

NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT
EDITED ORAL HISTORY TRANSCRIPT

MARK S. GEYER
INTERVIEWED BY JENNIFER ROSS-NAZZAL
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ROSS-NAZZAL: Today is June 19th, 2018. This interview with Mark Geyer is being conducted at the Johnson Space Center for the JSC Oral History Project. The interviewer is Jennifer Ross-Nazzal, assisted by Sandra Johnson. Thanks again for taking time. We know that you are extremely busy as our new Center Director. I wanted to ask when you were approached about taking this position, and who approached you.

GEYER: Actually [JSC Center Director] Ellen [Ochoa] announced she was retiring. I went to Washington in October to help [Associate Administrator for Human Exploration and Operations] Bill [William H.] Gerstenmaier out, to be his Deputy. I went in October, and in that time I knew that Ellen was likely to retire in May, because her youngest was graduating from high school. I knew that was likely to happen, but I didn't know when they would decide.

I went up there with the intent to stay up there, depending on how it went. That was a great job. We can talk about that too, another time. That was a great job, I learned a lot, and at the time I thought I would stay up there actually. But Ellen announced she was going to retire. Then [Acting NASA Administrator] Robert [M. Lightfoot, Jr.] said, "Hey, everybody, if you're interested put in a statement of interest and a resume." Then he'll have a panel. I did that, I think that was in March. March 5th, I think, was the due date.

They had a panel, but the panel didn't happen till April. It was an interesting panel, because Robert was not on the panel; it was three other people. I realized at that time I had never

interviewed with a panel before that didn't have the selecting official on it, ever, in my entire 28 years, so that was interesting, just an aside. Then they didn't call me for over two and a half weeks. Really it was two and a half weeks.

I'd had conversations with Robert in between about what my preference was and what his preference was. At the time we talked about that, [he thought] the job up there was so important that they might rather I did that. I was torn. It's a great job, but this would be a cool job too, and I wouldn't have to move. So I was torn. Then Robert and the panel and Ellen and Gerstenmaier met while all of them were out at the Space Symposium, so this is how late it was. They decided that it would be better for the Agency if I came here, although it would be hard for Bill.

Robert called me on a Tuesday afternoon. By this time I was sure I wasn't going to get the job. It'd been so long, two and a half weeks, and [Deputy Associate Administrator] Krista [Paquin] had told me, "We're going to know Saturday." The interview day, she says, "Tomorrow I'm going to tell Robert what our recommendation is." That was a Saturday. I didn't hear anything for two weeks; I figured I'm on the list you call after they pick somebody else. It's like okay. I was a little disappointed.

He calls me on a Tuesday. "Hey, we want you to do this job." It's like, "Oh, great!" Then Jim [James F.] Bridenstine got confirmed [as NASA Administrator] on a Wednesday. The very next day, I think. So Robert went to talk to him, because you can't pick a Center Director and then go, "Oh, we got a new Administrator." What's the Administrator going to do? He's going to go, "What the hell? Why did you pick this guy, and I'm about to come in?" The timing was just how it happened.

Robert and I met with Jim maybe a week after that. Now we're three and a half weeks since the interview. Jim was great. He's very open. He's learning. He'd been on the job two

days. Robert says, “Hey, we had a panel. This is our recommendation. We think Mark is a great guy, blah blah blah.” Jim listened. Basically he said he needed to think about it, because he was just getting up to speed, and it’s a big job, so I completely understand that.

Waited another week, and then there was some other things he asked me to do, I did those. I think it was another week before he said, “Yes, I’ll give you the job. Will you do the job?” That was great. By that time Ellen had one week left that she was going to be here, so we had about a week to transition really.

We were both in Washington one day. We went to White Sands [Test Facility, Las Cruces, New Mexico] one of those days just because it was good for her to say goodbye and me to say hello to White Sands. So we had about three days to transition. It wasn’t too bad. I knew the Center pretty well, and she and I had talked for a while.

That’s how it went down. It was like, “Well, I don’t know. Yes, that would be cool. It’s an honor to have the job. Well, I don’t know if I got it. Maybe I didn’t get it.”

