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ORAL HISTORY 2 TRANSCRIPT

ELLEN OCHOA
INTERVIEWED BY JENNIFER ROSS-NAZZAL
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ROSS-NAZZAL: Today is August 16th, 2012. This interview with Dr. Ellen Ochoa is being conducted in Houston, Texas, for the JSC Oral History Project. The interviewer is Jennifer Ross-Nazzal, assisted by Rebecca Wright. Thanks again for taking some time out of your schedule today.

OCHOA: You're welcome.

ROSS-NAZZAL: We appreciate it. After we met on Tuesday I wondered, when did things return to normal after the accident or did they for you. Did you consider there to be a point of normalcy?

OCHOA: Well, there was certainly a point where the number of hours I was putting in the office got back to a little bit more of a normal schedule. I don't know that I could tell you right off how long that took. Several weeks at least, probably a few months. In terms of how I spent the time on my job, clearly we were very focused for the next two and a half years really, up until return to flight. Once we had a good idea of what actually caused the accident of now trying to lay out the whole approach of what it would take to get back to flight. Obviously the Shuttle program is in charge of that.

You have weekly Shuttle Program Requirements Control Board meetings, PRCBs. Every week in general there were some pretty important topics that would be about approving or not approving something that would need to be done related to return to flight. So there was a big effort within the Astronaut Office to develop a crew office opinion about certain things, which then I would need to represent at this meeting, because I was generally the flight crew rep at those meetings.

A lot of times you would just struggle and struggle with a particular decision, because you were concerned that if it was something you said, "oh, we don't absolutely need this," you usually didn't have as much information as you'd like about what real risk you were putting the crew under. So there was lots of discussion among all different groups about what it was really going to take to get back to flight. That went on for quite a while.

ROSS-NAZZAL: Can you give some examples of some of those discussions that you had about certain procedures or equipment, training, things like that?

OCHOA: Well, a lot of it was what exact processes would need to change in terms of the external tank and what types of foam would need to be redone or reworked or have different processes done. Then there were all kinds of other technical issues with the Shuttle, especially since we weren't flying, that people were concerned about.

There were new ones that would come up all the time. There were issues with these engine BSTRA [Ball Strut Tie Rod Assembly] balls, which was a big issue that had come up shortly before *Columbia* [STS-107]. I think as people went back and looked at it they realized that was something we really didn't fully run to ground. We needed to do more testing on that.

Then a lot of it was not just what changes needed to be done to the vehicle or to our processes but it was how were we going to determine in flight whether we had any damage on ascent and how were we going to make a determination about whether the vehicle was safe to reenter.

We had a lot of different concepts for how you would inspect the vehicle. If you needed to make a repair to tile or you needed to make a repair to RCC [Reinforced Carbon-Carbon] could we do it, how would we do it, different methods. That was a big portion of it as well. Of course we eventually came up with the Orbiter Boom Sensor System that we use for inspection. We had these—I don't know what you would call them—pieces of essentially RCC that you might somehow attach to the leading edge of the wing, if there was damage there. Then we had this goo that you might spray into tiles. There continued to be discussion even after return to flight about so even if you went out and did one of these repairs, what would it really take for you to feel comfortable that the repair was sufficient for you to actually reenter.

ROSS-NAZZAL: Sounds like you did a lot of work with folks from MOD [Mission Operations Directorate], Engineering, Shuttle program. Were you also working with Marshall [Space Flight Center, Huntsville, Alabama] as well? Or was that pretty much Shuttle?

OCHOA: Within Flight Crew Ops Directorate and the Astronaut Office we always had a rep that worked with the Marshall projects. So generally we would get information from that person a little bit. So I wouldn't say I worked directly necessarily with them. Obviously the managers of the Marshall products reported up to the Shuttle Program Manager, but we would sometimes get information again through the Astronaut Office and through reps that we had at Marshall about what they were doing.

ROSS-NAZZAL: How did you come to a consensus on so many of these issues? Having been a former flight crew member yourself deciding whether or not this was a risk you would be willing to take?

