ORAL HISTORY: Mel Hotz

About Mel Hotz

Mel Hotz was born in Stamford, Connecticut. He attended NYU for electrical engineering after graduating high school, but soon had to leave to help with the family business, and then took immediate induction into the Navy during World War II. He attended Navy Electronics School, and was discharged from the Navy after serving two years and three months. Hotz then went back to NYU and graduated in 1950. He then began working at Norma-Hoffmann ball bearing company where he maintained and modernized the plant, leaving in 1953 for Admiral Radio in Chicago. At Admiral, Hotz worked on Geiger counters and a tank TV system. Hotz then came to Westinghouse Baltimore, building field test equipment before moving to electronic warfare and countermeasures. In 1966, he became an engineering manager, later a program manager. He worked on many important projects while at Westinghouse, including ALQ-119, ALQ-153 and DIDS. Hotz retired from Westinghouse in 1988. Remaining active since his retirement, Hotz served 17 years on the Maryland State Board for Professional Engineering, two years as Vice President for the National Council of Examiners for Engineering and Surveying (NCEES) for which he earned a Distinguished Service Award, and currently works on the Commission on Service and Volunteerism and as a Medicare counselor. He was also active in the IRE in college and later the IEEE Baltimore Section, eventually serving as chairman, and was Transactions editor for the Aerospace and Electronics Systems Society. Hotz is also an IEEE Life Member.

In this interview, Hotz talks about his education, time in the military, his long career as an electrical engineer, and his activities since retirement. He recounts many memories from his Navy days, including his time at Navy Electronics School and VE Day, and the changes at NYU before and after the war. Hotz also talks about his various jobs at Norma-Hoffmann, Admiral Radio and Westinghouse, discussing the various projects he was involved in. His role in management is also covered, as well as the manufacturing process and working with other countries while at Westinghouse, including Israel and England. He also discusses his sevice on the Maryland State Board for Professional Engineering and NCEES, along with the criteria for becoming and remaining a professional engineer, and Hotz's ideas about ongoing education. Hotz also talks about his involvement with first the IRE and later IEEE.

About the Interview

MEL HOTZ: An Interview Conducted by Frederik Nebeker, IEEE History Center, 13 April 2010

Interview #540 for the National Electronics Museum and IEEE History Center, The Institute of Electrical and Electronic Engineers Inc.

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It is recommended that this oral history be cited as follows:

Mel Hotz, an oral history conducted in 2010 by Frederik Nebeker, IEEE History Center, New Brunswick, NJ, USA at the National Electronics Museum, Linthicum, MD, USA

Interview

Interview: Mel Hotz

Interviewer: Frederik Nebeker

Date: 13 April 2010

Location: The National Electronics Museum, Baltimore, Maryland

Background and Navy

Nebeker:

This is Frederik Nebeker of the IEEE History Center. It is Tuesday, the 13th of April 2010. I'm here at the National Electronics Museum to interview Melvin Hotz. Could we begin by hearing where and when you were born, and a little about your family?

Hotz:

I was born in Stamford, Connecticut into a family of three. I'm the youngest - I have two older sisters. At this point, one is deceased, but one of them still lives in Connecticut. I get to visit every now and then. My dad owned and operated a toy shop in our town, and he did that for most of the years that I remember. Before that he was a shoe salesman and he traveled up and down the eastern seaboard, but my recollection is more of the toy shop.

Nebeker:

So you grew up in Stamford.

Hotz:

Grew up in Stamford and attended the local high school. As a matter of fact, about two years ago or so, I went back for the 65th high school reunion.

Nebeker:

My goodness.

Hotz:

Where I didn't recognize anybody, but I was glad I went. I'd never been to a high school reunion before, and it was an interesting thing to do. I do get back to Connecticut every now and then. I still have, as I say, my sister there, also other relatives that I visit now and then.

Nebeker:

When you were growing up, were you interested in science and technology?

Hotz:

Yes. When I was a kid I had some friends, and we all had our workshops in the basement. I had what I would characterize as a pretty elaborate little workshop. I piped my own gas into the workshop area so I could have my Bunsen burner going, and we did some chemical things and electrical things. Even as a kid, I did a little electrical work around the house and even for my uncle that had a shop in town. I remember installing an outlet for him in his store.

Nebeker:

Did you get into amateur radio at all?

Hotz:

Not really. A friend of mine and I tried to build a little crystal set. And we did that, but we didn't do much with it. We did other little things, such as making electromagnets by winding copper around a nail and seeing how heavy an item we could pick up. We did many chemical experiments and fooled with switches and lights. That's about the science part of my life at that time.

Nebeker:

Did you go straight to New York University from high school?

Hotz:

Well, I went there right after graduating from high school, but only for a very short time. That was during the war period, and NYU had what they characterized as the accelerated course. While I was there, my dad suffered a stroke, so I had to quit and help out in the family store, which I did, and he, amazingly enough, recovered. I would say he recovered completely and was able to get back in the store again. Around that time I was eligible for the draft. So I elected [for] what at that time they called immediate induction. When you did that you could select your service. That was the only benefit you got. I was going to be drafted anyway in a very short time, but by doing that, I was able to select the Navy.

Nebeker:

Were you able to select your area within the Navy?

Hotz:

No, you weren't able to select that, but when you went to boot camp, they try to figure out who you were and what you could do. Eventually I took what was called the Eddy Test. And that led to my going to the Navy Electronics School.

Nebeker:

Where was that?

Hotz:

It was located actually in three places. They had what they call the basic, the primary, and the secondary school. It started in Chicago with the basic, and we were housed in a school building. We actually lived in there. They had rooms set up with bunks, and we stayed there, I don't remember exactly, something like two or three months. Then there was primary school, and I had to go down to Gulfport, Mississippi.

Nebeker:

I know of the Air Force base in Biloxi next to Gulfport.

Hotz:

At that time there was no Air Force base, but there was a little Naval training center right in Gulfport. We were there probably two or three months, and then it was secondary school, which was back at Chicago at Navy Pier. Navy Pier afterwards became part of the University of Illinois and is now a tourist attraction.

Nebeker:

I know it, yes.

Hotz:

It was great going through all that. We actually learned an awful lot about practical electronics.

Nebeker:

Was there radar?

Hotz:

Yes, and communications, radar, sonar systems. They had big tanks where we could operate the entire sonar systems like it might be on a ship.

Nebeker:

I see.

Hotz:

As it turned out, I was in school, I guess, the better part of a year, perhaps even longer. By the time I was assigned to a ship, the VE Day came. It just so happened that I was on leave on VE Day.

Nebeker:

That was in May of '45?

Hotz:

Yes, something like that. I was home in Connecticut, in Stamford. Stamford is about 45 miles from New York City. So a friend of mine, also a Navy guy, both of us in uniform, hopped on a train to be in Times Square on the VE Day. I'm sure you've seen pictures.

