REVIEW OF THE SPACE PROGRAM

TUESDAY, FEBRUARY 16, 1960

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND ASTRONAUTICS,
Washington, D.C.

The committee met at 10 a.m., Hon. Overton Brooks (chairman) presiding.

The CHAIRMAN. The committee will come to order.

This morning we have the privilege of having the Secretary of the Army, Hon. Wilber M. Brucker, and his able Chief of Staff, Gen. Lyman L. Lemnitzer, both before the committee. We have had them previously, but this is more of a general appearance, and the other was for a special purpose. We are glad to have you.

Yesterday afternoon at an executive meeting the members of the committee, asked me to enforce the 5-minute rule. So I am going to call every member after 5 minutes and they are going to have to stop.

Mr. Brucker, would you care to give us your statement at this time.

STATEMENT OF HON. WILBER M. BRUCKER, SECRETARY OF THE ARMY

Secretary BRUCKER. Mr. Chairman and gentlemen, I welcome the opportunity to appear again——

The CHAIRMAN. May I interrupt you just a moment. Mr. Fulton asked me to announce that he will be late this morning. He is now attending a panel of the National Missile Space Conference and he will be along in just a little while. All right, sir.

Secretary BRUCKER. Mr. Chairman and gentlemen, I welcome the opportunity to appear again before the Science and Astronautics Committee of the House of Representatives. The matters which you are considering are of vital importance today and could conceivably become, in another few years, most vital to our overall position in the world—even to the security of our Nation itself. I particularly appreciate this opportunity to discuss with you the Army's contribution to our national space effort because the nature, scope, and potential of this contribution are sometimes not fully understood, even by some who are conversant with space objectives, activities and programs.

The other Army witnesses who will be appearing before you over the next 3 days are:

General Lemnitzer, Chief of Staff of the Army, who is appearing with me today.

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Lieutenant General Trudeau, Chief of Research and Development, and Major General Dick, his Director of Special Weapons, scheduled to appear tomorrow, and

Major General Schomburg, Commander of the Army Ordnance Missile Command at Huntsville, Ala.

May I also say that here with me this morning for additional counsel on these matters is Dr. Richard Morse, who is the Director of Research and Development of the Army, and who will represent me in my behalf as Secretary of the Army during any period of the next 2 days when Army witnesses are appearing.

This morning I propose to discuss in general terms contributions which the Army has made to the national space program since I appeared before this committee in February 1959, as well as the Army's policy and views with respect to its continued role and participation in the furtherance of this vital effort. General Lemnitzer is ready to discuss the Army's views on the military use of space and the Army's role and requirements in this area as we see them. The other Army witnesses are ready to provide greater details with respect to all of these matters.

In furthering the overall military posture and security of the United States, the Army will endeavor to contribute to the objectives set forth in our overall national policy. As you know, President Eisenhower has stated that our activities in space should be devoted primarily for peaceful purposes for the benefit of all mankind. This policy was ratified by the Congress in the National Aeronautics and Space Act of 1958, and the National Aeronautics and Space Administration was established and charged with the mission of conducting civilian scientific space exploration. At the same time, as the Congress likewise fully realized, our national security requires that we should not fail to exploit to the fullest the improved military capabilities which operations in space promise to provide. We must never lose sight of the fact that it is most difficult, if not impossible, to separate, in a technical sense, peaceful accomplishments from military capabilities in space. It is therefore our responsibility in the military to insure that we take advantage of every opportunity afforded by space exploration to strengthen our Nation's defenses and at the same time to insure that the military use of space by any potential enemy does not endanger our national security.

Potential military uses of space on the part of the U.S.S.R. will tend to increase the dimensions of the Communist threat, without necessarily replacing any element of that threat which presently exists. In fact, such an expansion of the threat might well have an effect comparable to the one we foresee resulting from the growing Soviet ICBM capability, in which the combination of this missile strength and the already large conventional forces of the Communist bloc may well encourage the Soviets to undertake bolder ventures with tactical forces, under the strategic "umbrella" provided by the threat of a thermonuclear holocaust.

The Army's efforts in space have been and will be directed to the accomplishment of two primary objectives: First, to strive for development of Army capabilities which will permit us better to accomplish our assigned missions of land combat and air defense; and second, to contribute, where we are best qualified, to the overall ad-

vancement of our country's national space program—both civilian and military.

Largely as a result of the explosive technological and scientific advances since World War II, it became fashionable in some quarters to jump to the unwarranted conclusion that the traditional and conventional methods of warfare—and particularly land warfare, the basic mission of the Army—were being eclipsed and had become obsolete. Fortunately for our national security, neither the Congress nor the other responsibile officials of our Government have been deluded by any such superficial approach. On the contrary, there is abundant evidence that the ability of the Army to engage successfully in any form of ground combat is more important to the security of the United States than ever before in our history. Despite the glamour of long range missiles and the boundless challenges presented by the possibilities of space exploration opening before us, we must never loose sight of the fact that man's home and life are on the land, and he is capable of existing outside his natural environment only to the extent that he is able to create an artificial environment for the time being and take it with him. We must never lose sight of the fact that if man does not control the land to which he must return, man cannot exist indefinitely, either at sea, beneath the sea, in the atmosphere or outside the atmosphere. The Army's interests and endeavors are therefore to use space to improve its capabilities to perform its vital mission of land combat and to defend the land from attack from any place, including an attack from the space above the land.

I should now like to review the Army's accomplishments in the year which has passed, to discuss the changes which have occurred during that period and, finally, to outline briefly the Army's plans for the coming year.

In accordance with our national policy to reduce duplication of effort and to obtain the maximum benefit from funds committed to our space program, all of the Army's efforts in the satellite and space vehicle fields have been conducted in an effort of either an integrated Department of Defense military space program directed by the Advanced Research Projects Agency or in support of the civilian scientific space program directed by NASA. The funds for these efforts have been provided to the Army by either ARPA or NASA from the funds made available to them by the Congress for satellite and space vehicle development. At the same time, the Army has been assigned by the Secretary of Defense responsibility for the development of the Nike-Zeus in order to provide an antimissile defense for the United States. The Army has conducted and funded this rapidly advancing Nike-Zeus program from the resources made available to the Army by the Congress.

During the past year the Army, which was the first agency in the free world to penetrate outer space; to develop large multiple-stage missiles; to accomplish the successful return and recovery intact of nose cones from outer space; and the first to orbit an artificial earth satellite, added additional firsts to this list of pace-setting accomplishments. On March 3, 1959, the Army, in support of NASA, launched the free world's first artificial satellite of the Sun, Pioneer IV, and on May 28, 1959, successfully recovered in a Jupiter nose cone two live monkeys, the first primates to have been transported

outside the atmosphere approximately 1,500 miles through space, and successfully recovered. During the same period our Nike-Zeus antimissile development program has proceeded on schedule, while at the same time achieving improvements in both the missile and its control system which will enable Nike-Zeus very substantially to exceed its original design objectives. Still another significant first was, as I am sure you have either heard or seen, achieved on the 29th of January 1960, when a Hawk air defense missile successfully intercepted and destroyed an Honest John ballistic missile at White Sands Missile Range. In response to a request from this committee we have brought with us a film of this firing and a film report on Nike-Zeus which we will be ready to show you in executive session after General Lemnitzer and I have completed our statements.

I would be remiss in reporting to you the Army space progress, present status, and future plans if I failed to mention the significant changes in organization which have occurred since last year. You will recall that at this time a year ago ARPA was responsible to the Secretary of Defense for the conduct of all military space research and development within the Department. It accomplished its mission by assigning to the various services responsibility for the development of particular projects for which they were either uniquely or particularly qualified. In September 1959, the Secretary of Defense assigned to the Air Force responsibility for the development, production, and launching of space boosters and for the integration into such systems of such payloads as might be developed by it or other services.

At the same time, the Secretary of Defense indicated his intention, which has since been implemented, of transferring to the Air Force the responsibility for the development of two major satellite programs, the Samos (reconnaissance satellite), and the Midas (early warning satellite). Subsequently, the Discoverer (an engineering development and test satellite) was similarly transferred to the Air Force by the Secretary of Defense.

