

REVIEW OF THE SPACE PROGRAM

THURSDAY, FEBRUARY 18, 1960

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

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

The CHAIRMAN. The committee will come to order.

This morning we have two distinguished witnesses. We have Maj. Gen. August Schomburg, who is with the Army Ordnance Missile Command at Redstone Arsenal in Alabama, and we have, then, Maj. Gen. J. B. Medaris, U.S. Army, retired, previously from the Redstone Arsenal.

Now, my thought is this: General Medaris is not called until 10:30. We will have a statement by General Schomburg and then as soon as General Medaris comes in, we will have his statement and then we will submit questions to both you, General Schomburg, and General Medaris at the same time and you can take your choice as to which one wants to answer which question. It will be all right with the committee.

You have a prepared statement, don't you?

General SCHOMBURG. I do, sir.

The CHAIRMAN. Would you like to proceed with that, General Schomburg?

STATEMENT OF MAJ. GEN. AUGUST SCHOMBURG, COMMANDING GENERAL; ACCOMPANIED BY COL. CALVIN HEATH; AND COLONEL ZIERDT

General SCHOMBURG. Yes, sir.

Mr. Chairman, members of the committee, I am Maj. Gen. August Schomburg. It is a pleasure to appear before you today, especially since this is my first appearance before Members of Congress as the commanding general, Army Ordnance Missile Command.

I should mention that although I have been commanding AOMC only since the 1st of February, I have been intimately connected with the Army's missile programs, including Nike-Zeus, for nearly 4 years.

The CHAIRMAN. You are located down at Redstone?

General SCHOMBURG. I am now at Redstone.

The CHAIRMAN. You succeeded General Medaris?

General SCHOMBURG. I have succeeded General Medaris.

Mr. FULTON. May we welcome the general into this new line of fire.

The CHAIRMAN. By the way, you will notice it is a crossfire, both sides. [Laughter.]

General SCHOMBURG. My connection with the Army missile programs began nearly 4 years ago, when I was Assistant Chief of Ordnance for Research and Development, and continued later when I became Deputy Chief of Ordnance, the job I held before going to the Redstone Arsenal.

I was also the Army's principal negotiator for the transfer of JPL to NASA, and about that same time for the use of the Army Ordnance Missile Command by NASA in space work; and then most recently again on the transfer that is about to take place.

I would like to introduce now two of the officers of my command who are here. I would like to introduce first, Col. Calvin Heath, who has been primarily responsible at AOMC for the command's work on the NASA transfer.

Colonel HEATH. Good morning.

The CHAIRMAN. Nice to have Colonel Heath here.

General SCHOMBURG. I would also like to introduce Colonel Zierdt, who is now known as Colonel Zeus.

The CHAIRMAN. General, before you get started and before the two colonels get started, under this posture hearing we have sworn all of the witnesses. I will ask all of you three gentlemen, if you will, to stand up. Do you and each of you solemnly swear that the testimony you will give before this committee in matters under consideration will be the truth, the whole truth, and nothing but the truth, so help you, God?

General SCHOMBURG. I do.

Colonel HEATH. I do.

Colonel ZIERDT. I do.

The CHAIRMAN. Thank you, sir.

General SCHOMBURG. Mr. Chairman, you have mentioned that you have a heavy schedule this morning. Recognizing this, I would really like to submit my statement for the record, rather than to take the time to read it.

The CHAIRMAN. All right.

General SCHOMBURG. I can brief it for you in a few minutes.

The CHAIRMAN. You stand on your statement.

General SCHOMBURG. I do.

The CHAIRMAN. We will put that in the record.

(The statement is as follows:)

Mr. Chairman, members of the committee, I am Maj. Gen. August Schomburg, commanding general, Army Ordnance Missile Command. It is a pleasure to appear before you today, especially since this is my first appearance before Members of the Congress as commanding general of the U.S. Army Ordnance Missile Command.

I am assured that the committee is familiar with the accomplishments and competence of this organization, so I shall not recount them here. However, I am compelled to say that even my brief residence at Redstone Arsenal has confirmed an old opinion that AOMC is indeed a national asset.

I count my new assignment a challenging one, even more so when I consider the future. We are faced with the transfer of the Von Braun group, an action which may restrict one area of our missile development capability. Yet our fundamental mission of providing weapons for defense remains unchanged, and, to be realistic, we must plan to meet future demands for more and more sophisticated weapons.

So we must now make certain changes in the application of our remaining resources, and we must supplement those resources where necessary and possible. It is a challenge of considerable magnitude, but it is a challenge which our experience equips us to meet with confidence.

The term "providing weapons for defense" is a handy generality, a sort of "shorthand" for expressing the job that has been assigned to AOMC. The substance and content of that assignment change constantly, because technology itself is ever-changing. As in Alice in Wonderland, we must run very fast in order to be able just to stay in the same place. But we do more than that, for it is our job to forge ahead; and we have gathered together at AOMC a great many of the Army's most capable and forward-looking people and have given them an environment in which to function effectively in the execution of our mission.

The AOMC organization has several unique features. Our headquarters staff includes representation from the combat arms. Through the Office of Military Applications and Training, the requirements of the user are integrated into everything we do, day by day.

A missile system is a composite development of many technologies. So representatives from the Army Corps of Engineers, the Signal Corps, the Transportation Corps, and the Quartermaster Corps serve on the AOMC staff. These people perform a development function in tying the other Army technical services into ordnance weapon systems development.

For example, although the AOMC agency contracts for the communications equipment which is integral to a missile weapon system, the Signal Corps exercises technical supervision over the execution of that portion of the missile system contract. We depend on the Signal Corps for basic advances in electronic components. We depend on the Corps of Engineers for the development of all generators, air compressors, air-conditioning equipment, and other power equipment, and for the construction of facilities. The Army Engineers are now engaged in construction of Zeus facilities at White Sands Missile Range, Johnston Island, Kwajalein, Point Mugu, and Ascension Island. We depend on the Transportation Corps for all aspects of transportability during development and test, and in the final, fielded weapon system. We depend on the Quartermaster Corps in developing materials handling equipment, various field shelters, heating equipment, and special clothing. We are also supported by a host of ordnance districts and agencies, including Frankford, Watertown, and Watervliet Arsenals, the Diamond Ordnance Fuze Laboratory, the Ordnance Weapons Command, and Aberdeen Proving Ground. Picatinny Arsenal provides us with warhead adaptation kits; the Ordnance Tank and Automotive Command with trucks and vehicles.

In turn we support others. We are developing components for the Shillelagh antitank weapon system, which is under the weapons system management of the Ordnance Tank and Automotive Command. Our missiles could be used as carriers by the Chemical Corps. And so on.

Among the "weapons for defense" we are now providing are the Corporal and Redstone systems, both of which have been deployed overseas. We are providing and supporting these two operational ballistic missile systems.

Further, the Jupiter intermediate range ballistic missile system has been ready for deployment overseas since December 1958, and we are now assisting the Air Force in the deployment of Jupiter to Italy.

We have two solid propellant ballistic missiles under development: The Sergeant system, with a nuclear warhead capability and a range of 75 miles, which will eventually succeed the Corporal; and the Pershing, a longer range ballistic missile, which will in the future succeed the liquid propellant Redstone.

Our surface-to-surface rocket systems include Honest John, deployed in 1953; and Little John, which will provide our airborne forces with a "Sunday punch." Development work is being conducted to increase the performance capability of both of these systems.

Our mobile air defense weapons include Hawk, which will complement our defense against high-level air attack by meeting the low-altitude threat. Hawk will be deployed this year. Hawk has also been selected by our NATO allies for production and deployment overseas.

Mauler is to be a highly mobile weapon for air defense in forward areas. Mauler's feasibility study has been completed and development will be initiated in the near future.

Redeye is an individual weapon for the man in combat. It is a shoulder-fired anti-aircraft missile which homes on its target. Redeye resembles the bazooka in size and appearance although it is much lighter in weight, and gives front-line and support troops a low-altitude anti-aircraft defense. The Redeye is in the early development stage.

We are also developing LAW, a light antitank weapon. It will enable an individual soldier to defeat the majority of tanks he will encounter, close up, in battle.

Lacrosse is an extremely accurate surface-to-surface guided missile which destroys hard targets such as pillboxes. Lacross artillery units are now in training for deployment.

The Nike progression of missiles provides a striking example of continuing growth in the Army's missile technology.

At the outset of the Nike-Ajax project in 1945, an Army evaluation of the threat expected 10 years in the future suggested the subsonic, high-altitude piloted bomber as the central element of the 1955 offensive threat. The Nike-Ajax program provided the free world with an effective anti-aircraft guided missile system. Ajax has been deployed since 1953 for the protection of cities and industrial centers throughout the continental United States. Ajax has repeatedly demonstrated its capability to destroy the fastest jet aircraft.

The Nike-Hercules program began in mid-1953. The Hercules system, with its solid propellant rocket motors, was calculated to meet the threat of supersonic aircraft and air-breathing missiles. To meet that threat, we now have the Hercules surface-to-air guided missile, with either conventional or atomic warhead, which is capable of destroying single or multiple targets. The Hercules system, now deployed, has destroyed the highest performance targets; and, indeed, no targets have yet been made available which are able to exercise the system to its limit.

While providing timely national air defense, Ajax and Hercules laid groundwork of priceless experience for the era of the ballistic missile and satellite threat. In November 1956 the Army staff approved a program for the development of the system which is now known as Nike-Zeus. Knowing the threat that faces the free world, we have pursued the development of Zeus with consecration. Our knowledge of U.S. defensive missile technology convinces us that Zeus will provide a workable solution to IRBM and ICBM defense; our knowledge of Soviet offensive capabilities convinces us that Zeus development must be pursued as expeditiously as our resources will allow.

In addition to the current weapons programs, a comprehensive consideration of AOMC activities must give due weight to our need for planning beyond the more immediate defense preparations. Unless we anticipate tomorrow's requirements and orient our research accordingly, we shall be unable to fulfill those requirements when they are expressed.

We must further explore the advantage of missiles in new techniques of warfare. For example, the speed and assurance with which high priority cargo could be delivered by missiles to isolated combat units make such a concept attractive. The economic ramifications of this concept are especially compelling when one considers the attrition rate of aircraft in supplying isolated units in combat, an attrition rate which will be prohibitive in future warfare.

An extension of this concept is missile delivery of small Army teams over great distances with pinpoint accuracy.

Because the feasibility of these and many other concepts is dependent upon the support of continuing research, we incessantly seek authority for expansion of our supporting research activities. There has been a frantic using up of our knowledge in the crash development of missiles in the past 10 years. During the same 10 years the competition for funds for missile development has crowded supporting research out of our budgets. So we have virtually exhausted our reservoir of knowledge. We must replenish it or yield our ascendancy—and eventually yield even our equality in the missile race.

This, gentlemen, has been an introductory account of what we have done—what we are doing—and what we hope to be allowed to continue to do.

