THE JOINT CHIEFS OF STAFF
Washington 25, D. C.

JCSM-487-61
21 JUL 1961

MEMORANDUM FOR THE SECRETARY OF DEFENSE

Subject: Net Military Consequences of a Cessation of Production of Fissionable Material (U)

1. Reference is made to a memorandum by the Assistant Secretary of Defense (ISA), subject as above, which requested an evaluation by the Joint Chiefs of Staff of the net military consequences of a cessation of production of fissionable material for use in weapons.

2. Appended hereto is an evaluation by the Joint Chiefs of Staff of military considerations of a cessation of production of fissionable material for use in weapons. Other studies are now being conducted which will have an important bearing upon the military posture of the United States (e.g., Study of US Requirements for Strategic Systems; Ad Hoc NATO Study, and Studies Pertaining to Arms Control Measures). It has not been possible to give full consideration to these other studies in the attached evaluation.

3. The net military evaluation envisioned by the Perkins Panel would entail a complete evaluation of the military posture of the United States vis-a-vis the Soviet Union under a variety of situations. It must be pointed out that the answers desired by the Perkins Panel are, in effect, the answers being sought by the

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entire military establishment, on a continuing basis, in its estimates of Soviet strengths, weaknesses and future intentions and the determination of future forces, weapons and strategy to counter the aggression of International Communism.

4. The major deficiencies which preclude a definitive appraisal of the type requested are a lack of direct intelligence information on Soviet nuclear weapons stockpile and the margin of error on fissionable materials estimates through 1968. However, the following can be stated:

a. A cessation of production of fissionable material will have a significant impact on our over-all military posture. Important new weapon systems now in development which will contribute to an improved US military posture would be reduced or eliminated.

b. There would be a meaningful shift in relative military strength if the US stockpile were frozen at the 1963 level and the USSR were somehow able to continue production. This shift would be substantially more severe if the USSR refabricated and tested while the United States did not.

5. It is emphasized that there are certain principles which must be adhered to in negotiations on this subject in order to protect the security interests of the United States:

a. Any agreement to cease production of fissionable materials must include an agreement for the implementation of an effective inspection system which must be installed and properly functioning prior to a cessation of production. The precedent established by the nuclear test moratorium must not be permitted to prejudice inspection of a cessation of production.

b. Any agreement to cease production of fissionable materials must exclude provisions for reduction of the nuclear weapons stockpile except as a subsequent arms control measure.

c. Tritium should be totally excluded from cessation negotiations or agreements.

d. Modernization of the stockpile should not be precluded.

e. A concurrent nuclear test ban, adequately enforced, is necessary if conclusions on the advisability of an agreement on cessation of production are to remain valid.

6. A cessation of production on 1 July 1963 would not be disadvantageous to the United States, provided the above conditions held. However, unless we expect the USSR to knowingly and willingly agree to a treaty to their own disadvantage, we should expect demands for concessions. In an eagerness to negotiate there is great danger that the United States may, for the sake of agreement, compromise one or more of the above limiting conditions. Compromises on any one could seriously jeopardize the security interests of the United States.

7. In view of the close relationship which exists between the cessation of production of fissionable materials for use in weapons and other arms control measures, it is recommended that this study be considered in conjunction with the report being forwarded by the Joint Chiefs of Staff entitled, "Studies Pertaining to Arms Control Measures" which addresses the military impact on the United States of reducing its military forces to 1.8 million men.

8. An offer by the United States to consider this matter in isolation will, in all probability, produce a counter demand that negotiations include an elimination of all nuclear weapons and material stockpiles. In this case, there is grave danger that the United States will not be able to restrict the negotiations to a cessation of production. Thus, an offer which appears attractive initially could easily be turned into a propaganda defeat by our refusal to negotiate on the larger question of total nuclear disarmament.

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9. In view of the highly sensitive information contained in this report, it is recommended that it be released only to persons having an absolute need to know. In regard to the footnote stating "figures to be furnished by separate key", it is recommended that the separate key be retained within the Department of Defense unless it is considered essential for use at the Principals' level.

For the Joint Chiefs of Staff:

/s/ L. L. LEMNITZER
Chairman
Joint Chiefs of Staff

Attachment

APPENDIX

NET MILITARY CONSEQUENCES OF A CESSATION OF PRODUCTION OF FISSIONABLE MATERIAL (U)

I. INTRODUCTION

1. Since 1958, the United States and its Western Allies have been in almost continuous negotiation with the USSR in an attempt to establish procedures for an effective arms reduction program. As part of a comprehensive proposal, the United States has offered the proposition of a cessation of production of fissionable material for weapon purposes as a step toward achieving the objectives of arms control.

