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HARRY AND NONA F. CURLEY
INTERVIEWED BY SANDRA JOHNSON
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JOHNSON: Today is February 17, 2015. This oral history session is being conducted with Harry and Nona Curley in Palmdale, California, as part of the NACA [National Advisory Committee for Aeronautics] Oral History Project sponsored by NASA Headquarters History Office. The interviewer is Sandra Johnson, assisted by Rebecca Wright.

I want to thank you again for coming in today and coming to meet with us. Because you both started out at the NACA High Speed Flight Station early on in the '50s, I just want to talk about how you started, what your background was, and what brought you to the Center [later named Dryden Flight Research Center, now Armstrong Flight Research Center]. So if you want to go first, Mr. Curley?

HARRY CURLEY: Yes. Actually, I lived almost at the Center. I lived on the Base. I lived on the Muroc Air Force Base [now Edwards Air Force Base, California] there. When NACA established work here from Langley [Research Center, Hampton, Virginia], when they came out, I was going to school at Muroc. I graduated from high school, and my birthday is on August 16th. I was set to go to UCLA [University of California, Los Angeles], to go to school. Of course a military family, my family didn't have much money. I was trying to earn some money so I could go to UCLA. My dad was a military man, that's how I got to the Base.

My dad was with the Inspector General's office, and he would go around and inspect facilities. I think what he did was he went to the NACA facility and knew the personnel director

and asked him if he had a place for me. They said they would hire me. I had to wait until my 18th birthday, so three days after my 18th birthday I started, I think on August 18th.

JOHNSON: What year was that?

H. CURLEY: In 1951. So I started, and I worked there for a year. Then I went to UCLA.

JOHNSON: What were you doing during that year when you first started?

H. CURLEY: I actually did the same thing I did almost the whole time, for NACA and NASA, I worked in the Calibration Lab. I was an instrument calibrator. Of course then I was just a high school kid. I was just learning from people what the job was. I worked with other calibrators, and they would show me what to do and let me do things, and I began to learn the trade. I worked there for a year. Then I went to UCLA from ’52 to ’54, and I didn’t finish. I stopped school, I have some paperwork here I think when I went back to NACA. Well, money was an issue. Money had become an issue because I had gone two years. But actually I wasn’t doing very well anyway. I stopped then and NACA hired me back.

Then again they put me in the Calibration Lab, only to start with I think they called me an engineering aide. In fact, I have some paperwork here I could show you. I was an engineering aide. Then after school in ’54 they hired me again as an instrument calibrator. I had a year’s experience. I worked there for two years. Then I got drafted into the Korean War.

So you see my time with NACA was really broke up. I didn’t get drafted till the end of the war. I think the rule was they had to hold my position for me, I think civil service held

positions for you. I was only in 13 months, and my father died. Then I went to get an allotment for my mother, and they said, "Well, you can't get an allotment, but you can get out," so I got out. I had to have letters from my mother and a chaplain.

Then I got out and I went back to the NACA. I got out of the military after 13 months, and then I went back and hired back in to NACA—I may say NASA all the time because most of my years were with NASA.

Then when I went back to work there Nona was there. That's where we met. Then that's only about a year before NASA started. That was summer of '57, and then I think late '58 is when NASA started.

JOHNSON: Mrs. Curley, talk about how you started there, and how did you, being a woman—and did you grow up in this area?

NONA CURLEY: I finished high school here. I moved here and did my sophomore year on. When I graduated, my dad said, "Well, now it's time to get a job." I hadn't even thought about that, I thought I was going on to school. They were hiring on the Base, so I took the civil service exam and I was placed at NACA. I was a clerk-typist in the Instrument Service Branch. I worked there for almost six years, and then stopped before my first child was born. During that time we met and worked together in the same office.

JOHNSON: Where were you living? You were living in the Lancaster area?

N. CURLEY: Yes. I was carpooling.

JOHNSON: Who were you carpooling with, other women? Or were there other people?

N. CURLEY: I started out with my dad, because he was working on the Base also. Then I ended up with just different fellows. I was always in the carpool with all men, because that's who lived near where I was. We carpooled. I guess the interesting thing about that was we used to just go down Division Street and drive directly across the Rosamond Dry Lake to pick up the road onto the base. Just everybody was out there, it would be 20 cars wide, and we all had an entry place and an exit place. That was the short cut, made the ride 15, 20 minutes shorter.

JOHNSON: You just take off right across the lake.

H. CURLEY: I didn't have to commute because I lived on the Base. My dad was a military man, so I came to the Base when I was 12 years old. We had lived in a whole bunch of different places—in fact we were in Panama when the war [World War II] broke out. They made the families come back and ultimately we ended up out here. I've never left.

JOHNSON: That is interesting, growing up in a military environment, and then continuing that with your career. It probably felt very comfortable to you.

H. CURLEY: Yes, well, I was acquainted with the aeronautical work, just because it was a military base. I didn't realize it at the time, but NACA guys were there from Langley, and they

were working on breaking the sound barrier. I really wasn't too much aware of that in high school, until I got my job. I knew it was going on, but I was just a kid.

JOHNSON: You weren't really paying attention to the historical aspects?

H. CURLEY: Yes. I actually got to sit in the seat of the [Bell] X-1 that broke the sound barrier. My dad worked in the hangar. He took me to work one day. The X-1 was in the hangar, and they let a 12-year-old go over and sit in it, or 13-year-old. It had the old Flying Wings [Northrop YB-49]. Have you ever seen the old Flying Wings that were before? They were in there. This was before I even got in there, and I was just a kid.

JOHNSON: Do you think that piqued your interest though, being around it all the time? Did you ever think about doing anything other than aeronautics or working in this field?

H. CURLEY: Oh yes, I hadn't thought about it, I had not really zeroed in on it. I was going to be an engineer, that's why I went to UCLA. I was interested in scientific things. I guess when my dad got that first job for me at NACA, I hadn't decided this is where I'm going to be. It was just natural to go back there after school, because I was living on the Base again. My dad was still a military man, so I could still live on the Base. It wasn't till my dad died that we had to move off the Base because my mother was a civilian.

JOHNSON: Where did you move to?

H. CURLEY: We moved to North Edwards, which is on the other side of the Base. My mother wanted to stay close there, so she just moved to Kern County on the north side of the Base, North Edwards over there, a little small community. She bought a house. Then later I lived there with her, and that was a short commute in to the Base, until I met Nona, and we married and moved to Lancaster.

JOHNSON: Mrs. Curley, you mentioned that your father worked on the Base. What did he do?

N. CURLEY: He was in construction. He did a lot of the building, and he was involved in a big hangar project. Just down the taxiway from NASA.

JOHNSON: Talk about when you both started working, you came back to that area, that's where you were working. During that time period there weren't as many women as there are now working at NASA Centers. What was the social aspect of that time period? Were there organized things for you to take part in, picnics, dances, those sort of things? How did you spend your time during the day? Did you go to lunch together? Was there a cafeteria?

H. CURLEY: Yes, they had a place, a cafeteria to eat, they had a place to eat. They had activities. They would have summer picnics that people would go to. Actually they had a bowling league at one time. But it's hard for me to remember whether it was NACA or NASA. But there were periods of time. Well, it was about the time we got married I was bowling. There were bowling leagues. I actually played on the facility basketball team. They had a basketball team that

played in town in the town league. All my good friends, the fellows, were all guys I played basketball with. Neil [A.] Armstrong was there.

