PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Roy Lindseth

INTERVIEWER: David Finch

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DF: Today is the 9th day of August in the year 2000 and we are with Mr. Roy Lindseth at the offices of the Canadian Society of Exploration Geophysicists in Calgary. My name is David Finch. Could you please start by telling us when and where you were born?

RL: I was born in Calgary on the 19th of August, 1925, Holy Cross Hospital.

DF: How did you get interested in the sciences?

RL: All people have some kind of natural talent and mine has been 3 dimensional thinking, I've gone through formal study of this kind of thing or tests. But the reason I got into geophysics or sciences, when I got out of the Air Force, after the war, I was in very briefly, I wanted to go back to school. So I had to go to work someplace to get some money. Well, I had two opportunities, one was to go to South America and the other was to go north in the Arctic, there was a survey crew going to survey the shores of the Arctic. So it was really a flip of the coin but I decided I liked warm weather rather than cold weather, so I opted for the south. I went to Wyoming and worked briefly there, learning something about a seismic crew and found out that they were paying three times the Wyoming rate in South America. So it didn't take me long to put in the application. I learned very quickly to pick up another talent, I was in the office as a computor but I went out and learned how to run a shot hole rig. So I had two talents and that made sure that I got elected to go down to South America. So I left, arrived in Caracas, Venezuela on the 13th of October, 1945. The rest is sort of history, I just sort of worked me way through. Actually when the first contract was up, they were three year contracts, I had enough money to go back to school but I was running the operation at the time so I got pretty cocky and thought, I'll leave school until later on. It took me quite a while to get back to that.

Video Tape #09:03.42:24

#028 DF: What brought you back to Canada?

RL: The first time. . . well, as I pointed out I was reasonably successful down there so I stayed, I was actually with Chevron at the time. In 1954 I left Chevron and started a business of my own, I had a seismic crew and had some heavy equipment, cutting seismic lines and all that sort of thing. And that worked very well until the big revolution in Venezuela in 1959. Things went all to pot, the number of drilling rigs dropped from 100 to about 1. There was some very strong anti-gringo sentiment and one thing and another. So we stuck it out for about a year, waiting for the elections, because the dictator fell and a junta took over and they called for elections, that took about a year. But after the election the whole thing really got worse. There was very strong, shall I say, socialistic sentiment. This was the wave in the 50's of expropriations and nationalization, the 50's and into the 60's and 70's actually, it started in the late 50's. So it was pretty obvious that this was not going to be a very successful immediate future so we packed it up and came back to Canada. In Canada here, of course, I started a number of things. I took some time off and went to school in the Brooklyn University and learned a little bit more about computers because in Venezuela I got very interested in computers. We were officed in a building that was right above IBM and I was always intrigued by the potential of applying computers to the geophysical computations, which at that time were pretty simple, you know, they were slide rule type things. But they were purely accounting people and I was the other end of the spectrum. So I went back to school, learned something about it, when I came back to Calgary. Then shortly after I started a little company in conjunction with Bud Coote, accurate geophysical company, called EDP, Engineering Data Processors. Engineering Data Processors evolved into Computer Data Processors, which brought in the first real heavy duty scientific computer in Calgary that's commercial. I think some of the oil companies had something like that. We had, what I think was probably the first digitizing machine, not in the world maybe. But it was a development I found in Denver, a fellow who had used a stroger??? switch out of the old telephone dial, a telephone dial is a stroger switch and it counts. So we had this hooked up to a device that basically cranked the telephone dial around by moving an axis and it counted the number of digits. So we got into the log digitizing business with what was then pretty primitive computing equipment, the old IBM 650, which was basically a big adding machine if you will. We had a plotter that was a hybrid. . .it took digital feed but it converted the signal to analogue and moved a pen around the paper. So those were interesting times believe me, learning as we went because we were developing. The first real success of that was real interesting too. The two gentlemen in Imperial Oil Company, Frank Jeffreys and Ted Connolly, they were interested in digital interpretation of well logs. So we got together and we had the equipment and they had developed a little program to analyze well logs and there was a unitization deal going on with another company and so Jeffreys and Connolly brought in a whole suite of logs and we digitized a very small piece. On the log scale it would be 2 or 3 inches, there's a couple of hundred feet of the log scale, and ran it through the little program. So they had then this massive contour map of the results of the log analysis, all on a great mountain of print out paper because it's very difficult to put it in any other form. To put it in a plotter would have been another major operation.

