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ORAL HISTORY TRANSCRIPT

SHIRLEY HUNT HINSON
INTERVIEWED BY REBECCA WRIGHT
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WRIGHT: Today is May 2, 2000. This oral history is being conducted with Shirley Hunt Hinson in Louisburg, North Carolina, as part of the Johnson Space Center Oral History Project. The interviewer is Rebecca Wright, assisted by Kevin Rusnak.

We want to thank you again for allowing us in your home and having this opportunity to visit with you. You spent numerous years as part of America's space program, and your contributions were so many. Tell us how you first became involved in working with NASA.

HINSON: When I graduated from college, it was in 1958. I went to college, started in September of 1955. I graduated in May of '58, which was two years and nine months, with a degree in math and a minor in science. I lacked one hour in having a double major. The main reason I majored in math was because it was easy. I mean, why do you major in things? The other reason is I decided that if I married someone locally and I got stuck in a little dinky town, I could always teach math. But if not, maybe I could get out of Franklin County [North Carolina] and go somewhere and work for real.

So the week before I graduated, my professor asked me would I like to have a teaching fellowship. I probably didn't even know what a teaching fellowship was, but I said, "What is it?" and he told me that I could teach one class each quarter, and they would pay me to get my master's. So I said, "Let me go home and ask Daddy."

So after I graduated, I asked Daddy, "If I need any money, can you help me through school one more year?"

He says, "If that's what you want."

So I went back to school one more year, and I ended up getting my master's in 1959. There were three people that had graduated from that math department that had gone to work at a place called Langley Research Center [Hampton, Virginia]. I heard they were making a lot more money than schoolteachers. At that time school teachers in North Carolina were making $2,999.99, one penny less than $3,000, and the government was offering $5,430. So I had nothing to keep me from going up there. So I wrote to ask them for an application blank. They wrote me back and said, "You can pick them up at the post office," to show you how much I knew. [Laughter] But anyway. I fill out an application, and they wrote me back and told me I was hired and that I could come to work on June 30th. So that's how I started work at NASA.

WRIGHT: How did your family take the fact that as a basically young single female that you were just going to pick up and move away from home with a brand-new job?

HINSON: My daddy was so proud of me, he couldn't see straight. I was the first girl—I had three sisters, no brothers, and I was the first one that had graduated from college, and he was very proud. The first thing, they asked if I minded moving to Greenbelt, Maryland, and I said, "No." They said, "Well, we will assign you then to the Space Task Group," because we were supposed to move to Greenbelt, Maryland. They were building a new facility up there which became Goddard, I think, but that's where Space Task Group [STG] was going, before

[Speaker of the House] Sam [Samuel T.] Rayburn and [Senator] Lyndon [B.] Johnson came along. And I'm thankful because I like Texas a whole lot.

WRIGHT: Tell us about those first days going with your brand-new job, brand-new facilities. For you, what was it like those first few days that you were there?

HINSON: I don't know. [Laughter] I was new. I had no car. I did find a new roommate through the placement area at Langley, and I was living with a girl who was working at the Unitary [Plan] wind tunnel, I think, was the name of the place. And I found a ride to work with people that were working on my side of the field. Space Task Group was on one side of the field, and Langley Research Center was on the other side of the field. I just found rides to work and just fell right into a great job, really a great job.

WRIGHT: What was your first role? What were you first assigned to do as part of that Space Task Group?

HINSON: The first thing I did was I walked into a room with about four other girls, or women, there. I think two of them had majored in math in college, and two of them were math aides. And then we had a little computer. This "little computer" was the size of a refrigerator. It was a Bendix G15, single instruction. Anything you wanted to do, you had to bring it into the register, do it, then store it. If you ever wanted to use it again, you had to remember where you stored it. So that was my first experience with a computer, and we

were given a Freidan calculator. I had had a Monroe. I had never had a Freidan before, so I didn't know to run that, and they were different.

From there, they started bringing us these trajectories about this thick to plot, and just started working then. I think the first program I ever did was to transfer rotational velocity to inertial velocity and vice versa.

WRIGHT: Did you have any idea what you were working on in the beginning, or all this make sense based what you might have learned in some of your classes in college?

HINSON: Well, in some of my classes in school, I knew what I was doing, but I was not familiar with orbital mechanics and all that. I had to learn that on the job. I learned a lot on the job. I did have one professor in college who always was saying, "When you go to work, you will need this." So there was a lot that I knew, but the largeness of it—see, I'd never been next to an airplane before I went to Langley. I had never seen an airplane on the ground before I went to Langley. So it was a change for a little girl from North Carolina. But I had a good time. [Laughter]

I worked hard and learned a lot and dealt with some great people. We worked hard hours. Sometimes we didn't even know—eleven o'clock at night we'd go home, and we had a computer over in another building. I think it was a 704 that they would run trajectories on and they used us to debug their programs. They would bring them back, and we would plot. When I say plot, I mean by hand on a piece of graph paper. There was no computer that plotted for us, so we would plot everything that they would bring back. If it didn't look right, we'd look at the data and find out what was wrong with it and then they'd go change the

parameter, rerun it, and we'd do something over again. So for all of the trajectories for Mercury, we basically debugged the programs by plotting and seeing what things looked like.

Then as we got closer to the missions, we would do all of the trajectory analysis reports and just the entire mission trajectory and the mission analysis reports we would do. The flight controllers would know everything that was supposed to be done. We plotted the big—I guess they were four-foot by four-foot projection plot boards that were at the Cape. We did all of that by hand on paper. They rolled them up, carried them down there, and put up on the projection plot boards.

WRIGHT: And it was you with a few other women, or did you have men that worked in this area as well?

HINSON: No, they were all women in that one area. We were not just women in that particular area; we were in the room with all the men. I mean, there was one long big room, and everybody was together. But they basically separated the women from the men as far as the work they did, although I did sort of creep out of my little math aide-type hole into the real world eventually. But it took me a while.

WRIGHT: Some of the management, or some of the other team members, that would bring you work to do, did they explain what they needed or did they basically leave this information for you to figure out on your own? How did they provide enough details for you to give them back what they needed?

HINSON: I think they just probably told me once, and from there on I know what should be done and could pick it up pretty good. I worked very closely with Clay [Claiborne R.] Hicks and Charlie [C.] Allen. They were, as far as I'm concerned, the trajectory specialists at that time. We would plot things about every five seconds. One day I was looking at a trajectory, and I noticed that it really looked funny. It was printing out every tenth of a second, so I plotted that, and I think I was the first person to ever plot max Q [maximum aerodynamic pressure]. It built a little castle. That's what we called it from there on out. They went like, "What's wrong with this trajectory?" And then they realized what it was.

WRIGHT: How was the trust built up between your work and their instructions? Did it take them a while to feel very confident in what you were giving them back?

HINSON: I don't think so. I think they trusted me pretty soon after I went to work. I never got the feeling that they did not think that I was on an equal with them. Even though I didn't take the data over to the other building and input it in the computer, I never did get the feeling that they didn't trust me or like my work or anything like that. In fact, I think I'm the first women to go travel for Space Task Group. I'm not positive, but I think I was. But I did go to the Cape [Canaveral, Florida] for just about all of the missions during Redstone and Mercury and the first three for Gemini.

WRIGHT: Can you share with us some of those trips and tell us what that was like?