The Secretary of Defense also indicated that assignment for development of the Transit navigation satellite and the Notus interim communications satellite to the Navy and Army, respectively, had been approved, but that the transfer dates would be determined later. These transfers have not yet been implemented, although the Navy is still developing for ARPA the Transit payload and the Army is still developing for ARPA the Courier interim communications payload.

Subsequently, on October 21, 1959, the President, as I discussed with you earlier this month, transferred from ARPA to NASA responsibility for the Saturn 1½ million pound thrust booster and decided to transfer from the Army to NASA the Development Operations Division of the Army Ballistic Missile Agency.

We in the Army recognize that these events have reduced significantly our capabilities and responsibilities for developing and launching integrated space vehicle systems, but I should like to emphasize that the Army still retains many and varied capabilities in its seven technical services which are contributing and will continue to contribute most significantly to space developments and progress.

At the same time, our efforts in this field complement and benefit our other Army programs since many techniques and hardware items, as, for example, in communications-electronics, have application in both.

The Army's micromodule and electronic component development programs have provided smaller, more reliable, and more versatile electronic parts for application in ground and airborne equipment and in satellite communications equipment as well. Here, then, is a case where our efforts have resulted both in benefits to all services in their assigned roles and in benefits to the national space program.

With respect to communications satellites, which I mentioned earlier, the Secretary of Defense is actively considering assignment to the Army of responsibility for development, under ARPA direction and funding, of the principal communications satellite systems. This significant program will be directed toward a 24-hour global communications system involving satellites at altitudes of thousands of miles and an extensive network of ground stations. Existence of such a system will assure reliable, adequate, and rapid communications for critical military operations in any part of the world. The initial system to be tested is called Courier and will provide a communications link of the delayed-repeater type, much like Project Score which directed President Eisenhower's Christmas message in December 1958 from a satellite-borne communications package.

The Army will accept this new task, if assigned, with enthusiasm and confidence.

In addition to the communications satellite program, the Army Signal Corps is conducting other satellite programs for ARPA and for NASA.

This represents the contribution, and the potential for still further contribution, by only one of the seven Army Technical Services. All of these Army Technical Services have the inhouse scientific and technological capability and the widespread contact with American industry to represent, in the aggregate, an organized and coordinated Army resource which can be rapidly oriented toward the accomplishment of almost any space project or program in the national interest.

Extensive Army capabilities also exist in the diverse fields of propulsion; mapping, geodesy, and selenodesy; ground-based engineering and logistic support systems; nuclear power systems; transportation; medicine; and many other related areas of competence.

During the coming year we plan to press forward at the maximum practical rate, consistent with available funds, the space and antimissile defense projects which I have already mentioned. In particular, we will continue to press vigorously the development of the vital Nike-Zeus antimissile missile. I support wholeheartedly, and without reservation, previous testimony before this committee that we must make every effort to provide a defensive capability against both the ICBM and offensive space systems. I am happy to note that the Air Force indicated to you that it has concluded that it will be possible to provide effective defensive measures against some offensive systems through the use of defensive military space systems. As you know, the Army has long been convinced that the Nike-Zeus will provide an effective defense against intercontinental ballistic missiles. You can be sure that the Army will bend every effort in the coming year to press development of the Nike-Zeus with the urgency it deserves and the top national priority for development which it enjoys.

In addition, the Army, until the Von Braun team's transfer actually takes place on July 1, 1960, will continue to conduct for the Na-

tional Aeronautics and Space Administration satellite firings and the Mercury Redstone firings which will lead to the free world's first launching of a man into space. NASA representatives have already described for you their plans for these programs so it is not necessary for me to elaborate on them at this time. We will also continue to press forward the Tiros meteorological satellite payload which the Signal Corps is developing for NASA and the Courier communications satellite development program I have described.

In summary, Mr. Chairman, during the past year the Army has made significant contributions in furtherance of the Nation's military and civilian space effort, it is in the process of contributing to the National Aeronautics and Space Agency what it considers to be the outstanding missile and space vehicle development team in the world, and it will continue to press forward vigorously with the extensive capability and competence it possesses to support the national program.

The CHAIRMAN. Thank you, Mr. Secretary. I want to say the way your statement impresses me, it is a ringing challenge to those that would write off the Army as a vital part of our defense program. I am glad you are taking a fighting, aggressive attitude in reference to the Army.

Secretary BRUCKER. Thank you.

Mr. MILLER. May I join you in that statement, Mr. Chairman.

The CHAIRMAN. As one old Army man to another, yes.

Secretary BRUCKER. Thank you very much.

The CHAIRMAN. Now, we have at this time General Lemnitzer, who is Chief of Staff of the U.S. Army. I think everyone has a copy of his statement.

General Lemnitzer, if you will, sir, we are happy to have your statement.

General LEMNITZER. Thank you.

STATEMENT OF GEN. LYMAN L. LEMNITZER, CHIEF OF STAFF, U.S. ARMY

General LEMNITZER. Mr. Chairman and gentlemen, it is a pleasure to meet with your committee again. I welcome this opportunity to discuss with you—in somewhat broader terms than on the occasion of my recent appearance before your committee—the very important subject of space, particularly the Army's interest, capabilities, and role in space.

At the outset, I would like to say that I feel that, at least for the time being, we must look upon space as an entirely new medium. It is a medium of untold possibilities—a vast, relatively unknown area which we are only beginning to explore. New technological discoveries and developments in the field of space are being made almost daily.

Accordingly, we should proceed to explore this new medium along rather broad fronts in both the civilian and military areas of interest. We must be sufficiently flexible to recognize quickly and utilize fully those developments made in either area which may have an applicability to the other. Similarly, at this state of our advancement into space, we must retain the maximum degree of flexibility—recognizing the extent to which the acquisition of unexpected capabilities may suddenly alter our concepts, plans, and programs.

Furthermore, the exploration and exploitation of this uniquely vast as well as entirely new environment will demand a substantial contribution in all fields—including scientific, industrial, political, and military.

With these thoughts in mind, I would like to outline briefly my views on the military use of space and the Army role in space, as we see it at this time.

Although the military use of space may ultimately produce new concepts of combat, for the immediate future space systems will be principally used to support terrestrial operations. Space systems can complement and extend present earth-based capabilities and techniques. In fact, in some respects they will make very substantial contributions. Offensive and defensive weapons systems in space are further in the future, are not as clearly defined, and at this stage, are primarily a matter for study and research. The extent to which actual military operations might be conducted in space, to include the land mass of the moon or of other celestial bodies, is still somewhat conjectural.

However, this possibility must be recognized, and the military space program should reflect these longer range considerations. In designing both the immediate and long-range aspects of our military space program, we must bear in mind that space, because of its potential for all of the military services, transcends the exclusive interests of any one of the services.

The Army plays an important and vital role in all forms of warfare, ranging across the entire spectrum—general nuclear war, limited war, and cold war. Within the context of this role, the Army's role and interest in space are initially directed toward the application of space to modern terrestrial warfare—more specifically, its application to the accomplishment of the Army's principal assigned missions in this environment. Stated briefly, these principal missions are—

To provide and support forces for land combat.

To provide and support forces for air and missile defense.

To provide a number of related services, not only for the Army but in support of the other armed services as well, including intelligence, communications, mapping, and geodesy.

The accomplishment of each of the foregoing Army missions would be greatly facilitated by space systems which we can visualize at the present time. For example:

Land combat forces urgently require surveillance and reconnaissance of hostile territory, which reconnaissance satellite systems should be able to provide.

Air and missile defense forces are vitally concerned with the early detection, identification, and location of hostile aircraft, missiles, or space vehicles, which space surveillance systems could provide.

Communications satellites will greatly increase the security, capacity, and reliability of our vital worldwide Army Command and Administrative Net, which provides communications service for many agencies in addition to the Army.

Proper performance of the Army's mission of providing mapping and geodetic service to all military services demands exploitation of space technology, particularly to gain vital and accurate information over extensive areas of the world.

