NASA ORAL HISTORY PROJECT
EDITED ORAL HISTORY TRANSCRIPT

JAMES A. HARTSFIELD
INTERVIEWED BY JENNIFER M. ROSS-NAZZAL
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ROSS-NAZZAL: Today is May 21, 2025. This interview with James Hartsfield is being conducted for the NASA Oral History Project at the Johnson Space Center in Houston, Texas. The interviewer is Jennifer Ross-Nazzal. Thanks again for heading up here in spite of the mix-up at the badging office.

HARTSFIELD: Sure, happy to do it, as long as it's of interest.

ROSS-NAZZAL: Absolutely, I wish we had more time honestly.

HARTSFIELD: We've been pretty thorough.

ROSS-NAZZAL: Well, I like to turn over rocks and dig in.

HARTSFIELD: Yes, I could tell.

ROSS-NAZZAL: Last time, we had talked about STS-107, and we thought we would start by talking about Return to Flight and your efforts there.

HARTSFIELD: Yes, so I don't know if we covered it. Eileen [M.] Collins's [STS-114] crew was a fantastic crew, and she was a great commander, and we did a very similar thing. Our big linchpin heading into the Return to Flight, there was a lot going up to the recovery, CAIB [Columbia Accident Investigation Board] and the CAIB final report, and then what NASA had done to address it. That was all covered continuously by the media, and we had a stream of media in to work that.

In the midst of that, actually, I changed jobs. I moved to management, to management of the branch that is the media and program support. It's had six different titles, but it basically is social media, media relations, program communications, the broadcast planning for mission support, so I became the branch chief of that. Eileen [M.] Hawley got promoted upstairs to Building 1, and then they asked me to move into leadership, which I did. I wasn't really keen on it, but it was expressed to me in a way where I could either do it or never have another opportunity, so I did it. It was kind of a battlefield promotion is how I'd characterize it, but I was the [Space] Shuttle Program PAO [public affairs officer] at the time, so I was already doing a lot of the planning that was taking place.

I was not doing any supervising of people, which I've always recommended to everyone since that you should try to mentor somebody on supervising people before you just throw them into it. Because it's better to learn that a little bit before you actually have to do it. It's a challenge. So I was a little reluctant going into it, but in the end, I will say this—I'll just jump to the end on leadership—it turned out to be as I left NASA, to me, the most satisfying thing I ever did here were the people that I supervised, and brought into the agency, and that I helped grow in their careers and enabled to achieve everything they can achieve. When I look back at it, if I left this place a better place than it was when I got here, it was because of them, that I helped bring to bear here. In the end, it was the most rewarding thing, period, also the most difficult thing, but both.

ROSS-NAZZAL: I can see that.

HARTSFIELD: Anyway, I was just promoted into leadership, and Kyle Herring took over the Shuttle Program. Kyle and I bounced the Shuttle Program and the [International Space] Station Program back and forth for a long time, over 15 years probably. But he took over the Shuttle Program leadership, John [P.] Shannon became the program manager, I think, at that time or, no, it was [N.] Wayne Hale and then John Shannon, so I'm trying to remember the order.

ROSS-NAZZAL: Yes, and I thought there was somebody at KSC [Kennedy Space Center, Florida] for a short time.

HARTSFIELD: Oh yes, it was, it was Bill [William W.] Parsons who came in, that's right, Bill Parsons, sorry.

ROSS-NAZZAL: No, that's okay.

HARTSFIELD: I just recited all the program managers, right. But at any rate, so Kyle's taking over coincided with Bill coming in pretty much and me moving into leadership was about that same time. But STS-114, we had worked on the plan for that, and I had been instrumental in working on the plan for how we would cover it. The linchpin really of it was instead of our normal month ahead of the flight, pre-flight briefings, we were going to do a workshop. This was very similar to the kind of practice I'd seen first with Intelsat where we brought media in to try to capture one.

Later we did that with the first element launch of station and STS-88, the start of assembly with the huge workshop that came in.

We did a similar thing. The STS-114 crew allowed us to have them for three days I think, total, out of their training about six months before launch. We set up stations all around the center to demonstrate what we had done, tile repair, inspection techniques, just the rendezvous and flying, and the crew members took part in those. The media got to see them training, got to have them explain hands-on what they were going to do, and then we also coupled that with a whole list of pre-flight briefings, which we held in Teague Auditorium, and we let employees come to those as well as media. All the employees weren't allowed to ask questions, but they could all watch, and we had a big crowd that would come in for those because it was really a united thing. The center was very close for that, for 114. It was that perseverance thing, everyone working toward the perseverance and to come back and do this for really the [STS] 107 crew, to continue to fly, I think was the big motivating factor, and that was really successful.

We had, I'm not sure how many media, but it was maybe 200 to 300 that came in for that, it was huge, and it was very educational for the media. It was stuff that they were going to use during the flight, and of course, during the flight, they ended up doing an unplanned EVA [extravehicular], I think, to remove a gap spacer. That helps because all of that became part of that story, and they had the background for that, and it helped with the accurate coverage. Like I've always said, if we can make the coverage accurate, then the public will understand why it's hard, and complex, and expensive.

Then STS-114 itself, that flight was just a fantastic flight. It had that to where we did have to remove the spacer and do the unplanned activity, but overall, the crew was fantastic, and the

flight was fantastic. It put the whole center on a high, all of the agency on a high, if not the whole country on a high actually.

ROSS-NAZZAL: There was foam, it didn't strike the vehicle, but there was foam shedding off the external tank.

HARTSFIELD: There was always going to be foam shedding. There was always going to be foam shedding, and I don't think there's a way to solve foam shedding. I think that's what the program thought. You could understand better if it had—I think it was air gaps in the foam that could cause it. I will say this about [Space Shuttle] *Columbia* [STS-107 accident] too. There was a lot of discussion about, could you have done something to save *Columbia* and the crew, and there was a big thing in the CAIB report about it. My personal opinion is the only thing that could have been done is if two flights before it [STS-]112, before 107—where it had had similar foam shedding—had the program stood down at that point and done some of the things we did after 107, which is almost an impossibility that that would have occurred, then that would have kept *Columbia* from happening. That was referred up to Washington [DC, NASA Headquarters]. I know the program manager referred that up to Washington as an open issue when it occurred, and it went all the way to the top and was still said that it was a condition that was acceptable to fly with.

But foam shedding was going to occur, there was no way—they looked at all kinds of things you could try to do, a net around that external tank or redesign, but if you were going to fly with this design of shuttle, there was going to be foam shedding. To me, the key after *Columbia*, as I said, I think we never had any insight. It was amazing to me that there's so much insight into all the critical systems of shuttle and so much redundancy, up to five times levels of redundancy

on the flight control computers, for example, and insight. Thousands and thousands of sensors, and probes, and temperatures that you can see constantly transmitted down, but absolutely zero insight to the health of the heatshield and the thermal protection system. No longer after *Columbia*, so, and no longer will we not have an alternative of staying at the station if that was required because there was damage to the heatshield or a potential way to repair it.

All of that, to me, were the most key aspects of returning to flight after *Columbia* because the foam issue was not necessarily something that was totally solvable. I think it improved, but it wasn't going to be solved. Then better imagery on ascent too, they added more cameras, so you could see more of what was occurring. I think we were clear about that in the discussions leading up to flight. In all of the interviews and press conferences, it was clear that we knew more about the mechanisms that caused foam shedding, but could we absolutely solve them? Not necessarily. We thought we could do better about screening the tank to see if it had any of those issues that we thought were the root causes of it, but they could still occur. Really, the key was we could tell if there was an issue with the shuttle, and we could possibly repair it if we needed to, but we'll go back to that.

After 114, there was just a super sense of high around the center. Everybody was excited, and, of course, it helped that the Administration had put in place a Constellation Program at the Moon and eventually to Mars, and station had done well during the downtime. We had leaned on Russia, all right, which had been supportive, so there was just a lot of excitement with everything. Well, yes, the shuttle had a limited lifetime left to finish the station, which was—I think when the end of a lifetime is 10 years away for a space program, it's not real to people. It certainly became more real as those years passed by towards assembly. Commercial spaceflight, which was going

to take its place was certainly not real to people at that time, so people weren't really focused on that a lot.

The flights were smooth after that to a large degree. The things that occurred in that interim that I remember the most, there were great assembly flights, and certainly, every assembly flight had some kind of thing that we had to deal with, be it a solar array that they had to go work with to open up. The media covered those very well. I think they covered them with a lot of accuracy for the most part.

