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# A Study of Requirements for U.S. Strategic Systems

**FINAL REPORT**

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**VOL II**

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TABLE OF CONTENTS

ANNEX A	DIRECTIVE
ANNEX B	DRAFT PROPOSED POLICY DIRECTIVE MILITARY ELEMENTS OF NATIONAL SECURITY POLICY
ANNEX C	PROGRAMMED AND PROJECTED FORCE LEVELS
ANNEX D	ADVANCED WEAPONS SYSTEMS CHARACTERISTICS
ANNEX E	OPERATIONAL FACTORS
Appendix 1	Operational Factors Current and Projected Systems
Appendix 2	Projected Missile Characteristics
ANNEX F	TARGET SYSTEMS
Appendix 1	USSR TARGET SYSTEMS
Appendix 2	[REDACTED]
Appendix 3	Anti-Ballistic Missile Defended Areas
ANNEX G	CORRELATION OF INTERIM AND FINAL STUDIES
ANNEX H	DAMAGE ASSESSMENTS (under separate cover)
Appendix 1	Significant Damage to [REDACTED]
Appendix 2	Significant Damage to [REDACTED]

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ANNEX A

DIRECTIVE

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ANNEX A

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THE SECRETARY OF DEFENSE  
Washington

March 30, 1961

MEMORANDUM FOR GENERAL HICKEY

Subj: A Study of U. S. Requirements for Strategic Systems

1. In reference to our discussion concerning the preparation of a study on the above subject, I have decided that you and the staff of the NESC should assume responsibility for the conduct of this project.

2. The purpose of this study is to establish a foundation for the determination of requirements for delivery vehicles for strategic nuclear weapons. Both the national importance and the complexity of this project are evident. I realize that a fully comprehensive analysis of this problem would require a great deal of time and effort. However, information from a preliminary analysis is required at an early date in order to provide the guidelines for the development of the FY'63 budget, and to ensure that the FY'63 program will be consistent with long term requirements.

3. In connection with this study, your group should familiarize itself with the draft revisions currently being prepared of the following NSC papers:

- a. Basic National Security Policy
- b. U. S. Policy in the Event of War

4. The study will:

- a. Define the range of alternative military strategic objectives in support of the revisions of the NSC papers mentioned above.
- b. Define the broad alternative U. S. postures for thermonuclear war.
- c. Evaluate, for each of the ten years FY'62 to FY'71, the alternative postures in terms of:
  - 1) Achievement of military strategic objectives,
  - 2) Budgetary implications,
  - 3) Alternative Soviet Union objectives, postures and budget levels,
  - 4) Alternative circumstances of war outbreak and termination.

5. In summary, then, this study will provide specific alternatives, together with analyses of their implications, for consideration in reaching decisions on force structures for deterrence and conduct of thermonuclear war in the period from 1962 through 1971.

6. Your report should be submitted by 1 June 1961.

7. A more detailed and comprehensive study should follow the first report, with a second report to be submitted in approximately 8 months.

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8. I shall ensure that you are provided with required personnel and other support necessary for the completion of the studies.
9. I shall ask the President to authorize the change in activities of your group and the postponement of the presentation of your current undertaking until after 1 June 1961, if this is required.
10. Dr. Alain Enthoven and Dr. Marvin Stern of my office will be available to work with your group.
11. You are expected to keep me, the Deputy Secretary, the Service Secretaries, and the Chairman, Joint Chiefs of Staff, informed of your progress. After the studies are completed, they should be forwarded to me through the Chairman, Joint Chiefs of Staff.
12. It is my understanding that you will continue on active duty for the period necessary to complete these studies.

