WILLIAM C. "CHARLIE" BROWN

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Interviewers: Rebecca Wright, Mark Davison

Wright: This interview is with Charlie Brown, who is the Chair of the Crew Exchange and Training Work Group for the Shuttle-Mir Project. Doing the interview is Rebecca Wright, for the Shuttle-Mir Oral History Project, Signal Corporation. Mark Davison is the audio technician and video crew. Today's date is May 6 [1998]. We are at JSC [Johnson Space Center], Building 1, in Mr. Brown's office.

Once again, I want to thank you for taking time out of your busy schedule to meet with us. I think the easiest way for us to start is wherever you feel comfortable, if you want to tell us about your current responsibilities with the Shuttle-Mir Project.

Brown: Okay. Currently I'm in the Shuttle-Mir Program Office working as the Operations Lead and the Crew Exchange and Training Working Group Chairman for the U.S. side. The separation of duties basically is the operations lead interfaces with the operations personnel of MOD, EVA, and Space and Life Sciences, with the purpose being of providing them with Shuttle-Mir program operations requirements. My primary interface for each area is Bob Castle/ Phil Engelauf and Tim Baum for MOD, Greg Harbaugh and Richard Fullerton for EVA, and Jeff Cardenas for the science operations on Mir.

Concerning the Crew Exchange and Training Working Group (CETWG), my counterparts in Russia are Yuri Kargopolov, who is out of Star City at the Gagarian Cosmonaut Training Center or GCTC, and also Alexander Alexandrov, who works for Energia. Topics we address include items varying from the overall training schedule for the astronauts and cosmonauts participating in the Phase 1 program and the content of the systems training to what kind of joint emblems will the crew wear and where it is placed on the suits. There will be a little bit of confusion of what my role is versus what Jeff Cardenas' roles and responsibilities are for training. He's responsible for the training of the science area, including the content and I'm responsible for the overall agreements of how much and where the training is conducted plus the systems training content. I am also responsible for other things like logistics and things that just make it possible for the cosmonauts or astronauts to either live here or live there and communicate back and forth.

As I alluded to previously, the CETWG also works other agreements pertaining to crew training or crew operations on Mir. That ends up being a lot of odds and ends that aren't in other working groups' charters.

I started working in the Phase 1 program at the beginning of '95. Don Puddy was the chairman at that time of the CETWG and started working with me to be his backup..

At the same time I started learning about the CETWG, I was asked to become the Russian Projects Office Manager, which I accepted. That was sometime probably in the summer of '95. The Russian Projects Office had several areas that we managed. These included the Russian language school, the contractor for the overall Russian language translation/interpretation services, the Director of Operations in Russia (DOR) along with the contract with the Russians concerning the DOR, and the Russian communications requirements for the Phase 1 program.

Working the communications requirements for Phase 1 was one of the more important areas we worked. We worked hard on getting communications between ourselves and Russia and our people in Russia. When we started this thing any kind of communications that we had with Russians was very difficult. Telephones in Russia were very unreliable. So we worked with the communications working group; Barry Waddell to establish requirements and get them implemented. So we went from basically a Russian communication system to really a U.S. system that we established in Russia. Now a person can pick up the phone, and it's like talking to Marshall [Space Flight Center] when we are talking to Russia. And we established that for not only our folks that were working there, but some of the Russians that we worked with quite a bit. So the Russians have been provided with both fax machines and telephones so that we could communicate, and it has helped our communication tremendously. We could communicate. Rather than traveling all the time, we can now communicate fairly easily. We now have video telecons and e-mail capabilities. A NASA communication center was established in the primary hotel for NASA travelers to Russia. There NASA travelers have access to direct fax and telephones to the US plus computers for their use.

Another important set of topics that the Russian Projects Office addressed was transportation and travel and things like that. One thing that we found out very quickly was that most of the rules that NASA has are for domestic travel. It was kind of tough to work around some of the rules and to try to actually get some of the rules changed so that people could travel to Russia and do what they needed to do more easily. It was not pleasant to travel to Russia initially, so we had to work to make things better. So we worked getting rules changed, making things easier for people to travel and work in Russia. We worked visas, letters of invitation, things like that. Once in Russia, getting around the country proved to be difficult. Initially, we established a working arrangement with our contractor, TTI, to actually go out and find people that would be willing to provide transportation. Then we actually purchased NASA vans with contract drivers to provide some of the transportation needs.