We must visualize that successful performance of the Army's missions in the future—in an age of expanding space technology—will require application of additional space techniques and systems, as they are developed. For example, it may well become necessary to extend air and missile defense systems to provide defense against hostile satellites or other space vehicles.

The Army's ultimate role and interest in outer space—including operations on the land masses of celestial bodies—will be determined by strategic, tactical, and technological considerations that are still very far in the future. However, it is reasonable to assume that there will be an important role for the Army in this area—particularly at such time as we may be able to effect human lodgments on habitable celestial bodies.

As assets to apply against its requirements in the realm of space, the Army has developed unique capabilities. These are largely a natural outgrowth of the Army's pioneering efforts in missiles, communications-electronics, geodesy, selenodesy, construction, and survival and operations in extreme environments. Even after the planned transfer of a portion of the Army Ballistic Missile Agency to the National Aeronautics and Space Administration, the Army will still have a substantial capability to participate in space activities. The application of this capability in space is not restricted to Army requirements but can continue to contribute, as it has in the past, to our overall national space program.

Secretary Brucker has already discussed the Army's capabilities in missiles and communications-electronics. I would like to expand somewhat upon our capabilities and present work in some other fields.

The Army is especially experienced in geodesy, which is the science of determining the exact position of points on the Earth's surface, and the topography, shape, and size of the Earth. The Army is also making our first real topographic map of the Moon.

Similarly, the Army has a great deal of experience in constructing missile bases, launching and space tracking sites, and is engaged in developing and operating simulated environment facilities.

We are involved in important work related to radiation dose and spectrum measurements, shielding requirements, chemical oxygen production, toxicity studies, and other activities relating to the protection of man from biological, chemical, and radiological hazards.

We are also studying the biomedical aspects of Army missile programs—and are engaged in the development of nonperishable food pastes and tablets, the utilization of algae for food production and the development of special clothing, shelters, and handling equipment.

In addition, we are supporting national missile and space programs in managing the movement of personnel and materials, and in developing techniques for handling and moving missiles, space vehicles, and ground-support equipment.

In summary, the Army has a vital role and interest in space. It also has the capability to contribute materially to our overall space program—in both the military and nonmilitary fields. Based upon its missions and capabilities, the Army is interested in developing communications satellites, mapping and geodesy satellites, a space surveillance system, and an antisatellite defense system—as well as an antimissile system. You may be assured that the Army will continue to provide maximum support for our national space effort.

The CHAIRMAN. Thank you very much, General, for a very fine statement.

Now, members of the committee, at 11:30—it will take about 20 to 30 minutes to see this film, and it is classified and we certainly want to see it this morning. I think that will give everybody an opportunity to question the Secretary and the Chief of Staff.

However, you will recall that you asked the Chair yesterday afternoon to limit everybody to 5 minutes and I propose to do it.

Mr. Secretary, did the Army ever make any recommendations concerning how the space program should be handled, as far as the Army is concerned?

Secretary BRUCKER. You mean in the 1960 recommendations of the amendments to the act?

The CHAIRMAN. Yes, sir.

Secretary BRUCKER. We did not. You see in answer to the question the other day, the amendments were not presented to us prior to the time that they were included.

The CHAIRMAN. Now, did you make recommendations to the proper authority as to the future program of the Army in space? In other words, did you make a request for certain areas?

Secretary BRUCKER. We communicated our ideas on the subject to the Department of Defense. My answer related particularly to this bill that would amend the present Space Act. We did make our recommendations and have currently and right along made our recommendations with regard to the position of the Army, our readiness, our ability and our desires with respect to space.

The CHAIRMAN. Now, I notice in the press reports that the Army has apparently greater jurisdiction now in the use for tactical aircraft and I would think following that principle, that the same would apply for space aircraft or spacecraft.

Secretary BRUCKER. I wouldn't believe that that would make a difference that would justify us in going further with that, Mr. Chairman. I think, in other words, our use of tactical aircraft is in connection with the battlefield, but not beyond that.

The CHAIRMAN. I notice that in your statement and also the General's statement references to various phases of the space program which the Army will retain in the future. How was that set aside? Was that by Army action, Defense action, or did that go to the level of the Presidency?

Secretary BRUCKER. It is by Defense action. The Army requested that it be permitted to go forward with various of these suggestions that we had with reference to space. And it was at the express direction of the Secretary of Defense, back in September of 1959, that we were assigned or given the assignment for a communications satellite.

That was at our express request, and we have followed that up for the purpose of having the entire mission with regard to a communications satellite turned over to the Army.

The CHAIRMAN. Now, who has Notus, that is the interim communications satellite?

Secretary BRUCKER. That is the one that I referred to. That is covered by the name Courier. Courier is a project that is under the Notus program. Notus is the name for the overall program for communications, and Courier is one of the projects in that program.

The CHAIRMAN. Now, the Army doesn't have Transit, does it?

Secretary BRUCKER. No, Transit is Navy.

The CHAIRMAN. That is a Navy project?

Secretary BRUCKER. Right. That is a navigational project.

The CHAIRMAN. But you have Notus, and you have what other projects? You have Geodesy, which is mapping. And I notice, too, the Chief of Engineers, of the Army, has been making maps of the Moon. Sometime later we would like very much to have him down before this committee to tell us what he has done in that respect because that is certainly pioneering.

Secretary BRUCKER. Yes, the Chief of Engineers is in charge of that project and it is actively moving along.

The CHAIRMAN. That is under you?

Secretary BRUCKER. It is, under the Corps of Engineers.

The CHAIRMAN. My time has expired and I recognize Mr. Chenoweth.

Mr. CHENOWETH. Mr. Secretary, we are happy to have you and the general again with us here. We have great confidence in what you are doing down there. I think the American people share that confidence. We are, of course, always anxious to get more details. Mr. Secretary, how would you sum up the Army's role in this so-called space and missile age in which we are now entering? What impact has it had on the Army? Has it changed any of your basic concepts of thinking, basic training programs or weapons programs, just what has it done to the Army in recent years?

Secretary BRUCKER. It certainly has done a great deal to lift our gaze to the things that are out in the future, in space, and there is no doubt about the fact that it will have influence in some things that are very earthy, but in which we are now having a slant toward the space side of it. I will give you an illustration of it. We will take, for instance, this program for communications, and also reconnaissance. We are interested in both.

We feel that eventually, in both communications and reconnaissance, it will assist very greatly even the field commander in the battlefield. I say, that weather and other characteristics of the space phenomenon, and also reconnaissance—as to what there is on the other side, and any number of other things that I wouldn't want to go into in unclassified discussion. The Army would be interested in having this information communicated directly to the land forces.

In addition to that, we have the mission, of course, of providing air defense forces—Nike-Zeus, for instance. The Nike-Zeus, as you know, is the antimissile missile. It is a wholly new concept in one way and yet a gradual and natural progression of what we have already had in the highly effective Nike family.

The Army has been interested in batting down any aerodynamically supported vehicle, in the atmosphere. Up to the present time, until we reached out into space, that was a job that we were satisfied with, first, with the Nike-Ajax, but we found that we had to do even more because of the speed of the aerodynamic threat. So, we stepped that up and developed the second generation of the Nike family, the Nike-Hercules. The Nike-Hercules has become so powerful that nothing can live in the atmosphere—I mean by living, can exist in the atmosphere, within its range, because when it locks on, it is sure death.

That ranges up to over 100,000 feet; I can't indicate the extreme height of it, but it ranges in such a way that nothing can exist in the man-breathing atmosphere at all.

Mr. CHENOWETH. What is the status of the Nike-Hercules now?

Secretary BRUCKER. The status of the Nike-Hercules is that it is on site in different parts of the country and in different parts of the world. At the present time it is on site, I will give you an example, at two places in Alaska. There it is in such a splendid spot that it is able to defend that whole area. The Nike-Hercules can protect not only against the incoming planes, themselves, but it also has an added capability in its present range to protect against anything that may come in on the deck as well as at high altitudes.

The CHAIRMAN. The gentleman's time has expired.

Mr. Miller?

