

JIM CARTER WAS APPOINTED PRESIDENT AND CHIEF OPERATING OFFICER OF SYNCRUDE IN OCTOBER 1997. A MINING INDUSTRY VETERAN, SINCE HE JOINED SYNCRUDE IN ITS FIRST FULL YEAR OF OPERATION (1979), HE HAS PLAYED A PROMINENT ROLE IN A VARIETY OF INITIATIVES AIMED AT ENHANCING SAFETY, RELIABILITY, PRODUCTION, UNIT COSTS AND PRODUCT QUALITY.

DATE AND PLACE OF BIRTH: FEBRUARY 4TH, 1950.GLASGOW, SCOTLAND

Date and Place of Interview: 10 am, June 20th, 2011.in Mr. Carter's home at:

24 - 51222
RR 260
Spruce Grove, AB
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Tel. 780-418-5440

Name of Interviewer: Adriana A. Davies, CM, PhD

Name of Videographer: David Bates

Consent form signed: Yes Initials of Interviewer: AAD

Last name of subject: CARTER

AD: Jim, thank you agreeing to be interviewed for this important historical project. Can you provide me with a summary biography as a context for your oil-sands related work.

JC: My pleasure Adriana to be interviewed today. I actually was born in Glasgow, Scotland, in 1950, and my parents moved to Canada in 1959, so I've been in Canada for a long time. We moved to Prince Edward Island, where my dad was a dairy farmer for several years. And then subsequently he sold the farm there and moved to Ontario and farmed there until he retired. So as a consequence of that I was raised in the Maritimes and started in the education system there. On my way through high school and as I got ready to go to university I ended up working in Ontario in the summers and eventually in the mining industry. When I went to university I decided to choose mining engineering. As a consequence of that I ended up with a mining engineering degree and then went to work for the Iron Ore

Company of Canada, initially when I graduated in Labrador City. After that, I moved to Alberta in 1974 and went into the coal business with a company called Smoky River Coal in Grand Cache, Alberta. Then in 1979 I moved to Fort McMurray and joined Syncrude Canada in the oil sands business. And that's where I ended my formal career in 2007 when I retired as President Chief



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Operating Officer of Syncrude. It's been a lengthy career in the mining and energy industry for a long time.

AD: Where did you go for your higher education?

JC: I did pre-engineering at the University of Prince Edward Island and then I finished up my engineering degree at the Nova Scotia Technical College, as it was called then. It has since evolved into the Technical University of Nova Scotia and then eventually it became known as Dal Tech, and now today it's part of Dalhousie Engineering. That was the way it worked in the Maritimes in those days in engineering. Not every university had the resources to grant degrees in engineering, so you would do your pre-engineering and then do your final two years at Nova Scotia Tech, in this case.

AD: To follow the old adage of "Go West, young man." What prompted that?

JC: Well, it was actually a fellow that interviewed me for the job at the Iron Ore Company of Canada who, at that time, was in a senior supervisory role. He was a former graduate as well of Nova Scotia Tech in Engineering. He was certainly going places; he was a real go-getter. He moved to Alberta in the coal business. His name was Bob Gaines. When Bob got settled at MacIntyre Mines, he indicated that he needed some help. I ended up submitting an application there and went to work there along with another friend of mine that I worked with in Labrador City. So that's how I got out west. It was a big open-pit coal mine. We were just starting it up, so it was a real interesting opportunity. I went there as a result of my interaction with Bob Gaines in Labrador City, that's how I ended up in Alberta.

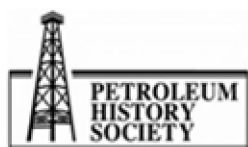
AD: What did you do there?

JC: Well when I first went there I ended up as a mine foreman, which is the same job I had been doing in Labrador City. Once I got there – very shortly thereafter – I became a general foreman, which is the next level up. Then I was assigned in an engineering capacity to design a new, smaller mine that was going to mine out a particular seam that was available and that had a really low stripping ratio. That was a good supplement to the large amount that was starting up. I took on that role, and we contract mined that in about two years time. My next promotion after that was to become mine superintendent at the new mine that was started up by then. I was mine superintendent actually when I was about 26 years old. Then the following year I became the mine manager of the surface mine, which meant I had responsibility for operations, for maintenance and engineering of the place.

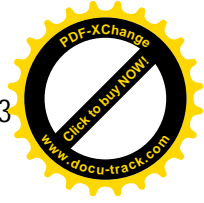
AD: What year was that?

JC: That would have been 1977.

AD: How did you get involved in the oil sands?



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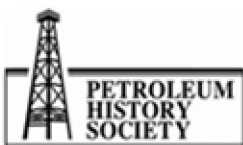
JC: I had, because I was actually on a steering committee. I chaired a steering committee for the province for the occupational health and safety division of Alberta Labour, at the time, to look at mine lighting, because there had been several incidents at surface mines where people had been run over by big equipment at night. There was an issue around how do we make people more visible? So I headed up a provincial study on that. At the time, of course, there were representative people there from the oil sands, and I met some of the people who were involved with the mine at Fort McMurray. In particular, one of them was Dennis Love, who was the general manager of mining at Syncrude. I got to be good friends, not just on that committee but on another committee that was established at about the same time on truck braking – making sure that trucks had adequate brakes for downhill hauls and so on. I represented the coal industry on that as well. So I got to know Dennis quite well, and he called me up one day and said, “Jim, we’ve got a bit of a challenge here with our mine plan. It’s not quite working the way we’d thought, and we’re going to have to move to truck and shovel stripping of the overburden and move our draglines and buckets onto oil sands and remove the overburden with trucks and shovels.” Which was a bit contrary to the original plan. The original plan had the dragline sitting on top of the overburden and then digging it and putting it into the pit all at the same time as casting up the oil sands. What happened was that the overburden would not stay at a steep angle. It wanted to go flat, and it contaminated the oil sands, therefore rendering that mine plan inoperative. So there was a big move to do this – switch to trucks and shovels – so Dennis asked me to come for the job interview. I thought, this sounds good. I’ll at least go and have a look at it. Of course, I went and had the interview and actually sat in on a couple of meetings before I accepted the job. That was Dennis, who was a great guy and served Syncrude for a long time as general manager of mining. He was just a great individual, so I decided to go to Syncrude, to join that company and take on that task, which was a pretty big role to do.

AD: When was that?

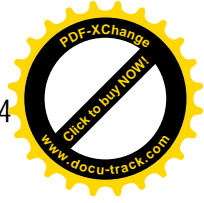
JC: That was in 1979.

AD: What was it like?

JC: Well, you know, Syncrude had just started. When I went there, Syncrude had been running for about eight months or nine months. It was really on the heels of Great Canadian Oil Sands starting up. Great Canadian had started up in ‘67, so this was kind of like 10 years, 12 years later. The whole industry was really viewed as a bit of an R & D curiosity in those days. Nobody really believed that we were going to be successful with this very complex business of mining the oil sands and extracting the bitumen, then taking this very, very heavy oil and then upgrading it to a light, sweet crude that was then usable in refineries to turn into gasoline and diesel fuel and propane and whatever. People viewed it as just an experiment we were doing up there. The world didn’t know much about the oil sands. Certainly, even in Edmonton it wasn’t really that well known. Calgary, it wasn’t well known. Toronto, they didn’t know about it at all. So it was, it was ... If you were going to get involved in something that was really a pioneering endeavour of the highest order ... And the other thing that complicated it was that it was the mining business attached to the oil business. Historically, the mining and the oil business hadn’t really worked together very well. The oil



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companies had tried to get into the mining business and it hadn't worked all that well. The miners, some of them had been in the oil business, and even today still are, some of the bigger companies. But it's not a marriage that is a natural one, even though it's still extracting goods from the earth. So there is a real challenge around that too. People certainly that were in the industry would wonder why a miner would want to go get involved with a bunch of oil companies getting into the mining business. So there was a fair bit of peer pressure saying, "Do you really know what you're doing, if you're going to take that on and do it?"

AD: What was the first challenge of the job?

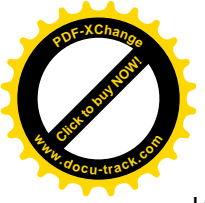
JC: Well, excuse me, I've just run out of voice here. Well, my first big challenge on the job was really sizing up the geotechnical issues associated with a very soft landscape. Because the oil sands are soft to traffic on, there wasn't a lot of aggregate material around for building the roads, and yet we had to move these high volumes of material. So we needed to use the biggest equipment that we possibly could, and I wanted to use the 170-tonne trucks because those were the largest in the industry at the time, and I knew that the unit cost per tonne mile of moving a tonne with those was going to be lower than say an 80-tonne truck or a 50-tonne truck, even though the conditions were very soft. The biggest challenge I had initially was convincing people there that we could do this successfully. Great Canadian Oil Sands at the time had tried the big 150-tonne trucks, and they didn't have much success with them. They were switching their fleet back down to 85-tonne truck, mechanical drive. There was a lot of skepticism to overcome, shall we say. But we persevered on that and ended up ...[clear his throat]

AD: If you have to pause, don't worry.

