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Defence of the North American Continent

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by

Ellis A. Johnson, Director

OPERATIONS RESEARCH OFFICE
The Johns Hopkins University Chevy Chase, Maryland

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*A Speech
Delivered at the
Fifth Annual Symposium of the
Defence Research Board of Canada
Ottawa, Canada
30 November 1953*

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DEFENSE OF THE NORTH AMERICAN CONTINENT*

It is a great pleasure once again to address the annual Symposium of the Defence Research Board of Canada. I will examine this afternoon the question as to what strategies we should consider in our struggle with the Soviet Union and the bearing of these strategies on the defense of North America. Let me be clear that I speak only for myself and not for the US Army for whom I work—indeed, with tiny exceptions, all of my “classified” material might well come from recent articles in Fortune, Harpers, Colliers, or the Saturday Evening Post. In spite of this I must admit that the exact kind of reasoning I will pursue might not have been possible without long conditioning in military affairs and without much access to the most secure and classified material.

My discussion will be concerned with the increasingly bright prospects that our decisions, if well made, can lead to actions that will secure without question our survival in the face of the inimical threat of the Soviet Union.

I do not believe that we can find a simple, linear, exact, and rational solution to this problem. Intuition and emotion, as well as calculations, must play a part in the decisions to be reached by our leaders, and we ourselves must accept the fact that this is a non-simple, non-linear, probabilistic and irrational world and yet have the faith and courage that in spite of these complexities and uncertainties, we can achieve practical solutions to our problems, just as we have always done in the past.

THE NATURE OF THE COMMUNIST

The tensions between the free world and the Soviet Union remain as high as ever, and the possible ways of easing or eliminating these tensions and the conflict between us are speculative, partly because as nations we have not decided specifically upon particular courses of action, or chosen among the various courses of action those which might form a firm and practical basis for our national behavior. About the only thing we do know is that we have a deep and intuitive distrust of the Soviet Union and an uncertainty with respect to its intentions. We fear the imminence of an attack on the North American continent as the opening engagement to destroy the free world. At the same time, many doubt the imminence of such an attack. Others question whether we can afford even a reasonable defense, even though such an attack were certain.

It is by now well accepted that the Soviet Union has the capability—the aircraft and atomic bombs—which permits it to mount a blow so destructive

*Adapted from a speech delivered 30 November 1953 in Ottawa.

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that it is uncertain if our productive base or our will to fight would survive the attack, and it is accepted that this capability is rapidly increasing.

We come then to the question of enemy intentions, which I shall deal with in long-range and short-range terms.

I think there is no question that we must look at these as closely as possible. On lower problem levels it is sometimes said that we should concentrate our concern upon enemy capabilities, and not upon his intentions, and that it is sounder and less hazardous to do so. Obviously, a Pearl Harbor demonstrates intentions so that all uncertainties cease for the duration. For many of us, the record of Communist action is sufficient to prove many times over that the enemy's intentions are in fact inimical. In contrast, the actions of our leaders demonstrate the margin of uncertainty in many minds as to whether enemy intentions are to be taken with full seriousness. Hence, we shall always have to establish as best we can a sound judgment as to both enemy intentions and enemy capabilities before we can hope to achieve an understanding of the nature of our opponent. I would like to deal first with the long-range intentions of the Soviet Union.

The degree of uncertainty as to the enemy's basic general intentions relates, I think, to the simple fact that there are three great elements in his mentality and doctrine, and that although these add up together, reinforce each other, and all point in the same direction, this common consistency and combined hardness are commonly not understood. The enemy is Communist, and this is a theoretical position which rationalizes the world situation for him as one of revolution in which he is sure to win. He is also Russian, and the doctrine of autocracy, of permanent terror, of obsequiousness to power, of lying about history, fraud and fear and ferocity, were built into Russian institutions centuries before Lenin. And he is Jacobin, by which I mean that he has the obsessed conviction that his ends justify all means which supported Robespierre and the Reign of Terror. These three elements together make a system of thought and feeling, instituted in politics and society, whose characteristics must not be ignored. To deal with each one separately is like stopping at the point in the fable where the blind men had said of the strange beast, "he is like a wall - no, he is like a tree - no, he is like a rope -" and failing to say, he is in fact an elephant. In the oriental despotism that we face we have something like a more sophisticated Reign of Terror, a permanent Jacobinism. It can wait as well as hurry. It can relax without losing its nature. It can use all tactical means and adjust to all circumstances. And its intentions are just as uncertain, and no more so than those of a wolf around a sheep pen.

We know that this hard but flexible attitude combines the most elaborate intellectual and systematic doctrine on world affairs with the most primitive, deep-set, and hard-to-change of the savage impulses of fear and aggression. The enemy knows how to use economic and diplomatic and political means when a situation offers no immediate military profit. He knows equally well how to use military means when the occasion occurs. And he knows the tricks of genocide by which to raise his social power by wiping out the elements which, from his viewpoint, constitute impurities.

During the last year of World War II, I was attached to the 20th Air Force at Guam, and for reasons connected with the campaign I conducted, I had to stay at Guam until about November. From the end of the war until I left I spent a good deal of my time reviewing the history of the Russian peoples and of Communism. From an intellectual point of view such a study is convincing with respect to the intentions of the Soviet, and I believe that most of

us share the intellectual convictions as to the long-range intentions of the Soviet Union. After all, neither the Soviet Union nor the Communist Party, through its organs in every country, including our own countries, conceals its long-range intent to destroy the existing institutions and its intent to substitute the Communist apparatus. The thing that we find it difficult to accept is that these monstrous and ambitious intentions might materialize, and that the reality is imminent in our time.

