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[0:00:08] Martin: My name is Martin Grasmeder. I joined RCA in 1979. I was hired in from Air Neutronic Ford out in California and I was hired for the Maroon Archer Program.

[0:00:26] Joe: I'm Joe Springer. I started in 1976. I started on the Maroon Archer Program too.

0:00:35] Fred: I'm Fred Barnum. I started in 1984 after a five year tour in the United States Army, and I was hired as the business development representative supporting these two gentlemen here and others.

[0:00:51] interviewer: Okay. Let's talk about where you worked in RCA, what was the job that you were doing then what were your experiences.

[0:01:07] Joe: Since I started first, In 1976 I came in out after Philco decided to leave for the West Coast and leave me here. I went to work on the Maroon Archer Program for Jim Feller. The fellow recommended was an old Philco guy, Mark Gelmen. If you've haven't interviewed him, you want to grab a hold of him. He lives in Philadelphia. I initially worked on a job called The Data Distribution Network and that occupied a couple of years to wrap it all up. I was to make about that time 24 computers and operate with each other. The time was the biggest fastest center computers switch in the world and today it would be a joke. Kinda changes in the technology. After that, I started on something called Gold Spur which was the first all digitized, all digital demodulator for NSA. All my work has been for Classified organizations mostly NSA and a lot with the army.

[0:02:32] Interviewer: When we started- were you working in the Gold Spur?

0:02:37] Fred: I was, but I think it was already ongoing when I started in '84. I think it started maybe a year or two earlier.

[0:02:44] Joe: Okay. It's one of those things never dies. Anyway, it was a lot of fun. We put together a team mainly with a lot of guys from RCA. When I first walked in to RCA, I said who do I work for and somebody said, "We don't know." I asked the secretary to reserve the conference room for me because I didn't have an office. The fellow named Nissen Sher, one hell of an engineer came over to me and he showed me this piece of paper and he said, "I work for you Joe." I said, "Don't point at me." Another fellow I worked with, and this one came from Philco, another fellow who came from Philco, Frank Applebaum was in the same group. Don Caplin. It was a circus. The same groups were merged into this Gold Spur thing later on. The short day was...

4 o'clock on Sunday was where coffee brought in, danish brought in everyday until I was finished. Let me shoot out with another company. We want to shoot out. They were betting against up down at NSA. They had a one year program to do it and they fired the other company in seven months. We were really happy with that program. Dan Webster ran the show at that time. Dan was probably the best area manager that I can possibly imagine. He was, sorry Jim. (laughter)

[0:04:44] He would move heaven and earth to keep that program moving. One day the air conditioning went out. I said, "We have to quit. We can't work OT tonight. The computers are breaking." He said, "Just a second." About an hour later he was breaking through the walls. These guys are breaking through the walls and they put in duct work to the next office over. We kept working. It was a good time.

[0:05:18] Interviewer: Martin, when did you join this?

[0:05:20] Martin: Actually, said I joined RCA in '79 as I said. I came from Philco also, but I was on the west coast. I was running a program out there called AUTODIN 2. AUTODIN 1 had been an RCA program. Philco took AUTODIN 2 away from RCA. When I was there, RCA took Maroon Archer away from the WDL. I was hired in to take Maroon Archer to the field to implement it in the field. That's what I did up and running. Then I took over as a business area directly. I was primarily program management all of these years and the early part and then eventually I moved over into business development too. That's when I really started supporting Joe from business development stand point with the army.

[0:06:22] Interviewer: Well, we can't talk much about Maroon Archer, but we can talk about the experience with Joe and the army and development. You were brought in to support that.

[0:06:34] Fred: Joe mentioned the group that Joe and Martin and you and many others worked for here was called information processing systems which was euphemistic term for the intelligence business. Our main customer as Joe said was National Security Agency. When I was hired in '84, I came with some background from army intelligence. I had just returned from three years in Germany where I was actually helping to field new systems for the MI units over in Germany. I had a little experience with army tactical fielding systems. They paired me up with Joe on day one when I arrived. I knew it was going to be magical from that point forward. I just knew it. I was in his office for about 5 minutes and we were cracking jokes back and forth and we hit it off instantly. I don't know if you remember but that's the way I remember it. Now, I'll get back to Joe in a second. Martin was right down the hall and

Martin sat in one of the front end offices and he was running several programs. I'm not sure what your title was at that time.

