

NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT

ORAL HISTORY TRANSCRIPT

ELLEN OCHOA
INTERVIEWED BY JENNIFER ROSS-NAZZAL
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ROSS-NAZZAL: Today is May 15th, 2018. This interview with Dr. Ellen Ochoa is being conducted at the Johnson Space Center for the JSC Oral History Project. The interviewer is Jennifer Ross-Nazzal. Thanks again for this final session.

OCHOA: Of course.

ROSS-NAZZAL: I know you're busy trying to wrap up things up and get out of town, but I thought we would just try and capture a few more things before you left. One of those was JSC 2.018. I know you rolled out some new plans, and we talked about all the various iterations. But I thought it might be nice to capture that [version], because as we've talked about in the past, things that are online tend to disappear into the abyss.

OCHOA: Yes. Again I worked with our senior staff to talk about what should we really focus on this year. Of course they're all in some way mission-related, but it's a little bit more about how we do things, not so much what.

The first one is achieve a flight tempo for Orion and Commercial Crew. So this is really about how we approach getting to first flight and getting to certification. We just realized there are a lot of people here who weren't necessarily either around when Shuttle was flying regularly or maybe weren't right in the process of doing it. Those of us who did support Shuttle just know

there's this whole mindset. When you're actually flying and when you're trying to get these missions off regularly, you can't turn things into engineering and research projects. You have to determine pretty quickly what kind of information do I need to get in order to make a decision about whether we can fly with this piece of equipment as is or whether we need to change it, and if so what are the options. You've got to quickly come up with these options and understand the situation and get to a point where a program manager can then make a decision and move on.

When you're in development, you're in a different mindset. You're trying to get the design right. You're trying to understand what testing you need. So we need to make that switch from development to what it's really going to take to operate these vehicles, so we want people to be very conscious of that. As we move toward of course AA [Ascent Abort]-2 but also EM [Exploration Mission]-1 and then eventually EM-2 where crews are on board—EM-1 is that opportunity where, especially since no crew [is] on board, you can really look carefully. There's an issue with some piece of equipment. What really is the risk if we fly without changing anything and are we willing to take that risk in order to continue to move on and get to EM-2 and what would it take. So we want people to focus on getting to those decisions, coming up with options reasonably quickly, understanding that you never get all the data you want.

Same for Commercial Crew. Of course we're in a little bit different situation with Commercial Crew, because you have the two providers who are really supposed to be essentially making the decisions that get you towards certification. In the end NASA needs to sign off and if we're not getting the data that we need, we have to make sure we're communicating that in order to get us to certification. So that was the overall emphasis of the first one.

Then there was an emphasis on ISS [International Space Station] commercialization. Again it's not that we are not working toward commercialization in a wide variety of ways. This

is about accelerating that and making sure that across our technical orgs that support ISS we're also thinking about how we would transition to a point where civil servants aren't actually doing the work that they're doing right now. We've transitioned so that other companies are doing it.

Clearly the ISS Program has been very focused on customers. Of course they also have the commercial resupply services contracts, so we take advantage of companies that have developed these cargo transportation services. We're working on Commercial Crew, so that's another part of it.

Also the ISS Program had a contract last year called REMIS (Research, Engineering, [Mission Integration] Services). Basically it's one of those multiple award contracts where you have a variety of companies, large and small, who can do certain types of services that support the payloads on board. Are they building the payload hardware, are they integrating it, are they providing some of the services that oftentimes we have done or we have been in charge of? Even if we've used a contract, as civil servants we've been in charge of making sure that it happens. Trying to make sure that there are a lot of companies out there that can do that, so that as we go into a post-ISS era people can continue to achieve a lot of really interesting R&D [Research and Development] in space.

Then we've challenged our flight operations organization, our engineering organization to say, "Okay. Think about a transition away from you all doing what you are doing for ISS, and somebody else is either doing it for ISS or they're doing it for some other type of space station. What does that really mean? What does that look like? How should we help with that transformation? How and when do you switch accountability?" Because right now as the civil servants overall in charge, we feel accountable for the success of everything that happens on ISS. So that's another part of JSC 2.018.