I had a personal opportunity to investigate Communism in action in Korea. This investigation went far to convince me emotionally as well as intellectually of the deep-rooted reality of the Communist preparations to implement its blue print. I was with General Walker's advanced headquarters and working in patrols into enemy territory during the breakthrough in 1950. During these patrols I saw at first-hand the massacres of South Korean civilians at Taejon, Changju, etc.

It is clear that there were two wars in Korea. The first was a military war, conducted by the military divisions. Most of the enemy soldiers in the military war were North Korean farm boys, many of them newly recruited. The second war was a political war, whose aim was to purge and eliminate the leaders of South Korea. You all have read about the massacre at Taejon, but it is one thing to read and to look at the pictures of dead men; it is quite another thing to stand beside the trenches where civilians have been buried up to their waists and then had their heads and chests bashed in with picks and shovels, to look at the pits filled with bodies, to see women and children tugging and straining at the dead, examining each one to find their own, weeping and wailing, and to see the cellars of the monasteries crammed so full of the dead that they spill out of the doorways.

Later, in connection with a problem of technical intelligence, I had an opportunity to work with the counter-intelligence corps and to find out who these murdered civilians were. They were South Korean school teachers and village leaders, taken from the list of the village commie (who had been recruited in each village years before). The executions had been carried out by the security regiments, Russian-trained for genocide many years before in Manchuria. You know that this pattern was repeated throughout South Korea. All of the community and scientific leaders of Seoul who had been unable to flee to the south during the first onslaught had been taken north and had disappeared. I had an opportunity to examine many of the North Korean school books our group obtained at Pyongyang. All of these had been rewritten in the Communist jargon, many indeed had Russian illustrations. I talked with well over one hundred North Korean prisoners. All of these confirmed the now well-known and accepted pattern of an informer in every village, picked at random and without desire on his part, but with hostages to fortune in the way of wives and children, and obliged to turn in his standard quota informing on his friends and neighbors. By compulsion, everyone in the village was obliged to attend, almost every evening, political meetings at which the Communist doctrine was taught. The theory in back of all of this is also well-known. It is to eliminate by continuous purge all of those who might lead in teaching the old ways to the new generations, to indoctrinate continuously in the dialectic until the conditioning is second nature. If this takes five generations, as is the estimate, the Communist plan is a long-range one, and five generations appear to be an acceptable time. This kind of indoctrination and its accompanying genocide is now the accepted pattern as each new country is overrun by Communism. It violates the United Nations Charter. We do not adequately and soon

enough challenge the Soviet violation of the Charter in spite of the overwhelming evidence. The very existence of this type of Soviet genocide, as illustrated by its use in South Korea as preparation for the construction of the Communist apparatus, is evidence of the continuing intent of the Soviet Union.

THE ENEMY CAPABILITY

Let me now return to my main discussion.

One new dimension has been added to major strategy on both sides as compared with previous wars. This is the technical advance in weapons. I do not mean that this did not apply to World War II in a way. Of course it did. The Germans took a long step forward to a new general weapons system and thereby gained a great series of early victories. In the air the advance remained dynamic, and newer and better planes came forward continuously during the war. But except for the initial German advantage there was no single change capable of changing tactics and deciding the issue, and there was no advantage gained technically that could not be recovered by the other side within the time scale of the war. The use of A-weapons was no real exception, since this weapon could not then be put to any general or continuing use. Now, however, we really do have a situation in which, if war occurs in some future year, the side with the initial technical advantage may well win finally and completely.

We all know something about enemy capabilities now which in turn bears on his intentions. He has shown conclusively in the last eight years that he can make a race of it. Remember how often some of us have tried to find reassurance in the notion that he could not keep up with us, far less catch up with us, out of the resources of his smaller and weaker position, both as to economy and as to science. Yet he has done so. This does not mean that he did not in fact have a smaller and weaker position from which to find the resources, but it means absolutely that his intentions can be read in the strenuous effort he accepted and successfully put forth.

Since the death of Stalin there have been many developments, and we have tended to read these as related to his death. There was a flurry of little gestures toward easing the situation, the freeing of Oatis, etc. Now has come an apparent serious turn within the Soviet toward more civilian economic welfare. This is a great fact. But to relate it to the death of Stalin is a misconstruction. The Soviet may now be equal or superior to us in atomic weapons design. The date when the Soviet relaxed its massive effort in conventional arms and turned to greater civilian welfare was not the date of Stalin's death but the date when they knew for sure and certain that they had technical strategic equality. We must not mistake the most terrifying of facts for the most reassuring. Yet so far, we seem much inclined to do so.

In order to turn from general intentions and capabilities, and to consider shorter run and more specific detail, we have to look at the world situation. To a great extent it has been stabilized, certainly at least in comparison with five years ago. So if we ask, does the wolf mean to kill the sheep, the answer may be, not this minute, for he has no direct opportunity at the moment. Also by the enemy book, he has every reason to wait. His qualitative technical catch-up has still to be translated into quantitative equality. The present degree of solidity and strength on the Free World side rests, as he sees it, upon unsure foundations, and he can wait for a time when we are weaker. He can

make himself a long list of latent weaknesses on our side, from exacerbated antagonisms in the Middle East to bitterness in South Africa and the desire for defense savings in the United States. From our point of view these problems are simply the tokens that the stability to which we have brought the Free World is, as it would have to be, a dynamic and not a static state. If he waits for us to come apart, it can then be our proper goal to make him wait forever. It remains that by his book our dynamics must lead to breakdown. This is why he will be willing to wait. But his waiting for the bargain obviously will not mean any relaxation on his part to advance on the technical front. This will be the constant focus of his intention.