“Oh, oh, hey, will you take the job? Oh, hang on, we got a new boss; he needs to decide.”

Then he says, “Would you like the job?”

“Oh yes, cool, that would be a cool job.”

In the end when Jim said, “Hey, I want you to go do this,” then it really sunk in, really, what a great job it would be. I don’t like to get my hopes up too much if I’m not sure. Once they said, “Yes, we want you to do it,” then I really got excited about it, because of the people and the work that we do here. It’s a daunting task too because of all the responsibilities that we have to execute.

[In] this position, when you talk about flight readiness the Center Director signs for the risk taker. They sign for the crew; that's a big deal. In a program I've always felt like I thought about crew safety, but now I sign for them, say, "We think we're okay with this." That's different, feels different. It's exciting but daunting.

Then Ellen, I hadn't thought about it before, but when we did the transition at the all-hands [meeting] she said that I was the twelfth Center Director. That kind of gets wow, 12, there's only been 12. I think about the other people that had the job. It's like wow. It's exciting. That's how it went down, piece of cake.

ROSS-NAZZAL: We didn't know all those details.

GEYER: My wife was pretty stressed the whole time. We had talked a lot about if it worked out with Gerstenmaier when I was up there, and if the JSC thing didn't work out or Ellen didn't retire, then I would probably move up there. She knew that was possible. She was ready, not excited but ready. There was no rush. She wouldn't have to move up there right away but stressful still not knowing.

We had this wedding coming up that we just had two weeks ago. All this was going on in the background. When it cleared up and Jim said, "I would like [you to] take the job," then that answered a lot of questions. It made it a lot easier all around.

ROSS-NAZZAL: Sounds like you had a couple of sheets going, pros, cons, both sides.

GEYER: Yes, both would have been great. It was an honor to do either job. Yes, that's how it went down.

ROSS-NAZZAL: You've had a lot of experience here at JSC. You've worked Orion. You worked Station. You were the Deputy Center Director. How do you think all those experiences are going to help you as you serve as Center Director for the premier human spaceflight center at NASA?

GEYER: I think the program experience taught me the importance of schedules and actually flying missions. I learned that in ISS too. That's really what we do here, that's why we're here. The Deputy Center Director job helped me see what it takes to put the people and the capabilities in place so programs can succeed. Programs are very much, "I got my thing. Give me what I need and got to get done." That's not to say that they don't have any long view, but their long view is really about their program. That makes sense. But the Center has got to have a view that says the programs today are successful because somebody in the past put a plan together that made sure we had the people and the experiences ready to support those.

We've got to have the same kind of vision, so we have the people and capabilities for the next program. Sometimes you have to negotiate with programs to say, "This isn't optimal for you, but we need this for this." Same with Flight Ops and those kind of things. I learned a lot of that from the Deputy. You know it, but you don't have to do it until you have to do it then you really learn how that happens. As the Deputy I learned a lot more about working with [NASA] Headquarters [Washington, DC] on Agency things, which again in the program I didn't have to do a lot of that, but as the Deputy there was a lot of interactions with Headquarters. I was

surprised how many. You've got to know how to do that well too, to speak for JSC, and help the Agency. I learned a ton about that.

I know a lot of the people here after 28 years, because I've worked with them in different things. I feel like we have a big challenge coming up, and it's not just flying, but looking at how we do our business differently. I think the benefit is that they know me and trust me. I think I can move them more than maybe other people would be able to do, because they know I've been there and I've done that, and I've been there with them. I think I have a better chance to push them into places that they're not as comfortable, because we've been there together before. You saw in the all-hands that's really where I'm headed. There's a lot of near term stuff. I want to make sure we are ready to fly, but this transform thing is going to be very difficult.

It's important and it's exciting, but it will be a challenge for many. I think I can help do that because I feel like they can talk to me when they're uncomfortable. They know me, so it's not like somebody they think has no idea what they do. I think that helps, I think that helps. We'll see.

ROSS-NAZZAL: Can you talk about the transition? You said you had about a three-day transition with Ellen. What did that involve?

