GLEN SCHMIDT

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Name of interviewer: Peter McKenzie-Brown

Name of videographer: Peter Tombrowski

Full names (spelled out) of all others present: Heidi Christianson-Brown

Consent form signed: Yes

Transcript reviewed by subject:

Interview Duration: 1 hour, 14 minutes

Initials of Interviewer: PMB

Last name of subject: SCHMIDT

PMB: Okay, I'm interviewing Glen Schmidt. Glen, what is your title at Laricina; President?

SCHMIDT: I'm President and CEO.

PMB: President and CEO of Laricina Energy. And with us also is Heidi Christianson-Brown.

CHRISTIONSON-BROWN: That's right.

PMB: And of course Peter Tombrowski is our videographer. We're downtown Calgary, and it's Wednesday, the 13th of March, at about 3:30. Okay, Glen, thank you very for participating in this. We're really, really pleased to do this and, in particular, because of your company's involvement in the oil sands carbonates. I think you're the only people that we have interviewed that have that experience pretty much now. Would you begin, please, by just giving me your biography; where and when you were born and, you know, and then up to any point that seems relevant.

SCHMIDT: Okay. I was born in Calgary so -- in September 9th, '57. Went to school at the University of Calgary, studied chemistry, then switched to engineering, and also completed a business degree. Had the opportunity to move into the energy sector on graduation, and saw no reason to leave Calgary. I think Calgary is one of those unique cities, over the years, where the marriage of imagination and capital has created a large number of businesses, but has also attracted a large number of people, a lot of immigrants. My father came from Germany originally; was born in Romania. My mother's family originates in Ontario, and then in England, and my great grandfather came out with the Northwest Mounted Police, and was the physician for Chief Crowfoot when he died.

PMB: Oh really.

SCHMIDT: And so there's some colour with respect to Calgary as a city. My mother was born here and my grandfather was born in Innisfail, and my great grandfather had house in the city in 1880 something.

PMB: Now, you said your father was German.

SCHMIDT: Correct.

PMB: Did he come over after the war?

SCHMIDT: Correct.

PMB: So around 1950 or so?

SCHMIDT: In the early '50s, yes, he did.

PMB: Thank you. Carry on.

SCHMIDT: So the opportunity in working in the energy sector was one of learning. Calgary is an amazing city to garner experience across a wide range of energy projects. And so my original work, when I came out of school, was miscible flooding. And Alberta was a leading jurisdiction in terms of the application of light hydrocarbons, whether that was ethane or propane, with natural gas to increase the recovery of some very specific formations. So whether it was the Swan Hills in Northern Alberta, or the Leduc and Bonnie Glen near Edmonton, or the areas that I focused on which were the Nisku Formation and the Pinnacle Reefs that were discovered in the late '70s and developed in the early part of the '80s. All carbonates. And when people talk about oil and gas, it's the carbonate formations that provide the largest resources of the greatest productivity. Alberta's blessed with the wide cross section of resources, natural gas, conventional CBM, deep shale gas to tighter oil plays to the bitumen projects.

PMB: CBM is Coal Bed Methane?

SCHMIDT: Correct. The opportunity for me moved from a larger company; I began with Getty Oil, which was a large US-based company, which acquired a Canadian company called Reserve. I left that company to work with a little company called Precambrian.

PMB: What were the years here, roughly?

SCHMIDT: '81 through '84.

PMB: That's when you worked for Getty Oil?

SCHMIDT: For Getty Oil and Canadian Reserve as an entity. From '84 to 1996 I worked for a company that worked as you would see in many oil and gas companies, developed through the amalgamation of others. So Precambrian I joined in '84; it merged with Bluesky to form Mark Resources in 1986.

SCHMIDT: And it was formed from German drilling funds, and so there's a very interesting history on how companies came together. And in '96 that company became the centrepiece of Enerplus, and interesting enough Enerplus became a joint venture partner with Deer Creek which had an oil sands project.

SCHMIDT: And then subsequent to that, a partner with us at Laricina. In between I had the opportunity to be Vice-President of Canada of Chauvco, then President of Pioneer Canada. Chauvco was acquired by Pioneer Natural Resources out of the US, and then subsequent to that did a very short stint in an investment dealer called Newcrest, recapitalized a company called Torex; "Tor" meaning top of the hill.

PMB: Oh, okay.

SCHMIDT: Which we sold. Then joined and became part of Deer Creek, which had a mining project in in-situ. So prior to Deer Creek I worked on the conventional. Post Torex with Deer Creek and Laricina, I've been involved since about 2000 in the oil sands. Deer Creek had both in-situ and mining, and developed two separate pilots, and had its own version of technology. And when we come back to Laricina its focus is based on innovation, the application of ideas and their development to not only plays, but projects. And Deer Creek was very much focused on bootstrapping a mining project through the use of in-situ, and we sold that to Total in 2005 for $1.7 billion, and then in the fall of 2005, formed Laricina, where we've developed the projects from scratch. So, our first financing was $7 million, and since then we've raised $1.3 billion. CPP, Canada Pension Plan, and everyone in the room is a shareholder, at least indirectly, in the development of Laricina. And our focus was, like all oil and gas companies, prospect first. Having prospected well by understanding what can be done and how, became involved in two very large projects which are the emerging plays. J.C. Anderson, who is a pioneer in aspects of conventional oil and gas, said it well; third man in often doesn't make money. So, Laricina was first man in in the Grand Rapids development in Pelican Lake, and the Grosmont development in the Pelican Lake region of West Athabasca.

PMB: Now, those are both carbonate plays?

SCHMIDT: No, the Grand Rapids is a conventional clastic or sand, a Mannville formation. So, oil sands bitumen production commercially today is produced, and its original development was the Clearwater, which is a Mannville sand, produced out of a vertical well. So, like conventional oil and gas, one of the primary questions we always ask is, how many wells of what type? And in many cases later, what fluids we might inject to improve the recovery? In thermal we have to deliver energy, and

the first commercial development was Cold Lake, using a vertical well to deliver the energy, and a vertical well to drain and produce the oil. That work, through Dr. Butler's imagination --

PMB: SAGD.

