PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Doug Layer

INTERVIEWER: Nadine Mackenzie

DATE: July 12, 1983

NM: This is Nadine Mackenzie speaking, today is Tuesday, the 12th of July 1983. I am at the home of Mr. & Mrs. Doug Layer, 4223 Britannia Dr. S. W., in Calgary. Mr. Layer, thank you for having accepted to participate in our project. Can you tell me, when and where were you born?

DL: I was born in Winnipeg, Manitoba on May 4th, 1914. Then we moved within a matter of 6 weeks, we moved to Alberta and my parents managed to get a job on a farm down near Medicine Hat.

NM: Were your parents Canadian?

DL: No, that was one of the problems. My mother was a Scottish lady from Aberdeen but my father was from Vienna and when war broke out in 1914 all people of his ethnic group were considered enemy aliens and so he was not able to keep his job. So we went out and looked after a farm and we were there for about 5 years and then we moved to a little town of Bankhead, which was a coal mining town about 5 miles out of Banff. He was in the coal mines then and we stayed there until the mine shut down in 1922.

NM: Was your father bitter about the way he was treated?

DL: No.

NM: They thought he was a German?

DL: Well, he was an Austrian and the personality of Austrians seem to be completely different than from the northern Germans. He was one of these people who, give him a bottle of beer and a few people to sing with and he was happy. My mother was a dour Scot so it took a lot to make her happy but he was very happy and he never was bitter. He had taken the course to be a maitre 'd and a waiter and stuff over in Vienna, in the Vienna school, so he was a maitre 'd at the Winnipeg Hotel when war broke out actually. But he never got back into it again. So from then on I stayed in Banff, went to school in Banff and left there in '34 to go to university in Edmonton. Went there and graduated from there in '39.

NM: What did you study?

DL: I took geology.

#033 NM: Why, why did you choose geology?

DL: I guess what happened was, climbing mountains around Banff, we'd get up on some of the higher peeks, 5,000' above the town or something and you would find seashells and all kinds of things. It was kind of intriguing trying to figure out how come seashells got up at 10,000' above sea level. So I was intrigued with that and then my main interest really was archeology, but archeology in the 30's, there were much fewer jobs than there were even for geology. In geology there weren't too many. So I decided to take geology.

As a matter of fact, I guess maybe it was a desire to just do something sort of not the ordinary because after I'd had this polio in 1929, and the doctor's finally decided what the problem was I cane down to a specialist here and after looking me over he told me that probably I'd have to spend the rest of my life pretty close to a rocking chair. Whether he did that from a psychological point of view or whether he meant it I don't know. But anyway I thought to myself, hell if I'm going to die I might as well die someplace other than a rocking chair.

NM: It was a challenge for you.

DL: Yes, so I took geology and I did pretty well. In the earlier days my breathing was a lot better than it is now so I was able to make out pretty well and I had some very, very good years in that and it turned out to be a very find career as far as I was concerned.

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

DL: From '34 to '39. I wanted to finish my Masters degree but I just had about 1 or 2 more courses to take. However money ran out pretty badly so I couldn't go back and finish.

NM: Did you take any summer jobs during this. . .?

DL: Yes, I worked for the GSC, both in 1937 and '38. In 1937 I worked down in southern Alberta with Dr. Russell. We were winding up a memoir by Russell and Landis covering most of southern Alberta. Then in 1938 I worked with Dr. Hume in the Turner Valley area, particularly the north end. The oil had been discovered in '36, in the Brown well and most of the drilling was at the southern end of the valley. But it looked as though the structure continued on up into the northen part and the Geological Survey went out to map it. So I was part of the party that went out to do that and we mapped it all right. It was a very, very tough problem of course, in those days. So that was my experience in that area. Dr. Hume was a very well known geologist for the oil industry during those years and he was a good instructor, except that he had just recently lost his wife and he had joined the Oxford Group, do you remember hearing about the Oxford Group. They were a group of people that were not strictly religious but they had an aim of sort of peace in the world type thing. And he became seriously involved and I know he used to spend most of his time worrying about this rather than worrying about the field party. But anyway. . .

#080 NM: What do they do, do they get together and . . .

DL: Yes, and it was all over the world these groups, all over the world. So it was a good summer. We camped in Turner Valley area there. It's an interesting thing, you read so much in the newspapers now about all these people having these serious ailments living near these sulphur plants.

NM: Was it true?

DL: Well, down there in the valley, you lived in sulphur all the time, it just smelled like rotten eggs all the time.

NM: I was told that and nobody was complaining.

DL: No, nobody got sick. The thing about it was, that was quite surprising to me is that one night it was just so. . .I think we were playing baseball, I could hardly breathe. And I said to one of the local young fellows that was playing, I said boy that gas smells strong

tonight and he said, what gas. So it shows you, if you live in an area like that you get . .

NM: Nobody developed allergies.

DL: Not as far as we know. The only thing that happened, one or two people were allergic to sulphur, or H2S and it caused them to lose their hair but that was the only thing that we ever heard of. And heck, I know all kinds of people in Turner Valley that aren't dying of cancer and all these other things. So I sort of listen to all these reports with a grain of salt that somebody's trying to get a lot of money for nothing.

NM: And then after graduating from university what did you do?

DL: I worked with the Alberta government Conservation Board for . . well, really from '39 until '42. And at that time it wasn't anything big like it is now and I was sort of the geologist for Alberta. In other words, anybody that was drilling a well, that needed any kind of interpretive work, then it was my job to do it. Whether it was up in Peace River country or whether it was down in Milk River country on the border. So I got wide experience in that.

#106 NM: You must have been travelling all over the province all the time?

DL: Yes. And the other thing, I met a lot of the old characters in the oil industry because many of them couldn't afford a geologist and there weren't very many consulting geologists here at that time but many of these fellows couldn't afford a geologist. So they got to know me pretty well. They didn't think twice of calling me up at 2:00 in the morning, dragging in a bunch of samples. But it was an interesting way to meet the oil people. And then after that I went with a company called McCall Frontenac, which was a company in Canada, later taken over by the Texas company, Texaco. I was with them until 1945. At that time I went with Imperial and stayed with Imperial until I retired in '77.

NM: What was the state of the oil industry in '45?

DL: It was bad. The first place for instance, there was no market whatsoever for natural gas. The only market was a local market by the utility company and they had their own supply really, mostly all they needed. So gas was of no value whatsoever. As far as oil was concerned the Turner Valley oil field was going downhill very quickly. As you probably know when the gas cap was found in the lime they drained the gas cap off and as a result they depressured the field and as a result you couldn't get most of the oil out. The numbers that I recall were something like the oil in place was about 3/4 of a billion barrels and they recovered about 100-150 million or something. So it was going downhill very quickly. There had been drilling going on intermittently for years and years and nobody had found anything really commercial. Imperial had been drilling over all the years someplace, both in the plains country and in the foothills country. Because we all firmly believed that there should be other oil fields in the foothills structures. And it turned out there never were. So things were in a very depressed state in 1945. The government decided to try to put in some kind of incentives to stimulate the oil industry and these incentives were that you could get acreage for relatively nothing, the work obligations were not too rough.

#145 NM; So was the land given to the people?

DL: Well just about. Really it was, you could go up there and file on 500,000 acres or things like this. They were trying somehow to get some activity.

NM: And were people interested in that?

DL: Well, they were, like Imperial, some of the big companies like Imperial. Because it was a chance to take a serious look at things again. Now there were small oil fields down in southern Alberta that had been found, mostly by Chevron I believe it was, California Standard. There were small heavy gravity fields up around Lloydminster. And then there was the odd scattered gas field used for local consumption such as Medicine Hat and then the gas fields up around Edmonton used for the Northwest utility. But other than that there was very little, gas and oil had been found in many places. We'd found oil up at Peace River, we'd found oil down at the border but it was not commercial. When you look at the price of oil in those days maybe you get 60 cents a barrel or something.

NM: So what did you do with the oil in those days?

DL: You couldn't do anything with it, you couldn't produce it because you'd just lose money every time you turned around. And it was always small, in other words it wasn't a big producer. It maybe produced, if you're lucky it might produce 25 barrels a day but 50 barrels of water as well. So unless you were getting, like you do today, $25-$30 a barrel, there wasn't any point to it.

NM: So it was really not worth having a refinery.

DL: No, the oil from Turner Valley was handled in Calgary at a refinery Imperial built here. We also had a refinery in Regina in Saskatchewan and the oil that was refined there came from Wyoming. We imported all the oil for that one. So really it was just a pretty bad state. Anyway Imperial, I can only speak for Imperial in this case, Imperial decided to sort of take another serious look and they decided to look two ways. They were going to do some exploratory drilling for oil and secondly, during the war years the Germans had developed a process called the Fisher-Tropps??? process, for making oil out of natural gas. Now, we were in the process of evaluating the economics of this process in 1945.

#183 NM: Was it a complicated process?

DL: Well, we'd found enough gas. We thought we could bring enough water from the Saskatchewan River and it was just one of these things that was just on the edge of being, well it was risky but it looked as though it might be the answer, the only answer we could find. But there was a decision to go ahead and drill certain other wells with the chance that maybe this would be the time we might be lucky and find oil. And as a matter of fact, that's when we made the Leduc discovery, which was in 1947. So once the oil had been found there and it was proven to be of substantial size, of course, we dropped all plans for this Fisher-Tropps deal. Then once we had drilled 1 or 2 wells around Leduc it turned out that it was substantial size and then the whole industry moved in, big and small and it just became a madhouse for 5-10 years. So it was . . I saw it go from nothing to really something. I don't know whether you want any more on what I did with the company when I was working . .

NM: Yes.

DL: Well, in 1945 and '47, I won't go into all the specific dates but when I joined the

company first I was a well site geologist. I was on wells up in northeastern Alberta, primarily gas wells that we were developing for this Fisher-Tropps process. I was also on some hopeful oil wells, up in the Two Hills area and places like that, where we thought we might get light gravity oil instead of the heavy gravity oil that you get at the tar sands and at Lloydminster. We got some but it was non-commercial again. Then I was moved over to the Leduc location when they started to drill in '46.

NM: What did it look like at the time?

DL: It was park land country. Scattered farms through the area, only one gravel road in the whole area, the rest were all mud roads. So that every time it rained you were in deep trouble. It was very pretty country. Of course, when we moved in there, I moved in there, I guess the rig sputted in, it must have been about November I guess and that country is not very pretty in November. But anyway I was sort of the senior well site geologist on the rig and I stayed there until about the first part of January. We hadn't found the Devonian oil by then, we had found oil in the Cretaceous and we had tested what we thought was the Mississippian limestone and got water. Which was kind of depressing as a matter of fact.

NM: Did you have a big staff working for you at the time?

DL: No. Not really, I think there were only a total of about 7 or 8 geologists in the company. Most of them were on field work, mapping structures in the surface. And they were in writing reports. So we had very few geologists. I can't give you an idea of the total staff but in the exploration department most of the staff was in geophysics and they were all . . now, I'm not sure of the right word for this, they were Carter employees. Now the Carter Oil company was an American affiliate, no, an American sub of the Jersey oil company. And Carter did most of the geophysical work for the Jersey Oil Company around the world almost. So they came up here and did our geophysical work so we didn't even have a great deal of geophysical staff here. It was very small, our land department was about 3 people. So at the well site, since we had to be there 24 hours a day we had sample catchers. These were young fellows with no training and they were responsible for catching samples every hour from the rig.

#259 NM: And then they would bring that back to you?

DL: Then they had to be washed and dried, which a lot of the time we did that, in a little shack that wasn't really much of a place but it was a shack and it was half warm. Then we'd look at the samples. See nowadays, there's not much of that done because with the modern equipment, the modern logging methods, you can tell more from that than you can from samples, at least that's what most people say.

NM: How was your equipment in those days?

DL: What we had was a binocular mic, that was it. And usually those were pre-war models too. The only other essential equipment that I had, that I always travelled with in the country in the winter time was, quite often you never got in for meals or anything so what I did was I used to carry these small cans of pork and beans. We were also rationed on liquor for many years and you couldn't get much liquor but I found that ordinary liquor always froze on you when it got real cold, so I had a bottle of brandy that I used to keep.

So that quite often I put the beans on the engine and heat the beans up and then take the brandy and then mix it with the beans when they got a little warm and swallow it down. So those were I figured the essential things. But the sample catchers were there on duty 24 hours a day, they ran 3 shifts of 8 apiece. And then in addition to that there was usually another geologist as well and maybe, depending on the availability, if we were drilling more wells then there would be maybe one geologist, if not there might be two depending on. . . And these people were all, at that time, mostly people who had been, largely on surface work, surface mapping. And they also some of them had come from Turner Valley but not very many, we only had one geologist in Turner Valley I think.

NM: What about these sample catchers, where did they get them from?

DL: When you're drilling, with that drilling mud, the drilling mud is a consistency that it carries up the cuttings as it comes up and then it goes over what they call a shale shaker. And this is a sloping screen with holes in it about half the size of my little finger nail. And this thing goes like this all the time, vibrates all the time and the mud that was carrying it goes through, the cuttings go on and come off the end like this. So it what you do is every hour, or if it's more critical, every 15 minutes, you go down there and just take a part of a pail full of this. Because you see, you have to keep samples for yourself and for the Conservation Board and also for anybody else who had any money in the well. So you might have to take 3 or 4 sets of samples. And these had to be washed and dried and examined, which was a slow process, particularly under those conditions because we didn't set our rigs up nearly the way you do now, air conditioned practically and this sort of thing. Anyway that was where I spent the first few years. Then I was called into the Calgary office and I worked with Bill Hancock. My job at that time was mostly what they call the regional geologist. In other words I did the map for broad areas, trying to pinpoint areas that we should concentrate on.

NM: This is the end of the tape.

Tape 1 Side 2

DL: I did a lot of the regional geological work and partly, not entirely, too, a good deal responsible for the areas which Imperial would take a look at with the idea of taking out these big reservations they called them of 100,000, 200,000, 300,000, 400,000 acres. And so I did that for a couple of years and then I was made assistant to the head of the research section. The research section I think as I recall it now was about 6 people. But what we were trying to do was we were trying to understand these reefs. Nobody knew anything about them really, up here, we couldn't understand them, we couldn't understand why they grew. We wanted to try to find out how to determine the most ideal spots where these reefs would grow. Then of course, our exploration efforts would be a heck of a lot more successful.

NM: Was that only for Alberta?

DL: No, this was for western Canada. But we were concentrating in Alberta. We were working in B.C. at the same time and we were also beginning to look at Saskatchewan. So then in 1950 I was made geologist for western Canada for the company. That covered

everything from the west coast right through to Manitoba, including the Territories. Now we weren't in the Arctic at that time. And then in 1954 I went to Regina as Exploration Manager. That was the time that the oil fields were discovered in southeaster Saskatchewan and we had a very active period in through there at that time. That was when the thing broke wide open there and that was another area that I had drawn up the maps for as to the areas that Imperial should concentrate. So I felt very good about it, although my number one area never found any oil but the number four area did. Then I was brought back to Calgary within about a year and made the regional manager, exploration manager. So I was there for quite a while, as a matter of fact, 6 years, as the Exploration Manager. Those I think were some of the, those plus the years in Regina, that early 50's and early 60's were the real years in the oil business. Things were being found, there were new ideas being developed all the time. Geophysics was improving at a tremendous rate, the quality of geophysics and everything was just moving ahead at a tremendous rate. The staff, the number of people involved in the oil business was going up at a unbelievable angle and the markets were expanding, so that things were very, very in the highs.

#047 NM: So you have seen the beginning of the oil industry and the boom?

DL: Yes, and right now. But I was in Regina for just a couple of years and then I came back here and then I joined a group that was called the Advisory Group, which was basically a group of people who were not doing so much time on administrative work but trying to get back to looking more at the technical problems involved and trying to come up with some better ideas because the discovery rate was starting to go down. I was there for a few years and then the company decided to take a look at particularly uranium as an alternate source of energy because of the . . well, the question mark of how long oil was going to be available in the supplies necessary. And also they decided to look, sort of very much of a skim look, at coal. And at that time there was somewhat of a shortage of copper and zinc building up, not zinc particularly but more copper. So the company decided to spend a little bit of money on taking a look at uranium, coal and the base metals. I was given the job of sort of being the housekeeper for that, setting up the department and then trying to organize it and keep it running. We hired some young fellows who had mining background, just young kids out of school. We took some of our own people from the oil industry because they were becoming surplus with cutbacks and they were able to develop into, not top mining people but at least they could. . like George DeMille, people like that, they had a broad enough knowledge and stuff that we could use them, either for coal or for uranium or something. Then we hired 1 or 2 senior. . .

NM: Was it only for Alberta or for . . .

DL: No, this was for all of western Canada. They had another small group that they set up in Toronto, which looked after Ontario, Quebec and Maritimes.

NM: Is there a lot of uranium in the west?

DL: Yes. So that was very interesting because there weren't very many people in the company that knew anything about that. So as a result it was like the oil industry was in 1945, you didn't have a bunch of experts sitting in a bunch of offices telling you what to do. So that

it was more fun, a lot of fun. I could decide what we wanted to do and nobody could sort of run it through a computer or a few other things. It was back to the old days where if you had an idea you could get something done about it. So I was there until ‘75 and then for the last 2 years I was sort of an advisor to the coal section. They had brought in some people, we had managed to get some coal reserves put together.

#086 NM: How was the coal production?

DL: Well, we don’t have any production. Yes, we do, I’m sorry, Barren Creek has produced. But the coal production in those days, when we were looking at coal and this is why Imperial missed a real opportunity I think, in that coal was the drug on the market. Companies like Keyser and Mannix and I can’t remember that other company out of Edmonton, they were really hardly making a nickle. So that the opportunities to gain an interest in coal, both 100%, that is by going out and exploring and doing some preliminary development work. .

NM: So there was no market for the coal at all.

DL: Very little. They only market really, of any size, was the Japanese steel market. As far as the local market was concerned, there are plants, electric power plants that use coal but relatively small.

NM: I was told there was a tiny mining company in Turner Valley.

DL: Probably the Burns Mine you’re thinking of. Well you see, in those days, back when you’re going back into the 30's, most of us used coal for heating purposes, so there was a demand for instance, and then the railroads were running on coal and that’s why we had that town of Bankhead out of Banff and Anthracite, another little town and Canmore. And the Crowsnest Pass, same thing, supplying coal for the steam engines and then local coal for heating. But then when the oil came in and gas, then that just went completely. . by 1950 there was nothing. Then it started up, I guess in the 60's. Carter went in in a big way in the Crowsnest Pass and developed a fairly good market with the Japanese. But the thing is that it wasn’t a thing that was very highly profitable. But I mean, he made money on it. So when we went into coal and other people did, we picked the right time because the opportunities to obtain coal were so good, they were at bargain basement. But anyway, the company restricted the amount that it wanted to spend. It was still shaky on when the coal might be of value and they didn’t want to tie up too much money. So anyway we did get some coal. There were so many places where I had the opportunity to get coal but they wouldn’t give me any money. Then in ‘77 I retired on a medical disability and that was the end of that.

#121 NM: You were in Edmonton when you were ???, what did the city look like at the time?

DL: The Macdonald Hotel was there as big as ever, well not the new extension, the old Macdonald Hotel was in there. Jasper Avenue, there were streets there, the street is such a wide street as you know and there were not too many high rise buildings. That hotel as you approach the old station was there, I can’t remember the name of that one. And then there was the King Edward Hotel. There were not too many hotels because trying to get a

room, particularly during the war years was just an horrendous job. The other thing was that there was a sort of, down near the CNR station on, I think it's 101st, that was the place we used to go quite often because they had a place down there like an old fur trading store. And then the other thing, the trains coming in from the northwest, people would be coming off that with packs of furs on their backs. It was quite, almost you'd think it was back 100 years or something and it was quite interesting. The streets were not jammed with people and crowded with cars and everything like now. There were not very many things in the way of new buildings. Population of about 80,000 people spread over a huge area. Places like the Hudson Bay store was kind of an impressive thing but it was completely different. It was a northern city, it depended primarily as far as you could tell, on the agriculture and on the transportation in to the north. It was not a booming city but then when war broke out, particularly it changed. And since the shipped so many American soldiers through that area and it was a stopping off place for shipping aeroplanes to Russia. So that the thing started to boom then but it was mostly Jerry built stuff. It wasn't until the boom hit afterwards that it started to really become better buildings and more permanent installation. More government money went into things and it started to expand just like Calgary did. Both of them went at about the same time and actually they've grown at about the same rate, they're both about the same population now.

