent real annual increase. "I would like to be able to kill the SS-20, but nobody is prepared to pay for it. ATM is a nonissue because of the lack of money." (British) "We can't dream of a defense against the SS-20 when we can't even afford a good air defense." (West German) "Everyone hesitates

to start a joint allied study on ATM, because it implies a step on the way to hardware; and that costs money." (West German)

5. The United States would have to convince West Europeans to overcome their generally profound distaste for defense measures that imply too explicitly the contingency of "war-fighting." West Europeans generally are unwilling to accept the Soviet view (increasingly respected in the United States) that deterrent capabilities are a product of operationally effective war-fighting capabilities. Instead, West Europeans (even more than Americans) tend to favor a "deterrence-only" perspective based on threatening strategic nuclear retaliation against Soviet society. Capabilities that imply limited war within Europe--and perhaps limited to Europe--are generally repellent.

6. The United States would have to convince West Europeans that the pursuit of defensive and damage-limiting means would not ruin all hopes for arms control. Renegotiation of the ABM Treaty would not worry West Europeans as much as total abrogation. Similarly, the unsettled question of whether ATM would violate the ABM Treaty would have to be resolved. If the ABM Treaty were to be abrogated, the United States would be well-advised to have a new and politically credible conceptual framework for future arms control endeavors.

7. Finally, the United States would have to place advocacy of a new defensive strategy within an overarching political framework for the future development of East-West relations. The new political framework would somehow supply a long-term vision of constructive intentions in order to demonstrate that the United States is not interested in needless confrontation, though it intends to uphold human rights and Western values and to defend its legitimate interests. West Europeans generally consider the Reagan administration's approach to East-West matters excessively military-oriented and fundamentally bleak, offering no hope for the future.

(U) Despite these seven major political obstacles to West European acceptance of a defensively oriented strategy, three countervailing factors should be noted. First, the USSR may inadvertently provide assistance in a persuasion process if its offensive force developments and BMD activities become more obvious in the public mind in Western Europe. As one West German newspaper editorial noted,

> President Reagan's announcement of futuristic defense systems for the United States did not go unanswered for very long. Party boss Andropov came out with a propagandistically effective statement on the subject. However, he is counting on the poor memory of those he is addressing. It has definitely not been the Americans who have sought to gain the advantage and superiority in nuclear offensive weapons during the past 1 and 1/2 decades, that is, during the era of so-called detente. All arguments are dishonest if they proceed from the premise that the party being addressed has a defective memory. How can Andropov advertise with a clear conscience the prevention of a nuclear catastrophe as the greatest goal

> when through its arms efforts the Soviet Union has been systematically working toward a situation which would allow the nuclear blackmail of Western Europe? (Konstanz Suedkurier, March 28, 1983, in FBIS, March 28, 1983, p. J1)

(U) Second, Western Europe's dependence on the security guarantees of the United States has historically been seen as so great that eventually European-American compromises have been reached. (The compromises have, however, often been of greater political utility than military precision--as the 1967 adoption of "flexible response" demonstrates.)

(U) Third, some admittedly anecdotal and impressionistic interview evidence suggests that a number of Europeans are attracted to the concept of defensive and damage-limiting strategies. A particularly striking French statement deserves to be quoted in full:

> Defense is the best deterrence, because it bases deterrence less on threats of nuclear blackmail. It amounts to victory denial instead of catastrophic certainty.
>
> Flexible response was technically acceptable so long as the U.S. had nuclear superiority, and psychologically acceptable so long as we thought there would never really be a war. But it has become a bluff that might have to be called.
>
> A basic cause of the pacifist-neutralist movement is that people don't want to threaten others or be threatened as civilian hostages. This can't be sustained in a democratic society; we can't be as good at it as a totalitarian state.
>
> How great a part BMD can play in the solution depends in part on technology. BMD will be opposed by Western Europe so long as it's limited to the United States. If ATM is clearly feasible, step by step, opinion will consider changing in favor of defense. People are afraid that P-2 and GLCM will be new targets for the USSR, so they are not insensitive to vulnerability.
>
> I think public opinion can be won over to the idea of defense. Dogmatic antinuclear protestors need not be politically relevant. People need to believe that defense is cost-effective and feasible, not hopeless.

> For this reason, the Falklands War was a boost to the self-confidence of Western Europe.
>
> So long as military preparations are associated with the total disaster of nuclear war, talking about defense is hopeless. We need to reestablish the feasibility of defense.
>
> That's the advantage of defensive policies. Telling the public, 'You are hostages, but we would retaliate' is very demoralizing. It undermines courage to face the threat. Why resist if fighting means a suicide that is immoral? With damage-limiting, you are in a more moral position, with less fear and more reasons to resist.

(U) Another anecdotal bit of evidence is a personal impression that West European concern and awareness about air defense problems may well have increased in the past four years. Moreover, despite some exceptions, the more informed Europeans become about air defense and ATM, the more supportive and concerned they seem to be with respect to defenses. "Air defense is our most critical weakness. We are losing the air battle." (West German)

(U) One British interviewee argued that the political legitimacy of air defense may facilitate ATM deployment:

> Defense against air attack is politically uncontroversial, except for cost. There are no emotional or political limits. A nonnuclear kill ATM used for point defense of airfields and other critical targets would be exactly the same game as SAMs, which are supported in Western Europe. That kind of ATM would probably be all right because it offers a proposition of limiting damage and providing protection as part of an integrated deterrent capability. It doesn't get into the business of hostage withdrawal, which is what Western Europe has opposed. Area defenses are bad for deterrence stability, but public opinion has never been asked to think about an ATM clearly intended for point defenses.

(U) There are even a few published West European sources supportive of BMD and damage-limiting, e.g.:

> The emerging turn toward a dominance in development of nonnuclear defensive weapons technologies could resolve

> the fundamental problem of nuclear deterrence... The possibility of combatting ballistic missile warheads is not limited to missiles of intercontinental range. It is not unlikely that ABM development will also come to incorporate the issues of European defense in the course of the eighties.
> (René Herrmann, "ABM in den achtziger Jahren: Technische Moeglichkeiten und strategische Zwaenge," Aus Politik und Zeitgeschichte, Das Parlament, April 16, 1983, pp. 45-46)

> Some will see in this a sort of Yalta in outer space. Certainly, the outdistanced Europeans will be led to denounce an American attempt to reassume the leadership that they were on the way to losing. But, for Europe, is it better to be physically protected from the SS-20s or to be capable only of avenging their attacks after the harm has been done? Is it better to have Pershing IIs and cruise missiles, maintained by the Americans and capable of killing millions of Soviets, or systems capable of saving millions of Europeans?
> (Colonel Marc Geneste, "Revanche de la Défense? Le projet 'High Frontier,'" Défense Nationale, May 1982, p. 17) [Incidentally, because this journal is a quasi-official publication of the French Defense Ministry, Geneste's article was preceded with a note emphasizing that his views were personal ones, and that the article was published to make known a current of opinion in the United States.]

(U) It should nonetheless be repeated that such statements of interest in and support for BMD remain in the minority. Even the relatively few supportive interview comments may constitute an unrepresentative sample. Overall, the prospects for persuading Western Europe to readily accept a reorientation of Western strategy in the direction of active defenses and damage-limiting appear most challenging. It could only be achieved as a long-term process and would require the resolution of most, if not all, of the seven preconditions outlined above.

6. British and French Nuclear Forces

(U) The direct interest that Britain and France each have in maintaining the existing ABM Treaty regime is too obvious to be belabored. Each government wants to prevent the expansion of Soviet BMD to levels that would invalidate the technical credibility of its nuclear forces. Evidence for this and background is provided in the fall 1982 International Security article (pp. 147-151).

(U) Evidence that has become available since the article was written is France's announcement that she would make an exception to her long-standing refusal to agree to any treaty that might limit her nuclear weapons in order to join in a general treaty, including verification, on the model of the ABM Treaty, "if such an approach could consolidate the prohibition of antiballistic defenses already prevailing on the bilateral level." (Intervention de Claude Cheysson devant la seconde Session Extraordinaire de l'Assemblée Générale consacrée au Désarmement, New York, June 11, 1982, p. 17) Similarly, the 1983 British defense white paper described the ABM Treaty as an "arms control success" and pointed out that the Chevaline warhead system could penetrate the Soviet BMD anticipated until Trident deployment in the 1990s. (Statement on the Defense Estimates 1983, Cmnd, 8951-I, London: Her Majesty's Stationery Office, 1983, pp. 1, 7)

(U) What would be the implications of Soviet BMD making the British and French forces less effective and more marginal? Four implications stand out: the strategic impact on European security, as West Europeans might well perceive it; the implications for European-American relations and U.S. interests;

the consequences of British and French countermeasures; and political implications in intra-West European relations.

(U) The strategic impact on European security would probably be perceived as negative by West Europeans. West Europeans outside of Britain and France often voice support for the arguments that additional centers of nuclear decision-making complicate Soviet risk calculations, could help to prevent U.S. strategic nuclear decoupling in a crisis or war, and provide Western Europe with long-term options for effective defense unity in an uncertain future.

(U) Quite aside from these strategic arguments, Britain and France have (to varying degrees) at least five peacetime political arguments for favoring maintenance of their strategic nuclear forces: (a) justifying greater autonomy within the alliance; (b) maintaining international prestige; (c) promoting economic development through scientific and technical research; (d) reconciling the armed forces to the end of empire; and (e) helping to maintain public confidence in the nation's historical destiny.

