

PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Glenn Fox

INTERVIEWER: Nadine Mackenzie

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NM: This is Nadine Mackenzie speaking. I am interviewing Mr. Glenn Fox. Mr. Fox, thank you for having accepted to participate in our project. Can you tell me, when and where were you born?

GF: I was born in 1918 in Weyburn, Saskatchewan.

NM: What did your parents do?

GF: My father was a hardware merchant. But they moved from Weyburn to Innisfail, just south of Red Deer, in 1919, before I was two and I grew up really, in Innisfail.

NM: Were you parents Canadian?

GF: Oh yes, they were indeed. My father. . .one of his grandfathers, I'm not sure how many greats, came to Canada in 1812 with the British army and my mother's family were United Empire Loyalists that came up from the States after the American Revolution.

NM: So where were you educated?

GF: Well, I went to public and high school of course, in Innisfail. I was at the University of Alberta from 1936 to '42.

NM: What did you study at the University of Alberta?

GF: Oh, geology.

NM: Why did you choose geology?

GF: Well, when I first went up as a beginner I intended to be a physicist. But we were allowed Geology 1 as an optional course, you know, you could take one of the following, geology etc. And I took geology and liked it better than physics so I just switched.

#018 NM: How many years did you spend at the university?

GF: In Edmonton, six.

NM: Did you have any summer jobs?

GF: Oh yes.

NM: What did you do than?

GF: Well, the first two or three summers I worked for my father, but then I got a job with the Geological Survey as a student assistant. For that and the next two summers I worked as a student assistant with the Survey. First for George Hume, then for the next two seasons with Con Hague, who of course, he's still living out in Mount Royal. A most wonderful gentleman he is too, and a superb geologist.

NM: Do you remember other students you were with at the University of Edmonton, you were mentioning Doug Lair?

GF: Fred McKinnon, a chap named George Wright, Eric Coneybear???, who I believe died

not long ago. He went to Australia. And Bill Farmelow???. There was a chap named Don MacGregor???, I haven't seen for many years, but he was in the same class as me. Let me see, I'm missing one, I know darn well. . . oh, a fellow named Evan Cameron, who actually went into the mining business after he graduated. I haven't seen Evan since he graduated either.

#036 NM: So you graduated with a B.Sc. in Geology?

GF: And an M.Sc. And then later I went and took more post-graduate work in the States.

NM: When did you go to the States, just after the University of Alberta?

GF: No, I worked for four years for Imperial Oil.

NM: Who hired you?

GF: Ted Link. But I worked for Cam Sproule.

NM: Where did you work?

GF: Mostly in southern Saskatchewan.

NM: And what were you doing there?

GF: Well, we did a lot of mapping and sampling of outcrop beds and taking samples for micro-paleontology. Studies that Sproule initiated in fact. And then we had to do some sub-surface work and some well site work, I didn't do very much well site work. I think mainly because I wasn't really very good at it. It ran counter to all my particular tastes in geology and in fact, the first chance he got, Dr. Sproule got me transferred back to Calgary so that I could work in the foothills, which is where I really wanted to work in the first place.

NM: How were the conditions of living, were you in the bush?

GF: Oh they were fine. You mean in Saskatchewan. . .in the summer we used to camp. The nicest places were farms with windbreaks, big belts of trees. We'd go and get permission to camp in the belt of trees. And if we were lucky then we could board in the farmhouse.

#053 NM: That must have been nice.

GF: It was very nice indeed. Sometimes we had to drive into town and eat there but most times we could find some. . .

NM: And that was with an Imperial crew?

GF: Yes. Not a seismic crew, it was a geological party.

NM: Who else were on these parties?

GF: Stan Harding was one of the chaps who was involved and Rod Morris, who died not very long back. A fellow named Fred Killer???, who stayed with Imperial but he died at least 20 years ago, I would think, a very able fellow. A fellow named Bill Macdonald, who now lives in Edmonton, he's an entrepreneur and a small company owner, a very shrewd businessman this Bill. But he was a good field geologist. And a lad named Tom Connick???, who ultimately was with Texaco Canada and he died very unexpectedly. He was Chief Geologist for awhile and he died very unexpectedly indeed and he couldn't possibly have been more than about 45 perhaps.

NM: That's sad.

GF: Yes, it was, he was a nice chap was Tom. And another lad named Stephen

Ostapovitch???

NM: Was he Polish or Russian?

GF: Steve, I would say he probably was from a Russian family. He was a real bundle of energy but he ended up by choosing the mining side of geology.

#072 NM: During these four years, do you have any anecdotes to say what happened to you, were you ever attacked by bears or. . . ?

GF: No. No bears. I don't think so really. I suppose in a sense they were quite prosaic because it's the kind of work that everybody was doing. There weren't very many companies operating then you know. There were five big companies and that was it, and two or three small ones and a few consultants.

NM: And after these four years, you came back to Calgary or. . . ?

GF: I went to the University of Oklahoma for two years.

NM: And why did you go to this university?

GF: Why that particular one. It's always been a place where a lot of Canadian students have gone. I had intended to go to Stanford and I had a very good friend who was ahead of me in university and he rather put me off Stanford.

NM: Why?

GF: Well, I wanted to go there because of the presence on the staff of a couple of people. My friend said, if that's what you're after, don't come, they don't teach you anything, they send their assistants around to teach. You go there and pay their fees and so on but you don't get instruction from the people you're interested in. So then I talked to folks like Bill Farmelow and others and they liked it at Oklahoma because it was very much geared to sedimentary geology. They were very accustomed to Canadian students too, you never had any problem with curriculum evaluation or anything like that, they knew all about it.

NM: So you went there to work on your Ph.D.? And how long did it take you.

GF: Two years. The company basically provided me with a thesis problem, so I didn't have that concern. And I had the field work done when I started. The company was very good about things like that. If they could help you out in an educational program, they would do it.

#097 NM: And after these two years at the University of Oklahoma, what did you do?

GF: I came back to Imperial and stayed two years.

NM: Here in Calgary.

GF: Here. Yes. I was working out on the front ranges in the foothills. In fact, I was doing Paleozoic stratigraphy. And then I left Imperial. I didn't really have any complaint or reason to grouse about the company, they were very good employers. But whilst I was away they had made the discoveries at Leduc. . . and Redwater also I think. . . but the result was the company was growing like a cauliflower and it was getting so big that it was easy to feel lost in the shuffle. The bigger it got, the more rules there were. And so I went to Hudson Bay Oil and Gas and stayed there five years.

NM: And what did you do there?

GF: Well, I did a bit of all kinds of things. I did some canoe work in northern Alberta and

some stratigraphic work in the foothills and I did sub-surface work. Basically it was a very unspecialized job. We didn't have a very big staff so people had to do whatever there was to be done.

NM: Did you prefer this type of atmosphere?

GF: Yes, it was nice. It was quite small too when I went there. There was Ted Williams and Bert Hamilton and a fellow named . . .well, Lindy Richards was the Chief Geophysicist. Let me see, there were two or three more geologists but I don't really remember now. That was a long time ago. And again, when I left Hudson's Bay, it wasn't that I had any complaints with the company. The one thing they were not interested in doing was any work in the foothills.