Assembly was exciting to the public, I felt, from the reactions we got because it was doing amazing things in space. One of the issues with spaceflight, and doing amazing things, and doing things that are on the edge of what humans can achieve, and doing them over and over is suddenly, people think they're a lot easier than they are. That can work against you, so when you have issues, it can be more difficult, but overall, I don't think those were tremendously difficult times. I think we did one more Hubble [Space Telescope] repair mission after 114?

ROSS-NAZZAL: Yes.

HARTSFIELD: Yes, which was fantastic, because Hubble had been such a fantastic story from the start, and the imagery that was coming down from Hubble at the time. I will just say, I remember I was in Mission Control [Center] working on a flight when the Deep Field image was released, and I saw it for the first time sitting on console. I was just looking at that and the story behind it. What is the core sample of the universe, and to see the galaxies as far as our technology can take us was just—the thing about Hubble to me was, yes, it took pictures of the universe for people, but more than that, I don't think anybody looked at some of the pictures from Hubble like Deep Field

or the Pillars of Creation without sitting down and starting to think about themselves, and where do you fit in all this, and how. When it gets personalized to that degree by people, there's nothing more impactful. That was great, to do the final repair mission on Hubble, servicing mission.

What did occur in those years that sticks with my memory were things on the ground that were not so smooth. It's odd how years converge sometimes, how things converge on a single year. I will say early in my career, there was a year that converged where there were hydrogen leaks on the shuttle, and I think we had stories that were dramatically about a new waste collection system for the shuttle that was being developed that were in the millions. It all converged into congressional hearings and problems. Then I told you, 1996 converged with a lot of things happening that I was involved with.

ROSS-NAZZAL: Yes.

HARTSFIELD: Then 2007 was another year like that, which started off early with the Lisa [M.] Nowak incident, which nobody would have ever expected something like that to occur, of course, obviously. But in the communications field at NASA, everybody is a person, all. Astronauts, we hold them up to be superheroes and immune from everything that makes people human, but they're human. It doesn't excuse that humans can do very bad things, which occurred here, but it's also then to have to go through that and everyone involved in it who was just a victim or perpetrator, to do it in such a public eye is difficult, very difficult for people. The overall outcome from that story for us supporting communications, I think, for the whole agency, and everyone here was just a sad feeling. I think that was really what a lot of the outcome was, a very sad feeling. But also, it was an impact to people that looked at astronauts as superheroes, and that they're human, and

they go through things, and they can do very bad things too. So that was a hit on the NASA culture a little bit at JSC in particular because the astronaut culture is so much here.

Then very shortly after that, equally unbelievable occurrence that you could never have imagined, after 30 years working here, I would have never imagined, 25 years at the time, right, or 27. You come in from lunch, and then suddenly, the center is locked down, and you're hearing there's a workplace violence, a shooting incident, and a person barricaded in a building. Of course, that all transpired with the Houston police who did a great job coming onsite and taking care of the situation as they do every day, day in, day out. It was unique to JSC, not unique to Houston unfortunately. Our communications really were following the police—they were the lead in communications on it, so we didn't really do a lot except that our big thing with that was afterward. Thank goodness we had Mike [Michael L.] Coates.

Mike Coates was a great center director through all of those things through that year and the whole time he was here. But that year in particular was a challenging year, and he was an emotional healer, I think, for people, as a center director. The violence incident, the shooting, I think it struck hard at that on the heels of the Lisa Nowak incident, both combined, but the shooting in particular. There's the NASA family that we talk about, that we talk about with a lot of pride because it is. I think there's a familiar atmosphere here, there's collegial, familial, people feel like they can depend on each other. Certainly, I talked about the team spirit in mission control that you have, but it's a close-knit team. People pride themselves on taking care of one another. I think that revealed that maybe that's not a universal truth that occurs, and also that there might be issues between contractors and civil servants onsite.

So there were a lot of things that came up as a result of that that I will really, again, give credit. We did a lot of the implementing of internal communications, but the person that was

leading everything was Mike Coates and his team, and they were doing a fantastic job on trying to heal the center after that, but it changed JSC. I think Lisa Nowak and the shooting both changed JSC some. I'd say for the better because it entered some realism, but then it also helped us see ways to make things better. Now time goes on, and do you do things as much as you did back then in that sense? Maybe not, but it was certainly a shock to our system that year.

Then later, and I think it really came about as an offshoot of the Lisa Nowak incident, there was a study of the Astronaut Office, and this was in the fall. The study had found, it was Bryan [D.] O'Connor, [Associate Administrator, Safety and Mission Assurance] who did the study, but [also] a former astronaut. But one of the findings had been that possible misuse of alcohol by astronauts prior to missions or even on launch days. Veracity of it, maybe dubious, maybe not, I don't know that it was ever determined one way or another totally in one sense, but it was another hit to the culture, and we dealt with it communications-wise. There were a lot of things that we had to do to work with that and try to get stories out to make sure it was all in perspective, appropriate perspective. So that year was tough, it was good in space, tough on Earth for JSC.

ROSS-NAZZAL: How do you handle that because people just love NASA and people, like you said, love astronauts. So how do you approach ABC News is contacting you and they're asking these tough questions that you're not accustomed to handling, how do you handle that?

HARTSFIELD: One, it's always good to remember, and I'm not knocking the news media because I was a member of them, and I told you I love news, and I love that the Constitution enshrines freedom of the press, and I think it's essential to the country. But it is also good to remember always in the communications business that even if you're working for a newspaper or if you're

working for an agency like me, that the bottom line is the newspapers are there to sell furniture, or groceries, or what have you. They're supported by ads, they're a business, they're for profit, and the rates they get for those ads are based on how many people read their outlet, be it a newspaper, or a website, or television station.

They love a story that's going to capture people's attention, and these kind of stories certainly capture people's attention. They're difficult stories, and they deserve to be covered, and they're definitely news. Do they get sensationalized some? Yes, because they're money-making businesses. When you have those big events, you have all the mass media come in to cover you. The fringe media are coming in who are maybe not the most stuck on trying to find the truth, but really leaning toward the sensationalize. But the fortunate thing is through most of my career, and it may be lessening now, we had a core set of media that covered NASA all the time, and that was not just trade media. It was not just Space.com, or SpaceNews, or what have you. It was also the *New York Times* had a reporter that generally covered NASA, there was an AP [Associated Press] reporter that covered NASA all the time, so all the major papers and outlets had a reporter that covered us. The networks had a reporter that covered us most of the time. That has trended away, but during those times, it was still in presence, and that was super helpful because those folks wanted to report it accurately.

The accurate story is that NASA does these great—in one sense, you could say, it makes NASA even—should be more a sense of pride because they reveal the fact that NASA is human. It's just a bunch of people, astronauts are just a bunch of people, they're human, they have all these flaws, and faults, and complexities, and they can do very bad things. They can also do very good things like any person. Yet, they still operate at the edge of human capability, and they still achieve things for the world that are truly remarkable.

To me, that, in the end, should increase the esteem you're held in. It just shows that you're not any superhuman aspect. You're a person dealing with all these things, you're a NASA family dealing with all these things, yet you still achieve. You fail sometimes too, and you persevere, but you do all those things, but you're still human. I think those core reporters help to report those kind of things because they're with us all the time in and out on things. The mass media come in who reach a huge audience other than that too. But when you had major outlets with those reporters that were familiar with us, it helped because they also reached a huge audience, and they could counter the mass media that only came in for the fringe because it was a good story to sell a lot of furniture.

I don't know if that answers your question, but that's really a nutshell of what that's like when you're in that situation.

ROSS-NAZZAL: I just have to follow up by asking were you ever annoyed with some of the questions that were asked or the amount of digging that people were doing and the coverage NASA was receiving?

HARTSFIELD: Well, I mean, you get annoyed at those things. Even during *Columbia*, we were annoyed that there was a certain reporter that came here wearing a trench coat in July in Houston because he was just weird and would try to go to program managers' houses and people's houses and just push beyond what is appropriate at all. There's things that annoy you with the media. That said, you can be annoyed with something, but you can understand it. So there's never a time that I didn't understand what the media was trying to do or what they were doing. The ones that were here just fly-by-night when those big stories occur, and they're here for fly-by-night to just

make a headline and then be done. Certainly when I see them report something that they absolutely know because you had people talk to them, you talk to them, you listen to an interview with them, and you see them reported inaccurate, yes, that's annoying. It's annoying to see that happen. It doesn't happen with our core media, so fortunately, we had them to rely on.

ROSS-NAZZAL: Yes, yes, I remember the trailers out behind Building 9.

HARTSFIELD: Yes, well, there's still ABC, and I think they're coming back for Artemis. There'll be a few more trailers there. But like I said, you can be annoyed. If you get annoyed, you need to just sit on it because you don't fight a person who has a bottomless supply of ink. That's what they say.

