

102

DRAFT

October 28, 1961

MEMORANDUM FOR THE PRESIDENT

SUBJECT: Consequences of Thermonuclear War Under Various
Conditions of Outbreak (g)

I have recently undertaken a preliminary quantitative examination of the likely consequences for the United States and Europe of possible thermonuclear wars that might occur during the next several months and that might begin in various ways. I have sought answers to the following questions. What are the advantages to striking the first major nuclear blow, both with respect to the military outcome and to the damage to civil societies in the U. S., Western Europe, and the Communist Bloc? Specifically, what military capabilities might exist on both sides after various war outbreak situations and what targeting policies might be adopted? What are the major uncertainties in these possible outcomes?

Inevitably there are major uncertainties associated with estimates of this kind. There are limits on the extent to which war game calculations can reliably predict events. Therefore, the numerical estimates shown in this memorandum should be taken only as approximations. Subject to this general qualification, the results are summarized below. The assumption and calculations underlying them are described in ~~greater~~ greater detail in Appendix I.

I. U. S. Strikes First Against a Non-Alert Soviet Posture

In the first case, the U. S. launches an attack carefully designed to minimize warning to the Soviets. This is accomplished, in part, by restricting the number of vehicles used in the first wave of the attack to what is essential to the timely destruction of Soviet long-range nuclear capabilities. The attack begins with ten B-52's, each carrying 4 bombs and 2 Hound Dog missiles, infiltrating undetected at night and at low altitude (500 feet) through holes in the Soviet radar coverage bound for the deep ICBM and bomber bases. Their first bomb drops are timed to occur immediately after the detonation of ICBM's and Polaris missiles on these and other targets. There is an immediate U. S. follow-up attack using B-52's, overseas based tactical aircraft, carrier aircraft, and overseas based (reflex) B-47's. The ten infiltrating B-52's, plus an additional 20 used in the immediate follow-up attack, could have been launched from a pre-existing Airborne Alert used to mask the launching of so many aircraft. The expected surviving Soviet long-range nuclear delivery force includes 2 or less ICBM's, 30 MRBM's, 3 heavy bombers, 45 medium bombers, and 5 submarine-launched missiles.

At this point, Krushchev is faced with a singularly difficult set of decisions. He must assume that U. S. follow-up attacks are on the way and that his small surviving force will soon be destroyed. If he launches his surviving force against U. S. military bases, he will do relatively little damage and have lost the war. If he launches this force against civilians in the West, he will do very substantial

damage to Western Europe and much less to the United States. He will have lost the war and, in addition, he can count on the U. S. being in a mood for retribution. An offer by the U. S. to stop the war and seek a reasonable settlement with the USSR should, at this point, be both in our interest, and even more strongly in Kruschev's interest, for it would be in our capability to destroy completely the Soviet Union.

Assume that he chooses maximum retaliation against cities. The damage that can be caused by the surviving Soviet force would be diminished by missile unreliability and, in the case of the bombers, by loss of tankers and staging bases, and by U. S. defenses. If the expected number of weapons reaching the United States happened to be assigned to the largest cities, and were to be delivered promptly, the result might be 9 million mortalities. However, this would probably be cut in half by inefficiency in targeting (e.g. the surviving weapons happened to be targeted against smaller cities), and perhaps cut in half again by use of the available time before arrival of bombers and submarines for evacuation of cities.

The surviving MRB's and medium and light bombers could deliver 45 bombs of about 2MT each on Western Europe. If directed against population centers, there would be about 35 million mortalities, allowing for expected targeting inefficiency. In addition, there might be attacks by fighter-bombers and short range missiles.

These estimates are based on the assumption that a well designed and executed surprise attack is carried out according to plan. It is possible that we might be even more successful. However, there are many ways in which such an attack might fail to go according to plan. The Soviet Union may have ICEM's that we do not know about, or we may have made other errors in our estimate of their forces. The Soviets might receive warning and alert and disperse their forces. For example, an unauthorized and unpredictable breach of radio silence might tip our hand. Or there may be unexpected field degradations in the performance of our weapon systems.

On the other hand, there are powerful advantages favoring the side that has the initiative. For example, warning signals that might alert the defender are almost always ambiguous and are unlikely to lead to decisive action. Moreover, the initial effect of the attack would probably be major disruption and disorganization. The temporary paralysis would improve the chances of the follow-up wave completing what the initial wave of the attack failed to accomplish.

Nevertheless, the above considerations suggest that the implications of substantially less favorable circumstances must be examined.

II. U. S. Strikes First Against An Alert Soviet Posture

In this case, we have assumed that the Soviets are on a high state of alert, that two-thirds of their missile submarines are at sea, and that their bombers have been dispersed. The U. S. first-wave attack includes the forces in the previous case plus 50 additional land and carrier-based tactical aircraft.