Nebeker:

The famous one of a nurse getting kissed.

Hotz:

Yes. As a matter of fact they have a statue of that in Sarasota. It's about two or three time's life size, very good statue made from that photograph. And I was there, doing that.

In that crowd of people, my friend that was with me - I guess you could say he drank too much - I put him in a doorway and I said "Look, you stay here. I'll get some coffee and I'll come back and try to help you." Well of course, there was a tremendous amount of excitement, and all the stores were closed. There wasn't anything open, and you couldn't get any coffee. I came back to tell him that, and of course he was gone. What had happened was that the Shore Patrol came around. They picked him up, and they threw him on a truck. I found out later when I talked to him back home. They took him some place and let him sleep it off, and the next morning they let him go and didn't do anything.

Interestingly enough, I met a cousin of mine - a young lad that talked me into going to his house and staying the night, rather than trying to go back to Connecticut. Which I did. I had been wearing a white sailor suit, and we were standing on the running boards of automobiles as well as all the other things that we were doing, and my white uniform wasn't white anymore. I didn't notice it during the night, but I did notice it that next morning. It was so bad that I just made the decision to turn it inside out and wear it that way on the train back home, which I did. That was the VE Day experience.

Nebeker:

So did you get assigned to a ship?

Hotz:

After that, yes. They took us to Guam on a troop ship, and I don't remember the course of events there. But VJ Day came.

Nebeker:

In August.

Hotz:

Right, and by the time I got on a ship - it was a destroyer escort, the USS Raymond - we were taking that ship back to the States, and it was going to go into a mothball fleet. I took the ship to Texas and actually helped put it into "mothballs." Then I was assigned to an electronic repair ship. I'm not sure that I don't have these two stories mixed up a little bit, and I can't remember which came first. But the electronic repair ship was an interesting innovation. The idea here was that a ship that was in battle might have part of the radar damaged either by gunfire or any other reason. Or it might just stop

operating. They don't have time or the material or the expertise to fix everything. So what we would do, we would pull alongside, we'd swap out the modules or whatever it took, take the damaged one onto our ship, give them a good one, and we'd go off on our way. We had all kinds of shops aboard that ship.

Nebeker:

There must have been dozens and dozens of different radar systems on Navy ships.

Hotz:

Yes, and we had a whole complement of radar systems operating on our ship. We could take the damaged component and put it into our system, get it operating again, and then it would be ready for the next ship that we would encounter. That came about really near the end of the war. But it was a neat idea, and we carried an awful lot of spare parts as you can imagine, and we had shops and could build things. We had all the machines that you could think of. And we had the radar operating on the ship. And from there I was discharged.

Nebeker:

Was that after two years of service?

Hotz:

Two years and three months.

Returning to NYU, IRE

I went back home and went back to school, to NYU.

Nebeker:

You were in electrical engineering there?

Hotz:

Yes, I took electrical engineering and graduated in 1950.

Nebeker:

How was your experience there at NYU in engineering?

Hotz:

As you can imagine, there were other people my age. At that point you know I was older.

Nebeker:

You must have had the GI Bill.

Hotz:

Yes, I had the GI Bill, which was a wonderful thing. I think that was one of the greatest things that our Congress did in a long, long time, because it certainly helped a lot of people.

Anyway, when I went to NYU before the war - when I was at the accelerated course - I commuted from Connecticut. It wasn't a long trip at all, but there were a lot of New Yorkers that went to NYU, as you can imagine. If they had a bad paper, they'd say to me, "Hey when you cross the state line, throw this in the garbage for us." They would think I was really going far. I think people from Brooklyn probably traveled as long, or longer, than I did going to Connecticut.

After the war, when I came back on the GI Bill, it was a different situation. My tuition was being taken care of. The GI Bill was just wonderful, and not only that, we also got a stipend. I really can't imagine a job where you could go work for two and a half years and have enough money to go to college for four. So it turned out to be a bargain. Of course, I was lucky that my war time experience was mostly in school. I was one of the lucky ones, and I know that. So NYU at that point had a lot of veterans, and they even had what they called a veteran's dorm. It was a separate building for all of the guys there who were ex-military types. We were a little older, and we had a great time, and at that time we had an IRE chapter and an AIEE chapter.

Nebeker:

I see.

Hotz:

I was quite active in the IRE chapter. I was the chairman of our group, and we would get speakers to come and talk to us periodically. We always would go to the local bakery and buy a bunch of cakes so that after the meeting we would have cakes and coffee for everybody. Of course, the veteran's dorm always got the leftovers, which was a little bonus there. That was my introduction to IRE.

Nebeker:

So that IRE chapter functioned well?

Hotz:

Yes. We did it for I don't recall now how many years, but I think it was for the entire time I was at NYU.

Nebeker:

I know IRE was growing fast after the war.

Hotz:

Yes. The AIEE was more for power people, and IRE was for the electronics guys. I don't recall the day that they merged [to form IEEE].

Nebeker:

It was 1963.

Hotz:

Yes, quite a bit after college. Anyway, that was my introduction to IRE, or you could even say to IEEE.

Norma-Hoffmann

When I got out of college, my first job was with the Norma-Hoffmann ball bearing company in Stamford, Connecticut. We manufactured ball bearings of all types and sizes.

Nebeker:

Were you particularly interested in returning to Stamford, or was it more because that job was available?

Hotz:

No, I hadn't really left because when I was at NYU I was home every weekend, and I helped out in my dad's store. I was home for everything that you could imagine. It was a little different, as I look back on it. I had come back from being several years in the Navy, and the thought of going to some school far away wasn't on my mind like it is today with young people because I had already been away. When you're in the service, the idea is to get back home not to go away, so I was able to live at home.

Nebeker:

I can understand.

Hotz:

After I got out of the Navy, I worked at my dad's store. I graduated, I'm an engineer now, and I did get a job at this ball bearing factory. I might mention that I had worked there before I went into the Navy, and I guess I went back there and got a job again.

Nebeker:

This was a job for an electrical engineer?

Hotz:

Well I was the electrical engineer, but really the all-around engineer, who worked for the plant engineer. What we did, we maintained the plant. This plant was really an old fashioned plant. You can't imagine what it looked like in there with great big motors, I don't remember, 30 horsepower or so, up in the ceiling.

Nebeker:

So they still had the overhead shafts?

Hotz:

Overhead shaft with all of these belts running to all of these machines. These machines were mostly lathes for turning the bearings. They made bearings this big around, and they made them no bigger around than a pencil. The bearings all had little balls in them, and they made the balls and they made the rollers for roller bearings, and all that. Every kind of a bearing that you can imagine. Of course during the war that was a big important factory. We began to modernize the factory, and one of my jobs was to get rid of all of those overhead shafts and all the belts, and motorize all the machines. We also had a two phase 220-volt distribution system of electricity.

Nebeker:

Did you generate your own power there?