/s/ Robert S. McNamara

Robert S. McNamara

-cc: SecArmy  
Sec Navy  
Sec AF  
Chm, JCS  
Dir, DER&E  
AsstSecDef (Comp)

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ANNEX B

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ANNEX B

DRAFT PROPOSED POLICY DIRECTIVE  
MILITARY ELEMENTS OF NATIONAL SECURITY POLICY

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ANNEX B



28 July 1961

EEAFT

PROPOSED POLICY DIRECTIVE

MILITARY ELEMENTS OF NATIONAL SECURITY POLICY

I. PREAMBLE

1. There follows a statement of the military elements of basic national security policy. It supersedes NSC 5906/1, paragraphs 10-27 ("Military Elements of National Strategy"), paragraph 53 ("Civil Defense"), and paragraph 59 ("Mobilization Base"). This statement does not prescribe the other-than-military aspects of national security policy. Policy herein is consistent with U. S. policy toward NATO contained in the NSC Policy Directive dated 24 April 1961 but does not include all points contained in that directive.

II. SPECIFIC OBJECTIVES OF U. S. MILITARY POLICY are:

2. To deter deliberate nuclear assault on the U. S. or its Allies, but if deterrence fails, to secure a military victory which ensures the survival and independence of the U. S. and its institutions.

3. To deter or frustrate attempts by the Sino-Soviet Bloc to expand its political, military, or ideological influence by the threat or use of force.

4. To pursue U. S. objectives and support and defend U. S. and Allied interests, using military force where, and to the degree, necessary.

5. To reduce the likelihood of nuclear war resulting from uncalculated, unpremeditated, unauthorized, or unintended action, or from accident, from misinterpretation of incidents or intentions, or from false alarms on the part of any nation (including the U. S. and its Allies).

6. To inhibit and, where possible, to reverse the diffusion of nuclear weapons; to reduce the likelihood of nuclear attacks by powers with a minor nuclear capability against the interest of the U. S.; to reduce the probability of such attacks triggering major nuclear war; and to obtain

all possible U. S. participation in the control of other nations' nuclear capabilities.

7. To seek to limit any war in important aspects, in its objectives, its destructiveness, its scale.

### III. RELATED BASIC OBJECTIVES

8. In addition to the foregoing specific objectives, U. S. military policy must take account of basic objectives of U. S. policy, in particular the U. S. objectives to:

a. Form, support, and strengthen alliances of Free World nations in order to prevent or overcome Sino-Soviet Bloc pressures.

b. Obtain such balanced, phased, and safeguarded arms control agreements as will enhance the security of the U. S. and, consistent therewith, will not jeopardize the security of any Free World nation.

Support the fundamental aims and objectives of the United Nations Charter.

### IV. OVER-ALL MILITARY POSTURE

9. The United States will maintain a military posture which, in conjunction with Allies, will achieve the above objectives in general\* and local\*\* war, and contribute to cold war\*\*\* operations.

\* General War: Armed conflict between the major powers of the Communist and Free world in which the total military resources of the belligerents are employed and the national survival of a major belligerent is in jeopardy.

\*\* Local War: Armed conflict short of general war, exclusive of incidents, involving the overt or covert engagement of the military forces of two or more nations.

\*\*\* Cold War: The use of political, economic, technological, psychological, and military measures short of

overt armed conflict involving regular military forces, to achieve national objectives.

10. U. S. military posture will embody a range of military capabilities to provide the capacity to meet any military situation discriminately with sufficient, but not excessive, measures. There will be adequate military alternatives to the initiation of general war by the U. S., including the option to engage substantial non-nuclear forces before having to decide to initiate the use of nuclear weapons.

11. U. S. military posture will capitalize effectively on Allied military capabilities. However, dependence on Allied forces in general war will be accepted only to the extent that participation of such forces can be politically assured.

#### VI. GENERAL WAR POLICY AND POSTURE

12. Objectives. In general war U. S. objectives are to:

1. Reduce the military capabilities of the enemy and retain major strategic capabilities ready, effective, and controlled.
2. Minimize damage to the U. S. and its Allies and in all events limit such damage to a level consistent with national survival and independence.
3. Exclude, under all circumstances, U. S. military inferiority to the enemy, or any potential enemies, at any point during or after the war.
4. Bring the war to an end on terms acceptable to the U. S.

13. Basic Conduct. There is a great range of possible outcomes of general war: in the degree of attainment of U. S. purposes, numbers of casualties, material damage, and long-term radiation effects.

