

PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Ed Baltrusaitas

INTERVIEWER: Susan Birley

DATE: July 1982

SB: It's July 27th, 1982, Susan Birley interviewing Ed Baltrusaitas at his home in Seebe, Alberta. Mr. Baltrusaitas, I wonder if we could start with just your basic biographical background, where were you raised and brought up and where you went to school?

EB: Okay. I was born in Pittsburgh, Pennsylvania, 1910, Dec. 5th. I was educated in Pittsburgh schools, grade school and high school and then university, I went to Carnegie Institute of Technology, from which I graduated in 1935 with a bachelor of science degree in mining engineering. The period at the school, I took both options under this degree of mining engineering as such, and petroleum geology. So I basically prepared myself for 2 fields, for which I've often been very thankful that I did.

SB: What made you interested in petroleum geology, was there any specific influence?

EB: My interest in geology as such came about, I think from my mother, who at one time, she was a physician who practiced in Plymouth, Pennsylvania and had become very interested in the rocks of that area and as I remember as youngster, collected a whole variety of the rocks she found around Plymouth, Pennsylvania, in that general area. That I think, excited me somewhat about geology. Then as my half sister, when I was growing up, had also an interest in geology which probably reflected in my interest in the subject. I suppose that is the way I became interested. There was no one in our family who was connected at all with the oil business or the mining business itself, and my interest just came through my family opening my eyes I suppose, to the fascination of geology.

#023 SB: When you were studying petroleum at the university were there any professors that were really spectacular or sort of influenced you to go on further?

EB: Yes, I believe I can give credit to Dr. Charles Fretky, who was professor of geology at Carnegie Tech, who had done a great deal of work around Pennsylvania oil fields, particularly Bradford oil field. He was a firm believer in geologists looking at rocks. Later in my experience with oil companies I became a geologist that did look at a lot of rocks, mostly through a microscope. Dr. Fretky though, opened my eyes, put it that way, to understanding what one could learn by looking at the sediments under a microscope and I became interested in that facet of geology and I think, it was part of the reason I finally went into the oil business, particularly after I had an offer from Gulf Oil. I suspect Gulf officials in Pittsburgh who hired me had discussed the possibility of my working with Gulf, with Dr. Fretky and he probably told them that I had shown an interest in looking at rocks through a microscope and that was part of the interest that Gulf apparently had when I was first hired by that company.

SB: What year was that that you first started working with Gulf?

EB: I started with Gulf in 1937 but I'd had a job after I graduated in 1935. Of course, that was still fairly well into the Depression, or the Depression was not quite over at that time and jobs were difficult to get. Not having anybody in the family that was in either the mining industry or the petroleum industry, I stumbled around for a couple of years with various jobs. I was a lifeguard for one summer and a social worker for the best part of a year, until I learned that the U.S. Army Engineers were going to build some dams on tributary streams that flowed into the 2 rivers that flowed past Pittsburgh. I just realized that if they're going to build dams they need somebody that would have to survey the area that was going to be flooded by the dam, or the dam site itself. I particularly enjoyed surveying during my schooling at Carnegie Tech. We did some mine surveying at some of the coal mines in the area, as part of our class work and I enjoyed surveying very much. So I went up to the federal building in Pittsburgh when I learned that the Army Engineers were going to build these flood control dams and applied for a job as a surveyor. They were happy to have me because they were very short of surveyors. I was hired as a civilian with the army engineers and did work for about 8 months on a dam site on the Loyal Hannah Creek near Pittsburgh. The dam was eventually built and I had great pleasure going back some years later and observing the dam and the lake that was formed behind it.

#062 SB: When you started working with Gulf then, what was your first position with them?

EB: I was still working at the army engineers when my mother, who was still living in Pittsburgh, told me when I came back one evening that I'd had a phone call from Mr. Gulley at Gulf Oil in Pittsburgh, wondering whether I was interested in a job with Gulf Oil as a geologist. So I'd talked to the lieutenant who was in charge of the army engineer project at Loyal Hannah, the dam site area, and we weren't able to survey during periods of rain. So one day shortly after it rained he said, why don't you go on in and interview for your job possibility with Gulf. He urged me to do so, he said there wasn't a great deal of future as far as the army engineers were concerned for a person like me. So I did go in, after making arrangements to visit the Pittsburgh office of Gulf Oil and visited with Mr. Gulley and then eventually, with Dr. Heeled, who was the chief geologist of the company. I was offered a job at \$125 a month. Actually I took a \$25 cut in pay to start with Gulf at that time, but I was promised if, after 3 months of employment with Gulf, if I proved satisfactory that I would be given \$150 a month. So I accepted the job and I never regretted it. So I was purely a low echelon geologist. I did have an office in the basement of the Gulf building. What we did there and what I was responsible for was collecting samples of wells that were drilled throughout western Pennsylvania and west Virginia, with the idea of studying the section drilled by these wells and learning a great deal more about the stratigraphy of the Appalachian basin than perhaps Gulf had known at that time. There was some interest in the extension of the production that was present in the northern end of the basin around the Bradford oil field for example, and to the area in west Virginia, in the deeper rocks, that had not been greatly explored in the western Pennsylvania and west Virginia area at that time. So I collected and went down to west

Virginia a number of times to take a cut of the samples from wells drilled by various companies and studied them and made logs and started to develop some mapping to show the information that we'd gained from looking at these samples. I found that I did enjoy the sample studies. Also, at the same time, Gulf had contracted to have a well drilled through an individual, to the Ariscony sandstone, just south of Pittsburgh. This was one of the very early wells to be drilled to that depth and to that formation in this area. The well was a cable tool hole and part of my job when the well reached a depth of around 5,500' or so, I went out and actually sat at the well. I had an old moving van truck body as a doghouse in which I slept and ate and learned a lot about cable tool drilling and actually tried to sharpen some of the bits occasionally, but found that I wasn't strong enough to handle the sledge hammer. But I did enjoy that work very much and of course, the camaraderie with the drilling crews was just wonderful. I had a lot of fun and it was a real pleasant experience. The well did drill to about 7,000' with cable tool. It was a dry hole so that was the first experience that I'd had at a drilling well and I would imagine Gulf #114 learned that I could take the life and enjoyed it. So an opportunity came in 1938 for Gulf to consider having another geologist in Michigan, which had gotten to be fairly active at that time. So I was offered the job. I remember I was brought up to see Dr. Heeled, can you imagine a lowly geologist such as myself being interviewed by the chief geologist of all the Gulf oil companies as to my willingness to transfer to Michigan. I recall he asked me, I believe this was on a Wednesday that I was brought up to his office and asked if I would consider a transfer to Michigan and I said I would, without hesitation. He said, how soon can you be there and I said, I can go home tonight and get my clothes together and I'll be on my way tomorrow. I think that flabbergasted him a little bit because I think they expected to have a little time element. He finally did tell me that I could take 4 or 5 days longer at home before I had to get to Michigan. So I suppose that didn't hurt my attitude toward working and toward the transfer. I got to Michigan in 1938, I think it was in the spring. Jed Mabeus??? was the district geologist at the time. The office at been established for a number of years, earlier been established by Ben Haik, who later went on to be a vice-president of Gulf in Pittsburgh. But Jed Mabeus was my direct supervisor at the time, for a couple of years. We were quite active in Michigan, had quite a few leases in areas that eventually became productive. I did a lot of well sitting in my earlier days, completion of productive wells. That is, to indicate the point at which drilling must stop in order to run casing into the Devonian formation that was the productive unit. This was very exciting because Gulf insisted that the casing be set on top of the Dundee limestone, in order that the shales that occurred above it would not eventually sluff into the well after production was established. So by setting casing at the top we avoided this future nuisance. But the problem was that the production was often established 1 or 2 feet below the casing point. So these wells initially were cable tool holes, so it took a lot of careful drilling and supervision to prevent drilling into the oil without casing in the hole. Of all the wells that I ever sat on, or that Gulf ever drilled, we never had a blowout or a well that was productive of oil before we set casing, for which I was very pleased of course. It was good training ground for the problems of properly handling a well and I used this background I'm sure, later in my experience, as a means of conveying to

younger geologists under my employ eventually, of the importance of the job itself, in handling the drilling of wells wherever I did work in the future. A few years after I arrived in Michigan, Jed Mabeus moved to Wyoming as geologist in Casper and I took over as district geologist. Eventually I hired a younger geologist to assist me. We were the only 2 in the office. Michigan at that time was rather a quiet oil state, never did develop into a major production, but it was profitable as far as Gulf was concerned. I found several oil fields by doing some careful geologic work and interpretation of structure. I thoroughly enjoyed the excitement of doing the subsurface studies that were necessary in Michigan in as much as the rocks that produced oil are usually very far removed from the area in which the production was found. So most of the work had be done by subsurface studies, that is examining cuttings of wells through a microscope. I expect that I probable saw and studied more well samples than any other geologist alive, because I just calculate that I examined samples from more than 5,500 wells in the state, including western Ontario, which is part of the Michigan basin. Even down into northern Indiana and over into Wisconsin. So I had a lot of fun working there. I worked in Michigan for 13 years, all through the war. Gulf felt that I was important enough to ask for an exemption for me from military service and that was granted. So I think I rewarded my company at that time by finding several oil fields through my geologic efforts and they were rather productive and profitable. Max Littlefield, who was a senior geologist, he was Dr. Max Littlefield, was a geologist at Tulsa and a very fine stratigrapher and a very, I would say also, a very difficult person to work for because he had little patience with ignorance or stupidity. But he was an excellent subsurface stratigrapher and I believe I can say very definitely that Max opened my eyes to the very good potential of a geologist studying the rocks through which wells are drilled and determining the characteristics and the facets of the sediments in which oil and gas might occur. And the stratigraphy, the lithologies that are important for oil accumulation. So Max, I have always credited him with making a geologist out of me. I think previous to that I had the general understanding of geology but he detailed this part of the work that I think stood me in good stead for my future work.

