

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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ANDREW S.W. THOMAS

July 22, 1998

Interviewers: Rebecca Wright, Carol Butler, Summer Bergen

Wright: We're visiting with Andy Thomas, astronaut with the Shuttle-Mir Program. We are here with the Shuttle-Mir Oral History Program. It's Rebecca Wright, Carol Butler, and Summer Bergen.

Thanks again for taking time out of your busy schedule.

Thomas: Sure thing. My pleasure.

Wright: We know that you just got back a few weeks ago. How are you feeling?

Thomas: It's going to be six weeks on Friday. I'm feeling very good, actually. I feel remarkably normal for somebody who's spent 141 days in space. I was a little surprised at the readaptation with gravity was a lot easier than I'd anticipated it to be. I thought there'd be weeks of ongoing problems. I have a few inevitable aches and pains, but otherwise everything's fine. I'm out running and enjoying the lovely weather here.

Wright: Getting used to the heat?

Thomas: Yes. [Laughter]

Wright: Well, you'll have to give us your secret. I don't think any of us are used to the heat.

Thomas: Well, you know, I spent 141 days in a confined space at a constant temperature. It is nice to get outdoors and in the sunshine and just feel it. It really feels good.

Wright: Is that one of the benefits of coming home, to be able to be outside.

Thomas: Oh, yes. I'd been looking forward to that, too, having the fresh air and being outside, yes. It's a nice feeling.

Wright: I know you've talked about being up there and having an unnatural environment that does become the norm. Did it take you long to adapt?

Thomas: No. One of the things that surprised me was how quickly I could adapt to that environment. Now, true, it was my second flight. My first flight was two years ago, and it was only ten days. I was surprised, because on this flight I adapted to being at zero gravity psychologically very quickly, and I very quickly learned to function and to accept that environment as the normal environment, and it felt natural.

That was what was so strange, is an environment which is fundamentally so unnatural could so quickly feel natural. It was an interesting experience to go through that, and as the flight progressed, of course, you become more blasé about it because you have it all the time, and every now and again you have these little reality checks with, "Wait a minute. I'm weightless. I can float. That's the way I move," and you just have to remind yourself that, yes, you are weightless. Of course, another form of reality check was when you would go and look out the window and have this spectacular view, just to remind you of where you really were. It was a great experience.

Wright: Any way to describe what you saw out the window?

Thomas: Just a series of amazing sights, breathtaking sights; seeing land masses as land masses as you're accustomed to looking at them on a map, seeing familiar contours, but it's not a map, it's actually the land; seeing the atmosphere and atmospheric effects; seeing storms; seeing day change to night and back to day again forty minutes later; and seeing the different parts of the whole planet over the course of an hour and a half. It's really a unique vantage to have.

Wright: Was the Mir what you expected?

Thomas: No, not really. Well, it was and it wasn't. I had gone into it expecting that, all right, it's going to be confined and it's going to be crowded, but I have to say when I went in there, it was a bit of a shock just how crowded it was, how much stuff was in there, and that took some getting used to, but you can get used to it. In the early part of the flight, the crew I was with, the Mir-25 crew, when they arrived, and I spent a lot of time to try and tidy things up so that it would be perhaps a little less crowded and the housekeeping organized a little bit better to make it more comfortable. But it is a confining environment. There's no doubt about that. At no time did I feel claustrophobic up there. You don't have that sense at all. There's enough room that you don't feel claustrophobic, but you are aware that it's a confined environment, that you don't have a lot of options of places to go inside this vehicle while you're there.

Wright: What were your feelings when you arrived and the first thing you saw out of the Mir was the Shuttle leaving you for those few days that turned into long days?

Thomas: Actually, by the time the Shuttle left, I was actually glad to see it go, because while the Shuttle is docked at Mir, you're in sort of a no-man's-land. You're partly the Shuttle crew, partly the Mir crew, and you always have an out. You know you could go back with them, in principle. While the Shuttle is there, things are very crowded. You're not able to set things up. You're not able to really move in because it's

still there. It's like when you're moving into a new house and the moving truck is still parked outside and you can't get on with what you're doing because the moving van is still there unloading stuff.

