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REPORT OF THE NET CAPABILITIES EVALUATION SUBCOMMITTEE

3 November 1954

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REPORT OF THE NET CAPABILITIES EVALUATION SUBCOMMITTEE

TABLE OF CONTENTS

TABLE OF CONTENTS

Page Two

CHARTS — Page

APPENDICES

REPORT OF THE NET CAPABILITIES EVALUATION SUBCOMMITTEE

THE PROBLEM

To assess the net capabilities of the USSR, in the event of general war in mid-1957, to inflict direct injury upon the continental United States and key U. S. installations overseas, primarily in the initial phases of the war, during which all or most of the Soviet stockpile of nuclear weapons might be expended.

APPROACH TO THE PROBLEM

1. Assessing Soviet net capabilities to inflict injury upon the United States involves estimating the strength the USSR is likely to bring to bear in an attack and calculating the extent to which the force of the blow is likely to be reduced by U. S. defenses.

2. As directed, we have considered only those U. S. defense forces and weapons that are called for in presently approved programs and that seem likely to be in effective use as of mid-1957. In view of this fact and the fact that certain critical Soviet military capabilities are estimated to be changing rapidly as of mid-1957, the analysis presented in this report cannot be considered valid in any sense for any other period except mid-1957.

3. In the process of assessment, it has been necessary at many stages to assign concrete values to Soviet offensive capabilities and intentions or U. S. defensive capabilities, many of which are of an uncertain character and quantity when projected into the

mid-1957 period. As a result the margin of error at almost every step in this assessment of net capabilities may be large -- possibly as much as 25 to 50 percent in respect to many key factors -- and the final answer is of course subject to substantial error or at least appreciable doubt.

4. In these circumstances, inherent in the problem presented because of its broad scope and its projection into the future, we have tried to give the most useful and realistic estimate possible by making and recording our findings as to the most probable value of critical factors at every stage. Throughout we have made our calculations with as much mathematical precision as possible but, recognizing that the information and estimates with which we are working seldom make such precision realistic, we have consistently rounded numerical values in the interests of simplicity.

5. While we often point out minimum and maximum values that might be assigned in each case and indicate that adoption of the upper or the lower limit values rather than the most probable value would make a great difference in the assessment, we have not tried to make alternative assessments based on minimum and maximum extremes. We feel that the cumulative bias, upward or downward, of a series of such extreme values would be tremendous and would result in a portrayal of a most unlikely situation. In this particular problem the net estimate would then show Soviet capabilities, if rated consistently in terms of maximum values, on such a magnified scale

that it would be folly for the United States to accept them as real and try to match them or, if rated consistently in terms of minimum values, on such a reduced scale that it would be extremely dangerous for the United States to accept them as real and allow U. S. defenses to drop to a parallel level.

6. The approach we have adopted has the advantage that our errors with respect to each of the successive factors considered are as likely to fall on one side of our finding of the most probable values as on the other — some erring in being above and some erring in being below the true situation — and therefore in a rough sense are likely to cancel one another out.

7. What we have then is an assessment built on a series of probabilities. It is likely to be in error in either direction. It is possible, if a series of factors have been erroneously weighted in the same direction, that the margin of error is very large. Nevertheless, we believe that it is the most reasonable assessment it is possible to make, in the time allowed and with the basic information now available, with respect to Soviet net capabilities to inflict direct injury upon the continental United States and key overseas installations in the event of general war in mid-1957.

DISCUSSION

PART I: SOVIET CAPABILITIES AND INTENTIONS

Probable Circumstances in Which the USSR Would Initiate General War in Mid-1957*

8. According to agreed national intelligence estimates, the USSR is unlikely deliberately to initiate general war through 1957, largely because of the West's greater war-making potential.

[redacted]

9. The Soviet military establishment, reflecting an emphasis on massive ground, tactical air, and submarine strength, is clearly adapted to a continental strategy of seizing and holding key areas on the Eurasian land mass. It seems clear, however, that the USSR

* This analysis, based on estimates of Soviet capabilities and intentions appearing in agreed national intelligence, is drawn mainly from NIE 11-4-54, "Soviet Capabilities and Probable Courses of Action through mid-1959", approved by the Director of Central Intelligence and the Intelligence Advisory Committee on 14 Sep 54, and from SNIE 11-7A-54, "Soviet Cross Capabilities for Attacks on the U.S. and Key Overseas Installations through 1 July 1957", approved by the Director of Central Intelligence and the Intelligence Advisory Committee on 14 September 1954. NIE 11-4-54 is at Annex A and SNIE 11-7A-54 is at Annex B.

has been gradually giving greater weight to long-range forces and weapons, particularly to nuclear warfare capabilities, designed to permit the USSR to strike directly at its principal enemy, the U. S. Soviet strategic air, long-range submarine, guided missile, and nuclear weapons capabilities probably will have improved markedly ~~in~~ by 1957. Nevertheless, development of Soviet long-range military capabilities is not likely to have proceeded far enough by 1957 to permit the USSR to rely on decisively defeating the U. S. by direct attack on the continental U. S.

10. We believe that Soviet leaders would estimate that in event of Soviet initiation of general war:

[redacted]

c. Allied defensive capabilities in other Eurasian areas would be limited initially except that most of the Pacific offshore island chain could probably be successfully defended against Communist amphibious attack in the initial phase of the war;

d. If the allies could be ejected from most of the Eurasian land mass they would probably be unable to return in such strength as to threaten the Soviet Bloc seriously unless the USSR had first been critically weakened.

Basic Soviet Strategic Objectives and Concepts

11. The basic Soviet objectives in a general war probably would be to:

a. Protect from attack the war-making capabilities of the USSR in particular and the Soviet Bloc in general;

b. Cripple or neutralize insofar as possible the war-making capabilities of the chief enemy, the U. S.;

c. Drive the forces of the U. S. and its allies so far back from the center of Communist power that a successful counteroffensive would be difficult or impossible;

d. Add to the Soviet Bloc as much as possible of the war-making resources of Eurasia and deny these to the West.

12. Recognizing that the USSR cannot be certain of inflicting a swift and decisive defeat on the U. S. itself in the first phase of general war, Soviet leaders would probably initially pursue a more limited course; that is, preservation of Soviet war-making capacity and destruction or neutralization of U. S. and allied war-making capacity sufficiently to leave the Soviet Bloc in a position of relative superiority after the first phase of the war. We believe that Soviet leaders in attacking the U. S. and key overseas

installations would have the following major objectives:

a. To destroy swiftly or cripple U. S. capabilities for nuclear retaliation;

b. To deliver such an attack on urban, industrial, and psychological targets in the U. S. as would prevent, or at least hinder, the mobilization of the U. S. war potential and its projection overseas; and

c. To inflict such destruction on U. S. overseas installations as to hamper or prevent U. S. reinforcement and logistical support of overseas forces.

They would consider that these attacks could only be carried out with maximum effectiveness in the earliest stages of a general war. They would calculate, moreover, that if these attacks were reasonably successful in neutralizing U. S. ability to strike directly at the USSR and to reinforce U. S. and allied defenses overseas, the USSR could then overrun Eurasia with relative ease, neutralize the UK and Japan, and place itself in a favorable position for the ultimate defeat of the U. S.

18. In examining Soviet [illegible] [illegible] importance of blunting the retaliatory air blow that they expect would be directed at the USSR upon initiation of hostilities. They would probably consider that only through achieving a high degree of surprise could they expect, in 1957, to achieve the desired success in neutralizing U. S. and allied air power and naval power, as well as inflicting substantial damage on the U. S. We believe that, in order

to achieve as much surprise as possible, the USSR would probably be willing to delay the mobilization and assembly in forward areas of additional ground forces. Soviet leaders probably would calculate that if initial Soviet air offensives were successful, the vital U. S. ability to reinforce overseas defenses would be severely impaired and that this advantage would, on balance, make it worthwhile to delay bringing to bear the full weight of the Soviet ground offensive.

[redacted]

[redacted]

15. The main Soviet land campaign in the event of war would be against Western Europe because it is:

a. The area of chief allied strength outside the U. S. itself;

b. The best allied base area for offensive operations against the USSR; and

c. The area whose resources could most quickly and effectively be converted to Soviet use.

In our view other Eurasian land campaigns would be undertaken, either simultaneously or after the main assault in Western Europe, only insofar as other forces were available and could be committed without [redacted]

16. Initially the USSR would employ its naval forces for:

a. Defense of the USSR against U. S. and allied carrier attacks;

b. Attack on U. S. and allied sea communications in immediate combat areas, i.e., Western Europe;

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g. Longer range attack on U. S. and allied Atlantic and Pacific lines of communication primarily to prevent reinforcement of combat theaters; and

h. Submarine-launched guided missile attacks on coastal targets.

The Strategic Air Campaign

17. The primary initial Soviet objective in war would be to protect the USSR and preserve its war-making capacity [redacted] Therefore, the USSR would also give overriding priority to air attacks on U. S. and allied strategic air forces and installations, world-wide, including those in the Far East.

18. The allocation of long-range aircraft and nuclear weapons to particular areas and targets would be governed by the Soviet leaders' judgment as to where they would need to strike in order to achieve the maximum possible reduction in the retaliatory power and war-making capability of the West. We believe that nuclear weapons and long-range aircraft beyond those designated to strike at U. S.

and allied retaliatory power would be employed primarily to inflict as much damage as possible on urban-industrial targets in the U. S. Soviet leaders might calculate that even partial destruction of U. S. war-making capacity, together with the psychological effects of such attacks, would seriously hamper U. S. ability to fight the war and might even critically weaken U. S. will to fight.

19. Soviet leaders would probably recognize that their strategic air capabilities (including bases, long-range aircraft, inflight refueling, etc.) would have to be strained to the utmost and their long-range air forces probably almost entirely expended in order to strike an effective blow at continental U. S. targets in the face of U. S. air defenses as of mid-1957. Nevertheless, we believe that they would attempt such an attack because of the overriding importance of such targets, particularly U. S. retaliatory power, and the value of even partial success in these efforts. An additional consideration in favor of this course of action would be the probability that even partially successful attacks on the continental U. S. would indirectly support their Soviet ground campaigns through reducing U.S. will to resist in Western Europe and interfering with U. S. ability to reinforce overseas theaters.

20. In our view the Soviet leaders would consider it unnecessary to attack industrial or urban centers in continental Western Europe, but we believe they would reserve a few nuclear weapons for such

attacks in case they should prove necessary as part of political and psychological warfare campaigns to end resistance in this area. We believe that there would be an allocation of nuclear weapons for attack on British air installations, ports, and other urban centers, along with heavy air attacks with non-nuclear weapons, to insure early achievement of the high-priority political and military objective of eliminating the UK from the war.

Soviet Resources for Attack on the U.S. and Key U.S. Installations Overseas*

21. In mid-1957, among the forces and weapons available for attacks on the U.S., the USSR would place chief reliance on its capability for overt military attack with nuclear weapons delivered by long-range aircraft. Soviet reliance on this form of attack stems from:

a. The limited capabilities of conventional naval forces, ground forces, and airborne forces against the continental U.S.;

b. The security difficulties inherent in the delivery of large numbers of nuclear weapons by clandestine means;

c. The insufficient development of other methods of delivery of nuclear weapons on a large scale;

d. The insufficient development of other weapons of mass destruction, or handicaps involved in their large-scale use; and

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* This analysis is drawn mainly from SNIE 11-7A-54, "Soviet Gross Capabilities for Attacks on the U.S. and Key Overseas Installations through 1 July 1957", at Annex B.

g. The availability of far northern air bases, from which air operations against the U. S. are least susceptible to detection.

22. Nuclear Weapons.* The main limiting factor in Soviet capabilities as of mid-1957 will be the size of the Soviet stockpile of nuclear weapons.** There will probably be enough fissionable material available in mid-1957 to permit the fabrication of about 800 medium-yield nuclear weapons equivalent in explosive force of 20,000 to 100,000 tons of TNT, or on the average, 60,000 tons of TNT. (Hereafter we refer to this class of weapons as the 60 KT weapon.) The range of yields of weapons actually stockpiled could be very large, since by 1957 Soviet technological capabilities will probably permit production of weapons with yields as large as the equivalent of 10 million tons of TNT (10 MT) or as small as the equivalent of 500 tons of TNT (½ KT).

23. The USSR can build its stockpile around any combination of such weapons. Soviet military requirements will govern the

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* Throughout this assessment, the analysis of Soviet nuclear weapons capabilities is based on information and estimates provided by the Joint Atomic Energy Intelligence Committee and the Armed Forces Special Weapons Project. For the most part the information supplied by these agencies represents an updating and pinpointing of estimates published in NIE 11-3-54 (Limited Distribution), "The Soviet Atomic Energy Program to mid-1957", approved by the Director of Central Intelligence and the Intelligence Advisory Committee on 16 Feb 1954.

** In all of the generalizations presented herein about Soviet fissionable material and nuclear weapons, the margin of error is such that actual Soviet resources could be as low as one half or as high as twice the figures given.

actual allocation of fissionable material to various types of weapons. Nevertheless, even with thermonuclear reactions, which greatly multiply the force of the weapons, the larger bombs require more fissionable material. [redacted]

24. The Soviet stockpile in mid-1957 would probably contain a variety of types of weapons, but in this assessment we have simplified the problem of measurement and quantification by considering the stockpile to be entirely 5 KT, 60 KT, and 10 MT class weapons and considering these weapons to be distributed by types according to any formula indicated by Soviet military requirements. Within the 5 KT class, the USSR could have small-dimension weapons with a very low yield (about 1 KT) for clandestine operations, and we assume that they would have such weapons in 1957. [redacted]

* On this and related paragraphs, see IIC comments and the Subcommittee remarks thereon, at Appendix IV.

[redacted]

25. Aircraft. Soviet capabilities for air attacks on the continental U. S. will also be limited by the numbers and types of aircraft available in the Soviet long-range air force in 1957. The estimated operational strength of Soviet long-range aviation in mid-1957 is as follows:

	Mid-1957
TU-4 piston medium bomber	700
Type 39 jet medium bomber	650
Type 37 jet heavy bomber	50
TOTAL	1,400

All of these aircraft can carry small-yield or medium-yield nuclear weapons, and the Type 37 probably can carry a 10 MT weapon.

26. In addition to these long-range aircraft, the USSR can attack most U. S. overseas installations with the IL-28 jet light bomber, now standard equipment in the Air Force of the Soviet Army, and with the similar Type 35 jet light bomber of Soviet Naval Aviation. The estimated operational strength of units employing these jet light bombers is as follows:

	Mid-1957
Air Force of Soviet	2,500
Naval Aviation	650
TOTAL	3,150

These aircraft can carry small-yield or medium-yield nuclear weapons.

27. The performance characteristics of these aircraft are described in great detail in agreed national intelligence estimate SNIE 11-7A-54, which is at Annex B. The range figures used in this assessment and presented here are based on maximum performance (eliminating most of the fuel reserve and disregarding other safety factors) rather than on normal U.S. military mission flight profiles, since Soviet operational plans for a war in 1957 would almost certainly call for stretching limited Soviet resources to the utmost and disregarding safety factors insofar as practicable.

28. The range of Soviet aircraft could be extended considerably above ordinary military mission levels by inflight refueling, provided that the USSR by mid-1957 creates a tanker fleet, modifies mission aircraft fuel systems, and conducts appreciable operational training in inflight refueling. Although we now have no intelligence that the USSR is actually employing this range-extension technique, no serious technical problems are involved, and the USSR probably will establish a tanker fleet of approximately 550 aircraft by mid-1957.* All or most of these tanker aircraft may be converted TU-4's scheduled to be phased out of the long-range air force in the 1954-1957 period as a result of the introduction of jet bombers. On one-way missions, with one inflight refueling, the combat range of the TU-4 and the Type 39 could be increased from approximately 3700 nautical miles to

* This estimate is made in NIE 11-4-54, "Soviet Capabilities and Probable Courses of Action through mid-1959", at Annex A.

approximately 5000 nautical miles, and the combat range of the Type 37 could similarly be increased from approximately 6000 nautical miles to approximately 8000 nautical miles.

