



ALIGN
RESEARCH

Petroteq Energy Inc.- Update Note

24th April 2018

Poised for dramatic growth based on the rollout of its patented EOR technology and blockchain for the oil & gas industry

Petroteq was previously known as MCW Energy Group and has disposed of its fuels distribution business to concentrate on a far more compelling opportunity. This is its patented Enhanced Oil Recovery (EOR) technology, which allows oil to be successfully extracted from heavy oil assets, like oil sands, with impressive economics. There are big opportunities in oil sands/heavy oil in the US and at many large-scale oil projects around the world. Projects are crying out for such an affordable proven technology.

Powerful proven clean technology to extract oil from oil sands

The Uinta Basin in Utah represents the largest concentration of oil sands in the US, with more than 30 billion barrels of reserves. Utah is an ideal place for Petroteq to grow by acquiring more leases and joint venture deals on the back of its technology that can really unlock the value in oil sands.

Asphalt Ridge facility planned to boost production to 5,000+ bopd

Proof of concept for the technology was successfully achieved at 250bopd. Now this revolutionary extraction facility is being scaled up as it is moved on to Petroteq's Asphalt Ridge site in Utah. Here there are 3,000 acres of rich and thick oil sands, allowing 25-30 years of production at 5,000bopd or more.

Providing the oil & gas industry with the blockchain solution PetroBlox Petroteq has teamed up with First Bitcoin Capital to improve the efficiency of oil and gas supply chain management by developing a bespoke blockchain, a move that is likely to attract a lot of attention to the stock.

NPV analysis and peer comparisons suggest over 475% upside

Our NPV and peer analysis shows the stock trading at a large discount to our perceived fundamental worth of US\$4.46 (CAD \$5.71).

Table: Financial overview. Source: Company accounts & Align Research

Year to end August	2016A	2017A	2018E	2019E
Revenue (US\$'000)	205	-	6,890	82,300
PTP (US\$'000)	(12,092)	(7,940)	(4,960)	41,200
EPS (US\$)	(4.26)	(0.66)	(0.08)	0.55

This investment may not be suitable for your personal circumstances. If you are in any doubt as to its suitability you should seek professional advice. This note does not constitute advice and your capital is at risk. This is a marketing communication and cannot be considered independent research.

Valuation update
– Price target
US\$4.46 (CAD\$ 5.71)



Key data

PIC	PQEFF, PQE
Share price	CAD\$0.97
52 week high/low	CAD\$2.40/0.32
Listing	OTCQX, TSX-V, Frankfurt & Berlin
Shares in issue	71.49m
Market Cap	CAD\$76.65m
Sector	Energy

12 month share price chart



Source: Marketwatch.com

Analyst details

Dr Michael Green
michael.green@alignresearch.co.uk

IMPORTANT: Petroteq Energy Inc. (PQE) is a research client of Align Research. Align Research holds an interest in the shares of PQE. For full disclaimer & risk information please refer to the last page of this document.

US:CAD FX Rate 1.28 used in report

Business overview

Petroteq Energy Inc. Operations

Petroteq Energy Inc. is involved in the development and use of its proprietary clean technology for heavy oil processing and extraction. The current interests include:

- **Heavy oil technology** – Proof of concept has been achieved for Petroteq’s patented environmentally friendly technology, which has successfully proven its ability to extract oil from heavy oil assets, very economically at current oil prices.
- **Asphalt Ridge** – A wholly-owned 3,000-acre lease in the Uinta Basin in Utah & which is the location of the largest reserves of oil sands in the US. The company is developing its oil sand resources and expanding production capacity at this site. **The application of Petroteq’s proprietary technology to the thick rich oil sands is set to provide sufficient reserves for 25-30 years of the planned production.**
- **PetroBloq** – An advanced blockchain solution for the energy industry with a goal of optimising petrochemical industry workflow processes. It is a joint venture with First BlockChain Capital to create the first blockchain based platform to meet the supply chain needs of the oil & gas sector.
- **Accord GR Energy** – The company holds a 44.7% stake in an exploration and production play in southwest Texas where oil production commenced in 2017.
- **Recruiter.com/Oilprice.com joint venture** – The provision of internet-based job placement and career services to the increasingly skilled and specialised energy sector.

Oil sands

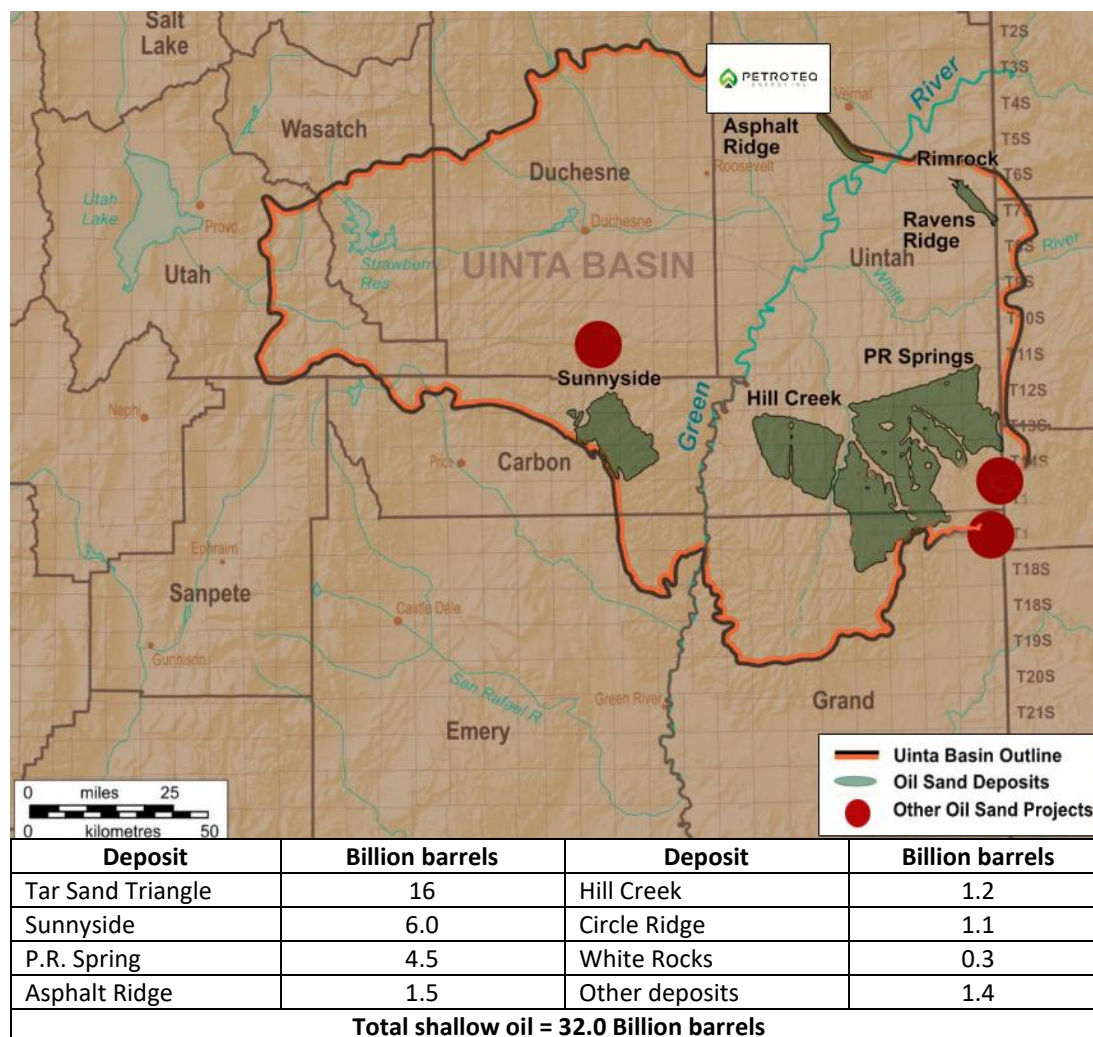
Oil sands are sedimentary rocks which contain a heavy hydrocarbon compound known as bitumen. Oil sands are also called tar sands or crude bitumen. Technically speaking, these are bituminous sands which represent a type of unconventional petroleum deposit and are found in many countries. One very large source is the Athabasca tar sand in Alberta, Canada and there are also other sizeable reserves in Venezuela, Kazakhstan, and Russia.

Essentially, there are two types of oil sands: oil-wet and water-wet deposits. Oil-wet means that sand particles are coated with oil. Water, along with oil, can move freely between these oil coated sand particles. With water-wet deposits, the grains of sand are surrounded by water and in between which the oil is trapped in pores. Whether oil sand deposits are oil-wet or water-wet makes a big difference in how oil is extracted.



