

**Interview subject: Kathryn Stockslader Hosford**

**Interviewer: Laura Ettinger**

**Date of Interview: October 15, 2008**

**Today is October 15, 2008 and I'm Laura Ettinger; we're here at Clarkson University in my office in Snell Hall. And, I am here with Kathryn Hosford, class of 1974, electrical engineering major. And, thank you very much for doing this today. I think what I want to do is sort of go in chronological order. So, I'd like to start with your childhood and growing up in Irondequoit. Tell me a little bit about what it was like to grow up in Irondequoit. I did my PhD at the University of Rochester, so I do know a little bit about the area.**

Well, okay. I grew up, as – and I was thinking about this interview and talking to my daughters. I grew up as a very basic baby boomer. My parents were the World War II generation. They came back from World War II, got a job, my dad worked at Eastman Kodak. My mom stayed home. I had three brothers and a sister. So, there were five of us. And, we were just a regular, basic family (laughter) – a basic U.S. family. We moved from the city of Rochester into Irondequoit, which was the suburbs, when I was in second grade. So, I was about seven, and I went to St. Cecilia's School which was a Catholic school. It was brand new. I went there through eighth grade as did my brothers and sisters. My oldest brother went to the Catholic high school, but I chose to go to the public high school, which was Eastridge, and so did my brothers and sisters after me. Actually, I had a difficult time in school during my early years. I stayed back in fourth grade and thought of myself as pretty dumb. Then all of a sudden in sixth, seventh, and eighth grade, in middle school, I started blossoming in math. And, that's where I started enjoying school. And, it was actually very lucky that I didn't go to the Catholic high school because the Catholic high school still had the division of girls in this wing and boys in this wing. Girls did not take advanced math and physics at the Catholic high school, except by special arrangement. But, because I went to the public high school, I did have all of those classes available and offered to me.

**So, how did you discover your interest in math or start this blossoming in math when you had difficulties in school before then?**

Um, I don't know. I think that as your brain matures, as you mature, it was just that I found certain subjects easier. And, the logic of higher math was easier for me. Actually, I'm still not good in arithmetic (laughter) but if you gave me algebra or calculus, I was fine.

**The hard stuff?**

Yes. The logic in things and, also thinking back, I was always interested in how things were made and in analyzing things so that's where I ended up developing my abilities. I mean, my aptitude was in math, and very strong in math. I got A's, A+'s in high school math. My science was strong too. Mostly physics, rather than chemistry, my science grades were A's and maybe B's, but it was my math that was 100% or more.

**And, how did you choose to go on to the public high school rather than the Catholic school? So, were you number two in the family of five?**

Yes. Yes. I guess this was due to my big brother, who said, “Oh. Go to the public school. It’s much better than the Catholic school.” (laughter) And of course the tuitions were starting to increase. There was tuition at the Catholic high school. I’m not sure that really influenced my decision, but my parents didn’t oppose going to the public school. Of course, I don’t remember that there was a whole lot of difference in moral values between the Catholic schools and the public schools at that time. And, this was, I graduated high school in 1970, so, it was ’66-70, and that was the radical time in America, as you know. (laughter)

**Right. (laughter)**

And, I guess I lived through it all [those radical days] without realizing it. In my high school, there was a protest over wearing dresses. Girls wore only dresses to school, and then, all of a sudden, we could wear pants to school. And, that was a big breakthrough and a very radical thing, about who was wearing pants to school and who was going to wear dresses. And, I was a very meek and mild. I was not radical at all. I wore the dress. And, everybody who wore pants got called to the principal’s office, and their parents had to come and get them. So, I guess even though I ended up in women engineering, in a male dominated field, I never felt like I was a trailblazer. I wasn’t that way. I just entered into the field that fit my talents.

**So tell me something about your high school – when you were saying that you had opportunities in math in your high school that you wouldn’t have at the Catholic school. And you were also telling me about the era in which you were in high school; I can see it’s a very radical era. Tell me more about what was emphasized or what you were encouraged or not encouraged to do there.**

I don’t recall limits for me. There were some I think, but I felt a very openness all my time to do or pursue anything I wanted to do. That was probably a lot to do with my parents, but I didn’t realize it at the time. It wasn’t like they said, “Oh, go into this or that.” But, they didn’t discourage me. Let’s put it this way. In high school, I guess the reason I ended up in engineering – which is always the question that’s asked – is that I took a mechanical drawing class in high school which at the time was men only, or only men in the classes. And, this is where I’ll have to give a pat on the back to my high school counselor; who never gets any credit for anything, school counselors. But he suggested that I take mechanical drawing because of my interests even though there were no girls in that class. So, that was my entry, into a male dominated class. And, I took it for three semesters and enjoyed it very much. And, he was also the one, in my senior year, when I – at that time, I’m not sure if you do it so much anymore, but you took all kinds of aptitude tests indicating what you’re good at – and I took the aptitude tests just like everybody else in the school but they had girl score sheets and boy score sheets. And, my scores didn’t fit on the girls’ score sheets. My math and science were way off of those scores. So, there were no girl careers for me. So, someone, just by chance, she grabbed a boy score sheet and said, “Here, score it on this.” And, that’s where I scored it, and it probably came out into some kind of technical fields for colleges. I don’t really recall if it said engineer, or whatever it had on it. And then, my school counselor had suggested applying to engineering schools. And, so I found very much an openness for me even though it was 1970. Perhaps these were just coincidences or happenstances, like this lady saying, “Well, here. Score it on another sheet of paper.” because

nobody quite knew what to do, but she didn't say, "Oh, well. Sorry." In high school, there were classes for typing and secretarial classes but the expectations in that era were that if you did well in school, you would go to college. I mean, that was the goal – to go to college. So then, the question became: what would you study in college?

**Did your older brother go to college?**

No, my brother went to Vietnam. Actually, he went to the community college and then he was drafted. When he came back, he got married and had a family. I think, he did go back to college later but he never finished.

**So, you were the first in your family?**

I was the first in my family to go to college, and that was another first for the family. I mean, cousins and everybody. I had a lot of older cousins and so I was the first one of probably 20 cousins to have gone to college. And then, my sister, who was next in line to me, went to Alfred University, and then my two younger brothers went to college also. I should say and I don't think I realized it 'til later – but when I went to college, I think my parents got a lot of sarcasm, or a lot of bad press, or bad comments. They just probably brushed it off and I never heard them, or I never heard anybody say it to them or me. At that time, 1970 actually, engineering was at a low point. We had just landed on the moon, and engineers were being laid off from work. And, so that was not a big field to go into, and for a woman to go into a field like engineering was sort of double stupid.

**(laughter)**

One of their friends would probably say. Little did we know that four years later in 1974, I was twice as smart. (laughter) As I was coming out of college, it was a time when they were looking for engineers. And, I also had the boost of affirmative action. And, so everybody was looking for a few women engineers, but there was just a few of us.

**Double smart.**

Yes. Double smart. (laughter)

**You were saying before that you didn't find barriers to pursuing these technical interests that you had, and that you think maybe that had something to do with your parents or that, at least, your parents didn't discourage you in this way. Can you talk more about that – your parents' attitudes toward, let's say taking this mechanical drawing class for instance?**

I have to give a lot of the credit to my mom. In my family, my sister and I were encouraged to go out and be independent women. My mom really somehow managed to instill in us that you wanted to be able to make your own way. And, you wanted to be able to have your own bank accounts or be able to manage yourself. Where my brothers were raised more conventionally, "You're going to be the breadwinner, and you're going to have a traditional wife that's going to

stay home and raise the children.” Somehow that came across in our family and my sister-in-laws, we kind of laugh about it; how my mother managed to raise traditional boys and independent girls. My mother always stayed home and was a homemaker, but my parents had a great marriage. My mother took care of the money and paid the bills and so it wasn’t as though there was “the little woman” type of thing in my home. But, I think that my mother really wanted us girls to go be able to be our own people. And so I think, she managed to instill that in myself and my sister.

**And, what about in high school, were you involved in things outside of academics?**

I was never a clubber, an activity type of person. I was very, very shy, very quiet. Rather studious. I was a cheerleader in eighth grade in my Catholic school, but I never made the team in my high school. I went to games and I went to activities, but I was not in clubs and sports. I pretty much had a few friends and did my homework, and I had younger brothers and sisters. There’s 8, 11, and 13 years between me and my younger brothers and sisters. So, even though I wasn’t expected to come home, I think I did go right home after school. I might have even used it as an excuse. (laughter) And if I was home after school my mom wouldn’t have to drag two little babies in the car to pick up my dad from work, because you only had one car in the family in that era.

**So, he was working in the city? And, you were in the suburbs? And, did she have to pick him up?**

Yeah. To keep the car for the day, she had to take him to work in the morning and pick him up in late afternoon. We only had one car.

**Times have changed. (laughter)**

Right.

**And, when do you remember first hearing about Clarkson? Was it this guidance counselor? Or, do you remember?**

It was the guidance counselor in my high school. I only applied, I think, to RPI, Clarkson, and RIT. I think it’s still probably the same way today that there are not many state schools in New York for engineering. So, if you wanted to go into engineering, you ended up going to a private school. So, that’s how I heard about Clarkson and I applied to those three schools.

**And, how did you decide on Clarkson? Or, was that decided for you? (laughter)**

No. I have to say that in 1970 Clarkson was very welcoming. I believe they were ahead of the curve in trying to promote and bring women to Clarkson. You might have heard this before – they had the upper class girls write to the applicants. In May, before I got my acceptance letter, I received an invitation to come up to visit Clarkson written by one of the freshman or sophomore girls. They wrote to all of the accepted women students and invited them to come up for a weekend. It was only later that we realized that they only wrote to the ones that were accepted.

**(laughter)**

So, I took the bus up, probably the first trip out of my little world near Rochester. I took the bus, the Greyhound bus, to Syracuse then changed buses and came up to the north country. And, I got off at the bus station downtown and somehow managed to get up to Holcroft the women's dorm. They were supposed to meet me there, but in usual fashion, nobody did. (laughter) I had a great weekend. They showed me all around. Once you spend a weekend with the students, I think you're ready to go.

