

NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT

ORAL HISTORY TRANSCRIPT

SALLY K. RIDE
INTERVIEWED BY REBECCA WRIGHT
SAN DIEGO, CA – 22 OCTOBER 2002

The questions in this transcript were asked during an oral history session with Dr. Sally K. Ride. Dr. Ride has amended the answers for clarification purposes. As a result, this transcript does not exactly match the audio recording.

WRIGHT: Today is October 22, 2002. This oral history interview with Dr. Sally Ride is for the Johnson Space Center Oral History Project, and is being held in San Diego, California, in the offices of Imaginary Lines. The interviewer is Rebecca Wright, assisted by Sandra Johnson and Jennifer Ross-Nazzal.

Thank you again for scheduling time to talk with us today about your career with NASA. In January 1977, you submitted a handwritten note to the Astronaut Selection Office at the Johnson Space Center, requesting the forms necessary to apply as a mission specialist candidate. Tell us what prompted you to write that note and describe the events that followed.

RIDE: I saw an ad in the Stanford University student newspaper that the Center for Research on Women at Stanford had put in the paper on behalf of NASA. It announced that NASA was accepting applications for what would be the astronaut class of 1978.

The ad made it clear that NASA was looking for scientists and engineers, and it also made it clear that they were going to accept women into the astronaut corps. They wanted applications from women, which is presumably the reason the Center for Research on Women was contacted and the reason that they offered to place the ad in the Stanford student newspaper.

I read the ad in the Stanford student newspaper, and either that very day or shortly thereafter whipped off a little handwritten note asking for more information.

WRIGHT: And what was the next step? How long was it before you heard back from the selection office that they wanted you to apply?

RIDE: Well, it wasn't very long. The selection office had a pretty good process in place even back then. It struck me as kind of an entertaining process. I remember that relatively quickly—and I don't know whether that was a week or a month—I got a simple one- or two-page application that was not much more than, “Is there really somebody at the other end of this application? Do you really want to apply?” It didn't really ask for much more than the civilian equivalent of name, rank, and serial number: name, address, educational background, maybe names of a couple references. Not very much.

I sent that in then got another form back that was considerably longer, much more like an application that asked for things like medical history, and asked why I wanted to be an astronaut.

After that application form was received, NASA performed a background check on a certain fraction of the applicants. I don't know whether they weeded anyone out before they did the background checks, but they probably did. They also conducted very detailed interviews with the references that applicants had listed.

NASA reduced the number of applicants down to two hundred and invited those two hundred down to Houston, Texas, in groups of twenty. So I went to JSC with nineteen other prospective astronaut candidates for a week of interviews, briefings, and medical exams at JSC.

WRIGHT: Were you associated with any of the other two hundred, or was this a group of people that you had never met before?

RIDE: It was a group of people I had never met before. And I didn't meet any of the other 180 who were interviewed. The only ones that I met were the ones in my little group of twenty. We spent a week going from briefing to briefing, from dinner to dinner, and medical evaluations, brief psychological exams, and individual interviews with the Astronaut Selection Committee.

WRIGHT: How did you learn that you were selected to be a candidate?

RIDE: I got a phone call from George W. S. Abbey very, very early in the morning California time. He was probably going through his list, making calls to those selected at, oh, seven-thirty or eight in the morning, Houston time. I was awakened by the phone call, and when I heard George Abbey on the phone, I thought it was probably good news. He would have delegated the bad-news phone calls to someone else on the selection committee.

WRIGHT: And your reaction?

RIDE: Well, it took me a while to wake up! I thought maybe I was dreaming. [Laughter] But, of course, I was thrilled. My biggest frustration was that it was five or six in the morning in California, so all my friends and family were asleep. I wasn't sure that I should wake them up to give them the news!

WRIGHT: Now, was this good timing for you in your career plan?

RIDE: It was almost perfect timing for me. And as I remember, it was January of 1978 when we were told we'd been selected. The thirty-five of us in the new class of astronauts were all told to report to Houston in July. My Ph.D. thesis was scheduled for late June, so it was almost perfect timing. I literally defended my Ph.D. thesis, got in the car, and drove to Houston.

WRIGHT: When NASA announced the new class that included six female astronauts, which was totally different from anything they had done before, how did [the] response of the media and other organizations, especially some of the feminist organizations, impact your life? And did the impact start before you actually went down to JSC?

RIDE: The impact started before I left for JSC. The announcement was made in the winter. There was a lot of media attention surrounding the announcement, because not only was it the first astronaut selection in nearly ten years, it was the first time that women were part of an astronaut class. There was a lot of press attention surrounding all six of us.

Stanford arranged a press conference for me, the day of the announcement—the first time, of course, that I had even thought of being part of a press conference. I mean, my gosh, I was a Ph.D. physics student. Press conferences were not a normal part of my day.

A lot of newspaper and magazine articles were written—primarily about the women in the group—even before we arrived at JSC. The media attention settled down quite a bit once we got to Houston. There were still the occasional stories, and we definitely found ourselves being sent on plenty of public appearances.

WRIGHT: Did this impact on your private life affect your decision or make you think that you were getting into something a little bit more? You were applying to be an astronaut. Now all of a sudden people were asking questions about who you were. As you said, you were a physics student.

RIDE: Actually, it didn't. It wasn't particularly burdensome after the initial flurry of interviews. There was a fair amount of it, but it was still easy to have a normal life.

WRIGHT: What type of preparations, if any, did NASA, especially at JSC, make to accommodate the female astronauts? Were there accommodations or facility changes to assist what females needed, compared to what the males had always just taken as their own?

