

**NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT
EDITED ORAL HISTORY TRANSCRIPT**

ROBERT L. GIBSON
INTERVIEWED BY JENNIFER ROSS-NAZZAL
HOUSTON, TEXAS – 10 APRIL 2018

ROSS-NAZZAL: Today is April 10, 2018. This interview with Hoot Gibson is being conducted for the JSC Oral History Project in Houston, Texas. The interviewer is Jennifer Ross-Nazzal. Thanks again for stopping on your way to LA [Los Angeles, California].

GIBSON: Oh golly, yes, finally found a break where I could get by. So good, I'm glad.

ROSS-NAZZAL: Yes, that's great, we really appreciate it.

GIBSON: Thank you for making room, thank you for moving back your other things. This is great.

ROSS-NAZZAL: No, thank you for making room for us.

GIBSON: Yes. We got through [Space Shuttle STS-51L] *Challenger*.

ROSS-NAZZAL: We did.

GIBSON: We got through *Challenger*.

ROSS-NAZZAL: Because we talked about the redesigned SRB [solid rocket booster] and your role in that, I wanted to ask you about Max Q [astronaut band]. I thought that was a unique thing to happen after *Challenger*.

GIBSON: It is, yes. That was a really interesting story. What happened was—and this ties in with *Challenger*. This was the summer after *Challenger*, so summer of '87. We had all been working diligently, and it was a heartbreakin year. It was a really sad, sad year for us because of our seven friends.

The next summer, Dan [Daniel C.] Brandenstein was chief of the Astronaut [Office] at that point, and he thought “You know what, we need a party. We need something to have fun and to lighten up a little bit from all the hard charging that we’ve done, so we’re going to have a sock hop.” The sock hop was held at Walter Hall [Park] Pavilion in the League City [Texas] Park on Highway 3, and they were encouraging people to put together mime acts or voice sync [synchronization] acts and dance acts.

Brewster [H.] Shaw [Jr.] and I on occasion had brought our acoustic guitars to astronaut parties and played a few songs, and I’ll never forget Brewster came down the hall to my office and walked in. He said, “Hey, Hooter, you suppose we ought to get us up a four-man rock band for the sock hop?”

I said, “Oh, that’d be a great idea. Why don’t we do that?”

We didn’t have a whole lot of time. I think we only came up with this idea about a week before. I ran down to the pawn shop in Webster [Texas], because I didn’t have an electric guitar at that point. I bought—I think it was a Kay electric guitar that was a copy of a [Gibson] Les Paul. It wasn’t a real Les Paul. I bought a little Yamaha amplifier, because I didn’t have either

of those things at that point. I had a couple of acoustic guitars, but none of those. Now today I have I think 28 guitars, because I started [collecting them] then. When I get a guitar I just don't get rid of it, I just keep them. I've given away a couple to my sons.

Brewster Shaw, Pinky [George D.] Nelson, and myself got together like on a Wednesday night and a Thursday night that week. Now I got picked to be the lead guitar, because when we got together Brewster said, "Okay, well look, I can play rhythm guitar but there is no way on this green Earth that I could possibly be lead guitar. Might be able to be bass."

Pinky said, "Well I could be rhythm, or I could be bass, but absolutely no way drop down dead that I can be lead guitar."

I said, "Well, I've been a rhythm guitar player, I'm not a lead guitar player." I had the weakest denial so they said, "Okay, you're lead."

Now that was fun. I had to really step up to the plate, because I had a lot to learn to be a lead guitar player. Of course that's the one who plays the guitar break and stuff like that. That was really fun. We, the three guitar players, got together with our acoustic guitars on Wednesday and Thursday night, and then I was on travel Friday night. They got together with Jim [James D.] Wetherbee, who wound up being our drummer, and they practiced on Friday night.

I got back into town Saturday for the actual sock hop, so the first time all four of us actually played together was at the sock hop. No practice. They loved us, and we didn't have a name at that point because we were just doing this for this one event.

Shortly after this, the head of our admin came to us and said, "Hey, we want you guys to be the dance band for the Fajita Fiesta," which we held every year. I don't know if they still hold it. They held it in Hangar 990 out at Ellington [Field, Houston, Texas]. Huge, big old hangar.

They moved all the airplanes out of it, and it was a huge fajita night. All of FCOD [Flight Crew Operations Directorate] and a lot of Mission Control would attend it. All of a sudden we had to come up with four hours of stuff. We had played for maybe 15 minutes at the sock hop, so we had to come up with four hours of stuff. From there, it took off. We were a novelty, because it was all four astronauts, and then later on we added Steve [Steven A.] Hawley on the keyboards. That was the original Max Q.

The name—now, Brewster has the recollection that he came up with the name; I'm pretty sure I came up with the name. Max Q, as you know, is that point during the Shuttle launch where you have maximum dynamic pressure, maximum air pressure. Air pressure is if you're driving down the road at 70 miles an hour and you hold your hand out the window the force that you feel on your hand is called Q. It's dynamic pressure, one-half rho v squared. I got to thinking "Okay, max Q. A lot of noise, a lot of vibration, a lot of buffeting. No music at all." I said, "That's us, Max Q." I'm pretty sure I came up with the name. I'm not going to arm wrestle Brewster for it, but I think I came up with it. Anyway, that became Max Q.

We branched out, people liked us, so we started playing in the local hotels for Christmas Eve and New Year's Eve. Golly, I remember we played downtown, one of the big hotels downtown, for New Year's Eve. We played at weddings. We played at lots of weddings. We actually had a road trip. We went to San Antonio and played at a conference over there. We played for years and years. The last year I was with the band, which was right before I left, we were the warm-up band for Cheap Trick when they came to town.

Ross-NAZZAL: That's really cool.

GIBSON: We got asked to play live on *Good Morning America*, which we did.

As one astronaut would leave, we'd pick another astronaut to take his place. I think the first one to leave was Pinky so then we got Pierre [J.] Thuot to be the new bass player. Then Brewster left, so we got Chilli, Kevin [P.] Chilton, to be the next rhythm player. When Stevie left to go be [Associate] Center Director out at [NASA] Ames [Research Center, Moffett Field, California], Susan [J.] Helms came on board to be the keyboard player. The band, as far as I know, still exists today.

ROSS-NAZZAL: I think the last time we had a [JSC] Safety [and Total Health Day] fair they were out performing.

GIBSON: They were out performing, yes. I got asked to sit in with them down at Space Camp. [U.S. Space and Rocket Center, Huntsville, Alabama]. They asked to come play at Space Camp. I was going to be there that evening, and the band asked me to sit in with them, so I did. I only sat in with them for two or three songs because hey, it's their show. I didn't want to be really horning in too badly on their show. I played a couple of songs with them, but that was so enjoyable.

The original band, we have gotten together a number of times down at the Cape [Canaveral, Florida] for the Astronaut Hall of Fame [induction ceremony]. They've asked us to play for the big black-tie gala. We've done that on two other occasions now, and all five members of the original Max Q have been inducted into the Astronaut Hall of Fame. It's always been so much fun when we got together again. It brings back so many happy memories of practicing in the gym.

We'd go over to the astronaut gym and set up all of our gear. We eventually made enough money—we wouldn't charge a whole lot of money, but we charged some money for some of these things. We made enough money to buy a PA [public address] system, the voice system, and a mixer board, and all of those kinds of things.

It was more fun, it was just more fun doing that, and it all started because we needed a little break after the year of *Challenger*. That's where it all came from.

ROSS-NAZZAL: That's a great story.

GIBSON: Yes. I guess I'll launch right into STS-27.

ROSS-NAZZAL: When did you know that you were selected? The reason I ask is because Rick [Frederick H.] Hauck—when I talked to him about [STS]-26, he mentioned that he knew before it was announced that he was going to command that mission, but was told he couldn't tell anyone for a time. What about you and your crew?

GIBSON: Mullane apparently remembered—Mike [Richard M.] Mullane, but everybody calls him Mullane, so I'll just call him Mullane.

ROSS-NAZZAL: Yes, that's fine, we'll know who he is.

GIBSON: Mullane has a little different memory, and that was that I was having a beer at happy hour with [Flight Crew Operations Director] George [W. S. Abbey]. George had told me that I was going to command STS-27, and I said, "George, it's not my turn."

George said, "Well, turns don't have anything to do with it."

The reason I said that is because I was the fourth pilot out of our class to fly. I was the youngest pilot, but I was the 4th one to fly out of 15, and so therefore I was the—let's see, the 4th one of our group to come back as mission commander. Rick Hauck came back as commander first, then Dan Brandenstein, and then Brewster Shaw, and then me.

Only four of us had flown twice, and now for STS-26, the [post-Challenger] Return to Flight, Rick Hauck was going to command that. Then I was going to be commanding 27, so I was going to make my third flight before most of the pilots in my class had made their second one, which is what caused me to say to George, "George, it's not my turn."

Having said all that, it was really a cool mission. It was Secret or above at the [classified information] level that it was, and in fact one of the things that happened was we started training on simulated missions. They had designated two crews to train on a TDRS [tracking and data relay satellite] deploy, which was going to be STS-26.

And those two crews had a funny name, 61AT or something like that. I was one of two crews that started training on a mission similar to what STS-27 was going to be. I think we were called 61MT or something like that. It was some kind of designation, and there were two crews training on each one of those.

The security aspects of the one we were training on—which we were training at a Secret level—and part of this was for Mission Control and for the whole Training [Division], so that

they'd have something to do. They were kind of twiddling their thumbs without a lot to keep them inspired and keep them working on it.

Partway through this Brewster, who was running all the classified flights for the astronaut corps—he was monitoring all of the classified flights. He came up with a bit of an issue or problem, and he went to George to say, "George, because of this we really need to specify which one of these two crews is going to be 27." At that point George did tell him, "Yes, it's going to be Hoot's crew." So I did know ahead of time that it was going to get announced, and that we were going to be the crew for it. We had some guess that we might be because it was one of two.

So we were training on the mission that was STS-27 although we didn't know what the payload was, we weren't briefed in on it. We were briefed in at the Secret level, but this mission was at another level other than that. I think we weren't supposed to run around saying the words, "This is going to be a Top Secret mission."

ROSS-NAZZAL: I was wondering what's above Secret.

GIBSON: Yes. The other thing that's interesting that we can say now is that it was also in the province of the NRO, the National Reconnaissance Office, which the existence of was Secret at that point. It was secret that there was an NRO.

Now the mission was being managed by the Air Force, General [Nathan J.] Lindsay, who was [Director] of Special Projects for the Air Force was his title. I don't remember what he was. Was he a lieutenant general? I think he was above a brigadier general. I don't remember if he was a major general or a lieutenant general. Anyway, he was running it.

The crew was interesting because the crew was the reconstituted crew of what was, 62A, which was to be the first launch out of Vandenberg [Air Force Base, California]. That crew had been Bob [Robert L.] Crippen, Guy [S.] Gardner, Mike Mullane, Jerry [L.] Ross, and Dale [A.] Gardner. Bob Crippen and Dale Gardner both left the astronaut corps after *Challenger* so that crew got recycled into what became STS-27 with me replacing Bob Crippen as commander. Then Bill [William M. "Shep"] Shepherd replacing Dale Gardner. Of those guys, Guy Gardner and Bill Shepherd were making their first flight. Oh, and then we got—let's see, I said Jerry Ross. Jerry Ross was on it originally.

One of the jokes on this whole flight as we progressed through our training was, "Well, we've been this close to launch before." When we hit six months to go, "We've been this close to launch before." When we hit three months to go, "Ah, we've been this close to launch before."

After *Challenger*, all the Shuttle launches out of Vandenberg that had to use the carbon fiber booster rockets were canceled because the steel boosters were tricky enough. The carbon fiber boosters were going to grow a whole lot more, expand under pressure. So NASA said, "We're just not going to risk one of our Shuttles with a plastic booster."

