

# NASA HEADQUARTERS NACA ORAL HISTORY PROJECT

## EDITED ORAL HISTORY TRANSCRIPT

CHARLES N. BAKER  
INTERVIEWED BY SANDRA JOHNSON  
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JOHNSON: Today is February 19, 2015. This oral history session is being conducted with Charles Baker at his home in Tehachapi, California, as part of the NACA [National Advisory Committee for Aeronautics] Oral History Project sponsored by the NASA Headquarters History office. Interviewer is Sandra Johnson, assisted by Rebecca Wright. I want to thank you again for joining us today and agreeing to talk to us, and allowing us to come to your beautiful home. We really appreciate it.

I want to start by asking you to talk a little bit about your background, and what brought you to the NACA in 1956 when you first started.

BAKER: I spent a year in college, and then Korea [Korean War] broke out. I enlisted in the Navy, and after four years in the Navy, worked as an aircraft mechanic. I came out, I was an accounting major when I went to college the first time. When I came back, I went back to New Mexico, where my folks had moved to, and I was working in the oil fields and a potash mine, waiting to go back to college as an accountant. I watched all the contrails going across the sky, and I said, "Uh-uh, this ain't for me."

I came back to California, went up to Reedley College, got an A&P [airframe and power plant mechanics] license and a pilot's license. Just before I was going to go up to San Jose, I got a summer job down at NACA [High-Speed Flight Station]. Through that summer job, they came

and asked me if I would stay. I said, “Yes, I like just what I’m doing here. I don’t need to go any more to college.” I accepted the job, went to work.

JOHNSON: Were you interested in aeronautics before you went in the Navy and became a mechanic?

BAKER: Oh, yes. I’d make the model airplanes, and all that good stuff.

JOHNSON: When you started that first summer job, you thought at first it was just going to be temporary?

BAKER: Yes.

JOHNSON: What type of things were you working on on that summer job?

BAKER: I was working on a [McDonnell F-]101. It was a [NACA] Langley Research [Center, Hampton, Virginia] program. I was working as a crew member on a 101.

JOHNSON: What did that entail, being a crew member on a 101?

BAKER: Changing engines, and fueling it, and getting it ready for flight, pre-flight, and fixing everything that broke, rigged her complete. Aircraft mechanic.

JOHNSON: Did you have to provide your own hand tools?

BAKER: Yes. Yes.

JOHNSON: What did you do to get those tools?

BAKER: Well, when I left the Navy, I had a full tool box.

JOHNSON: You just brought that with you when you came.

BAKER: Yes. You worked on cars with the same tools.

JOHNSON: Then, to learn to do what you did on that 101, was that just by watching the older guys and them telling you what to do?

BAKER: Yes, books, TOs [technical orders] that you read. But I had four years of experience in the Navy, working on airplanes. It was no big deal, other than just learning the procedures and the processes that they were using at the time that you did, it was just normal. When you're getting paid as a mechanic, you know what to do. Then there was three other guys on the crew that if you had a question, you asked them; they had more experience. You had a crew chief.

JOHNSON: Those procedures and those processes, were they documented already? Or, was it just you learned those things?

BAKER: Yes. Not to the extent they're documented today. You had to sign off, you had a worksheet, a work book, you wrote down if there was any broken items or squawks against the airplane, it was written down. You wrote in your repair, got an inspector to buy it off, and move on. A pre-flight was always printed out, you just initialed the portion you did. It's still the same today, basically.

JOHNSON: Where did you live when you first started working out here?

BAKER: On [North] Base. I came down for the summer, and they gave us a room out on [North] Base for 10 bucks a week. It had a little walk-in closet, and everybody had their [food] box, their chow they'd fix. Neil [A. Armstrong] was down there. All the new hires, the single people, we stayed down there. When I came down permanent, I rented an apartment in Rosamond [California].

I take that back. That was the North Base. The South Base is where the B-2 is now. That's the South—my mistake. It was the North Base.

JOHNSON: They provided that housing for you, the single people to have.

BAKER: Yes. It was old barracks that was left there from the Air Force, when they moved the new base.

JOHNSON: How much did you know about the NACA, coming from a Navy background, were you aware what the NACA was doing with research on airplanes before you came here?

BAKER: [I was stationed at Naval Air Station Moffett Field (California) in the Navy.] I learned about NACA through Reedley College. We came down for a field trip, and that's when I asked if they ever hired anybody for the summer. They said no, but we're going to start this year. They handed me an app [application]. Made out an app, sent it in, just like you were a regular civil servant. In them days, you didn't have to take a written civil service test. They would give you a rating on your experience and your schooling. I hired in as a WB-8. Most everybody else was hiring in at WB-2s, or so.

JOHNSON: Because you had the experience.

BAKER: From out of college, yes.

JOHNSON: You had that experience behind you.

BAKER: Yes. Well, four years and then A&P and everything, gave me the experience. Yes, we came down and took an airplane apart and took it back up to Reedley and made a test bed out of it, that NACA had given us. I got to know some of the mechanics there. There was only 26 mechanics in the hanger when I hired in. We still had B-29s, all the X-models were there. [Bell] X-1, clear through them all. Then the X-2 was on the South Base. We hadn't gotten it yet. Two

[Boeing] B-29s [Superfortress], a [Boeing] B-47 [Stratojet]. The hanger—you've been out there. You know, the big hanger on the main building? The biggest hanger?

JOHNSON: Yes.

BAKER: We had all our airplanes in there. It was jammed.

JOHNSON: I bet that was a sight, seeing that for the first time.

BAKER: Yes. The thing is, you worked on all of them. If someone needed a hand, that's why family is family out there. If someone needed help, they said, "Hey." Okay, you go over and give them a hand?

JOHNSON: Everybody kind of helped each other out. Even though you were working on one particular airplane, or what's what you were assigned to you were able to work on some of the others, too?

BAKER: Oh, yes. Yes. You might be working on an airplane, and then they might need someone to ride in the back seat and be an observer. In the [B-]29, we were launching X-1s and Phase IIs [Douglas D-558-2 Skyrocket].

JOHNSON: Did you ever ride?

BAKER: I got a couple of rides, yes.

JOHNSON: What was that experience like?

BAKER: Fun.

JOHNSON: I bet it was. It's something that not many people can say they got to do.

Then, they offered you that permanent position. What was your main project after the 101?

BAKER: I went over to the assistant crew chief on a [Lockheed F-] 104 [Starfighter] with old Dick [Richard E.] Payne. Old Clyde Bailey, did you ever interview Clyde Bailey?

JOHNSON: No.

BAKER: Ed [Edward C.] Coyle, who was crewing the 101 wanted me to move with him over to the [North American F-]100 [Super Sabre], on another project. Then Clyde called me in, and he says, "I think it would be a whole lot better if you went over and worked for Payne on a 104, brand new airplane. Good program." He says, "He'll teach you more."