JOHNSON: Did he play basketball?

H. CURLEY: Yes. He wasn't very good.

JOHNSON: You said you carpooled mainly with men, but did you have a group of women friends that you met or that you did things with?

N. CURLEY: Not really. I knew the women in the building. We would have to go to each other with questions with secretarial duties from time to time. I didn't socialize with them. There just really wasn't time for it I guess. The men I rode with, most of them were men from World War II, they were middle-aged men. They were always very respectful. We had some really interesting conversations. They wouldn't really talk about war experiences, but they would give you background on how they did and that type of thing. I really wasn't involved in the social activities. Even after we were married he would have lunch with the fellows, and I don't even remember what I did, or where I went. Probably at my desk. But we were careful not to socialize in the office.

JOHNSON: Did you have any awareness of what NACA was doing before you started?

N. CURLEY: I had never heard of it. When I went in there, it was completely new to me, learning the aeronautical language. I took business courses in high school, so I had no background in this. It was very interesting though. My particular job was just the regular filing and typing, that type of thing, but the work of the Center was very interesting. I always enjoyed it.

JOHNSON: As far as learning that aeronautical language, was there any type of training when you were here, when you first started, or information that they gave you so that you could come up to speed on things that you needed to know?

N. CURLEY: I don't think so. I think it was learn as you go. These new words were popping up. You just picked them up as you went on.

JOHNSON: Did you work in a pool of other women, or did you work individually?

N. CURLEY: No. I was in the Calibration Office, and it was all fellows. Then later on there was a woman who came to work in calibration, so there was another lady in the office. My desk was in the office with all of the calibrators. Then I had business to do with the Repair Shop and the Instrument Construction Shop, so I had associations with those men. I did their typing and their filing also.

H. CURLEY: Yes, there were three shops together in the same branch.

JOHNSON: Was this Instrumentation and Calibration? Was that the branch?

H. CURLEY: Yes. There was a group of us that did calibration, and then there were people, construction, they built things, like a machine shop. Then there were instrument repair guys, so they would repair the instruments, and we would calibrate them. You actually worked on the data stuff.

N. CURLEY: A little bit. That was a short time.

H. CURLEY: Yes. See, we had to prepare the calibrations that they would use to develop the test data. The instruments we calibrated went into the vehicles that were being tested. We had to have calibrations like big curves so when they took the data they could determine how fast they went and how high they were and all those things.

JOHNSON: You mentioned that you were learning those skills starting when you were pretty young, and then when you came back was that still just an informal learning from people that had been there before? Did you have any type of formal training on site to help you learn those skills?

H. CURLEY: There were experienced calibration people there. They would show you what to do, and they would let me do the more simple stuff to begin with, then you just work up. The leadership were almost all Langley people.

JOHNSON: Are there any names that you remember?

H. CURLEY: Oh yes, my boss was Ralph [M.] Pernula, and his boss was Russ [L. Russell] Mills, who was her boss as well. Ralph was over my calibration group, and then there were two other guys over the other groups. Russ Mills was over us. I never got an engineering degree, but Russ Mills, my boss—well, above my boss, my leader was Ralph—he encouraged me to take the civil service test, and they gave me an engineer's rating. So I ended up, I had to take a cut in pay, but I think I was a GS-6 [Government Schedule pay scale] calibrator, but when I took the test they would only approve me for a GS-5 engineer. Russ Mills said, and I realized, it was the best thing to do, because I would have been more limited as a technician than I would be as an engineer.

JOHNSON: You could move on from there.

H. CURLEY: Yes.

JOHNSON: That's wonderful that they gave you that opportunity.

H. CURLEY: Yes. In fact years later one of the personnel directors came to me and I guess he raised the issue I didn't have a college degree, and somebody, one of my bosses, had to go and talk to him about it doesn't make any difference. This is the way it worked. I guess he thought I shouldn't be where I was or something. It might have been a place where I was getting a promotion maybe. When you get to GS-11, 12, it gets a little bit harder in your job description to move up.

JOHNSON: When you started everything was still out on the South Base?

H. CURLEY: South Base. That's right.

JOHNSON: If you don't mind, just talk about that for a minute, and the working environment out there and what that was like, and then when everything got built and moved to the Main Base in 1954. If you want to just talk about that.

H. CURLEY: Yes, well, actually I lived on South Base.

JOHNSON: Did you live in the area for the single employees?

H. CURLEY: The South Gate used to come in by an old hospital area, and then it would go down by the runway and where the South Base was. They made that hospital part of it into housing for military people, because they didn't have any housing on Base. When my dad first came here, we had to live in Lancaster for a year. So I went to grammar school in Lancaster. And then he moved us to this hospital area, and it was right inside the South Gate that went down to the Base.

I was well acquainted with it, that's where the theater was and the gym and the social club. I knew all that, I had been living there for six years. The first year I was there, our lab was actually in the hangar. NACA had a hangar on the old runway. On the side of the hangar, you know how they have offices and shops along the side? We were in there. I worked in there. If you went out the door, you were in where the airplanes were.

Then they moved the Cal Lab across the road and down a ways into a building that had the old garage in it. The mechanic that took care of their cars was in part of the building with a garage and then the rest of the building was broke up into three offices for the Cal Lab and the repair and the construction shop and an office in the little building. It was just across the road from the runway. We could go out the door and look over and see planes landing on the runway. Then we moved to the new building when they built the new runway.

JOHNSON: Were you still living on the South Base when they built the new one and everybody moved to the main building?

H. CURLEY: [No. At the time of the move, I was living in the new base housing.] In fact I think that's the first overtime I ever got, to move. They got all the young guys to help move, so I think that's first time I ever worked overtime. We had to spend a day or so to haul stuff from where the old runway is over to the new one, over to the new Base.

JOHNSON: I think having grown up in this area you were pretty used to the environment, as far as the physical comfort of working in hangars, out in the middle of a desert. So that was pretty normal for you.

H. CURLEY: Yes, it didn't bother me. Yes. I was used to that. In fact we used to play softball. We'd wait until later in the day when it cools off, but I probably played when it was hot.

JOHNSON: We can do all kinds of things when we're young, right? Talk about some of the things in the Calibration Lab, what you were working on as far as the research that was being done at that time, what you recall, if there's any big projects or programs that were going on as far as the aeronautical research that you were working on.

H. CURLEY: The X-1 was earlier. That was earlier on. They just continued to make experimental aircraft like that. They actually went through an X-1 series, the X-1B. They changed it a little bit and put a different motor in it, and then they'd go to X-2. They've got the whole series of X aircraft. They just went from one to another. The instrumentation people now wouldn't believe what it was like, I guess. All the instrumentation I think came from Langley. It was stuff Langley had developed. We calibrated those things.

They were all recorded on film. The instruments had film drums and they would measure something like pressure or altitude, angular velocity, angular acceleration, they were measuring everything. When the plane did this or this and how fast they went. We would calibrate those, and then we'd have to put in a known pressure, record it on the recorder, and then we'd have to measure those films and put them on big plots.

Then those plots would go upstairs. Most of the ladies they were hiring were reducing data. Then they would read the flight films, go to the charts, and then find the pressure or the altitude or whatever. That's the way they did their data. No computers or anything. It's interesting.