GEYER: She and I were very close, and I always liked working with Ellen. We were in sync very much. She knew that I was torn on what I wanted to pick and Robert was torn. She knew I'd applied.

We actually met a couple times before the selection was made. We'd go to dinner when she was up there for a Washington meeting, and we would just talk about stuff. Here's what

she's seeing, here's what the challenges are going to be. We actually dialogued long before he picked me. In fact, we did enough of that that those three days were more a matter of, "Hey, I got these files, you want them? I'm going to leave the microwave. You want it?"

ROSS-NAZZAL: The important stuff.

GEYER: Yes. "Here's the keys." All these kind of things, which are good to do, but we didn't really have to. We went over some personnel stuff because she'd had the performance reviews, so she gave me a file of things that people had told them about what their plans were for their future, so I had that kind of stuff. A couple of sensitive things she went over. I swear I think we had a two-hour meeting. I have her e-mail and her phone number, so if I had something I know where she lives now in Boise.

ROSS-NAZZAL: Your home turf.

GEYER: It was easy. That was probably one of the best things about them picking me is that the transition was easier probably than anybody else would have been. We'd been working so closely together, we were in sync on things, and I'd just left in October, so it wasn't that long ago.

ROSS-NAZZAL: What are your memories of the first few days of being Center Director? What sort of things were you working on?

GEYER: I was working on that all-hands, what to say and how to say it, and then how I was going to start these initiatives. I had this wedding. I'd been on the job for a week, and then I'm off for a week for this wedding. I was smart enough to know that I needed to be home the week before the wedding, because we had in-laws coming in. Everything went great, but our air conditioner went out. I broke the bathtub. All sorts of things that you know is going to happen. I needed to be home.

I had to be done the Friday before the wedding, and then we had the all-hands the Monday I got back. I knew I wasn't going to do that during that wedding week, so I had to get all that done ahead of time. I read a lot, I talked to a bunch of people, and basically the key thing was getting ready for setting the stage at the all-hands. We had a senior council [meeting] on that Wednesday, after the all-hands, where my leadership was in there and we talked about what I meant, what they heard, how we work this together. I had to be ready for that Monday; I had to be ready for Wednesday.

It was a tough week, because then we had a dissenting opinion on an Orion thing on Friday. I had to really be ready for all those things. I had two press interviews on Tuesday, so it was like okay, bang bang bang. I had to have all that ready so the week was feasible. That's what I was doing that one week I had, was getting ready.

ROSS-NAZZAL: Let's talk about some of those things. You mentioned that JSC wrote the book on how to partner with people, and you said you hoped to turn that into a vision for JSC. I wondered if you could elaborate on what you meant by that.

GEYER: There's two things in that message. One is the future is more of that. The second part is we don't need to be afraid, because we've actually done it a lot. That's what I'm trying to say. I'm also trying to take it up a level. Some outside people, they like to use that commercial word, and they like to use it as a threat against NASA. Commercial partnering is one partnering technique. It's a very important one, but it's one of many. I'm trying to bring it up a level. It's a partnering thing.

NASA has a job to do based on what the policy of the United States is: to lead in space. We have a job to go do that—that's to set the vision, come up with strategies. Those strategies have in the past and will in the future include partnerships. We need to be thinking that way for these new jobs. What are the right partnerships for that job, what are the best ones, what are the ones that help us and help other people to get ahead of it?

I feel like in some ways we get told what to do. This whole Station thing. It needs to end by '25. We get told to do that. That's going to happen. [It's] policy. New people come in, they're going to tell us. But what is our plan? What if they hadn't told us it was '25? What is our long-term plan?

I think JSC can lead in those kind of things, provide Gerstenmaier and Bridenstine options and strategies for that. What is our long-term plan for commercialization? When does it work? When does it not work? What are the rules by which it works? How does that apply to the Moon? I think this place is the only place in the world that's actually implemented a commercial cargo service. We know what worked, and what didn't work. We did it right here.

It's not just Station. It's procurement, it's legal. And Station of course, and FOD [Flight Operations Directorate] and all these places and Orion have done international partnerships.

