PETROLEUM HISTORY SOCIETY

OIL SANDS ORAL HISTORY PROJECT

TRANSCRIPT

DON THOMPSON, BA, MA, MBA, PRESIDENT, THE OIL SANDS DEVELOPERS GROUP (OSDG) AND CORPORATE SECRETARY & GENERAL MANAGER, ENVIRONMENT, HEALTH & SAFETY, SYNCRUDE

DATE AND PLACE OF BIRTH: 1952, SNOWLAKE, MANITOBA

Date and Place of Interview: 9 am, July 29th, 2011 in his St. Albert home.

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Last name of subject: THOMPSON

AD: My name is Adriana Davies and today I'm interviewing Don Thompson. It's July 29, and the interview is starting at 9:50 a.m. Don, thanks so much for agreeing to be interviewed for the Petroleum History Society Oil Sands Oral History Research Project. Could you tell me when and where you were born and give me a summary of your life, a biography if you will.

DT: Well, I was born in 1952 in a place called Snow Lake, Manitoba, coincidentally a mining town, in northern Manitoba. Dad was in the RCMP, so we moved around a lot. I'll skip over to university. I did my undergraduate degree, honours zoology, at the University of Alberta. Then I did a master's degree of forestry at the University of Toronto. I consulted for a couple of years, doing studies of

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High Arctic mammals, along pipeline routes, and then joined Syncrude in 1979 in their environmental department. From there I became executive assistant to the then-CEO, moved into becoming in charge of owner-investor relations, rose in that line of work to the position of corporate secretary, and then began adding functions, such as environmental affairs, Aboriginal affairs, public affairs, travel. Of course, the regulatory affairs, reclamation and the like, and health, safety, and risk management. So my title when I retired from Syncrude was Corporate Secretary and General Manager, Environment Health and Safety. That happened about 2007, but it happened so that I could become president of the Oil Sands Developers Group, a role that I held for four years until, coincidently, yesterday, so I'm now on my second retirement.

AD: Tell me about your industry involvement, even before the oil sands.

DT: I guess in need to goes back to my consulting history. In 1976 or '77, I began consulting in the environmental affairs area. In those days, environmental legislation was new. In fact, Alberta had just passed, or maybe hadn't quite finished, its environmental legislation, and I believe Alberta was among the leaders in Canada. In any event, I began doing work on High Arctic pipeline routes—two in particular, the pipeline routes down the west side of Hudson's Bay from gas gathering systems on Ellesmere Island—the so-called Polar Gas Pipeline route—and then the pipelines down the McKenzie Valley, including Dempster lateral, and up to gas and oil fields in the northern and western part of the Yukon and in the McKenzie basin. So it goes back to the mid-'70s, I guess.

AD: What was the name of the consulting firm you worked for?

DT: It was called Renewable Resources Consulting Services. It was started by a fellow named Ron Jakimchuk and his partner named Glen Semenchuk. It was, along with a firm called I think LGL Limited, one of the first environmental consultant firms, that I'm aware of, in Western Canada. Even though it was the mid-'70s, we were still somewhat of a pioneer in original environmental consulting-type work.

AD: In terms of your academic studies, had you been trained to do environmental impact assessments? How did you go about doing it?

DT: Well, my view is that I was trained as a classical, if you will, scientist. In other words, I wrote a thesis and was trained academically. But environmental impact assessment work builds on the logic that you get and the discipline that you get from learning an academic discipline. So I think that successful people in the environmental assessment area must have solid academic credentials in core areas. You look around today and you see a lot of these degrees that have names that I don't recognize, but I think classical training is what's important. It teaches you how to think; it teaches

you how to think logically. And that's really what all of us brought to the original environmental impact assessment-type work back in the mid, early '70s.

AD: Tell us about your work on these Arctic projects. When did they come up?

DT: Most of them, at least the ones that I wrote, came out from '76, '77, '78. I joined Syncrude in '79. Some of them were in fact published in academic journals, particularly the work I did on caribou in the northern Yukon and in the Keewatin District, around Baker Lake and north in the Arctic Islands, so it would have been in that time frame.

AD: And what were some of your findings?

DT: Well, the findings were to define caribou herd potential interaction with pipeline routes, so really what we looked at was habitat use, migration patterns, that sort of thing, relative to proposed pipeline routes.

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

DT: Well, while it sounds quite romantic to spend long periods of time in the High Arctic, recognize that I was obviously much younger then, there were periods of three or four months where we were camping literally on the Barrens in the middle of nowhere and obviously quite a long distance away from family and new wives and things like that. So, in fact, it was a decision to have a little bit more of a regular lifestyle. So I came south to Fort McMurray, if you will, in '79 when I joined Syncrude. Actually, I joined Syncrude in Edmonton, because in those days their corporate offices were in Edmonton, but they soon moved them to Fort McMurray. For me, it was a regularization of life. I had a job that had me in one or two locations. It did not have me travelling for months and months on end and that to me was quite a benefit.

AD: How did you get your job?

DT: It was advertised in the paper. I applied; went through an interview process and the like. In fact, the fellow who hired me I still keep in touch with. We actually had lunch together not that long ago. So just applied from the paper.

AD: What was the job?

DT: The original job was—I remember the title, Environmental Co-ordinator. And I had a number of roles. One was that Syncrude had to update its environmental impact assessment predictions and forecast. So I wrote the second EIA [Environmental Impact Assessment] that Syncrude did. It was an update to the first one. I also had a role in environmental communication. In those days, we did a lot of communication with the public on environmental aspects of the Syncrude project, and that was the second part of the entry-level job.

AD: How did the job at Sycrude relate with your consulting work?

DT: Well, in terms of the Environmental Impact Assessment update, it was very similar, of course, but in terms of the environmental communications that was a new field for me. Getting out into communities and talking with people, communicating with stakeholders was something that as a consultant I hadn't done. So learning how to communicate with the public was new for me. And I know that sounds strange, but communication is in fact something that you need to learn, because talking to stakeholders, talking to people who don't understand intimately the project that you're talking about, is a learned skill and something that needs a lot of practice. That for me was the new area of endeavor.

AD: Tell me about the first Environmental Impact Assessment that you did for Syncrude.

DT: As I recall, it involved going out, reviewing what had been said in the initial impact assessment, and determining did that still hold true. Did it need to be updated in terms related to changes in the project or new findings or whatever? And, as I recall, it basically showed that the project was on track relative to what we had said. There had been some changes in mine plans and details like that but for the most part there was nothing there that was particularly exciting relative to what had been said in I think it was '76 or '77 when the first one had been written.

AD: And who did that first one?

DT: Interestingly, it was a group of companies, one of which was Renewable Resources, a company I worked with at the time, but I had had no involvement in that particular project when I was an employee of that consulting firm. It was a different group of people in that firm that did it.

AD: In terms of today, when the environmental area is so important, when you began the work there, with responsibilities in this area, did you have any sense of how important that work in the environmental area was going to become?

DT: It is kind of interesting, because I have always seen the environment area as important, and frankly, Syncrude has always seen it as important too. Now things have changed in the way that it is approached but, as I said, one of my first jobs back in 1979 was to communicate environmental matters to the public. In that regard, we used to publish all of our environmental studies, we put them in libraries all across the province, in schools. We went out to talk to people about the findings. We would make an effort to tell the public what we were doing relative to environmental protection. This was in 1979, and I think it was quite useful. People liked it, and it added tremendously to knowledge of the field.

AD: Can you talk a little about the evolution of your position. Could you provide me with some information about the kind of environmental monitoring and steps that Syncrude were doing at the time?

