

**Harold Brown, Oral History Interview—JFK#6, 7/9/1964**  
Administrative Information

**Creator:** Harold Brown

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**Biographical Note**

Brown, Director of Defense Research Engineering in the Department of Defense from 1961-1965 and Secretary of Defense from 1977-1981, discusses the cancellation of the Skybolt missile program and problems that caused with U.S.-British relations; multilateral military forces; struggles between the Air Force and NASA over control of the space program; and the lunar program, among other issues.

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Harold Brown—JFK#6

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Sixth of Six Oral History Interviews

with

Harold Brown

9 July 1964

For the John F. Kennedy Presidential Library

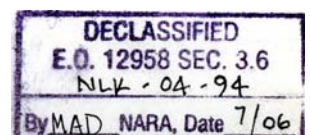
INTERVIEWER: Well, the remaining questions that we can discuss include at least two weapons systems and the problem of the military role in space. The weapons system that is drawing the most attention perhaps is Skybolt. Did you have much of a personal role to play in this, or was it your staff that was principally involved?

BROWN: I was involved in the decision and very briefly in the subsequent negotiations with the British, but the discussions which took place with Prime Minister Macmillan [M. Harold Macmillan] in Nassau in December of 1962 were handled for me by John Rubel [John H. Rubel], my deputy. So that I can tell something about the genesis and a certain amount about the consequences by hearsay, although I was involved in some of the international ramifications as well.

INTERVIEWER: Rubel's role predated yours, didn't it? Wasn't he here...

BROWN: Well, actually Skybolt goes back to 1959, and there was a long genesis, a difficult development period, then a reconsideration of its desirability in 1962, the summer and fall of 1962, and then some subsequent political consequences.

I think there is very little doubt about the proper thing to do from a U.S. standpoint in 1962, because several analyses indicated that the Skybolt role, which was principally one for



us—that is, for the U.S. the Skybolt role was principally one of defense suppression, that is, knocking out

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surface-to-air missile sites, fighter bases, and so on, so that the bombers would have a better chance of penetration. That role could better be handled at a lower price and with greater assurance by a combination of Minutemen launched from the U.S. and Hound Dogs launched from the bomber force itself. The Hound Dogs were air breathing missiles.

INTERVIEWER: What would the advantage of the Skybolt have been over the Hound Dog?

BROWN: Well, it would go farther and faster since it was a ballistic missile. Its lethality was about the same; that is to say, a combination of CEP [circular error probable] and yield. To the extent that ballistic missiles are less vulnerable and more certain to penetrate than air breathers, it had that advantage as well. But it did not have any of these advantages over the Minuteman. It had them over the Hound Dog. And the combination of Hound Dog and Minuteman could do the job. This we established during the summer of 1962, and then at the same time it was true that Hound Dog was slipping in time, and...

INTERVIEWER: Skybolt.

BROWN: Yes, Skybolt was slipping in time and having development difficulties, but that wasn't the reason for the decision nor was it ever given as the reason for the decision. It entered into the examination of the desirability of Skybolt versus the others, and it was a factor, but it wasn't the main reason.

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INTERVIEWER: Was the mission at all changing?

BROWN: Not for us. I think the Skybolt was the Air Force's—in 1959 really started out as the Air Force's way of launching missiles from the air, just as they were going to be launched from the ground and from under the sea. But by the time 1962 rolled around, it was clear that as such it didn't have any advantage. Its only advantage was that it could associate defense suppression missions with the aircraft fleet that needed the mission done for it; namely, the bomber fleet as it would be going in in a strategic strike.

Well, all of these studies were done in the summer of 1962, but with the B-70 fight of the early spring of 1962 in mind, it was decided not to make a decision at that time, but to defer it until the fiscal 1964 budget was being decided. That happened in the fall of 1962, October and in November, and during the discussions with President Kennedy [John F. Kennedy] in November of 1962, just after Thanksgiving, this was one of the decisions that

Secretary McNamara [Robert S. McNamara] put up to him for approval, and he did approve it.

There was some conversation at that meeting about why we should cancel it for ourselves, and it turned out to be worth a billion or two billion dollars, a billion and a half dollars, that we saved a billion and a half dollars by deciding to do what it would do in an alternate fashion.

At that time it was pointed out, I remember by Weisner [Jerome B. Wiesner]

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perhaps by others of us, that the British had a different purpose in mind for it. The Skybolt in their mind was a strategic system for use against populations, against cities, and therefore they had nothing else to replace it with, at least there was no easy replacement.

INTERVIEWER: This was similar to the original Air Force conception of it.

BROWN: Yes, and it replaced a British system, the Blue Streak, I guess, which was to be a missile system launched from the ground, and which they cancelled because they realized how expensive it would be for them to build it on the basis of an agreement with the U.S. that they could have or buy Skybolt from us if we completed the development. Now, they subsequently remembered the agreement as being somewhat different than it was. There was no commitment made by the U.S. at that time to finish Skybolt. It was only an agreement that if we did complete it, they could buy it. But in 1962 the thing looked very different to them than it had—they remembered it differently than they had thought of it in 1959 or 1960, I guess, when the agreement was made. It was clear that this posed very, very great problems to them.

