

APPENDIX A
NASC MEETINGS (1961-1968)

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NASC Meetings (1961 - 1968)

<u>Date</u>	<u>Agenda</u>
July 14, 1961 (First formal meeting of new Council)	National policy on communications satellites.
August 18, 1961	Briefings on U.S. vis-a-vis Soviet space programs.
November 1, 1961	Progress in management and interagency coordination.
March 21, 1962	Priority for Apollo; impact of space program on foreign relations; nuclear propulsion and power devices for space; space activity for defense purposes; lunar program plans.
July 12, 1962	Astronaut training report; Moon trip method.
August 3, 1962	Advanced aeronautics (SST, VSTOL, STOL); coordination in bioastronautics.
September 28, 1962	Effect of high-altitude nuclear tests on space program; public relations policy re space.
November 2, 1962	Delays in Centaur program; NASA request for DX priority for Centaur (recommended by Council and ordered by President).
February 19, 1963	Need for coordinated package report on SST prospects.
April 26, 1963	SST (State on impact abroad; FAA on study results).
May 7, 1963	Overview of space program.
May 17, 1963	Preliminary SST recommendations.

<u>Date</u>	<u>Agenda</u>
May 30, 1963	SST (go-ahead for development program, approved by President).
July 17, 1963	Gemini, space stations -- NASA/DOD coordination.
July 31, 1963	Public attitude toward lunar program.
April 10, 1964	Cooperation with USSR.
April 13, 1965	International aspects of space program.
July 9, 1965	Manned Orbiting Laboratory.
March 3, 1966	FY 1967 budget impact on space program.
March 23, 1966	DX priority request for SST (recommended); international cooperation.
April 29, 1966	International cooperation; expansion of USIA overseas exhibitions; future space plans.
June 15, 1966	Post-Apollo plans; international cooperation; space exhibits.
July 21, 1966	DOD space plans.
October 17, 1966	NASA report on resources satellites; FAA presentation on aeronautics plans and developments; State interim report on international cooperation; USIA evaluation of international space exhibit proposal.
November 15, 1966	Space budget proposals for FY 1968.
March 2, 1967	PSAC report on Post-Apollo program; Apollo fire report.
June 22, 1967	Resources satellites; NASA FY 1968 budget request.

<u>Date</u>	<u>Agenda</u>
November 14, 1967	FY 1968 and FY 1969 budget analysis.
February 14, 1968	AAP and MOL; international exhibits.
May 22, 1968	Aeronautics R&D; nuclear rockets; USSR space activities.

APPENDIX B
ORAL HISTORY REPORT

APPENDIX B

ORAL HISTORY PROJECT

JOHN F. KENNEDY LIBRARY

Interview with
Dr. Edward C. Welsh

Executive Secretary
National Aeronautics and Space Council

Recorded on May 16, 1964, in
the Executive Office Building, Washington, D.C.

Interviewee:

Edward C. Welsh

Interviewers:

Walter D. Schier, General Counsel, National
Aeronautics and Space Administration

Addison M. Rothrock, Consultant, National
Aeronautics and Space Administration

Eugene M. Emme, Historian, National Aeronautics
and Space Administration

Interview with Dr. Edward C. Welsh

Mr. Sohler: This is the beginning of an oral interview with Dr. Edward C. Welsh, Executive Secretary of the National Aeronautics and Space Council, for the John F. Kennedy Library. The interview is being held on May 16, 1964, in Dr. Welsh's office. Present at the interview are Dr. Eugene Emme, Mr. Addison Rothrock, and Mr. Walter D. Sohler.

Dr. Welsh, I wonder if we could begin this interview with the transition period between the Eisenhower and the Kennedy Administrations. In particular, what contact did you have with the Wiesner Committee, which, you recall, was set up by the President-elect to study the space program?

Dr. Welsh: After his nomination but prior to his election, Mr. Kennedy appointed several committees to study critical problems. One was on space headed by Jerome Wiesner. Another was on reorganization of the defense establishment headed by Senator Stuart Symington. I was the Staff Director of the latter committee.

Possibly the one direct relationship that existed between these two groups was that Dr. Wiesner attended some of the meetings of the Symington group. I'm not quite certain but I'm under the impression that Roswell Gilpatric was a member of both groups, so that there was also that interrelationship between them. However, there were no joint meetings between the group on space and the group on defense establishment reorganization.

Now this doesn't quite answer the question because, in viewing the reorganization of the Defense Department, it was necessary for us to make some recommendations as regards the research and development aspects of the work in the Defense Department and one of those was the space aspect. Consequently, we anticipated greater centralization of control over space research and development in the Defense Department, just as we anticipated greater centralization of control over the other aspects of defense.

Mr. Schier: Did this work lead to your appointment, do you feel, to your present position as Executive Secretary, or what was the background of that as far as you know?

Dr. Walsh: Well, I can't say. I might add that President Kennedy did not attend any of the meetings of these two groups but he did go over their respective recommendations with care and intense interest, and he also made use of the recommendations of both committees in the work that followed after he became President.

I think it's of interest, too, to note that Mr. Kennedy, as a nominee, but before election, wanted these two studies, the study on space and the study on defense reorganization, made so that the results of those studies would be available whether he or Mr. Nixon was elected. He thought they were so significant that the studies and the results of the studies should be available regardless of whether he was elected or not, and he wanted to make them public. Of course, he was elected, and he did make the reports public.

Now as for your question on my appointment as the Executive Secretary of the Space Council, I don't know that there was any direct relationship between my being the Executive Director of the committee for the reorganization of the defense establishment and my appointment to the job of Executive Secretary. Let's look at that for a moment.

I, of course, had known Mr. Kennedy as Senator Kennedy prior to his becoming President. I was on Senator Symington's staff there in the Senate and had some occasional contact with Senator Kennedy and also rather frequent contact with members of Senator Kennedy's staff. Also, during the campaign in 1960, I was asked to and did prepare some materials for speeches and articles on both defense and space for nominee Kennedy. I guess I was asked to do those things largely because I had some slight reputation, having been associated with Senator Symington, and was supposed to know something about these fields. But I would not be able to say exactly why I was chosen for the job. I would,

however, emphasize the fact that the job had someone appointed to it. That, I think, is the significant thing rather than who was appointed.

In December of 1960, President-elect Kennedy announced that he wanted to rely heavily on the Vice President in space matters and to do so he wanted the Vice President to become the Chairman of the National Aeronautics and Space Council.

Mr. Sohler: I think that was in his Miami speech, wasn't it, that this first came out?

Dr. Welsh: Well, he referred to it several times. I think one was on that occasion.

Now, this raised a little situation because, first of all, the Vice President wasn't even on the Space Council, let alone Chairman of it. But it was clear that President-elect Kennedy wanted to reactivate the Space Council; he wanted to do something with it.

Now the Space Council had been on the statute for some little while. It was provided for in 1958 in the National Aeronautics and Space Act, just the same act which established the National Aeronautics and Space Administration. But it had not been used very much by President Eisenhower. He had never filled the job of Executive Secretary which was provided by statute. There was an Acting Executive Secretary borrowed from NASA for the occasions on which they did have some meetings and did carry on some activities. But, generally speaking, I think it's fair to say that President Eisenhower was not in favor of the Space Council basically, and he didn't think he needed it and, therefore, he didn't want to use it. On the other hand, President-elect Kennedy thought it was a real instrument for doing several things: one was to accelerate the space program, and the other was to give some distinct, clear-cut responsibility to the Vice President. He wanted him to perform significant roles in the new Administration.

Now this tied in neatly, you see, with the fact that Vice President Johnson had been one of the major architects of

the Space Act and also had been the Chairman of the Senate Space Committee, so that he not only had some knowledge but he also had considerable interest in the subject of space.

President-elect Kennedy, when he made his statement about wanting the Vice President to become a major factor in the space program, and wanted the Space Council to be active, he said he wanted to make the Space Council "an active and useful instrumentality." In other words, he not only thought it hadn't been before, but he thought it needed to be under his Administration.

Now I was asked to draft legislation. I hadn't been appointed, and I can go into that appointment if you want.

Mr. Schier: Are there any vignettes in connection with the appointment that might be of interest here?

Dr. Welsh: Oh...I don't know. I was nominated on the 20th of March, 1961 (it happened to be my birthday), hearings on my nomination were held on the 23rd of March, and I was sworn in on the 24th of March, which is pretty nearly a record for speed as far as any kind of activity of that sort is concerned in the Government. In other words, I was sworn in within four days of my nomination.

I did not have anything to do with the appointment of other people in the space field. Mr. Webb, for instance, had already been appointed as the Administrator of NASA, and the Vice President, of course, had already been identified by President Kennedy as the individual who was going to be the Chairman of the Space Council, although he still wasn't in that position. And, of course, the Secretary of Defense had already been appointed and the Secretary of State and the Chairman of the Atomic Energy Commission, all of whom were involved in the Space Council. So that I didn't have anything particularly to do with that. As a matter of fact, the other way around I guess would be correct--having been told that I was under consideration for this position, I was asked to go down and visit Mr. Webb and I sat in Mr. Webb's

office (not in the new building they're in now but in a previous building up here on H Street), and I don't know that I did a great deal of talking but I was there and Mr. Webb did ask me some questions and did make some points in regard to his idea of how the Space Council ought to operate.

Mr. Sohler: Could you tell us a little bit about what his points were, whether you tended to agree, and whether that's the way the Council functioned? I suppose the head of an agency like NASA is a little concerned about the way an organization like the Space Council that is advising the President will function.

