

BANQUET ADDRESS:

Bryan Burrough

Introduction by Christopher Faranetta: I have the pleasure of introducing our banquet speaker tonight. He is Bryan Burrough, Special Correspondent for *Vanity Fair Magazine*. He has been a reporter for the *Wall Street Journal* and co-author of the book *Barbarians at the Gate*. I think one of the reasons that Bryan's book is so good and so detailed is because he is so different than most reporters. When he called for the first time, I was behind my desk with sandbags piled up and my flak helmet on after the collision and the fire on MIR, and he was another reporter. But what was so great about him and if you look in the introduction of the book, he explains where he gets all of his information, the fact that he went in and filed for the Freedom of Information Act. So many of the other reporters in the industry are so lazy, so many of the ones that I know, even from the *New York Times*, I can spoon feed them information, but Bryan is not one of those people. He was an outsider from the aerospace industry who came in and wrote a very detailed book. If any of you in this room go off and start up a space business, and I'm sure a lot of you already have, if it is an international business, this is a good reference and my hat is off to you Bryan. Thank you.

Just to add to what Chris said, the reason Chris was kind enough to ask me here this year, I'm not holding this up for anyone to buy, but it is for a book that came out last year called *Dragonfly*, which is the story of the Phase I program at NASA, which for a lot of people will think of as the 7 forgettable missions of Americans to Mir but I'll always think of it as the beginning of a partnership that many believe will go on for a long time. I guess I should say for those who really love speeches you are going to be disappointed because I'm not much of a speech reader. I'll sit and talk to you a little bit of my impressions as an outsider in your industry because I was very much an outsider. I know if you go to Toastmasters you should start off with a joke but I don't know any jokes, but I'll start with a funny story that happened last week. Chris will forgive me for this, but this is so amazing, this goes to a couple of themes I talk about in the book. I talk about all the time. As you would expect from a humanistic journalist I'm always fascinated by the human side of this rather than the technical because I can add very little to the technological understanding, but the two themes emblematic in the story are the importance of people in our march into space as opposed to just technology and the fact that the press' ignorance of all that you do, and in many cases what NASA does. I like to call it the Blow-up Go-up syndrome, the *Times*, the *Post* and the *Journal*, only pay attention when things go up or blow up. But did you see the story out of Moscow last week about this guy? For those of you who didn't see it, for all I know everyone of you saw it, it was announced, I got this from friends over the Internet last

Tuesday. Energia and the Russian government announced that after extensive searches they finally entered into a partnership with a western company that was going to invest \$100 million to keep Mir in space. For those who followed at all, this is something that they have been looking to do for quite some time. Some of us think this is a good thing. This is an asset, my background is in business journalism, I'm from the *Wall Street Journal* it's an asset and you don't let assets go to waste. In any case the story goes out, this fellow- his name is Peter Llewellyn, a Brit, had agreed to invest \$100 million, was named vice-president of Energia and had agreed to among other things build a hospital right out by the TsUP, the Russian mission control in that area. He was also going to invest money in the modernization of rocket engines and other things. This was quite a great story everybody in the community I know was like do you believe somebody actually did it. It was like in the movie *Contact* somebody, really was going to put money in and the catch was he gets to go up, he's a pilot and he's going to go up later in the year and stay for a short period on Mir. The note I got from the first person who sent this to me was this can't be serious. The next day the story came out the guy's a con man. That he is wanted on an arrest warrant out of Pittsburgh. I'm not making this up, apparently he is an Australian native named Peter Llewellyn who was last seen in Pittsburgh area fleecing a Pittsburgh businessman out of \$25,000.00. I'm reading this from the *Pittsburgh Post Gazette* from Friday, fleecing a Pittsburgh businessman out of \$25,000.00 in an investment scheme involving an Indian tribe in New York and trust funds in the South Pacific. Apparently according the Australian journalists he had previously done this in Hong Kong, Perth, Vietnam, Geneva and now Moscow. It is really kind of a sad story but I looked at this and thought gosh, this is front page of the *New York Times*. I walked into the editor of *Vanity Fair*. I had just finished a piece, working on a piece last week and said we've got to do this, this is a fantastic story and he just yawned. This is so common and I don't understand why the mainstream press ignores everything that you all do, and by extension most of the things, wonderful and not so wonderful that NASA and the Russians do. It is tremendously frustrating to me sometimes but the other thing that this points up of course, is that people are important in the equation as well and that was really a theme in the book. As I look back on the first missions of the Russian-American partnership which first began in 1995, we sent up the first American in '95 and as I swivel my head forward to the ISS missions my feeling after 18 months of total immersion in all this, is that the people and the psychological aspects of space flight even after 30 years remained the overlooked factor in the quotient. The most depressed people I have met are not the people trying to get private citizens onto the Shuttle; they are the psychologists at NASA. They just cannot get the engineers to listen. I should give you a little bit of a sense though of where I come from. I was born on August 13, 1961, which was the day that the Berlin Wall went up so I have always had an interest in the Cold War. I went to the *Wall Street Journal* out of the University of Missouri; my background is all in business journalism. I learned everything I do at the *Wall Street Journal* and really had no experience with space until the winter of '85-'86 in November. I managed to weasel the *Journal* into letting me go to Antarctica, to the South Pole on a tour and did a series for the *Journal* in which my favorite articles were about the studies of isolation. Which all seemed very blue sky at the time because it

