

## PETROLEUM INDUSTRY ORAL HISTORY PROJECT TRANSCRIPT

INTERVIEWEE: James Law

INTERVIEWER: Robert Erickson

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### Side 1 only - 40:00

RE: This is Robert Erickson at my residence 4320 Coronation Drive SW in Calgary. The date is November 26, 1991. I'm going to interview James Law, Geologist. James Law. I'm going to turn the microphone over to him now and let him tell us about himself.

JL: I was born in Scotland, Edinburgh, Scotland 1923. My dad was a traveling salesman and I was educated there, went to Edinburgh University and took a Bachelor's Degree there. The reason I was - it was a pure science degree - the reason I got in, I was attracted to geology was that it would enable me to travel and I knew from talking to their studies director that geologists were going all over the world, and that's what I wanted to do. I really had a burning desire to travel. That's what took me into geology and I've done a fair bit of traveling because of that.

My first job was in the Middle East with the old Anglo-Iranian company, subsequently became British Petroleum, and I was in the Middle East a little more than a couple of years, mostly in Iran, which was a fascinating country, fascinating experience both from a cultural point of view and the people, and geologically it has to be one of the most striking areas of the world with huge structures, salt tectonics, colored mountains and a really spectacular place, you know, the structures there are huge, your well spacing is in miles, the pay zones are very thick. There's one I believe ??? is 7,000 feet and that is caused by the fact that the anticline has one side which is vertical and then the other side is more gently sloping but on the vertical side, you can get tremendous thicknesses of pay, thicker than the reservoir which itself is maybe a thousand feet thick.

So that was a fascinating experience that I went to, I did field geology there as well as well site. The field geologist, I'd say was spectacular and I was working with the local tribespeople who are very colorful people, and of course, they didn't speak English. So a lot of that time I was speaking colloquial Farsi, which I had to just to survive. The wells, the well side work was different. It was not done actually on the well site, it was done in a lab in the field office and the most vital thing there was to detect the cap rock, now the cap rock on the Ismari?? which is the main reservoir, was maybe a hundred feet thick and in hydride, with certain crystal developments in it, and if you went through the cap rock without casing you find yourself in a reservoir, high pressure reservoir often badly fractured, you could lose circulation right away, and then you had a blowout on your hands. So it was vital to detect the cap rock and a lot of the microscopic effort went into making sure you weren't going to run through the cap rock.

RE: [Inaudible]

JL: Oh, that's right, yeah, and tremendous efforts there ??? springs. Because of the salt tectonics above the reservoir, you couldn't tell very often how close to the reservoir you were. The cap rock itself was of

course attached to the reservoir, but the rocks immediately above it didn't always give you a clue how close you were. So that was interesting too.

[00:04:45] Then I went down to Kuwait and I was, yeah 2 years in a row, I went down to Kuwait and that was again a very large structure. I was working on development wells in the Bergan field, which is, again Bergan is the biggest field in Kuwait, and at that time it was the only one, and as a matter of fact at that time at one of the wells I was geologist on the old Bergan 37, I don't know what it's called now, but it was at that time, I think from a structure, maybe still is the highest well on the feature and I used to wonder just how much oil that well would produce, because you're talking 40-billion reservoir, you know, you get the well on top that could mean a lot of oil.

That was interesting. I was working with Americans there for the first time and they're really quite different as you know from the British. There was actually a lot of friction. There was a lot of fighting which I fortunately managed to avoid and I got on okay with the Americans, but the Americans didn't like a lot of British people. So if you were a Limey as they called it you weren't very popular. Anyway, it was a huge oil field they shared 50/50 between BP and Gulf and, again an interesting experience. That was really the first time I came in contact with well logs. In Iran they really used the drill samples to tell where they were in the section, but in Kuwait well logs were important and of course ??? so it was kind of vital. As I recall the only log we were running was an E log, which was pretty primitive then, that's back in 1949 I guess. But certainly, that was when I came up against well logs and that was kind of an education in itself. I was invalided out of Kuwait, with an ailment that only lasted a few months, but it was long enough that the company didn't want to send me back to the Middle East and I didn't want to stay in the UK. Of course, that was long before the ????. I didn't want to stay in the UK, there was no significant oil fields there, a few little ones. There was a Socialist government and the outlook was just not very bright. So I decided to come to Canada. I'd been over here training to fly during the war and I thought I'd give it another go, and I came back out here to Alberta almost penniless and took a job first with Canadian Superior.