So although they are my colleagues, I was kind of glad to see the Shuttle go, because it meant I could get on with what I needed to do during that flight. I could unpack all my things. I could set up my home there, which was going to be my home for four and a half months. I could get into a routine of living on this vehicle, because until you get into a day-to-day routine of living and have a comfortable routine that balances your personal needs of recreation with the programmatic needs of work, you're not really living there, and you can't begin to enjoy the environment and establish a stable lifestyle until you do that, until you develop your routine. So I was able to do that after the Shuttle left, so in that sense I was kind of glad to get on with what I was sent up there to do.

Wright: And what did you set as your primary focus? I know that everybody has their sets of experiments.

Thomas: Well, I had a repertoire of science experiments and some engineering things to do, but I would have to say, for me, the whole experience, the primary focus for me was the personal experience. I knew this was going to be a very difficult experience. Mike Foale described it as the toughest thing he'd ever done in his life. I could well believe that, and I knew that it's not the kind of experience that everyone can do. Some people wouldn't like it and would not have a good experience. So my personal goal was to make this a good experience for me at a personal level and a professional level. The two go together there. If the personal rewards were there, I knew that I would have no trouble fulfilling the professional and programmatic requirements. So my goal was that I would be able to look back on this in June, after the landing, and say, "That was a good experience. I'm glad that worked. I made that work, and I'm glad I did it," and that was the focus of a lot of my energies during the flight.

Wright: I understand you took some things that would make you feel comfortable, including Monty Python. Is that what I hear?

Thomas: Yes. I took a lot of recreation items. We have cassettes for music. We had CDs for music, a Walkman to listen to music while you work or while you're exercising. There was a very extensive collection of videos up there, of fairly recent-release movies, plus I took some more with me that had come out. So I had a lot of movies that I could watch. I took quite a number of books up there with me to read at night. I took CD-ROMs like the Monty Python and some others that I used just as entertainment while I was there, because when you're on a vehicle like that, you don't have a lot of options for your recreational activities, but recreation is very important, because that's how you regenerate yourself and keep charged up

to get the work done and to fulfill the requirements of the mission under these very trying circumstances. So recreation's extremely important, and you've got to have personal recreation there, something that you are interested in and which you can escape in, because you can't physically escape the environment, but psychologically you can, so you need something to remove yourself from the environment and get regenerated so that you can have a productive flight.

Wright: Did it help being the seventh one up there, that you had things that people had left that you could--

Thomas: There wasn't that much that people had left, actually. Most of what I took, the books, the CDs, the music was all my personal stuff. They had their own, I think, but it was my personal stuff. I know Shannon Lucid had a lot of books up there, but they were in the Spektr module and inaccessible. So the things I took were mostly for me.

Wright: Were these books that you'd been wanting to read for a long time?

Thomas: Yes. Paperbacks mostly, because I wanted low weight, but there were collections of a lot of science fiction, which I took just for the escape value of it. I took some of the classics. I took some Mark Twain because I'd always wanted to read *Huckleberry Finn*, since it's a landmark book in American literature and it's a very controversial book. I wanted to see what it was about. I'd never read it. Edgar Allen Poe, as well as some books on science and things like that which I've been interested in.

Wright: Did you find time to have recreation?

Thomas: Oh, yes. We set up a workday that sort of would start at about nine in the morning, and it was a long day; we'd work through till about seven. There'd be a break in the middle of the afternoon for exercise on the treadmill, then clean-up, then lunch. Lunch was late, usually about three, then work through again after that till dinner, which would be at seven or eight, and then in the evening watch a video, perhaps, or read E-mail or write E-mail or read a book. I would usually read a book just before I went to bed, for half an hour before I would turn out the light, same as I do on Earth. And we would do that five days a week, Monday through Friday, that kind of routine. Weekends were--there were still duties you had to do. The nature of the vehicle is such that you can't just stop, but it was a much reduced work level for us. So it was sort of like days off, days of rest, so I used those days for watching movies or reading or something like that.

It was funny, you know, up there in that work environment where you get into this routine, you start to look forward to Friday, because Fridays you can start to relax. You know, you're not going

anywhere different, you're in the same vehicle, but you still look forward to Friday. And then on Monday, when Monday comes, it's like Monday-morning-itis, "Here we go again, back to the grind." So all of those sort of attributes about day-to-day life here we had up there, which is actually good because it gives it an air of normalcy and comfort to do it that way. So it was kind of interesting that we had that.

A recreational aid for me that turned out to be very important was to do something creative. I'd actually taken some guitar music up there, and there was a guitar up there, which I tried to play. Playing a guitar in zero gravity is actually very difficult, because the guitar won't sit in your lap. It turns out it's a lot harder than you might imagine. So I only did that a few times.

