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# MICKEY ABOUGOUSH

Date and place of birth (if available): Lebanon

Date and place of interview: March 13th, 2013

Name of interviewer: Peter McKenzie-Brown

Name of videographer: Peter Tombrowski

Full names (spelled out) of all others present: N/A

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Initials of Interviewer: PMB

Last name of subject: ABOUGOUSH

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PMB: I'm interviewing Mickey Abougoush at his home in Mount Royal, in Calgary. Thank you for taking part in this, Mickey.

So you've looked at these questions that I put together specifically for this interview. I wonder whether you would start, Mickey, by just telling us your story from the time you were born until whenever you feel like stopping.

ABOUGOUSH: All right. I was born in Lebanon. As a matter of fact, my family in North America goes back to the turn of the Century where my grandfather homesteaded in the Dakotas, in the United States, before Alberta was even a province. He went back to Lebanon but there was always a family relationship between Lebanon, Canada and the United States.

Because of the hard economic and political conditions in Lebanon, my dad immigrated in the early '50's to Canada. He left a wife and four children behind, including myself. So he worked for five years, saved enough money, bought a house and brought us over. So I came in August 1958; I was 11 years old. I started school in Calgary at Tuxedo Park Elementary School; 11 years old they put me in Grade 2. So 11 years old in Grade 2, I was the best soccer player on the team. By Christmastime I caught on to the language, and the school moved me from grade 2, to grade 3, and by the end of the year I finished Grade 4.

The following year, my family moved from Tuxedo to Parkhill; so I ended up going to Parkhill School for Grades 5 and 6. Fortunately for me, both grades were in the same room and I had a great teacher. Our teacher, Ms. Miller would ask questions of the grade 6ers while we in grade 5 were doing assignments. When the questions related to math or science and no one in grade 6 would



answer, I would put my hand up and answer the question... After a few of these sessions, Ms. Millar said I'm moving you to Grade 6. So she moved me to Grade 6; that was about Christmastime. When we came back from Christmas holidays she said, Mickey, I'm sorry, I got to put you back in Grade 5 because you already accelerated the year before, and the school board has a policy you can't accelerate more than once. So I went back to Grade 5, but a couple weeks later she says to heck with the school board, I'm putting you back in Grade 6. And that was a crucial thing in my life; had I stayed in Grade 5 I think I would have dropped out of school because I was older than most of the kids. So I owe a lot of gratitude to Ms. Miller for taking that risk on her own behalf.

So basically I went through school in Calgary until grade 11. My family moved to Lac La Biche, which is north of Edmonton. I finished Grade 12 there.

PMB: What were they doing in Lac La Biche?

ABOUGOUSH: It's really interesting. When immigrants come to a country such as Canada they typically don't know the language, they don't know the culture, and they don't have any money, so basically they go to where they have some commonality with their kin folk. There were some other Lebanese that were there. So basically Lac La Biche was settled by a lot of Lebanese pioneers, immigrants, and they would buy goods from The Hudson's Bay Company in Edmonton, they would go by dogsled up to Lac La Biche, trade with the Indians for the fur; they'd sell them the dry goods from The Hudson's Bay Company, they'd bring the furs and they sell them back to The Hudson's Bay, and that's how they made their living.

Afterwards they got into mink ranching. So my uncle had a place there and he persuaded my father to move there, buy a little business, and that's how I ended up going to Edmonton for university. I took chemical engineering at U of A in Edmonton. And that's how I started.

Then my first job was actually a summer student with Texaco; I worked in Drayton Valley, a small town just west of Edmonton. I spent a good summer there. In '69 I was hired by Amoco, used to be Pan American at that time, as a summer student in their head office. After I graduated they hired me back and they put me in the Crossfield area which is really a sour gas area.

At about the same time, this would have been in early 1970; Amoco started what they called a fire flood project in Gregoire Lake. They had several projects before that, on the smaller scale, but they announced at that time a much larger pilot in Fort McMurray to extract oil by in situ methods rather than by mining methods.

PMB: Now, as this about the time that Peter Lougheed and the provincial government introduced AOSTRA?

ABOUGOUSH: No, this was before. So Amoco, or Pan American at that time, took the initiative to do this on their own. So they had a process called fire flooding; they drill wells and basically they'd use oxygen in the injected air to burn the coke which in turn would heat the oil once the fire got started, and the water was injected to push the heated oil into the wells. So they announced a big



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project. They were looking for a field engineer to be in charge of the operations in Fort McMurray, so my boss recommended me, and that's how I got started in the heavy oil business and the oil sands business at that time.

I spent three years up there; really to the credit of Amoco is that they sent most of their technical people to the field to get practical experience. So after three years they moved me back to the headquarters in Calgary, and basically I was the person in charge of liaison between the research centre in Tulsa, who were really designing the project and all the R & D that was going with it, and the field operations, so I spent two more years doing that. And in '75 there was a lot more interest in heavy oil so I was recruited by many companies to leave Amoco. But I chose to go and start a heavy oil consulting company in 1975, and I've been consulting on and off ever since.

PMB: So that was the end of employment?

ABOUGOUSH: That was the end of employment, that is right.

PMB: Now, can you tell us a little bit more about how the fire flood worked in those days? And I want to put this question in context. Last week I interviewed Neil Edmunds, and he pointed out that in the old days we used to think that we could use water flood and we could use fire flood and push the oil through the hole, but he said in fact what everybody uses is gravity, it's not pressure, it's not the water that you're pushing, it's gravity that ultimately makes this oil accessible to production; is that true?

ABOUGOUSH: Well, that's in hindsight. So basically if you look at the technologies of the '70s and even during the AOSTRA years the technologies that were present or available for in situ operations were primarily in situ fire and steam floods.

So there was two types of fire flood, there was the reverse combustion where you start a fire in one well and you inject air from another well and basically you bring the fire in reverse direction. And the other technology was called forward combustion where you'd start the fire and you push the fire where you started it to another well. And where water came in is once you heated the reservoir you needed energy to get the heated oil out. In theory, in the lab, it worked extremely well. We got over 90 percent recovery.

PMB: The fire flood worked well?

ABOUGOUSH: The fire flood in combination with the water. So it seemed to be a very encouraging process. But this is the challenge that we had at that time is to take a laboratory experience and bring it to the field, and that's where I was involved. And Amoco committed a lot of money at that time trying to get this process into a practical application.

PMB: Do you have any idea how much money that might have been?



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ABOUGOUSH: Yes, it was easy to remember, it was \$10 million at that time. To put it in perspective in today's dollars that would be over \$100 million. So it was quite a risk that Amoco was taking at that time.

