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Interview with Mike Kleidermacher

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[START OF TRANSCRIPT]

[0:00:08] Mike: My name is Mike Kleidermacher and I worked in GCSD government communication system's division that at that time was RCA of course. I started in December of 1965 and I've been there until 2013. 48 years.

[0:00:31] Male Speaker 2: Can you remember the first project you worked on?

[0:00:35] Mike: The first project was a very interesting project. I was under the tutelage of an engineer who was designing a computer for the Navy. The computer was under IR&D funds – independent research and development. And he took me under his wing and he showed me how to design a computer. I was too much into a project, a young engineer, and the fellow who was the project engineer quit the company. He told me, "You are going to have to finish designing the whole computer." Which to me that was overwhelming.

I just started with a company for two months, and I was responsible for designing a whole computer. Then we finished the computer design under IR&D and then we sold the computer under a project for the navy where we developed a computer oriented voice communication system that really landed on the Land helicopter assault ships that is in use today. We built about 20 systems and subsequent to that were other developments. It was a great job for me.

[0:01:44] Male Speaker 2: Did they give you any mentors or anything after this gentleman quit?

[0:01:49] Mike: Absolutely no. I was kind of tough but I enjoyed it a lot and the fellow who really taught me first two months, he was unbelievable. He gave me such a strong basis of how to design and left all his notes that he did a great job and I was able to carry on.

[0:02:03] Male Speaker 2: Do you recall his name?

[0:02:06] Mike: Ted Campbell. He was a great guy.

[0:02:16] Male Speaker 2: Why don't you go over some of the other major projects that you worked on and what your recollections are from them.

[0:02:21] Mike: That was the first one that was called a CSP3 computer which I designed. And then we got involved in the voice communication system for interior voice communications on board a ship where we

had to design the whole telephone switching system that was computer stored, and automatic switching. I worked on that project. That project lasted about five years. It was very fortunate for me that on that project, we had to have a system that was fully redundant. Aboard the navy, you had an aft and a forward, and you really had two computer systems that were making voice connections all the time, and if one computer system failed via a hit or whatever, the other one took over automatically and none of the calls were lost including unprocessed calls.

We had to design a system that's called a synchronization of two computers. Two independent computers – how do you synchronize them, keep the data the same and switch when one fails and the other one takes over? I had a patent on the synchronization of the two computers... was a piece of hardware that RCA at that time refused to apply for a patent. So the navy applied for a patent for me and that was my first patent. So that was a great project for me.

[0:03:43] Male Speaker 2: Do you remember what year that was?

[0:03:44] Mike: It was '66 to '72. That was the range of my first big project.

[0:03:52] Male Speaker 2: How did this project affect your career?

[0:03:54] Mike: It was a great project for me because it was very successful, we developed the project, we delivered to the navy the first system and subsequent to that they gave us the big production order for what I was telling you – to land helicopter assault ships, which is a big ship that houses helicopters and they use it today, so it was a big-big system. Subsequent to the big production when I left in the 80's, the Navy gave us another production contract where we had to refurbish the computer. It was big and we redesigned it. It was another group that did it. I was in another project. I got a lot of promotions and many awards. It was a very good project for me.

[0:04:42] Male Speaker 2: Talk about your co-workers for a little bit.

[0:04:46] Mike: In that project I have to say I had tremendous help. Two fellows I remember specifically. One is Bob Zieve. He was the project engineer on the design. He was unbelievable. He knew switching systems, how to switch with relays automatically, he knew all about that and that took me a long time to understand the concept. He taught me a lot. So, Zieve was great. And my boss, Bill Lawrence, taught me how to do the software for automatic switching. I was a hardware guy. Still am, or was. Anyway... and I learned from him a lot of software concepts for store-and-forward switching and telephone switching. So he was great. Those two guys were the

best. And many other guys like Chris McGuinness, who actually helped me with synchronization of two computers, he was a great guy, I wonder where he is right now. So there was a lot of good people. At those times, in the RCA days somehow the comradarie and the people... it was just great teamwork. Great people.