was all NASA funded. It was all what would happen if we put 2 guys into a tank together for 3 months would they shoot each other, kiss each other or worse. Three months later I was thrown onto the team of *Journal* reporters who spent the next 6 months going over the Challenger disaster. I came to meet for the first time some great NASA people. Then 10 years later I left it all behind and went off and wrote a couple of books about business. I left the *Journal*, and then began to write for magazines and when the Mir collision happened 2 years ago, it seems like yesterday, June '97 it was for me going to be a writing exercise. I was looking for something that would be, I was tired of writing about guys running around boardrooms where to loser would only get \$50 million instead of \$500 million dollars in whatever takeover I was writing about. I wanted to write about real people, in real life threatening situations and when the Mir thing happened, (the Mir thing this is how profound I am, journalist and all.) I called my agent and my editors the next morning and said someone has got to do this and you know almost no one will because of the logistics of working in Moscow and just the expense. Someone has got to do this as a book and I got the assignment to for *Vanity Fair* and about three weeks into it, realized that you could probably do it as a book and no one else was going to be stupid enough to try it, but I was a rank outsider. I hadn't written about NASA in about 11-12 years. I didn't know a soul at NASA anymore and I had been to Moscow only once. Therein began a very intensive period of 14 months from the first phone call to the production of a manuscript. It was a lot of time in Moscow spending time with the cosmonauts and spending an awful lot of time in Houston. That is the background of *Dragonfly*, where it came from. I went into this thinking that this would be essentially a writing exercise, I would be writing about an eight-month period beginning right before the fire, even before the fire, what I think of as *the fire* the worst fire in orbiting, space orbiting history in February, '87. Which predated the collision by 4 months, then a series of breakdowns, collision, recovery, that's what you're writing about and I went into it thinking that I was writing about an incident and quickly realized I should be writing about a program. That there was a huge movement going on, the two space programs, Russian and American, were essentially merging that in fact I didn't know. That it's funny when I go, you all are the first group of space people I have spoken to, you are space people, it's like Wall Street. Wall Street is not a place; it is a place in your mind, anyway. When I talk to my local library, I'm big at the local library, I went in and started talking about how the two programs had come together and how we're doing this new international space station together with the Russians for 15 years, and these people looked at me like I was talking about Star Trek. This was last year and they had no earthly clue what we were doing in space with the Russians. I write books for my mom, like most authors do, if you can interest your mom, who may have absolutely no interest in what you are writing about, then normal people in Des Moines or in the mall in Minneapolis maybe interested in what your doing too. My Mom had no clue, she was like "No, we're doing this with the Russians". So I thought this is really great. I like writing about businesses and corporations. I'm very comfortable writing about corporations, large bureaucratic organizations and you talk about NASA and the Russians, that is what you are talking about. So I felt at home. I thought that I can do this and then I started hearing about the missions. At the time I went in, a gentleman

