

PETROLEUM INDUSTRY ORAL HISTORY PROJECT  
TRANSCRIPT

INTERVIEWEE: Don Weir

INTERVIEWER: Nadine Mackenzie

DATE: November 1983

NM: This is Nadine Mackenzie speaking. I am interviewing Mr. Weir at his house, 46 Medford Place S.W. Calgary. Mr. Weir, thank you for having accepted to participate in our project. Can you tell me, when and where were you born?

DW: I was born in Saskatoon, Saskatchewan on December 19<sup>th</sup>, 1914.

NM: What did your parents do?

DW: My father was the registrar of the University of Saskatchewan and a lecturer in English and Mathematics.

NM: Were your parents Canadian?

DW: Yes, they were both born in Canada and my father's father and his grandfather were born in Canada.

NM: What was the origin of your parents, were they British, Scottish?

DW: My father's people were from Scotland, who left Scotland for Northern Ireland back in the 1600's, built up a flourishing linen business and then in the Napoleonic Wars, were ruined by the French privateers who destroyed a lot of their goods. So finally the father took his last amount of linen and loaded it on a ship and started for the United States, telling his sons that if he was not heard from again they should go to their uncle in Philadelphia. He disappeared and was never heard of again, so they left Belfast for Philadelphia in 1812 and on the ocean they spoke a British ship who told them the United States had just declared war on Britain, so they ship changed course and went to Canada and they arrived in Canada in 1812.

NM: Where were you educated?

DW: I was educated in Saskatoon at the public schools and at Tanna??? Collegiate and then at the University of Saskatchewan first.

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

DW: Science with a specialty in geology.

NM: Why did you choose science and geology?

DW: There were many influences. I think the influences that led me to geology started very early. In 1927 my father bought a tent and sleeping bags and camping equipment and loaded my brother and myself in an old Model T Ford and drove from Saskatoon to Vancouver. It took us 21 days to make the trip with mud roads across the prairie and mountain passes and so on. But the experience of sleeping in a tent, hearing the wind slap the canvas and rain on the canvas and seeing prairies and mountains and deserts and sea coasts, made me love the out of doors, so that started me. Then since we didn't have much money, I started collecting stones as souvenirs. An unusual stone from Lost Lagoon in Stanley Park or a stone from the hillside at Lake Louise and so on. One of the best

ones I picked up had a fossil in it. I remember it was on top of Tunnel Mountain in Banff. I asked my father about the shell in the stone and he told me, he thought the sea had once been in there. I can remember I had pictures of the sea filling the valley and the mountain peaks as islands and so on. Anyway that got me interested, and the final thing, was my father's older brother, who was an engineer and found he'd always wanted to be a geologist. When I was starting university and thinking of engineering he advised me to take a course in geology. That first course in geology suddenly explained all the land forms I'd seen on our trips, it explained the rocks that I'd collected and it was so interesting that I never looked back.

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

DW: 3 years at the University of Saskatchewan, a year then with the Geological Survey of Canada, 3 years at Oxford University and then 2 years at Harvard University.

NM: Did you take any summer jobs while at university?

DW: Yes. I worked 2 summers for the Canadian Geological Survey. Then I took a job in Peru between my years at Oxford and the years at Harvard and did geological mapping in the Andes. Then I had one job in the summer in Alberta with the oil industry while I was at Harvard.

NM: So you were kept busy all the time.

DW: Yes, well, we had to earn money in those days.

NM: Can you tell me more about your studies, you went to Oxford?

DW: Yes, after getting a Bachelor of science at the University of Saskatchewan in geology and working for a year and a half with the Geological Survey of Canada I went to Oxford and spent 2 years there studying geology and received a BA from Oxford in geology. Then I started graduate work and received a scholarship at Oxford which I then took to Harvard and did geological work at Harvard, received a Master's degree in Harvard and continued on my research on a PhD thesis and received a Doctors degree from Oxford in 1943.

NM: Can you tell me a bit more about this scholarship from Oxford?

DW: It was called the Burdett Coutts scholarship. There are 2 towns in Alberta as you know, Burdett and Coutts, named after an English baron who invested money in Alberta and made a lot of money and left some of it to Oxford to set up a scholarship in science, which I received when I was at Oxford. It was interesting that first relationship to Alberta was through a scholarship of an Englishman who had made a lot of money out of Alberta.

NM: Was the competition very tough to get this scholarship?

DW: You had to write competing exams in biology and chemistry and geology but there were not too many candidates that tried the exams when I did.

NM: You mentioned that your BSc was not recognized in Oxford.

DW: Well, Oxford was a strange university where they believed that you had to have lived at Oxford for at least 2 years before you were fitted for an Oxford degree. They did not want me to start a graduate course immediately based on my Saskatchewan Bachelors degree. But in actual fact I found I was teaching the professors at Oxford certain things because we were taught practical geology at Saskatchewan and they were taught sort of theoretical geology at Oxford. However, I spent the 2 years and I used them to travel around Europe and see the geology of Europe, so it wasn't time wasted by any means. However, once I had received their Bachelor of Arts degree then they would consider I was educated and

let me go on with graduate work.

#075 NM: Did you do a lot of research?

DW: I did 3 years of research, yes.

NM: And what was the subject of your research?

DW: It was on micro-palaeontology. And palaeontology and structure but primarily micro-palaeontology.

NM: Then you went to Harvard University, can we talk about it?

DW: From Oxford I went to Peru and did work in the Andes and at the end of that summer I went to Harvard to continue with my research on my PhD. I found Harvard a very exciting university. At that time it was one of the leading universities in the world, and certainly in geology the people were outstanding so I enjoyed the 2 years of research at Harvard.

NM: And after Harvard what did you do?

DW: I came to work in the oil industry in Alberta.

NM: And what was your first job?

DW: The first job was on a gravity meter survey here in southern Alberta. That was during the summer between my 2 years at Harvard. Then when I finished at Harvard and came to work in Alberta, I started in on the oil fields and sitting on oil wells.

NM: Were you working for an oil company of Calgary?

DW: Yes, I was working for the early company that was Standard of California's company. They changed the names a number of times, I think . . . well, it became Dominion Oil Company so I was working for Dominion Oil Company, which then became the California Standard Company, which then became Chevron Standard which then became Chevron Canada Resources Ltd.

NM: And what was your work, what were you doing?

DW: At first I was doing field work, that is field work in southern Alberta, along the river valleys of the Milk River, the Old Man, and the Saskatchewan Rivers. And I was doing subsurface geology, sitting on wells. Then they put me to work examining all the samples of the wells that had been drilled in western Canada. At that time there were only about 1,000 wells had been drilled in Alberta and I think I examined all of those at that time. And put modern markers into the wells. So at the end of about 3 years I had a very good idea of the stratigraphy of western Canada.

NM: How were the conditions of working in Alberta at the time?

DW: Well, they were more primitive than they are now I guess. Most of the work that I did was on the plains and in many cases the rigs had no camp or no bunkhouse so we used a car and slept in the car and cooked some beans on a gasoline stove. When we had a break in the drilling we could drive into a small town and get a meal or get cleaned up. It was the equipment that was primitive in those days compared to today. But we did most of our work on the samples then rather than depending on wire logs like people do today.

NM: Were there many geologists working in the province at the time?

DW: Not nearly as many as now. In those years we had the Alberta Society of Petroleum Geologists and when we had a meeting, this would be during the winter, when we had a meeting if we had 20 people attend that would be a good meeting, a large meeting. Of course now, they will have 1,500 or 2,000 people. So I'm not sure how many there were

but there were not many geologists in Alberta at that time.

#118 NM: How long did you keep your first job for?

DW: Until 1946 so it would have been about 5 years. 1946 was a very interesting year. Our parent company, Standard of California was revising its world exploration, emphasizing places like Arabia and Sumatra, which were tremendously important. And took the attitude that western Canada was not in the same league and therefore they cut the operations in western Canada way back. It's interesting, at that same time, Exxon, or Standard of New Jersey as it was then, was also looking at its worldwide operations and they sent their top men from New York up to Canada to look at Alberta. Men like Moses Nabo??? who was their manager of exploration and Lewis Weekes??? who was their chief geologist, looked at western Canada and decided that they should do a long range program of exploration. I've always admired Imperial for that in comparing them with other companies who cut back at that time. Because it was really the people from Imperial who understood the oil industry, or the people from New Jersey, who had the knowledge, the scientific viewpoint and the capital to continue exploration in western Canada. Really, none of us would be here today if it hadn't been for those few top people in Standard of New Jersey. It always bothers me that our people in the government in Ottawa haven't the faintest concept of how much they owe to a few people in large companies. I suppose I'm talking politics now, but the narrow minded attitude of the nationalists who think that only people working for the government in Ottawa can solve these problems is just completely wrong. Anyway, to answer your question, 1946, since our company was cut back, since I had always thought I would like to teach, in fact that had been why I went ahead and got a PhD degree and so on, in 1946 I was offered a job at the University of Saskatchewan. So I accepted it and I went in to the head of our company, California Standard Company then, and offered a letter of resignation and he told me, you can't resign. I said, well, I have, I've accepted a job at the University of Saskatchewan. He said, no, I won't accept your resignation but I'll give you a leave of absence. He wrote to the Board of Directors in San Francisco and had the minutes of the Board of Directors pass, granting me a year's leave of absence. He told me I'd be back within a year and of course, that winter Imperial discovered Leduc and the whole situation changed and I came back the next spring as chief geologist of California Standard Company. So I broke my first job in a way, but since it was a leave of absence I was never considered to have left the company.

NM: What did you teach at the University of Saskatchewan?

DW: I taught geology. I taught palaeontology and stratigraphy to the senior students and I taught introductory geology to engineers. I had 160 engineers in 2 classes and I taught them geology. A lot of them of course, had never encountered geology before and it's amazing the people I run into now in the oil industry who'll tell me they were in those classes.