Now, Canada has a very different oil picture to the picture in the Middle East, whereas there you were dealing with maybe a dozen wells at a billion barrel a field. Here, you were dealing with 40 acres, maybe even 10 acres in some cases, very small spacing and of course much more reserves. The three big differences technically were, one, that seismic was very important here, the other places used seismic but with all these smaller features here, seismic was a dominant feature. The second was that strat traps were the things that we people were looking for primarily, so I was introduced to some detailed stratigraphy, which I enjoyed, and the third thing was a very different land situation where you know, everyone on a field of different quarter sections could be owned by different people.

I came here in '50, January of '50. So there had been some big fields discovered by that time. I really latched onto the stratigraphic plates, that's really where I spent most of my career, where most of my interest has been, in strat traps and sedimentology. And certainly Canadian Superior was good in that regard because they were a very active company land-wise and they would chase after every field they could get close to, I guess you're familiar with that. Nick Nichols was ??? he was the guy who hired me and as a matter of fact, I like Nick and I had a lot of respect for him. I know he had problems, but I enjoyed Nick, and Art Feldmeyer came there while I was still there. But anyway, I had previously been offered a job by California Standard, a bigger company, of course with a different outlook, and I decided to switch back over there. So I went over and I was hired by Don Weir. I was posted to the Peace River District and I worked on Peace River for I guess about five years, six years maybe and I'm sorry in some ways that I never published on the Peace River, the Peace River Arch, because I know the arch well and

at that time I probably knew it as well as anyone in the country, but I just never got around to that, but interesting geology, again frustrating though because as you know, the Peace River Arch looks like it ought to be a billion barrel oil field at the northeast end and then there isn't, and a couple of the wells I set were right there Bears paw and the ??? So it was kind of frustrating but interesting and the north country itself was a challenge just to get around, you know, in the winter. Also, one of the wells are set up there was north of the arch of Pristine River and the??? Plain??, and of course based on my stay at that well, and observing the section of that well, and many other wells which I ran the samples from in the north country, I was able to write my paper on the geology of Northern Alberta.

RE: [inaudible]

JL: Well, it wasn't getting... I know the people you're talking about and my paper was not a response to that. It was, disagreed with the author, but I was I guess what happened was I was deep and deeper into this than the author of that paper. So when I wrote my paper I disagreed with... my paper was very well received, which was a source of satisfaction to me.

RE: [inaudible]

JL: That's right. That's right. That's right. It was, the concept I really got from an article in the AAPG by Emory Adams who I guess later became president of the AAPG, and he had described the Capitan Reef in New Mexico. So I saw the similarities between our situation here, of course at that time, the Press Guild??? was really just an idea in my head. There really is an extension of the Press Guild down into BC, there wasn't really the data there to say that it did that, but given the stratigraphy of the wells to the northwest, I was able to interpolate there and make an interpretation which subsequently turned out to be basically correct, there was a lot of details that were added by other people.

[00:13:15] However, we're now talking I'd been seven years in Canada. I really didn't see a rosy future in the situation I was in and I still had this passion to travel. So I applied for a transfer to American Overseas, which is half Texaco and half Chevron and they hired me and he sent me to France. I worked for two years in the Paris Basin while I was... I think ??? when we went, we discovered the first oil in that Basin, I'm pretty sure at a place called Chateau ??? I was the well site geologist. There was another field discovered about the same time, but I think we were the first and it was a strat trap playing, small field, but the importance was that it demonstrated that was all in the basin and down the years, there's been, not a lot but a significant amount of oil found in their basin. That was really rough, you know, working in the Paris Basin, deciding which of the super restaurants you were going to eat lunch in, and of course Paris was an entertainment. So that was a fascinating two years. I worked for an exceptionally fine man, Maurice Smith, but he was called Smitty by everyone and it was a real pleasure to be there working for this man and also because nobody else in the office and indeed in the French industry really had what you might call the Canadian outlook on looking for oil you know, where you have your using strat traps and logs and you're very conscious as you're drilling of the opportunities as you go down. There's was a much more academic approach, so I was able to contribute that in a way from what I had learned here from other people I was able to pass on.

