ORAL HISTORY TRANSCRIPT

FRANK BORMAN
INTERVIEWED BY CATHERINE HARWOOD
LAS CRUCES, NEW MEXICO – 13 APRIL 1999

HARWOOD: It is April 13th, 1999, and we are interviewing Col. Frank Borman in Las Cruces, New Mexico. Let's start a little bit pre-NASA. I want to start with a question that relates to when you were at West Point [Military Academy, New York]. I guess you were lucky enough to have Vince Lombardi as your backfield coach, I understand, when you were there. And–

BORMAN: Well, that was quite a football team. Earl Blaik was the head coach. I was the lowly manager, but Vince Lombardi was a coach. Sid Gilman was a coach. Murray Wurmouth was a coach. There were all kinds of people that went on to greater fame in sports that were working for Col. Blaik.

HARWOOD: Well, one of the questions that the historians behind us wanted to know is whether Vince Lombardi in your—and your dealings with him then, did it have any impact? He's known as such a—you know, his management style as a coach, other people have adopted in business. Did it have any effect on you as you went on in your career?

BORMAN: No, I don't think so. He was very emotional, very intense. And he was a perfect compliment to Col. Blaik. So, but—you know, as I said, I was a lowly manager and I—and that didn't really much of that rub off.

HARWOOD: Let's talk about: You were teaching at West Point when *Sputnik* was launched—

BORMAN: Right.

HARWOOD: —in 1957. Do you recall what your thoughts were when that happened?

BORMAN: Yeah. I was really concerned. To be honest with you, I'd never even thought about rockets or space before. I—you know, I was into airplanes and I was a fighter pilot and I was only at West Point teaching over my great regret. I didn't want to do it, but the military said, "That's your job," so I went to do it. And when they launched *Sputnik*, it was a real shock to me because it appeared that the—you know, there was a real Cold War going on back then, and it appeared that the Russians had got a big leg up.

HARWOOD: Was it—you know, following that, we tried to launch Vanguard in December of that year and it failed. Did you have—what were your concerns right then about our capabilities?

BORMAN: Well, I think the concerns then were: When are we going to catch up? I believe I was typical of a lot of people my age at that time. We were very concerned; and, of course, there—the political climate was exploiting the so-called "missile gap," which turned out never existed but it made an impact.

HARWOOD: Did you—when we were successful and launched Explorer 1, do you remember what your thoughts were then?

BORMAN: Oh I was very happy. Very pleased. Of course then the Russians trumped us with [Yuri A.] Gagarin, so we were back in the mess again.

HARWOOD: But even back then, did you see yourself playing a role in any of it? Or were you interested as a citizen, as a military—

BORMAN: I was interested in it as a Air Force officer and as an American citizen. I had no idea, no concept, or any desire to participate in that part of the business.

HARWOOD: When you did get involved with rockets and then you played a role in developing the [Lockheed] F-104 *Starfighter*, how did that come about? I mean, how involved did you get personally?

BORMAN: When I left West Point, I went to the [Air Force] Test Pilot School [Edwards Air Force Base, California]. And then I stayed on there to teach because they were starting in what they called the graduate program, an advanced test pilot program, that would lead to, hopefully, prepare people to fly in space. And as a result of that, we wanted to get an airplane that would give you some sort of a feeling of reentry at a fraction of the cost of the *Norbet*, and so we—a friend of mine and myself came up with the idea of putting rockets on a 104. And we were in the process of running that through the Air Force and got it approved by everybody in the Air Force, and then I went to NASA. So I never even got to fly it! [laughs]

HARWOOD: You never did get to fly in it?

BORMAN: No.

HARWOOD: Did you—I guess when you got the word that you were going to become an astronaut (and I don't know that you necessarily had to resign from the pilot school), but I read that your commanding officer was actually [Gen.] Chuck [Charles E.] Yeager.

BORMAN: That's right.

HARWOOD: Go through that story of what you went to tell him.

BORMAN: Well I applied for the astronaut program, and the Air Force was very keen on getting people in the program. And as a matter of fact, we—those of us that were successful were interviewed and told by a Gen. Curtis LeMay, who was the Chief of Staff of the Air Force, in no uncertain terms that we were warriors in a Cold War and that—that our job was to go to NASA, do good for the country, and make the Air Force look good. I went back and I—

Incidentally, I just saw Chuck Yeager in Kissimmee [Florida], too. But anyway, I went back and I walked in, and I never will forget: He was sitting at his desk. And I said, "Colonel, I've got some good news." And he said, "What's that?" And I said, "I just heard from NASA that I've been accepted. I'm going to be joining the astronaut program." And he didn't even look up. He said, "Well, Borman, you can kiss your blank career—Air Force career goodbye." [laughs] So that was my sendoff from the Air Force. Actually, I never left the Air Force but from Edwards.

HARWOOD: Right. Did you know, I know, you know, Chuck Yeager—so much was made of Chuck Yeager years later, and people have this one view of him. I mean, you worked with him. What were your feelings about him?

BORMAN: Well, he was a great—he is a great patriot and a great guy to work for. He's mellowed a lot, as I said I saw him in Kissimmee this year. But he would give you a job and let you do it. It was very, very good to have him at the Test Pilot School because he had a lot of clout in the Air Force, and we were trying to build up and get the airplanes and get the resources to really start this program; and he was very instrumental in helping us.

HARWOOD: Do you think his—the bitterness that we've all been led to believe he felt about not getting the chance to be an astronaut, do you think that was overplayed or—?

BORMAN: I don't think he even wanted to be astronaut. I think by then he was a colonel in the Air Force, and I think he was a happy camper at Edwards.

HARWOOD: All right. Let's move on to the NASA experience. What did you expect when you were—I mean, you had some idea of the astronaut program because, you know, you had that original Mercury seven to look to. But what were your expectations? What were your family's expectations of the experience?

BORMAN: That we were going into the great unknown, to be honest with you. I had been to the Cape [Canaveral, Florida] once before in conjunction with this program we'd started at Edwards, so I knew something about the Cape. But interestingly enough, we got down there (three Air Force officers), and NASA wouldn't let in! So it was a great, big unknown. I don't know what to expect. Certainly my wife, with two small children, didn't know what to expect. We kind of went there like babes in the wood.

HARWOOD: Now when you say you went down there, "three Air Force officers," was that was when you were on *Starfighter*? Or was—

BORMAN: That's when we were at the Test Pilot School. We went down to watch a launch, and we didn't have the right credentials to get in. [laughs]

HARWOOD: Oh that's funny.

BORMAN: Yeah.

HARWOOD: That's funny. Were there any goals? Like, back in 1962 when you were chosen, that you think: "Oh, I have these goals." And how—when you were—when you left in 1970, had you met all those goals? Or—

BORMAN: No, I had not I've never been a person that set a goal that—my reason for joining NASA was to participate in the Apollo Program, the lunar program, and hopefully beat the Russians. I never looked at it for any individual goals. I never wanted to be the first person on the Moon or I and frankly, as far as I was concerned, when Apollo 11 was over the mission was over. The rest was frosting on the cake.

HARWOOD: They gave the astronauts kind of these technical assignments, too, and I guess you had boosters on Titan II. Why did they give you that specialty, do you know?

BORMAN: I have no idea how they handled out the specialties. I was just told that I was going to be specializing in boosters; and so I went to the Titan II and then to the Apollo, the Saturn V Program down at [George C. Marshall Space Flight Center] Huntsville [Alabama].

HARWOOD: Did you have any expertise in that area that—

BORMAN: I had no special expertise in that area. I had a—I had been teaching Thermodynamics, and I had a master's degree in Aeronautical Engineering, so maybe they thought that was some way, you know, helpful.

HARWOOD: Did they think maybe your experience with the *Starfighter* might—?

BORMAN: No, see because the *Starfighter*—I never—I flew the 104 a lot, but I never got to fly the one with the rockets on it. That came after I was gone. Now we did an awful lot of work—an awful lot of work—in high-drag landings (that I hope are helpful to the—what the Shuttle is doing now) with the 104. But of course that had no application in the Apollo Program.

HARWOOD: There is a committee that you were on that—I don't want to say "There's mystery about it," but it—the Crew Safety Committee that you were on, I guess, from '63 to '64. Just—can you—do you even remember what that was? Or can you clarify what it was?

BORMAN: I don't have any idea what it was. I can't remember. It wasn't very important. I—the main thing that I had as the rocket specialist was to make certain that the crew had a chance to escape in the event of an anomaly with the launch. I remember: We went to Aerojet once to look at—for—to look at a Titan II firing. And I was concerned (we were all concerned) that—the Titan has two barrels. And we were concerned that—what we be the turning moment if one of those barrels failed at launch. And, the Aerojet people informed us that that could never happen. There were all kinds of safety devices. We would never have a failure mode where one rocket would—where one barrel wouldn't light. So they proceeded

to turn it on, and guess what happened? Only one barrel lit. You never saw more chagrined Aerojet people in the world. But they fixed it.

HARWOOD: So I guess your role on that committee, you made a difference. I hear them hammering. You're—

[Break]

VOICE OFF CAMERA: We are recording again.