#162 NM: And they were your former students.

DW: And that taught them what geology was and they decided to go into geology.

NM: That was good. Did you enjoy teaching?

DW: I did enjoy teaching but when you look at a university from the inside, it's not just ivy

halls and pleasant environment. There's an awful lot of jealousy, backbiting between different faculties, there isn't enough money to go around and the classics people object to the engineers being able to make money in the summer and things like that. When I saw that and I saw that here was an opportunity to do work that I was teaching people to do, why shouldn't I do it myself instead of teaching others to do it. So I had my experience teaching and then I left.

NM: So after one year at the University of Saskatchewan you went back to California Standard as chief geologist?

DW: Yes.

NM: And what was your work?

DW: We were trying to catch up to Imperial and other companies who had discovered Leduc and to find out what the fields were and what the reefs were. So my work was really directing the geological work and the exploration of California Standard Company.

NM: Can you tell me about Alberta when Leduc was discovered?

DW: Before Leduc most of the drilling had been in southern and eastern Alberta. There were very few deep wells and little was known of the Paleozoic. California Standard Company drilled a well at Princess in 1938 or '39, which went right through the Devonian section to the basement and it did get some oil in the Devonian, the first Devonian oil out on the plains. Princess never amounted to much, it was a very small Devonian pool but the knowledge that there was Devonian oil up at Fort Norman and that there was a tremendous unexplored basin between southern Alberta and the Mackenzie basin led Imperial to drill a series of wells or to do exploration work across the basin. When they started there was very little known about the Paleozoic stratigraphy. Certainly from central Alberta on north. We didn't know about the changes in stratigraphy at the Devonian. There were one or two hints. There was an old well had been drilled at a place called Dubernay which had some shales of Devonian age, which were quite different from the limestones down south. There was a very interesting character from California who came up to Canada during the war to explore for oil, a man named Bill DeCooke. He drilled in the area around Vermillion for heavy oil which was being sold to the CNR for the railway. He drilled a well down through the Cretaceous sands and into a green shale which he thought was Cretaceous and kept drilling for 400' or coring actually. And never did find the basal sand. When we looked at that well we realized that that green shale was a Devonian shale and that was the first well that drilled the green shale in the Devonian basin. But we still didn't recognize that there could be reefs in that green shale basin. So before Leduc there really was very little concept of what the geology would be in the Devonian of western Canada or of Alberta.

#210 NM: Can we talk about the Leduc discovery influence on the oil patch?

DW: Well, before Leduc the only oil field of economic significance in Alberta was Turner Valley. A lot of effort had been put on the foothills to find another Turner Valley without success. The drilling on the plains of Alberta had discovered small pools of heavy oil, like Taber and Conrad and Red Coulee and Princess, a small Devonian pool at Princess. And a lot of gas, such as at Medicine Hat, Viking Kinsella, which was supplying Edmonton. But really, there was no indication that there was any objective that was of economic value for oil in western Canada prior to Leduc. When Leduc was drilled suddenly here

was a well that was flowing good quality oil at a rate that was very economic and once the follow-up well was drilled that found the main reef, the Leduc reef, it became obvious that western Canada was an area that could have large oil deposits that were large enough to attract world scale exploration and to completely change the whole aspect of exploration in western Canada.

NM: Can we talk about the people who hired you for California Standard?

DW: The man who hired me was named John Galloway, a geologist from Standard of California who had come from Oklahoma, was familiar with the geology in Oklahoma. Then had worked in California for Standard of California and was sent by Standard of California to Calgary to open an office and to study the geology of Alberta to see whether Standard of California should do exploration in western Canada. So he started by bringing seismograph crews and gravity crews on to the plains of Alberta, looking for geology like Oklahoma. A little bit of seismic work had been done on the plains prior to that but not that much. His first seismic work indicated a small structure at Princess and the first well at Princess, when it encountered the Devonian actually blew out and tore down the rig and caused a bit of a sensation. So that did encourage Standard of California to do a bit more exploration. The first summer, when I was at Harvard and I wrote to various companies, California Standard Company, John Galloway replied offering me a job. So I came to Calgary and joined a gravity crew. That was a fascinating experience because up until then I had always worked with the Geological Survey, with government people or with university people. The experience of working with industry people, perhaps because they were Americans, perhaps because they were industry but it was like a breath of fresh air. It was such a completely different atmosphere from the government or from the university. You were free to try things, you were stimulated to do things, it wasn't the slow way of working that the government does and always protecting yourself. Really, the influence of that first summer, the comparison of those people to government people, I think was what decided me to go into industry. After that first summer John Galloway told me that if they had any success with the well they were drilling that winter he would have a job for me the next summer. That winter my parents sent me a clipping from the western newspapers saying that they'd had a successful well at Princess and that it looked like they'd found an oilfield. So I wrote to him and congratulated him and said I would come when I finished at Harvard. Next spring I arrived in Calgary and walked into the office and he got the funniest look on his face, he had forgotten to get permission to hire me. So he told me to go out and see if I could get a job with somebody else. I contacted Shell and Imperial and Texaco. In the meantime he got permission from California to offer me a job, which he did and which I accepted. It wasn't until I retired 37 years later that they showed me the letter which stated that he could hire me on a strictly temporary basis. However I stayed on for 37 years. But within a month I'd had an offer from Shell to take a job from them and I'd had an offer from Imperial, but I'd started with California Standard and I stayed with them. He was the one that hired me and the fact that he got me the year's leave of absence instead of letting me resign were really the 2 things that kept me with Standard of California.

#288 NM: What happened to him later on?

DW: He went on his own as a consultant, lived here in Calgary from 1949 to 1982 and he died

in, I think it was 1982. When John Galloway was sent up to Alberta by Standard of California to see if he could study the geology and determine reasons why Standard of California should explore in western Canada, one of the things he looked at was Turner Valley and Home Oil. After some time he had negotiated a deal to buy Home Oil Company, which at that time was just beginning to explore what became the north end of Turner Valley. He had a deal finalized or agreed upon by both Home Oil Company and Standard of California to buy Home Oil, Standard of California would buy Home Oil Company. He went out to Vancouver and there was taken ill and placed in hospital and was unable to return to work for some time so Standard of California sent a man up from Denver, the superintendent in Denver to consummate the deal. This individual did not like the terms, he did not feel that Galloway had got enough for Standard of California and he tried to renegotiate it and essentially he queered the deal so that Home Oil said the deal is off. By the time John Galloway got back to Calgary Standard of California did not have the opportunity to go ahead and buy Home Oil.

NM: Where were the offices of Standard Oil of California in Calgary here?

DW: At that time they were in the Lancaster Building, 700 Lancaster Building. When I arrived in Calgary in 1940 the Lancaster Building and the Palliser Hotel and the Robin Hood Mill were the 3 biggest buildings in Calgary. The Lancaster Building at that time was one of the top office buildings in Calgary. So it was in the Lancaster Building from, I guess 1938 when Mr. Galloway arrived till about 1940 and then they moved to what was the Greyhound Building, is now a telephone company building, the Greyhound building on 7<sup>th</sup> Ave. and 1<sup>st</sup> St. and had offices there. At a later date the California Standard Company moved to the top floors of the Medical Arts building on, it would be 6<sup>th</sup> Ave. and 3<sup>rd</sup> St. Then after that they built what they called the Chevron building on 5<sup>th</sup> Ave. and now have moved again into Chevron Plaza, a block west on 5<sup>th</sup> Ave., each time getting larger and larger accommodations.

NM: This is the end of the tape.

#### Tape 1 Side 2

NM: In '49 you became vice-president and general manager of exploration. Can we talk about that?

DW: Yes. After the discovery of Leduc California Standard Company scrambled to get acreage and to learn the geology of the new objectives, the Devonian reefs. By 1949 it was obvious that there were some important oilfields in Alberta and Standard of California decided to increase their effort. So they sent a man from California, who was vice-president of exploration with Standard of California, Mr. Kenneth Crandall, up to Alberta to look at the situation and he reviewed all of our geology, the plays that we had, the work that we were doing and recommended that California Standard Company be enlarged, that it be given larger management, that it have a president appointed with a vice-president of exploration, a vice-president of production and the supporting groups that were necessary for a larger effort. So at that time, the directors in California decided to appoint as the president, the man who was chief geologist in California, Mr. George

Knox. He came up as a president and then they selected myself as the vice-president of exploration because of the work that I had done on the geology. I guess they thought I knew something about the geology.

NM: What was your work as a vice-president and general manager?

DW: To start with it involved trying to put together a scientific team of geologists and geophysicists. We had to scour the universities for geologists and for physicists. There weren't many geophysicists in Canada then but physicists that we could train in geophysics. So the first year or so a lot of my time was spent on recruiting people, assigning them to different areas of work, helping in the training of them and of course, supervising acquisition of land. Because if you don't have land you don't have anything in the oil industry if you don't have leases. So the problem of identifying where there could be objectives, primarily reefs at that time, how we could get land on those reefs, what geophysical work we should do interpreting the geophysical work, having geologists studying the wells that were available and deciding where we ought to drill, preparing budgets. It seemed to take a lot of time trying to get the money to do these things and a vice-president ends up by spending a lot of time both trying to get enough money and then determining where it should be spent.

NM: Can we talk about the staff at the time?

DW: When I started with the California Standard Company I think there were 3 geologists and a total of 7 people in the company. We grew during the 40's but in '45 the company was cut back so there were only 6 geologists left working for the company. Then after Leduc of course, everybody began increasing their staff and their exploration expenditures. From the 6 in 1946 Chevron gradually expanded its technical staff until, as I remember, in the 1960's there were 120 geologists and geophysicists. From a staff of 5 in early 1940 the company would expand to over 1,000. Of course, all companies did that so that the small group of geologists of 20 or so who would attend a geological meeting in the 40's has now expanded to 1,000 or 1,500 or 2,000 that will attend a meeting. Indicating that the discovery of real wealth creates a tremendous number of jobs and the number of scientific people that obtained jobs of course, created tremendous number of additional jobs for lawyers, accountants, economists and so on.