DT: While the technology has changed relative to environmental studies and while the scope has gotten broader, in fact, it is the same basic things that were monitored and studied then as are monitored and studied today. For example, on the land, we set out to monitor the impact on land through a series of plots that looked at, for example, impact on lichens—air impact on lichens. We looked at small mammals. We looked at large mammals. We looked at vegetation. So, today, you would call that a biodiversity study, but really back then we didn't have quite so fancy a term for it, but we recognized we had to look at the impact of air emissions on land; the impact of forest clearing and disturbance on wildlife; and things of that nature. Similarly, on air, we had air-monitoring stations up and running in 1979. They weren't as sophisticated as they are today, but nonetheless air monitoring was important. We did a lot of theoretical air-dispersion physics-type studies to look at how we could modify plant operations to minimize impact and the like. Water studies—again, the chemistry has gotten more detailed but the same places were sampled then as are sampled now. All the areas around the plant site, all the potential sources of seeps and discharges and the like. So air, land, water, biodiversity, those were the things we looked at in the '70s and early '80s and they are today the things that are monitored, albeit with better technology.

AD: Being involved in this monitoring work, were there any standards as to what was acceptable?

DT: If you go back to the original Syncrude approval, operating approval, you'll find in there references to many standards. There were air standards of the day. There were water standards of the day. There were expectations relative to land reclamation, so the government has regulated the

oil sands industry since the very first day. Now, if you go to the approval today, it will have many more clauses and many more numbers and standards, but those are evolutions of what everyone recognized we had to do back in the early days.

AD: Tell me about how the responsibilities of your job evolved and changed with the growing importance and impact of Syncrude?

DT: I think it was about two or three years—something like that—on in my time with Syncrude that I'll say I became noticed by the then-president and CEO, a fellow by the name of Brent Scott. Brent had invited me to come and work with him, and my initial role was what you might call today executive assistant, but one of the core functions of that role was owner-investor communications. Obviously, even at that point Syncrude was a very large operation, very critical to our owners and investors, and it was important that they got accurate reporting and communication on corporate activities, plant operations, and the like. So I moved into that role and functioned there for a very long period of time. Syncrude's corporate offices were scheduled to move to Fort McMurray, and at that time my first wife was very ill. She actually died of cancer and Syncrude saw fit to leave me in Edmonton until that had played itself out.

So I was re-established in an environmental role for about a year, moved then to Fort McMurray in the role of Manager of Environmental Affairs, but very rapidly was pulled back into what was called Participatory Liaison or the role of interface between the owners of Syncrude and the corporate entity of Syncrude. I then was given gradually more responsibilities added to that portfolio function over time, particularly the Environmental and Regulatory Affairs, Aboriginal Affairs, Public Affairs, Public Relations. They would come as chunks—Safety, Risk Management, and so forth. So my career grew on a cornerstone of that relationship between Syncrude and the owners, and I think really at its core this was a communications job, so it was kind of an interesting step from academic scientist, learning how to communicate with stakeholders in that environmental sense, to then learning how to communicate with stakeholders in a corporate sense.

I was also given the opportunity to do an executive MBA and did that at Western University [University of Western Ontario], so that added a lot of depth, particularly in the accounting, financial management side of the business. So, it's kind of been an interesting, what was it, thirty-two or thirty-three years at Syncrude. Then, of course, you can't let an old guy simply retire. So the position of President of the Oil Sands Developers Group was my next step. The Oil Sands Developers Group is the industry association for all the oil sands producers, so it was a nice opportunity to represent the entire industry. I have been able to do so all across Canada and the United States and into Europe. In a nutshell that's how my career evolved.

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AD: We hear a great deal today from environmental groups that protest one aspect of the industry or another. But I want to go back 25 years, were there any issues at that time? Just to restate my question. The environmental issues around tailings ponds, wildlife, etc., are very much in the eye of the public. Can you go back 25 years and tell me the situation at that point?

DT: I think … I'm going to take the question a couple of ways. First of all, from the technology point of view, I think people looked at oil sands plants and saw them as employing the best technology of the day. Tailings ponds, for example, were designed and built by people who used technology, processes, etc., that were state-of-the-art. So when oil sands plants were initially built, the Suncor plant, people looked at tailings ponds and saw them as business the way it should be done. Now, these ponds were not built by people who were malicious, they were not built by people who were out of step with contemporary norms. They were approved by government as being compliant with the best-available technology. And that applied to every aspect of the plant. The issues were, of course, the same. People were concerned about air emissions. People were concerned about water and land use. But most people looked at oil sands plants and saw them as contemporary design facilities. So, then, I'll talk a little about environmental groups. In the 1970s, frankly, there weren't very many such things, and they certainly were not organized, or as integrated as they are today.

I actually don't think contemporary environmental groups care at all about the oil sands. In fact, I think their agenda is one of "off oil," having nothing to do with oil sands other than they use oil sands as their whipping boy. But I don't actually think they care about Fort McMurray or any of the stuff they talk about. They want society to move quickly or more quickly onto renewables and so they draw from oil sands their examples. But I think it's just that simple. They don't really care about oil sands. They care about their other agenda.

So, as time goes on, of course, a couple of things change. First of all, technology improves, and that's the way of the world. The technology today is always better than the technology yesterday. It doesn't make yesterday's technology bad. It simply makes today's technology better. Expectations change. The public's expectations change, so the external environment in which you operate changes in many ways: technologically, expectationally from your stakeholders. It changes financially. It's always changing. So, today, when you look at an oil sands tailings pond you see something that most people would say, well it should be smaller or it should be drier or it should be this or it should be that. And the technology to do that has come a long ways, so more and more of what you're seeing is the tailings ponds shrinking, becoming drier, in response to the technical ability to do it, and the public desire that we do, do it. So I think what you see is an evolution along the way. I don't really think there are new issues. The issues have evolved, but really they come down to the same core. Water use has turned into in-stream flow needs of the Athabasca River and recycling

rates from tailings ponds, so we've gotten more sophisticated. But, as an issue, it's still water use; and the expectations as to what is "contemporary standards" has shifted. But I see it as a continuum and not anything else.

AD: I'm sure there are accidents with respect to wildfowl occasionally landing on the tailings ponds. Why do you think it became such a huge issue?

DT: It's an interesting story. If you go back to the original Impact Assessment, as I've said, '76 '77, sometime in that time frame, and the update that I did in '79, '80, and every Environmental Impact Assessment that Syncrude has ever written, the issue of waterfowl, wildlife interaction with tailings ponds has been part of the Impact Assessment. In other words, from day one, people who approve oil sands plants did it in the full knowledge that one of the risks was that waterfowl, and other wildlife, would interact with tailings ponds. So, this is not a surprise. It is one of the risks that society has accepted in approving oil sands plants. It is part of the regulatory process, to look at the risks, to look at how they're mitigated (and we'll talk about that in a minute), and then decide, is it or is it not in the public interest. So, I find it strange that people would be surprised or shocked because we told the world years ago that this was likely to happen. Then, you have to look at mitigation measures. Syncrude started off researching bird deterrent programs in around the 1976, '77 time frame. One of my initial jobs, back in '79, was to talk to the public about bird-deterrent programs: how they would be deployed, how they would be used, how effective they would or wouldn't be, and the like. So bird deterrent systems have been fundamental since the earliest days of oil sands plants. It's also true that they use bird-deterrent programs at airports, and it might surprise you to learn that 1,600 bird strikes occurred last year at Canadian airports, despite the use of bird deterrents. In an airport situation, life and limb is on the line. Here, we have one large incident that occurred several years ago on Syncrude ponds, for which they were found guilty of not adequately deterring birds from the ponds, and I think it was a $3 million fine. But, you know, I look at it as one of the risks that people accepted in approving oil sands plants. Subsequently, the risk had to be mitigated and, in the case of Syncrude, the finding was that they hadn't adequately employed the bird-deterrent system. But the fact that birds interact with tailings ponds has long been known, and the charge and the finding was that Syncrude had not done what it had said it was going to do to deter them by deploying bird-deterrent systems.