#122 NM: Why?

GF: Well, you see, they had a big mass of land through the Hudson Bay company and their interest was directed out in the plains. They knew perfectly well that foothills exploration was very difficult and drilling was very costly relative to the plains and they just thought that, that's not where they wanted to put their money. And it remained what I wanted to do so we parted amicably.

NM: While you were still with them, were there any major discoveries?

GF: Yes. You see that was between 1950 and '55 and there was a lot going on and more companies moving in all the time. The scale of exploration just grew at a tremendous rate during those . . .well, all through the 1950's really.

NM: Were you involved with any discoveries?

GF: Directly, no, I don't think so. The nearest I would have come to that probably, would have been if anybody had found anything in the Viking, where I had been working at it. Of course, everybody was doing work on the Viking in those days because there was a good discovery up at Armena. So we spent a lot of time doing studies in as much detail as we could manage. As time passed there were other discoveries made here and there but the truth is everybody in town knew as much about the Viking as we did. Simply because it was getting so much attention and relatively cheap drilling you see, not very deep holes.

#145 NM: So after you left the Hudson Bay Oil and Gas Company, what did you do?

GF: I went to a company that was called Triad. An oil company that is now called BP Oil and Gas and I stayed there thirteen years. During about the first five or six years we had a big program of field work out in the foothills and the front ranges of the mountains every year. Basically I supervised the operations of the field parties, which meant that I could go and visit them during the field season and spend a few days with each party. So I got to see a lot of things that, if I'd just been working away as a Party Chief, I would have missed. It was a very attractive kind of job.

NM: Who was in charge of Triad?

GF: The Chief Geologist when I went there was a man named A. M. Thomas, but of course, he was really with BP. BP owned the controlling interest in Triad so Tommy Thomas was the Chief Geologist. He hired me, very shortly they had an Exploration Manager, a man named Danny Iam???, also a BP man, they're both retired now and living in England. We

had basically a liaison man, but he was a geologist, named Peter Kent, Sir Peter Kent now. He came but he didn't have very specific responsibilities, it depended at the time, what sort of thing BP wanted to know from us. He functioned basically as a medium through which exploration communications were made.

NM: What was the story of Triad, who started it here in Canada?

GF: I'm not sure exactly who started it but I do know who some of the most important figures in it were and one of them was Harold Tanner, another was his brother, Reg Tanner. One of the Directors of the company, who evidently had quite a lot of influence and clout was a man named Cochrane???, I believe, in Montreal. I never met Mr. Cochrane but anybody who worked for Triad in those days met both the Tanner brothers because that's the kind of people they were. Very fine folks indeed.

#180 NM: Were they from Alberta?

GF: Not originally no. Hal Tanner died, I think maybe a year and a half or two years ago but I believe Reg is still alive out at the coast. They were great people. In fact, I've been very fortunate in the places that I have worked, in that I have never had to try and work with somebody that I disliked.

NM: That's very nice.

GF: Nobody likes everyone equally and I liked some of them better than others but I never ran into one that was a difficult thing because I didn't like him or he didn't like me. Whether we were bosom pals or not, we could always plug along at work, never have any friction. Lots of people aren't that lucky.

NM: That's right.

GF: And they have to work with some guy that they just cannot abide. It becomes mutual after awhile.

NM: So during these 13 years, what did you do?

GF: Well, once the big surge of work in the mountains and foothills was done, an enormous amount of money had gone into exploration and drilling. They were very costly holes, even for those days. They would cost you a million and a half dollars and you could probably drill five wells out on the prairies for that or maybe more. Basically it sort of destroyed the company's interest and ambition in the area and so they just shifted their emphasis, so that the staff had to shift it's emphasis too. Basically we all did sub-surface as needed. There was one side to it though that . . . Tinactic??? and it's partners in the group still had quite a lot of land in the foothills, some of which was drilled after they had actually begun to shrink their activities. Whenever they did that, then I was always involved in the structural interpretation. That kept an interest in it alive and encouraged me in a sense because my interest in the foothills would have stayed and would have remained anyway but dormant. But as long as they were doing a bit of drilling and a bit of work it meant that each year, at least some of my time was applied to the kind of thing I liked doing best of all.

#216 NM: That's very important for you.

GF: Oh, yes it is. Everybody has to do some jobs they don't like, so when one comes along

they really do, they cherish it and savour it. It was a good company to work for. Like any company, sometimes management makes decisions that you think are foolish or idiotic or dumb or whatever you want to call it, but after all, nobody is right all the time. We're not always right when we criticize the decisions they make either. As you get older and work with more people, you become less critical of the things that they do. And a jolly good thing too, that you do because you're also open to criticism yourself.

NM: Where was your office?

GF: When I was with them it's a very nice little building on the corner of 7th Ave. and 5th St. West, across from the old courthouse. Now, I think that building now belongs to Westburn Industries, they sold it. But it was a beautiful building to work in. When they built that there was absolutely nothing but the best available of everything went into it. The result was it was a beautiful place to work.

NM: And then they sold it to Westburn?

GF: Yes. They outgrew it.

NM: They had to move. Where did they move then?

GF: For a long time they were in the Royal Bank Tower, that's where they moved to as I remember to get enough space.

NM: The company was growing all the time?

GF: Yes it was. And not at a spectacular rate but steadily and they got involved in things like heavy oil exploration, which actually requires quite a lot of people if you're going to do a proper job of first of all, finding the stuff and secondly, figuring out how you're going to get it out of the ground. And I'm not sure anybody has solved that problem for sure. They know they can get it out of the ground now but they may lose money on it, which isn't something that pleases most company management a whole lot. But it will be done, for sure. Things like that always get solved and I remember once, when the man, who basically, in North America, he would be called the Exploration Vice-President, he ran the exploration in BP all over the world. He paid us a visit one time and it was at a time when there was all kinds of talk about the Trans Canada Pipeline and whether it could ever pay for itself with the number of customers that were committed to use the gas. I remember this man, a Mr. Cox, said, they're worrying about the wrong thing, when you build pipelines, the standard experience all over the world is that by the time you get the thing built, it's already starting to be too small because when people see a reality approaching instead of a bunch of drawings, then people come who've been sitting on the fence waiting for you to show them that you can do it. And of course, he was right. He said, there's engineering problems, there always are, but the engineers always find a way to solve them when they have to and that's probably right too.

#271 NM: That's true yes. What else happened during these 13 years?

GF: There was one period when it was very slow. Exploration was very slow and money was very tight. That would be, I guess about '59-'61. I was actually out of the country when it began. I was in New Zealand for six months and when I left everything seemed to be booming along as usual.

NM: Did the company send you to New Zealand?

GF: Yes. They lent me to BP, New Zealand and when I got back things were much slower and in fact, there were a lot of geologists and geophysicists looking for work.

NM: It seems to happen in cycles.

GF: I had managed with minimum effects of that kind. They did have to release some people but it was very small and they went about it in a way that was very understanding of the employees needs and they didn't just say out at the end of the month, they said, find another job and when you've got it, quit. So they didn't have a period of no income, for instance. They did it as humanely as possible, which I've always appreciated, because so many companies don't operate that way. But that is partly a function of size, you know, the company wasn't all that big and the management knew everybody, every soul. The interpersonal relationships in small companies I think, are closer, much closer, simply because everybody knows everybody. Everybody in the place knew Mr. Tanner, who was the President, not only that I'm sure he knew everybody. But there was that slow period and it was quite tough and then things began to recover themselves and by the time another couple of years went by things were going along quite well again.

