

PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Dr. E. A. Pallister

INTERVIEWER: David Finch

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DF: Today is June 26th, in the year 2001 and we are with Dr. E. A. Pallister at his residence at 21 Christie Gardens Estates S.W. in Calgary. My name is David Finch. Can you start by telling us when and where you were born?

EP: Yes, I was born in Edmonton in 1927 and went to school in Edmonton and to the University of Alberta in Edmonton, until I was about 19 years of age.

DF: What kind of education did you take at the university?

EP: I took what was then called the Faculty of Arts and Science, I took a major in the sciences but I also took quite a few art courses as well.

DF: Such as?

EP: I took philosophy and french and. . I guess a lot of them are lost to my memory now because I really was thinking more about the scientific courses.

DF: Sure. Now how did you get interested in petroleum?

EP: When I graduated I had graduated with a major in physics. I'd also taken one geologic course, Geology 1, or 101 I forget but my courses were all in physics, the majors and about that time, that was 1948 that I graduated and of course, Leduc had been discovered just a year earlier. And American companies were very active in expanding in Alberta, particularly geophysical companies were looking for people. I recall at the time many of us sat around the tuck shop comparing offers, this was just a month or so before graduation. We all heard each others offers and we all got jobs with either oil companies or geophysical exploration companies. I chose United Geophysical Company for the simple reason that they wanted somebody to go to the Persian Gulf, to Bahrain Island with a period of training in California beforehand. And also they paid me an amount of money which I told my professor and he said that's more money than I make and he'd been teaching for many years. So that's where I started. Bahrain was very famous a few years ago during the conflict.

DF: Tell us about your adventures there.

EP: I had a little training in California first, in offshore seismic use. Now I had never seen a seismic crew before I went to California. I was on a boat doing surveys just off Santa Barbara and Goleta and Camarillo, which are all now oil fields in southern California. And I had been in the Navy during university days I had been in the University Naval Training Division so I knew quite a bit about boats and ships so I fit in quite well on that and got that training. Well then when they sent me to the Persian Gulf it was offshore as well. As a matter of fact, the ship we used in the Persian Gulf was identical to the last ship I was on in the Navy. It had been converted over to do geophysical work. So we did this seismic work in the shallow waters of the Persian Gulf.

#035 DF: What kind of seismic were you doing, what was the impulse and so on?

EP: It was strictly a matter of towing a cable, very, very basic, and detonating an explosive and then pulling the cable up with the ships and going off, just like you do on land seismic in those days. It was interesting that at that time we had some geologists from our client, California Standard Oil Company and I asked him, why do we do these surveys just here and not over there, he said, oh, that water is over 200' deep over there, there's no point in doing anything over there you'd never be able to produce the oil. But that was in 1948. So I got a good training there. My job was called a computer, and of course, this would be long before the computers as we know today. My job was to do the calculations and ready the material for the seismologist to do an interpretation.

DF: Did you find anything?

EP: I never got that close to what was going on. In other words, my role was not connected at all to the decision making. Keep in mind I was 18, 19, 20 years of age at this time.

DF: What brought you back to Canada?

EP: The contract was through and the company brought me back to Canada. I wanted another foreign assignment and I waited around for awhile and there was none coming and I saw an ad in the paper asking for a Chief Computer, which is an enormous step up when you're just a computer. I applied for this job, it was with Century Geophysical Company and they gave me the job and sent me off in the bush up to Peace River country, in a little town called Reno. It was there that I started doing land seismic and I had never been on a seismic crew that was working on land. I thought they were all offshore. Not really but I had no experience on the terrestrial side. Our equipment was really wild, it was some tractors, Fordsen tractors, cletracs they called them and we would pull portable seismic drilling rigs along. This is all in the muskeg in the summer and we wouldn't get very much done. The weather was terrible, the mud was bad. And we had lots of problems. The other important thing was that Century, I guess they were kind of short handed at the time, they said, there's going to be a Party Chief come up to supervise the crew and in the meantime you look after it. As a Chief Computer, talk about leapfrogging, and the Party Chief never came and I took on the role of being the Party Chief, which at that time was an enormous responsibility especially when I had no experience in doing what was required to be done. But it worked out well and we got a lot of work done. Again, I had no idea what happened to the data, it just went into head office, we were working for the Shell Oil company there. So that was about 1950.

#068 DF: Now you told me before we went on tape that you don't come from a geology background, how did you come to be associated with the geologists?

EP: From this experience of being a geophysicist or a Party Chief on a seismic crew, I changed jobs a couple more times with geophysical companies and eventually found a job with an oil company. It's a little more comfortable life when you're working for the company rather than a contractor and I got a job with the Canadian Seaboard Oil Company and there I started to learn what happened to this geophysical data after it left the field crew. And I found this very, very interesting and intriguing because I had always wondered about this and as I mentioned earlier I had almost no geological knowledge.