JC: No, it's OK. So the challenge was really to get a truck that would be successful. I had used this particular brand of 170-tonne truck. It was called the Terrex, and it was made by GM diesel in London, Ontario. I knew that the truck would work in very severe conditions, because I'd used it in Labrador City in the iron ore business, so I knew it could work at very low temperatures, and I knew that its drive system was very robust. When we ordered the trucks, I actually spent time with the manufacturer in their engineering offices, doing something they had used in the locomotive application, because GM diesel made locomotives for the railway business. They used to use the same drive engines in this truck as they did in their locomotives. And the locomotive when it goes to get started, it starts off with the electricity going to the motors in series, and then it switches to series parallel, and then to parallel once it gets rolling and gets its speed up. I had thought this would be a great advantage to use in the oil sands because the trucks normally have power going to the wheel motors in parallel. So we talked to General Motors about, "Can we do the series parallel arrangement on the trucks?" and they thought about it and said, "Well, we don't really see why we can't." We began to work that, and we ended up with a design that enabled the operator to switch from parallel into series when he got on the waste dump, when the rolling distance was really high in the soft conditions. It increased the torque to the rear wheels to about 45 per cent, so it made a tremendous advantage for getting across these soft waste dumps. Now of course whenever you do that, you're putting more horsepower into the components, so we needed to build a bigger axle, a



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larger diameter axle, which became known as the tar sands axle on those trucks. It gave them the capacity to haul a 200-tonne payload across the soft conditions. It was really then that we realized we could make these trucks work, and we used radial tires. Radial tires tend to have a greater footprint, so they got the ground-bearing pressure lower, and that enabled them to traffic over the softer conditions. Similarly, on the shovels. We ordered them with extra-wide track pads. You know the tracks themselves were wider that they would be for any other application. That made them able to float on top of the softer conditions.

We started up the fleet about 18 months after I joined the company, and we hired about 300 people and built the shop and added the equipment and began to move overburden. The first year that we had the fleet running, it was designated as a 6 million cubic metre a year fleet and we actually moved 10 million cubic metres within the first year, so it was a great success. It was that initial success of that particular fleet that enabled us then to really look at trucks and shovels on a go-forward basis. It meant that we weren't going to be limited to bucket-wheel excavators and conveyors and draglines. So that opened up opportunities for other technologies to be introduced into the mining system.

AD: So you were 29 years old then?

JC: I was 29 when I went to Syncrude.

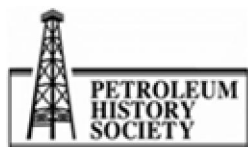
AD: And what was your job?

JC: I was manager of overburden operations when I joined the company.

AD: What happened then?

JC: Well, so that was in 1979. In 1981, I was promoted to assistant general manager of mining and reporting directly to Dennis Love, who was the fellow that had hired me. Actually I reported to Dennis as manager of overburden, too, but as assistant general manager of mining I had a responsibility for the mining, or the overburden operations, the tailings operations, that was the tailings pond and its construction, and mine mobile equipment. The mobile equipment fleet at Syncrude was huge. The miners did the maintenance for all the mobile equipment for the entire plant. Any thing that was mobile, like compressors or light plants, were maintained by the mining, the mine mobile maintenance group. It increased my responsibilities quite dramatically. I had a whole lot more people. I think there was probably about 700 people altogether in that group. I did that job for about two more years, until 1983.

Then I was moved – there was a newly created position of assistant general manager for the other part of the mine, which was the draglines, and bucket wheels, and conveyer, and mine maintenance that maintained that equipment. I was asked to take on that role. We had a lot of challenges with the equipment at that time because the draglines by then had been working for about four or five years and they were starting to show signs of wear and tear. Particularly the undercarriage design – the tub as it's known at the plant. They were experiencing a lot of undercarriage stress because of the



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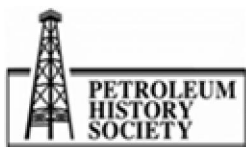


unevenness of the oil sands. I always use the example, if you were able to build a skyscraper in an afternoon and you erected one on the oil sands, when you came in the next morning it would be leaning like that, because the ground had differential vertical support capability. So you can imagine the draglines swinging on there with a big bucket and constantly changing the load. You can imagine that you've got an unevenness under the machine, and it caused a cracking in the tub ... also a revolving frame.

So we had a lot of those issues to overcome, and I was really put in there to help and facilitate that and move that forward. Part of the job was to come up with a design that would repair these machines and make them reliable, because we could see them wearing down – we were measuring cracks in terms of metres and metres and metres of cracking. You just couldn't stay ahead of it with welding under preventative maintenance. I had to do a deal with the suppliers of the equipment to redesign the tub, and we had a lot of in-house engineering capacity. We had our research organization. We were really good at strain-gauge measuring things and measuring loads, and all of that. We were able to actually provide information to the manufacturer that they didn't even have. In fact, we had a tool that is very common today in design for mechanical structures, but we had a tool called finite element analysis which allows you to really get in, hone in to the stress of very small surface areas: an inch by an inch kind of thing. The manufacturer, one of the manufacturers of the draglines we had didn't even have that capability themselves. They had farmed that out to another company.

So we were able to bring a tremendous amount of knowledge to the table. The first thing we had to do was to get them to believe that we weren't going to sue them because of the wear. You know, and once we overcame that. I mean, we could have sued them, and we could have been tied up in litigation for years and years, but it wouldn't have gotten a hundred thousand tons a year, I mean a hundred million tons a year of oil sands into the plant. We had to fix it and get going. Once we got them convinced that that's what needed to be done, we worked on a plan, in the case of the two Marion draglines, to re-tub the machines. The other draglines we had, the **Sirius Heary machines**, we had problems with the booms, the long boom that the bucket is attached to, they were cracking too. So we had lots of issues we had to overcome there.

Then, on the bucket wheels, we had problems with the original design specs for the bucket wheels were you would see a tooth-tip load of about 40 tonnes when the wheel was turning around digging the oil sand out of the windrow. The problem was that the oil sand in the wintertime would freeze in the windrow so that the bucket wheels were seeing loads that we had measure of upward 100 tonnes at the tooth-tip. Well, that's about two and a half times the design. We were getting all sorts of problems with the hollow shaft, which is the big shaft that goes through the wheel. Where it attaches to the drive, the shaft wasn't quite long enough, and it caused wobbling. So we had to redesign the entire front end of those machines. We worked with the manufacturers, of course, to make those modifications. And they're German design; they're O&K and Krupp – the two actually competing companies in those days – but not one company could have had the capacity to build four of those machines in the timelines we needed, so we ended up with a Krupp top of the machine and an O&K undercarriage.



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That complicated the issue of making these modifications, but we worked our way through that. We actually got our dragline and bucket-wheel system to work very well at the end of the day. We were very successful with it. It wasn't exactly a flexible system, and that's why we took our knowledge and learning of trucks and shovels in the oil sands to move to the newer technology that eventually emerged, where we actually mixed the oil sand with water and pumped it into the plant. We were able to do that with trucks, and then of course we had to develop crushers to enable us to do that. But the draglines and bucket wheels served us very well. Sometimes they get a bit of a bad rap these days, because everyone's doing trucks and shovels. Some people refer to the bucket wheels and draglines as being unreliable, and you know to some extent in the early days they were unreliable but we learned how to overcome that. We had some really good people that just committed their lives to this, to making it work. So I'm always hesitant to say that any one technology is that much better than any other. I think you can make them both work if you have the right approach to it, and we proved that at Syncrude Oil over the years.

AD: Did you have your own R & D capacity?

JC: It was really unusual to have it. I think that this is where the benefit of the oil company influence really came to the table. Miners themselves don't tend to want to have that sort of overhead, if you will – your own in-house mechanical engineering capacity. Although the modern big miners today – the Barricks and the BHPs and the Rio Tintos – would have that, back in those days it was sort of unheard of. Because the mining industry had very narrow margins. You didn't have the profit opportunities that you have in the oil and gas business. Miners by nature, they tended to farm that out and have the original equipment manufacturers do it, so that was a real benefit to Syncrude. We had an attitude there, we had to have, where, if people aren't going to help us with this, we've got to do it ourselves. We've got to get on with it and do it.

AD: Did the remote location force this on you?

JC: I think so, because in the mining industry you do that anyway, because you're in remote locations. And you have to have a can-do attitude to be successful with it. The mining industry is used to working in remote communities, and a can-do attitude is kind of inherent, is part of what you have to be successful. What the oil-and-gas industry brought, though, was the ability to think a little bigger than perhaps the miners would have done on their own. And we could add the capacity to do the mechanical engineering, and of course we had the research facility. That really helped us a lot. It helped us a lot because we knew how to strain gauge and measure and do all those mechanical data collection efforts that were needed to modify the equipment. But it also helped because it got our equipment operators and our maintenance people familiar with that sort of thing. So, later on, when a manufacturer was introducing a new piece of equipment, they loved to come onto the Syncrude site, because we already had a mindset for strain gauging the frame or strain gauging the drive system, because our folks knew that our research people were doing that periodically. In a lot of mines it would have been, "Well, let's just rip that wire off; it's just in the way," sort of thing. We



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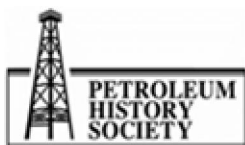
didn't do that. We had a discipline to honour the effort that had to be done, which helped serve us well in the future.

AD: You were involved with the tailings ponds.