ROSS-NAZZAL: Okay, yes, well, yes, I remember those stories. I remember, I was at a history conference, in fact, somebody asked me to talk about the alcohol issue, which I thought was interesting to ask me.

HARTSFIELD: A lot of times, people want to go push back on the story, and occasionally, we would with a letter to the editor or something like that. If it was in a publication that was one that covered us all the time, then that would be something we might push back. But if it's in a publication that is just here and gone, there's no sense trying to push back. But still, I think that's the exception, not the rule because pushing back in itself just prolongs the story, and sometimes, it's better to just let it go and move forward.

Actually, in all those circumstances, it's what you're doing as a result of them, how you're persevering afterward. What JSC did, what the story about workplace violence, what did JSC do to improve relations among the contractors and civil servants and the total team here, which Mike Coates did a fantastic job with. For Lisa Nowak, it was stresses on the Astronaut Office, and what do we do to take care of astronauts. How do we better ensure that they are equipped to deal with the super stressful jobs they have, and the insane schedules they must keep, and their families, and their lives. I think those are the stories that you try to get out too.

ROSS-NAZZAL: Yes, that makes sense. I was just curious about that.

HARTSFIELD: And maybe those stories help people because, like I said, everybody here is just a person and everybody has those kind of issues they have to deal with. So ways to deal better with stress or ways to work more collegially among everyone, those are pretty universal things, not applicable just to JSC.

ROSS-NAZZAL: Yes, that's very true, and so, your office continued to support shuttle all through the end, up through STS-135?

HARTSFIELD: Yes, we did, and it became evident, say, the last few years that the Shuttle Program's deadline was going to stick.

ROSS-NAZZAL: Yes.

HARTSFIELD: There was some doubt back and forth whether or not earlier than that, would an administration come in and change it and extend the shuttle or would it really end when assembly ended. It became evident that the shuttle was going to end and the emphasis was then on commercial spaceflight development and the station. During that time, Constellation ended. Constellation, I'll just, in a nutshell, say from a communications perspective, from my perspective on it, it really was not lack of overall support for the initiatives and objectives of that program. It was more infighting among how to achieve those that seem to bring it to pieces and down. It was all of the powers that be, and the scientists, and the engineers could not agree on and get behind a single path forward for it and the divisiveness. What is it, "United we stand, divided we fall?" I think that's what happened to that program, it got divided, so we lost that, which was a big hit.

It became clear shuttle was going to end, and I don't think we were huge believers at JSC, they were not huge believers at that time. There were believers somewhere, and they were born out to be true, but at the time, there was not a lot for you to place belief in that commercial spaceflight was going to, excuse the pun, lift off, take off. It was small. It became evident that the shuttle was going to end. From my perspective then, I was faced with, and I think a lot of the center here was looking at, how do I build up corporate memory and experience of what it's like to launch astronauts from the United States, and what you do for communications of that to last through an unknown amount of time when we may not be doing that?

ROSS-NAZZAL: Yes.

HARTSFIELD: And we're going to be dependent on Russia. I do know the last launch or so, I sent the youngest person in our office who had just converted from being an intern, who I would not

normally ever do that, sent him to the launch at KSC just to see what it was like. I think it was for STS-135. That was Dan [Daniel] Huot, who later on oversaw a lot of the communications for Demo-2. He said he was really grateful I sent him then back because that helped, so it was a lot of getting ready like that.

Then the other thing, as the Shuttle Program was coming to an end, station assembly was a fantastic thing, it had been completed. For me personally, having been from the start and the days when nobody paid attention to it because John [H.] Glenn was the next one to fly, that was exciting that the assembly was completing. "Complete," I put in quote marks because it can always have additions, and there's things that come and go on it. But that was exciting, and I also think that's an achievement that's never been fully appreciated just for how challenging it was and how difficult it is.

I always tell people, the station, I've always loved the Neutral Buoyancy Lab [Sonny Carter Training Facility] because when you take people out there, you can tell them, "Hey, only maybe a third of the station will fit in this giant pool because it's so big." Because people don't get it. Whenever you see the station, a picture of it, it's backdropped by the Earth, so it doesn't look that big. The Earth's big, and the station's just there, but it's huge. It's a million-pound mass, and it's the most complicated thing ever built anywhere, and it operates with tremendous success, and it's tremendously smooth, and it has brought the world together. The Russian-U.S. partnership has lasted through times when people wondered if it would. It's been good that it's been there. It's always a line that has continued between the two powers, and the same between all the international partners. So that was a highlight that that was happening, but with that, the shuttle was coming to an end.

One of the challenging things was to look at how to do justice for the Shuttle Program and all it achieved. People talked about the Shuttle Program as old technology, which it was. It had been improved, but it was designed 35 years earlier, and it did look like the inside of a World War II aircraft sometimes. But the bottom line is it launched more people and still has launched more people into orbit than any other spacecraft has. It'll be a long time, I think, before that record is surpassed. It will be surpassed, but it'll be a long time. It also launched more people from more countries than any other spacecraft ever has, and it launched more firsts in ethnicity, international, genders. It had more firsts in those realms of the human side of things than any other spacecraft ever will because you can't repeat first.

It was designed and sold early on, or maybe it wasn't designed for it, it was sold early on to be a step closer to universal spaceflight for all flying once a week. Of course that was absurd, it wasn't going to be that; it wasn't even going to be once a month, it couldn't safely turn around like that. It wasn't a safe vehicle, it had tragedies that occurred, and I hope those are the worst tragedies that ever occur in human spaceflight, I really do. But still, it achieved amazing things. You couldn't have built the station with anything else. The robotics that it could do, the modules it could launch, the assembly activities, the EVAs it could host, there's nothing today or even on the books that can do those things.

I will say, as the shuttle was approaching its end, even though commercial spaceflight seemed quite a ways off, in development on Earth, there were more types of spacecraft in development at that time than ever before in history. There were cargo crafts for Japan, Europe, commercial cargo crafts, Cygnus, SpaceX were all in development, or being looked at, or commercial, or maybe theory at that point, but they were all starting to be worked.

There was that part, but still, shuttle had a legacy, I think, from a communications aspect on the STS-135 that I want to do it justice for what it had accomplished and what it had done. We had a great crew for STS-135 that understood that. We did a few things that I thought were great. The press kit, we put a picture of every person that had flown on the shuttle, on the cover of it, on the front and back covers, which was an amazing number of pictures, and faces, and people, and it got that point across. We did a special set of briefings prior to it, we didn't do a workshop, but we did a big day of briefings, and we did interviews with more than just the crew members and the flight personnel. We did interviews with managers and historic figures from shuttle as well. There were a couple of videos that were produced about the shuttle overall. One of them with William Shatner narrating from headquarters, and we did one here, too, which were both really good summations of what it had achieved.

During the flight, I think it was maybe the first time the crew allowed us to let celebrities, who had had an aspect somewhere along the line with a shuttle mission or something, submit wake-up songs. So we had wake-up songs written and performed by people just for that flight. Paul McCartney did one, Elton John did one, so there was a whole list of people that did wake-up songs for that flight, which made it special. We had events during the flight with media with all the networks and this kind of thing.

The one really tough part—and this was only maybe, it was maybe a month. The shuttle was already at the pad, and we had been struggling in the office for quite a while in communications about there needed to be something symbolic, needed to be something that the crew needed to do. Maybe it wasn't just a press conference, it wasn't just a call from the President, it wasn't just this or that. It was something symbolic that needed to be done that tied things together, and we couldn't think of what it was, for the life of us, we couldn't think of what it was.

I'm sitting in the office one day, and I don't know what sparked the thought, but I thought, wow, well, there's nothing better about it, symbolic than a U.S. flag, right? Then I thought, well, maybe there's a flag that flew on STS-1 still available. I immediately called up to the Center Director's office, Abby [Abigail S. Cassell], who kept all the mementos. I asked, "Did you have any U.S. flag from STS-1, we might want to try to use it for something?" She said, "Yes." It was like a 10-by-12 flag or something. So the idea was sparked there.

Then we went to the crew and told them, "Hey, maybe this flag, you could take it." One of the things is I did go to a summer camp many years, several years in a row when I was a kid where we always played Capture the Flag. It was the highlight of the end of the camp session every time. We divided into two huge teams, and we played Capture the Flag. So we suggested we could leave the flag on the station, and we had both Boeing and SpaceX working toward a commercial crewed flight, that was the plan. The first one to get there could bring the flag home, and then after that, the flag supposedly would go on the first mission to land on another body. Be it back to the Moon, or on to Mars, or both.

