ORAL HISTORY TRANSCRIPT

MARK J. ALBRECHT
INTERVIEWED BY REBECCA WRIGHT
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WRIGHT: Today is April 20, 1999. This oral history with Dr. Mark Albrecht is being conducted in Bethesda, Maryland, for the Johnson Space Center Oral History Project, by Rebecca Wright, assisted by Carol Butler. Today's subject will be Dr. Albrecht's involvement with Phase 1 of the International Space Station.

Again, thank you for taking your time out of your busy schedule. We'd like to begin today with you sharing with us how you first became involved with Phase 1.

ALBRECHT: Well, it's interesting and perhaps significant that today is April 20, 1999, because the National Space Council was rechartered by executive order, signed by President [George] Bush on April 20, 1989, so this is the tenth anniversary of the reestablished National Space Council.

One of the very first things that I dealt with when I came to the National Space Council on the 20th was previous legislation that required the new President, of course, President Bush having been sworn in on January 21, 1989, that the new President, within, I think it was 90 or 180 days, had to make a decision of whether to proceed with the Space Station Program. The previous Congress had serious questions about the Space Station, its cost and schedule, and had laid it over to the new President to make a decision. And so one of the very first things I encountered on the Space Council was a financial decision on whether to proceed with the Space Station.

It's interesting, because even in that interaction, which was one of the very first I had as executive secretary of Space Council, the seeds of my eventual involvement in Phase 1 and where we are today were sewn, and that is I was met by NASA officials who literally

had a signed document ready for the President's signature to proceed, and I asked the question of, "What sort of review process? Aren't we going to have some meetings?" etc., and they said, "No, we don't think it's necessary. We're just ready to sign. The President needs to do it. I'm sure he'll want to do this. This is something NASA wants to do."

I had not been in the job for more than two weeks, was still trying to figure out which way was up, and we went ahead and processed this as a routine matter, without the kind of review, debate, discussion inside the White House that I think the crafters of the legislation had intended, that, in fact, it would be 180 days of serious, thoughtful debate and review, when, in reality, it was more processed as a piece of paper. The President's got ten things he's got to sign within the first thirty days, got to reauthorize the military, do this, and so even though the President had come as Vice President and was up on the step, there were just a lot of pieces of paper that needed to be reauthorized, and really the Space Station was part of it.

We did have some discussions. I had a brief discussion with Dick Darman, who was the director of OMB [Office of Management and Budget] and Alan Bromley, who was the head of the Science and Technology Policy office, but they were perfunctory. There was certainly no concerted serious review.

I remember at the time going through this, and we did, in fact, recommend the President sign, and did, in fact, sign. But I remember at the time I felt a little as though we were railroaded into this, and I had no background in the legislation. In fairness, no one from the [Capitol] Hill called. None of the members of Congress called and said, "We really want you to take your time about this decision." I think people tend to invest in a new presidency, a level of zero-based review, that isn't practical, that within 90 days of a new presidency, that all kinds of decisions can be fundamentally reviewed, when, in reality, they're still in the process of unboxing and figuring out personnel and who's going where. So were I to write legislation, I might give them more time, like six months or even nine months or maybe even a year to think about fundamental decisions, rather than short periods of time.

So that was my first exposure to Space Station. Then shortly following thereafter with the July 20th—I guess it was the twentieth anniversary of Apollo 11, and there was some interest in what the President would say and what would happen. We undertook an internal option for the President to announce a long-term space goal, and he was inclined to do so. In formal discussions with Dick Darman and Alan Bromley, I guess Bill Graham, actually, at this point, Bill Graham was still the science advisor. I don't think they had named Alan Bromley yet.

But in those discussions, there was support for this. John Sununu, who was the chief of staff for the President at the time, was fond of telling me that he did his graduate study, his Ph.D. study, under a NASA grant, had strong affection for the space program. So we had an interesting constellation of people. Of course, the President, with his history from Houston [Texas], was also very interested in the space program. So there was among us staff individuals energy around the possibility of recommending to the President that he consider some long-term commitment in human exploration.

That involved recognizing what it would and would not be. Of course, in 1989 we were not engaged in any fever-pitch technology space race with the former Soviet Union, then the Soviet Union. There was no national crisis and urgency, and we knew, in fact, the price tag for this kind of Exploration Initiative would be in the hundreds of billions of dollars, and that there would be potentially very little stomach on the part of the Congress to approve a hundreds of billions of dollars' program.

So we tried to use the lessons of Apollo and to make it clear that what the President was talking about with his Initiative on Human Exploration was in the tradition of Apollo, but not Apollo II, and that is to say not a crash ten-year program of the highest national priority, that, in fact, what we wanted was the benefits of the Apollo program, which was the long-term focus of human exploration; the reaffirmation of the American spirit and the American ethic; the long-term benefits of the technology development; the demonstration of

international leadership when the strains of the Cold War as the guiding principle of American foreign policy for forty years was clearly coming into descent. So all those were the positive elements.

