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12 Sep 1989

Mr. Peter Hayes
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Dear Mr. Hayes:

Your request for information under the Freedom of Information Act, identified as #FOI 218, item 10d, was forwarded to this Center by Counsel for the Office of Naval Research.

Although this Command retains cognizance over these documents, we were not the original classification authority and the documents were forwarded to the various DOD and DOE activities for security review.

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Harold B. Smith

HAROLD B. SMITH
By direction of the
Commanding Officer

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Cover, Strategic Systems Study II, Vol VII
Unclassified version: Strategic Systems Study II, Vol II

STRATEGIC SYSTEMS STUDY II

EXECUTIVE SUMMARY (U)

VOLUME 1

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STRATEGIC SYSTEMS STUDY II

SYSTEMS CONCEPTS (U)

VOLUME 3

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STRATEGIC SYSTEMS STUDY II

FURTHER REQUIREMENTS & PERCEPTIONS (U)

VOLUME 2

STRATEGIC SYSTEMS STUDY II

FURTHER REQUIREMENTS & PERCEPTIONS (U)

VOLUME 2

30 September 1975

NSWC/WOLX-152

STRATEGIC SYSTEMS STUDY II

This study, reported in eight volumes, was performed by a joint Navy/industry team led by NSWC/WO under the direction of Dr. I. Korobkin. The project was jointly sponsored by OP-604 and ARPA and funded as ONR Research Project R1513. The eight volumes of this report are entitled:

Volume 1	Executive Summary
Volume 2	Further Requirements and Perceptions
Volume 3	Systems Concepts
Volume 4	Cruise Missile Technology
Volume 5	Encapsulation Technology
Volume 6	Accuracy Technology
Volume 7	Submarine Technology - A
Volume 8	Submarine Technology - B

T. R. MCKNIGHT
By direction

FOREWORD

This study was performed by a joint Navy/industry team led by NSWC/WO under the joint sponsorship of OP-604 and ARPA. The principal participants and their affiliations are given below:

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FOREWORD TO VOLUME 2

This volume, Further Requirements and Perceptions, was prepared by personnel of Presearch, Inc., and represents a significant portion of Presearch's contribution to the overall study. The principal Presearch participants are:

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Chapter 1

INTRODUCTION (U)

1.1 WORK OF THE STRATEGIC SYSTEMS STUDY GROUP I (SSSG I) (U)

(U) In 1974 the Strategic Systems Study Group I (SSSG I) examined the potential strategic role of the Navy in the period 1985 through the 1990's. Possible future worlds, a variety of scenarios and the evolving strategic policy of the United States were examined. Based on this work the SSSG I defined strategic missions and system attributes. Concurrently, system concepts were developed and evaluated as to their capabilities in the various missions. All of the system concepts involved submersible platforms and ballistic missiles and placed emphasis on the capability to carry out major missions.* The constrained-response missions* were treated as of lower importance.

1.2 THE ROLE OF THE SSSG II (U)

(U) The SSSG II is tasked to perform three interrelated functions:

a. Review evolving policy and the SSSG I missions and system attributes to determine their continuing validity. This review is provided in the following chapters of this volume.

b. Expand the work of the SSSG I by considering system concepts that include cruise missiles and platforms other than submarines. The expansion to other platforms can be justified by emphasizing the role such systems would have in the constrained-response missions where survivability is not of paramount importance. While submarine platforms are not to be excluded, the SSSG II should specifically consider other platforms whose primary missions may be with general purpose forces. This effort will be reported in a separate volume.

---

*The missions of the SSSG I are described later in this chapter.

c. Examine in depth the technologies of submarine platforms, cruise missiles, missile encapsulation, and missile accuracy. The intent here is to identify critical areas where problems may arise or where additional funding is needed if the system concepts presented by the SSSG I and II are to be successfully developed. These study efforts will be reported in individual volumes separately for each technology area.

1.3 PURPOSE OF THIS VOLUME (U)

(U) It is the purpose of this volume to report on the further review of evolving strategic policy, noting any implications for strategic missions, new system concepts, or system attributes. Further, a brief chapter is included on perceptions of some aspects of U.S. strategic policy. The remainder of this chapter is devoted to additional detail on the work of the SSSG I.