#049 NM: While you were vice-president and general manager of exploration, from '49 to '54, were there any major discoveries?

DW: Our first major discovery was a Devonian reef at Acheson, north of Leduc. This was a major field, 100 million barrels plus and really established the company in western Canada. That was 1950. About the same time we drilled in Manitoba, having taken land in Manitoba in 1948 and '49 and our well was the first real discovery in the Williston basin. Our well at Daily in Manitoba discovered oil about a month before the discovery of oil in North Dakota in the Williston basin. This also turned out to be a fairly productive area and led to the industry coming into southern Saskatchewan and finding a lot of oil. We did not go into Saskatchewan, restricting ourselves to southwestern Manitoba. On the reef play in Alberta we also made a discovery at the south end of Bonnie Glen, part of one of the very large Leduc reefs. And south of that, a discovery at a field called Westeros,

another Devonian reef and then south of that, along the trend of the reefs, a very large gas discovery at a field called Home Glen Rimbey. So those were all major discoveries during that period.

NM: What was the impact of these discoveries?

DW: It was all part of the extreme activity in Alberta so that the whole industry just got more and more active. As far as our company was concerned it led to the establishment of a fairly firm basis for a larger company and continuing operations.

NM: In 1954 you moved from Calgary to San Francisco?

DW: This in a way was a training course. Although I had worked for 12 years or 14 years in Alberta, there was a lot of geology that I did not know or had not experienced. So in order to give me more experience the company moved me to San Francisco and made me an exploration coordinator or consultant. It was my job to travel around and look at the geology of the western hemisphere where our company was working. So that I looked at the geology and the type of oilfields in California, in the Rocky Mountains, in Oklahoma, the Permian??? reefs of west Texas, and the offshore Gulf Coast, salt domes and structural fields. I was also asked to travel to Central American, Trinidad, Columbia, Venezuela, Ecuador and Peru. So in each of those cases I would go and look at the geological work that our people were doing there, offer comments on it. I was required to point out those things that I agreed with and those things that I felt I didn't agree with or could be improved or make suggestions. In doing that of course, I learned a tremendous amount of geology, a different type of geology from what we have here in western Canada. It was really both to take my experience and spread it around the different operations of our company and also to give me more experience to bring back to western Canada.

#090 NM: You were travelling a lot too, at the time?

DW: I travelled a great deal. And that was in the day of propeller driven airplanes so that some of the trips were quite long and my family would be left alone for a month at a time in San Francisco.

NM: You kept this post for 2 years and then you came back to Calgary?

DW: Yes, I came back to Calgary after the 2 years, during which I had gained more experience, seen more of the geology of different types of oilfields. So I came back better prepared to continue the work in Canada.

NM: Can we talk about your work in Calgary, then you were director and vice-president of exploration.

DW: Well, it was a continuation of exploration work in Canada. But now we broadened our interest and looked at the Yukon, northern British Columbia, the Mackenzie basin, the east coast of Canada. I must admit that we still felt that the Devonian reefs in Alberta were by far, the most economic. So our efforts in the Arctic were always cautious and conservative. Standard of California was always dubious of the economics of trying to operate in the Arctic Ocean. Although we joined with Dome in the first well on Melville Island, we did that because we took a very small percentage and it didn't cost us much money and we wanted to see what the geology was like with those large structures. We

did take a very large land position in the Arctic Islands in those days but primarily we were allowed to do it because it didn't cost us any money. The federal government had got itself into a position where it couldn't make a decision, it didn't know what the land regulations were going to be. During the war the American Air Force had flown a series of high level oblique photographs of the Arctic Islands and for the first time, they suddenly showed tremendous structures. You could see that there were ancient mountain ranges that had been plained down, tremendous anticlines of a kind that, in other parts of the world, are oil bearing. Also piercement??? salt domes, or piercement structures, they looked like salt domes from the air. It was obvious that the Arctic had possibilities geologically. The Canadian government couldn't decide what sort of regulations they'd have but they allowed people to put in applications for land which would give them priority. So we filed on a very large amount of acreage since it didn't cost us anything. So once the regulations came in and the expenditures were rather large, the obligations were quite large and expensive, we gradually met our obligations by dealing off lands to others. As I say, mostly with the idea that the economics were not that good, trying to get oil out of the frozen ocean. Since that was in the 60's and we're now in the 80's and we still don't seem to be any closer to getting oil out, we were certainly wise to invest in more economic areas. But the work involved really, exploration all across Canada during those years.

#132 NM: Were you travelling a lot at the time?

DW: Just in Canada, mostly in Canada, from Nova Scotia to British Columbia and of course, we always had to make 2 or 3 trips a year to San Francisco to deal with budgets and policy matters.

NM: Then again, in '63 you went back to San Francisco.

DW: Yes. I of course, don't know all the reasons why the management in San Francisco chose me for chief geologist but I do know that following the 2 years as exploration coordinator that I had from '54 to '56, they had a number of other vice-presidents from New Orleans and Houston and South America in that job who travelled around and did the same sort of criticism and commentary and coordination that I had done. Apparently after those years when they'd had 5 or 6 of us doing it, they chose me as the one who would carry on that sort of work better and they asked me to be chief geologist for the corporation, with that assignment. To upgrade the quality of the geological work that the people did, to improve the training of our geologists and to help choose the best geology for our company to operate. Whether it was in South America or Asia or wherever. The assignment of chief geologist made me responsible for more than the western hemisphere, which I had first done in 1954 to '56. Now as chief geologist I had to travel to Australia to see our work in western Australia, to Sumatra for our work in the East Indies, to Arabia for our work in Arabia and Iran for the participation our company had with the consortium in Iran. To Libya, to the North Sea, to Spain, to Italy and so on. In other words, it was the geology of the world.

NM: Mr. Weir you worked in Canada, in the States, you travelled all over the world, can you compare the technology of Canada to other countries.

DW: You're referring to the oil industry I presume. Certainly in the 1940's, when the Americans first came up to Canada, they were far ahead in the technology of exploration for oil, the geology of drilling wells and the engineering of drilling wells. But the interesting thing is that Canada had a tremendous reservoir of university trained engineers, physicists, geologists, chemists and Canadians were able to, very quickly, assimilate the technology that the Americans brought to Canada. After the discovery of Leduc when more and more Canadians were hired, they took to the oil industry, as engineers, as geologists, as geophysicists and very rapidly developed a large scientific community in Canada that was excellent as far as solving problems connected with oil exploration. Problems with geology, problems with engineering. As I travelled around the world I couldn't help but contrast this with what happened in other countries, who did not have as sound an education base as Canada had. Certainly you could see it in the Latin American countries, where American technology was slow in being picked up by the people. You could see it in Mexico where the industry had developed, a large oil industry and when the Mexicans nationalized it in 1938, it took them close to 40 years to develop a first rate world oil company, which Pemex now is. But the length of time it took them to learn the technology compared with the time the Canadians learned it was to me, quite fascinating. The same thing was true in South America where again, American technology was introduced. South Americans would come to university in Houston or Oklahoma and go back to South America. But then instead of working on the rigs, they would want to sit behind a desk and give orders. It was quite interesting that it again, took them a long time to assimilate the technology. I personally observed the same thing was true in countries like England and France, which do have a better basis of technical education. But in Canada, for some reason, perhaps our environment, our closeness to the out of doors, our interest in the mountains, somehow geology and engineering in Canada were taught well, our people were practical and they very rapidly became world leaders, or at least up with the leaders in the world technology. By the 70's Canadians were definitely up with the top technology in exploring for and developing and producing oil. To me this has been one of the great tragedies that wasn't visualized when the group in Ottawa chopped back the oil industry in western Canada. They in many ways, took away the world opportunities that Canadians were developing and set back the chances for Canada to be a leader in this field.

NM: This is the end of the first interview with Don Weir.

#### Tape 2 Side 1

NM: This is the second interview with Don Weir. Mr. Weir, can we talk about the 2 ladies hired by Standard in '41?

DW: Yes. This was of interest to the oil industry because at that time the oil industry was very much a male industry. In the 1920's and 30's and 40's, field geologists and engineers and of course, roughnecks were all male. In 1941 with the shortage of geologists in the war effort, California Standard Company in Calgary hired 2 women geology graduates. One was Lucille Allen, from the University of Colorado and the other was Eleanor Young

from the University of California in Berkeley. They both arrived in Calgary in the summer of 1941 and were both young, good looking and intelligent so they . . .

NM: They had a lot of success.

DW: They caused quite a bit of interest. I had the job of training them in the type of geology done by the oil industry, such as studying the cuttings from wells, identifying markers, correlating between wells, studying the types of electric logs we had available at that time, drawing structure contour maps and isopac maps, doing litho-facies studies to outline reservoir trends and all the things that a geologist does in the oil industry. For the first year they worked in the office in Calgary, learning the skills of the profession. But at the end of a year they both began to agitate to go out and work on wells. Well, in those days we were drilling wells mostly out on the prairies of southern Alberta or eastern Alberta and conditions were somewhat primitive. Mostly the rigs would be located in isolated areas. Roughnecks would arrange to board at a local farmhouse or ranch house. The geologist or engineer assigned to the well would probably rent a room in the hotel in the nearest town but use his car as a shelter and a place to sleep if necessary at night. And of course, arrangements like toilet arrangements were the nearest bushes if there were any bushes on the prairie.

NM: It was a tough life.