Finally, whatever the substance and content of our present and future missions, it is our hope and expectation that the vitality of the Army missile organization will be sustained and increased by the support which those who direct our Government can give it.

Gentlemen, it is a pleasure to appear before your committee. I assure you that my command is ready at any time to assist you in your vital work. I shall be happy to attempt to answer any questions you may have.

General SCHOMBURG. My opening statement tells of the setback that we will suffer as a result of the transfer of the Von Braun team to NASA, but at the same time, it assures you of our determination to

reestablish the competence necessary to continue the fine job that the Army Ordnance Missile Command is doing and has done.

I should mention that the transfer will in no way affect the Zeus program. This program is handled by an entirely different part of my organization. It is not handled by the Von Braun team.

The formal statement describes our presently deployed missiles and the missile systems that are coming on in the future, and it tells you of the confidence that we have in the Zeus system. It tells you of our forward-looking attitude. In short, it tells you, sir, of our enthusiasm for the Army's missile job.

If you would like, I am open for questions, sir.

The CHAIRMAN. That is your complete statement, in brief?

General SCHOMBURG. This, I think, briefs it very well, sir.

The CHAIRMAN. We are glad to have you here for your first appearance before a committee of Congress, General. You have a most important assignment, and in your present assignment, you have control, do you not, of the backup for the Von Braun team down there?

General SCHOMBURG. I certainly do; and this is quite a responsibility, sir. It is my responsibility to see that that team is transferred without loss of momentum. This, as you know, starts on the 1st of July, and, as far as we are concerned, it is now planned that it will be about completed by a year from now.

The CHAIRMAN. My thought is this: General Medaris will be here at 10:30. I suggest that each member take one question. We will go around and then General Medaris will be here by that time; we will have his general statement. Then everybody can question both of the witnesses at the same time.

So I will ask one question now. Are you satisfied that the transfer can be made now without too much loss of momentum, and are you satisfied that you are going to get cooperation from NASA in your position?

General SCHOMBURG. The answer to that is "Yes." I might enlarge on it a little bit, sir. I feel that we can do this. As you know, we really have complete management responsibility for Dr. Glennan until the 1st of July; we carry on for him until that time. In the meantime, he will be building his administrative and support organization. NASA will start to take over on the 1st of July and then completely take over by the first of the year. I think this should work.

There is one problem, I think, that might be mentioned. The Von Braun team, of course, is unique, a great national asset, no doubt about it. It has done an absolutely marvelous job. However, this job, I think, might not have been possible without the management and the logistics support which the Army has given to Dr. von Braun and the Development Operations Division.

Now, we are furnishing cadres to NASA to help them in building their own support of the team, but this is not the same as transferring the management and the logistic support. That will stay with us. So I think there is quite a problem here to support the Von Braun group in the manner to which it has become accustomed.

The CHAIRMAN. Mr. Fulton.

Mr. FULTON. Glad to have you here. Yesterday evening General Schriever, on behalf of all the services, said before the National Rocket Club, and very firmly, there is no missile mess, and that

because of the progress that has been made in all the services through the scientists on the U.S. missile and space program, that it is a missile miracle.

Do you agree with him or disagree?

General SCHOMBURG. I think that is rather a good statement, sir.

Mr. FULTON. Thank you.

General SCHOMBURG. Yes; I think so.

The CHAIRMAN. Mr. Teague.

Mr. TEAGUE. Since you are in a new line of fire, let's start a little bit of fire. Do you agree with General Medaris that we should not have created NASA and that the whole space program should be under the military?

General SCHOMBURG. You know, I would rather you would ask General Medaris that, sir.

Mr. TEAGUE. General Medaris has already answered. I am asking you.

General SCHOMBURG. Well, I will answer this way: My job has been intimately connected with the Army's weapons up until now, as distinguished from scientific space exploration. I have just landed in a new job. I am anxious to be responsive in that job. I don't think that I have thoroughly thought out the question of the whole big problem, so I am really not prepared to give you an answer, sir.

Mr. TEAGUE. I will ask you the same question the next time you come up here.

General SCHOMBURG. Yes, sir. [Laughter.]

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

The CHAIRMAN. Mr. Sisk?

Mr. SISK. Mr. Chairman. General, I would just like to ask your comment on the paragraph at the bottom of page 6 in your statement where it starts off—

Because of the feasibility of these and many other concepts—

and goes on to say—

There has been a frantic using up of our knowledge in the crash development of missiles in the past 10 years. During the same 10 years the competition for funds for missile development has crowded supporting research out of our budgets, so we have virtually exhausted our reservoir of knowledge. We must replenish it or yield our ascendancy and eventually yield even our equality in the missile race.

Would you comment briefly on that paragraph, just what you—particularly with the point on this fact that we have virtually used up our knowledge?

General SCHOMBURG. For a number of years my experience has been largely in the research and development field. I think you will find most of us in this area believe that supporting research is really the heart and soul of our future. We have had a fairly good program, but it is dropping off. We do not put as much money into it now as we did previously.

The demand, on the other hand, is becoming greater all the time. As the systems become more complicated, more technical, we are trying to do more difficult things. So I am quite concerned that we are not putting more money into this supporting research, into component development, to develop the pieces that it takes to put together to make a system. We are not doing as much of that as we should.

Mr. SISK. I think it is a good statement. I am inclined to agree with it, but I think it is rather significant and I am very glad that you made it, that is why I wanted you to expound on it.

Mr. BASS. No questions.

The CHAIRMAN. Mr. Wolf?

Mr. WOLF. General, how do you see your job, what is your job? I am not sure I got that from the discussion this morning.

General SCHOMBURG. Yes, sir; let me tell you what my job is. It breaks down now into perhaps three separate pieces.

One part of my job is to see that the Von Braun team, this great national asset, is transferred to NASA without loss of momentum. This is one job I have.

Another job I have is to see that our Army missile programs go forward; that they do not lose momentum; that we continue to do a forward-looking job; and that we continue to give the Army what it needs. This is a very important part of my job.

Certainly another important part of my job is to reestablish in the Army Ordnance Missile Command that competence we need which goes out with the Von Braun group. We are giving the Von Braun group to NASA, along with \$100 million in facilities and equipment. We certainly do not expect to be able to rebuild that, not even a major portion of it. But some of this is going to have to be reestablished so that we can do our job.

The agreement, on the other hand, provides that there will not be duplication at Redstone Arsenal. If there is a test stand that can serve both of us, we will both use it.

The people—and this is very important. We are going to have to get some people—not nearly as many as the 4,700 we will lose, but we are going to have to get some people to fill in the gap that they will leave, and this is another part of my job.

So my job, you might say, in this last field, is to put us back on a going basis. And this, of course, we certainly intend to do.

The CHAIRMAN. Mr. Riehlman?

Mr. RIEHLMAN. General, in your briefing you referred to the tremendous loss to the Army in the transfer of the Von Braun team. Could you very briefly tell us just how that is going to directly affect the Army's own missile program?

General SCHOMBURG. Yes, sir. Now, we have—I can talk about the present and the future.

Mr. RIEHLMAN. That is right.

General SCHOMBURG. For our present programs we have made mutual arrangements for the Pershing, which is one of the most important; the Redstone, which still needs support; and the Jupiter, which still needs support. We have a completely satisfactory arrangement for the assistance of the team to finish those jobs. So I am not worried about those.

For future work, however, when we are coming up with a new weapon system where we would need that team, they would be able to help us only on an as-available basis. This means possibly on very low priority, after all the space work is done. I am not at all sure that in the future the Von Braun group would be able to serve us.

On the other hand, I certainly expect that we will build up the competence in our own organization to carry on the Army programs when the team is not available to us.

Mr. RIEHLMAN. Thank you.

The CHAIRMAN. Mr. Karth?

Mr. KARTH. No questions.

The CHAIRMAN. Mr. Hechler?

Mr. HECHLER. General Schomburg, I was very interested in the fact that in your oral statement you used the words "a setback" in terms of the transfer of the Von Braun group.

Now, I initially supported this transfer because I was so deeply concerned with the future success of Saturn that I wanted to see that Saturn was well funded and I believed that possibly that might be the only way to do it. But I want to be the first to admit publicly that I was wrong, that I was wrong in supporting this transfer because I didn't have available the facts that you are giving this committee and the facts that others are giving us which indicate that there is no reason why Saturn couldn't have been funded adequately within the Army. The Army was already doing an excellent job and had proven its success in the whole development program. What I would like to ask you is if you would comment on some of these observations and indicate whether we can pick up these pieces and proceed with the utmost speed toward the development of the other work that you have in the future. Would it be possible now to reverse this decision in your viewpoint?

General SCHOMBURG. I agree with everything that you say, sir. I think that all Saturn needed was money and it would have gone ahead, I am sure, just as rapidly as it could possibly go under any circumstances.

However, the decision was made and we are soldiers. Now that the decision has been made we are cooperating 100 percent. We will see that the transfer is made and that there is no delay in this very important program.

Since the decision is made and has gone this far, I don't know. This Von Braun team has a tremendous space capability and I would say, again, as I said earlier, the concern I would really have is that the Army did contribute to this team a most unique management and support capability. This is something that was almost as unique, in my opinion, as the team itself.

This capability does not transfer.

The CHAIRMAN. Mr. Daddario?

Mr. DADDARIO. General, exactly what will happen when a Nike-Zeus missile comes together with an incoming nuclear warhead?

General SCHOMBURG. This, of course, borders on some things that cannot be said in open hearing. But as General Trudeau said yesterday, the Nike-Zeus warhead has a capability of completely destroying the incoming ICBM nuclear warhead, without the ICBM or IRBM warhead going off. The Nike-Zeus warhead will be capable of destroying, with its own nuclear warhead, the incoming IRBM or ICBM warhead, but this will occur high enough above our own land that it should not in any way damage anything on the ground.

Mr. DADDARIO. And there is opinion, however, to the contrary to this, is there not?

General SCHOMBURG. No, sir. I don't know of anyone who would disagree with that. I don't think the scientists or any other technical people disagree.

The CHAIRMAN. Mr. King?

Mr. KING. The installation at Redstone is much broader than the Von Braun team. Could you just refresh our recollection on what will remain after—

General SCHOMBURG. Yes, sir; let me tell you what is at Redstone. The Army Ordnance Missile Command has four main parts, two of which are Agencies; the Army Rocket and Guided Missile Agency, which, for example, handles the Nike-Zeus as one of its important projects; and the Army Ballistic Missile Agency, which handled the Jupiter, which handled the space work, which handles the Pershing and these other oncoming ballistic missile systems. This Army Ballistic Missile Agency is a part of the Army Missile team and included the Von Braun group. So they will lose that group. The management that we have there remains with us, but it is my job to reestablish the in-house technical knowledge that will allow us to do the Army job in the typical Army fashion. This is the Army Ballistic Missile Agency. We lost only a part of that in the Von Braun group.