Dr. Welsh: I can't recall in any detail what took place in the conversation, but I would say that certain things impressed me. One was that Mr. Webb believed in a vigorous role on the part of the operating agency and did not want to have a Council or any other interagency group be controlling the operating day-to-day functions, with which I thoroughly agree. He did, on the other hand, think that the Council would have a major role in developing broad policy for the Government in the field of space and also in improving relations with other agencies in the Government which had space responsibilities--thinking primarily, I suppose, of the Defense Department.

Mr. Sohler: Did Mr. McNamara ever express to you his theories as to the role of the Space Council?

Dr. Welsh: No, I haven't had any discussions with Mr. McNamara on that particular subject. I have discussed with Mr. McNamara specific problems and, without much delay, have gotten his reactions. He is quite inclined to be concise and rather positive in expressing his views. Mostly, however, the contact with Mr. McNamara has been when we've had Space Council meetings or when we've had individual meetings between the Secretary of Defense and the Vice President and myself on a particular problem that involved primarily the Defense Department.

Mr. Sohler: Was there any philosophy put forward by Vice President Johnson or President Kennedy other than that which is set forth in the Space Act as to the function of the Space Council and your role?

Dr. Welsh: Very little was said about that. You see, when I came in as Executive Secretary of the Space Council, I found myself without any office space, without a desk, without a pencil, without any budget, and without any staff. So that I really had to start pretty much from scratch. Nor did I get what you would call particular guidance as to what I was to do in regard to the deficiencies.

The only thing that the President and the Vice President wanted was to get something done. Now the first thing that they wanted was to get an amendment to the law so the Vice President would be on the Space Council, so I immediately was pitching in on that work without any staff.

Both President Kennedy and Vice President Johnson, and now President Johnson, have left it pretty much to me as to what functions we undertake in the Space Council operation, with the exception that from time to time there would be a specific assignment given to the Space Council to look into and then, of course, that took priority over everything else.

Mr. Sohler: Could you tell us a little bit about how your thinking and the functioning of the Space Council has evolved during this period--have there been any changes in the way you've gone about your business, or what could you say on that general subject?

Dr. Welsh: Well, I'm not sure that a response to that question has very much to do with the history or the relationship with the President of the United States.

Mr. Sohler: Well, you occupy a position of closeness to the President as the Executive Secretary of the Space Council, and I think anything you have to say on this is of interest.

Dr. Welsh: I would think that the first thing that I would say was that I came into the job without any fixed, rigid idea of just what the job entailed and, as a consequence, I have been pretty busy trying to catch up with the problems that presented themselves rather than develop any clear-cut philosophy.

I do believe that the Act as it's written with the functions of the Space Council as they're indicated is very well phrased. The functions are there. They are important functions, but they are exceedingly difficult to carry out, however, because each one of the persons who is on the Space Council has (and should have, but this is a difficulty) direct access to the President. So it's very possible for people to go directly to the President without seeming to end-run the Space Council. They just go directly to the President, or a problem comes up in the National Security Council, or a problem comes up in consultation with the President or with the Vice President when we have one, which may seem to set aside the Council.

Now this means that a great deal of the Council activity is done with the Council staff rather than with formal meetings of the Space Council. During the Kennedy Administration, we had, I think, 15 meetings of the Space Council, or something about that number. They were well attended and almost always the top official of the agency came to the meeting.

But, during that same period of time, my estimate would be that we had 150 or 200 meetings conducted by me with representatives from various agencies of the Government--not a formal Council meeting but, nevertheless, a significant meeting, at which we worked out problems, we worked out pieces of paper, worked out documents, and tried to formulate something which would go before the Council. Where the Council would have only one meeting on it, we might have a dozen in the formulation of this.

Mr. Rothrock: The Council is rather unique in our Government at this time.

Dr. Walsh: Well, it's an unusual organization, yes. We do have, of course, a National Security Council, which is a little different because, of course, you have the President as head of it and decisions can be made right there. You see, it's rather significant--the Space Council is not in the same position as the National Security Council which can, in a sense, make a decision. The Space Council comes up with a conclusion which it formulates in a recommendation to the President. In other words, it is not an organization that can actually make decisions which then will be translated into action. It's an organization which has great influence on decisions which would be made, but, nevertheless, it does not make the decision.

You see, this is rather important, because otherwise there would be some question as to whether the Vice President could be the Chairman of it if it were an actual decision-making organization where it would be getting into the operations of the Executive Branch of the Government. This is not a function which the Constitution does give the Vice President of the United States, but, as far as an advisory function is concerned, or a consulting function, or a function of influence and persuasion, why, he obviously has plenty of basis for that.

Dr. Eames: The Vice President had insisted that this be put in the original Space Act, hadn't he? Wouldn't you say that the Council was cognizant of the Senate Committee's action upon the Administration bill in the beginning...

Dr. Walsh: Well, he did, yes...

Dr. Eames: ...prior to the Space Agency activities, and the Department of Defense and the other agencies, to be looked at as a national entity in the space era? That wasn't part of the original legislation that went from President Eisenhower to the Hill, was it?

Dr. Walsh: No, that's right. And it is also correct to say that the legislation that came out was more a product of the Congress than it was of the Executive Branch that sent the bill up there.

Dr. Eisme: The Council was an addition?

Dr. Welsh: That's correct, that's certainly correct.

Mr. Rothrock: You found it desirable to have a small tactical staff on the Council?

Dr. Welsh: I found it necessary to have a small staff. First of all, I wanted it to be small because I thought it would be highly undesirable to have it duplicate other staffs that exist. I wanted it to be in a position where it could work in coordination with Dr. Wiesner's staff rather than simply duplicate personnel with him. I wanted to rely primarily upon the staffs of the agencies that belonged to the Council. We would have a small staff here which would do evaluating and assembling and get ideas and, through their initiative, stimulate thinking on various subjects, but not engage in any kind of research or analysis in depth--for that we would rely upon the people in NASA and in the Defense Department and the Atomic Energy Commission and the State Department, and so forth.

Now, let me just move to one other aspect of this business because we still haven't gotten the Vice President on the Council and we've been referring to him as being there. I was asked by the President to draft legislation to put the Vice President on the Space Council as the Chairman of the Council. This request came about the first of April, 1961. I did draft this amendment. The major thing that it did was to substitute the Vice President for the President in the membership of the Council and as the Chairman of the Council. In addition, it made the Council a part of the Executive Office of the President and also reduced the number of members on the Council from nine to five. The amendment that contained these changes went to the Congress on the 10th of April, 1961. I was the only witness that testified for the amendment in the House and also in the Senate. As a matter of fact, I testified in support of the amendment on April 12, which happened, I think, to be the same day as the Gagarin shot, and so a fair amount of the inquiry made by the members

of the House Space Committee had to do with the Gagarin shot rather than the amendment to the National Aeronautics and Space Act.

The amendment as submitted, without any change at all, passed the Congress on the 25th of April, so that again I had fairly rapid action on this. I testified before the Space Committee in the Senate, also, on it before, of course, it passed. It passed in both the houses without any objection. I think that this rapid passage of this amendment to the Act was probably due as much as anything to the prestige of the Vice President in the Congress as it was to the influence of President Kennedy in this particular case, because this was viewed as a specific action which would affect the new Vice President, and there was such an action. Because actually, you see, the President didn't need to have this type of formal action taken. He could call on anybody in the Executive Branch of the Government and ask for their advice and so forth, and he could call on the Vice President whenever he wanted his advice.

Mr. Sohler: In fact, he was keeping Vice President Johnson pretty busy during this period when you were drafting the legislation on just exactly the sort of things he was going to do afterward as Chairman of the Space Council, wasn't he?

Dr. Welsh: That is quite correct. Even before we got the Vice President on the Space Council, President Kennedy called the meeting on what should be done about the Supplemental for the fiscal year 1962 budget for space. And the final meeting on that was a meeting in which the participants were, in addition to President Kennedy, Vice President Johnson, Dave Bell, who was then the Director of the Bureau of the Budget, Jerry Wiesner, who was the Science Advisor to the President, and myself--just the four of us with the President to finally decide on what should be done on the Supplemental for the space program for fiscal year '62. There was no question at all that there was an inadequacy. There was no question that much more needed to be done than just handling this thing through a Supplemental. But the President had been persuaded, largely by his advisors, that

we were wasting time in the space program, and that things needed to be done right away. And he wanted to know what was it that needed to be done right away as against what could wait until there had been a fairly thorough study of the space program and a real plan for the coming year.

It fell to my role to advise the President that there were lots of things to be done, but the main thing to be done was to stimulate the work on boosters; that we were farther behind on our propulsion side of the space program than anything else; that the big advantage the Soviets had was in the field of propulsion; and that, while we had many ideas on propulsion and many studies and many projects under way, they were moving too slowly. And so it was agreed to then that propulsion was the name of the immediate game and that other things had to be looked at (and other things were very shortly thereafter). The request that President Kennedy did send up to the Congress for a Supplemental amounted to about \$156 million, which in relationship to the total space program doesn't seem much, but of that \$156 million almost all of it was to stimulate the booster field. In other words, it was divided between the Centaur, the F-1 engine, the Rover program, and the Saturn program, with the Saturn getting the largest portion of the total. So this was the first real action which President Kennedy took in order to accelerate the space program.

Mr. Schier: Did you attend that March 22nd meeting, 1961, which was the first meeting actually when NASA officials sat down with the President on the space program? I guess you hadn't been confirmed yet, but do you remember whether you were in on that discussion?