The doctrine of "overtaking and surpassing capitalism" is one great theme in enemy theory. He knows now as well as we do that it will take him a long, long time to do so in terms of steel and power and oil and food. But on the far smaller economic scale of scientific arms effort he has found a relatively cheap and all-important area in which to do so. When he stops driving for more territory, or stops straining all efforts to maintain hundreds of divisions fully armed, the weapons technology front is the one where he will drive hardest and most consistently. He did so in the long wait between World War I and World War II, in the fashion of those times, and came astonishingly close to equality in both quality and quantity of weapons for World War II. He certainly knows how to do it again. And we know already that he has come perilously close to catching up in the key essentials.

I think we know from his over-all intentions that they are firmly and inflexibly hostile to us. And we know that his tactical intentions can include the choice of peace for a time when there is no profit in war, coupled with all the drive that his system can attain on the technical weapons front. We know also of his capability on the technical front, that with the advantage of learning what leads run into dead ends from our own broader effort, he can concentrate his effort and can pick essentials, and can catch up or even get ahead. What more do we need to know? It seems to me that we need to know nothing more in order to recognize that any soft thinking on our part would be fatal.

The forecast of our struggle with Russia began very many years ago. One of the earlier ones was that of Alexis de Toqueville, made in 1835, and I quote: "There are at the present time (1835) two great nations in the world.... the Russians and the Americans. Both of them have grown up unnoticed; and while the attention of mankind was directed elsewhere, they have suddenly placed themselves in the front rank among the nations, and the world learned their existence and their greatness at almost the same time.

"All other nations seem to have nearly reached their natural limits, and they have only to maintain their power; but these (Russians and Americans) are still in the act of growth...the conquests of the Americans are...gained by the plowshare; those of the Russian by the sword. The Anglo-American relies upon personal interest to accomplish his ends and gives free scope to the unguided strength and common sense of the people; the Russian centers all the authority of society in a single arm. The principal instrument of the former is freedom; of the latter, servitude. Their starting point is different and their courses are not the same; yet each of them seems marked out by the will of Heaven to sway the destinies of half the globe."

Many warnings go unheeded, but many more could be provided than are now being furnished. If war does come without warning, we probably will have to rely upon the "instruments of freedom" ultimately prevailing over the "instruments of servitude," and this by no means is a discouraging picture.

Let us next consider, in a crude way, our own capabilities and those of the Soviet Union. In Fig. 1 we have such a summary broken down with respect to raw materials and other aspects of national power for the Soviet block and the United States. It seems clear that we are about even—Steven over a wide range of important factors, including science and technology, but not in a number of critical raw materials, in production, in energy per capita, and in gross national product.

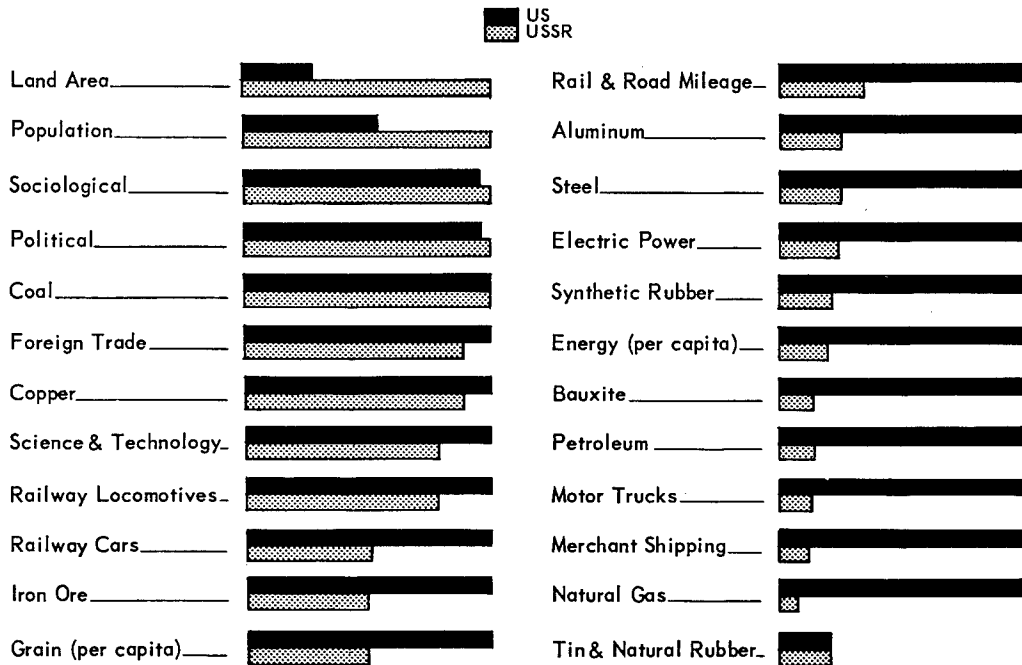


Fig. 1—Summary-Comparison of National Power, 1950

As a rough estimate, our productive capacity is 3 to 5 times that of the Soviet block, and is likely to remain in this ratio for one or two decades. Since it appears to be well established that the percentage of gross national product that can be used for military production is approximately 50 percent plus or minus 5 percent, regardless of the culture, it seems that our military productive capacity will continue to have a potential 3 to 5 times as great as that of the Soviet block.

Again, as is well-known, our military strength must be brought to bear on the Soviet Union over a long and vulnerable communications line. This line is dominated by sea transport. Little of our strength can be brought to bear in Europe or Asia either in air attack or in ground operations, or support to the civilian populations of our allies, save by sea transport of the necessary supplies. This line has been experimentally attacked by the Germans in the last two wars, but it may well be expected that the next attack on it will not be experimental, but will be made in full force.