OCHOA: We would get two or three folks from the Astronaut Office that would come over. Before every PRCB they'd go through everything on the agenda and talk about what data they'd collected, where they felt they were. It was usually the Branch Chief of the Shuttle Branch within the Astronaut Office, a safety rep, maybe usually a couple support engineers. Then I'd always ask the question. "What are the safety folks going to say about this at the PRCB? What position?" A lot of times you'd be up till 6:00 at night before the PRCB and they'd say, "Well, safety hasn't come up with their position yet." So everybody would be pulling it together the night before.

So I'd usually ask about what the safety rep folks, about what the engineering folks were thinking, and what they were planning to come in and say the next day. MOD, where it affected them. You'd try to understand well, separately all these groups were talking about the same thing, what conclusions were they coming to, and factor that in as well.

ROSS-NAZZAL: Were there any—I don't want to say turf wars. But did people butt heads over—

OCHOA: Absolutely, all the time every week, you bet. Rarely was there a consensus. So yes, those were very interesting meetings.

ROSS-NAZZAL: I can imagine.

OCHOA: In the end the Shuttle Program Manager makes the call. Yes it's a tough job.

ROSS-NAZZAL: Yes, that is a tough job. Were you involved at all in the decision about who was going to fly that return to flight mission?

OCHOA: Well, in terms of crew assignments the Chief of the Astronaut Office is really the one that puts that together, but then the chief brings it to FCOD [Flight Crew Operations Directorate] for approval. So we would certainly talk over that. It's rare that we would then go back and say, "We don't like your choice, go back." Oftentimes, prior to the CB [Astronaut Office] Chief actually coming with a definite "here's a flight assignment," they might come earlier in the process. They'd be looking at the next few flights and just talk through, "Here's the requirements for these missions, here's what we're thinking a little bit, here's what we're looking for, here's a couple issues we're working."

So honestly if you had a question about how they were approaching it you generally had that opportunity a little bit earlier rather than them coming to you with, "Here's my final flight assignment that I'd like you to approve." But yes we do approve them. Then we take them up to the Center Director level for approval.

For a Shuttle crew that's generally where the approvals end and then you notify [NASA] Headquarters [Washington, DC]. If it's an ISS [International Space Station] crew then it has to go through the Multilateral Crew Operations Panel so that all of the other countries involved in ISS now are approving a multinational crew.

ROSS-NAZZAL: It's a lot of layers to that decision. Tell us about Eileen [M. Collins] and why the decision was made to select her as the commander of the mission.

OCHOA: I don't remember who all they were considering. They were looking at people who were—I wouldn't say there was exactly a line. Clearly there's a certain number of people who are eligible to be commanders, and you look at a bit who's next in line. In other words once you come back from flight you're not going to be the next person assigned. They're going to look at other people who have the right qualifications. So usually there's only a handful that you say they're the next ones up. They have the right qualifications. We feel very comfortable. They'll look at the next usually two or three in succession and try to put together crews. You look at also who the pilot might be. In general most crews are a mix of veterans and rookies. You look at obviously things like what are the EVA [Extravehicular Activity] requirements, what are the robotics requirements. You put that all together.

They try to look at the other jobs that the commander and pilot may need to do, beyond commanding and piloting, in terms of supporting the major roles. One or more of them might need to be a robotics operator. So you also look at these other types of certifications. So you have to, among the crew members, make sure that you have all the roles and backups fulfilled. So you look at how they've done in lots of different areas.

ROSS-NAZZAL: Did you take any time to look at what had been done after *Challenger* [accident, STS-51L] as you were working through this process? Or were you just so engulfed in what had happened with the accident that *Challenger* was just something that had happened in the past.

OCHOA: I actually remember on the day of the accident pulling out the post-*Challenger* report and trying to think through okay, they're probably going to put together an independent commission. What are we going to be asked to support in terms of that? So it was partly what should we be prepared for in terms of support from FCOD to support the accident investigation. So that was the first thing I was looking at.

Then I think there were other points at which you were certainly trying to understand based on what happened there where we might be headed.

