

# JOHNSON SPACE CENTER ORAL HISTORY PROJECT

## ORAL HISTORY TRANSCRIPT 2

WILLIAM S. MCARTHUR, JR.  
INTERVIEWED BY JENNIFER ROSS-NAZZAL  
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ROSS-NAZZAL: Today is February 3<sup>rd</sup>, 2017. This interview with Bill McArthur is being conducted at the Johnson Space Center for the JSC Oral History Project. The interviewer is Jennifer Ross-Nazzal, assisted by Sandra Johnson. Thanks again for taking some time today to meet with us.

MCARTHUR: It's one of those real positive things when you two are here. I look forward to our time together because it's a chance to talk about things that I remember. You don't remember the bad things, you always remember the positive aspects of an experience. The opportunity to relate those things tends to be a pretty positive experience.

ROSS-NAZZAL: We're looking forward to hearing more about your time at NASA as well. In our last interview you had talked about Woody [Sherwood C.] Spring contacting you and saying, "Mr. [George W.S.] Abbey wants you to come down here and work; you've got to make this decision if you want to be an astronaut." Would you tell us about that phone call you received from Don [Donald R.] Puddy?

MCARTHUR: I'll go back just a little bit. I came here in '87 and then I worked in—I think our mail code was CA4. I was assigned to Flight Crew Operations Directorate [FCOD] to support the Astronaut Office, and I did that from '87 to '90. In that period of time, Don Puddy replaced George

Abbey as Director of Flight Crew Operations. I would be working with Mr. Puddy either at a launch or very often I was at then the Dryden Flight Research Center, now Armstrong [Flight Research Center, Edwards, California] of course, being the lead from the Vehicle Integration Test Office for landing support, because we more often than not landed in California in those days. I would be out there with a small group from FCOD, which about landing time would become a much larger group. I got to know Mr. Puddy a little bit better then. Of course it was not Don. He was Mr. Puddy. I think having been here through the next selection process had to have been helpful. I think it was January 16<sup>th</sup>—I'm even going to go back a little further because it was more interesting.

I think I mentioned last time that a buddy of mine from test pilot school was in the first interview group that week, and I was in the last. I think we launched STS-32 at the beginning of January. I came back from launch support. I was in my office, and I made some comment that I hadn't heard that they were doing background checks on me. That can be a little worrisome, because after you've been interviewed you're looking to know that they're interested enough that they're going to do a background check. One of my coworkers and officemates was Rich [Michael Richard] Clifford, who also was selected for the astronaut program at the same time. Rich kind of chastised me. He said, "Haven't you looked at your desk?" I looked at my desk, and there was a note [from Rich] to [return a] call. I had to call the OPM [Office of Personnel Management] investigator, so I at least knew there was something positive going on. That made us think that the calls were going to come out pretty soon.

One of my other office colleagues that morning [of January 16<sup>th</sup>], I don't think she was interviewed, but I think she had aspired to be in the program. She gave me a big hug and said something like I think today is going to be special. How she knew I don't know. But sure enough,

phone rang, and I answered, and it was Don Puddy. I think he asked something like are you still interested in a different job? I said I was. We chatted a little bit. I think there were six of us in this office, and it was completely open. There were no partitions, no cubes. The two more senior guys in the office were Max [Herman M.] Biggs and Frank [B.] Newman. Of course, you could always hear everyone else's conversation. One of the things that Mr. Puddy said was, "You can't tell anyone; you have to wait till it's official. You can tell your family, but that's about it." When I hung up I looked over and Max and Frank, I think they were both there, they were both grinning. It's like we know what that was. I said, "Can't talk to you, can't tell you."

As a little background, Rich had also been selected that time, so that was a good thing. Another Army colleague that was there and had been interviewed for the program at that time was Nancy [J.] Currie. Nancy and I were scheduled to fly a National Guard helicopter that afternoon, and our recollection is different. She thinks she called me, and I think I called her. But regardless, we got on the phone. We don't know who else has been selected, so I don't know if Nancy has been selected. If she hasn't been, particularly if she hasn't been called yet, I don't want to create any stress. If she hadn't been selected I didn't want to be the person to convey disappointing news. We both just said, "Oh, well, something's come up. Can't fly this afternoon. We need to cancel."