Dr. Welsh: I was not in on that discussion, as I recall. I believe that the Vice President was in on the discussion and then the Vice President and I had quite a long session after that and he asked me to formulate my views as to what should be done. I came up with a little bit larger figure (as I almost always do) than the figure that was finally decided upon, but, so long as I was able to get

across the important point that it was propulsion that we needed to push. I thought that we could get to some of these other areas where we wanted more money for research and development--a wide range of other fields in the space program, but we could get to that a little later.

Mr. Sohler: What was your method of dealing with the President? Was it usually or always through the Vice President? Or was there no particular pattern on this?

Dr. Welsh: Well, I would say there was no pattern and there was no single method. Most of my contact with the President was through the Vice President, who was the Chairman of the Council. On the other hand, as in this particular case that I just referred to on the fiscal '62 Supplemental, I was there present in the meeting. The first question that the President asked was to the Vice President: "What is your recommendation in this regard?" And the Vice President said, "Dr. Welsh here knows more about it than I do--let him speak." Which, I might say, was a very nice thing for him to say, whether it was accurate or not. So I did speak out and I made the only speech, because the President turned to Wiesner and Wiesner simply said that he concurred in the fact that the most important things for us to put additional money on right away were larger boosters and the field of propulsion. And the Director of the Bureau of the Budget simply took the position, as he said, "whatever the President wants, we will try to get that done."

Mr. Rothrock: Was there any mention of the moon flight at that time?

Dr. Welsh: Absolutely none. This was: How do we get ahead? Where are we lagging? What's the thing we're lagging most in? What do we need the money on as of yesterday rather than anything else? That was the situation in that fairly brief meeting.

Mr. Sohler: Now, a lot of things happened between March 22 and May 25, when the lunar-landing commitment was made by President Kennedy. I guess there were the Gagarin flight,

the Shepard flight, and then this momentous decision. Could you perhaps fill in the picture from your point of view a little bit about what you and the Space Council did during this period to guide the President in the making of this decision? We've talked about the Supplemental a little bit here; then there's the study that went on from there.

Dr. Welsh: Yes. Well, the Gagarin flight, of course, took place and we also had a little flight of our own that had taken place on the part of Commander Alan B. Shepard, Jr. It's a little hard to get these things put into the right order. Let's see if we can.

We have the Supplemental go up to the Congress, and the President had made a decision that we're going to push the propulsion side of this thing. Then, on the 20th of April, the President wrote a letter to the Vice President. He said: "In accordance with our conversation, I would like for you as Chairman of the Space Council to be in charge of making an over-all survey of where we stand in space."

Then he raised a number of questions. He wanted to know, for instance, what activity in space should we undertake that would give us a real possibility of getting ahead of the Soviet Union? He wanted to know how much it would cost. He wanted to know whether we were working full time on the space program, or whether we were going along at a leisurely pace. There was a series of questions of this sort, and he wanted the Vice President to undertake this kind of a study.

So immediately the Vice President asked me to set up some meetings, which we did set up. The meetings included not only all the members of the Space Council but he brought in a few people from the general public and he invited the Chairman and the ranking minority member of the Space Committees in the House and Senate to some of the meetings. We had General Schriever from the Air Force there and we had Admiral Hayward from the Navy and we had von Braun, who had been with the Army but was by this time with NASA. We

had some pretty soul-searching meetings on what could be done to accelerate the space program, what could be done to put us back into a real contending position in the space race.

These meetings were held one right after the other, day after day, so that this request, you see, was on the 20th of April, to the Vice President, the meetings were held, and a report went back to the President on the 28th of April.

Mr. Rothrock: The President referred to the Vice-Presidential study in his Press Conference on April 21 and there made a reference to a trip to the moon as something that might be considered.

Dr. Welsh: In the letter...and I'm sure no one needs to go into great detail as to how letters are developed and memoranda and that sort of thing. Often various people have a role in drafting them. Anyway, in the letter, the President says, "As one of the possibilities, do we have a chance of beating the Soviets by putting a laboratory in space, or by a trip around the moon, or by a rocket to land on the moon, or by a rocket to go to the moon and back with a man" In other words, he was raising these various questions. And then he says, "Are there any other space programs in which there would be possibilities" So there was reference to the lunar thing in that letter.

Now by the 28th of April we had completed a series of meetings and had prepared a relatively short report from Vice President Johnson to the President, a five-and-a-half-page report, in which among other things we indicated that the lunar project was something which was a real possibility that we could engage in and actually beat the Soviets. We stated in there that the Soviets now have a rocket capability for putting a multimanned laboratory into space and have already crash-landed a rocket on the moon, and so the possibility of their being ahead of us in certain lunar activities still existed, but, as far as landing a man on

the moon and bringing him back, this was something that neither one of us could do now, so that we said with a strong effort the United States could conceivably be first by 1967.

Mr. Sohler: Was this the objective--something we could have, let's say, a fighting chance of beating the Russians at? Was this the guiding thought at that moment or was it more complex?

Dr. Welsh: Yes, it was a guiding thought at that moment. It was not the only thought, however. We had a pretty strong feeling that, in addition to recognizing that we're in a race with the Soviets, we needed to win that race, and, therefore, we needed to choose various objectives where we had a chance of winning or getting ahead. It also was necessary to set up some clear-cut goals and schedule these goals in order to have a good orderly program. In order to develop real confidence, over-all confidence, you needed an orderly program. An orderly program calls for goals; it calls for objectives; it calls for schedules. You ought to have flexibility in them, but it calls for these things to get people to have something that they're working for, something that gives them a clear-cut objective, a target, if you will. So that we had that in mind in the program.

I think some of the other justifications for the lunar program have been seen and developed as we go on in the program. Technological and educational benefits, increase in international prestige, the possibility of a fall-out, so to speak, from the program in materials and in electronics, and things of that sort have been things that we have used to justify the program as it goes along...perfectly sound justifications.

Dr. Emsw: Was it the idea of having something that the public would support? Was that part of your consideration?

Dr. Welsh: It's a good inquiry, because this was the main reason why the Vice President invited some representatives from the general public in to meet him, i.e., to get the

public reaction to this program. Would it get public support? I must say that the support from the representatives of the public was even stronger than that of the members representing the Government. A good deal of credit has to be given to the Vice President, because he was really strongly sold on the importance of space, strongly sold on the idea that we can't stand having the Russians ahead of us in this thing. And so his leadership was felt very strongly in these meetings. Some people were somewhat hesitant. Some people would raise questions about how much it would cost and things of that sort. And he'd just come back with, "Well, would you rather be a second-rate nation and not spend quite so much money?" He showed a lot of leadership and a lot of enthusiasm.

Mr. Sohler: Well, I think President Kennedy must have been a bit skeptical at this point. He had the Wiesner Report in his hand which was pretty critical of the space program; he had the Bay of Pigs thing on his hands. The other night I read a book review of a book which is very critical of the space program, in which it was suggested that the lunar decision was a gimmick to get us doing something in reaction to the Bay of Pigs fiasco. This has been said several times. Is there anything to that? Were there any comments of the President or the Vice President that indicated this was a consideration?

Dr. Welsh: I haven't read that book. I read the reviews.

Mr. Sohler: It's called "The Rise and Fall of Space."

Dr. Welsh: I read the reviews of the book--probably the same ones that you have, and I also would not expect a very accurate book from that source.

I can say categorically that, in all of the meetings that we had to develop a recommendation for President Kennedy regarding the space program, there was not one reference to the Bay of Pigs. This was not a factor in any regard, unless it was a factor buried in the mind of the President but he

didn't express it. No one would be able to write about it as being a factor and do so accurately.

The only influence that the Bay of Pigs had was an almost reverse influence against the space program, and that is: Maybe we shouldn't take any of these risks right now with man in space and so forth because things haven't been going very well, and another bad happening would just make things worse.

Mr. Sohler: This must have figured in the Shepard flight.

Dr. Welsh: This figured distinctly in the Shepard flight decision and I think it's rather interesting. I was in the President's office with just a very small group of advisors to the President (in this case the Vice President was not present) and one of the advisors to the President raised the point that maybe we should postpone the Shepard flight, maybe we shouldn't take this risk, something might go bad, there might be a casualty, and we've had a number of things going rather poorly here and maybe we just shouldn't do this right now. At that point, I made a rather self-confident remark. I said to the President, "Why postpone a success?" The immediate reaction of the advisor who had raised the question was, "Do you have that amount of confidence that this thing will be successful, because if it is successful, why, it's going to be a plus, but if it's a failure, why, we're going to lose from it." And I said, yes, I had that amount of confidence. As a matter of fact, I said I didn't think the risk to the astronaut was any greater than if he took a commercial airplane from Washington to Los Angeles in bad weather. Now, obviously, I was overstating the situation but I had something to sell and I was going to sell it the best I could. And that ended the discussion on whether or not the Shepard flight should be conducted. And the President simply raised no further question about it.

Dr. Engel: What was the date of this conference?

Dr. Welsh: It was just about the time that we made our report. I'd be guessing now, but it could have been the

29th of April. It was somewhere around the 1st of May, but it's about that time anyway and it was before a detailed report that was prepared by McManara and Webl went to the President on the over-all space program.

Mr. Sohler: One thing we might ask you: What was the connection between the success of the Shepard flight and the lunar-landing decision? Had it already been made before the flight, or was it in a state of flux and did this give them the kind of added push that was necessary?

