

PETROLEUM INDUSTRY ORAL HISTORY PROJECT  
TRANSCRIPT

INTERVIEWEE: Craig Ferris

INTERVIEWER: David Finch

DATE: August 2000

Video: 07:00.46.12

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

CF: I was born March 22<sup>nd</sup>, 1913, in Los Angeles, California.

Video: 07:01.09.10

DF: What were your parents doing there?

CF: My father was a carpenter. He went to California during the boom days and was building houses and general carpenter work.

Video: 07:01.27.08

DF: What can you tell me about your education?

CF: I was educated in Wichita, Kansas. I went to grade school, junior high school and high school in Wichita and I graduated from Wichita High School East in 1931. That was at the height of the Depression. You probably don't remember the Depression but it's very vivid in my mind.

Video: 07:02.05.24

DF: What do you remember about the Depression?

CF: I remember 1927 in particular because Charles Lindbergh flew the Atlantic and landed in Paris. He came back through Wichita, Kansas and all of us teenagers were excited about his flight across the Atlantic and I became interested in aeroplanes, wanted to be an aeronautical engineer. The local newspaper there in Wichita, the Wichita Eagle had a model air plane building contest. My home was about 3 or 4 blocks from the Cessna Air Plane Company and I became acquainted with Clive Cessna, who founded Cessna Aircraft. He gave me the plans to the old cantilever wing monoplane and I entered it in this air plane contest and won third prize.

Video: 07:03.34.19

In 1929, when I was 16 years old, I had a job that summer working at the Travelaire Manufacturing company, which was owned by Walter Beech. That summer while I was working there, I have a very vivid memory of over production of these Travelaire aeroplanes. They had them in the hangar with the tails up toward the ceiling, stacked up. My job in 1929, I worked on the Travelaire monoplane. That was the aeroplane which

later flew across the Pacific, it was the first plane to fly from California to Honolulu. If you ever get to the Willow Rock Museum in Bartlesville, Oklahoma, you'll see the Willow rock, which is this particular aeroplane which flew across the Pacific. I made \$3 a day working on that assembly line.

Video: 07:05.05.19

In 1929 of course, the stock market crashed and Walter Beech, who owned Travelaire, took a vice-President's job with Curtis Wright, who built the Curtis Wright Whirlwind Engine. He moved to St. Louis and waited out the Depression and then moved back to Wichita and bought the old plant back and changed the name to Beechcraft. As you may remember, Beechcraft has now been moved into Raytheon, it's part of the Raytheon set up. When I worked there, Walter Beech and his secretary, who was Olive Ann Miller were not married. Later they were married, Walter Beech was an alcoholic, was in a sanitarium most of the time and finally died and his wife, Olive Ann Beech, assumed the Presidency of the company and the company prospered.

Video: 07:06.35.07

That summer I worked there, Travelaire developed a plane that was called the Mystery S and we had, in those days, air races in Cleveland, Ohio. This particular aeroplane entered the races there and out flew all of the army planes and I remember that Mussolini, who was then the dictator in Italy, bought one of these Mystery S planes and took it to Italy and dissected it and used it in the Italian Air Force. That was 1929. I graduated from high school in 1931 and that summer I worked at the Stearman Air Craft Company. These companies probably mean nothing to you but they were quite famous in the United States. In 1931 when I worked there, the first three Stearman Trainers went through the factory for the U.S. Army Air Corps. I have a picture at home autographed by Lloyd Stearman, who designed and built this famous plane. It was used for training purposes all during World War II.

Video Tape #07:08.23:03

#069 DF: Can you tell us how you then got into the seismic industry?

CF: Okay. I had saved up \$130. It doesn't sound like a whole lot of money to you, but I can assure you in 1931, to me, it was my lifetime savings. You probably never have heard of the bank holiday. My \$130 was frozen in the bank, I did not have access to it. I didn't think I was going to get to go to college but the Dean of Men at Friends University there in Wichita came to me and told me that if I would let them have my certificate to my deposit in the bank, that they would wait out the bank holiday and accept my certificate as my tuition for the first semester. And they would help me find a job, which he did.