1.4 POSSIBLE FUTURE WORLDS OF THE SSSG I (U)

(U) Figure 1-1* depicts a highly schematic notion of alternative future worlds c. 1985-2000. It was the consensus of the SSSG I to select three possible environments, assigning them the following relative likelihoods:

a. Peaceful World P = .1
b. Crisis Management World P = .7
c. High-Tension World P = .2

Table 1-1 describes the U.S. defense posture in these three alternative worlds.

1.5 SCENARIOS OF THE SSSG I (U)

(U) In the context of a Crisis Management World, the SSSG I considered scenarios of varying complexity and in varying depth. Major scenarios included a major war short of holocaust and two versions of a regional conflict. Minor scenarios included several versions of limited war at sea and limited war in Europe. Conflict levels, those scenarios analyzed in least detail, included surgical-strike and first-strike situations. None of the scenario analysis involved war-gaming but it did serve to illuminate those missions and system attributes that would be of interest.

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*Adapted from Volume II of the Strategic System Study-I Report.

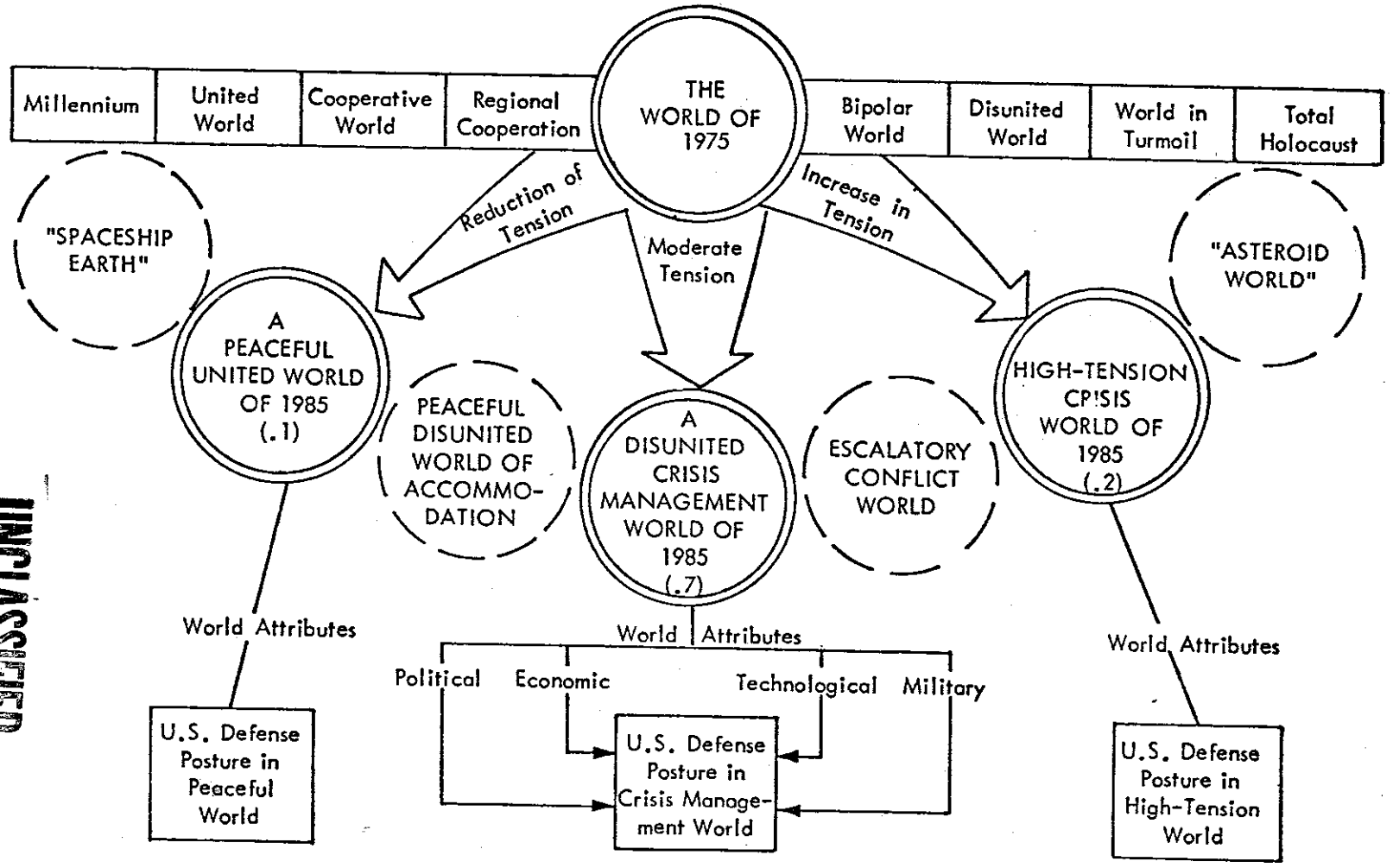

Figure 1-1 (U). Possible Future Worlds (U)

Table 1-1 (U)

U.S. DEFENSE POSTURES IN THREE SELECTED ALTERNATIVE WORLDS (U)

Peaceful World	Crisis Management World	Crisis World
• Strategic deterrence based on nominal unacceptable damage • Regional stabilization through alliances (U.S. provides theater support) • Mobile, small, well-equipped GPF to deal with brush-fire conflicts • Surveillance capability • Low-level RDT&E, low procurement • Long life-cycle for major systems • No arms race • Very few overseas bases	• Strategic deterrence based on reduced version of "Assured Destruction" (preemptive or retaliatory strikes) • Forces capable of quick response against military and U/I targets • High surveillance capability • Preplanned strategic reserve • High RDT&E, low procurement • Qualitative arms race (high performance systems updated frequently) • Emphasis on CONUS defense, some overseas bases	• "Assured Destruction" deterrent force • Preplanned strategic reserve • Large GPF forces and "National Militia" • High surveillance capability • Low RDT&E, high procurement • Quantitative arms race (short life-cycle systems, cheap, fast to manufacture) • "Fortress America"