[0:07:45] Martin: Director.

[0:07:46] Fred: You were director, right?

[0:07:46] Martin: Yeah. You were saying before Marv Gelmen was also a director and George Sardarian was a director.

[0:07:53] Fred: Yeah. I remember the visual. Martin had the office on the right next door to George. We had another guy named Roman Andracheck down left but we won't go there. Anyway, Joe had taken over a program that was very interesting and it happen to be with the army of the Fort Mammoth. The customer was known as the Electronic Warfare Laboratory, EWL. First thing Joe said to me was, "Hey look, customers come first. I go up there once a week. Even if I don't have a reason to I make one up. I'm with a customer at least one a week." I'll never forget those words he said to me because they're absolutely true. There's nothing that could substitute for customer intimacy or customer relationship. Joe and I started to do our trips together up to Fort Mammoth where I met the team of army guys, EWL, including a great friend of ours to this day John Servini, who all three of us know very well. John was the program manager for a R&D job, research and development job that was called the module adaptive signal sorter or MASS was the acronym for it.

In layman's terms the capability of a MASS was that it took a very crowded environment of RF energy of signals, radio signals and actually in this case it was non comm, it was more radar related signals, and could make sense out of a mass of different stuff sorted all out and give the operator a clear answer as to what a threat was that imminent in a tactical environment. We started that project, I think it was in '79 as a company, correct?

[0:09:45] Martin: Yeah.

[0:09:45] Fred: It was started way back in '79 so by the time I got involved in it had been going on for five years. You had taken it over in '82, I think. I came in '84. We did some very neat stuff ,Jim , with that box and we were told at the time to work with the company on the west coast and Electromagnetic Systems Laboratory or ESL. They had a contract with the same customer to make the front end receiver that our processor worked with. We were way ahead of our time I would say for army technology for anything for tactical technology in what was known as ELINT, electronic intelligence. We were out and thanks to these guy because this guy didn't know the answer to no, you can't do this. He would always figure out a way to get something done.

Actually, he'd even go beyond that. He promised a customer anything the customer asked about and then we get in the car and drive home and I'd say, "How are we going to do this, Joe?" He go, "I don't know. I will figure it out." Then we go home and I'd figure it out. He pull the people from wherever the hell he had pull them from within the organization and somehow magically come up with a solution and we go out and build another box and he was great at building boxes this guy; him and his team, his engineering team.

Before you knew it we had a prototype box to go take to the army and test it. We had a variety of boxes that we built for them over those next several years. One thing that I do want to point out, today you see on the news everyday unmanned aerial vehicles, UAVs. Unmanned from the smallest hand thrown a little airplanes to full brown jet sized ones like a global hall of UAV. Back in those days, they were known as RPVs, remotely piloted vehicles. Nobody was using them in those days. It was a brand new technology. There were very few companies that build those things to begin with. We actually pulled off a live demonstration with the United States army at Fort Hood, Texas in 1987 using Joss box with the other companies' receiver, and another companies' antenna and we flew a, it was called a RPV then. It was built by California microwave around a full exercise in the Fort Hood, Texas area with our army customers operating a track on the ground throwing out what were consider to be threat enemy radar signals, and we found every one of them. We found every one of them and we just blew this whole thing right out if the water. The problem was, again, we were ahead of our time. We had a capability demonstrated and the army did not have a formal requirement to field anything on a remotely piloted vehicle.

[0:12:48] Martin: I think the big problem there was the air force was really against--

[0:12:53] Joe: Good point, Marty.

[0:12:54] Martin: They wanted to have a pilot in any aircraft that was carrying any weapon or signal. We had a big problem fighting that with the air force. The Israelis got the drone, the UAVs, really working and that's what convinced Congress that they had to go that way.

[0:13:17] Interviewer: What did the three of you do out there to demonstrate this?