#203 SB: How long did you work in Michigan?

EB: I was in Michigan until 1951, having arrived in 1938. I was getting pretty tired of staying in one place that long. I'd promised my wife when we married in 1939 that one of the facets of an oil geologist was I could be moved around a great deal and she rather thought that was all right. And finally accused me facetiously of having married her under false pretenses because for 13 years we sat in Michigan. I think the years were well spent as far as my training as a geologist was concerned. My mother died in Pittsburgh, just about Christmas time in 1950 and the funeral was in Pittsburgh and I was there. After the funeral, at which a number of Gulf people attended I was invited to a party at Ben Haik's apartment and many of the officials of Gulf were there. I brashly used that opportunity to push for a transfer from Michigan for myself. I knew at that time that Gulf had acquired some concessions in Mozambique in eastern Africa and I even suggested that I'd like to go to Mozambique. I do remember, I guess in retrospect a little, that there was sort of snickering about the whole proposition and nothing much was said. Apparently, it had

already been decided before that, that I would be transferred to Salt Lake City. Because after I returned from my mother's funeral, about the first of the year, I was notified by the Tulsa division, through whom I worked, that I was to be transferred to Salt Lake City as manager of a new office to be opened in Salt Lake City that would be concerned with the geology and the development of production in Utah, Nevada, Idaho and western Colorado. The inner mountain area of that part of the States. I of course, was very happy for that transfer and I enjoyed living in Salt Lake City. I was only there a little over a year though. But in the period we had 5 geologists, 2 landmen and we did a lot of geology of the total area, which was quite an immense area to consider. At that time Nevada had only 7 wells that had been drilled in it. We had done some very interested surface geology through photo geology and Gulf eventually participated in a play on my recommendation to acquire about 1 million acres in Nevada, with the idea that some of the inter-mountain valleys were potential for production. That play developed as a result of the work done at that time. Mainly through photo geology.

#250 SB: Can you remember the names of the other geologists that were working with you at that time?

EB: Right off hand the one fellow I remember was Doug Collier, he was my senior assistant, the senior geologist of the group. He later quit Gulf and worked with, I believe it was Cal Standard down in . . . or maybe it was Carter Oil. At any rate I think he wound up in Denver with one of the Standard of New Jersey companies. Roland Boucher was another geologist that we had at the Salt Lake City office. Some of the other fellows, right at the moment their name doesn't come to mind. So at Salt Lake City I did find a lease in the middle of an oilfield that was unleased. And found out that the title on the lands was very clouded. I think it was Cal Standard that had developed the oilfield. I think it was the Roosevelt oilfield out in the Owinta Basin. Here was this attractive land that was not leased, right in the middle of a field with production all around it. I think probably, possibly because of my ignorance as a landman, not being too terribly concerned about title problems, I managed, through our landmen, to acquire the interests that were available on the land. Which I think amounted to around 80% of the title itself, and the remaining 20% were the portion that was very clouded. I forget now why that was but certainly we weren't able to get, and no one else was able to get the thing cleared to total interest. But at any rate, I was impressed that Gulf agreed to take the land on the basis of the percentage interest we did acquire, put the rest of the title problem in escrow and we drilled a well and got an oil well right in the middle of the field. There wasn't any particular trick in finding that oil except that I think, the idea of being aggressive enough to take the lease in the first place and so on, was rather pleasant. I suppose Gulf took that into consideration when, in 1952, needing an exploration manager in Calgary where the operation was quite immense, they took that into consideration and I was offered the job in Calgary as exploration manager with Canadian Gulf Oil. I went up there very shortly after being advised. The unfortunate thing in my retrospect again, was that Gulf suggested that I leave my family in Salt Lake City for awhile and I lived at the Palliser Hotel. Our office at that time was the top floor of the Hudson Bay building, where the present store

is located. The activity there was immense of course. Gulf's budget, as I remember it, was around \$25 million a year more or less. In fact, the exploration department of which I was the manager, I think our budget was somewhere around \$8 million a year. But the exploration department included 72 geologists, we had 12 geophysical crews, a number of scouts and landmen, we ran a core drill rig or two. So it was quite a massive operation. We were very aggressive. Of course, Gulf, at my arrival, had developed a great part of the Stettler oilfield. My primary assistance in the exploration end were Stan Pearson and Oscar Erdman. John Wanfer as I recall, was important. Norris Warth was a landman. A number of the other men too, their name slips my mind at the moment but they were an aggressive bunch of fellows and very well trained. I always felt in my background, in the States and in Canada, that after I arrived here I realized that the young graduate geologists were seemingly more proficient, better trained, than the geologists I'd been interviewing and hiring in the States at various times. I think their academic background was perhaps, a little better. But I felt the one factor that seemed to be important was that these geologists would have opportunity to work with the Geological Survey of Canada during the summer field season. I believe this opportunity to get out into the fields, on to the mountains and up into the wilds of Canada, to see the rocks and see the structures and see the mountains was very important to their training. And of course, to learn to live out in the open, away from town, made them a little more self-reliant and perhaps even more aggressive. That I have commented on a number of times in the past years in discussing the interest that I had in being in Canada.

End of tape.

Tape 1 Side 2

SB: What were some of the discoveries or major plays that you were involved in with Gulf at that time?

EB: When I got up here Pincher Creek had already been discovered. That was a very interesting gas field it was, in the Mississippian rocks because it was in an overthrust area. Of course, very, very difficult to find, from ordinary seismic effort, that is reflection seismic efforts because the Mississippian, as I recall, we drilled through 2 overturned thrusts and then finally into the Mississippian reservoir rock. Let's see, we drilled the first overturned thrust with the rocks normal and then upside down, then we drilled through the second thrust, normal through the Mississippian then upside down, then finally into the productive Mississippian, below both of these higher overturned. overthrusts. So to map that kind of structure by reflection seismograph was almost impossible because the reflection would have been clouded by the higher Mississippian rocks above the field. I had nothing to do with it myself but I learned that Gulf's refraction technique was most responsible for the location of this structure below these 2 overturned thrusts. The refraction technique was known by a number of companies of course, before this was done but Gulf, through its geophysical department at Harmerville, Pennsylvania, where their research department is located, kept up their technique in refraction work. This proved to be, as I understood it, the major reason that gave the information that justified

drilling, I believe the depth was over 12,000', for drilling and finding the Pincher Creek gas field. When I arrived we were then in the process of drilling follow up wells. The problem of course, was always to locate a well in such a place that we were certain to hit the reservoir portion of the Mississippian rock before the cut-off of the front fault of the field. That is, this fault was to the eastern side of the field and of course, if the well wasn't properly located it would have missed the productive unit and been a dry hole. So a great deal of seismic work was done, practically lines a quarter mile apart were shot transversely across the axis of this field in order to pinpoint the most optimum location to drill the follow up wells. As I recall, the period I was with Gulf after that, we drilled several wells and they all did manage to hit the productive portion of the Mississippian properly. Then of course, the field did develop. The reserves were estimated initially to be somewhere in the order to 3 trillion feet. Of course, Gulf then, at the time the Trans Canada Pipeline development was taking place, managed to include with the gas that was to be transported by the Trans Canada Pipeline, did manage to get the Pincher Creek gas to be included in that transportation of gas by that company. Now Max Littlefield, of whom I mentioned having such a major part of my training as a geologist in Michigan, was actually the well sitter, sent up by Tulsa division up to wells drilled in the Pincher Creek field, when it reached the productive unit. Max of course, being this expert in stratigraphy and sedimentologist, was important enough for Gulf to send up here for months at a time to properly handle the drilling in of these Pincher Creek wells. We would have a young geologist from our Calgary office on the well as well but when it came down to the very important matter of drilling in to the Mississippian rocks, and knowing when to quit and so on, it was important enough to get Max Littlefield up here. So it was great to renew my acquaintance with Max again. We had many conversations about the development of the field and I learned the tremendous problem it was to find it and to develop it.

#068 SB: How was the company governed, where was the main office that you were responsible to?

EB: Canadian Gulf Oil, at the time I arrived, was under the direction of the Tulsa division. The vice-president of the Tulsa division was the person, basically the manager in charge of our operation. When I arrived in Calgary Ed Lophnee was the manager, having replaced Jack Bevel, who had been released the previous year. Then I replaced Bob Lockwood who was a geologist here for a number of years in Calgary. Bob then was eventually moved to the Toronto office of Canadian Gulf Oil and I stayed on as exploration manager in Calgary. Ed Gallagher was the production superintendent. He also lived in the Palliser Hotel with me. Not in the same apartment of course. A fellow named Follensby was the attorney and he was also in the Palliser Hotel, so Gulf had quite a few of their top men living in the Palliser Hotel. I lived there for a year and got pretty tired of it.

SB: Was the Palliser sort of like the Petroleum Club at that time?

EB: No, the Petroleum Club used to be in the Palliser Hotel. I think it was called the Renfrew Club initially and was in the Palliser but by the time I arrived the Petroleum Club had

already established its place of business, I think on 6th Ave.

SB: I was going to ask, as exploration manager, how much approval you had to depend on from the head office, how independent were you in making decisions?

