

PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Lee Slind

INTERVIEWER: David Finch

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DF: Today is the 17th day November, in the year 2003 and we are with Mr. Lee Slind of R.R. #2, Cochrane, downtown Calgary at the Danish Canadian Club. We've just had a wonderful lunch, thank you very much for that.

LS: You're very welcome.

DF: It was delicious. Can you start by telling us when and where you were born?

LS: I was born in Minneapolis, Minnesota on August 3rd, 1928.

DF: Okay. And what did your folks do?

LS: My mother was a housewife for most of it, although during the war she worked in a factory. My dad had been a musician and then he spent a long career in real estate.

DF: Tell us about your education.

LS: I went to high school in St. Paul, Minnesota and then there was a break of 2 years when I went with the Marines and then back to the University of Minnesota for 2 years. That was broken by a recall to Korea and then back to University of Minnesota for 3 years, graduating in June of 1954.

DF: What got you into geology?

LS: When I got out of the service, and based on a summer's activity in the mountains I went into forestry but there were no jobs in forestry. So I took what they called a Minnesota multi-phasic test on what you're well suited for and I was good at painting flowers and I could maybe should look at aviation but also the gal said, why don't you go over and talk to the head of the mining department, that might be, you can combine your outside interests with this. So I went over and talked to a find old gentleman who had made his career mining in South Africa, he was American though. I said, sign me up so then I went into the School of Mines in Minnesota.

DF: So what did you learn in the School of Mines?

LS: I learned engineering and mining and geology.

DF: This was hard rock, wasn't it?

LS: It was mainly hard rock, yes. Minnesota didn't have a lot of soft rock. There were some soft rock courses but it was largely a hard rock school.

DF: And that was engineering?

LS: Well, I took it in the School of Engineering, you could take geology and an arts routine but I took it with mining in engineering, with the idea of going into the mining business. But as I said, there wasn't any jobs at that time.

DF: So how did you end up going into petroleum geology?

LS: That was kind of the luck of the draw, that was the first job I could. . . I guess I was kind of waiting to go into the mining business in the States and thought, well, my prof said,

take this summer job and the prices should come up in the fall and you can get a mining job. But as I said, I came up here and after that first summer on horses out there in the mountains I thought, gee, if I can do this for a career I'm all for it. Basic geology is pretty much the same but this was soft rock geology. I had very little, a few classes in it but not.

DF: Yes. So who was this summer job with?

LS: It was with Shell. A fellow who was party chief called Gerry Krause, he's gone now to his reward, a nice fellow. There was Gerry and myself, the two of us and a Scotsman for a short time called Jacques Pirette, with a bit of adventure in him and he left the party. So there was Gerry Krause and myself for the summer, two cowboys, wranglers and a cook who owned the horse string and I suppose there was about 20 some horses, pack horses and saddle horses. They sent us off, up into the Bull River of southeast B.C.

#042 DF: And what were you doing, tell us what your day was like?

LS: The project was broad, go out into this area, find outcrops of Mississippian and Devonian carbonates that may be the kind of rock in the plains and measure these and describe them and then prepare some mapping so you could see where they were. There were no maps of that area, no geological maps. They had some drainage maps from the park. It turns out that the people who planned the thing, there wasn't much known about the area. So we were looking for Mississippian and Devonian sections in a part of the mountains that only had pre-Cambrian and lower Cambrian and Ordovician stuff. It wasn't until later in the season that we were able to, we moved further east until we were well west of Kananaskis, in the upper Elk Valley and so on, where there were the younger rocks. So the first part was just kind of an adventure, cutting trail and trying to find out where you were. Gerry was a hard rock guy pretty well too, and I was. We could identify a few fossils but it took future years to get that geology straightened out. We ended up pretty well getting enough information on the Devonian and the Mississippian to satisfy that earlier part. One little problem though, of course, they always crop up, we measured a rather good section of Mississippian but then when the paleontologist got to look at it, they informed us that the section was upside down. It was ??? thrusts and it was in an area that you couldn't make the structural picture out very well. But I mean, the information was okay, it was just that they had to flip it around. That was a big learning experience for me that first summer.

DF: So how did you turn that into a career?

LS: That was the assignment for the summer. Shell had many positions, kind of thing, to fill. Then when I was accepted as a permanent employee then they had me working in the office, doing kind of basic subsurface type work, looking at samples and looking at logs and a few things. That lasted for a short time until I was rescued by a geologist called Bert Bally, who has quite an international reputation now. At that time he just had joined Shell too but he had good credentials because he came from Switzerland and had worked at Lamonte and other places. So I became his assistant and then we started doing structural geology and I've tried to stay with that end of the business, at least for the first few years. In the winter doing structural geology, in the summer going out in the field and mapping.

DF: So what were the big fields that were being developed when you arrived?