Mr. MILLER. Mr. Secretary, in the field of development you have demonstrated that the Army has great capacity. Now, as I see it you only are given—you are only in the program in one instance now and that is in the case of Courier. Courier is the only assigned——

Secretary BRUCKER. Courier, that is right.

Mr. MILLER. Only assigned satellite that has been given to you. Have you applied for any other work or does this occupy your full capability?

Secretary BRUCKER. Can I just respond first to the first part of your question: We have not completely been given that project. It has been indicated that ARPA would assign that to us and they have given us the opportunity to start on it. The actual assignment has not yet been made.

Mr. MILLER. In view of the fact that you have great demonstrated capability in this field?

Secretary BRUCKER. That is right. We are hopeful that we will get that. As a matter of fact, it was so indicated on February 11 of this year, just this last week, that it is getting closer, but yet the assignment hasn't been completely made.

Mr. MILLER. And you are willing to accept it if you do get it?

Secretary BRUCKER. With enthusiasm if we get it. We are ready, we have been working on it right along and we have made great progress on it, but the only thing I am calling attention to is that the assignment hasn't yet been made, actually made.

Mr. MILLER. Mr. Secretary, I am also concerned, very much concerned, with the defense against missiles. I think that in our effort to try and get ahead of the Russians we have overlooked this phase of it. Last year there was $137 million given to you by Congress for the development of the Nike-Zeus. Have these funds been released to you?

Secretary BRUCKER. No, they have not.

Mr. MILLER. Why, what is blocking them?

Secretary BRUCKER. The decision was made by the Department of Defense in the fall, last fall. It was at the time when the budget was submitted. On December 1, we are told that the $137 million will be placed in what is called a reserve for 1961. These were 1960 moneys you remember, Mr. Miller, and we were told that they would be placed in the 1961 reserve funds and that no preproduction or production money would be made available to the Army.

Mr. MILLER. I remember very distinctly in 1941 when we were in a bad way, Congress appropriated money and then the American people wondered why you couldn't go and take antiaircraft guns off the shelf; they weren't there. Aren't we putting ourselves exactly in the same position today that we were in then, when we are neglecting the development of this weapon that is presently about the only proven thing, the only one that has any great capability to it?

Secretary BRUCKER. The Army, as far as we are concerned is moving just as rapidly as it can. We are on schedule and I would like to give you the comforting assurance——

Mr. MILLER. But you could use that $137 million very successfully?

Secretary BRUCKER. As to the $137 million, we are desiring and—we don't feel that we are stopped completely on that. We are at the present time urging that there be reconsideration for portions of it so that we may go as far as we can on anything that we can get released. The Army, in other words, believes that it has something here that it can contribute for the good of everybody in the country. We want to do it and as rapidly as we can do it we are urging that we be given the funds for that purpose.

Mr. MILLER. General Lemnitzer, I would like to ask you as a military man: Do you see great importance in the Nike-Zeus program?

General LEMNITZER. Well I think it is obvious even to an amateur that it is highly desirable—in the light of the fact that ICBM's and submarine-launched missiles may be directed at this country—to have a capability to shoot them down. As a matter of fact, I consider it absolutely vital to our security in this oncoming ICBM age.

Mr. MILLER. Do you know of anything better that we have developed to date?

General LEMNITZER. No, there is no other active system of missile defense. I would just like to amplify what the Secretary has said, however. We are moving at the highest possible speed in the research and development phase on Nike-Zeus, and later on there will be explanations of what we have accomplished in this regard.

The issue, Mr. Miller, is in the field of going into what we refer to as preproduction. There are those who feel that we have not yet reached the stage where going into preproduction is warranted by the accomplishments in research and development.

On the other hand, we think differently about it——

Mr. MILLER. You think you should go into preproduction now? I don't have very much time.

General LEMNITZER. We thought differently about it, there is a difference of opinion on this. We have had our opportunity to present our case, but the decisions are just what the Secretary indicated.

The CHAIRMAN. Your time has expired.

Mr. Van Pelt?

Mr. VAN PELT. No questions.

The CHAIRMAN. Mr. Anfuso?

Mr. ANFUSO. Just one question.

Mr. Secretary, didn't you have a successful firing of a Nike-Zeus recently?

Secretary BRUCKER. Yes, we did. We had a very successful firing, completely successful, in the White Sands Missile Range, February 3, 1960, which is just a couple of weeks ago, as you see.

As a matter of fact, by request of the committee, we have a film here that shows the actual firing. We also have a film that is subject to your request here, too, to bring, on the Nike-Zeus system, showing just what it can do at the present time. That can speak, perhaps, better than I on the subject of what the ability is. We have great confidence in the Nike-Zeus. As a matter of fact, we are pressing for every day we can get and I may say to you that I not only have confidence as the Army Secretary but individually. I have seen it. I know what it can do. I know the progress we are making. I don't think anybody in the world doubts the fact that the missile is a good missile, and I don't think anybody doubts the fact that the propulsion and the launching and the system, itself, will do what we say it will do.

The question has been with reference to certain things that have been posed as things which must be encountered before it is completely successful. Those are things which require going into executive session to explain in detail.

Mr. ANFUSO. You have, Mr. Secretary, what is known as a military strategy board in which the Army, the Navy, and the Air Corps, and Dr. York sits, and reviews all of these programs.

Secretary BRUCKER. If you have in mind the—what is called the Missile Policy Board, there is a missile board in the Department of Defense. Then there is also a missile committee. Then there is also the Joint Chiefs of Staff. Now, those two agencies are side by side, but they are able to get together and from time to time the Joint Chiefs of Staff calls Dr. York in and from time to time the Joint Chiefs of Staff members appear before the missile committee of the Defense.

Mr. ANFUSO. It was this Board, Mr. Secretary, where Dr. York expressed the opinion that the Nike-Zeus needs more testing and more to show before he would go for it? Wasn't it at this Board meeting?

Secretary BRUCKER. I think it was at the Board meeting he first expressed it, although he has expressed it repeatedly since.

Mr. ANFUSO. Since this successful firing have you had another meeting?

Secretary BRUCKER. Since this February 3d?

Mr. ANFUSO. Since this February 3d. Do you propose to have one if you haven't had one?

Secretary BRUCKER. There has been no Board meeting that I know about since that time, but there is another committee has been set up that you should know about. Let me just add this, if I may for your information.

Mr. ANFUSO. Yes.

Secretary BRUCKER. It is called the Skifter committee, S-k-i-f-t-e-r. Mr. Skifter is a very renowned and reputed scientist in this field. This Committee has been assigned or given the job of reviewing the Nike-Zeus, both the potential and the progress and the scheduling and the rest.

Mr. ANFUSO. Tell us who is on that Committee, Mr. Secretary.

Secretary BRUCKER. I can supply those names.

(The information requested is as follows:)

DEPARTMENT OF DEFENSE NIKE-ZEUS ADVISORY COMMITTEE MEMBERSHIP
JANUARY 1960

Dr. H. R. Skifter, O.D.D.R. & E., chairman.
Mr. R. S. Morse, Director of Research and Development, U.S. Army.
Dr. J. V. Charyk, Assistant Secretary of the Air Force (R. & D.).
Mr. Tinus, vice president, BTL.
Dr. Bode, vice president, BTL (Murray Hill labs).
Brig. Gen. A. W. Betts, ARPA.
Dr. H. Beveridge, ARPA (alternate).
Dr. J. Wiesner, professor, electrical engineering, MIT.
Mr. C. Overhage, director, Lincoln laboratory.
Dr. A. Kantrowitz, director, Avco research laboratory.
Vice Adm. J. H. Sides, Weapons Systems Evaluation Group.
Dr. H. Bethe, professor, physics, Cornell.
Dr. Schilling, Raytheon Manufacturing Co.
Dr. Engstrom, vice president, RCA.
Dr. E. Purcell (consultant), physics department, Harvard.

Mr. ANFUSO. Is Dr. York on the Committee?

Secretary BRUCKER. No; he is not a member of the Committee. He sits as the research development man on the Missile Committee, as such.

Mr. ANFUSO. Supposing this Skifter Committee recommends it, could Dr. York's Committee then overrule it?