I'll never forget the day that we were assigned. Dan Brandenstein was the chief astronaut then, and he called all five of us into his office. He said, "Okay, guys, this is it. We're to go report to George in Building 1. You probably know what this is about." We walked over, and at that point George said, "Okay, you guys are going to be announced 10:00 today"—or something like that—"as the crew of STS-27." That was one of those fun moments, and then we proceeded to train. I'm trying to think if I'm even allowed to say where we went a lot of times to train.

ROSS-NAZZAL: That's what I was wondering. How much of this has been declassified? We don't want to get you in trouble.

GIBSON: Yes. What I'll do—I'll tell you what we would do, and I just won't say what it was we were going to in Denver [Colorado]. What we would do—any time we went somewhere to train, they told us, "Don't use credit cards. We don't want a paper trail. We don't want a paper trail, don't use credit cards. Pay everything in cash."

ROSS-NAZZAL: Did they give you cash? Did they give you an advance then?

GIBSON: You could get an advance if you went over to disbursing. You could get an advance. That was just a pain, so we just paid it ourselves and then got reimbursed for it in the travel claims. We'd all stay in a hotel in Denver, but they didn't want us flying the T-38s into Denver, so we'd fly into Colorado Springs [Colorado] and drive two hours to Denver.

ROSS-NAZZAL: Would you take the T-38 to Colorado Springs?

GIBSON: We'd take the T-38s to Colorado Springs, and then we'd hop in rental cars. I don't remember if we had to pay cash for the rental cars. That would be really unwieldy. Anyway, we would drive to Denver.

It was funny. One time after about, I don't know, the fourth or the fifth or the sixth time we did that, one of the guys on the ramp said, "Oh yes, I remember you guys. You're the ones that fly in here and then drive all the way to Denver."

We went, "Oh." We're being so secret, right?

Another time we're checking out of the hotel that we stayed at in Denver, and we all kind of look the same. We were youngish-looking, nobody's fat, and I remember walking up to the counter to check out of the hotel. The guy behind the counter looked at me, and he said, "Let me guess, you want to pay cash too, right?" So we stood out because nobody pays cash; everybody puts it on a credit card. So some of the things we were doing to hide, we weren't really hiding very well.

But anyway, it was a really exciting mission. We didn't have a launch time that was publicly announced. We had a launch window, and it was a big launch window. Oh, golly. I'll just say it was big. Let's just say it was three hours long. That does give away something. That shows we weren't rendezvousing on something is what that will show. Because if you're rendezvousing on something you're going to have a five-minute window.

The training was fun. The training was interesting. You had to be real cautious when you trained. Anything above the Secret level we couldn't talk about, except for I think in one little office in Building 4. And anything that really had to deal with it, any kind of things, there was a little secret building out near the astronaut gym that we'd go to that had DOD [Department of Defense] personnel that managed the files. You could go there to read some of the things that would have been beyond Secret level.

It took some care and some caution, and every time you had a meeting down at the Cape or a briefing down at the Cape you'd have a security guy, Air Force personnel usually, that would stand up and say, "Okay, the classification level of this briefing is—" something. All those buildings that we went to had barbed wire fences around them. Even once you were within

Cape Canaveral Air Force Station, the building itself had barbed wire around it, so you knew it was a spooky building. It was an interesting, interesting mission to train on.

My first two flights were both 28.5-degree orbits because we were carrying communications satellites. Those were going to go to geosynchronous [orbit], so they wanted to be as close to the equator as we could get, which is 28 and a half. This one was 57 degrees. Way up north and way down south in the orbit. It just coincidentally took us over much of the Soviet Union in addition. Smile.

ROSS-NAZZAL: I wonder why.

GIBSON: But golly, what a fascinating orbit, because that takes you over every continent except for Antarctica. All of the populated Earth is what you covered on a 57-degree orbit. My first two, like I say, were exciting, but they were only 28 and a half. This was really an exciting mission.

We got down to heading down to the Cape, and we got there. I've kind of touched on the training. I don't know that I can say a whole lot more about it. All the sims [simulations] with Mission Control were secret, so the Mission Control Center had to be—well, we had done that before, we had had Secret missions before *Challenger*. I guess I'll pick up down at the Cape.

ROSS-NAZZAL: I did have a couple of questions before that. One relating to Mike Mullane's book [*Riding Rockets: The Outrageous Tales of a Space Shuttle Astronaut*]. That's what I asked [Astronaut M.] Rhea [Seddon, Gibson's spouse] about. About the meeting where people were getting a little tired of [STS]-26 being prime crew, and there was that joke that your crew played

on them with the fire extinguishers at the Monday morning meeting. I'm wondering if you knew about that in advance and—

GIBSON: Oh, I was part of it.

ROSS-NAZZAL: Can you talk about that?

GIBSON: Mullane was the one behind this. There had been a big gala black-tie thing downtown Houston to honor the STS-26 crew before their launch, and it had them in this—I don't even remember where it was, it was probably the [George R. Brown] Convention Center downtown.

They had, "And now, ladies and gentlemen, the commander and the pilot of STS-26," and it was Rick Hauck and Dick [Richard O.] Covey. They came elevating up on an elevator up onto the stage. They were blowing smoke all around, and they were playing "Proud to Be an American" by [M.] Lee Greenwood. It was black-tie, and they ride up on this stage waving triumphantly to all their screaming fans there at the Convention Center. "The mission continues, STS-26."

I don't know, maybe it could be said that that went to their heads a little bit. That sort of thing had gone to their heads a little bit, because they really did get a lot of attention as the Return to Flight mission. They deserved it. Mullane said, "Hey, we got to do a spoof on them." So the very next Monday morning meeting after that I had to make sure—normally what they would do, we'd have our Monday morning meeting. Then at the end of it the Chief Astronaut, Dan Brandenstein, would say, "Hey, do any of the assigned crews have anything that they'd like to bring up?"

I went to Dan, and I said, "Dan, normally you just say, 'Would any of the assigned crews.' Would you please call on the assigned crews in order?"

He looked at me and he said, "Yes, okay." Mike Mullane went down to the fire station and got a carbon dioxide fire extinguisher that they were going to have to discharge to recharge it, because they expire, and they've got to be emptied and recharged. He got them to lend him one of those.

Guy Gardner and I had just regular shirts on, but we had a bowtie in our pockets. We went up and sat up in front where normally you just sit in back in with everybody else. We sat kind of up front. Mullane was right behind us, in the row behind us, up front. Jerry Ross, back at the back of the room, had his tape player with "Proud to Be an American" by Lee Greenwood.

When they called on STS-26, Guy and I slipped on our bowties. It was just a clip-on, and then Dan Brandenstein said, "STS-27." Jerry plugs in the recorder, and it starts playing the music. Mullane was hosing off all the smoke all around us. We just slowly rose out of our seats waving to everybody. I have never heard the astronauts laugh as hard as they did when we did all that. We played about 15 seconds of the song. Then the song ended and I said, "No, we don't have anything," and we sat back down. It was hilarious. People laughed for about another whole minute after this whole thing had gone. So it was cute, and it was all Mullane's idea. He gets all the credit, and it was funny. It was funny; people got a kick out of it.

ROSS-NAZZAL: Yes, it's a great moment to me in the book. I also wanted to ask you about being named "Swine Flight." I ran into Monica Hughes last week who worked in VITT [Vehicle Integration Test Team], and she said, "Oh, next time you see Hoot you just have to snort." So it reminded me that I need to talk to you about that.

GIBSON: Okay. This probably isn't one of our prouder moments, and nowadays this would get us into remedial harassment training.

ROSS-NAZZAL: Oh right, with the #MeToo movement.

GIBSON: But where it came from was—it actually was from [STS]-61C, and then it progressed on into STS-27. What's the commonality? The commonality was me. That was that the boys would occasionally snort at a good-looking woman in the hallway. It wasn't very cute, and it sounded kind of like this [demonstrates]. So one of the ladies, who was a good friend, at one point got snorted at, and she turned around and looked at us and said, "You guys sound like a bunch of pigs." That's where Swine Flight came from. That's where the name Swine Flight came from, and back then it was cute. Nowadays it'd probably get us fired or get us remedial training. At the time I guess it was a little different day and age, and it was funny.

ROSS-NAZZAL: I heard that there was some sort of ballet put on by [Astronaut Office Secretary] Beth [Elizabeth] Turner.

GIBSON: Oh golly, yes. The Christmas party after we landed—we always had a big Christmas party up in the big conference room in Building 4. The gals, the secretaries in the office, put together a ballet act. They decided it was going to be called "Swine Lake." It was cute. They all dressed up in ballerina outfits and had pig noses on. You can put that rubber band around your head that has a pig nose on it. We didn't know about it ahead of time.

I guess everybody had gotten something to eat, it was time for the entertainment, and they had a couple things. Then all of a sudden it was "Okay, and now the women in the office are going to do a presentation of *Swine Lake*." They all came out and were dancing and twirling all around in the room. Oh, that was funny. The Christmas party would have been somewhere around the 15th, and we had landed on December the 6th. Yes, that was where *Swine Lake* came from. Yes, there were some funny things associated with it.

In our table in our crew room somebody had made up a trough for us. They put a trough there, and that's the trough that the flight data file gals would come put our revised checklists and things in, in this trough that was in our room. They had made up little pigs—each of us had a little pig on our desk. It was a little amusing.

Even when we launched, on our spacesuits, on our pressure suits, on the nametags they had a little pig that they had stuck on our nametags for the pressure suits. I still have it. They had colored them for the different crewmembers. The commander's color is red, the pilot is yellow, mission specialist one is green, two is blue, etc. So I still have that little red pig in my stuff that flew. I have a number of checklists that I flew on my first two missions that NASA mistakenly let us keep. I think we talked about that with the first two missions. They weren't supposed to do that. Everything that flew in space is supposed to go into the National Archives.

ROSS-NAZZAL: I don't think we talked about that. That doesn't sound familiar.

GIBSON: Oh, is that right? What happened in the big reviews—we went top to bottom through everything after *Challenger*, and in the review it came out that NASA was just letting us keep checklists that weren't going to get used again. For example, my whole entire flight plan for

[STS]-41B and for 61C. I have that. It actually flew. I have a lot of checklists and things that NASA wasn't going to reuse. Anything that wasn't getting reused they let us keep. After *Challenger* that came out. They went, "Whoa, you're not supposed to have been doing that." They didn't come back to us and say, "Turn it all back in," so I've still got all that.

Some of the things, my nametags for example that went on your pressure suit, after that we got to keep. So I have the little red pig that was on my pressure suit for 27. Beyond that, they let us keep our individual notebooks. They gave us one of these government little notebooks that you could take notes in during the course of the mission. They did let us keep those, but that's about it. That's about it. So after *Challenger* everything went back and got kept.

ROSS-NAZZAL: That's interesting. We were investigating years ago—do you remember when [Astronaut Edgar D. "Ed"] Mitchell was trying to sell that [Apollo 14] camera? I was investigating all of that. That was my understanding—Shuttle astronauts didn't get to keep anything.

GIBSON: I remember, yes. I hate to think what my flight plan that flew on *Challenger* and my flight plan that flew on *Columbia*—and has all my notes from six days and eight days of space—would go for on eBay or someplace like that. I bet those would be quite valuable.

ROSS-NAZZAL: Oh, a lot of cash. Very, very valuable.

GIBSON: I hope NASA doesn't ever come back to me and say, "We want them back." I don't know where they are. I think I've lost them all. I don't know what happened to it in all the moves that we did subsequently, so I don't know where they are now.

Those are family treasures, I think; [that] is what I think they are. I can't picture ever selling things. I will admit I have taken checklist pages out of some of those checklists—like one of the small checklists—and had it framed with a bunch of photographs and things from the mission, and given those as gifts. I've done probably six or seven of those.

