Prefight Interview: Boris Morukov

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Boris, you've been involved in the Soviet and the Russian space program as a physician and a researcher for more than twenty years, but this is the first time that you are going to ever fly in space. Have you always wanted to fly in space yourself?

Yes, I always wanted to fly into space. And, I guess it's the "golden dream" of all the boys of my generation, that, for many of them, this is still a dream. But my life has made another turn, and all my work and all my life is dedicated to that goal.

The boys of your generation are old enough to have remembered when Yuri Gagarin became the first human being to ever fly in space; can you tell us what that was like - what was it like to be a boy in Moscow, or in Russia at that time?

That was a very happy event for all the people in my country, and the space flights of Soviets were like an everyday activity, you might say, but everybody was waiting for a man to go in space. But it was still a great surprise to everybody, and the whole population exploded from happiness and enthusiasm. That was wonderful.

I mentioned that you have been involved in the space program for many years, but you haven't told us much about yourself before. Tell us about your background, your career path that brought you to become a doctor and to work at the Institute for Biomedical Problems, and something about your work and how that institute has studied the effects of space flight on human beings.

When I was still a student of the medical institute, I knew that there is the Institute for Biomedical Problems. IBMP, which is, at present, the leading medical center for space medicine. And when I was still a student, I participated in some of the experiments that were carried out by the institute, and after I graduated, I started working for the institute, for the IBMP, as a scientist, as a doctor, and at that time, I was, I participated in the flights of the Soviet cosmonauts and used all the knowledge and the experience that I have gained during my work implemented as a part of the space flight. You can say that I was working in different departments which are in charge of space flights at our institute: I worked as a scientist, I worked as a physician, as a part of the medical support team, I participated in the medical support, and I participated in different experiments that were devoted to zero-gravity effects on the body of a human as well as different countermeasures to negative metabolic changes that might occur during a long-term flight.

I am interested to get your opinion, Boris, on how well we have been able to understand the effects of weightlessness on the body, how well do we understand what being in a weightless environment does to the human body? How, good have we gotten about being able to respond to that?

Well, the weightlessness and its effects on the human body have been studied as a part of the space flights, as well as on the ground, the experiments that were simulating the conditions of the flight. But this issue involved animals flying in the space station for Bionetic experiments and collecting all the experience that we've gained. At present, we can say that a human can stay, work and live successfully on orbit, retaining all the capabilities of a human body, given that, that countermeasures will follow all the recommendations for the countermeasures.

You made reference to your career at the IBMP as a researcher and as a physician, and now you've been involved with the space program for many years. From your professional career, even from your student days, do you have a couple of, some people in your life, some people in your career, that have been very important people, these were people who were influential in my making the choices that I made and becoming the person that I've become.

Well, many people, in fact, influenced my life...people that I worked, in the course of these years were supporting my desire to become a cosmonaut, they helped me a lot to become a researcher I am today. For instance, for a long time as a researcher I had been cooperating with Dr. Grigoriev, who is my mentor in science. As a cosmonaut, I took a lot from my predecessor, Valery Polyakov, who stayed in orbit for the longest time in the history of the manned flight, and it's not only because of his, his record, but because of his, his ability to teach me how to keep my health intact, how to coordinate my work with other people, and I'm very thankful to him for that. But in reality, there are more people who surrounded me, for all these years, contributed, and I'm very thankful to them for that.

Over its history, the American space shuttle program has planned its missions out for years in advance, and crews of astronauts have spent a year or more training for them. Well, in fact, you and two of your crewmates - Ed Lu and Yuri Malenchenko - had been training with four other crewmates for a different mission when you were switched to STS-106 with just a few months to prepare for your flight. Can you tell us what you explain to us the circumstances of the change and why STS-106 was added to the list; but second, talk about what it was like for you to move from being part of one group and being part of a second.

As you know, last year there were two unsuccessful launches of the Russian vehicle, and because of that, the Service Module launch was delayed, and there was a necessity to bring another additional crew, perform another additional mission, because the orbit of the International Space Station was decaying gradually and some of the systems and hardware of the modules which are on orbit right now have exceeded their, their operational, their operational time. Therefore, a decision was made for those tasks that at the beginning were planned for STS-101 expedition to divide them in two missions, which will be STS-101 and a new additional mission, STS-106. And our crew, therefore, was split, and three crewmembers that were assigned mainly into the Service Module were assigned to fly of the STS-106 crew. We had a wonderful crew, actually, STS-101 crew. We had a very good, very friendly relationship, and we had a very good support and coordination in our work, and I'm happy that they had a very successful mission. But, I guess, we were lucky the second time, also: Our second mission, our crew, consists of wonderful people and excellent professionals. And we have been working together for a few years, and we, we know, we know, we know each other very well as in the ground, Of course, it was a difficult move and we were sad, but at the same time, we were striving for our goal of flight to the International Space Station.

After having made the change from one crew to the other, have there been special challenges for you and your crewmates as you get ready for this mission?

Well, the most challenging part of our flight is work in the Russian segment and activities associated with the preparation of the International Space Station for the first incremental crew. And that is the most challenging part of our flight. And, I'm, I'm, I'm, I'm, I'm difficulty, I guess, is how to coordinate our activities because the two we'll be dock, when we'll be docked to the space station is quite limited. So, we need to spend our time the most, in a most effective manner, and this requires a great coordination, a great interaction between the crewmembers.

Your flight to the International Space Station is the first since the arrival of the Service Module; in fact, there will be a Progress vehicle that will be docked to the station at that time as well. So, let's go through your mission from the beginning. One of the first things you have to do is rendezvous with the station and dock to it. Could you describe what happens that day, what the steps in the process are, and tell us a little bit about what your part will be that day, what you'll be doing on rendezvous day.

Rendezvous and docking is one of the most crucial stages of the flight. And if this stage is unsuccessful, then we can't carry out any other activities. Therefore, each crewmember is involved in those activities. And, for instance, the docking, the docking, the docking will be carried out on the middeck of the shuttle; my responsibility will be the photoTV operations. At the time, I will need to prepare the systems to ensure that they are ready for rendezvous and docking operations, then I'll have to monitor the operations of those systems, and, after that, will have to send a video signal to the ground. So, these are my personal responsibilities for that stage of flight.

Can you give us a brief description of how the rendezvous goes, and how the shuttle approaches and, and then closes in to and docks to the station?

This is a very complex and very dynamic process because two objects which are on the space orbit will have to align all the movements, they will have to balance out all the angular and regular velocities, and they will have to come in one point in space without bumping each other. What I might say is that shuttle is a very reliable system that has a great experience for these type of operations. And, a lot, of course, depends on the crewmembers as well, and we have been trained a lot for these operations. And, I'm, I'm very confident that our shuttle commander is very experienced, and our pilot is a high professional as well. And our mission specialists will support them as well as can.

The first day after the docking to ISS is the day that Ed Lu and Yuri Malenchenko are to make a six-and-a-half-hour space walk. This will be the first space walk ever made by a crew of American and a Russian here made a space walk from the space shuttle, but similar teams have done space walks from the Mir station during the ShuttleMir program. Can you tell us how it is valuable to have multinational teams do this? What are we learn from that, and what does it mean for the International Space Station and space walks from there in the future?

That is true, that is the second time when we'll have a Russian and American crewmembers together performing an EVA, and for the International Space Station that is the first time, and I might say that this is a prototype, if you like, on EVA-type of activities since this is the first time, that, that, that