

The oral histories placed on this CD are from a few of the many people who worked together to meet the challenges of the Shuttle-Mir Program. The words that you will read are the transcripts from the audio-recorded, personal interviews conducted with each of these individuals.

In order to preserve the integrity of their audio record, these histories are presented with limited revisions and reflect the candid conversational style of the oral history format. Brackets or an ellipsis mark will indicate if the text has been annotated or edited to provide the reader a better understanding of the content.

Enjoy “hearing” these factual accountings from these people who were among those who were involved in the day-to-day activities of this historic partnership between the United States and Russia.

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## **PATRICIA "PATTI" MOORE**

**July 30, 1998**

Interviewers: Rebecca Wright, Paul Rollins, Frank Tarazona

*Wright:* Today's date is July 30, 1998. We're talking with Patti Moore, Patti Moore Newberry. She's a participant with the Shuttle-Mir Program. It's Rebecca Wright, Paul Rollins, and Frank Tarazona. Good morning, and thank you for visiting with us this morning.

*Moore:* You're welcome.

*Wright:* We'd like to begin with you telling us what your roles and responsibilities were with the Phase One Program.

*Moore:* I was an Ops Lead for NASA 6. Roles and responsibilities for that are kind of wide-ranging, because I was the lead position for the team in Russia supporting the mission. But pre-mission, there was a lot of activity that went on as we prepared. We followed the crew through training so that we were prepared as well. We did work with them in Star City as well as the training sessions here, and that enabled us to get a good rapport with your crewperson you were working with, as well as learning experiments. The crew definitely had to make a lot of decisions on their own because of the limited com, but we were there to provide answers and work things for them and stuff during the mission. So that's, in a nutshell, what our responsibilities were.

*Wright:* Let's take it piece by piece. You said you were the lead for the team in Russia. Who all were you leading?

*Moore:* We had a small team. You can draw similarities to payload support on Spacelab missions, basically. There's a much smaller team. We had a flight surgeon who was there full time like the Ops Lead. The Ops Lead and the flight surgeon were the one that spanned the whole increment. We had a back-up Ops Lead who they rotated on us. All the rest of the positions rotated on a six-weeks basis. The back-up Ops Lead who works the opposite shift from me was the team lead as well.

We had a systems engineer, which was kind of a new position after we started running into more systems problems on Mir. That was someone who followed and kept Houston management, JSC [Johnson Space Center] management, informed of the status of the Mir systems. Then we had a payload engineer who followed all of the payload hardware problems and the status of the payload hardware, as well as how the systems were affecting the payload hardware.

Then we had a mission science person who was kind of the science brains on console. I mean, they made the decisions, the hard calls between priorities and planning and trying to get the most science accomplished during the increment. Then we had a time-line engineer who was a new position as well later as we progressed through the mission, because time-lining became so tough for one mission science person to do, we added a time-line position, and they worked opposite shifts, and they cranked out a product for us to go by, and did a lot of the scheduling. It became a very important part, because resources were a little more limited later on. Then we had a biomedical engineer who was there. In support of the flight surgeon there was always one of those guys in the TsUP with us. They looked after the SMP experiments, as well as crew health issues and scheduling family conferences and psych support and stuff like that.

Then we had PAO support there. They were there all the time. She's been over there for a year, and she was working with us in the TsUP every day, and that was a load off, really, because she dealt with the press totally. So that was a big help. So that was the team and responsibilities, and Ops Lead was the team lead.

*Wright:* Is that a challenge trying to coordinate all these different disciplines?

*Moore:* Actually, it was really pretty easy, because everybody was focused on their discipline. We'd tag up once a day and bring everybody up to speed. Any decision had to be made quickly. You had about three people that you really looked to and said, "What do we do?" It's easier than when you have a whole bunch of people to deal with. So it was a good-sized team, and really everybody was focused on their work, and it wasn't a coordination problem at all. In my opinion, it was a good way to do business.

*Wright:* Did you find every day to be full while you were there in that position?

*Moore:* Yes. Every day was completely full. I'm from Spacelab world, and when you're working a Spacelab mission, you come off console totally drained, mentally and emotionally, basically, because for fourteen days you're just really running and going. When I started this I was going, "I'm going to be bored. You only talk to the crew twice a day." I mean, there's only contact with the crew ten minutes per orbit. That's really amazing. I thought, "Wow. There's too many people over there; we don't have enough to do. We're going to be sitting around a lot." That was not the case at all. [Laughter] We were all busy every minute from the time you walked in the door until the time you left in the evening, and sometimes it would get a little overwhelming, but really the workload was steady. It was like piecing together a jigsaw puzzle sometimes.

