BS: This is an oral history interview with Herb Ueda, taken as part of the Polar Oral History Project of the American Polar Society and the Byrd Polar Research Center at the Ohio State University on a grant provided by the National Science Foundation. The interview was conducted by Brian Shoemaker at the Army’s Cold Regions Research Engineering Laboratory in Hanover, New Hampshire, on the 23rd of October, 2002. Tell us where you’re from, Herb, who your mentors were, where you grew up and maybe later on we’ll talk about Antarctica.

HU: OK. I was born and raised in the Puyallup Valley, just outside of Tacoma, Washington. Grew up there. My dad was not exactly a farmer, but when I was born, he was pretty much a farm laborer and my mother also. We were of Japanese descent, so things got a little disrupted on December the 7th in 1941, of course, when we got sent away to camp for three years.

BS: Were you at Manzanar?

HU: No, we were in Idaho. Well, there was an assembly center in Puyallup, and then eventually, over the summer of ’42 – April, May, June, July and August, I believe it was. And then we got shipped to Minidoka, Idaho, which is just northeast of Twin Falls. Spent
three years there, and then after the war, or just prior to the war ending, we moved out of
there and went to Caldwell, in western Idaho, and spent a year or so there. And then we
moved back to the Puyallup Valley. Fife, Washington, to be more specific. Graduated
high school there, and then I left for parts East. So, I had a sister in New York, so I spent
a year or so out there, and then I migrated toward Chicago. I had a dream that I always
wanted to end up in LA, but I never got past Chicago.

BS: I got a question to ask you. When you left the camps, were you bitter, or was your
family bitter?

HU: You know, a lot of people ask that question. And I always say, it all depended upon
your age at the time this happened. I was a teenager – 12, 13, 14. Well, you know as a
teenager, it’s just a new adventure, really. Sure, there was a lot of humiliation or
whatever involved. You know, you’re more interested in other things, right? Girls and
getting in trouble and things like that, so it probably didn’t affect somebody like me as
much as maybe some of my older sisters or some of the older people. I’m not saying it
was a picnic, but it probably didn’t affect me that much emotionally as some of the older
ones. But, we certainly knew what was going on. Once we were in a camp, you met a lot
of new people. Frankly, I never knew that many Japanese existed in one spot in time.

There were about 9,000-10,000 in our camp, mostly from the Seattle area.

BS: I remember when Ken Iwasaki came back to school.

HU: Oh yeah?

BS: He was one of my best friends. I didn’t know where he had gone. I was much
younger than you.
HU: And I wouldn’t say – they had schools . . . I went to high school there for 8th, 9th, and 10th grades, I guess it was.

BS: *US Government fund those?*

HU: Oh yeah. It was a community itself, you follow me? We had firemen, policemen, so to speak. Schools, churches, a couple of little stores. It was a community itself.

BS: *Were the guards at the camp armed?*

HU: Oh yeah, they were armed. They had a barbed-wire fence surrounding the camp, but after they put it up – they had guard towers – they never used them. The only guard tower they used was at the main gate. And they had a small contingent of soldiers that were permanently stationed there. But, they were mainly concerned with who was coming in and out. And if you wanted to go on a little excursion somewhere, you just crawled over the fence or under the fence, whatever it was – go out and join the jackrabbits and rattlesnakes. So, it wasn’t that strict as far as . . . of course, you couldn’t just walk out of camp either. And later on, they allowed you to have passes and you could go into town in Twin Falls with whatever money you had. And also, if you were moving East, any adult could move East, East being east of the Rockies.

BS: *I know, my cousin’s wife, Shirley – I forget her name – she’s a Shoemaker now, but she lived on a farm that was about 20 miles east of the line, and they had more relatives overnight than you could imagine on a farm. So they didn’t have to think about it. Her family didn’t have to worry about it. I didn’t know that.*

HU: I’m not sure where the line was.

BS: *Well, it wasn’t the Rockies. It was east of Denver. It was in Colorado, somewhere there.*
HU: So, it was an interesting experience. What it all boiled down to, as far as we were concerned, is that in the time of an emergency or whatever you want to call it, like 911, the Constitution doesn’t mean beans. I mean, they could pick you up and do whatever they want with you and call it a time of emergency. And they got full approval of the government and eventually the Supreme Court, so . . . And the Arabic people right now are going through the same thing. In a sense, it sort of . . . I’ll be honest with you . . . it sort of helped our family because we were dirt poor. We didn’t have anything. And so, this sort of got the family up and out of the valley. And they ended up all over. My sisters . . . we were really spread out pretty far. But, it wasn’t the worst thing that happened to us, let’s put it that way.

BS: Have you got Caucasian relatives?


HU: Where’d they live?

BS: Well, he’s in Washington now. His name is actually John Gunning. His mother was a Shoemaker. He’s my cousin. And he retired from AID, and he lives in Arlington. Shirley and the kids . . . well, I don’t want to get sidetracked too much.

HU: So, then I ended up in Chicago, and I was just a young fellow then, and started to lead somewhat of a bad life. And then the Army finally caught up with me which was a good thing. I got drafted in Chicago.

BS: When was this?

HU: 1951.

BS: You were how old then?
HU: I was a little bit older because they had trouble catching up with me, but I must have been 23.

BS: *How old are you now?*

HU: 73. And so I spent a couple of years in the Army, which I wasn’t too delighted with, but I spent some time over in Germany. I spent a year in Germany, I guess it was. And so, I got out of the Army, came back to Chicago, and I started leading a little bit of a wayward life again, and somebody talked me into — we had the GI bill — and somebody talked me into going to the university. That was the last thing I had in mind. And he said, ‘Why, if you’re going to go to school, dollar-wise, that was the best deal.’ As far as money goes, you go to a state university and you couldn’t beat it. So, I enrolled in school. The University of Illinois at that time had a branch in Chicago called Navy Pier. And much to my surprise, I was able to make the grades all right. And I was interested in mechanical engineering, and so that’s the field I chose and in the meantime, of course, I got married, which was probably a mistake. She had one, and by the time I finished four years later, we had a couple of more. We had three of them and that was a struggle. But, anyway, after two years at the Navy Pier in Chicago, we had to transfer downstate to Champaign-Urbana, to finish up. So, I went down there and finished up in ’58.

BS: *Did you know Willy Weeks then?*

HU: No. First of all, I was a little late getting started because of my lifestyle. And I was several years behind time. So, when I graduated in ’58, I was already 28, 29 years old. Of course, then, I had a family and three kids and another on the way, and I couldn’t find a job. It was sort of a recession year, as I recall. You didn’t have the minorities rights that you do nowadays. I was offered one job with LinkBelt at a salary which I thought was
rather insultingly low, so I didn’t accept it. And so, I worked in a printing shop. At least it paid the rent. And so, about three months later, I get this call from this government employment office downtown and she says this person up there in Wilmette, Illinois, wants to talk to you. Some kind of a snow and ice lab, or something like that. So, I said, “OK.” So, I went up there and I interviewed and I met Lyle Hanson. And . . .

BS: SIPRE?

HU: SIPRE. That’s right. Snow, Ice and Permafrost Research Establishment.

BS: What year was that?

HU: 1958. And he was a pretty tough guy to be interviewed by. He actually, he used to give everybody he interviewed a little problem, you know, in the particular field – mechanical, electrical, etc. But, I had a good talk with him and he told me about the organization. What did I know about snow and ice, and whatever. So, he . . . actually, I didn’t have a long resume to give him. All I had ever done in my life was work in a print shop, worked for a wholesale book dealer one time, and when I was younger, I worked as a contract laborer out in Idaho. Well, contract labor is just what it sounds like. You contract with farmers to do a particular job. Menial . . . it’s menial tasks.

BS: I did it. I boxed almonds.

HU: Yeah? And you worked as a crew. But, everybody split even, so if you were slow or whatever, they sort of looked down on you. But, here I was a 16 year old kid or something, but I spent a lot of time out there. And believe it or not, when Lyle read that he said that impressed him more than anything, because he was an old – you see, the Mormons controlled the sugar beet industry all the way from Salt Lake up into eastern
Oregon. And he was an old Mormon sugar beet man. He used to work in the mills down there in Salt Lake, or in Ogden, or down that way. So, he knew what it was like.

