

REVIEW OF THE SPACE PROGRAM

FRIDAY, FEBRUARY 5, 1960

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

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

The CHAIRMAN. The committee will come to order.

This morning we are happy to have a friend of ours here, Lt. Gen. B. A. Schriever, Commander, Air Research and Development Command, the U.S. Air Force. We have had General Schriever before. He is a man whose qualifications everybody knows. We are fortunate to be able to have him this morning.

General, do you have anyone who is going to sit with you to support your testimony?

General SCHRIEVER. No, sir, Mr. Brooks. We have General Yates here who is also scheduled to appear, but I will take care of the situation as best I can; yes, sir.

The CHAIRMAN. We are swearing all the witnesses in and I thought we could swear them all in together.

General SCHRIEVER. General Yates—you might swear him in now. He will testify today, also.

The CHAIRMAN. All right.

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

General SCHRIEVER. I do.

General YATES. I do.

Mr. FULTON. I welcome you both, too, glad to have you, both of you.

General SCHRIEVER. Thank you.

The CHAIRMAN. Now, we won't meet this afternoon. In the first place, General Schriever has an appointment and then some of my colleagues are taking a long weekend off, making speeches. Already they feel the impulse to say something upon this historic week that is coming up. So we won't meet this afternoon. But we do have witnesses scheduled for Monday.

Dr. Sheldon, who are they on Monday?

Dr. SHELDON. On Monday we start in with Navy witnesses. Mr. Beresford, perhaps you have the names of the witnesses?

Mr. BERESFORD. The Secretary of the Navy and Assistant Secretary Wakelin.

The CHAIRMAN. We can't postpone those, so I hope everybody can be present Monday.

Mr. FULTON. May I ask is the Sisk bill listed for action?

The CHAIRMAN. Yes, Monday afternoon, so we won't meet Monday afternoon. That is in good shape and it ought to come up without any trouble Monday afternoon.

Mr. FULTON. I say to the members of the committee, I have had one request for time on the Republican time, but feel free to ask whether it is Republican or Democrat. My understanding is that we only have 20 minutes on either side. I want any member of the committee to feel free to ask for time.

The CHAIRMAN. I am satisfied we will take most of the time.

Well, General Schriever, we are happy to have you this morning. You have a prepared statement?

General SCHRIEVER. Yes, sir; I do.

The CHAIRMAN. If you will proceed, we would appreciate it.

General SCHRIEVER. All right, sir.

STATEMENT OF LT. GEN. B. A. SCHRIEVER, COMMANDER, AIR RESEARCH AND DEVELOPMENT COMMAND, U.S. AIR FORCE, ACCOMPANIED BY COL. BERYL L. BOATMAN, EXECUTIVE OFFICER, HEADQUARTERS, ARDC

General SCHRIEVER. Mr. Chairman and members of the committee: It is again a pleasure for me to appear before your Science and Astronautics Committee.

This is a welcomed opportunity to talk with you about the Air Force research and development program as it pertains to space.

But, before proceeding, I would like for a moment to recall my last appearance before your committee. As you recall, that was last July 28. Following those hearings, you and your committee, in its report to the Speaker of the House and to the public, expressed confidence in the Atlas program. I quote:

It is the belief of the committee that the Congress and the American people can be assured that the development of our ICBM strength has suffered no real setback by recent events, and can confidently expect that each new objective achieved by our rocket programs will be an additional guarantee for peace and our future security.

I am pleased to be able to report to you today that your confidence in the Air Force's stewardship of the nationally urgent Atlas program was not misplaced.

To discuss the Air Force research and development program as it pertains to space, I believe we must first examine the military requirements in space. Second, review of our present space projects, and third, briefly outline what we need to do to assure optimum progress in military space development.

OUR MILITARY REQUIREMENTS IN SPACE

The Secretary of the Air Force recently referred to the continuing nature of weapons systems development, and the necessity of providing the operational commanders with a constantly increasing capability to carry out their essential missions in defense of the Nation. I would like to expand on this subject briefly as it relates to military space requirements.

The defense of our Nation is the primary responsibility and concern of our military forces. The ballistic missile force which is constantly being strengthened and developed will be the most significant factor in deterrence to all-out war.

The CHAIRMAN. General, would you suspend just a moment there. Mr. Finch, will you see what the draft is? See where that draft is coming from and, too, is the press adequately provided for? If it isn't, we could make room for them a little bit up here. I can ask the members, if they will, to move forward a little bit there; if the press doesn't have places, we can give them an adequate place here.

All right, General, if you will proceed.

General SCHRIEVER. This deterrence can be strengthened by the development of such military systems as are necessary to provide surveillance, warning, navigational, meteorological, and communications data. With the advent of the ballistic missile which can travel more than 5,000 miles in 30 minutes, intelligence, early warning of missile launchings and reliable and rapid communications have assumed unprecedented importance. These capabilities are more urgently needed by the United States than the U.S.S.R.

I say this because our free way of life places few obstacles in the path of a determined agent who seeks to pinpoint on a target map our vital installations, or who wishes to observe and report our every move. We do not enjoy this same freedom of movement and action with respect to the U.S.S.R. For example, our information on Soviet ICBM sites is inadequate; whereas Soviet data on American missile base locations is excellent.

We must, in the face of this situation, be able to detect hostile acts, communicate information and commands, and be able to make decisions swiftly. Our national policy and moral consideration both conceded the initiative to the Soviets. It is my belief that the Soviet threat in the military ballistic missile age will be the greatest in our history.

It is imperative that we continue to maintain that kind of defense posture which, if war comes, will provide us sufficient alert so that we can withstand a first onslaught and rise up and lash back at precise targets with an overwhelming blow. The opportunities of maintaining and strengthening our deterrent posture lie principally with space vehicles, since space is a medium in which many military missions can be performed more economically and efficiently than on land, sea, or in the atmosphere. These military missions include those which have the capability of missile detection and alarm, and strategic intelligence and communications. This capability, coupled with a combination of hardened, dispersed, and mobile ballistic missiles, together with other weapons of the free world, can assure us of this kind of defense posture for the foreseeable future.

I feel certain that if we have this capability, and the Soviet Union knows it, we can continue to maintain the peace.

The Air Force ballistic missile program has established the base for achieving this capability in space, not only to serve the military requirements, but also national needs.

As I stated in my speech at San Diego in February 1957, it is my belief that at least 90 percent of what was being done in the Air Force ballistic missile program could be directly applied to an astronautics

or space program. In other words, projects that one could visualize for the future would be undertaken with the propulsion, guidance, and structural techniques which were under development in the Air Force ballistic missile program at that time.

From a technological standpoint, it is, I think, a normal transition to step from these ballistic missiles into space systems. As evidenced by recent events, our missile programs have provided this country with the hardware and foundation for urgently needed civilian and military space systems. Equally important, this program which represents the greatest single peacetime scientific government and industrial effort, has produced new knowledge and new industry, and has provided this country with a capability which was virtually non-existent 5 years ago.

From a national standpoint, progress in space research is essential for both security and prestige. Civilian and military space operations complement each other, and both should be pursued vigorously. We are cooperating with ARPA and NASA in order to achieve a maximum return at minimum cost in our national space effort.

In my opinion, close cooperation is desirable, and should be continued, between the existing space agencies—primarily the Air Force, which now has responsibility for all military booster development, systems integration, and launching operations, and NASA, which is responsible for civilian space boosters and other civilian space activities. The Air Force has entered into a number of agreements with NASA, insuring smooth operation between the two agencies. These agreements have effectuated complete and working understanding on the scheduling of launch stands, and the allocation of boosters and other matters including facilities, personnel, funds, and operation in general.

I feel that such cooperation has proven its feasibility and is preferable to the creation of a superagency to coordinate all space efforts.

I would like to depart from my prepared statement here and state—and I would like to put this into my statement—that all military services have a very definite interest in space operations, and I do not want to imply in anything I have said here that the Air Force is the only service that has an interest in space.

The other services very definitely do have an interest in space systems. I, as commander of ARDC, have talked to my military counterparts, and I can assure you that I will do everything possible to cooperate and assist other services in their interest in the space field.

Mr. FULTON. You are to be congratulated on that statement.

General SCHRIEVER. As for the specific needs of the Air Force, our present requirements fall most urgently in the area of satellite systems which will add to the overall capability of our counteroffensive forces. I have already described the necessity for early warning and strategic observation satellites.

As I have also pointed out, we should have—at the earliest practical moment—satellites for communication between our forces in all parts of the world, and for command of these forces in an emergency. These will be essential to the effectiveness of our deterrent strength.

For support of these operational systems, there is a need for weather and navigation satellites in the near future.

These, then, are clearly discernible military space system requirements. As we look further into the future, we can expect that some of the unmanned vehicles for reconnaissance and surveillance may give way to manned vehicles offering greater reliability and versatility in performing not only these but other defense mission operations. Needless to say, in carrying out the Air Force responsibilities in air defense and strategic air operations in the future, we shall rely heavily on space systems.

Let me turn to present military space projects. First, the Discoverer.

For the past year, the Air Force has been actively carrying on a program of experiments with the Discoverer series of space satellites. Since the last day of February 1959, we have launched—and I had eight in my prepared statement, sorry it is nine, and we were not successful yesterday, but we have launched nine of these satellites, injecting six of them successfully into the orbit.

The successful launchings have included the last four—that is before the one yesterday.

The primary purpose of this series is to develop and test components and techniques which will be used later in operational satellites performing various military missions. In this objective, the program has been highly successful. For example, the injection of satellites into orbit has been accomplished with a high degree of reliability; stabilized orbital flight has been achieved; and the performance of the satellite as a whole has been accurately programmed and controlled in flight. All these are essential features of an operating military satellite.

The Discoverer program is also being used in certain biological experiments which will be of value in any future program to put men in space. The Discoverer program should be thought of as a preliminary to the establishment of military orbital systems. Two such systems, now in different stages of development, are the Midas early-warning satellite and the Samos observation satellite. The functions of these two systems can be simply defined.

MIDAS

Midas is intended to detect the launching of ballistic missiles by a possibly enemy of the United States. It will make use of infrared sensors, which will react to the heat of the rocket engines during the first few minutes after launching.

Samos will provide strategic information on activities and preparations within the borders of a possible adversary, which might be the prelude to a surprise assault directed against this country or its allies.

The functional value of these two satellite systems is obvious. What is not so generally recognized is the degree to which they will protect and implement our own military deterrent posture.

Midas satellites, orbiting continuously, would give us up to 30 minutes warning after launching of an enemy assault. This would extend our warning capabilities and would give us time enough so that we could guarantee the effectiveness of our retaliation. It would also provide additional warning time to civil defense agencies.

Assuming that the would-be aggressor knows this, the likelihood of an attack upon this country would be reduced.

This is why we consider that the Midas satellite would be not only a valuable means of protecting civilian lives, but also an essential part of our deterrent strength itself.

SAMOS

The Samos observation satellite—though its immediate advantages are less obvious—might well prove to be more effective in the long run. If we could see the preparations underway for a hostile attack, deep inside the borders of any country, it is highly improbable that the assault would follow as we would have many hours or days in which to get ready for it.

Since both of these satellite systems are entirely passive in nature, they represent no threat to any other nation. They will be powerful servants of world peace and security.

DYNA-SOAR

Turning now to manned space systems, we come to the Dynasoar, which is the main Air Force effort in this direction. In recent months, contracts have been let for the experimental prototype of such a spacecraft.

Dynasoar will be a boost-glide vehicle, lifted into space by an ICBM. It will be capable of circling the earth one or more times, gliding back down through the atmosphere and making a controlled landing under normal aerodynamic conditions.

The military value of an operational spacecraft of this type lies first, in the fact that there are many kinds of missions for which missiles and satellites would not be fitted. As a bomber, it could attack mobile targets of various kinds. Most importantly, systems of this type would provide a flexibility which is not characteristic of a missile. It could be recalled, if conditions changed while it was in flight. It could be kept aloft, in times of emergency, during the critical period of uncertainty at the start of an alert, thus giving us the same alternative capability, backing up our missiles, which is now provided by the jet bombers of the Strategic Air Command.

TRANSIT

Among the programs of other agencies supported by the Air Force is Transit, the navigation satellite for which the Navy has the payload development responsibility. This satellite is designed to be an all-weather navigation aid. It will be of great value to commercial transportation facilities, as well as the Navy.

TIROS

The Air Force is working in support of NASA on the Tiros satellite. It is similar to Transit, with respect to the booster which is a three-stage vehicle. The payload differs in that it is designed to record the synoptic weather situation over the Earth. The test schedule calls for launch in the near future.

EXPLORER VI

One of the highlights of the past year was the successful launching by the Air Force in cooperation with NASA of Explorer VI—the paddlewheel satellite. This satellite is now in an orbit reaching out to an altitude of about 26,000 miles at apogee, and coming within about 150 miles of the Earth at perigee. It carried out successfully 15 major scientific investigations in space.

THOR-ABLE

Scheduled for launching in the near future is a Thor-Able vehicle, which will attempt to put a satellite in orbit around the Sun, near the orbit of the planet Venus. This is also a NASA project, in which the Air Force is providing support.

MERCURY

The Air Force is also supporting NASA in Project Mercury, which is designed to place an astronaut in orbit around the Earth. We are adapting the Atlas booster for the purpose of launching the manned capsule safely into orbit. Also, we are providing bioastronautics support, required to assure that the first astronaut will be physiologically and psychologically prepared and protected on his historic mission.