#076 In any case, these were transferred and mapped and we walked into the unitization conference, they threw the bundle of paper on the table and said, well, here's what we found. Their partners had no way of rebutting this so Imperial won the day. That told me, this has got to be a pretty good business to get in, I can see the potential of it. So we did this and the first thing I guess that was kind of original was developing from well logs and we started a program to digitize well logs and make synthetic seismograms, which we published in a little sheet called a sonagram that carried a lot of useful information. It had the digitized sonic log, it had a synthetic seismogram so you could tie seismic records to well logs, it carried the tops and we had a gentleman called Mickey Cochrane, who was an old time geologist who did a lot of picking for us. It had the tops, the depths, sub-sea depths, all this information, formation names, so on one little tabulator sheet you had a lot of information. We sold those, I think they were $35 a piece, something like that. Today they would be. . . .well, it's hard to say with the increase in production. Anyway that was our business for quite awhile, producing sonagrams, EDP. Then later on, seismic data processing got started, we got interested in that. Bud Coote and Wes Rabey had an analogue processing thing where you could process analogue magnetic tapes. It was a great cam operated thing, where it took the move out from traces, it stretched all the traces to their proper length, eliminating the effects of offset by a very, very elaborate set of cams. So what we did, we basically sold EDP into a new company called CDP and brought in a control data computer, a great massive thing. Of course, those were the days when computers were very new here. IBM had some business machines, the 1403 but this was the first real scientific machine that was sort of publicly available. We had it in Calgary House, over here on 6th Avenue and 5th Street, in a display window, glass on three sides and at night, raised floor and all this machinery humming away, the tape drives that you see in so many ads running away. Our operators, we insisted that they be well dressed, they had white shirts and ties on and this was a great show you know, at night, these brilliant lights, people would stop on the street, stop and see this wonderful machine. To show some of the progress in the whole thing, we got the machine in and I needed more core. I was doing some of the programming at that time and I wanted to get another 16K of core, so we had a Board meeting to decided whether we should or not because this was going to cost us something like $100,000. We finally convinced them that's what we should do, we got the core in. It was a unit, it was about 3' wide, maybe a foot deep and stood about 6' tall. It was the original ferrite rings, they ran wires in three directions through the rings and depending upon the current flow at any given time, it magnetized the ring in a way and that was the memory. We had a bug in one of the units, the new unit. It was a terrible thing because it kept giving us wrong answers. So we had the control data people in, trying to inspect the core and see what was wrong and we noticed that it kept sort of moving. It was a mobile type of error. They finally found it about the time it solved itself. It was a little piece of wire or some speck of metal that had got in the top and it kind of shook its way down through to the ferrite rings until it fell out the bottom and the problem was solved.

Video Tape #09:13.39:17

#120 DF: Those computers have changed a little bit.

RL: Oh yes. As I say, 16K of core for about, close to $100,000, whatever that was 1964 dollars I guess. Now, Craig Ferris, who you well know, was showing me that he has a camera, he's got 16 megabytes of core for taking pictures on a little chip that measures about 1 1/4" x 1 1/4". Sixteen megabytes.

DF: Yes, he's really gone into computers too, hasn't he?

