

PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Giles Wilderman

INTERVIEWER: W. J. Wood

DATE: March 1984

JW: Today is Thursday, March 15th, 1984. My name is Jim Wood and I will be interviewing Mr. Giles H. Wilderman in his office in Calgary, Alberta. I wonder if we can start out this afternoon and find out a little bit about just when you were born and where.

GW: My home was on a farm, I was born in High River on June 12th, 1925, I think it was Dr. Blainey officiating. Although I worked with another doctor that was there, Dr. Sun??? that was also one of the chief doctors in High River at that time. We lived on a farm 4 miles east of Blackie, which was about 12 or 14 miles out of High River. So it was fortunate that I was born in June because if it had turned out to have been January I might have had a real story to tell about how mother arrived in High River or I arrived home, if in effect I'd have even been born in High River.

JW: Can you recall what it was like growing up on the farm at that time, just briefly?

GW: The farm from my early recollections, was a series of droughts and/or grasshoppers. I recall that at one time, Blackie, our closest town, had the distinction of moving more grasshopper poison than any other point in the country. So the infestation in that area must have been pretty bad. That's how I first learned to drive because we had an old International 6 speed special was the type of truck and we used to go to town to pick up the grasshopper poison, which was arsenic and I think some syrup or something, mixed with sawdust. That would come out by the truckloads and Dad, when I was about 6 years old I guess, would sit me on a cushion inside the truck, which had a throttle on the steering wheel, put it into gear and my job was to drive it around the field in ever smaller concentric circles, around the perimeter and then one level in and what not, as he sat up in the back with a shingle in his hand, throwing out the grasshopper poison. So I had an opportunity of driving at a much earlier age than a lot of kids had and my brother, who was 2 years younger I recall, certainly thought that that was a disadvantage, from his point of view that I got this early. . .

JW: He was envious.

GW: Right, he was certainly envious but soon, well, grasshoppers lasted quite a few years and soon there was a mechanical device that we'd put in a device and the grasshopper poison was spread the same way that gravel is on the streets today.

#035 JW: You mentioned one brother, did you have other brothers and sisters?

GW: No, I had a brother and my sister was 9 years younger. When we went to school, the first school that I went to was the Wilderman School because my Dad was really the first Wilderman that moved into the area. He came up from Illinois in 1904. Why he stopped in High River and then trekked east to this lonely, dusty, cold, desolate place, 12 miles

east and set up their first homestead I'll never know. I sometimes wish he'd gone on and stopped in Stanley Park or someplace like that. But nevertheless, that's where the original Wilderman homestead was established and the following year his father and mother and sister and 5 brothers arrived from Illinois and that's where he grew up. It wasn't until he was I think about, it was 1920 anyway, when he was able to acquire some more land and start building up his own farm 4 miles away from the Wilderman homestead, which is still on that highway east of High River. It's still there. But the Wilderman School, which was an eighth of a mile away has now, of course, those schools were taken over, it was used as a granary for one period and then finally it was just torn down. But I guess the school lands are still school lands, I think people just rent them now. So we rode to school on horses for the first 7 years.

JW: That was in the depths of the Depression too, at that time.

GW: That's right. I remember, things were tough, there was grasshoppers and drought. And there was hail too. I recall some years that Dad would plant 4 pecks to the acre and he had to harvest the 3 that he got because you needed to supplement the seed that he could buy to put it in next year. So in some areas, some fields, he took less off than he put in, which might have been a result of hail or the grasshoppers or the drought.

JW: And the price, he was growing wheat?

GW: Chiefly wheat. I don't recall the prices of it.

JW: Well, it wasn't very high.

GW: No, it certainly wasn't. But we rode to school on horses first. I remember, there's lots of experiences in those days, with blizzards. It's like the mailman today, rain or shine or snow or whatever. Wilderman School had as high as 20 some students at it, many of them even walked 4 miles. Most of those families have moved away from that area now. the school lasted, when we got to grade 9 and because of the type of tuition we had we were able to compress 2 grades in one year, so I went to the Blackie School for grade 9, 10 and 11. And then I went to Calgary after that. Only because my parents thought they were going to give me another advantage and they sent me to Mt. Royal College in Calgary. So the Wilderman School only lasted a few years after I got to the grade 9 stage. I think about that time there was school buses or something. We never had the advantage of that, we didn't need them but there were some areas I think, were being bused in to town at that time. So Blackie became the central school for the area.

#084 JW: You mentioned you then went to Mt. Royal College, what did you take there?

GW: That was, when I went to Mt. Royal, it was really the start of university. I took grade 12 and part of first year university there. But at the same time that was going on I joined the university air training corps. So that kind of started my air force training and the reason I wanted to get in the Air Force anyway, so my number was really quite a bit lower and was prefixed with a U, it was always a matter of confusion in the Air Force how I had a U. 194780 was my number and most everyone else had an R and were much later in the numerical.

JW: What year was that, that you came to Calgary, do you recall?

GW: That must have been '41, the fall of '41. It might have been the fall of '42. So you see, I had a year there and then I went right into the Air Force. I got caught in the Air Force in that period when the Commonwealth Air Training scheme was in full blast. So Canada must have been making some money on the other Commonwealth nations because I went to the Manning pool in Edmonton and then to ITS in Edmonton. There were so many Australians and other groups going through that they would push right on through and all the Canadians were held up. I was fortunate in the course of, I forget how many now, around 90, there were 2 of us were able to get pilot selection out of that whole course. The rest went navigators or air gunners or something of that nature, out of the EFTS. So I was really lucky I felt, that I was going to pursue my chosen field a little longer. We got set aside and set aside many times, so I never did get overseas, which was very fortunate for me but at that time was a real disappointment. Everybody wanted to get overseas. So I spent quite a bit of time up there until I finally got to EFTS at High River, which of course, was right next to home. There I found out that asthma was, I guess you'd say a psychosomatic problem or something like that, because I remember, getting posted there right at the start of the harvest season and thinking, oh, oh, I'm going to get caught because I told, when I joined up, have you got any problems, no, no, no problems. So here I'm posted at High River at the worst time of the whole year for me and I went through it and never had a touch of asthma. But we got set aside at High River and I took dual training, I think I had 13 or 15 hours of dual training and they would never let us solo. Where really, we all should have been able to solo at 4 or 5, maybe 2 or 3. But the reason was, as soon as you soloed, that put you into a different classification and there was some necessity for them to push you on and they wanted to hold us because they were shoving through the Australians, the Norwegians and all that. So finally, after not flying very much, only flying 13 or 15 hours, one evening, just outside the mess that had the DRO's there was an opportunity to remuster as a flight engineer. So I thought, to heck with this, I think that's what I'll do. The next day I was on my way to London, Ontario. As it turned out there, I was in the last course. Well, the course just before me was the last course to go overseas. So I never did go overseas. Life at Blackie is what you asked me a moment ago, on the farm. I think we've jumped a few years. And how it ties into the oil business. I recall of course, in that area, and the way Turner Valley was in those days, you were reminded of it regularly. Sometimes for days at a time, because the odour was certainly evident. And during the Depression, I think it was Royalties, I kind of forget the name of that plant that was just south of Black Diamond on the east side of the road. Torn down now. But part of that was the distillate that they would sell very cheap. So we used to drive up there in the truck that could carry 9, 45 gallon drums of fuel, maybe 12 and purchase this distillate at a ridiculously low figure. I might even think that it was 4 cents a gallon but it was very, very cheap. I think Dad tried to burn it in everything but certainly it would burn in the John Deere tractors that were one of the most popular tractors at that time. So a trip to Turner Valley was always interesting, I had an uncle that worked up there. There were all those old flares, there was Hell's Half Acre and all those. There was always a trip by them, they were monstrous things at that time. So Turner Valley was already well along and as I just mentioned, because I had an uncle in the area who was a

rancher, but he knew a lot of the operators because they would lease, they had to gain access and whatnot.

#164 JW: What was his name.

GW: Art Wilderman. I always called him my swearing uncle. He was responsible or he certainly helped me getting my first job, which was with Commonwealth Drilling Co. At that time most of the activity was in the southern section of the field. That's where there was Little New York and Little Chicago. I lived basically, in Little Chicago because that was closest to the work.

JW: Was this after the war then ended, how did that work?

GW: No, this was during summer holidays. The war was on and I was a pretty husky kid and I couldn't work on the farm and I wanted to work. So I got this job, first it was roughnecking and then pretty soon I was a derrick man because I could handle that and those were the old steam rigs, which were really interesting rigs. When you look back on it now, it would take longer to set up those rigs and I was only involved in part of one set-up but it would take longer to set up one of those rigs than it would take to drill a 5,000' hole in many places today, or even a deeper hole. Because you had, apart from the immense amount of equipment and the weight of it and the assembly of it on site, there was gas lines to bring in from one place and water lines from another. I remember one well we were on, I think it was 12 miles, but generally it was from 1 to 3 or 4 miles was how far the water lines had to come in. They were all laid out and joined together with the expansion joints and all of that. Of course, a lot of the younger people, bigger than me, but who were military age at that time, were already gone. So because I was the youngest fellow on the lease, I got a lot of experience in a lot of areas. One I remember, that Commonwealth rig had 3, 300 lb. boilers. I think they call them double something or other, I mean they were high pressure. I think the steam went through another coil and got really cooked up or something like that. So every week these boilers had to be cleaned. What you'd do is, I think the evening shift, they'd shut down that particular boiler on the evening shift the day before and it would cool all night long. Drain the water out and it would cool. But of course, it was sitting right beside 2 others that were going full blast, picking up all the extra work that was involved running with 2. Then when I got there they would take these caps off the top and I would crawl in there and they'd stuff a hose behind me and turn it on. They'd open all the little ports around the bottom and hand me this hose and I had to wash all the slag out. It was certainly like working in a steam bath and then some. I remember that was the hottest thing that I could ever. . . But I was supple enough to be able to get in you know, and being the low dog on the totem pole I was relegated to that job. Everybody was senior.

#215 JW: This was after then, 1936, wasn't it?

GW: Right. I don't think I worked in Turner Valley before 1940, in the summer.

JW: Do you remember at all, you were probably about 11 when oil was discovered in Turner Valley, was that. . .

GW: That wasn't a memory of mine, when it was discovered. I think my first recollections of

Turner Valley was as we'd go on a family visit, was a special trip down to see Hell's Half Acre and a couple of the other, that's the only one I can really recall. There was an immense amount of fire in those holes in those days, and the noise.

JW: What kind of an outfit was Commonwealth Drilling at that time when you hired on for the summer work?

GW: I couldn't really. . . I remember Duckie Welsh was the tool push on our rig and I remember Merle Cairns being one of the drillers. Eddie Shaphill, who used to be with Hudson Bay here also worked on that rig at the same time I did. But I think I would have to say that it was a very well maintained rig, you were always either cleaning or painting, it was like a ship. For all the mud and everything that was spewed around on trips and what not, it was always cleaned up by the next shift and you could walk around in very clean, everything was tidy and neat and well painted. Just adding paint on paint on paint, and blue. The boilers were all of course, in buildings because I think those holes always took 9 months or more.

JW: 9 months?

GW: I believe. Because you see, I only worked for 2 or 3 months at a time. As a result all the time that I worked on those rigs, I never saw a hole sputted in, I really didn't know. And I would ask and they would try and explain to me how they did it with tongs and the kelly and whatnot. Or how they drilled the rat hole. I was never on a shift that the rat hole was drilled. It wasn't mouse holes in those days, I think that was an innovation that came along a little later. And I was never there when they tested and found that they had something, I was never on a shift or the holes I worked on were always at some other stage in between. Some I worked on were over 8,000' because I remember there was, I think there . . . no, it must have been deeper than that because I think there was over 120 stands in the derrick when I'd be working derrick.

JW: That rig you mentioned was well maintained and clean, was that an exception in Turner Valley at that time?

GW: I don't think I was really on anybody else's rigs. I would work my shift and go and play or I might have to work 2 shifts because we were short. I think a lot of the time they were short handed. At that age it was just work and sleep and play when you had time.

#269 JW: What were you living in when you were out there?

GW: There were several rooming houses in Little Chicago. They were just shacks, often above a restaurant, I can't even recall the name of it. But I always stay in rooming houses, in one of about three that were there. There's 2 fellows that I worked with that were about my age, well actually I think they were a little younger because they couldn't work on the rigs yet but I would see them on my time off and they were boys that were brought up in Little Chicago, that was their home. There weren't that many rigs working there at that time either I don't think.

JW: You mentioned play or recreation, what kind of things did you do for recreation?

GW: I believe it was mostly drinking. There was no organized softball teams. I think there were up at that plant I told you about, up by Black Diamond, there might have been up in that area. But the social life around Little Chicago and Little New York was pretty

limited. I think there was a theatre there so there were probably movies. But after I'd joined up and I was waiting in Edmonton, trying to get out of there, to get to EFTS, the opportunity came up where they needed people to help with harvest. You know, the country was short of harvest hands. So I was able to apply for that type of leave, because of my background, that I came from a farm. Of course, I didn't tell them I had asthma and I couldn't work on a farm. So I used that time to go back and work in Turner Valley and that's where I recall, I'd made a little over \$300 each of 2 months that I was off on harvest leave. Of course, I rationalized that by saying that by working in Turner Valley I was able to relieve somebody else from Turner Valley that could work in the harvest fields. But the Minister of National Defence didn't really know where I went or what I did but I got harvest leave when I was in the Air Force while I was waiting for the opportunity to move to EFTS.

#318 JW: Well, then weren't doing anything productive with you anyway so you might as well.

GW: No, they weren't.

JW: So you found I guess, working in the Turner Valley, the oil rigs and so forth, fairly interesting and when you were released from the Air Force you went right back to the valley?

GW: No. When I got out of the Air Force I had decided that I was going to go to university. So I applied and again, I got back to Mt. Royal College because you could take first year there. It was only a few months after I started that I felt I wasn't really quite ready to do that yet, I should go out and look around more to see what I wanted to become involved in. That was coincident with Geotechnical Corporation coming up to Canada and starting their first Canadian crew. So I applied for a job there and got it, they only had one that I knew of and that was in the Bow Island area. I think that I recall that was probably the start, not the very first but one of the very first major geophysical undertakings in the province. And that was in the fall of '45.

End of tape.

Tape 1 Side 2

JW: Let's talk for a minute then about the Geophysical Corporation. Was that an American company that was working up here?

GW: Yes, it was a Dallas company I would presume, that expected a lot of geophysical work was going to be required in Canada. Because of labour laws and what not, on both sides, they decided to train a Canadian crew to work up here because they were going to be limited to the amount of Americans who could come up. So in order to do this, they sent an American group up that took the Canadians and trained them here for 6 months, then moved them for the winter, because at that time it was impossible with the technology to work, everybody felt here, in the winter time. Certainly it was impossible for a bunch of southern U. S. types to work up here in the winter time. So we went down and started in the panhandle part of Texas, under a students' visa. We all entered the U.S. with a

students' visa. We had only been there about 3 weeks, 4 weeks, when we had 2" of snow, just like one of our little spring snowfalls here, and the whole crew was supposed to shut down because nothing was supposed to be able to move with this snow out and there was no telling how much worse it was going to get. I presume that they did have their bad blizzards, but nobody had clothes down there to work in that type of weather etc. And the Canadians of course, just went out and worked and were kind of a curiosity in Higgins, Texas at that time. When we arrived down there we were a curiosity as well because they had a municipal party, it was just a small town, to get to know this new crew that was going to move in and bolster the economy of the community and restaurants and bars and rooming houses. Even one of our people married one of the girls eventually, out of there. The comment at this social deal, that we sure didn't look like the Canadians that they pictured coming down, with big boots, red flannel shirts and talking in their French accent.

JW: How were you selected to ???, how did that work?