Our weaknesses, as have been well-demonstrated by the Korean war and by the difficulties in NATO, are that we do not have an adequate military force in being, nor the stockpile of supplies to equip and maintain such a force, with

[REDACTED]

the one possible exception that our stockpile of atomic weapons may be as much as 2 to 5 times as large as that of the Soviet Union.

On the side of the Soviet Union, our strength and weaknesses are mirrored in the opposites. The annual military productivity of the Soviet block is one-third to one-fifth of ours. Their lines of communications are internal and nearly secure. They have a greater military force in being, have stores of ready ammunition, have stockpiles for at least a two-year war, except in petroleum products, and are otherwise superior in every "ready" respect save in atomic weapons, where their stockpile may be one-fifth to one-half as large as ours.

All of these factors are encouraging from a long range point of view and discouraging from a short range point of view. It is clear that if the Soviet Union attacks us, we will easily win such a war provided it is a war that lasts for a long time, that is, long enough for our production to equip a comparable force in being, and then to continue on in the steady state with 3 to 5 times the production. Based on our experience in the last war this takes about two to three years. This steady state can be achieved only if our own base of fire and productive system remain essentially intact, and only if we can keep open our long and vulnerable lines of sea communications. We must be able as a first priority to frustrate the heavy and devastating early thrusts of the Soviet Union at our base of fire on the North American continent and secondly upon our allies in Europe and Asia.

FOUR COURSES OF ACTION

Let me outline the four possible courses of action that we might adopt. I want to make clear that I do not endorse any particular course of action. These are the ones that have been proposed for consideration by particular individuals or organizations in our two countries. It is fair to give each course some consideration.

The first course of action is to attempt to resolve our conflict with the Soviet Union by negotiation, with the hope that with time some enduring solution, not yet foreseen, may be achieved. This course of action would involve some type of non-aggression pact, or in a less desirable form, some agreement to limit the tactics of warfare by prohibiting, for example, the use of atomic and other new weapons. If we adopt this course of action, the history of the Soviet Union gives us little confidence as far as reliance on their integrity in keeping pacts is concerned. We would be imprudent indeed, under these circumstances, if we did not make provision against the high probability of a sneak attack on the North American continent. Thus, if we adopt this first course of action, as a first measure we would require as a first priority, and above all else, an airtight defense of the North American continent, if this be economically within our power.

The second course of action we might adopt would be to await an attack by the Soviet Union initiated at their pleasure. This would be based upon the assumption that an attack in the next decade is certain and that non-aggression negotiations have no ultimate chance of success, but that because of the ethics of the Free World, we ourselves will not initiate an attack on the Soviet block. It is assumed we would await the Soviet attack with the intention of retaliating and of pursuing the war by an attack on the Soviet Union to her ultimate defeat. Again, with this course of action, our only hope in winning the resulting war

[REDACTED]

would be to rely on our continuing will to fight and on an essentially undamaged productive capacity. Both of these conditions could be realized by the same airtight defense of our base of fire, the North American continent, while we develop more fully our offensive capabilities. It would be naive to rely upon retaliation by our Strategic Air Command as a counter defense after we are devastated. It must have been dry comfort to the surviving Carthaginians that Rome ultimately fell. The possible deterrent effect of the counter blow of our surviving SAC aircraft, if the Soviet attacks a lightly defended North American continent, may be negligible. We must remember that the Soviet once starved five to ten million of its own people for the sake of a policy, and that this famine of 1932-33 was only one out of many instances of the starvation, killing, enslavement, or forced migration of millions of people.*

The third course of action we should consider is a NATO attack on the Soviet block to remove the Soviet Union as a threat to our continued survival. In this case, it is less clear as to the ultimate success of the mission. If our Strategic Air Command opened the war by an attack on the Soviet strategic air force and their fission plants, we would need to be very sure of the completeness of this attack in removing the threat. The fact that a very large proportion of our SAC aircraft are reconnaissance aircraft is clear evidence of our need for reconnaissance in order to insure the successful destruction of a very high percentage of the mobile Russian Strategic Air Command aircraft. Thus, to rely simply upon such an improbably successful attack as a "defense" would be the height of folly. I assume that our SAC can successfully destroy the "old" Soviet production base.

In this course of action the other consideration we must bear in mind is that the nature of our democracy is such that it seems unlikely that we could prepare such an attack in sufficient secrecy so that the Soviet Union would not be warned well in advance. We would need the support of our peoples; this would require some political preparation, in addition to the necessarily widespread physical preparation, and all of this would have the great danger of inviting a Soviet attack before our own could be launched. Thus, if considered seriously, an attack on the Soviet Union would require, as a prudent action in view of the heavy risk of a prior Soviet attack, an airtight defense of the North American continent as a first priority.

The fourth course of action would be to make no basic decision at the present time, while perhaps pursuing the first course of action and awaiting more information with respect to ultimate Soviet intentions and the more favorable development of our own military capacity. To make no decision when faced with a state of high tension and an aggressive enemy is always dangerous. But, it is clear that if we need to mark time for internal reasons, there is at least one thing we must do and that is, again, to provide an airtight defense of North America in protection of our base of fire.

THE STRATEGIC AIR COMMAND AS A DEFENSE

Before discussing the practical solution to air defense, I must more fully dispose of the myth that the Strategic Air Command can act as our primary shield and buckler. The Strategic Air Command is ready, is efficient, and I do not in the least doubt that it can destroy the "old" Russian industrial base.

*Chamberlin, W. H., *Russia's Iron Age*, p. 88, Boston: Little, Brown, 1934.

