PETROLEUM INDUSTRY ORAL HISTORY PROJECT
TRANSCRIPT

INTERVIEWEE: Ted Best

INTERVIEWER: Susan Birley

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Susan: It's November 22, 1984 and this is Susan Birley interviewing Dr. Ted Best in his office in BP. I wonder Dr. Best if you could start with where you were born and raised and just tell me a little bit about your early background.

Ted: Okay, well I was born in 1927 in Windsor, Ontario and I really lived in Ontario and went to school in Ontario through to 1949, where I graduated in 1949 from the University of Wester Ontario. I had worked in Western Canada as a geology student though, in 1948 and 49. I supposed different than a lot of geologists at that time. Most of them when they graduated started working in the oil and gas industry but I decided to go to grad school and went to graduate school in the University of Wisconsin from 1949 through to the winter of 1953. During those summers I worked for the Geological Survey of Canada rather than in the Western Canadian oil and gas industry. So there was a hiatus before I came back to Western Canada in January 1953.

#020 Susan: How had you become interested in geology? Were your parents in the industry or anything?

Ted: No, I suppose it's a difficult question, I really didn't know a lot about geology when I went to university, I just went into a general science degree and enjoyed science and that. It looked like, with Canada having so many natural resources that I should go into geology, it looked like a good future. So I just really took geology and it was Ted Link and Ernie Shaw from Imperial that came around interviewing summer students at Western that I really came into the oil industry, through really being interviewed by those two gentlemen. Really in those days, particularly in Eastern Canada, there wasn't much, what you call soft rock geology being taught, it was really geology for working in the mining industry. So there weren't very many courses in those days on soft rock geology and not really much interest from the profs. And in fact, I think there was a general feeling that if you went into the oil industry you were almost sort of going into prostitution. It was not considered to be of the same quality as the mining industry in those days.

#032 Susan: Do you think people went into geology because they expected a bit of adventure as well, or was that part of it?

Ted: Well, I suppose it was sort of a youthful sort of view of the outdoors and adventure and the rest of it. Of course, in those days there was a lot more of that type of thing, where people spent at least their summers in the field looking at geology. Of course, it's quite a different situation for geologists today, where many of them spend

most of their time just in offices rather than actually in the field.

#038 Susan: What was your summer work when you were working in the field? Can you remember the different areas you worked in each year?

Ted: Well, I suppose my summer field work particulary in the oil and gas industry was interesting in the sense that I made the transition from the old style of geology to the new style. It all happened in a very short period of time. When I was originally doing geology in 1947-49, it was in fact, done by using pack horses or canoes and a fair amount of walking and that. Of course, by it would be about 1957 or so, it was really the first time that helicopters were used and I suppose within two or three years the idea of using helicopters and canoes had completely disappeared and all the work was being done via helicopters and in the Arctic using fixed wing planes that could land really, on the rubble without needing any runways and that, so we made a transition from a very crude system it took a long time to do, to a rapid efficient system that was in some ways really very interesting, flying around, landing on mountains and in some ways we were really pioneering how in fact, to use helicopters in the mountains. And of course, really doing the surface geology, because of the speed with which it could be done with helicopters, soon got all finished so there's very little filed work now, being done by the industry. So we really went from a slow system to a modern system to one that wasn't needed now.

#057 Susan: Well, I guess in a way that was speeded up by the discoveries of Leduc and Redwater, people wanted to explore areas much more rapidly. Do you think that had an affect on it?

Ted: Well, I think it was probably more the fact that they were available. Of course, it was really being used primarily by the military in those days and it was really the industry adapting that system and recognizing how much faster things could be done, my first two summers with Imperial in 1948 and 49, primarily we were using canoes going down the rivers between the Peace and the Saskatchewan River in Alberta. And then filling in the areas in between by horses, using horses. And the idea was really to get together the basic geology of Alberta which had not been done in any detail up to then. And we were still looking for structural evidence of the oil fields at the surface. I suppose my only claim to fame is I probably went over more oil fields that were subsequently found that we didn't find any evidence at the surface. We went over the Pembina oil field which hadn't been found, we went over the Swan Hills oil fields that were subsequently found. Really the only field that had surface evidence were some of the fields in the Peace River area, so our work really didn't end up adding much to the resources of Alberta, but it was sort of the crudest method to try to find oil fields.

#075 Susan: I guess at that time, the idea of reef discoveries hadn't occurred to anybody or. . .

Ted: Well, Leduc reef had been found, I guess it would be 1947, even though there had been a reef field at Norman Wells found previously, but that they were recognized as a reef field but sort of the context, of where they were distributed within Western Canada wasn't understood and there was a pretty elementary understanding of reefs. In fact my

graduate work at Wisconsin was working on reefs that were outcropping in southwestern Ontario. So I felt that I had a chance to sort of understand reefs in more detail than what was available from the initial wells in Western Canada. One of the things that I did after, when I came back to Western Canada in 1953, I worked for a couple of years for Marathon Oil Company which was called Ohio Oil Company in those days and then moved to Triad which subsequently became BP. In the first few years with Triad, I was then working in the mountains, where the equivalent of the reefs outcrop are exposed in the mountains. So what we were mostly trying to do was understand the distribution of reefs in the basin, from a very inexpensive way of looking at them in the mountains and understanding it from a whole basin and then secondly trying to at clues as to how they could be recognized when you were close to a reef. But it was pretty elementary type of geology compared to what's done now.

#095 Susan: Do you remember any of the people who were with you on those early field parties,
who your Party Chief would be or anything like that?