They loved it, they liked the idea. So we got the flag, it was terribly wrinkled up, I sent it home with Nicole Cloutier-Lamasters to iron it. She pressed it to make it nice and sent me a picture of her pressing it. But then it got taken to the Cape [Canaveral, Florida] on a T-38 [Talon] by a crew support astronaut who was going there to do some work in the shuttle, and then stowed it right on the pad, and the crew, we gave them some talking points. Then it went on the station, and in the end, I think that was a perfectly symbolic thing to do, it was wonderful, and it's back, and they call it the Legacy Flag now, and it's been displayed in various places. I do hope it continues to travel because no one person is going to fly on all these vehicles or all these achievements, but the U.S. flag is on every one of them, whether it's that flag or just a different flag.

It strung things together, and in that instance, it was great because it symbolized that we're not leaving the station and U.S. flight forever. It's a gap that's going to happen, and this flag is here to mark when it ends.

Happy we came up with that, we almost didn't have anything, and so that was great. Then STS-135 was over, and then a whole lot of else occurred in terms of the Shuttle Program because it was—do you call it memorializing the Shuttle Program, but we were—so interesting things that occurred. When the Shuttle Program ended, I got a chance to switch jobs for a while and move around a little bit, and I moved from the media branch. I was there for a while after shuttle ended, but then within a year or so I was still with the media branch when all the orbiters were designated where they were going to go and where they were going to be housed, which was disappointing because JSC in Houston had done a pitch. We had hoped that it would occur here, but it didn't, and I don't know what all went into those decisions, don't ever want to know, but it didn't happen, so it was disappointing.

But at about that same time then, I got a chance to move over to the outreach and exhibits area of communications and be the manager of that for a year and a half, which was actually a wonderful experience, both from a manager perspective leading a new team, but also because what that team was in the midst of then was sending shuttle artifacts out to permanent loan, which I felt an obligation. The shuttle had been such a part of my life, I wanted to make sure things found good places and all of this. Then a couple of things, like big on my plate was the Shuttle Avionics Integration Laboratory, we converted that into a shuttle stop for Space Center Houston, and it was a remarkable place, so we had a lot of work that we did to make that happen. One big thing that I worked on in person a lot was the arrival of the KSC Visitor Central shuttle here which the Space Center Houston has.

ROSS-NAZZAL: I was curious about that, if you had a hand in that.

HARTSFIELD: Oh yes, I was at that outreach area, the public outreach exhibits area, I had known what they did when I was working in media and program and mission support all the time, but I didn't. I thought I knew what they did, didn't really know what they did until I got over there as it happens. I loved being creative in writing. What I found out over there was there, you get to be creative in three dimensions, it's even better. It's like a whole new canvas, it was very exciting, and great people who were super creative over there in those formats.

But Shuttlebration was what we called it when it arrived, it was Shuttlebration. I don't know who coined that term, it wasn't me, but I helped lead the whole planning for it, and it really was a great thing. It came in on the barge dock, which I don't think had been used since the Saturn V [rocket] got here after Apollo, and there was going to be a parade down NASA Road 1 to Space Center Houston. We had everybody out for it, all the communities got together, everyone had a great parade, had booths and tents up, and the community came out. It was good weather fortunately. The only bad part was we had to cut trees on NASA Road 1, which people took that hard, but they got over it. Yes, the sting was there because we didn't get a shuttle orbiter in Houston, but that was the start of something that was going to be unique in its own right.

At that time when we got the shuttle from KSC in and had the Shuttlebration, I don't think at that time yet they had the 747 [Shuttle Carrier Aircraft] secured, but it was a thought, and then that came around pretty quick that we would have the 747. We did some restoration work on the shuttle that came from Kennedy, and then now, to have it mounted on the 747, I think that was a

whole rejuvenation for Space Center Houston actually. It's unique in the world, and it's an amazing display to go over and see that.

I always thought the 747, the carrier—I had a chance to fly once on a ferry flight on the Pathfinder. I didn't get to go on the 747, but on the Pathfinder for a [*Space News*] *Roundup* story—I wrote a *Roundup* story about it—from California to Florida. If a ferry flight stopped in Houston or anywhere when it was spring, the media would pour out for it, and the public, and everyone. They loved it so much, it was so amazing, it, in its own right, was an amazing feat to see that and to see the shuttle up close, which was another endearing thing about the shuttle. So many people in the country saw it up close just because it could fly around piggyback on the 747, what other spacecraft—? Never will that ever happen again. It was a showpiece around the country, very visible. You might just see it flying over the highway. It also signified how it was a product of the whole country, you know?

ROSS-NAZZAL: Oh, yes.

HARTSFIELD: I always loved the fact that it—I liked—I'm going off on a little tangent here, but shuttle, the boosters made in Utah, external tank made in New Orleans, Mississippi, in that area, the orbiter in California, all comes together in Florida, and then pieces and parts. Almost every town in America, it seemed like, had a piece that it made for it, so it was truly a product of the entire country, which was just a magnificent thing. Certainly, the ferry flight illustrated that because it was moving from one coast to another. So having that displayed at Space Center Houston, I think, is a fantastic thing, it was unique, and it was fantastic. Those were some of the

major things I worked on when I was in the communications and outreach area for a year and a half.

ROSS-NAZZAL: Yes, I remember those celebrations and just how exciting it was. They pitched it like, unlike all the other vehicles that you can't actually look in, you can actually walk inside of this one and get a better idea of what it involved.

HARTSFIELD: It was a negative that we didn't get an orbiter, but in the end, this turned out to be a super positive thing in my opinion because it's a unique display there. It's wonderful the way it's been done by Space Center Houston and everyone put together. I will say that KSC, in particular, has done a great job with the orbiter display. I've been there to look at that, went to see all of them and that one's fantastic. They've all done a great job, but nobody has a 747 ferried flight.

ROSS-NAZZAL: No, that's true. I did want to ask you though, as shuttle came to an end, that was such a big program, and it probably involved hundreds of PAO employees. What were things like in the days after that? Did that have some impact on your workforce?

HARTSFIELD: Yes, it was difficult, yes. It had an impact on the workforce all across the agency. So just on that whole agency perspective, we actually had a person that helped support the Shuttle Program because they started a special initiative to try to make sure they kept the skilled workers on the job they needed up until the end of the of the program. Brandi Dean, she went to every center with the Shuttle Program people to help talk about it, and the need, and that kind of, and people did stay. People stayed, they wanted to be part of it, they wanted to be part of it to the end.

They could have left and started looking for other jobs. From a personal sense, maybe that would have been more responsible, but they were dedicated people. They were doing this because they loved it, they were doing it because they believed in it, they wanted to stay until to the end and see it through, and so it worked really well.

Same with our people here in JSC in communications. We didn't have anybody leave really ahead of the end of shuttle, even though they knew it was coming, and they knew that we would be reducing staff significantly when that occurred. Certainly during my time, it was the most significant reduction we'd ever had, right. Maybe we lost 50 percent of our contract team.

ROSS-NAZZAL: Oh, wow, that's significant.

HARTSFIELD: Yes, because we no longer had—shuttle was covered 24/7 during its missions in a broadcast. That requires a lot of work, and the contract covers most of the television production for us, so, yes, we lost a lot of people, and that was sad because it was a close-knit team. But they knew it was coming, and they'd known it was coming for a couple years, and they were ready. They did a fantastic job right up to the end of all the activities.

When we lost workforce though, the one thing I will say as a as a manager, in terms of people, is that it was hard. Not as hard as some other times when we've had to reduce workforce, from a leadership perspective, not as hard because the people aspect is always the same. You lose people, and you're sad to see them go, and you're sad to see the impact on the team that occurs from a human aspect of that, but from an overall management aspect, the workload went away as well. The workload dropped by the amount that we had cut the workforce in parallel, aside from

being actually proactive about reducing workload because the program had ended, so the work was not there.

Other times, I've been through reductions where it's much more difficult, where the budget is reduced, and you lose people, but people are reticent to reduce the workload. That's not a good situation because you can only increase productivity so much.

ROSS-NAZZAL: Yes, yes, that's true. I was just curious about that because I imagine that was hard.

HARTSFIELD: It was a tremendous impact, and there was a sad aspect to that, but also celebratory. When I remember, I remember the aspects of losing the people, and that was just very personal and painful, but I also remember them leaving satisfied, which is important. It's one thing to leave satisfied, that you accomplished what you knew you were going to go accomplish and why you stayed to accomplish, another one to leave without satisfaction, you know?

ROSS-NAZZAL: Yes, feeling like you've left something that you really wanted to do.

HARTSFIELD: Yes.

ROSS-NAZZAL: So also, you took another job after that.

HARTSFIELD: Yes, after a year and a half there in communications and outreach, I went to education, which was great. It was the other leg of External Relations Office, which everything was consolidated in External Relations Office, it had been for quite a while at that point since

shortly after the Return to Flight, I think, maybe even before that probably, but it had been a long time. Education Office or STEM [Science, Technology, Engineering, Math] engagement, whatever you wanted to call it, I think it was called Education then, it's had—everybody has name changes.