EB: We were pretty well controlled. I think basically the Tulsa division was a little bit, I might say, dying. So when that group down there had the Canadian operation handed to them they took firm control and I believe there was not much opportunity to have individual authority to do things without their knowledge or control. It wasn't too difficult though. Gulf as I mentioned earlier, did have quite a substantial budget at that time, so there was great eagerness to move with aggressive attitude in the leasing of lands particularly. We had for instance, Eddy Gallagher and myself and Ed Lophnee were the 3 managers that would have a daily meeting. We would consider for instance, land sales and we would make up our mind between the 3 of us what to do about certain lands and how much to bid on them. We would often, on the determination of bids for example, we would often bring in the senior staff of geologists. Not only Stan Pearson and Oscar Erdman but some of the other men who were doing the detailed work of any specific area. Their opinion was very valuable and was listened to in determining the values that should be placed on the bidding price for certain blocks of land that were being offered by the province for oil and gas exploration. So I think when it came down to fairly large expenditures, of course, I think we had to transmit this information for approval, to Tulsa, but I think for our daily operation for instance, on drilling of wells I'm sure that we didn't need to wait too long to get approval. I don't recall now what Lophnee might have had to do. For instance if we were going to drill a wildcat how much approval he needed to get this. But I know when we proposed a well in the exploration department we didn't have to wait too long to have a go ahead to drill. So whether it was approval needed only by Lophnee or whether he had to go to Tulsa for higher approval, it didn't matter a great deal. Our actions were pretty rapid and not delayed.

#126 SB: You also acquired some land by the CPR leases earlier on.

EB: That was a very interesting facet of Gulf's experience up here in Canada. Jack Bevel was the general manager at that time. Jack has been dead now for 6 or 7 years as I recall. But at that time he was very aggressive. He'd come up from the States, having worked with Gulf in Kansas, Illinois and then came to Canada somewhere about the time Leduc was discovered. I'm not quite certain of that date that he did arrive here. But Jack was a very aggressive individual and not prone to let authority above him interfere too much with the actions that he wanted to take. I heard, of course, most of the stories about Jack Bevel from men who had been here when he was here. Of course, I didn't arrive until after he'd been dismissed from Gulf. Maybe I'll give you a little background about Jack Bevel. He started out with Gulf as a scout in Kansas. The story I was told was that he learned the Morris Code and could decipher the telegraphers signals when he sent a message. So Jack, who was a scout in Kansas, wouldn't do any scouting but would sit outside the telegraphers window at the railroad station every evening when the rest of the scouts of other companies brought in their information and transmitted it by telegraph to their head offices. Jack would sit outside the window and write down the information that was

gathered by other scouts. I think that was pretty aggressive. You can question the honesty of it but then, I guess that isn't so terribly important on a thing like that, I thought it was pretty clever. At any rate, that was the story that was told about him and his efforts in Kansas. Then he went to Illinois when Illinois became a producer of oil. He was in Illinois as a scout as well. I recall one period when I was then in Michigan, that we needed a scout in Michigan, our 2 scouts that we had having been away for some reason or other. So he got as far as Detroit and Chicago, as far as doing in to do any scouting for 2 weeks in Michigan and he wasn't concerned whether we needed a scout or not, he just enjoyed himself. This is a fact that I do know about him that made us wonder about Bevel when he was made manager up here in Calgary with Canadian Gulf Oil. As I mentioned earlier I think briefly, Jack finally was dismissed from Gulf about 1951. From the general knowledge that I gained after I arrived in Calgary, he had been participating with a landman on a rather shady deal on leasing for Gulf, or selling to Gulf by the landman, of large blocks of land in Saskatchewan. I think it's fairly well established that the lands were acquired by the landman at around 10 cents an acre and the land was then sold to Gulf with Bevel's recommendation to buy for varying prices, from \$1 - \$2 an acre. From the story I've heard he benefited financially on that transaction. Further, this was also quite well spoken about by various people in the industry, that if Gulf gave out drilling contracts or seismic contracts, that Bevel was anxious to get a small cutback from the contract fee. Of course, I don't know a lot of these things as fact but this was discussed broadly in my period with Gulf in Calgary and I've seen correspondence regarding the land deal itself,

#186 that assures me that many of these facts are probably true. I guess the denouement of Mr. Bevel came about when drilling contractors came up from Oklahoma and Texas who had been drilling for Gulf in those states, came up here to get drilling contracts and then found that they were asked for a cutback. Some of these drilling contractors were pretty good friends with executives of Gulf in Pittsburgh and that word got back to the executive department of Pittsburgh and eventually the company decided that this man had to be let go and he was. The manner in which it was done, Lophnee, who was an accountant for Gulf in Tulsa was sent up to Lethbridge and as Bevel went on the way to Tulsa being asked to come down there for a conference, after Lophnee saw Bevel pass through Lethbridge on his way down to Denver, Lophnee came up and had all the locks on the doors changed and he took over as manager. When Bevel arrived in Tulsa and walked into Bill Bowhart's office, he was the vice-president, he was advised that he was fired from Gulf. So there were a number of incidents that I've heard about. I don't know the details as well as I do about Bevel, but there were others in other companies, men of responsibility who were also greasing their own palm in their position of responsibility in the corporation they were working for. Several of them were I know, let go for much the same reason. I'm sure that there were, even among lesser lights there were probably plenty of kickbacks provided or maybe expensive gifts. I myself was offered gifts on occasion. But it was sort of a habit of the business I suppose, so it wasn't unusual to expect that some men would overstep the bounds of what the corporation would accept and found themselves dismissed from the company. Bevel did one thing though, for

which I personally had great admiration. When he learned and it was known of course, that CPR had a great deal of lands to which they had title to the minerals throughout Alberta and provinces, as a result of land grants given to the railroad for building the railroad in the first place. Bevel made a deal which included I believe, most of the Stettler oilfield and Stettler-Big Valley area, made a deal with CPR to buy a million acres of land at 10 cents an acre. Without approval from higher authority in Gulf. This kind of a deal was often referred to as an example of Bevel's aggressiveness because at the time, Gulf was holding a pretty tight rein I've heard, on expenditures. Even though this only amounted to perhaps a little over \$100,000 it still would have required approval from higher authority. But Bevel, having found the opportunity and knowing it was probably a deal that needed to be concluded rapidly, just agreed to it without the approval. We've often commented in Gulf after that, that some other executives would have probably not dared to buy a 40 acre lease in the middle of an oilfield without approval if it was for \$1 an acre. It was just one of those facetious things that was bandied around in the company after this pretty good deal. At any rate, the deal for the CPR land did benefit Gulf immensely and their whole position in Canada stemmed from the production that was obtained on those CPR lands initially, and early in the development in Alberta in the early 50's.

#248 SB: You eventually decided to retire or leave Gulf. Would you like to mention a few of the reasons that moved you to do that?

EB: I hate to talk about it too much, but even so, if you ask I'll tell you. I left Gulf on the last day of December, 1953. I'd been with Gulf for 16 years at that time. I'd been up in Canada just a little over 2 years. You ask the reasons I left, well, one of the reasons was that I mentioned earlier that I was forced to live in the Palliser Hotel. My family was living in Salt Lake City. I eventually, just a couple of months prior to my resignation I just got fed up with that situation and moved my family up from Salt Lake City and we all lived in the Palliser Hotel. I had a suite of rooms, adjoining rooms for the 4 children we had and my wife and we lived in the hotel. My children went to Jim Short School in downtown Calgary. Gulf never complained about my moving my family up here and living in the Palliser Hotel but I know it cost Gulf over \$2,200 a month for our suite of rooms and our meals. That situation was very unpleasant. I look back on it and I thought it was pretty damn dumb of Gulf to have treated a man in my position, with the responsibility I had, and the sleepless nights I had with all the problems that attended the operation of the size Gulf had then. I thought it was rather unfair and I thought I'd earned more in my experience with Gulf than living in a hotel like that. So I finally grabbed the situation that arose shortly before Christmas that year, in 1953, when I met Alex McCoy one morning for breakfast at the Palliser Hotel. Alex McCoy was a geologist, his father was a very famous geologist with, I believe it was Phillips Oil in Bartlesville, Oklahoma earlier. Alex McCoy III, the one that I'm referring to, was a geologist and he'd been with Gulf. When I was in Salt Lake City I became very well acquainted with him because he assisted a great deal in the direction of our work out of the Salt Lake office and I became quite well acquainted with him and rather liked the person. So when I met him for

breakfast that particular morning I asked him what he was doing in Calgary and he said he was up to hire somebody to run an office for him for a consulting group he was going to establish in Calgary and did I know of somebody who could be a manager of an office for him. I said, what about me and he agreed. So as I mentioned, the end of the year, about a week later, I resigned from Gulf and became vice-president/manager of the office that Alex McCoy Associates opened in Calgary. In that office we had John Andrechuk and Ralph Edye, hired several men. John Andrechuk had been with Gulf earlier and Alex McCoy and I both knew him quite well of course. Let's see, we had Alex Beverage, Ron Johnson, I believe, again, some of the names slip my mind. Oh, Roland Boucher, who worked with me in Salt Lake city, yes, we hired him. So we had a staff of about 6 geologists. Our effort was to review the geology, particularly of Alberta and Saskatchewan, with the idea of developing a firm geologic base to recommend plays for Texas Pacific Oil and Gas, who sponsored Alex McCoy in this consulting effort. We were tied wholly to Texas Pacific Oil and Gas the first year. Then the second year of this operation I recommended that Pure Oil, when Texas Pacific indicated that they didn't think they would want to continue to the same extent and the same cost as they had the first year, I urged that Pure Oil be considered. Through Texas Pacific, Pure Oil then came in to join with Texas Pacific for the second year of our consulting effort. We did a lot of good geological work. As I recall now, John Nisco was another geologist that we had. We did a lot of subsurface studies, trying to get the basic understanding of the main productive potentials of Alberta and Saskatchewan in hand so that we could make recommendations for areas in which to lease and eventually develop.

End of tape.

Tape 2 Side 1

SB: So how long did you continue on working for Alex McCoy?

