Episode 1 - USSC - Nasa Astronaut Sunita L. (Suni) Williams

[00:00:00] We're not supposed to lose any thrusters, so, so when we started losing one or two, they're like, this is not a good situation. So that's the first thing that we did to slow down the situation. Get to a safe spot

from the USS Constitution Museum Leadership Forum veteran NASA astronaut Sunita, Suni Williams joins WBUR journalist. And host of NPRs on Point, Magna Chakrabarti.

In 2024, Williams launched with Barry Butch Wilmore on a flight plan for days that stretched into months while a safe return was engineered. She takes us inside the cockpit to show how leaders decide under pressure, slow the moment, trust the crew, work the plan.[00:01:00]

That was an interesting day. Well, it, it, it is interesting because I think all the things that we wanna know about leadership under pressure, um, happened during that multi-hour. Maneuver. Now, obviously the docking was ultimately successful, but in the process there were some, let's call them anomalies.

Yeah. And again, we're gonna get a little, sort of technically nerdy here to get the, pull it out, the, the leadership questions. So you were the pilot, uh, and um, commander was Butch Wilmore. And there is a period during, uh, sort of midway through, I think roughly the, the docking sequence where we hear from mission control that there was an RCS jet feel, reaction control systems thruster.

What are those and what was it? Was it serious at the time? So, day one when we, after we launched, uh, we do a lot of burns to get to the right place for the next day, which is the really important day where you come up on the docking axis and you're ready to dock to the space [00:02:00] station. So during the, and during that timeframe, we actually had some time to fly the spacecraft, each of us.

So, um, you really fly it from the left seat. So Butch was initially flying the spacecraft and he did some maneuvers. And then I got a chance to get in the left seat and do some maneuvers and it flew wonderfully. The jets on that spacecraft are right sized and it flies like a little sports car when you wanna fly it, it does everything.

You wanna do it and it just like points and it sounds right. So, um, it wasn't a good situation. The public, uh, insofar as what we could hear. 'cause you can watch obviously all, all na what everything that NASA does, they have the live stream. So insofar as what the public hears. I've always admired that everyone's calm.

Oh yeah. But what I wanna know is early on when we first start hearing that, oh, there was this RCS jet fail, there was no action. Something was out of range. So as a safety precaution, yeah, I think some of them shut down. What was your. [00:03:00] First, you know, sort of thought process when this thing that hadn't happened before, right?

On the other docking sequences of the unmanned versions of the starliner happened with us when you were on board. So, you know, let me, let me, sorry. How do you judge the seriousness of a moment like that is really what I want. We we're not supposed to lose any thrusters. So, so when we started losing one or two, they're like, this is not a good situation.

And you know, I have some procedures and I, I'm the systems guy, so it's in front of me, is my book. And I'm looking at all the, the thruster pages and trying to understand what's happening, but is maintaining, you know, an eye on the space station. 'cause that's where we were looking at the space station. So we had a little bit of un uh, verbalized conversation like, this is not going well, this is not going well.

But there's a space station right there. And like the. What I was talking to the guys on the Constitution, we have this thing called norto, no radio procedures. Like if you lost your radio in an airplane, what would you do? Something has to be predictable. So we had these norto procedure, thought process [00:04:00] is, um, if we don't dock to the space station, then we are gonna require these jets to keep us in an attitude so we can come back to Earth and we don't know what is actually happening.

So our nonverbal communication was. We're going there and we both sort of knew that like, hey, they're being ISS we're, yeah, we're going to ISS one way or the other. Even if we don't have communication with the ground and doesn't mean we were gonna dock to ISS right away, we were gonna fly it in to see how controllable this spacecraft was until we got to a certain point.

We didn't even have to talk about it. We were like, this is what we're doing. 'cause we knew the, the, the situation we would've been in if we backed away. Yeah. Okay. So. Yeah. Interesting. So there's nonverbal communication, which

actually was a form of decision making mm-hmm. Between the two of you. Um, who was technically in charge at that moment.

So, um, since we had communications with the ground, the ground is actually in charge. Okay. So the flight director in mission control is in charge until we, we lose calm. So then, then it's butch is in charge. Um, [00:05:00] but there's. He's always told me, and we always feel this way about each other. You have 51% of the vote, you have 51% of the vote.

