

SALLY P. DAVIS

August 14, 1998

Interviewers: Rebecca Wright, Carol Butler,

Wright: Today is August 14, 1998. We're visiting with Sally Davis as part of the Shuttle-Mir Oral History Project. It's Rebecca Wright and Carol Butler.

Good morning and thank you so much for taking time out of your schedule.

Davis: Thank you for asking me to do this.

Wright: We'd like for you to start by sharing with us some of your duties and responsibilities that you've had with the Shuttle-Mir Program.

Davis: I started out in 1992; we took a trip -- there was a small group of us to understand the feasibility of being able to dock the Shuttle to the Mir. At the time it was just envisioned as one flight that we would do. We went over in August. My first impression, I was surprised at Moscow and it was so bleak and a lot different than what I expected. But when we started meeting with the Russians, my experience over and over again, but that was the first time, is how in parallel our space programs were. Some things were different, but the whole process of flying hardware and getting ready for a flight was pretty much the same as how we did it here. And we did that without collaborating. I have always been astonished by that.

Wright: How did it lead from that? You said you were over there in August, number two, and then what was the next step?

Davis: Actually, when I was over there originally, it was in the job I had back then as a flight design manager, which is the person that coordinates putting together the trajectory and the consumables required to do the flight--launch window, rendezvous design, entry design, and all of that stuff. But I was toward the end of my career of doing that. I wanted to be around for the Shuttle-Mir flight, but I knew I probably wasn't going to be a flight design manager much longer.

So I went again in January to Moscow on another trip, and then I moved to a different area, to work real-time operations. I worked that for a while. But I really, really missed--I hated not being able to work Shuttle-Mir, because I really wanted that opportunity. I had met some Russians and been involved in a little bit of exposure to their culture, and it was just going to be a great opportunity and I didn't want to miss it.

Then they started talking about needing the Russian interface officers (RIO) to coordinate between the two control centers. Pretty soon they were advertising the job, and I went and begged my management to let me apply for the job, with the hope that I could continue to do my other real-time job, which is a

rendezvous guidance procedures officer, and do the RIO job part-time. They went the selection process, which was an interesting thing to go through, helped me get ready to apply for flight director later on. Got selected, and they let me do both jobs for a while. On one flight I would work as a rendezvous GPO and on the next flight I would work as a RIO. Or that was the plan.

We were going to fly STS-63; 63 was the flight where we came up real close to the Mir and did the close approach, kind of a dress rehearsal for the docking mission. I was already assigned to work the rendezvous on that flight. The other three RIOs that were selected, we didn't think it was going to be that hectic of a flight, so they had real low-key support, just coming in for the rendezvous and then leave. They got overcome by events, because we had a jet leaking on the Shuttle. The Russians were concerned that it was going to contaminate some of the sensors on the Soyuz. You've probably heard this story from the other people that you've interviewed. We spent two days negotiating with the Russians to let us continue to do the close approach. They didn't decide to let us go in to thirty feet until we were at 170 feet. I mean, that's how the process worked.

Anyway, I'm getting off track, so I'm going to back up. Then we decided all four of us were going to work different shifts on 71. Bob Castle let me work the rendezvous part, the orbit one part. It was really an exciting--I was so excited to be on orbit one to do the rendezvous, because that was my specialty. But then when we started simming, I realized that the rendezvous was just--how you always find out in a job, the part you knew is just little piece of a much bigger picture. I had to start learning system stuff, and people were throwing failures at me that I hadn't explained to the Russians, that I barely understand myself. So I had a lot of growth to go for that. Anyway, I'm not sure I have a point. I'm just telling you my history.

So I worked as a RIO on 71, and then by the time we flew 71 they had decided to do several other missions. So we were planning to continue to support those. I worked on 74. Then I worked on 76. Then I got selected as a flight director in between that flight and the next flight. So those were the only three flights I worked.

Some of the other RIOs, Joe Cavallaro, Charlie Armstrong, and Ron Banfield are the other three that were selected initially, also came in with that agreement of 50 percent. We found out after we got going in it that you couldn't spend 50 percent of your time doing the job. So we spent 75 percent of our time doing RIO and 75 percent of our time doing our other job. We were working real hard at all our jobs.