I thought long-duration missions were going to really be boring compared to Spacelab, but it's not at all. Every day you had a new set of circumstances to deal with, and it tweaked stuff three weeks from now, and you'd have to roll it back in. We had really good support back here in Houston in the [Payload] Operations Support Center, and anytime we had something that was overwhelming, we said, "Hey, guys, you're just going to have to go work this out," and they would pick up the ball and run with it, and come back with a plan. So that's what kept the work from getting overwhelming. But we were busy every minute of every day, that's for sure.

*Wright:* How long were you there?

*Moore:* I was there for a little over four months during the balmy months, September to February.

*Wright:* Didn't get a tan then, did you?

*Moore:* No. Minus-36, I think, was the all-time low--Celsius. That was a little chilly.

*Wright:* Have a new wardrobe of winter clothing?

*Moore:* Oh, yes. Oh, yes. I have some great coats that you don't get to use them here.

*Wright:* Tell us about the worst day that you can remember being the Ops Lead, because I know if they were all full, there had to maybe be one that was more full than the others.

*Moore:* There was a little stretch there probably, that was probably the worst days. Dave [Wolf] and I weren't used to working together, because I had worked with Wendy Lawrence up until they launched. I was kind of worried about the switch, because I was going, "Oh, wow, Dave and Wendy are so different. How's it going to work?" But Dave and I decided that even though we didn't know each other that well, we were going to work it out just fine, and it did. It worked out great. We got along great on orbit, and he was really terrific to work with. I would have liked to have worked with Wendy, too, but Wendy really set us up very well on orbit, and she got things started off very well, and it was just invaluable to the whole mission. So I was a little worried about working the switch, but there was no problem.

I guess we kind of hit a stride about mid-mission. It was so difficult getting things unpacked, and it was a little frustrating for me, because I didn't know what Dave was going through, and he called in and told us it took three times longer to do something than we had expected, and I was like, "Oh, my gosh." Then he'd tell us why. It's like he'd have to rearrange the entire module just to set something up. So those

days were a little tough until we hit stride in mid-mission, and that was just like clockwork after that, because basically Dave had everything unpacked.

It was about that time his EVA was being planned, and all the science guys were starting to get worried about getting their last runs in, because Dave's EVA was falling towards the end of the mission, and you can't do some of the medical stuff right around the EVA. All the mission science guys were getting a little upset. There was about a week's stretch there where we were really questioning whether Dave should do the EVA. I kept telling everybody, "Yes, we can get everything in. We'll get it finished. Don't worry." There was a lot of skepticism in the mission science community, but finally we were given the green light to press with the plan to do it.

That was probably the worst few days right there for us over in TsUP, because we weren't here to present our case, and our managers were presenting it, but it's much easier when you're there to explain what Dave's thinking and why we were able to get stuff done quicker now. Because they were looking at the first of the mission going, "Well, it took much longer to do everything else. How do you think you can do?" So it was a little difficult being remote and really thinking you can get the job done, and not being here to present your case. But it all worked out great, we got everything done, and he was able to do the EVA. I think we got just about everybody's box checked there. That's probably the hardest part about being over there.

*Wright:* How was it to communicate with him, knowing he was so far away?

*Moore:* It was just like he was in the next room. It was frustrating at times because we had a lot of problem with the text uplink packet system. We'd come in and find out that the critical notes that we had for him that night did not get up, and so then the next morning you're in a struggle because he's sitting there tapping his foot going, "Guys, you know, what am I supposed to do?" because he wouldn't have gotten our schedule or our notes that we sent him the night before. We wouldn't find out until the next morning.

So then that would kind of push our schedule around a little bit, because we wouldn't talk to him until he was already supposed to be started doing stuff. So the communications from that aspect was a problem, but being remote, that's not a problem. I think Dave and I probably had a little bit, right at the first of the mission, an understanding of the way each other communicated. That was probably the only difficult part, but after we could read between the lines and know what each other meant, it was really pretty easy. We also had to try to compensate for the possibilities of not getting stuff sent. So we were resending stuff, and doing it several days early if we could. Sometimes you had last-minutes changes, but we started rearranging the way we--using voices prime and text as back-up.

*Wright:* Was that one of the biggest parts of being the Ops Lead, making sure the communication got to Dave?

*Moore:* The Ops Lead is kind of an overseer, basically, and communicator, and you deal with the Russians mainly, but that I made my job, was making sure Dave had what he needed to get his job done the next day, making sure the questions were answered, making sure that the communication was ready to go up and in the hands of the Russians to send it. Then the flight surgeon and I shared the voice com. Actually, everybody on the team talked to Dave at one point, because if they had worked an issue, we sat them down on the console and they talked to him. He liked talking to everybody, and it was kind of interesting for them and a lot of fun. They were the best person to explain it when they were the ones who developed the plan, so we definitely had a lot of that, too. But, yes, my main focus was making sure Dave had what he needed on orbit.

*Wright:* How did you get involved in this position?

