NASA HEADQUARTERS NACA ORAL HISTORY PROJECT
EDITED ORAL HISTORY TRANSCRIPT

DONALD L. HALLBERG
INTERVIEWED BY SANDRA JOHNSON
PALMDALE, CALIFORNIA – FEBRUARY 20, 2015

JOHNSON: Today is February 20th, 2015. This oral history session is being conducted with Donald Hallberg in Palmdale, 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 coming up and seeing us today. We really appreciate you taking the time. Let's talk, to start out, about your background a little bit, and your education, and what brought you to the NACA. I believe you started in 1952, is that correct?

HALLBERG: Fifty-two, yes.

JOHNSON: Okay. Just what brought you here?

HALLBERG: Well, I had never heard of it before. Grew up in California, then went to Seattle [Washington] for college, and graduated in '52, and applied at Boeing. They weren't hiring. Saw an ad on the bulletin board at school for NACA Ames [Research Center, Moffett Field, California], and I used to live in Turlock [California], so that sounded good to me. I applied there, and they didn't have any openings. They sent my application down to Edwards [Air Force Base, location of the NACA High Speed Flight Research Station, now Armstrong Flight

Research Center], I had never heard of them before, even though I lived in California. They hired me in there.

JOHNSON: Did you have any idea what they were hiring you into, what area you were going to be working in?

HALLBERG: When I went to college, I didn't really know where I was going. I was interested in model airplanes all the time when I was high school, so I was interested in aeronautic stuff. But they didn't have any engineering at the school I was going to, so instead of transferring to the University of Washington, I went and majored in physics. I guess when they hired me in here at physics, they figured that could fit into instrumentation, so that's where they put me.

JOHNSON: What type of training did they give you at the beginning when you first came into the instrumentation area? Was this completely new to you, as far as what they were doing?

HALLBERG: Yes, well, of course, physics background, I was acquainted with some of those things. Yes, it was on-the-job training. Then, they also had—I think it was a six-months course once a week, or something like that—to indoctrinate you into aerodynamics, and what they were actually doing here.

JOHNSON: What was it like, those first days? If you can remember that first day, and what you had to do in maybe those first few days. What was that experience like?

HALLBERG: It wasn't too fancy. They were in old World War II barracks on the old South Base at Edwards. Instrumentation had just moved into an old garage. It really wasn't the ideal scientific setup you might expect, but it didn't bother me any, I was used to that kind of thing, going to a small school.

JOHNSON: It was relatively rough conditions, though, as far as where you had to work. How did you get here? Where did you live when you first started here?

HALLBERG: I drove my old 1940 Chevrolet down from Seattle. They put me up at a barracks at North Base, which was the only affordable place, when you're hired in such a low salary. When I couldn't get a job in my field in Seattle, I went to work for a friend of mine who was a carpenter's helper, for summer for $1.75 an hour, came down here and hired in as a scientist for $1.50 an hour.

JOHNSON: Did you ever think, "What am I doing?"

HALLBERG: No, I was happy.

JOHNSON: Talk about those barracks. Did you have a roommate in those barracks?

HALLBERG: Well, you were supposed to have a roommate. They were set up for two beds, but there were not too many there. So, most of the time, I had a single room, and really affordable.

Then, they had a cook there, so you could have breakfast and an evening meal there, of course. They even had transportation for people who didn't have their own car.

JOHNSON: What kind of transportation did they have?

HALLBERG: Well, it was a carry-all. It was an eight-passenger, they call them "carry-alls" down there, they're SUVs now. Did you hear anybody talk about Alan Brown?

JOHNSON: No.

HALLBERG: He came about the same time I did, a little bit before. He was the manager, he drove that. He was quite a guy. He saved his whole first-year's salary, and I drove him down to LA [Los Angeles, California] after a year, and he paid cash for a brand new car. No too many people do that nowadays.

JOHNSON: No. It's a little harder now, isn't it, to save up that much money.

HALLBERG: Yes. It was only two thousand dollars, but then that was two thirds of his annual salary. I don't know, he really lived frugally for the first year, driving the company car and living in the cheap barracks.