The most creative recreation I did was to do sketches. I had paper and pencils up there, and I would do sketches of things that I saw out the window or internal views and things like that. Over the twenty weeks I was there, I did a number of these sketches, not many, about twelve, because they take a long time to do, but I found that a very rewarding activity because you can get so involved in it, it distracts you completely from everything else you've been thinking about, and you're thinking creatively, which I like to do, and that turned out to be an immense pleasure during the flight. I would do a sketch on a Saturday, or do some sketching on a Saturday, and I'd find suddenly that hours had passed, and at the end of it I felt just refreshed and ready to go, plus it has given me a personal record of the trip, which is perhaps a little more personal than just a whole series of photographs.

Wright: Was it challenging since the scene changed?

Thomas: Oh, I'd have to capture the scene on a video or something and freeze-frame it, yes, because out the window it's gone in a heartbeat. You'd have to capture it and then draw it off a screen.

Wright: Would that be something that the public will be able to see at some time, or is that your personal-- you'd keep for yourself?

Thomas: No, that's personal, I think. The thing is, when you say publicly that you got sketches done on Mir, everyone expects you to be an artist, and they expect real high quality. Well, I'm not an artist. For me these were very good, I was very pleased with them, but that doesn't mean that they're really high quality, plus they are a personal record, but I'm going to frame them and put them up in my house.

Wright: Have you reviewed them since you've been home?

Thomas: Yes, I've got them at home. They're kind of nice. It's nice to see the date on them and remember the scene and what I was doing when I did them.

Wright: Do you do sketches of your roommates?

Thomas: Well, I did--not do in-cabin sketches. I did sketches of them when they were outside doing EVAs, based on the views that I'd seen watching them do the EVAs. I never did sketches of internal scenes. I was going to do that, but I never got to the point of sketching that. It takes a long time to do a sketch, actually, because you have to compose the subject, which you do by trial and error, and you have to think about the view you want and how the light is going to be, and you compose it, and then you start the sketch proper, perhaps, and there's a lot of details you have to add. It takes a long time. It took me a couple weeks to finish one to the level of detail that I was pleased with, but that was good, because I had plenty of time on my hands. That turned out to be a really rewarding activity.

I think the big lesson from that is, if you're going to do a long-duration flight like this, the crewperson does have to have a personal recreation device at his disposal which is something he or she really derives a personal benefit from. NASA can provide tapes and videos and CDs and things like that, but the crewperson needs to think about what they really need for themselves for that time, what hobby is it they can take with them that will give them the recreational needs that they have, because it's really important that you have good recreation for a flight like this to make your off time productive and to get you away, psychologically remove you from the environment, so that you can have productive times during your work, just like here on Earth.

Wright: Speaking of things that you brought with you, I was reading how you took steel flint from your--

Thomas: That was actually on my first flight that I took that. Yes, my great-great-grandfather in Australia served on an expedition that was the first expedition to actually cross Australia from south to north over 100 years ago now, 130 years ago, and that was an important expedition because no one knew what was in the center of Australia. They thought it could be an inland sea or--they had no idea. He served on that expedition. So on my first Shuttle flight I took a memento of his on the Shuttle with me sort of as a souvenir.

Wright: Do you see yourself as an explorer?

Thomas: Of a kind, we are, because seeking new knowledge is exploration, but I don't see myself in the same league as people who do expeditions like that or like Lewis and Clark and so on, or the people that explored the Antarctic and the Arctic regions, because when they went off on those very courageous journeys, they went by themselves. They planned and everything, had a lot of support, but once they'd

gone, they were gone. They were alone. When we do these kinds of flights, it's true we're alone up there but we have radio communications to a huge group of people down here who have a lot of resources to provide assistance in the event something goes wrong, and a lot of guidance about what should be done next. So in that sense we're not alone. So there is a fundamental difference in the approach, although what we do is explorative in nature.

Wright: The crew that you were with, how much time and what kind of relationship did you have with them? I know you worked with them up there, but did other parts of the day did you spend--

Thomas: Yes. Actually, I didn't work with them that much. Most of the work I did was in the Priroda module, which was this module up here, and I was there doing the science program that I was sent up to do, and they were doing work mostly in the base block, which is in this module here. So my science program was sort of a one-person show and I did that.