Rubel had been over in England in October, and I think he reported to McNamara when he came back that the British viewed this as a very serious political problem for them, in that the government considered it an item which affected its prestige very,

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very strongly, that it was not a simple matter for them. They were really depending on us.

INTERVIEWER: Had they made some shoestring decisions?

BROWN: Who?

INTERVIEWER: Earlier, the British, in turning to Skybolt?

BROWN: Well, it was a cheap decision for them because it didn't involve them spend any money until the time came to purchase it, any substantial money. I think they perhaps spent ten or twenty million dollars to modify some of their aircraft so that they could carry it if and when it became available.

They felt they had no commitment to buy it, by the way. They felt that we had committed an option; that this was not the case doesn't really matter, except as a question of recrimination, which I don't think is very useful here.

At any rate, the government knew—that is, McNamara knew, and he did let Watkinson, I guess it was, the British Minister of Defense at that time—know that this was the case. I believe it was Watkinson [Harold Watkinson], but I am not sure. It may have been—Thorneycroft [Peter Thorneycroft] may already have been the Minister of Defense. That was in November, right after the decision was made here to cancel.

INTERVIEWER: Wasn't the decision made on a tentative basis?

BROWN: No. Well, it was made during November.

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During the summer, McNamara said, "We can't make the decision now. We will have to reexamine it." In November the decision was made and ratified by the President.

INTERVIEWER: Was it an out and out decision not to build it, or...

BROWN: To cancel the development.

INTERVIEWER: Or was it to cancel the development if we can get it by the British?

BROWN: No, it was to cancel the development, and that we would let the British know and fulfill our obligations to them. We did have an obligation to let them finish it at their own expense, which they regard as ridiculous. They had never had any intention of doing that, because it would have involved a couple of hundred million dollars.

The British, of course, had gotten word from the contractor and from our Air Force people—you see, they had liaison people working on Skybolt—that this was a possibility. Hence the expression of concern which Thorneycroft or Watkinson, whichever it was—I think it was Thorneycroft—gave to Rubel when Rubel was there in October. Looking back on it, it seems to me that there was a failure of communication of a rather odd sort. The British could not believe that we would cancel it, and we could not believe that they would not believe that we meant to cancel it. That is why the thing reached the proportions which caused it to be a subject of discussion at Nassau in

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December 1962, and which required British face to be saved, or British strategic capability to be preserved by the Polaris agreement which was substituted for the—I won't say substituted—which was used as a palliative of the Skybolt decision. Namely, the Polaris



decision to which I refer was the one by which we would sell Polaris missiles, A-3 missiles to the British, and that is an agreement that is still in force.

INTERVIEWER: While the British build the boats.

BROWN: Yes, they are building the submarines. As part of that same agreement at Nassau, or a corresponding offer, but not quite identical, was extended to General de Gaulle [Charles A. de Gaulle], because it was realized that the French would take this as a Anglo-Saxon plot, which they did, and the offer extended to them didn't stop them from taking it as such a plot, nor from using that as one of the excuses they used for excluding the British from the Common Market,

So I would myself not judge that these great events had their genesis in the Skybolt decision. I think the Skybolt decision was used, first by the British as an excuse to get a different deal with us, and second, by the French as an excuse for something that they were going to do anyway.

INTERVIEWER: You think the British wanted a different deal from us?

BROWN: They didn't really—I don't know whether they ever really intended to buy Skybolts. I am sure they did not

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intend to buy very many. They used it as an occasion to reaffirm the close particular relationship between the UK and the U.S., the special relationship, as they call it, which is a valuable one, and a real one. The French in turn used that as an excuse to bar the British as non-Europeans.

INTERVIEWER: Let us move back to the elements of this. You have given an indication in several of your asides, both today and previously, and I may have taken the wrong inference, that the Skybolt decision was part of a larger de-emphasis on the role of the manned bomber.

BROWN: The Skybolt was a missile, and I think during the subsequent controversy within the U.S., I was frequently tempted to say that over and over and over again to various congressional critics, "You are talking about a ballistic missile, the absence of which you claim is downgrading a manned bomber."

INTERVIEWER: Was that ballistic missile, when directed toward the mission of defense suppression, an enhancement of the role of the manned bomber?

BROWN: What it was was one requirement for a manned bomber—namely, that defense suppression targets be suppressed, and the question was how

you were going to do that, whether you were going to do it with ballistic missiles delivered from the same bomber, which had to be—or same fleet, which had to be protected from these defense capabilities,

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or whether you were going to do it by delivering air breathing missiles from the bombers, and ballistic missiles from the ZI, from the U.S. The bombers could get through just as well if the defense suppression targets had been suppressed by one means as by the other, and the identification of Skybolt decision as a downgrading of the manned bomber was partly just an emotional reaction, because the bombers now no longer would launch the ballistic missiles. They would launch air breathing missiles, and ballistic missiles to do the same thing would still be launched from the U.S., or could by Minuteman, for example.

INTERVIEWER: Would the bomber launching the Skybolt be a more attractive weapon system than the bomber just launching the Hound Dog?