HARWOOD: All right. I wanted to ask you an interesting story about Gemini III in that—that you kind of had an idea you were going to be [Virgil I.] Gus Grissom's copilot and then he had you over to dinner. And what happened?

BORMAN: I was told that I was going to be a—fly with Gus on the first flight of Gemini. No, he didn't have me to dinner, but I went over to his house to talk to him about it. And we had a long talk, and [laughs] after that I was scrubbed from the flight. So I guess that I didn't pass the test with Grissom.

HARWOOD: Do you know why?

BORMAN: Don't know why. Nobody ever said anything to me about it.

HARWOOD: And you never asked him?

BORMAN: I never asked. Could have cared less.

HARWOOD: [laughs] How come you couldn't care less?

BORMAN: Well, you know, if they didn't want me, I didn't want to be there.

HARWOOD: Yeah. But not everybody has that personality.

BORMAN: Well [laughs], I'm stuck with it!

HARWOOD: It served you well. Well then, let's move on to Gemini IV, where you were the backup crew.

BORMAN: Right.

HARWOOD: Did you take part in EVA [extravehicular activity] training for that, too, as—

BORMAN: No, I didn't take part in the EVA training. As a matter of fact, I was against putting the EVA in the mission. They—you know, they added the EVA quite late in the program in response to [Soviet Cosmonaut Alexei A.] Leonov's EVA, and I was concerned about the ability to pull it off. But [Pilot] Ed [Edward H. White II] and [Commander] Jim [James A. McDivitt] were very anxious to do it; and, of course, it worked out very well. I was wrong.

HARWOOD: Now you—there's numerous examples over your career of when you do speak out about things like that. And you say, you know, "This is too much." Or—

BORMAN: Yeah.

HARWOOD: What was the—how was that taken at the time? I mean, was it seen as—

BORMAN: Well, I thought it was taken well. I thought NASA, at that time, was about as good a management team as you could get because they expected everybody to tell how they felt, to express their concerns, to, you know, reasonably and effectively say what they felt. But then once the decision was made, they also expected you to pitch in. And when they made the decision I pitched in. It was—it seems to me that's the ideal way for management to work.

HARWOOD: Once the decision was made to go ahead with the EVA, I guess the crew really did push for a spacesuit with a new, special kind of coating: a G4C with a cover layer. Were you involved in that at all, in trying to transition to a newer suit?

BORMAN: I was not.

HARWOOD: Okay. The mission when you flew, on Gemini VII, in a 14-day mission, do you remember what your thoughts were when they first said to you, "14 days"?

BORMAN: Well, Gemini VII was looked upon among the astronaut group as, you know, not much of a pilot's mission. Just sort of a medical experiment mission, which it was. And we got the mission as you know, I think one of the great people in NASA was Deke [Donald K.] Slayton. He was—he had the integrity that was required; and I never talked to him once about crew assignments. I've heard that other people would try to lobby him for it, but I didn't. And I figured when they gave me Gemini VII, we'd do the best we could with it.

And fortunately I didn't have a choice in [Pilot James A.] Lovell [Jr.] either, but it turns out that was wonderful. Jim Lovell was a wonderful guy to spend 14 days with in a very small place. But the—we had a lot of interesting things. You know, some of the doctors said, "Oh well, in order to do that you're going to have to simulate it on Earth and see if you can stay in one g for 14 days." And I, you know, "They're out of their mind. Fourteen days sitting in a straight-up ejection seat on Earth? You're crazy!"

And so I was able—NASA at that time listened to the crewmembers when—in areas. We were able to get that nonsense kicked out in a hurry. And then we just went about our business, doing the best we could.

HARWOOD: So they wanted you all to (what?) simulate—

BORMAN: Yeah! Two weeks in one g! Come on, give me a break! That didn't last long.

HARWOOD: —with no bathroom breaks or anything?

BORMAN: —no. Just in one g.

HARWOOD: Just you and—

BORMAN: Well, I don't think you could do that.

HARWOOD: —just you and Jim Lovell?

BORMAN: Yeah.

HARWOOD: When things went wrong with hooking up with, you know, Wally [Walter M.] Schirra's [Jr.] part of that part of your mission, in hooking up with VI-A; and, you know,—and that mission was juggled around and changes were suggested; and you played a role in deciding what was finally going to happen. Walk us through that.

BORMAN: Well, we were down at the Cape for the launch of Gemini VI, and the Agena went off and everybody thought they had a good target vehicle. It turns out it blew up after it was out of sight. But in any event, before we walked out of that blockhouse, John [F.] Yardley and Chris [Christopher C.] Kraft and some others were already starting, "How can we use Gemini VII as a target vehicle?" And it—that was NASA at that time. There was a tremendous imperative to do—to reach the Moon before the Russians.

HARWOOD: Were you—what was your initial reaction? I guess it was George [M.] Low and John Yardley were really driving that thing of, "Let's let you hook up with—"

BORMAN: I don't think it was George Low as much as it was John Yardley and then Chuck [Charles W.] Mathews, who was running the Gemini Program. Low may've had a hand in it. I don't know. But in any event, I was all for it. I thought it was great. And this is another example of the flexibility in management that made NASA so successful.

HARWOOD: When—there's a story about when you were—when Wally Schirra had hung up this sign in the window: "Beat Army."

BORMAN: Yeah.

HARWOOD: And that you purposely misread it?

BORMAN: That's right. [laughs]

HARWOOD: "Beat Navy."

BORMAN: Yeah.

HARWOOD: What are your memories of that moment? Take us through this.

BORMAN: Well, that's true. We were—we'd—Lovell and I had been up there for 11 or 12 days (I don't remember how long). And we were tired, and the systems on the spacecraft were failing. We were running out of fuel, and it was a real high point to see this bright light (it looked like a star) came up, and then eventually we could see it was a Gemini vehicle. And we found that we could—we had very limited fuel. But we found that the autopilot for the controls were perfect. You could fly formation with no problem. And then Wally slapped up the thing: "Beat Army."

Wally was always one to inject some levity into the program. And, God bless him, he really did a good job in everything he did. He just has a different—he has that little quirk of being able to include some fun with things. I never had that. I didn't think much about the "Beat Army" sign, although it was fun at the time.

HARWOOD: Why do you think you didn't like to take part in all the practical jokes?

BORMAN: Me?

HARWOOD: Uhm-hmm.

BORMAN: I guess it's just the way I'm built. I don't have any other reason. You know, I would have—well, when—on Apollo (we're skipping ahead, but)—when on Apollo, when we opened up the dinner for Christmas and I found somebody had included brandy in there, you know, I didn't think that was funny at all. Because you and I both know, if we'd have drunk one drop of that damn brandy and the thing would have blown up on the way home, they'd have blamed the brandy on it. You know, I wanted to do the mission and I didn't care about the other crap. I didn't care about the food or anything else. I just wanted to get it done.

HARWOOD: Were there any other things from your Gemini mission that—and they specifically want you to tell, maybe things that weren't in your book *Countdown*? Any stories that you've—?

BORMAN: No. I—the interesting thing—one of the interesting things was flying formation with the second stage that put us into orbit and using an infrared sensor to track that. We referred to it as a "bogey" all the time, which was natural, normal parlance for it. And when we got back, *True* magazine wrote a big story about how we'd been tracking a UFO and all that nonsense. So I've been plagued with that ever since. People say, "Well,"—if you run into UFO circles today, they'll still tell you, well, we saw a UFO. Which is just foolish.

HARWOOD: And look where you moved.

BORMAN: I'm sorry?

HARWOOD: Look where you moved. UFO country. Las Cruces.

BORMAN: That's right! [laughs] Over here in—

HARWOOD: I know.

BORMAN: —over here in Roswell [New Mexico]. That's right. But the last few days were really trying. And, you know, the—I was very concerned about the fuel cells. And again, this was another example, I—of the concern that I had being really put to rest by Chris Kraft. He came on and told me, "Yeah, we have enough fuel in the fuel cells. It's going to be all right to go the whole 14 days." And so I had so much confidence in him, I quit worrying about it.

HARWOOD: It was a tough flight. Talk about readjusting, when you got down. I mean, were you surprised at—?

BORMAN: Well, we had a—you know, the doctors had made (as they did all the time in that era)—made more out of it than it really was. So they had Lovell with garters on that pneumatically contracted and then let out to try to impede the blood flowing back to the heart and to make the—trick the body and to think it was in one g. I was a control mechanism. I didn't have any. And the thought—some people even said that when we—when the Gemini snapped upright as we were on the parachute, that we would pass out or perhaps even die. And of course, we didn't. And it—about the only thing that I really felt after 2 weeks like that were the—our leg muscles were shot. And it took about 3 or 4 days; and I guess you could feel it for a week or so afterwards. But it wasn't any big deal.

HARWOOD: Can you imagine what it would be like to stay up on [Russian space station] *Mir* for, you know, 6 months or—?

BORMAN: I admire those people. It would take an awful lot of mental toughness, self-discipline, and it would take a (I hope they have) means to (I'm sure they do)—they have means to exercise some while they're up there. But I have great admiration for those people.

