

NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT

ORAL HISTORY 3 TRANSCRIPT

RICHARD O. COVEY
INTERVIEWED BY JENNIFER ROSS-NAZZAL
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ROSS-NAZZAL: Today is February 7, 2007. This oral history with Richard O. Covey is being conducted for the Johnson Space Center Oral History Project in Houston, Texas. Jennifer Ross-Nazzal is the interviewer, and she is assisted by Sandra Johnson. This is our third session with Colonel Covey. During the last session we finished talking about STS-26. Today, I'd like to begin with your career and flight assignments after this flight. In 1989, you served as Chairman of NASA's Space Flight Safety Panel. What were your duties and responsibilities?

COVEY: After STS-26, I actually was assigned two positions. First, I was selected to replace Bryan D. O'Connor as Chairman of the Space Flight Safety Panel. Second, I replaced Brewster H. Shaw as the astronaut lead for Department of Defense missions to be flown aboard the Space Shuttle. These missions were highly classified, and even though no new ones were to be added to the Shuttle manifest after the *Challenger* accident, four or five were still on the books. So I became, say, the interface between the Astronaut Office to the payloads community and to the Department of Defense for those types of missions.

The Space Flight Safety Panel, as I said, was formed after the *Challenger* accident in response to some of the thoughts and recommendations of the Rogers Commission. Like I say, it was to be an ad hoc, if you would, committee made up of Operations folks, primarily, to look and review activities within the agency that were specifically focused on human spaceflight. It was not to replace things like the Aerospace Safety Advisory Panel, which has a broader view

for NASA, but rather to be complementary to it with an additional focus. We were not aligned with the Aerospace Safety Advisory Panel, and instead had a direct reporting, as I recall, to Code M at the time. I may have to go back and look at that, but—yes, that was it.

It was loosely chartered beyond that, and so we spent our time not just looking at Space Shuttle-related activities, but Space Station. At that time Space Station was on the books, you know. It was being worked, actually, I think at time as Space Station Freedom, and so it was a little bit different with the work packages and the way that it was being managed, and it eventually wound up being the ticket on into the International Space Station of today.

I was not ever very sure that we really performed a valuable function in that safety role, the safety panel role. So as that went along, I felt more like it was something that had been set up in response to someone else's idea, but the practical implementation was difficult to make useful to the programs and then to the agency. But they could say they had one. It was one of those types of things. I think the reality of that is it eventually faded away and doesn't exist anymore, best I know, and that was probably the appropriate thing. It was in response to the accident and the immediate aftermath of the accident, and the return to flight, getting up to the point where we were back to more regular flight operations, it had some value, but beyond that, it didn't.

ROSS-NAZZAL: You said you replaced Bryan O'Connor. Was there anything in the charter that said specifically an astronaut has to be on the—

COVEY: Yes, right. Chairman of the panel was to be an astronaut, so that was it. But we had a Flight Director. We had a Launch Director. Norm Carlson was on the panel up until the time he

retired. I'm trying to think where the other membership of the panel, where they came from. It seems to me we had someone from Marshall [Space Flight Center, Huntsville, Alabama]. I know we had someone from Marshall that was part of the panel that represented their—so it was outside the program, more of an institutional flavor, looking at operations within the programs. That was about it.

ROSS-NAZZAL: What were some of the issues that you looked at as part of that panel?

COVEY: Tough for me to remember specific issues. Like I say, I was never really enamored with the effectiveness of the role, and probably one of the reasons I don't remember as much about it.

ROSS-NAZZAL: Okay, well, shall we go on and then talk about—

COVEY: Sure.

ROSS-NAZZAL: Well, actually, no. I want to talk about—you were Coordinator for DOD [Department of Defense] Flights. That was something that we hadn't found in our research.

COVEY: We were low-profile. [Laughs]

ROSS-NAZZAL: I can imagine. Can you share with us some more detail about that?

COVEY: Sure. You know, all of the missions were highly classified, and each crew, as they were selected, was read into the particular program that they were in, the DOD program that they were supporting. But there needed to be someone who was aware of what all of those missions were going to be doing and working that interface with the appropriate agencies within the DOD to make sure that the crew issues that may cross all of those were being taken care of.

So we had a very small staff, primarily focused on managing the classified materials that we kept in the Astronaut Office related to these missions; the clearances of the people that may have to go beyond just the regular Department of Defense top-secret clearances; helped manage all of that activity. Someone that could go and sit in on all of the meetings related, that are standard types of meetings for any payload that might fly on the Shuttle in the course of mission preparation, but because they were of the classified nature, they would be held in special environments or different places, and having someone that could go and attend all those other than just the crew for a specific mission.

Because even the crews, from one mission to the next, didn't necessarily know what the other crews were doing and what they were going to fly and do on orbit. If you think about just all of the meetings that go on related to mission planning and payloads, those were all done in a classified environment, so having someone designated from the Astronaut Office to go and do all those was important. So I got to know an awful lot about all of the missions that we called classified DOD missions at that time, starting in late '88 and going on through my flight in 1990.

ROSS-NAZZAL: Did you spend some time at the Pentagon working these issues, or were you primarily based here in Houston?

COVEY: Primarily based here. I probably can't even tell you where else I went.

ROSS-NAZZAL: Did you work very closely with anyone in particular while you were working on this?

COVEY: Within the Astronaut Office?

ROSS-NAZZAL: Within the Office or within the Air Force.

COVEY: The groups of people that we worked with within the Department of Defense and the Air Force were at the time very low profile. When they came to JSC, there were very few people that knew that they came, necessarily who they were and what organizations they represented. That was the way we operated back in that time frame.

ROSS-NAZZAL: Was it clear to you at some point that you were going to be flying on a DOD mission because you had received this assignment?

COVEY: Yes. I assumed that I probably was, but I'm trying to think of the timing. It must have been in '89. I was approached by the Air Force about returning to a Air Force assignment as a Test Wing Commander over at Eglin Air Force Base [Florida]. Going through the process of making my decision on whether I wanted to accept their offer to come back to a very, very good job, or to stay and fly again, I had discussions with Dan [Daniel C.] Brandenstein about, okay, so what's going to happen next and when. So [it] was in that discussion with Dan is when he told

me of his intent for me to fly STS-38, which was going to fly at the time, I believe, in the summer of '90. Yes, it was summer of '90. So that was sort of when I learned.

So I was in this role, which made sense that Dan would have assigned me to this role of coordinating all of the DOD flights if indeed he is planning for me to pick up one of those flights, much like Brewster had. See, Brewster left and went off and flew one of the DOD missions, I think STS-28, and so I kind of rolled in behind him in doing that, and then flew the STS-38. So that was when I found out that, yes, that was what I was going to go do. It made sense at the time.

ROSS-NAZZAL: What sort of challenges are associated with flying a classified mission versus, you know, flying your first two missions?

COVEY: Well, one, it was very complex. You know, from the training and standpoint that even sometimes the training loads were classified, so you had to operate in a classified environment; the controls and the limitations that that puts on you in how you train, how the Mission Control Center operates, make it more cumbersome. But actually, we had gotten very good at it by 1990. The facilities were set up. The procedures were set up. You had to have a classified way of developing the Flight Data File and managing the Flight Data File as classified material.