Going back, when I was interviewed, I think they asked me. They said, "What are you going to do if you get selected?"

I said, "If I get selected I'm going to take the rest of the day off from work, I'm going to go get my children out of school, and we're going to celebrate."

They said, "What are you going to do if you don't get selected?"

I said, "I'm going to take the rest of the day off from work, I'm going to go get my children out of school, and they're going to comfort me."

As luck--[bad]--would have it, my wife was a substitute teacher at the time at Clear Lake Elementary [Houston, Texas], and she was teaching that day. This is pre-cell phone days. I went there, I told her, and we got the girls. Cindy, because she was teaching that day, couldn't take the time off, but I took the two girls and we went home. The neighbors kind of know what's going on because the investigator has come and talked to all the neighbors. This was a fun week. It's like, "Okay, girls, what are you going to do?" They're going to watch TV or something. I said, "Let's go outside and wash the car." We're outside washing the car, and I'm spraying it with water and washing it. They would have been in like fifth and third grades, or sixth and fourth grades, something like that. Our neighbor across the street sees, and she comes over. She goes, "Why are the girls out of school?"

I think I tried to be vague. I wanted to follow the rules. I can't remember what I told her, but she knew it wasn't a holiday. The neighbors figure out something's going on. Then I think they, [NASA], said they were going to have a press release two days later. My older daughter particularly really wanted to tell her friends. I don't think it was the very next day, maybe it was two mornings later; I can't remember. Somehow we got a little early [notice]. We finally relented, and I told my older daughter she could tell her best friend.

She immediately gets on the phone, it may have been the next morning, she calls her best friend. What she said really was very touching. She said, "Guess what? We're going to get to graduate from high school together." She hadn't really had the classic military dependent's experience. She hadn't had the classic Army brat's experience. She was born in Savannah when I was stationed in Savannah, Georgia. When she was two years old we moved to Atlanta [Georgia]. When she was four years old we moved to West Point [New York]. When she was seven years old we went to Pax River [Maryland], I think. Then she was eight years old when we moved here

to Houston. She had moved around enough, and she seemed to deal with it quite well. I think she also knew that if I didn't get selected, we would be moving that summer. We didn't make a big deal out of it, but it meant a lot to her.

I think it was that evening, Karla [M.] Smith, who's over in the International Travel Office, was an intern or co-op, one of the admins in our office here. The family had become really close to Karla, so we invited her to go out with us to dinner that night. She knew. It was one of those within your office that was not a secret that really was keepable. I don't know where we went to dinner, but as we were coming back from dinner, as we turned into the neighborhood, I see a Channel 13 news truck right at the entrance to the neighborhood. I jokingly said, "I'm sure they're looking for our house," thinking they're absolutely not looking for our house.

When we get to the house suddenly it's a surprise party that the neighbors have put on. We're all celebrating and having a good time, and the doorbell rings. I open the door, and it's Shern-Min Chow who was one of the [ABC] 13 reporters. I think she's on one of the other stations now. She's there, and of course right over her shoulder is the cameraman with the big lights. They haven't had the official announcement yet, and I'm going, "I've already ruined my career." Turned out the gentleman that lived right next to us worked for Sterling Chemical, and he was a shift supervisor, a gentleman named Louis Lessa. Louis knew we were going to have the party but he had to work that night, so he had called Channel 13 because he hoped he'd be able to see it on the news that night, so that worked out. I didn't get fired, so it worked out okay.

ROSS-NAZZAL: That's pretty funny. I wanted to go back and talk with you about your time supporting the Astronaut Office. When you decided to come down here what were your thoughts about the position that you'd be taking? Did you have an idea of what you'd be doing?

MCARTHUR: I had an idea because I knew people who had been in that type of position before. Jim [James S.] Voss, who was selected in the '87 group, had been in the VITT Office, the Vehicle Integration Test Office, so we had an idea what the responsibilities involved.

ROSS-NAZZAL: Can you tell us a little bit about the office and things that you were working on? Because this was a period of change going on at JSC.