But that history tracks back to the early days of oil sands plants. Now, a lot of effort has continued to go into bird-deterrent programs. Today, we have radar vans that sit on tailings ponds systems. They look out; they scan the area surrounding ponds; they can detect flocks of birds; they can turn on bird-deterrent systems in the areas to which birds are coming—one of the quadrants of the

tailings pond, for example. So that. while bird-deterrent programs have become more sophisticated, they really are derivatives of the very early days, propane blasters, moveable scarecrows and the like, same types of systems used at airports and agricultural installations—no real difference—just a little more sophisticated. But, frankly, wildlife and bird interactions with tailings ponds remains a risk and always will remain a risk, and it's for society to judge whether the odd duck going into a tailings pond is offset by the massive benefits of economics and energy security provided by an oil sands plant.

AD: The implication of environmentalists and the media is that there hasn't been enough regulation or that the companies are remiss in implementing those regulations. What you said is that that is misinformation.

DT: I think it is one of the many, many myths that exist about oil sands. Since the earliest days, as far back as I can recall, which goes back, I think, to the operating approval in place in 1979, Syncrude has been required to maintain bird deterrent programs; Suncor has been required; in fact every operator has been required, as they come on-stream, to maintain bird-deterrent programs. And the programs that have been maintained are the ones that are as effective as we knew how to make them at the time. So, the claims of inadequate regulation are just simply wrong. A tailings pond is a certain size; you put deterrent programs on it. You can't possibly say there will never be a bird landing on it. That is simply not feasible. You accept the risk that some birds will land, and you judge that risk against the benefits. And that is the way the impact assessment works. It's a risk versus benefit decision. It's a balanced decision, and you make that same decision when you get in your car every day. You balance the risk of whether you are going to get in a traffic accident with the benefit of going to the store for a quart of milk or whatever it is. So, in my mind, regulation has been wholly adequate and, in this particular instance, the risk came home but I think the benefit far outweighs the risk and even the consequence of the risk, in this case.

AD: There are a couple of other issues to do with monitoring, for example, air quality. Let's start with water and seepage issues, location of tailings ponds, etc. Do you want to talk about that?

DT: Well, only if you'll allow me to go back to the 1700s.

AD: Go there.

DT: And the reason for that, is that in 1700-something, and forgive me, the date escapes me, a guy named Peter Pond paddled down the Athabasca River. And he spotted, on a hot summer day, what he called bituminous fountains flowing from the banks of the Athabasca River and into the River

itself. Well, this of course, caught his eye, and he stopped and poked sticks in them and things like that, as described in his journals. My point is that, when it comes to the Athabasca River, there has, since the glaciers went away, always been oil flowing into it, eroding into it. That is because the Athabasca River cuts through the oil sands deposit. It bisects it, east and west. And, over a many kilometers, tens of kilometers long distance, it erodes through it. I cannot—and I've looked for the reference—but at one point I saw a geological study that made an assessment of how much oil sand gets eroded into the River every year, and it worked out to 50,000 or maybe 80,000 barrels a year. Way back when we were looking at water studies and tailings pond reclamation, a fellow at the U of A actually did a microbial study and came up with the finding, which I guess is intuitively obvious, that there's a tremendous oil-eating bacterial fauna in the Athabasca River. Again, that shouldn't surprise people because every year oil erodes through it. You can take a boat down the river and spot oil flowing into the river, right now, today. All that is by way of background to saying, when people get all excited because they find hydrocarbons in the river, I say, "Well, what did you expect? It's been there forever."

And the same about seeps. If you look at groundwater in the oil sands region, it has been in contact with oil sands, presumably, for 300 million years or for however long the oil sands deposit has been there. And, as it seeps through, over, and below those deposits, it picks up constituents as well. And so into the Athabasca River through groundwater seeps, through erosions, flow hydrocarbons. Now, to my knowledge, the industry has no discharge permits that allows it to discharge anything other than once-through cooling water and treated sewage. So, when it comes to water quality in the Athabasca River, the data that I've seen suggests very little if any change. Yes, as it flows through the oil-sands region, it picks up oil and hydrocarbons but, in our view, and in my view today, most of that is—well all of it—is naturally occurring as a result of these processes. Tailings ponds have been located well back from the River, with one exception, and that is the Suncor Pond One.

Back in the '60s—early to mid '60s—when Suncor was approved, their pond was built such that it was geotechnically founded on a little island, called Tar Island, in the Athabasca River. And the dyke for that pond became called the Tar Island Dyke. That pond has been variously deemed to be leaking by people here, there, and everywhere. I've actually never seen geotechnical data that proves to me it is or it isn't. But, in any event, that pond is also the first pond reclaimed. So, that initial Suncor Pond One, as we speak, is now a small growing forest, having been reclaimed at the end of last year. All the other ponds are a minimum of a kilometre back from the River and I think that provides a tremendous isolation. Ponds are also there for a defined time period. It might be a long time period—forty or fifty years—but it is not forever. So, tailings ponds all have reclamation plans in place. The reclamation plans deal with the water, deal with the fine tailings and the like, and my view of the world is that the water quality in the Athabasca River is effected by naturally-occurring oil sands but is largely unaffected by the industry.

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AD: Would you say that water quality is a significant issue for the Athabasca River?

DT: Sorry, no. What I know is that even if you read papers by critics, and there was a recent paper by Dr. [David] Schindler, it says that despite his findings of woe, the Athabasca River still meets Canada drinking water standards. Well, there are not many rivers in Canada that do, so it must mean that that River is actually pretty good quality. There is no surface water in Canada that I suggest anybody drink, if only because of bacterial and other parasites that are common in surface waters in Canada. The Athabasca River also carries a huge silt load. In fact, if you go up to the little bridge there in Jasper that leads to the Jasper Park Lodge, and look down, you will see the water is a milky color. It carries rock flour from the glaciers. Even at Jasper that river has a fairly heavy silt load. By the time you reach Hinton, Edson, Athabasca, the water is murky with silt and so that's the second reason why you may not want to drink it unfiltered and uncleaned. Modern water treatment systems will adequately clean parasites and silt out of water, and every community on that water—Fort McMurray, Fort McKay, Fort Chipewyan—have modern water-treatment facilities.

AD: Schindler also mentioned evaporation from the ponds, which is another way of getting these materials into the atmosphere and eventually ingested by human beings as well as wildlife. Do you think that's a serious concern?

DT: Well, I can't imagine evaporation of material from ponds being much of a load on the River. There have been methane gases and the like evolve off ponds. I don't think they fall to earth in quantities that bother the River. They are a greenhouse gas emission and they are included in plants' greenhouse gas inventories. I think the other thing Schindler was worried about was particulate emissions, dust, that can contain contaminants and the like, falling into the River. I guess that is a potential pathway. One of the things I will say though if you look, as we speak, Syncrude is just getting close to completing a $1.6 billion project to retrofit flue gas desulphurization and particulate removal systems on its main stack. Other facilities have such equipment already. So, if particulate loading is a particular concern, I think one of the larger sources is likely to be reduced substantially within months of this interview. I don't think those types of problems are particularly difficult to solve, if in fact they're problems at all.