DW: Particularly in the winter when you have to drive and so on. If blizzards came up it could be dangerous and sometimes it was. So Mr. Galloway, who was the head of California Standard at that time and who felt responsible for the 2 young ladies, and to their parents, was dubious about letting them go into the field.

NM: How old were they?

DW: They were in their early 20's. 21, 22, 23, they were young, I don't know the exact age. Finally though we had a well drilling in an isolated spot on Milk River ridge and there we put in a camp with bunkhouses and a cookhouse. He agreed that they could go there where they would have a place to stay. So I took them down to the rig and they were given a place in one of the bunkhouses. It was fascinating the change it made in the drilling crew. The roughnecks would wash up before coming into the cookhouse for dinner.

#038 NM: So everybody was on their best behaviour.

DW: Yes. Their language was much better and all in all it improved the camp life considerably. Lucille Allen had been brought up with several brothers, I believe 4 brothers, so she knew how to get along with men and had no problem. Eleanor I believe, was the only child of a widowed mother and had a sheltered life and it was kind of shock to her to get out in the middle of the night in below zero weather to go out to the well but they both did very well. After that introduction and when summer came, they were allowed to go out on wells and work on their own, do the geological work on wells. And they had no problems. The roughnecks would do anything for them and Lucille in particular worked on wells in the Taber area. You have not interviewed George Furnival yet have you?

NM: Not yet, no.

DW: Well, at that time he was the superintendent at Taber so he could probably give you some

background. There are stories, I wasn't there so I don't know the details. He may have stories. The nearby Commonwealth Air Training station found out about these geologists so the airmen were quite interested. They would sometimes fly their training planes as low, ??? by the rigs to wave at the girls. There's even one story, probably apocryphal, of a pilot who came down too low and knocked a farmer off his haystack in trying to get close to the girls. At any rate, they both did well and worked on wells for several years and on the subsurface geology. Then Lucille married Hugh Beech, who was the vice-president of exploration for Texaco at that time. She lived in Calgary then for a number of years and had a family, 3 girls.

NM: Did she quit geology?

DW: But she stopped geology when she began raising a family. They moved to Houston and she lived in Houston for awhile and then to New York, to the head office of Texaco, where her husband died and she's now living in Connecticut I believe.

NM: Were they the 2 first female geologists in Alberta at the time?

DW: I wouldn't say they were the first 2 female geologists in Alberta but I believe they were the first 2 hired by the oil industry and the first 2 that worked in the oil industry. Now Dr. Alice Wilson, of the Geological Survey, who I know, worked around Lake Manitoba, may have worked into northern Alberta I don't know. But that was a different working, on a government party.

NM: And what happened to Eleanor Young?

DW: Now Eleanor Young married a mud salesman, a salesman for Black Magic Mud. He worked out of Bakersfield and she went back to California to Bakersfield and I lost track of her after that. But those 2 broke the ice and were the first women geologists that I know of in the Alberta oil industry and set the stage for many more that now are working.

NM: Real pioneers.

DW: Yes, they were.

NM: Why was geology a field for men mostly at the time?

DW: Because at that time basic geology was done by going out into the mountains or the deserts or wading up to your chest in swamps or working with very heavy equipment. It just wasn't considered at that time, that women would do the out of door work. But in the oil industry a certain amount of work is done with the cuttings from wells and with well logs and work that can be done in the office. In that way they worked themselves into the work in the oil industry. And today, not only geologists but engineers, engineering is also done by women. There are a number of women engineers in the oil industry now.

#078 NM: ???, did they come across problems from men, people reacting against their presence?

DW: No, I would say, it was the opposite, that everybody tried to help them. That everybody would help train them and encourage them. They probably had as good an introduction as anybody into the oil industry.

NM: So that was nice. Mr. Weir can we talk about Max Steinecki???

DW: Yes, during the war when exploration in Arabia was cut back, Standard of California brought some of their senior geologists, including Max Steinecki back to the United

States and they sent Max Steinecki up to Canada to look at the geology in Canada and to help those of us that were working here. Max Steinecki is a legendary figure in the geological world. He came from a farm in Oregon, studied geology and went to work for Standard of California in Alaska before going to Arabia. He is generally credited with recognizing the problems of structure in Arabia and that the surface structures did not indicate the great structures at depth and in working out some of the stratigraphy that led to the discovery of the vast Arabian oilfields. At the time he came to Canada though, Arabia was in a very early stage of development, but he was already a fascinating field geologist. He worked along the mountain front looking at the structures of our foothills and mountains. I can very well remember a field trip we had to Banff and sitting by the Bow River with Jack Webb and Max Steinicki and Max began questioning me, what would happen if we drilled a well at Canmore. Well, I could say that it would start in the .

..

NM: Why Canmore?

DW: That's back in the mountains and we were looking at the mountain structures and he wanted to know what I thought about the structure of the mountain. Now this was in 1942 perhaps. Mountain geology was still based on alpine models I guess, and we had not done that much work back in the mountains in Alberta. When he asked me what would happen if we drilled there he was really asking me, what did I think the structure was at depth. Of course, I was able to say that we would go down through the Cretaceous and Jurassic and Triassic and hit the Mississippian, which we knew would be there, and the Devonian. He said, but then what. I can remember saying, I think we'd fault and we'd hit into another piece of Paleozoic, Mississippian, Devonian. He said, but then what, you're going to keep drilling. Well, I didn't want to keep drilling because I didn't know what happened. So he took it up and began talking about and he came out with the suggestion that if we drilled deep enough we would go down into the so-called Alberta Shale, we would go down into undisturbed beds and that the whole mountain ranges at Banff had been slid forward over the prairie structure. Well, that was a tremendous concept in those days because no seismic work had been done to prove it, but it showed the type of thinking that led to the later exploration work, although it was Shell that did the work. That carried the seismic profile back across the mountains and proved that the prairie structure went right under the mountains in an uninterrupted fashion. But back in 1942 Max Steinicki had already visualized that and was thinking how you would explore such things. But he left us after that and went back to Arabia at the end of the war. Took part in the tremendous developments in Arabia that led to the discovery of the giant fields and he led a field party of top people from San Francisco who came out to see the operations. In travelling across one of the sebkas???, which is a dried up sort of saline surface, the cars broke through and were stuck in 120 or 130 degree heat. Max sent the top people on in a car that wasn't stuck and worked terribly hard in the heat to try to get the car out and had a stroke. After that he never recovered. But the time he spent in Alberta was quite of interest to us.

#129 NM: Absolutely. What type of man was he?

DW: He was a very modest man. He was a very powerful man, average height but very broad shouldered, very strongly built. A man who could walk all day, climb mountains all day and who could sit and talk about geology in a very modest way, asking you what you thought rather than what he thought. And yet a very deep thinker, a man who could visualize from the observations he made in the field, what actually was happening underground or in the regions that he was surveying.

NM: Did he spend a long time in Saudi Arabia?

DW: Yes, he did. I don't remember the exact year. The story of Saudi Arabia is tied up with Standard of California and it's fascinating. Incidentally, the first president of our company in Canada, Standard of California operated under several names, first the had Standard of British Columbia, located in Vancouver. Standard of British Columbia sent people, or were nominally responsible for the exploration here in Alberta. The president of Standard of British Columbia in those first years was a man named Lloyd Hamilton, who had been the landman who negotiated the Arabian concession from King Abdul Assis Eben Saud, the King of Saudi Arabia. When Lloyd Hamilton came to Calgary to meet with us and talk about our program some of the evening dinners when he recorded or told us of his experiences with the Saudis were fascinating. I remember that he told us that after the agreement was signed, Eben Saud told him that he had signed the agreement with the Americans because he noticed that if you sign an agreement with the British, very shortly the British Navy arrived and restricted your operations. And if you signed an agreement with the French, very shortly the French Army arrived and restricted your operations. But the Americans were so far away that they didn't do that. At that time he didn't foresee the American Air Force but that was one reason he signed with the Americans. Another interesting thing, the agreement was signed in one of the desert camps where the king and his retinue had set up their tents and spread luxurious carpets on the sand. The king arranged a large banquet in his main tent and Lloyd Hamilton had been coached that the Saudis would serve roast sheep and rice and that to eat it, you ate with your hand and would reach out . . .

#166 NM: The right one.

DW: The right hand, that's right, you'd never use the left hand. So when they were all seated around the banqueting space and the sheep were brought in on silver platters, whole roasted sheep on rice and basted with gravy and so on. A platter was set down before the king and Lloyd Hamilton and the king turned to Lloyd Hamilton and said, would you care for a knife and fork. Of course, Lloyd Hamilton had been properly coached and he said, oh no, your majesty and he reached out with his right hand and grabbed a great piece of sheep. The king said, that's strange, I prefer a knife and fork. And they produced the knife and fork and Lloyd said he was left with the greasy handful of sheep which he had to eat. There were many other stories, I don't remember them now. But Standard of California's early activity in Arabia did have quite a bit of influence, well, even on us here in Canada. Of course, some of the money was profits from Arabia that helped us explore here in Canada.

NM: How were the Saudi Arabians reacting to geologists going over there? Were they

welcoming them at the time or were they suspicious?

DW: At the time, no. At the time they definitely welcomed them. Eben Saud was always short of money because he fed anybody who came to his place as a guest. He was always using money in his various border skirmishes with other people. So the oil industry offered him a chance to get another source of revenue. The British had been giving him an annuity but they had either cut back on that or it wasn't enough, I don't remember the details. So he was coached by an Englishman, now who was that, I guess that was St. John Filby. That there was a possibility. . .

NM: Would he be the father of Filby the spy?