JOHNSON: How were those barracks heated and cooled?

HALLBERG: They had an old swamp cooler on them, sometimes you'd have to come home in the evening and have to shovel out the sand.

JOHNSON: Was it your first experience in a desert type of environment?

HALLBERG: Yes, right. I had been in San Joaquin Valley. Turlock was an agricultural area. I didn't know dust storms.

JOHNSON: I bet that was an experience the first time you experienced one of those. We've heard that they can take the paint off a car.

HALLBERG: You changed your windshield regularly back in those years. It seems like there was more people changing their windshields every two years or so, because it got so pitted from the dust storms.

JOHNSON: When you first went to work, the planes that were there, those early [Bell] X-1, X-2, X-3 planes, what did you work on at first? What project did you work on?

HALLBERG: Oh, I was in instrumentation, so I just worked on the recording instruments that come out from Langley [Research Center, Hampton, Virginia]. They sent all the instruments out and we calibrated them with the old mercury manometers.

JOHNSON: If you want to talk about those instruments because obviously, technology changed a lot over the years. But those first instruments you were using, can you just talk about those for a minute, and maybe describe what they were doing?

HALLBERG: It was all pretty simple stuff then, mercury manometers, and temperature measuring devices. We had to deep freeze to use for a cold temperature test. Not very sophisticated, but it got the job done.

JOHNSON: You were calibrating at that point?

HALLBERG: Yes. Everything was recorded. The main recording of those instruments they built at Langley were film drums, so you'd develop film, learn to process film and read the film with a precise scale. Then they'd use that, made those measurements to then interpret the flight data, for how fast they'd gone, and how high they'd gone. We did some of the calibrations right on the airplane, too. You'd have to go out in the hanger with the equipment.

JOHNSON: You were exposed to the different aircraft that way?

HALLBERG: Yes. Didn't specialize in any one, it was for all the aircraft.

JOHNSON: It was basically the same equipment, you just put it on different aircraft? In different locations, I would assume, just depending on the aircraft.

HALLBERG: Yes.

JOHNSON: You said you learned to develop film?

HALLBERG: Yes.

JOHNSON: Were you using that equipment from beginning to end, then? Setting it up, calibrating it, installing it?

HALLBERG: We didn't install, there was another crew that installed it.

JOHNSON: You were a physicist, but you were classified as an engineer?

HALLBERG: I was actually hired in as a scientist, but then, when NASA came along, things changed. But the physicist, I guess, fit into the scientific better than engineering. They did have mechanical engineers, but my degree fit more into the scientific category, I guess.

JOHNSON: About how many people were working in the area you were working in when you first started?

HALLBERG: Well, it was combined, the calibration shop was also the fabrication area. There was a machinist and the people that built the instruments in one section. There was probably a half a dozen people there, and then another half a dozen in the calibration section.

JOHNSON: Did you work closely with the people that built it?

HALLBERG: Yes, because they'd have to build some special fixtures for us. We were like one group, essentially. It was all under instrumentation.

JOHNSON: If they had to build something special, how did that work? Who designed that?

HALLBERG: Well, it depends on what was needed. Sometimes it was built for the flight, and sometimes it was built for our calibration needs, so we'd design that part. Of course, most of them came out from Langley in those days. There weren't too many instrumentation things originated at NACA then.

JOHNSON: Were there Langley engineers that would come out and do work also? Or, was it just the equipment they would send out?

HALLBERG: Just the equipment. There was some of them in aerodynamics, but they didn't usually send out instrumentation engineers, except for the ones that originally came out.

JOHNSON: You mentioned that you lived in those barracks. How long did you live there?

HALLBERG: It seemed like a long time, going back thinking of the days, that was just a couple of years, I guess, at the most. Then they were going to shut them down, so we all had to go find residence elsewhere, and I moved into Lancaster [California] then, in an apartment.

JOHNSON: That was a little bit more of a commute.

HALLBERG: Yes. Back in those days, you didn't want to drive 30 miles alone. Everybody had to carpool.

JOHNSON: Oh. Do you remember some of the people you carpooled with?

HALLBERG: Yes.