GW: I don't believe that anybody had any particular background, I think they were working for people that had some type of electronic background. But basically they were just looking for students that they were going to train.

#032 JW: So they came through Mt. Royal College then?

GW: No, I don't recall, I think I heard about it through a friend. Even though I had a little more, shall we say, technical background than he had, because he was first and I was second, that's the way that our whole existence in Geotech was predicated on the seniority that you had just by when you joined the company. So I started off, the only job that was open to me was on the recording end, and not on the drilling end where I'd had some background. And my whole time with Geotech was on the recording end. So by the time I finished there I was an observer is what they called it in those days. Which I was pleased with, I mean, I'd learned something in a different field. I didn't realize that that was due to end pretty quick, because as soon as we had finished our 6 month sojourn in the Higgins, Shattuck area of Oklahoma and across into Kansas, 3 little areas close together that we'd worked in down there for 6 months, they shut the crew down and we were going to move someplace else but there was about a week, I think it was 10 days holidays were given to the entire crew. So naturally, they all came back to Calgary on their holidays. We were stopped on the border on the way down where the Americans said that the students' visa was no longer valid, that we were all qualified operators and had to have work permits to enter the U.S. The work permits were impossible to get. And there was no work for the Geotechnical Corporation in Canada then, they had no jobs up here. They'd had one and were expecting a lot more to come. So the whole crew was thrown out of a job at that time.

JW: Let's just back up for one second, their intent was then to largely hire Canadian crews, to train Canadian crews. Was that in response at all to any backlash in Canada against the number of U.S. people coming up here in the oil industry? Or were they just being pragmatic in a different way?

GW: I don't think there was a backlash. I don't recall ever hearing of any local resentment or

anything against Americans working here. There might have been at a policy level in Ottawa, because the Americans were not letting Canadians down there, the Canadians may not be permitting them to work up here. But there were quite a few Americans around and everybody, you know, at that level, there was no animosity, everybody liked everybody. I think it was just like, and we did this ourselves in later years, when we for instance, working in Newfoundland. We tried to hire as many people from down there as we could, and train them as fast as we could because if we were going to expand our operations down there, or go back another year, it would have been nice to have had that base to work with. So I think that was the type of thing that really got Geotech to do this. They expected a lot more work up here and we'd better get some local people involved, we're going to do better.

JW: Do you feel then, when you were not allowed back in the United States, you were a qualified operator?

GW: I think with that equipment at that time, it isn't really that difficult to be an observer or to drill in the type of stuff, I think everybody was doing their jobs. They'd even trained surveyors. So with the type of surveying that was done, the surveyors that were trained on that certainly wouldn't have been DLS quality here but they were certainly able to provide accurate surveying for a geophysical crew.

#081 JW: Could you just perhaps describe the state of the art of seismic or geophysics at that time, or as you learned it working with them?

GW: I think they were using 1,320' spreads. Generally the technology was, it was a split spread that they shot most of the time, there was no fancy refraction shooting or anything of that nature. The doghouse was big and bulky, as different from some of the small sophisticated equipment that I see today, although I haven't followed it very closely. I remember there were a bunch of fine gold wires, were part of the, I can't think of the name of the seismic unit inside that were often breaking. This could shut you down for half a day, you might be sitting out in southern Alberta or sitting out in the panhandle and the wind blowing and you're trying to resolder this little wire back in. Just the wind on the truck was enough to make it an almost impossible job. Nevertheless. . .oh yes, and you had to work, when the shot went off everything inside had to be in complete darkness, inside the doghouse, because the record was. . .you know, to develop it, to maintain the security of the whole thing. That was different than it is today of course. The powder and the shooting truck were basically the same as they are today. I think they still use the same diameter and weight of powder, when they use that type. Of course, they have other canned types and whatnot now. The drills were very basic, as compared to today, very basic. Fortunately most of the drilling was in areas that were pretty easy to drill in, down there as well as in southern Alberta. In southern Alberta we didn't run in to too many places where there was any old river beds or anything of that nature, any glacial material. So the production was, even by today's standards, quite good. And down in Texas, where there was one formation that we were drilling ???, it was slow but there was no real problems. On these rigs there was no kelly, the rigs were like the diamond drills are today, where a chuck. . . they had a swivel and drill stem is all. So the swivel screwed

into the drill stem and the rotary table was a spindle with a chuck, which is like a pipe wrench that you can tighten up on the drill stem, and that rotated the drill stem. And that was pushed into the ground with 30" hydraulic rams, so every 30" you had to stop the rotary table, loosen the chuck screws, raise the rotary drive up in the air, retighten them and engage the rotary table. So when this got going, routine, day in, day out and several drills trying to out perform each other in the field, the driller was of course, responsible, his job was to shut down the rotary table and raise the drive. So he would shut the rotary table down, his helper had a wrench that was heavy and easy to put on to these chuck screws, he would quickly loosen the chuck screws. Just the moment that it quit rotating he would hit a chuck screw, it would rise up in the air and he would have his wrench on one of these and the other one hand tight as soon as the quill, as it was called, reached the top of his travel, he would pull on the wrench, tightening the screw and step back and the driller would engage the rotary table again. Now with the routine you can imagine that there was many times when there was thoroughly. . . there was accidents that injured people because the driller was a millisecond too fast or the helper too slow. So in that way it was a kind of dangerous apparatus. Drills are always dangerous to some extent. But that was a problem with those drills and it wasn't until, I'd have to think but quite a few years later, that kellys were common on little drills like that. At that time the George E Phailing Co. were making a drill that utilized a kelly but it was really in the slimhole or structure test type of drill. It wasn't in a shothole drill. So when we lost our jobs as it were, as a result of this immigration law, there was nothing and I don't want to jump ahead but the natural thing was that we could see the opportunity that might come here. We were on the verge of exploration work picking up, we'd already had a taste of it, we knew people with Cal Standard, Galloway for instance, and whatnot, you could tell there was going to be a need and 3 of us decided that we were going to get into the drilling business and start a business. The first rigs that we got here for the structure test type of work, that was the first type of work available, were of this type. With the quill and you tighten up the jaws on the chuck and drill just like a diamond drill. The first ones that were really sold here were. . . goodness, I drove to Michigan City, Indiana to get one too. It was Joy Manufacturing made it. They were big in mining drills at that time so they had redesigned one of their mining pieces of apparatus to become a structure test drill. So there were several of those sold in Alberta, really before there were very many Phailings. Now Imperial Oil had some Phailing rigs and they sold theirs to the Spalding's and McNeill I think it was. But that was kind of like a Cadillac. The 3 of us starting out couldn't afford these Phailings and we had to go for 2nd best, which was this Joy rig.

#169 JW: Who were these 3 that you started out with?

GW: One was John Switzer, who grew up in this town, both of them did. He was a surveyor on the Geotech crew and the other was George Cornford, who also grew up here, was in the Navy and he was a driller on the Geotech crew. Since then he has been involved in manufacturing drilling bits, mostly with a company called San Juan Tool, which is still operating in this town.

JW: So you had a good range of experience, you each had a different. . .

GW: Yes. But nevertheless we felt that drilling was it. Of course, we were naive enough at that time to think that we were going to maybe even drill up here in the summertime and drill down south in the winter. We were going to go like the birds. We didn't realize that we were going to have problems with immigration. We thought that being owner operators, that this was going to be something we could look forward to. But of course, it never happened for many, many years. And getting our first rig was really quite a lesson in business. We thought that the way to do it was to go and borrow some money at the bank and buy a rig and go out and get jobs and pay the bank off. You can tell we were pretty naive.

JW: How did you finance this operation?

GW: When we found out that that wasn't possible we went to our, I think they call them, reestablishment credits, I had \$1,200 worth and for some reason Cornford had \$900 and Switzer had \$300. That still wouldn't provide a down payment on a rig. So after visiting every bank in town we went to IAC. I believe the manager's name was McPherson, he later on went on to become president of IAC. But we went in and told him our story and we figured it all out and the interest that they charged for household finance, this was Industrial Acceptance Corporation, for their type of finance, we could never stay in business, it was too rough. But he saw that there was going to be a new need, not just in drilling rigs but in cats and other construction equipment. Over a period of about 4 months, while we sat and waited and visited with him weekly, he was able to convince his people down east that they should start a new program to finance industrial equipment. So we were his first account and he was able to provide this financing. So it took every cent that we had, we didn't think about working capital, we were going to work that out when we got to it. And he didn't ask us. But he was able to finance this first rig, which we ordered through a guy named Percy Smith, who was a supply salesman for, I forget the name of the company here. We ordered the rig and because I had a few dollars left over, because I'd got work, I'd worked in Turner Valley for a week or something like that, I was elected to go to Michigan City, Indiana and drive it back. While the other 2 were supposed to get our first job and our first job was months after we got back because Imperial Oil had a little bit of drilling to do out in Turner Valley. They were going to shoot a well and we were able to convince them that we were the ones that should get the job and not the Spalding, McNeill group, who Imperial had divested themselves of these little drills and sold it to some of their employees. And that they had better get somebody outside to do this work. So on a PR basis it made them look better I think was part of our sales approach to the thing. So I went down to Michigan City and started back with this beautiful drill, brand new. Coming through South Dakota, the first thing that happened, at about 4:00 in the morning, I was stopped by a patrolman who walked around the beast. He didn't know what it was and decided that it was over length and over weight. Now I mean, this was a very small matter but he was able to say that it was 3' over length because the mast stuck out in front and it was one inch over width, which I doubt but I think the U.S. justice in some small areas has a history of having these local rules. So we parked it on the side of the road and he drove me about 12 miles off to the side, to a little town and knocked on a door. The judge or whatever he was, the authority came out, had

his pants on over winter underwear and we held court in his living room and I was fined \$1 an inch for width and \$10 a foot for length. Which I think cost me, with some other costs, about \$50. Which was a substantial amount of money. So that resulted in me getting to Rapid City, South Dakota with only enough money to make a collect call home. So my dad had to wire me down some money so I could put fuel in this thing to get it home. He wired \$150 I believe, because it was very difficult for him to wire any money too. Farming at Blackie, that wasn't one of the big years. He wired this money and all of a sudden we went through those hills down there, the Black Hills of South Dakota, plus wind and we just barely made it to Calgary, I think we just about had to coast in to town on that \$150. It was close. Nevertheless we sat here for months, 2 months anyhow, while IAC held off on their payments and got our equipment put together and tested it and waited for our first job. Once we got that first job, just a short time after that the whole economy in the exploration business started to open up and there was more work than there was equipment.

#276 JW: Was that then, a product of Leduc, or was this before or after?

GW: That would be before. So the work was out around Wabamun, that's where we had our first work. And pretty soon there was. . .

JW: Was that for Imperial at that time, who was your first client?

GW: Well, the first one was Imperial down there. The first one up there was, I can't right now Jim, this of the name of it, I might another time. But it was one of the ones that have since merged into the Home group or somebody like that. But you see, from my point of view the reason for this type of work then was the geologists in oil companies, they might have tired some geophysics in this area and that area and decided it worked but in other areas it was structure test was their. . . you know, after you've done your surface geology and whatnot, to get some knowledge, they were going to use structure tests. I think we went through at least 2 periods where that was a very popular, either by area or just in times, method of exploration. So right after we got this rig structure test drilling, strat test they call it, was quite a popular geological tool.

JW: So what they were doing was, say in the Wabamun are, was looking for the continuation of a formation that was exposed in the rocks?

GW: Something like that. Or they had some marker that they related to something else and this is what you'd be following all along.

JW: Were you pulling cores out or just. . .?

GW: No, e-logging them.

#306 JW: Okay, could you explain that?

GW: Pardon me, at the beginning, I think the geologists were just looking at samples. Then a little later there would have been companies, and it wasn't Schlumberger, there were people like Al Barlow and others who had small portable equipment that would come and log the holes. They were just regular basic e-logs and they were just looking for one kick, which was either a coal marker in some areas or some other formation that was a clue of what we were looking for. So it would have been independent of the surface contours. So

at the beginning, that was summer work. Then after about the first year I guess, companies wanted to operate through the winter and there was just no, I guess that's when innovation started in the business. There was just no way that you could operate one of those little rigs efficiently during the winter. The first winter was a bad one. A bad one in as much as it was disappointing the amount of time you were shut down because you're frozen up. But all of a sudden there were just a few very basic, simple, little innovations put on these rigs so that you could operate in any weather. That was enclose the mud pump of course, and pipe exhaust in. It's so basic it's hardly worth even noting, we should have thought of that before. But that was the start of it, and positioning and draining the kelly each time. Every time that you'd add a rod, add another drill stem, even if it was only going to take you a fraction of a minute you had to drain the kelly and stand pipe. It was designed on the rig with a Nordstrom type valve, a quick opening valve, that it could just be drained, you just pull a lever 6" and the line drained. That was the start of getting ready for winter operations. Then of course, there were tents and other things like that that came later.

End of tape.

Tape 2 Side 1

JW: Let's just for the record, if we could get the name of the company that you started?

GW: The three of us started a company called Northway Co. It was a partnership, it wasn't a limited company. Northway Co. operated until '49 when we disbanded it and each of us went our separate ways. Switzer went to work for a geophysical company I believe, Cornford got connected with a bit company. They weren't manufacturing at the time but later he started into manufacturing, first he was just marketing bits. That was out of Edmonton. I got a drilling rig and went back into the drilling business.

JW: You briefly just mentioned the innovation that was required to do winter work and you skipped over some of it. I think that's interesting though, that must have been quite a revolution to be able to work 365 days, or all year, as opposed to just summer time and the amount of work that could be done. It probably changed the industry somewhat.

GW: It certainly did. Of course, the advantage of working in the winter, and in later years there was more work done in the winter often than there was in the summer because access to a lot of the areas up north was only possible in the wintertime, before the all track vehicles were used. But in the old days you had to rely on winter to even get into a lot of those areas. But in the beginning there was just the programs, they wanted to carry them on, if not all winter, at least well into the winter. I think just to finish up a program. And then of course, there was road bans in the spring which shut everything down, irregardless. I think we worked continuously after that first winter, we worked continuously, 365 days a year less road ban. Some areas there would be a road ban but you'd try and be someplace else. The business just started to grow, the opportunity just started to grow.

#028 JW: Could you just maybe summarize again, some of the technological changes that were required? You mentioned that they were so simple, or now seemingly

obvious but I think it would be worthwhile just running through those again.

GW: On these little rigs that, this was before we got into the oilwell drilling business later on, but I guess you crawl before you walk, they were still pretty basic. We had a doghouse as we called it, which was on a 2 wheel trailer so it would tow easily, that contained spare parts and just like on a regular drilling rig, spare parts and a bench and a vice, the records books and things of that nature, and a place for the operators and crew to get out of the weather. That was a real luxury and it certainly wasn't something that any of the geophysical crews had. It was soon after this that we were doing both . . . you know, I had rigs that were capable of structure test drilling as well as geophysical drilling. The structure test rigs, chiefly because they were 24 hours a day, you had to provide some sort of shelter, you know, for the rig. Nevertheless, the first innovations were to put heat into the mud pump and to be able to drain the lines, all the lines, the suction lines and the kelly lines. At a moment's notice and whenever you wished. The next one of course, we had to haul water long distances and there were fire boxes built into water tanks. The first ones were not very efficient, the pipes were too small, they weren't long enough, they might enter the water tank. . . I recall some of the first models, the tank would be 8' long but the heating duct would only go in 4' and then there would be the stack. Nobody realized how fast water freezes at 40 below, when you're driving down the road at 40 miles an hour. So inevitably that had to be changed because the front end of the tanks always froze up. Then propane really helped a lot. The old diesel fuel or kerosene burners that were first used to thaw everything on drilling rigs all over were very temperamental pieces of equipment and generally, in the conditions out there, there was dirty fuel put in them or something happened, they were not very reliable, they were quite a bother. But when propane was more widely available, that was quite a few years later I presume, it helped that. And of course, some of them put 12" diameter pipes through the tanks so that they could burn oil filters or burn wood or whatnot in them. I mentioned the doghouse, the next innovation for structure test rigs was a tent that, when the mast went up, it unfolded and covered everything back of the cab. So the drill pipe would still be outside and while you were drilling one length down you could always bring in some and they wouldn't really warm up that much but they would be standing there and getting partially warm. On the shothole rigs though, the operators and the crew were right out in the elements. But of course, they were only out there 8 or 10 hours a days. Later on there had to be some more innovations, to structure test rigs. As we went north and fuel was a bigger problem, you couldn't have salamanders or other types of heating units, close by, burning tremendous amounts of fuel, so that the crew could warm themselves. I often recall the old Indian thing where you say, white man build big fire, stand way back, Indian build little fire, get up close. Well, these salamanders were big fires, they really burned the fuel. It was very wasteful and soon, in later years, there were other ways to conserve heat and make things more comfortable. But the first years of course, it was pretty cold work for everybody that was out there. There was only a certain type of person that would really put up with it. Drilling crews generally came from the farms, and generally came from western Canada, Saskatchewan or Alberta.