**Right.**

And RPI was not very welcoming. They were very competitive, maybe still so. I don't know. Their interview was very much, "Well, why would you want to be a woman engineer?" And, I think they were trying to solicit why you were interested in this field but it was very intimidating. And because I really didn't know why I wanted to be an engineer, (laughter) their interview gave the impression that they didn't want you there. I don't know if that's what they intended, but that's how I felt. And, my other choice, RIT, was in my home town so I crossed that one out. (laughter) So, Clarkson became the choice for me.

**And, when you applied here, did you apply specifically to the electrical engineering program?**

No, I came here as an undecided engineer. I probably was that major through my first year.

**Did you know about the different engineering fields really, at that point?**

Well, back then there were only four. There was civil engineering, mechanical engineering, chemical engineering, and electrical engineering. Chemistry is not my strong suit, so I was not going to be a chemical engineer. I didn't want to be a civil engineer because they stood out in the rain with the transit. (laughter) I said, "Why would I want to go into a field where I could be in a lab or I could be outside in the field and be in wet and cold?" So, my choice was between mechanical engineering and electrical engineering. And I think, EE [Electrical Engineering] is and probably continues to be the stronger of the math. So, I went into electrical engineering. And, this was simply because I was drawn to the math.

**And, prior to coming to Clarkson, did you know really about these four different kinds of engineering? (Inaudible).**

I didn't know what an engineer did at all. (laughter) I mean, my dad worked at a factory. All my friends' fathers worked in factories or parks or something similar.

**You said your dad did film development at Kodak?**

Yes. I don't know that I really had an idea what engineers did. I knew that engineers made things. Somehow I expected to translate my math and my ideas to create new things. I was

always building little stuff out of boxes or whatever was around (laughter) and I guessed that's what an engineer did. As far as I knew they built refrigerators or came up with new designs for refrigerators or cars. Oh, that was another consideration for college; I had looked at going into the GM (General Motors) program. GM had a big engineering program to become an engineer for the auto company. It was focused only on that industry, however. I didn't apply there because I felt it was too narrow of a selection.

**So, this is within General Motors, but where would you go to school?**

They had their own engineering school, I think. I may be wrong, but somehow you went to their school for engineering design of cars. I expect that they'd have wind tunnel, dynamics, and mechanics classes. A lot of the things we were doing here at Clarkson in the ME [mechanical engineering] department.

**And, what appealed to you about that program? Even though, obviously, you decided it was too narrow and wasn't what you wanted. What made you consider it (inaudible)?**

Well, perhaps because it was something I could understand or see; that's a car. (laughter) EE, electrical engineering, is this area of engineering that you can't see. It's a much more of a mystery. I think that's the part of electrical engineering that makes it harder to understand; civil or mechanical you can really see it. I mean, you can see what you're building.

**Touch it.**

Yeah, touch it. I think that's probably why I ended up in communications; because you can see a FM broadcast station, or you can hold a cellular phone. I could relate to it.

**You like the physicality. That's interesting.**

So, that's how I got to Clarkson. (Inaudible).

**And, you were telling me a little bit about that weekend, after you'd been accepted. Did you know you were accepted?**

No. We didn't know we were accepted. I just got this letter to come and visit Clarkson from one of the current students. I think they were the freshman. It was April, so they were at the end of their freshman year. So, they were moving up to be sophomores. And I came up and spent the weekend in Holcroft which was the girls' dorm and they fixed you up with a date. Yes, I went out with a date and I didn't date much in high school. (laughter) I guess he took me for a movie and out for a pizza. And during the visit, we ate in the cafeteria. It was being in a dorm and on a college campus, and I guess Holcroft was more like a sorority house than a dorm.

**Yeah. So, transitioning to your first year here when you were in Holcroft, tell me what that was like being in Holcroft. Your roommates or suitemates. All that.**

Well, let's see. In my freshman year which was 1970, we had about 25 freshman girls come which doubled the number of girls in the school. So, there were 50 girls, approximately, in all four classes. So, the upper class girls had to move; we couldn't all fit into Holcroft. Before that all the girls were in Holcroft. So, in 1970, the upper class girls moved to a floor on Donahue, and there were 25 freshmen in Holcroft; we were all freshman in Holcroft. And, we had a matron, a house mother that lived in a little suite downstairs.

**Was that a woman from the community?**

Yes, I think so. I can't remember because that was another radical year when I started at Clarkson. By Thanksgiving, much had changed and we didn't have a matron anymore. We didn't have curfews; we didn't have locks on the doors. (laughter) We just could come and go. So, I often think of my dad who sent me to this all male school with a matron that had curfews and we had to be in by midnight. And, by Thanksgiving, those rules were all out and we would just come and go. And, I would just look at him my Dad, like any normal 20 year old, and say, "What's the big deal?" (laughter) And, he'd say, "What? You mean there's nobody there? You just come and go?" And, I said, "Yeah. So what?"

**(laughter)**

I've been in Holcroft since they remodeled it and they re-divided the rooms, which is a shame. It's sad to see. I don't know if there are plans for putting it back the way it was, because it was a beautiful home. I think that, since this is Thomas S. Clarkson's Memorial College, that they should restore it. To me, Holcroft House is a symbol of that identity. And so – oh here, I'm all choked up – I feel really bad that they tore it up and re-divided those rooms. I was there last year, as I told you, and when you go up the steps, there used to be two grand bedrooms on the left, a small room straight ahead which used to be a dressing room (closet like), and another bedroom on the right, and then a front sunny bedroom. So, there were four bedrooms plus the closet. And then, you went up the steps to the third floor which used to be the servants' quarters. The third floor is almost the way it used to be, but the second floor with the big grand bedrooms is all chopped up. If you go in there to the second floor, I can kind of picture it since they still have the fireplaces. I believe you could easily restore that second floor. So, that's my plug.

**Right.**

So, when I lived there you came up the main staircase, and the two rooms to the left had four girls in a room with bunk beds because we were crowded with 25 girls in Holcroft. The room straight on the closet had one person in there, I think. Otherwise, Holcroft was much like any dorm floor with girls. Similar to any all girls' dorm, we were just coming and going and running around and there was the bathroom off the hall. And I think the biggest challenge was sharing a room with four girls. (laughter)

**Did you have your own room at home?**

No. I shared my room with my sister. And, at one time there were actually three of us in a room including my brothers before my parents added on to the house. So, all four kids slept in one

room (laughter) when I was very small. And, so they added on to the house and then the girls got a room and the boys got a room. This is so unlike my daughters today. I didn't have a room to myself.

**It's still different – sharing a room with four people you never met before.**

Yeah. Right. And like any floor of 25 girls, we were all individuals. I think that the big thing about coming to Clarkson, and this is probably true for male or female, is that you move into an environment where everybody was somewhat akin; the same, you know what I mean? We students were all top of our classes in high school. We were all going to college. We all wanted to do something with our lives, but it was freshman year and everybody had fun. Most of my friends were in the room next door, (laughter) instead of the three that were in my room. But, that's the way things work out. (laughter)

**And, who were your friends in the room next door?**

Melanie Van Riper, and Pat Welk who didn't come back after freshman year. Pat was my best friend and I just saw her last month. So, we went to school together for one year and we still kept in contact, unlike the some of the others that I went to school with for four years. Pat was a civil engineer, I believe, and she left here and went to two years at Morrisville for, a secretarial degree, so she went back to a woman's field. I met my future husband the first day of class, or the first day of school. I kept trying to meet other people, but I ended up going back to dating him. (laughter) But we all hung out, just generally as kids do today, girls and boys together. It wasn't like we hung out only with the girls. The only thing I really recall us girls doing as a group was eating together. We ate in the Cubley-Reynolds cafeteria, so we had to walk from Holcroft over to the men's cafeteria. And, as you know that's an X shaped building, and we would walk over together on the sidewalk between the buildings from Holcroft to the cafeteria with men yelling obscenities out their window; we called it the gauntlet. And, a lot of time they would even put speakers in the windows with pretty raunchy music (laughter) so we usually walked with a friend, always in pairs. (laughter)

**And, did that happen every time you went to the cafeteria?**

Well yes, for the first week. I don't know how long it lasted. It seemed like eternity. But after that being a girl on campus wasn't a big deal. I do remember the gauntlet; that was our introduction to Clarkson. I guess, it was the hazing of the women. (laughter) So, except for trying to gross us out, I guess, it was pretty harmless. (laughter) Nobody really came up and said awful things to us individually.

**It was en masse.**

Right.

**And, what was it like to transition from high school to college in terms of the academic side of things?**



I think at that time – I don't know if they still do this – the freshman classes, like chemistry and physics, were in great big lecture halls of 200 students.

**I don't know exactly how large they are but they're still large here. (Inaudible), chemistry and physics.**

Yeah. Those classes were in a great big auditorium setting. And, we had a lecture and two classroom settings. So, we had it those classes three times a week and that probably was the biggest distinction for me from high school to college – having big lectures with a professor. We had Egon Matijević [Professor of Chemistry] up there. I mean, you had very prestigious professors teaching freshmen, which was really cool. It was really nice at Clarkson that you had them giving the lectures. But that was probably the biggest thing, and I think that's probably true for any college environment going from your classrooms to big lecture halls. As a woman of course, you went into a big lecture hall and there'd be 200 students and maybe three girls. It's hard for me to remember; that initial time passed very quickly. I guess, it lasted maybe a week, maybe two, because you met kids and made your friends. And it didn't seem to faze me much. You went to class; it was a class of 30 guys and one woman, or something, but they were just friends. I knew Tom and Joe and people from my classes. So, I didn't think much about it; they were girls or guys. And nobody made much of it. I guess they all knew our name, and it was very clear that they knew you were there. I might not have known all 28 names, (laughter) but they knew my name. But, I didn't think about it too much.

**And, what about how difficult the classes were compared to what you were used to in high school? How was that, if you remember?**

As I said, I found school – what do I want to say? – I always worked hard to get my grades. So I think that they the classes were just another step of difficulty. They were not easy. I remember freshman year that I was probably getting D's in chemistry. As you can tell, chemistry was the thorn in my side, but I would work harder on that subject. I got a C on that one, and then my physics dropped to a B. So, instead of an A and a C, or an A and a D, I had a B and C. I just had to continue working hard on them both. There was no dropping of classes back then, or very rarely. And I'll jump ahead now, because we were talking about freshman year, to my first semester sophomore year. They called it the make or break year, and I don't know if it still is that way, but it was considered that if you could make it through your first semester sophomore year, you would probably graduate. And, I remember my first semester sophomore year, it being almost Thanksgiving time and I was failing everything.