Oil-wet sands and water-wet sands. Source: US Oil Sands Inc.

Oil-wet deposits are found in Utah, US, whilst water-wet deposits are located elsewhere in the world, with the best known located in Canada and Venezuela. Water-wet deposits can be found deep in the earth and mixed in with water, sand, and clay in a semi-solid natural deposit with the standard techniques to extract such oil requiring high temperatures or high pressure. **This means large capital expenditure and high operating costs which require economies of scale that only a world-class project might bring.**



Major oil sands deposits in the Uinta Basin, Utah. Source: Company

Oil sands deposits are found in a number of the western and southern states of the US. More than half of the country’s total bitumen resources are located in Utah within the Uinta Basin which represents the largest concentration in the country. **Eight major deposit areas in this important basin have shallow oil sands resources totalling 32 billion barrels.**

A limited amount of oil sands production was seen in the Uinta Basin in the late 1970s through to the early 1980s. However, inefficient technologies coupled with very low oil prices seemed to have resulted in these operations being curtailed. There is a big difference between oil sands in Utah and the Canadian tar sands. **In Utah, the oils sands are on the surface, whereas the Canadian tar sands are underground, requiring additional costs involved in mining and injecting water to force the oil to the surface.** The current technology leaves behind vast tailing ponds that represent an environmental problem.

Background

Petroteq Energy, Inc. was previously called MCW Energy Group, a company which went public in Canada in November 2012. MCW Energy had two businesses which were in fuel distribution and oil sands extraction. The fuels distribution business, McWhirter Distribution Ltd., was established in 1938 and based in Southern California. The fuel delivery market was highly competitive and so the company's Fuels Division made low margins. Ultimately, Petroteq sold this business to concentrate its attention on oil sands.

Since 2011, the management team had been looking for more profitable opportunities in the energy market and chose to focus on the oil sands industry. **The team's analysis of the extraction technologies used at existing oil sands projects highlighted the lack of an environmentally friendly technology to extract oil from oil sands.** At that time, the most commonly used method was the Steam Assisted Gravity Drainage (SAGD) extraction process.

In 2012, the company secured an oil sands lease in Utah. The team chose Utah to be the location of the first plant, largely because the state alone has more than half of the US's oil sands deposits. In these early years, the team's pioneering research led to a discovery which has formed the basis of the company's ground-breaking extraction technology.

October 2014 saw the unveiling of the initial oil sands extraction plant in Utah, which had been designed over the previous three years. Following this initial plant, the company commenced a scale-up program, with plans to design and fabricate several larger extraction units throughout the Uinta Basin area in Utah. **In 2015, the company received permits and began processing oil sands in Utah and went on to produce 10,000 barrels of bitumen oil in Utah using this patented process.** In May 2017, MCW Energy Group changed its name to Petroteq Energy and the shares consolidated on a 30-for-1 basis.

At the same time, Petroteq has been developing other interests by taking a stake in a heavy oil E&P company and getting involved in blockchain. In June 2016, the company acquired a 57.3% interest in Accord GR Energy Inc, which following additional share subscriptions by other shareholders, has meant that Petroteq's holding has reduced to 44.7%. In 2017, Accord produced its first oil from Texas. The development of PetroBloq blockchain business was unveiled in late 2017.

In January 2018, the company received notices of new patents in the US and Canada covering oil extraction technology. Petroteq received a Notice of Allowance from the US Patent and Trademark Office for US Patent Application 13/627,518, "Oil From Oil Sands Extraction Process" and a Notice of Allowance from the Canadian Intellectual Property Office for Canadian Patent Application 2,754,355, "Oil Extraction Process." These form part of the company's intellectual property portfolio, which includes patent protection in Russia.



Large tailing ponds resulting from heavy oil operations. Source: Company

Operations

Petroteq Energy has well-developed interests in heavy oil alongside a large stake in a traditional E&P business in Texas and the development of a blockchain for the oil and gas industry.

Heavy Oil Technology

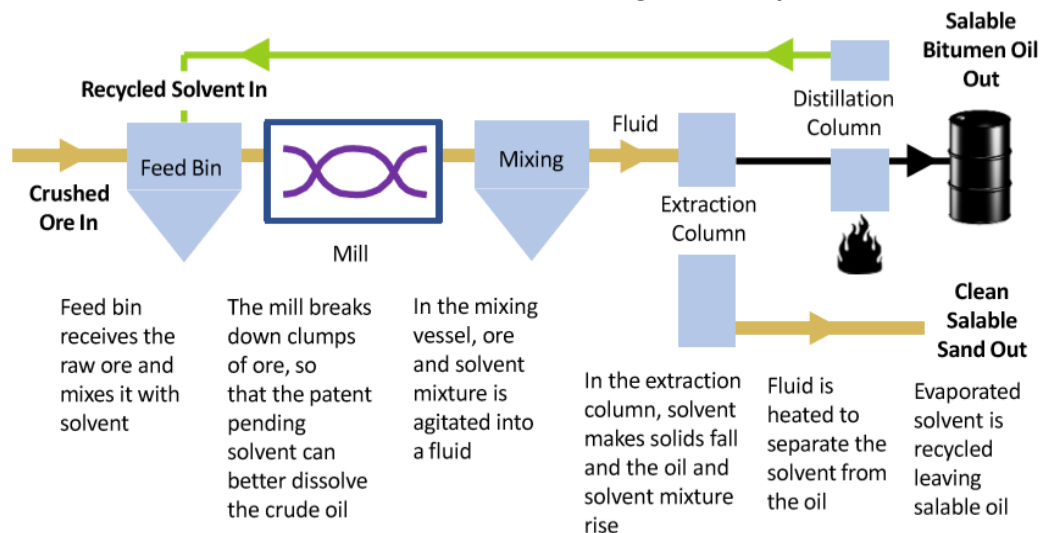
Petroteq is focused on creating value for shareholders through the development and implementation of proprietary technologies for the environmentally safe extraction of heavy oils from oil sands, oil shale deposits and shallow oil deposits.



Petroteq's operations in Utah. Source: Company.

There is a big opportunity in heavy oil around the world and the US Department of Energy believes that in just Utah, Colorado and Wyoming there are c.1.2 to 1.8 trillion barrels of oil locked in sand and shale. The problem is that recovering heavy oil is not easy. Existing processes require large capital expenditure which necessitates large economies of scale, not to mention land reclamation problems in dealing with vast tailing ponds.

After many years of painstaking research, Petroteq has developed a patented clean technology to produce oil from heavy oil deposits. **The technology is modular and even a relatively small-scale plant with low capital expenditure would be highly economic. Unlike the competing technology, no greenhouse gases are produced and the company's technology does not need high temperatures, which means lower operating costs.** In addition, there is no waste as the end products are saleable bitumen oil and clean dry sand which can be used in construction for fracking. **The team believe that Petroteq's technology could be used around the world and serve to unlock global heavy oil.**



Petroteq's patented clean oil recovery technology. Source: Company

The technology represents five years' work by the company's research and engineering teams which are headed up by Petroteq's Chief Technology Officer Dr Vladimar Podlipskiy, who is well known for his research work with benign solvents. At the heart of the technology is the patented solvent/surfactant, together with mixing and gravity which allows the bitumen oil to be liquified and extracted from crushed raw oil sands.



Petroteq's oil sands processing facility and schematic diagram of process. Source: Company

Over the years, the technology has been enhanced which has allowed the efficiencies to improve. What is most compelling is that this technology is highly versatile and so it can be used effectively in both water-wet deposits founded in the oil sands projects in Alberta Canada as well as in Utah's oil-wet deposits. **This important feature dramatically increases the size of the target market for this EOR technology.**

Without doubt this is green technology, as apart from producing no greenhouse gas and not needing high temperature, Petroteq's solution requires no water. **In all, the process has been demonstrated to extract up to 99% of heavy bitumen/asphalt and other lighter hydrocarbons from the oil sands.** The process of patenting the company's proprietary extraction technology worldwide is ongoing, with provisional patents applied for in the twelve countries which have significant oil sands reserves. These patent protection applications centre around the solvent combinations and compositions, the engineering and design features of specific major components and the specific extraction processes.