But what we found is what works in a lab really doesn't work in the field because you've got a very highly viscous oil. In order to drive the air through the formation you had to fracture it, and once you fracture a formation the air screamed through; we had no sweep efficiencies, we didn't heat a lot of oil, it just went from one well to another in a short period of time, and the end result not only did we heat part of the reservoir, but we burned a lot of wells because with fire flooding you reach temperatures of over 2,000 degrees Celsius and a lot of tubulars start to melt at that temperature. So eventually the process and the project failed.

The steam process at that time was called "huff and puff" which is really steam stimulation, and we also had steam drive. And the one that gave better results was steam stimulation. So basically you'd inject steam for a period of time, you let it soak, then you would drain back the heated oil into the well bore.

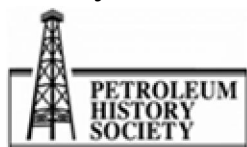
Until the SAGD process was invented by Dr. Butler, really those were the technologies that were sort of at our disposal. A lot of people would experiment by injecting butanes, propanes, a bunch of diluents to help the steam recover more oil. But it was quite a challenging process and none of them really worked all that well.

PMB: So now here we are in the early '70s, AOSTRA has not become part of the package yet. Now, can you give me any stories about the AOSTRA period?

ABOUGOUSH: So what happened is that companies were taking a lot of risks themselves. The government, and I was involved in many aspects of industry and government, felt that in order to really develop this great resource they needed better technologies, and the best way to do that is to create an institution like AOSTRA so that it can help industry with money to experiment with different technologies. The big question at that time was... Is AOSTRA going to support one technology or many technologies? Because their funds were limited, if I can remember at that time they were like \$50 million, and field experimentation was and still is very expensive. So a lot of companies made applications to AOSTRA claiming that their technology is the best, and being a consultant at that time I basically represented three different companies that made three different applications to AOSTRA. So one week I'd be representing Company A, another week I'd be representing Company B, and another week I'd be representing Company C.

PMB: Who were those companies?

ABOUGOUSH: They would have been independent smaller companies. Many of them are not even in existence today. The likes of Esso, Shell, and those guys, they don't need consultants because they have their own big research labs and things like that. So the question was from AOSTRA board members, you come here every week representing a different company, which is the best? And basically what I said is that they're all good because they're all different.



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And at that time I recall one of them was the application of horizontal wells. At that time we didn't have the technology to drill horizontal wells, and in order for me to predict what the performance would be from horizontal wells I had to go to papers that were published after the Second World War in the late '40s to get any idea as to what the performance would be.

So SAGD by itself couldn't have happened in the '70s because a lot of us that were in that business had a lot of bright ideas, but the technology to drill a horizontal well was not there. Things had to come together in order for SAGD to be as successful as it is today.

PMB: And is this a good time to ask you to describe the new technologies that had to be developed? Now, before you do that I'll give you a minute to think while I give you this little valueless piece of information.

The first horizontal wells were drilled in what year? 1740.

ABOUGOUSH: Of course. In the mining industry.

PMB: No. Actually, according to something I have at home, by Roger Butler. In the 1740s there were mines that went into the sludgy oil in certain parts of what's now Germany and France, so there were two areas where they did this. So they would have mine and they would drill straight into the wall and then the sludge would kind of come out. And he said these are the first truly horizontal wells.

ABOUGOUSH: That's amazing. Sure.

PMB: And of course think about that in terms of the UTF many years later because in effect that was the system that they used there, (indiscernible) tunnels and then the horizontal wells drilled from there.

ABOUGOUSH: That is right. That is right.

PMB: Now that I've given you all that I know about this topic would you explain the technology?

ABOUGOUSH: So I think the question you raised as to what technologies had to happen in order for this to be successful; one is that we needed the drill bits that can be dynamic and can go where we want them to go. So basically your GPS systems have to be there that can work underground and you have a whole bunch of metals that will not interfere with the signals. The mud, the sand retention, this was a huge issue that we faced in the '70s. We couldn't keep the sand out of the production area; all the wells would plug up so we spent a lot of time and effort to develop screens and filters trying to keep the sand from the production.

Instrumentation, the know-how of the skilled people, the capital, a lot of these things had to come together in order for SAGD to happen. And if it wasn't really for the effort of AOSTRA, SAGD would probably have happened, but not as early as it did. So the role of government, in this case,



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was very instrumental in getting the success of these projects. And we're bearing the fruit of that right now.

PMB: Well, I think SAGD oil, much more of that is produced than from the seven mining operations now. I believe that's correct.

ABOUGOUSH: Yes, that's correct.

PMB: And it's likely to get more and more. Now, one of the things that I heard about was a magnetic device which kept the two horizontal wells I think it's five feet apart. You could be sure that one well was more or less the same distance from the other.

ABOUGOUSH: Yeah. So really comes to the engineering. And one of the roles of the engineers is to determine the optimum placement of your injection and your producing well, and that would vary from one pair to another pair because the oil sands are very heterogeneous. So it's not a blanket of sand, you're going to get a lot of areas that have a lot of shale in them and you want to make sure that you don't have one well below another well that's got shale in-between because you're not going to get communication between the two wells. So trying to get a very good description of the reservoir is very important for that.

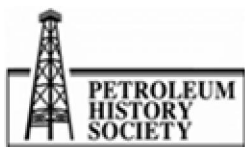
But these are the technologies now that were optimized in the process, where before we were just looking for a process.

PMB: Now I have to ask you a question, and this came out of a discussion I had with a friend the other day. I have heard the oil sands described as being kind of really gunky low quality oil in a very, very high-quality reservoir because the reservoirs tend to be homogeneous and there's good flow through them and that kind of thing. And yet I spoke to Tony Settari a couple of months ago and he talked about some of the experiments that he had done in terms of actually making computer models of the reservoirs, and he talked about the importance of actually fracturing these reservoirs. Now, can you square that circle for me, please?

ABOUGOUSH: Sure can. Let's take a look at what the oil sand looks like. So basically it's an unconsolidated sand that has a mixture of oil we call bitumen, and water. And the porosity of that sand is about 35 percent and the viscosity of the oil under reservoir conditions is in the millions of centipoises, so it doesn't flow. So in order to put any fluid through that and transport it through the formation, what Tony is saying, you have to push it to such a pressure that you're really fracturing the formation.

And this is what we found that we had to do with the fire flood projects, we had to fracture the reservoir in order for air to go through the reservoir. But once the oil is heated you don't need to fracture.

PMB: And one of the ideas that I've come across, and I'm asking this because I don't fully understand this. In Venezuela you have oil that's very similar; the ultra-heavy oil, Orinoco oil, and it



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was something very similar in Alberta, the main difference being that the reservoirs in Canada are very bloody cold, while Venezuela's right on the equator.

