Interview: NASA's Dr. Sally Ride


NASA

Shuttle astronaut details mission's technical success

Dr. Sally K. Ride, 32, one of the five astronauts on the June 18 mission of the U.S. Space Shuttle, is both the youngest person and the first American woman to have made a space flight. Dr. Ride has a Ph.D. in physics. The following interview, conducted on July 26 by Marsha Freeman for Fusion *magazine, was made available to* EIR *by* Fusion.

Freeman: The work that you did on the seventh Shuttle flight using the Remote Manipulator System (RMS) or arm, was one of the major objectives of the mission. Could you describe how the arm performed in space compared to your practice with it before the flight, and the importance of the RMS in future Shuttle missions?

Dr. Ride: We had quite a bit of training on Earth before we went into space, but almost all of that was on simulators. The arm itself is very lightweight, designed to be used in space, and actually won't support its own weight on the ground. You have to rely on computer simulations. We have several sophisticated simulators: there are two here at the Johnson Space Center, and one up in Toronto at SPAR Aerospace, which is the company that built the arm. Both John Fabian and I had extensive experience on these simulators. As a matter of fact, we did a lot of the design work, trying to match one simulator to another and get them to be as close as we could to what was supposed to be the predicted performance of the arm. What we found was that the real arm behaves at least as well as the simulators and in some cases, much better.

It's much easier to control than some of the simulators, and the dynamic control, the oscillations, are quite a bit less. All the operations were easy to perform, and in every case the arm worked at least as well as advertised. We had a 3,500-pound payload which we could position as close as we wanted. If we decided we wanted to move it two inches, we could move it two inches. It was really easy to use.

As far as the future, the thing we did on our flight which was different than the other flights was the release of a payload. We let go of it with the arm, left it as a free flyer, and then retrieved it. On other flights, they had used the arm to carry a payload but had only used the arm to wave it around. The main thing that we demonstrated with the arm on this flight was that the Shuttle can not only release payloads, but can retrieve them. This is a capability that NASA has advertised for quite a while and is one of things that will be very important.

We are planning payloads to be put into orbit that are designed to be serviced by the Space Shuttle. If after a year, for example, the film runs out [in a satellite], we are designing the payload such that we can go after it with the Shuttle and use the arm to grapple it and then service it. We have Flight 13 coming up where we are going to use the arm to grapple a payload that is in space right now, the Solar Maximum Mission satellite, which malfunctioned right after it was sent up. We are going to try to use the arm to pick it up and repair it with the Shuttle.

Freeman: You are one of the few scientists who has gone into space and the first physicist in the Shuttle. With your expertise, what would you be interested in doing on your second Shuttle mission?

Dr. Ride: Actually, I'm not the first physicist. On Flight 5, Joe Allen was one of the mission specialists, and he has a Ph.D. in physics. There have been quite a few scientists who have flown, particularly back in Skylab and the later Apollo flights. So far on the Space Shuttle we've had only six scientists fly. When we came to NASA it was made very clear to use that although we would have an opportunity to persue the research we wanted to, we would have no special privileges as far as proposing experiments or implementing experiments on the Shuttle. If there were experiments we wanted to propose, we had to propose them through all the proper channels. I don't have any particular experiments that I have intended to propose. The main advantage of a science background is that it prepares you to learn a lot very quickly about fields that you really don't know much about. NASA has wanted use to primarily generalists, not specialists.

Freeman: In the future, however, won't there be a great advantage in having scientists in space who will be trained in special fields, to do experiments in space?

Dr. Ride: I think that's very true. NASA is planning to have those people fly on the Space Shuttle as well as further on down the road. The astronauts who are flying as mission specialists now are not really seen as the experts for a given experiment. If there's an experiment that requires a scientific expert on board, NASA's plan is generally going to be to try to fly a principal investigator associated with that experiment, rather than to try to train one of us—to fly the person who's actually designed the experiment.

A good example of that is the CFES [Continuous Flow Electrophoresis] experiment that is scheduled to fly again on the next flight, but also on Flight 12. The work that's been done so far, including on our flight, was primarily engineering experimental work; proof of concept and then trying out a couple of different things, but it was mostly to make sure that the experiment would work in weightless conditions, and to try to refine it to the point where they could use it as a production system. During that period they trained a mission specialist to operate it and we were very well qualified to operate it, in that mode. But on Flight 12 they're going to use it to actully produce quantities of some pharmaceuticals that they intend to be tested by the Food and Drug Administration. For that, they [the industrial designers, McDonnell Douglas and Johnson & Johnson] want to fly one of their own scientists who is extremely familiar with the entire process and could make any changes if necessary.

Freeman: What might some of the most important missions be in the next 5, 10, or 20 years?

Dr. Ride: I know that NASA is looking toward the continuation of the Space Shuttle program—using it as a launch platform for communcations satellites and using it as a base for short-term experiments in space. But I think that NASA is also working toward the concept of a space station that would give us a permament presence in space—a space station that would be continuously occupied and could be accessed by the Space Shuttle, which could then be serviced and shuttle people to and from the space station. That has not been funded by Congress yet, but NASA has conducted several feasibility studies and considers this the next important stepping stone. It's the kind of thing we need, for example, if we're going to do more substantive experimentation on the lunar surface, we're going to need something like a space station as a platform to jump from, rather than building large rockets like we used to.

Freeman: One of your areas of expertise is in advanced laser research. On March 23 President Reagan announced a new defense policy based on high-energy laser development for space-based defense. What do you think the importance of space is for national defense?

Dr. Ride: That's an aspect of the space program that I'm not really very familiar with. We tend to concentrate on the civilian side and on our particular space flight. To be honest with you, I haven't had the chance to think about that since I've been back.

Freeman: From your overall experience with the Space Shuttle, what do you hope to accomplish on your next trip into space?

Dr. Ride: I don't have any specific goals. I think that one of the things that made our flight so appealing was that it was very diverse. We had a chance launch two communications satellites, to use the arm and demonstrate its capabilities, and to perform quite a few experiments, while we were on board.