So, so, you know, we, you know, like we, we had that, that going in, uh, scenario with each other through all the training that we had worked on beforehand. So if anybody didn't like what we were gonna do, we needed to talk about it. And, you know, luckily we're at a point where it's not. Absolutely dynamic. We were, what you mentioned earlier, we, we are outside of a thing called the keep out sphere.

You have to stay outside of 200 meters from the space station and that way you know that you're not gonna hit anything. So we were outside of the keep out sphere when all of this was going on. Um, so we had a moment to actually have the conversation and talk to the folks on the ground. But then it really gets interesting.

Don't chase the why work the what, right in front of you. By time regain options. So then what, I mean, obviously you train for every, so for as many possible scenarios as you [00:06:00] can, but what is it about the training that do you think helps you manage. When anomalies that you haven't trained for actually happened during a mission.

Yeah, so very interesting. So it's foundational skills, right? It's sort of like you're already been tested or you've worked through, particularly with your training team and your mission control team when you have anomalies and how you're gonna handle them. And we already have divisions of labor of what we're supposed, what we're going to do.

Butch had his hands on the controls. I had all the, the systems displays in front of me. I have the book open since his hands are busy and I'm leading him through what we are going to do. And I'm looking for this and I, I, I didn't really have to look 'cause I knew this is not an, an anomaly that we normally have.

But let's talk about what we've lost because. You, you sort of forget about or not forget about, but put aside, you compartmentalize why this is happening. I don't

know why, uh, mission control isn't telling me why they have a lot of data also, so let's deal with what we have right now and make sure we can.

Be. Okay. So you [00:07:00] get to like a, you wanna work on a safe space, until then you have a little bit more time to figure out the answer of why and how you can correct it. Okay. I, I have to say, it didn't occur to me that you didn't know why. Right? Because we're talking about this retrospectively. Uh, and mission control is trying to figure it out.

Well, I want to get to like how they tried that in a minute. How do you manage what a normal person would feel is rising anxiety, not knowing why something. Potentially, I don't wanna say catastrophic, but um. A real wild card comes up. Right. I mean, it's not a happy feeling. So it's, but it's a, you know, one of a little concern, but you gotta, you gotta just sort of put it aside a little bit.

Yeah. Um, you know, we have a, we, we are the two of us. That was it, you know, that we're in that spacecraft that we're actually operating at spacecraft. So, just to go back a little bit, so at about just the technical side. At about 265 meters they told us to take over manually. So Butch is actually flying.

His hands are on the controls, he's [00:08:00] watching the space station. We have little Eyes Vision system that has to look at the space station such that we can rendezvous. There's a system that is called Vesta that we need to be, keep looking at the space station. So he keeps, he has to keep it pointed at the Space Station.

And the reason we did. The manual is because that way we have control. Yeah. If we kept it in automatic or automation, then uh, the automation is gonna go, you've lost this, you've lost this. I'm gonna kick you out, and then you're gonna go away from the space station if you stayed automatic. So that's the first thing that we did to.

Slow down the situation, get to a safe spot. He goes manual, he's flying it, he's holding the controls. We could stop in space relative to the space station. Yeah. We're all, we're all flying around Earth 17,500 miles an hour, but it's formation flying. So if, if the space station here and we're here, we can stop our relative motion and just stay there slowing down the situation.

Yeah, absolutely. That's really interesting. Mm-hmm. Okay. Um. And just, just for, I don't maybe you all [00:09:00] all know this. I, I didn't until re relatively recently. I mean, there was, it's supposed to be able to dock autonomously, which it had done before, right? One time before. Yes. Yeah. Yeah. So, um,

and, but there were built in portions during the docking procedure where you were go, supposed to go manual.

Yes. But this was not one of those plans. This was not one of those. So, so as I was watching, there is this moment where I think you're about 260, 2 65 meters. Away, uh, from ISS and Mission Control says they're gonna do these hot fire tests. Yep. Okay. And so that is the, like individually firing these thrusters that weren't working.