named Mike Foale, a British-born NASA astronaut was still up there with two Russian cosmonauts and the previous fellow, named Jerry Linenger, the previous American up there had endured this fire, but as far as America knew these, actually I should blame the journalists for this. As far as the journalists were writing, these missions were the greatest thing since John Glenn to the extent that they were writing anything at all about them, you know a paragraph Reuters story that would appear in your newspaper under the stock table they weren't getting any publicity but what was going on made it sound like Joe Mission, they're going up there, they're living, they're coming down and here's the requisite quote from the press conference and nobody had a clue it was going on. What was going on, and I started hearing from some of the astronauts, they were just rolling their eyes. I wish I could use some of the cool curse words they used to describe what was going on. These words derive from army and Vietnam experiences. They were very colorful about their descriptions of these missions in total as the messiest, nuttiest, most chaotic missions, nutty that is bad, that suggests that the direction was wrong. Basically they were saying they were messy and chaotic. I thought this is really interesting. This is history, this is the two sides getting together and really colorful things are going on in space. This is really interesting. I should step back and say and I hope this doesn't disappoint you, I'm not a NASA basher on the subject, my feeling on this and any time I talk to a group and many a group that I talk to are very pro-NASA they think I'm some nutty left-wing or nutty right-wing NASA basher who thinks we shouldn't be in bed with the russkies or something like that and I'm not. I actually think we've done the right thing. It is a natural evolution that it's time for us not to be nations in space but just to be man in space, like on Star Trek. But the fact that I found and printed all these stories that did not make NASA look like they do in Tom Hanks' films it made a lot of people pretty angry at NASA. I found myself apologizing, saying guys, you know when a baby is born it is messy. That is what you have here. There is this great quote from Frank Culbertson the head of the Phase I program. Phase I referring to the first phase of three phases of working with the Russians. The second, the putting together of the International Space Station and the third if we ever get to it, the actual operation of it. There is this great quote from Frank Culbertson in which he talked about why it was so messy and I just want to use this to preface a few juicy stories. I want to tell you, in talking about the astronauts that went to Mir, Frank the astronaut, who ran the program said that they were pioneers, they were doing all of this for the first time. That is what people, and he means people at NASA, forget, it has been so long since we have done something completely new in this agency. That people forget what it is like. We've had no new manned program since the Shuttle in 1981. Well it can be ugly and that is what people forget. And people do forget it has been so long that NASA did anything that was so out there on the edge. They are all so scared of failure. I really like the people at NASA, but I really just wanted to take and wop them upside the head and say take a risk. What are you worried about? I don't write op-ed pages about this. I do not come with any type of agenda. I'm just a reporter that walked into NASA and started asking what happened and people gave me some decent stories and really one of the best stories, and I won't belabor this, but one of the best stories is how the whole program actually began. This is history that people knew, and it was