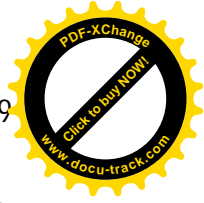
JC: Well, you know, the tailings ponds get a lot of bad airtime today in the industry. And it's very unfortunate, because they really are a part of the whole process of water management in the oil sands. The reason that companies today are able to recycle their water 19 times over is because they have these huge ponds that enable them to let the water reside in the ponds and the solids to settle out. Today, the surface miners are importing about 15 per cent of the water they need. The other 85 per cent is recycled. What they have to import is really water that is lost to the hydrological cycle through evaporation or it's trapped in the sand that's put into the walls of the pond. And these ponds are built – they're huge civil structures – but they're built very slowly and very gradually as the sand is available. What you end up doing is you pipeline the sand out and it's discharged hydrologically, so it's got a lot of water in it. And you build the slopes of the pond up and you let the water run inside, so you're building a beach of sand. We actually call it a beach. We also have internal drains so that any surface water is caught and it goes into settling basins. Then it's pumped back up into the pond. So there is no discharge out of that pond into the surrounding environment. It's all trapped and repumped. And the whole process is one of build, measure, observe, build again, measure, observe. **Constant mile train of movement, and pour pressures, and effects it might be having on the surrounding landscape in terms of movement down the slopes on the outside.**

In fact, it was such an important thing for us, to do it right, that we had established what we called a geotechnical review board. That geotechnical review board would meet four times a year, and it had on it world experts in geotechnical engineering. I'm talking about people like R.M. Hardy that formed Hardy and Associates. Bob Hardy was on our board for a long, long time. Chuck Brauner, who was the second entrepreneur in the Golder-Brauner Engineering firm – it's now called Golder – but Chuck was a member of that, with a master's in geotechnical engineering and a professor at UBC. Norbert Morgenstern, PhD in geotechnical engineering. If there's ever a dam failure anywhere in the world and you get on an airplane the next day, you're going to find Norrie flying into wherever that is, because they call him in to come and help investigate it. So these people were the leading geotechnical experts from around the world, and we treated that with a tremendous amount of dignity and respect. Almost as much as you would a board of directors that was guiding your entire company. This was such a critical thing. We needed to have it adjudicated. Our engineers were all very good people too, but they needed to track and bounce off their thoughts and ideas and their procedures with this group. We, as a consequence of that, had a very geotechnically-stable tailings pond. We had to do some remedial things. We had to put toe berms on the outside of the major tailings pond at one time. But that was a precautionary measure which we did just to make sure we weren't going to have any movement and that sort of things. So geotechnically, those ponds are very well constructed and the utmost in care is taken.

Later on, I became a director of the Mining Association of Canada, and the mining association had some concern because any time there was a tailings pond failure anywhere around the world it was



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like a negative on the industry. When I was on the board, we decided that we were going to establish an international set of procedures around tailings pond construction and operation, and a lot of the procedures that we had used at Syncrude became part of that, to help create that body of knowledge that could then be used world wide. The mining association today makes that available to any mining company, whether you're a member or not you can access that. So there was a very strong focus on integrity of design and integrity of operation to make that work successfully.

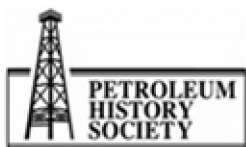
AD: What was your next career step?

JC: In 1986, I was asked to become the General Manager of Maintenance for the entire Syncrude operation. Now, in that role, I was responsible for maintenance that was shared around the whole site. That was involved things like the central machine shop, the auto shop that fixed the automotive equipment, the cranes – we had a fleet of 26 cranes at Syncrude in those days, ranging from 18 tonnes all the way to 250 tonnes, that we used in turnarounds and maintaining our equipment and the low-bed service that went along with that – as well as general sites and grounds and maintaining the roads through the plant. Then I also had a matrix role to look at, introducing state of the art maintenance principles to all of the areas of the facility. Those maintenance managers, say, in upgrading utilities or mining would report to their manager, but then they had a broken-line relationship to this general manager position that I was holding to look at new techniques and look at ways we could share workforce and that sort of thing. A good part of the job was in-line, making sure the machine shop was working well and all of that sort of thing. But another part was matrix, leading the maintenance thinking and ideas.

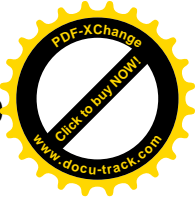
I did that job for about 18 months, and then I went off to Harvard Business School and did the advanced management program there. In those days, that was a 13-week program. It was quite extensive. I think they've shortened it quite a bit today from what it was back in 1987. When I came back from there – shortly after that – I became vice- president of administration. So that gave me exposure to a lot of the, I'll call it, the softer side of the business. You know, the accounting, and the internal audit, and the insurance, the treasury group, materials control, that was purchasing and contracting services, and the legal side of the firm. So all of those things that I really had not had an awful lot of experience with, other than using their services over the years. But hot on-the-heels of the AMP program at Harvard, it was kind of a nice extension of what I learned on that particular program, because it was like an on-the- job MBA. And there were some very good people that worked in there, that were very patient with this engineer learning about accounting and the legal ramifications of some of the things we were doing. It was a great time for me in my career. I certainly wouldn't have wanted to spend the rest of my career doing that, but I really appreciated the opportunity ...

AD: How did your next step up come about?

JC: Well, it came about because we had a president at the time – his name was **Ralph Sheppard** – and Ralph was an Imperial Oil guy, a career Imperial Oil person, an engineer himself, a chemical engineer, a great guy, a very strong leader, and when he joined Syncrude he was driving us to the



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next era of cost control and, you know, bringing some kind of discipline to the business part of our organization. We had been very technically focused up until then. We had to get it all up and running. But Ralph brought the sort of business focus to it and controlling costs, getting costs down, and getting productivity up, and so on. But he was also there to have a look around the organization and help to decide who was going to eventually run the company. He joined the company in '85 and we were in operation for seven or eight years by then, and so it was time to look and see if we had people in the organization who were going to move along and eventually take this thing over. He was the one who gave me the opportunity to go to the Harvard program and at the same time Eric Newell.

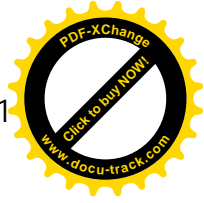
When I was the general manager of maintenance, Eric was the vice-president of administration. When Ralph was president of the company, Eric actually came to Syncrude from Imperial Oil and came as vice-president of administration. And I, at that time, was the general manager of maintenance. Then the vice-president of operations retired, and Eric became vice-president of operations. That's when I moved into Eric's old role of vice-president of administration. It just coincided with the Harvard Advance Management Program. Two years later, Ralph retired. He was 62 at that time, and when Ralph retired, Eric became president and CEO, and I moved into the vice-president of operations role. Then I was back doing something a lot more my forte, if you will, although I really did enjoy my two years as VP of admin. It helped me tremendously; that rounding out. I used a lot of the skills I picked up there in the operations role as well. But the operations role was a big job at Syncrude – a huge facility to take on. Of course, I had good experience on the mining and mineral processing side, just because of my education and my history in the mining business, but the upgrading and utility part was all new to me.

But the one common thread through it all, that really helped me, was the maintenance part of it. If you understood maintenance – the trades and welding and pipefitting and the electrical side – then that was something that crossed all the boundaries and really helped. I had some really good people that worked for me in the organization. Folks like Murray Smart - Murray was running our extraction plant in those days. But he was an upgrading guy by background and a very sharp chemical engineer. Murray became the general manager of upgrading and eventually general manager of upgrading in the utility plant and reported to me for a long time. He was just a great help to me over the years.

We had lots of challenges. When I began that role as vice-president of operations, it was now 1989. We had been operating for 10 or 11 years. One other thing that is very important, and is kind of a background item but has been going on through all this, was that when we started Syncrude we decided that we wanted to have a non-union environment. We wanted to have a relationship with our employees that would have been impossible with a union representing employees. So through all of that we really believed in the team approach and the team concept and spent a lot of time working with our employees and sharing things about the company that they wouldn't ordinarily have had access to, like were we profitable, what were our costs, what was our production, how much money were we making or were we sending back to the owners, if you will. So we really engaged our employees along the way and had a good relationship with them.



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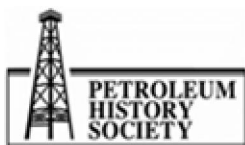
So, in 1989, you know by then we'd spent nearly 10 years with the team approach, and everything has a shelf life. You've got to look for ways of lifting up people to a new plateau of endeavour. So we elected at that time to sort of revitalize it all, and we did that through establishing what we called our vision and values, and then articulating with our employees what all that meant, how it would engage them, and what it meant for them, and how we were going to work together. That really helped to move us forward.

It was critical at that time, because in 1989 – I'll just give you a couple of numbers that will help to frame this – in 1989 we made 54 million barrels of oil and we had 4,700 employees. We'd spent a lot on computers and everything, but like a lot of other companies at the time we weren't seeing the benefits, because if you automate things and you don't reorganize then you don't really get the benefit. At the same time, our operating costs per barrel were \$17, mid \$17, and we were lucky if we were selling it for \$18 or \$19. So, if you did a return on capital-employee calculation for our owners, it was 3 per cent; that was kind of like your bank account in those days, so it wasn't really a very romantic business to be in.

