

Molly Graham: This begins an oral history interview with Mary Kicza for the NOAA 50th Oral History Project. Today's date is Thursday, October 7, 2021. The interviewer is Molly Graham. It's a remote interview with Mary in Woodbine, Maryland, and I'm in Scarborough, Maine. Because this is a remote interview, I'll send a release form separately, but can you just confirm on the tape that you agree to the recording of this conversation?

Mary Kicza: Yes, I do.

MG: Also, can I have you say and spell your name, just in case this gets lost in the future?

MK: Sure. Mary E. Kicza. Last name is spelled K-I-C-Z-A.

MG: Well, I'd like to start at the beginning, if you could tell me where and when you were born.

MK: Oh, my goodness. I was born in 1959 in Albuquerque, New Mexico.

MG: I was curious how your family came to settle in this area, so I'm wondering if you can trace your family history as far back as you're able, starting on your mother's side.

MK: Oh, my goodness. My mom grew up in a farm family in Kansas. Her ancestors were from Europe – not her mother, but her grandmother – her grandmother? No, her mother. Let me think. Her grandmother had come over on a ship, and similarly, her grandfather had come on a ship, as well – different ships, obviously. They met in the Hanover, Kansas, area. Their family settled in the northeastern part of Kansas, where they farmed. The family still owns the farm today. In fact, it's a very large operation. My mother, however, went into the military, and she was a nurse in what was the Army Air Corps, where she met my father, who had been a pilot. He had been in a plane crash; she nursed him back to health. They married. She ended up settling in Albuquerque because she had asthma, and for her health, she and my father moved to Albuquerque, where they raised our family. My father's family was of German and Irish descent. They had settled in the Pittsburgh area. When my mom and dad moved to Albuquerque, his father and mother moved to Albuquerque, as well. They settled in that area. So, I do have cousins in Albuquerque, as well as lots of cousins in the Kansas area. Obviously, as families do, we're spread all over the country now.

MG: Do you know where in Europe your mother's family hailed from?

MK: It's sort of a Heinz 57. My grandmother, on her side, was from the Czech area – Czechoslovakia. My grandfather was from Denmark. On my father's side, the grandfather was of German descent, and my grandmother was Scotch-Irish. So, I've got a little bit of everything.

MG: Were they part of farming families in Europe?

MK: On my mother's side, it was both farming and shipbuilding. The Denmark part of the family was involved in shipbuilding. My father's side, I'm not sure, but I do know that my grandfather's father had owned a hotel or something after he settled in America. I don't know what their backgrounds were before that.

MG: Do you know how they came to Kansas, how they found that area?

MK: I think it was part of where the ethnic peoples were going at that time. It was far enough west to be able to acquire land and settle. Obviously, on my mom's side, they were farmers, so that's what they knew. My grandfather on my mom's side was very, very involved in the community. He helped to build the Lutheran church in that area. He was involved in the coop and the bank, sort of a prominent community leader. But they were farmers. It's funny because now we still go back to the family farm. Every summer when I was growing up, that was our vacation. We'd go to Kansas, and we'd spend a week or two on the farm. Now, I take my daughters back to the farm, in the same house that I used to explore, my grandmother's house, which became my uncle's house, which is now my cousin's house; that was the house we played in as children. My own children, when we would go to the farm, they would explore the house, and still, they love going to the farm. I think they value that part of their heritage.

MG: You said it was a big operation. Was it a commercial farm?

MK: It is a family farm, but it's many thousands of acres. I know that in addition to their own land, my cousins lease lands. They lease land from me for grazing cattle. They grow crops. They raise a lot of cattle. They also have established an equestrian center on the farm where they might – the cousin that's my age, his wife has forty or fifty horses that she boards and trains, and she juries major horse shows in the region. So, it's a big operation. It's kind of overwhelming. What's lovely is the family members all live within shouting distance of one another. So, there's the house that my mom grew up in, and just down the road is my cousin Mike's house, and a little further is my cousin Paul's house, and Cousin Ellen and Cousin Tony, they're all there. The land that was passed down through the family that came to me and will go to my daughters is still part of the farm, and my cousins lease it from me to graze cattle. It's funny; on that land is a huge rock where the buffalo used to rub their hides when they would scratch their hides near a pond that's on the land. You can still see from that era of time the history. There's a family journal that my grandmother actually wrote down – I have a handwritten history of her life and her memories. She talks about her aunt or her ancestor, who was starting to farm when the Indians were still very active. They would have to – when the Indians were going on a raid, they would have to get on their buckboards to go into town to get to safety. There's a story of one of the relatives trying to put all the kids in the buckboard, and they forgot the baby; they left the baby in the cabin, and they had to run back to get the baby to take the baby to town. So, a lot of history of those pioneers.

MG: Was your grandparents' generation impacted by the Dust Bowl or the Great Depression?

MK: Yes. Oh, yeah, absolutely. In my grandmother's written history, she talks about how very dry it was, how very difficult it was to raise crops, and how very hard it was for my grandfather to have to go to the bank to ask to be given time to pay back the loans for the land he had bought. But they were fortunate in that they had land, and they could farm, and they could produce the food they needed for the family. I have in my kitchen – it's an advertisement from a 1932 *Ladies Home Journal*, and it was my grandmother who was writing to the *Ladies Home Journal* – this was to get money; this was during the depression. She wrote about Procter & Gamble's soap and

how useful it was on the farm. At that time, she had seven children, and a farm wife with – no, she had five children at the time and trying to keep all the kids clean, and her husband and his workers would come in just filthy dirty, and the Procter & Gamble soap was a lifesaver for her. So, Procter & Gamble ran that letter that she wrote. She wrote the letter, and she sent in a picture of the five children, and Procter & Gamble put a full-page ad with her letter inset and the picture inset, and they did a visual of the five children who are my aunts and uncles and my own mom. It's sort of a history in print of my family. My older brother has made it his mission in life to find those magazines. He finds the magazines, and he makes sure that each member of the family gets a copy of that to keep in their homes. He saved a couple – I've got one hanging in my kitchen. He saved a couple more for my girls to put in their kitchen when it's time. Very cool.