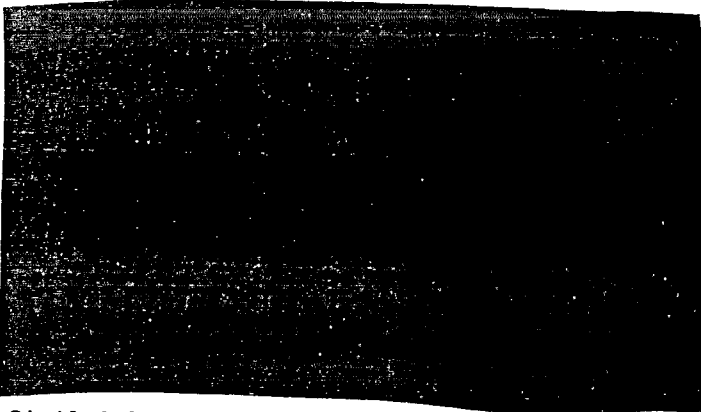
The United States will conduct general war so as to attain the best achievable outcome.

14. Consistent with over-all objectives, the U. S. will conduct general war so as to facilitate the conduct of negotiations to bring the war to an end.

15. Posture. The U. S. military posture for general war encompasses all U. S. military forces. It should include:

- a. Responsive, survivable, and flexible nuclear offensive forces, in major strength and capability, under positive central control, able to provide controlled nuclear attacks under a wide range of attack options.
- b. Flexible, uncommitted, reserve nuclear striking forces capable of enduring in a war-time environment under prolonged reattack while remaining responsive to central control.
- c. Comprehensive and survivable warning systems, active defenses, bomb alarms, and intelligence-gathering facilities.
- d. Effective and survivable command, communications, and information reporting systems to permit coordinated, informed, and selective over-all direction of U. S. forces throughout the hostilities.
- e. Flexible contingency plans which permit selection and execution of the best attack option, based on information available at the outset of hostilities and after.

Plans covering general war with the USSR will provide



- f. Civil defense capabilities to reduce the vulnerability of the U. S. to nuclear attack.
- g. The entire spectrum of other U. S. military forces, to provide the broadest possible range of courses of action against the enemy.

16. The U. S. general war posture does not at present have the material, the survivability, or the flexibility to implement in full, the foregoing contingency planning options. Such flexibility will, however, be progressively and rapidly created.

17. Civil Defense. In addition to survivable offensive and defensive forces which reduce enemy capabilities, draw fire away from urban areas, and threaten counter-city campaigns if U. S. cities are hit, the principal methods to be adopted for limiting damage to the U. S. civil society in the event of a general war, and thus reducing U. S. vulnerability, are:

- a. Passive civil defense which, at a minimum, provides fallout protection and post-attack recovery capabilities together with an effective public education program.
- b. Geographic separation of U. S. strategic forces from population centers and densely populated regions of the U. S. to maximum consistent with military effectiveness.
- c. Use of early warning systems such as DEW, BMEWS, and MIDAS.

- d. Use of such active anti-aircraft and anti-missile defenses as are judged to be effective enough to warrant the required resources.

VI. LOCAL WAR POLICY AND POSTURE

18. Objectives. In local war the U. S. objectives are to:

- a. Bring the war to a conclusion on terms satisfactory to the U. S.
- b. Control the scope and intensity of the conflict to minimize the risk of escalation to general war.
- c. Protect the interests of friendly peoples involved.
- d. Deter subsequent resort to armed force by hostile nations.
- e. Enhance the solidarity and strength of U. S. alliances.

