

# **NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT**

## **ORAL HISTORY TRANSCRIPT**

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HOUSTON, TEXAS – 14 AUGUST 2012

ROSS-NAZZAL: I wanted to spend time today talking about your management experience, in particular your time as Deputy Director of FCOD (Flight Crew Operations Directorate). Would you tell us why you made the decision to move into management? Were you encouraged by anyone to do so?

OCHOA: Well, I was asked if I would become the Deputy Director. It was a lateral move, so it wasn't a position that was advertised and for which they needed to do a competitive placement. It was a few months after I had gotten back from my fourth Space Shuttle mission.<sup>1</sup> I was one of the senior astronauts in the office, had gotten to fly several times. Because I was involved in the senior leadership of the Astronaut Office, I knew that there was a big push to make sure that we were flying all the astronauts. We had a large number of astronauts at that time who had never flown. When the assembly of the International Space Station got delayed a little bit, because we were waiting for Russian modules, and then as we got into assembly it was very focused on doing spacewalks, there was a lot of emphasis on making sure we had experienced astronauts doing some of that work. So while we were flying new people all that time, we weren't necessarily flying a lot of new people on each mission.

We had a fair number of astronauts who had never flown, and one of the big goals of the office was to make sure we get these people flight experience. Both as a matter of fairness, wanting to get them into space after training, but also they become much more valuable to the

office, to all of JSC, once you have the flight experience, because you can now come back and provide your expertise to the programs, to training, to everything that goes into planning future missions. You're much more knowledgeable once you've had that opportunity. So that was a big push. Because of that I knew it wasn't likely that I would get reassigned to a fifth mission any time soon. I was well aware of that even before I flew my fourth mission. I felt lucky to get assigned to that.

I had been doing some other jobs in the office since coming back. Troubleshooting roles where they had a particular issue they were working with some of the international partners and they wanted me to get involved in that. I had done a lot of the senior roles in the office already so when they approached me about becoming Deputy Director of FCOD that was obviously quite a different step for me and a chance to do something different, a new challenge. I thought about it for a little bit, and I felt like it was the right time for me because of all the reasons that I just talked about.

ROSS-NAZZAL: What are the duties of the Deputy Director?

OCHOA: Well, overall the directorate manages the Astronaut Office and the Aircraft Ops Division (AOD). With every directorate you're in charge of all the policies, the personnel, budget. Making sure that your directorate provides what it is supposed to provide to all the human spaceflight programs and to the Agency as a whole. You need to provide trained crew members. You need to provide the right aircraft resources and the people to fly those aircraft. Obviously in addition the astronauts have a big role in public outreach so you needed to make

sure that you were providing that role in addition to the operational role that astronauts provide. So everything that goes along with doing all that.

ROSS-NAZZAL: Just a few months after you became Deputy Director we had the *Columbia* accident.

OCHOA: It was actually only about six weeks after I became Deputy Director. It was really soon after I came up to the office.

ROSS-NAZZAL: Were you involved at all in the discussions with the Mission Management Team (MMT) about damage to the orbiter?

OCHOA: I actually did not attend any of the Mission Management Team meetings during that mission. You have to realize that in November and December of 2002 we got a new Director of Flight Crew Ops, who was Bob Cabana, a new deputy, Bob selected me as his deputy, and a new head of the Astronaut Office, Kent Rominger. We refer to him as Rommel, so that's what I will call him. So we were all new in our roles for that mission, essentially.

When I talked to Bob about okay how are we going to do our roles for this first mission that we're all supporting in these new positions—normally the Director of Flight Crew Ops goes to Florida for the launch and also to Florida for the landing, and the deputy would be in Mission Control for both of those as essentially the Flight Crew management rep in Mission Control. We both went to Florida for the launch. That gave me a chance to shadow Bob in terms of what the Director of Flight Crew Ops does during the whole launch run-up. There are certain meetings

obviously that you attend, including the prelaunch MMT down there. Then you're actually with the Mission Management Team in the Launch Control Center during launch. Your role there—of course following along with everything that was going on, but in any part where there's a decision that needs to be made or a go for launch, you're representing the flight crew and saying whether or not the flight crew themselves are ready to go, and whether in your judgment, as the manager of the flight crew, you feel everything else is ready and you're willing for the flight crew members to get on the vehicle and actually go launch.

