PAQS CONFERENCE - 2008
EDMONTON - ALBERTA
JUNE 16, 2008 - 1:00PM SESSION
PRESENTER - DEREK SANFT, PQS

20-May-08

"COSTING THE OIL PATCH"

		PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
1		**CONFERENCE INFORMATION**	1	
	?	Welcome to the PAQS conference and to our presentation **"Costing the Oil Patch".**		Picture - front cover of PAQS Brochure & Logo
	?	My name is **Derek Sanft and I am the Principal of Sanft & Associates** a Professional Quantity Surveying company based in Vancouver.		
	?	**This presentation is NOT going to be about technical stuff.** All of you in this room are experienced QS people or else you would not be here. What we are doing in the oil patch has less to do with estimating and more to do with understanding the special circumstances and characteristics of the Oil Sands industry and Fort McMurray, the acknowledged Oil Sands Capital of the world. We hope with **a few things to think about when you leave**.		
	?	**Hold this thought -** World Market Crude Oil price today - **$120.00 a barrel - W**hen you decided to come to this conference probably in the fall last year - that oil was $60.00 a barrel!!		
2		**WHO ARE WE**		
	?	**Sanft & Associates Inc**	1	
Qualified people		Principal - Derek Sanft PQS - Professional Quantity Surveyor		Sanft + Associates Business Card - Derek A Sanft PQS
		Derek qualified in NZ and worked there and in Australia in the mid to late 1960's		
		Immigrated to Canada in 1970 and spent the next 25 years working in general contracting as a professional estimator - from junior ranks to chief estimator and corporate management		

"COSTING THE OIL PATCH"

	PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
	Incorporated as Sanft + Associates in 1993 as a Professional Quantity Surveying and Construction Consulting company and celebrate 15 years in business this year		
	Our primary corporate **focus has always been "Cost & Constructability"** with the general contracting background that I have.		
?	**Gwent Building Systems Ltd**	1	
Qualified people	Principal - Roger Ward PQS, FIOB		Business Card Roger
	Roger immigrated to Canada in 1967 from the UK as a Fellow Institute of Building and qualified as a PQS 1970. His UK background was heavy civil and ground work .		
	From Edmonton, Roger worked on civil and infrastructure projects for Bechtel, Hashman, George Wimpey, Balfour Beatty, AV Carlson Group, Ledcor, French owned Carillion and more recently Morgan Construction & Engineering who operate all over northern Alberta and the Territories. In the late 1980's Roger did a 3 year stint in Nigeria with Balfour on the Balanga Dam & Irrigation project.		
	Roger started Gwent Building Systems in 1976, to handle his consulting and contracting out work.		
?	**KA Enterprises**	1	
Qualified people	Dwayne Knippshild - PQS (Mechanical) back in 1989		KA Enterprises - Business Card
	Dwayne's career path was in mechanical design with Reid Crowther- Earthtech; Vinto; Saskmont and Lamb McMannus doing it all from civil, industrial, commercial, and institutional projects throughout the province.		
	In 2007 KA Enterprises pass 20 years in operation as a Professional QS Mechanical Consulting company in Calgary.		
	It has been a big advantage for us to have a mechanical designer and QS on our team to talk "pipes and pumps" with the design professionals and the site foreman.		
?	**Wiremasters Automation Ltd**	1	

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	PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
Qualified people	Chris Reinert, PQS (Electrical) circa 2004		Wiremasters Automation Ltd - Business Card
	Chris is a PQS Electrical, a Master Electrician, a Professional Electrical Contractor, has a real estate license and is doing an MBA with Bath University School of Management in UK.		
	After more than a decade of hands on electrical work and contracting, Chris set up Wiremasters Automation Ltd, in 1998.		
	Corporately, we would not be doing what we are today in the Oils Sand without this talented team, We all took the chance to venture into unknown technical territory.		
	AQSA are your PAQS host. Roger is the current AQSA President, Chris is the current Secretary. Not to be out done, I was a charter member of AQSA in the early 1980's and was President #2 back when I lived and worked in Calgary.		
3	**HOW DID WE GET TO THE OIL SANDS AND TO ALBIAN SANDS ENERGY**	1	Map of Alberta / major cities
?	**Early in 2006, the phone rang in my office in Vancouver.** It was an engineer I had worked with a few years earlier. He was now with Albian Sands Energy in Fort McMurray, Alberta.		
?	**" We are having serious budget problems , he said**. I told them here that I knew of "some great QS people" who could probably give us some help and some advice."		
?	**My first instinct was NO!** What do I know about industrial process work or oil sands?		
?	But - I decided to **talk this over with my old buddy Roger Ward** - a structural and mining QS who has been in and around Fort McMurray oil sands for many years - decades in fact.		
?	To make the long story short, Roger and **I went to see Albian Sands, talked in larger philosophical terms ABOUT WHAT WE MIGHT BE ABLE TO DO.** Were we surprised - when we came away with a box of drawings and specs for 6 jobs that had to get done in the next 30 days? **Surprised? Not in the least. We were terrified!**		