The time we spent together was recreational time and meals. I made a point to share mealtimes with them, because I thought that was important, and it was fun, too, and it gave you some human contact. So we would eat all our meals together and watch videos together after the meals and talk. There is a dining table set up in the base block here, which is the main dining area where the water is, the galley is, and the food is, and so we had meals there and tea breaks and watched videos there. That's where we had the communication systems to the ground, too, so we'd do all our talking to the ground from there. So we spent a lot of time together in the base block socializing and recreating.

Wright: Did you bring special food items as well as bringing recreational items?

Thomas: No. There was an abundance of food up there. I had my choice of American food and Russian food, much more food than I could eat. It was really a good selection of food, actually. The food is largely canned food and rehydratable foods, much like you might use on a camping trip or something like that, and I had more than enough to eat. The Russian foods were really good. The Russian soups were just outstanding, and the Russian juices, fruit juices, were really good. They had a very nice natural taste, and they tasted very fresh, perhaps more so than the American fruit juices, which tend to be a little bit artificial, Tang-type things. So I really enjoyed the food that was available to me.

We had Progress vehicles--that's the small vehicle here--that came unmanned and brought supplies up periodically, and two of those arrived while I was there, and in that people would put letters and photographs and things from home in there for me plus treats, like we'd get some fresh fruit, some fresh vegetables, and got a nice big bag of M&Ms, a nice big bag of Oreo cookies, things like that.

Wright: No lasagna?

Thomas: No lasagna. No lasagna. That came later.

Wright: What other forms of human contact? I know you used E-mail quite a bit. Was that something you enjoyed doing?

Thomas: It turns out E-mail, actually, I think, really is very important, perhaps more important than voice communication. I missed E-mail when it didn't work, and there were quite a few times that it failed, and you really notice it when it's not there because it provides a link to people. You know, it's like getting a letter in the mailbox, something you can sort of hold in your hand and you can reread and prepare a response to. You can relive it. In that sense it's actually sometimes more rewarding to receive an E-mail from home from someone rather than talk to them on a voice contact, which is over in a couple of minutes. So I really enjoyed E-mail very much. I think E-mail is very important for the people on these kinds of missions.

Wright: Of course, you spent time away from home when you were training in Russia.

Thomas: Yes. I was there for a year in preparation for this flight.

Wright: Could you share some experiences that you went through there, the differences of training from here to there?

Thomas: It was actually a fascinating experience. The training all takes place in what they call the Gagarin Cosmonaut Training Center, which is in a small town called Star City, which is outside of Moscow, about an hour outside of Moscow. It was fascinating to go there, because there's so much history there of the space program, the Russian space program. It was just fascinating, being involved in it.

It was hard work, though, because all the training I had in the systems that make up the Mir and the Soyuz spacecraft was all in Russian, so I had to spend a lot of time learning some competence in Russian so that I could understand the instructors who would give me the classes in Russian, the technical classes. And then I had to do exams, oral exams, to a board of instructors, in Russian, on these systems, and I can tell you, that was a lot of work. That was a big undertaking to do that all in a year to prepare for flight on this vehicle. I did it. I don't know how I did it, but I did it. [Laughter] But it was really fascinating to do that.

The other thing about it, being in Moscow was fascinating, too, because Moscow is a city that's, in

some ways, caught between the nineteenth and the twenty-first centuries in part of its culture, and it's a culture that clearly grew up as an autocratic Communist state. Geographically it's caught between Eastern Europe and the Far East or even the Middle East, and you can see that reflection in their architecture and in some of the clothing and cultural habits. So it was fascinating to just be in that sort of environment and see that aspect to it and to live there for a year and get to know them. It's something that would have been unthinkable ten years ago, to do that, but I got to do it. So it was just an amazing experience, to have that time there.

Wright: When you originally went over there, you had the possibility of flying the course--

Thomas: I went as a back-up. The plan was I'd stay there a year, and David Wolf would go fly the last increment on Mir and I would come back and do something else. I actually undertook that mostly because I was curious about the Russian environment and so on, not expecting that I would get a flight out of it. But I did. I got to fly when the crew reassignments were made, and I feel very privileged that I was one of the seven people that served on this vehicle. It's just amazing to even contemplate that, actually, in hindsight.

Wright: And how did your family take the announcement that you were going to be gone so far away?

Thomas: Well, I don't think they minded that so much. I said, "I'm going to Russia for a year to just be a non-flight training back-up."