RIDE: There were some things. The most obvious was that they needed to add a women's locker room to the astronaut gym. That and most other things were accomplished before we arrived. I think JSC worked hard to prepare for the arrival of women astronauts and female technical professionals. The technical staff at JSC—around four thousand engineers and scientists—was almost entirely male. There was just a very small handful of female scientists and engineers—I think only five or six out of the four thousand. The arrival of the female astronauts suddenly doubled the number of technical women at JSC!

WRIGHT: It was a class of thirty-five, and a lot of attention was on the fact that it did include six females. How [was] the rest of the class impacted by the fact that so much of the attention was on six members instead of the whole thirty-five?

RIDE: I think the rest of the class understood that that was natural and maybe even appreciated it! It was really a good group of thirty-five. The selection committee was looking for men that were comfortable working with women, that were used to working with women, and that had no problem working with women, and they succeeded. It was a very congenial class and we really didn't have any issues at all within our group. They were very respectful, and incorporated us as part of the group from the very beginning.

So we all walked in as rookies, neophytes in the astronaut corps. None of us knew anything about what was about to happen to us, and so as you can imagine we were a pretty close-knit group. None of the astronauts who applied did it for publicity. Everybody applied because this is what they wanted to do. So the males in the group didn't really want to be spending their time with reporters; they wanted to be spending their time training and learning things. They didn't seem to mind at all that more of the attention was paid to the women astronaut candidates. In fact, they wished us well. And, frankly the women probably would have preferred less attention.

WRIGHT: How did the current astronaut corps accept the new class? It had been so long since they had any new ones added, and now thirty-five new ones showed up.

RIDE: They seemed to accept us pretty well. We had them outnumbered, so I'm not sure they had a choice. It was clearly very different for them. They were used to a particular environment and culture. Most of them were test pilots. There were a few scientists, but most were test pilots. Of course the entire astronaut corps had been male, so they were not used to working with women. And there had been no additions to the astronaut corps in nearly ten years, so even having a large infusion of new blood changed their working environment.

But, they knew that this was coming and they'd known it was coming for a couple of years. Well before the announced upcoming opportunity to apply for the astronaut corps, NASA had decided that women were going to be a part of it. So I think that the existing astronauts had a couple of years to adjust and come to terms with it.

By the time that we actually arrived, they had adapted to the idea. We really didn't have any issues with them at all. It was easy to tell though that the males in our group were really pretty comfortable with us, while the astronauts who'd been around for a while were not all as comfortable and didn't quite know how to react. But, they were just fine and didn't give us a hard time at all.

WRIGHT: It was a new time for NASA, with the new Shuttle era moving in at the same time, so they have all this newness that's facing you. What were your expectations? What were your goals and your objectives when you moved into this new phase of your career?

RIDE: [Laughs] I had no idea what to expect. I mean, what do you do when you're an astronaut? Who knows? I don't even remember having specific goals, other than to fly in space! So my goals were day-to-day goals to learn the things that I needed to learn and master the

technical subjects that I needed to master; basically to do everything that I needed to do to put myself in a position to be selected for a flight.

WRIGHT: You're there and they begin the training program. Can you tell us how that progressed, some of the different areas that you found to be more challenging than others?

RIDE: The training program included a few different components. Some of them I was very comfortable with. For example, we spent a lot of time in the classroom—it was just like being back in college. We studied systems and schematics and other things that I was well trained to do.

And then there were other parts, like learning to fly in the T-38s, that were completely new to me. I'd never even been in a light plane before I set foot on the Johnson Space Center, so the flying was totally foreign to me—and an awful lot of fun! I really enjoyed both the ground school and then the flight training itself. That was probably one of the more challenging aspects of the training, just because it was so new to me. Flying was completely out of my experience, whereas learning a schematic for an electrical system was something that I knew how to do. And it was just a matter of putting in the time to learn it.

WRIGHT: What were some of the first responsibilities that were given as part of that on-the-job training and those first assignments that AsCans [Astronaut Candidates] were given to move them through the program?

RIDE: I was given a couple of different assignments. We were given our first assignments after we graduated from being AsCans. NASA had initially planned for us to be AsCans for two years; then they decided that two years was too long and just removed the title and called us astronauts after about a year.

One of my first assignments was on the Shuttle's robot arm, the RMS [Remote Manipulator System]. It was still in the testing and development stage. I was one of a couple of astronauts that became heavily involved in the simulator work to verify that the simulators accurately modeled the arm: to develop procedures for using the arm in orbit, to develop the malfunction procedures so astronauts would know what to do if something went wrong. There weren't any checklists when we started; we developed them all. We also helped with the testing of the hardware itself at the contractor facility in Canada.

I worked on the robot arm for a couple of years and spent a lot of time up in Toronto, Canada, with the engineers that did the development and the testing.

WRIGHT: From that extensive training, you proposed recommendations and enhancements. Could you share with us how those came about, some of the areas and suggestions that you made to make it better?

RIDE: Most of them grew out of the simulations that we designed and performed, working in conjunction with the engineers that had developed the arm. Until you actually start using something, it's very difficult to make predictions on how well it's going to work, what it's used for, and how to accomplish the tasks that it's designed to accomplish.

Many of the recommendations came in the form of the procedures that we developed: how best to use the arm in this particular situation, how best to use it in that particular situation. We did a lot of development of the visual cues. The astronaut controlling the arm looks at it out the window and also monitors its motion using several cameras. Often critical parts of the view are blocked, or the arm is a long ways from the window, or the work is delicate. In those cases, the astronaut needs reference points to help guide the direction he or she moves the arm. How do you know exactly that you're lifting a satellite cleanly out of the payload bay and not bumping it into the structure?