HARWOOD: What did you miss the most when you were up there? What comforts of Earth?

BORMAN: It wasn't much—so much miss so much, it was just putting up with what we had to put up with. The food didn't bother me or anything else. It was boring. You know, when you're out of attitude control fuel and you're just drifting, tumbling through space, time goes slow.

HARWOOD: Yet some of the descriptions of what you all had to put up with: the bathroom facilities are—

BORMAN: Oh the bathroom facilities were primitive. But it's—

HARWOOD: Yeah. That's being kind.

BORMAN: Well, that's right; I was being kind. But, again, we were very fortunate. Well, I was very fortunate because Lovell was a great partner. We even ended up—I don't know how in the world we could, but in that small area, somehow, that small volume, we lost a toothbrush. We ended up sharing a toothbrush! [laughs]

HARWOOD: Oh really?

BORMAN: Yeah. Unbelievable.

HARWOOD: It's like being on a Boy Scout camping trip.

BORMAN: Exactly.

HARWOOD: You know, you'd been on Gemini and then you were there when the Apollo spacecraft was being developed. And it was two different companies: you had McDonnell [Aircraft Corporation]for one, and then you had North American [Aviation, Inc.] for Apollo. So it's kind of like that first taste of switching contractors. What do you remember from that process? Any differences in the—?

BORMAN: It was like going from night to day. McDonnell was much more informal and, you know, I think everybody really had a great deal of respect for Mr. [James S.] McDonnell [Jr.], for John Yardley, and for Walter [F.] Burke. And it was a sort of a countrified company. I don't know: You just had the feeling of people that did their work and weren't very fancy about it. You went to North American, and they had layers and layers of briefers and this and that and the other things, and customer service or customer reps. I don't know. It was also a feeling what—that I had the feeling, "Well, we built the X-15. We did this. We did that. We know more than everything about it." You know, so—

HARWOOD: What? That they felt that knew more?

BORMAN: That's right.

HARWOOD: Knew more than you? Do you think that played a role, that feeling, in then what would later happen with Apollo 1?

BORMAN: I'm not sure. I remember one of the first times I went out there and flew the Apollo simulator. And I pulled this—the hand controller back, and the nose went down; and I reversed it, and the nose went up. I called the engineer over and I said, "You got the polarity reversed on this hand controller." And he said, "Oh no, that's the way we're going to use it. That's the way we're going to fly it because it makes rendezvousing easy. It makes docking easier because, when you pull back on the stick, your nose goes down but the target goes up. You see," and "That's the way we were going to do it." But this is another example of NASA. I said, "Well, look, that may be the way you're going to do it, sitting here on your ass as an engineer, but that's not the way we're going to do it." And I called back to the Apollo Program Office, and I got it changed right there. Because these were things that you could do.

And it was—you know, I've often thought today in the climate we're in that you'll probably have a Human Factors Committee. And part of the reason is that they don't have a real urgent mission now. We did then. I was very fortunate.

HARWOOD: Did—in fact—and they were going to try to make you go against all those years of instinct?

BORMAN: All the years of training! Everybody was there was a pilot, you know. Well, "We've got a better way of doing it. We're North American. We're engineer—we're human factor engineers. We understand this."

HARWOOD: Funny.

BORMAN: We got it fixed.

HARWOOD: Well, let's talk about North American a little bit and the Apollo 1 fire. I'm—you know, you've said that you're a straight-shooter. So, you know, it comes out later that there was criticism before the fire, that there was [Thomas R.] Baron's report in '66 and then [Gen.] Sam [Samuel C.] Phillips had written (I guess) his unpublished report criticizing North American. Were you aware of any of that, though, at the time?

BORMAN: I was aware of the fact—as a matter of fact, we were assigned to the crew early on with one of the Block 1 spacecraft. But Gus [Grissom] and Ed [White] and Roger [B. Chaffee] were leaders in that, and I was aware they were having a lot of trouble with the spacecraft. But you know, when we were assigned our individual missions, we sort of focused on that; and the feedback would come through Deke or through meetings we'd have. But nobody felt it as intensely as the people that were involved in it. But I did know they were having a lot of trouble with the spacecraft.

HARWOOD: Did you know things had been written? Like, that somebody had actually put down on paper?

BORMAN: About the Phillips report? No, I didn't know that.

HARWOOD: Okay. The other astronauts' complaints. Like, as you said, what credence did you give them? You knew about them, but did you—?

BORMAN: I think everybody thought, "Well, it's a first time. It's a very complicated vehicle. These are things that will work out." I'm sure that's the way the crew felt, you know; that they were disgusted, they were trying to make it happen. But I'm sure they felt it would get fixed.

HARWOOD: Did you have your own individual concerns at that point?

BORMAN: I did not.

HARWOOD: Okay.

BORMAN: No.

HARWOOD: I guess when the fire happened, I read that you were actually in a cabin somewhere in Texas.

BORMAN: That's right.

HARWOOD: Where were you at? In Texas?

BORMAN: We were having dinner with some friends on a lake in Huntsville, Texas; and a highway patrolman knocked on the door. And how in the world anybody ever found that, I'll never know, because I didn't tell a soul. It was my family and I were up there.

HARWOOD: They said it was a Texas Ranger, I guess. Is that their—?

BORMAN: Well, I think it was a highway patrolman—

HARWOOD: Okay.

BORMAN: —or whatever.

HARWOOD: Knocked on the door?

BORMAN: Knocked on the door and said that I was supposed to call Houston right away. And so I did, and that's how I found out about it.

HARWOOD: Did you immediately fly to the Cape?

BORMAN: Went back. Susan [Borman] and I left and drove back to Houston and went to—went over to Ed White's house, because Susan was close to Pat White, and stayed there for—I left the next morning.

HARWOOD: Did—what was your initial reaction? I mean, your—the human reaction.

BORMAN: Well, Ed White was a close friend of mine and we—our families were close. And of course, your reaction is one of grief to begin with. I mean, that's normal. And then when you see, you know, the devastation that creates in a family, you it's difficult.

HARWOOD: Did you—I know you said you went the next day, but from—again from what I've read that—I don't want to say you were the first person in the spacecraft but—

BORMAN: I was not.

HARWOOD: Would you—some people write it that way, that you were the first person. Maybe what they mean is, were you the first other astronaut to go in or the first person from the investigating team?

BORMAN: Well, I think what happened was: After they got the bodies out and everything and we organized the committee down there, I was assigned to the group that was to dismantle the spacecraft. So under that portfolio, I was the first one in as we started to monitor—not monitor, but to document where—what the switch positions were. I'd go in and say, "You know, the ECS [environmental control system] is in this position," and the people would record it. So I was really the first—I think I was probably the first one on the *investigating committee* that went in. But there had been other people in there.

HARWOOD: Okay. And the bodies weren't in there?

BORMAN: Right.

HARWOOD: Or the—but when you—do you remember what it was like when you first went in there? I mean, you were somebody who would be riding in—could have easily been riding in there? I mean, that could've been your assignment. What were your thoughts when you first went in there and saw it?

BORMAN: Well, it was devastation and it was, you know—it was—your thoughts were, "I—I can't believe it could happen." I never—if you're asking, "Did I reflect some personal?"

No, I didn't do that. Again, I had a job to do and my job one was recording the switches. Then the next thing was, we went through and tried to understand where there might be bad insulation on it. So it was a long, drawn-out process.

HARWOOD: Did you ever have a thought like, "Can—we can't recover from this as an Agency?"

BORMAN: Never—in one instant.

HARWOOD: And why not?

BORMAN: I guess it's just the inherent optimism that people have that, you know, we stubbed our toes. And you've got to remember: Look, I've been around quite a few people that made holes in the ground. And that's it. You press on.

HARWOOD: How—there was a lot of criticism of NASA and North American during the investigation. A lot. I mean, how much do you think was justified?

BORMAN: Very little of it. It was a media frenzy with people who wanted to get their names in the paper. It—you know, we were—if today you gave NASA the mission of going back to the Moon, I bet you they couldn't do it as fast as they did it back then. This was uncharted territory, and a very complicated machine, with a very difficult mission. And to expect that you weren't going to have problems was unrealistic.

It's like the nitwit that was Secretary of Transportation (I forgot what his name was) but—we will not—you know, "Our goal: we'll never have another accident." You know, well he should say, "We'll do everything to make certain that we do our *best* not to have

another accident, but you know damn well there's going to be another accident." Well, NASA had one. And I got really kind of sick of the second-guessers.

HARWOOD: How long do you think NASA kept in mind the lessons that they had learned from Apollo 1?

BORMAN: I have no way of knowing because—I know they kept it in mind very well while George Low and the people that were there were there. I have no way of knowing whether that stayed with them or not.

HARWOOD: Okay.

BORMAN: I really can't comment on NASA management because I left in '70 and I never looked back.

HARWOOD: You know, you're on the review board and you're sent out to Downey to kind of lead that spacecraft redefinition team. And you're also trying to train for your Apollo 8 mission. How did you juggle all that?

BORMAN: Well, no, I didn't—I wasn't training for the Apollo 8 mission—

HARWOOD: Okay.