[0:05:52] Male Speaker 2: How do you think RCA helped you as part of the project?

[0:05:53] Mike: I would say in terms of education. They always tried to promote in-class courses, always tried to teach you all kinds of technical stuff. From that point of view RCA was very good. They encouraged me to get my Masters which I did at night and that was a great thing for my electric engineering, and they always encouraged you to think and do the right thing. From that point of view RCA was a great company.

[0:06:33] Male Speaker 2: Did you feel that RCA recognized your work well?

[0:06:36] Mike: They always had a recognition program, many recognition programs. In fact, I was part of a group that recognized achievements and I voted for them. They always ran achievement programs, they had a great magazine called The RCA Magazine, that highlighted the technical aspects of what engineers did. That was a great magazine. From a technical point of view, if you are a technical engineer, RCA was a great company.

[0:07:09] Male Speaker 2: Your career progressed beyond the computers.

[0:07:12] Mike: Yes. In '72 we were finishing that project I was telling you about, the land helicopter assault ship. At that time one of my previous managers, Matt Rosenblat, won an initial job about \$ 3 000 000 in a GCSD, and that was secure communications for the national security agency. He knew me and he brought me along to work interestingly enough, on the project that covered what I learned from him, an interior voice communications. He wanted me to design what they called a voice simulator to be able to test the crypto gear that we were designing for the National Security Agency. And I was able to do that because I learned the software from Lawrence.

So even though I was a hardware guy, I was given a big software job to design a simulator to do voice communications. At that time we were developing the first digital voice communication system for the army. And part of that big system called TRITAC, we were the crypto guys, and GTE was developing the switching system for the army. It was all digital. The first all digital protocol system the navy was going to fill for TRITAC. So he brought me into what I call secure communications for NSA jobs and that started me in a whole

different career path. I actually stayed with them in NSA business till I retired. Without bragging or anything like that I became an expert in crypto. And that was a very good thing. I loved it a lot.

[0:09:01] Male Speaker 2:

You were a recognized expert. How was that different from your earlier career?

[0:09:09] Mike:

The technology was a little different. You had to learn about stuff that you never learned in school. You had to really like digital logic, mathematics, random numbers, a lot of different technology, very different voice communications. I applied myself because I had one of the best teachers in that area. His name was Chip McGrogan. Great guy! He was my tutor. He loved to teach everybody, so under his tutelage I had an opportunity to design stuff I had never done before. For example, we were developing miniaturized integrated circuits for the NSA work which had to be low-power and very small size. We really started developing a group of logicians that integrated circuits, because RCA had a laboratory for integrated circuits.

At that time the technology, without getting into great detail, was 7.2 micron. And right now they're going to, God, Rich, .2 micron. At the 7.2 micron technology we were developing logic, it was called large scale integration, and Chip showed me how to do logic design for cryptosystems. He took me under his wing and said, "Okay, this is how you do it." We designed a set of chips that were integrating many boxes for the NSA. It was the first generation of large scale integration for the NSA chips that we developed. Subsequent to that, we developed a second generation of technology and we carried all the way to sub-micron. At that time, I would say from 1973 to about 1990 we were developing many, many large LSI devices that were incorporated into NSA devices for small power and small size. That really was great for us.

That was revolutionary for us. NSA loved us, they gave us many-many jobs, and we shipped well over million systems to the NSA for distribution for the for the army services, including the army, navy and air force. That lasted for about 18 years or so and then things changed. Things changed because with the onset of microelectronic computers like the Intel devices and a lot of the FPGA Field Programmable Gate Array technologies that came on board LSI logic integrate circuits custom sort of went away. We had to switch gear and continue the work on NSA but under different technology.

[0:11:58] Male Speaker 2:

What was it like working with the NSA people?