MCARTHUR: It was. This was during the post-*Challenger* [STS-51L] return to flight era. What the Vehicle Integration Test Office did is we acted as substitutes and representatives for the Crew Office, for the astronauts themselves. Most of our work we did involve supporting astronaut activities at KSC [Kennedy Space Center, Florida] and at Dryden for landing. Sometimes you might actually play a surrogate crewmember, like I was on the EERWG (Emergency Escape and Rescue Working Group). One of the things that we were implementing prior to *Discovery* flying on STS-26, astronauts were going to wear the launch and entry suits. They had the slide wires to evacuate from the pad, so one of my responsibilities was to go and work with the KSC team.

I remember we did one pad evacuation exercise, so to have enough suited people, I suited [up]. We had one astronaut. Bruce [E.] Melnick was the astronaut representative, but we needed more warm bodies so there'd be enough people for the rescue team to come in and actually rescue. So I got to suit up, and we did a pad rescue. We went from the White Room to the slide wire baskets. Of course, we couldn't ride the slide wire baskets, so they stopped the stopwatch then and we took the elevators down, went out to where the baskets would terminate, and then we ran

from there to the bunker and then got into the armored personnel carrier. Those were some of the responsibilities.

For each mission, we would have an Orbiter engineer. The Orbiter engineer's responsibility would be to coordinate the crew's participation in the terminal [countdown] demonstration test a couple weeks before launch. We would take the launch countdown document, also the terminal [countdown] demonstration test document, which required a lot of integration between the launch team and the mission control team, plus what the crew's participation was. We would be responsible for reconciling differences between the MCC [Mission Control Center] procedure and the KSC procedure. Again, we would make sure that the crew's actions were properly captured in the launch countdown document.

For the actual launch it's getting a little more compressed, so we would be involved with activities of actually going out and helping to prepare the crew compartment for crew entry prior to the Astronaut Support Person (the ASP), who was an astronaut, coming out and actually doing the final switch configurations out in the crew compartment.

Leading up to STS-26 one of my responsibilities also was the [Program Requirements Support Document, PRSD]. It was a document that laid out all the crew support requirements for launch and landing. Because the crew was going to launch in pressure suits, I was involved in determining the requirements for the room in which the crewmembers would suit up. It's like getting La-Z-Boy chairs and all the compressed gas facilities in there and the regulators so that once crewmembers suited up you could pressurize a suit and check for leaks. We would have responsibilities just to sometimes be gofers, do whatever tasks were needed to facilitate the crew's participation in whatever the official activities were leading up to the launch count and actual T-zero.

Every other mission I would go out to Dryden, and I would have to be there a couple days before the launch to participate in a simulation for the convoy that would recover the crew from the lake bed or the runway. I would participate in the prelaunch weather briefing, basically stick my head out of this trailer and tell them what the weather was like.

We had a neat thing. We had this complex, which consisted of a couple of manufactured homes, a couple of trailers. The one where I stayed, in the middle was a little officeish area and a little kitchenette, and at either end was a bedroom. I would get there, so for this whole period of time I would just go into one of the bedrooms and that would be where I stayed for sometimes a couple weeks. When my boss would come out right before landing, he would take the other end of the trailer. It was pretty good. I'm the only person there most of the time from the Flight Crew Operations Directorate, so had a lot of autonomy. It was a fun job.

The Army had a flight test activity there, the Army Aviation Engineering Flight Activity, so I had some buddies that were in that organization. I'd go visit them. I got the opportunity to fly once or twice in my spare time there.

When the vehicle actually landed—and I would have to be there the whole time in case there was an emergency deorbit. Fortunately, never had one, but if there was an emergency deorbit and it came into California, then we wanted to have someone there.

For an actual landing day, I would be in the Astrovan that would pick up the crew. I'd be out on the lake bed, and that's where I was for STS-26. That was just really cool because standing beside *Discovery* it just seemed to radiate space. It had just come back, and it just radiated space. Then Vice President George H. W. Bush greeted the crew. He was a little taller than I expected. He was very very gracious. I also remember—gosh, let me think. Let's see. Rick [Frederick H.] Hauck, Dick [Richard O.] Covey, Dave [David C.] Hilmers, Pinky [George D.] Nelson, Mike

[John M.] Lounge were on that. There were a lot of people on the lake bed. It was just one of these really cool things where you look across the lake bed and just as far as you can see wall-to-wall cars; the public have come out for the return to flight.

