

KCTS Pledge Night Break 2_ Transcription

00:00 **Host:** Tonight we have again Dr. Gary Lagerloef in our studio, a U-dub alumn, but has gone so far. You are in charge of a satellite mission right now. Tell us about the satellite. It's called Aquarius.

00:16 **Dr. Lagerloef:** That's correct. It's a mission developed by NASA. We're also doing it in partnership with Argentina. I can explain a little bit more about that in a minute. The Aquarius mission is developed to measure ocean salinity from space. It's really a brand new kind of measurement for measuring the ocean that we've never been able to do before. So it is really a pioneer program. We're looking at a picture of it right there.

00:40 **Host:** How long did it take? I know this is a complicated answer. You started thinking about the need to measure ocean salinity a long time ago. How long did it take to propose this satellite and to kind of sell the idea to NASA?

00:52 **Dr. Lagerloef:** Well, it's a long spectrum. I've been working on the idea for over 20 years. But it was in the late nineties and around 2000 we put together a team of scientists and engineers that really started to conceive of what the satellite would look like, and how it would make the measurement of ocean salinity. In 2001 and 2002 we prepared a series of proposals to NASA. We were selected in 2003. So it's been 10 years from that point to where we are today to develop, and watch, and fly, and collect data from the satellite.

01:22 **Host:** So Aquarius lifted off from Vandenberg when?

01:25 **Dr. Lagerloef:** Two years ago this month, June 10th, 2011.

01:30 **Host:** I bet you were there.

01:31 **Dr. Lagerloef:** I was there. Not only was I there, I was in the control room. I was not going to miss that. We watched the countdown all night long. Lift-off was 7 O'clock in the morning. Unfortunately it was foggy, but it was a beautiful launch for every other reason.

01:45 **Host:** So I love asking scientists this: what did it feel like when you saw your baby roar off that launch pad?

01:51 **Dr. Lagerloef:** Well, I was exhilarated and apprehensive at the same time. I mean anything could go wrong on a lift-off. This was an absolutely flawless launch. This was on a Delta II rocket which as you know is a Boeing rocket. The thing was flawless. It went off exactly on time to within a fraction of a second. By the time the satellite flew over the South Pole and came over Africa and it separated from the upper stage of the launch vehicle, we were within about 700 meters of where we were targeting the altitude of the satellite. I mean it was picture perfect.

02:26 **Host:** You know, Dr. Lagerloef, were you always pointed towards science as a kid? This is an unplanned question, but what got you interested and set your course?

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02:36 **Dr. Lagerloef:** Well, I think as I matured in high school I recognized I had better aptitude in math and science than I did for English and social studies. It was kind of a natural direction for me. I think that in any young person's education you usually have one or two teachers that make a real difference. I had a mathematics teacher in high school that was really profoundly impactful on my interests as I got older. I went off to a technical school and ended up majoring in oceanography of all things.

03:08 **Host:** Yeah. And public television is the world's largest classroom. So we're a teacher too. Take it right from the source. OK, back to Aquarius. Your satellite. You were the principal investigator, the head of the mission. It is in orbit now. It has been working for two years now?

03:29 **Dr. Lagerloef:** The satellite as I have said was launched June 10th, two years ago. It took us a couple of months for us to stabilize the [?] and get everything ready. Then near the end of August of that year we turned on the Aquarius instrument. You were talking earlier about excitement. There was an important step we had to go through to turn on the satellite, and that was to deploy the three meter antenna that you see in the picture there—that thing covered in gold foil. That required a very sophisticated operation to deploy that. We use some of the same mechanisms that the Mars rover uses when it landed on Mars. We really were biting our nails over that one, but it deployed perfectly. Then we turned on all the electronics. Beginning on the 25th of August we've been collecting data from the instrument. It has been working flawlessly ever since. We have not had to change a single parameter on that instrument since that time. No bugs, no glitches, no reboots on our instrument. We've had a few glitches on the satellite itself. We've had to tune the attitude control system that keeps the satellite pointing at the ground the way that it's supposed to and so forth. These are sort of the run-of-the-mill technical problems that most satellites run into. Nothing out of the ordinary. We've had a lot of success. We've collected over 98% of the data for the time period we've had.

04:51 **Host:** Have you ever seen it? Have you ever been camping or something and looked up, and there's Aquarius?

04:55 **Dr. Lagerloef:** Actually, it is possible to see it fly over, but it is a rare sighting because the satellite is in what's called a sun-synchronous orbit. That means it is in sync with the sun. It flies across the equator when it's flying from south to north at 6 O'clock at night, local time. By the time it goes by Puget Sound here, it's twilight. It's usually cloudy. The only time you're going to see it is in the middle of the winter within one or two weeks of either side of the winter solstice December 21st. You might have a chance of seeing it. It flies over around 5:30 at night on Fridays.

05:31 **Host:** How many times have you seen it?

05:32 **Dr. Lagerloef:** About three or four times. It's a lot of fun. It's a real thrill to see it.