**Oh.**

As sophomore EE's, we were taking Differential Equations, Dynamics, and Introduction to Electrical Circuits. (I guess that was it.) I didn't realize it until I finally understood differential equations but all three of them were differential equations (laughter) just applied in a different manner. And, so it was probably November, almost Thanksgiving time and I just didn't understand what I was doing in class, and I thought this was it. This was the end of my career, the end of my college experience, because I was going to flunk out. And, then just snap, all of a sudden – differential equations didn't look like Greek to me anymore. I understood what I was

doing; and then the rest of the classes, because they were all differential equations, they all fell into place. And, I must not have been failing everything, like I thought, because I managed to pass with at least a C. I probably squeaked by with all C's (laughter) that semester. But I remember that was the semester distinctly. I thought I might as well pack my bags and go home because I wasn't going to make it through Clarkson.

**And, sticking then with the academic side throughout the rest of your time there, what else do you remember from the academic side of things? You know, junior year, senior year? Did you have to do a senior design project?**

Well, at the end of my freshman year we had to declare an engineering major, and I chose electrical engineering because of the math. Another thing that I remember was that at the end of my sophomore year we took Circuits and Design I, and then in, in your junior year you would take Circuits and Design II. I didn't understand Circuits and Design I. (laughter) I passed it, but with a D. And, I decided rather than going on to Circuits and Design II that I would take it over again. So, I took Circuits and Design I over in the fall in my junior year, so I took both parts, I and II, in my junior year. And, I ended up getting A's in both. So, I just needed that extra time to get the concepts. And after that my other classes pretty much flowed along. Another thing that I remember is – we went to school before calculators, so we had slide rules. I'm not in school now so I don't know how this relates to today's student but our tests were graded, very heavily weighted, on our understanding of the problem and in laying out the steps of a problem.

**The process?**

Yes, the process and not the answer. (laughter) I don't have a very good memory and so as I worked my way through my college experience, I learned how to memorize equations. I would write them down over and over again, then write them all again on my test cover. I often wondered what my professors thought because – we took our tests on a blue booklet and I'd come in and open it up, and the first thing I would do is, on the inside cover, is fill the whole front cover with equations.

**We still use blue books. I use blue books for my essay exams.**

And, well, if you would open mine you'd see every equation that I could possibly need for that test written down, as quickly as possible, before I even opened my test. If I read the questions on my test, somehow the equations would just fall out of my head. I couldn't remember if the equation was cubed, or the third power, or sigma this or whatever. I couldn't remember any of those details. The equations would just get all jumbled up, in my head, as soon as I read a question. So, I used my own self-discovery tricks to compensate, if you've done anything with special education, as my own compensation techniques. In my whole career, however, I've never had to pull out an equation without looking at a book or on the internet; so memorization really didn't seem to matter in the long run. (laughter) And so I would pass my tests, because I knew exactly what equations to apply and how to solve the problems. And, if I didn't get my slide rule exactly lined up right (laughter) I might have gotten the wrong numerical answer, but I would get maybe 90 out of 100 points.

**Because you got the process?**

Yes. I had the process. And, the other thing I learned quickly was that if you had five questions, I would go through and I would set up all my equations. And then, I would go back and I would do the next set of work. And then, I would go and plug in all the numbers. And then, last, I would calculate all of the answers. (laughter)

**In case you ran out of time?**

Yes, in case I ran out of time. So, I think that I improved a lot from freshman year, when you would run out of time doing your tests, to my sophomore or junior year where I had compensated and learned how to get everything done on time. And, now that I think back that the professors probably told us to do it in steps but it didn't matter to us students. (laughter)

**You have to figure it out for yourself.**

Yeah. Now that I think of it, I think they probably said, "Work each problem a little bit and then go back." But it had to be something I had to learn for myself. (laughter) (Inaudible).

**So, speaking of professors, you mentioned Egon Matijević teaching freshman chemistry. What else do you remember, even if it's not about specific professors, names or anything, but what else do you remember about professors, or your connections with the professors here?**

Okay. I remember that the dean of electrical engineering was Dr. [Robert] Cotellessa [Professor and Chair of the Department of Electrical Engineering]. (Inaudible). He taught me the second time I took Circuits and Designs. He was an excellent dean and an excellent teacher. I liked him a lot.

**What made him excellent as a dean and as a teacher?**

He was just very personable. And I don't think he normally taught classes. I don't know. He was very encouraging and explained things clearly. I didn't have him for a teacher except for this one oddball, out of cycle class. And, so it was a rarity to have the dean as your teacher. And, he really liked to teach. He really did. After I got into SWE [Society of Women Engineers], and I talked with him a couple of times after I had graduated, not a lot, but he really encouraged me. I wasn't very close to my professors, more from afar I'd say. I remember a couple names: Professor [Bradford] Broughton [Professor of Humanities and later Technical Communications at Clarkson]. I took a class in humanities which was on King Arthur. I'm not sure what the name of the course was but it was all about King Arthur and *The Once and Future King* by T.H. White. And, while I was here Professor Broughton was on the kick about starting a technical writing course, a minor in Technical Writing I think. I did pretty well in my writing and my humanities. I probably didn't apply myself very much to those because I was more interested in engineering than those classes.

**Did you have to take a certain number of those classes? Or, do you remember?**

It seemed to me that we had to take maybe three humanities and then social sciences. And I remember that I stumbled through an economics class because it was required. I had no idea what I was doing in economics at all. In social sciences [psychology], I took some stuff about brains. (laughter) You can see how much I remembered about that.

**(laughter)**

I actually stayed to the technical classes. My senior year, I even took an additional math class as my elective. I guess one of the other things I remember is that I hated computers. (laughter) Computers at the time were large mainframes with key punch cards, and we had three key punch machines for the whole student body down in the old Snell Hall, downstairs. And, you had to punch up the cards, put them in sequence, and turn them in and wait overnight to get them back. And I took computer my freshman year. Everybody had to take it. And, all I got back was syntax errors (laughter) because I couldn't type. Nobody could type back then because we didn't have computers.

**Yeah.**

We didn't type our papers. We wrote them long hand. I did have an electric typewriter because I thought that this was college, and that you were supposed to type. But, pretty much, we didn't do a lot of term papers. Our labs were written summaries, turned in during the lab period. (laughter) So my introduction to computers was really awful. I had no interest in ever taking a computer class again because it was such a struggle to do anything on them. And, my senior year, and I always claimed that I was tricked into taking a computer class (laughter) because I signed up for some advanced electrical engineering class. I can't remember exactly what it was called; it was some applied engineering analysis class. And, when I got into the class you had to write your little routine every week and turn in these keyed punch cards. (laughter) And, I struggled for the first two or three weeks trying to get these engineering problems solved with my computer key punch cards. Until I figured out, after my third week when I just couldn't get this computer program to work, (laughter) and I turned it in without the answer. Well, I got nine out of ten points. So, I said to myself, "That's good enough for me!" (laughter) So I managed to get through that senior class with an eight or nine out of ten because I could never finish the computer problem. I always had a syntax error, or a do loop, or something, in my Fortran programs.

**Fortran, right. (laughter)**

Yeah. So, let me jump ahead. I ended up working at the FCC [Federal Communications Commission], and one of the jobs I had was programming (laughter) in Fortran. I had to take somebody else's program, which another engineer had written and then left, and I was pouring over Fortran programs trying to rewrite the programming code to get it to do what I wanted to do. (laughter)

**I love it. I love it. (laughter) After that experience in college. That's great.**

Yeah. Back to Fortran programming. (laughter)

**Going back for a moment, away from academics, back to the living situation: I know that you lived at Holcroft your second year also, right? And then in another dorm your third year and married student housing your fourth year. Can you tell me what you remember about your second and third years in terms of dorm life?**

Well, my second year, as I said, my best friend Pat Welk left Clarkson so I was without a roommate for that year. So, I elected to stay in Holcroft in the single room which was that little closet I explained. So I stayed in there. I had my own life by sophomore year, and my boyfriend. I knew the freshman but we didn't really mix much. I wasn't like their house mother or anything like that or an RA or anything.

**But, you were the only sophomore (inaudible)?**

I was the only sophomore in Holcroft that year. Of course, the upperclassmen girls were [all on two floors] of Donahue, and there were two in a room; so, you didn't have any singles in that dorm. So, that's how I ended up staying there in Holcroft for a second year. (Inaudible). You didn't have any single options back then. You didn't pay any extra money for a single or anything like that. You ended up having four to a room (laughter) or two to a room, and that's what you got.

**Right.**

My junior year, my friend Melanie Van Riper, from my freshman and my sophomore year, decided to room together. So we moved into Newell, which was a new concept – they were coed dorms. So, this was, again, very radical for my father. (laughter)

**I was just thinking about your father. (laughter)**

Yeah. (laughter)

**This was in 1972 with coed dorms. Was it coed by room or by part of a floor? Do you remember?**

It was coed by room. We girls got the two rooms at the end, which were the nice doubles (laughter), two to a room and a bath rather than the quads. The boys had the quad suites on our floor. (laughter) So we coveted the better rooms of Newell, part of Donahue and I think maybe Farrell, or one of the other ones might have been coed also. We girls weren't on all floors so there were still boy only dorms or boy only floors. There was still an all girls floor in Donahue and only girls in Holcroft, but it was very progressive to have coed dorms with girls and guys on the same floor.

**And, you chose the coed floor (inaudible)? And, do you remember why?**

We probably chose to live on that floor because we could get the doubles. (laughter) And, we didn't have to share with two other roommates in the quads. So they just placed us in different wings, scattered around the upper class dorms. And, I can't remember how they assigned us there. That is I can't remember the particulars of how I ended up in Newell on that floor. My boyfriend lived around the corner in Thomas (laughter) so we could easily meet in the cafeteria; not like, we couldn't go on each other's floor. I mean, all the floors were open.