29. The jet bomber aircraft have an additional performance capability in the event that the USSR should elect to commit them on one-way missions. By limiting fuel reserves -- and limiting the amount of refueling, if this technique is employed -- in such a way as to bring the aircraft over the target with only one hour of fuel remaining, the USSR could bring the Type 37 over the target at a maximum altitude of about 55,000 feet and the Type 39 at a maximum altitude of about 50,000 feet.

30. Bases. The areas most suitable geographically for launching air attacks against the U. S. are the Kola Peninsula base area, the Leningrad base complex, and the Chukotski and Kamchatka base areas in Northeast Siberia. Great circle routes from all these bases except the Leningrad complex initially avoid overflight of nations friendly to the U. S. and therefore are most advantageous for staging surprise attacks. The Leningrad complex could also be used in a surprise attack provided aircraft detoured the several hundred miles necessary to pass north of Scandinavia. Other base areas are too remote for optimum performance and strike patterns in attacks on the U. S. with the exception of the Baltic-East Germany base area, from which great circle routes to the U. S. pass over Western Europe or Scandinavia and where the security of preparations for a large operation would be comparatively low.

31. By 1957, the USSR could, by a major base-improvement effort, develop the capacity of the Kola, Leningrad, Chukotski, and Kamchatka areas sufficiently to permit staging through these areas alone approximately 1,000 long-range bomber aircraft in a single air operation against the U.S. This would probably be the maximum capability of the USSR in mid-1957.

32. In such a maximum effort against the continental U.S., even if refueling were employed and even though the forward bases were used for staging all aircraft, most of the aircraft would have to fly one-way missions in order to cover targets in various areas of the U.S. The Type 39 cannot reach the continental U.S. on a two-way mission from any of the Soviet forward base areas, even if refueled in flight. The TU-4 can only reach the Pacific Northwest area of the continental U.S. on a two-way mission from Soviet Siberian forward bases, even if refueled in flight. The Type 37, of which there will probably be 50 in operational units in mid-1957, has a substantial capability for two-way missions against the continental U.S., if refueled in flight, and could reach targets in any part of the U.S. except in the southeastern quarter of the country. On one-way missions, with inflight refueling, the TU-4 can reach targets in any part of the U.S. and the Type 39 can reach targets anywhere in the western and northeastern areas.*

* Maps in SNIE 11-7A-54, "Soviet Gross Capabilities for Attacks on the U.S. and Key Overseas Installations through 1 July 1957", at Annex B, illustrate in greater detail these capabilities of Soviet long-range aircraft.

33. Guided Missiles. The probable state of development of Soviet guided missiles is examined in detail in an agreed national intelligence estimate, which indicates that the USSR will not have an intercontinental guided missile in mid-1957.* It also indicates that, although the USSR can now have available an air-to-surface guided missile, the range of this missile would be so short for the next several years that the USSR probably would consider that nuclear weapons might be more effectively delivered directly by aircraft. The main types of guided missiles that could be available and sufficiently effective for Soviet offensive use in mid-1957, therefore, would be the improved V-1 missile, the subsonic turbojet pilotless aircraft, and the improved V-2 ballistic missile. All of these missiles are suitable for land-based use against U. S. forces and installations overseas. Either the improved V-1 or the pilotless aircraft also could be used for submarine-launched attacks on U. S. ports and coastal areas. These missiles could carry warheads accommodating small-yield or medium-yield nuclear weapons (up to 60 KT yield) by 1957, but their reliability to function properly is likely to be only 40-60 percent and the accuracy of all these missiles probably would be markedly inferior to that obtainable by either visual or radar bombing.

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* This analysis, based on agreed national intelligence, is drawn mainly from NIE 11-6-54, "Soviet Capabilities and Probable Programs in the Guided Missile Field", approved by the Director of Central Intelligence and the Intelligence Advisory Committee on 5 October 1954. NIE 11-6-54 is at Annex C.

The Problem of Strategic Warning*

34. From the Soviet point of view the achievement of surprise in initial attacks is complicated by the danger of giving the U. S. and its allies strategic warning of Soviet intentions.** Soviet leaders will be extremely apprehensive — probably more apprehensive than the actual facts would warrant — that the U. S. might discover Soviet preparations for attack [redacted] The normal Soviet deep suspicion of U. S. motives and intentions would almost certainly have increased as a result of the heightened tension bound to exist in mid-1957 in the event that circumstances seem to Soviet leaders to require them to go to war, as we are obliged to assume in this assessment.

35. We believe that a Soviet initiation of general war by attacks on the U. S., its allies, or key overseas installations would almost certainly be preceded by heightened political tension. While such tension would in itself constitute warning that war was becoming more likely, the indications of Soviet preparations which would probably

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* This analysis, based on agreed national intelligence, is drawn mainly from SNIE 11-8-54, "Probable Warning of Soviet Attack on the U.S. through mid-1957", approved by the Director of Central Intelligence and the Intelligence Advisory Committee on 14 September 1954. SNIE 11-8-54 is at Annex D.

** By "strategic" warning, we mean warning of enemy intentions received (through intelligence) before attacking forces reach the tactical defense system.

be obtained could be interpreted as evidence of preparations for defense or as part of a war of nerves. Therefore, Soviet behavior in a period of heightened political tension would not necessarily give specific warning of a Soviet intention to attack. Nevertheless, intelligence could probably give warning of the USSR's increasing war readiness and could probably chart the trend toward a period of maximum danger. This would almost certainly be true if, as we assume in this assessment, a major effort has been made to develop the bases, training and equipment of the Soviet long-range air force to a point where only minimum preparations would be required in advance of a large scale attack.

36. The USSR probably would sacrifice the advantages of full-scale mobilization, which would give the U. S. a generalized strategic warning as much as four to six months prior to D-day, and instead would begin the ground battle in Western Europe with only the forces currently stationed in East Germany. This ground battle would be planned to occur simultaneously or after the air attack on the continental U. S. and key overseas installations. Even so, the minimum preparations which the USSR would have to take to assemble its forces in East Germany in forward positions, to put them in a state of readiness to attack, and to provide support after the attack began would probably require about 15 days. We believe that warning of the probability of such attack could be given about one week in advance, but the period might vary from a few hours to as much as

10 days, depending on the seasonal patterns of Soviet military activity.

37. Soviet preparations to receive a retaliatory blow from allied air power would probably provide some indicators of Soviet attack. Minimum preparations would probably include the alerting of air defense forces and the civil defense organization, preparations of military units and installations for air defense, the dispatching of submarines to locate U. S. carrier forces, the evacuation of key personnel or even considerable segments of population from potential target areas, and some measures to increase Soviet ability to recuperate from nuclear blows. If these steps were taken, they would probably provide a warning period of as much as a week or 10 days, and, taken in conjunction with other indicators, would greatly increase the definiteness of any warning U. S. intelligence might be able to give.

38. Warning of the air attack on the continental U. S., if the forward base areas had already been improved as we must assume in this assessment, would depend almost entirely on indications of the staging of aircraft through the advanced bases. A reduced scale attack (50 - 100 aircraft) might stage through the forward bases with complete surprise, but preparation for a large-scale attack (500 - 1,000 aircraft) is likely to cause U. S. or allied intelligence to discover the movement of aircraft to the advanced bases. If U. S. or allied intelligence discover the movement of aircraft to the staging bases, warning of an impending attack could be given at least

six hours before take-off, or approximately twelve hours before attacking aircraft would reach any part of the U. S. and Allied tactical early warning radar screens. We believe this degree of warning would be almost certain if continuous radar, photographic, or other reconnaissance had been established within range of the Soviet forward air bases.

39. If U. S. overseas installations were to be attacked simultaneously, the additional preparations which would be necessary might not add significantly to the risks of detection. The long-range air arm would already be in a maximum condition of readiness and the readying of the IL-28 light bomber units for attacks on U. S. installations in Western Europe, the UK, and some parts of the Middle East, might be accomplished without serious additional risk of detection. Nevertheless, Soviet planners would have to reckon with the possibility that preparations for an all-out operation employing simultaneously around 2,000 bomb-carrying aircraft might give away the whole show.

40. The USSR would take great pains to compress warning time to the absolute minimum, but even so would probably in common prudence make the planning assumption that a large-scale attack on the U. S. and key U. S. overseas installations would afford the U. S. some strategic warning, ranging from a period of a few hours to several days, and would plan its attack accordingly.

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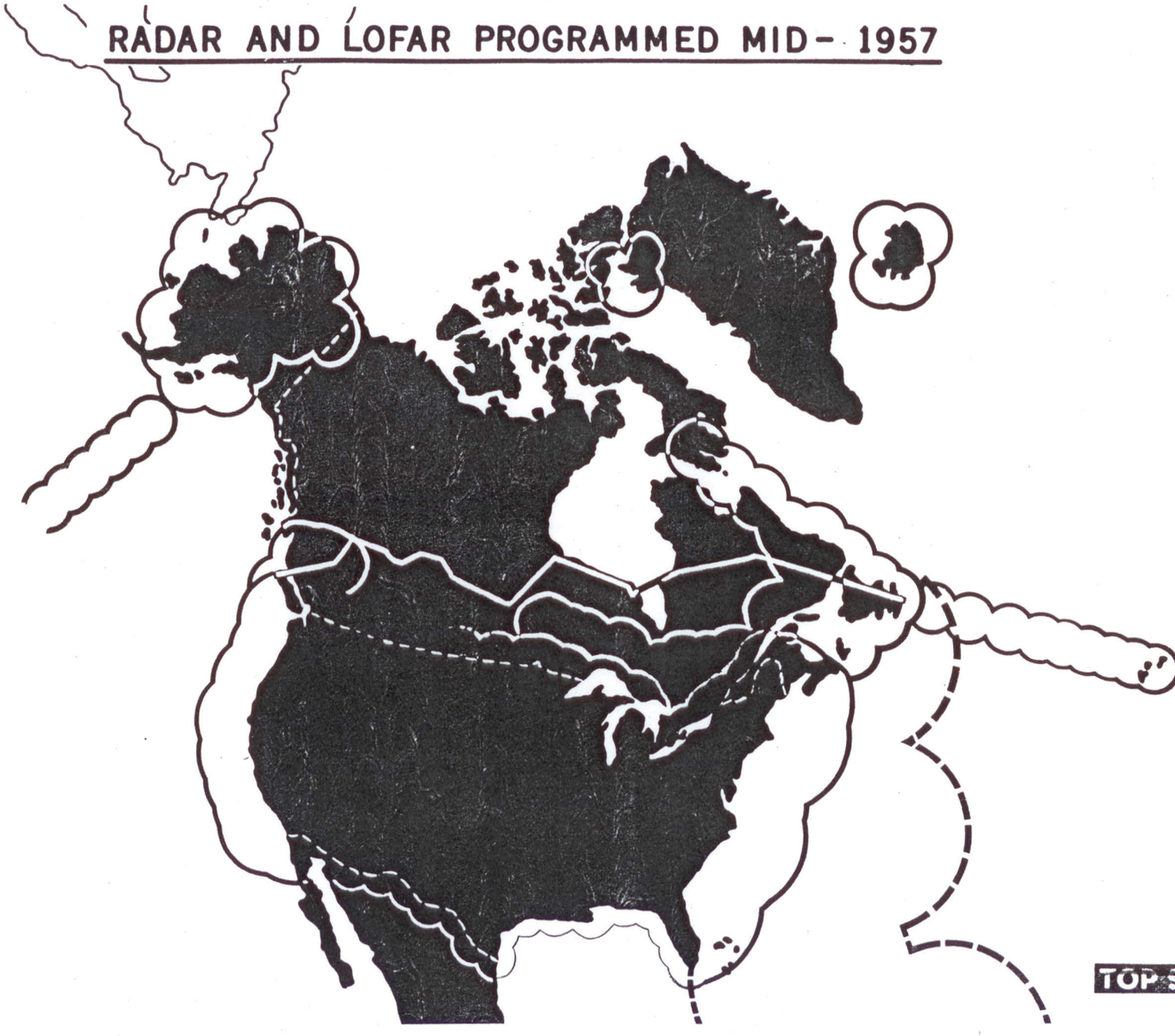
RADAR AND LOFAR PROGRAMMED MID - 1957



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Soviet Estimate of U. S. Defenses

41. Soviet leaders probably are able to get an accurate general impression of the character and effectiveness of the U. S. defense system from Soviet intelligence sources and from unclassified U. S. publications. Although they will probably not be confident of the completeness and precision of their evidence, Soviet planners probably would be aware of most of the developments affecting their chances of successful attack on the continental U. S. These U. S. defense developments programmed for the 1957 period and likely to be in effective operational use as of mid-1957, are examined in specific detail in a subsequent section of this assessment. In general they are the main elements of the U. S. defense system set forth in the Progress Report on the Status of Military Continental U. S. Defense Programs* and include (as of mid-1957):

a. A warning line across Central Canada (55°) and seaward extensions of airborne and shipborne warning radar, which together probably would give the U. S. early warning of an attack of any appreciable size when the bombers are about 750 nautical miles from U. S. borders. (This amounts to approximately one and one-half hours tactical warning of the approach of jet bombers to U. S. cities nearest the borders.)

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* Department of Defense Progress Report to the National Security Council on Status of Military Continental U.S. Defense Programs as of 1 June 1954, issued by the Office of the Secretary of Defense, 25 June 1954, at Annex E. See in particular Table of Defensive Forces, page 7, and Map of Radar Coverage, page 24, of that Report.

b. The U. S. land-based prime radar system, including the Canadian-U. S. Northeast Air Command system in the Newfoundland-Labrador area, which provides contiguous coverage for ground-controlled interception out to a distance of about 50 - 150 nautical miles (the distance depending on altitude of aircraft observed) from U. S. borders and/or the northeast Canadian shoreline.

c. The U. S. coastal radar barriers, composed of picket ships, Texas Towers, and airborne early warning and control aircraft, which extend contiguous coverage for ground-controlled interception about 300 miles seaward from the U. S. Atlantic and Pacific coasts.

d. An Alaskan land-based radar system, which provides contiguous coverage for early warning and ground-controlled interception out to a distance of about 50 - 150 nautical miles from the Alaskan shoreline (the distance depending on the altitude of aircraft observed).

e. U. S. Air Force fighter interceptor forces assigned the mission of defense of the continental U. S., which total roughly in the neighborhood of 60 to 70 squadrons and 1700 to 1800 aircraft, all of them jet aircraft, most of them all-weather interceptors, and a number of them armed with air-to-air guided missiles.

f. The U. S. Army anti-aircraft system, which — in addition to conventional gun batteries — includes approximately 60 battalions of surface-to-air guided missiles (NIKE I) capable of inflicting very high losses on aircraft flying between 5,000 and 60,000 feet altitude within ranges of 25 nautical miles from the 23 defended areas, which include the most important cities of the U. S. and several U. S. heavy-bomber bases.

g. An effective anti-submarine sound surveillance network of shore-based, deep-water acoustic listening stations (LOFAR) in the Atlantic coastal area (not in the Pacific in 1957), which provides a high probability of detection of diesel-driven snorkeling submarines out to ranges of 150 - 300 nautical miles.

42. In very general terms this continental U. S. defense system as of mid-1967 will appear to the USSR to be capable of inflicting heavy losses on aircraft attacking the continental U. S. at altitudes between about 5,000 and 45,000 feet. Mainly because of deficiencies of the standard radars used for search, ground-controlled interception, airborne interception and fire-control, the entire defense system is not nearly so efficient at very high altitudes (50,000 feet and above) or at very low altitudes (500 feet to 5,000 feet). At very high altitudes continuous tracking by search and control radar becomes difficult and interceptor aircraft performance becomes poor. At very low altitudes the range of search and control radar is severely limited by its "line of vision" characteristics and airborne radars

become increasingly ineffective because of "ground-clutter" or "sea-clutter" on the scope. Soviet planners are likely to know these general characteristics of the defense system, including the deficiencies of U. S. radars in operational use, through their intelligence sources, submarine reconnaissance of U. S. radar emissions, and Soviet experience with their own radar equipment. They may not, however, be certain that the U. S. does not have other undetected equipment that would overcome some of these deficiencies.

43. In overseas areas where there are key U. S. installations, Soviet planners would also know the general character of U. S. force deployments as well as local warning in defense systems as of mid-1957. They would anticipate much lower attrition in attacks against targets in these areas than against continental U. S. targets because of the much shorter distance from base to targets and the relatively lower state of development of local defenses.