RL: Yes. More as a hobby I think. His specialty is magnetics and although early we got into the reduction of magnetic data but the need for the sophistication, all of the ??? processing is not there. Seismic, the tremendous problem of inversion, of trying to take this jumbled signal and figure out where it all came from, the degree of need for computerization is a thousand fold. This control data machine, it's kind of interesting how circumstance sometimes develops opportunity and vice versa. To do the convolution operation, which is basically a filtering operation, required at that time a special unit, it was a made to order, so called, spam box. Control Data was making one of those for us but it took them awhile. The computer was pretty well off the floor stuff but the spam box had to be specially made. So here we were with a machine, we had some work to do and we just couldn't get the horse power out of the machine itself to do the filtering. So I got interested in frequency domain filtering. This is not an automatic improvement but by converting a seismic trace from the time domain to the frequency domain, you can do then, operations very quickly. You have to pay for the domain conversion and then you have to reverse it going back, but you can do a lot of the operations in the frequency domain. Filtering deconvolution can be done very effectively. So that got me into that field. And by accident I became something of. . I don't know if expert would be the right word but I certainly became very knowledgeable in frequency domain operations so that led me into a lot of other things later on in seismic conversion and so forth.

Video Tape #09:16.49:05

#150 DF: Can you tell us more, in 1966, there was a digital lecture series, you gave this talk in 30 countries around the world, tell us about that, what were you telling people?

RL: This was a new technology. We certainly weren't the pioneers, there were a number of people in it, GSI probably led the pack. But . . .and rightfully so I guess, it was treated very much as a black box type of thing. And actually the mathematics are somewhat difficult to understand. It's like so many other things, when you understand it well then it's simple but it takes some learning to really understand what's going on, particularly at that time. So I seem to have a certain knack of being able to explain this in terms that people could understand. So all these things of filtering, how the filters work and particularly convolution and deconvolution, how that worked. And then of course, some of this experience in frequency domain. So Pete Savage and I think it was Craig Ferris, was here at the time working, and some people in the CSEG asked me if I would put on a lecture. So we put on this lecture and it was wildly successful. Right away I went down to Oklahoma, the university at Norman had me put on the same series and first thing you know it was in Houston and then it was in London and yes, it took me around the world. And of course, as time went on this expanded. We published here, a little notebook that was the small format, whatever it is, 5 x 8, something like that, and it probably had 100 pages. But that thing grew, eventually into a sort of full fledged book, which always called sort of the elements of digital processing because there was hardly an equation beyond a square. . .a power equation, in the whole book, it was all explained really in physical terms rather than in mathematical terms. Because there were so many other good books that had the math in there. [Enders Robertson, Svend Trytel]???, all these people, they were the real mathematicians. But they wrote it out as math and for the average person it's just very difficult to understand. So one thing led to another of course, and it became quite a major issue with the SEG and AAPG, I do a lot of lectures for the AAPG.

I've lost count of the track. I know at one time, it was like, 40 countries that we had visited on this series.

DF: Pretty exciting.

RL: It was yes. It has been very exciting because we started off right at the beginning of sort of the digital evolution. I go back and brag a little bit now but even before we got started in all of this, I was doing some consulting work with Union Oil Company and they had a very difficult problem in Miligan Field. I guess this stuff is not confidential anymore. Miligan Field is sand units and they were quite variable in thickness, it was a real problem with drilling. Of course, I was working with the old time, paper, seismic records, but you could see the character change of the reflections as you went across the field. So I got the bright idea and knew what the geology was, I basically made three wavelets, one for each on of the three layers in the sequence. Then I took them over to IBM, this was before we actually had a computer and had them hold one wavelet constant and then shift the next wavelet so much, then shift the third wavelet. So we had this huge set, all the combinations of the three wavelets, shifting them a few milliseconds at a time. So I came back with this tremendous package of data and these things were strung out on large sheets. So I took a felt pen and scribble through each wave form and then sent them out to be photographed, down to seismic size, and then compared each wave form to the wave forms I saw on the seismic records. The crowning thing of this was they drilled four good wells and they were going to drill one right in the middle. I said, no I think it's going to be a dry hole and it was. So all these things, they really give you enthusiasm for the method. Here's a new way of figuring out how to predict results in drilling. This was before I really understood what convolution was. I was doing convolution in a way but I was doing it in the way it actually occurs in the earth. I was just adding wave forms together. But all of those things, they were the impetus to get deeper and deeper into the science of the whole thing.

Video Tape #09:22.46:27

#213 DF: What was the next technical or theoretical challenge, after those first computers?