X-15

An evolutionary step toward manned flight in space is the winged X-15 research vehicle—a joint project of the Air Force, Navy, and NASA. The X-15 is designed to fly faster than 4,000 miles per hour and to attain altitudes of about 50 miles, going possibly as high as 100 miles eventually. During the past year, initial phases of the flight test program were begun. These checkout flights were made at relatively low powers, pushing the airplane to what is today considered to be relatively low speed, somewhere close to 1,400 miles per hour.

What is needed to assure optimum progress in military space developments?

To take maximum advantage of our capability and realize our full space potential, we must first recognize that space is a medium through which vehicles intended for both peaceful and defense purposes can travel. We must recognize that there are many military missions and civilian services which could be performed more efficiently and more economically through the use of space vehicles than is made possible by other systems being used today.

I reiterate that I firmly believe that both civilian and military space operations actually complement each other and both are working toward a common goal, each fulfilling its respective and separate role. We have made excellent strides in this direction. As we proceed further along, the respective roles and responsibilities of both NASA and the Department of Defense become increasingly clearer. The present agreements between NASA and the Air Force and other military departments show the desire and capability of all agencies to operate in unison. The President, in his message to the Congress on January 14, 1960, proposed amendments to the NASA Act, which further

clarified the roles or responsibilities of the agencies. The primary objective of the civilian program is exploratory research and peaceful uses for the betterment of mankind. The military efforts are designed primarily to maintain peace. That peace can best be maintained by a strong deterrent posture of the United States. The armed services have the responsibility to achieve this deterrent posture which contributes to and maintains peace.

As we view the importance of our military space program to the survival of our Nation, we can assume optimum progress in military space developments by using to the fullest extent possible and with maximum urgency the facilities and organizations that have been established to pursue a vigorous space program. The same managerial concepts which have brought the ICBM to operational capability should be continued and extended in the military space program.

I believe that our Nation must acknowledge the predominant importance of space for national security and survival.

This concludes my formal statement. I welcome the further opportunity of answering to the best of my ability any questions from the members of the committee and from yourself, Mr. Chairman.

The CHAIRMAN. Thank you very much, General, for a very, very fine statement. We have a short statement here by Maj. Gen. Donald N. Yates, commander of the Atlantic Missile Range. I suggest that we hear General Yates at this time and then—you sit right there, General Schriever—we are going to ask you some questions.

General SCHRIEVER. I was going to let him make the statement.

The CHAIRMAN. Whatever you desire, sir.

General SCHRIEVER. All right.

The CHAIRMAN. There are two chairs, so you can remain right there at the table.

STATEMENT OF MAJ. GEN. DONALD N. YATES, COMMANDER, ATLANTIC MISSILE RANGE

General YATES. Mr. Chairman and members of the committee, I have been requested to present a brief statement on my responsibilities with respect to the Atlantic Missile Range and to comment more specifically on the organization for support of Project Mercury. Since you and most of the members of your committee have visited the Atlantic Missile Range, have been briefed and have toured our administrative headquarters and launch facilities, I will comment in this area only to refresh your memories and bring you up to date.

Since the summer of 1954 I have been in command of the Atlantic Missile Range, which, as you know, is one of the three national ranges operated by the Department of Defense to support the Nation's missile and space programs—the other two ranges being the White Sands Missile Range, administered by the Army, and the Pacific Missile Range, administered by the Navy on the west coast. The Atlantic Missile Range, administered by the Air Force Missile Test Center of the Air Research and Development Command, was located in Florida because of the unique advantages provided by the string of islands through the Atlantic and Caribbean. Instrumentation on these islands provides solid coverage of all missile firings over the first 1,500 miles of the range. Two South Atlantic islands plus a fleet of ocean

range vessels extend our coverage to over 5,000 miles. We are an outdoor laboratory designed for the development testing of long-range missiles and space boosters. All instrumentation on the range has been designed and installed to meet the specific data requirements dictated by each of the projects assigned to the Atlantic Missile Range for test. Missile systems such as the early Redstone, the follow-on Thor, Jupiter, Atlas, Titan, Polaris, and the future Pershing and Minuteman have established the range instrumentation pattern which now exists.

Military boosters developed in this environment have provided the basic vehicles for most of our space exploration to date and will continue to meet these requirements for some time in the future. We are, however, presently working on the instrumentation requirements for the NASA Saturn program—preliminary indication is that these requirements can be met in large part by existing or planned range equipment. Of course, as the vehicles become more complex so also do our instrumentation requirements become more demanding. I am proud to state that we have not fallen short to date in the field nor do we expect to in the future.

I should like to emphasize here that the range is basically a laboratory facilities for development test rather than operation of missiles, vehicles, boosters, et cetera. After completion of development, limited range instrumentation is required. Special ground service equipment is, however, needed to support military missiles and space vehicles under operating conditions. I specifically refer here to such items as the ground read-out equipment necessary for the Samos and Midas projects and the standard ground service equipment required to launch Atlas, Titan, and other military missiles. There are, however, two or three programs coming up which do require special extensions and tie-ins to the present ranges. The programs I refer to are Mercury, Dynasoar, and Centaur.

On the 10th of August 1959, I was assigned the responsibility, as Department of Defense representative for Project Mercury support operations, to prepare the overall plans for Department of Defense activities in support of NASA Project Mercury, to direct and control all DOD facilities allocated to this project, and to supervise the performance of specific missions assigned to the DOD in support of Project Mercury. Since the requirements for Project Mercury dictated a tie-in of existing national range facilities and the addition of certain stations to insure continuous coverage of the manned vehicle in low orbit, my position as commander of the Atlantic Missile Range—the planned launch point for Project Mercury—provided an ideal place from which to coordinate the development and operation of the ranges as well as the recovery support operation which will be carried out by units of the Atlantic Fleet. An overall plan for Department of Defense support has been prepared and was submitted recently to the Joint Chiefs of Staff for their approval and forwarding to the Secretary of Defense for his approval. Briefly, it involves a minor expansion and the operational tie-in of the three existing national ranges. By the addition of three land stations to be installed by NASA and the modification of two Atlantic Missile Range ships, the Atlantic Missile Range will be able to cover the area from Florida to the Indian Ocean. Australia, tying in communicationswise through the Pacific Missile Range, will operate two stations provided by

NASA, and the Pacific Missile Range will pick up additional stations at Canton Island, Hawaii, and southern California with White Sands Missile Range filling the gap with stations on the North American Continent. All ranges report their readiness in the operational phase to an overall controller at Cape Canaveral. Communications are being established by NASA for technical contact during orbit with administrative backup from our existing or augmented range communications.

All new stations are being installed on a mobile or movable basis since their requirements will be only for the duration of Project Mercury—some of these stations may be used later for support of projects such as Dynasoar and Centaur. The mechanics for range tie-in developed in support of Project Mercury will establish an ideal pattern for operational coordination in future programs requiring this worldwide type of service. The plan is workable and adequate. The DOD should have no difficulty meeting all of the NASA requirements qualitatively, quantitatively, and on time.

Summarizing briefly, the existing and planned program for installations on each of the national ranges and the system established for operational coordination of these ranges is certainly adequate to meet all foreseeable requirements. There is, however, one additional point which I feel deserves some attention; this is in the area of coordination of the development, procurement, and utilization of new range and ground support equipment. The Department of Defense and the National Aeronautics and Space Administration have been working closely in an effort to coordinate these developments to meet, with the fewest items, the largest number of common requirements. At the request of the Secretary of Defense, Mr. Walker Cisler has recently undertaken a detailed examination of this specific problem and has submitted to the Secretary of Defense and the Administrator of the National Aeronautics and Space Administration recommendations for improvement in this area. With the implementation of some such recommendations as have been submitted by Mr. Cisler the last possible gap will have been closed and I feel sure that insofar as the ground environment is concerned this country's space program will be adequate, efficient, and economical.

The CHAIRMAN. We are certainly happy to have that complete and unreserved assurance. At least the ground environment is going to be satisfactory, General.

General YATES. Thank you.

The CHAIRMAN. My thought this morning: We have two eminent witnesses here. We have until noon with them. We can waive the 1-minute rule and give everybody 5 minutes to interrogate both of the witnesses. I think they are working so closely together that they can remain there in their seats together and answer these questions jointly. I am sure there will be no conflict in their answers.

General SCHRIEVER. I am sure there won't be.

The CHAIRMAN. I will say this, too: This morning, the committee has 27 bills before it, which is a marked increase over last year and it is a very happy situation to the chairman. My thought has been and is now that the major bills should be handled by the full committee. Those that are—not less important—but more minor in their general nature, should be sent to the subcommittees 1, 2, 3, and 4.

Now, we haven't been able to do it because we haven't had the bills, but we are gradually building up a stock of bills which is comforting to the chairman and I know it is interesting to all the members. Now, if there is any discussion about it we can take that thought up at a later date in executive session. I just want to throw it out so everybody can be thinking about it.

Now, General Schriever, you have made an excellent statement and you have made an excellent impression on this committee, I will tell you that. I want to ask you this to start with: Can you tell us something about what made that last Discoverer firing unsuccessful?

General SCHRIEVER. Yes, sir; I can. I have gotten a preliminary report on it. We had a malfunction of the tower which moves the umbilical cord away at lift-off. This malfunction caused some tearing of the second stage. That is the Agena stage. Also we had a premature shutdown of the Thor booster. It shut down at about 145 seconds which was about 15 seconds early. We do not know yet why this occurred. But it could very easily have occurred because of the malfunction of the ground equipment. The failure of the umbilical tower to move away and unlatch the ground power, so to speak, to the missile, both the first stage and second stage.

Unfortunately, this has been one of our problems. We have had very excellent missile and booster operation but we have had ground equipment malfunctions. As I pointed out last July when I was here on the Atlas, three of those five failures that we had in a row were actually due to ground equipment malfunctions.

The CHAIRMAN. This is really due to ground equipment, too, isn't it?

General SCHRIEVER. Yes, sir. I would say now—without having seen all of the details which will, of course, have to be reduced—this will take a little time, but my feeling is that undoubtedly the failure will be traced to the ground equipment not functioning properly on this particular lift-off. This is the first time it has occurred in the Discoverer program. On all of our other eight Discoverer flights we have had perfect booster operation, both the first and second stages. This is the first time we have had any malfunction at all as far as the booster is concerned.

The CHAIRMAN. That is the reason it did not function successfully?

General SCHRIEVER. Yes, sir.

The CHAIRMAN. It was the second stage.

General SCHRIEVER. Actually, the first stage cut off a little short, so that—

The CHAIRMAN. The second stage was torn?

General SCHRIEVER. The second stage never had a chance to get it up to orbital speed.

The CHAIRMAN. Yes.

Let me ask you this: The NASA has a Mercury program and has astronauts. Is it true the report that I hear that the Air Force is setting up its own astronauts, training astronauts also?

General SCHRIEVER. No, sir. We are making, or developing, plans for the Dynasoar, but again the Dynasoar program is completely coordinated with NASA and NASA is actually participating in it. We will not be carrying out two separate uncoordinated efforts here at all. Just like the X-15, we have Air Force, Navy, and NASA

personnel who will actually participate in the flight program of the X-15.

The CHAIRMAN. That clears that up.

I will ask you this: Does the Air Force foresee a need for such vehicles as Saturn, Nova, and Centaur?

General SCHRIEVER. Yes, sir, we certainly do foresee a need for these larger boost vehicles, although at the moment we do not have what we call a firm military requirement. But we know we will need these large-boost, first stages in order to get the kind of payloads we anticipate in the future into high orbits such as are required for the 24-hour communications satellite.

The CHAIRMAN. Although they are being handled by NASA, the Air Force really has a fundamental interest in those programs?

General SCHRIEVER. Absolutely. I think it is entirely appropriate that they be handled by NASA at this particular time because they do have the first need to get the larger payloads into deep space operation.

The CHAIRMAN. Is it true, too, the report I hear, that the Air Force is interested in all space up to the Moon, we will say?

General SCHRIEVER. Well, we are, of course, interested in all space from an exploratory and scientific standpoint. I think it is a fair statement to say that at least in the foreseeable future, and I would say for this decade—and this is getting out on the limb a little bit, because we never can read the crystal ball too well—but I would say in this decade that our primary interest in space will not go beyond what we might call low satellites. The communications satellite, the 24-hour satellite, is at an altitude of some 22,000 miles, so you might not consider that as a low satellite, but in this sense it is. It is certainly not going out to the Moon or exploring Venus or Mars.

The CHAIRMAN. You are still interested in that high a satellite?

General SCHRIEVER. Yes, sir, because the communications satellite has tremendous potential for military application, and I might say also a tremendous potential for civilian use.

The CHAIRMAN. One more question, and then I am through.

Is the arrangement now with you and NASA—is it entirely satisfactory? And also I will ask you under the proposed bill, can you work with NASA, with a satisfactory result—in cooperation with NASA—if we put through a measure like that handed us by the administration?

General SCHRIEVER. You have asked two questions.

The CHAIRMAN. I wanted to do that to consume my time and then I am through.

General SCHRIEVER. Well, I will try to be brief.

First of all we have made very great progress during this past year in establishing both informal and formal arrangements with NASA. I would say that we are fast approaching the old, very good relationship that we had with the old NACA.

We get together and talk these things out and I have a number—I won't go into them, but I can supply them for the record—a number of actual arrangements that we have made with NASA which I think will back up what I have said. So I am very happy with the progress we have made and I feel that there is no real problem in working with NASA at all.

The CHAIRMAN. Mr. McCormack?

Mr. McCORMACK. Midas and Samos are both detection systems, aren't they? One after the fact and one before the fact?

General SCHRIEVER. That is true. Midas is a warning system.

Mr. McCORMACK. Yes, I know, but it is to detect, a warning system?