BROWN: Well, other things being equal, and leaving out the Minuteman launch from the U.S., and ignoring the fact that Skybolts didn't exist, and the Hound Dogs already did, I think that the answer is yes. So the decision to cancel Skybolt failed to upgrade the capability of the bomber considered by itself. The decision, of course, was made in a broader context of total capability. I think that that was partly responsible for the difference of view between the Secretary when he made the decision, and the bomber advocates who criticized it. But the words that were used, such as the words that were used to attack the decision to cancel Skybolt, such as that the cancellation of Skybolt meant that the bomber's

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useful lifetime could no longer be extended into the 1970s, and so on, that kind of statement, when analyzed carefully, was really more critical of bombers than the decision to cancel Skybolt was, although people who made the statement may not have realized that, and may not believe that even now.

I think the decision to cancel Skybolt was partly motivated by a belief that defense suppression targets as a whole were becoming less important because the manned bomber was becoming less important, and that to build a new system to better allow an old system to do its job was kind of a losing game.

But this was one particular analysis which was made by lots of different people, and they all came out with the same answer. It is a much more straightforward cost effectiveness calculation than can usually be made, because the weapon system that Skybolt was being compared with, the combination, Hound Dog launched from aircraft plus Minuteman from the U.S., was in every sense a complete substitute, and you could then just compare the different costs.

INTERVIEWER: Over the long run, how long is the Hound Dog going to be available?

BROWN: Through the 1960s, at least. I forget how many there are going to be in the inventory, but of the order of 500.

INTERVIEWER: Have you ever had any intuitive rather than cost effectiveness views about the future of the manned

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bomber?

BROWN: I think that almost everybody's views pro and con are intuitive rather than analytical, and this includes my own. My own are that it is a good idea to have some manned aircraft in a strategic force, because they can probably do some things better than missiles can do them. It is not clear that these are the most important things, so it is not clear to me that you need very many, nor is it clear to me that they need be very, very long range bombers, nor is it clear to me whether they should be used for counter-force or as counter-city capabilities. I think most of the arguments for manned bombers are phony, but I still think we ought to have some manned aircraft.

INTERVIEWER: Your intuition tells you that they are phony, and your intuition also tells you that you ought to hedge against...

BROWN: My intuition tells me that the arguments are mostly incorrect, but that bombers are enough different from missiles, and I can see a few things for which they are better, so that I think we ought to hedge. One thing they can do is go and look, which missiles can't do. Now, a combination of missiles plus indirect bomb damage assessment capability or satellite reconnaissance can probably come very close to doing what the aircraft can do. But it is not quite the same.

INTERVIEWER: Leaving aside and going beyond the Skybolt

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decision, were there any particular points in time or critical places in the development of strategic concepts over the two years of the Kennedy Administration?

BROWN: Would you say that again?

INTERVIEWER: Were there any points in time or phases in the development of strategic concepts where your intuitive feeling about the manned bomber's goal was a special input?

BROWN: Not particularly, because I think it made me more sympathetic to the

idea of the RS-70 than some people may have thought I was, but when I analyzed the RS-70 in terms really of what my own intuition told me a bomber should do, I concluded very strongly that what the Air Force was proposing would not do that, so that it was not the right way to go at it. That is, what they were claiming just could not be done, and what everyone would like an aircraft to do, if it can't do what you say it is going to, then it is not going to be a successful aircraft.

INTERVIEWER: Getting back to the Skybolt for a minute, the principal arguments against the Skybolt which were developed in the documents which immediately preceded the decision were not the ones, or don't appear to be the ones which you presented, although you give a very statesmanlike rationale. What were the technical problems in the development of the Skybolt, and exactly how significant were these problems?

BROWN: They were severe, having to do with keeping

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a very complicated guidance system in operation for a period of many hours in flight before launching the missile. Although the guidance system along toward the end was coming along quite well, it was much more complicated than it could have been and still have been reliable, so I think it probably would have had a fair amount of trouble, and was having some trouble as we went along.

The first few tests of the missile were failures, different failures each time.

INTERVIEWER: There was a successful launch, wasn't there, after the...

BROWN: That was after the cancellation, yes. But the first few had been failures of different kinds, all of which supported me in my conviction that it would take longer and cost more, but I always believed, and still believe that it could have been made to work, and would have had some real capability.

INTERVIEWER: What was your own role in the decision, and what was your relation to the President on it?

BROWN: The decision to cancel.

INTERVIEWER: Yes.

BROWN: I had proposed canceling it in the summer of 1962 to McNamara, and so did Charley Hitch [Charles J. Hitch], the comptroller. He, as I said, postponed the decision, didn't say that he would cancel it or that he would not, although I was convinced from

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our discussion that he would, but he wouldn't make a decision, and he wanted to defer the decision.

Then when the decision was made by McNamara, it was made in terms of a memorandum to the President, as part of a memorandum involving strategic forces, and Hitch's people wrote that up, and I participated in drafting.

This was one of three or four major decisions which McNamara took up personally with the President in November of 1962, at a meeting on the budget at which I was present and answered some of the questions which were raised about the decision by the President, having to do with the penetrability of the Skybolt, the penetrability of Hound Dog, the ranges of the two missiles, comparative efficacies. That was it. That was the ratification of the decision. What was left was the international aspects which kind of blew up in our faces.

INTERVIEWER: You did not go to Nassau?