LS: Let's see, '54, I guess Pembina had been discovered. And the reef fields which had been really discovered earlier and drilled you know, '58, '59 and so on, they had been. . .this was out in the plains part. There was still exploration going on then but that peak of the reef seemed to be dropping off. I didn't spend so much interest as the other companies, Shell's interest and where I was involved was in the structural part of the foothills. At that time, let's see, '56, we spudded Waterton and '57 it came in so Waterton gas field is still supplying a major part of Shell's thing. So I worked a little bit on that, although I was only kind of a minor player. Then we were drilling wells on up through. . .you see, Jumping Pound had been found earlier, in the 40's. West Jumping Pound, there was a well called Morley #1 Shell drilled on what they call now, the West Jumping Pound feature. It was a velocity problem in the interpretation and it was drilled a little bit downdip into the transition water zone. That prospect then lay fallow until. . .let's see, when did we drill that well, that well must have been drilled in about '59 or '60. It wasn't till later with some work by Gordie Stewart, a geophysicist and some others, they recalculated these steps and found that the west Jumping Pound structure was much higher to the east and then the well was drilled into what is now the West Jumping Pound gas field, which is quite successful. But it just kind of shows you to miss one. Fortunately Shell kept the acreage. But the dry hole at Morley #1 pretty well killed the enthusiasm because there wasn't a lot of money in the 60's for drilling exploration wells. But then it perked up, perked up. About that time I got transferred out of the foothills to Edmonton.

#104 DF: What year was that?

LS: 1962.

DF: And what did you do out at Edmonton?

LS: Prior to that though, I had a real nice assignment, again under the direction of Bert Bally to have a look at the oil and gas potential of eastern Canada. There wasn't much information but it included looking at the offshore; there wasn't a lot of seismic, a little bit of refraction, of Newfoundland, Nova Scotia, the St. Lawrence lowlands. This was mainly done by literature studies and so on and came up with a report with some recommendations that we would do something. But then that didn't go anywhere either, until about 3 years later. I was somewhere else but that rejuvenated, that report and some other things and Shell went into the east coast. I mean, some of the recommendations I had weren't that good but at least they got in there and so they've been there on and off ever since. Then Edmonton was doing a plane subsurface work, looking at logs and stuff. Something that never really fascinated me but it was once again, where the bread and butter of the business is. But then I did have the chance to do another field geology program which was pretty well helicopter born. We looked at the outer foothills, between the plains-foothills transition zone, from Rocky Mountain House to Grande Prairie. So I think we flew up and down every little creek and stream in that thing over the summer. There was a lot of flat but there were little structures and sometimes we would identify coal seams and so on. So that went on the report and then put on the. . . I've got a lot of reports in the archives but they're not used. Although occasionally they would drag that out. We had hoped that we would see more subtle structures out there in front that would be worth pursuing.

DF: So this was aerial or were you just flying in and coming out?

LS: I'd fly in, I would map what I could from the helicopter or you'd have to stop and hike because the underbrush was pretty bad. Then I looked at whatever wells were and seismic tried to see. . . but some of this real subtle stuff, you see, the seismic, just by itself is so sensitive to the difference of velocities that telling a true structure from another one takes a fair amount of, well, more than guesswork but you've got to analyze and see, what else could be causing these things.

DF: So by the 1960's there was a fair bit of seismic going on in your department?

LS: There was seismic going on even from in the 50's. It was expensive. Shell had prided themselves on their seismic abilities and they were quite a bit ahead, it's a matter of where to shoot it. Now to follow-up things like Waterton in southern Alberta. . .no, Shell shot a lot of foothills seismic. Still are I guess. And the techniques got better. And the thing that was good about Shell at that time, in that department, that the geologists and the geophysicists, they weren't two departments like people still try to get them to do, but the geologists and geophysicists worked right together and they'd be both doing the interpretation and there was that sense that it was a real team. Which made all the difference in the world because these things don't fall easily into one or the other. And that was particularly true for Shell out in the foothills. But in the same company out in the plains there seemed to be more of a separation.

DF: Oh really.

LS: Yes. Whether they've gotten over it now. . .and you're missing a big opportunity. And then we found when I had dealings with other companies, quite often they too would have this separation. You could really tell in the results. It seemed to be such an obvious way to do your business but everyone likes to build up their own empire. And so it really depends on who's calling the shots.

#157 DF: So quite a bit of personality thing?

LS: Oh yes. Not only the personality of the individuals, but it's the personality of the bosses too you see. I had the good part of it.

DF: So by this time you're in Edmonton.