General SCHRIEVER. Yes, sir.

Mr. McCORMACK. The other one is to be able to go in and see the preparations?

General SCHRIEVER. It is to observe both from an electronic and from a photographic point of view.

Mr. McCORMACK. What is the time limit on either or both of these being operationally effective?

General SCHRIEVER. I think—I don't know whether you plan to have an executive session, but I would prefer not to give you that in the open hearing.

Mr. McCORMACK. All right, I understand.

What defense have we against the intercontinental ballistic missile?

General SCHRIEVER. Today we have no defense. You are speaking of active defense, I am sure.

Mr. McCORMACK. Yes, sir.

General SCHRIEVER. No, sir, we have none today.

Mr. McCORMACK. What is the importance of SAGE in this setup?

General SCHRIEVER. Well, SAGE, as a ground control system for defense against conventional systems—that is, aircraft—has no specific application to defense against ballistic missiles except as it relates to the communications network that has been established or is being established through SAGE. This communications network, of course, will also be applied to any defense system that might be derived for ballistic missiles.

Mr. McCORMACK. Are you contemplating transferring that to a civilian agency for nonmilitary purposes?

General SCHRIEVER. That would be above me. I have heard it mentioned, but I have not gotten into any considerations on this score.

Mr. McCORMACK. In other words, that would be a time when SAGE, as an important part of the military defenses of our country, would be considerably demoted.

General SCHRIEVER. Well, I think it is a relative matter. The intelligence estimates give the Soviet Union a conventional bomber capability for quite a period into the future. I think that we have a need for this type of defense system, at least for the foreseeable future.

Mr. McCORMACK. Well, it could be used in the commercial field, couldn't it?

General SCHRIEVER. Well, it certainly could, yes, sir.

Mr. McCORMACK. At the right time, I suppose from the Defense Department and the Air Force. That is an Air Force project, isn't it?

General SCHRIEVER. SAGE is Air Force, yes, sir. But the Air Force has the responsibility for putting it into being. It really works for General Kuter, who is in command of Norad.

Mr. McCORMACK. What about DEW line?

General SCHRIEVER. Well the DEW line was also the responsibility of the Air Force to put into operation, to develop and put in place. Once it becomes operational, then actually it functions directly under

one of the joint commanders, which in this case is General Kuter at Norad.

Mr. McCORMACK. Well, when Midas and Samos become effective, what will be the contribution of DEW from a military aspect?

General SCHRIEVER. Well, the DEW line has a contribution to make only as it relates to conventional aircraft.

Mr. McCORMACK. I note you convey to us that ballistic missiles are going to become more and more emphasized in importance. As you say, they will be the most significant factor in deterrence to all-out war, is that right?

General SCHRIEVER. I believe that, certainly during this next decade, yes, sir.

Mr. McCORMACK. What effect will that have on the manned bomber?

General SCHRIEVER. Well, it is always a matter, I think, of mix.

The ballistic missile, I think, will assume a greater part of the job as far as our deterrent posture is concerned. However, I believe it would be a very serious mistake to read out the manned bomber as a system that is necessary for our overall deterrent posture. The reason for that is that one can never put all our eggs in one basket, so to speak. It isn't impossible that a very effective defense against ballistic missiles might be achieved. Now, today it is entirely true that it looks like a very difficult job. I personally think it is still some time in the future. But in the event you achieve this defense, and the ballistic missile were your only means of maintaining an offensive force, that is the ballistic missile, for our deterrent posture, we would be in pretty bad shape. Now, with the advent of air-launched missiles, higher performance aircraft, I think the manned bomber has a very important role for a long time to come. It is a matter, though, of balance of the force.

Mr. McCORMACK. And if they perfect and extend the air to surface—Hound Dog, is it?

General SCHRIEVER. Yes, sir.

Mr. McCORMACK. If they develop further—

General SCHRIEVER. We just had—

Mr. McCORMACK. What is that distance now? I have heard different distances. If you can disclose it I would like to get it clear in my mind.

General SCHRIEVER. I believe this is also classified—I can't give it to you now.

Mr. McCORMACK. All right.

General SCHRIEVER. The distances vary, of course.

Mr. McCORMACK. The further research and development enables us to project a longer distance, I can see where the manned bomber, the life of it as an effective instrument will be lengthened and become very important, I can see that as a layman. Is that true, General?

General SCHRIEVER. This is true.

Mr. McCORMACK. In other words, if you can shoot it for 200 miles that is one thing, but if you can shoot it for 5, 6 or 800 miles that is another thing.

General SCHRIEVER. We also have a follow-on to the Hound Dog. We have initiated a program for the development of an air launched ballistic missile which again goes into longer ranges which I can't disclose in open session this morning.

Mr. McCORMACK. Just one or two more questions. You use here with the advent of ballistic missiles which can travel more than 5,000 miles in 30 seconds.

General SCHRIEVER. Thirty minutes.

Mr. McCORMACK. Thirty minutes, rather. I think it would be interesting—I think the American people ought to have all the facts possible consistent with our national interest at the time, and I know you agree. I have heard various speeds, some 16,000, 18,000 miles an hour. Will you tell us how fast a ballistic missile can go now?

General SCHRIEVER. Well, of course, the speed varies over its entire trajectory. The average speed is about 16,000 miles per hour. That is for the total range.

Mr. McCORMACK. I think the American people ought to get that so they will be able to visualize what the problems are and what the dangers are, too.

General SCHRIEVER. That is right.

Mr. McCORMACK. I notice you say our national policy and moral consideration both conceded the initiative to the Soviets. I would imagine as a military man you are not happy with that, are you—your personal opinion?

General SCHRIEVER. Well, I am certainly not for preventive war or even a preemptive war. I think our democratic principles are correct and I would hate to see this Nation initiate a war which would end up with a result, I am sure, that neither side would win.

Mr. McCORMACK. My question didn't, of course—that is a responsive answer but I didn't have that in mind. You much prefer, I assume, to have no policy stated, that we are not going to under any conditions until we are actually attacked—suppose we saw the preparations going on? Suppose Samos becomes perfect and you are able to detect and you know we are going to be attacked, what are we going to do? Wait? As a military man, what do you say to that?

General SCHRIEVER. I would say that if you unequivocally knew that you were going to be attacked that you would be foolish not to attack.

Mr. McCORMACK. That is—

General SCHRIEVER. But this is going to be an awfully difficult decision to make. I mean I would hate to be the man to make it.

Mr. McCORMACK. I am not—I am not—I just want to get information.

General SCHRIEVER. And, of course the attacker in the future, as I see it, is also inviting a devastating attack on his own homeland. This is what really—

Mr. McCORMACK. Provided we can reach it.

General SCHRIEVER. Well, of course—

Mr. McCORMACK. I know now that we probably can, but have you any idea what defenses against our intercontinental bomber and what antimissile-missile defenses they have. Do you have any idea how far a potential enemy has advanced?

General SCHRIEVER. Well, let me say as much as I can say in an unclassified hearing. There is very much evidence that they have greatly increased their defenses against conventional aircraft; that is, if the aircraft has to penetrate through the defenses. We, of course, are always working on the electronic countermeasures, the air-launched missile, and so forth.

In the field of defense against ballistic missiles, I think we are quite certain that they do not have an active defense against ballistic missiles.

Mr. McCORMACK. Even on the bomber there is the question of attrition rate that comes in.

General SCHRIEVER. That is right.

Mr. McCORMACK. No further questions.

The CHAIRMAN. Mr. Fulton?

Mr. FULTON. General, both of you, we are glad to have you here. I want to thank you for your friendship and cooperation with this committee and the various members of it that have seen you on your duties. We are very pleased to have you as part of our team in the United States because I think you in the U.S. Air Force—as a Navy man—combined with the Navy Air, gave us the best Air Force in the world.

General SCHRIEVER. Thank you.

Mr. FULTON. Don't you think it is, too?

General SCHRIEVER. I think today we certainly do have without a question.

Mr. FULTON. How about General Yates?

General YATES. No question about it. I don't even understand the argument. [Laughter.]

Mr. FULTON. Now, you have said on page 5, General Schriever, a remarkable thing that I think should be noticed especially, it is the strategic needs of the Air Force. You state:

As for a specific need of the Air Force our present requirements fall most urgently in the area of satellite systems which will add to the overall capability of our counteroffensive forces. I have already described the necessity for early warning and strategic observation satellites.

As I have also pointed out, we should have—at the earliest practical moment—satellites for communication between our forces in all parts of the world, and for command of these forces in an emergency. These will be essential to the effectiveness of our deterrent strength.

For support of these operational systems, there is a need for weather and navigation satellites in the near future.

These, then, are clearly discernible military space system requirements.

I agree with you thoroughly because that means that we should get more effective systems for defense rather than merely laying up a whole, great number of this generation of operational missiles that we might use to land in an enemy country. I agree with you thoroughly on your emphasis. And you believe thoroughly in that statement, do you not, on page 5? I want to emphasize that.

General SCHRIEVER. Yes, sir. I do. I think there are two very important things, as we move into a nuclear rocket age: One is, as a democracy we have to reduce the element of surprise. Surprise becomes a very, very important factor because they have the kind of information, they have also the initiative, they have been the aggressor in the past. We don't have the kind of information they have on us. The element of surprise is almost overwhelmingly important and we have to reduce this element of surprise.

Mr. FULTON. And we must reduce it at once and therefore put the emphasis on these systems that will practically reduce that and give us the information as quickly as possible as to the action of any possible enemy?

General SCHRIEVER. That is true. The other thing, of course, is that we must also reduce the vulnerability of our retaliatory forces.

Mr. FULTON. That is right.

Now, then, we need research and development on Nike-Zeus and Nike-Zeus has not been put into operational status. I agree with that. My comment is: First, it is not proved out yet sufficiently. Second, it can be saturated very easily, and third, it has only directional coverage, and fourth, it would not be competent against submarine or IRBM missiles. Do you likewise feel that we should not expend the money now to put into operation the present status of Nike-Zeus or do you feel that we should continue with R. & D. on that as well as other allied systems of detection and early warning?

General SCHRIEVER. Well, I think we certainly should continue on R. & D. on that program, the Nike-Zeus, and possibly others.

I would prefer not to comment on whether or not we should decide at this stage to proceed with an operational system because I do not have all of the facts before me. Nor have I studied this particular system in great detail, as to the exact status of it as of now.

Mr. FULTON. Well, it is getting to be quite a political football.

General SCHRIEVER. Yes, sir, I know it.

Mr. FULTON. If you could give us a statement on it for the record later and do it as a technical statement—

Mr. McCORMACK. I don't think I want the record to show that we should sit here and say it is a political football. Any time any of us Democrats talk about national defense and we have views of our own we are talking politics. I am not going to sit here and permit that to go by.

Mr. FULTON. Might I say that I would say that probably in another body rather than this, they are the trial balloons for the Presidency that are going up and are being shot down by people on both sides, not Republicans and Democrats. I might say that certain Democrats are likewise shooting down the trial balloons of certain people with presidential aspirations on their own side on this same subject. So it isn't between two parties. It is rather the particular year we are in, and it is in that sense I am speaking.

Mr. McCORMACK. I think it is dangerous ground to get into when we are impugning motives of any American who has his own views about national defense. You go ahead. You can ask your question about it. I just want the record to show that any questions I ask are not asked from a political point of view. I am concerned with the preservation of this country, because everything I have and every American has is dependent upon this country and I respect you men who wear the uniform when you appear before me, because in case of attack I look to you. You gentlemen have to give us the leadership to win the war and preserve this country.

General SCHRIEVER. I think we recognize that. In the event things should happen in a military sense the military will be either the heroes or the goats and I would hate to be the goat in any future war because I think it means the end of this country. I think we have got to be right.

The CHAIRMAN. Let me say this to the general, I am thoroughly in accord with what Mr. McCormack says. This is not a political

committee. We are having these hearings for the defense and protection and survival of the United States. I don't believe there is room for Democrats or Republicans in a hearing of this sort. I don't know whether the general is a Democrat or Republican or either one of them. He may be something else. But I think that we should feel, all of us, that this is a national defense hearing, where there is no room for partisan politics.

General SCHRIEVER. I can assure you one thing I am not, and that is a Communist. [Laughter.]

The CHAIRMAN. I didn't mean to infer that. [Laughter.]

Mr. FULTON. Nor a candidate for President. [Laughter.]

You see what is happening is that it certainly has gotten into a realm that is not effective, so I agree with Mr. McCormack and our chairman that it should be kept completely nonpolitical. Mine was a warning that there is a possibility and a probability that some people, across party lines, use such a thing for political purposes, but that we want it solely on a technical basis. That is why I said it.

Now, may I—

Mr. MILLER. It isn't a question that the shoe pinches, is it—

Mr. FULTON. * * *

The CHAIRMAN. We are holding the—we will not hold the gentleman strictly to the 5-minute rule since he has already passed it.

Mr. FULTON. * * *

The CHAIRMAN. We will give you credit for 3 minutes.

Mr. FULTON. * * * I want to compliment you on both the Atlas and Discoverer program because it took firm courage on the part of both of you to stand up when it fell behind for certain technical reasons and for you each to come to this committee and state that you each had a strong belief in the programs and we should proceed with them. I am glad, across party lines with all members of this committee, to have been part of that support when it was one of the hard times. So I want to again congratulate you.

General SCHRIEVER. I can assure you we appreciated the support of the committee, too.

Mr. FULTON. Could I ask General Yates: You have two caps on, actually, you are a Department of Defense representative as well as the commander of the Atlantic Missile Range, are you not?

General YATES. That is correct.