The control center had to operate in a classified environment, which meant that there were real limitations on the communication systems; that encryption was required for communications, and some of it, there were special facilities required in the control center for the payload operations and for certain levels of secure meetings. It was much different. When you

throw the elements of classification, DOD classified operations, in there, it got more complex and more difficult. But, you know, we learned how to do it.

We had additional restrictions and limitations put on us in our travel. Sometimes we were not allowed to travel to acknowledged locations. So then when you start having to travel and, you know, the whole issue of how you do your travel reporting and expensing, when you have to say going someplace, but maybe you go somewhere else. I mean, it was complex, and so that was part of what the role that I had was, as the coordinator and integrator, was to help facilitate some of that stuff.

So there were those complexities, but that was all kind of fun, too, you know, all this keeping everything classified and saying, “No, I can’t tell you where I’m going, and I can’t tell you what I’m doing,” and those types of things. Outside of the core group in the office that was either flying the missions or had leadership positions and had the appropriate clearances, there was very few people that really knew what was going on on those DOD missions.

There were even further levels of classification and knowledge of what was really going on and what the payloads were designed to do and were to do, as you got within even the crew. So there were some things that I as the commander of the mission got read into that no one else on the crew did, and there were some things that the crew knew about and that some of the people working the payloads knew about, that other people working the payloads did not know about. So even in the control center they had a limited knowledge of all the things that were actually involved in the payload operations. So it was a different environment, different environment.

You have to remember we had gone down this path because when the Shuttle came into being, it was designated as the primary launch vehicle for Department of Defense payloads, so it

had to accommodate that. We were going down a path where we were even going to launch Department of Defense missions out of the West Coast. We were going to control them out of Colorado Springs [Colorado]. I mean, all those things were—and work facilities were being built. We had done a lot of work on developing, you know, supporting the development of SLC-6, the Space Launch Complex 6 out at Vandenberg Air Force Base [California] before the *Challenger* accident.

That all ended with the *Challenger* accident, and then the national policy became that they weren't going to fly satellites and expendable payloads, if you would, or payloads that could fly on expendable launch vehicles, on the Shuttle anymore. So that got phased out, and that's why it eventually went away. It took a while because of what was in flow and in process at the time, but then it went away after that. But that was because of the change in national policy based upon the *Challenger* accident.

So we stopped working on Vandenberg launches, which not only included the new launch complex out there and a very complex process of moving the Orbiter, we were developing filament-wound boosters that were lighter for the Shuttle that replaced the steel-case ones that we fly with now, and that was to facilitate launching out of the West Coast where they had a real performance issue. Those were scary boosters, because they had a lot more flex in them. So none of us were really sorry to see that go away after the *Challenger* accident, and the DOD missions went away, and we decided we weren't going to launch out of California with the Space Shuttle.

But the whole operation was going to be really weird out there. Getting from the runway to the launch pad, you know, it was up and down hills and through the valleys, because of the way California is built. They had made special provisions for being able to tow the Orbiter along

roads and stuff to get it from the runway down to the launch pad. That was very interesting, and got to do some interesting work in preparation for that pre-*Challenger*.

ROSS-NAZZAL: Were you involved in that work?

COVEY: Yes, yes, yes, for a while back before the—it must have been even before I flew my first flight we were doing, because we stopped pretty much everything after *Challenger*. I don't remember us doing anything out there but that. Yes, we ran tests on making Shuttle approaches to the runway at Vandenberg, which was sloped, and everybody worried about whether the slope of the runway would cause problems in flying the big glider down, because it was a one-and-a-half-degree slope, as I remember, which is not real severe, but the final approach of the Shuttle is only a two-and-a-half-degree glide path, so one and a half degrees, relative to that two and a half degrees, can make a big difference.

So we were trying to figure out if that was a problem; we ran a test out there. That was fun, and took the Shuttle Training Aircraft out and flew it around to the runways, and then we were working also, like I say, the SLC-6 development, the filament-wound boosters. All those were elements of getting ready to fly out there, and that was early eighties we were doing that stuff.

But anyway, so I'm back to the DOD missions. As I say, for those of us that were flying those missions involved, it was just a little bit different than—a whole lot different than the other missions.

ROSS-NAZZAL: What did it mean to you as a military man, being assigned to this DOD mission? Did it have any sort of special significance for you?

COVEY: Oh yes, absolutely. You know, I thought it was wonderful. There were exciting things going on in DOD space back then. There still are. There were exciting things, and being a part of all that then with my military background and my being an astronaut and being able to support all that was really very, very cool.

ROSS-NAZZAL: Why don't you tell us about the crew members and your relationship with them on this flight.

COVEY: Okay. Well, my STS-38 crew is a unique crew in a lot of different ways. One, we were all active-duty military folks. We had representatives of each service. We had a West Point graduate, two Naval Academy graduates, and myself, an Air Force graduate, and then a UT [University of Texas, Austin, Texas] graduate, so, you know, Carl [J.] Meade snuck in there. So we had representatives of every service. We had representatives of all three service academies. Every one of the crew members was a graduate of a military test pilot school.

Although only two of us were really flying as pilots, there always have been and continue to be some number of military test pilots who fly as mission specialists. So Bob [Robert C.] Springer, Carl Meade, "Sam" [Charles D.] Gemar were all graduates of test pilot school selected to be mission specialist astronauts by NASA and flew in that role with us. Frank [L.] Culbertson [Jr.] and I were selected as pilots, and so we were there. From the standpoint of, if you would, a

common background of military academies, military service, military test pilot school, we had the full bag there on the crew.

Three of the guys were flying for the first time. I had flown twice, Bob Springer had flown once, and then Frank, Sam, and Carl were all flying their first flight. Flying with guys for the first time is always an interesting proposition. I really noticed it going from STS-38 to STS-61, where I had a crew of everybody had flown; and then on STS-26, everybody had flown. My first flight, I was flying for the first time, so I was just wide-eyed. I probably didn't know the complexities it is of training with and flying with somebody for the first time.

So we did that, and it turns out that our mission—the good news/bad news about flying with new guys is that the good news is that we weren't flying a real long mission, so they didn't have to worry about a whole lot of things. The bad news was that our most critical operations were all on the first day right after, basically between launch and the time we went to bed. So here these guys were going to be adapting to space for a first time, with all of the “gee whiz” factors and everything, and we had to do our most serious and significant work that first day in deploying a payload.

So I worried about that, and we tried to keep our operations as simple as we could. And basically, they were relatively simple, other than the fact that, as I recall, the most difficult thing was dealing with lighting and things like that for photography. Had a lot of people that we had to have responsible for photography, but it's hard to simulate on the ground the exact lighting conditions you're going to have when you get on orbit, and we struggled. We struggled with that, and we didn't do very well with that when we finally got on orbit. It was just bad lighting. I mean, the lighting was terrible, and so it's hard in a short period of time to get ready to take pictures and movies and video and get them as good as you'd like.

