ORAL HISTORY TRANSCRIPT

WALTER M. SCHIRRA, JR.
INTERVIEWED BY ROY NEAL
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NEAL: You know, I got to that press site for this last flight. You know, we were surveying—

SCHIRRA: Wasn't that terrible?

NEAL: I waltzed into this thing and said, "My God! look at this! The whole world is here. They know—"

SCHIRRA: I'm sorry I missed you down there.

NEAL: I was going to get over to visit with you. As a matter of fact, [L.] Gordon Cooper [Jr.] and I started out to come over to visit with you. We were halfway there when they trapped him.

SCHIRRA: Oh gosh.

NEAL: And we just kind of lost it in the crowd. I said, "Oh to hell with it. I'm just going to roll on."

SCHIRRA: It was so funny. I was with ABC. Gordo I got at CBS. Walter went to CNN. We all tried to rendezvous.

NEAL: [M.]Scott [Carpenter] wound up with NBC.

SCHIRRA: Yeah.

NEAL: Fantastic.

Voice off camera: We're rolling now.

NEAL: You're rolling?

Voice off camera: Sorry to interrupt.

NEAL: Okay. No. Hey, we're just mincing words.

SCHIRRA: We've got to get this done, yeah.

NEAL: Sure.

Voice off camera: We're rolling.

NEAL: I don't have the slightest idea when this is going to be finished. Are you on any tight timeline?

SCHIRRA: Oh you mean tonight?

NEAL: Yeah.

SCHIRRA: Well, Jo just wants me home for dinner. [laughs]

NEAL: Okay, well that can be—

SCHIRRA: Yeah.

NEAL: All right. Let's see what happens time-wise. I hear the jets flying by.

SCHIRRA: We have a minute between that. It's a pass every minute.

NEAL: You know, hearing all those jets flying by reminds me, Wally—I think we're rolling now. And if we're not, we should be because I'm going to say: You essentially came from a flying family. Flying was in your blood from the beginning, wasn't it?

SCHIRRA: In this museum we have an old JN-4, a Curtiss Jenny. Mother and Dad barnstormed after World War One in a Jenny. Dad convinced Mother to get out on the wing and act like a wing-walker. She just got out on the wing. And her great story was she stopped wing-walking when I was in the hangar. [laughs]

NEAL: And so as time went on you eventually wound up in the Navy; where else?

SCHIRRA: Well, in fact I'd wanted to go to the Army at West Point. We lived near there in northern New Jersey. And I saw a naval aviator come into town with greens and a brown pair of [shoes] and a gold set of wings. This kind of gold. I said, "I think I'll do that." So I went to the Naval Academy instead of West Point.

NEAL: And from the Naval Academy it was Pensacola and then combat, and a little bit of everything, wasn't it?

SCHIRRA: I had a taste of just about everything.

NEAL: Somehow or another, though, you wound up being an astronaut. How did that happen?

SCHIRRA: That is probably a scary recollection. But I can recall going to Washington, looking at three men on a stage: two engineers and a shrink. (We'd learned to say "shrink." I think he was really a psychologist. In fact I saw him. It was Bob [Dr. Robert B.] Voas. I just saw him recently.) [laughs]

NEAL: Here you can call him anything you like, Wally.

SCHIRRA: Bob knows that I've called him a "shrink" his whole life. These three men tried to convince me how neat it would be to get in a rocket, or a capsule on top of a rocket. I said, "No way! I'm an aviator. I'm a hotshot flyboy. I'm a test pilot."

Voice off camera: [aircraft passing] I think we're just going to have—

NEAL: I think we'll just have to live with it.

SCHIRRA: I'll let that go and pick up as soon as I hear the engine. We'll just pick up—

NEAL: Sure. You can talk right through them though.

SCHIRRA: So I'm a test pilot. And a result of that is that, I really wanted to get out of that. Then they said, "Well, don't worry. We're going to put monkeys and chimps in there first." I *really* want to get out of there. We didn't even volunteer. We were ordered to Washington. That was the time to say "No." I went back to Patuxent [River Naval Air Station, Maryland], where I was testing aircraft, and talked to my peer group. And they said, "Look, Schirra. If you want to go higher, farther, and faster, this is the one way to do it." "Okay, I'll go along for a while."

NEAL: Did you ever regret that decision?

SCHIRRA: A number of times I have regretted that, because I missed my Navy very much. I was trained to be a commanding officer, and NASA never understood what a commanding officer was. This was sort of a group of people with equal rank. And there were times that I asserted myself as a commanding officer, particularly in Apollo. And I recall one of my greatest presentations was from John [P.] Healey, the manager of the spacecraft, who got me this big enunciator for a ship, "All ahead full," and said, "From your crew. Go ahead full, Schirra." That's one of my favorite possessions.

NEAL: I'll get back to that, as a matter of fact. I'd like to very much. But right now, let's go back in time. And here you are. Now you are an astronaut, early on in the training.

SCHIRRA: Now I are one. [laughs]

NEAL: Yes.

SCHIRRA: This was a big surprise. Seven of us sitting on a stage in Washington, D.C., with a bunch of Press corps. You don't know what those people are, I know. But they were there, interrogating us, and we all had these dumb answers. Except for [John] Herschel [Glenn, Jr.]. John had a good answer—John Glenn, of course—for almost anything. And the rest of us said, "Gee, this guy has some ideas we don't know about." And we began to realize we were becoming public features, or public individuals. It was something we were not prepared for at all.

NEAL: You learned, in time.

SCHIRRA: It took us—

NEAL: You even wound up being a television star in your own right.

SCHIRRA: Well, oddly enough what happened: We were drawn into it, slowly but surely. I guess my favorite memory, though, is—Well, I'll come back to my favorite memory. [aircraft passing] It's amazing, I've done these interviews here and none of this happens.

NEAL: Mark, do you want him to just go ahead and talk through that? Or let it—How do you want to work it?

Voice off camera: How bad is it, John?

Voice off camera: It's not too bad.

NEAL: Can you live with it?

Voice off camera: Yeah.

SCHIRRA: I'll go through, if you want.

Voice off camera: I mean, it's an aviation thing.

SCHIRRA: I've done interviews here now enough that I know—My favorite memory, though, really, was going after that Press conference, *from* that Press conference to the Hill, and watching Senators and Representatives make absolute *idiots* of themselves in front of all these news people. We all looked at each other, "Why are they doing this?" And we visited with the Senate Majority Leader, Lyndon [B.] Johnson. Then I knew what a mogul was, what

a *power* this man was! He had an office that looked like a Hollywood set. And here we are, looking around, somewhat awestricken ourselves, and our local Representative or Senator would come in and salaam practically. I said, "My gosh! we've joined a whole new world! And we haven't done a damn thing yet!"

NEAL: And so it was. However, once you got into Mercury you started doing some honest engineering. So let's start with that, if we can. Let's engineer the Mercury spacecraft as you lived it.

SCHIRRA: Well, when we joined the Space Task Group at Langley Air Force Base in Virginia, we all sat in this one big office—large, steel desk, which is the greatest threat to mankind as an officer to get a large, steel desk (you hope for a mahogany desk, not one of these big metal slabs). We sat there and said, "What are we going to do now? We've got to make this thing flyable. We're all test pilots." So we all picked various areas of concern that we felt we could individually do the best with. I got on the environmental control system, the suit system. I think Deke [Donald K. Slayton] was on the controls, the flight controls. We all unanimously had one vote, every time. We wanted a window in front of us, a window we could look through. The initial version had a little, tiny, round window down by your right knee and a little, tiny, round window by your left shoulder, and they looked like—well, little half-moons when you tried to look through them. You couldn't see a darn thing. That's what Shepard had to fly, because we couldn't change the windows in time.

NEAL: That early in the program, did you have any real objective in mind? Or were you just going to fly in space?

SCHIRRA: We felt we would put man-in-the-loop. We wanted to replace chimpanzees. We wanted to prove we could fly the vehicle, do something that man had never done before, of course. We wanted to be sure we could do it well. We knew the tools we needed. We needed this window so we could make observations out that window to align the spacecraft with the horizon, with the star patterns, with the geographic patterns. We had to make a hand controller, with this right hand, we had to make a pitch, roll, and yaw, and no room for rudder pedals. So a whole new flight control system with our hands rotating back and forth. [aircraft passing] This is a pretty difficult task.

NEAL: How would you describe the engineering in the Mercury system? Good, bad, indifferent? How would you describe it?

SCHIRRA: I was amazed, because Mr. [Daniel S.]Goldin, the present Administrator of NASA, said something about "risky devices." I thought that was a very well-made machine, and very, very carefully designed. I took great umbrage with his saying that. I told him that, by the way, personally. It was not something necessary that could be cut out of the film. He didn't know that we had gone so far with every engineer, with every detail, to get that spacecraft exactly the way we wanted. Including the booster, here in San Diego. We came out and visited General Dynamics. We made Atlas. I'll never forget [Virgil I.] Gus Grissom saying, "Do good work." Very poor grammar, but it got the message in. And we touched every facet of that vehicle. We went to McDonnell [Aircraft Corp.] in St. Louis, long before it was McDonnell-Douglas or now Boeing or whatever they are. The result of it was, we got to know Mr. Mac [James S. McDonnell, Jr., President of McDonnell Aircraft Corp.]. We got to know the engineers, Walter [F.] Burke, John [F.] Yardley. They were just like brothers.