**BS:** *I’ll put this in perspective. You got linked up with Lyle because he knew farming.*

**HU:** Pretty much.

**BS:** *And it had nothing to do with polar regions, SIPRE or anything else.*

**HU:** Pretty much. He knew – he knew what it was like to go out there and top 20 acres of sugar beets. Things like that.

**BS:** *An unlikely link that changed your life.*

**HU:** Yeah. It sure did.

**BS:** *OK.*

**HU:** I never in the world would have thought that anybody would have noticed or even know what a contract laborer was.

**BS:** *Have you articulated this before, in your mind even? The link was the sugar beets or farm labor?*

**HU:** I guess that’s about what it was. Yeah.

**BS:** *That’s a good story. I told you I’d pull something out of you on the phone.*

**HU:** So, he hired me and I said, “OK, when do you want me?” And he said, “Right now.” So, this was in August, of 1958. Wilmette is a couple of suburbs above Chicago. It’s the one just north of Evanston. And they had been there for about 7 or 8 years – SIPRE. Henri Bader was the founder of the organization up at the University of Minnesota.

**BS:** *Henri Bader?*

**HU:** Yeah.
BS: *I don’t imagine he’s around anymore.*

HU: Oh, no. Well, he died about 10 years ago. Maybe not that long ago. Lived to a ripe old age.

BS: *He was the founder of SIPRE?*

HU: Yeah. He was from Switzerland.

BS: *At the University of Minnesota?*

HU: Yes.

BS: *Where did Link Washburn fit in?*

HU: Link Washburn was in the military. He was a colonel with the Corps of Engineers. I don’t exactly know the link, but there are people who do and you should find that out.

BS: *I interviewed Link, and he’s got . . . he’s 91.*

HU: And Lyle Hansen was one of the charter group and there were a couple of others. And they only stayed up there at the university for a couple of years, and then I guess they found a place down in Wilmette. They found an old dry cleaning plant and they took over that. Built a cold room up on the third floor and some of the staff were housed at Evanston. They rented an office there, and most of the scientific work was done in Wilmette. And that was my first assignment. So, I still couldn’t figure out what they were up to there, but what it amounted to was that they were in basic and applied research in snow, ice and frozen ground. And a lot of their field work was done in the Arctic. Well, in 1958, that was the Geophysical Year and so, there was a lot of activity throughout the world. And so, naturally, SIPRE got involved in the Arctic and the Antarctic, wherever it was cold. So, I worked for Lyle and he was the only one I ever worked for. And he
headed what they called the technical support group. And so, like the name implies, they provided the technical support for the various scientists – geologists, glaciologists and physicists, designing systems for mechanical, electrical and whatever, going out to the field with them and helping out with the instrumentation and whatever. And that was our primary mission. So, right after the . . . by the way, as part of the geophysical work, they had done some drilling at Site 2, Greenland.

**BS:** *Drilling at DYE II?*

**HU:** Site 2. That was about 100 miles east of Camp Century, I believe it was. Yeah, it was mile 212. And then they had done some drilling down in Little America.

**BS:** *They drilled at Little America, huh?*

**HU:** Yeah, right about that time.

**BS:** *That was part of the IGY then.*

**HU:** Yeah.

**BS:** *And where did they drill at Little America? The ice shelf?*

**HU:** Yeah.

**BS:** *Through the ice shelf.*

**HU:** On the ice shelf. That was . . . well Tony was somewhat involved in that, I believe. Dick Ragle was involved, and Bob Lang was involved up in Site 2. During that time, Henri Bader who was a pretty intelligent sort. He figured, well, if it’s ice why can’t we melt our way through, drilling a hole, you know. Why can’t we drill with heat? Melt the ice. And so, he passed it on to Lyle and Lyle worked on it for a while and he came back and said it’s probably feasible. So, they applied for a grant from NSF and got it. So, they
hired an outside consultant. Well, they hired him for a year to get this program going. He was Fred Pollack. And then Lyle assigned me to him.

BS: What year was this?


BS: Now, you went down during IGY?

HU: No.

BS: Pollack was in charge of that particular project.

HU: Yeah. They called it the thermal drill project. So, it was his job to develop this thermal drill. And I worked with him, or for him. He was quite a guy, I’ll tell you that. He turned a lot of people off.

BS: Lyle?

HU: No.

BS: Pollack.

HU: Well, Lyle wasn’t the easiest person to get along with either. In the end, they had a little clash there that ended the whole thing.

BS: You’d like Willy Weeks’ opinion. He said that you’re the only one in the world that could ever get along with Lyle.

HU: Ha, ha, ha . . . Well . . . that’s interesting. Now that I think back. So, Fred was assigned to work on this thermal drill, and I worked with him. Well, there was one thing, for a beginning engineer like me. There was one thing great about working for this organization and that was, you had to learn that every time something new came up, you had to research it a little bit and learn about it and sometimes, you know, the pressure
would be on. But you learned an awful lot. And I learned a lot from this guy, Fred. And I learned a lot from Lyle.

**BS: New things.**

HU: Oh, yeah. This whole idea of doing this drill. You know, it was a new idea period. So, we worked on it for about a half a year, and then it was time to go try it out. And so in the summer of 1959, we went up to Greenland – the first time for me. And we worked out of a little base called Camp Tuto, which was about 15 miles inland towards the ice cap from Thule Air Base. And the Army had a set-up there. Now, you see the Army ran the operation. We were the Corps of Engineers which is a part of the Department of the Army, but we were all civilians. There wasn’t even a military overseer. Now, that’s where Link Washburn came in. I believe he was a military commander, just before I got there. But, when I got there, there wasn’t any. Anyway, so we worked at Camp Tuto, and Camp Tuto was located right on the edge of the ice cap. I mean, you could look out your window and there was the ice cap right there. Which, by the way, it was starting to recede then. And the last time I saw the ice cap about 10 or 15 years later, that ice cap had receded, oh, probably a mile or so, or better. Pretty dramatic, I mean you’ve heard of this warming up going on. It was very evident there at that point. So, what the Army had done was, they had built what they called a ramp road. What it amounted to was, you just piled gravel and you built a road and they built this road about three miles and a half up onto the ice. The elevation must have been 1500 feet in that three mile span, it was just unbelievable how much material they had poured on there. What they did was to use this road – they parked their tractors and sleds at the end of this road on the ice and they used the road to deliver the supplies and stuff, heading out to Site 2 and later on to Camp
Century. That’s what you call a ramp road. But, as the ice started to recede, the road would become relatively higher and higher and higher and they had a few accidents there. So, we set up on the end of that road. We put up a shelter and our drill set-up there and that was our first try at thermal drilling. Well, I think we drilled a total of 89 inches that year. And that was about as far as we got.

BS: How long were you there?

HU: Well, you know I’ve got a record of my travels. We were there for 2 or 3 months.

BS: You’ve got all that written down there, huh?

HU: No. What I’ve got here. You see, when you’re in the military, well at least under the military, you had everything . . . having travelled somewhere, you know that, travel orders, right? So, I saved all my copies of my travel orders. I sort of kept a record of them, just out of curiosity. But, it’s a good thing I can refer back to. So, we were there for a couple of months. And of course, it was pretty disappointing after all that work.

BS: Why only 89 inches? Just didn’t work, huh?

HU: Just didn’t work. It was one of those things. We felt we gave it a pretty good try. But, well, I guess we were there for July, August, September.

BS: You went to Tuto?

HU: Yeah. It was mostly military. But, they supplied our support if you needed something, and they provided the housing and the essentials. But, they also supplied some of the labor. And, you know the military. We were working with the military, with the Army. You know how it is. You get some good people. You get some bad people. It made it even more difficult. But, we managed OK. So, anyway, we gave it up for that
year. By that time, Fred and Lyle couldn’t see eye to eye anymore. And that was about the end of the relationship.

BS: So Fred Pollack left.

HU: Yeah. He left and so Lyle handed me the job. He said, “Well, you take over the job.” So, at that time it was quite a responsibility. So, we came back and regrouped and kept working on this drill. You see, one of the advantages of this thermal drill was that you could suspend it by a cable instead of like they do in oil well drilling where they put on drill pipe. So, here you could just suspend it by a cable and turn on the switch, in theory, and melt your way down. And get a core, too, by the way.

BS: Get a core?

HU: Oh, yeah.

BS: How did you do that?

HU: Well, you melt a ring.

BS: Oh, I see. You melt the ring. How do you pull the core out?