RL: Other than the geometrical effects, which were very important, the two big things were deconvolution, of taking a noisy signal and enhancing. . compensating for the attenuation of the earth. The earth tends to attenuate at high frequencies much more than low frequencies. So you get a spectrum that wasn't balanced, it was strong on the low frequencies and then taper off pretty much on the high frequencies. But the high frequencies carry a lot of the detail. It's like your high-fi set, you need the broad band signal. So the thing then, was to raise the frequency content on the high frequency end. So that was one of the great things. And that's what really, I think, other than the mechanical part of doing normal move out, compensating for the offset, stacking, that was a great event in the mechanical sense. You had this massive data and you had to smash it together and computers were a great way to do it because you could store it and move it around. But the real technical side was in deconvolution and then subsequently, or about the same time, in migration. Trying to put all these events that always come back reflected perpendicular to the angle of dip, so if you have a steeply dipping section, off to, say, the right, the signal is not coming from below as its plotted on the paper, it's coming from someplace off to the right of the section. So this once was done by hand and we cranked out huge tables of right triangles, at a given depth. . .and of course, you had to introduce some kind of velocity in this to get the depth. So you converted everything to depth and then put it back into time and plotted these all out on a wave chart. These were charts that you may have seen, had concentric sets of circles or parabolas, that corresponded to the wave travel. And so you would take a reflection, measure the amount of dip on it and then go over to this chart and find out where that dip and that time fit on the chart and then draw a little line in. Then eventually you built up a visual image of the sub-surface. It was a terribly tedious job. You'd have to crank out all these values with an old Munroe calculator. You'd punch in the values and then crank it one way and then uncrank it and come up with a number and write it down. So the computer made all of that generation possible. It was kind of interesting that right at the time that computers came out, Albert Musgrave at the Colorado School of Mines developed a marvellous mechanical machine to do all this. It had a series of cams and arms and so forth and you'd just crank in something, all these arms would move around and plot something on the table. Unfortunately, had he invented it 10 years earlier, it would have been the greatest thing on earth but it came just about the time of the digital revolution. So it was a marvellous invention but it was superceded almost immediately. The same thing happened with some of the analogue stacking equipment. I mentioned Accurate Geophysical Company, Bud Coote doing, in their shop, with all these cams that rotated as the tape went by. So you did this digitally but some of the companies were making humungous analogue stacking machines. One company, who I won't mention, had just got what was probably the world's greatest analogue stacking machine and the digital revolution came along and I think they only used it a couple of months and they scrapped it and went all digital. But that illustrates the tremendous advance, the weight of this kind of technology just wiped out everything. The SEG, Society of Exploration Geophysicists, used to publish maps they called NR areas, this was world wide but particularly in the U.S., you'd have a map of the U.S. and these big blobs up here are NR, where you could not get seismic reflections. For a number of reasons, the sub-surface was too granular or chopped up or whatever. So you had these great areas that people didn't even bother trying to shoot seismic in because they knew they couldn't decipher the results.

Video Tape #09:27.49:12

#271 DF: NR stood for?

RL: No Record. So, when the digital method came along, between the deconvolution and noise filtering effects, all these became transparent suddenly, you could see them all. Tremendous wave activity, just going back into these areas, to see what lay beneath the surface. Which brings up another thought, I see all of these advances, pretty well one at a time, although stacking and deconvolution were almost simultaneous. Each one is like a big sieve, and you sieve through the sub-surface with the latest technology and you come up with all these new plays that you couldn't see, or the previous sieve was too coarse to grasp. So now you have a finer sieve and you go through and you bring up a number of anomalies and then later on something else comes through and you sieve through the whole thing again. It's great for the seismic industry because you go back and redo these old areas. Sometimes you can. . .and they've done a lot of reprocessing of old data, try to modernize it. But no question, there are some physical limits beyond which you can't improve the data. You have to go out and get better information. So it's been a great driving force for the industry as well.

End of tape.

Side 2

DF: What have been some of the more recent challenges in your career, what's excited you over the last 20 years?