MG: Yes, it's nice to be preserved in the historical record in that way. I'm really curious about how your mother's life unfolded before you came along and what inspired her to join the Women's Army Corps [WAC].

MK: I think that if you know farm families, you know that the farm gets handed down to the boys. So, the girls knew that they either had to get married or go on – leave the farm because the farm would go to the men, and that's how it went with my family. In my mother's siblings, there were three boys. Two boys went to the priesthood. They're still priests. One boy, my Uncle John, got the farm. Uncle John had nine children. The farm went to three of the four boys; the women didn't get the farm. So, that was how it went. My mom knew she would not get the farm, and so she studied to be a nurse and made a career for herself.

MG: I'm curious about your father's service, too. Where was he assigned? Where was he injured?

MK: He was part of the Army Air Corps; he was injured in a pilot training accident. I think he was discharged – honorable discharge – after the accident. So, he went to work as an accountant at Kirtland Air Force Base in Albuquerque.

MG: Oh, that's interesting. Did that accident prevent him from having to go overseas?

MK: Yes. He did not go overseas. My mom and he both left the military. My mom continued to work in Albuquerque as a registered nurse, and my dad was an accountant at the military base.

MG: You were born in 1959, so I'm wondering, do you have older siblings?

MK: I do. I had four older brothers, an older sister, and a younger sister. It was a big family.

MG: Yeah. Tell me a little bit about growing up in Albuquerque.

MK: It is high desert, so summers are very hot, but it's a dry heat so that you don't feel it as much. Albuquerque is in the Rio Grande Valley. To the east of Albuquerque are the Sandia mountains, and to the west of Albuquerque are extinct volcanoes. Running through Albuquerque

is the Rio Grande. New Mexico is a very poor state, and it's also a lot of Indian and Latino ethnicities. So, I grew up – I told my kids – are you in Howard County? Where do you live?

MG: I'm in Maine.

MK: Oh, okay. So, I live in Howard County, Maryland, which has a very strong school – public school system. My kids went through school, and I know they had ten or eleven AP classes before they went into college. You didn't have that opportunity in New Mexico. When I went to college, I had no AP classes at all; I had taken calculus. So there wasn't the opportunity, from an education perspective, at least in those years that I know the kids on the East Coast had growing up. When I went to school – I went to school in New York – I was overwhelmed by how much further ahead those kids were and how many more opportunities they had than I had growing up in New Mexico. It's a beautiful, beautiful area. The climate is wonderful. In fact, this week, they just finished the International Balloon Fiesta. Every year it's hosted in Albuquerque. So, when I grew up in Albuquerque, my time was spent swimming, playing tennis, and watching the hot air balloons. There were always hot air balloons in the sky.

MG: Is it an area you've stayed in touch with or go back to visit? I'm curious how you've seen it change.

MK: It's grown a lot. I still have two older brothers who are living and living in Albuquerque. So, it's a much bigger city than it was when I was growing up, but it continues to be pretty challenged in terms of economics.

MG: I know your father's grandparents moved out there too. Were you particularly close with them growing up?

MK: I wasn't super close, but I was close, and I'm still in touch with the couple of cousins that were my peers growing up. I also had another cousin who was – he was my mother's first cousin, and he settled in Albuquerque, and they had a daughter, and I'm very close with her. In fact, she's coming down from Manhattan to spend Thanksgiving with us. So I do try to keep in touch with family, either through phone or through social media. I'm trying to encourage my kids to be mindful of that. As you get older, it becomes more important to you, and so I'm trying to set an example for my kids [inaudible] and always make sure family is close. In fact, my older brother – I had four older brothers, two of them remain living. I have two remaining living siblings. One of them was my brother Patrick, and when I was pregnant with my older daughter, Caitlyn, I convinced Patrick to be my nanny, and I moved him from Albuquerque, New Mexico, to my home in Maryland, where he spent the next twelve years living with us, and he was the uncle nanny, and he raised my girls while I was working full-time at NASA [National Aeronautics and Space Administration] and then at NOAA [National Oceanic and Atmospheric Administration].

MG: That's wonderful.

MK: Yes, it's pretty special.

MG: What part of Albuquerque did you live in? What was your neighborhood like?

MK: It was the Northeast Heights, and it was a lower-middle-class neighborhood. The houses were – gosh, the house that we lived in had been built in the 1940s, so it was at least twenty years old when we were living there, and it's still there today – small ranchers. In those days, you knew everybody in the neighborhood, and all the kids played outside all day and all night. So, it was a lower-middle-class neighborhood. Most of the kids went to public schools; I went to a private Catholic school and did that from first grade through high school, two different Catholic schools. But it was a lovely, lovely neighborhood – good kids, good families.

MG: I was going to ask you if religion was a part of your life growing up. I was guessing you were Catholic with Mary and Patrick.

MK: Yes, yes. Yes, it was. It was and continues to be a part of my life. I'm really happy – my youngest daughter now just had started at Clemson University, and she's becoming actively engaged in Bible study and going to church on Sunday, so I'm going, "Yes, you go, girl."

MG: Good for her.

MK: Yes.

MG: Did all of your siblings attend a private Catholic school?

MK: No, it was just me. My older siblings – my younger sister passed away when she was very young. She was a Down syndrome baby, so we lost her when she was, I think, maybe two years old. My older siblings all went to public schools. Three of the four boys were dyslexic, and so they were challenged in terms of academics, and they struggled through public school. I think the brother that's closest to me, the brother that became my nanny, could not – it was too difficult for him to be in the Catholic school. So he went there for the first year, and then he switched over to the public school and was in the remedial training classes because of his dyslexia. I was the youngest child. After my sibling had died very young, I was the youngest child, and my mom put me into Catholic school.

MG: I'm curious where your propensity for science and math came from.