Hotz:

No, we didn't generate our own power. It came in, and we had transformers - I've forgotten the numbers now, but it came in at a high voltage and we dropped it down to 440-volts and distributed it throughout the plant. Much of the plant was still on the 220-volt two phase system. What we did, we put in a 440-volt bus duct system. This is something that hangs in the ceiling; it's just primarily plates that carry the electricity. Then, using special plugs, power is dropped down to the machine. We put that throughout the plant. And little by little we changed the drives for each machine from overhead belts to individual motors.

Nebeker:

So you're installing electric motors on these lathes that previously were driven by a belt?

Hotz:

Right, they dropped away the belts. Eventually we replaced all of the 220-volt lines and changed to the 440-volt bus duct. Then the other big thing was that we built a new building. I was the electrical engineer for this new building, and as you can imagine, I didn't know enough. There was an architect and so on, and, I don't recall now, but there was an electrical contractor that did all of the construction for the building.

We had transformers on the property that dropped the high voltage to 440-volts [and] distributed it throughout the building. Dry type transformers provided 110-volts for utilities. When we were putting up the new building, we needed another substation, so

we built another pad with big oil-cooled transformers. The transformers we had were on one end of our property - my idea was to put the new ones on the other end of the property and have the bus duct go around and reconnect, so that if something happened to one bank of transformers, the other one could still carry the load, or part of the load, at least for some period of time.

Well luckily, there was an IEEE meeting in New York. I guess it was AIEE at that time. I had an opportunity to present my plan to everybody in that meeting. In those days we used overhead projectors, and I had a drawing. I got up and presented my plan, and everybody said, “You can’t do that! Don’t you know about short circuit currents?" And of course I didn’t. I didn't know.

Nebeker:

You were not trained as a power engineer, I take it.

Hotz:

No. They pointed out that you can’t safely make that connection. I was flabbergasted because here I thought I’m doing all these things properly. They said, "Well it’s not a problem, just leave a gap someplace in the line so that this set of bus duct is supported by one transformers system, and the other is by the other system. Just don’t interconnect them. Just leave a gap there. Now if something goes wrong with one of them, you can always close that gap and operate. You know, it would operate the way you had hoped it had operated, you could still keep the place going." And THAT was the way we did it.

Nebeker:

So it was good you took part in that AIEE meeting.

Hotz:

AIEE saved the day for me. That was quite an experience to have an opportunity like that from a voluntary organization. You just don’t know what you’re going to get. Like they say, you only get out of it what you put into it, and you never know how it’s going to affect you.

Nebeker:

I see you stayed at the ball bearing company until 1953.

Hotz:

Yes.

Admiral Radio

Here I am - I guess I was in my early 20s - still living at home. I thought, I don't want to live at home any longer. My own thinking was that it would be insulting to my parents to leave the house and find a place to live in Stamford, so my solution was to move to Chicago. I had been in Chicago during my Navy Pier days, and I had a good time in Chicago. I liked the city. My brother-in-law was an electrical engineer, and he worked for a company in New York that was doing business with Admiral Radio in Chicago. He got me an interview there, and it was pretty easy to get a job at that time. In any case, I got a job with Admiral Radio.

Nebeker:

Doing what, specifically?

Hotz:

Admiral Radio had a military wing, and I started out with Geiger counters. We were building these Geiger counters. We had a contract from the Navy or maybe the Pentagon, but it was the Navy building in Washington that I went to. And me and another fellow whose name I can't recall right now made some presentations on our progress. Everything was going fine until the Navy decided they didn't need these any longer, and they terminated the contract. This, of course, is something I learned that happens from time to time when you're doing military work. We had gotten to the point where we had built the prototypes, but we never got production going. At that time Admiral had a contract to build a TV system for a tank. We had a huge tank that came into the plant on a flatcar in the winter, and it was amazing to me how long that tank was. It was so cold that you couldn't go into it, even though we had it indoors, because all that steel just was like a big ice house. Anyway, I was helping on that contract.

Nebeker:

The idea was that there would be better visibility from inside the tank using a TV system than looking out through some slits.

Hotz:

Yes. It was not for controlling the gun. It was early in TV and it was innovative.

Nebeker:

I imagine that Admiral was getting into the TV business, or was in it already.

Hotz:

Yes. We were co-located with the factory that made TVs and record players and radios.

Nebeker:

Were those good years for Admiral?

Hotz:

Yes, they seemed to be doing quite well. It was a well known brand, and I liked working there. It was fun, and I liked Chicago. I had a good time. But as things happen in a career, you get to the point where it's time to look for a new job. Not only that, I had some things going on in my personal life. I thought it was time to move on.

Going to Westinghouse, Test Equipment

I went to one of these head hunters. One day they called me up and said, "Hey, we've got an interview for you with Westinghouse in Maryland," Baltimore I guess he said. I said, "I don't need you to get me an interview with Westinghouse. I could call them myself and get an interview." I said, "I thought you could find me something, you know, a little different." The idea of working for a big company like that was not attractive to me at that point.

Nebeker:

It wasn't that you were bothered by continuing in defense electronics.

Hotz:

Not at all. Then he said, "Okay, I hear you. But look, they'll pay your way, and Baltimore is just a hop, skip and a jump to Stamford. You can go home and visit your family, and it won't cost you a cent." He said, "It's up to you." And I said, "Well that's interesting. I'll do it."

Nebeker:

At least you'd get the trip.

Hotz:

Yes, and actually that's the way it happened. He was smart enough to talk me into doing it for that reason. I came to Baltimore, and I had an interview. They offered me more money than I was making at Admiral, and I took the job.

Nebeker:

What job was that?

Hotz:

At that time, Westinghouse had the plant right next to the airport. They were expanding, and I interviewed for building test equipment. Westinghouse was building radar systems, airborne radar systems mainly in the part I interviewed for, and the Air Force needed test equipment to test the systems that Westinghouse was selling to them. So they had a separate group that built test equipment that would then be sold to the Air Force to support whatever radar systems they had.

Nebeker:

So this was for field testing of units?

Hotz:

Field testing, yes. And that's what I did. One of the projects was a noise figure test set, that's what it was called. It was a small box about a foot and a half wide by about ten inches tall. Inside you had all the parts you needed to run a noise figure test on a radar system. I believe that they have one of those sets here in the museum. I know I saw it at one time.

Nebeker:

So you were working on the design of that set?

Hotz:

My design, the whole thing. We designed it, we made breadboard parts for it, we put it together, we designed the box and the installation, and we had a handbook that went with it. We had technical writers that actually prepared the handbooks, but we helped them write it.

Nebeker:

This was designed for a particular radar system?

Hotz:

That's a good question. I think it was, but I can't really recall that. I don't think it was in a universal set, but I'm not sure.

Nebeker:

And how long were you on that effort?