**No curfews.**

Yes, no curfews. There were no curfews even my freshman year. I was able to go in his dorm, Thomas. Gary was a year ahead of me so I would go over to Thomas; and I would eat mostly in his cafeteria with him and his friends, or my friends, during my freshman and sophomore years. And then, my junior year it was a really nice situation because I just lived in one wing and he lived in another wing. I can't remember the girls all being together a lot; you know, sort of clumping together. (laughter) We just didn't. We'd go down to the cafeteria and there'd be a table and maybe a girl sitting there with one of her friends, or maybe a couple girls together. There were so few of us we kind of just spread out, I guess. (laughter)

**And, since we keep talking about your boyfriend, I'd like to go back to that. So, you said you met him on the first day of class?**

I met my husband, Gary Hosford, honestly the first day upon arriving at Clarkson. (laughter) He was a member of the APO [Alpha Phi Omega], the service fraternity, and he was a sophomore. So, he worked freshmen orientation and stationed himself at the girls' dorm.

**That's smart. (laughter)**

And, he lugged my suitcases up to my room. I didn't pay attention to him anymore than any of the other guys. But he did me. (laughter) And then the first day of class, I was in Snell Hall looking for my classroom and he came up and was the gallant gentleman helping me find my classroom, which was one of those hidden classrooms in the back of Snell Hall up behind the auditorium so I never would have found it myself. He had a class next door to my class.

**Hmm. How convenient. (laughter)**

So after class, he stationed himself outside my door, and as soon as the bell rang he walked up to me. And I said, "Oh. Hi. Imagine meeting you here." (laughter) And later he called me up, maybe, a day or two later and asked me to go out that weekend. He was determined to get his place set right away to date one of the few Clarkson girls. (laughter) And so, he called me on the phone. There was a phone in the hall that we all shared. (Nobody had cell phones or anything like that.) And, then someone in the hall said, "You've got a phone call." And, I went and answered it, and he said, "Hello, this is Gary Hosford." I tried to play along like I knew him but I had no idea who he was among all the guys that I had met over two days. So, I finally said to him, "I'm sorry, but I have no idea who you are." (laughter) And he said, "Oh. I'm the guy who showed you to your Calculus class." (laughter) And, he asked me out. Then I said, "Oh! That Gary! Well, okay. I'll go out with you to the pub." We went to what was called the Ratskeller,

which was in the basement of Woodstock Lodge. The basement had a pub back then with beer and pizza. So, that was my Friday night, my first date, on my first weekend at Clarkson.

**Wow. Your first date.**

And all freshman year I said, “No. I don’t want to go steady.” and “I want to go out with other guys.” So, I would go out with other guys, but he always was around me. (laughter).

**You continued to date him as well?**

Yes. So, it was date somebody else and then date him the next night. (laughter) And, he was very persistent. (inaudible) He would come by Holcroft and say, “Do you want to walk down to class together?” which was, as you know, a mile and half walk down the hill. And, that was a long time to be chatting with someone. (laughter)

**Right. And, when did you stop dating other people? You refer to this as your freshman year.**

Well. Right. By the end of my freshman year we were pinned [going steady]. And, he gave me a little Clarkson pin with class of ’73 on it. And we got engaged the end of my sophomore year, and married the end of my junior year.

**Now, and tell me more about that. Was that a big decision to get married while, I mean, I realize he graduated in ’73, but you were still here at Clarkson obviously. Was that a big deal for you to get married while you were still in college?**

Yes it was. At the time, I’d say, a lot of the Clarkson women, even some of the guys, would get married their senior year. It wasn’t unusual if they’d been going out with somebody for two or three years. They’d get married their senior, or going into their senior year. Gary’s roommate, Gary Chadwick, and Sharon [Stevens], who was also a Clarkson woman and in chemistry the year ahead of me, also got married at the end of their junior year, which was the year before us, in ’72. And, we lived in Woodstock Lodge [Woodstock Village Apartments] which was the married student apartments. They were mostly for graduate students, but then it became more and more for married students. Woodstock Village was only for Clarkson couples who got married, or the guys who got married. Their wives would come up from back home after they would get married. They would live at Woodstock and she would get a job at the bank or someplace in town. So getting married wasn’t rare; but it wasn’t often either. I don’t know how to express it. The big thing for us was that I was raised that when you got married you didn’t get any money from Mom and Dad. So, when we got married, we didn’t get any money for tuition or for anything. We had to support ourselves.

**Right. So, how did you do that your senior year?**

Well, we took out more loans (laughter) than we had before. I also managed to get a full scholarship that year, which I didn’t have a scholarship before. I don’t know why I never got a scholarship, but for some reason, maybe being the first to go to college, we didn’t apply for a

scholarship. I didn't ask for one and they did not offer me one. (laughter) After we got married, my husband went to graduate school. He went to school mostly on loans, jobs, and work/study; and after we got married he worked at the P & C grocery store as a bag boy. So, we just managed that year just scrapping through.

**How did you pay for it before then? Your first three years? I mean, it sounds like from what you're saying you got some family support?**

Yes, my parents paid for one semester tuition which was what they could afford. And my freshman year, I had a college account that paid for most of my freshman year, and my parents paid the rest. So, I didn't have any loans my freshman year.

**A college account that you had been--?**

My parents had been saving a dollar a week for 18 years, and that was just barely enough to pay for one year's tuition which was four thousand dollars – room, board, and tuition. So, the account probably had about four thousand dollars in it which paid for one year, my freshman year. Sophomore year, there was obviously no college account, so I took loans and my summer job paid for that year. Actually summer jobs, part-time jobs were hard to come by back then, and I worked a summer job at the five and dime store or other stores, like Kmart, as a cashier, which was my spending money for the year. So, my loans paid for one semester's tuition and my room and board, and my parents paid for the other semester's tuition, and my summer job paid for my spending money for the whole year which was quite a budgeting feat (laughter). Everything is so different now; I have two daughters in college today with credit cards and everything. At Clarkson, we had a cash window on campus and I would cash a fifteen dollar check every week. Fifteen dollars (laughter) got me through a whole week, including going to the Ratskellar (laughter) and paying for a pitcher of beer and pizza. And, so that's how I paid for Clarkson.

**Right.**

So, when I graduated, I was essentially one year's salary in debt. So what I owed was almost one year's salary exactly, and Gary's debt was one year's salary also or a little bit more. So, we took our ten years to pay off those loans.

**Okay.**

Earlier you were asking me about our decision on getting married. We were young and in love (laughter) and it was rare to live together outside of marriage back then. Honestly, college became so much easier after we got married. We were in an apartment together and we weren't trying to find time to study and time to be together too. Actually, our grades went up. (laughter) We've been married 35 years and we're just as much in love today as we were then. So, getting married while students was a decision like anything else – about who you marry, and when do you get married, and so forth. We kind of just jumped. There are a lot of times in life that you just sort of close your eyes and jump, (laughter) because if you think about it you'll never do it. It's kind of like having children. If you think about it much, you probably wouldn't have



children. (laughter) If you think too much about getting married, you probably wouldn't get married either. (laughter)

**I understand what you're saying. Let's discuss SWE [Society of Women Engineers]. How did you get involved? And, how did you become the first president of the Clarkson Chapter of SWE?**

Well, one thing I wanted to say is I didn't plan it. I never started out to be a pioneer. I never – as you can tell, I just sort of followed my talents and things that I enjoyed. Somehow I received something in the mail, probably during my freshman or sophomore years, from the Society of Women Engineers. Perhaps a mailing saying, "Would you like to join the Society of Women Engineers? It's open to students at large."

**Right.**

So, I joined it and probably got a little pamphlet or something. I don't even remember reading it. But, I probably got something, maybe a quarterly newsletter or something. There were certainly no chapters around, and I didn't know any women engineers. I barely knew any men engineers. So I got this notice and I'm guessing it was at the end of my sophomore year. Now my husband was the big club and activities man around campus. He knew everybody, and everybody knew him. He was the president of the ID Society [Industrial Distribution Society] and of the APO [Alpha Phi Omega] fraternity, and I was just the little mouse (laughter) as I would like to say, who went to class and did my studies and had some fun with my few friends.

**Yeah.**

So, I probably got this SWE brochure and I said to him, "Gee, Clarkson should have a chapter. They have chapters of this group on other campuses and Clarkson doesn't have one." And, he jumps up and says, "What a great idea." and drags me down to Dean Edward Misiaszek, who was the Associate Dean of Engineering. Now, I had never even met Dean Misiaszek because he was in civil engineering. He was probably up on a stage when he talked to us engineers sometime, but I didn't know him myself. So, we went to speak to him. Probably, this was at the end of my sophomore year because getting SWE started happened in my junior year. And Dean Misiaszek said, "What a great idea." and, "We should have a chapter" and, "Would you like to get it started?" And, my junior year was spent gathering people. We had several meetings of the women engineering students, and we had to have a certain minimum number of girls. And, I can't remember what that number was, maybe 25, whatever. And we didn't have that many women engineers at Clarkson. (laughter) So, we had to go back to the society SWE headquarters and ask if the ID [Industrial Distribution] majors would qualify; ID is called Engineering and Management now. And so we had to basically get every woman engineer and every woman ID that was here my junior year to join this chapter in order to have enough chartered members.

**Do you remember how you got people to join?**

Twisting their arms, I guess. (laughter) I don't know. I do remember, and so this couldn't have been my senior year, but I remember that we had trouble with the senior class because they were

going to graduate in May '73. Let's see, they were probably seniors and I was a junior so they were seniors, and we started organizing SWE in the beginning of my junior year [Fall '72] and they said, "Well, by the time you get this set up, we're going to be graduating. So, why would we want to join this group?" And I said, "Oh, no, no. We're going to have this set up by January, or something like that." (laughter) And, so they had to pay 15 dollars, or some outrageous amount, or maybe it was even five dollars, but we had to get everybody to join. I think, we probably said, "Look, if you don't join, we won't be able to start this chapter." We probably laid it on the line and said, "We have to have every girl that's here at Clarkson." I'm trying to remember, I guess we got chartered in...it just was our 35<sup>th</sup> anniversary.

**I've seen the original certificate, and it says October 1, 1973. That's the fall of your senior year?**

Yeah. Right. So, I had gotten married in June '73. So, we came back my senior year and that was our first year for SWE. So, during my junior year, we worked on getting SWE set up and getting it chartered. My senior year, we started having our meetings and saying, "Okay. Now, who are we and what are we going to do?" And, we had to have bylaws.