EB: That period was for 2 years and at the end of the 2nd year, as I mentioned, we had Texas Pacific and Pure Oil Co. as our clients. Both these companies for bid us, in as much as they were footing our bill for our operation, we weren't permitted to take on any other clients. We did have a number of opportunities to do so during the period we worked for them but when we were forbidden of course, people thought we were tied in 100% with the company and so, we lost probably future contracts by virtue of this situation. But at the end of the 2nd year, Pure Oil and Texas Pacific did not continue to support us with a contract and we had no other contracts to maintain our office and the staff of the 6 geologists and the office secretary and the rent for the office itself. So we were forced to close the office. I resigned from Alex McCoy Associates at that time and shortly after interviewed executives of Forest Oil Corporation who had come up from San Antonio, Texas and they offered me the job with them as exploration manager. I had a very pleasant association with Forest Oil. It was a very aggressive outfit, again, I hired about 5 geologists. We were assembling a good background for our potential for future operations when, being a family corporation, when the chairman of the board died the estate was closed so that we were unable to spend any more money on any potential drilling activity

or so on, until the estate of, I think it was Mr. Forest, or was it Forest Doran. At any rate, whoever the chairman of the board was, that estate had to be settled, it took quite awhile. And it got so inactive and so tiresome. As I recall the landman and Bill Miller who was the manager and one of the relatives of the Forest Oil hierarchy, we would spend hours at the Petroleum Club drinking martinis and what not and I got pretty fed up with that and I finally advised Forest Oil that I couldn't take that anymore and I resigned. On my resignation I think they finally decided that they would close the office in Calgary for a period until the estate was settled. Then they eventually did reopen an office and Ken Germond became their manager when they did reopen.

#036 SB: Were they involved in exploration and drilling very much?

EB: We did not get too active in Alberta. We did drill several wells. One play that we did develop and we thought highly of at the time was a Leduc reef that surrounded the Peace River Arch. We did quite a lot of seismic work up there, had farm outs from quite a number of companies and had the reef been productive we would have been sitting pretty. But we drilled one well after doing some very detailed seismic work across the upper front edge of the reef and drilling a well, hitting the reef within 5' of the predicted depth. And it was a dry hole, it was just water bearing. We did not drill further wells in that area. I don't recall now whether we drilled a few more wells in Alberta or not. I believe we may not have. But it was about the time we finished that Peace River well that the executive of Forest died and put a stop to all further exploration. It was rather sad at the time, I found them a very fine company and I was sorry that I had to terminate my job with them. I looked around at that time and I of course, had been aware, through daily reports that Dome Petroleum was very active in drilling. I sounded out through friends, that Dome did not have an exploration manager. So I arranged a meeting with Jack Gallagher one day for lunch and put a proposition to him to be hired as an exploration manager for Dome Petroleum. He shortly agreed and that started my association with Dome Petroleum. That was in 1956, shortly after I resigned from Forest Oil.

SB: Did you find it was much of a change from being exploration manager for Gulf?

EB: It was very much a change and a very delightful change. Of course, Dome, now I talk in 1983 about Dome's activities, of course, they've had their tremendous problems here of late. But Dome was a very aggressive outfit and Jack Gallagher was very aggressive in his own right. There were, in the management group, of which I was one, we had all worked for major companies at some time in the past. Jack Gallagher had been with Standard of New Jersey and I believe he'd been with Shell as well. One of the things that was, I thought, most pleasant with Dome was, in any project that we were working up, for instance, in the exploration end, we didn't have to write endless reports. Nobody gave a darn about reading a report that would be I called it, a file filler. So it was most pleasant to be able to work up a play or an idea on a pencilled map for example. I would often go in and just talk to Jack about a particular area with a pencilled map and just say, here's a play I think it's worth tackling, and maybe we'd go out and file on the land or buy it and drill it. We'd often file on it and perhaps the next week be moving a drilling rig on it. So that kind of aggressiveness was wonderful. I always have maintained it's one of the

reasons Dome had the success it has had. One can blame that aggressiveness on the more recent financial problems they got into. I think their aggressiveness finally caught up with them, but maybe the banks had a lot to do with that aggressiveness as well. At the time when Dome more recently took over I think, much more than they could swallow. But at any case, at my period with Dome, and I did stay with them until 1965, for 8 years, was very aggressive, very active and we had, I believe it was 4 or 5 geologists. Con Hage was there, Allen Bryant, there was a Chinese boy there, his name slips my mind. We had a landman, Lloyd Harmon was the landman as I remember. Charlie Dunkley was vice-president of production and Ed Torvall was production superintendent. As I remember, there were about 200 employees at Dome at the time. We were also spread around the city in 3 different buildings. I remember I was on 9th Ave., near 4th St. in a building there on the north side of 9th Ave. right at 4th St. with the geologists that were in the department. It meant, when I had our daily meetings, walking over to the offices where Jack Gallagher was located. So it was not a very pleasant situation as far as that goes, but we could live with that. But eventually Dome built its own building on the corner of 7th Ave. and 6th St. Very wisely it was built only 4 stories high because that was about the limit of our needs at that time for Dome. But the foundations and the structural work was all built with the idea that it eventually could go up to 10 stories. Well, eventually Dome moved from that building, having developed into a larger company, needing more space and the company that took over that building eventually built it to 10 stories in height. It was a very nice situation at that time, when that building was completed, to be able to all be located in one structure. We would have daily meetings, that group, Gallagher and Bill Richards, and Dunkley and myself and we would discuss our problems, whatever we had, decide on action right in the board room. I'd had a large map made that worked on rollers. This firm in Tulsa that I knew constructed it for us, so we were able to keep up our land activities and keep posted on that map the wells that were drilled, so we were up to date on activity in the oil business. We had files set up with the electric logs of all wells drilled in the province of Alberta, and maybe Saskatchewan as well. I don't quite remember that latter part. But we were well equipped with information to act aggressively, when we needed that information it was at our fingertips. That was a very good situation.

#123 SB: I guess with being more independent the employees had more incentive to develop more ideas or new strategies did they?

EB: They did, that's right. There was a very open, easy situation. I believe this fact that we were interested in getting action rather than filling the files permeated everybody so everybody was eager to perform because you knew if you made a recommendation you were going to get action on it. We listened to our geologists that were in the staff, they were important cogs of our formation and we listened to them and their ideas were acted on and I think that gave them a sense of accomplishment. Plus I don't know just how far down the line we all had stock options, or a number of us did. Which in itself was an incentive to have success for Dome. So that you exerted yourself perhaps a little more because of that. In fact I remember at one time the stock option, I think the basic price

was \$6 a share. Our option extended for a number of years of course, and at one time, Dome's stock dropped to \$5 and Jack Gallagher caused our stock option price to be lowered to \$5, which was rather a nice thing to have happen. Eventually it proved very valuable to everybody who had those options.

SB: So did you have very large land holdings?

EB: Yes. Dome had a very good land holding. They weren't widely spread in any area. They were looking for early cash flow if possible and a lot of our land work earlier, in the first year or so, as I remember, was directed to acquiring lands near production. So that we could drill with some assurance of production and get a bigger cash flow, a very desirable thing for every oil company. We did take of course, a lot of really wild, wildcat plays. None of the ones that I remember taking of that sort ever found production but we were still aggressive in a lot of areas. Any ideas that we had that had merit were considered and acted upon without delay. So we put a lot of pressure on our geologists to keep working toward the end that we would get areas in which we could lease lands with a reasonable hope of production. And I think to that end we did succeed.

#163 SB: I understand that you initiated their move into the Arctic, would you like to go into the details on that a bit?

EB: Yes, well of course, that Arctic play was one that was very dear to my heart and still is. I'll give you a little background . . . I'll tell you, why don't I finish up my employment situation, then I'll get into the Arctic. I left Dome in 1965 and I basically retired at that time. I had earlier in my life had determined that if I could retire when I was 55 I was going to do so. Through my investments and the Dome stock option and various other incomes I was fairly well fixed. But I was approached shortly after my departure from Dome by Union Gas Co. of Chatham, Ontario, who had learned through some source that I'd had Michigan basin background. Of course, the Ontario peninsula there, just east of Michigan is part of the Michigan basin, in which Union Gas was the franchise distributor of gas. And of course, drilled and operated a number of gas fields in that area. I had studied Ontario stratigraphy while I was with Gulf in Michigan and had spent about a month or 2 in Ottawa, in the 40's looking at the entire Ontario peninsula, particularly for the Devonian section. So I was quite familiar with the stratigraphy. So when Union Gas approached me to assist them on their efforts in that area I accepted of course, on a consulting basis. I learned that prior to my employment by Union Gas that they had drilled 110 dry holes in a row without encountering any production. And of course, that was the reason they wanted some more sophisticated help I suppose, to see if they could do better than that. So it was determined that Union would not drill any wells without my approval and guidance and direction. So I sized up the situation and the land picture that Union had and determined that what we needed was some good geophysical work. So I hired Tony Lee, his name was A. A. Lee, I hired Tony to take on the geophysical work and we did a considerable amount of detailed seismic work in Ontario and during the first year or so did not drill a well at all. After the geophysical work started to uncover some interesting anomalies of the Silurian reef that we were looking for, we drilled eventually, in about the 5 year period that I was with Union, we eventually drilled 6 wells and 5 of