The driving factor for the decision to buy our own vans was our realization that our astronauts that were in training needed a safe means of travel in Russia. The number of vans have been added to and the mission increased to include our operations folks that are over there, Jeff Cardenas' people.

One thing that we found early on in part of the Russian Projects Office again, we decided that we needed a U.S. person representing us in Russia. We established a NASA office in Star City, and we called that the Director of Operations, Russia--DOR. Those were manned by astronauts. I've got a list of names if you'd like them.

Wright: Sure.

Brown: Actually, I'll probably have to read it to make sure I don't forget. The DORs in order: Ken [Kenneth D.] Cameron, Bill Readdy, Ron [Ronald M.] Sega. I think they're in order, at least. Mike Baker, Charlie Precourt, Wendy Lawrence. Mike Lopez Alegria--we call him "L.A." Brent Jett, and then now is Jim [James D.] Halsell [Jr.]. They have been integral in keeping the interface with the training folks in Star City, and they were my major point of contact. If I needed something or an answer or something worked right away, they'd work it for me.

Wright: How long did they sit in this position?

Brown: They generally stay there about six months. They work training issues or any other issues that our folks have--housing or any kinds of problems that we have with our astronauts in Star City.

During the same time period, there were also significant issues that the CETWG had to work. Around September of '95, we found out that two of the people that we had selected, Wendy Lawrence and Scott Parazynski, were not the right size to fit in the Soyuz. Scott was too tall and Wendy too short. They actually call themselves "Too Tall" and "Too Short" now. In September with Don Puddy still part of the group, we went over to discuss this issue with the Russians to find out if this was just something that we could get a waiver for. Since Wendy and Scott had already been through about three months of training at that point, plus a lot of Russian language training, we were trying to keep them in the program. To establish somebody new in the program, we would need to start them in Russian language classes six months prior to start of training in Russia. But the Russians convinced us that their safety was the issue. There's more of a chance for leg injury for somebody that's too tall, and more of a chance of maybe some other injuries for a too-short person. So based on that, we decided not to press.

So that really changed our program quite a bit. Up until that point a person that went over as a backup for another crewman, would not take the very next flight, but would take the flight after that. So they had a break, and it was kind of relaxed as far as the amount of hours per week that they had to train.

After we lost two crewmen in the middle of our flow, we had to go to a schedule where a backup went directly to be the prime for the next flight. That was not something that the Russians wanted to do,

but I had to convince them we did not have a better choice, since we didn't have anybody else in the training pipeline at that time. The total planned training time went from nearly two years down to fourteen months. In practice, some of the astronauts trained for as little as twelve months.

Don Puddy retired in October of 95 and at that point and I was the U.S. chair of the CETWG. Two flights were added to in 1996 to the NASA long durations missions to Mir. We proposed that Wendy Lawrence be the astronaut for mission 6, and after some discussion, the Russians approved based on new measurements.

The next big event that affected training was due to the fire on Mir and the collision by the Progress. After the fire, we insisted that our astronauts receive better emergency equipment training. After the collision, it became apparent that there would be a lot of EVAs scheduled to do the repairs. Also we knew that Wendy did not fit in the Russian EVA suit. At the time Wendy was chosen for a Mir flight, there was no plan for an EVA on that flight. There was only one EVA with a US participant intended, and that was Jerry Linenger. But after the collision with the Progress, it became evident that there were going to be a lot of EVAs, and we felt it was probably prudent to have everybody EVA-qualified, including the U.S. crew member.

So knowing that Wendy didn't fit in the suit, and Wendy being an understanding person, we replaced her with her backup, Dave Wolf. Several training issues had to be worked, primarily the shortened training time and the added EVA training. Dave Wolf therefore had only about a year or so total for training, and then his backup, Andy Thomas, also only had about a year total training time in Russia.

So those training templates had to be compressed, and we had to decide what could be removed. Those issues took fairly constant communications with Yuri Kargopolov. But we worked through it. EVA training was provided to both of the NASA 6 and 7 astronaut and both had a very compressed schedule.