**Right.**

I brought – there's a SWE picture in this yearbook here.

**So, this is from 1974?**

Yes, 1974. I just found it in the library yesterday. And, I've got to give all the credit for SWE's success to our secretary-treasurer, Valerie Barlow. I don't know if you've talked to her.

**I've been in contact with her. I've not actually interviewed her.**

Well, I hope you do. I got the title of prez (laughter) and founding chairman, but I graduated soon after it was founded. So we got things set up my senior year, but Valerie really got it going since she was the president the following year, and she carried it forward. I mean it was on her shoulders whether it was going to succeed or not. That's the way I saw it, because she set up the speakers and the activities, and defined, "What is this society going to do for Clarkson?"

**So, point yourself out here in the yearbook.**

Oh, I'm right there. (laughter) And, this was my senior year, so a lot of the charter members had already graduated.

**Right. So, why, I mean, you were saying your husband would (inaudible). He was encouraging you. I mean, what was the appeal to you of (inaudible) starting SWE?**

Well, as I said, I was a member at large. So, SWE gave me a connection that there were real women engineers out there. And probably during my junior year, as I'm looking for jobs and I was thinking about going out to be a woman engineer, the stories that were in the brochures – it

was like a newsletter as I remember about women engineers in the working world, and that's probably what appealed to me. And, I'm saying to myself, "Well, okay. What am I going to do?" and "How am I going to find a job, and what am I going to do when I get there?" (laughter) I felt that it was important; it was an advantage for Clarkson to have a society where the women could be identified with a professional organization in a male dominated field. And, we could discuss, "Who are we, and what is engineering? What is a woman's place, What are the difficulties? and What would it be like out there?" (laughter) And work was a whole other world of unknowns. So, I think that was the concept. I probably read in the SWE newsletters things that I found interesting and I thought that they would be of interest to other people, others at Clarkson. And, that's exactly what the society, SWE, would do. It would be a club that had things for women engineers. (laughter)

**Right. Right. And, did you remain involved in SWE after this?**

No. I did not.

**And why not?**

Um, I don't know. I can't answer that. I really don't know. When I went off to work, I didn't go out and look for the society. I don't even remember getting the brochures anymore. (laughter) Actually, it's kind of funny that I was involved in founding this society because I never looked at myself as a woman engineer. I think I just looked at myself as an engineer. It was a career or a job to me, and I was like anybody else. And, I never really thought too much about it, such as, "Well, I was going to be a woman in this male field." even though I knew it. I didn't really analyze it much. My sister-in-law, just this weekend I told her I was coming up here, and she's a nurse, and she said, "Wow. You went to Clarkson with all those guys. That must have been a real something to choose to go there." And, I said, "I don't know that I even thought about it that way."

**Yeah.**

So it is funny. And, I remember one of the comments, when we had our charter banquet, that Dean Misiaszek said that he hoped that women engineers would become so strong in numbers that one day there would be no need for a woman's engineering society, and that we all would be just engineers.

**Right. Right. By the way, I wanted to show you this. I brought, and you're welcome to have it, this is from the *Clarkson Integrator* [Clarkson's student newspaper] from 1974. A picture of you with Dean Misiaszek when the chapter was chartered. This is online actually.**

Yes. Right. Actually, I have the original article in my trunk but I never got time to pull it. I put it in a laminate protector.

**And actually the *Clarkson Integrator* is all available online now. I can show you afterwards. Perhaps your daughters would be interested.**

Yes. Thanks.

**Is there anything else you want to say about your experience at Clarkson – before we move on to post-Clarkson?**

Well, I think Clarkson then, as now, has remained true to itself. It's still a fairly small school. It's not much larger than when I came here. It was a nice place to go to college. I mean, this college experience was something I always wanted for my daughters. I think it's a very special environment. I really do. And I think that Clarkson had a lot foresight moving forward and welcoming women into the field, and encouraging us while here, and I never found any discrimination or difficulties with the teachers. They must have all bought into the idea because there were a lot of male professors that (laughter) might not have been too happy to have women invading their territory. But if they opposed it, it never showed, or I never felt it from any of my professors.

**What about from your peers? I mean, besides the gauntlet.**

The others? The guys? The gauntlet? Yes, besides the gauntlet. No, I don't think there was any major opposition. We were all students. I don't know if Clarkson is still this way, but back then it was a very collegial environment. I think Clarkson promoted teams and teamwork.

**It's still that way now.**

It is. Okay. From what I've seen from my work career, I think that team building is still the best value. I mean, the best thing you can teach a student today is how to work with multiple people.

**You should tell the students that tonight [at a Clarkson event, hosted by SWE and the Engineering and Management Society, at which you and your husband will be speaking]. I think that will probably be reaffirming because Clarkson is still very focused on team projects.**

Okay. Right. And cooperative spirit was part of the whole student body. We would study for tests together. It was just, "It's okay to help each other." I mean, back then everything was en masse; we were all going to go take this test together. Even senior year for Thermodynamics, there was all 60 of us going to take the Thermodynamics test. I could always find peers to study with, and I readily called male students and said, "I don't understand these problems that we're doing for class." And, I'd go over and we'd sit down and they'd help me work them through and learn. It wasn't like, "I've got to keep my grade and not help your grade." So I appreciated that and I think that was what I liked about Clarkson. And, from what I've read or get the impression, it's still a lot that way.

**Obviously I don't have a student's perspective, but I sense that's a lot of the appeal of Clarkson today.**

So, yes. It was just a great time in my life.

**Now when you graduated, my understanding is, from your pre-interview questionnaire, is that you then went to Rochester to Eastman Kodak?**

Yep.

**Now, was Gary still finishing his masters when you graduated?**

No. He had a one year master's program that finished in June or July. So, we stayed up here in Potsdam, and I worked at the library for the summer. When I graduated I had offers from every place that I interviewed. I mean it was like a dream come true. It's like I said earlier, I went from being doubly stupid to being doubly smart. Women engineers were in high demand by companies that were trying to fill their affirmative action plans. I'm not sure if that's a good thing or a bad thing. We could talk about that probably too. Nevertheless, I got plenty of offers. I remember Gary and I even interviewed as a team, a Clarkson couple, with I think it was GE.

**A team interview?**

Yes. They were going to hire us as a couple. And, Gary would go into engineering management, and I would go into engineering with GE. It was a program where you would rotate assignments every six months, and they couldn't guarantee we would be together. And this would go on for two or three years. So, we said, "Well, that's sounds like the army." And so, we didn't want to take that job, and that was his Gary's only job offer. I had offers from, I think, Westinghouse and Raytheon, and a number of other places, and Kodak. Now, I really didn't want to return back to live in Rochester, but it seemed, "Well, okay. I have this offer here amongst others and we can go back to where our family lives, so perhaps that's best."

**Was Gary also from Rochester?**

No, he's from Syracuse. Well, actually he's from Plattsburgh. He moved a lot so he's from all over New York State.

**Right.**

So Rochester was an easy place for us to start out right after school. Kodak was the prestigious company – at that time, it was the number one interviewer on campus. We used to get computer punch cards for interviewing, numbered one to ten in priority. And, you had to use your number one card for the job that was the most competitive. So, if you wanted to interview with Kodak you had to use your number one card, (laughter) because if you used your number ten card you wouldn't have gotten an interview. It was like a lottery to get an interview slot. And so it made sense for me to move to Rochester and take the job at Kodak.

**Was your Dad still working there?**

Yes. No. Was he? I'd say yes, but I'm not sure if my Dad had retired by then. I think so. Yes, he was still working there. So, I'd say that out of all the different jobs that I was offered – DOD [Department of Defense], Raytheon, and other contractors were very prevalent since we were

still in the Cold War, but I really didn't want to work on military contracts – so film and cameras seemed to appeal to me more than the other jobs. So that's why I decided to go to Kodak.

**And you were a test engineer, which means what exactly?**

The product that they're manufacturing – they were manufacturing cameras, the design engineer would design it. Manufacturing would build it. And then it would go to test. You would test the camera, or the equipment: a sample product. And, you would see if all the functions worked. And then, you would send that to quality control.

**Okay. Four step process.**

Right. And then, if it worked correctly they would start production. And I ended up as a test engineer which is like a big EE electrical engineering lab, which is not at all what I wanted to do. (laughter) EE lab was probably my least favorite subject besides computers, and so working as a test engineer was not my favorite job. (laughter)

**What did you want to do?**

I probably would have rather worked in design or in quality control. At that time, they used to interview you months in advance and we had job offers before graduation. Life is so different now. I mean, I was probably interviewing in February for a job in June. They brought you in for an interview, and you would talk to somebody in design, and test, and quality control. And they said, "Well, we don't know which job you'll get when we actually make the offer but it will be one of these areas." and I probably said, "The one I liked least is test engineering." So, when I showed up at Kodak's doors, they said, "Guess what? You're a test engineer."

**Of course. (laughter)**

So, from day one it was (laughter) downhill from there. And this was a whole different world for me. I mean, working is a different world, because you're stepping out of an environment where everybody's the same age. Before you're all going to school, which by the time you get in college you know the layout.

**The routine.**

Yes. I mean, you know how to go to school. You've been going to school for 18 years, and taking tests for maybe 15 years. The work world was a completely different environment for me. I mean, I worked summer jobs. Actually, I worked one summer at Kodak putting cameras together on the process line.

**You mean while you were in college?**

When I was in college, it was one of my summer jobs. So, I knew manufacturing generally, but what the engineers did over in that other building I didn't know. And you're working with people from – well, you're the youngest at 22, to people that are 62. So, let's say it was a

difficult transition for me. My husband made an immediate adjustment to the work world, but I did not. (laughter)

**And, what do you think was harder about it for you? I mean, you've described that you have very different personalities.**

Yeah. I think it was just different. It wasn't because I was a woman and he was a man. I think I lacked self-assurance, confidence. I was not sure of myself. And then, being in the test engineering environment, a sort of EE lab, I was even more at sea. I was in an office cube with other engineers. There were three other engineers in the room; all of us were test engineers. And, there was the senior engineer, and he was in charge of training me. All three of them were helpful and nobody sabotaged me, or did anything negative.