them were discoveries. All based on the, what I consider to be, very fine geophysical work that we did there. When one considers that that area was one of the oldest producing areas on the continent. The earliest production I believe, was around 1856 of 7, to go in and make 5 discoveries in a 5 year period was very satisfying to me to say the least. And of course, I must give most of credit to the geophysics but the geological review done by one of the Union geologists was also important. The company benefited very definitely from that effort. I basically retired before, when I left Dome, but this consulting bit with Union didn't take much time and I was free to do a lot of things on my own. I did invest in drilling ventures in Alberta and Saskatchewan and a number of them proved to be productive. Finally from some of that earlier development participation, a group of us who had some interests in production in southern Alberta joined with Bob Ross, who had a company called Clearport and we organized a company and we constituted it and set up #229 Clearport Petroleums in about 1970. I was one of the founders, with Harold Farney and Bob Ross, there were a number of other fellows involved too, who have since left the situation. I was on the board of directors of course, and I just retired last year when I found that I was too far removed from the operations any more in Calgary to be of any value to the company so I resigned from the company. So now I think, would be a time to get back to Dome. I had realized that Dome, with its aggressiveness, was the kind of company, after I joined them, that my thoughts about exploration in the Arctic might be receptive. I got my early ideas about the potential of the Arctic back in the 1940's when I was in Michigan with Gulf. I would get down to the Ann Arbor football games that the University of Michigan played, from Saginaw. Usually drive down in the morning and I would visit the geologic department at the university, Dr. Aylers and the other senior men in the department. Dr. Erdley was one man that we visited quite often. One time we went down and on the drafting table adjacent to his office he had a large map of the top of the world in which he was assembling some geology relative to the North American continent and to the Siberian and Asian and European continents. I inquired what he was doing and he was assembling information for eventual publication of a book on the geology of the world. I don't think that's the title of it but he did have a book eventually published. But at that time he was assembling this data and looking at the Arctic, of course, I knew about the Canadian Shield which is purely a granite outcrop. I didn't realize at that time that there was this large basin of sediments up in the Canadian Arctic Islands and northern Beaufort Sea and over into Alaska. That awakened my interest and I followed it up with a minor bit of study. When the naval reserve in northern Alaska was being discussed and explored during the war I followed that development with some interest and kept up as best I could with the information that was available. Erdley also sent me, in 1948, an article he had in the Journal of Geology in September of 1948, entitled Ancient Arctica. Again, Erdley, after my conversations with him, this article pointed out the tremendous potential for oil and gas in that province. So I kept that in mind when I arrived in Calgary with Gulf and I tried to get Gulf interested in going up into the Arctic. But with their massive investment and their need for quick cash flow Gulf wasn't too keen in going farther afield. And I can understand that. But I did get Gulf to start a geologic study down the Mackenzie Valley. We had a number of geologists for

several years doing surface work from both sides of the Mackenzie. We had an individual, Gus Crowse, up near the Nahanni area somewhere, build a large boat for us, on which the geologists lived during the night and then we operated from that with helicopters, taking geologists out to the mountains on either side of the river, and to outcrops, to study them and get their information. So we did a fair portion of the Mackenzie River Valley in that way with Gulf.

#302 SB: Was Andy Baillie involved in that?

EB: Yes, he was. He was involved. And then of course, after my departure from Gulf they followed up more with that. But I might modestly say I led the way. My idea was, here was this naval reserve in northern Alaska, with known oil trapping and then this potential up in the Arctic Islands of a deep basin of sediments. My idea was, maybe for once, I could get Gulf to move ahead of the game. I always felt through my limited experience with Gulf, that they were followers rather than leaders. And I suppose a lot of major companies are that way. But at any rate I was aggressive enough to want to be a leader at that time. It might have been good for Gulf if they'd done so because I think our program would have gone up and eventually tied in with the Prudhoe Bay area of course, and maybe Gulf would have been early in on that. But they weren't. In any case, at Dome I realized that here was a company that could be interested in the Arctic of Canada. I proposed that we start a geologic study of the area, particularly of the Arctic Islands.

SB: Was it instantly accepted or was there any hesitation about going up there?

EB: We didn't actually go up there. What we did. . . no, there wasn't much reticence about doing the work, as long as we didn't spend a lot of money. Because Dome did need the cash flow and was strapped, like most companies, for drilling funds. So I didn't propose that we'd spend a lot of money. The geologic study we did was rather limited, mostly reading the literature and getting a background on that. We became acquainted with some of the Geological Survey of Canada men who were working up there. On their visits to Calgary for example, we would talk to them. We learned that there was a great deal of data forthcoming. I particularly learned that there was a complete photo project that had photographed the surface from high flying airplanes. I knew from my past experience in Utah and with Gulf in Alberta even, that one can do a great deal of work from photos. So we instituted. . . I didn't have much hesitation in getting a photo study started.

End of tape.

Tape 2 Side 2

EB: So this photo study, the way I did it, so as not to excite anybody that Dome was interested in the Arctic I hired a consultant and swore him to secrecy. Actually it was [B. J.]??? Smith and Co., who are photo geologists. Smith used to be one of the partners of Geophoto Co. in Denver and I'd known of him and his work with Geophoto when I was in Salt Lake City. So we hired one of their men to make a trip down to Ottawa, presumably on their own, to examine the photos of the Arctic Islands and to make a preliminary geologic study of the Arctic as could be determined from the photos. He

spend a number of months down there and became acquainted with the Geological Survey men, geologists and they did this geologic study for us and it was very, very revealing and an excellent piece of work. I was most pleased with it and it relatively, was very inexpensive for us. As I recall, something on the order of \$6,000 at the time. So we gained a lot of information with very minimal costs. So we learned a number of things, one that in the Arctic Islands of Canada, there were probably more than 50,000' of sediments. Now to a geologist of course, oil and gas occur in sediments. 50,000' of sediments mean lots of oil and gas, regardless of what the potential reservoir may be. I mean, we know that usually in that many sediments there are going to be lots of reservoirs. So that was exciting in itself. Then the next, and the most exciting thing to me at the time, was the fact that there were mappable, on the surface, 42 salt domes. These ??? domes, many of them had actually come to the surface and the surrounding uptilted rocks suggested lots of potential structure for oil trapping at depth, along the sides of salt domes, much as, well, exactly as it occurs down in the Gulf Coast area of Texas and Louisiana, where salt domes are very prolific producers of both oil and gas. So here are these salt domes up there, some of them of tremendous size. It just had my mouth watering when I saw these on the aerial photographs. Besides that there were long anticlines mappable on the surface. Because the land surface in the Arctic has not been glaciated, except in the high mountain areas. So the general island area, they're very low lying relative to sea level and so the bedrock is exposed in most cases, so it's quite easy to see these anticlinal trends and we saw any number of them. With the thickness of sediments, the 42 salt domes, and the long anticlinal trends, a geologist doesn't need any more than that to be highly excited for the potential for trapping conditions at depth. We learned of course, that there were some reefs that outcropped in the area. The most fabulous reef was the Allen Bay reef, I believe it's Silurian in age. It outcrops where it's shallow in the formation, outcrops just west of the air base of Resolute, on Cornwallis Island. It has been determined that that reef is about 5,500' thick in that area. We also knew through work that Sproule did for us later that the same reef, the Allen Bay, outcrops on Victoria Island, which is south of Melville Island, that the reef there is around 27 or 28 hundred feet thick. So that distance of several hundred miles, here's a tremendous reef thickness, that of course, looking at the outcrop is highly porous. One only needs to think of Leduc reef in terms of the excitement that you could have with the potential that Allen Bay reef suggests. We didn't know in between those 2 outcrops, where the reef might be. But then you can only make your guess and eventually do whatever work might be needed to try to isolate it. The Allen Bay is enclosed within a black shale, which is called Cape Phillips shale. So it has black shale being generally suggestive of being a good source rock, with the reef enclosed in it, much like the Eyerton encloses the Leduc reef. But here's a black shale which is presumably even more carbonatious, that might have more. So the potential for the Allen Bay reef looked very, very great. That was something that I was most excited about in terms of potential production in the Arctic.

#073 SB: ??? easier to convince other people that it was worth investing in?

EB: That's right. And it wasn't too difficult, as I say, to interest Dome in this thing. So after our photo survey we outlined a number of what we considered the most favourable areas, that if and when we could file on lands in the Arctic, we outlined these areas that we considered desirable for Dome. They totalled about 3.5 million acres. So we kept our ear to the ground, I did especially, about what might be happening in terms of filing on lands in the Arctic. Because at that time no lands had been filed on through the federal government, for exploration in the Arctic. But I had learned through various sources, that Dan Bateman, who was a geologist in Toronto, or maybe he's Ottawa, was very inquisitive about the Arctic. And that he would make a lot of visits to the Geological Survey and talk with their geologists who had worked in the Arctic. I suspected that he was getting warm about the potentials of the Arctic just as I was. I think it was 1958 or possibly it was 1959, these dates are a little vague in my memory now, but Dan Bateman was the first man to file on lands as I remember, in the Arctic. The day he filed on those lands I learned of it immediately. So I got our Dome management group together and we discussed this situation. Here we were, all prepared, we'd done our basic initial work to justify a land selection. Some of the management group were very reluctant to get into the Arctic for various reasons. But I finally made the statement that if Dome would ever hope to obtain the stature of a major oil company in this continent that the Arctic Islands of Canada were the only place left to do so, if we got a good land position. Gallagher's immediate response, without hesitation was, let's file. So we had an attorney in Ottawa all primed before this with our land description so he was able to go to the department that handled the land matters and file on the lands that we wanted and we did get about 3.5 million acres either that day or the next day.

SB: Those were fairly large land holdings at that time, was it, that one company could have?

EB: I believe it was, I believe we took the greatest amount of land in the early filing. And I believe we were possibly the 3rd company to file on lands in the Arctic Islands. I don't recall who else were there, I think Texaco may have been.

#111 SB: Who was Don Bateman filing for?

EB: I'm not too certain about this now, I did know at the time but I have a feeling it was Dominion Explorers. Now I stand corrected on that because my memory of this is vague now but I think it was Dominion Explorers. But it was for a company. So we, as I mentioned, we were possibly 3rd in the list of filing. Of course, many other companies, when a land play starts everybody tries to get in on the play and many companies followed by taking many millions of acres of total land in the Arctic Islands. Now the sad thing about all this was, was that there were no federal regulations about operations in the Arctic. Even the question of filing, there was a long period where we filed on the land and paid nothing, just waiting for the government to come up with some idea about what our fees would be for the rental for example. The question of these regulations of course, became a serious matter with us. At Dome we did discuss, well, now we've got this land, what are we going to do with it. That was a fair enough question. There was a lot of reluctance to consider even, by many companies the idea of drilling. Many companies just laughed at the idea, how are you going to get it out of there was the main question and

how are you going to get in there was another one. So Dome, in 1959, we set up a flight into the Arctic in which we invited some representatives of some of the oil companies who had filed on lands, to join with us, on a share basis, for a flight into the Arctic to have a personal look at the situation. In August of that year we made this aerial tour of the Arctic with, I forget how many, I think there were 15 or 18 men. I remember John Downing was one, Jack Gallagher and I went from Dome, somewhere I have a publication that came out in one of the periodicals in Calgary in which all this has been shown and discussed and I have a picture of our whole group in that.