NM: Did you do any work for the Canol project?

DL: No. I didn't. The reason I didn't. I talked to Dr. Link who was in charge of the geological work and the exploration work about working for Imperial and this was in . . let me think now, this must have been around '42 or '43. He said, yes, we'll give you a job tomorrow, we need people like you on the Canol project. So I said to him, yes that's good but when you shut down that Canol project what are you going to do with me. And he said, I don't know, that's your problem. So I told him, I don't think so, so I went with McCall Frontenac.

#170 NM: Did you believe at the time the Japanese would invade Canada?

DL: Yes, I think. . .I don't know whether invade, I think we sort of thought there could be another Pearl Harbour type thing. In other words they were already landing on the Aleutian Islands and it wasn't very far and there were no facilities for defence at that time. The Americans were building as fast and furiously as they could to build defences, both in Canada and the United States, or in Alaska. But there was every indication that the war was going to be partially fought in Alaska and in the islands. And of course, there was no fuel there, it was rough country. So yes, I think there was a real concern. Of course, the restriction of news during the war, it doesn't really tell you how serious things are. We didn't know at the time for instance, that there were Japanese subs out along the coast and all this sort of thing.

NM: This information came later.

DL: Yes, this was after the war. You had to guess but the way things were going it was obvious that the Japs were just overrunning everything everywhere they went. And when you knew that there was absolutely nothing to help in the defences up in Alaska, you just

figured, if they want to land in any of those places nothing is going to stop them. Because they didn't have decent airports, no facilities, you couldn't even get men up there half the time because there was no road for instance. So it was a pretty worrisome thing. That's why there was such a panic to build the Canol pipeline.

NM: So they were recruiting people?

DL: Yes, getting anybody. And then of course, it was a joint operation between Imperial, the Canadian government and the American government. And a great deal of the heavy staffing was the American Army people up there, equipment problems and all this sort of thing.

NM: And they spent millions of dollars.

DL: Oh yes. The thing is that for instance, they moved a lot of people up there and there were no facilities. One of the things, they took up all kinds of bulldozers and tractors and things like that, but one of the funniest things is that one of the necessities when you have a lot of people are toilets naturally. So they didn't really think too seriously, so they sent up literally hundreds of the modern flush box type, what are you going to do with a flush box, you don't have a water system, you don't have a sewage system, you've got 45 degree below weather. So here they are, these things, they're all up there and they were there for years after the way, they stacked them on an island in the Mackenzie River and there were just crates and crates of these flush boxes.

#216 NM: Are they still there?

DL: I don't know whether anybody ever took them out or not. It didn't pay really to take them out at that time. But it's one of these things that you look at it afterwards, it's the sort of thing you think, isn't that stupid but when you're in a panic and you're moving literally hundreds and hundreds of people through a place and you get somebody back in Washington issuing orders. You haven't got time, you have to get stuff up there.

NM: So was everything organized from Washington?

DL: No, it was partially organized from Washington, a great deal of it was. All the exploration was handled by Imperial, we were in charge of the exploration. The Bechtel Corporation was in charge of the construction. And then the Canadian government was deeply involved in it because they had to look after an awful lot of the logistics and the paper work and stuff like that. So it was a kind of a mish-mash of people but the thing was if things were going to slow you just added another 150 men or something. It was a typical Army operation. I'm amazed actually that they did so well, considering. . and terribly conditions.

NM: ??? the highway to Alaska. . .

DL: The one thing that I did think, I just thought to myself, this is cruel, they had a work battalion of Negroes that had been training down in south Georgia I think, or down in Louisiana and really I suppose they were getting them ready for the South Pacific. But they needed work battalions to drive that road through. Here they move up these poor Negro fellows from right the Gulf Coast, up into northern B.C. in the middle of winter.

NM: And these poor guys are accustomed to a very hot climate.

DL: Any time they'd been in temperatures of 50 degrees they'd freeze to death, well here it

was 50 below with a wind blowing. Those poor fellows.

NM: How did they take it?

DL: Well, they took it but there was no way they could hardly get any work done because they were just freezing to death all the time. No matter how many clothes they put on they. . . you can imagine yourself. For instance for me to have to go work in the tropics. I'd just pass out the first hour. Well, in their case they were spending nearly all their time to start with standing around fires trying to keep. . .

NM: And over time did it get better?

DL: Oh sure, it worked out all right. But I thought to myself, that's just cruel. The poor fellows, I saw some of them in Edmonton, getting off planes, big transport planes and they were almost white with cold. Now what would you like?

NM: This is the end of the first interview with Doug Layer.

Tape 2 Side 1

NM: This is the second interview with Mr. Doug Layer. Mr. Layer when were you asked by Imperial to try to put together a record of the Leduc discovery?

DL: In 1977 I took early retirement for health reasons and at that time I was asked if I would be interested in trying to document the pre-history of the Leduc discovery. This request was made by Don McIver. Now I can't remember exactly whether he was President or a Director at that time. I had always been interested in Leduc, ever since my early days so I said, yes, that I'd be very happy to try to find all the documents that were possible. I guess the main reason was to try to correct the wrong impressions that had been made by various people who forgot slightly exactly what happened but felt that they had found Leduc. I think there were some 50 people at that time claiming that they had found Leduc.

NM: Each of them?

DL: Yes. Practically everybody who was in the country. So the company just felt that it would be better, even at this late stage to try to get the information together, not people's memories so much as the actual letters and reports and things that were done at the time. So I was asked to try to find out where Imperial first showed an interest in such things as Leduc, I mean that type of discovery or that type of exploration, let's put it that way rather than discovery and to follow it up to the time that the discovery was actually made. But not beyond that. It was strictly to get away from the legends of who found Leduc and this sort of thing. As a result I went back through the files, with a lot of help from a lot of Imperial staff. Many of our files had been taped, they were on microfilm and quite a few of the girls on the staff there helped me dig these things out and we gradually put it together. I was able to find some of the original maps of Leduc and area and a lot of the original documents on the wells and the original land agreements, a lot of letters and reports that went to Toronto. So all these things were put together with an idea that there was the actual factual material that was available on the pre-discovery and the things that led to it.

#033 NM: Was everything mostly in libraries?

DL: No, it wasn't. It was in various files and much of the material had been dead filed but fortunately they had microfilmed it. So we still had some of the gals there who had done some of the microfilming and knew where this stuff was. If it had been much later and they had retired it would have been just an impossible job. So we had all that information and was able to dig it out and got a surprising amount of documentation. Well, you can see by those three big volumes, there's a lot of documentation there. And it goes back really, I think you can say that Imperial's first real effort to try to find oil in the plains in a serious way goes back to about 1939. Then it follows up from then, gets a little more specific as time goes on. Then by 1945 and '46, they were specifically concentrating in the general Edmonton area.

NM: How long did it take you to finish the project?

DL: You might have to censor this but what happened was that there was some difficulty, since I was no longer a member of the management of the company, my work was usually put not exactly first in line on a priority basis. It took a long time to get some of the reproduction work done and the drafting. And in addition, to make matters even worse there was a major organization of the company right in the midst of this. So a lot of jobs were changed so some of the people who were doing work for me, they had material in their desk and they went to their new job, they didn't take it with them. The man coming to take over the job, he looks at this and it's dated '43 or '44 and thinks, what in the world does a guy keep that stuff here, it's 30+ years old, so naturally tear it up and put in the waste paper basket. So we lost a lot of stuff that way, we had to go way back to the originals again. Fortunately these were mostly copies but a couple of places we lost the originals too, they were just thrown out. Anyway, it took me, I guess I'm just trying to think now, I think it took about 2 1/2 years off and on getting this done. It was not 2 1/2 years steady work, it was just waiting, I'd get something done and then I'd have to wait and wait and wait. But we gradually put it together. There were an awful lot of people helped me. The one girl in the office who was a tremendous help to me was a girl by the name of Louise Donders and she helped me, she did most of they typing for me and she did the sorting and collating and all this kind of thing. She was a godsend and she's one of these people that likes to be busy. There are a lot of people that don't really like to be busy but she does and she had a little spare time so that's how we got it done. It was a slow process but. . .

#070 NM: But two years for such a huge task wasn't much.

DL: If it had just run smoothly I probably could have got it done in about 8 months but it didn't.

NM: Can you tell me about the story of Leduc's discovery?

DL: I'll try to summarize it. It's a long story and it's complex. There are so many people involved in it, it goes back 6 or 7 years at least from the time of the discovery in '47 and there's no sort of clean cut thing that the company or a man was out looking for reefs in western Canada. This is a legend that grew up. Basically to simplify it, in the 40's the only real oil field of any major size in western Canada was the Turner Valley oil field and it was gradually being depleted. There wasn't enough oil to supply the western Canada

demand. The company had been exploring for 20-25 years with not much success in western Canada. They'd found some non-commercial gas wells, non-commercial oil wells. However as the war ended the company decided that they would like to continue exploring and if necessary, go to the Fisher-Tropps process, for the conversion of natural gas into liquid hydrocarbons, as the Germans had done during the war years. So there was that possibility and the hope that maybe we could find an oil field someplace. We had done a great deal of exploration in Saskatchewan and the Saskatchewan plains area and had come up with nothing except dry holes. We were also starting to explore in various parts of Alberta, particularly in southern Alberta, where most of the shows had been recorded. Again, they were very, very questionable commercial well. So the one place that had not been heavily explored was in the general Edmonton area. The company thought that we should maybe take a look in there. Firstly we knew there was a lot of gas in the area, which could possibly be used for this conversion process. Secondly there was a theory that if you looked at the Alberta tar sand area, McMurray sands, the heavy, heavy oils, that if you went down dip from those heavy oil there's a possibility you could get light crude, which occurs in many places in the world. So those two things were thought of as being possible justification. In addition the man who was the Chief Geologist in the 40's, Dr. Link, wanted to drill a series of stratigraphic holes across Alberta, across the basin over into B.C., just strictly down to the pre-Cambrian or to the bottom layer of productive rock. With the idea that if we could get that kind of information we might be able to make some sort on interpretations that would lead us to a more specific location. So these facts were all considered by the company and in about . . now, the dates, I'm afraid you'll have to just qualify these, it would have been about 1942 or '43, it was decided that we probably should do some more exploration. In 1945 I believe it was, the company had sort of another final knock 'em out, drag 'em out session in Toronto. There was a strong feeling that really we shouldn't waste any more money and . . .

#128 NM: Was it very costly at the time?

DL: No, not in 1980 dollars but it was costly in those days. And we had been unsuccessful for 20 years. Many of the people on the Imperial Board at that time were refinery people or marketing people and they could see no reason for going and spending this money for finding salt water. There was another group that decided that really we should take another swing at the cat or whatever you do with it and do some more exploration. So the decision was given to go in and firstly we would develop gas reserves if we could and then go in and at the same time explore for possible oil. So we went in to east central Alberta and did a lot of gas development drilling around the Viking Kinsella gas field. I did a lot of the work on the wells on that area, I was a well site geologist out on that. So we found substantial gas reserves and there was a question of whether or not we had enough water to make it work or whether we'd have to pipe water from Saskatchewan River. The economics were getting a little shaky on that particular method of getting oil or liquid hydrocarbons. So we were doing regional seismic work at the time, just long lines across the basin, starting in east central Alberta and going west of Edmonton. It was decided that if we could find some kind of an anomaly in the area around Edmonton and

near the Saskatchewan River, that if there were gas reserved there we would have not only a local supply of people, people to hire, but we would also have the river for water supply. We would also be able to test the theory that there might be light oil down dip. So all these things sort of worked together and the decision was made that we will go in and we will drill the Leduc well, it turned out to be the Leduc well, this particular anomaly. And it would be a deep test. In other words we would go down to the . . now, let me think, I wrote up the original drilling recommendation and I can't remember whether we decided to go to the pre-Cambrian or the Cambrian. But anyway, it was to what we considered to be through the potential producing horizons all the way down. When I wasn't on the wells in the Viking Kinsella area and other wells, my job in the Calgary office at that time was to do the regional interpretation of the geology. In other words to try to put together some kind of a picture of what we might expect in the subsurface. So I had put together the wells and the information that was available. To give you some idea, the nearest well to where Leduc was finally drilled which had penetrated into the Devonian was 50 miles away. Now there were very few wells that had penetrated the Devonian at all. So this gives you an idea of the kind of interpretation that you had to make to try to even come up with an idea of what you might expect to find in the subsurface. So this is the stage we were in, we really didn't know much about the area. We had very little seismic and the seismic in those days was very, very poor. We couldn't map the Devonian, we were mapping the Cretaceous. And in the minds of I think I would say, 99% of the people, some people might disagree with me on that but, our main target was the lower Cretaceous beds. The lower Cretaceous had been the most hopeful of any of the formations in drilling across that part of Alberta and in the south and the Cretaceous was the one that held the tar sands and stuff like that. So it just looked like. . . So that there was really, in the minds of at least the people I talked to at that time, there was no real belief or no strong feeling that we could be finding Devonian reefs. It never occurred to me, although I had done well site work in the area northeast of there, up in an area called Deverney and I had found material which I called reefal material. And I had found material when I was working for McCall Frontenac down in southern Alberta that I also called reefal material but it really didn't strike me that we'd ever be producing from a reef. I'd just finished reading Darwin's book on reefs so that was why the name, I was using it to show how intelligent I was. When we were running these seismic lines, in the spring, I think it would be the spring of '46 we wanted to move a seismic crew from east central Alberta over west of Edmonton, west into that area. The road conditions were getting very poor. In other words there were certain periods in the year when you couldn't put heavy equipment on the roads.

#216 NM: Because of the mud?

DL: Mud and stuff like this. There's word for that, there's a period during the spring when the road. . anyway, maybe I'll think of that later. The only road that was gravel where we wanted to go, going west was one that went through what turned out to be the south end of the Leduc field. It is one of those fortunate breaks. The seismic crew, we had to move it so we moved it on the gravel road and when they went past the area where part of the

Leduc field extended they got a small amoebic like anomaly on the geophysical records in the Cretaceous beds. Then they continued on, continued going west. But when the people in Calgary and the people on the crews at that time say this slight anomaly the geophysical department decided that they would like to do a little follow up and see if they could outline an actual structure on this. They had one high point really, the line came along and there was one high point and then it went down again. Well, that doesn't really mean too much. So they followed it up and they did find that there was sort of a shapeless thing on the Cretaceous beds. Sufficient work was done to outline something that would be considered drillable. The people working on that, like for instance, Carl Chapman did most of the maps on that and then it was sent down to Toronto and approval was given to drill a deep test. So that's about the story in very brief form of how we came to it. So what you might say is, it involved, as I think most discoveries of any kind does, it involved luck to some extent and then also a sort of a long term concentrated effort to try to find oil and to try to localize the best conditions. So it happened that the two things finally came together and so we drilled the #1 well and that one, it was the one that found oil. It was cased and brought into production in February of '47 and at the same time. . you might be interested in the story on the Leduc #2 well. When we went through the Cretaceous zone in the #1 well there were showings of oil and there was considerable gas. It was decided we should go ahead and either drill an offset well right next door to the #1 well or we should drill a well down dip and see if the Cretaceous had any more oil in it rather than so much gas. So while we were still drilling the #1 well, we sputted in the #2 well and started to go ahead with that. We went right through the Cretaceous, it wasn't really commercial in #1 and continued drilling. We then ran into what was primarily called the D-1, which is a biostrome???, a broad sheet like limestone that's made up of frag metal and thin bedded reefs, very thin things. But anyway we made the discovery there and the well was cased. In the meantime #2 was being drilled and we got down into the lower Cretaceous, wasn't anything, wasn't as good as #1. Secondly we found out that it wasn't lower than #1 anyway, the seismic wasn't really giving us much of a picture. So then we decided we better go down and drill the D-1 where the discovery had been made in the #1 well. So we continued drilling and we got down to that horizon and it was tight, it was all plugged with anhydride, there was no oil in it. So there was great disappointment as you can imagine, this well was about 2 miles from the discovery. So we thought, oh, another one of these one well fields. There were several questions, some of the people in management wanted to immediately shut the well down and get the rig and put it onto an offset well beside the #1 discovery. Others, particularly people like Dr. Link and a lot of us people in the technical end of it wanted to carry the well down and make a deep test out of it, which we had planned to do on the #1. So this discussion was going on and in those days you didn't have quite as rapid communication as you do now. So there was phone calls and all kinds of things going on and while this was going on we carried out our normal practice, the drilling continued until they were told to stop. So the drillers up at the site, at #2 just continued drilling. They went through the so called D-1 and started to go into shale. By then when they did that, most of us were extremely pessimistic.

NM: End of the tape.

Tape 2 Side 2

DL: So this green shale from a well drilled some 50 miles to the east had been encountered in one of the early wells and it was several hundreds of feet thick. And so when we hit the green shale then gloom settled over everybody. However within a matter of several hours, not very many hours, the drillers reported to the geologist who was Steve Cosborne at that time that they had suddenly run into some very fast drilling and the bit was practically dropping through the rock. So he said, don't drill anymore, we'll check and find out what's going on. So he stopped them and you'd have to check his letter, I can't remember whether he suggested that they core or whether they just wait until he got out there to the well site, this was in the middle of the night as a matter of fact, and took a look at the sample cuttings. I'm not too sure but we could check that in the letter. So when he saw what was there he realized that we'd run into some oil. Unfortunately again, gloom wasn't too great, it was oil stained a little bit but it had a kind of salty taste to it and so the geologist thought, we've got run a test anyway. So they weren't very optimistic. What had happened was that the rock was so porous that the drilling mud and that had washed most of the oil out of it. It almost made it appear that it was flushed with water. Anyway they ran the test and they got oil way up in the pipe, 5,000' or something. And of course, that was the reef, that was the actual reef discovery. So that again, there's all kind of legends about that, that we didn't report to management, all this kind of stuff, well it is a bunch of junk you know. Anyway this is another one of the reasons why they asked me to try and put the documents together.

#034 NM: To get the facts.

DL: To get the facts. That this was normal procedure and there wasn't any skull duggery about it at all. It wasn't some brilliant man that decided he was going to find oil within the next 50' and a few of these other dreams you know. And then of course, at that time we couldn't map the Devonian with the seismic tool at all so then after we made that discovery then the seismic people made a tremendous effort to try to develop a type of seismic reflection work that would catch the Devonian reefs. And they gradually did and got it to the stage where it was pretty useable, although it was still pretty shaky compared to today's. We were working in those days with very, very primitive techniques. For instance, the electric logs that you run on wells today, they practically tell you how much oil is present, really. The ones we had, half the time you couldn't tell whether there was oil or water and they were pretty useless, so that you depended a tremendous amount on the ability of the geologist on the well site. I think in those days 90% of the real meaningful material came out of examination of well samples. So that you didn't depend on electronic gadgets and stuff like that. So in those days a geologist had a pretty critical job, which is not true any longer on well site because I don't think they look at samples half the time anymore. So that's the best I can do in sort of summarizing it.

NM: To put together this record of the Leduc discovery you wrote a lot of letters to people, people you knew who were involved there. Did all of them answer?

DL: Most of them did. There were probably 5 or 6 who for one reason or another, did not answer. Most of them though, either wrote long letters or a short letter but at least gave some impression of what they remembered and what they wanted to say about the discovery period.

NM: And you have used also some letters to the editor of the Producing News.

DL: The Producing News editor in 1957, decided to sort of look at Leduc 10 years after. And he wrote some letters to some of the people that were involved in the early days of the Leduc discovery. In that case I used some of those because they were as fully explanatory as asking them to write a new letter. So that helped me out considerably.

NM: And the first one we have is from Campbell . .

DL: Aird???, yes.

NM: Did you know him well?

DL: I knew him. He was in the production department so I didn't know him as well as I knew most of the people in the exploration but I had gone into him over the years and knew him quite well. He was involved of course, after the discovery had been made and was involved in bringing the well on production and doing all the other necessary things that follow a discovery.

#072 NM: And the second letter we have here is Roy Billy.

DL: Yes, he was on the seismic party that was moved from east central Alberta to the Edmonton area and did the original long line that found the first indication of the Leduc anomaly on the Cretaceous beds.

NM: It was called the first grid line?

DL: Yes, grid line, that's right. You see the thing is that the province was broken into, well, I shouldn't see it was broken but it was decided that we should run a series of lines from east to west across the basin. This was the first one that we were going to run and then we were going to run one north of there maybe, oh, 15 miles and another one south of there 15 miles and the another one south of that another 15 miles. So you'd have a series of long line going right across what we considered the basin, to the mountain front.

NM: And he's mentioned in here the Party Chief was Frank Roberts.