ROSS-NAZZAL: You had also mentioned the other day that you had gone to hear the President, [George W. Bush], give his speech for the new Vision for Space Exploration and that caused a domino effect for your office and the Shuttle program and Station in terms of the number of flights that you would be able to have. Will you talk about the role that you played in that effort?

OCHOA: Well, again we were supporting in general the Shuttle and the ISS programs as they went to replan all their efforts. So there's a certain part of that that pretty heavily involves crew input. So a lot of times that's again through various astronauts in the Astronaut Office. We have a Station Branch. We have a Shuttle Branch. So we use those folks to work within the programs, to be on their replan teams and to provide that crew interface. Then generally once it was at a point where it would get up to a control board level that's when we would be involved to say well here's how we think you should proceed in a particular area on a particular topic.

Again I was looking through my notebook. It wasn't very long before they decided to go to two-person crews, and they worked to talk about what sort of astronaut do we really need.

Wanted somebody who had flown before. Also they were looking at, for the first at least one or two people, what size EVA torso do we have on board. We need somebody that can fit into that, because we don't know when we can get up another one. Medical requirements of course are different from the Station and Shuttle. I think they wanted somebody who had already had at least some left seat Soyuz training. There was only two or three names. Pretty soon they went forward with the next I think three ISS crews. One American, one Russian. We got approval again with Russia as well on those fairly quickly, because that was changing. People had to absolutely go into training for those or redo training if they were already in training for some increment. They were now going to have to focus on different things.

So that had to be done pretty quickly. Again that primarily gets worked within the Astronaut Office with approval at the FCOD level.

ROSS-NAZZAL: Talk about working with the Russians in that position as Deputy Director. What was your role?

OCHOA: I did not do much interaction with the Russians at that point. I had done a lot several years earlier when I was Chief of the ISS Branch in the Astronaut Office. That was while we were just starting to build hardware, so long before anything was flown. I would go over to Russia and participate in technical interchange meetings and try to develop operations protocols and things like that.

As deputy that job was really done by the director. I did go over for a couple of the launches and landings—a couple launches, probably two or three landings. When I became Director of FCOD then I became the NASA rep on the Multilateral Crew Operations Panel,

which is again the heads of essentially the crew offices of all the participating agencies. Those are the ones that get together to decide how do you select crews and then actually selecting and approving crews, the multinational crews. All about what goes into who gets on what increment. So at that point I did take over that role.

ROSS-NAZZAL: Talk to us about preparing finally, once you knew you were going to fly the return to flight mission. Not you, but NASA.

OCHOA: We, NASA.

ROSS-NAZZAL: But really preparing for that. Had training changed? You mentioned that processes and procedures had changed. But were there other changes that occurred as a result, a domino effect, because of the accident?

OCHOA: Well, there were certainly new procedures on board that had to be trained to, particularly having to do with the inspection as I mentioned. But again that was primarily worked through MOD because they're in charge of training essentially.

So I guess what I would say was somewhat—I don't know if I would say different but strengthened a little bit was there was a whole report obviously, the CAIB [*Columbia* Accident Investigation Board] report, that came up with a lot of different recommendations. A lot of them had to do with how does the MMT [mission management] team get certified, and how do you ensure that the safety organization has a strong and independent voice, strengthening the systems

engineering and integration role within the Shuttle program. So that to some degree impacted what we did too.

Again generally the Director or Deputy of the FCOD is the crew rep on the mission management team. So we participated in a new process to be trained and certified to be a member of that team, which previously we didn't really have that. So we went through different types of training, and we did a lot more sims [simulations] as we prepared for that of the mission management team. Obviously there had always been lots of crew and MCC [Mission Control Center] training, but this was really making sure the MMT was part of the simulation and training for all of that.

Then it was obviously important to us that we did have a strong safety organization associated with the Shuttle program and that they had a knowledgeable and a respected voice at the table. I know it was really important for us to always be checking with them about, again, all these decisions that were being made and particularly as we would get close to flight or final go/no gos that they were an important part of the process.

ROSS-NAZZAL: Take us back to three or four months before STS-114. What were you looking at in terms of being able to say yes, the flight crew is ready to fly? What did you need to hear from say the orbiter project, the external tank, and all the other hardware components?