BORMAN: —then.

HARWOOD: You weren't.

BORMAN: My sole job then was: remember, I met Dr. [Robert R.] Gilruth in the hall somewhere and he said, "Look, we're going to put George Low in charge of the Apollo spacecraft or Project Office, and we'd like you to go out to North American and implement or help to oversee the implementation of the changes that the Program Office in Houston were mandating for the spacecraft." And so I just said, "Yes, sir," and went—and then I went.

HARWOOD: What was that like to be out there? I mean, you described your initial perception of the company; and now you're sent out there to kind of be—

BORMAN: Well, I had a good team: Aaron Cohen, Doug [Douglas R.] Broome, and we had—and Scotty [Scott H. Simpkinson]. We had about four or five people that knew their job, knew their business, and we just worked our fannies off.

HARWOOD: Any stories that stand out from that experience of changes you think you were able to make and—?

BORMAN: Well, a lot of the changes that they were proposing weren't changes at all that wouldn't have maybe really been effective. Like the change in the oxygen system. But we were able to make an input there. But, you know, George Low was one of the giants of the program, and he ran that Change Board so that things didn't get by him that were too frivolous or that were—and then I was faced with the problem: Guys would fly out and try to put their own changes in. So we controlled it all pretty well.

We had an argument with George [E.] Mueller once about the—we added a lot of weight to the spacecraft. And as a result of that, they were going to have to change the way

the parachute de-reefed. And he didn't want to test the new parachute. But I won that battle, too. See, NASA was really—NASA at that time would listen to people that were on the spot and that were not—that were—that they had confidence in. I was very fortunate to be a part of that team.

HARWOOD: Do you know why, or have you ever found out why, looking back, that you were selected to be on the Apollo 1 Review Board?

BORMAN: I don't know.

HARWOOD: Any speculation on your part about why? I mean, there was a lot of astronauts—

BORMAN: Oh, I'd been working on the spacecraft. Maybe they felt I had some familiarity with the [spacecraft]. I have no idea. Like I said, if Slayton said, "do it" I went and did it.

HARWOOD: Maybe it's because you were the only one who didn't play those gotcha games. Who knows?

BORMAN: I don't know. [laughs]

HARWOOD: Who knows?

BORMAN: I don't know.

HARWOOD: How did you view your management style? I mean, in a way that was—in some ways kind of your first taste of managing. You had sub-panels to management. How did—how would you describe your management style?

BORMAN: Well, I think that the management that NASA had there (which I think is the appropriate one), you gave people responsibility for doing it, you checked on them, but you did not try to micromanage it. And you were—you know, NASA at that time demanded the best; and if you didn't cut it, you were gone. And we had the best. At North American, NASA flexed its muscles and the whole hierarchy was gone. Bill [William B.] Bergen came in and Buzz [Bastian] Hello. So North American really became almost a sub [contractor] to NASA after the fire.

HARWOOD: Do you think that played a role in being able to so quickly recover?

BORMAN: Absolutely. Just take a look at the difference in recovery time between the Apollo and the Shuttle.

HARWOOD: Yeah. It's remarkable.

BORMAN: Yeah.

HARWOOD: In fact, did you have a moment where you'd think, "We're not going to fulfill [President John F.] Kennedy's goal of doing it before the end of the decade" after the fire?

BORMAN: I guess I'm an optimist. I never doubted that we'd do it. I never doubted we'd do it. And in that, you know, I wanted to beat Kennedy's goal—I wanted to meet Kennedy's

goal. But the more important thing to me was beating the Russians. There—this—I took very seriously this Cold War and the idea that we were somehow second-rate to a Communist country.

HARWOOD: Did—in terms of your Apollo 8 training and I guess the backup mission, you know, in case they decided you weren't going to go orbit the Moon was (I guess) to spend 10 days in orbit.

BORMAN: No.

HARWOOD: Did you train for that contingency?

BORMAN: No.

HARWOOD: You just refused to acknowledge it existed?

BORMAN: [laughs] We figured we'd figure out what to do if it came about!

HARWOOD: Did they make you train? Or did you just—

BORMAN: No!

HARWOOD: No.

BORMAN: They didn't—they—I—look we—I really think that that would've been wired or called up to us telling us what to do. We didn't train for it.

HARWOOD: What were your thoughts about being the first flight on a Saturn V?

BORMAN: Well, I had worked with the Huntsville people a lot. And I was confident that when [Wernher] von Braun told me he'd fix the Saturn V I, you know—I sure figured he'd fix the Saturn V. They—they had some pogo problems before. But I was involved with a guy that worked at Huntsville by the name of Jack Keutner in the crew safety committee there, where we put in the crew safety automatic ejection or automatic abort system. So I knew it pretty well. And I thought it was a reasonable design.

We started off with—there were certain parts of the launch where if you had a failure, crew reaction time wasn't enough to abort. So we said, "Okay, we'll put in a gyroscope," for instance if you get a—"Well, then you get a gyroscope failure," then you're gone with—"Well, we'll put in two gyroscopes." Okay, you put in two gyroscopes; "Which one are you going to believe?" So we ended up with three. And we voted it: "If two out of three said go, you went." And that was a development of many—over many weeks of the people at Huntsville. And it was, you know—I was confident in the Saturn V.

You know, I sound like a, you know, "People, if you believe me, I'll sell you the Brooklyn Bridge." But I understood. I had been with these people. And I had confidence that they would do their job.

HARWOOD: The—you know, you're going to go do something that's, you know, nobody's ridden on a Saturn V before. How do you prepare your family for that?

BORMAN: I didn't do a good job of it, but part of the reason that I didn't do a good job is that: my wife is a wonderful, wonderful person who was a complete support system. When we got married in the '50s, it was like a team. She had her job and I had my job. And one of

her jobs was to (I guess she had assumed it)—was to not in any way show any kind of fear or any kind of trepidation over what I was doing.

And so I never had the—I never really understood her concern. Particularly after the fire, because she and Pat White were close and she saw how Pat White was devastated. And, look, it's as I said: it wasn't as if she hadn't consoled widows before, because she had. And not a lot—not too long before we come to NASA. But in any event, I misread that; and so I just assumed that she was as strong—stronger than she really was.

HARWOOD: How did you manage to pick—to be lucky enough (speaking of your wife) to pick July 20th, Moon landing day, as not only your wedding anniversary but the birth of one of your children?

BORMAN: I know. I don't understand that. I—and as a matter of fact, you're the first person that's ever pointed that out to me. [laughs]

HARWOOD: You had to have thought about it, when we landed on the Moon on July 20th, that—the coincidence—

BORMAN: I didn't even—I had forgotten it was July 20th.

HARWOOD: You had a premonition. So it's the day before your launch on Apollo 8. And I had read that Charles Lindbergh actually came to visit you all in the crew quarters. What did you all—?

BORMAN: Charles Lindbergh and Anne Lindbergh came and had lunch with us and—the day before the launch; and we talked and talked and talked, and they stayed and stayed

and stayed. And we eventually got the conversation around to his flight. It was a delightful afternoon. It really was.

HARWOOD: Was he a hero of yours?

BORMAN: Not really. No.

HARWOOD: No.

BORMAN: I—my family was very, very pro-British and very, very pro-let's go help the British. And of course, Lindbergh was an America First'er. And so Lindbergh was not a popular name in our house when I was a child. On the other hand, I admired his (as I grew into the Air Force) what he had done, and I liked him a lot. He was a—he was intellectually very, very curious and very, very intent—even when he was asking about the Apollo 8 flight.

HARWOOD: So it's—now it's launch day, and they actually count down, and they don't delay. You're really—I mean, when did you have this sense, sitting up there, that this is really going to happen and you're really going to go?

BORMAN: Well, I think the big—greatest concern was that it wouldn't happen. I had two great concerns: I think the worst fear that I had was that somehow the crew would foul up, and that was the one thing that I did *not* want to happen. I want—you know, I had a great team in Bill [William A.] Anders and Lovell, and I wanted to make certain that we did and we could handle whatever was handed our way. The second thing was, I didn't want—really want the mission to get fouled up because we really weren't certain that the Russians weren't breathing down our backs. So I wanted to go on time.

HARWOOD: What was it like to lift off on that? I mean, there's never been another rocket like the Saturn V.

BORMAN: No, the Saturn V was a unique vehicle. And of course, it was powerful and noisy and vibrated, and the stagings were really kind of violent. But when you got on the third stage, the S-IVB, it was smooth and quiet and was just like the upper stage of the Gemini. Actually, it was less demanding than Gemini from a g standpoint, because it didn't reach the high-g's. It burned, I think, 11 minutes or something like that. It didn't get to the high-g's.

HARWOOD: No fear at liftoff?

BORMAN: I on't think there was any fear. The main fear, as I said, was that somehow we'd screw up. I remember I had my hand on the abort handle; and all I'd [have] had to do was like that and it—we'd have been gone on. And so I was worried that the vibration might—and yet I didn't want to take my hand off there, so that kind of concern was [it].