We worked with these men around-the-clock, visiting, living in St. Louis! And that kind of thing really made Mercury go. We knew what the spacecraft was like, every component of it. About the only thing we didn't know about was that escape hatch that I hit with my hand one time.

NEAL: Did you really know it that well, though? I'm remembering back during that era, when I used to see Atlases go up and come back down in flames more times than one.

SCHIRRA: What we found, we man-rated the Atlas we flew. And they grounded, in fact, after John's and Scott's flight the military Atlas, so they would have enough courage to send me up on my mission! It was flat grounded! I go off on the mission, everything works beautifully. The spacecraft reacted the way I wanted it to. The interesting part was, though, when I got back from the flight, visiting Hangar S where I prepared for my suiting up and getting into the spacecraft, on top of Hangar S was a ladder. I went up the ladder. They told me it was the launch of an Atlas. It lifted off about 100 ft and "Baroom!" It blew right there. Very consoling. [chuckles]

NEAL: This was before or after?

SCHIRRA: After. Right after the flight.

NEAL: Right after your flight?

SCHIRRA: Yeah.

NEAL: Well, that's what I mean when I said: Did they really know that Atlas had been converted for man-rating? [aircraft passing] Did they really know?

SCHIRRA: We talked about reliability in terms of 9's. In that if you had a 9 times a 9, now you have reliability at .81 because you multiply the 2 reliabilities together to get the ultimate. We had about a .9 on the Atlas, which is pretty high. But it was very interesting. The four surviving of the original seven astronauts all flew Atlas.

NEAL: Of course you flew Atlas, Gemini, and the Saturn, too.

SCHIRRA: Yeah.

NEAL: You flew them all.

SCHIRRA: Everybody was worried about the Atlas being dangerous, and the surviving four—the only ones, the only astronauts who ever flew on Atlas—are still alive today.

NEAL: It's an interesting point.

SCHIRRA: Carpenter, Cooper, Schirra, and Glenn.

NEAL: Of course, too, since your job at that time was to find out what's man going to do in space, life support became rather important. And that was one of your areas of expertise, was it not?

SCHIRRA: It really was. The life support system had to be designed just right. And I can recall John Glenn had a hot suit circuit. Scott Carpenter had a hot suit circuit. I had one for one orbit, but I knew what to do. There was a little water control valve (a little teeny, tiny valve; actually it was the right hand), and you turned the valve very slowly to get the water to drip through this plumbing, through a heat exchanger which made the water boil at 40°F. It

vented into the atmosphere or space itself. That was the heat exchanger. If you ran it too fast, you'd freeze. If you ran it too slow, you'd get hot. So I was sneaking up on the right setting. By the end of the first orbit I said, "I'm fine. Let's go."

NEAL: Then, too, you were working on the Mercury suit. Oh, that was a beauty, wasn't it?

SCHIRRA: That suit was unreal. If you can imagine spending a million dollars for a suit with only one pair of pants. [laughs] But the real key was to get the suit to fit very tightly. If it's loose at the elbow, for example, when you move your arm you can't move it. It just fills up that void; so it fits you very well. A change in weight of 5 to 6 lbs was enough to make the suit a bad fit.

NEAL: Then from Mercury you also worked in the Gemini suit.

SCHIRRA: Yes, I did.

NEAL: What was the difference between those?

SCHIRRA: Oh, we had a little less junk inside the suit. We had thick protection. We weren't sure how well the suit would work in Mercury. I had a sponge layer, a thick silver layer on the outside. We finally got the light Nomex® material that wouldn't burn, even though that was something that came along later in Apollo. But we were worried about flammability materials always. And the suit was a much better suit. Why? It had to be. We were going to do a spacewalk, which we could not do in Mercury. So it had to be a good fit. We still had to have what we call a "tactile touch." The suit gloves had to fit very carefully, almost like

racing car driving gloves. That was kind of interesting. We put little lights on the back of the hands so you could see what you were doing.

NEAL: You know, a good way to describe all this might be to just take your Mercury mission and relive it. Could we do that?

SCHIRRA: Gee. Before my time. [laughs] Well, I think probably the best part of my Mercury mission was naming it *Sigma 7*. Naming it the sum of engineering effort. Not a fancy name like *Freedom* or *Faith* or *Aurora*. Not that I didn't appreciate those names. But I wanted to prove that it was a team of people working together to make this vehicle go. That's why I talk so wildly about knowing the engineers, how they were brothers and buddies. And all of them were! And that's what I saw as the ultimate on that mission, was that [it was] an engineering test flight, where we weren't going to look around for fireflies. We weren't going to look for the lights of Perth [Australia]. We weren't going to give prayers to the peasants below. We were going to make this thing work like a vehicle, and I never gave those missions when I flew a Mach-2 fighter. I flew the damn thing until I got done! I wanted the Mercury flight the same way. So when we got into orbit, the boost phase was quite simple, although I found out later that it was going faster than it was supposed to have, but it did stop at the right time. But once we got into orbit I realized I could take control of it, because I said, "I do not want this to be an automatic control." What happened on John's flight and Scott's flight, as soon as they got into orbit they separated and "Ssshh!" turned it around rapidly to get the retro attitude so that Mission Control could then have reassurance that they could bring it home. I'm not up there flying for Mission Control. I'm flying for Old Natasha. [points to himself] So I separated and went off automatic and went "Pttt!" and

waited about 5 minutes. It finally came around to the right attitude, which was looking the heatshield first. I'm looking aft, looking back toward where the booster was; but I never got to see it, there was so much time between the time I turned around and when the booster settled out of orbit. So I couldn't see it.

NEAL: You were conserving fuel among other things with that.

SCHIRRA: That was the whole idea, to conserve fuel. Not to criticize John and Scott, but the mission was designed to have a chimpanzee in there. They replaced the chimp. But that meant they had to have a lot of automatic maneuvers. Automatic maneuvers took a *tremendous* amount of attitude control fuel. I said, "I don't want to do that. I just want to save that." And as a result, I ended up, I think, about retrofire, about 80% of my attitude fuel was still remaining.

NEAL: You were able to stay up for a full-duration mission. Yours was rather an open-ended mission, if I recall.

SCHIRRA: It was. It could have gone on and on. Thank God I didn't, because Gordon Cooper, he used all of my talent and had to use every bit of his own to endure that long! [laughs] But the interesting part of it was, I'll never forget this part either. Gordo and I were trying to figure out how we could look at the world from orbit. We had no simulators that could do that for us. So we took an [Project] Echo balloon, 100 ft in diameter, and painted on it the geographic points that we would pass over on an orbit 32 N, 32 S, adding a little bit so we could see out to the horizon. We took a cherry picker, hoisted ourselves up a little, tiny

vehicle with a window (like we had asked for), and looked at the globe at tangent as if we would be in orbit. The technique worked perfectly. [aircraft passing]

NEAL: I think that airplane is a little more than we can handle.

SCHIRRA: Yeah.

NEAL: That bird really passed right directly overhead.

SCHIRRA: So we looked at this large Echo balloon, with the Earth painted on it, and practiced our retrofire maneuver so we could do a big "Chth-chth," that kind of stuff, instead of "Chuck-chuck." I got back from the flight and said, "Gordo, I had a real problem. Our Earth had no clouds on it. You've got to put clouds on that." [laughs]

NEAL: And by the way, I'm prompted to note, as a footnote, that the spacecraft behind you is your *Sigma 7*.

SCHIRRA: That's the name on there. Yes.

NEAL: That is *Sigma 7*. It's in remarkably good shape.

SCHIRRA: Oh no, that's a copy of it.

NEAL: This is a copy.

SCHIRRA: The real *Sigma 7* is at the [Astronaut] Hall of Fame in Florida.

NEAL: Okay.

SCHIRRA: But they have a better version of *Sigma 7* painted here. Someone, by the way, on my *Sigma 7*, which is in the Hall of Fame—our Astro Hall of Fame—in Florida, the panel where *Sigma 7* was painted on is missing. And I'm going to chase that down with either Don Ingen at the Smithsonian or something, because somebody must have lifted that.

NEAL: Somebody swiped your panel?

SCHIRRA: Yeah. Maybe Max. L. Ary [President of the Kansas Cosmosphere and Space Center] has it, which is in [Hutchinson] Kansas.

NEAL: You had a specific goal in mind, I'm sure, when you were flying your mission. You've mentioned it, but let's vector in on it.