I have also, for good causes had those framed, like for Space Camp, for them to auction off. They bring a fair amount of money, and it's to support scholarships to Space Camp, which helps kids. I have not sold anything. I've given some things away but not very many. But anyway, that's the story on checklists and things that we weren't supposed to be allowed to keep.

ROSS-NAZZAL: I hadn't heard that before.

GIBSON: I have cue cards. I have my launch cue cards, because they weren't going to get used again. They said "STS-11" on them. Oh yes, because our name changed to 41B. But they didn't go back and change all of our checklists, so they said STS-11, which theoretically never existed, because it became 41B. I'm sure those would be some real collector things, but I'm not going to sell them.

ROSS-NAZZAL: Anything that's flown in space is a real collector's item.

GIBSON: Anything else you wanted to make note of, asking about 27?

ROSS-NAZZAL: We haven't talked about the mission, but the only other thought was you mentioned training, but we didn't talk about the changes, mainly the bailout system, the launch/entry suit. Did that complicate your training and things?

GIBSON: Sure. Oh yes, that added a lot. Yes, that really added a lot. Jennifer, when I trained on my first two missions, I said on occasions, "Why do I not even have a parachute? Why don't I even have a light glider parachute that if things went wrong I'd have some hope to survive?"

Those of us that came from the military jet aviation world knew that NASA's PR [Public Relations] that says, "This is going to be the airliner to space. You don't need a parachute because it's like an airliner. We're going to climb in and fly our mission and come back and land. You don't need parachutes, you don't need life rafts, you don't need any of those things." Well, all of us listened to that and looked at that and said, "Yes okay, well, good luck with that. I hope we never lose one."

When you walked out to the vehicle on launch morning and you heard it hissing and clanking and full of fuel, it was alive. It was really alive, and it's a bomb. You're sitting on 4.5 million gallons of liquid hydrogen and liquid oxygen. If it doesn't go off the correct way, it goes off. It's a bomb. Like I say, there were probably some mission specialists that didn't have a whole bunch of aviation experience that thought, "Okay, yes, it's going to be the airliner to space." I think we all knew if it goes wrong, it's going to go terribly wrong. Sure enough that's what it does.

So that was a big change. It was a very good change. Now there was a lot of whining out of crews as they were training about the pressure suit. Because it was heavy, it was hot, it

was bulky. It was less comfortable than the flight suit that we wore. Yes, okay, but dying is very uncomfortable as well. So I welcomed it. I thought, "Finally we got smart."

We put pressure suits and parachutes and individual one-person life rafts on board. We were kidding ourselves to think that nothing was ever going to happen. With *Challenger*, I think we talked about it—it wasn't an explosion, it was a breakup. The crew survived the breakup. Had they had pressure suits and parachutes, maybe we would have saved between zero and seven of them. We might have saved none of them, but they certainly had no chance whatsoever without parachutes. So I was very happy to see it.

This will fall later on when I was chief astronaut. About twice a year I'd have a commander come into my office and go, "Hey boss, we don't want to wear the pressure suit for reentry. It's bulky, it's hot, we're deconditioned. If we had an emergency on landing and we had to try to climb out and run away from the orbiter, and run through fire and stuff like that, the heavy pressure suit is going to slow us down."

My answer was always, "Have you forgotten that the Russians lost an entire crew during reentry because they weren't wearing pressure suits? You are to wear your entire pressure suit for reentry, because I don't want to have to speak at your funeral."

Over the years I guess that got to be a little bit lax, because none of the *Columbia* [STS-107 disaster] crew were wearing their entire suit. None of them had their gloves on. One of them didn't have his or her helmet on. I don't know who it was. They had become a little bit lax about it. You don't stand any chance in a rapid depressurization if you can't snap your visor closed and pressurize that fast. [Snaps fingers]

There was a lot of whining about it. I was happy for it, because it meant you're going to have some chance to survive a breakup like *Challenger*. I don't know about *Columbia*. But

anyway, yes, it did involve a whole bunch of other training, but in my way of thinking—and I think if we look at it in historical perspective—it was the right thing to do. We should have done it from day one really. That added a lot.

So down to the Cape. Getting ready to launch. We actually tried to launch on December the 1st, and we climbed in. What we had is we had, like I say, about a four-hour launch window. We couldn't tell the families what was the planned launch time. I think I can say that it was actually planned to be right at the beginning of the window. The families would all show up at the LCC [Launch Control Center] for the beginning of the window. We sat there the whole entire window, because there were winds at altitude.

Oh, let me back up. We had a preflight press conference. Normally DOD flights didn't have one. There was so much interest in everything Shuttle after the *Challenger* accident that of course for STS-26, golly, the Vice President [George H.W. Bush] was there for landing at Edwards [Air Force Base, California]. There was so much focus and so much interest. I'm sure it was driving the press crazy, because here we are, "The second launch is a Secret mission, we can't tell you anything about it."

They wanted a preflight press conference, and I said, "I don't mind. We can do it. We can keep it at an unclassified level." So we showed up for our preflight press conference, all five of us wearing Lone Ranger masks, and walked into [JSC] Building 2 for the preflight press conference. There was a picture of me that was in the paper. I don't know if you have a copy of that or have ever seen it. I have it on my home computer. Help me remember to send you a copy of it.

ROSS-NAZZAL: Yes, absolutely.

GIBSON: There was a newspaper article and in the newspaper article I'm quoted as saying, "We're probably going to get in all kinds of trouble for this." It was funny. I still think it was funny. Anybody that wouldn't just find it amusing doesn't have a sense of humor, I think. Anyway the five of us walked in with our Lone Ranger masks for the press conference.

Then we had a very nice press conference. The press was wonderful. They didn't try to pry; they didn't try to trip us up. They weren't trying to discover anything classified. Like I say, there was so much interest because we're the second launch after the accident. I think it was a good thing to do. I don't remember offhand now whether other classified missions started doing that as well.

Anyway, we sat there. The winds at altitude on December the 1st were exceeding the structural capability of the Shuttle, so we sat there for the whole launch window and then scrubbed, and then came back. We came back the next day to try it again, and we sat there for the whole entire launch window with winds at altitude.

This was December, so we've got the jet-stream winds up there. To the Space Shuttle, the jet stream looks like 120-knot wind shear, which is what it is. We're going so fast as we get to the jet stream altitude, all of a sudden you hit this huge wind shear. The loads were above our structural capability, the whole launch window. Right as we're getting to the very end of it, Mission Control come up and says, "Okay. We can go ahead and proceed with the launch. The loads have come down to—." They didn't say what they had come down to, but they came down to 100 percent of our design load. We can launch at 100 percent. We can't launch at 102 percent, but we could launch at 100 percent. So they said, "Okay, we're going to be go for launch."

We were holding, at I don't remember where, probably the nine-minute hold. I'm looking at the clock, and I know that we've got about 12 minutes left in the window. So we start counting down, and we get to five minutes. Start the APUs [auxiliary power units]; the APUs are running.

We get inside of five minutes, and Mission Control Houston comes up. Gary [E.] Coen is the launch flight director. He comes up, and he goes, "OTC [orbiter test conductor], we're going to have to call a hold. Our TAL [transatlantic abort landing] site is below the TAL site minimums."

OTC, orbiter test conductor, down at the Cape says, "Okay, countdown clock will hold at 31 seconds." Because that's the only built-in hold that you've got after five minutes. So we count down to 31 seconds. We get to 31 seconds and holding, and the clock is sitting there going like this [demonstrates]. I turned over to Guy Gardner, and I said, "I bet you never been this close to launch before."

That picks up on this line that I heard from those guys all through our training was, "Well, we've been this close to launch before." I thought it was very clever of me to say, "Bet you have never been this close to launch." I just know we're going to scrub, because we've got seconds left at this point in the launch window.

John [H.] Casper saved the day. He was over in, I think it was either Morón [Air Base], Spain or Zaragoza [Air Base], Spain, at the TAL site, and he made a call to Mission Control Houston and said, "Okay, right now they're calling the weather this, but I'm looking at the direction the weather is coming from and there's a big clear spot coming. It's going to be clear by the time those guys would get here." Based on that Mission Control said, "Okay, we can proceed."

So all of a sudden the call comes across the loop from Gary Coen that says, "Okay, OTC, we've got a go for the TAL site. You can go ahead and proceed."

OTC says, whoever it was, "Resume the count on your mark."

She says, "Count will resume on my mark. Three. Two. One. Mark."

It's counting, and I'm going, "What? What? We're counting inside 31 seconds?"

Boom, all off we went on our way to space. It was a heck of a cool ride.

There was something funny that happened in second stage. First stage—we probably talked about that a bunch—it's noisy and lots of vibration. Then you separate the boosters. Many of the astronauts refer to it as "pure electric drive." It isn't pure electric right away because you've still got a fair amount of atmosphere at booster separation. You're 30 miles up, and the atmosphere really reaches all the way up to about 85 miles.

In second stage we get going, and I notice, "Hey, there's an oscillation in pitch." There's just a little pitch oscillation. I said, "Hey guys, you notice this? It's not pure electric drive." This was after we had left virtually all the atmosphere. I said, "There's just a little vibration in the vertical axis."

They said, "Oh yes. Yes, I notice it now."

It turns out it was a product of the cargo that we were carrying, and because of the way it was attached back in the cargo bay, it just gave the orbiter just a little bit of pitch vibration. So we asked the question—I don't think we asked it from space, but in the debrief we asked the question. Then they produced the plot that showed "Yes, look at this. There's just a little variation in amplitude in pitch," the rest of the launch all the way to cutoff. But everything was quite nominal. We got to cutoff on time.

Now because of all the time that we had spent holding on the launchpad, there had been a flight rule that said, "If we have to hold more than 2 hours, that's going to result in a duty day of the crew that's over 16 hours"—or something like that—"and so we're not going to deploy on day one." Every time we carried a satellite, everybody wanted to get out of the cargo bay right away. And I don't blame them, because let's say you're not going to deploy till day two, and then you have an orbiter anomaly. You got to come back. Their satellite doesn't get launched.

We start working on day two, and according to the flight rules we were not going to deploy on day one. And I knew that the customer, who was Air Force/DOD, wanted to get out right away, soon as they could. So we worked for a couple hours, and then I said to the boys, I said, "Hey, how you guys feeling? You guys want to press on? It'll be a long day, be about 18 and a half hours." The flight rule had been if we were going to go over 18 we weren't going to deploy.

You're so wired on adrenaline at this point that it's hard to sleep, so nobody felt tired. I think I made a really good call, and I called down to Mission Control. I don't remember who the CapCom [capsule communicator] was, but I said, "Hey, I want to talk about day one." I said, "The boys are on a roll. We'd like to press on and complete day one." I said it that way because anything air-to-ground had to be only at the Secret level, and I don't know if it was more than Secret that deploy was to happen on day one.

I called down, and I said, "Hey, I know about now Randy [Brock R. Stone] is working on the schedule for the rest of the day." I said, "But the boys are on a roll. We want to press on and complete day one." So we did, and they let us do it. They let us go over. Then they let us sleep in a little bit the next day.

So we did the deploy. Of course that also involves the separation maneuver, so we had to do the burns to separate away and we separated out to—I think I can say it—80 miles away is where we went to. We could still keep an eye on “Dino.” We called it Dino, our gadget, whatever we deployed.

It was secret that we were deploying something, and of course that got declassified about four and a half, five years after the mission. If you walked outside to see us go by, you’d see two bits of light going by about 80 miles apart. So the whole world knew that we deployed something, but we weren’t allowed to confirm it. We weren’t allowed to say it.

We had the deploy that day and then finished up that day. Golly, the Payload Operations Center, which was out at Onizuka Air Force Station out in San Jose [California], they were just thrilled with us. They were just so glad that we got them deployed that day. So they let us sleep in because we had had a really long day.