Bob and I had talked. There were a number of missions planned for the upcoming year. He had said, "Hey, I want to go do that for the first couple launches, but then we'll alternate that role." So I said, "Well, why don't I come down with you to Florida for this first launch? I'll get to see how everything unfolds prelaunch. Then I'll feel comfortable later in the year going down and doing that role myself."

So we were both in Florida for the launch. That was neat for me because I knew Rick Husband really well. We had flown together before so I actually got to see him on launch day suit up and give him a hug before he headed out of crew quarters. Of course I knew all the astronauts, but I was closest to Rick because we had flown together. So then Bob and I came back. Naturally both of us are following along in the mission, but he said, "I'll attend the mission management meetings," because there's always lots of other things going on as well.

January is when you start the budget process for the upcoming year, and I was going to have to learn that from scratch. He wanted me to be involved in preparing the budget for the upcoming year. It was completely new to me. I can remember spending time getting briefings from our resources person that supported our directorate and then starting to talk about what's really involved in putting a budget together. I was focused on just learning how the whole

directorate operated, keeping tabs on the mission, but Bob was the one going to the Mission Management Team meetings.

I of course heard about the fact that there was an impact on the orbiter. I remember seeing the e-mail that came around that had the video of it and watching it and having some discussions with our FCOD personnel, Chief of the Astronaut Office, trying to come up with are we asking the right questions in the MMT meetings.

I was not aware of the great amount of discussion that was going on at a lot of different levels that I probably only found out about as the investigation proceeded, particularly when I ended up reading through the whole report that came out from the CAIB (*Columbia* Accident Investigation Board). They of course had compiled all the different conversations that had gone on in hallways in e-mails that had been traded between flight controllers and engineering people who were concerned. So there was a whole level of things that I didn't know was going on and only found out after the fact. But I had some knowledge of the event in general.

Obviously I think many of us didn't have a full appreciation of what this meant, and how worried some people were. That didn't make it to Bob and to me. Some of these conversations that were going on that were showing people were clearly extremely worried about that event.

ROSS-NAZZAL: I've seen the footage of you in Mission Control on February 1<sup>st</sup>, 2003.

OCHOA: So as I mentioned the director goes down and sees the landing, is there with the families. Then the deputy is normally in Mission Control at the MOD (Mission Operations Directorate) Management Council. So I was sitting next to John Shannon and Phil Engelauf, who were representing MOD management. That's just a longstanding role for the deputy.

Obviously the main reason to be there is in the event of a contingency, but I certainly didn't at all go in that morning thinking—I wasn't really worried. Again I didn't fully appreciate the seriousness of the impact on the orbiter. I wasn't aware of so much of the work that had gone on so I wasn't going in there thinking about that.

A lot of things that have to happen for a safe entry, but we had always had a safe entry. However, I reviewed the contingency book, because I knew that was my job. So I had looked through what is my role if something happens. I had the big book with me, but certainly was not at all expecting to ever open the book that morning.

ROSS-NAZZAL: What happened once you knew that the orbiter and the crew was lost?

OCHOA: Well, there's so much that happened that you could spend days just talking about even what happened in the next three hours after that. The flight director, LeRoy Cain, is in charge of that room, MCC (Mission Control Center). You can see all the video where he starts to respond to the mishap and starts to essentially go down a checklist of not letting people in and out of the room, making sure people are archiving all data. There's just some things you just have to start taking care of because you know that's what's going to kick off the whole mishap investigation.

I of course pulled open my contingency book. Actually I did bring out the notebook that I kept that day to remind me of things. We do have what we call an FCOD Contingency Action Center that's activated on launch days and on landing days. It's over in Building 4 South where the Astronaut Office is. I talked to them within five or ten minutes of the contingency being officially declared.