**Right.**

They helped me learn my job which was to write test plans. So that when the equipment came in you could test it. You gave those test plans to a technician who would run the tests, set up the scopes and run all the test equipment. And you were supposed to get certain results based on the equipment specifications. And, of course, you would be out on the floor with the technician (laughter) trying to troubleshoot what was happening. And after two years, I had no clue why it wasn't working (laughter) than the day I walked in the door. And so, I said, "Well, I don't think this is the job for me." (laughter) If it didn't work, I'd start with at the beginning and say, "Okay. Let's see back here, is it plugged in? Is the switch turned on?" I'd just take it in steps. (laughter) I just didn't have a natural inclination for what was happening. (laughter)

**So, how did you--, I mean, I know after that you went to the FCC. Right?**

Well, yes, I eventually moved. (laughter) I actually quit my job outright. I would say that I went through a very difficult time emotionally. After I was a test engineer, I moved to another area where we were doing some product analysis, but I ended up having to learn all about optics, refraction, lenses and such. And, I said, "Well, if I wanted to be an optics or physics major, I would have gone to school for physics." I have to say, Kodak tried to offer me another move but by that time I just had had it. And I said, "No, I don't want anything to do with Kodak anymore." Now, I still didn't know what to do with my EE degree. I really didn't. So, I took some time off; and my husband and I started buying lots of newspapers because at that time there was no internet. (laughter)

**Right. (laughter)**

We bought a lot out of town newspapers. And, we started looking at the want ads in big cities. And, I ended up in communications because that was the field when I opened the newspapers that had the most openings, and I said, "Oh! Look at all of these jobs in command, control, and communications, C3. Whatever that is?" (laughter) and "There are a lot of jobs in that! And they're all looking for EEs." (laughter) and, "Well, I must have the qualifications to do that job." So, I thought communications must be the future. Now, actually it was my husband who ended up getting a job down in Washington, DC. And since I was making him quit his job and move

for me, we would look for a place – and I figured, once again, I could find a job easier than him – so we picked an area, Washington, DC, where we figured we both could have a long term career without moving again.

### **Really, that worked?**

Yes, it did. I'm not sure that we planned it all out, but there were certain things we thought about. We said, "This is a big area. We both could have jobs. We won't be stuck with one company. If you want to go to another company, there's lots of opportunity there." So, we ended up moving to Washington and I got a job down there. Actually, it was on a Navy contract and I put in my application with the federal government. And then, the FCC called me for an interview about a year after I moved down there. And, I went in and interviewed for a job at the FCC in radio communications. And, I guess I did well enough to get hired; I mean, they were looking for entry level engineers. I was what? maybe two or three years out of school. I had enough general experience for the position. And they were doing interviews, in a panel interview format which was very unusual at that time, and

### **Intimidating?**

Yes, very intimidating. As I was saying to my daughter that I don't know what possessed me that day, but as I get to the interview, the guy setting up the interviews from Human Relations said, "Now, you're going to go into the room and don't be intimidated. It is going to be a big conference room, and the guys doing the interview are going to be sitting at the far end and you're going to be sitting over here at this end." And he said, "Don't let that throw you." So, I just screwed up my courage and I said to myself, "I'm going to do this." And, I went in with my little binder and I sat down, then I opened my binder and I wrote down notes as I was talking to them saying, "Oh, yes. I understand." (Inaudible) or I would say, "Well, let me think about that." (laughter) And to this day, I don't know how I ever did get that much courage but I looked very, very qualified (laughter) and like I was sure of myself and knew what I was doing. Well, it turns out that the job entailed working in multiple meetings, and they said, "Well, you seemed very self-assured and you knew how to handle yourself in a meeting." So, that's how I got the job. (laughter)

### **Amazing.**

I never really thought about it at the time, but certainly, they were going to hire a woman engineer if she was qualified. Since I was qualified and able to do the job, they were more than happy to hire me over someone else. And that's how I started at the FCC.

### **And, so what was that first job exactly? They said it involved a lot of meetings. (laughter)**

Yes. Well. First, I ended up in a six month training program offered by NTIA [National Telecommunications and Information Administration, Department of Commerce] learning all about radio communications and spectrum management which is the field I ended up in at the FCC. I even wore my FCC shirt for you today (inaudible). This logo is what we call the engineering emblem, because it has the wires and communications signals on it. The new logo is



just the F.C.C. letters, but all of us older engineers wear the old logo. You can't get these shirts anymore. (laughter)

**I saw that. Cool.**

Yes, that's really cool. All of us old time engineers have the old radio communications logo on it. As I stated, I started out in a training program that taught you the basics of how radio communications is organized. That's what spectrum management is about.

**Oh.**

What frequencies and what bands are used for what services. Where is FM broadcast? Where is TV broadcasts? Where do you put the new cellular service? Where do you have microwaves? Where do you have radar for military and all those services? So, the radio spectrum all broken down in this big chart and it's called the Table of Frequency Allocations. And, that chart is actually decided at international radio conferences. If you're going to operate a new satellite, your satellite in America has got to be compatible with satellites in Europe or Asia. If you have maritime radios for shipping, those have to work internationally. If you've have a FM broadcast station, that only operates primarily in the United States, maybe across to Canada, but not around the world.

**Right. Right.**

So, this frequency allocations is a whole field of study. I just told you, in a nutshell, what I learned in 30 years of radio spectrum management. (laughter)

**Right. (laughter)**

So, I spent six months in a training program by NTIA. I went to visit the Army. I went to the FCC. I went to NASA. I did little different assignments all around Washington learning how each agency managed their assignments and did their frequency coordination. Then, after that six months of training, I went to the FCC and I started my job. My first assignment was in FM broadcast. And, I was assigned to the Media Bureau; the FCC is split up by services. You have broadcasting, actually media, you have mobile or wireless communications, you have cable, you have wireline services (which are your telephones) and others like that. So that's generally the division of the FCC. And, I was assigned in '78 to broadcasting. I was in a branch called Policy and Rules, which is where we actually write the rules and regulations of how broadcasting is going to operate in the United States.

**That's very exciting.**

It is. It is. I was working on FM, another engineer was working on TV, and another was working on AM broadcasts. Now, in '78, there was no cellular radio. Broadcast was king. If you're going to work at the FCC in the '70-80s, broadcast was the most prominent. Both Congress and the FCC were trying to figure out ways to have more media outlets. At that time, you have your TV, you have your radio, and your newspapers as outlets for news and entertainment. The goal was to

get more forms of communications to the public. And, because I worked on FM broadcasting, my particular project was to reengineer all FM broadcasting standards for the United States.

**Wow.**

Yes. If they would have told me the scope of my project, I would have fallen down on the ground. Instead, it was “Go and study FM broadcast and figure out some options,” and so, it was more like an evolving process. The others were working on AM, somebody else was working on TV and they really didn’t want to make changes to TV at that time. They’re only converting TV now [2008]. (laughter) And, AM was sort of old hat and they weren’t going to do too much with the AM, but FM in the ‘70s was king. FM was where you got most of your news and music radio, and it was the most the popular. So, that my work on FM became the premier project. And so I went back – would you like to hear the history?

**Yes.**

I had to review all of the technical parameters of the initial standards, signal to noise ratios and the interference range, and the (inaudible). So I was reading the original FCC documents to see how FM broadcasting was established back in ’63. Now this was ’78, so it’s about fifteen years later and I was looking at all the variables. And we consulted with the Office of Engineering and Technology (which is where I ended up retiring) for our analysis. Together, we did some testing of the different signals levels and the interference that would be caused if we changed the parameters. By this time, I had moved into being a system engineer so I wasn’t in test engineering anymore, and so I let the test engineers play around with their gadgets. (laughter) I did go to the FCC lab and we did some signal and noise tests, and I understood it, but I was working on radio communications standards and policy. So I laid out the engineering for the new FM broadcast assignments. Now it’s really a very simple concept. If you have lots of power and a big antenna, then you’re going to have a larger signal area. (laughter) Right?

**Right. (laughter)**

It’s not so hard to understand that you’re going to cover a larger geographic area depending on the signal strength of your station. At that time, we the FCC had a lot of FM stations that were authorized for this huge power and big towers, but they weren’t using those levels. They were using the smallest, weakest levels to save energy and tower costs. And if they just wanted to just serve their town, they didn’t need a signal to cover all of the Adirondacks. So, I made a recommendation that we re-engineer the FM broadcasting standards, so the station owners would have multiple choices. Instead of just having two choices between a big station or a tiny station, you’d have multiple choices with in between sizes, or classes, of stations. Now that solution sounds so simple. (laughter)

**Yeah. (laughter)**

We had a lot of attorneys at the FCC, which was very new to me. Attorneys were needed because implementation of federal regulations involves communications law – companies such as NBC verses ABC have certain legal rights. So one of the benefits I enjoyed, when I went to the FCC,

is that I had other women professionals around me at work because many of the FCC lawyers were women.

**Ahhh.**

And many were a few years senior to me. So, when I got to the FCC, I may have been the only woman engineer, but I wasn't the only woman professional around. I had other professional women to talk to and have lunch with, and they were having babies too. (laughter) Some of the women lawyers already had part-time jobs. I was still in a man's field in the engineering meetings, and there weren't a whole lot of women attorneys either but they weren't rare. My best friend is a woman attorney who I met at the FCC, and she was one of the first women in her law school. So there weren't a whole lot of women attorneys, but there was more than one. (laughter) I worked on the engineering portion of the rules, but there were also legal aspects regarding how to authorize these broadcast stations.