ROSS-NAZZAL: Right, yes, nothing stays the same.

HARTSFIELD: Public Affairs and University Relations, all of those were together in External Relations. There was a lot of synergy with them. We quickly learned that if you can unite those aspects together, and I think the one example I always have told people that I learned as I rotated around. We'd always done in-flight events during the shuttle with students when they asked the crew questions and during station, and I always thought that's nice that the students get a chance to ask that. I'm sure that impacts the student, and the parents are excited about it. But if I had the crew's time and I can put them on *World News Tonight*, that's way more important. That's way better, that reaches way more people, that's much more impactful, that's a better use of their time.

After I had looked around at all these sites and come to understand more, I actually saw those interviews where students get to talk to the crew is the most impactful thing we could ever do with the crew's time. Because if you can have a student talking to the crew, of course, there's the inspirational aspect for the students and for everyone who's watching that, and for the parents, and everyone in that community, or that school, or others that even watch it. If you can have the media cover that, then instead of telling the media what the station accomplishes, then the media are witnessing what the station can accomplish in terms of inspiring people, which is a core objective of the station from the outset was to do that. So it's way better to have the media covering

something that they're seeing take place in front of their own eyes than it is to just tell them about it or have the crew telling them that they inspire people. Watch the crew inspire people instead of having the crew answer questions, seeing how they inspire people.

Then if I could have the community around it, having an exhibit or making a bigger community engagement event out of it, then that's great. It reaches more and more people that aren't even associated with the school district who are excited about it. Then Legislative Affairs was the other component in External Relations. If I can have an elected official in that area be part of that event as well, then I'm hitting all cylinders. Then everybody is getting impacted by this, way better than just a single entity. In my view, that's the whole nutshell of why External Relations made so much sense, to integrate all these things together.

Yes, I moved over to Education. I had an opportunity for a year to serve as the manager for internships, fellowships, and scholarships, which was great. One of the things I decided to do is I had a group of interns that was coming in as they do for a semester. At the event where the interns are coming in, it's a welcome reception for them, and they're all in various tables. I went to one table, and I said, "Hey, I'd like to meet with you guys periodically as you go through your internship," and so I did that every few weeks. I'd get together, and some of them would get together with me and just talk and see how it's going. Actually, the thing about interns and even new employees is they're the new blood that comes into an organization that in communications, for my field specifically, it's changing so much all the time. During my career, it changed in unimaginable ways. But the people coming in are the ones that have the latest knowledge, because they're teaching different things in communication school, in journalism school now than they taught when I was there. Some are the same, but a lot of the technologies weren't even existing, so they all know the latest information.

They bring you back to the enthusiasm. If you ever lost the enthusiasm that you had when you first walked in those gates, when I drove up here in my $500 car, if you've lost that, they reignited in you, and so that was a wonderful experience. Also, you're helping students, and you're building the workforce, and it was great. I worked with some of the same people around the center that I worked with in communications. I was just doing a totally different job, and that was interesting too.

After a year there, I ended up back in communications, but at a higher management level of both branches, so both the outfits, the communications outreach and the media side. So shuttle had ended, and I was really glad to have the opportunity to do those things because it certainly kept me from being bored at all. I learned a lot of new things, and saw a lot of new perspectives, and also managed different people, and got to end up working with different areas. It changed my perspective in a way that it could never be changed back, it made me better.

ROSS-NAZZAL: Can you elaborate on that?

HARTSFIELD: Really, like I said, about the in-flight events, just the fact that everything hits on different cylinders, and that everything should be integrated better and pulled together. Then also, I think, too, it's one thing to manage the same group of people your whole career or even though you're bringing in new people, it's still the same area. It's another to go into—I guess when I went to the communications outreach manager, I didn't realize it until I got there and I was the manager, I should have realized, I didn't think about it, but it didn't matter. But I was a male manager, and every employee was a female.

ROSS-NAZZAL: Oh.

HARTSFIELD: Not a big deal, it's interesting, right? I felt a little intimidated by it, but it was great, it worked out great. I think they all loved me as a manager too. In the end, it taught me things about being a manager. Every time you go change to a different group of people, you learn new things about how to be a manager, and you also have people that you lean on to mentor you about the different challenges you face. You can't do things like that without growing. The same in education, I didn't know anything about education, didn't know anything about internships, fellowship, scholarships. I knew people, at that point, I thought I knew how to manage people, and I brought that in, but I let the people educate me about the subject matter, which was good too. It's good to sometimes manage people doing something you don't know anything about. It creates a new level of trust in their instincts, and you have to trust.

ROSS-NAZZAL: What did you bring back from those positions when you came back to communication?

HARTSFIELD: I think it was the integration aspect. I was definitely, I think, a better manager of people just because of the experiences I had, so those were the main tenets. Better manager of people, I guess one of the indications that you've reached a good level of being a manager of people is to know for a fact that there's no totally perfect way to do it, and you'll never know everything about it. So you have to take it day by day, and be open, and honest, and fair with people, and communicate. It helped my communications with everyone a lot, going from different place to place to place.

I will say then, just from a flight perspective, when I got back, shuttle had been over for a while. Commercial spaceflight was still in development. We were leaning on the Russians heavily for everything, for the station, for cargo supply, for crew supply. I still recommend that you talk to Rob [Robert A.] Navias as an oral history interview if you get a chance because he was instrumental in helping coordinate that Russian relationship all through that time, just as he had been after *Columbia*. He was really the one that we left in charge of working with them a great deal. Of course, there were others with the headquarters and international relations, but Rob was really probably the most known to the Russians out of all the communications people at NASA and had been over to more launches and landings than he can count, way eclipses everyone else.

But commercial spaceflight itself was not here yet. It was coming into being. I'm trying to remember if there were really any major difficulties with the station during that period. There were, here and there, some issues, and this kind of thing. I don't think anything major that sticks out relative to other things in my career that have occurred. But I will say that we got to the point then when we had commercial cargo happening, some commercial cargo, some international cargo. I think HTV [H-II Transfer Vehicle] came online first before commercial flight, which was good. It caused us to figure out how to cover and communicate an international cargo flight to the station that was not Russian. Because the Russians are one thing to deal with, the rest of the world is something else.

ROSS-NAZZAL: Was that in the agreement? I know last time we talked about going up to Montreal, were you-all thinking about that at that time?

HARTSFIELD: We were thinking about how we cover things with transparency and operational transparency. At that point, I don't think you could foresee everything that was going to go on, on the station. Even back in that time, we didn't foresee that there would be spaceflight participants from Russia. In fact, I remember when that first came about, I was the Station Program PAO, happened to be when that was going to happen. I went up to the program and I said, "Hey, we're hearing that Russia is going to fly a private citizen," I swear the program said, "What? That can't really be something they can do." And then they went and looked at the agreements they had, and, yes, it allowed it. So then they had to develop a plan for how to deal with it, which it turns out to be the future of spaceflight.

ROSS-NAZZAL: Yes.

HARTSFIELD: So there's a lot of things in that early meetings we couldn't—now, that group continued to meet, and I will tell you, Rob was instrumental in a lot of those meetings, so a good person to talk to still about all of that. The group was a living, working thing to evolve, not meeting every year, but meeting every time that it was required.

ROSS-NAZZAL: Got you.

HARTSFIELD: I would get insight into what I thought they needed to talk about and what they decided, but I didn't go to them. But the international coverage was pretty straightforward. We had covered elements launching from countries. So cargo craft was not totally unprecedented in terms of that. We had the groundwork from how we covered the elements before, and it was joint

coverage. We want it to be fully broadcast in English here, I think they had a Japanese version, Europe, similar. But then when we got to commercial cargo launches, and SpaceX came online with those and Cygnus, there were two different models for communications then. Somehow, SpaceX, after the first flight or so of cargo flights, evolved into where they would do a version, and we would do a version of coverage, simultaneous. So there was a SpaceX broadcast, and there was a NASA broadcast that happened at the same time.

With Cygnus, that was not the case. Cygnus, we just did a NASA broadcast, they did not do one. SpaceX, no, it worked out the other way, and I think one of the reasons that happened at first was the difficulty in the marketing aspects that SpaceX wanted to do with their launches that were ethically a problem to put on NASA coverage and NASA television. Because it would appear we were endorsing some other marketing efforts they had for their company, which talked to legal about that, I don't know, but we would run it by them. So it evolved that way, and for many cargo launches, that's how it worked with SpaceX.