So let's see. The Russian Projects Office, I said I was manager of that until that office was abolished, and I can't remember exactly what the date was, but sometime probably close to summer of '96. At that point we moved everything, all of our duties and personnel, into the program office with Frank Culbertson [Phase 1 Program Manager]. We had already been working very closely with him, of course. In fact, he approved funding and everything for com upgrades and our other budget items. But we became actually part of the program office in '96. At that point my duties shifted over to the operations area that I described at the very beginning of the conversation, and I still retained the CETWG.

Okay. Now, I've rambled quite a bit, so can you think of any questions or more details?

Wright: Always. Let me go back. We don't have to back up very far. Going back to those positions that the astronauts held in Star City, how did that work for them? Did they feel that was beneficial to them, to

learn a program, or was this just routine duty?

Brown: Many of the people that are on that list have since flown to the Mir on the Shuttle, many as the commander. Charlie Precourt commanded two trips to Mir since his DOR duties. So learning the language and learning how Mir operates, learning to interface with the people and everything, I think, has helped those people quite a bit when they travel back to Mir. Baker was a commander going to the Mir. Let's see. Ken Cameron did. Readdy did. Wendy flew to the Mir twice as a Shuttle crew member.

I think it will also be beneficial to them for future work with the Russian on the International Space Station.

Wright: So they have some on-the-job training for future work.

Brown: Right. I think most of them thought that it was kind of fun to do, but they were initially worried that it took them out of the mainstream also, but I think it has turned out to them that it's been worth the experience.

Wright: More of an investment.

Brown: Yes, I think so.

Wright: They were a small part of the operations in Russia, or a large part? Would you expand a little more on that?

Brown: I'd say a large part, because establishing a good working relationship with the Russians was very important, and establishing everything that our astronauts needed while in Russia was very important for the successful training and successful operation completely of the Phase 1 program, so they were very important to get all that established. They helped establish requirements for things like the communications that I mentioned earlier, helped us to understand a little bit more of the system that we had to go through to get those things accomplished. Generally they were our eyes in Russia, and were very valuable.

I said earlier that early on we had to travel to Russia, and it was still important for us to travel to Russia a lot, but with somebody there that understood our side and the way we operated, that could directly talk to the Russians, it was not necessary to travel nearly as often.

Wright: Do you believe that this full-time presence in this capacity helped the Russians feel more confident or more secure in the United States' commitment to the operation?

Brown: Well, actually, to start with, the Russians really didn't see the need for a U.S. presence over there, and they were suspicious of it, I would say, and they were worried that we would try to interject too much of our way of doing things into their system. And probably a lot of that's true; we did. We tried to change quite a bit of their training. Even though we understood that we were in their system and we weren't going to try to change everything, we still changed quite a bit.

I can give you an example of one of the changes. Our medical group had an agreement that no medical test would be done other than what we did ourselves or approved. Well, part of their training process in Russia has been for years that they intersperse medical tests with the training. They continually test a person to see if they're really physically qualified. We saw that fairly quickly and decided medical tests should not be covered up as training, and we wanted to go by the medical agreements. We got the Russians to agree to not do those things, no more medical tests as training. If we didn't have a US person there, the DOR, watching those kinds of things, we probably wouldn't have known that for a while until we got crew member feedback. So a lot of the things that we were able to change and able to adjust during a person's training was because of the DOR.

DORs like Charlie Precourt and Mike Baker established good working relationships. The Russians grew to trust them and to use them as a good interface and in so doing they actually started appreciating the fact that they were there.

Wright: Would you describe for us how it was set up? You mentioned the office that was there and they were working there, but did they have assistance? Was it just one person in the office? Describe for us what it looked like when they walked in.

Brown: It grew. It changed over time, like just about everything that I've described changed a bit over time. To start off with, I can't remember which DOR it was, but they found a good assistant, a Russia assistant, and she's still there. Her name is Doreshinko. Natasha. Actually, I think her father was in the military as an information officer or something like that, so she has a lot of information and a lot of contacts, and actually has really worked out well as being a good interface. She lets us know who we need to talk to about any topic. So she's been a good office manager.

Since then, they've added two people. One works mainly as an interpreter and the other is additional secretary support. All these are Russia citizens that work very well with us. They work for us/TTI.

We have also added a deputy DOR, since the office. The deputy helps in running the office, the office logistics, and the daily schedules. Most of our DORs were putting in more than twelve hours a day.