DL: That's right. And that's the gentleman who wrote the long letter.

NM: That's right. We have another letter here from Alec Bland???. He's mentioned also George DeMille and Ernie Shaw and all these people.

DL: Yes, Alec was one of the well site geologists in the area. Because it was critical that there was a geologist on the rig, we used to have sort of swing shift, not swing shift but we usually had 2 or 3 geologists on each well. Because there had to be somebody on call 24 hours a day. So as a result when we were drilling these wildcats this is what happened, you had 2 or 3 geologists around and he was one of the ones that was moved up to, I think he was moved to the #2 well or was it the #1 well.

NM: *Early in '46 I went to Minburne. .*

DL: Yes, well that was where we drilling the gas wells, out in the Viking Kinsella area.

NM: At the beginning of his letter he mentioned he was attending Bill Gallup's summer school on Turner Valley, what was this summer school?

DL: This was a sort of a training school that we put on for geologists. Bill Gallup had been the geologist out in Turner Valley for many years so not only did he teach these fellows the well subsurface sort of geology and how to look at samples and describe them and things like that but he also took them out to outcrop areas and things like that. So that he tried to get them . . well, they'd been to school but unfortunately the universities did not teach the practical oil business end, they didn't worry about that. So somebody had to sort of at least show them what oil, like when I started I didn't know what oil looked like. I knew what it looked like in a car. . .

#111 NM: So you had a theory?

DL: Yes, but I mean I didn't know anything. The first oil I saw was the Lloydminster oil and that's the stuff, I was up there in the winter and I went up to see this producing oil well and the stuff was black and it was coming out in lumps. Well, that's not my idea of oil. But this is the case when you've been to university, that you need to have somebody teach you sort of the basics of what your job is going to be. So that was what that was. We kept on having summer schools for many, many years.

NM: Was it two months?

DL: No, usually it would be about a month is what we tried to cut it down to. Then the geologists were on a training period for two years. They were switched, jobs were switched, they would switch jobs and things like that but the one month was usually concentrated. For instance we were doing quite a bit of surface work in those days so we had a very excellent man on canoes, Dr. Crickmay and he would take these fellows out and teach them how to handle a canoe on the Bow River. And then we had other people who would take them out to outcrop areas and let them see what various types of rock looked like. They don't get much of this in university and that sort of thing and a lot of it was hard rock. So this is the kind of thing and then they would be put on a training program of exposure to different phases of geological work, for usually a year or two. Unfortunately what we'd do is they'd do that and we'd spend all that time sort of training them and then for a year or two they'd gradually learn their job so they'd be pretty good at it and about after 4 or 5 years then the smaller companies, who couldn't afford to train people, they'd sort of say, we can offer you a lot more money than you're getting from Imperial. And so after we get them nicely trained.

NM: They'd just disappear.

DL: We lost a lot of people that way.

NM: Then he went to Taber to work for Aubrey Kerr, was there a lot of things going on in Taber at the time.

DL: Taber was one of the early areas that we were exploring in the 40's. It had medium gravity crude but nothing really commercial. Now there are producing wells all over that general area. But you have to recall that probably we were getting $1.50 or maybe $1.25 for the oil. Now of course, $25 or $30, it makes a difference. So that they were non-commercial wells. They worked hard at it but it just wasn't any good at that time.

NM: So this first well was Tempest #1 and. . .
DL: Yes, that was down in that same area, down in the southern Alberta.
NM: Continued drilling in 1945 and 1946 in the area and then in '46 he went to Minburne and met you.
DL: Yes, we where we were drilling the gas wells.

#149 NM: And you were working with George DeMille?
DL: Yes. George was there for a short time as well, at Minburne on the gas wells.
NM: What was Ernie Shaw doing at the time?
DL; Ernie Shaw was at that time he would have been, I guess you would call him sort of the Chief Geologist in the Calgary office. I'm trying to remember, he was in Toronto and in Calgary but at that time he was in Calgary and he would have been sort of the senior geologist I guess is the best thing. The Chief Geologist we only had one and he was in Toronto. But he would have been the senior geologist. And then Bill Hancock was the head of the subsurface department, under Ernie Shaw.
NM: Now we have a very short letter from Ivan Burn, very short one.
DL: Unfortunately Ivan always was sort of kind of withdrawn, didn't say a lot anyway but he didn't write a very long letter and it was too bad because he was directly involved in, not only the acquisition of the original permits and reservations but also in the negotiations involving specific leases. So that he really would have had a very good feeling for the whole land situation at the time of the Leduc discovery. But he sort of refused to comment on that other than to say, the discovery made the land department very busy. So it was too bad.
NM: Carl ??? has sent a letter too. He quoted *you know better than I why Imperial moved into the Edmonton basin for which quite a few geologists have taken credit.*
DL: That's part of the reason for the documentation. Carl was one of the main interpreters in the Calgary office who did a lot of the interpretive work on the seismic information, coming in from Leduc, and other things as well. But he did the Leduc. And his maps are the ones that we have in the document book. He makes sort of, I can't think of the right word but the comment that, an awful lot of people have said, I'm responsible for Imperial moving into the Edmonton area.
NM: Thanks to me. . .
DL: That's right. So really I think I've given you enough background to let you know that it was a long sort of slow process that gradually took us into that area and really there was no one man responsible for it at all.

#190 NM: You mentioned Doris Chapman who was the secretary, was there a lot of women working there?
DL: There were quite a lot of women. We had quite a few secretaries and then in addition, there was an awful lot of work to do on the seismic records. They had girls in the seismic department there who did some of the preparatory work so that the interpreters could work on the records. So we had a fair number of girls working there.
NM: And some of the names, Labby Laberge.

DL: Yes, he was another geophysical man.
NM: When people are talking about computing in those days what does that mean?
DL: Computing is really calculating if you want to compare it to today's terminology because there were no computers other than in the mind, in man's mind. So really what it meant was that mathematical calculations. The computor was a name for instance that was used for seismic interpreters, they were called seismic interpreters or seismic computors. Which in today's terminology would be very confusing. But we weren't bothered with mechanical computers in those days, we had ones that were living, breathing types.
NM: He mentioned one of his superiors was Armstrong, was it Jack Armstrong?
DL: Yes.
NM: And what was he doing at the time?
DL: I believe at that time, he moved around a lot and I'm pretty sure that at the time Jack Armstrong was actually working for Ray Walters. Ray was in charge of the geophysical department which had expanded and was really in control of the exploration in those days. And Jack was his 2-IC I think is what you could say. Then he moved from there to various places, on up to Chairman of the Board.
NM: And now we have a letter from Steve Cosburn and some information too.
DL: He was the geologist who was actually on the well, #1 well at the time that the drill bit entered the so called D-1. After his examination of the samples and he could see some signs of pre-oil, light coloured oil so he decided it was time to run a test, rather objected very strongly to by many of the people involved on the rig because the weather was bitterly cold and running a drill stem test is not one of the most pleasant things to do.
NM: It was minus 10.
DL; Yes, minus 10 degrees and normally a wind is blowing. So he didn't make any friends but he went ahead with the test anyway and they managed to prove that there was sufficient oil to . . .
NM: He was even accused of being another Sproule.
DL: Well, Sproule ran tests all the time. He ran tests like they were going out of style. He wasn't going to miss anything. To some extent you have to blame, not blame but you have to consider the fact that the policy in the geological department in those days, now look you guys, when you're out on the well, if there's any doubt run a test. We don't want to abandon a well because you didn't run a test. So as a result when you're on a well and you know that really it's your decision that's going to make or break that well you tend to run more tests than you normally would if there was a backup. But with the kind of electro logs we had in those days it wasn't much of a backup. So it was pretty well the geologists decision. If he decided not to run a test and then a year later some competitor drilled a well in the area and ran a test and found oil, he might not have got fired but he certainly wouldn't have been given any kudos.

#263 NM: What was your post at Leduc?
DL: I was sort of the senior subsurface geologist in the area. In other words I was supposedly the most experienced in that area. Then I'd done a lot of the initial regional studies. For instance as an example when I was with the Texas company or the McCall Frontenac

company I had been and looked at all wells that had been drilled in western Canada up to that time, both in Ottawa and in Calgary, there weren't many in Calgary but in Ottawa and any other place that I could get them. So at that time there had been something like 2 or 3 thousand wells and I had looked at every one and logged them all. And so I had probably the best background of anybody, I would say, in the oil business really. So I was sort of the senior man in that area and looking at this Leduc area. And then they took me off to do strictly regional geology. For instance I did the drilling recommendations for #2 well and I did it for several others. Then I got out of that completely. Once it became a development field we didn't worry about it too much. So Charlie Visser he was one of the great people in the oil industry, they used to call him Dutchman.

NM: Was he Dutch?

DL: I don't think so. I don't really know whether he was. But he was one of these people I have tremendous admiration for. He got along well, he was an excellent man at his job, he got the jobs done, he got along, I don't think there was anybody in the company that worked for him or as an associate that didn't like him. He also had a tremendous ability to go into these small towns, where the oil industry in many cases had a pretty bad reputation, I don't know whether I should say this but some of the seismic crews going through these small towns knew that they'd never be back there again, many of them were American.

NM: Did they think they could do whatever they wanted?

DL: That's exactly. So that they tended to throw a lot of money around, they tended to attract some of the younger girls. So in many cases the city fathers, when they found out we were going to drill a well in the area, took a pretty dim view of it because they didn't want to go through this kind of thing again. But Charlie Visser had the ability, he could go out and soft talk anybody and by the time he was through talking to them they were practically standing with their arms open welcoming us back in, he was that kind of a man.

NM: A good public relations man.

DL; He was tremendous and he was also a top notch drilling superintendent. So he was really a tremendous man.

#318 NM: Here is a letter by George DeMille, what was he doing there?

DL: He was a well site geologist. George is one of the most brilliant geologists I think, really he has got an amazing brain. He can take on any kind of a job and his brain capacity just seems to expand to take it in. Most of us have a relatively small brain capacity it seems to me. Once we put something in then the rest goes out but he's not that way. And the thing about it is he had a tough struggle, George didn't get to university, I think he had to quit school about Grade 10. So he didn't have a really formal education and it was a very tough job getting him classified as a geologist because in the early days you had to have a degree to be a geologist. But he was one of the better geologists in the whole company as far as that was concerned, in spite of his lack of degree.

NM: End of the tape.

Tape 3 Side 1

NM: You were talking about George DeMille.

DL: Yes, the fact that he didn't have a formal education but what he did, he started to work as a sample catcher in Turner Valley. In other words he would go out every day to each of the rigs that were drilling, development rigs and bring in the samples for the geologists at Turner Valley town to examine. He'd also be responsible for washing them and cleaning them up and getting them ready. As a result of that exposure he took advantage of it and became one of the better . . well, he probably knew more about Turner Valley geology than most other people.

NM: So he taught himself.

DL: Yes, he taught himself. And that was the whole story of his career. He just had an amazing ability to learn and to take advantage of opportunities to learn and to think and to read. He was a very great reader. So it turned out that he is probably rated one of the better regional geologists in Canada, he has a tremendous knowledge and I know he's called on or has been many times by the Exxon people to go over to other parts of the world and look at the regional geology. And also to give talks on the regional geology. And he's a top notch man, have you met him yet?

NM: Yes, I have.

DL: You know, he's very quiet and not a pushy type at all. He's just one of these very nice fellows who knows an awful lot.

NM: And he wrote a book too.

DL: That's right. Oil in Canada West I think it was.

NM: The Early Years.

DL: I thought he was collecting material to write another book but I've never heard anymore about it.

NM: This is what he told me, he's planning to write a second book.

DL: I thought it was going to be on the men involved in the oil industry.

NM: Maybe he wants to keep it a secret.

DL: Yes, knowing George he probably does. Fred Keller was a very good friend of mine up here. He and I roomed together a good deal, both in Calgary and in Edmonton. And we worked together a lot. He was about 6'4", 6'2", a great big healthy man. He drank quite a bit but all of us did in those days.

NM: When the weather was cold eh?

DL: Yes, you have to have something to keep you going. But unfortunately Fred died very early. He was up in Edmonton, at a motel up there and he died there, he tried to notify somebody but he wasn't able to do it. Apparently his spleen suddenly ruptured and he was dead when somebody finally got to him and he died at a young age too, and he was an awfully nice fellow too.

NM: It was Fred Keller who introduced George DeMille to Aubrey Kerr. What was Aubrey

doing?

DL: Aubrey was another well site geologist but Aubrey had been down in southern Alberta. So we were scattered all over the province and in many cases people didn't meet each other because they were 100-200 miles apart. And then the other thing is of course, we also had field geologists, people out doing surface mapping and they never saw the well site geologists from one year to the other. Although there were not too many people, I think our total staff couldn't have been any more than about 10 or 12, something like that. But they were spread out pretty thin all right, they were out in the field, they weren't in the office very much.

NM: This is the end of the second interview with Doug Layer.

Tape 4 Side 1

NM: This is the third interview with Doug Layer. Mr. Layer last time we were reading a letter from George DeMille and now it is a letter from Michael Hyder, who was Michael Hyder?

DL: Mike Hyder, he was an American who had been working for, at that time called, New Jersey Oil Company and he was brought to Canada to the Toronto office to give some help to Imperial Oil people mostly because there were no real experienced people in the company at that time with respect to the exploration and production of oil fields. I shouldn't say there were no people but there weren't enough. He was brought in and really took over the reins. He had been through several periods of discovery and development in his career with Jersey and so he was a godsend to Imperial in telling them what should be done and arranging the plans and things like that and also getting the necessary budget money together and things like that. I think he was one of the real driving forces that got the job done. He was a man who, in my opinion, I had a tremendous admiration for him, he was considered by some to be a very hard man. In my case I found him an extremely great teacher, that he had broad, broad experience and he didn't hesitate and worry about losing time or anything, to teach young people what he knew. So I had a lot of respect for him. We used to enjoy him and when he was going to take on a new job we made a great big coloured plaque for him in which we had him driving a team of huskies with the names of the senior people in Calgary as the dogs and he driving the big sleigh with a black whip because we used to call him Black Mike.

NM: So the message was clear.

DL: I think he had a lot to do with organizing the company in the early days.

NM: He's mentioning several times a man by the name of Moses Knebel???.

DL: Yes. Mose Knebel was in the New York office of the Jersey Oil company at that time and I'm not too sure what title he had at that time but he used to travel around to all the Jersey affiliates as an advisor to them on geology and exploration. In other words his expertise was in basin evaluation, so he came around regularly every year, along with some of the financial people to not only help the local geologists but also to try to develop new ideas for them. In other words make sure that they weren't missing any bets and things like that. So he was a strong power in carrying out an aggressive exploration program on

Imperial's part.

#042 NM: He is saying also that another aspect of the Leduc discovery was a change of policy with respect to housing for field employees.

DL: Yes, I don't think I can really give you the real background on that because to be honest about it I never did know exactly what Imperial's policy on housing had been. In other words their policy had been set up for refineries, well, I suppose refineries and marketing people and I wasn't familiar with those departments so I can't really answer your question. There. For instance, somebody like Ed Lewis or some of these other people would do a much better job of that and I'd be afraid to comment on it.

NM: ??? in many cases lived in shacks.

DL: In most cases when we were exploring that's what we lived in was just shacks because it was a temporary deal.

NM: What happened to him, to Michael Hyder?

DL: After he left Canada he was moved to the New York office and finally ended up as Chairman of the Board for the Exxon Oil Company.

NM: So he did very well.

DL: He did very well, yes.

NM: The next letter is by Bill Hancock.

DL: Yes.

NM: And you have known him for a long time.

DL: Long time, yes. He was at the time that I knew him, he had already been up on that Canol project and had worked up there on surface geology under some pretty trying conditions. Then he had come down from there after that project was over and worked in the Calgary office here with Imperial. He had done not much more in the way of surface geology here, he had gone in to doing subsurface work and he had done primarily, his work had been in southern Alberta. When I started to work with the company he was what would be considered sort of in charge of the subsurface section. The company at that time was not really formalized in structure and all these other things that are so common now. So I got to know him quite well and he and his wife became very good friends of ours.

#072 NM: And the next letter is by Stan Harding, what was he doing there?

DL: Stan Harding was another Imperial Oil geologist. He had worked, I think this is correct, he had worked with Cam Sproule in Saskatchewan and again, Stan had done both subsurface sample examination studies and also he had done some of the, I guess what you'd almost call, administrative type work. When he came to Calgary after the Saskatchewan operation closed down he had a variety of jobs. To be honest about it I can't really remember specifically what you would sort of class them as. He worked directly with Dr. Ernie Shaw for most of the time that I recall he was with the company, doing geology and administrative type work. He was a very serious person, I found him one of these people who always seemed to take everything so seriously, which is not typical of geologists really.

NM: No, they like joking.

DL: No, they're not very serious types. But Stan was and he was a very hard conscientious worker too.
NM: And he mentioned Jack Webb.
DL: Jack Webb was really at that time, would have been what you would call sort of the head man for the Exploration Department. He had been a geologist for many years, he'd worked in southern Alberta back in the 20's, then he was appointed to run Imperial's exploration group, which was basically made up of a geophysical department under Ray Walters and then an exploration group which was made up of a few geologists. Really was not any sort of main head to it because Dr. Link out of Toronto pretty well ran it. But one thing that probably, because Ray Walters died early, when he was young, he doesn't get, I don't think, the kind of credit that he should. He was the one that drove the geophysical department to a very important place in the company and was really the one that sort of organized the original geophysical work. He was a hard character but at the same time I think if it had been a fellow unlike him, somebody that was sort of a lackadaisical type that we would not have done the kind of excellent geophysical work because it was being improved so rapidly.
NM: And Link did not like to leave Toronto.
DL: Yes.
NM: Can you tell me a bit more about Ted Link?
DL: Doc Link had a reputation. Some people couldn't stand him and others thought he was quite good. He was a man who had a sense of humour that sometimes bothered people.
NM: Was it difficult dealing with him?
DL: No, it wasn't really. Little things, for instance, when I went to see him about joining Imperial he was sitting at his desk when I walked in and he looked at me for a minute and then he turned around, put his feet up on the table behind the desk and didn't say anything, well it seemed like half an hour.

#121 NM: Did you go on talking a lot?
DL: No, I just waited for him. He finally said, well, so you'd like to join the company. I said, yes, I think I'd like to try it and he said, well, I've heard so much stuff about you, I guess you'd fit the company all right so he turned around and he said, you're hired. So he was that kind of person. Another time, after I'd been with the company for awhile, since he used to visit Calgary regularly, but not announced, he never announced his trips.
NM: Why, he wanted to surprise people?
DL: He didn't want people preparing stuff you know or putting on a show. So anyway this one morning, it was quite early in the morning and I had to take phone calls from the various wildcat rigs that were drilling, the geologists would phone in the information that they had as of that time in the morning, 8:00 or something and then that would be prepared in a form to teletype to the Toronto office so they'd be kept up to date. These local line from some of these small towns and that, there was always problems on them and that one morning I was right in the midst of this and the call was broken and the operator said, just wait a minute and we'll get the call back for you. So I put my feet up on the desk and I was just sitting waiting for this call and Link comes stomping down the hall and badgers

in the door and said, Layer, what are you doing. Of course, this kind of shocked me and I said, I'm thinking.

NM: With your feet on the desk.

DL: Yes. So anyway, he didn't say a word and I thought, oh god, I'm going to be fired because I'd only been there about 6 or 8 months. So all of a sudden, bang, bang, bang, comes down the hall again and he had a statue of a monkey sitting on a book of Darwin, you know that very famous one, you know, thinking deeply. So Link brought it in and he put it on my desk and he said, Layer, that does all the thinking for this company.

NM: So he had a good sense of humour.

DL: Oh yes. And that's the sort of person he was. Now in other cases his sense of humour rubbed people the wrong way, it hurt them, he could be very sarcastic but I think, unless you were sensitive it didn't. For instance one of the things he did that really bothered people, he would see me somewhere and he'd say, well, Joe how are you. This bothered an awful lot of people because he did that to anybody. After I got to know him, I used to just say, well, I'm fine Pete, how are you. But the thing about it was that I talked to him 10-15 years later, one time when we were sitting around and I said, why do you do that, why do you use that term Joe. He said, I'll tell you why, there are a lot of people that I've run into that have sort of the you might almost call it a racist attitude and Joe was a derogatory name back when so many of these central Europeans were coming into the country. In many cases their name was not really pronounceable to the Canadians and so Joe was just used for anybody that was digging the railroads up or something like that. He said, I found out that somebody who really takes exception to being called Joe, that fellow I have a feeling, I just don't trust him as being very stable. If he's that sensitive about being called Joe then I think that he's just a little bit. . .