OCHOA: Well, there was just a long list of items that we were all tracking. We were primarily again doing that through the PRCB. So every week is where you were seeing where you were on everything that needed to be ready. Then there's a certain amount that just gets transferred into the ops community. We would track that through the Astronaut Office in terms of is the crew

getting the training it needs, is it on track. They worked that. I would say the process by which that is all tracked really didn't change. It was already a pretty rigorous process. The crew commander works very closely with the training lead to understand all the training that needs to occur and make sure it's going to occur before you actually go fly.

So we would just get the status. Here's where we are on that. That was I would say a pretty well known process in terms of making sure the crew was trained.

ROSS-NAZZAL: Did you go to Florida [Kennedy Space Center], or did you stay here for launch?

OCHOA: By the time we flew Ken [Kenneth D. "Sox"] Bowersox was the director of FCOD, so he was in Florida for the launch and I was in MCC. Of course we had this ECO [Engine Cutoff] sensor issue when we tried to go launch the first time and had to stand down and not launch. So we had a period of close to a month, that whole month of July 2005, where we met every single day on the ECO sensor issue. Literally every single day, sometimes twice a day, weekends. I can remember going into that PRCB room. It was the daily [topic]. Usually there was some other meeting during the day that was associated with that issue too.

At some point people actually had to go off and work it so you had to stop meeting to let people. So we literally met almost every day for a month. There was as lot of crew involvement in terms of do we need to change flight rules. If we see an ECO sensor problem when we go launch again are we comfortable with launching with three or four ECO sensors? What do we change the flight rule to?

So it was another issue that we had to work. We did eventually get a launch I think at the very end of July. Although I'll say it took about two more years before we finally nailed the

ECO sensor, finally found the root cause, and fixed it. In the intervening time there were several launches that had an ECO sensor issue during countdown for which we scrubbed a launch.

That was completely unrelated to the issues that we had worked during return to flight, but that's so typical of the Shuttle program. You work and work issues and then when you actually get to launch day there's something acting up that you've either never heard of—not that we hadn't heard of ECO sensors but it was totally not on your radar screen at all and now everybody gets completely focused on that.

ROSS-NAZZAL: So tell us about those hours after launch. Were people looking at videos?

OCHOA: Oh yes. First of all there was elation that they got into orbit safely but there was a huge amount of—I don't know what word to use. People were very discouraged, maybe horrified, when that large piece of foam came off, because our whole job had been to make sure that we didn't have any large pieces of foam ever come off the orbiter again. In particular this PAL [Protuberance Air Load] ramp that came off was one of these many issues that we had discussed during return to flight. It was one of these ones where people came in with different opinions about whether it absolutely had to be redone or not. Talked about it. In the end the decision was made not to completely redo it. It was probably the largest manual spray piece of foam left on the orbiter. In the end we had made the wrong call.

Now fortunately it didn't lead to a disaster, because it didn't actually impact. But it was very very discouraging for everybody who had worked so hard to think that you can try your hardest and still not always make the right call. So it was another year before we flew again and that was a really difficult time too.

ROSS-NAZZAL: I can imagine, because you didn't fly again until the next July for [STS]-121. So you were working those issues again.

OCHOA: Right.

ROSS-NAZZAL: What else were you working on in between the second return to flight mission?

OCHOA: Also on 114 we had these gap fillers that ended up protruding from the bottom of the orbiter. We had to rework this one EVA so we could go and actually take them out. So we had a long list of items of, "What are things that could potentially be debris?" We had worked through a lot of them in return to flight. But you get down to a certain risk level. Now we were going back and relooking at the list especially after the PAL ramp and after these gap fillers came out to say, "Okay, we have more information now. What do we need to continue to work or go back and relook at?" So it was again trying to really understand what is the risk from anything that could possibly cause debris and how do we minimize that. Always trying to make the call of is it something we should be spending time and money on or is it really a low risk item. So a lot of modeling, in some cases testing still.

ROSS-NAZZAL: How do you make that decision whether or not to spend that money and that effort versus safety? Where do you find that middle ground?