They just sort of thought, "Well, that's an unusual thing to do, but you're coming back?"

"Yes, yes, I'll be coming back."

But I noticed the conversation got decidedly quiet when I announced that crews had been reassigned and that I was, in fact, going to fly on this vehicle. But I think they trusted my judgment and knew that I wasn't going to do anything impetuous or foolhardy.

Wright: Are they concerned because of all the information that had been released of concerns for safety of Mir?

Thomas: They never vocalized any concerns, but I've noticed that since I've got back they've vocalized a lot of relief that I'm back. I think they trusted my judgment. All the time I was on that vehicle, I felt safe. I never felt threatened. I thought it was a fascinating way to spend four and a half months, and I never felt any sense of impending danger or any problem like that.

Wright: We all get into routines every day, like you mentioned earlier. Was something more than others that you realized that you couldn't do your routine, something that you do every day here, but up there it changed?

Thomas: The thing you notice the most is the lack of options for what you can do. Here you can get in a car and drive up into town or go to a restaurant or go visit a friend or go to a movie or go to the beach, and you have that mobility that provides you a lot of options in what you can do. That's not the case up there. You don't have a lot of options. That's why I talked about recreation being important. You have to exploit the environment for whatever you can to give you as much interesting activities as you can find. So that was the biggest thing, was just not having a lot of options.

Of course, I flew with a good crew. I'm lucky I flew with them. I feel they were good guys. But there is only two other people you see the whole time. You don't have a lot of diversity in the people you see over the course of that four-and-a-half-month period.

Wright: You were with two other crewmembers, other than you were with two Russians. You felt like you were all a crew working together?

Thomas: Yes. Oh, yes, yes. I definitely felt that we were a team up there, and to their credit, I'll say they worked hard to make sure that that was the way everyone felt, and that was what they wanted, too, because, you know, they were in the same environment I was. They had the same needs, and if any one of them had not been sort of integrated as a crew, it would have been tough on them, too.

Wright: Of course, you left them and they're still there. Have you communicated with them at all since you've been down?

Thomas: No, I haven't. Mir is going to be flying over, possibly visible tomorrow night, so it's going to be interesting, the first time I actually get to see it go over now that I'm back. That will be interesting.

Wright: How was it to look over your shoulder and see that you were flying off in the Shuttle and leaving them behind?

Thomas: It was fascinating, because, you know, I'd spent four and a half months on Mir, but it was inside Mir. I really didn't see the outside of the vehicle. I'd seen it briefly when we first docked, but not a lot. So the fascinating part was that as we pulled away and did a fly-around, I was able for the first time to get to see the outside of what had been my home for twenty weeks. That was really interesting. I'd say, "Oh, yes,

I know that window. I used to look out that window. Oh, is that what that was? I wondered what that thing was." And so that was kind of fun.

Wright: Your crewmates did go out. You said they had done an EVA.

Thomas: They did five EVAs, yes.

Wright: What were your duties while they were busy on the outside?

Thomas: Most of the time I was glued to the windows, photographing their activities while they did the work, and also taking care of anything that came up inside the station if something did. There were a few calls from the ground to check a few things while they were outdoors. But, yes, they did thirty hours of EVA, and five of them. They did one series of EVAs to repair a solar array on the Spektr module that had been damaged in the collision, to brace it up, to give it some strength, and the other one was to replace an engine which is out on a boom out here that's used for controlling the attitude of the station. So they came out and climbed up this tall boom that's mounted on the station and replaced this engine. There was quite a lot of work that they did.

Wright: Were you envious that they were there and you were inside? Did you want to be out there with them?

Thomas: Well, I would like to have tried it, but I have to say, thirty hours of EVA is hard, hard work. They worked very hard, and they have my respect for that because it was not an easy thing that they did, by any means. I didn't envy the hard work.

Wright: The experiments that you performed while you were there, will you be able to follow the results once you're home?

Thomas: I won't be following them, but they're going to be providing me some briefings on them from time to time--I suppose that's following them, isn't it?--and giving me updates on what they find. It's still too early yet. I haven't had feedback from the results yet. It'll be some time before I do, too. There's a fairly complex analysis needed.

Wright: Did you have a favorite of all the ones that you were working on?