Although I think I had studied a lot and read a lot. I was then in contact with people in Canadian Seaboard, which is a very small company, right at the front line. I was dealing with the exploration manager and the chief geologist and the other geologists. What I noticed was that the geophysical maps we were making had very little meaning to a geologist. The reason for that is that we as . . . I was called a seismologist by now. . . what we did was give reflecting times. In other words the time that a sound wave goes down to a particular bed and back. And we'd map those throughout a prospect area and then hand it to. . . well, we'd contour it in isochrones and pass it on to the geologists and I think they were either sceptical that it meant anything at all, to the point where it was counter to their knowledge of geology. I suppose in the best case they'd say, we have to do something, what else can we drill on in Alberta where all you can see is the glacial till. We don't know what's underneath it and if the geophysical map shows a bump that's the place to drill. It was a little more sophisticated than that but not much. So from that experience I started working with the geologist in trying to say, what does it mean geologically. And that's where I learned an awful lot of geology. In fact, I've made a real point of being with geologists. Because I knew my geophysics to the extent that I needed it but I didn't know any geology so my friends were geologists, my golfing partners were geologists, everything I did it seemed to be tied to a geologist.

#098 DF: Who were some of these early geologists?

EP: I think of Roy Baker, who I just saw at the reunion a couple of nights ago, Bill Jub. At that stage those were a couple of the geologists in Canadian Seaboard. I perhaps need to answer your question by saying that Canadian Seaboard was purchased by the Texas Company or Texaco and at that stage I had been promoted to Assistant Chief Geophysicist in Canadian Seaboard and transferred to Dallas of the head office to be the Assistant Chief Geophysicist for the whole company. So I was pretty excited about this. When I went to work for Texaco they sent me to Regina as a seismologist. So the ladder I was on had no more rungs. So I left that and went back in the geophysical business working with Accurate Exploration, with Bud Coote and Marty Dewis, you mentioned. And this was really the opportunity to practice seismo-geology, a name I used to give it. Meaning that a lot of the independent companies operating in Canada did not have a geophysical staff, they had some geologists but no geophysicists, as opposed to the majors. And they were receiving geophysical maps from the geophysical contractors in the type I mentioned earlier, it was a seismic map with a lot of numbers on it that indicated reflection times. There was no consideration given to the variables of velocity, which makes the numbers not meaningless but almost, or not diagnostic. So in my contact with geologists, like Art Patterson at Western Decalta and Lee Meador, he was with, now I forget the name of the company, some of the company names escape me these days, as do some of the people. Probably as the conversation goes on I'll remember some of them. But the result was I became very involved with geologists and I wrote a paper that was, I think it was a classic. Excuse me a minute and I'll find that paper here. Well, I was invited to give a course at the University of Alberta department of continuing education. I entitled my paper, or the course, Application of Seismic Techniques to Reef Traps. In that

I researched the existing knowledge of the structural geology in Alberta and I obtained a lot of seismic data that crossed a lot of the important geological features and undertook to shoot seismic lines across those known geological features. In this paper I gave which was very, very well received I described what happens geophysically over some of these known geological features, with the exact seismic information to back it up and then explained what some of the velocity effects, that is the rock velocity, the different intervals, had on the interpretation. I guess I must have put an awful lot of effort in when I look at the publication now, a lot of effort into that because it was very much in demand and it went to 3 printings. The first printing in 1965 and the one I have here is in the third printing and there may have been more. So that was what made the real turn around to becoming a pseudo-geologist. Now my knowledge of geology was strictly superficial but I was trying to bring the two together. In that context I was in contact with a great number of geologists, it was really boom years here and the independent oil companies who were dependent on geophysical contractor maps were intrigues to think that you could have a value added product. I guess to make a long story short I started going to the geological meetings and applied for membership and there was no particular criteria I guess, and the first thing I know I had been nominated for the executive. I think I was on the executive a year and then I was elected President. So that's my story on being a geologist.

#160 DF: So was that a surprise for you, to become President of a geological association?

EP: It was certainly. . yes, it was a surprise and an honour. But it wasn't a surprise really in the fact that the community was small, we all worked together and nobody really would come up and say, let me see your credentials. The fact was that I was in the group and I spent more time with geologists than I did geophysicists. Of course, they're always looking for somebody to work too.

DF: Yes. So what were some of the highlights of the years you were on the executive, because as you said, you were probably on for a year or two before and then you became past-President.

EP: I don't remember too much about it. I do remember one little trivia, I was in Russia the year before I was President and I knew that I was going to Chair the International Symposium on the Devonian system when I got back and I knew there would be delegates from all around the world there. So I talked to a Russian guide over there, who actually I'm sure was KGB, but I talked to him and said, can you tell me how to say, welcome to the symposium etc, in Russian. Well, he worked on me for a couple of weeks and I got back, the best I could say, was jujuju. I couldn't do it. So I dropped that idea, it's not easy. So that's one of the things that went on that year. We were very busy in integration with other societies, getting relationships going with the Society of Economic Palaeontologists and Mineralogists and so on. And with the geophysical association, the Geological Survey and so on. A very interesting thing happened that year, I'm glad you asked that because I hadn't even thought of it in these terms, the Institute of Sedimentary and Petroleum Geology was opened at the university area, the ISPG. It was then headed by Dr. Digby McLaren. During the opening ceremony, it was opened by the Minister of Mines who then was Pepin, I can't remember his first name. But anyhow Pepin was there