AD: What about the carbon footprint?

DT: Greenhouse gas emissions are another interesting story. If you roll back the clock to when I was first starting, the stuff that bubbles out of your beer and your Coca-Cola was not much of an issue to anybody. Nobody talked about carbon dioxide in the '70s or '80s, even much in the '90s. It's a recent development. So, the facilities were never really designed with greenhouse gas emissions at

the top of the mind. They were designed with energy conservation and efficiency in mind and that had the result of reducing greenhouse gas emissions. But, frankly, in the design window of most of the facilities, it was not much of a concern. Certainly, for the original Syncrude and Suncor plants, greenhouse gases were not on the radar screen of anybody. Now, when I say energy efficiency, these plants are highly energy integrated. If you look at it, the design of Syncrude was such that the heat for extraction was practically, or is practically, all waste heat from the upgrading. A lot of the thermal energy is created using combined cycle gas turbine generators, which means you generate electricity as a waste product as a way to lower your total carbon footprint. So, energy efficiency has always been an issue. We just didn't frame it in terms of greenhouse gas reduction. We framed it in other terms.

Today, going forward, it's become an issue, so, obviously, people are spending a lot more time focusing on greenhouse gas emissions. But, the focus on greenhouse gas emissions has at its roots the need to be effective and efficient in a number of ways. Obviously, with how you generate any energy you need, how you use it, and what you get for it. So, in fact, greenhouse gas emissions are reduced by improving your extraction process. That also has a huge business driver. By increasing your upgrading yield, that has a huge business driver. By diminishing your losses to the atmosphere through flaring or venting is again a huge business driver. So, a lot of the reductions in greenhouse gas emissions have been as a result of parallel improvement in the business results. Since 1990, the industry has dropped its greenhouse gas emission footprint by 29 percent per barrel—that equates to a couple of percent a year—which people would say that sounds like a low amount but, in fact, for technical improvement, 2 percent a year is a pretty aggressive target in any technology, including oil sands operations.

AD: Water use is often mentioned as an issue. Do you want to talk a bit about that?

DT: Well, if you look at where we're at today, the industry provides about 70 percent of Canada's crude oil requirements, about 2 million barrels a day in round numbers. It does that by withdrawing something less than 1 percent of the mean annual flow of the Athabasca River. So, when you look at the value created for the water used, it actually takes less water to create a fully upgraded litre of oil from the oil sands than to make a single sheet of paper. Now, from a value added point of view, that's a tremendous use of what is admittedly a renewable resource and a precious one—water—but every industrial process that supports us uses water. So the first question I ask is, "Do you add enough value to justify your use of water or any other public resource?" And the answer in this case in my mind is, "Yes."

Secondly, "Are you a responsible water user?" In other words, do you take more water than the system is capable of providing? Well, when I look at the Athabasca River, it is 1 percent that is allocated. If I look to the future that I see for the oil sands, which is to grow to 4 to 5 million barrels a day, at that point, it will be about 2.3 percent allocated. We're sitting near Edmonton right now. The North Saskatchewan River is about 40 percent allocated. There are rivers in this province that are allocated at 50 plus percent. So, relative to the capacity of the River to provide the water we use, we actually use a very small amount.

So my second question, "Are we responsible?" My answer is "Yes." To add to that something like 85 percent of the water used by an oil sands plant is recycled, round and round and round. One of the benefits of having a tailings pond is that you have a huge water system that you can draw on internally. You can't use it for every use, but you can use it for most. And, so, 85 percent of the water we use is actually recycled round and round and round. Our critics, when they quote water use numbers from the oil sands, will quote the gross number. In other words, every time a molecule of water goes through our system they count it. I rather choose to quote the net withdrawal, which is way smaller. On the in situ side of the industry—now we didn't talk about in situ because I presume we'll get there—it is new and growing, and it is one of the future growth nodes of the industry. They are required to use non-potable or even saline groundwater. So, the whole growth in the in situ side of the business will occur without using fresh, surface water. From a technical step-out that's an enormous one that adds, in my view, to the responsible use of water by the oil sands industry.

AD: Another interviewee has mentioned that the max that you get from SAGD extraction is maybe 50 percent. With the traditional method, you can get up to maybe 80 or maybe 90 percent.

DT: I'm not saying one's traditional and one isn't. The oil sands industry began as a mining industry because we knew how to do it. We didn't actually have the technology to go after the deeper resources and, by the way, it's geology that defines when you mine a reserve or when you have to go at it using drillable or in situ technologies. Generally speaking, the cutoff is in and around 80 metres. So, down to 80 metres, you can't use in situ technology because you don't have enough weight of overburden to hold the steam in the ground. Below that, you can't use mining methods because it's too much overburden and the economics don't work. So, it's not a question of traditional and non-traditional. It's a question of geology, and we began as a mining industry because we did not have the technology to produce those deeper reserves. You're right, on the mining side of the business, we tend to get recoveries in the high nineties. And that's pretty good. In the in situ side of the industry, the recoveries tend to be in the fifties or the sixties, but, frankly, that's as good as the technology can do.

That's a bit unfair to compare the two. Both of them deliver the maximum the technology is capable of doing. In the non-oil sands drilling type of production, 50 and 60 percent out of a reservoir is actually a very high number. I would argue the in situ side of the business model. The in situ side of the business does pretty well in terms of recovery, and I'm going to also tell you that they are going to continue to get better, because the more oil they get out for the same amount of energy they put into the ground tremendously improves their economics and, by the way, their greenhouse gas [emissions] as well. So, we can talk about future technologies in in situ a little bit, but there is a tremendous story to be told there.

AD: Do you want to get into that and looking to the future in terms of the oil sands?

DT: Sure. So, where we are at today is in and about 2 million barrels of name plate capacity. Production is slightly less than that. My own "guesstimate/prognostication" is that we will grow to 4 to 5 million barrels, subject to two things. One is the continued development and improvement in the technology. And the second is continued market access. So you need to talk about the two of them.

On the mining side, as we speak, practically all the mining leases have been spoken for. I think the technology improvements will come in areas like tailings technology, where there are tremendous advances being made. In fact, all of the mining companies have agreed to put all their tailings technology in a common pool, their research and development in a common pool, and look to ways to improve tailings performance with a focus on reducing the size of the pond, drying out, if you will, the tailings put there, enhancing reclamation and the like. I think you'll see advances in terms of energy use in the mining side, particularly trucks and shovels, and that will occur by moving the extraction process closer to the mine face, reducing the ton-kilometers of haulage in the mine, and the like. I think you'll see modest gains in the upgrading side, because that technology is relatively mature. On the mining side, you'll see continuous improvement, but practically speaking the industry is becoming more mature. The in situ industry on the other hand is about a dozen years old, in commercial terms, in the Athabasca Region. So, there you see numerous step-outs of technology, some of which are radical and some of which are just evolutions from the current. I don't know which one will win, but I do know they all have in common the desire to drive down energy use per barrel, hence greenhouse gas per barrel, by driving up recovery, but driving down thermal use.

So if you look at it today traditional SAGD in situ technology—two parallel wells, steam in the top one, oil moving out the bottom one…. those people are not standing still. How they drill, the patterns of drilling, the design of the steam chamber underground—all those things have improved and will continue to improve SAGD efficiency. But, then, there are those who are saying, "Well,

wait a minute, we can reduce the amount of steam by adding solvents to it." In effect, dry cleaning the oil out of the ground. That shows thermal reductions as high as 50 percent and, hence, greenhouse gas reductions as high as 50 percent. Other people are using solvents without steam, so the use of solvents is just beginning to be part of the drillable in situ technology.