(U) As a result, Britain and France will oppose any U.S. initiatives likely to upset the ABM Treaty regime and could well sharply resent and criticize U.S. behavior. Other West European allies might also express resentment. How these implications might be assessed by the United States is uncertain. For over a decade, ever since the early days of the Nixon administration, U.S. policy has accepted, even vaguely approved, maintenance of the French forces (in, for example, the 1974

Ottawa Communiqué), though still not with the degree of active cooperation accorded to the British. On the other hand, other U.S. interests might be interpreted as outweighing the benefits of maintaining the British and French forces, as Keith Payne has noted:

> maintaining the British and French independent nuclear forces is not necessarily an overriding imperative for the United States... There could quite conceivably exist circumstances wherein the U.S. would prefer that the French and British not be capable of 'triggering' U.S. nuclear use by implementing an independent nuclear strike against the Soviet Union. The control of escalation would likely be made even more difficult and complex by the existence of multiple independent nuclear strike forces. Thus, the fact that revision of the ABM Treaty could lead to the degradation of the French and British independent deterrents need not necessarily be considered a wholly negative factor from the U.S. perspective. Indeed, the enhanced credibility of the U.S. deterrent provided by BMD may compensate in terms of deterrent effect for the potentially reduced penetrativity of British and French nuclear forces.
>
> The U.S. obviously must be sensitive to the fundamental security concerns of its allies, and the maintenance of a modernized independent nuclear force obviously is important to Britain and France. Nevertheless, the U.S. must also ensure that it has taken every feasible effort to maximize the likelihood that its strategic forces can support the deterrence roles assigned them. And if the point of this analysis is correct, i.e., that BMD for ICBM silos is feasible and important to deterrence stability, then that concern should predominate. (Payne, The ABM Treaty: Is It Sacrosanct? Information Series no. 120, Fairfax, Virginia: National Institute for Public Policy, July 1982, pp. 21-22)

(U) If Soviet BMD undermined the technical credibility of the British and French forces, the two governments would almost certainly be disposed to take countermeasures rather than phase out their nuclear forces. The French have been particularly explicit on this point, and appear more likely to maintain their forces than the British. In each case, the countermeasures would take the form of more reentry vehicles and more penetration aids, perhaps even more nuclear-powered fleet ballistic missile submarines. Some French sources have already referred to hardening against potential Soviet laser weapons. One result of this expenditure would almost certainly be less spending on conventional forces. In addition, resentment against the United States could increase, to the extent that the United States could be blamed for provoking Soviet BMD deployments.

(U) A final point concerns the political implications within Western Europe of reducing the effectiveness of the British and French nuclear forces. While the British case would probably not raise important problems, a French strategic nuclear force deprived of technical credibility with respect to the USSR could pose serious political issues. As was long ago noted by Johan Holst, "Should the French force...be widely viewed as impotent vis à vis the Soviet Union, it might come to look increasingly as a potentially anti-German force or as an instrument for the assurance of French ascendancy in Europe." (Holst, "Missile Defense: Implications for Europe," in Johan J. Holst and William J. Schneider, eds., Why ABM? Policy Issues in the Missile Defense Controversy, New York: Pergamon Press, 1969, p. 199)

APPENDIX H

FOREIGN POLICY IMPLICATIONS OF BMD

Leon Sloss
Marc Dean Millot

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APPENDIX H

FOREIGN POLICY IMPLICATIONS OF BMD

Leon Sloss
Marc Dean Millot

A. INTRODUCTION

(U) There is a well-established set of assumptions about how various other nations are likely to respond to a major new U.S. ballistic missile defense (BMD) initiative. In this paper we will call this the "conventional wisdom." It is held by many in the political and opinion-making communities, and it is based on known views in other nations regarding strategy and arms control and on reactions to past U.S. BMD programs such as Safeguard and Sentinel. We believe the conventional wisdom reflects the most likely, if not the most logical, response of foreign nations to a U.S. BMD program. That response will generally be negative unless the U.S. Government takes action to shape reactions in more favorable ways.

(U) The current environment of public opinion abroad, particularly in Europe and Japan, is increasingly antinuclear, and these negative attitudes tend to focus on the United States. Any new U.S. BMD initiative will have to contend with intense and widespread foreign expressions of discomfort and opposition to such a program. Further, these sentiments will be whipped up and influenced by the Soviet Union's active propaganda apparatus. This environment will not be easily altered, even by the best efforts of the U.S. Government. Foreign resistance to U.S. BMD will be strong, at least initially, and is likely to continue. The effect of the "conventional wisdom" on foreign attitudes may persist well after these views are "proved" wrong to the satisfaction of the U.S. Government or even of national security policymakers abroad.

(U) However, much has changed since the late 1960s, when the last major debate about ABM occurred. The conventional wisdom is based on a set of underlying assumptions which may no longer be valid. There is an appealing case that can be made today for placing greater emphasis on strategic defense, including BMD. To make that case requires addressing some of the assumptions underlying the "conventional wisdom." This paper examines these assumptions, raises some questions about their validity, and suggests some arguments that can be used and actions that the U.S. Government could take to support a new emphasis on defense in U.S. strategy. In addition, the problem of technology transfer and the need for allied consultations are noted and discussed.

B. THE CONVENTIONAL WISDOM

(U) The Soviet Union and most third parties will react negatively to a new U.S. BMD initiative for the following reasons:

1. There is a fear in many countries that BMD will provoke an accelerated arms race. The Soviet Union will exploit this fear and seek to place the onus on the United States for accelerating the "arms race."

2. Concerns have been expressed in Europe that if both the United States and the Soviet Union are well defended, this will result in the "decoupling" of U.S. strategic forces from defense of Europe.

3. The British and French will be particularly concerned that Soviet "responses" to a U.S. antiballistic missile (ABM) "initiative" will invalidate their deterrent forces or make it far more complex and costly to maintain them. China will have similar concerns.

4. Other nuclear-weapons states and potential Nth countries will be relatively unaffected, as their concerns are regional; they are not a threat to the major powers.

5. There will be widespread concern about any threat to the ABM Treaty regime, seen as the most successful example of arms control to date. In addition, many states will be concerned about any threat to the outer-space treaty and the test ban regime. In the case of the latter, it will be argued that failure to progress with a Limited Test Ban Treaty (LTBT) could increase pressure for nuclear proliferation on the grounds that the major powers are not making progress in controlling vertical proliferation.

C. ASSUMPTIONS BEHIND THE CONVENTIONAL WISDOM

(U) These judgments may not be entirely wrong (though many clearly are, while others are overdrawn or exaggerated), but, right or wrong, we consider them to be the likely initial reactions of most foreign countries to a new U.S. BMD initiative, particularly if the United States is seen to be the instigator of a new BMD race. However, these are not the only conclusions that could be reached. They rest on a set of assumptions that need to be examined, and where the assumptions are clearly wrong, they need to be demonstrated to be so:

1. That defense of any kind is inconsistent with deterrence.

2. That the U.S. program will be large, comprehensive, and provide a near-perfect defense, thereby undermining deterrence. However, it is also assumed that a smaller, less-comprehensive, less-than-perfect defense could also undermine deterrence, as it offers the most certain prospect, however eventual, of the larger system. Moreover, the smaller system, while ineffective in terms of population defense, is seen as a dangerous move toward a strategy of "war fighting" rather than deterrence.

3. That BMD deployment will set off responses by the Soviets that will accelerate arms competition.

4. That the United States will be the initiator of a renewed emphasis on BMD or will be widely seen to be the initiator.

5. That Soviet propaganda efforts will be more effective than similar U.S. efforts in generating concerns in third countries.

6. That allies cannot be defended or will not be defended with an effectiveness equal to that of continental United States (CONUS) defense.

7. That the ABM Treaty has great value in restraining Soviet ABM development.

D. THE ASSUMPTIONS ARE QUESTIONABLE

(U) All of the above assumptions can be questioned.

1. Defense and Deterrence

(U) A major problem in gaining acceptance of defenses, both at home and abroad, is the mistaken view that strengthened defenses are inconsistent with strengthened deterrence. In fact, defenses can strengthen deterrence, particularly in the extension of deterrence to third parties. The arguments for this view need to be fully developed and persuasively presented.

(U) In looking at the role of defenses in deterrence, it is useful to consider two situations. The first is the case in which defenses are partially deployed and have limited but still useful capabilities. The second is the case when a very low-leakage defense is in place. In both cases we assume that U.S. and Soviet defenses are roughly comparable and that the defenses are balanced as between ICBM defense, air defense, and defense against tactical missiles. In just listing these assumptions it is obvious that a number of variations on the base cases are possible, and these could have quite different implications. These are explored in more detail in the interagency paper on Deterrence and Defense Criteria.

(U) In the first case, defenses can strengthen deterrence in three ways. The most familiar example is defense of offensive forces and command, control, communications, and intelligence (C^3I). If our status of forces is well protected so that retaliation is assured, traditional deterrence is strengthened. By defending selected targets that might be considered of high value to Soviet attack objectives and thereby raising both the price and uncertainty of destroying these targets, defenses could discourage limited attacks on CONUS by the Soviets.

Deployments that can defend preferentially will have particular leverage. By raising the price and uncertainty of a limited attack, deterrence of such attack is enhanced.

(U) It can be argued that improving deterrence of small attacks makes large attacks more likely. But defense can also strengthen deterrence of large attacks. More widely deployed but still leaky defenses could force the Soviets to alter their entire targeting plans to assure penetration and destruction of the highest-priority targets. If the defense is sufficiently competent, the Soviets would be forced into a situation in which they could not be confident of destroying all or most of these high-priority targets. In this case, the limited defense would constitute a powerful deterrent. In sum, given the possibilities of preferential defense of large target systems, and the fact that target planners will normally make conservative assumptions in targeting, a defense that is far less than perfect could be a potent deterrent.