So the common background that everybody had from the standpoint of their experiences, pre-NASA experiences, I think helped us as a crew. All five of us were qualified and checked out to fly the front seat of the T-38, so a lot of crews, if they had five people, they might have three pilots and two mission specialists, and they take three airplanes when they go somewhere. Well, we always took five airplanes whenever we went anywhere.

There are some great stories that are stories about that, because, you know, Sam Gemar, even though he was flying the front seat of a [T-]38, his flying background before he came to NASA was predominantly helicopters. So he didn't have as much experience in flying high-performance jet aircraft as the rest of us did, and it showed. [Laughs] So we always had to accommodate that sometimes and make sure we were watching out for Sam; make sure we didn't put him in the wrong situation and do that. But that was fun.

So, you know, the crew, we got to travel a lot together to places where we couldn't tell anybody else where we were going. We had a lot of things that we could only share with each other. We couldn't share them with our families; we couldn't share them with other people in the office. So from that standpoint we still have a secret ring or whatever, and can nod at each other when we hear things or know things that we know that nobody else still knows about what we did and how we trained and stuff.

ROSS-NAZZAL: Let's talk about your style as a commander. This is your first flight that you get to command. What was your commanding style like, if you can characterize it?

COVEY: Well, it's probably better for someone else to answer that question than me. [Laughter] Well, my approach was always to make sure that everyone understood clearly their roles and

responsibilities, and then to make sure that I held them accountable for those, the activities associated with that. With the type of people that I had on the crew, that wasn't hard to do. They were all very much project, process oriented people, because of their test piloting backgrounds, and so they would go off and work the specific issues that they were assigned and do that.

I very much as a commander never felt like I had to be the smartest person on everything that was happening. I had smart people, and I wanted them to be smartest on the specific areas, and I would rely on them to be able to keep me smart, as smart as I needed to be. So I know that I learned that from the commanders I flew with, which is not an unusual approach for commanders to take.

A commander's role varies from mission to mission, and it varies from individual to individual. My focus was making sure that our preparation for the mission, including how we related to and dealt with our customers, which I considered to be the payload customers, the Air Force and DOD agencies, that that relationship was clear and solidified. That our relationships with the flight control teams and the Flight Directors, in particular, was appropriate and clear and open, and then that we had properly trained and were capable, each of us performing the specific roles and actions that were required of us during the course of the mission.

So, you know, that meant watching guys in training and making sure they had the right training, and being comfortable with their ability to perform on orbit. There are other people that are making some of those judgments, but ultimately to me it's the commander that has to make those calls on the readiness of the crew to perform on orbit.

ROSS-NAZZAL: As commander did you have any opportunity to select the crew, or as Coordinator of the DOD flights, did you have that opportunity?

COVEY: I did not in this case. Dan pretty much told me who I was going to fly it with, so there I was.

ROSS-NAZZAL: Why don't you tell us about training. You alluded to some of the challenges in training, but was training any different for this mission than your previous two, besides the classified discussion we had?

COVEY: Actually, the training was very much, in my mind, very much like the training that we had for STS-26. They were similar type missions. They were both scheduled for four days. They both involved flight-day-one deployment of a payload, and then basically a couple of days of doing things then coming home and landing. I mean, they're pretty simple missions from the standpoint of the structure of them.

So the training, very much like that, a lot of focus on ascent and entry for the pilot, commander, and flight engineer, who was Bob Springer in our case. We didn't have any robotic arm operations, so we didn't have to do that. The guys that were doing EVA [Extravehicular Activity] training were strictly contingency-type operations, and that was pretty minimal, as it usually was. So we didn't have any rendezvous. We didn't have any of those types of things, so the training, it was focused around ascent/entry, and then flight-day-one payload operations, and that was pretty much it, so it was pretty simple. We could get our training done pretty easily and in a pretty structured time frame.

ROSS-NAZZAL: What did you tell the rookies on your flight about being in space and some of the challenges that they might face or things they should be aware of?

COVEY: Yes, you know, I don't really remember coaching them that much. I'm sure I did, and both Bob and I did, trying to help them get ready for that. I don't remember any specific things, other than I'm sure we probably told a lot of war stories along the way and helped them that way.

ROSS-NAZZAL: Well, why don't we talk about launch day and getting ready to go to the launch pad and then the eventual launch?

COVEY: Well, let's see. First, we got caught up in a scenario that changed our launch date substantially in 1990, and I'm not going to remember all the details exactly. We were scheduled to fly on *Atlantis*, and I believe it was *Discovery* ahead of us had gone to the launch pad, and they had hydrogen leaks. I'm trying to think of—I don't remember exact details on it, but it was around the disconnects, the ET [External Tank] disconnects.

They were substantial leaks. They were unresolved, and somewhere in there they brought *Discovery* off the pad, and then they decided to check and see if *Atlantis* had the same problems; took *Atlantis* to the pad, did a tanking test, and it did. So that took us into a four-month delay, at least four months; I want to say it was four months. That rolled us into November from the summertime.

So before I get there, there was an interesting thing that happened in this, in that Bob Springer had decided that he was going to leave the Astronaut Office after our flight, and in fact,

had already accepted a position with Boeing in Huntsville, Alabama, when we got the delay announcement. I wasn't 100 percent sure that he wasn't going to say, "You know, I'm not going to fly. I'm just going to go to my new job." [Laughs] I think he probably had some of those thoughts about whether he wanted to delay.

Well, Boeing was good about letting him delay his report date, so he did go ahead and fly with us, but after we got back in November he left and actually finished his part of our crew report while he was working for Boeing in Huntsville, so he departed pretty quickly after we completed the mission.

So that all kind of happened. It pushed us off into November. I don't remember a lot of the details of that, and that was one of those things that got us into a different lighting situation that made it difficult for us to do our photography.

But anyway, when we got to November it turned out that the launch was a night launch. That in itself wasn't particularly new to me, since we had launched very close to night on my first mission. It felt like a night launch when it actually happened because of the clouds that were there, even though it was right at sunrise.

But going to the launch pad in the dark, which I had done before, is always an interesting experience, because you get to see things that you don't necessarily see in the daytime, like the hydrogen burning off and away, and the lights, the way things are lit up is very, very interesting and surrealistic out at the launch pad with the big xenon lights and all of the burn-off and the hissing and the gases and stuff that are moving around out there. It's pretty neat.

But I don't remember much about the launch specifically, other than I do remember that my oldest daughter was not there. It seems to me we launched in the evening, as I recall; it was an evening launch. But my daughter Sarah wasn't there. It was the only launch that she missed,

and the reason was that she was on the Clear Lake High School volleyball team, and they had won their region and she was on a bus heading to Austin [Texas] to play in the state championship series.

So we had talked about what happens if—and made a decision that she would not go to the launch. She'd been to two, so she wouldn't go to the launch; she would go with her team to the volleyball championship. So she was on a bus, actually, between here and Austin during the launch, and someone had to call her out. Back then we didn't have a whole lot of cell phones, so I was not sure exactly what happened.

