

**Oral History Interview of
Jerry Bostick**

**Interviewed by: David Marshall
December 20, 2017
Meadowlakes, Texas**

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Transcript Overview:

This interview features Jerry Bostick as he discusses the Apollo missions and his involvement with them. In this interview, Bostick describes NASA, then moves on to focus on Apollo 12 and 13. Bostick provides details into the missions, explaining how they were able to avoid disaster.

Length of Interview: 01:54:56

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David Marshall (DM):

The date is December 20, 2017. This is David Marshall interviewing Jerry Bostick at his home in Meadowlakes, Texas. Notice I didn't say Marble Falls. [Laughs]

Jerry Bostick (JB):

Well, we are a city.

DM:

Yeah, that's what John was saying, that you're actually an incorporated city.

JB:

John was the mayor for several years.

DM:

Well, can you give me your full name?

JB:

Jerry Creel Bostick.

DM:

And Creel is the maternal line, is that right?

JB:

That was my mother's maiden name.

DM:

Okay.

JB:

I didn't really like that name that much when I was younger but now I'm very proud of it. Done a little research on the family history. Interesting bunch of people.

DM:

Now, what date were you born?

JB:

June 9, 1939.

DM:

Okay, and where were you born?

JB:

In Golden, Mississippi, very northeast corner of the state, in Tishomingo County. A lot of the counties in Mississippi are named after Indian tribes. Chief Tishomingo came through there as part of the Trail of Tears on the way to Oklahoma. There's a Tishomingo, Oklahoma, also.

DM:

By the way, you mentioned in your book that you were up in Zion, Illinois and won a contest to name the streets up there and I looked that up. I looked up Zion to see what the streets names were and there is a Choctaw Street. Now, it's in a neighborhood of a bunch of tribal named streets. So, that might have been your influence there. I don't know.

JB:

Well, I hope so. I think I won fifty dollars.

DM:

There you go.

JB:

I submitted county names for Mississippi: Choctaw, Chickasaw, Tishomingo, Oktibbeha. Interesting names anyway.

DM:

By the way, since I'm mentioning this—and this recorder's on—I should mention that also in the archives are the books that you've written or been involved—or written parts of. First of all, your autobiography, *The Kid from Golden* then also *From the Trench of Mission Control to the Craters of the Moon*. So, those are there for anyone who's listening to this tape.

JB:

The *Trench* book has seven or eight different authors in it, I guess, derived from a coffee session that we all had in Seattle when we were up there for—at the Museum of Flight I think in 2012. We were all sitting around in a lobby of a hotel, swapping lives like we always did. I think it was Glynn Lunney that said, "You know, we ought to write all of this down and preserve it for our grandkids or history." So, several of us did. Gene Cernan found out about it and pretended to be really upset because we didn't ask him to write a part of it because for a couple of flights, he was down in the trench as a booster controller. His call sign was Tanks and he was there only for the launch phase but he monitored the tank pressure. We would've been happy to have him to be a part of it.

DM:

Well, I really am glad that you guys documented that and I'm really glad that you took the

trouble—and I know it's a lot of trouble—to write your autobiography. Even though it was directed towards your family, a lot of people will get good information out of that autobiography. It's an inspiring thing.

JB:

Well, I had never done any research on my family history until after I retired. I did do a typical genealogical search, walked through cemeteries and all of that. But I just got interested in it and found some information. It got me thinking about my grandparents and great-grandparents. I discovered I didn't know very much about them and I thought, I hope that my grandkids would like to know a little about me so I decided to write it down so they wouldn't be in that position.

DM:

You were just in so many important places in that era that most of us will never find ourselves in. So, it's important to document it.

JB:

And truly blessed. The beginning, I think, was being born in northeast Mississippi and had great parents, great friends, great school teachers, just very fortunate. I was fortunate enough to spend two and a half years in Washington D.C. in House of Representatives, initially a page and then as a doorman. Met a lot of famous people there, I guess, several presidents, it turned out.

DM:

It's incredible how your life has crossed paths with so many people like that, people who have made a difference.

JB:

Yeah. Very blessed.

DM:

Well, let's talk a little bit about your childhood. I'm not going to talk a lot about it because so much is covered in your book. But can you just about those humble beginnings, you know, like the days before plumbing, the days—you know.

JB:

I had a rather basic, I guess, upbringing. Family didn't have a lot of luxuries. We didn't have plumbing, indoor plumbing, until I was eight years old. And I didn't really think anything about it because that was the norm. All of my friends were in the same condition so I didn't think too much about it. But the main thing I guess I got out of my childhood was from my parents and friends was a work ethic, like my daddy's favorite saying was, "There ain't no free lunches. You got to earn everything you have." He was—even though a dynamo Democrat, he was very

conservative, very conservative. Another saying of his was, “The further the government gets from the front door, the sorrier it gets.” Which he convinced me not to feel conservative, I guess. And that’s another reason I wanted to write the book, to let my grandkids know what my basic beliefs are. The other thing I think I learned, especially from my mother, was always tell the truth no matter if it hurts. One of her favorite sayings was, “What a tangled web we weave when first we try to deceive.” And those two things worked, I think, and always being honest really served me well when I got to NASA [**National Aeronautics and Space Administration**], because those are strong beliefs of Chris Kraft. Anybody who wasn’t completely 100 percent honest with him, they saw the door fairly quickly. I have to thank my parents for that upbringing that served me well when I got to NASA.

DM:

You know what, that’s a real nice reflection because it sounds like you just fit in so perfectly with Chris Kraft from the very beginning, from the very beginning when he said, “Hire that civil engineer.”

JB:

Yeah, it was—and of course, it was—he was my hero even before I went to NASA because I had seen him on television and had his picture on the cover of the *TIME* magazine. He was a hero. And just to meet him, you know, I was in awe. Then, you know, to work for him in several capacities throughout my career was just truly blessed. And we are still friends. He’s ninety-four years old now and we were talking about going to Houston to go by to see it. His thing is that he thinks that God knew exactly what he wanted the flight control team to look like. He said, “As God led me to select certain people, I filled out the puzzle. I think I looked at it and said, ‘Yeah, that’s good.’” And, you know, for him to say that about me and people like John Aaron and a lot of others, it’s just somewhat overwhelming to think that he would even give me the time of day. His thing now is that—he says, “If we could get God to take about forty years off of our lives and we could resurrect all the people that are already gone, we could go and straighten out NASA.” [Laughter] I think he’s right. I sure would—and so I helped him do that.

DM:

You know, every astronaut and every mission controller that I’ve read about or heard about from that era says the same thing. “Oh boy, did we have it going.” And it’s true. I mean, a historian will look at that and say, “Oh yeah.”

JB:

A lot of people ask me, “How were you able to do that,” or, “Could we do it again?” I say, “Well, you know”—and I quote John Aaron and basically said when asked if we could do it again, he said, “Well, I’m afraid those dominos will never line up again.” Unfortunately he’s probably right. But what we had was, we had a clear goal. President Kennedy in one sentence

said, "Go to the moon in this decade, land, and come back safely." In one sentence he set the goal and a timeline. That's the problem with NASA now, they have no goal.

DM:

And you had national support, national funding and a really talented team of people.

JB:

Great leaders, like Kraft, who has explained to me that he got his management style from Bob Gilruth, who I knew and had some experience with and it was very similar to my experience with Chris.

DM:

Who did you say, again?

JB:

Bob Gilruth—

DM:

Okay.

JB:

—who was the director of the Manned Spacecraft Center, which started out as a Space Task Group. But he put the whole Manned Space program together. I remember when I was just first at NASA, even before I became a flight controller, I was doing mission planning. Chris Kraft, who was about six levels of management above me, called me one day and he said, "Dr. Gilruth wants to hear how we're doing on Apollo launch reports, which is what I was working on in mission planning, figuring out when the abort modes for Apollo launch. So, I said, "Okay. What—do you want flip charts, handouts, or whatever," and he said, "Whatever you're comfortable with." I said, "Oh okay. When do you want to hear it?" There was a little silence and he says, "Bob Gilruth is the one who wants to hear this. You go and tell him how we're doing. Okay?" By myself. Chris Kraft didn't go. He said to me—he's got that much trust in me to go speak to the center director.

DM:

That's motivational.