[00:15:32] After two years in France, they sent me to Libya. I was in Libya for four years again big structures, but this time big structures like the Middle East, but again the stratigraphy was important and faulting was important. So there were some significant differences.

RE: [inaudible]

JL: Sold to American Overseas. So I was six years with ??? and then I decided to come back to Canada partly because my family was ??? and it was difficult to keep on traveling around the world with the family that was getting that was getting into their teens. So I came back here, three of my kids had been born here, one Olivia, and you know, Alberta is such a tough place to be for raising kids, as marvelous as the outdoors is good positive atmosphere, and quality and all the opportunity for education. So I never regretted coming back. It was great for the kids and it's been good for me too. After another couple of years with Chevron, I went on my own, it was after the ??? discovery of Rainbow. And that was in '66 I went on my own. Of course. I had a kind of a running start because I'd written one of the original papers on the area, and of course there was a big discovery right in the play. I started off during my first year, I did a lot of consulting and I did a little bit of consulting after that. But basically I was selling plays, I worked on plays on my own, I went around and knocked on doors and of course by this time, to sort of backtrack to what I said about the Americans in Kuwait, there was a lot of friction. I have a lot of American friends now, I like the Americans, but when I was trying to move plays on the street, it was really the Americans who were receptive. I think they have a feeling about free enterprise that is stronger than Canadians. And so when a guy walked in and said, you know, I'm on my own I've worked this up. They said, you know, come on in let's talk to you and so I would often go on, I didn't always sell the play of course, but I was always made welcome by them by the people whom I want to especially by the Americans. So anyway, I made enough, I sold enough plays that I generated an income. It was a long time in coming because I started off with a lot of shut-in gas and in these days nobody wanted gas, so after I'd done this for six years, that would be back in about '72, I had gas in the ground but no money coming in. So I went back for a couple of years with Midwest which was a subsidiary of Indiana Standard, they were not mixed up with Amoco here, it was a different operation, but eventually they merged with Amoco, and actually I went to Amoco for a year, but the big company stuff was no longer for me so I left Amoco and went back on my own. And I did that until a few years ago. I would say I was winding down for quite a few years here, let's see, about after about '85, I went to the office as a hobby, not as an occupation. Now I quit altogether couple years ago, and the oil industry's history to me now.

RE: [inaudible]

JL: Well, I've always been keen on reefs and I seem to have had better luck with reefs than most people. I don't think I have a really deep understanding of reefs, I mean nothing like say, Ed Klován or some of these people, that are really into the reef petrography. But as in all my work, I think our record seems to show me that I'm able to see big plays before they develop, before they're obvious and to that extent being on my own was a disadvantage because you can't go and sell a big play on the street. You can maybe sell a piece of it, a little bit of it. But anyway, so I did tend to go for reefs because of the Rainbow thing, I did some work in northern Alberta. But I never made any money on it. I was, she was clearly particular, I was way ahead of the play on two occasions, I was ahead because she really cooled off and heated up again. And there was a lot of lads that bought some land in there and a lot of it around me was going for big prices, but I never clicked on that. Farther south I made some sand plays, in the Sylvan Lake area which I made some money on and still has some producing wealth there. And on the Peace River Arch I found... it was hard to find, although it looks easy, it's hard to find a reef play there, but that ??? field was one of mine. We started off great, but soon went to water, some of it was good for a while. An area where everyone and his uncle had drilled but as long as you could try again ??? Golden Eagle went on there and drilled that discovery well.