never in the newspaper or in the magazines or anyplace that you could read it until I went and started asking people, how did this all start? Well it started in a really neat kind of way. Again with profound adjectives by your author here. Back in '92, the genesis of the whole program with the Russians was a swap agreed to by the Bush administration in the summer of '92. In which we agreed to allow an American to go to Mir and we would take 2 cosmonauts on the Shuttle and that is pretty much what the newspapers reported in a little 16 inch story on page four and everybody forgot about it. The background to that was really interesting, what happened in a nutshell was that in June of 1992 many remember Bush was way behind in the polls to both Perot and Clinton. He had gone over to, in fact some of you may remember this wee, he went down in June to Panama, where he got tear gassed at a rally, people threw eggs and stuff and he was run off of the stage at a rally in Venezuela and then he went to some awful world ecological conference where the Communists picketed him and his ratings basically were in the tank. It was an awful, awful week for him. He came back on a Sunday night. Yeltsin was due in on Monday for a summit and there was nothing on the agenda for the summit. Nothing. The *Washington Post* ran a story the weekend before saying how boring this is. We miss Gorbachev. This Yeltsin guy is coming in, Bush has nothing going on, they're going to sign some arms protocol. You know, who cares? That was the general feeling in the press corps as put forth in the *Post* and the *Washington Times*. So the word goes out as President Bush is getting tear gassed in Panama and the word goes out across the White House we have got to have something good for the summit, there has got to be something electrifying. We have to do something that will make headlines. Well you can see immediately where I'm going. The word went out all across the administration come up with something. The guys at the National Space Council, which was a short-lived Dan Quayle-chaired space advisory thing. Everybody laughs, Dan Quayle. You want to laugh in a speech, just say Dan Quayle. I'm not pro or con the man; it's just an easy laugh. He chaired the Space Council at the time. Space Council said how about a swap, we can do that. The Russians would want to do it and the idea was put onto Bush's plate on Sunday night. The State Department having said they would have nothing to do with it because they didn't have enough time. Bush looked at and it took about eight or nine minutes, he said done, let's do it. The next morning at Blair House, Yeltsin said done, let's do it. We're partners in space. It was essentially a political thing to get headlines for Bush. Now that morphed into a far wider commitment under the Clinton Administration. Which I would love to be able to tell you that the Clinton Administration came in with this great view of our future in space with our new Russian partners as part of the New World Order. You never hear New World Order anymore; we used to say that in the early '90s. In any case politics is a little like journalism, I guess I'm learning it is like space too, it's really ugly. Everybody says it is like making sausage and you don't really want to see how it is made. Well the way we got into our permanent partnership with the Russians, the Clinton Administration came in on January 20th, and about 13 days later they called Dan Goldin in and said "Dan, hi, nice to meet you I'm Bill Clinton and we're killing your space station." They were going to kill Freedom. Bob Woodward actually wrote a book about this period when Clinton came in and had to make some very tough choices. Wasn't this The Choice? It has been

on our commode in our bathroom for I don't know how long and I never really did read it. Goldin basically said "oh my god" The Agenda, that's what it was called. The Agenda. Goldin said, "Oh my god, without a space station, NASA has essentially no reason for being". This was five years before they were doing all these Mars probes and things, but the manned program would have nowhere to Shuttle. We were hoping to Shuttle up to a station that Americans would build. Essentially Goldin said give me 72 hours and he went and got his guys and in 72 hours came back with a slimmed down version of a station and the Clinton Administration said, if you can do it, give it a try. Just as, to make a long story short, just as word broke that Goldin was going to slim down the station the Russians heard very opportunistically heard about it and sent Goldin a letter saying, Dan, Dan, have we got exactly what you want and that is just how it happened. Goldin realized that the best chance he had of getting flight-ready modules and vehicles was from the Russians. They had done it before and we hadn't. This was probably the last time anybody at NASA had a good thing to say about the Russians. That says more about NASA than the Russians, but essentially it was a shotgun marriage. The two sides were kind of thrust together and the final reason that pushed the White House to do it, was that the Russians wanted very much to do it. The White House didn't see the need for it, except that the White House had been trying to get the Russians to sign a very obscure nuclear missile protocol in which they wanted the Russians to stop giving rocket motor engines to India and places like that and basically in return for signing that protocol and stopping to do it we went into space together as partners forever, or for the foreseeable future. But the interesting thing is that, while the Russians were perfectly on point, perfectly focused, perfectly ready to do it, no one at NASA wanted to do it. No one. No one as we sit here, we meaning I, and tell these stories about how screwed up these NASA flights with the Russians have been. We have to remember is that it was essentially the politicians that wanted NASA to do this. Think about this, NASA was asked to put together the longest mission in its history aboard a vessel it knew nothing about and would have no supervisory capabilities whatsoever. That is a recipe for a screwed up mission, it just is. There is this great quote from Gene Kranz, who was invaluable. Gene, for those of you who don't know much about space as I did at the time, was the guy who in Apollo 13 said, "Failure is not an option." Gene said this whole Mir project, just kind of crept in almost unknown to us all. We saw it coming, but we never thought it would become a plan in itself. To be blunt the Shuttle-Mir missions were not something I ever took too seriously. I thought it would just die because of the lack of a mission and a crisp, clear reason for doing it. Well it didn't die. We sent 7 Americans up there and some of the chaos was funny Norm Thagard, the first American who went up there in 1995, got up there in one piece. He had his freezer, that he was going to take blood, urine and saliva injections from everybody and put them in his freezer and this was his entire program, science program, this was essentially the reason he was up there. 27 experiments from which he would take samples from everyone on board put them into his freezer and 3 weeks into this the freezer breaks and they can't fix it. It freezes. It totally goes on the fritz. The Russians and the Americans both try to learn anything they can about this freezer. No one can fix it and to make a long story short, really painfully comic in retrospect story short, a month into