We also helped determine how you move the arm. What limits should be put on the use of the arm to make sure that its kept well within its design constraints? We did a lot of work on that. It was rewarding work, because it was at a time when the system was just being developed, and nobody had paid attention to those things yet.

WRIGHT: The arm is designed to move payloads and cargo in and out of the Shuttle cargo bay, but was [there], at one time, thought about using it for a rescue tool for a disabled crew?

RIDE: It was. I don't remember some of the reasons that it was initially discarded as an idea, but it didn't have so much to do with the arm itself. In fact, later the arm was used quite a bit as a platform for crew members during spacewalks, for example, during repair of the Hubble Space Telescope. But it wasn't quite clear exactly how the arm could grab a disabled crew member.

WRIGHT: Another assignment, according to Dr. [William R.] Muehlberger, was that you had the job of being the scientist to think up the kind of scientific things that could be done by the

astronauts looking out the window. Could you share with us some details about this assignment and about your efforts to see that Earth observations and Earth science would become a very solid program?

RIDE: Yes. One of my assignments was to be on the support crew for STS-2, the second Space Shuttle flight. One of the things that that crew, Dick [Richard H.] Truly and Joe [H.] Engle, gave me to do was to help develop their plan for Earth observations. They were both very, very interested in observing Earth while they were in space, but they weren't carrying instruments other than their eyes and their cameras. They wanted to have a good understanding of what they would be seeing, what they should look for, and what scientists wanted them to look for.

I worked with Dr. Muehlberger with others to help develop the STS-2 Earth obs plan and help train the crew. The crew had to learn how to recognize the things that scientists were interested in: wave patterns on the surface of the ocean, rift valleys, large volcanoes, a variety of different geological features on the ground.

I spent quite a bit of time with the scientists, as a liaison between the scientists and the astronauts who were going to be taking the pictures, to try to understand what the scientists had observed, and then to help the astronauts understand how to recognize features of interest and what sort of pictures to take.

WRIGHT: Were you pleased with your students' results? Did they do a good job?

RIDE: They did an excellent job, yes. My students graduated.

WRIGHT: Speak a little bit more, if you would, please, about what type of training that you had to go through as being support crew for STS-2 and for 3. What does that involve?

RIDE: The job description is to be at the beck and call of the crew. The STS-2 and STS-3 crews made the assignments for the support crew, deciding what they needed from the different members of the support crew. I spent a lot of my time before STS-2 working on the plan for Earth observations and also on the detailed procedures for the tests of the robot arm. STS-2 was the first flight to carry the arm, so I spent a lot of time with the crew, helping to train them, helping to develop their procedures, and just helping to determine what tests they were going to conduct.

The support crew also made up the group of CapComs [Capsule Communicators] for STS-2 and STS-3. I was an on-orbit CapCom for both STS-2 and STS-3. That meant that during their training cycle, I was in mission control whenever they were doing their on-orbit simulations. Jim [James F.] Buchli and I were the two on-orbit CapComs for that flight.

WRIGHT: Of course, this new assignment as being the CapCom featured a female voice for the first time. Did you receive much feedback about that position as well, or was this—

RIDE: Not really very much. I don't think that drew much attention outside of NASA, outside of mission control, and it didn't draw any attention in mission control after the first couple of sims [simulations]. And since we did hundreds of simulations, it was old news very, very quickly.

WRIGHT: Just to step back for a second, on STS-1 you had a different assignment. You were part of the chase crew. Can you tell us what your assignment was?

RIDE: Everybody was part of the chase crew on STS-1! [Laughter] Yes, I was with Dick [Francis R.] Scobee. He and I were paired in a T-38, chasing at the Cape [Canaveral, Florida]. If STS-1 had come back to land at the Cape on RTLS [Return to Launch Site], we would have been one of the chase planes following them in.

WRIGHT: And what an exciting time for all of the crews, to be able to be there for STS-1.

RIDE: Absolutely.

WRIGHT: Were you at the Cape when it launched?

RIDE: Yes, I was.

WRIGHT: You had your own chance to be named to a crew with STS-7. When and how did you learn that you were selected for that first Shuttle trip?

RIDE: Shortly before one of the regular Astronaut Office Monday morning meetings, I got called to come over to George Abbey's office. It was 7:30 or 7:45 in the morning. I went over to his office and he told me then.

WRIGHT: Of course, this was the beginning of another first for you. You were going to be the first American woman to fly. Describe for us the reaction to the news when you told your family that, once again, you were going to be making the news.

RIDE: [Laughs] Well, they were pretty excited. They knew that this was something that I'd wanted to do for a long time. After all, I'd been in training for four years when I heard the news, so they'd been preparing for this eventuality for four years. They were really excited when I got assigned to a flight.

WRIGHT: When Mr. Abbey talked to you about your new assignment, that you were going to be flying, was there talk of the impact that it would [have on] you and NASA, that you were taking a step into history?

RIDE: Actually, yes. I met alone with Mr. Abbey, which is a little bit unusual. The commander is the first to know about a flight assignment; Bob [Robert L.] Crippen, who would be the commander of my crew, had already been told. But then usually the rest of the crew is told together—at least that was the way that it was done then. But in this case, Mr. Abbey told me first—before he called over the other members of the crew.