I said, "Clyde, I'm here, whatever you want me to do, I'll go do." I went over, and Payne gave me the opportunity to learn a lot about a lot of processes; how to order parts the NASA way, which NASA uses the Air Force way, not the Navy Way.

JOHNSON: So it was different from what you were used to.

BAKER: Oh, yes. TOs are different, part number, everything. From there, [I was crew chief] on another one, a 104, we did high altitude parachute testing for the Mercury capsule. We took and made a bomb, put the drogue chute in it and Neil would take and fly it. We'd take off and land over Santa Barbara [California], come back, zoom up to 70,000 feet, kicked out, put the rack down, kicked the bomb out at Mach 1. They had no high altitude deploying of a chute. They're getting ready to drop the Mercury. It was a crash program. We did 17 drops, and developed the drogue chute, which was a little six-foot ribbon chute that they finally used on the Mercury. Same one we were testing. That stabilized the Mercury capsule when it was coming in, and then it pulled the other chutes out. We used the same method, or the same procedures that they were going to use, but we did that ourselves. We made the instrument package and built the bombs and everything, in about nine months.

JOHNSON: Then did it land out on the dry lake? Is that where it went?

BAKER: We bogged it in out on the bombing range. It was a 2200 pound [unarmed] bomb. Same weight as the Mercury capsule. It had a huge drogue chute and stuff in it.

Then from there, we were getting ready to get the [North American] X-15, and they asked me to go over and take care of all APUs [auxiliary power units], so I did that. I went over and I developed and learned how to take care of all the APUs, and made a test stand, and a building, and all this good stuff. Pretty soon, my mentor was a guy named Jim [James E.] Love.



He came down and said, "Don't tell anybody, you're wasting your time here. You want to crew an X-15?"

"Yes, I want to go on 15 then, yes."

Pretty soon Clyde come over, and he says, "I'm going to put you over with [Thomas J.] Raczkowski on Ship 2. You're going to be his assistant for a while."

I said, "Okay." I went over and went to North American, we were going to school, learning the airplane, all the systems and everything in it. When we brought the airplane over to [NASA] Dryden [Flight Research Center, formerly NACA High-Speed Flight Station], I became the crew chief. Raz became night shift supervisor, and I became the crew chief on the airplane for nine years.

JOHNSON: You were assistant crew chief before that, and then you moved into crew chief. You mentioned you learned how to do the buying and doing the purchasing, and then they sent you to school to learn that X-15 system. What were your duties as a crew chief for the X-15?

BAKER: You're responsible for the whole airplane, and everything that's done to it.

JOHNSON: From the moment you take possession of it, on.

BAKER: If something happened, it was your fault. You had an ops [operations] engineer, and between the two of you, when it broke, or anything went wrong, the two of you worked it, but the responsibility was the crew chief. When something went wrong, the crew chief, it was your fault. We had a lot of power. In those days, crew chief had a lot of power.

JOHNSON: You directed all the activity that went around it?

BAKER: The instrumentation and you scheduled it and all these work orders come down, you coordinated all the work and the crews, and each airplane had a little different program, so each crew chief would handle that.

JOHNSON: Were there three X-15s here? Did you handle just one? Or did you handle all of them?

BAKER: When it started out, there were six crew chiefs, two on an airplane, because we worked two shifts. You just rotated every 90 days, days and nights. Then it walked down to where they started cutting back, so then there was four crew chiefs left. I was supposed to take care of the one and go to night shift, and I didn't want to. Mr. [Joseph R.] Vensel said I didn't have to. Then we just rotated airplanes. I was [Ship] 2 up until that period. When it crashed at Mud Lake [Nevada], I went down to LAX [Los Angeles International Airport], at North America, we put it all back together and put the tanks on it. Then, when we came back, after, that's when we shut her down a little bit. So, [Lorenzo "Larry"] Barnett sort of took Ship 2, I took Ship 3. We completely rewired Ship 3 and did everything, and I was crewing Ship 3 when Mike [Michael J. Adams] bought the farm and it crashed.

JOHNSON: Was there a lot of difference between the different X-15s?

BAKER: The programs, yes. Ship 2 had big drop tanks on it; Ship 1 had the small engines, and then it went to a big engine. Ship 2 had the big engine to start with, and then Ship 3 had a different guidance system in it. It had what you called Energy Management System. The panel was a little different, your cockpit panel. But, as far as the systems, they were the same.

JOHNSON: How long did it take when you went down to North American to learn the systems? How long were you there doing that?

BAKER: You mean the first time?

JOHNSON: Yes, the first time.

BAKER: We were over there maybe four, five months. Just before we got the airplane. Some of the guys had been over there for a year or so.

JOHNSON: So, it was quite a process, learning that plane, because it was so different, I imagine. You mentioned that the one that crashed at Mud Lake, and then you went and helped. Can you talk about that accident and what happened, and what you did after that?

BAKER: On Ship 2 when [John B “Jack”] McKay took it in?

JOHNSON: Yes.

BAKER: They had an engine failure, didn't start, so they made an emergency landing at Mud Lake, and the gear folded. It had too much weight in the back. It didn't jettison all the peroxide out of the rear tank. The engine peroxide that ran the pump that pumped everything in. When that did, it slid over, the wing dug in, it flipped over, and Jack got rid of the canopy, but thank God he did. It landed upside down. Once they pulled him out, we had to go up and get some cranes and turn it over and put it on a truck and bring it back. Then they finally found funding and that's when they stretched it out 39 inches; they made the airplane longer. They put the drop tanks on it. That's the one that Pete [William J. Knight] made the speed run in, tried to burn it up. But Barnett was on it, then.

JOHNSON: Were you on the X-15 the whole time it was here?

BAKER: Yes.

JOHNSON: Did you do anything else while you were doing the X-15? Or that was it, you just crewed that?

BAKER: Yes, other than when you're on night shift, we worked on 104s, or anything else that might need it. If your airplane wasn't ready to fly, you were just sort of babysitting and doing small mods [modifications]. When you had the time, you went and helped. Some of those crew chiefs down there they had on those 104s didn't even know how to change an engine, so you had to go down there and give them a hand. Well, they were learning.

JOHNSON: Did you ever work on the LLRV [Lunar Landing Research Vehicle]?

BAKER: I know what it is, yes.

JOHNSON: But you didn't actually do any of the maintenance.

BAKER: No. No, when they first had it, when the Iron Bird [X-15 simulator] was there—see, I left NASA for 10 years.

JOHNSON: When was that?

BAKER: I left in '69. I was crewing the [General Dynamics F-]111 [Aardvark]. I thought the world was passing me by, I wasn't being advanced fast enough, so I quit. Mr. [Paul F.] Bikle said, "If you ever want to come back, Charlie, you can come back."