The reason I mention this program, because in developing, and the President announcing that, in fact, we were going to embark on a long-term Initiative for Exploration that was going to take twenty or thirty years, not ten, that would, in fact, be an exploration that would be paid by the availability of dollars rather than by necessary to uncertain, that it would be distinctly international and invite participation, including then the Soviet Union. All these were elements that provided the boundary conditions for a detailed development of a plan.

The detailed development of a plan came smack up against the issue of Space Station, because it would be the first element. The question is, when we looked at this Exploration Initiative, where does the Space Station fit? Our view on the Space Council, given the controversy about the Space Station even at that time in terms of its complexity, its inability to articulate a single clear, compelling mission, the diffuse ownership of the Space Station in terms of the constituent elements in the community that were supporting it, we saw this as a perfect opportunity to review the Space Station in terms of where its real contribution to further human exploration was.

It was really in that context, perhaps better than the legislative context, about review the Space Station, approve to go ahead or not to go ahead, that we began to consider and develop ideas about the Space Station. And what became very clear from the very beginning was Space Station Freedom, which was what it was previously termed, was becoming unaffordable and becoming technically difficult, if not impossible, to achieve, primarily because of the diffuse decision-making and diffuse ownership of the Space Station. The Space Station had become all things to all people. It had to meet all the requirements of all the various constituent users, and that was just adding requirement on requirement on

capability to dollar, to the point where the program was really out of control, frankly. That was our assessment at the time, is that Space Station Freedom had grown out of control, and there was very little accountability and responsibility for the content of it.

So we looked hard at it, and there was a health debate inside the White House and the government about whether the Space Station was a necessary first step on future human exploration. There were those who felt that lunar bases could be achieved in roughly the same time frame, achieve almost all the objectives of the Space Station, and that the Space Station became an engineering impediment to exploration, rather than a facilitator. Because it was felt among many that the Congress would say, "We've got to finish Space Station first before we can do anything else," and so it became, to many, a roadblock rather than a facilitator.

I think the consensus out of that was that—and it was a disappointment to me, frankly, that NASA did not take this opportunity to not do a zero-base review, but a near-zero-base review of the Space Station. I felt that this would be a perfect opportunity for NASA to take its own destiny, rather than to have others impose changes to the Space Station, to say, "We designed and developed this Space Station when there was no follow-on exploration program in place. There was none. So we developed it to meet all kinds of different requirements, because we didn't know which way the Space Station was going to evolve."

"Now the President has given us clear guidance about his vision for the future and where the space program is going to evolve. That, of course, causes us to reconsider the fundamental design of the Space Station, because we now know what it's for. Before, it might have been for commercial exploitation. It might have been for microbiology. It might have been for new materials, sciences, primarily, and it might have been for learning how to work and live in space for the purposes of exploration."

"We now know what it's for. What it's for is to facilitate long-term exploration. So we can reduce its scope, we can reduce its size, we can reduce its budget. We can advance its schedule."

So we had these optimistic views that this would be a natural opportunity. I'm only spending time here focusing on Space Station. There are a whole host of other ancillary elements of the Exploration Initiative, but from a Space Station perspective, that was our whole dream, that NASA would come forward and say, "Gosh, now that we know, we can reduce its costs, we can move its schedule forward, reduce its scope, etc."

But they didn't. NASA took an attitude that this was the Space Station, Space Station Freedom, it's absolute perfection, it is a necessary first step on any kind of space exploration. I don't want to get off on the Exploration Initiative per se, but we also asked for NASA, as the lead implementing agency, of course, to give us alternatives, give the President alternatives. We wanted either a fast, cheap Exploration Initiative, or a longer, more low-risk Exploration Initiative. So we'd hoped to have one with enormous international cooperation in terms of critical path, leads, and an option with minimized international, what we might use pejoratively, though we didn't mean it this way, sort of token international participation, and that the President and Space Council would get a chance to look at all these, and the President could make some choices with an informed opinion.

What we really got from NASA was one option. It was a single option, that you could either choose to go slightly faster, more costly, or slower at less total cost. And always Space Station Freedom, as designed, with all the modules, etc., was integral to every single one of them. That was another disappointment and a growing concern that we had, that NASA was so—the institutional NASA, obviously. There are a lot of individuals in NASA. But the way it presented as an organization to the White House and the administration was so of a single mind about the way to pursue the Space Station and absolutely no exception of

any kind could be brought was a disappointment, because it began to suggest that maybe the institution wasn't responding to what we felt the President was clearly signaling to them.

So we moved forward with that, and we looked at alternative designs for the Space Exploration Initiative, and we began to focus our attention and thinking in terms of Space Station as a facilitator for long-term exploration. We began to focus on the life science questions associated with living and working in space as a laboratory to develop the necessary tools and techniques to support a lunar base and eventual habitation of humans on Mars.

That whole process led us to consistently work with NASA through budget processes, to focus energy on those, and to try to distinguish between first-order priorities of accomplishment in Space Station and second-order priorities.