BROWN: No, I didn't. Rubel went. He was called in at the last minute really to negotiate—not to negotiate, but to have someone there who knew the historical background of what had been agreed with the British back in 1960. He had, as you say, been very closely associated with the generation of the project and the management of it, from 1959 on.

INTERVIEWER: Was there any impact on our attitude or the British attitude of their coolness to us over the Cuban crisis, which is almost contemporaneous, a month or so before?

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BROWN: I don't think that the two things were related.

INTERVIEWER: I gather there was a study that was undertaken at the President's request within a year after the Skybolt decision. Do you know anything about it?

BROWN: Yes. He asked Dick Neustadt [Richard E. Neustadt], Professor Richard Neustadt of Columbia, to make an analysis of what had happened so that the proper lessons could be drawn. Neustadt came down and interviewed me, among others. He must have interviewed 30 or 40 people about it. I am not sure, but he may have spoken to some of the British. We spent about an hour together talking about it. I learned things about it. I think I taught him some things about it. We discussed some hypotheses which seemed very interesting. I don't really remember now what they were. I assume they appear in his report, which, however, has not only not been made public, but I think has never been distributed to the government. I think he did make it to the President shortly before the President was assassinated, but I don't know what has since happened.

INTERVIEWER: Do you know anything about the conclusions of the report?

BROWN: No, I don't. I am not trying to make a mystery out of this. I am not sure that the conclusions are all that world-shaking.

INTERVIEWER: What was the point in studying the decision?

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BROWN: It wasn't really studying the decision. It was studying the interaction of ourselves with the British, of which the decision was just a little piece.

INTERVIEWER: The diplomacy was the focus.

BROWN: That is right. What we communicated to them, what they understood from what we said, what they apparently failed to understand, what the interaction was with their local politics, what the interaction was between the State Department and the Defense Department, and so on. I mean such questions as why did the State Department apparently leave it to the Defense Department to negotiate this with the British?

INTERVIEWER: Maybe we can move to another perhaps similar, perhaps not affair, the development of the MLF [multilateral force]. At what point did this become an issue that you were aware of?

BROWN: This was one that I had really very little to do with. I was aware of it as a spectator. It was generated in the State Department. It has been a State Department project ever since. We have been in it as supporters of an administration decision to proceed with this.

INTERVIEWER: That decision wasn't made until very recently.

BROWN: Oh, it has been made and remade. President Kennedy made it. President Johnson [Lyndon Baines Johnson] has reaffirmed it. I did get into it in terms that I was an observer more than a participant, but I was in the discussions which were held in the

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Defense Department about whether it made sense to have a submarine multilateral force or a surface ship multilateral force, with our Navy people successfully maintaining that a surface ship multilateral force is hard, but feasible, and a submarine multilateral force is nautically impossible, militarily impossible.

INTERVIEWER: Why is that?

BROWN: Well, the contention is, and I guess I believe it, that a submarine is so much more complicated to operate than—particularly a nuclear submarine is so much more difficult to operate than a surface ship, that the crew have to know all kinds of stuff about its operation, that is, individual crew members have to know a great deal about the whole of the operation, and they have to work together much more as a team than on a surface ship.

INTERVIEWER: But you only need multilateralism for the firing, not for the navigation.

BROWN: Well, that of course is the problem of the whole multilateral force. The question is not so much who shall operate as who shall control, and the captain controls the ship, at least he does on any ship I have ever been on. Now, it may be possible to put into the missile system somewhere or the warhead, I think it probably is, a circuit, a subsystem which makes it unfireable except on the insertion of the right code which can be withheld from everybody on the ship and sent from

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a higher headquarters, which in turn operates under the civilian direction of a NATO [North Atlantic Treaty Organization] council. Under those circumstances you could have submarines, you could have a surface ship, it would not matter, or a land-based system, and it would not matter very much. But for political reasons, it seems to the State Department, and I think is quite important to have a sense of participation other than the voting on release or decision to fire. It seems important to have participation by the military of the various NATO countries. Otherwise, it would not in fact be multilateral in operation, only multilateral in control, or direction, which of course NATO forces are supposed to be anyway.

INTERVIEWER: Were there also factors of cost and security involved?

BROWN: There was a fear—well, there was a rather strong argument made by Rickover [Hyman G. Rickover] which again I believed, although not as much as I believed the other argument, that the submarine's operation, participation in the submarine's operation and particular operational procedures would be known by everyone on the submarine, and would compromise the security of information about how our own submarines operate and what their own features are to an unacceptable degree.

INTERVIEWER: Were there discussions of multilateralizing long range strategic weapons, such as Minuteman?

BROWN: Not in the Defense Department, at least none that I was involved in. Again I think we have talked in the

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past about committing some Minuteman forces to NATO, for example, as a possibility, just as we now have five Polaris submarines committed to NATO. This was another part of the Nassau agreement if I correctly remember it. But that does not give the Europeans the same feeling of participation. The fundamental problem in all of this, of course, the fundamental question, the one that everybody is thinking about, is how do you give the Germans enough of a sense of participation so that they don't go get their own nuclear weapons, or get involved with the French to have a joint French-German nuclear force, and at the same time give them little enough control over them so that none of the other Europeans are too worried about it, or the Russians, for that matter. I think we worry more about the other Europeans who don't trust the Germans.