I said, "Well, thank you," but I went up to Reedley where I had gone to school, and I bought a service station, and a tow business. I ran that, and then I got a call from Mr. Barnett.

He said, "Hey, I really need you to come back and do something for me." He said, "Would you come back?"

I said, "I don't know."

He said, "I can't pay you what you're making, tell me your bottom line, and we'll see what we can do." So, I did. The next thing, I came back and took over the [Space] Shuttle area.

JOHNSON: They asked you to come back and do that because of your experience with the X-15?

BAKER: Well, my experience with NASA. Knowing the ropes. Knowing how to get around. My first six weeks I was down in the Shuttle area, my job was to tell them what was wrong.

JOHNSON: What was wrong with the processes that they were using?

BAKER: [NASA] Johnson [Space Center, Houston, Texas], Kennedy [Space Center, Florida], Dryden [now Armstrong Flight Research Center, California]. The politics involved, and everybody's wanting a piece of the action. The good old thing that NASA does, turf. There was a big turf battle going on. I had to go back and tell them that poor Dryden didn't have enough clout to do what they wanted to do.

Dryden wanted to take over and process the Orbiter, because we had the [modified Boeing] 747 [Shuttle Carrier Aircraft] here. They wanted to take over processing the Orbiter and then send it back to Kennedy, save a lot of money. Well, Kennedy didn't think we knew what in the hell we were doing. That was a spaceship. Well, hell, when the gear comes down, it was an airplane. They'd stick it on a lake.

“Oh, how are you going to do—what are you going to do?”

You tell them, “No, don't do that. Don't do that,” and they'd do it, now what are you going to do? Well, then you had to go unstick it.

“How are we going to change a tire out there? It has a flat tire. What are we going to do?”

“Well, get some plywood, pull it up, pull the wheel off, put a new one on.”

“Oh, no, you can’t do that.” Almost got fired a half a dozen times for saving them. But, that’s internal turf battles. Milt’s [Milton O. Thompson] the one that really wanted to do that, so I had to tell Milt that, “Uh-uh, we don’t have the clout. We’d be eaten alive.” They wouldn’t train us. It would take too long to train us, and then if we made a mistake, they’d come back and you know. See, Bikle was gone, then. Walt [Walter C.] Williams was there when I first went.

JOHNSON: He was a different personality, too from what we’ve heard.

BAKER: Yes.

JOHNSON: And knew how to get things done. There was that NACA mentality in the way things were done, and then when it got switched over to NASA, for a while, maybe it may have maintained that, but things started changing after a time.

BAKER: When it went from NACA to NASA, at Dryden it didn’t change. We still did the same old thing we’d always been doing, it was the same old way. Then you’d have processes and pillars, and all this stuff come down from [NASA] Headquarters [Washington, DC] that you had to bring into your processes. The process, for now, is just so cumbersome. You could not fly an X-15 today.

JOHNSON: Just because of the way they do things, or process things?

BAKER: Hell, they wouldn't let you be running the pumps, and stick your head in there and see if there was a fire or anything.

JOHNSON: It was a dangerous situation, being an aircraft mechanic, then working with those crews, the X-15, and I know mechanics were right there with toxic fumes, and different things happening.

BAKER: We were careful. We knew what we were doing. Today there's just too many people saying, "Well, gee whiz, what if, what if, what if?" Well, come on.

JOHNSON: You came back, when was that?

BAKER: I was gone through the '70s. I came back in '80.

JOHNSON: Were you there during some of the early ALT [Approach and Landing Test] flights at all?

BAKER: No, right after that. I was an inspector on the 747, plus taking care of some of the stuff in the Shuttle area, until I finally became Chief of the Shuttle Support Office.

JOHNSON: You were inspector for the 747. What did that entail?



BAKER: That airplane belonged to Johnson. That was a Johnson contract that worked on that airplane. Well, [Joseph S.] Algranti, the deal was, when they left it there, that Dryden would furnish an inspector to make sure Dryden was covered. I got that job.

JOHNSON: You inspected to make sure that everything was done right on it?

BAKER: Yes, I went down to Flying Tigers [Flying Tiger Line], and I went to 747 school. I could have crewed it, I had the same ability. But I don't think I would have. You had to learn the airplane to even inspect it. You didn't know what the hell you was looking at if you didn't know some of the systems.

JOHNSON: Talk about that first Shuttle flight.

BAKER: STS-1?

JOHNSON: Yes, I'm sure everyone watched that first launch. Talk about when it came back and what your duties were.

BAKER: Well, the night before was chaos with all the photographers that were there. I was up all night long, because they'd climb the fence, and keeping them out of the area, it got to be a nightmare calling security, "Get that guy out of here."

JOHNSON: Was that part of your responsibilities, too, making sure the area was clear?

BAKER: Yes. All the equipment, because Dryden was in charge of all rolling stock. We maintained all the rolling stock, stair trucks, the generators, almost all that convoy equipment that was going out, we maintained it all. That was our job. We had a contractor that did some, then NASA was a COTR [Contracting Officer's Technical Representative], oversaw it. That was part of my responsibility. But after we did that and they landed, and they towed it back, that's the first time I ever saw it. I got a sunburn on the roof of my mouth from gawking at it.

But when we were towing it back, they came across the lake bed, and we were going to pull it up—you've been out there, where the MDD [Shuttle Mate-Demate Device] was? Old Chuck [Charles A.] Brown, which he was a facility guy at the time, washed down the ramp, and water went out on the lake bed, made it a little soft. They were pulling it, and I could see the Shuttle sinking. I'm telling them, "Pull harder, get moving, get it going faster." Oh, no, no. They stopped. Down she went.

JOHNSON: On a STS-1?

BAKER: Yes. Right out in front. It's dark, and everything. They finally give up and said, "Oh, the tug's bad."

"No, the tug's not bad."

"Oh, it's all heating up."

I took the radiator cap, stuck my finger in, and said, "Not very damned hot to me." I'm arguing with Kennedy. They didn't know what to do. Finally, I turned around and says, "Do you think you know how?"

And I said, "Oh, yes." I called the warehouse and said, "Send me down a bunch of plywood. Thickest you got." Come down and put plywood under the wheels. First, I wanted to leave the air out of the tires. Oh, can't do that. That's old farmers that do that. We got the plywood down, got the T500 [truck] come down, hooked it on, we pulled it and got it up on the plywood, started moving, take that plywood and walked it up until we got to concrete. They didn't like that, either. But it got done.

JOHNSON: What would have been the alternative if you hadn't gotten it out of there?

BAKER: They would have probably gone down and dug it down and poured concrete.

JOHNSON: Built a ramp?

BAKER: Yes. You know how they would overdo things.

JOHNSON: Well, you mentioned the convoy and the ground support equipment. How many trucks were in that convoy?