I just remember how gracious they, [the crew], were to all the employees that lined the road or the route they took to go back to the place where they did their quick postflight medical assessments. I've once or twice run into Rick Hauck just in the airport. I remember running into him at [George] Bush [Intercontinental Airport, Houston, Texas] one time and just so gracious, just really. To me they set what I thought was how a crew ought to treat employees around them and the public, because they were, they were very gracious.

ROSS-NAZZAL: How much did you work with the Air Force, being that you were out there for weeks at a time?

MCARTHUR: Not a lot. I'd have a car pass. I would come right through the gate at Dryden, and I would park right by the trailers. So, I didn't do very much with the Air Force. Again, if I wanted to rub elbows with military people there was a nice group of Army buddies there. Matter of fact, one of them was the gentleman I mentioned [who] was in the first interview week. Guy named Dave Cripps. Dave and I were test pilot school classmates.

ROSS-NAZZAL: You mentioned when you were doing the test out at KSC that you couldn't go down the slide wires. Why was that?

MCARTHUR: Safety, they wouldn't allow [it]. There was always a concern. When they first put the system in I know Charlie [Charles F.] Bolden rode it. I'm not sure who else did. I guess people felt that it was important to demonstrate confidence in the system. After that when they wanted to test it they'd put sandbags in it. I think it was just a concern. There was no purpose to expose people to that risk. What they do for training purposes is, because they want crews to actually get as much high-fidelity training, the TCDT (terminal [countdown] demonstration test) would end with a crew evacuating the vehicle. What they would have you do is they would have you all go and get into a basket. I think they would actually allow us to hit the paddle to release the basket, but it would be chained in position so it wouldn't actually go down the slide.

Then you would egress the baskets, go down the elevator, go out to the bunker. I think for training they might only put one of the baskets down there. You would practice. They'd put you in the basket, put the side up, they would practice having you release the side and then hop out. What was interesting is I think we could put either two or three people in a basket. When it's loaded, it sags down. But as each person hops out, it gets a little higher, and so the last person has a bit of a little further to go down to get to the ground.

ROSS-NAZZAL: That's interesting that they wouldn't test them. For an Agency that's always thinking about what if, and how we're going to handle this, I just find it interesting. There were a lot of changes going on with the Shuttle at that point. There were new brakes being tested. There was the idea of the drogue chute. The SLF [Shuttle Landing Facility] was [not open] at that point. Were you involved in any way in those type of discussions? Or were those just on the periphery?

MCARTHUR: Those were engineering discussions. Then for the landing gear and the brakes, they had a DC-8 that they put Shuttle landing gear on and did tests out at the SLF. I did get involved in something called the end-to-end flight control system test. John [W.] Young had asked the question. What he really said is, "Every time I get on the runway in a T-38, I do this, [sweep the cockpit with the stick]. I look out to make sure that the flight control surfaces actually do what I'm telling them to do. The Shuttle is a fly-by-wire system, so what happens if a wire is crossed? You may pull the stick back, and you want the elevons to go up, but what if they instead go down?"

He had asked that we do [something similar] because the vehicles had had so many modifications, and it had been so long since they'd been flown. There was a joint team that involved JSC and KSC. I remember I think Scott Seyl, the deputy in OE [International Space Station Safety and Mission Assurance/Program Risk], was on this team. He and I go way back. We were going to do this. We took some early procedure that was developed for actually testing the Orbiters when they were first built, and we modified it. They tweaked the software so that we could do this test. There was even a fixture that we could put around the rotational hand controller and move it just a specified amount. We spent months doing that, and then we were going to do this test with each vehicle.

It was an interesting evolution. You're going to like this story. This is *True Confessions*. They can't do anything to me now. The first time we did it, this was a big deal, this was a high visibility test. You couldn't swing a dead cat by the tail without hitting astronauts.

I'm in the firing room, in the control room at KSC. Going down this procedure, there are at least two astronauts in the pilot and commander seat. There may have been another astronaut sitting on the aft flight deck. They go through, and they move the rotational hand controllers; they make inputs. It was a test that took I want to say a couple or three hours at least. I think it was

probably in the order in which the vehicles flew. We did *Discovery*. When we did *Atlantis*, there weren't quite so many astronauts there. By the time we did *Columbia*, there was only one astronaut there, and it was on third shift, so it was kind of late. The astronaut was Sam [Charles Donald] Gemar, another Army guy. I'd known Sam since he was a lieutenant. I'd been a captain in Savannah, and I think Sam came to us right out of flight school. Sam had been really supportive when I applied for the program and when I was in the VITT Office.