#086 JW: How many people would you have on one of your crews?

GW: On a structure test rig there was generally 3 to a shift and they were generally running 12 hours shifts. I think that was something that was in the industry for many, many years, where people would go out and work on rigs and they just went out there to make money. They would work as long as they could and they went back and slept and they went again to work. After they'd worked for 3, 4, 6 months or something like that, when they were sending them up to the Arctic, it was often 4-6 months people would want to stay up there. They wanted to get it all over with, wanted to make some money, then they'd come out. And they wanted long hours and no breaks. So basically, a lot of the crews were like that. It was the provincial governments, without the benefit of unions, in their wisdom decided that people shouldn't work like that anymore and started to change it. That was quite an aggravation when that legislation first started. But there's nothing you could do about it, you had your Workman's Compensation and everything and it was all regulated. But in those days, that was the practice.

JW: When you were out in the field, in say the 40's, with your company and drilling, were you living in a camp, did you set up a camp or were you moving a lot or were you based out of a town, how did that work?

GW: Both. Generally you were based out of a town. You know, like Wabamun or any of those towns up there you could either live, Wabamun didn't have a hotel but they had summer cottages that were just that, that you could rent. They were pretty chilly in the winter time. Out at Waskatenau and out the other way where work was going on there were always hotels. Often they were as cold as those summer cabins too. But that's where you stayed, you lived in hotels, you ate in restaurants and you were really nomads, very much the nomad. And even when, as far as I'm concerned, even when I got married, we lived in Edmonton but I would go out to these towns and live in hotels and whatnot, as lots of people did on crews in those days. And then come back on the weekends. Now this wouldn't be on structure test work of course, which was 7 days a week, this was on geophysical work. So they would try and find accommodation in the little towns to spend the weekend. Then in many cases, people's wives would say, I'm not going to stay here in Edmonton, I'm going out there too. So that was another problem because many of the towns had no extra accommodation. You had to find somebody that wanted to make a few extra dollars and would split their house in half or rent the upstairs or something of that nature. Very, very few suites or apartments in any of the towns for many, many years. You can imagine, places like Daysland and Killam, and all those, there still isn't.

#127 JW: No, that's right. What effect, or do you recall when Imperial found oil in Leduc and what was your reaction, do you recall that?

GW: Jim, I'd have to really think. I recall the newspapers talking about it, I remember going. . . I never even went out to look at it. We were so busy doing other things, all that meant is that it was good. I wasn't playing the stock market, didn't know anything about the stock market. I was chiefly involved in running my business. It seemed like a full time job. You had equipment problems and labour problems and money problems and marketing problems. So there it all was and all Leduc did was another ray of hope, things were really

going to go after that. But I wasn't even in a position, and none of us were, any of my peers, we weren't able to start planning and say, oh, this is really going to change things and we've got to get ready for the big time. It was just like farming was, there was always a problem. We didn't have grasshoppers and hail, but we had twist offs and equipment failures and stuck in the hole and lose your pipe and lose a crew to somebody else or something like that. Some of your help rolling some equipment. It always seemed to me that, although these fellows, this odd breed that we got that would work in that terrible weather and long hours etc., why were they such poor drivers. I can just recall so many times the phone would ring and somebody had rolled a truck. And sometimes it was a drill which was pretty serious for a little company. There was an awful lot of that.

JW: Who were your competitors at that time?

GW: Basically, at that time. . .when we first started off, the Cornford, Switzer, Wilderman and Northway Co., our competitors were Libbin, Spalding and McNeill.

JW: They were an established. . . ?

GW: Spalding and McNeill, not Libbin, I don't know how. . . he might have helped finance, but he was a young fellow from Calgary. Maybe part of the family were involved in it, but Imperial divested themselves of these small drills. So they had ongoing work with Imperial crews. So that set them up. I don't really think they were competitors as it were, they were just in the business at the same time. It was quite a few years, I think, before we really had a competitor. It was just a lack of work I guess. Not lack, I mean we were always busy with one rig or the other but if you had a rig that was working you were always trying to find work for the other one. But I mean, it always seemed to come together but it was finding work, not competing for work with somebody else. For I'd think, 2 or 3 years, maybe 4 years in there. LM&S, Libbin, McNeill and Spalding that is, LM&S developed and I guess eventually they started to get some more equipment and we were competing for the same work. Then some people called Becker's came into the business and then Seaman's. They started off in that end too, and it got more and more competitive as time went on. At the beginning . . .

#180 JW: So you were a pioneer really, or pretty close.

GW: Pretty close I guess, yes. There wasn't the competition of that type, it was other problems.

JW: When you were doing structure tests and that sort of thing, did the company that you were working for have a geologist, did they provide you with a geologist?

GW: Yes.

JW: So they would have one of their people out there.

GW: Right.

JW: He was in effect, like sitting the well, sitting your drilling.

GW: Yes. So he was in town and he knew that there was nothing for him to see until you got to 777' or something like that. So he would govern himself accordingly, a shift would come in, how deep are you, 500, they should be down to the marker by midnight or something like that and he would go out in lots of time and be there and collect his samples and log it. So yes, a lot of the time there was a company geologist out there. Then I think I would recall that maybe they decided that the e-log. . .there was no company geologist, there was

just the drilling contractor and the logging contractor. And the surveying group. I don't even recall, in some cases, there being surveyors. There must have been after we were there.

JW: Figuring on where you were.

GW: Well, I mean, you could always say I was in the northeast corner of section 23. Within a few feet of whatever. But how would they know the elevation so that they would be able to. . . So I guess sooner or later a surveyor did it, but he might have been after the fact because maybe where he would have located a hole wouldn't have been a suitable place to set up a drill or something like that.

JW: Did you have to do the negotiations for the land yourself, or was that done by . . . ?

GW: All done by somebody else.

JW: Okay, so you got access once you were up there.

GW: So it's not confusing, that would be in the structure test. Now in the geophysical end, which we were chiefly involved in for many years, the surveyor, that was part of his responsibility to go ahead and make the arrangements with the farmers. If a line had to go across some farmers land and couldn't just go down the ditches. First they had to make an arrangement with the municipality, next they had to make it if they were going to encroach on anybody's land and that was generally the surveyors job. It was always permitted as we call it, before we got there. So he was a very busy guy in some places because sometimes there could be a lot of mileage covered in a day. So not only did he have to survey it and do all that but he had to permit land and things of that nature.

#225 JW: So Northway Co. was successful until it disbanded in '49?

GW: Yes. It got us out of that first big hole and gave us a chance to expand. Of course, anybody who is in the contracting business, whether it's cats or drills or whatever, I think is always equipment poor. You know, you just can't stand still. You've got to either improve your equipment or get more of it or lose your position. Then the cycles of course, in the oil business started and I was just before you came in, trying to recollect, but there is no way that I can put a number on them. I just kind of recollect that the period from '50-'60 was a series of them. And some of those were, in the 50's, as far as I'm concerned, is the start of Big Indian Drilling. So Northway had ended, I had a little short sojourn with a company called Wilderman Drilling, which I didn't really like the name of it too well. I thought, I had another idea on financing and how I was going to get equipment so that's when I formed Big Indian Drilling. The 50's, we had good years and we had some that just would scare you to death. Everything folded around your ears. You had all the financial obligation and no way to handle it. So that's when we diversified into other areas. But we were always in the geophysical business. But rotary drills were not supposed to be of any use in hard rock country, in the mining business. I mean, that's another story but we certainly pioneered that and that became quite a successful division of Big Indian Drilling. Another one was in what we call ground water development. It used to be that a well driller had to have a cable tool, you couldn't tell where water was. They used to plaster it off with the rotary drills and whatnot. But when you hit some of these low cycles, we had to do other things and one of them was ground water

development, or you can call it water well drilling if you wish. But we didn't want to get out there and compete with the ordinary well driller. We did a little of that and I could see that there was something to it so we went to Illinois and took courses, etc. etc. and quickly tried to get into that business and did in a fairly size way. As a matter of fact, Big Indian became maybe the second or third largest well driller in North America.

#274 JW: Of water?

GW: For water. We put things, like we supplied Regina with 17 million gallons a day of their water from wells. These are quite an engineered hole in the ground. We always used to say a well is a hole in the ground but a hole in the ground isn't a well. The City of Regina, a lot of the water floods, a lot of the towns and defence establishments and things of that nature, rely on ground water. And the development of ground water is a simple logical process but nobody had been doing it that way. So we developed this division which we called our hydro-geological division.

JW: So you could charge more.

GW: So we could charge more. And that was gaining lots of headway. We had a hydro-geologist in it and a geologist and an engineer. Barney Thomas who used to be a commissioner with the City of Calgary was our engineer, left the city and came with us. We didn't do any work the City of Calgary but he left the city Stronglam and Nelson Engineering firm started. So we had Barney Thomas, we had Dennis Delorme, who's now got his PhD and he's with the federal government down east. And another fellow, the hydro-geologist was an American that we had up here and didn't like it and eventually, after about 3 years, went back south. But by then the Alberta Research Council had started to enter our field and provide for free, what we were trying to make a living on. So we could afford to lose him about that time anyway.

JW: We're jumping ahead just a little bit. Why don't we just wrap up this session, we'd like to know how come you folks at the Northway Co. then decided to disband?

GW: We just decided to go our separate way.

JW: Okay, that's fine then. Let's then stop for this session.

End of tape.

Tape 2 Side 2

JW: Okay, last time we were talking about Northway Drilling and that dissolved sort of and then you started Big Indian Drilling. I wonder if you could talk a little bit about that and maybe first of all, where the name came from, it's sort of a curious name?

GW: Well, actually Him, right after Northway I started back in the drilling business as Wilderman Drilling Ltd. and acquired several small rigs and started working for our old customers again. About 1951 I decided that being the Wilderman in Wilderman Drilling might have limited my marketing potential somewhat. If I ever wanted to grow I just preferred to get a name that was easier on my customers than Wilderman. And because we're in the west I decided on Big Indian Drilling but where I got the idea was when the uranium boom was really jumping in the 4 Corners area, New Mexico, Arizona, etc.

down there. I went down to see if, for 2 reasons, I went down because I was in a prospecting syndicate that had a guy named Spud Eustace, who was a very famous Canadian prospector, was working for our little syndicate down there. And secondly, because he told me that there was a lot of drilling, of which we had the right kind of equipment and things were a little hungry up here, that that would be a good place to go. So I went down to the 4 Corners area, and Steen, if you remember Charlie Steen was the fellow that originally founded uranium on the Navaho Indian Reservation. He had a company called Indian Drilling or something like that. That was fitting because he was doing all his drilling on the Navaho Indian Reservation. I came back and Indians are part of our heritage here and I just thought, if Charlie Steen has got Indian Drilling, I'd have Big Indian Drilling, be bigger.

#027 JW: You mentioned, interesting, in 1951, you mentioned things were a little hungry around here yet I thought that was a fairly active time in the oil patch here in this part of the world.

GW: It might have been fairly active, I can't recall, I might have had several pieces of equipment that had payments against them and no potential jobs. I think also, I always to diversify and do some work someplace but be locked into the particular line of business here. And if there was a big opportunity down there, well naturally I would want to check it out. I wanted to grow and it was Wilderman Drilling I went down there and investigated the area on, it was shortly after that, of course, I had this growth idea in my mind, that I decided that we would call the new company Big Indian Drilling. I would finance it somehow outside and as quickly as I could I would put Wilderman Drilling in it. In fact, it took about 3 years to get Wilderman Drilling in it. But I financed it with Wilderman Drilling credit and the help of a guy named Percy Smith, who ran Seismic Service Supply. Seismic Service Supply was a principal supplier of small drills, the Denver brand and other related geophysical products in that end and they had a real good machine shop, an excellent machine shop. New rigs at that time were costing more than I figured I could possibly finance or find the funding for. But we could purchase used rigs that were available on the market and refit them just like you refit a boat and they would be as good as new, if you did it in your own shop or a real good shop. The reason some of these rigs were on the shelf as it were, is that at one stage as exploration was growing here at that time, druggists and farmers and everybody heard that a real easy way to make money was to buy a small drilling outfit and hire a driller on it and you could make a lot of money. Well, of course, their driller was their partner and they were poor businessmen and in no time a lot of them were out of business because they didn't know how to market and get contracts or they didn't know how to maintain equipment properly or they just didn't know how to administer a business and keep it going. So this equipment was for sale and we decided that we would buy it at the best price we could, remount it on new trucks, which you can't repair cars or trucks as well as you can drilling equipment. But drilling equipment can last, with good care and proper maintenance etc. for many, many years as you know. So that's how we started Big Indian.

JW: You were doing shothole and slimhole drilling, is that right?

GW: At that time, more shothole than slimhole. Slimhole drilling was in it one of its low cycles during '50, '51, '52 period.

#063 JW: Could you just maybe talk about both of those, what the differences are?

GW: Well, shothole drilling, all the geophysical work in those days, as different from now, when they have other energy sources, geophysical work relies on an explosive charge being detonated, sending out an energy wave that is reflected off various strata back and picked up by seismometers and recorded. And they calculate, estimating the velocity of this energy wave through the ground they can tell how deep various formations are and so map the underground strata. So all these geophysical crews needed shothole drills to drill the hole that they were going to load the powder in, this was part of the geophysical crew. Now there were Century and Western United and GSI, and a lot of others, Northwest Seismic in those days was a Canadian company. All of these companies, some of them had their own drills, the major U.S. companies had their own drills. Probably 2 drills per crew which were sufficient in areas where the drilling was good, but there are so many eskers??? and others things that you drill through here, old river channels and other glacial things, that they needed additional drill power on their crews to keep the recording truck working properly. So there was room for outside contractors in the business. So that is where we supplied the extra drills. Now there were some companies, for instance, Hudson Bay Oil and Gas was one, who had a kind of policy as it were, Linden Richards, who later became president here, he was exploration manager at the time and I knew him well, he didn't want Century Geophysical for instance, to have their own drills. He thought that if he had a real good drilling contractor on there that would drill a lot of holes, then the geophysical company were going to have to keep up to them and he would get lower cost per mile as a result. So that was the policy of many companies was to make sure that there were 2 contractors involved in the geophysical crew, the drilling contractor and the geophysical contractor. So there was an obvious market there for shothole drills. Now the structure testers, strat test drilling. . .

JW: Is that the same as slimhole?

GW: Slimhole, yes. So the slimhole drilling were generally deeper holes and as different from shothole drilling was generally operated on a 1 shift a day basis, say 6 days a week, or 20 days a month. Slimhole drilling was a 24 hr. a day, 7 day a week basis, naturally because you had to run 3 shifts with it.