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		PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
	Client's needs	? We asked for copies of previous estimates - NOTHING; formats - NOTHING; guidelines - NONE. **What did they want - They wanted Results!! OK!**		
		? We did get something - it was **a Project Funding Application Form Summary** - it looked familiar. A job activities breakdown - engineering and trades and closeout costs. With the end product Summary in front of us, we started out by designing an estimate package to go with it.		Summary
		? As we exited Albian's office with the "box of 6 jobs"- I said to our new boss **"..... we may not yet know a lot about the oils sands but we do know a lot about estimating and the estimating process ...."**. A bold statement - but what else can you do with a box of 6 jobs under your arm.		
		? **After we calmed down a bit - We can do this!**		
4		**WHAT ARE THE OIL SANDS / TAR SANDS OF ALBERTA**	5	Pictures
		? Canada	☐	Map of Canada
		? Alberta - Edmonton		Zoom to map of Alberta -
		? **Fort McMurray about 500km north of where you are sitting** and is the centre of the oil sands industry.		
		? **If you looked at a map of the "top of the world" 57 degrees north** would put you in Fort McMurray and Juneau Alaska and Oslo and Stockholm and Leningrad and somewhere at the southern tip of Greenland		Top of the world map with circle at 57 north
		? For those of you from down under - if you looked at the corresponding map for 57 south - Hobart Tasmania is a balmy 43 degrees - Invercargill NZ is 46 - Stanley in the Falklands is 51 degrees which is the same as Calgary. Cape Horn at the bottom of South America is 55 degrees. **So that would put Ft Mac South is somewhere out there between Cape Horn and Antarctica** - definitely Penguin Territory.		Map of Antarctica at 57 south

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Remote location	?	**In Canadian terms, Ft McMurray is a remote location -** 500Km north of Edmonton - one road in / same road out - mostly two lanes. Nothing else out there. The road stops 200km north of Ft Mac - stops - goes nowhere. Remote or not, Fort McMurray has a population over 50,000 - 4 x that of 20 years ago. The Alberta population has more than doubled in that 20 years to 3.4 million.	Picture of Fort McMurray / Population Stats
How much oil	?	Tim Horton's in Fort Mac you can coffee and donuts and anything you want to know about the oil industry - some you don't want to know. However, to be somewhat more official, there is the Alberta Energy Board (EUB) and the Canadian Association of Petroleum Producers .... **"recent quote ..... Alberta's oil sands deposits contain 1.7 to 2.5 trillion barrels of bitumen, of which 175 billion barrels are economically viable oil with today's technology. That's enough to meet the current needs of Canada for the next 500 years ... end quote".** The official predictions are that we have the second largest known oil deposits to Saudi Arabia, but we are only beginning to discover how much oil is really there in oil sand deposits that stretch from here to Saskatchewan (next Province to the east). It is generally accepted at Timmy Horton's) that this is the largest oil deposits on the planet by a wide margin.	Picture of Oil Sands oil leases
	?	**This is an oil lease map** - a rainbow of colours . **Shows Who is and Who has!** It is the new miners prospectors map. This is about 300km north / south and 200km east / west, The land is leased off the Alberta Government to the oil producers.	Oil lease map
	?	**What is Oil Sand or Tar Sand? Here is a sample.** As the name implies, it is a composition of sand, bitumen, mineral rich clays and water.	Picture of oil sand - packages on the table
Mining Operation	?	**Actually, all this is NOT about oil. This is really about mining - open pit mining - pure and simple.** This is about digging, hauling, crushing and processing. It's about lots of giant excavators and hundreds of massive trucks as big as 3 storey houses and conveyor belts and process plants all running 24 hour a day processing millions of tons of sand. It could very well be about producing coal or potash or aluminum or iron or diamonds. It's just about mining and extracting the product.	Photo of open cast mine, drag line, excavators, trucks