The solvents used in the composition form an azeotropic mixture (a mixture which displays the same level of concentration in both liquid and vapour phase) with a low boiling point of 70-75°C. It is for this reason that, even without any vacuum or pressure applied, the process is able to extract hydrocarbons from oil sands at a fairly low temperature (50-60°C). **It has also been demonstrated that more than 99% of the solvent used can be recycled along with any heat generated during the process. There is no need for tailings ponds, as the only elements that leave this closed loop system are saleable oil and clean sand.**

The technology has been evaluated by Calgary-based consultants Chapman Petroleum Engineering Ltd which made the following comment in their report. "... *Petroteq's oil sands extraction process has been designed utilizing good engineering practices and confirmed chemical and physical principles. Many innovative chemical and engineering aspects have been incorporated into the process to achieve over 98% of bitumen extraction from the oil sands, and a greater than 99.5% solvent recycling efficiency. The principals and processes implemented utilize established technologies, and are comparable to ones successfully utilized in different industrial applications for many years....*"

Asphalt Ridge

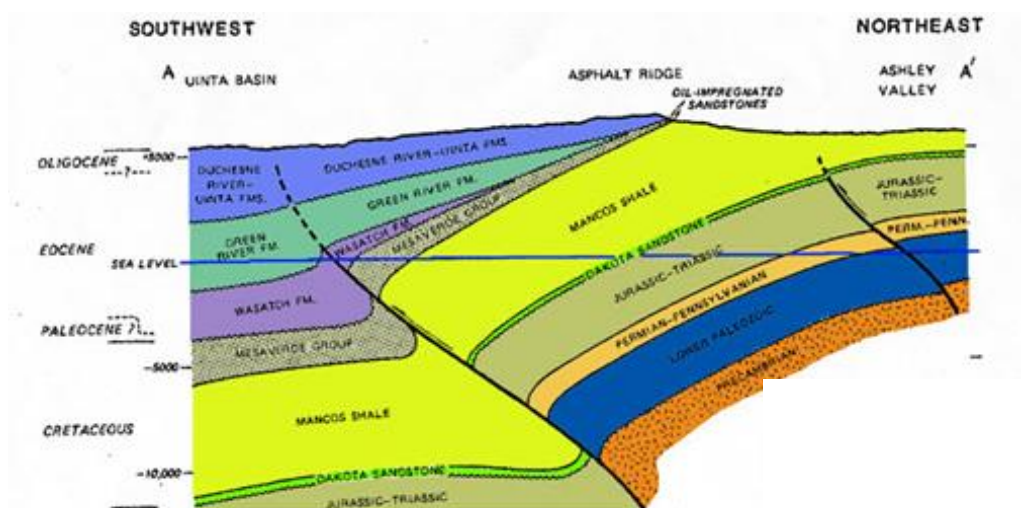
Petroteq owns the Temple Mountain Mine lease, in the area known as Asphalt Ridge, Utah, in a well-known heavy oil triangle. The company's first plant is being relocated at Asphalt Ridge, which is one of eight major oil sands deposits in Utah. **The board believe that Asphalt Ridge's oil sands deposits are probably the richest in the US. The company is involved in heavy oil production on a licence area which extends over more than 3,000 acres.**



The Asphalt Ridge area and a sample of the oil sands deposits that mostly comes in the form of chunks, like the one shown. Source: Company

Resources

Consultants Chapman Petroleum Engineering (2015) evaluated the property based on 84 samples from bore holes drilled across the property and estimated that there were 139.5 million stock tank barrels (STB) of bitumen in place on the site, in accordance with the Canadian Oil and Gas Evaluation Handbook (COGEH). It is not economically feasible to extract all of this resource in its entirety, as the oil saturation in some parts is too low.



Asphalt Ridge – cross section (horizontal and vertical sales are equal). Source: Company

From their work, Chapman have gone on to estimate that 87.8 million barrels of oil equivalent (boe) of shallow high-grade resources would “*under favorable circumstances, support very positive mining economics*”. These 87.8 million boe are classified as a Contingent Resource under current NI 51-101 and COGEH criteria.

Asphalt Ridge is a hogback or cuesta (a hill or ridge with a gentle slope on one side and a steeper slope on the other) which is trending in a NW direction. The structure contains formations from the Cretaceous and Tertiary ages which are seen to dip in a SW direction into the Uinta Basin. It is these Tertiary aged sandstones along with those of the Cretaceous age (making up the Mesaverde Formation) which have been locally highly saturated with oil where these sandstones outcrop along Asphalt Ridge.

The richest areas within the measured field lie within in two bituminous sandstone outcrops. **The level of richness varies from 100 to 300+ barrels per acre-foot, with the net pay ranging between 35 to 50 feet in thickness. The measured resource in-place at Asphalt Ridge is estimated to be 0.8 billion barrels underlying 29,000 acres, whilst the speculative resource in-place is estimated to be 0.3 billion barrels under 22,000 surface acres. (source: US Department of Energy).**

Contour	Barrels per Acre/foot		Net pay feet	
	Range	Average	Range	Average
Measured Area				
60,000+ barrels per acre	700-1200	850	25-83	50
20-60,000 barrels per acre	580-950	775	22-100	35
0-20,000 barrels per acre	300-1000	400	7-60	35
Speculative Area				
0-20,000 barrels per acre		400'		35'

¹ – assumed the same as the measured area contour

Asphalt Ridge – summary of resource-in-place. Source: Company

The depth of the oil sand resource at Asphalt Ridge range between 20 and 600 feet and the reservoir rock, or the sandstones here, have been found to have 27% porosity and permeability over 1000 millidarcy (md). The level of oil saturation averages 48%, with a maximum level of 60%.



Petroteq's oil sands processing facility. Source: Company

Extraction process

The project consists of a small-scale mine and a bitumen extraction plant. The material being mined is very close to the surface and has 8-12% oil saturation. The process uses condensate from shale plays as a solvent which is mixed with crushed oils sands to dissolve the bitumen. Also, ultra-low surface tension surfactants are added to speed up the process. This mixture is fed into an extraction column, and a centrifuge, where the solvent and bitumen are separated from the sand. **The final product is a mix of bitumen and solvent with a 16-18 °API, very little sulphur and metals, which makes it highly acceptable to local refineries.**

Independent valuation

Along with defining a Contingent Resource for Asphalt Ridge, consultants Chapman Petroleum Engineering Ltd also evaluated Petroteq's extraction process. This analysis was carried out in 2015 when West Texas Intermediate (WTI) oil price was US\$80 per barrel. At that time the consultants estimated overall processing costs in the region of US\$30 – 40 per Stock Tank Barrel (STB) of crude bitumen generated, with a netback of around \$49 per STB. **It has to be pointed out that there was 90% confidence that the processing cost lay in the US\$ 22.84 - 38.87 per STB range.**

Low capex and operating costs

Petroteq's technology is both modular and scalable from 250 to 5,000 barrels per day. The estimated capital expenditure comes out at around US\$9,000 per flowing barrel per day which demonstrates a quite compelling low cost. In addition, this sort of plant is highly energy efficient in being able to return over 22 times the energy used to produce oil, which compares highly favourably with competitive technologies which only provide energy returns of between 2-6 times.

Following most recent work, the team anticipates that overall processing costs will total between US\$18 - 25 per barrel, with the netback margin expected to average US\$15 – 20 per barrel. This analysis is based on assuming a very low US\$45 per barrel WTI and 360 days of operation per year.

	Low	Likely	High
Crude Oil Price (WTI) per barrel	\$45	\$45	\$45
Heavy oil differential & transport ¹	\$7	\$5	\$3
Operating cost mining ²	\$12	\$10	\$8
Operating cost solvent (20%) ³	\$6	\$6	\$6
Royalties (7%)	\$1.75	\$1.75	\$1.75
General & Administration (G & A)	\$2.5	\$2.5	\$2.5
NETBACK	\$15.75	\$19.75	\$23.75

¹ Price varies from a 10% discount to as high as a 10% premium

² \$6/ton of ore/0.6bbl per ton (oil saturation varies between 7-14% by weight)

³ Solvent is abundant and at a discount of 25% to WTI and could be further reduced.

Low production costs at Asphalt Ridge create strong netbacks. Source: Company

To make sense of the economics at more recent prevailing oil prices, the team reworked the calculations based on a WTI price in the range of US\$50-60 per barrel. On this basis, the overall processing costs come out at US\$25 - 28 per barrel.

Phased expansion

Petroteq has a three-phase expansion program for Asphalt Ridge. Phase 1 involves producing oil at a rate of 250 barrels of oil per day (bopd), a figure which was achieved in 2015 when a total of 10,000 barrels of oil was produced. Petroteq's initial extraction plant has established proof of concept and has served to illustrate the potential of larger capacity plants.