MK: I guess it was probably in high school. In high school, I really gravitated towards it. I was a latchkey kid. My father died when I was eight years old, and so my mom continued to work as a nurse, and she worked the night shift. So, I would come home from school. I was the youngest. My brothers – the closest one to me was four years older, and the other ones were ten and twelve years older, so they were away from the house and in their own apartments. I would come home and study. I would wait for my mom to come home, and I would watch *Star Trek* because it came on at ten o'clock at night – 10:00 to 11:00 – and I would watch it from 10:00 to 11:00, and then wait until 11:30 for my mom to get home. Maybe it was that that kind of pushed me toward the sciences. I became very involved in maths and sciences in high school. Plus, I liked the teachers in the maths and sciences in high school. I think they influenced me, as well.

MG: Do you have a particular iteration of *Star Trek* that you enjoyed?

MK: Oh, I think I liked them all. I continued to watch it all through adulthood. When I was at NASA headquarters, every time a new *Star Trek* movie would come out, all of NASA headquarters would go to the same movie theater in Crystal City, and the whole of NASA would be there watching the *Star Trek* movie, so we were all geeks, you know? [laughter]

MG: Do you mind telling me how your father passed away? It must have been such a challenge for your family.

MK: Well, he was an alcoholic, and so he struggled with it through all the time I could remember. So, the alcoholism did him in, basically. Which is why I tend to not – I stay away from alcohol, and I encourage my kids to stay away from alcohol.

MG: I had also wondered if his injury had any lasting impacts or physical effects.

MK: I think that might have contributed to it. I think probably depression may have contributed. But I was so young when he passed away I really don't have much of a memory.

MG: Did your mother ever remarry?

MK: No, she did not. She had her hands full. I have two kids – two kids and two step kids, but the step kids are adults. You have kids, obviously. It's a lot of work, and how on earth she managed to raise, at that time, six kids by herself working full time. I was in awe – I am in awe of how she managed it.

MG: I also wanted to ask – you were ten years old, I think, when the first moon landing took place. Was that something you watched on TV? Was it a big deal?

MK: Oh, of course. Of course. I still have memories of watching it on a black and white TV that was sitting on our kitchen table in our tiny kitchen in Albuquerque. So, yes, it did have a huge impact. By the time I was fifteen, I knew I wanted to work for NASA. I chose biomedical engineering as my undergraduate degree and went to Rensselaer in Troy, New York, but ended up switching into electrical engineering because I met my first husband, and we started our lives together. He was military, and as he was beginning to transition to different jobs, I saw the opportunity to join NASA. So, I joined NASA one year out of college. But I had my sights set on it when I was in high school.

MG: That's interesting. I'm curious what other influences or role models you had in high school that were helping support or nurture this interest.

MK: I think my science teachers weren't NASA-oriented by any means, but they were really good teachers. My math teachers [and] my science teachers were really good, and so I enjoyed their classes. I had friends who had that same sort of passion for working with NASA. In fact, there was one boy that I can remember as we were maybe seniors in high school – I remember one night I was talking about it. He was at my house, and we were talking about wanting to

work for NASA. Years later, when I was working for NASA at the Kennedy Space Center, he came for a visit. He was in the Air Force, and he came for a visit, and we watched a shuttle launch together. It was pretty cool.

MG: Do you remember what shuttle it was?

MK: No, I saw so many shuttle launches, I don't remember which shuttle it was. I worked at NASA Kennedy for around five years, and there were a lot of shuttle launches during that time frame.

MG: What year did you graduate high school?

MK: 1978.

MG: What made you choose Rensselaer? I know you transferred a little bit later on, but what appealed to you about that school, and what was that process like, applying for colleges?

MK: It was actually a friend of my older brother that made me go to Rensselaer. I was applying to several schools. I had gotten offers from several schools and scholarships from several schools. I was gravitating towards going to the University of New Mexico because it was close to home. This gentleman, his name was Bob Andrews, was a really good friend of my older brother, Joe, and he took me aside, and he said, "Mary, you really need to go away from home to go to college. It's just such a different experience to get out of this environment and explore new territory." He just felt it was really important that I consider that option, and so that kind of changed my mind. What I ended up doing was going about as far away from home as I could go by going to Rensselaer. I am really glad I did it. It was really hard the first year. I was so homesick. However, with my own daughters, now, I have encouraged them to go away to school, not be at home for school, which they've both done. My daughter Caitlyn called me last night in tears, "Mom, I'm so homesick." She's a senior in college; she's still homesick. [laughter] But I know she's glad she's where she's at. But it's amusing.

MG: Troy, New York seems very different from Albuquerque, New Mexico. So how did you do with upstate New York winters?

MK: Oh, I was miserable. Literally the first month I was in Troy, it rained every single day. And from Albuquerque, I was like I was in a foreign land. The kids were really, really smart, and they'd all had all the advantages of East Coast training. There was nobody – I don't remember anybody from the Southwest in my class. Most kids were East Coast kids. It was challenging until I met the young man who became my husband. Once he and I met, everything seemed to get a lot easier. I was less homesick. It was much easier for me.

MG: And you met in Troy?

MK: Yes. He was a senior when I was a freshman.

MG: Was that the impetus for then transferring to California? Did he find work there?

MK: Yeah, he was Air Force ROTC [Reserve Officers' Training Corps]. So, when he graduated, he was assigned to McClellan Air Force Base. I switched from Rensselaer to California State University in Sacramento, which is where he was stationed. So, I was starting my sophomore year in college – very young. I got married when I was twenty years old, which was really young. Still, it's really young to get married, but I did. I finished my degree at Sac State. Then he got transferred when I was – right after I had graduated, I had gotten my degree in electrical and electronics engineering and had started to work at McClellan Air Force Base when he was transferred. He was going to an education with industry assignment in Oak Ridge National Laboratory, but it was a one-year assignment, and he knew that after that, he was going to be going to Patrick Air Force Base in Cocoa Beach, Florida, which was my entrée into NASA. So, I interviewed for a job at NASA Kennedy. I can so remember it because I was in my boss's office at McClellan to take the interview. How old was I? I must have been maybe twenty-one years old – yes, I think I was twenty-one or twenty-two – and there were five people interviewing me on the phone at NASA Kennedy. I had five people on the opposite end of the phone, and I'm sitting in my boss's office trying to answer all the questions. I was like, "Oh, my god." But I ended up getting hired, and I moved to Florida a year ahead of my husband because he had the Oak Ridge assignment and started at NASA Kennedy.