Secretary BRUCKER. It has the power to overrule it; yes, it does.

Mr. ANFUSO. So don't you think you ought to go before that Missile Board then in which Dr. York is in now as soon as possible?

Secretary BRUCKER. Dr. Morse, who is here with me now by my side, is a member of that group and he sits with them and relates to them the progress that is being made. So we are tied in on it.

The CHAIRMAN. The gentleman's time has expired.

Mr. Bass?

Mr. BASS. Mr. Secretary, referring to this Nike-Zeus controversy, as I understand it, as far as research and development is concerned, you are moving ahead as fast as you can; is that not correct?

Secretary BRUCKER. Let me answer that—I wish I could answer it categorically yes, but I can't. There is this reservation that I ought to give you: There is no doubt about the fact that in the President's message and in the statement of the Secretary of Defense it has been said that the Army is to go ahead full-scale on research and development. But Dr. Morse, here, has run into a situation where we have been told that less than the amount of money which was stated as the research and development portion of this will be released to us. Namely instead of $323 million, in the neighborhood of $287 million will be authorized.

Now, that means this, because if you cut the amount of the research and development money that is available at the present time, it relates back to things which are in being at the moment which are being processed. So I wouldn't want to categorically say yes to that and have you not know the reservation I just made.

Mr. BASS. I just understood General Lemnitzer to say that the issue was on preproduction rather than on research and development; is that not correct?

Secretary BRUCKER. That is correct, Mr. Bass, that is the issue. But there is this qualification that I speak about in connection with research and development, that you must have before you get into production or preproduction. We are striving at the present time to

get the money which will carry out and implement what the President has promised and what the Secretary of Defense has promised, and that is the full-scale amount for that purpose, but up to the present time we have moved as rapidly as we could and have been financed by it. The only reason I give you that caveat is because I don't want you to say later: "Why didn't you tell us about that?"

Mr. BASS. Up to the present time you are moving ahead as rapidly as you can. What you are concerned about is more money for future research and development; is that correct?

Secretary BRUCKER. That is right.

Mr. BASS. Now, you certainly wouldn't advocate, Mr. Secretary, would you, going into preproduction of a weapon system that hasn't been proved out as effective; would you?

Secretary BRUCKER. This is a question that I have to analyze, I think, out loud for you.

There is what is called a preproduction of material for components of Nike-Zeus. You have your whole system made up of components.

Now, of those components there are a number of items, such as modules, transistors, and other devices of electronic and other nature, some of them very tiny, miniaturized, that can be made in advance of the actual production itself. The purpose of the Army was to suggest that all of those things which could be done in advance of that time, simultaneously with the research and development end, and which would have a relationship to the whole program of not just the Nike-Zeus but other things in that field, that we go forward with that prior to the time that we put brick and mortar and concrete and the rest. My answer to you with regard to brick and mortar and concrete is that with respect to that, in that part of it, the Army has not made any representations or insistence upon that. Our question we raised was to release the amount of money which we could do simultaneously with research and development which we thought would not be duplicated or not be lost, and save time which would, of course, save considerable time by doing.

Mr. BASS. Am I correct in saying that the Nike-Zeus antimissile missile has not yet been effectively proved out as an effective antimissile missile?

Secretary BRUCKER. That is a difficult thing to say because as far as the missile itself is concerned it is in the course of research and development at the present time. It hasn't, of course, been shot at an ICBM, if that is what you mean.

Mr. BASS. That is right.

Secretary BRUCKER. We are going to do that in the Johnson Island-Kwajalein affair.

The CHAIRMAN. Mr. Sisk?

Mr. SISK. Mr. Secretary, just pursuing briefly the question on the Nike-Zeus, actually this situation with reference to moving ahead at the maximum capability of the Army is in almost the same situation it has been in since 1957, for some 3 years, isn't that true? Isn't going far back as late as late 1957 and early 1958, if I am not correct—I believe I am correct on statements made at Huntsville to us, and on other occasions that is, there has been a lack of really a decision to push ahead full scale on Nike-Zeus? Isn't that true, this actually is not something that is just new today?

Secretary BRUCKER. Well, this is not new today, the decision not to press ahead on Nike-Zeus. It is something that has been going on for some time.

Mr. SISK. That was the point I wanted to bring out, because certainly we had statements, as I recall, back in—I am sure as far back as 2 years ago and it seems to me a little further back than that, where from General Medaris and others on this Nike-Zeus program, where they were eager and anxious and yet lacking decisions and lacking money, they were unable to go ahead at their maximum speed. I realize you, with such funds as you have had, have moved ahead as rapidly as possible and I appreciate what has been done. But the point I wanted to bring out, the situation you are confronted with now in the sense of not having sufficient funds to do some of the things needed to be done is not something that just happened in 1960 or 1961 budget.

Secretary BRUCKER. No, it didn't start now. As a matter of fact, 2 years ago when I testified before the House Armed Services Committee, Dr. Von Braun and General Medaris and many others in the Army field, and experts, including my Chief of Research and Development and others urged that that be done. We went before that committee, and at that time after the hearing Congressman Vinson wrote a letter to Secretary McElroy and suggested that the Army be permitted to go into preproduction at that time.

Mr. SISK. Thank you. I want to ask General Lemnitzer one question. I am watching the clock, you know.

Secretary BRUCKER. All right.

The CHAIRMAN. So am I, I am watching it, too. [Laughter.]

Mr. SISK. General Lemnitzer, I was somewhat startled the other day in reading some testimony before a committee over in the other body given by General Twining. And my amazement was due to the fact that I have spent some time at Huntsville from time to time and visited there during the final development of Jupiter and it is my understanding that General Twining in his testimony before the joint hearing of the Senate Aeronautical and Space Sciences Committee and the Preparedness Investigating Committee emphatically denied that the Jupiter missile is mobile. Now, it was my opinion that the Army designed the Jupiter missile system to be a mobile system. Now, I would like to have your opinion as to the mobility of the Jupiter system as designed and visualized by the Army. Would you comment on that?

General LEMNITZER. The Jupiter was designed by the Army as a mobile missile. We had the handling equipment for it, and mobility was basic and fundamental to the entire Jupiter program.

I presume that General Twining's statement was based on the fact that the Jupiter today is not mobile. We turned this missile over to the Air Force in accordance with a decision made by the Secretary of Defense several years ago. The Air Force, in taking it over, did not concur with the mobility concept which we had, and I presume that General Twining's statement is based on the fact that today Jupiter is not mobile. I want to emphasize, however, that during the entire Army development of Jupiter, it was designed and developed as a mobile missile by the Army.

Mr. SISK. I actually had an opportunity to see a demonstration of the mobility of the weapon.

General LEMNITZER. Yes, sir.

Mr. SISK. During its ultimate development, and I was amazed here; I can see that apparently they have, by the method they are attempting to use, simply made it immobile.

Mr. SISK. That is all.

The CHAIRMAN. The gentleman's time has expired.

Mr. RIEHLMAN. Mr. Chairman, I would like to ask Dr. Morse one question and I think the committee would be interested in his appraisal of it.

Would you give the committee as briefly as you can your appraisal of the Nike-Zeus program and its potential?

Dr. MORSE. That isn't something I can do in 5 minutes, I am afraid. [Laughter.]

Mr. RIEHLMAN. I would like to have you give us what you can in 5 minutes.

STATEMENT OF DR. RICHARD S. MORSE, DIRECTOR, RESEARCH AND DEVELOPMENT, U.S. ARMY

Dr. MORSE. Well, I have spent a very substantial part of my total time in my job on Nike-Zeus, particularly in the last 6 weeks. I am very glad to do this.

The problem of defense against an ICBM, as you gentlemen are well aware, probably represents one of the most formidable technical problems that this country has faced. I think it is against that background that you should look at Nike-Zeus or any other system. Nike-Zeus is being well directed; it is being run by, in my opinion, the most competent group of industrial contractors that we have in the United States or anywhere in the free world, and I am currently very much impressed with the growth potentials which have been demonstrated in Nike-Zeus, the rapid progress which has been made in the sense of technical breakthroughs, all of which, in my view, tend to confirm the fact that we should proceed as rapidly as possible with the research and development of this system.