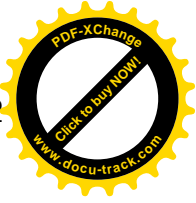
Yet we could see the potential that it had. When I say we, I mean Eric and myself and other members of our executive team that really felt that we could do something with this. But one of the things we needed to do was to get our unit costs down and we needed to get our productivity up and we needed to do that. We weren't going to be able to ask for more capital from our owners. They weren't going to be interested in putting more money into something that was giving them that low a return. So we set off down a path to reduce our costs, and as an executive we established a target of 12 and 12 by 2000. The first 12 was \$12 a barrel operating costs, and the second 12 was a 12 per cent return on capital for our owners. We knew that the way to get there was to improve our productivity. So in 1989, we had 4,700 employees and we made 54 million barrels of oil. Our productivity per employee was about 11,000 barrels of oil per employee. By about 1994, '95, we had reduced our costs to about \$13 a barrel, and we were now making 74 million barrels a year. So we went from 54 million to 74 million, without a lot of capital invested in throughput.

This was all about getting more on-line time out of the equipment. Finding out where the chronic failures were happening, fixing it, getting more on-line time. In other words, getting more productivity out of the same iron and steel that we had in the ground – concrete and steel in the ground – and also doing with fewer people. We had let attrition take our workforce down from 4,700 to 3,400 by about '95, '96. And we did that without laying anybody off. And because we were non-union, we could take single mothers that were secretaries and give them an opportunity to become a tradesman or an equipment operator.

We implemented something actually called the Bridges Program. It was a federal government program to introduce women to non-traditional roles, and they had tried it in Ontario but it was only in a very small pilot project. It didn't really get off the ground. Our HR people found this program and brought the federal people that were trying to get it moving into my office and they sat down and we said, "How can we get it moving, how can we get this thing going?" This is ideal for



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us, because we've got all these administrative people that are now somewhat redundant because we've put in more computers and everything, but they're good people and we need to have good people, so how can we introduce them into the trades. So we set this program up just the way the feds had intended it to work. And they were delighted, because they could see that we were going to be really serious about it. And it worked very well for us.

They way we did it is we had the women who wanted to go into the program to go and pick a trade and go and work in that trade for six months. First, of all we gave them six weeks to select the trade they would like, and they went and sampled different ones and then they would pick one. Then we said, "Look, we'll give you six months to try this out and if you don't like it we'll put you back in an administrative job six months later." Very few of them, by the way, wanted to go back to an administrative job. Most of them were off and running in the trades they were in. Many of them became welders. They became motorized equipment operators. They became electricians, process operator. Well, the program was so successful that a lot of our males that were in accounting roles and administrative roles said, "Well, what about us? I'd like to try that too." So we opened it up for them, and they went into some of the trades. So here you had a person that maybe had gone to NAIT or SAIT and taken business administration and that were maybe in purchasing or maybe in contracting services that decided, I want to be a millwright. Well, when they came over to be a millwright, they don't just throw away all that knowledge. They bring it to the millwright team as well, so you've got an uplift all across. We managed the workforce that way, and it helped productivity. By 1995, we were up to 22,000 barrels per employee. We'd virtually doubled it. Of course by then our costs were down in that \$13 range and our returns were looking better.

But this is part of the story of how did the oil sands grow and get to where it is today. We had a 50 per cent royalty at Syncrude. Others had 30 per cent. Coal Lake had 35 per cent, 25 – something like that. But in our case, if you saved 50 cents a barrel, you gave 25 cents of that to the government of Alberta – the way the royalty system worked. We could have worked forever to lower our costs, but we could never have made it attractive to reinvest with a 50 per cent royalty. It just wasn't going to work. That's when the work for the National Oil Sands Task Force, through the Alberta Chamber of Resources, got an initiative. It brought all levels of government together. You know, the feds and the province and organized labour to the table. And all the developers, to say, "What can we do? How do we unlock the potential of the oil sands?" Of course, Eric Newell was the president of the Chamber Resources at the time, and Eric had very much had his hands on the reigns of everything that was happening, with a lot of really good help from the people at the Chamber of Resources. Eventually, we ended up doing a socio-economic study that proved that if the government was willing to take lower royalties from the front end we would grow the pie so large that they would be much better off in the long run. That took a lot of leadership on the elected officials side of the equation. And Ralph Klein was our premier, and Ralph supported doing that. If we hadn't had that pragmatic leadership I don't think that we would have seen the movement that we did.

So as we were developing the new technology that we were developing on the mining and extraction side of the business; we were also focusing on our reliability and our throughput on our fluid coking operation. Over the years, we had learned a lot about the cokers. Where the original run lines were



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six months, eventually we got them to 12 months between turnarounds. What would happen is that the insides would coke up and we had to bring the unit down and clean it all up; do obvious repairs to it and then bring it back into operation. But, ultimately, to get our costs down to where we wanted to get them, we needed to get longer run lengths, so we were targeting to get 24 months out of the units, and we kept making modifications to get reliability. We did things that were revolutionary in the fluid coking field. We engaged a lot of the universities to do it. UBC, for example, helped us a lot with the fouling on the stripper area of the unit, which led to us redesigning the stripper, the sheds in there and modifying those. We had the University of Western Ontario that worked with us on coker nozzle technology, which really enabled us to break the bitumen down into smaller droplets which gave more contact surface area, so when it was in the reactor we would get better conversion and less coking. That also helped us to improve the yield so that when we put a barrel of bitumen in we got more out of that barrel of oil than we otherwise would have done. The reactor things were designed for 74 million, or 74,000 barrels a day initially, and we were running them at over 100, 000 barrels a day by the time we got them ironed out to where we wanted to have them. We'd got our coker run lines up to 25 to 29 months, in that range.

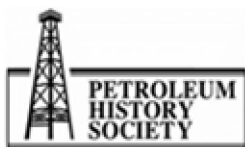
There was a lot of work going on in the whole facility. It wasn't just on the mining side. I've talked a lot about mining because we kind of changed the process completely there. But we were busy making sure the back end of the operation, the upgrader part, converting the bitumen into this light, sweet crude oil, and that was going well. They're very difficult beasts to operate – an upgrader – and people that are getting into the business are learning that. It's not for the faint of heart, but as we were going through all of that, we were busy making the equipment better and getting the longer run lengths and higher liquid volume out of it. Just generally making the operation work better.

AD: Did Syncrude patent any of this equipment?

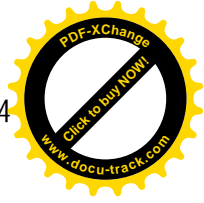
JC: Yes, and some of it was licensed technology. The cokers themselves are Exxon design. We had gas-oil hydrotreaters that were Gulf Oil design. We had different licensors of the technology that we utilized, and we had to honour those licences, obviously, and work with them to the extent that they were able and willing to help us. Sometimes, the things that we wanted to do were beyond their willingness to go with us, and so we ended up doing it on our own. We didn't let it stop us from advancing the development. But we did it in a way that honoured those agreements, obviously. But it was all part of our drive to try and secure Canada's energy future, which was our vision and values statement.

AD: Can you perhaps summarize the achievements?

JC: The first eight to 10 years, we had operated with a very open book with our employees. We had used the team approach, team concept, where we would really share things with them and have them participate in making decisions that in another environment would have been considered the purview of management. But we wanted our employees onside; we wanted their hearts and minds, not just their bodies coming to work. We had worked for about eight years with the team approach, and then we realized that we needed – this is all new, by the way; we were learning as we went;



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nobody else has done this. You can imagine this huge industrial project with all these different cultures. You had the upgrading culture, which is really kind of the refining of oil and gas culture. And we had the utilities plant culture, where we made the electricity and the steam, and that's got a different sort of culture. People come from municipal water treatment plants to work in those plants. So they come to work in those plants. Then you've got the miners, who are the real, you know, get her done, get out there and make it happen sort of culture. And then maintenance people who tend to have their own culture. If you're a pipefitter or a welder or a heavy-duty mechanic, they've got their norms that they bring with them. So we had quite a challenge earlier melding this whole thing together and creating what I would call the Syncrude glue, which was really our team approach to everything.

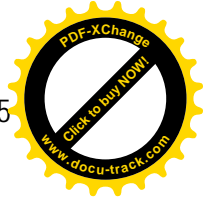
By the time 1989 had rolled around and Eric was the new president of the company and I was VP of operations, we were ready now to start a new chapter and take things to another level. So we went to work to create our vision and values statements. They were popular at the time; everybody was doing it. But like we always did, we wanted to make sure we did a thorough job of this and we wanted to make sure that it actually had value and that it paid off. So it was actually before Ralph retired, Ralph Sheppard, that we actually embarked on creating a vision and values statement, but it really got traction after Eric became president and CEO.

We were pretty bold in our statement. We said, we are going to secure Canada's energy future, "securing Canada's energy future" that's Syncrude. Today you'll see it on the electric shovels that dig in the mine or on the crane – it will be there. And we talked about doing it with the vision to lead, the knowledge to succeed, the commitment to do better, and the heart to win the race. If you think about those words that are in there, knowledge, first of all, we've got to know what we're doing. Vision to lead: leadership is important and the leaders aren't necessarily the appointed leaders. We want everybody to be a leader, to lead along. The commitment to do better was all about continuous improvement, and the heart to win the race was, "We're not giving up here." In our history, we hadn't given up. If we'd been predisposed to giving up we never would have got that far. Then we said, "and we will do this by pushing the limits of what technology can accomplish." OK, so that's getting more oil out of the iron and steel we've got, going from 54 million barrels to 74 million barrels. Pushing the limits of what technology can accomplish. Applying learning and innovation in everything we do. Treating people with dignity and respect, and behind that we had a series of statements about how we were going to treat people and how we were going to work. Those really were the how-to part of this.