HARWOOD: So the human element of things—

BORMAN: No, I'm not saying that, you know, it wasn't exciting and that there wasn't a lot of anticipation of what was going on. But Lovell and I had been there before. It wasn't that bad.

HARWOOD: The—you know, you—there's the little things, like, the closeout crew does before launch. And one of the little stories (I know this was in the book *A Man On the*

Moon) was that they gave you a tiny stocking hanging from a paper Christmas tree. Do you know why that was the gift they gave you?

BORMAN: I don't even remember that. [laughs]

HARWOOD: They had given Jim Lovell a clean, white handkerchief.

BORMAN: Where was that? Where did they do this?

HARWOOD: It—on launch morning, as they're suiting you up.

BORMAN: Oh, okay.

HARWOOD: And you have—Guenter [Wendt] would always—.

BORMAN: I thought you meant at the pad.

HARWOOD: No. You know how Guenter at the pad would give you little gifts.

BORMAN: Yeah. To be honest with you—

HARWOOD: You don't remember.

BORMAN: —I didn't focus on that in that light.

HARWOOD: I mean, obviously it was right before Christmas—

BORMAN: Yeah.

HARWOOD: —but—

BORMAN: It was, yeah.

HARWOOD: — I don't know. What were your feelings when you knew that you were going to have to go around to the dark side of the Moon? It's hard for us to fathom now that that was even, like, such a big deal, that you don't know. You know, can you come back around? And, but—

BORMAN: It's hard for us to fathom now. But the thing that's interesting about that mission was that, I don't know, maybe half a dozen of us sat in Chris Kraft's office one afternoon and we went over the flight plan, to try to understand what would we do on the—on—when we got to the—or on the whole flight. And I've always thought, again, it was an example of NASA's leadership with Kraft and their management style that we were able to hammer out, in one afternoon, the basic tenets of the mission.

You know, the Tracking people wanted us to stay up there a month. I didn't want to stay more than one—it was a give-and-take, and Kraft called the shots. So we ended up going around 10 times, and I never really thought about, you know, going around behind—you'd lose radio contact; but that's about all.

It was—actually, the far side was lit, because the Sun was over there. And it was a—I remember that, in order to go 10 revolutions around the Moon, we had to launch at a certain time; but the recovery would then be before sunrise. And the Recovery people were concerned about that. But all this was thoroughly discussed, and then *Kraft* made the

decision. It wasn't a committee; it wasn't a—you know, it was one man who had the knowledge to fly like that.

HARWOOD: Well, you know, you've kind of been portrayed in some of the things I've read as "Let's do the mission and not one thing more."

BORMAN: That's right.

HARWOOD: And—why?

BORMAN: Well, because—well, I—some idiot had the idea that on the way to the Moon we'd do an EVA. Naw. You know, I guess I shouldn't call him "an idiot." He was just stupid to—you know, to put a—what do you want to do? What's the main objective? The main objective was to go to the Moon, do enough orbits so that they could do the tracking, be the pathfinders for Apollo 11, and get your ass home. Why complicate it with a bunch of other stuff?

You had to decide: What is the primary objective? And then forget it! I was—I couldn't believe it when people proposed that we open that damn hatch so you risk (or not risk) but you subject the main mission to the possibility of failure with some of these trivial things on the side. And I just wouldn't buy that.

Now maybe it's the—maybe it's the thing—maybe it's the military background, you know. Because you always say, "Okay, what's the main objective? Let's make sure the main objective gets done, and put all your resources into your main push. And don't forget about the rest."

HARWOOD: Do you know what your feelings were when you all first dropped out of that radio contact? And did you have any sense of the tension on the ground as they're waiting to pick you back up?

BORMAN: Not at that point. I think our—the time of greatest tension in the spacecraft was when we fired the rocket to slow us up, and when we fired the rockets to get us out of there. That was the time of—

HARWOOD: To slow up, to go into Moon orbit.

BORMAN: Into lunar orbit, right.

HARWOOD: And how did you know that—didn't you actually, like, turn it off, even though the computer would have shut it off? You shut it off yourself to be safe?

BORMAN: Lovell, I think we—he had a—we back up the computer—we backed up the computer on that. And also on starting we did, too. But, the—we really didn't know where we were from the standpoint of, we knew where—from the standpoint of how high we were in the lunar orbit. Except we had a—one of the timeline things in the flight plan that would give you a pretty good idea that you were on course is when you lost radio communication. And we lost it right at the time we were supposed to.

HARWOOD: When you got home and somebody sent you a telegram and—do you—that said, you know, "Thank you for saving 1968," did you—was it a telegram sent to you that said that? What were—

BORMAN: To the crew of Apollo 8.

HARWOOD: To the crew. I mean, did you know what they meant right away? And what were—?

BORMAN: Well, '68 was a rotten year. [laughs] So you're darn right I knew what they meant! Yeah.

HARWOOD: And did you—did it make you proud? How did that make you feel to get that telegram?

BORMAN: Well, I was glad because, in a way it sort of endorsed what we had done. You know, there were still naysayers about spending the money on the Moon and all that whole lunar project, you know.

HARWOOD: The—you didn't want to bring the television camera along.

BORMAN: I didn't want to bring a television camera.

HARWOOD: So that's true.

BORMAN: Yes.

HARWOOD: You didn't want to bring it on?

BORMAN: I did not.

HARWOOD: You wound up bringing it on.

BORMAN: I was dumb in that.

HARWOOD: But you wound up bringing it along and you do the broadcast that, to this day, I still remember watching—

BORMAN: Yeah.

HARWOOD: —as a child. And it gives me chills right now thinking about it. How did you come up with reading from *Genesis* and—?

BORMAN: Well, it's another example of the wonderful country we live in. Because Julian Sheer, who was the head of public information for NASA in Washington, called me one day. He said, "You're going to have the largest audience that's ever listened to or seen a television picture of a human on Christmas Eve; and you've got" (I don't know) "5 or 6 minutes." And I said, "Well, that's great, Julian. What are we doing?" He said, "Do whatever's appropriate." That's the only instructions. But—and that's the exact word, "Do whatever's appropriate." Whatever you feel is appropriate.

And to be honest with you, we were so involved in the mission (and this was a peripheral one), so I just kind of farmed that out to a friend of mine, Si [Simon] Bourgin, and (from Washington)—and he came back—well, I guess he consulted with some of his friends and came back with the idea of reading from *Genesis*. And I discussed it with Bill and Jim, and we had it typed on the flight plan; and that's—I didn't give it anymore thought than that.

HARWOOD: And then the line at the end, you know, "on the good Earth."

BORMAN: I think—On the good Earth. I think that Sy—I think that Sy had printed that, too. Had sent it back.

HARWOOD: Did you know when you were reading it, the effect—I mean, did it have that effect on you all up there?

BORMAN: Looking back at the Earth on Christmas Eve had a great effect, I think, on all three of us. I can only speak for myself. But it had for me. Because of the wonderment of it and the fact that the Earth looked so lonely in the universe. It's the only thing with color. All of our emotions were focused back there with our families as well. So that was the most emotional part of the flight for me.

HARWOOD: Speaking of that a little bit, I get the sense from—(again from reading some of the recollections, especially Bill Anders' recollections), you know. He would've liked to look out the window a lot more; and you were like his taskmaster in a way.

BORMAN: Well, he had a job to do. And again it gets back to, "Let's do the mission." And you know, we weren't there simply as observers. We had a lot of job—Bill had a lot of jobs, and he did them very well. And, you know, I think he felt, "Well, you know, I don't want to go to sleep here. We're—" But by the same token, I wanted everybody alert so that we ended up getting home and that nobody fouled up their part of the procedures to get us home.

HARWOOD: So you literally made him take a nap at one point, right?

BORMAN: I sent him—yeah. We—I sent he and Jim underneath to get—they were making mistakes. They were getting tired.

HARWOOD: Any other recollections from Apollo 8 that you didn't necessarily include in your book? Stories you might've left out that [pauses].

BORMAN: No. I think I may have put in the book, but one of the other things that always struck me was: when we were going over to—when I was going over to testify before Congress on the results of the investigation, I rode over with Mr. [James E.] Webb (Jim Webb), who was the Administrator of NASA. And I never will forget, he said, "Look, I don't want you to do anything to try to protect me or to try to protect NASA. The American people have a right to know *exactly* the unvarnished truth, and you tell them." That impressed me. I was going to do it anyway but here was the man—you know, I just don't think that happens today. I can't imagine the President today telling me to say the unvarnished truth to anything, when he's such a liar himself!

HARWOOD: Probably so. When your friend Jim Lovell went on to command Apollo 13 and all the problems happened, did you reflect back on your mission at all? Or—you said you left and never looked back. But he was a friend of yours obviously—

BORMAN: A good friend. Still is.

HARWOOD: —still is. Did it make you reflect on your mission and what if that had happened to—?

BORMAN: You know, I had a job then because the—no, that was Apollo 11. No, I—on Apollo 13, I was just a bystander. No, I did have a job in Apollo 13. Excuse me. I had—after Apollo 8, I had been assigned to the White House as liaison to prepare for Apollo 11. And so I got to know Mr. [President Richard M.] Nixon pretty well and the people up there.