But the follow-on to that was when I was on orbit, I was getting the scores from them. They won the semifinals—yes, the semifinals, and then lost in the finals that year. But I got all that while I was on orbit. I'd get it in the teleprinter. It would come up in the message; they'd give me the scores. [Laughter]

But like I say, I don't remember anything unique or specific about the launch. I don't remember anything unique or specific about the crew's reactions. It was pretty typical.

ROSS-NAZZAL: Anything you can share with us about the flight itself?

COVEY: Yes. We did not go very high, and you can read a lot into that. We didn't go very high because we couldn't go very high, which says we probably had a heavy payload. But, you know, if you go back, there's some stuff that's in the statistics now and they talk about that. But that was the thing that was really unique about the whole mission is I don't think we ever got up above about 135 nautical miles. Our insertion was low, maybe 125 miles or so, and then we went up a little higher after we deployed a payload.

So that put us in an orbit that was so different than my previous ones. It's really low. You know, you have a greater sense of—I mean, the proximity to the Earth makes a difference in how you look at it, what you can see. You can't see as far to the north and south or ahead of you or behind you. But then when you're looking down, you can see more things.

I remember at that time this was in the time period called Desert Shield, which was right after the invasion of Kuwait by the Iraqis in 1990, and when we had started deploying large numbers of U.S. forces in the Saudi Arabia in preparation for what eventually became Desert Storm. So whenever we would fly over that part of the world, of course, there's lots of fires and stuff in the oilfields in Kuwait. We could see all those, and we would try to see what else we could see. I remember looking and seeing the bombers on Diego Garcia sitting there very clearly when we flew over it in the Indian Ocean. In fact, I think we sent some messages that basically we're focused on our troops there.

Everybody had a sense that we were going to go to war, that Desert Shield was more than just a saber rattling, that they were really positioning for an invasion and a rejection of the Iraqis out of Kuwait. But I think that happened like in just after the first of the year, January-February time frame in '91, yes, somewhere like that. We were flying right at Thanksgiving time, just before Thanksgiving, so I remember that.

But that was probably the one unique thing about the flight, more so than my others, because during my next mission we went up to the Hubble [Space Telescope] up at 300 miles, and it's a lot different up there. That's more than twice as high as we were on the other mission. People don't think about the different operational range of the Shuttle from the standpoint of, yes, you can go into 120-mile orbit. You're not going to stay there very long, but you can go

into a 120-mile orbit. Or you can go all the way up to 330 miles, or however high the Hubble might be, with it, and it makes a difference in the things that you do.

So we, like I say, had a very busy first day, and then transitioned into enjoying our next couple of days.

Then the end of the mission was different. After the *Challenger* accident all landings had been in California, and there really had not been any plans to change that approach. A very, very conservative agency, very conservative. In the past when the Kennedy Space Center [KSC, Florida] was the primary landing site, California was the alternate, and people always thought about, okay, you know, we'll go to California if we can't land in Florida. That was kind of the way that people thought about primary and alternate sites. But we had switched back now to where the primary site was California. We were supposed to land in California.

On our landing day—and it was a four-day mission, and on our landing day the weather in California was not good, and so after doing all our preparations for landing, we waived off and extended a day to wait for the weather to get better. Well, the next day the weather in California was still not good, and it was not forecast to get any better the following day, which would have been our last extension day on this mission. So everybody started looking at landing in Florida, which was really weird, to think that Florida was going to be the alternate weather site as opposed to a primary site.

Lee [Alan L.] Briscoe was our Flight Director, Entry Flight Director, and I remember he did something I've never heard of done or seen before. He actually got on the com [communication] loop to talk to me, and basically the question was, "How do you feel about landing in Florida instead of California?" We hadn't landed in Florida in five years, since, you know, '86—or almost five years.

It was kind of a no-brainer to me. I says, "Hey, I've flown so many approaches and landings to the Kennedy Space Center. We can go land there. That's not a problem."

But so that was different, for a Flight Director to get on the com loop instead of letting the CapCom [Capsule Communicator] talk to me and tell me. That was very different, and they did that.

So we said yes, and so on our first extension day then we flew to a landing in Florida. It was a late afternoon landing. Mike [Michael L.] Coats had the weather aircraft duty down in Florida, and I suspect Dan was still out in California, so he had sent Mike down to Florida to be a weather aircraft guy. So he was there, and so they went and they watched the weather.

This is the fall of the year, and one of the things that they do in Florida during the fall is they burn the underbrush in their pine forests, a very controlled type of burn just to get everything down. And they were doing that over on the west side of the river down there in Florida, and the winds were predominantly from the northeast, and so they were blowing that smoke out over central Florida toward Orlando [Florida]. So at the time Mike made a recommendation that we land on runway 33 to the north down at the Kennedy Space Center, and that's what we were targeting to.

Well, between the time that they made the weather call and probably about the time we deorbited until we got there, the winds shifted, and they shifted around from the southwest. All of a sudden this smoke started getting blown over the Shuttle Landing Facility. Mike was watching it, and it was one of those things where we go, "How bad is it going to get," you know. It was getting worse and worse, but it was one of those things where it was, "Well, how bad is it going to get?" They didn't know.

As it turns out, the smoke was coming pretty much right across the southern half of the runway, and the northern half was clear. Mike could have made a call somewhere in there and said, “Let’s go and fly in from the north end and land on runway 15.” We could have come in—I would have loved that, because that’s a left-hand turn for the commander, so the commander can see the runway and see everything coming around, and that’s what we all like to do is see that.

But he didn’t make that call, and instead we wound up coming around, and they started telling us, “There may be some smoke. It may be bad.” Well, it got compounded by the fact that the Sun was going down, and so all this time, you know, Mike’s looking and saying, “Well, the smoke’s not too bad, not too bad, not too bad.” The Sun starts getting down, the smoke starts getting a little thicker, and pretty soon, because of the refraction of the light off the smoke, you can’t see through it. So we’re coming around on the heading alignment circle, and Frank now is over looking out his window.

“Frank, what do you see?”

“Not much.” [Laughs]

“Do you see anything?”

He says, “I don’t see any of the aim points yet. Don’t see anything.”

So, you know, that’s not bad. We’ve got great guidance in the Orbiter. It’s always been good, and we knew we were close. So we’re flying around, and when we rolled out on final, the only thing I could see—I could not see the runway. I could not see the visual aim points. The only thing I could see was the what we call PAPI lights—the Precision Approach Position Indicator, PAPIs—lights through the smoke.

So that's good, because it gives me a visual reference that I can fly to that tells us if the guidance isn't—but that was the only thing—so we're flying down. We fly all the way down. We go into the smoke, and we get down at our pull-out altitude, and when we go in the smoke, I can still see those lights, but I can't see anything down toward the runway. We come out and we pull out below the smoke, and there it was. There was the runway.

Frank lowered the gear, and we landed, and I think technically I get to log an instrument approach on that. [Laughs] So not only were we landing at KSC for the first time in five years, we'd just basically flown through conditions that they would not normally have said, "Go fly through those." The irony of it was at the other end of the field it was fine. So anyway, I remind Mike Coats of that all the time, of the weather call he made for me. [Laughs] So that was actually one of the more exciting things that happened on the mission I can talk about.