When we first put it together we put it out to our managers. We first worked as an executive committee, and then we sent it out to our managers, and they came back. It took us about a year to go through the process. Obviously it wasn't our prime focus. It was important part and we felt it was a building block, but we were doing other things like running a plant and doing all that. In about the course of a year, we flanged up on our statement, so we had a lot of input from our managers in creating it. But then we realized that we really needed to take it to all our employees; otherwise these things go on a shelf and they collect dust, and we wanted it to be small enough that it could go on a card. And it is to this day; it's on the back of a card. It's very simple on everybody's ID tag; it's the



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card behind that. So what we did is we had sessions with all our teams through the whole company. I was vice-president of operations at that time, so in that case I would kick off the session, if it was an operation session. By the way, 2,900 of the 3,400 employees were in operations by that time. We started this in 1990, so our workforce wouldn't have been down to 3,400 but it was 4,200, but the majority of them were operations so we had a lot of sessions. I would kick them off in the morning, and I would have a general manager there. There would be a general manager of mining and one of extraction and one of maintenance and upgrading and utilities. They would spend the whole day with their management team and their employees, right down to the process operator or the equipment operator. It was a two-day session, and I would come back and close it out at the end of the two days.

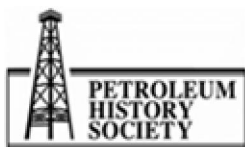
We did this over a course of about eight months to a year, and we got around to all of our employees that way. They were working sessions about what does that really mean? Of course, the employees would point out that we were doing things that wouldn't subscribe to what we were saying and that our guidelines for how we were going to treat people with dignity and respect – they would point out that, hey, they're just not working that way. So it turned out to be great two-way dialogue with them, and at the end of the day they knew what we were trying to do. This was all about creating more opportunities for sons and daughters and relatives. There would be job opportunities that will come out of this if we're successful getting our costs down and attracting more investment and growing the business and growing the industry. It was all about engaging them at a higher level than we had been able to do with a team approach. We were able to instill the whole notion of life-long learning, because pushing the limits of technology and applying learning and innovation in everything we do – all of those words, we were able to operationalize for them in these two-day sessions.

AD: Would you say that the vision of process worked?

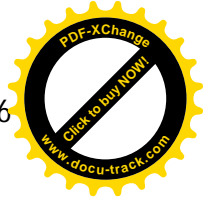
JC: Yes, it definitely did. It definitely did, and it helped us in the ensuing years. This was about 1991 that we did all this with our employees, so we were just embarking on reducing our workforce through attrition and realigning and reorganizing, moving people into different jobs, and trying to get more throughput and all that sort of stuff.

We realized as we were going along that we needed to have some more initiatives to support that. One of them was business literacy that we introduced. It was really all about trying to have people saying in the mine, "When I produce a barrel of bitumen and then it goes into the upgrader, what is my line of sight to cost of a barrel at the end of the day?" And developing a better understanding across the whole process, if you will, for how your particular piece in all of this affects the bottom line at the end of the day. So we spent quite a bit of time on that sort of thing, really enabling our employees to get a better understanding of the whole business.

Then over the years – and I'm trying to remember when this would have started – well, I think it was 1998 actually, because I became Chief Operating Officer in 1994 and President and Chief Operating Officer in '97. In 1998, crude oil prices went in the tank, again, to \$11.50, \$12 a barrel.



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We had by then embarked on what we were calling Syncrude 21, which was our growth opportunities. The first piece of that was a \$500 million investment, which enabled us to open the new North Mine that I spoke of – the new technology – but it also put in a hydrogen recovery unit in the upgrader to help us then to do more hydrotreating of the product and then to get more capacity out of our upgrader. So that was \$500 million. The next part was that we had a vacuum distillation unit in the upgrader. We, at that time, were also contemplating opening up the new Aurora Mine, so that was a billion dollar investment. We were into that in 1998 when crude oil went to \$12.50 a barrel.

At that time, I was president of the company by then, about '97, so we had a real need to communicate with all our employees. I began to have, in 1998, these monthly sessions with the top 300 leaders in the company. We were trying to figure out ways of cutting our operating costs and surviving, and not to have a cash call on our owners. We were partway through our expansion and didn't want to put it on ice, so we had to do things like avoiding a coker shutdown. We did a lot of things as a result of working those issues, and so for the month, for the year 1999. It was actually in 1998 we would have these monthly meetings. Through the crises of the crude oil prices we went to quarterly meetings, and I would use those meetings to update them on how the whole business was doing.

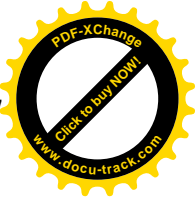
In 1998, when we were having the crisis about crude oil prices, I was having these meetings about what could we do to help improve our cash flow, and they were very successful. We had them monthly and then we decided, well, we don't need them monthly but let's have them quarterly and then we can talk about performance in the quarter and what the challenges are for the following quarter, and it was a way for us all being on the same page as to how we were doing operationally as a company. Those meetings became regular events for a long period of time. It was from 1999 to 2007 that I had them regularly with our top 300 employees. It was a really good way, I think, to have them be familiar with the entire company as opposed to the particular area they worked in as individuals. It helped us to kind of keep on the same track.

AD: When you become President and Chief Operating Officer and the price of a barrel plummets. Talk about the stress level.

JC: Well, yes, there was always a lot of stress. Particularly with the operation, virtually every day there was something you would have to become concerned about, so things like on the weekends I always had status updates every morning and then I would plug into and find out how the plant was operating and what the issues were. Sometimes you had to be involved if it was a significant event on a weekend or whatever or if it happened in the middle of the night. You'd get a phone call at home. With that sort of operation, that is there all the time. Anybody that is in operations knows that, understands that, but it can be a real burden to carry for as many years as I did. I mean I ran the plant for 18 years, so over the course of that I experienced a lot of difficult times there. Of course, when the price of crude went down, that certainly didn't help, because it was really the operation, really what Syncrude was all about – making the oil and managing the costs and doing all that. Obviously, we had lots of help from the support groups but the real sharp end of the arrow



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was the operating side of the company, as it's that way by nature. It's a joint venture company so we weren't out there raising capital or trading securities or taking over somebody or getting taken over, not necessarily. It was more of an operating focus. So a lot of stress, no doubt about that, especially around budget time and year end, when you're really trying to hit targets. Owner expectations were amazingly high, and quite frankly there wasn't a tremendous amount of understanding for the business we were in, because a lot of our owners were upstream producers. I mean, upstream as in conventional oil and gas, which is way different than the oil sand business.

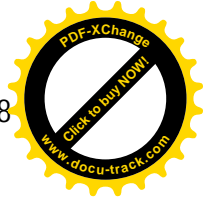
In the mining oil sand business the upstream is the mining business and the downstream – the ones that had downstream – they were more familiar with the upgrading side of the business but they were running refineries at a nice feed stock that they could count on every day and that was the same relative consistency. We had issues with ours where we had chlorides in the bitumen so that we couldn't use conventional de-salting techniques or electrostatic precipitators because we had too many fines [solids] in the bitumen itself that would migrate through the system. You couldn't eliminate those with ESPs [electric submersible pumps]. We had to centrifuge. Well, you could only get down to about 20 parts per million, so you had that amount of chloride going into your upgrader. You know, most refineries get it down to three parts per million. We had all those issues to deal with, and a lot of solids, and cold weather – extremely cold weather – and a very tightly integrated facility, where you have not much inventory between one piece and the other. So this whole thing had to operate as a pretty smooth machine. And to do it at some pretty extreme cold temperatures, 24/7, 365-days a year. The entire time that Syncrude has operated, we have never lost production due to labour disruption. We had one event, a coker turnaround that was back in 1988, that resulted in a slow start-up of a coker due to some labour issues in the building trades. Outside of that, that place ran 24/7, 365-days a year. That is a tall order in managing and running something that complex and that intense.

AD: All these developments that are happening ... Can you talk about the relationship with Aboriginal People?

JC: When I joined Syncrude - Syncrude had determined right from the beginning that they wanted to engage the Aboriginal People, and in fact during construction a lot of Aboriginal People worked on the initial construction of Syncrude. Bechtel was the general contractor and they were either working for them or working for some of the subs. It was an endeavour that Syncrude decided to undertake because, if they didn't do that, the Aboriginals were going to become strangers in their own back yard. We were building this huge industrial facility in the middle of, really, Aboriginal territory. Hats off to the senior leadership in those days, and particularly our second president, Brent Scott. Brent was really adamant that he wanted to engage the Aboriginal People. The mining operation had had some success in the startup of the mine in engaging Aboriginals, but it hadn't really been to the degree everybody thought we could do. So when I came on board to start the overburden operation, which was really kind of starting up after the rest of the operation had begun, I was asked to develop a fly-in, fly-out program with Fort Chipewyan, Fort Chipewyan being 200 miles north of McMurray, and to enable people from there to become equipment operators and work in the overburden removal department. So we got that set up.