Ted: Well, my original Party Chief when I worked for Imperial was Joe Gleddy,??? who
had been with Imperial for quite a long period of time. As well the person in charge of the field work was Fred McKinnon who had done quite a bit of work in the Norman Wells during the war. Of course, there wasn't a very large number of total geologists in those days, there was Fred McKinnon, Bill Clemis???, Lorne Faulkner, there were a lot of people that established themselves in the oil business, a lot of them went with other companies other than Imperial in those days. But when we were doing the canoe work, we were just two man canoes so it was really Harold Cummings, now with Petro Can, he and I did a lot of the canoe work under the supervision of Joe Gleddy.

#108 Susan: And how many different field parties were there in an area, combing it?

Ted: Well, I suppose in those days Imperial would have probably, six or seven parties in
total. We were the only one working in the sort of Central Alberta area doing the rivers and the horseback parties.

Susan: Did you have any incidents with wild animals or anything like that?

Ted: Well, I suppose the amazing thing, I remember coming down the Athabasca River,
one morning we counted the number of deer and we counted something like 90 deer just in one morning, so we used to see a lot of animals because there weren't that many, quite a long distance between towns. We would put in at one town and then go down the river and get out at the next access point. But there were long distances between access points in those days so we used to see a lot of animals. We never really had any trouble. I suppose when I look back the most amazing thing was that nobody really concerned themselves about safety. We didn't even have life jackets. And in fact, the first year I worked for Imperial, there were two geologists drowned that summer in canoes. From

that point of view, you were working in very cold rivers, you were pretty loaded down because there was a long distance between pick up points, but I look back we never really had any. . . , nobody taught us how to use a canoe. We didn't even have a life jacket with us. And really when I look back on our first days of helicopter use, it was, we maybe spent five minutes saying, don't get into the rear rotor blade and a few little things like that. It's one of the things that really has changed in the industry. I suppose it was really more the attitude, well, we're sort of adventurous rather than professionals in some ways, in the sense that you've got a responsibility to be safe. Animals always got the publicity, but it was really accidents such as canoes overturning or helicopters crashing and there were a fair number of geologists killed in both of those areas, a lot more in helicopters than there were in canoes. We never had any really serious accidents, I must admit.

#137 Susan: Ted Link was well respected in the industry at that time, do you remember your first impressions of him and working with him?

Ted: Well, it's funny, I suppose that Ted Link has the most impression, through all the years he was a tremendously enthusiastic man, he was a very capable geologist and it was a great thing to have actually had a chance to work with him and get some of the enthusiasm that Ted Link did. He really was a leader and he had sort of all through his life, he dept his interest in geology and maybe it's just getting older, but it seems there were more characters in some ways in those days, but he really was sort of a tower all by himself in many ways. And he was a sort of a rebel in many ways, he didn't really want to conform to what was considered to be, I guess in those days, the grey flannel suit approach to things. He always believed in having fun, and demanding a lot out of people and that but he had that great combination of those characteristics, that I suppose when companies get bigger and the whole industry gets bigger, it's more difficult to really reach that same pinnacle of being a bit of an anomaly.

#155 Susan: And how about Ernie Shaw, was he very active in the industry then?

Ted: Yes, Ernie was a much more sort of quiet methodical approach to it I would say. But you need that mix of people. The other person in the early days was Jack Webb, who was Exploration Manager for quite a long time for Imperial. And they kept a very high level of science, even after they took on their management responsibilities and Jack Webb wrote one of the early papers on the geological history of Western Canada that really stood up for a long time. And all through his life he always kept an active interest in geology and in young geologists and the rest of it. So in some ways, in those early ones, I think of Jack Webb and Ted Link as maybe being the real leaders in geology.

#168 Susan: And it seems that a lot of geologists did have a chance to become management at that time. Was that just because the main emphasis was exploration, do you think?

Ted: I suppose really, the oil and gas industry, particularly in Western Canada, was almost unique in that, really the technical people, the geologists and engineers ended up to be by far the most common ones in the managers and the most senior managers. Of course it was a day when the key was finding oil so it was a logical progression that the

oil finders became the dominant people in the company so that they moved rapidly through companies. I suppose the next stage was almost, now we're much more, certainly in Western Canada into a production phase so people knowing the details of engineering and that, of course, were successful and maybe came along a little bit later and if anything, now, the top executives are more likely to have an engineering background than a geological one. So we went through a transition from explorers to maybe production people being dominant. It would be interesting to look down the road now, because what's happened from 1975 on, the political impacts of things became dominant, so maybe it won't be the technical people that will dominate companies in the future. It will be people that are more keyed to government policies, government relations, understanding how the world might unfold, so maybe lawyers and economists will become dominant in the future. And of course, marketing will be much more important, so it could be marketers too which maybe is more typical of other industries. So we really have gone through a transition as to the type of skills and the people that have dominated the companies.

#196 Susan: Was there ever any tension that you can remember in the early stages between the technical, scientific people and the people who work in the field, the people who have more of a background in experience than education? Was there ever any problems getting along and seeing the same objective or anything like that?

Ted: No, I don't think so, at least I can't remember any. I suppose one of the great things about the oil and gas industry in Western Canada was really, that people treated people in a professional fashion, not only within companies, but between companies. There was sort of an honest, straightforward approach in all of these areas. Great friends developed out of that and you could truly believe somebody when they said something. It was a very ethical industry. One of the blows that probably individuals felt, when the National Energy Program and the attacks on industry came along in the late 70's and early 80's was this sort of inference that maybe we weren't completely honest and ethical. But I think it's one of the great things has been the high ethics and the high professionalism. So it wasn't really a period of conflict, you had differences of views but they were aired and tried to be resolved in a realistic fashion. So I don't look back as it being a time of conflict or anything, I think we were all striving to accomplish the same things. We worked together and laughed together. It was seeing it grow up from almost nothing right through that stage but it was done working together and doing it in an honest fashion. And I suppose the other part of it was that the rapidity of change. One I can remember is when I first came to Calgary in 1953, was the Canadian Society of Petroleum Geologist had luncheon meetings and we had it in a restaurant on 8th Avenue just west of Centre Street and the whole membership could be in the one restaurant. In those days there probably were 30 or 40 people at it. And now if they have a luncheon, people are lining up on the street to get in and a couple of thousand people attend to it. So there was an explosion really, of the technical needs of the industry. And it changed, not only the needs but the way of doing things changed so much.