#316 NM: You went to New Zealand and what did you do there?

GF: Basically I did whatever their Chief Geologist thought would help them out at the time. They had a very small staff and an awful lot of work to do. He was constantly confronted with the fact that there were some things that they really didn't understand and didn't know about and he didn't have anybody available. So I never knew what I would be doing next month. It just depended on what he needed.

NM: A lot of challenges for you then.

GF: Oh yes, I saw most of New Zealand doing these things. In some cases simply collecting stratigraphic information because they didn't have any time for anybody to go and look at it. It was as near as you can get to having a holiday while you are working.

NM: Why were they so short of staff?

GF: I suppose a variety of reasons. New Zealand at that time and to a degree still, is a very difficult place to explore, it's small.

NM: This is the end of the tape.

Tape 1 Side 2

GF: It's a small area and it has an immense mountain range down the west coast of the south island and a big volcanic area in the middle of the north island and around this there's a series of small but extremely deep little basins. For instance, there's one bunch of grey mud stones in the Myacine??? that's 20,000' thick. Unless you can see the top or the bottom of the thing you don't know where you are in it because it looks the same. I was walked through that several times and you didn't have a hope if you couldn't see the contact there or over here. It meant that it had to be meticulously sampled for micro-fossils and that meant that they had to have a micro-paleontologists, in fact they had two, very capable people. That was just one little basin and then there's others on the south island and another one west of the lava fields. There were a lot of things that seemed to be rather depressing about the geology before you even got started. When you think, it's going to cost an awful lot of money to explore this and the benefits that might accrue very easily could be far short of what you need to recover your investment. There was BP and Shell and a local company working together and they persisted. But the budget was never really big and they were hesitant to commit large bodies of staff. Companies like BP and Shell that operate all over the world, almost always need staff somewhere. The way they normally deal with that is by internal movement in the company. They find a place where they are perhaps over staffed a bit and move some people. They were a bit reluctant to do that kind of thing in New Zealand so they plugged away for a long time but it never was a large scale sort of operation. In a sense that made it very nice for those working there because you weren't constantly pressured by competitors, for instance, we didn't have any. I loved it and that was a very happy six months and I saw a lot of geology there, which we have no counterpart in Canada at all. We haven't got anything like the huge wrench fault??? systems that they have. We haven't got anything that looks quite as spectacular as the southern Alps on the south island because basically when you go down the west slope off the Alps you go straight into the Tasman Sea. They are right there at the water's edge so you look up like this at the tops and it is very spectacular, very beautiful.

#036 NM: So it must have been a dream for a geology study.

GF: It is. Any kind of a problem you like, you can find in New Zealand. And it probably wasn't very far off either.

NM: Did they send you to other places.

GF: No, that was the one.

NM: What year did you leave Hudson Bay Oil and Gas?

GF: That would be 1955.

NM: Which year then did you leave BP?

GF: 1968. And I came to Pan-Arctic and stayed.

NM: Why did you leave BP?

GF: I was getting stale and Pan Arctic was just starting in a new part of the world where

nobody had ever really done more than a sketchy bit of work. I didn't approach Pan Arctic, they approached me. So thought it over a bit and decided, well, even if they go bust in five years and have to quit, it would still be worth doing because how else would I ever see what the Arctic Islands are like.

NM: That's right. Had you always been interested in the Arctic too?

GF: Yes. Although there really wasn't any body of geological information easily available at all before then. It was all buried in old reports of these British expeditions. So basically I was intrigued because there were aerial photographs available and there were two or three reports from the geological survey, from the very first studies. I was intrigued by the fact that there was really nothing else. Whatever you did it was likely to be getting attention for the first time.

#056 NM: So it was a fantastic challenge.

GF: It was of course. For that matter, it still is. Only the nature of the challenge has changed.

NM: Who hired you for Pan Arctic, who approached you?

GF: It was John Andriuk???, of Dome, because when Pan Arctic was first put together, Dome undertook to manage the company until they could find a President and people to run it. The first thing Dome had to do was find some staff. John Andriuk was talking, as I understand it, to a friend of mine in Ottawa and Harry said, I don't know whether he's interested in a new job or not, why don't you ask him. So John did, he phoned me up and we talked about it two or three times and I thought, as I said, at the worst they should be able to survive for five years and if they can't well, I'll just have to find another job. It wasn't hard in 1968 to go and find a job. So I came. The only geologist that they had doing anything was a fellow named Allan Bryant???, who was on the Dome staff but they really wanted him back. I didn't blame them either, Allan was a very good man. In fact, we would have liked to have had him. But a month after I started then Gray Alexander came along from Canadian Pacific and he started and then over the next year we acquired various people but they took their time about building much of the staff.

NM: So you are among the first persons who worked for Pan Arctic?

GF: As far as I know I am the second one who was hired. Typical of an oil company, they hired a Chartered Accountant first. A very fine fellow too, named Don Mader???. but somebody had to handle the money and then they loaned Pan Arctic a couple of Dome people and then I came along as a geologist and Gray Alexander. But the same time I started, Bob Merritt??? arrived to become Chief Geophysicist and he stayed 10 years before he went consulting. Then Bob got a young geophysicist named Keith Terrill??? and things gradually . . .

#085 NM: Started growing.

GF: Yes. But the staff never really was a big staff. I think the most . . . we once had 7 or 8 geologists. And I used to talk quite a lot with Gordon Crombie, he was our first Exploration Manager and I had known Gordon for years and years. We used to discuss this and he said, we are very reluctant to build up a great big staff because when you do this and you go out and collect the people you would like to have and so on, you are also

accumulating responsibilities.

NM: And problems.

GF: Yes. And he said, you have obligations to those people. You persuade them to leave their companies or whatever they are doing and come to work for us, then we have an obligation to them and if the money runs out, then of course, we can't keep them. For that matter, they can't keep you or me either. But this was always in the backs of their minds and consequently, quite often, if things got pinched a bit, they'd just hire a consultant. And when the job was done he was off and everybody was satisfied.

NM: What was the reaction in Calgary to the formation of Pan Arctic?

GF: I don't know that I can really answer that very well. I think there was probably a good deal of interest in the fact that these companies had all gotten together and pooled their land holdings and so on. And a feeling that said, well, we're going to have to wait and see how they do. If they survive, fine but with a new operation like that it's always possible that they can't. But I couldn't suggest at all what was in the minds of corporate executives and so on. There were times when some of the claims that were made about Arctic geology were a bit exaggerated. That was the early bursts of enthusiasm. Not very many of them actually came from us but you would discover in, say the Nickle Bulletin, some guy would say, there's a fold up on Eureka Sound that's as big as the biggest Middle East fold. That's true enough it is, but as a matter of fact, that doesn't tell you at all if there's any oil in it.

#116 NM: Did you go often to the Arctic yourself?