Video: 07:09.41.27

The job he helped me get was carrying newspapers. I delivered 300 newspapers every morning and every afternoon, all the years that I attended Friends University. I got up and 3:00 every morning to deliver those newspapers. I wanted to be an aeronautical engineer. Friends University did not teach aeronautical engineering, the University of Kansas did but I didn't have the money to go to the University of Kansas. So I took a course in physics there at Friends University, which would have allowed me to transfer to

engineering once I got my degree. I went to Friends University and got my AB degree in 3 years.

Video: 07:10.50.25

I graduated in 1934. I was very fortunate, I was able to get what they called a university scholarship at the University of Oklahoma in the Physics Department. I'm a physicist, my degree is in physics. When I got to University of Oklahoma, I of course, worked on a Masters degree there and I got a job working in the Physics Department shop. This was 1934, still the height of the Depression. And I worked there for 25 cents an hour.

Video: 07:11.44.22

The University of Oklahoma at that time, during the Depression, couldn't hire an instrument maker in the Physics department full time. So they let him. . . he was on the payroll for four hours a day and the other four hours they let him moonlight. There were two former students that had graduated there at the university of Oklahoma, their names were Reginald Sweet and Elliot Sweet. They had started a company in Houston, Texas, by the name of the American Seismograph Company.

Video: 07:12.44.08

Having gone to the University of Oklahoma, they knew this instrument maker, his name was Otto Kraus. He had served his apprenticeship in Germany, he was a German and he had come there and worked in the Physics department shop. That was my assignment, I worked with him for 25 cents an hour. As part of Otto Kraus' moonlighting, he manufactured parts for this seismograph group that was owned by Elliot and Reginald Sweet. Elliot Sweet's wife was named Mildred. She at that time, was working on a law degree at the university of Oklahoma and Elliot Sweet would come from Houston up to Norman and look after the instruments that Otto Kraus was building and of course, visit with his wife there in Norman.

Video: 07:14.04.09

I was fortunate enough to meet him when he would come to . . . Otto Kraus was building geophones, galvanometers, the seismograph camera and other equipment for the seismograph crew and I was fortunate enough to meet him. In 1936, I had been there at the University of Oklahoma about three years and he offered me a job on this seismograph crew at 50 cents an hour. That doubled my salary. The decision was easy. I accepted it and he took me on down to Houston and I went to work on a seismograph crew in Bay City, Texas.

Video: 07:15.01.09

Back in those days, they called them placement engineers or jug hustlers. We had geophones that were maybe 4" in diameter and 10 or 12" in height. We took a hand auger and buried those geophones and that was my job, that's what I started out doing, I was a jug hustler, placement engineer, whatever you want to call him. It was a very rewarding experience, \$4 a day, no expenses, lived in a boarding house. Eventually I went from junior observer to observer, I learned how to run the seismograph camera and I worked there in Texas, worked in Louisiana, worked in Illinois, worked in Oklahoma.

Video Tape # 07:16.26:12

#146 DF: They kept you busy, didn't they?

CF: Oh, yes.

Video: 07:16.29.05

DF: How was it you came to Canada?

CF: How did I come to Canada. Well, I continued working with the American Seismograph Company until about February of 1938. We had a little recession and the geophysical business, as you're probably aware, has always been the sign curve, too much work or not enough work. The crew was laid off in February 1938. I heard about a new company that had started up. As a matter of fact, when I was working in Illinois in 1937 on the seismograph crew, I was an observer then and I had my geophones all spread out along the highway, there came a truck and it was muddy, I had to take my geophone cables up and let this truck by. I didn't much more than get them strung out again till here the truck came back from the opposite direction and I had to take my geophones and cables up again. That turned out to be a Gulf gravity meter crew. That was my first exposure to a gravity meter. But this recession, which I mentioned in 1938 and a new company, I went over to see the Mott-Smith Corporation. Dr. Mott-Smith was a Rice University professor of physics and he had invented this Mott-Smith gravity meter. I was very fortunate, the same day I was laid off, I was hired by the Mott-Smith Corporation to go to work on a gravity crew.