After I met with him, he took me up to Dr. [Christopher C.] Kraft's office and Dr. Kraft talked with me about the implications of being the first woman. He reminded me that I would get a lot of press attention and asked if I was ready for that. His message was just, "Let us know when you need help; we're here to support you in any way and can offer whatever help you need." It was a very reassuring message, coming from the head of the space center.

WRIGHT: Describe the training that you and your crew [completed]. How is that different from the AsCan training, or from assignment training? Here you were, for the first time part of a crew, and you were all going to be sharing assignments, but yet you would have specific duties. So tell us how all of that evolved and how you grew closer together to be a crew for this flight.

RIDE: It was quite different, because we were all training together. At first we were a crew of four. Then, Norm [Norman E.] Thagard was added to crew a little ways into the training. We didn't spend every waking hour together, but we did spend almost all of our time together, either as an entire crew or in groups of two or three.

I was spending almost all my time either with "Crip" and Rick [Frederick H.] Hauck in launch and reentry simulations, or with John [M. Fabian] and Norm in on-orbit or RMS training. Also, because we things to do on orbit that required the whole crew, we did a lot of training all together. For example, we launched two communications satellites, and we each had a job as part of that.

We did the first release-and-deploy tests with the arm and then the first Shuttle rendezvous tests. We did them as a crew of five also. So we spent a lot of time in the Shuttle simulator together, working out the procedures that we were going to be using for approach and rendezvous. We got to know each other very, very, very well. NASA did a pretty good job of selecting the crew, because we got along very well. We never had any issues at all and got to be very, very good friends through the training.

WRIGHT: There was a lot of media attention on your flight, because it was you, but yet there was a crew of five. Did this impact the crew or did it impact your training at all, that so much attention was being put on you and not the whole crew?

RIDE: Actually it didn't. NASA did a very good job protecting me and protecting the rest of the crew. I did very few interviews from the time that we entered training until our crew press conference and the interviews afterward. Then we did no more interviews until our pre-flight press conference about a month before the flight. Right after that press conference, we did a day of solid interviews.

NASA protected me while we were in training, and even the day that we did all our interviews, we did them in pairs. I did most of my interviews with Rick Hauck or Bob Crippen. NASA's attitude was, "She's going to get all the attention, and we need to help her." And they did. They did a really good job shielding me from the media so that I could train with the rest of the crew and not be singled out. We also tried to get across that spaceflight really is a team thing.

WRIGHT: With all the activities that you had that you were involved with, with training and being part of this crew, were you aware of all the attention you were getting that you weren't involved in—all of the newspaper articles and all the special attention from all the different organizations?

RIDE: I was only vaguely aware of it. The training, particularly in the last couple of months before a flight, is very intense. It was early in the Shuttle program. Four of us on the flight had

never flown in space before. We had a lot to learn and there was a lot of information coming at us. The training really accelerated and intensified during that two months before the flight. I was spending virtually all my time trying to learn things, what I'd learned, practice and just stuff that one last fact into my brain.

I was barely watching the news at night and really wasn't aware of all the attention. Of course, I was a little bit aware of it—I couldn't help but be—but it wasn't impacting my training at all.

WRIGHT: Talk with us about comparing the simulations with the actual work in space. For instance, the simulations of the liftoff. How did that compare to the actual moment that you were lifting off?

RIDE: Physically the simulator does a pretty good job. It kind of shakes about right, and the sound level is probably about right, and the sensation of being on your back is right. It can't simulate the G forces that you feel, but that's not that dramatic on a Shuttle launch. So on the one hand, the physical sensations are pretty close and it's pretty accurate. And of course, the details of what you see in the cockpit are very realistic. The simulator is the same as the Shuttle cockpit, and what you see on the computer screens is what you'd see in flight

But the actual experience of a launch is not even close to the simulators! The simulators just don't capture the psychological and emotional feeling that come along with the actual launch. Those are fueled by the realization that you're not in the simulator, you're sitting on top of tons of rocket fuel and it's basically exploding underneath you. It's an emotionally and

psychologically overwhelming experience. Very exhilarating. Exhilarating, terrifying, and overwhelming all at the same time.

WRIGHT: Plus you had a lot to think about because you were flight engineer on this mission, and so you had duties that you needed to take care of while this was going on. Can you share with us what some of those were, what you were responsible for during those first minutes?

RIDE: My job was primarily to keep track of where we were in the checklists and be prepared with the malfunction checklists should anything go wrong. I was the one that was expected to be the first to find and turn to the procedures should anything go wrong. I was also monitoring systems and status on the computer screens.

My main job, though, assuming that nothing went wrong, was to read the checklist and tick off the milestones. One of the first things that I was supposed to do—seven seconds after ignition—was, once the Shuttle started to roll, to say, “Roll program.” I’ll guarantee that those were the hardest words I ever had to get out of my mouth. It’s not easy to speak seven seconds after launch.

WRIGHT: Once you were up in space and your duties began, they also included working with the RMS. How did that compare to how you had worked with it so many years on the ground, and now you were working with it for real?

RIDE: Actually, the simulators did a really good job of simulating the robot arm. It was a little easier to use the arm in space than it was in the simulators, because I could look out the window

and see a real arm. And although the visuals in the simulators are very good, there's nothing quite like being able to look out the window and see the real thing. It felt very comfortable and familiar. The simulators had prepared me very well.

WRIGHT: And as you mentioned, you deployed satellites. Again, you were not in practice anymore, you were actually being successfully productive and meeting those goals.