(U) In the case of perfect or near-perfect defenses, the concept of deterrence changes. Dominant defenses deter attack because there is nothing that can be attacked effectively. If such defenses exist on both sides, the balance of nonnuclear forces might be the predominant factor in deterrence. If the United States has a "perfect" defense and the Soviets do not, deterrence would be satisfactory from the U.S. standpoint, but the Soviets would presumably seek to redress such an imbalance if they could. If they do so by strengthening their defenses, we return to the former example.

(U) Against these cases, we must consider the effect of Soviet dominance in strategic defense on deterrence and stability. Clearly, if the Soviets were able to achieve such a position, the United States would have a serious security problem. In this light, stable deterrence requires a viable U.S. program in strategic defense. This scenario is also a powerful argument for not neglecting defenses in the years ahead.

2. Nature of the U.S. Program

(U) Most analyses of foreign reactions assume that the U.S. program will be perceived as leading ultimately to a nationwide urban defense, and that this will undermine deterrence, leading to greater risks of war in a crisis. These assumptions have been reinforced by the thrust of the President's March 23rd speech, which focused on long-range objectives. However, a highly effective defense will not emerge quickly, and it is not obvious that less-effective defenses are, on balance, destabilizing. In this study we are examining the utility, over the near- to mid-term period, of a range of system types with different defense objectives and varying magnitudes of effectiveness. Regardless of what the long-range objectives of the program will be, it will be many years before a near-perfect defense of the United States will be possible. Thus, some of the concerns raised by the image of a comprehensive, leakproof defense are exaggerated; deterrence based on the threat of retaliation will continue to operate for some time. However, it must be recognized that, even without any strategic defenses, the threat of retaliation has been steadily decreasing in credibility as a deterrent. Indeed, it is in no small part because the threat of retaliation is increasingly incredible, particularly for extended deterrence, that strategic defense is presently under consideration.

(U) In the longer run, we are seeking a far more competent defense of the entire United States. This will require some adjustment of our conception of deterrence. Deterrence could be strengthened if defenses improve the survivability of strategic forces and C^3I. However, competent area defenses can strengthen deterrence too, by complicating the problems faced by an attacker and increasing his uncertainty of performing his objectives. Such "denial-type deterrence" is perhaps less familiar to Western strategists but could still prove to be a more effective and stable deterrent than the threat of punitive retaliation is today.

3. Impact of BMD on Arms Competition

(U) The conventional wisdom argues that a BMD deployment will stimulate strategic arms competition because the Soviets will be forced to "respond" to our BMD in order to maintain their offensive deterrent. First, this assumes that the United States is initiating the expansion of BMD programs rather than the Soviet Union. This is not at all clear, and we deal with this issue below. Second, it assumes that any Soviet response will be adverse to U.S. interests and to the objectives of arms control. However, a number of Soviet responses are possible. At least some of these may be desirable from the U.S. standpoint, and the United States may be able to influence the directions they take.

- The Soviets may decide to deploy more of their current large liquid-fueled missiles to overwhelm the defense. Such a brute-force approach seems unlikely as a sole response because the Soviets have at least several new missiles ready for deployment. However, they do plan to continue to deploy new liquid-fueled ICBMs, and a credible early boost-phase intercept (BPI) might cause them to alter their current plans, thus giving the United States leverage over the structure of Soviet strategic forces similar to what we now seek with the MX. However, we must recognize that currently limitations in the "state of the art" of BPI are a constraint on this U.S. approach in the short term, and perhaps even the middle term.

- The Soviets may deploy new missiles. They seem certain to do this in any event. At least some of their new missiles are likely to be mobile. If they continue to observe the Strategic Arms Limitation Talks (SALT) II limits, new missiles would have to be deployed as replacements for existing systems. More likely, they would use the excuse of a U.S. ABM program to rationalize exceeding SALT II limits. However, this is an option they have at any time, as SALT II constraints are tacit rather than formal. The prospect of an effective BPI may impel the Soviets to proliferate missiles rather than fractionate large payloads--a result which is now sought even by many arms control advocates.

- The Soviets could decide to further fractionate their large payloads (again, this would require that they ignore a tacitly observed SALT II limit if they go beyond 10 warheads). While this would result in an increase in the number of nuclear weapons, if they were used to penetrate or saturate defenses, it might result in no more (or even fewer) weapons arriving at target, depending on the effectiveness of the defense and the targeting strategy of the offense.

- The Soviets might decide to deploy penetration aids. If these substituted for existing payload, it would actually decrease deployed megatonnage. However, it must be recognized that decreases in deployed megatonnage could be offset, in terms of the military effectiveness of the missile force, by: increases in accuracy; smaller, more efficient nuclear weapons; larger missiles; or more missiles.

- Finally, the Soviets would be likely to increase their development efforts in defenses as a response to a new U.S. ABM program, although it should be recognized that this effort is already substantial. Depending on resource constraints and how they decide to allocate resources, this might subtract from offensive programs. As the U.S. defensive programs become more effective, the Soviets will be forced to devote more resources to the penetration of defenses. At the same time, they will not want to lag behind U.S. defensive efforts. This is bound to put some pressure on the Soviet defense budget and may force some tough choices on them. In this situation the Soviets could become more amenable to restraints on offensive systems. It must be recognized, though, that for some time defensive-offensive improvements will interact before they may become amenable to a serious arms control agreement. Indeed this desirable result may never occur. U.S. BMD programs cannot alone guarantee arms control.

(U) The main point is that a great variety of Soviet responses are possible. While some of these could adversely affect U.S. and allied interests, others might be beneficial. We should try to design our defense programs to elicit beneficial responses. In particular, we want to try to persuade the Soviets to limit their offenses. The more credible and effective a U.S. defense, the more likely the Soviets will be forced to consider limits on offenses to be attractive.

4. Who Initiates ABM Deployment?

(U) If the United States is seen as the party initiating a new ABM program, it is generally assumed--and correctly so--that the United States will suffer serious domestic and international criticism and even strong opposition. This will be particularly true if the U.S. program is seen to threaten the ABM Treaty or other arms control agreements (e.g., the Outer-Space Treaty and LTBT). However, it is by no means inevitable that the United States will be seen as the instigator of an arms race or the first to challenge the ABM Treaty, especially if the facts support an opposite conclusion.

(U) During the 10 years the ABM Treaty has been in effect the Soviets have pursued an aggressive BMD R&D program; they have modernized the Moscow ABM system, they have developed elements of a potential nationwide ABM defense that could be deployed rapidly, and they have developed an ATBM. Whether their actions actually violate the provisions of the ABM Treaty is subject to debate. What can hardly be questioned, however, is that the Soviets have continued an extensive effort in air and missile defense. They are presently in a position to deploy a defense well beyond the treaty limits quite rapidly. How rapidly is a subject of debate among U.S. intelligence experts, but the Soviets are clearly in a far better position to deploy an ABM capability than the United States during the balance of this decade (incidentally, thereby having reversed the advantages enjoyed by the United States at the time the ABM Treaty was signed!).

(U) It should not be difficult to make a case that the Soviets have been the party initiating a new round of competition and that Soviet, not U.S., activity calls into question the viability of the treaty. Whether the international community can be persuaded to accept such a conclusion depends on how effectively the United States presents the case. This may be particularly important in the case of United Kingdom, Chinese, and French reactions, for their deterrent forces are directly affected by an expansion of a Soviet ABM deployment.

5. Explaining BMD

(U) Closely related to the above is the assumption that the Soviets will be able to achieve a propaganda advantage, placing the onus on the United States for taking a new initiative that threatens the ABM Treaty. We have already suggested that there is ample material available for the United States to demonstrate the contrary. A strong U.S. BMD R&D program may be the best deterrent to a Soviet breakout from the treaty's constraints. However, there may be reluctance to challenge the Soviets due to concern that the administration will be charged with negativism towards arms control. All we can point out is that if the United States is widely seen to be threatening the ABM Treaty regime by initiating a new program, the reactions to the program in many foreign countries, including some of our closest allies, is likely to be negative. If we can shift the onus to the Soviets by educating the public on Soviet BMD efforts since the treaty was signed, and do this in a credible way, reactions are likely to be quite different.

(U) A program of public education cannot be started at the last minute, after a decision for a new and expanded BMD program is announced. The effort must begin well before a formal decision to seriously alter current policy regarding BMD is announced. Otherwise, it will be interpreted as a self-serving ploy to enlist support for the new program.

(U) Our success in convincing key opinion leaders in this country of the need for the program will also help us abroad. Foreign attitudes on such issues are influenced in important ways by the judgments and commentaries of experts and opinion leaders in this country. If the program is widely criticized in the United States, that criticism will be reflected abroad, and it will be quoted in Soviet commentaries. Of course, no BMD program will be uncontroversial, but the better we explain the issues and the program at home, the better we are likely to do overseas.

6. Defense of Allies

(U) The fact that technology may permit the deployment of an anti-tactical ballistic missile (ATBM) system of some considerable capability, along with a CONUS-based BMD, or perhaps in advance of a CONUS defense, should help to allay some allied concerns about the discriminatory aspects of ABM that were voiced in connection with past systems. To the extent that an ATBM can disrupt the Soviet offensive in Europe--by defending against missile and air attack, for example--deterrence by denial and uncertainty is extended to Western Europe.