DW: The father of Filby the spy that's right. He was an Arabist of considerable note. He's travelled in Arabis, I've forgotten what his position was. I think he was one that coached the Arabians that there might be oil there. This story has nothing to do with Alberta. The British had gone into Persia as it then was and made the deal with the Shaw of Persia and had gone into Iraq and they made some kind of an agreement called a Red Line Agreement, which said that all of the area within the red line, that none of the companies associated with the group would take another concession. Bahrain fell within that red line. Gulf had sent a group of geologists over to Bahrain and had mapped quite a nice anticline. They wanted to do something there or. . .at any rate Gulf could not operate alone in Bahrain because it was within the red line agreement. As I understand the story, the British went to Bahrain and they looked at the geology and of course, the Cretaceous rocks were outcropping all around the rim of the anticline and the British knew that in Iran there wasn't any oil below the Miocene actually. That's where they found all their oil in Iran. Since the Miocene had all but eroded off of Bahrain and the Cretaceous was exposed, they said they weren't interested. But Gulf couldn't go ahead because of the red line agreement so they offered it to Standard of California. Standard of California sent a geologist from Denver who'd been working on Cretaceous rocks all his life over to look at Bahrain and of course, he saw a beautiful anticline of Cretaceous rocks. There was oil in the Cretaceous other places, why shouldn't there be in Bahrain. So Standard of California took it and drilled a well, made a discovery and that led to the Bahrain Oil Company. It's just across a very narrow strait from Saudi Arabia so they began looking at Saudi Arabia. Well, in Saudi Arabia the Cretaceous is eroded and the Jurassic outcrops in Saudi Arabia. So that was another jump in their thinking, can you go to the Jurassic and find oil below any place in the Middle East that had ever had any oil. And of course, some people thought it was very risky but because of the extremely large area that they were able to negotiate with Eben Saud, Standard of California was willing to do it. Since he wanted to extra revenue he welcomed them. From the very beginning Standard of California tried to cooperate with the Saudis. When they had geologists doing field work, looking for structures for oil, they also worked out the geology of underground aquifers and water is more important to the Saudis or as important. So some of the geologists were put to work by Standard of California just to exploring for water. Some of the drills were put to work drilling water wells. They did find a tremendous amount of subsurface water. The kingdom was able to pump water in a number of areas and irrigate, increase the amount of food production and in general the cooperation between the Saudis and the

Americans has always been quite good.

#238 NM: What about Max Steinecki, after Saudi Arabia, did he come back to the States or to Canada?

DW: No, he came back to California. But he'd had a stroke then and he was crippled pretty well then so he . . .

NM: It was quite serious.

DW: Yes. So he did not live too long after he came back.

NM: Can we talk about the Alberta Society of Petroleum Geologists?

DW: This society has a long and detailed history and I have by no means, all of the details. But the American Association of Petroleum Geologists was organized in 1917 in Tulsa, Oklahoma. Now in the early 1920's a few geologists had come up to Canada and were operating in Alberta. In 1926 there were a few geologists in Alberta and 2 of them, T. B. Williams and P. D. Moore, had offices in the Lancaster Building. Williams suggested that the geologists should hold luncheon meetings, which was in existence then, in 1926, each Wednesday noon. Actually, the meetings were irregular because there weren't many people and they were often out on business. But that was a sort of a preliminary start of meetings of geologists during the summer of 1926. At that time Turner Valley was their main element of interest because Royalite #4 had reached the limestone in July of 1924 and there was quite a bit of follow-up activity. Home Oil Company was new then. Hudson Bay - Marland was beginning its . . . their program was a survey from the international boundary to northern Alberta in one year. There was a Frontier Development Company which started to bring in geologists each summer, although they were rarely in the city. And the Canadian Western Natural Gas Company became active and secured the services of S. C. Slipper, Stan Slipper, who had worked with the Canadian government. And there was a Charlie Ross in charge of the Western Oil Resources for the federal government and he brought in a William Caulder and later T. G. Madgewick for the federal government. At that time of course, the federal government had kept control of all of the natural resources and had not given them to the provinces of Alberta and Saskatchewan when they were formed. So from that little beginning in 1926, of luncheon meetings, in 1927, according to some notes by T. B. Williams, there were 19 geologists in the province of Alberta. In December of 1927 Glen M. Ruby, of Hudson Bay - Marland, who was a member of the American Association of Petroleum Geologists, apparently felt that a local society would be in order and would be helpful if it was organized. Ruby I believe, was the force behind the scenes but he asked Stan Slipper, who was the senior Canadian geologist in Alberta at that time, if he would call the meeting. So that over Stan Slipper's signature an organizational meeting was called for the afternoon of Saturday, December 17<sup>th</sup>, 1927, in the Board Room of Canadian Western Natural Gas Company. In the notes of that meeting there are the signatures of 12 geologists who were present. Do you want me to give their names?

#295 NM: Yes, please.

DW: There was Glen M. Ruby of Hudson Bay - Marland, S. E. Slipper of the Canadian

Western Natural Gas Co., Stanley J. Davies who was a consultant, T. B. Williams who was with Alberta Pacific Consolidated, Russell V. Johnson who was a consultant, Harry M. Hunter who was with the Canadian Western Natural Gas Co., P. D. Moore who was with Royalite Oil Co., Theodore A. Link who was with Imperial and J. O. Howells who was with Hudson Bay - Marland, Robert McNeely and E. V. Whitewell who were probably also with Hudson Bay - Marland, although I'm not sure and J. A. Allan who was head of the department of geology at the University of Alberta. The meeting drew agreed that a society should be formed so they set up a committee to draw up a constitution. The committee was Glen Ruby, Theodore Link, R. V. Johnson and S. J. Davies. They retired and returned in 15 minutes with a constitution so that obviously the constitution had been prepared in advance. Since it was very closely modelled on the constitution of the AAPG and Glen Ruby was a member of the AAPG I believe that he had prepared it in advance. Also in the minutes there was a motion by Davies, seconded by Link, thanking Ruby for having done all the work in drawing up the constitution. So anyway, at the end of an hour or so, these 12 geologists had formed a society, they elected officers. The first president was Stan Slipper of the gas company, the vice-president was Professor J. A. Allan of the University of Alberta. The Secretary Treasurer was Theodore A. Link of Imperial Oil and the business representative was E. V. Whitewell, probably of Hudson Bay - Marland. They also set the annual dues of the society at \$1 per member and they were able to collect \$11 from the 12 members at the time and that started the society in business. The first meeting was held in January 1928. Actually the first meeting was interesting, a discussion was on a major fault play at Turner Valley. They were already thinking of that. I won't go into the details now for the rest of it.

NM: This is the end of the tape.

#### Tape 2 Side 2

DW: In 1928 the society held 2 meetings. Those were held in the Palliser Hotel and they discussed the geology of Turner Valley. In February 1929 they held the first Annual meeting of the Alberta Society of Petroleum Geologists. It was held on March 1<sup>st</sup> and 2<sup>nd</sup> in Edmonton. The cost per member was \$2.25 to attend the annual meeting. In 1929 the first annual meeting, the University of Alberta hosted a luncheon for the members. The department of geology provided a lecture room, projection machine and charts and Dr. Wallace, the president of the University of Alberta, who was I believe, a geologist, supported the meeting and the society. Then Hudson Bay - Marland tendered the society a banquet at the Macdonald Hotel showing early industry support for the society. At this time Glen Ruby proposed affiliation with the American Association of Petroleum Geologists but it was not until January 1931 that the final affiliation with the AAPG was consummated. Then in 1930 and '31 the society decided to prepare a symposium on the geology of southern Alberta. By 1930 there were 30 members in the society and by April 26<sup>th</sup>, 1930 there was only \$1.60 remaining in the treasury. So 14 members each contributed \$2 to make the society liquid again.

#027 NM: \$1 was a lot of money at the time.

DW: It was a lot of money, 10 cents would buy a loaf of bread and 25 cents would buy a fair lunch. And on November 15<sup>th</sup>, 1930, at this meeting it was agreed that the 3<sup>rd</sup> Annual meeting should take the form of a symposium on the stratigraphy of the plains of Alberta. This symposium, which was produced was finally published by the American Association of Petroleum Geologists as the Donaldson-Bogart Valley Memorial Symposium. There's some interesting correspondence regarding the publication of the symposium. One suggestion was that the Geological Survey of Canada publish the papers but some members took strong exception to this saying that the Geological Survey would edit and take credit for everything and the society should not agree to that. Also the federal government objected to some criticism of the paper by a federal government geologist and said the society had no right to criticize federal government employees. It led to a little misunderstanding until they finally managed to calm down the bureaucrats in Ottawa. But it was interesting that even at that time there were these problems. The society then attempted to prepare a second symposium on the geology of the foothills but the Depression had then struck, there were not as many member available to prepare papers, there was not sufficient information that would be released or was available so nothing came out of the effort to prepare a symposium on the foothills geology. But in February 1932 the society wished to purchase one subscription to a scientific magazine and they found that the American Journal of Science could be purchased for \$6.25 or the Journal of Geology for \$6.25 a year. So the society approached the city librarian, Mr. Calhoun, who advised that the city could provide space to store the volumes and could perhaps purchase on subscription for \$6.25. This was then put into effect in 1932 with the ASPG subscribing to the Journal of Geology. And they also felt they could subscribe to Economic Geology at an annual cost to the society of \$13. The City of Calgary agreed to subscribe to the American Journal of Science for an annual cost of \$6.25. However, as the Depression deepened the City advised that it was unable to find \$6.25 a year and had to cancel the subscription and the society was unable to find \$13 a year and so the subscriptions lapsed. By 1934 the membership of the society was down to 17 members. At a meeting on December 8<sup>th</sup>, 1934, Mr. Slipper drew attention to the small amount of geological work now being done in Alberta and wondered if there was actually sufficient interest among the members of the society to successfully continue. Dr. Robin Willis and T. B. Williams and Mr. Thorne thought it would be worthwhile to carry on so the society decided to struggle on. In 1935, in January the question of refreshments for the annual meeting was raised and the society authorized Mr. Slipper to assess each member present 50 cents and to use, if necessary, up to \$10 from the society funds to cover additional expenses for the annual meeting. This indicates the sort of struggles that the society went through up till the time of the war when renewed exploration activity brought increased expenditures, additional geologists into Alberta and the society then continued at a slightly higher rate, although even during the 1940's a meeting that had 20 people attend was considered to be a good turnout. Of course, it really wasn't until Leduc and the tremendous development after that, that the society took off. Then it continued to grow and finally, on January 15<sup>th</sup>, 1973 it officially became the Canadian Society of Petroleum

Geologists and extended its interests and activities across all of Canada.