JOHNSON: Was it just a variety of people?

HALLBERG: [R.] Dale Reed was one of them. Have you gotten acquainted with his name in this?

JOHNSON: Yes.

HALLBERG: He was one of my early friends I met here. He was from Sun Valley, Idaho. I was just starting with skiing, and he was a really good skier, so we went skiing together a lot. He was quite an engineer.

JOHNSON: Was there a lot of social activities like that available for people that worked here?

HALLBERG: They didn't do too much like that, that was kind of on your own.

JOHNSON: Did you participate in any of the groups that got together, like the people that bowled?

HALLBERG: Well, some did. I didn't start that for quite a while. They had their annual picnic and that kind of thing was good. I don't remember, but yes, I was usually off doing other things.

JOHNSON: In 1954, they built the main base.

HALLBERG: Yes, that's when we moved into the new building; that was really nice.

JOHNSON: What were the differences between the place you were and then the new building?

HALLBERG: Like an old wooden garage, compared to a new modern structure with air conditioning.

JOHNSON: You were a little cooler, then?

HALLBERG: Yes. Cleaner.

JOHNSON: Where you worked, where was that located? Was it in the hanger?

HALLBERG: No, it was a building right next to the hanger.

JOHNSON: Was it a separate shop area?

HALLBERG: Yes.

JOHNSON: Once that happened, did the number of people working in your area start growing, also?

HALLBERG: Yes, that grew, too. Actually, when they changed our name to N-A-S-A, that's when we first got some money to spend. It was a real low budget before that.

JOHNSON: There were a lot of different research planes during that time period. Of course, as you mentioned, when everything switched to NASA in 1958, do you have any memories of that period right before that in 1957, like when Sputnik [Russian satellite] launched? When people started talking about the U.S. going into space? Do you remember that happening out here, or the discussions that might have taken place?

HALLBERG: No, we were in aeronautics, and we didn't really pay much attention to space, except for the X-15, but that didn't really get much publicity until NASA came along, either.

JOHNSON: Yes, and those X-15s, I think, were delivered in 1958, that's when they arrived?

HALLBERG: Yes.

JOHNSON: That was around the same time period when everything switched over? Did you stay in that area all the way through your career?

HALLBERG: Yes.

JOHNSON: Can you talk about the progression of your experience in that area?

HALLBERG: That's when the money started changing, and they had to hire a lot of people in that time period. Around 1960, I guess, is when most of the people started coming in. That's when they changed my name to different categories to get more pay. They couldn't hire people in at certain grade levels, so they changed them to a new name and a new grade level.

JOHNSON: What did they change you to?

HALLBERG: I ended up being a "technologist," or something like that. I don't remember what the whole progression was, but we went through a series like that, so they could hire in new engineers, because they were having trouble attracting—NASA wasn't noted for high pay in those days, they had trouble attracting college graduates. They had to change their pay scale to

compete with private industry. That was the other thing, everybody wanted to leave to go to the private industry, because they got per diem for living out here in the desert, and we didn't.

JOHNSON: So if they worked for a contractor, they would get more money.

HALLBERG: Yes.

JOHNSON: Did you stay in Lancaster the whole time?

HALLBERG: Yes, I stayed in Lancaster. When I got married, we looked around. My wife had lived in Lancaster all her life, and she wanted to look around. We thought of Tehachapi, but we came back to Lancaster.

JOHNSON: Did she work out at the Center also?

HALLBERG: She had, for a short time.

JOHNSON: Was it when it was NACA, or after NASA?

HALLBERG: No, she worked at the Air Force for a while.

JOHNSON: That's interesting. There weren't a lot of women when you first started out at NACA.

HALLBERG: No.

JOHNSON: I imagine that changed a lot, even in your area, as time progressed.

HALLBERG: Yes. Right.

JOHNSON: Do you remember when women started moving into the area of instrumentation and calibration?

HALLBERG: Yes. At first there was just a secretary, of course, and eventually got rid of secretaries. They'd call them something else, office managers. We were still out in that garage when they hired the first woman. They were some of the military wives that they hired in to do some of that film reading, and that kind of work.