I think one of the big things communications-wise leading into commercial crew, and I will tell you the person who is now at SpaceX and manages communications at Starbase Texas, Dan Huot is the person that—Kyle Herring had done Commercial Crew Program a lot, but then he became actually in the program, not in the communications office as working there in integrating activities. Dan Huot is who I put in charge of Commercial Crew towards the end as they were getting close to flying. It was a very complicated path to get to crew communications with SpaceX.

One thing about it, when SpaceX started to fly even cargo flights, and we had learned lessons from station with Russia and with other countries. That there's information that even though we want to be transparent, it's a sovereign nation, and they release what they want to release. We have agreements with them, and our agreements really pertain to if it's a risk to our

crew members. That's our only right we really have is to say that if there's something that is going to affect the success and safety of the crew members, we need to put that out to the public right away, which we never really got pushback on anything like that. But the press wants more than that, they were used to an open book from NASA, and a sovereign nation doesn't have to do that, they can do what they want to do. Of course, we'd send them to that nation to go ask questions, and they would not be satisfied with the responses they get, and they'd come back to us, and we'd just throw up our hands and say, "Well, go ask them again." There comes a point you just have to do that.

But it was good preparation for the whole community involved, us and even the media, I think, for what happens with commercial spaceflight because with commercial spaceflight, you have proprietary information because it's a company, and it's developing systems and its operating systems that it needs to make a profit off of. They're not a contractor; they're a partner just like a foreign nation is a partner. A little more difficult to justify to the media because the media know that you're putting in sometimes the majority stake of funding for the partner, but they're still a partner, and our goal is still to have them foster a business, and it's a U.S. company. So the media, a little less understanding on proprietary information, so there was a lot of rough road there with SpaceX, and the media, and NASA for a little while in terms of how much transparency to put forward.

Again, cargo missions in particular because there was no human on board, so when does it become an issue of worth to provide to the media? Obviously, it's going to affect the success or endanger the success of the cargo mission in getting to station, then that impacts the crew on station, and impacts station, which is a NASA asset. So we had to work through that. I think there were issues, spacecraft lost, spacecraft problems, that sometimes that's how progress is made,

unfortunately, in communications when it's a worst-case scenario. So we made progress in those areas at that time, but we were still doing separate broadcasts on things. Except for docking, we would do one broadcast there, but launches, we would do separate. To this day, we never broadcast cargo spacecraft returns to Earth, we just put out a statement about it.

But for a commercial crew, that was not going to be satisfactory. I think that came around pretty quick in thought process as we were thinking through it in communications, that we needed to do a single broadcast. It was not accurate messaging, even for cargo, it was not accurate messaging to have two separate broadcasts. Because, yes, SpaceX is its own company, and Boeing was its own company, but NASA has enabled that to take place, and they're flying NASA astronauts. So it needed to be a single broadcast to send that right message of an integrated activity that is totally integrated and totally an integrated team, not separate. I kept telling Dan to push toward that.

We came to the idea of trying to do the first or the last few cargo launches before the first Demo-1 and Demo-2 to do those is a unified broadcast, and that was not easy. Dan worked really hard at that with SpaceX to pull that together then and legal, and to get everybody to compromise on how much marketing they could put in. That was really the toughest aspect was the marketing amount that SpaceX could put into a broadcast when it's on NASA TV.

ROSS-NAZZAL: Can I ask about the marketing because I'm trying to think in my head, what sort of marketing was there?

HARTSFIELD: Well they can't go say some things like they're the best provider for all of this, and we can go do that, and you can fly more satellites on here. Probably talk to legal if you want to

get more on it in depth, but there's difficulties there. You can't have NASA endorsing this one over any other company out there that may provide launch services.

If it's on NASA television, then it's seen as endorsing if you say the wrong things in that regard. Not insurmountable, but difficult because the company's based on creating business. I used to tell Danny's bulldozing a path through the wilderness because he had some tough days and just keep bulldozing along. We got there, did integrated broadcasts for cargo launch, I forget which one it was, one or two before we got to commercial crew. First one, rough spots, almost fell through on doing it again, but then we did it a second time, got better.

There's still a lot of negotiation that goes on today in every broadcast that we do with commercial companies period. Boeing, SpaceX, Cygnus, we still negotiate there. Every other commercial entity we've dealt with about the marketing, about proprietary information. The bottom line still being our crews, if our crew is on, it comes down to that. The live communications is coming from our crew to SpaceX, so it has to go out public live. That was a stipulation we made, which got agreed to. In the end, I think then for Demo-1 and Demo-2—Demo-1, we did a fully integrated broadcast, there was no crew on board, and it was a fully integrated broadcast. It won Emmy Award, actually, it went really well.

ROSS-NAZZAL: I didn't know that.

HARTSFIELD: Then Demo-2, what we would never have envisioned, the most crazy thing when I look back at shuttle and then moving towards commercial crew, the craziest thing was that we would fly Demo-2 during a pandemic. When everybody is on Teams, virtual, and it was a crazy, crazy amazing thing. But I think the broadcast went perfect, it went great, it was a great mission,

great crew, great coverage. I know I looked when it finished, I pulled up on the museum, they show you all the front pages from around the world, it made front-page news all around the world that astronauts are launching from the United States again.

What I told the team then, I think it's very true, is it was rough times for humanity in that pandemic. At that point in time, there were the reports unseen with the counters about fatalities from the illness, and that there were reports from Italy of people singing grief songs from balconies when coffins were carried by multiple times a day, and there was just this kind of mood in the country and the world. Then we take over all the front pages with an uplifting story about, again, perseverance because it had taken longer to get to that point than ever envisioned when shuttle ended, right?

ROSS-NAZZAL: Yes, oh yes.

HARTSFIELD: But it got there, and it worked perfectly, and here's humanity moving into this new commercial spaceflight realm, which I will tell you too, even back in the Apollo guys, Doug [Ward], Jack [John E. Riley], other folks that were here when I first started. And even reading the history of Apollo, you look back, Wernher von Braun, all of those folks, everybody who was working here in the early '60s, I think, even the late '50s, their dream was that spaceflight, much sooner than it's going to ever be, would become commonplace for the average person. The mural at [JSC's] Teague Auditorium [by Robert T. McCall], you look at that, that's a vision of spaceflight that is like air flight. That everywhere where there's colonies, people are flying, it's just average citizens flying to space, you're not special, you're not a billionaire, you're not a selected astronaut

who is the best and the brightest. You're just the average people who are great people flying into space because that's what civilization is at the time.

I think it was in NASA's original visions, maybe not written somewhere, that that's what NASA wanted to do was to create that open space for that. You're never going to do that without commercial entities finding a way to make space a business and developing that kind of activity. So to me, commercial spaceflight is a major step that's necessity in that dream. It's a huge milestone that we're trying to get to that dream. That dream still may be a hundred years away, but it's never going to be realized without commercial spaceflight.

Hard for NASA because I think it's also an evolution away for the agency from what it originally was. That now, one level of spaceflight can maybe be turned over to commercial entities because maybe the business case is there, but some of that remains to be seen. But maybe the business case is there, maybe they can all succeed at that, maybe it can become, that low-Earth orbit could really be that, and we can focus on the further things that still don't have a business case, that still require breakthroughs in technology. But I'll still tell you, what NASA has been for those years leading up to commercial flight was a unique circumstance, and it was never envisioned, in my opinion, from the early days of the agency to be what NASA will be in the end. It was a means to try to build that business case to expand spaceflight for all of humanity.

I think the center and a lot of people at agency had difficulties accepting commercial spaceflight sometimes in there because it was such a cultural change. The media did maybe because of the proprietary information and this kind of thing, and they're not as forthcoming, and they have good reasons not to be forthcoming as NASA is sometimes on things. But I think, in the end, people are starting to see that. It's a step toward the path, toward the goal that I think

NASA wants to get to, and the whole country and the world want to get to, and you can't get there without taking those steps.

ROSS-NAZZAL: Yes, I wonder, would you be open to chatting a bit about the Starliner [Program] and the issues there and how you handled those in public affairs? We should definitely talk about it since we're talking about commercial spaceflight.

HARTSFIELD: Sure, yes. Starliner's been challenging, there's no two ways about it, nobody's going to say anything other from the first flight actually. I think transparency though, I will say this, Boeing, it's different than SpaceX because Boeing chose a different model of using JSC assets for a lot of things, JSC mission control. Boeing has been totally integrated into partnership throughout Starliner. It was a struggle to work the two broadcasts into one with SpaceX, never had that issue with Boeing. Boeing was going to do a single broadcast from day one with us. But then they'd also seen SpaceX doing that by that time, so maybe. I'm giving them too much credit on that, but it was never difficult. They were great partners to work with communications-wise.