I think they told us, “Don’t set any alarms in the morning. We’ll wake you up when we decide it’s been long enough.” So we woke up the next morning, I guess when they finally called us. I think that was when we woke up, when they called us, because actually we were tired. We had had a real long day. We were tired.

We had some stuff to do that day, and it also turned out that they needed us—we have to be cautious here a little bit. They needed us to re-rendezvous with it. We had trained on rendezvous and all, and we had all the procedures. I can’t say a whole lot more about it other than they needed us to go ahead and rerendezvous with it to help with something.

However, we had a serious problem that reared its ugly head first thing that morning. What had happened was Jerry Ross, on the middeck, set his foot down in a particular location on the middeck and it soaked up some water. So he said, “Water is not supposed to be down there.

What in the world is going on? So I better soak it up.” So he took a towel, and he put the towel down there. It soaked up the entire towel. He got another towel, and it soaked up that entire towel. He said, “Hoot, we got a problem here, there’s water coming from somewhere.”

Water in a spacecraft that’s an electrical spacecraft as we are could kill us, because it floats around free in weightlessness. We opened up one of the panels to where we could look underneath the deck. I could see a mass of water that had adhered to one of the surfaces down there underneath. I called Mission Control and I said, “Hey guys, we have a serious issue here. We’ve got a problem.”

So we had to go dumpster diving under the middeck. We had to remove Volume D, I think it was, which is a big panel that’s about—you can see this but the tape can’t see it. It’s about five feet by three feet. We had to remove that, and we had to use the free water disposal procedure to get rid of all that water.

It turned out once we got to where we could really see what was happening, the humidity separator had malfunctioned and was spitting water out. Now the humidity separator is there, as its name implies, to pull humidity out of the cabin air. It’s a centrifugal thing. The little tube that’s supposed to catch the water was blocked up somehow. We had to turn that humidity separator A off and turn on B.

B was working okay, but we had to do the free water disposal procedure. Mission Control said, “Hoot, can you estimate how much water you’re seeing?”

I said, “It looks like about two gallons to me.” That’s how much water we had free underneath where it could get into electronics and fry us. It could have short-circuited all of our fuel cells, and we could have been dead in space.

Anyway, because it was a Secret mission, nobody heard much about this.

ROSS-NAZZAL: Yes, I didn't know about that.

GIBSON: We had to get that done because we had burns to do, and we would not have been able to do any burns without getting this out of the way.

Right at the very end, as we were about done cleaning all the water up and getting rid of it all, Shep did something funny. He was a Navy SEAL [Sea, Air and Land Team], so he had been a diver. I don't remember exactly what he did, but he got a face mask. Oh, the free water disposal procedure includes a pair of goggles that you could put on, and he got himself a hose somehow. So he made it look like he was a scuba diver diving underneath the floorboards to go clean out the water. So we made something silly out of it as well, after we had already finished cleaning it up.

Then we were able to do all the burns that we needed to do, and as much as I can say about it is that we did a rerendezvous where we rendezvoused with the satellite. We helped the Payload Operations Center with an issue that they had with it to where we helped get it fixed, and then we separated back out to our 80 miles. I think that's about as much as we're allowed to say nowadays.

The world out there has been rampant with spacewalk. There must have been a spacewalk. I can't say yes or no. Not allowed to say whether there had been a spacewalk. Shep and Jerry were our spacewalkers, but I can't say whether they did one. It has to sit there.

Now the other thing that happened of course was—the other big thing—this didn't get a lot of publicity either because it was a classified mission. Later on, I guess on day two, Mission Control came up and said, "Hey guys, during launch we saw something hit your right wing. We

want you to take the RMS [remote manipulator system].” I think it was originally classified that we had the RMS on board. “We want you to take the RMS and hang it over the right wing and take a look at your underside of your right wing and tell us what you see.”

Mullane was our prime arm operator, so he maneuvered the arm over there to look at the right wing. I’ll never forget saying to myself when we brought the TV view up—I think this is in Mike’s book. I said to myself, “We are all going to die.” The right wing was just shredded-looking, the tiles.

It turned out after we landed, and everything got counted, we had damaged 770 tiles on the right wing. The cause of it was that the ablative coating of the right-hand booster rocket had disintegrated during launch and showered our right wing with debris. This sounds just like *Columbia*, except that we knew about it, because we looked at it with the RMS.

I called Mission Control, and I said, “Hey guys, we’re seeing a lot of damaged tiles on the right wing.” They had to convince DOD to let them send down TV. Well, DOD didn’t want any downlink TV coming down whatsoever just in case it would show something. They finally relented and said, “Okay, we will let you send encrypted TV down.”

Encrypted TV is not very good because what it does—it shoots a frame, and then it takes about three seconds to encrypt it and ship it, and then it shoots another frame, three more seconds, another frame. You get the picture. It isn’t very good. Down on the ground, unbeknownst to us, Mission Control looked at it and they said, “Oh, that’s not tile damage. These stupid astronauts, it’s only lights and shadows that they’re seeing. They’re not seeing tile damage.”

What are they forgetting? They're forgetting that on board I am looking at clear video, not encrypted video. They never said to us the words, "You guys aren't seeing damage. You're just seeing lights and shadows."

Had they said that, I would have said, "Okay, what do I need to do, send you clear TV, for you to believe me? We're seeing—."

Anyway they never said that. They took some hours to analyze it, and I remember Dave [David C.] Hilmers was the CapCom. He came up and said, "Hoot, we've got the resolution on your right wing."

I said, "Okay, what is it?"

He said, "It's no problem. Reenter as per usual."

I was just—I was dumbfounded. I keyed the mic [microphone], and I said, "Dave, what are they basing that on?"

He said, "Stand by." He's got to get their real answer to that. Fifteen minutes later he comes back and he says, "Hoot they've looked at it, and it's no worse than what we've seen on other missions."

I keyed the mic, and I said, "Dave, I've been here since before STS-1 and I don't recall seeing anything close to this. But okay, you guys are the experts."

I should have been more proactive. I should have been more forceful, because I knew what we were seeing. There was a failure to communicate, and the failure was on Mission Control's part. They didn't tell us, "Hey, you're not seeing tile damage, you're just seeing lights and shadows." Had they said that, I could have really addressed this.

Now, I remembered that some of the astronauts got in trouble for arguing with Mission Control back in Skylab, and I didn't want to be one of those. I should have been more assertive

about it, is what I should have been. Even though I couldn't believe what they were saying, and I knew that this was unheard of, what we had.

I guess where I should have been more assertive I wasn't. I let it go. I've always been pretty easygoing. If it had been Bob Crippen saying it, they wouldn't have come back with something like that to Bob Crippen. But because I'm kind of easy, I suppose they just thought they can just blow off Hoot, "Who cares?" Anyway, we pressed on with the rest of the mission.

Oh, by the way, we did some other things, too. DOD missions were really exempt from having to do any medical DSOs [detailed supplementary objectives], but we're going to be up for four and a half days. I want us to be productive. I had asked if we could have medical DSOs, so we did a number, a bunch of medical DSOs over the course of the flight. So we got all that done.

Okay, time to reenter.

ROSS-NAZZAL: Was that recommended by Rhea? Just had to add that.

GIBSON: No.

ROSS-NAZZAL: No?

GIBSON: No, I'll tell you another story. When I was chief astronaut, a number of my astronauts came to me, about four or five astronauts. They said, "We'd like to have a meeting with you."

I said, "Sure, come on in." So they came in, and they were on a mission that involved a whole bunch of medical stuff, and they had brought a letter that they wanted me to sign that we were going to send out.

It said things like "The medical flights are no fun, the medical flights are intrusive, they're painful, they're the least rewarding, etc., etc. of all of our flights."

I said to them, "Hey, guys. This is part of our job. Part of our job is to be doing medical research. Part of our bailiwick up in orbit is to do these things. We are not going to send out a letter like this." So they gave up.

So we did a bunch of that. And okay, time for reentry. I think Mullane has it in his book. The night before reentry—I don't remember why it came up. We were watching the Earth go by, and he said something about reentry and about being nervous about it. I did say, "Hey, come on, you don't want to die all tensed up, do you? So just relax and go along with it." All the way down during reentry I was watching our elevons, because I knew what I would see if we started to burn through on the right wing. The right wing would develop more drag than the left wing, and in order to keep the orbiter balanced and keep it flying straight, the left elevon would start going down. That elevon generates more drag when it's down than it does when it's up, and so I knew I'd see a split in the flight controls. I'd see the left elevon going down and the right elevon going up.

I watched it all the way down from orbit. I have the audiotapes that we recorded on board, and they got declassified so we could have them. But all the way down, every four minutes or every three minutes or so, I said, "Okay guys, the controls are looking good." Meaning the elevons are looking good. Because I knew if I started to have a split in the elevons I might have 30 seconds to tell Mission Control what I thought of them, as we were about to die.

I don't know if I've told that story anywhere officially before. I think I have. I think I have said I knew if I saw the elevons start to split that we were burning through, and that I could

tell Mission Control what I thought of them right before we died. It never happened obviously. We made it all the way down.

ROSS-NAZZAL: Would there have been a chance that you could have used the bailout system coming back? Or would you have been too high?

GIBSON: Maybe, and maybe not. The thermal aspects of it, the temperature and the heat of reentry—where *Columbia* broke up, they were Mach 17. I don't know that they could have survived even if they had the pressure suits zipped up. Of course that's another whole story, another whole area. I think the worst part of the heating region is actually Mach 25 down to 20. I seem to remember that. They had made it through much of the heating region, but they had a big hole in their wing.

By the time we got down to Mach 10 the fire starts to dissipate, so at that point I was pretty confident that we were going to make it. Although, like I say, I still watched the elevons every bit of the way down. We had a normal—other than me watching all that—a normal reentry.

Oh, we flew the very first ever reentry without a blackout. And that's because STS-26 had put up the second TDRS, tracking and data relay satellite. So during the reentry we were able to talk to—I guess that one—through the upper antennas of the orbiter. The reason we always had blackout was that you're broadcasting down to the ground and not up to a satellite. Since we were able to use the upper antennas to broadcast up to the TDRS, Mission Control had voice and data all the way throughout, and then that's been the case ever since. But we were the first ever spaceflight to come back without a blackout.

I think I remember during the reentry at one point—I'm trying to remember who our CapCom was, and I don't remember. I came up and I said, "Dave, do we still have you?" Even though I could see signal strength, I said, "Dave, do we still have you?"

They said, "Yes, we've got voice and data." All the way down. Because we could go through the upper antennas, and therefore we weren't trying to broadcast through the plasma sheath that's primarily in front of us. All the way back down to landing.

Then of course when we landed and rolled to a stop, there was a huge hub of activity over our right wing. Everyone was just flabbergasted at our tile damage. We had lost one tile entirely. What I was told was that the reason we didn't burn totally through at that location was that there was a steel plate that had something to do with an L-band antenna ground plane, or something of that nature. The steel plate had lasted long enough before it melted through that the heat started to work on the aluminum skin of the orbiter, but at that point we were far enough in the reentry that we didn't quite burn through.

So I almost had the opportunity to tell Mission Control what I thought of them right before we died, but it didn't happen. Had we disintegrated where *Columbia* did, at Mach 17, it would have been over the North Pacific Ocean, because we were up close to the Aleutians during the reentry. We would have gone down in the Pacific Ocean off the Aleutians.

This was the second launch after *Challenger*. That would have been the end. The Congress, the President, everyone would have said, "We spent billions to rebuild, and you guys lost your second orbiter right after *Challenger*. Shut it down, we're through." So that was a close call not just for us, but for the whole Space Shuttle and the whole space program. That would have been the end of it if we had gone down. So we dodged a bullet on that one.

I guess the other thing I'll say about that is when we had our debriefing with the launch and entry team and Gary Coen—if I remember right, Gary Coen was our reentry flight director. I said something along the lines of, “Gary, if you guys had really listened to us and realized that we really did have a lot of tile damage, what could we have done?”