#175 NM: So it was a good way for him to check how tolerant they were. And at the same time teasing them.

DL: That's right. But gosh, I knew people that used to get so mad. When Link had known them for 10 years and he'd come barging into the office and there would be a whole bunch of people around and he'd say, well, hello Joe how are you.

NM: It would be a blow to their egos then.

DL: My name's not Joe, you know. Anyway these are the sort of things that he did. For me when he did that, I thought that's fine, I could care less.

NM: He was American was he not?

DL: Yes, he was. And he came from a very brilliant family. His brother Walter was Chief Geologist for the New Jersey Oil Company. He had another brother and a sister who was, . . gosh, she was in some form of, I can't remember now, professional work, but anyway she was at the University of Chicago I think, down in that area. It was a brilliant family, a very brilliant family.

NM: Where did he do his studies, in the States?

DL: Yes. I'm not too sure which schools he went to but I think he got his doctor's degree at the University of Chicago. He was a real character in the old oil field days I can tell you.

NM: The next letter is from Jack Harvie and he says confirming our telephone conversation, so

you did not send him a letter, you gave him a call. Number 1) *I know of no delay in sending the information to Toronto that the D-2 was tight*.

DL: Yes. On the #2 Leduc well the rumours went around that the only reason the company found the reef or the D-3 production was because the Calgary office neglected to inform the Toronto office that the expected productive zone was not productive, that is the D-2. So this rumour got around and spread as becoming factual. Jack Harvie was the engineer at the time in Calgary and so he knew what was going on at the rig and he knew the general plans and the schedule and the way the information went. So there was no attempt made by his department or any other department to withhold information. It was just that in those days, the decision making was much slower because you didn't have all these modern gadgets and stuff like that and it was normal company policy that the driller kept going, drilling kept going until they had a specific order to shut down. So there was no hanky panky at all involved in it.

#218 NM: And also no delay in notifying Hoskins?

DL: Yes, that's the Toronto office.

NM: And he explained the delay in shutting down the rig was penetrated was two fold.

DL: [mumbling under his breath like he is reading] I believe the delay . . . after the D-2 was pene. . . was two fold. That's saying the same thing, first the communications were not the best in those days and the decision was made while waiting on order, which was the normal decision on a wildcat well. This would be a normal decision to obtain geological data. So there was nothing funny about that at all.

NM: And he was in the Calgary engineering office.

DL: Yes. Literally. That gives you some idea of how we were operating in those days with a very minimal staff, everybody was into jobs way above their training, we were all working on stuff that under normal circumstances wouldn't have been doing that work for 5 or 10 years.

NM: It was a very good challenge.

DL: It sure was. Everybody learned pretty fast.

NM: And who was Don Wilson, he was working . . .?

DL Don Wilson was one of the engineers, I think responsible, he's the one I suggested maybe you should add to your list. And Maurice Paulsen, these are two engineers who were involved in actually, you know, doing the engineering work on the well site.

NM: And Bob Teskey?

DL: Bob Teskey is another one of the petroleum engineers involved in the completion of the well, the first wells in Leduc. He's another one it would be worth talking to. Those fellows were right on the rigs at the time so that it's best. Some of the other people that you've got listed there were associated with the oil industry after it sort of sprung from Leduc but these people were actually at the. . .

#250 NM: And now we have a very long letter addressed to Audrey Johnson from Vern Hunter. What was the role of Vern Hunter, what did he do?

DL: This letter was written by Vern to Dick Johnson, who was the editor of the local Esso

news and this was at the 10 year anniversary of Leduc. Vern was the tool push on the rig at #1 rig. Which means that he was sort of the supervisor over all the drilling crews, the whole 3 drilling crews plus the mud men, plus the other people, the water truck holders and everything. In other words he was in charge of the rig.

NM: Was he from Calgary, or from Alberta?

DL: I really can't answer that. As far as I know he was an Albertan but in fact I can't really answer that one.

NM: He mentioned that the derrick was located on Mike Tota's??? farm. Did you know Mike Tota?

DL: No, I didn't. The only people that would know him would be that landmen who went out to obtain the lease and get the surface rights.

NM: And he said here, many of the boys on the crew were from Saskatchewan, including Jack..

DL: Grosnick, yes.

NM: Did you know him?

DL: I knew him slightly yes.

NM: Jim Davidson.

DL: Jim Davidson, Paul Le Frenier, Ben Aurey, I knew him quite well, Johnny Funk I knew quite well and Stan Smith. Now the reason for that is, as I mentioned Cam Sproule had been exploring in Saskatchewan for Imperial and this particular rig had been over in Saskatchewan as well and they were picking up various people from the farms and places like that to fill out the crew and then training them.

NM: So did he know these people from Saskatchewan and brought them to Alberta?

DL: Yes, they had worked with him in Saskatchewan and he just brought the crew along with him, yes.

NM: Can you tell me about Mousy McIntyre?

DL: Mousy was one of the old Turner Valley people, that had worked in the Turner Valley field and since we were short of every kind of man at that time people were moved into more responsible jobs very quickly. And Mousy had had quite a bit of experience as a roughneck so he was one of the ones that was given the opportunity to act as a driller on this particular hole.

NM: And he was very sorry looking. He wrote the report in that morning, no hole and lots of trouble. George McClintock. And he was relieved on occasion by you.

DL: The thing was the way it was set up is that there were 3 geologists on each rig because they had to be there 24 hours a day. So George was one of them. Now you've got to recall that the geologists were changing all the time. McClintock would be on a well, he might have come in then George DeMille, Alec Bland, so that the names are changing all the time, depending at different times. But my job at that time was really sort of as the senior geologist there so I was the one that had the responsibility for getting the reports in and all this kind of stuff. And I wasn't there just part time, I was there half the time as a matter of fact. The company took a very big gamble on Leduc #1. We had received a lot of publicity and decision was made that we'd try to let the public know as much as possible about it because oil companies, and it still is the case, their reputation is always

kind of coloured slightly that they're hiding things, they're not telling the truth and they're dinging the public and stuff.

NM: End of the tape.

Tape 4 Side 2

DL: So in order to try to avoid this problem a bit it was decided to invite a lot of the senior government people and a lot of the business people and some of the press and people like that out to see bringing this well into production. And that, oh, it was a tricky job, you never know whether it's going to be done in a few hours or whether it's going to take a few days and whether it's going to be successful. So they gambled and although there were some slight delays it worked out perfectly that the well came in and it did come in, it produced oil, so people. . .

NM: How long did people wait?

DL: I think there was about a 5 hour delay as I recall it. I know I was kind of mad because I wasn't invited.

NM: Why were you forgotten?

DL: Most of us who were working on the well were forgotten in that group. The only people they needed around in that time were the engineering people and the drilling people. The geologists weren't needed because our job had been finished you see.

NM: So was it like a big party?

DL: What they did is they had a party in Edmonton where they had drinks and I think they had food and then in addition. .

NM: Was it at the Macdonald Hotel?

DL: In the Macdonald yes. And then they presented a series of graphs and illustrations explaining what was going on and what they would see and etc. And then they went out to the site and . . .

NM: The same day?

DL: Yes.

NM: How long was it to drive?

DL: Oh, it's not very far. Not it would be about 15-20 minutes but in those days it would probably take I suppose 3/4 of an hour at least. Because the roads left something to be desired. But it worked out fine. There's pictures now of Nathan Tanner opening the valve and these sort of things, Vern Taylor. . . So it worked out extremely well and got a lot of publicity.

NM: I'm sure. And what were the people given, were they offered tea or alcohol?

DL: I suspect it would be mostly alcohol at the time. Well, there would be tea and that too but it was a typical reception type thing.

NM: And it was very cold?

DL: Yes. Well, they were given that in the hotel, out there, there wouldn't be anything for them because there was nothing there, except the rig.

#034 NM: So they had to wait 5 hours with nothing to drink or to eat?
DL: That's right. About 5 hours, you'd have to check the timing on it.
NM: And then Leduc #1 came in.
DL: Yes.
NM: And Vern Hunter ???
DL: Yes. This. . . if I ever learned a lesson it was never predict when a well would come in. Well, you never did, I don't think anybody ever did in their right mind, never predicted when they could bring a well in.
NM: It's something impossible.
DL: Yes, it is. Because you never know, so many things can go wrong.
NM: And now we have a letter from Aubrey Kerr and here are some points that he wants to put the Leduc discovery, number one, any comment on . . .
DL: That comment, it's a little bit too black and white. There was a strong feeling in the company that really, since we'd been exploring for 20 years, other people too and hadn't come up with anything except Turner Valley that it was beginning to look as though this was strictly a gas prone area. So there was an element in the company that said, we can't continue to pour money into Alberta and the west looking for oil, it's just going on too long and we're not getting anywhere. There were a couple of alternatives really, one of them, in addition to continuing to look for oil was one of using this Fisher-Tropps, using natural gas to make synthetic liquids. And the other one was to pull out, that was it, there were three alternatives we had. So the company was split, there's no doubt about it, the Board of Directors was split on what to do. So then it was decided in about '45, on the basis of recommendations made by people like Don Mackenzie and Mike Hyder, Mose Kniebel and Louis Weeks and various people in the company and in the Jersey company to make another attempt to see if we could find any substantial amounts of oil in the west. We were at that time importing oil from Wyoming to meet the demands of our Regina refinery. And it was very expensive oil at that time. So that it was becoming critical whether or not there would be an indigenous supply for the west of some kind of fuel. There was really I guess you could say that the amount of encouragement that we had had at industry had been not worth getting excited about and I can really understand why people who were not in the exploration business but in the refining business, in the marine business, in the marketing business, could easily say, you're just throwing good money after bad. So anyway the decision was made that we would take another crack at it and that was fortunate.

#075 NM: And point number two, the discovery of small amounts of oil in the Provost, Greendale area, which when followed up did not amount to anything.
DL; This was a discovery that was made just on the Saskatchewan, Alberta border. The rigs were moving in from Saskatchewan and this was another one of those deep tests that Dr. Link had wished to make. So it went down very deep. Small amounts of oil had shown up but we couldn't make anything worthwhile out of it. It was later developed into a small oil field, when the price of oil went up.
NM: And point number three, the hurry up move of the Franks rig from Provost up to Leduc,

in December ‘46, when ??? were found in the lower Cretaceous sequence at Imperial Leduc #1.

DL: Yes. I better check that. Okay, yes, the Franks rig was moved to the #2 location, that’s why that sounds confusing. At that time the #1 well was down around, it must have been down around 4,500' and we were getting oil shows and gas shows and things like that, primarily gas shows. And the decision was made that we would move another rig in, theoretically down dip a little bit to see whether or not there might be more oil in these Cretaceous sands than there was in the #1 location.

NM: And point #4, Imperial Leduc’s #2 located southwest of #1 to be down dip from the ??? gas shows found in the lower Cretaceous sands, hopefully to be in the oil lay.

DL: Correct. That was the theory anyway. Now the seismic showed the #2 location to be somewhat lower than the #1 location.

NM: And #5, by the time Imperial Leduc #2 was sputted, Niscue at #1 had already been intercepted. #1 was put on production the same day as #2 was sputted.

DL: Yes. Now these words are interchangeable. In the early days we didn’t name the formations, we didn’t know enough about them but that is the D-2. When we were working there we named the Devonian formations, D-1, D-2, and D-3. Then we wrote a report, I wrote most of the report along with company people and a publication that used these names, the niscue would have been. . .

NM: What does that mean?

DL: Niscue is the name of a little siding, just about 15 miles from Leduc, on the main line of the railroad between Calgary and Edmonton. It’s an Indian word but don’t ask me what it means. I probably knew but like a lot of other things my memory isn’t as good, it doesn’t recall all these things back.

NM: So next time we will go on commenting on all the point of Aubrey Kerr’s letter. This is the end of the third interview with Doug Layer.

Tape 5 Side 1

NM: This is Nadine Mackenzie speaking. This is the fourth interview with Mr. Doug Layer. Mr. Layer last time we were commenting on Aubrey Kerr’s letter point #5, now we are reaching #6. When the niscue was reached at #2 after a great deal of coring and tasting in the Cretaceous and ???, it was found to be virtually tight with only a few oil stains in the core and very minor porosity.

DL: That’s correct yes. So obviously we were not going to get any production out of the niscue or the D-2, as it was called in those days, such as we did in the #1 well. There’s no doubt about it that this was a very, very great disappointment to the company because we had all expected, or hoped for anyway, that we would have an oil field here and here the second well we drilled was dry in the productive horizon. And also in the Cretaceous where we had expected to find oil down dip from the gas, in the first well it was nothing really, mostly water. So it was a pretty disappointed group of people. Fortunately the rig was able to continue drilling for a bit, which was normal procedure in those days anyway, just until the final decision was made as to whether or not we should abandon, the rig

usually just kept going till they got an order to stop.

NM: Right and #7, while the company officials in Calgary were wondering what to do about the next location the well site geologist, in this case it was Aubrey Kerr, was instructed to resume drilling and green shale was encountered. This was recorded as being similar to that at McCall Frontenac's Hobbema well drilled during the winter of '46, '47, where there were many hundred feet of green shale.

DL: That's true. There were two wells drilled in the area at that time, the Hobbema well and then a well about 50 miles to the east of the Leduc area. When they had gone through the D-2 or the niscue then they went into just a long section of green coloured shales and no reef material or anything else that was of any value. Then when you went to the bottom of that several hundreds of feet of green shale you ran into some tight limestones or dolomites that again, were non-productive, there was nothing in them. So it was an indication that you'd had it, in other words you'd gone through the potential area and there was nothing much left.

#032 NM: #8 now, after having drilled about 150' of green shale, Aubrey Kerr noted a considerable speed up in drilling. After having penetrated 6' of this, of drilling, orders were given to circulate for returns. This did not appear until 11:00 in the evening and when they did come out they consisted of coarsely, crystalline, white dolomite with no trace of oil stain.

DL: That's correct. The rock was so porous, had so many holes and everything in it that what happened was, and the oil it turned out of course, was quite light, when it was being drilled and under the pressure with the mud and the water and everything, all the oil and stuff was just flushed out of this open rock. So as a result there was very, very little sign of any oil. Now an old method that we used to use and I don't know whether Aubrey used it or not, is to take those samples and even if you can't see anything on them, we used to have a hot plate or something around there to dry samples. If you take samples like that and there's no sign of oil or anything at all you can put them on the hotplate and you'll find that if there is oil present then you'll get the fumes coming off as that rock gets heated up. That was a trick we used quite a bit when you were a little bit shaky on whether there was water or oil in the section.

NM: #9, Aubrey Kerr ordered a drill stem test despite indications that the zone appeared to be water bearing. The well flowed the next morning, May '47, he's not sure of the date. In 7 minutes through 3 1/2 drill pipe, using a full hole packer the well was full all the way with only 150' of surface casing, which after investigation was found to have been cemented in gravel, leaning??? dangerously.

DL: Very much so. Because normally you're supposed to get your surface casing down to something solid, so that if there's any surge of gas or something that it doesn't just blow the casing out of the hole. In this particular case that was pretty rough going. But I think the Conservation Board changed the rules later, I believe they insisted that you had to put in 500' of casing I think it was, or something, to get away from this particular type of problem. Because that can be extremely dangerous.

NM: #10, coring was immediately started. In brackets, I believe using 5' intervals, close

brackets and continued with tests until the oil, water interface was encountered.

DL: Not the thing is if you want to back up any of that information, the actual detailed log or history of that well is in that documentary file. There's a card there which shows the date and the interval tested and the results of every test run here. And you can also of course, get the date.

NM: #11, it is interesting that #2 hit the Leduc just at the gas, oil interface.

DL: Yes, that's a coincidence, it doesn't usually happen. Usually you get your gas cap and then you get your oil and then you get your water. But this one, it just turned, just by sheer coincidence encountered the top of what turned out to be the reef just at the elevation at which the oil started to appear and there was no room for the gas. So it was quite a strange coincidence, no gas cap.

#078 NM: And #12, the gas cap in the Leduc was identified in Imperial Leduc #3, drilled to the north face of #1 and designed to discredit the seismic picture. It encountered the Leduc some 60' shallower than #1 equivalent depth.

DL: That's doesn't sound. . that's kind of a little complicated. The terminology kind of bothers me there, I don't suppose there's anything wrong with it. Really, the #3 well wasn't really drilled to discredit the seismic picture, it was drilled to try to evaluate the seismic picture is what was done. To see just what was right and wrong about the picture because you have to remember that that time the seismic boys were not mapping the reef, that was a jumble of dips. You couldn't make any sense out of it. So they were mapping the Cretaceous, one of the horizons on the Cretaceous, which hadn't a direct bearing on the reef itself. It had a little bit of a bearing but not an accurate reflection of the reef. So what we were trying to do was to try to find out just how far out the seismic was or whether it was out or not. Do discredit is a little bit harsh, it was trying to evaluate the seismic a little bit. Then it wasn't too long before the seismic people began to make some sense out of the records at a greater depth, that is the ones that actually were involved in the reef itself. They used different techniques, they had originally set up their procedures to emphasize the horizons in the Cretaceous, to get those so that they showed better than anything else on the seismic records. When we found out that the production in this reef, then what they did is they switched and experimented with new techniques all the time until they finally got some information that could give them a little bit of a clue on some of the reefs. Some of them were very, very difficult until 20 years later when they had very, very new techniques. But in those days some of them just barely showed up at all, they were just a mish mash of criss cross lines. It took a genius practically to try to figure out what might be there. And yet at the same time, the situation at Redwater, which was another big field that we found just about a year later or the same year, it was a very good case where, when the seismic boys went over it they just mapped the northeast edge of the reef, just without any trouble, just so sharp that it was a cinch. As a matter of fact, we found out later that Shell had already mapped it and the chief geologist for Shell, Les Clark, was just happy as he could possibly be that they had a structure on the plains because we weren't sure whether it was a fault that cut it off there, made the slope. And he wasn't either. But unfortunately from Shell's point of view and fortunately from out

point of view, the Hague decided that they had spent enough money in western Canada and said, we're finished exploring so just forget about it and then they pulled up. So we managed to get the land and map it and get the Redwater oil field. So anyway we were lucky there.

#124 NM: Right. Before we go on with the next letter I wanted to ask you about the environment in this time. Were people talking about environmental problems at Leduc or not at all?

DL: Not really. There was some complaints but this is not really what you would think of as environment. We were always having constant troubles with the farmers with respect to, particularly cattle. The drilling mud that we used in these wells was salty, it would pick up salt from the formations and the cows would come around and sort of enjoy a little bit of this salty stuff or particularly it would usually be the prize bull within 5,000 miles. And included in drilling mud we used to use a compound of oil and lead for lubrication for the drill pipe and of course, it's toxic. So we had troubles there.

NM: So did you kill many cows and bulls.

DL: Not really. Very, very few of them but it was always the most valuable animal that god had ever put on this earth, particularly the bull's I think, who had had their day 20 years ago in many cases. They were considered the best bull in the west you know. We'd send people out to check and they'd go out and talk, not as Imperial Oil but they'd go out and talk to some of the farmers in the area and they'd make some comment, well, that's sure too bad about old Joe's bull wasn't it. So usually what you'd hear was, well, the damn thing was practically dead anyway. But environment as it's thought of today, no. Most of the farmers, I would say the big percentage of the farming people were happy to get the extra money. They weren't concerned, the people in the cities were not concerned about the environment being destroyed with oil and all this kind of stuff and seismic lines, so that we really didn't have that kind of a problem. Our major problems were with tearing up country roads, in other words moving heavy equipment over the dirt roads. Doing that particularly after rain storms and that, we made them almost impassable for the ordinary farmers traffic. Because in those days a lot of it was by old age automobiles and some wagons and things like that. We did have a problem there but what we did normally, as soon as we got into an area where we started to do much work at all then we gravelled the roads. We'd go in and gravel them ourselves to protect the roads. We had troubles to some extent, and these were all kind of local troubles, it wasn't a group from western Ontario or something coming around raving about we were destroying the ecology and all the other things, there were local farmers and that. In the winter time there was another problem we ran into which was in many cases, the farmers were quite mad at us and I can't blame them, that we had to plow the roads in order to get out crews back and forth because we didn't have track vehicles or anything. We did have a few of them but not enough. But the thing is when you plowed the roads in that country then the first time a wind comes up, then it fills in even worse you see. Because you piled the snow on the edges and then the wind, not only does it get in there at a foot deep, it gets in there 3' deep. Then the farmers can't get through. Of course, we send a bulldozer ahead to get out

trucks and stuff through but in their case they wouldn't necessarily be using it at the time we were clearing the roads. So that caused a bit of a difficulty because in the winter time, normally the wouldn't plow except maybe just to go to the haystack or something. They would let the country roads in many cases, blow clear, or where they didn't blow clear, then it would pack down gradually and it would only be a foot or two. But when we piled up this snow around the edges. .