Mr. FULTON. In your capacity as Department of Defense representative on the Mercury program where can you report in? Can you report in right to the top without redtape and talk with the Secretary of Defense?

General YATES. Yes; I have authority for direct communications with anyone in the Department of Defense.

Mr. FULTON. So you have no complaint on echelons to go through in order to get prompt action on Mercury, do you?

General YATES. None whatsoever.

Mr. FULTON. Likewise you feel the Mercury should go ahead promptly and the target date should not be moved back 3 to 5 years because it is an essential element in our space program for the security of the United States, do you not?

General YATES. I feel it is extremely important.

Mr. FULTON. On the Kapustin Yar and Tiura Tam launching pads of the Russians—the Tiura Tam is the one that they launched the Pacific missile from, could I ask you on that? Actually, the Russians only have about a 3,500- to 4,000-mile landfall on that particular range, do they not, where they can closely and accurately observe the trajectory?

General YATES. Actually, with the ballistic missile for the purpose of observing the trajectory and determining the impact point they need only to track accurately for the first few hundred miles. That distance, of course, they have adequately. The missile is committed then. It is going to land wherever it was going to land when the power was cut off. So there is no need for tracking after the missile propulsion has been shut off.

Mr. FULTON. Now, on Kapustin Yar, their short range, we have just as good facilities as that, do we not, right in your Atlantic Missile Range?

General YATES. I have never visited Kapustin Yar but I am quite sure we have as good or better facilities for launching in the Atlantic Missile Range area.

Mr. FULTON. I am leading up to this: You have said that we can have worldwide range very shortly by the addition of a few station ships as well as the cooperation of Australia and that we can then have missile shots that will go clear to the Indian Ocean, for example, or we can have satellite shots that will be traced the whole way around the world from the launching on the Atlantic Missile Range?

General YATES. Actually, as the satellites go higher fewer stations are required. The most difficult shot is Mercury because the orbit is extremely low. As we go into higher orbits fewer stations will be required. So with the advent of the Mercury system I can't think of any net that would be needed more completely for any project. The later projects will require fewer and fewer stations.

Mr. FULTON. This is my last one: Therefore, our ground control and our ground installations are really ahead of Russia, because first she doesn't have them and secondly, she is making no move in the immediate future that we can see to get such a worldwide system and, thirdly, I would like to ask you: When will this system be in effect? How long will it take?

General YATES. The complete operational date? I don't know the exact target date on it, say a year approximately. It will be available for checkout well ahead of the first manned flight and we will fly several unmanned vehicles ahead of that time. I do not know what NASA has set right now as the target date for the first orbital flight. The net probably will be ready in a year.

Mr. FULTON. So when will that date be for checkout? Could I get that?

General YATES. Each station is going in on a different schedule basis which is set by NASA in their Western Electric contract. Now, I don't have available the schedule for each one of the stations. I would say that all of the net would probably be operational in a year.

Mr. FULTON. Would you put the program in the record for us? We won't ask for it here.

General YATES. I will be glad to.

(The information requested is as follows:)

The scheduled operational dates for the Project Mercury tracking and ground instrumentation stations are:

Cape Canaveral.....	July 1960.
Grand Bahama.....	Do.
Grand Turk.....	Do.
Bermuda.....	Do.
Control center (AFMTC).....	Do.
Canary Islands.....	September 1960.
Communications and control center (Washington, D.C.).....	November 1960.
West Australia.....	Do.
Hawaii.....	Do.
West Mexico.....	Do.
Southern California.....	Do.
South Texas.....	Do.
Indian Ocean ship.....	January 1961.
Mid-Atlantic ship.....	Do.
Nigeria.....	Do.
Zanzibar.....	Do.
Woomera, Australia.....	Do.
Canton Island.....	Do.
White Sands.....	Do.
Eglin AFB.....	Do.

The CHAIRMAN. Mr. Miller.

Mr. MILLER. You fired a Discoverer the other day that wasn't successful, so you heard a lot about it. But if I remember rightly, I think yesterday you had fired the 35th Jupiter, 22 of which had been successful, is that correct?

General SCHRIEVER. The Jupiter was fired yesterday, and, of course, this has been a very successful program. It has been carried out by the Army.

Mr. MILLER. And here is a case where we have practically worked the bugs out of it and we have an operational missile now, but that no longer makes too much front page interest reading, isn't that correct?

General SCHRIEVER. I can comment on that, because I have lived through these things for a good long while now.

We have a habit of accentuating the negative and the opposite on the positive. So when things become successful, why they are no longer of great interest. They are of great interest to me, I can assure you.

Mr. MILLER. I just wanted to bring that out that we may have a failure, but we do have successes.

General SCHRIEVER. This has been true in the Jupiter program. The Thor program also has been highly successful. Last year we had some 40 flights of the Thor. I think, only about three of those didn't perform as expected.

The Jupiter also was very successful last year. I think the Polaris fired yesterday was successful. The fifth time in a row they had a successful flight. We had about 17 straight Atlas flights in a row that were successful, 2 of them in 1 day. It got about page 19 notice.

Mr. MILLER. I would just like to get some of those successful flights into the record along with the ones where we point out your failures.

General SCHRIEVER. We are adjusted to this. I mean this is a way of life and we are adjusted to it.

Mr. MILLER. It is very nice that you are, but, nevertheless, I appreciate it.

This is my only question, other than to get that statement in the record. Are we stressing the defense against rockets or intercontinental missilery sufficiently, or are we putting all of our emphasis on the offense? Now, I think it is a military axiom that every time you develop a weapon, somebody develops a weapon that counteracts it.

Are we doing enough in the defensive field in research and development to balance off what is being done offensively?

General SCHRIEVER. I would say that in research and development we are. It is a matter of very careful judgment as to when you make a decision to go from research and development into what you might say a system program. The reason for this is you have to then commit very large funds for the operational environment, the construction of bases, you have to set up and train people, new organizations, and you commit yourself irrevocably to a very large-scale program in terms of dollars.

It is always a matter of judgment on the part of the best scientific and technical people as to just where we stand in terms of technical feasibility with respect to any of these programs that are in Research and Development. I might get up here and say: Well, I think a certain program should be committed as a system now. I feel that we have established the necessary technical feasibility that we should take the calculated risk to proceed with an operational system. Someone else may disagree with me, so it becomes a matter of judgment. I feel, further, that it is only for those systems which are of extreme importance to the national security that you should take the calculated risk to proceed toward an operational system before you have proven out that everything works properly. We did this in the ICBM. We are doing it in the Minuteman program, the Navy did it in the Polaris program. I think we will have to take risks of this kind in order to get an early as possible operational capability in some of our satellite systems.

Mr. MILLER. Of course, war is always a matter of risk. You can't sit back.

General SCHRIEVER. That is right.

Mr. MILLER. But the thing that was worrying me, I was concerned with, General, there is no glamour in the defensive end of this business? In other words, this isn't a thing, again, that lends itself to a lot of glamour, it is real hard work and hard going and I just want to know that we are not neglecting that phase of it.

General SCHRIEVER. Well, of course, in the R. & D. field, the Army has the Nike-Zeus—the Air Force has the BMEWS system which is a radar fence. BMEWS is actually in the process of being installed. The Midas is an R. & D. program. A tremendous effort is going on in studies, not only within the Department of Defense, but by industry, for other means of defense against ballistic missiles and against satellite systems.

It is just that these are very difficult things to do and we are just not ready to launch forth aggressively in a hardware program in some of these areas.

Mr. MILLER. But we are keeping abreast of it?

General SCHRIEVER. Yes, sir.

Mr. MILLER. Through research and development?

General SCHRIEVER. Yes, sir.

The CHAIRMAN. Mr. Chenoweth.

Mr. CHENOWETH. I want to congratulate both of you on splendid statements. It is certainly a great pleasure to have you here. I haven't had the opportunity to see General Yates since we were there last year. I want to again thank him for the courtesies he extended the committee. It was a very interesting experience. Just a year ago, I believe, you were before our committee for the first time after this committee was created, General Schriever. I wonder if you would tell the committee what our picture is today as compared with a year ago? What have we been doing in the past year? There seem to be some rumors afloat that there is some complacency about this whole thing, the tendency to upgrade everything the Russians are doing, downgrade what we are doing. I am interested in what we are doing, not so much concerned with what Russia is doing.

I am interested in your telling us as much as you can in open session to compare our picture today with a year ago.

General SCHRIEVER. I will confine myself to talking about missiles and space here.

Mr. CHENOWETH. Yes, yes, sure.

General SCHRIEVER. I think first of all, of course, in the missile programs—and I will talk about the Air Force programs.

Mr. CHENOWETH. Yes.

General SCHRIEVER. Without minimizing the other services.

Mr. CHENOWETH. Yes.

General SCHRIEVER. In the Air Force program we, of course, have gotten the Thor operational. In fact, three squadrons of Thors have been turned over to the RAF in the United Kingdom.

I might say that there is a fourth squadron going in and our schedule calls for turning that fourth squadron over to the RAF at a time that is considerably ahead of the schedule that we first said we could meet back in 1956, when we initiated the IRBM program.

In the ICBM field the Atlas became operational in September of this year [1959] at Vandenberg Air Force Base, Calif.

This was a couple of months later than the July 1959 schedule that we had set for ourselves back in 1955.

However, it was a year or two earlier than the best experts in the scientific and technical field thought we could do, and I am speaking of the Von Neumann Committee and other groups that met in 1954.

This beat their timetable by a year or two, and their timetable was predicated on establishing the kind of management arrangement which would not be harassed in any sense by bureaucratic redtape.

Now, the fact that we have accomplished these goals in our ballistic missile field, I do feel, have been somewhat overlooked by the fact that everyone speaks about our missiles as the missile mess. I resent this very greatly.

Mr. CHENOWETH. You have a right to.

General SCHRIEVER. Because I think that the scientific fraternity, the industry, and the military have done a remarkable job in getting where we are today. I think it should be clearly differentiated that the problem with respect to numbers is not one that we have or I have the responsibility for. Those are decisions that have to be made at higher levels. To get numbers of missiles operational requires decisions to be made 2 or 3 years in advance of the time that you will get

them in the field, because of the leadtimes involved in production, training, personnel, establishing organizations, building bases, installing and equipping the bases—installing the equipment and the missiles on the bases has a leadtime of anywhere from 2 years to 3 years.

So I think that a very great job has been done. The numbers business is something that is not the responsibility of the research and development people, the production people, the scientists, and the lower military staff.

Mr. CHENOWETH. In other words, you are telling the committee that really substantial progress has been made in this past year in this missile field?

General SCHRIEVER. A year ago we were in trouble on the Atlas, as I testified here, as late as July of last year, because there was a question as to how well we were doing.

Now, I think the next day after I testified we had our first successful flight after five failures and we haven't had a failure since. So I have my fingers crossed on that.

Mr. CHENOWETH. As commander of the research and development program for the Air Force, General, do you feel that we have been going fast enough in this program? Do you feel any glaring defects have been called to our attention here? Should we be doing more than we are doing? That is what I mean.

General SCHRIEVER. I will speak in my area of responsibility.

Mr. CHENOWETH. Yes.

General SCHRIEVER. That is the research and development, in getting a system operational. I think we have been moving as fast as we possibly could move over the past 5 years. I want to excuse myself from getting into any discussion as to whether the numbers are adequate or not.

Now, in the military space area, we have also made substantial progress during the past year. We, of course, have gotten the Discoverer program going. It has been highly successful, even though the impression is that it has been a failure because we have not yet made a recovery. As a matter of fact, that is the only objective that we have not yet achieved in that program. So we have come a long way toward perfecting the techniques and the components, the equipments that will be necessary for Midas and Samos. They make direct contributions to those systems.

I feel very strongly that for the next 5-year period our big job is to exploit the hardware and the techniques, in other words, the overall resources that are available today to develop to operational status those systems which I mentioned, such as surveillance, warning, communications, navigations, meteorology, and so forth.

These can all be accomplished within the resources that we have now.

The CHAIRMAN. Mr. Sisk?

Mr. SISK. No questions.

Mr. CHENOWETH. Thank you, General.

The CHAIRMAN. Mr. Van Pelt?

Mr. VAN PELT. No questions, Mr. Chairman.

The CHAIRMAN. Mr. Mitchell?

Mr. MITCHELL. Mr. Chairman and General Schriever, I think since Zeus has been mentioned this morning that it should be pointed out that the Congress, with both Republican and Democratic support last

year, appropriated some \$137 million additional funds for that program and that as to this date, that money has not been made available to the Army for the further development of Zeus.

That, of course, requires no answer. But I was interested in your statement, as you concluded, General. You stated, "I believe that our Nation must acknowledge the predominant importance of space for national security and survival."

Do I conclude then that you believe that our Nation has not made such an acknowledgement?

General SCHRIEVER. I believe that there has existed over the past year or so considerable confusion as to the importance of some of the systems that were under development as to their contribution to the national security.

Specifically, the systems that I have mentioned, and I won't repeat them all again. These systems, as I have pointed out, have a great contribution to make to our deterrent posture. I think they are absolutely essential to our deterrent posture in our nuclear rocket age. And I have felt that there needs to be a better understanding as to the need and requirement for these systems as differentiated from the exploratory, scientific type of activity which is extremely important from a scientific and prestige standpoint and which is the primary responsibility of NASA.

I think that we have to recognize that from a military standpoint there is an extremely important job to be done. We look at space as a medium where we can either do a job uniquely, in other words, we can't do it anywhere else, or else we can do it better and more economically in space than we can either on land, sea, or in the atmosphere. We look at it from a very practical point of view.