BAKER: Oh, God, probably 14, 15, 20 or so. I think the first time we went down with everything there that was 25, 30 vehicles in line. They had the two big air conditioning units, that cool and the purge. Those were the ones with the tubes coming up, they did the same thing at Kennedy.

JOHNSON: That's a lot of people, then they were all working under you, the people that drove it?

BAKER: No, I supported that.

JOHNSON: The flights that came after that, of course [STS-] 2 landed, but STS-3 landed at White Sands [New Mexico].

BAKER: We packed all the equipment to go to White Sands. We came in that day, they had the abort, and they made the decision, so we started tearing all the equipment apart, putting it together, went home, took a shower, came back, we loaded them up on the cars, drove to Las Cruces [New Mexico], went out to White Sands for a meeting. We beat the train there. Then we went and started unloading the train, and then I went to bed. Slept in the car on the way.

JOHNSON: How long were you out there?

BAKER: What was it? A month? Three weeks? That's when it got all sanded up. In fact, it was Lockheed then. They didn't show up in time, so here I am driving the purge unit and equipment back out to White Sands, and my guys. I had four guys from Smith, it was Smith Engineering [Company] at the time. It's Kay and Associates now, but that contract. They were there, we took care of all the generators and made sure they kept running through the whole time, and everything.

JOHNSON: You took all the equipment out there to take care of that.

BAKER: Yes, I worked pretty close with Kennedy. We were just outside looking in. But when they needed something, they knew where to come.

JOHNSON: So, coordinating, I imagine especially on that flight, the coordinating between Kennedy and Johnson and Dryden, and then you throw White Sands into it.

BAKER: Yes. I'll tell you the little story on White Sands. We were out there before it landed, so I met the press, some people from the press. I got my mother, who lived in Artesia [New Mexico], just over the mountain, a pass. So, she came over and she was sitting in the press trailer for the landing, so she could watch the landing. Well, I told her, I said, "Mom, you better bring some sandwiches and stuff," so she did, in a little suitcase. Well, she put the suitcase, instead of taking it into the trailer, she just set it there. Well, security got it. They cut it open, and they wanted to know who she was, and she wouldn't tell them. Because she thought she was going to get me in trouble. I said, "No, you're not going to get me in trouble."

When she got on the press bus going back, she says, "Anybody want some bomb cookies?"

I didn't know about this. When we finished that day, and we were coming in, there was a little beer joint there just outside the gate, where NASA is. We went in and I'm hearing them talking about it. Uh-oh. I said, "A little old woman, about that tall?"

"Yes."

"Dark hair?"

"Yes."

I said, "Goddammit, I think that's my mom." When I got back to the motel, boy, she was all nervous, and I calmed her down. She wouldn't go out the next day, because that was the day before the landing. That's a side story.

JOHNSON: That's a good story. That's pretty funny. So, she didn't see it land?

BAKER: No. She went back home.

JOHNSON: At the beginning, like you said, there were people everywhere, and people tried to get out there. Do you have any memories of any of the dignitaries that showed up, that wanted to come out and see the landing? I think President [Ronald] Reagan came.

BAKER: He was there. Yes, and Nancy [Reagan] went out and put her hand on the Orbiter. Yes, that was a fiasco. That was, what, July 4th, [1982, STS-4], but yes, Reagan came in. We took the [Space Shuttle] *Enterprise* [used for the ALT Program]. They wanted it parked up by where the little hanger is, on the big building, so we pulled it up there and set it around, and moved it here, and moved it there. We had already been there maybe 12, 14 hours. We'd put it in like that, and the press guy says, "No, we've got to have it the other way." I pulled it around, I backed it in, and I went over and disconnect the tow bar. He said, "Wait a minute, we might want to move it."

I said, "You moved it the last time we were going to move it." I said, "We're gone."

He said, "No, no." This is the press corps out of the White House.

I walked over, and John [A.] Manke was the Center Director, and as I walked by, he says, “God damn, that’s a good show, Charlie.” So I knew I wasn’t in trouble. Then they took blue carpet and put it on the wing, and stapled it on the wing. It’s a non-flying airplane, but nevertheless. Then where the OMS [Orbital Maneuvering System] pods went, they didn’t have any on it, so it was sort of flat. It was chromate, so they had us paint it with house paint so it was white.

JOHNSON: It was just a show.

BAKER: Yes, a big show. I had to go in and get something, because I had a little pickup, I ran around, and I was a chief gofer, and I’m running in there to get something out of the thing, the guy with the Uzi says, “You can’t go here.”

I said, “Then shoot me.” He looked at me. I said, “I’ve got a job to do, you got a job to do. I have to see that person right now, and I’m gone.” I walked right on by and did my job and left. I don’t know if he’d have shot me, or not, but I think I out-bluffed him.

JOHNSON: There was so much more interest once the Shuttle started than there was when you first started with some of those X-planes, and the X-15. Nobody really knew what was going on out here. Then Shuttle came and brought a lot of attention.

BAKER: [President Lyndon B.] Johnson came out on the X-15, and there were movie stars. We made the X-15 film, did you ever see that one?

JOHNSON: I don't think I've ever seen it.

BAKER: It had [Charles] Bronson, Chuck Bronson, and I forget some of the others. They made a film, and we filmed at night in our hanger.

JOHNSON: It was a regular Hollywood film?

BAKER: A regular Hollywood film, big time. Yes, it was great, because they brought their food, and we could go eat their food. We didn't have to bring our lunch bucket.

JOHNSON: Was the movie good?

BAKER: Yes, it was. It was pretty good, yes.

WRIGHT: Did you feel like it was realistic?

BAKER: Sort of, yes. They took a little mockup and put it on the [Boeing] B-52 [Stratofortress], and they would show some of that. It was just sort of a love story, or whatever it was.

JOHNSON: We'll have to look that up. Did you support their effort to do that and was that part of what you needed to do?



BAKER: Yes. Night shift did that. Then, when they made that lunar landing picture, for HBO [*From the Earth to the Moon*], we supported that, too. That was a lot later on. I was running a support contract out there. I retired in '94 and I started a flight station out here for [Aurora] Flight Sciences, flying robotic airplanes. The Perseus. We put an airplane to a hundred thousand feet with a gas engine. Robotic.

Then after a year, I found out that big green money they flash in front of your face was not worth it. I quit. Then the guy that was running the AGE [Aerospace Ground Equipment] support contract out there had a massive heart attack, and they asked me if I would come and take over that contract, so I did that. I was there for 11 years doing that.

JOHNSON: What was that, the support contract?

BAKER: We took care of all the AGE equipment, ground support equipment, all the vehicles.

WRIGHT: You were on the other side now.

BAKER: I was a contractor. I was triple-dipping. Well, I was still doing what I wanted to do. I've always been sort of a troubleshooter. When they'd come and say, "How can we do this?" or, "Can we do that?"

"Yes, we can do that."