JOHNSON: Since they were doing research as you said on a lot of different things day to day, did things change daily for you as far as what you were working on? Was it long periods of time

you would maybe work on one project and then it would switch to another? Or it was more of an ad hoc—you would just go for whatever was happening that day?

H. CURLEY: No, we just did the instruments. We knew new planes were coming along, but the instrument that went in one of the X-1 series, they put that instrument in the next plane. We would get to go out and work on airplanes. Sometimes they would want us to do one of the pilot's indicators or something. They didn't want to take it out of the airplane, so there was a way you could go and put the pressure in through the Pitot tube and read the gauge, the altimeter, airspeed indicator. Then sometimes they'd want us to do pressure transducers on the aircraft, because they didn't want to always take them out to get them calibrated again. We'd have to go out and hook pressure to some place on the airplane and record it. It was evolving too, new things were coming all the time. People started inventing different kinds of instruments, and they eventually got away from the film drums.

JOHNSON: When you were doing all that, how closely did you work with the engineers that were actually doing the research? As you said, sometimes they'd have you to go out to the airplane. Were you working closely with them to achieve what they were trying to do the research on? It was a close relationship?

H. CURLEY: Yes. Because they had engineers that were assigned to each airplane. They were in charge of what was done on the airplane. Then the data would go to other engineers who evaluate it and write reports. We were in contact, yes. The engineers particularly assigned to the airplanes would come and see all—they'd have an engineer especially assigned that worked with

the instrumentation. He would come to you all the time. We would work closely with the repair guys.

A good friend of mine that I had gone to grammar school and high school with actually worked in the Repair Shop. He would repair things. Sometimes if they had a big flight and they had an instrument they had to have, we'd work overtime. A guy in the Repair Shop would work on it. Then the calibration guy would calibrate it, and if it didn't come out quite right, you'd go back to the repair guy. Then the flight engineer, he'd want to know, well, when is it going to be here? He'd want it. They'd come to ask questions about the data. Yes, there's quite a bit of coordination.

The engineer is doing a lot of research reports. We knew most of those, and in fact some of them were my good friends, played basketball with me, but we didn't deal with them too much on a regular basis.

JOHNSON: From what I've read, some people said that coming from a Langley environment and then coming out here, there was a different feel, that sometimes Langley was more concerned with—if you were working in, say, instrumentation, and then there was a research engineer that you would defer to them. There was more of a hierarchy of the way people interacted with each other. Out here it was more relaxed.

H. CURLEY: I think so.

JOHNSON: I was wondering since you worked with Langley people, and then you had people like you that were here already, working here, how that worked, and how that interaction was between—if you noticed those differences.

H. CURLEY: Yes, I don't know what it was like at Langley, but I don't think there was that structure you talked about. The fellows that were above me to start with were Langley guys. They seemed comfortable with it too. These people, we were good friends, a small community we lived in.

JOHNSON: During that time Walt [Walter C.] Williams was the Director. You both I'm sure have experience with different things that he did and his style of being a Director. We've heard him described a lot of different ways, and always in glowing terms. Do you have any stories or any anecdotes or any thoughts about his directorship?

H. CURLEY: No. I didn't know him that well.

JOHNSON: Do you feel that as the Directors changed over time, even after NASA, did things change at the Center depending on who was the Director? Was there a different feeling as time went on?

H. CURLEY: I guess there were some Directors that did something a little different. Later on, they began to get into people that were more from the space program. Early on they were more aeronautical people, and I know Walt Williams went from that to space. Paul [F.] Bikle was a

glider guy. He held the records. Then later on you had guys like Dave [David R.] Scott. You started getting astronauts. Yes, there was some change. The organization gets bigger. Even though I didn't know Walt Williams very well, I think he knew who I was. Then later I got more into management, so I did have to deal more with the fellows that were up higher.

JOHNSON: You mentioned reports, like some of the engineers would write reports. Did you ever help them on any of the reports, or have any dealings with any of that?

H. CURLEY: Not very often. I knew the fellows doing that, in fact once we were married I carpooled with Bob [Robert W.] Kempel, and he did a lot of the reporting.

JOHNSON: Did you ever have to do any work as far as people doing reports in that area?

N. CURLEY: I remember I typed a lot of papers, but they wouldn't have been on that level. They were probably coming from just our Service Branch. That's where I ran into the terminology, strange words popping up you're trying to type and you're not familiar with. It always slows you down.

Oh, one thing I do remember is shortly after I went to work there I was given an electric typewriter. Up until then it was manual. That was the first time I had ever worked with an electric typewriter. It was special.

JOHNSON: That is really early on for electric typewriters.

N. CURLEY: Yes, it was. That was pretty nice.

JOHNSON: As you mentioned too, the technology changed, even in the time you were there, technology was changing.

N. CURLEY: And the language changed again, when all the space terms started coming in.

JOHNSON: What year did you get married?

N. CURLEY: 1961.

JOHNSON: You were married in ’61. You were actually married then after it became NASA. Let’s talk about that time in 1957 when the Sputnik [Russian satellite] launched. How aware were you in your day-to-day activities of that event, and was that something that you remember talking about at work?

H. CURLEY: Oh yes.

N. CURLEY: Yes, it was talked about by everyone at the Center at the time. It was big news.

JOHNSON: Did you have any idea of how that was going to affect your lives, as far as the work environment at that time? Were people already talking about moving?

H. CURLEY: It took a year for the U.S. to respond. I don't know whether we thought very much about what's the U.S.'s response going to be, and the space organization. I don't know.

JOHNSON: Once the NACA did switch over in 1958, when that happened, how did that affect what was going on? Was it just one day you had a NACA badge, the next day you had a NASA badge?

H. CURLEY: That's right. I think you're going to interview Don [Donald L.] Hallberg on Friday. I saw Don yesterday at a funeral.

N. CURLEY: He also worked in the office with us.

H. CURLEY: Don worked with us. He was my best friend then. We did everything together until we got married, and go off with your families. I was talking to him, and we were both of the opinion, well, one day we worked for NACA and the next day we worked for NASA.

JOHNSON: It wasn't any big difference as far as you were concerned.

H. CURLEY: No. It took a while, I think, for things to grow and get bigger.

JOHNSON: In those first days after NASA formed and then that focus was more towards spaceflight, a lot of the other Centers—of course then Johnson [Space Center, Houston, Texas, originally named Manned Spacecraft Center] came along and different Centers, that was their

main focus, and that was pretty much it. But out here, there was still so much aeronautical research going on. I think there was also a lot of things happening I guess under the radar, like the Lifting Bodies and Paresev [Paraglider Research Vehicle] and the different things that they were looking at for returning from space that the public wasn't as aware of what was going on out here. If you want to talk about that time period, and maybe some of the things that were going on.

H. CURLEY: One effect it did have, a lot of people left. A lot of people went to the space program. It wasn't just Walt Williams. In fact I think my boss Ralph Pernula told me he was offered. A lot of the engineers I knew left and went and became significant parts of the space program down in Houston, so it was an effect on people. I think that's when they started bringing in a lot of new engineers, because people left, and they had to replace them.