[REDACTED]

But, if we examine honestly our reliance on the concept that the threat of retaliation by a US atomic air counterblow against the Soviet Union is a deterrent to their attack, we find it a tenuous shield indeed, dependent upon several untenable assumptions. First it has to be assumed that the Soviet place the same rational value on life and property that we do. On the contrary their own bloody purges in the thirties and their tenacious, ruthless, and self-destroying defense in World War II show their willingness to sacrifice their own lives for a policy or in order to achieve victory. Second, it must be assumed that destruction of these extremely concentrated "old" industries will lose them the war and that this they will not risk. But this is to forget that they have a stockpile of all classes of arms which will last out two years of full scale and ferocious war. It is to forget that their industrial capital investment and expansion is in the making and is increasingly dispersed. They cannot win a war against us even if their economy is unharmed provided only that ours also is unharmed. Production-wise we can outproduce both the Soviet Union and Europe combined.

Their gambit is to destroy our base of fire, the North American continent, so as to cut us down to size, to interdict our lines of communication, to take Europe as a new production base, risking the partial destruction of the old Soviet production centers.

If they succeed in destroying our production capability in North America, as an estimate, they might well gain five to ten years before we could attack in force. Since Western Europe will surely fall if we cannot provide military supplies and forces (whether the Soviet economy is destroyed or not) we will then face a most discouraging military problem, far more difficult in magnitude than the one we face now.

It would not only be imprudence but folly to risk our lives, our children, and our future on the frail assumption that the Communist philosophy is the same as ours and that therefore we need only to have the miraculous deterrent of a counter atomic air attack to paralyze our enemy! I say that if North America is desolated, and if I am still alive, I will not care one whit about our counterblow, whether it has come before or after their attack. I am afraid that the Soviet are such a dangerous and different enemy culturally that we would not regard as rational their kind of reasoning. My argument leads then to the conclusion that our counterblow through the Strategic Air Command is not by itself alone a suitable solution to our strategic problem. Neither is airtight defense of North America by itself a strategic solution. But it counters the one risk which outweighs all the others. An airtight defense of North America is thereby the critical ingredient in each of the acceptable solutions. Do not misunderstand me. I believe that the Strategic Air Command is a mighty weapon. It is a striking force—it is not a defense. And on the personal side, Curtis E. LeMay, the "Old Man," is a commander under whom I would be proud to serve again in time of war.

To summarize, it is clear that regardless of what course of action we adopt, and taking into account the nature of our enemy, our capability in military production and our will to fight are our most important weapons. We must, as a first priority, preserve these. This we can do with certainty only by developing a system which can defend the North American continent against any attack which can be brought against it by the Soviet Union. If such a system is to be successful, we must do three things: we must be sure that we have an indicator of the imminence of hostilities; we must be sure that we have the weapons which can defend the country at a cost that we can

[REDACTED]

afford; and we must bring into existence the organizational measures that will provide for the logistics and operations of our defenses.

IMPORTANCE OF INTELLIGENCE

Because of its overwhelming importance, I want to emphasize here the importance of strategic intelligence, and in particular of short-range strategic intelligence indicating the imminence of a Soviet attack.

I do not know whether or not we now have an adequate indicator for such an attack. The problem is not only the simple one of gathering the basic intelligence. This is hard enough to do, since apart from radio intelligence, most of the necessary information must come from deep within the enemy's own country. There also is a question of the effective communication and evaluation of this intelligence, and the necessary decision-making at the highest level of our governments, which will set in motion all of the necessary countermeasures in sufficient time to meet the attack. If we have a good defense of North America in being, it will be impossible to maintain continuously over a period of years the state of alertness required to meet a sudden blow, unless there is some warning to bring this alertness up to the necessary high pitch. It must be a system that does not introduce too many cries of "wolf."

I was on the golf course above Pearl Harbor with Admiral Smith, Admiral Kimmel's Chief of Staff, a few days before the Japanese attack, and I commented on our vulnerability in view of the concentration of the fleet units in the harbor. Admiral Smith replied that the Navy had been on the alert since 1937; that usually there were never more than one-third of the fleet units in the harbor at one time; that the men of the fleet spent two-thirds of their time at sea; that this had become a dreary chore; that the existing accidental concentration was in honor of the new Russian Ambassador and would persist only over the week end while the men obtained some relief from the monotony of their peacetime sea duty; but that I need have no fear but that the Navy was fully alert to the serious danger it faced with respect to a surprise attack by Japan.

We all know that the necessary elements for evaluation of the imminence of hostilities did exist at that time, but that they were not organized in such a way as to bring about the necessary counteraction.

I have had long experience as a user of intelligence and as a developer of intelligence. Although I am for the most part ignorant of our present situation, I have the most serious doubt as to whether or not there is now in existence an intelligence system that will serve to alert the units defending the North America continent when they have come into being. We do have time to develop such an intelligence system, since the defense itself is not yet in being.

COSTS OF AN ADEQUATE DEFENSE

Let us now turn to the problems of the actual defense system and in particular to the weapons needed to kill the attacking aircraft. There have been many studies made, and in great detail, of the anti-aircraft weapons possible in an air-defense weapons system. Until the last several months,

everyone concerned with the cost of an adequate defense has felt that such an adequate defense was hopeless, because it lay in the cost region which would require the expenditure of twenty to one hundred billion dollars a year, with the most probable cost around seventy billion dollars a year.

The tactics for the attacker is to mix his tactics so that he attacks at those altitudes or from those directions which avoid the defender's strength.