SCHMIDT: -- and (indiscernible) was the development of dual well SAGD, and so being very specific, CSS is also gravity drainage. It includes some other features but it's about --

PMB: CSS is Cycle Steam Stimulation.

SCHMIDT: Correct.

PMB: Mostly used by Imperial at Cold Lake.

SCHMIDT: In vertical wells in the formation called the Clearwater. That vertical well, and understanding how the production really worked, lead Dr. Butler, in the case of the McMurray formation where ejection at high pressure was not feasible, to look at what could be done horizontally. And so the concept of delivering energy with an injector and a producer had to do with how to deliver energy, how to start up the production which is different than the Clearwater, and then how to produce it. So, Clearwater can also be produced horizontally by SAGD, Steam Assisted Gravity Drainage, but cyclically, and Canadian Natural does it at Primrose. Shell, in the Bluesky formation at Peace River, has experimented with a variety of configurations back to that primary question, how many wells of what type? They've experimented with steam floods vertically, they've experimented with SAGD, they've experimented with a variety of configurations, all to address the question, and how many wells of what type? As Laricina developed we looked at the formations that are applicable, and the next two largest formations -- actually, the next three largest formations after the McMurray, are the Grosmont, with about 400 billion barrels in place, the Grand Rapids, which I believe is about 150 billion barrels in place, and then the Nisku, approximately 100 billion barrels in place. And Laricina has a leadership position in all three of the next largest plays for the recovery of bitumen, and the work that we have underway in the field is the resolution of how many wells and what type. And in the case of the Grosmont it's a carbonate. As a platform, it's one of the largest in the worlds. The main area that we're involved in is as large as Ghawar.

PMB: Okay, Ghawar, is the big oilfield in Saudi Arabia.

SCHMIDT: The largest oilfield in the world, currently producing 5 million barrels a day, with about 175 billion barrels in place. And geometrically and geographically the distribution of that oil is fairly close as an overlay to the Grosmont project that we own a piece of, and other major operators, which would include Suncor, Husky, Shell, and Cenovus would own other good positions within that play. And as a company, we've been through a pilot that we now have onstream, and it's been onstream for two years. We're now advancing a commercial development. Our partner announced what is now recognized as reserves now within the Grosmont, in the transition from a pilot and a concept, to the beginnings of and the emergence of a next commercial play for bitumen recovery. Adjacent to that project, about 30 kilometres away, our Grand Rapids development, which uses dual

well SAGD, so in this case it will be two wells and more conventional. That formation -- that project will come onstream in June of 2013.

PMB: By "dual well SAGD", you essentially mean the system that Roger Butler created --

SCHMIDT: Two wells, correct.

PMB: -- with two wells, so one is the injector, one is the --

SCHMIDT: Producer.

PMB: -- recovery well, the producing well, which is built around -- which becomes part of a chamber, gathers the oil from a chamber that develops.

SCHMIDT: You inject steam; the steam heats the rock; a chamber does develop. The oil drains and is produced from the lower well, and the key to dual well is you need two wells to start the process. There are projects that use two wells, but they don't require them to be adjacent to move the process, and one of the very successful one of these is called Tangleflags, originally operated by Sceptre.

PMB: Is that in Saskatchewan?

SCHMIDT: Correct. And that project began in the late '80s. And it was vertical steam injection at the top of the reservoir, and drainage of oil at the base of the reservoir. So, you are injecting steam. In this case, how many wells of what type, vertical wells, injecting the heat, a horizontal well to drain the oil, and the wells were not required to be adjacent the way they are in the McMurray because there's sufficient mobility. In other words, the bitumen, or heavy oil, has a low enough viscosity that it in fact can be produced and started up without the wells being adjacent. And the reason I spent a few moments on it, there is no single recipe for the production of oil. In a conventional world you might take primary oil recovery, and that's all you do. You might have pressure maintenance, you might inject gas, you might have a water flood, you might have a miscible flood, you might have a polymer flood. There are a range of tools that are specific to the characteristics of any one reservoir. In bitumen recovery it is a very similar program. And in the case of the carbonate, as we've evolved through our pilot, it is now the use of a single horizontal well to inject the steam, and to produce with the postulation that, like Tangleflags, as the project matures it will migrate to a continuous operation with steam injection at the top and the drainage of oil at the bottom. And we call that process C-SAGD. Because it's all gravity drainage and it's all steam-assisted gravity drainage.

PMB: Oh.

SCHMIDT: Variance on the --

PMB: Oh I'm sorry, what does the C reference?

SCHMIDT: Cyclic.

PMB: Cyclical, okay.

SCHMIDT: Because we inject and we produce.

PMB: Okay. And then --

SCHMIDT: And it can move to continuous SAGD, so which is why we selected the C and only a C, because we don't need stimulation, and we may migrate to continuous injection with gravity drainage with a separation of the wells, no different than it's done at Tangleflags.

PMB: Now let me ask you a question. Tangleflags, as I recall, is not bitumen, it's heavy oil; is that correct?

SCHMIDT: It's heavy oil, that's correct.

PMB: And you see the application of SAGD in reservoirs that have reasonable mobility. What I mean by "mobility" is the viscosity is not as high as bitumen, but the principles still apply. A good reservoir with lower viscosity, which means it can be produced and stimulated for gravity drainage with steam, and to do it efficiently. Senlac, one of the first projects developed by PanCanadian was not only the testing of solvent and steam in a conventional heavy oil reservoir, but it included the SAGD operations. And Neil Edmunds, in our office, who I think you had the opportunity to meet and discuss, that was one of his first projects. And so as people look at oil sands recovery, not only the formation and tools, it will also come to the fluids you inject. So is it -- will it be steam only or will it include, as I discussed earlier, the EOR component that we see in conventional, which is the injection of light hydrocarbons, whether those light hydrocarbons are propane, butane, or condensate.

PMB: Okay. Now, that's a really good clear explanation, and we will be coming back to those things when I think of some intelligent questions to answer -- ask about them 'cause you've done a great job with that. Let me ask you this now. You became part of this company in 19 -- or in --

SCHMIDT: 2005.