It's like Don said yesterday, he said they had more money too. All of a sudden they had more money, and I think along with the aeronautical, like you said, they began thinking about other things. Some of the engineers that were good friends of us that we knew, a fellow named [R.] Dale Reed was in all that Lifting Body stuff. My boss for a while was John [G.] McTigue, and he was instrumental in that. He was one of the engineers—I think he was the flight ops [operations] guy on the first Lifting Bodies. They built some really crude things and started experimenting I think with some guys from Ames [Research Center, Moffett Field, California].

N. CURLEY: Didn't they call those the flying bathtubs at first, they were nicknamed?

H. CURLEY: Yes.

JOHNSON: I think the—was it the M2-F1? One of them was the first vehicle that they actually built here, instead of doing research from having aircraft coming from other places, they actually built it here.

H. CURLEY: Yes. They had enough money I think to put together something and fly. You could always watch it. All you had to do was go outside and watch it on the lake. They did most of that stuff on the dry lake.

JOHNSON: There were a lot of the test pilots that were here, and the things that they were doing. Did you have any interaction with any of them? You mentioned Neil Armstrong not being very good at basketball. Some of the other test pilots, especially since it was such a dangerous thing, the research and what the pilots were doing, and there were accidents that happened, and you lost people. If you want to just talk about some of that, and how that affected the Center.

H. CURLEY: Yes. There were a lot of accidents. In fact I was somewhat associated with them, because I lived on the Base before then. A good friend of my father's was killed in I think it was a [Boeing] B-47 [Stratojet] that crashed. It happened fairly regular. You go to the Base, all the streets are named for pilots that died in accidents. Yes, I can remember the day the [North American X]B-70 [Valkyrie] crashed. I'm trying to think of names now. I can't think of his name.

N. CURLEY: Joe [Joseph A.] Walker?

H. CURLEY: Joe Walker was the one that was killed. But I'm thinking one of the other pilots got in a [Lockheed F-]104 [Starfighter] and went out to look at the site.

JOHNSON: Don [Donald L.] Mallick, I think in his book was talking about going out and looking at the site. It was him and somebody else he was with [James "Doc" Roman].

H. CURLEY: Yes. I remember being out in back of the Calibration Lab, I guess nobody had heard that they were all dead. I guess they assumed they were. The one pilot came back and landed, and he walked back up to the building. There was a group of us standing there, and he said, "He's gone."

JOHNSON: I imagine that was very difficult, especially if you knew them socially and worked with them.

H. CURLEY: Well, there was an [North American] X-15 accident with an Air Force pilot [Michael J. Adams]. I did not know him. I did not know him. I didn't know some of the Air Force pilots that flew in the X-15 Program.

JOHNSON: You were talking about the X-1, when it first flew it was very hush-hush because the U.S. was trying to do something and they didn't necessarily want anyone to know that they had broken the sound barrier at the beginning. With X-15, there were a lot of—in working so close

with the Air Force—there were a lot of projects, programs that were classified or highly classified. Did you have to have any kind of special clearance?

H. CURLEY: Yes, I did. I did. I don't think you did, did you?

N. CURLEY: I had a secret clearance because of documents that I handled. Because I had to go sit up in the branch office from time to time to fill in, and I had to put documents in and out of the safe.

JOHNSON: What was it like getting that clearance? Do you remember what that process was like?

N. CURLEY: I remember my neighbors wondered why they were being questioned about me. They would do some kind of investigation. I don't know any details of it, really.

JOHNSON: You had the same thing?

H. CURLEY: Yes, in fact, I looked at it last night. I went and looked at some things, so I could refresh times and memories. I'll show them to you. I even found my three job applications for '54, '56. I was only with NACA for four years, but it was over a period of six. Well, it was more than that, because I kept having breaks, one year, then a break, then two years and another break, then another year, and then we were into NASA.

JOHNSON: During the earlier years at NACA do you remember or recall any visits from famous people, or people that would have been memorable visits to the Center?

H. CURLEY: The famous people who came of course was all with space. [President Lyndon B.] Johnson and [President Ronald] Reagan. I do remember at NACA a bunch of the leaders flew out, and it might have been for the new building, I'm trying to think what it was. They got us young guys in the Cal Lab, they sent us over to the Main Base, and the people that I guess were coming from Langley or someplace, they landed in an airplane, and we went to get their baggage. They sent us, we were the young guys at the bottom. They sent us to get the baggage and put it in a van and bring it from the runway. I don't remember what the occasion was. I don't remember who the people were, it must have been [Hugh L.] Dryden and some of those people I guess. These are important guys, everything has to be done just right. That's the only thing I recall. I don't remember them doing too much more, I don't know.

JOHNSON: In your job description you were moving man, baggage handler, calibration, you did a little bit of everything.

N. CURLEY: Whatever was needed.

JOHNSON: That's right. That seemed to be a spirit, from what I've read. Out here especially in this area, at this Center, that it was pretty much whatever was needed, you did it.

H. CURLEY: The people I worked with were my best friends, we were together all the time when we were apart from work.

JOHNSON: It was small too. There weren't as many people here.

H. CURLEY: Yes. We used to do things on weekends, a lot of the single people would get together and go to the mountains or someplace, we were always doing things. I used to go backpacking with some of the engineers.

JOHNSON: You got married in '61 you said? Did you continue working for a while afterwards?

N. CURLEY: I did for almost a year, well, most of that year; I stopped before our first baby was born.

JOHNSON: Where did you live when you got married?

N. CURLEY: We lived in Lancaster.

H. CURLEY: Yes. We've always lived here. We've moved a couple of times, we rented at first, and rented several times before we bought a house. We're in the same house we bought. We've been in there a long time.

JOHNSON: You just drove to work together after that I assume.

N. CURLEY: Actually we carpooled. His brother and his wife lived just down the street form us, so we carpooled together for a while.

JOHNSON: They worked also at the Center?

N. CURLEY: Right. They both were at the Center.

H. CURLEY: Yes, my next brother worked there for a while. He didn't make a career of it, but he worked there when he was young. He eventually went into law enforcement, ATF [Bureau of Alcohol, Tobacco, and Firearms] agent, Treasury [Department].

JOHNSON: As far as the NACA, is there anything that comes to mind that you think would be the most significant thing that you did while it was still NACA, or any other anecdotes about that time period that you can think of?

H. CURLEY: Yes, I looked at that list of things. My NACA time was mostly me just learning the trade and progressing. I went from an engineering aide to calibrator. They were always changing titles, and then you go through calibrator. Then they gave me an engineer's rating, like I told you, through the civil service exam. Then I had a more responsible position in the Cal Lab. They would let me do the more important things. Then Don Hallberg was my boss for a while. The organization would change character every once in a while. People would move up. Don didn't like it, so then I became a branch head.

JOHNSON: When was that?

H. CURLEY: I don't remember. That would have been in NASA. It would have been after NACA. NACA, I was still just an instrument calibrator. I think I was GS-6 and then went back to 5 as an engineer. Then I worked my way up through the engineers. Then they did—well, this was NASA—NASA did a big reorganization, they changed the whole organization. They formed a facility manager group, and they asked me to be a facility manager for calibration and test. That's when I worked for John McTigue. The Director then was the pilot [John A. Manke], and he became the Director. Well, of course there's the time we were under Ames too. There was a while there, Ames was the big Center, and we weren't, so they put us under Ames.