MG: There must have been a lot of pressure on that phone call because this was a big opportunity.

MK: It was a scary phone call for me. Once I got to NASA and started working with those people who had interviewed me, they became very good friends and mentors. My time at the Kennedy Space Center was really wonderful. I thoroughly enjoyed it.

MG: Good. I just wanted to hear a little bit more about your college experience in California. Was it a little bit different because you were a married student? Were you able to be involved on campus?

MK: It was different. It was very different. Because I was married, I was not living on campus; I was living in base housing. When I first got to California, to Sac State, I tried out for the tennis team; I made the tennis team, but I was also taking a full course load in engineering. When they posted the travel schedule for tennis, I said, I'm married, I have eighteen to twenty hours of engineering courses. I can't afford to travel to Hawaii to play tennis. So, I dropped out of that. I didn't get involved in much other than the Society for Women Engineers. At that time, in the electrical engineering department, I think there were almost no women. When I graduated, there was one other female graduate in electrical engineering, and she was from Iran. So, it was very much a male-dominated field. I gravitated to – in terms of the closest friends, not surprisingly, it was former military, people who had been enlisted in the military who had gotten out and were now getting their degree. The friendships that I formed in college were with those types because it was more closely aligned with what I was living as a military wife at that time. I do remember, when I was going to college, although I was getting a degree in electrical engineering, I still wanted to pursue biomedical engineering as my graduate work, and so I was taking a lot of biomedical-related classes. I had a physiology professor who really wanted me to go for a medical degree. He was encouraging me to do that. He was encouraging me to get my husband

to go to the Air Force Institute of Technology, and then I could join and I could go for a medical degree. So, in terms of the friendships, those were the friendships I remember. In terms of the relationships with professors – all male, not a single female professor. All of them were good, though. They were kind; they were very supportive. I didn't have any – I didn't feel in that arena any bias towards a female in engineering. I was supported through that process.

MG: You mentioned the Society for Women Engineers. Do I have that right?

MK: Yes.

MG: How did you get involved in that organization?

MK: I was involved through membership, peripherally. It wasn't a very large organization at that time, obviously, because there weren't a lot of women engineers. So I don't have a lot of memories of it. However, that organization is still very active today, and my daughters are both members of it. My elder daughter is now a mentor to the younger women engineers at the University of Tennessee in Knoxville.

MG: Does anything else stand out about your time in college during those years?

MK: Yeah, I remember Reagan getting shot. I remember where I was when Reagan was shot. I was in physiology lab with my friend, Cliff, who was former military, and I remember our shock at that piece of history.

MG: Yes, because you were fairly young when John F. Kennedy was shot, when Robert Kennedy was killed, and Martin Luther King.

MK: Yes, yes.

MG: Did you discuss politics on campus? Were you following along with the news?

MK: We were because at that time when Jimmy Carter was president, there were the hostages – the Iranian hostages. I mentioned that we had classmates who were from Saudi Arabia and Iran. Because of the Iranian hostage situation, there was a lot of fear, I would say, in my classmates who were from the Middle East. I remember one young man who was a classmate, who was from Saudi Arabia, and he was being interrogated, I think, because of what was going on in the hostage crisis. So, I remember that political event impacting us at the college. Largely, though, no. We were focused on studies, getting through the next exams, and getting through all the labs and such.

MG: Can you tell me a little bit about the position you held at McClellan? What were you doing there?

MK: I actually did a cooperative education program. So as I was a junior and senior in college, I worked part-time at McClellan Air Force Base. It was a GS-4 position; it was an electronics technician. I began to learn about developing software to support automatic test equipment.

When I graduated, they hired me, and they hired me in as a GS-7, and I was an electronics engineer developing software and testing circuit boards that were used in the ground support equipment for the Air Force satellite communication systems. So, it was very much a hands-on job. I developed the software, and then I actually got onto the computer systems to use that software to test for errors in circuit boards.

MG: This is when my eyes are going to start to cross. I'm curious what the applications of these things were.

MK: Well, if you think about satellite communications, they're used all over the world. The ground systems that are developed to pull the data down from the satellites are deployed all over the world. In this case, these were mobile ground capabilities. We needed to have – and they were operationally deployed where the military was, and so you needed to have the ability to rapidly detect where errors were in the circuitries so that you could fix them in the field. So, we developed the software that would be used on small computers that could be deployed in the field where, if they were having a problem with the ground support equipment, they could pull the circuit card out of that equipment, put it into the computer, run the computer software that was testing all the ins and outs of the circuit board to determine which actual circuit or resistor or capacitor needed to be pulled off the circuit board and replaced to fix the problem.

MG: Were you enjoying this kind of work?

MK: Oh, I loved it. At the time, I was doing a five o'clock in the morning to one o'clock in the afternoon shift. I would work, and then one of my coworkers and I would go play racquetball. I lived close enough to the base and base housing that I could ride my bike to and from work, so I'd ride my bike in the morning, and I'd ride my bike home. It was pretty idyllic.

MG: There, too, were you one of very few women?

MK: Yes. I think I was the only female in my office. However, that changed when I went to NASA. It was kind of fun.

MG: It was 1982 when you came to NASA.