HU: Well, it took a little doing, but we were able to devise ways to do it. But, anyway, we continued on. Lyle said he wanted to keep trying, so we kept trying and we continued designing another drill and we went back up the following year in 1960. And this time, Fred wasn’t there. We set up in Camp Tuto there, right on the edge of the ice again and had a little bit more success. We got down . . . well, the drill was about 30-35 ft. long and we actually had the drill disappear beneath the surface which measured out about 35-40 feet which was cause for celebration, believe me.

BS: In other words, you ran out of drill.

HU: Oh no. We had a cable.
BS: *Oh, OK. I got you. OK.*

HU: But, actually the drill went down the hole was something new to us, much to our joy. And so then we packed up and we were going to move out to Camp Century. Camp Century is located about 130 miles east on the ice cap. You’ve probably heard of it.

BS: *Oh, yeah.*

HU: And we moved out there. Getting to and from Camp Century could be as fast as an airplane flight which took maybe an hour, or if you went by tractor trailer, what they used to call “swings”, it could take you anywhere from 3 days to a week, depending on the weather, and whatever.

BS: *How far? How many miles?*

HU: Oh, about 130 miles as the crow flies.

BS: *From . . .?*

HU: Tuto. But, of course the tractor trails, they had to go around the cravasses and things like that. So it was quite a bit longer.

BS: *How’d you go out? You went out by surface the first time?*

HU: Yeah. And they used to live in what they called wannigens for living quarters. And of course, the living conditions weren’t too . . . they were pretty gross. It could become pretty gross. They usually crawled along at about 4 miles an hour and they moved a lot of cargo that way. In fact, they built the camp that way. So, we were actually the first project in that camp. The camp officially opened that fall – the fall of 1960. And we were the first project in there. So, it was a good time. And so, we stayed there until December that year. When did we leave the U.S.? We left later then. We left in August.

BS: *What year was that? ’61?*

BS: OK. 1960. So, you went to Tuto first and then you moved over to Century.

HU: And we were there from August to December that year. August, September in Tuto, and then until December at Century. And so we set up in one of the trenches. Camp Century . . . I guess you’ve read about it . . . it was quite a large encampment. It was built entirely under the snow. They cut trenches out and they covered them over.

BS: Arches?

HU: Yeah. Arches.

BS: Same as Byrd, later on?

HU: Well, yeah, exactly. Well, I’ll get to that a little bit later. But, it was quite large. The main trench must have been a quarter of a mile long. And off to the side, they had about a dozen other trenches where all of the other, the motor pool and the mess hall and the living quarters, these were 200-300 feet long, each one of these individual trenches. It was pretty large. And then they had the nuclear reactor which they were putting together at that time. And it was built to take care of maybe 100 or so more people. But, one of the problems with the place was that the snow accumulation was tremendous. Oh, it must have been 3-5 feet a year, I’d swear. And so, what happens with the accumulation so high, the roof started deforming rapidly. The walls also started coming in and the ceilings would come down, the arches. And that turned out to be one of the major jobs to keep the camp open, just to keep the place from collapsing on you. But, they had buildings inside the tunnels and they were quite comfortable. Food was good. They had a large bathroom there. You know, latrine facility. Large mess hall with a little movie house. They had bars and things like that. So, it was sort of interesting. And we set up in one of the trenches
there, and we were there for the life of the camp. So, we set up our drill and we started drilling, which takes quite a bit of effort. Getting your equipment down there and then you have to drill a hole and encase the hole and then go down there and there’s lots of hole fluid involved. At that time, it was diesel oil, and trichlor, things like that. It took quite a bit just to get ready to go. So, we were still struggling with the thermal drill. Anyway, in December . . . by the way, some of the military people we worked with were excellent. They worked out real well for us. The Army had . . . I don’t know about the Navy, but the Army had this program called S&E, science and engineering, and we got a lot of these people. They were permanently assigned to us.

BS: These were Army uniformed people?

HU: Yeah. They were regular Army.

BS: Officers?

HU: No. Not necessarily.

BS: Seabees?

HU: No. This was one thing about this group. Every one of them had some college – technical or scientific background. And most of them had at least a bachelor’s degree.

BS: They were enlisted.

HU: Well, they were drafted.

BS: Oh, I see.

HU: So, the Army wanted to try to utilize their talents, of course, and they sent them around to these different places like ours – a lab like ours. Well, some of them, believe it or not, some of those people are still here. A good many of them stayed on, surprisingly enough. And we were fortunate in retaining a couple of them and it made quite a
significant impact on our project. So, again, we came back and we worked on the drill and we went back again – back to Camp Century – and this time we went earlier in the year, in March. And the reason we did that was because the skeleton crew . .

BS: *This was 1961, by then.*

HU: Yeah. The skeleton crew that they left at this camp was maybe 2 dozen people. Whereas, in the summertime, with the additional military and scientific people, the population could rise to over 100 people. And it was sort of a mess. But, we’d go early in the season and you were down below so the adverse weather didn’t affect you.

BS: *You were drilling inside the station?*

HU: Inside. Like I said, we weren’t affected by the weather. It was very nice. Some of the problems at the camp . . . they finally got the reactor going and it would be . . . it was about a two megawatt reactor, I believe.

BS: *The problems they had?*

HU: The power would go out and believe me, when you’re down in that camp and the power goes out, it is pitch black. You can’t see the hand in front of your face. And another time, it would come on and well we’d be going good. They had all electric heaters, of course. Turn on all the heaters?

BS: *You had back-up diesel, I hope.*

HU: Well, let me tell you. They had a very elaborate back-up system. I think they had four-500 kilowatt generators. Huge. And in the end, this camp lasted about 5 years, and in the end, the back-up generators operated longer than the nuclear reactor.

BS: *That’s the same nuclear reactor that went into McMurdo.*
HU: Well, no. A similar one. There were only three. One was at Sundance, Wyoming. One was in McMurdo, and one was at Camp Century, and they had an experimental one in Fort Belvoir, I think it was. Yeah, I remember that one.

BS: They were at Century, McMurdo, and where was the other place?

HU: Oh, wait a minute. There was one up at Fort Greeley, Alaska. Sundance, Wyoming – there was an air base – air something there. Radar base or something. And I think they had an experimental one down at Fort Belvoir.

BS: That was pretty close to Washington.

HU: But it was an interesting experiment. They learned a lot from it. They’ll never try it again.

BS: I wintered with Larry Donovan and he was the head of the nuclear power plant at McMurdo and it ran all winter, and that was a big break through. It was good for us. We had showers all the time.

HU: Well, that’s right. You were down there. Eventually, they had to haul all that material out of there. Oh, my goodness.

BS: Anyway, I didn’t mean to interrupt you.

HU: So, we went back in 1961 and started drilling again, and I think we got down about 500 and something feet and we got the drill stuck.

BS: Now were you the head guy when you went up there?

HU: I guess I was. I was sort of ... when Lyle wasn’t there, I was sort of in charge. You see, Lyle was a pretty high ranking member of our organization. And so, the higher ups didn’t look too highly on his spending so much time in the field, but he loved us, I guess.
BS: I understand. It’s like us managers . . . we get to be captains in the Navy and the commanders of the squadron, and they don’t want you flying. They want you to send the young guys out, but that’s no fun. The worst job in the squadron was captain, I thought. Well, no, I felt because I gave him all my work.

HU: He was a GS-15. I mean, he’d be out there two months at a time suffering.

BS: OK, so you got the drill stuck at 560 feet.

HU: About 500 – somewhere around there.

BS: So, is it still down there? Did you get it out?

HU: That was a real disappointment, of course. So, we came back - 535 feet. So we decided we’d go back the following year and try to retrieve it. But the cable had pulled out of the top of the drill. And then we built a retrieving tool and whatnot, and went back down there the following year – 1962, and we couldn’t come close to retrieving it. So, in the meantime, we also had brought another drill along with us. And so, we started drilling a new hole.

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(Begin Tape A – Side 2)

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HU: By the way, each time we re-drilled a hole, it was a major operation because you had to move the winch and everything and start a new hole. And down in this trench, our space was sort of limited. It was a major concern. So, we did start another hole and low and behold, at 750 feet, we lose a part of the drill and that was the end of that hole. So, it was just one heartbreak after another for those couple of years. And by the way, we’re
spending two or three months at a time out in the field. I had a wife and four kids and she didn’t even drive.