That led us, in turn, to a series of discussions internal to the White House as the Berlin Wall fell and the Soviet Union became the former Soviet Union, of how we would keep and maintain American—how we could demonstrate American leadership post-Cold War, that we, in fact, affirmatively wanted to have a positive role in world policy; that we wouldn't retreat back to the shores of the United States as a foreign policy; that we remained engaged in the world that we had, in fact, an affirmative leadership role; that our leadership role was not just in coalescing allies in opposing the potential threat of the Soviet Union; that, in fact, there were affirmative and positive elements of U.S.-international leadership; that for forty years we had developed a technology base that put us in a preeminent position in the world, largely financed out of our defense programs, and, to some extent, our civil space programs which, again, were linked to this notion of a countervailing foreign policy and countervailing policy to deal with the threat of the Soviet Union.

So we looked at all these things. When I saw "we," I mean this in the broadest possible sense, obviously under the leadership of the President and the Vice President. But we began to see unique opportunities for engaging and involving the former Soviet Union in

the Space Station Program. We saw the opportunities (A), because we were constantly interested in how we could reduce the cost of the Space Station, because we wanted those costs applied to future exploration. We were constantly interested in how to move the schedule of Space Station forward, because we wanted to get on beyond the Space Station on to further space exploration.

We wanted to take advantage of the enormous space assets that the Soviets brought. They had a unique heavy-lift capability which was potentially of utilization for further exploration. They had operational and flexible crew return-type capabilities, unparalleled development in rocket engine technologies. All these things seemed very appealing to us. Plus they had an existing Space Station in Mir. So, again, and the reason I give this sort of long-winded explanation of how we got there, was our impulse generated from the sense that the President had set a course for long-term human exploration, that Space Station was to fit into and facilitate, rather than the International Space Station Freedom, as the end-all of our program, and how could participation of other parties facilitate Space Station Freedom, we said how could participation of other parties facilitate our Exploration Initiative and do whatever was necessary with the Space Station to move that objective forward.

So all that led us to the beginnings of some discussions inside the government about the potential for beginning to accumulate the life science experience, the long-term exposure to space that we believe the Space Station was all about. And that led us to the notion and idea that we would like to put U.S. astronauts, properly instrumented with life sciences instrumentation, on the Mir spacecraft, because, again, we would get the experience of learning, of working and living in space for long duration faster, which, of course, was the whole purpose of the Space Station, to facilitate exploration.

So we thought about that. We thought about what would be attractive to the then-Russians. We felt that flights on the Space Shuttle would be a nice quid pro quo, something they might be interested in, and began to develop the idea of a Shuttle-Mir Program that

would allow us to start getting the life science data faster and would show that we could work with the Russians, and it had a positive attention to work with the Russians in space, post-Cold War.

That met with surprising opposition initially from NASA. I say "NASA" now institutional NASA, because it was about this time we were in the change of leadership at NASA. Dan [Daniel S.] Goldin had yet to be sworn in, and Admiral [Richard H.] Truly had yet to depart the scene, but obviously there was a period when NASA was not fully under new leadership. There was surprising resistance from the institutional NASA to this because, again, it was perceived—at least my sense was, it was perceived as a threat to the Space Station Freedom Program. Everything was oriented towards keeping the Space Station Freedom Program intact, in place, as done.

In fairness, the argument made—this will get to another issue about how Congress related to all this—but the argument was made, "Look. This is so fragile and it is so delicately constructed in terms of the constituencies, if we start changing the fundamental design and the capability of Space Station Freedom, we will lose constituents. If we lose constituents, the constituents who are delicately crafted to provide balances inside the Congress, to continue to get affirmative support for the program will erode, will lose support of the program, and while what we sought to do was to modify, streamline, and customize the Space Station to meet the Human Space Exploration Initiative, will, in fact, cause the termination not only of the Space Station or Space Station Freedom, but therein the termination of the human space."

So it was a very delicate crystalline balance in that any deviation to it would cause a collapse of the whole program. So that was a legitimate point of view. I don't mean to belittle it and say that it wasn't. It was a completely legitimate point of view that I fundamentally disagreed with.

The argument some of us in the White House made, the countervailing argument, was, "The space program has to be solid enough and healthy enough to endure change. If it is so fragile and it is so delicately based on constituencies, then things outside of our control could cause the whole program to collapse, and it can't possibly be in the nation's best interest to have a space program that's that fragile and that delicate. In fact, we want the space program to be solid and strong so that it can, in fact, adapt to change and become more solid and stronger."

Two completely different views, both intellectually respectable. So the argument was the Shuttle-Mir Program. Surprising to me. I was continually surprised by the institutional response of NASA.

I'll digress in one other way. As a person who grew up in the sixties, me, like anybody else, I was an absolute fan of the space program, watched very Mercury, Gemini, Apollo launch just like every other person in my generation, and had the same very positive, "can do," innovative ideas about NASA. What was continually surprising to me in my early years in this was how institutional and bureaucratic and protective and political NASA was. It was a total surprise to me, because even the NASA people you would meet, who worked in the field centers, were the kind of people that I expected them to be. They wanted to explore, they wanted to get on with it. They weren't there to make money. They weren't there to become senior officials. They just wanted to be part of it. Frankly, the more time spent in meetings, talking about annual reports was horrible, and what was exciting was getting on with it and achieving things.