ABOUGOUSH: Really, surface altitude is not a factor; it's really the burial depth. So when we go to the oil sands the temperature, if I can remember correctly, is like about 10 degrees Centigrade, and at 10 degrees Centigrade the oil doesn't flow at all. In the Orinoco oil, a lot of it is buried deeper and as you get deeper into the earth the temperature increases. So what they have is under natural reservoir conditions the viscosity of the oil is lower, or it was less than that at the oil sands. So with a little bit of help they can bring it up. So it's really reservoir conditions, so they've got to make sure that when they produce the oil, if it's hot in the reservoir when it comes up through the wellbore it doesn't sort of gel up and loses its heat. So they'll insulate the tubulars to make sure that they retain the heat.

PMB: So one of the reasons this SAGD, and fire flood to a lesser extent, that SAGD is so successful in Canada is that it does heat the oil underground and maintain the temperature to a large extent.

ABOUGOUSH: Yeah. One of the things that's going to be a challenge for all in situ operations is we're injecting steam. And the reason we're injecting steam is to lower the viscosity of the oil so it can flow a lot easier. But in that process we're heating the sand, and that's wasted heat. So a good portion of the heat that we inject is going to a product, the sand grains, that we never really utilize; we don't produce, we just want the oil.

So this is where other technologies have got to come in after the fact is to inject cold water into a heated reservoir so we have really a built-in steam boiler underground. And you're going to see that primarily once you've gone through quite a few cycles of the SAGD, that people will just inject cold water trying to recover the heat from the sand to recover more oil from the reservoir.

PMB: Is anybody testing that yet?

ABOUGOUSH: Well, we're still too early in the SAGD operations, but I'm sure that every reservoir engineer that's in charge of these operations is thinking about that.

PMB: You've told us about your time with Amoco, and then in your profile you say that while you've had a lot of executive level positions and so on, would you mind going through that?

ABOUGOUSH: So basically my involvement in the industry; basically once I became a consultant I couldn't do it all myself so I had to hire more people. We expanded into enhanced oil recovery, mathematical simulation, software development, so I became more in the managerial in the executive positions, and kept on going for quite some time and had other bright engineers, geologists, and geophysicists working in these companies to provide the services to people not only in Canada but to the rest of the world.

And this is I guess one of the side benefits of being leaders, by Canadians being leaders in a certain technology is that we can take this technology to the rest of the world, so basically we're exporting



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our brains to other countries and we bring in money back to help the economy of Canada. And I did that. Many other people did that for many, many years.

The other government agency that was also involved beside AOSTRA was really CIDA, Canadian International Development Agency. So basically what they did, they had funds to help Third World Countries to accelerate their development of their petroleum resources. So I was involved in a couple of them where we did one in Pakistan, and we did one in China, and the China one was primarily related to heavy oil. So I spent from the mid '80s, for 20 consecutive years going back and forth to China, providing them with expertise, doing technology transfer, training courses to the Chinese to develop their resource. And the Chinese did very well in adopting the new technologies and started to manufacture a lot of the equipment that they were buying from the Americans, the Canadians, the Germans, and the like.

PMB: And China has gone from being a net oil exporter to becoming a net oil importer.

ABOUGOUSH: That is a very good point. When I started my first trip in 1986 to China most of their hard currency came from the export of oil. If you saw Beijing at that time it would have been 99 percent bicycles, maybe 1 percent cars, and really not a lot of cars; most of them were trucks, by the Army or by the military, they were transporting goods back and forth.

You go to Beijing now, bicycles, really there's no place for them, it's just become a huge, huge city, and they've industrialized and as a result they need a lot of energy. So this is one of the obstacles, one of the challenges that they have right now.

PMB: What I've heard is that they actually do a lot of heavy oil development and they manufacture the equipment in their own country now, and they're quite expert at it.

ABOUGOUSH: Well, it took some time. I remember the first time I went down there, and steam generators were sort of the big cost item that you had to purchase or acquire. The efficiency of the steam generators that were manufactured primarily in the US was about 80 percent. So they'd buy one steam generator and they'd try to copy it, and when I was there I looked at the steam generator and if they were getting 50, 60 percent efficiency if they were very lucky. But that was the first version of copying. Now I would hazard to guess that all steam generators are manufactured there. So they've improved a lot in their know-how, in their commitment to getting the best technologies and to really become a manufacturing country.

PMB: Any other major areas in the world that you travelled in?

ABOUGOUSH: Oh, I've travelled probably for business and pleasure to more than 70 countries, so I've seen a good part of the world. And I would say probably 50 of them were related to business in one way or another.

PMB: Was all of your business-related work done in English?



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ABOUGOUSH: With the exception of Latin American countries where business was done in Spanish; you had to put all your reports in Spanish. In China all of our reports were English, all of our communication was in English. So when you go to Venezuela, Argentina, Mexico, that yes, we would converse in English, but all of our reporting would have to be in Spanish. So we'd hire a lot of translators and interpreters; we'd write the report in English then we'd have it translated into Spanish after that.

PMB: You mentioned in your profile you talked about executive level positions and director's experience, and you've mentioned your international experience. Could you talk about the executive level and the board of director's experience?

ABOUGOUSH: Board of directors, so basically what happens is that once I became more in the management side of the business I sat on for I think six years with what used to be Mount College at that time, and the whole premise or idea at that time was to convert it from a college to a university, and once that was done I left, so I was pretty happy that the process worked; now it's a university.

But I sat on the board of public companies, private companies, and to help me in that process I took a very good course from the University of Calgary, it's called a board of directors course, so it was very good in the day to help me in that process.

About four years ago I decided to leave the consulting business and I was retained by a company from Toronto, a private equity firm, to become an adviser. They were investing in oil and gas service companies, and my role was to mentor CEOs and to advise them on how to grow their businesses.

The unfortunate thing, in 2008 the market fell, the company couldn't raise a lot of money and many of the companies that they did purchase struggled, so that relationship ended about a year ago.

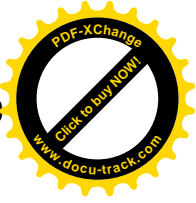
PMB: I seem to remember from one of the documents that you sent me that you led a drive to raise, and I think the number was \$10 million or \$15 million, to put up a new building at Mount Royal College; am I correct about that?

ABOUGOUSH: Yes. So what happened is that at that time there was a \$100million capital budget to build a business school on the facilities of Mount Royal College. The government share was about 75 million so we had to raise, as a college, \$25 million. So our role, basically there were about a dozen of us, to go knock on doors and raise the \$25 million, which we were successful. And every time I drive by the university right now I see not only that building, but many other buildings have been built. And Mount Royal has always been a hidden gem. It was a great institution and still is a great institution, and Calgary should be very proud of it.

PMB: And it's great that it's now a university. You mentioned that when you were working in the Athabasca Oil Sands you were located in Anzac, which is a town just south of Fort McMurray.



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ABOUGOUSH: That is right. Anzac is really on an Indian reservation and Gregoire Lake, and that's why our project was called the Gregoire Lake Project because it was located there. When I went in 1970 to Fort McMurray the town was only 5,000 people, and Anzac would have had maybe dozens of people; a very, very small community at that time.