SCHIRRA: Scott Carpenter got involved with playing with fireflies, which was that same water I talked about in the environmental control system that cooled you. And it came out as an H_2O, one molecule of water, which froze instantaneously into one snowflake, but a very tiny, tiny snowflake. These stuck on the outside of the spacecraft. They drifted around. This was what John called fireflies, is what Scott got involved with banging the spacecraft and watching them come off. And as a result, both of them lost sight of the fact they had to have fuel enough to fly the mission. John got a little wrapped up; I did, too, because I was his Capcom [capsule communicator] in California, on the retro-rocket package that had to be kept on because of a false signal that said his heatshield had detached, when in fact it turned out it had not. But at any rate, that became kind of a traumatic part of John's mission. But in both cases, they almost ran out of attitude control fuel; and that kind of shook me up, because there's no reason to do that. So I went to great lengths to drift—In fact, I alienated some of

the flight controllers because, after drifting for a while, I put it back into automatic control. I'm in chimp [chimpanzee] mode now; it didn't go over too well. [laughs]

NEAL: You also were navigating the spacecraft. You were using the stars. You had spent a lot of time—Let's talk about that a little bit. Where did you get this knowledge of the planet formations and what planets to look for? How did that all go together?

SCHIRRA: There's some state on the East Coast that has a planetarium—North Carolina. [laughs] Couldn't resist doing that.

NEAL: All right. That's an "I-got-you."

SCHIRRA: We were taken to the planetarium at [The University of North Carolina in] Chapel Hill.

NEAL: Morehead.

SCHIRRA: Morehead Planetarium. And Tony Jenzano was our instruction. Tony is long gone now. Tony taught us every trick in the trade about how to recognize stars, how to put the constellations together, how to get checkpoints so we could find out what stars we needed to know *very well*, and we became quite proficient at that. Bill [William K.] Douglas, who we lost just recently, also went to the planetarium with us. He had joined that. But Tony would put us up on little chairs, much like a spacecraft, with our window again; and then he'd put projections of little constellations and things up there for us to look at, at night, in the planetarium. So as a result, we learned what we called the celestial field, the celestial pattern, which took us through Apollo really. It was kind of fun. I'm going to jump ahead

a little bit because, when we got to Apollo, I had been assigned the role with Walt [Walter] Cunningham and Donn [F.] Eisele backing up Gus Grissom, Roger [B.] Chaffee, and Ed [Edward H.] White [II]. We arrived at Griffith Planetarium [California] after they had been training out there, having been working with Tony back at Morehead again, even for Apollo now. And this is worth getting right. [laughs]

NEAL: Take your time. As a matter of fact, here comes another jet. [aircraft passing] Let's wait until this one goes on by.

SCHIRRA: Yeah. The director of the Griffith Park Planetarium, the same as Tony Jenzano with Morehead, told my crew—Cunningham and Eisele and myself—that "We have three stars in the celestial system now that we didn't know about that the Apollo 1 crew told us about that they'd learned from Tony Jenzano; they're 'Navi,' 'Dnoces,' and 'Regor.'" "Navi" is Ivan Grissom spelled backwards; "Regor" is Roger spelled backwards, and "Dnoces" is Ed White the Second, spelled backwards. And this poor director of the planetarium for at least 2 years thought those were real stars! [laughs]

NEAL: Did you actually use the stars for navigation?

SCHIRRA: We used them for reference for yaw. At night, if you couldn't see the Earth clearly, because it's dark just as it is when you're down on the surface, you're not going to get a good checkpoint. But the star field's right there and you can say, "Ah, that planet is where it should be. That star is where it should be. That's my yaw attitude." Very, very precise. We're talking about, oh, 1/1000th of a degree. The same use of the stars was used in Apollo to 1/10,000th of a degree. That's how accurate that stuff is.

NEAL: Did that celestial navigation, I think I can call it that safely, ever help a crew anywhere along the line in terms of flying and navigating the spacecraft?

SCHIRRA: I think Gordo had the perfect example of that. We'd both trained to use the Earth and the stars to get our retro attitude. That son-of-a-gun landed closer to the carrier than I did! And he had no automatic control system at all. No horizon, reference from the horizon scanners that would go like this outside. None of that worked.

NEAL: Back in those early days—and here comes another one of those heavy jets. [airplane passing]

SCHIRRA: Yeah.

NEAL: So we'll sit tight until he passes.

SCHIRRA: That's probably Southwest. [laughs]

NEAL: I mean, boy, they fly right over this museum.

SCHIRRA: Yeah.

NEAL: But back in those early days, the photography portions of the mission were not what they are today. There was no Hubble telescope up there.

SCHIRRA: Yeah.

NEAL: You guys shot a lot of pictures. And you, in particular, took the time to learn how to shoot. Can you tell us about that?

SCHIRRA: It was interesting because Deke and I—Deke initially had the second orbital mission and I was his backup. And that was changed when Deke had his physical problem. Then he was grounded, and Scott took that mission, so I was Scott's backup. So Deke and I had talked about getting a good camera. And we looked at the Hasselblad, and I finally got a Hasselblad camera. But before I got it, I talked to Ralph Morse and Carl Mydans of *Life* magazine, Ken Weaver and Louis Marden of *National Geographic*, "What's the best camera?" "Hasselblad." "Really? All four of you agree?" These were individual interviews really. "But for this;" "but for that." We took all the "but for's" out and made a perfect Hasselblad at the Cape. That was when Pan Am had the laboratory down there, and Pan Am people made all these modifications. Viktor Hasselblad came out with Hasselblad 500C, which was our version after we had made those changes. We got some good pictures. I think I could have taken better pictures, but I was too busy doing other things. And Gordo, up there for over a day, got some absolutely gorgeous pictures with the Hasselblad he flew.

NEAL: Pictures that have now gone into the books of history. In retrospect, how would you place Mercury in the overall space program in the scheme of things?

SCHIRRA: Mercury was the kickoff. We made enough modifications in Mercury, we proved man could do a lot more than a machine could do, and with that we had a working reliance—alliance is probably a better word—with McDonnell. By then we know Mr. Mac was like a father to us. Walter Burke, John Yardley were like brothers, as I say. That camaraderie took us all the way into Gemini. And when Gus got up there after having backed me up on my Gemini—No, no, Gus—See, I'm just trying to put this in perspective. Gus had his flight the second flight. Then he was out of the loop. Gordo backed me up, and Al Shepard backed up

Gordo. So Gus was out of the loop right away.[aircraft passing] He almost moved to St. Louis to work on Gemini, he was so disheartened about losing his Mercury that sank (which was not his fault; too many people have given him blame for that, and I've pretty well cleared that one up). But any rate, Gus got the Gemini concept going very well. And oddly enough, everyone thought Gus was the smallest guy. He was the *shortest* guy, but not the smallest. He had the longest torso length. So Gus had left room in there that Tom [Thomas P.] Stafford could fit in. A lot of people thought that we had to change things to get tall guys like Tom Stafford in. No. Gus had short legs but a long torso.

NEAL: Fascinating. You know, this brings to mind—I'm going to deviate from the meaning of the hardware, and let's talk about people. Let's talk about the original seven astronauts, as you knew them. Let's just take them one-by-one and think about them.

SCHIRRA: We'll go back over the seven, there was C C, G G, S S S. I'm the last of the smart S's. [laughs] That goes on.

NEAL: Okay. Carry on, tally-ho!

SCHIRRA: Don't wipe out one of my better lines. Well what happened, I didn't know any of the fellows. I met Al [Alan B.] Shepard [Jr.] when we were up there for interviews in Washington. We stayed at a Marriott near the Pentagon, and the pool was frozen. We were ice skating. I remember doing that with Al. We got to know each other rather rapidly. We had three Navy, three Air Force, and one "jarhead," a Marine by the name of Herschel Glenn. We were surprised about John when we first saw John at that Press conference, because we

just weren't prepared for something like that. John had done some international flight—not international but national flight—

NEAL: Set a few record.

SCHIRRA: —he'd been on a TV show. We had all set records, but John made lots of fun out of it.

NEAL: *Name That Tune*.

SCHIRRA: Yeah. And so John had the presence in front of a camera and in front of the Press corps we didn't have. So we learned in a hurry, because we were going to compete. And we seven competed with each other. We *bonded* so closely, we were like brothers. Still are. But sibling rivalry is also part of brotherhood. We had a lot of that.

NEAL: How would you describe the guys, one-by-one? Just a thumbnail, you know. Not a lot.

SCHIRRA: Scott I would best describe as being the proponent for the song *Yellow Bird*, [laughs] because Scott loved music. We got tired of hearing *Yellow Bird*. But Scott was more of the dreamer than the high technician, the hard-nosed test pilot, fighter pilot. Very competent, by the way, but he didn't portray the role of this hotshot flyboy. Gordo portrayed the role of the hotshot flyboy. He's a sharp guy. A couple of times he was looked down on by Deke, because he wasn't a test pilot in flight test as Deke was. Gordo was involved with engineering tests. Then we got to John Glenn, who made it quite clear what he was. He was a Marine. [laughs] And the Marines are different. We got along with John because he's

really a neat guy. We became very close. John took over some errands we needed to take a look at and worked on them very hard. Worked on the flight control system as well as Deke. Deke always complained about not having rudder pedals. He wanted rudder pedals. We couldn't have them, so we put yaw in the stick. So we got done with—Gus Grissom is probably the one that really hasn't been portrayed very well. Gus, a little guy, sharp mind—

NEAL: Let's wait till that jet goes by— [aircraft passing]

SCHIRRA: Yeah.