2. At the request of the Advisor to the President on Disarmament, Mr. McCloy, a special panel was convened in early 1961 to study the problem of the cessation of production of fissionable materials for weapons. This panel, under the chairmanship of Dr. James Perkins, submitted its report to Mr. McCloy in April 1961. The submission is entitled, "The Report of the Panel on the Cutoff of the Production of Fissionable Materials for Weapons", and is generally identified as the "Perkins Panel Report".

3. The Perkins Panel Report concluded, in part, that:

> "The larger US stockpile of weapons materials (possibly several times that of the USSR) suggests a US advantage in a stockpile freeze. However, it is impossible to draw any final conclusions as to the net effect of cutoff, until the appropriate net military evaluations are completed."

4. The Perkins Panel Report further stated that:

> "The impact of a cutoff on the relative military positions of the US and the USSR should be judged on the basis of a comparison of net evaluations of future military positions both with and without a cutoff. While a net

evaluation under conditions of continued nuclear production can utilize existing projections of US military planning and estimates of Soviet military planning, a net evaluation under conditions of a cutoff would have to anticipate substantial reprogramming of forces by both the US and the USSR in order to optimize their military positions in the new circumstances. A net evaluation under conditions of a cutoff would also be dependent on assumptions concerning other future steps in arms limitation agreements and future changes in national policy in this situation."

5. On 2 June 1961, Mr. McCloy requested the Secretary of Defense to begin a net evaluation of the relative military consequences of a production cessation in the context of Perkins Panel Report Conclusion Number 3, which is quoted in part, in paragraph 3 above. On 9 June 1961, the Assistant Secretary of Defense (ISA) requested the Joint Chiefs of Staff to conduct this study on a priority basis.

6. The net military evaluation envisioned by the Perkins Panel would entail a complete evaluation of the military posture of the United States vis-a-vis the Soviet Union under a variety of situations. It must be pointed out that the answers desired by the Perkins Panel, are, in effect, the answers being sought by the entire military establishment on a continuing basis in its estimates of Soviet strengths, weaknesses and future intentions and the determination of future forces, weapons and strategy to counter the aggression of International Communism.

7. The many unknowns and variables in this problem preclude solution by wargaming since there are an infinite number of possible solutions. Further, the conclusions which are reached in this study are based upon the qualifications and assumptions employed and consideration of interrelated problem areas. They must be viewed in context therewith.

8. The cessation of production of fissionable materials for use in weapons is addressed in this study as an arms control measure. In this context, it is extremely difficult to look objectively at the problem since the USSR position is "complete and total disarmament within four years." Such a position, although of tremendous propaganda value, is obviously fallacious as a short term goal for a totalitarian dictatorship such as the USSR. The fact that the USSR has held to this position clearly shows that they have no desire to negotiate a progressive arms reduction program. Allied difficulties at the Geneva negotiations on nuclear test cessation illustrate the difficulties to be anticipated in negotiations on nuclear materials production.

9. It would be a mistake to assume that the USSR would negotiate contrary to her own self interests. Past treaty violations by the USSR clearly demonstrate that even if a production cessation were agreed to, they would continue the production of fissionable material by clandestine means if they needed the material. On the basis of past record they would not hesitate to violate openly such an agreement, if they consider it to be in their own self interest. Western experience with Communist Russia over the past years reflects a history of Soviet broken promises, treaty violations, threats, vacillations, false insinuations and lies. Consequently, any agreement entered into by the United States with the USSR must recognize the basic fact that morality and honesty as we know them in the Western World, are nonexistent in Communist ideology and Soviet foreign relations.

II. BASIC ASSUMPTIONS

10. a. Production by the Western Allies and the Sino-Soviet Empire of fissionable material for use in weapons would cease on 1 July 1963.

b. The amount of production of fissionable material by countries other than the United States and USSR is not a major consideration in the time period of this assessment.

c. There will be no reduction in the stockpiles of fissionable material for weapons existing on 1 July 1963. Within the existing stockpiles of materials for weapons, modernization of weapons will not be precluded after the date of production cutoff.

d. The production of fissionable material for peaceful purposes and military propulsion and power will be permitted under effective international control.

e. Present alliances will continue.

III. PURPOSE

11. The purpose of this study is to evaluate the military consequences of a cutoff in production of fissionable materials for use in weapons.

IV. SCOPE

12. This study addresses a time period beginning with the proposed cutoff date, 1 July 1963, ending 1 July 1968, with an intermediate peg point of 1 July 1965. The opposing forces are considered to be the United States with all its Allies on one side and the USSR with all its Allies on the other, referred to respectively as the "Western Allies" and the "Sino-Soviet Empire". In order to keep the problem manageable, military strengths are compared primarily in terms of estimates of nuclear weapons and military personnel and not in terms of estimated conventional force requirements. The types of military operations considered are strategic, theater, and antimissile defense. Cognizance is taken of the potential military manpower resources of each of the two powers. As will become apparent in following sections, the lack of definitive intelligence on Soviet strength and intentions seriously limits the depth of the study.