In addition to ABMA and ARGMA, we have what is known as Redstone Arsenal. This is our geographical name for the whole installation, but Redstone Arsenal is also a support organization. This is the agency that does all of our finance and accounting. It takes care of our supply. It takes care of our utilities. It takes care of the roads and grounds. This is the support agency that takes care of all the technical people there—this stays with us. We will give cadres from this agency, from my headquarters, from the others, to NASA, so that they can build a competence to take care of the Von Braun team; but essentially they stay with us.

The other portion of AOMC, the fourth portion, is the White Sands Missile Range. This is, of course, down in New Mexico, a thousand miles away, but also a part of this command so that we have full control of the testing of our Army missiles.

The CHAIRMAN. Mr. Roush?

Mr. ROUSH. General, do you feel that we have gone far enough with Nike-Zeus in its research and development phase to warrant going into production?

General SCHOMBURG. I certainly do, sir. I would answer about this way: I have full confidence in Nike-Zeus at this time. We feel we have as much confidence or even possibly more confidence in Zeus at this time than we had at the time in Nike-Ajax, when we put Nike-Ajax into production.

Mr. ROUSH. Do you feel we should spend that \$137 million—are we limited to one question?

The CHAIRMAN. Yes, you are limited to one question on this first go around because General Medaris will be here at 10:30. However, I think all of us would like to know what your answer would be to the question about the \$137 million, General Schomburg.

General SCHOMBURG. Well, the figure of \$137 million resulted from a study which was made last year to determine the least amount of money we could commit or obligate during fiscal year 1960, that is

starting July 1, 1959, which would prevent any slippage in the earliest possible date of operational availability for the Zeus system. The \$137 million is the lowest number of dollars that could be applied in the production area, or for preproduction preparations, which would prevent a slippage in the Zeus program.

The Army has been funded for Zeus research and development, but the needed funding for production has not been forthcoming. If you do not begin on production before you complete your development program, then you delay the time when you can actually use the system which is being developed. This is happening to Zeus.

Since the \$137 million was not available to start production or preproduction on July 1, 1959, we have already lost, forever, 7 months in the operational availability of the Zeus, our only antimissile system.

And of course this \$137 million would have to be followed by production funding in fiscal year 1961 and succeeding years.

But we are now losing 1 day that we could have Zeus on site, defending the United States against IRBM and ICBM attack—day by day we lose 1 day of Zeus operational availability for every day we delay in starting to use that \$137 million.

The CHAIRMAN. Mr. Chenoweth?

Mr. CHENOWETH. General, you indicated you were losing the Von Braun group. They are still going to be at the Redstone Arsenal?

General SCHOMBURG. They will be there; but, of course, they will not be under our control, and any work that they would do for us is not on our priority. Future work, as I mentioned earlier, will be on a catch-as-catch-can basis.

Mr. CHENOWETH. But you will still be on speaking terms?

General SCHOMBURG. Completely on speaking terms. This is going to be one of the most friendly relationships, I assure you.

The CHAIRMAN. Mr. Quigley?

Mr. QUIGLEY. No questions.

The CHAIRMAN. Mr. Miller?

Mr. MILLER. Right now, I haven't any questions.

The CHAIRMAN. The gentleman lost his turn, then.

We have been around the full committee.

General Medaris is here—

Mr. MILLER. Is this the second time around?

The CHAIRMAN. Yes. The committee will recess for 3 minutes and during that time we will have General Medaris here and give the newspapermen any opportunities that they may wish to take pictures of our distinguished witnesses.

If you will tell General Medaris we will be happy to have him.

(Short recess taken.)

The CHAIRMAN. The committee will come to order.

Now, General Medaris, we are happy to have you here this morning.

I told the newspapermen if they wanted to come and make some pictures of you and General Schomburg, to do so before we got started with your statement. I assume that they have made the pictures.

General MEDARIS. That is correct, Mr. Chairman.

The CHAIRMAN. We are happy to have you. We welcome you to the committee. We haven't had you since last year. We were glad to have your appearance then. Now, you come to us in a new capacity as a retired officer. You have quite a statement here. I think that

the committee would be very anxious to hear your views on the matters that are vital to this hearing.

Incidentally, we are swearing all the witnesses, General, on this particular hearing, the posture hearing.

Do you solemnly swear that the testimony you give in this proceeding to be the truth, the whole truth, and nothing but the truth, so help you God?

General MEDARIS. I do.

The CHAIRMAN. General, if you will proceed with your statement, then, we would be very happy to have it.

STATEMENT OF MAJ. GEN. J. B. MEDARIS, U.S. ARMY, RETIRED

General MEDARIS. With your permission, Mr. Chairman.

Of course, it is a great honor to speak to you gentlemen of this committee again and because I understand the time before this committee is limited I have selected two particular subjects to which my opening remarks will be addressed. The first is general, and has to do with my views with respect to our national missile and space effort. The second subject which I will consider is specific, and deals with my opinion as to the urgency of our requirement for an operational anti-ballistic missile system. Incidentally, it is both unusual and fortunate that this divided effort finds unity within the responsibilities of this particular committee.

In assessing the U.S. missile and space program, I believe we must first consider the character of the gross United States-Soviet competition. Fundamentally, I believe it is a clash between different philosophies as to the position of the individual in society. The field of conflict then is so broad, so profound, that it encompasses every element of international power—military, economic, diplomatic, political, psychological, and spiritual. Clausewitz observed that in human conflict the moral is to the physical as three is to one. Our strength must therefore be at least three parts psychological.

Now, I do not want to belittle the material benefits that may accrue from aggressive space exploration. I do not want to pursue in detail the self-evident fact that material benefits inevitably derive from new knowledge. Nor do I want to press the point that the military implications of a new principle or environment are never understood until that principle or environment is itself understood.

Without considering these corollary reasons, I want to affirm my personal conviction that for psychological reasons alone the free world must attain and maintain no less than parity and preferably a margin of superiority in the field of space exploration and exploitation. I consider the decision to achieve that parity—and eventually superiority—one of the most critical and fundamental decisions of our day. If the “space race” is not a valid one, then I would suggest that we are already spending too much money and too much effort on it.

On the other hand, if the competition is as critical and as fundamental as I believe it to be, then we are faced with two possible solutions. Either we must spend more in dollars and effort; or, we must substantially increase the efficiency of our effort.

Now, let us consider the manner in which our national missile and space program is presently splintered. First and most importantly:

it is divided between two executive departments: National Aeronautics and Space Administration and the Department of Defense. Functionally, it is splintered into four agencies, NASA and the three branches of our armed services.

Within the Department of Defense, a recent directive from the Secretary has revised the missions of the respective services. Both the developmental and operational aspects of space vehicles have been assigned as missions to the Air Force. A navigational satellite system has been assigned as a mission of the Navy. A communications satellite system has been assigned as a mission of the Army. On the surface, perhaps this decision pretends to settle old issues. Actually, in my opinion, it creates dissention.

By direction, the Army and the Navy are to buy their space vehicles from the Air Force; however, there is no immediate knowledgeable authority responsible for the overall mission. The problem of wedding the payload and the vehicle must be settled by such anemic devices as committees, coordination offices, and other such inadequate administrative devices.

Mr. FULTON. Hear, hear. [Laughter.]

The CHAIRMAN. The general is not referring to congressional committees, I hope.

General MEDARIS. I certainly am not. The function of congressional committees is quite well understood and is quite different from the operating functions to which I refer.

Mr. HECHLER. And they are not anemic.

General MEDARIS. And they are not anemic, Mr. Hechler.

There is in this case no technically competent authority sitting astride both the vehicle program and the payload program to give a joint program the decisive drive that success demands. In theory, system coordination has been assigned to the Air Force; but this, if authoritatively exploited, denies to the responsible service full control over its assigned operating space mission. Since no one authority is totally and immediately responsible for the complete mission, what is everybody's business ends up being nobody's business.

Let us now turn to the creation and continuing expansion of the National Aeronautics and Space Administration. The presumption that has apparently been accepted that the borderline between scientific space exploration and military space requirements can be cleanly and effectively defined. Gentleman, I believe this presumption to be totally incorrect.

From a purely technical viewpoint, there is so little difference between civilian and military space programs that there is no justification for their division and resulting duplication. For example, in the area of powerplants, both programs are concerned with a reaction-type engine, liquid or solid, whose functioning requires rather sophisticated control. This is a fundamental characteristic of every vehicle, whether it be a short-range ballistic missile used by troops in the field, or a more ambitious vehicle used in an interplanetary probe. Their development and operation stem from identical technologies.

Not only are the power sources themselves fundamentally identical, but the control methods, either on board the vehicle or those located at ground stations, come from common parents. I can give you as

many examples of commonality between the military and so-called civilian systems as there are components of their respective systems. For added example, in both programs, it is necessary to explore ways of getting dependable electronic propagation from a supersonic vehicle, getting antenna patterns, the effects of boundary layer, heat and velocity, and so forth.

All of this knowledge is essential to the development of any missile or any space vehicle. Also, there is a common requirement for guidance systems that perform identical functions. The same thing is also true in terms of dependable long-range communications to and from missiles and space vehicles. Further proof of the principle is offered in the use of smaller ballistic missiles as upper stages of larger vehicles.

Even from the standpoint of pure science, gentlemen, these programs are interrelated. Scientific exploration is in no way inconsistent with military objectives. New military technology inevitably results from scientific findings. An examination of the many projects contained in the research and development programs of the Department of Defense would indicate clearly that the military is supporting and fostering fundamental research insofar as its limited resources will permit.

There is a final consideration on this subject that I believe to be particularly cogent. The military objectives and the civilian programs, with very limited exceptions, are and must continue to be, derived from the same physical and manpower resources. Every single engineering and production facility that is involved in any kind of important space project is either now involved in or has been involved in one or more missile projects. This includes both commercial and governmental resources.

Further, the exploration and exploitation of space will continue to demand the use of the same facilities and the same brainpower that are now being used in the development of weapons systems.

Again, the list is endless and complicated, but the principle is brief and simple: We are trying, gentlemen, to divide the indivisible.

I quite well understand that because of the pending transfer of the Von Braun team from the organization which I have commanded, this criticism may sound like sour grapes. May I dispel that presumption by saying flatly, that under present circumstances, I concur in the transfer.

Mr. FULTON. May I congratulate you.

General MEDARIS. Thank you, sir.

In the area of political competition for control of resources, the Army has done the only thing it could do. When one is forced into making a choice from a bundle of bad choices, he must take the least objectionable one. The transfer of the Von Braun group to NASA is the unfortunate culmination of a long series of such dilemmas. At the end, the Army faced a Solomon's choice: First, by the assignment of the space vehicle development, production, and launching mission to the Air Force, and secondly, the Army's total inability to secure from the Department of Defense sufficient money or responsibility to do the Saturn job properly, we found ourselves then in the position of either agreeing with the transfer of the team, or watching it be destroyed by starvation and frustration. However, gentlemen, this

particular issue of the transfer of the Von Braun team is only one small part of the issue before you, the issue I hope to put before you.