OCHOA: Well, you bring in as much information as you can. You try to understand if you feel like you understand root cause or not, because that helps you. The best analysis that people can bring in in terms of what is the risk and how it stacks up against other risks that you have day in and day out with the orbiter flying. What can you do about it once on orbit? So it's not only the risk of preventing it, but how did we actually feel about our inspection techniques or our ability to remove gap fillers or whatever. So if you were wrong on the front end, can you still do something during flight prior to reentry that gets you in a position where you at least feel comfortable about the crew being safe?

ROSS-NAZZAL: How did you keep morale up during a time when people were so elated that we were flying again but then oh the disappointment that we're not going to fly again for who knows how long until we solve this issue? Again that we thought we had solved. How did you keep morale up?

OCHOA: It's part of I think people really wanted to get us back flying, and so they wanted to work hard at doing that. Again there were a lot of people throughout the directorate who were directly involved in helping that. Then there were a number of people focused, of course, on keeping Station going. We only had two crew on orbit. We didn't really know how long we'd only have two crew, because we had to get back to a point where you were flying pretty regularly to feel comfortable about yes we can get supplies up and then eventually continue on with assembly. Obviously a lot of issues supporting that.

There were a lot of things for people to work on. There were some areas that people would have been working on though that you had to step back because we weren't flying. So I

think it's a lot easier to keep up morale for the people who are busy working the issues. It's harder when you're working in an area that isn't really doing much, because you're not flying. So then you try the big picture. The big picture is we're doing whatever we can to get back to flying and to continue to build the ISS.

ROSS-NAZZAL: Talk to us about Aircraft Ops. You mentioned the other day that you were doing some upgrades with the T-38s.

OCHOA: That was another thing going on during this period of upgrading the avionics within the aircraft. We had a big engineering design effort going on. Then that transitioned into an actual implementation where over a period of several years one by one each of our aircraft was upgraded with these new avionics, and we did upgrade the ejection seats also as part of that.

So part of my job again was to help get the budget from the Shuttle program to do this. Then within AOD [Aircraft Operations Division] they were really leading the effort as a project to do all the engineering and design and scheduling. That did lead to a safer environment for people in the T-38 as well as address some obsolescence issues. T-38s came out in the 1960s, you can't really find the parts to replace equipment that fails in the aircraft. So we had to address some obsolescence issues as well as have the opportunity to upgrade some of the safety issues, put in a weather radar system, put in a terrain collision avoidance system and things like that.

ROSS-NAZZAL: Were you still flying? Did you have to keep up your hours?

OCHOA: I was flying a little bit. I wasn't flying nearly as much as when I was in the Astronaut Office. I wasn't required to keep up obviously the same number of hours as if I was a crew member. So I tried to continue to fly on a much more restricted basis, but I did get to fly. I did end up flying in one of the converted aircraft, I think the very first aircraft that we converted that had all of the new systems in I got to fly. One of the pilot managers from AOD got to essentially demonstrate the new features in flight. So that was nice.

ROSS-NAZZAL: You mentioned that Ken Bowersox traded out duties with Bob Cabana. How did that change the dynamic of FCOD or did it?

OCHOA: Well, everybody has a different style. I think one of the things that Sox brought to it is of course he had been an expedition crew member on ISS. So he was really the first person to lead either FCOD or the Astronaut Office who had this long duration experience. That was the way we were headed. I only had Shuttle experience so I think he made sure that we were asking the right questions about what do you need to look for as you do astronaut selection, how do you prepare people for long duration expeditions. He obviously had a good experience base and had a lot of questions in that regard.

One of the things I did as deputy was develop an FCOD strategic plan. So this was after the Vision for Space Exploration came out. One of the things that we always are tasked to do in FCOD is explain and defend, both within NASA and external to NASA, the size of the Astronaut Office and the training assets, in particular the T-38s.