When we ran into problems during the flights, the test flights, the uncrewed test flights, really transparency came pretty quick. At first, it was a little bit of a shock to the system, I think, when they had to deal with it, but pretty quickly, they came around to being transparent. It got harder the more flights you do, and the more problems you have because the company has a lot riding on it. I think they were still forthcoming.

When we got to the crewed flight, I think there were legitimate differences of opinion in the technical community about how big of an issue certain things were. Maybe those were reflected in the difficulties we had with communications. Unprecedented some of the things that

no Starliner people appeared in a couple of briefings by choice. We wanted them to, but they would not be in it, so it was just NASA. This is during the flight at the final decision point. I think everyone has gotten a bad rap is the right word to say. It's the test flight, so I would tell people this on the test flight with the crew. I think it was only the sixth time that NASA's flown a new spacecraft with a crew onboard, a test flight with a crew, sixth time in history, Starliner was. Every other one of those, if the spacecraft had any kind of a problem, it needed to be fixed right then and there because you weren't going to find any other way home. You were going to come home on that spacecraft, you're going to make it on that spacecraft, or you're not going to make it.

This was the first time that there was ever a test flight in space with people that had a plan B possibility if you needed it. To me, that's a great indication of what a great maturity we'd gotten to in space that you have that. That you suddenly have a test flight that has a—I guess, it's like an airplane with a parachute, you have a way out if you needed it. So I think that was lost on the world. I don't think they understood that that was a great benefit to have that. Does that make NASA more cautious than you would have been? Probably, probably makes us more cautious because there was no point in being cautious otherwise. You had to be cautious, but you were going to come home on that spacecraft regardless, so you had to figure out the best you could. I think we did the best of both of them. They were trying to figure out how to come home on Starliner if they could have, but if there's any doubt whatsoever, who would not choose the option that is more proven, which maybe that's a catch about having that outlet. It's not a good analogy to a parachute. You don't probably jump into a parachute as quickly. But I would say that it was, in terms of absolute safety, when you're looking at it, if there's any flaws whatsoever in the spacecraft, you're going to choose the more proven route possibly.

But I think there was a lot of debate in the engineering community about that while the flight was taking place, and it probably hinged really deep in people's minds on those things. Yes, it was all about thrusters and technical aspects, but also that fact that here is a plan B that we know is proven, or here's the test flight continuation that maybe has flaws now. So what's the safest approach because NASA is going to take the safest approach. Of course, Starliner landed well without an issue, uncrewed, and I think that just heightened a lot of opinions.

I respect the fact that I think Boeing is going to continue and fly again, and I hope they do. There needs to be way more than one commercial provider for spaceflight to reach that dream that I was just talking about a minute ago. We need many people who can fly people to space, and so it's good that there are others working toward it. But I do think that it is a huge advantage and a huge step forward in the business of spaceflight, in my opinion, that you have the opportunity now to do test flights like that where you have an alternative mid-flight if you need it. If the station goes away, maybe you won't have that again. But it also comes with the difference in logic, maybe sometimes, it happens. But I don't think the public understood the order of magnitude jump forward it was in spaceflight to have a test flight that had an opportunity to change course midstream.

ROSS-NAZZAL: What did you think of the coverage of being stuck in space?

HARTSFIELD: That's where I thought the coverage was lacking on that. And because the crew knew all along that this could occur, everyone here knew that it could occur. Bottom line is, I think that was the whole element that was missing, was that it's a test flight. The spacecraft had some issues, it landed fine, but we chose to keep the crew on station because—and we could have

brought them home quicker, we could bring them home in an hour if we needed to. There's always a lifeboat on station for every crew member. Would that endanger the science and the activities going on? The media doesn't get any of that.

I will tell you, I'll go back to my analogy of, we have media that cover us all the time. It's getting less, it's less than it was in 2007 when I was talking about this before in this interview, but it's decreased over time. The ones that stick with us and cover us constantly and really know space and are educated because it's a complex subject. People don't dive bomb into it from a publication where they have nothing to do with it, and they're not going to write an accurate story, and they're going to grab the headline as best they can and selling furniture, selling groceries, selling what have you.

Unfortunately, there's less people that cover us all the time now, so there's less of a chorus out there that will tell the accurate story. There's still one, there's still one, they're probably not as widespread as they were. So we certainly experienced that with Starliner, and with the crew stuck in space stories, great headline, nothing better than—a crew finishing out a test flight in space, that's page 18 of the paper, a crew stuck in space, page 1, you know?

ROSS-NAZZAL: Yes.

HARTSFIELD: More readership, more ads can be sold. I guess you just have to understand the business that way. How do you counter that? You just keep saying the facts, and hopefully, someone will write them. The crew answered their questions, and I think that is the final thing that counters stuff, is the crew is the one that tells you the final opinion, and what they say, nobody can speak for them.

But I think that was the point that was missed was that it was a test flight, and the crew managers had the option. I think I'll say it has always been known pretty well that crew members are integral to decisions, but the crews generally, the test pilots that fly or the crew members are willing to take more risks than the managers are willing to have them take. I think that's a universal truth in the business.

I think this one was decided where it was the better decision to stay on station and come home with a proven entity than risk coming home on Starliner at that time and work on improving Starliner for the next flight. Should it have been launched with those flaws? That's a tough question. I'm not sure I have an opinion on that, so I think you need more detailed, technical input to figure that out. I will say this, on everything I've ever been involved with, *Columbia,* and every issue that's occurred with shuttle, and all the missions that I've had that were ups and downs on missions, all those cases of perseverance, Hubble and all those, hindsight is always 20/20, and it's too easy to go back. It almost taints your judgment so much to go back. You need to go look at lessons, learning things, but hindsight can taint your judgment and make it seem so much easier than it really was at the time. So I would assume that's probably at play with that as well.

ROSS-NAZZAL: You can decide whether or not you want to answer this question, but I'm just curious. There was a lot of discussion and criticism of the agency for not bringing the astronauts home sooner by the administration and by another individual. How did you handle that? Was that something public affairs did?

HARTSFIELD: I think that was a lack of understanding of the situation. I think NASA did a good job trying to explain that, and management did a good job trying to explain that, but the media

create their own rising tide too. I think the media shapes politics. There are congressional hearings, like when I see media, then a congressional hearing is going to follow, a bad media story if it catches enough fire, if it goes enough places. The media, there are going to be ones that don't report accuracy because stuck in space is a great headline, but I think we could have brought them home sooner, of course, technically any time. The Station Program was basing their decisions on when they're going to come home on what is best for not just those crew members, the Starliner crew, but every crew that's assigned to go to the station over the next six months, and all of the researches on station and the health of station. You need to keep a certain component of crew on board, you need to keep your crew there for increments that are within our experience base.

Factors in their decision were ones that the average layperson is not going to bring in to play. They're not going to look at what is the best time based on all of the traffic going back and forth to the station, all the experiments you have planned, all the maintenance work that needs to be done, all of the crews you have in training. When you look at it that way, rushing to bring them home right away, not the right answer. The right answer was to find where they fit in the logic path the best to come home for the station overall, which I think the crew certainly understood. It's just, again, not a big gripping headline to try to explain that, right?

ROSS-NAZZAL: Yes.

HARTSFIELD: Then if it's not a gripping headline, then the media is going to write it up another way, and then politics is going to respond to the way they're seen in the media.

ROSS-NAZZAL: Yes, it just seemed to be this hot potato flashed up. I was just curious if that was something that you had dealt with from that side, not necessarily the media side?

HARTSFIELD: I mean, just from the media stories. I'd still say it was the media. Mike [Michael D.] Griffin had a great line at a press conference once. It was about hydrogen leaks, I think, it was about something that he was explaining when he was [NASA] Administrator.

ROSS-NAZZAL: Oh, yes, I remember that quote, right. He was quite blunt.

HARTSFIELD: Oh, yes, yes, and his thing he said to the media was, "I can explain it to you, but I can't understand it for you." A little arrogant on that quote, maybe he has the right to be arrogant. But I will say, when you're faced with those headlines that are inaccurate, that are not portraying it correctly in your opinion, you just keep reporting the accurate truth that you can and explaining the facts, and there's not much more you can do.

ROSS-NAZZAL: Yes. I did want to ask you because we should talk about it if you have time, and that's Artemis and Artemis I. How did that change your work?

HARTSFIELD: Artemis has been fantastic. Constellation, we talked about that and how it was such a fantastic atmosphere after STS-114, and where we were going, and everything was out there and planned, and the dream was there for everyone. Artemis, the same way, as it has come into being, it's like other programs, it's taken a long time to get to this level, and it's so hard when that occurs, but now, you have more. It's back to that same thing of more spacecraft under construction, more

things under development, the rovers suits, everywhere you turn. The public has been captured by Artemis I feel like. We get so much interest, we had so much interest in rovers, in suits, in Gateway, in spacecraft, in Orion. Artemis I certainly captured the public. It had a lot of interest, a lot of viewership that launched, in and of itself amazing. Artemis is fantastic, and it has enthused people, people here are excited for it. The atmosphere at JSC, atmosphere at the agency is excited for Artemis. We'll see how the times go for it, but they have been excited for it.