They work well. Sometimes they're hard, but we know what worked well and what didn't work well more than anywhere in the world.

What I'm saying is we know we don't have to do it all. In fact, we've not done it all in the past, but we've done the important things that we had to do. So let's think about that. Let's bring it up a level. Let's think about that. The United States is leading; partnerships are part of leading. Let's come up with the vision for the parts that we think we can partner with and the parts that we have to own. Let's be clear about that rather than just be told. Then we have to figure it out, then we have to react to it, that's where I'm coming from.

I think there's a little fear here about commercial partnerships, because we're not getting in front of the vision. I feel like we're being pushed and being told, when in fact we've implemented things like that. That's really it. One, take the fear out of what partnerships are, and get back to, "We're not afraid of partnerships. We've done them. Here's the part that we need to hold on to today. Here's the part we can let go of so that we can multiply the dollars we've been given to do the missions we're doing." That's really what that's about. I think we can do a better job of providing a vision, taking the fear out of it, and then also focusing on the things that we think we've got to hold on to.

ROSS-NAZZAL: What would those things be?

GEYER: That's the hard part, because I think it changes. There's some things that only we do. That's provide the vision. What is the vision about going to the Moon? What are we going to do there? This whole gateway and the [lunar] surface. That's a vision that we've been supporting Bill Gerstenmaier on for a while. That's a good example of this is where we're headed, and

we're going to do these kind of things. Really speaking for the taxpayer, we're the only ones that can do that really. That vision has to have a lot of pieces in it. Why are we doing these things? There's discovery, there's global leadership, there's all these things that are in there, but we provide the vision.

Then there's a part of the job where if you and I as taxpayers, we're asking someone to do a very dangerous job for us, we have an expectation that the government will do some level of risk reasonableness. Even if it's a soldier in a Humvee there's some expectation that DOD [Department of Defense] has done some level of work to say the risks are not ridiculous. Sure, it's a war. But do they have the right machines? Do they have the right flak vests? The same with sending astronauts into space. If we as taxpayers are asking someone to do this, we have an expectation there's a government group that's going to do the due diligence. It's safe enough. That's also one we can never give up. If it wasn't us it would have to be someone in the government, the FAA [Federal Aviation Administration] or somebody. Those are the ones that only we can do.

We also are the only ones who can really pick contracts and assign contracts. Has to be a person that's not a contractor. That's a legal thing. Those are the minimum.

The part about assuring safety is complicated. You have to have enough expertise in spacecraft design to be able to say, "I think this is a safe enough design." There's some level of what people often call a smart buyer. In other words, you're smart enough to know systems that you can make those judgments. That's where it gets hard.

What I'm saying is that's where it gets complicated. If you think about Mercury and Gemini, we didn't build Mercury and Gemini. McDonnell Aircraft built Mercury and Gemini,

but we had a large part in the design because no one knew how to get to space. Max [Maxime A.] Faget and engineering, they had a huge role in the design and actually did a lot of testing.

Now you see SpaceX and Boeing where we don't have as much of a role in the design, because we've been flying people for 50 years, so those companies can get expertise in other places. But we have to have people who understand propulsion and structures enough that they know these guys have it right or they're way off.

Today we're benefiting because those people worked Shuttle or Station or Orion, so they gained that expertise. We're benefiting from that now. What happens in the future if we do more and more where we're partnering with people who are doing the designs themselves? How do our engineering folks stay on the cutting edge? That's an example of this is our job. How do we make sure we can keep doing our job. Those are the biggies.

As part of that, I think to be a smart buyer then you also know where the big levers are in technology, in human research that will enable our missions to go in the future. That technology leadership, funding the right things so that we can do our missions. The big levers to saving us money and time on missions, which structure designs to put money into, which propulsion concepts to put money into. I would say those are the biggies.

You're pushing on a really good point, because I've thought about it to a certain level, and I need the team to go, "Okay, here's the other things." But think about the crew. When you have a government-selected workforce, which is basically the astronauts, you got to have a way to pick them, you got to have a way to train them, you got to have a way to operate. There's a role there for the government too. For the human health and performance I think there's expertise there. This is the other part, and you're catching me now as we're trying to figure out how to talk about it.