So in individually taking them out of the set and then, um, put firing them and then potentially putting them back in the set. Mm-hmm. Okay. Now I would like to talk about communication and information flow during that. So there, there you're you and which are holding. And, and mission control is saying, okay, well we're gonna, they, he's, he's actually, um, calling out the particular thruster that they're testing.

Right, [00:10:00] right, right. Mm-hmm. Okay. Yep. So can you talk to me about that, like how that was working in terms of keeping the information flow going so that the tests had the greatest chance of success? Yeah. So again, I was talking about the vision system. Yeah. So we had to keep facing the, the, the space station.

So he has, Butch has his hands on controls. I have the systems again, and I'm doing the calm. Between our, uh, flight director or our Capcom capsule communicator sitting right next to the flight director. And in that room, there's all the people who have all the different disciplines and prop, uh, you know, propulsion and guidance, navigation control.

Those are key people as well as Rendezvous, who's monitoring our profile and where we're supposed to be coming in toward the space station. So he's got all that data coming in his ear and, uh, the. Prop and the GNC people say we're shutting that thruster down. Um, and so it's off and butch is flying and then they're like, we are going to hot fire it.

And so then they were like 3, 2, 1. And I'm like, hands off the control. So he, I'm, I'm the middle man here [00:11:00] 'cause he's has his hands on the control so he's not uh, being able to talk 'cause you have to press a button to talk. So I was doing that as well as watching the systems and, and making sure he knew exactly when because his, I, his eyes and his concentration was on staying.

Looking at the space station during, even during the test, right? Well, during the test, so you have to take your hands off the controls. Okay, so he lines up, but

do you have to correct the, yeah, he lines up the, the spacecraft, looking at the space station and then mission control calls. I call him hands off, then I say hands, hands off.

He has to take his hands literally off the controls and the spacecrafts is floating around there and we're hoping it's not gonna float too far away as they shut the thruster down and start it back up again. Clear roles and shared trust. Move teams. Cockpit and ground seeing different parts of the same picture.

We had an extra orbit. So we usually plan for, uh, a docking at a certain time where the sun is behind you. You don't want the sun shining in your face just like you're driving down the road and you don't want to have the sun in your face so you [00:12:00] can't see what's going on. And those vision system needs to be able to see also.

So we, we time the, uh, the docking when the sun is like above and behind us through a, through a timeframe. We don't wanna, also, don't wanna really dock in the dark. Yeah, we can, but it's not optimal. Um, and so we have. Uh, an hour and a half to get around the earth. And so we have one docking window and then a little while later we have a second docking window.

So we skipped the first docking window 'cause we knew it was over. I mean, that was also not really communicated, but we knew like, Hey, we have problems. We're not gonna dock on the first docking window. Yeah, we're gonna have to wait till the second time around to get this all done. Again, sort of nonverbal.

But we've done enough in the simulator that our team is a little bit. Well-oiled machine and can actually understand exactly where we are during those big changes in the trajectory. Yeah. So for those of you who love detail like me, 11:15 AM Central Time was the first docking window on that day. Yeah.

The next one was at 1233. Yep. Yeah. Um, so, [00:13:00] so before we get back to some of the, the sort of the technical things that were happening. Was there a moment or maybe in, in, in training where, um, or how do you manage moments where there's actually disagreement? Between you and your crew member or in a dynamic situation like this?

Uh, we fall back on our training and we trust each other. So I'm, I am serious about the 51% of the vote. So somebody will verbalize, I'll verbalize, Hey, hands off the controls. If he's not ready, he's gonna tell me no. And, and then

we'll wait. And I will convey that to mission control. So it is really in a dynamic situation.

I'm not gonna even ask why. You know, there's no time to ask why dynamic things. If someone says, no, we don't do it. We just wait till the next moment to have a conversation about it. Um, I don't remember. I have to listen to the tapes whether or not I ever told him to hold off or he told me to hold off. Um, but that [00:14:00] communication seemed like it with all of that.

Understood. When pretty well up and down from the spacecraft to earth and in between our seats. But the trust has to be there from the start. The trust has to be there. Yeah. And that, is that something that's intentionally built? During, during training? During training, absolutely. Yeah. Well, I think the way we, we train for these flights, we wouldn't be successful if we didn't trust each other in those scenarios.