*Moore:* Well, that's an interesting story, since I was, up until about three weeks ago, a Marshall employee. Apparently they were not getting a lot of volunteers to go spend that much time in Russia, here. Plus everyone was focused on station ops or whatever, and had their job, and they didn't want to train for a year and then break away and go to Russia for four months. They were too involved with what they were doing. So they were having a problem getting a lot of volunteers to do it.

So I think Rick Nygren called some of the ops people at Marshall and said, "Have you got any guys in Spacelab? You've got to have some people with ops experience running around with nothing to do basically," which they didn't really. I was in Washington at the time. I was already on extended TDY in Washington. So my household goods and everything were kind of all taken [care] of, in my situation in Huntsville. So my boss, my tour of duty was over in Washington, and he said, "Hey, you just want to keep driving south and go to Texas?" I said, "Well, I'll go down and talk to them."

I came and talked to Nygren and Jeff Cardenas and they explained the jobs to me. They were saying, "Any of these jobs. You can be training, you can be discipline lead," which were mainly based here in Houston, and they said, "but we need Ops Leads, too." I said, "Well, if I'm going to do it, I'd like to do the Ops Lead job," because I knew a couple of the other guys from Marshall were volunteering for the Houston-based jobs. So we actually sent four people from Marshall altogether: George Norris, who's doing training; and Allen Johnston later, they kind of swapped off; and Steve Battle was the microgravity lead position; and Angie Jackman was science lead position, and she was my counterpart back here basically

from a science standpoint. She led kind of the science team here during NASA 6. That was good because we had a real good working relationship to begin with.

But that's kind of how, in a roundabout way, I got involved. I was definitely glad I did it, because it was a good opportunity, and it was a very challenging job.

*Wright:* Take us through what happened. You landed in Houston and you decided this is what you wanted to do, and then what was the next step? Did you move into the training part?

*Moore:* Well, first of all, I followed Tony Sang around for weeks. [Laughter] Tony was the NASA 4 Ops Lead. We were in the middle of NASA 3 at the time I arrived, or just beginning NASA 3 with [John] Blaha. So I'm following Tony around, and he was just in his last training session with Jerry [Linenger], probably, I think it was. Anyway, trying to figure out what it is an Ops Lead does. All I did was sit in meetings, and I'm going, "Wow." It was like he was the catch-all and the person who was saying, "This needs to be done." It was kind of hard to get a grip on what exactly you're supposed to do.

But then also besides doing that I dove right into Russian language training. That was fun. I love taking Russian, I just didn't get to do enough of it. I was probably the weakest among the Ops Leads on language skills. They got to study Russian up front before they started their Ops Lead job. I was in the middle of both so I really didn't get to dedicate a lot of time to language, which I wish I had. I'm planning on now going back into it, so I hope it helps a little bit. I could get by, but that's about it. The Russians used to give me a hard time about it, anyway.

So after that, I took a FAM [familiarization] trip to Russia with Jeff Cardenas. He was going over to support Blaha. They were doing six-weeks rotations as Ops Leads then. So I went over there for a couple of weeks and then came back, and we started training right after the first of the year, was Wendy's first training session in the States. So that really showed me what I needed to do. You saw what experiments had problems, we had to get procedures verified. So then the job really became more concrete to me than exactly what I needed to do for her, because she and I talked about a lot of stuff that she needed. That really got me off and running.

I went to Russia to back Tony up to learn what the job was over there. So I was Tony's back-up for a six-weeks tour in the March time frame. Then we had another training session back here for Wendy, and then I went to Star City with her during the summer, almost all summer. That's when the switch occurred. It was at the end of the summer right before I came back.

*Wright:* How did that affect you? What did you have to do to prepare them to start supporting Dave

Wolf?

*Moore:* When I came back here, I started the worst six weeks in my life, probably, because we had so much. I mean, every investigator out there was going, "I need to train Dave on my experiment," because he'd been Wendy's back-up, but back-up training and prime training are two different things. I'm just going, "Look, most of the stuff Dave saw enough to read the procedures and wing it." So the training folks and I had to sit down and come up with exactly how to use Dave's time, because he was going to be here for such a short period of time before he had to leave. So that was probably the most hectic time.

And then poor Dave, when he hit Houston, I mean, his time was not his own, and Chris and I both were trying to minimize the load on him. I mean, he gets back here and he has a lot of personal problems. His car wouldn't start, this or that or the other. His pool was messed up. He had a team of people trying to help him with those. People were taking him and driving him around. He was having to do all of his baseline data collection and stuff. That was a really hectic time for all of us.

That was the hardest part, is trying to make sure that Dave had what he needed to have, because I knew it had to be frustrating for him, too, because he was being pulled in so many different directions. But he wanted to get what was really important as well, so Chris and I were trying to filter a lot of that, and even the MOD-train[ing] folks, they were really good, and his scheduler, trying to keep everything working together. That was probably the toughest part, was trying to make sure, number one, Dave didn't get just fire-hosed. He did get fire-hosed, I have to admit, he really did. But I think a couple of things that they did really helped him. We spread out all of the equipment that we could get our hands on and just went over it and said, "Now, remember, this is called this and this is called this." I think that probably helped him the most, because he hadn't seen it in months and he got to refamiliarize just looking at it, and I think that really helped us on orbit. But that, I would say, was the toughest part of the switch.