**So, you were writing policy? And, how was that part of it for you, given presumably that was not your training?**

Right, I was writing regulations. Yeah, one of the things to emphasize tonight [at an event for Clarkson students] is the old story – write, write, write. I credit my advancement in my career to my ability to write, and probably my ability to speak even though that came later. (laughter) If I had to take a public speaking course at Clarkson, I probably would have dropped out of college. (laughter) That's how difficult it was for me (laughter) to get up in front of anybody, and that's how much I've changed during my life. One of the things I did in my early training program for the FCC was to take a public speaking class – and they taped us. I guess I was mature enough by then and I had worked long enough and I wanted this career enough (laughter) to give it a try (inaudible). And I lived in Washington, DC, so I started watching the professionals in Washington, the Secretary of State, and the Vice President, etc., and I noticed that they'd get up to speak publically and they'd trip all over themselves and look like a bunch of boobs. (laughter) And, so I said to myself, "Well, I can't do any worse than them." (laughter)

**I love it. (laughter)**

And, I thought, they're representing our United States in other countries and going to conferences. So that gave me a lot of courage. (laughter) And, when I saw Secretary Shultz, well, he was not a great speaker, but he was our Secretary of State and he did a lot of good things, but I looked at him speaking on TV and I thought, "Now, if he could be Secretary of State, I could make a presentation." (laughter)

**That's great. (laughter)**

So, my first project at the FCC was working on policy and rules in FM broadcasting from, let's see, '78 to about '86. And that job was writing the regulations. Basically, you set out all of the rules and standards for station operation. The rules have to set power limits for equipment. It would specify whether it used FM or AM modulation or another, signal to noise ratios, and maybe a certain transmission mask which is how the interference would roll off for your signal,

just to name a few. Normally, an engineer doing policy would start out working in licensing first. Licensing is where someone would apply for a license for a broadcast station and we would process the applications, saying, “Do they meet the parameters of FCC rules?” And, if so, we would grant them a license to operate. So normally, you came from licensing and then moved up into policy. But, at that time, they were doing the reverse and just hired new people into policy. So since I skipped that step, I decided to go back and learn licensing. So, I moved from the policy and rules, actually taking a step backwards, and went into a licensing job at the FCC.

**Yeah.**

In licensing, I learned how the FM applications were evaluated and granted. And, I was a supervisory engineer there, working with a team. And, we reviewed applications which came in from broadcast stations. The FCC really had a lot of autonomy in some respects. It was my name that was signed on the FM broadcast station license. It said Kathryn S. Hosford. And, if you walked into a radio station back in the eighties, it would have had my name on it – either mine or another’s, as I think there were three of us signing FM licenses. Actually, that license with my name wouldn’t be there anymore because it’s been superseded by a renewed license. So in this job, I learned about the application process which is a much different venue from policy and rules. In licensing, you were working with clerks and analysts, and it was more like a production operation.

**Right.**

FM licensing had many applications come in every day and you had to grant them within a certain timeframe, say within 30 days or 60 days, and move them along the processing steps. Certain ones would have to have waivers because they couldn’t meet the requirements; maybe they wanted to build on top of another tower or something. I worked there in FM licensing for about three years.

**I was going to say, were you full-time during all this time? Because, you mentioned (inaudible) being part-time.**

Yes. I went part-time when my first daughter was born in ’83. So, all while I was writing the FM broadcast rules – I wish that I had brought my pictures, but I didn’t have a chance to go through them at home. It probably wouldn’t have meant anything to others, but I’m pregnant and sitting at home working out some of the calculations for the new FM broadcast standards. And at work, I was upstairs in the chairman’s office giving briefings that decided on the policy for these new broadcast stations – and I was pregnant. (laughter)

**Sometime, I would love to see that picture.**

Yes. So, at that time I was part-time. And, I expected that when I went part-time, well, I thought my career would freeze or stall. This was still very early days for women professionals in ‘83. And, I didn’t expect to get a promotion while I was part-time. Also there were several other engineers who were ahead of me in seniority. When I went on maternity leave – I took six months maternity leave which was quite a bit back then.

**Yeah.**

We euphemistically called it “maternity leave,” because we were not given any time off, but were just granted permission to take our leave that we had already saved, perhaps just a couple of weeks. We didn’t get paid maternity nor was there family-friendly leave and there was no standard within the FCC, or the government. One office or boss could offer you six weeks or six months, or maybe even a year could have been requested. However, six months was sort of the outside limit. It was the most anybody was getting at that time, and six months is still pretty generous even now.

**Right.**

So, for my maternity I used all my vacation time, all my sick time, and then I took three months without pay. When I came back, I was part-time and all of the other engineers, for one reason or another, had left my department.

**Perfect.**

Yeah. (laughter) So, my boss had put me in for a promotion because I was senior and a good engineer. Actually, he left while I’m on maternity leave, and then another guy came. So here I’m part-time and my promotion was on his desk to be signed. And, he told me that he would sign it, but he would not have recommended it for a part-time employee. And so, everything worked out well for me. (laughter) I continued part-time and I even made that change to licensing while part-time, which was a surprise because it was unheard of to be a part-time supervisor also.

**And, you had your second daughter, also, when you were in that. In '87?**

Yes, in ‘87. When I was in licensing, I had my second daughter. And I was doing fine in licensing and I was going to stay there for another few years, but – and I guess this was networking before we knew to call it networking, I mean, we didn’t know we were networking. Someone I knew asked me if I would like to come over and work for him. And I said, “Well, before I get buried forever in licensing, and lose all my contacts (laughter) or my networks, I better apply for that job.” So I went to work for him and moved into the international maritime radio service.

**Oh huh. Oh.**

And, so I’m back into policy and rules again, but writing regulations for international maritime this time. I wrote rulemaking documents this big, 50-60 pages, with all kinds of attachments of frequency charts and tables. And, I updated the FCC maritime rules based on the international regulations for maritime. Internationally, they just finished a major maritime conference where they revised most of the maritime radio regulations. Believe it or not – this was ’88 or ’90 and distress and disaster communications for maritime ships at sea was still based on the Morse code of the Titanic. (laughter)

**Oh. (laughter)**

Here, we were going into the 21<sup>st</sup> century (laughter) and every ship still had to have a Morse code operator who needed to know how to do Morse code. But every ship was using satellite and HF [High Frequency] communications daily. So, some wise people, at least I thought it was wise, in the international arena said, “We should update our distress and disaster (laughter) communications, so that they could use their everyday radios on the bridge in a disaster instead of relying on some aging Morse code equipment that nobody uses and can’t find (laughter) down somewhere in the radio room.” So, there’s a whole book of radio regulations changing from old Morse code to modern technology. Now for this job, I had to learn how to read all the international maritime regulations. And, they looked a lot different than the US Code of Federal Regulations (CFR). So, I was kind of lost in this new job for almost six months or a year.

**Do you speak other languages than English?**

No. No. I don’t, but the documents were all in English. It was just that the format and the sections were all different. International documents start out different. They start out, “For this, under this consideration, and this consideration,” which generally means, “for these reasons, we resolve to make these changes.”

**A different language. Yeah.**

Yeah. It’s just a different way of presenting things. And, I was reading all of these international documents, because Morse code is ancient, and because we wanted new modern technology. So, those were the reasons for that project. The FCC was going to adopt these international changes and use HF [High Frequency] and satellite for distress and safety at sea. And then, we had to consider this whole long list of equipment that would have to be on ships and when they would have to make the change. So, I worked on all of that effort – changing all of those rules and regulations in the United States to comport with the international regulations. And, when I went on my cruise a few years later, I even went down to the radio room (laughter) and up to bridge and was looking at the EPIRB [Emergency Position Indicating Radio Beacon] and said, “Oh, yeah. Yeah. I wrote the requirements for this radio equipment.” It was really pretty cool. Actually, I guess could be credited with having some, some impact in changing the United States from Morse code (laughter) to modern radio communications (inaudible) for our ships.

**I think that’s incredible. And, that was late eighties/early nineties?**

Yes, around ’89, ’90, or ’91. And, at that time is when I also went on my international trips for coordination meetings. So, my work now included international meetings of the International Telecommunication Union (ITU) and, for maritime, the International Maritime Organization (IMO). First, we would have bilateral meetings with Canada and Mexico, and then, we would have regional meetings of North and South America. And, try to get our positions all lined up, on what we wanted to do in the Americas. And then, you would take those ideas to Europe to the international meetings, where you’d say, “These are the recommendations of our group, and specify what the Americas wants to do.” So, I went to Buenos Aires for the regional meeting of the Americas, meetings of CITEL [Inter-American Telecommunications Commission]. And

then, I went to London to the meeting of the IMO [International Maritime Organization]. And, my mission at that time – this was 1989-90, I guess. At that time, there was one satellite system INMARSAT [International Maritime Satellite] that carried all maritime communications, and it was a consortium that all the governments paid into, and ours was called COMSAT [Communications Satellite Corporation]. All of the other governments of the consortium would pay into these satellites, and ours was kind of a quasi-government corporation, COMSAT.

**Okay.**

In the '90s, the United States' policy was to have competition and more satellite carriers than just INMARSAT, which COMSAT was part of. And, so my job overseas was trying to convince them, (laughter) the international countries, that they really want competition in satellites. American companies, such as the American Mobile Satellite Corporation [AMSC], and Motorola's Iridium, and other companies, were trying to get into the satellite industry at this time. So, we the U.S. wanted to broaden the international regulations to allow other satellite companies to carry maritime communications and use competitive markets. So, there, I'm expanding my field from engineering into the economics and competition.

**International?**

Yes, international regulations. Now, I'm just one little person on this team. I mean there's a delegation that is involved in all of the international aspects of one country versus another country. I mean, there were certain countries that would vote against the United States because they're part of the other alliance. I mean, that was (inaudible).

**Very interesting. So, international politics were playing out within?**

Yes, right but that interplay was all beyond me really. (laughter) So, I took a couple of trips to international meetings. When you see delegations on TV, like for UN meetings, and the United States representative is there with their earphones – that was me. At the IMO meeting, there was the delegation leader and two people next to him, and I would be sitting there with my earphones on discussing that issue. Now, I just had the one item which was to allow competition for satellites, and there were many items on the agenda.

**Yeah.**

An engineer from the Coast Guard was our delegation leader. And, if you wanted to speak he would hold up a nameplate for the United States, and he handed me the nameplate and said, "Do you want to talk?" I said, "Okay." And so, I lifted it up, and I started arguing against Denmark and some of the Nordic countries who were against the changes and wanted to keep it under INMARSAT only because those governments, particularly at that time, most of their communications systems were government run. But here in the United States it's private companies. In the nineties, we were trying to expand privatization and increase global commercialization. We trying to convince the other countries to be more democratic and open to more competition.