- [0:12:00] Mike:** I've got to tell you something, the best. Number one, they were talented, they knew their technology, they were good engineers, they would like to work with you, they believed in their mission to get things done and help the warfighter. Because of their technology savvy, their will to really get things done, for at that time we didn't have many restrictions of paperwork and regulations it was a different ball game that we just got the job done. And they helped us along with getting the job done. It worked out very-very well. It was very good.
- [0:12:45] Male Speaker 2:** Cryptographers are a very different group. What were those co-workers like?
- [0:12:54] Mike:** Some of them were a little weird, you know in terms of trying to tell you how things work. It's not easy to explain cryptography. To really explain it, it takes a long time and you have to develop a savvy to really learn. They were a little unusual, but still good guys.
- [0:13:16] Male Speaker 2:** Did you socialize with any of them?
- [0:13:17] Mike:** Oh yes. I have many friends. In fact we still socialize to this day. We actually go twice a year to what is now a GE club. As you may know, RCA was bought by GE, and there's an RCA club. We see them a lot. In fact, this is very apropos, a lot of my friends like Mike Paparo, Steve Haas, they already retired and we at this meet twice a year, and we walk for dinner. We are going on August 26 with Nancy McCabe who used to be my secretary and with Mike Paparo and Steve Haas. So we do meet a lot still.
- [0:14:06] Male Speaker 2:** People have talked several times about the term *the RCA family*. What does that mean to you?
- [0:14:13] Mike:** I would say family meant for me that you could always rely on people to help you, to be part of you. It wasn't just work. In other words, if you needed help, if you had a problem, they always came to help you. From that point of view you really felt that you were a family. They were like your relatives. It wasn't like, "Oh my God, I'm going to work, I have to separate work from family." It was a family. Can't say the same thing for other places. Things changed when RCA was sold to GE. GE was more of a bottom-line company and getting the job done in terms of cost, schedule and money. Money was a big deal for them. Those are different. Even though I liked GE, too. I'm not going to say I didn't like it.
- [0:15:05] Male Speaker 2:** Do you recall any of the parties or celebrations?
- [0:15:12] Mike:** Don Parker, who was our "boss" of the division, he would hold almost every year a Christmas party for the whole group. That was a

lot of fun. You meet everybody and that is a lot of fun. Every year we had a Christmas party, and then the tradition continued for the different companies and the different people, including Charlie Schmidt, who used to be part of the COMSEC area and he became a big manager for satellite communications under Lockheed Martin. That was very good. And we still had what I call picnic parties. In the summer we'd get together and run an RCA picnic with all the engineers and their families. So that was very nice.

[0:15:58] Male Speaker 2: What about the work place itself? What was it like? Did you have the resources you needed? What was the work environment like?

[0:16:07] Mike: In terms of research and development it was always money funding issues. You couldn't do everything you wanted to really do. But generally speaking they gave you all the resources you needed to get the job done. I never had any problems with it.

[0:16:26] Male Speaker 2: How did your supervisors treat you?

[0:16:32] Mike: All my supervisors were great. I never had any troubles with them. Partly because I think my philosophy about work was if somebody gave me an assignment to do, I get it done. If I made a commitment to get the assignment done under a schedule that they asked me, "How long will it take you? Can you do it?" I would provide a schedule and I would provide the cost. If I didn't make it I would take it under my responsibility to finish it under my nickel basically. From that philosophy point of view I think my supervisors liked me. I never had problems with them. In fact, unfortunately for me the system that RCA had if you remember that was called the EPR system was earners performance review, and they would give you higher points if you did a good job. I had too many points. After a while my points really didn't measure up to the salary I was given. I got a lot of points but the salary wasn't there.

[0:17:51] Male Speaker 2: You took on some pretty important leadership positions as your career progressed. Did you make any important decisions that affected the direction of RCA or did you contribute to any of those decisions?

[0:18:06] Mike: That's a good question. I could tell you a lot of stories about that. I'll tell you one that I'd say was very significant. It was an interesting story. Before I say that, one time I had about 300 engineers under me. It was very difficult for me. To manage 300 and try to teach them and help them – it was difficult. Especially when GE de-layered and all of their managers got de-layered and it was reported to me. That was a tough problem because I always wanted to teach the people but 300 hundred was kind of difficult. Saying all of that, I left

to go to, and I'm sorry if I'm talking a lot about myself, it's one of those things, there was one project that I worked on. It was called the Mobile Subscriber Equipment which was a mobile switching system for the army that in the 1990's they used in Iraq. So it was a national system, it was used extensively during the first Iraqi war and the subsequent redesign is still being used by the army.