PMB: You were actually living there?

ABOUGOUSH: I was living not in the town because there was no motels, there was no facilities, so Amoco set up a bunch of trailers right at the field site, so basically we stayed right at the --

PMB: And so you flew back and forth?

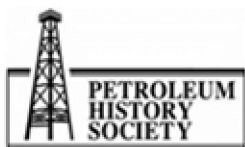
ABOUGOUSH: Yeah, I'd be there for ten days and I'd fly back to Edmonton for four days. So I'd rotate with another engineer to make sure that there was always somebody in the field.

PMB: That's where you did the fire flooding is Gregoire Lake. Can you say anything more about that? You've told us an awful lot about it, but it is really a renowned project.

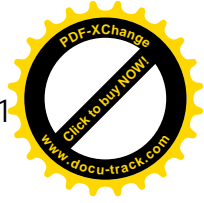
ABOUGOUSH: It probably at that time was the largest field operation in Canada. Because it was on the Indian reservation a lot of the people from Anzac worked for us. And we drilled the wells, we retained a lot of service companies primarily from Edmonton, and the whole idea behind it -- and we always had one research engineer from Tulsa. Amoco's R & D department was located in Tulsa. And that person would be looking at the results from a theoretical point of view; was it working to their predictions? What could be changed to make it work better? And as I said earlier, our challenges were primarily in retaining the sand when we did produce oil because if you produce sand, sand erodes and plugs a lot of your equipment so you have a lot of maintenance costs. So that was one of the challenges that the Tulsa research engineers were trying to develop liners and gravel packs, we used to call them gravel packs, to retain the sand into the reservoir rather than come up to the surface.

The other challenge was to get a fire going. So it's like starting your barbecue or charcoals, how do you get them going? So basically you put a little bit of starter fluid, you throw a match or you put newspapers or whatever; you need something to get the fire going. So they had developed a catalytic heater that would, once you put certain fluids into that catalytic heater and you throw some oxygen in there, the temperature would rise into the thousands of degrees and it would heat the surrounding oil.

And at the same time, because the temperatures were very high, we had to use speciality metals around the reservoir, and if I can remember correctly it used to be called Inconell 800. It was made by a Swiss company. And it was high nickel that withstood the corrosion because a lot of times we were creating a lot of corrosive environments, a lot of emulsions that were very corrosive, and the high temperature. Very expensive products.



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PMB: Now I'd like to go back a little bit to the mostly Aboriginal community Anzac. I know that today in Fort McKay, near Fort McMurray, it's become a real hotbed of Aboriginally-owned companies which because they're located on a reserve don't have to pay taxes. Was any of that kind of activity going on in Anzac at that time?

ABOUGOUSH: No. I would say you've got to remember the skill level of the people of that time that were living in Anzac was pretty low, the education level was also pretty low; so their prime tasks were primarily related to labourers, cat skimmers. So basically they didn't have the capital to buy their equipment so they'd be working for another service company or they'd be working directly for us.

So that spirit and the skill level wasn't there, which brings me to the question of what is their role right now? Yes, you can have them as providing, as you mentioned in here, service providers and they can do very well in there because of their tax exemptions, but in order to really elevate them, I think they have to become stakeholders, so basically that they have a working interest in these projects, no matter how small it is. But they've got to have the feeling that they have ownership. And then we need to hire the people, regardless of the level they're at, and with time gradually increase their level of proficiency so they can take on management jobs.

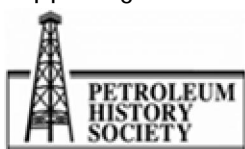
Paying them a royalty or just giving them some work because they're there, and they're tax exempt, is not enough. They have to become stakeholders. If they don't have the capital to invest for their share of capital, carry them until such time that the profits that they generate would pay for their share. So, to me, I think trying to bring the Aboriginals into the whole process, to integrate them, companies have to be proactive rather than being asked by the government, rather than the Aboriginal people trying to demonstrate and give us more, I think we have to be much more proactive in our industry than we have been in the past. And that's from the Aboriginal side. Also I find the same problem with our industry from the environmental side. We're always reacting rather than being proactive.

We can set up very easily a big research institute that's funded by government, industry, whoever, and even from the environmental groups themselves to come up with technologies to reduce our impact on the environment? What do we do about tailings? And this wouldn't be exclusive to Syncrude or Suncor or to Shell, but this would be an industry wide, that the information and the know-how would be given to everybody. It would be public information.

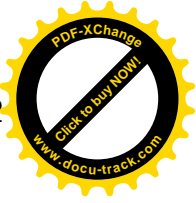
PMB: This is a system that's already in place with organizations like COSIA.

ABOUGOUSH: But we need a much concerted effort so we don't have the people that come, Hollywood stars come in and tell us what we should be doing because they have no clue what they're talking about but they garner all the publicity. And to be honest with you, the ordinary people that are listening to it on radio and television don't know any different.

PMB: So you have COSIA in which the 13 or 14 members, or it might be higher, they do share the environmental technologies with each other, so they're already doing that. What more would you see happening than that?



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ABOUGOUSH: The concept is great. What I believe should be a much concerted effort. A much bigger budget, rather than sort of hey, we're doing something here. But go in the billions of dollars, that it's really meaningful that we're going to develop this technology and guess what, we're going to apply it to the oil sands and we're going to sell it to the rest of the world because we know how to clean our smokestacks, we know how to clear the sulphurs, we know how to do the heavy metals, we know how to do a lot of that stuff. So it really becomes an initiative how do you develop technology that you help yourself, as well as help export it to other countries.

PMB: There was a lot of discussion and it was killed in the provincial budget last week about having an AOSTRA 2, and I believe the premier endorsed that idea during the last election campaign, and then I'm pretty sure that she just dropped it in the budget list. And it would have been \$3 billion over a 20-year period.

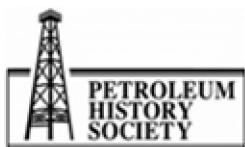
ABOUGOUSH: The provincial government alone should not be the one that's carrying the full burden. You've got to remember that the economic impact from the oil sands is not only felt by Alberta, but felt by every province, and by definition "by every province" it's Canada. So an effort should be made, from my point of view, is to get all the provinces involved in this one here so that Alberta is not shouldering the total burden.