ROSS-NAZZAL: Yes, that's not classified, is it? [Laughs]

COVEY: No.

ROSS-NAZZAL: How different is it landing on a runway versus landing at a dry lakebed?

COVEY: You know, I had never landed the Orbiter on the lakebed, but my two [times as a] pilot were on the lakebed, and the biggest difference is the deceleration tends to be a little quicker on the lakebed, just because of the makeup of the material. But the pilots wouldn't say that it's substantially different other than that. You've got more runway and more places to go sideways when you're on the lakebed.

ROSS-NAZZAL: Was there any damage done to the Orbiter? I know the last time the Orbiter had landed at KSC there were some problems. Any damage to the Orbiter?

COVEY: No. No. Not with my landing. [Laughs]

ROSS-NAZZAL: Okay. Of course not, no. [Laughs] I wasn't making a comment about your piloting skills there; just a question.

COVEY: Okay.

ROSS-NAZZAL: Did you guys have any PR [Public Relations] duties after this flight, or were they also classified?

COVEY: Yes, we did. Yes. Let me put it in the right perspective. We had some. Most of them were related to our customer, so they weren't highly publicized. I'm trying to think if there was anything else unique. The only thing that was unique and was very memorable is that the crew did get invited to the White House, and this was the George [H. W.] Bush the first and Barbara, Barbara's White House. We went just before Christmas, so we went in December. We went very quickly after our flight, which was, you know—the Bushes were great about that type of thing.

It was the most memorable visit that we had. Of the three that I'd made to the White House after flights, it was the most memorable. The reason was because of George Bush and

Barbara Bush. They invited our spouses, so our wives went with us, and we all went into the Oval Office. Had a very nice photo session in the Oval Office with them, and I've got this great picture of my wife and myself with George and Barbara Bush, and that's unique, to have the First Lady in the picture. In my first visits the First Lady wasn't anywhere around.

Then the President says, "I want to take you guys to go do this, and Barbara's going to take the spouses and go show them the private residence," which was all decorated for Christmas. So they disappeared, and then he says, "Okay," he says, "I want to show you this little—," so he took us off in his little office behind the Oval Office. He had his little world map in there, and he had a typewriter, and that's where he typed all of his little notes to people and stuff. He was showing us that, and he was just kind of saying, "This is where I really do my work," you know, and stuff, and it was very personable.

He took us outside and showed us around some things, where he played horseshoes, and the dogs were running out there, I remember. Barbara came out somewhere in there, because Millie went running out and caught a bird, and it drove Barbara crazy. She was so ticked at Millie for killing this bird, as you can imagine.

But then my wife tells the part about when they went up into the private residence, and we came up, I guess. Yes, we came up there and joined them. This was about the time we had joined them, and it turned out that "Jeb" [John Ellis] Bush's—Jeb Bush was there with his family for the Christmas holidays.

I think Kathy said that we were standing outside the Lincoln bedroom—she still remembers this—and these two little kids came running out, grabbed their arms around Barbara Bush, and pulled her down. I sort of remember this; my wife remembers it. And she listens to them; she says, "Yes, these are the astronauts." So here were these kids who were the

grandchildren of the President of the United States, and they're real excited about seeing the astronauts, you know, and stuff.

It was kind of a neat story that's there. So that was the most memorable postflight thing we had from STS-38 was that.

ROSS-NAZZAL: That's a nice memory. It's nice that you were able to go and get those photos.

COVEY: Yes, yes.

ROSS-NAZZAL: Well, the next thing that I have in your chronology is your work as Acting Deputy Chief of the Astronaut Office. Do you want to talk about that a little bit and some of your duties and how you got appointed to that position?

COVEY: Yes, let's see. That was in a time period when Jim [James F.] Buchli was the Deputy of the office, and he was going to go fly. So the way that had been worked, that Dan would let him go fly and still retain his title as the Deputy of the Astronaut Office, so they had somebody come in and act for him. Dan did the same thing, so when Dan went to train to fly, he would have someone come in and be Acting for him so his position was secure when he came back.

So Dan asked me to come in and be the Acting Chief while Jim went off to train and fly. You know, there the Deputy of the office has to run interference for the Chief in a lot of things. I'll call them personal personnel issues, helping resolve things that come up with members of the astronaut corps, you know, their working with other people, or helping make sure that we've got all of the assignments and duties that we think we're responsible for covered by somebody, with

the flux of people going in and out of training. So it was largely focused around those types of activities.

While I was in that role, several things happened. First was in April of '91, I believe—yes, it would have been April of '91—the Association of Space Explorers, which is an international organization made up of, at the time, cosmonauts and astronauts who had flown in space, the Russian—or Soviet, at that time—branch extended an invitation to the U.S. folks, U.S. members of the Association of Space Explorers, to come to Russia for a commemoration of Yuri [A.] Gagarin's flight thirty years before. So it was a thirtieth—and this was before there was any established relationships between NASA and the Russian space program.

But I got to go, and it was pretty extraordinary, because we didn't know exactly what we were going to get to see or get to do at the time. But it turned out to be much more than we had—the Russians had decided to kind of open up a little bit to us. So we went over to Moscow [Russia]. We spent time out at Star City [Russia]. We went to Energia; we got to see their control center. I mean, we got to see things and ask questions and got to do things we had not imagined that we were going to get to do, very much get a front-row view of their human spaceflight program and how it was structured and how they did.

Then for the actual commemoration, it was done on the same launch pad that Yuri Gagarin had launched from. They actually had a vehicle on the pad, ready to launch or close to being ready to launch. But so they flew us from Moscow out to Baikonur [Kazakhstan], which at the time everybody says, "Well, it's not really Baikonur. It's somewhere else. It's out here in Kazakhstan," you know, and we didn't know where we were going. But they took us out there and hosted us.

The whole time the Russian government hosted us in different government facilities, and they hosted us out there. We got to see where the cosmonauts' crew quarters were at the launch site, basically, and their training facilities there and everything, and share all that. They took us out to an air field, and they had all of their military fighters, their Shuttle Training Aircraft equivalent, all kinds of things out there we got to see, not expecting to be able to. You know, I mean, they just really gave us a lot of access that we didn't expect. I got to take my wife. It was a wonderful event, and we did that.

So that preceded some other activities that took place the next year that I was involved in, which was the actual first discussions between the Russians and the U.S. programs as to how we would exchange crew members and participate in each other's programs. That kind of set the bit. I got to meet a lot of the people that I'd deal with later on the Russian side, but just getting that experience was neat.

So then we got into an interesting daisy chain of events. Dan Brandenstein was getting ready to go off and get into serious training for his mission in 1992 on *Endeavour*. The first flight of *Endeavour*, I think, was in '92. So he asked me then to be the Acting Chief of the office. While he did that, and then at that time we said, "Yeah, okay," and Steve [Steven R.] Nagel would be the Acting Deputy, because Buchli was still off doing his thing for a little bit longer.