Sam is in the left seat, in the commander seat, and there's a KSC technician in the right seat. The KSC, the forward shop, those are the people who work on the forward part of the vehicle, to include the crew compartment; the forward shop, there was a duty position there called an SCO, a spacecraft operator. I still think that's one of the coolest job titles I can imagine. You go into a bar, and somebody goes, "What do you do?" If you're in Florida. "What do you do?"

"I'm a spacecraft operator." How cool is that?

The instructions will be for Sam to manipulate the controls, and then when they want to see how the pilot control inputs are they would have the young man in the pilot seat make his inputs. Then they're going to make some rudder inputs. The rudders are adjustable fore and aft, because there are tall astronauts, there are short astronauts, so you need to adjust the pedals. You can adjust the seat a little bit, but you adjust the seat relative to the rotational hand controller, and then you make the pedals come to your feet.

The way it works is it's spring-loaded aft. What you generally do is you put your feet on them, release this lock, and then you can push the pedals to the location you want them. You can either push them further out, or you can relax and allow them to come further aft.

They're going to make rudder inputs, so the young man in the right seat just reaches down and releases the rudder pedals without his feet on them. Kabang! They slam all the way back, and it's like "Well, I don't think that's the approved technique."

I started asking. I said, "So you're an SCO."

He goes, "Well, not yet. I'm OJT [on-the-job training]."

I said, "So is there a formal training program? Do you have a supervisor who's teaching you?"

He goes, "No, I'm just doing it on my own." Okay. Then it reached a certain point.

He goes, "Oh, my shift is over, I'm out of here." Maybe that's a good thing.

Sam goes [to me], "You get up here."

I get up there. I'm at least not freely releasing the rudder pedals, and I've had my hands on flight controls before. On the one hand, I'm going, "This is so cool." On the other hand, I'm going, "I am so not certified to do this." But he told me to, and I won't say anything.

Then they go, "Okay, we want the names of who's in each seat."

I'm going, "Oh." I'm envisioning that somebody is reviewing the test. Of course, in the firing room with each test they're writing down data and this, that, and the other.

I'm thinking at some point they're going to come look and they're going to say, "Okay, who was in there moving the controls around? Sam Gemar, astronaut, okay. Bill McArthur. Who's that? Is he trained to do that? No. Then the test is invalid. We'll have to do it again. Mm, mm, mm." I'm thinking okay, well, maybe it won't get to that.

We finish the test and as we're getting out one of the KSC—this is why I'm really grateful I was selected for the astronaut program later. There's one of the KSC employees there, and she has a dollar bill. There was a KSC tradition that employees would take a bill and they would ask

astronauts to autograph it. She asked Sam to autograph it, and then she asked me to autograph it. I'm thinking if she goes, "Astronaut Bill McArthur autographed that," and somebody says, "He's not an astronaut," I'll be done.

I signed it as illegibly as I could. I'm glad. Maybe it's not completely fraudulent now.

ROSS-NAZZAL: That's funny. Did you ever worry that they were going to look at that when you applied the next time?

MCARTHUR: Oh, no. That's the real advantage why I think several of us really benefited from the Army's willingness to send a few people here who hadn't been selected for the astronaut program, but somehow had appeared to have a little bit of potential for selection. It was clear. Same thing from Woody's question. Do you want to be an astronaut or not? You look good enough on paper to have gotten some attention. So come here, and you can convince people that it would be good for you to stay. Of course, the risk is you can show people that you're really not somebody who would be [a right fit]—that people then may form the impression that there are better candidates to bring into the office. I may have said it last time, but I still think they wanted me to stay because they didn't want my wife to leave the local area.

ROSS-NAZZAL: Did mention that, yes. This might be a good time [to end]. I know that you've got your front porch activity.

MCARTHUR: Sure, and you-all are always welcome to join the front porch.

ROSS-NAZZAL: Okay, well, great!

[End of interview]