*Wright:* The Ops Lead was the central character. Was it a position of authority that was recognized by the Russian officials?

*Moore:* Yes, absolutely. They really liked to have one person to talk to and a focal point. All of the Russians had a focal point, basically, like the science guy talked to the other science guys, and the time-liner talked to the time-liner. They'd come in looking for them. But the flight director types, they would come looking for the Ops Lead. That was kind of interesting for me because I was the only female. Christine Chiodo was back-up, she's the other female lead we've had as Ops Lead. When I was a back-up, I never talked to the flight directors. As a matter of fact, when I got there they had no idea who I was, even



though they had been introduced to me three or four times. Some of the Russian women said, "They'll go talk to one of the guys. They won't come talk to you," but they did, and they were very respectful. But they definitely looked to the Ops Lead as the point of contact for them. It worked out very well, because everybody kind of had their own points of contact, and I think the Russians really liked to work that way.

*Wright:* How were your experiences working with them? Did you find it easy to talk with them and ask them for things, or did you feel like there were confrontations every time? Maybe you could share some of that with us.

*Moore:* I was kind of intimidated at first. I mean, I've worked with internationals before on Spacelab missions and just found it so much fun to get to know them. But the Russians intimidated me a little bit. I'm not sure why. After you have a couple of encounters with them, that starts wearing off and you realize, okay, well, maybe they act a little bit stoic, but they're really not. It went from being a little uncomfortable at first, to being totally feeling like I could walk in and sit down and talk to them about anything.

It depended on the situation, whether you felt like it was going to be confrontational. I don't think we ever got confrontational, because we had a mutual respect. I respected the fact that it's their station and their cosmonauts were just busting their butts to improve things and keep things working correctly, and I respected that, and they respected me from the standpoint of we expect this much science, this is a contract deliverable, basically, and my job was to make sure it got done. They respected that. They only said no when it was in the best interest of the station and the crew to say no. I felt that way, at least. When I would go in and ask for things, I knew it was going to be on that kind of grounds. So it was really never confrontational.

I was a little bit nervous more times than others, going in with a request or a complaint. Usually my complaints, though, were met with, "You're absolutely right. We'll do our best to change the situation." So we really never had any confrontation; it was just my nervousness going into it depending on what the subject matter was.

*Wright:* This increment was a relatively smooth increment, but leading into it, it was not, coming on as an Ops Lead right after Mike Foale's increment. Did you have any anxiety of what possibly could happen and what positions you might be put into?

*Moore:* Absolutely. Before Dave left, I said, "Dave, we don't want to talk to any reporters." [Laughter] I was there during the collision and saw the absolute circus situation the whole team was put into. I knew we were ready to handle keeping JSC management informed and following every problem, because we had the

right talent on the team. Our system engineers were all very, very good, and their knowledge of Mir systems had really ramped up. So I wasn't nervous from that standpoint, but I was more nervous, I guess, of trying to keep a handle on everything else that goes along with it, because they just kept the door shut and kept people out, but it could be really disruptive to what we're trying to do to make sure everybody's informed of the situation back here. I was a little nervous because I had been concentrating on payloads more than Mir systems, but our Mir systems engineers were so good, I wasn't worried that I wasn't going to be able to follow the situation on the station itself. They worked out very well.

You're right. We had, all things considered, probably the smoothest increment. I mean, we had our share of problems, but Dave has said, too, that he felt like station was in better shape when that crew left than it was when he first got there, because Anatoly [Solovyev] and Pavel really did a lot of work and improved a lot of the situation on board.

*Wright:* You have a whole new range of international experiences, of course, being with the Russians. I'd like to start with those. Tell us about when you were in Star City training with the crew. What were your duties there, but also if you could elaborate on what you did when you were on duty during that time?

*Moore:* It's a lot different working in Star City than it is working in the TsUP. The TsUP is really a busy place. In Star City, you're mainly going to classes with your crewperson. A lot of it at that point in time was refresher for Wendy, and I was going to things with her, but some of her classes were totally in Russian, and I had an interpreter with me, kind of whispering in my ear. It was great to get to see hardware and stuff out there, but she was doing so much self-study, because she was getting ready to take her final exams, basically. So it was not near as--I spent most of my time in meetings late at night with Houston, and in the daytime we'd stay up until two and three in the morning talking back to Houston, and doing a lot of e-mail work. So, life out there was very, very different. I almost starved to death. [Laughter] Because we had a kitchen there, but I just didn't come really prepared and everybody was feeding me. Alice Flynn, Chris' wife, she was cooking lunch for me and stuff. She did during the mission, too; she kept us all fed.