MK: Yes. Yes. So, I had that interview. I got hired. I went to NASA in '82, and my – not my immediate boss, but my boss's boss was a woman. Her name was JoAnn Morgan, and if you Google her, you will see that she was one of the pioneers of NASA women. She was in the control rooms for launches and such. She was quite a grand lady. When I went to NASA, I began working for a man named Chet Norris, and he was handling the – what would you call it? – the electrical systems for the Atlas-Centaur launch vehicles. But as a part of that process, we had what we called a real-time data system, a computer system that would monitor the launch vehicle, all of the parameters on the launch vehicle, and on the payload, the spacecraft, and through all of the testing that took place to prepare for a launch. So when Chet hired me, I was the only woman in his group. When I left five years later, I was one of five women in his group. So the influx of women I saw changed remarkably over just a very short time while I was there. I still am in touch with one of those women. It's funny; we're Facebook friends. So, pretty cool.

MG: What was the position you were hired for?

MK: It was an aerospace engineering position. I was first an engineer who was learning about the real-time data system and how it was used. When I left, I was the lead engineer for that system in terms of using the system to communicate to all of the engineers on the pad and all of the engineers – at that time, it was General Dynamics Convair, and at the Glenn Research Center, which had the program responsibility for the launch vehicle. When any test or launch would happen, the system that I was basically leading the effort on would pull the data down, would provide it to all the engineers all over the country in real-time, so they would see it on their computer screens. Then after the test or launch, we would have recorded all that data, too. We would take that data and put out all the reports that were required to make sure that the electrical and the mechanical and payload systems – the power systems, the thermal systems – that everything had performed as they had expected it to. Or if not, which sensors were not performing.

MG: Can you say a little bit more about the Atlas-Centaur, its purpose, and why it's fairly well-known?

MK: So, at the time, there were two types of launch vehicles. There were the manned launch vehicles, which was the shuttle, and there were the unmanned expendable launch vehicles. So, they would launch, and that would be the end of them. So, there's the manned vehicles and the unmanned vehicles. I worked in the unmanned vehicles, which was the expendable launch vehicles directorate. There were two workhorses, the Delta launch vehicle and the Atlas – at that time, the Atlas-Centaur launch vehicle. Those launch vehicles were largely used to lift weather satellites, commercial satellites, or military satellites into orbit. It was about a three-month cycle that we went through at Kennedy for every payload, every satellite, every spacecraft that was going to be launched. They would go through that cycle again and again and again. At that time, I was working the Atlas-Centaur launch vehicle, not the Delta. The Centaur stage of the launch vehicle was also being prepared for a shuttle Centaur launch. Believe it or not, they were planning to put a Centaur rocket in the payload bay – the shuttle cargo bay – to launch – at that time, there were two exploration spacecraft – one bound for Saturn and another bound for the sun. Those were going to be shuttle Centaur launches. We were actively supporting ongoing spacecraft launches on Atlas-Centaur, and we were preparing for shuttle Centaur.

MG: And shuttle Centaur never happened, right?

MK: No. When *Challenger* was lost, within two weeks of that disaster, the shuttle Centaur program was canceled.

MG: How come?

MK: Too dangerous. We were putting a rocket inside of a rocket, so it was pretty challenging.

MG: Can you talk about what happened with the *Challenger* accident?

MK: Yeah. We were actually doing – we weren't working that launch, we were preparing the test for the next launch which was a shuttle Centaur launch. We were doing what was called a terminal countdown demonstration; it's a timeline that sort of mimics all the steps up to a launch. Our flow for our test was paralleling the *Challenger* timeline for the actual launch that was taking place on *Challenger*. So when *Challenger* was going into its launch holds before liftoff, that's when our holds would happen because it was just a parallel timeline. I can remember we went into a hold when *Challenger* launched, and we were in our control room with our headsets on, but we were watching the actual *Challenger* launch on our screens above. I remember one of my peers, Linda, saying – she said, "It doesn't look right. It's shaking a little bit more than usual." And then, right after that, the explosion happened. Of course, we were right there; our offices were on Cape Canaveral, just a couple of miles away from the launchpad. We went outside, and you could see the contrails of everything coming down. It was horrible. It was just horrific. I can remember our team gathering that afternoon because we finished our – we wrapped up our test, shut everything down, and were talking. I remember one of our older guys were all – there were five of us sitting around in the office – it was a bullpen office – and he said, "This program is never going to happen. It's going to get canceled." It was that afternoon he was saying, "This program's dead." Sure enough, within a couple of weeks, we got the news.

MG: Can you tell me what those next few weeks and months were like? Did you have to deal with the press? How were people shifting focus?

MK: Honestly, I don't remember. I know that we were wrestling with shutting down the program. In my personal life, I was also getting ready to move on. My husband had finished his assignment at Patrick Air Force Base, and we knew that he was going to be assigned at the Pentagon. At that point, I was anticipating leaving NASA Kennedy, and I was exploring opportunities both at NASA headquarters and at NASA Goddard. At that time, there was a NASA location in Reston where they were doing International Space Station program planning. I remember more about, within those next few months, preparing to leave than what was going on with the shutdown after shuttle Centaur.

MG: And did you end up leaving shortly after that?

MK: I did.

MG: Goddard?

MK: I ended up going, not to NASA Goddard. I got an offer at NASA Goddard, I got an offer at NASA Reston, and I got an offer at NASA headquarters. I ended up going to NASA headquarters. My reasoning was – and actually, it was my boss Chet, at NASA Kennedy, who helped me come to the conclusion. He said, "Mary, do you want to be a big fish in a little pond or a little fish in a big pond?" And I chose to be a big fish in a little pond. I went to a small program at NASA headquarters; it was called the Microgravity Science and Applications Division. There was a female boss; her name was Katy Schmoll. I'm still in touch with her today, and it was the smallest of the science organizations in NASA. It was called the Space Science and Applications Directorate at that time. So, I went to NASA headquarters and, not

surprisingly, my husband's transfer got delayed, so I was living up there for almost a year before he was transferred into his job at the Pentagon.

MG: So, were you not involved in any of the reports and safety efforts that took place after the Challenger?