Plant size bbls/day	CAPEX US\$m	Production cost US\$/day	Net daily revenue US\$	Net Profit US\$m/year
250	\$5m	8,750	10,000	0.45
1,250	\$5m	25,250	50,000	8.55
5,000	\$40m	90,000	200,000	39.6

Estimated financials for various sizes of processing facilities. Source: Company

Phase 2 involves an expansion of the processing plant to 1,000bopd as it is relocated on the property next to the mine where the oil sands will be mined by excavators. This process is now in progress and expected to be completed in Q1 2018. **Increased investment will allow for the scaling up of its capacity and the elimination of previous bottlenecks, thereby allowing production capacity to increase.**

Capital expenditure is estimated to be US\$5 million where the breakdown is: \$3.6 million equipment manufacturing, \$0.4 million permitting, \$0.5 million site preparation and \$0.5 million R&D and overheads. The table above provides a good illustration of the estimated capex costs along with the financial results for the operation of a facility with increasing capacity including a 1,250bopd plant. However, subsequent announcements show that the company are clearly focusing on a production capacity of 1,000bopd for this current phase of the development of Asphalt Ridge.

The Chairman's year-end message (27th December 2017) informed investors that additional equipment had been brought in to take production capacity to 1,000bopd. This is a reference to oil extraction equipment with an approximate value of US\$3 million which was purchased for a discounted price of US\$838,000 earlier on that month.

Phase 3 involves the expansion of the processing facility to 5,000+ bopd at the Asphalt Ridge site in Utah. Using a shared feed conveyor system, several extraction plants may be operated simultaneously, providing larger daily oil production capacities. **At this level of production, there is a resource life expectancy at the Temple Mountain lease comfortably in excess of 25-30 years. The company anticipates EBITDA at Phase 3 of US\$39.6 million annually, with capital expenditure of US\$40 million (US\$28 million equipment manufacturing, US\$4 million permitting, US\$4 million site preparation and US\$4 million R&D and overheads).** Phase 3 is likely to be debt funded using project finance and be in production in 2019.

Offtake agreement

In March 2018, Petroteq announced an offtake agreement with Firebird Logistics for 100% of production from its Utah heavy oil extraction facility. Firebird is a regional provider of transportation and distribution services and this agreement gives Petroteq access to multiple refineries in the region. The agreement is to continue on a month-to-month basis following an initial six-month period.

The monthly price has been set at calendar day average of the NYMEX settlement price for West Texas Intermediate Light Sweet Crude Oil less \$6.50 per barrel and adjusted for basic sediment and water (BS&W). Certainly, production from Petroteq's oil sands is a high quality heavy crude oil with low sulphur content, low heavy metal content and no waxes or paraffins. With high concentrations of the very valuable diesel fraction hydrocarbons and aromatic hydrocarbons, the quality of the company's oil seems as though it should meet all refineries' specifications and quality requirements.

Oil quality

An independent report was published on the quality of the oil generated by the Asphalt Ridge project. This was announced in March 2018, when the board pointed out that they were extremely pleased with this report which confirmed the quality of the company's oil sands assets. Oil with high levels of heavy metals has a negative impact on the life of the catalysts in oil refineries and so it was indeed good news that the Asphalt Ridge oil contains low levels of asphaltenes and very low metal levels making it attractive to oil refineries.

The Asphalt Ridge oil actually contains a high percentage of hydrocarbons that are diesel range organics (C-10 to C-28) making this an ideal oil for diesel fuel. Tight shale plays are becoming an increasingly important source of US domestic oil production and typically have higher concentration of hydrocarbons in the gasoline range organics (C-6 to C-10), and so are not as readily refined into diesel as they are into gasoline. It does look as though the disproportionate production of very light oils in the USA (as opposed to heavier oils) may result in upward pricing pressures on heavy oils if this trend continues.

The Asphalt Ridge oil has very low sulphur content which is ideal for making ultra-low sulphur diesel. Much higher sulphur contents are found in the oil sands in Canada where additional costs are required to remove the sulphur before it can be refined into a finished petroleum product. The company does not expect to find such economic issues in the Asphalt Ridge oils. Essentially, refineries prefer as low a sulphur content as possible. The Asphalt Ridge oil has relatively higher level of aromatic components which increase the quality of the oil the products that can be produced from this oil.



Petroteq is behind PetroBloq, a technology which will be the first blockchain-based platform developed exclusively to meet the supply chain needs of the oil & gas sector. **The team is seeking to improve the efficiency of oil and gas supply chain management by a developing a smart contract system prototype on a blockchain.**

In taking advantage of ledgers distributed on a multiplicity of computers around the world, the technology plans to monitor supply chain logistics on the blockchain and thereby automate oil and gas industry transactions. The plan is that PetroBloq users will benefit from cost and time savings, increased transparency along with a real ability to mitigate ever-changing geopolitical risks and market fluctuations. The sort of aspects of the oil & gas industry that might benefit from PetroBloq are currently deemed to include: transparency and compliance, tracking provenance for authenticity and quality control, security/data protection and managing the full asset cycle.

PetroBloq is a partnership between Petroteq and **First Bitcoin Capital Corp (OTC:BITCF)** which is seen as the first publicly-traded cryptocurrency and blockchain-centred company. First Bitcoin Capital is involved in the development of digital currencies, proprietary blockchain technologies, and the digital currency exchange. First Bitcoin Capital is executing a strategy of acquiring Bitcoin start-ups and investing in software/hardware companies in the Bitcoin space.

The advisory team behind PetroBloq is highly impressive and includes Petroteq Director & President Dr. R. Gerald Bailey, along with Greg Rubin, Joe Abarms and Vyacheslav M. Abramov. Greg Rubin is the CEO of First Bitcoin Capital and an investor in international energy products with ten years' experience in working in the Russian oil market. Joe Abarms has diverse corporate board experience that includes start-ups and strategic planning. Dr Abramov is a leading financial professor with a PhD in mathematics (Tel Aviv University) and more than 30 years' experience as a financial and mathematical statistician, software engineer and the development of algorithm/computer databases.

Progress looks to have been quite rapid since early November 2017 when the PetroBloq joint venture between Petroteq and First Bitcoin Capital was first announced. The company is paying First Bitcoin Capital US\$500,000 to build a new supply chain platform based on advanced blockchain technology for the global oil & gas industry. On 20th December 2017, PetroBloq became the most recent member of the 200-strong Hyperledger, which is an open source collaboration to advance cross-industry blockchain technologies. It does seem that only an open source, collaborative software development approach can really provide not only the necessary transparency, but also the important interoperability which is necessary to allow blockchain technologies to be adopted by the commercial mainstream.

The company has received numerous expressions of interest from industry participants and the trade press. In an update in March 2018, the board outlined the breadth of the targeted capabilities of its PetroBloq platform which seems quite wide. At a plant level, the platform will allow oil production, facilities maintenance and capacity upgrades on a more cost effective basis as well as enhanced transparency along with providing a safer working environment. These intended benefits will come from the deployment of a network of Internet of Things (IoT) sensors throughout the plant to monitor its operations.

In addition to monitoring operations, PetroBloq also intends to use blockchain to start and end processes and adjust parameters using the data collected by its IoT sensor network. This would seem to suggest that the platform would have the added benefit of eventually reducing the manpower required to operate it as the components of a blockchain enabled plant materially improve input. All this is because the technology will allow production and operational data to be communicated from the facility and the plant to be controlled remotely. Petroloq believes that these technologies will extend to wearable devices and smart analytics that will also help to maximize production efficiency.

Accord GR Energy, Inc.

Petroteq has a 44.7% interest in Accord GR Energy, Inc., a Houston-based oil and gas exploration and production company. Accord GR focuses on the development and recovery of heavy oil reserves and deposits utilising licensed technologies which include: SWEPT and S-BRPT. The company initially acquired a 57.3% stake in Accord GR for shares and warrants as well as satisfying some US\$110,000 of debt by issuing further shares. Petroteq’s interest has subsequently been diluted, due to incremental investment in the company made by other shareholders.



The Wardlaw Field, Edwards County, Texas. Source: Company

In 2015, Accord GR acquired the Wardlaw Field which comprises of mineral leases covering around 7,000 acres in Edwards County, Texas. The Wardlaw Field is located approximately 28 miles west of Rocksprings, Texas and proven reserves have been estimated to contain more than 100 million barrels of oil in place (source CNW Group 14-06-17). More than 139 wells have been drilled at this field to a depth of 250-500 feet, including three wells that have been recently drilled by Accord GR. Currently, there are a total of 84 wells which are permitted for production.