#183 NM: They were not too happy.

DL: So those were the odd things that did cause some disturbance between some of the local people. But environmental problems, for instance now, I'm convinced that if we'd had the radical environmentalists that are present in many areas now, that we'd still be trying to get Leduc #2 drilled.

NM: It seems they would have made so many. . .

DL: This is right, it's just hopeless to try to get anything done. So fortunately at that time there was nothing and if you go up to the Leduc field now, I don't know if you've had a chance to visit it or not but if you go up there you can't see much in the way of damage when you consider there were, gosh I don't know, hundreds of wells in that area. It seems to me there were 7 or 8 hundred wells in the area. Well, you go up there now and you really don't see an awful lot of damage. It was just another one of the fortunate things. We had an honest government and we didn't have too many radical environmentalists.

NM: People were not getting sick, having allergic reactions or anything like that, they did not exist?

DL: No. It's like the people who lived at Turner Valley for 80 years and they never got sick either you know. And they lived in sulphur gas for their whole life and they never had all these problems. No, there was no problem such as that. The smell of oil and the smell of gas that you got in those fields, it wasn't as sour as the gas from the deep holes and along the foothills but it still smelled and nobody complained about that.

NM: It wasn't the fashion of complaining.

DL: It was just a different outlook. I mean, here was progress, in those days we were finding some oil and I think a lot of people could realize they were going to be able to buy gasoline cheaper and there would be more of it and things might be a little better for the farmers and everybody else. So it was not one of the serious problems. We had a constant monitoring, we had PR people who, in the case of Imperial anyway were out in the field all the time making sure that we were not doing things that were upsetting the townspeople or the farmers or stuff like this. Now Imperial and the other big companies did that. Some of the small companies didn't and we did have some pretty, I shouldn't say serious but kind of critical things happen that shouldn't have happened, where the townspeople got riled, where water wells were destroyed, where seismic crews shot too close to a house or they tore down fences and the cattle got out and didn't replace them. But in most cases this was done by the smaller companies, the big companies were very careful of their image. Oil companies have always had a bad image, as you know, and so they lean over backward to try. . .

#234 NM: Try to make everybody happy.

DL: Yes. Try to keep. . you can't do it but at least to try and to try to avoid causing any friction at all. So actually we had very little serious problem, compared to what we'd have today.

NM: The next letter is from Hank Kunst???, who was he?

DL: He had been a geologist and done a lot of surface work, particularly in the foothills. When we started to run quite a lot of seismic work, Ray Walters, who was in charge of the seismic programs wanted a geologist to sort of help coordinate the geophysical effort with some geology. Ray himself was a very strong minded man and he didn't want the geological group as a whole to be interfering with his geophysical work so instead or working, the normal way would have been for the geophysics to be done and then it would be carried on by the geological department but Ray took the attitude, geophysics is a lot more important than geology so I don't want a bunch of geologists wandering around looking over my shoulder. So he picked one geologist and said, okay now you coordinate the geophysics and the geology and we can keep. . . Actually for instance, he wouldn't let geologist into the geophysical department, they couldn't go in. So I mean he wouldn't let me in there. So Hank Kuntz was the one that was picked to do the job. He was a good man for it because he had a good background on the geology of Alberta. Not too great on subsurface since most of his work had been on the surface doing mountain and foothills geology, but he had also done some plains geology. And he had looked at some wells but not a great deal of them. He was an extremely good man at. . I can't quite think of the right words but he had the ability to put things down in sort of a logical manner. In other words he could do it with a sort of good rationale, he wasn't a helter skelter type so he could keep excellent records and he was an excellent man to put in there because it did take somebody that could sort of work, I'm still searching for the right word,. . . .like so many people, they're helter skelter type and he wasn't. He was well organized I guess that's about as good as I can think of at this time. So that was his job. That should be one of the points here, he mentions here this T. A. Link questionnaire, I think that's one subject that is worth taking a little time on and somewhere along in your interviews I think you should. It was a most interesting thing, it basically. . .

#289 NM: There is a sample of the questionnaire in your book, yes I've seen it.

DL: Yes, and all the answers are in the book too. But I think it really gives you a true idea of what the Imperial Oil geologists thought and what they knew in that time. And it takes away from all this brilliance that people developed after 30 and 40 years. In other words they were not nearly as intelligent as they thought they were at that time.

NM: But at the time they did not know much of what was happening in any case, it's just looking back then we can. . .

DL: Now we're all smart.

NM: About this T. A. Link questionnaire, I saw myself that there was a question that were asking the geologists, do you think more oil could be found in Canada and most of the people answered no.

DL: You have to remember that there had been a constant exploration, by Imperial particularly

for over 20 years and there had been no commercial oil found with the exception of the Turner Valley oil field. There were small fields found by Chevron but they were all of a very minor category. And of course, you have to remember the price of oil was very low in those days, so that you had to find something worthwhile before it would pay. So you get the impression and it was a very true impression that many of the geologists were pretty pessimistic about the potential most of them felt very strongly that there would be a lot of gas, which turned out to be very, very true, that there would be extremely large amounts of gas found. But as far as oil was concerned the results had been so poor that many of them just felt that this area was primarily a gas prone area. We had followed up the Turner Valley oil discovery and every foothill structure which had been productive was productive of gas, they never found any more oil. So you go to various places, Medicine Hat, gas only, you go to the Kinsella area, gas, you go up to Peace River, we drilled on tar seeps up there and what do we get, gas. Everywhere you turned there would be gas.

End of tape.

Tape 5 Side 2

DL: So that probably explains the rather pessimistic outlook that many geologists had. I think one of the questions was, would you be able to find commercial oil within five years, I think there was something like that. There were several questions and I think it's worth looking at because Dr. Link had given a sketch map and said, if you think oil will be found, where in this area do you think it will be found. The figures are in the document file but there was an extremely high percentage picked about the same area that they thought would be the most productive for oil if oil was found and that was in the general Edmonton area. It turned out that they were right really. I can remember that for many years after Leduc I'm sure that 75-85% of all the oil that was found in Alberta was in that belt that had been chosen by the geologists, basically I think on some technical knowledge and then also on the fact that it was down dip from the heavy oil belts and those area always good areas to look at.

NM: On the whole it was a good guess.

DL: It was a guess tempered with knowledge of other areas where the light oils occur down dip from the tar belts. But I don't think there were any of us that were brilliant enough to say that we were going to find most of the oil in reefs. That is just not quite true.

NM: That is just looking back.

DL: Yes. Everybody was very brilliant, when you look back 30, 40, 50 years.

#030 NM: Here is now a very short letter from Labby Laberge and he was a seismic interpreter for party #10. What was party #10?

DL: We had seismic parties and each one were given a number, rather than call them Joe's party or Sam's party they were given a number. And that's the reason for that, it was party #10 and then from a purchasing point of view and an expense point of view, the bills and

everything were directed to party #10 accounts.

NM: And he said, I presented a geophysical case history of the Leduc discovery to the exploration conference held in the Macdonald Hotel, which I believe was in the spring of 1950. You were there too?

DL: Yes, he was chosen to give that and that was back in 1950, you see, we had pretty well, we knew it was a reef and we had done a lot of drilling so he had a lot of information. He was also out there at the field so that it was a nice chance for him to put together what he knew and work with the geologists and geophysicists and get the basic background on the thing. So he gave it and I don't know, I know there will be a copy of that around someplace but it would be in the company files. At those exploration conference we put together a copy of all the papers and they're filed in the company files.

NM: So it is available to the public?

DL: No, it wouldn't be available to the public because I don't think that they have given any of them out to the university or places like that. They made up enough for the people who were attending and they were your own property, you kept it after the meeting. So that usually in the office they only had maybe 2 or 3 copies for the library files. Unfortunately many of those are just kind of disappeared but they may still have that sort of thing. So it would be one that you could check to get some of the ideas then but I don't think it would add much to what you've already found out.

NM: He mentioned other interpreters, Buzz Crosby and Bruce McDougall, did you know them?

DL: Yes, I did. Buzz Crosby as a matter of fact, has just within the last week moved over to Victoria. But I can't tell you, I really can't tell you where these two were working. I didn't think Buzz did any work on the Leduc itself. I think that Wes Rabey and Bud Coutt, it seems to me did a great deal of the direct work on Leduc. Where Buzz and Bruce McDougall spent most of their time I don't know, they were obviously with party 10. You see, I don't think that party 10, let me see there. . . . Yes, they were doing a little bit of the detail afterwards, after that initial bump had been found. But I really can't answer that question. I didn't really that Buzz and Bruce McDougall were on any of the interpretation on the Leduc area. Now it's very possible they could be because there was a constant shift of parties, several parties went in there after the initial discovery and then as more wells were drilled more parties went in. So you end up with a pretty complex mixture of people. But in those days quite a bit of the interpretation was done in the field. Then it gradually changed so that more and more it was done in the office. What was happening and this was a bit of a sore point for many years, the interpreters in the field would make an interpretation and then they would do their work and they would send in a map and everything else. And then they had another group in Calgary who would reinterpret the whole thing so that the field interpreters sort of felt like they were wasting their time and to some extent they were. But they were getting an awful lot of good experience and that's about the only justification. Well then gradually we got to the stage where there was very little and then finally no interpretation in the field. Somebody looked at the record and saw that it was getting the kind of information they wanted but didn't interpret. Then they went to doing it all in the office.

#090 NM: Who was Peter White? It says he was session chairman at the exploration conference, but what was his role in Leduc?

DL: He had nothing to do with Leduc as a matter of fact. Now this conference that you're talking about here, that would cover all phases of Imperial's exploration in western Canada.

NM: Yes, that was in the spring of '50.

DL: Yes, so it covered everything we were doing. We had one every 2 or 3 years. Peter White in 1950. . . I don't know. I'll tell you what, Peter White was a South African and he had been working for Exxon before the war. His actual specialty was gravity meter work. After the war I think he went down in the Bahamas where he did some gravity work in the island areas there. And then he was moved here as a geophysicist. But basically since his expertise was more gravity and we weren't using much gravity work he was swung into sort of more administrative work. Then he was a smart enough character, I know him very well, he's a good friend of mine. His history is vague in my mind, I can't tell you, I know he was put in charge of our operations at Peace River, then he was put in charge of Calgary operations, he ended up in Toronto as exploration manager for Imperial. But at the time he was session chairman I don't know what his specific job was. I suspect it was either as an exploration manager in Dawson Creek, Peace River country or Regina or maybe even out of Calgary. So I can't really answer that, that's another place where my memory is gone completely.

#121 NM: And now we have a letter from Ted Link himself, it seems to be a very articulate letter.

DL: Link was articulate in more ways than one. He was a very knowledgeable, the whole family as a matter of fact, were knowledgeable people, they all had PhD's. So he was quite a man and he was the Chief Geologist at the time of Leduc. So he pretty well had knowledge of everything that went on, both from the field operations and since his office was in Toronto he also knew how the Board of Directors and the higher up people reacted to all these things. So he had a very full view of what was going on, both before the discovery and after the discovery. He was quite an individualistic type person and not necessarily too easy to get along with but he was certainly a smart man and his comments are well taken that there was a great deal of indecision in the higher levels of Imperial, whether or not it was worth carrying on any further exploration. So as he points out, you could continue to drill these relatively shallow wells to try to find some really commercial oil, in the Cretaceous primarily or what I know Dr. Link himself personally wanted to do, was to drill a series of deep tests, right across the basin, through Saskatchewan, across Alberta, over to B.C. to the basement. In order to find out what the stratigraphic sections were that might be potential in oil if you could get them on a structure. Then the last one, which was very seriously considered, we'd made economic studies and everything involved except the actual planning of the building for a Fisher-Tropps plant to convert the natural gas into oil as the Germans had done during the war. So those three things were. . and fortunately after the discussions we went for #2 which was drill some deep tests to the basement. Which is when Leduc was found, as a result of the first of those.

NM: And the drillers at the discovery well were Vern Hunter and Charlie Visser, we have talked about them and then it says, Doug Layer was sitting on the well the night of the discovery, so here you are.

DL: No. You'll have to change that a bit because I unfortunately was not there that night. I had been called back to Calgary to do some work on the #2 location as to geological interpretive work, and also to do some more regional studies. So it was Steve Cosburn who had that fortunate occurrence happen in his life.

NM: So the correction is done now.

DL: But that just shows. . .Doc Link remembered that I was assigned to that well at the beginning of it and I was there until about, I think I came back to Calgary sometime about, I think it was about the 1st part of January and I think they hit the D-2 about the middle of January. Somewhere in there so I was there for 3/4 of the time that the well was being drilled.

#170 NM: So it was not surprising that in his mind he did not know, especially if he was in Toronto.

DL: And see, *Jack Webb was at the well site that night too*. Well, now I don't think he really was. I certainly don't recall that because when you read Steve Cosburn's letter it was a night 30 or 40 below, the middle of the night and he stopped them and made them run a test you see. In those days you didn't get on an aeroplane and fly up to Leduc. Jack Webb would have had to have driven up, unless he happened to be in the area at that time and I really don't recall that. For instance I know that Jack Webb, when he was alive, he always insisted that he knew that one of the big prime targets that we were drilling for were reefs. I told him several times I said, that may be absolutely true Jack but you sure never put it down on any piece of paper that I can find.

NM: So it was not in writing.

DL: Well, I generally don't put down everything on paper.

NM: That's the letter from Ted Link and here is now a letter from Don Mackenzie. What was Don Mackenzie doing at the time?

DL: I wish you hadn't asked me that. I'm trying to remember, I think that Don Mackenzie was still in Calgary at this time. I'm pretty sure he was because I know when he attended this famous Toronto meeting he went down to that meeting, he wasn't in Toronto at the time. So he would have been probably, at that time, head man out here for the production and for the exploration people, in other words the chief bottle washer. So he was always one of the top men in the company so I'm pretty sure he would have been in Calgary at this time.

NM: Can you comment because Don Mackenzie is talking about a special important tax relief granted to any pre-Cambrian wells by the Canadian federal government, in bracket, in any new exploration area, close bracket. What was this tax relief and why?

DL: The federal government at that time. . . maybe the federal government but yes, the Canadian Geological Survey wanted to get additional information on the stratigraphy of the western Canada basin. There is so little rock exposed in this country because it's covered over with glacial material and stuff and the only way that they could really get

any kind of a picture of how deep the sediments were, what types of sediments they were was to drill wells of some depth and to go down to the pre-Cambrian basement. Now in order to encourage exploring companies to do that, they said, okay, if you will take the well right down to the pre-Cambrian we will give you quite a lot of financial relief for the cost of that well. The problem was that most oil companies didn't think there was any potential down say below, well, some people didn't think there was anything below the Mississippian. Which left you about, well, we didn't know but you could assume maybe, another 8,000' of drilling to go to the pre-Cambrian and here you were drilling through a section that was sort of written off as being non-potential. Now we were assuming this but I mean the Ordovician and the Silurian and the Cambrian rocks had never really been productive anywhere in the world to any extent. So you sort of said to yourself, this is ridiculous, it's costing a fortune. But the thing is, suppose you drilled an 8,000' well and stopped at the base of the Devonian or something. Well, the cost of that, these are just numbers they don't mean anything, but let's say the cost of that was $250,000 in those days. Now if you take that down to the pre-Cambrian, which is say another 3,000', the total cost would maybe be, $400,000. But the government if you did that would probably return $250,000. So that the total well would cost less than if you had stopped at the . . .

#244 NM: So it was a good deal.

DL: So this is why they were able to get companies to dig some of these wells down to the basement. The other problem of course, we had, is not many of the rigs, there were a shortage of rigs that could take really deep holes. Most of the rigs we had were either old rigs from Turner Valley or rigs that were fairly shallow that were good for 6 or 7 thousand feet. So that there wasn't a great deal of rigs that would go to 9, 10, 12 thousand feet. That was the reason for that one and it had a bit of a . . well, it was another thing that we managed to get the deep hole finally. Doc Link wanted to just go across the country and drill a well say, every 75 miles right across the country. But Dr. Hopkins said no way, if you're going to spend that kind of money you better have a structure, some kind of an anomaly to drill on. So that's why we were doing the seismic. Doc Link wanted to do the stratigraphy, find out the stratigraphy and the worry about the seismic later. But Hopkins said, no you can't do that, you've got to have it on a prospect. Now you can see the reason for it because if you drilled a straight strat test, with no structure then you didn't get your money back.

NM: That's right. So people wanted tax relief.

DL: Yes.

NM: There was some discrepancy of opinion between Ted Link and Dr. Hume, what was it?

DL: There's usually a lot of differences of opinion between geologists. This particular one. .I guess you could call it a major difference. In the early days in the foothills it was assumed by many geologists, including Dr. Hume, that the various fault blocks that formed the foothills structures were faults that were at an angle of about 60 degrees and just came up from depth and then formed the mountains into slices or at least the rocks into slices. That each one of those slices, or not each one but many of those slices actually formed anticlines at the tops of them. Doc Link I believe, when he was at Chicago University did

some experiments on mountain structures and on foothill structures and using plastic models he came up with the idea that really these structures in the foothills were not caused by a whole series of 60 sharp angle faults but they were caused by a push from the west with the mountain building in which rocks were actually physically shoved maybe 5 or 10 miles over each other and back and then over. So that what you had were these so called, became very widely known as the thrust fault belt that caused the structures and it wasn't due to these individual slices that Hume had been working on for many years. So this was one of the big arguments between the two of them. Now I think you have to say too, that their personalities were the exact opposite.

#305 NM: So that did not help.

DL: Link would automatically disagree with anything Dr. Hume said, I think just for fun. But this was I think, their main area of disagreement. I worked for Dr. Hume when he was still working on the idea that these were individual slices, these blocks. I know I got into trouble with him because I did some of the maps based on the wells that were available at that time, 37 or 38 and I came to the final conclusion that you couldn't just take these faults we could map on the surface and carry them forever down at a 60 degree angle. So I found that in many cases what was happening was that a fault that would start at the surface, then you could trace it in the wells without any difficulty for maybe a short distance and then suddenly it would apparently disappear and flatten out in a coal seam or just become a bedding plane fault. And so I drew my cross sections based on that theory that many of these faults died out at shallow depths and they didn't go on forever. Well, Dr. Hume didn't like that at all so he said he'd have to redo the whole job. As a matter of fact he did that year and the year after that then all the faults started to die out in bedding plane faults. So he never gave me any credit for that but then Doc Link had already figured that out so it was all right.

NM: I like the comments by Don Mackenzie, *today all great achievements are by a group of brilliant men, not always as a team but each playing a part. And one man discoveries are just not part of post World War II history.*

DL: That's a very good statement. I agree with it 100% as a matter of fact. I think that any time that you hear somebody say they found Leduc or they found this or they found that famous mine that you really have to take it with not only a grain of salt but a teaspoonful of salt because it's just not likely to be the case. The only odd case that can happen I think, is in the prospecting business, where a prospector does happen to step on to a mine. But he's really discovered a prospect, he hasn't discovered a mine. But in the oil business there's just no way and certainly that was true in Leduc. There were an awful lot of people involved in it and certainly that documentation indicates that there were people involved from way back in the early 40's that were really involved in it. So it's a very true statement.

NM: This is the end of the fourth interview with Doug Layer.

Tape 6 Side 1

NM: This is the fifth interview with Doug Layer, this is Nadine Mackenzie speaking. Mr. Layer can you tell me about the drilling site team?