GF: Yes. The last time I did any field work up there was about five years ago I guess. I was about 60 or 61 at the time. I was having my annual medical that year. My doctor asked me the same thing, he asked me if I'd been out in the Arctic that summer and I said, yes. I always enjoy it. It's one of the few places in the world where there is a good chance that if you're standing on a mountain somewhere, nobody has stood there before you. You really do have the feeling that you're in an unknown area, even after you maybe become familiar with parts of it. He just grunted and he said, some people get their kicks in the oddest way. But then he's a sailing enthusiast or was then. Ice and snow didn't really hold a lot of appeal to him.

NM: It's very beautiful too there, is it not.

GF: Oh yes it is. Some parts of it are extremely dull. East Melville Island is dull as ditch water. The western Melville is quite beautiful.

NM: Did you go there in summer or winter or both?

GF: Oh no, summer. Summer, during the field season.

NM: So you never went there in the winter?

GF: No. I haven't been there for a long time now.

#137 NM: Can you tell me about your early work with Pan Arctic, what did you do?

GF: The first thing we did was. . . well, there were really several first things, we had some field work done by Sproule the first season, but we also had an enormous pile of reports that were purchased by the partners from Sproule and Associates. These all had to be

evaluated. We really had to develop some drilling prospects, which was really our first priority, which meant we had to evaluate the bits of seismic we had got done and integrate it with geological data and so on, so that drilling could begin. The first hole we drilled we discovered gas, when it blew out on us. That was at Drake Point. Really there are so many things that you really feel you have to have when you start off like that. You don't know what your hand will be turned to next but basically for the first while it was trying to evaluate information we already had and trying to evaluate Bob Merritt's work then really. Interpreting the new seismic work and then for me or for Gray Alexander, what we had to do was to integrate that work into the stratigraphic section as we knew it and try to see what might be available or what we might be looking for as potential reservoirs. In most cases we had no means of estimating how thick they might be. We didn't know whether we would find 30' of sand or 100 or none. It really is no different than a new company making a new start anywhere. Unless they're willing to wait 3 or 4 years to drill, one of the very first things they're going to have to do is start making evaluations to propose sights to drill. Of course, with a company like Pan Arctic, all the shareholders are companies, I think there's one or two exceptions. But they are putting up the money and they wanted to get on with it and get going. We're also governed to quite a degree, I almost forgot this, that under the original agreement, which established the company and the interests of the various participants, there were commitments to drill holes in some places, quite specifically. So they of course, had to be. . . that's where we had to start. For instance, we were committed to drill a hole on Eastern Melville Island and whether or not we thought much of the prospect after we got looking at it was irrelevant. The commitment was there and we were expected to do it. So we did, we drilled a hole up there at Tulson??? Point. It was extremely informative but it didn't produce any oil for us or gas. Drake Point was a commitment and it. . . except that it blew out, it treated us very kindly. It's part of a big gas field.

#187 NM: Was there a blow out on King Christian Island?

GF: King Christian blew out.

NM: How long did it take to. . . ?

GF: Well, they drilled directional holes and simply stifled it from below. I don't know, Charles Heatherington could probably tell you how much sea water they pumped into the reservoir at King Christian.

NM: They told me too, it was nearly a tourist attraction for . . .

GF: It was too. You could see it for 100 miles. But they pumped and pumped and pumped and suddenly just, bingo, like that, it just snuffed it out.

NM: So that must have been very educational too.

GF: Well, it's the kind of education you'd rather not have to get. The directionally drilled holes are very expensive affairs and yet, there was no other approach really, that was practical, because of the pressures and so on. There was no question of going up and starting to muck around the top of the hole. Not with it in flames.

NM: But nobody was hurt?

GF: No, we've been very fortunate in that respect.

NM: It could have easily happened.

GF: But you can usually hear them coming. If gas is going to blow out, the crew knows it, they hear it and when you see the crew starting to go, you go too.

NM: No questions.

GF: Ask afterwards if you still need to. But it remains true that we are very fortunate that there weren't any serious injuries and nobody was killed or anything like that. In fact, over the years, unless there have been . . . there are always, in any operation, there are accidents, one degree of seriousness or another. I remember one young man burned his leg quite badly. As it turned out in the long run, it wasn't really all that bad but it was very painful at the time and he had to be brought out to be treated. He was burning up cardboard and rubbish that we wanted disposed of and it looked very bad, that fellow's leg. One of the things that I recall about that was that it was not really. . . I was surprised, most of the fellows on the rig nearby that were attending to this fellow were under the impression that with a burn like that you should put something on it and . . .

#228 NM: Like cream or . . . ?

GF: Yes or ointment or something of that sort. When I was a boy people used to put butter. But I had just had a refresher course from the St. John's Ambulance people a while before and I remember the doctor who spoke to us was very, very specific, he said, don't put things on burns, just wrap them dry. Put a dry bandage on them and wrap them to keep the air away as much as you can but don't put anything on it because if you do when you get him in the hospital the doctor has to take it all off again, so don't do that. If he's got to have them give him 222's, give him whatever you've got for the pain.

NM: Would it be a tendency in the Arctic, if somebody got burned to put ice or snow on it?

GF: I suppose. It depends on the season of the year. There wasn't any ice or snow around this place when this boy got burned, I was there at the time, we had some field parties working out of the drilling camp. They'd have had to go to the mountains to get it. But what surprised me that it was not understood that burns you should send to the doctor dry.

NM: So what did you do to him?

GF: Bandaged it. He was flown over to the base at Gray Point, where there was a qualified. . . like a medical technician and he had lots more stuff to work with. So he tended to him there and gave him whatever pain killers he needed until the plane came to bring him out and he didn't suffer nay permanent bad effects. But things like that can happen and of course, they are always so startling when they happen. Everybody has the same view I think, you think, it happens I know, but to other people, but not to me. You have to be careful sometimes about that.

#264 NM: Is there specific problems to safety working in the Arctic?

GF: Oh yes. Some of them are merely safety problems that are attached to the use of any big machinery, earth movers or these enormous trucks even or drilling rigs. Drilling rigs are great places for the ignorant to get hurt. And the trouble is, if people get hurt there, everything is so big and heavy that it's liable to be a very, very serious injury. It'll just smash a leg to a pulp. So yes, there are those but those are true really on drilling rigs

anyplace. Then there are the other things to do with the cold, the winter temperatures. Then they don't want people working outdoors, say for an 8 hour stretch, that's too long. It's an in and out sort of thing, you go out and do whatever it is you're supposed to be doing for a couple of hours and then you go and do something else where you're in shelter and somebody else swaps with you. They very soon learned how to deal with that and of course, the proper clothing is imperative. But nowadays you can get remarkably efficient winter clothing. The only thing is you always feel like a bunch of link sausages when you get one of those things on. Everything is all puffed up, I look like the shape of a pumpkin when I get all that stuff on. But crews and people who are used to machinery very soon catch on to those things, nobody really has to tell them. They have enough knowledge and experience that they know damn well, it's 60 below outside, you don't go and work out there for a full shift.

#298 NM: What about the problem of bears?