13. This is particularly true regarding the Soviet weapon stockpile -- although we have estimates of the Soviet nuclear material stockpile, we have no specific characteristics of a single Soviet stockpile weapon. Lacking this information and lacking the knowledge of Soviet military intentions, the problem of determining the net military effect of a cutoff of fissionable materials becomes extremely complex and conjectural.

V. MILITARY POSTURE OF SINO-SOVIET EMPIRE

14. a. Nuclear Weapons

(1) In assessing the nuclear materials and nuclear weapons available to the Sino-Soviet Empire, only Soviet production is considered, inasmuch as production by Communist China and the Satellites will be relatively insignificant during the period under consideration.

(2) The estimate of the USSR materials availability, shown below, is based on NIE 11-2-60, currently under revision as NIE 11-2-61.

(a) The oralloy estimate for 1963 is considered to have a margin of error of $\pm$50%. Meaningful margins of error cannot be assigned to the 1965 and 1968 oralloy stockpile estimates.

b. [redacted] No margins of error are assigned to the post-1961 estimates because of their dependence upon actual production which in turn is dependent upon Soviet plans, policies and intentions. [redacted]

[redacted]

(3) The number of Soviet nuclear weapons estimated for 1963 was arrived at using the assumption that the weapons in the Soviet stockpile will have roughly the same average material composition as those in the US stockpile in the 1961-1965 period. In using this weapons estimate, it must be recognized that its reliability is extremely low.

(4) These estimates are as follows:

	FY 63	FY 65	FY 68
Oralloy (kg)	*	*	*
Plutonium Equivalent (kg)			
[redacted]	*	*	*
	*	*	*
Number of weapons	*		

b. Military Personnel. Estimated total active military personnel strength of the Sino-Soviet Empire as of 1 July 1963, to include anticipated mobilization through M+6 months, is as follows:

	M - Day	M + 1 Month	M - 6 Months
USSR	2,995,000	11,340,000	15,544,000
Albania	39,000	86,000	128,000
Bulgaria	162,700	476,000	736,000
Czechoslovakia	215,000	587,000	1,050,000
East Germany	143,500	252,000	388,000
Hungary	138,500	180,000	207,000
Poland	290,000	716,000	1,342,000
Rumania	281,500	531,000	1,044,000
(European Soviet Bloc)	(4,265,200)	(14,168,000)	(20,439,000)
Communist China	2,814,800	3,027,000	3,868,000
North Korea	380,000	391,000	427,000
North Vietnam	315,300	349,000	380,000
(ChiCom Bloc)	(3,510,100)	(3,767,000)	(4,675,000)
TOTAL (Sino-Soviet)	7,775,300	17,935,000	25,114,000

Mobilization estimates for Sino-Soviet forces other than ground forces are not readily available. In the absence of such estimates, it has been assumed that their rate of mobilization roughly approximates that of non-US countries of the Western Allies. Also, as in Section VI below, the aggregate Sino-Soviet military personnel strength in 1965 and 1968 is assumed to be roughly the same as in 1963.

VI. MILITARY POSTURE OF WESTERN ALLIES

15. a. Nuclear Weapons

(1) In assessing the nuclear material and nuclear weapons available to the Western Allies, only US production is considered. The most current forecast of the US nuclear materials stockpile, as of 1 July 1963, is contained in the Atomic Energy Commission's (AEC) Estimates of May 1961. The numbers

and types of nuclear weapons expected to be produced from this material is derived from a current action to determine the desired composition of the nuclear weapons stockpile for FY 1963 and has not been approved by the Joint Chiefs of Staff. These two sources provide the most reliable current estimate of the US nuclear weapons posture as of the proposed cutoff date, 1 July 1963. The anticipated nuclear weapons posture as of 1 July 1965 and 1 July 1968, assuming no cut-off of production, is reflected in a memorandum from the Joint Chiefs of Staff to the Secretary of Defense dated 13 April 1961 which responds to Project Number 5.

(2) The above estimate is tabulated as follows:

	FY 63	FY 65	FY 68
Oralloy (kg)	@	@	@
Plutonium Equivalent (kg)	@	@	@

For 1968, the estimate considered additional (larger) requirements for nuclear materials in case cluster warheads are provided for MINUTEMAN, ATLAS, TITAN, THOR and JUPITER. However, since these added cluster warhead figures substantially exceed expected AEC materials production, they are not accepted in this study as reflecting probable FY 1968 production.