The Deputy CB Chief was there.<sup>2</sup> Of course the Chief was down in Florida also. So that's where the deputy Astronaut Office Chief is, a couple of assistants and support people. We talked. They have a list of things they need to do, and we started to talk about who we needed to contact. Each astronaut on the crew has what we call a CACO, a casualty assistance calls officer. Before flight each astronaut designates another astronaut in the office who will work directly with that astronaut family should there be a contingency. One of the first things is to call those astronauts and put them on notice that they're about to take over this role.

That started a whole chain of events. One of the things we wanted to do very quickly was inform the crew on board ISS (International Space Station) what had happened. I did leave the Shuttle Control Room and went across the hall into the Station Control Room. We brought in Beak Howell, who was the JSC Director at the time. We brought up a private air-to-ground loop to talk to the crew. Beak talked to them first to let them know what had happened. Then I actually got on and talked with the commander who was Ken Bowersox at the time. We didn't have very much information at the time, but we told them as much as we could and that we'd keep in contact with them, because we wanted to make sure that they were informed.

Then after that I called up Bob Cabana. He had I would say by far the toughest job that day, because he was at crew quarters with the families and basically had to inform the families. So let's see. The contingency, I think, was declared around 8:15 because that was supposed to be the time of the landing on Saturday, February 1st. I have at 8:41 we informed the ISS crew. At 8:58 is when I talked with Bob. There was a mission evaluation team meeting at 9:00. Then our first Mission Management Team telecon, which essentially turned into a mishap response team telecon, at 9:30 that day. So I attended that as the Flight Crew rep.

That was essentially the first time that they get everybody together to talk about how are we responding to the mishap. Ron Dittmore as the Shuttle Program Manager talked. Linda Ham was the head of the Mission Management Team so she called it all together. Then we just talked about what are the very first steps, what do you have to do to protect information, protect the debris, and what the next steps are. There are a number of teams that get kicked off. One of my jobs being the senior Flight Crew rep in Houston—obviously again Bob and Rommel were really dealing with the families at that point—was to start to make sure that we had crew reps on all the teams that were forming. There are a couple teams for which you predesignate crew reps. There's something called a rapid response team that would go to the actual site. Our crew rep was Jerry Ross on that. So he came in that morning. There was at least one other team that I think had predefined crew reps.

Then as you start to say okay, the engineering team is pulling together to essentially come up with a very detailed timeline of everything that we know; we wanted to put a rep on that. It just balloons out from there. Every time something would come up, where we were going to form a special team, then we tried to make sure we were naming a crew rep to that.

Pretty early that day, before noon, I got a call. We had a bunch of astronauts out at Aircraft Ops that wanted to head up to East Texas. JSC was starting to receive calls from people up there with reports of debris on the ground. So very quickly the whole team had to try to figure out okay, what do we do, how are we dealing with the debris, how are we logging the calls, how are we pulling all the information together into one database that we can then respond to as a team. We of course wanted crew reps involved in all that.

So we talked about how we were going to get crews out there. We wanted to involve our medical folks, because they knew how to deal with this issue better than we did. We got all them



involved, so that was one of the first things that happened that day as well. Within the next day or so we were trying to work on the memorial that was going to happen here at JSC on the following Tuesday. I don't remember at what point, but within 24 hours we knew the President was coming. That kicked off a lot of activity around the Center. We certainly needed to have someone again representing the crew and in charge of notifying all former astronauts about the event and helping to have astronaut escorts for crew families that would be coming in.

Then of course there was an independent commission that was formed, the Gehman *Columbia* Accident Investigation Team. We needed to have a crew rep on that team. So those were all things that were forming pretty early on in those next couple days or so.

ROSS-NAZZAL: Those must have been pretty long days.

OCHOA: They were. I left home—I don't know exactly, maybe around 6:00, 6:30 in the morning Saturday. I can remember telling my husband, "Well I'll be home for late breakfast." It was about 14 hours later when I got home and that was pretty typical over the next at least couple weeks, maybe longer, of being gone 14-hour days. There was just so much going on, so much happening. We were trying to make sure we were involved in all aspects of the mishap response, but also we had special activities associated with the astronaut families and dealing with all of that.