Allocation of Nuclear Stockpile

44. Since the Soviet nuclear weapons stockpile is the main limiting factor in Soviet capabilities for military operations in mid-1957, the first step in Soviet planning for an attack on the U. S. probably would be an allocation of nuclear weapons to various areas of the world and various methods of attack. The objective would be to assign the maximum weight on targets in the continental

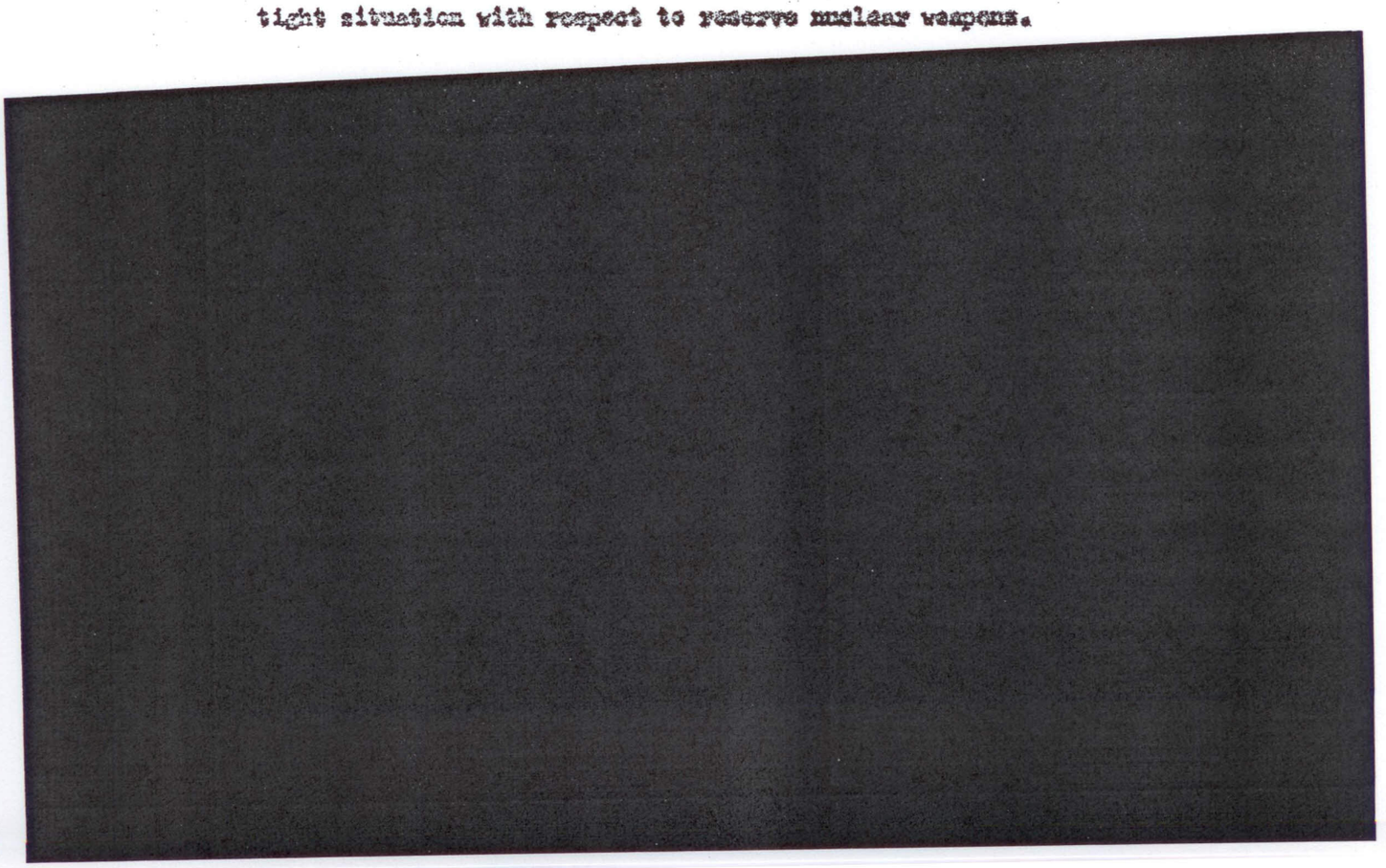
U. S. consistent with other essential requirements.

[redacted]

45. The initial general reserve established in this allocation would have to be kept very small, because Soviet leaders would realize that an early, devastating blow on the continental U. S. would be virtually the only hope of Soviet victory. The comparatively small number of nuclear weapons available to the USSR in mid-1957, coupled with the limitations of the Soviet air force, makes it appear likely that the Soviets would try to do the whole job at once — that is, to attack the U.S. retaliatory forces and the urban-industrial structure of the U.S. simultaneously. Accordingly, the Soviets probably would expend almost all their nuclear stockpile, other than a reserve, at the earliest possible time after the initiation of hostilities — that is to say, within a period of a very few days.

46. The USSR would consider it a military necessity, nevertheless, to preserve a small number of nuclear weapons for reattack on selected targets in case the margin of resistance either in the U.S. or in the Eurasian land battle seemed slim and military success might hinge on an actual military capability for limited reattack and/or the psychological warfare capability of giving the impression of reserve nuclear strength. The USSR would also feel it necessary to have a few weapons that could be expended on major urban industrial areas in Germany, France, Spain, Turkey, and Japan, for example, if necessary to give token backing to psychological warfare campaigns designed to neutralize these countries at an early stage of the war. A total of 80 weapons or 10 percent of the entire stockpile is probably an absolute minimum for these purposes.

47. This reserve would be supplemented by weapons recovered from aircraft which abort on long-range missions. Perhaps 50-80 percent of the aborting aircraft from the total long-range attack force could be recovered and — since a 20-25 percent abort rate is anticipated on such attacks — this recovery would provide a considerable additional reserve of nuclear weapons. The successful exploitation of this recovered reserve would, however, depend a great deal on whether or not the U.S. strategic air offensive succeeded in striking heavily at Soviet air bases and aircraft in the USSR and the Soviet Bloc generally during the first days of the war. Soviet planners, knowing as they must that the U.S. would try to launch such an offensive, might not rely on this recovery except as a bonus factor to make acceptable what would otherwise be a very tight situation with respect to reserve nuclear weapons.



[redacted]

49. The USSR would rely mainly on its ground, air, and naval forces — armed with conventional weapons — to neutralize U.S. installations and forces overseas. Some of these are of such high priority in terms of U.S. ability to continue to prosecute the war, however, and particularly in terms of U.S. ability to mount an early air offensive against the USSR, that D-day attack with nuclear weapons would be essential. We have examined a long list of U.S. overseas targets which the U.S. armed forces considered to be suitable for Soviet attack with nuclear weapons and conclude that a number of them, particularly pre-strike strategic air bases, are almost certain to be attacked by the USSR. [redacted]

[redacted] Even this number would be inadequate for the objectives of the overseas attack if they were not accompanied by very heavy air raids with conventional high explosive bombs.

50. Soviet planners probably might allocate some fissionable material for nuclear warheads of land-based guided missiles, particularly the improved V-2 type, to be used in the European land battle. In mid-1957 the USSR probably could have in limited operational use an improved V-2 ballistic missile capable of ranges up to about 900 nautical miles.* This missile would appear to offer the advantages of relative invulnerability to interception, all-weather capabilities, and the possibility of surprise attack. [redacted] The USSR is unlikely to be able to use larger field weapons as missile warheads in 1957. The functional reliability of such guided missiles would, however, probably be only about 50 percent and the probable aiming error would be such that any European target that could be attacked by land-based guided missiles could be attacked with much greater accuracy by IL-28's.

* For details of probable Soviet guided missile capabilities, see NIE 11-6-54, "Soviet Capabilities and Probable Programs in the Guided Missile Field", at Annex "C".

In view of the limited supply of nuclear weapons available to the USSR in mid-1957, this greater bombing accuracy of the IL-28's, plus the low functional reliability of the guided missile as of mid-1957, probably would outweigh in Soviet minds the advantages of large-scale use of guided missiles with nuclear warheads at least in the initial phases of the land battle.

51. On the other hand, the USSR might use turbojet pilotless aircraft (with a range of about 500 nautical miles and a guidance system effective up to 200 nautical miles) for launching from submarines against continental U.S. and overseas targets difficult to attack with piloted aircraft. We believe this method of attack would be sufficiently advantageous in 1957 to warrant Soviet allocation of a small amount of fissionable material for this purpose. Avoiding the Atlantic LOFAR area, Soviet submarines could attack critical U.S. military bases at Panama, in the Azores, Oahu, and Guam. They also could strike at ports on the Pacific coast of the U.S., such as Seattle and San Diego.

[redacted]

This portion of the nuclear stockpile

roughly delimits the maximum nuclear warfare effort which the USSR could afford to mount against the continental U.S. in air attacks or, alternatively, by clandestine means. The allocation of a small amount of fissionable material to clandestine blows and the allocation of the bulk of the stockpile (about 65 percent) to air attacks are based upon the following considerations concerning the clandestine delivery problems.

The Clandestine Attack*

[redacted]

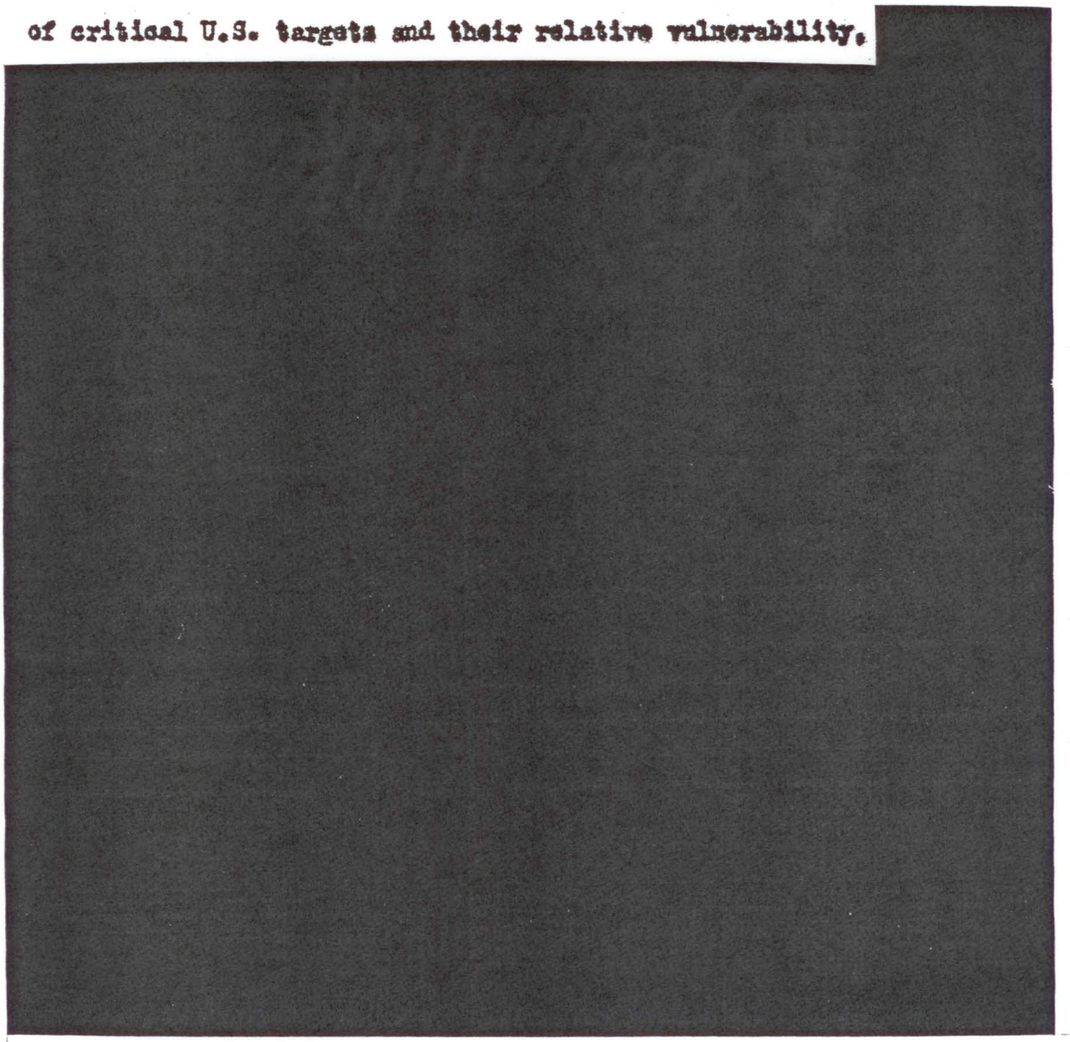
Pages 35-40 remain classified in full

[redacted]

Targets for Air Attack On the Continental U.S.

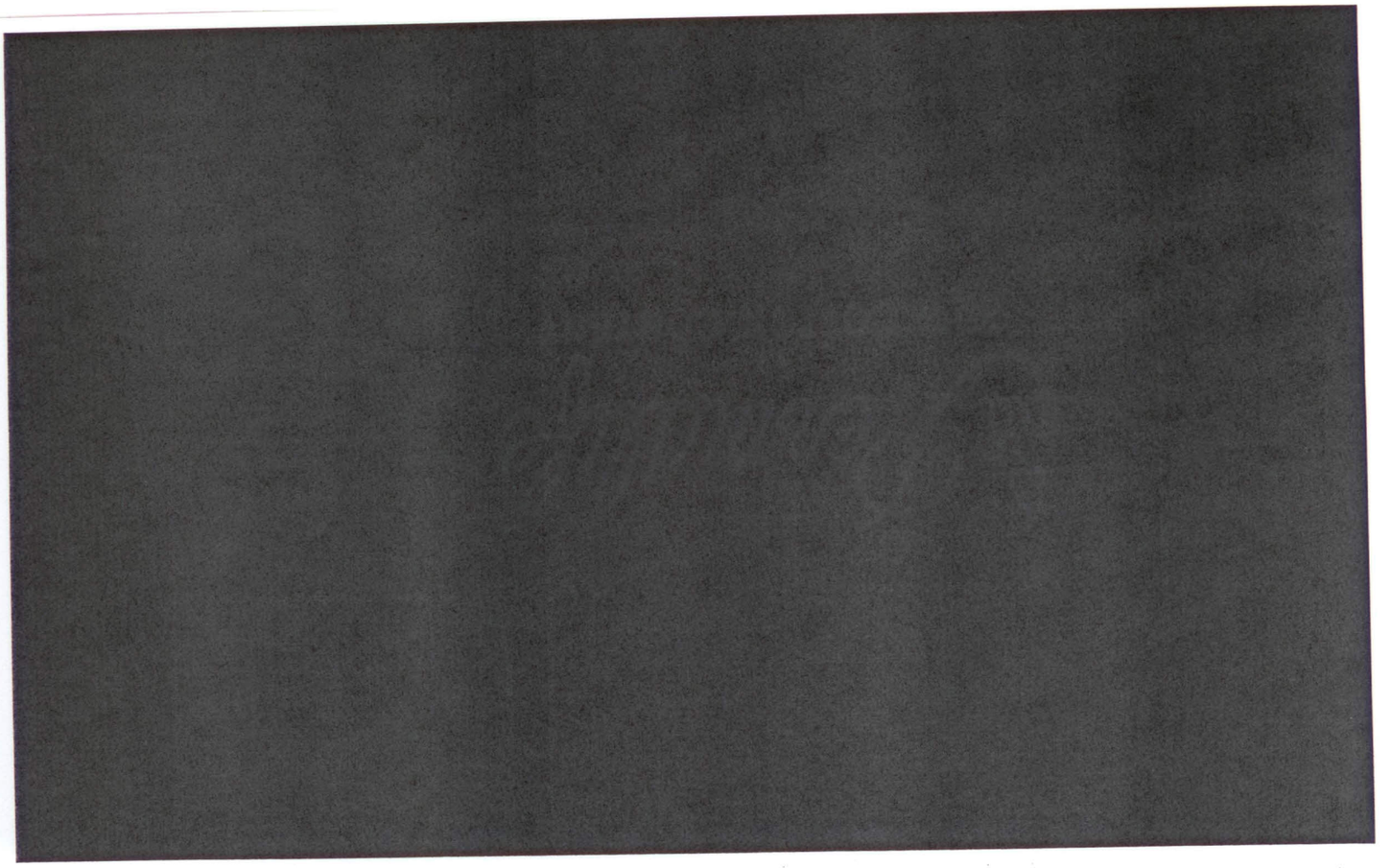
59. In planning the air attack on the continental U.S. in accordance with the strategic concepts described above, Soviet military planners would examine U.S. targets and target systems with

special attention to their relative importance to U.S. retaliatory capabilities and general U.S. war-making capacity, as well as their relative vulnerability to attack. We have examined detailed studies of critical U.S. targets and their relative vulnerability.



