Narrator: Gordon Roper (GR)
Interviewer: Rene DeJarnatt(RD)
Date: February 23, 2012
Location: TriQuint headquarters, Hillsboro, OR
Transcribed by Rene DeJarnatt, February 29- March 23, 2012

One audio file, 105 minutes,32 seconds = 1 hour, 45 minutes

Time Code	Transcription
	Audio File, 2 hours, 11 minutes
0:00 –	RD: Okay, so today is February 23rd, 2012. My name is Rene DeJarnatt and I will be interviewing…
	GD: Gordon Roper
Narrator's birth, etc.	RD: For the Silicon Forest Project, hosted by the Washington County Museum. Could you please start with your full name, your birth date and your place of birth?
	GD: Okay. My full name is John Gordon Roper. I was born on August 3rd 1941 in Moose Jaw, Saskatchewan, Canada. I guess I could start into my educational background.
	RD: Yeah.
College	GD: I did all of my college work in the United States. Uh, I got my undergraduate degree in electrical engineering…uh, from the University of North Dakota in 1964. Uh, following that I worked for a couple of years for IBM as a programmer analyst. This was back in the days when computers were the size of this room and had very little capability. There was…just as mainframe computers were being introduced into the mass markets. Uh, I worked for IBM for two years and then made the decision to go back to school and, I went to Washington State University in Pullman, Washington. Got my

	PhD degree there, in 1971. That was a PhD in Physics. Uh, following that I did a one year post-doc at Washington State University, teaching various courses. And then I followed that with teaching one year at Seattle University. Uh, teaching physics. I enjoyed it very much but I was always kind of a hands on person so I wanted to get into industry. So I… uh… I don't… You probably aren't aware of it, but in the…from about 1969 to around 1973, the high tech job market was, uh, really, really very bad. RD: Okay. GD: There were, you know, articles in magazines like *Life* magazine showing PhD's who had stacks of, uh, job requests, you know, three to four hundred deep with no responses. And I experienced a lot of the same kind of thing. But fortunately, I was able to get a position with Tektronix when they were coming out of those doldrums. RD: Hmm. What do…what was the cause of that? GR: It was just a general---one of those periodic economic downturns. You may have heard this story. But during that period, companies like Boeing, dropped from a peak employment of around 145,000 people down to 35,000 people. RD: Wow. Yeah. GR: Some private individual posted a sign, a big billboard sign on I-5, "would the last person leaving town, please turn out the lights?" RD: [laughs] GR: I mean, it was that bad. The northwest was hit particularly hard, as well as California, uh, by that downturn. Um, it wasn't quite as bad as what we've been
Employment with Tektronix	

	going through for the last few years, but it, it was pretty serious. RD: How did you…how did you end up in Oregon? In this area, from Seattle?
Tektronix	GR: Well, I was well aware of Tektronix. They were a well-respected manufacturer of electronic test equipment and that's something I used routinely. From using their equipment I had a lot of respect for that company so I applied with them. And as it turned out they had a need for somebody with some of the background that I had. Uh, at that point in time, uh, Tektronix was one of those companies that was very highly vertically integrated. And I don't know if that's a term that you are familiar with or not but what it means is that they did everything necessary to make a product. If they were making an oscilloscope, for example, they made the sheet metal cabinet that it went in. They made the wire that it went in. They made a lot of custom components that went into it. They made the CRT2 that was the display for the instrument. They did everything. RD: Right.
Vertical Integration	GR: So they were totally vertically integrated. And at that time they were seeing the need to develop much faster instruments than they had in the past. So they were, uh, building their own integrated circuits, their own chips to drive these instruments. And they needed some new process technologies that they didn't have to help build these state of the art chips. And I happened to have a little bit of background in one of the areas that they were particularly interested in. So I was fortunate that I was one of the first senior R&D people hired after, uh, this economic downturn. RD: Okay. Now, how did you… receive that information? Did you… then for this specific job… it sounds like they had a really good use for you, in Tektronix.

GR: Well I wasn't aware of the job when I made the application.

RD: Oh, you weren't?

GR: No.

RD: Okay.

GR: But a couple of the people who were in one of the small R&D groups saw that I had some experience with a particular area called ion implantation. Where you accelerate charged particles of certain elements and then drive them into silicon wafers to change the electrical properties of the wafers in certain areas. That was an area that they felt was going to be extremely important for building these new devices. So that was the kind of thing that I worked on.