SCHMIDT: We sold Deer Creek to Total on September 12th, and on September 13th Laricina began.

PMB: Okay. Actually, Deer Creek was one of the questions that I wanted to ask you about. You said, and it surprised me a lot when you told me that it had both mining and in-situ projects. Now, what is that mine called, the mineable project now?

SCHMIDT: Joslyn. Joslyn.

PMB: So that's the origin of the Joslyn Mine?

SCHMIDT: Correct. Originally owned and operated by BP, and then subsequently sold by Talisman, who inherited it, to Deer Creek for $5 million, and if you will, they took the mortgage back, and that then translated into a much larger number at the end in the sale to Total.

PMB: Oh, that's really interesting. Okay, would you please tell me a little bit more about Deer Creek and what you accomplished there 'cause that's a piece of the story that I -- this is the first time I've encountered the name "Deer Creek".

SCHMIDT: Chauvco -- when I was at Chauvco, and Vice-President of Canada, and then President of Pioneer Canada, we were looking for heavy oil. A project called Frog Lake was originally operated by Texaco, and it was one we looked at. It's currently exploited by a company by the name of Twin Butte in current operations. Because when you stood back and looked at Canada, there was two large resources; natural gas, which was certainly significant in its contribution to the Canadian or the Alberta economy in the early 2000s, and heavy oil, including bitumen. And so Chauvco was looking for heavy oil projects, and then subsequent to it I was trying to encourage Pioneer, out of the US, to become a participant in it. The original founders of Deer Creek worked for us at Chauvco in soliciting and identifying opportunities. The Joslyn project is sold by BP to Deer Creek, was available to Chauvco, subsequent Pioneer, which they chose not to participate in. While I was at Torex, in a conventional company, I joined the board of Deer Creek to help advance the project, and then when Torex was sold I went in to be Chairman and Chief Executive Officer, and then --

PMB: Of Deer Creek.

SCHMIDT: Of Deer Creek. And so it had been founded with the people who had worked with us, Paul Jespersen, who worked on the original Sceptre Tangleflags project while at Sceptre. So that's how Deer Creek and -- my relationship with Deer Creek existed, and where we took it is a small company and mining company is large. So Deer Creek had a mining project of which the western part of the project was deep enough that SAGD could be implemented or in-situ recovery. With the idea of innovation there was an alternate well configuration that was postulated and tested, and benchmarked against SAGD. SAGD, dual well SAGD, was the resulting winner in the application of the technology. That was then piloted, and then it subsequently expanded to a 10,000 barrel-a-day project to begin the expansion of, and the commercialization of the Joslyn lease, which is directly south of the Canadian Natural Horizon Mine, which is now onstream. At the time it was completely undeveloped.

Total, in 2004, was looking for participation on the mining side, and joint venture discussions took place. Subsequent to those joint venture discussions Total had a desire to acquire the whole asset, and through, interesting enough, a hostile takeover which has its own nuances, Total was a successful purchaser of Deer Creek. And that closed on September 12th of 2005. And on September 13th I began the work of assembling Laricina; didn't have that name at the time. And through the fall of 2005 we took the -- those with the likeminded to raise about $7 million, followed by $70

million, followed by a number of financing -- with a very simple principle. In 2005 in-situ developments had not yet fully matured. There were a variety of opportunities and formations for which the application of SAGD, whether it was vertical, horizontal, single, or dual could be applied, and we acquired land in 2006 and 2007 and 2008. We drilled it, we tested it, and began our pilot operations within the Grosmont in 2010, and have advanced the development of our Grand Rapids project where its initial development will be onstream in July of this year. And subsequent to this we now have a 500,000 barrel-a-day project base in Pelican Lake, where all the ingredients are now in place; it's drilled, it's delineated. We're waiting on the regulatory approval for the expansion of both projects, and while we have our own pipeline application before the regulators, TransCanada, through partnership with PetroChina, is bringing what they call the Grand Rapids project right past ours. And so what Laricina has done based on Deer Creek, was take ideas and concepts back to the -- I think the very characteristic of Calgary, take those ideas, marry it with capital, and build a business.

PMB: Now, one of the ideas that I put to Neil the other day was that, you know, 20 years ago you could take a million dollars, and drill a few gas wells and, you know, and then all of a sudden you have a going concern, and you suddenly have an oil company, and you can sell it off, and then start the whole process all over again.

SCHMIDT: Hmm-hmm.

PMB: What would a million dollars get you today?

SCHMIDT: Nothing. And I think with the transformation of the oil sands or the oil business; the multinationals exited Canada in the late '80s, and with the emergence of trust, the trust became the consolidator of mature production, and the sponsor of exploration codes that you've just described; that evolution or adaptation of what I'll call the economic ecosystem evolved further where with oil prices the emergence of, and the opportunity to do resource plays has been created. The change in the tax structure has also -- the "tax structure" meaning the royalty tax structure. Well, this was a change in the tax structure affecting the whole industry. Back to your question, what does a million dollars get you?

PMB: Right.

SCHMIDT: The tax structure change, which removed the ability of companies to form trusts in the energy sector.

PMB: Oh. Oh, that one. The Halloween horror story, 2007.

SCHMIDT: Absolutely. Now when you look at the ecosystem, to play shale plays wells might cost you five to $12 million. To start a company you need 100 to 150 million. You used to be able to do it with five. A resource play in the oil sands, we've raised 1.3 billion. We're beginning our commercialization. If you were to migrate to the tight gas plays that will be exporting LNG to the coast, an LNG project is $25 billion. There is not a Canadian company that can carry it on its own.

So to answer your question, over the last ten years there was a transformation of the business where the very small scale oil and gas is less fungible. There's been a transformation where there's a large amount of capital required to play in the resource plays called tight oil, and certainly in our business a significant amount of capital to play in the resource play called bitumen. And the tight gas play and the LNG that is attached to it is a multinational only. You can't start with a million dollars, and you can't really participate.