You used to have to fly to Ames to coordinate with people, and then, well, now Ames has gone away, and Armstrong is the bigger Center. Things change. Yes, I tried to think, but I don't know that I did anything.

JOHNSON: Other than learn.

H. CURLEY: Yes. I don't know what I would call something significant.

JOHNSON: Is there anything that strikes you that you worked on during that time that you remember as being interesting or something that jumps out in your mind?

N. CURLEY: All of the aircraft projects were interesting to me. The fellows would take me out back and show me what was going on and explain things to me, and I saw a lot of special landings of different crafts. Usually we couldn't see the takeoffs, they were too far away. They were down the other end. It just was all very interesting. I think the X-15, I don't remember if that came while it was still NACA or if that was after NASA.

JOHNSON: It was '60, I think, 1959 or 1960.

N. CURLEY: I think it was, yes. I think it was a little bit later, we'd go out and watch all those landings. I was thinking about it the other day. The fellows acted more like fathers to me and showing me around and teaching me all the information and showing me how things worked. It just was very interesting to me, because it was something that was all entirely new.

JOHNSON: Something that you weren't necessarily expecting to do when you were still in school?

N. CURLEY: I had no idea I was going to do something like that. But I always enjoyed it.

JOHNSON: You mentioned that you came here when you were a sophomore in high school to the area.

N. CURLEY: Yes.

JOHNSON: Where did your family come from?

N. CURLEY: I was born in Indiana, but my dad followed construction jobs on the Bases, so we traveled all over the country.

JOHNSON: This is quite a difference as far as the environment, from Indiana to here.

N. CURLEY: Yes.

JOHNSON: Was that an adjustment as far as working? As Rebecca mentioned before we talked, women had a dress code that they had to follow, and you were expected to dress certain ways. Of course sometimes this environment was a little harsh for that.

N. CURLEY: It was just the normal way to dress, because even in high school here you did not wear pants. It was not the accepted thing. Every once in a while when we had snow days, we would have an exception and be allowed to. So it was just what I was used to.

JOHNSON: Wasn't anything unusual about it.

N. CURLEY: No.

JOHNSON: Of course there wasn't any air conditioning at that time either.

N. CURLEY: Oh, there was at the NACA Center. It was quite comfortable.

JOHNSON: It wasn't an uncomfortable work environment.

N. CURLEY: No, it was comfortable.

H. CURLEY: At the old base, we didn't have air conditioning.

N. CURLEY: This was the new modern buildings, it was quite nice.

JOHNSON: Better than being at home probably sometimes.

N. CURLEY: Yes. We didn't have AC at home.

JOHNSON: It changed over to NASA while you were still working too.

N. CURLEY: Yes, it did.

JOHNSON: You stayed for a little while with NASA. Did you notice any changes in the work that you did or the organization? I know you were in the same organization.

N. CURLEY: Not at that point in time, there really wasn't much change.

JOHNSON: Not a lot that you did differently or anything that came through?

N. CURLEY: I keep saying the thing that I remember the most about the change is that shortly after the change we had all these stacks of NACA stationery that we had to just dispose of. It took a few weeks probably until they sent in the new NASA things. We had all these things, what do we do with these? That was one of the things that was a joke among all the secretarial type women.

JOHNSON: You mentioned that you moved up as a branch chief first? Then you moved on into more management?

H. CURLEY: My first leadership was being over the Calibration Lab.

JOHNSON: Was there anyone in particular that you had worked for that you modeled some of your management style after? Was there anyone that you admired that you tried to follow the same type of management techniques or anything as you went through?

H. CURLEY: No. I don't think so.

JOHNSON: Did you just develop your own style? How many people?

H. CURLEY: It was a very small group. Ralph Pernula was the leader over us most of the time until he turned things over to Don Hallberg. Russ Mills was over Ralph, and he was one of the

original guys that came out. Well, I guess he came a little bit after Gerry [Gerald M.] Truszynski]. Gerry Truszynski was probably the big instrumentation guy that came out with the first group. Then guys like Russ Mills and Ralph Pernula came. Russ Mills was I thought a good example of a leader. I admired him. He was very helpful to me, and I think I probably tried to do things quite a bit like he did. Actually, well, the training, you know how the longer time went, they got to positions where they would do more training with people. It eventually got to where—well, I'm sure it's that way, all NASA Centers, they're always having training sessions. They would send you away to different places for these little conferences where you would get instruction.

I remember they sent me over to near Santa Barbara one time to a management training, and I can't think of the name of the guy. He's the guy that wrote all the training and management books that were written at that time. He was really famous. I remember I couldn't afford on the government [per diem] to stay at the hotel where they did it. I think I was the only NASA guy there. There were a bunch of other people from big organizations. Our secretary called over there and was able to get them to let me in under the government allotment to stay at a hotel. I thought that was funny.

JOHNSON: You mentioned that you had to go back and forth to Ames, when the Center was still a part of Ames. Did you go to any other Centers?

H. CURLEY: Yes. Maybe I ought to tell you about it. This of course is NASA. NASA got some complaints from the government about their calibration labs, their NASA standards. Apparently it had to do with money. They thought that NASA wasn't using their calibration standards,

because the Centers weren't sharing with one another, and they had duplication. Some guy from Washington was assigned to form a NASA calibration group with representatives from each Center. We would meet twice a year. We would meet at the National Bureau of Standards, either in Colorado or Maryland, and we would meet at different Centers. It was to try to work together with standards. To do calibrations you have to have standards. Ultimately they have to be traced—well, I don't think they were to start with, but ultimately they wanted them traceable to the National Bureau of Standards, which has changed names now, it's not what it used to be.

So yes, I've been to Langley, I've been to Johnson, I went to JPL [Jet Propulsion Laboratory, Pasadena, California]. They put JPL in with us too. I've been to Ames quite a bit. What made me think about that is I got to know the calibration manager at Ames pretty well. We had to coordinate things with them. I would go up to Ames periodically. NASA ran an airplane for a while. In fact the airplane might have come from JPL. It used to come up here and pick people up and then go to Ames, and in the afternoon fly people back. Yes, I got to know Ames pretty well. The other Centers I just got tours and had meetings over a period of several days.

JOHNSON: Neil Armstrong and some of the other early astronauts were out here at some time when it was NASA. We started with the early programs and then Apollo. Just talk about some of that time period, what was going on with NASA and what was going on at the Center during the Moon landing. And if there were any celebrations, or if there was anything going on that you can recall during that time period when NASA was accomplishing those goals that the President [John F. Kennedy] had set for us.

H. CURLEY: Antelope Valley is a big aerospace place. There have been periods where almost all the jobs were in aerospace, and you could see the housing go up and down with budgets. In fact for a while her parents, when I was dating her, lived in a place, the housing area was all empty almost. Empty homes. People here, they're big on aerospace. Of course there's a lot of new people coming in. Yes, they like those kind of things. People come over here to Palmdale to watch planes take off from here. They get on Sierra Highway, they park and watch new airplanes take off or something, and go to the Base. The Space Shuttle landings on the [dry] lake [bed] were big deals.

JOHNSON: That's what I was going to mention, because so much of that focus during Apollo was not here, because that's not necessarily what people realized, that the work here was actually going towards reentry, but nobody was aware of that until the Shuttle. Then all of a sudden the Shuttle changed the public perception of what was going on here.