JOHNSON: The computers and the mathematicians?

HALLBERG: Yes.

JOHNSON: They were working on all of these planes, and you said you were doing the calibration and instrumentation. Do you think people that worked at the Center and early on were aware of what some of these planes were doing, or what they were trying to do with some of these planes?

HALLBERG: Yes, they kept us informed on what research was going on.

JOHNSON: When they were planning a certain project, or research project, at what point did they bring your area into that? Or, was that something that you started meeting on early on, in whatever they were trying to test? Or, was it just a day-to-day thing?

HALLBERG: Just day-to-day. The instrumentation engineers was the one most involved in that part of it. They'd coordinate with us on what we were going to have to do.

JOHNSON: When the X-15 came, and then that was quite different, as you said, that was going into space. How did that affect the instruments?

HALLBERG: Well, it was more extreme environments.

JOHNSON: How would you test it for those extreme environments?

HALLBERG: We had test chambers for altitude and temperature to make sure everything was going to work, what they predicted they were going to get.

JOHNSON: Did you have those chambers all along? Or was that something that was brought in just for the X-15?

HALLBERG: Like I said, it first started out with the cold chamber being in a deep freeze. Then they went to a more commercial one that was made for instrumentation.

JOHNSON: So, the first one was just off the shelf, like you go to Sears and buy a deep freeze, and things became more specialized as it went along.

HALLBERG: Yes.

JOHNSON: Do you know if they were chambers that they specifically had designed for that? Or, were they already in the market for aircraft research?

HALLBERG: On the market, yes, they were.

JOHNSON: Would you have to put things in those chambers for periods of time?

HALLBERG: Yes, temperature soak them, and altitude.

JOHNSON: Do you remember having any problems with that, or anything failing when you did those tests?

HALLBERG: Yes, occasionally things would fail, an altitude test mainly.

JOHNSON: What was that chamber like? The altitude chamber?

HALLBERG: It had to be a pretty heavy construction to withstand the pressure, and sealed.

JOHNSON: As you said, you worked in that area all along. In what year did you leave?

HALLBERG: Actually, I retired from NASA in 1987, then I hired on as a contractor for part-time work in the same area. It worked out good for me.

JOHNSON: So, you were there from basically seeing those first X-1 planes all the way through the [Space] Shuttle?

HALLBERG: Yes.

JOHNSON: It must have been interesting.

HALLBERG: Retired then, from that, in 2000.

JOHNSON: Did you do instrumentation for those early Lifting Bodies? The calibration?

HALLBERG: Yes. Dale Reed was one of the main guys in one of those.

JOHNSON: It was kind of a different flying vehicle.

HALLBERG: Yes.

JOHNSON: Also, the LLRV [Lunar Landing Research Vehicle], did you have any work with that?

HALLBERG: Yes. We had something to do on that, too.

JOHNSON: Anything in particular you can remember about either one of those programs?

HALLBERG: No, I wasn't very much involved.

JOHNSON: Then, of course, the Shuttle Program, with the Approach and Landing Tests?

HALLBERG: That was our big publicity heydays then. I remember the biggest one, when President [Ronald] Reagan was here, people and flags all over the place.

JOHNSON: Everybody was, I imagine, here at the Center during that time, weren't they?

HALLBERG: Yes.

JOHNSON: Those first flights, as I mentioned, the Approach and Landing Test flights, and then the first Shuttle landing, were you able to be here for all those first ones?

HALLBERG: Actually, they had us assigned to be guides on some of the bus tours from some of the celebrities they were inviting. It turned out nobody showed up for my bus. I think Johnny Carson was supposed to be on it, and I was looking forward to that, but they decided not to make it. But they did a little over-planning on some of that original Shuttle stuff. The population really turned out for it, but all the invited guests didn't seem to show up.

JOHNSON: Do you remember some of the ones that did?

HALLBERG: No.

JOHNSON: You mentioned Johnny Carson, they must have been inviting celebrities and politicians, I imagine. That's pretty interesting. It was an interesting time, because I know NACA days and then early NASA days out here, it was kind of quiet. As you said, you didn't even know it existed when you first started. You knew about Ames, but you didn't know about here.