Video: 07:19.04.09

DF: What did you do on this gravity meter crew?

CF: Well, they kept me in Houston a few days to acquaint me with the gravity meter. At that time, Dr. Mott-Smith was assembling his gravity meters out at Rice University. They had a professor in Industrial Engineering by the name of R. R. Crookston, that helped him build and assemble these gravity meters. They sent me out to the field to learn how to operate a gravity meter and they sent one of Dr. Mott-Smith's students by the name of Sam Worden. Sam taught me all the fine points of reading the gravity meter. It turned out that Mr. Worden, later, developed his own gravity meter and became really, world famous. Sam Worden was able to take a fused quartz fibre and make a zero length spring out of it and, whereas the Mott-Smith gravity meter that I first used weighed about 150 pounds, Sam Worden was able to reduce the size and weight and make a little portable meter that weighed just 5 or 6 pounds.

Video Tape #07:21.19:25

#199 DF: Before you go on, could you explain to us what a gravity meter does?

CF: Yes. A gravity meter works on the principle of Newton's inverse square law, which states that if you have two masses, there is an attraction between them which is proportional to the square of the distance. This little fused quartz spring is just like a spring on a screen door. Essentially what you do, it has a mass on the end of it, you take it around to different locations and weigh that mass. You probably don't realize it but you don't

weight the same right here in Calgary as you would in Tulsa, Oklahoma or at the North Pole. There are very, very minute changes in gravity. That little gravity meter that Sam Worden. . well, even the Mott-Smith gravity meter, and there were other gravity meters besides theirs. Humble had developed one, Gulf Oil Company had developed one. They measure the force of gravity on the surface of the earth to one part in 10 million. Of course, we map the changes in gravity. A gravity crew not only has readings from the gravity meter itself, but we have surveyors that survey the location of where the reading was taken, the elevation of where it was taken and then we make a correction for the change in latitude. As we go north we have . . that is in the computation of the gravity meter reading. We contour up these gravity maps just like you'd contour up a topographic map for elevation. We contour the maps and note the changes in the gravity field.

Video: 07:23.57.01

DF: How did you come to be in Canada then?

CF: Well, in 1942, I'd worked for the Mott-Smith Corporation beginning in 1938. I worked in Texas, I worked in Oklahoma, I worked in Louisiana and Mississippi, Alabama. In 1941, when the Japs attacked Pearl Harbour, I was in Bottineau, North Dakota. I don't know whether you know where that is or not. That's very near the Canadian line in North Dakota. In 1942, the Mott-Smith Corporation, who I was working for, contracted to Standard Oil Company of British Columbia, now known as Chevron here in Calgary. I was the Party Chief on this gravity crew, I first came to Calgary in May of 1942 and we worked over at Medicine Hat and we stayed in. . . and later moved to Swift Current, Saskatchewan and I stayed there until December of 1942 and returned to the United States. But this company, in 1942, this subsidiary of the Mott-Smith Corporation was called the Canadian Geophysical Company. Somewhere around your office here, you'll find a picture, which I sent to the CSEG, in 1942. The Standard Oil Company of British Columbia was managed then by John Galloway, who was the first President of the Canadian Society of Exploration Geophysicists. That's when I first became acquainted with him, in 1942.

Video Tape #07:26.43:29

#260 DF: When did you come back to Canada then?