to open the ISPG building, which was really a remarkable nice building in those days and I imagine still is. I was invited as President of the CSPG to participate in the opening ceremonies - Jean-Luc, Jean-Luc Pepin. So I got to know the Minister of Energy and also I got to know Digby better. Now I can't remember if Digby was the head of the ISPG at that time or was the head of the Geological Survey of Canada but most certainly he became, if not then, the head of the GSC. A couple of years later, it wouldn't have been much later. . let me think what year this is, this is 1967, yes so it would be about 3 years later, a funny little story, I was out at Kelowna in my sailboat and a motor boat came racing out from the motel I was staying at saying the Prime Minister is on the phone and wants to talk to you. And I said, yeah, yeah, but they did convince me, in fact towed me in because I think we were in irons out there and I got on the phone or I phoned the Prime Minister's office and it wasn't the Prime Minister but it was his office and they asked me if I would serve on the Science Council of Canada. I hate to admit this but at the time I said, sure, fine. What I don't like to admit is I'd never heard of the Science Council of Canada. In fact I barely recognized Ottawa, being a strong westerner. Anyhow I accepted the invitation. Oh, I'm getting back to Digby McLaren, by this time he was the head of the Geological Survey of Canada and I'm sure it was through him or Jean-Luc Pepin that put the finger on me to serve on this very illustrious council. And as I mentioned to you earlier my scientific credentials aren't an awful lot better than my geological credentials. But I guess they were looking for a person that they knew in Alberta and the President of the Society, it was very prestigious. So that's how I got picked I'm sure. Well, the first report we worked on there when I worked on this committee was on the geological prospects in Canada and what we should be doing in terms of supporting geology research in Canada. That was the mandate of the council. It looked at all sectors of course. From then on, I served on the Science Council for one term and then I was appointed Vice-Chairman of the Science Council for another three years, so I served on the council six years. By this time I was obviously a bona fide scientist and a bona fide geologist, at least in people's mind. But I was very careful to make sure that everybody realized that I just happened to be in the right place at the right time.

#233 DF: If you'd like to review this small annual report you wrote the year you were President, something else might pop up.

EP: Okay, so it was the year 1967. Oh, one of the things that we were very much interested in doing was pursuing the idea of changing it from then, the Alberta Society of Petroleum Geologists and we pointed out that we're fulfilling a national and international role as representing petroleum geologists in Canada and to have the name Alberta was not inclusive enough. Because I know we had branches in Saskatchewan and British Columbia at the time. And there were many geological operations in eastern Canada, although there were no geological societies that I'm aware of, there may have been in Ontario. So we were pushing for the change of name to the Canadian Society of Petroleum Geologists. It didn't happen during my tenure but I think it did in the next year or two, I don't remember the year it was changed. Incidentally as a Society, my Vice-President was Ernie Pelzer and you can imagine the fun we had with phone calls

with people, particularly those who slur saying I'd like to talk to Ernie P[slur], was it Pallister or was it Pelzer. So I got his calls and he got mine. We had a good executive there with Jack Stobart, with whom I worked in later years and George Collins, Ron Budd, and Charlie Newmarch and Neil Burk. Now I still see many of those people, how many years ago was that, 34 years ago. In fact I saw Charlie Newmarch just a couple of evenings ago. But beyond that we had a large number of meetings and we organized field trips and. . . And this is what every executive has done really, we organized field trips and published field trip guide books and we had election meetings and so on. So I don't think of anything spectacular that's different than all the societies at that time. Now our membership was growing, growing, growing and the publication was very basic, the Bulletin was very basic at that time but it started to really become a really professional journal. And I see the ones that are put out now, I'm amazed at the transition. But there's a lot more geologists here now.

DF: In the early 1960's there was quite a slow down in the oil industry, in comparison to this boom that you were talking about in the late 60's, do you remember that time period? Like, Leduc was a big boom into the 50's but by the early 1960's things were tight, do you remember that period?

EP: I remember them being tight before that, the mid 50's as I recall. I had changed from Texaco to Accurate Exploration in 1958 and I guess it was a bit slow, although we were pretty dynamic there, doing surveys using track equipment up in the Swan Hills area, that general area. But I guess it was about then that we started to think about the north, about doing some participation surveys in the north. I think that all took place about 1960ish.

#282 DF: So what got you interested in the north then?