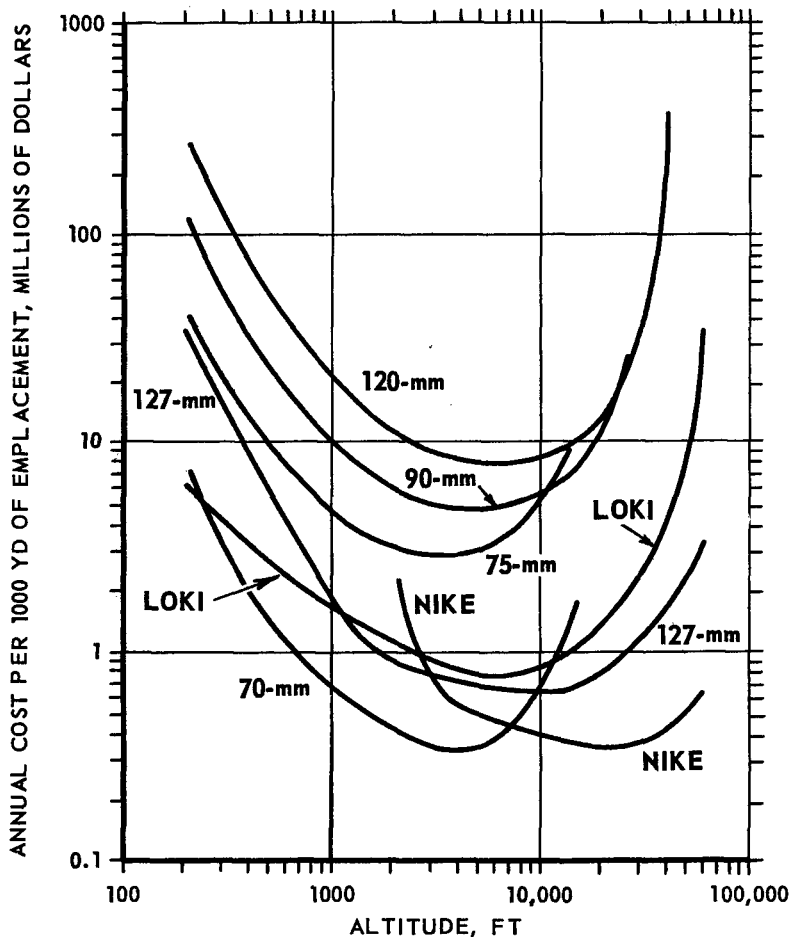


Fig. 2—Cost-Effectiveness

Attrition—90%; Raid—9 Acft (B-29 Vulnerability); Speed—600 mph;
Fuze—PD (except NIKE); No Maneuver

Thus, if he is safe at low altitudes because we have no effective weapons there, he will tend to attack at the low altitudes; if he can come in safely from a particular course, say from seaward, he will tend to come from that direction; if he is not sure that the defender is weak in any particular way, he will tend to attack from various altitudes and directions. He will use every possible strategy to mislead, confuse, and to saturate the defense.

The dilemma we have found ourselves in is shown in Fig. 2, which plots the annual cost of defending a thousand yards at various altitudes against a particular type of attack. You can see that on the part of US Army weapons

there has indeed been a tremendous improvement in the effectiveness of the newer weapons in contrast with the old ones. But you can also see that even the newer weapons are quite ineffective at low altitudes, and although NIKE can produce a good defense at high altitudes, the reduced effectiveness of all weapons below a thousand feet has presented a major difficulty in designing an economic defense system.

Figure 3 shows the same data in another form.

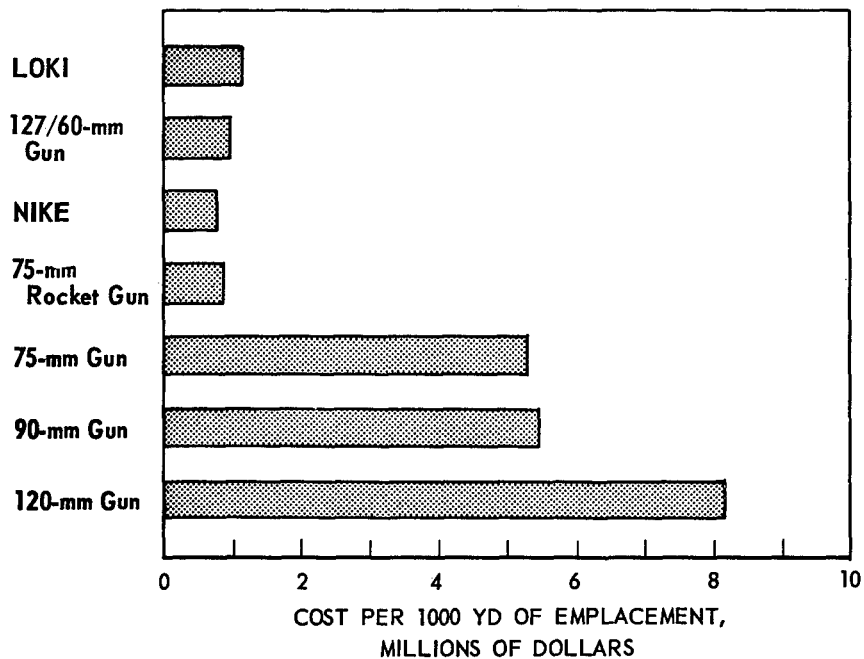


Fig 3—Annual Cost of Defense

Altitude of Attack—10,000 ft; Attrition—90%; Raid—9 Acft (B-29 Vulnerability);
Speed—600 mph; Fuze—PD (except NIKE); No Maneuver

The most noteworthy point of these figures is that, with only a small effort, ground-to-air weapons have increased in effectiveness by 20 times in seven years or by 300 percent per year. We can expect this rate to continue if we increase and focus our Research and Development effort. For example, only limited funds had been allocated to the low altitude problem. Some increase in funds for the study of specific low altitude weapons was allocated by the US Army last summer. This has resulted in a proposal of one new, guided-missile system by the Raytheon Company of Waltham, Massachusetts, with exceptionally good supporting development and "hardware" data. The predicted effectiveness-cost curve for this new system is reasonably flat from 200 to 80,000 feet in altitude with a reasonable expectancy of about ten times the effectiveness of previous guided missiles. This single technical breakthrough provides us, if the missile is realized in actual hardware, with the means to develop the kind of air defense we need and at a cost that we can afford. But this is only one of a SERIES of competitors.