Hotz:

I worked in the test equipment area for several years. I worked on other things. We also built a side looking radar test set. Westinghouse built a radar system that they called a synthetic aperture system, and we built a test set for that. We had several of us working on it. I was the lead guy. As a matter of fact I have a patent on that. The idea was that we would connect this to the radar, and it would produce photographic images that would tell whether the system was operating properly. We could take the radar output, delay it and send back the signal. We would print this out on a photographic paper, which then would be analyzed to determine whether the radar was operating properly. That test set was about the size of a desk, and it was a fun job.

Nebeker:

Was this airborne radar?

Hotz:

Yes, airborne.

Nebeker:

But the test set was operated on the ground?

Hotz:

Yes, this was operated only on the ground, and the radar would be installed in the aircraft and this would be out in front of it.

Nebeker:

Okay.

Hotz:

We worked on that for quite a while. We only built a few of them because they didn't need that many. That was an interesting project. I also worked on other test equipment projects.

Electronic Countermeasures, ALQ-119, Management

Then I got a promotion, I guess is the way to say it.

Nebeker:

I see.

Hotz:

I moved into electronic warfare.

Nebeker:

Electronic countermeasures?

Hotz:

Yes.

Nebeker:

Was that in 1966, the engineering manager position that you're referring to?

Hotz:

Yes, that's exactly right. They offered me a job as an engineering manager of the ALQ-119. It was a pod that was a countermeasures pod. The idea of these pods was that they could be hung underneath the wing of many different aircrafts without requiring a tremendous installation change. There would be some wiring for the control box and so on, but only that. These could be jettisoned in the case that they needed to be. The pod was about as long as a torpedo. It looked a lot like a torpedo or a gasoline tank.

Nebeker:

I've looked at some of these in the museum here.

Hotz:

Yes, they're in the museum. We built a large number of these systems.

Nebeker:

Was this for the Air Force?

Hotz:

Yes, for the U.S. Air Force. I was the engineering manager, and I don't remember exactly how this all went, but sometime after that I became the program manager for that device.

Nebeker:

I see.

Hotz:

We built over 1,000 of them over a long period of time, maybe it was 1500.

Nebeker:

I think I understand what program manager is, but what is engineering manager?

Hotz:

The program manager has all the talents that you can think of. You have marketing, you have engineering, you have manufacturing, and you have the money management side. And every program has at least those things, maybe a few others. For the program, I was the engineering guy. So if a program manager needed something in engineering, he would come to me. The way we worked it then in those days, we had various engineering departments. We would go to them and say, "Hey, we need someone to design this gadget for us, can you assign some people?" We would tell them what we want, and we would set up the specifications, and how we wanted to test it, and so on and so forth. They would do the actual design work from those specifications.

Nebeker:

So the team assembled for a particular ECM system had a certain number of dedicated people, but then went out and got work done by other Westinghouse people.

Hotz:

Exactly. I would say that we might have 50 engineers working on the project, but they didn't report to me as the engineering manager. I might have a few engineers reporting to me, but not the whole entire group. That way, I could devote my attention to the job and not to the management of all of these people, which would be done by the department that they worked for which was probably a neat way to do it because managing a large group in itself is quite a task.

Nebeker:

Yes.

Hotz:

I did do some of that when I was in test equipment, where I was a supervisor and had to worry about salaries and so on. But this was a little different. When I became program

manager, then I was the - you could say - person running the program for the company, and I would be the main spokesman for the project with the customer. That turned out to be a pretty successful project - we built many, many of them.

Nebeker:

Was this tail warning radar?

Hotz:

No, this was the ALQ-119, which was a pod that could be hung on many different fighter aircrafts. That went on for quite a while.

ALQ-153

Nebeker:

You've listed here that in 1966 you were named engineering manager to [the] electronic countermeasure system. Then you've got the ALQ-119 listed as 1970 to 1981, and then 1981 to 1988 the ALQ-153 tail warning radar.

Hotz:

Yes, that was the next project, the tail warning radar. That was a radar that was going on the B-52 aircraft. The B-52, at that point, was an old aircraft. For most of the pilots that flew a B-52 at that time, the aircraft was older than the pilots. That's the way I like to say it. But interestingly enough, we did get to become somewhat familiar with the aircraft. The Air Force would take these airplanes to a depot, and they would strip them right down to the metal struts that the aluminum is riveted to. They would remove all of the skin, and you would see just the skeleton there, and they'd rebuild the entire aircraft. Even though aircraft was that old, they would put new wheels on it and new wings on it. The only thing they seemed to never change is the cockpit seats. You'd walk into the cockpit area and you'd see paper cups laying all around on the floor. But it was a huge aircraft, a really impressive thing to see. Our radar was mounted in the tail of the airplane, way up in the tail, and it looked backward. Pilots could not see backward, and the idea was that this radar would see a missile coming up and would warn the pilot that this is happening. He could do several things: he could take evasive action, he could put out countermeasures, he could put out flares, he could do something to help the situation. I got on that project from the inception of the production part.

Nebeker:

So this [is] a radar that has some screen that the pilot looks at so he can see if anything is approaching from behind?

Hotz:

Yes. The pilot has a control panel (not a screen) in front of him that gives him all the information on what the radar is seeing and where it's coming from. The antennas were on each side of that tail, so he could tell whether it was coming from this side or this side.

Nebeker:

And there's information if it is coming right toward the aircraft?

Hotz:

Yes, so he could make a decision to do something. We had to set up the operation to build it in the factory. We also thought when we proposed this to the Air Force, that we were going to put these on other aircrafts besides the B-52. That didn't happen. For various reasons, they didn't buy them for smaller airplanes, but they did buy them for the B-52, and we did supply them. If you see a picture of a B-52, you can see the fairing where the antenna is, way up on the tail.

Nebeker:

So it bulges out?

Hotz:

Just a little bit on each side of that tail. You can see it. We had a lot of interesting experiences on that job because we would go to the various bases where the B-52s were, we would try to talk about the system, explain a little bit to the people that were operating it what it was like, and how it operated, and what it did.

Nebeker:

So people were coming out and installing these at those bases?

Hotz:

No, they were installing them at the depots.

Nebeker:

Okay, so the planes would go there, have it installed, and then you would go out to the bases and explain.

Hotz:

Yes. We would go to the depots and the bases. There was a little problem that came up one time with some wiring, or at least they identified it as a problem. We identified it as a wiring problem. And the thing was, we didn't do the wiring, we just provided the information for the wiring. That was done by others, at the depots. We had to go out, though, and find out what the problem was. We had our field engineers go out. I went out a couple of times to this one depot, and they had ladders so that we could go up where the tail was. There was a place to get at the wiring there. I remember going and standing on the stabilizer. You would think that you could make that thing bounce.

Nebeker:

Like a diving board?

Hotz:

Yes, sort of like a diving board. But that thing was as solid as walking on this floor. It was amazing to me. Not only that. When you got up and walked on it, and you looked up at the tail, it was just amazing how big that thing was. So that was a very interesting experience.