(3) If materials production for weapons use is cut off as of 1 July 1963, the materials available will remain at the FY 1963 level shown above. It is assumed that weapon modernization within this materials ceiling will be accomplished

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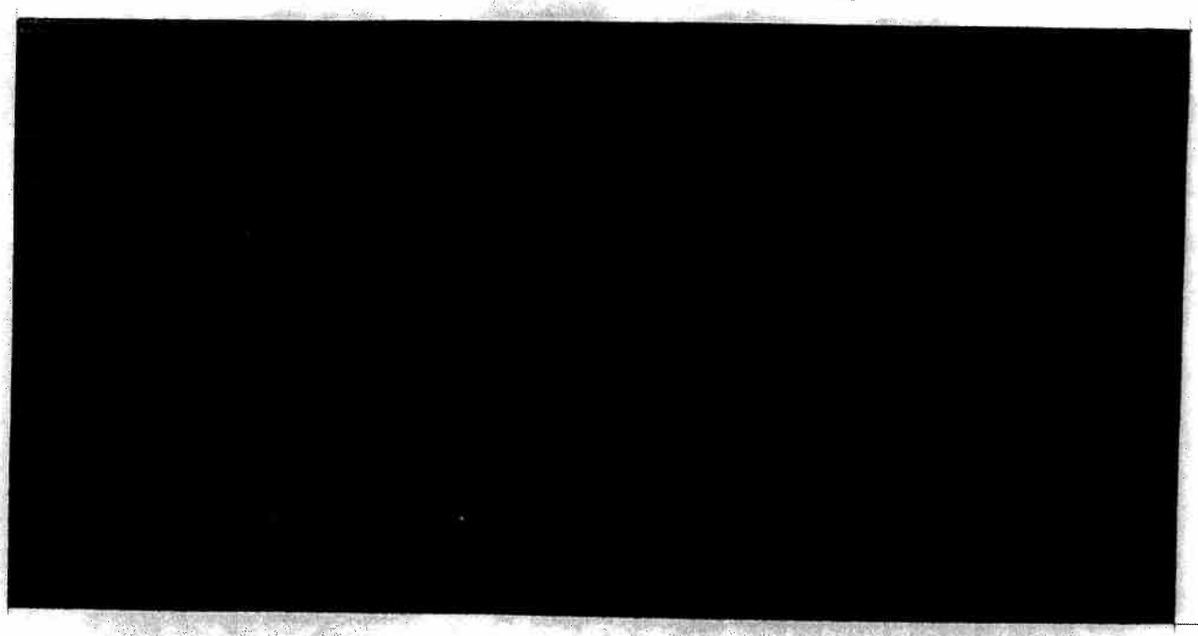
@ Figures to be furnished by separate key.

as feasible throughout the period under consideration. The configuration of the expected US nuclear weapons stockpile as of 1 July 1963 is as follows:



It is not possible at this time to determine within acceptable accuracy the FY 1965 and FY 1968 composition of the weapon stockpile by specific weapon type or even by broad categories. In all cases throughout the period it is assumed that adequate means will be available to deliver the nuclear weapons in the stockpile.

b. Military Personnel. Estimated total active military personnel strength of the Western Allies as of 1 July 1963, to include anticipated mobilization through M/6 months, is tabulated as follows:**

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* Available for weapons use but not yet fabricated into weapons
** N=NATO; C=CENTO; S=SEATO

	M - Day	M + 1 Month	M - 6 Months
United States (N) (S)	2,533,000	3,946,000	6,005,000
Canada (N)	117,410	168,000	286,500
United Kingdom (N)(C)(S)	478,590	1,136,600	1,971,200
France (N) (S)	948,300	1,628,000	2,726,300
West Germany (N)	283,000	303,500	367,000
Norway (N)	36,940	203,700	262,700
Denmark (N)	38,850	197,400	251,300
Belgium (N)	122,490	403,400	536,700
Netherlands (N)	125,350	337,200	439,000
Luxembourg (N)	2,150	7,500	20,000
Italy (N)	337,400	930,900	1,243,900
Portugal (N)	55,150	140,900	220,600
Greece (N)	159,390	381,500	452,500
Turkey (N) (C)	469,740	915,300	1,371,700
Iran (C)	201,100	211,100	275,100
Pakistan (S) (C)	266,190	290,100	327,300
Philippines (S)	42,590	71,100	119,600
Australia (S)	46,890	85,900	191,400
New Zealand (S)	12,400	26,200	50,100
Thailand (S)	132,970	150,600	264,200
South Vietnam (S)	212,070	234,800	266,300
South Korea	588,440	649,200	784,400
Republic of China	573,700	700,800	707,200
TOTALS	7,784,110	13,119,700	19,140,000

It is recognized that during the period 1963 to 1968 the above figures will undergo continuing change, and there exists the possibility that these changes would be substantial. However, in the absence of any present indications of significant changes, it is believed adequate for the purposes of this study to assume that aggregate military personnel strength in 1965 and 1968 will be roughly the same as in 1963.

c. Western Alliances. The national mobilization capabilities of the principal Western Alliances or potential alliances reflect the following manpower assets: 1/ 2/

	M-Day	M + 1 Month	M + 6 Months
(1) NATO	5,707,760	10,699,300	16,154,400
(2) CENTO	1,415,620	2,553,100	3,945,300
(3) SEATO	4,673,000	7,569,300	11,921,400
(4) South Korea and Republic of China	1,162,140	1,350,000	1,491,600
(3) + (4)	5,835,140	8,919,300	13,423,000

1/ It is emphasized that these are national military strengths and must not be construed to be deployed forces.