[0:13:24] Joe: We started originally building a miniature system hoping to fly on a small plane. We build a box maybe like so. It was a multi micro processor system based on a bus system that could handle that kind of architecture. It was new to RCA, a matter of fact pretty new to the world. We designed our own digital signal processors for it, which is pretty neat. We designed our own operating system and it's an operating system that can control multiple

digital signal processors and multiple individual general purpose processors. It's … The system- the first system we were building it for was a platform called the Aquila oddly enough it was also called the lead sled. They had a hell of a time trying to keep it in the air. Eventually, fast forward the clock, it went on a Hunter where did you run that test was 1970?

[0:14:58] Fred: Well, the hunter came later, yeah. The first one was the California microwave, CM30, back in the 80s. By the way, the transition of business development responsibility from me, Marty took over for me in 1990 when I moved to a different job at Camden. Marty then picked up the helm for the business development efforts and Marty got to experience a lot more than field demos or that kind of good stuff that I unfortunately missed in the late 80s.

[0:15:31] Martin: Our problem at that point was trying to get to UAVs as an approved platform. The army didn't have the where-with-all to be able to do it because of the air force they were fighting it. Eventually, we went and we did put on the piloted aircraft out in the desert, out in Arizona. That was a very good demonstration and very successful and we made the video of it and got a lot of and we used that video to get down to talk to congress about getting the drones funding and so forth. Joe and I did most of our problem were fighting for the platform to be able to put this on.

[0:16:16] Joe: If you're interested I have all of the videos that we ran right from the original.

[0:16:27] Fred: No, we got the one from Fort Hood.

[0:16:28] Joe: Yeah, the one from Fort Hood. We got the one from Parka Halla plaines.

[0:16:37] Fred: Is that the Q-ing down all right?

[0:16:39] Joe: Yeah, that was the q-ing down. That's an interesting program. We got it under this program.

[0:16:45] Martin: Exactly. That was something that I really push forward trying and get that program for me.

[0:16:49] Joe: We had 24 hours to put together the proposal. The trick in this proposal was it had have a high chance of failure. If it wasn't a high chance of failure they weren't interested, but it had to have a high pay off.

[0:17:09] Fred: This is perfect for this guy because he always went for the impossible, always. It was right up his alley.

[0:17:16] Joe: There's a lot of fun.

[0:17:19] Fred: This guy by the way I have to say something right here and you know this too because Jim ended up running the IPS group and he lived the experience of this program. I always like to say that this program is the longest running research and development program in the history of the United States department of defense. No kidding. When I say that, it started '79. It would finish and then it would just rear its ugly head the following year again under another name, same customers. Come on, you did this. We run continuously non- stop from '79 to '96. Unfortunately, in '96 there was a hiccup because our customer at that point was a guy named Frank Elmer. He had a very weird accidental death. Everything just stopped up there for a little while. Within the year he had started again under a, I think you had on a support contract (John Kosinski) To get it going again which then led, and if I'm taking some of your thunder stop me, but led to these guys starting another program where they took the radar intercept work and applied to a COMMS problem for radio frequency level stuff. They convinced the same customer, EW laboratory, to give them, how much did you get, $5 million?

[0:18:50] Joe: Something like that.

[0:18:51] Fred: $5 million new contract to build a new box to put in the Hunter UAV, the RQ5 hunter UAV which is still out flying out today, and became the staple aircraft of the tactical military. The thing that was amazing to me and I wasn't even here when they were doing this job I was doing something else. I kept in touch with you guys, and they were telling me what was going on. They took the job then they had to go out and take a look at the aircraft, correct?

[0:19:21] Joe: Well, it started out with the Predator. I went on vacation and it turned into the hunter which was the biggest mistake that that army could ever make.

[0:19:30] Fred: To give you a good example of how this guy operates, takes the contract, sight unseen of the specs of the aircraft this box had to go into. he hadn't build the box yet either by the way. Goes out, makes the trip to where to go, Arizona to see the hunter? You guys went out there?

[0:19:47] Joe: Yeah.