I mean, there's definitely times where, uh, in training, um, I'm handling a, an emergency all by myself and he just has to keep his hands on the controls. Like if we have a, a fire or a depress, I'm doing a bunch of things and I'm just calling out. 'cause there might be a switch on his side over there, just turn that switch and he doesn't have time to think about.

Like, hopefully he knows the whole scenario and hopefully I know the whole scenario from him, but it doesn't even matter. Like if I'm telling you to do that, then you just do that. Yeah. Yeah. Okay. And we built that into all of our training and, and our team has exercised us enough that we went into scenarios where, where we're handling multiple emergencies.

And so you just have to trust the other person. Are there [00:15:00] specific, um, tactics or exercises that NASA incorporates into training to help build that trust? Yeah. Or is it simply just training over and over again with people? No, no. I mean, it's a buildup process, right? Yeah. So you handle one, maybe. So the way we do it, like you'll handle one emergency and then you have both have time to, you know, suss it all out.

Um, but then eventually then they'll do another one, the two, and then then three whatever at the same time. And so you, it. Builds up because you know, you've already, the other person has the skillset, so it, it just takes a little time, but you get there. Okay. Yeah. So you just have to do it over and over again.

Yeah. A test of process, not bravado. Okay. So then as you're, you're sort of parked essentially mm-hmm. Relative to ISS at 265 meters and the, these hot

fire tests are being, are happening mm-hmm. Are happening. Um, it was very, very interesting to me that after each one they asked you mission control, asked you if you could see [00:16:00] or hear.

Yeah. The thruster being fired, that they actually relied on your human senses. Oh yeah. Over whatever telemetry information. And I never, I didn't think about it at the time, but, but of course we're in a little can and they're right around us. So yes, you can hear and feel, you know, you can hear, hear it more so than feel it.

'cause it's small thruster. I mean the, the nozzles only this big. They're pretty small. I was just looking at them. Two days ago or whatever last week. Anyway, the nozzle's only this big. Um, so, but you can hear them 'cause you can hear it actually when the valves open. 'cause essentially it's hyperbolic fluid.

So as soon as the valves open, these two fluids come together, make a little explosion and poop. Uh, you know, out goes the thruster. So you can hear that valve opening and that happening. And I didn't realize it at the time, but we had. Um, less thrust. It wasn't it like the way we'd have trained, it's either working or it's not working.

Like there's a clog, right? So it's either working or it's clogged up and it's not working. But we could hear the, the valves move [00:17:00] and what we didn't realize, or some of the thrusters were just degraded. Not, not just, I shouldn't say that they were a lot degraded, but they just were not putting out the amount of thrust that they were supposed to.

So the automatic system was like cutting them off. They were saying, you're not putting out 50%, so we're getting you out. So then that's why some of them were failing. They were still maybe putting out some thrust, but not the whole amount. But it wasn't enough. Yeah, it wasn't enough. And I think ultimately there were what, five that had gone out.

Mm-hmm. Um, and they were able to get, what, four of them? Four back? Back Yep. To fully like optimal working condition. Yep. And, and we have to get to 200 meters, uh, to, to switch back over from manual to, uh, automation. So, so once we got them all, as many as we could back one, absolutely not, uh, then we were able to fly it into 200, 1 95 to 205 meters.

And then automation can take. It back. Now that was a different conversation too, because once we've gone manual, we've done this in the sim before, [00:18:00] in the simulation, before, once you've gone manual, do I really

wanna go back to automation? Is automation causing the problem? And I don't want to have that be my, uh, problem again, particularly as we're getting closer and closer.

200 is that keep out sphere around the space station. So we both were like, eh, I don't know. But mission control was like, yes. We're gonna do this. 'cause the way we see the data, it looks like it'll be fine. The automation is. Not causing the problem, it's the thruster itself. Can you talk more about that though, because we so far have been focusing on the, the teamwork between you and Butch.

Mm-hmm. But obviously, as you said earlier, like there are hundreds, if not thousands of people on the ground mm-hmm. Um, who are part of this whole process as well. Um, when you had that, eh, I don't know, moment. Mm-hmm. I mean, how do you put to rest, um, doubts or concerns about. Decisions being made in Houston?