2/ Numbers are not mutually exclusive, e.g., the same US strengths are included in both NATO and SEATO.

VII. MILITARY POSTURE - WESTERN ALLIES VIS-A-VIS SINO-SOVIET EMPIRE

16. a. General

(1) A comparison of the gross military personnel strengths recapitulated below, indicates a parity on M-Day, but shows Western Alliance deficits of roughly 4,800,000 and 6,000,000 respectively at M+1 month and M+6 months. In addition, the wide dispersal of Western forces as compared to the relative concentration of Sino-Soviet forces in EURASIA gives the Sino-Soviet Empire an even greater advantage in manpower in the more probable theaters of operation, i.e., Europe, the Middle East, and Eastern and Southeastern Asia.

COMPARATIVE MILITARY MOBILIZATION STRENGTHS[1]/

	M-Day	M+1 month	M+6 months
(GROSS COMPARISON)			
US and Allies	7,784,110	13,119,700	19,140,000
Sino-Soviets	7,775,300	17,935,000	25,114,000
(COMPARISON BY ALLIANCE/AREA) 2/			
NATO	5,707,760	10,699,300	16,154,400
USSR & Eur. Bloc	4,265,200	14,168,000	20,439,000
SEATO	4,673,000	7,569,300	11,921,400
ChiComBloc (w/o USSR)	3,510,100	3,777,000	4,675,000
Sino-Soviets (w/o Eur Sat)	6,505,100	15,117,000	20,219,000
CENTO	1,415,720	2,553,100	3,945,300
USSR	2,995,000	11,340,000	15,544,000

1/ Gross Military Strength-Deployment Not Considered

2/ Numbers not mutually exclusive, e.g., the same US strengths are included in both NATO and SEATO.

(2) The Western Allies have relied to a large measures on nuclear weapons to compensate for their force level and conventional weapons deficits vis-a-vis the USSR. Under conditions of nuclear monopoly a net military advantage accrued to the Western Alliance. The advent of a growing Soviet nuclear weapons stockpile has affected the over-all balance of military power. This has produced doubts, in some quarters, as to whether the Western Alliance will have an over-all military superiority or even parity in the period under consideration, unless steps are taken to correct the deficiencies in its over-all defense posture. The table which follows compares projected US and estimated USSR nuclear materials availability for weapons use:

COMPARISON OF STOCKPILE MATERIAL

	1 JULY 1963	1965	1968
[redacted]			

* Figures to be furnished by separate key

b. Strategic Forces

(1) In determining the impact of a cutoff of production on the capabilities of strategic forces, it is necessary to determine the quantity of material estimated to be required by the US and the USSR. These requirements are influenced by many factors and/or variables which include national policy, strategic forces, force loading, delivery effectiveness, base survivability and desired ground zeros (DGZ's) to be attacked.

(a) Soviet Requirements

i. There is no indication that Soviet national policy precludes an initiative attack. The USSR is well aware of US national policy which rejects preventive war by the US. They could, therefore, make plans to attack the United States without strategic warning. An attack such as this, by a minimum force would have to be carefully planned and executed to prevent a possible pre-emptive attack if the US were alerted through intelligence. As the USSR moves more and more toward a strategic missile posture the capability to achieve surprise increases. However, the US forces during the period are simultaneously building toward a less vulnerable posture. Since a basic requirement of an initiative attack is to destroy the enemy's capability to retaliate, Soviet strategic force structure may increase accordingly if they intend to exercise the initiative. A Soviet initiative attack appears to represent the maximum requirements for Soviet strategic weapons.

ii. If the USSR does not contemplate an initiative strategic attack against the US, these requirements would be greatly reduced since all that would be needed would be the requirements to deter an attack by the US. Since national policy of the United States in effect provides this deterrence, the USSR requirements for a deterrent posture could be comparably smaller.