*Wright:* Well, that's nice.

*Moore:* That was great. Star City, working out there was a little bit different pace and a little different agenda than working at the TsUP. But it got really strange, because that's when the collision happened, is while I was at Star City. So Wendy wanted me to go back to the TsUP to keep her informed of everything that was going on. So I started going back to the TsUP at that point, because we were done with training.

She was just studying to get ready for the finals. So I was going back into the TsUP. She was coming out once a week, and we were sitting down telling her everything we knew about systems statuses, and she was bringing us some of her study documents so we could learn more. So it kind of got a little different during that time frame.

*Wright:* Were you received okay in the TsUP at the time when all that was going on? There were so many people, you could come and go as you like?

*Moore:* Yes. Especially when Wendy was with us, you felt like you needed to bring her in in disguise or something, because the reporters knew who she was. It still was a necessary thing, because she needed to be kept informed, and we did our best job to do that, and she helped us a lot as well.

*Wright:* Did she continue assisting with the increment?

*Moore:* Oh, yes, she was great. She helped during that six weeks when we were so stretched, plus she developed a plan of where to put stuff on orbit. You have stowage locations, but it changes from what we see. You just kind of make a best guess as to where to put stuff, but you can't tell them; they have to figure it out. So Wendy did all that for Dave. I mean, it was incredible. She put his stuff away in an organized fashion, and then the best thing she did was, she wrote it all down. It was very descriptive detail like, "Inside this panel on the left wall behind this cable." She even sent it down to us from the orbiter so that we knew right where everything was. That was probably a big help to Dave, because he said, "Patty, it's like trying to work in your closet," because there's just so much stuff everywhere. So we had a good description. Dave had the same piece of paper, but we were able to figure everything out from what Wendy had done. So she was a big help during that whole time.

*Wright:* We always see it as very busy, very serious work. Were there light moments?

*Moore:* Oh, sure. Yes. There really are. Even with the Russians, we had celebrations. I mean, they have a lot of holidays. Women's Day is my favorite, of course.

*Wright:* Tell us why.

*Moore:* Because you're treated like a queen on that day. It doesn't matter who you are, it's just every woman has a nice day that day. I got so many flowers, so many chocolate bars. Every Russian there brought me something, and all the women on our team. They even came in and the guys sat us down at the

table and said, "Okay, you guys can sit here for the rest of the day and we'll do all the busy work and stuff like that." So there are a lot of light moments.

Even there were a lot of light moments with Dave. We had a running tally with him of anytime we made a mistake, we had a little running tally of this game we were playing of who made the most mistakes. So once a week or so we would update him on the tally of who answered wrong, or whatever, and everybody on the team had that. And we would send him jokes, and we even sent him a weekly status report of who was in town, and what we had done, anything fun, or where we went on the weekend or something, kept him up to date with a list. So we had a little running back and forth thing that was kind of fun.

There were a lot of light moments. Probably for our mission we were not as stressed as far as hoping things were going to work out right with the station and stuff. We didn't have that kind of fear. We had a couple of MCS failures and low power towards the end and stuff. There was a lot of time to enjoy your job and enjoy the cultural experience and working with the Russians, and get to know them a little better, actually. I mean, you'd sit and chat with them. The interpreters hate that. [Laughter] Oh, when Victor Blagov came back from vacation and had to sit down and tell me everything he had done, our interpreters are sitting there, "And then this day we went to the beach." [Laughter] They hate that. Actually, Victor speaks pretty good English, and a lot of times he didn't have to use an interpreter. We didn't have enough time to actually get to know some of them on a more personal basis, so that was kind of fun.

*Wright:* Did you have any trouble adapting to anything when you were there?

*Moore:* Well, the first trip over, that two-week trip, I said, "I don't think I can do this for four months." I remember when Jeff Cardenas pulled up in front of the Volga, and he said, "This is where you're going to be living." I looked at it and I went, "No, I don't think so." It was kind of scary-looking. But then when you get inside, it's all very nice, it's just the outside that looks a little dingy and kind of scary. But it was a great place to live. I loved it.

I was a little intimidated by the Metro and stuff, but after I could read Cyrillic, it wasn't a problem. So it's just a big city to live in. I was a little worried I wasn't going to cope with that real well or be able to get around on my own, but I was. But it was kind of fun doing that. I was a little worried at first. But the second trip over I was like, "Oh, this is going to be great. I can do this."

*Wright:* Did you find having more Americans there made the time easier, or did you have new friendships

with the Russians and you did things with them on your free time?