[0:19:49] Fred: They're told as with all UAV makers, "We don't build our UAVs in advance to accommodate payloads. We don't want you drilling anything on the outside of this thing. Here's your one little space that we'll give you." That's what they said to these guys. They had a measure of space about like this in the back of the plane, and they had to come home and they had to force fit the design that would fit in that exact spot on that air craft. Guess what? How

many months from start to finish? It was little over a year I think, wasn't it? Which is pretty phenomenonal when you think about it. Not only did they build the box, they got it out to what you call Arizona area, and they successfully flew it and this was in 2000.

[0:20:36] Martin: One thing that I like to make was during this whole period we got a lot of support from RCA and engineering. From the IR&D we always got IR&D money. We always got B&P money to be able to pursue this thing. Fred said it took a long time so the corporation was always behind this and that was one of the big things that I think we sold outside and we sold inside.

[0:21:04] Joe: Martin brings up an important point. the reason we went into communications combined with radar intercept on this last program was because we run into another NSA job called Beesting. MASS led to Beesting, Beesting led to a combining of Beesting stuff and MASS stuff to make Sky Hawk, the three code names for the program. Beesting was a fantastic program. We got it mainly because we knew how to do signal sorting. The real problem they had with communications intercept in those days was how the hell do you handle millions of pulse per second to make any sense out of it? We have 12 competitors on that program. RCA didn't know anything about. The IR&D, RCA coughed up $7.5 million for IR&D devoted to Beesting. We started from zero and build up a capability to intercept; that IR&D took us from zero to winner. I'll never forget the awards conference. I sat back in the back at a room and the government guy said "we first started this out we never even thought that RCA had any kind chance at all. I never expected to be standing here". We won that job.

[0:23:06] Martin: That really led to a number of other programs too in the multimillion dollar area from Beesting technology. That was a very good investment the company made, that IR&D.

[0:23:22] Joe: I would go as far as to say there would be no IPS today if there were no Beesting. At the time we were really down on our luck. When I kicked off that program, I explained to everybody. This is it. There isn't any other big job around. You better do this one right.

[0:23:43] Interviewer: You did have a remarkable way of making a presentation that would win R&D . I heard, a story that said you're the longest running IR&D PROGRAM in the army because you would never let it go to production. You could always kept changing the complexion to a different thing and developing a different new one. Is there anything to that?
LAUGHTER

[0:24:19] Fred: I think we were convinced that the drone was the way to go and that's what we were really waiting for. It took it into that one.

[0:24:30] Joe: I did one production.

[0:24:31] Interviewer: Guys, try to answer that one. I want to hear.

[0:24:33] Joe: I got one protection program was called Gwen. We were the local experts and the digital signal processing. The designer, Main designer for the signal process by the way was the son of one of the fellows who already interviewed the guy's name is Steve Nossen, fantastic. The father's name is Ed. Anyway, we put together a signal processor that would work for Gwen they had no other answer. We weren't even associated with those people across the street. They came over and said, "What can you do?". We said well this is what we can do. We did it for them and then we had to build it in production and it drove me bats. He would come in and talk to me, I would be catatonic.

[0:25:38] Fred: You weren't even responding some of the time. He love the R&D world Jim.

[0:25:45] Interviewer: I also heard something about when you were doing the Hunter R&D about somebody totally disrupting the entire airfield.
Laughter

[0:25:57] Fred: I wasn't there for that one.

[0:25:59] Martin: I drove across the airfield in Arizona and Joe bailed me out of that. The police caught up with me, took me in tow and that type of thing.

[0:26:11] Joe: He didn't do it maliciously.

[0:26:13] Fred: He was just trying to find his way back to find Joe again.

[0:26:15] Martin: No I was taking a short cut.

[0:26:17] Fred: Oh he was taking a short cut. He did what he was doing. Why don't you tell the whole story as long as the whole world is watching - go ahead.