Thomas: No. I enjoyed them all, because they provided activity, stimulating activity. The biotechnology

experiment, growing the cells in the bioreactor, was perhaps the most time-consuming. I'd say that was the one that got most of my attention. That's the one I'm sort of going to be interested to see what the outcome of that was, and it also gave quite a lot of problems during the flight which required a bit of careful work to overcome. So it remains to be seen what the outcome of all that is.

Wright: At the end of the flight, there was a computer glitch.

Thomas: Yes.

Wright: Did that give you little anxious feelings of maybe your flight home was going to be delayed?

Thomas: Yes, it was a concern. The Shuttle was to launch on a Tuesday, and the Saturday before that, just before I was supposed to give a press conference, the attitude-control computer failed, and I thought it was unbelievably bad timing. After twenty weeks this happens and just before a press conference, because one of the things I was going to say in the press conference was how problem-free the flight had been and so on. It turned out the press conference had to be canceled. But I was concerned that if they didn't have attitude control, which meant that the station would be slowly rotating, it wouldn't be possible to dock the Shuttle to it, in which case they would delay the launch until it did get control back.

But they worked very hard to change out the computer and reestablish operations, which they had done within a day, I think, a day and a half, perhaps--yes, a day and a half, and so the Shuttle was launching on time and came on time. But for a while there I was thinking, "Hmm. Wonder when I'm going to see the Shuttle?"

Wright: Did you see it approaching?

Thomas: Oh, yes. I saw it first as a point of light out on the horizon, like a bright star. Then you could get binoculars and you could look at it. You could just make out that it was not a star, that it actually was the Shuttle. Then, of course, it came closer and you could see it clearly, and I got some spectacular photos of it just floating around next to us to come up underneath and dock to us. It just got closer and closer, and then at one point you feel the whole station shudder, and you know that they've made contact and have latched on. So it was a great moment.

Wright: And I guess the next great moment was when they opened the hatch?

Thomas: Yes. At that point I knew I was going home. And we had a good time. We spent time together

socializing and saying goodbye and packing up, and after three days closed the hatch, made sure I was on the Shuttle side of it, waved goodbye, and slowly pulled away, and then did the fly-around, when I got to look at my home for the last four months.

Perhaps one of the most moving moments, though, was as we drew further and further away, we went into the night side of the planet, and I could see stars, and the running lights of the station were on. You couldn't see the station. All you could see was lights flashing, and they were just going off into the distance, these flashing points of light fading out slowly. That was kind of an emotional moment, because I knew that would be the last time I would see it--ever. And that's been the case, too.

Wright: You rode home with one of the people who were very instrumental in having Mir.

Thomas: Yes, Valeri Ryumin.

Wright: Did you get a chance to visit, to share any information on the way?

Thomas: Not a lot during the Shuttle flight. He spent a lot of time on Mir while I was doing the transfer of all the bags and things that I'd packed, and it's my understanding he's going to be preparing some kind of report on the Mir for the Russian Space Agency. I would assume, and I certainly hope, that we would get a copy of that, to see what their interpretation of it is.

Wright: You were the last American, probably will be the last American there.

Thomas: Definitely will be, yes.

Wright: What makes your mission different than the rest?

Thomas: Well, it was my mission. [Laughter] There were seven people that flew up there. We all had sort of similar science that was undertaken. I think mine was probably the most placid of all of them. The first person, Norm [Norman] Thagard, when he went up there, there were a lot of problems to do with the fact that he was the first, and a lot of the things that you need to sustain yourself I don't think he had. So that must have made it tough for him. I don't think they had the E-mail situation worked out nor the [unclear], things like that. Shannon, when she flew, her flight got extended because of Shuttle problems, actually. So she had to stay up there six months instead of four, and that would have been tough, I think. She has a very good spirit about it, though.

And of course, for Jerry's [Linenger] increment, John Blaha flew. He had a fairly benign

increment, too, much like mine. For Jerry there was the fire, of course, and for Mike [Foale] there was the depressurization. So they had some exciting times on theirs.

David [Wolf] had a number of power failures during his. Mine was fairly placid by comparison, which I think is testimony to the capability of the Russians to restore operations, to bring the system back on line, which I think they did well, because I think they recognized that the world was sort of watching what they do with the station, and that they were on the world stage and needed to prove that they could do it, and they did that.

Wright: Was this your first dealing, working with the Russian partners?

Thomas: Yes. I got to know the Russian culture and mentality reasonably well by spending that year in training beforehand. It sort of gave me a sense of the way they think and the way they approach things and so on, and the Russian engineering, the quality of the Russian engineering.