PMB: My recollection of AOSTRA 1, because I worked for Gulf in those days, is that if we, Gulf, were involved in an oil sands project AOSTRA, I'm pretty sure, would basically contribute half the funds. Now I think that an AOSTRA 2 type version would essentially do the same thing, it would say okay, I'm a successor to Gulf which I think is Suncor actually, so I'm Suncor and I want to put \$100 million into investigating this piece of environmental research and AOSTRA 2 would match that, or something like that

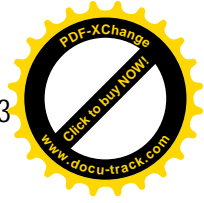
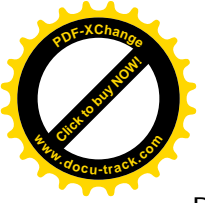
ABOUGOUSH: That concept is great. My point is it shouldn't be only Alberta that's contributing that 50 percent. People from Newfoundland and Labrador come and work in the oil sands; they get a benefit, so maybe they should be contributing to that AOSTRA 2. Ontario; we buy a lot of manufactured goods from them; maybe they should contribute to AOSTRA 2. So what I'm saying is that Alberta should not be the only one that's contributing to AOSTRA 2.

PMB: One of the things that you say in your resumes is that you evaluated whether Amoco should pursue mining in addition to its in situ operations. What project was that? What was it proposed and whatever became of it?

ABOUGOUSH: If you go back to the early '70s when Amoco sort of knew that their in situ project was sort of not technically feasible or economically feasible so they were looking at what other things can we do there. And Shell was also looking at their lease, and if I can remember correctly it was lease number 13 up in Athabasca. And they were looking at the option of selling that lease. So we looked at it; I spent quite a period of time with another engineer and the research centre in Tulsa trying to evaluate whether Amoco should be involved in that project.



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But you've got to remember that at that time the only project that was in operation was GCOS, the Great Canadian Oil Sands Project, and it wasn't doing very well at all. The price of oil was very low, the technology was sort of not all that great because if you got four bucket wheels and two of them were in repair your production went down by 50 percent.

PMB: Or there was an explosion in your upgrader.

ABOUGOUSH: There was a lot of economic uncertainty. So the decision was made at that time by Amoco not to go through the mining process. The difference between mining and in situ; in situ you can start small and grow. With mining you have to spend all of your money, all your capital before you see one drop of oil. So there's a huge risk that the mining operations take before they see any revenue accruing from those projects.

PMB: What was the name of the project that Amoco was considering? Because I went through a bunch of records and I found a few names and I can't remember them all right now, but there were a number of very peripheral projects that were announced and then almost as soon as they hit the newspapers in those days they died, never to be heard of again. Did it ever reach that stage?

ABOUGOUSH: I left Amoco in '75 so after that period what they did and didn't do I wouldn't have been privy to it. So I don't have any recollection.

PMB: It didn't have a name then?

ABOUGOUSH: It didn't have a name that I would remember.

PMB: You were a founding member of the Heavy Oil Association, was that you individually? You personally, or your company?

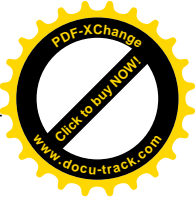
ABOUGOUSH: Well, I was both company and individually. The community was very small at that time so we felt in order to exchange ideas, because everybody guarded their technology very much because whoever developed a great technology was going to really capture this huge resource. So every company was very secretive about their technology and about their know-how.

But we felt, as technical people, that there are certain things that should be available to everybody, so we would have technical conferences and somebody would come in and make a presentation on sand retention. The big thing at that time was also for the in situ projects, how do we get upgraders on a small scale that you can put them in the field?

So the big challenge that we had with the heavy oil projects, the in situ projects, so you produce the oil, how do you get it now to market? You're in the middle of nowhere, there are no pipelines, and if there was a pipeline it was too gunky it wouldn't flow through the pipeline. So there were a lot of companies involved at that time trying to develop a technology that would partially crack the crude so it would flow without adding a diluent to it.



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And I think even to this day I haven't seen any successful projects that can be on a small scale, and what I mean by "small scale" may be ten to 25,000 barrels per day, that you can put them in a field, that you can transport this real viscous crude that would be partially upgraded, you can put it in pipeline and send it to refineries for further upgrading.

PMB: What year was the Heavy Oil Association founded? I'm thinking that last year was its 25th anniversary which would have made it 1978. Does that sound right?

ABOUGOUSH: That sounds about right.

PMB: So the idea of the Heavy Oil Association was to look after mutual interests and mutual sharing and discussion of ideas?

ABOUGOUSH: And you bring guest speakers in; there were a lot of experts in the US. Venezuela and Canada were sort of at competition with each other, who's going to develop the resource first? We were trying to sell them some of our expertise, so that was the whole idea behind it, trying to get industry involved in that.

PMB: And it still does exist?

ABOUGOUSH: Absolutely.

PMB: And it's still an important player. From that point you talked about the consulting services you provided to most operators in Canada?

ABOUGOUSH: Well, I would say I don't know if all of them, but I would say most of the independents. Most of the independents. The big oil companies, they will only use you when they lack certain type of expertise because they prided themselves that by having research labs in Sarnia, Edmonton, Calgary, Tulsa, so they were all pretty proud of their know how).

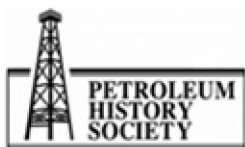
PMB: So the independent guys. In general, the smaller or the newer companies?

ABOUGOUSH: That is correct.

PMB: I find this really fascinating. Technical expert in arbitration case between the Ontario government and Syncrude. What was that story, can you tell me, please?

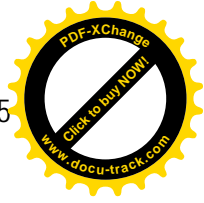
ABOUGOUSH: Let me go back a little bit in history before I answer your question. When Syncrude was being initiated there was a lot of uncertainty in the marketplace and the project was suspended for a period of time because of that uncertainty. In order to get it going the federal government, the Ontario government, and the Alberta government basically came in with some cash.

PMB: This was in 1975.



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ABOUGOUSH: And further, the Alberta government introduced what they called a Syncrude royalty scheme where basically it was a very low royalty to help Syncrude get going and to encourage other operators to come and have facilities in the oil sands.

With that the project did proceed and it did very well. Now that the governments said look, we helped you get going, our role is no longer required, now we want to sell our interests. The Ontario government did get some cash; as a matter of fact I think they made some money on their investment. But there was one part of the investment that they couldn't agree on a price, and as part of their deal if they couldn't agree as to what it was worth they would go to arbitration.

So the Ontario government came to my company at that time, said would you represent us on this technical arbitration? So basically up to that time most of our work was related to in situ, and I had to in a very short period of time come up to speed on the important parameters, economic and technical parameters related to all mining project. So we went through quite a period of arbitration and we ended up getting pretty close to what the Ontario government wanted to get for their share.

PMB: Can you tell me simply what the technical problems was.

ABOUGOUSH: Well, basically if I can remember correctly there was part of the oil sands that were not developed, it was basically raw land; what was that worth? So how do you assess it? In the conventional oil and gas business it's very easy because there are a lot of sales going on, so you can go and say what was the average price for a hectare of land over that past month, over the past year, over the past five years, and you can get a trend.