* These studies, at Annex H, include the following:
CDM Study, "Relative Vulnerability of Non-Military Target System in U.S. as of mid-1957", 13 August 1954.
FCDA Study, "Relative Vulnerability of U.S. Population Centers", 11 August 1954.
AEC Study, "Relative Vulnerability of Nuclear Energy Programs".
Military Staff Study, "Estimate of Likely and Alternate U.S. Industrial Targets and World-wide Military Targets", 7 September 1954.

Pages 43-52 remain classified in full



76. A state of high political tension in international affairs is implicit in any situation that would force the USSR to go to war in mid-1957 contrary to basic Soviet strategic interests, and many indications should have been received of increases in Soviet readiness for war that would necessarily have occurred if the USSR had developed its forward air bases and long-range air force to the point of undertaking attacks on the U. S.** In these circumstances, we believe

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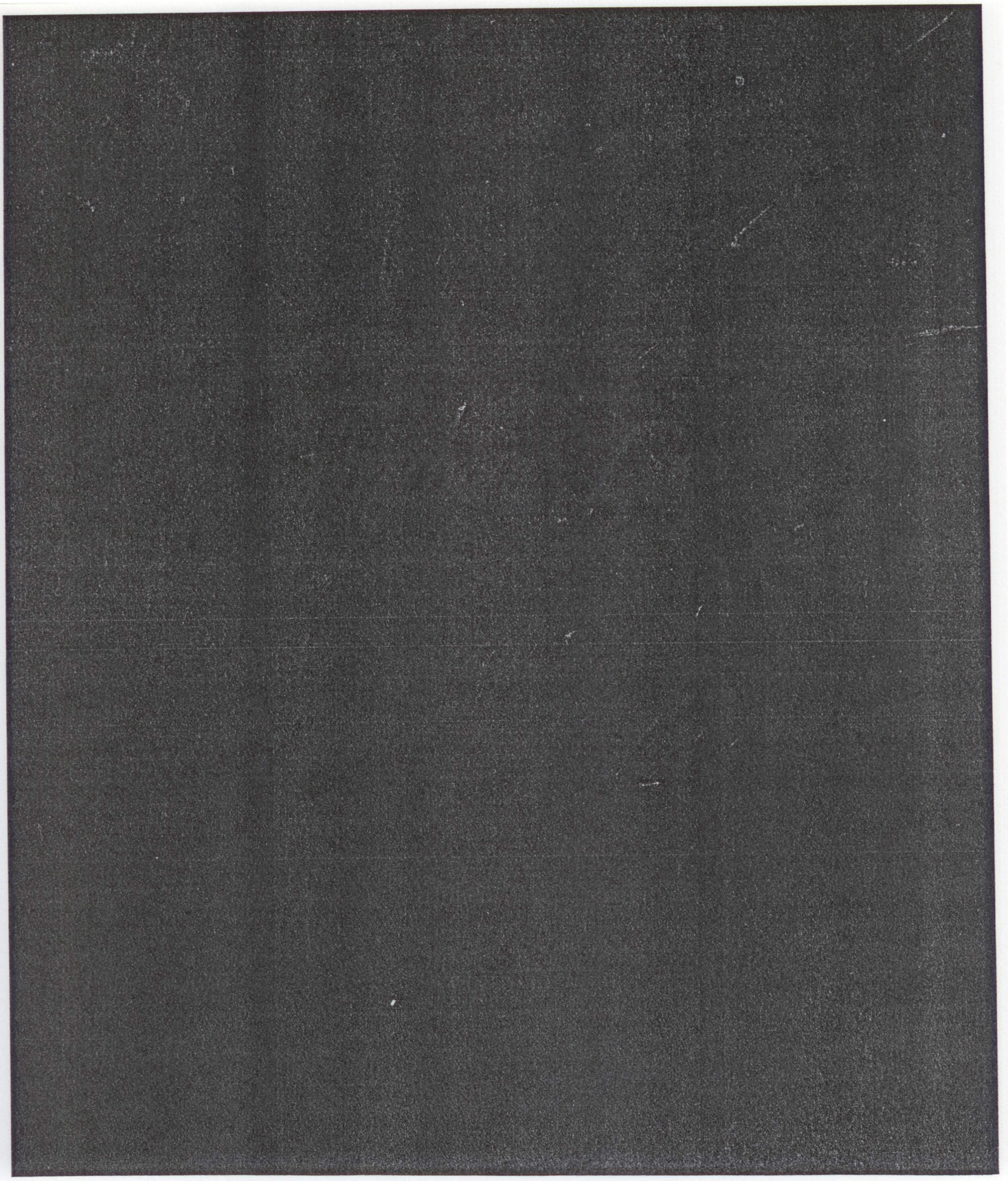
* On the vulnerability of U. S. carrier task forces, see Military staff study attached to Appendix I.

** These points are established in agreed national intelligence estimates. See NIE 11-4-54, "Soviet Capabilities and Probable Courses of Action through mid-1959" at Annex A; and SNIE 11-8-54, "Probable Warning of Soviet Attack on the U. S. through mid-1957" at Annex D.

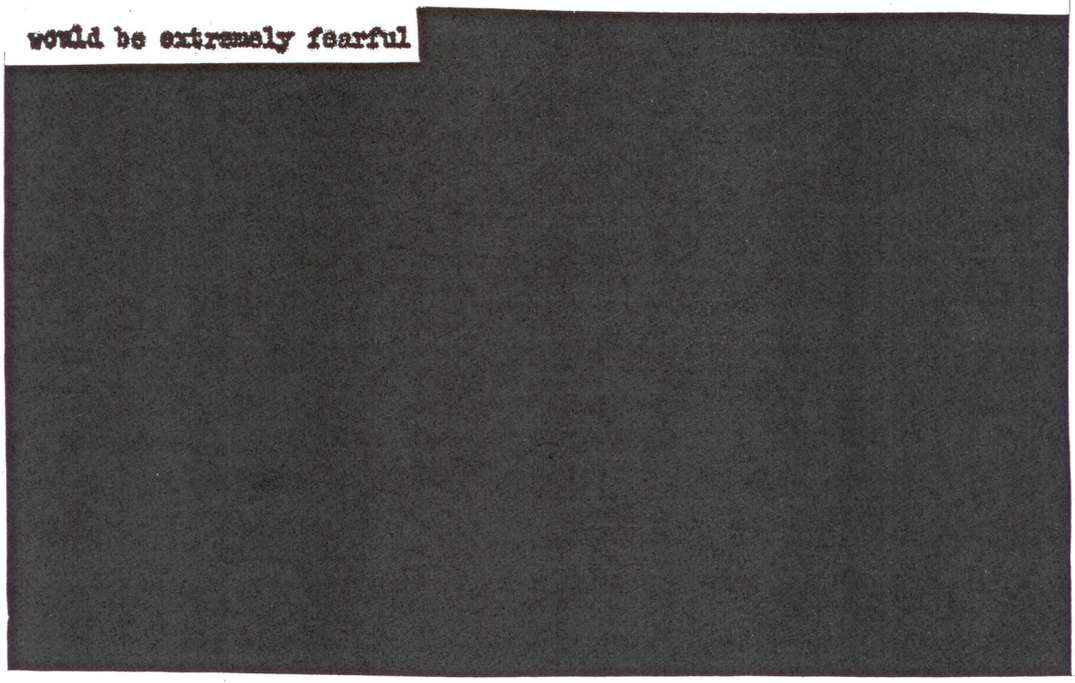


[redacted]

78. This Soviet requirement of getting the attack off promptly is complicated by additional factors, namely the difficulties of marshalling, coordinating and launching a global attack involving several thousand aircraft, and the danger of premature disclosure of intent. After a long period of intensive preparation and training, Soviet planners could probably count on staging large numbers of aircraft through the forward bases in the Kola, Chukotski, and Kamchatka areas with considerable precision. Nevertheless, if the movement of the aircraft were detected by U. S. or allied intelligence when they left home bases, the U. S. would receive a minimum of about 6 hours warning before take-off time, or 12 hours before the first aircraft off would reach the U. S. radar screen. We believe Soviet planners would consider this amount of warning to be the minimum, since they could expect some timing errors, or operations and communications failures in any large-scale movement through the forward base areas. They would also realize that a well-balanced strike pattern of attack

against the widely-dispersed key targets in the continental U. S., employing aircraft with such different speeds as those of the TU-4 and the Soviet jet bombers, would require some staggering of take-off time if the raids are to arrive at times reasonably close to one another. Moreover, Soviet leaders would assume U. S. intelligence to be in a partial state of alert as a result of indications of increasing Soviet readiness for war and to be conducting continuous radar, photographic, and other reconnaissance around the Soviet periphery.

79. In consequence of these factors, we believe Soviet leaders would be extremely fearful



80. This situation confronts Soviet planners with a dilemma. They would like to launch their main attack on the continental U. S.

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* This estimate is based on SM-357-54, "Study on the Reduction of Soviet Air Offensive Capabilities by U. S. and Allied Counter-Air Action", 28 September 1954, at Annex I.

and hold up the attack overseas in order to let the main attack get as much tactical surprise as the continental U. S. radar system allows. In so doing, however, Soviet planners would add some 8 or 10 hours — the minimum flying time from Soviet bases to continental U. S. targets — to the period during which the U. S. might react and launch a counterattack that would catch on the ground the entire Soviet bomber and tactical air force designated to attack U. S. overseas installations.

81. The alternative solution would be to start the war with attacks on U. S. bases overseas, [redacted] If the main attack on the continental U. S. were launched within about 6 hours of the initial attacks overseas, Soviet planners could be reasonably sure of getting the main elements of their whole attack under way before U. S. counteroffensive could interfere. The disadvantage of this plan would be that U. S. defenses would be fully alerted (about 10 hours definite warning of hostilities) when the long-range force reached the continental U. S.

82. Since reduction of the initial attacks on the USSR and particularly on its main strategic air striking force would be the top priority Soviet objective and since the mid-Canada early warning line and its seaward extensions provide considerable tactical warning for most of the continental U. S. in any case, we believe the USSR in 1957 would adopt the second alternative method of timing Soviet attacks. This would mean that the USSR would ready its entire force for massive

air blows and then would initiate its offensive, hitting overseas targets initially and continental U. S. targets about 10 hours later. Attrition on the continental U. S. attacks would almost certainly be higher than if a "sneak" attack on the U. S. were attempted, but the main blow would be sure of getting off intact, and the large numbers of aircraft essential for raids on overseas targets would not run the risk of being caught on the ground. Furthermore, we believe this course of action would be in keeping with Soviet military doctrine and the habits of mind of Soviet leaders.*

The Small "Sneak" Attack

83. There is one way in which the USSR might attempt to escape the timing dilemma described above rather than accepting it and choosing the course of action we have indicated as probable. This way would be to launch a comparatively small number (50 to 100) of bombers against the continental U. S. in the first wave of the attack. Soviet planners might calculate that the movement of such a number would be unlikely to alert U. S. or allied intelligence and that chances would be excellent for this first wave to stage, take off, and reach the continental U. S. radar line without being detected. The preparation of forces for the overseas attack and a heavier main attack on the continental U. S. could begin as soon as the first wave

* See R. Garthoff, Soviet Military Doctrine. It is worth noting that up to now Soviet military doctrine, probably under the influence of Stalin's personal views, has heavily discounted surprise as a decisive factor in war and labelled it only "transitory" in effect. Also see N. Leites, Operational Code of the Politburo.

was on its way, and the overseas attack could be launched just prior to the time that the first wave hit the U. S. contiguous radar system.

84. If a "sneak" attack of this sort were reasonably sure of destroying most of SAC forces, we think the USSR would take the calculated risk of launching it. As indicated above, (paragraphs 70-74) Soviet planners probably would not rely on achieving such a high level of destruction and would be much concerned about the counterattack capabilities of the remaining SAC forces, particularly those overseas and in the carrier task forces at sea. This "sneak" plan would add enormously to the risks that would be involved in holding back the overseas attack by also holding back the main attack. While a "sneak" plan would call for getting the main attack forces staged to and through the forward bases before the earliest possible time of the beginning of a U. S. air counteroffensive, this would require a very tight schedule and constitute an operational problem of exceptional difficulty. If by chance the "sneak" force were detected shortly after take-off by U. S. or allied reconnaissance aircraft, reconnaissance submarines at sea, or other sources of warning near the flight path, there would be a period of at least a few hours during which U. S. air forces from the closest U. S. or allied bases could catch on the ground both the Soviet aircraft assigned to the overseas attack and the main element of the long-range bomber force. The threat from Alaska and the U. S. carrier task forces would be especially critical. Soviet planners would be

reasonably sure that a great part of the "sneak" effort would get through. [redacted]

85. We cannot exclude the possibility that Soviet leaders would run this risk and adopt the "sneak" attack as a preliminary to their main attack on the U. S. This would probably be the case if Soviet leaders considered that the U. S. would not react to early reports of the "sneak" force or would be unable to arrive at any quick decision as to possible counteraction. If they should adopt this plan, there is no way of predicting the success or failure of the operation since the outcome would depend mainly on the degree of alertness of U. S. intelligence and air counteroffensive forces at the time of the attack. At the best, from the Soviet point of view, a "sneak" attack might get through to the radar warning lines undetected and do more damage to SAC forces on the ground than the USSR could hope to do under conditions of a much longer alert. In other respects the damage done by 100 aircraft used in a "sneak" attack would be about the same as if the same number of aircraft were used as part of a more massive attack. The defenses might be

less fully alerted in a "sneak" attack than in a mass attack, but this situation would be partly offset by the fact that the defense system as a whole would be much less thoroughly saturated.

86. At the worst from the Soviet point of view, premature detection of Soviet intentions might bring a disaster of the first magnitude for the Soviet air forces, a disaster that would virtually eliminate Soviet chances of winning the war. We believe the USSR would be unwilling to gamble for such high stakes in this way in mid-1957 and is more likely, as explained above, to take the safe course of attacking U. S. overseas targets first.

A Plan of Attack on U. S. Overseas Forces and Installations

87. If Soviet planners adopt the course of action (in respect to timing) that we have outlined (paragraphs 81 and 82), the USSR will initiate hostilities with a large-scale attack on U. S. and allied overseas bases, facilities, and forces around the world.* They would reach nearby targets with little or no tactical warning.

[redacted] The aircraft would mainly be IL-28 jet light bombers, but some TU-4's would be used in order to reach the more distant overseas targets and guided missiles with nuclear warheads

* This plan of overseas attack is based in part on Army, Navy and Air Force studies of "Possible Soviet Methods of Attack" provided by the JCS in SM-858-54, 28 September 1954, and similar Service studies of "Vulnerability of Overseas Target Systems to Soviet Attack", SM-751-54, 24 August 1954. These studies are at Annex J.

would be launched from submarines against military installations at Panama, Oahu, Guam, and the Azores.

88. The timing of the overseas attack almost certainly would be adjusted to give the most favorable circumstances for the continental U. S. attack — as much of which as possible should arrive at night. We believe that 2000 (Z) Greenwich mean time would be the most likely time for bombs to fall on the closest overseas targets, which include those in the UK, Alaska, Western Europe (except Spain), the Near East, and the Far East. Most of these attacks would occur at dusk (Western Europe), about dawn (Far East), or in the morning (Alaska). It would be dark in Central Europe and most of Eurasia. The time of these first bombs on target, 2000 Z, we have called H-hour to simplify reference to other events, particularly the main air attack on the continental U. S., which would not occur until about 9 hours later (H + 9), when it would be dark in the U. S. The initial overseas strikes according to this plan would occur as follows:

(a) Aircraft from Soviet Bloc bases in Europe would attack targets in the UK and Western Europe (except Spain) at H-hour, which would be 2000 local time in the UK and 2100 local time in most of Western Europe.