EP: Well, it seemed pretty obvious to me that you look at a map of western Canada and you see a line at 60 degrees slicing across it with oil wells here, there and everywhere and gas wells, in Alberta and little old Norman Wells sitting there all by itself. And it was from a reef and our expertise in the south was finding oil in reefs. It seemed to be a political line on a map as opposed to a geological map. In our company, Accurate Exploration, we. . . I guess maybe business was slow because we were promoting our own work there. We thought we could run a line from Great Slave Lake to the Beaufort Sea in the Mackenzie River, run a seismic line and give a reconnaissance line of seismic. There had been none. I should correct myself, during the war years, the Second World War, the Americans, the U.S. Army, had done a seismic survey over Norman Wells. Very, very crude instrumentation and work naturally. I was able to find that data, now I don't remember how I found it but I guess I dug around in the archives of Washington, or the Army or somewhere and got the information. And lo and behold, on this very crude information you could see exactly where the reef edge was. It was amazing. So I became convinced that. . . oh, there work had been on land, not on the river. So I became convinced, particularly with my background in the Persian Gulf and California that there was no reason we couldn't shoot a seismic line down the Mackenzie River, I should say up, up the Mackenzie River. Yes, down the Mackenzie River, we started at Hay River and went down river. I'm so used to the press reports always talking about gas coming down the

Mackenzie River, it's actually coming up. But anyhow, we put some experimental surveys out in the Saskatchewan River and the Bow River to see if we could actually obtain data in a river. Because we had no knowledge that had ever been done. In the offshore it's a little different, you've got more stable conditions but you get into a current you've got several problems.

#318 DF: Such as?

EP: Well, such as holding the cable still and it not being towed away. Or not having your cable move with the current so you have to have enough power on the boat to keep it in place. And also the turbulence makes a lot of noise and that's the last thing you want on a seismic receiver is noise.

DF: So what was your technique for handling both those problems then?

EP: We did it experimentally to start with. We went out into the Bow River and put out a land cable and we bought some inner tubes for tractors and taped them onto the cable so it would float and naively tied the end of the cable to a tree, because we didn't have any boats and then took some dynamite roughly to the middle of the cable, to explode it you see and take some shots. Well, the first trial as we laid out the cable, the current caught it and we had no idea current could be so strong, this was the Bow River, and it just pulled the rest of the cable out, at its speed, not our speed and pulled down the tree to which it was attached and the last time we saw it, it was headed for Medicine Hat.

DF: Where was this on the Bow River?

EP: East Calgary. It was terrible, talk about being naive. Almost as bad, jumping to a different story, almost as bad as when we did some seismic work at Boundary Bay, off Vancouver, White Rock. This time we had some boats and we tried some experiments there, trying to get into some stable water. The day was done so we parked our boats and went to rest for the night and came back to work the next day. Of course, we got out there the next day our boats were high and dry, didn't realize there was a tide. So we learned the hard way. But then the next experiment we did was in the Saskatchewan River, where we had more knowledge of the geology because we had by this time, figured out how to do it, using a boat where you actually float with the current, so you get rid of the turbulence.

DF: And do you turn off your motor then too, to get rid of the noise?

EP: With just idle, yes, keep it very quiet and we used small motor boats and we'd lease boats here and there. So in the Saskatchewan River we knew more about the geology because there had been a lot of wells drilled around Edmonton. And we were able to make a correlation from the seismic to the geology. Which convinced us that it could be done. Then our next experiment was at Norman Wells.

DF: Okay, so where on the North Saskatchewan was it, right in Edmonton?

EP: Yes, right in Edmonton. I have some pictures of our explosions going off by the 5th Street Bridge, with the Parliament buildings in the background. I don't think we asked permission because I'm sure they would have said no.

#365 DF: Okay, and then your next experiments were where?

EP: At Norman Wells itself.

DF: This is interesting because I know that when geophysicists first came to Alberta in the 30's, Carter Oil and so on they went to Turner Valley where the geology was known from the drill and they would do seismic to figure out whether or not the seismic was doing it's job right. And that sounds like what you were doing wasn't it?

EP: Yes, it was.

DF: So backwards testing.

EP: Yes.

DF: And at Norman Wells were you successful?

EP: Yes, very, very successful. I think there's an example of it here. It showed up, the reef edge, the keescarp reef edge, showed up more clearly than any of the classic reef experiments we had done in Alberta up to that time. So we were very encouraged. And of course, we were doing these on our own hook, Accurate Exploration. We were a team of about 7 shareholders. Bud Coote was the President and we were getting it financed by the work we were doing on contract.

DF: This was spec survey wasn't it?

EP: It was a spec survey.

DF: Was this new at the time?

EP: Yes.

DF: And so you were doing this because there wasn't any work for you as contractors, so you were thinking that, explain it to me, don't let me tell you?

EP: Well, we were creating our own market you might say.

DF: Making your own jobs.

EP: Yes. But it was so obvious at the time that here was an oil field, been there since the 1920's in a reef. Alberta is full of reefs producing oil, wouldn't it make sense that there's more. And there's 1,000 miles from that Alberta border to the Beaufort Sea.

DF: But Marty Dewis told me that your first geophysics up at Fort Simpson wasn't very successful, on land there because you were just getting reflections, the sand was just kicking everything back to you. Is that not true?