H. CURLEY: Once I got into the facility management group, my boss was put in charge of this thing about greeting all these people who were coming to—I guess it was the one with Reagan, it must have been.

JOHNSON: The July 4th [landing of STS-4].

N. CURLEY: Yes. July 4th.

H. CURLEY: People went to a visitor center in Lancaster at the Antelope Valley Inn, and people were picked up on buses. Me and another engineer, I don't remember who was with me, we were in charge of one of the buses. We had to talk to the people on the bus about going out, and we were involved in helping the guys with security. Yes, it was a big impact. Of course technically we instrumented the [Shuttle] Carrier Aircraft [SCA, modified Boeing 747]. That was a big deal.

JOHNSON: Yes, and that was quite different, the whole idea of the Shuttle and the Shuttle Carrier Aircraft.

H. CURLEY: We had instruments on it, we had to put instruments on it. They were concerned about the structure that held the Space Shuttle, and they had strain gauges and all kinds of things. They wanted to know what it did to the fuselage. Even leading up to that first launch was an exciting thing. They didn't know what was going to happen when they flew. They flew it a lot of times with it up there, but then there was one point where they had to separate it. Even though aerospace people get excited about all things like that.

JOHNSON: Do you remember the Approach and Landing Tests [ALT] and the first release? Did you get to see it?

H. CURLEY: Oh yes.

N. CURLEY: Oh yes. Our family was involved in a lot of those things. We would go out and watch them, and even during this particular Shuttle landing on the 4th that you were talking about, my girls were teenagers. They worked at the Shuttle center in town, the visitor center. A little aside to this, my neighbor was a carpet installer person, and he carpeted the wing of the plane that Reagan stood on to make his speech. Our family and a lot of surrounding families were involved in all those things, besides going out to the Center. So we went out to the Center and saw all of the early landings, and all that you were allowed to go to. Yes. We were always involved in it one way or another, and he always had to go out early and work on some part of it.

H. CURLEY: We have all these buttons they gave for every landing.

JOHNSON: I imagine that was an exciting time, because all of a sudden the public realized, "Oh, there's a Center out here in the middle of nowhere doing this work, and the Shuttle is going to land there." I think I read that the release—the first approach and landing where they had the release and they landed the Shuttle—they said over 1,000 reporters were here at that time, and that was just unheard of out here, that much attention.

N. CURLEY: Yes, they were very exciting times.

JOHNSON: I imagine the whole community like you said, everybody being involved, and everyone was excited. Did they allow people, if you were family members? Or did they allow the general public to come on site to see those things? Or were there special areas set up so you could see the landings?

N. CURLEY: They had special viewing areas for the general public. The families and all went right to the NASA Center.

H. CURLEY: Yes, they let the families come here, but then up on the hill from Armstrong they had an area where people could come. Then they used to allow people to go in on the other side of the lake. They could drive around toward the rocket site and actually drive out on the lake where it landed and see it from the other side.

N. CURLEY: Well, viewing areas out there, they were restricted.

H. CURLEY: Yes, it was always a big deal. The people used to come from all over the place. I remember some guy I went to college with calling me up one time, he was from Turlock. He was coming down to watch the Space Shuttle land over on the Kern County side over near Boron and North Edwards, over on the other side. Yes, they were big deals.

Even in the aeronautical programs, people always liked to celebrate a significant thing on the flight. If something was done, then they'd decide they were going to stop at a place on the way home and celebrate.

N. CURLEY: I think they had a party after every X-15 landing.

JOHNSON: Yes, I was just going to ask you if those were significant, because they had a lot of flights.

N. CURLEY: I don't think that was general public so much, but the people involved. They were exciting times too.

JOHNSON: In the X-15, when that was ending, there was actually talk of closing the Center at that time, before the Shuttle started. There was that time period that things were a little uncertain, until they decided. I think they moved into the Supersonic Transport work, and that kept things going until the Shuttle. Do you remember that time period? Was there a lot of concern?

H. CURLEY: I think when they put us under Ames I think was one of those times they were wondering about closing the facility. The fellow that was our leader at that time was actually a [Lockheed] U-2 pilot. The spy aircraft. He was the Operations Chief at Ames, and they put him in charge of us [Martin A. Knutson]. They put us under them.

JOHNSON: Was that Manke, maybe? John Manke?

H. CURLEY: No. Manke is the pilot that was a Center Director, and he was a good friend of John McTigue. That's when they did the reorganization. They just broke up each group to where somebody was in charge of engineers, somebody was in charge of technicians, and somebody was in charge of money and planning. I was in the Facility Management Office handling the money and the oversight of the facility, but the engineers assigned to us were in one group, and

the technicians were in another group. I don't know if they still have that out there that way now or not. It was quite different than the way it was before.

JOHNSON: At any point during those times where you weren't sure about funding or what was going on, were there any times you ever considered not working for NASA, or maybe changing careers, to go somewhere else or do something else?

H. CURLEY: No. No, I don't think so. Actually I took an early out.

JOHNSON: In what year did you leave?

H. CURLEY: 1985. It was probably one of those times. They offered a lot of the managers early outs. I don't know if it was during the Ames time or not. It might have been. Because to get you out early they make an offer to you, and you reject it, so they offered me a slot at Ames, and then if I rejected it, they would let you go out. A number of managers went out, and I did. I had 32 years. I think you had to have 25. I went out.

JOHNSON: Did you go do anything else afterward?

H. CURLEY: Yes. I went to the rocket site [Air Force Rocket Research Laboratory] on the other side of the lake and worked 15 years.

JOHNSON: You had your second career.

H. CURLEY: I don't know why I did it. She didn't want me to do it. She was a little bit upset about it. I don't know, it might not have been—it worked out though. It worked out well for me, because I enjoyed my job at the rocket site. There I actually got to work on rockets. I got to work on more—calibration for NASA, I was working in an area that supported the project—up there is right on the rocket, so I enjoyed that. Worked up there.

JOHNSON: Did you ever get to fly on anything while you were here? Were you ever interested in that?

H. CURLEY: No. Actually people would go up with the pilots. I don't know if they were supposed to do that or not. I could have got a ride I think, I don't know. I'm not too hot about it. I know another guy in the Cal Lab got a ride. It's wild. The pilot likes to turn you over if he can. Some people come back sick. So no.

I've been up in airplanes a number of times. We flew to Ames quite a bit in that small airplane. A lot of the guys at Dryden, a lot of people had their own airplanes. There was a spell there where guys were building their own airplanes. The aeronautical people, they like to build their own airplane, and Don Hallberg had a plane of his own. He didn't build his, but there were a lot of little airports around the valley, and the guys would have their own airplanes.

JOHNSON: And I know gliders are a big thing out in this area because of the environment.

H. CURLEY: Yes. Oh, yes. Gliders. A lot of guys worked with Paul Bikle. In fact we calibrated some of his stuff. He had an altimeter to measure his flights, altitude. He was trying to break altitude records. They would bring it in the Cal Lab and have one of our guys calibrate it periodically.

JOHNSON: It must have been interesting. I know that the personalities of pilots and people that are interested in that are—it's pretty interesting working with those types of people, I would imagine.