#238 Susan: And you said that the state of geological knowledge at that time wasn't really that advanced, it hadn't really changed that much, I guess until the early 50's, you didn't really many changes taking place in theory or anything like that?

Ted: No, we were really relying very much on what really hadn't changed, I would say back into the 20's and 30's when people first arrived and through almost to the mid 50's. In some ways, Western Canada was a leader in looking at how did the rocks form, what was the relationship, what was the evidence of being close to a reef or being close to a sandbar that could be oil bearing. And in those days, we were really going back studying the details of the wells and the development of what we call stratigraphy. A lot of it was being done in Western Canada. There were people like Ralph Edie and John Anderchuk that were spending all of there time looking at cores and samples and really starting to look into the detail of how the rocks were deposited and trying to predict what would be the changes. And the work that was done here was being published quite early in the Canadian Society of Petroleum Geologists and those articles are really classic articles and the foundation for a lot of the more rapid development that took place in the 60's. And many of us had been trained as hard rock geologists, or mining geologists, we didn't have a great background. We were a sort of self help group and I think the SCPG was a major force in that where we started an early publication. We had lots of noon hour meetings and I suppose on of the things I was pleased with, I really started a one week course up at Banff that we called Advanced Geology Courses, where we took a specific subject such as carbonate deposition or reefing or geochemistry and tried to find the world's experts in those areas. We came to Banff and then we had maybe 30 or 40 people and we tried to get the best 30 or 40 people in Western Canada as the students. And it was more than just a course, it was really a seminar, a dialogue between people. I think it started us down the road to increasing our knowledge but a lot of it was really pulling ourselves up by our bootstraps to develop our knowledge.

#285 Susan: And what do you think the role of the Geological Survey was? I know they did a lot of early surveys in Alberta, but do you think they helped speed things along by their reports?

Ted: Certainly they had done the initial mapping, so they were the foundation for the oil

companies doing further work and they were basically doing surface geology then. It was a switch for them to in fact, start looking at the data from the wells. For instance, Helen Bellier was one of the early one there, where she was really being able to sit back and look at the geology of the Devonian and was starting to piece together some of the stratigraphy there so the Survey was making a real contribution. And as well, they were doing the paleontology which allows us to establish the age of the rocks so we could look at things on a more regional basis, so the Survey were certainly an important contributor in those earlier days, when we really needed every little bit of information.

#305 Susan: And when you did your Ph.D. thesis, what area did you concentrate on?

Ted: Well, I was doing that in southwestern Ontario. In fact, it was on Devonian reefs,

the same ones that produce oil out here, the same age, but they were exposed at the surface so it was an area where you could actually see the reefs. So it was quite useful to me, the fact that I could see what was happening in more detail than you can get from the wells.

#315 Susan: So when you joined Marathon, can you remember who hired you or who the people were in charge at that time?

Ted: Well, actually I was hired by the U.S. company when I was still going to school in the States and then came up to Canada. Really Marathon, or Ohio in those days weren't doing very much, they were active in Saskatchewan but it was really Tidewater that was the operator. So actually in hindsight it worked out great for me because I spent a couple of years without any great pressures on me that I could spend all that time looking at the well information and available data so I though I developed a fairly good idea of the total basin. I'm not sure I made any contribution to Ohio Oil Company though. Then I went with Triad which was an interesting one in that Triad was really formed by the Tanner brothers who were local men that were financiers and had bought some initial property, had a little bit of production and then BP had decided they were going to come into Canada. It was a multi-national that hadn't arrived early like the Chevron and Shell and that in the 50's, so they really arrived on the scene in 1954. Well a lot of the acreage was tied so they formed it through buying an interest in the Tanner brothers, Triad Oil Company which was then owned about 65% by BP and 35% by the Canadian public. So they arrived late on the scene.

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Tape 1 Side 2

#008 Susan: So what was their objective, was it much different from the rest of it much different from the rest of Alberta's companies?

Ted: Well, BP had really developed into a big company from it's finding of oil in the Middle East where they found it in large structures, particularly in Iran. So when they arrived in Western Canada, they could look out the office windows in Calgary and see the structures in the foothills and there had been the Turner Valley oil field and there wasn't a lot of activity in the foothills in those days, so their feeling was they really needed to concentrate on something different than everyone else had. So their major emphasis in those days, was on the foothills. What happened of course, in the end was it was gas bearing, not oil bearing and they had some troubles with really good productivity. So it was probably a good technical idea but the difficulty, I suppose it wasn't untypical of naiveness, that they set up this company and they borrowed money to explore int he foothills. And it was a very expensive and high risk area so their emphasis all through the 50's was foothills and by the end of the 50's they'd used up their $25,000,000 of borrowing on drilling gas wells in the foothills and were very close to being broke in fact. So they had a good technical idea but it was a bad commercial approach on it.

#024 Susan: What was your position when you first hired on with them?