To estimate the approximate cost and order of magnitude of the proposed defense using the Raytheon system, I will outline the elements of such a cost. This cost must be related to the assumed threat, which in turn must be derived from intelligence information. Let us assume that the Soviet Union can mount an attack on the North American continent consisting of a thousand aircraft carrying hydrogen or atomic bombs. He has planned his attack to assume at least a 90 percent probability of destroying 10 percent of our war potential. I have assumed that the defense in turn is planned so as not to allow the Soviet Union the possibility of destroying more than 10 percent of our war potential. The defense has a severe problem, because of the concentration of North American industry, because of the nature of atomic and thermal weapons, and of the probabilities that a single aircraft can get through a defense. If we assume a defense based upon this new guidance system, we can calculate, for example, the number of battalions required for the defense of New York City. The effectiveness of this defense must be expressed as a probability, since it will never be possible to make sure that no aircraft at all get through; this probability has the usual normal distribution. We can design a defense such that the probability of a single aircraft out of several hundred planes in the attack getting through is very small indeed (say the order of 1/10th of 1 percent). The general shape of the function is given in Fig. 4.

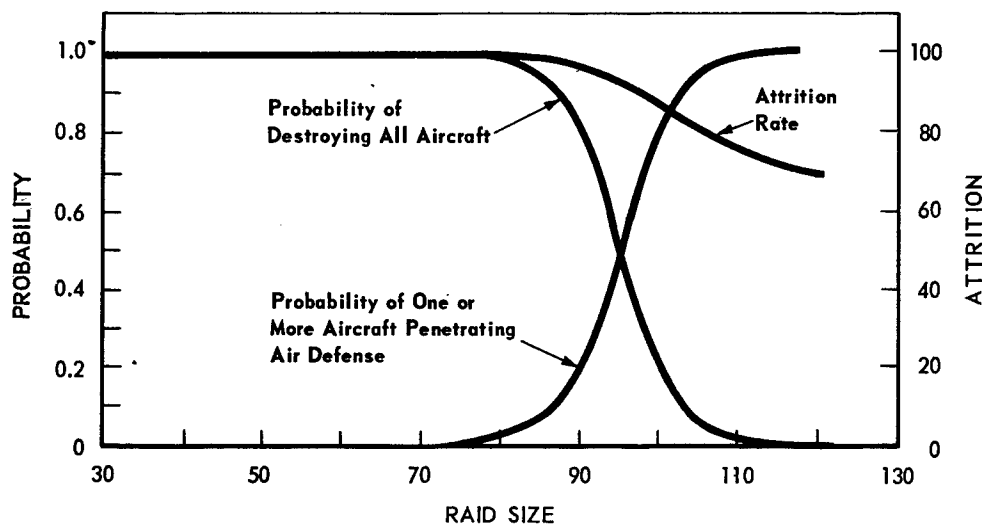


Fig. 4—Measures of Air Defense Effectiveness

This is drawn for a particular raid size and for a particular defense. On this basis 20 battalions of this new guided missile defending New York would cause the enemy to expend his entire attacking force of a thousand aircraft in order to obtain a 90 percent chance of getting one or more aircraft through. Taking into account the potential of the North American continent as a target system, approximately 250 battalions of such missiles would prevent the enemy from destroying more than 10 percent of the North American war potential. I believe we could survive an attack of this magnitude.

The initial and the annual costs for a complete system are given in Table 1. If the initial costs are amortized over a period of four years, you can see that the approximate annual cost will be in the order of five billion dollars a year.

TABLE 1

COST OF DEFENDING THE NORTH AMERICAN CONTINENT
(In Billions)

| | Initial | Annual |
|--------------------------|---------|--------|
| Guided missile | 5.5 | 1.25 |
| Warning and coordination | 2.7 | 0.45 |
| Interceptors | 3.7 | 0.50 |
| Total | 11.9 | 2.2 |

This is the cost for the entire system, including the various warning nets, ranging from the Arctic and picket-ship nets to the McGill fence and the Lincoln type systems, the target acquisitions, the fire control, and the coordination systems. I have also included the costs of operating the manned aircraft interceptors, although these, because of their excessive expense, are expected to contribute relatively little to an effective defense. Even if the effectiveness of the new missile is appreciably less than expected, it can hardly be as low as one-fourth of the calculated value. On one-fourth of the optimistic basis, the maximum cost could be established at approximately 13 billion dollars per year. The above estimates represent direct costs only.

Estimates by various economic groups indicate that such expenditures, if really necessary, could be endured without reducing our present standard of living. The National Planning Association, headed by Ralph J. Watkins, Director of Research for Dun and Bradstreet, for example, estimates that we could spend an additional 22 billion a year for defense without any serious effect on our economy or standard of living. The figures I have quoted, however, do not require going to this limit.

If one-fourth of our defense budget were devoted to the defense of the North American continent, an additional expenditure of 10 billion dollars a year would be required under the most adverse of circumstances. Under the best of circumstances the expenditure for defense of the North American Continent could amount to only about 10 percent of the present total costs of our defense budget.

The tremendous improvement in effectiveness of Army anti-aircraft weapons, an improvement of twenty times in seven years with a limited effort, can be accelerated to provide even greater increases in effectiveness if we desire. I believe the "optimistic" guess is the minimum that can be achieved rather than the reverse.