That has been the problem, and I think it is an insoluble problem.

INTERVIEWER: Who made the decision for the Defense Department? When and how was it made, that the MLF was acceptable to the U.S. defense policy?

BROWN: This was made I think by Gilpatric [Roswell L. Gilpatric] at a series of meetings which I have been referring to, and at which I was present.

INTERVIEWER: In what year?

BROWN: This must have been in the spring of 1963, although I am not sure. It may have been earlier.

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INTERVIEWER: Has the Navy accepted the decision wholeheartedly?

BROWN: Well, the Navy, of course, is really acting as a technical advisor to the—well, they have really been active in getting the technical proposal ready. The State Department is really handling this. The leader of the group that has been discussing this with the various European countries was Livingston Merchant [Livingston T. Merchant], and I am not sure whether he still is—the Navy has been providing planning, programming, technical information through Claude Ricketts [Claude Vernon Ricketts], the Vice Chief of Naval Operations, who just died last Monday. But the Defense Department has not been in charge of these negotiations, nor have they been the prime movers in the MLF.

INTERVIEWER: How strongly committed to the MLF have they been?

BROWN: Well, we are committed with the U.S. This is an administration position, as I say, reaffirmed by President Johnson, and it is an official U.S. position. If the other NATO countries go along, it will be implemented. As you know, there is an experimental test on a U.S. destroyer, I think it is a destroyer, of a mixed man force.



INTERVIEWER: To what extent did you deal with the President on this?

BROWN: It came up at one or more NSC [National Security Council] meetings at which I was present, but I was so little involved that I don't

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really remember what the discussion was.

INTERVIEWER: Well, let us move on to the space problem.

BROWN: Yes.

INTERVIEWER: It has been widely said that there have been struggles, at least there were at an early point, between NASA [National Aeronautics and Space Administration] and the Defense Department over the control of the space program, and over the definition of the line between NASA.

BROWN: Yes. There were strong conflicting currents in 1960 and in 1961 as to who should do what, and what it really was was an attempt by the Air Force to take over the NASA space exploration role on the basis that it was—they were qualified and had managerial capability, and would automatically ensure that these endeavors would lead to the maximum national security fallout, the maximum gain in military capability.

This goes back, really, to 1960 when there was an Air Force committee set up to examine Air Force possible roles in space considered as broadly as possible. I was a member of the committee, but I didn't subscribe to the report.

INTERVIEWER: You were there as a consultant?

BROWN: Yes, in 1960. President Kennedy, after he was elected, set up a space committee of which Jerry Weisner was a member, which said many of the same things, as a matter of fact, and then in 1961, when we had responsibilities, we reached very different conclusions.

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INTERVIEWER: You didn't accept the first report?

BROWN: No. We reached very different conclusions than what were in the Air Force report. The report of the space group that Weisner was on I don't think was nearly as strong, but it implied some of the same things. But in 1961 it seemed to me during that spring when policy was being hammered out that, one, the Department of Defense was big enough already; two, it had not really, or the

Air Force had not really demonstrated so very much greater managerial competence than anybody else; and three, and most important, there were enough deficiencies in our military capabilities so that efforts of the Defense Department should be addressed to those, rather than trying to go off and explore space.

INTERVIEWER: The Air Force arguments were strictly on their managerial capabilities?

BROWN: No. I think I made the others. They were that there was a terrible military threat from space, the nature of which was not clear, but if only we could go out and explore, we would be able both to find out what it was and protect against it. All during 1961 and halfway or all through 1962 as well, there was a drumfire of Air Force and public alarmism about this question. What happens—well, Soviet satellites are very close to Washington. They are only 100 miles overhead. Isn't that terribly dangerous? What would we do if they issued an ultimatum without ever making quite clear what the ultimate—

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what the “or else” in the ultimatum might be?

Well, in 1961 we considered a number of possibilities. We considered putting those parts of the Air Force which wanted to do exploration, giving them to NASA, just keeping those who were interested in military things in the Defense Department. We considered the possibility of taking on the space exploration role in the Defense Department, and we considered splitting the role between the civilian and military as best we could. We did the last of those three, which was the obvious thing to do, of course.

Also we considered the question of whether there shouldn't be some super-agency to assure that NASA and DOD efforts were really closely coordinated, that there were no gaps, and that there were no overlaps. I think it was concluded, probably rightly, but I think with foreseeable consequences, that you could not have anybody between the President and the cabinet member and agency head—that it was up to them to thresh out their problems. The Space Council, which provides a forum, is still only a forum. It makes no decisions. And therefore no special provision should be made here.

The foreseeable consequence is that there has been overlap, there has been conflict, and looking back I am not sure that it could have come out any other way. But one thing has happened, and that is that the military have been confined to a military role in space. There was a time when it looked

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as if there might be a very, very divisive and damaging conflict between OSD [Office of the Secretary of Defense] and the Air Force. John Rubel spent hours censoring Air Force speeches to take out of them the things that could have led, well, the misstatements and provocative statement that could have led to such a conflict. There was a large publicity mill in the Air Force that kept turning out things, many of which inevitably did get out. But the

enormously wasteful and diversionary, so far as real military capability is concerned, efforts that could have been started by the Air Force mostly did not take place. Most of them we did not let happen.