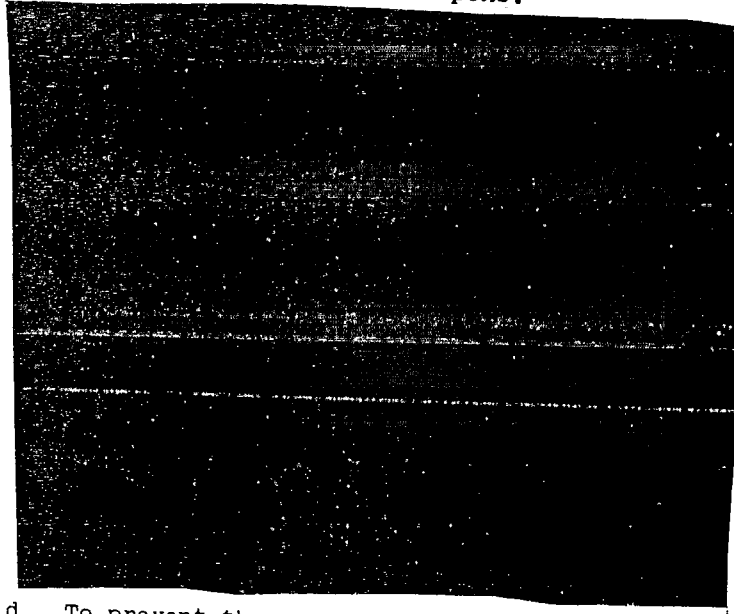
19. Basic Conduct. In local war, the U. S. will:

- a. Act quickly and effectively to achieve U. S. objectives.
- b. Fight in concert with Allies, but unilaterally if necessary.
- c. Fight locally in direct conflict with Sino-Soviet armed forces where indicated.
- d. Shift or expand the area of conflict where, on balance, desirable.
- e. Limit damage in the area of conflict, consistent with achieving military objectives, especially when using nuclear weapons.
- f. Mobilize resources as required, and provide essential assistance to Allies involved.

20. Nuclear Weapons Policy. In local war, U. S. policy with respect to nuclear weapons is:

- a. To preserve carefully the distinction between nuclear and non-nuclear weapons; to employ nuclear weapons only on the President's decision.

- b. To attain U. S. objectives whenever possible without using nuclear weapons.



- d. To prevent the accidental or unauthorized use of nuclear weapons.
- e. To provide nuclear weapon support to Allied forces when consistent with and necessary to the attainment of Allied and U. S. objectives. U. S. nuclear-capable units will be ready for this mission and capable of flexible target assignment.

21. Local War Posture. U. S. local war posture encompasses all U. S. military forces capable of contributing to the local war effort. It includes:

- a. Forces deployed on the periphery of the Sino-Soviet Bloc, and other strategically or politically advantageous areas, at high readiness and in adequate strength, composition, and disposition in conjunction with local and Allied forces to:
  - (1) Assure continued access and support under local war conditions to nations around the Bloc periphery.

- (2) Establish and support selected areas of strength around the Bloc and to do so with forces adequate to defeat Bloc attacks on a sizeable scale in non-nuclear conflict.
- (3) Halt Bloc aggression or to retard it to permit necessary augmentation of U. S. and Allied forces or, where necessary, the introduction of nuclear weapons.
- (4) Force indirect Bloc aggression to the openly military level when such action is in the U. S. interest.

- b. U. S.-based forces, capable of selective, swift, and effective action to support deployed forces or conduct independent operations as required.
- c. Forces with special capabilities for counter-insurgency, guerrilla, and other types of para-military and covert operations.
- d. Selected elements of the National Guard and Reserve forces maintained at high readiness and capable of rapid mobilization and deployment.
- e. A broad range of nuclear capabilities for attaining limited objectives.
- f. Transport for the timely movement of forces to areas of conflict.
- g. Material pre-stocked in selected areas for the support of initial operations.

22. The U. S. local war posture is at present inadequate to support our objectives. A substantial augmentation to satisfy these objectives, especially though not exclusively, directed toward non-nuclear forces, will be created as rapidly as possible.



VII. MILITARY ASPECTS OF THE COLD WAR

23. In developing and carrying out military programs and operations, it is essential that continuing consideration be given to making U. S. military power credible and evident in order to achieve optimum impact in terms of deterring the Sino-Soviet Bloc from resorting to the use of armed force and of reassuring friendly nations regarding U. S. strength and determination. To this end, consistent with political considerations and with primary military missions, judicious use will be made of military exercises, maneuvers, weapons demonstrations, and ship and aircraft visits for impact purposes.