PMB: Now, and I asked the same question; I was a little bit more naive when I spoke to Neil last week. To set up an oil sands company, what will a billion dollars get you, you know? I mean most of the companies seem to be worth in the range of anywhere from two or three to 50 or a hundred or, you know, look at Suncor, a billion dollars -- no, I'm sorry, Suncor is worth around $50 billion in market cap.

SCHMIDT: A billion dollars can begin a project. If you own the land, if it's delineated, a 30,000 barrel-a-day project requires about $1.2 billion. So $1.2 billion, when you're at that stage, will deliver a full-scale initial commercial development. The targeted size, or the sweet spot, is more than a billion barrels recoverable, and more than 100,000 barrels a day, developed in phases. And so an oil sands company, to develop full commercial scale, entails several billions of dollars of capital through its life, and upfront capital to establish the business, maybe as much as a billion to two billion within the full commercial development of say one to two. So your two to $4 billion to become commercial. So it's a huge barrier to entry, and only a few Canadian companies are participants or will be participants because of that scale.

PMB: Okay. Now, what has happened is that there's a requirement for international capital now because of the size of these projects.

SCHMIDT: Correct. Canada cannot fund developments of its business. So if I started with the largest of the projects, LNG is larger than oil sands. One LNG project is $25 billion. The --

PMB: Now this is to export LNG, Liquefied Natural Gas --

SCHMIDT: To Asia.

PMB: -- to Asia or somewhere.

SCHMIDT: If we look at the most recent oil sands mining project completed by Imperial, at Kearl, or Exxon, at Kearl, it's -- I believe their most recent announcement, 11 to $12 billion. And so if I look at scale, in an LNG project, one is twice as large as the largest oil sands project currently large -- launched.

PMB: Oh, that's an interesting idea.

SCHMIDT: So when you look at flow of capital we, "we" meaning a very large company called Exxon, can do ten to 12 billion; you have to be very large to do 25. To launch a 30,000 barrel-a-day

project you need 1.2 billion. All of that capital requires extensive participation internationally. The shortfall of Canada, in terms of its needs, is at least $50 billion a year foreign capital. A company like Laricina is owned approximately half by Canadian shareholders, and half by mostly North American shareholders. And so to answer your question, free flow of capital is very important to marry that free flow of ideas in the energy development, otherwise the sector is dominated by multinationals.

PMB: Good. A few minutes ago just before we began this interview, and I want to come back to this, I mentioned that I had interviewed somebody who had been working in the Bitumount project in 1937, and the Bitumount project up near Fort McMurray I think was the first site in Alberta to be proclaimed a historic site. And then you had some very interesting comments on that that I'd like you to go back to, please.

SCHMIDT: I had a chance to, along the Athabasca River, see the Bitumount site, and it is -- I would say the forest is reclaiming it. As a historic site it hasn't been disturbed, but the trees are beginning to grow up through the buildings, and it's quite forested. So when people ask the question, the time for recovery, from the '30s, 80 years later the forest is reclaiming the site naturally.

PMB: And I thought I heard you say that there were trees growing right through some of the buildings from that period.

SCHMIDT: It is.

PMB: Yeah. Okay, I thought that was an interesting commentary because there is discussion about how long does it take to truly restore all of the vegetation from a boreal forest, and some, you know, professors at the university have suggested that really it's likely to take over a hundred years.

SCHMIDT: It depends on what the impact. And so on certain mining projects that may be the case because of the duration. On in-situ project, which is the bulk of the recovery, that is not the case. And I'll give you an example of a company like ourselves. Of the land that we own only 3 percent has been disturbed to date, in all our activities. Of that, 45 percent has either been fully reclaimed, or in the process of being reclaimed. And then the question with respect to the reforestation, that -- those lands are of a state or a condition, because in-situ is very much like conventional, no different than the clear cutting and other forestry in the area 'cause this isn't clear cut, will recover it fairly quickly, and within that cycle time because we plant it.

PMB: Okay. But some of the species, you know, for example, some of the more unusual species do take a while to evolve.

SCHMIDT: They will --

PMB: And, of course, you can take a wetland and replace it with a lake and you don't have the same ecology.

SCHMIDT: Which is what they do on mining.

PMB: Yeah.

SCHMIDT: But that's not what in-situ is.

PMB: Right, of course.

SCHMIDT: So when you think of mining, if you have a lease, you might disturb 90 to 95 percent of the land. Now, go back to what I just said. We've currently impacted 3 percent, and because of the nature of in-situ --

PMB: Bingo. Thank you, I missed that small detail. Okay, thank you.

SCHMIDT: -- we reclaim it as we go. Mining tends to defer it until the end. And so in terms of the -- how benign in-situ is, it is very benign and very much equivalent to conventional and may, in fact, offer a more favourable environmental balance sheet.

What do I mean by that? The recovery per horizontal well is larger than conventional, so that's more favourable. We recycle the water. That doesn't occur in conventional. And within ten to 12 years we've reclaimed the land. So as a well, not the project, but as a well, we get in and out. We get more energy for the impact. We have less of an impact on waters because we recycle, which is not what occurs in conventional, and we reclaim it faster. So when people ask or describe the questions on the environmental performance on in-situ, in-situ has a very high standard and, in fact, most conventional operations do not achieve either the lower relative impacts of conventional because of what I've just described, nor the standards discussed with respect to the reviews. A conventional heavy oil development in Pelican Lake might be approved within three months. It might be a polymer flood with horizontal wells producing out of the Wabiskaw, receiving royalties under the oil sands regulation, but considered conventional. So when people talk about the environmental impacts, we have the same footprint, higher recovery, more rigorous review, more thorough engagement with the community, and a more positive environmental impact. So when people talk about what they can be proud of, in-situ oil sands in terms of its footprint, its future impact on revenue to the province, its opportunity to change technology is a wonderful story that's not well told.

PMB: I'm going to defer that question to a few minutes 'cause that's an important one that I've been chasing down lately. Is your company, and I was a little unclear on this while I was speaking to Neil the other day. Is Laricina a going concern?

SCHMIDT: When you ask the question "a going concern", yes. So I'll answer --

PMB: And now explain in a little more detail, please.