Mr. MITCHELL. But we should, the American people, and that means the Government of the United States, should make this acknowledgment as you point out? I agree with your statement and concur with your views about it that we have not, if those are your views.

General SCHRIEVER. Well, it is easily understood why there is confusion. I think that some of the space firsts of the Soviets have been extremely glamorous and they are important and they are dramatic and I guess that if you can call space mundane, the kind of things that the military is doing in space would fall in that category. As a consequence we don't get the same kind of treatment at this particular stage in the game.

Mr. MITCHELL. One other question, General. You stated that it was your belief that at least 90 percent of what was being done in the Air Force ballistic missiles program could be directly applied to an astronautic or space program, but you went on to conclude that the setup we have for space today is preferable to the creation of a super-agency to coordinate all space efforts.

Now, if that percentage of the Air Force space program has, or your ballistic missile program has a space application as well, why wouldn't there be greater efficiency in a single agency?

General SCHRIEVER. Well, in the first place, if you talk about the 90 or 95 percent, I was talking about the resources that existed as of that time and I think that it is true that those resources are the ones that are being primarily used today.

They are the Atlas booster, the Thor booster, the Jupiter booster, the hardware, the techniques, the launch facilities, the industry base and personnel, scientific and military as well.

Now, as we go down the line, of course, there will be other equipments required, other boosters such as the ones being developed in NASA today. Then the same percentage that I am talking about certainly will not apply. In the payload area, in the scientific payload area there will be new developments, this is a new field.

Now, in response to your question about a superagency, my feeling is that NASA will serve a very important national need by taking on the responsibility for the exploratory and scientific type of space development.

The military will certainly support NASA in this regard. I personally am quite happy to have no more than the responsibilities that we now have because I tell you it is more than we can handle now. I am perfectly happy the way the arrangements are made at the present time with NASA having their distinct responsibilities and the military retaining the authority and the responsibility for developing those systems which contribute to the national defense.

Mr. MITCHELL. Thank you very much.

The CHAIRMAN. Mr. Bass?

Mr. BASS. General Schriever. I want to make sure that I got your answer to one of Mr. Mitchell's questions and I would be glad to yield to Mr. Mitchell if I misstate his question. He asked you, as I understand it, whether you felt that the people of this country and the Government, which, of course, includes the military, has not recognized in the past the importance of this ballistic missile program and a stepped-up space program.

Now, certainly as far as the military and the Government is concerned, that is not true, is it?

General SCHRIEVER. They certainly have recognized the importance of the ballistic missile program. And they have also recognized the importance of the space program. But what I am saying is that the people generally, when they think about space, they are thinking about the more dramatic and glamorous single-shot project type of things. The lunar impact, or orbiting the Moon or going out into deep space.

What I had in mind when I said there was confusion is there has been at least a body of thought, I think you will agree, that there is no requirement, or the military has no requirement in space. This is what I had in mind. The military, as I have pointed out, in the programs that we have at the present time, have a very, very definite requirement. Space systems have tremendous potential for increasing the security posture of the country.

Mr. BASS. And that requirement has been recognized in the past, too, as well as in the present by the military?

General SCHRIEVER. It has been recognized within Government circles, it has; yes, sir.

Mr. BASS. Thank you.

The CHAIRMAN. Mr. Wolf?

Mr. WOLF. Mr. Chairman, everybody has been very kind to the two generals and I think that is very fine and I know they are fine people. I happen to be one of the people who is perhaps not critical of the military, but I am not sure who I am critical of, but I don't believe

everything is quite as lovely as our two friends here have portrayed it, because there seems to be a great conflict of opinion, notwithstanding Mr. McCormack and Mr. Fulton, notwithstanding the political overtones and implications.

I happen to be the father of three children, 9, 6, and 2. They are a long ways from adulthood. I am vitally concerned about this country. Perhaps that is one of the reasons I got into politics. There is a great conflict of opinion here in this missile thing and one of the real problems that we have, Mr. Chairman, is to establish what we are going to do as a committee on the basis, pretty much, of the compliments that we pay each other, and what fine people we are, rather than on any factual information.

With all due respect to my good friends here that I know personally, this is one of the real problems that we have.

The CHAIRMAN. The gentleman had better proceed to develop the facts that we can use.

Mr. WOLF. I can't develop them but I would like to read if I may, a little bit from the Washington Post and obviously they have not perhaps the scientific and military people on their force that the generals have at their disposal. I would like to read this into the record if I may. I have 5 minutes.

American preparation in defense and space matters may well be more adequate than some of the pessimists believe. Of course, these are only two aspects of national power. But the question of attitudes is basic, it is here that the largest gap exists. The President continues to say that everything is dandy, that he knows best about defense and that the demonstrated and quickening Soviet powers in various elements of national strength is no cause for alarm. It is a little more like saying that no one should worry about the smoking volcano because it hasn't erupted yet and its intentions are peaceful. In the face of a mounting and vital competition in many phases of national activity from a determined and resourceful adversary, the President invites complacency and the illusion that no unusual effort is required.

This is the essential danger—and it goes far beyond the question of whether Mr. Khrushchev plans to attack next year or at any time. Walter Lippmann has expressed the problem well:

"The peril is that in the race, not only in armaments but in overall national power, the Soviet Union is moving ahead faster than we are * * *. Because in this vast field the Soviet Union has gotten its research and development effectively organized, and because the Soviet Union is allocating to it all the resources that it requires, the gap is not becoming narrower, it is becoming wider."

If such analysis is correct, and this newspaper believes that it is, then despite the President's apologia there is plenty to worry about.

Obviously I don't imagine this was written with the secret knowledge of an R. & D. general.

The CHAIRMAN. Does the gentleman want to put the whole article into the record?

Mr. WOLF. Yes; I would appreciate having the whole article in the record.

The CHAIRMAN. Yes; it will be put into the record. Because the gentleman is consuming his time.

The article is as follows:

[From the Washington Post, Feb. 5, 1960]

THE GAP

President Eisenhower has made a plausible if unconvincing statement of his philosophy on American defense and missile programs. There is too much concern over catching up with the Soviet Union, he said in effect, when our

deterrent is adequate. Much of the advocacy of increased defense effort is "parochial." This country retains a great deal of prestige abroad. Space exploration, apart from its military aspects, is purely scientific. The United States can't expect to be ahead in everything. We ought to have faith in our own system as against that of the Communists and think more about our democratic values.

This is what may be called the "don't get excited" approach. It is unlikely, however, to satisfy Members of Congress who are investigating the missile and space gaps. There is too much evidence that administration attitudes and policies toward the Soviet threat have been tailored to fit economic preconceptions. There is too much effort by administration officials to stigmatize criticism as unpatriotic. And there are too many holes in the President's own argument, as indicated by his resolute denial that American prestige is at all involved in space competition.

It seems clear enough that in current circumstances the American military deterrent is very powerful indeed. The concern is about the future—about whether American power to deter will expand fast enough to keep pace with Soviet capacity to evade or overwhelm the deterrent.

Obviously it is possible to become overly preoccupied with mere numbers. Nevertheless, there is not much comfort in the contradictions of the assertion by General Power of the Strategic Air Command that 300 Soviet missiles could destroy American retaliatory capability. General Power may be mistaken in this and in his advocacy of a constant airborne bomber force; but the recent confusion over the meaning of intelligence estimates is not reassuring. Seemingly the "downgraded" assessments of Soviet power are now being upgraded because of the accuracy of long-range Soviet rockets in the Pacific tests.

Moreover, the impression that policy is being played by ear on a transient basis is reinforced by the administration's record. For budgetary reasons the administration allowed the military aid pipeline to become nearly depleted. New ship and fighter plane procurement has been curtailed to a point where replacement is at only half the rate of obsolescence. The late start in missile development does not really explain the failure to push it, and finance it, more intensively. And there is plenty of testimony to the fact that American space exploration has been retarded by lack of funds.

The point here is that intelligence estimates, and more pertinently the policy decisions which bend them to particular purposes, can be wrong. There is a long list of wrong assumptions, and it goes well back into the Truman administration. Policymakers miscalculated the time the Soviet Union would require to produce atomic and thermonuclear weapons. They did not foresee the speed of Soviet rocket development. Sputnik caught them by surprise. They have consistently underestimated the pace and competence of Soviet scientific achievement.

American preparation in defense and space matters may well be more adequate than some of the pessimists believe; and of course these are only two aspects of national power. But the question of attitudes is basic—and it is here that the largest gap exists. The President continues to say that everything is dandy, that he knows best about defense, and that the demonstrated and quickening Soviet prowess in various elements of national strength is no cause for alarm. This is a little like saying that no one should worry about the smoking volcano because it hasn't erupted yet and its intentions are peaceful. In the face of a mounting and vital competition in many phases of national activity from a determined and resourceful adversary, the President invites complacency and the illusion that no unusual effort is required.

This is the essential danger—and it goes far beyond the question of whether Mr. Khrushchev plans to attack next year or at any time. Walter Lippmann has expressed the problem well:

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If such analysis is correct, and this newspaper believes that it is, then despite the President's apology there is plenty to worry about.

Mr. WOLF. Not only that, there are some other folks around the world consuming time. That is the only part I intended to read.

I have just returned from a trip to the Far East and there are many people around the world who are vitally concerned with our position in the missile business and I wonder if these generals would suggest or admit that there is a possibility that there is always a political overtone to anything that we do in a scientific way either here or in Russia in our relationship with uncommitted nations and other nations in the world who perhaps are friendly to us but are in a worried position relative to becoming too closely attached to us.

This is just a "Yes" or "No" answer on that, either one of the generals.

General SCHRIEVER. I think from a military standpoint, there are not.

Mr. WOLF. Any political overtones to our failures and successes?

General SCHRIEVER. Oh, there are many political overtones. What I am saying is, this does not enter into our consideration of factors in trying to get the job done.

Mr. WOLF. The next part of that is, and I know that you research and development people are sincere and are working hard and I don't mean to impugn you in anyway, and I haven't, I hope. I am just trying to present a worried position.

General SCHRIEVER. I understand.

Mr. WOLF. Do you have any really concrete method by which we are telling the story that Mr. Miller brought out about our successes to these uncommitted nations over the world? I know we have the USIA and all of that, but obviously they are not doing as good a job as the Russians are in these fields.

General SCHRIEVER. I think there is no question that the Soviet Union has exploited their successes to a much greater degree from a propaganda point of view than has the United States.

Mr. WOLF. The question is, Is there anybody or any department studying ways by which we could gain greater use of the successes we have? Our press in America, bless their hearts, they have done a great job of telling about our failures to the entire world.

General SCHRIEVER. Well, I am not sure—I imagine there are. I can assure you that we have studied it from our point of view. We have made efforts to get a little bit better coverage on some of our successes. I know General Yates and I have been working on this problem for a good many years now—he in command of Cape Canaveral and I as former head of the Ballistic Missile Division. I can assure you it was of great concern to us how we got the story across to the American people.

The CHAIRMAN. Mr. Riehlman?

Mr. WOLF. Is my time used?

The CHAIRMAN. Yes; it is 6 minutes.

Mr. WOLF. If we had a little more time, I have a couple of other questions.

The CHAIRMAN. My timekeeper here to the left tells me it is 7 minutes.

Mr. WOLF. That is fine. But if there is any time before these gentlemen leave, I would like to ask some questions.

The CHAIRMAN. I would remind the committee that Tass is sending reports back to Russia daily on the meetings here, on this committee. This is of real interest to us.

Mr. RIEHLMAN. I would say to my good colleague that the statement he read into the record would be pretty good propaganda for Tass and the other papers.

Mr. WOLF. If the gentleman would yield——

Mr. RIEHLMAN. I have my time. It gives some connotation that you might be agreeing with it.

General, let me get to two or three important things that I think I would like to have answered.

First of all, may I say to you very sincerely that I recognize the responsibility that rested upon your shoulders as leader in this ballistic missile program for the last 4 years and the great accomplishment that this country has made under your leadership in the research and development program, and bringing into being an operational Atlas missile.

Now, recognizing that very same need for greater work to be done on Midas and Samos, do you feel that——

The CHAIRMAN. Mr. Riehlman, could you speak just a little louder?

Mr. RIEHLMAN. Do you feel that the same urgency rests with those two programs as there was with bringing into being the Atlas intercontinental ballistic missile? For this reason, General: We recognize and you have well outlined it in your statement today the importance of these two projects and what they mean to our defense. Are we putting the emphasis and should we put the same urgency and emphasis on those two programs that we put on the intercontinental ballistic missile program?

General SCHRIEVER. In answer to the first question my personal opinion is yes. As for the second question I think that we are proceeding on these programs with a more cautious attitude than we did on the ballistic missile program.

Mr. RIEHLMAN. Do you think that we can telescope that time period the same as you were able to in this program of the Atlas?

General SCHRIEVER. First, let me say that we do have enough money for the research and development programs today. We have under active consideration within the Department of Defense the possibility of making a decision that we should go operational, you might say, in the Midas program.

I personally hope that that decision is to the affirmative. I feel that it should be because I think it is the kind of program where we need to take the calculated risk on it similar to what I have mentioned we have taken on other programs.

Mr. RIEHLMAN. I hope that you will use your leadership and influence in seeing done just as much as can be done.

General SCHRIEVER. I can assure you I have been hounding them for quite some time on this one.

Mr. RIEHLMAN. I have just one other question, General. Toward the close of your statement you mentioned something about this early warning program and what it would mean to our people in the civil defense agencies. What importance to you in your field of activity, do you place upon having an adequate civil defense program in this Nation?