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1.6 EVOLVING STRATEGIC POLICY (U)

(U) Indicators of future policy were found in present and projected international commitments, public statements of senior U.S. officials, and classified guidance to the Department of Defense. Table 1-2 summarizes the trends in strategic defense policy as seen by the SSSG I.

1.7 SSSG I MISSIONS (U)

(U) Based on the analysis of future worlds, the perceived trends in evolving policy, and lengthy discussions of various scenarios, the following strategic missions were projected as being of interest in the period 1985 through the 1990's.

1.7.1 MISSION 1 (U)

(S)

1.7.2 MISSION 2 (U)

(S)

1.7.3 MISSION 3 (U)

(S)

1.7.4 MISSION 4 (U)

(S)

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Table 1-2 (S)

TRENDS IN STRATEGIC DEFENSE POLICY (U)

1.7.5 MISSION 5 (U)

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1.7.6 MISSION 6 (U)

~~(S)~~

b(1)

1.8 SSSG I SYSTEM ATTRIBUTES (U)

(U) It must be emphasized that the above missions were not intended to conform necessarily with current policy; they should, however, represent a reasonable extrapolation of current trends. These missions, then, could form a framework for the conceptual design of future strategic systems. For ease of discussion, the SSSG I grouped Missions 1, 2 and 6 together as major missions and Missions, 3, 4 and 5 as constrained-response missions. The system attributes defined for each of the above missions are shown in Table 1-3.*

1.9 SSSG I SYSTEM CONCEPTS (U)

(U) Without addressing the important but difficult question of how to optimize multiservice roles in strategic missions, the SSSG I developed eight sea-based system concepts that strongly emphasize the capability of the platform to survive and carry out Missions 1 and 2. This emphasis led to the choice of a submersible platform in each case. Only ballistic missiles were considered. The technology of components and subsystems that could comprise strategic systems was examined broadly, but time was not available to study any technology area in great depth.

*Taken from Volume II of the Strategic System Study-I Report.