Until a few months ago, I had been most deeply pessimistic with respect to our chance for survival against an antagonistic Soviet Union, and mostly because I could not conceive of a feasible course of action which would guard this continent against a highly probable attack, when the Soviet Union chose to destroy our base of fire. This attitude was the result of my underestimation of both our technological skills and our innate drive toward teamwork to solve the impossible problems. This teamwork, not only between our two countries but within each one of them, has recently been increasingly spontaneous by many individuals at all levels. It still lacks leadership and direction, but given the will and desire on our part, these can be provided.

I am in no sense unaware of the tremendous organizational, research, production, and operational problems which must be solved if such a defense

[REDACTED]

system is to be achieved. I am also aware of the fact that for three to five years we must lie defenseless, even if we press most vigorously for the actions which I have outlined. This danger we must endure because of our inaction in the past. It is not an excuse for present lack of action.

There are many actions necessary in the design of our defensive system, and the studies leading to the design of the optimum system must proceed parallel with the development of the warning nets, the means to clear the skies of friendly aircraft, the consideration of subversive attack, and the threat of and protection against the use of biological and chemical agents, and so on.

RESEARCH STUDIES NEEDED

Let me list a few of the studies and actions badly needed, which are not now underway or are incomplete.

1. A better evaluation of the Russian threat with thermo-nuclear weapons;
2. A study of the threat from submarine-launched guided missiles;
3. An accelerated program of tests to give basic data on the capabilities of BW and CW agents;
4. An analysis of the BW and CW threat on population targets;
5. A study of the effect on war potential of various degrees of damage to population, war industries, and critical facilities;
6. A study of the psychological effect of various degrees of destruction;
7. A study of the threat to war potential and to the governmental system by organized Communist guerrilla activity;
8. The encouragement of rapid and intensive action to establish adequate early-warning and aircraft-tracking systems;
9. The coordination of work on target-acquisition and assignment systems for ground weapons closely with work on aircraft-tracking systems;
10. The development of plans for clearing the air of friendly planes in the event of an alert;
11. Change in the rules of engagement for ground defense to permit unrestricted fire;
12. A crash research and development program for guided missiles with an all-altitude capability, beginning with the Raytheon system;
13. Vigorous support of alternate solutions to the low-altitude problem;
14. Study of the effectiveness-to-cost ratios as a function of enemy tactics in the new weapons systems, to include all of the present and the future weapons as they emerge;
15. Study and tests against possible enemy countermeasures;
16. Study of the possible economies in the use of civilian operation of the air defense system;
17. More intensive study of the problem of destroying air-to-surface missiles;
18. Solutions for the minimax optimum defense for various reasonable choices of fixed assumptions of the scale of enemy attack;
19. A study of the optimum composition or a future defense system to provide a quantitative guide for division in the budget, this to include the cost of defense of various degrees of adequacy;
20. Study of the detailed tactics of bomb delivery in a saturation raid by the Soviet Union;

- [REDACTED]
21. Study of the cost and effectiveness of manned interceptors on a basis comparable to that used in connection with ground-defense weapons;
 22. Study of the cost and effectiveness of passive measures for preventing critical loss of isolated critical facilities;
 23. Study of the costs of dispersion of new industrial capital as compared to possible savings in defense costs.

It is clear that there are many studies required, and there are many research and development, procedural, and operational decisions to be made in addition to the ones enumerated above, and which are not now contemplated. It is clear that even with the bright prospect of a North American defense, reasonably airtight, this remains speculative unless our potential capabilities are better organized. Like others, I would suggest that this could best be done by a Joint Department of North American Defense, civilian directed, with its own separate budget for research, development, and procurement; with a military Theater Commander responsible for Operations, and with authority stemming directly from the heads of our two countries. Thus organized, the capabilities we already hold in our hands can achieve a defense so good that no foreseeable Soviet attack could destroy either our will to fight or our military potential. I know that this last suggestion is not in the slightest original. It is so much common sense that it has been proposed by one group after another. But we do not adopt it and we lose time—we lose time without good organization!

To summarize then, the Soviet Union is unalterably hostile and has a capability, already in existence, of destroying our base of fire. But the Soviet have their own troubles, and this may give us time to provide a defense. We can defend and can afford to defend the North American continent if we so desire. If an inimical Soviet Union continues to press us toward a war, we can win that war if we have insured the defense of the North American continent, and on no other condition. Let us take the prudent action of defending our own base of fire as a first priority. If we do so, we will have the time to seek the best and least destructive solution, not only for ourselves but also for humanity.



DEPARTMENT OF DEFENSE
DIRECTORATE FOR FREEDOM OF INFORMATION AND SECURITY REVIEW
1155 DEFENSE PENTAGON
WASHINGTON, DC 20301-1155

24 JAN 2000

Ref: 99-F-2117



This is a final response to your Freedom of Information Act (FOIA) letter of June 28, 1999, to the Defense Technical Information Center, requesting the following booklets under the provisions of the FOIA:

- Analysis of Atomic Weapon's Effects Upon Army Ground Operations Equipment
- Defense of the North American Continent AD B234 130
- Military Skills in a Changing Technology AD-B234 128

As indicated in our initial response to you dated September 1, 1999, the first document ("Analysis of Atomic Weapon's Effects...") was referred to the Department of the Army for action and a direct reply to you. The remaining two documents, which were reviewed by the Department of Defense, are released in full and are enclosed.

There are no assessable fees for this response in this instance.

2-22-2000 Sincerely,

Per telecon w/ Ms. Patricia Skinner,
DOD Freedom of Info + Secy Review
Office, AD-B234 130 + AD-B234 128
are approved for Public Release.

SIGNED

H. J. McIntyre
Director

Completed 2-22-2000
aw

Enclosures:
As stated

AEHman

cc:
Defense Technical Information Center
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