EP: That is true in the sense that the Northwest Territories is a very large place. And we got good data and we got poor data. It just turned out that Norman Wells was a classic. It was a classic in every respect given that it was found so early and also that it had an outcrop that led to it. But yes, as we did our survey, starting right at Great Slave Lake, at Hay River, we put our boats in at Hay River and away we went, and we floated with the river, it got rid of the turbulence problem. To do that work we needed a very shallow draft boat. So I went out to Vancouver, that's an interesting story too. I went to a marine broker and I said, I'd like to buy an LST, and he looked a bit shocked, why would a guy from Calgary come to buy an LST. He said, we don't have any in Canada but there's some down in Seattle, I can take you down there. Let me show you pictures of some and he opened up his brochure and he showed me an LST. Well, an LST is a landing ship transport. It's about 300' long and carries hundreds of marines. So obviously my terminology was wrong. What I was looking for was an LCVP, which is a landing craft vehicle and personnel. And that's the kind I had in my mind that landed on the coast of France, that size. He said, oh we've got lots of LCVP's. So we bought two LCVP's.

#425 DF: How big were the more or less, 50'?

EP: At most, yes, probably less, yes, maybe 50'.

DF: Yes, but basically a flat bottom, like a scow bottom and a couple of walls on it and a motor.

EP: That's right. And they used to have a flat that went down in the front so the troops could get out. They were very well publicized in the movies of the war.

DF: So you bought a couple of these, how did you get them up north?

EP: That wasn't easy. There was a railway to . . . I guess we could get them to Grimshaw in Alberta by rail. So we sent them by rail, we had some problems getting them under bridges, they were a little too high so we had to cut them down a bit to get under bridges and tunnels and things. So we kind of took them apart and then we got them back to Grimshaw. Grimshaw is the beginning of what was then the Mackenzie Highway. It was the end of everywhere was Grimshaw, a little town of Mannings just north of it. Anyhow we got them to Grimshaw and glued them back together so to speak, and trucked them then, down to Hay River. And at Hay River we fitted them up and brought all our seismic equipment up by road and installed all the seismic equipment in the boats. And one was a housing and one was an instrument boat. So we got the two of them in the water and then we hired local people, Indians, who knew the river backwards, knew every shoal in the river to run them. They were a little amazed that we were asking them to run these strange boats but they did it, did it very, very well. And away we went, we just took off and floated down the river. Then to detonate the charge we had just a little runabout, outboard motor and it would be loaded with dynamite. Oh, I should explain the dynamite. We didn't use dynamite it was rather expensive. I haven't got into the finances of all this yet but anyhow, what we used was ammonium nitrate, which is very famous recently in Oklahoma, you recall.

DF: Fertilizer.

EP: Yes, so we bought fertilizer and when we were ready to prime a charge we would just pour some kerosene in it, or diesel fuel, tie it up, it came in plastic sacks and then we'd put a detonator cap in it, throw it over the side and steer away and then push the button and we'd get an explosion. A little earlier I showed you a picture of what it looks like.

#475 DF: Yes, what did that do to fish?

EP: Well, we had a fishery observer, no I guess we didn't at that point. We didn't give very much consideration to the fish, I'm sorry to say.

DF: Did you see many floating upside down?

EP: No, I don't think we did.

DF: Did it give you a good signal?

EP: Oh yes. But record quality was from good to rather poor throughout the whole survey. Then we got to Aklavik and the quality of data started getting better. This was largely because you've got a better sedimentary column there as you're going into the Beaufort Sea. However our boats weren't capable of going much farther than Tuktoyaktuk, so at Aklavik we saw a boat there that didn't seem to be being used. So we went to the local

priest, the Catholic priest there that owned the boat. The boat had been used to bring the native children into Aklavik for school and they were now flying them and no longer needed that boat. Yet the boat was capable of going over to Banks Island and places. It was a very, very small boat but we found enough room to put our gear on it so we moved the gear off the landing craft onto this little missionary boat and then headed out to the Beaufort Sea. Because we were pretty excited because the seismic was starting to really get better and show structure. Everything else we saw was pretty flat, rather uninteresting. But we were working largely, in a very thin geological section. Well then we went offshore and then it happened. The reflections became very strong and they were very tilted, lots of dip as we call it. And then after awhile it started turning up the other side. And about then we got a visit from the RCMP saying that we had no business being out there in that boat because there was bad weather coming and we better get ourselves ashore and we either do it voluntarily or they'll tow us. So we took their good advice and went ashore and that was the end of our first survey. We called it Operation Beeline. In other words making a beeline to the Arctic. But that kicked off a whole new era. Now at that time there had been several wells drilled on the coastal plain but nothing of course, had been drilled or seismic offshore.

End of tape.

Side 2

DF: Okay, so you were telling us about this first seismic up the Mackenzie, down the Mackenzie. Can you tell us a bit before you go on to whatever you have in your hand there, was that a successful operation?