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		PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
	?	**An excellent grade of oil sand will have a bitumen content in 14% to 18% range,** poor grade in the low single digits range. The deposits are very carefully mapped and surveyed and drilled and the digging and retrieval of the sand is by no means guess work or hit and miss. No use digging and hauling and processing material that has no value except to wear out your equipment. Different ore grades are mixed to produce a relatively constant output of finished product.		
5		**JUST SOME INTERESTING FACTS**	3	
		What is the barrel of crude oil we hear so much about - it is 42 US gallons and 35 Imperial gallons and just under 160 litres		
		What is the relationship between oil sand and a barrel of crude - it's about like this - 1 cubic metre of ore = about 2 metric tonnes = about 1.25 barrels of bitumen = 1 barrel of crude. The terms of reference are 1 barrel is 1 cubic metre of ore - since we are talking mining that's 2 tonnes.		Picture of 2 mtne sand = 1.25 barrel bitumen = 1 barrel crude
		The Alberta Oil Sands are now producing about 1 MILLION barrels of crude a day, = 2,000,000 tonnes of sand a day = 6000 truck loads a day = 250 trucks per hour = about 4 trucks per minute or **1 truck every 15 seconds is maintained, loads, trucks, dumps, returns and is ready to load again** = that is happening ever minute of the 24 hour day, every week, month and year in the oil sands. (generally accepted and published combined daily outputs at Syncrude, Suncor and Albian Sands)		Pictures - Truck being loaded, conveyor, plant picture, refinery, Calgary skyline, airport
	Subs and Suppliers	**That's just the mining aspect** - than there is the extraction, the processing, refining and distribution of about a million barrels of product a day, maintenance, upgrades, new plants, support, subs, consultants, and all the things needed to run the plants and the City.		
	Largest industrial project in the world	Quote from Tom Radford of CBC film director doing a documentary film called Tarsands (Aired in March 2008) **" ...Once you get up in the air above the oil sands, you realize the immensity of what's going on. You suddenly understand that this is the largest industrial project in the world ..... millions of tons a day of Alberta is being dug up and hauled away ..."**		Photo of documentary filming

"COSTING THE OIL PATCH"

PRESENTATION - WRITTEN FORMAT		64	Comments - Power Point
Product costs	**How much does it cost to produce?** From the Syncrude information booklet - 1987 price per barrel $14.54 - 1997 price per barrel $13.78 - 2005 price per barrel $26.59. Before you all rush out and quote that Oil Price today is $120.00 per barrel and it is produced in Alberta for about $26.00 - that is the cost to get it out of the ground ready to refining into the many finished petroleum products.		Syncrude book highlight / three pages and prices Newspaper headline of Oil Price $120.00
6	**WHO ARE THE PLAYERS IN THIS INDUSTRY AND THIS REGION**	3	
	Syncrude Canada Ltd - The largest player - Owned by Canadian Oils Sands / Imperial Oil / Petro Canada and Conoco - 400,000 barrels a day		Photo - Syncrude Logo and plant and location map
	? Began as a pilot plant in 1958 and actually began commercial production in 1978 and passed the 1 million barrel mark in 1982 at about $15.00 a barrel cost. Now has produced more than 1 billion barrels (1999) and currently is running at 400,000 barrels a day at about $30.00 a barrel cost. Refines most of the product on site to a diesel type product and then ships it out.		
	Suncor - Second largest player - Owned by Suncor Energy Products and Suncor Energy USA - 300,000 barrels a day		
	? Began as Sun Oil Company in 1917 in conventional oil production. It was actually the first oil sands producer in 1967. Suncor is presently reporting an output of about 300,000 barrels a day and too has surpassed the 1 billion barrel total production. Suncor also has a refinery on site		Photo - Suncor Logo and plant and location map
	Albian Sands Energy Inc - The third player - Owned by Shell Canada and Royal Dutch Shell, Chevron Canada and Western Oil Sands - 200,000 barrels a day		
New plant and operation	? This new plant began operation in 2000. The plant was first set up to produce 155,000 barrels per day but is now producing more than 200,000 per day. This plant does not have a refinery on site and uses newer technology to convert the bitumen into a flowable product that is piped 600 km to the Shell refinery at Scotford outside of Edmonton. Newer technology dictated that planning, building, operating and maintaining an oil refinery in a remote location was now not a requirement for an oil sands plant.		Photo - Albian Sands Logo and plant and location map