#099 JW: Would you use the same equipment for both operations though?

GW: No, generally we used the Mayhew 2000 or the Phailing 1500 or some larger drill for the slimhole business. So we acquired some of that equipment at Big Indian Drilling. As the slimhole business petered out, or it went into one of its low cycles, low demands, then of course, we had that equipment on our hands and we had to be innovative there in trying to keep it working. It was too big to be a suitable shothole rig so we had to find other work. I remember one interesting job, Western Kyanite???, who were chiefly I think, a promotional company but they acquired some geological information south of Morley, on the Indian Reservation. They figured there was potential there for gas or some of this

deposit of Kyanite, which they were going to pursue. They engaged us to drill a hole with our slimhole equipment and got a very good price for us. We started off with a Phailing 1500, which means in Phailing jargon that the rig is rated at 1,500' with 2 3/8 drill pipe. We eventually drilled to about 3,500' on that particular hole and it was because they never did find the marker that they were looking for or the Kyanite or the gas. But the money kept coming in to Western Kyanite through their stock market promotion. We were onsite and every time he'd come up and want to go a little deeper we would find a way of doing it so we eventually drilled to about 1,700' with a hole diameter as large as we could with this Phailing 1500, cased it and cemented it because I was getting worried about what kind of gas pressures we were going to, if there was anything that could happen. We cemented that in, proceeded after that with a diamond drilling rod, which was B rod, which would go inside of this casing. Because we even reached beyond the right hoisting limits for the Phailing 1500, or at least the brakes. We floated it into the ground, we had to devise blow-out preventors for the top, we had go to oil based drilling fluids, which in those days were just really quite new but they were available from mud companies. Because even the torque, you know, twisting 3,500' of that rod would either twist the rod out or there were other problems involved. So it was quite . . . we were out there for a number of months, pursuing the Kyanite and/or gas, it was finally abandoned. But the slimhole rigs were used for that type of work. Or that is the reason that Big Indian Drilling went into the mining and ground water business, which we eventually formed, 2 kind of divisions within our company because they took different types of hardware on the drills and different expertise. As far as this is the time to mention that, the ground water, is it?

#146 JW: Well, okay, before we go on to that, you mentioned Hudson Bay Oil and Gas, were you working closely with the geophysicists in the oil company geophysical departments or was there much. . . ?

GW: You mean in the marketing of our product?

JW: Or in the discussion of the operation, how you're going to proceed?

GW: Oh yes, often. That was because. . . not so much in those days as later but often the drilling contractor was asked his opinion of what it would take to maintain a certain number of holes a day, how he was going to do it. And this was particularly so up in the Arctic areas. And later, especially in the Arctic Islands because the equipment was lighter and had to be more efficient. But nevertheless the cost of a geophysical program in the operator's mind, in Hudson Bay or whatever, was often, how much did it cost per mile. And you wanted to get as many miles as possible that the recording equipment could produce records on in a day, you had to have enough drilling power and surveying power to keep ahead of them.

JW: Did you ever get feedback on the results of your efforts?

GW: Oh always. We were naturally, all drilling contractors were sort of jealous of their ability to produce holes for the oil companies. Or any successful ones I guess you could say. That was how you hoped to be recognized that you operated, that you had good equipment, had experienced personnel and knew what you were doing. That was the

reason that you would be hired.

JW: Well, more though, just out of curiosity, were there any areas that you did seismic drilling on that turned out to be quite production afterwards?

GW: It was only by chance. In other words, there would be an interest in a particular area. So Imperial and Texaco and Shell and Gulf or whoever, would go in and conduct their own exploration of that area. With their own geophysical crew and their own interpretation techniques and everything like that. And they would eventually get land based on their own judgement of what they should have got. But we worked in all the areas, like Red Earth and Wabamun and Golden Spike and you know, everywhere.

JW: You mentioned when you were out here near Morley looking for the Kaylene???

GW: Kyanite. Well, it might have been Kaylene and Kyanite, I don't know. Kyanite was the company's name.

#189 JW: Okay. In any event, you were concerned about the possibility, at that depth anyway, of encountering gas. Was this something that you had to pay attention to a lot in the slimhole drilling, the inadvertent discovery of gas, or even oil, and take precautions to avoid. . . ?

GW: Well, of course, in the Medicine Hat area some of the work that you did was drilling for gas at these shallow depths for farmers who, because of the tremendous, what is that formation, nevertheless, down there, that produces gas. Yes, in those areas you went in specifically to develop a small gas well for a farmer or a small town. Then in the Killam area and out east, there was a lot of marsh gas that there was never any safety equipment used. It just occurred and was a novelty, bubbled out. The drilling crew would light it and play with it. Then there was other areas, up in the Hay River area for instance, where it would really blow out and you would have a problem. You had to set a little surface casing for shallow holes up there. Then down east in Quebec there were occasions where I guess there was previous geological knowledge that there was a possibility, or maybe there was just gas seeps. I remember this one program that lasted several winters where we drilled on islands we constructed in the St. Lawrence River on the ice and they continued to find gas in every hole in fantastic amounts. I mean, they would really test but they were never put on production as far as I know. We certainly didn't do it there, we had to cement the hole back and it became the company's knowledge that it was there. And we could not drill them on the shore. I think because, in that area, the farms were so small, the homes were so close together that that was another problem. If there had been a lot of gas there I imagine they would have had to have bought out some of those farmers. But for our type or program at that time they just elected to go out into the river, rather than move back into the populated areas. But there were some pretty exciting amounts of gas found down there, under pressure that made it very difficult to hold it and at very shallow depths that we encountered it. So you had to have, for these small rigs you had to have a lot of blow-out preventor equipment. Which of course, a lot of blow-out preventor equipment is a stack quite high and there's no room on a little rig. So we used to build, like a substructure, with a long sloping ramp that we could drive our drill up, about 9' up in the air. I mean the normal rigs out in the field now have substructure of course, they've

always had them to accommodate blow-out preventor equipment. But truck mounted rigs, the only way you could do it was to build a substructure. We had to put wheels on them so we'd roll that in first, drive the rig up on top, so that we would have room to accommodate all the blow-out preventor equipment underneath them. And other devices.

#246 JW: Okay then, Big Indian did get into some water and mining. . .

GW: Yes. Eventually they acquired equipment and we built and designed some of our own equipment to pursue the shallow, up to 3,000' drilling. That came later. Before we reached the point where we got shallow oil well drilling equipment per se we found ourselves in with non-active equipment or just a general industry slump where we had to do something else. At one of these times we had been investigating in the down water development field. Of course, there was a time when, I mean, there's much of Saskatchewan that had a tremendous amount of water underneath the ground and virtually nothing on top. And what is on top is highly mineralized and it's either difficult or absolutely unuseable, untreatable economically. But underneath there is some very, very good water. So through evolution we were contracting to towns and villages to put in a water supply because they had some government assistance they could get. For little towns and hamlets. The only thing was there, most of the good water, potable water was fairly deep for their budgets. It might be 7 or 8 or 9 hundred feet and it took a special kind of well and whatnot, well design that would fit their budget. Because you just don't put casing, cement, drilling and development dollars into a hole of that depth without, you know, it soon reaches a fairly. . . and for a municipal supply that has to have certain safeguards. So eventually we had what we called our hydro-geological division and we had in it a hydro-geologist, a geologist and an engineer. Which in a few years proved to be a little more overhead than we really needed. We thought it was going to benefit us and some of it did in certain types of work at the beginning. But basically, that was more than a commercial company could handle because the Alberta Research Council got into the business and started supplying for free, all the services that we were trying to incorporate into our business.

#301 JW: Makes it hard to market your services?

GW: Yes. Even though we had them all covered up in our drilling price. And we really gave away a lot because we were competing with other contractors that had none of this and would drill a hole in the ground for some town where it wasn't properly designed and could allow surface water to seep in. Or else the bottom of the well, the formation could slew in and plug itself off and the well would be useless, all of these features. Where we eventually designed wells where we could gravel pack wells at 700' within 4" diameter casing. Things like that which were really technically quite innovative because it's quite difficult to do. We had to bring up samples of the material down there and then design a gravel pack that would hold the formation back. For a rough rule of thumb the pore size of the gravel pack should be about 5 times the size of the formation sand. But there are certain rules of thumb you used. So we had to find sources of this gravel pack material, which in some cases was really a fine sand because the formation sand was almost of a

silt consistency. Whereas for the city of Regina, we were able to develop aquifers there that were very prolific and you could use gravel the size of peas, for instance. So there was a wide range of materials that these wells had to be constructed in. And then once you drilled the hole, decided on the gravel pack, selected the gravel pack you had to decide how you were going to get it down there so there would be no holidays. And you had to have it evenly placed around the well bore, between the well screen or casing, and the formation, holding the formation back while you installed it, not washing out holes in it. Then the development process that was necessary afterwards, often cost as much, or in the city of Regina, more than the drilling of the well. It would take maybe a month where you went through a process that we called development where you might, I'll just use Regina as an example in explaining this, the formation there was quite shallow, about 150'. Test drilling that we did first indicated that we could expect a certain specific draw down on this, so much draw down per gallon per minute produced. They wanted a lot of water and we could see where these wells were capable of producing a tremendous amount of water. But this would be from around 100' is where the pumping level would be. So to produce, we'll say, 4,000 gallons a minute from 100' you need a pump maybe, 15, 16 inches in diameter. I mean, that's fine, but then you've got to design a well that big. We ended up drilling wells that were 32" in diameter to about 150-60 feet with I think it was, 18" stainless steel screens that we purchased in Minneapolis from a firm that made them especially for us and they manufactured them and sell them all over the world. And then this gravel pack around the outside, that was phase 1 of the construction of those wells. The development of them was the next one, where we took in a smaller rig, we had compressed air and a number of other techniques, many of which. . .

End of tape.

Tape 3 Side 1

JW: There at the end you were talking about the development of the wells at Regina and the kind of pumps and screens and so forth.

GW: Yes. Well, the development technique, like I mentioned, was probably one of the most important things to bringing in a good well. Firstly we assume that the gravel pack was correctly designed to hold back the formation and there was a lot of water out there. But the drilling process had moved the formation around, and some of the drilling muds because the additional pressure that you had, the weight of the drilling fluid, had gone back into the formation and helped seal it off a little bit so you started your development process. And we used compressed air and backwashing, we would use a lot of air with an airlift pump, remove a lot of water from the well creating a lot of draw down so the water then is flowing from the formation into the well. So the flow of water is from the formation into the well. Then we would have a very large tank, maybe 100 barrel tank sitting beside it and we would then stop the pumping procedure and flow water down the well so now the water is going from the well back into the formation. So this is just like waves on a beach, the water comes in, the water goes out, comes in, goes out. And we do that 24 hours a day, sometimes for weeks. Stopping it every few days to run pump tests to

see how we were improving the specific capacity of the well. You might start off with, we'll say, 1,000 gallons a minute with 10' of draw down and a week later you might be pumping 3,000 gallons a minute with 10' of draw down. So that was the result. So of course, the city wanted to develop the most water they possibly could. We eventually, in a few wells, and had to give them a 20 year guarantee on 17 million gallons a day, of water that was produced almost within the city limits instead of their 23 mile pipeline from, I forget the name. . .out northwest.

JW: Yes, the big lake.

GW: Yes. Which was, now I don't know if a new city engineering staff have. . . certainly they have not used up all the ground water because part of our initial survey indicated that we would not be mining water. The recharge was there. The wells were designed not to mine water but to just pump out what was going to be replenished. But in years I guess, the wells could have incrustrated, because naturally with a pressure drop coming into the well you're going to deposit whatever mineralization is there. That's one thing. And there's a maintenance procedure that's involved there. Or there's any number of things that could have happened and I don't know how much water they're getting out of those wells now. Because I read, within the last year I recall, that they're doing something else about their water supply. Maybe it's just to augment it, I don't know.

JW: Well, they had it full of PCB's too.

GW: The well water, or the lake water?

#039 JW: I'm not sure but that was a big problem in Regina a few years ago, were PCB's in the water supply.

GW: That might very well be. But Regina was so fortunate in having this tremendous aquifer just to the west and northwest of town that provided water right at their doorstep. And of course, there were all sorts of cities and towns in Alberta and Saskatchewan that had similar deals. I remember another one that was of particular interest, the Penhold, RCAF and Radar facility, were going into kind of the nuclear, it was going to become the nuclear headquarters for this area. As such they had to develop everything, including their water supply that was going to be safe. So what I heard was that they were going to put quite an extensive facility on the Red Deer River and a pipeline some 7 or 9 or 11 miles. I had a friend that was in the pipeline business and we were talking on evening and he told me how much that was going to cost. It was either going to be a small diameter high pressure or a larger one, lower pressure and they would have to be buried. And I knew how much it was going to cost to develop this facility on a muddy silty river like the Red Deer. And I'd been reading about these pre-glacial channels that exist all over here. And because of our shothole drilling experience and our slimhole drilling experience and we had kept records of this for years, because I was building up, trying to get more and more information so that I could go to a customer, a town or an oilfield water flood thing, and consult, tell them, we're going to do this for you and you've got a chance of developing your supply this way or that way. You know, giving them some. . . so it so happened that we had, I'd read, and we could check our records where there was definitely several pre-glacial channels existed south of Red Deer and could be in this area. And it looked like

there was one arm of this pre-glacial channel was very close to Penhold. So it ended up that I went to a J. Iver Strong, ex-commissioner of the City of Calgary, who'd gone into his own consulting business, who I knew fairly well, and who was consulting to that up there and said, Iver, this is a gross waste of public funds, to go out there and do that when they've got better, cheaper and cleaner water right close by. Then I got him to go to Ottawa, to the national DND and said, we should have a look at this other thing. I remember, it was a spring when we desperately needed some work and we were very pleased when they said, yes, they would talk about it. So we went up there, our first approach was that we were going to drill test holes. I knew they didn't have to be over 100' deep, maybe only 60 or 70, we were going to drill them to the bedrock contact at 100' intervals, no, I think it was quarter mile intervals first. In a kind of checkerboard fashion where we thought the thing existed. About the 30th hole, and these were just punch, punch, punch, as fast as you could drill them, we got a sniff that there was something there. So we went back and straddled that with holes 100' apart and were able to delineate right where the pre-glacial channel was there. So then we followed it for several miles as it wound its way back. Then the next thing that they went for was some testing and we put in a little test well and did the same thing we did with the city of Regina, did test pumping and eventually we convinced them that it was cheaper to construct those wells. Then the next thing they wanted them hardened against nuclear blasts. Well, you know how much experience everybody had in those days. That's right, they were thinking of it. So the 4 wells that are directly east of the station right now are our construction, at that time, of a hardened well. One that would withstand, well, not a direct one that's going to blow 100' hole in the ground but you know, earthquakes and all that. So they were all stainless steel piping and screens and thick gravel packs and everything we could. . . there was a lot of cement at the top, the best we could construct. Then they needed some back-up supply in case the bomb fell over there, you know, how government agencies do. So we followed this thing up and several miles south we drilled 2 more wells and they were right close to the railroad, inside a farmers field where they got permission to do it. They never used those things and if you go and find them today, each of those wells are all stainless steel construction. They never hooked them up to the main set-up, and if you were the farmer that owned that, they are capable of producing 100 and some gallons each with not too much draw down. So that would make a pretty nice little irrigation for a garden or whatever, for a market garden or something. They're sitting there.

#100 JW: Yes, and they're going to last forever, all stainless steel.

GW: They should last forever, that's right. So a variety of real interesting things. Then there was the oilfield water flood projects you know.

JW: Yes, what I was going to ask you about.