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We did it in a very unconventional way. I would fly to Fort Chip after the regular day's work – I didn't have time to do this during the regular working day – and we'd meet with the Band Council up there and we had some very forward-thinking council members. Rita Marten was one of them and Sonny Flettt and they are still involved in politics today in the community, and when I would sit down with them and we'd say, "Look, we want to get this thing started, but we need your help. You tell us who we should be hiring from the community. Here's the way we would like to have it working. What do you think of this? We're going to fly them down, they're going to stay in camp, and they're going to follow the same shift schedule that our people do that are working there now. Then we're going to fly them back to Fort Chip for their days off. We won't just let them go into Fort McMurray. We want to make sure they come back to their family and we need you to help us select who we ought to hire."

We hired 11 or 12 in the first handful. "And we also want you to make sure they're ready to come back and fit for work when the plane is ready to come down, and if we have problems with any of that, give us advice on what the issues are and how we ought to deal with this; what action we have to take. We know what we're probably going to have to end up doing, but we want to make sure we work together on that." And we got it going. The first 12 people, I think seven or eight years later, eight of the 12 were still there. The other four we had issues with, and we had to replace them. We'd consult with the Band Council on their replacement. That was the beginning of our fly-in, fly-out program with Fort Chip, and really establishing an employment opportunity for that community. In the tailings side of the business, at the same time, we had established a program where they could work on the tailings pond from April to October, which was kind of a seasonal opportunity. Then they would go back to Fort Chip and participate in the traditional way of life – hunting and trapping and so on – and then they'd come back to work for us in the spring. It was just a great thing. We had about 29 people in the original program that did that.

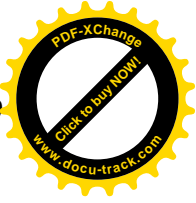
AD: What work did they do on the tailings ponds?

JC: You know, the tailings pond require quite a bit of activity in the summer. You have to put out the bird deterrents to stop wildfowl from landing, and you've got to maintain any other that was out there that wasn't recovered in the process. We would boom that and scoop it up and recycle it back into the plant. And things like the discharge points; they would work the pond area to enable that to happen; that sort of pond maintenance. This pond is huge so they could be out there through the summer doing all that work. And it was the kind of thing that lent itself to seasonal work and enabled them to do their traditional way of life in the wintertime. So those two programs were very helpful to get things off the ground and running. We had a lot of success in bringing the Aboriginal People into the workforce, and if you fast-forward it into today, Syncrude has over 400 Aboriginal People in its employment today; directly with Syncrude.

And, then, Syncrude does \$150 million worth of business annually with Aboriginal firms that were helped by the company to get started over the course of the company's history - 30 years now. Since Syncrude started to collect records, they've had over a billion and a half dollars worth of business



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with Aboriginal firms, so it's been a huge success story. And, then, there's an additional 350 Aboriginal People who work for contractors on the Syncrude site on any given day. Syncrude's right up there with the largest private-sector employers of Aboriginal People in Canada now.

AD: You nurtured Aboriginal entrepreneurs.

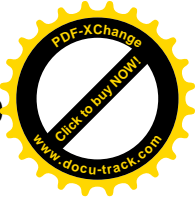
JC: That was the other side of the story. When we first decided to do this, when we first decided to engage the Aboriginal People, we decided we wanted to do it in two ways. We wanted to do it as a direct employment opportunity while at the same time helping to create Aboriginal businesses. Now we had a bit of a debate within our company around whether that was the right thing to do, because those are two competing things. We're trying to hire out of the Aboriginal communities but we're also trying to help them start businesses. They're going to want to hire as well. So how are we going to do that?

We decided that we would not be going to our fullest potential if we did not do both at the same time, so that was the course we embarked on. We found lots of business opportunities that really fitted them. For example, on-site bussing was one of the first ones that we had. As you can imagine, that Syncrude site is huge. I mean, there are street numbers through the upgrader complex. To get from there to the extraction plant or to get from there to the mining offices, we need to have an on-site transportation system. That was an ideal one that we put in place with Fort McKay First Nation. We had garbage collection, both from our camp – we had a 2,800-person camp. You can just imagine the garbage collection to do with that. And the industrial garbage that just came from packaging of goods coming on to site, and all of that sort of thing. We created a company, called Denesoline, with the Chipewyan First Nation in Fort Chip. We had another labour company that we created with the Cree band in Fort Chip as well.

We also worked with individual entrepreneurs. Dave Tuccaro is one of them. He's from Fort Chipewyan. Dave worked for a company at one time that was owned by the Band, and then Dave decided to buy the company himself and took it over, and he's grown the thing tremendously since then. Provides all kinds of services. They've been an environmental service company now that does lab testing and sampling. They have a vacuum truck company that provides vacuum truck services and high-pressure and vac services. They've got small equipment that cleans up around conveyors and that sort of thing. All sorts of opportunities actually came to the fore once these individuals got started. Another one is Clear Water Welding and Fabricating. That was started by Doug Golosky. Doug was a welder by trade and got his start and built a huge company with a thousand employees in the end. He has since sold the company - a couple of years ago. So there's all kinds of examples of really good Aboriginal commercial opportunities that have developed. You know, it was a long journey, and a hard journey. None of it was easy to do. We learned a lot of things. When we first started stepping up our Aboriginal employment we were always concerned about how the Aboriginal People would fit in on the job with our other employees. And we thought there would be issues there. So we hired an Aboriginal expert, who was Aboriginal himself, and he was there to help them to become members of the work force.



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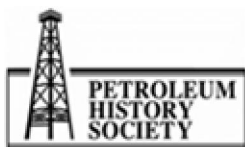


We very quickly found out that that wasn't the issue. Our employees were really good with bringing them in and working with them, particularly on the mining side. We have a lot of Newfoundlanders that work here - a lot of them work in the mining area - and they very quickly befriended the Aboriginal People because they both like the outdoor life and hunting and fishing. So there was a natural sort of bond that I think really helped along the way as well. What we did learn is that we needed help within the Aboriginal community for the employees we had just hired because now they had all their friends and relatives coming to visit them at night because they had this regular pay cheque. Sometimes, they would keep them up at night and cause some issues. So we had to intervene inside the community to make that work in the very early days. It was something we hadn't anticipated. Nonetheless, we did that and helped to get through that early stage of the beginning of our employment opportunities that we'd created. The other things were among the way sometimes the Bands, whenever they started to develop businesses and whenever they changed leadership in the community, you know the chief got turfed out and they put in a new chief. Well, they would end up getting rid of all the employees of the Band-owned companies. We had to really work with them to make sure they set those companies up in a way that, irrespective of who the chief was, the company was still going to survive and have the same management. Otherwise, we were always having to deal with new people and it just didn't make sense.

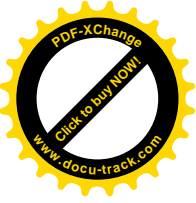
So that was an evolution and a learning, and I know when I say all this it sounds like they really didn't know what they were doing. It was not the case. It was the case that they didn't have the experience, and so it was really important that we worked with them to help develop this and to do it in a way that would fit our cultural beliefs as well. We didn't want to see employees get laid off because the political regime had changed in the community. It just isn't right; that's not the right thing. Once the role models were established in the community, where you had examples of chiefs that were really doing a good job and that were business oriented, like Chief Jim Boucher of Fort McKay. Talk to him today, and he'll use language that any CEO is going to use. He's a real leader of that community and a role model. And Dave Tuccaro, and Doug Golosky, and these guys hold it all anywhere in the world today in the business community and in the Aboriginal community anywhere, any segment of it. It was really nice over the course of almost 30 years to watch that grow and develop and to be part of that.

You know, in the end, and I shouldn't use the words "In the end," because as we were progressing along, we began to realize that the human capital, the talent pool in the Aboriginal community, was one that nobody had recognized and we were able to tap into that. To this day, guys like Dave Tuccaro will tell you that, when he retires he's not going to Arizona, you know to spend the winter. He's going to spend his winters in northern Alberta, and the wealth that he has generated and created is going to be there for everybody, and his talents are going to be available. He might be in Kelowna for part of the time, but he is going to be very active in the community. And that tends to be the case, so you've got this captive group of human resource talent that's available and just needs an opportunity to help them move forward. It was a great experience over the years with that.

AD: The Government of Alberta was involved in the funding of nearly 30 years of Karl Clark's research before passing that on to the companies. What is the role of government in all of this?



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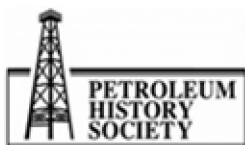
JC: I think the resource, just by virtue of its complexity and the value that is either there or not there, depending on how you approach it, really suggests that you have to have governments onside. If you look at the history, as you point out, the Karl Clarke's of the world, the Alberta Research Council, the University of Alberta, that original science and, then, fast-forward to the early '80s. AOSTRA – the early oil sands technology research authority - really helped to develop the in-situ process that is going to be so prominent around most of the oil that comes out of the oil sands, because 15, maybe 20 per cent of it is going to be surface mineable and the rest of it's coming out of the in-situ process. That all happened because the government had an interest in this and was focusing on it and helping it to happen.