There are people who are using fire-flood operations. Now, fire-flood has had a chequered history in the oil industry. It works in some places; it doesn't work in orders. It's kind of been the marginal player in a lot of enhanced oil recovery schemes. In the oil sands, it seems to have some application. If that technology comes to fruition, again, it's about a 50 percent reduction of the greenhouse gas footprint. One that really intrigues me is the use of electricity. A small pilot plant currently is pumping electricity into the ground. It heats the ground up through its own resistance, like the filament of a light bulb heats up through resistance. It's the heat that drives out the oil. Well, using the carbon content of the electricity in the Alberta grid, we're talking a 60 percent reduction from current footprint. If you hook this kind of technology up to low-carbon electricity, and there's lots of people working on that, theoretically, you get a carbonless bitumen out. Well, isn't that an amazing story.

So when you look at the carbon footprint of oil sands/crude oil, right now, today, it's competitive with the average oil imported into the United States and North America. Some of these technologies coming forward, we could actually see oil sands crude becoming the crude of choice from a carbon point of view—not just because the carbon footprint of oil sands goes down but because Mother Nature is not kind to oil everywhere else in the world. The oil everywhere else in the world is getting harder to produce; it's getting heavier; it's getting higher in sulphur content. As a result, its carbon footprint is gradually creeping up. So, as oil sands uses technology to go down, the average barrel in the world gets worse. At some points, the lines cross and oil sands will become the crude of choice. So there's another fearless prediction for the future that, in fact, the carbon footprint of oil sands is going to out-compete the carbon footprint of the competition.

AD: Norbert Morgenstern [geotechnical engineer and Emeritus Professor at the University of Alberta] made an interesting observation, that at the University of Alberta people are now conceptualizing the rebuilding of entire ecosystems relating to oil sands recovery. People forget, and you pointed it out, that the bituminous sands are naturally occurring and the going back from the use of oil sands to tar sands, as the common term for these bituminous sands, implies somehow that tar is dirty. Well, it is a naturally occurring substance in its own right. The LaBrea Tar Pits, for example. To look at that whole area, once the extraction has happened, and to be rebuilding that ecosystem and recreating habitats. Do you want to comment on that?

DT: Again, you've got numbers of parts in your question. Let me talk about tar versus oil sands. You're right, originally the oil sands were called by the industry, by everybody, tar sands. Now, as time goes on, people sat up and said, "Now wait a minute, tar is actually a manufactured product." Oil sands does not make a good tar, in its natural state; for example, in the original bitumen plant, they used the material from there to pave the roads at the Jasper Park Lodge in the '20s. It didn't work very well. It's not tar; it's a heavy oil. So people changed their term from tar sands to oil sands. You know, there are people in this world who use tar sands just because of history. There are also people who use the word tar sands because they think I'm going to lie awake at night worrying that they've demeaned me, and somehow they've painted me as dirty. I don't get that excited about rhetoric. So the tar versus oil sands actually has an interesting history as well, that whole labelling.

In terms of rebuilding ecosystems, well again I'm going to take you back and say, "Not new." The original land reclamation, certainly a lot of the reclamation research done by Syncrude and others, has been done around rebuilding watershed. Now, why is that? Well, if you look at the large mining areas, which people criticize because they're so large, one of the challenges in reclaiming an area that large is to make sure they shed water properly, stable and non-erosive; which means that the landscape has to be land formed into watersheds—small systems that the water will drain off of in a controlled manner without creating erosion concerns. And, so, a lot of the land reclamation research that has been done over many, many years has been targeted at rebuilding ecosystems within watershed, land-based forms. So, yes, that's something, some of the research organizations have helped with, but no it's not new. It's an evolution of the land reclamation research that's been going on for a long time. If you look today, as we do this interview, at the south end of the Syncrude base mine, and you understand the reason contours exist as they do today, they exist to fit into a landform design for the east and base mine that has it shedding water in an appropriate manner. So, that landform design actually was put in place many years ago, and, if you think about it, you have to do that because you're moving several hundred million tonnes of dirt every day. And you'd better be putting it in the right place so you don't have to move it again. So, there is an enormous business driver to have a doable, end landscape and landform in mind before you open the mine, because every tonne of material that you don't put in the right place is a tonne of material you've got to move somewhere else. So, the whole concept of mine reclamation must be integrated into land, into, rather, mine planning before you stick a shovel in the ground or else you're going to spend a lot of money that you're going to have to go redo.

AD: What about Aboriginal issues to do with the oil sands?

DT: Obviously, Aboriginal People were the first inhabitants of the oil sands region. There are five First Nations in the region and numbers of Métis locals. First Nations also, in addition to being first inhabitants, have Treaty rights that include the need for developers to consult with them on projects. So, the Aboriginal Affairs portfolio at Syncrude began having two focus areas: one, of course, was to discharge our duty to consult. But I think the more positive one was to make sure that we provided the capacity for the Aboriginal People in the region to participate as fully as they could in the economic/employment benefits that we were bringing to the region.

One of the ways that we are able to mitigate our impact on Aboriginal People is to provide them with economic benefits, so the second part included things like focusing on educational opportunities, building Aboriginal businesses, getting people engaged in that side of the oil sands. Now, if you look at the industry, it's been pretty successful generally in doing that. The Oil Sands Developers Group has tracked some of that history. In our first snapshot of employment and job benefits, which I think was 1997 or '98, we came up with 800 Aboriginal People employed in the oil sands, and now that's a pretty healthy number.

In our most recent 2011 survey, that has leapt to 1,700. I don't know of any place in North America, certainly not in Canada, where an industry can point to employing 1,700 self-declared Aboriginal People. These are people that work in operations jobs for members of the Oil Sands Developers Group. In addition to that, there are business opportunities. Again, in our first snapshot in '97, I think there was a couple of hundred million dollars of business done. Last year, in the 2011 survey, it was $1.3 billion, so that has actually grown faster than the employment has, and it speaks to a huge increase in capacity among the Aboriginal businesses. In addition to that, as we speak, three companies are over the billion-dollar level on their own. Syncrude, I think, was the first to reach that total. Suncor has done that, and now Shell-Albian has done that.

On the Aboriginal employment and business front, the industry has been terribly successful. On the consultation side, each of the First Nations has developed, in my view, pretty amazing capacity, certainly more than I see in other places in Canada. They all have Industry Relation Corporations, organizations whose job it is to do nothing but consult with oil sands developers. So the consultation process has become very sophisticated and is managed on the First Nations side by people that have a lot of capacity in doing that. So, I think that's an area of success for the oil sands, and I think it's an area where we stand apart in the business scene across the country.

AD: Do you want to tell me a little about the Oil Sands Developers Group. You know, the inception of it and what it does and so on?

DT: A complicated story, and again it goes back awhile. I'm going to take you back to a process called the National Oil Sands Task Force. Some folks in the industry, and I'm going to say some of the Syncrude leaders, you know, the Eric Newell's and Jim Carter's, saw that the technology for the oils ands business was robust and investible, and foresaw not just the need but the desirability of expanding the oil sands. There was, however, a problem, and the problem was fiscal terms. So the Oil Sands Task Force—the National Oil Sands Taskforce—set out to convince federal and provincial governments to put in place facilitative terms that would grow the industry. That was successful and, as a consequence, we foresaw that the industry would grow and grow quickly. We didn't see how fast it would grow, but we knew that things were in place that would facilitate the growth of the industry.