There were people all over the country just sending stuff to the Astronaut Office. Quilts and teddy bears and kids sending in their allowance to help make sure the Shuttle program continued.

ROSS-NAZZAL: That outpouring of support must have been overwhelming.

OCHOA: Yes. Just all kinds of things going on.

ROSS-NAZZAL: How did you determine who would be on what team? I'm guessing that everyone wanted to be doing everything, but they couldn't.

OCHOA: Yes, we had no shortage of volunteers clearly. Everybody in the Astronaut Office wanted to help. Certain people, because of their particular position in the Astronaut Office, were logical people. We have branches in the Astronaut Office, and there's a branch that particularly supports the Shuttle program. I think Dom Gorie was heading that, so he was very involved in the investigation. There were other senior astronauts that were logical people to put on these teams. So some of them were just based on what job they currently had in the office. Others based on their seniority and experience.

Maybe they had supported the Shuttle Program Office itself at some point or had previously been head of the Shuttle Branch in the office so it made sense. Then you just start to tick down the names as new teams came up. Of course it wasn't just me. It was me working with Rommel and there were four of us at the time, Bob and I as the Director and Deputy of FCOD and Rommel and Andy Thomas as the Chief and Deputy of the Astronaut Office who would get together and talk about okay, who does it make sense to put on these teams. There was a level then where I wasn't even involved; Rommel was involved as you got another layer down.

Everybody wanted to be involved. In fact the hardest thing is not to have a specific role after that, I think. Not only did we have a need for a lot of people, but we actively tried to get people involved as much as possible in some way, supporting some team, because the worst thing is to come in and not have a specific role to do, and not really know when you would.

Of course in the immediate aftermath there was just no telling when we might get back to flight. Of course the whole question starts to come up in the media if nowhere else. Should we even continue the Shuttle program? So there's a whole uncertainty factor thrown into the whole future of human spaceflight that you have to deal with in addition to the more specific response of this particular mishap and what it might take to understand it, respond to it, and get back to flying. Assuming we were allowed to do so.

ROSS-NAZZAL: Did you have to deal much with the media?

OCHOA: I didn't specifically have a lot to do with the media. At that point there were a number of other managers at NASA that dealt with that.

ROSS-NAZZAL: Talk to us about your role in the memorial. You mentioned that that was an important part of the grieving process.

OCHOA: So the memorial that we had here, we were just extremely busy, because we only had about probably only 48 hours once we knew definitely it was happening to put it together. Certainly I was not one of the prime people working on the specific plans for the memorial, but we were supporting it in every way possible. Sylvia Stottlemeyer, who was the administrative

officer for FCOD, was extremely helpful. The astronaut that we assigned to it, Mike Bloomfield, was another key person in thinking about all the ramifications. We needed to understand again what roles astronauts would play in that memorial. In a lot of cases they were escorting the families of astronauts coming on site. We of course make a special point to talk to the families of the *Challenger* accident and of the Apollo 1 accident and invite them. If their spouses or families were coming, we had a current astronaut who would meet them here and bring them on site and be with them during that time. You can imagine that could be an extremely difficult time for them, in addition to the current families who were involved.

We had a flyover as part of that and because Aircraft Ops is part of our directorate that's something that we are involved in planning. Of course we can primarily hand it over to Aircraft Ops. They know exactly what to do. Just making sure that we had plans for that in place and that was included as part of the memorial.

Then because a lot of formers were coming—not a whole lot of notice, but a lot of them, it was really important for them to be here—we wanted some kind of reception so that they don't just show up, attend a memorial, and then walk out. People wanted a chance to get together and talk about it. So we wanted to provide that as well. Those were the immediate concerns that we were thinking about.

We wanted to make sure we were reaching out to all the current astronauts and their families as well. Trying to make sure that we had periodic all hands. I don't think we actually planned an all hands with astronauts and their families prior to the memorial because there wasn't time. But I think by the end of that week we did and tried to do that periodically in the first few weeks after the accident to make sure they were getting information that we knew about the mishap and what we knew about it, what caused it, and how we were responding to it.

ROSS-NAZZAL: So many people were good friends of the crew of STS-107. What sort of counseling or support did you provide for the Center and also, of course, their friends in the office?