About the time that they said, "Yeah, Covey's going to be the Acting Chief of the office," well, Don [Donald R.] Puddy was the Director of Flight Crew Operations. At the time, for whatever reason, at that particular time he didn't have a Deputy. But he got selected to go off to a three-month program at Harvard [University, Cambridge, Massachusetts], executive professional development type program.

So no sooner had Dan said, “Hey, why don’t you come be the Chief of the office,” and I got a call from Don Puddy that says, “I’m going off to school. I want you to be the Acting Director of Flight Crew Operations.” So I still have this little sign that somebody gave me that showed where I was the Acting Deputy, the Acting Chief, and the Acting Director all at the same time. Technically, it was weird.

So I wound up doing that, and Steve Nagel became the Acting Chief of the office while Dan went off and flew. Then I went up over to Building 1 and backed up Don Puddy while he was off at school as the Acting Director of Flight Crew Operations. When Don returned, then I stayed on as the Acting Deputy Director, because at the time they didn’t have a Deputy, although they had identified one, and it was going to be Steve [Steven A.] Hawley, who was coming back from Ames [Research Center, Moffett Field, California] to be the Deputy Director. So until he got there, I was the Acting Deputy.

So I got to act a whole lot for a year or so there, which was great. I had a lot of fun in the role. I got to learn a lot, and I felt like I made a difference, even as an acting guy, in that time period, so it was interesting.

ROSS-NAZZAL: What were some of your responsibilities while you were working in Flight Crew Operations?

COVEY: Basically, the Director has responsibility for all the aircraft operations as well as all of the astronaut activities. So those are the two primary suborganizations that the Director has responsibility for. So management of all the crew activities, management of the flight crew operations, were the primary focus of that. You know, having to deal with, again, a lot of the

personnel issues that evolve at the next level up, and got to there; dealing with aircraft incidents and the additional aspects of having all of the airplanes that NASA had at JSC, the responsibility for those, was the primary focus of that job. Readiness of the crew and the flight crew, the flight crew elements to support launches in that time period, and being a part of the flight readiness review process was a big part of it.

ROSS-NAZZAL: What impact do you think that accepting these positions had on your career or your next flight at NASA?

COVEY: It had a direct influence. Let's see. What happened, when Don got back from school in the early part of '92, then I was the Acting Deputy Director until Steve Hawley showed up, and I can't remember exactly when it was. But it wasn't too long after in that time period—I think it was probably in the summer—Don Puddy announced his retirement, or his assignment to the Center Director's staff, one or the other. So it became clear that they were going to select a new Director of Flight Crew Operations.

Well, this is an interesting story in itself, in that at the time the Center Director was Aaron Cohen. The Deputy Director was "P. J." [Paul J.] Weitz, former astronaut. In that time period Dan [Daniel S.] Goldin had come into the Administrator's position; that would have been early '92, as I recall. So the landscape at [NASA] Headquarters [Washington, D.C.] started changing, and one of the changes it made was George [W. S.] Abbey, who had worked on the Synthesis Group and came back into NASA Headquarters as basically a supporting staff to Dan Goldin.

George very clearly had someone in mind that he wanted to be the Director of Flight Crew Operations, which had been his old job, and I suspect that was part of the reason that Don got moved to another position was to open that up. But the person that George had in mind was Randy [H.] Brinkley, and Randy was outside NASA at the time. He had just been hired by NASA but had no experience at NASA or JSC, and George was promoting him for the position.

Paul Weitz and Aaron resisted that direction, if you would, from Headquarters as to who should fill that position, and so they did something that you don't see very often, which is they opened this SES [Senior Executive Service] position up for competition. They basically posted it and told everybody. What that allowed them to do then, and I'm not sure exactly of the process, but they made sure that they had plenty of people that were very qualified that applied for the job, including myself, okay? Then what they did was they were able then to make Randy Brinkley's application come in—they do a process. I think it allows them to go down to where they just have to look at five or something.

So they threw him out, and then they looked at the five they wanted to look at, going strictly by the government process relative to posting and filling a position. The end result was that Dave [David C.] Leestma was selected as the Director of Flight Crew Operations. That probably was a compromise, I suspect, between George Abbey and Aaron Cohen, and that's okay. That's how that works.

So right after that was decided, and they said okay, by then I had been sitting around up [on] the [eighth] floor, because Steve Hawley had come in, but the two of us were still kind of running Flight Crew Operations, and I was helping around up there. But then after they made Dave's selection, I got called in by Aaron Cohen and P. J. Weitz, and I still remember this very clearly. They thanked me for applying for the position and were very gracious about it, and then

said, “We want to talk to you about what you want to do next.” The choices were, “Do you want to go back and be the real Chief of the Astronaut Office, or would you like to command the Hubble repair mission next year?”

It took me about two seconds to say, “I don’t want to go back and be the Chief of the Astronaut Office. I want to go fly the Hubble mission.” So did I have an input? Yes, I think because I was working with Aaron and P. J. in Building 1 in Flight Crew Operations, I gained their confidence, and they wanted to do something good by me, so that was the good thing. So I got the jump on that one there. It wound up they made that assignment, and that’s how I got that.

ROSS-NAZZAL: Before we talk about this flight, I was just curious, do you think there were any drawbacks to taking these administrative positions?

COVEY: No. No. No, I actually wasn’t sure if I was going to fly again or not. I’d pretty much decided I wanted to, but there were absolutely none, no. I learned an awful lot, and I felt like I was contributing at the right level, based upon my experience in the office in the time that I had had with the agency by then.

ROSS-NAZZAL: Let’s also talk about your role as a representative for the negotiations between the U.S. and the Russians a little bit before your flight. What did that involve and when did that process start?

COVEY: Well, it started before I got my assignment. It must have been in the fall. It must have been in the fall of ’91. I think the first time they came, he said, “We’re putting together a group

to go to Russia.” Don Puddy was still gone, so I just self-designated myself to go as the flight crew representative. So I made two trips to Russia somewhere in that time period, and somewhere in there I also found out that I was going to fly the Hubble mission. I remember that.

Basically, as they were trying to have these initial discussions about what could we do—could we fly Russians on the Space Shuttle; could we send U.S. astronauts to Mir—the early discussions didn’t even look at the Shuttle flying to Mir. That actually evolved later. It was more just an exchange of crew members.

So we were trying to figure out what’s the right structure to do that. What are the right agreements that have to be put in place? How do we deal with Russians coming over here and getting trained? How do we deal with an American going and training with the Russians, flying to Mir? What assurances do we need to have about the safety and reliability of the Mir and the Soyuz and all that?

As you can imagine, very difficult, very difficult. One, there was still not a lot of trust between the two sides. One, we had to do everything through interpreters, because we didn’t have anybody at that time that spoke Russian, at least to the point where—there were so many of us that didn’t that we had to have an interpreter. Likewise, they didn’t have too many people that spoke English.

So we got initial exposure at that time to the Russians who ran much of the crew operations, both inside Energia and outside Energia, and started setting up agreements on the exchange of crew members. So, as I recall, they were very painful, very painful discussions, just because of how hard it was to get through everything and make sure everybody was clear that we were all talking about the same things.