Now, of course, good men working hard together can make any form of organization work after a fashion. The purpose of sound organization should be to reduce the requirements for coordination and cooperation to a point where they are reasonably consistent with human nature and the capabilities of the average executive group. With sound organization, coordination and cooperation become the natural product within the organization. Thus only, may we avoid the sort of hothouse nurtured or blackjack inspired coordination that presently seems to be the order of the day. People after all are human. The only way that we get the best effort out of any individual, no matter what his size or stature, is to so place him that in furthering his own intelligent self-interest he is at once furthering the objectives of his organization, and hopefully, of his country. This is the sort of organization to which we must work.

There is a further reason why the present trend is illogical and I believe undesirable. The Von Braun group has been supported extensively by a nationwide Army organization which must continue for the performance of Army missions, regardless of whether the Von Braun group goes or stays. You cannot expect to create a new and separate system to support them in terms of finance, accounting, purchasing, inspection of purchased products, contracting for services, and the provision of general logistic resources and facilities, without spending additional money.

I understand that this issue is now academic, but the Congress has continuously beaten the Department of Defense over the head in an attempt to unify those same activities, and thus reduce the duplication among the three military departments. By the existing organizational concepts and the operational responsibilities placed on NASA, NASA must necessarily proceed to create its own system for all of those things—a system which already exists in triplicate—Army, Navy, and Air Force.

Now, for all of these reasons, I believe, that if we are to compete successfully without bankrupting the country, there must be a fundamental organization unification of the entire missile and space program. One asks immediately, How can this be done and where?

It is unrealistic, and, I believe, an obviously improper division of responsibility to take outside the Department of Defense the responsibility for weapons that are essential to the performance of the mission of that Department. However, and particularly in view of past performance in areas of purely civilian activities, such as the work of the Corps of Engineers in rivers, harbors, and flood control, the work of the Signal Corps in operating the Alaska Communications System in the absence of a commercial capability to do so, the administration by the Army of the Panama Canal, and many others, there is nothing fundamentally inconsistent in assigning civilian scientific efforts in a particular field to the Department of Defense.

Thus, in view of the fundamental inconsistency involved in taking the responsibility for weapons development out of the Department of Defense, we are forced to conclude that the space effort, if it is to be unified, must be unified within the Department of Defense.

Now, how can this be done? If we look with discerning eyes, Congress itself has pointed the way. In the most recent amendments

to National Defense Organization, it is evident that Congress intended an extension of the principle of the joint unified command composed of elements of the several Armed Forces. By its enactments, the Congress gave to those joint commands a substantially greater degree of independence from the individual services than such commands had ever before had. They strengthened the staff of the Joint Chiefs of Staff, and set up the commands to operate with direct channels to the Joint Chiefs and to the Secretary of Defense. So far, this concept has been applied almost exclusively to geographic operating areas. These are now almost entirely handled through joint commands. While this is as far as this concept has gone to date in its broadest applications, it has been also applied to an important degree in atomic weapons through the charter of the Defense Atomic Support Agency, known as DASA.

DASA offers us a tested pattern for the problem that faces us here. It would appear there is nothing to deny the possibility and the desirability of creating a joint command to assume the undivided responsibility for the major missile and space activities of the Nation. Each service, being fully represented within, and dependent upon the command, would necessarily feel the compulsion to support its representatives in the joint command. Through that medium and that fact, the availability of the various supporting elements of the several services to smoothly and competently reinforce the joint effort would be assured. In order to assure adequate attention to the scientific side of space exploration, the scientific community should be represented at the command level. Thus, we would align individual and national objectives.

In substance, gentlemen, I am recommending that this committee and the Congress take a broad new hard look at the organization of our resources to meet our needs in missile and space activities and give thorough consideration to the suggested course of action, or any other, which will achieve with assurance a solid, undivided, and effective approach to the solution of our most urgent need.

In concluding these remarks with some consideration of our need for a ballistic missile defense system, and particularly of the present position of the Zeus system, I want first to deal with that school of thought which argues against the need. In this connection, I should like to rephrase an old cliché: When offensive capabilities are equal, then the best offense is a good defense. We have a positive deterrent only when we can do something that the aggressor cannot do.

There is no denying the requirement for an assured retaliatory capability. It serves as an effective deterrent against all-out, massive, and sudden annihilation. If its purpose is achieved, gentlemen, it will never be used. Conversely, if it has to be used, it has failed in its purpose.

For a deterrent force to be fully effective, it must have certain characteristics. It must be powerful enough that the damage certain to be inflicted would be wholly unacceptable to the aggressor power. Second, it must be supported by the unquestioned public will to use it if necessary, and without delay. Third, the potential aggressor must know with certainty that the two foregoing conditions do exist.

Certainly, the deterrent force must not be made ineffective by the very act it is designed to prevent. Now, within the military there are many ways to achieve this relative invulnerability. Being military,

the direct retaliatory capability is subject to military discretion. It can be hardened, dispersed, hidden, and made mobile. It can simply be multiplied to the extent that the aggressor cannot completely destroy it in a single blow. This is a technique which we understand and can apply.

However, it seems to me that there would be little sanity in destroying half of Russia and Asia, if before such destruction was meted out, the major populations of the 20 largest cities of the United States had suffered massive damage and wholesale slaughter. It would be nothing more than revenge. There would, in fact, be little left for us to fight for.

What are we going to do with those cities—with New York, Chicago, Pittsburgh, Cleveland, and Detroit? They cannot be effectively hardened, dispersed, made mobile, depopulated, nor forgotten.

Passive means of defense have very real limitations. By the nature of economic circumstances, if for no other reason, it is unrealistic even to consider adequate hardening as a protection for the physical resources from which stem our industrial and economic strength. In the cold and pitiless light of pure logic, we must therefore find a means for their defense against sudden and massive annihilation. This has been adequately recognized in the development and deployment of missile systems to protect these centers from air attack. To the more formidable threat now rising we have only one present answer.

The Nike-Zeus antimissile system now in development, is our only conceivable positive defense for the next decade. While better means may be discovered in the future as a result of active research, the nature of those possible means is not nearly sufficiently and clearly known at this time to warrant the commitment of resources to the development of any other systems. Given the essential leadtime required for the genesis of any such complex defensive system, any really new approach cannot, in my judgment, be available for use before 1970. Meantime, the millions of inhabitants of our concentrated centers live with a sharp and cruel sword poised over their heads and held only by the gossamer thread of our opponents' nationality.

At the same time, gentlemen, it is a certain fact that every day we delay in initiating the series of complex actions required to commit the Zeus system to production will delay by an exactly equal period its availability for use.

Admittedly, there are development problems still to be solved, but far too much has been made of them as a negative point. They exist in all development programs. Otherwise, there would be no need for any such program, and we could go directly into the production of a new weapon. I assure you that those technical problems are proportionately no greater in the Nike-Zeus system than they have been, or are in other weapons systems of great cost and importance. The immediate, discernable problem of straightforward defense against straightforward ballistic missiles, IRBM or ICBM, is in my opinion fully in hand. I am further convinced that additional defense against more sophisticated weapons can and will be solved at least as fast as any such more sophisticated weapons can be brought against us.

Now, in other complex and urgent programs, great virtue has been ascribed to the technique of integrating development, initiation of production, training, and the preparation for deployment. In fact, the term "concurrency" has been widely advertised as representing a virtue. Such telescoping of all phases substantially shortens the lead-time to availability, and, therefore, carries assurance against the obsolescence of the weapon itself before it can be brought to bear.

Gentlemen, I am at a total loss to understand why it is not equally obvious that this same procedure is essential in connection with a weapon of such tremendous importance to our survival as is the Zeus.

In essence, I believe that the question is not whether we have yet completely demonstrated the full effectiveness of the Zeus system, but rather, whether we are to make any effort to defend the major centers of the United States against atomic annihilation by ballistic missiles during the next 10 years. I feel very strongly that we cannot afford not to initiate immediate action looking to the prompt production and deployment of the Zeus system. The absence of a decision is in itself a decision. To fail to order the immediate preparation for production of this essential defense system is to add days, months, or years to the period when fear must hang like a cloud over our civilian population. To do otherwise than to take this action immediately represents, in my opinion, the assumption of an awful and a burdensome responsibility—a responsibility for the survival of the women and children, as well as the men, in the population of our great cities, upon whom in large measure both the prosperity and the will of the United States to survive as a nation depends. I for one am wholly unwilling to have that responsibility on my conscience.

Gentlemen, the entire field being considered by this committee is extraordinarily broad and complex. Giving full consideration to the influence of technology on the strength of this Nation, and on those elements which go to make up that strength, the decisions to be taken are, in my opinion, of vital importance to the future of this Nation, and, indeed, to its very survival as a free nation. I could not hope to cover even a fraction of the problems involved, let alone discuss all elements of their potential solution within the scope of this comparatively brief statement to you. I have tried, therefore, to single out two areas as being, in my opinion, of the greatest significance at this particular time.

To summarize, then, my carefully considered feelings with respect to those two areas, I should like to conclude with these brief statements:

Firstly, I do not believe we can afford not to compete, with all the necessary ingenuity and resources, to demonstrate to the free world both the capability and the will of this Nation.

Secondly, I feel that because of its prominence in the public mind of all nations, the field of space activities has become a most critical element of that competition, and that we, therefore, must have an aggressive and urgent national program to attain and maintain no less than equality, and preferably, demonstrated superiority in that field.

Thirdly, I believe strongly, and feel that it is wholly demonstrable, that the fields of ballistic missileery and space exploration and exploitation are in fact naturally indivisible elements of a single broad technology, and that a continuance of divided efforts in this broad area

cannot but result in delay, duplication, and waste of both money and manpower.

Fourthly, I believe that any pretense toward the deterrence of atomic general warfare must necessarily be ineffective unless it includes the effective protection of our population and our major resources, and thus assures the survival of our will to live as a nation. I further feel that to delay the full acceptance of that responsibility, regardless of the uncertainties that may exist, involves a risk far too great to be accepted by any individual who can in any way influence that decision.

I therefore strongly recommend that this committee give full consideration to the means for the creation of a truly unified and singly responsible authority for the direction of the national missile and space effort, and that it further recommend immediate preparation for the production and deployment of the only visible means for the protection of our population against the awful threat of atomic ballistic missile destruction, whether medium range or long range, sea-launched or land-launched, that is represented today by the Zeus anti-missile-missile system.

Thank you for your forbearance, Mr. Chairman and gentlemen. I shall be glad to answer any questions.

The CHAIRMAN. Thank you very much, General, for your statement. I might add that it is a very potent statement.

Now, at this time I have just been looking over the committee. We have some 18 members here and we have the subcommittees meeting at 2 o'clock. We have an hour for questioning of these two distinguished witnesses. If there is no objection, why not set 3 minutes per individual and that will insure that we get around to everyone on the committee? Is there no objection to that?

Mr. TEAGUE. That is fine. Let's get started.

The CHAIRMAN. If not, we will do that. I will watch the clock and I am just going to take 3 minutes, myself.