Dr. Welsh: The recommendation to the President in regard to the lunar flight was in this memorandum that I referred to of April 28 or 29, and the Shepard flight wasn't until May 5. I don't believe that the Shepard flight had any real impact on the lunar program other than to lessen the doubts in the minds of those who had doubts about the program. In other words, the recommendation had gone through anyway, I think the decision would have gone through anyway, but the success of the Shepard flight added a little greater enthusiasm in those who were lagging a little bit in the program so it had that kind of a contribution rather than a decisive contribution.

And, of course, we were very encouraged about this flight. By now, each country has had six successful cosmonauts or astronauts and the order of the flights is that we have been at least up with them on everything except the first flight. In fact, in order for them to get as many as six, they had to make the last two flights. The distinction, therefore, is not in the number but in the length of time and the amount of flying experience that the Soviets have gotten compared to us.

So that they are well ahead of us in this aspect of manned flight because they've had a great deal more experience. But in any event and in response to your question, the Shepard flight gave us additional encouragement, and this was followed by the Grissom flight which, again, was a successful flight and gave us added encouragement. But then that was shaved down a little bit, relatively, on a space race because

the Titov flight came along and, of course, it was so much more impressive than our flights.

Mr. Schlar: Did the Council, and you personally, play an active role in connection with the Mercury project in some of the decisions that were made as the project went along, or was this pretty much done over at NASA?

Dr. Welsh: It was pretty much done in NASA. And this, I think, is the right way for a program to operate. I think the Council ought to come into the picture and rather emphatically when you're starting a new project and the general horizons that surround or affect a new project. But once the project is under way, the operating agency ought to have the most to say and to do about it.

That leads me a little bit to this question of the method of going to the moon, whether it should be a direct ascent procedure, or whether it should be a lunar-orbiting procedure, or an earth-orbiting procedure. This became something of a debate in the Government. There were some of the President's scientific advisors who were recommending that we should follow the earth-orbiting method. NASA, after a great deal of detailed study, came up with the recommendation that it would be at least as safe and less expensive and could be handled in an earlier time period if we went lunar-orbit method. And so this did develop a sharp difference of opinion, which, I suppose, came to a public head during a trip which the President took.

President Kennedy believed that the space installations should be visited by high-ranking people in the Government, including himself. As a matter of fact, he did take several trips related to the subject we were just talking about. He took a trip on September 11 and September 12 [1962], on which he visited Huntsville, Cape Canaveral, Houston, and St. Louis. I might say parenthetically that just about a year before this trip, on September 30, 1961, President Kennedy had written to the Vice President and asked him to study at firsthand some of the more important

space installations and so, at the request of President Kennedy, the Vice President did visit a number of installations on the West Coast and other places and reported back to the President. I say that parenthetically because I think it is worth noting that President Kennedy had this continued interest in the space installations, not just when he himself was going on a trip.

During President Kennedy's trip in September of 1962, when he was at Huntsville, President Kennedy, who had been aware of the fact that there was some difference of view between Jerry Wiesner and his people and Mr. Webb and his people on the best method of going to the moon, was viewing part of a Saturn mock-up and turned and said to von Braun, "Which do you think is the best way to go to the moon--earth-orbital or lunar-orbital?" And von Braun said that he thought the lunar-orbital method was the superior one and started to give some explanation, and Jerry Wiesner said he disagreed. And so there was an ensuing discussion on this matter with various people expressing themselves. I might say it got more attention than it would ordinarily have gotten because some of this discussion could be overheard by the press, which was just outside the roped-off area there where this discussion took place.

I might add also that the discussion didn't end there. On the next leg of the trip, in two planes--the one the Vice President was in and the one that the President was in, the discussion was continued. I know that it went on for hours with an effort being made on the part of Wiesner to justify his view and based on the fact that NASA had made a very extensive study of this while the PSAC group had made a less detailed study of it.

Well, the matter came before the Space Council but not for decision. The matter came before the Space Council because it seemed necessary to have the Space Council briefed in some depth on this matter and it was. Also the Defense Department was briefed separately on the thing by NASA people, as the PSAC people were briefed by the NASA people.

In other words, every effort was made by NASA to show what the results of their studies were. It wasn't that they were so confident they were right, it was that they were confident that they had made enough of a study to know more about it than anybody else. So we took the position, which I expressed and which was supported by the President, that this was a matter which was to be decided by the operating agency. The agency that was responsible for going to the moon ought to be the agency that decides the method by which it goes to the moon after it has given due consideration and careful thought and attention to each one of the other recommendations. And this was the way the thing ended, and properly so, I think.

Mr. Sohler: Actually, the role of the Space Council and your particular job were further complicated by the fact that in the White House itself there were other advisors in this very area to the President, in addition to the fact that the operating agencies, of course, had a direct line to the President, too. Has this been a difficulty, or what was the President's way of dealing with that?

Dr. Welsh: Well, yes. I suppose one would say that it's been something of a difficulty, but it hasn't been one which couldn't be surmounted. The difficulty exists because the President would discuss some matters with other people. He would discuss matters, let's say, with his scientific advisor and he'd get a view on something. He wouldn't always have time to discuss it then with everybody else who could advise him on the same subject, so that, sure, it caused some problems. On the other hand, we did work up a very good day-to-day relationship between my office and Jerry Wiesner's office, so that, I think in the majority of cases anyway, the one office knew what the other one was telling the President, which helped a certain amount. It didn't necessarily cure the situation, but it helped.

Mr. Sohler: I wonder if we could talk a little bit about the NASA-DOD relationship question, and perhaps, more specifically, the evolution of the concept of one space program. As I recall, in the Eisenhower Administration, we were talking more about two space programs.

Mr. Rothrock: In fact, as you remember, President Eisenhower had recommended that the Space Act be changed to recognize essentially two space programs, one a Department of Defense program and one a NASA program, stating that one could look at two independent programs, one military and one civil.

Dr. Welsh: It's a little bit difficult to make any comment because I don't know who thought of what first in this. I have played a fairly major role in this selling of the idea that we have a national space program rather than a fragmented program. Others have done so, too. The President and the Vice President both have so stated.

In the reports, for instance, which the President is required to make to the Congress each year on space and aeronautics, he has...President Kennedy has and so has President Johnson...made reference to the fact that we have a national space program and we don't have a divisive one.

I started out making this point rather strongly shortly after I became Executive Secretary of the Space Council because I was troubled by references to the fact that we had space for peaceful uses and we apparently had space activities for nonpeaceful uses. And it was my reading of the National Aeronautics and Space Act that all of our space activity was supposed to be devoted to peaceful uses, that a portion of the activity would be handled by the Defense Department in order to maintain the peace, which is a very peaceful thing to be doing, while other parts of it would be for scientific research purposes and other civilian objectives. And so I kept hammering away at this for some period of time.

It seemed to me also that the Space Council was a very useful device to emphasize this national space program thing. We have one Council over the whole space program. If we had two space programs, why maybe you ought to have two Councils, and we had only one and we certainly needed only one. So that, again, all I can say was that President Kennedy and Vice President Johnson both were persuaded that

we had one space program rather than two; that there should be as little duplication between the different agencies of the Government as possible; that there should be a joint use of facilities whenever that was possible; and that there should be a sharing of personnel of competence whenever that could be worked out effectively. When you get right down to it, you find that NASA was using Defense Department developed boosters for launching their men into orbit, while they were using NASA-developed spacecraft to put them in. When you had a flight of an astronaut, he was in fact going there with a military booster and a NASA spacecraft. So that it was a joint program even on each flight in that respect. You had the tracking facilities and all the other facilities worked in, some of which were manned by military and some by civilians. So that it was a real national program.

This has continued. We now find ourselves with a portion of the program, the MOL project, where you have the Defense Department using a spacecraft developed by NASA for a part of their project on the MOL. So that this has been working out pretty well. There have been some controversies and has been some rivalry. I've said again and again that we ought to keep in mind that the space race is between the United States and Soviet Russia and not between NASA and the Air Force, and I think that to a certain extent that making that point has been somewhat persuasive.

Mr. Schier: Were these occasional differences and rivalries and so on things the President had to get into, or were these matters that one tended to read about in the newspaper and perhaps came up at the Council meetings?

Dr. Welsh: One of the major roles, as I see the Space Council, is to minimize the number of things that have to get to the President. If they can be settled and smoothed out without having to have the President...he has so many other things to do...so that actually in most all regards, we've been able to minimize them and to smooth them out, or play a role in doing that.

Mr. Rothrock: To what extent would they be decided between Mr. McNamara and Mr. Webb in a meeting of the two of them?

Dr. Welsh: On, the first step in a procedure of coordination is for the heads of the two agencies involved to try to settle the matter themselves, and, as you know, this does go on. There have been many agreements between the Defense Department and NASA, and then there has been continuing functioning in light of those agreements through the AACB [Aeronautics and Astronautics Coordinating Board] and other coordinating relationships. But some of the issues get sufficiently important that they ought to at least be brought to the attention of the Space Council in formal session, and we have found that we've settled a number of things by having the people have to get up there before the different parties and express their views. They're not nearly as outspoken when they find that the other fellow can be reasonable, too. Sometimes just the atmosphere of the Council has helped settle differences of views. But I wouldn't want to say that it's been just a court sending down decisions or anything of that sort.

Mr. Sohler: Was this national space program concept directed at all to take care of, in some way, the criticism both as to rivalry between NASA and DOD, duplication, and also the fact that, as some critics said, there wasn't enough being done militarily in space? Was this related to the concept, or is that a different question?