(U) However, we should not expect our allies to be uniformly overjoyed at the prospect of a defense of their territories. First, there will be many questions about the effectiveness of the defense, and what it will defend. An early ATBM is unlikely to provide population defense for allies. Rather, it will be directed at defending military targets and C^3I. Thus, we will not be able to tell our allies that an ATBM will eliminate their vulnerability to nuclear attack, at least not in any near term. At the same time, a defense of military targets will be seen by many of our European allies as designed to strengthen war-fighting capabilities. This is a doctrine that many West European strategists have long opposed because of its presumed effect of making a superpower war in Europe more likely. So, a defense for overseas theaters cannot be seen as an unmixed blessing. Nevertheless, the prospect of a good ATBM and the possibility of early deployment of such a system do overcome at least some of the potential resistance to BMD that might otherwise occur, particularly in Europe.

7. Value of the ABM Treaty

(U) We have already noted that Soviet actions to expand their BMD capabilities under the terms of the treaty, combined with U.S. unilateral restraint, have permitted the Soviets to close a substantial gap over the past decade in ABM technology. Furthermore, they have created a production base which would permit them to break out from the treaty more rapidly than the United States. Nevertheless, the treaty is perceived by the public, in the United States and abroad, as being highly beneficial to allied security interests. Furthermore, it is widely defended in the arms control community as the best example to date of a strategic arms control agreement. It is essential that a more realistic view of the strengths and weaknesses of the ABM Treaty be conveyed by the U.S. Government. This needs to be done soon. It will not be a simple task to accomplish without appearing to be opposed to arms control in principle. Nevertheless, so long as Soviets' actions under the treaty stand unchallenged, the United States is likely to bear the onus for endangering the treaty regime, and we will have a very difficult time making a case for any new BMD program.

E. THE CONVENTIONAL WISDOM: ASSERTIONS AND RESPONSES

Assertion:

1. (~~S~~) "There is a fear in many countries that BMD will provoke an accelerated arms race. The Soviet Union will exploit this fear and seek to place the onus on the United States for accelerating the 'arms race'."

Response:

(~~S~~) Soviet BMD-related programs are now proceeding at a rapid pace and are ahead of the United States in many significant areas. The Soviets have pushed up to, and many would argue beyond, the limits of the ABM Treaty in these programs. In particular, they have created a production base that would permit rapid deployment of a widespread ABM system if they so chose. At the same time, the United States declined to take full advantage of its rights under the treaty; indeed, our BMD R&D has languished. The Soviets also have developed an ATBM system. While it can be argued that this does not violate ABM Treaty limits, any ATBM will have some ABM capability. In a very real sense the pace and extent of the Soviet BMD program are provoking an accelerated arms race. To deter their breakout from the ABM Treaty and be prepared to deal with that eventuality, a vigorous U.S. program is necessary.

(S) The Soviets will almost certainly exploit the widespread fear that BMD will provoke an accelerated arms race by focusing on U.S. programs and even on U.S. discussion of BMD options. Simultaneously, they will continue and perhaps even accelerate their own efforts. It is essential that the United States inform the public here and in other countries about the full scope of Soviet BMD-related programs, to put this widespread fear of an accelerated arms race into perspective and to focus public concern on the Soviet Union's current programs, rather than on the prospective BMD efforts of the United States. If a U.S. BMD program is needed, it can then be more readily justified to the public in terms of a real Soviet threat of superiority in BMD.

Assertion:

2. (S) "Concerns have been expressed that if both the United States and the Soviet Union are well defended, this would result in the decoupling of U.S. strategic forces from defense of Europe."

Response:

(S) Defenses deployed over the near to middle term will not be effective enough to completely negate the threat of U.S. offensive nuclear force employment in support of West European defense. Therefore, for some years, even with U.S. and Soviet BMD, U.S. strategic forces will continue to support deterrence. To the extent that the United States deploys a BMD of even limited effectiveness, however, the credibility of U.S. willingness to employ strategic forces should be enhanced. While this point should not be overemphasized in the near term, defenses in CONUS should play a role in bolstering extended deterrence. Moreover, while a Soviet BMD system will impose uncertainty on U.S. attack planners and complicate the targeting of our strategic forces, it will not immediately negate the threat those forces pose to the Soviet Union.

(S) Defenses, particularly an ATBM, may also strengthen deterrence in Europe by their ability to disrupt the Soviet conventional offensive. Missile attacks are an important aspect of this attack plan; to the extent that an ATBM can deal with the missile attack, it can deprive Soviet attack planners of high confidence that a conventional offensive will succeed in achieving its military objectives. In this way, the uncertainties generated by an ATBM would clearly contribute to the deterrence of aggression in Europe.

Assertion:

3. (S) "The British and French will be particularly concerned that Soviet 'responses' to a U.S. ABM 'initiative' will invalidate their deterrent forces or make it far more complex and costly to maintain them. China will have similar concerns."

Response:

(S) British and French nuclear planners are presumably well aware of current and projected Soviet BMD programs, and are already contemplating countermeasures. [

] These actions are taking place now, in response to the evolving Soviet threat, fully aside from U.S. BMD efforts. As the Soviet BMD program is well under way, it seems that the problems of maintaining adequate French, British, and Chinese deterrent forces will continue to increase in complexity and cost regardless of U.S. BMD programs.

(S) Indirectly, a U.S. BMD improves the survivability and efficacy of these states' nuclear forces. By requiring the Soviets to concentrate more nuclear warheads on the United States to assure penetration and required damage expectancies, the other nuclear powers may see a decrease in the Soviet nuclear threat to themselves.

Assertion:

4. (S) "Other nuclear-weapons states will be relatively unaffected, as their concerns are regional; they are not a threat to the major powers."

Response:

(S) This is not entirely true. Admittedly, even a limited U.S. BMD would probably be capable of dealing with the smaller nuclear arsenals of these countries. However, U.S. BPI might be capable of defending foreign countries against missile attacks as well. This could lessen the value of such weapons to potential proliferators, thereby reducing the threat of proliferation overall. If regional nuclear concerns are affected by BMD, it is likely to have a positive, stabilizing effect.

Assertion:

5. (S) "There will be widespread concern about any threat to the ABM Treaty regime, seen as the most successful example of arms control to date. In addition, many states will be concerned about any threat to the outer-space treaty and the test ban regime. In the case of the latter, it will be argued that failure to progress with an LTBT could increase pressure for nuclear proliferation on the grounds that the major powers are not making progress in controlling vertical proliferation."

Response:

(S) It has been pointed out above, and throughout the course of the Future Security Strategy Study, that the principal threat to the viability of the ABM Treaty today is the Soviet BMD program. Indeed, a vigorous U.S. BMD program may be the best method of preserving that treaty's viability, for it may be the only way to hedge against a Soviet treaty breakout and thereby dissuade the Soviets from that course. Thus far, the record of Soviet BMD efforts severely diminishes the credibility of arguments that the treaty is a successful example of arms control. It is important that the public be informed of these facts, to correct the false impression of the treaty as a model of success in the achievement of arms control.

(S) Many states will be concerned about the threat that BMD systems may present to the outer-space and limited test ban treaties. Here again, however, it is Soviet efforts that pose the threat today, by forcing the United States to seriously consider BMD responses.

(~~S~~) Arguments that BMD will undermine the nonproliferation regime are largely specious. Decisions to "go nuclear" are generally far more a question of regional security than a response to great-power nuclear weapons programs. Moreover, as pointed out above, certain BMD systems (especially BPI) may decrease regional security by protecting potential victims of local nuclear aggression from missile attack, thereby negating possible advantages that nuclear forces would otherwise give to potential proliferators.

F. CONSULTATIONS

(~~S~~) Consultations with U.S. allies on BMD must be handled with the utmost care to successfully alleviate the problems and counter the perceptions noted above. The U.S. Government must be thoroughly aware of allied anxieties, based largely on the "conventional wisdom" outlined above, and able to deal with these issues with a straightforward but carefully considered approach. In addition, we must be prepared to accept the idea that strategic defense will be treated with some skepticism, and perhaps even rejected, by some of our allies. Certainly the allies should be consulted before official announcements (and let us hope before any leaks) regarding major shifts in our BMD policy that might raise questions about the ABM Treaty. In particular, decisions regarding ATBM should be preceded by close consultations with those allies that would potentially be affected by such a program. To minimize the prospects of premature speculation about U.S. Government policies on the part of either group, it would be prudent to conduct these consultations in parallel with, or immediately following the initiation of, similar consultations with the Congress.

G. TECHNOLOGY TRANSFER

(~~S~~) In considering an ATBM for the defense of our allies, the United States must be concerned with the problem of technology leakage to the Soviet bloc. This is particularly relevant for an ATBM utilizing the most advanced and sensitive technologies; for example, a "top-down" approach incorporating technologies developed for a BMD program, such as airborne optical sensors. A major breach in the technical security of a joint ATBM program based on this technology could have a serious impact on the overall effectiveness of our strategic BMD. Consequently, any technology-sharing arrangements with our allies to develop an ATBM must incorporate the strictest security.

H. CONCLUSIONS

(U) A well-conceived plan for demonstrating why the U.S. position in support of an ABM capability is in the best interest of the United States and its allies--one that addresses various interest groups in ways explicitly designed to alleviate their concerns and that takes into account problems of consultation and technology transfer--is essential. No such plan exists. The Office of the Assistant Secretary of Defense (International Security Policy) should be tasked to develop such a plan (for eventual coordination with the Department of State and the National Security Council).