I think if you look at even Syncrude in the early days, the government was an owner, you know, the original joint venture partner. Atlantic Richfield pulled out in 1974 -75, and the project was going to go on ice at that time unless other partners were found. Alberta came in and took an equity position, which they held for many years, and it paid off very well for them. They sold that position and did fine with it as well as the royalties they've actually had out of it too, so I think at different points in time there's an element of necessity to have governments involved. A lot of people would argue that they shouldn't participate as an equity owner. That's fine to say, but the reality of it is that these nation-building endeavours, whether it be running the railway from eastern Canada to the West, the CN and the Canadian Pacific Railway, when those were built there was government involvement in that. There was government involvement in Hibernia, the offshore operation that we've got to get it off the ground. If we hadn't had that we would not have had an offshore industry today. There are times when I think it's important for governments to become involved.

I think the important thing, though, is for them to know when to get out, and that's always a challenge, because once you get into doing something, it's hard to break the ties. But knowing when to get out and let the thing go on its own and be developed forward with private money is very critical, knowing when to do that. If you look at the revenue stream coming out of a new oil sands operation, the oil sands, in general, huge amounts of it go to government - I mean 41 per cent of it goes to the federal government, 37 per cent goes to the provincial government, and then municipal governments get another 9 per cent or so. Other provinces get a percentage, and the rest goes to the developer. You can see that it's a mixed economy model.

AD: What about the regulatory framework?

JC: The regulatory framework, I think, has been and is very robust in Alberta. You cannot go and develop an oil sand operation without having everything in place to satisfy the regulatory authorities. If you're starting a new mine, you have to have public hearings. The developer has to fund interveners. If somebody gets intervener status, the developer funds their expenses. The review process is very thorough. Some would argue that it takes too long. I think in this day and age, it's got to be thorough, and I think there could be opportunities to streamline what happens today. But nevertheless at the end of the day, we've got to be able to stand up and say we've had a thorough review and have looked at all of the things that could potentially could go wrong, and answers to



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how we're going to mitigate those or avoid them. I think the process is very robust in Alberta in doing that today. I think it would stand a comparison test with other jurisdictions very well.

AD: What about the environmental issues?

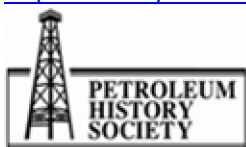
JC: I think with respect to the environmental impacts of the oil sands, it's very important to keep it in the right context. I think sometimes these things get blown out of proportion in the media, and it's a bit unfair, really, for the industry and more so for the people that dedicate their careers to this industry. We have an awful lot of people that live in Fort McMurray that have been hired by the oil sands industry. Traditionally, we hired from the top of the class in every university across the country in engineering and science to work in research and to work on making the operation more efficient and to making it more environmentally acceptable. And that all came through the development of technology.

Hydrotransport technology¹ - that was a big contributor to reducing CO2 emissions for example. Other examples are the land reclamation that we've done. The bison herd – the 300 head of bison – millions of trees that both companies that have been there for a long time have planted. When you look at the land disturbance, it's 620 square kilometres of land that's been disturbed, about the size of Toronto proper, a fraction of the size of the greater Toronto area, less than 10 per cent, and yet we've got a reclamation plan for all of it. It's all going to be turned back. You can hardly see it on the map if you look at the land currently disturbed, by satellite from surface mining. And, in fact, an analogy that has been used is that if you put a Smart car in the corner of a football field, that's about the size relative to the surface area. So that has been blown out of proportion a bit, I think. The CO2 emissions thing has to be considered. The oil sands today emit about 32 million tonnes of CO2 annually. You compare that with the coal-fired power industry in the United States that emits 2 billion tonnes a year of CO2; the coal-fired power industry in China that emits over 4 billion tonnes, and yet the oil sands are being tarred as being the negative poster boy for CO2 emissions. Canada emits 2 per cent of the world's CO2. The oil sands emit 4 and a half per cent of Canada's 2 per cent, so that's one tenth of 1 per cent of Canada's emissions. Yet, we're being targeted as being this terrible emitter, and so we need to put it in context, I think.

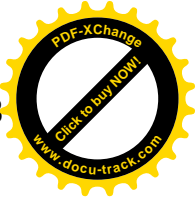
Having said that, the industry has always been concerned about doing right by the environment, right from the very beginning. I can tell you that Syncrude had an environmental department before they had an operations department, and that was before being green was something that everyone wanted to do. We didn't even think of it as being green. We just thought of it as doing the right thing. The Poplar Creek Spillway was built to the water out of the area away from the oil sands so

¹ AD: "Hydrotransport technology enables oil sand to be transported by pipeline as a slurry from mining to extraction, rather than using conveyor belts. One of its greatest benefits is that, as the oil sand is transported through the pipeline, it is being conditioned, taking care of the first step of the extraction process. Developed to a commercial scale by Syncrude, hydrotransport has been part of our operation since 1993, with full production implementation in the North Mine in 1996." Retrieved 10 August, 2011, URL:

<http://www.syncrude.ca/users/folder.asp?FolderID=5803#2>



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that it wouldn't get in touch with oil sand, and, then, it was diverted and built into a huge concrete structure to take the water and let it go into the Athabasca River, the surface water. That was built before the plant was even constructed.

The industry has got a history of trying to update and be on the leading edge of technology. Another example would be SO₂ emissions. In the early days, Syncrude used to emit 300 tonnes a day up the main stack, and that was when they were making 100,000 barrels a day or 150,000 barrels a day. Today Syncrude makes 350,000 barrels on a good day and emits less than 100 tonnes up the main stack. To put through gas to sulphurization and to take the SO₂ out when it became available, reliable technology was needed. We actually introduce an ammonia stream today and make an ammonia-sulphate fertilizer that gets sold to the fertilizer business.

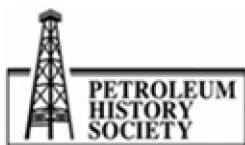
Leading-edge new technologies are implemented when they make sense; when they can be implemented; when you've got a capital stock turn-over opportunity. I think the technology is the answer to all of this, and I think that the industry has got a pretty good track record of implementing that along the way to do right by the environment.

One of the things I've done since I've retired is I've chaired the Alberta Carbon Capture and Storage Development Council. The whole objective there is to look for ways that we can actually capture CO₂, compress it, and then use it for enhanced oil recovery or contain it in underground storage aquifers. The idea was to have four to five projects operational by 2015 that would be able to capture and store about 5 million tonnes. We're well on our way to those projects actually coming into fruition, and one of them is to take CO₂ from the back-end of the Shell Scotford upgrader. Shell, Chevron and Marathon jointly own that upgrader, and they will capture the CO₂ and it will be used, it will be stored underground. **One of the other projects is to enhance energy pipeline and the Northwest upgrader, that we'll actually use it for capturing CO₂ and use it for enhanced oil recovery. When that happens, if you trace a barrel of oil from the Shell facility right from the Albion Sands mine through the other end of their upgrader, the carbon footprint of a barrel of that oil will be as low as any other oil that's available around the world; well, the average available crude oil around the world.**

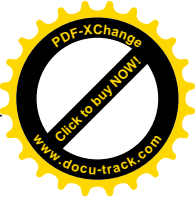
There has been a lot of work done, by the way, on well-to-wheels, from when the oil comes out of the ground to when it comes out of the tailpipe at the end of the day. On average, the oil from the Athabasca oil sands is about 10 per cent higher than the average slate of crude oil available around the world. But that number is coming down, and, for the rest of the world, the slate of crude oil available has got a higher carbon footprint because it's heavier oil and therefore requires more activity and is transported, and distance and so on for that oil gets factored in. I think in some ways the oil from the oil sands has got a bit of an unfair focus.

AD: What about scientists like David Schindler and their critiques of the industry?

JC: I really sometimes get short on patience with some of the proclamations that are made by people that consider themselves real scientists in the scientific community, particularly when they've



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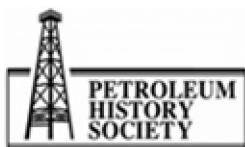
become advocates for certain causes and not just doing their work on pure science. I don't think it's fair when headlines get lifted out of reports or reports get written in a way that provide headlines for the media to latch onto to turn into a story that can result in fear-mongering, quite frankly. And I think, to some extent, that what has happened in Fort Chip is that people have been scared to death by some of these headlines that they've read.

If you take, in particular, the David Schindler recent report what you'll find in there on the bottom of page 5 of a six-page summary a statement at the bottom that says none of the drinking water requirements have been violated by the industry. The water quality doesn't violate any of those drinking water standards and, in fact, you could drink the water right out of the Athabasca River, if you could stand the solids that were in it, naturally. That didn't, certainly didn't, come out in the report. There was a really interesting article written by Vivian Krause in the *National Post*, just recently, about a week ago, and she goes through the entire case of the Schindler report and how it was grabbed by the media and turned into quite a sensational piece of work. She's got a really good ... She's done follow-up discussions with David Schindler himself, who has clarified some of the things in his report and his position on it, quite frankly, which is not nearly as concerned as the media reflection of his original report would suggest.