HINSON: Oh, that was great. A few funny things about it. The first when I went down there, John [P.] Mayer called me into his office, and he says, "Shirley, we're going to take you to the Cape to do the post-flight reports. But you have to behave, because if you don't behave, they won't ever let another woman go." [Laughter] And I really wasn't quite sure what he was talking about, but I found out before it was over, but he didn't have to worry about me because I had [James] Kirby [Hinson]. [Laughter] Anyway, that was a little funny. We laughed about that over the years.

We would have these what they called go/no-go parties. If the mission didn't go and it was scrubbed, they'd come around and knock on our doors at midnight, and everybody was expected to get up and go sit out by the pool. Most of the time they'd sit out by the pool and talk about the mission and everything, and then we'd go back to bed about one or two o'clock. But, anyway, they woke everybody up for go/no-go parties. And they weren't really parties that much, but everybody had to get up and get dressed.

We did all the post-flight reports at the Cape. In fact, we got to see a U-2 land while we were there. We were at Patrick [Air Force Base, Florida] doing the reports initially, and that was very, very good because you learned a lot. The data was being transmitted back and forth. Somebody would get on an airplane and go to Goddard to get it and bring it down there. If there was anything wrong, we'd call back and say what was wrong with the data. It was a great time, it really was. We had a good time. And I learned a lot.

WRIGHT: It was almost as if it was on-the-job training, but so much of what you were having to do was being discovered as you were doing it.

HINSON: Oh, yes.

WRIGHT: Did that pose a challenge for you, or was that something that you felt excited about doing from day to day?

HINSON: You didn't really realize that was what was going on. I didn't at the time. I knew I was just learning, and everything was just falling into place, and we were doing things right, and every time we got ready for the next mission, we had learned on what we did before. But I don't really remember anybody saying, "Okay. Here's what we did, and it was good, and we're going to do this next." I don't remember that. It was just everybody did what they were supposed to do and kept doing it better, without any realizing you were doing that, I think.

WRIGHT: What was the atmosphere like working with the Space Task Group during Mercury and so soon after you started then became the goal that we should land a man on the Moon and return him safely to the Earth? Was there excitement in the air?

HINSON: Oh, it was excitement the whole time. To me, everything I everything I ever did out there was exciting. It was interesting, exciting work. After Gemini, or really after Mercury, when we moved to Florida, I moved in April of '62, we formed a group that was going to do the real-time program requirements and do the flight support requirements, do the programs and everything for flight control. We formed a group then, and I was working

a little small 1620 computer then, IBM 1620 computer, and that's when I was telling you that I had trained other people to program.

But I moved on from that and started doing the launch and launch abort program requirements, and that was a extremely exciting time, because all of the launch requirements and all of the launch abort requirements, I worked very closely with flight control. These are the people I'm sure you have heard about in the Trench, the Retrofire Officers and the Flight Dynamics Officers more so than anybody else, and Guidance Officers. I did all of their requirements and wrote the requirements up in terminology so that IBM could code the requirements. Then I did all of the unit testing, subsystems testing, and everything with IBM.

We would schedule computer time just like we were going to run the missions and go, and of course we would get a lot of midnight, 4 a.m. computer time, but we had to do that so flight control could have the daytime. But we did all the testing. You will never go through every branch of the program, but the launch programs probably had the most branches of any that you could go through. We would test those programs and test them, and I dare say that the launch and launch abort programs was probably as error-free program as has ever been written. [Laughter] I had a lot to do with it, I'm sure.

I think the first mission that was controlled out of Houston was Gemini IV. There was a cute little story about Gemini IV. Kirby was going hunting, and he had made arrangements for me to go hunting with him also. I think it was the first weekend of December 1964 that we were going to have a simulation for Gemini IV out of the control center in Houston. I was going, and my division chief says, "No, you can't go. You've got to babysit flight control."

So I sat on the—I guess you've seen in the control center where there's a little ledge right behind the trench row. I sat there all day long helping Cliff [Clifford E.] Charlesworth. They resented us a little bit by being there, but we knew the programs better than they did. They knew what the requirements were, but we knew the programs better than they did. So he wanted me there in case he had any troubles, and it was a good day. I enjoyed that.

WRIGHT: What were the challenges in creating those programs? What kind of requirements did you have to meet to do this?

HINSON: This was the first time that we ever had displays on television screens. There's one thing I need to mention, too. Back then we could pick up the phone and call our programmer and say, "Flight control says they didn't like velocity located at this place on the display. Move it." Before that, we had done everything by hand and on paper. Now we had a computer program that was driving each spot on the TV screen, and if you didn't like where velocity was displayed, you could move it. We were very fortunate in that we were able just to pick up the phone and called the programmer and say, "Move it. The requirements will follow."

Of course, we were doing requirements then without word processors, you know. You would cut and paste, and you'd cut out this part and move it down on the paper and insert the correct part. But the programmers trusted us to cover them with the requirements later, and they'd go ahead that night and make the changes and recompile the programs. The next day the flight controllers would be seeing it moved to where they wanted it moved, or a new computation and things like that. It was nice to be able to communicate with your

programmers. Now, you know, if you want to change something, you've got to go through all kinds of requirements, panels, and budget cycles and everything else before you can get anything changed.

But it was nice to be able to say, “Our flight controller doesn’t want it this way. Change it for him," and we could just get it changed for him overnight. Some of us were a little more effective at getting things changed than others, more persuasive. That’s another part where trust came in. They knew if I asked them to do it that I would include it in the requirements and they didn’t have to worry about my changing my mind, “Oops! I didn’t really mean to do that.” So that was good.

WRIGHT: What area were you included under at this time when you moved to Houston? Did your division continue to change as the organization changed, or were you pretty much left with the same folks that you started with when you started originally at STG?

HINSON: I was with the same people. We were in Mission Planning and Analysis Division. It really wasn’t MPAD at that time. It was Mission Planning and Analysis. At that time I was working in a branch called Real-Time Program Development Branch, RTDPB. That was Lyn [Lynwood C.] Dunseith. A little after we moved to Houston, we were transferred, detailed to the Ground System Project Office, which was a big mistake. They figured that out after about six months and put us back in MPAD, which was nice.

We stayed in MPAD until the division chief—and this sounds awful—the Flight Support Division died, and they asked my branch chief would he be division chief. He said, “Only if I can take my branch with me.” So that was the first time that the control center

requirements group had been moved out of MPAD. So we went into Flight Support Division, and that's where we were the rest of the time.

WRIGHT: And it felt like a good match, a natural match for you?

HINSON: It was really good because it put software requirements and the hardware requirements in the same division. Then MPAD, they did the design and the trajectories and the system parameters and limits and everything. We used their work, but it was good that the software and hardware requirements were in the same division. The systems engineering for the hardware was in that division. That was a very good organizational move.

WRIGHT: How did your role change at that time? You were doing the same day-to-day activities?

HINSON: We did the same day-to-day activities as far as the program requirements go, and check-out and getting everything ready to turn it over to flight control to fly the missions. We were just moving up to Apollo at that time. Then I got the added duties—we were having a little bit of problems—they're having real bad problems now, I hear, but we were having little problems with system parameters and constants and things like that where one programmer divided a day by twenty-four hours, and it messed us up. A day doesn't have twenty-four hours.