SCHMIDT: We'll answer it the way our accountants would ask for it because we do publish our financials, notwithstanding we're private --

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PMB: All right.

SCHMIDT: -- is we do require more capital, and so the uncertainty with respect to the development is the timing of and the nature of capital, and it's a function of the business we're in, no different than a technology company. The assets that we hold and the value that we hold is well described by the independent resource and reserve consultants, no different than if we were in the conventional business. The economic potential in value, using current technology within the company is between 11 and $15 billion. If we can enhance the recovery of the Grosmont to the degree that we would, and see currently recognized within the McMurray formation, which would grow to $25 billion. We've invested 1.3 billion today.

PMB: Wow.

SCHMIDT: We have a very favourable ratio in terms of the dollars invested and the economic potential created. And in that basis we are very robust.

PMB: Now, what is the business model? Because, you know, I mentioned a while ago that it wasn't that long ago that, you know, put a couple of million dollars into wells, and then, you know, you have a going concern, in no time you sell it off. But here we're talking about something which is really a much longer term proposition. In those days, two or three years and you were in and out, and then you'd take your team and do another one.

SCHMIDT: The duration and the scale of the assets is more akin to a technology company or the development of a pharmaceutical where you have research, testing, development, and then a large or longer production development cycle time. That's a better model or a metaphor for what we do in terms of the development of a company. What does it require? So in the case of our company when we focused on assets, it's certainly large scale. If you're going to be in the oil sands, you have no efficiencies at being small, you must be large, and our current base is over 5 billion barrels recoverable, more than 500,000 barrels a day of production potential. We're large. Quality: There is an -- a large volume of bitumen just as there's a large volume of conventional gas or oil, which is subeconomic. In other words, it's in formations that are of lower quality, lower permeability, too thin. There's a variety of characteristics that will make it within this, call it, generation uneconomic, and so you have to have the right quality. And then proximity to infrastructure, and the best example of that is gas in the Mackenzie, since the Berger Commission in the '70s, is still not producing. If you are going to be involved in a resource play, and talked about a characteristic that you must achieve, it is to find assets that can be supported by or developed with infrastructure. So Laricina's platform, what's underpinned our business was the ability to understand what can be done and how it's applied, take a leadership position and prospect well, develop those prospects so that the platform has the infrastructure necessary to go to commercial development, which we have on each of those cases. And now, as you talked about a business strategy moving from pure engineering to the financial side - so I did do my business degree as well - is a simple process that we would do on the technology is not too large too soon because we have much to learn; on a capital side, not too large too soon because it's expensive. You are always sharing the future potential, and sharing

the least amount to advance the project is the characteristic of the financing, and interesting enough it's well supported by an operating strategy which is don't build too big because what you're building is a prototype or initial development that you will both enhance and improve. That marriage and that complimentary strategy, both operationally and financially, is what underpins both the strategy of Laricina from an operating basis, but it's financing.

PMB: Okay. Well, that was pretty comprehensive, and I suppose I would expect that from an engineer who has a business degree as well, but that was good. Now, I'd like to go back to you made some comments about the significance of developing technologies and, you know, I'd like to talk about the kinds of technologies that you're developing for the Mannville and for the carbonates, but before we do that, would you remind me again what your production facilities are now, and how much will they produce, and when will they go on, at least -- or when did they go on initial production?

SCHMIDT: We have an 1800 barrel-a-day pilot in the Grosmont that began steaming in 2010.

PMB: And the Grosmont is the carbonate, okay.

SCHMIDT: And it's a dolomite. With respect to the Grand Rapids formation, our commercial demonstration project of 5,000 barrels a day will begin steam in June of 2013. The expansion of Seleski, now that the pilot has established --

PMB: Seleski is the -- is the Man -- Mannville --

SCHMIDT: Is the Grosmont.

PMB: Oh is the Grosmont, sorry.

SCHMIDT: Seleski, which is the Grosmont project. And Germain, which are the labels for the Grand Rapids and Winterburn project which is also a carbonate, and the Grosmont project. We have the roads fully established; natural gas is in place; electrical power and substations; deep disposal. The last piece of the puzzle as I discussed earlier, is a main pipeline. So this initial production is trucked, it could be railed, but given the scale of the operations at 500,000 barrels a day of full development potential, the pipe will follow. To come -- to advance the development further, our next stage is a commercial scale phase one expansion of the pilot in the Grosmont, and shortly thereafter an expansion of the Germain Grand Rapids by 30,000 barrels a day, which is a full first scale development. And so the strategy employed in both is to build into our business, so whether we were a technology company or a pharmaceutical, to complete our testing, to advance the design work, and then to scale up. And so we're in the process now of scaling up first within Grosmont. We expect that production in 2015, it's growth, followed by an --

PMB: Sorry, you expect the expansion in 2015?

SCHMIDT: In 2015. Followed by the expansion at Germain in the Grand Rapids in late 2015 or 2016. So we have a little bit of overlap.

PMB: So the year 2013 is really a significant year for you.

SCHMIDT: It's a catalyst year. A catalyst year because we're starting the start-up of our Grand Rapids. We now have a full reserve recognition within the Grosmont. And when people ask the question, how does a play move from an exploration concept to a commercial development? It goes from discovery and description to testing, implementation, piloting, which we've now completed, to now an initial commercial scale, and the assignment of reserves. That work is being completed in 2013 with a reserve assignment. The expansion of the project, we expect approval in the middle of 2013. We expect approval of our expansion of the Grand Rapids project that's coming onstream. We expect approval or a business determination or combination on the pipeline, and we have then demonstrated the catalyst that could put the company well positioned for public markets.

PMB: And these approvals come from the ERCB?

SCHMIDT: Correct.

PMB: And from Alberta Environment?

SCHMIDT: Yes.

SCHMIDT: And under the new regulations, the joint agency that will kick off in June or July of 2013, because they will be combined. There will be one window.

PMB: That's right.

SCHMIDT: SRD. Sustainable Resources and Development was once called Forestry. Alberta Environment and the ERCB will be formed into - and I've forgotten the name of it - but there will be one window, and one agency for the development of energy, whether it's conventional or oil sands.