NEAL: —and save it for dear old Gus. That's an important number in the book. Okay: Gus.

SCHIRRA: Gus was an intent person; very intense. And his intent was to get things done right, although Gus could be a lot of fun. We played "gotchas" on each other all the time; tricks, of course. I guess my favorite Gus one was later, when we were trying to do the Gemini vehicle, and we called it "the Gusmobile." That's kind of the way Gus was. He asserted himself and he was so intent that it was obvious it was going to be his vehicle. And we called Gemini "the Gusmobile." He was trying to fly a vehicle that would come down on a little parachute like a hang glider, and he almost didn't live through it. We said, "We're not going to do that." We all said that in that case, "We're not going to do that." He said, "Anybody else have an opinion?" "Nope. That's our opinion." That's what Gus was like. Deke and Gus were very close. They were both Air Force. They both had gone through the same hoops together, I suppose. Gus had had combat in Korea. And I guess those who have had combat look at the others with a little bit less—not reserve but less heroic worship, I

suppose. John Glenn had combat. Deke had combat. I had combat. Al and Scott had no combat time.

NEAL: You've forgotten one person in your description.

SCHIRRA: Oh?

NEAL: Walter Marty Schirra.

SCHIRRA: I told you I had combat.

NEAL: Yeah, you had combat. But you didn't describe yourself. How would you describe yourself, Wally?

SCHIRRA: I would say I was a truly committed flyboy. A test pilot. I'd had combat experience. I had gone to China Lake, where I developed the weapon Sidewinder, which is in production today, and this was done in '50/'51. I came from a flying family. I was very intent about it. One of the things I learned at the Naval Academy was the word commitment. I had made a commitment to be a naval officer, and I aspired to having command. And I felt very sad when I left my Navy career. I was about ready to go to a squadron to be exec or skipper; my first command. I'd never had a command. I regret that. I still do regret it. And that's why they teased me about my Apollo, I'd be commanding that flight at least. I even got something from the Navy Department, because they heard about it. When Apollo landed in the ocean, it went down about maybe 4 or 5 ft then bobbed back up to the surface again. So I got a Deep Draft Command thing presented by the Navy Department. That was my only deep draft command. [laughs] So even the Navy knew I was aspiring for command. But I

suspect I was hard over. I really wanted this thing to work right. I was known as "Jolly Wally" for a long time, until I got mad at Apollo. And then once in a while I'd get kind of tight. But why did I get mad? I lost my next-door neighbor, Gus Grissom, who was killed on the launch pad. And I didn't feel very good about that. And I wanted things to go properly. I didn't want to make any abrupt changes. So that kind of attitude was always in me, but it never surfaced. I didn't need to have it happen. I had a good time in Mercury. I had a good time in Gemini during that rendezvous. That was a ball!

NEAL: Let's get back to that, though, because right now you're into a rather critical element of your career, that was the Apollo 7 mission. And so let's dive in there first, and then we can come back to Gemini.

SCHIRRA: Okay.

NEAL: Shall we?

SCHIRRA: Sure. Well what happened on Apollo was an amazing series of events that happened. Initially, Gus Grissom and his crew had the first Apollo flight, Block I. My crew—Cunningham and Eisele—had the second flight. I saw this as a very *dumb* flight. And I campaigned to have that flight canceled. There were a lot of scientific experiments, and I said, "We're trying to get to the Moon before this decade is out; if you'll remember what Mr. [President John F.] Kennedy told us? Let's get on with that." We wasted a lot of time flying Grissom on a second flight on Redstone. We were about to fly a third one when John got his orbital flight instead, because we picked up momentum. I said, "Why should we duplicate two Block I flights, neither of which prove a thing about Block II and the capability

of going to the Moon and back?" I would have said more than that. So I aced myself out of that mission, thinking I'd have the first Block II mission. Suddenly I'm now backup to Gus! I said, "Wow, I just lost a command role!" And that kind of bothered me no end, because I'd been backup to Scott, I'd been backup to Gus—This was going on and on and on. I said, "I'm a little tired of being a backup." But as it was I took that role on, not with the guarantee of having another chance at an Apollo mission, by the way. I was kind of chafed about that. We were saying, "Well, we are Mercury astronauts. You are a Mercury astronaut. You might have a Gemini. But Apollo, that's really the next team." I said, "Oh-ho! that's interesting. You want me to be a backup with nothing to look forward to? No deal!" "Oh no, I'm sorry. We'll back that off." This is Deke and Al talking that way—the other two "Smart S's." [laughs] I went along with this for a while, but then when we lost Gus on the pad suddenly I had the first Block II flight. I realized this is not very nice. I'm taking over a mission that my buddy was not able to fly. That was a tough, tough one. So with that, we went through a lot of trauma. NASA, unfortunately, as a bunch of civilians, didn't know how to take off the black armband. And military people mourn inside, cry inside, *bleed* inside about losing a compatriot, but they wear the black armband to the funeral; that's it. It's gone. NASA wore the black armband for a year. And we kept saying, "Look, take the band off! We've got to get back to work. Gus would be the first person to say, 'Let's get on with it. Do good work.'" And that was the kind of attitude I had going into Apollo. I was a little annoyed about how the spacecraft was prepared, the one that—[aircraft passing]

NEAL: Let's stop right there. We'll pick up with "I was a little annoyed with how the spacecraft was prepared."

Voice over camera

SCHIRRA: A quick break, yeah?

Voice off camera: Do you want us to take a break?

NEAL: Yeah, let's take a quick break.

SCHIRRA: Yeah.

NEAL: We're right at a very critical point in the interview, of course. But Wally's—you're putting this together beautifully.

SCHIRRA: Ah, no problem.

NEAL: But I don't need this.

SCHIRRA: I'll just put it right here.

NEAL: No. Let's make sure Wally gets what he needs there. When you're comfortable, then we can start it.

Voice off camera: Oh, okay.

NEAL: Okay. Now you were a little uncomfortable with the way—

SCHIRRA: I was annoyed at the way what became Apollo 1 came out of the plant at [North American Aviation's plant in] Downey [California]. It was not finished. It was what they called a lot of uncompleted work or incomplete tests and work done on it. So it was shipped

to the Cape with a bunch of spare parts and things to finish it out. And that, of course, caused this whole atmosphere of developing where I would almost call it a first case of bad "go" fever. "Go" fever meaning that we've got to keep going, got to keep going, got to keep going! When my crew did the test that was followed by Gus and his guys, we were in sea-level atmosphere; no pure oxygen. We were in shirtsleeves. And there were things going on I didn't like at all. I was no longer annoyed; I was really pretty goddamn mad! There were glitches, electronic things that just didn't come out right. That evening I debriefed with [Apollo Spacecraft Program Office Manager] Joe [Joseph P.] Shea and Gus. And I said, "If there are any things that go wrong, like a glitch in the electronic circuits and bad sounds, scrub!" Because Gus and his guys were going to do it in pure oxygen and in an environment that's not very forgiving. We didn't realize how unforgiving it was at that point. We'd gone through the same environment with Mercury and Gemini and made it through. Not that I think of it in that way, but that's how I look at it in retrospect. Gus, I can recall saying, "If I can't talk to the blockhouse, how the hell are we going to go to the Moon with this damn thing?" That's how bad the communications were. He should have scrubbed. He didn't. He was himself involved in "go" fever.

NEAL: We'll wait for that. [aircraft passing] I'll pick you back up with a question.

SCHIRRA: With that thought in mind, when I picked up the Block II spacecraft, I said, "All of these things will be completed in the plant in Downey before it leaves the plant." I might add, today, even though we're doing an interview at some X point in time, I talked to Fred Peters, our NASA engineer, just today about Fischer pen trying to make a memento of the Apollo 7 on the Fischer pen and the turtle, by the way. Just today: Fred Peters. I talk to John

Healey and Fred Peters every October between October 11 and October 22nd, and they both say, "Thank you, Wally, for a good mission." And yet, I wanted it to be a perfect mission. When we left Downey, John Healey and Fred Peters were the last—they did a tumbling exercise, to take the spacecraft off all the axes and flipped it around, trying to get all the spare things loose. If it falls out, they take it out and put it away. In orbit I found a washer and a little nut and a little tiny bolt. I presented each one of those guys one of these pieces, which they didn't find. But that friendship developed from the sense of perfection, because I had been in and said, "I'm not going to mess around with an incomplete vehicle." When we got it to the Cape, Healey and I were there and I'll never forget, it was "Buzz" Bastian Hello who said, "Well, nice of you to be here, fellows. I'm glad you're here." I said, "Don't you touch a damn thing. This thing is perfect, and it's going to stay that way!" "Whoa!" That's the same time he said, "Is there anything else you need?" Because he was wondering if this guy was really real. I said, "No, no, I'm serious. We lost a crew on the launch pad. I want Guenter Wendt, the pad leader that I had for Mercury and Gemini, to be hired by North American-Rockwell and be our pad leader." [aircraft passes] I can pick this up easily.