So we decided something had to done about that. I took over the system parameters and constants, and I don't know how many, I'd say 2,500 at least, and then many, many,

many tables that had to be inserted for each mission that were mission-dependent and verified every mission. I took that over and we didn't any inches and centimeters problems.

WRIGHT: Well, I'm glad to hear that was a good move so that didn't happen.

HINSON: That did not happen. We had two problems, though, in the programs based on things like that. One of them was [M. Scott] Carpenter's mission, where he overshot the landing zone. I think that was the one where we divided by twenty-four. Anyway, we had two mistakes. But we took all constants out of the software code and put them in tables so that anybody who wanted a constant, even pi, they had to go to the tables. Any programmer that wanted it had to go to the tables and use it, so that everybody was using the same accuracy. One person wasn't using four-digit accuracy and somebody else seven-digit accuracy. Everybody was using the same accuracy.

The Viking [Mars lander] people came down. They heard we were good, and they looked at our system to see how we did it, and they copied our system.

WRIGHT: Good. Let's walk back a few steps. When you were working with Mercury, you were building a trust and, of course, building a new reputation as being very efficient. You assisted and co-authored three papers that we know of, that you helped do for technical papers. Tell us how you became involved in doing that. Do you remember those?

HINSON: I remember them. One of them was like Tracking—

WRIGHT: "Tracking and Sighting Data for Stations"?

HINSON: Yes. They were just—

WRIGHT: Was it a compliment, or was it an expectation that you would have been involved with technical papers at that time? Was it something that you were looking forward to do as part of your career, or was it kind of a surprise that you were going to be working on technical papers?

HINSON: As hard as I worked on those documents, I wanted my name on them, but it wasn't easy. The worst thing about documents like that, no matter who worked on them, they would put "compiled by" and there would be just one person's name on it, or the section chief would sign them. But I worked hard enough on those documents, and I had enough of my work in them that I was very, very happy to sign them. I probably got to be third author on everything, but that's okay. I got on them, anyway.

WRIGHT: Was that a time-consuming task that you did those papers, or was it information that was already available that you just helped put into a paper?

HINSON: No, they were all original work. Once we did the first document, the next mission was patterned after the last document and just the data changed. But all of that was original. We didn't have anybody's work to copy.

WRIGHT: No, everybody was new.

HINSON: We did not have anybody's work to copy.

WRIGHT: Did you have an opportunity at a later time to do other publications?

HINSON: After every mission, I did the insertion papers. They were like memos of what the orbital insertion conditions were and what data we used to decide whether we were into orbit or not, like how many points we averaged to tell whether we were definitely into orbit or not, and all of the data from—I think we had four launch insertion sources, if I remember correctly. One was GE-Burroughs, one was Impact Predictors 7090, which they called the Azuza, and San Salvador, and Bermuda. We got data from those four sources and we compared that data for insertion. The reason we did is was so that we would know whether the data we were getting from those tracking sites were good enough to base an abort on. If not, we might not know whether we were really in orbit when we were. So we did post-flight analysis on data sources, a lot of analysis on data sources, and with different types of computations as to whether we averaged data or whether we applied short arc solutions and things like that to the data itself, just to make sure whether the transmission of the data was good.

WRIGHT: Were there times that you could see that your work here, especially these post-flight documents, proved to save time or maybe cost or just affected the next missions down

the line? Could you see the compilation of your work continually to positively affect the next missions?

HINSON: I think it did, and it made us better. Every mission made us better the next mission. If we had not done that, we would not have known whether what we were doing was right or wrong. So every time we did these post-flights reports, we did the next mission better because of having done that.

WRIGHT: You worked on landing site prediction, is that correct?

HINSON: It was the launch abort type.

WRIGHT: Something regarding radar look angle.

HINSON: That term? That was what I was talking about, the San Salvador and the Bermuda. That was the radar looking at the spacecraft. So those post-flight reports is taking that data and analyzing it after the missions.

WRIGHT: This was in Mercury. Did you continue this effort as Mercury moved into Gemini and then on to Apollo?

HINSON: We didn't have to after Gemini.

WRIGHT: How did it evolve? Did you find this work then be applied to the other programs as well, or this was finished and so you started on a whole different process of doing things for Apollo, as far as your new duties, as Apollo progressed?

HINSON: I did the same thing. I did the launch requirements and the launch abort requirements, but the Gemini was so different from the Saturn that it was just a totally different program.

WRIGHT: How did that affect your work? The time is changing, the spacecraft was changing. But are you finding that your tools were changing to help you do this as well, with the computer starting to evolve along with the spacecraft, to help provide you support you need?

HINSON: If we hadn't had Apollo, we'd still be back ten years. You wouldn't have a desktop probably now. Apollo drove the computers in the United States, as far as I'm concerned. If we had not had the Project Apollo, we would not have had computers for at least ten years. We would have had them eventually.

From way down looking up, there were two people that I can say that helped us get the computers that we went to the Moon with, and that was Dick Hanrahan [phonetic] and Lyn Dunseith. Dick Hanrahan worked for IBM, and he was Bednarcyk's boss. But they were little brains just working all the time, and they knew we had to have something better than we had had. Of course, IBM was always at that time these big number generators. But I think knowing what our requirements would be to go to the Moon helped develop the

computers. We could not done as many computations as we did. We couldn't have gone if the computers had not been getting better and better. We could not have had the requirements to get more detailed as they were and as many as they were.

WRIGHT: Can you walk us through the evolution of the computers that you've worked with? You said you started out with paper and pencil, and, I guess, an eraser on occasion.

HINSON: I had Freidan calculators, and then I had a Bendix G15, which was a single instruction. From there we went to the IBM 1620, which was a low-decimal machine, and we had a Flexiwriter paper tape input, and if you missed one key, you had to start over again because it had little holes in the paper. I have taken a pen and corrected the paper tape to get it to read so we wouldn't have to do the whole program over again. They were basically the only computers that I programmed for, because once we got to Gemini—well, that's not true either. I programmed for the 7094 a little bit when we got into Houston. But basically we hired IBM as our software programmers for Gemini and Apollo, and all we did was we looked at the code. This wasn't like you don't see the code. We did flow charts and we did code and NASA got to see the code, where I'm sure now no one ever sees the code. We did have people who could correct the code in hexadecimal. There were a couple of people that were that good. So it was basically just the capacity, and, now your desktop calculator computer has much more power really than the computers we used to go to Moon with.

WRIGHT: Was there a time where the technology was coming up quickly and your requirements were still needed as quickly as they had been, where you were having to learn the new technology and still do your job and meet all these deadlines at the same time?

HINSON: Always. But it was no problem. It just evolved. If there was a problem, we weren't smart enough to know it was a problem, or dumb enough, as the case may be.

WRIGHT: Just adapted to the moment, huh?

HINSON: Yes.

WRIGHT: I can imagine that it—because sometimes if you're on one system but yet the new system has to be implemented, but yet you still have to get your work done, it must have been a little challenging at times to have that happen.

HINSON: We were very fortunate that throughout Apollo we were able to keep the same contractor without going out on bid. The government does itself an injustice by trying to change. We were very fortunate that we were able to keep IBM and IBM computers, as far as all of the software requirements go, and the programmers and everything, because a lot of the programs that were used, if you just move it from one computer to the other and that you had the same operating system and same programmers, and we wrote our own operating systems at that time, and we had a whole section that had operating system requirements. So

we were fortunate in that we did not have to go out on open bid to replace our coders. That made a lot of difference.