GF: I don't think we have every had anybody attacked or injured by a bear. When you're working away from the camp, it's a good idea, if there are any around it's a good idea to know where they are. One thing that's very noticeable when you have geologists going out, of course, the normal way they would go is by helicopter and the pilot and the geologist watch the ground. They will normally just take a little scout around the area where the fellows are going to work.

NM: Just to see if it is safe.

GF: Yes. A bear is pretty big and if he's up on one of those hillsides in the summer you will see him all right. You can even see an Arctic hare. So they watch for them but once you get inland a bit, away from the coast, you're not so likely to run across them unless you happen to be in one of the areas they'll shortcut through. There's one at southern Bathurst Island, called Polar Bear Pass. It's a national park now I think, or game preserve, but instead of going all the way down around the south end of the island or all the way around the north end, the polar bears will go through there, it's only a very short distance. I spent some time around down there and we spent a little while in the morning having a dang good look, offshore both east and west, to see if there were any there and if so, which way they were going. But the discretion lies in being careful and watching and if they turn up it's time for you to go.

NM: This is the end of the tape.

Tape 2 Side 1

NM: This is Nadine Mackenzie speaking. This is the second interview with Dr. Glenn Fox. Dr. Fox, you told me that you have different interpretations for geology.

GF: Well, they were different when I first published them. That isn't to say that I was the only person that thought that was the way to interpret. I was working on foothills structures and for many years the interpretations had always been built on an assumption that first the beds were folded and then they were faulted. As I worked with interpreting these structures, I came to the conclusion that didn't work and that in fact they were first faulted and then they were folded. The folding was an essential effect of the faulting. That's what the paper. . I did a paper on the foothills for the AAPG years ago and that was the principal which I employed. Now there were other people working for other companies, who were equally aware of the fact that the old interpretations didn't work and they were not in the least surprised to see the interpretations I drew. In some cases, we differed on detail but we were in agreement on the fundamental causes or the fundamental reasons why the structures looked the way they do.

#023 NM: Which year was it?

GF: 1959, I think. That is the way most structures in the foothills are interpreted now. Again, there are many more people, or until recently, there were many more people concerned with interpreting foothill structure than there were in the 50's. They used what literature was available but there were 2 or 3 people, who especially had very good ideas indeed, which were close to mine. They all helped to make the point that the old interpretations don't work.

NM: So that was a break through, that was new?

GF: I wouldn't say it was a break through because that implies that you've suddenly discovered a new answer to the same old data but that isn't true. It came slowly and it came as drilling was done and as seismic work was done, we had two more sources of information that were not available when the earlier interpretations were drawn. So that it was just a normal consequence of an increasing data base. People who drew the earlier sections that were not really workable, I think, in most cases would have reached the same conclusion if they'd had the same data.

NM: So what were the implications?

GF: The most important implication coming out of that was that it was almost folly to go out and drill a hole in the foothills without having good seismic coverage. Even the seismic coverage that we had to rely on was not the normal sort of reflection work that's done out on the plains and the flat country. It was what they call refraction work and it is much difficult to work with and it's not as precise but it does, nevertheless give you, and did, give you a third dimension to the data you had to work with. And with patience you could usually get enough guidance from the seismic interpretations to get you on the right track when you are making a geological interpretation. But again, one can't really look for great precision. We could not make a well prognosis and expect to come within 25 or 50 feet of predicting the depth to the reservoir or to any deeply buried beds, but we could do a lot

better than we did before.

#060 NM: So it was a great improvement.

GF: Oh yes. It was a very big help indeed.

NM: Did you have a lot of publications about that?

GF: No, just the one. Wait a minute. . . one much shorter one a couple of years later for the Edmonton Geological Society and then nothing until, I think it was 1968 or so, when I published a paper on the same subject but from a different approach. It was a paper on rules of thumb that you learned to depend on in structural interpretation and that was published by the Geological Society of London. Then I didn't publish anything until a couple of years ago. I was too busy trying to understand the geology in the Arctic.

NM: Can you tell me a bit more about the geology of the Arctic. What is so special about it?

GF: Perhaps it isn't really special in many ways. Some of the structures are at least of a very unusual kind in Canada, but similar structures are known in many other parts of the world. Up on Ellesmere Island there are enormous anticlines. In the early days of Pan Arctic these anticlines got a lot of attention in the press. They were very fond of talking about them as being the same size, sort of structures as the structures in Persia or Iran. They are immense but unfortunately they don't seem to have anything in them. On the western islands there's a belt of structures of a kind we don't really have anywhere else in Canada but are well known in many places in the world, the same type. They have been quite well mapped on the whole, although not in great detail. We've drilled some holes in them and we've done seismic work all over them. So that we can establish fairly well what the structural style of the things is and get quite a good idea of the sequence of events that led to their formation. One of the unhappy things we lack up there, this style of folding is a sort of intermediate type between the extremely complex folding that you find in mobile belts and the essentially flat structure when you get out onto what are called Cretonic belts. In other words, the Canadian Shield. The fold belt itself is quite well exposed in Melville and Bathurst Islands, and it has certain characteristics that make it clear that somewhere north of it there was a big mobile belt. But it's foundered, it's gone now, the central core of the thing is beneath the sea. So we have to speculate about exactly where it was and how big it was, but it certainly was a big area in which some pretty strong structural movements were going on. We can't really see where we run from the moderately folded rocks at Bathurst and Melville Island, we can't see where they meet the old mobile belt. Of course, now, it is very deeply buried beneath Cedrop??? Basin, it's a long way down underneath there somewhere. But we aren't ever going to see what it looks like.

#119 NM: What about the oil reserves, are there many of them or how can we know about that or is it just speculation?

GF: No, there has been oil found in a number of the wells that have been drilled. Of course, gas in very substantial quantities. The problem with both the oil and the gas is transportation, to get it out of there. It would all be on production if it were down here. But that's a very harsh and difficult country to work in. There are studies going on and

they have been for a long time years now, of what might be the best method for getting oil out of there. Do you send it out on tankers and produce it on the spot or do you try to pipe the stuff out.

NM: And the cost is astronomical.

GF: The cost would be astronomical and even after . . . by the time you get it onto the continent, onto the northern part of the country, you have to get it to where the people are. So it would be an immensely costly thing. I'm surer the engineers can build it but I'm not sure we. . . I keep saying we, although I'm not with Pan Arctic anymore but I'm not sure that anybody can pay for it. That is a side of the business that I've really had very little to do with. About all I really know about it is the things that I've just learned from our Reservoir Engineer, who I like to visit from time to time.

#145 NM: So in fact, the technology is here but it's a question of money.

GF: That's probably true. It can be done all right. I remember a man, a British Petroleum man, who once said, no matter how difficult a problem looks when you are studying it, engineers will always find a way to solve it. If it's important enough to get something built they can build it, they'll find a way to do it and they can build it, the question is whether you can pay for it.

NM: The problems of transportation will be mostly the tankers and then the pipelines?

GF: Oh, people have thought of all sorts of things. Submarines, somebody, I'm not sure who, suggested blimps, zeppelins, airships in other words. Perhaps because, in the last few years there's been a renewal of interest in that kind of aircraft. It is perhaps not such a fanciful suggestion as it first sounds. You certainly eliminate all the problems you've got getting over the surface. I suppose the hard rock that one comes against is, what size would such an airship have to be to carry out enough to be worthwhile. Or as an alternative, how many would you have to have. Clearly the average zeppelin couldn't carry enough out to really make any splash at all. I have a suspicion that the problem is going to get solved one of these days but the need is not desperate enough yet.