(b) US Requirements

i. As opposed to the Soviet requirements for a minimum deterrent force or for an initiative force, the US is faced with the problem of attaining a strategic posture adequate to effectively attack the USSR under many circumstances, including a second strike with those residual forces remaining after a Soviet initiative attack. Estimates of forces and weapons required to attain this posture vary widely and are currently being studied by the Net Evaluation Subcommittee. However, results of the NESC analysis will not be available for several months.

ii. A preliminary NESC evaluation of "US Requirements for Strategic Systems" has been received. The information contained in this preliminary evaluation is, for purposes of this study, inconclusive.

c. Theater Operations. For the purpose of this study, theater operations are considered to be those conducted in specific theaters of operation under the direction of unified commanders, as opposed to world-wide strategic operations. The probable theaters of large scale military operations (Europe, the Middle East and Eastern and Southeastern Asia) all lie along the periphery of the Sino-Soviet Empire. This permits not only a Sino-Soviet numerical manpower superiority in any or all theaters on M-Day, but more significant, it permits the Sino-Soviets to reinforce much more rapidly than the Western Allies.

Without adequate nuclear weapons to neutralize the the advantages of mass and surprise, and with no major improvements in the conventional military posture, attainment of Allied victory would be difficult indeed. In the early years of US nuclear weapons production, when nuclear materials were in relatively short supply first priority was given to strategic weapons. In recent years, with more nuclear material available, the production of weapons for US tactical and defensive operations has substantially increased.

National Intelligence Estimates indicate that the Soviets probably also gave a high production priority to strategic weapons. NIE 11-2-60 estimates that the Soviet long-range strike systems in 1960 may have consumed about 80% of their oralloy and 50% or more of their supply of plutonium equivalent. If there is no cutoff of production for weapons use, and if the Soviets utilize their estimated capability, Soviet materials production by 1968 could permit them to close the tactical nuclear weapons gap and largely nullify the Allied nuclear advantage in theater operations.

With a cutoff, it is concluded that in view of the size of the material stockpiles available to the United States and the USSR for use in tactical nuclear weapons a net military advantage would accrue to the Western Allies in the conduct of theater operations. However, if the US finds it necessary to substantially reduce its weapons inventory for theater operations and the Soviets maintain their 1963 posture, the above conclusion would be correspondingly less valid.

d. Anti-ICBM. It is assumed that with no cutoff in materials production, both the United States and the USSR could have AICBM's in quantity in 1968. The United States FY 1968 stockpile forecast shown in Section VI reflects this assumption. The Soviet nuclear materials forecast for 1968 also could permit production of significant numbers of AICBM's, without seriously degrading other weapons systems.

In case of a cutoff, however, this picture changes sharply, since all United States and USSR nuclear materials would already have been fabricated into other types of weapons prior to initiation of AICBM production. With a cutoff, substantial AICBM production would require that other weapon types be correspondingly reduced below their 1963 inventories to provide for this defensive system. The Soviets with a much smaller materials stockpile at cutoff would be in a considerably more difficult situation with respect to AICBM production. To produce significant numbers of AICBM's would require them to substantially reduce their weapons inventories in other areas where they are already seriously deficient in comparison to the United States. It seems apparent, then, that with a materials production cutoff the Soviets would find it considerably more difficult than

would the United States to achieve a militarily significant AICBM posture in 1968. Thus, any net military advantage in this area should accrue to the United States and, thus, to its Allies.

VIII. PROBLEM AREAS

17. a. Inspection System

(1) To insure that terms of the cessation of production agreement are observed, such an agreement must be subject to, and preceded by, the implementation of a permanent and effective inspection system considerably more comprehensive than that required for a test ban agreement. Obviously, such an inspection system, in order to be effective, must be applied world-wide to all material production facilities, processing facilities for nonweapons material and all nonweapons materials stockpiles. This requires continuous monitoring of such materials.

(2) With respect to the assumption that continued production of materials for nonweapon use will be permitted under effective international control, a major problem will be to ensure that the materials are not clandestinely diverted to weapons fabrication. Adequate safeguards will be required to ensure that the total production is actually put to nonweapons use and not stockpiled in large quantity for future diversion to weapons fabrication. It will also be necessary to ensure that fissionalbe materials originally put to nonmilitary use are not later transferred secretly to weapons fabrication.

b. Tritium Production. One of the key assumptions used by the Perkins Panel and suggested for application to this study by the President's Advisor for Disarmament and the Assistant Secretary of Defense (ISA), is that production of tritium

will be allowed to the extent necessary to maintain the tritium stockpile existing at the time of cutoff. There are several factors which should be considered when assessing the feasibility of this critical assumption.

(1) It is axiomatic that the USSR will seek every possible means to gain a military advantage over the Western Allies. The mere act of advancing a proposal along the lines of this assumption will indicate the critical dependence of the United States on this material. The Soviet stockpile on the other hand, may be much less dependent on this material. If this is true, to expect Soviet acquiescence on a treaty provision which is largely to the advantage of the United States is to ignore past Soviet performances in international negotiations.