APPENDIX I

THE COST OF GOING INTO ORBIT

F.P. Hoeber

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APPENDIX I

THE COST OF GOING INTO ORBIT

F.P. Hoeber

A. INTRODUCTION

(U) Boost-phase and midcourse intercept systems, perhaps two decades or so from operation, would involve large aggregate masses of equipment deployed in orbit. Current launch costs for communications satellites, military command, control, communications, and intelligence (C^3I) satellites, and other satellites tend to range from 40 to 100 percent of the cost of the payloads themselves. (This assumes for the Space Shuttle that the user price is the same as the cost of launch, a questionable hypothesis.)

(U) The future systems will be expensive--in tens of billions of today's dollars per year. Whether or not they are cheap for what they accomplish, or in comparison with general-purpose forces, the costs will be conspicuous and likely to generate serious political opposition. It therefore matters greatly, in terms of the possibility of eventual acceptance of proposed systems that may in other respects prove feasible and desirable, whether the total costs can be significantly lowered by manifold reduction in launch costs. If, for example, a system costs $100 billion for research and development (R&D), hardware, and ten-year operations, and $100 billion for launching, the total--the figure to be presented to the Congress and the public--will be $200 billion. If the launch costs could be cut by a factor of, say, five, to $20 billion, then the cost would be $120 billion. This latter figure might be vastly more acceptable to all involved. Whether the number were $110 or $130 billion would not be a significant distinction in a 20- to 30-year projection.

(U) While there are various conceptual candidate systems for boost-phase/midcourse interception, at this time, of course, none has been fully designed, much less developed, tested, or accepted. Selection of concepts that warrant further R&D and perhaps test and evaluation is precisely the task of the Defensive Technologies Study Team (DTST). This appendix will consider factors listed in the subsections below.

1. Cost Reductions

(U) The possibility of dramatic launch-cost reductions may be a function of many factors:

- Possible increases in mass to be orbited, i.e., in the total demand for boost of payloads into space, as they may affect Shuttle and expendable launch vehicle (ELV) cost.

- Possible differences in the aggregate demand of different types of systems.

- When given types of systems would be put in orbit, and how rapidly [initial to final or full operational capability (IOC to FOC)], including especially the difference between "normal" deployment schedules and surge capabilities.

- The potential effects of counter-countermeasure requirements--systems increments, replacement requirements, etc.

- The possible implications of other layers (not necessarily the same for all first layers or for all other threats) on total costs, on possible needs for increased launch capability, and on interservice coordination.

2. Institutional and Policy Factors

(U) Numerous institutional and policy factors may affect not only the feasibility of alternatives but also possible launch costs. It is not "all a matter of numbers."

a. Nature of Ballistic Missile Defense Choices. (U) The effect of a ballistic missile defense (BMD) decision on plans for new-generation shuttles, ELVs, or other launcher concepts would involve first the question of sizing for predicted payloads; the Shuttle's 65,000-lb capacity seems never to be fully utilized, because of dimensional and packing problems. Also important will be the role of man in space, involving questions of the need for servicing and for possible recovery of failed or obsolete space vehicles. The recovery problem for nuclear systems may be very different from that for nonnuclear (chemical laser, mirror, kinetic energy, etc.) systems. Whether any or all of these functions can be performed without a man in space will be important.

b. Stability. (U) The question of "stability" will also appear critical, even though "stability" remains an ill-defined concept. For the moment, we may regard stability as the lack of, or minimum, incentive for nuclear attack or for direct attack on space-borne BMD vehicles. Would cheaper launch methods (and expendable versus reusable launchers) affect the speed of deployment (IOC to FOC)? Rapidity may affect the nature as well as the timing of Soviet reactions. It is assumed here that deployment must be in peacetime, "precrisis." While one may not know when a crisis starts, deploying in acute crisis would at least be believed to be destabilizing by giving the enemy an incentive to fire before we are ready. The degree to which the Soviets perceive us to have "surge" deployment/replace-cement capability may in itself raise this stability question.

(U) A further, potentially more critical, stability problem involves the question of whether space-based BMD systems can be protected against attack, particularly against speed-of-light systems (what might be called "c" systems). The BMD space stations will contribute to stability if they can always be on duty. The situation will be unstable if they can be put out of action rapidly. In the special case in which one side achieves FOC well before the other and can abort the other's launches, the stability of dominance will obtain--the situation will be stable if the United States is first, but unacceptable and politically unstable if the Soviets are first. (Other stability questions, such as those concerning nuclear-generated beams versus nonnuclear kill mechanisms, "thickness" of defenses, and antisatellite (ASAT)/defensive satellite (DSAT) capabilities, will also arise but are beyond the scope of this task.)

c. Arms Control. (U) Arms control implications will also be relevant. Will low numbers of permitted ICBMs and submarine-launched ballistic missiles (SLBMs) make defense more effective? Would proliferated small, single-warhead missiles be more survivable against counterforce attack, as the Scowcroft Commission argued--but also, from the other side, against boost-phase intercept? Will other defense layers cover SLBMs that are launched at short ranges, with or without depressed trajectories? And will lack of air defenses provide a free ride for air-breathing weapons that are not vulnerable to the space-based defenses? Agreed limitations on the numbers and nature of offensive weapons may have a profound effect on the numerical and qualitative requirements for defenses and hence on the degree to which launch costs can be lowered. Finally, passive (especially civil) defenses could reduce active defense requirements.

(U) There is also the question of the implications of arms control treaties. The politics of when to negotiate/abrogate treaties are considered elsewhere. Questions are raised here because the answers may bear on launch methods and costs. Most immediately, there is the question of the ABM Treaty. No research is prohibited by the treaty. However, development, testing, and deployment of boost/midcourse intercept systems will be affected by at least seven treaty provisions. What is negotiated will have obvious implications for what can be orbited. The Threshold Test Ban Treaty (TTBT) unquestionably has special implications for the testing of "third-generation weapons" for the propagation of beams by nuclear explosions, if, as suggested by the DTST, much higher (megaton-range) yields should prove to be required. The Treaty on Outer Space will also affect the question of deployment of third-generation weapons systems (Excalibur). Finally, a possible (and already proposed) ASAT treaty could impinge on space-based defense options, since boost-phase and most midcourse systems would by their nature have some ASAT capabilities.

B. CURRENT COSTS AND CAPABILITIES--THE SHUTTLE AND ELVs

(U) The most recent study of Shuttle launch costs found was written last April by Eberhart Rechtin for the Air Force Science Advisory Board.* A brief look at Shuttle development

*(U) A Short History of Shuttle Economics, E. Rechtin, President, Aerospace Corporation, for U.S. Air Force Science Advisory Board Ad Hoc Committee on the Potential Military Utility of a Manned Space Station, 13 April 1983.

is in order, since it makes clear that the Shuttle was developed for a very different mission (or rather, mission mix) than that of launching future space-based BMD systems. The mission mix estimated in 1972 included four functions, in almost equal proportions:

- Manned or man-tended
- Applications
- Science
- Department of Defense (DOD).

Dr. Rechtin reallocates these into three categories, also roughly equal:

- Cargo delivery ("trucking") to low earth orbit (LEO)

- Servicing (of satellites on orbit: repair, replenishment, modification, sortie support, orbit transfer, and recovery)

- Man in space.

(U) Both the science and the man-in-space missions can properly be viewed as national objectives, the costs of which should be separated from the trucking and servicing missions for commercial and Government users (except as the services of the man in space may be directly demanded).

(U) Several dramatic changes took place between 1972, when the original plans were made, and today, when the Shuttle is starting operational use. These changes are reflected in the drastic reduction in the demand for Shuttle launches, predicted (from 1972 to 1980) to rise from about 20 per year in 1984-85 to 60 in 1990 and 80 in 1995. Current projections run in the range of 12-24 per year (feasible with the first four

Shuttles). The 1972 estimates were not misguided, although sticking by them until 1980 was questionable. Several things have happened:

- Satellite lifetimes on orbit have increased from 1-3 years to 5-10 years (at which point obsolescence is generally assessed as high, and interest in repair, recovery, and reuse has been lost, while replacement needs have declined).

- Reliability has greatly increased. First-year, ground-commanded, on-board repair actions have declined from "dozens" to an average of a half dozen, and manned intervention does not appear to be required.

- Levels of on-board sensing, recording, and processing have greatly multiplied.

- Communications rates have increased by more than an order of magnitude.

- Microprocessors have replaced printed-circuit boards, greatly reducing weights while contributing to increased capacity.

- DOD has cut its 1983-1987 launch requirements by 40 percent due to schedule slippages and program disapprovals/cancellations. Even commercial users accept slippages in order to improve S100-million satellites.

- Fiber-optics technology is burgeoning, and fiber cables will become increasingly competitive with communications satellites on high-demand routes.

- Direct costs ("reimbursables" charged by the National Aeronautics and Space Administration (NASA) to the flight and to the user*), reducing the value of reusability.

- The payloads and reliability of ELVs are increasing, providing redundancy and more user options, i.e., increased competition for the Shuttle.