General SCHRIEVER. Well, on this one, I am sorry that I have not had an opportunity to read all of the studies that have been made in recent years on this. My own feeling is, my own personal feeling is,

and from a position of a sense of inadequacy to comment, is that we should have put more emphasis on the civil defense activities in this country.

Mr. RIEHLMAN. I am very glad to hear you say that, General, because many of us on Capitol Hill have been vitally interested in really constructive programs in civil defense and we are having a hard job selling it even to our own colleagues.

General SCHRIEVER. I think, of course, it is an expensive program from what I have seen about it. But on the other hand, I don't believe that we as a nation, should think if ever we are attacked that this necessarily would be the end and certainly civil defense could make a great contribution to our being able to rise up and move on.

Mr. RIEHLMAN. Thank you very much.

The CHAIRMAN. Mr. Hechler?

Mr. HECHLER. I have no questions.

The CHAIRMAN. Mr. Daddario.

Mr. DADDARIO. Mr. Chairman. General, you have had some nine attempts in attempting to recover the Discoverer satellite. And these have been unsuccessful. Now, what basis can we have that the Mercury capsule can be recovered, taking that into consideration?

General SCHRIEVER. Well, we have had nine attempts with the Discoverer, but not nine attempts at recovery.

Mr. DADDARIO. How many have there been?

General SCHRIEVER. I will just recollect now and then I would like to be sure that the record is straight.

I think we have had five attempts at recovery. Now, remember, three of these missiles did not go on orbit, three of the nine that we have fired. The last successful one, Discoverer VIII, we had our recovery sequence completely instrumented, we know that every step that was supposed to happen, happened in the sequence on the recovery.

We had one difficulty and that was that the attitude of the satellite. The angle of the satellite was a little off due to the fact that we ran out of gas and that is exactly what we did. We ran out of gas because we had a highly eccentric orbit so the missile was in flight longer and we ran out of the gas which stabilizes the bird.

As a result, the recovery capsule went over the recovery force in the Pacific and landed out near the equator. We are certain that it did reenter the atmosphere. We had telemetry data right on through every sequence that occurred, including the opening of the parachute.

Mr. DADDARIO. Then these are problems that you feel can be overcome?

General SCHRIEVER. I feel absolutely confident that we will make a recovery and make it soon.

Mr. DADDARIO. I was very pleased to hear your answer to Mr. Riehlman's question on civil defense, because I believe with him that one way we can develop our capacities and overall military capability is by shielding and protecting our civilian population to the utmost.

General SCHRIEVER. Yes, sir.

Mr. DADDARIO. In your statement, General, you talk about our whole capability, and you have the phrase in a clause on your third page that, "together with other weapons of the free world," and it is extremely important in the overall picture that we take into con-

sideration the capacity of those nations which are allied with us, is it not?

General SCHRIEVER. Yes, sir, it is.

Mr. DADDARIO. And as we develop our capacities, we develop their capacities as well, not only in the military field, but in the economic field as well?

General SCHRIEVER. That is right. I think it is extremely important that they be furnished the most modern weapons, too, in the age we are living in.

Mr. DADDARIO. Isn't one of the problems propagandawise, that in the community of the free world that we are involved, not only with the military capabilities, but also with those things that affect man, himself, a better way of life? We have certainly through our benevolence helped build up the whole European community and we are doing that in the undeveloped areas of the world and this is certainly as good propaganda as anybody can possibly get, insofar as keeping those nations allied with us, is that not so?

General SCHRIEVER. Oh, I think it is very definitely so. The military factor is only one of a number of factors that establish the overall strength of this country, and its influence on the rest of the world.

Mr. DADDARIO. And while we have here a tendency to confine ourselves to the space effort, and you have said—and I think correctly so—that we have conceded the initiative to the Soviets in this whole field, when you take the entire picture into perspective, take into consideration everything that has been done; certainly, propagandawise in the free world the United States is not in second place to the Soviets.

General SCHRIEVER. Well, I think I am inadequate or do not have sufficient information to answer that one.

Mr. DADDARIO. But there are other factors that have to be taken into consideration.

General SCHRIEVER. There are many other factors; yes, sir.

Mr. DADDARIO. And you will concede that these factors are very important in the overall picture?

General SCHRIEVER. Very important; yes, sir.

Mr. DADDARIO. That is all.

The CHAIRMAN. Mr. King?

Mr. KING. General Schriever, I believe it is conceded by all experts that a year ago the Russians were ahead of us in total space effort—and I use "space" in its broadest term—and it is conceded that they are ahead of us today.

My question to you is: Do you think they are further ahead of us today in space effort—and, again, I am using "space" in its broadest possible sense—are they further ahead of us today than they were a year ago?

General SCHRIEVER. My judgment is that—first of all, it is very difficult to just lump everything together. They are, without a doubt, ahead of us in the large booster field which has permitted them to make some dramatic firsts. Whether they are further ahead of us today than they were a year ago, I really can't say. I think overall, spacewise, if you take into account the accomplishments in the defense area, I would say they are not further ahead of us in space than they were a year ago.

And, as a matter of fact, I would not concede, in the areas that I have talked about, that they are necessarily ahead of us at all.

Mr. KING. Don't you feel that they have more ICBM's, though, operational, than we do?

General SCHRIEVER. As of today?

Mr. KING. As of today.

General SCHRIEVER. Not as of today.

Mr. KING. Don't you feel that they will a year from now?

General SCHRIEVER. Based on intelligence estimates on numbers, they will have; yes, sir.

Mr. KING. Then that would give them clear superiority, at least a year from now, would it not?

General SCHRIEVER. They will have a superiority in numbers based on our firm program and what the national intelligence estimate says they will have; yes, sir.

Mr. KING. Then, looking forward for, shall we say, 1 year, it would seem that the gap, if there is a gap—you question whether there is one—but, in any event, it will increase or at least it will appear? They will pull out ahead of us over the next year?

General SCHRIEVER. If our estimates are correct, they will be ahead of us in numbers; yes, sir.

Mr. KING. Numbers are quite important, aren't they?

General SCHRIEVER. They are very important, but I want to—I tried to make the distinction in that I, in the Research and Development Command, have been responsible to bring us where we are today in terms of an operational capability, in terms of the performance that has been laid down, that we are not responsible for the numbers that somebody has decided we will have in the inventory a year from now or 2 years from now or 3 years from now.

Mr. McCORMACK. Will the gentleman yield right there?

Mr. KING. Yes.

Mr. McCORMACK. What is your personal view about the difference in the numbers? Would you care to express—from a military vantage—what your views are?

General SCHRIEVER. Well, I have expressed my personal views in the past on this matter, last year and the year before, after Sputnik, and I have always qualified my statements by saying that I am not in a position to evaluate the overall military posture. My own personal views have been that we should have made the decisions to put more missiles into the inventory.

The CHAIRMAN. Is that all?

Mr. KING. May I ask one other question?

General Taylor is quoted as having said that we should have \$60 billion a year to really build our entire defense picture up to tiptop condition, vis-a-vis the Russians and their threat.

Would you agree with that statement?

Mr. FULTON. Is that 60 or 50?

The CHAIRMAN. Fifty.

Mr. KING. I am relying on my recollection. If Congressman Fulton remembers it as 50, I will yield to that.

Mr. HECHLER. Fifty to fifty-five.

Mr. KING. Fifty to fifty-five.

General SCHRIEVER. I wouldn't want to comment on that, because he has just retired as a Chief of Staff. He has had available to him a great deal of information with respect to the total force structure and certainly has a better feel for what might be required overall than I would have, so I would not want to comment directly on his statement.

The CHAIRMAN. Mr. Roush?

Mr. ROUSH. General Schriever, do we have vehicles today with sufficient thrust to take care of these satellites you have mentioned? I am referring to Midas, Samos, Dynasoar, Transit, and Tiros?

General SCHRIEVER. Yes, sir; we do. I would like to qualify what I say. We have the Atlas and Titan boosters; we have the growth potential of both of those, plus having under development the Centaur, which is the higher energy fuel second stage.

The Centaur is not available today, but this will be an essential upper stage to our communications satellite. All the rest of them we do have available, I would say that with these boosters and with the growth that we have projected, we have the necessary hardware to do those jobs.

Mr. ROUSH. You speak of the growth potential of the Atlas. What thrust do you contemplate to develop with the Atlas?

General SCHRIEVER. The Atlas has some additional growth from the standpoint of thrust. As a matter of fact, you may recall we fired a Thor here recently with a higher thrust engine, up to 165,000 pounds of thrust. This, of course, is the same basic engine that makes up the booster cluster on the Atlas. The Atlas booster has two of these engines which are rated now at 150,000 pounds. So that uprating these engines is one way of getting growth. Of course, I was thinking more about the growth that was also related to having higher energy upper stages on the Atlas. The Atlas is the booster that is tied at the present time to Samos, Midas, and the communications satellites. It is adequate to do the job with the qualifications of the Centaur in the communications satellite program.

Mr. ROUSH. Do you contemplate using Saturn for any of these satellites?

General SCHRIEVER. The Saturn is not programed at the present time for any of these, although we have under study the possibility of using the Saturn later on with respect to, say, the communications satellite or perhaps even the Dynasoar. These are in the study phase.

Mr. ROUSH. General Schriever, it has occurred to me that there is a difference or distinction between a sufficient deterrent power and a sufficient counteroffensive force. It seems to me when we think in terms of deterrent we are trying to think in terms of what the other man is thinking.

If we are thinking in terms of a counteroffensive force, we are not only thinking of a deterrent force but a force which will give us a victory in the event of war.

Would you care to comment on that, sir?

General SCHRIEVER. Of course, our definition in the Air Force of a deterrent force is one that has as a first objective, of course, by all odds, the highest priority objective of preventing a war from beginning in the first instance.

In a sense we have already failed, if a war starts. In the second case, we feel that this deterrent posture must be strong enough so

that we not only can retaliate, but, in fact, can win in the event a war is initiated.

So I think probably on the counteroffensive it is a matter of definition. It is often thought of, and I think of it along these lines, that the ideal deterrent posture would be a capability of striking and actually knocking out all of his military capability to strike us. In that sense deterrent and counteroffensive would be the same. A counteroffensive has often been looked at in that light.

Mr. ROUSH. Are we in a position today to strike with a counteroffensive force which would give us a victory?

General SCHRIEVER. I think it would give us a victory, yes, sir. I am not saying that we would not be hit in return. I think we could prevail in a war today, yes, sir.

Mr. ROUSH. No further questions, Mr. Chairman.

The CHAIRMAN. Thank you very much, Mr. Roush.

May I then ask you a couple of additional questions, General? I want to know of General Yates: Do you have suitable and sufficient range instrumentation down at the Atlantic Missile Range? Or are you in need for some additional equipment?

General YATES. Our instrumentation is continually changing depending upon the demands and requirements of the new missiles coming in. However, I think the answer to your question is we have sufficient to do the job today and have sufficient planned to do the job in the future.

The CHAIRMAN. Do you have enough support facilities and equipment in A.M.R.?

General YATES. Yes, sir, we have enough to do all the launchings we need. Sometimes it is rather difficult to get these unromantic types of facilities such as warehouses and things like that, but other than that, the usual gripe over lack of that kind of facilities, we have enough to do all the launchings that we need to do and we can get by.

The CHAIRMAN. We were told there were serious problems down there and I have heard of some criticism, too, of the A.M.R. Do you know whether or not your problems are all straight now?

General YATES. I haven't heard of this criticism you mention, Mr. Chairman. I would welcome it.

The CHAIRMAN. We got some. We sent a man down there, Mr. Beresford; he has been there several weeks. How long were you there, Mr. Beresford?

Mr. BERESFORD. Two weeks.

General YATES. I have read criticism in the columns in the newspapers that you refer to, yes, sir. I am completely satisfied that we haven't earned the criticism.

The CHAIRMAN. We are not passing judgment on it at this time because I don't think Mr. Beresford's report is in print.

General YATES. We are satisfied that we have adequate facilities to meet all of our known requirements.

The CHAIRMAN. General Schriever, I understand you to say a year from now we will be behind in the arsenal supply of ICBM's. Would that give us a blind defense spot a year from now?

General SCHRIEVER. Of course, I don't believe you can equate our total deterrent posture just to the numbers of missiles. I believe that

missiles have a very important part to play in our overall deterrent posture, and having fewer—personally, I would rather have more.

The CHAIRMAN. Well, in a sense it does give us sort of a blind spot there in our defense, doesn't it? How long would you say that the supply of missiles is going to be heavier with the Soviets than with the United States?

General SCHRIEVER. Well, there are other things that have to be done. Until we have warning and until we have enough missiles, I think our strategic air force will have to—I am talking about our bomber force—will have to go on to an air alert. Exactly when that is, I can't say. It is based on when the intelligence estimates indicate the danger is the greatest. But I think—

The CHAIRMAN. Well, I think we rely defensively on the SAC air force, which is the greatest air force of that kind in the world, in the history of the world. We rely on them, of course, for preventing war and we rely on missiles, but in the sense that we need missiles we will have a blindspot in our defense, won't we, for a while?

General SCHRIEVER. Well, I wouldn't call it a blindspot. It certainly is a weakness and there isn't anything, of course, that can be done today to get more missiles by 1961. The leadtime just doesn't permit it.

The CHAIRMAN. Well, you have a great man in the Air Force there in charge of SAC. I have with pleasure met him and visited Omaha, and gone over his program, and he has very strong views on that. Do you have similar views?

General SCHRIEVER. Well, of course I have a great regard for General Power.

The CHAIRMAN. We all do.