PMB: Thanks. I knew that, but you've put it in a slightly different context. Okay, Mannville. Can you explain to me what the carbonates are and how are they different from the oil sands, the classical oil sands?

SCHMIDT: It's a sedimentary rock, and so we'll start at the very beginning. I'm not a geologist. But if we went back to your junior high or your high school science, these are sedimentary rocks. So as we look to the Canadian Shield you get into metamorphic rock and igneous and that's where you have minerals, and so mining occurs in the Canadian Shield. Sedimentary rocks are what contains oil and gas. There are two types of sedimentary rock; one a clastic, basically a sandstone. And so as we look at the mountains or we look at the river, just through the window, the sand that's deposited in that river is the creation of formations, and over geologic time those are buried, and where there are

traps the migration of hydrocarbon from shales that we see contain hydrocarbon are then trapped, and that becomes the reservoirs from which we produce. And there are two types; sands and carbonates, clastics and carbonates. Sands can contain marine deposits or fluvial, something like the river, or something in the ocean. That deposition characterizes how big, how laterally continuous, what the character, quality and thickness of the sand deposits. In a carbonate it's quite similar. With the change that limestone of which carbonates typically are, reefs or otherwise, are converted to dolomite, because when water moves through that rock limestone it will convert. There's an ion exchange between calcium and magnesium, which forms dolomite, and a larger porosity, a better reservoir. In the case of the Grosmont, it was a marine deposit that was deposited horizontally. It was tilted because we have tectonics occur, so in geologic time, it was subaerially exposed, which means it was on the surface and water moved through it, and the water would --

PMB: What is the expression you used?

SCHMIDT: Subaerially exposed. Through that exposure and movement you've created more porosity and even karsting, "karsting" meaning the dissolution of rock over time - it doesn't occur very quickly - to create a wonderful reservoir, and that reservoir with the additional deposition of rock above, if you will, other formations, and the migration of hydrocarbon from the deeper shales that create them, is then trapped in the bitumen that migrated from the deeper formations. It was light oil at the time, became bitumen in the McMurray. It also became bitumen in the Grosmont. And the reservoir itself is dolomite with very high permeability and good thickness, but also high porosity. Neil may have shared this with you in his discussion, you make money heating oil not rock. And so if you're in a carbonate formations you can have very good reservoirs but the porosity is low, and while they may contain bitumen you have to heat too much rock. The Grosmont is relatively unique in that has fairly high porosity, over 20 percent, in some cases averaging closer to 25, that it's sufficiently large -- that the amount of oil in proportion to the amount of rock is just right, kind of like Goldilocks, that you get the benefits of good permeability and not too much rock to heat, that you have a very good thermal recovery program.

PMB: And one thing that somebody pointed out to me some years ago is that when you have Leduc, for example --

PMB: -- is a conventional oil reservoir, a conventional carbonate reservoir.

PMB: And so really when we're talking about some of these -- the projects like the Grosmont, we're talking about possibly a conventional, you know, carbonate --

PMB: -- reservoir, it just so happens that it's filled with bitumen.

SCHMIDT: Exactly. It's a sub crop play. And so if we were to go to southeast Saskatchewan, Estevan, Weyburn, the Midale, the Frobisher, the Alida, those are all carbonates, they're Mississippian in age, and they're all sub-crop plays, and they're all good reservoirs, but small in scale. And so from a depositional perspective there are similarities, but the characteristics of the trapping

of oil that you would see in those conventional reservoirs is no different than as you just said, the bitumen trapped within the Grosmont, and then the opportunity to produce it.

PMB: Good. I'm glad -- I thought I was losing it there a little bit. I thought that was what I'd heard. On your website I found a question which I've stolen here. You've given me an answer in a few different ways, but I'm going to ask you this specifically because I think you could do something interesting with it. The question is, How does a small company like Laricina excel in what is being described as a "big company game"?

SCHMIDT: The ability and willingness to act, and I would say that more than anything. Large companies have brilliant people, but they don't always have the willingness or ability to act, which allows us to come to a determination of what could be done, and then to act upon it. It's not that large companies cannot make the same determination Shell has within the Grosmont. They've taken a land position, but they don't act, not for irrational reasons. Shell still isn't commercially exploiting the Grand Prairie project; they're sitting on it. Big companies will often inventory, a small company must act. And so our ability to discern, understand, and then act, and then to provide that opportunity to investors allows us to compete with the large companies, but also allows us to provide an offering to shareholders that they can participate in, and you have to do both.

PMB: Good. Okay, that's quite good. I'm going to come back to the key question in a couple of minutes, but now probably you've given me enough on the general background. I want to talk about the kinds of technologies 'cause you've referenced this early on.

You've talked about what you're doing in the Grosmont, and the different kinds of things you're testing. There are so many things that are going on now. You know, you have Shell testing the use of electrical heating. The new Esso, or the new Imperial Oil project has found a way, apparently, to recover the bitumen and leave the worst part of it in the mine. You know, this is their new mining project.

SCHMIDT: Deasphalting.

PMB: You basically leave the asphalt behind. A very interesting new technology. And Shell is also using this. I've forgotten the name of the technology. So many different things that are going on and being developed. Can you talk in -- as if you were able to look into the future with perfect 20/20 vision. What would you see happening?

SCHMIDT: When you have a large resource play, so -- as a company, if you thought of a technology company, they take an idea and they look for a market, and they look to meet a need. What's interesting about an oil and gas company is you own your market, it's your own assets, so organic growth is how can we do it more efficiently. So innovation is imbedded in our company, it's one of our underpinnings; innovation in prospecting, innovation in every aspect of our business. But in terms of extraction it is not to discover more oil, it is to get more from the assets we own. And we look at it as a sequencing of can we be more efficient on capital. We're doing some fairly interesting

things on how we drill the wells in the Grosmont. There's -- we were the first to do thermal foam cement in a partnership with Halliburton.

PMB: What did you call that?