Yeah, it's the same. I mean, honestly, it's almost the same as the 51% and, but me and Butch are one [00:19:00] entity. They're another entity, right? So they also have 51% of the vote. And we also know that we don't have all the data. There's no way they could display all of the, you know, the ones and zeros in our cockpit displays that the folks on the ground have.

And so they could actually see some of the chamber pressures. Of the thrusters and knew like, okay, um, it's the thruster problem. It's not, it's not the automation problem. Now we have to undo some of the automation and they can do this that says, if you only fire at 50%, I'm gonna kick you out of the set.

Uh, they can undo that. They can say just. Just keep it in the set. Just keep it in the set. So that was part of the process too. We saw them changing some of the automation on the fly as well as doing the hot fire tests. And you're like, wow, these guys are, and I, we knew them. We know them very, very, very well.

They're, they're awesome and they, they know the systems better than we could ever know them. Um, but we have the whole conglomeration of all the systems like the, an [00:20:00] individual propulsion control engineer. Is awesome. They, he knows every single thing about that, but doesn't put it all together. Like Butch and I were putting it together.

Okay. And the flight director. And so we violated some flight rules. 'cause in the flight rules, uh, they said, you know, we have to have dual fault tolerant, which means you can be able to have two failures. And you can still fly. Um,

we were not there in I think a couple axes, uh, but we decided that was okay, we're gonna take it in, in, uh, to dock as what with what we had.

So, so, so our plan just to, you know, yeah. Just to back up two seconds here, two is like. We, we had decided what we would do is go into 10 meters when you're, you're inside the Kipa sphere, which is a little bit dangerous 'cause you're really close to the space station and it's huge. It's a football field.

That's how big, how big this thing is. And so you're driving this capsule, which is about as big as this stage in, into the, into that football field. So you, you can get whacked with it, with the solar arrays and stuff if you're outta control. So our thought process. [00:21:00] Uh, had we lost calm and also the team on the ground had the same thought process.

We're gonna drive this guy into 10 meters and just hold there and make sure that everything feels as good as it can be. Just in case we had to fly manual and dock to the space station, we have to wait there anyway because the docking system has to, uh, align itself and, uh, send some commands to make sure that the docking system, which connects us.

Is working. Okay. Yeah. So the whole thought process from everybody was, let's get to 10 meters and see what happens if we're, if we can't ma, you know, manage flying this, we're, we're backing out right away. Oh, okay. Yep. Okay. Mm-hmm. Now, of course, given, um, NASA's history, which is full of successes, but also the most, some of the most high profile, dramatic, dramatic failures.

Failures. Mm-hmm. Um, you know, you could look at. We in the media tend to look at everything in a negative light. Um, so I know like when, when NASA first announced that the, the reason why you were staying was because they deemed it. Not safe for the astronauts to come back when they didn't fully have a [00:22:00] handle on why these failures happened.

Now, in, in, in the media and the public conversation, it was like, oh, massive failure from nasa, also, Boeing's on the line, et cetera, et cetera. But isn't there another way to look at this? Oh, absolutely. Right. And, and so far that this whole sequence that we just talked about was one of success in the face of possible failure.

Oh, AB absolutely could have gone a, a DA totally different way, and then it would've been, I think, what we would all call a failure. I don't necessarily call

it a failure. I thi I feel like it's a very big learning experience. Uh, we did some things that were. Not, uh, the way those thrusters had been flown before.

We learned that, uh, as a result of this incident, we learned, uh, you know, exactly how they're made, what small little things causes heating for the Teflon. You know, there's, there's a lot of questions that. Uh, were answered because of this, uh, flight, which they could have not had those problems in a couple different scenarios, and then they could have found those failures later and it could have been [00:23:00] much more dramatic and much more, uh, consequential.

Right. So I think this was a really. A great event in that regard, but we, we just sort of ran outta time because the space station program has to have a rotating crew, uh, come up and another one come down at a certain time based on negotiations and food and clothes and all that kind of stuff. So, um, we just, we actually just ran out of time by September, and so we had to make.