In the end it wound up that one of the last things I did in my role in Flight Crew Operations was to facilitate the first two Russians to come over and get established in our community here and into our training programs, into the Astronaut Office. It was Vladimir [G.] Titov and [Sergei K. Krikalev]. ... The first two.

Part of the agreement was that we would pay their living expenses here when they came. So I had to go and work with the NASA folks on how we pay these Russians and the basis of what we pay them, and how do we give them money and know what they're doing with it. At that time checking was not something that they came with any knowledge of, and so I remember having to go—we decided to use the JSC Federal Credit Union as a way to funnel money to these guys and have some insight into what was happening.

So I remember that when they showed up, we got them and we put them in a hotel, them and their families in a hotel. We had arranged for some executive apartments that we had taken out leases for them. Then we put money in the credit union account, and I remember taking them over to this apartment and helping them write checks for their first month's rent and their deposits or whatever they had to put down, and do that. It was, you know, taking them through the basics of it. They were smart guys, so they figured it out. In fact, they were real smart guys, and we didn't give them nearly enough credit. ...

But there was a communications thing. Titov spoke very little English. He spoke some. The other one had very good English skills.

So they came and got geared up to go fly on the Shuttle, and then we sent Norm [Norman E.] Thagard over to go fly to the Mir on the Soyuz, and then that evolved into a whole program with the Shuttle flying up and doing dockings with the Mir and things like that. But I just got that first stuff going, and I bailed out. Actually, I thought it was going to be too hard to work

with the Russians anymore, and going and flying the Hubble mission looked like a good one to me, so that was sort of what happened in that time period and what I was involved in.

ROSS-NAZZAL: Yes, it's interesting. You mentioned that there were a lot of trust issues between—well, I guess just on the part of the Russians and not necessarily the U.S. side?

COVEY: Both sides.

ROSS-NAZZAL: Both sides?

COVEY: Yes, yes. Well, for years these had been competitive programs. For years, other than the 1975 mission where we flew with them, that had been lost. This was fifteen years later, sixteen years later, so a lot of the relationships that had been built for Apollo-Soyuz [Test Project, ASTP] had vanished. The players were in different roles. They were gone. So the idea that facilitated this basically was the breakup of the Soviet Union. That then took away the adversarial, competing programs aspect of it to one of finding a way for these two great countries with these great space programs to work together.

So I think it was supported because it was a way to work together that should be nonthreatening, and I think it was, largely, but it's just that, you know, the Russians did things different. To them, knowledge was power. Well, it is anywhere, but to them knowledge was power, so when you tried to find out information about like their systems and stuff, you found out that there was one or two guys who had everything in their head, and they may have a set of drawings or something, but they didn't share those with everybody. Those were theirs.

So whereas we have everything documented and you can go and pull out—the knowledge is not resident to one person. It's resident to a community, and theirs, it was more small groups had the power and the knowledge that allowed them then to secure their roles. So they weren't necessarily willing to share everything as much with us, nor when they wanted to share it with us did they have it in a form that made sense to us, that we could deal with. Says, "Okay, yeah. Oh, yeah, you want to know about that? Here is this guy. Ask him your questions." And we want the schematics and we want the—you know, and they weren't there.

ROSS-NAZZAL: I imagine technology exchange was quite difficult then.

COVEY: Yes.

ROSS-NAZZAL: This is probably an easy question. Did they have things like Xerox copiers or scanners so they could share those things with you?

COVEY: Not to the degree that we had.

ROSS-NAZZAL: How challenging was it for you, being that you had been working in the military for so long, and they had been the focus of the Cold War for so long, and now we're trying to create a partnership with them in space? Was that a challenge for you?

COVEY: Not particularly, no. No.

ROSS-NAZZAL: You mentioned ASTP, and I was just curious, did you ever talk with people who had worked in the program and talked about their working groups and how they made those relationships between the U.S. and the Soviet Union work?

COVEY: I don't remember specifically addressing it relative to the activities that we were undergoing then. We did have some people that had been around during ASTP that were part of our team, so there was some knowledge. I remember early on talking with people like Jay [F.] Honeycutt when I first came to NASA, who had been involved. That was in '78, and he had just finished working on that in '75, and so he had a lot of experiences there. People like that were around that supported a lot of this, like George Abbey and Tom [Thomas P.] Stafford, had vast experience with them. But for most of us that were involved in those early parts, early discussions, it was limited.

ROSS-NAZZAL: Well, I think we need to stop and change out our tape here.

COVEY: Okay.

[Tape change]

ROSS-NAZZAL: All right. So we are back, and we're going to talk about STS-61, which was the first Hubble Space Telescope servicing mission. You told us how you were selected for that flight, given the opportunity to do so. Probably pretty exciting for you.

COVEY: Yes, it was.

ROSS-NAZZAL: So why don't you tell us about the first days after you had been selected and what some of the things were that you were working on.

COVEY: Well, it hadn't been announced for a while, you know, after I had talked to P. J. and Aaron about it, but I knew it was in work. So I was still working a lot of the Russian stuff there up until the time. At the time they had already assigned four of the crew members. The four EVA crew members had already been assigned is my recollection. So when they finally got around to forming the rest of the crew—and I didn't have much input on this, either, although I had no objections, but they assigned Ken [Kenneth D. "Sox"] Bowersox as the pilot and Claude Nicollier as the RMS [Remote Manipulator System] operator. Claude may have been assigned before; I just don't remember specifically if he was. So the other crew members were Story Musgrave and Jeff [Jeffrey A.] Hoffman and Kathy [Kathryn C.] Thornton and Tom [Thomas D.] Akers.

So everybody had flown before. All the EVA crew members had previous EVA experience, except for Kathy, I believe. So it was a very experienced crew from that standpoint. In fact, if I went back and added up all of the flights that everybody had, there was a bunch of them. I guess—I'm trying to remember if it was—it may have been Sox's first flight. No, that was his second one; I'm pretty sure it probably was his second. I think everybody had flown before. I just can't remember which one he had flown on before that. So I had a very experienced crew and a great mission.

It was at the time the environment was such that NASA was struggling, as it always seems to be, with its image and with its role and with the Space Station evolution, which had gone from Freedom to the International Space Station. That was all in this time period going on, and then the Hubble was up there and not working the way it's supposed to, and everybody was poking fun at them. The sense that you got was everybody was looking at the servicing and repair of the Hubble Space Telescope as the mission that could prove NASA's worth and, I guess, that it deserved to continue to be given the charters; that it was advancing space and aeronautics for our nation. So we felt that throughout this time period. There was this overarching focus and pressure on the success of this mission.

NASA did the right things relative to making sure that the right focus was there. Our Lead Flight Director was Milt [J. Milton] Heflin, a very experienced Flight Director, a longtime NASA Flight Controller, so very, very good experience there. He was given the first team relative to all of the support that he got. The agency decided that they wanted to put an additional focus on the mission, and so they came up with something that didn't previously exist, which I think they called—was the Mission Director role. Basically, this was a George Abbey creation, and he assigned Randy Brinkley to go do that job.