HALLBERG: Yes.

JOHNSON: Then the Shuttle, of course, brought a lot of publicity out here for people.

HALLBERG: Yes.

JOHNSON: Kind of a different environment. Do you have any memories about that time period, about the Shuttle Program, and how that changed? Were you involved in doing anything in preparation for that?

HALLBERG: We had some instrumentation, but not much. It was mostly handled out of Houston [Texas, Johnson Space Center]. Actually, I guess when they first started that, a lot of our people transferred to Houston.

JOHNSON: Oh, did they?

HALLBERG: Yes. I was tempted to go. I got a phone call, but I didn't go.

JOHNSON: What made you decide not to go? Didn't feel like the right move?

HALLBERG: Yes.

JOHNSON: Did you ever travel to the other Centers as part of your job?

HALLBERG: Just Ames. A few trips up there.

JOHNSON: What was that for?

HALLBERG: Well, the original one was indoctrination. They take all the new hires up there to show them around, see what else NASA was doing. Then later, we were under the leadership of Ames. Then we'd coordinate with them, we'd go up there for some instrumentation projects.

JOHNSON: The technology changed a lot.

HALLBERG: Yes, completely.

JOHNSON: As you said you were using the film readers. By the time you were working on that, can you talk about the changes it went through?

HALLBERG: Yes, from simple analog things to fancy digital. It was quite a difference. Everything became under computer control in the later years, where everything was manually done, originally.

JOHNSON: That computer control, was it more difficult to take care of that equipment, or to calibrate that equipment?

HALLBERG: More challenging, but it was more fun.

JOHNSON: Was that something that they kept sending the people in your area to training to keep up on that?

HALLBERG: Yes, you'd have to get a little training on that.

JOHNSON: Where did they send you to train?

HALLBERG: Our first computers were Digital Equipment Corporation. Then we decided to go along with the [National Instruments] LabVIEW [Laboratory Virtual Instrument Engineering Workbench]. We went to Austin, Texas, for training on LabVIEW programming. So, I have been in Texas.

JOHNSON: That's a good part of Texas to go to.

HALLBERG: Yes, I liked that. Yes, that was a great change in the way we did things, then.

JOHNSON: Were you involved in the equipment, like, for the digital fly-by-wire plane?

HALLBERG: Well, that was a different area. We did the instrumentation on it, but we didn't do the fly-by-wire stuff.

JOHNSON: So it was completely separate from your area?

HALLBERG: Yes.

JOHNSON: What about the relationship between [NASA] Dryden [Flight Research Center, now Armstrong Flight Research Center] and Edwards? I know a lot of the pilots would be working back and forth. Was it the same in your area?

HALLBERG: Not as much. The pilots were a lot more acquainted with each other than the instrumentation. In later years, we did do more than we did, originally. Originally, we were pretty much separate.

JOHNSON: You mentioned some of the people, like Dale Reed, but did you get to know a lot of the pilots? Did you work closely with them?

HALLBERG: Yes, we're not very close to the pilots. We'd meet them casually occasionally, but didn't work closely.

JOHNSON: Did you make a point of watching some of the X-15 landings?

HALLBERG: Yes, some big event come along, we'd go out and watch them land on the dry lake, or whatever there was happening. It was an interesting time.

JOHNSON: We heard that a lot of celebration went on every time they'd have a successful landing.

HALLBERG: Yes.

JOHNSON: Did you ever go to any of those?

HALLBERG: No, I wasn't too much in on those. That was more the pilots and the crew.

JOHNSON: Was there any program that you were working with that you really enjoyed the most, or anything you enjoyed while you were out there with the NACA or NASA, that you'd look back and think, that was probably my favorite thing to work on?

HALLBERG: Well, the programming in LabVIEW, I think, was the most enjoyable part of things.

JOHNSON: When you were first majoring in physics, did you think you would ever be doing what you ended up doing?

HALLBERG: No. No idea.

JOHNSON: You said you were interested in airplanes.

HALLBERG: Yes. I flew model airplanes, and so I was interested in aerodynamics that much. But didn't really get into that much into aerodynamics, here. But I kept my interest in the field, anyway.