RL: Well, of course, the thing is certain knowledge, whatever you want to call it. . . .the whole business of starting seismic inversion. The synthetic seismogram says that if you know the reflection sequence you can synthesize the seismogram, that's a relatively simple mathematical operation. So if you just work back through the formula you can actually go the other way, you can try to go the other way. And I did that, I in fact, got one of the first patents on the process. You couldn't patent a computer program at the time, but a very good patent lawyer in Washington got me a patent on it as a process. So it was accepted. It's not very complex, it's just simple rewriting the mathematics for the thing. So I started to do that and at the same time, because with this information, you can start to interpret the lithology. Seismic reflections always just show the shape of the sub-surface, at least until that time certainly. But if you can get back to the log, even though it's just one log, it's actually kind of a combination of the sonic density log and impedance log. You can then start to make some educated guesses about the lithology and the porosity. And to do that we used a colour coding. I won't say that we started a colour revolution but we were certainly right up there in front with it. You had no such thing as colour plotters at the time so we used equipment that lithographers used to proof colour pages for magazines, billboards, all this sort of thing. It's kind of an interesting process and if you're in the photography field you probably know about it, but it's a dye process and the fundamental operational thing is you take the colour picture or whatever or the masters. . . . You basically take a picture of it through three filters, red, yellow and blue I guess, whatever. So to get this colour then, we were generating what would be the negatives for this stuff. We would take large sheets of film, we had a huge camera type thing and the computer would generate three layers of film that were black and white but each one corresponded to a colour. So then you would take these and put them into the photography machine and you had a negative behind it, which was actually an emulsion and take a picture of it. The effect of the photography was that the emulsion was sticky in places where you wanted colour and was not sticky where you didn't want it. So then you would take the sheet out and you would rub it with a powder that's the corresponding colour, magenta, blue and so forth. And then you overlay the three sheets, with a great deal of precision, of course, and that gives you the sense of transparent colour. We had all this set up here in Calgary and I don't think anybody was doing anything like it at the time. And of course, that became quite useful in other things, in just plotting amplitudes in seismic sections, colouring them. So somewhere after 2 or 3 years of this we heard about a Swedish colour plotter and it was basically one of the first ink jet plotters. It had a drum, about 3' long and the diameter of the cylinder was about 10" or so, that would take the 20" sheet of paper. You wrapped the paper around the drum and stuck it on there and then as the drum rotated, a screw drove the three colour heads across the surface of the paper and the ink jets spurted blobs of colour. And believe me they were pretty good sized blobs. But you built up a colour image. So we had again, I think, one of the first in the country of that kind of plotter here. Plotting out these inverted sections. Where we had taken the seismic data that had been processed and balanced and all that sort of thing and then inverted it to get synthetic sonic logs. And then, using acoustic impedance as a criterion, plot colour. So green for what was probably shale and blue for what was probably carbonate and yellow for sands and so forth. This was quite a thing. What can you say about your own stuff. But this really led me into another whole series of adventures, going around the world. I started to specialize in reservoir development because I needed some logs to really get started with this. But once somebody had made a discovery we could go in and map out the reservoir with a fair degree of precision, it was a tremendous thing. We did a job in the North Sea one time, another one of these unitization things and inverted all of the seismic lines and it was pretty clear who had what portion of the production. That kind of stuff. Libya, we did some, what I think is still, pretty great work of mapping some very complex, either depositional or structural conditions and pointing out the place to drill and what to expect. And it works, it's interpretive but you have something to interpret.

Video Tape #00:07.32:16

#062 DF: So most of your career has been in the manipulation and finding new ways of dealing with the data, not in seismic collection?