I would tell my teams always that they're the right people here for the right time for that, and that it's going to be one of the best stories you ever tell to humanity. There could be the same difficulties it faces in a little bit, as Constellation did, of not a differing with the objectives, but a differing of opinion on how best to meet them. I hope that if that does happen, it makes it through any evolution of that kind with the objectives still intact and just the tactics may be changing. If they're going to change something, just the tactics, not the overall goals. Constellation, it all just went away, seems like. Artemis, I don't know that it's even realistic to think that you'll have a program like that that won't evolve and change while it's in progress. So hopefully, we can find a way that that can occur without losing the program.

ROSS-NAZZAL: Were you involved at all? [James F.] Bridenstine came out and said, "We're going to send the first woman to the Moon," were you involved in any campaign for that?

HARTSFIELD: I wasn't, that really came from Headquarters.

ROSS-NAZZAL: Okay, yes, I was curious about that. So why did you decide to retire?

HARTSFIELD: Yes, well, that's really not based on much at all with NASA. In fact, I had thought about staying through Artemis II. It kept slipping.

ROSS-NAZZAL: Oh, yes, that's true.

HARTSFIELD: Because my time frame for retirement was really focused at the end of this year, the end of 2025 because I turned 65. Lots of things happen at 65 that make it a good time to go. All my kids got out of school earlier this year, I wouldn't say they're all financially independent yet, but they're certainly well on the road, I can see it happening. My wife and I have things we want to go do, so it just all clicked together, and then an incentive that they offered, impossible to refuse based on the fact that I was going to retire all along, I just hadn't told anybody at the end of this year, come hell or high water. I'll miss it, I'll miss working at NASA, but there's a phase three where we want to go travel and do a lot of things together and focus on the family.

ROSS-NAZZAL: Yes, that's understandable.

HARTSFIELD: Yes, and it's just all those factors. I think when you retire, it's more based on what's happening with your family than with what you're doing at work in the end, probably. Maybe it ought to be, right?

ROSS-NAZZAL: That makes sense, a lot of people I know who have retired, that's really been the push factor or the pull factor, I'm not sure which.

HARTSFIELD: You get your kids out of school, and then it's back to you and your wife again, and you get to go do the things that you couldn't do while you had all the kids around and doing all that stuff all the time.

ROSS-NAZZAL: Yes, yes, well, I did have a couple of general questions if you don't mind?

HARTSFIELD: Okay, sure.

ROSS-NAZZAL: You see the switch from public affairs to communications, why and what's the difference? I still call you guys public affairs.

HARTSFIELD: There's not really a difference. In my view, the job has been the same. To me, I'd say communications is a broader term that encompasses the outreach, the exhibits, the whole thing as well as media. Public affairs probably focused more on the media side only. So when we have an Office of Communications, that encompasses all the various things that communications entails, which is all of those. It's exhibits, it's executive communications, outreach protocol, tours, it's media, social media, television, mission support, broadcasting, program communications. So communications to me is the broad term, public affairs was more focused in, although back when I started, they called it the Office of Public Affairs, and it encompassed all those things too. So why did it change? I don't know, but public affairs, in the end, came to be associated more with just the media side of the house for some reason.

ROSS-NAZZAL: Okay, yes, I was curious about that.

HARTSFIELD: But comparing then to now, it's just impossible. I try to think about, like I said, I think at the start, I don't know if I said, but NASA changed dramatically over the years, I was here 37 years. But even more dramatic to me has been the change in communications technology, and thus, how you could—so I came here, and I was a writer, and I could go interview people, and tell a story, and I had a picture I could put with it, and I felt I did a good job at that. I really got a high out of doing that, I was inspired by it, I loved telling people stories, I loved it, I told you all that. But that was exciting, I could do that, and that was an accepted way to do it. You had television too, you could use television, but television was hard, you had big cameras, editors had to come in and do it. It wasn't easy, it's expensive, but you could use that as part of the story too. Still photos, one needs either, you had to take a photo, then you had to go get it in a darkroom, get it developed and printed, and then get it into a publication.

But now, you have social media, and reporters these days have to do it all usually. They have to write a story, they have to develop a web post, they have to develop a social media post, they have to take pictures, they probably have to take a video clip to put out as part of the social post. So it's one jack-of-all-trades for a lot of reporters that have to go do that. They teach you to do all those things, generally, in school now when you come out, digital communications, so those changes have been phenomenal. Yes, the world is different because of it in the ways that we can consume information and get information so much.

What in my mind has not changed are the basic things that interest people. You can explain those in a lot of ways and tell them, but people generally are interested in other people. That's really what it boils down to, and that hasn't changed, I don't think that will ever change. Your mechanisms you can use to tell the stories of other people, that maybe probably will always

continue to change and evolve, and it's great to have. It's like colors to put on your painting. It's just you keep adding to the color palette, more and more colors to put in there to make sure the painting transmits what you want it to transmit to somebody else.

ROSS-NAZZAL: Yes, I wanted to ask you to talk about the evolution of the *Roundup* because you had seen it from a paper copy, and now it's an email.

HARTSFIELD: Well, it fits that whole analogy I just said, right?

ROSS-NAZZAL: Yes.

HARTSFIELD: The *Roundup*, I have an affinity for the old paper copies and the wax paper and all the stuff we used to do, they were cool, but then it became electronic and email. It remains to be seen. We didn't have a good way to track how many people picked it up off the table in the office and read it when we brought it out and put in the office. There was no real good way. Somebody grabbed it, you didn't get an indication that, oh, somebody clicked on it, somebody hit it, there's no stat that comes out, so readership was hard to gauge in those days for the *Roundup*.

I think it's a legitimate question, did it get more readership then when it was sitting there than it does when it's an email, do people open it in email? The email has a junk problem, you get too much email, and so that's hard. I think what is better, what they just have done is that you come, that when you first go to your computer and you go online, the first page you're going to go to is the JSC internal page, which in one sense, the *Roundup*. The *Roundup* stories are now on

that, and that's great. That level of internal communications, and I hope people do stop and read it, and we do get good viewership on those.

But I will still go back to the whole premise of why I was hired. I was hired to increase internal communications because, at that time, the Rogers Commission [Presidential Commission On the Space Shuttle Challenger Accident] said internal communications was critical to a safe atmosphere at the center for NASA, safe spaceflight. I'd expand it, we talked about all these difficult things that happened in 2007, the workplace violence and this kind of thing. I just think internal communications, the people talking to each other, people understanding each other, reading about each other, reading about what's going on at the center, being open is critical to all of the teamwork here and to everything. It is to workplace safety, and workplace health, and workplace happiness.

So having a daily update now that goes out and having it on your website when you open your computer to see the feature stories, it's a great blessing. Still the same content though, I guarantee you what people are interested in the most. They're interested in what's happening at the center and what are you going to do for badging and what's going to happen there, but the stories that are going to get the most clicks are about their coworker and something they didn't know about their coworker. If their coworker goes off and roller-skates downtown Houston every weekend with some group, they're going to love that.

ROSS-NAZZAL: Yes, that was a fun article, I did read that one.

HARTSFIELD: Okay.

ROSS-NAZZAL: Well, I'm just looking at my questions. I think we've really touched on a lot of these, but is there anything else that you want to add before we wrap up today? Anything that we didn't touch on?

HARTSFIELD: It seems pretty thorough, Jennifer. I can't think of much else. I hope that it's useful information, and like I said, I was lucky to get to work here. I got those second chances that ended up with me being here. Look back on it, I can't really believe that it worked out, but it sure went by fast at 37 years.

ROSS-NAZZAL: I bet, yes.

HARTSFIELD: It's been exciting, and also people, the people are what the—you want to talk about being a leader and being a manager, and the great, most rewarding thing has been people. That's what has made working here so great. You're part of a lot of exciting events, and maybe you are a party to history some. You get to watch history being made because that's communication does. We're not actually part of it, we're on the sideline getting to talk about it, but we're close to it as anybody can be. That's what you choose when you choose a career in communications in my opinion. But it's not being there, it's who you've been there with.

ROSS-NAZZAL: Yes, I can see that, yes, those memories.

HARTSFIELD: Yes.

ROSS-NAZZAL: Well, thank you so much for coming in and for your time.

HARTSFIELD: Sure, it was my pleasure.

ROSS-NAZZAL: I know you'd rather be spending time in your garden.

HARTSFIELD: Yes.

[End of interview]