It's tactical secure communication system for wide area networks including the battlefield. It was an unbelievable project. But the genesis of that project was that the army didn't have any money to develop the project. They put up an RFP saying, "Hey, I'm looking for a mobile subscriber equipment as an NDI, non-development item. Can anybody go and bid it?" As a company we said, "No way can we do it. We can't tell the government we have it. It's no NDI. We no bid." There were two companies who said, "We have it." One was GTE, and the other one was a British company that developed the Ptarmigan system. It was a British company. So there were two bids, and GTE came to us. At that time Mr. Parker was the manager of the crypto communications in RCA.

They said, "Hey, listen, we want you to team with us, but we are not going to give you any money. I want you to commit to certain things. And you are going to get all the production and all the crypto of this mobile subscriber system." And Don Parker never thought that this would ever take off because this was billions of dollars. He didn't believe that GTE, all the army would ever field the system. So he told GTE, "We're not interested to even team with you." And I knew I was the crypto guy, and I knew a lot of guys from GTE, and they actually called me and said, "Mike how can Don Parker not team with us? This is going to be big! We've got to do something." And I was faced with a real dilemma because I was told by my management not to get involved. And yet I felt that this could be big.

Not doing anything illegal I did meet with GTE just to listen them out and help them on my own to a lot of questions they were asking me even though we hadn't teamed. Because of the technical exchanges that I had with GTE, they went ahead and made some assumptions and bid themselves the system assuming a few things, but we had no agreement. And they won. Once they won, with the idea that I helped them develop they went to the army and said, "Look, even though it's a non NDI item, we have to develop one little thing. We have the company, it's RCA." And what we had to do, we had to develop a crypto box that was supposed to go to a French radio. GTE also teamed with the French for the radio component because they had the NDI element. And the army was like, "We said NDI!" GTE

said, "Look, it's not going to be on the development money. Same fixed cost, we're taking the risks. It's development, but we are making NDI developing ourselves."

With that idea once they won, GTE came back to Don Parker and said, "Look, we've been talking with Mike, we want you to be our partner to develop the crypto. A lot of the crypto we had; this development would end. So the idea was you produce all the scripts you already have and do the development under Mike for this French radio and tell me the developing money's going to cost you. Just give me an estimate, we'll give you the money." That's what GTE said. Don Parker went along with that. To make the story short, that program won GTE about 8 billion dollars. We made probably a billion dollars. We made a ton of money, Don Parker got promoted. He was like a hero in the company. Fortunately for me, his boss recognized I had something to do with it. In between the time RCA was sold to GE his boss without Don Parker knowing gave me some stock options for GE, which was really great.

And GTE really liked me a lot and that was a great project. But there are so many stories to that because I got to tell you something else. During the development of this crypto for the French radio we had to go to France to test it. We had to take this US crypto that was classified top-secret, we had to take it to France. So we took it, you know, by escort of the air force carrier, they took it to the US embassy. We took a separate trip to Paris with one of my engineers. And the embassy called and said, "Your package has arrived." This is classified and we couldn't tell the French anything. We had to keep it under our total control while we took it to the French company, Thompson and tested with the radio. Remember, we just developed it, then had the radio, we plugged it in, it took us a week to make it work. It wasn't an easy thing, but that was such a great time. Me going to France under these circumstances watching US embassy holding something top-secret. It was all legal, because we went through the air force security. That was a great project.

[0:24:57] Male Speaker 2:

Do you have any other recollections of pressures or difficult times during the developments and the projects you worked on?