(b) Aircraft from the Chukotski area would attack targets in Alaska at H-hour, which would be 1000 the same morning, local time.

(c) Aircraft from the Vladivostok area would attack targets in Japan and Okinawa at H-hour, which would be 0500 the next morning, local time.

(d) Aircraft from bases in the Southern Ukraine, the Caucasus, and the Ashkhabad area, would attack targets in the Middle East, the Persian Gulf, and Karachi area at H-hour, which would range from 2200 to 0130 local times.

(e) Aircraft from Soviet Bloc bases in Europe would attack targets in Spain and Northwest Africa at between H + 1 and H + 2, which would be 2200 or 2300 in Spain and 2100 or 2200 in North Africa.

(f) Aircraft from the Kola area would attack targets in the Northeast Atlantic area (Northeastern Canada, Greenland, and Iceland) shortly after attacks on the continental U. S. in anticipation of finding SAC aircraft staging through intermediate SAC bases in these areas, perhaps about H + 12, which would be 0400 or 0500 the following morning local time.

89. The nuclear weapons available for the overseas attack, as limited by the allocation of fissionable material described above (paragraphs 46-52), would permit only the highest priority overseas installations to be hit with nuclear weapons and even these, for the most part, only with small-yield (5 KT) weapons. The targets to which nuclear weapons delivered by air would be assigned include 5 U. S. air bases in the UK, 5 U. S. air bases in North Africa and the Middle East plus the Port Lyautey naval air facility, 5 U. S. air bases in the Northeast Atlantic area, 4 U. S. air bases in Alaska, 4 port and logistic support complexes in Europe, certain U. S. troop concentrations in Germany, and 3 U. S. base installations in the Far East. The total number of nuclear weapons allocated to overseas air attacks would be approximately 50 medium-yield (60 KT) and 150 small-yield (5 KT). In addition, the attack would include submarine-launching of about 15 guided missiles with medium-yield (60 KT) nuclear warheads.

90. In order to saturate U. S. and allied defenses overseas and to strike at a wide range of key U. S. installations which could not be hit with the nuclear weapons available, mass attacks by aircraft carrying conventional bombs would occur in addition to the strikes with nuclear weapons. The total air attack would require a force of about 2000 IL-28's, plus nearly 200 TU-4's for the overseas targets more distant from Soviet Bloc bases. Of this number only about 200 aircraft would carry nuclear weapons. The detailed list of approximately 120 U. S. overseas targets of critical military importance is attached as Appendix I, "The Overseas Attack". The general pattern of this attack is shown on the map, "Pattern of Attack, World-wide", facing paragraph 99.

91. The initial Soviet air attack on key U. S. installations overseas would be accompanied by air attacks on the prime military targets, ports, and industrial cities in the UK, using the stockpile of nuclear weapons reserved for this purpose. The USSR would also initiate a political and psychological warfare campaign to induce other allies of the U. S. not to fight and to prevent U. S. forces from using their territories. This campaign would include threats of nuclear attacks against the major cities of these countries, such as France, Spain, the Scandinavian countries, and Japan, and expenditure of a few nuclear weapons from the general reserve might be necessary for this purpose early in the war. Since the UK battle and the political warfare effort are not included in the subjects we

have been directed to study, these campaigns are not further examined in this assessment.

*92. As quickly as possible the USSR would also begin the land battle for Western Europe, using the Soviet ground and air forces previously in place in East Germany, and the Soviet maritime campaign, mainly in the first phase of the attack, employing submarines and naval aircraft to destroy U. S. and allied shipping and lay mines in European ports and sea lanes. The advance of the ground armies, the results of tactical air battles, and the development of the maritime campaign are not examined further in this assessment, since their decisive phases are unlikely to be reached in the period we have been directed to study, that is, the period during which most of the Soviet stockpile of nuclear weapons would be expended. According to our analysis of the 1957 situation, this period would include only the first few days of the war. The overseas attack would also be accompanied by widespread attempts at clandestine attack and sabotage (with conventional weapons), particularly at U. S. forward air bases. Some of these attempts undoubtedly would be successful, but we have not been able to measure the probable scale of success or the damage inflicted, and we therefore do not further examine the clandestine attack overseas.

A Plan for High-Altitude Attack on Targets in the Continental U. S.

93. We believe that one way which the USSR might try to overcome the obstacle presented by the U. S. defense system, if war comes in

* On this and related paragraphs, see IIC comments and the Subcommittee remarks thereon, at Appendix IV.

mid-1957, would be to exploit Soviet capabilities for penetrating the U. S. defenses at very high altitudes.

94. Soviet planners would realize that they could not in any case deliver an effective air blow against the continental U. S. without recourse to one-way missions. In the circumstances in which Soviet leaders are likely to have found themselves compelled to resort to war contrary to their basic strategic intentions, it would be necessary for Soviet military leaders to induce practically all of their long-range bomber crews to accept missions from which there would be very little chance of return. We think that, in order to preserve crew morale, encourage efficient performance over the target, and reduce voluntary or semi-voluntary aborts, the USSR would allow its aircraft about one hour fuel reserve at the target and instruct the crews to try to land in Mexico, Canada, or in designated areas at sea where submarine pickups would be attempted. Actually, however, the aircraft and crews dispatched to the continental U. S. would be considered by Soviet planners as expended, except for some aborts and a few crews that might be picked up at sea. Wholesale resort to one-way missions, while it would be an extreme measure, would be the only way in which the USSR could hope to win a war in 1957, and we believe that Soviet leaders would not hesitate to adopt such a policy if they decided war was necessary in that year.

95. In these circumstances the USSR would be able to extend the performance of its aircraft, particularly its new jet bombers, to

maximum ranges and altitudes. The Type-37 could arrive over target at about 55,000 feet on one-way missions, but there would be so few of these aircraft available that they would for the most part have to fly in formations with Type-39's and probably for their own protection would fly at the maximum altitude for the Type-39, which -- on one-way missions -- would be about 50,000 feet.

96. Under this plan of attack, we believe Soviet planners would allocate most of its high-speed, high-altitude aircraft to high priority urban targets and SAC bases in the industrial northeastern portion of the U. S. and, in smaller numbers, to the northwestern part of the country. Since all the Type-39's would have to be refueled to reach targets in the Atlantic and northeastern area, a major refueling effort would be involved. The most distant targets would be attacked by TU-4's.

97. The number of aircraft on the forward Soviet bases in this plan of attack would be about 900, of which approximately 775 would be mission aircraft and the remainder tankers. This number is nearly the maximum the bases would accommodate. An additional number of tankers sufficient to refuel the mission aircraft requiring it -- about 300 tankers -- would take off from rear bases, overfly the forward bases, refuel mission aircraft about 500 miles out, and return to the forward bases after the strike aircraft had left. Since many of the mission aircraft would only need additional fuel adequate for one or two hours flying time in order to reach target, it would be possible -- although operationally difficult -- to use a single tanker to refuel more than

one aircraft in some cases and it would not be necessary to refuel at the optimum point for range extension. We have calculated that the USSR would allow one tanker per mission aircraft refueled, which should give a generous margin of safety for aborts by tankers or operational failures and still extend the ranges of some 425 mission aircraft sufficiently to bring each of them over its designated target in the continental U. S. with about one hour's fuel reserve.

98. The mission aircraft would include about 40 Type-37's, which would be all of the 50 estimated to be in operational units in 1957 that would be serviceable after movement from home bases to forward bases, 470 Type-39's, very nearly all of the 650 jet medium bombers that would be serviceable in the same circumstances, and 255 TU-4's.* Approximately 10 Type-37's, 180 Type-39's, and over 400 TU-4's would remain in the Soviet long-range air force, and only TU-4's would be immediately available in numbers for other operations.

99. Of the mission aircraft, approximately 65 would take off from the Kamchatka area, 210 from the Chukotski area, and 490 from the Kola-Leningrad area. The targets, the number of aircraft assigned to each, and other details of the attack, are set forth in Appendix II, "The High Altitude Attack on the Continental U. S.". The general pattern

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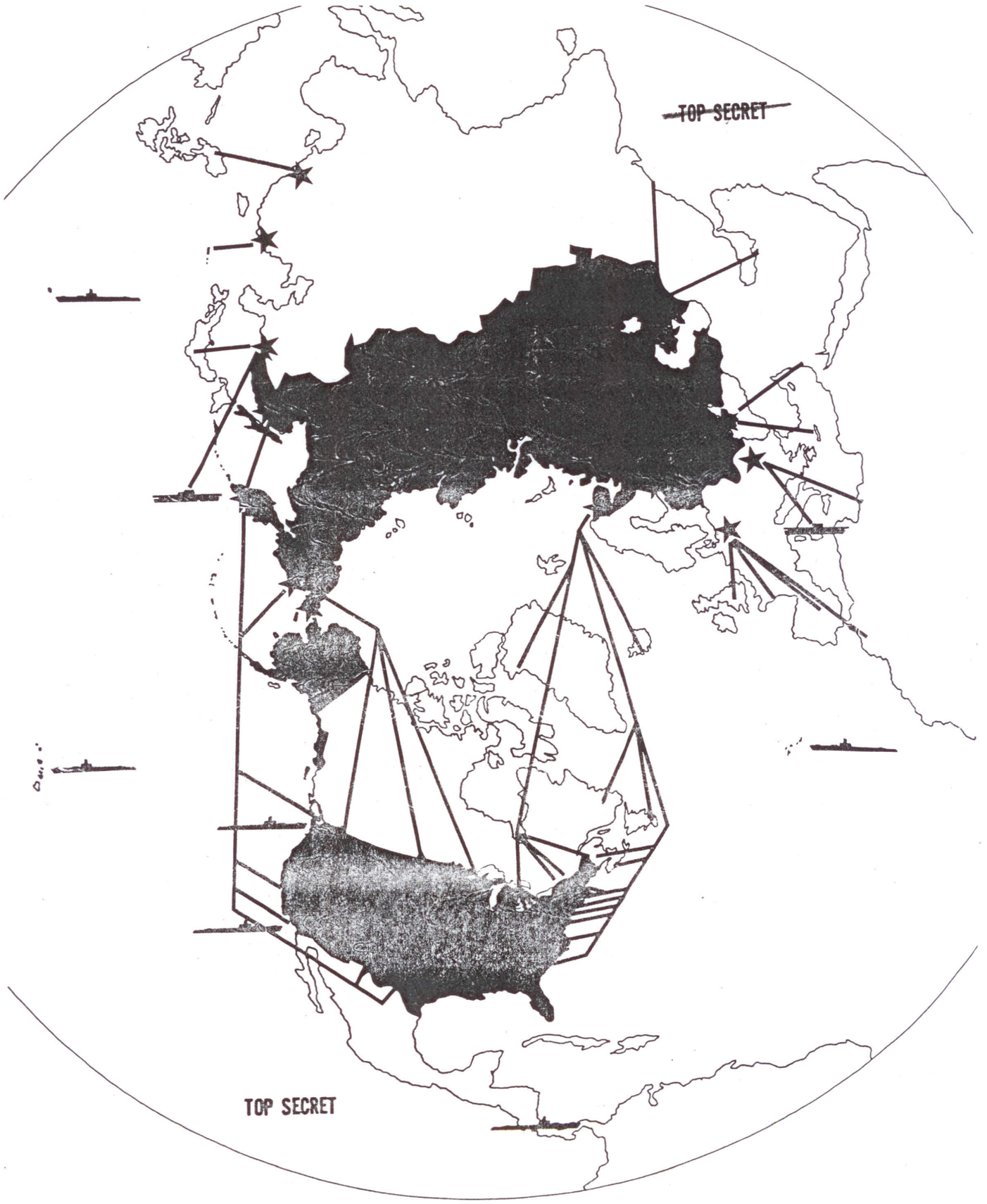
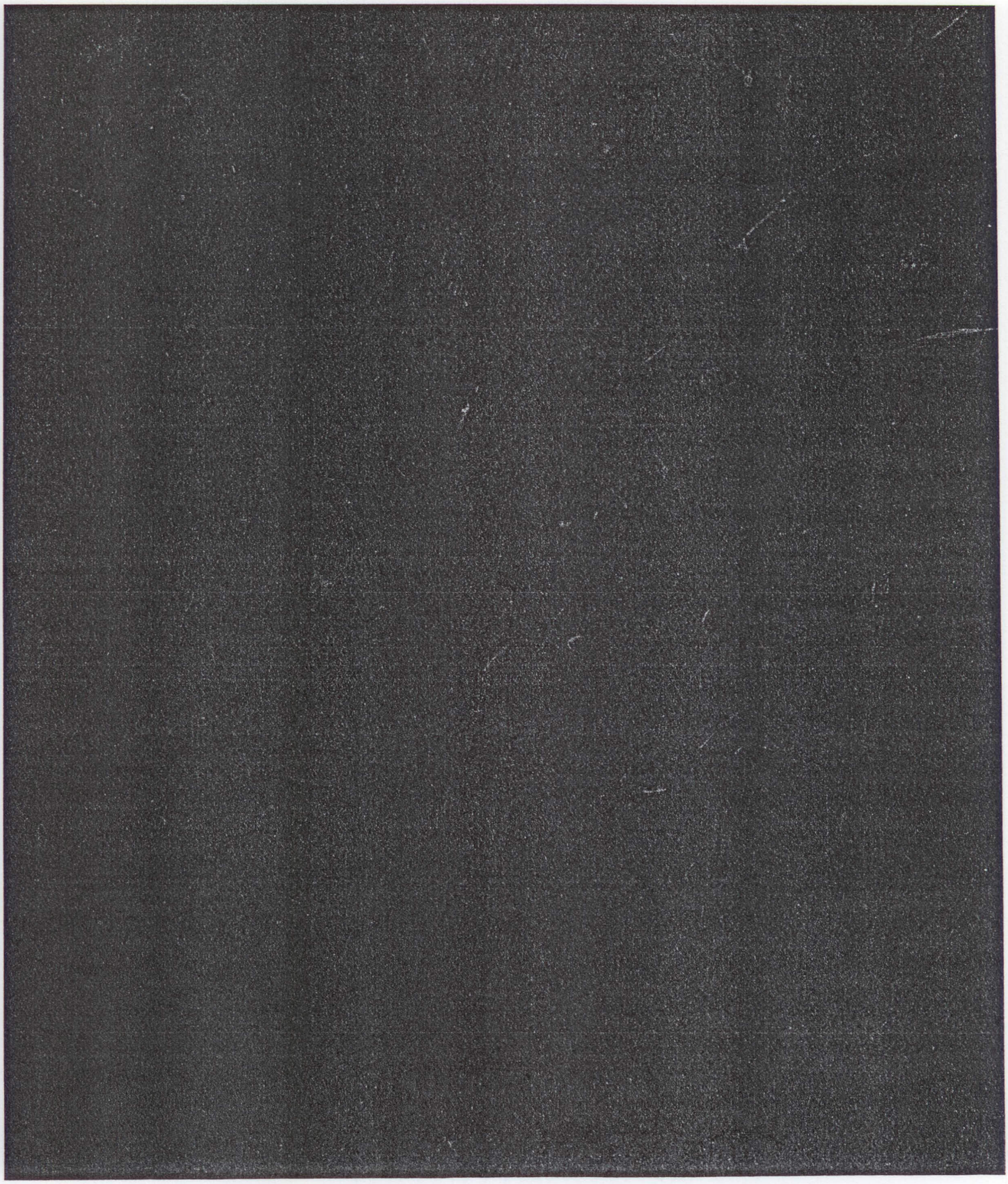
* For this assessment, it was assumed that all mission aircraft staged through the forward Soviet bases. In accordance with estimates contained in SNIE 11-7A-54, "Soviet Gross Capabilities for Attacks on the U. S. and Key Overseas Installations through 1 July 1957", at Annex B, this involves deducting 10 per cent of the force for unserviceable aircraft and operational losses at home bases, and 15 per cent for similar reasons at the forward bases where maintenance would be more difficult.