Then the third part is really focused on our exploration efforts going forward and on the gateway [Lunar Orbital Platform-Gateway]. Of course the real strategy comes from [NASA] Headquarters [Washington, DC], although a lot of our folks directly support Headquarters in developing that strategy. I also wanted to say, “What else could we be doing here at JSC that helps move that forward, that is going to help overall HEO [Human Exploration and Operations Mission Directorate] and NASA achieve success in gateway? Can we start to delve down into the next layer about what it really means to run and integrate gateway, looking at the possible activities that might happen? Are there other things we should be doing this year that address how you might integrate all these different partners?”

Of course we’re well versed in that through our ISS Program where we bring together NASA Centers, international partners, commercial companies that both have spacecraft as well as payloads. You can see that very same kind of thing happening for gateway where you have all these different variety of partners. But you still need to integrate, need to understand how do you actually help each one of these partners achieve what they want to achieve. In some cases it may not be that closely related to what NASA is using it for, but we still want to enable a variety of different activities. So those are the three efforts really for JSC 2.018.

ROSS-NAZZAL: Sounds like a lot of work. You’ve been in this position now for over five years, and you’ve had quite a few deputies.

OCHOA: I have.

ROSS-NAZZAL: I thought it was interesting. What did you think about that, that you had so many people come in and out of the office? Did you see any drawbacks? Or were there benefits to having so many people in that position?

OCHOA: I think first of all they've all been great people to work with. I didn't anticipate changing six months in, but Steve [Stephen J.] Altemus had a great opportunity to go off and be an entrepreneur in the engineering and space business that he was interested in doing.

When I selected Kirk [A.] Shireman, who at that time was the Deputy Program Manager of ISS, my feeling, and I told him this, was that if there was an opening at some point for the Program Manager I wanted to make sure, if that's what he wanted to do, he would have that opportunity. I didn't want him to think taking Deputy Center Director would take him out of the running at some point in the future for Program Manager. He was my Deputy I think a couple of years, and in fact that's exactly what happened. The Program Manager left, and he put his name in the hat for the ISS Program Manager. Of course with his background he was vastly well qualified for that position and got selected for that position. So that actually happened exactly the way I thought it might, and I think he thought it might. I thought it was important to show other people if you come do this Deputy Center Director position, sure, it could lead into a Center Director position, but it can also lead into other top leadership positions here at JSC or at the Agency. Those are also viable paths, so I think we were able to show that.

Then I was lucky enough that Mark [S.] Geyer accepted to become my Deputy. He'd been Orion Program Manager for a number of years. Again I think it's really good to get folks who have been in programs to come be on the institutional side and vice versa, because you're really then building well-rounded managers, people who really know what it takes across the

whole board to make our programs successful, to make our missions successful. Mark knew everything there is to know about program management but had a fair amount to learn about some of the things here at the Center, particularly in the mission support directorates, how they operate, what their budgets look like, the whole variety of services, and how they work with all of the orgs here and across NASA. He had that opportunity.

Then of course Mark got this opportunity to go do a detail at Headquarters. Even though I hated for him to leave, it was a great opportunity for him to go be Deputy to Bill [William H.] Gerstenmaier. Obviously we're a HEO center, Human Exploration and Ops Center. I felt he could be really really helpful up there and certainly didn't want to hold him back from that great opportunity to be up there. Of course he was up there during a year where there was a lot of transition. They were more broadly trying to understand where the administration wanted to go in exploration and what an exploration campaign might look like, and Mark was right in the thick of that. I think now he's been selected as Center Director and he's coming back, he will bring all that with him and that will make him even more valuable. Everything that he's done, his program experience, his experience as Deputy Center Director, and his experience at Headquarters, will be hugely valuable here at JSC, really makes him the perfect choice.

I've had the opportunity, while he's been on detail, to have a couple of different acting. People who have been part of the Center Director Office either for a long time or at least at some point, Vanessa [E.] Wyche and Melanie [W.] Saunders. They both did a great job for me as well.

ROSS-NAZZAL: One thing that we didn't talk about, and I know it's a sociocultural kind of thing, and that's the book *The Martian*. This is one of the things I was trying to find online. I could

have sworn that there were book clubs here at JSC and that you started encouraging people to actually read that book. I wondered if you would talk a bit about that, why you saw the book as important for people to read, and how it might affect JSC's future.

OCHOA: I read the book, and I found it fascinating. What I really liked about it was that it really captured the operations culture that we have here at NASA. Of course a lot of it was focused on human spaceflight, so here at Johnson Space Center.