[0:25:08] Mike:

I do remember one. That previous I was telling you about, this interior voice communication system.... When we delivered it switching system to Pascagoula, Mississippi, where they were building a ship, the LHS ship, they installed our equipment and they were making voice connections. Somehow the system was making the voice connections; however, it was also making random other connections. Meaning, if the captain was talking to somebody or the

cook would come in and interfere with the call. The system had a lot of problems, these extra connections. I was already working in the crypto area. At that time our manager Jim Fayer who was the manager of the voice communication system, he sent about 20 different engineers to fix the problem in Pascagoula, Mississippi, and they couldn't fix it. So they said, "Who knows about this LHA stuff?" I had already left. He said, "Mike Kleidermacher knows, but he working on crypto, you can't touch him!" They went to my management and they said, "We've got to get him for a week to Pascagoula, Mississippi."

Making the story short, I went to Pascagoula. I arrived to the shipyard, and they showed me what the problem was, and I was by myself. They actually said, "The RCA engineer is here!" And there was a big loud boo like, "BOO!" Their reputation at that time was horrible. So here I am, this little guy, coming in to try to fix this voice communication switching. And let me tell you, that was the most frightening period of my life. I didn't know what to do, number one. I didn't know where to start. But I had to do something, so I started troubleshooting on my own, spent about a week. It's a long story how I found the problem. But I did find a problem, and the problem was the telephone switching system had a gigantic back plane with millions of wires. And believe it or not there was extra wires in the back plane that was installed incorrectly by the integrator of ship, Litton Industries, they were doing some testing and there was a cross-connection field that gave you the upshot but they never removed the wires! And the wires they use were the same color wires, so you couldn't tell where the extra wires were. I was lucky that I found one! Once I found one, I said, "Oh my God, this has got to be it!" I started searching for extra and I looked at the wire list and wherever there was an extra wire that it's called a second level wire or third level wire, the third level wire meant it was an extra wire. So I was looking for pins in extra that had an extra level wiring. And I say, "That's got to be an extra wire."

Normally RCA would do the backplane with two level wiring. So I just had to find all these extras. It took me a week to remove about two hundred wires. And when I removed the two hundred wires, I went to the captain and said, "Okay, I think I figured the problem. Make calls." And he looked at me like, "You've got to be kidding me. This thing has not been working for months, we already told RCA we're shipping the system back. We want our money back. You're talking 30 million dollars." I said, "Just give it a try." And they started making calls and nothing. It worked for hours and hours making millions of calls. Everything worked great. Finally he said, "You fixed

it." And that was a great story for me, too. It's not always the money that you get a satisfaction from for doing something.

[0:28:53] Male Speaker 2:

That was a great story. Anymore?

[0:28:56] Mike:

I have some more, but we'll keep it like that.

[0:29:00] Male Speaker 2:

What was the best thing about working for RCA?

[0:29:03] Mike:

For me the best thing I would say is I was fortunate that even though I was working in government communication systems, that I was not working on offensive warfare. Had I been working on offensive, maybe I would've done it. I don't know. But I was working on equipment and technology that helped and defended the warfighter. From that point of view I felt I saved lives. I wasn't using weapons of mass destruction, I was crypto to save lives. That was very satisfying. Even though people say, "How can you work for the government? They do some many blah-blah bad things.." The truth is I was only working on the defensive technology which was saving lives. From that point of view it was very satisfying.

[0:29:55] Male Speaker 2:

What was the worst thing in working for RCA?

[0:30:06] Mike:

Can't really think of many things. I never got enough money. I could've gotten better raises. My father told me a long time, "If you want to be rich, never work for somebody else. Get your own business." It was true for RCA, it was true for GE, and you know what? You're not going to get rich working for somebody else. If there's anything I regret in my life is too late for me it is I never went out and did my own business. That's something I probably regret. But you know, it's a small regret.

[0:30:45] Male Speaker 2:

RCA was a place where we have heard about people meeting their wives or girlfriends and so forth. Do you have any recollections there?

[0:30:58] Mike:

From engineer point of view it happened a lot. It didn't happen to me. I was already when I graduated I was already engaged. But many people met their wives through the RCA work force and lived happily ever after. That was a great place to meet, develop a long-time relationship and get married, so yes, it happened a lot.