JB:

That is—boy, you don't mess that up. [Laughter] But Gilruth, I walked into his office, and I saw a little—a lot of what Chris said—had since told me—that was his—Gilruth's mode of operation, too. I think I walked into his office by myself and he was—had his _____ on

[0:13:41] on and he was listening to a simulation. He said, "You caught me. I was listening to you guys over there in the control center." He said, "I really wish you we could swap jobs. I'd like to be a flight controller and you could come over here and deal with Congress and worry about budgets." But he put me totally at ease, just a great leader. And that had a lot to do with how we were able to do what we did. Ask any of the flight controller, mission planners, anybody, or program officer people, they'll tell you that, "There's no way I was going to let people like Bob Gilruth and Chris Kraft down."

DM:

And Glynn Lunney for that matter.

JB:

Yes. Glynn Lunney is in my mind, very close to Christ Kraft management, style-wise. Had been blessed to work with him and for him several times. I think I've been his—I was his deputy in five different jobs over the years. Just wonderful guy. He's the type of guy that when he would say, "How are you doing," it wasn't a casual question. He really was concerned about how you were doing. Just a very quick. Certainly there was a lot of trust, very much Kraft.

DM:

So the leadership was great. People say—and you might've said in your book that the integration was great between systems and even worked between the separate centers back in those days, maybe not so much later.

JB:

Yeah, it was pretty amazing. The closest to me was in the control center and then the relationship with other flight controllers then the relationship with the astronauts then with other centers, as you mentioned. We all had different jobs. We knew what our jobs were. We knew vaguely what other people's job was. But to main thing that we learned under the direction of people like Carl Huss and Glynn Lunney and Chris Kraft was how what we were doing fit in with everybody else, like if I did something, how did that affect John Aaron or if he did something, how did that affect me? I never tried to do his job. He never tried to do mine. But we tried to understand each other's job enough that we knew how what we did would affect other people. I guess that's known today as assisting generation [?] [0:16:44]. We didn't know what it was, we just called it being operational. Had a lot of smart people at the Manned Spacecraft Center and engineering director. I mean, they were system designers and they knew systems better than anybody else. If you asked them, "How does that interface with this other system over here," and usually the answer was, "I don't know, that's his job." They didn't do—and that was a surprise to me that the engineering director did not really do systems integration. They kind of had their blinders on. "I'm going to design a fuel cell and how that interacts with everybody else, I don't care. That's

not my job.” And operations, that was a big part of our job. They’re saying how everything fit together.

DM:

I was kind of surprised from reading and talking to people to find out that there was also a fair amount of interaction with the astronaut crews. I wouldn’t have expected that but that seemed to be the case.

JB:

Oh yeah. All of the astronauts were very smart and capable people. There were varying degrees of how smart, how capable, I guess, but most of them would serve a tour in the control center, and that’s where our relationship began, to learn to trust each other there. And then when they were assigned to a flight, you know, they would come over and talk to me, John Aaron, and all the other guys. “I really need to understand this very well.” That served us very well. The simulations were—between the flight controllers and astronauts—were good, very good training for all of us. We got to know the astronauts and we knew how they would react. Best example of that, I think, is Apollo 13 when T.K. Mattingly, who was pulled off because he’d been exposed to measles and Jack Swigert was assigned. We knew Jack, had worked a little bit, but it was only a couple days that we had to spend with him. So, when the accident happened, it was Jack who called down and said, “Houston, we have a problem.” My immediate reaction was, “Okay, I don’t know how serious that is,” because I don’t know Jack that well. Then just a minute later or so, Jim Lovell said, “Houston, we have a problem,” and I knew immediately because I had worked with Jim and knew the tone of his voice, “Yes, that is a big problem so you better pay attention.” And that was a big benefit of the simulations and just the time we spent with the astronauts. I think they trusted us and I’m sure they did, and we trusted them. But it was, again, “You do your job, I’ll do mine.”

DM:

That interaction, though, that seems to have been part of the magic of that moment that made everything work. Now, something John Aaron will say is also another critical ingredient here that made everybody coalesce was this common threat that was being faced of Cold War, the Cold War threat, you know, that probably put pressure on the nation to come together and fund this thing and support this thing. I noticed that you talk about Neil Armstrong saying the same thing as one of his four-part—there are four ingredients that made this thing happen.

JB:

The Cold War definitely had a big impact, probably more than I was aware and most of us were aware at the time. For us, it was definitely—flight controllers—it was a competition to race them. We wanted—we knew what it took to get to the moon. They’d have a big booster, and you had to learn to rendezvous and you had to learn how to do EVA [**Extravehicular activity**], learn

how to change orbits, all that kind of stuff. For a long time there, the Russians beat us at everything. They were just—first orbit, artificial light, Sputnik, then dogs, humans, and women. They beat us at first aviation, beat us at everything. Then finally we beat them at rendezvous and that was a big, big boost for us, especially for me because that was my specialty in the control center was the trajectory guidance. To rendezvous was a big thing. First time we did it, we didn't [bell chimes 00:22:16] more successful in docking. We finally did that on *Gemini 8*. First time we could just kind of say, "Okay, we're up with the Russians now. In fact, we're ahead of them. We rendezvoused and docked and they haven't done that." From there on, we just took off.

DM:

Gemini 8 and *Apollo 8*.

JB:

Yup. *Apollo 8* was my favorite flight and I think most flight controllers would say that. That surprises some people. Some people say, "But *Apollo 11* landed on the moon." Well, yes, that was very dramatic and it brought the nation a lot of satisfaction but *Apollo 8* was just a very bold move. I was in on the planning even before we flew *Apollo 7*.

DM:

This was the secret planning?

JB:

Yeah. I couldn't even tell Glynn Lunney, who was my immediate boss and John Hodge who was above him. But Chris Kraft had assigned us this task of figuring out if we could do *Apollo 8* or not. And it was a bold move. I mean, it was the boldest move, I think, that NASA ever made. Then it was highly successful and the crew _____ [0:23:43] on Christmas Eve. It's just mind-boggling. Brought tears to all of our eyes.

DM:

You know, especially after the loss of *Apollo 1*, what a contrast in emotions it seems like to have lost *Apollo 1* and then to have the great gain of *Apollo 8*, and not in a very—that was in a fairly brief time period, too.

JB:

Yeah, a lot of people say that *Apollo 13* was NASA's finest hour and I have a hard time arguing with that. In my mind, NASA's finest hour was the twenty-one months between fire and completion of *Apollo 7*. In that time period, NASA and its contractor completely redesigned the command and service module, tested it out and flew it very successfully. I don't think that'll ever be accomplished again. *Apollo 7* unfortunately never gotten the credit it deserves. In fact it's gotten some bad press because of conflict between flight crew and flight controllers, which I was

not personally involved in, thank goodness, but I think I understand it. Wally Schirra and Gus Grissom were very good friends. They were next door neighbors. And I think that Wally was dedicated to checking the spacecraft out and fixing everything that Gus had ever complained about. So we had the most jam-packed flight plan that we'd ever flown then he came down with something close to the flu, real bad, had to call in. He was already kind of upset before the flight because with that jam-packed flight plan, he was asked to fly the first camera, and take some videos and send them back and he said, "That's not critical. I only want to do critical stuff." But he was overridden and had to do that so he was a little upset about that.

DM:

Did a lot of system checks, is that what you call it?

JB:

Oh yeah. He wanted to prove everything worked and they did, and that's the reason—I'll just say, *Apollo 7* hadn't been as wonderful as it was, test wise, to prove that to Systems, we wouldn't have flown *Apollo 8* and therefore we wouldn't have got the President's help. We'd been on the moon before the end of the decade. So, I give a lot of credit to *Apollo 7*.

DM:

But that twenty-one months from *Apollo 1* through *7* to *Apollo 8*, what a critical time period to make all of this happen. It's interesting—there was a little anecdotal thing here—it's interesting that the *Apollo* fire, *Apollo 1* fire, happened on January 27 of '67. Does that sound right?

JB:

That's right.

DM:

Two days before that—well, let me go ahead and say: two months later you were on a flight back from California sitting next to Don Knotts. Well, he had just made that movie *The Reluctant Astronaut*. It came out two days before the *Apollo* fire.

JB:

Is that right?

DM:

And that put a real damper on that movie. I wonder if that movie came up in your conversation since it was NASA related.