24. Stronger cold war military measures will be used where and when a situation of heightened tension requires, for example:

- a. Mobilizing manpower and economic resources, and increasing the defense budget.
- b. Engaging in harassing tactics within the Communist Bloc or on the high seas.
- c. Augmenting para-military activities.
- d. Raising the alert status, deploying, and otherwise increasing the readiness for action of military forces.

25. The U. S. military establishment, through its large overseas community, the military assistance program, participation in international military organizations, and other activities involving contacts with foreign nationals or governments, plays an important role in shaping the American image abroad. Accordingly, military activities abroad, particularly in such fields as community relations, humanitarian endeavors, civic actions, and psychological operations will be utilized, in appropriate ways and in consonance with national policies and implementing instructions, to provide support to other U. S. programs - political, economic,

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psychological, technological, and cultural - designed to achieve U. S. national objectives.

#### VIII. OVERSEAS BASES

26. The U. S. will maintain an adequate system of overseas bases and base rights, together with the arrangements necessary for their support, acquiring additional bases as necessary.

27. The base structure will support:

- a. General War missions.
- b. U. S. and Allied forces in local war, wherever such war may occur throughout the world.
- c. Reconnaissance, communications, intelligence, and space programs in peace and war.
- d. Peacetime deployments.

28. The base structure will provide strategic flexibility by:

- a. Limiting dependence on a single base in any region, and
- b. Limiting the influence of a single country or bloc of countries on U. S. strategy.

29. Efforts will be made to procure, in advance, rights of base access and overflight to cover a wide range of contingencies.

#### IX. MILITARY ASSISTANCE

30. The U. S. will provide appropriate military assistance to selected nations where:

- a. An increased military capability is important to collective security and the security of the United States.
- b. It strengthens capability and determination for self-defense and independence.
- c. It secures an alignment with the Free World or sustains opposition to powers unfriendly to the United States.

d. It supports the securing and maintaining of base rights and facilities to fulfill United States military requirements.

31. In countries subject solely or predominantly to threats to internal security, the emphasis in military assistance will be on internal security elements.

32. The U. S. will make available advanced weapon systems to technically qualified Allies, where such systems are needed. Nuclear delivery systems will be provided only in consonance with the U. S. policy of inhibiting the diffusion of independent nuclear capabilities. U. S. control of nuclear weapons will be retained.

33. Except in cases where overriding political considerations so dictate, sophisticated weapons will not be included when the local country is incapable of using them effectively, does not need them in its probable war operations, or will be adequately supplied in such weapons by deployed U. S. forces.

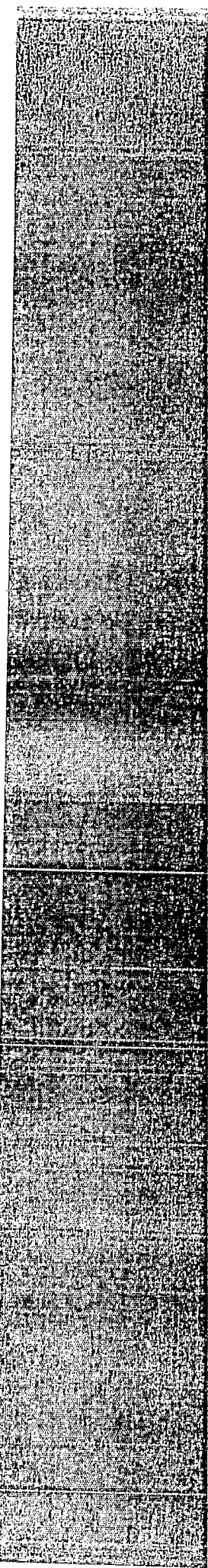
X. R AND D

34. The U. S. will pursue research and development to maintain the broadest possible superiority in military technology over the Sino-Soviet Bloc. We will utilize both private and governmental research and development resources and will expedite the translation of research into hardware.

35. The U. S. will support mutually with Allies selected research and development for military application.

XI. CHEMICAL AND BIOLOGICAL WARFARE

36. U. S. forces will be prepared to use chemical and biological weapons. Use of these weapons will be ordered when it will be to the politico-military advantage of the U. S. The decision to use chemical or biological weapons will be made by the President, except for the use of: (1) existing smoke, incendiary, and riot control agents in appropriate military operations; and (2) riot control agents in suppressing civil disturbances.