But since then, Joe has gone and done some other things. He was the payload officer on a couple of the Shuttle-Mir flights and now he's a section head. Rob Banfield went to a new area. He went from being a simulation supervisor to being a payload officer or assembly checkout officer in training and he's

still doing that. Charlie's gone off to work station, portable computer system, so he doesn't do much RIO'ing anymore. They've selected a whole new crop of RIOs who are in training on my team now. I try to be sympathetic to them as they go along in their training. It's really hard in training to learn the RIO job, and learn to work with the Russians, and learn to work with the new flight controller and new flight director, interpreters, all those.

Wright: Tell us about the selection process. You mentioned that earlier. Were there lots of folks interested in being RIOs or just the four or five?

Davis: No, actually, I think they interviewed around thirty people. Bob Castle could tell you the exact number. But I remember it was a lot. They didn't let everybody interview. Every organization, every division in MOD, and then our contractors screened who got to do the interview. They asked for people that were interested, then each division chief went through, I think, and said, "Okay, these people can apply for a job," based on their background and the necessity of them in other jobs and things like that. So I think they wound up with about thirty interviews.

They wound up conducting it, it was Gary Coen and Bob Castle did the interview in Gary's office down here at the end of the hall. It was like a flight director interview. They asked the same kind of questions that they did in flight director interview. They asked around about people to see how they worked with people and how they got along with them, and were they committed to the job and those kinds of things. So they did it almost identical to the flight director interview.

Wright: What did they tell you that the RIO job would be?

Davis: The way I remember it, there were a lot of different versions of what the RIO was going to be, everything from assistant flight director to just somebody that's mimicking what everybody else tells them. In reality, the job wound up being something in between, trying to be a cognizant as you could of what was going on on the flight control team and figuring out which of that we should tell the Russians. Not to withhold information, but that it wasn't relevant to their decision-making processes. And then to do the reverse.

They had a person in their control center that was doing the same thing, which was aide to the flight director. The Russian acronym was PRP. So you'd have to take what he told you and figure out the relevance to the decisions that we were making in the control center and then pass those along to either the flight director or the appropriate person on the flight control team.

Wright: You're like a right-hand person to people in the Mission Control Center?

Davis: Yes. It was a way to simplify the interface between the two control teams. We plan to use them for the station, just because if you have two flight control teams, you do want everybody talking to everybody else. You want our environmental specialists to be able to talk to their environmental specialists. But as far as marching down the road of executing the mission, you need somebody that's going to keep each control center in sync, because you can go off forty directions with everybody doing their same thing. You have that problem anyway with one flight control team. So with two, you needed, I guess you'd call it a sync pulse. Keep the control teams in line. That's kind of what the RIO and the PRP did.

Wright: Kind of developed your job as you went through it?

Davis: Yes.

Wright: It was more than on-the-job training.

Davis: Yes.

Wright: It was on-the-job job.

Davis: Yes. Since it was a new concept position, we had to start from scratch on everything: console, procedures, everything from making sure there was a hole-puncher to training interpreters. We weren't sure what we were going to have to do when we started the job, what it was going to take. We soon found out that we were going to be teaching interpreters basic Shuttle training classes. We had to figure out how to certify the interpreters and get them all trained, and how we were going to simulate the Russians when they weren't really in a simulation with us.

We wound up training ourselves. We'd have one RIO that was part of the flight control team and his interpreter. Then over in the training area where the rest of the training team sit, we'd have another RIO and another interpreter, being Moscow. We would help write the scripts and be a part of the training team. Then when it was your turn to train on the flight, you'd switch with someone.

There was one particular PRP that they had, sometimes it was difficult to get agreement out of him on things, and you didn't understand why not. It wasn't like, "Yes, we understand why you don't agree." It was like, "Why are you disagreeing with us?" We always tried to emulate him when we were on the simulation side. When we were training one class of interpreters, they were like, "Why are you doing that?"

That's so negative training. You're being difficult when you know these people are not going to be difficult to work with."

The first time that person sat down and the person we were simulating was really on the other end of the line they said, "Gosh, this is just like in the simulations." We all laughed about it, because we knew. I mean, we didn't make it up. We were just trying to be as difficult as he was trying to be.

Wright: The training was realistic.

Davis: Yes, it was. As I was saying, the RIO job, we really, we built it from the ground floor. We really did. We had to put together the procedures we had to do and what books we needed. Then there were other things that we wound up branching out into that we didn't expect. We traded consultants back and forth. We would send three or four of our specialists to Moscow for the mission and they would send a cadre of their specialists over here.