LS: In Edmonton. So I was supposed to be doing the subsurface, I did that one field project. Let's see, that was what, what did I say, '62. Then Shell got involved in the west coast, they filed on acreage on the west coast. Then I got transferred into, I kind of the fledgling west coast geologist. I was the geologist and there were about 4 geophysicists. And the party chief there, a fellow called Bob Comer. He got the thing organized, we shot a lot of seismic, over. . .let's see, when was the first seismic shooting, I guess 1963, a little bit, then '64, '65, '66, a lot of marine seismic. And it kept improving, we started drilling wells. Let's see, the first well was, I'm trying to think now, this would be '67 maybe. Aside from the first well out there this was the first well that Shell. . .actually, there had been wells drilled offshore in California and Oregon but Shell built this rig, Sedco. . . what was it, 135F, I can't remember now. . . anyway, they built it in the Victoria Machinery Depot in Victoria. It was a big prize to have this big vessel built in Canada, bankrupted the steam ship company. Shell didn't bankrupt them but the idea to take on something of that magnitude. But it was a good rig. I don't know if it's still in use now but that Sedco group of wells. . . four corners, a floater. We drilled 14 wells with that. Let's see, 6 of them offshore of Vancouver Island and 8 in the Queen Charlotte Sound,

Hecate Straight area. A few shows, but that's not a lot of drilling. You figure, that's one well per million acres, Shell had 14 million or 12 million acres out there, so not heavily drilled. Then the moratorium, I got transferred out of there and then I finally got a supervisor's job. Well, when I was party chief in the field I had control of my own destiny.

DF: Those wells were all dry right?

LS: Those were dry, yes. Plugged and abandoned. So in '68 I got really the first supervisor's job, what they call the District Geologist, like a junior manager, in the plains areas, around Zama and that stuff. Shell was a little late getting there. I suppose there were 10 folks involved in that business. I stayed with that till '71 and then I got transferred to Holland.

#197 DF: So why did you go to Holland?

LS: Because I wanted to, I wanted to go forever on an international thing. Shell did not transfer a lot of guys overseas at that time, maybe one every couple of years or something and things were easing up a little bit. So I took the family, we just jumped at the chance. Left Edmonton, went to The Hague. Wonderful three years we had. Worked the North Sea, Denmark and the Middle East. Trips into Libya and Egypt and Abu Dhabi and Kuwait and it was just. . . What was nice about that Hague group, it wasn't very large and if they kind of trusted you, you were expected to do a lot but you didn't get nitpicked, micro managed on it and it was a really, really good experience. Actually, I think we did some good, picked up concessions ???, Yemen, we went out to Yemen. That was pretty good. Talk about stepping back into time, the walls of the city of Sana, the capital of Yemen were mud, 20' high. At that time it was North and South Yemen, now it's one but that was North Yemen. The city gates they had brick with an arch but the rest of the city wall was mud, 20 some feet high piled up, just stepping back into a wonderful time. So we were there to see if we could concessions. It turned out the area that we thought we would like to get would be in central Yemen where now, there's quite a bit of oil in Yemen. It's also up in this central area where this old civilization, Marib??? and these others, were, but that was heavily, heavily fought. No one went in there. So Shell picked up, we got some lands in the offshore areas at the south end of the Red Sea. They didn't amount to much but CanOxy and these others. . . they came in a little later and got. . . Because Shell knew about those basins up there from the 50's but it's just been impossible to get in there. So we had a good trip there. Went to the market which was just great and I got an old Arab rifle, Damascus wrap, a big knob on the back for the shoulder, not firing. I tried to bring it back with me and I got into Beirut and going into Beirut in the middle of the highjacking season with this rifle caused a little bit of problem. Then the funny part, they had one of those nice magnetic loops, you know, you go through to get checked at the airport. So one of the fellows from the plane was with me and I went through the loop and it was all right and then one of the soldiers said, let me just see, so he took the rifle and he wanted to go through the loop to see how I could. . . Not a thing happened. So they'd been passing people through this thing all day. Then there was a scary. . .it didn't bother me but it scared. . .it was kind of fun to watch. We had real good neighbours in Holland and the job was good. I was offered a chance to stay but then our folks were still alive and I wanted to get the kids to finish high school. I think I would

have been better off by staying because I mean, it would have been better off in some ways for the kids too because Shell would have picked up their university and their other kind of school. But anyway, it was good, I had it good both ways. Then I came back and worked.

DF: What year did you come back?

SL: I came back in 1974.

#251 DF: So you were over there during the middle of all the Middle East crisis and all that?

SL: They had the gas rationing, Sunday's no driving in Holland. That was good, you could take the family, we'd get on the bikes and cycle downtown The Hague and you could do figure 8's in the main square, no cars. And of course, we used the bike a lot so it didn't make a lot of difference to us. Holland was a great place to live. Corner, small stores, people and so on. People are nosy as can be but we had a good time. So we'll go back, say if we travel, we go back and see our neighbours. Some of us are getting older but they're still there and some of our kids and their kids. . . although they went to different schools. Our kids went to the American school and the Dutch kids. . . So it's good. What happened when I came back, gee, I was given a small area to work in, in the Arctic Islands and then later, some on the east coast. Eventually I went back to the foothills. I guess that was in about 1977. Foothills had been kind of slow, there had been some discoveries but it was kind of on a rise. So I got back to it at a good time and my old friend, Gordie Stewart was there as kind of the geophysicist and I was kind of the supervisor, manager, or what do they call them, I guess district geologist at that time. We had a crew, I suppose 5 or 6 geologists and 5 or 6 geophysicists. But a budget, in our one little district alone we spent \$50 million one year with the land purchase, seismic and drilling. Drilled 12 deep wells, that was really a good. . .there were a few discoveries, some very expensive dry holes of course, but that was really a good time.