MK: I was not for *Challenger*. However, *Columbia* was a different aspect because if you fast-forward to the *Columbia* disaster, I had progressed in my career; I was the Associate Administrator for Life and Microgravity Sciences. So remember, I went into the big fish in the little pond, Microgravity Science and Applications? I progressed in my career to be the AA [assistant administrator] of both Life Sciences and Microgravity Sciences. For the *Columbia* mission, it was a major microgravity sciences mission, and we had eighty-nine experiments – my division, my organization had eighty-nine experiments on Columbia. I can remember; it was a Saturday morning. Every day we had been reporting how the experimentation was going. The mission had been stunning; everything worked wonderfully. We had no issues with any of our experiments. They were on their way home. It was a Saturday morning. They were going to be landing at Kennedy. I was actually with my husband. We were with our financial planner. We had a meeting that morning with our financial planner. My brother called me. He was taking care of our kids. He called me, and he said, "Mary, turn on the TV." I said, "What?" He said, "You have to turn on the television now," and we got the financial planner to turn on the television, and *Columbia* had exploded on return to earth. Needless to say, I left the financial planner and went right down to NASA headquarters, where I spent the next many, many hours. I think I was eight months pregnant at that time with my younger child. So, it was pretty challenging. I have a picture of myself at eight months pregnant, standing in front of the *Columbia* spacecraft before it launched with the NASA administrator. We had been down for the launch. I remember a lot more about that and the aftermath of that than I did about *Challenger*.

MG: I'm curious about the impact that had on you or how it changes your approach to the work you do when lives are on the line.

MK: I will tell you that for *Columbia*, because of the nature of what I was doing at the time, and the people that I was working with who were so very close to the astronauts who were learning how to run the experiments, and principal investigators who had spent – some of them had spent their lives preparing for this opportunity – was a lot of grief management. I can remember bringing in grief counselors to work with our teams in the aftermath of *Columbia*. For *Challenger*, our group wasn't as close to the action, but for *Columbia*, we absolutely were. I remember one of my staff who was worried about me – because, remember, I was eight months pregnant dealing with this – she brought in a massage therapist to help me relax. She had somebody come in and give me a massage because I was pretty stressed at the time. So, yes, it was a very difficult time. I can remember that day, that Saturday. In fact, there's a picture of me in *Life* Magazine because *Life* Magazine took pictures of us when we were at NASA headquarters that day, dealing with the aftermath of the tragedy. There was a huge group of us gathered in one of the main conference rooms on the ninth floor of NASA headquarters, working with the White House, working with the press to try to communicate what had happened and how it happened, and trying to understand what had happened. But that night – it was probably

10:30 or eleven o'clock at night – my husband drove to NASA headquarters with my – at that time, she was three years old – daughter to pick me up and bring me home after a very long day at work. I can remember my daughter, Caitlyn, saying, “Mommy, did the space shuttle break?” I said, “Yeah, baby, the space shuttle broke.” She said, “Don't worry, Mommy. They'll make you another one.” It just killed me. It makes me tear up. I don't know if she remembers that day or that time. She probably doesn't. But I do remember afterward her coming to the ninth floor. Actually, it might have been before that launch – either before or after. Around that time frame, she came to the ninth floor, which is the headquarters administrators' suite at NASA. It was after because I was in the administrators' suite working with Sean O'Keefe then. She had on these little, tiny tennis shoes that lit up, and I remember Sean – she was on the big NASA meatball logo that was imprinted in the carpet on that floor, and Sean O'Keefe was admiring her little light-up shoes. He gave her a little set of worry dolls. He had gotten worry dolls from one of his – I don't know, from somebody who had visited him, and he decided that Caitlyn needed the worry dolls. Caitlyn still has those little bitty worry dolls that she keeps.

MG: It sounds like in addition to grief counselors, they should have brought in three-year-olds [inaudible].

MK: [laughter] Yes, yes.

MG: That must have been so difficult. I imagine it was an enormous administrative effort in the following months or years to deal with the reporting and all of those things that follow.

MK: It was. I can remember one of the biggest challenges that the administration and the administrator was facing was what to do with the Hubble Space Telescope. Could they afford to risk the astronauts to go service the Hubble Space Telescope? You know what an icon that space telescope is and was at that time for the American people. I can remember the fierce battles that were taking place about the safety of the astronauts and whether or not the space shuttle should be put in that situation. What were the chances for risk to the astronaut's safety? I can remember one astronaut, in particular, was really adamant that this mission needed to take place, that they shouldn't cancel that servicing mission. It was something that was too important. And it did eventually. It took place. But it was a lot of angst, a lot of emotion in getting to that decision. I don't know if you know Kathy Sullivan was one of the astronauts that serviced the Hubble Space Telescope at the very beginning, but this was after that time.

MG: Yes, I wanted to ask you about Hubble at some point, but I'm worried we've left my timeline a little bit.

MK: Yes.

MG: Well, while we're talking about the *Challenger* in this time period, can you say a little bit more about Sean O'Keefe? He was the administrator of NASA at the time.

MK: Well, *Challenger* was earlier. *Challenger* was, I think, during the James Webb timeframe. *Columbia* was in the Sean O'Keefe timeframe. So there had been – at least two or three administrators had gone by before Sean O'Keefe had come into the picture.

MG: Okay. So maybe we'll back up a little bit, and you can tell me a bit about the position you had at headquarters after you left Kennedy.

MK: Sure. So, I started out as a program engineer in the Microgravity Science and Applications division, and it was a very different experience. When you work at one field center, just the one NASA area, one NASA office, you tend to see only what's going on in that office. When you go to NASA headquarters, you see the big picture. Rather than knowing Kennedy, I became familiar with all ten of the NASA field centers. Microgravity Sciences had worked at NASA Glenn, NASA Langley, NASA Johnson Space Center, and the Jet Propulsion Laboratory, and at Marshall Space Flight Center. We launched out of Kennedy. I began to get very much a big picture view and began working with many of the NASA field centers to implement the missions, the experiments for Microgravity Science and Applications. So, I started out as a program engineer [and] progressed to being a program manager. Then I was a branch chief. Then I was deputy director there, I believe, if I recall before I transitioned. As NASA was changing, I transitioned to a different role.