RL: Yes, exactly. No, not seismic collection. No, we trust the people that do that. And as the processing developed, we started to trust more and more of the people. Because one of the things about inversion, you can tell right away when you've got a little control, how good the processing is. Boy, I made some enemies and some friends sometimes, by just talking about the quality of what they were doing. There was one company that came out one time with a process that . . . they said it was the cat's whiskers at improving the data. I proved to them that what they were really doing was synthesizing some stuff. Of course, that process just disappeared. Because you could learn a lot about the processing. If it fit the log when you inverted it, you knew the processing was pretty good, at the tie??? point of course. And if it didn't, then once in awhile a log may not be right, because logs aren't perfect either. But you must remember that the log is actually measured at the point of contract. You are actually measuring something where the seismic method is indirect and all the things aren't into the data. So that was another kind of by product of the whole thing. Why I'm getting off on that tangent was the fact that, as we went along, we had to do the processing ourselves, for quite awhile, because that was the only way we could get the quality we needed. Some of the early digital processing, in spite of all the good intents, was being done by, basically amateurs, who really didn't understand the process so well. And you couldn't trust it, it was kind of delicate, walking on egg shells, to tell somebody, look this is a lousy job of processing. Especially if it was a contractor who was doing the processing. If it was a client, well, kind of delicately we suggested that we could improve the data. Of course, that led to all kinds of things too, people thought we were trying to promote our own processing. But the fact was that it was fairly easy to demonstrate that we knew what was going on in the processing. It comes back to the whole business of the lecture tours and explaining what was done. Because to understand processing, what it's really doing in the physical sense. . .you can have all the equations and that's necessary of course, but you can't develop the math, the routines, if you don't have the math. But to apply it in an intelligent form is the next step in this whole thing. So as we went along, of course, processing got better and we concentrated on the inversion. Again, that was pretty pathetic I suppose, by today's standards of inversion, but certainly I guess I can say, we certainly led the way to show it could be done. And turned out a lot of useful information.

Video Tape #00:11.10:19

#095 DF: I'd like to change the direction of the interview for just a few minutes. We did mention that you had done this digital lecture series in the 1960's, but by the 1970's you were becoming more and more active in the executive of the CSEG. Could you tell us how you came to be working on committees and so on and then how you came to be President?

RL: It's a very natural thing I guess, you become visible and people want you to start with something you know something about. So you get on a Processing Committee or something like that. So sure, you devote some time to it, that's part of the whole business. As you go along, you just sort of move up the ladder. I started off with the Canadian Society, the local one, as a lecturer. Somebody asked me to do it. Sure, there's no monetary compensation for it and when you do these things, you're not really looking at any kind of direct benefit, you're doing a service to the community, the profession. But these things grow, as you get more experience and you get more knowledge, you just kind of move up the scale. I was one that worked up to be President of the local society, the CSEG, I'd have to look at the date but I think it was '71. Of course, that leads to the next thing, the international group, the SEG, and in 1977-78, the last time we brought the SEG to Calgary. That was a very proud accomplishment because in spite of all this professional stuff, I'm also a very dedicated Calgarian, Albertan, Canadian. In the last few years, dedicated more and more of my time to that kind of thing, promoting the province or the city. And of course, I mentioned before we were on camera here, the whole business of development, how to develop a petroleum economy, petroleum industry. That is kind of a hobby with me now, in a number of different ways I can demonstrate this. That would take almost a whole new lecture, but just a simple thing. Petroleum is a truly universal global activity. Most of the factors apply just about everywhere, the geology, with some variations are similar, the seismic techniques and all this stuff. So if you take the major companies, divide their earnings, not their profits because they go up and down. But take their earnings and divide by the number of employees to get some kind of an efficiency index, you will find that all of the national companies in the world fall at the bottom of the scale. For many years, Pemex and Oil India fought for the bottom positions, Pedavesa is probably one of the better ones. But it's so revealing that free enterprise is more efficient than all these national companies. Of course, they have tremendous advantages that they don't generally recognize, they don't pay anything for the acreage, they've got a monopoly situation, all these things, they've got the cream of the crop. But they're just not able to handle it, the free enterprise system is so much better. So going back to this whole thing of the contribution, you start at one level and you gradually work your way up and you get broader views. Certainly I've had the wonderful opportunity to travel all over the world and see how people do things. You help them, try to suggest whatever. . . . And so, as you mature you become sort of broader, you become more of a generalist I guess, and less of a specialist. The last six years, I've been down basically being a diplomat, a pipeline engineer. . . . .