JB:

No, no. Not at all. That's another thing about the sixties for most of us. A lot of stuff that was

going on that we only knew about at a headline—newspaper headline level: the war in Vietnam was just horrible. You know, we knew it was going but didn't really understand it. We had a couple of assassinations: Martin Luther King and Kennedy, Robert Kennedy. We kind of missed all of that, which somebody, I think, sent—some lady sent Frank Borman a letter after *Apollo 8* and said, "Thanks for saving 1968 for us." Even today I'm finding out more of the bad stuff that was going on in the sixties. We were shielded from that. If we were able to give any arrogance, any pride, in what we were doing, I think that's great. Not just Americans. I have always been amazed in the last twenty or thirty years, been to a lot of conferences: NASA, foundation [?] [00:29:07], Spacefest and all the other conventions. There are more Europeans there, usually, than Americans. I never could really understand that. I was over in England and Wales a couple of months ago and I asked several people, I said, "I don't understand. Help me understand why you are so enthused about America's space program back in the sixties," and they said, "Well, number one, we—" and this is merging a lot of comments, I guess—but they are very impressed with technology. They admire even the Russians for their technology but they considered America their friends and allies and were happy that we were beating the Russians. Just a—and that's great. I didn't realize that we had—at the time in the sixties—I didn't realize we had that many fans in Europe. But boy, they just—they can't get enough of it even now.

DM:

I've talked to a few astronauts about that and they went on their tours after their flights, you know, and they said, "Yes, Americans embraced us as American heroes but the world also embraced us. It didn't matter what country we were in, we were theirs as well."

JB:

Yes, yes, yes.

DM:

"The whole world came out for this thing and said, 'Wow, this is what mankind has done.'"

JB:

Yeah. In fact, I had a couple of Europeans tell me that even if the Russians had won, they would have been fans or proud just because of this technological accomplishment but not nearly as much so as the way it turned out when America won the race because we were their friends.

DM:

You had a great quote in your book, one of the books, about *Apollo 8* when y'all were talking about, "What, you want to go to the moon now?" And your quote, "We thought about this, we thought about it," and then quote, "We couldn't come up with any reason why we couldn't do it." [Laughs]

JB:

That's true.

DM:

I just love that. It's like you thought and thought then, "Hey, you know, we can do this."

JB:

Chris Kraft—there were eight of us initially that he called to his office, top secret meeting, can't tell anybody, on a Friday afternoon. Our initial reaction was, "No way, that's crazy," and Kraft said, "Don't even think that, don't say it." That's what I thought when he first told me but he said, "Why don't you really think about it and I'll give you till Monday morning." I'm thinking, Okay, this is Friday afternoon. Thanks a lot. The eight of us, I think it was, did spend that weekend—and we couldn't come up with a reason that we could not do it. The biggest hurdle for me was the software and the real-time computing complex that drove all of our displays in the control center. There was just no way that we could get all of that stuff ready. But we had the Mission Planning Division, which is in the same building as the control center in the office, and they had all of these programs that we used for mission planning and they couldn't interface with the display system but they could run the programs and get a hardcopy printout on computer paper. Runners would bring it over to us and we would look at that. It was timely enough, obviously not real-time. It would take several minutes, in some cases several hours instead of several seconds if it had the software. But yeah, we could get by with that. We explained that—I explained that part of it and Arnie Aldrich explained the systems part. He was kind of in the same boat, you know, that they wouldn't have all the systems displays that he would like but they could get by.

DM:

Amazing step.

JB:

Yeah. It was—I tell people that when they want to know why *Apollo 8* was my favorite flight, was because of that boldness, I guess, being involved in the early planning. But we really, on *Apollo 8*, we baked the cake then *Apollo 11* we put the icing. And it was a big icing. I mean, landing was a big deal, but everything except landing it, we proved on *Apollo 8* we could do it. You can't imagine how satisfying that was to all of us that, "Hey, you know, this crazy idea of landing men on the moon before the end of the decade, that can probably be done." First time we ever actually thought—or I actually thought, Yeah, we're going to do this.

DM:

If that bold step hadn't been taken, had not been taken at that time, would you have gotten a man on the moon in the sixties?

JB:

No. No way. Chris Kraft, I know he agrees with that, but he tells people, "If it hadn't been for the *Apollo 1* fire, we wouldn't have done it," because that forced us to get our act together, fix all the problems with the Command/Service Module.

DM:

That twenty-one months, incredible.

JB:

Has to be NASA's finest hour. It exemplifies, I think, the whole attitude of NASA at the time. We got this _____ [0:35:11], we're going to fix it. Now, to do that, it takes support of, as you mentioned, the Congress, the people, and it takes dollars. We spent dollars. I don't think we ever wasted any, I really don't, but as a trajectory guy, I needed a tracking ship in the Indian Ocean so I'd just say, "I want to send a tracking ship to the Indian Ocean," and everybody would salute and say, "Okay, give me the coordinates where you want it to show up." And that's expensive but it was necessary.

DM:

Not only that but it was such a critical moment in American history and world history. It's what the United States will be—one of the big things that the United States will be remembered for.

JB:

I think so. I think—I used to tell people that was America's greatest technological achievement but I modified that now to greatest peaceful achievement, because people bring up the Manhattan Project, atom bomb, and yes, that was great technology but it was not something that I think we're extremely proud of and certainly wasn't peaceful.

DM:

But not even just American history. In world history, this Apollo space program, it will be remembered always. It will always be a major historical event, so I don't know how much you reflect on that having been so close to it, but it is a fact.

JB:

It's interesting that—and John Aaron and I discussed this quite frequently—we—John's expression—he comes up with the greatest sayings—he says, "We go up to find wine," and we did. And even the astronauts, obviously, played a great part in it, but we're now realizing, you know, fifty years later, that we did a hell of a job. We would fly a mission and maybe take half a day or a day off, come back and start sims on the next one. We didn't have time to sit around and say, "Oh man, that was a great flight. We did a great job." I guess the longest time we had was

after the fire and after Apollo 13. But we were still working on the next flight and didn't have a lot of time to reflect. I regret that and we're now realizing, like in this very year I went to Wales in England, and I'm just amazed at what we were able to do. It had more impact on the world than I ever thought.

DM:

And will two-thousand years from now. You know, it's something that won't be forgotten.

JB:

I guess. I'm with Chris Kraft, "Too bad we can't resurrect all of us old guys"—

DM:

Exactly.

JB:

—"And go help NASA establish a goal and achieve it again."

DM:

I know that that's been very heartbreaking for all of you guys that were involved in it that after that huge step, it just kind of became a space-bust kind of—

JB:

The thing that was so important to us, as the people who executed the program—and other people are beginning to understand, I think, but didn't for a while, was the goal that we had. President Kennedy—I don't know who wrote that speech, how much he had to do with it, but he accepted it and delivered. But in one sentence, he set the goal and schedule. At that time, we didn't know that we were going to do a direct descent to the moon, a lunar orbit rendezvous, Earth orbit rendezvous. He didn't tell us how to do it, "Just do it." And then advance forward, I think, twenty-two years. I was working on the shuttle arm, the Remote Manipulator System, and on the floor of the U.S. Congress, they debated how many degrees of freedom that each joint on the RMS should have.

DM:

Oh my. It enters bureaucracy then.

JB:

Yes. And it's gotten worse since. I've thought about and even looked into it some. The biggest problem has been the increase in staff people in Congress. There are the same number of Congressman and senators as we did in the early sixties. We had two House office buildings, one Senate office building. Now we have four or five House office buildings, three senate. You say,

“Wait a minute, got the same number.” It’s the staff. The staff, they’ve gone wild, in fear of staff to a Congressman or Senator for manned space flight or human space flight. You’ve got to do things, whether they’re helpful or not. You got to earn your pay. We got all of these people that are really getting in the way more than they’re helping.

DM:

Let me ask you this. Often today, what you have—and really in different areas of human—of American history you see this: political appointees who don’t really have any skills but they’re maybe the son of a big contributor to a campaign, they get placed in a program and are pretty much dead weight or an impediment to that program. Did you see any of that in—while y’all were working the Mercury, Gemini and Apollo’s?