PATTERN OF ATTACK - WORLD WIDE



of this attack is indicated on the map, "Pattern of Attack, World-wide", facing this page. In general terms, the bulk of the attack, including about 625 aircraft would be assigned targets [redacted] designated for attack, about 100 aircraft would be assigned SAC bases as targets, and about 50 aircraft would be assigned to attack [redacted] installations.

100. The major portion of the attack would be planned for simultaneous penetration at night of the U. S. contiguous radar system and the mid-Canada line by all jet aircraft and by the TU-4's crossing through the Southern Canada line to hit St. Louis and Paducah. Other attacks penetrate with TU-4's over the ocean areas after the jet attacks. The time differences would be necessary due to the comparatively slow speed of the TU-4 aircraft and the necessity for avoiding delay in launching the high-speed jet aircraft. If over-all simultaneous attacks were planned, time-spread between the take-off of the first and the last plane launched from the forward bases would be as much as 17 hours between the TU-4's going to Altus Air Force Base in Oklahoma and the Type-39's going to Fairchild Air Force Base in the state of Washington. The present attack has a ten hour take-off spread, which is much greater than Soviet planners would wish, but no radar barriers would be crossed before H-hour. TU-4's from Kola, taking off at H minus 6 for the southeastern United States, would only be nearing the coast of Greenland northwest of Iceland at H-hour.

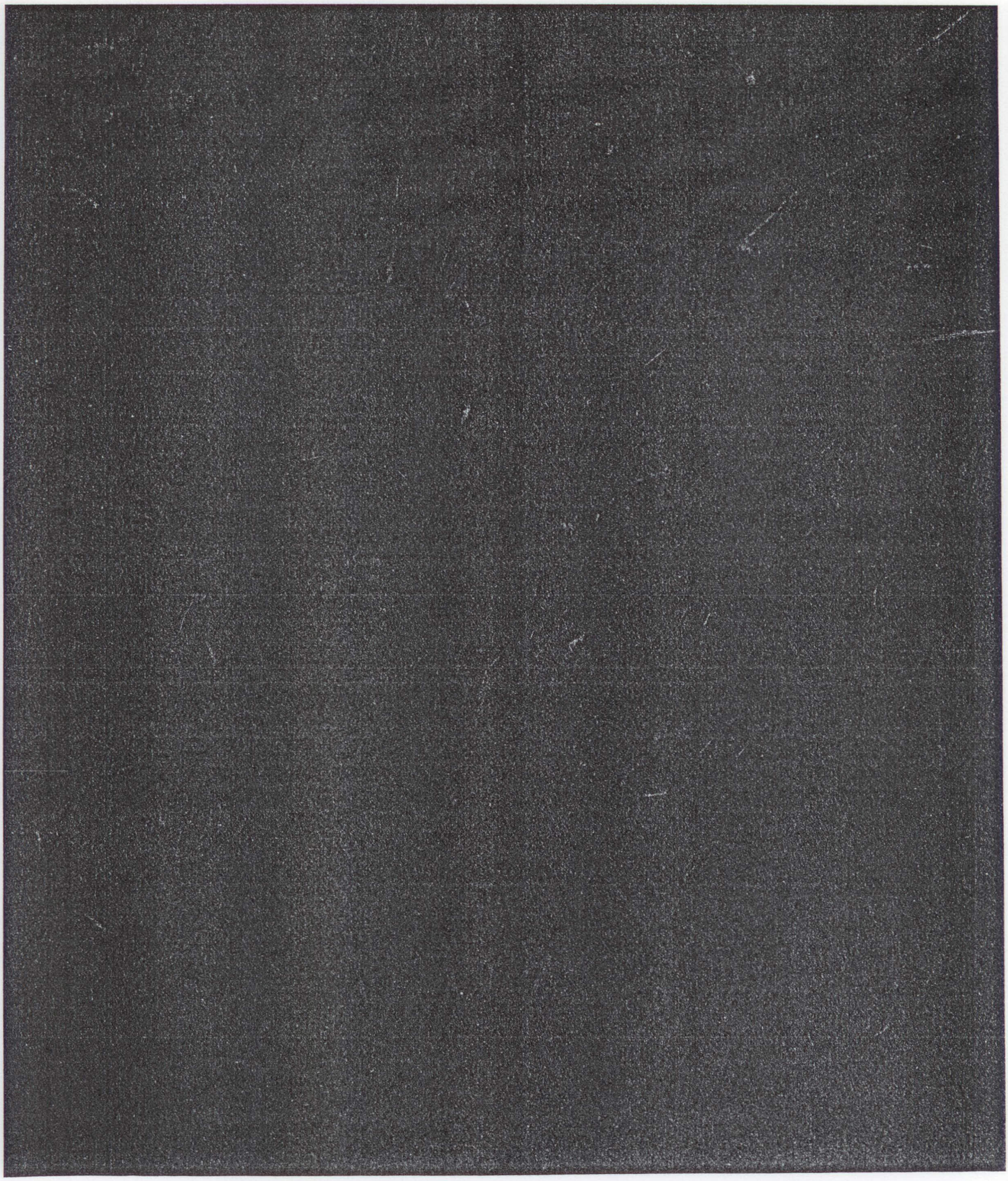


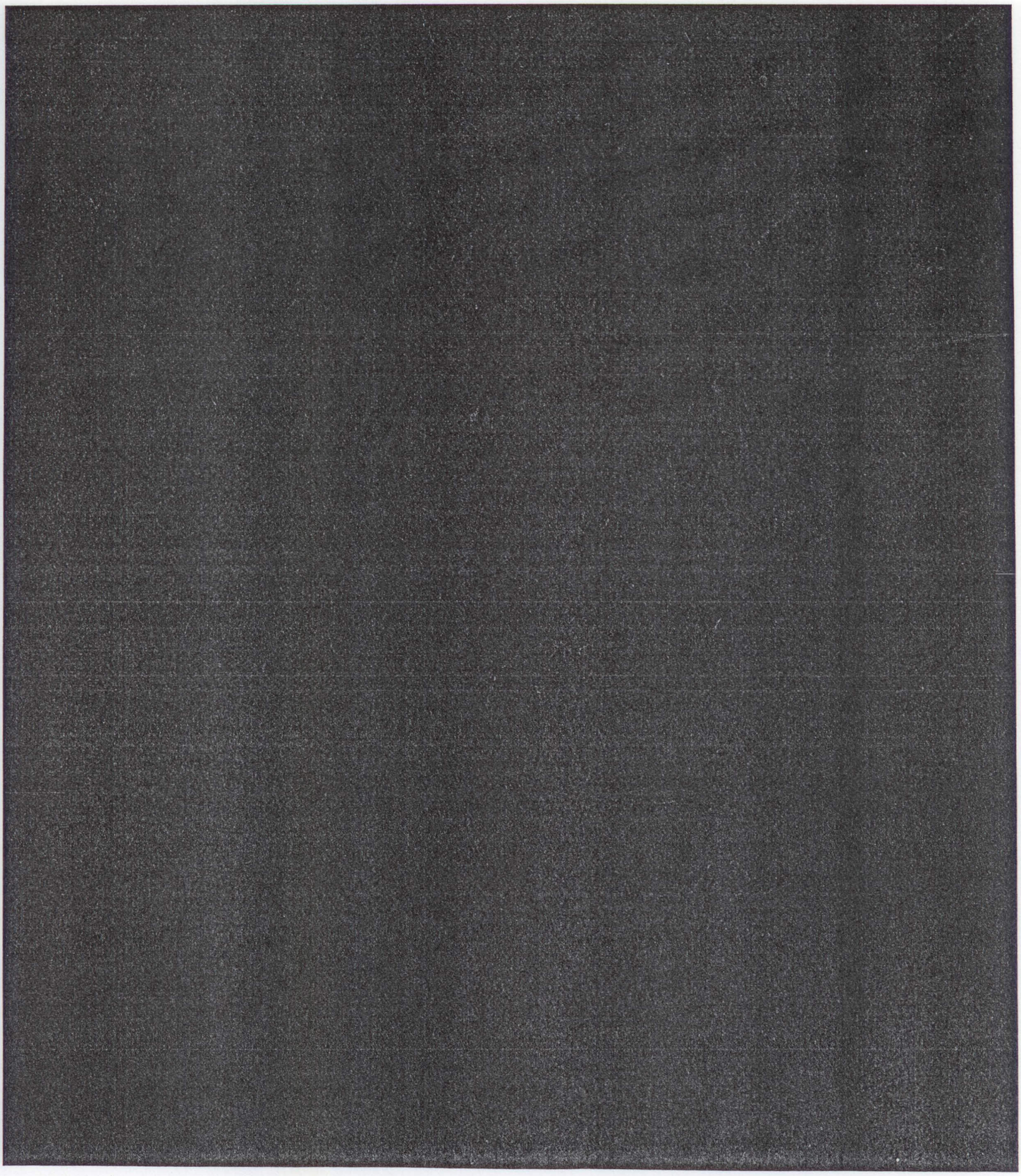
102. The USSR would, if it could, use large-yield nuclear weapons in the attacks on U. S. metropolitan areas. Multi-megaton bombs probably will be available for Soviet use in 1957, and we believe the USSR by that time would have a weapon yielding in the neighborhood of 10 MT.

[redacted]

103. In a high-altitude attack, however, the anticipated attrition would be so great that it would be prohibitive for the USSR to use multi-megaton weapons against more than a few major targets.

[redacted]





107. An attack based on this plan would, in our opinion, be a desperate gamble on the part of the USSR, involving the loss of most of the Soviet long-range air force in the first blows of the war. Such a war, however, might well be effectively decided — though not necessarily ended — in the first days, and the USSR might attempt an attack of this sort in the belief that the U. S. system of government and society could not stand up under the heavy damage that probably could be inflicted on the U. S. in an attack of this magnitude. This plan would not represent the way in which Soviet planners would wish to initiate a war but represents one way in which they might try to win it if they felt compelled to fight in mid-1957.

A Plan for Low-Altitude Attack on Targets in the Continental U. S.

108. If Soviet planners are aware of some of the critical deficiencies in the U. S. defense system, we believe they are likely to consider the probable costs of a high-altitude attack too great and develop a plan for striking the continental U. S. at minimum altitudes. This approach would sacrifice the advantages of "over-weather" flying and easier navigation, and would call for additional refueling of jet aircraft, since they would burn up about four times as much fuel while flying at very low altitudes as at optimum altitudes. Since lower attrition could be anticipated, a somewhat smaller number of mission aircraft would be required, and adequate tanker forces would be available for the refueling operation.

109. The key to the low-altitude attack would be the flight profile, which would call for most of the mission being flown at optimum cruising altitude, a rapid descent upon reaching the outer limits of the U. S. contiguous search and control radar system, an approach to target from that point on at minimum altitudes (below 1,000 feet over the sea and 2,000 feet over land), a rapid climb beginning between 5 to 10 minutes flying time away from targets (perhaps even less for jet aircraft), and bomb-release at the minimum safe altitude for delivering medium-yield (60 KT) weapons set for ground burst — which would be about 5,000 feet.*

110. The entire attack could be scheduled to arrive over targets at night, when U. S. aircraft might find it impossible to intercept bombers at very low levels, if (a) TU-4's are used for the closer targets and all the overland approaches, (b) Type-39 jet bombers are refueled for the intermediate targets and sea approaches (where the shortest periods of low-level flight are required), and (c) Type-37's, refueled, are used for the long-haul targets in the southwestern and south central U. S. regions.

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* A plan of attack involving TU-4's (the closest Soviet aircraft to be used) against New York (the largest metropolitan area to be attacked) indicates that as many as 60 aircraft could drop their bombs from about 5,000 feet in less than one minute and escape from the area. For this plan and a similar plan for jet aircraft, see Memorandum, HQ, USAF, 8 October 1954 and Memorandum, HQ, USAF, 20 October 1954, at Annex L

111. This use of the Type-39 would require low-level flight (and extraordinary fuel consumption) only for the relatively short time — not much more than a half hour — that it would take at 450 knots to travel to targets from the outer edge of the U. S. contiguous radar system on either coast. Refueling the mission aircraft flying the more extreme ranges could take place at optimum distances from forward Soviet bases, since fewer aircraft would be necessary in this attack and all tankers could operate from the forward bases. Approximately 100 Type-39's, attacking the more distant targets assigned to that type aircraft, could reach their targets only by special fuel conservation techniques and the elimination of nearly all fuel reserve.

112. As in the case of a high-altitude attack, under this plan all aircraft would be dispatched on one-way missions in order to permit optimum coverage of targets in various areas of the U. S. In view of the use of a large number of Type-39 jet medium bombers, a major refueling effort would be involved.

113. The number of aircraft which we believe Soviet planners would launch in an attack of this kind would be approximately 800 — of which about 515 would be mission aircraft and remainder tankers — and all of them would operate from the forward bases.* This force would represent

* This total is not quite as large as but very close in size to the scale of attack indicated in SNIE 11-7A-54 as most probable in mid-1957, and is well within the estimated capacity of the Soviet forward bases as they could be developed by 1957. SNIE 11-7A-54, "Soviet Gross Capabilities for Attacks on the U. S. and Key Overseas Installations through 1 July 1957" is at Annex B.

only a little more than one-third of Soviet long-range air strength and would leave the USSR a much more substantial reserve for reattack and other purposes.

114. The mission aircraft would include about 25 Type-37's, which would be all that would be required for the most distant targets, about 220 Type-39's, and 270 TU-4's. Approximately 25 Type-37's, over 400 Type-39's, and over 400 TU-4's would remain in the Soviet long-range air force. At least 600 of these should be immediately available for other operations, not counting those unserviceable as a result of staging operation.*

115. Of the mission aircraft, approximately 210 would take off from the Chukotski-Kamchatka area and 385 from the Kola-Leningrad area. In this attack some of the jet aircraft could be refueled and reach targets on the U. S. West Coast from bases in the Soviet Maritime Provinces. This would reduce the time spread on take-off and reduce the load on the Siberian forward bases. The only aircraft taking off from the Kamchatka base area would be about 35 Type-39's assigned to strike [redacted] set forth in Appendix III, "The Low Altitude Attack on the Continental U. S." The general pattern of this attack, which is approximately

* See footnote to paragraph 98 concerning the method of assessing serviceability in movements from home and forward bases.

the same as under the high altitude plan, is indicated on the map, "Pattern of Attack - World-wide", facing paragraph ~~100~~ 99. In general terms, the bulk of the attack, including about 450 aircraft, would be assigned targets in the [redacted] about 45 aircraft would be assigned to SAC bases as targets, and about 20 aircraft would be assigned to attack nuclear energy installations.

116. The entire force in this attack could be launched within a period of about 7 hours. As in the case of the other plan, the launchings would be keyed in with the delivery of the first bombs on targets in the overseas attack, H-hour (2200 local time, Kola, or 0800 in the Chukotski area). The first aircraft off, the relatively slow TU-4's, would take off about H minus 4, and launchings from the forward bases would continue at intervals thereafter until H + 3. All aircraft would arrive over targets between midnight and dawn of the following morning, local time. The general pattern of attack would be as follows:

(a) Jet aircraft from the Kola area attacking East Coast targets over the sea approaches would be the first ones to arrive. They would require 6 1/2 or 8 hours flying time to their targets and would reach their targets about midnight, Eastern Standard time.

(b) The TU-4 bombers launched from the Kola area against targets in the industrial north central section of the U. S. would approach over Canada and would require about 13 hours flying time. These aircraft would be the first to take off, at H minus 4, and would arrive about 0500.

(c) The TU-4 bombers from the Chukotski area attacking targets in the central and northwest sections of the U. S. would approach over Canada and would reach targets after from 11 to 15 hours flying time.

(d) The Type-39 bombers attacking West Coast targets from the Soviet Maritime Provinces [redacted] from the Kamchatka area would take only a little more than 8 hours flying time and would therefore not leave until H + 3, the last departure time, in order to be able to arrive after dark.

(e) The Type-37 bombers from the Soviet Maritime Provinces attacking targets in the southwest and south central U. S. over the sea and Mexico would require about 11 or 12 hours flying time and would arrive at targets between midnight and 0200, local time.