Ted: Well, I was a geologist for them working on the foothills and I, in fact, mostly went back into the mountains and was looking at the outcropping areas of the potential reservoirs to determine what would be the likely type of porosity and permeability in the foothills area. So I was back doing some pretty basic geology, doing some mapping in the foothills and there's no doubt, PB knew a lot about structure, but they didn't know a lot about stratigraphy. In fact, when they really went into the foothills, I can remember the first year I went back into the mountains, I wasn't very impressed with the porosity and permeability. I thought it was going to be not a very. . . , it wasn't going to work out very well and in fact, our first wells we then drilled had very los gas flow rights. We found some of those early ones, like Stohlberg??? and Lovett ??? River, it would be in the late 50's and in fact Lovett River didn't go on stream till last year so it was a lot of early investment, it took a long time to make any money out of it.

#036 Susan: Do you remember, had theories like the folded fault theory and things like that, I think they were the sort of main theories that you followed at that time or had they come about yet?

Ted: That was Jim Scott, who had developed the folded fault theory which was quite an interesting idea. Jim probably wouldn't agree with me, but it was more of an academic interest except for, he did use it in one field at Plateau Mountain, the theory of it being folded fault did work out in that area. But where we were interested, which was called the central foothills area, there were folded faults but we didn't expect them to go into any depth, so it was trying to use fairly crude seismic techniques. But they were mostly seismic techniques that had been developed in Iran. I suppose the funniest one was that, in those days, Triad had a lot of the people that worked here were BP people that had worked in the Middle East so they tried to apply more than the scientific methods, they just tried to apply the overall ones. And I can remember there was T. C. Richards, who was Chief Geophysicist, who decided the way to do geophysics in the foothills was to use horses rather than trucks and track vehicles so pretty soon we were trying to do it with horses. The trouble was there wasn't that much feed so then we had to hire horses to haul in feed for the horses that were doing the seismic work and then we had to bring in horses to bring in feed for the horses that were bringing in feed for the horses that were supposed to be doing the work. Pretty soon I think we had every horse in Western Canada working on our geophysical ones. I can remember our partners, Gulf and Royalite, I think they were screaming, and rightly so, about our seismic costs. They were something like $4,000 a mile, mostly horse costs. So it took them awhile to adapt to the local situation. I suppose it isn't a surprise but there's a tendency for people from the outside to come in and say, we've got a better way to do it. It isn't always a better way.

#062 Susan: Did they use helicopters in seismic?

Ted: Well, we did start using helicopters in the 60's. In the 60's, Triad was looking for gas up in northeast British Columbia, what we call the Bull Moose Seconca area. I think we were probably one of the early companies to try to use helicopters in geophysical work in there. It is a very rough area, in fact some of our lines, we had to rope people together, it was so rough. So we were probably one of the first companies to in fact, use helicopters in our seismic work up in northeast B.C., which eliminated the need of putting in a lot of cut lines. And it was a very inaccessible area when we started in the foothills of northeast B.C. there weren't even topographic maps in 1960 and some of our earliest work was mapping the geology and mapping the topography and building the first roads into that area. It's really quite a mountainous area. That was one area, it's great grizzly country so we did have a lot of bear trouble up in that part of the country.

#077 Susan: So they just start in the Alberta foothills and work their way north?

Ted: Now there had been, in the foothills area there was a gradual working it's way north but out in the plains area, B.C. had gotten started fairly early with Pacific drilling wells up in the Fort St. John area. One of the ones I can remember when they were first looking for export of gas from Fort St. John area down into the northwest United States, the initial hearings, there were great concerns whether people could really operate up in here in the winter time and whether pipelines were going to operate under all that snow cover. Looking back it's been a pretty small problem but it was looked on by the U. S.

authorities as a major problem trying to operate in the winter time in the Fort St. John area, which is everyday occurrences now. So they had worked their way quite far north out in the plains area but really the foothills were quite a bit slower developing/

#088 Susan: And so they were involved in the plains in Alberta as well.

Ted: Triad? Yes. What happened was that our Alberta foothills hadn't been a great success and in the 60's we were saying, look if we're going to find any oil and gas, we're going to have to compete directly maybe, and do the same things everybody else is. And we had gone through most of our money as well. So we then switched to working in the plains area and the more convention area. I guess the turning point for the company was in about '62 when we participated in the finding of the Edson gas field which was a two trillion cubic foot gas field. We got on stream fairly quickly and that stared giving us some cash flow. Until Edson was found we were in financially, a fairly difficult place. I think in 1962 our revenues were $2,000,000 and now we're up to about $150,000,000 of cash flow and capital expenditure. So we've come a long way since 1962 but we were really on the brink so it was really Edson that turned around Triad.

#103 Susan: And who were the people in charge, the executive when you joined them in '55?

Ted: Well, it was mostly people that were seconded from BP. I'd say from a technical level, the Tanner brothers were the President and the Chairman but they were really financial people rather than operating people. And then Grant Sprat who came from Trans Mountain Pipeline became the President for a few years. Then it switched back to seconded people again. So through the 60's it was always seconded people that were at the top of company. But in the 60's, the switch was the technical people, technical programs became Canadian people.

#115 Susan: Did Triad or the Tanners Company have any production when BP acquired it?

Ted: They had a little bit of production at Redwater. Even by 1962, it was only $2,000,000 a year of revenue, so it started from a pretty small base.

Susan: And you said. . ., was Jerry Henderson. . . Oh he wasn't with this company.

Ted: No, Jerry was with Chevron and when I talk of Ralph Edie and John Anderchuk on the sub-surface I always think of Jerry Henderson as one of the people that understood the structure of the mountains and the stratigraphy of the mountains. He and Ken North really did some outstanding work in the early days. One of the things we did with CSPG, in addition to our luncheons and courses was we used to have field trips every year all through the foothills and the mountains. I can remember well some of those early field trips when Ken North or Jerry Henderson would have these great photographs of complex geology and we'd be standing in front of the mountain and they'd be explaining the geology and you could see it right there.