General MEDARIS. I would like to ask you this question: There is \$137 million stashed away somewhere that has been appropriated by Congress for the Zeus program. If you had your way, do you think there is justification for releasing that money to use in the furtherance of the Zeus program?

General MEDARIS. Mr. Chairman, I so recommended months ago. I believe it should have been released immediately that it was available through the action of the Congress.

The CHAIRMAN. May I ask you also this question now: If you had a Manhattan type project, for instance, for the Zeus and you were in charge of it, what would specifically be your action in pushing forward that project?

Would you outline that in detail to this committee?

General MEDARIS. Well, the immediate requirement, if we are to meet any kind of a time scale in the deployment of Zeus, the immediate requirement, now overdue, is to begin to create the production resources that will be needed to make the system effective as a deployed system.

Now, we can build the requirements for the Zeus system from a development standpoint by hand, as they are practically being built today.

But when you consider, for example, the single requirement for a million transistors in one particular building, one part of the Zeus system, you must know that our present resources could not possibly meet this requirement.

Therefore, it is necessary, as one single example, that automated means for the production of these transistors be available before we can turn to the deployment of the Zeus system.

Now, the lead time for such a situation is long. That must begin immediately. In our best judgment when we had made the most detailed computations possible in connection with our prime contractors and with their assistants, we came up with the conclusion, and I believe it to be thoroughly valid, that from the day money is released to begin preparation for production, you are "X" years away.

I leave the figure out because I believe this to be a classified figure. But you are that many years away from having the first system that can be used in defense of a specific point.

Now, it is essential before that date can be fixed that these actions begin. The actions necessary to make it possible to produce the Zeus system and put it on site, as distinguished from the resources which are capable only of producing it in an R. & D. fashion, one at a time over a period of considerable time.

The CHAIRMAN. But your \$137 million would not cover that? Your \$137 million is for engineering, isn't it?

General MEDARIS. No, sir; this would cover a part of it. The \$137 million, if employed immediately that it had been available, would have taken care of approximately the first 12 months of all of the activities required to maintain this schedule and could have been followed by a succeeding appropriation the following year, which would, of course, have been greater, to continue that work.

The CHAIRMAN. Mr. Fulton?

Mr. FULTON. Glad to have you here, General.

Now the question—I have to give you a short area of reference or statement in order to couch my question. The 85th session of Congress decided unanimously both in the Senate and House that space should be entered by peaceful means for peaceful purposes.

The President signed it. The United Nations set up an ad hoc committee, and I was a delegate for the United States second to Henry Cabot Lodge. It was unanimously decided by the General Assembly that space would be used for peaceful purposes.

You at one time said every time man puts his foot anywhere he ends up with a war. So I would imagine you must mean the same thing for space. Then when on February 1 in "Missiles and Rockets," you had said, or you are quoted as saying by James Baar whom we all know that you—

Raked the civilian-military separation of U.S. space programs as "fundamentally unrealistic" and called for creation of a single missile-space agency—a joint military command.

You would put it inside the Pentagon as a joint command. Then saying—

The only excuse for NASA was to take projects from the competitive area. But a joint command would do the same thing.

Here is my question: There have been two very successful space programs and missile programs. One of them has been conducted by the United States of America.

The other has been conducted by Soviet Russia. Soviet Russia has had a peaceful approach to space because they put it under civilians—call it a civilian approach rather than peaceful. They have it under an academy of sciences.

Nesmeyanov is the president of it. Likewise, they have as their head of the astronautics, Sedov, who is now the president of the International Astronautics Federation.

We in the United States have proceeded into space through the National Advisory Committee for Aeronautics established in 1915 and it worked beautifully for aeronautics. Now, with that as a preface, why should we leave two successful programs and go into a program placing it thoroughly under the military and stifling the scientists by making them come up with weaponry systems rather than use space for peaceful means which is the settled decision of the Congress of the United States?

You say you are in the minority. It seems to me you are in a very small minority. Would you answer?

General MEDARIS. Yes, sir; with due apologies, Mr. Fulton, since you have now given me your feelings in the matter, I have to enter the opposition.

I feel that the situation in Russia has been misinterpreted. It is titularly under civilian authority from the scientific angle but the organization throughout from top to bottom is welded as between civilian and military and there is no separation of the activities and the resources are used in common by both, all programs.

Mr. FULTON. That is what I want us to do.

General MEDARIS. I beg your pardon. The organization is welded together so that it does not function as separated organizations until it becomes either an operating weapon or something of the sort and is taken out into the wholly military channel.

Now, my only reason for recommending that the effort be unified under the Department of Defense is because of the illogic of having weapons outside the Department of Defense. If there is another way outside the Department of Defense to bring together all of the resources under a single direction, I would not object to it.

The CHAIRMAN. Mr. Miller.

Mr. MILLER. General, I was very happy to see you make a reference in here to the necessity and immediate necessity for a defense of the women and children of this country in the civilian population through the development of the Nike-Zeus system to give us at least some defensive capability against it.

Do you believe as I take it that this is the best system that we have devised to date?

General MEDARIS. It is the only system on the horizon to date, sir.

Mr. MILLER. And you are convinced that it is time to go into production on that system now, we are far enough along with it that we can go into production with it now?

General MEDARIS. It is my best technical and managerial judgment that we are past the time that we should have put it into production.

Mr. MILLER. So every day that we delay going into production on that, we just weaken our own fiber in the case of war?

General MEDARIS. Of course. We delay by 1 day the capability to provide any protection for the civilian population of this country.

Mr. MILLER. Thank you, that is all.

The CHAIRMAN. Mr. McDonough.

Mr. McDONOUGH. General, I appreciate your statement. It is to the point and undoubtedly will have quite an impression on this committee's consideration. I am curious to know if you would be as positive in your views if you were still in uniform?

General MEDARIS. I have been equally positive, Mr. McDonough, in my views as expressed within the conferences inside the Department of Defense.

Mr. McDONOUGH. You have made some very definite statements here and I appreciate them as coming from a loyal American. But having had command of the very area in which you now recommend certain changes. I am surprised that these changes were not put into effect while you were there.

General MEDARIS. They were recommended, Mr. McDonough. The recommendations came to nought.

Mr. McDONOUGH. Now, insofar as Nike-Zeus is concerned, is it your opinion that it has proved its capability to the point that it is the only deterrent that we have, effective deterrent that we have at the present time?

General MEDARIS. There are two clear points, sir. One is that the present status of the engineering of the system, the theoretical work and the ground test work that has been done is sufficient in my opinion, to clearly demonstrate that the forthright and straightforward defense against ballistic missiles is a capability of that system as it will come out.

And, further, the engineering means to that end are sufficiently advanced to point clearly the direction necessary to prepare for production without requiring any costly alteration at a later date.

So that whatever growth potential may be put into it as we go along, can be added to the present system and will not change the basic formula.

It is further my conviction and so far as I know, not disputed, that there is no other effective defense now known to be feasible.

Mr. McDONOUGH. What about the test we made in New Mexico just recently? That wasn't a Nike-Zeus test, was it?

General MEDARIS. We have been beginning the testing of the missiles in New Mexico.

Mr. McDONOUGH. The Sparrow and the Little John that we shot off—

General MEDARIS. This was the Hawk that we shot against the Little John.

Mr. McDONOUGH. That is right. What about the Bomarc?

General MEDARIS. The Bomarc has no antimissile capability nor was it designed nor intended to have. The Bomarc is an air supported weapon. It cannot go outside the atmosphere to meet an incoming missile before it reenters the atmosphere.

Mr. McDONOUGH. You think the Nike-Zeus is the only long-range antimissile possibility?

General MEDARIS. On any kind of ballistic missile, it is the only thing on the horizon at the present time.

Mr. McDONOUGH. Do you have any knowledge that Russia has similar plans or programs or do they have anything in a practical way on missile attack?

General MEDARIS. I want to be quite careful in this area because of course, I still feel the same responsibility for the protection of security that I always have. I can simply say that I feel quite sure in view of what we do know and in view of what we know about past developments they have come upon us when we have recognized them, as being in the hands of the Russians, we are wholly unsafe at any time to assume that the Russians do not have the capability of doing anything that we are capable of doing.

The CHAIRMAN. The gentleman's time has expired. Mr. Teague?

Mr. TEAGUE. General, I think you have made the most challenging statement that has been made before this committee in all the hearings we have had.

I think only history will tell whether you are right or wrong and I for sure, am going to put your statement in the record so it will be recorded.

As it is said, you are in the minority. But I think that over in the Defense Department, you are on a team and when a decision is made, you have to play on that team.

General MEDARIS. Correct.

Mr. TEAGUE. When you come over here, you are on a bigger team and you ought to play on that team. I was disappointed, as far as I personally was concerned, I asked a question directed toward this problem, to General Schomburg and I think he ducked the question.

My question to you is if you were all powerful in our whole missile program, what would you do as far as all our different programs, the Atlas, Titan, Minuteman, Bomarc, all the rest of them?

General MEDARIS. Well, within the time limit the Chairman has imposed on these remarks, I will have to confine myself to this—

Mr. WOLF. I would happily yield my 3 minutes to give him 6.

The CHAIRMAN. The gentleman is out of order. He can't yield. Just proceed, General.

General MEDARIS. Thank you, sir.

First of all, I would have created long ago a joint command to operate this area, and secondly, I would have killed certain programs in order that within the present budgetary limitations, we might do fewer things and do them better.

Mr. TEAGUE. Which ones, General?

General MEDARIS. Well, I would have killed the Snark a long time ago.

Mr. TEAGUE. Name the rest of them.

General MEDARIS. I am not going to have any friends when I get done, Mr. Chairman. [Laughter.]

Mr. TEAGUE. You will have some friends in this committee, General.

General MEDARIS. I personally killed the Dart inside the Army. I would have killed the Bomarc because it is a weapon that is to be available when, by intelligence estimates, there is no longer a threat that it is capable of dealing with.

I have not had the opportunity nor the time to examine in detail between the Titan and Atlas and the Minuteman. I know something

of all of their characteristics and can appraise them reasonably, but certainly three is too many. Those actions certainly would have provided up to date a sufficient amount of budgeted funds to have given us the kind of support for an aggressive program at full speed in both Zeus and the space program.

Mr. TEAGUE. General, one other question. You are in the minority. How much minority are you in? How many people do you know, not naming them, but generally, what support do you have for your thinking as to whether or not we build our missile space program on sand or whether we are on a solid foundation?

General MEDARIS. Sir, I can only comment that within the evening councils of the renegades of our business, I have a great deal of support. [Laughter.]

The CHAIRMAN. Mr. Chenoweth—

Mr. FULTON. May I have a unanimous consent request?

The CHAIRMAN. That is in violation.

Mr. FULTON. Consent request. I would like to put in the record at this point the statements of the Atlas, Thor, and Minutemen generals in—

General MEDARIS. Atlas, Titan, and Minuteman.

The CHAIRMAN. It ought to be done afterwards. Mr. Chenoweth?