"Well it's not really—they're not going to—"

I said, "No, it can get done. Just shut up and be quiet, and it'll get done." In fact, you heard about the [Convair] 990 [Coronado] program?

JOHNSON: Go ahead and talk about that.

BAKER: That's when we tested the Shuttle gear and tires. After [STS-]26. Dick [Richard D.] Tuntland from Johnson and I, when we were having brakes and tire problems so bad. I said, "Dick, why in the hell don't we put them on an airplane and fly them and test them out?"

He said, "Well, how in the hell would you do that?"

I says, "I think I'd just go find an airplane with the same oleo [strut] size, and I'd take the bottom of the Shuttle oleo out, and put it in there, make a new metering [valve], and go out and see what happens."

So, next morning, he says, "You know, that might be a crazy idea." He said, "Why don't you see if you can find an airplane, and I'll see if I can get some funding."

He went back to Johnson, and we got a hundred thousand bucks to do a feasibility, and we ended up doing it completely different. It ended up being a 10 million dollar contract. [Arnold D.] Aldrich is the one that finally bought it off, when he was the head of the Shuttle [Program].

We got the money, and we decided that, yes, we can do this, and we put a whole program together at Dryden. We went out and found a 990 that was a NASA airplane, and then we got the people that built the Convair 990, to come up on contract to do some engineering to see what we could do. So we ended up putting the Shuttle gear in the middle of the 990, and we put the main gear down permanently. Then you sort of landed it like a B-52. [C.] Gordon Fullerton was the pilot on that. We ended up getting a program, and we went down to Kennedy and proved to them that that slotted runway is what's tearing the tires up. So they went in and reground that all

down. The 990 proved that. Then we proved lots of tire metrics and all kinds of things, on that. That was from ground floor. My boss said, “No, stay away from that.”

“Larry, it needs to be done.” So I went and did it. Well, I did not give up, so Dick and I kept going. [Center Director Martin A.] Knutson finally bought in, and we went down. We had to go clear back and sell it, and Arnie really wanted to do it bad.

We gave them the price, and he says, “What can I do for you? What can you do for a million and a half?”

They put a project manager [in charge] named Bob Baron, and he says, “Nothing.”

And Arnie said, “So be it.”

Well, Johnson about died, because they knew he wanted to do this, and I’m sitting there, “Baron, shut up.” Because I’d given the technical brief on how we were going to do it, and anyway, that slows you down.

Gary Kerr, I don’t know if you knew him or not, he worked for Arnie. He came through and he says, “God, Arnie wants to do that. Change your charts and we’ll go back in.”

When Arnie came back out, he saw Marty, who was the Center Director at that time, and he says, “I really want to do that.” He said, “Why don’t you see what you can do?” He didn’t really want to do it really, but we went in to Arnie, and I gave him the charts, “Okay,” so we got a million and a half to start, and then the funding just drug. Me and Grace [J.] Germany just never have seen eye to eye since. I don’t know if you knew her or not.

When we did the people mover for STS-40, when I come back, they couldn’t decide how we were going to reconfigure it, once they’d brought it out here. I’m listening to this telecon, and I finally said, “I’ll do it, and you reimburse me.”

“Sure, fine. What do you think it’s going to cost you?”

I said, "Maybe \$70,000. I'll do it out of my budget right now, but you'd better reimburse me." When it came time, I'm telling Grace, "Okay, this is what it's going to cost you," I think it was 70,000 bucks or something.

"Oh," she says, "Anything under \$100,000, forget it. We're not going to do it."

I said, "What? After I spent my little bitty support money?" She paid big time. I must have got another million dollars out of her. A nickel at a time.

JOHNSON: Yes, budgets are always an issue, aren't they?

BAKER: Yes. Yes.

JOHNSON: After they started landing in Florida, you still had to be ready here in Dryden, didn't you?

BAKER: Every time.

JOHNSON: Just in case?

BAKER: Yes. Well, we landed out there, what, 26 times.

JOHNSON: You had to be ready in case they aborted too, didn't you?

BAKER: Yes.

JOHNSON: Was that any different, preparing for those aborts, than it would be for a normal landing?

BAKER: No, not much, other than the personnel. We finally had our own little crew, so if it had did an AOA [Abort Once Around] and landed here, we'd have gone out and powered down and hooked the tow bar on it and pulled it off the runway, basically, and sit there and wait for Kennedy to get out here. We knew enough about the systems on the Shuttle by that time.

JOHNSON: How to take care of them, and safe them, and everything. You mentioned STS-1 getting stuck. Did that happen more than once?

BAKER: Yes. I forget which other one. We went and did a whole bunch of testing on the lake bed.

JOHNSON: Talk about that. I think how you tested the lake bed, I think that's pretty interesting, too.

BAKER: They had a big—what would you call it? A trailer with the Shuttle tire mounted on it, in the middle of it. We put weights on it to make it 250,000 pounds. We pulled it with a tug out around the runways and the lake bed, and then we measured how deep it went, which certified it for a Shuttle landing. Then they came out and we got testers, where they did a kind of [ground penetrating radar], put it in a vehicle and popped it down, and you knew by the size of your

probe that you were pushing down, how much weight it would take. We went around sort of flying it that way after that.

JOHNSON: But they still got stuck, even though you did test it like that, occasionally?

BAKER: Well, yes. Well, the Air Force did it first. This kid, captain, certified the runway, and we said, okay, so we towed it the second time on the lake bed towards the Shuttle area. We followed the area, he had it, and we stuck it. But it was easier to get out that time.

JOHNSON: Did you have to use plywood again?

BAKER: Yes, a little bit.

JOHNSON: That seemed to work better than any other idea, right?

BAKER: Yes. Well, when they had the flat out there, they didn't know what to do. I got my plywood out, and I made a little bridge, and I pulled the Shuttle gear up on there, and we took the brake, the brake came apart. Pulled the tire off, pulled the brake off. Put the tire back on, backed it down off. Kennedy said I overstressed the Shuttle, so I had to prove to them I didn't overstress it.

JOHNSON: How did you prove it to them?

BAKER: Got me an ops engineer, and we went out and got all the data on what it is. The gear can't stand more than 40,000 pounds to pull on. Well, the T500 torque converter would give up at 25,000 pounds, so there was no way in hell we could pull any harder on that gear, because the torque converter and the transmission in the T500 wouldn't pull it. I had to get the tug people to give me that data.

JOHNSON: They believed you, once you showed them the data?

BAKER: Yes.

JOHNSON: How did you prepare for night landings, once they started, as compared to the day landings?

BAKER: What we did was, Tuntland came out, and we had the Xenon lights. We did all that testing down at White Sands [Test Facility], then we brought them out here, and we made configurations. The first configuration we make, and Mike [Michael J.] Smith was flying that, looked like an arrow. The Xenons went down, but we had one right in the middle, a mile off from the runway, from the threshold. We flew on that and made the configuration. Then [Richard H.] Truly came out and flew on it, and they couldn't find the runway. I was driving home after this all-night session and I saw those reflectors on the highway. I said, "Oh, man. Why not that?"