#131 Susan: I guess training for geologists was improving all the time too. You mentioned one course that you started, were university starting to develop better programs as well?

Ted: Yes, certainly in the western Canadian universities, prior to 1947 or so, there was a sort of basic group of geologists that were interested in. . ., sedimentary geologists at the University of Alberta, Charlie Stelk ??? and some of the other ones. People at the University of Alberta had more background in soft rock geology but there wasn't really that many other universities across Canada that had that. Through the years, there's probably more geologists have gone into the oil and gas industry than into the mineral industry. So now, they're teaching the fundamentals of geology rather than calling it soft rock or hard rock, I don't think we really hear those words to the degree we used to. But they're really teaching the fundamentals of geology much more which includes both the igneous and metamorphic side as well as the sedimentary side. So there's just a lot better foundation than what we had in those days. We had good geology departments in Canada in those days but they were pretty limited in the fields in which they were doing. And I would say they were really undergraduate department and if Canadians went to graduate school they tended to go outside of Canada to go to the graduate school because it wasn't a high level of research going on. Whereas it's not true today, there's lots of the departments in Canada carrying on fundamental research. But in those days it was really a sort of undergraduate and pretty limited areas in which you were being taught.

#154 Susan: Did you feel that going and getting your PhD was going to be an asset at that time?

Ted: I had wanted to do it and in 1949 there was a great demand for geologists, but I had really wanted to go on for a PhD and so I thought, it's not going to do it. When I came back in 1953, the people that I had worked with in '49 had all advanced quite a bit. I remember, I think when I graduated in '49, Imperial offered me a job at $225 a month and in 1953, after I had gone to school for another 3 1/2 years, they offered me $225 a month. So there wasn't really any financial benefits. In fact, I really had lost in the sense that the other people had been here 31/2 years and knew more about the oil and gas industry, had got promotions and the rest of it, probably some salary increases, although salaries didn't increase very rapidly in those days. It was just a personal satisfaction that I wanted to do it, and really when I went to grad school I recognized that I didn't want to be working in a university. It's sort of the union card for universities rather than for companies. But I've never regretted it, in the sense that, if I hadn't done it, I probably would have been unsatisfied that I didn't go ahead and do it so I'm pleased I did it but I don't think it ever made any difference financially at all to me, or any difference in being promoted or anything like that.

#177 Susan: Did you feel like there was ever any easy oil? You know, like you've heard the expression, all the easy oil has been found, did you ever think it was easy to find oil in Alberta?

Ted: Well I think probably in the early days, it certainly was a lot easier than now, but the other side of the coin is the tools that we had were a lot cruder. Certainly the kind of data that we had from seismic was a lot. . ., we were using some really gross approaches to try to locate reefs. You couldn't really locate sand bodies on reefs, so today you can

actually do a pretty good job of defining sand bodies, certainly reefs will show up. But the other side of it, you're looking for much smaller reefs in aerial extent and much smaller ones in vertical extent, and the competition is fierce. So I think it is a lot tougher today than what it was. The technical requirements of the individual is much higher than what it was when we were first starting out. I think it truly is a tougher one, not only from a technical point of view but there's everybody else that's out trying to find the same thing.

#196 Susan: I guess seismic in the 50's was mostly, was it a two track recording device? Not very many tracks anyway.

Ted: And it didn't really have a digital system. You weren't recording digitally so that you couldn't really massage the data to the degree that you can now. It was really into the 70's before we had that burst of advance in the seismic. I would say the changes in our geological capabilities came along maybe, in the late 50's and the 60's and it was not until the 70's, when we had the capability of computers and to record digitally in the field that we've had the heyday of the geophysics came along. So it really came along quite a long time after the advances in geology. Advances in geology have been probably more in detail. . . ., it's peculiar, in some ways we're getting down to detail and the other side is sort of looking at the whole structure of the earth, what type of structural relationships are going to be petrolipherous??? basins. All of that sort of developed with the theory tectonics, which made a complete reversal of how the world was acting in a growth sense. I would say as far as Western Canada came, in geology, the advances were really in the 60's, the biggest advances anyway.

#222 Susan: What would have been your principal tools in the 50's for finding oil, you would use seismic and then other than that, what did you have?

Ted: Well, seismic really was the tool, where we were trying to find reefs and trying to find new fields in the Mississippian where they were eroded and formed escarpments. But you had to have fairly big features in order to see that. And then I would say, what was coming along then, we were starting to understand the total basin. Maybe we could use an example, in the 50's the Mississippian, what we called sup-crop fields, Harmat??? and East Harmat and all of those had been found. We had a regional idea as to where that same edge was, where you might find other accumulations was known, but you couldn't really map it geophysically. In some ways you had to drill a certain number of wells to try to define it. For instance, the Edson was the same type of accumulation and our first well we drilled had about 2 or 3 feet of gas pay in it so we had to drill down ??? We didn't really use seismic, it was really geology, but it was more regional type of ones. So you had to keep on drilling wells and some of those more subtle plays to then give you enough information to redo the geology and drill another well. So in some ways the 60's were much more of a period when you were using sub-surface geology information from wells to then drill in other places. Because the obvious geophysical ones had been found and it wasn't that great advance in geophysical techniques in the 60's.

#250 Susan: I guess the policies of the Conversation Board in insisting that information from wells was shared really helped as well, did it?