H. CURLEY: Yes. It was interesting. It just had a chart like, and it just had a needle that went up like this and came down. He carried it in his glider, but we'd have to calibrate it so they'd know when he got to 20,000 or 25,000 or wherever he went. I don't think I did it. One of the technicians did it. I think that's when I was the branch head.

JOHNSON: You mentioned too those early things with calibration, everything was on film, and then of course technology changed, and things became computerized. During your time, things were already changing pretty rapidly. Can you talk about some of those technology changes? When the female computers, they were mostly female, were doing those numbers, it would take them days or weeks to arrive at a certain place. Then once computers came along, of course that was happening so fast. Any of those changes in your area, or how did it affect the workload or the ability for your area to do the job?

H. CURLEY: The biggest change in calibration, well, now they use the word metrology more. They like the word metrology. I go to church with another guy that's a calibrator, and he likes to talk about how we're calibrators, not metrologists. That's the more technical.

What happened was the instrument that goes up in the airplane, you have to have something more accurate to check it to. As they began to improve the instruments that went on the aircraft, they began to get more accurate. Then pretty soon, in some areas, they were getting almost as accurate as the standards. You used to check something with the standard that was a significant amount more accurate. You want it to be much more accurate than the thing you were testing. That gap began to close, and so it makes things difficult because the standards you have, and you have to do a lot of special things to keep your standards.

You go to the National Bureau of Standards, and the way they take care of their weights is extravagant, temperature control. That made things a little more difficult because, well, when you bought new instruments from a supplier, you always had to check them to make sure they met the specifications. You buy something from somebody and they said this is what it'll do. We used to have to check in the Cal Lab to make sure it did do those things, like you're measuring pressure but the instrument you're measuring pressure with is going to go to altitude in an airplane, and it's going to get cold. What's it like when it's cold? It's going to measure different than when it's warm or hot. Those things started getting more difficult. You're going to colder temperatures, and it's harder to find the standard to check it. There's some impact just from the advancement of technology.

JOHNSON: As far as setting those standards, since like you said it was different because of the altitude, for example temperature, was NASA setting some of those standards? Nobody else was doing that, right, as far as the calibrating?

H. CURLEY: The standards pretty much comes from the National Bureau of Standards. They're the organization that's responsible for that. Things are supposed to be traceable to them somehow. As time went on things got more—well, I was part of that committee. More emphasis then was put on your standards, like here's a thing that goes in the airplane, here's the thing you check it to. This thing is checked to this thing, and ultimately it's supposed to end up at the National Bureau of Standards somehow. The Centers would send things, and I don't know, maybe they've gotten away from that, but the Centers used to send things to the National Bureau of Standards, and they would tell you this is how good it is. Then you bring that to your Center, and you use that to make sure these other things are good. But that's changing almost all the time. In the old days we didn't do stuff like that too much. Then it gets stricter and stricter. I don't know what they're doing now.

The instruments people use to measure things are supposed to be checked periodically, like people use a voltmeter, you don't need it in your home that way, but if you're doing something like we were doing, you have to know that voltmeter is accurate when you measure something. The only way to do that is to check it to something else. But then how good is that thing you checked it to?

JOHNSON: I imagine that was a large paper trail too just trying to keep track of everything and when things were checked against those standards.

H. CURLEY: I don't know how that thing with the NASA committee worked out. I don't even know if they still have it anymore. I know somebody replaced me when I retired. I don't know, sometimes those things have a way of going away over a period of time. But I did think it was helpful in knowing guys at other Centers. I got to know the guy at Ames pretty well, and JPL. I got to know those guys pretty well. The guys at other Centers, I would only see them once or twice a year.

JOHNSON: You mentioned before that some of his hours sometimes would be longer. Were your hours generally 8:00 to 5:00 all the way through since the beginning? Or were there periods of time where you were working extended hours if something was going on?

N. CURLEY: There were some periods of time when he worked overtime, worked late for weeks on end.

JOHNSON: I guess specific to a project?

N. CURLEY: It must have been. I don't really remember what it was about. I remember several times when he worked.

H. CURLEY: It was more overtime under NASA. Like I said, I don't remember too many times with NACA. Of course I wasn't the guy they probably would have stay over to do it. I was at the bottom. But later yes, there would be times. They have an X-15 flight scheduled, they don't

want to cancel it. If they had an instrumentation issue, guys would have to work and get that instrument in the aircraft in time for the flight.

N. CURLEY: Yes, as I recall, most of the times I'm thinking of were during X-15 flight time periods.

H. CURLEY: Like I told you earlier, a friend of mine who worked in the next room was a fellow in a wheelchair, and he was a repairman. We knew each other well. We would work a lot together. He'd be in the repair shop and me because we were trying to get some either altimeter or airspeed indicator to work right, and he'd tweak it, then I'd calibrate it, and if it wasn't right he'd tweak it again and I'd calibrate it. Then there'd be a guy, technician, from the airplane that then comes and takes that and puts it in the airplane, so all those people are working overtime.

We were working overtime to get the instrument ready, and then some guy has got to work to get it in the airplane before they can fly. Yes, probably X-15 was the most overtime thing.

JOHNSON: I want to ask Rebecca and see if she has any questions that she can think of.

WRIGHT: I've got a couple. You said you were working with the SCA, the instrumentation for that. Could you share your thoughts about when you first heard that the 747 going to be used to be the transporter first for the ALT, for the Approaching and Landing Test, and then it was going to be doing it for that? As a person who had to do the instrumentation calibration for that type of a test, it's a very strange structure to fly in space.

H. CURLEY: Actually it didn't make much difference to the instrumentation guy. We just calibrate the instrument, and the guys putting it in the airplane have to worry about it. With the Carrier Aircraft, you've got all kinds of room. Like the X-15, everything's crammed into little places. They take a cover off, and they got all these pressure transducers down there, hooked into pressure lines, and things are hard to get in and out. The Carrier Aircraft, you just walk up the stairs and you go in a great big room, and the instruments, well, they have to have instruments in places still. But they're easier to get to and easier to do.

I think they probably only had one technician assigned to that vehicle, and it wasn't instrumented as significantly, I don't think, as something like the X-15. Something like the X-15 had hundreds of pressure transducers on it. They had stuff all over, measuring everything. I do remember when the X-15 that crashed, I think it was Number 2, they actually brought an instrument to the Cal Lab to calibrate. They formed an investigation committee. They put some pretty important people on those things. They had people come from other Centers to participate in that because they wanted to find out what caused this accident.

I guess they had some concern for some indicator. They brought it to the Cal Lab and asked us to calibrate it. They had me do it. I had to test it. I'm trying to think what it was. We had to test it in a chamber. They wanted to see if the temperature had affected it. I felt like that was important, because I knew there was a group of guys that were important that were depending on this for their committee. As I recall, it worked all right as far as we could tell.

They thought it might be a contributor to the flight. I think they think the pilot lost his attitude somehow, he got confused with something. I don't remember what the final report was.

WRIGHT: They'd have to rule out, I guess.

JOHNSON: Yes, the instrumentation. They had to rule out that that was the cause.

H. CURLEY: Yes, that's right. They wanted to know if that contributed to it. I think they knew some of the things that had happened, but they wondered why they happened. It could be the guy read a meter wrong, but it could be that the meter was doing wrong things too. Well, they had some trouble with the attitude of the vehicle when it came back in. It was in space, so when it came in it had all that stuff that the Space Shuttle gets, and it got some violent effects on it and heat.