Nebeker:

So they had the program manager climbing up on the tail of a B-52.

Hotz:

Yes. You could do whatever. That was one thing nice about being a program manager - you got to do a lot of interesting things. For our visits to the bases, we made a movie on

the system that we would show. The idea was, it would help describe the system and we would leave [a] copy for them to use.

Nebeker:

I see.

Hotz:

Of course they had handbooks for their own training. We had one interesting time. The movie was classified. In those days at least, when you were traveling with anything classified, it was double wrapped and you were not supposed to take it to your hotel room. The requirements were that if you were going to a base, you would take it to the base and leave it with the people there. Then you would go to your hotel and wherever. So we went to this base with our package, double wrapped. I don't remember how big it was, but it was a reasonably sized package. We said, "We've got this classified package, we want to leave it." The officer at the entrance to the base looked at us. He was all shook up. He was worried that we were leaving a bomb. He didn't say exactly that, but we knew that was what was on his mind. He had to call somebody, and we were escorted to an office where they made us open the package. Of course when they saw that it was what we said it was, everything was taken care of.

Nebeker:

This was in the '80s sometime?

Hotz:

Yeah, it must have been the '80s. It was interesting that they were not prepared.

Nebeker:

A suspicious atmosphere.

Hotz:

At least at that one location. But I guess I shouldn't say "not prepared," because they certainly were suspicious. They called in extra help and they made sure that everything was all right. We got a big kick out of it because we knew we were doing only what we should have been doing.

Nebeker:

When you look back on that program, I take it that things worked out well?

Hotz:

Yes, it was a fun program. We had some problem from our financial side because when we undertook the project, we undertook it with the firm belief that the Air Force was going to buy more of these, which didn't materialize. So it left the remaining part with a financial problem.

Nebeker:

I see.

Hotz:

I had to go and explain this to some of the generals, which was a very interesting experience for me. I had my financial guy. We were in the motel. His name was Al Baikauskas. Al and I went with viewgraphs (no Power Point then) and everything to make our explanations and tell them why we were having financial difficulties. Al and I are in the hotel room, and Al is asking me logical questions that he assumed the general would ask. He's asking me one after the other.

Nebeker:

This is your preparation for the meeting.

Hotz:

Yes. It's got to be about midnight, and I'm getting a little blurry eyed. I finally said, "Al, I've had it. That's enough. I'm calling it a night. Whatever is going to happen is going to happen." So the next morning, we went to see the general, and he did ask all these questions. Interestingly enough, Al had asked me so many things that there wasn't a question that he could ask that I didn't have the answer right on the table. And while he didn't like some of the answers, he had the answer. And we went out of there, I would say, we went out satisfied. I don't know what the general was thinking, he never said. But he didn't berate us, he didn't rave or rant, he just listened. I don't think he was happy with what he had to hear, but he heard it.

Nebeker:

So the Air Force covered the shortfall?

Hotz:

Yes, we made our concessions and agreements.

Nebeker:

So Westinghouse was not unhappy.

Hotz:

Yes, we did what we had to do. I don't recall specifically, you know, this is 20 or 30 years ago, exactly how we came out financially, but we completed the job.

Nebeker:

And those systems were used on the B-52?

Hotz:

They were used, but of course by this time there was no more war. So I don't know of any incident where we saved a B-52.

Nebeker:

I see.

Hotz:

Hopefully that would have happened, but I don't know. That was that.

DIDS

From that I had a short stint on DIDS. Did I mention DIDS in my resume?

Nebeker:

Yes, the DIDS program to provide communication with the public in the event of a nuclear event.

Hotz:

We had a short time when for Westinghouse - I think it was after we went to the moon - there was a downturn in electronics, and we were laying-off some people.

Nebeker:

So early ‘70s?

Hotz:

I think that’s when it was. Anyway, I was interviewing some people. We didn’t have to lay them off, but we said you’re up for disposition. That means that you’re no longer working for me or on my project, so you’ve got to find yourself a job, hopefully in the company. If you don’t, we don’t say this, but if they didn’t they would then be laid off. I was interviewing the people that I had to tell this to, when I got a phone call myself, from, I think it was, Ben Vester [a Division Manager]. He said, "We’ve got a new job for you." It was this DIDS program. Civil defense decided that in the event of an atomic bomb exploding in the area, most everything would be destroyed, but we would still want to communicate with the public. The government would still want to communicate. So what we were tasked to do was to build a hardened place where we could put a transmitter, really a total broadcasting station.

Nebeker:

For radio broadcasting?

Hotz:

Yes, radio broadcast. This would be underground, and it would be a hardened site, resistant to EMP. We’d have transmitters in there. It would have its own power generator and its own fuel to run the generators for X number of days, or weeks, I don’t recall now. This was to be built up in Aberdeen. The only thing that we didn’t have, at that time, was a hardened antenna. We had a 700 foot antenna that we were also erecting. We did build this thing. We built it underground. Then the idea was that we would build a certain number of receivers, and they would look like little radios, home radios, plastic

boxes, you know, that would receive the information. And we did build it. We contracted someone to build us the plastic.

Nebeker:

This was for civil defense?

Hotz:

Yes. We had maps set up, and we figured how far an antenna would reach. I think there were going to be seven or ten of these across the United States, and the one at Aberdeen would be the prototype. I was the assistant to the program manager. I was not the program manager on that one, Zane Collins was the manager. We hired a company to design the antenna for us. We had an architect for building the thing underground. It had rooms in it for people to sleep, septic facilities, and everything you could think of that you'd need to survive. We built the transmitters here at Westinghouse, and we actually built the thing underground. It had blast-doors. I don't remember all of the things it had, but it was buried. The idea on the antenna - there was work going on -where an antenna would be built that would be lying horizontally in the ground, and in the event of a blast, it could be erected.

Nebeker:

Oh, so after the blast it could be raised.

Hotz:

That was one of the ideas. Another one was that you'd have something that would be tethered that could go up with a balloon, and you know, after the blast. So those are things that were being looked at. We never did actually build any of that, we just talked about it.

Nebeker:

But the hardened facility was built at Aberdeen?

Hotz:

Yes, the hardened facility was built. The antenna was built, the 600 foot antenna. It might still be there, I don't know. I often looked when I'm on the train. You can look

over, and I used to think that I could see where the antenna was. Lately I have not noticed it, and I don't know whether it's still up or not. We cleared the area all around because it was a woody area. These were fun projects, they were different.

Nebeker:

Now, did that get activated?

Hotz:

Well, what happened was that the threat of an atomic invasion of the United States was reduced, and that was the only one we ever built. We never built any of the others. We did build it. I don't believe it was ever manned regularly, but it was operated, just to see that it would do it. Like many of these projects, that's as far as it went.

Nebeker:

So that was somewhere around 1990?

Hotz:

No, no. That was a lot before 1990.

Nebeker:

Okay.