GW: Mobil Oil were a particularly good customer because they had a lot of that stuff down in southeastern Saskatchewan. And Fosterton, all up through there, did a lot there. Did an awful lot of it out at Pembina, and a lot of the oilfields. We had very nice contracts. Of course, the things with oil companies are that they soon decided the number of wells they

had, they wanted low price quantity and not a little higher price quality. So they were stereotyped. You'd drill a few holes, they would say, okay now we're going to have 100 wells of this design. You say, by Mother Nature didn't lay everything down that way, you should do each one. No, no, this is the same. So they'd have out of that, some number, say 10% maybe or 15%, that were failures after 6 months or a year. That didn't bother them at all, they'd just go back and do another one beside it. But with that number of wells they had their own insurance plan I guess you'd say. So there was that type of well, then there was the solution mining was another big, you know, potash in Saskatchewan. We would put wells in for them. There were towns, oilfields, cities, and national defence and then there was, out in B.C. was a little different problems. A lot of the big lumber mills, their insurance is very, very high if you're in the lumber business, so they would need wells surrounding these big yards. Or not wells but a fire protection and often the cheapest way was to put wells at each of those places. If they had the right geological conditions they'd put wells out there. I mean pipelines that wouldn't freeze up in the wintertime, all that kind of stuff. So it was a consideration. So as this well business got bigger and bigger so did the need for improved development techniques. We devised things, one, I tried to patent some of these, but HERD was one for High Energy Rate Development. That was a little acronym that I put together. That was a series of small explosive charges. And we experimented in many cases with this until CIL had blasting caps with millisecond delays in them. This is how, you know, when they're blasting big faces in mines and stuff, you don't do it all at once, you go boom, boom, boom, boom. This theory was that I put a string of those down the well and would detonate them from the surface so the charges would go boom, boom, boom, boom. Well, a lot faster than that, but you could calculate would go out, push the formation and when it came back in, just about the time you had kind of gone through one rebound, the next charge would go off. These were 1' apart so one wouldn't set the other one off. Because they were just small charges but still, they were explosive charges that we would lower down the well. We made a lot of recognition from that, as a matter of fact they used that in paper that I gave at the Groundwater Institute once, that and some of the other. Like we had high pressure jetting, where we modified equipment that we got from some of the oilwell jet perforators and we would shoot high pressure water through these screens back into the formation. Pumping at the same time, lowering the head so that it would eventually return bringing the silts and fines out, because what you wanted to leave in these formations to improve the production was the coarser materials. You wanted to take all the fines out. If it was a graded formation it wouldn't have good porosity. So if you took all the fines out you'd improve the porosity and the permeability and improve the production of the well. So there were half a dozen techniques like that, that just were necessary for this area. And then we found down in New Jersey that they used that. There were certain conditions down there that they were good for and North Dakota. Then some of them, even down in Louisiana and places like that. . . I can't think of the names of the firms right now. But we have correspondence, I used to visit those people and they were always writing about more experiences that we'd had. Particularly the jet and HERD, the High Energy Rate Development techniques. So this area was really quite a challenging one and permitted a

lot of imagination to be used in improving techniques I guess you'd say.

#174 JW: That's right. Are some of these techniques still used today, do you know?

GW: Well, I haven't followed what they're doing now at all. I don't think that charge on is.

The Groundwater Institute was a group of non-competitive contractors engaged in developing groundwater supplies. You were invited in shall we say. We were the only ones in Canada that were invited in. There was one from South America and all the rest were from the U.S. It was really quite a good little group in that they were all non-competitive so that you and I, we could talk. We could say, here's the way I handled this, we talked about our financial problems, and all the technical problems. How this piece of equipment, how it compares with another piece or a development technique or drilling techniques or anything. And we were always, because we had the oil business, we were involved with that, we were always looked on as the key person. And then I could always give them another little bit of excitement by telling them how tough things were up here. I remember one year we were working up in the Yukon on a mining job and I took a whiskey bottle and filled it full of tea, froze it, knocked all the glass off the end and then I had a parka lid on which of course, had the hoar frost all over the front. And I was licking this thing and I said, we call this a Yukon popsicle, it's so cold up there that the booze freezes and it's the only way we can have our happy hour.

JW: I bet a lot of them believed you too.

GW: Oh, they did. For years.

JW: You were mentioning some of the challenges in the water reservoir drilling area. How about when you were getting up into the north, northern Canada with the oil industry, the Territories and so forth. You were somewhat innovative in that neck of the woods too weren't you?

GW: Do you mean in drilling or in water?

JW: Drilling more now.

GW: Well, just while we're on the water, because of that, we finally, the Geological Survey and other people got to know us quite well. So I remember one particularly interesting job where they were going to check on the amount of permafrost and they were doing that in Norman Wells. So they drilled a series of holes, from the Mackenzie back and put thermocouples down there. I remember that even the drilling, our fluids were just about at 32 degrees. But nevertheless, that amount of heat upset the well bore and the adjacent area for many, many months I guess. So we drilled about 400, maybe one of them was 600 and then they got shallower. We found that the permafrost level, back from the river, this is north. . I don't think it was right at Norman Wells, it might have been north of there, one place it was up to 400' deep. Then when you got up close to the river, you could drill through permafrost, then through non frozen, then back into permafrost because the river produced a kind of a bulbous??? for some reason, underneath. And the permafrost interestingly, in the ground, didn't go much below, it was something like 26.7 or 27.6 degrees. And it would travel down like rings on a tree, so they could tell, oh, the winter of such and such was real cold because this slug of cold was still moving down. It was very interesting that we were able to determine from that.

#234 JW: Were you working with Alex Hemstock at all, who was. . . ?

GW: No, it was GSC. But I remember Alex, yes, he was always poking around someplace. He was always interested in that but that was a GSC job. But that was interesting how. . .

JW: That they could date those too, carbon 14 I guess, sure.

GW: And it travelled. It was always going down till it finally warmed up and we were out of the permafrost but they could trace this slug going down, if it had been an exceptionally bad winter. But the north, even Waskatenau, Peace River and all that, was north at one time. We'd worked a lot out there, had crews working out there, I mean, I'd drilled on them myself for years. Then pretty soon it would move a little north, I remember when we went out of Hay River. I used to think that was a real adventure. I remember one time, whenever the crews were going to move, I would go up to make sure what I could do to help plus on a supervise basis. So I was riding on a cat, I was 100 miles west of Hay River. It might have been 80, it might have been 110 but a long, long, days and days out. We had been building this road and I was riding up on this D-8 with this buy. Because we were just about where we were going to find a camp and I wanted to decide. I remember we went by, trees were going down and everything like that and all of a sudden, you keep thinking I'm a real pioneer, I'm out here, the first person probably to set foot when I hop off this cat, that's ever been here. And all of a sudden you would go by a little log cabin that the roof fell in 20 years ago. Somebody was there a long time before we were. And I really think from what I read is that, that was part of the path, one of the alternate routes to the Klondike. So there was a whole bunch of them went up and took off that way and we'd just inadvertently gone by one of the wintering places of somebody, that he just had to hole up. I don't know. But you know, when you run on to something that far back, in those days, that made you wonder. Just the same as when you used to fly up north, it's still that way but back then when it was really desolate, you'd fly for an hour or 2 and all of a sudden you'd look out and there would be a couple of lights down there. Who on earth, how did he get there, what is he doing down there. Our ancestors have been pretty hardy, interesting, inquisitive people haven't they? But nevertheless, when you get to Hay River, that used to be north. Then it moved to Fort Simpson and it just kept moving north. The next jump after Hay River for us, was when Western Decalta drilled a hole, I don't know what to call it. It wasn't a slimhole, it was a strat test, they were testing for hydrocarbons at Ron Lake, which is about 90 miles from where we took off, 90 miles off the Mackenzie River and north of the Arctic Circle. So there was Art Patterson was the exploration manager, Al Ross was the president or the general manager and a guy named Jim Kirker was another one of the, he was the geologist in charge of that. That was, in those days, there was just one barge company on the Mackenzie River, what was their name, do you recall hearing that?

#298 JW: Yes, but I don't remember right now.

GW: Okay. So there was a government barge company. So the first thing was, one I guess, that Western Decalta decided that we were the kind of people they would hire for this. Next they sent me up there and I went with PWA to Norman Wells and got a bush plane and I had to fly the route in. Because you know, how are you going to get your equipment in,

you've got to get a road. So we flew north of Fort Good Hope and found a place that we could land barges on the side of the river and then flew in to Ron Lake several different ways and there was really no problem making a road. There was no cliffs, there was no deep rivers, there were a few little streams and some bad muskegs. You could easily see how you could keep out of the worst of the muskegs. So we decided, we took some pictures and plotted it out on the map how we were going to go in there on a road and came back. Worked with them and made estimates on how much that would cost and we figured that 2 D-7's I think it was, were sufficient for us and that we would use cat trains with sleighs. We had to acquire the sleighs so we went shopping for those for Western Decalta's account. In those days they would just turn something like that over to you. You've got the expertise and you've got the people, you do it. So we found the sleighs, we got the cat skimmers. We had worked with many and we found some that we figured had the crews. We said we want Joe and Jim or whatever, up there. And eventually put all this equipment and hundreds of barrels of fuel organized out of Norman Wells. We drove everything to Hay River, loaded on barges, down the river, picked up the fuel at Norman Wells and north of Fort Good Hope in this appointed spot we dumped all this stuff and moved it as far back on as high ground as we could on the river and left it. That was in, I would say August maybe.

JW: Of what year, about?

GW: I'd have to look that up.

JW: Late 50's, mid 50's.

GW: I think it would be the late 50's.

JW: So you were waiting for winter, you were just caching this stuff and then. . .

GW: We had to cache it you see, and the only way we could get there was on the barges. I should have looked that up because this turned out to be the first well drilled in Canada north of the Arctic Circle. We were kind of pleased to have that opportunity.

JW: Do you remember the name of that well, what it was called?

GW: Ron Lake, #1, 2, and 3 I think. And they were quite shallow, one was only 5 or 6 hundred feet. But you get out there. . . Ron Lake incidentally has long been known by Indians and whatnot and Sproule, his people did a lot of work on it and there was an indication that there should have been something worthwhile maybe there. Because I've got pictures, of this tar, real tar, that's oozing out on the ground.

JW: Oh, a seep, yes.

GW: A real seep.

JW: Like at Norman Wells.

GW: Yes, only bigger. Quite a good sized seep.

End of tape.

Tape 3 Side 2

GW: Yes, I remember you see, this tar at Ron Lake is such that there is animal bones, they get stuck in it and die there.

JW: Like Labraya??? tar pits in Los Angeles I guess.

GW: I haven't seen them but it is a pretty interesting little spot. So around this and various locations is where the testing was going to be. So it isn't a structure test, I guess you'd call that a strat test. It was going to be, not only drilling and determining the different formations they went through and e-logging them, I think they had gamma ray logs, but also maybe, conducting drill stem tests and things of that nature. So winter came and we kept checking with Imperial Oil at Norman Wells and it was finally about the 10th or 15th of December when it was deemed frozen enough that we could start in. So certain part of the crews went up there and started up the cats and started making the road in and clearing snow so that it would freeze faster and all that kind of stuff. Took the first load of stuff in to Ron Lake and then they would come out and the next one, we drove our equipment in, everything was on wheels. The camps were all on wheels, towed them of course, and the cats, I believe they had 3 sleighs each, loaded down. And eventually, they would just keep going out for fuel, 3 cats with these sleights bringing in mud, chemicals and fuel chiefly. Everything else came in by air because they created a landing strip on Ron Lake, which was a mile away from where our camp was or not quite. PWA, we had, it was generally a DC-4 that came in with the supplies. Not very often but that was their biggest aircraft at that time for freight. But the fuel, it didn't work out that it could come in by air. Although the cat trains, 90 miles was used up by those big cats. They had to always start back to the river with enough fuel to get there, then they would pick up all this stuff and they would pump a good portion of it into their engines before they got back to Ron Lake. Any fuel savings were certainly important there. On that one we had a tent built here in Calgary, of course, all the stuff had to be thought out ahead of time, that when the mast went up completely covered the whole work area. And we used gasoline engines. We felt at that time that that was an advantage because of the amount of heat that's produced there, as different from a diesel. So we had the exhaust from these engines going in, we built a special heat exchanger and had fans on it. So when the exhaust went out of the side of this tent, it was cold, absolutely cold. We'd sucked all the heat out of that and kept it in the tent, plus you know, the radiator and the engines, all that was collected in there. The pictures of that. . .and the temperatures up there are really not that bad. If we'd have had good funding we could have made a lot of money in those days because you could have taken the jobs on a turnkey basis. But we never had the funds to do it. We always had to do it on a day work basis which is not a very profitable type of operation. I remember on warm days, you could get it 30-35 above in the middle of winter

#042 up there, quite easy. The tent was bulging out like one of our hot air balloons. But then when you got down to 40 below the tent was the other way around because there was just not enough heat generated inside and it was just hanging. So we worked there all winter long and did these various tests and it never did turn into an oilfield. Or hasn't or maybe never will I guess, we never found enough. Maybe didn't go deep enough I don't know. We went as deep as Western Decalta. . you know, we completed the program. Moved out in the spring and we left that equipment up there for a number of years because then it was there and we were able to find work with Imperial. Eventually we had quite a number of rigs working in that area, and that type of work. Strat test work. Shortly after that we

put our first air rig up there, air was becoming a drilling. . .instead of mud. We did work for, I think Imperial was the first one using air compressors. So there was quite a lot of business there. We even moved one of the rigs down out of Inuvik, or out of Tuk and did some other work, just testing. For the government, they were going to enlarge the town. It was just engineering work, you know, like shallow work but involving certain types of coring, or other soil sampling equipment for structures and to test how deep the permafrost was. Things of that nature. Things were really starting to wake up. Everything kept moving north, right up the sedimentary basin. Then of course, I guess it would be about that time the same thing was happening on the Eagle Plains our geophysical stuff down here wasn't doing very well. There had been a slump in the market because everybody was working up there. I mean, all summer long there was a slump, the only time you could use all your equipment was in the wintertime when the muskeg was frozen in northern Alberta. So we were certainly suffering again, a yard full of equipment and just a few things working around Norman Wells or whatever. Then that was when I was talking again to Bruce Bullock, who was the same partner that I had in the syndicate in the Four Corners area, years ago, when I got the Big Indian idea. He and I were in the same syndicate. We were talking about that up there and I had been for several years because he had helicopters and he was talking about how they'd like to get a big one and move big camps in and a lot of geologists. He was working on an iron ore deal up in the ??? Plateau, as well as geological work for the, it's now the Devonian Group, Eric Harvie and . . .

#076 JW: That would be what, Western Leaseholds?