117. In view of the impossibility of using multi-megaton nuclear weapons in low-altitude attacks, all aircraft in this attack would carry medium-yield (60 KT) weapons. In the absence of any chance of delivery of a multi-megaton weapon or of a fall-out bonus -- except from the weapon detonated by clandestine means in Washington -- the USSR would wish to use medium-yield weapons consistently and hit each metropolitan area heavily rather than adding small-yield weapons to the attack. This consideration, in view of the limited stockpile of nuclear weapons available, would be the controlling factor in holding the number of mission aircraft to about 500 rather than making the maximum effort visualized in the high-altitude attack.

118. In addition, each aircraft would carry the ECM passive receivers described above in the high-altitude attack plan (paragraph 104), so that they could enter the radar defense system at the optimum points en route to target. The USSR might, of course, also use considerable numbers of individual aircraft carrying special ECM equipment as in the other plan of attack. Since we are not sure how

such special aircraft could be used in coordination with the low-level approach, however, we have not included a major ECM effort as part of this plan.

119. This plan of attack, like the high-altitude plan described above, would include the launching of guided missiles on the U. S. Pacific Coast at H-hour (1200 Pacific Coast time) and would be accompanied by the clandestine attacks, also outlined previously.

120. This low-altitude plan of attack, if successfully executed, would probably insure a great deal more damage to the continental U. S. than the one previously analyzed, and although it is operationally much more difficult, we believe the USSR might select this method of attack if Soviet leaders felt compelled to initiate hostilities in mid-1957.

PART II: U. S. DEFENSIVE CAPABILITIES

The U. S. Air Defense System in Mid-1957

121. In calculating the probable success or failure of Soviet attacks on the U. S. and key U. S. overseas installations, we have tried to develop realistic, authoritative estimates of the availability of U. S. defense weapons as of mid-1957 and their probable performance characteristics as of that time. For the overseas installations, our calculations reflect the best information currently available to the Joint Chiefs of Staff as to armed forces deployment as of 1957 and the probable effectiveness of local air defense systems at that time.

For the continental U. S., we have relied mainly on the Department of Defense Progress Report already cited as at Annex E, but have checked critical factors in this area with the appropriate responsible military commands or authorities.

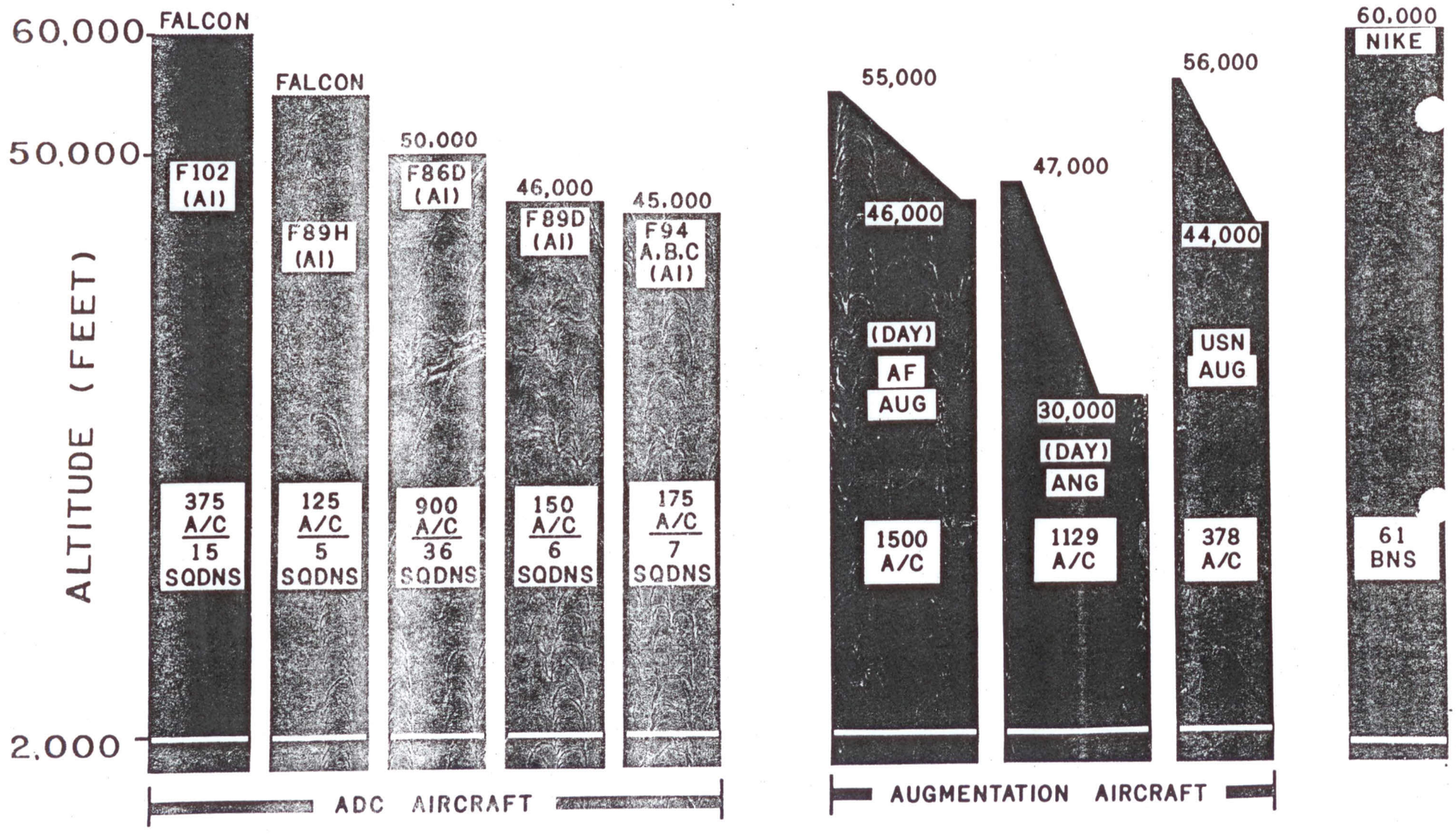
122. The continental U. S. defense system will be as described above (para. 48) and, as we pointed out, will be generally understood by Soviet planners. We have excluded from consideration in this assessment the Distant Early Warning (DEW) line in the Canadian far north, which might conceivably be installed by mid-1957 but which cannot in our opinion be considered a firm program at this time.

123. We have accepted the availability of the mid-Canada early warning line and its seaward extensions as fully operational by mid-1957, with the exception of the Pacific (Alaska to Hawaii) line, which will probably be only one half complete (extending 1,000 miles south from Alaska) with respect to shipborne radar and one third complete with respect to airborne radar. Under normal conditions the mid-Canada line and the Atlantic seaward extension would give a very high degree of probability of detection of aircraft passage (approximately 80 per cent for a single aircraft). The Pacific seaward extension would be a little less effective in the areas it covers, due to the fact that it would not have its full complement of airborne early warning aircraft.

124. The contiguous radar system has been evaluated as having the following performance characteristics:

a. Geographically the ground-controlled intercept radar

MAX. AND MIN. FIGHTING ALTITUDES AND OPERATIONAL SQUADRONS



coverage at 50,000 feet will extend approximately 250 nautical miles seaward off the West Coast, 350 nautical miles off the East Coast, 140 nautical miles north into Canada, and 100 nautical miles south of the southern U. S. border.

b. Radar ranges:

(1)	AEW&C Aircraft	- 150 n.m. at 50,000 feet 120 n.m. at low level
(2)	Texas Towers	- 120 n.m. at 50,000 feet 50 n.m. at low level
(3)	Picket Vessels	- 175 n.m. at 30-35,000 feet 50 n.m. at low level
(4)	Gap Filler Radar	- 50 n.m. at low level

125. In view of the strategic warning probably available and the certainty of 9 - 12 hours warning available in the continental U. S. as a result of our decision that the USSR would attack overseas first, all continental U. S. defense forces are considered to be in the highest state of alert when air attacks arrive. Continental Air Defense Command experience indicates that at any given time a certain number of aircraft would not be operational or would abort, and we have used the factor based on this experience, which indicates that 18 aircraft per squadron (of 25 assigned) would be available under these conditions.

126. The interceptor aircraft programmed for the fourth quarter of FY 1967, consisting of F-102's, F-86D's, F-89's (D's and H's), and F-94 C's totalling 69 squadrons, were considered available for

air defense, except that the F-102, which will be coming into operational use in the 1957 period, was considered to be operational in only 15 squadrons, 8 of which would be fully combat-ready. These forces would be augmented with Air National Guard, Tactical Air Force, SAC fighter squadrons, Navy, and Marine forces as presently planned, and they would be supplemented by the Canadian air forces. All of these forces are listed, with their planned base-deployment, in Tables of the War-Game Analysis prepared for us by a Continental Air Defense Command team of operations analysts. This Analysis is at Annex H.

127. With respect to F-102 availability and performance, as well as other critical weapon performance capabilities, we have adopted the estimates given us by Headquarters, U. S. Air Force in a special memorandum on the air defense system as of 1957.* This source provides the basis for three factors which are critical in calculating the probable high-altitude effectiveness of the defense system as of mid-1957:

a. The ground-controlled intercept radar stations responsible for major target areas and for most of the rest of the defense system will probably be capable of performing their functions at altitudes up to 58,000 feet with a high degree of reliability.

b. The F-102 probably will be able to operate and fight effectively at an altitude of 52,500 feet.

c. The F-102 (and the F-89H) will be armed with the FALCON

* HQ, USAF, memorandum, "Requirement for Information Concerning the 1957 Air Defense System," 10 September 1954, at Annex H.

guided air rocket, which has a relatively high kill probability and which (according to current preliminary estimates of a new launching technique) can be used against targets at altitudes up to about 10,000 feet above the altitude of the launching aircraft.

128. The NIKE-I battalions and the defended areas in which they probably will be installed as of mid-1957 are set forth in Table 2 of the War-game Analysis at Annex M. The defended areas include [redacted] For the most part, there is more than one battalion for each defended area, and there are four batteries capable of firing independently in each battalion.

War-gaming Analysis

129. The calculation of the kill effectiveness of the NIKE missile is based on factors developed by the Army Anti-Aircraft Command of the Air Defense Command from theoretical analysis, controlled experiments, and limited field testing. The process of calculation is described in Section 2 of the War-game Analysis at Annex M. In very general terms, it is based on the probability that every five or six NIKE missiles fired at attacking aircraft would on the average destroy one aircraft. This probability is about one-half what the weapons system itself is considered capable of achieving under ideal circumstances by mid-1957. The lower probability factor was used to allow for the

adverse effect of such things as electronic countermeasures, fire-control errors, failures in operational readiness, and errors of operating personnel. The effectiveness of the NIKE weapons system varies, of course, with the time of fire and would therefore be less for low altitude attacks.

130. The war-gaming technique for analyzing probable attrition of attacking aircraft due to interception in the air is much more complex and reflects a great deal more operational experience than was available for the NIKE calculations. The Continental Air Defense Command team of operations analysts, working under our direction and with guidance from the military services, charted the air battle and estimated probable deployment and allocation of defensive aircraft to individual hypothetical strikes by attacking aircraft. Every effort was made to hypothesize a realistic defensive situation and determine probable defensive actions on the basis of information that would be available to the defense forces in the circumstances visualized. Once the critical factor of the probable fighter-bomber ratio in each area is established in this way, the course of the ensuing air battles was reduced to quantitative factors expressing available time and normal probability for every stage in the continuous process of detection, interception, and kill of attacking aircraft. Every effort was made to assign quantitative values to these factors in a realistic way, allowing for reductions in effectiveness of the various elements in the defense system as a result of the operational situations as analyzed for each air strike. This process is described in detail in

the War-game Analysis at Annex M.

Critical Deficiencies

131. A critical deficiency of the air defenses of the U. S. that impressed itself upon us in our analysis is the apparent inability of the U. S. radar system at present to produce the results needed to defeat an enemy attack at very low altitude. Every function performed by the air defense system is affected. The presently installed search (surveillance) radar sets can detect aircraft at very low altitudes only at an unacceptably short range, because of limitations inherent in "line of vision" characteristics. The presently installed ground-controlled intercept radar is similarly limited in range and as a result is likely to have insufficient time to bring about the interception and destruction of enemy aircraft attacking at very low altitude. Airborne search and control radar is also seriously deficient in its ability to track a very low altitude aircraft because of its inability to discriminate a moving aircraft from the "clutter" partially obscuring its radar scope with reflections from the uneven surface of the ground or the water at sea. The current Ground Observer Corps represents an effort to remedy certain features of these deficiencies.

132. Interceptor aircraft are even more critically affected by this deficiency of radar at low altitudes than other elements of the defense system. Airborne radar installed in U. S. all-weather fighters is unable to function effectively below about 1,000 feet over the sea

or about 2,000 feet over the land because it cannot discriminate a moving aircraft at these altitudes from the ground or sea "clutter" depicted on the radar scope. Accordingly, any interceptor aircraft that has to rely upon its airborne radar fire control system as it must at night or in bad weather is unable to intercept or to engage an enemy at very low altitudes except by pure chance. Moreover, as a result of the limitations of presently installed search and control radar on the ground, day fighters and all-weather fighters operating in good weather in daylight cannot be adequately directed from the ground and probably are therefore also restricted to chance interception. Finally, due to similar radar limitations, the kill effectiveness of NIKE is critically reduced in defensive efforts against very low-flying aircraft.

133. At the other end of the altitude scale, we feel it necessary to point out the probability that Soviet capabilities to attack at extremely high altitudes may progressively improve, in the face of possible lack of capability of our radar system to operate effectively at these altitudes.

134. We realize that these deficiencies are known to responsible defense agencies and commands, and we are aware that efforts to remedy them are in process. Nevertheless, in our judgment, current programs and projects probably will not adequately remedy these deficiencies by as early as mid-1957.

135. These deficiencies put a high premium on low-altitude night attacks. We have examined the status of projects now under way for developing AMTI (Airborne Moving Target Indicator) equipment, which could discriminate a moving target by screening out ground and sea "clutter", and have concluded that such equipment is unlikely to be available as of mid-1957 under currently approved programs. Similarly, low-frequency search and control radar, which might considerably increase the range and certainty of detecting and tracking low-level aircraft, is also unlikely to be available under currently approved programs. These two factors are critical in our calculation of the results of a low-altitude attack on the continental U. S.