It became apparent we needed to get them more help.

So, Don Puddy and I while he was still here, interviewed a set of people for this position and negotiated it with the Russians and our management. I guess it was probably in the summer of '95, and we didn't get the first one over there, that was Rick Davis, until about a year later. The Russians also didn't see a need for another person. They actually said, "If you need another person, hire another Russia to help out," which is a good point, except that we wanted somebody else that knew our system, to help the DOR.

Anyway, Rick stayed there about a year and a half. That was also the idea to get somebody that could stay long term. Since the DOR was six-month interval, this person could help through the transition from person to person, both with the Russians and with the normal running the office. The deputy DOR has been very helpful, too, to just help out around there with all the logistics and running the office.

The DOR housing is kind of like a dormitory that the Russians have historically used for their cosmonauts who have come back from flight (called the Profy). There are three floors and we have leased from them the second floor. In one corner, we've established the DOR office.

Wright: That has to provide that, "It's our place." When they get there, they know that they can go, and it feels American, they can talk American, and it gives them that sense of home.

Brown: And the Russians have been pretty good about it. On their own, I guess because we had provided the cosmonauts that were training in the US, pretty nice housing, they have built additional housing for our astronauts that is to Western standards. They initially provided cosmonaut housing for our astronauts and that was typically kind of a high-rise apartment arrangement. The apartments were nice by Russian standards, but the new housing is even nicer and is close to the Profy.

They have now built a total of three of these cottages and because Space Station training has already started, we are leasing all three.

Wright: On the opposite side of the world, tell us how you arranged for housing for the cosmonauts. Was that difficult or was that an easy part of your task?

Brown: There are a couple of people that worked for me when I was the Russian Projects Office. I should mention Kathy Dawes ran the language school.

Travis Brice also was another person that you might want to talk to. He's the contracts person, and also took care of most of the things like housing for the cosmonauts and things like that. Travis has done several things for us, including the com center that I mentioned earlier. He was instrumental in working those details to establish the center. He also worked to get better rates for the primary hotel we

use in Russia, the Penta. He's worked the language contracts for us. He also works the contract with the Russian for DOR support.

Wright: Okay. I will find him.

Brown: He's now right across the corner from me here.

Wright: Then he's easy to find. That's good.

Brown: There have been difficulties as far as determining what the cosmonauts expect, and them deciding what it is that they can ask for and what they should ask for. Some, of course, are more bold about asking for things than others. In their own country, the cosmonauts have a very high status. Around here, astronauts and cosmonauts are not treated quite as highly, I guess, as what they are accustomed to, but we did gave them nice housing and good treatment. A couple of them just thought that they needed other things that we probably didn't think of at the beginning, but we try to work with them in every way to make them comfortable.

Wright: I guess that was just one more part of the evolution as you went through and learned.

Brown: That's true. In some cases, we were just learning expectations and learning how people normally behaved. It's been interesting, overall, just learning the differences in cultures and things like that. I'm sure you've been told that over and over again.

Wright: And everyone's had different experiences with it. I was going to ask you what you felt was probably some of the more challenging aspects of getting through this Phase 1 project.

Brown: Actually, I've not had any difficulty working with the Russians at all. Fact is, the people that I've mentioned earlier, Kargopolov and Alexsandrov, we've developed, I'd say, reasonable friendships. I have respect for them and I think they have respect for me. I can't think of any cultural problems that we've had; they're just things that we had to learn, to make things a little bit smoother. I'm trying to think of a good example to give you. I don't know that I can.

The Russia sense of humor, of course, is a little different from ours. We sometimes make remarks in the middle of a negotiation that we intend to be funny, but they don't take those things usually. They wait for a joke in order to make anything funny. I mean, they have a sense of humor, of course, also, but they generally tell a joke for the sense of humor, and we intersperse it quite a bit. It took them a while, I think, to get used to that. When we sometimes laughed at odd times, to them, I think they were trying to

figure out what was going on. But I think they've gotten used to that, too. Actually, now we have a very easy working relationship, generally.

Wright: Earlier you mentioned with some of the changes you had to convince the Russians that it probably was the best thing to do. Was that convincing a challenge?