INTERVIEWER: What were they?

BROWN: Oh, they wanted a much bigger space station program than we have ever thought about. They wanted a large bombs-in-orbit program for a while. They came in with about a \$5 billion space program in the fall of 1961, for the fiscal 1963 budget, which never saw the light of day. I think very few people know about it even today. It essentially would have taken over all of NASA's functions and done a lot of military things, or alleged military things. The Saint Program, you know, rendezvous with every satellite at the cost of \$100 million a rendezvous.

INTERVIEWER: This is to inspect it?

BROWN: Yes.

INTERVIEWER: Was that to take it apart or to look at it?

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BROWN: Visit it, look at it, take it apart, take pictures of it.

INTERVIEWER: This was called the Saint?

BROWN: Well, satellite inspector. Saint was an acronym, and a not very felicitous one.

INTERVIEWER: Was there ever any explicit assignment of responsibility along these broad lines?

BROWN: Yes, that happened in May of 1961. There is a paper that went up from Webb [James E. Webb] and McNamara through Vice President Johnson to the President, and it laid out what we were going to do, and we really have followed that pretty well, although with all of the frictions and so on that I have talked about. The real reason, I think, that the tremendous push for more military space has died down is that people still have not been able to think of very many things to do in military space. The same ones that were thought about six, eight, even ten years ago, are the things that are—the ones that people were sure would be useful then, are the ones that we know are useful now, and that we are doing. Reconnaissance, navigation, communication satellites, meteorological satellites, all unmanned so far. It really still remains to be proved that man is useful in these roles.

INTERVIEWER: What happened to the Dyna-Soar?

BROWN: We cancelled that in the fall of 1963, or the winter of 1963, November, December. Actually after the

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President was assassinated, after President Kennedy was assassinated, although the plans with which we led up to that took place before. He was never a great admirer of Dyna-Soar.

INTERVIEWER: Was it the name that put him off?

BROWN: No, I think he was unhappy for the same reason we were. We didn't know what we were going to do with it. It was a way of getting back from space, rather than a way of doing anything up there. I remember two incidents in this regard. One was when we were out at Vandenberg Air Force Base in March of 1962, and General Power [Thomas S. Power] was doing the briefing. We saw missile launching, and then we went into a hangar, and General Power—well, first he took us past a whole bunch of space things for the Air Force. This was unclassified. Then he took us into a classified room and he showed us a model of the Orion Project, which is a way of launching enormous payloads, millions of pounds, into orbit by nuclear explosions behind them, pushing them up into space. Then he showed us a movie of a model, of one of these being blasted up into the air with high explosives. The model of the Orion thing had about 50 Dyna-Soars in it, and I was appalled, and President Kennedy was obviously appalled, and amused, too, and he asked me what the devil the Dyna-Soar was for. I said, "Well..." I answered with mild support for it, that it was a way of getting down, which if you have to get down quickly is a better way of getting down than ballistically, because you can land over a wide area. You can also change your

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orbit. If you have to get down suddenly from orbit while you are up there, and you don't have any lift capability, you have very little choice about where you will come down. I indicated I didn't think this was an overwhelmingly important thing, but it did have that advantage.

Right after that, we went and looked at a model of a moon base which the Army engineers had been working on, and had apparently sold to the Air Force. I don't think that impressed him much, either.

Anyway, that was in 1962, the spring of 1962. That winter we had started the Titan III as a way of trying to standardize on a military booster. We didn't really have any payloads for it. We had Dyna-Soars, I guess. Now we have manned orbital laboratory and a number of other payloads, but it is still not completely clear that this is a—well, I think it is clear it is a good idea. It is not clear that it is ever going to pay off in a very large way.

We were on a trip having to do with looking at NASA things mostly. We went down to Cape Canaveral, now Cape Kennedy, and looked at a model and demonstration of Titan III, and then away from there to Huntsville or from there to Houston, I forget which, he came

back into the passenger compartment from his own private room and was talking to me and to Bob Semenson. He said, “What the devil are you going to use Titan III for? To launch Dyna-Soars?”

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He had, I think, what is the right attitude towards military space.

INTERVIEWER: Do you remember what he said the first time at that Power briefing? Do you remember anything specific?

BROWN: He asked me what the devil it was for, but we didn't have any time to discuss it afterwards, because he went down from Vandenberg down to Los Angeles that weekend right away, and McNamara and I came back to Washington. So we didn't have time to explore his reaction. But throughout I think he understood that military space had to be justified on the basis of what it produced. He didn't feel that way about NASA, about civilian space exploration. I think in the spring of 1961 a number of us, myself included, helped talk him into or helped convince him of something he really believed in, too, that you could not not do space exploration. It was too great an adventure for the U.S. to be left out.

Subsequently, I am sure he had second thoughts, as all of us have had second thoughts about the pace of the program, and the value of a race in which there only may be one participant. But I think he recognized the prestige gains of civilian space exploration and recognized that the prestige gains of military space are not very great. He may have overestimated the former but he did not overestimate the latter.