So at one level it met all my expectations of an institution, and in another, at the more senior levels, it was really surprising, almost shocking. So the initial reaction was negative on the Shuttle-Mir, because the idea was, "Well, if we did that and we gathered all these life sciences data, well, we might not even need a Space Station, let alone not a Space Station customized and tailored to developing the database necessary for long-term exploration of

space. Maybe we wouldn't need it at all. And we can't handle that answer. So we're not so sure this is a good idea."

State Department, also to my surprise—I guess you might even argue I was naive through all this—also was opposed to the idea. Part of it, frankly, was that the State Department hadn't invented it, and so there was just an issue of, "You know, that's kind of a good idea," and we consistently heard, "It doesn't fit into our transitional Russian policy. Maybe it has a place and maybe it doesn't have a place, but it's a second-order issue. Maybe we'll get to it, maybe we won't."

I think when you talk to Brian [Dailey], or if you have already talked to Brian—I left in June just as the [Russian President Boris] Yeltsin summit was heating up, and to get this on the agenda and approved by Presidents Bush and Yeltsin was something that happened shortly after I left. Brian was involved in all that, so I'm sure he'll tell you about the final end game. I'm talking about the early days when we were dreaming it up and trying to get it on the agenda.

But eventually NASA came around, and Dan Goldin joined NASA and he really had the idea and spirit of this. I mention this because I want to go back to the previous year on Space Station, and it is germane to all of these factors in the issue of the fragility of NASA, fragility of the civil space program, and the fragility of the coalition to support the Space Station.

There had been a decision to cut funds from the Space Station. By then Congressman Bob Traxler from Michigan, who was chairman of the House Appropriations Committee on HUD [Housing and Urban Development], Veterans Affairs, and Independent Agencies, and he had made a transfer of funds from NASA and the Space Station to the Veterans Affairs. It was not terminal, but it was a cut that we didn't approve of. The question was, should we challenge that and should we use the administration's working with Republicans and others, quite bipartisan, but should we try to oppose him on the floor. Again, the consensus view

was, he's the chairman of the most powerful committee with regard to NASA appropriations, he has made this decision, and challenging a chairman of an appropriations subcommittee was unheard of, unthinkable, and it would do great damage. Again, this whole concept of how fragile this all was.

In this one, I did make common cause with the OMB director, Dick Darman, and said, "If we continue in this mentality that everything is so fragile that nothing can change and we have to accept whatever the congressional committees give us without recourse, we have a space program that really is not worthy of the support of the American public, and, in fact, the American public does support the space program, but we haven't given them an opportunity to do so." Very few members of Congress had ever really been visited on the space program. They'd never had to vote on it, of course, because it was always handled in a very small subcommittee of the Appropriations Committee, and never really debated and discussed, other than normal oratorical speeches before an appropriations bill, and members who had space interests in their districts would come forward and say how wonderful it all was, but they never really had to act politically about it.

So Dick Darman and I worked with the President's staff and convinced the President and Vice President that, in fact, it was not only appropriate, but potentially necessary for us to challenge the Appropriations Committee and to very respectfully, without any sense of hidden agendas, to go forward in a very affirmative, positive, open way, that we intended to support sponsorship of an amendment to take on the committee chairman on the floor of the House. And it was widely regarded as absolutely impossible, but what it did was it forced the White House and NASA and the entire community to engage the Congress in a purposeful, meaningful way, each and every single member of Congress.

It was a really high-drama period of time, but we won. We won by ten or twelve votes, which was the first "Space Station vote." What it did was, it began to develop and

build a sense that the space program wasn't fragile, but it was strong, that it wasn't that it couldn't tolerate change, but that it was strong enough to tolerate change.

I really think those votes—and it happened a couple of years in a row, and every year, of course, now Dan Goldin is delighted to go up there. I mean, NASA says it hates the Space Station vote, but I think it likes the Space Station vote because it allows them to have a purpose to engage all the members of Congress in it. It has caused each member of Congress to have to go back and interrogate their own districts and constituents about how they feel about the space program. Rather than being scared and timid about what that reaction is, I think it's emboldened people, because what they found is that in most districts, in almost all districts, people want a healthy space program.

Members of Congress, even when they don't have any constituent contract or industry interest, are more than willing to cast votes. The margin on Space Station, which is the only vote we only really seriously have on space, is getting bigger and bigger and bigger each year. So I say that because that was part of the puzzle that gave the administration in the White House the courage to go ahead with the Shuttle-Mir Program, not accepting the argument that it might make changes to the Space Station, and in making changes to the Space Station, it would tamper with this delicate coalition that was responsible for a delicate level of support in the Congress. So I see that as another element of how we got on to Phase 1 of the current Space Station. That's a long answer.

WRIGHT: It's a good one [answer], though. It's a good one. Once you got the vote, can you share with us the details of how the procedures started to move us closer into this new relationship with the former Soviet Union?