CF: I went back to the United States there, in 1942, this would have been in December. I worked for the Mott-Smith Corporation in Texas and up in Oklahoma and in September of 1943 my supervisor at the Mott-Smith Corporation invited me to be his partner in a new company. We moved to Tulsa, Oklahoma in 1943 and I've been there ever since. We called our company, E. V. McCallum Company, of which I own 1/3 interest. To answer your question about when I came back. In the interim Leduc had been discovered and we had put out our first crew for the Tidewater Oil Company there in the States, our number two crew went to work for the California company now called Chevron and our number three crew went to work for Continental Oil company. When Leduc was discovered here in Alberta, as you're probably aware, the Hudson's Bay Company, the trading company, received land grants from the government and had 1 2/3 sections of land out of each

township. Hudson's Bay Oil and Gas company here in Calgary, they had concessions here in Alberta. As you're probably aware, once they had concessions, in order to hold those concessions, they had to spend money exploring.

End of tape.

Side 2

DF: Okay, just pick up by telling us, you were talking about the Hudson's Bay Oil Company and their land.

CF: The Hudson's Bay Oil and Gas Company had these concessions here in Alberta. In order to hold those concessions they had to explore, they had to spend money and convince the government that they were actively exploring for hydro-carbons. One of the cheapest things they could do was run a gravity survey. It's much cheaper than running seismograph. So in 1946, through Continental Oil Company there in Falcon City, Oklahoma, who owned Hudson's Bay, they arranged for us to send our field party to Alberta. Leduc had been discovered and I believe Redwater had been discovered by that time. We set our automotive equipment up and the crew was headquartered in Red Deer. At that time, Shaun Crawford was Continental Oil Company's gravity supervisor. You've probably never heard of Shaun Crawford but he later became in charge of Conoco's

research department there in Ponca City and is considered the father of Vibroseis. One of the pictures that I sent to the CSEG shows that crew and Shaun Crawford is in that picture when the crew left Ponca City to come up to Red Deer.

DF: What were you doing on that crew?

CF: I was part owner of the company. Of course, we had a Party Chief, his name was Ben Kendrick, we had a gravity meter operator and we had two surveyors and we hired a rodman locally. One of the rodman that we hired was a student at the University of Alberta by the name of Bert Warnke. Bert was a very capable man and worked up the ladder and became a Party Chief, came down to the United States, worked for us both here in Canada and in the United States. He had a lot of native ability, we were able to teach him all the fundamentals and he was an excellent employee.

DF: So what year was this?

CF: This would have been 1946.

DF: And how long did you stay here in Canada that time?

CF: We were here 2 or 3 years. When the job with Hudson's Bay was finished, we worked for, it was called Ohio Oil Co. at that time, now Marathon. We also worked for Western Leaseholds, that was Eric Harvie's company. Don Harvie was I think, the son. . . . One of the things that I wanted to mention, when we were here in 1942 working for Standard Oil Company of British Columbia, we sent the automotive equipment, the gravity meters, the surveyors and Standard of B. C. arranged to hire students from the University of Alberta as rodmen on the crew. Some of those fellows are still around Calgary here. One of them was Jack Gregg, another one was Richard Swan, who lives out of Priddis now. Gregg and Swan both graduated from the University of Alberta, became Petroleum Engineers, both of them went to University of California at Berkeley, got Masters degrees there. Jack Gregg became a Petroleum Engineer professor at the University of Alberta.

Video Tape #08:06.36:11

#056 DF: This is the 50<sup>th</sup> Anniversary of the CSEG, what do you remember about the formation of the CSEG, you were here in 1950?

CF: Yes, sir, I'm a charter member.

DF: What do you remember of that organizational process?

CF: Well, of course, it's been a long time ago. But I remember meeting in the Palliser Hotel, and that's where everyone signed up and I remember the photograph being taken of all the founding members, all the charter members. I remember John Galloway being the first President.

DF: What was the reason for starting a Canadian society?

CF: There were many Canadian geophysicists that were getting into the business by 1950 and they had need for an organization up here.

DF: Can you tell me some of the activities in those first early years?