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	PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
	Right - Sanft can't add 400+300+200 - not a million a day. I think the plants are producing more than they publish. At $120 a barrel - wouldn't you, I would!		
Peak capacity is now the norm	There are more players here now and many others en route to this area and this industry. CNRL (Canadian Natural Resources Ltd) will commence operations this year - new player - new plant - new technologies. As we speak, there are more than 10,000 construction and support workers operating daily on new projects or expanding existing plants. Some are 24 hour a day operations building new facilities as fast as they possibly can. At $40.00 or better $60.00 or better still $80.00 and now a fabulous $120.00 a crude oil barrel , WE ALL KNOW WHY. The reality is that the ferocius pace of activity that now exists in the oils sands will not abate and will become the norm, if it hasn't done so already. What we are now experiencing (fortunately or unfortunately depending on who's view point you follow) is just the beginning of what is planned for the region in the coming decades and the potential importance on the global scene.		Photo - CNRL
	I hope this first section is opening you up to an understanding of the area and the industry the size and the scope. Now to a bit more of the technical aspects.		**15min**
7	**THE OIL SANDS PROCESS IN A SIMPLIFIED AND SCHEMATIC FORMAT**	2	Photo - flow chart of process
?	Ore	Exploration, digging, hauling, crushing, and delivery for processing	Photo of mine / excavator /
?	Extraction	Extraction, processing and shipment of the product	Photo of cyclopack and other
?	Tailings	Disposal and storage of the process residue	Photo of aerial shot of ponds
?	Utilities	Supply of energy and materials to keep the process going	Photo of generation plant / gas
?	Refining the product	Albian - Off site / Syncrude and Suncor On site	Photo Albian pipeline /
8	**WHAT DO WE DO AS QS**	5	

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PRESENTATION - WRITTEN FORMAT

64

Comments - Power Point

Photo of a plant function

? **We work on capital upgrade projects** - **systems that are better, faster, cleaner, safer, cheaper** and new technologies that **enhance operations and profitability**

? we do not do general maintenance work - that's a different department and cost centre

? **How does all this upgrade work happen? Well - there are about 20 on site engineers,** who spend much of their time looking at "what if" scenarios. Each is experienced in their discipline of piping or instrumentations or electrical and many other more specific sub indices of the plant and process. They check plant design criteria against actual performance - and probe ways and means to make production - better - safer - cleaner - safer - cheaper. New pumps - valves - reroute here - bypass there - new monitoring ..... **AND ALWAYS - HOW MUCH WILL THAT COST!**

? Our projects are typically in the $2 Million to $10 million range but that being said, $20 and $30 million are not uncommon and a few at $100 and $200 million are on file. Typically we do 2 or 3 estimates per project through design to implementation.

? **Some projects end up on the cutting room floor - usually not because of costs.** Interesting - many of the project that are cut are not because of the costs - they are more likely put on hold because the **construction cannot be fitted into the logistics of the plant operations in the immediate future.**

? Conversely, the benefits some other change will far out weigh cost or schedule complications and that project will advance though the system and be implemented. Albian was designed and constructed on a "fast-track" basis with definite budget constraints. At the time it was built in 1998, oil was under $40.00 a barrel - production cost projection were $15 to $20.00. **Cuts and economies were made in the plant design and construction of the plant and some of those they live with today - and every day. Some can be changed - some not. Some you can just tweaking to make better, some are genuine upgrades and some are new technologies.**

"COSTING THE OIL PATCH"

PRESENTATION - WRITTEN FORMAT		64	Comments - Power Point
Schedule	? The plant runs at maximum capacity 24/7/365 with very little down time. Very hot summers - very cold winters - rain - hail - shine - storm - blow - still 24/7/365. **There has to be a major shut down every 3 or 4 years for 20 to 30 days. This is a reluctant necessity. Profitability stops and the really hard work begins - materials, crews, literally thousands of workers, feed, clothe, transport, and supervise, direct and schedule. Never enough time, never enough manpower, never enough money to do what is needed.** Larger upgrade jobs never get done in regular time or sequence or necessity because they can only be completed in shutdown. So, the scheduling of all work has a major cost factor in budgeting.		Photo of the SFC
Price for the worst case	? With a plant that runs 24/7/365, we on the estimating side never actually know when or if the work will be done. Day shift, night shift, summer days of 16 daylight hours or winter with 7 daylight hour - winter weather at minus 40 or summer at plus 40. **At minus 50C, they close the plant - nobody can work outside and it is just too hard on the equipment and the machinery.** This happens at least 2 or 3 days a year. That is very big cash loss per day but no doubt has been factored into the operating revenues. So - escalation and contingencies have to be allowed for schedules and weather and the inherent production uncertainty of when work will be done.		Photo of the winter operation
	? **One of our biggest assets and allies has been our client,** who has been on the same learning curve with us - so we have both brought many things to the table> Where we both are now, is certainly not where we started. We are still trying to hit a moving target. At least we are doing this together.		
9	**HOW DID WE DO IT THEN**	3	
	? **Back to the Summary** - you have all seen one of these before in various forms. Looks pretty simple and some of it is. **Design and Management are OK**		