Video Tape #00:15.47:00
#140 DF: How did you get into pipelines, most people know you as a geophysicist?
RL: Teknica was the company that finally evolved out of EDP and CDP. Teknica was the one that was really dedicated to the inversion process. Let me go back to that, EDP was the original sort of hybrid analogue-digital at the beginning, CDP was the true digital, specializing in processing and Teknica got into the whole inversion, colour, all this kind of stuff. So I had an accident one time and I thought, I better start thinking about my future here. So I made a deal to sell Teknica to the employees. The timing was terrible, we got into the big slump and so Teknica really ran into some real problems. Also we had spent a lot of money, and I'm responsible for that, in trying to develop the next stage, which was the work station. Boy, this was really before our time and financing was hard to get and you couldn't have an IPO like you have today. It was a million bucks and we were doing it with our own money. Anyway the thing was that with the slump, Teknica really got into tough shape and went into receivership. We managed to get it out of receivership and it was bought by an Arab group, Texel in London. I stayed with them for awhile, but when I left, part of the sale deal, selling my part of it to them, was no competition for two years. So I kind of thrashed around, I worked awhile with the super computer company here in Calgary. I knew some of the people here at Trans Canada who, at that time, were thinking of going overseas. Getting out of the domestic into the. . . . so, I did a little consulting with them, because I speak Spanish, know the countries. I lived 16 years in Latin America, the first stint, Columbia, Venezuela, Trinidad and some time in Brazil and Peru. So one thing just led to another. We looked at a number of things and talked about it. Finally in the fall of 1993, they suggested that we go down and open up an office in Columbia. For a number of reasons that was a good place at the time. So I did that, I went down to Columbia and opened an office for Trans Canada. It was more of a representational office, to try to establish the name but we very quickly got deeply involved in some contracts there, for building pipelines. So one thing led to another and I

just ended up staying there, three years in Columbia. Then we had pretty much soaked up most of the important business so then moved to Venezuela, which was starting to open up also. Under the previous administration, the Caldera administration and Pedavesa, the national oil company, under Luis Giusti, the President was starting to open up. They had announced in, what was it, 1994, I think it was, a grand expansion program. Giusti, incidentally, in 1999, I guess, was named man of the year in petroleum. It was a great plan and actually it's a magnificent plan I think, to expand the business and to try to capture some of the market. One of the problems that Venezuela faces, they're big competitors to the big Arab countries in particular, Saudi Arabia, Kuwait, Iran, is that when they have some of these cutbacks, the OPEC type of cutbacks they tend to lose market. He was determined I think, it try and capture more of the market so he had an expansion plan that had $65 billion worth of new investment, which he was going to farm out $25 billion to private enterprise. So the land of opportunity. So I moved to Venezuela to set up the office there. We landed one contract in partners with another company. But then of course, Caldera's reign came to an end, they had an election and they elected President Chavez, who was very well meaning I think, but very . . . . I have to be careful but he really hasn't taken advantage of the opportunity. He's fundamentally reverted, he's gone back to greater control and almost dictatorial powers. People ask me sometime, aren't you afraid of revolutions, I say, I think they're out of style now because a lot of these leaders have determined how to use the democratic process and yet, control it very well. They did this in Mexico for many years with PRI. They actually had an election every year but they always won. In Venezuela they had two parties, the liberals and conservatives if you will, but underneath, still basically the same people driving them, it wasn't much different. So the whole thing got so bad that when this army general appeared with a very charismatic personality, and the poor people are really suffering so much in Venezuela and he was swept to power by the masses. Not necessarily voting for him, although a lot of them were, but voting against this previous regime that just really had driven the country into the ditch. It started to improve, as I mentioned, at the end of the Caldera administration, but now you can get into all sorts of political analysis. He may have been forced into it more than voluntary for a number of reasons but that's water under the bridge. So with all this anyway, and one thing and another, we decided to come back to Calgary.

Video Tape #00:23.11:08

#217 DF: Are you still with Trans Canada?