General SCHRIEVER. He was my boss at one stage and I work for him in a sense now, a lot of the work that we do in ARDC—

The CHAIRMAN. From what you say, you are really following his idea that we will not have a sufficient number of ICBM's in our arsenal—I don't know how long that will last, you didn't tell us—but to that extent we are missing in one fundamental element of preventing a war and winning it when it comes; isn't that right?

General SCHRIEVER. Well, of course there is an air alert planned and programmed for. I think it is a question of timing and whether it is enough. General Power, I think, has indicated that he doesn't think it is enough. This is his responsibility and I respect his views.

The CHAIRMAN. You have a terrific responsibility, too. We are looking to you, to you gentlemen, for proper defense of this Nation and you surely have some ideas on that.

General SCHRIEVER. Well, I agree, completely in principle, with General Power. Now, I am not, I can't really say that I agree in every detail, because I don't have available to me all of the war planning information that he has as Commander of the Strategic Air Forces and working directly for the Joint Chiefs of Staff.

The CHAIRMAN. I think you have answered the question when you say you agree in principle.

General SCHRIEVER. Yes, sir.

The CHAIRMAN. Because that does put you squarely behind a strong defensive posture and an arsenal full of missiles.

Mr. BASS. Would the chairman yield?

Mr. FULTON. * * *

The CHAIRMAN. I am going to withdraw here and I will recognize Mr. Fulton. He asked me first.

Mr. SISK. I passed on the first round.

The CHAIRMAN. If the gentlemen will stay here, I will recognize you and Mr. Riehlman.

Mr. BASS. You mean Mr. Bass?

Mr. SISK. How much time is the gentleman going to use?

Mr. FULTON. * * *

The CHAIRMAN. That is all right. He is my timekeeper on—

Mr. FULTON. * * *

The CHAIRMAN. I think he is a little strict when he asks the Chairman to tally, himself, the time there, but that is all right, Mr. Fulton.

Mr. FULTON. * * *

Mr. MILLER. I will keep the time. On your mark, go.

Mr. FULTON. * * * I might say when the patient has doctors who disagree, God help the patient. I have never heard so many generals disagree on so many things, on so many questions that are much beyond their own level of responsibility, as I have in the last few weeks. For example, it would seem that many generals are trying to say what overall posture of defense of the United States should be, when, as a matter of fact, that is under the President of the United States, the Commander in Chief, after consulting with the Joint Chiefs of Staff and the National Security Council, Department of Defense, and the various services down the line. And that is a much different thing from a bunch of generals popping off who want everything they can for their own particular posture.

The CHAIRMAN. I think the gentleman is a little severe with General Schriever. General Schriever—

Mr. FULTON. No, I didn't say this general.

The CHAIRMAN. I don't think he is popping off a bit.

Mr. FULTON. Just a moment.

Mr. MILLER. Let him have his time.

The CHAIRMAN. All right.

Mr. FULTON. Just a moment. I am commenting on certain generals—

The CHAIRMAN. But not General Schriever?

Mr. FULTON. But neither my good friend General Schriever.

The CHAIRMAN. Nor General Yates.

Mr. FULTON. Nor General Yates.

The CHAIRMAN. Let's have that understood.

Mr. FULTON. I know him well, yes. But if you read the papers and hear them quoted here they would have a 25-percent increase in personal income taxes or a \$10 billion deficit in the budget in order to have a complete emphasis on their particular jurisdiction. I asked the general, General Schriever, is it not a question of the defense of this country overall rather than any particular field where the responsibility must be placed? Is that not right?

General SCHRIEVER. There is no question about that.

Mr. FULTON. All right.

Now, you said this about the capability, on page 3, that is, the capability in space and to defend, economically and efficiently on land, sea, or in the atmosphere, and you say this: "I feel certain if we have

this capability"—and notice especially—"and the Soviet Union knows we have it, we can continue to maintain the peace. The Air Force ballistic missile program has established the base for achieving this capability in space not only to serve the military requirements but also national needs."

Now, you have evidently made a good plan and you say it is able to achieve this capability in space, not only to serve the military requirements but also national needs. Would you please say whether you firmly believe that?

General SCHRIEVER. Yes, sir; I do.

Mr. FULTON. All right. Then the next thing is this: You had made as an equal statement that the Soviet Union must know that we have the capability and if the question comes up so that there are serious doubts of the capability of the U.S. Air Force, U.S. Navy, the U.S. Army, the U.S. Marine Corps, if there are serious doubts of the U.S. ability to defend itself, and these are generated in an atmosphere that has no technological basis, then one of the main factors of defense of this country which you have pointed out has been weakened, because then the Soviets will not know we have the capability; is that not right?

General SCHRIEVER. This is true.

Mr. FULTON. All right.

One other thing: I had been in the Navy on active duty as a Reserve officer in World War II and had some experience on the aircraft scheduling units, scheduling planes that I believe you were dealing with, for the U.S. Air Force, the Navy, and the British.

Now, our problem was always there: At what level, on a modification, was there a cutoff point where we went into production of numbers. That brings up the question on this generation of missiles whether we should have the cutoff point at this point because of something almost certainly happening in 1961, or whether we should keep on placing emphasis on research and development as you are doing and giving you every capability for that research and development and I might say putting into effect what you say should be operational. So I hope this committee will strongly endorse you on the operational capability of the Midas. But you see, the point is: Shall we cut off at an early generation stage of missiles and lay up 3,100 or 3,200 of them as has been suggested by somebody, or shall we proceed on research and development with fewer numbers and have, at a later date a much greater capability. What is your answer to that?

General SCHRIEVER. Well, that is an answer that I can't make categorically, because this is exactly in the field that you had indicated before. These are the kinds of decisions that have to be made on the basis of considering all contributions to our overall military strength. These are very hard decisions to make.

Mr. FULTON. So really the question of numbers is a question of the Joint Chiefs of Staff of the U.S. Forces, and also of the National Security Council, based on the strategy the President of the United States lays down as Commander in Chief of all the forces, is that not right?

General SCHRIEVER. That is correct.

Mr. FULTON. So the ultimate decision, then, is the decision of a man by the name of Gen. Dwight D. Eisenhower who is President of the

United States of America at the present time and voted that by all the people, and so it is not at your level that you decide the numbers nor recommend numbers on a mission that is not yours, is that not right?

General SCHRIEVER. That is right.

Mr. FULTON. That is all.

The CHAIRMAN. Mr. Sisk?

Mr. MILLER. The gentleman took 9 minutes.

Mr. FULTON. * * *

Mr. MILLER. Maybe some of us will insist on taking 9 minutes if that is the way the gentleman—

The CHAIRMAN. Mr. Sisk, you are recognized for 5 minutes.

Mr. FULTON. * * *

Mr. SISK. General Schriever, I would like to get back to something I think is a little bit nearer in your line and that has to do with your research and development—Mr. Chairman, could I have a little order? I can't seem to understand myself.

The CHAIRMAN. If the gentleman will suspend until we get order here.

Mr. FULTON. * * *

Mr. SISK. If the gentleman from Pennsylvania would be quiet for a minute some of us may have a chance to talk. I think he is doing all the talking here.

The CHAIRMAN. These witnesses are fine witnesses and we don't have them every day.

Mr. SISK. General Schriever, I am interested in the problem of defense and what is being done to defend against these missiles.

Now, our committee, members of our committee, have from time to time been briefed on certain proposals with which I am sure you are familiar. I wonder if you are free to comment to what extent you might or might not endorse a proposal that has been made for further experiments in the field of using energy? Dr. Salisbury, for example, and certain others—I don't know to what extent this program may be classified. I do not wish to get into a matter that is classified. But I am sure you, as head of ARDC, are aware that a lot of study has been done and there are those who feel that it is completely feasible. Are you familiar with what I am referring to?

General SCHRIEVER. Yes, sir, I am, but not in detail and I feel that I couldn't comment on it in open hearing. However, I would like to, if you desire, give you some feel for the kind of things that are going on in the overall area of looking toward the defense picture against ballistic missiles.

Mr. SISK. I appreciate having that, if you might, because, as I say, there have been two or three presentations made to the committee or various members of the committee which look impressive to us as laymen. But we are sincerely desirous of seeing these programs funded if, in your opinion, and others who are responsible, feel that this is an opportunity, because this seemingly could be the real answer, where these missiles could be struck down early, almost from the time they departed from the pad. After all, if we had 100 percent defense, or let's say even 90 percent defense, then I think we would have little to worry about. I think you agree with that.

General SCHRIEVER. I think if we should get a breakthrough that would provide an adequate defense against the ballistic missile type of threat, this would be a major advantage to the country making this breakthrough. I think we recognize this. Actually ARPA has the responsibility in the Defense Department to review all of the proposals and all of the thinking that is going into the matter of ballistic missile defense. They have been extremely active in it and each of the services have been contributing to ARPA. Industry, particularly, has come up with some interesting proposals in the past 6 or 8 months that are being evaluated. We have used the Rand Corp. out on the west coast to look into active ballistic missile defenses. We have also used the Lincoln laboratories and Miter, up in the Boston area, to look into it.

We have had a number of proposals made to the Air Force that are being evaluated by the Ballistic Missile Division because they involve satellite types of systems for active missile defense.

We are to get a result of their particular study here very soon. None of these proposals that I have seen to date have advanced to the point where I think they warrant a large-scale effort relating to hardware. Some of them, however, look promising enough that we should pursue them quite vigorously from a research standpoint.

I think perhaps during this year certain programs, additional programs over those which are now in being, such as Nike-Zeus, BMEWS, and Midas will probably be undertaken. This would be my estimate of the situation at the moment, because some of these things do look quite promising.

Mr. SISK. As a last question, do you anticipate any problem of funding. Because this, of course, is something that we down here could help you on if there is a need.

General SCHRIEVER. Yes.

Mr. SISK. And I think those of us who have seen some of these things would be most desirous of supporting you in getting the funds to carry it through.

General SCHRIEVER. Well, here is what happens in a situation of this kind, and it has happened in my experience a number of times in the past: If, in fact, a program looks extremely promising, as to constitute a breakthrough, so to speak, we have invariably either reprogrammed or taken money out of emergency funds or have come back to the Congress for a supplemental.

The budget cycle being what it is you just can't, you can't accommodate these kind of things when suddenly something very promising appears on the horizon in research and development.

We didn't have nearly enough money in our ballistic missile program when we accelerated it in 1954, but the moneys were made available through reprogramming actions and emergency funds. It took us about 2 years really to catch up with the budget cycle, but we were never underfunded in this program. I think the same thing might well result in this area, and I can assure you that I would press strongly for coming to the Congress for additional moneys if such a breakthrough appeared to have great potential.

Mr. SISK. Thank you.

The CHAIRMAN. Mr. Bass?

Mr. BASS. General, following the line of inquiry of Mr. Fulton, I just want to make sure that I understand what you have been saying. You have testified earlier that as of now there is no so-called missile gap between us and the Russians as far as operational missiles are concerned. Is that correct, as of today?

General SCHRIEVER. That is as of today, but these are very dynamic things and you can't—the number of missiles that you have in your operational inventory isn't subject to turning the faucet on and off. You have got to make the decision several years back. So we are committed without a question as to the numbers of missiles that we will have in our inventory at least during the next 2 years.

Mr. BASS. And in the future, say a year from now, you have testified that from your best information the Russians will have some more operational missiles than we will.

General SCHRIEVER. Based on intelligence estimates; yes, sir.

Mr. BASS. And you have just told us that in your opinion you think we should match the Russians missile for missile, is that correct, and that we made a mistake in not doing so?

General SCHRIEVER. I did not say that. I said that I had in testimony back in 1958 and also in testimony last year, had advocated that we provide for more missiles in our inventory, yes, sir, I said that. I did not ever say we should match missile for missile.

Mr. BASS. Doesn't it amount to the same thing? You feel we should program more missiles than we are programing; is that not correct?

General SCHRIEVER. At the present time there is a great question as to whether or not we should increase the first-generation missiles, but again—this is because of the leadtimes involved. It would be late 1962 or 1963 before we could increase our inventory.

Mr. BASS. General, do you think we should have programed more, of these first-generation missiles?

General SCHRIEVER. Yes, sir; I definitely do.

Mr. BASS. So you dis—

General SCHRIEVER. That is my personal opinion.

The CHAIRMAN. Will the gentleman yield?

How many more should we program? Is it all right to ask that question? If the gentleman objects—

General SCHRIEVER. I am not saying—I am merely stating that I had said this in my previous testimony. I am not saying today that we should. I said that because of the leadtimes involved that there is a question whether or not we should today, because it is going to be late 1962 or 1963 and other missiles will be coming into the inventory at that time. I am under oath here and I am merely repeating what I said in 1958 and 1959, that I advocated at that time that we increase our missile inventory. I am merely stating a historical fact.

Mr. BASS. Do you think we should program more missiles now than we have?

General SCHRIEVER. I don't—I feel that this decision is above me at the present time and I will not state that we should program more at the present time.

Mr. BASS. General, how can you say that when you have just said earlier that we should have programed more than we did?

General SCHRIEVER. Well, there are two reasons. First of all, the critical period in my personal view, based on projections of Soviet missile strength, may well be in the 1961 and 1962 time period. If we had made decisions 2 years ago or even 1 year ago, we could have had more missiles, as part of our overall deterrent posture in 1961 and 1962. If we make this decision today, we cannot increase the numbers until late 1962 and in 1963. And in that period there are other programs that will be becoming operational and will provide additional missiles into the inventory. So there is a very, very difficult judgment here to make which I don't feel that I, with the information available to me, can make at this time.

Mr. BASS. Is this personal opinion of yours based on the overall picture, or just from your own program in the Air Force?