#145 SB: Were any of the other companies as well grounded as you were in the potential of the area or did they just claim the land because you had?

EB: I would guess, and this is all I can judge about the matter is that I would guess that a lot of companies had some basic background for their selection of lands, that guided them. A number of them I'm quite certain, just filed on land wherever they could get it, just to have a representation in the oil play. Which is what you do anywhere normally, that if you didn't know much about it you'd just file on land anywhere and hope that sometime an oil field would occur on the land you selected. But on this flight we did cover almost all the islands, that is fly over almost all the islands and were able to look down at the land and the geology that was visible. Much as it was visible on the aerial photographs. We saw most of the salt domes and of course, the anticlines that were visible. We saw the geology basically, of the Arctic Islands, from the airplane. We landed at Moe??? Bay, which is at Prince Patrick Island in the western Arctic and then we were at Resolute for about a week because there developed a little motor problem that had to be corrected so we had a lot of leisure there. That's when we had a chance to go over and look at the Allen Bay reef which outcrops not far from Resolute. I would say now, that the enthusiasm for the Arctic increased very definitely as a result of this airplane trip that we sponsored and it had its good effects later on. Well, the Calgary oil men, after that period, as I mentioned, a lot of them were very sceptical. I was constantly quizzed about how are you going to get in there, how are you going to get through the ice. The general knowledge of what the Arctic was like was so minimal that these experts sitting in Calgary with their judgements were using just far fetched ideas. They had a point though, how would you get through the ice. Then if you did find some oil, how would you get it out of there. That was a legitimate question. But my answer as a geologist, not only since I've been to Calgary but even earlier was that if a geologist can locate some oil in large enough volume there would be others in the company that would find a way to get it out of there. I think that can be said about a lot of areas in the world. You take the Amazon or just very remote areas in many places of the world, the same kind of scepticism can exist. If you're aggressive you don't care how you get it out, you'll get it out if there's enough of it. If there's not enough of it, you won't get it out. That's about the way you look at it. Our major concern of course, still continued to be the slow development of the regulations in Ottawa. The Canadian Petroleum Association set up an Arctic sub-committee and I was made chairman of it. So our efforts with a group from various oil companies in the committee, our effort was to try to help the government, they asked for help, in setting up the regulations that we could live and that they could live with, to

determine our rights and our privileges on lands that we had acquired in the Arctic and the fees that were to be paid, all the details. So we made a number of trips back to Ottawa and discussed, particularly with Alvin Hamilton, who was the Minister of Mines and Minerals at the time. That was during Diefenbaker's reign as Prime Minister. So poor Alvin, we'd go down to a meeting and he would scratch his head and he would say, he can't get Dief to sit down long enough to consider these regulations. We kept prodding him and hoping that they'd come up with something and he would constantly bemoan the fact that Diefenbaker was not excited about the situation. I always considered that Diefenbaker was the kind of guy who found it very difficult to make up his mind about anything. That's my own personal reaction to him. At any rate, we tried to convince the government, through Alvin Hamilton, that there should be incentives to drill in that remote area. They were not reluctant at all to give us a good incentive. In the meantime, and before these regulations came out, we decided to make a proposal to drill a well in the Arctic at Winter Harbour on Melville Island. There's the copy of my proposal. It's about 6 or 7 pages. The general proposal that we submitted to a number of oil companies that had lands in the Arctic. We had learned through this Arctic sub-committee meeting with the government, that there was an interest in giving any exploration work a double credit for their expenditure. A double credit would mean this, that if you spent a dollar in drilling a well then you got \$2 to apply against land rentals or lease costs or whatever would be determined, on lands that you held within the Arctic. So participation in a well was a good thing, it was a good business deal for any company. If they had a lot of land this was a means of paying off some rentals and still benefiting by an exposure to a drilled well. So I set this whole proposition up, that we would drill a well 10,000'. We estimated, with some help from Peter Bawden especially, that the total project could be done for about \$1 million. Don't forget, this is 1961 so a million now and a million then are two different things. We hoped that the structure that we saw, a very strong structure, that crossed Winter Harbour in more or less an east-west direction, across Melville Island, appeared to be perhaps 75 miles long, 8-10 miles wide, maybe a closure of 1,500'. Despite the fact that we couldn't see the east end of the closure, by comparison to anticlinal structures north of this area which did show closure to the east, we assumed and I think rightly so now, that this was also closed to the east. Of course, of greater importance in the prospect was that if Allen Bay reef was there, under this structure that we would have a very strong potential to find oil and gas.

#250 SB: I guess you couldn't use seismic out there at all could you?

EB: You can use seismic but you must realize, that to send a seismic crew would have been terribly expensive. At this initial stage, the surface geology was so strong, that structure was so great, so beautiful, that you didn't need to do the seismic. Now, it would have been a big help to have had it but the cost of seismic work, even then, for transportation for a crew and all that business, it would have been way beyond. I haven't any idea what, we never even considered it. I would just guess that to do a reasonable job up there you could have easily spent a quarter to a half million dollars, just on the seismic. So what, maybe you wouldn't gain enough out of the seismic in the long run anyway. So we just

took this long shot chance that this structure, with the rather gentle slopes on the side, 8-10 degrees, on the flanks of the structure, with the length that it seemed to have and the closure it had, was a very viable prospect for drilling without any further work. We did have Sproule go up and check the surface geology, for dips for example, and verify the photo-geology, which basically was just the same as the surface work. In other words, the photo-geology was pretty accurate and the surface work done by Sproule confirmed the photo-geology and that was fine. So Dome, the way we did it, and I have this all written up here in this lengthy thing, but what we basically did, we selected a block of 10,700 acres around this Winter Harbour drill site that we'd selected. The reason we selected Winter Harbour was that it was near the sea. There was a harbour of some sort. The name Winter Harbour, I later found out, was a harbour used by early explorers to get away from the push of ice on the main channel. So this was actually a harbour named in 1819 by Perry when they did have their ships in this harbour during the winter. So this became a good place where we could get a ship to, to bring our equipment in. So that was why we selected Winter Harbour location. We set this block up of our land, of 10,700 acres, no I'm sorry, 100,700 acres. We set it up so that any participant in the well had to participate to the extent of at least \$50,000. For which, that participation earned a certain percentage in the block of land after the well was drilled. There was a slight override to Dome for the lands that they acquired. I think it was even a net carried interest, which means that if production was obtained, the participant would get his money back before we came in for our override. It was a fair deal, I think the industry accepted that without argument. And of course, the double credit was one of the big incentives. I was quite surprised, I was given the job of course, of selling this deal to the industry so I spent quite a few days and phone calls and visits to various oil companies to sell this prospect or proposition to the various oil companies. I was frankly, very surprised to learn, and to have such a response, particularly from independent companies. Because they're the ones that would have suffered most. If they didn't spend some money they were going to lose their lands. And a good many of them were small companies that couldn't afford to do much work up there anyway, so they were eager, most of them, to come in on the proposition.

#322 SB: I guess by then, most of the land in Alberta had been taken up had it?

EB: Oh no, no, Alberta was still wide open for work here too. There wasn't any lack of potential here yet. In fact, I still say, even now, there isn't any lack of potential. It's a little tougher I admit, but there's still lots of room in Alberta for more oil and gas. The interesting thing about all the lands that were filed, and as I say, it was millions and millions of acres. I don't have a figure in mind now as to how many millions of acres were taken but I wouldn't be surprised at 40 or 50 million acres that were taken in the Arctic, as a result of that first land play. That can be determined somewhere along, through publications, I'm sure there would be no trouble finding out that figure. But my memory isn't that good now for exactly how much was taken. But the major oil companies were, you might say, notable by their absence. It was mainly the independents who did a lot of the filing. Now there were several who took land, I know that Cal

Standard took a fair block, I think Texaco did, Union Oil of California did, there were a few. One notable exception was Imperial Oil, which did not take any land. In my selling job of this proposition to drill at Winter Harbour, I did get to see Vern Taylor, who was manager of Imperial Oil at that time. After I gave my initial spiel to Vern about this well and what we were looking for and hoping to do, thinking and knowing that generally Imperial Oil wants to be in on any new area. Because it's just their nature to want to have a finger in every pie. Vern, whom I knew quite well, he said, Ed, what are you doing in the Arctic, we've got oil coming out of our ears. I remember, my answer to him was, yes, Standard of New Jersey may have oil coming out of its ears but Dome Petroleum doesn't. He laughed. That was basically the truth. Why would we go into the Arctic if we had as much oil as Standard of New Jersey. So that was, I would judge, one of the reasons why they did not go into the Arctic. And let's face it, if they ever decided they wanted to go in they would easily get their way in, you know that. Incidentally, of the participants in this well, there were about 20 companies that joined, not all of them took the minimum \$50,000 each, but a group of them, 4 or 5 would join and take \$50,000 interest and divide that among themselves, in their own group. But 20 companies in total participated and Dome took a goodly share of the cost. I think our initial obligation, out of the million dollars was 400,000.

End of tape.