Dr. Welsh: Well, it's partly related. It certainly was related as far as duplication and overlapping of functioning are concerned. It is not related directly to the business of not enough being done from the military aspect of space. I say "not related" meaning that that argument--that not enough is being done on the military side of space--came after we had discussed and come out with the thesis of a national space program.

Now we have been able to answer this business of whether enough is being done in the military side of space by indicating that a great many of the capabilities and the

competences developed by NASA are those that can be also used by the Defense Department if need be. And so that it isn't the business of one agency developing things that are only useful to that agency. They become national assets. The facilities become national assets. The competences become national assets. The experiences become national assets.

Now, I don't want to leave the impression that I think enough is being done by the Defense Department in space. I don't think there is enough being done. I think they could move more rapidly. Part of the criticism has been that we have devoted so much attention to our lunar program that we don't engage enough in the earth-orbital area where the Defense responsibilities lie. That is not true.

In contrast to the Soviet Union, we've been devoting a much greater percentage of our effort toward the earth-orbiting activities and they have been devoting a much greater percentage of their activities toward the lunar and planetary activities. The facts are quite in contrast with the general criticism.

Mr. Sohler: There has been some frustration voiced over in NASA that, whereas NASA officials are pointing out that one of the major supports of the space program is this military importance—the fact that there is a capability here that could have significant military use, this point is not being echoed over in the Department of Defense in the same way. General LeMay may make statements of this kind but it doesn't seem to come out of the Secretary of Defense's office. Do you know what President Kennedy's views on this were? Did he feel that the NASA program itself was of great significance militarily because of the potential value of the facilities and so on?

Dr. Welsh: I don't think there was any doubt that President Kennedy believed that the activities of NASA were contributing to our national security. Whether it was understood fully by all the parties concerned was another matter, but

he did believe that. He made the point several times in his annual reports to the Congress. For example, in his 1962 Report, he said: "The benefits of our peaceful space program, in both its civilian and military aspects, are becoming increasingly evident. Not only have the horizons of scientific knowledge been lifted, but the resulting international cooperation and world-wide dissemination of knowledge and understanding have strengthened the world image of this country as a force for peace and freedom. The economic benefits of our national space program are also revealing themselves at an increasing rate." In his 1961 Report, he emphasized: "It is the policy of the United States that activities in space be devoted to peaceful purposes and during 1961 we made significant progress in that regard. Such progress included space projects to help keep the peace and space projects to increase man's well-being in peace."

Mr. Schier: In terms of working out between NASA and DOD what specific programs will be done by which agency, the two agencies have set up this AACB mechanism. Do you feel this is the proper way to work these kinds of things out?

Dr. Welsh: I think it's one proper way to work them out. It's one mechanism that is being used. It's a mechanism that is being used primarily to work out day-to-day problems rather than big issues of who should handle what major project. There are other ways of working it out, of course, and that is through the whole budgetary process. We go through quite an elaborate budgetary review, in which I represent the Space Council in sitting in on the reviews which the Director of the Bureau of the Budget makes of the presentations from NASA and from the Defense Department and from the Atomic Energy Commission, and so forth.

And there we have on occasion had both the representative of NASA, the Administrator of NASA, and the Secretary of Defense present at the same time to justify evidences of duplication, or to explain why one wants to carry on a project—what does the other agency think of that project? and that sort of thing. A very excellent illustration of

this is on the M-1 where both Secretary McNamara and Administrator Webb were present at a Director's review to go over this particular project.

Mr. Sohler: This isn't in the context of a formal Council meeting?

Dr. Walsh: That is quite right. To the extent that we can handle problems without formal Council meetings, the better off we are.

Mr. Sohler: So your involvement and impact on the program is not just in the sense of calling a meeting of the Council. It's in all the various ways--the budget process and in other ways.

Dr. Walsh: Yes. I also do some testifying before the Congress. I've testified before seven or eight different committees of the Congress on various aspects of the space program, and I suppose we've actually accomplished more through our meetings below the top level--the Assistant Secretary level type of thing--rather than at the formal Space Council meetings.

Mr. Sohler: One area in which, I guess, you and the Space Council became very involved shortly after you came on board was the matter of communications satellites and establishing an Administration position and policy in that area and then going ahead to draft the legislation. I wonder if we could sort of begin at the beginning of that story. As I recall, the Eisenhower Administration had set forth a sort of brief policy statement--my recollection is it didn't go much beyond espousing the private ownership of such a system. Then, as I recall, the FCC put together an ad hoc carriers group that came out with some recommendations, and it was about this time you got into the picture, wasn't it?

Dr. Walsh: Yes. The first point at which I got into the picture was back in March of 1961 when the question of the Supplemental for the '62 fiscal year budget came up, and

one little item in there was a \$10 million figure which President Kennedy put in to offset a \$10 million anticipated investment in communications satellites by a private company in the United States.

In other words, part of the Eisenhower program was to rely upon the largest company in communications in the United States to invest its own money in communications satellites and, therefore, not have the Government continue with the research and development, at the same pace at least. This, President Kennedy, on our recommendations (when I say "our" I'm meaning everybody who was involved in it--Mr. Webb and the Vice President and so forth), recommended that the \$10 million be put in the Government budget and we will decide when we see what the situation is whether we will rely upon a private company or whether we will have the Government do the thing.

So the issue of what was to be done on communications satellites came up a little bit even back as far as March of 1961. However, on June 15, 1961, President Kennedy wrote Vice President Johnson and said, "I will appreciate your having the Space Council undertake to make the necessary studies and Government-wide policy recommendations for bringing into optimum use at the earliest practicable time operational communications satellites. The Federal agencies concerned will provide every assistance which you may request."

Now, as Executive Secretary, I was asked by the Chairman to draft such a policy position for consideration by the Council preparatory to submission to the President. I called together top-level representatives of ten interested agencies. They were the State Department, the Defense Department, NASA, AEC, the FCC, Justice Department, the Office of Science and Technology, the OEP, the Budget Bureau, and the USIA. And I held a series of drafting sessions with these people.

Out of that exercise came a paper which I then presented before the Space Council with the Vice President presiding.

Because of the nature of the subject, those attending the Council meeting included not only the members of the Council but the Attorney General, the Chairman of the FCC, and the Deputy Administrator of the CEP. The paper was gone over word for word in the meeting, minor modifications were made, and then was approved unanimously. The Vice President then asked me to transmit it to the President. Consequently, I did formally transmit on July 15 such policy recommendation in the field of communications satellites.

Mr. Sohler: Was this after the FCC ad hoc carrier group's report?

Dr. Welsh: No, no, this was not. There are two stages to this activity as far as the Government is concerned, as far as this office is concerned anyway. One of them was the President's request for a policy recommendation regarding communication satellites. The second was a request that came in the fall of 1961, in which the President asked for recommendations as to how the policy should be implemented. And in between you have activity with the ad hoc committee of the communication companies with the FCC.

Mr. Sohler: I have here that they started their effort around April of '61 and made their report in October of '61, so this was simultaneous.

Dr. Welsh: There's an overlapping but what took place was: The President's policy statement, which he released on July 24, and in which he stated that "private ownership and operation of the U.S. portion of the system is favored provided that such ownership and operation meet the following policy requirements," and then he listed a whole series of requirements where it would meet and protect the public interest. Now that particular statement came out, as I say, on July 24. The conclusions of the ad hoc committee were not yet available.

Mr. Sohler: Yes. What was the thinking behind private ownership as opposed to Government ownership of this system?

Dr. Welsh: Well, first of all, the main attention was given toward protecting the public interest, but then the question was, "How best should this be implemented?" And this was, of course, what prompted us to draft legislation, which was a long, drawn-out process in the sense that we had meeting after meeting, day after day, on the thing during the fall of 1961.

I was largely responsible for this business of the choice of private enterprise. My reasoning went something like this:

That the United States Government should undertake those activities which private enterprise will not do, can not do, or will not do in the public interest. In other words, if it can be done in the public interest, in this case with adequate regulation, why then it should be a function of private enterprise--there's no point in the Government undertaking this. If I had any doubt in my mind that the public interest would not be protected, however, I would favor the Government ownership of it, because I have no question of ideology in this thing at all. It was a question of where would it be done best and most effectively, and, if it could be done effectively and well in a capitalistic system by private enterprise, that's the way it should be done.

I did prepare a paper which gave the pluses and minuses on public ownership and private ownership, and we discussed that among the participants before we arrived at a drafting job. But President Kennedy requested then in the fall of 1961, directly to me, that we should come up with recommendations as to how the policy, which he had issued on July 24, '61, could best be put into effect. And you may recall that the policy paper itself stated that the Space Council would have continuing functions in this field.

So I drafted a series of alternatives, particularly as regards whether it should be a Governmental or a private entity for carrying out the policy.

Mostly the same agency representatives who had participated in the drafting of the policy document participated in the drafting of this piece of legislation.

Mr. Sohler: There must have been some different points of view on the private ownership matter even before this became quite a thing in the Congressional discussion of the bill. Weren't there people in the White House who differed with this, or people advising the President in one way or another who suggested this wasn't the route to be taken? Or was this pretty much everybody's consensus at that time?

Mr. Rothrock: It's a new situation, somewhat with ComSat but more with the supersonic transport, that the development costs and the risks combination is too great for private industry to handle in the way we had normally handled development projects in the past. This is sort of what we're facing up to in applications.

Dr. Welsh: Of course, as far as the communications satellite business is concerned, in some contrast with the supersonic transport, there was no question that it was something that could be handled by private enterprise. The risk was not too great.