**BS**: Wow.

**HU**: And she managed. Down there in Claremont.

**BS**: Still married to her?

**HU**: Yeah. ‘fraid so. But, the life at the camp was, you know . . . the food wasn’t bad and you met a lot of different, interesting people. Some not so interesting. There used to be a joke. See, when Admiral Byrd went down to the Antarctic, he took a Boy Scout with him who was Paul Siple. And I guess they were trying to do a similar program up here. So, they had a little contest in Denmark and the United States. And the winner of these contests would get to spend a year at Camp Century. So, here these kids – they must have been 17 years old or something like that – 16, 17 years old, and there was one from the United States and one from Denmark and they come up there. Oh, they were going to have a good ol’ time. So, the joke up there among the guys was, if Camp Century was first prize, what the hell did the runner-up get purgatory? But, they survived. They lasted a year.

**BS**: Who did they work for?

**HU**: They did work with the Army, with the military, more or less. Well, everybody, you know they just did odds and ends.

**BS**: The kids get experience in everything.

**HU**: Yeah. I probably shouldn’t say this, but the camp commander that winter, see he was gay.

**BS**: Oh boy. The Army wouldn’t stand for that then.
HU: Oh boy.

BS: *Did he have a gay friend there?*

HU: No, but there were a lot of problems. When I flew in the following spring, I flew in because we were starting our season, and I flew into Century and the commander was leaving. And boy, I’ll tell you, he was so happy to get out of there. He literally dragged me out and had me by the collar and pulled me out of the plane. It was just a little Beaver.

BS: *Was he a colonel?*

HU: Captain.

BS: *Oh, OK.*

HU: But, one of the things I liked about working out in the field was that you never get to really know somebody until you’ve been out in the field with them for a while. And I met a lot of good people. A lot of good people. You had the camaraderie. It was just an experience. Oh, by the way, keep going back . . . it was a job. And there’s one thing, I was never crazy about the cold. It didn’t seem to bother me that much. But the one thing I remember back from childhood or back from those days when I was working on the farm were these blistering days of 95 or 100 degrees in the shade and no shade and you had to go out there to work in the lettuce field, or whatever it happened to be. I swore from that time on that never again would I ever get involved in this type of an atmosphere. You know what I mean? And so I thought it was ironic, I sort of fit into the Arctic, I guess. I mean, I get cold like anybody else. It just never bothered me that much. And Camp Century was, if you stood out there, you couldn’t tell if you were in Camp Century, Greenland, or Byrd Station, Antarctica. Except the temperature was a little bit warmer up there, but the weather can get just as nasty and the blowing snow – ah, the snow was
always blowing up there. It was really miserable if you had to work outside. And actually, over the years, I think me and Wayne Tobiasson – we spent the most time there of any civilians. Over the years, I lived in Camp Century for two years, or close to it. And Wayne, he was up there quite a bit of time, too. So, you know, when you get going on your job there, there’s no reason to go upstairs, although you should, for your own good. Go upstairs and see a little sunshine once in a while. But, boy, sometimes I would get so wrapped up in the work. I think I had a record when I stayed down below for over a month.

**BS:** Wow.

HU: But, every now and then, we’d go upstairs and get a little sunshine. So, in 1963, we went up again. Moved the drill and started a new hole. This time we got a pretty good start and we got down to about 800-900 feet and it was a good hole, using the thermal drill. Of course, we had a lot of problems.

**BS:** You brought a core home each of these times?

HU: Yeah.

**BS:** Where did it go?

HU: They stayed there at that time until later on they were shipped out. Chet Langway took care of those.

**BS:** Did they analyze them there?

HU: Somewhat.

**BS:** You got a storage facility here now?

HU: Well, that’s a long story. No, they’re in Colorado.

**BS:** I know. I know they are now.
HU: We did have them here for a while.

BS: *Ohio State’s got some.*

HU: Yeah, and they were in Buffalo for a while, too. So, my mother died that year, in 1963. And they were kind enough to let me leave there and attend the funeral. I remember, when I got the news, there was a storm blowing outside and it blew for about three days. And I thought, oh boy. And the third day I went up there, it cleared up, the plane came in and took me out. We had a little, they called them de Havilland Otters – little single engine. You’ve probably seen them.

BS: *I’ve flown them.*

HU: Oh yeah? Good planes.

BS: *Except they’ve got one engine. After you go to two engines, it’s pretty hard to go back to one engine.*

HU: They also had what they called a Beaver.

BS: *Oh yeah. Predecessor to the Otter.*

HU: Then they had one called the Caribou, with two engines,

BS: *Well, that was different, a different thing, yeah.*

HU: What’d they have?

BS: *I’m not sure who built the Caribou. Army had a Caribou.*

HU: Oh, yeah. So, anyway, in 1963 . . . all this time I was trying to convince Lyle that this thermal idea is OK, but it’s just . . . we had to drill with a fluid filled hole also, which complicated matters even more. And it was just a struggle. Just a struggle to get anything done. And finally, I said we’ve got to start considering something else. And so they had
this outfit down in Oklahoma - Reda Pump Company, founded by a Russian immigrant
and genius.

BS: What’s the name of the company?

HU: Reda. R-e-d-a, it was. Now it’s under TRW, but it was fathered by this guy, Armai
Arutunoff - brilliant guy. And he had devised this system where, instead of using the
conventional oil well drilling methods, you had a cable suspended drill that he wanted to
try out in the oil field. They were using it in the oil fields. And they did a lot of work on
that and he came up with this drill. But, apparently it didn’t work too well, and we had
heard about it from somebody and so, Fred and Bob Lange went down there, back in
1961 and they found an old one sitting in some cornfield someplace. He was willing to
get rid of it for $10,000, or something. You know, it was a bargain. So, we bought it in
1963 and brought it back to Hanover here and we modified it for our purposes. It was
heavy, but at least it had the possibility of working. So, in 1964, we went back up again.
And we stayed there about 4 months, but about half way through that season, we finally
said, we had gotten down to 1800 feet with the thermal drill, but we just said, “This is it.
This is much too much . . .

BS: How far?

HU: 1800 feet. That was a struggle. And so we switched over to this other drill and low
and behold . . . well, it was a struggle getting going, but we finally got it going and it
worked like a charm.

BS: And what did you call it?

HU: It was called an Electro-drill. It wasn’t a thermal drill. It was electromechanical. It
had a motor down the hole and it rotated the core barrel. And it took a core, and so . . .
BS: Did it put pressure on the cable when it spun?

HU: Well, in theory, you’re supposed to have an anti-torque device that will prevent that. And in reality, the cable we had was an inch thick – armor cable, double armored cable. It was so stiff, it provided the anti-torque necessary.

BS: Was the twist of the cable . . . if the drill went this way, was the twist that way?

HU: If the resistance got too high, yeah. In other words, if you tried to drill.

BS: You build a cable, you twist them, right?

HU: Yeah.

BS: OK. Did they twist?

HU: No, you’d design it to twist the other way.

BS: It twists the same way that the cable was twisted. OK.

HU: But, actually, there are two layers of armored cable. One was twisted one way and the other was twisted the other way. So, that provided the counter torque and the thing worked pretty well.

BS: How deep did you drill with it?

HU: Well, we got down to . . . I don’t have it here, but it was down to a couple of thousand feet anyway. Now, two of the guys that we picked up in the S&E program, Don Garfield and John Kalafut, we were fortunate, after they got out of the military, they stayed with us and they spent that summer – it was a long year – they spent that summer and they got down a considerable distance. And Don, by the way, in fact Don and John, they stayed on with this organization and they retired and they’re still in the area.

BS: Spent their lives with SIPRE, huh.
HU: Yeah, we moved here in 1961, and then they changed the name to CRREL. So then, in 1965, we went up again and spent a long season up there. Drilled some more and finally, in 1966, on July the 4th, we finished the job – 4550 feet.

BS: *Did you hit bedrock?*

HU: Yeah. We hit bedrock. So, it took that long.

BS: *How was that again? 4550 feet?*

HU: A little of controversy in there of what the actual depth is, but that’s because . . .

BS: *But, it was the first drilling through the thick Greenland ice. You were the head driller, huh?*

HU: Well . . . no, I worked for Lyle and we did it together.

BS: *He came up occasionally. I think you’re being humble.*

HU: No, no. He was there in the end. He was there in the end.

BS: *I’m sure he was.*

HU: Probably the most satisfying moment of my life, or of my career. But, it was a great experience.

BS: *So, what did you do? You had a core of the whole thing.*

HU: Oh yeah.