NEAL: Yeah.

SCHIRRA: So Hello said, "I'll get you a Barbie doll if you want." I said, "You don't understand what I'm saying. I want a guy up there that's so hard-nosed, I want a pad Führer up there. I will not have 'go' fever. We'll have nothing going wrong. We'll still do checks for dust and play games with each other. But I want a pro." And we had Guenter Wendt for every Apollo flight. And guess what? They all worked perfectly.

NEAL: As a matter of fact, Guenter stayed with North American for quite a long time.

SCHIRRA: Yes. And the fun of it was—I might as well put this on camera. The last thing that happens when you mount up on Apollo. The Clean Room was ready to draw back, and the last person you can see, and only one person who can see, and that's Donn Eisele, the only window that has an opening through the hatch looking back at the Clean Room. He looks back and says, "I wonder where Guenter went?" And I've got to admit he said that. I've stolen it, and I'll use it every time I can. [laughs]

NEAL: During the mission, of course, you had the misfortune of also catching a cold. So did the rest of your team. Did that influence the flight?

SCHIRRA: The cold did. It made us a little short. But I was short before we took off. I, in a meeting at Downey, walked into an open-door meeting, dark room [where] they were discussing the couches that we would fly in this Block II spacecraft that were going to be Block I couches. And I said, "Oh, what does that mean?" And they all turned, "Oh, oh, oh, hi, Wally. Well, we can't get the Block II couches ready in time." I said, "What's the difference?" "Well, the Block I really can't take a land landing." "Oh? Have a new Mission Rule then, don't we?" "What's that?" "We don't launch if the wind's going to blow us back over the beach." "I guess that's a good Mission Rule." Guess what? We launched and the wind was going to blow us back over the beach. So someone broke that rule. I didn't. I was compromised. Again, it was a case of a little "go" fever; not as bad as the real bad cases of "go" fever. But it was enough to make me annoyed, and that's bad form. Then in orbit—[aircraft passing] We launched on a Friday. I remember this very specifically. In orbit, our

so-called Friday night, Donn Eisele was on watch and Cunningham and I were supposed to be sleeping. And I hear Donn saying, "Wally won't like that." "What was that?" I put on my mike and listened in. "Oh, we're supposed to put on the television tomorrow morning." [I said,] "Well, we didn't have it in the schedule, gentlemen. That doesn't go on till Sunday morning." I should have said, "I don't want to interrupt *Howdy Doody*," but I wouldn't have gotten away with it. [laughs] What I really was saying, "We have not checked this system out. It's in the flight plan to be checked at this point in time. We'll check it at that point in time." We did. We did the *Wally, Walt, and Donn Show* Sunday. But by then, everybody was saying, "These guys are getting testy up there. They're not mutinied, but they're not going along with the flight controllers." I have yet to meet a flight controller that ever died falling out of a chair like this. That was my whole attitude from then on. "Don't mess with me, guys! This is my command," and I wasn't kidding. And, "I'll take all the advice, all the information you can give me, but don't push us around. We're still worried about whether this is a safe spacecraft or not." And we had even gotten to the point where they were going to shave all our hair off in case there was a fire. "And why am I going to start running a TV show for somebody if I haven't checked the camera out, all the electrical circuits, piece by piece? Ah-hah, it works. Now we'll show you TV." Oddly enough, we got an Emmy for that *Wally, Walt, and Donn Show*, so I can't really say it was a bad deal.

NEAL: Coming as it did, too, on the heels of the disaster, this was a tremendously important flight from a NASA point of view. It really had to be near-perfect.

SCHIRRA: It had to be perfect. That was—I was so thrilled, because I was at the Cape recently and I saw Sam Phillips Drive. Sam [Samuel C.] Phillips, then a General, called that

mission 101%, which was spacecraft 101, by the way. But that thrilled me no end that Sam saw that what I was trying to do was to make it at least 101%.

NEAL: The crew that you flew with, did you pick them?

SCHIRRA: No, I did not pick my crew. Donn and Walt were assigned by Deke. Donn was easy to work with. Walt was very difficult to work with. My wife said (and Walt's heard me say this, so it's not out of school), "He's like a puppy dog. Scratch him behind the ears, and he'll do anything you want." When I stopped scratching him behind the ears, it was real hell. [laughs]

NEAL: After the flight of Apollo 7, did you think that your career would continue within NASA?

SCHIRRA: Oh no. Prior to the flight of Apollo 7—a lot of people don't remember that—I announced I was retiring, leaving NASA, and possibly retiring from the Navy. Prior to the flight. So I had that in my little data bank. I hadn't really committed to retiring from the Navy yet, but I was definitely leaving NASA.

NEAL: There was another world out there, waiting for you.

SCHIRRA: Well, I also knew, having almost not had an Apollo flight at all if you go back to that point in time, there was no way I was going to get another Apollo flight. And it turned out no crew commander was to get a second Apollo flight. The only one that broke that rule was Tom Stafford on Apollo-Soyuz. Now others had flown twice on Apollo, but not as a commander. So I knew that my destiny was there; I was gone. And I knew the Space

Station—Skylab—would take too long for me to get involved. We had to go through all the lunar landings, all of that; and I'd seen these transitions from Mercury to Gemini, Gemini to Apollo. Those were long, hard, dry spells. I had no idea how long Shuttle would take, although it had been talked about.

NEAL: All right. I think then this is the time now to go back into Gemini, because we were just finishing up Mercury.

SCHIRRA: Yeah.

NEAL: We deviated to get across this solid story of the Apollo. Let's go into Gemini just a bit. Let's first of all talk about the big step up, down (or was it in between?), between Mercury and Gemini? What was the difference?

SCHIRRA: I without doubt [would] say Gemini is my favorite flight. Gemini [short i], Gemini [long i], either one; quite correct. I recall Bob Gilruth on an airplane one time, flying commercially somewhere, back before we flew Gemini [short i] or Gemini [long i]. I said to Bob, "These women walking up and down the aisle. They're stewardesses, right? What do you call them in plural? Are they 'stewardi' [long i] or are they 'stewardi' [short i]?" "They're hostesses." Thud! [laughs] So it turned out Gemini [short i] or Gemini [long i] is correct. It's either Arabic or some other language. Latin I guess.

NEAL: Do you know we in the television media once went to Walt [Walter C.] Williams and we said, "Now we don't care which way you throw it up, but come down with an honest answer. We have to know whether it's Gemini [short i] or Gemini [long i]."

SCHIRRA: Yeah. [laughs]

NEAL: And he said—he thought for a moment and he said, "Gemini [short i]." I said, "Okay, so be it. From this point in, all the television guys will always call it Gemini [short i]." And we did.

SCHIRRA: I called it Gemini [short i] most of the time.

NEAL: I know you did.

SCHIRRA: Gemini [short i] VI, that's what I called one of the flights.

NEAL: Well anyway, I'm sorry I interrupted.

SCHIRRA: What has happened in time: Gemini has been forgotten. There were no major stunts like the first man in space or the first man on the Moon or the first woman in space. So as a result, Gemini just fell down the crack. Yet without that mission, we could not have gone to the Moon and back. There were four things Gemini did: (1) [guiding] itself through reentry; it actually changed its pattern to come back into a landing point, which you had to do if you were coming back from the Moon; (2) enduring space for 2 weeks; (3) [taking] a spacesuit outside the spacecraft to do something; and (4) [doing] a rendezvous. I was so thrilled to do the rendezvous mission. That's why I loved the mission, but—[aircraft passing]

NEAL: We'll wait till that jet goes by, because now we're coming up to—

SCHIRRA: Yeah.

NEAL: —what we the media loosely labeled "76." You know, your mission, first of all, as with all spaceflights, there were highlights, there were lowlights, there were moments of great adventure. And one of them you shared by virtue of being a pilot who knew when not to fly.

SCHIRRA: Ah ha-ha.

NEAL: Would you like to go back over that?