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ANNEX C

PROGRAMMED AND PROJECTED FORCE LEVELS

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## PROGRAMMED AND PROJECTED FORCE LEVELS

1. Assumed operational vehicle inventories were developed to establish a basis for programming the force structures. These inventories represent committee estimates of the full potential production capacity of industry as related to each of the weapons systems examined in this report, guided by data furnished by the respective Military Services.

2. It should be noted that the numbers of vehicles represent "operational" numbers rather than total production.

3. The tables are constructed as follows:

a. Three lines are shown for each type vehicle. The first line represents Service objective force programs, which are essentially approved programs through 1963. The second line represents assumed new production potential over and above current programs. The third line is the total of lines 1 and 2. In developing figures for line 2, new production is keyed to estimated capability of existing physical plant to increase production rates given additional tooling where required but without instituting "crash" output schedules.

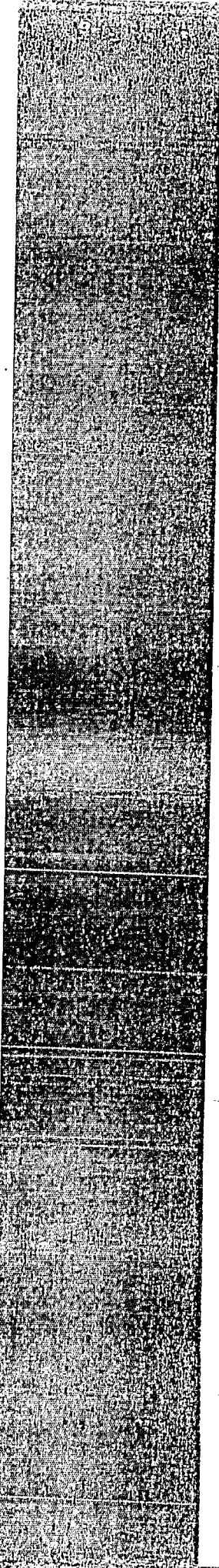
b. Where two versions of the same basic vehicle are shown, each is treated in "isolation" assuming that one or the other could be chosen, but not both. For example, Polaris A-3 or Polaris (advanced version) can be produced in the amounts shown, but not both.

4. Figures are cumulative.

5. Years represent end fiscal years.

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ANNEX D

ADVANCED WEAPONS SYSTEMS CHARACTERISTICS

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### ADVANCED WEAPON SYSTEM CHARACTERISTICS

Sixteen advanced weapon systems were considered in the selection of systems judged most appropriate for the strategic force structure. Six of these were selected (as discussed in Volume I, Section II).

Reconnaissance/Strike Aircraft  
Standoff Missile Launching Aircraft  
Supersonic Low-Altitude Penetrator  
Polaris Advanced  
Titan II Advanced  
Minuteman Advanced

In addition, the concept of a Small ICBM (Road-Mobile) has been considered in a separate context (see Volume I, Section II).

The assumed characteristics of the remaining seven weapon systems considered are displayed in this Annex:

- (1) Aerospace Plane (B-X)
- (2) Space-Orbital Bombardment System (SOBS)
- (3) SLAM ASM  
SLAM SSM
- (4) ALEM (Advanced Version)  
GAM-67 (Improved Version)
- (5) LOBLO
- (6) Torpedo Tube Ballistic Missile (TTBM)
- (7) Small ICBM (Hard & Dispersed)

The assumed characteristics of these seven weapon systems were examined and considered not as responsive to the stated requirements relative to those finally selected.

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ANNEX E

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ANNEX E

OPERATIONAL FACTORS

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ANNEX E



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APPENDIX 1

OPERATIONAL FACTORS  
CURRENT AND PROJECTED SYSTEMS

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APPENDIX 1  
ANNEX E

1. The manner in which the operational factors were applied is demonstrated below using throughout, the B-52 airborne alert system for aircraft and the hardened and dispersed Minuteman for missiles, for the "no warning" condition as examples.

a. Aircraft

(1) Multiply factors for Surprise Attack Survivability (1), Reliability (2), and Enemy Resistance Survival (3) to arrive at the over-all value for any system.