JB:

No. We were primarily shielded from that, I guess. The only thing—and there weren’t that many staffers to worry about—the only thing that we saw then that was a little distasteful, I guess, was that every Congressman, especially the ones on the Space Appropriations Committee, they wanted a part of the business in their district. That’s how, you know, contractors like McDonnell, Rockwell, North American Aviation, that’s how they won Congressional support. They said, “I’m going to build the thrusters in Huntsville, Alabama,” or, “In your district.”, “Oh okay, now I’m going to support it.” That was a little distasteful but I guess we accepted it as necessary. But now it’s just crazy that way. And I—even when I was in high school there as a page, I saw enough of that going on that I wanted nothing to do with politics. My Congressman, God bless him, he was a wonderful man and gave me so many opportunities. But he was dead set that when I graduated from high school up there that I would go to University of Mississippi and become a lawyer then come back and be his legislative assistant, a couple of terms later he would resign and I would run for his office. Boy, that was hard for me to do but I had to tell him, in nicer words, I didn’t want to have anything to do with—I had learned a great distaste for politicians.

DM:

Aren’t you glad you went a different route? [laughs]

JB:

I just don’t, you know—and I think—I’ve gotten to know quite a few Congressman over the years and I think what they say to get elected, they really believe in and they have good intentions but, boy, once they get up there and they find out, you know—all the lobbyists just descend on them. It was Jack Smith is a good example. He is a very smart man, very strong conservative beliefs. He got elected to, I guess, the Senate for New Mexico but he got up there and he found out things like, “Hey, you’re a freshman, you can’t make a speech on the floor and you don’t speak up in committee meetings.” And the lobbyists just descended on them and said,

“Okay now, you’re going to be up for reelection here again and if you want support from us, you got to do this.” And even—Jack resisted that and probably went further than anybody I’ve ever known in not accepting that condition. But he got defeated the next time around. They were right. The lobbyists said, “Okay, you won’t do this for us? To hell with you.”

DM:

Even though he was an astronaut and in that sense an American hero.

JB:

Yes. And had—

DM:

So it works against good people.

JB:

Yes. He had very strong beliefs, very much along the lines of Barry Goldwater. It’s funny. When he decided he was going to run for Congress, Gerry Griffin was an Assistant Administrator at NASA for Congressional Affairs at the time and a guy named Gerry Mossinghoff was legal counsel and I was up there as a horse holder to the administrator and I ended up in the interview office with Jack. But anyway, he decided he was going to leave NASA and go into the Senate. The four of us, Griffin, Mossinghoff, and Schmidt and I, stayed up all night long at Griffin’s house to figure out if he should run as a Democrat or a Republican. There was no question about his beliefs, very conservative, but they’re just saying, “You got to get elected.” We concluded that even though New Mexico up until then had tended to lean Democratic, you know, that he should run as a Republican because he really was and that’s what he believed and he could get elected.

DM:

And he did.

JB:

And he did. But it’s funny, early the next morning after we’d been up all night long, Jerry’s wife Sandra came down and started cooking us breakfast and we said, “Well, we concluded that he should run as a Republican,” and she said, “I could’ve told you that without staying up all night long.” [Laughter]

DM:

That’s good.

JB:

We need more Jack Smith's up there.

DM:

Do you talk to him still?

JB:

Yeah.

DM:

I want to interview him sometime. He's living in New Mexico, isn't he?

JB:

Uh-huh. Albuquerque. They celebrated the forty-eighth anniversary of Apollo 17 just last weekend in Houston and I didn't get to go because my health. Very disappointed not to see him. Jack was one of the first people that called me after my wife died.

DM:

Is that right?

JB:

Yes. Just insisted on coming to the funeral and I said, "Do not come. I will tell people to turn you away if you—do not come, because it's a long way here and I probably wouldn't even be able to speak to you, just say hi." And that was one of the—I don't know if you've experienced it or not—but so many people, you know, that I admired and respected came to her funeral and I was not able to spend any time with them. I felt very bad about that.

DM:

Same with my wife. It was the same thing. I really hated later that I didn't to talk to them.

JB:

This is off the subject of space I guess.

DM:

Let's pause it here a second. [Pause in recording] Well, that's something also, you know, about this whole space program, how kids are growing up now—there's a resurgence, it seems like, of interest in this that I think will just continue as it becomes more historical, it becomes more of an awesome event in people's minds.

JB:

I sure hope so. I'm somewhat disappointed, though, when I—I don't do a lot of speaking engagements anymore. In fact, the Lions Club or something, I usually don't go. But any elementary school kids, I'll drive all the way across Texas to do it because I just like kids. But I'm finding out that they don't—one of my first questions is, "Have you been studying about human space flight," and in general the answer is no. They know a little that their parents have told them about but their parents were born after Apollo 11 as it turns out. I'm told—I haven't seen it—the latest Texas history book has one paragraph about NASA and it says, "In July 1969, Buzz Aldrin and Neil Armstrong landed on the moon," and that's about it. And it's very disheartening.

DM:

Textbooks are that way, though. I think that beyond the school curriculum, there's something more important and that's what captures the human imagination, that kids growing up will continue to find books on the subject and they'll be personally interested in it.

JB:

I am encouraged—even though initially discouraged—when I talk to them. I find they are very interested and ask a lot of good questions. The best question I ever had was here in Marble Falls at the elementary school a couple of years ago. Just a young girl said, "Mr. Bostick, were all of the flight controllers and astronauts as old as you are?" I said, "The ones that are still alive, yes." [Laughter] I think the ones I've talked to do have an interest, just very disappointed. In fact, I talked to some of the teachers, "Why don't you teach them more?" "Well, we have this set curriculum we have to follow."

DM:

Exactly. That's the problem.

JB:

That is a problem. It's not only a big part of Texas history but United States, world history.

DM:

That's why I say it's going to have to happen outside the curriculum but it will and it is, you know, that subject is important.

JB:

We talked about how the Space Race was—the Russians aided the Apollo program. It may take the Chinese landing somebody on the moon to wake us up again and if it does, fine. Let's do it.

DM:

John Aaron says exactly the same thing. “It needs to take another threat or perceived threat to make people be willing to spend the money on it and to come together, because people come together in the face of a common issue.”

JB:

It's too bad that we're somewhat driven by fear. If that's what it takes, let's do it. I just have always believed that we should look over the horizon. I usually end all of my speeches with, “Our vision should not be limited by how far our eyes can see, only by how far that our minds can imagine.” I really believe that. If we ever stop imagining, we're in trouble.

DM:

And if we allow ourselves to be limited by just practicality issues, that's a problem because humans are—have the psyche to explore. Let's talk about *Apollo 12*. Were you there at the launch?

JB:

Oh yeah. I was there.

DM:

Someone said along the way, might've been Chris Kraft—it might've been Gene Kranz—that said, “Man, that Bostick was always there. I don't know when he slept.”

JB:

Well, I was the chief of the flight dynamics branch, which—and I had the responsibility for the retros, the ____ [0:53:02], so I had to supply fifteen to twenty or more flight controllers for each flight to make sure they were prepared. So, yes, I was there every shift, not full-time, but I lived just across the street, ten minutes away. So, I could run home, and sleep for a couple hours then come back. But I had to evaluate people to make sure that they're doing what they were doing. And I never missed a launch phase. That was my favorite.

DM:

What can you tell me about the lightning strike issue? Of course, y'all didn't know it was a lightning strike at the time, but what happened?

JB:

Well, the first thing we hear is a callout from the crew, Pete Conrad, and the people in the control centers started seeing and we saw it on our displays. We lost our telemetry. Then almost immediately, John chimed in with a—finally come tell them to come to do SCE to AUX [**Signal Conditioning Equipment to Auxiliary**]. I, like everybody else in the control center, including

the captain, had no idea what he was talking but I knew it was John Aaron and immediately felt relieved because John was usually 100 percent right. It turned out that that's what Al Bean either remembered or found the switch and put it to auxiliary. That allowed the systems ops to get our data back to then solve the problem. SCE to AUX didn't solve the problem, it just gave primarily systems guys the ability to do that. *Apollo 12* is usually remembered by two things: number one, what happened in the launch phase, and number two is how Bean pointed the camera to the sun and burning it out. There aren't any videos of *Apollo 12*, unfortunately. And it was—for us guys in the trench, it was wonderful because we had learned from *Apollo 11* what had caused us to go long and we corrected that. Pete Conrad had asked the FIDO [**Flight Dynamics Officer**] who was going to be on for the lunar descent. I told him. He said, "I want all of that right on top of the surveyor." He had to maneuver away from it to avoid it." So, you know, it was a good flight for us but remembered mostly by the launch phase and the camera. The only case in human space flight, I think, where a single individual flight controller, single one, solved a major problem that saved the flight. John deserves all the credit in the world for that. He said, "That was all confidence, no hesitation."