His answer was, “I don’t know.”

From there on, we never did anything about it. What we did do after our experience was we changed to a different ablative on the nose cap of the booster rockets, went to a stronger ablative so that it wouldn’t disintegrate during launch. But we didn’t address anything to do with tile repair on orbit. We didn’t put in place any kind of equipment or stuff that we could use to fill voids where we had tiles, so nothing got done about it.

Not that that would have necessarily helped us with *Columbia*, because they didn’t have a tile problem. They had a hole in the leading edge, the reinforced carbon-carbon. I don’t know how you’d repair that, so I don’t think any of that would have helped *Columbia*. That’s where it stayed.

The other thing they tried to do was position Air Force [Lockheed] U-2s, the high altitude reconnaissance planes, near the Cape for the launch of STS-29. Maybe they were the next launch, I don’t remember—to see if they could catch some imagery during the launch to look for damage, or look for debris or anything like that to supplement what we had from the Cape. I think it was about impossible to position that U-2 to where it could see the Shuttle during the launch. They did attempt to do that.

We didn’t have any more instances of that nose cap coming loose or losing the coating during launch, so that wasn’t a problem anymore.

ROSS-NAZZAL: So you felt okay about the changes that had been instituted?

GIBSON: Yes.

ROSS-NAZZAL: Obviously you flew again.

GIBSON: They did kind of address where the problem came from on that one. But we still didn't have an on-orbit repair capability. That stayed with us I think throughout, until the *Columbia* accident, and then I think they did put something in place. Although Rhea and I weren't with NASA, so I don't know much about that. I think they at least looked at, "Could we fill up an empty void?"

Much of the point papers and the white papers about our incident weren't really published until after the *Columbia* accident. In fact, on one of them it actually—I should send you those too—the safety organization put out something. What's the famous quote that says, "Those that don't learn from the past are condemned to repeat it"? They had those words written on the white paper in italics on the heading of it. Hammering ourselves for *Columbia* after the lesson of STS-27. That was STS-27.

Now a couple of the events that happened after it were really exciting. Those are in Mullane's book. My little crew and I, the five of us, went to the Pentagon [Washington, DC]—I want to say it was in January or maybe early February after the mission—to do several really fascinating things, and one of them was we debriefed the Joint Chiefs [of Staff].

Mullane wrote about this in his book. It was pretty intimidating to me because their conference room is really quite small. I don't remember it as being much of anything bigger

than what we're in right now. Around this table—if you weren't at least a four-star general or admiral, you didn't have a spot at the table. If you were only a three-star or a two-star, you were in one of the chairs on the rim.

We went there, and we debriefed them to tell them about the mission. We showed them our movie. Our movie was classified—I'm just going to say it—it was classified Top Secret. The way it got to Washington, DC was in a briefcase that was literally handcuffed to the hand of the courier that was taking it there. We couldn't carry it anywhere with us. It had to be sent via courier because it was Top Secret, the movie.

ROSS-NAZZAL: But you had Top Secret clearance, did you not?

GIBSON: We couldn't carry it ourselves because—I don't know if the courier was armed, but it was literally handcuffed to his wrist, just like James Bond. That's how that movie went around the country. It didn't go many places that I was aware of. I believe we took it out to Onizuka Air Force Station to show the Mission Control team out there, and we took it to show the Joint Chiefs. Those are the only two times I believe we ever were able to show our movie because of the classification level of it.

We briefed the Joint Chiefs. Right then the chairman of the Joint Chiefs was five-star Admiral [William J.] Crowe [Jr.]. Admiral Crowe was the chairman of the Joint Chiefs. Here we are, at this point I was just a lousy Navy commander. It was interesting because two of my crewmembers outranked me militarily. Guy Gardner was already a bird [Air Force] colonel, so he outranks a commander.

There's the old expression, "In the cockpit there is no rank." I was still the mission commander even though I was just a Navy commander, which is the equivalent of a lieutenant colonel and not a colonel. Mike Mullane was also a bird colonel. After the mission Bill Shepherd got promoted to Navy captain, which is a bird colonel. Let's see, Jerry Ross was a lieutenant colonel as well. But I was the mission commander. So I led the briefing, but I wanted every one of my boys to do part of the briefing. Mullane gushes about that in his book, that I wanted to make sure that they all spoke in front of the Joint Chiefs.

I guess there were a few questions, though I don't really remember. At the end of it Admiral Crowe said, "Well, are there any more questions?" There weren't. Then he stood up and he said, "Well, gentlemen, I think we owe these young men a standing ovation." All of the Joint Chiefs stood up and applauded. I could still choke up over that if I'm not careful. It was one of those moments you'll just never forget.

We just wore coats and ties to that, we didn't wear our uniforms. They didn't want us to wear our uniforms; they wanted us just to be in coat and tie.

ROSS-NAZZAL: They didn't want you to be identified?

GIBSON: I think they didn't want us to stand out, once again.

ROSS-NAZZAL: Oh my gosh.

GIBSON: The other place we went was we went to CIA [Central Intelligence Agency] Headquarters [Langley, Virginia]. When we were finally allowed to have possession of our medals.

ROSS-NAZZAL: I wondered about that. Do you finally have that?

GIBSON: They pointed out that we are to point out any time we talk about it this was not a CIA mission, this was a DOD mission. The CIA can award a medal that the DOD doesn't have, and they wanted us to have that very special medal. It was called the National Intelligence Achievement Medal. So I've tried to tell my wife I therefore must have achieved intelligence because this is the National Intelligence Achievement Medal. She of course says, "No, you haven't, Robert."

Judge William [H.] Webster was the Director of the CIA then, and we had, oh, just a delightful time in their big conference room with them. We had coffee and doughnuts in there; they took a bunch of photos and things. Then Mullane tells the story in his book as well. They pinned the medal on us on our [coats and ties], and that's in the photos as well. I should send you some of those, too.

ROSS-NAZZAL: Those have been declassified as well?

GIBSON: Now they have, yes. Since I have them, they've been declassified. As we're walking to the door, there's a security guard standing at the door. He's holding his hand out. I said, "What do you want?"

He said, "I've got to have that medal back, sir."

Mullane is the one, big grin on his face, and he says, "Wait a minute, you don't mean to say you just gave us a medal that we can only wear in a safe, do you?"

He said, "Well, yes, unfortunately that's true. Not only that, but you can't tell anyone you were here or that you received a medal. But if you're ever back in the DC area, you can drop by and we'll let you in. You can look at your medal."

That lasted for about four and a half years, and it was only when we had flown the last classified Shuttle mission, there weren't going to be any more of them, that someone from—I don't remember—I guess it was NASA Headquarters came to JSC. We had a meeting with all the astronauts that were going to get their medals now for real. They handed us the citation that they had originally let us see, and they let us keep the medal. Now we can talk about it.

The citation is this really pretty two-page thing. It's really ornate and fancy, and it talks about the National Intelligence Achievement Medal from the National Center for Intelligence, CIA. On mine it talks about the mission, and the fact that we deployed—and I can say this because it's in the citation—a major new intelligence satellite. Separated away from it and there was an issue. We had to do an unplanned rerendezvous with it and assist with fixing it, then separated away, and it went on to a completely successful career. To this day that's still as much as I'm allowed to say about it. It was really quite the experience, as you can imagine. That was pretty cool.

At that point I've flown three times, I'm way out in front of the rest of the pilots in my class. Like I said, only four of us had flown twice, and only four of us had flown as mission commander. Now Rick Hauck and I were the only two who had flown three times and had commanded two missions. So it was going to be a while before I would go again is what it

wound up being. I was fine with that. I felt a little bit guilty about being way out in front of everybody anyway like that.

That was 1988 when we flew. It was going to be 1992 till the rest of the pilot astronauts caught up and had a chance to fly a second mission at least before I'd get to fly a fourth one, third one as commander.

ROSS-NAZZAL: Right, and even your spouse hadn't flown more than one mission by that point.

GIBSON: She had flown one mission before *Challenger*. There were a number of astronauts that didn't stick around after *Challenger*. I don't know, maybe some of them it was a realization that it could be dangerous. I heard from at least one or two of them that chose to leave that, "I've already flown. It's going to be two or three years before we launch again. I've got other things I want to do, and so I'm going to go." I don't second-guess that decision.

Rhea flew once before *Challenger* and twice after, and I flew twice before and three times after. I felt like it was important to show confidence in the system and show confidence in our space program. The space program gave me a bunch of really good years leading up to that point. I said, "We owe it to devote some back to it." Plus, I just flat loved it, so wanted to stay with it.

ROSS-NAZZAL: I can tell. I did have one more question for you. I had asked Jerry about this. You hold a record supposedly for football return and kickoff. I thought that was just kind of a fun moment in space.

GIBSON: Oh, yes. Yes, we had a football on board. The reason we had a football was that we were going to the Super Bowl. We were going to go to the Super Bowl, I guess the end of January, down at Joe Robbie Stadium in Miami [Florida]. NASA had stowed this on board for us, and that was a football for us to give to Pete [Alvin R.] Rozelle, who was the [commissioner] of the NFL.

It was decided kind of late in the game, so they didn't have an opportunity to stick it into the OFK, the official flight kit, that went underneath the floor somewhere. So it just went in one of our extra lockers. Being inventive as we are, we found it in the locker. NASA had deflated it so it wouldn't take up so much room on board.

We didn't have a tire pump to be able to pump it up, so we had to be creative. We invented our own pump on board. We took one of the empty drink containers. When you would fill them up with water, the plastic cover inside would get pushed up by the water—and they were a square container. We concluded that you know what, if we could figure out a way to fasten a needle to this, we could repressurize that football.

We had spare galley water needles, so we took a spare needle and we grafted it to the drink container. By inflating the drink container, sticking the needle in the football, and then squeezing out the air out of the drink container—not water, but air—out of the drink container, and then repeating that about 20 times, something like that, we were able to get that football from being collapsed to being a viable football, so we had a football game.

I got to be the quarterback, because I was the commander, and we had two of the guys against the three of us. We filmed all this of course. One of the videos that we made was me throwing a forward pass. Trying to remember who I threw it to, maybe Guy Gardner.

I threw a pass, and you could time it. The ball was weightless and floating for four and a half seconds. So at 5 miles a second it covered 22 and a half miles, something like that. So yes, I threw the longest forward pass in football history that covered, I think it was 22 and a half miles we calculated. We had a little fun with that.

Then we went to the Super Bowl, and we were part of the halftime show. They had a huge inflatable Space Shuttle—when I say huge, I mean about 30 feet long—out on the football field during halftime. The five of us walked out in our flight suits and waved at all of our thousands of screaming fans.

For doing all that, we got to go to the Super Bowl. The theme that year was beach party, I think, for the halftime show. So who did they have there but Frankie Avalon [Francis T. Avallone] and Annette [J.] Funicello to represent beach movies. So we got to meet them as part of the halftime show. Billy [William M.] Joel was there to sing the national anthem, and he at the time was married to Christie Brinkley, so we got to meet Billy Joel and Christie Brinkley as well. That was kind of fun.

ROSS-NAZZAL: All the fun stuff you get to do as an astronaut, right?

GIBSON: Oh golly, yes, astronauts get spoiled so badly.

ROSS-NAZZAL: It wasn't too soon after that though that you did get named to command another mission, which was STS-46.

GIBSON: Yes. It was a couple years later. Let's see, when would it have been? Oh, I was assigned to that later on in 1989. That's right, it was towards the end of '89 that I got assigned to be the commander of STS-46. The reason I was assigned so early is because this was the first tethered satellite. There was going to be a lot of procedure development to handle some of the modes of the tethered satellite and handle some of the flight control issues that were going to come up because of this. So I was actually assigned to it three years before launch.