And on Apollo 13, Bob Gilruth called me and he said, "Look, we just got the word that the Vice President, [Spiro T.] Agnew, is coming down here." He said, "That's the last thing we need. We've got a problem. We don't want all the press. We don't want—" You know, Agnew was head of the [Space Task Group]. He said, "You've been up in the White House. Can't you do anything? Please see if you can put him to put that off." So I called Bob (oh, I've forgotten his name)—Bob—(What was Nixon's right-hand man? the hatchet man?)

HARWOOD: Halderman?

BORMAN: Halderman.

HARWOOD: Okay.

BORMAN: I called Bob Halderman. Thank you. And I explained the situation to him, and they stopped Agnew from taking off and sent him somewhere else. So I performed on Apollo 13. [laughs]

HARWOOD: You were still with the Agency?

BORMAN: I was. Yeah.

HARWOOD: Yeah, you were still with the Agency. Did it—did you reflect on what it would be like to be the astronaut in that experience?

BORMAN: No. Oh I figured that, again, Lovell knew that thing. I had confidence in him, confidence in the people in the ground. If they could get them back, they'd get back. If they couldn't, they'd be dead. It was as simple as that.

HARWOOD: You know, Apollo 8 in many ways was a real gamble and it really took a lot of guts on the part of the team who said, "We're going to go do this. And we're going to try to get it done." And many people feel that we really wouldn't have made it to the Moon without doing that, that in some ways it was, like, the defining mission that made Apollo 11 possible. Did you have that sense at the time?

BORMAN: I had the very—I was delighted when they changed the mission to go to the Moon, because I didn't want to go around the Earth for another 14 days or whatever it was. But I think Apollo 8 was a very important mission. But, you know, you also have to say: It wasn't just Apollo 8 that was an important mission, because 8 couldn't have happened without 7. If 7 hadn't and if Wally and his crew hadn't done a perfect job, we couldn't have gone on 8. And 11 couldn't have happened unless 9 and 10 were perfect. It was a well-thought-out plan; and Apollo itself couldn't have happened unless Gemini had done the job; so I think that every one of these flights was very, very important.

And for me, the interest ended with Apollo 11. Now 12, 13, 14, they were all extremely important from the standpoint of lunar exploration and lunar—and so on and so forth. I wouldn't have volunteered to go pick up rocks. For me it ended when we beat the Russians on 11! 11 was the defining flight for me. That's the one that did it.

HARWOOD: Now why, though, after Apollo 8, you know again, there's—you know, you could've been the one to go to the Moon. From every—from the historical record shows Deke Slayton would've let you command the first flight to land on the Moon. Why did you not want to?

BORMAN: Well, I—it wasn't that I didn't want to. But when you look at, again, who's going to do the mission, the—I had never even been in the lunar simulator. I had—when all this was going on, I had been on that committee and then I'd been out at North American. I knew the—I think I knew the Apollo spacecraft as well as any other astronaut. I didn't know a damn thing about the LM. And I'm not—I don't recall Slayton ever discussing it with me. But I would've been flattered if he had. But I would've thought that there [would've] been better people, better prepared to do that—to do that.

HARWOOD: Well, how did, then—you say you didn't have a direct discussion about putting you in that role. But was it just the crew rotation that would have naturally put you in that role?

BORMAN: The crew—No. The crew rotation, which was he had established and which he followed, put the backup crew in that role. [Neil A.] Armstrong was on that flight. And nobody knew for certain Apollo 11 was going to be the lunar lander. What if 9 would've fouled up? Or what if 10 would've fouled up?

Deke established a rotation system. I was the backup on IV in Gemini, and I flew on VII. And Neil was the backup on 8 and he flew on 11.

HARWOOD: You know, there's always speculation about how did Neil Armstrong get picked to be—and you could say it was a quirk of fate, you know. And then some people say, "Well, he happened to be the only *civilian* astronaut at the time—"

BORMAN: I think that's nonsense. I think that Slayton looked at us all. I don't think he knew whether we were military or civilians. I think Neil was picked because he was a competent guy, and he had a good team.

HARWOOD: He's a quiet astronaut.

BORMAN: He's an introvert.

HARWOOD: Yeah.

BORMAN: An introvert. He's much more intellectually curious than I am.

HARWOOD: Were you surprised at terms of—you know, when we landed on the Moon. Where were you when we landed on the Moon?

BORMAN: I was with Mr. Nixon in the White House.

HARWOOD: You were? And do you remember what your recollections were? And what the President thought?

BORMAN: Well, it was a great euphoria. You know, he didn't have else much—he was still getting battered over Vietnam and everything else was—this was before Watergate. But

nevertheless, this was a very bright and shining plus for the American people. It was a happy time.

HARWOOD: Were you surprised at—I mean, the reaction when they came home? I mean, it was—you know, they were heroes. And for many people, though, that's probably the last astronauts they could name. You know, that after that—

BORMAN: Well, [John H.] Glenn [Jr.]. I think they all could name Glenn.

HARWOOD: Yeah, everybody can.

BORMAN: And [Alan B.] Shepard [Jr.] I guess, maybe.

HARWOOD: But—because he hit a golf ball on the Moon? Do you think maybe that's why—?

BORMAN: Because—I hope it was because he was the first man in space—American in space.

HARWOOD: Yeah, I would hope so, too.

BORMAN: Yeah.

HARWOOD: But—

BORMAN: Yeah.

HARWOOD: —the point is, that you had brought up earlier, about how after we went to the Moon it was all over for you.

BORMAN: Yeah.

HARWOOD: And in many ways, it was for the American public. I remember Chris Kraft telling me once that he knew it was all over when he looked at his little monitor in Mission Control and we were driving on the Moon for the first time. And he looked over at the networks, and they were all still showing soap operas.

BORMAN: Yeah.

HARWOOD: And he knew it was over.

BORMAN: Yeah.

HARWOOD: You know, as it wound down so quickly after that, and no one's been back since, you know, what were your thoughts as the program closed out completely? And I know you weren't even with NASA anymore when it happened.

BORMAN: Well, I think that NASA remains a very important—a very important entity in our—in the country's future. And I think it's important, extremely important that we have this continually grasping, grasping, looking for things. I lose it when we talked about colonizing the Moon and all the other baloney that you read about. We're going to mine—

once we're going to mine oxygen and—I just don't have that belief. I—maybe I'm too practical. I don't think that's ever going to happen.

So, I was with NASA with the objective of being part of the team that beat the Russians to the Moon. We did that. And that, you know, I thought the other flights were just as dangerous, just as—and probably much more adventurous and brought back much more knowledge of the Moon. I just don't happen to be interested in that. I'm not going to lie to you.

HARWOOD: Do you think we'll go back to the Moon?

BORMAN: I'm certain we'll go back to the Moon someday. And I suspect someday there'll be a permanent scientific base on the Moon like there is at South America—South—the South Pole, Antarctica. But I have a hard time understanding how we're going to have apartments on the Moon.

HARWOOD: How are we for tape?

VOICE OFF CAMERA: We're doing fine.

HARWOOD: Okay.

Voice off camera: Would you like some more water?

HARWOOD: I just want to stop at a good place.

BORMAN: I'm fine.

[Break]

VOICE OFF CAMERA: All right. Recording again.

HARWOOD: Okay. Let's talk about the Apollo Program closing out and making the decision. Did you really make the decision to leave before you even did Apollo 8?

BORMAN: I did.

HARWOOD: Why?

BORMAN: Well, as I said: I thought that I had carried my end of the bargain. I'd done—contributed as much as I possibly could. I wasn't a pro on the LM. It would have taken me longer to learn it. And like I said: I would not have gone to the Moon after the first one. To me, it wasn't worth it. It wasn't worth assuming the risks because I wasn't inclined to go pick up rocks.

HARWOOD: A few little things from your missions. I don't know if this is safe to say, but I know that you had space adaptation sickness on Apollo 8. Right?

BORMAN: I did.

HARWOOD: —Not on Gemini. Or did you have it on Gemini?

BORMAN: No, we never had a thing on Gemini.

HARWOOD: Okay. But on Apollo 8. I mean, it's safe to say that—I guess, were you the first person to get sick in space?

BORMAN: Oh I don't know whether I was or not. But—and at the time I didn't know it was motion sickness.

HARWOOD: But you thought it might be the flu. And they actually considered your worst fear, which is shortening the mission.

BORMAN: Yeah, well, but that's another example. You know the damn doctor's (what?) 100,000 miles away; he doesn't know what's going on. And I got over it very rapidly. And Jim and Bill both told me that they felt queasy, too, when they started moving around. And I threw up a couple of times, and it was over with. It wasn't a big deal.

HARWOOD: Well, and now it's so common. I mean, it's like half the people—.

BORMAN: Well, there's a lot more room to move around in the Shuttle.

HARWOOD: Yeah.

BORMAN: And I gather some people just don't get over it.

HARWOOD: Right.

BORMAN: But I didn't have any trouble with it. Well, I—somebody said that Glenn puked when he got back, too. I don't know.

HARWOOD: He did.