ROSS-NAZZAL: That's okay, that's why we wanted to capture this now, and we can go back next year and see how things unfolded.

GEYER: Hopefully we'll have a lot of help. I talked about the vision, but part of the vision is that the government really needs to lead exploration. When I think of exploration, it's not a short-term profit question. It's a long term, "Hey, we don't know what we're going to find, and we're going out there to explore." It could be scientific, it could eventually lead to an economic gain, it could be just global leadership. Companies are not going to do that. They're not going to spend their money to explore with that definition. That's the government.

In that vein, I think if we're exploring with humans then it's the government's job to also be leading this human research. What does it take to put people into space? What are the long duration exposure impacts? That's a government job. That's why we have HRP [Human Research Program] and the Human Health and Performance Directorate. It's unique. It's a unique benefit. That doesn't mean we don't partner with people to do some of that work, but that's our job too. That gives you a sense.

ROSS-NAZZAL: You had mentioned risk. I heard that you had been encouraging senior leadership to go out and read the address that Robert Lightfoot gave about being a risk leader versus being a risk manager. Can you elaborate on why you thought that was important?

GEYER: Yes, you'll notice I didn't talk about that a lot at the all-hands because I want the senior leaders to first of all talk about the concept and then how are we going to address that with the workforce.

The idea that Robert laid out, and I've heard it before but I thought he said it very well, was we'll make these decisions. We've got this mission, Orion. We want to go out past the Moon and eventually on to Mars. We need this system to go do that. So we make a choice on the system that's going to do a risky mission.

As we're going through design though, sometimes we don't balance. We find a risk in the design, and we want to drive it as low as possible. We don't step back and say, "Well, overall this mission is risky. We're doing it because it's part of exploring and discovering and leading the world, so it's worth some level of risk." Sometimes we don't do that. We don't talk about our technical risks in the context of the benefit. We're not doing a real risk-benefit conversation about that. He says we get lost too much in the weeds. I think that's completely true.

This is the thing I need the senior leadership to talk about. I don't want the team to feel like we're saying crew safety does not matter. ... What I want the teams to do is think about this risk-reward conversation, and I want this team to get better at communicating risk up the chain. That's what I want, not just trying to drive the risk low, making design decisions that are very conservative, driving our cost and schedule to the right without that conversation.

We had a good conversation about an Orion thing. I had two things happen. One, I met with the crew. Sorry to divert a little bit, but these are examples of why I see this problem. I met with the crew. This was another thing that happened this first week I was back. I said, "I want to meet with the crew because now I realize that I'm signing for them. I want them to know I

know I'm signing for them, it's a big deal. We need to communicate, so [if] you guys see an issue, crew, you come talk to me." It's not an issue with BK [Brian K. Kelly, Director of Flight Operations]. He's so open. He's got his heart on his sleeve, it's not a problem. But I wanted to let the crew know that I understood my responsibility now.

One of the conversations we started going into was when one of the leaders said, "I look across Commercial Crew and Orion, I don't think we're risk-balanced. I see some things in Commercial Crew, and they're doing great. But I see some higher risk things here. I see us pounding risk flat on Orion. Even though I know the mission is different, I don't think it's balanced."

Our conversation was what is the Center's role in that. I thought it was really good because I think we can, at the Center, have that conversation and bring it to the next level, which is really Gerstenmaier. "I don't think these are the same." It makes sense, especially when you're going up and down; both systems go up and out of the atmosphere and both enter. The entry systems and the launch systems, at least for the things that are equivalent, should be equivalent risk. That was one good conversation, and that tells me here we are in this Orion thing, and I think we've been pounding that one flat for way too long.

Then we had a dissenting opinion on Orion. I'm not a big fan of the dissenting opinion process, but I want to be careful about how we talk about it. I don't want people to say, "Don't dissent. Geyer doesn't want dissent." That's not the case.