Ted: I would think that was one of the other, where we really were a leader in the world on that. And it sort of ties in with what I said, we were doing some of the best stratigraphic work, new concepts that were being developed in Western Canada. One of the reasons for it was the ERCB and that we had a system where the cores had to be retained, the well samples had to be retained and then all of that information became available to other companies within a year. So we had high quality information that was preserved, in a lot of places it wasn't preserved. And then secondly it was then made available instead of being kept secret, in contrast to a lot of places in the world and in contrast to the mineral business. We had available to all of us, quality information, easily accessible, where the ERCB had available rooms where you could go up and look at the well samples and the cores and the rest of it, so we had this great data base. And the Board insisted on a certain quality of logs and that type of thing, so they made sure there was a good standard of information. They preserved it and then they made it available. There were lots of other aspects that was good about the ERCB but I think that really allowed us to advance more quickly and develop some of the fundamentals because of what they did right from day one almost.

#280 Susan: Did you feel that the government itself supported industry in the 50's?

Ted: Well, it certainly was a lot more benign than it was in the 70's. We had stability in those days, we had stability of energy prices, we had stability of regulation. We much more knew or thought we knew anyway, how the world was going to unfold and we had technical uncertainty but you might say the economic factors were well known. And the regulatory and policy factors were well known so we really only had the technical risk in many way. Though I think in those days we really didn't talk about economics, like now, it seems to be the number one subject. And really what we were using in those days were our skills, we were concentrating on what we were skilful at, finding oil, producing oil. And then in the 70's, when we had our rapidly increasing prices and rapidly changing government policies, we really didn't use our skills anymore, we were spending our time worrying about taxes and royalties and government policies, and how to devise a deal that gave us the most tax grant efficient systems. Well all the people in the industry that had been so successful at finding resources, we were really devoting our efforts to try to get the policy aspects changed or to sort of optimize that so we weren't really using our talents anymore. And that's I suppose one of the sad things that we've had to concentrate on our. . ., as a country, what you want to do, is make the most money at doing what you do best, and we were no longer doing what we do best and that was finding and producing oil and that's what Western Canada has really been good at. It wasn't just in our exploration areas, but production, we were leaders. Once again the Alberta government policy, where the rate of production was related to your recoverable reserves, so companies very early tried to get up their recoverable reserves by putting in good conservation systems, water floods and later missable ??? floods and the rest of it, so really the policy once again, made us leaders in conservation techniques and production

techniques. Of course, it's easy to criticize the government but when we had that stable environment we were really making great technical progress. And then when the world became destabilized and then policies became destabilized, we really have concentrated on the wrong thing in some ways.

End of tape.

Tape 2 Side 1

#009 Susan: I wonder today, if we could just start with, or continue on with your involvement with BP in the 60's. You became Chief Geologist in 1960, were there many changes for you in taking on that position from mostly looking at things from a field point of view before?

Ted: Well, there certainly were a fair amount of changes personally, but I suppose the biggest changes was really as a company. When they came to Canada they were basically managed by secondments from overseas and primarily from people that had been experiences in the Middle East. The big thing they had been doing of course, was looking for accumulations similar to what had been in the Middle East which was a very expensive and high risk type of ventures and the commercial structure of the company was such that it couldn't stand that type of expenditures. They had a good technical one but they didn't really consider it in terms of financial and commercial implications maybe as much as they should. And they had spent much of their money that they had available through their debt in the 50's on exploration and if we were going to survive we had to start an exploration program that was more similar and lower cost to what other companies were in fact, doing. I suppose the irony of that was that we had in fact, acquired a lot of the near shore, off shore, Beaufort Sea, McKenzie Delta area but it really was beyond our financial capabilities even though the technical idea of the delta out there, which is now in the 80's, being pretty thoroughly explored, we didn't have the capability to undertake those types of things. So we had a major switch in what our approach was and started looking in the Western Canada basin for exploration opportunities. At the time we only had about $2,000,000 revenue and we were spending every cent of it exploring. I guess the first breakthrough that we had was participating in the finding of the Edson gas field which ended up to be something over two trillion cubic feet of gas and it was one that was brought on under production very early. On that one, the interesting thing is we were selling the gas for about, I think it was about 16 cents a thousand cubic metres in contrast to today. And that was a sort of set price for many years and it didn't change for a long period of time. But that started giving us some revenue for the first time. But we were still really a small company, I'd put it down at the bottom end rather than in the middle. I suppose one of the most frustrating things that we had in those days, was that we had some good reef ideas but we didn't have the money available to in fact, acquire the acreage. One particular one I can remember was West Cabob gas field which had a lot of liquids in it, this turned out to be a very profitable field. The southern

extension of that field, there were three companies drilling wells to it, the Fina group, BP and Chevron and all three of us made more or less simultaneous discoveries at the time. But we ended up not buying it, nor did the Fina group and in fact Chevron bought it. In those days we had very complicated skid bidding arrangements that allowed people to keep on upping their bid even though they were sealed bids. It was really more similar to, you might say, a normal auction where you could keep upping your bid till finally the rest had to drop out. Some of the companies had developed really sophisticated systems on that bidding but when it came right down to it, we didn't have the capability of spending the amount of money that it warranted. And Chevron, it ended up to be a very important asset to Chevron. Then the same thing happened to us on the Goose River, Beaver Hill Lake, field, where we posted the acreage and had the concept but Gulf in fact outbid us. So in the 60's we were a company that had I think, fairly good ideas, but we really didn't have the financial capabilities to follow up. What we did concentrate then, was on Eastern Alberta, in the Shauvin ??? area, where we didn't have much competition and developed a fair amount of oil production looking for small cretaceous oil fields in there that build up our cash flow from our oil production as well as our gas production from Edson and a few other discoveries. So in the 70's we were trying, by bits and pieces to build up a reasonable level of production and I suppose it wasn't until the 70's when it started becoming larger and of course, the price increases helped us, that we became a more aggressive explorer, primarily looking for gas. So we were back into the foothills again after we left them in the 50's. Our major area of interest then was really up in the Seconca-Bull Moose ??? area of northeast British Columbia. We were I think, the first company that tried to use helicopters to do seismic work. . ., the country was very inaccessible in those days, and we made a couple of gas discoveries on those fields plus some other ones, so it started making an important impact on us in the 70's. So we did quite well in the 70's on the gas exploration.