DF: And where was this?

LS: All through the foothills, we drilled wells down just north of Waterton and all the way up into northeast British Columbia. We picked up land and so on that is still being used. That was a good session because there was some backing. There was some interest in the company and people worked hard, but there was money to be spent and the fact that we found things and so on, it was quite good. Then '79 I got transferred to the position called Manager of Geology or Chief Geologist. That was a good thing too, it was supposed to be a non-operational job, you were supposed to look after the well-being of the geologists and get the training and get the hiring and give advice and get people doing special projects and so on. I had that job for 4 years, I got to travel to The Hague, you do this and that.

#294 DF: How did you come to hire Clint Tippet?

LS: That was one of the . . . as geologist you were responsible for the hiring of the . . . usually the geologists, usually one of the more senior ones that had established some relationships with the different universities. Sometimes they'd go and they'd go for several years. In fact, it was Charlie Bruce, he's been the point man for Queens and McGill and some of those eastern colleges. I went down with him, I wanted to get a little better idea how this recruiting thing went. So Charlie was interviewing his folks and I

talked to the head of the department on the side and he said, you know. . . because Clint wasn't on our list at that time, he said, Tippet was really the top. I said, gee, we better talk to him. So I mentioned it to Charlie, he said, we better get this guy in here so then we made Clint an offer and he took it. And it was good, it was a good investment on our part. And then, let's see, that takes me up to '83, so then I was removed from the Chief Geologist thing to looking after some northern. . .there wasn't much going in the north, in the Delta and these other areas. That was for about a year and then Shell decided that anyone over 55 was going to retire. So I happened to make that cut. And there was quite a few folks with experience so they cut us, in all departments, except for the vice-presidents, they kept some of them and they cut us all but then they realized, in several departments including geology that they'd gotten rid of too many. So 9 of us in the exploration department were brought back on a temporary contract for 2 years. That was funny because I still kept the managerial job even though I was a temporary employee for 2 years, and then in '86 it was all over, at the end of '86. And that's when I went in with this consulting outfit.

DF: So they even retired you early at that senior position?

LS: Oh yes. Vice-presidents were exempt but anyone else was. . . And then, 2 years later, that time the cut-off was 55, 2 years later they dropped the cut-off to 50 and I think they lost a lot of good people there. And I don't know if they've ever gotten over it.

DF: Yes, tell me, what's your opinion of that?

LS: I think it was a big, big mistake.

DF: Why did they do it?

LS: That's what they say in the management books.

#335 DF: But why fire all the people with all the experience?

LS: You can always. . .I think the theory was. . . that well, no one is indispensable, you can always get more. You can but there is a gap that you kind of realize. We pay these guys more than the young ones, these people can do the job as well as the others. I mean, that's the theory but in some cases, depending what you're doing, sometimes not. And I was ticked off then, still am. I thought you know, I had another good 5-6 years because I was kind of a late bloomer. But I thought I was in good form because we were buying acreage, we were doing stuff, we were getting out at things. Of course, there's folks behind you that want to do that same job and I can understand that.

DF: So did you take it personally?

LS: Oh yes, very much so. Still do.

DF: What did you feel at the time?

LS: Betrayed I guess. I had some pretty good opportunities but also, I put in, and I think the others did too, you put in a hell of a lot of extra effort. I remember when I started with the company they'd have posters on the wall about Shell and perform and in the family and getting the stuff. Then the theme started to change, I think there was more a Harvard Business School approach to things somehow and then it became more and more colder. And you can't run a real big outfit I guess, on that homey approach but I think that it could have. . . Because an outfit like Chevron and so on, kind of kept that culture going for quite a while. I think they've succumbed now too but they were pretty good. But I did get some nice jobs, I mean, did some nice duties, some good projects afterward but I still

think after you thought you were doing a good job. . . then, well, these are the number so that's it.

DF: When you were in management did you have to lay off a lot of people?

LS: Yes. It kind of went in cycles. When I was in the Chief Geologist job Shell decided to collapse, we had a minerals exploration department and that was going to be disbanded. So we had I don't know how many, I suppose they had about 15 geologists or something and they said, you can keep 4. So I had to go and interview each one and tell each one why he'd gone. As far as dismissing anybody for cause, which I wouldn't find so difficult, but most of the time I was involved in. . . and then there were other lay-offs too. I found myself in the awkward spot of being only a contractor and laying off people. That was the work. In fact, that experience, when I was interviewed to do this east Africa job which I had to go through a bunch of things that was one of the questions. I said, well, this is what we had to do. And I guess you have to do it but it's. . . I thought it sometimes a little better to do it a little less so you don't have to do it but it doesn't work that way. You do it a little less and the company will say, okay, get rid of them anyway. So that doesn't work. We did have some pretty good times. And one of the things, you know, I'm not too proud but I think I liked pretty well that when we were in this hiring, and there was a word down to hire more, that I hired lots and lots of women, much more than before. I bet about half the people that I brought in over those 2 years of the new hires were women.