INTERVIEWER: Speaking about an assignment of missions, in May 1961, at what point was the moon mission determined upon?

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BROWN: It was part of that same paper. It was determined—the same paper that laid out military, DOD and NASA roles indicated that the NASA role would be exploration of space. The way it was sent up from Webb and McNamara was not with manned lunar landing within this decade as a specific goal because we were not sure we could beat the Russians to it, and in fact, had they really been working on one, I think that they could beat us. I think it is now perhaps too late for them to do so. They didn't work on a big booster. Had they been working on a big booster and we didn't know in 1961 whether they were, they could have been a couple of years ahead of us. It is now 1964. Unless they show a big booster this year, they are at least a year or two behind us.

INTERVIEWER: You mean we made a somewhat reckless decision in 1961?

BROWN: We made a decision—no. What I am saying is that in 1961 we could not be sure of winning such a race. So some of us wanted to say

exploration of space and the planets but that got changed. I am not sure who changed it. I think that now President Johnson may have changed it to manned lunar landing within this decade, or Kennedy may have changed it. That it was a reckless decision, I don't think you can characterize it as reckless. It was not a decision which at that time we were sure—well, we are still not sure. I have my doubts about whether we will make the date, but we didn't know then

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what we can be pretty sure of now, which is that the Russians are not going to beat us.

INTERVIEWER: How did we come to focus on the moon as the target?

BROWN: We just looked up and there it was. No, it is a reasonable clear landmark. That is to say, landing on the moon or trying is probably the next item, next accomplishment of size comparable with orbiting a man in space. I don't think anything in between is comparable, considering that orbiting man in space is first. Well, two men, a man and a woman, rendezvousing, none of those things is.

INTERVIEWER: Were these things all studied?

BROWN: They were all considered. There was little systematization in the first few months. A big space station I think is bigger than any of these, but I don't think it is as big as landing on the moon and returning. The only question in my mind at the time was whether, in view of the doubt as to whether the Soviet might not be able to beat us, we should not set something farther ahead, namely, exploration of the planets, which is in my mind as big a step beyond lunar landing, as lunar landing is beyond anything between—well, the logical steps, what you would have to do is indicate peaks, and of course each peak comes later, and therefore has to be a bigger accomplishment to have the same impact, and I would group them this way: man in space in orbit, man landing on the moon

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and returning, exploration of the planets. Those are the three big things, with the big space station as another one which I think you can do before you can land on the moon, although it is clear that now we won't, but it does not have I think quite comparable impact. Anyway, these were all looked at.

INTERVIEWER: Somebody must have told the President, one, it is feasible to get to the moon, and two, it is feasible to do it by 1970, someone with technical capability, or am I wrong? If so, who was he?

BROWN: I think that our report said that it is probably feasible, but you can't count on it to get to the moon by 1970. What our report said as well

was that you can't be sure that the Russians may not do it before. In other words, the problem was not so much the technical feasibility of a manned lunar landing by 1970. I think our report said it was, and it was. I kind of doubt that we will do it now, but that doesn't mean it was not feasible. And I think we may. I think we may come pretty close. We will come close, and we may make it. The doubt in my mind was whether we should get into another race that we might lose. So far as that decision is concerned, I think that has been proven to be the correct decision. We are not going to lose.

INTERVIEWER: This is the first race, in fact, that we

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have ever been in, explicitly with the gauntlet laid down.

BROWN: Yes, but we laid it down, and it is not clear that the other side picked it up.

INTERVIEWER: What were the other factors, so far as you can recollect them, that were prominent in addition to the technical ones, to get to the moon?

BROWN: Oh, the prestige one was the big one. Would it be something that would capture prestige?

INTERVIEWER: Was there any consideration about forcing the Russians to spend a lot of resources?

BROWN: It was mentioned as an item, but of course you could not be sure that it was. You could be sure that if they didn't, then they would not beat us.

INTERVIEWER: Was there ever any consideration about how we could gracefully pull out if the Russians didn't race?

BROWN: No, I don't think that that was looked at.

INTERVIEWER: Do you think that is a deficiency?

BROWN: No, because that is something we could not have done. We could have in subsequent years changed our schedule if we had wanted to.

INTERVIEWER: Unless we got some indication of that the Russians were doing.

BROWN: Yes.

INTERVIEWER: Before I wind up on this part, what were your personal contacts with the President on these two related

decisions, the assignment of responsibility and the determination of going to the moon?

BROWN: I believe they were early, and I don't remember. I think there may have been a meeting at which this was discussed with him at which I was present. But the discussions which I remember with him came later. They came in 1962, the spring, and then again about two other times, in March of 1962, the trip to Vandenberg, in September of 1962, a trip to Houston where he gave a speech in Rice Stadium, and then December of 1962, we made a trip which combined some things. It included Rover. We visited Los Alamos and talked about Rover. There is one we saved him from.

INTERVIEWER: What was that?

BROWN: Well, there was a big push by Senator Anderson [Clinton P. Anderson] and Vice President Johnson and Jim Webb.

[TAPE CHANGE]

INTERVIEWER: All right, you were talking about saving the President from some friends in the Rover decision. You said they were Senator Anderson...