#090 NM: Let us go back to your career Mr. Weir. You became senior exploration consultant to Standard Oil of California and Chevron Standard Ltd. in 1974. That was in Calgary?

DW: That is correct. I could have stayed in San Francisco until I retired but I didn't actually look forward to retiring in the States. I found I became more Canadian the longer I lived in the United States. I had decided I would retire in Calgary and so I asked if I could move back to Calgary before retirement and continue working on a consulting basis out of Calgary. At that time, I felt that Calgary was more of an oil centre actually, than San Francisco. Although San Francisco was the head office of Standard of California, there were no other oil companies in San Francisco. The meetings of the local geological society were just essentially company meetings plus a few geologists from the U.S.G.S. office in Menlow Park and the one or two professors from Stanford. Whereas in Calgary meetings were vital and enthusiastic and had people from many different companies and working in many different areas. There was far more geological thought and experience and ideas developing so I didn't feel I was cutting myself off from industry by any means by coming back to Calgary. Fortunately the company was willing to allow me to change jobs, give up the chief geologist position and come back to Calgary. By doing that I was able to reestablish some of my friendships and relationships and get established here before I retired. It made it much easier than if I had worked in California till retirement and then picked up everything and tried to find a place to live back here in Calgary. So that was really the reason why I came back, plus the fact that both my children had come back here to university in Calgary and had both become established here in Alberta. My son with Gulf Oil Co. where he now works and my daughter with Nova Corporation where she presently works as manager of compensation. So by coming back I did both come back to a place where I felt at home.

NM: Calgary was home for you.

DW: I had lived in Calgary really since 1940. My wife was born here and she had aged parents at that time who had to be taken care of. We put them in a nursing home here in Calgary. So all in all it was really better for family relations and it was fine with me personally and I didn't think it hurt my professional career so I chose to do it that way.

#123 NM: And you kept this post for 4 years?

DW: That's right, until I retired in 1978. And during that time I did still travel a bit around the offices in the United States and Canada but I was relieved of the travel to many foreign places which was beginning to get rather tiring.

NM: What did you do exactly as senior exploration consultant?

DW: I would examine the work of different geological groups, appraise their concepts and their objectives and compare one to another and try to set priorities on it. And also help evaluate people, choose people for different jobs as they came open and advising the managers of exploration in different companies when I was so asked.

NM: It sounds a very interesting post.

DW: It was. It was somewhat a continuation of the sort of work I had done as chief geologist but advising the new chief geologist and helping him.

NM: And then you retired from the oil company.

DW: Yes.

NM: And in '79 you became consulting professor of petroleum geology at Stanford University?

DW: Well, that was a short term assignment. Standard of California has fairly close ties to Stanford University and Stanford University is a private university supported by private contributions. Standard of California feels that it pays many hundreds of millions of dollars in taxes to support state run universities so it generally tends to give its voluntary contributions to private universities. One of these is Stanford. They have had very close relationships with the earth science department of Stanford University, trying to bring some of the concepts of the oil industry, some of the philosophy of private enterprise to students at a time when students were inclined to be strongly anti-business and get a lot of socialistic ideas in their courses. So Standard of Cal had often volunteered geologists to teach at Stanford and a series of courses had been given by the man who had been the former vice-president of exploration and director of Standard of California and my own boss for a period of time, Kenneth Crandall. He had given lectures for a couple of years on petroleum geology but in 1979 he suddenly decided that he did not wish to continue this. Stanford was left without anybody to carry on the program, which they'd already announced. So on rather short notice I was asked if I would go there and provide these lectures during a 2 month period. It was a very interesting assignment. The young people at Stanford I found, were very mature, very well trained in the technology, very interested in the idea of oil exploration, interested in the geology around the world and were quite able to take probably even more than I was able to give them. But I was able to give them the ideas and the philosophy of exploration and the methods that we used in oil exploration and I think it was, I hope it was beneficial to both. It was a lot of work as far as I was concerned but it was a nice 2 month visit back to California. Then they went into a system of rotating this professorship so in other years different people took it over. So I did not go back after that one year.

#168 NM: But you really enjoyed it?

DW: Yes I did. I would not teach for a living. When I first started university my whole training was thinking that I would work towards a teaching job because my family, of course, my father was in the university and I was brought up in a university environment. Then I thought I would work for the government. Then I got the chance to work for private industry and the comparison, as I think I mentioned before, between working for the government and working for industry, where you were so much freer to do things, where you were stimulated much more and you were rewarded much more. And the fact that you were doing things yourself, instead of teaching others to do them, all left me feeling that I would stay with industry and did not make a mistake in going into industry rather than teaching as a lifetime job. Or working for the government as a lifetime job.

NM: You were Chairman ??? on the Geo-Science Council Advisory Committee to Geological

Survey of Canada from '76 to '79?

DW: This advisory committee was requested by the Geological Survey. The Geo-Science Council is a council of earth sciences or science societies in Canada which provides an umbrella organization to speak for the various societies active in earth sciences to speak to the governments and to speak for earth sciences. The Geological Survey, which is an old and well established institution in the government was under considerable pressure because, in the early days the Geological Survey mapped the geology of unexplored areas of Canada and mapped the geology of areas where the federal government owned or kept control of the natural resources. When British Columbia entered confederation they were wise enough to make one of the terms of confederation that the federal government would be required to provide geological surveys of British Columbia from then on. However, as time developed, the provinces of Alberta and Saskatchewan were set up and in 1935 the federal government finally relinquished control of the natural resources and gave them to Alberta and Saskatchewan. Of course, Ontario and Quebec, the Maritime provinces had always had control of their natural resources. Various provinces began developing their own geological surveys and doing their own geological work. So there became a problem of what was the proper function of the federal Geological Survey, what was its relationship to the surveys of the different provinces, how could costly duplication be avoided, how could cooperation be improved. Cooperation does not always come easily between people working for provincial governments and people working for the federal government. So the Geological Survey, with a rather farsighted view, thought they would ask members of the geological fraternity in Canada to set up a committee and look at the problem and make recommendations. The committee, which consisted of 5 people, had a member from the university, a member from the mining industry, a member from the petroleum industry which was myself, a member from the consulting industry, a member from . . . Anyway, a wide spectrum of people across the geological fraternity and earth sciences fraternity in Canada. To start with I was not the chairman, the chairman was a professor of geology at Dalhousie University. But he accepted a job with the Bedford Institute of Oceanography or with part of the Geological Survey, which then eliminated him from the chairmanship job. At a meeting of the Geological Association of Canada out in Vancouver, I found myself railroaded into the position of chairman. Oh, I know, the 4<sup>th</sup> member then was a professor of geology and geophysics at Toronto University. Anyway, the group of us made a study of the different offices of the Geological Survey, the Cordalera section in Vancouver, the Institute of Sedimentary Petrology here in Calgary, the main offices of the Survey in Ottawa, which included the mining section and the pre-Cambrian section and the Bedford Institute of Oceanography, which included the work on the Atlantic coast and the deep oceanographic research. We tried to wrestle with the problem of, what is the actual function of the Geological Survey, how should it be organized and what should its future direction be, so that their work would complement and not duplicate the work of the provincial geological surveys. We produced a report finally and when that report was turned in then I had retired and I gave up the chairmanship. The Survey was satisfied enough with the report that they went on and had the committee continue and they worked on other reports but my own work and

association with them terminated when we produced that first report on the direction the Survey should take. I don't think the problem has been finally put to rest because I understand there are still rumblings about whether the Survey should be continued or whether it should be abandoned in favour of the provincial government surveys. The problem of whether the Survey should get involved in the administration of oil and gas lands and so on was one of the things we looked at and suggested that they should not. Again, now I don't know what the thinking in Ottawa is but I think it's a continuing problem.

#255 NM: So they have not yet solved the problems?

DW: No, I think the problems are continuing. They always will when you have conflict and sort of jealousy of duties and powers between the different governments.

NM: This is the end of the second interview with Don Weir.

### Tape 3 Side 1

NM: This is Nadine Mackenzie speaking. This is the third interview with Mr. Don Weir. Mr. Weir, in 1980 you worked for Unesco???, what were you doing?

DW: I was asked to serve on a Canadian committee for the geological correlation program of Unesco. I am not familiar with all the things that Unesco does but one thing the geological fraternity did was to try to assist third world countries in geological work, in financing geological programs that might help their development. I think particularly in aiding geological workers in less fortunate countries in gaining some economic support for their geological programs. So the Canadian section of Unesco that was financed by funds from the Department of Energy, Mines and Resources, through the Geological Survey had some funds to grant to support different geological programs of Unesco. This committee, which met once a year was set up to judge the relative merit of request for funds and to allocate funds for the support of geological workers in third world countries. So my work essentially consisted of reviewing the programs and meeting in Ottawa once a year with the committee as one of the members from industry to judge the relative merits of the programs.

NM: Are you still working for them?

DW: No. I have finished my 3 years term as a committee member. I do not know too much about Unesco but I must admit I was not greatly impressed with the small view that I had as a member of this committee.

NM: Why?