Manufacturing Process, Retirement
Hotz:

I'm trying to think. What happened then - I was getting toward the end of my career, and we were building the next family of countermeasure systems. The number just got away from me right now, I can't think of it. But it was a relatively new project, but really not that new because it had been going on for years in the development stage. Now they were getting ready to go into production. They were having a lot of problems, and there was a possibility that that could be something that I might work on. And I was already looking at leaving.

Nebeker:

I see.

Hotz:

In my mind, and I don't know how familiar you are with the manufacturing process in a factory like Westinghouse, but the beginning of the project is where if you're not gray-haired, you'll get gray hair. It's getting things going and having a start up and operating that is the difficult period. I kept thinking to myself, I'm going to get on this project maybe. It wasn't offered to me yet, but the possibility was there. If I'm assigned to that project, I'm going to go through the really bad time and then I'm going to retire. And I thought to myself, well I don't want to do that. I guess I already had in my mind that I'm going to retire, that I was going to retire at 62 and a half. I then pretty much stayed on building spare parts for the ALQ-153 at that point until I retired.

Nebeker:

I see.

Hotz:

That was the end of my career at Westinghouse, which was a fun career. I liked what I did, I got to travel all over the country, and had an opportunity to go overseas several times.

Israel and Offset, England

One of the highlights - I have some relatives in Israel - occurred when my boss came to me one day. Are you familiar with the term offset, when it comes to working with other countries?

Nebeker:

No.

Hotz:

When we sell a system to another country, the way we do it, Westinghouse doesn't call up Israel and say, hey, I'll sell you some of these and it's going to cost you X number of dollars. You do it through the government. It's actually the government that makes the deal, but you're doing the supplying and you get paid and so on and so forth. Well, the

country that's getting this equipment has to pay a lot of money to the government to buy this equipment. So they come back to the government and say, hey, look, how about you're buying something from us to offset some of this cost?

Nebeker:

I see.

Hotz:

They call that offset. So I get a call and I'm asked, Mel, you got anything that they could build in Israel? I said, Israel? I said, certainly! You know, I'm Jewish and I'm pro-Israel, and when I heard that I said, absolutely! No question. What do you want, how much do you want to build? What do you want to do and how much? So we figured out what they could build for us, for our system. It was like building something any place offshore - we gave them the specifications and drawings of whatever we wanted built. In this case it was printed circuit cards. We told them how we wanted it tested, and in some cases we provided the test equipment. In some cases we provide[d] the material, in some cases they bought some of the material. It depends, you know, what is easy to get and what's difficult to get. They built these things for us, and that was a fun thing, too. An opportunity to go over there and see what they did, and how they did it, and to make sure that we were satisfied with the way they built the things for us.

Nebeker:

Nice.

Hotz:

So that was an experience. We also had times when we thought we were going to sell some of these to England, and we worked with a company over there. I recall we went some place over in England and they put us up in what they call their White House. They had like a campus where their plant was, and they put us up, and we had a butler. In the morning somebody came into my room with a newspaper and coffee and put it on the table. It was very nice. So I said to my boss, I've got to send them something. They were so nice to us, so we sent them a gift to put in the White House. Actually we found some English china, and we packed it up and shipped it to them. They wrote us back and said they're going to put it on their fireplace in their White House.

Nebeker:

Nice.

Retirement, IEEE, Maryland State Board

What did you do on retirement in '88?

Hotz:

Well in '88 I'm newly retired. I was active in IEEE at that point. Even before that, almost the entire time that I was in Baltimore, I'd been active in IEEE in the Baltimore section. I held all of the offices through, eventually, chairman of the Baltimore section. I also played an active role in several national activities. And after that I was usually the auditor of the section books. I don't really recall what other positions I had, but that always sticks in my mind because we would go through every year, and we'd write a report and tell them how they're doing financially and so on. At one of the IEEE monthly meetings, the then chairman said hey, we've got a letter from the Maryland State Professional Engineering Board, they have a vacancy in the electrical engineering discipline, and we need to submit three names that they're going to give to the governor. So my name was one of them. Eventually I was appointed by Governor [William Donald] Schaefer to be a member of the Maryland State Board for Professional Engineering.

Nebeker:

Please explain what that entailed.

Hotz:

Every state in the United States has a State Board for Professional Engineers. What happens there is that if somebody wants to get a license, to be a professional engineer, they have to apply for it. They have to show their credentials, they have to document a certain number of years of experience. If the board accepts all of that, then they're permitted to sit for an exam. There's two exams. The first exam is called the fundamentals of engineering. And if they pass that exam, then they're called an engineer in training, and after four more years of experience, they can sit for the professional engineering exam. It's an all day exam. If they pass that then they're licensed as a professional engineer. Now, what that means is that you can hold yourself out to the public as an engineer. You cannot do that if you're not licensed. Now, people that work for a company, like Westinghouse, do not need it because they're not working for the public directly. But you do if you work for a consulting engineer, if you want to

work on buildings like we're in right now. All of the electrical work in this building is done by a professional electrical engineer. The same is true for all of the professions, which could be mechanical engineering, civil engineering, or chemical engineering. It's civil engineering, as you could imagine, that would have the most PEs in any state because buildings cannot be built without a professional engineer to sign off on the drawings. And most buildings are designed by civil engineers (and architects). That's the law, and that's true in every state.

Nebeker:

How long were you on the board?

Hotz:

I might just mention before I answer that, every board belongs to an organization called the National Council of Examiners for Engineering. It's actually engineering and surveying. So it's called NCEES. That organization provides the examination given by each state. They write the exam, and they score the exam for us. The exam is given by all state boards across the United States to all examinees on the same day, twice a year.

Nebeker:

I see.

Hotz:

I was on the board for 17 years, and I was chairman for more than half of that. You had to be reappointed by subsequent governors, and I was for several of them. Finally, when it came to Governor [Robert] Ehrlich, he didn't reappoint me. So I was off the board at the end of my term. It was a little over three terms because I was on for part of a term in the beginning. So it was 17 years, and it was a great job.

NCEES

While I was on that I was elected as the Vice President of the National Council for a two year term. That was an interesting time. In addition to writing the exam, the Council promulgates a model law that most of the states look at and try to emulate, so that if you're an engineer in Maryland you can easily get a license in Jersey by reciprocity. You still must comply with certain state requirements, but all the states try to make these

reasonably close so that it's not difficult to practice in another jurisdiction if another state license is required.

Nebeker:

How much time did that job take, especially when you were chair of the board?

Hotz:

I would spend about two or three days a week, but not for every week.

Nebeker:

I see.

Hotz:

Council meetings would be a three or four day meeting at locations throughout the United States. We had a formal state Board meeting once a month, only once a month. But I would go into the office many times. Usually I was there at least every week, and I'd review all of the electrical engineering applications outside of the board meeting. We didn't to do that at the Board meeting. You had to actually look at all of this paperwork that people would send in.