(U) In order to encourage early use of the Shuttle (early on the "learning," or cost-reduction, curve), NASA has adopted a policy of pricing at direct launch costs, on the basis of 12-year averages at assumed annual launch rates. Presumably these rates will be adjusted, since "NASA intends to remain competitive" (with ELVs), taking into account "not only price, but other factors such as assured launch, reliability, and unique services." Because dimensional problems mean that the 65,000-lb-capacity cargo bay of the 200,000-lb Shuttle is generally loaded to 60-80 percent of capacity, averaging 75 percent, the shared price of a payload is 75 percent of the average of the weight and length load factors for the given cargo.**

(U) Taking account of NASA pricing policy, Rechtin† projected 12-year average costs in FY83 dollars for rates from 12 to 24 launches per year. These estimates ranged from $207 million down to $127 million per flight. (This is a decline of

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*(U) Reimbursables include propellant, external tanks, refurbishment, etc. Today, these costs are roughly those of expendable launch vehicles (ELVs) for the same payload, and user choices are often made on the basis of availability, guaranteed rescheduling, and other conditions.

**(U) STS [Space Transportation System] Pricing Policy, C.M. Lee and B. Stone, National Aeronautics and Space Administration, Washington, D.C., AIAA paper 82-1786, October 12-18, 1982.

†(U) Rechtin, op. cit.

40 percent with a doubling of rate. J. H. Ashmore, also of Aerospace Corporation, estimates a leveling off of costs at $60 million per year.*) This works out to about $2500-4000/lb to LEO. About 45 percent of this, $91 million down to $58 million, is for reimbursables. Rechtin estimates 16 flights per year to be the break-even cost point for the Shuttle against ELVs (European Ariane and Japanese Tanageshima); current pricing is about equal.

(U) Reimbursable launch costs range from 40 to 100 percent of payload value (say, $3,000-6,000/lb), depending on the payload and its orbit [fuel plus engine of some six-seven times the weight of a satellite being required in the Shuttle payload to transfer it to geosynchronous earth orbit (GEO)].

(U) While the dimensions and weights of the space platforms in the concepts being considered by DTST cannot yet be closely estimated, they will clearly exceed the capacity of the present Shuttle as well as current ELVs. This will be discussed below, along with likely launch-rate requirements, possible needs for manned servicing, questions of relative satellite costs, and so on.

C. THREAT ESTIMATES

(U) Before we can discuss payload and launch-rate requirements of future space-based BMD systems, we must consider the threats that these systems will have to be designed to counter. We will use the range postulated by the DTST.

(~~S~~) Table I-1 shows a preliminary range of estimates of Soviet numbers of boosters and reentry vehicles (RVs) used by

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*(U) Space Launch Systems Projection, Decade of the 90s, J.H. Ashmore briefing to DTST, 13 July 1983.

TABLE I-1. (U) ILLUSTRATIVE SOVIET THREAT DEVELOPMENT SCENARIOS

~~SECRET~~

Scenario	Boosters	RVs	Boosters	RVs	Boosters	RVs

the DTST. The mid-1980s and early 1990s are given for perspective. The 2000+ figures are of interest to us here. We will take as our base Case 3A, using a "Strategic Arms Reduction Talks (START) fail" assumption, since the total of ICBM and SLBM launchers conforms to the [redacted] boosters attacked by the boost-phase interceptors in the DTST model of a hypothetical layered defense (Table I-2). Several points should be noted:

- The [redacted] RVs carried on these boosters imply high leverage for the boost-phase intercept (BPI) layer.

- But with the 20 percent leakage assumed, the boosters that get through carry [redacted] RVs [plus potentially several times as many decoys, other penetration aids (penaids), and debris] to severely stress the midcourse defenses.

- Cases 4A and 4B, assuming arms control, include the assumption that we succeed in moving the Soviets to single warheads, à la "Midgetman," either for adequate dispersion under an RV limit [redacted] or through a MIRV-ban agreement. Thus, there would be [redacted] boosters facing BPI but, with 20 percent leakage, only [redacted] RVs (plus possible penaids and debris) challenging the midcourse defense layers.

- Case 3A seems conservative for our purposes, since the Soviet unconstrained buildup would take time, during which U.S. planned lift capacity, discussed below, could also be built up.

(S) The Excalibur interceptors in the DTST example could turn out to be another system, say, chemical lasers, and we can use the higher weights given below for testing lift requirements.

TABLE I-2. (U) ELEMENTS OF AN ILLUSTRATIVE SYSTEM CONCEPT

~~SECRET~~

Component	Type	Number of System Elements	Basing	Comment
Global Surveillance	SWIR/MWIR sensor			Alert all tiers global battle management
Boost Phase				
Overlay (mass raid)	X-ray weapons, [ ] beams per weapon			Local battle management
Underlay (100 boosters)	Neutral particle beam			Midcourse discrimination also
Midcourse Phase				
Midcourse sensor system (acqisition/discrimination/track)	LWIR Visible/ultraviolet laser radar			Midcourse battle
Kill Vehicles (CONUS-based)	Chemical rocket, IR homing hit-to-kill			Sized for 20% BPI leakage
Terminal Phase				
Airborne optics	LWIR sensor plus laser radar			Terminal battle management
Interceptors	IR homing fragmentation warhead			Sized for 10% midcourse leakage

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D. NEW CONCEPTS FOR SATELLITE LAUNCHERS

(U) New-generation launchers have been studied for other large payloads, notably for satellite power system (SPS) components. No estimate will be made here as to if and when an SPS may prove feasible/economical. If it should be as soon as satellite-based BMD, then the demands might be complementary (assuming energy versus weapon priorities to be resolved!), possibly changing judgments on the value of reusability (with or without man aboard) and the impact of differing rates of deployment (assuming the standby-for-pop-up case to be practicable with ELVs only).

(S) We will report on launch-system concepts under consideration for the 1990s and 2000-2010 that would have the lift capacities for the following satellite weapon systems:

	Unit Weight	
Satellite	Metric Tons	Thousand Pounds
Chemical Laser	[	]
Neutral Particle Beam (NPB)		
Free-Electron Laser (FEL)		

These are the driving items, by weight, according to preliminary DTST estimates. The chemical laser will be our test case. In fact, the launch vehicles (LVs) considered will go to higher weights to allow for possible growth to match Excalibur performance. [

]

(~~S~~) We can then make a worst-case estimate of total lift requirements:

[(S)] The only dimensional problems noted to date are the mirrors that might be used with ground-based lasers [ ]

(S) We will therefore concern ourselves here with lift requirements by weight only, and with the potential for going beyond the above [ ] to provide possible system growth in the next two decades. By comparison, today's Shuttle carries a maximum of 65,000 lb.

(U) Figure I-1 shows notional diagrams of threefold to fourfold Shuttle technology growth potential, up to some 225,000 lb maximum lift. Figure I-2 presents similar diagrams for more-advanced launch vehicles, lifting up to 925,000 lb.* (In Fig. I-1, SSME stands for Space Shuttle main engine; in Fig. I-2, SDLV stands for Shuttle-derivitive launch vehicle, and HLLV stands for heavy-lift launch vehicle.

(U) Several points should be made about these Figs. I-1 and I-2:

- The Shuttle evolution (Fig. I-1) does not meet the BPI potential requirements (unless Excalibur is chosen, in which case today's Shuttle has sufficient lift, or unless NPB or FEL is selected, in which event the postulated evolutionary Shuttle vehicles are marginally adequate).

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*(U) These figures, and much of the data to follow, were supplied by the Aerospace Corporation, taking account of NASA and aerospace company [NASA contract and independent research and development (IR&D)] studies.