I went and got a bunch of them and put them on the runway, and the Xenons shone down, would show the reflectors, so then you saw the side of the runway. And then at the airport,

there's always blue lights. I got a couple—you know those lineators and put a blue light on top of them, so they could see where the end of the runway was.

Then, when we went to the main runway, it's higher. How are we going to do that? Hell, we'll get some scissor lifts and pick the lights up. We ended up buying the scissor lift trucks, the ones they put roofing on with. We got them, we had three, and then we put one out in the middle, and then it rained. I called Mike, and I said, "Where in the hell do I put the center light?" I said, "Can I bring it into 18 feet from the"—and it's sticking up in the air 20 feet—"on the concrete, because the lake bed's wet?"

He said, "No, we can't, what are we going to do?"

That's when we came out and re-flew it, and it took out the black hole, because when you're coming from altitude, and there's no lights like on a normal airfield, like Edwards [Air Force Base] doesn't, it's black, so you have no depth perception. Mike was saying, "Well, what are we going to do?" He says, "You know, when we were flying out on the bed and you had that flashlight laying on the ground? I could see them through the lights."

I said, "Good. I'll get a bunch of florescent lights." I got 108 florescent lights, and we made an approach light and put it out on the front of the runway.

JOHNSON: Sometimes the simplest solution is the best.

BAKER: That's why they always called. I wasn't very smart, but I did simple.

JOHNSON: But you could work a problem and fix it.



BAKER: Yes. Yes.

WRIGHT: We call that “resourceful.”

JOHNSON: Yes, that’s resourceful, that’s true.

BAKER: Yes. Tuntland, we worked pretty good together. Yes, so they adopted all that, the whole night landing configuration. Smith put it in, we got 35,000 bucks, the eight of us that developed that whole system, won a federal incentive award.

JOHNSON: Oh, that was the award I saw on your wall that the president had signed.

BAKER: Yes, and I got 4,000 bucks for the reflectors, and I got 4,000 bucks as incentive, suggestions. Mike put all those in.

JOHNSON: That’s great.

BAKER: Yes, he was a good guy. Navy man.

JOHNSON: Of course, right? Your area, were you responsible for the microwave scanning beam landing system, the PAPI [Precision Approach Path Indicator] lights, and everything?

BAKER: Yes, all that. It was my idea to put the PAPI lights on the trailer, because we had to take them off and on, off and on after every flight. Before, we had them on a steel thing, and we took them out with a truck and set them up. I said, "Oh, this is bull." We got some little trailers, mounted them all on a trailer, and hauled them out there and set them up, made a procedure on how to align them.

JOHNSON: When the [Space Shuttle] *Challenger* [STS-51L] accident happened, were you out at work?

BAKER: I was in Kennedy.

JOHNSON: Why were you at Kennedy?

BAKER: We were following STS-26 through processing. There was three of us. Jim [James R.] Phelps and Barnett, and I. None of us wanted to go, but we were—Milt with Jesse Owens, decided we were going. We went, and our job was to see if we could take 10 days out of processing an Orbiter, because it was taking them so long to process, by putting in flight test procedures. We followed 26 through the processing. In fact, we were supposed to do our out-briefing right after launch which, naturally, we didn't do. But we could have taken 10 days, it was so cumbersome, the way their processes were done.

JOHNSON: Was that as a suggestion for them to take those 10 days out? You were there to help try to find those 10 days.

BAKER: Yes. We were on a task for Headquarters. They would have never accepted them. We gave them our thoughts and why it was happening, and everything else. Just for instance, they replaced an O-ring, because Lockheed went up to Alabama [Marshall Space Flight Center, Huntsville] and had some O-rings that they needed to put in the APU system. It was in a normal Air Force sealed bag, all stamped and everything. Lockheed got it and put it in, and kept going. Well, ERAS [tracking system], which follows everything through the Shuttle system, spotted it. It didn't have a Downey [California] stamp on it, making it a flight hardware. So they had to pull that out. I watched this.

Then, here comes one from Downey. It was in the same little brown bag, with the same numbers, with no other stamps on it as the one that went on. The one that got up there was probably 90 cents. The one they got from Downey was \$900. A 1032 washer. If it had an "S" on it, that's Shuttle; if it had an "E" on it, that was the ET [external tank]. Let's see, what's another one? Oh, the launch vehicle. Anyway, there was three different ways. Okay, the same little 1032 washer, they could not use one that was for an Orbiter, if it had an "O" on it. It was the same one. They'd be out someplace else, but they couldn't use one over there. Many of those things I found, just by going through the way they do things.

If a piece of tile came off, they had to replace it. There was a work order signed up that called for 17 signatures, from engineering and everything. Then that piece of paper and that piece of tile went to the tile shop. The tile shop did the same thing, 17 more signatures, and then it went to Downey, and then Downey did it. Then it went up to Sunnyvale [California]. Then Sunnyvale, then it came back the same process, coming back. They'd get it. They'd put it up on the Orbiter and fit it, then it come back down and it went to the tile shop. Every one of these

maneuvers took 17 signatures from inspection and engineering. But if you did it at night, there was one guy could sign them all. That was the kind of things we were finding out when we were following them through.

JOHNSON: Okay. Were you watching the launch when *Challenger* happened?

BAKER: I was right up on top. All the Shuttle families were standing right behind me. They were over here; we were sort of here. In fact, we were joking around two days before. We were sitting in that meeting that made the launch, when they were polling it and the weatherman came on, and he said how bad it was going to be, and how cold. This voice come on the horn and said, “Well, you really didn’t hear what he said,” and he went around and changed it.

We’re looking at each other, “Did you hear that?”

They polled, “Okay, we’re going to launch.” It was just too cold. The ring on the SRB [Solid Rocket Booster] was two big O-rings in there. Well, they’d had troubles with that before. You know that. If it had separated anyplace else, it would have probably been okay, but it just happened to—yes, I saw it.

We were watching, and I hit Larry, and I said, “There’s something wrong with that plume.” You could see a little thing come out, you know, next thing you know, boom. It was gone. Yes, that was a bad day at Blackrock.

JOHNSON: How long did you stay in Florida after that?

BAKER: We left immediately. Then we went back, I think, in a week, two weeks, and briefed out. When we went back, we told them we would not write a written report, we would do a verbal briefing. Everybody agreed to that, so we gave them a verbal briefing. It was just like I was telling you. All the things we found, and everything that was there.

Gene [James A.] Thomas was there, and who was the Center Director then? The General [Forrest S. McCartney]. I can't remember names anymore.

JOHNSON: There's just a lot more names.