DL: I can give you my brief memory of it. You'll have to refer to one of the production people to back me up because I know that my memory is gone on me. But basically the crew on a rig was controlled and managed by a man who was called the tool pusher and he had charge of the rig during 24 day operation. Under him there were three crews working 8 hour shifts and each one of those crews was under the charge of a driller. The crew men themselves were basically roughnecks, or that was the term generally used, called roughnecks and there were four men who worked on the floor and then at the top of the rig, when they were stacking pipe there was a man who was called the cat head man. Now in addition to those regular members of the drilling crews you had engineers, I'm sorry not really engineers, men to run the diesel machinery and they were probably diesel engineers. You had pump men to look after the pumps the pumped the fluid down the hole and back up again, then you had a man who was basically responsible for the quality of the mud, so that it did the maximum good as far as carrying cuttings to the surface from what was being drilled and also at the same time made drilling as good as could be expected. You also had a man who hauled water to the rig, he was again, on a 24 hour basis. These were about the general make up of the crews. There were others around but all crews were not the same size. So this is my memory of it. If you can check with a production man, just make sure if that's all right. Then in addition, on wild cat wells you always had geologists in those days. And this is going back into the 40's and in Imperial's case we had geologists on the rig 24 hours a day because there were really no other supplementary sources of information in those early days. The logs were not electric logs and those type of things were not really very definitive. And in order to help the geologists we used to hire basically untrained people who were called sample catchers and they were responsible for catching samples from the rig at, hopefully every 10' interval. These samples were washed and bagged and sets of samples were sent to the Conservation Board, which was a law and then we kept samples for ourselves and any of our partners. The geologist then would examine these samples as soon as they were ready. If there was something interesting, in other words if there seemed to be a sign of oil or a smell of gas he could then tell the driller to stop drilling. He could do one of two things, he could say circulate for an hour so I can see more samples from the bottom. Or he could say, we'd better pull out and put on a core bit because I want to get a core. Now he had that full responsibility to do that. So that was the general set up of the crews as I recall it back in the 40's.

#051 NM: Let us go back to the letters now, we have one from George McClintock, who was he?

DL: George was a geologist that came from eastern Canada, I think it was either New Brunswick or Nova Scotia and he had started with the company a couple of years before Leduc. He'd worked in Saskatchewan as a well site geologist with Cam Sproule and at the time that we closed down our Saskatchewan operations he, along with the rest of the men, moved into Alberta. He didn't come directly to Leduc as I recall it, I think he spent

some time over in the Provost area first. Then when Leduc #1 started to drill, several of us, because we were using 3 geologists on a rig at that time, were moved over into the area and George came there shortly after the well sputted. I don't think he was there when it sputted. I'm trying to remember just exactly when he did come because I was there largely by myself to start with, then George came along and about that time I was called into the Calgary office, which was about Christmas time of '46. This was Christmas '46, New Year's '47. George was left sort of as the senior man in charge of the well at the time. He carried on from about the time that the well went into the limestone, which at that time we didn't know whether it was Mississippian or Devonian. There had been, above that in the Cretaceous beds, which were called the Blairmore at that time, had been some showings of oil and gas which had been tested and we had found significant amounts of gas but since there was no sale for it, it wasn't very critical, and some oil. So he took on the job. And then he went home for a holiday and his replacement was Steve Cosburn. So that at the time that Leduc #1 hit the D-2 or the niscue he was not there, Steve Cosburn was filling in for him. So when he came back that discovery had already been made and I don't really recall where he went from the #1 well. I don't know whether he mentioned it in his letter or not.

#086 NM: And now here is a letter from Fred McKinnon and he says that he was not there.

DL: No. Fred wasn't assigned to the subsurface up in that area at that time. I think Fred may have been doing some surface work. My recollection is that he was actually in charge of surface work but that may be foggy too, that would require checking. So he wasn't actually on the site but he'd been with Imperial for quite a while and he was one of the more senior and more experienced people there. So that he was chosen as one of the people to talk about the discovery at the time that the government and Imperial got together with kind of a presentation before the actual well was brought into production. So he's being quite honest about, he wasn't there, like 500 other people were that said they found it. He was involved because of his position in the company and his abilities, he was involved on the fringes of a lot of things really. So he knew what was going on although he may not have been involved in detail. So he's not one of the ones that was really part of the operating. . although he was back in the office handling things. But he's a good man to talk to because he knew an awful lot about the oil industry in those days.

NM: And now here is a letter from Maurice Paulsen and he was on Imperial #1 and Imperial Leduc #2.

DL: Yes. Maurice was one of the young petroleum engineers that were faced with some big problems in those early days. He was called on to help run the casing and to try to bring it into production for the showing that the company had that they decided was going to be held on the 13th of February. So he went up there with very little experience but enough that he knew how to get around the problems and then they worked all night trying to get the thing ready to go. They had quite a few problems but the main one was the swabbing line broke. Apparently he was worn out so he went back to town and I'm not too sure whether he ever did get back to the site again. Yes, he got back after the well had come on production, that's right. So he missed the big showing but he saw, at least the well was

producing into the separator when he got back. Then he was fortunate enough to be the engineer on Leduc #2 as well. So he'd be a good man to talk to about how he felt bringing in two wells in the Leduc field, the two critical ones.

NM: He said, *I recall that after 5 swabs to about 500' the well kicked in at about 7:00 a.m.* so he really remembered very well.

DL: Yes. He's probably got some records on that.

#130 NM: They had the crew turn it into the storage tank. . .he was then transferred to Leduc and stayed there until the fall of '48.

DL: He'd been the engineer in charge of the field then, probably at that time. One thing that happened in the company was when Leduc broke, the department's expanded so rapidly. In the exploration department we had a tremendous program going on in exploration and then of course, on Leduc, we not only had Leduc, then we found Redwater. So we had a tremendous development program going on. The result was that the two groups, exploration and production sort of had to separate and you didn't really see some of these people from one year's end to the other, in the different departments, even though the company wasn't really that big at that time but they weren't all cramped into an office they were scattered from hell to breakfast. From way up in Grande Prairie area and northeastern B.C. to southeastern Saskatchewan, the whole western Canada. So as a result, although I knew Maurice and I still know him, really never did work very close with him and I couldn't tell you his history at all in the company.

NM: And now here is a letter from Wallace Pratt.

DL: Wallace Pratt is one of these geologists that, if there was a hall of fame, which there is to some extent, he is in it. He was a geologist that started out in Texas and went through the Humble Oil organization, I believe that if he was not the head of it at least up in the very senior Board levels. Then he moved on to the Jersey organization as of that time, now called the Exxon. He was an amazing man, he was knowledgeable on, I think geology all over the world. Not only was he mentally a giant but physically he was, beyond my conception, he flew his own little aeroplane when he was in his late 70's and early 80's he learned to fly an aeroplane. He flew from Texas where his ranch was, near the Guadalupe mountains up to Calgary. That's quite a flight. He's one of these people who has the most pleasant personality, he was a very kindly man and one of the most observant people I've ever seen. Like for instance, I'll give you an example of the sort of person he was, we were coming out of the Imperial Oil building on 9th Ave., which used to be the old Albertan building and it was finished with a rock called kindlestone, which comes from a quarry in Manitoba, which used to be quarried by our people in the penitentiary. But anyway it's a beautiful dolomite and it's absolutely loaded with fossils. Here's this man who at that time was in his 70's I guess, he'd been all over the world, he was world acclaimed and he was a big man in the company, in other words he was a Director or Vice-President of something. All of a sudden when he comes out the door he sees this rock and the first thing he wants to do, he wants to know where that rock came from. After you've been in a profession of any kind for 50 years and you still have enough interest to stop and look at a piece of building stone it shows the kind of a mind he had, it

never closed down, it just went on and on and on. So he's really one of the great people and he did a tremendous amount of good geology. His articles are read all over the world. But he was one of the ones who had pressured Imperial for years to for heavens sake, try to document the early history of how Leduc was discovered. Because he said, there are so many legendary stories that are going around that are obviously untrue, it's a shame that people who did do the work on it aren't getting any credit and a lot of people who had absolutely, basically nothing to do with it, are taking the credit. So he said, why don't you do this. And he wanted Don Mackenzie to do it. Don would have been the real man to do it but Don just didn't feel like he'd like to. And as a result it turned out that I was sort of second so I took on the job when I was just leaving the company. But if it hadn't been for him the documentation never would have been done. It's unfortunate that so many companies and I think this is true of many, that they don't want to waste time on recording history. They would rather spend time making history I guess is what you would call it. But he's a man, he's just one of these people that you just really admire. He set his ranch aside as a park. It's in the Guadalupe mountains in west Texas and that's the place where the first reefs were explored. El Capitan, the big mountain at the southern end of there, the basin is an actual coral reef. He bought a ranch that ran back into the reef country, he was out sort of the semi-flat but it was just as you went into the canyons, into the reef country and he had a geological thing there and any time anybody went out there of course, you had to go look at the back reef and the fore reef and the front reef.

#218 NM: He really chose his place. The next letter is from Wes Rabey, what was he doing?

DL: In those days we had actual interpreters on the crew, in the field. Primarily because the records were such bad quality that sometimes they had to be redone in order to get any kind of useable information. So that the crew interpreters had to be along to take a look at the records to see whether or not they could use them. And he was on the crew that was the first one to get an indication of Leduc. The crew itself had been stationed near the Saskatchewan border and it was to move west into the area of Edmonton where we had picked up some land permits. It was in the spring time and the road bans were starting and we got part of the work done and then as we got further west the bans were getting more and more strict and the only road we could possibly shoot happened to be the one that went just across the south end of the Leduc field as it was later defined. So we went across that and then the crew was pretty well shut down until the ban was over. Wes was with the crew at that time and I'm trying to remember, it seems to me Bud Coutt may have been with him at the same time but he doesn't mention that. That was one of the first of these long regional lines that Imperial had decided to run across the basin. These boys in the field had to be there because the records were so poor and they had to really struggle to get anything that they could see at all. So we kept them on the crews at that time in order to go and reshoot the area if it became necessary. He doesn't mention anybody else.

NM: No, he does not, he just mentions some places, he doesn't mention people.

DL: No, he doesn't. That road, I just thought of the little town that went where the road was where they were doing the shooting, that was Calmar, they went through the town of

Calmar I remember that now at the south end of the field. But he doesn't mention any people, he mentions that Frank Roberts of course, was the Party Chief but I'm sure there was another interpreter on the crew. Do you have a letter from Bud Coutt in there?

#265 NM: And now the next letter is from Frank Roberts, it's a very, very long letter, I think about 12 pages or something like that. He assumes that you are the same Doug Layer that he met in the Calgary office shortly before he left Canada on February 10th, '48. *I saw you again*, that's in the letter, *at the exploration school in Tulsa in 1960. Although I did not agree with you history of the Leduc discovery I remained silent*. Now why?

DL: I don't really know. It's hard to tell. His idea of the discovery was I think, really, that it was a one man type discovery. That's the impression I get. Of course, in my comments it's been the fact that it wasn't a one man discovery, that an awful lot of people were involved in it and that there's no such thing as a one man discovery. I think that was basically the thing. He had looked at it, I think, on a fairly narrow view. In other words that he had run the seismic crew that found the first high point that was later turned out to be an indication. I shouldn't even say that, that led us to drill in the Leduc area, it wasn't really a critical point.

NM: But Frank Roberts was not with Imperial.

DL: No, he was a Carter Oil company employee and in those days all seismic crews were Carter Oil company crews. They supplied the crews for the Jersey operations around the world. So they would send crews up here for the summer months, then they would, in the early days this was a strictly summer months operation. Then they would take off as soon as the first snow flake turned up. Later on, then we began to keep the crews here for the winter months as well because we got into areas where you couldn't work in the summer because of muskeg. And then it gradually shifted over the years to where Imperial built up their own crews, to where we had 10 or 12 of our own crews in the 50's. But he was only up here for a relatively short time as I recall and according to his letter he left here in 1948. So I really know very little about Frank Roberts, I wasn't out on the crews at all.

#316 NM: If you read the letter you have the feeling that he did all the work and he is responsible for the discovery.

DL: This is right. He feels that he did find most of the fields in western Canada, that he had really completed his work before he left here and that there wasn't really much point to staying on. So he returned to Carter Oil and then I believe moved down to Humble at the time when Humble took over Carter Oil operations, which is now Esso America I guess, Esso U.S. or something. But he mentions a lot of names here that I'm not familiar with, many of them are American names.

NM: End of the tape.

Tape 6 Side 2

DL: But he mentions names like. . what was happening on these crews in the 40's was that

Imperial was putting people on the crews to train and then sometimes they were going back down to the States to get further training, both in operations and in interpretational work. Then in addition we hired people, from particularly farms and places like that to do some of the less technical work on the crews and gradually trained them as operators and all these other things that go along with the seismic crew. He mentions Bud Coutt was on that crew that he had over in Saskatchewan. Bud Coutt stayed with the company for quite a few years and then he went into business with another company. But people like Ralph Aiken I don't know, Jimmy Murphy was a geophysicist who was a Canadian and he stayed here. He presently is working with Syncrude. But he was a geophysicist for many, many years. So there are a lot of people that he mentions that were all working for the company or working for Carter in the early 40's. Like Larry Fliegle, is dead now, he was one of the people that was sort of in the accounting end of the business Ab Balutis, I don't remember exactly what he did, Billy Oakes was out on the big drills in most of his later life. So he mentions a lot of people that were just being trained in almost any kind of a job.

NM: Somewhere in the letter Frank Roberts mentions he's going to write a book about the story of Leduc, maybe to change a few facts. Have you heard of this book?

DL: No. I've never heard whether or not he got started in it or not. This letter that we are talking about was written in '77. I question whether he's going to get around to it but he may, it will certainly be a variation on what has been written to say the least because his opinions are quite dogmatic and he has a lot of very, very different ideas than most other people have. So it certainly would make interesting reading. One of the things that he does comment in his letter too, is the fact that he disagrees quite powerfully with the results of the core drilling and that's probably something that not too many people have mentioned. At the time . . .

#040 NM: He seemed to disagree with everything.

DL: Yes. That is pretty true. In those days Dr. Sproule, who was running our operations in Saskatchewan felt that near surface geology would give you a clue at the deeper beds, what the deeper beds were doing and as a result he put in an extensive core drilling program, in which you drilled wells 50's or 25 or 75' deep into bedrock and then used micro-palaeontology to get indications of structure. So this was being done along with the seismic work that Frank Roberts was doing. Frank was of the opinion and here he states that really the seismic never agreed with the core drills and naturally, it was obvious that the core drills were wrong. Well, as a matter of fact, in this particular case, it turned out that neither the seismic nor the core drills were right. So we learned that from history a little bit later and after drilling wells. But neither the seismic nor the core drills were giving us any definitive information at all. But anyway it's another thing where he's very definite about the fact that these core drills just were no good. Anyway that's about all I have to say on that one. I think it should be brought up because Gordon Beard spent years and years working on these core drills and we brought them over into Alberta and we did core drilling in Alberta too, in the general area south of Leduc. But unfortunately they never turned out very satisfactory.

NM: This is the end of the fifth interview with Doug Layer.

Tape 7 Side 1

NM: This is Nadine Mackenzie speaking, this is the sixth interview with Mr. Doug Layer. Mr. Layer now we have a letter from Ernie Shaw, who was Ernie Shaw?

DL: Ernie had worked for the Armed Services, well not really the Armed Services but down in the Sarnia area in a technical job during the war years and then he was hired by Imperial in the mid 40's and was basically operating with Cam Sproule in Saskatchewan in aiding and supplementing some of the exploratory work that was being done by core drilling. When that was wound up in 1946, because of two things I think, the threat from the socialist government that had taken power that they were going to expropriate all equipment that was in that country owned by oil companies and everybody else. And secondly we'd been very unsuccessful in drilling wells anyway. So it was a good time to move out. He moved to Calgary and then when the reorganization was completed in another year or so, melding the Saskatchewan group and the Calgary group, he became really what at that time was called the Divisional Geologist. The division at that time spread from Manitoba to British Columbia and also from the U.S. border up into Norman Wells country. So it was a big area that he was placed in charge of for geology. Mostly his background prior to coming to Imperial had been in the mining industry.

NM: At the beginning of his letter he states that the exploration activity was dominated by the so-called majors. Secondly independents, mostly from the United States were making their debut. Were there any competition among all these companies?

DL; Not in the sense that you would think a competition today. There was competition to some extent by some of the independents, trying to pick up acreage and where one independent would maybe pick up a little acreage and then another one or two would go in and try to get some, if it looked like there was any oil there. So there was a minor amount of competition but you have to remember at that time that acreage really didn't cost anything, there were no real work obligations. That you could go to the government and you could file on 100,000 acres, just by filing on it and with no work obligations. So that it didn't really, it wasn't a dog fight to try to get acreage. In other words you could get it all over the place and you really didn't have enough clues to know where to go anyway. So it was wide open and there was not a great deal of exploration going on, in terms of today's ideas of exploration it was very, very quiet. So the majors at that time had certain spheres of interest, where their geologists thought that the best prospects would be. So in general for instance, when I was working with McCall Frontenac, which was later bought out by Texaco, our prime area of interest was down in southern Alberta, right along the U.S. border, to a large extent. Now that was partly technical, from an oil point of view because there was oil just south of the border, down in the Sumbers??? field and in Montana. And also it was economics, because Texaco had a refinery just south of the border so it we had been able to find oil in southern Alberta it would have been very competitive and we could have probably made money on it. Whereas if we had for instance, gone and explored up in the Grande Prairie area, we might as well shut the

oil wells in because it wouldn't be any good to us. So that's the sort of thing. Now Imperial had concentrated its efforts primarily in the foothills and they had also done some work in the area of the Taber Lethbridge area. This was an area that had been looked at by many of our people on the surface and we had also, in the earlier days, drilled some wells back in that area. There had been shows so we were interested to follow some of those up. Other than that there wasn't a great deal of activity. Chevron at the time, as I recall it, was operating in two areas, they were operating in the Princess area down near the badlands, and they were also operating in the area of Foremost in south central Alberta and in southern Alberta as well. But these areas were relatively small and they were all separated. Many of the independents were up in the heavy oil areas of Lloydminster, Wainwright and places like this and none of the major oil companies, to my knowledge were up in that area. So that there was room for everybody and you just went out and if your geologists had an idea and the company had some money you went out and picked up some land and at the various meetings you would just tell the opposition, we're taking a look at such and such an area. And everybody said, that's interesting, good luck and that was it.

#071 NM: That was good but he said too that things changed in the 50's. A sort of country club relationship existed between the majors but then everything changed in the 50's.

DL: Yes. Once there was an indication of a major oil field found then there was a sudden surge of some very highly experienced people from the United States who had gone through one or more developments of a new oil basin and they immediately came in and knew that the best way to win in the business was to get your acreage, get it early and get it cheap and get it fast. So as a result people moving in just forgot about any kind of a gentleman's agreement and they just were just a dog eat dog set-up. And of course, Imperial at that time, within its own staff didn't really have this kind of background thinking. So Imperial was to some extent a little slow in moving until the company brought in Mike Hyder from the United States as an advisor. Mike Hyder, well, he later turned out to be Chairman of the Board of Exxon, he knew what happens when an oil play starts so he was the one that really pushed the company. I think one example is that Imperial, when we made the discovery at Leduc we were looking at picking up some acreage, scattered acreage, around the area of the discovery, say within 6 miles or something. Which was a pretty big deal in those days. Mr. Hyder took a look at this and he suggested that a better number might be try to pick up all the acreage within 50 miles of the discovery. That's the kind of thinking he did. We were still thinking small. But the other companies brought in some of their very experienced people and of course, you were constantly running into problems. People rushing around trying to get acreage, and that's when the scouting system started to develop too, with spying really on other people's operations and what they were doing and trying to get some of the fellows on the rig drunk to find out what they were doing. It got to be quite a game for awhile.

NM: Ernie Shaw says also, the Leduc discovery brought about the end of the former buddy, buddy conduct of the oil people of those days.

DL: This is right, this is the same thing. This is where this competition started. You forgot about. . you play golf with the fellow in the afternoon, you don't tell him anything at all about what's happening in your oil company any more. They became straight competitors again, there was no giving away any information about where you might work or what you were getting or what you were even thinking.

NM: So it was top secret.

DL: Everything was top secret and it became a very difficult security problem because so many people in the business were not really aware of how critical this information was. It meant millions of dollars if the wrong information got out.

#110 NM: Ernie Shaw did several things at Leduc, he was not having the same work all the time, no?

DL: No, he was basically in the Calgary office as sort of a general manager of the geological department is what you could call. He was a staff man, no that's the wrong term, he was in charge of the staff but he was not actively engaged in either the surface geology, which we were doing quite a lot of in those days, or in actually going out and doing any of the well site work. So that he was I guess you might call him the manager, although that term was not used. The term that was used was division geologist which meant that he was responsible for everything that was done in geology from Manitoba right through into B.C. and up to Norman Wells.

NM: He mentioned here on this page that he had some difficulties with Cam Sproule, he did not agree fully with him.