ALBRECHT: That's a good point. And it did. And there really was a sea change in NASA leadership, I think not just the literal change with Dan coming in, but I think the senior

managers in NASA were surprised that, in fact, their confidence was beginning to build. They didn't really feel that they had such a delicate, fragile situation, that, in fact, they had some baseline support. They then began to embrace with real enthusiasm working with the Russians.

Also we had to get over the notion, and this was a little more stubborn, but when we were talking to other Europe nations, to Japan, about participation in the Human Exploration Initiative, we learned that they were beginning to insist on significant roles, that they felt that their role on Space Station Freedom was really nominal, detachable, optional, token, and they felt that they were being treated that way as partners, that they were consulted, but not really collaborated with. And I think during this period of time, as well, there was real pressure from the White House on NASA about the notion of contemplating a more significant involvement.

It was the Exploration Initiative discussions where countries like Japan were very most interested in being involved in a significant way, with real significant commitment of resources, but they wanted a significant responsibility and unique responsibility and critical responsibility in lunar bases. The Japanese were very interested in that. As we proceeded in discussions with them, they wanted to be accountable and responsible for critical elements of lunar bases.

That really helped the thinking further of how we might exploit international cooperation, not simply as another fragile element on a coalition built to support the Space Station, but really a fundamental and integral foundation on which to build. I think during this period of time NASA became more open for substantive involvement internationally. That, of course, led the way when NASA undertook the full redesign of the Space Station to be a lot more open-minded and accepting of more significant participation by other countries.

NASA had had relationships with the Russians, of course. They had the tradition of the Apollo-Soyuz mission that was still fresh in the memory of a lot of senior individuals

who had participated in that. There had been informal linkages between the Russian Space Agency and NASA. So it's really interesting to watch, from where I sat, that rather than taking like the Defense Department or somebody who would be absolutely antithetical to the former Soviet Union as an adversary and to start military cooperation which was "How do we do this?" for NASA it was more—and this was a very positive experience on my part—of rediscovering modes of operation and historical linkages than it was "How are we ever going to do this?" They drew heavily on the Apollo-Soyuz experience. People like Tom [Thomas P.] Stafford brought a lot of capability right to the fore and were integral in thinking and helping Dan Goldin and George [W. S. Abbey] think through how we would go ahead and do this.

So there was a real openness once NASA got over the idea that a Shuttle-Mir Program would be a threat to Space Station Freedom, and began to embrace the idea as really part of the growing depth and strength of the space program, how much they had institutionally and really led a large segment of the government in early discussions and early collaborations with Russia. They were actually far ahead of others because they had this depth of experience to draw upon.

WRIGHT: Were you involved in those first meetings and negotiations as far as getting these people together to have serious talks?

ALBRECHT: I was, primarily on the U.S. side. We did meet with some Russian officials in large groups. I did not have any personal contact with these individuals, and so I didn't have anything to add personally. But, again, individuals like Tom Stafford in the space program and others who had extensive longstanding relationships that went back to the seventies, of course, with Apollo-Soyuz, were quick to get involved and have these contacts. So my discussions were primarily inside the U.S. Government.

WRIGHT: What were you hearing that the Russians' reactions were to this proposal?

ALBRECHT: Extremely positive right from the very beginning. When President [Mikhail] Gorbachev—I guess he was Prime Minister Gorbachev. I'm not sure what the old nomenclature was. But when he met President Bush in his second summit, said to President Bush, "Let's go to Mars together," so the Russians had been pushing this space collaboration. Bush gave, at the time, an appropriate and measured response, because this was yet before the fall of the Soviet Union. But when Vice President [Dan] Quayle met with Mr. Gorbachev and met with Mr. Yeltsin, he introduced the idea of space cooperation, not a specific Shuttle-Mir Program, but the idea of further cooperation and, in fact, said, "We'd like to take you up on your offer of going to Mars together." It again met with a very warm, very positive—so every indication we had, and, in fact, one of the reasons we think that—I think that the State Department was not as interested is, I think that they knew that the Russians would be very enthusiastic about that, and they didn't want the—let me be fair to them now—they had a legitimate and necessary urgent agenda of U.S.-Russian relations post-Cold War that had some very important issues associated with our security and theirs that needed to be worked off right away.

I think there may have been a concern on their part that had we tabled this too early, that the Russians would be so interested in it and, of course, the media would be so interested in this, that necessary, important items to both our national securities might get pushed to the background rather than staying up in the foreground. So that was what happened in that.

WRIGHT: Were you getting the support and the effort you were needing from Congress, or were they involved at any time during these meetings?

ALBRECHT: That's a good point. The Congress was—we did talk to several members about that, and they really varied. In fact, the complexity in this issue persists to today. In my mind, it was surprising. Some of the most zealous anti-Soviet members of Congress were the most aggressive supporters of collaboration U.S.-Russian post-Cold War, and some who were less animated on the U.S.-Soviet Union problem became extremely animated on the dilution of U.S. space preeminence, or it's almost a protectionist sense of "Why are we letting them get involved in our space program?" And I don't think that's yet sorted out today.