Table 1-3 (S)

STRATEGIC SYSTEM ATTRIBUTES (U)

CHAPTER 2

REVIEW OF EVOLVING POLICY, MISSIONS, AND SYSTEM ATTRIBUTES (U)

2.1 METHOD (U)

(U) To evaluate the continuing validity of the missions and system attributes defined by the SSSG I, several sources of information were consulted, including:

a. New developments in the legislative and international areas

b. Public statements of the Secretary of Defense

c. Classified guidance to the Department of Defense

d. Discussions with defense officials.

2.2 LEGISLATIVE AND INTERNATIONAL AREAS (U)

(U) There have been several developments in the legislative and international areas relating to strategic forces. These are:

2.2.1 PUBLIC LAW 92-44, SEPTEMBER 1972 (U)

(U) In this act the Congress authorized the President to approve the interim agreement on strategic offensive arms and the protocol relating thereto; recognized the principle of United States-Soviet Union equality reflected in the ABM treaty and urged the President to seek a future treaty that would not limit the United States to levels of intercontinental strategic forces inferior to the limits provided for the Soviet Union (the Jackson Amendment); stated that a prudent strategic posture required a vigorous research and development and modernization program; urged the President to seek Strategic Arms Reduction Talks (SART) and work toward reduction in conventional armaments; and stated that success in the above depended on neither side seeking unilateral advantage by developing a first-strike potential.

2.2.2 1974 PROTOCOL TO THE ABM TREATY, JULY 1974 (U)

(U) This protocol changes the number of allowed ABM areas from two to one. There is provision for a one-time shift of the ABM area

elected, for example, from missile fields to the nation's capital. This protocol has not been ratified by either side and, therefore, has not yet taken effect. The delay in ratification apparently results from a lack of any sense of urgency to take action.

2.2.3 THRESHOLD TEST BAN TREATY, JULY 1974 (U)

(U) This treaty between the United States and the Soviet Union prohibits underground nuclear tests above the 150-knot level. It would take effect on 31 March 1976 but has not been ratified by either side; in fact, it has not yet been submitted to the U.S. Senate for ratification because of wording that excludes peaceful nuclear explosions from the provisions of the treaty.

2.2.4 VLADIVOSTOK UNDERSTANDING, NOVEMBER 1974 (U)

(U) This understanding between the United States and the Soviet Union establishes numerical limits for strategic delivery vehicles (2,400) and MIRV'ed missiles (1,320). No written version of the understanding has been released. It seems clear, however, that if a final treaty is negotiated within these limits some of the counting problems of the present Interim Agreement will be removed--at least for SLBM forces. Presumably many of the SALT-related problems, discussed in the report of the SSSG I, Volume 2, Requirements, Section 3.2.1, will be resolved in the negotiations.

2.3 ANNUAL DEFENSE DEPARTMENT REPORT (U)

(U) The Secretary of Defense, in his Annual Defense Department Report for FY 1976 and FY 197T, discussed the strategic nuclear balance and strategic forces. He made the following points that relate to nuclear deterrence and have a direct bearing on the work of the SSSG I and II.

a. There is a requirement for a highly survivable force to deter coercive or desperation attacks

b. There is a requirement for a force capable of implementing a variety of limited preplanned options with rapid retargeting

c. The ICBM force, MINUTEMAN, is the most reliable source of limited response options but its survivability is in question.

These points support the concept of a Strategic Reserve Force as set forth in Mission 2 of the SSSG I. They also justify the efforts of the SSSG II to further explore the use of sea-based systems for limited response options. Some pertinent selections from the latest Annual Defense Department Report are quoted below:

Quote 1

"Credible strategic nuclear deterrence depends on the satisfaction of four major requirements. First, we must maintain an essential equivalence with the Soviet Union in the basic factors that determine force effectiveness. . . .

"The second requirement is for a highly survivable force that can be withheld at all times and targeted against the economic base of an opponent so as to deter coercive or desperation attacks on the economic and population targets of the United States and its allies.

"The third requirement is for a force that, in response to Soviet actions, could implement a variety of limited preplanned options and react rapidly to retargeting orders so as to deter any range of further attacks that a potential enemy might contemplate. . . .

"The fourth requirement is for a range and magnitude of capabilities such that everyone--friend, foe, and domestic audiences alike--will perceive that we are the equal of our strongest competitors."