The opponents of Nike-Zeus—and there are many—in general have made certain major premises with respect to its effectiveness. These, for example, call for a massive attack on the United States with hundreds of ICBM's all arriving on target at essentially the same time. This is not a simple thing to do, even for the Russians.

Nike-Zeus has a demonstrated capability in the sense of its computers. We have had a very successful firing within the last 2 weeks; by that I don't mean a firing outside the Earth's atmosphere, but a firing which was on schedule, which gave us many of the data which we required, and I have never seen a better-run program of this complexity in my tenure in office of work here in Washington.

There are a lot of problems still to be solved. I think they will be solved. It is the only system that I am aware of—I think I am aware of all of them—that any one of the three services is currently seriously contemplating. We have in ARPA expenditure of some $100 million, for example, current rate of expenditure, in an effort to find other solutions to the ICBM problem. I am familiar with all of these.

I don't think any technical person would disagree with me when I say that none of these yet looks sufficiently promising to spend any money on in the sense of hardware. So Zeus today is the only answer that anyone has been able to come up with to solve the very dire situation which we have in this country, in the sense—as of today we have zero defense against ICBM or even detection.

Mr. RIEHLMAN. Doctor, would you give for the record your position that you hold with the Department?

Dr. MORSE. I am Director of Research and Development for the Army.

Mr. RIEHLMAN. That is all, Mr. Chairman.

The CHAIRMAN. Doctor, at this point I would like to swear you in. All the witnesses in this hearing have been sworn in except yourself. [Laughter.]

Do you solemnly swear the testimony you are giving before this committee in matters under consideration will be the truth, the whole truth and nothing but the truth, so help you God?

Dr. MORSE. I do.

The CHAIRMAN. All right.

Mr. McCormack?

Mr. MCCORMACK. You said, Dr. Morse, and the doctor is one of our most dedicated Americans, I know him very well and I am glad to see him before this committee—the opponents of Nike-Zeus and they are many. Will you give just a little amplification of that now? [Laughter.]

Dr. MORSE. I don't intend, Congressman McCormack, to use the word opponent in a derogatory sense.

Mr. MCCORMACK. No, I didn't——

Dr. MORSE. I referred to honest differences of opinion between both technical people and pseudotechnical people who have tried to look at Zeus and the general ICBM threat. And we are trying to arrive, I say the opponents are, for example, at a rational appraisal of a system which to date has many technical problems, but they are being solved currently and rapidly and in an orderly manner, I am sure of this.

Mr. MCCORMACK. Let me ask you this question: As you are now testifying and, having in mind the future of our great country, and I know those thoughts went through your mind the same as it does every one of us, trying to do the best we can to preserve our way of life, are you satisfied that the Nike-Zeus is the only defense workable in the foreseeable future that we have now?

Dr. MORSE. Nike-Zeus as far as I am concerned is the only conceivable answer to which we have to shooting down an ICBM in the next 5 years. Minimum.

Mr. MCCORMACK. Do you say the same thing, I will ask you the same question, Mr. Secretary.

Secretary BRUCKER. I answer it exactly the same way. I know of nothing else that we have or will have in the immediate or foreseeable future, and we have gone over the whole gamut of it, other than the Nike-Zeus. While there are studies going on in other fields, this, in my opinion, is exactly as Dr. Morse has said, is the only one.

Mr. MCCORMACK. I will ask General Lemnitzer.

General LEMNITZER. I agree with those comments.

Mr. McCormack. Now, is there any division of opinion on the high level of the Defense Department that it is a waste of money to try and devise any kind of defense against ICBM's? [Laughter.]

Secretary Brucker. Do you want to have—[laughter] I got it.

There isn't any reason for my impugning the motives of any person anywhere on this, but there are varied opinions in the spectrum all the way from what you said on through. In other words, there are a lot of people who have talked on this subject or discussed it who have varying opinions and I wouldn't want to say that there is any consistent opinion, either of opposition or otherwise, that entertains that view. But I would say that there are those who oppose us.

General Lemnitzer. I would like to augment that, because I think that this question should be answered in its entirety. I do not want to indicate that the comments I am making refer to anyone in the Department of Defense, but I have heard, frequently, within and outside the Department, the suggestion that the ICBM problem poses insoluble problems for this country.

In my opinion, they are taking a very defeatist attitude in this regard. This country has not been used to agreeing that problems are insoluble, and I don't believe this one is. As a matter of fact, I feel certain that it is not.

The opinion expressed is that we should put all of our resources in offensive-type weaponry, rather than in defensive weapons.

Now, I yield to no man on the desirability of, or the fact that you only win with, offensive systems. You never win by taking a solely defensive attitude. But warfare has proved throughout history that a certain amount of defense is absolutely essential if you are ever going to be able to utilize your offensive systems, particularly if you have the philosophy and outlook on warfare that we do—that we will not strike the first blow or launch a surprise attack.

Therefore, this being our philosophy—and I agree with it—we have no alternative other than to work hard, very hard, at getting enough defense to insure that we are not wide open to a surprise attack that may destroy us or prevent the employment of any offensive system which we have available.

Mr. McCormack. Mr. Secretary, have you looked over the amendments? I have called it to your attention before, before this committee. I agree with you we should never—

lose sight of the fact that it is most difficult, if not impossible, to separate, in a technical sense, peaceful accomplishments from military capabilities in space. It is therefore our responsibility in the military to insure that we take advantage of every opportunity afforded by space exploration—

and so forth—

to strengthen our Nation's defense.

Now, have you looked over the bill?

Secretary Brucker. I have looked over the bill since I have been here and the Army's staff has been coordinating it with the—the technical services and I will discuss it later on.

Mr. McCormack. You will make recommendations later?

Secretary Brucker. Yes, later on.

The Chairman. The gentleman's time has expired.

Mr. Karth?

Mr. KARTH. Mr. Secretary and gentlemen, it is very nice to see you again.

I would like to follow up Mr. McCormack's questioning of General Lemnitzer, I would like to ask you this question, sir: Is it therefore your oponion that the lack of an antimissile missile system presents a very serious hole in our military posture?

General LEMNITZER. Yes, as I indicated before, this is apparent to everyone. In the past, if we had not put up any air defense we would have been wide open to a bomber attack. We didn't accept such a situation. We have today a very substantial defense against manned aircraft. The situation would be parallel—even more serious, in my opinion—if we were not able to develop an antimissile missile of the Nike-Zeus type.

Mr. KARTH. Knowing what we know, General, what the Russian missile capability will be in 1961 and 1962, is it therefore your opinion that we treat an anti-missile-missile system with a sense of urgency that borders perhaps on a crash program basis?

General LEMNITZER. Not necessarily on a crash program basis. I think there are some that would so describe it. I regard—and as a matter of fact, I think this should be made clear—the development of an anti-missile-missile weapons system is one of the highest priority programs in this country today. It has been so assigned by the National Security Council. I think that gives a fairly good indication of the importance of developing such a system.

Mr. KARTH. General, who specifically decided that we should not go into the Nike-Zeus preproduction program?

General LEMNITZER. Well, we received our direction from the Department of Defense.

Secretary BRUCKER. December 1, 1959.

General LEMNITZER. We received it in response to a request which we made for the funds which have been discussed here earlier. We received our information from the Department of Defense.

Secretary BRUCKER. Maybe I can just add to that this: That we requested on October 22, 1959, that these funds be released which had been provided and the December 1, 1959, document from the Secretary of Defense was the answer to that request.

Mr. KARTH. One last question, Mr. Chairman:

Do you have any reason to believe and if you wish not to answer this question, certainly you don't have to but is there any reason for you to believe that some of this decision not to go ahead may be budgetary in any sense of the word, rather than tactical or scientific?

Secretary BRUCKER. One would just have to speculate on that. The reason that has been assigned is a reason that we have not yet proved out, as has been said here, the Nike-Zeus system as against an incoming ballistic missile.

Mr. KARTH. Yes, sir, but the Atlas system wasn't proved out before it went into production either, was it?