Example:  $1.00 \times .95 \times .50 = .475$

(2) The value thus derived establishes the probability of one scheduled weapon of the particular system arriving at the bomb release line (BRL). Using the formula  $P = 1 - (1 - p)^n$ , solve for the number of weapons that must be scheduled (n) in order to achieve a [REDACTED]

Example:

$n =$  [REDACTED] = number of weapons to be scheduled

b. Missiles

(1) Missile force requirements were based on applying the whole number of missiles which resulted in [REDACTED]

Example: Value = .73

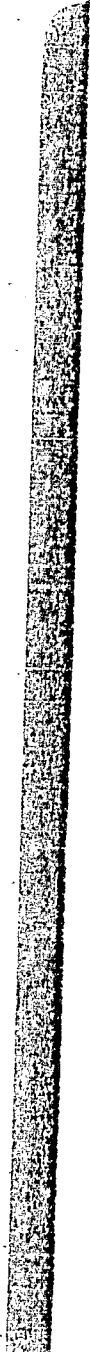
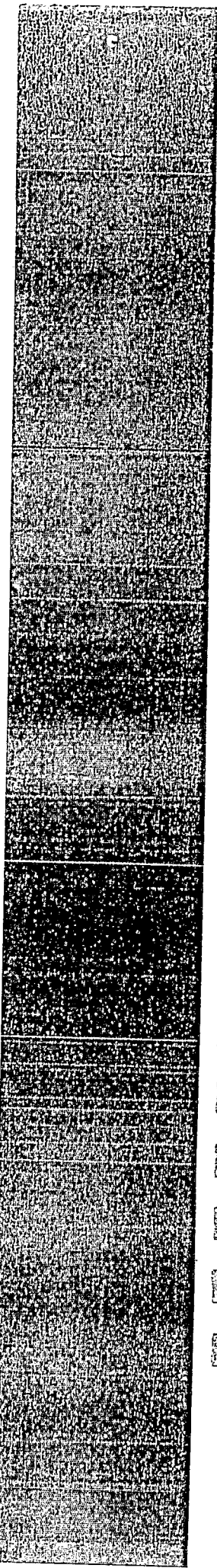
$n =$  [REDACTED]

c. In those cases where cross-targeting occurred, whether between two different types of missiles, or between bombers and missiles, the number and type of weapons were carefully selected so as to arrive as closely as possible, if not precisely, at the damage criteria specified for each category of target in the system.



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APPENDIX 2

PROJECTED MISSILE CHARACTERISTICS

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APPENDIX 2  
ANNEX E

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PROJECTED MISSILE CHARACTERISTICS

This Appendix displays characteristics of ICBM's, FEM's, and ASM's associated with the environment in which each operates. All of these systems were used in the development of force structures except the Small ICBM (Mobile).

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ANNEX F

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ANNEX F

TARGET SYSTEMS

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ANNEX F





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APPENDIX 1

USSR TARGET SYSTEMS

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APPENDIX 1  
ANNEX F

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APPENDIX 2



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ANNEX F

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APPENDIX 3

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APPENDIX 3

USSR

ANTI-BALLISTIC MISSILE DEFENDED AREAS

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APPENDIX 3  
ANNEX F

SOVIET AREAS ASSUMED TO HAVE BEEN DEFENDED BY ABM

<u>Year</u>	<u>No. Oper. per Year</u>	<u>Accumulated Total</u>	<u>Name of City</u>
1964	1	1	Moscow
1965	1	2	Leningrad
1966	6	8	Kiyev Stalino Gorkiy Saratov Kuybyshev Sverdlovsk
1967	8	16	Voronezh Murmansk Vladivostok Yaroslavl Minsk Perm Stalingrad Riga
1968	8	24	Odessa Kharkov Chelyabinsk Kharbarosk Krivoy Rog Kazan Archangelsk Ufa
1969	6	30	Novosibirsk Gomel Irkutsk Baku Krasnoyarsk Omsk

No change from 1969 to 1971.