Norm's 4 and a half month mission, he has nothing to do, nothing to do. He had a great time up there. The other astronauts would get on COM, communications with Norm, there this is legendary exchange between John Blaha, one of the other astronauts and Norm where John said "Norm, what are you doing up there all day?" and Norm said, "Well you see where I'm standing right now"? He was floating by the dinner table. "This is where I stand 99% of the time". He had nothing to do. The Russians at that point did not trust the American astronauts so early in the program. They didn't trust the American Astronaut to let them touch anything and Norm was constantly trying to hint I can do stuff, they would never let him do stuff. Norm took one book up there. I got to tell you Jeff Manber, one of the Energia guys said, "That idiot, if you're flying across the Atlantic you take 2 books. He's going for 4 1/2 months and he took a book of *New York Times* crossword puzzles. That was all he took?" So he sat there, Norm sat there, floated and looked out the window for 3 1/2 months. That whole story, and that's a pretty good story was nowhere near the newspapers. Nowhere near anything. We believe crazier stuff about Apollo. The next mission was Shannon Lucid's mission. Those may remember Shannon, she was on the cover of Newsweek. She broke the record for the longest time in space by a woman. It was on its face a tremendously successful mission in large part because she was everything that the other astronauts, who didn't thrive up there were not. She was flexible, she was good humored, she was endlessly patient and she was willing to put up with a preparation process that totally bewildered her. Essentially those who know and love NASA bureaucracy, as I do know that to get an experiment onto the Shuttle, the astronauts read and train. The process lasts about 18 months with every experiment that they will do on the shuttle. Shannon did not have a list of the experiments she would do on Mir, until she got on Mir. I tell that to laymen sometimes and I'm not sure the enormity of that sinks in. But she was an astronaut particularly by her own admission, particularly used to that preparation, liked that

preparation, like knowing and going over it and for 6 months while she was training at Star City, the Russian complex, she was screaming at people in Houston what am I going to do up there, will somebody please tell me what I'm going to do up there. No one knew. They shipped her a bunch of stuff and said try to make it work out, and it did work out. It worked out magnificently for her. She did happen to finish a month early. Her daughter had sent her bunch of paperbacks so she had good books to read. The third astronaut is actually one of the saddest stories John Blaha, the one I mentioned earlier. John was a Shuttle commander, and shuttle commanders are very much like Russian commanders, they're used to getting their own way. One of the problems with long duration space flight, we're learning is that it is a place you don't get things your own way, flexibility is key. John got up there after an exhausting 7 day a week, he went 24-7 training for about 18 months, flew absolutely exhausted and got up there and found initially what he saw was, he wasn't enjoying it. The cosmonauts would talk amongst themselves with the ground and he wasn't talking much. The situation got worse and worse and he withdrew. He is the only American space flyer to ever publicly acknowledge having experienced a period of depression in orbit, and he had it pretty bad. He was not talking and for about six weeks there he had a rough

