

## AirSpace Season 2, Bonus

### Bonus Breifing

Nick:

This is a quick AirSpace briefing. I'm Nick.

Emily:

I'm Emily.

Matt:

And I'm Matt.

Nick:

So the big news in space this week was going to be the first all-women spacewalk from the astronauts, to the ground controllers, everyone involved for the very first time and that looks like it's not going to happen now.

Matt:

What has changed? NASA is still doing the spacewalk, but it will no longer be the all-women spacewalk that was planned. We're going to try and figure out what's going on with the information that's been released so far.

Recent update, according to Bob Jacobs on Twitter, Anne McClain decided not to do the EVA, having first thought that she could wear the larger suit. It turned out they couldn't get a another medium top ready by the Friday planned spacewalk.

Nick:

Now, what do you mean by medium top?

Matt:

Well, those spacesuits have different components, different garments that then all come together in multiple layers and multiple pieces to form the whole EVA suit. It's kind of like Voltron coming together. Right?

Nick:

What my friend, the historian of technology, is not saying is, it's the shirt. It's the shirt of the spacesuit.

Matt:

Yeah, exactly. It is the shirt of the spacesuit. Yeah.

Nick:

And EVA is not to be taken lightly.

Emily:

EVA is Extravehicular Activity.

Matt:

Exactly. Yeah. So anytime that an astronaut is outside of the protection of the vehicle or the space station, they are on an EVA.

Nick:

Something that NASA has been doing for 50 years or more now, but the thing that was going to be special about this one as originally scheduled, is that Christina Cook and Anne McClain were going to be the total EVA crew, which meant that for the first time it would be all women conducting it.

Emily:

And if I'm not mistaken, it was also that the people in mission control, or command, or whatever you call that place at Johnson Space Center, the leaders of that aspect of it, the earth based aspect of it, were also women.

Nick:

Mission controllers. Okay. All right.

Matt:

So it was really, truly going to be an all women, EVA, from the ground-based crew to the actual EVA crew.

Nick:

From the ground up-

Matt:

From this ground.

Nick:

... was too good for you?

Emily:

That's pretty unique. When you think of the fraction of engineers who are women, the fraction of astronauts who are women, the fraction of people who work in human exploration are women. The fact that you have this team of women working in this EVA, it was a pretty special thing that everybody I think was really excited to see on Friday.

Matt:

Yeah and I still think it will probably happen in the future, just the scheduling did not work out with the garments they had on hand.

Emily:

And so given more time, they can adjust the EVA suits that they have on the space station in order to accommodate both Anne McClain and Christina Cook, at the exact same time. They just didn't have sufficient time before the scheduled Friday EVA.

Nick:

Right. So what it sounds like is NASA didn't have spacesuits for two women at the same time, but it's not quite as simple as that, right?

Matt:

No, although one does wonder how many large spacesuits they have versus medium on board. If they didn't have another medium that they could have adjusted in time. Right? Because I've never heard of a similar thing, although maybe it does happen with male astronauts as well, for EVA's, but it doesn't make the news.

This was going to be obviously a very significant moment in the history of space since it's never happened before. So it was getting a lot more attention than a usual EVA spacewalk would have been.

Nick:

It's a good reminder that it's complicated up there. You don't want more equipment than you know that you'll necessarily need to use, but also that NASA isn't in the business in the space program, at least for the main is no longer about accomplishing milestones, for the purpose of accomplishing milestones. Racing another space program to be the first EVA and then to fly the first woman in space. Those are not the primary drivers. The important thing was the mission.

Matt:

Yeah, the mission was obviously the priority.

Nick:

Installing batteries in a solar array.

Matt:

Right. And speaking of, you mentioned things change. I mean, one of the things that does change is height, which I think is McClain actually, her height increased by two inches after spending some time in the weightless environment there in space. And so it may have been that she felt like she could fit into that large top and that, that was why the Friday spacewalk was planned in the first place. But then, she found that in fact, when she was out there on her own spacewalk, it wasn't quite doing the trick for her.

Emily:

One of the things that I've been trying to fact check is, as you guys were talking, is that I had heard stories of female astronauts who were unable to do EVA's because they didn't have any spacesuits that were able to fit them.

Matt:

You found other examples?

Emily:

Well, yeah. This is a 2006 article, so this isn't the most recent information, but the spacesuits only come in medium, large and extra large, which is pretty much like all men's sizing at Costco. And if it's a Costco medium, it's enormous and it's not actually like-

Matt:

It's not really a medium.

Nick:

I'm a small otherwise.

Emily:

And so as of 2003, I think it was something like a third of the female astronauts, so eight out of 25 astronauts, actually couldn't fit into the existing suits they had on the space station, which fundamentally meant because they hadn't pre-planned, there's a lot of women astronauts who were missing out on the opportunity to do spacewalks. That's eight out of 25. I mean, at some point, yeah, you don't want extra stuff on the space station, but an EVA suit to fit your astronauts, to allow your astronauts to do their fundamental job, that's not extra stuff. That's fundamental equipment that you need.

Nick:

We also don't build spacesuits now in the way that we used to.

Matt:

It's a lot of parts.

Nick:

That's kind of what happened this time. We talk about the spacesuit top, NASA doesn't buy a spacesuit. NASA buys X number of tops, X number of left gloves, X number of right leg segments, and you build the spacesuits around whoever it is. So it's more modular and therefore more customizable, but not as bespoke as it used to be.

Emily:

And it's still-

Matt:

Good use of the word, bespoke.

Nick:

Thank you.

Emily:

And there's still progress that needs to be made. Right? I mean, one of the stories that I was thinking about was of an astronaut Nancy Currie, who I had a chance to meet in 2000 and something. It was a while ago.

Nick:

In the aughts.

Emily:

And she's five feet tall. She didn't fit into those spacesuits that they had on board, and these spacesuits cost millions of dollars. They're fundamentally little spaceships, right?

Matt:

Right, and they actually can't even be used that many times.

Emily:

Right. The stature of a human should not determine whether or not they are capable of making an EVA. Because it doesn't affect their ability to do the work, and women are typically of slightly smaller statures, in general.

Nick:

The spacesuit parts lying around haven't quite caught up with the realities of the astronaut core, it seems.

Matt:

It sounds like you need to keep a few more medium tops there on the space station.

Emily:

Or start making small spacesuits.

Matt:

Maybe so. Yeah.

Emily:

That's it for this episode of AirSpace. AirSpace is produced by Katie Moyer, Jocelyn Frank, and Lizzie Peabody. Mix by Tarek Fouda. Special thanks to Jason Orfanon and John Barth and Genevieve Sponsler of PRX. Don't forget to follow us on Instagram @airspacepodcast.