[0:26:24] Joe: We had to calibrate the system and the way you calibrate it is you turn on an emitter in the direction that you know is accurate. He had a truck full of radars and I said, and we rolled up the doors to where we kept the airplane and I said, "Go across the field and turn on the radar." Instead of using the perimeter road well, he goes right across the airfield across all of the airstrips. Meanwhile, he comes back, another fellow Jeff Kesling, a great little guy that helped us along here. He goes over in the cops goes to him and say, "What are you doing driving across the vehicle?" It finally winds up with our hosts getting beat upon and having to put into place a safe practices procedure for the next nine months.

[0:27:42] Fred: I got also aid in another little bit, my travels with Joe. Travels with Joe like travels with Charlie but it's Joe. This guy was a blast to travel with. It didn't matter where we were going. As a matter of fact, that was the fun about it. We didn't where we were going. We just say, "Okay, we need to go see the air force." Joe would say, "Go find somebody in the air force for us to go visit." We go to Wright Patterson, we go to Hanscom, and we would take our story of what we were doing all over the country literally. Some of that came in the form of attending conferences with Joe and his customer John Servini. were like blood brothers. They would co author papers together, and they would go out together to these conferences and present. One time Joe would present it and next time John would present it. Again, I'll get back to thing about customer intimacy. This guy did it better than just about anybody I ever met in my whole career here now working for this company 31 years now. I was taught by the master from the beginning here on customer relationships. It served me well all these years.

[0:28:58] Joe: It was easy because we had really great customers.

[0:29:02] Fred: Ms: That too.

[0:29:02] Joe: John Servini is fantastic.

[0:29:05] Fred: He had a good technology.

[0:29:06] Joe: Good technology. It was engineer's talk and engineers.

[0:29:12] Fred: That is true.

[0:29:12] Interviewer: Do you think you would have been able to pull this off in any other company?

[0:29:23] Joe: Well, which one are you talking about, RCA?

[0:29:27] Fred: Let's qualify that.

[0:29:30] Fred: No, I don't think so because I think RCA was very technically oriented. When we were at Philco and Air Nutronic Ford and so forth, we didn't get the same response from a technical stand point when we came up with a good idea. I think here at RCA we always had an ear for any good idea.

[0:29:52] Joe: Except for GE

[0:29:56] Interviewer: That was going to be the next question. Did that change as we transitioned out of RCA?

[0:30:04] Martin: Yes because I think what Jack Welsh from GE he wanted to get rid of a whole level of management, middle management and that forced us to change things around. I don't think we got the same technical response from management under GA as we were doing with RCA.

[0:30:04] Fred: Yes. It was a whole different ball game. Of course there was a little delay in that because they bought RCA in '86 but they didn't even show up to Camden until January '89. We were literally I think the last site in RCA that they actually sent their management into to take over. We got away with it a little bit longer after the new parent came in. Once the new management came in, it was a whole new ball game. People called up on the carpet for program reviews and it was a whole new world of grilling and cost and how you're tracking this, how much more profit am I going to get out of this. It was totally, totally financially driven goals.

[0:31:11] Interviewer: What do the R&D money look like after that?

[0:31:16] Fred: Not good.

[0:31:17] Joe: It dried up to zero. They actually tried to put us out of the business. I'm trying to think who was the GM at that time.

[0:31:29] Fred: It was Tom Corcoran first. He was here from '89 to '90 and then Gingrich came in '90 and was here through March of '93.

[0:31:39] Joe: Those were the lean years. I started here at RCA. John Rittenhouse was the CEO. He was a great guy. He graduated out of Drexel, same school as me. A matter of fact, my boss Jim Feller and I were in the cafeteria. He stopped and I was introduced. He says, "It's about time you found somebody that could work." We were both co-ops out of Drexel. After that with Joe Howe. Both those guys were engineers and you can walk into their office any time. A matter of fact, they would come over and sit in on design reviews. I could remember of times I would sit there we would talk about that's the way we're going to build the thing. He understood.

[0:32:34] Martin: They were very technically oriented too because I remember Joe Howe interviewed me when I came in from Philco. He wanted to know how I was able to take AUTODIN 2 program away from RCA and how we were able to work that out with Western Union. They were technical people and when we got into the GE people they weren't. They were management. They were there to trim things down and save money.