Just to dwell for a moment Bob on the on the business aspects of operating in Alberta, I was an independent geologist for, well I was active I guess for about 15 years and there was a situation here that was really perhaps unique in the world, in the freedom that an independent geologist had to get into company offices without necessarily having the land tied up. It was done on a matter of trust and after a few initial bad experiences that people had with consultants, I think they learned to know who the trustworthy ones were and of course it's only on the other side of the fence that people like myself on the street knew there was some companies you didn't really want to get near. But the way I would do it and sometimes with people I had never met, and this comes back to the favorable things I said about the Americans here, I would phone up an American who didn't know me from Adam and just explain what I was doing and he would welcome me, very often I found that easy to do. And basically what I would do is I would phone up and I would say, I have a play you might be interested in, it's in the Cretaceous and I'd usually say it's maybe not in the specific township, but I would say it's in something or other area or I might give a small block of townships, do you want to see it? Now, if the fella had a play guy in that area I'd say, I'm sorry, we can't look at it and that was an end to it. If he didn't have a play in the area. I would go in and show him the play. And I think I could see maybe two or three places where people had used my plays, or I don't mean by that they had taken the exact play, but they had used it to make a slightly different play. But basically, I would say just about everyone I called on didn't abuse my confidence, and of course I certainly didn't abuse theirs, anything that they gave me. So that was a really gratifying experience from a personal point of view as well as from a geological and from a business point of view. I mean geologically, although you were on your own you were able to exchange ideas with these people you were calling on, maybe you were giving more than you were getting but there was an exchange there, so that was very satisfying.

[00:24:49] I was at university when the war broke out, I was 16 when it started, so by the time I was halfway through university, I was drafted. I joined the fleet air arm, went for pilot training and that was when I first came to Canada, I was at Kingston learning to fly, but I never made it through the course, and actually that wasn't as bad as it sounds because at that point in the war they were, they had more pilots than they knew what to do with so all the people were washed out before I was, and I got a trip to Canada, a pleasant stay in Kingston out of it so I can't really complain. Anyway, I went back and re-mustered as a navigator and radio operator and gunner and general factotum in the backseat. And I spent I guess another year training to do these things and then went on to a squadron which was operating the workup squadron really on the, over the North Sea and we flew a few anti-submarine patrols but didn't see any real action. And then I was posted to the Far East and while I was on embarkation leave, this was subsequently that time they dropped the atom bomb on Hiroshima and that was the end of the war. So basically I spent a lot of time and other people's money learning to fly but didn't really see any action.

RE: [inaudible]

[00:26:39] JL: I've uh, I've worked with some quite prominent geologists. In England. I worked under Peter Kent for a brief period, of course, he subsequently was instrumental in the discovery of the Prudhoe Bay field, which incidentally is interesting because when I was with BP, they have been a very successful company, and at that time anyway and maybe to this day their philosophy was very simple. They looked for reservoir rock, source rock as shale and cap rock which of course was very vital to them as I mentioned, preferably but not necessarily some oil seepages, then they looked around for a bigger structure they could find and drilled not on the top but near the top and that was about all there was to it. they did some refraction seismic but nothing compared to the seismic you see done in North America even in these days. But technically I would say that they were quite a long way behind North America

and I don't say that harshly because, firstly because they didn't need the technology with these huge structures and secondly because given the problems they had in Iran, they really did an exceptional job. I mean the logistic problems as well as the geological engineering problems, a lot of their engineering work was, we thought it up and did it, made the material just on the spot. So they were as a prominent company in that area, although they weren't as advanced in other areas as in North America. Incidentally, that bit about drilling near the top of the structures, the ??? structures where you might have a relief on the structure in the thousands of feet, they didn't always drill right on top of the structure because if there was a gas cap, then they would be drilling into the gas cap and gas was useless to them. So in some situations they would drill maybe a thousand feet below the top of the structure. Now if you look at Prudhoe Bay, you see what happened there was that, let's see., was it Arco and someone else in there, Marathon, or Esso I guess, they had a lot of land on the top of the structure and BP came in and looked at this and I'm sure they drew...