RL: No, I finished my contract as of the end of May. So we're now back to Calgary and that's when we relocated here, came up in April to kind of lay the ground and then I went back and closed up the office.

DF: We've got just about five minutes left, could you just reminisce for a moment, just think for a moment, what have you enjoyed most about your career in the oil industry, so far? We're not saying you're done yet.

RL: Well, I've been so fortunate, you know, I tell people, I've had more good things happen to me than any usually two or three people. I've had a reasonable amount of success, I've been recognized to a wonderful degree, I have the Order of Canada, I have the esteem of my peers, most of them anyway, I suppose there's always a few, I've met some wonderful people, I've done some good I think. I'm happy to say that so many alumni of the old companies, they have prospered, they have done better than I have perhaps, no not perhaps, certainly they have. But all of these things, they combine to have made a wonderful life. I've been everywhere. Some of these things, for instance, in the early years, going to China, long before anything was open in China. Back in the days, in Beijing, there was only one hotel in the city and it was relatively primitive. And being taken by the Chinese as one of a group of five specialists who had been requested by the ministry just after the sort of opening in the Nixon years and all that, to go in and advise on what they could do to modernize the petroleum industry. At that time, they were producing about 800,000 barrels a day, a lot of which came out of Daching, but they were exporting I think, about 500,000. They used just a thimble full per capita. Most of their foreign exchange was coming from the sales to Japan but they wanted to develop the country. So I went over there as the geophysical member of a group of five, there was a paleontologist, a geologist, a petroleum engineer. It was all set up through Columbia University, a gentleman name John Kuo, who was a Chinese national, born there, but became relatively. . . well, he's very well known in the U.S. as a geologist. John called me one day and asked me if I would go on this mission. Well sure. So we went over there and spent five weeks, we spent a week in each area. Went all the way up to the very northwest part of the country, up to the Karami-Chunger??? basin. This is right on the edge of the Russian border. Wonderful treatment, you know, we met all these people. We would see what they were doing, and then we got back to Beijing, spent another couple of weeks writing up notes and interviews with the minister. So things like that, that are a privilege, they're such a privilege to have been able to do all these things. I'm not an educated person but to have these opportunities. . . and I've got friends all over the world. When I travel, meeting like this, there's people that I haven't seen in ten years maybe and sometimes I don't always remember them but they remember me though. So things like that. I should add some personal things though. Also I had the good fortune to marry just a wonderful girl I met on an aeroplane on a trip to Columbia one time. My wife of 52 years who has given me a son who is very successful, my son Richard is an architect here in the city. I'm proud of him for a couple of reasons, one the success he's had, but the other one. When I had Teknica I tried to get him in to take over the family business and all that but he wasn't having any of it, he was going to do it on his own. And he's done it.

DF: And your wife's name?

RL: Lucy, actually Lucille but everybody calls her Lucy. She was born Columbian but blonde and blue eyes, doesn't look like the typical Latin. So there are many facets. The sort of level of activity, recently the stuff with Trans Canada and this is not the first time, but you're working at the ministerial senior level with people who are really the cream, for one reason or another, of their country. They've risen one way or another to these responsible positions. To be on a first name basis with them and fundamentally be treated as an equal or sometimes an authority, that's quite a thing. Of course, you have to be careful about these things, you don't abuse them. Part of this whole thing is really trying to help them too. It's not always understood or perhaps appreciated because they generally tend to have pretty strong ideas of their own. But I go back to this business of the alumni and all these people that have passed through the operation or my hands in one way or another, who are now very successful. All these things are things that give me great satisfaction.

DF: Well, I hate to have to do this to you but we're going to have to end the interview at this time. So, I would like to take this opportunity and on behalf of the CSEG and also the Petroleum Industry Oral History Project, thank you so much for coming down and spending a few moments with us and sharing part of your life story with us. Thank you very much.

RL: Not the least of this, I should have said this before, is having met David Finch, you're an old friend from way back and I admire what you do, you're very successful in your career. So it's just part of the whole thing.

DF: Thank you.