SCHMIDT: Thermal foam cement. In order to drill carbonates or -- in some formations you have to control the weight of the cement column. You do it by injecting nitrogen and lightening the cement. It retains its strength but it's not as heavy. How we control fluid loss in a well; we're doing some fairly interesting work on how we can, in fact, use bitumen to be a lost circulation material, and that's just on the drilling side.

When you drill a well, if you lose fluid you can't control the well. You don't want to lose fluid. You can. Your choice is to seal the formation as you drill. So how can we seal the formation? There's a number of things you could use. You could use cement. There's a whole variety of conventional techniques. We've come across and are working with a partner in a very unique idea, to use bitumen itself, and that's just on the drilling side, giving you two examples. To answer a simple question, How can we be efficient in and address the issues of drilling? For the delivery or the recovery of the bitumen itself there are people, and a number of people -- the use of solvents, as I discussed earlier, in EOR and conventional.

That was some of the first project work I was involved in is adding light hydrocarbon to get more oil. Steam is water, it's a miscible; you leave oil behind. A light hydrocarbon is miscible; you recover more oil. Light hydrocarbon also mobilizes bitumen, so like a hybrid you have two drivers in a reservoir. Imperial has their project called LASER, Liquid Assisted Solvent Enhanced Recovery, at Cold Lake. It is commercial. Cenovus does their SA SAGD, Solvent Assisted SAGD. Laricina has its own recipe called SC SAGD, Solvent Cyclic SAGD, which is the application of, or the addition of solvent to steam to be thermally more efficient which means reduce our footprint, get more oil out faster, and increase our recovery. The delivery of energy in a partnership with Harris Communication, Nexon, Suncor and ourselves, radio frequency heating like microwaves, they're not the same, but like microwaves, to deliver energy over a volume, and still use two wells, only in this case on the end of a cable is not a pump but an antenna. An ability to deliver more energy faster than steam, and this work has progressed from the testing of the antenna to a horizontal well at the Steepbank Mine, which know -- we know how to propagate it, we know how to generate it --

PMB: Sorry, the Steepbank Mine is own -- operated by?

SCHMIDT: Operated by Suncor who is a partner in the group. Now we're looking to see if we can even do more, faster. And so --

PMB: Okay. Now I really apologize. That one went by so quickly, and I could see that it was so big. Would you explain it again slowly, and maybe in a little more detail?

SCHMIDT: Bitumen requires heat or to be diluted to be mobilized. You don't have to use steam to deliver heat. You talked about earlier could you use electrical heat? Now there are three choices that

are being tested in the field. ET Energy is using resistive technology; two wells, create a circuit, the circuit releases the energy with the electrical energy transferred between two wells, if you want to think about it that way. It's like a toaster. Shell; the application of a conductive heating that they've done in shale. TAGD; the use of a coil in a horizontal well by Athabasca.

PMB: And what does that stand for? T --

SCHMIDT: Temperature Assisted Gravity Drainage, I believe.

PMB: Oh, isn't that interesting. Okay.

SCHMIDT: So it's using a coil. And the metaphor for me is if I wanted to cook a turkey I could stick a hot rod in the middle of the turkey; you could cook it. If you used a convective oven you might be happier with how you cook it.

PMB: Right.

SCHMIDT: And that's what radio frequency is. We cook over a volume, and so we use an antenna to do that, no different than when you think of what a microwave -- parts of the electromagnetic spectrum do different things. Radio frequency can be used to heat a reservoir. So to answer your question, how do we see innovation within the company? Every dimension of what we do, we patent an application on how we can make our facilities more efficient in how they're modularized. So we look at cost, process, and a current state as an opportunity to see how it might evolve to improve the output, either use less inputs - in the case of steam use less steam - it's a solvent. A different input that's cheaper and more efficient, perhaps radio frequency over steam. A more efficient process in drilling because we take fewer days to drill. We could control our wells more effectively. We could compete them -- complete them more effectively. We could be more capital efficient in how we modularize our facilities. So I'm giving you a cross section, and one, you -- you've been introduced to Neil. Neil created a piece of software call Jepsom when he was at a company called CS Resources. It was -- and he sold it to Cenovus. It is the reservoir software that they use to describe their SAGD wells.

PMB: He talked about that a little bit yesterday -- or last week.

SCHMIDT: We're looking at the transformation, and a little bit --we haven't decided whether to be fully open source, but collaboration with the university - a project called Oasis, and the opportunity to better describe our reservoirs and their performance mathematically because like an architect, if you can better describe your building, you can better build the building. And so, again, back to how we view innovation, innovation is about efficiency, it's about recovery, it's about every attribute of our business, and that is what Laricina means. The name of Laricina means to pioneer. It is the Latin name of the Tamarac. The name came from Marla Van Gelder, who is our Vice-President of Corporate Development. Her husband is an arborist. And when we talked about the formation of the company in 2005 -- So as the engineer, I came up with a whole bunch of poor names, and we talked about how could we describe our company? What described where we work? What described

who we are? And we liked the name Tamarac because the Tamarac is native, along with the Black Spruce, to the area that we're operating in in the Boreal Forest. Tamarac was taken. Laricina was not, which is the Latin name, and Tamarac is a pioneer; it works in a harsh climate, it is first to go in, it dominates and others follow, and when you look at those characteristic it well describes who we are, what we are, and our approach to innovation.

PMB: Good, I like it. Okay. I want to go back, and we're nearly done. You've given me some great information. I want to go on to -- you mentioned Joslyn a while ago. Do you remember the big blowout at Joslyn a few years ago when they were pumping steam into the ground?

SCHMIDT: Hmm-hmm. Yeah.

PMB: And, of course, Imperial did that in -- something very similar around 15 or 18 years ago.

SCHMIDT: Texaco did at the airport at Fort McMurray.

PMB: Okay. I want to -- so my question is this, and -- have you ever been any time in your career involved with a project where, you know, there was some horrible explosion like that?