[0:33:09] Fred: Joe, you want to also give just a little background when we were talking earlier days on MASS. Tell Jim and the folks a little about our guys that were up in Somerville because that was a key piece.

[0:33:22] Joe: Oh yes, we couldn't have done it without Kal Prost; he died last year. Good friend, fantastic engineering staff. It was Steve Nossen but is probably their lead circuits designer and then it was Dominic Imbesi, Let me see...

[0:33:44] Fred: Larry Merboth?

[0:33:44] Joe: Larry Merboth. Harbeson was a local hire. It was like a secret weapon.

[0:33:54] Fred: Explain what the significance of the location and what they were doing there to your program. What were they doing in that program?

[0:34:03] Joe: They were doing the digital signal processor design. It wasn't a digital signal processing in MASS. I started working with them for Gold Spur. That's when we became close friends and I understood their capabilities. Then when MASS came in back and it sort of started that way. When I got the MASS program on the prior administration, I walked down, I looked at Steve and I say, "Steve." He says, "I'm sorry Joe. They made me design that way." What we did, and there was a lot of politics involved here. We took the MASS label off the box, took the box away backed the new box up on the label. At the time, there was another program going on with a sold the army on developing special LSI logic chips. These are complex highly integrated circuits to do things called pulse re-piping and stuff just came out, it all came from. The concept that was coming out of these chips, I was told I had to use the chips and Nossen and I, how are we going to do this?

[0:35:38] Fred: It's always for you to figure it out.

[0:35:40] Joe: This, what the hell was the guy's name that would come in to our design view and say, "What about my chips?" He's from the army, that army contract. Anyway, every time they would come in I would say something like, "There's a 50% chance we're going to put it on this board and maybe a 60% chance with this board and the chance kept getting lower and lower." Then finally we put together in architecture that was nothing sort of phenomenal. It could actually handle rated two million pulses per second and do histograming of those pulses through some unique LSI logic at the front end and unique techniques we were able to do things like take signals that were crappy, that is broken up signals, and heal them back together we called it the pulseifier.

[0:36:56] Joe: We had a histogrammer that could anticipate what was going to happen next. It took about a dozen tricks to get that thing to work.

[0:37:10] Interviewer: It was remarkable. One reason we departed from our normal-

[0:37:15] Joe: That was by the way. That was done with Kal Prost and these guys.

[0:37:22] Interviewer: One reason we departed from our normal, one of you meant there was because I think what keeps coming up over and over again we interview and what was so great about RCA, and it was always comes up to people. Then another term comes up, the RCA family. I wanted them to see some of the RCA Family.

[0:37:49] Fred: Yeah. We're family all right. Dis- functional like most families but we are family.

[0:37:53] Interviewer: Talk to me about the RCA family.

[0:37:56] Fred: We had a very good esprit amongst all of it. We could do anything we felt. I think that the RCA family was very important to us until GE came in and took us over. That's what it dissipated and so forth. We saw GE just took us over because they wanted our pension plan.

[0:38:16] Joe: And NBC.

[0:38:17] Fred: And NBC. They wanted NBC and the pension plan. We weren't too happy about all that. It was really the so called family back in those days.

[0:38:30] Joe: Yeah, I came in I saw two families within that same couple of floors there in 8- building where IPS was headquartered out of. I saw one group that I didn't understand at first why they all knew each other so well and felt like they did until I realize you guys were former Ford Aero space guys. I saw that. That came together rather quickly in my mind. Then there was just the whole rest of the gang that worked in that building from the secretaries to the data management people, to the security people, to the engineers, the program managers. There was no air of hierarchy in there. I never felt that at all. I was 27 years old when I started in that job. I was younger than most of the people that work there but I was taken in immediately from day one as a member of the family.