A lot of it just sounded so familiar in terms of how you would respond to scenarios and how an actual astronaut stranded on Mars would think about, "What do I need to do to survive, what's the first thing that's going to kill me, what's the next thing, what's the next thing?" That's exactly how we train—trying to understand what are the risks, what are the hazards, how do I prioritize, how do I work through all of these things. Then of course, once he was able to get back in contact with Earth, having the team on Earth work with him, which is exactly what we do in human spaceflight.

And yet, it was projected just enough in the future—and of course we were working on the journey to Mars—that to me it helped bring that future a little bit closer to all of us working on that. Because we could really picture, "This could actually happen." We actually will have humans on Mars in hopefully the not too distant future. You always have to be prepared for anything to happen and things to go wrong and how you would support them. This was just one scenario that an author thought up, but I thought it was just a really good thing for our folks to read about and think about and realize that this is where we're headed, this is what we have to be prepared to do.

I think people in general really enjoyed the book. There's a lot of humor in there as well, so much so that you could almost, with the different characters, think about real people that you knew that were very much like some of these characters. So I think people just really appreciated that. It seemed very real, the responses and the kind of things that people did in that book.

So we had a theme of Mars that year. We brought the author, Andy Weir, here to speak. We tried to do various things highlighting what we are doing on our journey to Mars that year, using at least partly the book as a tie-in. Of course we had a couple of actors from the movie come by as well. Those were all things that I think were fun for our employees but also had a serious purpose in terms of yes, this is what we have to be prepared to do, and this is what we're looking forward to in our future.

ROSS-NAZZAL: I've noticed that you have your own Twitter feed. I wonder if you would talk about social media and why you think it's valuable and important as a Center Director and former astronaut.

OCHOA: Yes. I started it a couple years ago. I was shamed into it by Bob [Robert D.] Cabana, who had one at KSC [Kennedy Space Center, Florida]. I didn't really ever tell him that. He never said something like that to me. Clearly it's a way to communicate—lots of people are on social media and a lot of them are on Twitter.

As I would go around and visit labs around site, I realized I was missing an opportunity if I was the only one seeing it. Occasionally we'd have a JSC photographer come along and maybe there'd be an article internal to our Center about me and the Deputy visiting someplace on site.

But nobody else was hearing about that. So I thought here's this very easy way to communicate, and I'm just not taking advantage of it.

I had my External Relations folks. "OK, tell me what I need to do to start up a Twitter account." They helped me at the very beginning, but I'm the one that has done all the tweets. Nobody else knows exactly what I would want to tweet or say, so that was a ground rule from the beginning, that I was going to be doing all of it. I was just getting advice from them on how exactly to set it up and what I was supposed to do exactly. It gave me a chance as I went around the site to highlight things that we were seeing. Of course I often retweet with or without a comment from the ISS Program Twitter account, Orion, and Commercial Crew, so that all the things that are going on across the programs that we either lead or support are something that I'm amplifying as well.

ROSS-NAZZAL: One of the things that we didn't talk about that you mentioned about at the all-hands were changes in the way JSC communicates. Obviously social media is one of those. Would you talk about the changes that have been implemented under your tenure?

OCHOA: I think our External Relations Office has done a great job in understanding that they have to keep evolving because how people get their information is constantly changing. They've made probably at least two big revamps of all of our communications in the five plus years that I've been Center Director, and certainly been in social media in a big way.

There's really so much to do here, being the home of human spaceflight, so it's not only the accounts from the programs and from the Center itself, but also the astronauts who are on the ISS generally all have Twitter accounts. You're getting that daily, pictures from space, or

something about what they're doing up there, and lots of people really enjoy following those. Of course we've done things like Google Hangouts and Facebook Live events. So it's not just Twitter. It's Facebook and it's Instagram and it's all of these things. Pretty much all of the platforms that have evolved that can bring in audiences we've used.

Then in terms of other internal and external communications, [we are] always trying to look at what sort of information are you trying to get out, who are you trying to reach, why the way we're doing it today isn't really the way we should be doing it. It's much less press releases, and it's really getting the information out in different ways. Most recently they revamped all of our internal communications under the *Roundup* label to just brand it in a way where you could see how they were all connected and then what each one was used for in a little bit different way and made sure that they made them mobile-friendly.