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	PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
	? **Material costs are generally OK. At Albian** the owner orders and supplies all materials at the site but we do cost project materials into each estimate. I had to rethink material supply costs - just the size and scale of some things - pumps that can throw a Volkswagen across a football field, piping by the km and valves and fittings at hundreds of thousand of dollars each - and freight from all over the world to this remote site.		Copy of the Summary
	? **If the Plant supplies most of the materials - what's left? The subtrades who do the work are "labour and equipment only contracts".**		
	? **We got out our standard industrial labour performance tables** and guidelines and tried to assess the book designation for a site like this with not much success. Also tried to assess what the real deal might be at on site, with not much more success.		
	? **For the first jobs we did, the construction department at the site told us, (**with very little finesse) we did not know what we were talking about! Unfortunately, they were right!!		
	? BUT - maybe the saving grace at that early stage was - **they had an actual estimate on their desks - on paper and electronic - quantities - prices - strategy - order and form - something to review.** And review we did. This was good. Next job they had another estimate on paper in the same format and review - next job - next job - next job!		
	? **What was it we were still missing - a real grasp and understanding of the plant, the culture and many other factors we had not even remotely considered.**		
10	**WE THOUGHT WE HAD IT - BUT!**	10	
	I have to be really careful here, in that I am a "contractor" to the company and want very much so wish to remain one. As such, I am reporting to you here and not criticizing the company or their policies. I think the lawyers call this "statements without prejudice". Well I am invoking mine, right here.		

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PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point

? **Back to the Summary again - Design, Materials, other factors are generally OK. What does that leave - Labour. This is the crux of the whole region and industry is LABOUR. It's the BIGGY!! It's an estimating criteria for us because that's what we do - it's the industry criteria for everything that is done - the trades - the town - the territory.**

? **If the Plant supplies the materials - subtrades are labour brokers with "labour and equipment only contracts".**

? **Now it gets interesting!**
All of this work - millions of dollars in upgrade work - there is one sub for each
SINGLE SOURCE SUBTRADE LABOUR
I hope that did not slip by you - ONE SUB PER TRADE
One piping /millwright-rigger sub
One electrical sub, one instrumentation sub, one scaffolder, one excavator, one hydrovac, equipment rental, one crane operator

This practice is common throughout the industry and the area. The reasons are many and varied and our time is too short here to address it. Suffice to say - it's here and we have to deal with it and try to read it and accommodate it.

? **And then more interesting!**
The job is ready for construction. The subtrades quote prices for labour and their own equipment - piping, electrical, millright, scaffold. Remember now this is "lump sum labour only" from each of the trades along with a long list of exclusions and qualifications.

We have materials. We have labour. We have equipment.

Where is the general contractor?

Has anyone seen the general contractor? Oh - the company is the general contractor - OK! And the company is the designer (contracted out), the material supplier (purchased for the sub), the equipment supplier (sub out) and the manager (some direct employees and but mostly contract employees)

"COSTING THE OIL PATCH"

PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point

Each one of the trade has their own interests at heart - not surprising. If all the pieces align, all the materials are there on time - ready in place - all the rest of the trades are there on time and ready - it's not plus 40 or minus 40 and there is not a bitumen spill or a safety shut down or any one of so many other factors, the job has a good chance of moving ahead that day. Can anyone see the "extra labour costs" fairy flit by!

Did I say yet that there is a shortage of all labour - that includes general contractor's personnel - so quite often it is the trade foreman / foremen who run the job. Now I'm sure I saw that extras fairy buzz past

Did I say yet that there are usually a lot of changes that occur on jobs - if not in the physical workings of the job, it's other factors - couldn't get this off so we did that, needed a new fitting (owner supplied material remember), design changes access problems (owner supplied scaffold), weather - etc, etc. **And the labour cost is rising**

More I cannot say. I think you get the general picture I am reporting.

But in spite of itself, the system works and the industry and the plants continue to function. Our job is to continue to read and assess and allow costs for all of this in a meaningfull way.

11 **WE BEGIN TO UNDERSTAND - BUT!** 10

? Remember those **"italic red notes"** . **These are some of the real factors that drive costs in Fort McMurray for all projects** in the region for Albian, Syncrude, Suncor, CNRL and everyone else. Firstly appreciating this and secondly understanding some of this is important in doing our job because it eventually has an effect on job costs.