It's funny because in Orion we had this thing in the prop [propulsion] system where today the propellant tanks—let's say for fuel, there's two of them, and they're tied together in a serial manner, meaning that one flows to the other and then flows to the engines. Most propulsion implementations do a parallel implementation. In other words, each tank could feed

the engine, one doesn't go through the other. That allows you to isolate things and protects for leaks. In general, parallel implementation is safer.

But the problem is when you're pushing something to the Moon, the delta-V requirements on that system to implement a parallel system with all the valves you have to add is [600] pounds heavier, which takes directly off of the mission you can do, [600] pounds less you can do. We're sending these people out into a dangerous place, so you're doing less mission to add this safety thing.

Everybody says, "Well, we always do parallel." The one time we didn't do parallel was on the Apollo service module. The thing we're talking about in Orion is the Orion service module. I said, "The one mission that was similar. We did not do parallel." Everybody said, "Well, yes, that's true, but we always do parallel." Not really. This is a great example of this mission is different, and those folks in the '60s made hard choices. Seems to me this is the same kind of hard choice. Yes, we're letting go of something. We can't do parallel on this, maybe for the exact same reason that they let go of it, but it's very hard.

You wouldn't believe the amount of money we spent assessing this parallel option, and now this dissent will probably go all the way to Bridenstine. That's where we are today. ... The prop guys agreed with the Program. They think serial is the best option because the other implementation is so complicated and heavy.

But there's people there going, "This is different, and I feel like we're giving it up." Which is okay. This is my struggle. This team spent a bunch of money and now is spending a bunch of time going up the chain. I think we're losing perspective on risk. This is my struggle. I'm pushing it at the senior level to say, "I see this issue." If you talk to all of them they see it [in different ways], but they're not sure what to do. That's why we're going to talk about it, "Okay,

look, we don't want to send the wrong message, we want to send the right message. Things [need to be properly] balanced. We have different missions. Are we really balancing correctly? Is our dissenting process, which is of course the right thing to do, is it causing us to do things that are not helping us?" You think about the time that the team spends on this that they're not doing something else or not focusing on something else.

I'm worried about it but I want to figure out how to talk about it in a positive way. Just like the transform thing where I'm trying to bring it up a level. "Hey, we partner all the time. Don't be afraid about partnering, we partner all the time." How do we talk about this? That's why I didn't mention it. That's the one I didn't mention at the all-hands, because I want to wait until we're ready.

I have a team. I'm forming teams on all these, and the team on risk is going to have a key astronaut and Trish [Patricia A.] Petete from Safety [and Mission Assurance]. Those people are going to be part of that team, and they're going to speak about it, because it needs to come from them. I think we're going to be really good. I think it's the right thing, I think it's a difficult conversation. But that's where we're headed.

ROSS-NAZZAL: Do you think it's because of the accidents that you're afraid of bringing this up, especially with *Columbia* [STS-107], that people are going to say you're squelching conversation?

GEYER: Absolutely. Yes. Then you're not talking about the right thing. Then you're talking about, "Oh, you're not doing what the CAIB [Columbia Accident Investigation Board] said." I don't think that's what they said. I don't even want to get into an argument about the accident or

the report. I'm trying to bring it up a level and say, "Hey, risk balancing is part of what we do, or we would never fly."

One of the things that I worry about too—and this is one I wouldn't talk at an all-hands yet. We're so sensitive to applauding dissenters. "Way to go. You should bring it up," which is true. Bosses can be intimidating. When it's you you go, "I'm not intimidating." But I get it. I've been there. I've sat there with [former Center Director] George [W.S.] Abbey at the end [of the table]. I get it, it's hard. I need to remember that.

But I sometimes feel we applaud that too much, and we don't applaud the folks who have found a really interesting innovative way to do something but add some risk. We don't applaud them as much. In fact, I had a team that found a great way to do the ascent abort test, the structures team, and they found a great way to make sure the loads were reasonable. We saved, I don't know, \$30 million.