We wound up escorting them, getting them badged, getting them log-on IDs to the computer. Then because we were working in the flight control team and they were off in a back room called customer support room, we didn't allow them to go escorted in and out of the building. It's just one of the security rules we have. So we wound up having other people in MOD, who were interested in working with the Russians, escort them around. Really, they were like our back room. If we needed to talk to somebody on the consultant group, we needed to be able to explain to the person back there--we called them groundhogs--what we wanted and who we wanted and what technical material we were looking for. So they were our helpers in the back room. Some of those people wound up being selected for RIOs during subsequent selection processes.

Wright: Sounds like you experienced a real team effort from lots of different types of people.

Davis: Well, what we had envisioned originally of a team of four RIOs turned into ten interpreters and six or eight groundhogs every flight and consultants to take care of. It really did grow. It got to be a whole team. Originally we were sending faxes, paper faxes back and forth, because that was the only hook-up we had. Later on we started doing fax/modem, vis-a-vis the PC link and that. Then we had to get the staff support to go make the fax and then distribute the fax and log it in and all that. We had a pretty big team. By the time we flew 71, there was a pretty big infrastructure in place to support us. I know I was surprised by it. I think we were all surprised that the job grew like that.

Wright: Did you travel to Russia to work with your counterparts there?

Davis: In the course of being a RIO, I didn't travel, but we were taking turns. It was partly because I was working the rendezvous job also. I really couldn't leave for a couple of weeks. It never worked out in the timing. But each of the other RIOs in their turn went over and worked some of the different things, what kind of calls we were going to make during the flight and those kinds of things.

Wright: Tell us about your experiences when you actually got to see the rendezvous, since that part was your background that you were working in at the time, and then you were also doing it as a RIO.

Davis: I tried not to focus too much on what was going on on the rendezvous, and focus on what my role was as the RIO. But I remember when I looked up, we had the TV on, we had the camera pointed at the top of the docking system, and when I saw those two pieces of hardware coming together, I thought, "Gosh, this is just the coolest thing I've ever done." But when you're in that moment, you can't stand up and say, "Yea, we did it!" You have to keep focus on what you're doing, because there's a lot that happens after the interfaces hook up, too. There were a lot of calls that we were making back and forth then, too.

But when the shift was over, I stood back and thought--I thought back to--I can't remember, was it three years? I think it flew in 1995, 71 flew in 1995. All that had happened from the first time I had been there, when we were sitting across the table from them trying to figure out if we could even do this, could the Shuttle dock to the Mir without some kind of technical difficulties that couldn't be overcome, and we'd done it. It was just the coolest feeling. I can't tell you. I was just like, "Oh, I'm so happy to be a part of this."

Wright: Then you got, of course, to watch it move on into the other areas, as well.

Davis: Yes.

Wright: You mentioned, too, that learning to deal with the Russians was a lesson that all the RIOs had to encounter.

Davis: Yes.

Wright: Can you share some of the lessons or some of the experiences that you went through learning the successful way to deal with your international partners?

Davis: Well, let me speak in a more general sense, because I think it's important. I think a lot of the way we have wound up discussing things with the Russians, because their culture is different and because they

interact with people differently, a lot of the tone was set for doing principal negotiation, at least in mission operations, because Victor Blagov, on their side, and Bob Castle, on our side, were up front and they didn't play games. They said, "Okay, here's what we want to do and this is the technical reason for it," every time they interfaced with each other. That made it a lot easier. We didn't have to play poker or anything like that. We always put all the information out on the table. It made a huge difference.

I mean, when we were negotiating, when Bob was negotiating whether we could come in close to the Mir on STS-63, with the jet, we thought we had isolated the leak, but we were not 100 percent sure. He was, "Here it is. Here's our data. This is how the jet works. This is why we think we've isolated the leak. We think it's safe." Victor said, "These are the sensors on the Soyuz. This is our concern with the contamination. If this happens, here's what happens to Soyuz." They were both like, "Yes, we understand each other's positions."