The viable production interval is the A Zone and testing of this zone has shown production in the 0.5 – 20 bopd range. The deposits are in the light gravity range of heavy oil at 18-22° API gravity and the oil is termed medium crude. Accord GR commenced production in 2017.

Glen Rose A Formation			
Depth	236 to 254 feet	Thickness	10 to 21 feet, average 15 feet
Average Porosity	28.7%	Stratigraphy	Lower Cretaceous: Silty Dolomite
API Gravity	20°	Permeability Average:	105 md, Median 12 md
Temperature	75°F	Maximum Permeability:	1,500 md, Dykstra-Parsons ¹ – 68 %
Oil Viscosity	125 cp	Oil Saturation Average:	51.2%, Range 20% to 69%

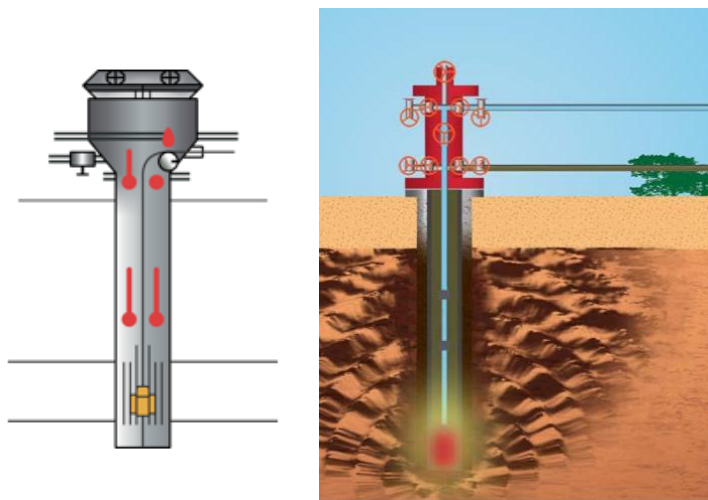
¹ Method for predicting overall oil recovery

Characteristics of the producible zone in the Glen Rose A Formation. Source: Company

EOR Technologies

Accord GR has licensed two technologies called SWEPT and S-BRPT which have been specially developed for EOR of heavy oil assets. Both these technologies are currently being implemented by Accord GR at the Wardlaw Field and this company has a licence which allows these technologies to be used on any fields that they own.

SWEPT Technology creates waves to reduce viscosity and helps the oil become more liquid due to the thixotropy effect, a shear thinning property which allows viscous heavy oil to flow. SWEPT Technology is applied using a specially constructed wellhead that generates the necessary waves. Repeat treatment is necessary as typically this effect only lasts three to five days. SWEPT can also overcome problems including: low energy, high viscosity, low permeability and porosity and high water cut along with low oil saturation.



Schematic diagrams of SWEPT and S-BRPT Technologies in operation. Source: company

S-BRPT Technology was developed for the EOR of heavy oil in shallow/extra-shallow depths, for bitumen, kerogen and lignite etc. The technology relies on a natural ability of materials to exist in various aggregate forms with specific physical properties. The technology is applied on the oil and other hydrocarbons in-situ using a specially designed tool, along with additional components located subsurface in a conventional well. This action results in the physical form of hydrocarbons down the well changing from liquid, in the case of oil or harder forms like bitumen etc. into a vapor/gaseous form and which allows the hydrocarbons to travel more easily to the surface.

Strategy for growth

Petroteq has made a tremendous breakthrough with its environmentally friendly proprietary oil sands extraction technology which has a comprehensive application profile across all heavy oil deposits. The company is currently executing a well-planned growth strategy involving the three key elements that make up the company today.

Asphalt Ridge

Good progress is being made in assembling the processing facility at Asphalt Ridge in Utah. Although it is currently winter in Utah, there has not been any snow and most days the temperature has been above freezing. The concrete foundations have now cured, which has allowed the team to begin assembling the structure. Items of new equipment to allow for the expansion have been ordered so that Phase 2 name plate capacity is expected to be achieved comfortably within the planned timescale.

Oil production is now timetabled to begin in Q2 2018 with 1,000bopd on target to be achieved, probably within 45 days after production commences. Once production has been stabilised at 1,000bopd, the next goal is to ramp production up to the 5,000bopd level, which is planned to be achieved in 2019. The technology is modular and the eventual configuration of the 5,000bopd facility is still being designed. Currently, Petroteq's engineers are testing some bigger centrifuges, and results of this work will help in the decision-making process for the choice of the ultimate overall configuration and design of the expanded facility.

Once the plant is up and running at Asphalt Ridge, this facility will provide a useful reference point for the company's technology. **Attention has to be drawn to the fact that a succession of major companies have been involved at Asphalt Ridge over the last fifty years, but Petroteq is the first company to have actually been able to extract oil from the project.**

Heavy oil technology

Petroteq has acquired valuable IP as its technology looks to be game changing. The licensing opportunity that exists within the EOR technology has the scope to add substantial value as the technology is rolled out. The closed-loop technology can also be applied for remedial projects such as tailings ponds. After the launch of the first extraction plant in Utah, the company plans to commence the scaling up its capacity with several additional higher capacity extraction units within the state of Utah, where the US Department of Energy estimates there is more than over 30 billion barrels of undeveloped but recoverable oil.

Already, the company has been in discussions with around half a dozen interested parties concerning licensing/joint venture deals around the world. Progress on these negotiations is not being rushed as "seeing is believing". A critical stage in the negotiation process is seeing the technology in operation, something which Asphalt Ridge will be able to provide over the coming months.

Most of the interested parties are overseas. There are big opportunities in Canada where discussions have concerned government contracts. **Petroteq's technology has a very powerful application as both a remedial technology and an oil spill technology.** As such, the technology is ideal for cost-effectively cleaning up the tar sands tailings from operations in Alberta. This could be a highly lucrative business as the company would be paid for the environmental clean-up. However, as well as sorting out the problem, it looks more than likely that Petroteq would get to keep the oil as well.

Likely deals to be negotiated are expected to present Petroteq with opportunities for licensing and joint venture deals as well as situations where the company might seek to take full control. It will all depend on the economics of each project. The company has proved that it can be flexible and nimble and moving ahead, the board is seeking to achieve a good balance between licensing, joint ventures and company-owned projects. The scale of the opportunity looks to be vast. There may be a host of EOR competitors, however we believe Petroteq is likely to be seen to be in a different league, once its reference site is up and running.

PetroBloq

Management has the vision to position the business as a technology company. Ideally, the team is seeking to take hold of technology, develop it and then seek to monetise the technology via licensing and product sales. PetroBloq gives the company the opportunity to replicate what they are beginning to achieve in EOR within the fast-evolving world of the blockchain. **Work by the leading global accountants Deloitte on the emergence of blockchain consortia has identified just one blockchain in the Energy and Resource Sector, so PetroBloq has importantly seized first mover advantage in the oil & gas space.**

Petroteq wants to carve out a niche in being both early and smart to develop technology. For PetroBloq, the company is very well positioned in having access to people with the necessary skills to achieve this goal. The end result will be a blockchain for the oil and gas industry which will help manage the supply chain and generate savings for the users as well as providing all-important provenance. This is once again a benefit of the company being small and nimble, but with the resources to fund such a development. The larger oil companies are likely to develop their own proprietary products, and so the sweet spot is the smaller-scale oil & gas companies that can benefit from using this technological product, but do not want to get involved with hiring software designers and development teams.

Conclusion

Petroteq is currently sitting on the cusp of a major transformation. Phase 3 of the planned development at Asphalt Ridge with its 5,000bopd could see annual revenue in excess of US\$80 million in the year ending 31st August 2019, coupled with an impressive level of profitability. In addition, licensing the technology could generate a long-term stream of additional earnings in unlocking the value in heavy oil and oil remediation projects around the world. The increasing production, revenues and earnings are a big value driver, so too are the 87 million barrels of recoverable reserves at Asphalt Ridge.

As an entrepreneurial oil & gas technology company, it is impressive that Petroteq has seized the initiative and are working on PetroBloq, as in the future it does seem that blockchain technologies will be at work in a wide-range of business settings and across a diverse range of sectors. It is becoming more and more obvious that blockchain has the potential to really disrupt business models. Through PetroBloq, the company is taking the oil & gas supply chain and transforming the way in which data and assets are recorded to exist within the code on a blockchain, with all the benefits and costs savings this could bring. **Moving ahead there is expected to be a series of blockchain announcements which could see other oil and gas industry members joining to strengthen the network.**

The board is seeking to improve the profile of the company going forward and is planning to list the shares on the New York Stock Exchange (NYSE). To list on the NYSE, a company must have a market capitalisation of US\$100 million and have earned more than US\$10 million over the last three years. **The way the company is shaping up with a rapid production growth trajectory planned at Asphalt Ridge, these hurdles might be passed sooner than later. Such a move could serve to dramatically improve perception and valuation metrics.**

Financials & Current Trading

The high revenue figures for 2013 and 2014 came from the fuel distribution business which had low margins and was fiercely competitive. That business was disposed of in 2015, as the company focused on its oil sands operation.