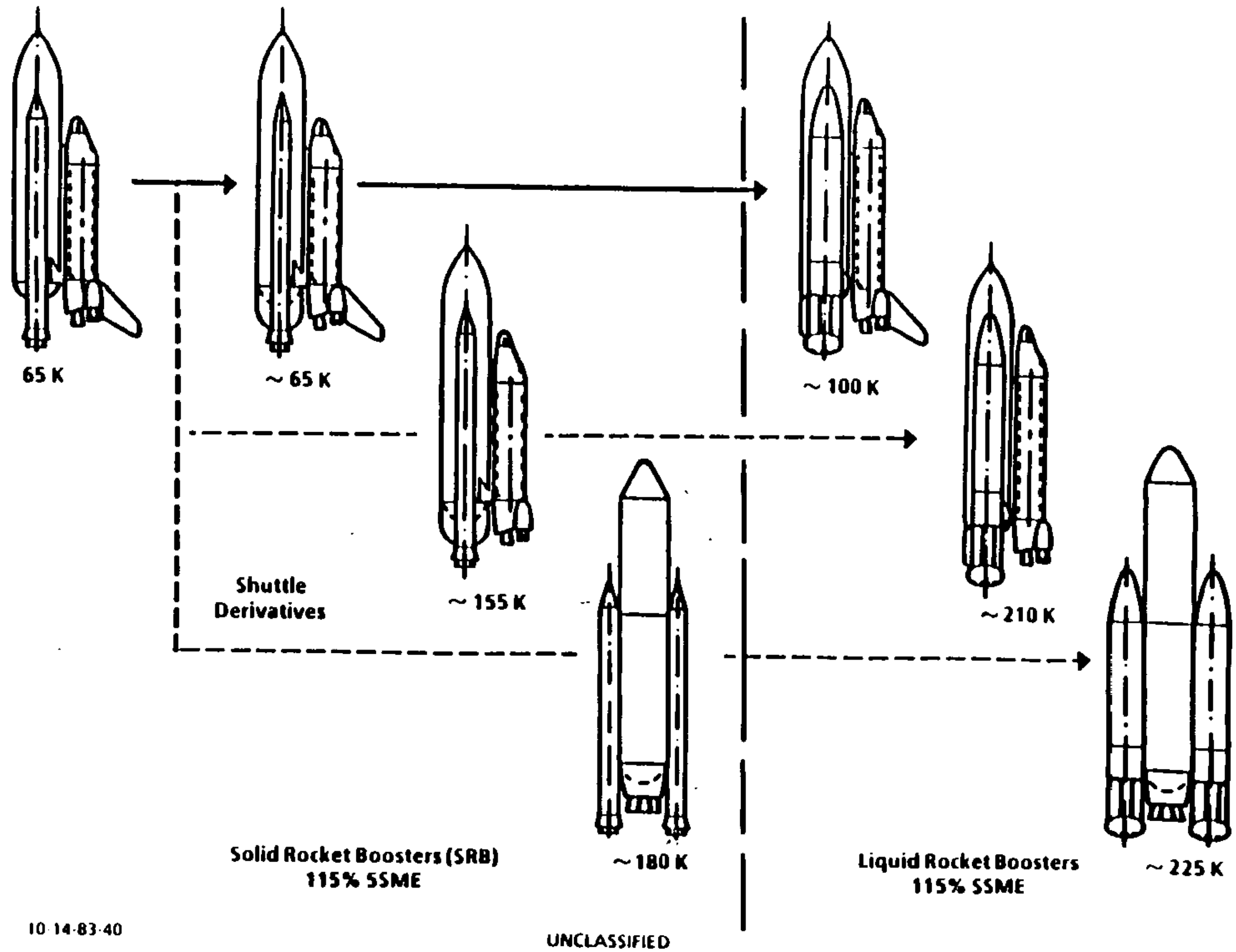

FIGURE I-1. (U) SHUTTLE TECHNOLOGY EVOLUTION POTENTIAL

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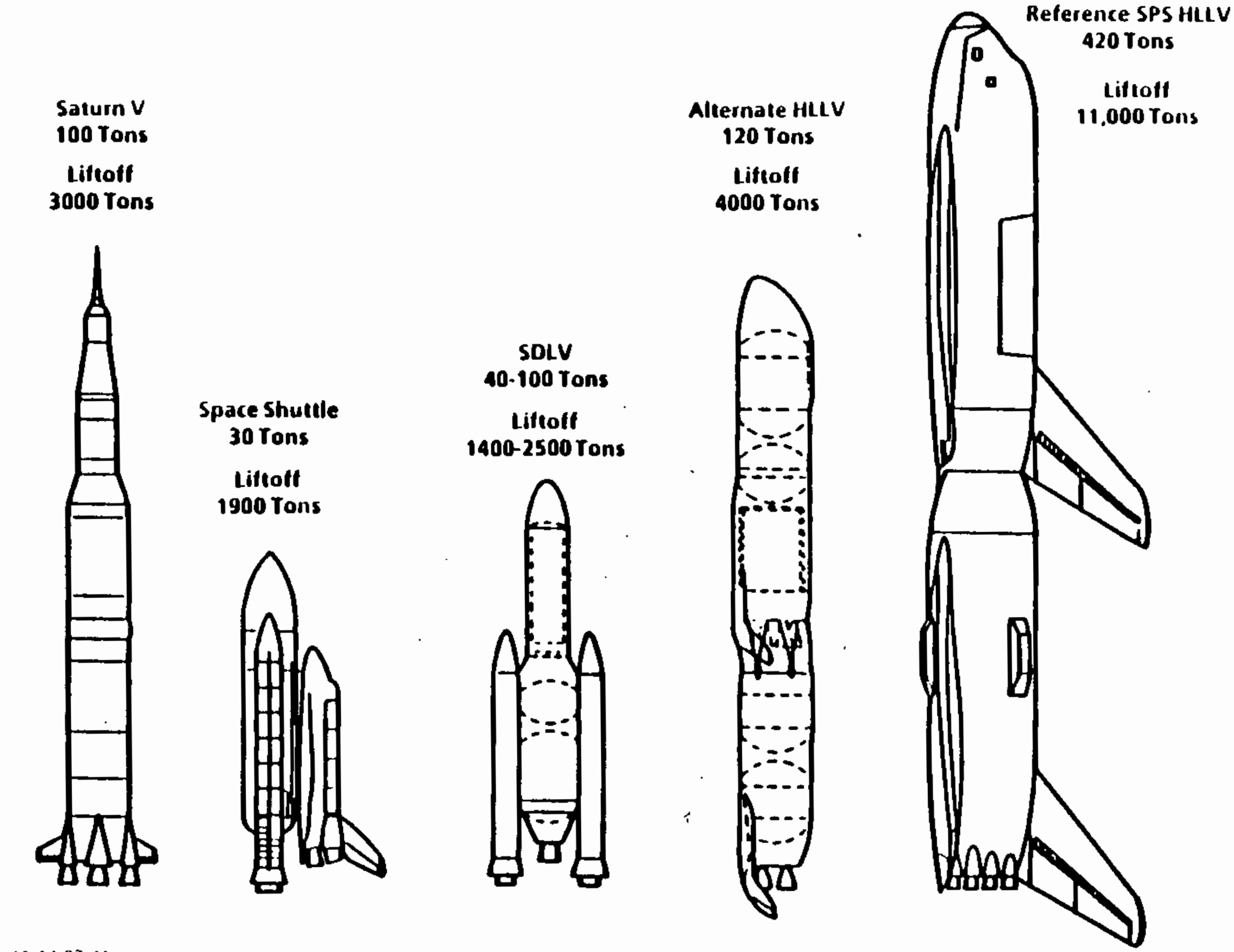

UNCLASSIFIED

FIGURE I-2. (U) ADVANCED LAUNCH VEHICLE COMPARISON

UNCLASSIFIED

- Shuttle evolution would probably warrant the building of a second launch facility on the West Coast, presumably adjacent to Vandenburg Air Force Base). The West Coast is better for polar orbits, Kennedy for eastward launches.

- Figure I-2 shows launch-to-lift weight ratios in the 25-35 range in all cases except the Shuttle, which is over 60--a measure of its inefficiency for the mission considered here.

- The SDLV, or Shuttle derivative, is assumed not to have an integral motor, except for maneuver propulsion, (as the evolutionary Shuttle also might not) or to be manned (although a manned capsule could be carried).

- The HLLV would be fully recoverable.

- The HLLV could also carry a manned capsule [not at present an anticipated requirement for the boost-phase intercept (BPI) system], separable from the cargo.

(S) The Shuttle, even with evolution, appears to be ruled out for the BPI requirements, because:

- It is an inefficient design for this mission.

- Its operation requires about 10 times the personnel as ELVs, and its operating personnel are perhaps in a somewhat lower but still high ratio to the personnel required by fully recoverable HLLVs.

- Even the proposed evolutionary Shuttle does not, as noted above, meet the present potential lift requirement.

- Potential deployment rates could require an inordinate number of Shuttle vehicles.

- DoD would probably be unwilling to depend on NASA, especially for the demanding BPI mission. Moreover, DoD replication of NASA facilities and vehicles would probably entail institutional conflicts and lack of adequate use over the 12-year life that NASA has estimated to be economically required.

(~~S~~) The reference satellite power system (SPS) HLLV appears adequate for the potential maximum lift requirement foreseen here.

E. COSTS

(U) As would be intuitively expected, costs of launch to orbit will decline dramatically as new systems are developed--if there are economic utilization rates. Figure I-3 gives some orders of magnitude.* The numbers are for launch to 150 nmi altitude, due east; as noted above, they would rise for higher angles and for higher altitudes, and this has been allowed for in the weight estimates given earlier.

(U) The middle range of $500-1,000/lb is for systems that could be available sometime in the 1990s. The fourth curve, down in the $100 range, is for systems reusable up to 100 times or so but available only by about 2005. This appears consistent with a recent NASA Future Space Transportation Systems (FSTS) Study estimate of $147 (sic) per pound for an advanced Shuttle system in the same time frame and at launch rates of only 15 in

*(U) Source: Aerospace Corporation.