RIDE: The act of releasing a satellite and then backing the arm away felt very much like it did in the simulators. But the act of going up and capturing a satellite was a little more scary. I remember thinking, "Oh, my gosh. This is real metal that will hit real metal if I miss. What if we don't capture this satellite? It was easy in the simulators, but is it going to be as easy in orbit?" It turned out that it was, but the experience was different because it was real. In orbit, it really mattered that I captured the satellite. In the simulators it's not that important. If you miss, it's just a virtual arm going through a virtual payload, and no harm's done.

WRIGHT: When you returned, did you have any new suggestions or recommendations on how the operations worked, that you could give back to the trainers to enhance the arm's movement for the next crew?

RIDE: I think we made a few small recommendations, but I don't think that we made any major recommendations. Basically, we said that the procedures worked quite well and that the arm responded very much like the simulators suggested that it would, both during release and in capture.

WRIGHT: The mission was responsible for the agency's first full photo of the Orbiter in space.

RIDE: I still show that slide.

WRIGHT: I was going to ask you if you'd share your thoughts about the accomplishment of your mission that has left such a lasting image for everyone.

RIDE: We spent a lot of time taking that picture. It was almost an afterthought that NASA decided to put a camera on board that satellite. There was a video camera whose output we could view inside the cockpit of the Shuttle; as a result, we could almost center the picture and make sure that the whole Orbiter was in the frame of the picture. We actually spent much more time than we should have, much to mission control's surprise, putting the arm in the shape of a "7" before we took the picture so that everybody would know it was STS-7 that took it.

WRIGHT: We've talked about how the technical aspects during your mission met your expectations. How did your body respond once you got to microgravity? Was it what you thought it was going to be, and did you respond as well as you had hoped?

RIDE: I did. I didn't really know what to expect, because there isn't a way to train for being weightless. It's so far removed from a person's everyday experience, that even hearing other astronauts describe it didn't give me a clue how to prepare for it. What I discovered was that

although it took an hour or so to get used to moving around, I adapted to it pretty quickly. I loved it. I really enjoyed being weightless.

WRIGHT: Did you get to use some of the training that you used with Joe Engle and Dick Truly about Earth obs? Did you have an opportunity to do that as well?

RIDE: We spent quite a bit of time plotting our Earth observations strategy. I don't think I was the best photographer on the crew, but I had a great time looking out the window.

WRIGHT: Talking back to Earth, one of the people that you talked to was CapCom Mary [L.] Cleave, [the] first time that we had a woman talking to a woman. Did that even cross your mind that you two were visiting?

RIDE: You know something? It did not cross my mind. I don't know whether it occurred to Mary either. I didn't even think about it until after I landed and somebody pointed it out to me. And apparently the first time we talked we said something totally unmemorable. [Laughter] I don't know what it was, but it was not particularly historic.

WRIGHT: Just astronaut to astronaut. Did you encounter any significant challenges on this mission that you remember, or do feel like your training provided you what you needed?

RIDE: The training prepared us very, very well for everything we were going to do. We had a few small problems on the flight—problems with some of the recording instrumentation

associated with the satellite we deployed and some of the experiments on that satellite. We spent a fair amount of time trying to work those problems. But that only served to kind of delay the timeline a bit. We didn't run into really any big surprises during the flight, certainly no obstacles that the training hadn't prepared us for.

WRIGHT: Due to bad weather, your plans got changed and you didn't land at Kennedy [Space Center, Florida]. You landed at Edwards Air Force [California]. How did the crew feel about going to there instead of back home to KSC?

RIDE: Well, I think we all wanted to go to KSC. We were supposed to be the first flight to land at KSC, and we were looking forward to that. They had a red carpet ready to roll out for us, and our families were all waiting for us in Florida. But on the other hand, it was pretty obvious that the weather wasn't good and wasn't going to clear up.

I remember being disappointed that we weren't going to land in Florida, but I grew up in California, and we'd spent a lot of time at Edwards Air Force Base. The pilots had done a lot of approach-and-landing practice at Edwards, so it almost felt like a second home. But there weren't many people there waiting for us!

WRIGHT: After landing, your duties didn't stop. You still had crew activities that you did. How much of that, again, was because of actual normal duties, if we can say "normal" at STS-7 level, but normal duties that flight crews do after landing, and how much of it, again, was due to the fact that you were the first woman that had flown?

RIDE: A huge amount of it was a result of being the first woman to fly. I think that's when all the attention really hit me. While I was in training, I had been protected from it all. I had the world's best excuse: "I've got to train, because I have this job to do." NASA was very, very supportive of that. So my training wasn't affected at all.

But the moment we landed, that protective shield was gone. I came face-to-face with a flurry of media activity. There was a lot more attention on us than there was on previous crews, probably even more than the STS-1 crew.

WRIGHT: Did you have assistance from NASA in dealing with all of the requests and even maybe some preparation before you walked into some of these events?

RIDE: Yes and no. A lot of help with fielding the requests. All the requests went through NASA, through the Public Affairs Office and through the Astronaut Office, but very little help in preparing to talk with either the press or to make public appearances. Now, of course, all astronauts learn "on the job" how to give a talk and how to work with the public and with various organizations.

I'd done my share of public appearances and speeches before I'd gone into training, so I knew how to talk to the press and I knew how to go and show my slides and give a good speech. But just the sheer volume of it was something that was completely different for me, and people reacted much differently to me after my flight than they did before my flight. Everybody wanted a piece of me after the flight.

WRIGHT: Were there times that you felt some of the events that you went to or some of the times during the events that people asked questions that were not necessarily NASA-related that got into too much of your personal life and activities, or how your new life was affecting your personal life?