So Randy had to create this role, basically, which was almost like—I don't think he reported to the Space Shuttle Program; I think it was an agency role that integrated the aspects of what the Hubble folks were doing at Goddard [Space Flight Center, Greenbelt, Maryland] and what the Shuttle folks were doing relative to the mission, and sort of working it from a agency-level view. So that was new, and we had to deal with that additional structure and reporting, if you would, in doing that.

The mission grew in complexity after we had the crew assigned. We initially were looking—it initially started as a three-EVA mission, but it grew to five, and that was because of the things that were added onto the mission itself from the standpoint of what was required. So the idea that we were going from—a leap from one mission in '92, where they had done three EVAs, to doing five really pushed the bounds of what people thought we could do. Even with four EVA crew members; even with an eleven-day mission, it just started pushing the bounds. There was a lot of scrutiny on it and a lot of focus on it.

But, you know, the mission itself, some new aspects. It would be the first time that we would have rendezvoused with the Hubble Space Telescope, so there was some newness to that. We had not at that time had not rendezvoused with anything as large as the Hubble. This was pre-Mir, so we hadn't been to the Mir. The largest things that we had flown up to had been things like the LDEF, the Long Duration Exposure Facility. But it was still, with the solar arrays and everything, it was still one of the larger objects that we had rendezvoused with, so we had that aspect of it, too, of newness.

The idea of doing five days of spacewalks was clearly new. The idea of doing some of the substantial maneuvering of large pieces of equipment on the end of the RMS was new. So all those things together, all the things that made this an incredibly appealing mission to astronauts also made it very complex, and some of the newness of it made it so we had to work things a little differently.

So we went off—all of us were assigned, I know, at least a year before the flight, so that would have been December of '92, in that time frame, and we set off in the direction of preparing for the mission. The differences between preparing for this mission and any of my other missions, it was closer back to my first one than it was to the two in the middle. The

integrated operations of Shuttle maneuvering, RMS activities, and EVAs, although now commonplace, wasn't then. So integrating all of those activities and the crew activities together was a big part of my role as the commander, and making sure that what we signed up to do was something that I felt was achievable and that we could control the way it was done.

Because of the size of the Hubble Space Telescope and the environments we needed to train in, we knew immediately that a lot of the EVA training, neutral buoyancy type training, would have to be done at Huntsville at the Marshall Space Flight Center, because at the time the only facility we had at JSC was relatively small. It was okay for contingency Shuttle tasks, but when you were starting to talk about wanting to fully simulate maneuvering the RMS with an EVA crew member on it, with the large instruments that we had to move around, then we had to do that at Marshall.

So we wound up spending—the crew spent a lot of time at Marshall. It wasn't just the EVA crew members. They may have spent a little more time there, but we all went, because that was the only way for me, in particular, to learn what was going to go on, what it looked like, what were the issues that they were dealing with, what were the complicating factors involved.

So we all spent a lot of time in Huntsville, me on scuba, Sox on scuba, and the EVA crew members in there in their suits and Claude Nicollier working the RMS operations. So I could get on scuba, and I could go down, and I could get right up there next to them and see what they were dealing with, see what the latches looked like, and see what the tools looked like, where they had to put them. So that was invaluable to me in preparation for the mission, to be able to do that.

ROSS-NAZZAL: Did you and the crew spend any time out at Goddard?

COVEY: Yes. Of course, the high-fidelity mockups of the telescope were there, so there was time that was spent there looking at what the real telescope should look like, and did that.

ROSS-NAZZAL: I'm wondering if you could compare the media interest in this mission with STS-26, which was also a very popular mission.

COVEY: Twenty-six was more focused on the crew and the aspects of the crew than 61. Sixty-one, it was more focus on the mission and what we were going to do rather than who we were. So that was a major difference, and I was more comfortable with the 61 part of it, where the focus was on the things we were going to do, not on who was doing it so much; I mean, the people. So that's a difference in the type of mission that we had on both of those.

“Oh, okay, tell us about the TDRS [Tracking and Data Relay Satellite].” Well, that takes about two minutes, and everybody's asleep, you know. “Okay, well, let's talk about the crew,” you know, so that was the difference between 26 and this one, which is you could talk about the mission forever and ever, and people just never got enough of it about the things we were going to do and how we had to do it, and they loved talking about what the potential improvements meant. So that was the difference.

ROSS-NAZZAL: Why don't we talk about the launch of this flight then, or any other sort of events that occurred prior to the flight.

COVEY: Yes, let's see. There were some bumps along the way. One of the other things that the EVA crew members did was to take a lot of their tools and stuff into the thermal vacuum chambers, where they would go in and spend time in their suits in the thermal vacuum chambers and work with the tools. Now, Story Musgrave, I love him. He's one of the smartest people I know. He's a medical doctor; he's all these other things. Story goes in, into one of the thermal vac [vacuum] runs, and does something that just blows me away. It still does; I still don't understand Story doing this.

But his hands got cold, and he didn't want to stop the run. He wound up getting severe frostbite, to the point where we didn't know how well he was really going to recover his sense of feeling in some of his fingers, as I recall. His fingers were black, okay? Well, so this angered a lot of people—one, that he let this happen.

But the problem is Story had been around for a long time. Story is different than a lot of people, other people, and so there were some that looked at this as an opportunity to try to get him off the crew. So the first thing that happened was we were assigned a backup EVA crew member, and it was Greg [Gregory J.] Harbaugh. It was interesting. Greg was recovering from knee surgery, so he couldn't even get in the suit and do stuff, but he was designated as the backup EVA crew member for us.

Then there was this concerted effort to use Story's injury as a reason to get him thrown off the crew by some people within the agency and the Center, and I had to go fight that. Basically, it was that he was going to recover, and he was going to be fine. So the reasons went beyond. The reasons were political and personality based rather than technically based on his capabilities and whether he was going to recover from his injuries.

That was hard to deal with. You would think that we could get beyond some of that stuff, but it was still out there, and all the signs were there that someone was going to make this decision on their own. It didn't happen, and Greg continued to train with us and was there as our backup, but we didn't have to replace Story, which was good. It was what I wanted. So that was one of the bumps along the way.

I'm trying to think if there were any other. Nothing in particular. I mean, the training was pretty intense, focused on the EVA activities and the support of those activities. Obviously, rendezvous and proximity operations and the redeployment were all those things that we had to prepare for and do.

I had made some divisions of responsibilities along the way. I had decided that I was going to fly the rendezvous and the proximity operations up to the grapple, but any other maneuvering that had to be done, basically on orbit, I was going to let Bowersox do. So the separation maneuver when we redeployed the satellite, if we had some contingency things, it was my intent to let him fly and do that flying, just so he got the additional experience, and do that. And that worked out well.

So now where are we?

ROSS-NAZZAL: That's what I'm wondering. Do you want to stop here and then maybe start up with launch? Would that make more sense to you?

COVEY: Yes, it may be the best thing to do.

ROSS-NAZZAL: Yes, and that works for us. So we'll talk about it next time.

COVEY: Okay.

ROSS-NAZZAL: All right.

[End of interview]