GW: Western Leaseholds, yes. So he worked for them and for Mobil Oil and others up there. And his brother Evan, who was the real helicopter pilot, but they just said no, a powered helicopter is really starting to decay from the first minute that it starts up. The pistons are getting slacker, the power is going down, so you can't rely on it. You can rely on them to carry you and I but to carry a regular sling load weight, it is not any good for that. It might be for the military but you'd never be able to stand it in commercial fields. The only thing is a jet powered helicopter. So finally we were talking one day and they said that the Huey, that was in Viet Nam, the 204B, was going to become a commercial helicopter. So we talked some more and they said, do you think you could get a drill that we could carry that would do the job. I remember, I thought for weeks and weeks and drew hundreds of pictures on that and thought, I knew that weight on the bit for drilling and permafrost, or any hard formation, you've got to have weight per inch of bit diameter. That's the only thing that's going to give you a good penetration rate. And unless you have a good penetration rate, I mean, that's what shothole drilling was all about, you had to have penetration rate. So we were mounting our equipment on bigger and bigger trucks. We'd even put big weights right at the back end of our trucks to have more weight available on the bit. Because all these rigs, I think I should explain this, use a pull down technique. In other words, as you start drilling into the ground, you are pulling down on the swivel, which is really pushing the stem into the ground and putting weight on the bit. But if you think about it, the fulcrum of a conventional truck, drilling off the back end,

like all those little rigs are, as you lift up the back end the fulcrum is the front axle. So it's a very long arm. So your whole unit weighs 12 tons say, or 15 tons, say 30,000 lbs. but on a 24,000 lb. drilling rig you were lucky, very lucky to get more than about 55 to 6 thousand lbs. of weight on the bit. So all the rest of that weight was just useless. And then you convert that, we'll say it's 6,000, to pounds per inch of bit diameter, which is the real criteria you've got to use in the efficiency of a tri-cone bit. It was very, very little because they were drilling generally, 4 1/2 or 4 3/4 inch holes. So 4 3/4" holes, say it's 4" even, divided into 6,000 lb., that's 1,500 lb. of weight per inch of bit diameter. Not very good. I mean, oil well drillers, they like to be able to call on 6 or 8 thousand or more. So anyhow, that's not a very efficient way to go. So that was the problem in developing a helicopter drill until all of a sudden one night, I woke up in the middle of the night and it just dawned on me. How to use it all would be to drill through a vertical axis of the centre of gravity of the rig. So I had to design a rig where, you know, take all the conventional positions for mud pump and engine and drillers position and mast and change it all around so that all the weight went through a central axis. And that's how the heli-drill was born. It only took a

#120 few more pictures then and I figured out sure, it can do this. And then the components that we needed, the next question was, it was going to be more than 4,000 lb. which was the maximum sling load capacity of this helicopter. So after talking to the Bullocks it came down to, we've got to carry a crew, we've got to have extra fuel, we don't want the helicopter having to fill up every 10 minutes. He should fill up every 30 minutes and he burns 10 gallons a minute so we had to give the helicopter some range. We had to be able to carry our crews. When you lift out of the muskeg you're going to have a bunch of mud or something hanging through the pads, so you're going to have all that on there. So somewhere's around 3,000 lb., it turned out is what we reckoned would be the ideal. So I went to work on that and decided on how I was going to split up, you know, you have mast, draw works, pull down and an engine, have to supply power to that. I put that all in one package and then the frame, or we call the power base, with an air compressor or mud pump and levelling jacks because there's nobody going to create a nice level platform out there, if you're drilling on the side of the mountain or anything like that. So we came up with a base that had 3 points of contact with the ground, a 3 sided base. They were all hydraulic jacks and that carried drill stem and whatnot. We used the best steel we could, bent in a special shape, cut holes out in it to lighten it. We got it as light and as strong as we possibly could. Did the same with, I designed a drilling rig with a mast, pull down draw works, utilized Wisconsin engines in both of them and got transmissions from various places if you're doing machinery catalogues. Put all this together and it really made sense. Still couldn't afford to build it until I got a contract. I mean the bank wasn't just going to let me go off on my own. So finally this helicopter could come up and display itself, Bell was going to go for that, Bullocks arranged that. So we made a mock up of this drilling rig out of, we put together 2 pieces of equipment. They were just pipe welded with a box nicely painted in orange, our colours, filled with sand so that each unit was 3,250 lb. and decided that we were going to have a demonstration with this helicopter out at the airport at Shepherd. That was a real exciting day and we had some 37

or 38 senior people in the oil business had been invited. We checked back and they indicated that they would come. The helicopter arrived into town. We had never tested this idea before. I had my 2 pieces of equipment there, the Bullocks had come down and Bullock was going to be one of the fellows with the helicopter, with the pilot and he told me the signals, you know, down, back forward, up, with helicopters. We practiced that, we got a crane from one of the companies in town over there and we put these 2 pieces together with a crane on the ground. It went slick. I said, are you guys going to be able to do this with a helicopter, no problem they said. I had no idea what it was going to be like. So the appointed day arrived. The helicopter arrived last night, we're all going to meet this morning. We get out there, the fog is so thick you could hardly see. The helicopter was not permitted to leave McCall Field. So all these guys arrive, stand around, have the coffee and donuts and they all take off again. All they see is these 2 things on the ground and my sketches of what it was going to be like. So that afternoon it cleared up, and we hardly ever have fog in this area, but nevertheless, the next morning was the same. And the third morning the helicopter had orders, he had to move on, he was going to go and demonstrate to a lumber company in B.C. They had a schedule and this \$400,000 machine had to get back to Fort Worth. So that morning, he was as anxious as we were, this guy and there was a little break in the fog about 7 or 8 o'clock and he got permission, long before our 10:00 rendezvous I think, he got permission to take off and he took off and got outside of the jurisdiction of the tower. No, that was at noon he did that because they came out on the third morning and we eventually did it that afternoon and about 30 some people came back for the fourth time, which was the afternoon and the show went off just beautifully. We moved the rig from 3/4 of a mile. We put it together down there and took it apart and brought it down here and took it back and brought it back and all these fellows just thought that was marvellous. The only thing they didn't really believe, is that we were going to have a rig that could be carried by a helicopter that could be drill in hard ground. I knew it could because I was a drilling contractor. But explorationists who, that was not their field, they just still were dubious. But Mobil Oil had a problem that they really wanted to get at in the Eagle Plain area and they asked a few more questions. You know, do you really think it will, how would you do this, and I remember, I got a model builder here in town to build about 2' long and 2' high, a model of what this was going to look like. Bullock and I, we put it on the side of one of his helicopters because the key guys were working out of Peace River at the time. They were going to make this judgement you see. We put it on the side of the helicopter, tied it on, and we flew up there and showed them how it was going to work out at the airport. I remember this afternoon, we flew up in the morning and they met us there at noon. So I had hoisting cables and I said we're going to fly over and we're going to set it in here and then we want to move and this has got these 3 hydraulic jacks, which didn't work of course, but they were good little models of them. And we're going to set up on the side of hills and all this type of stuff. They were really taken but they didn't want to put their jobs on the line by goofing in either, they were really good guys. And then we went out and Bullock picked up some 45 gallon drums and stacked them one on top of the other to show how much control. . . you know, I was giving him the signals and he just came down and we set a 45 gallon

drum down and released it. So they were convinced. We put it on and flew back to Calgary. The next thing I heard was that they said, yes, we want to go. Somebody else in Mobil Oil decided that they would have somebody else, they got the idea of the drill now. I had patents applied for, but that they would build the things. Oh, I was ill. But nevertheless I knew the Mayhew guys, because we had bought quite a bit of equipment off of them. And also the seismic service people who were Mayhew representatives here. I went to them and I said, now look, we have done a lot of business together and let's not spoil anything. You owe it to me to say that you will not get involved with this because the patents are pending. And they didn't even think it was patentable at the time but you know, when patents are pending, it goes in there, somebody down in Ottawa thinks about it for a year or two and you don't know if you're going to get the nod or not. But the clock starts running back when you put it in. Anyhow we convinced them not to become involved. We put our first rig together, took it by truck and we had to find some good hard ground so I found some on the old Banff Coach Road, up close to Banff, on a knob on the side of the road. We hauled the equipment up on a flatbed truck, by now the Bullocks had another helicopter up there. They flew it from the university, we could see it coming over and they set it right down beside us. This is the first time we'd had the helicopter with the real rig you see. He flew back, he picked the other thing off the truck, he came over. By that time we had jiggled our little levers and the base was all level, sitting on the side of the hill and he came back and he just set the other thing in there just beautifully. Inside of 60 seconds or less we had them latched together because off this had been, you know, we had designed and worked it all out in our shop and we were building another one by then. But this was the test before it was sent up into the Eagle Plains. Mobil Oil wanted to see the test. And we got it all put together and we drilled like you wouldn't believe. Because we had more weight on the bit per inch of bit diameter than you could get on a big 24,000 lb. truck rig. So instead of just going into the ground like that, we had a nice shale knob that we were drilling on, it just went. And we were air drilling and there was dust and chips flying every place and everybody was just delighted. Until the clutch stuck. Before we could get around and shut the engine off, it was just a simple little adjustment but a clutch stuck and the pull down kept going and it just jacked that rig up and it fell over on its side. Anyhow, Mobil Oil realized, thank goodness, that that was just a simple mechanical little problem. The damage we were able to rectify. We were able to build another rig, this is day and night, our whole Big Indian shop force and everybody available was doing things and we got them up there. They hauled them back in and away we go. One of the best things that every happened to Big Indian was the start of the heli-drill. We coined the name heli-drill. So everything was going along just fine. And Mobil Oil were elated and when they were elated, we were 10' off the ground. All of a sudden the phone rings and they had dropped part of one of those drills. So now the whole job is hinged on one of them and I could just see this thing going down the drain. Unless you've got a big enough company to provide instant back-up, you know, like you get a computer these days and no thanks. But 2 things happened there, it was getting so far north that we

#224

#270 had almost 24 hours of daylight. So the helicopter guys decided they could juggle their

hours and we could work with 1 drill 2 shifts, instead of 2 drills 1 shift. The dollars for helicopter time didn't come out much higher because there was still the same amount or rig move. The only thing was an extra trip back to camp to take the drilling crews and switch pilots. Bullock supplied the extra pilot because he had a lot of dollars on the line too, like we did. And they found out at Bell's lab that we had 1/2" cable and a big long lanyard from the helicopter from the lifting ring to the heli-drill and we had to go to lighter cable and a much shorter one because the Bell 204 is a 2 bladed prop and it sets up a certain harmonic with the length of this cable and it just started to go like a yo-yo and he had to cut it loose because it was going to tear the helicopter apart. We never thought of that so when we got the helicopter, this lanyard adjusted, we never had that problem again. But that was another thing that happened right at the beginning that scared us. But after that, we were really selling heli-drill projects. And everybody wanted to try them out and it was quite novel and then all of a sudden that business went down the tube. There was no business this year and we had all this money out in these heli-drills. Except Shell had a job in the Fort McPherson area so Bullock and ourselves took that one on, on a lump sum deal. Which because we ran into some bad weather which we never thought, we didn't allow for enough bad weather shall we say, and we had this big camp out there. Oh, we had a big camp because we had to send crews out to clear landing pads. They were Indians but we still had to pay them to clear bases. So we had a big camp and they had ??? provisions and paid during the bad weather. And that just about toppled us but we lived through that one and eventually heli-drills were used, at one time we had 48 of them working across in Prudhoe Bay and all out through there. Then they were used for testing the pipeline route all the way out. They were used as an engineering tool for soil testing, sampling and whatnot. Another year we had an interesting contract. One of the pipelines that were going to come out from there and come right down through the Eagle Plains and etc., we put together a heli-portable camp and one of these drills. The camp was big enough for one of their engineers, the pilot, engineer, 2 of our guys and they just leapfrogged, camp, drill and stuff, all the way from Prudhoe Bay, across the reserve up there, across the Eagle Plains, right down the Mackenzie River to the Alberta border. So the heli-drill, there was many, many places that. . .so eventually, instead of just having a conventional heli-drill we kind of redesigned it. We had a conventional one, we could drill with air or mud, we could drill with auger, we had percussion drills. Any number of models of that particular machine. We could drill angle holes up to 45 degrees because we were using it in mining work. But like anything else, it has to be marketed and Kenting, who eventually bought Big Indian, weren't orientated that way. Now I don't think, today, there's probably, there might be none working today.

#343 JW: No kidding, I thought that there would be others that would have picked up on that.

GW: There were several. I mean we had a lot of experiences where people tried to infringe and naturally we had to try and protect ourselves. But it still was a technique that was. . . you know, you had to tie the helicopters and all the other logistical things all together. It isn't just go out a do it, a person had to be able to . . .well, the logistics are the main thing so

that the customer feels he's getting a better or as good a job, more economically, done this way than some other alternative he has. So as soon as the know how goes and nobody can say, this is how this is going to work, the whole marketing thing falls apart. It's got to be followed up and it hasn't been for quite a few years now.

End of tape.

Tape 4 Side 1

JW: This is tape #4 in my interview series with Mr. Giles Wilderman. My name is Jim Wood. I should also add that this is March 29th, 1984. You had mentioned last week about the cyclic nature of the petroleum industry, especially through the 50's and that's what led you in some of the down times to get into the mining aspect and the ground water drilling aspect and so forth. You also got involved in Ron Lake, I wonder if you could just talk briefly about that project?

GW: Ron Lake was an exploration venture of Western Decalta. Al Ross was heading it up then. It started in 1959 where of course, they knew where they wanted to do the testing and it was in and around the oil seep, which was like a tar sand on the surface. I recall they found the bones of animals and birds and whatnot in the seep, it was that sticky that wildlife had to tangled and starved to death in it over a period. Nevertheless, Sproule had done a lot of work on it. Of course, the Indians had known about it forever. And Western Decalta undertook to lease land around it and to test. So in 1959, in the spring, we formulated an agreement. I must emphasize this, we formed a verbal agreement with a couple of letters about what type of equipment we had available to supply and etc. We felt we were fortunate enough in Western Decalta saying, well, you go up and look at the situation etc. and report back to us. So at their expense I flew to Norman Wells and there I rented a little bush plane and we flew the Mackenzie, finding a suitable place to land the equipment that I envisaged would do this job. Secondly we flew routes in to Ron Lake and there was really very little choice there. There was no bad geological conditions that we had to circumvent except muskeg in the summer and we were naturally going to move in on the frost. So the route in was going to be quite easy. We flew around Ron Lake, we had a float plane and we landed on the lake and trekked back and looked at the site. Everything was going to be a very easy operation as far as a location was concerned. So on the way out, there's a lake close by Ron Lake I recall, we flew over and there was this little camp down there and here was a guy waving madly. So the bush pilot landed there and we picked him up. He wanted a ride out, he was working for GSC and his program was finished 10 days before somebody was going to come in and pick him up and he just thought, gee, if I could just get out of here now. So although our plane was a small Beaver and whatnot, the pilot said, okay if you can be ready in 20 minutes. Well, I've never seen a camp torn apart faster. This guy just threw everything together, it was just like a big gypsy bundle and we crammed it in the plane and the only place that was left

for

#043 him was laying on top of his gear in the back. So we took off without any real trouble, although a little longer taxi of course and we landed him at Fort Good Hope, where I wanted to see the Mountie I believe, was one of the reasons or something like that. You know, to let him know we were going to use some Indians etc., I wanted to see the Chief and things like that. So we dropped him off there but because the plane was so loaded, it had too much momentum when we docked on the side of the river and little did we know but we tore a pontoon. So we saw the Mountie and we were ready to leave and we came out and the plane was sagging a little bit on that side, it was filled with water. So the assessment of the bush pilot was, we'll go anyway. So with the pontoon partially filled with water we roared off into the Mackenzie River. Fort Good Hope is right on a bend so it's not a lake but it's not flowing that fast there. It was too heavy to get off but finally he got one pontoon out of the water so we're careering along with one out and finally he lifted off and it was just like a full bathtub being towed through the sky for the rest of the way back. When he landed at Norman Wells, at their little lake that they were using for these planes he had to gauge pretty carefully because we landed and scooted right up to where we tied his plane up just as it was filling up. We arrived and that was as far as we could go. But nevertheless Ron Lake, we came back and Western Decalta said go, and we started preparing and we had to make arrangements to ship all the equipment down the Mackenzie River on barges, put it all together, organized camps etc. This was done. The lawyer started working on the contract and before I forget I must just finish that little part of it. The lawyers never did get through with the contract so we moved all the equipment in, went in, drilled all winter, moved back out, had a few differences of opinion but never had a bit of problem. And that I really think, personified the way business could be carried out in those days out here. Western Decalta's word was their bond and so was ours. We just sorted things out across the table and the contract never was signed because there was always something in there, it was going back and forth between lawyers all the time. Nevertheless, we moved in, in the latter part of the fall, unloaded the equipment, camp and provisions, chemicals and everything, as well as picking up hundreds and hundreds of barrels of fuel from Norman Wells. Deposited that north of Fort Good Hope on the river. It was around the 2nd week in December that somebody in Norman Wells advised that in their opinion it was frozen enough to commence moving in. It was before Christmas. That's when the minimum number, the advance party moved in and the cats started building the road in which really was no more than clearing the snow so it would freeze faster and better and they had to make a couple of ice bridges. Fortunately they had the right weather. And we moved into Ron Lake. On that particular job the cats ran steady because they had to, although we built an airstrip on Ron Lake that would accommodate a DC-4, it was still cheaper, because of the cost of fuel I guess, for a cat train, towing sleighs, to go back out to the river, load up the fuel and haul it in. And they burned tremendous amounts while they were doing this of course, because it was 90 miles each way. But that was the way the fuel and all the supplies came in for that job, the DC-4 at the very end when we were running a little short of fuel, I think landed 1 or 2 loads and

that was from Norman Wells. They just brought it that distance. The DC-4 was a workhorse of PWA in those days. Ward Air had the Bristol Freighters, which we used shortly after that. But it was too small for the type of air freighting that was needed at Ron Lake. So at the same time, for that same winter, Peter Bawden moved in west of Norman Wells. But it was south of the Arctic Circle, that was about the only distinction. He drilled a lot deeper than we did of course.