They had to make the call genuinely. Um, how, how did you feel when it was decided that you guys were gonna be up there for longer? Well, we were listening to the, the data as it was coming in. We were, you know, I, you know, right from the get go, I was a little bit happy. I know, I was gonna say, you know, a lot of people were like, oh, you're smiling.

It was just because I love being in space. I love the space station and there's so many great things and fun things that we're doing up there and, you know, it's just fun to be part of a team when they're doing, when they're really doing. Good stuff. And I would've been a little, I mean, just my own selfish self, a little sad to [00:24:00] come home, but very happy for the program if we actually got the space direct craft to come home.

But I was happy to stay just because, you know, this is a great place to live and work. Right. Um, as the summer went on and we were listening to the testing, uh, 'cause we were involved with it. Like, not that we were doing anything, but we were able, they were able to. Uh, dial us in, you know, good thing for Zoom and other, other activities that we're able to listen into the ground conversations, you know, we still had some questions ourselves and we had those conversations, you know, offline, like, Hey, what questions were they?

Um, so, so we had questions, uh, like. We're testing a thruster. How about if we test the whole package of thrusters, the way they're mounted on the spacecraft? It's just like you're testing one part of your engine of your car, but it's not encapsulated in your whole car. So is that really gonna work the same way?

So the initial conditions and how the whole, um, how the spacecraft operates, is that contributing to the problem that we're having? And it was so, um, so we didn't get [00:25:00] to the point where we were testing it like it was actually being. Flown entirely. We tested only a single thruster and so it, I think the writing on the wall was getting clearer and clearer to me and Butch up there.

Like they have a lot of splaining to do, Lucy before we get on that spacecraft. Um, but in the meantime, you know, we used it as a safe haven. Because it was a little bit sick spacecraft, but it was still our way to go home when we had all the people up there. And so it, that was a consideration in the back of our minds, like, if something goes wrong with the space station, we are going to go in that spacecraft and come home.

So you, you know, we're all, we're weighing all the risks here. Also, it's a, it's a risk to the bigger, bigger group than just me and Butch. Right? Yeah. It's a risk to the whole space station. What are we going to, what do we do? We'll have to go home in that spacecraft. All of you? No, just me and Butch. Just you and Butch.

Okay. Yeah. Not all of us. No, no, no. I might be confusing the subject here a little bit, but I think there was some contention and some debate on the ground [00:26:00] also, like what is the safest thing for the whole International Space Station program? Do we put those two in that spacecraft and send them home, or do we keep them up on the space station and then we don't really have a great way for them to get home?

Yeah. So then what do we do? So we actually had seats that were made out of essentially styrofoam or, or foam, um, on the Dragon capsule. 'cause we didn't have enough seats. Once Starliner left, we were, we were taking that risk that we didn't, we didn't have a space suit. We didn't have a seat. We were strapping ourselves into essentially styrofoam on the, on the floor of the dragon.

For reentry? Yeah. For, oh my God. So that happened, that was like that for a couple weeks. Until our spacecraft came up and we had seats. And so that's, that's what I'm saying is like, there was a lot of debate. There's a lot of debate and you have to look at all these sides of the picture. And I, you know, I, I pitied the poor people who have to actually make the ultimate call about what we're gonna do.

'cause you know, they have to explain that to, you know, our family and our friends. [00:27:00] About what the situation they're putting us in. You know, there, there's the decision made between sort of the, the nucleus team, then

there's the broader team on ISS, and then of course there's nasa, the public. The public, yeah.

NASA as a whole. Yeah. And your families. Yeah, I, I mean, I can, I can definitely understand how, um. An unexpected 200 plus day absence from family and friends is challenging, but part of me is still that stargazing kid who was like, that would've been so awesome. It is nice to get away from your family and friends.

No, it's like, no. It's like you get to spend that much more time on the international space space. I miss my dog. What I've heard here. To tonight is so interesting to me because obviously there's, there's practice, there's building trust, uh, there's sort of healthy debate leading to ultimately we hope, um, decision making that's not inflected by emotion.