**And, I'm just curious given your public speaking background – at this point, did you get nervous doing stuff like this? I mean, international, at this level? By then you were probably in your late thirties/early forties?**

Yes. Well, of course you were nervous but I guess for me I had a job to do and that sort of overcame that fear. Also I went to a lot of meetings and a lot of these issues are discussed at meetings before you get to the floor. By this time of the IMO meeting, I had already talked to South America and to all these different delegations earlier. They were waiting for the United States to stand up and say, “We propose this idea.” And Denmark was saying (inaudible). All were waiting for me to speak, to say what our position was, and to bring it to the floor. So, I obviously overcame that fear of public speaking. (laughter)

**Clearly. (laughter)**

Also, I should go back and mention that when I was working on policy and rules for the FCC, not only did you write those policies and regulations, but you had to formally present it to the FCC commissioners in large public meetings. At that time, there were five commissioners that would have to vote on your recommendations.

**You had to be persuasive (inaudible).**

Now, you went to the table at the FCC with your bosses and others, and you waited for them to tee up the agenda. So, I would read a statement and give a brief summary regarding the new regulations for the FM broadcast stations. And then, they'd ask questions and normally if it was technical it would be passed down to the engineer to answer because the boss didn't know the technical details. I mean, he would answer the policy questions, (laughter) and anything that needed to be tactfully answered, but if the question was of a specific nature such as, “How are these new stations going to operate and not interfere with each other?” then, they would pass it down to you. And, so my skills developed over the years. I didn't all of sudden end up in the international arena speaking on behalf of the United States.

**Right. Right.**

I was a senior engineer by this time and I had gone to a lot of meetings on behalf of the FCC in Washington, DC because the FCC works with many other agencies. So, I'd be in these big meetings, even that first interview was in a big conference room, and at these big meetings you might be sitting around a table with 24 other agencies (FBI, DEA, NASA, Air Force, etc.) and the FCC would be one member at that table.

**I think that the students tonight might be interested in hearing about that kind of thing. An incredible variety that you get by working for the federal government, at least the kinds of things you've done.**

Right.

**[End of first part of interview. A short break was taken.]**



**Okay. This is Laura Ettinger, again with Kathryn Hosford for part two of our interview a few minutes later, after having taken a little break. So Kathryn, again, you were talking about the international part of your job in the early 1990's.**

Yes, in the early '90s I went on a couple of international trips. My daughters were little at the time. Let's see, this was probably '91, so they were maybe three and six [actually, five and eight]. Then, I ended up changing jobs within the FCC from international into what was called wireless. I moved to the public safety radio service. It's actually called the private land mobile radio service, and public safety was within that radio service. This was in '93, which is about the time when the FCC formed the Wireless Bureau.

**Okay.**

One of my bosses asked me to change to public safety radio and, so I moved within the FCC again. (laughter) At this time, we were updating, revising the radio regulations for police, fire, EMTs. We were going to modernize those radio services. This was the early nineties. And not only public safety but all of the private radio services were going to change. At that time, public safety radio frequencies were interlaced with what we called private radio services, like taxis and other businesses. Remember, we didn't have many cell phones around; I mean, you had some mobile phones in your cars by the '90s but they cost a dollar a minute to use.

**Right.**

So, back then plumbers and all of your delivery services would use mobile radios in their vans to check back with their office base station, before going to the next call. So, there was private radio or business radio, I guess we could call it, and public safety frequencies were interlaced because they used the same type of equipment for police, fire, or business. (inaudible) Now, each time I changed jobs from broadcast to maritime to land mobile, these were all different kinds of radio services.

**Yeah.**

So, as I went through my career, it was fascinating work because I was always learning about all different kinds of radio communications. I had to learn and grow, go back and start over with new technologies. I was always an engineer and I was always at FCC, but I was learning new and different areas of telecommunications. So this time, I had to become an expert on land mobile radio. And, I actually went out on a train from DC to Philadelphia to learn about how the signaling on trains worked. I also went to the forestry service and learned about how they used their radios to fight forest fires. I went with the police too; I didn't actually go out on a run but I worked with police on their communications needs for 911 offices. I saw how the 911 centers communicated with the police officer in the car.

**Okay.**

I didn't work on the public talking to the 911 station, but I worked on the 911 station talking to the police and the fire personnel. I heard about how a snow plow in the public works department needed to talk with the ambulance during a snow storm. They may have had some medical emergency, but the snow plow couldn't talk to the ambulance because they were on different radios – different frequencies and different technology. And, so the snow plow would be going along clearing the road and, then all of a sudden, the ambulance would get a different call and go off on another road and get stuck in snow.

**I never would have thought about any of that.**

It's really very fascinating work at the FCC. I've had such a wonderful career. It all started out by opening the want ads and saying, "Oh! I think I'll be in telecommunications." (laughter) It was exciting because the world has changed in my 35 years from starting out with broadcasting or the mobile industry. When I first went to work for the FCC they were just thinking up the idea of a cell phone. And, now I've got this cell phone which is a little computer in itself. It was a wonderful career. (laughter) In the '90s, I actually was in public safety radio doing policy and trying to figure out how to modernize it, when they had the Oklahoma City bombing.

**Wow. Okay.**

I had just started job when there was lots of interest in radio interoperability with hearings on the hill. I went to some of those hearings before Congress. Of course, I didn't testify, but I attended and heard about how police on one floor in the trade center, this was before the 911 attack, couldn't talk to the fire fighters on another floor. So, I had a part in devising the modernization of emergency communications. This update was not just the old walkie-talkie, over and out, your turn to talk, but we examined the latest data communications using broadband technology. This was in the '90s and we were trying to project into the future. We couldn't even keep up with what technology was doing. We were trying to figure out what bandwidth was needed to have a quality picture for the police to take into court.

**That's interesting.**

Yes, there just is so many different aspects of my work that was so interesting. And, so in the '90s, I was working on new radio technology and regulations for police and fire and EMT. And, then Congress decided, "We want you, the FCC, to take this slice of spectrum away from broadcast and give it to public safety." And, that is the DTV [Digital Television] change out that is going into effect this February [2009].

**Wow.**

That's what the whole country is getting ready for right now. Two 12 Mhz segments, or 24 Mhz of that spectrum is being given to public radio communications, reallocated from TV broadcasting to public safety. And, I noticed just last week on your Clarkson University website that Qualcomm has come up here with a team to study public safety radio using CDMA [Code Division Multiple Access]. Now, I confess I'm not a real technician type engineer. I'm more a system or project engineer.

**Right. It seems like, if I understand correctly, you do big picture, you do policy, you do big projects.**

Yes, big projects. I worked all through the '90s on public safety radio and how they're actually will use these television channels that are being converted from old TV channels 63/64 and 68/69 to land radio technology for police safety. And, we had to look at the technologies and consider the bandwidths. One of the concepts that we came up with, now I'm not working in that area anymore so I'm kind of dating myself, but one of the concepts that I suggested was – by this time, I was a project leader and I had a whole staff working for me.

**Right.**

The concept was to set aside a number of frequencies, some spectrum, for the states and let them build out state systems. The idea was that states could work with the local entities, and they could work with the federal entities to build out statewide systems. And certain interoperability channels were set aside by the FCC for that purpose. So that was what we did with that 24 Mhz of public safety spectrum in the '90s which will eventually be used in 2000. (inaudible) Actually, it's planned for 2010. As a matter of fact, the rulemaking was called "public safety in 2010." I was working on that in the '90s, so we were looking at technologies in the future perhaps 15 years down the road. So, that brings me, my career, to the year 2000.

**Yeah.**

And, in the year 2000, I decided to move again (laughter) from wireless and land mobile technology to work in the Office of Engineering and Technology (OET). As I said, the FCC is broken up into Bureaus by services like broadcast/media, cellular, wireless, public safety, etc. There's also auxiliary offices like General Council and OET which is sort of your engineer department for the FCC. We had engineers in all the Bureaus too, but generally, the OET engineers were the ones that work on emerging technologies and policies. Also, OET is the office that coordinates the rulemakings for new technology and the licensing of frequencies, with all the other federal government agencies. So, I went to work there [OET] in spectrum coordination.

**Okay.**

Eventually, I became the branch chief of SCB [Spectrum Coordination Branch] which is the office that interfaces with the federal agencies. The FCC doesn't govern what the government federal agencies are going to do with their radios but we do coordinate with them. The FCC governs commercial and business radios, but those things that are going on with DOD, FBI, NASA, and others, well they're all regulated and authorized under NTIA – National Telecommunications Information Administration. So, there are two parts, the FCC and NTIA.

**Thank you for explaining.**

Yes, we work with NTIA to figure out national telecommunication policies, what technologies to implement, and how to foster technology, such as 3G, to advance modern technology. Many of these policies are set out by the FCC, in the OET, with coordination by NTIA. My department [SCB] would attend those meetings as the FCC liaison to the IRAC [Interdepartment Radio Advisory Committee]. These are huge meetings with FBI, and Coast Guard, Army, Navy, and many federal agencies, and by NTIA. So not only were we at the FCC working on modernization of police/fire radios but we wanted them to work with DEA and FBI, and others. So, there's a lot of comingling of needs and requirements (inaudible). And then there is also a need to coordinate specific frequencies when we authorize a station. Now years ago, the radio spectrum was separated into sections – some of it is broken into FCC spectrum, and some is federal spectrum for their operations, and then there's some that is shared spectrum. So, if we're going to authorize, or they're going to authorize, a station, it has to be coordinated. If we have an application for a satellite system, we have to coordinate that with say, the Air Force or NASA, for compatibility.

**Lots of coordination. (Inaudible).**

Right. Right. Well, specifically it is called frequency coordination and that was handled by SCB. Now when I went to that office in 2000, I don't know why, but OET was kind of behind the times on having a computer system to coordinate frequency assignments. So, my career has come full circle back to computers. I ended up in charge of the OFACS contract [OET Frequency Assignment and Coordination System]. We had a contractor design and built a computer system to coordinate these assignments back and forth between the FCC and NTIA. It became one of the larger FCC contracts and, it interfaced with several government systems. It integrated different computer systems within the FCC that came into our network or our system, and coordinated directly with other systems in the government. Well sort of, it's not real time. It would have been nice if it was but it would update on a regular daily basis. Before that we were doing it by emails or separate independent systems. So, building that computer system [OFACS] took the last couple years of my career, and updating the frequency assignment process for OET. And when OFACS was finished, that's when I retired. (laughter)

**Okay. Right. Thank you. I know we've been talking for a long time. I've been (inaudible). I enjoyed this tremendously. Thank you.**