#102 JW: Yes, just mention the significance of this Ron Lake, drilling at that time. Wasn't that the most northerly?

GW: Yes, that was the first well in Canada north of the Arctic Circle. The Arctic Circle being, I don't think it was even 10 miles south of us. We were just north of it anyway. So that was something that we felt was our claim to fame at the time.

JW: You mentioned hauling the fuel and supplies in on cat trains. You also, along with the helicopter portable drilling rig, developed a heli-portable tractor as well, and had a method of setting up camps in the Arctic and the north.

GW: Yes, well, when the heli-drill, the very first heli-drill project was carried out with a tent camp. The one on the Eagle Plains for Mobil Oil. But that certainly pointed up that the need, 1) to keep your camp as close as possible to the work so that there was a minimum amount of flying time for the helicopters transporting crew back and forth. As the work was planned, if there was a river nearby we would deposit fuel at strategic places along the river or whatever, to keep helicopter time down to a minimum. And moving the camp really made a difference. It might only take a couple of hours to move a camp but you might use up many times that flying people from your old camp to the new work area. In other words, it was best to move the camp and cut down on that. So tearing down these tent camps and moving them was a time consuming and therefore costly part of the operation. So right away we needed hard portable camps. Something that the guys could go to work in the morning and one helicopter could move the camp, nobody had to take their tent down etc. That was why we went after Atco, and there were several, Atco of course being the biggest at that time, camp builders. But they weren't really, the first ones to come up with an answer and the first ones were, I think it was a polyurethane. It was a foam, it was a composition unit that was quite fragile, but still quite warm. And that's what we used on the next job, we had these built. There was no amenities in them, I mean, the wash basin was a wash basin, it was a few years later that we had snow melters and proper kitchens and everything was quite sophisticated at the camps. At the start they were really just shelters and everything had to lay on the floor literally, when you moved them from A to B. but I think the first portable camps for helicopter use, we picked some of them up, we would pick bunkhouses up 2 at a time. Because these units, 8 x 16 foot units were so light we could carry 2 of them in a cradle. And we could only carry the utility units, the kitchen and the others one at a time of course.

#146 JW: Were they bear proof being so light?

GW: No, you could really just about kick a hole through them. But they were warm and they kept the rain off and the mosquitos out, which were important.

JW: Never had problems with bears then in those things?

GW: Not there. The only bear problem we ever had was at Churchill where one winter we had the same type of operation that we had on the St. Lawrence River, where we drilled onshore and just offshore, about 40 or 50 miles south of Churchill. We drilled there for a couple of years, early when they figured that Hudson Bay had potential and was of interest. All that equipment was truck and track mounted and was shipped by rail to Churchill and then we went and built a road with cats, back to the location south of Churchill.

JW: Were you in the lowlands there or up on the ??? Beach?

GW: I would have to look at a map, I can't recall the name of the river that was just north of us that entered Hudson Bay. At one time we had drilled, doing structure test work, south of Churchill and we had other drills, heli-portable ones working at Eskimo Point for a mining company, quite a ways of course, north of Churchill. And quite a ways west of Eskimo Point. But we were, because of the cyclic condition of the industry, we found ourselves pretty soon having, what we called, we were organized so that we had people and equipment that suited the requirements of the mining industry, ground water and engineering and the oil industry as far as structure test and geophysical, who were all different markets. Because the geophysical and exploration part of Mobil Oil, Shell or whoever, was certainly different people with different budgets, needs, than were the ones who did the structure test work for them. So Ron Lake, I always thought that one of the most interesting things about that was the fact that all that work was carried out and all that commitment by both parties, without a legal contract.

#182 JW: When did that change in the industry do you think, this was 1959 and you could still proceed on a handshake? When did that start to change and you became a little bit to the point where you wouldn't go out without the lawyers?

GW: I don't know Jim, but I know it was shortly after that where we found out that there wasn't a contract long enough to handle the type of operator we dealt with in Montreal for instance. I remember. . . the name, I'll think of it in a minute maybe, there was the same type of very portable equipment that we had, we had a capability of having 3 different types of blow-out prevention equipment under our rotary tables. We had a substructure that we could drive the equipment up on top, we could assemble it on site, it was very portable. We had mud tanks etc., we had the ability to mix our own cement and our own mud. Then we had small portable units for all that, we had small boilers that supplied just enough heat for our unit, they were small high pressure boilers, not the larger ones. And all these things and even camps. So we had the type of equipment that was able to go out and do some of this odd work or frontier work or something like that, in the most economical way. It was that reason that we started drilling on the St. Lawrence River. There we started off with a little contract that said what we were going to do and how they were going to pay, etc. And I remember the very first year, we got our equipment and we shipped it all the way back to Calgary at the end of the season but this operator found a way to deduct over \$3,000 from our bill, which was pretty important because we were on a day work contract and there wasn't that much in it in those days. So I

remember that, next year he came by and wanted it again and I told him we weren't interested, we were busy. He knew we weren't busy but I mean, we just didn't want to have to deal with him anymore. He persevered and we eventually said that he had to put enough money for the move down to Montreal and back in with a Trust Co. that we selected. Had to have 3 weeks operating at our estimate, in the account. Every Monday morning we would present an invoice and it didn't have to be approved by his engineer, just that we submitted it and if the money was not replaced in the trust account by Wednesday noon, 2 days later, then at our option we could proceed to abandon that hole because we had all the money and load our equipment up and come back to Calgary. So making a deal like that, you know, you'd think if I made a deal with you like that it would really bother you because somebody distrusted you that much. But nevertheless, that's fine. And we carried out another winter's operation that way and on the very last invoice he withheld \$377, just to show us who we were dealing with. So I guess there's still people out there that you can deal with on a handshake but there's more people in the business. I don't know really when it changed. Of course, big companies like Imperial or any of those, nobody would want to operate that way because they'd want to have all the proper authorities etc. on a contract. But with a company the size of West Decalta you were dealing on a more personal basis at that time. I think most of the people though, could have dealt on a handshake basis in those days. I remember Wilderman, Jones Drilling, the one that we started before the first steel strike and I was desperately in need of work so that I could make my payment. One of the people I called on was a fellow named Blue Deal, with Shell, he was their production manager at the time. He was kind enough and honest enough to say, Giles, I've got a lot of friends out there who have either worked for me before or who I went to school with and after I put them to work then you're next. Which saved, I didn't need to waste anymore time and I appreciated his directness because I understood it naturally. But that was, really that was appreciated because you knew where you stood and that was the way people were.

#255 JW: You mentioned Wilderman, Jones Drilling and the steel strike, maybe you could just elaborate on that event.

GW: That steel strike really caught everybody by surprise. It was the first of its kind. I can't think of an analogy right now but we were just carrying on, no matter if you were Western Decalta or Esso or who, and when that steel strike hit it was devastating because all of a sudden the supply of tubular goods just disappeared. You might have had your drilling rig . . .

JW: Do you remember the year of that?

GW: I would guess maybe '62. It's sure a guess. Nevertheless, we had ordered, from Cardwell the new model D, it was designed to pursue a certain market. Our target was a certain depth of hole, up to 6,000' and that would have been pushing it, 5,000 would have been a lot nicer. But it was the latest thing, it was very mobile and anybody who had a weakness in their head for iron, which I obviously had it was beautiful. And we're putting this all together and the rig was shipped from I think it was in Oklahoma they were made, I forget now, maybe it was Wichita Falls, the rig was shipped and the supplier of our drill pipe

was having trouble and we couldn't get our drill pipe. So a rig without drill pipe is kind of like a ship without a sail or an engine or something. So then there's a desperate scramble to try and find drill pipe. We finally found some Tubiscope 2 in California. In those days that designation meant that. . . I mean, if you had a brand new string of pipe and you ran it, it would immediately be 2. So it was quite close to the top. And Tubiscope is a respected measurement, so we got that pipe up. Our very first hole was on the river, about 10 miles down river from Drumheller and at somewhere around 3,000', we were coming out of the hole and a tool joint parted about 1,500'. It all dropped back on the bottom, sheered off the 3 cones, planted them as well as could be possibly done and we spent 11 days, we used everything in the book. Of course, we had McCullough out, we had jet shots, we had all sorts of baskets and different devices. We milled on them, we did everything. My operating capital was disappearing very fast and I certainly didn't have very much of that. I wasn't set up for any 11 days of bad luck at that stage of the game, on top of the extra

#313 expense of getting the drill pipe up, because that cost differently too and we had to go outside of our previous commitment from the supplier that was going to supply ????. Now we're dealing with an opportunist in California. So we fished and fished and that was just terrible but we finally completed that hole. We had another one up at Camrose which we moved to. It went well and we got paid for that. Our next one was for Red Creek Oil and Gas, we had 3 wells in Leduc. But Red Creek Oil and Gas had an opportunity, while we were drilling the Camrose well, to drill on a sure bet. . . it was close to the highway anyhow, just a few miles away and they could get that completed and get it on production and do their banking and they would all be set for us. That's what they thought but they never told us they did this. So we got set up and they had enough money to put up the move into Leduc, I mean, I think they had to put something like 7 or 10 thousand dollars up. The next payment point was at 3,000', we got there, that was late. By the time we completed the first well which had a small amount of oil in it and we were trying to get the payment for 3,000' it didn't come, they didn't have it. And we found this story, that they had to refinance, which they were never able to do. I think they found a little bit, they got us into the second hole, that was it. And there was many meetings of course. To make a long story short, we had to finish the job, was the only safe way out. That absolutely strapped us, we were unable to operate any longer. We put a claim against the production. I had to get tanks and everything and set up a production facility. Of course, now we had to operate it, Red Creek Oil and Gas were some promoters here in town. So I learned a little bit about production which I never knew before then. So for about 14 months we had to produce that and sell the product but we couldn't use the money because of the litigation. So that went into a trust account. Of course, I felt that we had a right to it eventually, which we did. Wilderman Drilling and Big Indian Drilling were carrying on and I was trying to peddle the 3 wells around the industry here. Everybody in the industry knew that we were in a fix and it was Western Canadian Petroleums, Paul C. Evans was the president, was the first and only guy that said, we'll have a look at it and if the numbers look right we'll pay you what it's worth and he did. It wasn't worth that much but I got a real square deal, I figured, from Paul and I've never forgotten that. As what's

his name, Wood, with Eastman, never forgot that we had to close the company down and dispose of it. We ended up with \$110,000 which was quite a bit of money then, that we were short. So anyhow we closed Wilderman, Jones Drilling down and Big Indian Drilling paid that off, it took about 3 years or more to do it but we managed to pay all the creditors back and Wood . . .

End of tape.

Tape 4 Side 2

JW: If you could just finish the story.

GW: Oh, this guy Wood, I'll never forget because it was almost embarrassing because he would tell everybody around, whenever he ran into me, how we'd paid off everybody's bills when we were bankrupt. But we weren't, I mean we were technically bankrupt but we had a moral obligation even if that company had been dissolved and disappeared. That was the steel strike and how it affected us. But the tubular goods certainly dried up in a hurry on that and there was a lot of rigs sitting around.

JW: What happened to that well at Red Creek Oil and Gas, they obviously didn't get it back did they?

GW: No. It was 3 wells, West Canadian bought them from us, us and the bank.

JW: Oh, I see, yes.

GW: The Royal Bank, Norm Stewart was the manager then and he was pretty easy guy to work with, I wouldn't say easy but pretty fair. He could assess the situation and he went along with us so everything worked out in the end.

#013 JW: One of the other things you were innovative in or involved with was the 2 man drilling rig, what you I guess, called the Savage 3000.

GW: That came along quite a few years later. We'd been doing a lot of work, we'd been up in the Arctic for years in exploration work. I can't recall the year we started on that but I'd had this idea for quite awhile that working in the Arctic, if a person could cut down on the size of the camp. We were having more and more problems incidentally with unions because the mining work that we were carrying out, a lot of it in British Columbia. The unions were giving us a bad time. And some of the engineering work we were doing on bridges and offshore on barges, we were involved with construction companies building bridges and the unions had got to us. So we eventually set up a little B.C. company, it was a scam, a joke and our personnel here who would have to run that equipment because the B.C. labour force had nobody familiar with rotary equipment. So they would move into the high rate of pay etc. that we had to pay, that we bid the job with and everything out in B.C. And we would only send our most trusted and long term employees out there. We would rotate them, give everybody a chance at it. But it was just understood that they weren't going to bring any unions back into Alberta, which they never did. They felt like we did, they had a chip on their shoulders as far as the way the unions acted. But this was coming and I just thought, we've got to get equipment that uses fewer personnel. The camps were costing a lot up north, moving people in and out was costing a lot. And the

quality of the operator was sometimes, was really lacking, of the driller. So all those things went together, were formulative in the original concept of what became the Savage 3000. So this was going to cost a lot more money of course, than we could afford and we finally got a loan with a grant. It was a loan from . . . I'm sorry Jim, I'll think of the name later, but from Ottawa. IRDA was one, the Industrial Research Development Act but that is not the one I'm trying to think of. We had help from them too in developing other types of drilling equipment. This particular one we got \$150,000 that they would loan us providing we put up another \$150,000 and on that basis, with the work that we had ahead, I felt that Big Indian Drilling could start to build this rig. The rig was built and it used a lot of switches, there were no computers then. I found out that we had to develop a program of switches that would, for instance, link the pipe out of the hole, set the slips, back it off from the drill stem then back it off from the swivel and lay it down on a rack and put it in a certain position on that rack, all either automatically or semi-automatically. What really evolved is that for an operation of going into the hole or coming out of the hole, every