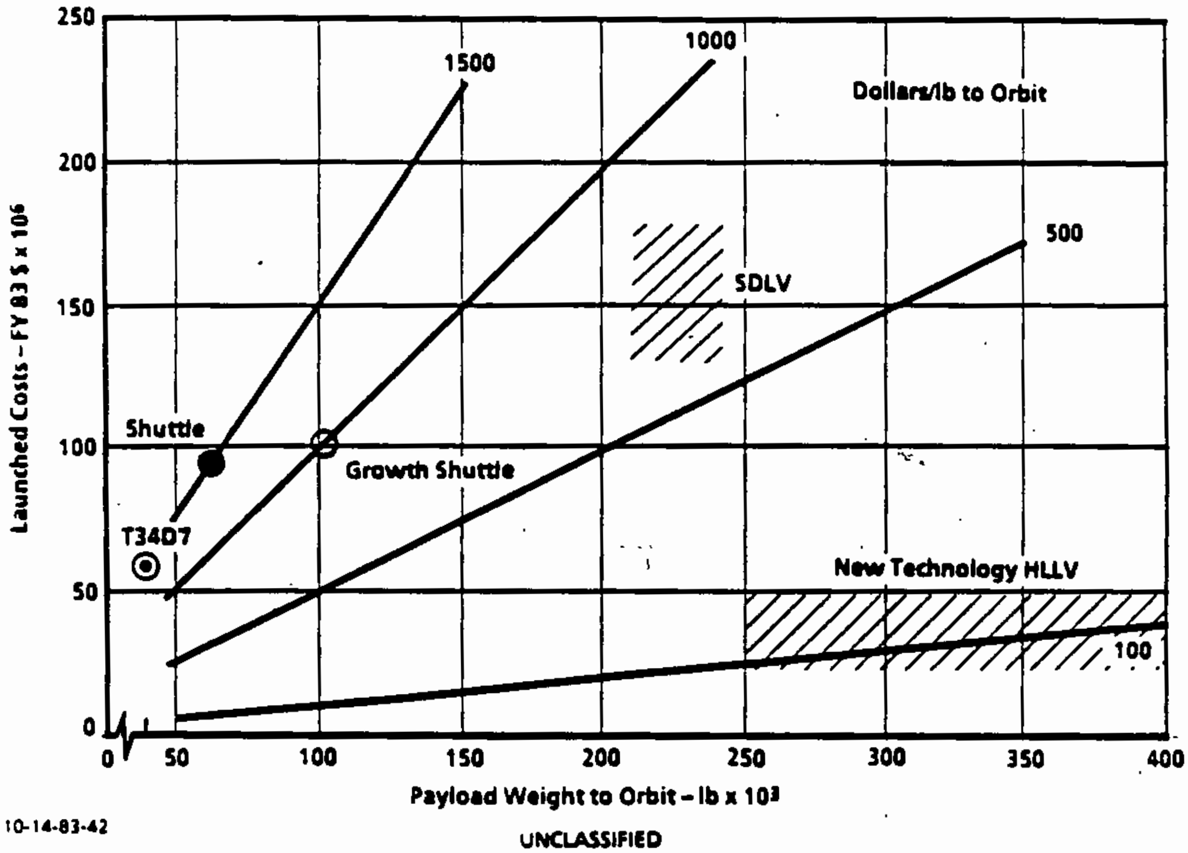

FIGURE I-3. (U) LAUNCH VEHICLE COSTS (LAUNCHED) VERSUS LEO PAYLOAD (150 nmi DUE EAST) the first year, growing to 38 in the fifteenth year, requiring only three Shuttles.* To be conservative, we will use $150.

(~~S~~) The HLLV cost appears most applicable to our study. Recalling the 260-million-pound maximum estimate derived above, $150/lb gives us a total cost of about $40 billion, added to a system projected to cost several hundred billion dollars over ten years. It has been estimated, however, that R&D to reach this goal would be $25-30 billion. These are maximum figures.

(U) The $25-30 billion R&D for the HLLV would undoubtedly provide a system usable for other military or civilian missions, but for conservatism, it is all charged here to BPI.

(~~S~~) At the other extreme, use of Excalibur would bring launch costs down to about $5 billion, and even the present-generation Shuttle or ELVs could be used, so that no additional launch vehicle R&D cost need be assumed. At $1500-3000/lb, this would be, say, $30-60 billion, although these figures might be cut in half, to $15-30 billion, by the availability of a next-generation Shuttle derivative by 2005. Since R&D costs for such a vehicle are projected at about $10 billion, its development for Excalibur would be justified: total costs would be in the $25-40 billion range. A neutral particle beam underlay would, however, require growth from the present 65,000-lb capacity to some 100,000-300,000-lb capacity for only 14 satellites. We assume Saturn V, possibly with some growth, could be used. This would add only $1-2 billion. Total launch costs could, but probably would not, go to $35 billion.

*(U) T.A. Talay, W.D. Morris, D. Geide, and J.J. Rehder, Astronautics & Aeronautics, June 1983, p. 44.

(S) In short, for the chemical laser case, some $75-80 billion--perhaps between $80 and 100 billion--would be required for launch to orbit of the satellites for a BPI system costing on the order of $500 billion--i.e., 20 percent or less. For Excalibur, conservatively, $25-40 billion might be added to a system costing $200-250 billion, or from 10 to, again, 20 percent.

(U) With a development lead time of 13-15 years, a decision might have to be made by 1990 to meet the earliest IOC projected for the BPI system. To keep this option open might cost $1-2 billion, or $150-300 million per year from FY85 through FY90, compared to the billion a year required in this period to study the feasibility of BMD alternatives. The $1-2 billion would be spent for technology development in critical categories such as: thermal protection systems, advanced liquid booster engines (e.g., LO^2HC), reusable insulation, advanced composites, and advanced honeycomb structures (titanium, René 41, etc.).

F. SPECIAL PROBLEMS

1. Nuclear Weapons in Space

(U) The nuclear explosive in Excalibur is used as a power source, not for destruction. However, a careful reading of the Atomic Energy Act of 1954* as well as common judgments about public, Congressional, and allies' reactions, plus potential Soviet propaganda, suggest that Excalibur will indeed be regarded as a nuclear weapon in space. Implications for the Treaty on Outer Space, possibly the Threshold Test Ban Treaty [ ], and, of course,

*(U) Public Law 703, Chapter 2, §11d, 42 USC 1801.

the ABM Treaty along with its alternatives, are discussed elsewhere. We are concerned here with implications for launch modes.

(S) One way around the Treaty on Outer Space problem that has been suggested is the "pop-up," or rapid launch of Excalibur only when and if international tensions indicate the need (at which time the United States might be prepared to abrogate the treaty). In many ways attractive, this option nevertheless appears to entail a number of risks:

- It might negate attempts to convince the public and the Congress of the need for BMD to "eliminate the threat of ballistic missiles."

- There are grave risks of mistiming the launch. On the one hand, it might start too late, bringing on a Soviet attack before enough Excalibur satellites are on station--i.e., it might be highly destabilizing. On the other hand, if it came sooner, it might bring on all the problems of violating the Treaty on Outer Space without even the opportunity for abrogation preceded by full explanation of why this drastic step was required.

- We might turn out to have waited until the Soviets beat us to the punch, at which point, since BPI systems can shoot down satellite boosters just as well as warhead boosters, the Soviets might threaten to shoot ours down as they were launched, or they might actually do so.

- While Excalibur could be on a "small missile," how would it be based for rapid launch? Concentrated, the [ ] launchers would be the highest-value target yet, a very tempting Soviet first-strike objective with perhaps limited collateral damage--again, destabilizing. Yet, to disperse them, put them in silos, make them mobile, etc., would duplicate all the problems of public opposition, command, control, and communications (C^3), and cost that today face every new missile system.

(S) Since we have postulated that Excalibur will--must--be considered a nuclear weapon in space, it will have to be recovered when it is obsolete or considered no longer reliable, in, say, 10 or 20 years. Other systems might be left there (littering space is a separate issue), or commanded to self-destruct (perhaps by deorbiting in a burn-up mode), but surely this would not be salable for Excalibur. It is possible, however, to design a detachable module for the nuclear weapon and bring it safely to earth. Whether a man would be required in space to make this a measure of sufficiently high confidence (including public confidence) may be an open question. In any event, such a module could weigh on the order of only [redacted] Moreover, though it is certainly not a controlling consideration, recovery of the nuclear material might pay for the cost of recovery. [redacted] It is also conceivable that three decades or so hence further savings could be realized by reprocessing the materials in space for rendezvous and mating with new basing, beam-generating, pointing, and tracking devices. Any discarded material would be in nonexplosive form and could be easily returned to earth.

2. Rate of Launch

(U) How rapidly a system should be deployed is not necessarily a simple question. One criterion might be to launch as the devices come off the production line and are certified for deployment. But rate of production is controllable within a wide range, so this may beg the question.

(U) On the one hand, since we must assume we may be in a race with the Soviets, and we may not in the next century have high confidence in our intellignece on an item to which the Soviets may give a high cover-and-deception priority, we may want to deploy as rapidly as possible, lest the Soviets deny us the capability. Rapid deployment may add to costs--in multiple launch pads, in facilities for rapid production of both satellites and launch vehicles, and (conceivably) in stockpiling satellites and boosters until we are ready (if we believe we can wait). The type of launcher may also be a factor. It has been estimated that the HLLV could be launched at one a day (if all goes well, i.e., if Murphy's law fails, which, by Murphy's law, even it should do someday). At this rate, 400 satellites would take over a year to launch. But note that the more rapid the deployment, the less advantage can be taken of LV reusability.

(U) On the other hand, we might wish to go more slowly. The period might appear to be one of relative political stability, and we might not wish to disturb that stability by an apparently precipitous act. We could argue that we could afford to save money! We might opt for a more "normal" deployment time (IOC to FOC), say, three or four years, a plausible production time.

3. Reconstitution

~~(S)~~ (U) Closely related to the deployment-rate question is that of having a "surge" capability for reconstitution of a damaged force. This possibility seems to imply the start of a battle in space. With the rate at which speed-of-light "c" weapons could destroy each other, a surge capability would seem to have to be incredibly high to be useful. How depleted would our force be? Would the enemy force be so decimated that it could not shoot down our launches? The uncertainties appear to be so great as to preclude even predicting how many systems should be stockpiled for replenishment--especially in the face of the very high cost of the systems. The concept does not appear promising.

G. CONCLUSIONS

(S) The conclusions of this appendix are as follows:

- In 20 years or so costs of launch can be reduced to 20 percent of the cost of a BPI BMD.

- The HLLV appears to be the system of choice if a heavy beam weapon is chosen, or if enough smaller satellites can be packed in and launched into satisfactory orbits from one booster.

- HLLV lead times appear to be consistent with an early 1990s decision to deploy a BPI system beginning in 2005-2010.

- The FY85-89 costs of technology hedges to protect an HLLV IOC of 2005 appear to be modest [4-8 percent of the cost of exploratory R&D on BPI (and layered) BMD systems]. These hedges should be funded if the BPI R&D is.

- An HLLV or alternative launch system might come into being in 20 years or so for other space missions, but this possibility should not enter into BMD planning.

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