I'll just recount what I characterize as a humorous incident. This one engineer sent in a box that a vacuum cleaner came in. You know, a pretty big box. Inside he had all of these loose-leaf books, and some bound books, which described much of his experience. I looked at these things, and I'm thinking to myself, I'm not going to read all of this stuff, that's ridiculous. Most people would give you a little package, not that big. I called him, and I said, "Hey, I got your box here, and I want you to know, I'm not going to look at it." I said, "I want you to come in and you tell me what your experience is." And he did. When he came in, I didn't berate him or anything, but I said, "You know, you don't expect me to read all that stuff do you?" He said, "Look here, I did this, on this assignment I did this and on another I was doing this." After about 20-minutes of his explanations, I said, "You've got acceptable experience, but that's not the way to present." We did permit him to sit for the examination. That was a humorous incident.

Then I had one where this individual was designing outlets for rooms like this. For years. I'm looking at his experience. You know that's not engineering, I mean, to decide you need 14 outlets in a room this size, and that you need a number 10-wire, a number 14-

wire, and whatever it is. Anyway, I called him in, and I explained to him, I said, "You know, you're not doing engineering, you're doing technician work." I said, "I can't allow you to sit for the exam with this experience." I said, "You've got to tell your boss you want to do something else." I thought I would get this huge argument. He sat there and he listened, and he said "Okay, I understand." That was the end of that. So, it was an interesting kind of a job

Nebeker:

Well, you must have found it rewarding if you kept at it so long.

Hotz:

I really liked it, it's the best volunteer job that I could have. It was particularly good to be part of the council. We had meetings all over the country. We met people from all over, with the same interests and the similar problems. We could discuss them, and we could formulate improvements in the model law. There were other things that we did to help the profession. So that was an excellent job, and eventually I was awarded the Distinguished Service Award from the council.

Service and Volunteerism

After that, I was casting around, you know, what am I going to do now? It's going to be pretty hard to find something as good and as interesting as that, and as far reaching as that. I volunteered with the Baltimore County Police Department, and that lasted a very short time. They had me entering information into their computer system. When an officer goes out and he has an incident, he writes up a three by five card with what happened, and that has to go into the system. So I would key it into the system. I kept saying, "You've got to find something that's a little bit more to it than this." But they couldn't, so I told them, "I'm sorry, I'm leaving."

Then I tried the Baltimore County Code Enforcement. I'm sure they have one all over the country. These guys get a phone call: my neighbor has a car parked there, there's no license plate on it, and it's in their yard, and I saw it. I say that's against the law and they ask you do something. We'd write this up, and then we'd send an investigator out, and he'd say, "Yeah, he can't do this." And they'd notify the violator that the car had to have that removed by such and such date. Or they could remove it and then charge him for doing it.

Nebeker:

I see.

Hotz:

So, there they had me answering the phone. I got onto it really quickly and I could field a lot of it myself without ever having to do anything, but a lot of them were written up and then they'd send an investigator out. But that got old rather quickly, and so I finally left that. I got myself appointed by Governor [Martin] O'Malley to the Governor's Commission on Service and Volunteerism.

Nebeker:

I see.

Hotz:

Yes, I'll give you my card so you can see what I'm doing. The governor of the state wants to promote volunteerism, as you can well imagine. One of the things that goes on is - I don't know if you've heard of it - the AmeriCorps programs. There are hundreds of programs throughout the state with hundreds and hundreds of volunteers. What happens is these programs are non-profit programs funded by the national government as grants. The non-profits send their application to us. We review these applications, and then we make the decision [of] those that we want to send on for funding. That's one of the things we do. It's interesting, and I've participated in reviewing some of these grant applications. We meet once a month formally, and as a matter of fact I have a meeting coming up next Monday. They go around the room and everybody would tell all of the things they're doing, and they get to me and I say I'm not doing anything! And it really bothered me, because I wasn't. I was going to the meeting, but I really wasn't involved in any of the service activities that a lot of the other commissioners were. It turns out that a lot of them are selected to be on the commission because they're involved already.

Nebeker:

Yes.

Hotz:

We have a paid staff. And a paid administrator, I guess you'd call him. I went to him and said, "You know I'm not doing anything, I'm just here. It's nice to be appointed to the Commission, but I'm not doing anything." He hooked me up with a Baltimore County agency, and now I'm a Medicare counselor, which I do find interesting. I had to learn a lot about Medicare.

I've been on Medicare since about 1990 or so. I knew that when I go to the doctor I only pay 20 percent, and I have my "medigap" insurance through Westinghouse, so didn't pay any attention to it. I really didn't know anything about it. Now I've learned a tremendous amount about Medicare. We have an office in Towson. I go there once a week and field calls. The way it works is that we have a screener. The screener gets the calls, she writes a sheet on it, and then we call the person back. We say, "I understand you're looking for some information on getting a - whatever. How can I help you?" I find it interesting. I've had to learn a lot, and I'm still learning. People can be on Medicare before they are 65 if they're disabled. You have to learn about that. So it's an interesting thing, and I'm enjoying it, and that's what I'm doing right now. As a matter of fact I'm going there right after this.

More IEEE

Nebeker:

You've mentioned some of your activities relating to IEEE and predecessor society IRE, also a little bit with AIEE.

Hotz:

Well, lately I have not participated in IEEE activities. I still get -

Nebeker:

The magazine Spectrum?

Hotz:

Yes, I get Spectrum. I was going to say I still get the notification when there's going to be a meeting. The meetings are held here, at this museum. Our Baltimore section meetings are held right here. I think the last one was just last week. I still get notices, and I keep saying to myself, why don't you go to a meeting? Frankly I've gotten to the age now where I don't know what I could do for them. I've already been through -

Nebeker:

Yes, you've held pretty much all of the offices.

Hotz:

Yes, and I don't find that I'm as interested in a lot of the talks. I used to love to go to the meetings, and to the big conventions.

Nebeker:

I see.

Hotz:

Frankly, my interests [have] gone elsewhere - now that I've been retired for 22-years.

Nebeker:

I know that for three or so you were editor of Transactions on Aerospace Electronic Systems.

Hotz:

That was a fun thing. We had a big meeting in Washington, and we had a lot of papers, and I was the chairman of getting the papers.

Nebeker:

But IEEE couldn't function without all of these editors that are doing the work for these hundred or so publications.

Hotz:

Well, as I say if it wasn't for IEEE I never would have gotten onto that engineering board. I've always found it interesting to be involved with IEEE. Some of my friends that are electrical engineers are not even members of IEEE, I never can understand that. I can understand certain ones not being active in it, but to not even be a member and get the publications, and read them. I have a stack of Spectrums. I keep saying I'm going to read

the rest of it one of these days. I usually thumb through, but I don't read everything. I'll put it over in my pile, and I'll read it when I get a chance. The pile is getting higher. And it's amazing how many I have. The other, I've forgotten the name of the other little magazine that comes with it.