[0:31:28] Male Speaker 2:

What is your assessment of RCA standing in industry?

[0:31:33] Mike:

Today?

[0:31:34] Male Speaker 2:

No. when RCA existed.

[0:31:37] Mike: When RCA existed, at one time it was the premiere company from the technology point of view. Beside doing government communications they were very heavily commercial, as you know leading in the televisions, it was very high, except when they started making some management changes where they were buying a lot of companies that was not related to the technology just to start to grow. Their stock went a little bit from that point of view. But David Sarnoff research library is well renown. At that time it was one of the best research places in the world. From that point of view and the technology point of view they were number one.

[0:32:24] Male Speaker 2: How would you sum up your time in RCA? Just a job...

[0:32:28] Mike: Time in RCA, or the whole time?

[0:32:29] Male Speaker 2: Let's do RCA, and then talk about the whole time.

[0:32:34] Mike: I felt that the best thing that RCA gave me as a start, they had the best training program for engineers. When I came out of college, I had zero knowledge about what the profession was. I was green, really green. What RCA did is they didn't give an assignment right away. They selected you different divisions on your own choosing to give you a training and see what you're like. From that point of view as a starting engineer what a program, where you actually go for eight months, where you go to different assignments for six weeks and you get to taste what other divisions do.

And it happened to me where I actually worked in Moorestown plant, and I went to the Camden plant and the Burlington plant and yet I chose one of the "worst plants" of RCA which was at that time Camden was a little dangerous. But guess what? I went to work to Camden because I saw what they were doing, that was interesting. So I got my shot of working where I liked and RCA gave me that chance. That was a great thing from that point of view. RCA gave me that fundamental training to get me started as an engineer. And that's priceless.

[0:33:55] Male Speaker 2: Then your career progressed into the...?

[0:34:00] Mike: ...right. GE was a very different company. As I said they were taking over a lot of companies and we felt like it was taking over the RCA got sold. GE was different. A lot of people didn't like GE. I didn't mind it because I thrived under GE also, meaning they were fair in terms of assessing me. They did give you stock options if you performed okay. I was okay with GE also. Jack Walsh may have been a tough cookie in terms of telling you like it is, but sometimes it's good to hear and tell you what it is than tell you something that's

not true. I didn't mind GE. I actually liked GE more than Martin Marietta or Lockheed Martin. Lockheed Martin was a strange company. Very impersonal. They were not GE, they were not RCA. I wasn't sure what Lockheed Martin was. I was happy when Lockheed Martin sold us to a new company called L-3. It was a small company.

But because it was a small company, we had a chance to capitalize on its growth and get rewarded. So L-3 was a really good company for me because at that time I was fortunate to meet the CEO Frank Lanza. I met him in his office and he was an unbelievable person in terms of getting things done. I remember that one day he wanted to go into this commercial crypto. He says, "You, guys, do crypto. Let's commercialize it!" And our manager looked like, "Commercial? It's not going to work." So he says, "Look, I want to hear ideas of the commercial." And we came up with what's called a very cheap, very inexpensive voice communication box that gets hooked up to every telephone. You can call anywhere in the world. Secure communications for anybody! He loved it! He said, "Okay, Mike, I want you to come up..." with Joanna Shukal, my boss at that time, "present it to me."

And Joanna was really excited. She was really a nice person. I liked her. Some people may not have liked her. We prepared a paper to present to Lanza about this idea. We went to RCA building, he had a beautiful building in New York. We presented the idea and he loved it. He said, "Okay. How much is it going to cost?" I think at that time I told him 2 million dollars. I may have said a million dollars. I forget the number. I think it's a million. To develop this little thing. He says, "You got it. Joanna, give him a million dollars!" And guess what, we developed it. And we sold a lot of units. And that was successful but it wasn't to millions. Rich, Do you remember how many units we sold?

[0:37:09] Male Speaker 3: I don't know how many...