This time, the expectation is that 2 Soviet ICBM's, 40 heavy bombers, 125 medium bombers, 80 MRB's, 100 light bombers and 45 submarine-launched missiles either survive the attack or are launched before the attack destroys their bases.

Krushchev is still faced with a set of difficult choices although they are less excruciating than in the preceding case. He can still expect a military defeat, but he can do substantially more damage to Western civil societies. If he elects to carry out civil attacks with ground burst weapons, the U. S. would suffer 47 million fatalities, Western Europe, 64 million, including the effects of fallout and expected targeting inefficiency. (A crucial variable is whether or not the Soviet Union would fire on the basis of radar warning and other clear signals of an attack. In this case, we have made the very pessimistic assumption that it would.)

III. USSR Strikes First In A Well-Executed Attack

The Soviet Union would have serious difficulties in carrying out a disarming attack against the U. S. Its long-range bombers are too few in number and restricted in performance to be able to use optimal routes, and its ICBM's and submarine missile force is too small. However, it has in its MRBM force enough missiles to destroy the bulk of our fixed overseas forces. We have designed a hypothetical Soviet attack within their capabilities and on assumptions more favorable to the attacker than those made in the first case discussed above. Their attack delivers 100 bombs against SAC in the U. S. and 200 bombs against overseas forces. They are assumed to catch us completely by surprise. Our expected surviving forces include 5 ICBM's, 45 B-52's and B-47's, 64 Polaris missiles, 160 land-based and 160 sea-based tactical aircraft and missiles able to reach important targets in the Soviet Union.

At this juncture, the U. S. has the following prospects. First, the attack on SAC produces 3 million mortalities if air burst weapons are used. This assumes that the Soviets try to minimize civil damage and that no major cities have been hit. (However, even in an initial wave, a few bombs might be directed at cities.) Second, a quick U. S. attack on Soviet arctic staging bases might be able to reduce substantially the size of follow-up attacks. A successful Soviet follow-up attack against U. S. population could kill 90-115 million Americans. Third, the surviving U. S. forces probably would be able to destroy either the great bulk of the surviving Soviet strategic forces or, if directed at cities, approximately 90 million Russians.

IV. USSR Strikes First But U. S. Alert Force Gets Off

In this case, we make the assumption far more likely to be correct, that the Alert Force gets off. About 50 per cent of the SAC bombers are on ground alert. They can begin take-off within five minutes of an alarm, and at each base, bombers can take-off at twenty second intervals until about 735 Alert Bombers are launched.

The military consequences in this case are fairly clear cut. The Soviet Union loses the military exchange. The surviving Alert Force would be able to destroy 185 million Russians. The initial Soviet attack on SAC might produce as few as 3 million mortalities in the U. S. if the Soviets were trying to minimize civil damage. But a successful Soviet follow-up attack against the U. S. population could kill 95-115 million Americans. However, in this case, the U. S. would have a much better chance of preventing the launch of follow-up attacks.

V. Conclusions

These preliminary calculations suggest the following tentative conclusions.

First, the U. S. could achieve a major military advantage by striking first. In comparison with the alternative of a Soviet first strike, a U. S. first strike is clearly preferred.

However, the Soviet Union would have some surviving retaliatory force, even if our attack went well. And we would have to credit as possible the execution of a pre-planned Soviet retaliatory response that might kill 9 million Americans, though probably fewer, and 35 million

Western Europeans. But such an expenditure of forces by the Soviets would leave them disarmed and at our mercy (though we would be able to disarm them in follow-up attacks anyway). We might be able to deter the Soviets from retaliating against cities. Our ability to deter Soviet retaliation against Europe would be strengthened considerably by the weakness of surviving Soviet power to retaliate against us. An offer by the U. S. of a settlement at this point would be very much in our interest; it would be rational for the Soviets to accept. However, we obviously cannot count on the USSR being rational in such circumstances.

Second, there are grave risks associated with an attempted first strike, and much less favorable outcomes are possible. Our attack might be poorly executed. The Soviets might receive warning, or as the result of a crisis, disperse and alert their forces. In such circumstances, the result of a U. S. first strike would still be the achievement of a military advantage. However, the Soviets might retain forces capable of destroying 47 million Americans and 64 million Western Europeans, if they elect to retaliate against cities. Again the U. S. would be able to threaten virtual annihilation of the Soviet Union, and this might deter the Soviets from retaliating against cities.

Third, the Soviets are only marginally able to execute a surprise attack against the U. S. with any reasonable prospect of success. Under assumed conditions very favorable to the Soviets, we would be able to destroy 90 million Russians in retaliation. If Soviet follow-up attacks were directed against our cities, we might suffer roughly 90-115 million mortalities.

If we were to get warning and launch the Alert Force and use it entirely against Soviet cities, we would be able to destroy 185 million Russians. Alternatively, we could destroy their remaining military forces and still destroy the Soviet urban society.