At that point, it became obvious that local infrastructure in Fort McMurray was not adequate, should the industry grow. It was adequate for what was there today, or at that time, but not adequate to support the growth that we foresaw. So, we created, the industry created, an organization that was called the Regional Infrastructure Working Group or RIWG. RIWG was the forerunner to the Oil Sands Developers Group. RIWG's focus was just as the name implied—regional infrastructure—and it was a working group because its mode of operation was to draw together all the key infrastructure providers and users to define what was required to support the industry going forward.

On the industry side, we thought and knew we had done that through the socio-economic impact assessment process. So the data that we needed to provide people had long been in the public realm. Using that information, which governments had assessed and approved of in order to grant approval, we brought together hospitals, police people, the Municipality of Wood Buffalo, as broad a stakeholder group as we could, and through the RIWG process defined about a $1.3 billion infrastructure requirement for the Municipality to support the growth that we foresaw. So RIWG was created to solve issues that we saw as constraining to the industry's growth.

The issue in 1997, which was when we began, was regional infrastructure. So we began, in effect, as a lobby group on infrastructure, because that was the issue that we saw needed public support. As time went on, of course, infrastructure dollars began to flow into Fort McMurray. The problem, though, was that the industry grew much more rapidly than even we in the industry had predicted, and certainly more rapidly than governments had predicted, or the municipality had predicted. So, despite the money that had flowed into infrastructure in Fort McMurray and, frankly, continues to flow in, it's an uphill battle. Right now, today, for example, the infrastructure is in place that would

have been required for the last boom, and they're trying to dig out from the one that's on them now. Nonetheless, that's a problem that a lot of people in today's economy would welcome.

We soon identified other issues that were potentially difficult in terms of growing the industry. One, in particular, that began to bother us a lot was what I'll call oil sands reputation. Now, the representational issue wasn't "regional." It certainly wasn't infrastructure, so the title of the organization did not really allow us to speak beyond Fort McMurray. In order to tackle issues of concern to growing and developing the oil sands industry, we had to shed our regional cloak and it became the Oil Sands Developers Group.

Now having said all of that, still, 90 percent of the focus of the Group is on local issues. The organization is designed around an issues focus. Each issue is assigned to a key committee to work on. We have key committees that focus on municipal affairs; housing; municipal infrastructure and the like; transportation, which focuses not just within Fort McMurray, but up Highways 63 and 881, and north to the plant sites, the airport and the railroad; we have a health care committee of health care professionals that look at health issues; an Aboriginal affairs committee; environmental affairs; and the like. In terms of reputation, that's an issue that I have taken on. In my presidency for the Oil Sands Developers Group, I've crossed North American and into Europe. I think I gave over 250 speeches. I have no idea how many tours—it's got to be 80 or 90—we have hosted; over 700 media interviews. Through that vehicle have attempted to deal with some of the reputation myths that dog the industry. But, as I say, despite that, the focus of the Developers Group remains the Municipality of Wood Buffalo and the regional issues of concern.

AD: Tell me about the whole infrastructure issue; the oil sands being the engine of the Alberta economy. You think of the various banking studies that have been done on the Calgary-Edmonton Corridor; the whole petroleum industry centred around Red Deer; the talk of a high-speed rail link; and so on. Clearly the whole Fort McMurray area is huge. Do you want to talk a bit about that? How do you envision any of these? Does the group talk about that?

DT: In terms of infrastructure, it's hard not to compare yourself to other regions. There's a twin road between Calgary and Lethbridge, for example. There is not a twin road between Edmonton and Fort McMurray, and you do look at that and say, "Well, wait a minute." But I would rather focus on simply justifying, in terms of the economic contribution of Fort McMurray, the transportation needs to support that contribution—the roads in the area—and, similarly, with other infrastructure. You know everybody today thinks they need more hospitals and more doctors. Well you've got to recognize that, yes, Fort McMurray's important, but it can't demand more than anywhere else. What we get concerned with is having less than anyone else, because clearly it is a key

engine to the Alberta economy. In that regard, it doesn't do Alberta any good if it is not attractive and retentive to the work force we need. In terms of infrastructure and amenities, our view of the world is that Fort McMurray should be able to benchmark itself with any other community in Alberta and not be at a disadvantage. And that's how we look at infrastructure. We look at it in relative terms. Everybody thinks they should have more and resources are not infinite, but what bothers me is that, in some cases, Fort McMurray has been noticeably behind.

AD: What's the population of Fort McMurray now?

DT: Well, it depends, and what it depends upon is what you count. I think, if I am not mistaken, the official census is in the 85,000 number, but there are large numbers of people that live in Fort McMurray in basement suites and the like. There is a shadow population for sure in Fort McMurray that is much higher than the shadow population in other areas.

AD: What about the residents in the camps?

DT: We'll talk about that in a minute. I think ,if you include the shadow population, you're more like 100,000 people. In the camps, we do a snapshot every six months. Our last snapshot was this winter, the winter of '10-11, and at that time there were 27,000 residents in construction camps in the region. So, it depends on which number and what components you add up. Of course, for funding purposes, the Province of Alberta has its number, and it tends to be on the low end of that scale, which of course creates challenges for the municipality, who really in effect have to provide infrastructure and services to maybe not the people in construction camps so much but certainly the shadow population in the Municipality. So, they argue, and I think with some justification, that they're not getting funding for the people that spend the majority of their time there.

AD: What about the high-speed rail link?

DT: Well, I guess the market will determine that. The problem with high-speed rail … I don't know if you've ever been to Japan. I've been privileged to be there a number of times. In Japan, you have high-speed rail. But, in Japan, you have a high-speed rail car stopping once every five, seven minutes, something like that, at a station, absolutely jammed with people. And this goes on all day long. In other words you have a critical mass of population.

AD: Sorry, the videographer has to change the memory card.

DT: So, as I was saying, you have a huge number of people using high-speed rail. Now, I don't think it costs any less to build high-speed rail between say, here, [Edmonton] and Fort McMurray than it does between Kyoto and Tokyo. It may actually be more expensive here because you've got frost and muskeg and everything else. But there is nowhere near the number of people. Where I have a

challenge with high-speed rail is simply the number of people. There is not the population density here that there are in other places that support high-speed rail. And that doesn't matter if you're talking Japan, if you're talking Europe, wherever. I think the problem with that is simply that the population density is not high enough. But, if the market proves me wrong, there will be high-speed rail.

AD: What about the aspect of it being a greener technology than the planes, the cars, and all of that?

DT: You know that may or may not be true and I think depends on how you count the carbon. It would be interesting to note the carbon content of all the steel and construction, the forest that's taken out, and all that stuff. It may well be. I think you have to do a full-cycle accounting. The other thing you have to account for is, unless life styles change dramatically from what they are as we speak, then, everybody who took the high-speed rail from A to B is going to rent a car or take a cab at the other end. So, it doesn't get rid of the cars totally. It only eliminates that proportion of the rail trip. So, I think full-cycle accounting has got a lot of merit and it may well prove it or disprove it. I don't know.

AD: We talked about the SAGD technology. Do you want to talk about original development of the mines?