Secretary BRUCKER. No, it never was, that has been our argument. That we are being given conditions which were not posed against some of those other weapons. I don't want to get into any interservice rivalry by saying it.

Mr. KARTH. I understand.

Secretary BRUCKER. But, if the same ground rules occurred, we would be permitted to go forward. That has been the statement that we haven't proved it out, yet.

Mr. KARTH. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Hechler?

Mr. HECHLER. Mr. Secretary, you would concur, I gather with General Lemnitzer's statement of a few minutes ago that Nike-Zeus is, and I use his exact words, "absolutely vital to our security"?

General LEMNITZER. An effective antimissile-missile system is, and we believe the Nike-Zeus has the promise of developing into that kind of a system.

Mr. HECHLER. Mr. Secretary, you would concur with this statement by General Lemnitzer, would you not?

Secretary BRUCKER. Yes, I do.

Mr. HECHLER. And do you feel that our overall national security would be improved if we could go into production of an antimissile missile at the earliest practicable date?

Secretary BRUCKER. Oh, yes, at the earliest practicable date I would feel that way. The question, of course, turns on what that date is and when it is practical, and that is where the dispute lies.

Mr. HECHLER. I was interested in your statement on page 10, the last sentence of the paragraph on page 10 where you said—

You can be sure the Army will bend every effort in the coming year to press development of the Nike-Zeus with the urgency it deserves and the top national priority for development which it enjoys.

Secretary BRUCKER. That is right.

Mr. HECHLER. I submit that it could hardly have top national priority if $137 million is put in reserve at a time when you need that money urgently. If that be top national priority, why we should put all your money in reserve and then you might get ahead faster. I can't get that through my thick head.

Secretary BRUCKER. I must concede this, that I have been overruled on that, and my guidance is this on it. This is not ready for production and therefore until you gentlemen qualify it for production we are not going to give you the green light. From the standpoint of somebody deciding things in Government, somebody has got to do it. We have urged it, but we have been turned down on it, on December 1, and that is our guidance.

Now, as I said just previously to you here, I don't consider that guidance as binding as against our reapplying from time to time for any or all of it, if it is necessary, in the days to come, I feel that the country's interest requires that we reevaluate this, month by month, and that if I find, as I have with respect to a part of this, that we should reapply for some of it, I am going to reapply.

Mr. HECHLER. Mr. Secretary, if a decision were made tomorrow that we should proceed toward preproduction and the earliest practicable production of Nike-Zeus, how soon could we have it?

Secretary BRUCKER. That is something I would have to go into a classified session on, because the date of this and the amount of time that we would save in preproduction and the amount of time that it takes to produce it are at this time classified.

Mr. HECHLER. I will ask General Lemnitzer this: Are there any aspects of the Nike-Zeus system on which it would be practicable to proceed with production now?

General LEMNITZER. None, other than those mentioned by the Secretary. We feel that it would be advantageous to develop production facilities on components which we know will be required in any system of this type, such as modules and transistors. Developing the ability to produce them in large quantities. That is the problem that faces us.

Mr. HECHLER. You feel it would help the defense of our country to proceed to the production of those elements of the system?

General LEMNITZER. We think it would because we feel it will substantially reduce the time required to put operational units on site after the system is proved out, and we are given the green light to go ahead on it.

Mr. HECHLER. No further questions, Mr. Chairman.

The CHAIRMAN. Mr. Daddario?

Mr. DADDARIO. Mr. Secretary, on page 8 of your report you refer to the fact that the transfer of the Von Braun team has reduced the capacity of the Army in the space vehicle system field.

Secretary BRUCKER. Yes.

Mr. DADDARIO. And on page 3 you refer to the increased dimensions of the Communist threat in the space field. Now, how has the transfer of the Von Braun team reduced your capacity, the Army capacity, to meet the increased Russian threat?

Secretary BRUCKER. In just this way: We had an inhouse capability that was unique, and I want to be humble when I say it, I think it was the best scientific team in the world, or is, at the present time.

Under those circumstances, with an inhouse capability in defense, or in the Army to put it plainly, we feel that we had both the capacity and potential for missiles as well as space vehicles. We felt that was the place where we could score and keep on scoring as we had with these other things that have occurred.

There were a couple of decisions that changed that. One was a decision by the Department of Defense in September that the Air Force would take over the manufacture, launching, and all characteristics, including the necessary integration, of space boosters for the Department of Defense.

The second decision was that the Saturn project, which we were producing and had for a year prior thereto, should be transferred to the NASA. Under those circumstances, of course, it became untenable for the Army to take any position other than to say we will keep this team together as a national asset, rather than have it divided, part for the Army and part for NASA.

Now, since that time and up to July 1, we will still have the team with us, but after that date it will be under the new management of NASA. It will be at the same location, with the same people doing the same things, namely, producing Saturn and other things. It will be available in the sense that the Army is located there. The Army is going to support and logistically provide a number of things for NASA. Under our arrangement, ABMA will continue to have that relationship, but it will be primarily, this time, a NASA operation.

To that extent, of course, our inhouse capability has been lessened. But that does not, of course, lessen the other things that we are interested in; the seven technical services, and also our ability to have other scientists who are down there at Huntsville in what we call the ARGMA, the Army Rocket and Guided Missile Agency, and the balance of those who are in the ABMA, which we will retain, that will still give us a capacity there.

But, of course, it does remove the inhouse capacity of that Von Braun team from us, but leaves it for the country.

Mr. DADDARIO. General Lemnitzer, in your statement you have referred to the fact that space is only important insofar as it is able to help our ground forces carry out their missions. I wonder——

General LEMNITZER. I want to be sure that you do not misinterpret my remarks. I said that space presently is only important insofar as it will support operations on the surface of the Earth—not necessarily ground operations, but space can be utilized now, as we see it, primarily to support the Army, Navy, and Air Force type of operations on the surface of the Earth.

Mr. DADDARIO. Well, although it is perhaps a little far afield from space, I wonder if our ground force capacity in such places as Korea, where we interdisperse Korean nationals with our own troops and what effect this has on our ground force capacity in this age and in the threat that we face in North Korea at this time?

General LEMNITZER. Well, I presume that you are referring to the situation which developed during the Korean war where we did have Korean soldiers assigned to most American units. These members of the Republic of Korea Army were known as KATUSAS, Korean Augmentation to the U.S. Army. That is the name applied to them.

We utilized Koreans with our Army forces in Korea during the entire Korean war. They were extremely valuable, and there was a very important mutual benefit. Operating in a country where we were not very proficient with the Korean language, KATUSAS were most useful in getting information for us, and in interviewing the people for intelligence purposes. On the other side of the coin, their service with the American units was very helpful in training them for the organization of their own army. The training which they received operating with American units was invaluable in putting together the fine units of the Republic of Korea Army which we had during the Korean war and which we have today.

The CHAIRMAN. The gentleman's time has expired.

General LEMNITZER. Could I finish this one, Mr. Chairman? I think it is important we get this matter very clear.

The CHAIRMAN. All right.

General LEMNITZER. In Korea today we have two American divisions. I know the basis for your question, Mr. Daddario, because it has been raised frequently in the hearings that we have participated in throughout the Congress.

We have in Korea two American divisions. We would like to have them fully—100 percent—manned with Americans. However, because of personnel limitations and the requirements of the many missions that the U.S. Army is required to fulfill throughout the world, we are not able to do so.

So, we are still employing KATUSAS with those two U.S. divisions in Korea. Now, if we did have these divisions manned 100 percent with American personnel, I would like to say also that from the viewpoint of training and the assistance which they could give us, as they did during the entire Korean war, we would still have the need for KATUSAS to serve with those U.S. divisions. We would, of course, prefer to have the divisions manned 100 percent with Americans with KATUSAS reinforcement.

The CHAIRMAN. Thank you, General. Mr. Moeller? May I say this, too, we will go into executive session at 25 minutes to 12 so that we will have time for that film.

Those that are not—thus far have not had an opportunity to question the witnesses, I am sure the Secretary will be here at the end of the film.

Secretary BRUCKER. Yes.