DM:

Gerry Griffin says the same thing, I notice, in documentaries, that he didn't know what he was talking about but he said it with such a matter-of-factness that he said, "Okay."

JB:

And he knew John Aaron and trusted [inaudible]. All flight controllers, if they're on a console, they have earned it, they're good, they know what they're doing but then there are people like John Aaron who you never question. You expect them to be able to solve problems like that. I know every time I got up a manning list for an upcoming flight, I would look and see who would be on it. It was, "Okay, good. Great, I'm on the same shift with John Aaron." The other one that was close behind in my mind was Dave Fidel [?][0:57:41], who was a communications guy. Ended up pointing a camera guy. He was just a—had much more interface with EECOM than I did with the communications guys. Ed was another one of those guys that when—he had learned through simulations and flights before that when he says something, you didn't question it.

DM:

Where did the term "steely-eyed missile man" come from? Was it really applied while y'all were sitting around in Mission Control?

JB:

I don't know the derivation of that.

DM:

Did you ever hear it used in the—

JB:

Oh yeah. We would do—something people said that it was first used by Pete Conrad. I have not been able to verify that.

DM:

About Pete Conrad?

JB:

Yeah, that he would—that somebody had done a good job or something, “your a steely-eyed space man.”

DM:

Oh Pete would say that? Interesting.

JB:

Yeah. John Llewellyn used it a lot. I’m not sure where he got it.

DM:

I understand that you can maybe verify this, that during the *Apollo 12* launch, after the problem and you were still concerned about what the lightning strike might have done to the spacecraft, Sig, what was Sig’s—

JB:

Sig Schubert, Sig Schubert. He was vice deputy.

DM:

He said to you, “Jerry, if you feel uncomfortable in any way about the TLI, the trans-lunar injection, speak out.” Do you recall that?

JB:

Oh yeah. He was doing—he did that all there in the trench. He went to FIDO, ____ [0:59:27]. Chris Kraft did it with John Aaron and all the other people. The systems guys, same thing. He told Gerry Griffin, “We don’t have to do this today. You’re in charge. You be satisfied.” You don’t know how comforting that is, you know, to hear the big bosses say, “Okay, it’s in your hands.”

DM:

They trust you.

JB:

Yeah. "I trust you. You decide if—if you have any reason not to go the moon, you just say so and we'll be happy with that."

DM:

That's amazing.

JB:

When we looked at it—again, another thing like the decision to do *Apollo 8*, we couldn't come up with any reason not to.

DM:

Did you think of—did you have to think about it first before you responded?

JB:

Oh yeah. I mean, we analyzed as much as you could analyze something within thirty minutes or fifteen minutes and just said, "No reason that we can't do that."

DM:

Part of the amazing thing is the huge amount of pressure that was on you guys and yet you had to make fast decisions.

JB:

Yeah. Obviously, our big thing was, "Are the engines going to work?" We had the software to compute the maneuvers and that wouldn't affect the propulsion systems.

DM:

How close did *Apollo 12* get to the limit line before abort?

JB:

Trajectory wise it was always good. There was no question about the trajectory, it was just about we don't have any data. We had skin track data. It was nominal the whole time. I wasn't really worried about that.

DM:

At what point do you have to abort? You can already be in orbit and make a decision to abort at that point, I guess.

JB:

Well, during the launch phase, if the trajectory deviates, like if it goes straight up or too far down

at limit lines, if you exceeded those, the spacecraft would either come down on land or it would break up due to pressure and temperature. But once we, you know, got into orbit, it was more of a systems question than a trajectory, like, "Do we have adequate systems to do the job that we want to do?" Again, you know, the first propulsion system was John Aaron's responsibility and if he said it's fine, I didn't question that. I mean it's fine. Don't worry about things that you have no control over, especially if somebody like John Aaron says fine, that's it.

DM:

So, if the trajectory isn't right before you reach orbit, that's when you might have to abort—

JB:

Yes.

DM:

—because Pete Conrad has his hand on the abort. I guess it was a turn—so he must've been worried about trajectory, not knowing at that point.

JB:

Yeah. [phone rings 01:03:07]

DM:

I'll pause that. [Pause in recording] going again

JB:

Of course, I don't know exactly what was going through his mind but he just knew that something had happened and he suspected the lightning strike had knocked out all his data and had to think, Did it fry the systems? Or, If we're going into orbit, would we be able to fly this and come back home? Maybe not. So in that case, yes, I want to get off right here, use the ejection system.

DM:

In orbit?

JB:

Huh?

DM:

After entering—

JB:

No. I'm sure he was thinking, I don't want to go into orbit because if that engine doesn't burn, we're stuck in orbit. So, I want to use the tower, the launch escape tower, to abort here now. I don't know. He was a calm and cool guy, too. There was several instances in the program where astronauts had a nervous hand on the abort switch but thank goodness they never did.

DM:

Who had the final authority on abort? He could make that decision? Pete Conrad could've made that decision without any word from flight control?

JB:

Yes, if he thought it was bad enough. The flight commander could obviously do it. The FIDO could do it. I had an abort switch as a FIDO.

DM:

You could do it without authorization from Gerry Griffin, in this case?

JB:

Yeah.

DM:

Or without authorization—

JB:

Normally I would've told him or said—but yeah, the FIDO had the final authority because he's the one that had the data. Everybody else would have to say, "I'm coming up on the limit pressure or whatever. I request an abort." If the flight director agreed, he would tell the CAPCOM [**Capsule Communicator**] and the CAPCOM would tell the crew, and they would actually be able to abort.

DM:

Was there a way of executing the abort from mission control in case communications were disrupted?

JB:

Yes. The FIDO, during the launch phase, could actually shutdown the engines. Usually an abort was a request of the crew to take action on board. But during the launch phase, the FIDO could shut down the engines.

DM:

How dangerous would an abort have been before leaving the atmosphere? Would they have survived? I mean, was there—

JB:

Yeah. We had a lot of planning that went into that, a lot of simulations. Yes, it would have been kind of a scary ride, a lot of—when they aborted, it would've been a lot of G's, gravity pressure, on them. It wouldn't be something that you'd want to volunteer to do every day. They were designed to save the crew's lives.

DM:

I remember, I think, you were talking about either in late Mercury or early Gemini there was a chance where one of the astronauts was looking at abort and he didn't, although it was an iffy situation, but he had seen the test dummies coming back without arms and legs and maybe that was—[laughter]

JB:

Yeah. We were in the office one evening. The recovery guys had their offices over there, too. Especially when they were doing the Gemini launch abort tests, they would come in with these astronaut dummies just torn to pieces. They said, "I don't want to see that." [Laughter] But especially when they were testing the paraglider for Gemini, that was one possible way to come back in. Thankfully we decided, "No, let's just go the old-school way and land in the water."

DM:

Alan Bean, in his interview with NASA—I've read the transcript—and he talks about when they were resetting the navigational platform that he had learned the stars and one way they made sure that thing was oriented properly was, "Hey," he was saying, "You need to come 60 degrees to the right here. You need to line up with this star." Do you remember anything about that?

JB:

Oh yeah. They had a sextant and, I think, an Apollo telescope, sextant, to correct—but anyway, there was a couple ways they could align with certain stars, and they had charts, then hit the computer button and that would be transferred to the spacecraft platform and give them a rough alignment, nothing perfect.

DM:

Do you remember him specifically doing that on that night launch?

JB:

No. I guess I don't. But it would've been a normal thing to do. And it was good enough, even

without an update from the ground, that their platform would have been accurate enough that we could get into the reentry altitude and come home.

DM:

Well, that was an interesting story. He said that he kind of paid a lot of attention to the stars, that he would go back into the simulators sometimes just to learn the stars because he thought, Well, that might come in handy one day, and sure enough it did.

JB:

It's called the Apollo Optical Telescope. Yeah, I could read the star charts, you know, and it was no problem, could even suggest what stars to look at for alignment. But I could—if I could walk outside and look at the sky, I could find the North Star—not that I'm not an astronomer but I could read the star charts, and people don't understand that. But it was for a totally different purpose and they were much more identifiable, in fact they had names on them.

DM:

Do you remember about how many navigational stars y'all were using?

JB:

Oh gosh.

DM:

Fifty-some-odd or so?

JB:

I would say less than that, but, you know, a lot. The brightest ones, obviously.