RIDE: Occasionally, but not too much. Most often, people were just interested in the flight, in my experience, in my view of the historical nature of the flight, that sort of thing. Not too much on my personal life. That really wasn't as much of a problem for me as the sheer volume of things that I had to do. It was just incessant for months.

WRIGHT: It wasn't too long after you landed that you were advised that you'd be flying again.

RIDE: Thank goodness. [Laughter] Back into training, safe again.

WRIGHT: And how did you learn about this new assignment?

RIDE: I actually don't remember the details of how I found out about this second flight assignment. It was George Abbey, again, who told us, but I really don't remember the details. I think I heard that it was likely to come before we actually met with him.

WRIGHT: Did you learn with all the rest of the crew this time or, again, was it a personal advisement to you?

RIDE: No. It was with the rest of the crew that time.

WRIGHT: So it was somewhat of a normal situation now.

RIDE: Back to normalcy. And one great thing was that Kathy [Kathryn D.] Sullivan was on that crew as well. A nice “first,” the first crew with two women on it.

WRIGHT: At least she had someone to share the attention with.

RIDE: Right. Exactly.

WRIGHT: And she was going to be doing the EVA [Extravehicular Activity], which was very much a historic moment. The first woman to do one.

RIDE: Yes, absolutely.

WRIGHT: During the time that you were training, historian Henry [S. F.] Cooper wrote a book about the STS 41-G mission, and apparently just took the time with you guys as you were doing everything that you were doing. How did this affect your training and what did the crew feel about having almost an extra person there with you?

RIDE: It didn't affect the training too much, but it was unusual. It was very different from STS-7. We really didn't have much connection with the press. We were just a crew in training before

STS-7, and before 41-G, it was almost like there was an outsider looking over our shoulder a lot of the time. I don't think it really affected our training, and I don't think it affected our cohesiveness as a crew either, but it was different. We just had to be a little bit more careful about what we said and be aware that there was somebody who was watching and taking notes the whole time that we were training.

WRIGHT: In his book he mentions that Bob Crippen was training for another mission while your crew was training as well, and indicates that you were basically the number two person for this mission, because Crippen had asked for that. Was this something that had been related to you or is this his perception?

RIDE: No, that was right. "Crip" was the Commander of 41-C, which didn't fly until our crew was several months into training. Our crew started training without a commander, and I was the only one on the crew who had flown before. The rest were first-time flyers. I was the one that had the experience and I had also flown with "Crip" before, so I knew how he liked things done and I knew what his habits were. On launch and reentry I knew what he wanted to do, and what he wanted the pilot to do, and what he wanted the flight engineer to do. So I was the flight engineer on that flight as well.

Our crew started launch and reentry simulations without "Crip." During those simulations, I was the flight engineer, Jon [A.] McBride was the pilot, and then one of the other mission specialists played commander. We were basically in there to train Jon and me; part of my job was to say, "This is the way 'Crip' likes to handle this situation or this sort of problem, and this is how he would want us to work." During the first couple of months, I tried to give the

rest of the crew some indication of the way that “Crip” liked to run a flight and run a crew. Then, thankfully, he launched and landed and came and joined us.

WRIGHT: That changed somewhat the dynamics, because you were all—I guess, were things a little more flexible because he didn’t have a full-time presence there?

RIDE: They were a little bit more flexible because of that, but he’s very easygoing. He’s very flexible and very easy to get along with—a very friendly, very real person. So I don’t think the dynamics changed very much when he joined the crew. Everyone on the crew knew him really well, had worked with him in one way or another in the Astronaut Office for years, so it’s not like he was an unknown or outside presence joining the crew.

WRIGHT: Since he picked you as the flight engineer for STS-7 and then made you the number two person there on 41-G, he somewhat impacted your career with those decisions. Were there other decisions that he made or other areas [where] he impacted you? Did he somewhat serve as a mentor or just kind of a person there for you to look up to?

RIDE: In a way he did. I knew from the time that I was selected for STS-7 that he had been influential in that decision. He was picked as the commander of the flight, and though he didn’t get to choose his crew, he had some input into it. So I knew he had had an influence on my career even then. He’s very, very smart and a very easy person to get along with, and so it’s easy to look up to him—both in the way he thinks through problems and makes decisions and the way

that he interacts with people. I spent a lot of time watching the way he worked, the way he learned things, and the way he worked with other people.

WRIGHT: As a veteran of this crew when he wasn't around, what advice or what type of experiences could you share with your new crew members to help them get through that first experience of flight?

RIDE: Well, mostly we were far enough from flight that the burden on me wasn't too great. I didn't have to totally prepare them for spaceflight! So the role that I was playing was really more to talk about some of the basics of being in space—simple things like “Okay, you've seen the food trays on the ground, but let me tell you what happens when they get weightless.” Give them some familiarity with the space environment and the way “Crip” liked a crew to function. I didn't try to cover some of the details “Crip” would get into later. We all knew there was plenty of time for that. He was going to be spending months and months and months with us in training, not just weeks.

WRIGHT: Was liftoff different for you the second time?

RIDE: Actually, it wasn't. I had very much the same experience the second time as the first.

WRIGHT: This time when you were working with the arm, you had a little more challenges with the two satellites that you had. They had the Shuttle Imaging Radar B and the TDRS [Tracking

and Data Relay Satellite], and a little frustration. Could you share with us some of the experiences of how you were able to be successful with those?