SCHIRRA: Well, it's kind of interesting to see Gemini VI initially was GTA, Gemini-Titan-Agena 6. Our first attempt to launch, we lost the Agena. It didn't make it into orbit. Second attempt, amazingly John Yardley and Walter Burke conceived of the idea of Gemini VI taking off *after* Gemini VII and using it as a target for rendezvous. And, "Wow! Can we do that?" Now this same group that I gave the name *Sigma* to put this all together, got us all set up to launch, within 7 days after Gemini VII took off, on the launch pad, go through the countdown—3-2-1-zero. Clock started liftoff. Negative liftoff. A plug fell out. The engine started, and "Woom!" and shut down. Mission Control said "Liftoff." Launch control said "Liftoff." My clock started. I didn't say, "Liftoff." Having had the experience of being in Mercury—having lifted off—I knew the difference. I think even Tom Stafford would admit today he wasn't sure. I was sure, though our choices were rather limited. We could stay there and blow up, or we could stay there where it was safe, or we could eject and that would be the end of the mission, once and for all. And I would have ejected if I'd had to. I know that. A lot of people say, "You didn't want to eject." I said, "Baloney! Old Natasha wants to live through it. We'll discuss the mission later." But the result of it was that plug that fell out caused another engineering test to go on, and they found another series of plugs that said,

in the sequence, "Remove the dust plugs." It didn't say how many. I have one of those little things that was not removed. It would have shut down a second time. I probably would have ejected that time. As it was, the third time we got off, did our rendezvous, had a great time seeing these guys with all their laundry hanging out. Of course it wasn't hanging out; it was just junk around the back. [chuckles] The mission was one of my very favorites because we had rehearsed it over and over and over and over again, with all these months in between. I even had Hubert Humphrey, then Vice-President of the United States, in the right seat with me in the docking simulator. [aircraft passing] That's how much time we had. In fact that's one of my favorite stories about a nice man, Hubert Humphrey. In this dark room, we were sliding around on these air-bearing cushions, up, down, right, left. The Agena was moving us around all 6 degrees of freedom, and I'm supposed to come in and dock with it. They stop me and I'm essentially frozen in a dark room. The ladder comes up and this man comes and open the hatch and gets in. "Hi, Wally." "Hi, Mr. Vice-President." It was Hubert Humphrey. "Mind if I join you?" "No, no. Please do." Close the hatch. "Can they hear us outside?" "No, sir." "I want to take a 5-minute nap. Will you wake me in about 5 minutes?" "Yes, sir." [laughs] I go do my thing. I wake him up 5 minutes later and he says, "What were we doing?" "We'll spend another minute and I'll show you." [laughs] "You can turn on the sound again." Isn't that a fun story about a nice man?

NEAL: That is. That's a remarkable story.

SCHIRRA: Yeah. Well, that's how much time we had to do those kind of things! We didn't have the Agena to dock with. But all that precise maneuvering with my left hand. Even though I write left-handed, most things I do with my right hand. But now from pitch, roll,

and yaw, now we have forward, back, up, down, right, left. And now I have dexterity in both hands, so I was a hell of a good translation man! Again it was little tiny, tiny thrusts. There was a term we used, which you'll probably cut out of the tape, but I wanted the smallest amount of thrust I could get. I called it "a micro-mouse fart." [laughs] Bet it will never make it through the editor, but it's still—

NEAL: You never can tell. [laughs]

SCHIRRA: It might make it. [laughs] Well, fart's not a dirty word anymore at all.

NEAL: Well, not to the Germans at least.

SCHIRRA: That's right. *Ausfahrt*. You know German? Very good. But I wanted something that, if I made a maneuver, where I would come right a little bit, I want to come like this and then stop, and come back a little bit and stop. That's why the Shuttle can dock with *Mir* today, or dock with the Space Station of the future. You've got to have these very slow, minimal attitude changes, where you don't waste a lot of fuel. And that's where we developed that technique to perfection. And from then on we did docking without any hesitation at all. All the Gemini flights were successful in docking.

NEAL: You know, it brings to mind, too: It seems to me I remember some signs being hung out of windows like "Beat Army," "Beat Navy." Wasn't there something like that? Can you remember that for me?

SCHIRRA: It's rather interesting. Just recently, four Gemini astronauts got together in Dayton, Ohio, to induct Jim Lovell into the Hall of Fame. The other three of us had already

been inducted. So Tom Stafford and I, who were Gemini VI, Frank Borman and Jim Lovell were there. We were doing these photographs, and the people who were doing the photographs—it was for *Vanity Fair*—wanted to do a Mount Rushmore pose, all heads. It looked like old, old men. At any rate, other pictures were taken. This photographer had asked one of his crewmen to call me before I went back. "Can you think of something that would make the guys laugh?" I said, "Yes, make a big sign that says 'Beat Army.'" We did hold it up, and Frank Borman fell apart laughing. But now why did I do that? When we did the rendezvous, knowing we could do it, got within about 2 ft of the other window of the other spacecraft. (We figured you could just put the windows together; you didn't have to put the noses together.) Frank Borman is a West Point graduate. With him is Jim Lovell, a Naval Academy graduate. With me, although he went in the Air Force, Tom Stafford Naval Academy, and I'm Naval Academy. Naturally I hold up the sign: "Beat Army." [laughs] Frank Borman topped me, though, darn it, if you'll remember that. He said, "Look at that sign. It says, 'Beat Navy.'" The heck it does! [laughs] That's in a museum at the Naval Academy, I might add, that sign.

NEAL: The funny thing is we did have some tape with some film of that.

SCHIRRA: Oh really?

NEAL: Yeah. There was film of that particular episode.

SCHIRRA: Oh, I'd like to see that footage.

NEAL: It's around somewhere. I don't quite know where. As a matter of fact, you know, you can straighten something out for us. At that time in Gemini, the thing was being labeled either in Roman numerals or in numbers.

SCHIRRA: Yeah.

NEAL: Which was right? The Roman numerals or the—

SCHIRRA: We used both. I think my patch has a "6" like that from your viewpoint. But also the "VI."

NEAL: Nobody ever really quite figured that out.

SCHIRRA: No, no.

NEAL: Or straightened it out, let's put it that way. Also let's see. Houston took over Mission Control with Gemini. You were breaking in a whole new thing. Gemini IV was .actually the first flight out of Houston.

SCHIRRA: Actually Jim [James A.] McDivitt and Ed White were the last to use that Mission Control Center at the Cape. Oddly enough, by the way, to put this on camera: I just got some correspondence from a guy (Troy Lufkin, I think his name was, or Ledkin) who's trying to save Mission Control at the Cape, which is on Air Force land but a NASA building. And NASA has gone along with the idea of moving it over to Kennedy Space Center, which then takes an historical site, breaks it down, and moves it to someplace else. I think that's wrong; really wrong.

NEAL: You think it ought to stay where it is.

SCHIRRA: I can vividly recall pictures—I was just in there, oh, less than—during John Glenn's prep period, I went through that same Mission Control. Sat at the same console. I recall talking to Gordo from there. I can recall Al Shepard talking to John Glenn from there, with Chris [Christopher C.] Kraft in back of us. Chris Kraft wouldn't dare come on the line unless the Capcom gave him permission, if you remember that? [laughs] But that was the way it was. We were all buddies. Chris is a little younger than I. I didn't realize it. I always thought he was older than I. We're all the same age.

NEAL: He just acted older.

SCHIRRA: Well, he did. Very well.

NEAL: He was the boss.

SCHIRRA: Yeah. He was the boss of the flight directors, I know that.

NEAL: That's it. [laughs] Do you have any memories of other Gemini flights? Let's say, for instance, Gemini VIII. You were—

SCHIRRA: Oh, Gemini VIII? My gosh. Frank Borman, Susan his wife, Jo my wife, and I had to do a Southeast Asia tour for then President Johnson on an airplane described as Air Force One. We went to Japan. We went to Korea. We went to Taiwan, the China with Chang-kai sek, met all these leaders of the countries. Met [President Ferdinand] Marcos in the Philippines. Went into Australia, of course. Had a birthday party. Frank Borman's birthday is 2 days after mine; mine is March 12th; Frank's is March 14th. The Prime Minister

of Australia had a party for us on March the 13th, when we were there. That's how I remember that so well. He was the one that was lost at sea some time later. We came back to Hawaii with all our little goodies, got through Customs, which was a nightmare in those days. (It still is, in fact!) [laughs] The next thing I know, I'm on the beach and I get a phone call. Come to the phone. I get the phone. An admiral calls and said, "[Neil A.] Armstrong and Dave [David R.] Scott have landed in the Pacific. They want you to take the airplane back and pick them up." "Oh, wait!" So I told Frank, "You've got the gals. You've got all the loot. Take it all back to the mainland. I've got the airplane. We'll go out to Okinawa and pick up Neil Armstrong and Dave Scott," who had trouble, of course, with the stuck thruster in their Gemini spacecraft which caused them to spin rather violently. And they lost their attitude control fuel to a level where they had to reenter immediately; and they reentered near Okinawa. Interesting story about Okinawa, by the way. It's one of my favorite Gemini stories. I'm with a fellow by the name of John Fasalino, about 6 ft 5 in. He's assistant head of protocol in Washington. Very robust-looking Italian guy. I said, "John, I'm in civvies. I don't want to get involved now. I've got to get these guys off that little destroyer and put them into security and take them back to Hawaii so we can debrief them. I don't want any interruptions." "I've got that." So we're standing there and all of a sudden cars start driving up with three stars, four stars; generals, admirals; we have a platoon of generals and admirals. A big band starts coming in, and they're all lining up with their tubas and all that brass stuff and all the whole thing. And I think, "My God! this is going to be a big event." It got bigger and bigger. So I'm retreating away from this whole group, farther and farther. "John, you've got to get them off that boat and get them out of here in a hurry!" We had a helicopter standing by. This destroyer comes in, having picked up Neil and Dave and their Gemini

spacecraft. It was so light in the water, because he was racing back to Buckner Bay, Okinawa, that as he came into the dock he blew it and went right on by. The band's "oom pah pah, oom pah pah," and the platoon of admirals and generals is saluting like mad. Straight on by! You can see him up on the bridge, "All ahead boiler! Astern! Astern!" [laughs] Starts hitting the power. Backs up. Roars back by the band "oom pah pah, oom pah pah, oom pah pah," right on by the dock again. Makes a third pass. This one, an admiral says, "If he doesn't get a line on it this time, I'll sink the son of a bitch!" [laughs] That was the recovery of Gemini VIII.