Another thing they did, what was it, about two or three years ago, and again this was in response to shrinking budgets. We used to have—was it a half hour or an hour, I think it was an hour program every week on here's what's going on on ISS. It was just becoming difficult to support with the number of people that we had, so they made it a shorter program and then they developed this other product called *Space to Ground*, which is a two-minute video they put out once a week just narrating in a weekend anchor kind of format of here's what happened on ISS this week. The nice thing about that is it's a two-minute video. You can post it on all the social media. You can make it available to science museums across the country or across the world. It's just a real easy way for people to see what's going on on the International Space Station. So I think they've just done a really good job over the last few years of understanding what the trends are out there and making sure that we're up to date and getting the information out that people want to hear about and in a way that people like to receive.

ROSS-NAZZAL: It's changed significantly since Shuttle.

OCHOA: Yes.

ROSS-NAZZAL: We didn't talk about Flex Friday, and I understand it's the most popular program that you started.

OCHOA: Probably.

ROSS-NAZZAL: You want to talk about that, and what impact that's had on JSC?

OCHOA: There was a group of folks that had put together a proposal and done some of the focus group work on that and how it might work here at JSC real early, I think the first year I was Center Director, and brought it to me. I know people are always looking for flexibility in their schedules. People love to work here. They'll work overtime, they'll work crazy hours to get the work done. It's not about not wanting to come to work or anything like that. People are always looking for flexibility.

One of the things that we wanted to be able to offer was this schedule where you could get every other Friday off, as long as you had 80 hours for a two-week period. Again most people don't have any trouble making that but not everybody at the Center can do it. Of course we have 24/7-hour ops going on on ISS and various other things. Almost every organization has been able to do something. Even organizations where they're like, "Well, we have to staff every

Friday for whatever it is that we do,” they would still say, “Well, we’ll have half people here on one Friday and half on another so that we’re still allowing our people to take some flexibility.”

For a lot of folks, people may be working, but they may be working remotely. They may not be working, because they may have personal things to do. They may be here but are taking the time where there are no meetings to do work where you actually need to concentrate and think. I know I use Flex Fridays when I need to read through things, I need to think about them. I need to write up something, because during a normal day there’s just so many meetings that your time gets broken up and it’s hard to get a big block of time where you can do that. People actually really appreciate that as well. This is a day where I may be at work, I may be working, but it’s a different kind of work than the other days. For all of those reasons I think people have found it very valuable, both personally and professionally, to be able to do that.

Then we’ve been able to save a little bit of money in terms of utilities in buildings. We don’t have all the guard gates manned, so we’ve been able to save a little money also by doing Flex Fridays.

ROSS-NAZZAL: We’ve talked about some of your deputies and yesterday you made an announcement that you would be replaced as Center Director by Mark Geyer. Did you play any role in that decision? Were you asked by the new Administrator [James Frederick “Jim” Bridenstine]?

OCHOA: I was certainly asked by Robert [M.] Lightfoot. He put together a panel that was headed by Krista [C.] Paquin up at Headquarters to interview. He also asked me for input as well as they went through that process. So yes, I did get the chance to make an input.

ROSS-NAZZAL: I was curious about that. One of the things that you had mentioned, and I've heard you mention before, is that as Center Director you have two goals. One is to accomplish the mission today and for tomorrow, and then also to take care of JSC's people. I wonder if you can give an example for each. What's the best illustrative example you can give for those?

OCHOA: Flex Friday is a lot about taking care of your people. You realize that people need flexibility in their lives and also you want to make sure you attract and retain really good people here. If other companies are offering flexible schedules, you want to be the kind of employer where you are offering those kinds of things as well. To me that's about taking care of your people, because people look for that. It's also about focusing on mentoring, focusing on inclusion and innovation, and on appropriate performance feedback and training and development. All those kinds of things I think are about taking care of your people.

Accomplishing the mission, that's the whole reason for our existence here. I think the point I've often tried to make as the Center Director is we have to look at not only today's missions, the programs that we support today, but looking well into the future as well. It's partly about making sure that we continue to get exciting work here, that we have the workforce with the right skills for the future, not just the workforce with skills that we're using today. That we have the right facilities, which is both a combination of we need to get rid of some facilities as well as we may need to either renovate or build new facilities, whatever it is that the mission requires in the future. All of those things really come under the purview of the Center Director, of course always in concert with Headquarters, but those are all the things that end up being part of what we're working on here.