About a year after STS-27, I had worked in the Safety Office. I guess I was our branch chief for the Safety Division in the astronaut corps. We had our own safety organization. So worked in that job, and then got assigned to be the commander of STS-46, which wound up launching July of '92. I think it was going to be the 49th launch.

I was assigned to that for, golly, about six or eight or nine months or so, something like that—the end of '89 until July of 1990. In July of 1990 I was removed from that mission as commander, and I was grounded from flying T-38s, because I had a very close call with death in an air show. I was flying my little home-built racing plane—this was July the 7th of 1990—basically in an air show. It wasn't even a real air race, but they were calling it a demonstration air race.

I was in first place leading the race, but I got run into by another airplane. He hit the very strong wing that I had engineered and designed and built myself for this home-built airplane. I had built it very, very strongly out of carbon fiber and fiberglass and had designed it to tolerate 13 and a half gs [gravity]. So it held together, and the wing that was on the airplane that hit me came apart. The pilot crashed and was killed.

It got so much press coverage and so much that happened out of it that the chief astronaut decided that I had violated one of our rules that says when you're assigned to a crew, no high-

risk recreational activities such as air racing, motorcycle racing, auto racing, boat racing—skiing was one of those high-risk recreational activities.

The accident happened on Saturday, and by Monday morning they went out with a press release. I think they rushed it quite a bit. What was happening was they were going to put out a press release grounding another astronaut, and the feeling was “Well, let’s take all of our lumps all at once and not spread it out.” So they kind of rushed it. They removed me from command of STS-46. They removed me from being chief of the Safety Branch, because they said, “Well, obviously he’s not safe. He can’t be branch chief of the Safety Branch, because he isn’t safe.” They grounded me from flying T-38s for a year.

ROSS-NAZZAL: That must have been a big disappointment.

GIBSON: That was. That was a big disappointment. Coming on the heels of it was a friend of mine, a guy I’d known for a couple years, that was killed in the crash of that thing. So it was a really sad time. The chief astronaut really threw the book at me. I say it was excessive. Maybe that’s just whining and sour grapes, because I’m the one that got grounded. So I got removed from STS-46, which was the tethered satellite mission.

I worked a couple of other jobs that were really fascinating, and I’m really glad I got to do them, after I was removed from being Safety branch chief. I worked in the Orbiter Project Office, and I worked as our representative to the Program Requirements Control Board, the PRCB. That was really fascinating to see all of the things that went on in both of those programs week after week all through the way.

I think that the management—because I took my medicine without whining or crying about it—said, “Okay, maybe we overdid it.” They very quietly ungrounded me. Oh, it made headlines all across the world when I was grounded and kicked off. It was very quiet when they ungrounded me six months later. Then subsequently assigned me to the very next mission, STS-47, instead of STS-46, and republished the rule that really didn’t say what it meant.

What it meant was normally we assign crews one year prior to launch. For that one year, we don’t want you risking the flight schedule by doing high-risk recreational activities. The rule didn’t say what it meant. It said when you’re assigned to a crew, no high-risk recreational activities. It didn’t mean you can’t go snow-skiing for three years. It meant just for the last year. So when they republished the rule it said, “When you are assigned to a crew, and within one year of launch all these things apply.” So we overdid it.

ROSS-NAZZAL: What did other people in the office think of your grounding? Were they in support of you?

GIBSON: Oh yes. Oh, absolutely in support of me. I think maybe astronauts aren’t really supposed to whine, so I didn’t hear anybody whine on my behalf. I will tell you though, I’m going to say this—the chief astronaut was going to fire me. When I got home Sunday, he had me come to the office, come to Building 4, and he said, “I’m going to press for you to be fired.”

It broke my heart. I didn’t whine, didn’t argue with him or anything. When I got home I was in tears. I just couldn’t believe it. I called him on the phone, and I said, “Hey, name, I think I’ve done a lot of good things for the space program. Yes, okay, all right, I screwed up this time. I think I’ve done a lot of good things for the space program, and I’m asking why don’t you just

ground me indefinitely. That way you can make it permanent later if you want to, or there's some possibility. I don't need an answer now. I'm asking you to consider this."

He didn't say much of anything. He just said, "Okay," and so we said goodbye. I didn't hear anything more. The next day I had taken leave, because I was heartbroken. I drove over to New Braunfels [Texas] with a buddy of mine. My airplane was not flyable, of course, because the wing had been torn up a little bit.

I was on the way home driving back from New Braunfels in his [Chevrolet] Suburban riding with him, and my airplane was in his airplane trailer in the back because we had taken it all apart to put it in the trailer. I heard on the news that I was grounded for a year. I was happy because I said, "Well, at least I haven't been fired."

What I found out later on, was the acting chief at the time had talked to the one who grounded me and pulled me off the mission and was going to fire me. He was training for a mission at that point, so he had stepped down from being chief astronaut. The acting chief—I'll tell you who it was—it was Mike [Michael L.] Coats.

ROSS-NAZZAL: I was going to say that was Mike Coats. In my head I'm thinking it was Mike.

GIBSON: Mike Coats was the acting chief. He said, "Hey, this makes no sense at all. You can't keep"—the other astronaut who was getting grounded—"and fire Hoot. This makes no sense at all." The other astronaut had many, many violations of flight safety in the T-38s, and that's why he was being grounded for three months. I was getting a year; I wound up with a year. The actual chief astronaut was apparently really mad at me. Mike Coats saved my skin because he

said to him, "This makes no sense, you can't fire Hoot and keep other name astronaut." So whoever the chief astronaut was—

ROSS-NAZZAL: I know who it is.

GIBSON: —he relented and just grounded me for a year. Then after six months he relented again and, like I say, quietly ungrounded me and then gave me the very next mission. That's how that turned out.

ROSS-NAZZAL: Obviously you did your penance, and he felt satisfied.

GIBSON: I kept my mouth shut and didn't whine, didn't call in. I had lawyers call me and say, "They can't do this to you."

I said, "You know what, I'm not going to fight it. I could win this battle and lose this entire war. I'm going to take my punishment and shut up." That's what I did. Then I was training for STS-47 and went down to the Cape to train in the STA [Shuttle Training Aircraft] as STS-46 was landing. Loren [J.] Shriver was assigned to replace me on that mission.

This points out one of the ironic things about this. The rule that I supposedly violated was there to protect the flight schedule, because if you got yourself killed in an air race they'd have to replace you on the mission. That's what we wound up doing. We replaced me on the mission with Loren Shriver, so it's kind of ironic that the purpose of the rule happened anyway, because I got kicked off the mission and they put Loren Shriver on it. I've always found that kind of funny.

Anyway, I was at the Cape to train in the STA when Loren Shriver and the crew of STS-46 landed. I was in the building right there at the SLF, Shuttle Landing Facility, when Loren and the crew walked in. They had gone up with the tethered satellite. They had reeled it out to 900 feet, and the reel jammed. It was supposed to go out to 12 miles. They weren't able to ever get it unjammed after several days of fighting with it. They reeled it back in and brought it home. It was a total bust. It was a total failure.

Having the evil kind of sense of humor that I have, I walked up to Loren after they walked into the building, and I shook his hand and I said, "Hey, Loren, thanks for taking that one for me."

He is one of the coolest guys on the face of the Earth, so he smiled and said something like, "Well, you're welcome, Hoot." It actually wasn't such a bad thing for me to get pulled off of that mission. That led into STS-47, which I got assigned to, which wound up being the 50th launch of the Space Shuttle.

ROSS-NAZZAL: You have a number of those kind of historic flights. Were there any events around that or associated with that mission?

GIBSON: There was a lot of publicity about it because we had the first black female on that mission. The first woman of color—as she was termed at the time—Mae [C.] Jemison, was on that mission. There was a lot of publicity devoted to that, of course.

We wound up with a married couple. They were assigned to that mission three years ahead of time, because there was so much training with the Japanese. It was a joint flight with Japan [National Space Development Agency of Japan (NASDA)]. Japan, I believe, paid for the

Spacelab and all the experiments that went in the laboratory. We had more than 40 life sciences and materials science experiments that went on that mission.

The payload crew consisted of Mark [C.] Lee, [N.] Jan Davis, Mae Jemison, and who else was on that crew?

ROSS-NAZZAL: It's Mohri.

GIBSON: Mamoru Mohri, of course, how could I leave him out? The first Japanese astronaut, who was just an absolute rock star over in Japan. Just a real team player, wonderful guy to work with. Very talented and capable, and wonderful, wonderful experience that was. Now we had the four of them that had been on the mission, plus Chiaki Mukai and Takao Doi as backups, who had trained here in the U.S. for the three years leading up to the launch.

A year before launch—because that's when we assign crews and that's when you have to not do high-risk activities—from that point on, from one year on, Curt [Curtis L.] Brown [Jr.] and Jay [Jerome] Apt [III] and I were added to the crew. This was Jay Apt's second mission, it was Curt Brown's first mission. We started training on the crew.

We went to Japan one time prior to the mission to go train. One of the things that we learned right away, when we got assigned to the crew, was these little Japanese toys—it's a little red barrel on top of a stick. You flip this barrel up in the air, and you catch it. There's a hole in the barrel, and you catch it with this stick. They were all about those. Mark Lee, he taught us how to flip the thing. You could flip this barrel and make it do three flips in the air and catch it on the stick if you were really good. We got to that point where we were really good with this.

We did train on other things as well. We trained on all the life sciences experiments. This was my first Spacelab mission. So we wound up training in Houston. We trained in Japan of course—the one time that all of us went over there. Mark Lee and Jan and Mae and Mamoru had been over there many, many times training on the experiments that were flying on that flight. We also trained down at [NASA Marshall Space Flight Center] Huntsville [Alabama], who ran the Spacelabs. So we wound up training at JSC, Japan, and also down at Huntsville.

That was the first time I had operated a Spacelab, and it's almost a whole separate vehicle that it's on. It did things a little differently than what we did on the Shuttle. So we had different name systems, and we had MDMs (multiplexer/demultiplexers) that took analog data and turned it into digital data, or digital data and turned it back into analog displays and things like that. On the Spacelab, they had a different name for those kind of devices.

It took a bunch of learning to really learn the Spacelab. But golly, what a capability it gives you. It doubles our pressurized volume. We had 2,500 cubic feet in the orbiter between the flight deck and the middeck. When you had the Spacelab you had 5,000 cubic feet, so it doubled our pressurized volume that people could live and be in.

Like I say, it took a bunch of learning, and we had a whole bunch of animals on board with us. We had an interesting experiment called ISAIAH [Israeli Space Agency Investigation About Hornets]. Israeli hornets is what we were carrying. The reason we had these Israeli hornets is because they make nests underground. It's pitch-black where they make their nests, but they're able to build nests that are purely aligned with the vertical axis. They're perfectly straight up and down, and it's pitch-black. They can't see what they're doing, so they must have some kind of a gravity sensor that's very accurate.

The experiment was basically, "Will they make nests in weightlessness?" The net result was, "No, they will not." They were totally confused. They were not able to make nests. Now these are kind of fearsome-looking hornets. They're about two and a half inches long, they're huge. We had 256 of them in the middeck with us. They were in a drawer full of 256 Israeli hornets. Thank goodness they never got loose, because that could have been ugly. They could have kicked us off the orbiter. That was one of the experiments that we had, and it showed that okay, in weightlessness they can't function. So they just didn't function.

We had two Japanese carp, which are big goldfish, and they were doing some kind of a vestibular experiment with them. Oh, we had frogs. We had African clawed frogs on board, and we had two or three of them. We had two female frogs. When they would lay their eggs, they'd float in the water, and there was a black dot on the eggs that was always pointing straight up. So this was to see if in weightlessness will these little eggs hatch and become normal pollywogs, and then will they become normal frogs.