BS: *Did you get some rock?*

HU: Yeah.

BS: *What kind of rock? Granite?*

HU: Basalt, or I don’t know.

BS: *You weren’t interested.*
HU: There were several rocks, and actually, we chipped off one rock and it had been cut through, so it had the curvature of the drill on there, so Don and I chipped that out there. We split it and I mounted it. I kept it at home, but eventually, I gave it to a museum in Japan. There was a new museum in Japan named after a fellow that used to – well, he worked for SIPRE, Dr. Nakaya. And he’s got a museum there in his honor in his home town. I donated it there. It was just a rock from the last core.

BS: *He’s in their Polar Institute, is he not?*

HU: No, he died several years ago. He was in the Polar Institute in Tokyo.

BS: *I know. Tetsu Toriil’s the president now.*

HU: Oh, that could be.

BS: *Hell, he lived in McMurdo all summer. He’s an Okinawan.*

HU: Oh, well you’re familiar with him then.

BS: *Well, I was secretary of the American Polar Society and there are a lot of Japanese members. There’s one guy who joined in 1934.*

HU: Really.

BS: *Wrote me a letter and told me all about it in broken English. It was good English, but it was . . .*

HU: Don’t remember his name, do you?

BS: *I could find it out. He’s a life member, but one of the guys that joined - a charter member. And he was a member throughout the war, and I don’t know how we ever got the Polar Times to him, but I guess he got them all. He said he had a complete set. So, I’ll let you know.*
HU: So, anyway, then we started and now we had a little pressure on us because this was July. We had to wrap everything up, ship it down to the States and some of it to McMurdo because, believe it or not, ever since the very beginning in 1958 or ’59, Greenland was supposed to be a testing grounds for this drill, after which we were scheduled to go down to the Antarctic. Every year they cancelled the Antarctic.

BS: Until they got the drill right. Well, it was certainly a lot simpler to go to Greenland. The logistics are a lot simpler for Greenland.

H: Uh, yeah, yeah.

BS: I mean, you know, it’s a fantastic jump. I mean, the money, the C-130 aircraft and all that stuff.

HU: Well, we still had to ship some of the stuff by ship to Thule. A lot of the heavy stuff.

BS: But, the people, going back and forth it is a short hop compared to the Antarctic.

HU: Oh, yeah, yeah. But, the other thing, we didn’t have the 130s up there either. So, you’d have to travel by tractor train or something like that.

BS: OK. Shipped to McMurdo.

HU: Some went to McMurdo and some came back to the States to be worked on. And so we went down that summer, which would have been September, October of 1966. Oh, I’m sorry. We didn’t get down until early November. So, we got everything out to Byrd Station all right, just about. And now we were working with the Navy. Although down in the Antarctic we only depended on the Navy for support, like transportation.

BS: That was their job.

HU: No direct support.
**BS:** Did they supply you cooks and everything at Byrd?

**HU:** Yeah.

**BS:** OK.

**HU:** And we brought our own. In fact, it was just John Kalafut and me the first year. And we set up in the main trench there in Byrd Station – the arched trench. The Main trench.

**BS:** Well, you went down the same time I did.

**HU:** Yeah.

**BS:** That was my first trip. I was there October 1st.

**HU:** Well, I’ll tell you something about Byrd. They had sent people up to Century and they had seen how the Army had built these trenches. And our trenches in Century we had these stepped walls that had little steps in them and then over the top of that they would put an arch. And I’m not saying that was a poor design, but they think that accelerated the drop in the ceiling.

**BS:** They were already having problems up in Century when they finished Byrd Station.

**HU:** The temperatures up there were warmer. The accumulation was higher. So anyway, they said at Byrd, they said well we’re not going to do that. So, they went straight up, if you remember. They went straight up like that and put the arches over there – longer arches. So anyway, the Navy says we’re not going to make the same mistakes you did at Sentry, so they excavated these vertical wall trenches. So, the story goes that some guy in the Navy department there gets a bargain on these buildings that they put inside the trenches, and the buildings were twice as high as the ones they used in Century, so there went your advantage. And the buildings were twice as high, but they only used one floor.
They never had a second floor or anything. So, the roofs, the arches started to come down, of course.

**BS:** *They had to heat them too? Did they heat the upper floors?*

**HU:** No, there were no upper floors. It was just a high building.

**BS:** *Oh, I got you.*

**HU:** It was just one floor. So, there went the advantage. And, of course, it took a little longer at Byrd because the snow was denser and the temperatures were lower. So, we went down to Byrd to set-up. Incidentally, when we left, by the time we got out of Century, the drilling tower that we were using underneath the tunnel, underneath the arches in the tunnel, it was getting crushed by the snow, so we dismantled that tower, poked a hole through the snow to the surface and we built a newer tower up on top and this made all kinds of room. So, by that time, the surface of the camp was about 55 ft from the top of the hole just from the accumulation. So, when we went down to Byrd, what we did was we just punched through the ceiling, or punched through the snow over the arches which was about 20 feet and then we built the tower up from the surface and we went up about 90 feet.

**BS:** *Oh, that was your drilling tower. Pulled your pipe up and . . .*

**HU:** No, no, remember there was no pipe. It was all cable.

**BS:** *Ok, ok.*

**HU:** So the cable went through the roof and then down to our winch and we did our work down there.

**BS:** *I see. OK.*
HU: And that was about 20 feet of roof and about 20 feet of headroom, and that started to sink slowly too. But, anyway. . .

BS: *Not that year though.*

HU: No. So that took John and I most of the summer to get that all set up.

BS: *Did you leave the rig?*

HU: By the way, we had a new hydraulic winch that we had made down in York, Pennsylvania, and we hauled that into the tunnel and it’s still there, by the way. It was an awful clumsy thing. So, we started getting that hole ready. Drilled the casing hole, set the casing in and then we started to drill with the electromechanical drill. No more thermal drills. And we got to about 700 feet that summer and we left . . . that took us into February or March of ’67 and then we closed up shop and went back.

BS: *Did you leave the rig?*

HU: Yeah. We left everything.

BS: *Why did you leave in the winter? I mean, could you do the drilling in the winter or not?*

HU: Well, we weren’t too happy about staying – wintering over.

BS: *I understand.*

HU: Yeah, we could have.

BS: *I wintered that winter.*

HU: Did you?

BS: *Yeah. Did you meet Elmer Cranton, who became the doctor leader for the base, big guy.*

HU: Oh yeah.
BS: I just interviewed him. He was an old friend. He was supposed to winter with me in McMurdo, but your doctor and C.O. got fired.

HU: Yeah, that’s right.

BS: Why did they get fired? Do you know? Elmer didn’t know.

HU: Something. I don’t recall. I think there was some dissention between . . .

BS: Oh, they were fighting.

HU: I’m not sure why. Maybe it was . . . you know who was in charge or whatever. Other than that, they had a good crew.

BS: Elmer said it was great. He said he fell into it like a pig in . . .

HU: What was his last name?

BS: Cranton. C-r-a-n-t-o-n.


BS: He’s at Puyallup. That closes a loop, didn’t it? He’s living there now.

HU: Where?

BS: In Washington. At Puyallup.

HU: Puyallup?

BS: Puyallup, yeah.

HU: No kidding. I’ll be darn. I didn’t know that. So, he came on and he was the camp commander, too, I believe.

BS: He used to be a fighter pilot, then he became a doctor.

HU: Oh, I see.

BS: So, they _______. Otherwise they wouldn’t have done that.

HU: Oh, I see.
BS: So anyway. You’re back home?

HU: Yeah, so we got back home and went back down in October, October 15th of the next year. And we drilled until the end of January, down to . . . we hit bottom the end of January, 7102 feet. But, things went well, but it was again a struggle. Not as bad. We had lots of problems. Lots of winch problems. The hydraulic winch and spent a lot of time working on that.

BS: That was a record wasn’t it? Polar drilling then?

HU: Yeah. Well, it was only the second hole ever drilled through a major ice cap.

BS: The first one you did was up at Century, and then this one.

HU: Yeah.

BS: So, you did Greenland first.

HU: Yeah.

BS: And you were in charge of both the drilling and . . .

HU: Wellll, I was in charge of the field operations.

BS: Did Lyle come down?

HU: Oh yeah. He wasn’t there when we finished up at Byrd. And I had to wake him up early in the morning. The communications wasn’t very good. You remember that. We used to have ham radios.