time. To his credit he came out of it. His ground team and the Russians certainly no one said the D word, depression, until he got down. They did all the things that you would do to cheer up a colleague who was down and he just, it wasn't just a sad thing, and it was an angry thing. His ground team, NASA was slowly learning how to do this, too slowly, there was a lot of screaming, depressing activities. The fourth astronaut that went up there Jerry Linenger is a favorite of mine because the Russians tried to disqualify him. This is actually the opening of the book for those of you who haven't seen it. The Russians didn't like Jerry. To work in space, the Russians feel you've got to be a team player and Jerry is not a team player. Jerry is a very smart man, great scientist, smart doctor but he's not, I'm not sure I would want to be locked in a room with him for 4 1/2 months. The Russians tried to disqualify him and they came up with some trumped up medical reason and NASA screamed and got him on there. The fascinating reason and I always thought everyone knew this, because I learned this fairly early on in my research, everyone understood that no American wanted to go to Mir. Excuse me; there were about 3 of the 120 some odd Astronauts that wanted to go. The others were basically forced, no other volunteers. Not only was Mir among the chauvinistic American astronauts a bucket of bolts all of this type of talk, but you would fall off your scheduled shuttle flights and so nobody wanted to go, so they had to get Jerry up. The fifth, I could talk about the collision all night, but I shouldn't was Mike Foale, who was probably the most successful of the American astronauts in the American mission. The very mission in which they had the collision, was probably the most successful in that he was the first to integrate himself into a Russian crew and I hope going forward that NASA listens to Foale and all the things he says about getting on with the Russians. There are so many other things to talk about, the intricacies of the relationships between Russian mission control and Star City. That is always a fun one. Between the Americans and Russians, that's a fun one but I know I'm running out of time. The one thing that I do hope going forward is that we'll pay a little bit more attention to these human considerations that I dwell on and psychologists dwell on. I don't know if it's funny or sad for 30 years the psychologists have been the least liked people in the manned space program even below journalists in the pecking order. Because engineers don't want to have anything to do with this soft kind of touchy feely. The idea that some shrink on the couch is going to be saying whether he can fly or not. I mean there's a great quote from one of the Skylab astronauts turned to the psychologist before one of the Skylab missions, you don't understand do ya' boy that no astronaut will be satisfied till the last psychologist is strangled by the entrails of the last flight surgeon, something like that. That is the mindset that goes to this day. Common sense would tell you that NASA would realize, I have to stop saying common sense and NASA in the same sentence. I'm not trying to be tacky. I think of it as the same way army veterans think of the Army, it is a big bureaucracy and common sense is not something that is rubber-stamped. There is always a process and the process is never as obvious as it should be. But common sense would tell you that the most important thing about long duration space flight as we are going forward are the human pressures that our people will be under. Common sense would already tell you know about that, we had people in Skylab for a long time. There aren't any psychological notes on our people from Skylab. The great stories are

the ones that cannot be confirmed: The Russian with the gun. The Russian who nearly went out like Gene Hackman in "Marooned" in the EVA. There are plenty that they won't confirm. There were plenty of Russian foul-ups. That we're only learning about the Russian foul-ups because they're telling the American doctors about it. The American doctors are saying did you hear what happened to the Cosmonauts in '86, who they said had the stomach flu, he went nuts. That is the only way we are learning about this stuff. It is the stuff you guys at Energia probably chat about around the office cooler. Can you believe when the guy went nuts with the gun in '86 on Mir? These are just rumored stories that I'm throwing out, but I'm still stunned that there was a gun on Mir. Anyway, having said all this and having talked a little bit about the messiness of all this, I do want to emphasize that I have not had a lot of exposure to y'all's world. I get some phone calls from Buzz Aldrin every now and then and I hope it works. I really hope the ISS works. I think that we are doing the right things and that it is important to remember that someday when there really is just man in space, people are going to look back at this right now 1999, 1995 that is when it all began. Sometimes when we all get really frustrated late at night whether its me writing a book or one of you guys trying to get a grant or get a rocket off remember that we are all still in the crib together. It's been wonderful, a real honor to come and talk with you guys. I hope I get a chance to meet more of you tonight and I hope you have a good conference. Thank you.