#058 length of drill stem could be added or removed by, of course, the driller was the only operator, by pressing 4 switches. You'd press the first switch and somewhere up to 20 or 25 operations would occur in a semi-automatic mode. I mean, that was all automatic and there was a fail safe there where it would stop. It was a logical place for it to stop and I could go into detail on how this happened but I don't think that's necessary. So then as soon as that was over, he had his fingers on 4 switches, he'd press the next one and it would go to the next stage. In other words, the drill stem would pull up and clamp and maybe break off and stop. He'd press the next switch and it would raise the drill stem out of the tool joint that was sitting in the chucks and then clamp it again and break the swivel off and do something else. And the next one would be an arm that was holding it would retract, lay the drill stem down and open up, kicking it out onto the pipe racks. And the next operation, the pipe racks all had hydraulic levelling devices on them so when you were going out of the hole the pipe would keep rolling away from the rig and at stops, would roll so far and just keep stacking against itself. When you're going into the hole those would raise up a few feet and point the other way and it would all roll back to the rig. So all that was operated at the drillers position. And then the fourth thing, the arm would go up and reposition itself to the next cycle. So the cycle was, there was 4 portions to the cycle and they happened so fast that this rig could come out of the hole in singles as fast as one of our 5 man crews could come out on another rig in doubles. It was very fast and very precise, it worked beautifully. The rig could drill from the vertical to 45 degrees. I know there's a rig now, being made by Dennis Conn???, an ex-employee of Big Indian's, in Medicine Hat, that is doing most of this but he didn't put all these automatic modes on. He has 3 or 4 employees on his and it's working very well. In the paper 2 weeks ago he sold one to Venezuela. And he freely admits that's where he got his idea was from Big Indian Drilling. But ours, it had a special type of tri-plex pump on that could permit it to mix cement and drill, you know, with very high pressures, so you could use jet bits, which were big at that time. It had a high pressure air compressor, fairly high, it would go up to 350 psi's so we could use some other innovative drilling techniques. It

had a stool pigeon on it that could monitor a lot of the drilling activities. As far as the oil industry, but more interesting, the mining industry, some of the data that we figured you could get back from the monitoring of the drill, in other words, we could put any amount of weight that we wanted on the bit, right from the surface, because we had a very powerful pull down system. The system that hoisted the pipe out of the hole could drive it into the hole using the weight, 92,000 lb. is what this drill weighed, just like our heli-drill did. We drilled through the vertical axis of the centre of gravity. So when we started off in the mountains

#103 and there was hard difficult drilling, instead of just sitting there rotating one drill collar with a bit on it and hoping there was enough weight to get through boulders, we could start off as if we were at 10,000'. With all that weight on the bit. So this had a very powerful pull down arrangement on it. And because we could just the amount of weight that we wanted on the bit precisely, to within a few pounds, we also had a way of, and actually we could monitor how much weight was on the bit and this was monitored on a graph with a pen. So we had the amount or weight on the bit was one drilling parameter that was a matter of record for every minute of the day, 24 hours. The next pen was calking the rotary speed and we could of course, set, 10, 50, 300 rpm., whatever we wanted. The next one monitored torque, so we knew how many foot pounds of torque it was taking to turn the bit. The next one was penetration of feet per hour so that was another pen you know, right now we're drilling at this rate or we're drilling at another rate. We knew the amount or pump pressure and air pressure. It was all being monitored. So when you put all these together you could tell very, very accurately where a drilling break occurred which we felt was going to be real good for a geologists sitting on an oil well. But of course, as soon as you get out in mining country all these things are doubly important because you're going through slip zones and all this sort of stuff. Then this equipment also was capable of using a reverse circulation techniques where we had a double wall pipe and for instance, a lot of the mineral exploration holes we did were drilled 4 1/2" diameter and we had a 4 1/4" OD drill pipe. So the drill pipe literally filled the hole up. Our air or mud, our circulating medium went down the annular space between the inner and outer pipe, came out through the bit and the cuttings from the bottom came up the inner pipe at a tremendous velocity. So at 1,000' it was just literally seconds and the material that you'd cut down there went into a special sample cyclone collector that we had. So the geologists, no matter mining or on oil, could just, he had clean samples, uncontaminated. You know how when you're drilling with conventional rotary drills you're pumping the drilling fluid down the middle, it's coming up the annular space on the outside, you have a wash out at 3,000'. So you have cuttings from 3,000 but there's a washout at 1,000, you've got some of that mixed in and all this kind of stuff. And it takes quite a while to get up. But now, with this technique, the cuttings were just instant. And in hard rock country where we were drilling with air you could divert a part of those cuttings into a glass tube so you could just see the formation in revers, what you were drilling down, every little change, when you hit a little mineralized zone and stuff like that. So it really had some possibilities. Plus when you get, because you had all these various controls, because you could control all the various drilling parameters, you

only really needed to have one experienced person around, which would be the tool push. But the driller, he could have been a crane operator or anybody that really knew equipment because he didn't have to. . . the drill is the one that broke off the pipe, how much weight on the bit. So the tool push could come and say, Joe, I don't want you to go over 125

#153 rpm, I don't want more than 8,000 lb. of weight on the bit, this, that and the other thing. And if the air pressure or the mud pressure deviates by this much, do this or call me. If the torque builds up, the hole's getting tight, call me. If this happens, if that happens. So he could go back to his bunk or his office, whatever and sit there. He could come back an hour or 2 later, he'd look at the stool pigeon, we called the charting arrangement that we had, and say, Joe you've done everything just right, oh, what happened here. You either stopped rotating for a minute or you did this or that, the whole story was there. So all these things, for mining work for instance, the way that . . . I felt it would do a great number of things and I know this is an oil industry kind of discussion. But it would even help in the development of the mill that was going to work. Out in Copper Mountain for instance, in the Princeton area. Because of the drilling information that we got, there were a lot of metallurgical information obtained. So you could even put a grading on ore hardness and all that. So you could engineer the cost of building a big mill and how much it was going to cost to operate a mine. You had rock drill ability, we worked with Hughes on this for instance, you could find out what the wear was going to be, you could forecast the wear in the grinding mills and how much the ball charges were going to be and all that. There was just a lot of things that we could see a great future for this. And we tried variations of this because this big rig, we just couldn't get it off the ground because by then we had sold to Kenting and they didn't have much interest in one or two man rigs, or in developing something for the mining industry. It just ground to a standstill. The rig drilled quite a few holes and as far as I'm concerned, very successfully. And did all these things and I think it would have been, before Beaufort, this was before the Beaufort Sea but we could see that coming. And I really thought that would have been shallow enough that this rig, or the next model bigger would have been an ideal rig there because it could have been enclosed very, very easily in one building, had a very small crew running it and could have got a lot more information out of the hole. I mean, it could have conducted all the drill stem tests etc. that you normally can do but also could have had a real close check on formation changes and things of that nature.

#198 JW: What was the relationship with Kenting then, why couldn't you have gone out and pursued this on your own?

GW: Kenting were a very successful oilwell drilling contracting company in one area. Very successful helicopter operator with Klondike. They had a real good geophysical crew and they were trying to operate as a, I guess you'd call them a vertical conglomerate wouldn't you? Anyway, so they could handle the first primary exploration, the structure test drilling, the oilwell drilling, the pipelining to get it to the market, they weren't in refining or anything like that. But they offered a real wide service. But the people that ran it were mostly concerned with helicopters or with oilwell drilling. And right here. Tony

Vandenbrink, who I have an immense amount of respect for, I remember I was coming back from Chile where we were working on a mining job and I was looking for more work in South America because I thought, I'm down here and I've got equipment down here, etc. So I was regularly calling oil companies in Lima and in Bogota. There was Texaco in Bogota had an immense program that they were starting on down there. It was even enough, I couldn't wait to get back and tell them about it, I phoned them down there. I was only going to be a couple of days more but I thought, boy we've got to get working on this. Is there anything more you want me to do while I'm here. They weren't the least bit interested. There's been a few contractors did very well in that field, in the upper end of the Amazon River didn't they. But anyhow that was there, they eventually went to England and they've got a division over there working well but they just weren't interested in this piece of equipment. One of them came out and even saw it operating once. They would come down to our shop and see us testing various aspects of it in the yard and Tony would say, I don't know how you do this, this is really marvellous. But to support it, it was supposed to immediately leap into producing gold bars for their bank account and they just weren't interested. I've never known why.

JW: That must have been frustrating for you a little bit.

GW: Yes. That was why when our 5 year management contract was over, well, I think they figured that I was a dreamer and we had a mutual understanding, we went our separate ways. I remember Graham Ross always saying when Kenting bought us out, you'll never last more than 5 years. I said, what do you mean, the reason that we're selling to you is so that some of our old hands here are going to be able to have a challenging future. Because we couldn't do it in Big Indian Drilling. We needed additional financing and lining up with them was what I thought was the way to do it. But what I think they were interested in was our potential with our heli-portable drills feeding their helicopters, which really didn't work out. Because we had more drills than their helicopters could ever haul anyhow, so we were still dealing with Okanagan and all the other helicopter operators. And certainly when you get up on the north slope of Alaska, BP or somebody up there had maybe, their own favourite helicopter operator and they would never let Klondike in. Klondike couldn't have got there anyhow because they were too busy down here maybe. So it didn't work out the way they planned. It was shortly after I left that they sold Big Indian.

#255 JW: Do you regret somewhat having sold Big Indian?

GW: No. I would like to have gone on but when things changed, we went in with Kenting, they soon moved me into kind of their research deal and that's how I got involved with, at that time it was secret work with the federal government. They wanted to lay a string of sensors across Robson Channel, way up in the Arctic in conjunction with the U.S. military to detect Russian submarines coming in. I had been doing, when we sold to Kenting I'd also been working on this same idea I'm talking about here, doing shallow structure test holes in the bottom of the ocean, off a boat. So that an operator on a boat would lower the rig down and it would sample. Up in the Arctic or off the east coast or wherever. I'd given a paper or something on it and they knew that we were engaged in

that so when this need came up to put an array across Robson Channel then I got a chance to work with them on that.

JW: That must have been fun for a little bit, a little bit different.

GW: Yes, it certainly was. As a matter of fact I learned to scuba dive then and took some training under ice because I didn't want to have our guys doing anything I didn't know how to do myself. It was very interesting in so many ways. I could only go as far as a need to know but I had a secret classification. Supposedly I couldn't even talk to the directors of Kenting or anything about this. They just knew I was doing this, I could only give them little glimpses of it then. But they had ways Jim, where they could recognize, at that time, each Russian submarine. They knew it was #1 or #2 because of the sound signatures that came, even when they were running silent and sneaking in and out through Robson Channel. Now everybody knows that but that to me was a real novel and interesting deal. Then we had to design how we were going to . . . first I was supposed to figure a way to test the bottom of Robson Channel and then after that, we designed, they said, we want this type of array here and this type over there. Because you have a lot of temperature fluctuations and the sensors or these arrays had trouble picking up sound if it went through different thermal layers and all this kind of stuff. So there were certain problems they were looking at, one branch was looking at but then they wanted me to design the way to get it ashore. Because Robson Channel is like a highway, there's just big icebergs spawning up there, breaking off and they float down. When they come close to shore they can gouge 10 or 15 foot, even 25 foot furrows in the bottom of the . . . So if you had your array out there and it came ashore you had to make sure that there was no danger of it being wiped out when an iceberg was pushed down by there and did it's plowing job. So that was how to get from deep water to shore safely so that required a lot of testing and how you're going to construct this trench and cover it all up and all that kind of stuff. So it was really interesting. But that was a result of this type of Savage 3000 and the various drills that we'd had to build, to adapt to certain conditions that we were working in.

End of tape.

Tape 5 Side 1

JW: In sort of wrapping this up then, I wonder if you might recall some of those people, if there were any, that were influential along the way in your career, or important from your point of view, people that stand out?

GW: I would think Jim, there's 2 different classifications that were important. I mean, they were important to us and we were important to them. I can't really zero in on that. For instance, I've mentioned Al Ross of Western Decalta and Art Patterson who was with them and Jim Kirker also who was with them at that time, as a junior geologist. I credit them with having . . . taking on a job that at that particular time was adventuresome by anybody's standards and I thank them so much for thinking that we were the people that they would work with on that. So I guess they were thankful that they got us, I hope they were, that we did the job for them. But certainly if there wasn't somebody that had the

initiative to even get that thing going, that was good. There would be a few mining people in the same category of course. There was Lucian Freon and Pierre Marachelle, 2 people with the exploration division of the consortium Petorpar Alf???, who did the first work in the Arctic Islands. We'd had helicopters for a number of years operating in the Northwest Territories and the Yukon and places like that before, but when I think of how far they were ahead of anybody else. These people that came over from France and I guess they found some big blocks of land up there that they wanted to have a look at, from not just a geological point of view but from a geophysical point of view. They looked at track equipment etc. and of course, we were contracting track equipment at the time. But they came to us and said, what would you do about it. I remember the meetings where I suggested that this would be a more economical way of doing it and how we would do it and everything like that. There was some gentlemen that had some real kind of gutsy ideas too. Of course, somebody in Paris had said, go and do this I guess, not knowing what they were going to do, but they could have. . .well, really, I don't know any other way they could have done it because there was no way that you could have taken conventional track equipment into the Borden, Mackenzie King, or Prince Patrick Island in those days. So our heli-drill was really the only thing. and it worked for quite a few years up there and a number of different companies used it and we had to devise a heli-tractor. We even put another moving capability, a third helicopter load. First we would move the base of a heli-drill, that had wheels and a drive on it, then we would set the heli-drill on top of that. This could drive for miles and miles across those islands, the flat part of those islands up there, without ever needing a helicopter. This was to bring the cost down. But when they had to be moved then the helicopter would come out from and pick us up and move us wherever we had to go. but those people were certainly, we certainly thank them for being the instigators of real interesting and challenging projects. The rest, I really couldn't pick out any particular person. The ones in the mining business and a particular innovative drilling, double wall pipe deal that I explained that was the reason we worked in Chile and in Cyprus. Because that was a sampling problem. But that was really equipment that we designed or developed for the mining industry, that had a bigger application there than in the petroleum industry. I couldn't name any. . .I mean I knew a lot of great guys, they were people that worked with the fishing companies and the production people and you know, and others like that, that were real characters, that were in CIM and various petroleum societies and things like that.

- #062 JW: That's right. Speaking of societies and organizations, with your innovations and some of your innovative work, did Big Indian or yourself ever receive recognition from organizations or awards or anything?
- GW: No, about the only recognition we got is that we were able to keep on working and getting new challenging jobs and we got paid and occasionally we would have an invitation to describe it at an SEG or a CIM or some other society. Which always firstly, it frightens the hell out of me but secondly I knew that the only way that we could get to the next one might be if there was somebody there that would understand what we were doing a little bit more. We were pretty bad at marketing I think. Spent too much time out in the field

and building innovative. . .you know, handling that end of it and not marketing. When I look back I think we might have done a lot better if we'd have been stronger in that area. But then again, I mean, we did, I think marketing the heli-drill, when I look back I marvel at it myself, how we ever made it.

JW: You had that little newspaper you slipped under the doors in New Orleans, for which you got. . .

GW: But we had all sorts of things. For years I put out a publication I called Impact. It came out 4 times a year. I only have one copy left that I know of but it was really designed to tell people what we were doing in various parts of the country or the world, who we were working for, trying to give as much credit as we could to our clients without forgetting ourselves.

#084 JW: What I'm looking at here is a quite nice glossy 8 page publication that Giles was just explaining with some colour photographs and so forth. This is quite nice. Well, we've come a long way. Is there anything you think we've left out that maybe we should mention at this point, before we turn off the machine?

GW: I'll probably not think of it until tonight or tomorrow Jim. When I look back I certainly fondly recall all of my experiences and the people I knew in the oil business. I was lucky to be in a real very exciting, challenging time of it and a lot of people around today that were. Whereas today I think it has certainly changed a lot. I mean, all those frontiers, or not all of them but there's not so many frontiers there and things are a lot more stereotyped and whatnot. So we were just fortunate in being in a real interesting time. Part of it, not only in the development of all the equipment and whatnot but in the development of this part of the country. I mean, goodness we went from Turner Valley days to what we have now in one generation. It didn't take long. We had different problems than they had in Texas. Texas did the same thing but Texas didn't have ice and snow and mosquitos. . .well, mosquitos is nothing but you know, all the obstacles that we had up here. The rivers and just the plain logistical problems were. . .

JW: Well, the isolation.

GW: The isolation. The logistics of it were a whole field in itself. Then there was the different types of drilling problems that we had. One of them is operating at 40 below zero, which is commonplace now. So no, I think I'm lucky.

JW: Okay, well thank you very much for this.