In the oil sands there were no properties that were put up for sale; whoever owned them kept them and so there was no historical record to go to.

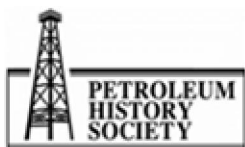
PMB: But also if you didn't have access to an upgrader and mining operations it had zero value, it had negative value.

ABOUGOUSH: Well, that was Syncrude's case. Ontario's case was but there is an upgrader next door, there is a pipeline, so it is worth something. So their side presented that, as you just stated, that it's not worth anything so we're not going to pay you anything for it.

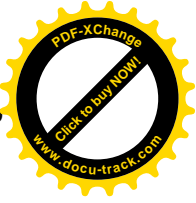
PMB: I was actually making the opposite argument because there was an upgrader and there were mining operations right there that you could connect to. And that was the case you made?

ABOUGOUSH: Our job was to go in there and we said okay, here's this land in here, you're operating in this area, the overburden was this much. In here it's thicker, here you have water, here we don't have water, here you have so many billions barrels of oil, here we don't; there was about 12 technical and reservoir parameters that we sort of played around with, did a lot of modelling and came up what we thought was a fair market value.

There were three arbitrators, they had to make a decision as to who made the better case.



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PMB: And they decided for you and Ontario?

ABOUGOUSH: Well, let me put it this way, the Ontario government was very happy with what they got. So we were pretty happy with the decision.)

PMB: Now, Petro-Canada's attempt to purchase Husky Oil; you were adviser to Petro-Canada. Can you tell me a little bit about that story because I'm having a little trouble remembering that far back.

ABOUGOUSH: Okay, so let's go back in the mid '70s during the oil crisis. I don't know if you recall the lineups at service stations.

PMB: This was all a response to the Arab oil embargo in 1973.

ABOUGOUSH: What a lot of people don't realize, and I didn't realize until when I had to make a presentation to Petro-Canada, they didn't have a lot of staff so it was just the board of directors. And I was sitting at the side waiting for my turn to talk, and during their discussions they're talking about oil not coming to Canada. Because you've got to remember at that time every country with the exception of the United States had a state oil company, and the role of the state oil company was to make sure that they found the oil for the refineries in that country to keep its industry going.

Canada found itself that it was the Essos, the Shells, the Texacos, and the Gulfs that were buying the oil to feed to the Canadian refineries. But those companies are all American and when there was a shortage in the United States, they were asked to curtail their delivery to the Canadian refineries so they can have more oil to the United States.

So from a political point of view the government, at that time was under Trudeau, said that this is not satisfactory for Canada, we need a state oil company, and that's how Petro-Canada came in. So you create a company but how do you get oil now?

PMB: Let me remind you there just going back on that, is that he had a minority government with the New Democrats holding the balance of power, and it was the NDP, as I recall, who said we must have a national oil company.

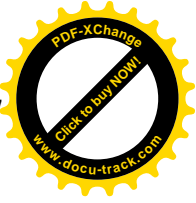
ABOUGOUSH: You're very well versed in that.

So what had happened is that during that board presentation that I was listening to they're trying to come up, where do we get oil for our refineries? Because you're going to remember refineries are built for specific types of oils and you can't just bring any oil into a refinery. They were talking about Mexico, Venezuela, but their oil was being purchased primarily by the US, so we really didn't have the pipelines, we didn't have facilities for that type of crude.

So a decision was made where are the resources in Canada? And heavy oil and oil sands were a big part of that. So they asked our firm to do a study about the heavy oil potential in Canada, which we did. And based on that, a decision was made by Petro-Canada's board at that time the best way to



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accelerate them getting into the oil business was to buy Husky Oil because Husky Oil was the dominant heavy oil producer in Canada.

In Calgary there was a lot of resistance to having Petro-Canada being involved in the oil industry, and there was a lot of I guess lobbying to have Petro-Canada not purchase Husky Oil, and what ended up happening is that Nova ended up buying Husky Oil and then Petro-Canada bought Petrofina and they started doing other purchases to become an integrated company).

PMB: They essentially became a big refining operation.

ABOUGOUSH: That is right, yeah.

PMB: With a lot of gas stations, and not really and oil producer (indiscernible).

ABOUGOUSH: Well, that was the Gulf. I think they had the Gulf, if I can remember correctly.

PMB: They bought the Gulf, but also the Petrofina. All of those are refining operations they had.

ABOUGOUSH: That is correct.

PMB: And they have now since merged into Suncor. Husky and Suncor.

ABOUGOUSH: That is correct.

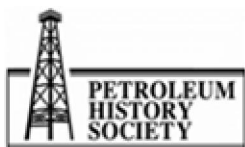
PMB: So you helped them represent their case, but in the end you lost, or Petro-Canada lost?

ABOUGOUSH: Well, basically I was the consultant; I was not in the decision-making process, yeah.

PMB: Performed evaluation of tertiary recovery potential in Canada for the Canadian Senate Energy Subcommittee. Can you tell me a little bit about that, please?

ABOUGOUSH: This was at about the same time during the oil crunch, the shortage, that IPAC represented primarily the independents in the oil industry. So they came to our firm and said, the Senate was having hearings on what do we do because of the shortage, do we have the potential -- what potential do we develop? So IPAC was to make a submission to the Senate Committee on Energy with the hope that if these projects really had potential that the Senate would have some influence on maybe having lower taxes, better royalties, loans, and all of that sort of stuff.

So what we did, made a study of almost every reservoir in the Western Canadian Basin and tried to determine its potential for tertiary recovery. So enhanced and tertiary recovery, what that is, so primary recovery is getting the oil out on its own energy. Secondary recovery is when you put a fluid like water into it to push the oil out. Tertiary recovery, or enhanced oil recovery, is really trying to get the residual oil out of the reservoir.



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So that would involve processes like miscible flooding, caustic, polymer flooding.

PMB: These are basically tertiary recovery for light oil?

ABOUGOUSH: Some are for light, some are for medium, and the in situ ones like steam and fire for the heavy.

So we looked at every process. I travelled I would say to many different pilot projects in Canada and the United States trying to see what other people were doing. And the first thing that we did, we screened all of the reservoirs in the Western Canadian Basin for a particular type of enhanced oil recovery because you wouldn't want to put steam recovery in a light oil reservoir. So every reservoir, we established screening criteria to see what process would work best in a certain risk form.

CO2 flooding was a big thing. We found that a lot of reservoirs would be amenable to CO2 flooding; that carbon dioxide. The problem that we had, we didn't have a lot of natural sources for carbon dioxide, so we did another study where could we get carbon dioxide, and it was primarily from the smokestacks of coal-fired power generators.

So we ended up coming and giving a report that had the technical risk, the economic risk, the potential, what price was the threshold before these projects would go, and some of our projections at that time, even though oil was fluctuating quite a bit, to be over \$100 a barrel. So once you got over that a lot of these projects became very economical.