DL: In the early 40's there was one group of Imperial's exploration people operating out of the Calgary office, exploring in Alberta and there may have been a bit of exploration in B.C. but I don't believe that's that early. No, we were strictly in Alberta. And then the company in Toronto had set up another group to explore in Saskatchewan. This group in Saskatchewan was set up under the leadership of Cam Sproule who had been with the GSC in the early days I believe. Anyway he had the job of trying to explore in Saskatchewan and he did it primarily with core drills and micro-palaeontology. He drilled 7 or 8 deep holes and none of them were successful. He was however, the first person to recognize the presence of potash beds in Saskatchewan. One of the deep wells that we drilled encountered a potash bed. So he was the first one to know that there was a potash potential in the area. In late '45, '46, the company decided that it was time to pull out of Saskatchewan for two reasons. They weren't finding anything and they had no real good shows and then secondly the socialist government in Saskatchewan had threatened that if they got into power they would actually expropriate any materials that belonged to the capitalistic system and that therefore our whole equipment, all our operations and everything might be subject to expropriation. Now this never happened but there was the combination of these two things and so as a result the whole group and all their equipment was moved rapidly into Alberta. And they continued to do some work in east central Alberta, the staff people or many of the people that were not directly involved in field work were then moved into the Calgary office. As a result you got two groups, you put them into one office, they were operating under two different heads and there was a

very difficult problem of who was going to take over as the senior group. So it took about a year plus before that problem was sorted out and Ernie Shaw was caught in the middle of it. He had been working for Cam Sproule and Cam had told him how to do things and how he was going to have to do them and at the same time Cam was not there any longer and Jack Webb, who was in charge of the Calgary group was saying to do them differently. So Ernie had a bit of a problem until they sorted out this. . .there was no formal. . if there had been a formal set up in those early days then before the groups moved together they would have been melded and it would have been decided who was going to run the operation but in those days everything was done sort of just by the seat of the pants. And so a decision to move them in, well, move them in. And then we'll work out something somehow. So that was solved after about a year and Ernie was given a senior job as Division Geologist and everything worked out fine after that.

#170 NM: He mentioned also at the end of this letter that a woman called Diane Noringer??? was a geologist there. Can you tell me a bit about her?

DL: Diane, I don't know exactly where she was educated or what her experience was prior to coming with Imperial but she specialized in micro-palaeontology. Because Cam Sproule had felt that you could map structure in Saskatchewan and in other parts of the western Canada basin by drilling to shallow horizons and then using micro-bugs for correlation purposes. Diane at that time, was really the only one we had who had a real knowledge of micro-palaeontology so she did nearly all the work on that.

NM: There were quite a few women working in this field.

DL: Yes, well, at that time she was the one who did most of the micro stuff. The others were basically doing macro-palaeontology. Like for instance, he mentions Colin Crickmay, now, I shouldn't use the term macro because I think he's the one that uses the English language so carefully and it's mega-palaeontology not macro. But he was concentrating on those kind of fossils and then most of the other geologists were concentrating just on rock characteristics, rather than on bugs at all. And then we added more people later to do this type of work when we got into it more deeply. It was used in Alberta quite a lot in later years but mostly from deep wells rather than core drilling. We gave up on core drilling pretty well, within a year or two after we had done the original work in Alberta in '46. Then we did an awful lot of micro-palaeontology when we moved into the Northwest Territories, in the early day in the Beaufort area. So we added more people. And we're still doing quite a bit of it at the research centre.

NM: At the end of his letter Ernie Shaw says, *from the above it is fairly obvious that I had little or nothing to do with the Leduc discovery. After the discovery however, perhaps I can claim to have been the first one to recognize the D-3 as a reef from merely looking at the core. This was easy because I had done a test??? on the middle Silurian reef rocks in Ontario a few years before.* So he was really the first one to recognize the D-3.

DL: I can't say yes or no to that because my memory doesn't. . either I wasn't there when he saw the core or my memory has just gone on that point too. I don't really know the full story on that. I do know this, that when the D-2 was encountered in #1 well and the information of the character of the rock from the core, what it looked like, was sent to

Toronto, Doc Link wired back immediately and asked whether we had considered the possibility of a reef. Now that was in the D-2, not in the D-3 and the D-2 is not what you think of as a true reef. It was called a bioherm in those days and I don't know whether that term is still used but it's more of a reef that occurs in shallow water, maybe only gets 10-50 feet thick or maybe 75 but it will extend for 10 miles. Whereas the reef. . did I get that mixed up. . the biostrome is the flat one, like the D-2, and the bioherm is that one that is more typical of the reef as we think of it, that is a growth with a limited area extent and substantial height. These area qualitative definitions. But I can't really answer that question, whether he was the first.

#234 NM: I should ask him?

DL: Well, you should do. Personally the problem on this reef thing was that most of us, none of us, very, very few had ever seen a reef of any kind. The thing that I couldn't quite understand was that when I looked at the core there was bedding in it and I didn't think that reefs would show horizontal stratigraphic bedding. So I couldn't really believe that this is what a reef looked like. Now I found out later I was wrong. But the other thing, we didn't have any idea of whether there was any edge to it in other words whether it dropped off or whether this was just a great mass of broken up coral and marine life. It could have been that stretched for miles, something like the Great Barrier Reef, some great huge thing like that, which is what, 700 miles long or something. And we found places where this sort of thing did happen, that we'd get these huge areas. Then you get into what you have to consider reef complexes and all this other stuff. But the thing that really made it definite in everybody's mind was when one of the competitor wells drilled a hole that we thought would be on the reef and instead of getting the reef, suddenly went into green shale and went through about 400' of green shale. So we could see then that the thing just dropped off. I wish I could remember the name of it but you may find it somewhere in the records but I think it was . . was it B. A. Pyrch or something, British American Pyrch, I think that was it. But anyway, I don't know whether it's too critical but when that well dropped off like that we knew then definitely there was no question we were on a real reef. Until then you could sit around in beer parlours and coffee breaks and everything else and argue until you were blue in the face but it really wasn't proven. Because you had to have a 3 dimensional knowledge of the thing before you could definitely say it was a reef rather than a sort of a shell bank.

NM: The next letter is from Walker Taylor, who was he?

DL: Walker Taylor at that time, when Leduc broke he was in charge of Imperial's operations here. We had a little bit of exploration going on and we had some drilling going on and production from Turner Valley and he also would be looking after the little bit of work and production that was going on up in the Norman Wells pool. He didn't have anything to do with the refinery, the refinery was run by a different department out of Toronto. As far as marketing is concerned that again, was under a separate section, separate department. So he was really looking after production and exploration.

NM: The next letter is from Very Taylor, what was he doing at Leduc?

DL: By the time Leduc had come around, I guess you could sort of say he was almost in the

management end of engineering. He'd started as far as I know, with the company in Turner Valley and had become the engineer out at the Turner Valley oil field in the 30's and early 40's. He had worked with Don Mackenzie very closely, who did the geology for many years out there. By the late 40's he had been promoted. . although there's no formal record of it I would say he would be in almost a management position. In other words he wasn't doing a great deal of direct field work but he was supervising a lot of it. I didn't really know him too well and as far as what he was doing because at the time there was quite a distinct separation between development work and completion work and exploration work. Once we had done the exploration work and found anything then immediately it was taken over by the development people to develop it. So that you really didn't have a great deal of cross contacts and since everybody was to put it very mildly, overworked, there was a very small staff, very inexperienced staff so everybody. .you didn't have time to go round and meet people if you follow what I mean. It was just strictly a case of, for god's sake I don't want to have to come back Saturday as well as Sunday to get the jobs done. So there wasn't this sort or worry about keeping informed about what somebody else was doing, you were worried about what you were doing. So you didn't really make a great effort to see these people because they had a job to do and you had a job.

NM: So everybody was going on with their own . .

DL; Yes, you were going at a dead run anyway. So I would guess that he was the senior engineer that we had at that time in the operation. At least the ones who had had more practical experience on completing wells.

NM: End of the tape.

Tape 7 Side 2

NM: The next letter is from Bill Twait and he said that, *I'm delighted to hear that you are tracking the history of the Leduc discovery. You may recall that in the 60's this became a subject of intense controversy*. What happened then in the 60's?

DL: I don't know whether I'd use quite as strong words as intense controversy but what happened was that quite a few people took upon themselves to make the statements that they had found Leduc. And quite a few of them that were making these statements for public consumption had basically very little or practically nothing to do with the Leduc discovery. So this made other people who had been involved in it or people who knew the truth, even though they hadn't been involved, made them slightly unhappy about these people going around claiming that they were the great discoverers. So this read pretty badly. At one time I estimated that 50 different people had found Leduc from statements that they had made. So this is what he means by intense controversy. There were a lot of people got pretty mad. I think one of the ones, I don't know whether he mentions the name but Wallace Pratt, whose name comes up every once in awhile was with the Jersey company at that time, he was most unhappy. He had nothing directly to do with the discovery but he knew several of the people who were claiming to have made the discovery and he knew they didn't. They were Americans as a matter of fact, and he took

violent exception to the fact that some of these American people . . .

NM: Claimed to have found everything and then. .

DL: Yes, claimed that they were the ones that found it. And making great public statements and actually putting it into their bibliographies, for distribution for when they were getting awards and things like that.

NM: It sounds very good.

DL: Well sure, I found Leduc. So this is what he means, it got kind of hot and heavy. I think one of the reasons that it took such a long time to get anything done about it was that you knew that no matter who did it, he was going to get into trouble with somebody because there's no way that everybody is going to be happy about the documentation.

#031 NM: And in '46 he formed Imperial's first corporate planning group, which was a creature of Hewittson's fertile brain???.

DL: Hewittson at that time was the President and he had been with the marketing department before he became the President. He was quite clever man, he had a typical salesman approach, he was always glad handing people, no matter whether it was a driller on the rig or the head of the government of Canada. But he also had an awful lot of ideas, he was a tremendous idea man. So this was the first effort that the company made to try to put some sense into basically, the economics of the company. Prior to that it had been a question of each manager would come up with a proposal and sort of bring some dollar figures along and some profit figures but with no formal way of comparing, for instance how do you compare a half million dollar expenditure on a refinery and a half million expenditure for doing half a dozen exploratory wells. And yet if only have half a million dollars then somehow somebody's got to make a decision and better to be able to do it on true economics rather than on just how a guy feels that day. Which is what was happening.

NM: And he states also that *Turner Valley in southern Alberta barely met our requirements at Calgary. We were importing by tank car oil from Colorado, Louisiana, etc. to the Regina refinery at an out of pocket cost of over $1 a barrel*, which is incredible.

DL: Yes. You want to remember too, that oil in those days was only worth about $2.50 a barrel. I made a calculation on this thing one time and if you brought it to present dollars, it doesn't sound too much now but when I made this calculation 10 or 15 years ago, the price that we were paying for this Montana, Colorado oil was equivalent to $16 a barrel in today's prices. It was a poor grade of oil and everything else too. But that was the only way we could keep the wheels turning at all. And Turner Valley was going down hill pretty rapidly. It had been heavily produced during the war years of course.

NM: And then it was going down and down.

DL: Very, very fast yes. It was a difficult field. The engineering and knowledge at the time was not great enough to really efficiently produce that field. It shouldn't have been discovered until about 1970 or something and then there would have been enough knowledge of how to produce that field that we might have saved a few million barrels. I think the last figures I saw on Turner Valley, to give you an idea, was that the oil in place was somewhere around 750-850 billion barrels and they were hopeful they could get out

about 150. And that was because of not technical knowledge of how to produce the field in the early days.

NM: He even mentioned that there were strong arguments on the Board to close down the whole operation.

DL: Yes. There were some members of the Board that just felt we had been exploring for 20-25 years, we had found absolutely nothing to show for it and it was costing money and there was surplus oil around the world so you could bring in oil and probably rather than waste money on exploration, break even anyway. Even if you didn't make too much money.

#073 NM: That was a short letter from Bill Twait and the next letter is from Sid Weller. What did Sid Weller do?

DL: I don't know whether he was a trained accountant or had taken a course in accounting, I don't think so, I think he had just learned accounting through working at it. So he was the man in the office who basically kept track of expense accounts and did work on budgets and whenever we were starting to spend money kept track of the costs and the number racket. He'd been with the Canol project for awhile and then he came down and worked in Calgary. So he was the one person in the office whose real job was to try to keep the rest of us from completely losing track of where we stood as far as dollars were concerned. And he kept track of the well costs to help the engineers, really worked with everybody trying to make sense out of the hodge podge of information that was coming in. And there was no fixed, in other words there was no formal cost control operation going at that time, there was no such thing.

NM: What about the payroll, how did you pay people?

DL; The payroll was handled by the personnel department, employee relations department. So that was a separate section and most of that I think at this time, may have been actually handled out of Toronto, rather than out of the Calgary office. Because in the Calgary office originally they didn't have much of a personnel department. When I joined the company I don't think there was anybody in the personnel department, at least I don't recall anybody.

NM: He was the office manager it says here. And he talks about Ray Walter.

DL: Ray was of course, the head of the geophysical department and he was the one who really built up the geophysical department. He'd come here from Carter and he decided to stay here when many of the Carter people went back to the United States. It turned out that he was just trying to get the geophysical operation running. It had not been successful in Saskatchewan, it had not been successful in the foothills, so that really it's success ratio in Alberta had been nil and it didn't have a particularly high reputation because in those days it was very primitive, let's put it that way. So he was trying to put it together and he was trying to coordinate the work that was done by the Carter crews who went back to the States every year. And it just happened that at the time he was getting set up here that the seismic crew found Leduc or found an indication that turned out to be Leduc and from then on of course, seismic became practically the god of everybody because it seemed to answer all the questions about how to find oil in the plains. So it became extremely

important and he had the job of expanding that department very rapidly and trying to make it run. So that he was fortunate in his timing of it but we were also fortunate I think that we had a man with his experience and with his drive to set up this thing because it was a fantastic amount of work that started to build up. Ray and Sid Weller got along quite well together.

#119 NM: Yes, he is saying that he had a great respect for him.

DL: Yes. And Sid had a lot to do with keeping track of the numbers, the cost and all kinds of things because Ray Walters certainly didn't have time to do it. There's a telegram there.

NM: That's right, he mentions a telegram from Calgary to Toronto was lost, the telegram regarding the discovery then.

DL; Yes, that's right.

NM: That happened often, the telegrams were lost.

DL: Well, this was the trouble, when I was trying to do the documentation of the Leduc discovery I found out that although we had microfilmed many things, that apparently, for some reason telegrams were not covered. There must have been too many of them I guess and many of them of very, very little value, just telegrams for instance saying, Oliver Hopkins would be arriving on the 21st, get him a room in the Palliser or something like that. I think that the decision must have been to destroy them on a yearly basis because I was unable to find any telegrams. Yet a great deal of the critical information for documentation were on telegrams.

NM: In this time everything was done with telegrams?

DL: Yes.

NM: He ended his letter with a very philosophical statement, *we are all proud of the part we are playing, the like of which we will never see again.*

DL: That's right. I think it's very true, there may be other basins in the world in some of the undeveloped countries where this sort of thing might happen, where you go into a basin with very inexperienced people and use your own inexperienced people to actually do the initial development for the first 2 or 3 years and train them on the job. I think in most cases now if there was a discovery made there would be an actual mob of people, of experts from all over the world go in and be consultants and everything else. It's a different kind of a set up.

NM: A completely different approach to it.

DL: I think so too. But this was different in that nobody believed it was a big discovery, that was one of the things, until a couple of years afterwards. Then all of a sudden it turned out it was big and by then we had done an awful lot of the work ourselves with untrained people, our own people. Then we added people but most of the initial work was done by people that were way over their heads in their responsibilities. But if you give people a job and tell them they've got to do it well they'll do it. I think Sid says the same thing that he was told by Ray Walters, who was a pretty hard man, he said, I won't fire you if you make a mistake but I'll damn well fire you if you're not doing anything. That was I think, the general attitude. Tip Maroney was another one who bluntly just said, in somewhat the same tone, look, I don't know what you're going to do but for god's sake do something.

When you're brought up with that and you know. . .

#160 NM: You go on with your job.

DL: You just decide, what is the most rational thing to do. And the thing about it was that was good of course was that you knew you'd be backed up. If you made a mistake you'd be backed up anyway. Now if you made the same mistake again, that's a little different.

NM: So we went through all the letters. This is the end of the sixth interview with Doug Layer.

Tape 8 Side 1

NM: This is Nadine Mackenzie speaking, this is the seventh interview with Mr. Doug Layer. Mr. Layer can you tell me about the training of geologists in your time?

DL: I guess the best way to explain it is that going back into the 40's and into the 50's, things were very hectic and I can only talk for Imperial now but there really wasn't time to go into formal training programs such as are so very common now. So what happened was that you had to really train on the job, in other words . . in fact, it even goes further than that, that many people were put into jobs which they were not trained for to start with.

NM: So they were trained on the job by other people.

DL: Well sometimes you went on a job and there wasn't nobody to train you. So you learned the job yourself and at the same time you were trying to train other people to do the job. So it was not a formal thing. With the one exception and that was that we were doing a considerable amount of surface geological work in those days and that was somewhat different in that we always had some very capable people that knew about surface geology, particularly things like handling canoes and a few things like knowing how to use an ax, so they wouldn't get seriously hurt out in the field. So they were given some training before they went out in the field. But again, 90% of what they learned was on the job sort of thing. I don't think any of the companies at that time really went in for the serious formalized type courses that became so prevalent I guess in the 60's or something, where everybody had to go to courses. I personally think that it's the best way to do it, is to train on the job rather than try to do it formally.

NM: Were they learning a lot at these courses? Were they given information they could not get otherwise

DL: I don't think it is. I think in many cases they're giving information in a new form, in a condensed form that people can now go and get theoretically and sit in a meeting for 2 or 3 days and get a sort of a condensed version of a lot of stuff. In the early days it was more practical, maybe that's not the right word, but the thing is we did a lot of work from canoes. I don't know whether you've handled a canoe or not but a canoe is a kind of a tricky thing, particularly on rivers so that was one where we got some pretty good intensive training. Because we could lose people pretty easily in the rivers. There was also some training on pack train work but most of that again, you depended on the packed to teach the geologists how to get on a horse. It was really not until I think, about middle

50's that Imperial started to have some in house courses. We had the advantage at that time, that our affiliates in the United States, Carter Oil particularly at that time, had been operating for many, many years. So we were able to use some of their expertise, they would set up particular courses for Imperial employees on specific subjects. So we were able to take that advantage and then gradually over the years we built up our own in house staff and did an awful lot of formal teaching and formal courses and things like that, both from a technical point of view and also from, I don't know the right work, the human relations point of view, how to handle people without getting into all kinds of trouble about the way you're treating them like animals or treating them like numbers or something else. It has changed, there's no doubt about it, it has changed absolutely radically since the late 40's till this present time.

#052 NM: So what do you think of the training of geologists nowadays?

DL: I find it a very difficult question to answer because there's no doubt about it, that the amount of technical knowledge that a geologist has today, compared to 40 years ago is just 100 fold greater than what we had. But it is certainly the amount of detail knowledge he has on stratigraphy, on all the phases of geology are extremely great. The equipment that's used is so far above what we used 40 years ago, so that the information you get is far, far better. Things like ordinary logs and that from wells, they're very, very meaningful. So much more can be done from those than you could with the things that we were forced to use in the 40's and 50's. But there is, to my way of thinking, there is so much knowledge that it becomes very difficult for geologists to promote a new idea and really, like many so called sciences, geology is primarily a kind of an art, in that no matter how much technical information you have you really have to have somebody who can see or thinks he can see an oil or gas field ahead of the time the kind of knowledge that you need is available. In other words, it's no use waiting until all the information is available and then going out and looking for an oil field because by then somebody else has already found it. So you still need the type of man who can sort through this mass of technical knowledge and see further than anybody else. So theoretically it should be easier now than it was in the early days but I personally, being maybe obsolete, think that there's too much information that you can't get through the forest because of the trees. So you wonder whether the old cliche or quotation is becoming true and that is that a geologist is a man who continues to learn more and more about everything till finally he ends up knowing nothing about everything. That's not quite the quotation but it's in that term. I think it's true of anything, if you get too much information you get lost in the information. The other thing too, that I notice particularly in the work now and that is that there is such a tremendous dependency on supplementary. . like information that comes in to the office. In other words the geologist very rarely spends any time in the field anymore

NM: Why is that?

DL: You don't need to anymore. The information is better, you can look at it and you need a computer to analyze it. So you get into this problem that you can't really do anything directly, you've got to have all this very highly sophisticated instrumentation.

#094 NM: So do they spend most of their time now in offices?