BS: Yeah. Unofficial communication, ham radio worked better than the Navy stuff.

HU: Well, we had these telephone hook-ups. You know, you’re sitting around the room with 10 other people waiting to call and that’s the kind of privacy we had. So, it was a struggle. And here’s the thing. We did it with the S&E program, for that one season, we picked four people. We asked for volunteers and four of them volunteered and we took
all four of them and they worked out beautifully. We worked around the clock, two 12 hour shifts, or essentially two 10 hour shifts. Two people on a shift. And that’s getting down there to a minimum number, and they did extremely well. And then we had a fifth person who was sort of our handyman. Ed Parrish from the University of Wisconsin group, and he did thermal drilling around the camp for other projects. He drilled four holes 200 feet deep. This was all going on at the same time. And then we moved the thermal drill behind the electro drill here and we thermal drilled a hole about 1100 feet deep, so it was a pretty busy season. Now, we . . . from all indications we had trouble when we hit the bottom. We knew we were at the bottom because the core came up with rocks in it. But, we also hit water from what we could tell. All indications were that we had hit water. And that sort of . . . well, it was sort of the end of the hole.

BS: Was it salt or was it fresh?

HU: We don’t know. We don’t know. And we tried to recover a core, some more core, but we just couldn’t advance it. We just couldn’t advance it. We’d go three or four more feet and we’d pull up, and it would be a helluva pull to get it up and when it would come to the surface, there wouldn’t be any core. But, the ice up to that point had rocks and silt in it, so we knew we were there, and we know from all indications that we hit water, because the fluid level in the hole rose considerably. And eventually that was the demise of the hole because it refroze that section of the hole.

BS: It came up in there.

HU: It refroze and we couldn’t. . . Well, when they went back the following year, they tried to redrill through it and they had problems. They lost the drill. So, that was the end of the hole. But, they could still get down to two-thirds of the depth of the hole, or about
three quarters of the depth. And they’ve been doing that over the years to take
measurements. And so that was the end of my . . . well, no, it wasn’t the end of my
drilling career. That was a good feeling, too. But not as good as the feeling at Camp
Century when we finished that hole because that was such a long struggle. So, then, after
that we built several drills – thermal drills for shallow work with dry holes, no fluid. We
built one for Ohio State. We built one for ANARE people down in Australia. Stan
Patterson and the Canadian outer Continental Shelf project. I think we helped Paul
Theodorsson up in Iceland. And we helped Japan with their first drill. We supplied
information. That was way back. And then I sort of got out of the drilling business. Do
you remember John Rand? He took over for a while and they continued different types of
shallow drills, things like that. I revisited Byrd in 1975, Don Garfield and I shipped some
of the cores home and we logged the hole for temperatures as deep as we could get which
was about 5600 feet, I think. And, oh, I got a chance to visit Vostok.

BS: You did? When was that?

HU: Well, you might have been piloting the plane. That same year. 1968. Uh 19 uh, I’m
sorry …

BS: ’67.

HU: No, ’75.

BS: No, I wasn’t there then. I did it in ’67, when you arrived at Byrd. I did fly the plane.
I was the junior pilot. Everybody else wanted to go in and drink with the Russians. We
had about 35 pilots in the plane. And when we came back there were only two sober ones
because we had to sit in the plane.
HU: The time we were out there, they were out there greeting us, and they had on these suits and ties. And they’d have these left over World War II Army tanks.

BS: I went back in ’85. Same stuff. Tank bottom and they put a bigger cab on top.

HU: Well, they’d been doing quite a bit of drilling too, so that’s why we were invited there.

BS: They provide all kinds of cores nowadays. So, you were there in 1977, huh?

HU: ’75. And then I went back in 1978, and worked for John Rand on the Ross Ice Shelf project. And that was the first time that anybody ever penetrated an ice shelf. Well, it was the second time because at Little America, they did it too, I guess.

BS: Yeah, they did.

HU: But it was a little bit . . . they had problems at Little America when they punched through, I believe it was.

BS: Yeah. Denny was involved with it.

HU: Oh yeah?

BS: Well, he was there anyway. He told me.

HU: Well, this hole here was done with a flame drill with Jim Browning from here in Hanover, it was his drill, and he was down there.

BS: He’s from CRREL?

HU: No, he’s from Browning Engineering. He’s got his own little firm. Still here. He’s still active. Quite a guy. And then, before that, in the early ‘70s, the Danes, . . . actually they wanted to drill in Greenland again at DYE III. And we were given the task of doing it. But, we had some problems with what we felt was unnecessary spending on the part of NSF in order to set up this camp;
BS: At DYE III.

HU: We thought they were getting taken and they were getting taken.

BS: What year was this?

HU: 1970, I think it was. So, the director at the time, I think his name was Myers, well he got . . .

BS: 1970, it was Joe Fletcher.

HU: Todd. I think it was Todd.

BS: Was it Ed Todd? Well, he didn’t know what was going on.

HU: Well, he got teed off because . . . well, we were just trying to help out. Money was tight and he got teed off and he said, well he went over to the Danes and he told them they had the job. They got the task.

BS: Was it Rutford by any chance?

HU: No, it wasn’t Rutford. It was Todd.

BS: Well, it must have been later in the ‘70s then. He came like ’76. See, Fletcher had it then, then Rutford had it for three years after Fletcher.

HU: There’s one more in there. Maybe it wasn’t Todd. Anyway, so the Danes got the job of doing the drilling there. So, they designed their own drill. See, we worked together prior to that. And truthfully, we taught them some, they learned a lot from us. So, they went ahead and they built their drill which was a mechanical drill and it was on a cable and they were successful. It took them a couple of years, or three years.

BS: Did you go out there?

HU: Well, I was still indirectly involved with what was going on. And so was John and maybe even Lyle, but they were the ones doing the drilling. And they succeeded. They
got to the bottom of the hole in, I think it was ’73. And the drill got stuck. Well, one of
the objections or criticisms we had of the design was that the cable was a little frail and
when they got stuck, they couldn’t tug too hard on it. We didn’t like that. But, ours was
just the opposite. We had too much weight and strength. But, they got stuck. Everybody
gets stuck, believe me. But they got stuck in the bottom of the hole. So, they went home
that winter. They pumped glycol down the hole and everything. They went home that
winter and came back the next summer and they got her free. And we knew all those
people over there Sig Johnson, Henri Rufli, and Niels Gunderstrup. But, that happens.
Everybody gets stuck. The Japanese went down south. They were drilling at Dome Fuji
down at the Antarctic and they got down to 2500 meters and they got stuck. So, I
happened to be over there when they came back was talking to after the season.

BS: Over in Japan?

HU: Yeah. And I was talking with this guy and they were pretty ashamed. I said listen,
there’s nothing to be ashamed of. Everybody gets stuck. I said we were stuck a half a
dozens times. We lost a drill, or whatever, you know. Well, they eventually lost that drill.
They had to cut the cable off and they’re back down there now, though. They’re trying
again. They’re inland. The coastal station is Syowa or something.

BS: Muzio. Was it at Muzio?

HU: The inland station.

BS: That’s Mizuho. It’s the same station.

HU: It could be.

BS: They had an airfield there.

HU: I don’t know. I don’t believe so. They could only go in by tractor train, I believe.
BS: But, I mean, small planes could land there. Anyway . . .

HU: So, I started getting involved in the DYE sites with Wayne Tobiasson.

BS: This is after . . . the drilling program.

HU: After the drilling program.

BS: Now what year did you get started on the DYE sites? D-Y-E?

HU: In the early 70’s, yeah D-Y-E. These are code names that were used during World War II. DYE II, DYE III on the ice, DYE I, and DYE IV on each coast. They were worried about the stability of the stations. I don’t know if you ever have seen one, but they’re quite a structure. You’ve probably seen pictures of them.

BS: Of what?

HU: The DYE sites.

BS: I’ve seen pictures of them, yeah.

HU: Well, you could see how I thought they were a little overdesgned, but don’t tell that to the designer. But, they were always worried about the integrity of the structure.

BS: Why? What’s the . . . ?

HU: Well, the sinking. And whatever effect the wind forces were playing on it and all of that.

BS: They’re on pylons?

HU: They’re on stilts, because they were made . . . well, believe me by the time they got to jacking it up the first time,

BS: They were bent.