Mr. CHENOWETH. General, I am happy to see you again. It has been about a year since we saw you down at the Redstone Arsenal there. I have formed a very favorable impression of what I saw down there, General. What is the impression we want to give to the American people today? That we are in a rather defenseless, helpless condition here after having spent some \$400 billion on defense?

What is the picture we want to tell the people? Is it a defeatist attitude or must we take an affirmative attitude?

General MEDARIS. We must take an affirmative attitude. On the other hand, I can see no virtue in soothing syrup, as such. The point is there is always a difference between our present situation and the situation as it will develop if nothing is changed. In dealing with these programs, we are dealing with an inescapable factor of leadtime, Mr. Chenoweth, and I am concerned with what is going to be the situation 5 years from now.

I do not think we are in a defenseless situation today. I think perhaps we could be better off, but we certainly are not badly off.

Mr. CHENOWETH. You are telling this committee and the country some mistakes have been made?

General MEDARIS. I believe some mistakes have been made, but I believe if we do not change our approach to the future we will have worse ones, and I think that the situation of 5 years from now should be of greater concern to us at this point than the present situation about which none of us can do anything.

The present situation is in the wood. Now we can only do things that may constructively give us a better situation 5 years from now than we would otherwise have.

Mr. CHENOWETH. General, in years gone by we have had the capacities and the leadership and know-how both in civilian and military leadership to solve these problems as they have come before us. Shall we confess now that we are no longer capable of making the right decisions in these important matters? What is our situation? I don't

know. I think the American people are getting a little concerned over this.

General MEDARIS. I should imagine they would be—and I am with them. [Laughter.]

Mr. CHENOWETH. We had better make up our mind here what we are going to do. I recall when we were in Redstone last year that you were a little critical of some of the things that were going on; you weren't getting enough money.

But I just can't sit here and believe that this thing has been an overall, colossal, complete failure. I don't take that as my view—

General MEDARIS. I do not pretend to insinuate that that has been the case.

Mr. CHENOWETH. I know you don't, but the people are getting false impressions of what is going on, they hear one charge, then a countercharge the next day, no wonder they are sometimes bewildered—

Mr. TEAGUE. Sometimes.

Mr. CHENOWETH. So I think we should take a positive and factual approach in what we are going to do. I think you have done a great job in the Army. I think the country recognizes that, General, and I think you can continue to do a great job in the civilian area, but I don't think it can be done all together in a critical vein. I think it should be a positive critical program, where you can lend your weight to what we are trying to do to save this country.

That is all, Mr. Chairman.

The CHAIRMAN. Mr. Sisk.

Mr. SISK. General Medaris, of course, we are happy to welcome you and I certainly want to concur with what Mr. Teague had to say in his statement. I want to explore a little different angle here in the brief time that I have and that has to do with a specific program which we are talking about. I would like to ask you about three questions here, very briefly. First, what in your opinion, does Russia plan on doing with reference to exploration of the Moon?

General MEDARIS. They have made the open statement—and if we consult history, what they promise us they usually produce somewhere along the line—that the 50th anniversary of the Revolution of 1917 would be celebrated by Soviet citizens on the Moon?

Mr. SISK. What do you think the United States, then, should be doing about exploration of the Moon?

General MEDARIS. My own personal feelings are very strongly in the direction that we should have begun sometime back the necessary long-range preparations that would lead to our capability of having a manned outpost on the Moon by 1966 or 1967.

I don't know that we could now make those dates, but we could still come awfully close to them if we went about it.

Mr. SISK. Has the Army ever made any proposals in this regard that would seriously compete with Russia?

General MEDARIS. The Army has made two such proposals to my knowledge.

Mr. SISK. When were they made?

General MEDARIS. The first was included in a document that was made up voluntarily by our group in the period between the firing

of Sputnik I and Explorer I, when a document was turned out which pretended to be an approach to a national space program. Included in that was lunar exploration and lunar landing.

This document used all the resources and all of the hardware that was available or could be made available. It was not a unilateral program all to be done by us, by any amount of means. That was the first such document.

Mr. SISK. To whom was this proposal made?

General MEDARIS. The proposal had no place to go officially, Mr. Sisk. We took it out and handed it to people that we hoped would do something with it.

It eventually became a feeder to a committee report of the NACA, who then began to see the shadow on the wall, they might have to interest themselves in space. [Laughter.]

General MEDARIS. And this committee used this document as a feeder report and it became, to a considerable extent, the basis for their first document outlining the possible national space effort.

Mr. SISK. That actually to some extent answered my last question which was what action was taken on this proposal, because I think it is of importance—in the first place you had a problem of actually to whom to submit the proposal.

General MEDARIS. This is correct, because we had—at no time did we ever have an assigned space mission. Therefore, we had no official capability to engender and propose a program on our own.

The CHAIRMAN. The gentleman's time has expired. Mr. Van Pelt?

Mr. VAN PELT. General, while down at Huntsville a year ago, you made a statement relative to men who had been in the service coming back and staying on the job as civilians.

Am I correct in that?

General MEDARIS. I don't recall it, sir. I am sorry.

Mr. VAN PELT. We were talking about the morale and it was along the point of maintaining our technical people and interest in some of those people who, like yourself, are so vitally interested in this program that they did come back, some of them, after separation from the service and continued in their—

General MEDARIS. I think if I recollect correctly now, Mr. Van Pelt, we were talking to the subject of conserving the capabilities that we had in general and I was pointing out both the positive and the negative aspects. That in the negative side the actions of the Nation, as represented by the Congress in terms of the restrictions placed upon their retired military officers, had effectively discouraged their participation after retirement in public activities, or as support to the industry in general.

At the same time I was pointing up the fact that at that point perhaps the council of elders that could be so composed might have some virtues. But primarily I think I was speaking to the point that it becomes very difficult for this to be accomplished under the present circumstances.

Mr. VAN PELT. Yes, I recall that. There was some mention of compensation as well in that area.

One other question. I would like your opinion as the morale of the Von Braun team and others connected with it, with this transfer? Has there been any change there?

General MEDARIS. I think the morale of the group at the present time, sir, is very high. This would be rather obvious if we put together a series of circumstances.

First of all, I was very frank with the entire group at the time this transfer was arranged and gave them as my frank opinion that this was the only way by which they could be in a position of having a positive mission and be able to go forward aggressively in the space area.

Secondly, since that time things have been done which we never managed to get done, in terms of increased funding for the Saturn project, which is the best bid we have at the present time, and, obviously, the agreement to add more money to that project and greater impetus to it is, in fact, a great morale factor.

So I would say at the moment that their morale is very high.

Mr. VAN PELT. Thank you very much.

The CHAIRMAN. The Chair is going to recognize Mr. Moeller at this time, because he has an urgent call to go home and he is going to have to leave at 11:30. I recognize you for 3 minutes.

Mr. MOELLER. Thank you, Mr. Chairman.

General, you may stand in the minority at present. I hope grace will be provided that you will be proved to be right. I would always rather be on the safe side.

While others have had the media of radio and television to expound their ideas, I think if this same were accorded you, you would find that the majority would be standing with you.

Now, the question I would like to ask you is this: As to cost, is it not true that a Nike-Zeus would cost us about one-fourth as much as, for example, a Titan? And if this were done, we could actually cut down considerably on the amount of money that we would be investing in intercontinental ballistic missiles?

General MEDARIS. I don't know that I can go with the exact proportion. It is difficult to cost the missile as comparative items, because, in the case of the Titan system, for example, the missile itself is the most of the weapons system. In the case of the Nike-Zeus, the major cost of the system is in the ground equipments and installations required to use the missiles, and the missiles themselves are less costly, of course.

The position comparatively on cost might be stated this way: If, in addition to protecting the civilian population, the Nike-Zeus system were used as a defense for our deterrent capability—for our counterstrike capability—it seems to me obvious that a lesser number of intercontinental missiles would be required to assure an effective counterattack, which would come out mathematically to cost less. I am not sure, but I think the advantage would be somewhat in favor of protecting our counterstrike capability with Zeus.

Mr. MOELLER. Thank you.

The CHAIRMAN. Mr. Bass?

Mr. BASS. General, you spoke earlier of the high morale of the Von Braun team. Do I understand from your prepared statement that we again investigate and reexamine the possibility of moving Von Braun and his team from NASA back under a single unified military command?

General MEDARIS. I am sorry, Mr. Bass. I think we have to put it in this kind of perspective: Under the present circumstances and

within any time lapse which would be required to consider the organization, it seems necessary, if delay is to be avoided, that the transfer go forward, and I understand that the House has already expressed its opinion in that direction.

To delay the transfer at this time would only further complicate an existing situation. What I am recommending is that a look be taken at the total overall structure with a view to possible revision which would not mean, necessarily, transferring them, because it would merely bring the whole together under a single organization, and would require no physical transfer.

I think it would permit some peeling back on supporting resources and, therefore, represent some economies. But this should be taken as a longer range picture to look at the total structure, because at the present time any attempt to stop the present action would, I think, have no merit.

I mean I don't think it would achieve anything.

Mr. BASS. Thank you for clarifying that point, General. We heard Dr. von Braun earlier and I got the impression, anyway, that all he wanted to do was to go ahead full steam and perhaps it would be a mistake to cause further indecision by subjecting him to the possibility of going back again under a different basis.

Now, my next question is a general one and is one that has been bothering me. In this age of missiles and other terrible weapons systems that we are developing, do you think, General, that it can ever be possible, now, for this country to enjoy military security in the way we did 40 or 50 years ago, no matter how many billions of dollars we pour into defense?

General MEDARIS. Well, I think our history has indicated that even then we didn't enjoy real military security, except that our civilian populations were then free of the immediate threat hanging over their heads, which now exists by reason of the development of the intercontinental ballistic missile system.

This is the major change, that there is now no place to hide, so everybody is in the game. As far as the Nation is concerned, there was no time when we enjoyed full immunity from the possibility of successful military attack, shall we say, and this has been demonstrated by the history of repetitive wars in which we have had to engage to make our position stand.

I do not believe that anyone who pursues positive security as an objective can ever achieve it. I do not think there is any such thing as 100-percent security. But that we can achieve at least an uneasy balance which will leave the problem of military security as one primarily concerning those whose business it is, and give confidence to the civilian population and the industrial values of our country, that they may go ahead with their business in the knowledge that the sentries are capably armed and on the job; I think this we can achieve.

The CHAIRMAN. Mr. Mitchell?

Mr. MITCHELL. General, as a fellow renegade, let me join you in the minority. [Laughter.]

General MEDARIS. Thank you, Mr. Mitchell.

Mr. MITCHELL. Now, you know the time limitation. I am going to ask you, if you will, to answer yes or no—give me your opinion to these brief questions, and if we do have the time, then you can elaborate.

Now, the transfer of Saturn to ASA; will that speed up the Saturn project? Let's forget funding, additional funding, the transfer from Army to NASA; will that speed the Saturn project?

General MEDARIS. Not without additional funding.

Mr. MITCHELL. Without additional funding, do you think it will slow it down?