RD: Did you work on that in college?

GR: Not directly. I was familiar with the kinds of equipment that was used to perform that function. I had done a lot of work with high-energy particle accelerators during my PhD work and there was nobody here who had any of that kind of experience. So they, uh, hired me for that reason. I worked on developing those processes and actually, over a two to three year time period we were very successful. We were able to develop some of the fastest transistors available anywhere in the world. And those went into the new generation of oscilloscopes that Tektronix was making.

RD: Okay.

GR: So at that point, as that became successful, I migrated out of the basic research and development group into a… more of a process development,

	engineering organization, that was closely tied to our integrated circuit manufacturing operation at Tektronix. And actually was quite successful in developing an integrated circuit process using that technology. That was used for a wide variety of high-speed analog circuits used by Tektronix. RD: Okay. Um… GR: So, I guess, that covered a period from about… my work in the R&D group… from 1973 thru about 1975 and then I moved over to the integrated circuit development organization in '75 and I was there until 1982. When I got a call from one of the people that I had worked for in the R&D organization asking if I'd be interested in heading up a manufacturing operation for this new gallium arsenide technology that they'd been working on. It sounded very interesting to me so I jumped back into the R&D organization and started trying to put together a manufacturing operation. My responsibilities at that point were three-fold. One I had to build a team of engineers and technicians and operators to do the manufacturing work. Had to design and build a wafer Fab facility… RD: Wow. GR:...And I also had to work with outside customers to develop an interest in the technology. RD: This is a very different side of the business, it seems like… GR: Yeah… RD: …Than what you had experienced, um, with Tektronix. How did you learn…were you sort of, going about… going about this, sort of learning as you went?
10:00 R&D Work	

GR: Oh yeah, yeah…

RD: [laughing with astonishment]

GR: It was a continual learning process. It was a very, very… it was interesting times, I guess you could put it that way.

RD: Okay

GR: Sometimes things worked well sometimes things didn't work very well.

RD: Well, I'm looking around and I'm thinking that things ended up working really well.

GR: Yeah.

RD: How many…what was your team? What were you working with? How many people were you working with at this time?

GR: Well, when I returned to the R&D group there were about 8 or 9 total in the whole group. And I started hiring people--- I hired about 6 or 7 engineers in each of several different core areas. Different areas of expertise. Metal depositions for forming metal interconnects between devices on the wafers--- what they call dielectric depositions to put down insulating layers to separate, you know, the signals from each other and photolithography and there were a few others as well. Ion implantation ----I hired a specialist in that area as well. Then I hired several very experienced technicians from various areas in Tektronix. We were ---or I was particularly fortunate at that time period because we were going through another one of these periodic economic slumps so business was declining in the high tech industry in the 1982, '83 time period. So there were some people who were at risk of being laid off because the

Beginnings of subsidiary (to become TriQuint)	business was declining for Tektronix and other high tech companies. So I was fortunate I was able to select some extremely talented individuals. RD: Where did you draw from? Did you have a preference? GR: Most of the people I drew from were from within Tektronix. I did get a few from Intel and then there were a few people eventually who came in directly from college. And those people had a wide variety of backgrounds. Some were material scientists, others were mathematicians, others were physicists like myself and a wide variety of degree levels as well. In fact, a couple of the very best people I had were un-degreed people. But they were just those kind of people who were extremely talented. They had a technical intuition that was phenomenal. So I built a team that way and we started to work on, on the very first products for outside costumers. RD: What would some of those be? GR: Hmm? RD: What would some of those be? GR: General Electric, Magnavox, AT&T, Bell Northerner, or Bellcore, I guess is their name now. There were several others. A company called Pacific Monolithics which no longer exists… there were quite a few. RD: What kind of products were you producing for these companies? GR: The initial products were---there was a mix. We started off largely doing what was called foundry work. Like for a company like General Electric. We basically served as a foundry for them. They would send heir engineers to us and we would educate them on the way we built the devices and the ways to