*Moore:* Well, you do both, but having Americans there does help. Actually, it was really nice having Chris Flynn's wife, Alice, there because she and I, if I needed to go do something, she knew that town very well. I'd say, "Alice, I need this," or anybody on the team could say, "Alice, I don't have any socks. Do you know where to buy them?" and she would always go with us and help us out. She and I even did some sightseeing things together on my day off, and Chris would always be at work when I was off. You really need to enforce the buddy system there, definitely, for a lot of reasons, but having the Americans there, you always had somebody to go do something with. Very rarely did you strike out on your own. Having Alice there was a lot of fun. She even set up a tour for us one morning to go see the KGB Museum, and I would have never gotten to do that on my own. She would keep us apprised of what the embassy [had going on] was going.

*Wright:* Was it a little strange walking into that museum of something that at that time--

*Moore:* Yes. You would think, "Wow. Who would ever expect you would be seeing this kind of stuff?"

*Wright:* So what's in there?

*Moore:* A lot of history of the Stalin days, and how everything got started, and the purges. It would show pictures of these people and say, "These people were all killed." What was funny, the first part was they had a picture of each one of the directors of the KGB, and the guy who was doing the tour, he'd go, "Oh, this guy was director for six months, and then he was killed. And this guy was director for a year, and then he was killed. This guy--" Every single one of them had been rubbed out. [Laughter] That was probably the most amazing thing to me. Of our spies that they caught, they had how all they figured out they were spies. I mean, that was really fascinating.

*Wright:* Make sure you don't do any of those things.

*Moore:* Really.

*Wright:* Where else did you get to go while you were there?

*Moore:* Oh, did the normal tourist things to Red Square and the Kremlin and the Armory. The Armory was fantastic. I've been in a lot of museums, but it was really pretty impressive. I liked going to some of the cathedrals; that was really interesting to me. We went to a couple of monasteries and stuff. I didn't

have a lot of time for sightseeing, but I did get to do probably the big things, and that was fun.

*Wright:* And you did get to see Russian under the snow.

*Moore:* Definitely in the snow. I got to see it in the summer, too, but in the snow, too. I actually like the snow. It was pretty.

*Wright:* Picturesque.

*Moore:* It is, very. The summer's kind of neat because it stays light so long, but it's also kind of dusty. But the winter, I really like the winter there.

*Wright:* After going to all those museums and seeing all that history, then you would walk back into the TsUP and you would be there working with them, did you find that to be a little bit ironic?

*Moore:* Actually, learning more about the history gave me a better appreciation for their attitudes toward things, more sympathetic to, okay, I understand why they approach things this way because of learning about their past and the way things were, and it kind of carries over a little bit. They do have a different approach than we do. It's hard for me to explain, but learning more about their history, I think, helped me with that and how to approach them on some things. It was a really good exchange. They've learned a lot about us, too. Sometimes I think that's a bad thing, because they're like finding our weaknesses. No, I'm just kidding.

*Wright:* Well, we even do that here with our own people.

*Moore:* We do. We do. You learn how to approach people and things when you want to get your way. I did it all the time. I had a real good rapport with Victor Blagov, who was my [point of contact]. He is who I went to for everything. Victor probably was our best advocate. I mean, he really went to bat for us all the time, and he was very easygoing. He has come a long way in his understanding of why we do things the way we do.

We would have discussions with them like, our lead time-liner from the Russian side, Nadia, she would come in and go, "Patty, why do you worry so much about this experiment?" I would say, "Well, Nadia, I want the scientists to get their data." She said, "They're the ones that messed it up. They messed up their hardware. It doesn't work right, so why are you worried about it? It's their fault." I said, "Well, I understand your point, but we have this thing where we want to get the good return for the money," and she

didn't understand that this was taxpayers' dollars and we're trying to make sure we get the biggest [Science return for the money], because that's not the case there. These guys fly experiments, and if they mess up, it's their fault, basically, in their opinion. I tried to explain this to her. They don't understand why we sweat bullets over somebody's experiment not working just right. But they're learning that about us, too, "Okay, this is a public kind of thing." They actually became, in a lot of instances, as concerned about our science as we were. So it was interesting to watch that change. And they had a lot of co-investigators as well; they became just as bullheaded about it as we were sometimes with their own management saying, "No, no, no." So it was something that I think we met at least halfway on.

*Wright:* That was a difference that became something that they worked with you well on. Are there some similarities that you saw that they do business the way that we do business?

*Moore:* The similarities, when I walked in their control center and saw it's basically the same way we operate. They don't have the resources we do, they don't have the constant com coverage, they don't have the uplink-downlink capabilities we have, and sometimes it works and sometimes it doesn't, and when it doesn't you say, "Oh, well." But still, the common thread of similarities in the disciplines and the way they report and everything, it was comfortable, basically, because you walk in and you go, "Well, there's not as much difference as I thought."

The way they approach problems, and they have little tiger teams that break off and go do it, and they would bring us into that as well. It was very good of them, because they were resistant to doing that at first, but as our systems engineers got to know them better, they would say, "Come with us and you'll learn as we learn." Our EVA guys were definitely brought into that fold, too, into the planning process real well. So there were a lot of similarities in the way they do business.