Mr. Rothrock: The whole background--development of the booster system, development of the launch facilities, etc....

Dr. Welsh: Oh, yes, but those developments had taken place anyway, so this was a question of purchasing a competence rather than developing a competence.

Mr. Sohler: What I am really asking is: Did the first debate of this issue occur on the Hill, or was there an internal Governmental debate?

Dr. Welsh: There was a discussion. There was very little debate. I suppose that the majority of the people involved in the discussions in the meetings and in advising the President felt somewhat the same way I did--that this was something that could be handled by private enterprise provided the regulation was adequate in order to protect the public interest.

There were some who favored public ownership. They were in the minority. But, regardless of that, there was nobody whom I know of in the Executive Branch of the Government who thought for one minute that legislation that proposed public ownership could pass the Congress. So, just from a realistic point of view, even if they would have favored public ownership as against private ownership, they would not have recommended it because they could have gotten no action from Congress on it. The vote on the two bills is pretty good evidence of the fact that you couldn't have gotten anywhere at all on public ownership.

Mr. Rothrock: There's also the fact of cloture of the bill.

Dr. Welsh: That's right. You see, the bill passed the House initially 354 to 9, and it passed the Senate 66 to 11. Then there was some little modification, and then the final passage in the House was 372 to 10. So that you see there was a pretty one-sided vote on something where there was a whole lot of debate and talk and shouting and noise; there wasn't any question at all how the thing was going to turn out from the beginning.

Mr. Schier: Were there any meetings with the President where the pros and cons of a number of these policy decisions were discussed or was this a matter of staffing by you and other agencies and coming in to him with a policy statement in the first instance and later on a bill to approve?

Dr. Welsh: Well, it was largely the latter. He was kept informed, however, of the way the thing was going. He knew what we were drafting as we went along and we kept immediate members of his staff informed there.

Now, when the bill was drafted, however, it was sent down to him (he was down at Palm Beach) and he went over it word for word, debated each little piece of language in the thing, and, as a matter of fact, made a few little suggested changes. He went over the whole thing, so he was quite competent to get up and discuss it and know why and what was back of it

and so forth, but you realize now he had in the background this policy statement which he had also gone over and which had been approved unanimously by his top-level people and this was simply an extension of the policy statement. This was not a new policy now; this was an extension of it. It was putting into statutory form a means of carrying out and implementing what he had recommended in the policy statement.

Mr. Sohler: Theoretically, I suppose, the policy statement could have been carried out without legislation. I guess the ad hoc carrier group proposal, which might be said to be consistent with the policy, wouldn't have required any legislation. As I recall, you were going to have a nonprofit organization run this. What led to legislation?

Dr. Walsh: Oh, the main thing that led to legislation was a desire to protect the public interest. There was no certainty at all that you wouldn't be increasing the concentrations of economic power in the United States in private hands without legislation if you followed it the other way.

Mr. Sohler: There were a number of other things in the evolution of the bill that are interesting. One of them is this question of the price attached to shares of stock which, I guess, started out around \$1 million, then down to a hundred thousand in another draft, then down to ten thousand, then to a thousand and then down to a hundred. Could you give a little of the thinking about that?

Dr. Walsh: Well, those were not proposed by the same people.

Mr. Sohler: I realize that.

Dr. Walsh: The million dollars per share was proposed by Senator Kerr in his bill. He was in favor of having the control of the Communications Satellite Corporation largely in the hands of the AT&T and he was not in favor of widespread distribution of the shares of stock, and so a million dollars seemed reasonable to him.

We had initially proposed and we just picked the figure of a thousand dollars. The reason why we had picked the figure of a thousand dollars, which subsequently was reduced to a hundred dollars in the discussion with the Congress...the reason we picked the figure of something of that size was we had great confidence in the future of the stock and we were highly desirous that there be widespread distribution of it. Yet, we still did not want to have people with a very small amount of savings investing in this particular stock because they might need to be relying upon dividends coming out of it rather rapidly and we couldn't see the possibility of that. So we were trying to discourage people who could barely afford to invest in stock anyway, but still we were trying to get as wide a distribution as we could for those who could really afford to invest. It was sort of a compromise situation on this price question.

We have never, however, thought that the price of the stock was a significant element of principle in the passage of the legislation. We were quite willing to reduce it to a hundred dollars, and, as a matter of fact, they now plan selling the stock at twenty.

Mr. Sohler: The Justice Department registered no disagreement when they went down to a hundred after the bill had gone up there?

Dr. Welsh: As both Nick Katzenbach and I, when we testified... Katzenbach being from the Justice Department...indicated this was not a matter of importance to us how low the price was.

Mr. Sohler: Meanwhile on the Hill, as you were drafting here, Senator Kerr introduced a bill of his own. As I recall, that came out just before your bill went up. Do you know any of the background of that? Were the circumstances of drafting that bill ever discussed with you?

Dr. Welsh: Well, I would think that probably the circumstances of the drafting of the bill could better be gotten from some other source rather than from me. I know something about it, but...

Mr. Sohler: You didn't participate yourself in this with Senator Kerr?

Dr. Welsh: I not only did not participate but I was opposed to the bill as it was drafted.

Mr. Sohler: Yes.

Dr. Welsh: It had some pieces of language in it that were very similar to those we had in the bill we had been working on, but I was quite opposed to the bill which would have concentrated the control of the Communications Satellite Corporation in the hands of just the communications companies and that meant really just the AT&T.

Mr. Sohler: I guess there were a number of committees on the Senate side that would like to have asserted jurisdiction over this subject. Do you think this was a major reason for Senator Kerr getting a bill in fast so that the Space Committee in effect got jurisdiction?

Dr. Welsh: Well, I couldn't guess the reason why he wanted to get the bill in--whether he was persuaded by those who thought that was a good thing to do or whether he himself thought it out on its own merits. But the jurisdictional question was a problem because it not only had to do with space but it also had to do with commerce, and so you had at least the Space Committees and the Commerce Committees concerned in the two houses of the Congress.

But the bill which Senator Kerr proposed was dropped and the Congressional consideration was of the bill that was proposed by the President and it was passed with a relatively small amount of modification.

Mr. Sohler: This assertion of jurisdiction by the Chairman of the Senate Space Committee was not something that the President and you got involved in as sort of a maneuver on the Hill?

Dr. Welsh: No. As a matter of fact, we were definitely by policy not involving ourselves in the thing.

Mr. Sohler: I see. What about the prolonged argument that went on about whether the Corporation or the carriers should own ground stations? Is there anything in the background on that that might be useful to bring out here?

Dr. Welsh: Well, there might be something if we were really discussing in detail the history of the communications satellite legislation. I think at this point, however, we will say simply that it was a move on the part of the communications corporations, AT&T primarily, and the FCC, because they could see advantages in having the ground stations owned by the carriers rather than by the Communications Satellite Corporation. They could see that advantage because it would leave in the hands of the carriers pretty much the control of the situation. We really thought probably the best way was to have the Communications Satellite Corporation own the ground stations so that they would have, in fact, control over a significant element in the system in addition to just the satellites. But we compromised on the thing by saying either-or, so to speak, or both.

Mr. Sohler: President Kennedy was very interested in this particular subject as I think you've brought out here. Was this because this was one thing we were well ahead of the Russians on, or do you think it was more complex than that?

Dr. Welsh: President Kennedy's interest in the communications satellite thing was in part because it was an area in which we were ahead of the Soviets. In fact, this was one of the reasons why a great deal of attention was given to it. It is in the application of space competence for immediate uses to the public that the United States has been well ahead of the Soviet Union. But also the President was interested in it because of the tangible nature of it—he could see something definite coming out of the space program to justify the investment in it. He was a pretty practical sort of a fellow and he liked to see these tangible returns, and communications

satellites, meteorological satellites, and navigation satellites looked like the most positive outcome from a viable program. So he was interested in it from that point of view. He was also interested in it from the point of view of international relations, and the fact that it would have some positive impact on our peaceful relations with other countries.

Mr. Sohler: I wonder if you could say a little bit about the storm that broke on the Hill when the several bills were up there to be considered, particularly in the Senate, and the involvement, if any, of the President in this storm.

Dr. Welsh: Well, really, it was a storm but there wasn't very much damage from the storm. It was a good deal of vocal activity on the part of a very small number of the members of the Congress and particularly in the Senate, as you know.

So that the President stayed out of this. There was no question that the legislation was going to pass. The only question was, "When will it pass?" There was no question that it was going to be a very lopsided vote in favor of the passage, so, again, there was no point in using the President's asset of persuasion on such a very small number of people.

The debate and the amount of publicity that occurred in the press did have the effect of increasing the President's mail to a great extent. He got a lot of mail on communications satellite legislation and so did the Vice President get a fair amount of mail on it. It so happened that that added a little bit to the work that I had because I got the drafting job for both the President and the Vice President on their mail.

Another significant aspect of this thing was they did invoke cloture on the bill. Now, this was significant, not because of the legislation itself but because of the fact it established the voting of cloture in which we got a number of the people who usually vote against cloture to vote for it.

It may have some advantage in the future as a matter of precedent, so that I think the voting of closure was probably one of the most significant things that came out of the legislative procedure.

Mr. Sohler: Maybe we could wind up the discussion of communications satellites with some comment that you might have on the machinery that is now in existence in this Government for overseeing the evolution of the commercial system and the operation of the Corporation--the so-called ad hoc committee, jointly chaired by the Science Advisor to the President and the Deputy Attorney General at the present time.