DW: I'm afraid that we spent more money as committee members, or almost as much as we had left over to assign to workers in other countries. I felt that the committee organization was cumbersome, much too large, had far too many government employees on it, which it seemed to me were filling in time by working on such committees. Of course, we heard stories about Unesco's head office in Paris that weren't very encouraging.

NM: They have beautiful headquarters.

DW: Of course, they're spending other people's money at a tremendous rate. Third world

individuals who get jobs with Unesco then set themselves up in very expensive quarters and spend far more money on themselves than they should. I had the feeling that less and less got through to the countries that needed it. Actually, in the last year that I was on the committee I had found that I could write out recommendations in advance and that they were essentially what the committee ended up by more or less accepting. So rather than spend all the money and go to Ottawa I suggested they apply it to the programs and that I would just write what I believed about their program for the coming meeting. I believe, as a result of that, they cut down on the size of the committee and cut down on the expenditures for members of the government to attend such meetings and tried to get a bit more into the program. So that's why I say, I wasn't that impressed with the efficiency of the operation and even with the programs that they were supporting. I'm not sure that's the best way to go about helping third world countries.

#045 NM: When you were going to Ottawa did you go to the Canadian commission to Unesco?

DW: No, I went to the Geological Survey of Canada and the meetings were held in the board room of the Geological Survey, which administered the Canadian funds for Unesco. So as I say, and said at the beginning, I don't have a very broad view of Unesco. I merely saw this small program and heard stories, horror stories, of the expenditures in Paris to be honest with you.

NM: You have seen the ups and downs of the oil patch here in Calgary, can you comment on that?

DW: Certainly when I started in the early 1940's, before Leduc, the enthusiasm that had been engendered by the discovery of Turner Valley led to a lot of exploration in the foothills without much results. Exploration on the southern plains of Alberta and Saskatchewan at that time did not yield any large discoveries so there was quite a period of depression. As I think I mentioned earlier it was really the farsighted views of the technical men of Standard of New Jersey that led them to finance or advise Imperial Oil to do a wide ranging exploration program, starting in the Williston basin in Saskatchewan and planning to work across western Saskatchewan, central Alberta and on into the Peace River country and towards the Mackenzie Basin before they had fully decided what the opportunities were in western Canada. Of course, on the way there they discovered Leduc which led to a tremendous increase in activity. From then on the ups and downs of the oil industry I guess, is related to the objectives which geologists and geophysicists were able to outline. For awhile the Devonian reefs, the Leduc reefs were the tremendous objective and there was a surge of exploration. When the majority of those had been found there was Mississippian oil found in Manitoba and Saskatchewan that led to another surge of exploration. Again, when that died down ideas developed on middle Devonian reefs in northern Alberta and that led to another surge of exploration and development. So essentially, the ups and downs of the oil industry depended on the ideas of the technical men, that is to say the geology which they developed. They depended on the economic conditions at any given time, that is the markets which could be reached by the oil or gas developed and they depended on the political conditions at the time. So ups and downs of

the oil industry are related to geology, economics and politics and this is true all over the world and it's true at all time. So in looking at ups and downs of the oil industry, I think if you relate it to those 3 factors and realize that at any given time, there may be a lull in geological thinking or work, there may be a lull in economic activity or there may be a deterioration in political views and actions. Thus there's bound to be ups and downs, it's just inevitable in the oil industry. Furthermore, you cannot always predict exactly what the reserves of oil or gas will be in relationship to the market. It's incredible if production and consumption are exactly in balance at any given time. If they are it will be for a very short time. You either have too much production for the market, in which case there will be a downturn or you won't have enough production for the market, in which case there will be an effort made to find new reserves. So the oil industry is always going to have a series of ups and downs. The technical people can live with the problems of mining out one set of ideas and trying to develop another and they can live with economic cycles. The real thing that bothers them I think, are the political cycles.

#093 NM: So what do you think of the National Energy Program?

DW: This is a very controversial topic. I believe that the National Energy Program was and is a mistake for all of Canada. I think it is a mistake because it has led to a massive misallocation of funds at a time when Canada doesn't have that much in the way of surplus funds to throw away or waste. I think that the misallocation of funds has developed because the policy was based on a misinterpretation or a misunderstanding of facts. And I mean geological facts and economic facts. Probably compounded by an element of anti-western sentiment and certainly, further influenced by a strong anti-business bias. I think that when scholars in the future try to study and determine how and why the National Energy Program was developed, they will conclude that it is rooted in Canadian history, which makes it difficult to change or to look at in an objective way. When I say it's rooted in Canadian history I would say that for the first hundred years after Confederation central Canada dominated the federal government and its policies so as to draw wealth from the Maritimes to central Canada, wealth from the western provinces and the far north to central Canada. This has been a dominant factor in Canadian history. Then in looking at energy in relationship to this you have to look at more than the oil and gas industry. For instance you have to consider the electrical industry, which is very important in central Canada because of their water power. If you look at the development of the electrical industry it developed as a number of utilities, either private or government controlled. But as utilities the utility was required to go to the government for the rates which they can set and the government controls the rates. They so control the rates with one eye on the consumers, who after all are voters, and the other on the operation of the utility such that the utility is not allowed to generate capital internally. This means that utilities like the electrical industry, when they need to expand, have to go to the sources of capital, the old rich families in the east and the banks, for capital and they have to go to the government for permission to raise the capital and to have a rate set which will provide for payment of a rate of return of 12 or 15% to the lenders. In this way the utilities are very much under the control or influenced by

government regulations and decisions. Now you look at the oil industry which has always operated on a different basis. In the oil industry risk capital is used to search for a new resource. Either it doesn't find it, in which case the money is lost or it does find a new source of wealth in which case the industry has always developed it, produced it, manufactured the products needed by consumers and delivered them at a price and in a place that the consumers wanted but at a price which allowed the oil industry to generate capital internally. This meant that the oil industry financed its own activities from the profits or the capital internally. So that when Leduc was discovered the oil industry immediately realized that there was a new area of potential new deposits and new wealth. Eastern Canada paid very little attention at the time but the oil industry brought in capital to explore and develop in Alberta and Saskatchewan. Capital accumulated from operations in Arabia, capital accumulated from operations in Peru, capital accumulated from operations in Texas and many other places. Came into Alberta and developed new sources of wealth. Once the industry began to mature the local industry in western Canada then continued to develop its own internally generated capital. This meant that people with offices in Calgary could decide to invest money in the North Sea, could decide to invest money in offshore Spain which they did, could decide to invest money in Indonesia which they did. Suddenly Canada was becoming an influence in international affairs technically and financially. Now this meant thought, that the decisions were being made in Calgary and they weren't necessarily referred to the bureaucrats in Ottawa. When I went to Ottawa on some of the committees I was quite astounded, and I must admit, rather dismayed, to find the bitterness, the jealousy and the hostility among the bureaucrats in Ottawa. To think that there were people out in Calgary making decisions and they didn't have to refer to bureaucrats in Ottawa. It was unthinkable. After all the people in Ottawa had been chosen by god and Mr. Trudeau to govern the country and they were going to govern it. There wasn't any way that they could see that the people in the oil industry should continue to make these independent decisions. So this difference between utilities and the oil industry created a considerable hostility between Ottawa and the industry. Of course, the industry didn't help because the oil industry took the attitude that Ottawa was irrelevant, they didn't count. In fact if the Ottawa Valley had opened up as a big crack in the earth's and Ottawa had disappeared into it people in Alberta would have said, well, that's too bad and gone about their business. They really didn't care. This again, irked Ottawa tremendously. There were other problems. The oil industry worldwide essentially works in English, the development of western Canada created tremendous amounts of new wealth, people flooded into western Canada to get the jobs and a share of the wealth. They had to work in English, the population shift in Canada was thus to the west, the percentage of population French speaking in Quebec declined. If Quebecers wanted to join in the development they had to learn engineering and science and move west and speak English. I think it contributed to much of the worry of Quebec, the sense of being threatened. It's an amazing spin-off from Leduc. The development of the west probably helped contribute to the development of the feelings in Quebec that led to the Parti Quebecois. At any rate, these are the roots in Canadian history. It was I suppose you'd

#195 say, it was an irony of history that right at this time, the Canadians placed the tremendous power that we give to a Prime Minister in the hands of a man who had a different view of Canada, who believed that the way to run a country was through a centralized bureaucracy, with the model of Paris, centralized bureaucracy running France or the model of Moscow, a central bureaucracy running Russia, and that this was the only way that the various regions of Canada could be brought under control. So here we had an oil industry making decisions that the bureaucrats felt shut out of, although the Alberta government didn't help things because they broke the contracts that were involved in their leases and jumped the royalties from 12 ½ to 15 to 25 % and finally, perhaps 45%. Tremendous amount of money then flowed into the Alberta government and here again, this created great jealousy between provincial bureaucrats and federal bureaucrats. So the federal government, Mr. Trudeau's government, their way of solving a problem is to hire a very bright graduate from a well known university like Harvard or the London School of Economics, set him up as the deputy minister or the assistant deputy minister or a director general and then get him a secretariat and tell him to solve the problem. This is what they did with the problem of energy. It was obvious then, to the secretariat that the reason that people could make independent decisions in Calgary was because they were generating capital internally. Therefore the international energy policy set out to stop that and put very heavy front end taxes on it and take the money away from the industry. If you don't have the money you can't make these independent decisions. Then secondly the way to get them to do what the bureaucrats felt they should do was to set up a petroleum incentive program, where they would make these PIT payments to companies if they did what the bureaucrats thought should be done. Well of course, here was where their lack of familiarity with the industry, perhaps bad advice on geology and economics, but it led them to determine that the industry should be forced to go up into the Beaufort Sea and off the Atlantic coast. So this led to what I say was a massive misallocation of funds. Arbitrary misallocation of funds. I guess that's why I started out by saying I think that the National Energy Program has been a mistake. It's no wonder with such parentage that it is a misshapen offspring. So now the question Canadian face it what to do about it. Do we face a long series of painful surgical operations or do we support mercy killing. When you use the phrase mercy killing of course, the emotional response is so great among some people that I doubt if we would be able to make an objective decision. So we will probably face a long period of unfortunate political decisions, attempts at surgical operations to change the policy and a long period of suffering is my opinion.