EP: It was somewhat disappointing in that much of the 1,000 miles of work was really not what we call good record quality. I suppose there's a number of reasons for that and we stopped several times to just see if there was something wrong, we were doing something wrong. But we tested everything and it seemed we were doing everything we could. And then we were very encouraged when we crossed Norman Wells, there again, it just showed up so well. So we knew we were recording correctly. And then it was spotty. Some places you'd get good data, other places it would be very poor. Of course, that was rather typical of seismic at that time. Keeping in mind you had one receiver per trace and you had 100% instead of the CD systems now use multiplicity and computers to add up the signal and subtract the noise. We had none of those advantages. We were recording it on a piece of paper, just like an EKG and that's all we had to show for it. It did get better as I say, at the Delta. Because geologically we know that it's just going into a whole deep basin there. Just looking at a map, at that period of time, this is now 1971. . no, I'm sorry this paper I'm looking at is 1971, the survey we did was in about 1956 I think. I don't have the exact date on that but that's about when it would be. And this was being done by Accurate Exploration. I'm making a correlation here on time, years later we were doing more work in there and I can refer to that a little later if you wish. But back to the 1950's, that started off a series or projects we called quests. We had a Geo Quest, which was in

the southern Northwest Territories. We had an Arctic Quest, which was in the Beaufort Sea, a Polar Quest up in the Arctic Islands, a Baffin Quest in obviously and a Bay Quest in the Hudson Bay. Each of these is a separate year, going from . . . during the 1960's. I wish I could be more specific but my memory of dates is not that good. Now each of those quests, as was the Beeline, the first one, we would interest oil companies in. . . I'm sorry I'm going to back up a bit. When we did Beeline there was virtually no oil company involvement in the Northwest Territories, outside of the Delta, where some wells had been drilled in 1960, in the early 60's there was about 4 wells were drilled up near the Delta. So our survey was preceding just about all the oil and gas activity in the Northwest Territories, other than Norman Wells. In order to finance that Beeline we talked to a large number of oil companies and their geologist certainly agreed that there was potential in the north and there was no information and a nice reconnaissance line would satisfy everybody's curiosity. So that's how we got the money to pay for it, companies subscribed to it you might say. And they paid a portion of the total cost and got all the data. Which started us off on another career, as I refer to the quests, and in the quests we went one step farther. Rather than just a single line we would do quite a number of lines but on land, and we would integrate the seismic and gravity meters, magnetometer and surface drilling, core hole drilling. So when we went into a so called quest, we would do all those geophysical techniques and actually shallow drilling techniques. Here again, we would do a quest on the basis that we would solicit funds from a group and everybody would get all the same data and it was reconnaissance and a lot of this land had never been filed on. So people could have a quick look at the prospect and if they liked what they saw they could post it with the government and acquire the acreage and then of course, do their own more detailed work later. So we did a series of six quests over a period of 6, 7 or 8 years.

#057 DF: So this was quite early in the north wasn't it?

EP: Yes. I'm trying to remember the first quest, it was in about 1970, probably more like '69 or '68. So in those quests of course, we got much better funding and we got the correct kind of equipment to do it. We co-ventured the quests with George Collins who was a geological consultant and he helped us immensely by, he knew the geology and oriented us where our lines should be and of course, when we presented them to the oil companies George would present with and they had a great deal of respect for what he had to say. So those were very, very successful and they came to an end in I think about 1972 or so, when we were doing some work quite confident of ourselves. Actually one of the surveys we went to the farthest north any commercial vessel had ever been and that was to Eureka, which is on the west side of Ellesmere Island, that's a long way up there. So we were getting pretty cocky and I think it was in the next year we went into some of the more traditional areas and got trapped in the ice and called for assistance from the ice breakers, Canada Ice Breakers. I think they were kind of late coming to get us, anyhow we lost a lot of money that year. By this time the techniques of shooting offshore in ice, we had to cross another little barrier there, was well established because we'd been doing it. But again, on the cheap, we were improvising in every way we could. Well, about that

time the large geophysical companies started looking at what we were doing and saying, and I'm sure their management said, how come those poor boys are doing it, why can't we do it. And we got really moved out of the Arctic through sophistication, we just didn't have the resources to hang in there.

DF: How did you shoot through the ice?

EP: We used sealers, ships that we brought from Newfoundland and they would plow a line in front of us and then our ships, which were also ice strengthened, would come in the plowed line. So it was just like running a bulldozer in the bush. So as long as the ice was removed there was no problem, there were some reverberations off the ice but we were able to solve that. By this time I think we were doing multiple coverage, rather than just the single point.

DF: Were you ever shooting through the ice itself?

EP: No.

DF: Anything else from this time period?

EP: Well, I guess I was pretty enthusiastic in those days and I was interviewed by the World Oil and another major publication and I see, the title of my interview was, Northwest Canada Oil Potential May Be 30 Billion Barrels. Now of course, I was talking all of the Arctic at that stage and I'm sure that I meant 30 billion barrels as meaning including equivalent of gas. But I was kind of curious, I was digging through my papers here and I find there's two articles, one says 30 billion and the other says 50 billion. So I guess, there's the other one, this is with Oil and Gas Journal and I don't know which one was first, one says 30 billion and the other says 50 billion. So I was either getting more enthusiastic or less, I'm not sure.

DF: And how has the proven out, what do you think is there now?

EP: I haven't put a number on it but as you know, we were too early by 30 or 40 years. Of course, later on, after the quests we got into the business with Dome Petroleum and others in the offshore. And of course, there again, that became a very large venture, as you're aware. It died in the early 80's because of the moratorium on land and also oil prices and of course, now, both those have changed. The aboriginal people want activity and the oil price is up there again. So it's all starting over again. But in answer to your question about the potential, I haven't seen any numbers lately but I'm sure the Geological Survey of Canada is publishing them and I'm sure they're large, particularly gas.