I guess their attitude towards solving problems, I mean, they've had that station on orbit for a long time, and they're used to [some] trial and error, where we want it all worked out before we try it, because the orbiter is such a different vehicle. But they'll go try something that we might not, and that was an interesting learning experience for us, because most of the time it worked. They leave a lot of stuff in the hands of the astronauts, too, the cosmonauts. They'd give them a procedure and the cosmonauts go, "Well, we think it would be better this way," and they'd go off and do it. Well, a couple of times that didn't work out real good, but it was an interesting way to watch them work with the cosmonauts and within their own teams.

*Wright:* Do you believe the experiences that we had with the Shuttle-Mir are going to be beneficial for

what we do with the International Space Station?

*Moore:* I tell you, I don't think we could do it, the International Space Station, unless we had done Shuttle-Mir, because we've learned how to work with them and they've learned how to work with us. We did have a lot of head-butting at the beginning of Phase One, I'm sure. I mean, Frank [Culbertson] could tell a lot of interesting stories. And I know Jeff and Rick and all of them have told us about when they sat down at the negotiating tables with them at the very first. And still, at the negotiating table it still can be kind of rough, but when you get down to working together on the vehicle and on the plan, it's much smoother. You have a meeting, you're not trying to--when you're doing stuff on paper, everybody's trying to get their thing worked out. When you're working together on an orbiting vehicle, you work together more, I think. I think Phase One paved the road for that kind of coordination, and we learned a lot about each other. It's probably even made some of the paper negotiations a little bit easier, because everyone knows each other so much better now than they did when we started Phase One. It has saved station that terrible grinding of the gears in order to get started. It'll make things go a lot smoother.

Everyone who worked Phase One now knows a lot of the flight controllers in Russia. Some of the faces are changing for Phase Two, but still a lot of them are the same. Those working relationships are going to carry over, and that's definitely going to help, because they made a lot of headway being included in things, because sometimes the Russians are resistant to just hand over documents. On Phase 2, we've probably gotten a lot further with that than we did right at the beginning of Phase 1.

*Wright:* What about for yourself? Do you feel like the experiences that you've had during Shuttle-Mir affected you and made you a different person or helped you see things differently? How did those experiences affect you?

*Moore:* Well, anytime you live in another country it's going to affect you personally in a good way. I mean, it makes, number one, you appreciate what you have here, but, number two, it gives you a different perspective on a lot of things. I enjoyed living in Russia a lot.

But from a professional standpoint, I learned what it takes to do long-duration missions. It was different than I thought. It really was. I mean, you have a lot more time to work things out. It's more of a finessing of the process, rather than the way we did it on Spacelab. You have time to work things out. You have time to really discover things you didn't expect to on orbit, and that's what's really neat about it.

Then working with the Russians and just international partners, in general, I think it has helped me try to see their side and the way they're looking at things, and it'll make me more able to negotiate and see



their way of thinking a little better. So I gained a lot from it in all those aspects, but I'm definitely glad I did it.

*Wright:* Other than driving up with Jeff and seeing where you were going to be staying for the next few months, was there another low point of the time that you were there that kind of made you wish, "Maybe this wasn't the right decision to make"?

*Moore:* Actually, that first trip was mainly it. I mean, I had a lot of highs and lows, because when I was in Star City with Wendy when the collision happened, that was probably the other lowest point, because at this time I was really excited about the mission, Wendy and I were ready to go, we felt good about what we were doing and everything. Then we were going, "Whoa, all this work, and we may not get to execute it." That was kind of a low point. It sounds kind of selfish, I mean, here they're up here with this station that's in big trouble, but after they got everything back under control and it looked like they were all going to continue in the station, and then Wendy and I were going, "Where will we go? What will happen?" We were really heavily disappointed at this point. It was scary at first, and then it was like, "Wow. We may not get to see closure on this." So that was kind of a depressing time.

*Wright:* Was there a significant time that you remember that if nothing else happened, you're so glad that you were part of this experiences because you got to experience this, whatever it was?

*Moore:* Well, there are a couple of things. Dave's EVA was a high point for us, because that was something that was difficult to work out, both with the Russians, just getting everything coordinated with them, and trying to get our mission finished as we were science-wise, and because we got the science in and because we were able to get that EVA done, that was kind of a high point for the whole team, because everybody worked really hard to pull that off and to make sure we were going to get our data around. And Dave was so cooperative, because I think we took blood from him on Christmas Day, which we were not planning to do. But all that teamwork together and seeing the plan come together like that was a high point for all of us.