BAKER: The mentality between NACA and NASA, was completely different. I think NACA had a mission, and they got mission oriented completely. We're going to get it done. NASA became more of a political animal.

JOHNSON: It was just a different way of doing business.

BAKER: Different funding, and, well, different missions, too.

JOHNSON: What did you do during that time period between *Challenger* and STS-26, when it flew, the Return to Flight?

BAKER: We had to keep most of the stuff going together. We were doing some of the 990 stuff, but then mostly just clearing everything up. We had the crew transport vehicle in, we had to get that one ready for it. Most of it was just covering your hiney. We had to go through all our own

procedures, all our own paperwork, re-verify we were doing things right. It was pretty intense. In that same time, you couldn't hurt them flying up there on the other end, because that was sort of my job, was to make sure none of the Shuttle went up in the flight test. I was supposed to keep all the Shuttle stuff away from flying airplanes. We had to get ready for Spacelab [reusable laboratory], we redid the facilities for processing all the equipment, and then DoD came in. You know, just that every day.

JOHNSON: Yes, how is that different, when those DoD flights flew, as compared to a regular one as far as your job, once it landed? Was it a completely different?

BAKER: You had to put up with the Air Force then.

WRIGHT: Is that spoken like a Navy man?

BAKER: Yes, right. The difference was the security, because the DoD packages, if you got around it, you had to have a clearance. They weren't real big packages, usually. They were nothing like a Spacelab.

JOHNSON: I guess it was quite different, because you never knew what was coming off of those Shuttles, whether it was going to be completely classified and top secret, or monkeys. There was quite a variety of things that came off the Shuttle.

BAKER: Then a lot of it was, you just kept it in the Orbiter, and once it came down, and sort of during the processing to get it ready to go back, and then DoD would come down and take it out at night.

JOHNSON: Everything was taken out before they took the Orbiter back for processing?

BAKER: Yes, most of the time.

JOHNSON: You did that until '94?

BAKER: Yes. Then for a year, when I was at Aurora, but after that, then I ran the contract that was taking care of all of the equipment. Then I had some civil servant telling me what I should do and what I shouldn't do.

JOHNSON: I bet that was a different experience for you.

BAKER: That was fun. I'll show you a t-shirt, some of them said, "There ain't nobody happy if Charlie's not."

JOHNSON: Oh, that's funny. Were there any other memories of that time period, and beginning with when you first started out there, and moving on through your career? Is there anything you would think of or consider your proudest achievement, or what you really enjoyed the most?

BAKER: Just getting a job done. One thing about Dryden, at Dryden it was family. The janitor could stop a flight. If he saw something that he didn't agree with, everybody would stop and listen to what he had to say, and then you'd tell him why it was okay. Anybody on the crew could stop it. Anybody could stop a flight. It didn't make any difference where your pecking order was. You know, it wouldn't stop it necessarily, but it made everybody look, and make sure he didn't see something that was wrong.

Being out there, I've had a piece of aviation history. I've touched a lot of hands, strapped a lot of nice guys in airplanes, had conversations. And Neil [Armstrong] was a scholar. When he was flying a project, he would come down and explain exactly what we were looking for, which made it easier for us to instrument the airplane. We put a fiberglass wing on a 104, and flew, and it was made for finding out aerodynamics. Laminar flow is where it's going across the wing real smooth. Turbulent flow is when it goes like this. What makes that happen, and what happens when it does, we took a 104 and we put fiberglass on the wing. Then we had it instrumented underneath it. Then we had two cameras taking pictures off the side of the fuselage, and we painted it with the heat paint and watched what it would do. That's how we figured out what really made good airfoils.

JOHNSON: It helped to have that relationship with the pilot, I would imagine, and the engineers, and everybody that was running the tests.

BAKER: Oh, yes. Everybody. Yes, it was a team.



JOHNSON: Were a lot of the pilots like him, that they would explain more about what they were doing?

BAKER: Not as much as Neil, but most of them. [William H. "Bill"] Dana would. Joe [Joseph A.] Walker—yes, sometimes it depends on what it was. Like, he wanted a switch done, so to get it in, I would have had to auger out a piece of structure to get the switch to go which way, so hey, it switched this way, but you had to go upwards with a switch.

I said, "Joe, how about this?"

"Oh, no, man, my way or no way."

"I'm sorry sir." So we got to go the other way. He was very boisterous, or he was vocal when he wanted something. Yes, there was a lot of them.

JOHNSON: Of course, being test pilots, and the danger of their jobs, and then you did lose some. I imagine that affected everybody at the Center.

BAKER: Oh, yes. Oh, yes.

JOHNSON: Especially people working closely with those pilots.

BAKER: Yes. We couldn't believe it when they tried to blame it on Joe.

JOHNSON: The 104 [accident with the North American XB-70]?

BAKER: Yes, wiped out the B-70. That was a bad day, too. You'd never know, either he slowed down, or they speeded up and he didn't know. And it was all for taking pictures.

JOHNSON: Did you take part in any of the social activities, or the athletic groups, the bowling team and the different things that people would get together?

BAKER: No. When we first started, I would play softball, but we had a softball team, but not really. I took a part in a lot of the flight parties.

JOHNSON: At Johnson, they used to have splash-down parties after all the missions. Did they have that after the X-15 flights?

BAKER: Oh, yes, big time. There was always a flight party, 104, whatever the program was, if it had a good flight, you went and had a party. If you had a bad flight, you went and had a wake.

JOHNSON: Basically same thing, just call it something different.

BAKER: Yes. Neil could chugalug a beer faster than everybody else, Jack McKay, you know.

JOHNSON: Didn't his son work out there too?

BAKER: Yes. He lives right down here. John.

JOHNSON: Was he working when you were there?

BAKER: Yes, he came down and helped me in the Shuttle area, first time. Then he became a branch chief, and then he didn't like the politics, and he got his time in and retired. I couldn't believe it. I tried to talk him out of it.

JOHNSON: Probably ran into some of the same things you were running into, I'm sure.

BAKER: Well, yes. He couldn't ignore it.

JOHNSON: I was going to ask Rebecca if she has any questions.

WRIGHT: I've got a couple of plane questions. You briefly talked about being an inspector on the SCA, the Shuttle Carrier Aircraft. Could you talk a little bit more about that, and when it first came online, and maybe what your thoughts were when you found out they were going to use it for transport?

BAKER: I wasn't here, then; I was here after the fact. Herb Anderson, bless is soul, was the ops engineer from Dryden that was on that airplane when they modified it and did all that. When I came back, I went down to Flying Tigers, and went through flight engineer school, really, which you learn everything, the panel and all this stuff, then I was qualified to go inspect it. You'd crawl up the tail and inspect all this. All you're doing is—the crew did it, and you're just verifying that they did it right. But I could start it, and if I'd have had to.