Quote 2

"The ICBM force, the heart of which is the MINUTEMAN series, continues to give us the accuracy, flexibility, and control necessary to deal with and thereby deter a wide range of attacks on military targets. It provides the most reliable source of limited response options so essential to nuclear deterrence under conditions of nuclear parity."

Quote 3

"The throw-weight of the Soviet ICBMs will continue to exceed that of the U.S. MINUTEMAN force by a very substantial amount--perhaps by as much as a factor of six (unless the United States also increases its ICBM throw-weight). This throw-weight, combined with several thousand high-yield MIRVs and rapidly improving accuracies, could come to jeopardize the survivability of our fixed, hardened ICBM force.

"Such developments would not give the Soviet Union anything approximating a disarming first strike against the United States. One reason for this is that less than 25% of the U.S. strategic deterrent capability measured in terms of missile and bomber warheads resides in fixed ICBMs. But such a development could bring into question our ability to respond to attacks in a controlled, selective, and deliberate fashion."

Comment: The concern expressed in the preceding quotation provides a reason for developing systems alternatives to fixed, land-based ICBMs for use in the limited response role.

Quote 4

"Her [the Soviet Union's] central strategic systems are sufficiently large in number so that she could strike at a substantial number of military targets in the United States, and elsewhere in the world, and still withhold a very large force whose future use we would have to consider in responding."

Comment: It was similar reasoning that led the SSSG I to propose a Strategic Reserve Force. See Mission 2, described earlier, for a brief explanation of this Reserve Force.

Quote 5

"But it should be evident that the problems on our agenda, both today and in the future, make some of the earlier views of nuclear deterrence totally obsolete. Clearly, our requirements in this realm are for strategic forces capable of providing more than the simple response of a limited or wholesale destruction of cities.

"This is not to say that a highly survivable force, which can be withheld for substantial periods of time, if need be, and targeted against an enemy's major economic and political assets, is irrelevant. Most of us can agree on the need for such a force to serve, at a minimum, as a deterrent to attacks on the cities of the United States and its allies. But to treat such a reserve force as an all-purpose deterrent, as a sovereign remedy for the problems we face, would be the height of folly. To threaten to blow up all of an opponent's cities, short of an attack

on our cities, is hardly an acceptable strategy, and in most circumstances the credibility of the threat would be close to zero, especially against a nation which could retaliate against our cities in kind. Granting the need for such a withheld force in order to deter coercive attacks against our cities, we must surely go on to something else if our deterrent is to be credible over a wide range of contingencies."

Quote 6

"If one side could remove the other's capability for flexible and controlled responses, he might find ways of exercising coercion and extracting concessions without triggering the final holocaust."

Comment: See comment following Quote 3.

Quote 7

"In addition, I believe that our response options would be enhanced by increased accuracy and a greater flexibility in the yields of the nuclear weapons available to us. In some circumstances, we might wish to retaliate against non-collocated, small soft targets, or facilities near large population centers; high accuracy and a low-yield, air-burst weapon would be the most appropriate combination for those targets. In other cases, we might wish to respond with attacks on a limited number of hard targets such as ICBMs, IRBMs, and MRBMs. The desired combination for these latter targets, especially as long as we have to depend on all-inertial guidance systems, is high accuracy and a higher yield warhead than we now deploy."

Quote 8

"Accordingly, I continue to consider the capability for limited response options as one of the essential requirements of deterrence under current conditions."

Comment: The eight selections quoted above reinforce the concept of possible use, in the future, of sea-based systems for limited nuclear options.

2.4 GUIDANCE TO THE DEPARTMENT OF DEFENSE (U)

(U) The Secretary's policy and planning guidance to the Department of Defense was revised during the past year. However, the revisions in the strategic offensive area were not substantive.

2.5 DISCUSSIONS WITH OFFICIALS (U)

(S)

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Chapter 3

CONCLUSIONS AND IMPLICATIONS (U)

3.1 CONCLUSIONS (U)

3.1.1 GENERAL (U)

(U) The preceding discussion substantiates the work of the SSSG I in identifying trends in evolving policy and in defining strategic missions and system attributes. It appears that there are no changes contemplated that would require revisions to the work of the SSSG I. Even the successful negotiation of a treaty on strategic offensive armaments along the lines of the Vladivostok understanding would not change this conclusion.