Dr. Welsh: President Kennedy thought it was necessary to set up some means, or some organization, which would watch over the development of the Communications Satellite Corporation, and see that the legislation was being carried out as it was intended. You see, the Communications Satellite Act specified functions of the President of the United States, it specified functions of the State Department, of NASA, of the Federal Communications Commission, and so forth, and it was necessary that these things be carried out. It also meant that there was a good deal of international relations that would develop as we attempted to develop a global system for communications satellites.

A committee was set up (I happened to be a member of the committee) and it was really to fill the void that should not have been there, in a sense. There should have been a Director of Telecommunications in the Government who would have taken over this responsibility of following through on the implementation of the legislation. But since that position was vacant, a committee was formed and it's very possible that that committee may have worked itself fairly well out of a job now because we again do have a Director of Telecommunications.

Mr. Sohler: Well, why wouldn't this have been a good thing for the Space Council to have gotten involved in?

Dr. Welsh: Well, the Space Council was pretty actively involved in the thing from the beginning right up until the present, but for the Space Council to take over the function of day-to-day coordination and day-to-day operation and day-to-day decision on the allocation of frequencies and things of that sort would seem to me to be out of its proper role. There ought to be someone in a position to give full time to this, all the time, in the area of communications.

Mr. Schier: Maybe we could move on to a couple of other subjects that are perhaps a little briefer, one being the supersonic transport and the involvement of you, the Space Council, and President Kennedy in that particular project.

Dr. Welsh: On January 21, 1963, President Kennedy sent a memorandum to various interested agencies regarding supersonic transports, stating that he wanted these various agencies to participate in developing recommendations for activity in that field. He followed that with a memorandum on February 19, 1963, to the Vice President, asking the Vice President to take the leadership in coordinating the recommendations that were being developed in the field of supersonic transports. The Vice President immediately turned this into an expanded Space Council activity, in which he called Space Council meetings on supersonic transports. We had three detailed, extensive meetings--one on April 26, one on May 17, and one on May 30. In between these meetings there were various studies being made, so that reports could be brought in at the subsequent meeting.

But this wasn't the first occasion on which the Space Council had gotten involved in that subject. Back in August of 1962, at a Space Council meeting, it was concluded that studies should be undertaken by research organizations. Two of them were picked, studies taken as to the cost and as to the demand, the market potential and so forth of supersonic transport. So that these studies were undertaken under the leadership of the head of the FAA, but at the direction of the Space Council.

Mr. Sohler: There were two aspects of this project that one sees quite a lot of in the newspapers, one being the competition being given this project by the British and the French and the second being the extent of industry financial contribution to the project. I guess President Kennedy got pretty deeply involved in both questions. Could you give us a little background of his involvement and what these issues are all about?

Dr. Welsh: I should probably have followed up just one point and that is: After the May 30 meeting, the Vice President immediately sent a letter to President Kennedy reporting on the interagency recommendations regarding the SST and coming up with the proposal that we do proceed to undertake the development of a supersonic transport in this country, citing the numerous benefits such as the benefits to the balance of payments, the benefits to employment, the benefits to maintaining a viable aviation air frame and engine industry in the United States, and so forth.

The President in turn sent a message on June 14 to the Congress in which he recommended and said that he was going to undertake this supersonic transport development.

Now the main debate, I think, in regard to supersonic transport came as to how they should be financed. There seemed to be very little question that there is the technological competence in the United States to undertake the development of a supersonic transport superior to that which the British and French consortium are developing. That project is known as the Concorde and is limited to a Mach 2.2 and probably will be less speed than that. The Concorde is an aluminum airplane and has no growth potential so far as speed is concerned. The proposal of our committee was for something with speed in excess of 2.2 where it would have to go to steel or titanium and to increase the range over and above that which the Concorde would have.

The debate, however, came as to how much should the industry invest in this project and how much should the Government

invest in it. It was concluded that the whole thing should be paid for by private industry. It was to be commercial and the projection showed it would be a profitable venture. However, the amount of money involved in the development was to be so large that it could not be undertaken readily by private industry and so the Government was, in a sense, to advance the money for development purposes--in other words, to participate in 75 per cent of the development costs, while private industry would contribute 25 per cent. The idea being, however, that, once the aircraft became a commercial, profit-paying vehicle, royalties would flow back to the Government to make up the Government's 75 per cent participation.

Now this still seemed to be a very large figure to the people in the industry and, when the proposals went out for the competitive bids, none of the air frame industries and none of the engine industries proposed that they would contribute as much as 25 per cent. So at the present time we have no bid before the Government where any company is proposing that they would put in as much as 25 per cent.

The President anticipated that this would be a difficulty and he appointed Eugene Black and Stanley Osborne to make a special study in regard to particularly the financing aspects of the supersonic transports. After making the study, they came up with a proposal that the ratio should be reduced to 90 per cent by the Government and 10 per cent by private industry. They had a number of other proposals in their study but this was the most pertinent one, I suppose. This has not been either accepted or discarded.

Mr. Sohler: One got the impression from the newspapers in any event that President Kennedy was quite involved in this particular project personally in terms of his concern over the competitive environment as well as the financial matters.

Dr. Welsh: I think this is correct and I tried to imply that he was. He was very much impressed with the fact that here was an area in which two European nations were liable

to take away the business that we might otherwise have. He was very much concerned with the gold flow at the time and the position of the Secretary of the Treasury that this would be a very great boon to us on our balance-of-payments situation, so that he was impressed with it from that angle. He also was very much impressed with the tremendous cost and what was the advantage in going this much faster, so that it wasn't just a clear-cut black-and-white picture to him. But he was persuaded, by the Vice President and the fact that the Vice President had gotten the unanimous support from this large committee which we set up to consider it, that the thing should go ahead.

Dr. Eames: Is the RB-70 related to some of these considerations?

Dr. Welsh: Some of the RB-70 technology can be transferred to the SST, but there is such a wide difference between an aircraft developed for military purposes and an aircraft developed to be profitable and commercial.

Dr. Eames: That has been a prominent problem for the Department of Defense.

Dr. Welsh: Yes.

Dr. Eames: What about the Russian capability in the SST area? Was this at all a factor?

Dr. Welsh: The Russian capability was not much of a factor because we don't believe that the Russian aircraft would have much sale outside the bloc in any event.

Dr. Eames: Well, was the prestige value of importance?

Dr. Welsh: Well, it has that, but that was not a major argument in the thing. This was a little bit more on the practical dollars-and-cents basis rather than on the prestige basis.

Mr. Sohler: You mentioned a minute ago the attitudes of the President on a number of these issues. It's of some interest, I think, to know just how the President operated with respect to a project like this, for example. Were these things that he said at a meeting with you and the Vice President? Were these matters that one learned here and there, or partly at meetings and in papers? What was his method of operating with someone like you and other officials in this sort of area?

Dr. Welsh: Well, as far as the supersonic transport is concerned, I don't think I was in any discussion with President Kennedy more than once, but I did have a great many meetings with people who did discuss with the President, but primarily with the Vice President. And it was with the Vice President that President Kennedy had his discussions. Vice President Johnson was quite alert on this subject of supersonic transports. He had made quite a little study of it; he really did his homework on this. When he conducted these meetings he knew a lot of the figures and facts and that sort of thing, so that he was an excellent individual to discuss the whole thing with the President, and did. So that my relationship was more through the purpose of memoranda, the writing of the report that went in; I drafted the report which was later agreed to.

Mr. Rothrock: Was there much suggestion that the Government handle this project itself? The amount of money involved is about the same as we have, say, in the supersonic bomber project and this kind of thing.

Dr. Welsh: There was very little discussion that the Government make a Government-financed project out of it. There was a debate as to how much private industry should put in, but the general discussion was that private industry ought to support the whole thing. Now there were a few people who thought, well, if private industry won't support it, we still ought to go ahead with it, but even their first choice was private industry.

Mr. Rothrock: Then the discussions really didn't get to that point of them just bringing it up if private industry would not come in?

Dr. Welsh: No. Well, the Secretary of the Treasury was so sold on the idea of the supersonic transport that he thought that we ought to go ahead with it even if it had to be subsidized.

Mr. Sohler: In our discussions of these various subjects, there are certain names that haven't come up--Ted Sorenson, McGeorge Bundy, Arthur Schlesinger, for example. What role did any of these people play in the decision-making process of the President?

Dr. Welsh: I can't comment on that very well. I'm sure they played a role because they saw the President frequently, and he was a man who liked to probe into the minds of people with whom he was associated. He certainly saw these people, and I would say they undoubtedly had considerable influence on him.

Mr. Rothrock: Is there any indication that the President's suggestion of cooperation between the U.S.S.R. and the United States on the manned lunar flight had been discussed with these gentlemen?

Dr. Welsh: I think it was discussed with them, yes. I understand that it was, although I don't know this as a matter of record and, therefore, I shouldn't put it down in any matter of history, but that Mr. Schlesinger had a significant role in coming up with the idea and it was discussed with the Vice President and with the Administrator of NASA before it was announced by the President. It was not a subject that was taken up before the Space Council. It was a general statement of evidence that our interests were peaceful and we were willing to cooperate in this field. It was a ploy, so to speak, for better international relations rather than anything that had been specifically gone into as to how can this from a practical point of view be done. Now if you read the language of the proposal, you

will note that he doesn't limit it to the lunar activity or he doesn't limit it to a booster on their part and a spacecraft on ours. It could simply be cooperation on exchange of information. But this was not a matter that was discussed in the Space Council.