WRIGHT: The people that you dealt with IBM, you felt that they were very supportive of the NASA goals and the country's goals as well?

HINSON: I sure did. The hardware people started out as Philco Ford. I don't know who they are, I guess they're Lockheed now. We kept the same contractors. They changed names, but we kept the same contractors for the hardware and the software from Gemini through early Shuttle, and that really made a difference. I think if we had to go out on open bid and got a different contractor every two years, we'd have never made it. No way. I think they've just put out a consolidation contract. We tried that in the early eighties, an awful, awful lot of work, and it basically went down the drain, because as soon as they came on board and they were supposed to be a fixed-price, "Here's your job. Do it," NASA wouldn't let them do it. So it was not good.

WRIGHT: How was the rapport with the IBM folks on a one-to-one basis with you? Were you their supervisor? Were you the one that checked off to make sure they had gotten their job done correctly, or were you mostly kind of their peer, where you worked very closely with them to tell them what you needed and they gave it back to you? Explain that whole relationship to us.

HINSON: In Gemini and Apollo, I was basically equal to the programmers. I gave them the requirements. I would sign off on all of the systems tests and subsystems tests as far as launch and launch abort goes. But later in my career, I was a section chief, so I was their boss basically. But I did have to sign off on all of the subsystems tests for the launch and launch abort systems for Gemini and Apollo.

WRIGHT: Were all the programmers IBM employees, or were there NASA and IBM?

HINSON: They were all IBM employees.

WRIGHT: Were they housed at NASA?

HINSON: They were housed across the street at the IBM Building. I don't know what building it is now, but it was across in Nassau Bay. We had couriers that carried decks of cards back and forth because we compiled all the programs with decks of cards.

WRIGHT: I'm glad you mentioned that, because so many people now who work with computers don't realize that. So maybe you can give a little background on those cards worked and how many hands that those cards went back and forth to, to give us some background on that whole system.

HINSON: Well, as I said, we had couriers hired, and they would bring these big boxes of cards over, and they have been dropped. Of course, they had a sequence number on them,

and some people would have to put them back in sequence. Everything would be recompiled if you made a change. It wasn't like if you made a change now like you do in a PC. You had to punch a card, recompile the program, and rerun it. So it was time-consuming, very time-consuming compared to the way you input data today.

WRIGHT: There were only so many computers with only so much computer time. How did everybody who needed time on those computers get time to do their job to get the results that were needed?

HINSON: We had a meeting once or twice a week, and you had a form to say, "I need X number of hours to run a certain program," and you were scheduled, and twenty-four hours a day we ran the computers. Well, most of the time we ran them twenty-four hours a day. Sometimes we started not running them but two shifts later in the program. But we ran them twenty-four hours a day, and you could schedule on every computer but one. That was an earth resources computer, and that did not have programs. But you could load any program on any machine. That may not be exactly true, but for the most part, any machine could run any program. It was manually scheduled, everybody with their little block of time. Then it was put up on the bulletin board over in the control center, and you'd go find out when your time was, and you'd better show up, because if you were a no-show more than once or twice, you didn't get any computer time anymore.

WRIGHT: Did you ever get bumped?

HINSON: Yes, we would get bumped. Flight control could bump us any time they wanted to, if they decided they wanted to have sims [simulations] or if anybody wanted to go in and practice, they could bump us a little bit.

WRIGHT: Where were all the computers housed?

HINSON: They were in Building 30. All the flight controllers were in Building 30. All the flight support people were in Building 30, and all the mission planning and analysis people were in Building 30. Beautiful situation. That's the way it should be, I think.

WRIGHT: Clearly it worked.

HINSON: Yes, it did. It would be awful, I think, to have part of the people in—well, now they have people in Building 4 across the duck ponds and everything, but it was much better when everybody was in the same building. I just walked around the corner and talked to the FIDOs [flight dynamics officers] and said, "Is this what you really want?"

"Well, that's what I said I want."

And I said, "Well, once we put it in a program, it looks like this."

And they said, "Oops! That's not what I expected it to look like."

I really felt sorry for those guys. They had to come up with what they wanted to control the mission with six months to a year before they used it. And then once they saw it, they thought, "Well, that's not quite what I thought it was supposed to be." I thought it was nice when we could go back and change it for them, because you can't always decide six

months in advance what you want to use to control a mission. First of all, they may not even know what the mission rules were when they gave you the requirements. I think that was one of the best things about Gemini and Apollo, is that we could change it for them when they saw it and they didn't like it.

Down the road—do you want to talk about down the road?

WRIGHT: Sure.

HINSON: Well, that's a little bit too far down the road. I don't want to do that now.

I guess one of the other things I did that I really enjoyed is Gene [Eugene F.] Kranz called me and asked me would I help him out. I told him I would do anything other than go to Building 12. And he says, "Well, it's close." He says, "It's coming to flight control." I asked him what did he want me to do. He said he wanted me to teach the teleprinters for Skylab how to be teleprinters. They were all about to quit because they couldn't learn the job. That was, I think, on a Friday. I had never signed on to that program in the control center. That was not where I was working at that time. I was still working on Apollo.

I got somebody that weekend to show me where the requirements were for that particular program. I read it over the weekend, got me some computer time on Monday and worked with it. There was one guy in flight control who knew it very well, and he worked with me a little bit. So by Tuesday I says, "Okay, I think I can do it."

So I taught the secretaries in flight control how to be teleprinter operators for Skylab. For nine months, I worked for Gene Kranz and Ed [Edward I.] Fendell. That was an experience, and I thoroughly enjoyed it. I thought that was very good experience.

WRIGHT: What a different pace, I guess, from what you had done before. A different avenue, anyway, of moving.

HINSON: Yes, I probably had a chance to be a flight controller if I had really wanted to be, but you didn't own yourself if you were in flight control. You were a slave to missions, and when you were needed, you couldn't make any plans. I admire those people who did that. They basically gave up their lives, and for nine months that's what I did, just about. So I was ready to go back to the real-time program area after that.

But when I got back, they had changed bosses, and I didn't like him, about one of two or three people that I ever had to work with before that I didn't like. I didn't like his methods. I did like him, but I did not like him as a section chief. I'll put it that way. So I went to the division chief and asked him, "Is there anything else I can do for you?"

He said, "I need somebody to help me with the budgets so bad." We had about 120-million-a-year budget, and it wasn't being controlled.

So I said, "Well, let me have a try at it." So then I went into working on the budget area for the control center, and that was an extremely rewarding job. It wasn't your ordinary budget job. The engineering orders for all of the hardware and the control center, nobody knew where they were, what the schedules were, whether they were being worked on or not, whether anybody was charging charges correctly for the work that was getting done. It was just haphazard.

I did a program for keeping up with all of that. We had a monthly meeting, and every month we knew exactly how much work was completed, how many charges had been made

against an engineering order, and how much money we had budgeted for it, what they thought the projection was to finish it, and the date it was going to be finished. After about, I guess, three months, we had a total absolute handle on how much everything in the control center was going to cost, when it was going to be done, and whether it was going to be done on time and everything. That was a good job.

WRIGHT: Quite an accomplishment.

HINSON: It was really was. One of the worst things that this program showed is—I don't know how to say this. It was about the time when you couldn't do what you want to anymore at NASA, when you could not effect the program the way you wanted to because they said money was tight and all of this. Money wasn't tight. The way money was handled was tight. I think they got so many people up at headquarters and didn't have anything for them to do.