RIDE: Under normal circumstances, the Imaging Radar normally would have had nothing to do with the arm at all. It was just an experiment in the payload bay. But before Kathy and Dave [David C. Leestma] could go out on their spacewalk, we had to fold it back up. The radar antenna was folded up for launch and then unfolded on orbit to make its radar observations. Because it was a radar and because it took up a lot of the payload bay, before Kathy and Dave could go out on their spacewalk, we had to fold it back up again. But we had trouble folding it—we couldn't get it to come down all the way to latch.

So we had to use the robot arm in a way that it hadn't been intended to be used—we set the arm down on top of one of the leaves of the antenna and pushed down on it—trying to push it down far enough that a latch could grab it and latch it down. If we hadn't been able to do that, the spacewalk might have been cancelled. But it worked quite well. It was pretty easy to push the top piece of the antenna down, just far enough to get it to latch. The problem was solved relatively quickly and to everyone's satisfaction—especially Kathy and Dave's! They were afraid they weren't going to get to go out on their spacewalk.

WRIGHT: Tell us what support did you give during the EVA.

RIDE: I was not one of the direct support crew members during the EVA. Jon McBride was EV [Extravehicular]-1, which is the support crew for the two folks that go out. I was primarily doing other things while they were outside. In fact, the way that I spent most of my time during their

spacewalk was doing repair work. We had problems with the Ku-band antenna. The antenna had malfunctioned. We couldn't drive it back to its stowed position inside the payload bay. We had to do some pretty detailed and sophisticated and time-consuming rewiring inside. We had to rewire a 36-pin connector, so that we could make a new connection while Kathy and Dave were outside. After that new connection was made, they moved the antenna while they were still outside. So during in the spacewalk, I spent almost all my time rewiring a connector.

WRIGHT: Were you able to—I'm trying to think of a word other than enjoy. But here, for the first time, you were actually right there as you watched two of your crewmates step outside and enjoy outer space. Can you tell us about that experience of watching that EVA?

RIDE: Oh, yes, that was great fun. That was really, really great fun, watching them emerge from the hatch and then float around outside. I wish I'd been able to enjoy a little more of it. After they headed outside, I was down on the middeck most of the time.

WRIGHT: You came home; you had a good landing. Again, because there were two women on this flight, did you encounter again a great deal of press attention when the crew landed, and were you and Kathy both then involved in that as well?

RIDE: There was a fair amount of attention. Not nearly as much as there was after my first flight. Kathy and I got quite a bit of press attention after 41-G, but it was manageable. It really wasn't nearly as intense as it was after STS-7.

WRIGHT: Were you starting to see the attention on the space agency as a whole start to dwindle at that time, or do you still feel like the press, as a whole, was giving attention to the Shuttle flights?

RIDE: At that time there was still a lot of attention on the Shuttle flights. Forty-one-G was only the thirteenth; there had been something new and exciting on almost every Space Shuttle flight. They were still getting quite a bit of publicity. Shortly after that, Shuttle launches and landings became less newsworthy. You had to really hunt to find them on TV. That started a few flights after 41-G.

WRIGHT: Before we move on from your missions, I'd like to talk to you about the science that's such an important part of your life at that time, and there were experiments on board. Could you share with us some of the experiments that you worked on these missions and how you were involved in making sure that the experiments were taken care of?

RIDE: On STS-7, we collected data and changed data tapes on some of the experiments on the SPAS [Shuttle Pallet] Satellite, but the only experiment that we interacted directly with was a pharmaceuticals experiment on the middeck that was designed to isolate a very specific strand of protein that could be used in pharmaceutical research.

I spent time in St. Louis, Missouri, before the flights, learning about the experiment and the apparatus. I was the one that operated that experiment on the middeck. On 41-G, most of the experiments that we carried were designed to observe the Earth.

We didn't have a lot of direct interaction with the experiments themselves. We turned them on and off, changed the parameters and settings, did some fine-tuning. We changed data tapes for the Imaging Radar. Our direct involvement was not really as scientists, but as operators. We spent a fair amount of time before the flight understanding the science and the engineering behind the experiments themselves, so that we'd have a better appreciation for what the scientists wanted to learn during the flight.

WRIGHT: You were assigned to your next mission, but before you could fly, the nation and NASA lost the crew of the *Challenger*. Can you tell us where you were when the accident occurred?

RIDE: I was on a commercial airliner, flying back to Houston. It was the first launch that I hadn't seen, either from inside the Shuttle or from the Cape or live on television. The pilot, of the airline, who did not know that I was on the flight, made an announcement to the passengers, saying that there had been an accident on the *Challenger*.

At the time, nobody knew whether the crew was okay; nobody knew what had happened. Thinking back on it, it's unbelievable that the pilot made the announcement he made. It shows how profoundly the accident struck people. As soon as I heard, I pulled out my NASA badge and went up into the cockpit. They let me put on an extra pair of headsets to monitor the radio traffic to find out what had happened. We were only about a half hour outside of Houston; when we landed, I headed straight back to the Astronaut Office at JSC.

WRIGHT: And what were your duties during the next thirty months, during the time that—we know that you were appointed to the Rogers Commission as the only active astronaut on that panel, but did you have duties before you were assigned to that commission? Were you assisting different areas for NASA?

RIDE: No. I was in training at the time of the accident and I was assigned to the presidential commission within a couple days of the accident. It happened very quickly. The president constituted that commission almost immediately; I went to Washington D.C. very shortly thereafter for the first meeting, and then stayed in Washington for the most of the investigation.

The investigation lasted almost six months. I think we turned in our final report towards the end of May 1986.

WRIGHT: Could you tell us about this panel and your actual duties and assignments, and how you were able to accomplish those in such a short amount of time?