#405 DF: What year was that, what years?

LS: That would be 1980-'81. I had the job for 4 years. Of course, it wasn't a matter of prejudice but when you went down to the schools these gals all had better marks than the guys. And they also seemed to have outside interests as well. I mean some of the guys were okay but the gals seemed to be a little more mature, the same age you know.

DF: So why were you looking for outside interests?

LS: When you go to hire somebody, I mean, you've got to be able to look at some examples of what. . . I mean, just to kind of build up a character of what you'd like to have. What have you done, what are you? Mountain climbing. . . it doesn't necessarily have to be related to the thing. How did you earn your way through school or what did you do ??? But some of these gals seemed to have a broader. . .well, not all of them, some of them turned out to be mistakes of course. But some not, the same with guys. I remember this time we'd gotten a word from, I guess he was the vice-president saying, okay, we've got to expand, we've got to do this stuff. I thought it was great, we need more staff. So in one year I think I hired 13 people or something, which you usually get 3 or something. It was fine and they were good quality. Then the cycle changed a little bit, ???, he had the job of firing about half of them, not just them but everything else. It's too much roller coaster and it's not necessary I don't think. I'm not bitter from that part of the job but you just don't like getting laid off I guess, no one does. Especially when you don't think there's a reason.

DF: Yes. What contributions from your career are you most proud of? Any particular fields?

LS: Not that so much. I think most of it in the personal relations thing. I've been pretty loyal to the folks and folks have been generally pretty loyal to me and I can still get invited to folks from years back. I established I think, a pretty good working relationship and kind

of . . . well, not a loyalty but people that worked . . .well, I think they liked me and I liked working with them. So as far as any kind of accomplishments and so on, daily it was kind of that personal thing. On commercial things, I think doing the field work was great, of course, some of it is pretty hard to measure except we got lots done. The foothills session the group I was working with, we did quite well as far as land and access.

#467 DF: How about the north?

LS: Well, we worked the north but we didn't much. . .I mean I personally didn't have anything that I could. . . I had a group working, at that time in the Delta there was some work going on, a few wells but we didn't make any big discoveries there.

DF: But you did a lot of regional work?

LS: Oh sure. The regional work is what I liked the best. The regional work and the structural work. I think I did a fairly good job on that east coast thing. There was a chance to get out and do something. On the west coast, on the input of the geology and so on, which I was kind of responsible for, I wasn't the boss but. . .and working with the geophysicists, I think we built a pretty good story there that still holds together. I don't think there's anything to be ashamed of on that part of the thing.

DF: But Shell is looking at going back into the west coast isn't it?

LS: Yes.

DF: That would be based on your work and the work . . .

LS: Well, I mean, it would be based on what was done there before and kind of an appreciation, so I don't take any particular about that, except that the team that we had, Bob and the rest of us, we were able to . . .so it wasn't my doing.

DF: But you were part of it. Don't be too shy here.

LS: The fellow who was the manager out at the west coast, he's a fellow called Moe Mahanna and he was a fine guy. He had a lot of balls going in the air. And there was some enormous logistical problems out there, which they had a logistical group and so on, folks that really looked after the thing and made things go smoothly, guys like Grant Murphy who's just died a little bit ago, and Carl Blanke, who's dead; who got me into the club here as a matter of fact; so the operations people in Shell have really been first class, still are.

DF: When we were having lunch you mentioned that the geophysics you did on the west coast, what were you using as your sound source?

LS: It was dynamite. It started off reflection dynamite and then the dynamite for the refraction which was big shots. But then Shell Oil in the States developed a system, what they called air gun, not air gun, they called them gas exploder. Prior to the air gun. In a case like that they had neoprene tubes, 20' long, it was quite an amazing thing, I think they got as many as 8 in a column. They were injected with acetylene gas and then sparked and then the poof, these neo things would give that pulse. There was something about it, it didn't have quite the power that the air gun did but you didn't get an air bubble, you didn't get the collapse like you do if you have an air gun. You get a hell of a thing but then you get the collapse of the thing. And then also we used for some of the shallower work, we had what you call the sparker which was kind of a high voltage . . . would send a . . .I'm not sure if it would send an electrical signal or a sound signal down. But you got very, very refined. . . they still use the same technique for doing details of harbour work

and environmental stuff in the offshore.

DF: Now these newer seismic techniques are less harmful to the fish are they?

LS: Some are . . . see, the gas exploder doesn't give you quite the penetration, doesn't give you the strength but it would cause less damage. The air gun, if you get too close it will have a problem but the air gun is much less damaging than dynamite.

End of tape.

Side 2

DF: Anything else you want to say about the seismic, how you've seen it change over the years?