WRIGHT: How did you take what you had learned and what you had done at NACA and NASA and apply it to your last job on the rocket site?

H. CURLEY: I did basically the same thing. They hired me as a quality control guy, not as a technician. I wasn't even an instrument engineer. They wanted a quality guy. It was after the Shuttle when the rocket blew up.

N. CURLEY: The Shuttle explosion.

JOHNSON: The *Challenger* [STS-51L]? Okay.

H. CURLEY: I guess the same thing might have happened to the Air Force. They were trying to recover those Titan rockets. They decided to fire one at the rocket site, a full-size rocket, vertical. It was right after I retired. I think I had been retired about a year or part of a year. I went over and got interviewed, and they hired me right away. They wanted me to do quality. They wanted me to check instrumentation. They had technicians and guys who were putting everything on—it was just like what we did at NASA and NACA. They had technicians and engineers that were putting them on, but they wanted everything checked. I oversaw the quality control of it.

N. CURLEY: He sat on top of a fully loaded rocket one day. Checking it out.

JOHNSON: Did you know he was going to do that, or did you find out afterwards?

N. CURLEY: I didn't know until later.

JOHNSON: That's a little scary.

H. CURLEY: Actually when you work with those guys around rockets, it's surprising but it's not—well, what happened is it leaked between the segments. They have segments, each segment is 10 feet but they got to hook together about four or five of them. And when they put them together, they have to put an O-ring in there. You know what an O-ring is?

JOHNSON: Yes.

H. CURLEY: That's what caused the accident, the O-ring leaked. They were trying to improve that. But the way they put those things together, they lay one segment on top of another, and they pound these big pegs in all the way around that thing, bam bam. You look at the segment, it's all full of solid rocket fuel, and they're pounding these things in. You'd think they'd be worried about sparks or something. I guess it's a lot harder to light on fire than people think it is.

Just before the firing, they have a crew that handles the rocket when it's ready to fire, until they fire. They wanted to go up on the upper dome and check the pressure transducer that measures the pressure inside the rocket. That was part of their procedure just before firing, so I would go up with a technician all the way up to the fifth floor, and then crawl up on top of the rocket and hook up to measure the pressure.

N. CURLEY: And it was already armed.

WRIGHT: Had a good view.

JOHNSON: I don't think I'd look down though.

H. CURLEY: Yes, but they have safety things. They have things taken out so that nobody can—and those are the very things that are put in last. It has everything in it to make it work, but it's really not armed yet until something lights the upper end and starts it.

So I used what I had at NACA and NASA when I went up there. Eventually my job changed a little bit. Once we got through the rocket, I stayed with the contractor, and then it

went from quality control to safety. They made me a safety officer. That's something I should have had training on. But it worked out real well. Worked out real well.

WRIGHT: I just wanted to ask one other question, and it really goes back to those early days, even when you were both younger. We have so many forms of communication now, but back then you would hear these sounds, like the sonic booms, or you would hear explosions. How did the community react to that, knowing that all of this was taking place in their backyard? Was there any communication of what people would know? Or was it just by neighbors telling other neighbors when they found out from people working on site that that was a sound that the airplane makes when it breaks the sound barrier?

N. CURLEY: Oh, we would get hit with sonic booms numerous times a day, and depending on where you were in relation to it, the dust would fly up off the ground. You would actually have windows shatter in some houses if the boom hit you. People in the valley just knew that that was it.

H. CURLEY: Most people knew in those days.

N. CURLEY: If you came here new, it took you by surprise until you found out what was going on. Then it was just accepted. That was the work going on out there.

H. CURLEY: When the area was small, almost everybody here knew, well, that's sonic booms at the Base. Of course they didn't know the more secret stuff was going on. They did a lot of

really secret things at North Base. When I was still living with my mother at North Base before we got married, they had U-2s there, the secret aircraft, and I didn't know. I think I was dating her, I would come into town and date her and then drive all the way through the Base to North Edwards to go home. I always used to see something landing at North Base. You could see the lights on the wingtips, quiet, come down, land or take off. We didn't know until they shot the one down in Russia.

JOHNSON: What it was.

H. CURLEY: Yes. Then they brought one over to Dryden. They wanted to show it to the news people. Interestingly enough, that was probably the first time a lot of the NASA people had seen it.

JOHNSON: Yes, I imagine the level of secrecy in things that were going on, because everything was so isolated out here, it was a good place for that type of work.

N. CURLEY: When they brought that U-2 in, they wanted the public to think that this was a normal thing. We were told not to go out back and watch it or anything. We were told if we went out there we'd be shot, was the rumor going around, but we still all poked our heads out and watched, and never saw anything fly quite like that. We were all really very interested in that.

JOHNSON: I imagine you did get to see a lot of very interesting things fly that most people would never even imagine.

N. CURLEY: We did. Yes. Then back to the early times and the sonic booms, other than the engineering people that were here the valley was mostly farming. Our population was very small compared to what it is now. Everyone knew. They didn't know what the projects were, but they knew what all the sonic booms were.

H. CURLEY: Now there would be a lot of people in Antelope Valley that really wouldn't have any idea what's going on at Edwards, I don't think. Big influx of new people, younger people.

WRIGHT: When you and your friends were doing the basketball league and the bowling and hiking, did you all talk about work? Or were you not allowed to talk much about work off the Base?

H. CURLEY: Oh no, we talked about work. You just had to be particularly—I think the secret stuff came more with the X-15. I think it was the X-15 that a lot of people just didn't want to talk about what they were testing for. People on their outings, I don't think they talked much about work. A lot of these people ended up being married to each other. I remember people we went around with who were single, and two of them would marry from the group, that's how they met.

JOHNSON: I would imagine that your relationship, you weren't unusual. I imagine there were other couples that met on site, and that was maybe the only place to meet people.

N. CURLEY: It was one of the places, right.

JOHNSON: Yes, the size of the communities weren't that big.

WRIGHT: You didn't want to go back to work after you had your children?

N. CURLEY: No, I've never gone back. I've been a stay-at-home mom.

WRIGHT: Full-time job.

N. CURLEY: Yes, that is.

H. CURLEY: I always enjoyed my work. You hear people complain about what they do, and they can't stand to go to work. I'm sure there were times I didn't really want to go to work, but I liked what I did. I liked the people I worked with. Even at the rocket site, I enjoyed it. I didn't stop until I was 70. I worked up there. They had limitations on what you could earn back then. If you were getting a civil service retirement, a government retirement, you could only earn so much. There were periods I couldn't work full-time. Even then I cut my hours back when they had that law in effect. Yes, I worked till I was 70, I think. Finally, they were starting to cut

people. I said, "Well, don't start cutting me, just tell me not to come in sometime." Then one January, the supervisor told me, "Harry, don't come in anymore."

JOHNSON: Is there anything we haven't talked about, or any other anecdotes that you can remember?

H. CURLEY: No, I don't think so. Did we cover pretty much everything on the list?

JOHNSON: Yes, I think so, the topics that I had down, I think we've covered them. But if there's anything that you think of later, you can add it, once you get the transcript. If something comes to mind, any anecdotes or anything you'd like to add. But we appreciate you coming in.

[End of interview]