DT: Originally, the technology used in the oil sands mining was derived from large German core-like mining equipment; so, Suncor opened up with bucket-wheel excavators. They removed overburden with bucket wheels; they removed the ore with bucket wheels. Syncrude opened up with draglines moving overburden and bucket wheels moving, reclaiming oil sands. That didn't work too well, and Syncrude evolved to trucks and shovels to remove overburden; in fact, very early in their history. The bringing in of trucks and shovels to the mining operation in the oil sands was the first evolution of that mine, and it was done by Jim Carter in the early days of the Syncrude mine operation. What also happened was those trucks and shovels demonstrated flexibility in the mining process. Large draglines and bucket wheels are not particularly flexible, in two ways. One, they have to mine large panels. They can't pick and choose on a micro scale. They can on a macro scale but not on a micro scale. And, secondly, they require large areas of prepared benches. The capital cost of opening a mine is very high. When Syncrude moved to the North Mine, it soon became obvious that that's where the breakpoint was. Trucks became larger and larger; shovels became larger and larger, so the cost per ton dropped. And when we looked at the capital cost of pre-stripping the North Mine for draglines, it demonstrated that, on a present-value basis, trucks had actually beat them out even in the ore mining process. So, the trucks and shovels then evolved into the ore. Not just overburden, but ore.

Suncor subsequently changed from bucket-wheel excavators to an all-truck mine. In fact, because they had an opportunity to do so sooner, in other words they did a transition to a new mine before Syncrude. A couple of other things facilitated that, and that was the developments of crushers, because trucks need a place to dump, need a device that's sized the ore, and so the development of crushers facilitated the use of trucks and shovels. Now, interestingly enough, once you got to that stage, the next stage of production was enabling. That was the elimination of conveyor belts. I can tell you that, in the early days, conveyor belts were a giant challenge. They froze up in the winter. I can remember at one point where conveyor belts stopped, and it was one of those infamous 40 below days, fully loaded, and it was impossible to get started, to get moving again. There was not enough force in the system to move the conveyor belt. It only got moving because a couple of Cats hooked onto the side of the conveyor belt and dragged it until it got enough momentum and inertia that it could start. So, eliminating conveyor belts was the next step.

Well, shovels, trucks, to crushers, how do you eliminate getting it from there? Well, you put it in a pipe. So the transportation of oil sand slurry was the next evolution. That was facilitated through the development of cyclo-feeders. Those being best defined as large toilet bowls, into which went dry oil sands slurried in a vortex into a water solution. Interestingly enough, once you had it in there, the process of pumping it in the pipe conditioned the oil. That made the extraction process lower energy. You could put less heat into the tumbler because you've replaced the thermal energy with mechanical energy in the pipeline. That, then, eliminated tumblers. The move from dragline-bucket wheel to truck and shovel in the overburden set the stage for truck and shovel in the mine, crusher, hydro transport and, ultimately, lower energy extraction. So we moved from large German coal equipment to trucks and shovels with hydro transport. We moved from 80 degrees centigrade to 40 degrees centigrade, and that was done sequentially. It was also done purposefully. And part of the process was to allow us to open remote mines.

When Syncrude sat back in the mid1990s and said, where do we go when we run out of oil in the Base Mine and the North Mine, it became obvious that the only choice for us was at least 40 kilometres away. We had acquired leases, but that's where the closest lease was. The problem with that was - remember earlier I said oil sands plants at Syncrude are highly heat integrated? A lot of the temperature, a lot of the heat for extraction came from the upgrader. The question was, then, "How to you get heat 40 kilometres away in an efficient manner?" Well, the only way is to build a bunch of boilers and generate a bunch of steam. Well. if we were extracting at 80 degrees that would be very challenging from a business point of view. So the development of lower energy extraction was enabling the move to remote mining.

Similarly, "how do you move the bitumen back to the upgrader?" You can move it as bitumen, except, as it comes off the front end of the process, it still has solids and water in it, and the way you clean it up is you dilute it with naphtha and you centrifuge it. Well, if you're going to dilute it with naphtha that means you're going to have to handle naphtha. In my mind, and in the Syncrude leaderships' mind, it was not desirable to have light hydrocarbons in what was, in essence, a mining operation forty kilometres away from the main plant site. So, we needed technology to move bitumen back so that it could be cleaned at the Base Plant without handling light hydrocarbons in a mine. That became the drive for the development of froth pumping technology—the movement of bitumen froth as an annulus with tailings water surrounding it in a pipe. That technology, purposefully developed, allowed that handling. That meant you had to get a lot of water to Aurora; you had to get a lot of water up there, provided the opportunity to remove a lot of heat. So, the water-return line, going back to bring the bitumen to the main plant, was run through heat exchangers at the Syncrude upgrading site. At the end of the day, the remote mine that Syncrude created at Aurora was radically different technologically than the original Syncrude mine located next to the Upgrader at Mildred Lake.

AD: I'm sorry, the videographer has to replace the memory card.

DT: So, as I was saying, as a result of the development of this enabling technology, the remote Aurora Mine was radically different technically than the original Syncrude: firstly, draglines and bucket wheels; secondly, no pre-stripping of the mine to prepare dragline, bucket-wheel benches. It was all truck and shovel. Thirdly, no conveyor belts. All handled slurry form in a pipeline. Fourthly, 40- degree extraction as opposed to 80-degree extraction; part of that heat provided as waste heat from the upgrader; the rest provided as combined cycle gas turbine generators. Lastly, no light hydrocarbons at site with the bitumen going back in raw form to the Mildred Lake base plant for processing. So, that became the norm, that suite of technologies became the norm, for the Albian Plant, for the CNRL plant, and for Suncor expansions. It's become the model for mining technology today in the oil sands.

Now, there will be and there are also step-outs from that that will develop. Life goes on and technology will continue to improve, but the technology development in the mining side of the oil sands is a kind of interesting strategic planning and business development process, and it's been quite radical. In 30 years, the whole front end of the process has changed dramatically.

AD: Let's talk a bit about the research. I mean, how much is happening with the company and how much is happening in partnerships with academe?

DT: Companies research in many ways. In Syncrude's case, we have a large R & D organization, but we also have large partnerships with many academic institutions. Other companies do it with different proportions. Some have more or less partnerships, more or less employees as fits their purpose. In all cases, I think, most people partner to some degree with outside organizations, either to get access to unique capability or particularly to have people explore areas that are not immediately commercial but which are, nonetheless, fundamentals of the process or the issue needing to be examined. If you look at the extraction area, we've benefited tremendously from the work of guys like Dr. Masliyah at the U of A. Most of his work is academic, looking at the very core fundamentals of the extraction process; the kind of things where none of it is immediately commercialized, but where key principles and key learnings can be developed and then incorporated into commercial processes. It's very unlikely that a company could attract and maintain a fellow like Dr. Masliyah. He is best suited to the university-type environment, but that's not to say that his talents and the talents of many other academics aren't needed. They're needed in specific areas. Companies tend to focus on development and commercialization of things as opposed to the fine academic details of the process. I think that's generally where the breakdown or the breakpoint occurs: Is it commercially ready, is it ready to be developed or not?

AD: Now, the issue is transporting that slurry to other countries for processing. At the beginning of your career, you started work with the impacts of the proposed MacKenzie Pipeline and other stuff. Now, we are in a whole new era of consultation. Do you want to talk about that?

DT: First of all, you're transporting clean bitumen as opposed to bitumen froth.

AD: Okay.

DT: What comes from Aurora is bitumen froth. It would be cleaned up into a marketable bitumen. Marketable bitumen is free of solids; free of water and salts and the like; generally diluted so that it's pipelineable. Okay. So the issue is export of oil, be it heavy oil such as bitumen or light oil such as a synthetic crude oil from the oil sands.

At the highest level, Canada's economy is a commodity-based export economy. If you look at it, every commodity this country produces, whether it is grain or cattle, whether it is lumber, whether it is nickel or potash, all the commodities that Canada produces are traded on salt water into a global market, with one exception and that's crude oil. Canadian crude oil has basically two markets—in Canada and in the United States. In other words, it's traded continentally. Now it's traded internationally in the financial sense because, as we speak, there are Japanese, Chinese, other non-North American oil companies that own portions of the oil sands. What they do though is they trade the product to companies who have production offshore, who then deliver it into their country.