HU: No, no. The cost of raising these things 20 feet or whatever it was, was more than the original cost of the building. And the second time they raised it, I think they only
raised it twice, the second time they raised it, it was even more than that. And DYE II, or DYE III? They cut the legs off and they moved the building sideways because the foundation was getting down too deep and the columns were getting too long. The foundations were down 100 feet from the surface and these buildings were humongous. So, Wayne and I or Wayne’s group, we devised a means of trying to measure the forces on these towers - the lateral forces. There might have been some theoretical questions about the validity of this attempt, but we got the OK from the Air Force and we went ahead and started doing that. And so, every year we’d go back and take some of these measurements up and down these towers to 100 feet down below the surface. They were maybe all together there might have been half a dozen or seven or eight levels at which we would take these readings. And it involved hydraulic jacks and load cells. Physically, it was quite demanding because you have to climb these towers up and down and the wind would be blowing out there at 40 knots, the temperatures would be down. But, we did that for about 10 years until they finally closed the DYE sites down.

BS: You studied the towers, then, for 10 years?

HU: The structures, yes.

BS: What else?

HU: Well, we studied the sewage system. Things like that. Did they go to water well later on? They used to get their water by snow melting.

BS: Was it the Gonzales well, or ?

HU: Oh, you’ve heard of that. Rodriguez well. No they didn’t use that.

BS: I wanted to put one in at the South Pole.
HU: No, they didn’t use that. They used it down at the South Pole. John Rand, in fact.

He’s the one that drilled it.

BS: I wanted to put it in because, who was the group? I guess that was Karl Kuivinen that was pushing that. And because it was somebody else’s idea at NSF, it never happened in my time. You know, they had to . . .

HU: We had this up at Camp Century.

BS: The Rodriguez well.

HU: Yeah. Raul Rodriguez. He worked for the Corps of Engineers out of Fort Belvoir.

BS: So you did sort of maintenance, effects studies on these sites. And you did that until when, the ‘80s?

HU: Yeah.

(End of Tape 1B)

(Begin Tape 2A)

BS: This is tape two of the Ueda series. We were just talking about DYE sites and 24 trips to Greenland, right? 4 to Antarctic and 10 to Alaska.

HU: Yeah.

BS: OK.

HU: Speaking of trips to Greenland, back in the old days, or what I call the old days, we used to fly up out of McGuire Airbase in New Jersey and they’d fly these, I guess they were the military versions of DC6s and DC7s – 6 hours to Goose Bay, Labrador, and then they’d stop and refuel and you’d get a couple hour break, get back on the plane, another 5 or 6 to Thule. It never happened to me, but I’ve heard of cases where they’d go 5 or 6 to
Thule, and the place, half the time was socked in, they’d turn around and come back to Goose Bay. Yeah, that was something.

These DYE sites, they were quite comfortable. And they had a combination of Danish and American crews running the radar. And the food . . . they’d always have a Danish cook and there was excellent food. One of the problems they had was liquor was a little bit too accessible and too cheap and there were more than a few that left there as alcoholics, believe me. And then, in the late ‘80s, they started having females up there, too, so things changed quite a bit. And in all that time I’d been to Greenland, I never got a chance to visit anything outside the military complex - Sondrestrum Airbase, Thule Air Base, DYE sites, Camp Century – and finally, on my last trip to Greenland, we got a chance to visit Jacobshaven an extremely interesting village and spent a couple of days there.

BS: Last trip.

HU: Yeah, last trip.

BS: That was what year?

HU: Must have been 1986. No, 1985. Next to last trip. In 1986, we went up there and more or less closed the place down. If you’d go up there today, the structures are still there, just as solid as ever. A little deeper in the snow, but perfectly good. They go up there . . . we have some people here who do some research work up there in the snow. The 109th out of Schenectedy - you’ve probably heard of them – they still go up there, I believe, every summer for training. You know, snow landings, take offs and, whatever.

BS: Are they the ones with the Hercs?

HU: Yeah.
BS: Skis?

HU: Yeah. They’ve taken over from the VXE-6.

BS: They’re going down to Antarctica. That’s why I was asking the question. They’re down in Antarctica.

HU: I think they still go up there. They fly out of Schenectedy. I think they still use DYE II. Great group.

BS: They’re not great in Antarctica. Let me tell you why. If you’re a reservist, two weeks, you’ve got to get to McMurdo, do some useful flying and get back home in two weeks. That’s useless. They were supposed to civilianize it, which was what I recommended and then the Soviet Union fell apart and they wanted to keep Schenectedy going, they wanted to keep these guys going, and their Congressional delegation got them the job. They can’t really handle it. The Air Force is filling in for them. They won’t land in the open field. We put scientists all over. We put scientists all over in open fields in C-130s.

HU: Well, that’s arguable.

BS: That’s not arguable. We did. I was the commander. I ran the operation.

HU: Up in Greenland, they didn’t have any trouble.

BS: But, we didn’t have any trouble in Antarctica, but the Air Guard won’t fly into the field because they’re afraid of crevasses. As soon as they got there, they stopped it. So, I don’t know why they wouldn’t do it. But, anyway, it should have been civilianized. Cheaper . . .

HU: They had that two week Guard duty problems up there, too. It’s a tough way to do it.
So, anyway, I worked up in Alaska during the pipeline days. We were making some pipeline movement studies.

BS: *This is after it was built?*

HU: While and after it was built. The organization was involved in different aspects of the pipeline. Mainly, it was observational things, you know.

BS: *Did you work for Fred Crory?*

HU: Yes, sort of, Fred was sort of in charge of the operations, and in fact, I damaged one of his brand new Blazers on the haul road.

BS: One of his trucks?

HU: Brand new one. I flipped it over. Oh boy.

BS: *So, what did you do? You say you inspected the pipeline?*

HU: We were doing some measurement studies. We’d take certain sections of the line and see just how much the pipe itself was moving, either laterally or vertically from the movement of the support and things like that. It was interesting. Terrific food at the camps. But, anyway, it was good. And then, when I retired in 1987, I worked for a while for PICO. Have you heard of PICO? They had just moved from . . .

BS: *Lincoln?*

HU: Lincoln to Fairbanks in ’88.

BS: *Did Karl go with them?*

HU: No, no.

BS: *He didn’t.*

HU: No, John Kelle.

BS: *John Kelle took it, that’s right.*
HU: You probably knew each other. Well, he talked me into being the technical director of the operations so I said, well, I’d give it a try. So, I went up to Fairbanks and I went to work for him for a short while. But, I didn’t like the direction that things were going, so I got out.

BS: What kind of leader was John Kelle?

HU: He was good, but he was sort of out of his field. He was an oceanographer. I thought that you had to have somebody more involved in actual drilling programs. Then, again, Karl wasn’t always that technically competent either, but he was a good administrator.

BS: A leader.

HU: Yeah, yeah.

BS: I knew Karl and John.

HU: So, I did go up to Greenland once more for John.

BS: After you retired?

HU: Yeah, in ’89, to help him get that GISP-II program started up there.

BS: Oh, you did? Tell me about the GISP program.

HU: The Europeans were about 10 miles away at their site.

BS: Tell me about the GISP program. What were they doing?

HU: Trying to drill to the bottom and they they did.

BS: What kind of drill?

HU: It was an electromechanical drill that Bruce Koci had come up with. My criticism of the whole thing was that it took too long and it cost too much. But, they did succeed in getting the job done.
BS: *What was your job when you went there?*

HU: Oh, I was the technical director, or whatever you want to call it, for John.

BS: *For . . . PICO?*

HU: Yeah. I didn’t stay long. But, I did work with him indirectly off and on. I didn’t like the design of the drill or the drilling system. And I knew that it was going to be a looong haul. Let’s face it. At least I had been through it. I knew it was going to be a long haul. Well it was a long haul. NSF actually cut them off the last year. But, they got the job done.

BS: *So, 1989, to Greenland. You were a freelancer then, huh? Working on project to project.*

HU: Yeah. By the way, John’s a helluva nice guy. Don’t get me wrong. You couldn’t work for a better guy. It’s just that I thought he wasn’t. knowledgeable enough in drilling. I didn’t think so.

BS: *To run PICO*

HU: Yeah. Well, they’re going through this right now all over again in Madison. It’s moved to Madison now.

BS: *I thought it went back to Nebraska.*

HU: No, no. Oh, it did go back to Nebraska, and then now, it’s moved to Madison.