MG: Within NASA, or was that when you went to NOAA?

MK: No, that was within NASA. Let's see. I went from NASA Microgravity Sciences and Applications to become an assistant associate administrator in the big science organization. So, Microgravity Sciences was one of seven divisions in the big organization. I became – it's called – a triple-A [AAA] at the big level, and I was working technology. The assistant associate administrator for technology, and I was interfacing with the aerospace director that was developing a lot of the technologies that we then incorporated into the space science missions. That was at the Office of Space Science and Applications level.

MG: Was this associated with the Discovery Program?

MK: Actually, I missed a spot. So I went from microgravity sciences to become the deputy of planetary, which was in another division. Then, as I was the deputy of planetary, I also was program manager for Discovery, and this was when Discovery was first starting, and the two big missions were the *Mars Pathfinder* mission and the *Near-Earth Asteroid Rendezvous* mission. So *Mars Pathfinder*, I was working very closely with the Jet Propulsion Laboratory, and the *Near-Earth Asteroid Rendezvous*, I was working with the Johns Hopkins Applied Physics Laboratory. So, I went from microgravity sciences to planetary sciences, and then up to the AA level at all of sciences. I was there for a couple of years, and at that point, the administration changed, and there was a heavy emphasis – this was, I think, on the Clinton-Gore administration, heavy emphasis on reducing the sizes of headquarters, and so they were shrinking headquarters. At that time, Joe Rothenberg, who was the head of NASA Goddard, came cherry-picking. He went to headquarters to find good people and bring them back to Goddard. So, I actually went from NASA headquarters as a triple-A into NASA Goddard in Greenbelt, Maryland. I started out as an associate administrator for the space science programs there. I was working on all the space science programs, including the Hubble Space Telescope, which was managed at NASA Goddard at that time.

MG: And can you tell me a little bit of the story of Hubble, maybe just summarize it?

MK: Oh, my goodness, I can tell you from my knothole, and then I can tell you about James Webb, because that's fun, too. So, Hubble actually began, I think, at NASA Marshall, and at some point in time, the transition was to NASA Goddard. When I got to Goddard, NASA Goddard had management of the Hubble, which was on orbit. The Hubble had the mirror problem; there was a flaw in the mirror that was very, very minuscule, but in a telescope, a minuscule flaw is amplified. The engineers were able to find the right workaround to correct it through software. With those corrections in place, they were able to maintain it and continue to use it and change out instruments for many, many years. The Hubble Space Telescope, at that time, when I first came to Goddard, was between maybe the second or third servicing mission. I had the pleasure of working in Houston when the Hubble servicing mission was taking place. That was really cool. I went to Mission Control in Houston and sat through that servicing mission. But Hubble continued to be a very active part of NASA Goddard's repertoire of missions in space science. But NASA Goddard had a lot of – and continues to have a lot of missions. So they've done hundreds of space science and earth science missions. So as an associate administrator, I was working with NASA headquarters across all of those space science missions. I eventually became association administrator for both space science and earth science at Goddard. In that vein, I think one of the biggest challenges was to – well, there were two challenges. Wes Huntress was the AA of space science at that time, and he wanted to find money to start developing the next generation space telescope; it was called NGST. He laid a challenge on Goddard to reduce its costs in order to create a wedge of funding that he could apply for that analysis. So, I was charged with working with the Goddard operations directorate to put in new systems that reduced the footprint and the cost, and the manpower associated with operating missions. I was also charged with reviewing the grants processes across NASA to identify how that could be streamlined. With those two areas of savings, Wes was able to create the wedge to begin the next-generation space telescope. I worked with the deputy director of Goddard, who at that time was Al Diaz, and the program manager of the Hubble Space Telescope, who was John Campbell, to start doing the next studies for the next generation. It was kind of like having two tigers by the tail. The guys did not – they were very stubborn, they were very strong-minded, and getting them to agree on things was challenging at times. But they both had the same objectives, and they managed, obviously. Next-generation evolved into the James Webb Space Telescope, and it's currently scheduled for launch this December. So, not too long from now.

MG: You wanted to tell me a little bit more about James Webb. I'm not familiar with him.

MK: Well, James Webb was the NASA administrator. He was the NASA administrator, I believe, when *Challenger* exploded. I remember meeting him when I first came to NASA headquarters working in the Microgravity Science and Applications Division. He was not a scientist. He did not have a scientific background. His more was a management background, and I think that may be some reasons why some people don't like to call it the James Webb Space Telescope. But he did a tremendous amount for NASA. He was a very good leader and manager, and I think the telescope is aptly named. The technologies associated with it are amazing. It's a deployable mirror. So instead of launching a single mirror, it's a stacked mirror that, when it's deployed, it'll unfold into a much larger primary mirror. So, it'll be pretty

stunning, I think, when we start seeing the first light from this telescope. The current program director for the James Webb Space Telescope is a gentleman who I brought to NOAA to work for me for about a year. His name's Greg Robinson. When he came to work for me, it was a career-broadening opportunity for him, and it was very helpful for me during that time that was challenging at NOAA. He went back to NASA, and he's currently the director of James Webb.

MG: It was in this period and in this position that you got involved with the International Space Station.

MK: Well, when I was in microgravity, they were beginning to develop the requirements for the International Space Station. Obviously, it took many, many years to develop the space station. I went to NASA Goddard, and then it was in Sean O'Keefe's timeframe that I got sweet-talked back to NASA headquarters, where I was the AA for Life and Microgravity Sciences, and that was developing payloads for the International Space Station.

MG: Is there anything I'm missing up to this point? I think I'm in 2004, 2005, when you were back at headquarters.

MK: Yes, correct.

MG: One thing that we definitely skipped over was earning your MBA in Florida.