CF: Their activities consisted of meeting once a month and they gave papers and they had a journal. I think I sent you one of my papers that appeared in their journal. But it's a very vibrant organization and many, many famous. . . .you had Roy Lindseth, who is quite a world famous geophysicist here, from Calgary. You recently had Brian Russell as

President, both those gentlemen have been President of the SEG. They've not only been very active in the Canadian SEG, they've been very active in our organization. I don't know whether you're aware of it or not but we have 17,500 members now, world wide in 106 countries.

DF: How long did you continue your work here in Canada?

CF: We continued operations here, I think I mentioned we worked for Western Leaseholds, we worked for the Ohio Oil Company, we worked for the Shell Oil Co. I particularly remember the winter of 1949-1950, when we were working for Shell over in Saskatchewan. I came into Swift Current and our crew was in there southeast of Swift Current, a little town, Aeneroid. But I came into Swift Current, I couldn't even. . . the roads were blocked, snow, and I had to get a plane with skis on to fly me out to where our crew was. Our crew was actually . . . they couldn't get out of town. They had 4 wheel drive equipment and still couldn't. . . the snow was deep and it was cold. We finally put that crew on the train and took it over to Estevan where there was a highway. The other crew that was working for Shell in that area, this was about the time that the Bombardier, all-track vehicles were coming into use and we actually used those on one of the crews as transportation. That was the only way we could get around.

DF: Does the cold not affect the gravity meter?

CF: No. The working gravity meter is temperature compensated. Sam Worden made that meter small enough to where it would fit in a thermos bottle. Some of the other famous gravity meters, there's one called Lacoste-Romberg, it's made down in Austin, Texas. It actually had a . . . it was connected up to the car battery and had a heating system that regulated the temperature, kept it a constant temperature.

Video Tape #08:12.28:11

#111 DF: Any more adventures in Canada? Did you do gravity meter work in the north?

CF: We did some work up there for Hudson's Bay, around Peace River. That's about as far north. I remember catching the train one time from Edmonton and going out to visit the crew. Back in those days, I remember I went out there by train and I went to Peace River and Grande Prairie and in those days, the runways weren't lighted, they had kerosene flares along the edge of the runways. I remember that very vividly. Airports today are well lighted, but this was in the early days before they had lights at Grande Prairie or at Peace River.

DF: What kind of aeroplane was that?

CF: A DC-3 I'm sure.

DF: Any other adventures up here?

CF: I have to think about that. Always loved Canada, I feel like it's my second home. I came here as a young man, I was 29 years old and I remember thinking at the time that if I were young, this was the land of opportunity. I felt that way about Canada in 1942.

DF: How long did you stay in Canada?

CF: Well, we came up in May and went back in December.

DF: Yes, but you were here in the 50's as well, what year did you leave Canada?

CF: I was in and out all during the 50's and I know I did work even up into the 60's and 70's

for Chevron.

DF: This was always gravity work?

CF: Yes.

DF: How did the technology change in the gravity industry over the years?

CF: It's been a tremendous change. Not so much in the instrumentation but in the interpretation of the maps. When I was here in the 40's and 50's and 60's, we hand contoured all these maps. Of course. . . . are you acquainted with Roy Lindseth?

DF: He's coming in after you.

CF: Really. Well, he's a very dear friend of mine. He had a company called CDP and then Teknica. Roy used to make my residual gravity maps, my interpretation maps. In 1985 I had to either get in or get out of the business, the gravity business. I decided to stay in and I bought an IBM computer, I bought a Houston Instruments digitizing table, I bought a Nicolet zada??? plotter and started to do my own interpretation maps. You see, we used to have to hand contour these maps. Today on a computer, I can do in about 45 minutes, what used to take me 2 or 3 weeks to hand contour. Of course, since 1985 I've gotten rid of that IBM computer and got an Epson, Equity 3+ and I'm just now in the process of giving them to one of the schools there in Tulsa and I've replaced them with a much faster computer. The interpretation maps that we can make is the big change. But Roy Lindseth, when . . . I'd been active in the SEG there for many years, I was Secretary-Treasurer one year and I also was the inaugural chairman on three of their committees. One was a professional affairs committee and the other one was what we called the continuing education committee and the third one was the SEG museum committee. Back there in the 60's, when we were working for Chevron up here, Chevron had a geophysicist by the name of R. R. Clawson. And I started out from scratch, I didn't have anything to work with so I started enquiring around about what subjects to cover for continuing education, what speakers to teach certain subjects and Clawson told me, one of the guys you ought to see is Roy Lindseth. So I went over to see Roy Lindseth and he gives me credit for getting him started in the SEG. He became President and he's had a fabulous career. As a matter of fact, I had dinner with him out at the country club last night. Had a visit with him and Lucy, one of our dear friends.