NM: That's right, so we can take our time to think about it.

GF: Yes we can. In fact, we better take out time thinking about it. The stakes are just too costly, not only in terms of cash but in terms of time and sweat that goes into getting it done. It just means in the end that you may have wasted 5,000 people's time, trying to do something that couldn't work.

#180 NM: And people are pretty active in the Arctic now.

GF: Oh yes. But you see in the Beaufort Sea the drilling season is the summer season, in the islands it's the winter. Especially to drill offshore wells, where we build an ice platform, an island, build an ice island out at the location and put the rig on it and drill from that. You have to be able to build up a sufficient thickness of ice to hold the weight of the equipment and so on so that means really you must do it in the winter time. They start off quite early to build these islands and they just flood and keep flooding until they get, I think it's 20's of ice in, like a big pancake. Then that's strong enough to put the equipment on. Then you've got really a relatively short time before. . . I suppose you could

say spring comes there about May, by late May that ice is getting pretty rotten and shaky. So our drilling people are never very happy being there much after the first of May.

NM: So it is a very short season.

GF: Yes. You've got to get the equipment off before the pad gets rotten.

NM: Where does the equipment come from?

GF: You mean its source. I don't know where it's built but it certainly is acquired from Canadian business people.

NM: It's not American?

GF: No. It would be built here. It might very well be that components like tractor engines and what not are built in the States or by Canadian subsidiaries but the policy has always been that anything that can be purchased from a Canadian supplier must be. And I don't think that it's every seriously hindered us at all.

#214 NM: What are they doing with the gas of the Arctic at the moment?

GF: Nothing, it's not being produced. It's not likely to be for some time. We have a gas glut down here. We've got too much now and if you added on 20 trillion cubic feet or whatever it is.

NM: The market would be flooded.

GF: We'd need a bunch of new customers pretty soon. Again, I think it's lying fallow because the urgency to get it out isn't there at the moment. From the company's point of view of course, the urgency is there, they want some income as fast as they can get it. But they are confronted with an extremely hard situation at present. One thing about Mr. Heatherington, he doesn't give up and he's an optimist.

NM: Which is good for a company.

GF: It is especially good for a new company starting out in an extremely difficult area. If you had a President who was a pessimist, he could ruin you.

NM: And the company would have closed down.

GF: It could. Mr. Heatherington is an optimistic man, after all, he's an engineer with a lot of experience too. So he is the sort of man a new company with a tough job needs.

#238 NM: Dr. Fox, could you comment on the roll of Alberta in the development of the Canadian oil industry?

GF: Briefly. Until quite recent years, Alberta was the Canadian centre of the Canadian oil industry. It was the only place that produced any, except small amounts of heavy oil that came from Saskatchewan. But there was no Canadian oil industry anywhere but Alberta from the early 1900's until, I think, probably the 1950's they began to make some finds in Saskatchewan. That's it.

NM: And what about the ups and downs of the oil industry, you have been a witness to that?

GF: Yes. In a sense I suppose it is a cyclical industry. I've never really understood why but I think it lies with the sources of financing primarily and when money gets a little bit scarce and the investors get increasingly cautious then the industry's available source of funds shrinks a bit and they must shrink their activities accordingly. When that happens, if it's severe enough, they must sometimes shrink their staff a little bit. Most companies that I

know anything at all about, intensely dislike releasing people that they would otherwise keep but sometimes they have no choice. The other cyclical things like employment of geologists and employment of engineers and so on is simply one of the effects flowing from the basic cause, which, as I said, I think is that availability of finance, primarily. That's the availability of finance here, in Canada, say, or in North America. Often whilst we're having a period of doldrums in North America, other parts of the world are not. I think what happens really, is. . . take a recent, very good example, you get a series of discoveries in an area, say the North Sea, which are highly productive, very enticing things to explore for. So that is another place where the companies and the investors must put some of the money they have available. It often tends to dry things up say, in Canada if something is happening in the North Sea that takes a lot of money because they haven't got a market problem. All they have to do is find it and get it ashore. They are surrounded by a huge market. Many of those countries of course, arrange their oil supplies. . . actually they all must do, on long term bases, so you don't burst into that market just overnight. It takes time but it also takes time to build up the fields and get the installations built. So that kind of activity in another part of the world, say off Africa, anyplace that it's going on can draw off money that otherwise would be spent in North America. So we have a period of doldrums whilst that gets developed, and at least the early phases of exploration and drilling are well along, then we may recover a bit. But I think ultimately there is one other factor which sometimes contributes to diminished activity in the industry, exploration, drilling, everything, and that's meddling in industry affairs by government who don't have any understanding at all of what they are doing. If there is anyone in the country who is not competent to make oil company decisions, it is a government official, any government official.

NM: This is the end of the tape.

Tape 2 Side 2

NM: What do you think of the National Energy Program?

GF: It is probably the most spectacularly disastrous decision any Canadian government ever made. Even if it had been correct the decision was made for the wrong reasons. Beyond that I could say no more without being rude. I will add one little further comment, I think that it helped to end the political careers of at least two ministers this country can certainly do without.

NM: Can we talk about the training of oil people, can you compare the training of oil people in your time to what it is now?

GF: What kind of oil people?

NM: Geologists for example?

GF: That's really a bit difficult to do because you really must begin with the teaching they get in university and the universities of course, have changed greatly over the years. I have the impression that they do some things better probably, than they did when I was a student.

NM: Like what?

GF: My experience when I was a student was that the curriculum, for instance, that I had at the University of Alberta, was designed very carefully to ensure that when I finally got my degree I would not be a specialist. I would have had an equal share of teaching in what we call hard rock geology and sedimentary geology.

NM: So a bit of everything.

GF: Yes. And I know at least part of the philosophy of the Geology Department at the University in Edmonton was a fairly high percentage of their students always went on to graduate schools elsewhere. And they wanted to be sure that those students were qualified for entry to any graduate school in North America or any place else. They felt that the best way to do that was to concentrate on the fundamental aspects of geological teaching with such subjects as mineralogy and mineral deposits and stratigraphy and sedimentation and they very seldom spent any time talking about things like the origin of oil or courses in petroleum geology, they simply didn't teach them. The whole thing was designed to ensure that they did not graduate a specialist with a B.Sc. degree. They believed, correctly in my opinion, that you can't do that, you really can't, he has to know more than what he learns in undergraduate school. In other ways they do a better job for a variety of reasons. They have available now equipment that enables them to do things that we could not possibly do. The electron microscope, most universities now have a geo-chemist or two. Optical equipment is far better, more versatile than it used to be, so that they might still teach you the same course but they can do it better because they've got more and better equipment. Most Petroleum Geologists, especially Canadians, learn their craft from. . . their employers teach them their craft. I never even saw such a thing as an electro-log until I was in a graduate school in the States and even then they were pretty new and primitive things, but the philosophy of the department was such that they probably wouldn't have shown you one anyway. I went to work for Imperial Oil when I first

graduated and they begin teaching you the techniques that you need to know to become a Petroleum Geologist.