Brown: It was a challenge in some cases like the change in crew rotation because both of us, Kargopolov and myself, knew that there was a better way to do it if we had enough astronauts. The original rotation didn't overburden them with too much training. It was obvious that the right answer would be just to add a person, but it was also obvious to both of us that it took time to get somebody prepared. So Russians are just like us. If we have good reasons and they understand the situation very well, I have had no problems at all convincing them that that's the way it has to be.

Generally it's just letting them know what the facts are and convincing them that they really are the facts, you're not trying to pull the wool over their eyes or something, which I never did. I think they came to understand that I did not play with the truth. I just told them how it was, and they learned to accept that fairly quickly.

Wright: The Phase 1 program, as we visited with people, it was evident that it, as you mentioned, continued to change from the moment that it started.

Brown: Oh, yes, a lot.

Wright: Of course, you mentioned earlier, too, that you are moving into Phase 2. Could you tell us some of the benefits that you see and why it was worthwhile to do this program as part of Phase 1 and Phase 2?

Brown: Well, there are probably a lot of reasons. One, of course, is working with the Russians and learning. Most of the Russians, or all of the Russians, probably, really, that are working Phase 2, are the same ones that worked Phase 1, so I'm used to working with them already, and all the Phase 1 folks are used to working with them. We have mutual respect. So just from that standpoint, we already have a start at working based on mutual trust, so that it will be easier to start working things for Phase 2.

We've learned a lot about their training program. We've learned a lot about what is required to maintain a space station on orbit, the things that can happen and how to react to those things, how we need to do business a little differently to be able to react to them. For instance, before Phase 1, we probably wouldn't have considered adding things to the Shuttle manifest within, say, three or four months before flying. During Phase 1, there are a lot of things that happened that we had to add things very late, and were

able to do that. So we learned a lot. I think the Russians learned that they had to be more flexible. Normally their training program was fairly rigid, and they believed, I guess, when they started Phase 1 that it was going to stay that way. But they learned that it didn't really have to be that rigid, and that there were a lot of good reasons why things needed to be flexible. For instance, us adding EVA training late and us changing crew members. Of course, they used that to say, "Okay. See, we told you that a backup crew member is necessary." So it goes both ways. Since then we've added backup crew members for all of our station flights, which we didn't intend to do to start with. I think they've learned, on their side, to be a little bit more flexible in training and everything else. We've learned the same thing.

Wright: What did you learn from each other that summer when you had the situations with the fire and the collision? Was that a rapid exchange of information? Were you ready to be able to work together, or how did that work?

Brown: There were different levels, I guess. We didn't have people that were responsible at the time to track Mir systems in Russia. Our people were responsible only for tracking the US science requirements that our astronaut and the cosmonauts were supposed to do. We learned that we needed somebody to keep track of the Russian systems also. Our justification was that the Mir systems could obviously affect our crew member and we needed to be more aware of the system status. So with Russian agreement, we established a full-time systems position in Russia.

So what I'm really saying is that in a way we didn't have the right interfaces at the time, nor did we have the right people to ask the right questions, and it took a little while to establish that. In some ways, the Russians weren't accustomed to telling everything to people not directly in their group. It was a little bit slow to build that. Eventually, though, I believe that they've gotten where they provide us a lot of data. Sometimes you have to ask for it. They don't necessary volunteer it, because, for one thing, they don't know for sure what you want, and it's not in their normal nature to ask, "Do you need this data? Do you want this data?" They wait for you to ask for it. But they generally will provide anything that you ask for, and they've been fairly open. It's a new experience for them. Understand just a few years ago they were very much more closed than NASA is.

So they generally didn't know who to communicate with outside of their group, and they didn't necessarily think that they should volunteer information. Since then, it's gotten a whole lot better, and that's probably a real big benefit for the Station also, just establishing who does what and how we want to share information. I think we've already established the roadwork for that.

My background basically is I have a bachelor's and master's degree in aerospace engineering. I

was a pilot and flight instructor in the Navy between my bachelor's and master's work. After the master's work, I began work for NASA, in the Training Division, specifically. So for the first, I don't know, fifteen years I was here or so, I was in the Training Division and worked various jobs, either instructing for Shuttle operations or supervising instructors. So I understand the training aspect on our side, and I guess it was easier for me then to understand how the Russians did or, or do it, compared to how we do it.