MK: Yeah, when I was at NASA Kennedy, I started to go for my MBA, master's degree in business administration. I was doing it with night classes, and I transitioned to NASA headquarters. At that time, the Florida Institute of Technology actually had a satellite campus in Franconia, Virginia. So, after work at NASA headquarters, I would drive over to Virginia and do night classes. It took me a long time to get it done, but I did get it done. It actually was really helpful for me because I was learning in graduate school the types of things I was applying in my job at work, so it stuck with me. Everything about strategic planning and developing strengths, weaknesses, opportunities, and threats, and developing goals and objectives and being able to measure them, was something that I was doing as a program manager at NASA headquarters. It was very helpful at the time.

MG: I imagine it helped to shape your career and all the leadership positions you held.

MK: I think it did. There was a point in time when I was considering going the astronaut route, going the technical route versus going the management route. Because of my husband, at the time, heading to the headquarters area, obviously, the management route made more sense for me.

MG: Back to your last position with NASA in 2004 and 2005, can you describe that time period? In my research, it sounded like one of great transition.

MK: It was. As I had said, I was the AA for Life and Microgravity Sciences. Sean O'Keefe was the administrator. In the wake of *Columbia*, NASA was basically doing a reset on its goals and objectives. We worked very closely with the Bush administration to establish a vision for

space exploration that would go to the moon and Mars. So it was a really exciting time. I remember working with Sean to brief our plans to the science advisor to the president; it was John Marburger at the time. I remember Sean bringing in people who were well known for exploration. I don't know if you know James Cameron; he's the producer of the *Titanic*, *Avatar*, and all those. He was on our advisory board, and he was known for his exploration of the Titanic, so he was advising more about messaging and describing the thrill of exploration. So, it was a very, very exciting time to reestablish where NASA was going. It was also a very challenging time because the budget versus the goals was inconsonant. How we could afford to complete the space station, to manage the space shuttle fleet, which was very expensive, and at the same time, create the next generation exploration capability was really challenging.

MG: In 2005, you were named a special assistant to Ed Weiler?

MK: Ed Weiler at NASA Goddard. Yes, it was a challenging time. The administration changed, a new administrator came into NASA, and I took issue with his leadership style. A very, very brilliant man, but he was hard on the people, and that was not my style. So, I knew that I would not work for that individual, and so I chose to exit, and going to work back to Goddard with Weiler was my exit strategy. Which is why I came to NOAA; I began looking for opportunities outside of NASA. It wasn't the NASA that I had grown up with.

MG: The other person I wanted to ask you about was Charles Elachi. I saw his name and your name together in an interview, and there was a program you had set up together under O'Keefe.

MK: Yes. Was it the New Millennium program or –?

MG: I'm not sure.

MK: Oh, well. So I had worked with Charles for many, many years. Charles was the director of the Jet Propulsion Laboratory [JPL]. It was probably the planning for the Vision for Space Exploration was what was going on. So, Sean brought in Charles to help align the science community to identify challenging scientific objectives that would guide our efforts on lunar and Mars exploration. Keeping the two in sync, the development of the infrastructure, which is the rockets and the crude vehicles, keeping that infrastructure aligned with scientific purpose is a really challenging endeavor. Oftentimes, the scientific community sees big infrastructure as taking away from science. My job, within NASA – I'm losing my voice – my job within NASA was to align the mission directorates to be supportive of the Vision for Space Exploration, seeing what each mission directorate could contribute. Charles's [job] was to identify the way to pull in the external science community so that they would be advocates for this Vision for Space Exploration. I continued to work with Charles even after I left NASA. I would reach out to him because JPL was doing a lot of the technology research that was important to NOAA, as well. He and I continued to stay in touch well after I left NASA.

MG: I don't know about this, but do you sense that NOAA and NASA play well together?

MK: When I left NASA and went to NOAA, I would say very definitely the answer was no. There had been a disagreement between NASA and NOAA in that timeframe, that was the early

2000s timeframe, about the Tropical Rainfall Measurement Mission, TRMM. TRMM was a mission that was a NASA mission that NASA was funding, but NOAA was getting a lot of very valuable data from TRMM that they were using operationally. NASA was deciding they were going to not continue an extended mission of TRMM because they had their next scientific objectives that were important to them. NOAA was saying, "No, we need this data." So, there was a lot of angst that had been created between NASA and NOAA during that time frame. When I went to NOAA, there was a lot of mistrust. Now, in that same period that that was happening, also there was a lot of change going on in management approaches within NOAA. Again, it was a lot driven by the administration. NOAA was moving towards a coordinated, consolidated weather program that captured the military's needs as well as the civil needs, and that was through the NPOESS program, the National Polar Operation[al] Environmental Satellite System. That was going to be a consolidation of polar weather satellites. The approach that was being taken was NOAA would manage that, where in the past NOAA had sponsored NASA, and NASA had managed the development of the polar satellites. At the same time that this TRMM issue had bubbled over, NOAA's management style was, I would say, cutting NASA out of a role that they had largely played in the past. There was a lot of angst when I moved into the NOAA arena.

MG: Are there any moments or experiences from your NASA time that we haven't talked about before we move on to NOAA?

MK: No, I think we've covered it pretty well.

MG: And I'm wondering – we won't get through all of NOAA anyway, so I'm wondering if you'd like to take a break now and continue another time. I don't want to wear out your voice.

MK: It probably is a good time. This is probably a good breaking point. That way, you'll have time to get your daughter, and I will have time to get this reference letter submitted for my daughter from another mother. [laughter]

MG: Sounds good. I think this is a natural stopping point because when we pick up next time, it will be with your career with NOAA.

MK: Okay. Sounds great.

MG: Well, Mary, I really appreciate all the time you spent with me today. I will send you an email with some possible dates in the next couple of weeks to continue.

MK: Sounds good.

MG: All right. So nice to meet you. Thank you so much for your time.

MK: All right. You take care.

MG: Bye-bye.

MK: Bye.

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