Ultimately, the decision on whether we came in close rested in the hands of the Russian flight directors and managers, and Bob conceded that. He didn't say, "We need to do this because I said, and I'm in charge of the Shuttle mission." It was, "I understand your point of view. The decision is up to you." They made the decision to let us come in closer, but if they had decided not to let us come in close, it would not have made any difference. Now, Bob understood that. He felt like we had accomplished the mission objectives and it was an amicable thing. It could have been different if they had had different personalities. It could have wound up not as friendly. I don't know how to say it. It wouldn't be a war, but it would be not as friendly.

They've continued to carry that through. It's the leadership thing. The teams have a sense of cooperation toward a common goal, rather than "us versus them." You know, you can't say that to the person, but the general operating environment is one of cooperation.

Wright: You found that as well from RIO to PRPs?

Davis: Yes.

Wright: You found a good working relationship?

Davis: In general. There were a couple of personality differences, but, yes, and we knew we had a job to do and the flight directors expected us to do it. So we moved down that path. We hit a couple of roadblocks every once in a while, but that's normal.

Wright: Did you ever encounter any hesitation from your counterpart when they spoke with you because

you were a female?

Davis: Yes. It's hard for me to articulate without sounding negative about the Russians, but their culture is not the nineties' culture like it is here. They're making progress. I think they'll probably have a feminist movement. They're probably in the beginnings of a feminist movement now. I got a lot of comments, but they were never intended in a negative. It was more of an enlightening, I felt like, to them.

The second trip I went over there, there were eight or nine of us. We had a couple of engineering people, mostly MOD people, Bob Castle and Gary Coen and myself and another woman who was the rendezvous specialist on 71, and one of the engineering specialists in attitude control went. So there were three women, six or seven men. I can't remember exactly. Small group. We met for a week.

At the end of the week, they invited Gary Coen over to a party at Vladimir Solovyev's house, and they were trading stories and so forth. One of the Russians asked him, "Where did you get all those smart women?" [Laughter] Gary told us that story a couple of days later. He didn't tell us right away. But we all laughed about it.

Wright: Well, that was a compliment, coming from him.

Davis: It was intended as a compliment. In our environment it sounds chauvinistic, but they don't mean that way.

I've become pretty good friends with Victor. He has said a couple of times to people that I didn't have a "woman brain." [Laughter] And I just laugh about it. But he also told John Curry, who has spent quite a bit of time in Russia as the head of the operations team supporting the astronaut on Mir, we've had several women in that capacity also, and they are in charge of the operations, the American operations team, and every time we would send another women over there, Victor would go to John and say, "John, you're sending me all these women. You're giving me a lot of trouble. Our women are starting to ask, 'Why can't we do that?'"

I said, "All right, John, there you go."

In a way, it kind of scares me, because I know the women have indicated to me that they're looking to me as an example. I'm like, "Oh, gosh, that's a lot to measure up to."

Wright: Just doing your job.

Davis: Yes, I'm just doing my job. I wouldn't want to steer anybody in the wrong direction, because I know if they do have a feminist movement, that it's going to not be easy for them. There's going to be a lot

of obstacles. Well, there already are obstacles. But when you start asking for things you didn't ask for before, you're going to run into that some.

I try not to dwell on those particular incidents too much. The ones I told you about stood out because they were humorous, yet not humorous at the same time, depending on your perspective. But I have high hopes for the women over there. I actually think they have a harder life than we do and overcome more obstacles than we do, just because their life is harder, in general. I get the sense that they're husbands don't help them with the housework and the children and so forth like that. The kinds of things that we've already talked about and gone through and like that.

Wright: Well, you have served as a role model here, because you've helped start this position. If you were talking with somebody who was interested in being a RIO, what would you suggest, or what would you be looking for if you were having to do the selection process? What are those characteristics that help someone be successful in this position?

Davis: If I were going to tell somebody whether they should be a RIO or not, I have always advised people that they should. I think it is probably the second best job in the control center. I know it broadened my horizons, not only what I understand about the Shuttle, but the opportunity to work with people from a different culture. I've even picked up a little bit of Russian language, and working with interpreters. I would always encourage people to take an opportunity like that.

However, if I were trying to decide what the best characteristics would be, it would be people who are flexible, that don't expect for you to have a black and white set of rules for how to do the job, because the job changed from hour to hour depending on what was going on on the mission and who was on console and what we were transferring back and forth. So they'd have to be flexible and--I don't want to say friendly, but have a positive attitude and be open to different kinds of personalities and cultures and temperaments and so forth like that.