BORMAN: Yeah?

HARWOOD: He admitted that he did, yeah.

BORMAN: I don't know why he would do it on reentry, but you would think maybe in space you might. I don't know.

HARWOOD: Yeah.

BORMAN: But it wasn't a factor.

HARWOOD: Was it was certainly uncomfortable.

BORMAN: Well, nobody likes to throw up.

HARWOOD: But it was short-term.

BORMAN: Short-term. I thought I had never—take—I don't take pills if I don't have to, and I had taken a Secanol and I thought it was a reaction. I honestly didn't think it was motion sickness because we had been for 14 days in that space and never had any trouble, because we had worked—we couldn't move around in Gemini.

HARWOOD: So you might not have affected your inner ear as much. When you—when Jim Lovell (and you talked about your crew, how you said you didn't want "us" to mess anything up)—a couple of the stories that I want to check the facts and have you reflect and tell stories.

BORMAN: Okay. Right.

HARWOOD: Jim Lovell inflates his life vest, because he's—and *he says*, he'll "never forget the disgusted look" you gave him.

BORMAN: [laughs] Well, that's true. [laughs]

HARWOOD: What did he do? And what did you think when that happened?

BORMAN: Well, it wasn't a big deal. But, you know, again, it was an anomaly. [laughs] And Lovell, as I recall, he squirted it out the urine dump system or something so we didn't get too much CO_2 in the cabin. But that—the worst thing he did was he fouled up the computer!

HARWOOD: When did he do that?

BORMAN: Oh he did that, I think, we were either around the Moon—in or around the Moon. He hit the wrong number on the computer, the wrong button, and had the spacecraft think it was back on the launch pad. And we had to reinitialize *everything* again for the reentry! All—they read up stuff, and we had to re—we had to refill all the memory.

HARWOOD: It's a good thing you—

BORMAN: He was getting tired!

HARWOOD: —it's a good thing he made those mistakes on your flight, and then he was ready for Apollo 13 then.

BORMAN: Boy, I'll tell you what: I think the only person that hasn't made a mistake was crucified about 2000 years ago. Everybody's going to make a mistake. Everybody's going to have a day when they wish they didn't. So you just have to plan not to make it bad. And Lovell didn't have any bad mistakes. He did a great job. He's—he could whip that computer like you couldn't believe it.

HARWOOD: We talked about how, you know, some astronauts like Wally Schirra being famous for their jokes and their pranks.

BORMAN: Yeah.

HARWOOD: Were you ever a recipient? I mean, did they play jokes on you? Do you remember any of them?

BORMAN: I don't remember much about it. I—to be honest with you, I'm sure I was a participant in some of them, but I don't—they don't remember—I don't remember that.

HARWOOD: Did you didn't really take part, though, in flying jokes? Like on Guenter Wendt or—

BORMAN: No.

HARWOOD: No.

BORMAN: No.

HARWOOD: And why not?

BORMAN: It's just not my nature. You know, I enjoy Wally and his wife and Jo and Susan and I went for 30 days around the Far East on a good will tour in the—in a 707 without windows. And Wally, I think, is great; and I think he contributed enormously to the program. More than any of the other first seven, Wally Schirra and Deke Slayton did the job. But he just is a different person [laughs] than I am from that standpoint.

HARWOOD: What were some of the technicians, the engineers, and the managers behind the scene who you felt really made noteworthy contributions, that are—their names are worth being mentioned. And tell us stories about them and your interaction with them, and why you single them out.

BORMAN: Well, if you have—if I have to go back in the people that made NASA work, you start with Jim Webb. Okay? He was—he's not an engineer. Then you go down the line to people like Gilruth and Kraft, Slayton, [Kurt H.] Debus, von Braun. I'm sure I'll leave some—left some—Low. My goodness. How could you leave George Low [out]? These were all the *giants* that made it work.

On the other hand, there were just hundreds of—well, thousands of people that *cared*, that knew what they were going to—that their one goal in life was to do their job and do it perfectly. And they're the George Pages, the Aaron Cohen, Doug [Douglas R.] Broome. You could just go on and on and on with people at a lower level of management who were motivated. Who cared. And you know their contributions were what made it work. They're the ones that made it work. And they weren't just all at NASA. They were just as motivated in all the contractors, too.

HARWOOD: Any stories that stand out? You told us your story about Jim Webb and riding in the car with him. Any stories about Chris Kraft? I mean, he's legendary.

BORMAN: Well, Kraft, I told you, was spending one afternoon in the—in his office and defining the parameters for the Apollo 8 mission. And then also I told you that he was the guy that really gave me the confidence on Apollo—on Gemini VII. They were just wonderful people. I—you know, I'd just go to Hell for them. They were really—that's what made it work.

And now if you go back and talk to the people—you see, we were fortunate. We had a goal; we had the money; and we had the support of the country. With those three ingredients, this country can do whatever it wants to do. If one of those ingredients is missing, it's going to mess up.

HARWOOD: Well, that kind of leads to the next question: Which is, what do you see as the future for manned spaceflight? Are those elements there?

BORMAN: Those elements are *not* there; and I think it's going to be very, very difficult to pursue an aggressive manned space exploration program. I think we should, but I think it—

and you know, I believe that the Space Station is right. I hope it's not so complicated and so big and so expensive that it doesn't fulfill its promise. I would have preferred to see a less ambitious program, but I'm not there. And I don't know the people that are running it. I know George [W. S.] Abbey, but he was a minor functionary when I was there. So—I don't know [Daniel S.] Goldin from the hole in that wall. And I don't have any confidence that the political constituency is there to spend a lot of money on it.

HARWOOD: Did you know, you talked a lot about what motivated you to become an astronaut. What made it—motivated you to take the risks you take. And for you it all came down to the Cold War and the Russians. Did you *ever* think, in your wildest dreams, that we would now be partners with them in space?

BORMAN: I—you know, I was sent over to Russia by Mr. Nixon with the goal to starting the process that led to the Apollo-Soyuz Program; and I spent 10 days there on the—July of [19]'69. And we then invited the cosmonauts back. So, you know, I had *hoped* that it had ended in Apollo-Soyuz. So—but I never had the in my wildest dreams, did I ever have any idea that the Russians would essentially become a Third World country. You know, I looked upon them as the Big Bad Bear in the Cold War. And now they've sort of disintegrated economically and every other way. So, the answer to your question (the long-winded answer) is: No, I never did.

HARWOOD: Well, you said—you know, the role that you played in Apollo-Soyuz coming together, you kind of helped your friend Deke Slayton finally get to fly. I mean, any stories from remembering what it was like, that he was finally going to get fly so late in his career?

BORMAN: No. I did Deke—I think it's fortunate that the doctors took him off flight status, because he had the integrity and the dedication to run that Flight Operations—Flight Crew Operations Division with integrity and in a way that makes sense. So I think—and Deke, you know, so he didn't blow up and leave or any—he just stayed there and did his job. He was committed. He was one of the great people in the program.

HARWOOD: So, you mean it's fortunate that he—

Borman; Fortunate for the program.

HARWOOD: —fortunate that he was kept on the ground?

BORMAN: Yeah. Fortunate that he was kept on the ground. I really believe that. You know, if you ask me where I think I contributed the most to the Apollo Program: I think I contributed the most to the Apollo Program out in Downey, California, as part of the redefinition team, not as an astronaut on Apollo 8. I think I contributed more to the program there than it's a strange part of our society. All attention is on the celebrities (who happen to be the astronauts). And, you know, I don't care what you say: there's nobody that flew that did as much for the program as George Low or Chris Kraft. You could go down the line. But they didn't get all the hoopla.

HARWOOD: What do you think was the most challenging milestone of your career then? That—your time at Downey, or—?

BORMAN: The time at Downey was the most challenging, I think. We had a lot of balls in the air there. And we—I think that our team out there did a really important job.

HARWOOD: Did you—when you left NASA, were there—what did you draw on from your NASA experience to go on to your experience at Eastern?

BORMAN: Well, I tried to draw on the management style that I'd seen at NASA which was, to me, the most effective management team this country's ever produced, and the most effective management style. And I still think it is.

HARWOOD: Are there any things that stand out, you know, from any of your time at NASA that—any stories that you think, "Oh I need to tell these stories. I need to get these stories on the record."

BORMAN: Well, I have a—I—well, you know, after the fire—when I went out there—I never will forget Mr. Webb, in his very nice way, managed to change the management at North American (as you know). When I sat out there with the North American people and Bill Bergen came in and said, you know, "Look around to your left and your right because a lot of you aren't going to be here in a week." [chuckles] There wasn't any touchy-feely kind of crap. It was just "Let's get the job done. We got to get it done." So—

And there was another very traumatic time in an office when—after the fire, when one of the really respected civilian—contractor people had a nervous breakdown, and they had to haul him away in a straitjacket.

HARWOOD: Somebody you can name, or—?

BORMAN: I don't think you ought to name him because, you know, he's since recovered and played a very important role. But he started drawing a organizational chart of Heaven. And

I never will forget—I forgot he had Big Daddy. And then he was—when he just lost it all. And you know, the—poor Joe [Joseph P.] Shea lost it. But it was—I was very at home there because the overriding goal and the mission drove things. And it was—to me, it was a very worthwhile mission.