OCHOA: I was just reading through my notes. That was something we were definitely thinking about, although it wasn't necessarily FCOD's particular responsibility. I think that was something they were really thinking about at the Center management level, because clearly while FCOD is greatly affected so are so many other people at the Center. Both because so many support the Shuttle program, but also so many people knew the astronauts personally. They helped train them, or they were neighbors, or their kids were on the same soccer team, or they went to the same church. So we knew it would be a huge huge impact to the whole Center. I saw something in my notes here. Let me just look it up, about providing Employee Assistance Program support. Let me just see if I can find it here. So much was going on.

ROSS-NAZZAL: Looks like a full notebook of events.

OCHOA: This is all the first day still. I can't remember. I did see a note about there would be EAP support in the cafeteria, essentially full-time, where people just come over and talk to folks. The clinic was open all day Sunday. The EAP counselors were in the cafeteria. I know they told the folks in MCC that they were going to make counselors available to them. Then we did the same thing for sure in FCOD for the astronauts and families. So yes that was something that we

thought about not only in FCOD but they thought about Centerwide, of trying to provide that. That continued for quite a while. Definitely extra support in that area.

ROSS-NAZZAL: Did you have a chance to go up to East Texas as many of your crew members did?

OCHOA: Yes. I didn't stay up there for days or weeks like some of our crew members did, but I did go up a couple of different times. I think the first time I went up was one week after the accident. They actually had a memorial service up there one week later, and that was my first chance to get up there. So in addition to attending the memorial service there, obviously we had a chance to talk to everybody in the incident response center that they'd set up, not only our folks but folks that had come over. Dave King from Marshall Space Flight Center was heading that up so we talked to him. Jim Wetherbee was one of our astronauts who was a primary person up there and Jerry Ross. Then we had astronauts that would go up for several days, and then we'd switch out. We essentially did that. We had that specific astronaut support until everything associated with our crew had been located.

So I got to just be there that day and talk to a lot of different folks and see how that was all headed. It was hard, but it was really neat too in some way to see everybody pulling together and to see the support from the community. Had really incredible support from the community where you had people cooking and providing food and bringing it in. That went on for weeks. People doing laundry for our folks, just really really incredible.

We got to not only be at the main center in Lufkin, but we went out to Hemphill and I think one other place and talked to a couple of the satellite centers where they were supporting.

Just the support from everyone there as well as we ended up having, I don't know, two dozen different state and federal agencies that were involved. Huge support from the US Forest Service. I did go back a couple of times. I went back at one point, this was after the Forest Service folks, the people that are really experienced, and they go around and provide wildfire support. But they came in to support with the actual debris collection. They had set up this huge camp. They already know how to come in and set up a whole tent city, and that's exactly what they did here. I came in one night and just did an astronaut outreach, talking about Shuttle missions and what we do and gave them a chance to ask questions. We did that with various astronauts. I went by, so I got to see that whole operation.

Then as you may unfortunately remember there was a helicopter that had a mishap during the recovery, and we lost a couple folks there. So I went up for that memorial, which was just really tragic. It was almost right at the point where people were starting to get over the initial shock. So to have this happen was just a real downer. But again being up there gave me a chance to see our folks that were up there, and everybody else who was supporting, go around thanking people. That was an amazing, amazing operation up there.

ROSS-NAZZAL: Of course the accident and recovery wasn't the only thing going on at this time. How did you and Bob decide how you were going to handle managing FCOD and all the other things that you had to do in addition to recovering?

OCHOA: We talked through it every day all day for 14 hours. As every new thing came in Bob would either say okay, you go do this or I'll go do that. It was just literally minute by minute.

We worked very closely, as I mentioned, with Rommel and Andy. We were just literally tagging up every few hours, because so much was going on.

We still had to do this whole budget preparation too, which again I was learning from scratch. NASA as an Agency has a deadline that you have to meet every year with preparing all your plans. You have to prepare five-year plans. Of course that was even harder when you had no idea what your plan was much less coming in new to the budget anyway. So that was all going on that spring as well. All I can say is I was learning something new every minute of every day.