NEAL: You know, that brings to mind: What was your last assignment as an astronaut? What did you do to round out that career with NASA?

SCHIRRA: I was on the accident board for Neil Armstrong's simulator—the flying simulator [Lunar Landing Training Vehicle]—for the lunar module, and trying to determine what had happened. It was very obvious that the machine itself had failed.

NEAL: Okay. Wally, what would you think, looking back over it, you flew Mercury, Gemini, Apollo, what would you think was your biggest contribution to the space program?

SCHIRRA: I used the word earlier: commitment. I made a commitment to doing the things I could do within the timeframe I was willing to do it, which was almost 10 years to the day—April to July really. I had 10 years of doing what I thought was appropriate to get man into space, to make man perform in space, and make the prelude to going to the Moon and back. All those things were done. I thought I had a good time.

NEAL: Well, there were some things in there that I'm sure you look back on and say, "That was a key to the space program. I really did something there," as compared to just doing the job that you had to do.

SCHIRRA: I would say I enjoyed Gemini. Fully. I *did* Apollo. I was amazed, frankly, when John Glenn, who had only 5 hours in space, was anxious to go up there for—what was it?—8.3 days or 9.3 days. I was *bored to tears* up there for 11 days. I mean, bored! Fighter pilots like to fly for an hour, an hour-and-a-half, come back, and do something else. Maybe two flights a day, three flights, then you go to the bar. Unless you're going to fly it the next day, then you don't go to the bar. And to sit up there for 11 days, oh, that was so bad! Do you remember those little bands you'd wear around your wristwatch for the calendar? I have that band in a plastic block with 8 of the 11 days scratched off, like a prisoner. That plastic block and the band are in the Smithsonian, in the Air & Space Museum.

NEAL: Are you saying you really wouldn't like to fly on the Space Shuttle with the 9-, 10-day missions that they fly?

SCHIRRA: I would not at all be interested. I'd love to land the Shuttle. Everything else: Been there, done that, even have a shirt! [laughs]

NEAL: Well the Shuttle, of course, was the next generation.

SCHIRRA: Sure. Let me make a point of that, though. There *are* people who enjoy being up there for a long period of time. I've talked with—oh, I'm just trying to think of the fellow—there are people who enjoy being up there. Norm [Norman E.] Thagard had, I think, four

flights. He had 111 days in *Mir*. One hundred and eleven! I'm bitching about 11! That's 100 days more! And he came back as a scientist, an engineer and a scientist, *enjoying* that. I wouldn't even get in that dumb *Mir*. I saw it in 1991. I said, "What a bucket of bolts this thing is!" I wouldn't have flown that. I saw it in '91. I wouldn't have flown that in '61, let alone '62. Yet there are people, scientists and educated people, who feel that they can do something constructive. That's their goal. That's not my goal.

NEAL: I guess that's the difference between the people who will fly in the International Space Station, too, isn't it? They're not really going up there to be pilots. They're going up there to be scientists, engineers, …

SCHIRRA: To do work. Sure. I think it would be a crime to have a pilot go up there and sit around for months at a time. In fact, you haven't seen many do that, if you look at it. And most of those who have been up there for a long time left NASA in a hurry, I've noticed that, too. But the concept of the Space Station is important if we're going to go all the way to Mars and back. We're talking at least 2 years and maybe 3 for the total mission. So you've got to select people who are willing to stay in that dumb environment for that long. You can't eat out. [chuckles] And the entertainment is pretty limited. So I would say you'd have to be a totally different kind of person than a hotshot fighter pilot. That's essentially what I thought I am.

NEAL: If you could start all over again, would you like to command a flight to Mars?

SCHIRRA: No way! No, no.

NEAL: Too long.

SCHIRRA: It's too long. By the way, even to command a Shuttle flight in my mind would be too long. To *command* it, I would want at least 2 years to be properly prepared to fly that mission and command the mission.

NEAL: Now that's a whole different ballgame, flying that spacecraft, isn't it?

SCHIRRA: It is. I flew the simulator in Houston one time and crashed on the landings, and, "Oh ho ho, I'd better practice this!" And of course, this was the first time. I had no cues or anything like this. I said, "This is bad." The young astronaut who was checking me out laughs then, "I could have helped a little bit there, Wally." I said, "I know, I know, I know." You know, but when you can walk away from a landing you call it a good landing. I'm not sure I could have walked away from that one. [laughs]

NEAL: It's an interesting point of view.

SCHIRRA: But it taught me a lesson, though. You've got to spend a lot of time, as I did in the simulators, to fly a vehicle safely under any possible circumstance that might come up. We trained out fear. We did not want any surprises at all. I almost had a semantic lecture I start out with. We can't afford the luxury of fear. Because if you have fear, you're out of control. If you're out of control, you're going to die. So you have to avoid surprises, because surprises conjure up fear. Or they make you afraid, we'll say. If you go beyond all that, all I can afford is a little bit of apprehension. Not a whole bunch of apprehension either.

NEAL: Interesting progression from a pilot's point of view. I'm looking now at Mercury, Gemini, Apollo, and on into Space Shuttle. From a pilot's point of view, how would you size up, step-by-step, that progression?

SCHIRRA: Everything was the same, other than practicing that landing. And they practice that with, I think, it was a G-2. If they still use that Gulfstream-2 with gear flaps and speed brakes and all those thruster reverses to get that unbelievable glide slope. That sort of power-off landing.

NEAL: That's the Shuttle, of course.

SCHIRRA: The Shuttle.

NEAL: Yeah. I'm looking now at the progression from Mercury to Gemini to Apollo in terms of the pilot—

SCHIRRA: Oh, oh.

NEAL: —what he had to do to fly the missions—

SCHIRRA: I'm sorry.

NEAL: —and then moving on to the Shuttle.

SCHIRRA: Well, Mercury, the flight path was predestined. You were aboard a ballistic flight around the world. So if you just went fast enough, you just kept going around the world until you slowed down and you came down. If you fired the retro-rockets at exactly the right time in the right attitude, you'd come, as I did and as Gordo did, within 4 miles of the ship. I'm

still convinced the ship was 4 miles out of position, but—[laughs] So your piloting task was merely maneuvering—not maneuvering, *changing* the attitude of the spacecraft. That was all you could do. You couldn't maneuver the spacecraft. In an airplane, if you pull back on the stick, the airplane goes up. If you pull back on the stick in Mercury, all you do is pitch up. You don't go up or down. There's no aerodynamic flow. So you're just changing your view. In Gemini, you change all of these things. So Gemini was a real controlled task. The only task that you might describe in Mercury was getting your proper retro attitude, so you were in the proper attitude to fire the retro-rockets. That's about the only attitude you really had to have. And the chimp had that by having automatic control! In Gemini, you could change your flight path by rotating. The center of lift was off from the center of mass, center of gravity, so if you rolled it you could go left or right, ultimately changing your flight path downrange. So if you'd go left, right, left, right, left, right, you'd land shorter. If you did nothing, you'd land longer. We called that a footprint, like the sole of your foot, and you could fly either side of the footprint or the length of it. Those were pretty good distances; like miles. And that meant you were actually controlling it through the atmosphere on reentry. Why was that important? If you come back from the Moon in Apollo and can't control your attitude through the atmosphere, you'd either bounce off the atmosphere and go into solar orbit, which makes it a very long mission, or you'd punch in too deeply and you're going to cook or kill yourself in high acceleration. So it's very precise flight control. Now to make that even more accurate, we then went into celestial navigation, inertial guidance, for Apollo, which now threw in a very big computer (very crude, but it worked) where we looked at those stars, identifying each star, and realigned the inertial guidance system. We essentially moved our state vector, which is an arrow in space, either decreased its length or

we'd move it around. That's where we're going to go with time. And that was all inertial guidance. So you're not looking out the window anymore looking at Earth for retro attitude. You're flying it with your guidance system, and it's now a computer telling you what to do. So Apollo went from just real fun to fly in Gemini to almost an automatic mission, back towards Mercury again.

NEAL: And from there, then they transitioned into Space Shuttle. And since you did some simulation, how would you rate the difference in flying Shuttles as compared to the earlier spacecraft?

SCHIRRA: Shuttle for one I don't like because there's no escape system. They talk about this dinky kind of escape system; you slide down a rod and come down and put on your parachute. And they showed the crew, at least John Glenn recently, dunking in the water. Now that would be very nice if you could get that close to the water and still be alive. But there is only a short period of time you can use that escape system. And Chris Kraft corrected me during the ABC broadcast on John's flight and said, "Well, the solid rockets are your escape system." I said, "Yeah, but you can't turn them off. So you're stuck with these solid rockets." The solid rockets we had in Mercury and in Apollo would pull you away from the booster if it was going to blow, and then you'd come down in your parachute system. Shuttle, you've got to land it or you're going to climb out. The time frame where you can climb is very limited. So that's one. But now the Shuttle can do something the others could never do, that's land on a runway. Now people always ask me, "What was the most beautiful view from Mercury, Gemini, or Apollo?" "The parachute." If it didn't come out, it was a

lousy ride. [chuckles] But with Shuttle, you can land almost anywhere if there's a good runway and you have time to get to it.