DM:

Arcturus and some of those, yeah.

JB:

Cassiopeia.

DM:

Antares, maybe, some of the bright ones.

JB:

And that was primarily the guidance officer's job, you know, to do that, to recommend the stars.

DM:

Who was the guidance officer?

JB:

Charlie Parker was the original and the best ever. I mean, oh my gosh.

DM:

Yeah, you mention him.

JB:

He was another John Aaron. If Charlie said it, there was no questions about it. Yeah, he was amazing. When we first—in the early Gemini—started the position of a guidance officer, I wasn't sure—even though he was my partner in the trench, I wasn't sure exactly what he was—I knew what he was going to do so I monitored the onboard guidance system and compared it to our tracking data from the ground. Beyond that, I wasn't real clear on how that was going to help me do my job. But, ah, it was amazing. He figured out the whole concept, his own displays and everything. First few simulations we had, he would say things like, “Well, first guidance's are doing great but when you go through staging, you can expect the second stage to be a little wild.” I would say, “How does he know that?” But then we would go through staging and sure enough, _____ [1:12:23] would just wiggle all over the place, just like Charlie had predicted.

DM:

[Laughs] That's amazing.

JB:

Smart guy. And he's never gotten the attention he deserves. He didn't like attention.

DM:

What about—why don't we talk about Apollo 13 a little bit. That'd be okay?

JB:

Sure.

DM:

Okay. You doing okay?

JB:

Oh yeah.

DM:

Okay. One of the—one of the quotes that you have about Apollo 13 is, “I would not allow myself to think we aren't going to get these guys back. It was always a question of how.” That's

it, huh?

JB:

Yeah. And I think that applied to most of the people in the control center. We did not think, didn't even allow ourselves to think, that this is a lost cause and we aren't going to get them back. Didn't have a good idea of how we were going to do it but we just said, "Okay, here's the situation that we're facing and the challenge that we have before us. Now, go solve the problem." And we had been taught by Kraft and Lunney, also that the way you solve a problem like that is step by step. You don't necessarily—well, you don't try to solve the whole problem at once. You say, "Here's all you got to do." Just say, "Okay, in order to get them back safely, there are a number of things you have to do so I'm going to learn all of them one by one." That sounds simple but, you know, even today you see people facing a problem and they want to jump to the end and solve the whole thing. It's not always possible.

DM:

Step by step is the way. Sounds like the engineering way.

JB:

Yeah, I guess it was. It was certainly true in that case. Can't solve the whole thing but we can take one bite at a time.

DM:

And pretty much you say the same thing when—you know, about, "We weren't going to allow this thing to—we didn't think about it failing." That's interesting that when the Apollo 13 movie script writers were talking to you, you said basically the same thing, "We laid out the options and failure was not one of them."

JB:

Yeah. I was being interviewed by Bill Broyles and Al Reinert, the script writers.

DM:

Where was that, anyhow? Where did that take place?

JB:

That took place in a Cajun barbeque joint just north of NASA on old Galveston Road, right across from Arlington field [1:15:25].

DM:

That wasn't the singing wheel. It was another one.

JB:

Pe-Te's Cajun Barbeque. I sense that even after I said that that Bill Broyles was somewhat bored. He seemed distracted. [Clock chimes 01:15:47] I don't really know. I guess he had enough of talking to me. In fact he said, "Al, I think we're going to have to go." So, they left and I thought, Well, I wasted their time. Little did I know, they were in the parking lot and Broyles is going, "That's it, that's the whole line of the—headline of the movie." They spent all the way driving up to Houston trying to figure out who to give it to. Of course, they gave it to Kranz. Slight change, just simplified it to, "Failure is not an option."

DM:

Congratulations on coming up with the main line of the movie.

JB:

My wife, she's always telling me, "Too bad you didn't get a copyright on that." [Laughter] It was the case. It was the case. When bad things happen or a difficult situation arose, just try to lay out all the options on how to solve. We never thought about, "It's not solvable."

DM:

Were you in the room when Kranz called the people in there? And I think John Aaron was already on the scene at that time, or maybe he came in a little later. But Kranz called people into the room and you all discussed this, you know. At some point, he kind of appointed John Aaron the power broker.

JB:

That was not in the control center. Kranz was on the console when the accident happened. Glynn Lunney's team was coming in to relieve them. Glynn was an ex-flight dynamics officer, FIDO, so he understood what was going on. Chuck Deiterich and I had concluded already before there was any discussion in the control center about it. The thing to do was, again, one step at a time. "Immediately get back to a free-return trajectory then we'll figure out things later." Glynn, without hesitation, said, "Okay, I'll buy that." So, there was no question in his mind. Once he got on duty, he entertained that as a question that needs to be on the record, I think. But Gene, when he went off, he went down to a vacant room on the second floor and assembled a team of people—and John Aaron was one of them—and he appointed Arnie Aldrich, who really is the key guy to keep up with the power, John for the Command/Service Module and Bill Peters for the lunar module. That turned out to be the right people for the right job.

DM:

Were you in that meeting?

JB:

Yes I was. People ask me, “What team were you on during Apollo 13?” Well, the team thing just kind of went away. Everybody was there all the time. But I spent most of my time outside the bunker with Gene’s flight team he had assembled to help solve the problem.

DM:

Did you work on the free-return trajectory?

JB:

Oh yeah. The problem with that was, you know, once we had concluded that that was the thing to do and convinced Lunney, which didn’t take any convincing, was that we didn’t have a computer program and real-time computing complex that would target—it would burn the lunar module engine while docked but we couldn’t target it to a point on the Earth. That was a big deal so we called a bunch of mission planning NASA guys and IBM [**International Business Machines Corporation**] computer programmers in and within forty-five minutes to an hour, we had that capability. It was the only—one of the big problems was that with the DACS configuration with the command/service module and dock to the lunar module. Using the lunar module’s descent engine, the center of gravity of that total configuration was physically outside of the lunar module. So, you use the lunar module engine to do this burn and the center of gravity is outside of that configuration. So that’s what gave the flight crew a little problem, how to control the altitude. It was somewhat exaggerated in the movie but not much. In fact, Jim Lovell. He thought, “Yeah, that’s pretty close to what—the way it was.”

DM:

Did you work on speeding up the return?

JB:

Oh yeah. I mean, I was a—the next thing then is, “Okay, we’ve got them on them on a free-return, they’re going to land in the Indian Ocean.” That’s acceptable, at least it’s water. There are commercial ships that can probably get there, not military recovery ships but it didn’t matter. But while the systems guys both command/service module and lunar module, we kind of figured out how to stretch the consumables: the air and water, food and everything else. We had to make all of that last longer, which was a small feat. The lunar module was designed to accommodate two people, I think, for like two days at that time and here we were asking to support three people for four days. That was—while they were doing that, we were trying to figure out how to speed it up, which would help them. We came up with idea of doing a speed-up burn, actually going around the backside of the moon and were heading back to the Indian Ocean. We could speed it up and move the landing over to the Pacific Ocean, where we had recovery forces. We actually—I think we sped it up by like eighteen hours. Actually, we physically could have done it even a day faster than that, but we would’ve had to burn the lunar module engines to fuel the

_____ [1:23:31]. That didn't seem like a pretty thing to do and the systems guys were then—in my mind anyway—didn't reach a—stretching the consumables to last that long so that's what we ended up doing.

DM:

Have you ever pondered whether that saved eighteen hours might've saved that crew? Because, you know, not only were they running out of these things but the body temperatures were dropping so badly. You stop being able to function at a certain point. Kind of wonder.

JB:

Fred Haise and I have had some discussions about that. He was sicker than we knew about. It got down to around 36 degrees inside. That's about what your refrigerator is. [Coughs] And when we did the movie, in filming that part, they got the set down to 36 degrees and I could only stay in there about five minutes. That's cold. But yes, if we hadn't have sped it up [coughs] the crew would've been in more danger.

DM:

Can you imagine eighteen more hours in that cold?

JB:

Yeah, and it was good to have a real trained recovery crew, including medical doctors on-site, to retrieve them. But, you know, there again we're talking about John Aaron's expression of developing a fine wine. We were proud, very proud, that we had gotten them back alive and safely. But we didn't have time to sit around and dwell on it, we just went to work on Apollo 14.

DM:

Talk a little bit about the reentry angle. That was a problem. There were some venting that caused a problem. Was the lack of moon rocks really a problem? That comes out in the movie but was that really much of a problem on the angle?