	model the devices so you could predict their behavior. Then they would go off and use those models to design their own chips. And they were doing a variety of things. They were doing a lot of microwave designs for low-noise amplifiers. Some people tried to develop power amplifiers as you might find in a cell phone. RF switches for switching signals to different locations. Then there was also---that was on what we call the wireless side or the RF side. There were also companies very interested in building digital devices for high speed telecommunications. For example, all the landline communications across the country now are all done via fiber optic cables. Not--- they don't use metal anymore. And to drive the signals in the fiber optic they use high-speed digital circuits to drive lasers. And we were building those high-speed digital circuits and we were one of the first companies to get into that kind of work. And that work started in, you know, started real seriously, in the 1983, 1984 timeframe. RD: That's early then for the business too. It sounds really exciting. Sounds like it must have been a really exciting time for everybody working on this… GR: It was. It was an extremely exciting time… RD: Was there camaraderie among most people? I feel like there might have even been a little bit of competition…maybe… in some way? GR: The gallium arsenide industry grew up in a slightly different way than the silicon industry. Let me go back to 1982, just to give you an idea. When I walked into the R&D lab for the first time after accepting this position, I was watching one of the senior technicians---who still works here by the way---cleaning one of the Gallium Arsenide wafers. And it was a little teeny tiny wafer that looked like a "D." It wasn't even circular. The Gallium Arsenide
Gallium Arsenide	material technology at that time was in its infancy. As compared to silicon, where silicon manufactures like Intel and Fairchild, Texas instruments, IBM, several of the others. They were using 4 or 6 inch diameter silicon wafers so

20:00	they were about that big around. [gestures with hands] Where as what we were working with was a little tiny thing. It was grown with a real esoteric crystal growth technology. Not at all like the way silicon is grown. The gallium arsenide is a---what they call a compound semiconductor. It consists of two elements gallium and arsenic. That makes them at least twice as hard to grow a single crystal material. Because you have to get the crystal just absolutely perfect in order for the devices to work correctly. And the grow technology was in its infancy at that time. In addition to having to build a fab one of the first things I had to do was to work with the basic material suppliers to try and help them move away from this older crystal growth technology to something more like what silicon uses. And they were successful fairly rapidly, they started delivering 2 inch diameter wafers to us in 1983, which was a huge step up. Uh, we continued---uh—myself in particular continued to work with several of the crystal growth people in the United States and in Europe for the next few years. We transitioned from 2 inch wafers to 3 inch wafers to 4 inch wafers and then in the early 90's we eventually moved to 6 inch wafers and that's what we're using today. RD: And what's the difference in size? Moving up in size, what's the benefit for that? GR: Well you can---for every operation you---you are forming several devices on a wafer. And the bigger the wafer the more devices, so... RD: Right. GR:---So every operation that you perform on a wafer, and there are several hundred that you have to perform---that costs money. RD: Yeah.

	GR: Uh, so the more devices you can get the lower the cost... RD: Ok… GR:---the more business you get because you can sell the devices at a lower cost. RD: Right. But you guys weren't producing ---you guys weren't actually creating the wafer? GR: No, no. RD: Right. GR: That was a whole new world in itself. In fact, like I said when I joined the company it was still highly---it was a very speculative proposition as to whether they'd ever be able to grow a decent single crystal of gallium arsenide of the type we wanted. RD: Okay.
Crystal growth	GR: The crystal growth people invested millions and millions of dollars into that technology and they finally beat it into submission. RD: [laughs] GR: But even today, the gallium--the difficulty in growing gallium arsenide still restricts us and them. Uh…you may--you probably aren't aware of it, but typically the silicon crystal growers will grow a single crystal of silicon that's a round ingot, typically 12 to 13 inches in diameter and 8 to 10 feet long. And they grow it vertically. They, they have a molten mass of silicon and they grow

this crystal by drawing a seed out. And they, you know, they grow it until it's about 10 feet long. Then they stop the processes and they take that huge ingot and they saw it up into slices that are about 25000ths of an inch thick and polish them and then they sell them to the people like Intel or National or Fairchild. Now, on the gallium arsenide side they finally went to the same kind of growth technology which is called a "Czochralski crystal growth method" and don't ask me to spell it because I can't.

RD: [laughs]

GR: It was first developed by, I think, a Hungarian individual in the 1950's. But the single crystals that we grow are maybe at most a foot to a foot and a half long [gestures with hands] and six to seven inches in diameter. It just reflects the extreme difficulty in growing these compound semiconductor single crystals.

RD: Right. And even the--- it would require a different type of labor, too, right? If you're not able to grow it into such a large mass. I feel like that's going to change how people approach, like, the actual work with it.

GR: You had to be extremely careful because you are working with a Class "B" poison. I mean, that was the big problem in working with gal--you know--doing gallium arsenide, uh, growth… because you're working with arsenic in liquid and vapor form, you have to be extremely careful about how you deal with it. Once you get the, the crystal grown, it's not a problem.