World Largest Industrial Project	This is the driver of almost all costs.	
	This is the major contributor to the direct cost of work	Factored into lower productivity

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PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
World cost of Crude Oil	One might imagine that the fluctuating but ever increasing market cost of crude oil should not affect our estimate pricing. Difficult to peg specifically but none the less real when translated into a work ethic and culture directly related to a lower work place productivity where many believe that "nobody really cares what it costs". Lower production rates and work ethic - a direct cost to the estimate	"Attitude" factored into productivity
Remote location	Nearest manufacturing centre to Fort McMurray - 500 km from Edmonton, 800 km from Calgary. Freight costs - direct cost to the estimate	Put a factor into every material item to get it to the site
Qualified people or lack there-of	30,000 workers in this city and region working 10 & 12 hour days - two shifts. **From labourers to CEO's - this town could use another 10,000 overnight and you probably would not see a significant relief in the labour shortage.** **But where do they all live,** school, shop, eat, entertain and play. Labour and staffing shortage - direct cost on to the estimate	Factored into lower productivity
Cost of Living	The high cost of living translates into the wage packet in the hand at the end of the month. The food bill and the heating bill and the travel costs. Average house price in Fort McMurray is over $500,000 - condo's and apartments $400,000. mobile homes over $500,000, 3 bedroom houses $600,000 and up. 2 Bedroom apt rent - $2800 a month - a single room in a house, $1000 a month - no food.	

"COSTING THE OIL PATCH"

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	To retain qualified staff, many companies pay cost of **living allowances around $40,000 to $50,000 per year tax free** to the employees - or provide work camp accommodation for a similar cost. Everyone who works at the plants outside Fort McMurray is transported to and from their work place by bus every shift, every day, both ways. Much of the plant clothing is supplied or subsidized Every shift sequence (about 10 x 10hr days), workers travel back to their home base is paid or subsidized - Edmonton - Calgary - Vancouver - Saskatoon ..... AND back for the next shift sequence. Cost of living allowance and travel - direct cost on the estimate for expenses or LOA	Increased to LOA expenses
Plant culture	It's boom town There's big money to be made What ever I make - the company makes more Up at 5am / on the bus at 5:30 / work at 7:00 / 10 hr day / bus back at 5:15 / home and changed by 7:00pm - live your life from 7:00pm to bed time to get up again at 5:00am - 10 days on 5 off 5 Days off - go home to see the family in Calgary or maybe work 2 Earn more - spend more	
Plant operation	A very large component of the estimating, is for us to become familiar and understand how the plant operates.	

"COSTING THE OIL PATCH"

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	A knowledge of the placement of landmarks and distances around the site, know the layout and the process, the local environment and the working conditions, a grasp the size and scale of machinery and equipment and the idiosyncrasies of many of individual work areas, the danger zones, the safety measures and in many cases just sit and talk and have a coffee or lunch with the engineers or site foreman. How the working environment actually operates, summer or winter, mosquitoes and black flies, super downpours and dust storms. Understanding the plant and the culture - these are major factors in successful estimating here.	Part of our learning and understanding as a team - factor in the work conditions
Plant safety	**"Everyone home at night, safely" Safety is a huge factor and cost** For starters - everyone in the work force in Alberta has to take the Alberta Construction Association training session before you start work anywhere - any field. Then there are general safety sessions. Then there are specific training session for each individual work area or process area Every shift, every day begins with a safety session. Every individual on site is personally charged with the responsibility for personal safety and as part of the team or group. This is top down and bottom up	Site motto Photo of safety sign

"COSTING THE OIL PATCH"

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	Attitude, correct procedure, protective clothing, eye cover, hearing protection, gas and air masks, flame suits, boots, gloves, no running, no smoking, no wise guys, the buddy systems, ID checking-out, max 5km vehicle speed, no overloading, wear seat belts everywhere in vehicles, ID flags and lights on vehicles, plant wide daily accident and safety reports. Plant safety - a big factor in overall labour productivity and labour cost	

"COSTING THE OIL PATCH"

PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
Suppliers	YOU WANT IT WHEN!?? This is boom town, the past, the present and into the foreseeable future. That means everyone is busy, stretched to their limits in all capacities. You get materials when they are available, fabricated when you have the time and resources and delivered when available. Prices rise to meet demand. Price often becomes of secondary or lesser importance in deference to delaying a project or an installation. Premium prices for goods and subs in peak demand - direct cost to the estimate	Looked for new non traditional suppliers, in Ft McM,
Labour Cost	As constantly referred to here and everywhere you go in this region, is the call for more and qualified labour. The general labour rate is pegged at Edmonton union rates plus 30 to 40%. The oil sands sucked up all of the available labour in Edmonton and the rest of the province, the local Edmonton rate went up and so did the Fort McM rate to plus 40%. All sites in the region are Union affiliated for every trade category. **The current charge out labour rate for journeymen is in the $80.00 to $100.00 range per shift hour - that is plus the LOA and travel** allowances which puts the effective cost in the $125.00 per hour range. Labour rate charge out - $125.00 per hour average with LOA	McDonald - Help Wanted Dictated by the local union rate
Who Cares	**The "who cares what it costs culture" - It's not that they don't care, it's just not as important.** After all, labour is working in an industry where everyone at Tim Horton's know oil $30.00 a barrel to extract - and $120.00 a barrel to fill up the pickup truck at the pump - and it's the same corporate giant from shovel to tank and all the steps in between.	

"COSTING THE OIL PATCH"

PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
That culture has an affect on attitudes and productivities and costs.		Picture of filling up the pickup!

"COSTING THE OIL PATCH"

PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point

12 **THE NEXT STEP. FIXING THE LABOUR VALUE** | 4 | SOLUTIONS

Somehow, we quantify all of those factors we just looked at. They are not in any labour productivities manual. They are historical costs and experience and wisdom - oh and a bit of luck!

We still came up short. There had to be something else.

It turned out to be location productivity. The cost analyst people at the plant went back into cost records on a different basis and looked for average hourly costs in various parts of the plant - various environments and locations. They recognized that similar work in the ORE prep areas were consistently at one cost or productivity level and similar work in EXTRACTION was correspondingly higher and UTILITIES was correspondingly lower

They came up with quantifiable percentages on the accepted labour costs - So we factored in those differentials productivities relative to where in the plant the labour operates. These percentages ranged from zero in open areas to 30% in highly affected areas and are project specific - that is to add for that productivity loss.

What were some of those factors

- heat - some building areas run 30-40 C	Extraction building
- some areas run 90% humidity - you are literally "in the clouds" with a minus 40 outside	
- 5% labour increase for every 25' vertical work location	
- frequent work stoppages and having to get new work area permits to continue	
- area idiosyncrasies, access, sound, gas, toxicity and a host of other factors	gas masks
- ore is outside and climate and distances height are factors	SFC and trucks

As a general statement, this plant and I am sure most other facilities in this business and in this region are getting at maximum 50% productivity. At $125.00 charge out, that's $250.00 per hour. You can extrapolate that into project specific tasks can be $300 or $400 or $500 per hour.

"COSTING THE OIL PATCH"

	PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
	Go back now to our earlier premise that the job labour and extras can easily get out of hand. At these kind of rates, we can see why. If a piece of material is wrong or a crane doesn't show up, the $20,000 crew bill for today's work not done costs $40,000 tomorrow.		
13	**THE NEXT STEPS. FIXING THE SCOPE OF WORK and CONSTRUCTABILITY**	3	SOLUTIONS
	Old format - If you don't get the scope defined - you get extras and up go the field costs and down goes the estimate and budget. In design terms, practicality and constructability were not high on the radar - sometimes never made the screen.		
	New format - project documents as previously - and now an "Estimating Package". Could and probably should have been a "Construction Package". The design engineers have begun to Project Manage the job at the design stage. The design team has been to the site, tracked the physical aspects of the job, looked at the location of the work, and now suggest **HOW IT COULD and SHOULD BE CONSTRUCTED** - how to get labour to it, how to get material to it, access platforms, scaffold, hoists and cranes, shifts allowances, work schedules and durations, a sequence of set up for installations and a Bill of Materials.		Estimate Package / Bill of Materials
	We would like to take the credit for implementing the "estimate package" but other than pushing a lot of buttons with plant management about what we were not getting and having many discussions of how things could be better represented in the design format - we have to applauded our client, the Manager of Projects at Albian Mr. Wayne Greasley for his direction and foresight in "requesting" this function from his design team.		
	"Cost and Constructability" was our core focus of service. We are still going down that same road as before, but it now has a large number of 400 tone mega trucks on it.		
14	**THE REAL CONCLUSIONS**	5	**TIME OPTIONAL**

"COSTING THE OIL PATCH"

PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point

As a company took on a huge challenge and a huge risk venturing into an unknown market sector and have worked really hard with really good people to learn new skills and methods. This could not have been done without the full support of our team willing to probe and ask and challenge and learn and become more knowledgeable.