DL: In the offices yes. There's very few geologist spend any time out in the field now. There's not much field work done, that is surface work. At least in this area, in western Canada. Now there is in some new areas in the third world and that but even there it's more likely to be seismic work or gravity meter work or some other type work, where it's not so much the geologists observing eye that is critical but the instrumentation that's used. It's a major change, there's no doubt about it, it's a completely different profession than it was when I took it 40 years ago, I know that.

NM: Mr. Layer you have seen the ups and downs of the oil patch, what do you feel about it?

DL: In my terms I'm very pessimistic about it. One thing I feel that the amount of useable, recoverable oil and gas in Canada has been very highly overrated. That's not to say that there isn't a lot of it around but the point is that it's the price that it's going to cost to get it out that is the critical factor and it just seems to me that it's going to be too high to be of any use unless it's very highly subsidized by the government. Which again, becomes almost a non-economical thing, if the government is going to have to pay for. . and the government of course, which is us is going to have to increase taxes in order to get that oil to make it commercial so that people can afford to use it. The other thing, I think that the amount of oil and gas that will be found in the future is going to be severely reduced because of the government attitude of taking over too much power, setting up their monolithic. . Petrocan, which has no problems with cost analyses or profit making or anything and excluding the people who have really, the real ability to find oil and develop it, namely the major world companies. So what we are doing now, I think, is we're using sort of a group of amateurs that are just getting started in order to so called Canadianize the operations. And we've really basically kicked out the people who know more about the oil industry and finding oil and they're the people we need because at least they can find it cheaper and they're more likely to find more of it than our one company, the Petrocan and the small Canadian companies that are being set up to sort of make it look good I think. When you look at these Canadian companies that are being set up, when you realize that for every dollar they spend they're getting 80 cents back of tax payers dollars and you further know that for instance, if we set up our little company and we operate on 20 cent dollars then just assume we're lucky and we find a little oil field, 5 million barrels or 6 million barrels or we find a nice little gas field. What we're going to do, the two of us, we're going to sell it and who gets the money, not the taxpayers but you and I get the money. So here we come up with a $15 or $20 million profit for not really spending any of our own money.

#141 NM: It sounds like a good deal.

DL: It is you see, but the point is it doesn't build up a reserve and it doesn't develop the real kind of expertise that the major oil companies have.

NM: So it doesn't build up the country too.

DL: That's right. And personally I think that the only real hope for long range self sufficiency is the development of more of the tar sand plants like Syncrude and hopefully the Cold Lake plant that Esso is now starting to build on a small scale. Those sort of things we

know the oil is there, we know the techniques for obtaining it. So it becomes a question of whether or not it can be produced at some kind of a useable price, in other words that it won't break everybody to use it. If that works out then I think Canada is going to be in good shape. But I think most of the oil that's going to be on the east coast and in the Arctic Islands and in the Beaufort, I can't see how that can be developed under $50 or $60 a barrel and I don't think at the moment there are wells there that will produce at a high enough rate that even at that you could make any money, unless the government subsidizes the thing practically 100%, which we really can't stand because then again it's our tax situation. So I'm just glad that I'm out of the oil business to be honest.

NM: So how do you foresee the future for the oil industry in Alberta, what's going to happen?

DL: I can't see anything but a decrease in activities. I think you'll continue to have the small operators that are following the government procedures of being true Canadian, I think you'll see them more as entrepreneurs. In other words people who are going to go in and try to find small oil fields and small gas fields but that will not really do anything in the way of building up reserves for Canada. When you look at the huge supply that is required to look after the Canadian demands. For instance these days if somebody found a 5 million barrel oil field, a small company that would raise their stock about 10 times on the market. But when you realize that that really, a 5 million barrel field is probably going to last Canada 3 days. The numbers become so unbelievable. You've got to find fields of 500 and 700 and 1,000 million barrels to make it worthwhile, to build up a reserve that will be of some value to the country. Which you won't get I don't think, with small independent companies. They can't afford this sort of thing, to get out into these areas, these highly expensive areas, they can't do it. In Alberta I think it's been well enough looked over and the western basin itself, that you're not going to run into those kind of fields, you're going to run into half million and 5 million, maybe a good one. And you're going to run into gas but even in the gas fields I don't think you're really running into any big huge gas fields, trillion cubic fields or anything, they're all relatively small again. So you just can't see any hope unless you believe that there's going to be huge reserves on the east coast, on the offshore and huge reserves in the Arctic Islands. Drilling to date has not substantiated that. You can be an optimist and say, we'll find it yet but I think there becomes an end to the amount of resource that's available and I think we're approaching that down hill grade. If you look at the reserve pictures that we have in the oil business you'll see that they have been going down steadily now for I think, it's almost 15 years that the reserves have been going down. That's a long period and it's difficult to see a major turn around and no use looking at these small fields, you've got to find something that's big and I have no knowledge of any areas where we're likely to find it so you can see why I'm pessimistic.

#205 NM: So what would be the solution then for the near future?

DL: In the near future, my personal biases are, one thing that the use of petroleum, that's crude oil, should be restricted. In other words it should be primarily used for transportation purposes where there is no other alternative except electric power. You can run railroads by electric power but you can't run buses very efficiently or even cars. So that it seems to

me that now that we're running into this situation that there should be this restriction put on how many uses we try to make out of a declining resource. I think that nuclear power is essential for the short term until such time as fusion or solar energy or some of these other things become practical. And then for the real short term I think we're going to have to switch to using coal, not only for making some of the things that we're presently making from oil and gas, but also for straight energy for factories and places like that. Now I know this is going to cause all kinds of problems with the environment and everything else, but I don't see any other answer. We do have good supplies of coal, unfortunately it's the same situation that we face all the time, the coal supplies are in the west and the big demand is going to down in the east. At the same time it may be necessary that we move coal down there to replace petroleum. I don't think we should be burning petroleum in industries any longer, I don't think we can afford to.

NM: Do we really have huge coal reserves in the west?

DL: They're not huge if you compare them to what they have in the United States or in Russia but from the work that I did on coal, it seemed to me that we probably had a supply of coal that would carry us without too much of a problem for the next 20-25 years. In other words we could expand the amount of coal production 10 or 20 times and we would still have enough to carry us through. There are huge reserves of thermal coals. Now they're nothing like they are for instance, down in Wyoming country and in parts of the Dakotas where you get 60 and 70 foot thick seams, you just don't get that in Canada here in the plains. You're more likely to get 6 and 7 foot seams. But under a relatively light overburden they can be mined extemely cheaply. Then there is always the hope and I think that there's been fairly good luck on this and that it to actually take the coal and burn it in situ. You obtain then a great deal of the energy, the gas comes off, you can get the gas off and also there are ways where you can make liquid, really what amounts to hydrocarbons, out of the coal too. There's all those sort of alternative type things which again, might solve our problem on the short term, but on the long. . .

#263 NM: For periods and then it's back to square one again.

DL: By then you're hoping one, that you've solved the nuclear disposal system, in other words getting rid of nuclear waste or that you've got fusion where you really don't have much waste. Or that you've got a lot of your solar energy type thing has come into force, where you can start using that. So that these things are all potential and then I think the other thing that's got to be kept in mind all the time too is that we're going to have to start to conserve. In other words instead of wasting stuff the way we do now and where people are still driving big cars and driving at 80 miles an hour and all these things. And everybody's got to have a boat and all this kind of stuff. I think that again, we're going to have to start conserving. When you see how Europe has been able to restrict the use of energy over many, many years and Japan and yet still become tremendously important manufacturing and trading nation you can see that in North America we can go a long, long way in starting to restrict the use of what energy we have and I think we're going to have to do that. I'm a firm believer for instance, that across Canada we should have a 55 mile speed limit. And I think enforced by $1,000 fine.

NM: That will work.

DL: We will not accept the fact, Canadians anyway and I think to some extent Americans, that there is a crisis coming up and until people are willing to accept that I don't think there is going to be an answer. We're just going to wake up one day and it's going to be damn cold and we're not going to have anything to heat the house except burning wood. So I hope it doesn't come to that but I haven't seen much sign of a strong feeling of conservation by the people and secondly I don't see a sign at all that the government is doing anything about it. Which is what worries me, I think the government could start propaganda now abut starting to cut back on stuff and save fuel, save energy of every kind.

NM: But it doesn't seem to be one of the priorities of the government for the moment.

DL: No, they don't even mention it.

NM: That's right so nothing is going to be done.

DL: And I think you have to get that starting, the government's have to start it, federal and provincial but you've got to get people somehow to realize that we are running out of energy, particularly oil and gas energy. But I can talk to I would guess 4 out of 5 people in Calgary who should be knowledgeable about the oil industry and they'll say we don't need to worry, as soon as the price goes up a little more they'll open up another well. You can't convince them, I've talked to people and I've said to them. .

NM: It does not work like that.

DL: I know, I've talked to them, I've said look, do you know where there's any oil or gas that you know about and the big companies have shut it in, I'll tell you what if you can tell me where this is and where this well is I'll get enough money and we'll make a lot of money on producing this well. They can never do that and besides I say, you can't do that in Alberta, the Conservation Board here has such a strict control over your oil field operations that if it's a producing well you can't abandon it, they won't let you do it. So it's one of those ridiculous things but that doesn't make any sense, that logic, well, there's all kinds of stuff said and you just wait until the price goes up.

NM: So it's like nobody cares really.

DL: No, they don't, they'll just open some more wells up as soon as we run short. As long as you believe that, as long as the government doesn't put pressure then we're not going to get anywhere we're just going to go downhill all the time until finally we're going to be in, I think, dire straights for energy.

NM: End of the tape.

Tape 8 Side 2

#023 NM: Mr. Layer, who were the most influential persons in your career?

DL: I think that there were probably two of them that had the biggest effect. One was Dr. John Allan who was the head of the geological department at the University of Alberta in Edmonton. He was responsible for making sure that I was able to get work in the lab during the university year in order to supplement my money because I wouldn't have had enough money to stay in university if I hadn't had that little bit coming in. He was also

the man who sort of acted as an advisor, a very good advisor and the third thing is that when I graduated there weren't very many jobs available and I couldn't get one. Most of the jobs were down in South America, they really needed people down in South America but the trouble is that you had to have a certain physical rating before they would permit you to go down and I couldn't pass the physical. So I didn't have a job when I graduated so I had to go and work on a road gang and John Allan knew where I was and during the summer months I guess it was, he phoned and got in touch with me, which was an extremely difficult thing because there were no phone lines except the park warden's had lines that they could get through on sometimes. So he had an awfully difficult time getting through to me but he finally did and told me to get to Calgary that day, so I got my first job with the Alberta government Conservation Board, which gave me a start and gave me an awful lot of excellent training because I was exposed to, not only the people in the oil industry but also exposed to all the wells that were drilled in Alberta. So I had a real good background to go on. So that was the early start of things and I think the other man that affected me most strongly was the man that was brought up into Imperial's operations at the time of Leduc, Mike Hyder. Mike Hyder was a real driving force, he was an extremely capable oil man, ended up as President of the Exxon Oil Company. But it was his attitude that I think affected me from then on, I was fortunate enough to sit in on many of the meetings at which he was the Chairman and I was doing an awful lot of the recommending for deep drilling in the plains and follow-up wells to Leduc and a lot of things that, from a technical point of view, were extremely essential because they were based on the idea that we had to find out as early as possible why reefs occurred in certain areas. We didn't know and it was essential that the sooner we found that out the more successful we'd be. But unfortunately on the other side of the coin there was also a shortage of money so we couldn't do everything. But Mike Hyder's attitude was that, first thing he, unlike many managers or many people in charge of committees, he didn't just say no, we can't do that, or not, let's drop that subject. He took time in all cases to explain in detail why it couldn't be done and then the second thing he did, which I tried to impart to everybody that ever worked for me and I think it's highly critical was, now, don't throw that in the waste paper basket, that idea, think about it, if you see any indication of any kind of changes going on around or you get anything to add to it bring it back and bring it back a dozen times if necessary. Because if it's a good idea some of the dumb people in the committee will agree with it and we'll do it. And so I did that from then on and I tried to impart that to all the people I worked with. Because the normal thing that you do and I think this is true of the great majority of people, if you take an idea to somebody and they say no, you say, oh well, to hell with them and throw it away. Which I think is one of the worst things that can happen because so many good ideas are lost that way. So those two men I think, the first one helped me tremendously in getting started in the career and the second one sort of taught me an attitude that I never forgot and tried to pass on to other people.

#081 NM: What was the most exciting experience in your career?

DL: That question is usually kind of hard to answer. There's so many things that come to

mind but probably the one that I guess, to me, meant the most was when I got the job really, of the senior geologist for Imperial Oil. My ambitions in the early days when I started with Imperial was to hopefully become Chief Geologist. However that job was one of the things that was taken out during a reorganization so that when I got to the levels of where I could have been Chief Geologist they didn't call it Chief Geologist anymore. But it was equivalent to Chief Geologist for Imperial and I think the fact that I got to the job that I had sort of dreamed about having was probably the most critical thing. There were other things that were really exciting but I think that was probably the one that I would remember most. I finally got to where I wanted to be and where I'd dreamt to be, I guess you could say, where you sort of dream about these things.

NM: How would you compare Imperial with other oil companies?

DL: Imperial really has been a part of the oil industry in Canada for well over 100 years now. They started in the east in southwestern Ontario, where they put up the first refinery and where they were handling some of the crude from some of those early wells at Oil Springs. And they were in the refining and marketing and marine business for all those years and as far as exploration was concerned, for oil, they had begun exploration for oil in western Canada back in 1918, 1919. And they had continued doing some exploration, admittedly in many years it was quite small but they had a constant effort in western Canada, over all the years starting back in the teens, 1918 I think it was. So they were sort of recognized, they had more refineries than anybody else, on both the east and west coast they had most of the marine transportation of fuel oils. And in the west here they had been a big frog in what was relatively a little puddle. They had really dominated the Turner Valley pool, although they weren't under the name of Imperial then, that was named Royalite. But they almost dominated even though they had not found the pool. And then into the 40's they still really occupied that dominant position. When Leduc broke then we were very fortunate, we found Leduc, we found Redwater, we found Golden Spike and it seemed to the public and to independent oil companies that we had everything, we were going to end up with 100% of the oil. So we were such an extremely dominant figure in those days that it, frankly, it got to be an embarrassment to the government and to Imperial and there were representations made by members of the independent oil associations to the government to stop up from continuing to find oil fields and stuff.

#129 NM: So it was like Imperial was getting too big.

DL: It was assumed that we were so smart that we had gone to work and we had outlined all the oil fields you see, and we were just drilling them 1, 2, 3, 4. Well, at that time it kind of seemed like it. Anyway, then that stayed that way I think, until about the middle 50's and then with the tremendous amount of competition coming in from major companies and independent companies that dominant position got to be a more realistic position. In other words we were still the biggest operator, we had the most production, and all the other things. Then as we get into the 60's Imperial's image started to change a bit, I think it was getting too big and it was getting too bureaucratic, in my personal opinion and we were not the active, sort of idea generating people we had been in the 50's. And then as

you got later into the 70's then Imperial was starting to fight the battle of the governments and it gradually got down to where it is now, where it's one of the oil companies but really not a dominant part of the oil industry. It still has a substantial interest but it's gone down I think, a tremendous amount in sort of the image that it had by Canadians. For instance, this meant a lot to Canadians, but for many, many years Imperial paid for the radio and television broadcasts for the hockey games, from the Maple Leaf Gardens. They must have done this for 20 years. And I mean, Imperial and hockey were the same thing, everybody tuned in the hockey game on Saturday night and Imperial was the one that put it on. So it was almost a household world, the Imperial hockey broadcast.

NM: A good publicity then for them.

DL: Well, it was the Imperial hockey broadcast you see. So this is why the name had. . and of course, the other thing in those days, people weren't all concerned about the fact that it was an international oil company. You see, the thing about it is in Imperial, we rarely had any Americans working for us, 99% of the time it was all Canadians. And so there was really not an obvious American influence. So people, heck, fathers, sons, grandsons were working for Imperial and they're all Canadians.

NM: So it was becoming like an empire.

DL: That's right. But it didn't have that tinge of nasty oil companies working for the States, where they were draining off all the money from Canada and all this other stuff. Anyway I hate to see Imperial down to where it is now but of course, with the National Oil Policy they can't do much else because they don't get any of the freebies that Canadian companies do so you can't compete. So that's about the way I feel about it, I'm glad I'm out of the oil business, that's one thing.

#172 NM: Looking back at your career, is there anything you will do differently now?

DL: Very little. I was happy with my career with Imperial, I really didn't have any desires to jump to another company with the exception of probably a year or so during that 32 years, all the work I did was interesting and I was interested in it, to the extent that when I went away on holidays I always looked forward to coming back to work. So that there was no particular difficulty there. I think the only thing that has always sort of bothered me and I don't know whether it's correctable or not, and that is that in many cases when you are presenting ideas to a group of senior people and it's turned down, the one thing you don't know is whether it was turned down because you made a poor presentation and I've often thought that if there was anything I could have done or changed, it would have been, have gone to a Carnegie expert or somebody like that to understand better how to be sure to get a point across to a mixed group of people. When you're talking to an engineer, an accountant, a geophysicist say, a landman, just a variety of people, a refinery man, a maritime man and to try to present an idea which basically has to be in part technical, it's an extremely hard thing to know. If they say no you tend to feel that I probably didn't present that right. I would like to have had the opportunity of somehow becoming more sure that it wasn't my fault that the idea was turned down. I don't know, maybe there was some source of information I could have obtained but I didn't get it. I think that's the only thing that really bothers me about my career.

NM: But you have never regretted to have spent so many years with Imperial?

DL: I don't think so, I think it was probably one of the best companies to work with and I enjoyed the work that I had. I was fortunate that I always had interesting jobs. I didn't feel that I was shoved back into a cubby hole and forgotten so I had no desire to leave Imperial. I would have liked to have taken some foreign service but I was never given the opportunity for that. But other than that, I was quite happy and I'm glad that I had the opportunity to go with them and stay with them, over, particularly, that exciting period in the oil industry. Because there's no doubt about it, from the time of Leduc until about 1965 the oil industry was a real interesting place.

#219 NM: In your time people had a career with one company and nowadays they are jumping from company to company, what do you feel about that?

DL: I would hate now to be a supervisor because I know in our case at Imperial, we used to put the new employees through a very, I think, excellent training program of many phases of the work that they would be exposed to. And we used to feel that by the time we got them through that training course and in many cases, the training course lasted about 2 years off and on, that then they would start to become productive employees in their 3rd and 4th years. So now, with the fact that so many young people from university just come with a company for a couple of years to get organized then go to another company because they're offered more money or they're given the title of President in charge of cars or something, to me it would make it just a waste of time to spend any time on training people.

NM: And then seeing them going somewhere else.

DL: And the best thing I would say, instead of doing that, don't hire university graduates, hire people that are trained some place else and don't waste time on these, get these people that know what they're doing and put them to work. Which of course, is going to be deadly for the universities graduates but they've brought it on themselves by sort of, somehow, I think they feel that you don't make a career with a company, that you make a career by jumping from one promotion to another in different companies.

NM: And does it work really like that?

DL: I don't think it does, I can't see how it does. I don't see where you have any loyalty to any company and I don't see how the companies can have any loyalty to the employee. I know I wouldn't, if I'm pretty sure the guy's going to leave in 2 or 3 years I'd be darn careful not to tell him anything that I thought was very important. And I certainly wouldn't give a damn whether he lived or died, it wouldn't be of any critical importance to me. And I'm sure that his attitude would be exactly the same, I'll just get what I can from Imperial then I'll take off. So to me, it destroys any hope of building up a strong team of idea people or any sort of high moral because with people shifting and changing and going to other companies all the time, there's no way you can do it. I think there are some places that have been able to, I believe Bell Telephone on their operation, particularly in some of their research things, they have apparently been able to build up some kind of an esprit d' corps that people will stay there, just almost forever. So that they've got a team there that over the years has just turned out some fantastic things for the Bell Telephone people and

as I understand it from what reading I did, and this is a few years ago, that many of those people have been there years and years and years and years. They just act as a team, they work together or they work on their own but they're loyal to Bell and Bell I gather, treats them pretty good too. So I think it's going to destroy any big company with this constant jumping around. I don't know what these fellows, I hope these fellows are saving money on their own because they're not going to have any pension except the government pension. But that's their idea of course, is to make yourself a millionaire before you're thirty and some of them have done it I guess.

NM: Not too many. This is the end of the interview. Thank you very much Mr. Layer for all these interviews, I have really enjoyed them.

DL: You're sure welcome and I wish you luck on the rest of your interviews.

NM: Thank you.