JOHNSON: If you look back over your career, what do you think would have been the most challenging thing for you to do?

HALLBERG: Probably the most challenging, when they tried to make me a supervisor. I tried it for a while, but I went back into the engineering part of it.

JOHNSON: When was that?

HALLBERG: Oh, in the ’80s. I can’t remember exactly when it was.

JOHNSON: You didn’t enjoy that?

HALLBERG: No.

JOHNSON: What about the working environment? From what we understand, the NACA had a way of doing things, and then once it became NASA, that evolved over time into a different way of doing things, and maybe there was more paperwork, I’m sure.

HALLBERG: Things were pretty much under control under NACA. I remember we used to have to go into the division office to get permission to make a long-distance phone call.

JOHNSON: But as far as the day-to-day activities, do you remember any significant differences between NACA—other than making phone calls?

HALLBERG: Well, the money available. The big difference was how you could spend money, and buy things you need, compared to having everything scrutinized for a penny.

JOHNSON: Like every Center, they've had their days when they had more money, and then days when they had less money. I think it was in the '70s, there was talk about closing the Center.

HALLBERG: I didn't ever think they would do it, because it was too ideal a flight location.

JOHNSON: Did it affect people's morale, as far as the work here?

HALLBERG: No, I didn't really notice that. The biggest effect on our morale, I guess, was 1957, when everything went to space. Everything in that whole area was really down then. That was a big depression here, because everybody was going to Texas.

JOHNSON: Did you lose a lot of people in that transition?

HALLBERG: Yes, there was empty houses all over town then, you could pick up a house for payments. It was a ghost town for a while there, when space first started up. I thought aeronautics was finished, but we survived.

JOHNSON: About how long do you think before things started picking up again? Do you think it was any one program that made it pick up, or—do you think maybe the X-15 coming in helped?

HALLBERG: No, it was mostly the aircraft industry that was hurting the housing in the community, not so much NASA. They were all going to space instead of building bombers.

JOHNSON: There were accidents that happened, several times while you were out here, working. Do you have any specific memories about any of those accidents?

HALLBERG: Well, the saddest one was when Joe [Joseph A.] Walker was killed in that [F-]104 [Starfighter, mid-air collision with North American XB-70]. That was really a sad day in the office. Of course, they all affect you, but that was a big one.

JOHNSON: After those accidents, did people just pick up and keep working?

HALLBERG: Oh, yes.

JOHNSON: It's something they lived with, the fear?

HALLBERG: Yes.

JOHNSON: We've heard that when it was NACA, and also NASA, especially in the early years, everything was more like a family in a community.

HALLBERG: Yes, it was. Yes.

JOHNSON: Did you feel that, too?

HALLBERG: Yes.

JOHNSON: Everybody supported each other?

HALLBERG: Yes.

JOHNSON: Even though you didn't enjoy it, moving into that management area, were there any people that you worked for, or Center Directors, or anybody that you felt were good mentors, or good managers that you worked with?

HALLBERG: That's hard to say. They were all pretty good quality.

JOHNSON: You came in during the time Walt [Walter C.] Williams was here.

HALLBERG: Yes.

JOHNSON: Then the Center Directors changed over time, and you had more NASA people, as opposed to aeronautical background people. Did that affect the feeling at the Center? Or, do you feel like it changed anything?

HALLBERG: Well, I don't know, it's hard to say. The bigger it got, the more downhill it went, certainly.

JOHNSON: I imagine the atmosphere changed a lot.

HALLBERG: Yes.

JOHNSON: You got out here at an interesting time in the history of the area, and there was a lot going on. I mean, we've heard stories of Pancho Barnes and her area out there [Happy Bottom Riding Club]. It was still there when you started.

HALLBERG: Right, a couple of us guys one night went driving over there. It was sort of closed down, then. I didn't even know what it was all about. But we went over and we went in, there wasn't any official activity there, but we went in and looked around, we went in and played her piano. Nobody else around when we visited the area, anyway. But later I found out what it was all about.

JOHNSON: It was a little bit different than you expected?