#054 NM: So it was on the job training.

GF: It is and many companies had very formal and comprehensive programs. One or two I can think of. . .well, Imperial, it was not a formal program when I was there but it became one. Chevron Standard had one and Pan American, now called Amoco had one and in many cases the first year you worked for the company, you were on the training program all the time. You were instructed by senior members of the staff. For instance, there were people who taught you how to read electro-logs and there were people who taught you how to calculate porosity and all sorts of techniques that were essential to your development as a Petroleum Geologist. On the whole I think they did it very well indeed. They were good people who knew their stuff and they had lots of experience. And probably the majority of Petroleum Geologists learned their craft that way. The first year or even perhaps more with a company, was a year of post graduate work, only they got paid for it. It was a good system, a very good system indeed. The companies knew perfectly well of course, that if they hired 20 new graduates and they put them all through the training program, over a period of a few years, they might lose half of them to other companies, but then. . .

NM: It was happening all the time.

GF: Yes, and it happened to all companies and it was merely one of the small risks that they took. They knew perfectly well some of you would go but they also knew some would not and they felt it was worthwhile to do that. I think that kind of training can really be done better that way than by setting up courses in log interpretation and what not in universities. I think you use up time at the university that could be better employed in other ways and you don't use the talents of the people in industry that know how to do this. I think the old philosophy probably still is quite good. The university's aim should be to turn out a well taught, well rounded geologist, who can turn his hand to whatever job he is able to get and adapt himself to it, with help. I suspect that many schools have drifted away from that now a bit and are teaching specialized courses, perhaps they had to.

#089 NM: Because of the demand?

GF: Because of demand. They really cannot operate without paying some heed to the public expectations for them.

NM: Then they become more and more sub-specialities.

GF: Yes.

NM: Is that a good thing?

GF: I think it's an inevitable thing because so many phases of geology have become so very complex. And there is such a flood of literature now. I'm primarily interested in structural geology and I couldn't begin to read everything that's published on structural geology in any given year. It's just out of the question, it's impossible. And if I was trying to do that on top of keeping up on all other aspects of geology I'd end up knowing nothing about

any of them probably.

NM: What about field work? It seems in your time all the geologists were doing a lot of field work and now it isn't true, they come out of university and go straight to work in an office.

GF: That's true. Yes, many of them do and it's their misfortune really. Some of them don't want to do field work anyway but many of them would be glad of the chance to do some. There is a stage reached in any company's exploration program, where they have done the field work that they need to do. And it's usually done. . for instance, Pan Arctic didn't go out and map areas that the Geological Survey had already mapped. They might go and do a little stratigraphic work in there so that the geologists would look like in that area, but they wouldn't make a new map. The point comes when the company's need for that information is at an end and so the field work stops. The agencies that don't stop are the Geological Survey, which is public of course, it's a federal government body and the Research Council of Alberta has a survey branch. Those people exist for the purpose of providing reliable information to the public. That objective is a very important one and it won't every disappear, so that their work will go on and on and on until you'll be able to go, someday, up to the Geological Survey office here and get a detailed geological map of any place in Canada that you want. Right now, you can't. There's huge areas that they haven't gotten to.

#125 NM: But you think one day it will be done?

GF: It will get done, yes, it will get done. But it will take time. In the meantime, they're going at it in a very intelligent way. What they're doing first is making reconnaissance style maps, which shows you the big features and there are not many parts of Canada left now where they can't at least give you a reconnaissance map. But when you get down to really wanting to explore for oil or gas or for that matter minerals, you need much more detailed maps than reconnaissance maps. You need maps that go say, two miles to the inch. I think I can get away with sticking to imperial measurement there. And you have to have more detail than that. At present the interested party must go and do it himself or itself, if it's a corporation. But the day will come when he'll be able to get it. The public surveys, the Geological Survey and the provincial Surveys, in this country have maintained a pretty high standard of work for a long, long time. The information they publish and give to the public is reliable and done by competent people you might go and look at something and decide you don't agree with a fellow about his interpretation of what it means but you're not likely to go out and say, his facts aren't facts. I have a great admiration for people of the provincial Surveys and the Geological Survey of Canada.

#149 NM: Yes, they have done a fantastic job.

GF: They do very superior work. They are, at least in my experience, they are always glad to be of any help that they can to you. If you want to discuss problems in some area with him, there'll be somebody there who know something about it and he certainly will be glad to talk to you. For one thing of course, he hopes he might learn something from you. It's a two way street.

NM: It's communication. What is the future of the oi industry, what do you think is going to happen?

GF: I don't know.

NM: Are you an optimist or a pessimist?

GF: Well, you see I don't have to be either anymore. I don't know what its future is. I don't suppose anybody knows how important oil or gas might be to us 100 years from now. But it's a pretty fair surmise, I think, that it'll still be pretty important. Because some of the alternate sources of energy and that's really what we're talking about is energy, some of them are much more difficult to deal with. For one thing of course, some of them are dangerous and have to be managed with the very greatest of care and are certainly not mobile, thank goodness. But as technology improves they may become mobile some day. There is one thing, we will always need lubricants, as long as there is machinery, with parts that go around and around. But we don't know that it will still have to be oil.

#175 NM: Let us go back to your career. Who were the most influential persons in your career?

GF: Professional persons you mean? That requires a little thought. Some I think, are easy, they come to mind immediately. One is Ernie Shaw. I didn't work for Ernie Shaw very long but I thought a great deal of him and his advice to me was always good. Another was Cam Sproule. I only worked for him for a couple of years, although there were times when we didn't get on together all that well, but Cam was a very fair minded man and he was a good friend. We were friends until he died. Still another that I remember with great affection and admiration for his abilities was Jack Webb, who died, unfortunately, some years ago. I'm sure other people have mentioned him to you. Still another was a man who was Chief Geologist at Hudson Bay Oil and Gas and his name was Rees???. He had been many years with California Standard and then had gone and worked on the Naval Petroleum Reserve in Alaska. Then he had come to Hudson Bay Oil and Gas as Chief Geologist. He was a very astute man, a very good geologist with a great background of experience but in his own way he was a teacher and he had a very sharp eye. If you had made a goof somewhere, he'd find it every time and instead of just ordering you to change it, he would explain to you why it was wrong to make sure you understood how the error came about. I don't remember. . he certainly never criticized me for making an error and I doubt that he criticized the other fellows. But he wanted to make sure you knew about it and if you kept on making the same error, he certainly would want an explanation. I didn't realize you know, until I had been gone from there a couple of years, how much he had influenced me. Unfortunately he died long before he should have too. Then there was Tommy Thomas at Triad. I think perhaps much more recently and probably to a much lesser degree, but two people who had quite a strong influence, not only on what I was doing but on how I chose to go about it. One was Gordon Crombie, who was our first Exploration Vice-President and I had known Gordon for a good many years. He was a very low key sort of man but a very sound and sensible thinker. The other one is Jerry Varney???, who is Chief Geologists at Pan Arctic now. He's a very fine stratigrapher but he's better than that really. He can absorb information on any aspect of

geology in a hurry and he's a good critic. If you draw something that doesn't really make sense, he'll spot it. So he's had quite a lot of influence on me in the last five years even, largely because of the things that he asked me to do. He is a fascinating man in many ways. Then other people who. . I don't know that they greatly influenced me but I had a great opinion of their abilities and always enjoyed their company. . was Jerry Henderson, and Ken North, who were both at Chevron Standard at that time and a fellow named Carl Olson, who's now retired in Spokane. Burt Bally???, who was here with Shell for a long time, he's retired now and he's head of the Geology Department at Houston University I think it is. All of them had much the same kind of interests as I do and it was always a pleasure to talk to them and get their thoughts on problems that we both knew about. But then I'm sure over the years you meet so many people in your profession, and it would be true of any profession, who all have gifts of their own. Unknowingly, I think mostly, but merely by being at least acquaintances. . . shop talk, is what it is, but they do have a cumulated interest, so basically everybody I suppose that you work with, in one way or another.