LS: I think the resolution is better. I've got a son working for a seismic company in town and there's lots of techniques and they can handle structural problems much better, it's still improving in a lot of ways and you can get a lot better data than you could in the past. Still I have a bit of a problem, they don't ask me to solve these problems, even when I went back to Shell; the seismic is getting so good that seismologists don't think they have to apply as much geology to it. Because everything is just not as obvious, as you say, what are the implications. And some of the teams there work very well together because the guys have worked together. I think what used to bother me the most when I would go to a meeting or someone would come to present something, it would be a geologist and a geophysicist working on the same thing and they'd say, one doesn't support the other on interpretation. I mean, you're looking at the same thing you know. So people have got to watch that, that sort of thing. I mean, you don't have to agree on everything but they say, well, the seismic is wrong or the geology is wrong. It's not wrong, it's just got to be fixed, it's got to be assembled. The seismic, the quality has gone up and I'm thinking about the marine but the onshore too. The 3-D stuff onshore is expensive but they . . .no, it's improving steadily. I suppose maybe the curve's flattening out now but it's really pretty good. A lot of the . . .and I'm still talking about here, western Canada, a lot of the more obvious stuff has already been drilled or found so you've got to be a little more subtle with these things.

DF: What did you enjoy most about your career?

LS: The geology part?

DF: Geology, yes.

LS: You mean as a technique, or as an area to work, which?

DF: Either one, yes. What made you excited to go to work in the morning?

LS: The foothills, certainly. That Africa project that I was doing was really, that was kind of near the end of my career, that would be from . . . I started preparing the stuff in 1994 but from '95 to '98 that was a kind of concentrated. . .

DF: So this was in your consulting career?

LS: But there I had complete control, a \$5 million budget and the whole world to explore with people. That was really good. The field work I did in Nepal. These were kind of highlights. Foothills I liked a lot. West coast, on the lowland. . .I worked on it and I think I did a decent job but that wasn't the highest thing. And the chief geologist job was good too of course, because you got . . . But some of the others were good. This is kind of out of the sequence but when I went, my last year in university, second last year, I took a

semester off and went to Mexico to work as a field assistant for a prof that was mapping stuff up in the volcanic mountains east of Mexico City. They were the 5th and 6th highest mountains in North America, where we were. We were working on the slopes, archeological and geology and glacial and stuff. We had a backpack, we had to carry 2 weeks supplies up and live on the side of the mountain but gee, that was really geology. No pay, but as a geological thing that was a fantastic experience. Lost a lot of weight there too, when you have to carry everything with you. The big weight losing things, when I went to Korea, when we came out of there we had some rather heavy battle to the north and they had a chosen reservoir camp eh, and we'd been surrounded by Chinese and so on, it took several weeks to get out of there. By the time I got out of that I'd dropped plenty of pounds. Then when I went to Mexico I dropped it, when I went out in the ??? we were out in the mountains and we were 2 weeks overdue, so there's a lot of ways to get in. . . But going through this is geology, that's what you're mostly interested in but I think what had a very large influence on myself was the time I spent in the Marines. They've got a certain approach to themselves and duty and doing this sort of thing and it kind of lingers through. So I didn't necessarily run my district like boot camp but sometimes it maybe felt like that but it wasn't that. I mean, 50 years later it still. . .

#064 DF: Put that idea into words, what was it from the Marines that you took into life?

LS: Responsibility and the idea that you have to work with someone. Loyalty I guess, things aren't going as well as you'd like you've got to commit to something, you've got to do it. I guess that's some of the problems that they have now, you can get too much of a blind look, although I tried to. . . I mean, you may not like what you're going to do but you'll do it. I don't think I'd put up with it now, I couldn't go through boot camp now. But when I was 18 I could and of course, I was fit when I came in because I came out of. . .so going from fighting forest fires to boot camp wasn't that big a change. It's kind of just kept a. . . I feel that it had a thing through it, you don't like to give up. It's kind of a mixed thing.

DF: What have you seen change in geology in your time, the biggest changes?

LS: At least from what I see, the geologists are spending less and less time being with the rocks. It's become a clerical job, or at least that's the view that I see, I don't think that's an improvement.

DF: No.

LS: But I think that companies can make money. Techniques and interpretation, I think the computer's helped. . . well, it should have helped in folks doing a little less of the scribing and the Bob Cratchit type stuff to get it on but sometimes I'm kind of afraid that someone will get a program, whether it's a structural program or some other program and they'll let the program go and do it and the thinking tends to suffer from that. But I think by using the technology properly you can get work. . . but I think the idea part is still there. Now what's happened, well, let's say over these 50 years there's been more analogues developed and there's things that you didn't know about. . . and I think our work is, not so much, analytically putting the little pieces together and then coming up with an answer, I mean, there's some of that but the thing is, if you see something and you say, gee, I can't talk about interpretations or whatever, gee I've seen something like that or something almost like this. So the broader the experience and probably the better defined

some of the things you're looking at are, the better off you are and then the more you can see and the more you can access. Well, that's one thing with the computer, access to stuff is improved so people can. . . So there's certainly been improvements. There's the danger, as I say, that you'll let the machine do too much for you.

#103 DF: Any regrets, things you wish you could have done?