We always get pushback on how come you have so many astronauts, how come you're using aircraft, what does that all mean. So rather than just addressing those questions separately

we went back and looked at what are the objectives of FCOD, how do we support the programs, how do we support the agency. I split it up into three timeframes, I think we came out with this in 2006. 2006 to the end of the Shuttle program, what were the challenges we had there? Then the end of the Shuttle program through at that point ISS was approved through 2016, so that timeframe. Of course Constellation had started up by that point. Then beyond 2016 and tried to understand how to determine how many astronauts you need, how do you determine the selection criteria and the different types of training. What is really important in the training in these different phases? How should we be morphing? How do we support MCC? What does that mean for how many people we need?

Then we also of course looked at Aircraft Ops support in those areas as well. Primarily the aircraft is there to support both training and then program needs. We did have some aircraft that also supported science and DoD [Department of Defense], so we had some things that were in addition to just what we needed to support human spaceflight exploration. So that became part of it.

We compiled just a lot of historical information about when we had selected classes, what attrition rate looks like, what seemed to affect attrition rate, how long it took to train crew members, what drove that, reflight rates and all of that.

We've used that framework, and of course updated by subsequent people within FCOD, to determine when we need astronaut classes. How we explain to a whole variety of stakeholders how we decide that and how many we look to select. We've used that to also say how important T-38s are and also to periodically review and look at other potential aircraft training assets. So that actually was a big part of what I was doing in those years as well, was pulling that together.

ROSS-NAZZAL: Your mention of that made me think about the 2004 astronaut class. Were you involved in that at all?

OCHOA: Well, sure, FCOD is the one that does the selection. Now I wasn't on the board. I had been on the board for the 2000 class. So the Director of Flight Crew Ops was on the board for that. Along with the Chief of the Astronaut Office and then the director and deputy, we have to go essentially get approval at NASA Headquarters for doing a selection.

Then we have to explain how many people we think we're going to select and why and what we're looking for and all that. So we have to do a lot of the prework before you actually even get into the selection. Then the FCOD Director is really the one that makes the final selection on that. So that wasn't me but I was involved in a lot of the prework for that class.

ROSS-NAZZAL: That was an interesting class because that was the first selection of the educator mission specialists which [NASA Administrator] Sean O'Keefe had supported.

OCHOA: Yes, so that was part of that. We'd had Barbara [R.] Morgan of course in 1998, but yes this was the iteration where we specifically opened up the astronaut selection to that.

ROSS-NAZZAL: Did she weigh in at all in terms of what she thought you might look for for candidates?

OCHOA: Barb? Oh sure, sure, yes, she was still in the office at that point. Yes, absolutely.

ROSS-NAZZAL: What do you think some of the biggest challenges were when you were Deputy Director of FCOD?

OCHOA: *Columbia* of course. Responding to the Vision for Space Exploration where we knew the Shuttle program was going to end. Then we are constantly being reviewed about how many astronauts we have, what it costs to train them, why we have aircraft. I'd have to go back and see exactly which reviews we did during that time. But we get IG [Inspector General] audits, we get GAO [Government Accountability Office] audits, we get congressional inquiries. No more than a few months go by in between all of those things. That's part of why we ended up putting this FCOD strategic plan together that also led to an aircraft study that we did. What is the best type of aircraft training? Do we need aircraft training and if so what is the best type? We evaluated a number of different aircraft and did a study on that, which was important for going forward as well. So I think those were the major topics.

ROSS-NAZZAL: Then you had an opportunity to move up and become Director of FCOD. Were you approached by the Center Director [Michael L. Coats]? Or was that just a lateral move?

OCHOA: Yes. I was.

ROSS-NAZZAL: Would you talk about that?

OCHOA: Well, I think at some point previous to that I had let both Sox know and Mike Coats know that I was interested in that opportunity. At the time it came up—so that was 2006, right?

ROSS-NAZZAL: That's what I have.

OCHOA: I have to remember. Yes, 2006. So by that time I had been deputy close to four years. So I felt like I had gained a lot of really good experience and was certainly well prepared to be director. There were certainly other people who could do that job well, but I felt I was well prepared to do it and I was interested in doing it. So I let them know at some point.