There was an initial—it is kind of remarkable politics that issues that don't have any salience today, tomorrow morning can have huge salience, and there will be an instant and fundamental divide among members that you couldn't have predicted beforehand. It's just "Where did that come from?" And this is one of those issues. It was almost a galvanizing one and not one that, surprisingly, I would have predicted. You might have thought that those that were most ardently involved in the Cold War conflict would have been wanting to keep as far distance from the Russians as possible. Many of those were the most eager to engage them, and those that had been more interested in consolidation between the two would have been more accepting, became more concerned about dilution of U.S. internal space effort.

Those reactions were as fresh and as firm on the first day of discussion as they are today, remarkably. There was just sort of an instantaneous reaction to it. But I think, on the balance, there was a general support on the Congress that this was a positive step forward. They shared the administration's view that reaching out to the former Soviet Union as soon as possible was a crucial item, that we had the conviction and the sufficient self-awareness and confidence that we could engage the second or first leading space-faring nation in a meaningful way, without threat, was another thing that I think people found positive. And, of course, the enormous advantage of cost savings that the Russian collaboration offered, plus the issue of accelerating the schedule and doing more space for a constant number of

dollars was another attraction. But it is remarkable from the earliest days of informal consultations, instant, strong views on this matter. And they have really persisted to today.

WRIGHT: The support from the administration was continual from Vice President Quayle and President Bush?

ALBRECHT: Absolutely. I remember being in several meetings with them, where they were both animated and energized on all the positive elements of this collaboration for us, for the Russians, for stability in international affairs, for presenting a positive affirmative vision of international foreign policy, post-Cold War. All those things were instantly obvious to them.

There was also an ancillary motivation for an enhanced space program that involved trying to supplement what had been forty years of significant investment on the part of the United States in our military research and development budgets that were clearly going to be going down, and the question is, what was going to be the new generation of that kind of technology. It was before concepts that the commercial marketplace would be the generator of technology. So there was also a sense that we could put additional resources into a positive, affirmative, aggressive space program that would bring the same kind of technology developments along as had in the military research and development budget. That one was not as embraced as enthusiastically by the members of Congress as the other parts of this strategy, but they instantly saw the value and were strong supporters from the very, very beginning.

WRIGHT: Many have said that the cooperation between the U.S. and the former Soviet Union on this project led to so many more benefits for both countries than just the space advancement. Many folks that we've talked to had been there in the early days in Russian

and now have seen the changes that this project has brought to Russia. Have you experienced that as well? Do you see many more benefits than just the space benefits?

ALBRECHT: Yes, there's no question about it. Space cooperation—and we here at Lockheed-Martin, where I'm currently working, have a very, very beneficial, mutually beneficial partnership with Khrunchev Space Center, who, of course, is an integral element of the Space Station effort, and a purely commercial business. U.S.-Russian cooperation in space has really led the collaboration between the two countries post-Cold War. It is the single most positive accomplishment that both countries can point to. It's been a vehicle and mechanism for a lot of other collaborations and normalization of relationships.

I can say, even today, here we are on April 20, obviously this is germane to what people who would listen to this in the future will know, we're in the midst of today a very strong crisis in Kosovo. Many of our positive chains of communication with the Russian now are through these areas of space cooperation. It is probably the closest collaboration we have between the two countries, and I think it's helped really generate a very positive progressive market-oriented view, because our space program, our civil space program is highly geared and linked to economic health and developments in the United States. It's a very positive proactive link in that regard. I think the Russians are seeing that on their side as well. So I think it has a demonstrable and significant impact on bringing the former Soviet Union into the mainstream of modern free-market societies.

WRIGHT: Did this project take up most of your time while you were on the Council?

ALBRECHT: Not really. There were so many other things going on. Our main focus was trying to help the President develop an overarching space policy before the Space Council existed, got reestablished ten years ago. There was a military space program and policy.

There was, of course, a civil space program and policy. There was a—I'll call it burgeoning meteorologic Earth remote sensing, which was civil, but it really was not in the sense of purely NASA program, of space policy. And then there was a growing militation activity associated with commercial space programs. And all these had their sponsors both on the Hill and inside the government. All of them were pursuing aggressively policies that comported with their world view and governmental view.

The main purpose of the Space Council was to try to bring some coherence and continuity to all these policies, to deconflict them, to help the President delineate what the priorities within those policies were, how we would subordinate and pace the application of all those, what were the legitimate tradeoffs between national security concerns about space policy and growing interest in the commercial marketplace about a global commercial space market. So the primary focus of the Council was to try to take this and bring it together in a coherent way so that the President could impart a national space policy, and that it was that significant to the future development of the United States, that it was worthy of that kind of attention.

So this was clearly, as I've described it, a significant peace part to that, how do you manage the post-Cold War world, and what, in fact, is the fundamental purpose of a civil space program. What's NASA's role post-Cold War? Was it, as many had said at the time, a civil agency designed to be a tool in the Cold War? Which has certainly been argued that it was. So getting a positive agenda for NASA, a reaffirmation of its purpose and long-term sets of goals, again fitting into this concept of its solidity and integrity in terms of its place in the U.S. Government, and then its future in international policy and commercial development were all things that took the time and attention of the Council.