No matter what it was that had to be done, people would just stop what they were doing to help you finish something. Especially a new guy like me if I didn't know where something was, it didn't matter who I would ask on the floor there on 8- three would come in. They had Grace sitting upfront there and Mary Green sat out next to her. There were two gems of secretaries, those two ladies, and then there was Pete Peterson, and then there Don Hoger. The names are coming out as I'm thinking about them now. That tells you something right there that I haven't thought of some of these people in 30 years but their faces and names comes right back to me as if it was yesterday. It went beyond the office too. You know and you guys know

those Christmas parties that we always had were the best, were the best. We would have multiple Christmas parties. We had one just for our IPS group, maybe one for all of Camden and ones for different disciplines like engineers would have their own. That's like several before you go on holiday break.

[0:40:34] Joe: Don't forget Christmas eve.

[0:40:37] Fred: Why don't you tell that one?

[0:40:41] Joe: Okay. On John Allan's party. We would suddenly have nothing but confidential work that would have to be done.

[0:40:52] Fred: Had to be done. It had to be done on the 24th of December.

[0:40:55] Joe: We went behind the doors and there was some "sparkling water". John Allan to me was always Father Christmas. I miss that man. They would have poetry reading, Carl Solomon's son would do "who's on first" with his buddy. Carl Solomon was another funny guy. Every time I went to China Town with him he would say, "Don't tell my son I ate the shrimp." I'd like that. Then, we'd have another. Sam McGee was absolutely an essential part of the day. It was a very nice time everybody got a long very well. There was another party off campus at John Allan's house. He would host a huge blowout every year. I looked forward to it all the time.

[0:41:56] Martin: We're talking about the beesting program. For several years, three in a row I think it was, I organized as softball tournament. Do you remember that?

[0:42:09] Fred: Yeah.

[0:42:08] Martin: We used to have that in Cherry Hill one of the fields followed by a barbecue at either my house or one of the other guy's houses and it was just like a team thing that just went beyond work and nothing to do with work. That's how much we all loved each other. We would just go out and have a good time. Wherever it was, it didn't matter.

[0:42:29] Joe: Me and Don Hoger still see each other regular.

[0:42:32] Fred: Let's not forget Maurice. We didn't mention Maurice here. Maurice Timkin was one of the best guys I ever met in my career.

[0:42:39] Martin: Great systems engineer.

[0:42:40] Fred: Great fantastic system engineer program manager. He was customer oriented. He has such a personality. It was infectious. You'd be around him

for five minutes and you couldn't help just laugh along with everything he said because he had a great sense of humor. I just saw him recently. We had the latest luncheon with Tony Rodriguez. I hadn't seen Maurice for a while up until that day a couple of weeks back. My God guy's how old now, 90?

[0:43:11] Martin: Maurice? I don't think he's that old.

[0:43:13] Fred: Okay. Well, he's getting close.

[0:43:15] Martin: About 84 or something but not young like us.

[0:43:18] Fred: Well, let me tell you something I walked up behind him, Jim, and he hadn't seen me in a long time and he just turn around he goes, "Fred, what the hell are you doing in there?" It was like I had just seen him the day before. He was a big, big part of that time period of the family environment that we had in IPS.

[0:43:40] Joe: Originally, I did the IR&D for Beesting. The initial qualification for the contract and then after the contract was let.

[0:43:54] Martin: Then he gave the impossible task of actually to build the damn thing to Maurice.

[0:43:58] Joe: I said, "I'm out of here."

[0:44:01] Fred: I'm going back to my R&D program. Here Maurice.

[0:44:06] Joe: Here's the plan: This is the box, lead goes in here, gold goes out of here. You take care of the details.

[0:44:15] Fred: That was the one time I did not see Maurice smile though.

[0:44:21] Joe: They were able to pull that out.

[0:44:21] Fred: They did it.

[0:44:24] Joe: A lot of it, most of it just came out of the IR&D on that program. The way we sold it was we visited every organization that had any say in the award. We went up to MIT, we went to ESD, we went down to- the one in Virginia for the guys who were in Virginia at the time. Army.