#074 Susan: When you were up in that area, the Seconca area, did you have much, was there much evidence of the coal possibilities then or did you recognize that?

Ted: Well, I suppose that's one of the ironies, we were really the first explorers in the Seconca-Bull Moose area and in fact, did the first geological mapping as well as the first geophysical work. I suppose it's a good example of us not thinking laterally but sort of, focussing on the idea of finding gas, never really gave any consideration to the coal, even though we had noticed it. So we were completely beaten out by other people taking out the coal licenses. So we didn't really even think of it which is I suppose, one of the difficulties with companies, they tend to focus on something and maybe some other thing that's far removed doesn't sort of precipitate some action. In hind sight it was one of the things we should have thought of but in fact, we didn't. What we were doing, even though we in the 60's, didn't have a lot of money, we still tried to continue to look at some of the more far distant areas. We kept on doing mapping up in the Northwest Territories, up in the Arctic Islands, so we were getting a good basic understanding of the geology even though we didn't have the financial capabilities to spend a lot of money up in

those areas. So we were still having a fair concentration on geological work, primarily measuring sections and that type of thing and continued that work right up into the Arctic Islands. The other one we did do was really . . . , on the development of the new concepts of basins related to the plate tectonics, built up a large acreage position off Newfoundland, Labrador, filed on acreage in there just on a geological concept. I suppose one of the things about the industry was, we were really, all of us were too optimistic as to how fast the technology would move along. I think very few people thought if they had made discoveries such as what was made at Hibernia, it would take, probably till the end of this decade to actually develop those. We were probably pretty optimistic as a geological foundation as to how we could overcome some of the problems associated with those areas.

#104 Susan: Did you ever consider going into partnership, or did you, with other companies?

Ted: What we really were doing, it's now the title of a book, Other Peoples Money, what we were doing was getting the acreage ourselves at quite an early stage when the costs were low and then bringing in partners to pay for the program. In the case of our East Coast acreage we only spent $600,000 ourselves and then we farmed it out to the Columbia Gas group of companies who spent the next $25,000,000 because we didn't have much money, then we refarmed part of our interest out again to PetroCan when they came into it for another $13,000,000 so we spent $600,000 and we got basically $40,000,000 spent. So we were able to maintain our position through the 70's in those frontier areas and really we did the same thing in the Arctic Islands. We took on some obligations and then would refarm them out to a third party so we could maintain that. That's really what we did in the oilsands which is an important area to BP today. We obtained that acreage that we're now doing our Wolf Lake project on in the late 60's that idea that insitu??? recovery of oil would come along. I remember that one we bought for 16 cents an acre and then got other people to put up a lot of the money on experimental work so that BP's expenditure on oilsands was very low until we started our Wolf Lake project in the early 80's. We didn't have too much money but we were able to be like a major company in the sense that we were represented in the longer term areas but in the meantime had to use other peoples money to maintain our position in that area. I suppose as a company we probably are proudest of our insitu oilsands area where we got in there early, not quite as early as Esso, but we maintained a research program through there through fifteen years doing a number of different pilots and then brought it into a commercial status in the 80's. So it's been a long process, about twenty years to see commercial development of insitu going ahead.

#134 Susan: I guess during the 60's, you yourself were promoted. . ., what were the different positions that you held during the . . .?

Ted: Well, one of the things I'm pleased with is not just what I did with the company, but also the external things. In the early 60's I was president of what was then called the Alberta Society of Petroleum Geologists, which was subsequently called the Canadian

Society of Petroleum Geologists. I suppose the biggest project we undertook in that group of people was the Atlas on the Geology of Western Canada, which was a massive undertaking for a local society. No local society had ever undertaken that, it's sort of a portfolio sized one and it's still probably the bible for the basic geology of Western Canada. Bob McCrossan ??? was the editor of that one and Bob used to work, I think every night he was working until 1:00 or 2:00 bringing it together. It's out of print now and I see they're considering reprinting it almost twenty years later, it's going to cost 3 or $400, I think it used to sell for about $25 when we published it. But it's still really an applicable book for Western Canada geology. It was really a cooperative effort between a lot of individual geologists to get the basics of the basin published. In my own case, I subsequently became Exploration Manager in the 60's for oil and gas and then in the 70's, after the first oil price rise in '73, I think there was a general concern as to whether we were going to keep on finding much oil particularly. So ourselves as with a lot of companies, diversified into some of the other naturally resource areas. We started up a modest mineral program, started up a modest coal program, so I became responsible for all the natural resource areas in the 70's, which included some coal and some minerals. And then became responsible for the production side of it as well.

#164 Susan: And were you involved very much with CPA or did BP see themselves as a major?

Ted: Well no. I suppose the last sort of, change in my career is really becoming involved

more in the policy of industry. What had happened previous of course, the governments were pretty benign to their role in it, royalties were stable, there wasn't any special federal taxes. And it wasn't until we started having the oil crisis and then governments began changing the royalties and then ultimately of course, with the National Energy Program, the federal government brought in their own taxes on it. We went to the stage of having controlled oil and gas prices, rather than letting the market set them. So I became much more involved in the CPA because it became a much more important body because industry had assumed that if we did a good job, found oil and gas, found it economically and developed it, that was good enough. But the public didn't perceive it, so we really had to change to getting the public to understand the oil and gas industry. Up till then, we had really been reacting to what governments were doing or what the public perceived and what we were trying to change was to be proactive, to get the public to understand more, to anticipate what was going to happen and try to influence what governments were likely to do. I suppose it was about '79, '78 when I became fairly active in the CPA and then was the Chairman of the CPA in 1983-84. So I've devoted a lot more effort in the 80's to really trying to understand governments who've got different problems than we do and to try to have some impact on what governments will do. So from that point of view, it's sort of interesting, from a straight technical one and being involved outside of the company in technical societies to a change where my major involvement the last part of the 70's and the 80's has really been as part of an industry group that are speaking on behalf of industry.