BROWN: Anderson and then Vice President Johnson and Jim Webb were pushing to increase the Rover from \$200 million a year to \$400 million a year, and Weisner and I were the flies in the ointment. We kept saying, "What are you going to use it for?" to the people at Los Alamos, and to the NASA people. In this case we also said one other thing, which

we don't usually say: "Is this design going to work?" It turned out that the design didn't work. President Kennedy decided not to go from \$200 million to \$400 million a year. The experiments the next spring, the spring of 1963, the reactor shook apart, and they went back to the drawing board. I think they are probably going to solve the problem, but in the meantime we would have been spending \$200 million or \$300 million a year more than we should have been. We still have not answered the question what we are going to use it for.

Incidentally, the month after President Johnson succeeded to the presidency, there was another meeting on Rover just about a year after the previous trip, at which he used me and Jerry Weisner to help cut the program from \$200 million back to about \$150 million, which was a fine sign. He remembered everything we had said, and he was in a very different position. I was glad to see that he recognized that the president needs different advice to help him do what has to be done.



INTERVIEWER: Why was Johnson pushing so hard on space when he was Vice President?

BROWN: He had very little else to push on, and he has since been shown a man of enormous energy who had been given a very restricted area to work in, and he pushed that for all it was worth. I think he now recognizes it in its proper perspective. He is still for it. He recognizes the limitations and is circumscribing it in a sensible way. I am

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not worried about a man who recognizes his responsibilities and adjusts his position to one of somebody who has to make decisions instead of being an advocate. What I worry about is somebody who doesn't change when he obtains greater responsibility

INTERVIEWER: You mentioned he had some unique views on the nuclear test ban treaty. Could you outline them?

BROWN: No, I don't really remember. I think he was present at the meetings and said very little. He tended to place greater weight on national security and less weight on international political considerations than most of the other participants, a situation which I think is different now that he is president.

There is one other thing that came up, which I think is worth reminding people of in connection with the space program of President Kennedy. This was one where we gave him good advice and he didn't take it. This was on the earth orbit rendezvous versus lunar rendezvous. Jim Webb pushed lunar orbit rendezvous, and President Kennedy essentially baited Weisner and Webb into an argument before the newspapermen who didn't hear it. They could just see there was an argument going on down at Huntsville, in which I joined Weisner again, and said that I thought—well, I was asked for an expert opinion, an outside opinion, since the Defense Department had nothing to do with this, as to which was more sensible, and I said from the Defense Department point of view, of course it is more useful

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to us to get experience in earth orbit rendezvous, since we don't expect to be looking at the earth from the moon, or indulging in military operations in space, which if they happen at all are much more likely to be near the earth than near the moon. But from the point of view of the best way to get to the moon, I also think it is better to do it by earth orbit rendezvous since you can do your rendezvous, your difficult job near the earth, rather than having to do them away out in space.

Well, there was a subsequent review in which I was merely a spectator. Webb came around—well, Webb and Weisner disagreed. Webb made a recommendation to the President that they go lunar orbit rendezvous, and neither Weisner nor I—I was in no position at all, Bob McNamara and I were in no position to give the President contrary advice on something

that was really none of our business, and even Weisner whose business it was to advise didn't feel that he could say that the President should overrule an agency head, because overruling an agency head in a matter like that is equivalent to firing.

INTERVIEWER: Did you find yourself lining up with Weisner in most of the cases? How did you get along with him? Did he stand between you and the President?

BROWN: No. On the contrary, I think as far as I was concerned, he was a channel to the President. I think in most things we agreed. I don't think we really agreed on the test ban. As I think I mentioned, I think that Kennedy and

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Weisner were the two people in the administration who were least happy to resume testing. I thought it was right then. I still think it was right.

On Nike-Zeus, on Skybolt, on most of the space program, on the NASA part of the space program we agreed. We disagreed about Titan III, which he doesn't think we should have started. We disagreed, at least I in my official position disagreed with him about the MMRBM [mobile medium-range ballistic missile] which he was against starting.

INTERVIEWER: Was that ever started? We won't go into it.

BROWN: It was started so far as Defense was concerned, but the Congress has essentially killed it. They killed it last year. We tried to revive it. They killed it again this year. I doubt that it will revive again, at least in that form. We may be able to revive it in another form. But I would say there were a couple of issues on which I disagreed with Weisner fairly strongly, starting tests again, that one time in the atmosphere in 1962, and Titan III, and a couple of which he was in disagreement with the official Defense Department position, and I was supporting the Defense Department position, perhaps not very strongly sometimes.

INTERVIEWER: On Titan III?

BROWN: No, on MMRBM is what I am thinking of, and on most issues, Skybolt, B-70, and so on, he really supported the Defense position. It was not a matter—he didn't take the lead. He just concurred in the Defense Department position.

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INTERVIEWER: You said that after May 1961 there were three discussions with the President.

BROWN: About space, yes. Actually four, because there was the briefing before we left on one of these trips. I guess the September trip.

INTERVIEWER: Briefly, do you recollect what the President's views were on the lunar program after it once got under way?

BROWN: He in 1962 was still strongly for it. In 1963 I think he was looking for a way out, not a way out, but a way down a little bit. He never really found it.

[END OF INTERVIEW #6; END OF INTERVIEWS]

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