Someplace along the line Dryden quit inspecting the airplane and Johnson took care of all the responsibility. The guys would do their job, and then a flight engineer would come out before you flew it, and he would go through and inspect it.

WRIGHT: The whole Mate-Demate, the whole mating system.

BAKER: I had the MDD. That, the hanger, everything inside the fences, plus all the rolling stock. Plus the MDD. Plus the MSBLS [Microwave Scanning Beam Landing System] the landing aids, the lights, battery shop, the labs. The astronauts' trailer, when they'd come in. Just all the support branch. I just had to see that it was done, so I knew who did this, who did that, and I had to coordinate between facilities, that they had the hangar right, and the fire systems worked, and the fire pumps worked, and all this good stuff. I didn't do it all, I just had to see that it was done. But if it didn't get done, I'd do it myself.

WRIGHT: It's quite an operation, that's for sure.

BAKER: It was. And the thing is, you had to see it all done, but you really didn't have the big bang. When I first went down there, it was such a battle all the time. I went back and I told Milt, "Dryden can't do this. They'll eat us alive, Milt. Let us just support them." Then after that, everything started going smooth.

JOHNSON: When you started out there, I would imagine there weren't any women working in your area at all. Did that change over time?

BAKER: Oh, yes. The women worked tool crib, they worked procurement, they worked the personnel, and secretaries, the libraries. We didn't have any aircraft mechanics, women aircraft mechanics until the '70s.

JOHNSON: How did that work, as far as that environment being such a male-dominated field, and then having women come in? Did that create any issues, or was it relatively smooth, as long as they did their job?

BAKER: The ones that proved themselves, yes. The ones that didn't, yes, it was tough on them. They'd usually get moved to a non-critical position of some kind.

WRIGHT: The other question I had for you, in your early days, when your teams were so close with the X-planes, were you able to teach the pilots what to listen for when they were up there? How were you able to do that?

BAKER: When an X-15 new pilot would come aboard, he'd sit in the cockpit and we'd tell him what every switch he'd touch was, what it did, and try to explain the system. They read the book, and everything; it was just that then you orientated them in the cockpit. Then on the other, like the 104, whatever other project, the pilot came down—these airplanes got pretty modified. We used them as test beds; regular airplanes, but we put a lot of different stuff on them. We'd talk about it, and like a switch, he would say, "Well, no, that's not comfortable for me."

“Well, let’s see where we can put it.” Or else, you know, speed brake handle, or something, didn’t move easy enough, so we’d have to ease that. We wouldn’t have any problem, but he did it in the pressure suit. Then when they’d have to put on the pressure suit to fly, and then we’d have to fit them in the cockpit, and make sure that you can get your legs back, and you know. Yes, it was just a team. Everybody worked together. They were the number one guy. But most of them, they knew that they were getting the best piece of hardware they could get. Bill Dana would come out and he says, “What do you think, Charlie?”

I said, “I don’t think I’d fly this son of a bitch today.”

He says, “Why?”

I said, “They won’t let me.” I said, “An ops engineer signed that off, and I think it should be fixed.”

He says, “I think you’re right,” and turned around and walked back. They’d already cleared it for flight. So I won. I might have lost the war, but I won that battle. But we came in, we fixed it. I felt good.

JOHNSON: You had a life in the balance.

BAKER: Yes, the ops engineer had a lot of responsibility too, but if something happened to the airplane, he wasn’t the one that was going to be going down, you’re the one going down. Like when [X-15] Ship 3 went in, I was crewing it. I had to get all my bookwork together, and I sweated it out, but I got a clean bill of health that the airplane was fine. But it went through a big process. That’s the worst, and that’s why I quit. That took the glory out of flight testing. I pulled Mike out of the cockpit.

The airplane was all apart, and I'm the one that checked Mike out in the cockpit. And I knew he got vertigo, because he told me that. He said, "I'll believe my instruments before I'll believe anything." When he got up to the top and was going over, if he had looked out and seen the horizon, he could have brought the nose around, which Milt was the first one who ever found that out. If he'd have brought the nose around, he'd have reentered all right. As it was, he read the instrument wrong, and he aggravated it, and so he started reentering backwards. Then the airplane went into a big spin. Stayed together until 60,000 feet, and then it started coming apart.

WRIGHT: Did you feel like all the pilots that you've met, there's some that are just naturally born to be test pilots, and there are some that have to work at it?

BAKER: Oh, no, they all got that desire, that need to know. The test pilot needs to know. They push the envelope. Most pilots, they fly an airplane safely, this is what it's supposed to do, and that's all they're going to do. But a good test pilot is just going to push it a little further, and a little further. That's why in test flight, you do little bitty steps at a time. You don't go out and go for a speed run right off the bat. You go a little bit at a time. That's why Dryden was so good at what it did.

WRIGHT: Were any pilots that you could think of that you worried more when they got in that plane than others, because they tend to push a little bit more?

BAKER: No.

WRIGHT: You knew they were all doing a good job?

BAKER: They were all good guys. There were some that, personality, your personalities didn't click too much. The Air Force—we were lower because we were civil servants. If we'd have been master sergeant or something, which is the crew, they'd have given you a little more. Just like [Charles E. "Chuck"] Yeager hated NASA. He'd come over and be showing someone something, and he'd say, "Well, what do you think they're doing?" I heard him tell this senator, or whoever he was, "Oh, they don't know what in the hell they're doing. Lucky they get it together." That's how bad he hated us.

I'll tell you another little story if you want to listen to it.

JOHNSON: Okay.

BAKER: Marty Knutson was a [Lockheed] U-2 pilot. I don't know if you knew about Marty or not.

JOHNSON: Yes, I've read a little bit about it.

BAKER: When he was a captain, the first [Russian Aircraft Corporation] MiG they brought over, it was over in Guam or someplace, and Marty was supposed to fly it, so he went out and checked it. Well, it didn't have any oil pressure, so he grounded it. Here comes [Curtis E.] LeMay and Yeager in. Yeager comes up and he says, "Well, you can go, I'm going to take this over, now."



Well, Marty didn't like that, but it ended up that either LeMay or someone told Marty he could go on back. Well, it ticked Marty off.

Years and years later, Yeager is coming down to make his normal flight, and they'd always let him fly one of our airplanes. They told Marty, "Yeager is going to come in, he's going to fly one of the [F/A-]18s [Hornet]."

Marty says, "When he gets here, why don't you just send him up my office?"

"Oh, okay." So they send him up there.

Marty said, "Hi, Chuck. If you think you're going to fly one of my airplanes, you've got another think coming. You can get your ass the hell out of here." Paybacks are hell.

But that was another little story.

JOHNSON: We appreciate all the stories and all of the information that you have given us today.

BAKER: I don't know if we gave you much about NACA.

JOHNSON: No, but that's okay. I mean, it all adds up, and we appreciate the time you took to do that. Thank you.

[End of interview]