Tape 3 Side 1

EB: In my selling of this play, the last company to join was Cal Standard and the only truly major company who joined. The basic reason was that they were perhaps a little embarrassed because just a half mile east of our location they had a large block of land in their own name. So they did join but none of the other major companies then very active in Alberta joined the drilling proposition. Some of the participants that I remember out of the 20 companies that did join, were Dominion Explorers, which I suspect was the company that Bateman was interested in, Bankino Mines and Round Valley Oil Co., Union Oil of California, Canada Southern Petroleum, Clark Oil and Refining, and Cal Standard. Now I'm sure that anybody interested will find, it's a matter of public record, all the companies that did join the proposition, as I say, there were 20 all together. Before the deadline, I mentioned this deadline that Cal Standard came in on, we had set up April 30th, 1961 as a deadline to commence this operation. In other words, when we would make our firm commitment to the drilling contractor to drill a well in the Arctic on Melville Island. So we set up April 30th as the last date. Peter Bawden was the contractor that we'd selected and he'd advised us of his problems of getting equipment down to Montreal for a ship and so on. I'll talk more about Peter a little later. But I gave a talk after our flying trip through the Arctic that Dome had organized, I was asked to give a talk about the Arctic to the Oilwell Drillers Assoc. at one of their meetings in the Palliser Hotel. I labelled my talk, an exploration man looks at the Arctic. I gave all my beliefs about the potential of the Arctic. I remember I gave the potential reserves of a sort and I remember one of my closing statements was that we could become independent in

Canada, of the Middle East oil. What is this, 22 years later, we're still not independent of them. But at any rate, I think this talk I gave was eventually published. One of the oil magazines published it. I think it had some effect on the participation in this drilling because it gave a little enthusiasm for the Arctic that maybe some didn't know about at the time. Now I'd like to dwell a little on what Peter Bawden's contribution was to this whole project, to this venture. We had talked early with Peter, in order to get some idea of costs and whatnot, and to gain some information about the problems of the shipping to Montreal and so on. Well, Peter Bawden went all out to get this project going. He really did. I don't believe the industry has ever given him the full credit that he deserves. At least I do, in the talking I do about it because I know that he had a great deal to do with making this thing work. He'd gone on his own expense, even before we ever had a contract with him, he'd gone to Denmark and talked to the Lorrison??? Line people, who have ice ships, that is they service Greenland, both the east and west coast. Their ships are not ice breakers but they're freighters with more solid construction that permitted them to penetrate fair thicknesses of ice without damage. The normal freighter would have had a great deal of

#045 trouble and these ships were designed for ice use. So Peter went over and talked to the Lorrison people and it was determined that the Thoradan, which was one of their ships, would be available in the fall if we could get this proposition settled by, well, I think that was probably one reason why April 30th was set as the final date too. They needed to know plenty far in advance that their ship would be needed. We were still fussing, this is probable the latter part of 1960, we were still fussing about the lack of regulations from Ottawa, maybe it was early '61, Peter was also down in Ottawa. Now Peter's father was a very well known and respected member of the Progressive Conservative party, I think he may have even been in parliament at one time. But at any rate, he was well known in political circles of the PC party. So it was through that association that Peter was able to gain an audience with Diefenbaker without much trouble. He was visiting just sort of personally. The story as I was told and as I remember it is this, Peter Bawden and Diefenbaker met in Diefenbaker's office. During the course of their conversation Peter mentioned about the fact that Dome was anxious to drill in the Arctic and that they'd probably have to give up their drilling proposal because the government was unable to come up with regulations in time to get this proposition going. As I gather the story, Diefenbaker kind of bristled at that statement and you remember his jowls, he shook them probably, the characteristic motion of his you know, I can imagine him doing this, and he said in effect, who says the government can't get these regulations issued. That was just the offhand statement that Peter made, maybe he did it purposely, but at any rate, it was a statement that stirred Diefenbaker and jarred him as I say, enough to get him off his fanny to get these regulations out. Of course, when we did get them out then the industry knew where it stood in terms of operations up there and then could proceed. You had to have them. So they were soon issued after that meeting of Peter and Diefenbaker. Now, to me, this was so important at that time that I again say, that Peter deserves tremendous credit for having done what he did to get this drilling venture going. Because see, it was the first well to be drilled in the Arctic Islands. At the time we drilled it was the farthest north

well in the world. Anywhere in the world. So that was a big venture and it was an important venture. So Bawden quickly got going, as soon as the regulations were out. And on April 30th, when we gave him the final, firm answer and a contract to drill this well, Bawden immediately got on the bit, assembled all his equipment. He'd had a rig in northern Alberta that had been exposed to winter weather previous. So he assembled everything and got it all down to Montreal. He got the ship to Montreal in the latter part of July or early August. In August they got the equipment, and that meant everything, that meant thousands of drums of diesel fuel and the housing and the barge that they used to unload and the landing craft to manoeuvre back and forth between the ship and the shore. And the food, you name it, everything necessary to drill a well to 10,000' had to be taken up.

#090 SB: In one shipment?

EB: In one shipment. The drilling mud, everything. So the ship was loaded in Montreal and I don't know how long it took, maybe 15 days or so. One of the Canadian government ice breakers did assist in getting through some of the ice along Lancaster Sound, up into Melville Sound, to Melville Island, did assist in breaking some of the ice to get through for this Thoradan. Because some of it was too thick for it to manoeuvre apparently. They got everything set up, unloaded, in 10 days at the drill site and the drilling commenced on September 10th. So within less than a month after the equipment arrived, the drilling commenced. They drilled all winter long and drilled till March 24th, when the well was abandoned at a depth of 12,543'. That's deeper than the 10,000' and I'll tell you part of the reason why. We reached 10,000' I think, early in 1962 and we realized, knew then of course, we had not reached the Allen Bay reef, or the Cape Phillips shale. I told you the Cape Phillips shale is the shale that encompasses the Allen Bay. So we proposed immediately rather than. . . oh, one reason we drilled that depth and didn't find anything of importance was that, we had drilled the Devonian sand where we expected maybe 6,000' of it, we drilled I think somewhere around 8,700' of sand. Right from the surface on down. Just sand and sand and sand the whole darn way. Much thicker than we had estimated there would be. And of course, that added thickness over our estimate, added to the potential depth to the Allen Bay, which we hoped to find. The participants agreed to put in, I think it was another half million dollars for drilling, we didn't know how much. Because it's more costly to drill below 10,000. But I think we put up another half million guaranteed and we proceeded. Actually we drilled 2,543'. We were, when we quit drilling, we were in the Cape Phillips shale a considerable distance, had not found the Allen Bay reef and we knew our objective we originally started with was not there. We had not hit any other potential productive formations. So after running electric logs and so on, to determine all that, we abandoned the well. Except that it wasn't truly abandoned because casing was run to 2,000' and as I mentioned earlier in our conversations before taping this, the United States Geological Survey, through a friend of theirs in Montreal, I wish I remembered that gentleman's name, agreed to foot the bill, the cost of running casing 2,000'. Their purpose in doing so was to put sensors in the well to that depth, every 5', so that they could make heat flow determinations of the earth at that

area. They apparently have these wells all over the world but none that far north at that time. So they were eager to get this and that was why that was done. The well now is still used for that purpose as I understand. So what were the results of drilling the Winter Harbour well? I think basically, naturally, we did show the industry that the Arctic could be conquered. It wasn't as difficult as a lot of people sitting in Calgary thought. We were able to drill during the winter months. That was difficult. We did have temperatures at 60 below zero Fahrenheit, winds of high velocity on occasion, but the very cold temperatures made one wonder whether the equipment would stand up under that intense cold and it was shown that it would and did.

#145 SB: You must have had a lot of people that were experienced in drilling in the Canadian north or in northern Alberta. Would that have helped in dealing with the Arctic conditions?

EB: Oh yes. Bawden of course, was very active in drilling all through the Canadian provinces and the Northwest Territories. That's one reason we selected him, because his organization was large enough, his background was extensive enough, plus he had that desire to do something as a pioneer too. I think that was important too. If you know Peter he's a very aggressive person. Otherwise his drilling company wouldn't have been as successful as it has been. So he was a natural. We showed too, that many of the Arctic Islands are accessible, with some help from ice breakers. I believe the pioneering effort was well worth it from that standpoint and the result is that, to date there have been about 170 wells drilled in the Arctic Islands. Of which about 120 are dry holes, about 27 of them are gas wells and there are some tremendous gas fields that have been found there. I believe the last estimate that I heard and I'm not very close to those who keep track of this sort of thing anymore, but my last knowledge was that it's estimated that there's at least 15 trillion feet of gas found in the several large gas fields that are now known in the Arctic Islands. Melville Island for example, has one of the largest. And there's a minor amount of oil, there's only 9 oil wells out of these 170 that have found oil. But none of them have yet found what I believe to be the most potential possibility, of the Allen Bay reef at the proper place in the basin of deposition, to really be. . . I still honestly believe it's going to find some tremendous oil fields in that formation.

SB: What is the deepest well of those other 170 that have been drilled?

EB: I have the map somewhere that the Pan Arctic group have issued and I believe they indicate the depth of all the wells that have been drilled to date but I don't know offhand which one was the deepest, or if there are any deeper.

#178 SB: Than yours?

EB: But I do know, you see, with the 50,000' of sediments, there's still a lot of depth to penetrate for potential horizons beyond anything that has been drilled to date I'm sure. To more or less end up my personal thoughts about all this in the Arctic of course, I've talked at it at fair length, my enthusiasm for it is obvious, and I'm still very enthusiastic about its future potential. It's all going to be terribly expensive, naturally, with the high costs of pipelining or any other means of removing products from the Arctic, by tanker or

whatever. It's all going to be expensive but there will come a time when it will be in demand. It actually, the production has extended longer than I had thought it would, although I frankly had hoped that there would be more oil found than gas, but right now it's the other way around. Gas is a little harder to haul in tankers than oil. At any rate, there was a great deal of personal satisfaction in my own mind about having been involved with the initiation of the development of the Canadian Arctic for oil and gas. It's been a very thrilling event in my life and for any explorationist to consider that situation in the Arctic.

SB: Dome continued on with work in B.C. and Alberta as well, did they, after Winter Harbour?