Wright: You've been from Australia to American, Russia to Mir, and now back again.

Thomas: I want to stay at home for a while. [Laughter] Yes, I do. Just before I went to Russia, I bought a small house here, which I moved into, only to have to pack up and go to Russia. So I've only just sort of moved into it again. I want to spend time to turn it from a house into a home and enjoy that. For the whole of my time while I was on Mir and the whole of my time training the year before it, my whole life was scheduled. Each day you'd have a piece of paper telling you what you had to do, where you had to be throughout the whole day, and you had to follow that up with hours and hours of study at night because it was all in Russian. It took a long time to read a twenty-page document, a long time.

So I'm looking forward to not having a scheduled life. It still is scheduled, the post-flight activities require that, but I'm looking very much forward to, for a while, having an unscheduled life and be free to do what I wish and come and go and be my own master for a while, and enjoy just building a home, getting back into establishing a home here.

Wright: You might even have a pet. You certainly couldn't have pets on Mir.

Thomas: No. I don't think I want a pet.

Wright: I was going to ask Carol and Summer if they had a question.

Butler: Would you say the Shuttle-Mir Program has accomplished everything it set out to?

Thomas: Yes, I think so, in spades and more, perhaps. The Shuttle-Mir Program has taken a lot of criticism over the two or three years that this program's been running, particularly last year with the problems that Mir was facing. Perhaps some of those criticisms are justified, but I think you need to step back and look at this program and this collaboration. In fact, if you even go back forty years ago when NASA was formed, NASA was formed because there was a space race and there was competition between Russia and the U.S. in the Cold War, and the role of this agency was to represent the U.S. interests in going into space, and it was definitely in competition with the Russians.

Well, the Cold War is over. I think one of the great geopolitical and social events of the twentieth century history will show will be the ending of the Cold War and the peaceful demise of Communism in the Soviet Bloc countries. I think that's just an extraordinary historical event to contemplate. And it is equally amazing that over the course of that, that spirit of competition that existed for forty years has evolved smoothly into a spirit of cooperation, and the Shuttle-Mir Program was the instrument of doing that.

I think it's very important that we judge the Shuttle-Mir Program by the standards of today and by the standards of the nineties and by the geopolitical world that exists now and we don't judge this program by the prejudices of the Cold War era, which we all grew up in. Those aren't valid now, and you have to look at this program and say, "Is this the right thing to do?" I think the answer is yes. From a purely U.S. point of view, it is the right thing because it serves the interests of the United States to support this program and, in so doing, support the new directions that the Russian society is trying to take. It's very much in our interest to do that and to have access to the technology of these systems, which we didn't have before. That serves the interest of our space program. It serves our interest to help stabilize the economy of Russia, because that's potentially a huge market that we can one day participate with. It stops the technology falling into the wrong kind of hands, because there's lot of bad guys out there that would like to have access to some of this technology. So [from that]..perspective, I think, you have to say that this program of collaboration serves the interests of the United States and is something that should be done. I think, also, on a global point of view and sort of a human point of view, collaboration, as we start to explore space, is the right thing to do, too, because no one nation should have control over space or dominion over space. It should be something that is shared by everybody as an international venture, and that's another reason why this collaboration is the [direction] to go.

So those are all the reasons why the Shuttle-Mir Phase One Program was the right direction to go and the Russian collaboration we have is the right direction to go. Just looking at the Phase One Program by itself, though, it provides a lot of benefits, because it's taught us and given us experience on operating and living on a day-to-day basis in an orbiting space station, which we didn't have. It's taught us how to

resupply a space station, how to bring crewpersons up, how to change our crews, how to train crews for these missions. It's taught us how to fly a Shuttle up to a space station and dock with it and do all of these exchanges. These are not trivial problems, by any means. So we've learned a lot from doing that, and I think that information is going to be of profound importance as we do the International Space Station. I actually think it's inconceivable to think that we could have even attempted an International Space Station without the Shuttle-Mir lessons-learned program that we have now.

Wright: I believe a lot of people agree with that. Any more? Do you have anything else that you'd like to add?

Thomas: No. You've heard me talk enough, I think.

Wright: We thank you again for taking time and visiting with us, and we wish you luck and lots of rest and free time for yourself.

Thomas: Absolutely.

Wright: Thank you.

Thomas: Thanks.

[End of interview]