JB:

Yes. It wasn't the weight, which they say it was in the movie. We tried to talk about how that was a matter of center of gravity. That affected the lift. So, we had to accommodate for that. That's when we told the crew to go into the lunar module and bring everything you can think of or you can get at least out, and store it where the rocks should be and help accommodate the center of gravity.

DM:

Did that seem to help?

JB:

Oh yeah. Did that. We also had a helium vent, apparently, that we found out later that was causing the trajectory to be slightly off.

DM:

One of them was a double vent that was supposed to prevent that.

JB:

It was a noncompulsory vent. It was a T-vent but it turns out that's very good in theory but it's almost impossible to build one. It was causing them to be a little shallow, which meant they would've hit the atmosphere and shipped out. And it would come up—in orbit it would appear about, I don't know, thirteen days or something and they couldn't have lasted that long. We did the midcourse to get the entry angle pointed and feeling really good, and then we hit the blackout. We went from a period of four days where we were just working on the impossible to try to solve the problem, to solve getting rid of the lunar module, getting the angle right. Everything is looking perfect then we go into wipeout and it lasted about a minute and a half to two minutes longer than we've ever seen before and we just thought—went from happiness to deep depression. Then when they finally—we heard from them, we went to complete elation again. Of course, Jim Lovell says now, "We didn't say anything because we thought it'd be a bigger, great part in the movie," which is not true. It was—the best we could figure out is that the Orion Aircraft, which was recording all of that and relaying it back, was not that reliable itself. So, it went a little long. When we were filming that for the movie, Ron Howard, as usual, he got everybody all sitting in the control center. He walks over to me, puts his arm around and says to me, "I want you to direct us," and I said, "What? I don't know how to direct." He said, "You were the only one there. Just get a bit—tell them how you felt, what it was like to be in the room." I went through my things that I just went through with you, working our butts to solve the problem and being pleased and going through a deep depression when we didn't hear from them to elation when we finally did. And they filmed it. Ron, as usual, said, "Okay, guys, how do you feel about that, the actors?" Ed Harris says, "I'd like for Jerry to come up and give us that pep talk again and try it one more time." [DM laughs]

DM:

That's nice. I hope you got director's pay for that.

JB:

No, no, no, no, no. Yeah, that was—it was interesting, and I think Gerry Griffin will tell you same thing. We really didn't appreciate what we had done on Apollo 13 until we did the movie and that was especially true with getting to work with my son. He would say every day, "I didn't know you were doing all of that." [Laughter]

DM:

While you were—while that was going on for those, what, four days, I believe, did you go home? Did you sleep there?

JB:

I would—I slept there most of the time. We had showers there but I lived about ten minutes away, just across the street. So, at least twice, maybe three times, I would go home and shower and get a good meal, better than what we had in the NASA cafeteria that they had brought over to us. And maybe get a couple hours sleep. But that was what I did.

DM:

The guys that—when you were there sleeping and eating, where would you sleep? Did they have a room with cots?

JB:

Yes, in the—between the control center and the office wing of building 30. On the third floor there was a flight controller's lounge they called it, had cots in it. But it was usually pretty noisy and rowdy. I think it only had one shower so it was full all the time, most of the time. So, I tried that at least once, maybe twice, and didn't find it that satisfactory so I either slept on the floor in the control center or went home.

DM:

Was that happening a lot, people just sleeping on the floor of the control center?

JB:

Oh yeah. Just go into the staff support room and curl up under a console.

DM:

Just outside of the Mission Control?

JB:

Yeah. Some may have even done it in the bunker but I didn't. I went into the staff support room and crawled up under a console in the back row and went to sleep, made sure somebody was going to wake me up in an hour or two hours, whatever.

DM:

But there actually was a cafeteria there so you could get something to eat.

JB:

They brought food from the cafeteria, so it was close to the control center that they would bring

food over and set up a buffet line. It was not horrible but it wasn't good either, [laughs] and usually cold by the time they got it setup. A lot of hot dogs.

DM:

Well, let's—oh, one other question here. Did—if Apollo 13 had—if there had been fatalities on that mission, if you couldn't get the crew back alive, would the Apollo program have continued?

JB:

I doubt it. I sincerely doubt it. Of course, we had gone through the Apollo 1 fire but to lose a crew during the flight after we had already landed on the moon twice, I think the President, Congress and most of America would say, "That's enough. Just don't do it." So, you know, maybe we saved the program after all. At least for, what? Four more flights.

DM:

But saving the Apollo program might've also saved future space programs, too, so it was really a critical moment.

JB:

Especially if they had been just some weird orbit about the Earth or the Sun or whatever. You could probably track them or maybe even see them occasionally and think, Boy, there's—

DM:

What a demoralizing thing.

JB:

—three dead astronauts. Not a happy thought. I'm not even sure we would have wanted to continue it again.

DM:

Can you imagine that demoralizing factor of having them floating up there?

JB:

Apollo 1 was bad enough but at least we had their remains.

DM:

Let's talk just a little bit more about the movie, if that's okay.

JB:

Sure.

DM:

Can you tell me the story of Michael calling you and saying, "Hey, here's a level synopsis of a book."

JB:

He called me and said, "You know Jim Lovell is writing a book about Apollo 13," and I said, "Yeah and his co-writer is a guy named Jeffrey Kluger." There was a silence on the phone and he said, "How do you know that?" I said, "Well, I just hung up from talking with Jeffrey. I talked to Lovell a couple of times." [inaudible] And he said, "Okay. I've got a front page synopsis and I think it would make a great movie." I'm going to recommend to Ron Howard that we auction the rights to the book." I said, "They're going to do a documentary," and he said, "No, it would be a general entertainment movie," and I said, "I don't think you should do that. I don't want to have anything to do with it. You shouldn't have anything to do with it." He said, "Why do you say that?" I said, "Well, because all the ones that I have seen before, especially *Marooned*, which was roughly based on Apollo 13, was terrible. I got up and walked out in the middle of it. It was just horrible and you shouldn't do it." He said, "Well, I think we can make a good entertaining movie and stick to the facts." An hour or so later, I got a call back from him and he had Ron Howard on the line. So, I explained to Ron why I didn't think it should be anything other than a documentary. He said, "Well, I agree with you about *Marooned*. That was a terrible movie and I guarantee you we aren't going to do anything like that." He said, "I'm convinced that we can make an accurate but entertaining movie and just to help us reach that goal, I'd like to hire you and Gerry Griffin and Dave Scott as technical advisors.", "Okay." And then we were at a restaurant later and I said, "What's a technical advisor supposed to do?" He said, "Stand in the corner and say nothing until somebody asks you a question." [laughter]

DM:

Is that how it works or do you have to interject sometimes and say, "Wait a minute guys?"

JB:

Well, it turned out we did that and Gerry Griffin and I had been, you know, ex-NASA guys. If we had a call to be there at eight o'clock, we would arrange to be there at like seven-thirty just to make sure we were on time. That's just the way we operated. Every time we did that, three or four days, first three or four days, Ron Howard was already there but we just were careful not to interrupt because he was going around with his script and looking angles for the cameras and stuff. I guess on maybe the second day, he started asking us a few questions and after about three days of that he said, "Since you guys are coming in early anyway, would you mind coming in even a little bit earlier when I come in and you can help me plan out the shooting for each day, and so we did that and it worked great. He would ask our opinion about everything, just about. That was impressive. He also invited us to the dailies. Each day, usually at night, seven o'clock at night. They would show the film they had shot that day with Ron and Brian Grazer who was

allegedly the producer, the editor. They would edit the film. But Ron would always ask me and Gerry, "What do you think? How do you think that fits?" He was very dedicated to making it correct, especially [inaudible 01:39:41]. And every time that either Gerry or Dave Scott would go to him and say, "Well, you know, that's not really the way it happened. That wasn't Kranz that did that, that was Glynn Lunney." He would consider that, stand there and he said, "Guys, I know you're right but I'm making a movie and I'm trying to consolidate four or five days into two hours and I can't have fifteen different paid actors. So, we've got to consolidate people and some facts." They said, "Okay." But at least he would always listen to us. It's like the thing about not having the moon rocks. The way the script was written was had to have them for weight. That affected the entry angle. I pointed out to him that really didn't have anything to do with weight, it was the center of gravity. I explained that to him and he said, "Oh yeah, that makes sense. I understand that but," he said, "I'm going to go with weight." I said, "Well, okay." He said, "Well, there's probably only a dozen people in the world who would understand what the center of gravity was."