I'll tell you a cute little story. When I was little, my daddy would go off and play poker. When he would come back, he would bring me little purses, this little patent leather purses, full of nickels and dimes. I always thought that was the greatest thing in the world. After Apollo, Headquarters reminded me of a whole bunch of little people with these little bitty patent leather purses, and they all had their little nickels and dimes. In order for them to have anything to do, they had to have a budget and thought they had to control that budget.

Well, the control center at one time had something like maybe twenty-five different fund codes that we had to pay for. We had a little purse. The money to do this job had to come out of the little purse. These little purses didn't have enough money in them to really

do the jobs, so you were having to either put some of this work over in another purse, move this over to this place, move it over here. We had to keep up with so many fund codes and reprogram things into different projects because we didn't have the money and we did have it there, that if they had put all that money back together, we could have done the job cheaper, much cheaper. We spent more time trying to keep up what we charged something to than we did doing the work. I don't whether they're still doing that or not, but that was one of the worst things NASA had every done.

WRIGHT: Quite a difference from what you had seen before.

HINSON: Apollo had one fund code, basically. Once we got into the Shuttle, like I say, there were so many people that felt like the only way they had any authority is for them to have a budget, and somebody at Headquarters gave everybody a little bit of money so they would have a function. It just about destroyed being able to be efficient. I don't know whether that's still going on or not, but that was one of the worst things that's ever happened to the funding sources at NASA, is they broke them up in such little bitty pieces. You had to charge to them and keep up with the actuals. That was very difficult.

I think finally people just decided it wasn't worth it, and they just did them however they wanted to. But one thing they did for us is they knew that we knew what we were doing so much that they did not cut our budget frequently. They would cut other people's budgets because they couldn't really verify and justify what they had. But we didn't have that problem.

WRIGHT: That's when you were doing the cost or before that?

HINSON: I'm talking about when I was doing the costs.

WRIGHT: Where did you go on from there?

HINSON: From there I applied for and got a section chief position for the control center software, so I was section chief for about three years. My division chief at that time said, "I need help over in simulation. I think I'll send you over to simulation and let you be a section chief over there."

I said, "I don't even know how to spell simulation," because I had never worked there or anything.

He said, "It doesn't matter. We need you over there."

So I went over to Building 35, knowing this, and to a section that felt like they didn't belong on site, I think. They didn't even get [the Johnson Space Center] *Space [News] Roundups* in that building. Nobody had ever said we're not getting them and nobody ever knew or anything. But I went over there and stayed over there and stirred up the pot and learned how to spell simulation before it was over. Had some great guys working over there, really did. They're spread out through JSC now, and I'm sure are doing great jobs. But that was quite an experience to go there when I didn't know anything. I told them. I said, "I don't know a thing. You'll have to teach me," and they did.

WRIGHT: I'm sure it didn't take you long to learn.

HINSON: Well, I never did learn it all. You don't learn it all in simulation if you live there forever, but I did learn a lot and I think I helped a lot.

From there I went to two source boards: the Control Center Source Board and the Simulation Source Board. I stayed there for almost a year for those two source boards.

WRIGHT: Now, that was a different type of a job. Would you like to explain to us what your duties were as a source board member?

HINSON: I did most of the evaluating the cost proposals. That was fun and hard. That was probably one of the hardest jobs I had, in that all the people who bid would bid differently. You could tell them to come with a bid costing a certain way in the proposal, and they'd come in with their own costing. Everybody has a different definition of what a manager is, or what an assistant manager is, and they would cost them at different levels and everything. So to get all of that for all of the proposals on the same plane was a very difficult job, but fun.

WRIGHT: And you made some order out of chaos at times.

HINSON: Well, you had to end up with them all on the same plane, so you had to change them to where they would all be the same so you could compare apples and apples.

WRIGHT: And from there, did you move on to yet another position?

HINSON: It was another section chief. I moved back into section chief back into the control center section chief area, and stayed there until that branch was abolished. Then I went into the ground software development environment, which was a fairly new environment. It was developing the tools for all of the Space Station software development, which had planned to do software development with tools instead of people and requirements. Basically it was building the software support environment. There we had just that little area. There were two of us doing that, and we had about a little over a million dollars a year to spend in that area. So that was interesting and challenging, because that was in the new era of computing and Internet and really getting automated to develop software rather than doing it manually, the way we had done it before. That was where I was when I retired.

WRIGHT: Well, you can literally say that as far as computers were concerned, you had done it all.

HINSON: I had done it all, from a little Freidan calculator to something much smaller than the Freidan calculator doing more than the computers were when we were going to the Moon. But it was interesting.

WRIGHT: Is there a time during that period of evaluation that you found to be the most challenging and rewarding at the same time, of having to turn theory and hopes into something that was reality and a success?

HINSON: I guess there were three areas maybe that I thought were really challenging and good. One of them was really the launch program requirements, working so closely with the FIDOs, the Retros, and the Guidance Officers. That was a great time. It really was. Everybody was doing something brand-new, and you'd do it, and you'd look at it and say, "Ooh, that's good" or "Ooh, I want to change it."

Then the part that I played with the constants and systems parameters in the Apollo time frame. I did that, too, in Gemini, but Gemini didn't have as many as Apollo. Then the engineering orders and the handle that we got on the costs of the control center was very good. I enjoyed that a lot.

WRIGHT: Three very different aspects of it all.

HINSON: But also related, because you can't do software without the hardware, and you can't do the costing without knowing what you need for the hardware and software. You just can't take a budget person and cost the control center. You've got to know what these components in the control center do. That was a very fulfilling job. It was so time-consuming. That was one of the places where the government did go out and re-bid. We had outside databases that we interfaced with, and it was doing the job, and I could come home at 4:30 every day, and then the government went out on bid and they got this other program that could do the job, but it took me five times longer to do everything that I was doing before. And that's when my husband didn't see me in the daylight for about five years. It took me twelve to fourteen hours a day to do what I had been doing eight hours a day.

The government would say, "This program does do the job." Yes, it does do the job, but I had to code around the basic program. I had to cut and paste all the time. I couldn't print out anything on wide paper. It would only print this way, and then it would reprint. Then you'd have to cut it and tape it together in the middle. I could spend hours doing that. Then it went out on bid again. They got us a better program, and I saw daylight again. In fact, that was probably the best database management program that has ever been. I guess it's still around. It should be if it's not. NOMAD [phonetic]. Are you familiar with it? Oh, compared to what I had before that, it was just such a beautiful tool.

WRIGHT: Were you involved at any point in those decisions for those new programs?

HINSON: No, Building 12 did that. That was their job to do that and to supply the programs to the center. So I didn't get to do anything but gripe about the one that they picked was bad. The rest of them were good. They only picked one that was bad.

WRIGHT: So many talents came together to make NASA's history, and with those talents were people of different personalities. In your job, you certainly came across so many of them. I thought about that when you mentioned working very closely with the Trench folks. Here you were coming in and saying, "Are you sure that you really want to do that?" How did they take you doing that? And can you tell us some episodes that maybe that they felt a little challenged at someone saying, "Think about this twice."