HARWOOD: The—one of the things that some people have said that from that era when they look now at the space program, that now so many people sign off on things, that the responsibility is so watered down that no one's responsible.

BORMAN: Can you believe that they could get one flight plan today with one man, Chris Kraft, making the decision? I can't. I don't know much about NASA today, but I just can't believe that would happen.

HARWOOD: No.

BORMAN: And when I left NASA and went to Eastern, you know, I just—I don't think you can keep one foot on the beach and one foot in the boat. So I got off the beach and went on the boat, which was Eastern; and I never looked back much to see what went on at NASA. And I—last thing I ever wanted to be was a professional astronaut. As you know, there are some around. And so I'm not competent to really analyze current NASA. But a lot of the old-timers that stayed on afterward have told me or written me or called me and said, "God, you can't believe what it's like now."

HARWOOD: Well, what let you go and do—you know, so many people (and I don't want to say "so many")—but you're right. That spaceflight—there's this sense that it changes you somehow. That, you know, you have this experience and you're not the same and—

BORMAN: Well, I don't understand that. To me it was a—look: Apollo 8 was a definite success. It was a dangerous mission. But while I was doing that, guys were flying to Hanoi [North Vietnam] with 105s, in F-105s. Now tell me: I figured that the risks were about the same. And we got all focused on going to the Moon. You know, it was interesting. Looking back at the Earth was inspiring. But, you know, you go to the Grand Canyon and look around I find beauty looking out here in this (what you call)—the barren desert! I think you either have an innate belief in a Spiritual Being or a God or you don't have. You don't have to go to the Moon to—you know.

HARWOOD: Well, but some people come back; and, you know, Buzz Aldrin has talked a lot about how he had a rough time after the Moon. You know, you could say—

BORMAN: He had a very rough time. Buzz had a very difficult childhood. And Buzz, unfortunately, I don't think has recovered.

HARWOOD: And knowing that, it has been hard for him to go on.

BORMAN: Very tough.

HARWOOD: I mean, what let you go on and have, like, this life after—I mean, there's—I bet there's people who know you as the head of Eastern Airlines who may not have ever known. I mean, people of a younger generation. I mean, the fact that you had success outside of (as you said) being "a professional astronaut," what let you do that?

BORMAN: I don't know. I—as I said, I've been very fortunate. And I just have been able to compartmentalize my life after I left Eastern (involuntarily). I was the first guy Lorenzo fired. But nevertheless, you know then I started with something else. And I just try never to look back. Like Satchel Paige said: Somebody might be gaining on you if you look back. So, I just feel very, very privileged to have been part of NASA in that era. I was with Chuck Yeager this last weekend, and he said, "Aw, you know, you should've stayed with the Air Force." (He's mellowed a lot). But still, I think I contributed more to the country there than I—in—than I could have if I had stayed in the Air Force.

Of course he was right. When he told me I could kiss my Air Force career goodbye, I *did* kiss it goodbye. I didn't fill in all the blocks. You know, I hadn't gone to any of the schools and so on and so forth. When I left NASA, the Air Force offered me an opportunity to come back and head their Military Man in Space Program. Well, it didn't take a genius to realize that there weren't going to be two space programs. So I left.

HARWOOD: The—you told us some stories about Chris Kraft. Any stories stand out about any of the other folks you mentioned, like George Low? I mean, any little anecdotes?

BORMAN: Well, George Low was a brilliant guy. And the one thing that all these people had in common was this devotion to doing the thing on time and to getting it done, to beating the Russians, and to doing what seemingly was an impossible task. You know, when President Kennedy said "We're going to the Moon and back in 8 years," we hadn't even launched—we hadn't even orbited anybody! Think about that! Unbelievable! But they all had this dedication, this—and you know Max [Maxime A.] Faget, a brilliant engineer, scientist. But probably not the [manager]—Low was the consummate manager. He was an excellent manager.

HARWOOD: Was there any times that you tried to talk him out of doing something? That you spoke you mind to George Low and—?

BORMAN: George Low and I were pretty much on the same page. I don't think he didn't—I can't recall ever disagreeing with anything that he said. But Joe Shea, who was the head of—Joe didn't have the experience in [managing]. He didn't have that. So Joe—and Joe didn't—took it awfully hard after the fire. That was the end of him.

HARWOOD: Did you mentioned getting close to Nixon and doing the roles for Nixon; and he played such a role in where the space program went after Apollo in terms of Shuttle. Were you privy to any of that? Or did you counsel him at all?

BORMAN: I was not.

HARWOOD: No.

BORMAN: No. You know another man that you should mention that was really a giant, too, was Sam Phillips. He was really the one person, the Apollo Program Manager Office in Washington, that I think had a practical head on his [shoulders]. He was a good—he was a wonderful leader.

HARWOOD: What were your recollections of Guenter Wendt?

BORMAN: I didn't have much—you know, Guenter Wendt was a German guy who I would trust to do everything right. All the funny—fun and games and—it was a bunch of crap as far as I'm concerned.

HARWOOD: Von Braun? Did you have a personal—?

BORMAN: Von Braun was wonderful. I knew him very well because I spent a lot of time at Huntsville on the—he was—he had a rare combination. He was a wonderful engineer. He was a great visionary (I'm sure *he* would be saying we're having apartments [on the Moon]), but he was also a super salesman. He had a rare combination. And his people were really devoted to von Braun. And if he said something, I believed him. But—all of the people that I've discussed with you: they told me something, you could put it in the bank.

HARWOOD: Was there anybody who you didn't trust or didn't—

BORMAN: Well, George Mueller I didn't think was as—I didn't distrust him. But I think he was sort of a gadfly; and Sam Phillips provided the guts in that program, as far as I'm concerned. George is still alive. He's out trying to launch some new, lost-cost rocket; and I hope he succeeds. But I think Sam Phillips was the man there.

HARWOOD: Do you still follow the space program and keep up with things

BORMAN: Not really.

HARWOOD: No? You—

BORMAN: I read *Aviation Week*.

HARWOOD: Yeah. There you go

BORMAN: Okay.

HARWOOD: You've moved on. Where do you think—what do—what would you like to see as the direction of the space program?

BORMAN: Well, I'd like to see the Space Station lead to a long-term mission to put humans on Mars. I think that would define a goal in the mission and a well thought out—I think it's more difficult. Bill Anders has convinced me it's much more difficult than people have projected because of the requirement for shielding (radiation shielding); but I think that would be a good goal for it. And I hope the Space Station works out well and that we do find things on orbit that we can do that will help, you know, people here on Earth. I'm not—

HARWOOD: Did you—?

BORMAN: —sure we have—you know, we've talked about the Shuttle and their flying fishes and worms and all that crap. You wonder what it's all about. You know, you have a—kids send up experiments on a billion-dollar launch? Come on! Where's the mission there?

HARWOOD: Did you—the science portion of your mission; I mean, the exploration part of it. I know you said the motivation that you sensed at the time was this Cold War and to beat the Russians.

BORMAN: Exactly.

HARWOOD: But did you see any other benefit coming out of it? Or was that a side benefit?

BORMAN: It was a side benefit for me.

HARWOOD: It really was for you?

BORMAN: Yeah.

HARWOOD: Not the sense of—? Okay.

BORMAN: No. I just have to be honest with you.

HARWOOD: Yeah. No, that's—no—that's what I want you to be.

BORMAN: It was on the side; and it was fine as long as it didn't get in the way of the main mission.

HARWOOD: But you know that just the *fact* of Apollo changed our life on Earth more than, probably, almost anything of this century?

BORMAN: I agree with you.

HARWOOD: I mean—

BORMAN: That was the important thing: to do it. You know, and to—and to have it accomplished. And to extend humans' horizons. That was what came out of Apollo,

not how do you make Teflon pots and pans. And whether that is a lasting thing? I think it is. I think it's a—and I think that Apollo was extremely important. I think it may have been, other than World War II,—it may have been the most important project in this century.

HARWOOD: Do you look up at the Moon a little differently than the rest of us? Or are you—?

BORMAN: Sometimes I do. I try to. I try to feel like everybody thinks I should. [laughs]

HARWOOD: Which is?

BORMAN: Which is, in awe: "I can't believe I was really there." And sometime I do. But sometimes I do. But most often I find I just revel in the beautiful Moon.

HARWOOD: All right. Anything that—I mean, I've really gone through all my questions. So anything that you think is—?

BORMAN: No, I think I've been—I'd be repetitive just to say that I was very proud to be associated with that team. You can fault people for what they did or what they didn't do. But when you think what that team accomplished in a decade, it was a remarkable group of men and women.

And I think it was one of the rare moments in history, when people can look back and say, "Everything was together, and the people did it." And I was proud to be part of it. And as I said, I think that my part—the more important part was played on the ground. But nevertheless, I certainly was overwhelmed to be in Apollo 8.

HARWOOD: Okay.

BORMAN: *And* Gemini VII.

HARWOOD: Yeah. All right.

[End of Interview]