#109 DF: I'll say. Do you attend these past President dinners that the CSPG holds?

EP: Yes, I have.

DF: And what happens at those?

EP: There's a great camaraderie before the dinner. You get to see your old friends but you also get to see who's running the show now and they're all introduced and it's almost as if the old timers are giving their nod of approval. Then there's committee reports from the new executive, the current executive and there's a lot of questions on what are you doing about education of young people, it usually centres in that very quickly. Then we have our picture taken and that's about it.

DF: What are some of the topics that come up, any controversial things?

EP: I can't think of any. I spend my winters away from Canada now, so I haven't attended one for several years because they're always in the winter time.

DF: Yes, that's right. Just some general overview questions, what have you enjoyed most about your career? You've done so many different things here, the table here is covered with many articles and there's many more in the basement, what's excited you about this career.

EP: That's a really tough one David because it's been exciting right through. Funny I was going through all my presentations here today, just trying to get a picture of what happened the last 40 years, I guess it's 50 years isn't it.

DF: 50 years, more.

EP: Time flips. It just went from one exciting thing to another. I would just relate it this way, I went to the Persian Gulf, I got a unique experience, marine seismic, unique in this part of the world. I end up doing these quests, starting with the Beeline and then doing these big regional quests and a lot of private work that went along with it. This isn't necessarily in order of chronology but I was President of the CSPG, or ASPG, I met the Minister of Energy, who I think must have been responsible for my being appointed to the Science Council. On the Science Council I got to know many, many very, very important and intelligent and vigorous people, the creme de la creme of the scientific community in Canada. 30 members on the council and it changes each year and I was there 6 years, I met a lot of people. One of the people who I met on a aeroplane coming back from a Science Council meeting was Donald Harvie of the Devonian Foundation.

#143 DF: He just passed away, did you hear?

EP: No.

DF: He just died, just last week.

EP: Oh my god.

DF: I'm sorry.

EP: A very close friend.

DF: You met him on a plane.

EP: Yes. We were sitting together and I didn't know him. He said, what takes you to Ottawa and I told him about the Science Council and he said, what does Canada need. And of course, that's the Science Council's mandate, is what we should be doing for the future to boost our science. I went into several of the projects we were working on and he said, I'm just taking over from my father the Devonian Foundation, Glenbow etc., could we get together and talk about science in Canada. I got together with him, to make a long story short I met with him and his family and I was at a meeting at which the family decided to dispose of the wealth of the foundations over a 10 year period rather than let it go on in perpetuity as some foundations do, and the group set out several objectives, one of which was parks and streets, the black paths of which you're aware I'm sure. Another was scientific research and they asked me to be a member of their board, they had a different name for it. In any case I became the person responsible for the expenditure of science. I'm kind of following the links in this chain. The next link was that I went back to these people I had met at the Science Council, either at the Council or member of the Council

or their colleagues in universities and I spent a long time finding out what are the needs of Canada. Well, it's a long shopping list so we held meetings of the Deans of universities to get their opinion of what needed to be done and we only had so much money and we didn't want to trickle it away. As I worded it at the time, I said, we don't want to turn the pages of research, we want to throw the book at it and that's what we wanted to do. So we found 4 projects over time, one of which didn't continue and I'll just drop that one. But the other three, one was ice engineering at Memorial University, we formed an organization there called the Centre for Cold Ocean Engineering or C-CORE, at Memorial. Soon after we centred in on veterinary infectious diseases at Saskatoon and formed VIDO, Veterinary Infectious Diseases Organization. And later, there was a little gap there in years but later we formed the Centre for Frontier Engineering Research at University of Alberta and it's called C-FER. It recently has been amalgamated with the University of Alberta. These were all based on a formula of participation by industry, government and the university. We sought funds from all three, plus the Devonian backing. So the Devonian promised roughly \$3 million on each of these, closer to 4, on the basis that if the university initially could bring in additional money, a matching grant. And each of these organizations did just that and raised money well beyond our expectations. They're all operating today with a budget of maybe, \$20 or \$30 million a year each. And it all came from seed money from the Harvie's of about \$10 million. Now every year they spend 4 times that much I think, each. So that's been a very successful trend and as you can see, it took me away from geophysics and geology, although there was a sprinkling of it in there. In other words I knew the offshore east coast, I'd done a lot of work out there. I was on the Royal Commission when the Ocean Ranger accident and worked with the Newfoundland government in planning their future of the offshore. Later I served on the Board of Husky Oil Company and Nova and Can Ocean Resources and a few other companies. So I was back into geology in that respect. But I'd become a master of . . . what do you say a master of everything but a master of none, what is the wording.

#206 DF: Jack of all trades.

EP: Jack of all trades. So I knew a little bit about a lot of things. So geology served me well, I guess that's the thing I'm trying to say. And it all worked up through that little chain of events. In 1960 the research things were all going, the Devonian Foundation had met its obligation, I had been doing a lot of consulting work for oil companies in the offshore, Dome and others that turn down and I thought it was time to quit. I was 60 years of age I think, in 1987, so that's when I decided to spend more time painting and travelling.