But then you get to the early '80s and the price of oil collapsed. I think in '86 we went down to \$10 a barrel for a period of time, so a lot of these projects, nobody looked at them anymore.

PMB: Where I thought that was going, it is now owned by Cenovus, the field they have in Southern Saskatchewan which connects to a coal-fired plant in the United States, by pipe.

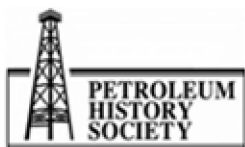
ABOUGOUSH: That is correct. As a matter of fact, I did visit the lab facilities that the University of Saskatchewan --

PMB: Remind me of the name of that project.

ABOUGOUSH: I can't. The biggest CO2 project at that time was SACROC; that was run by Chevron. The one in Saskatchewan, the name escapes me right now.

But that was the whole idea was to bring in -- and it has two purposes; one is that you're not -- the CO2 is not going up into the atmosphere, you're capturing it, using it, putting it into the reservoir, and getting more oil out. But sooner or later you had to capture it and maybe you can sequester it and put it back in an abandoned reservoir. It had a lot of advantages. And you get very high recoveries with CO2 for certain types of reservoirs.

SACROC was the biggest CO2 project at that time, run by Chevron, and it was also very successful.



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PMB: And that was in the late '70s, early '80s?

ABOUGOUSH: That is correct.

PMB: You've already talked about being involved in the early years with AOSTRA, anything else to add on that?

ABOUGOUSH: No, other than I got to know the people very well; Dr. Clem Bowman was very instrumental in getting the AOSTRA going. So you can have a concept, you can have an organization, but without good people it can fail. A lot of times it has to do with the people that are managing it. And I would say that Dr. Clem Bowman did an excellent job to getting it going.

PMB: Clem was one of the first people we interviewed for this project, by the way. But was he the director or...?

ABOUGOUSH: I think they called him the Chairman of AOSTRA.

PMB: Dr. Clem Bowman; he's kind of one of my heroes.

ABOUGOUSH: Yeah, he is a great guy.

PMB: You say you published papers and gave courses?

ABOUGOUSH: Yeah, so basically in order to be good at your job you have to be at all the technical sessions, you've got to see what other people are doing, and primarily the courses related to a lot of the work we did for CIDA when we'd go out to foreign countries that we'd have to give seminars, courses as to what is the latest technology.

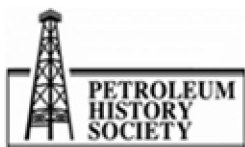
I remember being in China one time and giving a lecture, and they must have had two or 300 people in the audience.

PMB: And you had a translator?

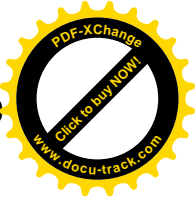
ABOUGOUSH: Oh yeah, they provided all the translators.

And one guy raises his hand, asks the question through a translator, and he is reciting probably information or data from 34 technical papers that he's read and read thoroughly, and at best I would have probably just read the abstracts on these papers. So basically my response was you can get into the science so deep that you forget about what's really important and what's really practical.

One other guy was more concerned about the geothermal gradient. He did his PhD on the geothermal gradient, and whether the reservoir temperature was 50 degrees Fahrenheit, or 50.125, it really didn't matter because that's what happens when you become too much of an academic; the little stuff start to bother you a lot.



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PMB: And I know that you didn't have any choices here, but what an inefficient system for asking and answering questions and, of course, there was no alternative to that. So the one question, the first one you mentioned, might have taken him forever to ask and then for the translator to translate accurately and then for you to give an answer and to be translated again.

ABOUGOUSH: Oh, but that's good for me because it gives me time to think, as the translation was going, where's it going and how do I respond to such a question.

So what I found is in a lot of these countries they got great theoretical, they know their equations, they know a lot of this stuff, but when it came to the practical aspects of it they were lacking very badly in that aspect. And that's where we came in. We said look, you know the theory way better than we do but we're here to show you how to do it, how to get the oil out.

PMB: Did you ever have any crises while you were working on these projects? I'm thinking in GCOS and Syncrude, when they had these awful fires and explosions and different things at different stages in their operations. There was the famous T-pad in Cold Lake where the well essentially blew up and blew dirt and rocks and oil all over everywhere. Have you ever encountered anything like that?

ABOUGOUSH: I guess I can talk about it now. But this was when I was a field engineer in Gregoire Lake, and it was in January fortunately. I was sleeping in my trailer and we had operators that were taking data on a 24-hour basis. So I get awakened in the middle of the night, there's an explosion.

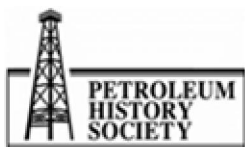
So what had happened is that you've got to remember now we're injecting air at very high pressures, we're fracturing the formation, and all of a sudden we see things just blowing up all over; it's just like a number of geysers of steamy fluids with oil spewing at a whole bunch of different places.

So the first thing you did was just shut down the compressors and all of a sudden things started to calm down a little bit, but it took I would say two or three days before the bubbling didn't come up from the ground anymore. But because it was in January it was minus 25, 30 degrees below, no sooner that it came to the ground it froze right away.

So basically what we ended up doing once it all froze up we get a Cat, we scraped it all up, put it in a big pile and hauled it away later on. You couldn't get away with that right now. That's what I was talking about; the industry wasn't really concerned a lot about the environment. And in hindsight we should have been much more pro-active. When I was sent there as a field engineer we never anticipated anything like that would happen. What's the worst thing that can happen?

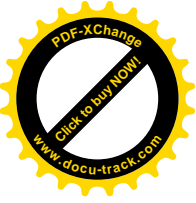
PMB: You would never have thought of that.

ABOUGOUSH: No. But if you really thought about it at that time, that was quite a likely possibility because you're injecting fluids; if you don't have a good cement bond in your well and you burned



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your casing because it was made out of carbon steel and you have very high temperatures that stuff is going to come up to the surface. And did it reach any aquifers? I have no idea.

PMB: And, of course, that sort of thing is still happening. T-pad was in I think 1997. But do you remember the Joslyn explosion just five or six years ago?

ABOUGOUSH: The more projects that we have, particularly in situ, that we're injecting a very hot fluid, steam, into the ground, mistakes are going to happen, accidents are going to happen and we should be prepared for that. So I don't think that's something unexpected. And I'm hoping in the designs of all these projects that they have solutions for those possibilities.

PMB: My favourite story on the environmental side. I joined Gulf around 1977, and one day the director of environmental affairs or whatever it was took a bunch of us out to the field and gave us a run and he said, okay, here's what happens before we drill a well. We have to fill out this stupid environmental form; so here's the piece of paper. We tick everything off and then we sign it and then we start drilling. And that is what they did.