EB: Well Dome always continued its activities in Alberta and in Yukon and in Saskatchewan. That's where their bread and butter came from. Dome of course, is part of the Pan Arctic group and a very big part of it, yet they have had no income from the Arctic either. The Beaufort Sea development happened and developed after I had left Dome. I had nothing to do with any recommendations for acquiring lands in the Beaufort Sea. That is of course, closer to the main land and the structures are quite large. Dome I know, has been fairly successful in the Beaufort and should get into production there earlier perhaps, than they will from the Arctic Islands. Dome has continued to be as aggressive as can be and of course, as I said somewhat earlier, some of that aggressiveness has caught up with them and they are having their financial problems now. But they'll recover from it, I am not worried about their future.

#218 SB: So it seems that by initiating a move into Winter Harbour you probably speeded up the process of exploration in the Arctic.

EB: I have no question in my mind that that's a fact. As I say, to show the industry that it could be done was the important thing. It was only a matter of a couple of years later a company moved a rig up there. In fact, I was invited to join, it was the Floradan that hauled the next rig up and I was invited to join that ship and took the trip from Montreal, down the length of the St. Lawrence River and across the Atlantic to Greenland and up to the 70th degree of latitude and then across into Lancaster Sound and Northwest Passage to Resolute. I made that trip and that was a thrill of my life too, to be able to do that. But there's no doubt that Dome's initiation of action in the Arctic was the big factor to get the thing off centre. I believe others might have done it in the course of time but who knows, they might have waited 5 years or longer. I think it took an aggressive outfit like Dome to take the bit in their teeth and move. And that was the way Dome did things too, it wasn't afraid. Of course they did have enough cash reserves to be able to do it, or their credit was good enough to be able to borrow money to do it, so it wasn't hurting too badly.

SB: You mentioned before that you actually became interested in the historical development that took place in that area as a result of Winter Harbour. Did you want to just mention that briefly?

EB: Oh yes, that again is just a personal thing. When I looked on maps early in our acquisition of land and saw the name Winter Harbour I naturally wondered, how in the

world did a harbour get named Winter Harbour. So I started looking in the literature and I found that Perry, with another ship, under the command of Lyddon, in search of the Northwest Passage, had gotten into McClure Straits west of Winter Harbour, at the southern end of Melville Island. Had gotten into McClure Straits and then were hampered by very heavy ice that they couldn't get through into the Arctic Ocean or Beaufort Sea and had to turn back. It was late in the year so they came back to Winter Harbour, which they had examined on their way west. By cutting ice channels through the ice with saws they were able to take their ships into this harbour. It was a harbour about a mile or two in depth, north and south and about half a mile east and west, something on that order. The point is that it would get those ships out of the crush of ice that would exist in the channel where the ice was moving. That's what would have crushed ships, these were wooden ships, would have crushed them had they been in that kind of a situation. So getting into Winter Harbour was a place where they were safe from the ice push. Even though the harbour froze it wouldn't give that severe pushing on the frame of the ship and crush it. So I became interested in learning this and I got the book from the library by Perry. It was published I think, a year or two later. He was sent out by the British admiralty and actually got a prize of, I think it was 10,000 pounds for having gotten as far west as he did. That was an incentive to try to get through as far as he could. So I read this book and of course, it was just a fascinating story to read and it was the first book I read on Arctic exploration. The book is written by these early explorers, I suppose they've been all edited by the admiralty but still they're just fascinating to read. As a net result of that exposure to Perry's story, I became more and more interested in the Arctic and I started to acquire books on my own. Through dealers in Montreal and New York and some dealers in Calgary, but particularly a dealer that I finally became associated with, Francis Edwards in London, I started to acquire books that came out in their catalogues which they publish periodically and I now have a library of about 350 volumes of books that deal with the Canadian Arctic or the far north of Canada. That includes the complete set of Hudson Bay Record Society, it's about 35 volumes now. But the rest of the volumes are those that I acquired dealing with Arctic exploration and they're just fascinating reading. It's one of my real pleasures in life, to read these stories again and I hope to be able to do something further with some of these stories. In fact, I've started to assemble stories of, not relating the exploration itself, but taking out vignettes of the individual stories that would be interesting. Particularly to children, to excite them. I've given talks for example, to a lot of school children in Calgary, where my wife was involved with the public school system for a period and I'd give talks to the children. They were always interested in these stories. Then when I travel anywhere I have a series of slides of the Arctic, showing the flora and the fauna and the general aspect of the Arctic. I give these talks and then give these side stories of detailed interest that are always fascinating to people that hear them, because they tell me so after the talks. So that's been a real pleasure to have that. And of course, that's just an outgrowth of my original interest in the Arctic. Who would have thought early 1940's that 40 some years later I'd be just as enthusiastic about the Arctic, having had it start that long ago.

SB: You also left a monument in a way up there.

EB: Yes. Peter Bawden, you see, the rig stayed at the Winter Harbour site for quite a few years after the well was completed. He naturally thought that with this first well, that the next well would start soon and he'd be able to use that same rig.

End of tape.

Tape 3 Side 2

EB: So Peter was going to take a group up, not he himself but some of his personnel in his company, about 6 or 7 of the men were going up to the rig just to look it over and to make sure that things were shipshape and in good condition and not being damaged and so on. So they flew up in Peter's DC-3. They had space so they invited me to go on that. That was a thrill because we flew up to Yellowknife and then up to Cambridge Bay and then to Winter Harbour. That was an exciting venture because we had very low clouds as we were flying north and I'll tell you, when you're flying in cloud area, not knowing where a hill might be. We were flying quite low. It was exciting. We came on to Melville Island just a little west of Winter Harbour and then located ourselves and then came in. Of course, there was a landing strip at the rig site, nearby. We flew over it a couple of times to make sure it was all right and landed. It was snow covered but not impossible and we landed without any problems. We were there about a week. That's where I had a very fine opportunity to walk all around that whole Winter Harbour area. Over to Perry's Rock, a big boulder that was ice drifted, that's a story in itself about that boulder, how it got there. I've worked up the geologic idea of why it's there. But this boulder is about 15 or 20 feet long and about 10' high and 10' wide and it's sitting on the shoreline about 20' above sea level now. It has become a favourite signpost for Arctic explorers. Perry carved a record of his visit there in 1819, then McClintock, in 1850 carved his record while they were looking for Franklin, who was lost in 1847. Other explorers, Bernier, when he was there in the early 1900's he spent a winter in Winter Harbour and his men carved their names on, some of them. I made a research on all the names that have been carved into that boulder.

#050 SB: And you can still see them?

EB: Oh yes, they're very visible. Some of them are fading but most of them are quite visible. It's a sandstone boulder so it's rather easy to carve. That boulder gave me an idea that when I went up with Peter on that DC-3 trip, I looked around the Winter Harbour drill site, where the rig was still standing, to see if I could find another boulder of any size that we might be able to use for carving a record of the Winter Harbour well. I did find a boulder and I've got picture of it here. The boulder is rather low lying, I think it stood about 2 or 3 feet above the general ground level. It was about 700 yards, just stepping it off, so it's more or less 700 yards from the well site in the direction of Bernier's Cross, which is on the promontory to the north end of Winter Harbour, that Bernier put on a hill about 200' high. It's a large cross, it stands about 10' high with a large arm. It's been there since the early 1900's. So this boulder is sort of in line with the well site and Bernier's Cross. I took a pneumatic drill bit, it was about a foot and a half or two feet long and a rig

ax when I found this boulder and I walked over. So then I carved on to it, first off here I show a picture here of an arrow that points to the well site, then I carved into the sandstone a notation, 700 yds, to the Dome Winter Harbour #1. Edward Baltrusaitas, Exploration Manager, Oct. 10th, 1964. It was 20 below zero when I did this. I took most of the day, I had a sandwich with me and a little pint bottle of brandy and that kept me going. On the other side of the boulder I put in, Drilled Sept. 1961 to March 1962, 12,543', contractor Bawden Drilling Co. So if Perry's Rock, with its inscriptions has had its inscription there for 170 years or so, I would imagine that inscription will last for 1,000 years and maybe this boulder will too, with this inscription. I wanted to send this to some geographical magazine or so, just as a matter of record. I'm sure that the well site will have another marker put at it some day because it would be natural to do it and I don't know whether it's been done or not. But at least this is my record of it.

SB: It's much more authentic in a way, considering the location.

EB: Yes. And the guy who had a lot to do with it, by the guy who had a lot to do with it.

#086 SB: Sort of looking back over your career in the oil industry, what do you feel are some of the more obvious changes? I guess it's hard to summarize that. Do you feel it's a different kind of place now than it was when you started?

EB: Sure, it's different. Of course, I'm not at all active anymore, or even very closely associated with anybody anymore, that's in the oil business as such. I am through my few investments I made I mentioned. But sure, it no doubt has changed. After all, you take, let's say, a virgin area that has found some oil as large as Alberta. I mean, here's a province as big as Texas practically. So in the early days there was lots of room for speculation and for stepping out and for doing all the work necessary to locate it. And when they found more fields the enthusiasm became greater, the investment became higher. So with all the reefs and the tremendous amount of oil that's already been discovered, that means there's that much less to discover. So it's going to be harder to find the oil that still remains. I have no doubt there is considerable amount yet to be found. It's all going to cost more, or at least cost a great deal to locate but there will be oil fields found here for the next 50 years I'm sure. Because it's difficult enough to locate these fields. The shallower sands, you might say are deposited as sand bars. Well, they may be narrow, they may be less than a mile wide. To make a drill location, to hit that particular mile width is fairly difficult. There's a lot of room still between dry holes you know. On any map you look at it that has all the wells drilled there's lots of room between dry holes for things to happen. And for deeper potential, there's still unknowns at depth that somebody will find some someday and that will cause some more play in the exploration end. There will be exploration for a long time, I'm convinced.

End of tape.