General MEDARIS. It will make it a little more difficult to maintain the scale, but the scale can be maintained.

Mr. MITCHELL. Will it cost more money?

General MEDARIS. Definitely.

Mr. MITCHELL. Going to Nike-Zeus now, very quickly, General, let me say I think Judge Chenoweth mentioned something about the American people being bewildered. I am quite bewildered as to why we don't go ahead with Nike-Zeus full blast, myself.

I will ask you this: For how long a period of time do you think that the Zeus system will be an effective weapons system?

General MEDARIS. At least until 1970, considering its present position and its growth potential.

Mr. MITCHELL. Now, going into the growth potential, what is the growth potential of the Zeus system as you see it?

General MEDARIS. It has been designed from the ground up to be able to add those refinements and more effective methods which will deal with more sophisticated incoming weapons, within the capability of our view at present—everything that we know.

Mr. MITCHELL. You think it can deal effectively with the more sophisticated weapons?

General MEDARIS. I think by the time such sophisticated weapons could be brought against it that the Nike-Zeus can deal with them; yes.

Mr. MITCHELL. Thank you.

The CHAIRMAN. Mr. Riehlman?

Mr. RIEHLMAN. General, delighted to see you here today; and I recognize the sincerity and the manner in which you have presented your statement here and I appreciate your views.

Now, following what my colleague, Mr. Mitchell, has had to say, in respect to the Nike-Zeus, are you aware of studies that are now going on in respect to other weapons comparable to the Nike-Zeus?

General MEDARIS. I am.

Mr. RIEHLMAN. Do you feel that there is any merit to any one of them other than the Nike-Zeus?

General MEDARIS. I think we must necessarily continue such experiments with the constant hope that we might find something more effective in the future. As to the immediate present, none of them give promise of being immediately translatable into any system that would be better than the Zeus.

Mr. RIEHLMAN. But you would hate to see any one of them—the further research in respect to their effective striking power—discontinued?

General MEDARIS. That is correct.

In every field of activity, we not only must be about solving our immediate problem within our immediate technical capabilities but we should be doing even more than we are toward laying the basis for more effective work in the future.

This can only be done through continuing research.

Mr. RIEHLMAN. Back to one other question that my colleague from Texas, Mr. Teague, was pursuing. That is in respect to your feeling regarding some of these projects that should have been canceled out, and then you got to the Atlas, the Titan, and the Minuteman—some question in your mind whether those three should be now under consideration and production. Let me ask you this, General: How would we have gotten the Atlas—and now we are stepping up to the Titan and the Minuteman—how would we get into these programs and progress with them if we didn't put into production at least one missile? And then we are trying to move into others, take the Minuteman, for instance, as a solid fuel missile and one that we feel has greater potential than the Atlas.

Would you like to comment on that?

General MEDARIS. Well, I think one, and another generation if it shows sufficiently marked improvement—that this combination is warranted. All I said was that out of the three, it seems to me like that is one too many.

Now, I would like to point up, however, a particular view of my own with respect to the matter of obsolescence and greater efficiency.

I cannot see that greater efficiency, for its own sake, is of value to the taxpayer who has to pay for it.

If we have a weapon that can effectively do the job the man who gets hit with it isn't going to have the vaguest idea whether it was 120 feet tall and weighed 200,000 pounds or whether it was 60 feet tall and only weighed 50,000 pounds.

So that I think we must guard against upgrading, so to speak, our weapons systems simply for the sake of doing something that is apparently technically more perfect. If the system will do what it was intended to do, it need not be replaced nor upgraded.

Only when it becomes a system that cannot do its original job because either a defense is available against it or it is outside of its capabilities of reaction time, then we should do something better.

Mr. RIEHLMAN. One other quick question. An awful lot has been said here this morning in respect to the Nike-Zeus and its defense to the civilian population.

Do you have any comment you would like to make in respect to the need for a strong civil defense program for this Nation?

General MEDARIS. Well, I certainly feel that our people must achieve some realism in the area. By what means it is to be done, I don't know—but some way the consciousness must get across that the everyday citizen of this country must know how to behave and what to do under chaotic conditions.

It can probably best be achieved through a strong civil defense program, and passive defense measures are in themselves, also useful, but they do not solve the problems of our resources.

The CHAIRMAN. Mr. Quigley?

Mr. QUIGLEY. General, I want to join with those who have indicated that your testimony today has been the most provocative that has been presented to this committee as far as I am concerned in its entire history.

I would merely say that for myself, I think the country should thank God for parochial generals like yourself. [Laughter.]

If I could ask a question along the line of Mr. Riehlman's opening question: Is the Army itself, at this time giving any serious study or consideration to any other antimissile weapon other than the Nike-Zeus?

General MEDARIS. Not at this—

Mr. QUIGLEY. By "serious consideration" I mean funded studies and the like?

General MEDARIS. The Army, under its auspices, is funding with the authority of the Department of Defense and of ARPA, corollary studies in this research area looking to better means for defense against ballistic missiles, yes.

Mr. QUIGLEY. Are these related to Zeus or are they separated and above and beyond and entirely different approaches?

General MEDARIS. Some of them represent the exploration of possible different approaches. Some of them are intended merely to get more information about the characteristics of an incoming missile so that we may perhaps find other means for seeking it out. Some of them are related to possible future changes or refinements in the Zeus system, itself. They cover all those areas.

Mr. QUIGLEY. Do you think the Army is doing enough in this particular field of research—

General MEDARIS. The Army is doing all it has money to do and more, too. I think a little more could be done.

Mr. QUIGLEY. With more money?

General MEDARIS. That is correct, sir.

Mr. QUIGLEY. General, I gathered that your rebuff on the Nike-Zeus program is not the first time that you have had this experience in your career. I am thinking particularly that the space age arrived with us under a Soviet flag on October 4, 1957. Some 4 months later, thanks to you and the Von Braun team we finally got off the pad with Explorer I. As a matter of curiosity, how many months before October 4, 1957, could you have put a satellite in orbit?

General MEDARIS. About November 1956.

Mr. QUIGLEY. You could have?

General MEDARIS. Yes, sir.

Mr. QUIGLEY. Did you—

The CHAIRMAN. The gentleman's time has expired.

Mr. Wolf?

Mr. WOLF. I want to follow that, I didn't intend to, Mr. Chairman. But who was the man that was responsible for stopping that or was there a man or was it a system?

General MEDARIS. Well, this is, of course, the meat of the whole problem, because in the period of years that I have been involved with this system I have found that secretaries change and administrations change and the system seems to go on just the same. So I am somewhat disinclined to point fingers at individuals. But certainly we ran into every kind of frustration and denial in attempting to get a chance to do something in the space field, although we knew we had the capability. We got that authority finally when the Vanguard program, obviously, was unable to come through on the President's commitment to have a satellite in orbit during the Geophysical Year.

Mr. WOLF. I don't want to get into the political overtones of this, General, I think this is one of the unfortunate mistakes being made,

that this has taken on a political overtone. I said the other day and I will repeat it, I am the father of three children and like yourself I am concerned with the preservation of my country and the primary motivation that I know you have as well as myself and members of this committee. I would like to say if I may take a half minute of my time, General Schomburg, that we want to help you, we hope you will be frank with us and if you feel you have something down there that you can't give in open session, we could have a classified session and discuss it, because we have got to move ahead with this program and you are the boss now and we want to help you. I am sure I speak for every member of this committee.

General SCHOMBURG. Yes, sir.

Mr. WOLF. General Medaris, I would like to, if I can, put you in a position of—like, as you said, in the twilight zone group, I think it was, if you had an opportunity to do so, what changes might you make in the system of defense that we have, in the mechanics of operation of our Department of Defense.

General MEDARIS. Well, this is a very broad subject, Mr. Wolf, and I don't pretend to be such a broad authority that I could have at hand all the solutions. I do know that by some means the great administrative overload that now sits on top of the military services should be radically reduced, and I don't know any way to do it but with a meat ax. [Laughter.]

The concept of civilian control was successfully maintained for years and through a great world war, with a very small group of people appointed by and responsive to the Executive, only, and without the great assistance of the mass civil service employees that now seem to be required to assure that the military remain sufficiently dominated and sufficiently under control in detail. And I personally would take a broom right through the middle of that.

The CHAIRMAN. Mr. Karth?

Mr. KARTH. General, for a major portion of your statement at least I am of the opinion I am going to have to join the minority and the renegades along with you, because I think it is an excellent statement and gets to the heart of the problem that we face.

Mr. WOLF. Would the gentleman yield? I failed to mention that, Mr. Chairman, but I would like to join the minority, too.

Mr. KARTH. General, I would like to ask you that if the space program was under one head as you suggested, how much greater capability could we get out of the same dollar?

General MEDARIS. I think about 20 percent is my best estimate. This is a gross estimate, but my best intelligent estimate is about 20 percent.

Mr. KARTH. I would like, if you could General, to give the committee the benefit of your opinion on—I hesitate to call it system, but for lack of a better word I shall do so—it seems to me we put too much emphasis on sophistication, if the object is big, I mean, rather crude but it works we have to hold it in abeyance until we sophisticate it a little bit. Would you care to express your opinion on this thought?

General MEDARIS. This, of course, is the basic problem that got us into the fix that we are in in the first place. Now, the Russian, per se, not only has no fear of bigness or crudeness, but in fact, bigness has

been something the Russian seem to worship psychologically. He loves a great big thing, a monumental sort of creation. So they were not in the least deterred by the necessity for large size in getting into the long-range missile business as early as they did, and this caused them to come up with heavy powerplants.

We, on the other side, find ourselves in the position of having a certain worship for theoretical excellence, and we often rob ourselves of the margin that is necessary to give us reliability by insisting that we design down to the last half ounce. So that we wind up and we have done a very beautiful job. You could put it in a museum, but it is still much less effective than it would be if we had allowed ourselves a 10-percent margin or error and thereby had been able to come up with so-called crude solutions to some of these things. Sometimes the crude ones work the best, you know.

Mr. KARTH. Thank you.

One more question, Mr. Chairman: Could you very briefly give us your opinion of the feasibility of the man-in-space program upon which we are now embarked?

General MEDARIS. You are talking about Project Mercury?

Mr. KARTH. Yes, sir.

General MEDARIS. I think from a feasibility angle there is no question about it—

Mr. KARTH. Let me say from the possibility of success.

General MEDARIS. I think it will succeed. I think it is somewhat loosely organized and as a result it is going to take much longer than it ought to.

The CHAIRMAN. Mr. Hechler?

Mr. HECHLER. General Medaris, I have been sitting here with some fascination as these thunder bolts of yours have gone smoking by. [Laughter.] And there is one ingredient that seems to be missing here. I can't figure it out. I believe that many of the problems that our Nation is facing would be minimized if your statement and the ideas contained therein were seriously considered by the President of the United States and the National Security Council. What I would like to ask you is: Have you ever been asked by the President for your views? Have you ever had an opportunity to present these views to the President or have you ever had an opportunity to present them to the National Security Council?