RD: It's getting it…

GR: But just getting it to grow…

RD: Okay. So, and this is really the---this seems like from the little bit that I've

	read and from what I'm hearing from you, is that this is the product that, sort of, is the foundation of Triquint. GR: Yeah. RD: Essentially. GR: Yeah, we started building what they call a "mesfet" device. M-E-S-F-E-T. It means it's a "metal semiconductor field effect transistor," where you control the flow of current through a region of the wafer by applying a voltage to a metal electrode that's deposited right on the wafer surface. Now, that allowed us to build transistors that were much, much faster than conventional silicon transistors. The problem is they were much more difficult to build.
MESFET and TriQuint	RD: Right. GR: Silicon has and always will have several advantages from a process technology standpoint over gallium arsenide. That's why silicon is used in almost all integrated circuits except for a small class of circuits that gallium arsenide or other materials fit into. RD: Okay.
Silicon vs. Gallium Arsenide	GR: Gallium arsenide's particularly well suited for building power amplifiers that are used in all cell phones today because you can--- like your cell phone in the United States operate at a frequency of about 900 megahertz. If you go to Europe it operates around 1900 megahertz. That means the transistors have to switch on and off very, very fast in order to transmit the voice information. RD: Ah, right.

	GR: Silicon can do it at those frequencies but you have to put a lot of power into the silicon to make it run that fast. And they tend to self destruct after awhile. RD: Mmh, okay. GR: Where as Gallium Arsenide is more robust in that sense and it has some fundamental material properties that inherently make it a faster material to use. But uh…during those early years, you know from 1983, 1984, 1985, we were having some increasing success in building devices that were useable and we were starting to, uh, see strong interest from various companies that wanted to build these pocket sixes devices…
30:00	RD: [laughs] GR: They were unheard of at the time and they said, "oh by the way, we'll want at least a million devices a year and we'll want to pay about 10 cents a piece for them." RD: yeah! GR: [chuckling] Both of which were… were not quite where we were at. RD: No. Not in the early 80's. GR: Yes and no. So, we had to do a lot of work to, you know, make our whole process starting with the material, make everything more robust… RD: ---Well you did have an existing market. You had people who… GR: ---You had people wanted it, yeah.

	RD: Yeah, for something that you guys essentially were creating.
Market	GR: Right. In addition to the--- I mean we had both a commercial market and a military market. Of course the military market wanted devices operating in the extreme microwave frequencies for secure communications and for satellite communications and things like. So they were providing funds to us to do basic R and D work. We also got some money from the Defense Advance Research Projects Agency to develop some digital, high speed digital processes. They were a strong advocate in the very early years. They didn't---we didn't get much money from any of those but at that point in time everything…
	RD: …everything counts?
	GR: …everything helped.
	RD: Yeah.
	GR: Now we were, up until 1985, we were still basically just a group within Tektronix. We were a part of Tektronix. But in 1985 a decision was made by Tektronix to set us up as a ---initially---a wholly owned subsidiary of the company so we were actually at that point made a separate subsidiary company. And that's when TriQuint was really born as---as a company. One of the most difficult things we had to deal with at that point was finding a name. You know the name TriQuint, we must have spent hundreds of man hours everybody trying to think of a good name for the company...
Group within Tektronix	RD: [laughs]
	GR: Finally, people gave up and said "what we're going to do is have a contest and the winner of the contest will get a hundred dollars for naming the company." And one of our design engineers at that time came up with the name.

Naming TriQuint	And the name it---if you think about it, it reflects our technology. TriQuint is Tri for three, quint for 5. So it's, I think it's a Greek three and a Roman five… RD: Okay. GR: So, I mean that was to reflect the fact that we were using a compound semiconductor, one element from group three, one element from group five of the periodic table. RD: Oh, that's great! That's brilliant! GR: Yeah? RD: Yeah, it's great. GR: And the logo, it was developed at the same time. I developed that one, was a group of three pentagons…[shows symbols] RD: Cool! GR: Stacked one on top of the other… RD: Awesome! GR: So again, it was this 3-5 motif. RD: Cool. So before---growing up as a kid---you must have been curious about technology or someth----you have a lot of enthusiasm… GR:---I took a lot of radios apart. RD: [laughs]