We have assumed that the Soviets deploy an ABM system to defend key urban industrial areas on the above schedule and under the following assumptions:

- a. That each defended area would be 150 miles in diameter.
- b. That there will be [redacted] acquisition radar control sites per defended area located in general towards the center of the defended area [redacted] defended area.
- c. On an average, each defended site will have 150 "ready" <sup>And:-</sup> Air Ballistic Missiles available.



ANNEX G

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ANNEX G

CORRELATION OF INTERIM AND FINAL STUDIES

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ANNEX G

CORRELATION OF INTERIM AND FINAL STUDIES

1. In terms of general approach to the problem posed by Question 12, both studies are similar and, therefore, the Final Study can be considered as refining the analysis contained in the Interim Study. Both studies took as their point of departure the proposed revision of the Military Elements of the Basic National Security Policy. For the years 1962-1964, they both attempted to fit forces in being, or authorized, to cover the same general target system, the Composite Target System. The development of force requirements for the remaining years of the decade was similarly to be guided by a similar general concept of what the objective forces for 1971 should be, i.e., survivable, flexible, reliable and highly accurate, with these attributes to be achieved in a mix of weapons systems. Both studies emphasize the need for battle reconnaissance by stating a requirement for a reconnaissance/strike aircraft with advanced characteristics. But despite these similarities in general approach, the important differences, discussed below, make it essential that the Final Study be considered as superseding completely the Interim Study.

2. Major changes in intelligence estimates, reflected in our Soviet force assumptions, occurred in the interim between the two phases of the study.

a. ICEM's on Launcher. The intelligence community has sharply reduced its estimate of the number of ICEM's on launcher which the Soviet Union has today and will have in 1963. This change is also reflected in the USIB-approved Intelligence Assumptions for Planning which depicts ICEM's on launchers through 1967. Moreover, it appears that the Soviet second-generation missile does not lend itself readily to hardening to withstand 300 psi overpressures. In the Interim Study, we assumed the second-generation Soviet missile which became operational in 1963 to have been hardened. Such protection apparently will not be attempted at least until a third-generation missile becomes operational perhaps in 1965 and 1966.

b. SLEM - Polaris Type. The intelligence community estimate of a Soviet Polaris type missile launching submarine was also modified considerably. In the Interim Study, based on NIE 11-8-60, such a system was introduced in 1962 and was built up through the period at a rate of four submarines per year. In the Final Study, based on NIE 11-8-61, such submarines came into the force in 1963 and a build-up rate of four per year was not achieved until 1964-1965. Moreover, estimates of number of missiles per boat came down from six to twelve to about six. Because of these changes, in the Final Study we changed the assumption as to the outbreak of the annual war. We hypothesized that the Soviets sought to gain surprise by an ICEM attack rather than with SLEM's. This had a significant effect on the bomber destroy-before-launch rate in the early years.

3. There was a significant change between the two reports with respect to damage criteria. In our reconsideration of this criteria, it was concluded that requirements based on the application of a single damage criteria--75 or 90 percent--to all target categories was not very realistic. It appeared to us that a high damage criteria should apply against certain categories of targets and that a lower criteria should apply to other, less critical targets. Therefore, in the Final Study we established a single criteria for each target category.

4. There were major changes in characteristics of US missile systems employed. Most important was the conclusion that an objective CEP of [redacted] for ICBM was probably not feasible, at least in the decade. This change together with reduced reliability rates caused a major difference in the numbers of weapons required to destroy hard targets. Where [redacted] advanced weapon in the Interim Study would give [redacted]

5. In the Final Study, more time was available to consider the programming problems and budgetary implications were given greater consideration. Thus, in most cases, the necessity rapidly to introduce a more effective system was tempered by estimates of its availability and the useful life of existing systems. Cost comparisons were employed to assist in determining the ratio between weapon systems in those situations where the capabilities of the systems under consideration generally were comparable relative to the targeting criteria.

6. In the course of our investigation subsequent to the Interim Study, we came to the conclusion that [redacted] potentially presents the most difficult problem. Thus in the Final Study we defined alternative weapon systems which might overcome this threat. In so doing, we came to the conclusion that [redacted]

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