It helps if the person has some experience in the flight control room, but I wouldn't necessarily say that was mandatory. One of the other RIOs, who is also a real good friend of mine, Joel Montalbano, hadn't worked in the front room before he became a RIO. Extremely talented young man. Came in and was just like natural to him to work there, but it was because he had spent a lot of time working on Shuttle-Mir in a non-real-time position, spent time building relationships with the Russians. His personality just fit right in to the job. It was a perfect match for him. It wouldn't be like a job for some other technical position, where you'd have the right degree and the right experience and focus on the technical aspects of it. That's not what kind of job it is. It really is a people job.

Wright: Did you ever have an average day? Did one day turn into to be like the day before?

Davis: No.

Wright: Anything ever get routine?

Davis: No. Well, no. While I was over there doing simulations or missions, every day was different. I mean, we never knew what the mood was going to be when you came in. You just had to go with it. If things are not going well, you can't let that set the tone for how it's going to go on your shift. You have to come in with a positive attitude and go to work and get things done like that.

Sometimes getting ready for a flight was kind of cumbersome, getting documentation updated and making sure we had everything we needed. The logistics were all arranged for the consultants. The interpreters were trained and certified and ready to go, and understood their getting on shift, and so forth, like that. Sometimes it was a little cumbersome. But I found that to be true in other console positions, too. Right before flight, you're all focused on the flight and you forget to pick your kids up from dance. [Laughter] Things like that. But overall, I would say it was a great experience. I wouldn't trade it for anything.

Wright: I guess your families have to be a little flexible, as well.

Davis: Yes. My daughter, her birthday this year, there were some Russians in town for a meeting and they asked if we could go to the beach. My daughter wanted to go to the beach on her birthday. So my husband loaded her and all her friends up in his car and then I had a carload of Russians, basically had to spend most of the day entertaining them. Sarah said, "Are you going to pay any attention to me? It's my birthday." She's fourteen years old. You know how they are.

Wright: Yes.

Davis: It's like, "Yes, Sarah, I'll do the best I can, but I have to take care of my Russian friends here, too."

Wright: I guess she didn't go for being the only fourteen-year-old that had international friends there.

Davis: No.

Wright: Didn't work. [Laughter]

Davis: The funny thing is, since we've been working together for most of their cognizant youth, they take it

for granted that you work with Russians. It's just people from another place. It's not the guys that we used to point our nuclear weapons at, because that was before they understood all of that.

Wright: Hopefully they'll grow up with a different perception.

Davis: I hope so. I hope so. I think that's good. I would like for them to appreciate it in a sense that they understand the value and the importance of--I sound like a bleeding-heart liberal, but world peace and working out your differences, rather than what we had before that. I hope it stays this way, anyway.

Wright: Hopefully at some point you can share information with her what it was like when you were fourteen, or maybe you've already had a chance to do that.

Davis: I have. I think it's intellectualizing about it, though, and she doesn't really understand what I'm trying to tell her.

Wright: She's fourteen. [Laughter]

Davis: Yes. I would love for her to go to Moscow to see the Bolshoi Ballet and realize how beautiful it is. My husband had an opportunity to go earlier in the year, and it turned out he couldn't go to Moscow. But I'd love for the whole family to just go see what life is like over there, see all the old buildings and beautiful churches and all the culture and history they have there. I think they would think that was a hoot.

Wright: Did you have a chance to spend much time when you were there doing some of those things?

Davis: Yes. Normally when we went, we would go for two weeks. My first two trips were just one week and we'd go sightseeing after we got off work if there was time, or on the Saturday or Sunday where you weren't traveling. So I got to see a lot of things going on tours.

The neatest experience I had, though, I was there for two weeks and the weekend in between, Victor Blagov offered to escort me to St. Petersburg, and Sergei Krikalev met us there. He's from St. Petersburg and he was there for like a class reunion. They spent the day showing me around St. Petersburg. I was so flattered that they would take time out of their doing something else to show me around their country and what was there. Of course, St. Petersburg is just incredibly beautiful, indescribably beautiful. We went out to the Summer Palace and looked around. I was just awe-stricken. I couldn't imagine that much wealth. I've never seen anything like it before.

At the end of the evening--Victor is one of those people that knows someone everywhere he goes.