We come under some criticism at times and had to strenuously defend our work and decisions. When necessary admit you were wrong or flat out don't know - and say it!

Gratifying now to walk into an engineers office and see the estimate on the desk being used as a tool not just for costs. Used now by the project management team in the field as a check on systems and schedules; used as check pricing for the subtrades who quote the labour - estimates are being used for material checks in procurement and purchasing.

The Assumptions and Risk Assessment are now key elements to back check any scope creep and changes against the initial scope.

A client who was willing to work and also grow with us in the understanding of what we were doing for them and moving forward with their agenda of more accurate cost predictions

The oil sands stakeholders are no different from you and me. Clients want certainty and reliability. I take my car to get fixed - get an estimate - I want the cost to be close to the estimate - simple. I know inherently the cost is going to be a bit more than the estimate - always is and I compensate for that. I, like the oil company, don't want the cost to be 40% or 100% or 200% more. All drivers, Chevies or Cadillacs, want the same thing - estimate and price to be same.

15	THE FUTURE IS HERE	5	TIME OPTIONAL

"COSTING THE OIL PATCH"

PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
That's the technical stuff - that's an insight into what we do. I would be remiss if I did not briefly address the future and the environment.		
Who or what will slow the growth and expansion of the oil sands - certainly not the oil companies! I charge you personally to start reading and exploring this because in the next decade this will be CANADA as seen by the rest of the world - "the oil supplier - and at what costs" "The evil that men do lives after them, the good is oft interred with their bones." Thank you Mr. Shakespeare for you wisdom. Canada will be defined both locally and by the rest of he world "as the oil industry giant" - TV - radio - newspaper - magazines - editorials. **They will experience the good. What they hear and see and remember will be the not so good.**		Newspaper headlines
Boom town / Boom Province - all of the good and bad - highs and lows in everything. Highway 63 rush hour at 6am and 6pm every day. They have been trying to Twin the highway from Ft McMurray city out to at least the Syncrude plant site about 45km - a public highway is under provincial jurisdiction - has massive daily use day and night 24/7/365 - claims many lives per year - the contractors cannot find the labour or equipment to get the job finished - that labour and equipment is way more profitable 2 km off the highway digging and working in the oil sand. The same is true in every facet of life in every town in the province.		Highway 63 rush hour
The local ecology - 1,000,000 barrels and day - 1 million cubic metres being dug up and 1 million metres of left over sand and slurry to dispose of EVERY DAY. I will let you do your own research on this. The producers create immense ponds with mountainous dykes around the perimeter to hold the slurry. The dykes take years to fill and many more years - decades even - to settle out and then disposed of and then reclaim.		The ponds, the stacks, the air quality
Environmentalists - public opinion - theorists - radicals - the informed and uninformed will have their say.		The articles

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	PRESENTATION - WRITTEN FORMAT	64	Comments - Power Point
	Landscapes or moon scapes - and the oil companies are spending very big in reclaiming the landscape, reforesting, fauna and flora, bringing back the Bison to Wood Buffalo Region - and yes it takes 25 years to regrow trees in this climate.		Buffalo, Boreal forests
	Dead Ducks - last month 500 migrating mallard ducks flew into one of the tar ponds and died. World wide condemnation against the oil industry - fish, game, other species have also been under environmental scrutiny and will continue to be and rightly so.		Headlines
	Water flows - The present bitumen extraction process requires massive amounts of water. By law and agreement, there oil industry in Fort McMurray is restricted to a maximum water usage from the Athabasca River that flows directly through the area. We are approaching that maximum and we have 3 plants on line - what about the rest. New technology will have to overcome this factor.		River picture
	Natural Gas or Nuclear Power - The present bitumen extraction process uses massive amounts of power and energy. Each plant has it's own generating station - huge - enough to power a small city. A natural gas pipeline from Alaska down the McKenzie corridor to feed the oil industry needs? One or two nuclear power stations? Need I say more about the regulatory process and environmental assessment and public opinion on this issue.		Nuclear plant
	Potential for an ecological disaster and pollution and global warming - some tell us it is happening every day - on a measurable world proportion scale.		
	Aboriginal Peoples - agreements, land claims, working relationships, partnerships, customs - all to be acknowledged and understood		
16	**Be open to new ways and new technologies. Communicate and be patient and be tolerant. THIS IS NOT ALL ABOUT OIL - IT'S ALL ABOUT PEOPLE. I KNOW YOU ALREADY KNOW THAT!**		PAQS Conference brochure
17	**Q&A**		
	Time total / min	**0**	**Target 45 mins**