A personal high point, I guess, I was really dreading being over there for the holidays because that was just--oh, I don't know. That was going to be tough. I think it was tougher on my family back here, actually. Because we had a team there and everybody, Alice cooked Christmas dinner for us, and we put all our tables together and all ate together, even Star City--well, Star City guys were gone. Thanksgiving and Christmas we did this. Star City guys came in for Thanksgiving. Those two times were very special because we were all there together. I think, Christine, she came over right before Christmas, and she even

made a little stocking for every single person there and had a little gift for everybody. We had a Christmas tree with presents under it. Even the cats got presents from Christine. All of that was very special, because it was you're away from home on a tough time, but I don't think anybody was really depressed. I think everybody called home and was happy to talk to their family, but we were all there together, and it was kind of neat.

*Wright:* So you really have a bunch of new members and a new family then you all bonded with.

*Moore:* Well, that's kind of the way it is over there, because you're really dependent on each other. I was dependent on the team in the TsUP and also outside, because we kind of all stuck together and worked very closely together when we were at work, and then even when you're not at work, you're really dependent on each other. You can be by yourself if you need time alone, or you always have somebody you can call up and say, "Hey, I need to go buy groceries. You want to go?" I did a lot of grocery shopping by myself, but still you always had somebody you could depend on to help you out.

*Wright:* Did you have your Russian friends or counterparts visit you here when you were back home in the States? Have you had a chance to show them around your home here?

*Moore:* I've only been back in Houston a brief time. I've been here probably a month now after my transfer. But actually our interpreters are coming this weekend, so this will be my first opportunity to see them in the States. Our interpreters are terrific over there, and they become your good friends, because you spend so much time with them. A couple of them would even take us to museums and go with us, go out to eat with us, and that made it nice because they take you places you might not know about, and they could definitely order something that you wanted you knew what you were getting. Then one of them had us out to his *dacha*, and just had a great feast for us out there. He and his wife just really had a great time for us. They're going to be here, so we're going to get to pay them back now. So it's going to be fun the next couple of weeks while our interpreters for Phase 2 are here.

*Wright:* I hope you have warned them about the heat. [Laughter]

*Moore:* Yes. I even told one of them on the loops yesterday that it's going to be a shocker. "It's going to be so hot when you get here." One of them told me, he said, "If I ever move to the U.S., I'm going to live where it never gets cold." I said, "Well, Houston would do it." I think they're kind of intrigued by it [but] they're going to die when they get here.

*Wright:* No matter how long you've been here, you just don't get used to it.

*Moore:* No.

*Wright:* Paul, do you have any questions for Patty?

*Rollins:* Tell me about visiting with your co-workers. Did you get to go to their homes? Do you have a Russian best friend?

*Moore:* Well, that's hard to say. Work-wise, there's a couple of the women there. Nadia, who is our time-line person, and then Elena Heroshiva [phonetic], who is the medical science person, those two I'm very close to, but there's a language barrier. They are limited on their English, and I'm limited on my Russian, so it was a little difficult. But other than that, our interpreters all became very good friends, and we did go to their houses and they came to our houses there in Russia. That was interesting to see. I'd never been to anybody's *dacha*, and it was interesting. You pass by them on the road, but then you get to see what it's like and where they spend their summers. It was very interesting.

For me it's a problem because there's still a language barrier. I remember one sunny day, Nadia and I were walking from some of the buildings over on the Energia side back to the TsUP. We were conversing in our limited languages, and she was mainly just pointing out things to me. We were discussing the English and the Russian words, but it's hard for me to carry on a conversation with them, which I regret. I wish my languages skills had been better, because they were very good friends, even though we can't really converse that well. That's where the interpreters get mad, is when we start talking about our flower gardens and stuff like that.

*Rollins:* You just want to visit.

*Moore:* Yes, and it makes it hard when you don't have the language skills. Victor Blagov gave me, right before I left, he gives me this book that says, *Your First Thousand Russian Words*, and it's a children's book. He said, "Here, learn fifty words a day." It was a big joke. He presented that to me right before I left. His son actually came in the TsUP one day and was sitting down on the console, and he goes, "So you live here and you don't speak Russian." I said, "No." I said, "I can speak enough to order in a restaurant and buy my groceries and get around town with taxi drivers and stuff, and that's it, but I'm not conversational at all." He says, "I don't know how you do it. How do you talk to my father?" I said, "In English." He said, "His English isn't that good." His son's English is great. "His English isn't that good." I said, "We get by. We get by." That was probably my biggest regret, is that I could have communicated

better.

*Rollins:* Thanks for communicating with us today.

*Moore:* No problem.

*Wright:* We're glad you're back in Houston, even though it's hot.

*Moore:* Yes, really.

*Wright:* It's not Huntsville anymore, is it?

*Moore:* No, it's actually been nice weather up there. All my friends call me from up there and go, "Yeah, it's seventy degrees today." But it's also been raining like crazy up there.

*Wright:* Well, we're glad to have you, and we're glad that you spent some time with us.

*Moore:* Thank you. I appreciate it.

*Wright:* Anything else you want to add?

*Moore:* Not that I can think of.

*Wright:* Well, thank you so much.

*Moore:* No problem.

[End of interview]