RIDE: The panel, by and large, functioned as a unit. We held hearings; we jointly decided what we should look into, what witnesses should be called before the panel, and where the hearings should be held. We had a large staff so that we could do our own investigative work and conduct our own interviews. The commission worked extensively with the staff throughout the investigation.

There was also a large apparatus put in place at NASA to help with the investigation: to analyze data, to look at telemetry, to look through the photographic record, and sift through

several years of engineering records. There was a lot of work being done at NASA, under our direction, that was then brought forward to the panel.

I participated in all of that. I also chaired a subcommittee on operations that looked into some of the other aspects of the Shuttle flights; like was the astronaut training adequate? But most of our time was spent on uncovering the root cause of the accident, and the associated organizational and cultural factors that contributed to the accident.

WRIGHT: All of these details were put basically in your lap every day to deal with. How did this affect your decision to fly in the future?

RIDE: It didn't have any effect on my decision to fly. I had been planning to leave NASA after my third flight and intended to go back to academia in the summer of 1986. From the day I entered the astronaut corps, I had planned to return to research in a university environment. I reevaluated that thinking in light of the accident. I decided to stay at NASA for an extra year, simply because it was a bad time to leave. I wanted to stay a while to help the recovery process. But the shuttle was grounded for three years and that was too long for me to wait to return to academia. So I stayed with NASA through 1987, then left for Stanford University [Stanford, California].

WRIGHT: The massive amount of information that you had to deal with in all the hearings and all the details was regarding a terrible tragedy that affected the nation, but these were your friends and colleagues. Were there difficult periods that you had to work through personally to keep moving through the six months to get this investigation completed?

RIDE: Absolutely. I didn't really think about it at the time. I was just going from day-to-day and just grinding through all the data that we had to grind through. But, it was a very, very difficult time. It was a difficult time for me and a difficult time for all the other astronauts, for all the reasons that you might expect. It was very, very hard on all of us. You could see it in our faces in the months that followed the accident.

Because I was on the commission, I was on TV relatively frequently. They televised our hearings and our visits to the NASA Centers. I looked tired and just kind of gray in the face throughout the months following the accident.

WRIGHT: That's a time that I hope no one ever has to go through again. We have maybe about fifteen minutes left before we need to close out today, and we've tried to cover as much as we can about your JSC experience. But before we leave, I was going to ask Sandra and Jennifer if they had a couple of questions for you that we can close out the session, regarding that part of your life.

ROSS-NAZZAL: I had a question. I read an article recently that was published by *Florida Today*, and you had talked about what they had to add to the flight kit on STS-7, for instance, things like tampons. And there was a discussion about whether or not you should bring makeup on board the flight. I was wondering if you could talk a little bit about what else was included in the flight [kit], if you had any suggestions, or if they had any suggestions that you were opposed to, and why.

RIDE: It's actually kind of funny, because there was a reasonable amount of discussion about it. The engineers at NASA, in their infinite wisdom, decided that women astronauts would want makeup—so they designed a makeup kit. A makeup kit brought to you by NASA engineers. [Laughter] So, "What?" You can just imagine the discussions amongst the predominantly male engineers about what should go in a makeup kit. So they came to me, figuring that I could give them advice. It was about the last thing in the world that I wanted to be spending my time in training on. So I didn't spend much time on it at all. But there were a couple of other female astronauts, who were given the job of determining what should go in the makeup kit, and how many tampons should fly as part of a flight kit. I remember the engineers trying to decide how many tampons should fly on a one-week flight; they asked, "Is 100 the right number?"

"No. That would not be the right number."

They said, "Well, we want to be safe."

I said, "Well, you can cut that in half with no problem at all." [Laughter]

And there were probably some other, similar sorts of issues, just because they had never thought about what just kind of personal equipment a female astronaut would take. They knew that a man might want a shaving kit, but they didn't know what a woman would carry. Most of these were male engineers, so this was totally new and different to them.

But the people you should really talk to about that are Mary Cleave and Marcia S. Ivins. And Kathy Sullivan—she ended up with some of this, too.

ROSS-NAZZAL: I have one more question, if that's okay. When I was going through some of your materials, I got the sense from some of the books that we've read about you—there are a couple of children's books, in particular—that talk about after you found out you were going to

be the first American woman in space that you were a little leery about the press' attention on you, that you told them it wasn't a very important news item. And I'm wondering, is that the reality? Is that actually what your opinion was at the time?

RIDE: It was a little bit different than that. My attitude was more like, "It's too bad this is so important. It's too bad that we're not further along that it's a normal occurrence for a woman to go up on a Space Shuttle flight. It'll be a wonderful day when this isn't news."

And we've reached that day! Now people don't notice there are women going up on Space Shuttle flights. It's happening all the time. I completely appreciated that this was really an important thing. On the other hand, it was just a little bit irritating that it was so important, because I thought it should be a very natural thing for women to be astronauts.

ROSS-NAZZAL: Thank you.

JOHNSON: I was just wondering, growing up and then moving into college and then, of course, moving to NASA, did you have the belief all along in your life that you could accomplish anything and that being female wouldn't hold you back in any way, or was that ever an issue with you?

RIDE: Yes, I guess I did. Looking back on it, it never really occurred to me that I couldn't accomplish anything I wanted to. I think that there's a lot of credit due my parents—and teachers that I was lucky enough to run into—that I really never did think that I couldn't do

something because I was female. I don't ever remember thinking that and that's a wonderful thing to be able to say.

WRIGHT: What we'd like to do is close for now.

RIDE: Great.

[End of interview]