RE: [inaudible]

JL: ??? was it? Oh, that's right, yeah. But BP looked at this and they could see a similarity to the experience in Iran where the top could be in the gas zone, and down the flank might be the place to be, and that's what subsequently turned out to be correct. They were, Prudhoe, the guys that were there first didn't get the best part of the structure. BP's Ohio??? did. Another prominent geologist that I worked under in Kuwait, I worked for John Moody who was with Gulf that time, of course, he subsequently became Exploration VP of Mobil Oil and president of the AAPG. So I have worked with some prominent people, certainly a lot of intelligent ones, but I can't really say that anyone I worked with was influential in the way I think. I react more to circumstances than to people so that I would learn, as I've pointed out about the big structure picture in the Middle East and North Africa and the stratigraphic picture here in Canada. Now my education at Edinburgh was hard rocks, it was a hard rock school and I spent a long time looking through petrographic microscopes. Their sedimentary teaching, the teaching of sedimentary geology was really rudimentary. I learned pretty well all my sedimentology and stratigraphy here in Canada. And some of the people I met, ??? with Superior, you know, like Bill McDonald and Marie Spencer was there, a real fiery old lady, but a great geologist, and watching these people really taught me about the analysis of drill cuttings and I did, subsequently did a lot of that was Chevron Standard, but likewise the strat trap concept was all out of American publications, AEPG and talking to North American geologists. I didn't really get any of that from my basic education. One thing I did get introduced to was plate tectonics early on.

[00:32:08] So as I'm saying, I sort of develop ideas as I go along rather than learn them from other people who, obviously quite a few of the ideas that I used were seeded by other people. But if there's any things that make me different from other guys in the industry, Lord knows that we're all independent thinkers, otherwise, we wouldn't be any good as petroleum geologists, but I'm a very independent person, in addition to thinking independently, I act independently and that's one reason why I always kind of, felt a little held back in a big company, even though the big companies were good to me. I've no complaints about them, but I wanted to do my own thing. And so that's one of the things that's enabled me to move around the world as much as I have and indeed to come to Canada the time when I was starting off and broke. And another thing that I seem to be qualified at is this capacity for taking either a big area with small amount of information in it and making a story which although it's got to be high risk is maybe better than most people are able to do, and conversely to take a lot of confusing data and boil it down into an intelligible basic thesis and I do both of these things much better than I do really detailed science. There's a lot of geologists do much better detail science than I do.

[00:34:04] So you can see both of these methodologies that I used in the papers that I've published. For example, when I wrote the Northern Alberta paper, I had looked at pretty well every well up there but there weren't really all that many. I don't know, I guess thinking back maybe 30 wells, there really wasn't, there hadn't been any previous work done to speak of. There was a local area around Great Slave Lake that had been studied by the survey and that was very important to me as a take-off point, but I was able to extend the ???, a lot of people don't like that name, but the ??? Reef, the Barrier Reef anyway, show, ran down into BC and build up the faces behind that based on really quite a limited amount of information. Similarly in the Northwest Territories, I wrote a paper there after the Alberta paper, a very large area with just a scattering of wells. And again, I was able to sort of come up with a coherent picture. So if I've made a contribution, I think it would be in that type of thinking.

The Middle East paper was, did owe a lot to other people. I wasn't in the Middle East long enough to do a lot of original work. I did some work on the Ismari, which was my limestone, which was started by somebody else, but I took it quite a bit farther. But basically I was a learner in the Middle East and so when I wrote the Middle East paper that covered the giant oil fields of the Gulf, I was really using other people's information and to quite an extent other people's ideas. So in that area, I was really drawing on other people's thinking and pulling it together into a cohesive whole.

The little paper I wrote on Southern Alberta was based on what I'd seen up in the north country and it drew an analogy there where the D3 reef would form a barrier and behind that it would, there was in fact solid deposited. However, the analogy was, may be correct, but the reefs, the isolated reefs that I'd hoped would exist there as they did in the north country didn't appear and so that play was aborted. The paper I wrote in Northeastern BC on the Debolt was kind of the opposite, there was a lot of information there. It wasn't so much a conceptual play as the others, it was a matter of looking at things that had been missed and in particular the main reservoir rock was in Debolt, which people didn't seem to have realized. But there was one particular horizon there that was particularly productive. So that paper was more of a compilation paper and I understand from speaking to geologists that it has been useful to them. I don't know how much oil they found based on it, but anyway, it helped them a bit.

That's the end of the James law interview.