3.1.2 IMPORTANCE OF CONSTRAINED-RESPONSE MISSIONS (U)

(U) If anything, Secretary Schlesinger is even more adamant this year than last on the need for limited response options as one of the essential requirements of deterrence. Thus, the constrained-response missions of the SSSG I take on increased importance.

3.1.3 HARD-TARGET KILL CAPABILITY (U)

(U) The Secretary identified fixed land-based ICBMs as the best weapon system now available for use in a limited response role but expressed concern as to their vulnerability in the future. Thus, the development of effective alternative systems with the yield/accuracy required for hard-target kill capability becomes a matter of high priority. Further, if one considers the three constrained-response missions of the SSSG I and the desire to terminate hostilities at a low level or at least to avoid escalation, then the use of sea-based systems for these missions appears very desirable.

3.2 IMPLICATIONS FOR THE SSSG II (U)

3.2.1 GENERAL (U)

(U) The foregoing conclusions amply justify the work of the SSSG II, specifically the emphasis on constrained-response missions and the inclusion of cruise missiles and platforms other than submersibles. This is not to say, however, that submersibles or ballistic missiles

should be excluded nor that the systems presented must have roles only in constrained-response missions. Rather, these systems may include any type of platform and any type of weapon consistent with the attributes for constrained-response missions. They may also be a part of other forces, strategic or nonstrategic. Although the systems will be addressed with constrained-response missions in mind, it will be important also to evaluate their usefulness in major missions.

3.2.2 MISSION BOUNDARIES (U)

(U) To develop system concepts, it will be useful to have mission descriptions that are more precise than those given by the SSSG I. However, there is no hard and fast boundary separating one mission from another. For example, in some instances Missions 4 and 5 may be considered as special cases of Mission 3. In a given situation, whether Mission 5 or Mission 4 should be invoked will be a matter of judgment requiring details of information that we cannot now anticipate. Further, the line between Mission 3 and Mission 1 may, under some conditions, be fuzzy. In all such cases, it will be a future president who will make strategic decisions based on information then available to him and policies then prevailing. What is important now is that systems be developed that are capable of responding with varying degrees of restraint to a wide range of possible provocations. With such capabilities we may be able to deter escalation, terminate hostilities, or prevent the provocative situation in the first place.

3.2.3 CONSTRAINED-RESPONSE MISSIONS (U)

(U) If it is understood that precise definitions of missions cannot be applied to all situations, it is possible to present arbitrary situations in which each mission would be useful. The following ground rules for constrained-response misssions (described briefly in Section 1.7) provide reasonable starting points from which to develop appropriate system concepts.

3.2.3.1 Mission 3 (U)

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3.2.3.2 Mission 4 (U)

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3.2.3.3 Mission 5 (U)

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Chapter 4

CONGRESSIONAL AND SOVIET PERCEPTIONS (U)

4.1 CONGRESSIONAL PERCEPTIONS (U)

(U) The question has been asked, "What are the Soviet perceptions of the current U.S. emphasis on limited nuclear options?" Those asking this question are frequently concerned more with congressional perceptions than with Soviet perceptions. There is definite opposition in Congress to any attempt by the U.S. to attain a first-strike capability; and the limited options with their requirements for low collateral damage, high accuracy, and hard-target kill capability are interpreted as a step toward that goal. This interpretation is made even though the Department of Defense disclaims any ability now or in the foreseeable future to conduct a successful disarming first strike. Thus, programs aimed at a greater accuracy or higher yield for our strategic weapons may not fare well in Congress. Nevertheless, the trend in the thinking of our defense officials is apparent and has persisted for several years.

4.1.1 ARGUMENTS FOR A HARD-TARGET KILL CAPABILITY (U)

(U) A possible argument with which to relieve congressional concerns is that only a small portion of our strategic weapons need have a hard-target kill capability. If the Soviets could be convinced by type of weapon, platform, or deployment that we had only a few weapons with hard-target kill capability, then they would have no cause to believe that we were planning a disarming first strike. Additionally, it can be argued that greater accuracy leads to greater single-shot kill probability and a resulting economy in the number of weapons required.