BS: *Why? Did Karl retire or something?*

HU: No. They put out a new contract every five years. And this time, Charlie and his boys were able to . . . He’s retired, too, but he’s still semi-active in the program. He’s essentially in charge of the program. He oversees the program.

BS: *PICO program.*
HU: Yeah. They call it ICDS now. Ice Core Drilling Services.

Oh, by the way, I did go up to Prudhoe Bay, Alaska on a project – very interesting project. That was in the late ‘70s. ’77-’78. Very interesting project. I worked with Bob Lewellen and Paul Sellmann and they were looking for permafrost, sub-sea permafrost. So, we were right out in the bay, top of the ice, doing some drilling there.

BS: Bob Lewellen and Tom who?

HU: Paul Sellmann. They’re a couple of old timers, too. Bob’s up in Alaska still. He lives up there and Paul’s here. He’s retired.

BS: Old Arctic hands?

HU: Oh yeah.

BS: I’d better interview them. I’ve got to come back here, it looks like. There’s a whole bunch of guys I’ve got to interview. I know we haven’t got much money, but I wanted to have 100 interviews. They only wanted 50 out of me for the grant. So, we got 50 interviews. We got 65 transcripts so far, and we got the archives.

HU: If you ever get up to Alaska, you’ve got to look up Bob Lewellen. He’s a real interesting character.

BS: Where is he? Anchorage? Fairbanks?

HU: Wasilla? Pretty sure it was Wasilla. He’s well known up there. Well known. Good man. But, since I retired, I’ve kept in touch with what’s going on, so I know what’s going on in the world of drilling. The drilling community itself, I’m talking worldwide, is quite small. The Danes and the French, and some Germans, some English, and us in the US and then Japan and Australia . . .

BS: What about the Russians?
HU: And the Russians, yeah. We all sort of know each other, most of us do. And they hold these symposia every three years or so – Ice Drilling Technology symposia. And I attended the last two which were in Japan. And so we get together every now and then. Of course, we’re getting pretty old now, but it’s a small community.

BS: Last two were in Japan. Where?

HU: One was in Tokyo in ’93 and the last one was two years ago, in Nagaoka. In fact, I wrote a paper for that one.

BS: And what year was that?

HU: ’00.

BS: Oh, 2000. And so every nation sent somebody, I assume.

HU: Oh yeah. Like I said, we’d been working together indirectly and directly for a long time.

BS: Syun-Ichi Akasofu get involved?

HU: How do you know him?

BS: He’s up in Alaska. I’ve known him for a long time.

HU: You’re right. He’s the head of the geophysics department.

BS: He’s done all kinds of stuff. He was an exchange guy for IGY and never left.

HU: Still there?

BS: He built the International Arctic Center in Fairbanks. That’s his project. It’s Japanese funded.

HU: Oh yeah?

BS: He went home and got the money.

HU: Yeah, I think I heard something about that.
BS: He brought the Minister of Science over in 1997 for the 50th anniversary of the Naval Arctic Research Lab. We’ve interview him. He’s a neat guy. Boy, he pushes for money.

HU: I’ve never been involved with him, but a couple of his people – of course, geophysics . . .

BS: Any connections between the United States and Japan, he’s sort of the bridge on a lot of that stuff. But, he’s Alaskan.

HU: Was he seriously ill a few years back?

BS: I don’t know. He wants to build a staging base. He wants to bring Japan into the Arctic research heavier. He doesn’t care what kind. And he built the International Arctic Center and now he’s going to build a staging facility in Barrow.

HU: Really? For what?

BS: For jumping off into the Arctic Ocean. For the world.

HU: I’ve never even met him. John Kelle told me about him. They’re in different departments, but he knew him quite well.

BS: I don’t know him that well. So, anyway . . . that’s aside. I thought that he would be involved with these symposia.

HU: No, these were strictly ice drilling. That’s what it amounted to. And I’m still in contact . . . as a matter of fact, I’m writing a report right now, just on my own because I don’t think I can get it funded, but it’s going to be a chronological history of the Russian drilling in the Antarctic. It won’t have much of an audience, but I just feel that it’s something that should be done. It hasn’t been done and should be done. I’m working with a fella in Russia right now and I think I’ll co-author it with him.
BS: Can you give a talk?

HU: Pardon?

BS: American Polar Society is having a symposium in two years on the history of science in the polar regions.

HU: This is a chronological thing. The reason I’m doing it is that they started about the same time that we did and we know each other quite well. But, the problem is, I can only work from the English translations if I’m doing it myself. Very, very difficult because of the problems with translations, problems with the terminology we use in drilling, and I don’t blame the translators. It’s difficult. There is no translation for some of these words. And it’s very difficult. So, I contacted this guy in Russia that I met at the last symposium and I started getting some information from him. And he was very helpful. So, I told him recently that I’d just include you as an author in this thing. But, I don’t think I can get it published here because of the money situation and things like that, but I’m going to do it anyway. I think it should be done. And boy, from what I gather so far, I give those people a lot of credit. Boy, I’ll tell you, they’re some pretty hardy souls over all these years.

BS: How far have they drilled down now? 12,000 ft?

HU: Oh, yeah, around there, I think.

BS: Have they hit the bottom?

HU: The last hole they stopped because of the lake. Now they’re trying to decide what to do.

BS: Yeah, I know.

HU: Some of these holes . . . they went down and the drill got stuck and they’d devise a way to bypass the drill in the same hole because if you change the hole, you’ve got to
move your whole operation over. They’d devise ways to go around the stuck drill. They might do that two or three times in a hole. Unbelievable. Of course, they worked year round. Twelve months out of the year.

BS: They’d go there for two years, too.
HU: They might, yeah.
BS: They do.
HU: I give them a lot of credit.

BS: I flew over there and brought a lot of cores back. We shipped them north – the Greenway – to Christchurch. They got there and some bastard pulled the plug on the refrigeration. Lost about half a million dollars worth of cores right there.
HU: Oh, geeze.
BS: I was madder than hell. I know it was done deliberately because you’d have to undo the pin and then twist it off. And then there’s an alarm and they did something to stop that. You know, you get guys like that.
HU: Oh yeah. See, our problem was that during the old days of the Cold War, some of this information didn’t come over here until two years later. So, that just complicated matters, too. I’m also writing the history of drilling – I’m not getting very far, but I’m trying to write a history of the drilling at CRREL.

BS: Have you got any money to do it?
HU: No. It’s a bad time, because we’re having problems here, too, you know. Financial problems. It’s not getting any better.

BS: I’ve got my . . . this is a history project. I got money from NSF. They’re really interested.
HU: Oh, I think I could get money from NSF.

BS: *Go to Guy Guthridge. You know Guy?*

HU: He still there? He was there when we were . . .

BS: *'72, he came.*

HU: Oh, in ’72?

BS: *Anyway, he’s interested. Carl Erb, the head guy, is interested.*

HU: The head guy of . . . ?

BS: *OPP.*

HU: Oh, OK. Oh, he’s the head guy now.

BS: *So, anyway, sounds like we’re getting close to the end. You’ve got these retirement projects coming and going.*

HU: I like the Russian one. I just feel like it should be done. And if I have to do it on my own, I will. It may not ever become an official publication, but I know there are people interested in reading it. And I told this guy in Russia, you know how it is when you spend some time up there or down there, it sort of gets in your blood, believe it or not.

BS: *You’re telling ME?*

HU: It’s not that I had any great love for the Arctic or the Antarctic. It started off just as a job. I had no job and I had no choice but it turned out to be extremely fascinating and interesting. It was tough on the family.

BS: *Yeah. On all of our families.*

HU: But, you’ve got to admit that something about it gets in your blood. The same way with this drilling.
BS: If you were – I’m going to ask you a retrospect question, then we can close this down – you’re one of the guys that are still working things. A lot of guys haven’t done anything for years. But, if way back, you’re sitting there in front of Lyle and he asks you a farming question, and you make this connection on sugar beets, would you do it all again, the same?

HU: I think so.

BS: So, it was a good life.

HU: It’s been a good life. I can’t complain. We got to do a lot of traveling to a lot of places that most people will never get to see. Met a lot of interesting people, fascinating people. Yeah, I’d say it turned out quite well and I’d do it again.

BS: Yeah, it sure did. I loved it and am still doing this.

HU: But, you can understand what I mean that it sort of gets in your blood after a while. There were many, many miserable days in our business.

BS: But I overcame them. You overcame them, right? We all do. Well, that’s great. It was a good interview.