This particular issue was one where almost all those elements and parts came to bear in a unique way, but it sounds like I spent more time on it because it looks like it's the only

thing we were doing. There were lots of other things, but it touched on all the central features of what we were trying to do on the Council.

WRIGHT: You moved on from that post before you were able to actually see the Shuttle-Mir Project launch. Were you still able to have impact? I'm sure your enthusiasm lasted with it, but were you able to keep up with what was going on, even though you had gone on to other things?

ALBRECHT: Yes, I did. I have enjoyed a good personal relationship with the administrator and some of the other senior people, because, of course, of our longstanding mutual interest in this, have been able to vicariously participate and watch the program come to fruition. I've been in a very wonderful position of having been involved in the birthing of the United Space Alliance, and that allowed me to participate in the Shuttle launches, etc., associated with the Mir Program. So, yes, I've been able to keep involved, obviously not in a fundamental or pivotal way, but obviously I'm very interested and very, very pleased and delighted to have been even a small part of what I think is one of the most significant space and foreign policy achievements in the twentieth century.

WRIGHT: Working closely with you and helping to do that was Mr. Goldin. How were you able to learn to work so closely with him in such a short amount of time that you were able to, and to accomplish so much?

ALBRECHT: Well, he's a very unique individual, and I was privileged to be in a position to have come across him in the course of my business in the Space Council years prior to his appointment as administrator, and he had impressed me in my first encounter, from very first encounter, when we had a discussion not unlike the discussion we're having here, with his

ability to visualize where we were trying to go and to understand fundamentally what some of the impediments were. He saw it from an industry point of view, whereas I was looking at it from an internal government point of view. A lot of the issues that I was raising about the difficulty in providing the leadership and getting support from the institutional part of the civil space program were things he was saying on the industrial part. He had strong vision in his job and industry about how to move beyond and how to facilitate a growth in the commercial space business and in supporting government institutions that was so consistent and so clearly motivated by the things that I saw, that that dialogue continued to the point, when he was appointed administrator and there was such a meeting of the minds about how we were going to operate, it was real easy.

WRIGHT: We understand you had some help, also, from another individual, Mr. Abbey.

ALBRECHT: George was an absolutely pivotal and crucial influence on this entire process. The Space Council, I would say, prior to George joining us, was in a period of frustration and inability to communicate clearly either way with NASA. I think we had a growing appreciation of where there was not proper functionality in the communication between the White House and NASA, but we didn't know how to fix it. We tried as best we might in various ways. I think it was with George's joining the Space Council that we really were able to communicate effectively and to understand how to properly motivate and to understand from NASA's perspective their requirements and practicalities that really allowed this to move forward.

I think a lot of the work of the Space Council really can be attributed to George's positive influence in terms of facilitating the communication. It's not as much that George had a strong sense of what needed to be done, as he did help us articulate on the part of the White House and the President and the Vice President, articulate to NASA, and to

communicate and receive communications from NASA to start on this agenda of building together, to build confidence, to understand where the strengths of the organization were and to understand where we could facilitate growing the strengths, and where we could call on people in the outside community who have enormous influence on the institutional process of NASA that we didn't really have access to.

George's ability to put us and me in contact with people of enormous internal influence to NASA and to bring instant credibility to those communications where in the past we might make an attempt to contact somebody, and they didn't know us and we, of course, only knew them by reputation, and there wasn't the sense of confidence that when George would introduce me to somebody and we'd try to explain what we were doing, and enlist them in support and help and try to build things. This was of enormous utility and use.

Plus the strong sense that George brought as part of the team, that the kinds of things almost all that I've talked about here were really important and positive for NASA. I can't emphasize the fear, I guess is the best way to describe it, the fear that I encountered in NASA in those early years about change, and the fear of positive, forward-looking, aggressive agendas, and the fear for the very survival of the agency. That just was enormously difficult to overcome. George brought the kind of institutional stability to our organization and the communication between the two that I think really helped build this foundation that allowed us to really move way beyond where we were in the late eighties.

It's almost hard to remember. In fact, if you go back and look at the kind of articles written about NASA in [19]'88 and '89, and you compare and contrast them to the kinds of things that have been written about NASA in the last four or five years, it's almost unbelievable that they're the same organization. The organization, "The gang that couldn't shoot straight," "Where's NASA going?" "Lost in space," "Loss of focus, loss of performance." And today it's seen as a bright, shining example of the kind of technology advancement, purposeful, positive element of U.S. foreign policy, U.S. civil research and

development program, and it's the kind of vital program and agency that I grew up with in the sixties when people had attributed it to Apollo and the Cold War and the space race, and we've now seen that there's something about space and space exploration that Americans absolutely demand and expect of their government and their country, quite independent of this longstanding dual. So the growing of the institution through that crucial phase, Dan and George deserve enormous credit.

Now we have an institution and an agency that is one of the highest performers in the U.S. Government, of unquestioned support by the American public, looking for new agendas, looking for new activities. I mean, it's really remarkable when you think about what's happened in that period of time.