(2) Inclusion of this provision in treaty negotiations implies that there is some method by which tritium stockpiles at the time of implementation, or other fixed time, can be determined. Lack of knowledge of Soviet production requires that Soviet claims in this regard be accepted at least for an extended period. If the Soviets have a known or anticipated need for this material in excess of that required to maintain the stockpile, it can be expected that claims of existing stockpiles will be exaggerated. Excess amount could then be utilized to advance their military position.

(3) Studies on the feasibility of inspection systems to monitor trituim production, e.g., the Perkins Panel, acknowledge the relative ease with which tritium could be produced clandestinely. This, coupled with the difficulty of monitoring the output of declared tritium production facilities, indicates the magnitude of the problem of tritium diversion by a nation intent on so doing.

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(4) If modernization of weapons is permitted, large amounts of tritium in excess of that presently stockpiled would be required. An agreement which permits production of just that amount required to maintain the stockpile would thus effectively preclude modernization, and this would:

[redacted]

(b) Limit production of cluster warheads.

[redacted]

The magnitude of the inspection problem can be visualized by considering that United States production is measured in tens of thousands of grams per year. The magnitude of the inspection problem and the seriousness of diversion of tritium in even relatively small amounts casts serious doubt on the adequacy of any feasible inspection system.

(6) The theory has been advanced that tritium production could be controlled by requiring the turn-in of He-3, the by-product of tritium decay, for equivalent amounts of tritium. This system of control is highly suspect when it is considered that He-3 is present in natural helium in the ratio 0.00013. Annual production of helium in the USSR exceeds 8×10^9 cubic feet, so that there is in excess of 100,000 cubic feet of He-3 available annually to the Soviet Union. If sufficient incentive existed to separate this isotope, it cannot be doubted that a method would be developed to do it.

(7) In summary, it is preferable to completely exclude tritium from negotiations on cessation of production rather than attempt to agree on specific reduced levels of production, because:

(a) The United States will require increasing amounts of tritium to modernize the stockpile.

(b) There is no feasible method of determining precisely what levels of production should be authorized.

(c) No feasible method of inspection is possible which would provide for adequate enforcement of such an agreement.

c. Test Ban

(1) The assessment of relative military posture contained herein assumes that both sides observe a nuclear test ban. This assumption permits modest extrapolations of weapons technology deemed attainable within this limiting parameter. It precludes major advances.

(2) A resumption of testing could lead to one or more of the following results among others:

(a) Development of totally new types of weapons.

(b) Discovery of unknown, or refinement of little known, weapon effects.

(c) Substantial improvements in yield-to-weight ratios.

Examples in each of these areas are already foreseen, so that their attainment would not be unexpected.

(3) For example, successful development of the all-fusion weapon with a wide range of yields, might lead to a predominantly all-fusion weapon stockpile. Current dependence on fissionable materials could, in this case, be completely eliminated. New discoveries in the weapons effects area might lead to a cheap, highly effective anti-ICBM, which in turn would exert a major influence on weapon systems and relative postures. Sufficient improvement in yield-to-weight ratios could result in wide variations in numbers of weapons attainable from a fixed amount of material or in new types of weapon systems.

(4) These and other potential new discoveries indicate the close dependence of a study of this type to the test issue. It is not an exaggeration to hold that resumption of testing, overt or covert, by either or both parties to an agreement negates the results of this study and would require a reassessment of relative posture in the light of conditions then existing.

d. Transfer of Materials to Non-Military Use.

(1) Mr. McCloy, in his letter of 2 June, suggested that the study consider an alternative in which significant stockpile reductions by transfer to peaceful uses would be associated with a cutoff. The transfer of nuclear materials not actually fabricated into weapons, and converting additional material already fabricated into weapons, to peaceful purposes poses such a variety of alternatives as to preclude meaningful analysis. Also, such stockpile reduction should be considered only as a subsequent disarmament action and not concurrently with this initial step. However, some of the facets of the problem are:

(a) It is apparent from Sections V and IV that the Soviet advantage in manpower and conventional capability is offset to a substantial degree by the United States advantage in nuclear materials at the proposed production cutoff date. Therefore it seems logical to expect the Soviet to insist upon a "leveling" of the nuclear stockpile as an initial step in stockpile reductions.

(b) Regarding a transfer to nonweapon uses of materials not actually fabricated into weapons, it seems logical that the Soviet would propose a transfer of all such material, which should be to his advantage, rather than a gram-for-gram transfer. Similar Soviet proposals with regard to materials already fabricated into weapons, which would be even more to his immediate advantage could be expected.

e. Weapons Modernization

(1) In previous papers on disarmament negotiations, the Joint Chiefs of Staff have recommended that the United States avoid a commitment which would preclude fabrication of new weapons from either unfabricated material on hand at the time of cessation or material included in stockpiled weapons. Any agreement which would stop weapons fabrication at the time of cessation of production of fissionable material for use in weapons or at a later date, would effectively preclude modernization of the stockpile. Modernization includes either the equippage of important new weapons systems with warheads or the ability to take advantage of new weapons technology.