Nebeker:

Institute.

Hotz:

I do look at that more because it's shorter. I have always found IEEE to be a very worthwhile organization. As I say, early in my career, going to IRE and AIEE meetings and presenting that substation information, and then conferences even later. All of the years going to conventions, usually in New York, where we'd have all of the vendors there. You could go around in one day and see 50 vendors that you could never cover any other way, to see what's coming, what's new, what's old. Westinghouse always had an exhibit booth there.

Nebeker:

You're also a Life Senior Member of IEEE, and those of us doing history are always grateful for the Life Members because the Life Members Fund has been so important for history activities. It's wonderful when people stay with IEEE so long and support that effort.

Hotz:

Well, when you become a Life Member, there's no reason to not stay with it.

Nebeker:

Right, but you have to stay with it for a long time to become a Life Member.

Hotz:

I have always found IEEE to be a really worthwhile organization to belong to. It was something that was helpful, including reading the Proceedings. You know I've dropped some of the publications, only because I know I'm not going to read them now. One of the things I find myself doing, interestingly enough, is I was never much of a book

reader when I was younger. Now I'm trying to catch up and read books that I never read when I was a kid. Five years ago for the first time I read Moby Dick. And I just finished Crime and Punishment. Very difficult book to read. You know, it's about 600 pages, and I don't sit and read all day long. So I renewed the book from the library, and they wouldn't renew it the second time. So I said, "That's not a problem, I'll just get another copy of the book." So I did, but it was a different -

Nebeker:

Translation.

Hotz:

Yes, a different translation. And the names changed. Not completely, but somewhat. It's hard enough anyway, because you know there are all of those Russian names. They refer to nicknames, and you can understand it if somebody is Robert and you say Bob. Then you don't have a problem, but what do you do in Russian? I mean, you don't know the Russian nicknames. But anyway, I just finished reading that.

Nebeker:

So you've become quite a reader.

Hotz:

I've read Monte Cristo, and Of Mice and Men. And I do remember reading that when I was a kid, but I didn't really understand it then.

Nebeker:

I've often thought that literature is wasted on people going to school or college, because they're not mature enough to appreciate it.

Hotz:

Not only that, you're trying to rush through it to be able to say you did it.

Nebeker:

Great.

Hotz:

As far as being active in IEEE, I keep saying, "Maybe I'll go to a meeting." But I guess I haven't been to a meeting in about two years now.

Navy Memories, Ongoing Education

Nebeker:

Is there anything that I haven't asked about - about your career or anything else that you'd like to mention?

Hotz:

We talked about being in the Navy. When you're in the Navy all you can think about is getting out. I guess I could say I was very lucky because I was the right age to be a fighting guy. I never had to do that.

Nebeker:

Also you got into electronics at a very good time, partly through the Navy.

Hotz:

Yes, I would say that. Partly due to my brother-in-law who influenced me on it. But the Navy was the place where I really got into it. I remember taking what they called the Eddy test when I was in boot camp. (This was a test to see if you should be sent to the Navy electronics school). I didn't really even know what a capacitor was, I mean they had it in the test, and I don't remember how I answered it, but I'm sure I didn't know what it was. So look at how lucky I was to get picked to go to school during the age when I could have been on the fighting line. You know, many of the people that I went to boot camp with ended up on these assault boats that went to the islands.

Nebeker:

Yes.

Hotz:

I was on a destroyer escort for a while, and the ship itself had been in combat. It also had been in a big typhoon, and the ship heeled over so far that it ripped off the antenna way up on the mast. Tore it right off and the waves made a big dent in the sheet steel that is part of the front of the bridge of the ship. It was amazing that it didn't capsize altogether. So I missed all of those things, luckily.

Nebeker:

Many people I have been privileged to talk with got their start because of military electronics training in World War II. You're an example of that.

Hotz:

Yes. I was going before into EE before I got into the service. As I said, I did start at NYU, and my eye was on being an electrical engineer, right from the start.

Nebeker:

Were you thinking of electronics at that point?

Hotz:

I don't think I thought either way. I don't think I thought of electronics, no.

Nebeker:

Then it was basically radio as far as the civilian world went.

Hotz:

There was radio. The labs in school as I recall were not particularly electronic labs, they were more power labs.

Nebeker:

I imagine engineering schools may have been a little bit slow to offer the curriculum for electronics as it was developing in those years.

Hotz:

Yes. When you think about it, here I am working for Westinghouse, which is on the cutting edge of technology. The things that we built were astounding from my viewpoint. If you've looked around in the museum here, you see some of the things that we built. I didn't even know there was such a thing as a transistor when I was in college. (Of course it hadn't been invented as yet)

Nebeker:

Yes.

Hotz:

The other thing that I found interesting in my career in the engineering board is ongoing education. I'm sure you know that in order to get your license renewed in most states, you have to show that you did ongoing education. I say "most states." When I left the board there were about 17 or 18 states that had that on their books. So that's really not the majority. We talked about it in our board many, many times, and I personally was against it. I was never against education and continuing education, but I was against the idea that the government says to somebody you must maintain yourself as an engineer. I just didn't think that was the right way to go about it. I was negative about it, and during my tenure, all the time while I was on the board, we never had it here in Maryland. I'm not saying that was only because I was against it, but I think that I did have some influence on it.

Nebeker:

I see.

Hotz:

They're talking now about doing that. The problem I have with it is that a lot of the proponents of it are organizations that make money on the courses. Many of my acquaintances in other professions, I'll hear them say, "Oh yeah, I went on a cruise. Well, you know, I ducked in there and I signed the books so I got the credit." I hear so many stories like that, it just turned me off to education that comes that way.

Nebeker:

I see.

Hotz:

Now, I worked for Westinghouse, and I found that if you don't keep up as a professional individual, you will fall by the wayside. It isn't that you will be building equipment that is going to be lifesaving - you'll never get near it. You will be sidetracked to do something that you can do, but you're not going to be at the edge of things. I say to myself, what's wrong with that? If somebody is happy over here, just doing outlets for 18 years or 25 years of his career and he makes X number of bucks and he goes fishing whenever he wants, and he's happy. What's wrong with that? Why does he have to apply himself if he's not interested? That's the way I look at it. I don't see anything wrong with somebody who doesn't want to grow. I believe that everybody should want to, but I don't say that everybody must.

Nebeker:

So, in Maryland, when a person has passed the exam, shown the experience, then he or she remains a PE from then on?

Hotz:

Now. But I think they're going to pass the continuing education requirement. But I bet you that 85% of those that show that they've got the number of hours - you know you have to get so many hours - that 90% of those hours are nothing. They're saying if you go to an IEEE meeting, just an Adcom meeting, that you'll get X number of hours of credit. To me it's a sham. It's a personal feeling.

Nebeker:

Thank you very much for this interesting interview.

Hotz:

I enjoyed the conversation.