HALLBERG: Yes.

JOHNSON: A lot of history that went on, and of course you hear all the stories about her place.

HALLBERG: That was back when we used to be able to drive on Rosamond Dry Lake. We used to cut across the lake to go to Lancaster.

JOHNSON: That must have been interesting.

HALLBERG: Especially at night, you'd get lost. You couldn't find your way off.

JOHNSON: Did people get lost?

HALLBERG: I don't know if anybody did, but I thought about it at times.

JOHNSON: Yes, we heard people talk about the wild burros that would just wander around.

HALLBERG: Yes, I used to have a motorcycle, I'd ride out in the desert when I lived out in the dorm, there. They were always worried about rattlesnakes. I never did see one.

JOHNSON: Maybe you were driving too fast for the snakes. That's an interesting time, and you were relatively young when you came out here. Was everyone young like you were?

HALLBERG: No, not all of them. A lot of them transferred out from Langley with their families, so there was just a few of us younger guys.

JOHNSON: Did the younger guys tend to stay together and do things together and socialize together?

HALLBERG: Yes, there was a few of us at the dorm that we'd go skiing together, and do different things together. I used to like to go to Mammoth [Mountain] the first few years, went more time skiing up at Mammoth than I ever thought I would. That was a very good time.

JOHNSON: I bet it was. The early Korean War and the end of the Korean War, did that have any effect on any of your decisions?

HALLBERG: When I was in college, I got my draft notice. I went down to take my physical and decided I'd better study a little more, I got my grades up and got a deferment until I graduated. Then NACA got me deferments. It was about over then, anyway. I was glad I missed that.

JOHNSON: I was going to ask Rebecca and see if she has any questions that she might think of while we were talking.

WRIGHT: Just the one, you certainly had a long career, and many types of aeronautic projects that came through that you had your hands on. Was there any one in particular that you really enjoyed working on more than the others? Or, that brings you rewarding memories, to know that you helped do that?

HALLBERG: I didn't really think about it so much at the time, but it was interesting in the days when the X-15 was flying, they'd get new records. You'd have to go out and do post-flight calibrations on it, so they could verify the records.

WRIGHT: Yes.

JOHNSON: What is that like? The post-flight calibrations?

HALLBERG: It wasn't so much on the X-15 though, it was on the earlier ones, the earlier X-1s, we'd go check the air speed.

WRIGHT: How soon after the plane landed were you allowed to get close to the plane to get those instruments?

HALLBERG: When they'd bring it back into the hanger.

WRIGHT: You had to wait your turn?

HALLBERG: Yes.

JOHNSON: How do you feel that the work that you were doing out there affected aviation overall? Especially that early NACA work?

HALLBERG: Dale Reed had a big influence on aviation overall, with his Lifting Body projects out there. He was really a pioneering guy. He tried to inspire me, but I stayed in instrumentation.

JOHNSON: You never had any desire to move into other areas?

HALLBERG: No. I was in the instrumentation engineering office for a while, but then they decided I worked better down in the labs.

JOHNSON: What did you do down in the labs?

HALLBERG: Hands-on with the calibration, rather than sitting up in an office figuring out what to do. More of a hands-on kind of guy.

WRIGHT: You had all the years of experience of building upon for the next times. Did you have an opportunity to give some feedback that helped develop different ways to do instrumentation? Innovative ways to do changes?

HALLBERG: Not so much originating it, but we helped the engineers evaluate the tests we were doing for them.

WRIGHT: You worked more closely with the engineers?

HALLBERG: Yes, the instrumentation engineers. They were mainly ones.

JOHNSON: Is there anything that we haven't talked about, any memories of that time period, any anecdotes, stories, anything during that, during your career that you'd like to share with us?

HALLBERG: It was nothing there really outstanding, I guess.

JOHNSON: I know we've talked to other people, and they said, "Well, we were just doing our job." And of course, as outsiders looking in, you were there at such an exciting time, and so many things going on.

HALLBERG: It just didn't seem that way, being there.

JOHNSON: Well, we thank you for coming and sharing your information with us, we appreciate it.

HALLBERG: Okay.

[End of interview]