General MEDARIS. I have never been asked for my views by any authority above the Secretary of the Army. I have been twice, I think, before the Security Council. Both times I had an assigned task; both times my statement had been most carefully examined.

Mr. HECHLER. What do you mean by that, "most carefully examined"?

General MEDARIS. Well, I think about five echelons must be satisfied with the wording and that it is only a statement of agreed fact and introduces no recommendations not theretofore adopted.

Mr. HECHLER. Would you go so far as to say it was censored, then?

General MEDARIS. I think this would be a fair statement, yes. But on the other hand, one must recognize that this is part of an organizational entity.

Mr. HECHLER. I must say, if I may interrupt at that point, General, that it seems to me that this is the most shocking revelation that has

ever been made before this committee. Something was said yesterday by the President in his news conference. The President said this—"The National Security Council in which nobody is barred from bringing up any fear or any matter any preoccupation on his mind, any anxiety or conviction, of course, we have to work by agenda but everybody there is just as free to express his opinion as a man can be."

General MEDARIS. I think he means everybody who is a member of the National Security Council, Mr. Hechler.

The CHAIRMAN. The gentleman's time has expired.

Mr. Daddario?

Mr. DADDARIO. General, you have been a strong supporter of the large multithrust engine for some time. Could you give us a little history of what your part in that has been? What you have done to obtain a larger engine or a cluster of them and what has happened to it?

General MEDARIS. Again, because of lacking a mission of sorts our official efforts in this direction could not be recorded as being very great.

However, we had considered and examined the engineering feasibilities quite some time ago.

We had examined means by which some pressure could be brought in some direction that would give consideration to the needs for larger engines and finally we did a trial balloon. Not exactly sure of my dates, but I think I can work it back: This was—let me see, it was 1957 that the Sputnik went up, and it was in the spring of that year that we came up with a request for authority to develop a somewhat larger engine than the one which is used as the basis for the Jupiter, the Thor, the Atlas, and Titan.

Now, this was a modest request because we could not base the request, officially, on anything having to do with space exploration. We based the request, then, on our desire to provide a certain margin of assurance, the same thing to which I was speaking a few minutes ago in this business of ultrasophistication, of trying to get enough margin of assurance in the IRBM program that we could be certain of having a completely dependable and reliable missile and not run into very marginal weight requirements that we couldn't see, and that sort of thing. We asked officially to be able to develop a motor of 200,000 pounds of thrust, which would have an ultimate capability of 250,000 pounds.

Now, in doing so, as I say, we had to predicate that request on its needs in connection with the only program we had, which was Jupiter. At the same time we did have in mind and in hand certain theoretical studies that would have permitted clustering such an engine, engineering studies I should say, in terms of four of them, which would have given a million pounds of thrust.

We didn't get very far. Finally, after we had asked a number of times about it, we got an answer from the Defense Department in terms of their appointing a committee.

The committee was known as the Silverstein committee and its purpose, its mission assigned, was to decide if there was any national requirement for a larger engine. Now, this was the summer of 1957. The committee report dashed all our hopes, because the Silverstein

committee report came up with the conclusion that in view of the trend toward smaller sizes in the atomic energy field, there was no conceivable future requirement for any engine larger than that then available. This was two months before Sputnik.

Mr. DADDARIO. That was the Silverstein committee, and Mr. Silverstein is now with the National Aeronautics and Space Administration which has as its responsibility the development of such an engine?

General MEDARIS. That is true, Mr. Daddario.

Mr. DADDARIO. And it has been agreed that this is a large national requirement?

General MEDARIS. That is correct.

The CHAIRMAN. The gentleman's time has expired.

Mr. King?

Mr. WOLF. If the gentleman would yield, that is pretty much like putting a fox in the chickenhouse to guard the chickens; isn't it?

Mr. KING. General, in support of the argument in favor of the Von Braun team to NASA, it has been reasoned the basic responsibility of the Defense Department, of course, is defense. It would be unfair, therefore, to distract them or to get them off into a large operation only a part of which was concerned with defense and an even larger part of which was concerned with purely peaceful occupations, and so on. You understand the argument. I would like to get your reaction to that because that argument, I must admit, had some effectiveness and persuasiveness on me.

General MEDARIS. I must go back here, Mr. King, to the indivisibility of the field as such and to the fact that it reinforces itself. In dividing it you come up with a solution that is in fact harder overall to handle. I think even as far as the operating individuals in the Defense Department, the services themselves, are concerned, that they would find it easier to handle as a package than they do to handle only their part of it. We now have a situation where for weapons purposes as they may come up, either the Defense Department must depend upon NASA to develop the vehicle and buy the vehicle from NASA, or vice versa, NASA must depend upon the Defense Department to develop a vehicle for them and buy it from the Defense Department, or alternatively we have duplicating programs, one of the three. This adds enough clumsiness in my mind to far more than offset this requirement that the military not be concerned with this area. Furthermore, I think that military uses will develop out of peaceful exploration and peaceful facts, as they always have in the past. The argument appears to be a little strained since I find nobody rising to meet the urgency of getting the military elements of the Army, to wit: The Engineer Corps, out of the rivers and harbors business. If it is good one place why isn't it good somewhere else? What is the difference?

Mr. KING. It was the Army that constructed the Panama Canal, as I recall.

General MEDARIS. I think so, and opened the West.

Mr. KING. Do you think—perhaps there is time to just touch this—that where there are two commands instead of one that there is always the difficulty of exchanging information so that the one command isn't certain of what the other command has found out?

General MEDARIS. This is a very awkward situation and with the best will on everybody's part—this is not a question of withholding information—but the pure mechanics of the lateral exchange of detail on everything that is going on between organizations not under single control is a very formidable task, and it cannot be done within normal human resources to the degree of completeness that is essential to assure taking full advantage of everything that is learned.

The CHAIRMAN. Mr. Roush?

Mr. ROUSH. General, I have a series of short questions which I hope will require short answers.

General MEDARIS. I will do my best.

Mr. ROUSH. Prior to October 4, 1957, was the Army ever under any positive instruction not to tinker with this orbital business?

General MEDARIS. It certainly was.

Mr. ROUSH. Is it true that the Army initiated Project Saturn?

General MEDARIS. That is true.

Mr. ROUSH. And is it also true that funds were requested from ARPA which were denied for Project Saturn?

General MEDARIS. Funds were requested in greater quantity than ARPA made available.

Mr. ROUSH. All right. Is it true that as late as the last part of 1959 funds apportioned for Saturn were cut back?

General MEDARIS. That is correct.

Mr. ROUSH. If you had been allowed to go ahead with your large engine back in 1957 and would have had the funds, would we have an engine today with a million-pound thrust capacity?

General MEDARIS. If this had been a coherent program and the objective had been so stated, we would be very close to it. We would probably be in a position to fly such a vehicle within the next 6 months, I would say.

Mr. ROUSH. Do we have a present military requirement for a large booster engine?

General MEDARIS. Well, here we come back to the question of what is the military requirement in space. Again, I say that in my opinion there will be a very positive military requirement in space, in fact such exists right now in the classified military programs. So they either have to use Saturn or develop another one for that requirement.

Mr. ROUSH. You spoke of projects you would like to see cut out. Which projects which we now have under consideration would you like to see enhanced and furthered and pushed?

General MEDARIS. I think fundamentally in the space area we must look to the Saturn. And certainly Nike-Zeus in the defense area is the most important one that we have. In the strategic strike capabilities I look to Polaris as the most effective weapon.

Mr. ROUSH. Is it true that—

General MEDARIS. And—well, certainly I would like to add that the Saturn is merely a means to an end. The man in space program, a man on the Moon program must be pushed forward.

Mr. McDONOUGH. That is very important.

General MEDARIS. Mercury then is important as the bridge to it.

Mr. ROUSH. Is it true that because of all of these administrative difficulties and this bureaucracy in which we are living that it is diffi-

cult for us to have a positive decision which will carry us to a certain end?

General MEDARIS. I can only say that anytime in the last 5 years that I have gotten a decision that lasted more than 6 months I was ahead.

Mr. ROUSH. I heard you say once, General, that the one thing that would put us back into this race with Russia was the ability to make a decision and then stick with that decision for at least 2 years. Do you still adhere to that?

General MEDARIS. I still adhere to that.

The CHAIRMAN. The gentleman's time has expired.

Mr. BASS. Could I have one question?

The CHAIRMAN. Mr. Chenoweth asked for one question; Mr. Bass asked for a question. Everybody has had the same identical time now. Nobody can complain.

Mr. CHENOWETH. Mine is not a question. I would like to have 15 seconds.

The CHAIRMAN. The gentleman asked for 15 seconds.

Mr. CHENOWETH. General, I wonder if you have in your pocket a little poem entitled "Medaris, Von Braun and Me"?

General MEDARIS. Unfortunately, I haven't, I am sorry. I wish I had. I would like to get that in the record, however, if I may. If I may have the opportunity I will extend the record with it, yes, sir.

Mr. CHENOWETH. Would you please?

(The poem is as follows:)

THE RELUCTANT ASTRONAUT

In the missile game we've won great fame.

The world knows our Jupiter C—
And what we've done with Explorer I,
Medaris, Von Braun, and me!

Explorer III went off in the blue
On its own self-guided spree.
Number III kept in track and now reports back
To Medaris, Von Braun, and me.

We will send others to join their brothers.
Some will orbit, some fall in the sea.
Yet history will toast the man with the most:
Medaris, Von Braun, and me.

Oh, watch our smoke as we go for broke,
To solve the space mystery.
We have a thirst to be there first,
Medaris, Von Braun, and me.

Our skill we pride. We'll travel wide
Into spaces so wild and free—
To the Moon, then to Mars, then to distant stars,
Medaris, Von Braun, and me.

When finally we've planned a spaceship that's manned,
And they call for brave men—two or three—
To try first for the Moon in that metal balloon,
Call Medaris and Von Braun. Not me.

—*Ivan E. Hirshburg* (ABMA, 1958).

The CHAIRMAN. Mr. Bass?

Mr. BASS. You indicated earlier that there is a present military requirement for the big booster engine. What is that military requirement?

General MEDARIS. That has to do with the Dyna-Soar program.

The CHAIRMAN. General, we want to thank you and General Schomburg, too. We haven't given him so many questions there but we have gotten a great deal of help out of General Medaris and General Schomburg, and we appreciate the opportunity of having you here as witnesses.

Gentlemen, the subcommittees begin to meet at 2 o'clock on the NASA authorization program and I think you two have given these subcommittees a lot of motive power, a lot of enthusiasm to carry on with the program.

We will adjourn.

Mr. QUIGLEY. Would you ask the members of the patent subcommittee to stay over about two seconds?

The CHAIRMAN. The members of the patent subcommittee are requested to stay over here about two seconds to get a report.

Now, we are giving the subcommittees a chance to begin at 2 o'clock and we have no session in the morning—the full committee.

(Whereupon, at 12:01 p.m., the committee adjourned to reconvene at the call of the chairman.)

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