#245 NM: How do you foresee the future of the oil patch, what's going to happen?

DW: I look at the Canadian oil patch as just a portion of the world oil industry because we are important enough now to play a part in the world oil industry. As a geologist I do see a lot of areas that are still to be explored. I know from my engineers colleagues there's a lot of engineering to be done on secondary and tertiary recovery. I know that the presently visualized world reserves are in the order of 650-700 billion barrels. While reserves are very difficult to estimate and they vary with economic and engineering geological conditions still that's enough for 35-40 year production. While it would be impossible to

continue to producing on an even level because there's always a decline that sets in on older fields, yet I think there will be more exploration that will keep the production up. So I personally, if you ask me about the oil industry worldwide, I visualize at least another 50 years of conventional oil exploration, conventional oil production. In more difficult areas of course, it will be more costly to obtain. But those 3 problems of geology, economics and politics are the ones that will influence the level of activity, how much we produce, or how much alternate energy we develop, and where it is produced. I feel that the tremendous reservoir of technology that's in the petroleum industry will allow exploration for a long period yet. I gave the figure of 50 years, it may be shorter or longer. It will eventually, gradually tail away but not quickly or immediately. By then I think our technology will allow us to convert such things as the tremendous coal reserves of the world to either direct use of energy or convert some of it into liquid energy. The real reason petroleum is so important is because it provides a source of energy for use in mobile equipment. I believe here in Canada the tar sands have tremendous reserves, although they offer tremendous technological challenges. Chemically as well as engineering wise. What I think the limitations on the petroleum industry are going to be are not a shortage of ideas, not a shortage of geology or technology but a shortage of money. I say that because the oil industry is working under more constrained conditions. In the first hundred years let us say, of the petroleum industry, there was fairly free movement of capital and if you were successful in one area and generated capital you were free to take it to the area where you felt the geological conditions and economic conditions were favourable. But now we're finding that every government is becoming selfish, nationalistic. We see the suggestions in Canada that the industry should not be allowed to accumulate capital and take it outside of the country, that it must be reinvested where the central government thinks it should be. We're seeing the same restrictions on capital movement or suggestions of it in other countries. I think one of the problems the industry will face in the future is inability to move capital from one successful exploration to another area where new resources could be developed. However, generally, after difficult times it's possible to solve some of these political problems, get rid of some of the politicians that are creating most of the difficulty. So if someone was to ask me today, should they go into geology, should they go into work for the oil industry I would say yes, there's still another generation or two of future work to be done. But there will be immense problems, wrestling again with these problems of economics and the political aspects. The technology of geology and geophysics have improved tremendously and I think they'll continue to improve and that will help the industry in finding more illusive deposits. So I'd be optimistic as far as the technical aspect is concerned. I'm somewhat pessimistic as far as the political aspects are concerned.

#332 NM: Historically speaking, what has been the role of the oil patch of Alberta for the development of the Canadian industry?

DW: Do you mean how has Alberta influenced the development of the Canadian industry?

NM: Yes.

DW: Well, it has dominated the Canadian industry. When Leduc was discovered by Imperial

with geologists trained in Canada, with some geophysicists who had come in from the United States, with guidance from management in New York who understood the world oil industry, and with world oil companies immediately realizing the significance of Leduc, capital did flow in from outside and expertise flowed in from outside. But unlike undeveloped countries, and that would include countries like Venezuela and Arabia and so on, Iran, in Canada there was a very large technically trained body of professionals, geologists, physicists, engineers. Canadians learned very rapidly how to employ the tools and the techniques of exploring so that Alberta became the centre of a tremendously vital oil industry, which not only was able to influence the rest of Canada, taking exploration back to Ontario and to the Maritime provinces and to the north. But also, to take Canadian technology to the Middle East, to Indonesia and so on.

NM: This is the end of the tape.

### Tape 3 Side 2

DW: Certainly the development of tremendous new wealth like the oil industry found. And even a small oilfield is equal in wealth to a very large mine. So while mining had been a big contributor to Canadian development the oil industry was on a much larger scale. And the wealth from, true wealth, new wealth that was developed in Alberta showed up in Alberta of course, in new roads, new hospitals, new schools, new universities, new homes. But it spread throughout Canada. A lot of it went to eastern Canada and I'm not the economist that has those figures of what percentage of every dollar spent ended up in the manufacturing industries in Ontario but it certainly influenced it. So both technologically and economically the petroleum industry gave a tremendous lift to Canada. And it came as a result of the far sighted professional views of the little group that thought out the geological problems in western Canada.

NM: Who was the most influential person in your career?

DW: In trying to answer that question I have to say that many people influenced me. Both my colleagues with whom I worked, the people that worked for me and the people for whom I worked. So it's hard to say just one person. Certainly I was influenced professionally by some outstanding geologists. I was influenced by some management people who taught me some management skills, thus it's hard to say just one person. But thinking of the technical aspects and the geology I always think back to Dr. Frank H. McLaren who was a geologist with the Canadian Geological Survey and for whom I had the pleasure of working in the field in 1935. We were working in eastern Saskatchewan, western Manitoba on the Cretaceous section. To me it was fascinating to find, when we studied outcrops, we would sit down on a Cretaceous outcrop, trench it to get good clean samples and to locate fossils. To find that Dr. McLaren could look at a fossil, identify it with a zone in Alberta, talk about the correlations from Alberta to Manitoba, talk about what the beds we were looking at told us about the rise or the process of mountain building in the west. He taught me that the ability to correlate beds and to determine time in geology and the ability to use observations on the geology of sediments to unravel worldwide events,

as I say, like mountain building or like deposition that later I realized could be used to study reservoirs for petroleum and so on. This concept of the power of observations of rocks, when properly analyzed, I think then influenced all the rest of my studies and my work. I look back on those days as probably the most important professionally, although again, I learned many other things professionally from other people later on. So I'd end up I guess saying I would pick Dr. McLaren, who was an outstanding geologist, although a very modest, retiring man. I know I was invited to a family in Ottawa for dinner one night and they asked me who I worked for and I said, Dr. McLaren and they said, who's he, what's he do. I said, he's one of the world's outstanding Mesozoic palaeontologists and they just looked at me because they didn't know what Mesozoic was, they didn't know what palaeontology was and they didn't know what the significance of it was. So he didn't receive all of the recognition he probably deserved but among geologists he is recognized as one of the finest that Canada has had.

#046 NM: What was the most exciting experience in the oil patch for you?

DW: I have had many so it may be hard to determine. Seeing some of the giant oilfields in Arabia was certainly a tremendous experience. Seeing the giant structures in Iran was another tremendous experience. But I guess as far as myself personally is concerned, when we drilled our discovery well at the Acheson field outside of Edmonton and when the bit had reached the top of the reef, so we knew we had found the Leduc reef, we flew up to Edmonton and went out to the well for the first drill stem test. That morning when the valve was opened and there was a hiss of air out of the blow pipe and then a surge and a gush of oil out in the pits, the knowledge that we'd really found another oilfield and that it was a tremendous one was probably one of the most exciting events that I remember. That was what really got Chevron Standard or now, Chevron Canada Resources established in the oil industry here in Alberta, that first major discovery.

NM: What do you consider your achievements?

DW: I would regard my main achievements as training others. In geology and oil exploration and building up teams of experts so that the team could do far more than any one individual. Far more than I could do, far more than just one of them could do. But a team of stratigraphers, palaeontologists, geophysicists, engineers, economists, and then directing them towards successful discoveries of oil. But I would go back I think, to working with people and training various types of people.

NM: Looking back at your career, is there anything you would do differently nowadays?

DW: I think I have been extremely fortunate. If I had to do it again I would certainly choose geology again. It is the most wide ranging and fascinating topic anybody could study. Geology is the application of all forms of knowledge to the study of the earth. So I was interested in chemistry, physics, astronomy, biology, mathematics as well as geology. But to apply all of those has been a tremendous challenge. I lost my train of thought. . . Geology is the scientific basis for geography. It's geology that determines where man builds cities, has harbours or has fields for growing food and so on.

NM: So the control is not geography. . .

DW: Geography is controlled by geology. You can't be a good geographer if you don't

understand geology. And if you understand geology, as you travel around, geography makes sense. So geology is the control of geography, geography is the control of man's development and man's history and of course, man's history determines his politics and the rest of it. So I have been fascinated as a person with geological training to see how that has carried on and influenced all of man's activities and of course, as a by-product of that I've always had a considerable interest in history as a hobby. So when I look back I couldn't have chosen a better way to spend my life than studying geology and applying it. I think that in applying it I have had a great deal of satisfaction because I have seen results from the work I've done with other people and the favourable, I think favourable results from the development of new resources for all of mankind.

#093 NM: You spent 40 years working in the oil industry Mr. Weir, on the whole what do you think of the oil patch of Calgary?

DW: I think it's one of the most energetic and exciting groups of technical men you'll find anywhere in the world. I've seen the oil industry in the United States. Of course, areas like Houston, New Orleans, Tulsa are very important but Calgary ranks with them. Another centre is London, another is in Australia. But I would rank the Canadian oil patch in Calgary as one of the top ones in the world. For technical expertise, for cooperation among professional people and for stimulation of new ideas. It has been an excellent place to work and an extraordinarily fortunate time in history, from 1947 to the present.

NM: Thank you very much for this very interesting interview.