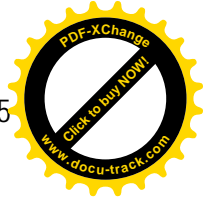
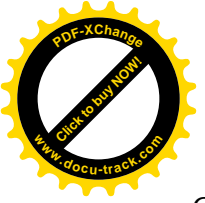
It's unfortunate that we end up with those things that happen, and for me in particular I find it that way because I've spent my whole life trying to help communities like Fort Chip to benefit from this industry and this business. Sometimes, when I read those articles in the paper, I say to myself, "How many people on the David Suzuki Foundation have really thought about creating jobs for Aboriginal People and created opportunities?" I don't hear them suggesting there's an alternative way for those people to benefit from our economy and our society. I don't hear that at all. I hear them suggesting sometimes that making wind turbines would be a great opportunity, but let's face it that's manufacturing and it's relatively low tech and it's going to get done in other countries, not Canada. So it's going to be very hard to find an alternative to the opportunities that are created in the Athabasca Oil Sands. You've got to look at the whole picture together, the whole pie. You can't just pick part of it and say, "Well, we don't like this and therefore you shouldn't do any of this." That's my argument, to sum it up.

AD: What about the relationship between the industry and universities?

JC: There has always been a strong relationship, I would say, with a lot of universities and Syncrude. Just by virtue of the fact that the oil sands industry is a very technical business and requires a lot of engineering and science talent. When you're located where the Syncrude facility is, including its head office, which is in Fort McMurray, then you need to have relationships with the universities if you're going to hire the talent you need and get folks to be willing to go to places like Fort McMurray. We had a lot of relationships with a lot of universities; obviously, a good one with the University of Alberta because it's the closest one to us and has a good understanding of the oil sands industry and its challenges. We had many, many connection points with the U of A.



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One of them was saving the School of Mining Engineering, which was to be shut down, I think, back in 1990. That was one of the disciplines of engineering that was going to be put on the chopping block at the time that post-secondary operating grant cuts were happening in the province. The industry came to its rescue, and I actually chaired the committee and I still do today that helped resurrect that mining engineering program. It went to having three graduates back then and not enough profs. We had to actually pass an accreditation review. We had to hire a fourth professor in order to get through that next review. Today, it actually has 50 graduates coming out of that school. I shudder to think of what would have happened if that school closed down – all of the mining growth that we've had in the province of Alberta and the oil sands development.

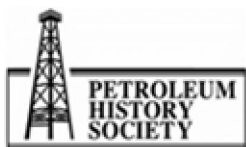
So, there's one, just one connection with the University that we had. We also did a lot of chairs in science and research. One of them was the Jacob Masliyah Chair, which was originally funded by Syncrude, and subsequently funded by some of the other players that came into the industry to really focus on fundamental research on bitumen and how it reacts under temperature and pressure; how to improve its recovery and conversion. We had another chair that we established with Murray Gray in the department of chemical engineering to look at the upgrading process, to enhance that whole side of the business. So over the years, a strong relationship there, and I think one that, because we had a research facility in Edmonton, we had a natural connection with the University as well. Jacob Masliyah has an office, or had an office, in our research facility, and some of our researchers actually left Syncrude and went back to the University to become professors there. We did a lot of work, over the years, to build that kind of relationship. A strong bond exists there that really helped us.

And not just on the engineering side. We did it on the business school side too. We ended up with an MBS program being delivered in Fort McMurray in the early '90s that enabled some of our students, our engineering graduates, to get an MBA, not just engineering students only but others. That came when one of our vice-presidents, Phil Lachambre, who was the executive VP and the CEO of the company in the latter years, helped to get that program going, because he was involved in the business school. We had those relationships for a long time that really built a pretty strong bond between Syncrude and the University of Alberta.

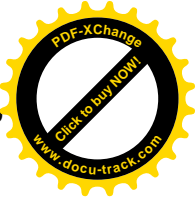
AD: Where do you see the industry going in the future?

JC: Certainly, there has been a fair amount of work done lately by CERI, the Cambridge Energy Research Institute, to look at the opportunity that's there if the development that's projected actually happens. They've looked at things like royalties to government, that sort of thing. The government royalties actually increase quite dramatically as we go forward, so it's going to be a tremendous locomotive in the Alberta economy for a long time to come, and it's going to help to fund schools and hospitals and roads and all the things that we enjoy today, if we do it right.

The Alberta Chamber of Resources just recently completed a study on resource development in the province and didn't limit it to the oil sands. They looked at conventional oil and gas and shale gas and high-pressure frac on conventional oil production, and so on, and oil sands and agriculture and



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forestry. Project out into the future, and they talk about if we do it really well over the next 10 years it's worth 700 billion more than if we do a just mediocre job of developing our resources.

I think we've got tremendous potential here in Alberta just by virtue of the resources we've got. The oil and gas, the coal, the agriculture – we're really in a great position, and it's ours to mess up, if we don't do it right. So we need to really focus on doing it right. I think that as we move forward, the focus really needs to be and again will continue to be on the science and technology side, and learning and applying that as we go forward to do the best job that we can. It's still very expensive oil. It's not easy making oil out of the oil sands; it's a hard job and it's not for the faint of heart. You've got a mine and a surface mining operation that uses 4 tonnes of material to make a barrel of oil. There's a lot of human interaction that goes on when you mine 4 tonnes of material.

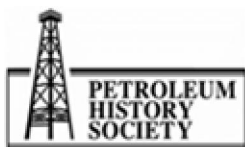
And then there's the machinery. You run it through an upgrader, and people have to turn valves and they've got to watch temperatures and pressures, and make sure that we don't have fires and that stuff doesn't go to the atmosphere and all those things. So it's a very difficult process, and it's expensive, so we have to continually keep in mind that we've got to work to keep our costs down; that if we do not do that we will price ourselves out of a market opportunity. So that's important.

I think you're going to see continued development by the majors, the privately-traded, non-national oil and gas companies, because 50 per cent of the barrels available to them in the world today reside in the Athabasca Oil Sands. The rest of it's owned by national firms that don't allow them access. So that's why you're going to see the big players of the world there – the Shells of the world, the Exxon Mobil's of the world, Total's and BP's and others are going to be attracted to that opportunity. I think that we can continue to develop it.

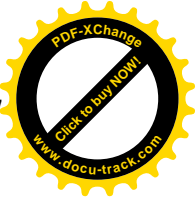
We're probably going to be limited in human resource capital. I think that will be the thing that will probably stop or hold back our ability to develop a resource. And we're going to have to continue to emphasize the need to have people going through the school system and focusing on science and technology, and coming out and availing themselves of those opportunities.

We're going to have governments that have got to have a lot of foresight and are willing to spend the money on the infrastructure. Fort McMurray has got, I think when the last census was over, 100,000 people now. It's really the third-largest city in Alberta, and nobody talks about that. It's developing at quite a rate, and those are all people there that are fairly high-income earners and they're living in the north, they're northerners. They're not going to let things stop them from being successful. That community is going to develop and create its own future, and it's going to need governments that are going to be willing to develop it and support it. It's not going to be OK to take the resources out of there and not treat it properly. They need to have roads, bridges, have schools. We have to have all of those things that are necessary and I think that will happen.

This government has focused on infrastructure and been somewhat criticized for doing it by other members of the electorate in the province. That's needed, if we're going to build a future, and it will be almost back to the days of the National Oil Sands Task Force work. If you're willing to invest,



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the returns are going to be there, and we're seeing that happening now from the National Oil Sands Task Force work, and I think we're into a new era with another 15 or 20 years ahead of us where we can continue on this continuum to generate that opportunity, and we can do that in an environmentally responsible way. We've just got to stay on the leading-edge of science and technology and innovation. It's possible.

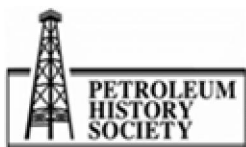
AD: What about negative environmental impacts?

JC: My office for 18 years was sitting right next to this big, what some people would consider a polluting plant. I mean I could sit and look out my window at the stack and I could see it clearly. Do you think I would have sat there for 18 years if I knew that it was poisoning everything around it? I mean, I'd be dead now, for one thing. Taking care of the environment isn't the purview only of the environmentalists.

AD: Do you have any final observations to make?

JC: The one, just sort of building on previous comments is that we really need to be focused on developing this resource in the right way, and we need to recognize that it is an expensive resource. These are the highest cost barrels that you will find just about anywhere in the world. If we want to make a success of that, we've got to be continually focusing on our operating costs of producing a barrel. That's one thing. And by the way, the oil sands industry has got a history of doing that. In the early days, if we hadn't focused on that, we never would have had the opportunities that we've got today. And we also need to look at and focus on the cost of construction of new facilities and make sure that we're being cost competitive in doing that. Because if we're not able to do that, we might be successful in mining the bitumen and producing bitumen, and it will go to the US to get upgraded, or it will go to Asia or someplace that would get pipeline capacity to do that.

We want to keep the value added here in Alberta, then, we've got to keep our pencils sharpened. I'm a little worried, quite frankly, about what is happening in Alberta these days because I think we've experienced economic success and people aren't quite as driven and as hungry as they were. In the early part of our days at Syncrude, I mean in the early '90s, just having a job was a good thing in those days. And people had a "get it done attitude" in Alberta, and I think we've lost a bit of that. Somehow we've got to remember that we got here by having that pioneering, "get it done, be efficient" attitude. If we lose that too much, we're going to give up the opportunity that lies in front of us. That would be my one comment, and I hope that we're able to repeat the successes that we've had in the past and continue to develop this and grow them into the future.



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