The Russian method of training is in most part classroom oriented. It is not that much different from the way we did Shuttle training a few years ago, actually probably ten or fifteen years ago. They are still effective with this method since they don't have much of a turnover in personnel. They also did not like to write a lot of things down for security reasons. So they relied basically on people just giving lectures and doing the same things over and over and over again. From my background, I understood why they did what they did, but also I understand what the advantages are in some of the things that we do. Actually, I think I can talk to my Russian counterparts and they understand also why we do what we do and what the advantages are.

Does that provide enough on background?

Wright: Sure.

Brown: Let me expand a little bit on the differences in our training, then. Once we establish a program, we think the right thing to do is to have fewer classroom and therefore fewer instructor requirements. We rely more on written materials, part task trainers and full simulations and less on instructor-intensive classroom sessions.

On the Russian side, their advantage has been they keep people around for twenty or thirty years, doing the same kind of thing. So they don't have that problem of turnover, but at the same time they don't have the portability of, say, a workbook, handing it to somebody and telling them to go home and study it, or sending it to some other country and say, "You can study it there," or a part task trainer that is portable and allows a person to get "hands on training." They understand the need for that now with an international program, but they're just not geared to develop that as rapidly, probably, as we would like for them to be.

Wright: Will you take this experience into Phase 2?

Brown: Oh, yes. Training is an issue in Phase 2 thing that we've got to work a lot. In Phase 1, like I said very early, we anticipated generally that we were going to use their training system. I mean, we were a guest in their country to participate in their program, the same way when a cosmonaut came over here, we

didn't do anything differently in Shuttle training.

In Phase 1, we made changes, but we tried to keep those to a minimum, just because we knew that we weren't supposed to make a lot of changes. In Phase 2, there will be a lot of differences, though.

Wright: I imagine, though, that if many changes in the flexibility that you had during the last three or four years, that at least with the new phase, you'll have a little bit more time to put things in place. So you're well prepared for the future.

Brown: Yes. We have time, but yet crews right now are several months into training for Phase 2, and already the training materials are behind schedule to support the training. So we're behind, actually, for Phase 2.

Wright: I guess we'll never catch up. [Laughter]

Brown: Not until we're well established. Probably ten years from now, after the station is flying around, we'll finally catch up and have everything established.

Wright: Out of all of the things that you've done for Phase 1, do you find anything, one thing or a couple of things that you feel that were significant contributions based on your personal contributions to the program?

Brown: The most significant things, I think, are just making things easier to work with the Russians, like the communications, and once we got there, the transportation, making it easier to deal with them and for us to work in Russia. I think those were the biggest things that I contributed. As far as training goes, we established some good working relationships, and that's significant. But generally just being able to work with and in Russia, I think, would be the biggest thing that we've done in Phase 1 and what I've done both in the program office and what I'm doing now.

Wright: Well, we thank you.

Brown: You're welcome.

Wright: This concludes our interview. Do you have anything you [Davison] want to ask?

Davison: I'll ask one question, see if you can clear up. We talked to Jeff [Cardenas] about the science training, and we talked to you about the systems training. We haven't really heard how those two mesh, whether they are run in parallel, or are they all over in Russia or some in the United States?

Brown: Some was in the United States and some was in Russia. Generally, all the systems training for Mir was done in Russia, and science training also was done in Russia and the US. Actually, Jeff had a person there that worked with the Russia schedulers to schedule in the science training so it ran in parallel.

The sessions that we had back here generally concentrated mostly on science, with a little of time for the cosmonauts to learn some about Shuttle, for their docked activities. There were two US sessions of 3 weeks each. I think we ended up with ninety-six hours each session of science training.

Davison: Was there integration training within the Mir mockup or the Spektr or the Priroda, a mockup?

Brown: Sure. There's some of it. It took a little time to get those mockups configured with some of our science hardware and early on they didn't have much of U.S. science in there. Crews could see what the mockup looked like inside, and some of the science configuration, but not all of the hardware was there, and not all of it was kept up to date as far as the configuration goes. But our guys generally did get time in all the Russian trainers, and we got some pretty valuable training in the Russian trainers, I think.

Wright: Thanks again. We wish you luck.

Brown: You're welcome, and thank you.

[End of interview]