LS: Earlier on I always wanted to get more international work and I wasn't able to get really international work, except for that little bit in Holland till after I retired. After I retired I went back to the Philippines after 40 some years and spent a couple months there working on some stuff. That was just great, even going back out in the field. When you get out of the city of Manila it was just like you'd never left. So I would have been disappointed if I didn't get more of that international stuff. But it's about right, it's about the right mix now. I didn't really have any aspirations for any higher positions. But I did find, I suppose everybody finds this, if I was a manager or a supervisor that at least I had a chance of getting some of my own stuff done. If you're too far down the pole, you still have good ideas and so on but you can't get them looked at. So it was not so much the trappings of power that I liked but the freedom you had to do something and I had a pretty good luck with that. What do I regret, I guess I don't regret very much. The fact that I'm still involved in the business, that's kind of been a hobby too of course, in a way.

DF: How much of your time do you spend working at geology these days?

LS: Maybe a day a week. We're putting together a project now so I think this next week I'm going to have to spend about 3 or 4 days on that. I'll go in once a week or if there's something else I'll maybe go a couple of times. But it's 39 kilometres from my house to the office one way. I'm pretty well satisfied. And I hope you don't get the idea I'm knocking Shell because Shell has been a pretty good outfit to work with. I mean, there are the things you don't like but as I say, I've been away from them on an official basis since '86 I guess, so what's that 17 years or something, and even those last 2 were only as a contractor. And as I say, I went back for a few months this last year and you can kind of listen to people.

DF: What was this contract you had last year?

LS: This one I had this last year was, I actually worked for Clint to try and get this west coast . . . see if we could find west coast material and kind of bring it up to. . . get some data bases organized and a few things like that. And that was fun too because I remember . . . ??? when both of us worked there at that time.

DF: Do you think that west coast can be developed safely?

LS: Oh yes. I don't think the hazard is. . . I mean, it's kind of a rough environment but manageable. But safety. . . when we drilled our first well there it was just south of Tofino and I suppose we were what, 15 miles offshore or something. There's a weather station onshore of course, on Vancouver Island and there's a weather ship that the Canadian Navy has out in the north Pacific. And then they would take these things and you'd look at the weather records, when they were designing this and they said, this is the thing, this is the pattern and this is the average height of storms. Every 100 years you might get a storm and waves this high and all this kind of stuff. Then we got out there on that rig and we were already about 600 years behind because we had 6 hundred year storms within the first couple of months because the trouble is of course, there's the weather onshore and the weather on the Pacific but you just can't extrapolate along the coast. But we didn't

have any disasters, there was no fatalities. No, I think safety, no, that shouldn't be a problem. No, I think they have that pretty well . . . I think the big thing is, is there enough out there, which you're not going to find out until you do some more work on it. You say, gee, the first wells, they should have found all kinds of stuff, well, they should have but still. . . You could put an area like that and stretch it between the U.S. border and beyond Grande Prairie, I guess, and 13 wells or something, that's not. . .

#162 DF: They had a couple of you old timers come in last year, tell me why they needed your expertise?

LS: First of all, to help find and organize some of their data. You see, the west coast operations stopped pretty well with the moratorium and most of the material had been just kind of archived, catalogued to some extent but not completely and then there had been a number of reorganizations in the company and stuff had shifted and stuff was missing. Or not missing, the stuff was probably there but you don't know how to get at it. So we were, two things, one was to help see if we could kind of put some idea, because we knew of these things and search through files and get stuff from the warehouse and work at that. Then also, I took . . . and that was going to be part of ??? problem, okay now what I learned around the world elsewhere and what you see, what do you think of some of these prospects and so on. Then so I wrote up a little bit. Or this well was drilled and it was drilled on this sort of thing, what did you learn from it and what was right or wrong with it, that kind of thing. So that was useful and there can be more of that done. And that was good, I enjoyed that. Except it took longer than they thought it should. It took longer than I thought too but gee, you start to get into something and then you realize how hard it was to find your stuff and then how are you going to leave it so that the next guy can find it. But it worked out all right.

DF: Anything else you want to tell us about your career?

LS: No, the career is good. The Nepal field work, I really like it. . . you see, there's one kind of road, Nepal is about 800 kilometres long, big mountains and then there's the India plain and there's kind of a road that runs along the edge of the foothills, more or less a road. In some places it's paved, some not. And we were looking at the sampling and for geochemistry and for all that stuff. So there was a fellow called Ross McLean, a geologist, helping me and then a fellow called Martin Fowler from the Geological Survey came out for a little bit, a UG??? chemist. The idea was to sample these things, so we made 53 traverses, gee we looked like gypsies. We had a couple of Toyotas and then a kind of big bus-like thing that the cooks and the baggage and the stuff, you know, with the springs gone. But these guys, they'd set a camp up for us here at kind of the road end and then, let's see, there was the 2 of us plus 4 Nepalese. Then we'd hike back into the mountains, sometimes overnight. Then we'd go to the next valley. So we made 53 of those traverses. It was really great. And we lived in a little tent, it was supposed to be a 2 man but we had an individual tent. The funny thing, this was in . . . credit cards and so on weren't very much good and when you had to go out into the country well, there were quite a few people, there was the 6 of us plus the cooks and everything else and buy groceries but no cheques or anything so I had to take rupees. But I couldn't leave them in a box or anything because of the thievery. So I got this big money belt and I had it just stacked full of rupees but I'd have to wear it with me every day so nobody would steal it.