Y/E 31 August US\$'000s	2013A	2014A	2015A	2016A	2017A
Revenue	431,932	451,837	-	205	-
Pre-tax profit/loss	-11,271	-10,135	469	-12,092	-7,940
Net profit/loss	-11,271	-10,135	469	-12,092	-7,940

Petroteq Energy, Inc. five-year trading history. Source: Company accounts

2017 results

Financial results for the 12 months ended 31st August 2017, showed a net operating loss of US\$2.367 million and a net loss & comprehensive loss of US\$7.940 million. The basic and diluted loss per share were both US\$0.66.

3Q results

In January 2018, the company reported results for the three months to 30 November 2017. During this period operating expenses totalled US\$3.534 million compared to US\$0.741 million in the same quarter in 2016. This increase was largely due to share based compensations which added up to US\$2.505 million (vs US\$13,107 in Q3 2016). In addition, the 3Q 2016 saw a gain on the settlement of liabilities of US\$0.470 million (vs 4Q 2017 zero). The pre-tax loss came for the period came out at US\$3.645 million compared to US\$0.741 million (vs Q3 2016), which equated to a loss per share of US\$0.07 compared to US\$0.11 (vs Q3 2016).

Recent developments

In March 2018, there was a series of highly positive announcements. Firstly, the company was able to announce that it had received numerous expressions of interest from industry participants and the trade press. At this time the board outlined some of the targeted capabilities of its PetroBLOQ platform to improve understanding in the industry & which included the deployment of a network of Internet of Things (IoT) sensors in plants to allow oil production, facilities maintenance and capacity upgrades in a more cost effective manner, and with improved transparency along with providing a safer working environment.

Secondly, Petroteq announced an offtake agreement with Firebird Logistics for 100% of production from its Utah heavy oil extraction facility at Asphalt Ridge. Firebird is a regional provider of transportation and distribution services, and this agreement gives Petroteq access to multiple refineries in the region. The agreement is to continue on a month-to-month basis following the initial six-month term.

Thirdly, there was news that good progress was continuing to be made at Asphalt Ridge towards completing the plant construction and also about an independent evaluation report which confirmed the quality of the company's oil sands assets. Notably that the Asphalt Ridge oil was shown to contain a high percentage of hydrocarbons that are diesel range organics (C-10 to C-28) making this oil an ideal oil for diesel fuel.

Risks

Geological risks

There are a series of technical risk factors concerning the amount of understanding of the geology of the project areas, the structures being targeted and the distribution and magnitude of the indicators that have been identified in exploration work.

Oil price risks

Oil prices are highly cyclical and changes in the price could have a negative or positive impact on the valuation of the company's projects and revenue from the sales of hydrocarbons. Over the past decade, the price of oil has been highly volatile, trading in the range of \$145 to \$29. Currently, the benchmark West Texas Intermediate (WTI) crude oil trades around the \$68 level.

Blockchain risks

There have been big movements in the valuations of companies with interests in blockchain over the last twelve months, as the technology has become one of the hottest trends in the fintech world. When valuations increase so much so fast, there are always concerns that there might be stock market bubble forming that which might led to a collapse.

Future funds

The market for raising funds for growth companies may have improved from the worse conditions two years ago, however the equity market does continue to be difficult, especially for resources companies. Some recent fund raisings in the resources sector have seen share prices being undermined by incoming investors demanding substantial discounts to provide the necessary capital.

Board of Directors

Aleksander Blyumkin – Chairman of the Board & CEO

Co-founder Alex has a wide range of experience in the energy industry. After achieving significant success in downstream operations on several energy projects in Azerbaijan, Ukraine and the US, he recognized a worldwide need for a safe, environmentally-friendly oil sands extraction technology. After many years of technology research, Alex and his team discovered the origins of what is now Petroteq's groundbreaking extraction technology. With his vision in seeing the tremendous potential of a safe oil sands extraction technology, he was the key figure in providing significant funding to further develop Petroteq's extraction technology. After four years of improvements and enhancements to create today's version of Petroteq extraction technology, it is now being deployed on the company's lease location in Asphalt Ridge, Utah. He has now focused his interests in oil sands lease development opportunities in the US.

Dr R. Gerald Bailey, P.E. – Director & President

Gerald has over 50 years of experience in the international petroleum industry in all aspects, both upstream and downstream with specific Middle East skills and US onshore/offshore sectors. He is also currently the Chairman of Bailey Petroleum, LLC, a consulting firm for major oil and gas exploration and development corporations. In addition, Gerald is Chief Operating Officer of Indoklanicsa, Nicaragua, Vice Chairman, Trinity Energy Group, Inc., former Chairman of American Impact Energy and former CEO of American Dakota Refinery, LLC. He retired from Exxon, where his last position had been that of President, Arabian Gulf. Gerald holds a BS Degree in Chemical Engineering from the University of Houston, an MS Degree in Chemical Engineering from the New Jersey Institute of Technology, Newark, New Jersey, a PhD Degree from Columbia Pacific University, San Rafael, CA and is a graduate of Engineering Doctoral Studies from Lamar University, Beaumont, TX.

Robert Denneweld - Director

Robert was born and educated in Luxembourg where he obtained a degree in civil engineering at the University of Liège. He worked for the Luxembourg-based steel producer ARBED, where he rose to take over the export sales of carbon steel long products. After a period as Director of the cement group Ciments Luxembourgeois (Dyckerhoff A.G.), in 1996, he was appointed President and CEO of Eurobeton S.A., and developed his company's activities in the North-East of France. In 2006, together with four financial partners, Robert initiated a MBO/LBO takeover of the Eurobeton Group. Beginning of 2010, through a secondary buy-out, he took a controlling interest in Eurobeton, which is a main supplier of building materials in Luxembourg with its subsidiary Chaux de Contern. He is a Director of ING Luxembourg S.A. and of Redline Capital Partners, the President of investment fund EUREFI S.A. and the angel investor of cleantech company APATEQ and IT company e-Kenz. Robert is the Chairman of FEDIL – Business Federation Luxembourg since 2006 and a Vice-President of the Luxembourg Chamber of Commerce. He is also a member of the Board of Directors of the Jean-Pierre Pescatore Charity Foundation.

Travis S. Schneider – Manager, Corporate Affairs. AgriMarine Holdings Inc., Vancouver, B.C. Canada

Since 2008, Travis has been the Manager of Corporate Affairs for AgriMarine Holdings Inc., an aquaculture production and technology company which trades on the Toronto Stock Exchange – Venture. This company was recently acquired by the Dundee Corporation. His responsibilities include management of legal and regulatory affairs and business development. Previously, Travis was a self-employed consultant to various junior public companies focusing on communications and regulatory capacities, and has also spent fifteen years as an information technology consultant with a focus on health care.

Management Team**David Sealock – CEO**

David is a highly accomplished, results driven senior executive leader with over 26 years of strategic management and business/digital transformation leadership. He has a track record of building high-performing teams with a strong focus on setting corporate strategy, executing for results, leading teams, galvanizing relationships, connecting corporate activities and translating ideas into action. Before March of 2018, David served as President of Autus Ventures, where he established equity financing processes for startup and intermediate oil and gas companies and managed strategic planning and portfolio optimization. Prior to that, he was Vice President of Research & Development at Petroleum Technology Alliance Canada (PTAC), a Canadian hydrocarbon industry association that serves as a neutral non-profit facilitator of collaborative R&D and technology development. There he managed the coordination and services to facilitate the implementation of specific methane related projects.

Between 2014 and 2015, David served as President and COO of Sulvaris. During his tenure at Sulvaris, he collaborated to deliver equity financing and JV financing to recommence project construction. From 2008 to 2014, Mr. Sealock was the EVP of Sunshine Oilsands and was promoted to President & CEO (Interim) from 2013 to 2014, where he managed daily operations for engineering, construction, technology, operations, regulatory, human resources, investor relations, health, safety & environment, marketing, supply chain management, IT & systems, and corporate governance. From 2007-2008, he was VP of MegaWest Energy Corp (now Gravis Energy) and from 2006-2007 he was Senior Manager of Total E&P (formerly Deer Creek Energy, Ltd.), where he was charged with leading a large scale business & digital transformation to integrate Deer Creek Energy's technology infrastructure into Total's enterprise-wide global infrastructure. David holds a Bachelor's Degree, Business Management and is a Registered Engineering Technologist with ASET.