We had the frogs on board, and we had in some of our video Jan Davis taking one of the frogs in the glovebox and turning it loose in weightlessness to see what it would do. Of course it tried to swim. It kicked its hind legs, and it was trying to swim in weightlessness in the air. So that was kind of cute to watch. The pollywogs actually hatched when we were on orbit, and they could not swim straight on orbit. They would fly in loops. They were making continuous loops. They did develop normally, even in the weightlessness, and they grew into little baby frogs.

These were astronaut frogs, so they went on the lecture circuit after the mission. They had appearances here and there around the country because they were astronaut frogs. One of the things that I was told they appeared at was the Calaveras County [California] frog-jumping

contest. They didn't enter the contest, but they were celebrity astronauts giving speeches at the frog-jumping contest. So we had those frogs on board.

We also had a furnace on board. We used those to make the world's largest single crystal of indium antimonide. The reason the scientists wanted to do single crystals in orbit is that down here in the gravity field you start progressing a melt zone through a block of indium antimonide to make a single crystal out of it. Gravity will cause the melt zone to collapse, so you can't make a very big crystal. In weightlessness we don't have any gravity, so we made the largest single crystal of indium antimonide that had ever been built. Also samarskite. I have no clue what samarskite is or what it's used for, but indium antimonide is a semiconductor material, like silicon. So it is used in semiconductors. We did use the furnace to make that.

Let's see, what else did we have? Oh, we had a bunch of science experiments. We did a medical experiment that I never would have thought we would sign up to do, and I'm pretty sure the whole entire crew signed up for it. What it required, certainly after we landed, was getting a hep [saline] lock injected into our arms and wear it for about the rest of the day.

ROSS-NAZZAL: Can you describe how big that is, or what that entails?

GIBSON: It's a needle. They're going to stick a needle in a vein and then have a hep lock, because what they wanted to do was be able to draw blood for the remainder of the day to see what our nutrition level was. It was a nutrition experiment. We also had to wear that, I want to say, for at least a day prior to the launch.

Astronauts—we don't like needles, we don't like blood draws, we don't like all that stuff. Every one of us signed up for it, because the person who briefed us on it showed up—and the

way the medical DSOs happened with the astronauts, the researchers would come in and brief us on, "Here's what's available. We'd really like you to sign up for our experiment."

This particular one, one of the researchers showed up, and said, "Here's what we would need you to do. We'd need you to have a needle in your arm and wear it for half a day," or a full day or whatever it was. I don't remember exactly.

Of course all of us are going, "Oh no, we don't want to do this."

At that point she said, "And it's really not challenging, and it's really not painful." She said, "Let me show you." [Future Astronaut] Peggy [A.] Whitson at that point took off her jacket and she had one in both arms. She had one in each arm. That, I think, almost to the point of shamed us into saying, "If she can do this I can certainly have it one arm." So we all signed up for it.

ROSS-NAZZAL: Even with the launch and entry suit that wasn't an issue, donning and doffing it?

GIBSON: I'm trying to remember when we had to wear it. It might have been that we didn't wear it in the suit, but we wore it for the day before. And once we got back we got into the crew van, I think they shot us right then. We actually had changed out of our spacesuits on that mission because they wanted to get that needle in our arm right away, so we changed into flight suits. We got out of the LES, the launch and entry suit, and into our flight suits. In the course of getting into our flight suits they went ahead, and they put those in our arm before we put the flight suit on, so then we wore it for the day.

I was so impressed with Peggy because she showed up with one in both arms to show us, "Okay, you big boys. You big strong male astronauts, don't you think maybe you might be able

to do this, too." That's the first time I remember meeting her. I've been impressed with her ever since. How could you not be impressed with her? So that was one of the experiments that we did.

What it required during the flight though was to record everything we ate. Every single thing that we ate during the mission. Then at the end of the day, stick your finger with one of those little things to get some blood, and put it on this little thing that would tell you what your blood sugar level was and record that value. So we had to do that every day as well.

Nobody would have signed up for that if it weren't for Peggy. We did that every single day. We stuck our finger and made a big blob of blood and put it on this little detector that then would read out what your blood sugar was. It was an experiment to say, "Is your stomach and are your intestines as efficient in weightlessness as they are here on the Earth" where you've got gravity on them. Because food probably floats around inside those places in weightlessness.

ROSS-NAZZAL: Were you weighing your food in some way? Let's say you didn't finish a meal or finish something that you had been consuming.

GIBSON: You had to record whether you finished it or not. With Mark Lee on the crew, it wasn't ever an issue of whether you were going to finish it. It was always a contest to see who could eat the most. Usually astronauts would come back and they'd have lost six or eight pounds in the course of a flight. Mark Lee put on weight. It was a bit of a challenge. He was funny, he was funny to work with.

When we'd have our food tastings we'd go over to the kitchen and Rita—

ROSS-NAZZAL: Rita [M.] Rapp?

GIBSON: Rita Rapp. We have a Rita Rapp back in Tennessee is why I was hesitating.

Anyway, Rita Rapp would put out a bunch of different types of food to have us sample. We had a note card or a note sheet for us to rate them from 1 to 10. The challenge was to see who could have the highest scores, which meant you liked food the most; whoever had the highest score. Mark Lee always had higher scores than any of us. I eat everything, I like everything, but you couldn't beat Mark Lee. That was part of the fun on the mission, was how much you could eat.

ROSS-NAZZAL: Did you, the orbiter crew—because I assume you were part of the orbiter crew, not necessarily back in the Spacelab—did you handle many of the experiments back in the Spacelab? Were you responsible for many of them?

GIBSON: We were not responsible for much of anything in the Spacelab. We were managing the orbiter obviously, and we had the medical DSOs that we were doing. Might have been some DTOs [detailed test objectives] as well.

Now, the flight was all about microgravity. So in one way, from a piloting point of view, this mission was really boring. Because we launched, we got through cutoff, we got established in orbit. Then we went to a pitch attitude, and we stayed there for the entire eight days of the mission. We never changed attitude. That attitude was tail to the Earth, nose up. I'm pretty sure it was cabin going forward. In other words, it wasn't belly first; it was topside of the orbiter first.

We stayed in that orientation for the entire mission, and it was so that we would have what's called gravity-gradient stabilization, which has to do with a really long object will tend to stay perfectly straight up and down because of orbital mechanics. We didn't want to be firing thrusters at all for the entire mission, because we wanted microgravity back in the Spacelab for the experiments that were being done back there, and they were all focused on micro-g, microgravity. So we never moved from that attitude.

Finally, on the eighth day of the mission when it was time to land, we got to maneuver off of that attitude into I guess a star tracker attitude and some of the attitudes that we do before reentry. I remember we sat in that orientation the whole entire mission. Every other flight I've been on we'd be changing attitude. So we'd be maneuvering, we'd be changing pitch angle and roll angle and all of those things. Not this one. It was stuck in one attitude the whole entire flight for the microgravity.

ROSS-NAZZAL: Did you have any problems with the vehicle that helped occupy your time, like you did on the last mission with that water?

GIBSON: We really didn't; we really didn't have much. I don't think we did. We didn't have anything much. Now we did have things that we were doing. We had one experiment where we had to remove Volume D to get under the floor for something, and I wish I could remember what it was for.

We also had the sleep stations on board, because we were working around the clock. We were working 24 hours a day. So we had the crew split up into the red crew and the blue crew. Then, as the commander, I could float with either the red crew or the blue crew, so I could go be

involved with them for this shift or the red crew for this shift. Then twice a day, every 12 hours, we'd have a shift change where we handed off from red to blue or vice versa.

So you had sleep stations. There were four sleep stations. I let the rest of the crew have the good ones. The one that was down on the very bottom, right by the floor, was the smallest one so I said, "I'll take the crummy one." That could be a little claustrophobic, because you're climbing into something that's just a little bit bigger than a coffin, was what your sleep station was. That's a funny comparison, I know. But that was what you slept in.

It had a little light, so if you wanted to read you could read during your sleep period. Usually you didn't. Usually you had been busy enough that when it was time to get in the sleep station it was time to go to sleep. But what could be disconcerting was when you woke up and you wanted to see where you were, you'd wake up and you'd go, "Oh, that's right, I'm inside this little coffin. Where's the light? Where's the door?"

You could be turned around, and you couldn't find the light. You couldn't find the door, and you're stuck in this thing. You could get a little bit of claustrophobia before you either found the door and could open it and see outside, or you found where the light was and you could turn the light on. I had that happen to me once or twice where I'm going, "Oh, how do I get out of this thing?" So they weren't the most comfortable things to have. That's the only mission I ever had those on, was 47.

ROSS-NAZZAL: Rhea had flown in a Spacelab before. Did she give you any tips for flying a Spacelab, or any ideas?

GIBSON: Not really. They did a very different sort of Spacelab. Theirs was purely life sciences, so they didn't want any kind of sleep shifting. They launched into, I think, a 40-degree orbit so that you wouldn't have the circadian shift that we had on every mission I ever flew, where you'd wind up getting up at the equivalent of 1:00 in the morning on reentry day because they would shift your sleep schedule.

For the life sciences missions that she did in the Spacelab, they didn't want any sleep shifts. So they did a 40-degree orbit because of that and that let them have a normal daytime leading up to launch. And then landing at what would be a normal daytime, where you didn't have to mess up your sleep schedule like we always did on every other mission. So they didn't have sleep stations because in order to keep your sleep schedule the same, everybody slept at the same time.

There wasn't a lot of similarity between the Spacelab that she did and the ones that I did. Although she was very much in favor of the Spacelab. She had wanted to do life sciences research when she came to NASA, being a doctor. So it's great that she wanted to do that, and in fact got to be payload commander for SLS [Spacelab Life Sciences]-2, her final mission.

Let's see, payload commander—that came about after her second mission. On SLS-1 that she flew in 1991, they didn't have a payload commander designated. Then at some point later on we figured out that was a smart idea to have one person as head of the payload crew. So that was her on her third mission, her second Spacelab mission, SLS-2.

She, at one point, had described her first mission as a "rinky-dink deploy." Which I found kind of irreverent. They had two satellites to launch, and they wound up doing an unplanned rerendezvous with the SYNCOM satellite. She wound up having to do something that she had never trained for, which was reach over with the arm to flip that switch. But she

whined about that mission before it happened, calling it a rinky-dink deploy mission. Then it wound up being quite an exciting mission and quite a challenging mission.

She had always wanted to do the life sciences. I told you about the group of astronauts that came to me and complained about life sciences and not wanting to do it. She really embraced it, she was really eager to do it, so it's good that she got to do two of them.

ROSS-NAZZAL: Do you think that influenced your interest in doing these medical experiments on this mission?

GIBSON: No, actually it didn't. I had that interest from day one, and I saw that as part of our job as astronauts, to take part in every bit of that we possibly could. Like STS-27, where we would have been completely free from it, didn't have to do it at all, and I said, "Hey, guys, I want to sign us up for stuff."

Because you want to be productive while you're up there. It's costing the country a whole lot of money. I've heard it estimated to be \$500 million per launch. You want to be productive when you're up there, so like I say, I signed us up when we could have taken a bye on STS-27. But it's part of our job.

ROSS-NAZZAL: You had mentioned the ISAIAH experiment. I noticed that you had to create something on the fly to fix that experiment. I wonder if you would talk about that. What happened?

GIBSON: Yes, we had a problem with it. If I remember it, it was a temperature and humidity problem inside their box. It was the size of a full middeck locker, but even so, that's not real big. The problem was noticed after a couple of days. I believe it manifested itself because the temperatures were higher than what we wanted inside that box. We had to rig up a fan so that we could blow more air through that box. I think it had built-in fans—I could be wrong about that—but maybe the fans were too small.

If I remember it right, Jennifer, what we did was we took one of the cooling fans for the launch and entry suit and connected that using duct tape and cardboard and things like that to route that fan to where it would blow into the enclosure to try to bring down the temperatures and the humidity inside the ISAIAH box.