#198 Susan: Do you feel that government is coming around to see industry's point of view more?

Ted: Well, first of all the style has changed, where before it was being done in isolation,

they were deciding what was best for the industry, that they knew what was best for Canada. Even in the end of the period in which the Liberals were in power, they were recognizing that you get better decisions by having a discussion and understanding of each others side of the problem and that they don't have all the answers. And then we've had a quantum jump since the Conservatives have been in power, of this approach of discussion and try to build consensus. Of course, if you can build consensus and get people to agree, this is what we should be doing or trying to do, it's much more likely to realize those end results than we are if it's imposed on us. And that's really what the Federal Government were trying to do was impose on industry, what should be done. But it didn't work and I think they were recognizing that it didn't work. Certainly in the case of the public, I think they understand the industry better now. We're talking about such huge sums of money, I think it was always hard for the public to understand the industry, that it was a risk taking business, and it would take a lot of money because it was risk taking. So the public understands it. And in the end of course, governments only do what they think the public wants them to do so it was important for us to discuss this with the public, doing it through speeches, doing it through advertising, doing it through a lot more discussion with governments at all levels. So I think we have really come a long way since 1980 and the late 70's in that area. It was really the industry having to change as well and to recognize that we couldn't be dealing in isolation even though we thought we were doing a good job and I think we were doing a good job. It doesn't do any good if you're not accomplishing what governments perceive you should be. The major change. . ., I suppose the really big impacts have been the price of energy going up so much in the 70's, so that when we were all thinking in terms of huge oil fields, huge gas accumulations. Of course, we can make money on much smaller accumulations now, but then the second one was really the impact of government on us and that was a logical reaction of them realizing they just couldn't leave it to be handled by the industry, they went too far. So I suppose now the recognition that we have to work together with the public and together with the governments has been the big change in the industry in the last 8 or 9 years. And I think that's going to be with us for a long period of time, so it's sort of the political, economic inputs have become more important than the technical ones. It's frustrating in some ways, in the sense, that what we thought we were good at was finding oil and producing oil as an industry and doing it economically. Where now what is really important in fact, is to understand the taxes and the complications of royalties and regulations. So that we're not as productive from that point of view but we've changed and recognized that importance of it.

#251 Susan: So do you think the future energy, the emphasis of the source of energy in the future is still going to remain basically with petroleum or what do you see, say before the end of this century, do you think it's still going to be the major energy source?

Ted: Well, I think it will be a very important one. One of the things in the 70's that came, and it was really precipitated by the club of Rome work, that we were going to be running out of resources and the sky is going to fall in on us. What tended to be forgotten was the fact that if something becomes scarce, the price goes up so the demand goes down and then secondly because the price has gone up you can find smaller accumulations. So as long as the market's allowed to work, we will find more oil and people will use less of it, but it's going to continue to be a very important product to us. And of course, Canada is unique in the sense that we've got that huge oilsands resource, we've got offshore potential, plus the Western Canada basin. There's probably not another country in the world with that great variety of hydrocarbon potential. They might have one or the other but to have all three of those, we really are unique.

#272 Susan: What do you think were, for yourself, some of the more significant periods, say in your career?

Ted: That's a tough one. It's been sort of a gradual change from a technical person to a management one, so I suppose the most interesting part of my career has been the last couple of years when I've been, as Chairman of the CPA, been a spokesman for industry within the public and in the government. And how much I've had to change from being a technical person to try and look at it in quite a different perspective. All of them are fascinating, when you are doing geology and doing exploration, there was a tense interest and the great joy of making a discovery but I must admit this new role I've had is and enjoyable one because you can see some impacts. We've been able to accomplish some changes and I think it's helped the industry as a whole as well as my individual company. I think it's better for the Canadian as well. So I suppose my role in the 80's as an industry spokesman has been my most satisfying one.

#296 Susan: Are there any other things you'd like to add before we finish up?

Ted: I don't know whether I've been too generalized or not for you.

Susan: No, I think it's interesting.

Ted: I can't think of anything right at the moment anyway. I don't know whether it's very much of a contribution or not.

Susan: No, it's been good. Well if there's nothing else, I don't know. I guess, what are BP's directions in the future? Do you have any changed outlook for BP or are they still going to carry on?

Ted: Well, we're a lot different company than what we were in that, certainly one of the major thrusts for our company and where I guess I would classify ourselves as a large, middle sized company now. What we did do is prepare for the longer term in the 70's and the late 60's and we've got a good position in the oilsands and it's an important investment area for us so we'll have a lot of concentration on the oilsands and we're optimistic we're still going to find oil and gas in the Western Canada basin. That's not going to come to an end. There was what I call the gold camp theory that was prevalent in Ottawa in the late 70's that we were not going to find any more oil and gas in Western Canada and we had to look in the frontiers and in the oilsands but in fact, we bring in new

technical skills to Western Canada. Smaller fields are now economic so I think in Western Canada, we're still going to be looking for oil and gas twenty years from now, but the oilsands will be a lot more important to industry and to Canada in total. And the frontiers will probably become more and more important although I think there's some uncertainty when that's going to happen in some of those areas. We hope to get back to drilling next year in the frontiers as well.

Susan: Okay, well thanks for your contributions.