Vladimir Podlipskiy, PhD – Chief Technology Officer

Vladimir has extensive experiences as a researcher in many senior science disciplines, involved in oil extraction technologies, car care, household consumer and cosmetic products and research into mold remediation products, all with a focus on the utilisation of benign solvents/solutions. Previously, he held research appointments in new product development for EMD Biosciences, Inc., (Merck KGaA, Darmstadt, Germany), and worked as Chief Chemist in Research & Development for Nanotech, Inc., Los Angeles, CA, and as Chief Chemist for Premier Chemical, Compton, CA. Vladimir is a former Premier Chemical Scientist at UCLA's Department of Chemistry. He owns patents for innovative fuel additives and car care products and has authored several papers involving fuel re-formulator products and mould remediation. Vladimir is currently involved in research and development of new petroleum industry products, systems and technologies.

Vladimir has worked extensively with a variety of suppliers from the US and Eastern Europe in the planning and design stages of the extraction unit's systems. He holds a PhD Degree in Bio-Organic Chemistry from the Institute of Bio-Organic Chemistry & Petroleum Chemistry, Kiev, Ukraine, and a Degree in MS-Organic Chemistry from the Department of Chemistry, Kiev State University, Kiev, Ukraine.

Donald Clarke, PhD – Chief Geologist

Donald has extensive experience in the geological sciences which includes teaching both graduate and undergraduate courses in geology; consulting; publishing and research. He has made many professional conference presentations to a wide variety of organisations including the Geological Society of America, the American Association of Petroleum Geologists and the Geological Society of London. Donald is recognized among his peers for authoring or co-authoring a variety of resource topics in many professional publications, including "Hydrocarbon Potential of the Mesozoic Carbonates of the Bahamas," and "Searching for Natural Gas in the Beekmantown Group Carbonates of Eastern New York State" He holds a Ph.D. in Earth and Environmental Science (City University of New York), a Master of Arts in Environmental Science (City University of New York College of Staten Island), and a Bachelor of Science in Geology (State University of New York at Brockport). Donald is a member of the American Association of Petroleum Geologists (AAPG) and the Society for Sedimentary Geology (SEPM).

Mark Korb – Chief Financial Officer

Mark has over 20 years' experience with high growth companies. He serves as the CFO or Financial Consultant for several companies, including Caldera Pharmaceuticals, a drug discovery and services company. Other represented companies include Fluid Spirit Holdings, LLC, a brand development and events coordinating company; First South Africa Management Corp., a small cap private equity and financial consulting firm. He also serves as the financial consultant to Propel Technologies, an oil and gas services company.

From 2007 to 2009, Mark was the Group Chief Financial Officer and Director of Foodcorp, a multi-million-dollar consumer goods company based in South Africa. He delivered operational and strategic leadership during a period of change including mergers, acquisitions and organic growth. As a Board Director, Mark cultivated relationships with shareholders, bond holders, financial institutions and auditors. He was also responsible for leading this group's IT strategies. From 2001 to 2007, he was the Group Chief Financial Officer of First Lifestyle, initially a public company trading on the Johannesburg Stock Exchange which was purchased by his management group. Mark eventually led to process of merging the two companies, whereby First Lifestyle was sold to Foodcorp.

Robbie Grossman – Secretary, McMillan LLP, Toronto, ON, Canada

Robbie is an experienced securities lawyer who joined McMillan, LLP, a Toronto, Ontario, Canada law firm in September 2013, after having been with Garfinkle Biderman, LLP since 2004. He assists public/private companies, as well as the securities sector with IPOs, M&A and deals with a wide range of securities matters. He is the Executive Director of the Larry Grossman Foundation For Kids. Robbie holds a LL.B Degree from the University of Windsor (ON) and a B.A. Degree (Political Science) from Concordia University (Montreal) and was called to the Ontario bar in 2002.

Forecasts

We initiate coverage of Petroteq with forecasts for the financial years 2018 and 2019. In year ending 31st August 2018 we expect the company will see the first oil production from Asphalt Ridge, with 1,000bopd subsequently being achieved. We estimate this will result in the pre-tax loss being reduced to US\$4.960 million, equating to a loss of US\$0.08 per share.

For the year ending 31st August 2019, we have modelled production rising from 1,000 to 5,000bopd by the end of December 2018. In this twelve-month period, it is estimated that the company will make a pre-tax profit of US\$41.200 million with no tax payable due to accumulated losses from previous years. That would result in earnings per share of US\$0.55.

Year end 31 August (000' US\$)	FY2016a	FY 2017a	FY 2018e	FY 2019e
Revenue	205	-	6,890	82,300
Cost of Goods Sold	(1,399)	(427)	(3,600)	(35,950)
Gross Profit/(Loss)	(1,194)	(427)	3,290	46,350
Operating Expenses				
Amortisation	1,213	1,166	1,100	1,000
General and administrative	577	348	400	500
Interest expense	1,501	1,107	1,000	1,000
Professional fees	1,789	618	850	1,200
Plant relocation costs	-	438	500	-
Salaries and wages	865	703	800	900
Share-based compensation	3,014	16	-	-
Travel and promotion	437	553	600	750
	9,395	4,948	8,250	5,350
Net Operating Profit/(Loss)	(10,589)	(5,375)	(4,960)	41,000
Profit/(Loss) on settlement of liabilities	(1,503)	(2,367)	-	-
Equity income from investment of Accord GR Energy, net of tax	-	(198)	-	200
Loss before income tax	(12,092)	(7,940)	(4,960)	41,200
Income tax	-	-	-	-
Net Profit/(Loss) and Comprehensive Profit/(Loss)	(12,092)	(7,490)	(4,960)	41,200
Net Profit/(Loss) and Comprehensive Profit/(Loss) attributable to:				
Shareholders of the company	(12,075)	(7,940)	(4,960)	41,200
Non-controlling interest	(17)	-	-	-
	(12,092)	(7,940)	(4,960)	41,200
Earnings per share				
Basic earnings per share (\$)	(4.26)	(0.66)	(0.08)	0.55
Weighted average number of shares	2,835,138*	12,096,101	62,070,905	74,831,171
Total shares plus warrants, options and those resulting from the conversion of loan notes	8,595,882'	59,659,013	92,730,738	94,434,185

* adjusted for 30-for-1 consolidation

Source: Company/Align Research

Valuation

Petroteq is currently at an exciting stage in its development and lies on the cusp of beginning to make a real return from its ground breaking heavy oil technology. We have sought to place a value on the company using a sum-of-the-parts valuation. The assumptions behind the valuations awarded to each of the main business interests are detailed below.

Heavy oil technology

Petroteq's proprietary patented EOR technology has been demonstrated to be highly successful over an extended trial. To place a value on this technology, we have looked at a peer group of companies providing technology solutions to the global oil & gas industry.

EOR technologies are very powerful and can serve to unlock the value in heavy oil projects. Most of this technology lies within the large oil companies. These oil majors have either sought to develop EOR technology in-house or acquired it. At the same time, there is more specialised competition from privately-owned companies which are often at pre-revenue stage.

Titanium Inc (TSXV:TIC) is behind a new sustainable technology for Alberta and Canada. Titanium's Creating Value from Waste™ (CVW™) technology provides sustainable solutions to reduce the environmental impact of oil sands froth treatment tailings, while recovering valuable products that would otherwise be lost in tailings ponds.

Titanium is working with Canadian Natural Resources Limited (CANL) and is in the midst of the engineering design work for the first commercial implementation of the CVW™ technology at CANL's oil sands site. The development of CVW™ was made possible through more than C\$18 million of government funding in addition to shareholders investing over C\$80 million. At a current share price of C\$0.81, Titanium Corporation has an Enterprise Value of US\$47.4 million.