ROSS-NAZZAL: As you look back, is there one thing that you would point to that was your biggest challenge as Center Director?

OCHOA: I don't know. Oh gosh, I think I said in one of the earlier sessions the first year I was here they had the budget sequestration and then they had the government shutdown. I was like, "Really, come on people." So right off the bat we had to deal with some pretty deep budget cuts, and then with the shutdown it was hard to maintain some momentum in the things that we were doing. So just keeping people focused and on track, and what should we really be working on, and what are those highest priorities I think was the focus certainly of the first year. I had started to think about and talk about JSC 2.0, but it was probably really into the second year when it really had a chance to flourish a little bit more, after getting through those couple of big things that happened in 2013.

ROSS-NAZZAL: If you had to point to one thing, do you think that there's something you could say, "This was my most significant accomplishment."

OCHOA: Ask me in 10 years. Because again I don't think so much about me, I think about did I leave the Center in a good place, did I help it move forward, are we well situated to continue to lead human spaceflight well into the future, are we continuing to attract and retain the best people. I think in 10 years we'll be able to look back and say, "Yes, that happened." Or maybe not. I think that's really when you're going to be able to look at that, because a lot of what you're trying to do is build for the future.

ROSS-NAZZAL: Along those same lines, NASA is going to be celebrating its sixtieth anniversary coming up. What do you see JSC accomplishing in the next 60 years?

OCHOA: Oh gosh. It's always hard to look that far out, but I hope we're continuing along the path. So I think we'll have a big role to play in gateway as I talked about, really that integrating Center role that we've played in the past. That will allow a variety of activities on and around the Moon, including NASA astronauts on the Moon. The plan is still to move on to Mars. To me those are the things. I'll go out 20 years maybe instead of 60, because that's a really difficult time. That's really what I see exciting happening in the next 20 years or so.

ROSS-NAZZAL: I wanted to ask you more of a personal question. There's so much focus on your career, really focusing on the fact that you're Hispanic and you're a woman. What are your thoughts on that? Does that ever bother you, or is that something that you're really proud of that you're the first Hispanic woman in space?

OCHOA: I think the important thing is to try to show that here at NASA we want everybody. We want people who are really enthusiastic obviously about space exploration, who have studied math and science. I say that, of course not everybody here is a scientist or an engineer. We have a lot of other kinds of professional people here, but who are interested in supporting space exploration.

You want people of all backgrounds to think, "Hey, someday I could come work for NASA." So if they see me, and if they see a variety of different people, men and women, and

people of different racial backgrounds and ethnic backgrounds, and people who grew up all over the United States, small towns, big towns, every state, went to all different colleges, then it's much easier for them to picture themselves coming here to work for NASA as well. So I think that's why there's been a big focus on my background, because it is different than the other Center Directors here at Johnson Space Center, and it helps send that message that there's not just one kind of person with one kind of background that works here at NASA. It's really quite a diverse workforce.

ROSS-NAZZAL: I just wanted to ask, because you had also brought this up in your last all-hands meeting. It was about an article that you found as you were cleaning out your desk.

OCHOA: Yes, I have it.

ROSS-NAZZAL: That 2006 article about what we love about JSC. I thought that might just be nice for you to end on that note. What do you love about JSC? What are you going to miss?

OCHOA: The things that I read were the ones that really struck me, because I would read them and say, "Well, that's exactly what I love about JSC too," that there's a feeling of family here, that teamwork is really important, that we're all focused on making the mission successful, that we have friends at work, that we come here every day and we're working with our friends. Those are the things I really love about JSC and that's why I picked those particular quotes. Although there was a whole bunch of really good ones in that article. I had a hard time narrowing it down. I think I picked four or something.

ROSS-NAZZAL: I think those were all of my questions. I think we did a thorough job capturing your tenure.

OCHOA: All right, thank you.

ROSS-NAZZAL: But I wasn't sure if there was anything else you might [want to talk about].

OCHOA: Oh gosh, I don't know, I can't even remember what I talked about in all of our sessions. I don't know. I'm sure there are things I should be mentioning that I haven't thought of.

ROSS-NAZZAL: Maybe we'll come up to Boise. It'd be a good excuse. Thank you very much for your time.

OCHOA: You're welcome.

[End of interview]