[0:45:05] Joe: I forget the name of it now suddenly. We visited them all, and we made sure before we turned in the proposal they understood how thing worked. There was not a surprise among them when we turned in that proposal. They all

knew how it worked and that's why we got the job. What was interesting was up the MIT. MIT Lincoln Labs there was a key contributor to that evaluation. I went up there one week and explained the signal sorter function in that program. They sat there politely listening to it not saying much except for when I knocked over the coffee and spilled it on their evaluation. Next week I went up to talk about A to D converters and not anything on Beesting. They were doing some really fantastic A to D work. I walk in and a guy there and the head guy there grabs a hold of me and says, "It hit me." He says, "That's not a box. It's a concept. Come on ," and drives me down to another office. Were you there with me that day?

[0:46:29] Fred: Yeah.

[0:46:30] Joe: I had to explain all over again. This is what- that was a really typical reaction. The first time we explained idea that system to our own engineers was the same damn thing. Two weeks later it would.

[0:46:49] Fred: You lived it too. You know what he's talking about.

[0:46:53] Interviewer: Almost ten years is to get the concept. I can't ask you this question because you're not done yet, but for the two of you, I want to ask you you're retired, talk about your career at RCA. Just a job or what? Describe it. Sum it up.

[0:47:16] Martin: It was really you were part of a team and you're trying to push technology and push the state of the art and so forth. One other thing that I would like to mention about the family, it wasn't just here at Camden. I think we cooperated between other divisions like Moorestown with people out there we cooperated with them, the people up in Massachusetts back there then.

[0:47:40] Joe: Burlington.

[0:47:40] Martin: Burlington, sure, yeah. We would come to help them and they would come to help us. That was one of the things after I took over Maroon Archer, shortly after I took it over, I got a call from the chief engineer up in Moorestown saying that he wanted Jimmy Sullivan back, who was our head engineer. He went and Maurice Timkin back and Chuck Nossifer and a few others because he had loaned them to Maroon Archer, to get Maroon Archer going ten years earlier. He wanted them back and I used rather bold language in telling him no way. If he wanted him he had to go through Rittenhouse, and Rittenhouse had to direct me to give them up. That was one other thing. Other than that we really did cooperate with other entities within the RCA family. We were all family.

[0:48:39] Interviewer: Joe, it was just a job for you?

[0:48:42] Joe: Right. I'll tell you, I more than once I said I had the best job in the world. I was convinced of it. Conrad Haber who was still working for this place he and I used to sit across from each other and say, "They're actually paying us this." It was a tremendous amount of fun. One of the hardest things I ever did was to retire. There's more to life than work. That was the thing. Outside my office one of the engineers had actually keeled over at his desk at 55. One of the mangers, his wife was 61 and she as dying, and I was 60. I was approaching 60. I said to myself, "Well, you know what? You never know that the next day is going to bring." I retired.

[0:49:41] Interviewer: Just you that maybe you were in greater danger when you were on your dirt bike in the forest than here.

[0:49:52] Martin: He's still an enduro bike rider still.

[0:49:56] Fred: I think we still stay together too. We have the luncheons periodically. That's true. We see each other pretty regularly

[0:50:00] Martin: and we're interested to see what's happening down here what L3 is currently doing with a technology that we help to incubate and so forth.

[0:50:14] Fred: True. By the way, just to complete the story of the connection of all of those. In '95 I went off for, it turned out to be six-year period. I left Camden went to work for a different division of the same company out in Cherry Hill, the services group ,the RCA's service company. I did that job for 6 year and in that 6th year I get a call from this guy. He say, "How are you doing?" I said, "Good. How are you doing?" He goes, "Good." He goes, "Hey, we just had this really great demo out at Fort Huachuka on the Hunter UAV we were talking about earlier. He goes, "I want you to come back and take my job." I say, "What are you talking about?" He goes, "I've had it. I'm done. I'm retiring." He goes, "You want my job?" I said, "Let me think about that." I thought about it and I said, "You know what? It's like meant to be that I came full circle," because I started as his business development guy way back when, he had unfinished business to the program but he wanted to move on and do some other stuff. It was only logical for to come in and fill a form. That's what I did. You're the one who hired me when I came back. I came back in 2001 and I'm still here. Believe it or not we're still working on a lot of very good programs that had been in outgrowth of this guy's program right here. That's why a bunch of us are still employed here today.