WRIGHT: During those days of planning and in trying to set those visions, did you ever have a doubt that you wouldn't succeed in what you were trying to do?

ALBRECHT: Oh, man, yeah. There were many dark days. I mean, you know, as I said, of course not only do we have the benefit of hindsight, but the voices that said, "You are really destroying the space program," were significant and serious and well thought out, and you had to look at that and say, what if we would be sitting here in 1999 and, in fact, there was a discussion among serious people that the consequence of all these things involving Russians in the space program, changing the design of the Space Station Freedom, challenging appropriators on the floor, demanding that NASA work for the White House and become part of the administration, accepting that their fate was tied to the normal political vision of the administration, etc., would, in fact, destroy the agency—I saw pieces of paper by very senior, credible people in NASA who were worried that NASA would be split apart into two or three parts and that NASA would cease to exist as an organization. In fact, there was belief that there would be those inside the Congress, some in the government, and others in the general

public that would say, "NASA had outlived its usefulness, and all this stirring that you're doing, all these changes that you're asking the agency to consider are going to, in fact, destroy it." It was actually a very serious concern on my part. I knew that I would be part of the people that would be accountable and responsible for that. As I said, I grew up, like most Americans of my generation, revering NASA, so the possibility that I could in any way be involved in what would be the dissolution of this was terribly burdensome.

So I say here in now hindsight that these were the voices and this is the way we went, and it all worked out, isn't it wonderful, but at the time, of course, one doesn't know that these things are going to work out. You go from deep personal conviction and do your very, very best efforts to do what you think is right, but at the time it was very serious. A lot of sleepless nights, a lot of unhappy evenings at home when we grappled with this.

WRIGHT: Was there a specific time or event that you knew that *that* was the turning point, things were going to fall in place and it was going to be successful as you wanted?

ALBRECHT: No, but there were little victories. The congressional vote, that first vote, in my personal mind, I felt that was such a tremendous risk and it was such a tremendous reward, because I really thought with that first congressional vote on the Space Station that there was the beginnings of the growing self-confidence that it wasn't fragile, that it wasn't necessarily tied together by very disparate threads that couldn't be jarred, that there was some fundamental support for the space program.

I think at that point, even though there were many, many travails ahead, if I had to put the one point, certainly there was that. I think the incredible risk and incredible reward of the nomination of Dan Goldin to be administrator was another turning point. I remember vividly that President Bush challenged me personally to make sure that Dan Goldin was confirmed

by April 1st, which is the time that Admiral Truly had made his resignation effective, so that there would be no interregnum at NASA—zero.

It turned out the first time I made inquiry to Connie Horner, who was the head of administration at the White House, I think it was something like eighty-one days, and I asked her what was the shortest period of time anybody had ever been confirmed in the Bush administration, and she said, oh, it was easy, it was Jim Baker, Secretary of State, who was confirmed in an absolute speed of light. I said, "How long was it?" She said, "Eighty-three days." And we had eighty-one days. Of course, it was in the beginning of a presidential election with a Democratically-led Senate, who had no particular interest in making sure that the President—as a matter of fact, there were many who would love to see the President embarrassed by having had a resignation of a NASA administrator and then a period of time with no NASA administrator, would have been a terrible embarrassment for the President.

By dint of Dan's personality and the sincerity of that appointment, that there was no political guile to it, he was the right person for the job, when he met the members of Congress and particularly the Senate, who were considering his confirmation, he completely convinced them that this was the right thing to do. I think when that nomination came through on April 1st, I think there was a second sense that we're on the right track, this is going to work.

WRIGHT: I guess it just kept rolling from that day forward and never stopped.

ALBRECHT: Yes, I think so. Dan said—of course, you've probably chatted with him and George, but they had their own set of travails and risks, etc., but I think it's always been on a positive upward-leaning slope, that they really are making progress. We are all making progress. I still harbor the hope that we're going to get back to the Space Exploration Initiative and soon. I think it's about time. I think there's no question that the American

public has an appetite and expectation for further exploration, human exploration, and I think the day is coming soon when we'll get another opportunity to put some more energy into that. Clearly, the assembly phase and initial phase of the Space Station is going to be an impetus. Soon people are going to ask, "What's next?" And I think we know the answer to what's next. It's just a matter of unveiling it at the proper time.

WRIGHT: It must be a very good compliment for you. If they're asking "What's next?" then that means we're thinking ahead.

ALBRECHT: I hope so. Like I said, it's an enormous opportunity to be part of. I was real lucky to be there at an interesting time. As the Chinese say, be careful, may you live in interesting times. And I certainly got a chance to.

WRIGHT: You have managed to provide so much information for us, and again in such a small amount of time. Do you have anything else that you would like to add?

ALBRECHT: No.

WRIGHT: Any contributions that you felt need to be noted?

ALBRECHT: No. I'm just delighted to participate, and this is a wonderful opportunity. I think it's a great program, a good idea. As a former historian, primary source material being able to go and listen to people who actually did things, in their own words, is a unique opportunity, and so I'm delighted to have been able to participate.

[End of interview]