(2) The table below illustrates the first point. Warheads are produced on a schedule generally commensurate with production of the weapon system. This means that if weapon fabrication were stopped on the assumed date of 1 July 1963 the weapon systems shown below as programmed for production after that date would not have warheads. Strategic systems such as POLARIS and MINUTEMAN would be limited to very small numbers. Modern tactical weapons such as the PERSHING and SERGEANT would be severely limited.

Projected new antisubmarine and air defense systems would be curtailed. Some important new weapon systems would probably be cancelled for lack of a warhead. The summation of the above actions would constitute a serious impact on our total defense posture.

PROGRAMMED WEAPONS SYSTEMS

SYSTEM	1963 PROGRAM	1964 PROGRAM
MINUTEMAN	150	540
POLARIS	253	385
PERSHING	10	155
SERGEANT	105	286
SUBROC	0	50
NIKE-ZEUS	0	9
SKYBOLT	0	0
TYPHON	0	0

(3) Weapon technology can be expected to advance even with a continued test moratorium The United States should take advantage of scientific achievements in this area in order to improve its military posture and should avoid any agreement that would preclude this

IX. CONCLUSIONS

18. Based on the foregoing assumptions and considerations it is concluded that:

a. A freeze of the stockpiles of the United States and USSR on 1 July 1963 is estimated to give the United States a three to one quantitative advantage over the Soviets in nuclear material.

b. A continuation of materials production at current trends through 1966-1970 could reduce this advantage to near parity, providing that estimated Soviet weapon production capability is exploited and that US production continues at present levels.

COMMENTARY: [redacted] Projecting the Soviet estimates would indicate parity sometime after 1968. It should be pointed out, however, that future Soviet stockpiles and the attainment of parity are functions of intentions which cannot be predicted. The USSR has the industrial base, the raw materials and the technological ability to expand production.

c. The United States will continue to require a superior nuclear capability in order to offset the Sino-Soviet Bloc quantitative superiority in manpower and their continual threat of world domination. Nuclear weapons and force levels are so closely related that they cannot be considered in isolation under any condition short of total and universal disarmament.

d. The nuclear material advantage possessed by the United States also provides the Free World with a measure of flexibility to compensate to some extent for the Soviet advantages of secrecy and initiative.

e. While the United States has, at the present time, an advantage over the USSR in the availability of fissionable material this advantage alone does not constitute a proportionate military advantage.

f. US strategic forces must be adequate to effectively retaliate against the USSR with a clear military advantage under any circumstances of attack, including the possibility of second strike with those residual forces remaining after a Soviet initiative attack.

COMMENTARY: In order to ensure security of the Free World during the next decade, the United States must retain a credible nuclear capability. To do this will require that US military forces include responsive, survivable, and flexible nuclear offensive forces which: (1) in the short term, are

capable of emerging from a nuclear exchange with a clear military advantage; and (2) in the longer term, will possess the highest practicable degree of alert and be capable of a range of options, including those made possible by a secure reserve, to increase control of response and enhance military flexibility.

g. Within the composition of the 1963 US stockpile, a spectrum of weapons exists which meet the expressed requirements of commanders of unified and specified commands to within approximately 75 per cent.

h. No net military disadvantage would accrue to the United States vis-a-vis the USSR if the nuclear weapon materials stockpiles of the United States and the USSR were frozen on 1 July 1963; however, it is necessary for the United States to retain no less than its present nuclear capability relative to that of the USSR. To retain this posture, it is essential to insure by effective inspection that the USSR nuclear weapon materials stockpile remains frozen after the cutoff date. In the event of a stockpile freeze, it is equally essential that the USSR not have the opportunity to conduct clandestine nuclear weapons tests. With a stockpile freeze and an unpoliced test moratorium any advantage possessed by the United States could be rapidly dissipated. After 1 July 1963, the Joint Atomic Energy Intelligence Committee is unable to assign a confidence level to Soviet production. Soviet materials production after 1963 is more a matter of desire than of capabilities. Assuming no increased rate of US production, parity in materials stockpiles could occur sometime after 1968. Also implicit in this conclusion is assurance that the relative posture of the United States not be weakened by the transfer of unequal amounts of nuclear materials to peaceful uses. If the USSR agrees to a stockpile freeze, possibly as a gambit, their next move would be an attempt to strengthen their relative posture by negotiating larger transfers from the US stockpile than from their own stockpile.

i. If the nuclear weapon material stockpiles are not frozen as specified in paragraph h, the US must continue the production of nuclear material at a level which meets military requirements.

COMMENTARY: New weapons are heavy users of nuclear materials. It is necessary to US and Free World security interests that the US retain an adequate stockpile of the most modern weapons.