DF: Good for you. What were you doing in 1980 when the National Energy Program came in and how did that affect you?

EP: Oh wow. I was in Calgary and I had been very close in Ottawa through the Science Council, I was on the Science Council till about '77 or something like that. So I knew my way around that city and knew the politicians and the Cabinet Ministers. My ??? there was Assistant Deputy Minister, no, I'm sorry a Deputy Minister, so therefore I had knowledge of other Deputy Ministers. So I did a lot of work, particularly with Dome, with Jack Gallagher in presenting the case for development in the Beaufort Sea. I did not

get involved at all really, with the Alberta provincial dispute, other than doing some studies. I did some studies for the government indicating the future resource potential. I've done a number of reports here that were making the case that you can't just turn off exploration in this country and expect to meet your increased need for oil and gas. But in terms of the taxation side of it, I was involved in a task group with Ernest Manning, Bob Brown of Price Waterhouse and myself were retained by the Canada West Foundation to do an objective study of the resources of Canada and the government policy. So we did get into that but it was Bob Brown, who was the Price Waterhouse person, that crunched all those numbers. And I of course, oriented myself to the resource base, how much was there and when we're going to find it. Senator Manning, I don't think he was a Senator at the time, talked about government policy. So the three of us published this document and I don't think anybody ever read it, not judging from what happened. But Mr. Trudeau had his mind made up what he was going to do and John Macdonald, who was the Minister of Energy at that time, Donald Macdonald.

#246 DF: Well, with the price of oil going through the roof everybody thought there would be lots of money didn't they?

EP: Yes.

DF: It didn't work out that way.

EP: They killed the golden goose.

DF: Any regrets from your career, anything you would have liked to have had time to do?

EP: I should have been less of a gadfly and spent more time making money.

DF: So why do you say that?

EP: Well, a lot of these ventures were with not-for-profit organizations. A lot of my time was not for profit also. But that's what I wanted to do and I had enough, I had two shoes on my feet. So I did well.

DF: Anything else you'd like to tell us today.

EP: I picked a book out of my library, just as we were walking through it, about trying to convince the oil companies they should participate in our quests offshore, particularly the first one, which sounded pretty wild, doing the seismic on ice covered waters. I knew that the U.S. Navy had come up to the pole with an icebreaker and I figured it would all be military classified but with a little investigation I found that it wasn't. I was able to invite the commander of the U.S. ship, Skate, which had penetrated the ice at the pole and ask him to come up to Calgary and attend a symposium, which I organized, with several, like Captain Pullen of the Canadian Coast Guard and Moira Dunbar who had done the original flying over the Arctic, these were the pioneers of the Arctic. They had been there. So I got them together and I got the oil companies together who were interested in this wild idea and pretty soon people were convinced that the ice up there was not that unmanageable. Unlike Antarctica, the ice in the polar regions of Canada is 7 or 8 feet thick, unless it's rafted up of course, and then it's thicker. But Antarctica of course, you're on a land mass covered with ice. And a lot of people hadn't thought very much about what the ice was like in the Arctic. It was there, that's all. As we researched it we found it was not an impenetrable way to work.

#285 DF: So tell us about this book.

EP: Well, later I think probably James Calvert sent me this book, later that described the work. Because it was obviously in the public domain, the fact they had penetrated the ice in the north pole. Which reminds me of another little trivia. When we were doing our shooting in Lancaster Sound, in the Arctic Islands, I was in Calgary and got a phone call from, I think it was Halifax. And the person on the line said, are you detonating an explosive every 6 seconds in the Arctic, up in Lancaster Sound. I said, yes, they said, are you at latitude this, longitude that, I said, yes why do you ask. I didn't know how anybody would have known this. They were listening to us in Halifax, where it was being relayed from the Arctic Islands into the central in Halifax. What I discovered, they wouldn't tell me anything but I dug around and found out that Canada has a grid, or it's probably part of the U.S. and Canada, has a grid of listening devices under the water, listening for quiet little submarines coming in and we come in there and bang, bang. We must have blown them right off their screen. Another little trivia about that kind of thing. We were working offshore, just off Tuktoyaktuk, on that peninsula there's a DEW line station and our fellows were doing their work and they can see the DEW line station off on the land and they said, let's go over and visit. So they took one of their smaller boats and went ashore and walked around and walked around the station and eventually found the mess hall or at least they found somebody eventually. And they said, what in the world are you doing here, they said, we just came in to visit. This is our ability to guard this continent and of course, what we're doing there is looking up in the air and never realized you could just walk in underneath. So we were rather unimpressed with the security of DEW line.

DF: Anything else?

EP: No, I think that's about all the things I can mention.

DF: Well, I'd like to take this opportunity on behalf of the CSPG and the Petroleum Industry Oral History Project to thank you so much for inviting us into your home this afternoon, allowing us in and showing us just a little bit of the paper work that you've collected over the years, things you've done and for sharing your recollections of your time on the executive of the ASPG, thank you very much.

EP: It's my pleasure and I feel a little apprehensive being part of the interview of renowned geologists but I had a lot of fun working with geologists. Thank you.