I had a dissenting opinion from a [technical expert], and those folks had to defend themselves at three different levels. Here they were, they were making this possible for us. In the end of the meeting I thanked the dissenter, because yes, it does take courage to say what you believe, and I believe that's true. I also thanked these guys and made them stand up and said, "Thanks for finding a good innovative solution." You got to be careful now. We'll all get conservative, we'll stop [flying in space]. That's what worries me.

ROSS-NAZZAL: I think we have time for one more question. I wanted to ask about the other topic you talked about at the all-hands. You had some concern about—I'll call it the wall of flights that we're going to be launching out of Florida.

GEYER: The flight tempo, yes.

ROSS-NAZZAL: Can you talk about that? I know you said you were going to ask senior leadership to look into how JSC can be more prepared. But what are your initial thoughts on how the Center can be ready to move forward on all that activity?

GEYER: There are some specific things we can do. I need to see an integrated plan for the MMTs [Mission Management Teams]. Commercial Crew is going to have an MMT, Orion is going to have an MMT, Station already has an MMT. Station and Commercial Crew's is linked in a way. Those meetings are the easy part. It's just people at a table. That's the easy part. It's not easy, but that's the simple part.

The hard part is how do the organizations get ready to support that meeting. What is the Engineering Director going to do before the MMT? Now he's got three MMTs he's supporting. Are we ready for that? The MMTs have to decide quick. There's a timeline that you have to decide within. Are we ready to support these flight MMTs? I don't think we're ready. I don't think we know how those guys are going to participate. I don't think they have a plan yet for how they're going to get comfortable. How comfortable do they need to be before these meetings? Then there's going to be overlap between all three of them pretty soon.

That's an example to me. It's not about doing Orion's job or Commercial Crew's job. Those guys have a job. It's really the overlaps and the surging. Commercial Crew is about to surge. All this paperwork is coming in. Orion has got stuff to do too. Commercial Crew needs help. Good. Okay. We got to figure out how to do both. Or we got to have a good conversation on what Orion is going to stop doing so Commercial Crew can get done. If we're going to do

that, is everything else at the Center focused on helping make that happen? Are we on our toes so that when we do surge from one and the other we don't hurt the other one so bad? I'm not sure.

Gerst said it really well. He said, "Part of the tempo issue is we're not used to flying. It's been so long. If the launch date is not driving people, then the process drives them. They're more worried about following a process than hey, we're going to launch in two months."

When you have a flight cadence it starts pushing people, but I don't want to wait until we start pushing those launch dates because we can't react quick enough, or we're not ready to make hard choices. What do we do ahead of that? That's what I would say were the big things.

I think some of the mission support people don't see themselves tied to that, but I think they forget how much those guys get involved. Contract changes. How do we go grab people? HR [Human Resources], CFO [Chief Financial Officer] moving money around. We're going to need to do that, so those teams better be ready. They need to be here every day ready to do that work. I don't think we're ready. Part of what this team would do that I'm standing up is one, how to talk about it. Give us some concrete examples and some specific steps that we can do to be ready. That's what I'm asking them to do.

Some of it, like in the senior staff now, we have a picture of the crew that's on board. On the webpage I said, "I want a picture that always shows the crew that's on orbit all the time." Hey, here we go.

Then the problem with Commercial Crew schedules—it's not a problem, but they're very aggressive. It's politically sensitive if you talk about a slip. Not that Orion slips are not politically sensitive. The providers, it's a business case thing for them; it's a little hard for us to show where we think they really are. People don't believe the schedule, so it doesn't drive them

to do stuff. We got to find a way to talk about that differently. If I think SpaceX is really going to fly in December their uncrewed flight, then I want to keep talking about it. “Hey, it’s coming up in December.”

The problem is SpaceX says they’re going to launch in August. No one believes [that]. Boeing does the same thing. That’s part of what I’m struggling with, because when you have a launch date in front of you that you believe is reasonable it’ll force you to start getting into plan. I’ve got to deal with that somehow. That’s an example of, “Oh, how do we talk about that.” Yes, that’s it.

ROSS-NAZZAL: I think this might be a good time for us to stop and you can get ready for your next meeting. Thank you very much for your time today, we appreciate it.

[End of interview]