Mr. Sohler: We, in NASA, had the impression in the past that there were varying degrees of enthusiasm for space in the White House staff and that there were different points of view on various projects, including communications satellites. Were these differing points of view that might have existed matters that were talked out with you personally, or, if they weren't, were these matters that went to the President from these particular people? What was the method of operation in the White House on this matter?

Dr. Welsh: Well, some of these differences, and I suppose most of them, were talked out with me personally. That doesn't mean they necessarily stopped there or got settled at that point, or that I was so persuasive that the subject was dropped so that some of these matters wouldn't go to the President also, but the budgetary process is an interesting process and it does bring out into the open a good deal of evidence of the competition for the budget dollar. And it was competition for the budget dollar on which these views rested rather than on the business of people analyzing carefully that the space program is not worth its cost or it is worth its cost or the return will be great from it or the return will be small from it. The idea is: We want more for this program, we want more for that program, and the space program is taking so much that maybe, therefore, the space program shouldn't be getting as much as it is. So I think it's that type of competition, in the budgetary process, in which you get these different views as to whether the space program is important.

Now one of the major errors that is made by some people in the Executive Branch and to a great extent up on the Hill is criticism of the space program, such as: We ought to do more for slum clearance, we ought to do more for education, we ought to do more for medical research, and

if we didn't spend so much on space, why, it would go into those other things. That's an error. There is nothing at all automatic about cutting down on the amount going into space. The funds cut do not necessarily crop up over here in more for education or more for slum clearance or anything else. It's just that, if people are in favor of cutting, they cut—they don't put it in to meet some other urgent need.

But there has been some feeling within the Executive Branch that maybe too much is being spent on space because, if it weren't so much on that, then more money would go for something else. I think that's the main thing.

Mr. Schier: Did the President ever express himself on that particular point?

Dr. Walsh: Yes, he did. Yes, he expressed himself frequently on that point, because we would have these various meetings with him about what we were going to do on space and he would want to know, How much is it going to be? and then he'd say, Well, gee, we need money for this purpose, too, and money for that purpose. And so that he did express himself on this point, but he still was sold on the space program.

Mr. Schier: But I mean the argument which we have all used quite a lot—that just because you have a lot being spent on space doesn't mean that it's hurting the aid program, or some other program. There are different committees on the Hill and there are different considerations, obviously. Did the President ever make that kind of semiphilosophical point, or was he dealing with facts and figures?

Dr. Walsh: I think he made that point. He was dealing a good deal with facts and figures, but he also was very much persuaded by the idea that real benefits to our economy will flow out of the space program. He was quite persuaded that this was a good investment in the future. He was persuaded to a considerable extent by the influence of people, to a minor degree by myself, to a major degree by the Vice

President and so forth, but I think he was concerned with juggling the short-run benefits with the long-run benefits, and it was a difficult philosophical question.

Mr. Sohler: His own enthusiasm evolved a great deal, didn't it, from the early days of his Administration until his death in terms of this interest in space? We had the feeling he was pretty skeptical at the beginning and at the end he certainly was an enthusiast.

Dr. Welsh: There is nothing that sells an individual more effectively than to hear his own voice express enthusiastic support for something, and he made some pretty enthusiastic speeches, and he sold himself in those speeches as well as he did others.

Mr. Sohler: Did his involvement with you, with the decisions, with the program, change as he got more interested? In other words, in the beginning we get the picture of the Vice President being the man he was looking to for advice and recommendations. Later on was that any different? Did the roles change in any respect?

Dr. Welsh: I don't think in any significant respect, no. If anything, the role of the Vice President relative to other individuals in the Government increased in influence as far as the space program was concerned.

Mr. Sohler: In the area of U.S.-Russia cooperation in space, did you play a role in, for example, the U.N. address in 1963 suggesting collaboration in going to the moon? Was this something that you got involved in? Do you know any of the background of this? You have discussed this a little bit already.

Dr. Welsh: I think we already have discussed that by my saying that the Space Council did not get involved and that I personally did not get involved, and also by saying that it was discussed with the Vice President and the Administrator of NASA.

Mr. Sohler: This was a theme that seemed to start with the Inaugural Address and go all the way through the speeches of President Kennedy. Did this theme have its origin in his own thinking, or where did this come from, do you think?

Dr. Welsh: Well, I can't guess with you except to say that a strong motivating force in almost all of President Kennedy's thinking was this idea of world peace and trying to contribute to world peace, and anything where you could cooperate with other major antagonists on any kind of a project seemed to him to be a little slice in the right direction for world peace. This would be my main thought on this.

Dr. Enge: The whole summer of '63 was the "space dialogue," as some of us call it, starting with Sir Bernard Lovell's comments that the Russians really weren't going to the moon and that here we were doing this massive, expensive effort for the lunar landing in this decade. Then, of course, there is this rather nasty article in the Reader's Digest in August that also is very critical of the lunar program. Did you or the Vice President have something to do with analyzing the Reader's Digest arguments?

Dr. Welsh: Well, all I would comment was that there were a number of attacks on the space program, particularly on the lunar part of the space program--attacks that it was costing too much, that it wouldn't be worth the effort, that there were risks involved, and then that there wasn't anything to race because the Soviets weren't going to go into the thing. All of these problems came up. The one that there wasn't any race didn't carry much weight because this was such an obviously incorrect interpretation of what Premier Khrushchev had said that we didn't lend any credence to that and so the President didn't. But President Kennedy was very sensitive to the criticism such as appeared in the Reader's Digest article and in some other articles. So we discussed this at a Space Council meeting and came up with some proposals as to how this could best be answered and some things of that sort, but I only think it's worth mentioning at this time to show that he was sensitive to this criticism of his decisions. He was sensitive and he wanted them responded

to, and so that a number of us did, in our speeches and so forth, tend to respond as best we could.

He was also concerned about Reader's Digest, which is anything but a progressive publication from a policy point of view. It's an interesting compilation of information. It has such a wide circulation, however, that it was troublesome to him. He was also concerned about the possible criticisms that occasionally occurred in Time and Life magazines and Fortune magazine, and so forth, and so that he would again raise questions about that. I had a number of contacts with him on that very matter of how does the public react to this space program...I see this article, I see that article...is this symptomatic or is it just an exception?

Mr. Sohler: Did he ever suggest why don't you have lunch with such and such a reporter and straighten him out? Was there that sort of technique used?

Dr. Welsh: He didn't suggest that to me, but I couldn't say that that suggestion wasn't made.

Mr. Rothrock: Well, in the debate in the House on the authorization bill of NASA for '63 was the first time I remember that there was definite criticism of the NASA appropriation and largely from the standpoint of not enough military emphasis on the program, although the Senate debate in that year was more or less across the board--such criticisms that were raised.

Dr. Welsh: Yes, well, I already referred to that earlier in here. I might add this, that on July 29, 1963, President sent a memorandum to the Vice President regarding a growing number of attacks on the Apollo program, citing in particular then the August 1963 Reader's Digest article and asking that certain points be analyzed and to provide information back to the President in regard to what these points were in this Digest article and whether they had any bearing and any fact to them, any support. Two days later,

on July 31, the Vice President transmitted the requested information back to the President by letter, and the Space Council meeting was held about that at that time.

Mr. Sohler: I think we've got one loose end here--the nuclear propulsion area. Was there any particularly interesting involvement with the President or the Space Council on this that you'd like to have go into the record here?

Dr. Welsh: Back in March of 1961, when the Supplemental to the fiscal year 1962 budget was decided by the President, one of the items for which he favored increased money was the Rover program, and the President did support the nuclear rocket system throughout his whole career in the Presidency.

It was in March of 1961 that the supplemental request, I believe, went in for \$9 million more for the Rover program and related facilities. In his May 25 speech to the Congress, known as "The Lunar Message," which was a special message on urgent national needs, President Kennedy asked for added funds, some \$23 million, to accelerate the development of the Rover nuclear rocket. He said: "This gives promise of some day providing a means for even more exciting and ambitious exploration of space, perhaps beyond the moon, perhaps to the very end of the solar system itself."

Also, on December 12, 1962, the President was asked in a press conference whether he intended to spend more money (the President had just gone to Los Alamos and visited there) to speed up the Rover project, or for nuclear propulsion in space. And the President's response, which is in the record, of course, was that we have to see how the tests went--if they went well, obviously, we would push more but we would have to wait and see. But he didn't drop his enthusiasm for the nuclear space program, and this continued to be stimulated by Senator [Clinton P.] Anderson, Senator Pastore, Congressman Holifield, and others in the Congress.

Mr. Rothrock: It is interesting that he essentially was making a tactical decision at that time that we were going to hold back on the flight program until we had more success from the ground programs than we'd had to this point. The President was making a tactical decision which, in my opinion (I was in NASA at the time), NASA should have made itself.

Dr. Welsh: Well, I have no comment to make on that. The nuclear rocket program has gotten a confused press, so to speak. There have been those who claim that you could do everything with nuclear rockets and there have been those who have said it's not practical and we can do everything without them. So it was a very difficult job for the President to support this, knowing it wasn't going to be used right away, knowing that it wasn't going to even be used on the lunar program, you see. So that it was a difficult thing for him to talk about spending more and more money on this thing, but he did support it. But it was less support than was asked for and it was more support than the Bureau of the Budget would have provided if it had been left up to them, and more support than if it had been left up to the Office of Science and Technology. And that continues to be the situation.

Mr. Schier: Thank you very much, Dr. Welsh.

Interviewee:

Edward C. Welsh

Interviewers:

Walter D. Schier

Addison M. Rothrock

Eugene M. Enne