HINSON: They were good. They really were. We worked together so well. We'd fight. We'd fuss. "I told you what I wanted." and I said, "No, you may have, but you don't really want that. You haven't seen it like I have." But they were good. They were just great. I worked for some great people. I had some very smart people. My division chief, of course, was Chuck Mathews, then Chris [Christopher C.] Kraft [Jr.] was my next division chief. Then John [P.] Mayer and, of course, Bill [Howard W.] Tindall was working with John Mayer at the time. Then Lyn Dunseith. But all of the flight controllers like Tec [Tecwyn] Roberts, Carl Huss, and I'm sure you've heard of these people, and Chris Kraft was in the trench way back when we were at the Cape.

Speaking of challenges and things, after MA-3, they blew up MA-3, I was standing out. We weren't in the control center over by the Redstones then. We were in the, I guess it was military control center. They had a little porch out, and I was standing on that, and it was drizzling rain when it blew up. It was thirty-eight seconds or forty-eight seconds, whatever it was, but we knew what time it blew up. We spent the next two and a half days looking for the thousandth of a second that it blew up. We ran trajectory after trajectory, trying to figure out exactly the thousandth of a second that it blew up. After that, I realized you don't just plot every five seconds. You plot every five seconds and then look in between. Did anything change? If it did, was it changing smoothly? Because it really made a difference to find out exactly when the error occurred. I thought that was interesting.

WRIGHT: Now, you were mentioning all these people that you learned so much from, those great leaders that you had. You were a section chief several times. What did you want to pass on to the people that were in your division? How did you want them to perceive you as

a manager, and what did you want them to learn from you? How did you train them to do their job?

HINSON: Before you do that, there's two other people I didn't mention that were in my chain of command that I thought were great. One of them was Jerry [C.] Bostick, and the other one was Jim [James E.] Mager. Have you heard of Jim Mager?

WRIGHT: No.

HINSON: He took over after Jim [James C.] Stokes [Jr.], and Jim Stokes was there, too.

When I got to be section chief, they sent you to Columbia Lakes—I think it was Columbia Lakes—for a week of management training. I don't know whether they still do that kind of thing or not, but it was interesting. The people under you had to fill out these forms so that the instructors could read what your people were thinking about you. So when I got down there—the guy was Dutch Hall, I don't know whether you've ever heard of Dutch Hall, and Walt Mattenmeyer [phonetic] or not, but they stayed at JSC doing a lot of management training. He looked at me and he says, "I don't think anybody has ever gotten any better comments than you have. I don't what you do to these people. You must have brainwashed them or something."

But I tried to provide them with the tools. I told them I was not going to do their jobs for them. In a lot of cases, I did not know their job, and I really did not want to know their job, except to whether they were doing it properly or not. I did not want to know the details. I don't think you can manage very well if you try to manage at a level that you could do

everybody's job for you. If you have eight people under you and you can do all of their jobs, then you don't need me. So I did not try to manage them so tightly that I could know everything they did. I expected them to keep me informed so I didn't look like an idiot when I went to my bosses. I think they did that, and for the most part, I think I had very good rapport with the people I worked for, even though I was a woman. I had two women working for me, and the rest of them were men. I don't think I had any problems.

WRIGHT: When you were first named as a section chief, were you one of the first women to be named in that position in Houston?

HINSON: In that division, yes, but not on the site. There had been a lot of others on the site. When I first went to Houston, there were eight or ten people that they featured in the paper down there, of "These women make over $10,000 a year." [Laughter] I had a lot of firsts, and I enjoyed it.

WRIGHT: Let's hear some of those.

HINSON: I was first to go on travel.

WRIGHT: And you behaved.

HINSON: And I behaved. I got two trips to New York City for the IBM 1620 computer having some internal problems where it was not compiling our program so that we got the

answers that we thought we should get. When I started flying for NASA like that, I wore high heels and hats and gloves, believe it or not. I went to Headquarters one time on travel. I think most of the things that I did first was to get to travel and go down for the post-flight reports for the Cape, got to see most of the launches. In 1983, I got a Manned Flight Awareness Award and got to go see a Shuttle flight. After you leave, there will be billions of things I can think of to tell you, and you won't be here. [Laughter]

WRIGHT: You'll have to list them for us later.

The launches were pretty spectacular all the way through NASA's history, and you certainly saw many from each program.

HINSON: I think I saw everything except the Saturn IB.

WRIGHT: What was it like to see what you had done on paper turn into reality for everyone to watch? Because you had a part of what was going on.

HINSON: Awesome. It really was. It was just indescribable.

WRIGHT: The people that were around you, they were all part of different teams that had come together, pretty much individuals like you that were putting their talents together to make that happen. Then yet when the launch was over, everybody went back to prepare for the next time. Was there ever a start and finish, or was it just one continual trip from the day that you started on your road?

HINSON: There was never a stop and finish. Everything was always overlapping. In fact, sometimes we were working two or three missions at the same time. You'd just to start over, take your mind off one and start on another. But for things like Mercury, they were basically all the same. You were going around the Earth with basically the inclination, and you could work on two or three things at one time and not have to reset. But once you got into the Shuttle, you had to reset based on what payloads were going and things like that. Everything was always overlapping. You never finished a job and started another one. You were always working on one and starting another one at the same time.

WRIGHT: That's quite a talent in itself, keeping it all straight, but yet, as you said, overlapping. You were promoted to a full engineer during the Gemini Program, which at the time that NASA began, there weren't many, if hardly a few, women engineers. Can you tell us how that promotion occurred, and what was the result of that? How did that affect the rest of your career, being moved into more of a technical position? Because you were a math aide.

HINSON: No. I was never a math aide.

WRIGHT: You were hired into NASA as an engineer?

HINSON: I was hired in, I think they called us—there weren't ASTs [aerospace technicians] at the time I hired in. Numerical analysis engineer, I think, is what I was.

WRIGHT: Okay.

HINSON: So I was never a math aide.

WRIGHT: Okay. Well, that clears that up then. Then you went from the numerical engineer. Did it change from a different status of an engineer at some point?

HINSON: Well, at one point they changed our classifications to aerospace technologists. Then they gave our classification, and they did that so that we wouldn't be equal to civil service titles, so they could give—I think this is the reason they did it—so they could give NASA a higher grade rating than they did civil service people in other agencies. I think that's why it happened. You may want to cut that. [Laughter] They did give NASA different classifications than they did other government agencies. But I had my master's in math when I went to work, and I did work very closely with the trajectory-type work rather than just a math aide-type work.

WRIGHT: Okay. Well, I'm glad we have that straightened out because I think some of our earlier research wasn't clear on what we were able to find. So that does that.

Missions. Any particular that you found to be more challenging than others as they were building from one program to another? You said that Mercury kind of went round and round, but then, of course, in Gemini you had two men, and you were having to make modifications here and there.

HINSON: I guess Gemini VI was our real Gemini challenge, getting ready for another launch so soon afterwards and basically doing two missions and all of the constants and parameters and everything for two at the same time. That was probably the hardest one we did. Worked hard on that. That was a challenge in every respect for everybody, I think.

WRIGHT: As you moved into Apollo, so much was going so quickly in order to meet the mandate from President [John F.] Kennedy. Apollo 8 all of a sudden now was going to put men closer to the Moon than we had ever been before. Were you involved in that as well?

HINSON: We just worked longer hours, harder and longer hours. If the same number of people did the same job, but we had to work more hours.