The CHAIRMAN. And so will the General, and they will have an opportunity to question at such time.

Now, we have one or two more.

Mr. MOELLER. Just two brief questions, General. On page 4 of your statement, speaking of the Army's mission in the future, you make the statement that it may become—

necessary to extend air and missile defense systems to provide defense against hostile satellites or other space vehicles.

Could there be, then, some refinement, possibly, of the Nike-Zeus to accomplish what you have here stated, or do you have something else in mind for this?

General LEMNITZER. We believe that the Nike-Zeus has a limited antisatellite capability even under the program which is presently under development.

Mr. MOELLER. But if it were further refined, it could possibly accomplish this very thing?

General LEMNITZER. Yes. We feel, following the pattern of Nike-Ajax being extended in its capability by the Nike-Hercules program, that there is no reason why the Nike-Zeus couldn't be extended similarly into an antisatellite weapons system.

Mr. MOELLER. The other thing is this, in modern warfare naturally armed forces are pitted against one another and sometimes, of course, civilians suffer with this, also, many times.

Now, as far as we are concerned, something like the Nike-Zeus is the only civilian protection we have. Is this correct?

General LEMNITZER. It is the only antimissile-missile weapon system that is on the horizon at the present time. The others, as the Secretary pointed out, are only in the study phase. The Nike-Zeus—the missile itself, as you will see later—is presently in the hardware stage. The entire Nike-Zeus weapons system is not entirely proven, but it will be proven in our Johnson-Kwajalein Island test.

Mr. MOELLER. I want to waive my time, but I think this is something that the civilian populace ought to take a very keen interest in.

The CHAIRMAN. Thank you. Mr. King?

Mr. KING. In President Eisenhower's message to Congress January 14 he said with the repeal of the statutory enumeration of Presidential duties, the National Aeronautics and Space Council should be abolished, since its only function is to advise the President and so on. He

also stated, "The Civilian-Military Liaison Committee should also be eliminated."

Now, it has been said that by eliminating these two councils or agencies, you have removed, perhaps, the last and only machinery left for bringing about close coordination of effort between the military and the peaceful aspects of our total space program.

Would you care to comment on that, Mr. Secretary?

Secretary BRUCKER. I see no harm in the recommendations as such, but the reason that I replied as I did to Mr. McCormack, along the same line when he asked me the question briefly, was this: We haven't completely coordinated our study on it.

We do have a feeling that for two agencies that should be as closely connected as this, that something in the nature of the Atomic Energy Commission's relation with the Department of Defense might be a very good structure to consider. That is the military liaison committee, not a Civilian-Military Liaison Committee such as is in this bill or in the previous act, but a military committee, putting responsibility upon the military to provide the liaison with the other agency.

It works well with the Atomic Energy Commission and we are studying it. We are going to give you the results of our study, as I promised Mr. McCormack here, as soon as we get through coordinating with each of the branches of our service. That is the main thing we have in mind in answer to your question.

Mr. KING. You feel then that more will have to be done to bring these a little closer together but that this is not the final word?

Secretary BRUCKER. I think more is desirable, maybe that is a better way to put it, for this reason: Here are two heads of Government who are expected to get together, but in the busy life it is hard for them to do that, unless there is something that brings them together.

Now in this, the responsibility ought to be on the military under this circumstance to have it, to have a military liaison committee and have the military, the Department of Defense take the initiative. Somebody always has to do that in Government. If they don't the project falls somewhere between the chairs.

That is why we are studying this thing, to come up with something that is more definite. I don't want to go on record and say this is all thought out and complete and here is the amendment. We lean very strongly in the direction of saying that it is our obligation over at the Pentagon to make that military liaison complete and that the previous one didn't work too well.

I understand that, because it was on a bilateral basis and neither one would take the initiative or whatever it was. But in this the military ought to take the initiative and keep this liaison with the space agency.

Mr. KING. Will Congress get the benefit of your thinking as soon as it has matured on this subject? We have a practical problem of going ahead.

Secretary BRUCKER. Yes——

Mr. KING. And recommending legislation.

Secretary BRUCKER. May I say this, the only reason we haven't brought it over to you to date in semifinal form is because we respect your committee enough not to give you something that is incomplete. We will be able to get the thing over here in the next couple of days,

we hope. I think in the meantime we ought to indicate to you the direction in which we are thinking about it.

Mr. KING. Thank you, that is all.

The CHAIRMAN. Now, Mr. Roush is the only one who hasn't had an opportunity to ask any questions. When the film is completed, we will give him any opportunities. And Mr. Fulton——

Secretary BRUCKER. I would be perfectly willing if you want to have the questions completed and then stay.

The CHAIRMAN. How long will this film take?

Secretary BRUCKER. About 28 minutes.

Mr. FULTON. Mr. Roush is the only one left.

The CHAIRMAN. All right. We will hear you, Mr. Roush.

Mr. ROUSH. If they will make their answers brief, my questions will be brief.

I want to preface my questions with a remark and that is that I have a very keen feeling for the U.S. Army. I wear the Combat Infantryman Badge which the colonel with you gentlemen wears, and I have been disturbed because of what I think is lack of attention to the Army's part in our space program, especially in view of the fact that we have proved ourselves so successful in so many different areas.

The question I have concerns the project Saturn. I understand that the Army must have felt that there either is or there will be a military use for a large booster engine, is that correct, General Lemnitzer?

General LEMNITZER. Saturn was originally an ARPA project. It was an effort to build a booster of about 1½ million pounds of thrust, and on that basis it was regarded as a program that was important from the military point of view; yes.

Mr. ROUSH. During the time that Saturn was under the Army's jurisdiction, you had difficulty getting funds for project Saturn, too, did you not, sir?

General LEMNITZER. Well, we utilized the funds that were allocated to us by ARPA. You see, the funds were not appropriated as a part of the Army appropriation.

Mr. ROUSH. All right. The Army was always looking for more funds for Project Saturn, was it not, sir?

General LEMNITZER. Yes, our people in the Army Staff and at Huntsville were pressing for more funds.

Mr. ROUSH. And on one occasion, the funds which were allotted to you were actually cut down, were they not, and that was as late as the latter part of 1959?

General LEMNITZER. This is correct.

Mr. ROUSH. And in Nike-Zeus we can't get our funds. Sir, can you tell me, is there any reason why it is that these programs which the Army has been interested in has had so much difficulty with the Department of Defense in getting their funds? The other services seem to get them and here we have two programs which are absolutely vital to the security of America, absolutely important if we are going to get ahead and catch Russia in this space race, and yet we can't seem to get funds. Is there any rhyme or reason to that, sir?

General LEMNITZER. I don't think the Army has a monopoly on not getting funds for certain projects because I happen to know that some of the other services also have had funds withheld.

Mr. ROUSH. What program, sir, does the Army have right now which has a top priority insofar as our space program is concerned?

General LEMNITZER. Nike-Zeus has the highest national priority for research and development.

Mr. ROUSH. But just for research and development?

General LEMNITZER. This is correct.

Mr. ROUSH. How much money would it take during the fiscal year 1961 to get Nike-Zeus on its way?

General LEMNITZER. Nike-Zeus will continue to be on its way in R & D, and test and evaluation stage in 1961.

Mr. ROUSH. I am talking about production.

General LEMNITZER. There will be no preproduction unless additional funds are made available.

Mr. ROUSH. How much would it take, sir? That was my question.

General LEMNITZER. We estimated that $137 million could be used to advantage for preproduction purposes.

The CHAIRMAN. Now, at this point the committee will go into executive session to see this film that we have heard so much about. We want to thank you, Mr. Secretary and General, for both appearing here. We are very happy to have had you.

I want to make the announcement for the benefit of the committee that the committee this afternoon will meet at 2:30 rather than 2 o'clock and we well hear Richard E. Horner, Associate Administrator of NASA, at that time, and he will address himself to the bill H.R. 9918, NASA authorization for fiscal year 1961. So I urge all the members to be back at 2:30.

(Whereupon, at 11:42 a.m., the committee proceeded in executive session.)

(The executive session is classified and will not appear here.)