He knew this man that was a sculptor in St. Petersburg. He lived in this studio and we went there and had dinner that night. I was like engulfed in Russian culture. I mean, they didn't even talk to me most of the night. Every once in a while, Sergei Krikalev, he speaks pretty good English, would ask me a question or something like that, but most of the time they were just visiting with each other in Russian. I was going, "Gosh, this is so neat." I was just really enjoying it. I thought I can't wait to get back and tell my family about this. I took pictures. They were like, "Well, yes, this is okay." I said, "No, no, you had to be there. It was really, really neat." I mean, he had stuff all over, all kind of sculptures all over the place. My daughter would have loved it. She would have just gone crazy.

At the end of the night, he pulled out a plaster-of-paris statue that was--oh, I can't remember. At the Summer Palace there's all these gravity-fed water fountains and they have statuary all around them. In the middle there's a big statue of somebody holding the mouth of a lion open. It's real symbolic, overcoming adversity or something like that. He had a little plaster-of-paris sculpture of it that he had done, and he gave it to me. It's in my husband's office now. It was neat. I guarded that thing. I carried it on the plane. I stuck it under the seat, wouldn't let anybody touch it.

Wright: I guess not.

Davis: I was just absolutely thrilled to death with the whole day. I wish there were something I could do to repay Victor and Sergei that way. Some of us took a busload of them to San Antonio one day, showed them the Riverwalk. They did a little bit of shopping. We actually went there and back all in one day, so it was kind of a long day, a lot of driving. But I think they enjoyed it.

One of them, getting back to the women thing, was really impressed that I could drive all the way to San Antonio and all the way back. [Laughter] He thought that was amazing.

Wright: What a woman. [Laughter]

Davis: Yes. I had most of the Russians in the van with me and we were driving. We were caravanning over there. There was an interpreter with us. Driving along, and I was speeding, probably going about somewhere between seventy-five and eighty, driving along. After a couple of hours, the interpreter said, "Sally, they are telling you that they have decided that you are exceeding the speed limit."

I said, "Yes, I am. Thank you very much." [Laughter]

But I think they were--I don't know this for sure, I think they were surprised that you could go that fast for that long. I don't know. Maybe they weren't. But it seemed like they were surprised by it.

Wright: Certainly noticed what you were doing, though.

Davis: Yes. They talked for a long time before they finally came to that conclusion. They went back and forth. "What are they talking about?" "We have determined you are exceeding the speed limit."

[Laughter]

Wright: Well, you've had new friends and new responsibilities and a whole new concept. Your days were so busy and so full. Was there ever a time during all that time period you maybe thought that this hadn't been the right decision?

Davis: Well, not just being a RIO. I mean, my career, in general, my kids fuss at me for spending too much time at work and I try to balance. You know how that is. Everybody here knows how that goes. But I can't imagine not working, not taking the opportunities to do things like this. I don't think I'd be a very good mom if I did that, because I wouldn't feel very fulfilled. I ask myself that question almost every day, "Am I doing the right thing by working and working at a job that demands that much of me?" But I feel happy and most of the time the kids understand. My husband's real understanding. He's just super supportive of me.

Wright: During the missions that you worked, did you remember one being more memorable than the other one? Of course, 71, because you got to see the--

Davis: 71 was definitely more memorable. By the time we got to 74, I was focusing more on my rendezvous job, because I was working on a flight that was really going to require a lot of intense effort. I didn't have as much a role on 74. I don't know. 71 will always be special, because it was the first one and we spent so much time preparing for it and practicing. Everything was new.

Wright: It sounds like it was a wonderful experience, a challenging experience, but a wonderful experience from one day to the next.

Davis: Yes. It was also hard for me once I came into this office. I didn't have any role on the Shuttle-Mir because I was working Space Station. Of course, some of the Russians were the same. Some of them were new to me. They weren't new Russians, they were just new to me. But what occurred to me, we had a little ceremony where we exchanged some gifts. The managers exchanged gifts, and everybody else stood around and watched, after the last time docking. Let's see, I can't remember what the flight number was. Anyway, what went through my mind then was, I'm so glad we're building the station together, because I

can't imagine what the ceremony would be like if it that was going to be it. I wondered if the people that worked Apollo-Soyuz maybe had some of those same feelings. But I'm glad we still have the opportunities in front of us to work with them and other people that I don't know yet, that we haven't worked with.

I can't describe the feeling of growth and enlightenment that I've gone through. I feel like a changed person because of it, from a personal perspective.