WRIGHT: What were your thoughts when you heard that all of a sudden we were moving that few steps closer?

HINSON: Fine with me. I was gung-ho. We were young and could care less. And I had already found my Kirby. I may not have had him then, but I'd already found him. I don't know how much he told you, but a cute thing about how I met him. When we first went to work, there were so many brand-new twenty-two-year-olds right out of college, we had these beautiful orientation courses. We had to go once a week on Wednesday mornings to these orientation courses, which I don't think they do now because they don't probably hire enough at one time to do that, but that was an excellent training, a way of training us. You

were talking about how did we get involved and everything. And I saw him and I thought, "Um." That's not I really said. In fact, you will enjoy this. This doesn't have to be official in the end, but the first time I saw him, Mary Shep [Burton] and Cathy [Catherine T.] Osgood were sitting at this table, and we were at the cafeteria at lunch time. He walked in the door, and I said, "I'm going to marry that man right there if he's not already married." I put down my fork, and I stared at him until he saw me staring at him.

But the way I found out who he was was in these orientation classes, I stayed back one day until—we had to sign in, and they gave us these little pieces of paper to sign in on, and I stayed back until he moved down on the end of a row. So I sat at the aisle end of that row, and I watched everybody, where they put their piece of paper on the bottom or the top as they passed them over to the aisle, and that's how I found out what his name was.

WRIGHT: It worked, didn't it? [Laughter]

HINSON: It worked. It worked. It did work.

WRIGHT: So you had goals. I mean, so—

HINSON: Yes, oh, yes.

WRIGHT: And it worked out.

Speaking of goals, one of the major goals at that time was to put a man on the Moon and to return him safely to Earth. Tell us about your part in that. Where were you when that all happened?

HINSON: I was doing launch and launch abort program requirements and the system parameters and the constants for the whole mission, for every phase of the program, for the launch, the launch aborts, the orbits, the rendezvous and everything.

WRIGHT: Just doing your regular job.

HINSON: Just doing my regular job.

WRIGHT: Were you on site when they landed? In mission control, the room?

HINSON: No. I was always in the control center for the launches, because that was my program. I wanted to see how it worked and everything. Then, of course, I always had to do the reports, the launch reports right afterwards. So I would stay there and gather the data and do my little post-flight analysis for the data. But I was not ever in the control center during a mission, per se. Sometimes they called me and asked me about specific things about the programs, but I was never a pure flight controller.

WRIGHT: And you mentioned before, that was something that you really didn't want to move into, or did you have desires to move into as a flight controller?

HINSON: I sort of wanted to, but I didn't want to be that tied down, I guess. Not tied down. The best way is, Gene Kranz would have owned me. [Laughter] I mean, he would have owned me. Greatest man to work for. He inspired me. He asked me to do a job for him, I had never done that job before in my life, and I learned it in two and half days and started doing it for him. He could make anybody produce 140 percent. Everybody wanted to work him. You wanted to do the best job in the world for him. I had several bosses like that, but Gene was really—I don't know what he had. I can't put my finger on it, but whatever you did for Gene Kranz, you wanted to do the best in the world.

WRIGHT: So many people who know nothing about the space industry know him, of course, from the movie *Apollo 13* and how he was so instrumental in saving Apollo 13. Did you have a role in that mission as well that was different? Did you have anything extra to do as part of that?

Shirley HINSON: No.

WRIGHT: Just sit and wait like everybody else to make sure that they go in?

HINSON: We gave them the best programs in the world and let them take control of operations. We did a good job, I think, on providing flight control good hardware and software. They did a great job on using that hardware and software to operate the missions, but I was always in the support role.

WRIGHT: And the Skylab came, and you mentioned that you put a nine-month stint, probably something very different than you had ever done before.

HINSON: Yes, I was teaching nine girls to be—nine women, some girls really, some of them were very young—to be flight controllers. They were really flight controllers. They had mission assignments and they worked shift work eight hours a day, seven days a week. I think we had no back-ups. I think only one time did I have to go on console myself because somebody couldn't come. Because they couldn't come, somebody had to sit in for them, but most of the time they wanted the overtime, so I figured I could get people to work. This girl called me five minutes to midnight. She said, "I just had a wreck and I'm not going to be there." So I jumped in the car and went out there and took her shift. But I think that was the only time I had to do that.

The thing that was rewarding about that job is they had been trying to train these girls, the guy that taught me had been trying to train them, and he couldn't get the computer time to train them. I was able to get the computer time. The bad thing about the teleprinter job—I hope they've learned their lesson—is that you had to have three computers up at one time in order for that job to happen, to get the message to the astronauts. If one computer went down, they didn't know what to do. They didn't know how to store the messages, type them so that when the computer came up, they would just go without doing them in real time again. So I wrote the procedures for them to do that. They didn't have anything. They were just trying to do it haphazardly and everything. So I put a little organization into that, and

they did a great job. They really did. And some of those messages—I don't whether—did y'all ever find their messages?

WRIGHT: Nuh-uh.

Shirley HINSON: You didn't get any of the teleprinter messages? I don't know where they stored those, but some of those messages were great.

WRIGHT: I have to look for them. Is there an example that we should look for?

HINSON: Some of the Christmas messages. They were cute. Some of them were cute and some of them weren't. Very innovative.

WRIGHT: That will give us a challenge. We'll have to look for those and see what we can find.

Shirley HINSON: See if you can find any of the teleprinter messages.

WRIGHT: Okay. We'll do that. The last program with Apollo was the joint effort that was done with the Russians. Were you involved at all with ASTP [Apollo-Soyuz Test Project]?

HINSON: Yes.

WRIGHT: Same capacity?

Shirley HINSON: In the same capacity as the other missions.

WRIGHT: Did you have to do anything different because you were working with the Russian spacecraft?

HINSON: I was doing launch and launch abort. I wasn't doing rendezvous and docking and that. So the only thing I had to do for that was to make sure I got that set of system parameters in the program correctly. I just say I did the constants and system parameters, but that was a very important job because that had to be accurate, and you had to take somebody who cared and played tennis almost, proofreading. There was a lot of proofreading in that job.

WRIGHT: And lots of pages of information, isn't it?

HINSON: Lots of pages.

WRIGHT: When you passed that on, after you knew it was accurate and it was ready for someone else to review, what could you possibly tell them in a synopsis, or was their responsibility to take all that information and—

HINSON: Well, I gave them the exact cell in the program, the exact name of the system parameter, the exact value, and a verbal explanation of what the numbers were. Then when they gave it back to me to make sure it was correct, they gave it back to me with the same name on that parameter. Every system parameter had a name, and every letter in the name meant something. Like M, mission program number, it was six letters, and every one of those letters meant something. It had to go into exactly the same place in the program so that when somebody came and got that system parameter, they called it the same thing every time they went after it. I sat there and proofread those things. That was the only way to make sure they were correct. Some of them were fifteen digits long.

WRIGHT: Hours of your time.

HINSON: Hours, hours, hours.

WRIGHT: Did you bring your work home and review, or did you stay on site and go through—

HINSON: Kirby and I both did a lot of work at home. Something like that you could bring it home and proofread it at home.