Bob and I were just joined at the hip literally, meeting constantly and talking constantly about now here's something that we need to do, how are we going to do this. Of course we called on everybody that worked in the FCOD office, and everybody that worked in the Astronaut Office and AOD as much as possible, all of our support people. Everybody really stepped up and realized, you know, it's what JSC does. You do what you need to do.

ROSS-NAZZAL: At what point did you know that you would be flying the orbiter again, so you could move forward with this five-year plan? Do you recall?

OCHOA: That's a good question. I haven't looked that up. I would really have to go back and review exactly at what point. I believe it was January 2004. It was about 11 months later when President Bush came out with the Vision for Space Exploration. In fact I flew in for that announcement, when the President came over to NASA Headquarters and rolled out the Vision for Space Exploration. So it was January 2004. I really think that was probably the date. That was about 11 months later when they said okay, we're going to continue to fly the Shuttle, but



we also have an end date for the Shuttle. We had to really change the approach to the assembly of the International Space Station, cut down on the number of flights that we were planning, because we weren't going to be able to do our original plan.

So there was a huge replan effort in the ISS program that went on. In the immediate aftermath of the accident they had a huge issue, which is we depend on the Shuttle for our consumables. The Progress does come up, but the bulk of it comes up with the Shuttle. Anything we need to get down comes on the Shuttle. So now we had no way of getting anything down, and we had a very limited way of getting things up. Not even knowing how long that might go on, they immediately had to go into what are we going to do, can we even keep the Station crewed. Of course as you know we went down to two crew members, I guess, by April. Until the Shuttle started flying again we stayed at two crew members but were able to keep them supplied. Part of our job was working with the ISS program about the plans for keeping it crewed and how we were going to work on that.

So we were working very closely with both programs—the response to the Shuttle and then how we actually responded on the ISS side. With this new vision, knowing that we would eventually get back to flight, of course you still don't know exactly when that's going to happen. The program obviously runs this—how they're going to respond to that and figure out how to assemble the ISS in fewer missions. We supported that from the crew perspective as well. Of course every week the programs have control board meetings and go through their whole process of doing it.

ROSS-NAZZAL: So how did you come up with the budget for that first year? Not knowing. I'm just curious how that all worked out.

OCHOA: I think it's one of those things where I have no idea how we even did it. The bulk of the budget in Flight Crew Ops is really for our Aircraft Ops. There's actually very little budget associated with the Astronaut Office itself. We have to know how many people are in there, so we know how many civil servants to account for, but there's very little money that is provided to the Astronaut Office itself.

So the bulk of our budget in FCOD is for Aircraft Ops. What you mainly have to figure out is how many flight hours you're planning to fly in each of those years. Then you have to guess about gas prices and spares. We had to make some guess, some range, about how many flight hours we thought we would need to fly both for the T-38s, which are the bulk of our flight hours, but then also the Shuttle training aircraft and things like the Shuttle carrier aircraft, which are much fewer hours but then more expensive per hour to fly.

When you don't know exactly how many flights you're going to support, it was difficult. So we just had to make some assumptions and then update that throughout the year. We had to come up with some scenarios and some assumptions about those flight hours. I'd have to go back and look up all the paperwork to understand what exactly we submitted, because I can't remember any of that off the top of my head. But that was one of the major things that we were trying to do. At the time we were also advocating for an upgrade to our T-38s in terms of their avionics, and adding some safety features, and upgrading the ejection seats. So that was another added wrinkle to the budget. That's certainly not something we're doing every year. This was something we were specifically requesting funding from the Shuttle program for, for these upgrades to the T-38s. So we had to work through that.

We ended up having to get an independent review of the method, what we were planning to upgrade, and how we were planning to do it, to satisfy the Shuttle program management that we had a sound plan, a cost-effective plan. So I know that was one of the major things I was working that was independent of the whole response to *Columbia*. That was eventually important to our continued operations.

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<sup>1</sup> That mission was STS-110, which flew in 2002.

<sup>2</sup> CB is the organization code for Astronaut Office. The Deputy Chief at the time was Andrew S.W. Thomas.