Mr. Roper's interest in technology	GR:---you know I was a tinkerer, that kind of thing. RD: Okay. GR: Played with HAM radio when I was a teenager. RD: Mmhmm. GR: But actually it's kind of surprising that I did wind up the way I did because when I graduated from high school I wanted to be a mechanic. So I was an apprentice mechanic for a year before I actually went back to school. I learned the hard that that was not the way I wanted to earn a living. but uh… RD: Okay. GR: Yeah, I went back to the things that I really enjoyed. But getting back to, yeah know that 1980's to mid 1980's time frame, that's a time period when Tektronix and many other technology companies in the industry---across the country---were changing the way they did business. As I said before, Tektronix when I joined them was a vertically integrated company---they did everything. So, for a person like me walking in, boy, it was like taking a drink of water from a fire hydrant, you could learn so many things about so many different technologies because Tektronix did it all. RD: Yeah. GR: They made their own integrated circuits. They made their own vacuum tubes---they did everything. Every high tech specialty thing they needed they made themselves. Now that gave them control over the whole manufacturing process.

	RD: Yeah.
	GR: They could be sure that they had what they needed…
	RD: Yeah…
	GR: …at the time. Problem is, in the late 1970's to 1980's the whole high tech industry, no matter what you were in, whether you were building airplanes or whether you were building integrated circuits like INTEL was or building test equipment like Tektronix was, the technology was exploding. Integrated circuits were getting much, much faster. The ---the airplane technologies were changing, you know, everything was in a…in a rapid state of flux and that meant that companies like Tektronix had to invest massive amounts of money into these technologies in order just to keep up.
	RD: Yeah.
Changing business model	GR: I think I became clear to most of the companies at about the same, same time period that the business model, the vertically integrated business model was a model of self-destruction. You'd spend all your money and probably only have limited success in certain areas and you'd never get your products out the door. So they started identifying areas where they could either set up a subsidiary company or set up a---help fund a new company to build certain parts of the things they needed. I mean they, Tektronix, quit making their own cabinets for their oscilloscopes because that was basically a, you know, a metal-forming and plastic forming technology that wasn't in mainstream or what Tektronix wanted to do. So they started buying those components outside. They sold their CRT business off to other people…
	RD: What's CRT?

	GR: That's cathode ray tube. That was like--the old television tubes, where you had an electron beam that wrote on the CR--the phosphorus to make it glow. RD: Yeah. GR: Tektronix was a pioneer in one kind of CRT technology called "direct view storage" where they would take an electron beam and direct at different spots onto the CRT and turn the beam on and off and you would get a line pattern or a series of line patterns that would persist on the screen for awhile. So you're basically storing where the electron beam went… RD: Cool. GR: And Tektronix made a line of engineering work stations. They were the first mini-computers, if you will.
40:00 Tektronix product diversity	RD: Wow. GR: They used that---and then they used that technology to draw graphs for things for engineering purposes. But again, at about the 1980 time frame it became clear that--that was a self-limiting technology. You'd be better off to use the TV technology, where basically you're just scanning a beam of electrons in a Raster pattern across the screen and modulating the electron beam to form the images. But that meant you had to have memory to hold the image while it was being written. RD: Okay. GR: So it's the integrated circuit industry had learned how to build semiconductor memory relatively cheaply, so it made it convenient to use the

Changes in Tektronix	technology for PCs and other things like that. So, Tek got out of that part of the business. They also--they also got out of some--what would you call it?--design tools. They were building software design tools specifically to aid the engineers in doing their design function. They decided that that again was not a core technology for them and they allowed several people from Tektronix to go off with I think a few people from Mentor Graphic--- or from Intel, to form Mentor Graphics. That's where Mentor came from. They're one for the major design tool manufacturers in the world now. And they're, I think they're still headquartered here in Beaverton. Or they may be down in Wilsonville now. RD: It's really interesting the relationship that Tektronix has with a lot of these companies because on one hand they have a lot of their, like a lot of their really smart people, right? They're like leaving Tektronix to go, you know, work on progressive ideas and launch new businesses. And at the same time Tektronix sort of has a hand in it a little bit too. GR: Oh yeah, yeah. I think Tektronix benefitted, you know, quite a bit from that synergy between the companies. At one point Tektronix had been trying to build high speed laser printers in the 1980's time frame as part of this transition away from vertical integration. They sold that technology off to Xerox. And so Xerox gained a presence in the Silicon Forest area as result of that and they took over the Wilsonville facility that Tektronix had.
Dismantling Tektronix	RD: Okay, that's actually an old Tektronix facility? GRR: Yeah. They--Tektronix corporate offices were down there for several years. RD: Ok. I'm going to drive down there after this and go explore. GR: Oh, you are?