[0:37:10] Mike: Probably, a 100 000 units. A lot of companies who wanted to go to China to do secure communications bought this little device that gets hooked up to any telephone. They were able to dial normally, and then press a button *Secure*, and you went secure. That Privatel box was 400 dollars. Which is still a lot of money. That was part of the problem about going commercial. People don't want to pay even 400 dollars, so we sold a 100 000 but it was successful. That was a nice project.

[0:37:45] Male Speaker 2: Do you have any other stories or incidents that you would like to tell us about?

[0:37:57] Mike:

Greg Roberts, he was president of L-3. I had a lot of respect for Greg Roberts. He was probably one of the smartest guys I ever met. To me he was the nicest guy. Some people may disagree with that, I liked him a lot. He actually motivated me. I felt that under his tutelage, under his guidance... he also listened to me. One big thing that he listened, thank God, because the previous manager of the company when we suggested that idea, he said, "No way!"

What it was is we had developed this STU-3 secure voice communication box, and the next generation was ready to go and it was called the STE, Secure Terminal Equipment. It required a lot of money developing on our own. And we presented the idea to him and he said, "Let us do this. This is the right thing to do." He made the right decision even though many managers prior to that didn't. And when he made that decision, gave us the money, millions of dollars to do it, the NSA gave us some seed money but not enough. We won that job. We shipped Secure Terminal Equipment that made a division really. I think you know, Jim, that Secure Terminal Equipment. I think we must have shipped 300,000 units.

[0:39:37] Male Speaker 3:

335,000.

[0:39:38] Mike:

Right. It was really Greg Roberts who needed to say, "Yes, we're going to do it." Many of the managers that worked previously said, "No. Too much money, I don't have money." And he said, "Yes, we are going to do it." That was great. And it helped Camden for many years. Still, probably, does. And that was the beginning of a great cycle of crypto gear in Camden.

[0:40:03] Male Speaker 3:

I heard about a competition in that development. What happened there?

[0:40:07] Mike:

You heard the story. Maybe, I shouldn't repeat it. The competition was Motorola at that time who was developing a similar device. It was two companies developing. We finished the development. Motorola could not finish the development. But they had to ship 300 units to the government, that was the contract. The government says, "You've got to give me 300 units." We gave them 300 units. Then Motorola came to us and begged that we should sell them 300 of our units so they can satisfy the contract to ship the units to the government. They bought 300 units from us to ship to the government. That was unbelievable because Motorola was our main competitor at this thing. I don't think they ever forgave us for that. It was really a tough thing for them. But it's a true story.

[0:39:58] Male Speaker 2:

I think it shows the quality of the crypto people that we had.

[0:41:02] Mike: It was great. Absolutely great. Great people.

[0:41:12] Male Speaker 2: Okay, Mike. Anything else you want to share with us?

[0:41:18] Mike: I worked for the company 38 years. I decided to retire when I was 60. Even though you are happy it is still stressful. Nobody's going to say it is not stressful. We were working. You had to deliver... a lot of stresses, so I wanted to retire. The week before I retired, Joanna Shukle took me around to a new fort that she was developing. She says, "Mike, look, if you come back to work for me as consultant, I'm going to give you this office." And she shows me this gigantic office overlooking the river.

My retirement party was Thursday, and I came back to work Monday. For 10 years as a consultant. Under Joanna. And I have to tell you, those 10 years I worked as a consultant were the best years of my career. Why? Because I had zero responsibility about any administration, about any people, any headaches, any politics, any nothing. The only thing I did was technical presentation and technical proposals. For 10 years I felt like I rediscovered my engineering talent. I felt like an engineer again. I would've stayed longer but my wife was complaining. I retired 10 years later. Best 10 years. So I really worked total 48 years in the five companies. What am I doing now? I'm happy retiring. I love it.

[0:42:58] Male Speaker 2: How were you able to come back after you retired? Wasn't there some regulation there that...

[0:43:03] Mike: The regulation started after. I was very lucky that I didn't have to wait six months. Some of the fellows who tried to come back, everything was legal but they said, "You can't come back as a consultant, you've got to wait six months." In my case there was no regulation there. So I came back like that. I was lucky. Very lucky.

[END OF TRANSCRIPT]