General SCHRIEVER. It is based on what is available to me and this certainly is not the overall picture.

Mr. BASS. So is it fair to say, then, that you disagree with President Eisenhower in his recommendations in this ballistic missile field?

Mr. McCORMACK. Don't you think—might I suggest to my friend that he is giving his testimony and we appraise it.

Mr. BASS. That is a perfectly proper question.

Mr. McCORMACK. I didn't say it wasn't a proper question.

Mr. BASS. I would just like to know—

Mr. McCORMACK. It is not—

General SCHRIEVER. No, I am not disagreeing with President Eisenhower today. I said—when I mentioned what I had said 2 years ago and 1 year ago, I am merely stating a fact, that this is what I said at that time.

Mr. BASS. So you disagree with the President's program.

The CHAIRMAN. Any further questions? You don't want to get the man in trouble just by—

Mr. FULTON. I wouldn't ask that.

The CHAIRMAN (continuing). By asking him if he disagrees with the Chief.

Mr. BASS. Mr. Chairman, what is wrong with that? [Laughter.]

Mr. FULTON. Getting him into trouble or disagreeing? I don't think he should—

The CHAIRMAN. He stated what he knows and I think that is it.

Mr. FULTON. I think Mr. McCormack is right.

The CHAIRMAN. He came here at our request and he has been a good witness.

Mr. BASS. I think we ought to call a spade a spade, Mr. Chairman, and I don't see—

The CHAIRMAN. I think so, too, but you don't want to crucify your best men. And General Schriever is one of the best we have.

Mr. BASS. Why is this crucifying him? He has chosen of his own accord to testify before this committee as to his own personal beliefs.

The CHAIRMAN. He has testified as to his beliefs pretty well.

Mr. BASS. Now, I have one other question, General. Referring to General Power, you just said earlier that you supported him and his statement that we are not doing enough on this airborne alert, is that correct?

General SCHRIEVER. I said I supported him in principle on the airborne alert. I further said that I did not have available to me the

same detailed information that he has in terms of his position with respect to timing. It is really a position he has taken on timing. I don't think there is any question in anyone's mind as to the desirability of air alert. I think he is advocating that we move faster and get more on air alert. Now, I would prefer not to comment specifically on things because I do not have the same kind of information available to me that he does.

Mr. BASS. General White said yesterday, and I quote him—

To order an airborne alert at this time is one condition which we do not see is needed as of now, but it could well be a situation which would make an airborne alert prudent in the future.

Would you agree with that?

General SCHIEVER. Well, General White has a great deal more information available to him than I do. And I certainly wouldn't disagree with General White.

Mr. BASS. Thank you.

The CHAIRMAN. Mr. Hechler has a question to ask?

Mr. HECHLER. I have a short question that is exclusively within your jurisdiction, General Schiever. [Laughter.]

General SCHRIEVER. Thank you.

Mr. HECHLER. Wouldn't your job be easier if all of the American people had a fuller understanding of the serious nature of the threat which confronts us and were willing to make the necessary sacrifices in order to meet that threat? Wouldn't your job be easier?

General SCHRIEVER. Well, I am not sure that the American people do not know of the seriousness of the threat in the nuclear rocket age. I think that they do understand that we are living in a period that—or we are moving into an era where the world has shrunk by many orders of magnitude and for the first time in history this Nation will be placed in a position where the oceans no longer afford any protection.

I think the people understand this pretty well.

Mr. HECHLER. I tried to couch my question so it related to your job rather than your appraisal of what the people thought. But I appreciate your answer.

The CHAIRMAN. Are you through?

Mr. HECHLER. Yes.

The CHAIRMAN. Mr. Miller?

Mr. MILLER. General, adverting back to first-generation missiles, the decision to go into production on them, first let me say, unlike my colleague, Mr. Fulton, I am not a Navy man, I am an old Army man. So I am neutral here. But the Navy made the decision to go into production on Polaris, we have built the submarines, they just launched another Polaris down at Canaveral the other day that was successful. We have just got the bugs out of it. By the time they go into production, are prepared to go into production in a big way on it, this gives us a great deterrent power, one of the things that the enemy could be very much afraid of, at least I believe so—a lurking submarine armed with a missile that can go a thousand to 1,500 miles is an ace in the hole. Now, wouldn't we have been very foolish if the Navy hadn't take a chance, although this is a first-generation missile, to go into production on them when it did?

General SCHRIEVER. Absolutely, I think this is the very way to do it. We have done the very same thing in our ballistic missile programs. It is just a question of how much program.

Mr. MILLER. I have in mind that there is a factory ready to go into production on Polaris.

General SCHRIEVER. This is right and we have factories that are producing Atlases today, we have factories that were in production on Thor and are on Titan. We are already building operational bases for the Titan which you might say is analogous to the submarine. They are already under construction now, even though a Titan will not be operational until sometime next year, but we had to make that decision several years ago.

Mr. MILLER. So you are justified. In all the war we went through first-generation, second-generation planes, artillery pieces, everything else—

General SCHRIEVER. We must be on the 50th generation of airplanes, I am sure.

Mr. MILLER. Sure.

The CHAIRMAN. Who was next here? Mr. Fulton? I have agreed to recognize Mr. McCormack last, I will tell you that.

Mr. WOLF. I had a question just to address to the chairman.

Mr. FULTON. I will yield for a question.

The CHAIRMAN. No, the gentleman has a car waiting to take him away. He has to leave this meeting in just a moment. As a matter of fact, we didn't have the afternoon session because Mr. Fulton will be out of town. We really ought to have an afternoon session.

Mr. MILLER. No, we are doing very well.

Mr. WOLF. My question, while we are figuring out what we are going to do, simply was that the most significant thing in my opinion that has been said here is that we actually have no defense against the intercontinental ballistic missile and I believe we will have to delve very deeply into this question of what we are going to do about it very shortly. It seems to me this is our most serious problem. I am wondering if we have any executive session planned within the day or so on this.

The CHAIRMAN. We have no executive session planned.

Mr. WOLF. I would like the record to show that I think this is a very serious matter and I hope in the very near future we can bring the general back to discuss defense against missiles.

The CHAIRMAN. That is one of the most serious matters this committee has approached.

Mr. WOLF. That is all.

The CHAIRMAN. Mr. Fulton?

Mr. FULTON. I would like the record to show that on the Discoverer program alone we have 50 separate study contracts and projects now being worked on. Secondly, on the defense for the ICBM that we do have research and development on Nike-Zeus and on some others that I am not allowed to give in public, several types of projects. Is that not right, General?

General SCHRIEVER. Yes, that is correct.

Mr. FULTON. Likewise, Project Defender—I had said Discoverer, I meant Project Defender. Now, you fellows—

The CHAIRMAN. The committee will be in order.

Mr. MILLER. Go right ahead.

Mr. FULTON. Our counsel, Mr. Feldman, of the select committee, had passed this up to me: When the nuclear missile comes the saying

will be that "all men will be cremated equal," because there will be no defense at all. The point I would like to make is on the range of Atlas, vis-a-vis the last Russian missile that landed in the Pacific Ocean. On our last Atlas shot, if I recall, we had a 6,800 mile range and still had 10 percent of the fuel remaining, did we not?

General SCHRIEVER. Not the last one. We have fired the Atlas on several occasions beyond 5,500 miles. The last one that we fired was—the last one of that range which was beyond Ascension Island, was 6,200 miles. We did have—I don't remember the exact amount, but there was about 10 seconds fuel remaining, which means quite a lot in additional miles.

Mr. FULTON. Yes.

That would probably run the range of that particular missile, had it been used, rather than targeted on a certain CEP to an 8,000 mile range, would it not?

General SCHRIEVER. We can fly the Atlas that far.

Mr. FULTON. The Russian missile that plopped in the Pacific here recently, actually was a missile that—I am trying to think of the distance from the Tiura Tam missile base of Russia in southeastern—near the Caspian Sea, would be about 7,600 miles away, would it not, on a great circle route?

General SCHRIEVER. That is about right.

Mr. FULTON. So that it was a 7,600-mile range with a target CEP of maybe a mile and a half or 2 miles and we would have equal to that or greater with the Atlas missile at the 8,000-mile range, would we not?

General SCHRIEVER. Well, of course, we have no way of accurately determining whether they actually had that accuracy. We just have to take their word for it. We have very adequate accuracy in the Atlas and I would say it is certainly equal if not better than the Soviet accuracy.

Mr. FULTON. That means that you might not be able to put the Atlas up in the reserve seats but you can certainly hit the ball park, can't you?

General SCHRIEVER. We certainly can. We can actually put it in the reserved seats, I think.

The CHAIRMAN. Now, I am going to recognize Mr. McCormack for the last questioning here.

Mr. McCORMACK. I take it, General, that you attach great importance to the next 2 years in this period of world history?

General SCHRIEVER. I think that the next few years are very important; yes, sir.

Mr. McCORMACK. Particularly important?

General SCHRIEVER. Yes, sir.

Mr. McCORMACK. Is there any opinion in the Defense Department on the higher level that there is no defense against ICBM's?

General SCHRIEVER. No one accepts the fact that there is no defense. We do not have it today and everyone accepts the fact that it is a very difficult, very difficult job.

Mr. McCORMACK. Well, is it the opinion that a defense cannot be perfected against it and for that reason we are only wasting money to go into research?

General SCHRIEVER. No, sir.

Mr. McCORMACK. I see. There is no such opinion?

General SCHRIEVER. No, sir; not that I know of.

Mr. McCORMACK. I want to ask you about this "overall"—I read always the overall defense, that is the word that interests me.

Now, SAC, I have been told, and we have had testimony and I have read in the papers, particularly in the select committee we have had testimony, and that was public, and I have read it in magazines. I have asked questions about it, constituted about 90 percent of our attacking power, is that right?

General SCHRIEVER. Yes, sir.

Mr. McCORMACK. I won't say now but I am talking about a year or 2 years ago?

General SCHRIEVER. Yes; that has been generally—

Mr. McCORMACK. It is the same attacking or deterrent power that is our defensive power against sudden—anyone wanting to go into a general war—

General SCHRIEVER. This constituted the bulk of our retaliatory strike force; yes, sir.

Mr. McCORMACK. Now we have no definite knowledge what the Soviets—how far they have gone in the defense against our intercontinental bombers?

General SCHRIEVER. There is quite a bit of intelligence information available which I think permits us to make a reasonable estimate as to their capabilities; yes, sir.

Mr. McCORMACK. Is that something you would want to state in public? I prefer you to resolve it against stating it if you think you shouldn't.

General SCHRIEVER. No, sir; I don't believe I should state it in public.

Mr. McCORMACK. All right.

But assuming they perfect a defense against our intercontinental ballistic missile, SAC is the kernel of our defensive and deterrent power now?

General SCHRIEVER. Of our—yes, sir.

Mr. McCORMACK. I am not downgrading any other activity or any other service, but we have to look at the kernel, the main thing, and if we should lose that during any period where SAC cannot hit because of their defenses or the attrition rate is too great and they perfect the intercontinental ballistic missile before we do, with perfection, in other words, if we lose our deterrent power, that would be a rather dangerous situation, wouldn't it?

General SCHRIEVER. Yes, sir.

Mr. McCORMACK. So when we talk about the world overall, at least for the next 2 years we have to attach that word "overall" in connection with SAC and the ability of SAC, is that right?

General SCHRIEVER. I would, in my own personal opinion, primarily SAC, yes, sir.

Mr. McCORMACK. I am just a layman and I am trying to grope, trying to perform my duties as a legislator, a summary responsibility.

General SCHRIEVER. Well, SAC has been recognized as the primary retaliatory force; yes, sir.

Mr. McCORMACK. So above all, we can never at any time lose our retaliatory power?

General SCHRIEVER. I would say if we lose SAC, we would be in bad shape during the next couple of years; yes, sir.

Mr. McCORMACK. Or if they perfected a defense against SAC, really effective, maybe one gets through, but if the attrition rate is too great, that would be dangerous?

General SCHRIEVER. Yes, sir, it would; but we think we can get through.

Mr. McCORMACK. I am not saying that—I am just here asking questions and I know all you and your associates have it in mind, and I respect the uniform and I respected the uniform which I wore in the Army which was a private's uniform and I respected all others. I don't refer to people as you privates or you generals or anything else. I know my friend didn't mean it to be derogatory, but I think it is a mistake, my personal opinion. We have to have respect. We may differ, but we have to always say things and conduct ourselves in a manner where there is respect for those who wear the uniform. That is my opinion.

General SCHRIEVER. Thank you.

The CHAIRMAN. Thank you very much. Now, just before adjourning, I want to say this: We are holding over four witnesses from NASA that we lost in an effort to hear them about a week ago and we did it because we took up some other matters and sidetracked them.

I would like to get those witnesses before the committee before adjournment for the Lincoln birthday weekend. And then we have Monday the Secretary of the Navy, and I thought—Monday afternoon, of course, we are on the floor with the Sisk bill, so probably Tuesday afternoon, and I hope you gentlemen will stand by to be available on Tuesday morning, Tuesday afternoon, so we can clear up these witnesses.

Mr. HECHLER. Will this cover project Mercury?

The CHAIRMAN. Yes, that is exactly what it is. You have been queried about it and I thought I had better make a statement.

General, I personally think that you and General Yates are doing a great job. We are lucky to have men like you. I don't know who else we can look to in times like this, but the men who have spent their lives trying to protect this country. So the committee will adjourn until 10 o'clock Monday morning. Thank you very much.

(Whereupon, at 12:42 p.m., the committee adjourned to reconvene at 10 a.m., Monday, February 8, 1960.)

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