Video Tape #08:19.47:24

#185 DF: Can you tell me more about the museum, the SEG museum, how that came about?

CF: Yes. I had gone to Beijing, China. Roy Lindseth was over there and there were about six of us that went to this geophysical meeting in China. Following that meeting in China, we took about a 10 day tour, went to Sheon??? and Shanghai, Kuelyn???. One of the other men on that trip was the President of the SEG at that time, his name was Olander and he's the one that invited me to be Chairman of the SEG museum committee. Here again, I started with an empty room. I started correspondence with all the past presidents, asked them what they wanted in the museum and we have quite a collection there today of seismograph instruments, gravity instruments, magnetometers, airborne magnetometers. I was Chairman of that committee for 13 years and it was a very rewarding experience. We've collected. . . in that museum we have the very first reflection seismograph record

every made in the world, made by a geophysicist by the name of Karcher, John Karcher. There's a monument there, right north of Oklahoma City where that record was taken. There's a monument there, it's now in the city limits of Oklahoma City, where they took this first reflection seismograph record. We have not only the record, but we have his notebook where he made all the notes and we have . . . . Dr. Karcher wrote up a little history for us. We have his photograph, which his son gave us. His son now lives in Midland, Texas. We have instruments called torsion balances, which were built in . . . there's a man by the name of Roland Eotvoss, he was from Budapest, Hungary. He built those torsion balances and as a matter of fact, the first oil field found by any geophysical method was found by a torsion balance. The first one in the world found by geophysical method was found by torsion balance. This torsion balance came from Budapest, Hungary.

DF: We have about five minutes left. Could you just reflect for us on what you've enjoyed most in your career.

CF: The thing I've enjoyed most is the people I've met. The people I've met like Roy Lindseth, really a fine gentlemanly group of people.

DF: And the technology, did you find that intriguing?

CF: Oh yes. I'm so glad that I got into computers back in 1985. I tell my wife I would have lost about half of my lifetime if I hadn't gotten into computers. I have three of them that I use in contouring the maps, I have a fourth one in my office and I have a fifth one at home. I can operate all five of them.

DF: What do you see as the challenges of the future for the geophysicist?

CF: It's just unlimited. I went to a luncheon yesterday and I listened to a man talk about their recent exploits, which took them about nine days and they covered about 80% of the earth, making an elevation map. And the accuracy is about 30 meters. It's just . . . my lifetime, when I stop and think about it, I've seen the first plane to fly the Atlantic, I've seen the first plane to fly the Pacific, I've seen these space stations go to the moon. My life has just been absolutely fantastic. You just marvel at what has taken place. And I would have to say, it's very, very difficult to predict what the future might hold.

DF: Anything else you'd like to say about your career? Any regrets?

CF: I can't say that I do have regrets, no. I can't say that I have any regrets. I just feel very, very fortunate, I feel like I've been blessed, really.

DF: Well, at this time, I'd like to take this opportunity, on behalf of the Canadian Society of Exploration Geophysicists and the Petroleum Industry Oral History Project to thank you so very much for coming out and letting us have a few moments of your time to record your recollections of your career and the time you spent here in Canada. Thank you very much.

CF: It's been a pleasure.