NEAL: In retrospect, what would you say was the most difficult thing that you had to do in connection with the American space program? [voice off camera] Okay, we're getting very near the end now. We're down to the last couple of questions.

SCHIRRA: That's good.

NEAL: Got to get you home in time for dinner.

Break

NEAL: All right. I just said, what was the most difficult aspect of your involvement in the space program?

SCHIRRA: The most difficult part? Probably the funerals. When I think about it, we lost some—obviously, we lost three from Apollo 1. I thought, by the way, the television series *From the Earth to the Moon* was very well done. And they showed me there, or Mark Harmon who portrayed me, in my Navy Captain uniform with Betty Grissom, the widow; and it hit me hard, just seeing that all over again. We very rarely wore our uniforms, other than to visit the Chief of Naval Operations or a funeral. Eisenhower was the President—everybody gives Kennedy the nod, but Eisenhower was what started the manned space program—[who] said this would be an open program to the world. And so we never had the security of hiding behind our uniforms, looking anonymous with a uniform. We were *thrown* to the Press corps, literally, so that might be the second most difficult part was the number of public

appearances that we had to go through. We had our routine; we called it "week in the barrel." We had to go around the country visiting various congressmen, or having Press media. Now I get paid for doing that. [chuckles] But in those days, that was pretty difficult for a guy from a small town of 2200.

NEAL: NASA still makes its astronauts available to the media, and I think rightly so. Somebody's got to explain all the intricacies of the business.

SCHIRRA: In contrast, I wish NASA would pay more attention to the astronauts and get them closer to the media. When I was asked by media people—and I'm looking at Mark as well—to talk to this newspaper or this magazine or this television crew about John Glenn's flight, I said, "I'll talk to you, if you give me the name of the crew commander of STS-95." "We'll call you back." "Don't bother." John Glenn liked that. It was Curt [Curtis L.] Brown [Jr.], of course.

NEAL: Of course.

SCHIRRA: But I heard the name of the next mission—I've forgotten. I don't know. It's sad. But I don't know the name of the crew that ran the mission before either. We've got to publicize these crews, because they're the ones that got the Press corps excited. Getting name identity out.

NEAL: Some time you and I will have a debate about that. [laughs]

SCHIRRA: Every Shuttle mission has been dull. I have yet to find something that makes it exciting. The reports that come out of it, have you heard anything about STS-95? I have not

heard a thing. It's almost a month now. We're not feeding information out. I have mixed emotions about the Space Station, whether I really believe in it or not. But if we have man's quest to go from Earth to someplace else other than the Moon, which would be Mars, we've got to qualify people and equipment in Earth orbit for a protracted period of 3 years, which is involved with that lunar or that Mars mission. We might just as well send unmanned missions. Now if there's a justified future for astronauts, that's not a good way to do it. So somehow we've got to start telling the story about the human involvement. That's what made it exciting about going to the Moon. Does anybody talk about Apollo 10 or 12? It's Apollo 11. Now why is that? We had a *heck* of a good series of flights! I can recall when I was broadcasting with Walter Cronkite, how to get to the Cape for Apollo 11 we went out by helicopter. I think we went out on roller skates for Apollo 12. The first time I saw a large number of people at the Cape since Apollo 11 was STS-95 with John Glenn. Now that means that the human being has some factor in this thing to get the excitement up. Now whether that's going to go on for a while or not, I don't know. We'll know eventually whether that made a big impact or not.

NEAL: Don't you think, Wally, when you fly more than 100 manned missions of different types that the public at large keeps looking for something different, and there isn't something different to really offer them? Because basically these flights are bread-and-butter flights. Now especially the next 45, while you're putting together a Space Station, which is like watching grass grow.

SCHIRRA: Well, they're going to have some fun on these spacewalks on building a Space Station. I can recall so vividly, I even talked to Alexei Leonov; he said he almost died first

spacewalk. Soviet cosmonaut. Almost couldn't get back in again. Gene [Eugene A.] Cernan almost couldn't get back in again, almost died up there. The only guy that really did a first good spacewalk in Gemini was Buzz [Edwin E.] Aldrin [Jr.], because he took advantage of all the other flights and worked in the underwater tank, perfected his maneuvers, and we thought he had a good spacewalk. The only guy that did very well with a spacewalk was Shepard, although he took a Mulligan on the Moon. [laughs]

NEAL: He shanked it. [laughs]

SCHIRRA: But the whole point is, this is a very difficult task. This is back to that same suit I was involved in. And the worst sound you could ever hear is "Sssss." That could ruin your whole day. Now these guys and gals, I guess they'll be working on some pretty complicated equipment, and it's very possible they could puncture their suit. And that would probably bring a lot of media attention, I'll say that. But they're going to be working awfully hard to put all of these various pieces together, making all of these complexes. We're building something locally in San Diego called Lego™ Land; this is Lego™ mile! It's going to be a big one.

NEAL: As a matter of fact, as you look at the construction phases, it will be surprising indeed if there aren't some moments of high drama in putting together that Space Station. With 45 missions at least.

SCHIRRA: It's awfully hard to comprehend. Initially when we first started talking seriously about Shuttle, each Shuttle was supposed to have 100 flights. We have not had 100 flights total at this point in time. We're approaching it; 95. But that was a higher number. I think

there's a 93 coming. But we're getting close to 100 flights, which is the equivalent of one Shuttle. So we've got a lot more flights to go, allegedly, although I'm not sure the Shuttle will last that long.

NEAL: Well, the Shuttle will be a tug of sorts.

SCHIRRA: It was supposed to have been.

NEAL: There will be replacements, will there not?

SCHIRRA: For Shuttle?

NEAL: Yeah.

SCHIRRA: On the drawing-board there are some concepts for replacements for Shuttle. I think they call it the X-33 or something like that.

NEAL: 38.

SCHIRRA: Is it the 38?

NEAL: It's the 38.

SCHIRRA: 38? 33?

Voice off camera: 38 is the crewed one.

NEAL: That's right.

SCHIRRA: Oh, 38 is the flying one. Oddly enough, now do you really want me to get me excited about flying that?

NEAL: Yeah!

SCHIRRA: You are a passenger like Glenn was on that Shuttle flight. There are no flight controls for the crew to fly the 38. It's a back-to-chimp mode again, which really impressed the hell out of it. But why? You don't need a pilot to do all those hotshot flyboy things. You're going to have technicians, scientists, medical people. This is what the Space Station is all about.

NEAL: A transfer vehicle.

SCHIRRA: It's a transfer vehicle, which is what Soyuz has always been. Soyuz is not flown by the cosmonauts. So maybe they were smarter than we were. But we had to do those tasks because we didn't have automated systems that could land on the Moon and get back again at that time. Now we have.

NEAL: Do you think we should go back to the Moon?

SCHIRRA: I was told that half of the lunar samples that were brought back from the Moon are in storage in the Lunar Receiving Laboratory, waiting for newer equipment to look at it. I also reminisce about that great man [Wernher] von Braun, who was a dear friend of ours. He entertained the seven of us at his home shortly after we were selected. Showed us engineering drawings of how to go into space that were used in their preliminary studies back in the time frame of World War Two. That's how far ahead he was. Now Wernher wasn't

too good on spacecraft, but he was sure good on boosters. But he did say something about the Moon I thought was really prophetic. "Whatever you bring back from the Moon, whatever piece of material you bring back, if you compare it to investment-grade diamonds, which is worth $40,000 a carat, it's not worth it. But the knowledge is." That's a very good statement.

NEAL: Well, Wally, we've pretty well covered all the bases I had in mind. Is there anything else that you'd like to tuck into this interview? Because right now's a grand chance to put one down for posterity.

SCHIRRA: Talking about Wernher von Braun, you've really got to have this one on film. Whenever we went to an event where maybe 10 to 100 people were and Wernher von Braun was there, Wernher would say, "Wally, tell that cosmonaut story." "*Ja*, Wernher, I tell the story."

NEAL: [aircraft passing] Well, you'll tell the story after the jet goes by.

SCHIRRA: Wernher would say, "Wally, tell the astronaut/cosmonaut story." "*Ja*, Wernher, I tell that story." You have to imagine now, no one had landed on the Moon. So two vehicles land on the Moon simultaneously. One has CCCP on it; the other one has USA. They touch down on the Moon. A hatch opens. A hatch opens. Cosmonaut comes out. Astronaut comes out and they walk over, touch their helmets together. "Hello, Hans." "Hello, Fritz." "Now we speak German." [laughs]

NEAL: I think that's a good note on which to wrap it up. [laughs]

SCHIRRA: Isn't that a cute story though? Wernher made me tell it every damn time I was out with him.

NEAL: You do it very well!

[End of Tape]