Speaking of working at home, we had some DoD [Department of Defense] joint missions at one time. The guy who was in charge of DoD died, and nobody, nobody did his work. When we came, this was when I was doing the engineering orders and the costs control of the control center, nobody knew what his budget was last time versus what it

should be this time, to deal with DoD. I probably worked about three nights until 4 a.m. in the morning getting ready for that program operating plan, based on what he had last time versus what he needed this time. That was a very difficult task, to do things like that without the person there.

WRIGHT: Quite a challenge, no matter what you picked up. [Laughter]

HINSON: Program operating plans were certainly a challenge for the control center.

WRIGHT: We're going to take a break for just a second. [Tape recorder turned off.]

Having such a career with NASA, as you mentioned, you have had so many challenges and you had so many tasks, and life was almost never-ending from day to day as you accomplished one thing to another. Do you have any regrets of not becoming that teacher and filling out that application and moving on to Langley?

HINSON: Not at all. I think that's the best thing that's ever happened to me is to have been hired by Langley Research Center for two weeks. I never worked at Langley, but my first paycheck came from Langley, or it came from Greenbelt, Maryland, I think. I'm not real sure. But anyway, then the next one was Space Task Group. I have never had any regrets for going to work for NASA, and I really enjoyed moving to Houston. I just had a great career. I think that I could never have done better than working for NASA.

I said when I went to work that I was never going to work anywhere more than two years, because I wanted to travel and I wanted to get different experiences and to learn

different things, but there's no way when you are hired to work for Project Mercury that you could ever change jobs. Of course, the job itself changed every two years, so I did change jobs every two years. I just didn't change agencies. But I could never have worked anywhere I enjoyed more than NASA.

WRIGHT: Well, you walked into a time period that has never been matched, and as you met people, of course, from we understand and from what you've said today, walked into an extended family. The family itself had some challenges, with the Apollo fire as well as with the Challenger accident. How did those affect you personally? Did you feel like NASA might have stopped its goals at that time, or did you feel like it was something that everybody could pick up the pieces and go again?

HINSON: It hurt deeply when we had these, but there was never any doubt that we weren't going to continue. I saw no reason whatsoever to stop just because we had accidents. It was a deep personal tragedy, but the mission had to go on.

WRIGHT: Well, your certainly did, from a youngster in North Carolina. You mentioned that math was just fine. Even through grade school, as a child did you enjoy doing math?

HINSON: As far as I know, I've always enjoyed it. I can't remember when I didn't enjoy it. One funny thing about it is I think the first time that we went to one of my high school reunions, there was one of my classmates there, and he said, "She was the best thing in math

I've ever seen," or something similar to that. "Is she still good in math?" I don't know that I'm still good at math, but it was always easy for me. It really was.

The only other thing I can think of that I might would have enjoyed majoring in would have been chemistry. If I had done that, though, I would have had a totally different life. I would have gone to work for DuPont. I would have never met my husband that I have today. It would have been just a totally different life, and I wouldn't have been involved with the space program. So I'm glad I majored in math.

WRIGHT: We are, too, because your contributions have been many and I think they'll live on in history.

HINSON: I hope somebody else recognized them. [Laughter]

WRIGHT: I think every time those accuracies were proofed, they recognized. Kevin, do you have anything that you'd like to add?

RUSNAK: Yes, I did have a couple of questions. You mentioned once or twice your work with the gentlemen who were in the Trench. I wonder if you have any particular stories you'd like to share about any of these guys. There were some colorful characters that came out of there, very different personalities, men like Glynn [S.] Lunney or John [S.] Llewellyn [Jr.], or the ones that you had already mentioned.

HINSON: John was the biggest character, John Llewellyn. He was adorable. I don't know whether you've had anybody to talk about him or not, but he was a good old guy. One of the cutest things about John is he'd come to work and couldn't find a place to park, so one day he parked right on the grass, right at the back door of Building 30, and they hauled his car off, I think, or they called and asked for him or something. Parking at Building 30 was not the easiest thing in the world. John sort of tried to prove to them, you need to build more parking spaces around here, and he did.

But those guys were just so smart. It's hard to tell you how hard people worked and how they cared as to what they did. I assume that all phases of life have that kind of people, but I haven't met them anywhere except at NASA. That changed before I left, which is sad to say, but it did. I'm sure that y'all have seen that, too. I think it changed when they started bringing people in that did not grow up in the job, when they started bringing people who-– maybe they had a great success in a mission in one particular area and they made a name for themselves and then when the job opened over here, they said, "Oh, let's give him this job."

I could see a difference in it when they started not bringing the managers up in the ranks in the organization, when they started trying to get people from outside. That would have been good had they moved these people around and they had experiences in several different areas. A friend of mine who got trained for a job, I told her, "Don't stay in this job more than five years. Don't stay in any job more than five years. Train somebody to do your job so you can get out of it and move up." But I think when they started not promoting people from within is when I saw a big change in NASA. In JSC, I should say, not NASA. When I say NASA, I really mean JSC. I don't know NASA as a whole.

RUSNAK: You had spoken at length before about doing the launch and launch abort activities. Just to clarify, did you not then have that much involvement with the phases of Apollo going to the Moon and that type of thing? In other words, like an Earth orbital mission not being any different for you than one that was actually going on a lunar trajectory eventually?

HINSON: They were very different because I did the system parameters for all phases of the missions. I did those for every phase, so I had to know a lot about the other requirements in order to do the system parameters for those phases. I just didn't have write the requirements and check out the software and do the subsystems tests and everything. But I did know a lot about the program overall. I had to in order to do the system parameters, to know that the systems parameters were needed for those phases.

RUSNAK: In that vein, I wanted to ask you a little bit more about Apollo 8, because that decision was obviously quite a milestone, to send the second Apollo mission around the Moon, but it was kind of kept under wraps for a little while. Did you remember having any work on that type of lunar mission before it was actually revealed that NASA was going to send this mission to the moon?

HINSON: Yes, we were working on getting all the programs ready so that they could talk to each other and my part was only the numbers for those phases. All these programs had to hand over to the next phase. Like the launch program had to hand over to the orbit program.

That was a pretty big phase-over, sort of like changing shifts. You had to make sure you gave the next program all the data it needed to continue, so we were working on those.

RUSNAK: Did you know then what that was going to be for specifically, that that mission was going to be doing that? You were in on the secret, in other words?

HINSON: Yes. You had to be. If you were doing mission planning, you have to be in on the missions. You have to be in on what the mission is going to be if you are doing mission planning. So, we knew a lot of all of that, like when the re-boost was for the Skylab and things like that. We were in on it.

RUSNAK: A little bit earlier, you talked about the Gemini 7/6 mission. That was a mission that occurred because when VI first tried to launch, there was essentially an abort on the pad. Do you remember that event specifically?

HINSON: I could not take you through it in detail. I could probably sit down and think about it for a day and figure out what—

RUSNAK: I just didn't know if you had any specifics.

HINSON: No, I didn't. Not being in the control center, that's not the thing you remember. How hard you had to work to get the programs turned around in order to launch and totally

change the configuration of the computers is the type of things I remember rather than the actual mission phases.

RUSNAK: Well, that makes sense, given your particular experience.

Well, that's all I had for this one.

WRIGHT: Then we thank you and appreciate all that you've had to offer. What a wonderful insight into couple of evolutions all by themselves in the middle of everything else that was going on.

HINSON: Like I say, I'm sure I would have a million things to say after you leave, that I just can't think of today, but—

WRIGHT: That's okay. We always welcome the information.

[End of interview]