Wright: From a professional point, the experiences that the RIOs have helped to contribute to the success of Shuttle-Mir you believe will also benefit the ISS?

Davis: I'm not sure the RIOs are going to--I don't know if that concept will always be there, but I think there will always be someone doing a similar function, whether it's someone over in Moscow or whether it's a person that's doing two other things. You still need somebody to coordinate the control centers and to do some of the pre-flight work to make sure that everything's going to sync up. Where the center of gravity in that falls in the future doesn't matter; the work will still be there.

Wright: Where are you going to be going now? You mentioned that you were chosen as a flight director.

Davis: I'm working on a couple of the first assembly flights. There have been a couple of things we've done in preparation for station that I've had the opportunity to work with my Russian colleagues, building up the ground interface infrastructure and getting that all tested and so forth. I've had an opportunity to work that way, but we've also worked some on missions. On 2A we're actually working with a different set of flight controllers. We're working with Khrunichev versus everybody else we worked for before was with Energia. So there were a different set of people, but it's been the same kind of growth experience working with them, too. It's been, I think, a challenge for them, too, because normally, as best we can tell, when they build the modules on the Mir, they have a real limited operations role. They get the module on orbit and then they hand it over to Energia to operate and then they provide engineering consulting. So all of this operations interface that they're dealing with for 2A, I think they've had a lot of learning to do about working with Americans. So we're trying to be as easy as we can on them and not overwhelm them too much.

Wright: It sounds like the learning is never going to stop for all sides.

Davis: Yes. Well, ultimately, at least from my perspective, you always want to be learning in the job. There's plenty of opportunity for it in the station and working with the Russians and the other internationals.

Wright: You'll possibly have opportunities to work with other international partners in this job.

Davis: Yes. Well, we have different people in the office working with the Japanese. Europeans are much further down the assembly sequence. So from an operations perspective, we haven't worked too much with ESA [European Space Agency]. But I suspect other areas, we're real involved with them right now.

Wright: It sounds like your job will continued to be busy.

That's about all that I can think of. Carol, do you have any questions that you would like to ask Sally?

Butler: Was there any one thing in particular that you learned from an operations standpoint that really stuck up for Shuttle-Mir and that maybe will be applied to Space Station?

Davis: I don't know if it will be applied to Space Station, but I hope it will. When the Shuttle flies, you have ten days of on-orbit time to get the most out of a mission that you can, which means that decisions have to be made right now, or soon, today or tomorrow, or you'll lose your mission objective or you won't get as much of it accomplished. The Russians--and I think it's two factors: one is their cultural approach to the job, and the other is that they have more experience with flying 365 days a year. You don't have to decide something right now. I would like to see us grow into that for Space Station. We're still in the Shuttle mode when we do simulations. We got to make this decision right now. Of course, a lot of what we're simulating is when the Shuttle's there, so you really do need to hurry up and make the decision.

But I think it's going to be a real learning process for all of us, especially managers, to realize that you don't have to call up people at three o'clock in the morning to come in and do an analysis, so you can decide if this circuit breaker can be pushed back in. This is an analogy; we don't really have circuit breaks on the station. I won't know until we start flying 365 days a year whether we're going to do that or not.

The other one--I will probably get fired for saying this. I think it's more important to build cooperation than it is to establish who's in charge. That doesn't mean we should acquiesce every bit of what we are or what our technical standards are. That's not what I'm talking about. I'm talking about, we don't necessarily have to always say that we are the boss and do things to prove it, that we're in charge

I would rather truly like it to be a partnership with everybody, regardless of the size of their country or their space program or their experiment or any of the objectives they're going to have on the Space Station, or how many crew members they have on board or whatever. I don't know. It's probably a little idealistic. I'll be fired for saying it, but, oh, well. [Laughter]

Wright: Something to strive for anyway.

Davis: Yes.

Wright: No matter how or at what point that comes about, it's a great idea to try to do that.

Davis: Yes.

Wright: Well, we certainly thank you for your time. Do you have anything else that's come to your mind that you'd like to add?

Davis: No. I feel like I rambled a lot.

Wright: Oh, no. I think you've offered a lot of information and I'm sure that the information that you gave us will serve well for others that want to understand what you did. So we wish you the best of luck.

Davis: Thank you.

Wright: Take care.

Davis: Thanks for your interest.

[End of interview]