Probable Weight of the Attacks Delivered by Air

136. In calculating the net weight of weapons that might actually be delivered on target in the various possible Soviet air attacks previously discussed, we have deducted from the forces launched for each target the number of aircraft that probably would abort or fail to reach targets for reasons other than combat, using the agreed national intelligence factor of 20 percent for unrefueled mission aircraft and 25 percent for refueled mission aircraft. From the remaining forces, assumed to be the number actually attacking each defended area, we have deducted the number of aircraft indicated in the war game as probably destroyed -- first -- by U. S. intercepting fighters and -- second -- by NIKE and other anti-aircraft batteries. It is important to recognize that these figures represent mathematical probabilities only, and the actual situation might vary considerably

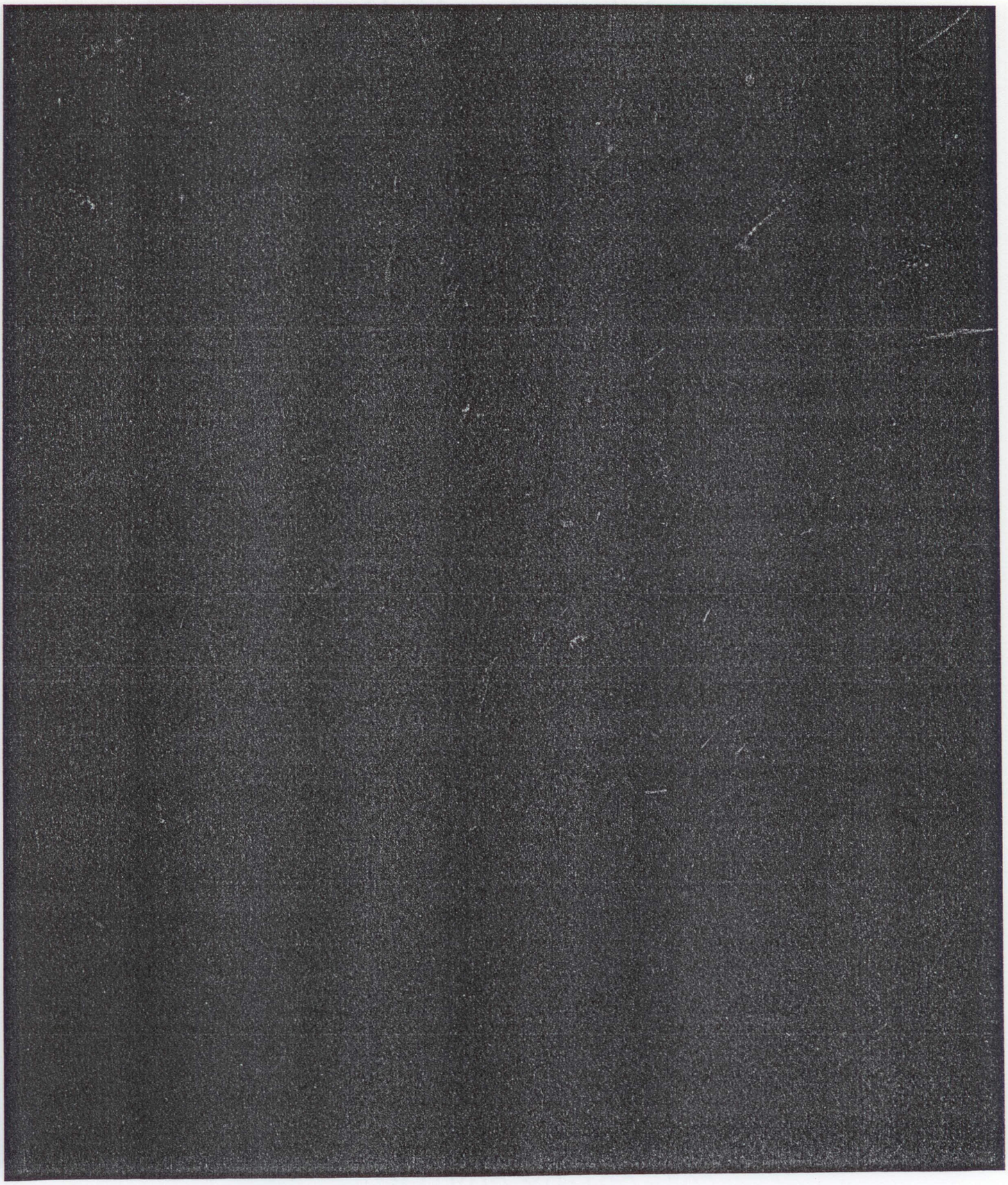
in either direction in any one case. Nevertheless, general as it is, this process represents the most sophisticated analysis we were able to make of probable attrition in Soviet air attacks on the continental U. S. as of mid-1957.

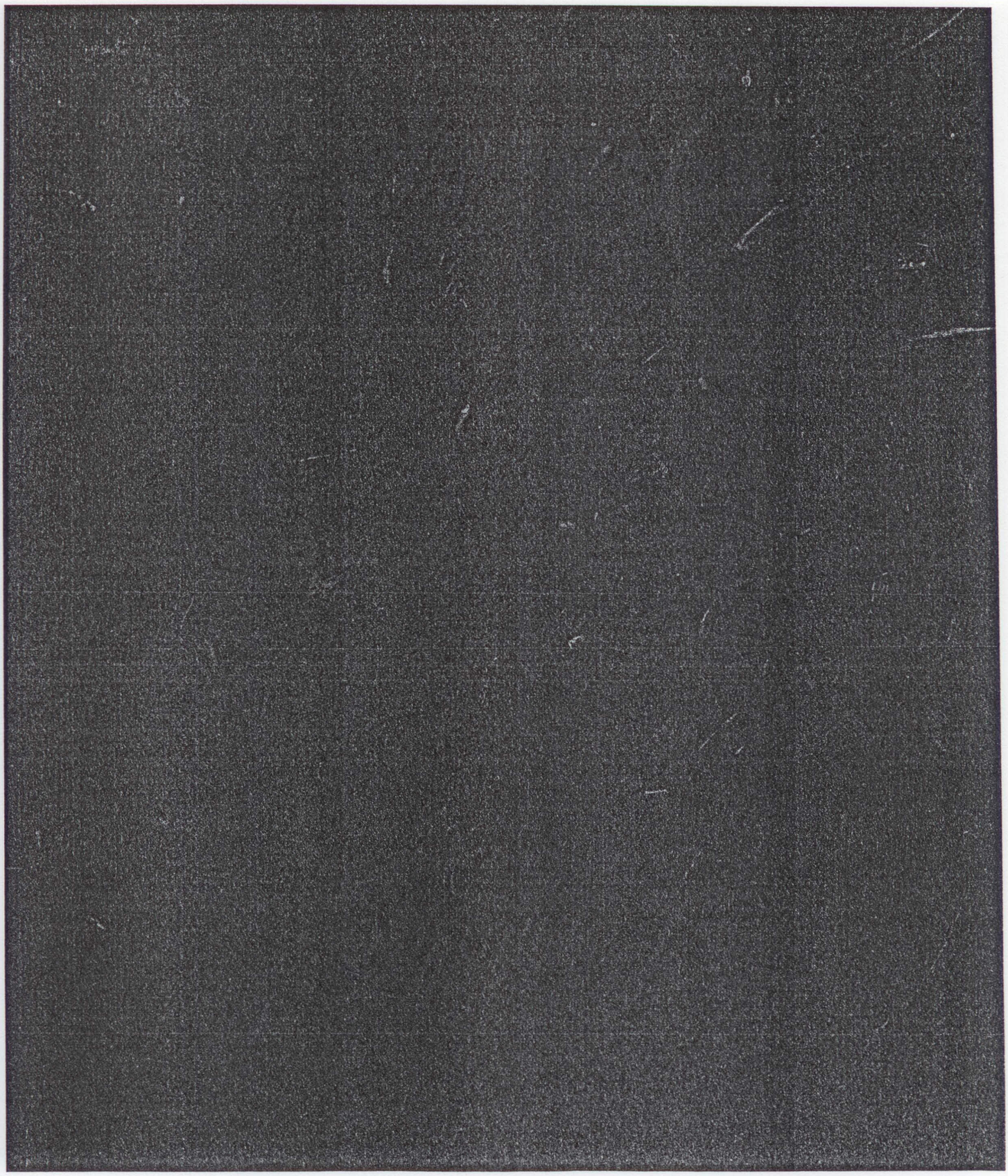
137. The calculation of the probable attrition and net weight of the attacks on overseas installations is based on a much simpler system of analysis and estimating by staff officers of the military services. The margin of error in our estimate regarding the overseas attacks is probably greater than in the more complex process developed for the continental U. S., but these estimates reflect the best information currently available.

138. <u>High Altitude Air Attack on the Continental U. S.</u> The results indicated by the War-game Analysis of the air battle that would occur in 1957 if the USSR attacked, and if it attacked with the large number of mission craft (about 775) visualized in the plan for high-altitude attack described above (para. 96), would be generally as follows:

[redacted]

* Daylight-visual bombing

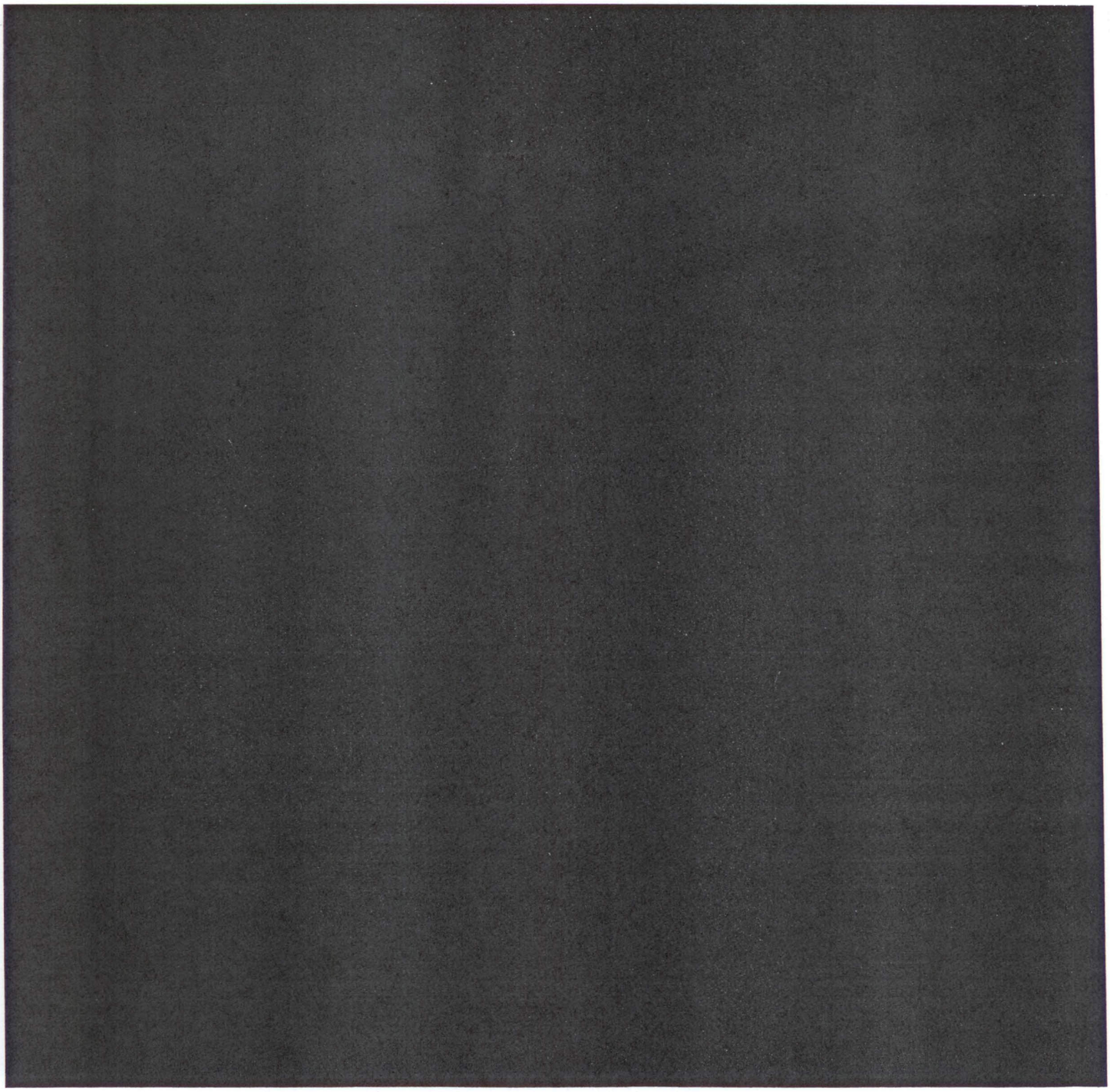




[redacted]

142. Low-Altitude Air Attack on the Continental U. S. According to the factors used in calculating the results of the air battle that would occur in 1957 if the USSR attacked with the number of mission aircraft (about 515) visualized in the plan for low-altitude attack described above (paragraph 116), the attrition would be spectacularly less than in the high altitude attack because of the inability of the interceptor force to engage attacking bombers below 1,000 feet over the sea or below 2,000 feet over the land. While we believe the difficulties of the low-level approach are so great, particularly for the Type-39 jet medium bombers operating at extreme range, that the abort and gross-error rate might be even higher than the 20 - 25 per cent factor employed, for comparative purposes we have used the same rate in assessing the results of this attack in the high-altitude attack.

143. If all attacking aircraft arrive in darkness at the altitude indicated, the probable kill by interceptor aircraft would be so low that it has been assessed at zero. Chance visual interceptions and chance positioning of fighters where they could catch bombers in the few minutes of climb to bomb-release line would be the only exceptions to the zero rate of kill. Thus the total destruction of bombers would result from NIKE missile and anti-aircraft gun fire. The results indicated in our analysis would be generally as follows:



144. In general, the results of this air battle indicates that about 400 of the 515 aircraft launched would reach the U. S. defense system and that fixed defenses (NIKE and guns) would destroy about 220 of them, or about 55 per cent. This rate of kill is somewhat

less than in the high altitude attack because of the reduced time of fire for NIKE batteries in view of the low-level approach of the bombers. While very limited data is available to use as a basis of calculation, NIKE probably would also be reduced in effectiveness in such a low-level attack because of "line of vision" radar limitations and the effects of ground "clutter" on its radar at very low levels. These estimates are the best approximation of NIKE low-level performance that could be developed at this time.

146. Since this attack as planned used all 60 KT weapons, the results of this air attack would be the delivery of 171 medium-yield (60 KT) weapons on target, [redacted] To this total of weapons delivered by air in the continental U. S. should be added the 2 missiles of 60 KT yield delivered on San Diego, as indicated above.

146. If Soviet planners had anticipated this degree of success, they might well have developed a somewhat broader target system to be hit less heavily. On the other hand, we are not certain that Soviet planners would rely on U. S. deficiencies in defense at low altitudes to be so serious as present evidence available to us would indicate or that they would rely on these deficiencies to persist into the 1957 period. In any case, for purposes of comparison with the results of the high-altitude attack, we have retained the target list developed before analysis of the probable attrition in a low-altitude

attack. The results show several times greater probable weight of weapons delivered in a low-altitude attack than in a high-altitude attack.

147. Electronic Countermeasures. In this assessment we have allowed a minimum factor of reduction of the defense system effectiveness due to Soviet employment of electronic countermeasures (ECM). We believe the USSR would try to exploit ECM to the utmost of its capabilities and might even in individual cases reduce the effectiveness of U. S. defensive weapons to zero. In some cases, for example in the case of the airborne intercept radar of the F-102 or the FALCON guided air rocket, the effectiveness of weapons critical in our calculations of defense capabilities might be greatly reduced.* Since we have found it impossible to analyze the specific balance between offensive use and defensive use of ECM, we have been obliged virtually to disregard this important factor and make only the minimum allowance for reduced defense system effectiveness across the board that we believe would result from the initiative and greater flexibility of the offense.

148. Overseas Attacks. We have made very general estimates of the probable attrition and net weight of attacks that might be delivered on key U. S. installations overseas. They are presented in

* See an indication of this effect, along with a listing of other factors reducing theoretical kill probabilities, in HQ, USAF memorandum, "Requirement for Information Concerning the 1957 Air Defense System", 10 September 1954, at Annex N.

Appendix I, both for high-level and low-level attacks. In summary, we have estimated that attrition would vary between 5 per cent and 30 per cent, that all the targets attacked by nuclear weapons would be hit with several weapons each, and that the other attacks would result in a level of conventional bomb delivery that would reduce but not entirely interdict the operability of the installations. In all, between 110 and 120 small-yield (5 KT) weapons and about 40 medium-yield (60 KT) weapons probably would be delivered. In addition, about 135 to 180 conventional 500 pound bombs would be delivered on each of the targets attacked. The general military consequences of attacks of this weight on key U. S. installations overseas are examined below (paragraphs [redacted]).

[redacted]

Pages 97-133 remain classified in full

[redacted]

PART IV: CRITER DICTUM ON THE LIKELIHOOD OF WAR

222. By direction, this report has been prepared under the basic assumption that full-scale war between the USSR and the U. S. would begin during 1957. Although we have not been instructed to make a judgment as to the likelihood of war, certain factors which came to our attention in the preparation of this net estimate pertain to the likelihood of Soviet initiation of general war in mid-1957. In general, in the course of study of the probable circumstances and Soviet net capabilities, we have discovered little that would lead to a conclusion that general war would actually occur at that time.

Appendix I remains classified in full (12 pages)

Appendix II remains classified in full (2 pages)

Appendix III remains classified in full (2 pages)

TOP SECRET

RESTRICTED DATA

ATOMIC ENERGY ACT 1946
SPECIFIC RESTRICTED DATA
CLEARANCE REQUIRED

APPENDIX IV

- THE IIC COMMENTS -

Memorandum for Mr. Hoover from the Executive Secretary of the Subcommittee, dated October 19, 1954, attaching the paragraphs of the draft report relating to internal security.

Letter for Rear Admiral Robbins from Mr. Hoover, dated October 25, 1954, attaching the comments of the IIC.

Letter for Mr. Hoover from Admiral Robbins, dated October 29, 1954, covering the action taken on the IIC comments.

A brief concluding statement on the position taken by the report on clandestine attack.

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