So Mike called me into his office at one point and asked me if I would like to do the job. I said yes absolutely. As deputy I had started out as a GS [General Schedule]-15 and been GS-15 for the first, I don't know, two or three years. I don't remember the timeline. That is a position that had previously been SES [Senior Executive Service] and could be SES, so we did actually end up competing that position as an SES. I was selected as the deputy under the SES. So because of the fact that I was SES at that point Mike was able to just appoint me to that position, because you can lateral SESs.

ROSS-NAZZAL: Pretty soon after you became Director of FCOD there were a couple of notable incidents, I guess, that the press got wind of. One was drinking in the astronaut corps before a launch.

OCHOA: So there wasn't ever actually an incident.

ROSS-NAZZAL: According to the media, let's put it that way. But it drew a lot of attention.

OCHOA: I'm sure the other one you're going to mention is Lisa [M.] Nowak. Really the alcohol thing came out of that. There was again an independent commission put together to review that, and it was within that report that there was an allegation of that, which as far as we've ever been able to determine, there was nothing to it.

It grew out of the report that was in response to the arrest of an astronaut. So they were related in that sense.

ROSS-NAZZAL: Would you talk about how you found out about the Lisa Nowak incident.

OCHOA: It was a phone call at 6:00 a.m. in the morning from the Chief of the Astronaut Office, [Steven W.] Steve Lindsey. Obviously very little information initially. In fact I know I had a hard time believing it. I kept saying, "Are you sure it's the astronaut?" Steve said, "Well, they have her badge." I said, "Are you sure it isn't somebody with her badge?" because I knew Lisa. I just could not jive this story I was hearing with what I knew of Lisa. It was just completely out of left field, completely.

Interestingly enough, it was a call about 6:00 in the morning, but I was planning to leave for work about 6:30, because I had a 7:00 a.m. meeting with Mike Coats and another person in our directorate about a completely different topic. So I probably got off the phone about 6:20, and I knew I was going to see Mike Coats so I just left almost immediately for work and grabbed him before that 7:00 a.m. meeting to tell him. Then of course we had to inform Headquarters

and that's pretty much all I worked for about the next eight months, the combination of everything that came out of that.

ROSS-NAZZAL: So did the police call the Astronaut Office? Or how did those events occur?

OCHOA: No. Oh gosh. I don't know. Another astronaut called the Chief of the Astronaut Office. I would have to remember exactly how they heard, but we didn't hear from the police. No, we heard a different way. In fact it took us hours to try to even confirm with the Florida authorities. I mean hours. They wouldn't talk to us.

ROSS-NAZZAL: Did someone go down then and meet with her and bring her back to Houston?

OCHOA: Yes. We tried very hard to try to understand okay, what is our actual responsibility in this. But in the end, we were in contact with certain members of her family. It didn't look like any of her family members would be able to immediately go to Florida. It became clear within a few hours. Obviously as soon as I heard about it I knew there would be a media circus. Within a few hours it became clear that it was going to be absolutely overwhelming. It wasn't clear to us Lisa was going to have somebody available for any kind of support. We just felt it was our responsibility to provide some kind of support.

We didn't have any information on what sort of medical state or psychological state she might be in. We were just really really concerned. We were just really really concerned about her well-being. It was so difficult to try to get information secondhand that in the end Steve

[Steven W.] Lindsey and another astronaut went down there. It was difficult to even get the ability to meet with her, but in the end we did. We helped facilitate her getting back to Houston.

ROSS-NAZZAL: How did you deal with all that onslaught of media? I'm sure that they pounced on the Center pretty quickly.

OCHOA: It was difficult. Even in Florida there were helicopters overhead. You couldn't get away from it. You take literally each minute by minute what's happening, what's going on. Our desire was to try to make sure that Lisa was somehow being taken care of, some way, shape or form. It wasn't necessarily our complete responsibility to do all that. But to do what we could when it looked like there was a hole in that process, and to make sure at least that she could get home safely to her family. So that was the initial reaction.

ROSS-NAZZAL: So after she was back in Houston, what started happening here in terms of determining what had occurred?