But it was so bloody hot I would sweat and this money would just be soaking wet. So every night when I'd come into my tent I'd have my own bed and on the other side I'd have these rupees laid out there to dry out a little bit. It was just wild. But that was good. And also as you'd go, you'd see, in the villages and the people, just tough. And those Communists raising hell, life is tough enough for them. But that was a real good thing. We did a report and that was fun. And this Africa thing was almost a highlight because we had 2 man teams, we had a geologist and a geophysicist and we had about 3 of these teams. So the

#218 geologist and geophysicist from here would work with a couple from say, Kenya. The guys would go out to Kenya and get a bunch of data with the people and they'd bring the data back here and work on it. I'd go back and forth and set it up and then we'd have another group working in Ethiopia and tried to coordinate these things and so use a standard set of things in these reports. That was a great project, then when they ended it . . . And this was funded by the Canadian government, a CITA??? thing which they knew we had. The idea of this project was to encourage oil companies to look at east Africa because east Africa, there had been some wells drilled in the past but there was just nothing. This may be a way to help these countries get some enthusiasm going. Then these reports, it was pretty good. We made a regional report for the whole area which we've sold and provided about 350 of them now. Mainly to get the oil companies. We had this conference in South Africa, in Capetown, which was great. So each of the groups got up and did a presentation, like a paper, they talked about this. We sent invitations out to oil companies and universities all over and we got a real good turnout, a couple of hundred I guess, there from all different kinds of companies. And that Capetown is such a beautiful spot. So now, I've got to go back down because we've got some more requests for reports. Each country ends up with 2 cubic feet of reports. And we had 8 or those, 9 of them. So that's a whole lot of paper. I'm very proud of that one, that whole project. I was key in designing it and so on, we had help of course but I think that was a good one, it was probably as good as any. And working with the people and working with the people here. Anyway, so that's my geology career about now. I was a little late meeting you because I tried to stop in at the Y for a little exercise or something which I have to do. And the family is good, my wife is still doing her art stuff, I'm doing a little of this, piddling around doing some carpentry. Living out in the country there's always something to do, I mean that you have to do because it's falling apart. I still subscribe to the journals and keep my memberships up and so on. And I still like to see some of the guys, I get Clint downtown, come down for a lunch here now and then. The only old timer part of it I think, I did have the opportunity of working with horses probably longer than many did. Or some never got a chance to do, so that combination of dealing with horses and when you could actually be on the rock. Flying over it's okay, you can see a lot of stuff but it's not quite the same. Because we put a camp right at the base of the mountain and then you'd kind of climb. I guess one of the fun things. . . 1956, we decided that. . . we'd looked through one of the CSPG journals and they talked about some mountains that they saw west of Saskatchewan Crossing, Mt. Forbes and they thought that was Mississippian or something. We were looking for places to do this sampling and this geology and I said, gee, I was on a kind of foot and truck traverse then but I went to Shell and I said, gee, we'd like to hire some horses and so on. So we ended up we hired

Bruno Engler as a guide because this was some pretty steep country. Three of us, we wanted to go up there, and old Jimmy Simpson that runs the ??? Lodge, we went to his place to hire some horses. He was in his 80's at that time and he said, well, you can hire some horses but I've got to go along as a cook. So there was Bruno Engler, Jimmy Simpson and a fellow called John Geary and Terry Edgar and myself, we went to the base of the fresh field with these guys. And between Simpson and Bruno, back and forth, more stories than you could ever say. Of course, we had to climb every day, 3, 4 days and I bet that was one of these, at least 4,000', up and down, Bruno would have to pull us through. But as far as an adventure in the field, that was just great and had a great time with both those guys. And absolutely beautiful back in there of course, too.

#285 DF: Wow. Did you take pictures of that?

LS: Yes, I'll have to bring my slides out.

DF: You'd better, yes.

LS: It's been a good career and as I say, please don't take my grousing at Shell because they've been pretty good. There have been some pretty good people at the top. You know Bill Daniels was there for a long time, he was an engineer and so on, he was kind of the first Canadian president. He was out at the old timers I was chatting with him. But as I say, he was the president. Prior to him they had a fellow from the States, a really talented fellow called Paul Cartzke. He'd been the president that got us in the west coast. He was from the States but he was the president of Shell and he was good. And that kind of permeates down. There's been some pretty good folks.

DF: Good. At this time I'd like to take the opportunity to thank you very much Mr. Slind for spending this time with us.

LS: It's fun to talk you know, too much as you can see.

DF: And we'll end the formal part of the interview at this time, thank you very much.