RD: I'm just going to explore this region a little bit because it's—it's really interesting--- there's like farm, like old farm houses still---sort of in pockets. And you can you can tell that there's---like it appears there was an agriculture base here, before these facilities popped up. And a lot of them look fairly new. I mean it looks new out here, as far as the development of it all. And I really don't come out here very often so I really wanted to sort of explore… It's very interesting.

GR: It is--yeah--the growth in this area has been phenomenal over the last few years. Unfortunately Tektronix is has shrunk substantially. They're not the major force that they were.

RD: Why do you think that is?

GR: Uh. I don't know. Their major decline occurred after I left, so I'm really not sure. But they decided to focus down very tightly on a few core areas of expertise. They still are the world leader in oscilloscope manufacture and also in another type of instrument called "spectrum analyzers." Where---it's a tool that's used to analyze radio frequency signals, and those are--those tools are used very heavily, everywhere in the electronics industry these days.

RD: Good.

GR: But, yeah, when I joined Tektronix they were I think around 9000 people and in 1982 when I left I think they were up around 17 or 18 thousand which was close to the peak. I think they peaked at around 20 thousand people and now they're back down to around 3 thousand 4 thousand people worldwide. But, yeah while Tektronix was doing this kind of thing that was the time when we were just gaining a foothold and starting to show some signs of real life. So in 1985 they made us a business unit with the long-term intent that we would become a totally independent company.

	RD: Okay.
Narrator's movement with TriQuint	GR: And in 1985 as part of forming TriQuint as a wholly owned subsidiary, we also absorbed one of our competitors and one of our customers. And that grew our product base significantly. And it, you know, just gave us some additional leverage and we gained a lot more customers and moved into new areas. And all during this time period there was intense activity going on to develop the GA wafer fabrication process. As I said we were, basically I led the transition from 2 inch to 3 inch wafers and from 3 inch to 4 inch wafers and after that I decided I didn't want to be a manufacturing engineer.
	RD: Really?
	GR: Yeah. I was VP of manufacturing until I think about, uh, it somewhere around 1990. And at that point they made me a TriQuint fellow and basically gave me license to do whatever I wanted.
	RD: Cool. Good.
	GR: So I worked on a wide variety of projects after that.
	RD: What year was that? GR: In about 1990.
As VP of manufacturing	RD: 90? Okay.
	GR: Basically I worked, you know, with various groups around the company as they grew.
	RD: Were you working on any projects and things at home? Do you do any

projects at home? Like were you bringing---like experimenting at home or doing anything like that and then coming to work or was it primarily…

GR: Basically my first love dates back to my days with IBM and writing, you know--- programming, computer programming. And I went back to do a lot of that kind of thing and developing software tools for various people and various groups in the company. And I did a lot of that at home as well. Still doing that today. I retired from the company, I think it's been three years ago now or four years ago now. I made them a deal that was, just give me a desk and a computer and I'll come into work for free.

RD: [laughs] Great!

Interest in computer programming

GR: So I've been, you know, helping out where I can.

RD: Would you say the Silicon Valley—Silicon Valley--- has a commun---is there like a community? A high-tech community--- a lot of you, people who, maybe left Tektronix? I feel like there's still a lot of people from Tek here that are in different companies and what is that--what are those relationships like?

50:00

GR: There's still--there's still a lot of communication between people. Our company has not seen much turn over. I hired a total, I think, of about 200 people over the years that I was running the manufacturing operation and some of those people have since retired…But very few, very few, have left the company…and in fact, several of the core group of engineers that I hired in the very beginning are still working with the company.

RD: Cool. Wow. That's great. That's awesome.

GR: They've still got, you know, senior positions within the company. They in turn have hired, you know, more and more people. Uh, we've grown from that small group of, you know, 15 to 20 people up to over 2,500 world wide now.

RD: Do you think a lot of the people who work here live in Washington county?

GR: Yeah.

RD: Yeah.

GR: Yeah. Yeah, in fact, many of the people still live in the Beaverton area because it was close to Tektronix---myself included. Yeah, but there are quite a number of people who live out this way as well.