SCHMIDT: No. When we sold Joslyn to Total part of the contributing factor was pressure limitation. If you have a vessel and -- your hot water tank in your basement, your hot water tank in your basement has a pressure relief valve which means thou shall not go above that pressure or it relieves so it doesn't blow up. You can't do that with a reservoir. What you can do with a reservoir is don't put more pressure in than the container should hold. They did, and they had the subsequent result that it went bang. And bangs like that occur through some misadventure and how it's operated. Canadian CNQ at Primrose did one of their largest injections about a year and a half ago in a Primrose pattern, and it went bang in the night. And I don't mean it too facetiously, but to answer your question, care and attention to everything, which doesn't mean other operators have not. There may have been a miscalculation, a misunderstanding, and those things contribute to the events that you have. And the quality of the company in thinking about safety as a process; if you have integrity in your process, integrity in your planning, safety is a byproduct, and the quality of your safety can be driven by the quality of your -- the integrity in both your planning and the patience in your execution.

PMB: Okay, I want to ask you one thing based on something you just said. Texaco had a blowout of that kind near the Fort McMurray airport?

SCHMIDT: Absolutely. They were doing a CSS project within the McMurray and it blew out, and it was one of the most amazing scenes of steam. And I've seen the tape. So lessons learned.

PMB: And roughly what year was that?

SCHMIDT: Oh, in the '60s, but I can't remember what --

PMB: Oh really, okay. So quite a while back.

SCHMIDT: And so the industry learns as it goes, as every industry does. I mean the auto manufacturer, they learned that having no seatbelts wasn't as good as having seatbelts, wasn't as good as having airbags. And so if you think of that sequencing, that exists in oil and gas every bit as much.

PMB: And did you say that Cenovus also -- or was in Encana?

SCHMIDT: CNQ.

PMB: Oh, Canadian Natural Resources.

SCHMIDT: Yeah. They blew part of their Primrose pattern out about a year ago.

PMB: Well, that's interesting. And usually I think they attribute that to corrosion in one of the pipes. You know, usually it seems to be that kind of thing that if it doesn't cause the problem it contributes to it.

SCHMIDT: There are pipelines that fail, which might be corrosion.There could be corrosion in a well which could lead to failure, or pressure. So it's not a single issue. If the reservoir has a breach, the breach in the reservoir can be a function of pressure, or the reservoir itself has been breached, if you will, by a core hole that had not been effectively abandoned. There can be a variety of causes that lead to the blowouts that you discussed.

PMB: Okay. I just spoke to somebody -- well, the fellow I was just talking to, Mickey Abougoush, he's a good friend of Rick George's.

SCHMIDT: Hmm-hmm.

PMB: And he -- and we were talking about the difference between Suncor today and Suncor a year ago when Rick left the company and, you know, he was replaced by Steve Williams.When I interviewed Rick George he said that their plan was to produce a million barrels a day by the end of this decade. And I guess Williams announced yesterday, or two days ago, that they're going to stick to half a million barrels a day. And I'm not going to tell you what Ricky Abougoush said, I want to ask you what does that say about those two leaders?

SCHMIDT: It's an adaptation to the game they're in. So Rick George's aspiration for the development was a reflection of the environment and the time, but it changes. Steve Williams' decision to develop it is within the environment we are, both from a financial basis, a transportation basis, and an economic basis. They're never the same. One of the best metaphors and my favourite is football. So when you look at Manning who went to Denver, the capacity and ability of a quarterback to play the game he's in, not the game you plan for, 'cause you always plan, but to adapt. And I think what you see in the transformation, or the development, or the decisions between Rick

George and Steve Williams is an adaptation to the game they're in. They're not the same game. They're both good quarterbacks.

PMB: Okay. The way Mickey put it was he said Rick George is a builder, Steve Williams the guy who likes to maintain what you already have.

SCHMIDT: I think it would be fair to say that you could make that description. I'd prefer to say that both are playing their own game, which you always do.

PMB: Okay. And that pretty much finishes -- I know that I've taken an awful lot of your time. Let's just see whether there's anything else that I want to -- oh, I did want to ask you this one question. Social and environmental protection gives companies a license to operate. When I worked for the CPA, the Canadian Petroleum Association, this concept was unheard of, but of course today it's just -- it's part of the way business is done. Can you tell me a little bit about how does the work you do give you a social license to operate?

SCHMIDT: So the social license to operate, as a label, is maybe misused too often, is the quality of the work done. So you have perception and you have a number of people describing what's done, and the views, and the public is trying to discern how well we do. So to have the ability to operate in any industry, the ability to finance a company, the ability to have a good relationship with the community are all of those things. If you have a safe environment for your workers it's all of that. It's good work.

Setting aside the politics, it is the reputation of and the substance of the quality of the work undertaken. Canada has nothing to apologize for. The quality of the oil we produce is second to none. Every objective measure shows that Norway and Canada are 1A and 1B. When the United States Ambassador talks about the work that Canada should do, it should be an invitation of the reverse; Canada seeking the US to join the quality of the production we have in water recycle, in the regulation on land and reclamation, in carbon regulation. There is no carbon charge in the US. Canada is the leading jurisdiction. I know there's a debate and there's views, but it's politicized. The substance of what we do, the quality of the oil that we produce is second to none, and the industry needs to be clear in it, and not afraid or reluctant to describe it within that context so that the public hears that message, sees that message, but also tests the results, and when they test us they'll find that we, in fact, achieve those standards, and in that achievement people can be proud of it. When they're proud of it then you have the engagement which fosters the development because we make a contribution in the communities we work in, we make a contribution in the universities we partner with, the recovery and the development of the technology, our economic contribution to the province, and the rigour at which we produce, whether -- and the outputs, whether it's the safety, whether it's the quality of the production, and as I've discussed the aspects. And so I'm being -- taking the question a slightly different angle, but the standards that we are asked to achieve, the standards that we, in fact, do exceed give us a product that is as good as or better than anything on the shelf.

PMB: Wow, great way to end up. Is there anything else you want to tell me?

SCHMIDT: Calgary in the energy sector is one of the most fascinating, and it is, I would say, good fortune to have had the opportunity, one, to be born here, to have had the opportunity to go to school. I grew up in Forest Lawn, and I will say I wasn't maybe the best student, but I chose to go into engineering and I had that window. What could be better? What could be more fun?

PMB: Thank you very much for your time.

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