I'd be thrilled to take, if anyone has any questions. If not, that's okay, I won't be offended.

Question: What lessons should we be drawing from the Mir experience?

Well, first and foremost what I was talking of the importance, there is no way to fix psychology. But even coming out of that. There is a sense inside NASA that they are paying lip service to it. That they're saying while a million different things went wrong to cause that collision. The most important were human error. That cosmonauts simply being dead tired, not trained correctly, having a severely antagonistic relationship with the ground crew. Those are the types of things that we, they the ground, the man in the can as they say is something that the psychologist have preached for years and it crops up NASA that MOD thinks it knows everything and that the astronauts are a bunch of dumb fly-boys. That still comes up MOD guys tell me that. That attitude is institutionalized in Russia. The poster that everyone who goes to TsUP, Russian mission control, talks about, is the famous poster on the wall of Viktor Blagov. Viktor is the number two man at the TsUP, who I spent hours with and I have incredible respect for his skills. But their attitude toward the cosmonauts as Mike Foale put it is that of Master to Slave. The poster is of hands with 11 puppet strings with Mir as the puppet and so I would say that is not very enlightened. And I would like to see it more enlightened. There's a million other things to talk about, lessons, but that is certainly the main one. Chris, do we yet know what language we're going to be speaking on the ISS?

Rusglish.

We'll be speaking whatever will make the other guy understand. NASA remains really worried about the autocratic tendencies of the Russian commander. Russian commanders, I like the Russian people as much as the next guy, but the Russian military commanders they want you to hop to. The sixth astronaut up there Dave Wolf learned that. Dave was basically treated like a 12 year old by his commander Anatoli Solovyov. Dave has a few things in common with a 12 year old and Anatoli is a quite a veteran and Dave was a first time flyer in that environment. But those are the things that worry NASA. And I think worry me because I was surprised to see people not take it seriously down at JSC.

Question: What was the biggest challenge going to work with the program over in Moscow?

Running out of money. Everybody in Russia pretty much has their hand out. I had only worked in Russia once before on a very long story that never saw the light of day and I was concerned about that and I found the Russian space program institutionally more difficult to work with. And I not blaming, they just don't have experience with people who do what I do. Which is I show up and I stay and I stay and I stay and I ask questions that you wish would go away. The wonderful thing was I found that it was very easy and not in a bad way to interrupt and I said to the translator what would happen if we just called people at home? Getting home phone numbers was so easy. So we started calling Cosmonauts at home: Solovyov had just come down from up there and had the world press all over them I had their home phone numbers right in the book and sat down with them. Had a little vodka, a lot of vodka. A little champagne, a lot of champagne and after about a year I had 20-25 hours with each of them. So I was able to get a certain amount of big important people, but I never could have done it if the Cosmonauts had not been kind enough to invite me into their homes. They were wonderful people. I guess it is fair to generalize. Just wonderful people.

Question: What was the feeling of the Russians regarding their interaction with the Americans?

You find that the Astronauts kind of roll their eyes at that stuff and the Russians in general don't care. Their attitude is Americans coming on Mir, they're paying customers. They do what we say. They have to learn our lessons. The Russians just didn't need to care that much. It's their vehicle. And I understand that attitude. The Russians have a real chip on their shoulder they realize that everyone else in the space community essentially feels that theirs is a broken down program. They and I always say what would you be if your budget had been cut by 90% pal. Mr. smart NASA guy. So they do have a chip on their shoulder and they don't want to bend if they don't have to. All we have left are our rules and our traditions, you get along with that and that was a source of endless frustration for the Americans. Again that is something that you cannot teach. And the way you get around that is by sending Americans to Star City, spending weekends

at the Dotez beating yourself over the back with those tree limbs, somebody tell me what I'm doing here. And I'll tell you it is not all negative. There are some really wonderful stories, some of which made their way into the book about some real long standing relationships.

I know that we have to wrap up, but I would be thrilled to talk to any of you afterward. Thank you.