ABOUGOUSH: That was my point is that we took it casually and it's biting us now. We can't take those things casually.

PMB: Notable figures you've encountered. You've mentioned a number of them. Did you know Peter Lougheed very well?

ABOUGOUSH: Yeah, I knew Peter Lougheed. Not during that time, I got to know Peter during my advisory service to the company that I talked about in Toronto, and he chaired the boards that I was on, so I probably got to know Peter --

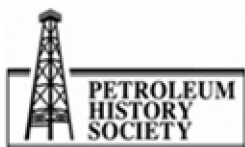
PMB: What companies were they?

ABOUGOUSH: This was called Quorum. And so I got to know Peter and learned a lot from him actually in the way he conducted meetings, how he would ask for the opinion of others, although he had a great knowledge base he would never dominate you or make you nervous about speaking up. So he always encouraged people really to -- he was a great listener what I found about Peter.

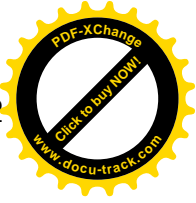
Other prominent people Rick George is a good friend of mine. Rick, I would say he just finished publishing a book, Sunrise, and he's really probably more instrumental in getting this industry going than anybody else. So if anybody's looking to see how that was done be advised to read his book called Sunrise.

PMB: I read the book; I love it. He cites in Chapter 6 the only footnote he has there's a reference to an article I wrote, and it's quite funny; if you want to look at the footnotes to Chapter 6, and the context of it. But he also is one of the people that we interviewed, and he was simply superb.

ABOUGOUSH: Yeah, he is very good. So that's why.



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Eric Newell is another fellow. I mean between these two guys I mean they got the oil sands, the mining, and with Rick got the in situ going because he recognized that he's got a lot of land, a lot of resource that requires to be developed by in situ methods, and he's got an upgrader there. So there's a lot of --

PMB: That was a brilliant strategy. Do you want to say anything about the trucks and shovels?

ABOUGOUSH: Well, what happened, if you read the book, and I've talked to Rick quite a bit about this. GCOS, they were the pioneers, and you've got to give them credit in getting a project like that going when the price of oil was two, \$3 a barrel. But as a result they encountered a lot of problems. And GCOS was not a profitable operation at all, so when Rick came in to run the company he faced a lot of challengers; people were demoralized. The company required a lot of capital and the technology they were using was really not suitable for the application.

So he went in and proposed to his board to change from bucket wheels to draglines to get the people motivated, and basically the board said well, if you can go and find money we're okay with it. So Rick had to go to the capital markets in a very tough environment where this company has lost money for decades and now they've got this young guy going in there and saying I can make a change. I can make it better. And he did. He took a company that had capitalization of a billion dollars when he took over, to one that had over 50 billion by the time he left.

PMB: One of the brilliant things that he did was before he improved things he separated from Sun Oil.

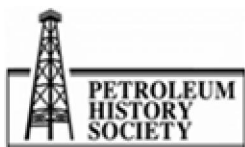
ABOUGOUSH: Yes.

PMB: And became Suncor.

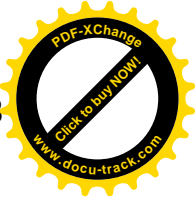
ABOUGOUSH: I think it was probably mutual; Sun Oil just had all their memories have been just write cheques, we just write cheques; they wanted to get out. And Rick had to buy them out so he had to go to the market for that money.

PMB: And one of the people that I interviewed was Bob McClements; he was the chairman and CEO of Sun Oil, and as soon as he was gone -- he left about the time that Rick George came in, his successor sold off Suncor and got rid of all of their other producing operations on the principle that they'd never be worth anything. So the company is now -- I think that Suncor in market cap is now worth about 50 billion, and Sun Oil is now worth a couple of billion. It was one of the stupidest decisions in history.

Any other notable figures that you would mention? And you said there were people you would recommend to be interviewed. We've done all of the ones you've mentioned so far. In terms of my notes this would be point number 8.



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ABOUGOUSH: So let me just go in here, we talked about Clem Bowman, we talked about Rick George. Bob Peterson. Bob Peterson was the CEO of Esso at that time, so he was very instrumental particularly in the Cold Lake projects. So you remember in a lot of these things you need momentum. If you only have one project, if it fails it's a hundred percent failure, if it's a success it's a hundred percent success. So you need many projects going at the same time that you make sure that your risks, and you have different technologies in different areas.

So Bob Peterson was very instrumental in making sure that Esso was still involved, particularly in the Cold Lake heavy oil projects.

PMB: Are you in touch with him by the way?

ABOUGOUSH: I haven't seen Bob probably for ten years.

PMB: Because I have had some communication with him and he said he usually makes it to Calgary once a year, and so every once in a while I send him a reminder, if you're in town I would like to talk to you.

ABOUGOUSH: We talked about Eric Newell, and I think you know him very well. Just from the academic world I'm going to mention Bill Hopper. So even though that a lot of people were against Petro-Canada, but he really invested quite a bit in the heavy oil by trying to go after Husky Oil, by trying to do studies of heavy oil.

PMB: Is he still in town?

ABOUGOUSH: I think he's passed away. But I think he deserves to be recognized as one of the pioneers in that area. So that's from that side.

I'm going to give you names of two people in the academic worlds. We can't forget about our universities, so Farouq Ali was a professor at Penn State and then moved to University of Alberta. And he did a lot of theoretical work primarily related to the steam operations. So he should be credited for --

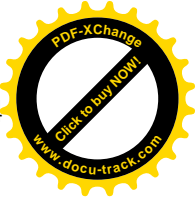
PMB: My colleague up in Edmonton is trying to get in touch with him, and so we are after him.

ABOUGOUSH: And the other one from Calgary is Gordon Moore, Dr. Gordon Moore. So we go back to he was getting his PhD when I was still in my bachelor. So he's been involved primarily in physical modelling for most of his career. So he'd be a good guy. And he's a great spokesman. He'd be a good guy. And he's contributed to the heavy oil industry significantly I would say from that aspect. So those are the names that I would mention in that.

And another fellow that you may want to contact is Don Towson, Dr. Don Towson. He was involved with AOSTRA, he worked initially for Esso, became a consultant, was heavily involved in the Heavy Oil Association, so he'd be a good guy for you to contact.



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PMB: Where is he now?

ABOUGOUSH: He's in Calgary. I think if you just Google his name you'll find him.

PMB: Those are excellent ideas. And I'm trying to think of who was the chairman of Imperial Oil? He was the chairman and he was the guy who was really behind both Syncrude and the Cold Lake project, but he died just while we were getting this project off the ground. But his son, how is my and he's semiretired, but he really appreciates his father's story and so I'm going to be interviewing Dave...

Thank you very, very much.

ABOUGOUSH: You're very welcome.

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