4.2 SOVIET PERCEPTIONS (U)

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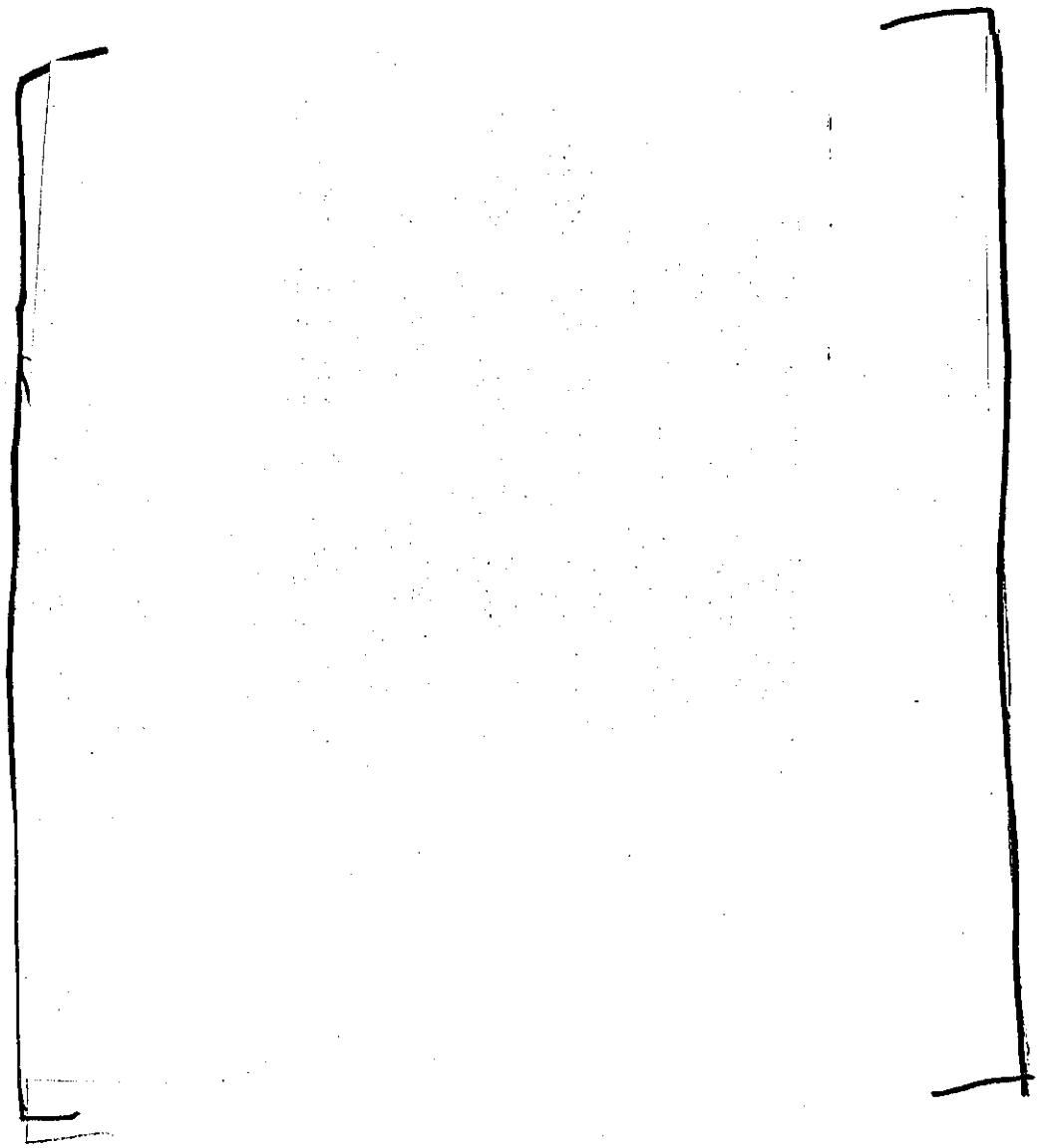

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