DM:

You know, that is a critical point, that your audience has to understand what you're talking about. So that'd be tough to balance that between the engineers that were there and the public that's going to see it.

JB:

He took Gerry and I and Dave Scott, I think, I'm not sure, over to see Steven Spielberg one day just to get his opinion. Spielberg said, "Well, you know, every once in a while, throw in some sentence or statement that's nonsensical, makes no sense at all. Just say, 'Well the _____ [1:41:39] is out of kilter.'" He said, "Nobody will understand it but it'll raise their interest." I don't think Ron ever did that but that's an interesting concept. "Throw in something that nobody will understand." [Laughter]

DM:

Makes me want to go back and watch a Spielberg movie and look for those things. Oh yeah, you've commented on the authenticity of the movie, how well the actors prepared and how the set was done. Is that your overall opinion of the movie, that it was pretty well done and authentic?

JB:

I think it was done as well as you could do a general entertainment movie, I really do. Some people, you know—a lot of people find fault with it. In fact, I found out there are people that's all they do is try to find fault with movies. They come up with little things that are wrong. And some are right and some aren't right, like some people didn't believe the scene about Marilyn Lovell losing the ring in the shower, but that really happened. That really happened. But even

Scott said that. I tell people and they say, “No, that can’t be true.” But yes, I think it was very good. I was worried because at the time I worked for Grumman and I really had a problem with the way they portrayed the Grumman guy. And I pled with Ron, “Don’t do that. It didn’t happen. He never would’ve been in the bunker starting with.” Well, it turned out that there was a guy, a Grumman person, in the mission evaluation room. When the script writers interview Don Arabian, who was the head of mission evaluation, he told them almost word for word that’s what the Grumman guy told him, “They can’t do it that way. We won’t stand behind it. The engine wasn’t designed to do that.” So, there was some authenticity but that worked anyway. And then, you know, I was worried people would think that was Tom Kelly. He was my big boss at the time at Grumman. Fred Haise was under him, still my boss. Ed Smiley, who was portrayed in the movie as the guy who put the system together to allow them to get rid of the carbon dioxide, square peg in a round hole thing. He was my immediate boss. T.K. Mattingly worked for me; the whole chain. And I was saying, “They’re going to kill me. They’re going to fire me.” They were all at the premiere in Houston—actually in Pasadena, Texas. We left from the Space Center in Houston and rode a bus to Pasadena. On the way back I was just, “They’re going to kill me.” The only thing that Fred ever said to me was on the bus ride back. He said, “I never _____ [1:45:08].”

DM:

That’s all you ever heard about that.

JB:

The only complaint I ever heard was in the movie Bill Paxton portrayed him, _____ [1:45:17]. No, they liked it. I talked to Charlie Duke some about it and he had some things he could pick apart, especially his wife Dottie, she didn’t like it at all. She just thought they didn’t portray Marilyn properly or Mary Haise at the time who was pregnant.

DM:

She knew them as friends.

JB:

Oh yeah. And that was her big thing is they didn’t portray the wives.

DM:

Everybody has their thing. What about you? You’re visible in that movie. How are you—and you have your suit on.

JB:

Yeah, and it bothered me to start with, like Ron said, “We have to consolidate so we’re going to

have this one FIDO and he's going to portray all FIDOs. The guy that had that job is an actor. He choose to use my name and his badge. It had his picture and my name on it.

DM:

I know they'd say, Jerry.

JB:

Yeah. And I was worried that the real FIDOs, in some cases, would say, That wasn't you, that was me. I was on that. That happened, and of course it happened with Kranz. And I was a little—very disappointed—my biggest disappointment in the movie, I guess, was that it didn't portray Glynn Lunney as well as it should have. He had a lot more to do with that. T.K. Mattingly helped correct that. I saw him after the movie and saw him interview. He said that the room was in great confusion. In came Lunney and he soothed, kind of solved the problem. In fact, even in the documentary that's out now, *Mission Control: The Unsung Heroes*. Kranz says, "That room was in deep confusion." Now, what they cut out of the documentary was, he was talking about Kranz's team. He said the same thing T.K.—[coughs] it was either [coughs]—Glynn Lunney came in and saved the day.

DM:

Why did they end up portraying Kranz as the consolidated figure instead of Lunney as the consolidated figure?

JB:

Because Ron Howard's answer to that was that Gene Kranz was a character in himself. He wore a vest, crew cut. He did—he was on duty during a lot of the critical phases. But mainly because he was a character in himself. Interesting thing that I've ever seen published and I don't want to publicize it now too much. But he said—Ron told me and Gerry Griffin when he came down to Houston to meet all the flight controllers, and he hadn't selected the actors yet, he said, "You know, I've got a brother, Clint, who I try to put in as many of my movies as I can." He said, "I already decided there wasn't a place for him in here because he's kind of a goofy guy." He said, "then I met Sy Liebergot." He said, "He's as goofy as Clint."

DM:

There you go. [laughter] Well, what was your opinion on that? Did he reflect well?

JB:

Yeah. He did—it was fairly accurate. Clint had no—I mean, Sy, had no idea what was wrong. He was talking about instrumentation and Will Fenner and Charlie Parker, who were guidance officers sitting just to my right in the trench kept saying, "Why are they talking about instrumentation, because I didn't look at my displays. It's not instrumentation. Something bad has happened to the pilot. It's gone. It's not instrumentation. Why are Kranz and Liebergot

talking about it?" I said, "Just let them talk through it." I regret it in real-time, during the real mission, I should've said [phone makes noise], "Okay, go tell Kranz the truth. It doesn't have anything to do with instrumentation." But Sy has made a living off of that.

DM:

John Aaron was also portrayed in that movie. He was recognizable.

JB:

Oh yeah.

DM:

Was that accurate?

JB:

I think so. The guy who portrayed him came to me and we spent a couple hours together. "Describe John Aaron to me." All I could say was, "He was always calm and he wasn't excitable. He never raised his voice. He just—he was very thorough in his planning and in executing his duties in real-time." I think the guy did a good job of portraying John Aaron. And John was pleased, also, even though the facts there are not portrayed accurately. It has Mattingly in the simulator talking to John. Well, Mattingly never got in a simulator. That was primarily John Young.

DM:

Oh really, John Young was in the simulator?

JB:

Yeah, he's the one that spent most of the time in the simulator.

DM:

That's interesting.

JB:

John Aaron, I don't think, you'd have to ask him—but he didn't go over there and sit with whoever was in the simulator and do it in real-time. He may have gone one time or something but it was—but it made a good movie. It didn't really distort the facts except that [coughs] for who did what to whom. And that was another thing that Dottie Duke didn't like about it. They were, and our, still good friends of Mattingly. She thought it portrayed him as a beer-drinking happy-go-lucky guy, you know, that turned the TV off before it happened. She said, "He didn't ever do that." Interesting thing there, though, Gary Sinise played this part in the movie. Because of his scheduling problems, they brought him in much earlier than it really happened in the

movie. He had one line the first day he was there. He was supposed to say, "Apollo 13, CAPCOM, would you throw switch [inaudible] [1:53:07] I forget what it was on panel twelve to on." That was it. Ron as usual got everybody all set and he said, "Okay, everybody ready?" Sinise says, "Yeah. Can I talk to Jerry, though, before we shoot this?" Ron said, "Sure. See what he wants." So, I go up and he said, "Where is the switch?" I said, "On the panel." He said, "In front of me or behind me? Will it be on my left side or my right side? What happens if they don't throw the switch?" Spent thirty minutes with him going through all of that. I went back to Ron and I said, "Boy, did you ever pick the right guy to play T.K. Mattingly, because Mattingly would've asked the same questions." [Laughter] At the premiere, after the premiere, we went back to the hotel in Silverlake. And I introduced the two in the bar. In fact, I left them in the bar at two o'clock in the morning. They were extremely interested in what the other guy had been doing. Really pleased. And they're still good friends.

DM:
That's great.

JB:
But, boy, was Sinise ever the right guy to play Mattingly. Mattingly, to his fault, in my opinion, sometimes would just—he nitpicked every detail. He had to understand everything as well as you did. John would tell you the same thing. He spent hours and hours with John going over schematics.

End of Recording