#273 NM: What were the most exciting experiences in your career?

GF: I don't know. I really wouldn't know how to answer that. Excitement is like so many other things. At the moment it is unmistakable and you can't ignore it because it's an emotion but it passes and it fades. Sometime later, a year or two or ten, you don't really remember, it doesn't stand out in your memory especially.

NM: You have nothing which stands out in your memory as being very exciting?

GF: No, I don't think so.

NM: What do you consider your achievements, what do you think you have achieved?

GF: I hope that I have contributed something to the knowledge of the geology of parts of western Canada at least, where I've worked and to the Arctic. I hope I'm about to contribute some more. This is a paper that is going to the Survey on the Perry Islands fold belt. Again, as usual with my papers, it's a structural paper. But I think like most professionals, you hope that you've at least contributed something to what's known and even what is merely suspected. Sometimes if you can rouse a suspicion you rouse somebody else to go and find out what the truth is. It's hard to tell you know, you don't know.

#311 NM: When did you retire from Pan Arctic?

GF: Last April the 1st.

NM: And you are still working here.

GF: Yes. That's through the generosity of the company really. This paper that I'm doing, I was invited two years ago to do. I had to have company consent of course, so over the last two years as an employee I just concentrated on making illustrated material and I got the maps drawn and the cross sections made and chose the seismic data that I wanted to use, so that I could get all that done whilst I was here with a drafting service. However I hadn't written a word. I had many pages of notes that I had made but no text. So the company said, I might just as well finish it here because I need availability of the company files and

they've done all the typing for me and all the drafting.

NM: This is the end of the tape.

Tape 3 Side 1

GF: And it has been a very convenient arrangement for me. I used to be around the corner in one of those offices so I swapped with the man who was in here. I didn't need the space or facilities anymore, I needed a place to write really. All that junk on there behind you is stuff that belongs to the paper and I've nearly finished it. But the company most generously provided me with this office and all the services. In the meantime I have agreed to do another, considerably smaller project for the Survey, and again, the essential information is much more easily available here than it is up at the Survey. They have it, it's all in the public domain but they haven't got it in as well ordered a filing system as we have. So again, the company said, well, you can't really do the job without using our files or using the files and here, they're all in a row down there, I know where everything is and I can lay hands on it in a moment. Occasionally one needs library material that perhaps we don't have downstairs but if I do that, then I can go up to the Survey library. So right now, what I'm doing is working for the Geological Survey, here.

#018 NM: Have you any plans for full retirement?

GF: Yes, I have actually. There are 2 or 3 organizations in which I have a particular interest, one of them is called Operation Eyesight, which provides money and professional help and advice for eye clinics in India and East Africa. In India it costs \$25 to have both eyes operated on for cataracts. That's because most of the surgeons who are doing it are essentially volunteers, they get paid expenses and essentially nothing more. The facilities are not very sophisticated hospitals but they work and the money is raised by Operation Eyesight, which has its headquarters here. That's one organization that interests me a lot.

NM: Are some doctors involved with that too?

GF: From here?

NM: Yes.

GF: Some have been. They usually will give a year or two or whatever and they never seem to have trouble finding doctors. Ever since I've been old enough, I've been intensely interested in Free Masonry and have spent a great deal of my so-called leisure time at it.

NM: So you are a Free Mason?

GF: Yes. And I have done quite a bit of writing on Masonic subjects and I have a major project at the stage now where I have summarized all the information I need but I haven't written it.

#040 NM: So what is this book about?

GF: The overall Masonic organization in Alberta began in 1882, with just a series of lodges,

one forming here and one there, but in 1905, they got together and formed a governing body for the province and from that moment on, all of the activities, every time that body meets, everything that is said and done is recorded. In other words, it's minutes, but when you have a meeting go on for three days, minutes can get to be. . .well, they can fill up with detail. So that I've read all through all these proceeding, they're called and they are difficult sometimes because at all meetings, people have a tendency to get up and repeat what somebody else has just said. So I decided it would be a very useful service to go through those year by year and take out a lot of the superfluous language. They're basically like a digest of one to two pages on each meeting, so that anybody wanting to know what they did in 1911, can go to that and go through and say, they didn't do what I thought they did, it's not in here. One disadvantage of undertaking to do that is that you have to read it all, every bit.

#059 NM: Yes, it would be a big work.

GF: Some years ago I was a member of the Board of Directors of the Symphony Orchestra for 3 years. Of course, we were always in need of money and one year we decided that the Directors should go and talk to groups of people and so I had noticed over quite a long period of time, what seemed to me an exceptionally large number of geologists in audiences at the concerts and in the lobby of the auditorium and so on. It was very striking to me because of course, I recognized them. So I got hold of the President at the time and asked him if he would give me 5 minutes at a meeting, to talk to the members about the Philharmonic Society and he said, sure, next meeting if you like. So I went to the meeting and when I stood up I was really quite surprised when I looked at the audience, at how many of them I had been seeing every month for years at the concerts. And I've often wondered if. . . I have a suspicion that perhaps it's something about the kind of minds that geologists have that gives them an interest in such things.

NM: It might be that because often science and music go very well together.

GF: Music is basically a mathematical science. Years ago when I was taking piano lessons I was astounded to discover that of course. I had taken lessons for 5 or 6 years before I encountered a tuning fork in school and found out that this tuning fork was for middle C and that it vibrates 256 times per second when you clunk it and that every octave it doubles. That really got me fascinated. And then of course, years later, a great Swiss conductor, Ernest Unsermay???, was a mathematician.

#088 NM: Yes, and a very good one.

GF: I'm sure he was, he was a very good conductor.

NM: And this is that last question. Looking back at your career in the oil industry, what do you think of it?

GF: I think it treated me extremely well and I don't have any regrets at first my choice of geology in the first place. Although I have often wondered why it never occurred to me to think about law because legal things fascinate me. But when I was a student it never even occurred to me, it never crossed my mind I might try for law school. But no, the oil industry, of course, to me in a personal way, is the companies that I have worked for and I

have no regrets whatever about any of them. They were good people and they were just trying to do the best they could and to treat the people that worked for them as well as they could. And you can't really ask any better.

NM: Dr. Fox, I have really enjoyed interviewing you, thank you very much.

GF: It's been a pleasure.