For me, the export of crude oil to tide water is, in fact, something that is in Canada's interest. Firstly, we need to access markets of 3 billion people in the Pacific Rim as opposed to being constrained within a market of 300 million people in North America. And secondly, we need to access world prices. As we speak, there is a $10 to $15 a barrel difference between Brent Crude, which is an international market, and West Texas Intermediate, which is a North-American benchmark crude. So, every person in Canada, through the tax and royalty system, is losing money relative to that global price because, obviously, accessing that global price means profits are higher. That means royalties are higher; that means taxes are higher, because in and around half of the profits from oil sands companies flow to Canadians through the tax and royalty system.

Similarly, the debate rages into the United States and I think the debate is aided and abetted by the "off-oil" agenda of some of the international NGOs. The debate is "should the United States access more Canadian crude or not?" Well, right now, today, the United States imports between 8 ½ and 9 million barrels of crude oil a day. Canada supplies 2 ½ million of it; we are the largest single supplier. Other large suppliers, particularly Mexico and Venezuela, as we speak, are declining in terms of the ability to send crude oil to the United States. In fact, even Saudi Arabia is declining, not so much because its production is off but because it can get a higher net back sending it shorter distances to China and India. So, the traditional supplies into the United States are dwindling, and the United States is scratching its head over whether it wants to access more Canadian or at least that's how some of the NGOs would portray it. My view is that any thinking individual in the United States would far rather stake the energy security of their country on Canada than on Middle East or North African crude oil suppliers because, as we speak, that area is in turmoil and has a history of being in turmoil. But I'll leave that for the United States government and the people of the United States to decide. Were I one, I know how I would come down on that issue.

In terms of the Pacific Rim, there are large economies that are very hungry for commodities of all kinds. So it's not a surprise that you see Chinese oil companies in the oil sands, Japanese, Korean. In fact, one day not so long ago, I hosted the new Chinese Ambassador to Canada on his tour of the oil sands in the morning and that same afternoon I hosted the new Indian High Commissioner to Canada. These people don't just turn up because they want a tour; they turn up because those countries are interested in secure access to commodities, one key commodity being oil supplies. And, as I say, every commodity Canada trades is on a global market, save for oil. In my view, there's no reason it ought not to trade the same as grain, or cattle, or lumber.

AD: In terms of the actual pipelines, I mean the technologies and places to build, the whole issue is going to be around environmental and social impact assessments. You started your career working for a small consulting firm that was looking at that. Now, think of what you've learned, what could you say about it?

DT: I say that the common perception of the environmental impact of pipelines is grossly overestimated, relative to their actual impact. Most people who live near pipelines literally don't know they're there. The process of building a pipeline means that a crew comes through the community. It might be obvious and visible for a couple of months and then it's gone. Pipelines have a narrow right-of-way. They're dug into the ground; they are built; the land is backfilled and reclaimed; and practically speaking most of the time nobody knows they exist. They are built across streams and rivers in a prudent manner not unlike anybody else crossing a stream or a river and they sit there, and 99.95 percent of the oil that flows through them gets from A to B with nobody even thinking about it. So, again, the supposed environmental impact and social impact of pipelines I think is vastly overloaded. The social impact consists of people having a job. The environmental impact consists of a trench in the ground that's reclaimed and, then, on occasion, you get a spill. Most oil spills that I have had any involvement with are either relatively small or relatively easy to clean up. Oil spills on land—it's a fairly simple matter to clean oil out of land and reclaim the land. Oil spills on water—it's much more complicated but, here again, the history has been that the industry has proven quite capable of cleaning up water bodies, and water bodies also have a capacity to clean themselves naturally. While they occur and for sometimes afterward, yes, there's an impact, but the impact is not permanent. The impact is transitory and is reparable.

So you get to the risk question. Is it enough risk that there might be an oil spill some time some place to offset the benefit of, in this case, a pipeline to the West Coast that would allow every barrel that Canada produces to attract 10 to 15 dollars more, which would flow from the tax and royalties system into the pockets of the people of this country? Is there enough risk of a spill to offset that benefit? That will be judged by the people that sit on the panel looking at this. Were I sitting in judgment, as I speak, I know how I would vote. Yes, there's a risk; it's mitigable; it's repairable; it's cleanable. Is there a benefit? Yes, and it's very large.

AD: Is there anything else you'd like to share with me in the questions I've asked or haven't asked?

DT: Well, development of oil sands monitoring is a whole other story that needs to be talked about. It's obviously a topic of the day. But, from where I sit, I'm in fact quite proud of the processes that are in place today to monitor environmental aspects of oil sands exploration. I'm proud of a couple of things. Going back into the '90s, Syncrude and Suncor—we were the only two plants at the time—both had a small number of stations, three or four each, that monitored air. The stations had to, under our permits, operate 24 hours a day, 365 days a year, which meant that you had to have on-shift, on-call people for three or four stations. My equivalent, my counterpart at Suncor, a fellow by the name of Don Klym, and I sat down and we said this is kind of silly. We each have under-

employed people looking after a small number of plants. Let's combine our monitoring systems and let's turn it over to a third party to run. We did that, like I say, it was the mid-1990s. I think we were the first regional air-monitoring network, frankly, that I know of. We did it for a business purpose, but we also said we're tired of being accused of hiding information; so, let's let this thing then be public. We've got nothing to hide. That was the origin of what is known today as the Wood Buffalo Environmental Association. As time has gone on, more plants have been built, more stations have been contributed. Now we have in place a third party, fully transparent, air-monitoring organization that runs stations from Fort Chipewyan in the north to Fort McMurray—they're all online. You can go online and get the data; at any moment, the real-time air quality data and all the history; and it all began because we, two of us, outsourced our air-monitoring requirements. Now I don't know of anywhere that has as large a network, certainly not geographically, that is sitting on line in real time as WBEA. They also do a lot of research that is also posted on their website.

The same thing happened in water. We each had water-monitoring requirements. It didn't make sense to do them on our own, so we combined our forces. That became the Regional Aquatic Monitoring Program. Now, unlike WBEA, the Regional Aquatic Monitoring Program didn't stick to core business. WBEA, when it developed, had a public board. All its data was public. The Regional Aquatic Monitoring Program somehow went a bit of a different route. It also was public in that people could join it, but its data was not made public. It was made public through annual reports and the like, but not in real time. And it also didn't stick to core water monitoring and became a creature of its own in some senses, programs of the year. So, it didn't have the same continuity of history; having said that, it is still an exceptionally expansive and extensive water-monitoring program. Again, I don't know of any program that is as large and as sophisticated as the Regional Aquatic Monitoring Program has become. It's now under more criticism than the air-monitoring program is. So, really. if you look at it, environmental monitoring in the oil sands has for many, many years been effectively third party and transparent; some more than others. Similarly biodiversity monitoring has been done by the Alberta Biodiversity Monitoring Institute (ABMI), or something like that, a third-party organization; so, a lot of the monitoring in the oil sands has been public, third-party a lot longer than just about anywhere else in this country. Now much of the rest of the country has followed suite. But it followed the oil sands' lead, in my view.

AD: I think that this is it.

DT: I'm certainly happy [laughs].

AD: I would like to thank you for agreeing to this interview because, as I said, it's going into the Glenbow Archives and will be accessible to academics and historians who want to do balanced research.

DT: I hope, in some small way, I've contributed to that research in the future and to any researcher, who may well be listening to this, all the best with your studies.

AD: Thank you so much.

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