Right. Yeah. E exactly. And it, and um, I think we all knew there was a lot of motion flying last summer, um, with all of this and all of last year, which is a little bit [00:28:00] crazy too 'cause the decision had already been made. So that seemed weird to me and Butch. 'cause we're already, we're there, right? So there's, there's, let's move on with all of that too.

So yeah, I think there's lots of levels of decision making and at some point in time, you know, just to go back to that one, uh, point that I was making about being in that other spacecraft. You have to realize where your your place is in it. All right? What is, what is our, what is our greater purpose? And I think, you know, being in the Navy, uh, that foundation sort of gave me that idea, like you're just, you're one part of it.

And knowing that, like I'm a helicopter pilot, I do logistics and I deliver people and mail and all that kind of stuff. You know, everything from eggs to bombs. Um, but then there's the other people who are doing other things. Uh, and I'm supporting them and there's, then there's, you know, they another service the guy on the ground and you're supporting them.

So, um, I think that was the benefit that me and Butch had. We were both Navy guys. Mm-hmm. So we have lived in a world where [00:29:00] you, like, I'm just one piece of this. And I have to, uh, be part of the bigger team that's getting the mission done and the job done. And so we have opinions, of course, we are knowledgeable, but then at some point in time, you have to let the people who have the biggest picture make the call.

That is such a good point, right? Because being in the, in the services you are naturally, I, I'd say hopefully Imbu imbued with this sense of purpose. Mm-hmm. Right. Which sounds like it was really key in terms of. Um, the various forms of leadership Absolutely. That were needed to handle this situation. Um, I, I wonder what has being an astronaut, uh, and this part of your career, which came of course, as you said, after your naval service, um, like what are some of.

The experiences that you've had that have, that have changed you, that will, that will stay with you, that have maybe altered your, your perspective, not just on, on yourself, but your fellow human beings? Yeah, I, I mean, I think I'm very fortunate. I've had some three really great missions and a lot of, a lot of [00:30:00] folks, particularly in the shuttle timeframe, sort of did the same thing over and over.

Not that every time it's different and new, but I, I mean it had some very different space flights and I think there, the reason, um, I. Felt very comfortable 'cause uh, I learned so much from each of them. My first one, um, I, we were only up there with three people. And actually the second part of it, I was up there as an American with two Russians.

And that, that was really to me, like one of the momentous. Times I was like, oh crap, I'm in, I, I could really screw this part up. You know, like, like I have no one to fall back on. Well, mission control of course, but nobody up there. Um, because I was up there with an American and he left and then I was like, uhoh, now it's just me.

Um, so that really felt the, the lot of weight on my shoulders on that first mission. Um, but I think that set me up to do the next one, which was great. I was the pilot on a Russian Soyuz and felt super confident to be able to get over there and speak Russian and be very. Tuned with how this spacecraft works, um, be the guy to start the engines start, you know, [00:31:00] shut down the engines.

Um, felt very confident about that and I think that's what led me and, and my military and test background to me and Butch both to, uh, be the first testers of this. Spacecraft, which I was pinching myself. I'm like, are you kidding me? This is like the, you know, test pilot's dream come true that you have all these opportunities.

And so just when I think about it, I think about how much growth potential everybody has. You know, take one step, then try something new, and then try something new and you know, you, you'll just surprise yourself of what really

great things you can do when you. Push yourself a little bit. Um, being an astronaut and being in space, I mean, it's incredible.

I love it. I wanted to go back. I wanted to stay 'cause I wanted to have the moment to be able to look out the window. I wanted to have a moment that I could write, um, emails to my family and friends, to like take them on the journey with me. 'cause not everybody gets to do it right. So, to say the least. So I, I wanted to really share that.

And that's. [00:32:00] That was the part about long duration missions or staying up in space, which was so rewarding to me. Um, I got to send pictures, I got to explain what was going on, and it was, it was just really neat. And it, I mean, the biggest perspective, uh, coming from this mission at the end, and I was mentioning to a couple people over at the cocktail hour, so if I'm repeating myself, I apologize, but people are nice.

People are good. We care. I mean, that was what I got out of this mission.

Preparation is respect, trust is earned. Calm is a practice choice and shows up in the human details.

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