OCHOA: Obviously we're not the ones doing the investigation. So we can't really do that part. There was obviously almost immediately all kinds of media requests for information. So we had to start putting together a big FOIA process, a Freedom of Information Act process. Just to even log in all the requests that we were receiving. Then coordinate between FCOD and Space Life Sciences, which is where the Flight Medicine Clinic are, because a lot of them were asking medical questions. Legal had to be obviously involved, because there's certain types of

information you do or do not give out. They were asking for all kinds of e-mail traffic and all that kind of stuff.

So we had to put in place a FOIA process for that. Then there were a lot of questions being asked about did we have the right process for screening people for becoming astronauts, for being on a crew. So we put together an internal investigation about questions regarding our processes. Of course then there was also this Astronaut Health Care Committee, I think they called it, which was an independent group that was asked to come and review that as well.

So once that happens then of course they come, talk to lots of various different people. They pull together a report. It has a whole series of recommendations. Now again working primarily with Space Life Sciences, because the questions had a lot to do with medical issues of astronauts, and relationship between flight surgeons and astronauts, and all these kinds of things, we had to work together to track all the recommendations and our response to those recommendations.

So that was a process that took several months. As part of this report that's when there was this allegation of the alcohol incident. That kicked off a whole other committee. Again we did an internal investigation. The next investigation was really headed up by Bryan [D.] O'Connor, who was head of safety for NASA. We had to put together that process.

So to respond to some of the recommendations in the Bachmann report, we ended up putting together a survey where we surveyed astronauts and flight surgeons regarding all kinds of things: trust between the groups and processes and privacy issues. That had to be done very carefully because any time you put a survey together, if you actually want honest responses you have to ensure a certain amount of anonymity and privacy. But obviously we were going to have to in some way, shape, or form have a summary report of the survey that would be public. So we

had to work very carefully to work that process so that we could assure anonymity and yet have a product that could then be made public.

So that was a process that took a while to put together. Again we had outside experts that were involved in that process as well. It was a combination of an internal and external group that helped put together the survey, which we then administered. So that led to lots more things, like I needed to do a media telecon once the survey was released to answer all the questions about the survey.

Then Congress decided to have a hearing. I was the one that was asked to represent NASA in terms of the crew perspective at the hearing so I needed to prepare testimony for that. That was pretty much how I spent my year as Director of Flight Crew Operations. So all those things that you wanted to do—again it was just overwhelming because there were just so many media requests and so many things to respond to related to this particular incident. We put together a code of conduct in the Astronaut Office. Again every single day we were talking about actions and how we were going to carry them out and tracking them and collecting information for requests from outside entities, working with NASA Headquarters. So it was a very busy time.

ROSS-NAZZAL: So your deputy was taking care of the rest of the office.

OCHOA: I think I had two or three deputies in that time, because people just ended up taking jobs outside NASA. So every time a deputy would come in I'd be like "You know what you're in for, right?" I had really good deputies, but unfortunately they didn't last real long during that year.

ROSS-NAZZAL: Even after all this you decided to accept the position of Deputy Director of the Center.

OCHOA: Well, I was influenced by when Mike asked me to do it that he would not accept no for an answer. I was actually very surprised that he asked me, because I had been in my position less than a year when he asked. We were still in the middle of this. We knew this hearing was coming up, and I was in the middle of preparing my testimony. To me I just never thought he would consider me, because of the fact that I was still fairly new in FCOD. I was in the middle of this issue. I thought he's not going to pull the FCOD Director. He's going to choose somebody else so I wasn't actually expecting to be approached for that job.

I was actually very surprised when he talked to me. I didn't accept immediately. I said, "I really need to think about this. I feel like I'm right in the middle of this issue." I had other things I wanted to accomplish as FCOD Director. Of course we had a couple flights coming up. Obviously we were back flying. I was going to Kazakhstan for launches in this timeframe too. So I had to wrap my [head] around the thought of transitioning to something at a point when I was not initially considering that at all.

But he was very persuasive and of course I knew at some level it was a very good opportunity for me, but I was not thinking that way at all. At least I have to take a little time to think about what does this really mean. What does it mean for FCOD? What does it mean for me personally?

ROSS-NAZZAL: Sure, I think that might be a good note for us to end on.

OCHOA: Okay.

ROSS-NAZZAL: It's perfect timing.

[End of interview]