I recall that we did bring it down. I also recall though, that a number of those hornets actually died, actually perished, in the course of the mission. I don't think that really had anything to do with their nest building. We would watch them, and we'd videotape them. They really didn't get any concerted effort going at all to make a nest. You'd just see them sort of walking around on the walls of the box and never did get any nest making done.

But yes, once again we had to do what's called an in-flight maintenance, or an IFM procedure, to fix something on orbit. Over the years IFM has become really big and really capable in terms of taking an anomaly and being able to work around it.

ROSS-NAZZAL: Was that the orbiter crew's idea? Or was that something that they came up with on the ground and then sent to you?

GIBSON: I'd love to take credit for it, but it came up from the ground. The IFM guys—and I don't remember their names. We worked with them over the years. They were so very clever. They were so competent at saying, "Okay, what do we have on board?"

Like Rhea's first mission, making the flyswatters. "We need something, and we don't have one. How are we going to make one? How are we going to build one?" They've always been just very very good at coming up with clever ideas. That was one of the ones that we employed on that one, using a suit fan to blow some more air in there.

Now that I talked about that, that was what Shep used on STS-27, the hose from the suit fan, to be his scuba mask. You've reminded me.

ROSS-NAZZAL: I had also read that your mission, for just a very brief time, wasn't able to communicate with Mission Control for like six minutes, so things migrated over to the Payload Operations Center [POC]. Did that have any impact on your mission or did you have any concerns with that?

GIBSON: I don't actually remember anything about that, but it wouldn't have been a big problem, I guess since we could talk through the POC over at Huntsville. I just don't remember it standing out.

ROSS-NAZZAL: You had asked for an extension, and you were given an extension to stay in orbit. Which I thought was interesting, because you were already exceeding the goals and requirements for the mission. So talk about why you decided to ask for that.

GIBSON: We actually didn't ask for the extension. It was given to us because we had a problem right after we launched, and that was we had a water leak in the coolant system for the furnace back in the Spacelab. What was required was Mark Lee and Mamoru, I think, were the two who were trained to do the in-flight maintenance, IFM, back in the Spacelab should it be required.

What they had to do was remove some panels and get down inside and repair this water leak. I can't remember what the problem was, whether it was just a loose fitting or something that was broken. I can't imagine they could have fixed it if it was something that was broken, like a severed line or something like that. It was probably just a loose fitting or a loose attachment point or something, and they had to tighten it up.

Because we couldn't power up the furnace the first day, having to do that IFM, they extended the mission a day so that we'd get everything out of the furnace that we had planned to get. So we knew right away on the first day that we were extended from seven days into eight days. We actually knew that at the time.

ROSS-NAZZAL: I did not realize that.

GIBSON: Everybody always wants more time in space, not less time in space. They budget enough consumables for mission duration plus two. So they design in two waveoff days, two extra days.

We pushed that on 61C because we wound up going into the third day. However, we launched, and we were originally scheduled to be five days. They shortened us to four days, and then with the waveoffs that we got, we wound up extending into six days. So we actually wound up pushing the three-day thing, and that's what led to the song that we sang for Mission Control.

ROSS-NAZZAL: Which I still have. I remember you sent that to me.

GIBSON: Oh, did I?

ROSS-NAZZAL: Yes.

GIBSON: On tape? Or how did I send?

ROSS-NAZZAL: Maybe you sent an MP3 [digital audio file]. I remember listening to it.

GIBSON: Yes, I have it on my [Apple] iPad.

ROSS-NAZZAL: Maybe that was it. Maybe you just played it for me at the end of our last session.

GIBSON: Yes, I actually have it digitally. [U.S. Congressman] Bill Nelson sent us a longer version of it. What I have starts with [CapCom] Shannon [W.] Lucid saying, "Well, if you don't have anything else, we'll sign off for the night."

I said, "Well, we do have just one more thing."

She said, "Well, we're standing by."

Then we sang the song. Bill Nelson had a little bit longer one that started off a little before it, and then it had a little bit after it as well. I don't have that on my iPad. I have that on my computer at home. Anyway, that was the song for the extra days.

The food that they stow is just benchmarked for mission duration, so if you slide into a waveoff day or two waveoff days, you are expected just to work out of the pantry where they store extra food. And also go back through all the meals, because not everybody always ate everything that was on their list. You just make do for the extra day or two beyond mission duration.

ROSS-NAZZAL: Did you guys have different food because you had a Japanese astronaut on board? Did he bring up some delicacies from his country?

GIBSON: He did; we had some things. We had chopsticks, of course. Because of Mamoru, he brought along chopsticks. One of the delicacies that he brought was a thing called pickled pears. It was an actual pear, but they were small if I remember right. I think they were bite-size. We had not tasted these before the mission, and I remember there was a day where it was Curt Brown, myself, Mamoru, and maybe Mark. Mamoru said, "All right, it's time for us all to try a pickled pear."

I don't remember if they described for us what it was going to taste like or what it was like. My pilot on that mission, Curt Brown, was from North Carolina. He was a meat-and-potatoes kind of guy. Exotic food was not on his list. Anyway I tasted one of these pickled pears, and I only ate one of them, because it was the world's biggest salt bomb. A huge dose of salt is what it tasted like. Curt was getting ready to eat it. I said, "I don't think Curt is going to

like this." I'm not sure he even finished eating it. Sure enough, he didn't like it. I don't think any of us liked it. So that was one of the delicacies.

When we were over in Japan we got to see some real delicacies. One of the things that you could buy over there from a street vendor was a little stick that had an octopus on it, a baby octopus. It was a baby octopus; it had the eight legs all fried and sticking out. I wanted to buy one and get my photo taken eating it off of this stick, which would have just grossed out Rhea big-time I know.

We never did that, but one of the things that Mark Lee made sure that we all got to try was something called takoyaki. In Japanese, "tako" is octopus. It was dough balls where you'd have these street vendors once again. They'd cook this stuff on the sidewalk, and you could buy three or four or five balls of octopus. It was kind of funny, we referred to them as octopus balls just to be silly. It was a chunk of octopus. They'd be there with this whole big octopus cutting it up into chunks. You were liable to get a chunk of sucker, one of their suckers, inside this ball of dough. It didn't taste bad because it was dough, but the octopus itself was like eating a rubber band. These weren't little baby octopi; these were great big ones. It was like chewing rubber is what it was kind of like. Mark just raved about it. I can eat anything, but I think I ate one of those and said, "Okay, that's enough of that, too." So we did have some funny things with food.

I can't think of anything offhand that we had on board in addition. The pickled pears really were memorable because they were so bad.

ROSS-NAZZAL: Where did you stay when you were in Japan?

GIBSON: The time we went over there to train we stayed in a U.S. government-run hotel. So it was open to military and government employees. We actually stayed in that.

When we went back over to debrief after the mission, we went right to Kobe. We rode the bullet train to Kobe, and we stayed up in the mountains above Kobe in a traditional Japanese spa. So right away when we got there they showed us to our rooms and they said, "Get those American clothes off and change into your kimonos," or whatever they call them. So we changed into sandals and whatever those things are. The floors were these bamboo mats, and it was a traditional Japanese spa that we stayed at. There was some unique food there. Curt Brown was kind of starving at that.

One of the funny stories was we were having breakfast. I have this little bowl of noodles. Of course I'm using my chopsticks, and I'm eating these little white noodles out of this thing. Then I take a closer look at these noodles. I notice that each one of these noodles has two little black eyes on it. I said, "Mamoru, what's this?"

He said, "Oh, those are baby eels." I thought they were noodles, but they were baby eels.

The other funny story about food—this was after the mission as well, and I'm pretty sure this was in Kobe as well. We went to IHI, Ishijima Heavy Industries, who made some of the machinery that was back in the Spacelab. We were having lunch, and we were having a slice of beef for lunch. I remember it was some of the most tender beef that I've ever eaten, and it had a really unique flavor. We're in Kobe, so I said, "Mamoru, is this Kobe beef?"

He said, "I will ask." He asked one of the waiters. He said, "Yes, it is Kobe beef. It's tongue." Jan Davis stopped eating at that point.

I can eat anything, so I continued to eat. Because I was enjoying it before that, so I ate some more of it after that. But yes, we were eating beef tongue, which I'd never had before. It

was kind of a unique flavor. I don't know if that's because it was actually Kobe beef or just because it was tongue, which I'd not had before, or since.

So there were some interesting food things. Some of the food we had at the Japanese spa was a thing that looked like a piece of green paper, and Mamoru showed us how you eat this. You fold it up into like a little square, and then you chew it and eat it. It was dried seaweed is what it was. There were some interesting food choices that we got to see.

ROSS-NAZZAL: Was there a lot of attention on board the flight because he was there? Did you have a lot of media conferences?

GIBSON: In Japan? Oh, golly. In Japan we were swarmed. We landed in Tokyo. Riding the train from Tokyo to Kobe, people were swarming the compartment that we were sitting in, just to see Mamoru and shake his hand and say hi to him. Everywhere we went. We went to a big department store one time, and we all got to make speeches in this department store. Mamoru was a rock star. He was like a rock star. We were just swarmed by people to come see Mamoru. That was interesting.

ROSS-NAZZAL: Did you have that same experience here in the U.S. with Mae?

GIBSON: She was certainly a center of attention everywhere we went. I'm trying to remember if we went—I'm not sure we went back to the Cape after the mission. Everybody kind of separated and went their separate ways. After she flew her flight, she was in the process of leaving, so she stayed for that one mission and then went off to do something else. So I don't remember us

doing a whole lot of public appearances here in the U.S. with her, although she's always been a focus of attention of course.

ROSS-NAZZAL: Very well-spoken, and good public speaker. I just wanted to ask one more question. That was something I noticed, that you had noticed an anomaly on your mission. There was something protruding from the rudder before you were getting ready to prepare for landing. You asked Mission Control to take a look. Wondered if you would talk about that.

GIBSON: Oh, yes. I had forgotten about that. We took some photos of it, I know. We probably sent them down some video of it. It was some sort of a seal or a thermal barrier that was protruding. It wound up not being much of an issue at all. I don't remember if it was still on the orbiter when we landed or not. It hasn't really stuck in my mind a whole lot after that.

Anything protruding you would worry about during the reentry. Of course on the top side of the orbiter, it's somewhat protected by all the rest of the orbiter leading the way during reentry. So it's not like having an anomaly on the bottom side.

ROSS-NAZZAL: You weren't as concerned as the previous mission with those tiles.

GIBSON: Yes, that's true. Somebody had mentioned to me, "You're the 50th mission. We lost the 25th. Is it every 25 launches?" Somebody had mentioned that to me before the mission. I said, "No, that's superstition. That's silly."

ROSS-NAZZAL: Did that enter your mind at all when you were in orbit?

GIBSON: No, not at all, didn't even enter my mind.

ROSS-NAZZAL: I think this might actually be a good place for us to stop so we could pick up being chief of the Astronaut Office. ...

GIBSON: [Let me share a little bit before I go.] What happened very shortly after that mission was I [hear] the rumor that said, "Hey, the rumor mill is out there that says you're going to be the next chief." I said, "Really? After I've been grounded?" To myself.

It stood to reason, because Dan Brandenstein had been the first pilot astronaut to fly four missions, and I was the second pilot astronaut to fly four missions. So at that point I am the most experienced pilot in the corps, so it stood to reason that that could be the case, and sure enough it was.

ROSS-NAZZAL: That'll be good for us to talk about next time.

GIBSON: I was so glad I got to do that. It was probably the hardest I ever worked in the whole time I was at NASA, but it was such a rewarding experience, and it was such a difficult experience at the same time.

ROSS-NAZZAL: I'm sure.

GIBSON: Yes, it'll be interesting to talk about.

ROSS-NAZZAL: Good. I'll look forward to it next time.

GIBSON: Okay, good.

[End of interview]