There are clear parallels between Titanium's CVW™ technology and Petroteq's technology which can also be used as a remediation treatment. However, Petroteq is clearly at a more advanced stage than Titanium's CVW™ technology in having already achieved the first commercial implementation. Now the company is in the midst of beginning to roll out this technology, which seems to have a significantly larger potential market. **We believe that US\$47.4 million would serve as a fairly conservative base case valuation which we have no hesitation to carry over into the SOTP valuation.**

Asphalt Ridge

We have worked to develop a financial model of Asphalt Ridge. This has been assembled based on our conservative analysis of management's plans, discussions with management and Deloro shareholders, and a review of the consultant Chapman Petroleum Engineering's November 2017 report. In this analysis, we have used roughly similar figures for capital expenditure and operating costs as set out by Chapman, but with some important changes. Whilst Chapman used a flat oil price of US\$54 per barrel, we have employed our WTI crude price deck with an oil price of US\$63 per barrel for 2018, with an average price of US\$73.8 per barrel over 2018 – 2025. The operating costs in our model have been escalated, whereas Chapman's independent engineering report uses flat costs.

Cash flows over a thirty-year period have been determined. It has been assumed that a 1,000bopd plant would be operational in 2Q 2018. Once 1,000bopd is achieved, the strategy is to further increase production to the 5,000+ bopd level, which is targeted for 2019. We also note that the required capital expenditure to achieve this level of production does seem to be rapidly decreasing. Although a figure of US\$40 million has been outlined in company presentations, more recently it has being suggested that this capex figure could well be US\$30 million or even less.

In December 2017, the company was able to announce that it had successfully bought oil extraction equipment with an approximate value of US\$3 million for a discounted price of US\$838,000. These aspects have been taken into consideration in our model and we have assumed that the cost for the expansion will be funded by project finance.

Product parameters were based on bitumen recovery of 0.60 barrels bitumen per ton of oil sands processed with 0.25 barrels solvent required to be added per barrel of bitumen. Assumptions on input costs and sales price are in-line with Petroteq’s expectations which are to pay 70% of West Texas Intermediate (WTI) price for condensate and receive 90% of WTI for the blended product.

We undertook the analysis at two discount rates of 10% and 12%. **We have sought to adjust for further risk in selecting to use the after-tax NPV(12) figure of US\$452.37 million for the company’s 100% interest in Asphalt Ridge.**

The move in production from the pilot plant stage to 1,000bopd and to a far larger name plate capacity carries additional risks and so in order to remain conservative, we have further risked this NPV(12) value by 25% to US\$339.28 million.

US\$ million/Discount rates	10%	12%
Petroteq’s 100% interest in Asphalt Ridge - unrisked	534.94	452.37
Petroteq’s 100% interest in Asphalt Ridge- unrisked	401.21	339.28

Table: Net present values of the project and Petroteq’s interest. Source: Align Research

PetroBloq

The company seems to be making good progress with its blockchain business focused on the oil & gas supply chain. We have sought to value PetroBloq by peer comparisons by investigating the Enterprise Value awarded to other companies that are developing and marketing blockchain services (see table overleaf).

Looking at these peer comparisons, as PetroBloq makes further progress towards its goal of providing such a solution for this key industry, we believe that the company could achieve a similar valuation to that currently awarded to Global Blockchain Technologies, Big Wind Capital, 360 Blockchain Inc or Global Arena Holdings. The average Enterprise Value of these three companies is US\$40.01 million. **As PetroBloq is a joint venture with First Bitcoin Capital, we have used a valuation of US\$20.0 million, which represents a 50% interest.**

Company	Share price	EV US\$m	Comments
Global Blockchain Technologies (TSX.V:BLOC)	C\$0.495	111.13	Vertically integrated originator/manager blockchains/digital currencies. Acquired stake in Coinstream cryptocurrency mining company to use the streaming model.
Hilltop Cybersecurity (CSE:BWC)	C\$052	22.68	Formerly Big Wind Capital which acquired Hill Top Security, a military-grade cybersecurity company operating in the blockchain/bitcoin sector.
360 Blockchain Inc (CSE:CODE)	C\$0.12	14.92'	Invests exclusively in blockchain-based technologies including cryptocurrency, smart contracts, decentralised data management and security.
Global Arena Holdings (OTC:GAHC)	US\$0.016	11.31	Acquiring technologies, patents and companies leveraging the blockchain crypto technology.

' – market capitalisation

Peer comparisons of companies involved in blockchain. Source: Align Research

Sum-of-the-parts valuation

Our sum-of-the-parts (SOTP) analysis thus derives a valuation of US\$413.52 million. On a per share basis, this equates to US\$5.63 (CAD \$7.21) for the current number of shares in issue (56,44,257) and US\$4.46 (CAD \$5.71) on a fully diluted basis (62,660,383) which has been selected as our current target price.

We believe that this valuation is conservative for a number of reasons that have been mentioned in this section. In addition, we have not included any valuation for Petroteq's substantial holding in Accord GR Energy where production commenced in 2017 at the heavy oil Wardlaw field. The number of shares on a fully diluted basis has also been determined in a conservative manner by taking into account the shares and warrants that may arise from the conversion of the US\$508,000 convertible secured loan note, which is due to expire on 31st October 2018: and also, the US\$1,650,897 unsecured convertible debenture.

	Valuation US\$ million
Heavy oil technology	47.74
Asphalt Ridge	339.28
PetroBloq	20.00
Cash	8.00
Debt	(1.50)
Total	US\$413.52m
Per share (73,370,765)	US\$5.63
Per share on a fully diluted basis (92,730,738)	US\$4.46

SOTP valuation. Source: Align Research

Moving ahead, an impressive flow of news over the next twenty-four months does seem to be on the cards, all of which could serve to add substantial value. Firstly, there is the 1,000bopd plant at Asphalt Ridge where all indications are that this facility is expected to be commissioned in March 2018. From then on, the focus of at managements' attention here will be the further expansion of nameplate capacity to in excess of 5,000bopd, which is planned to be completed in 2019. **This move looks to be happening in a period of improving oil prices, which are expected to have a profound effect on the level of netbacks the company receives.**

Secondly, Petroteq has very powerful proven technology for the treatment of oil sands and is seeking to gain additional interest in the Utah, either by acquiring further licences to expand the company's resources portfolio and thereby increase Petroteq's long term earnings potential and valuation. At the same time, management is also seeking to use Petroteq's proprietary oil sands technology to pursue licensing and joint venture opportunities overseas where the potential is even larger.

Thirdly, 2017 saw the surge in the value of anything blockchain related that has continued into the current year. Over the coming months, it does look as though the company will have a series of announcements concerning the development of PetroBloq towards the goal of becoming the blockchain solution for the oil & gas industry, specifically in supply chain management.

Our analysis of Petroteq Energy is initiated with a price expectation of US\$4.46 (CAD \$5.71) as progress on Apshalt Ridge is made over the medium term.

DISCLAIMER & RISK WARNING

It is the policy of ALIGN Research to only cover companies in which we have conviction in the investment case. Our “Conviction Buy” recommendation is derived from our conviction in either taking equity as payment for our research services, or applying our fee to the purchase of equity in a covered company whilst absorbing the cash cost of our freelance analyst payments.

Petroteq Energy Inc. is a research client of Align Research. Align Research own shares in Petroteq Energy Inc. Full details of our Company & Personal Account Dealing Policy can be found on our website <http://www.alignresearch.co.uk/legal/>

ALIGN Research has made every reasonable effort to ensure the accuracy of the information in our research reports and on our website, although this can not be guaranteed. Our research reflects the objective views of our team of analysts. As we actively seek to take the majority of our fees by the way of equity payment in the companies we cover, we believe that we are aligned with both investors and the subject company. Additionally, we only write about those companies that we have conviction in. However, as a consequence of this alignment, our vested interest is in an increase in value of the subject company’s equity. As such, we can not be seen to be impartial in relation to the outcome of our reports.

ALIGN Research has both a personal & company dealing policy (covering staff & consultants) in relation to the dealing in the shares, bonds or other related instruments of companies that we follow & which adhere to industry standard personal account dealing (PAD) rules. In addition, ALIGN Research Ltd as a Company has a self-imposed lock-in in relation to the companies written about of six calendar months from report publication date and two full days for further update notes. ALIGN Research may publish follow up notes on these securities/companies but has no scheduled commitment and may cease to follow these securities/companies without notice.

Your capital is at risk by investing in securities and the income from them may fluctuate. Past performance is not necessarily a guide to future performance and forecasts are not a reliable indicator of future results. Nothing in this report should be construed as an offer, or the solicitation of an offer, to buy or sell securities by us. As we have no knowledge of your individual situation and circumstances the investment(s) covered may not be suitable for you. You should not make any investment decision without consulting a fully qualified financial advisor. The marketability of some of the companies we cover is limited and you may have difficulty buying or selling in volume. Additionally, given the smaller capitalisation bias of our coverage, the companies we cover should be considered as high risk.

ALIGN reports may not be reproduced in whole or in part without prior permission from ALIGN Research. This financial promotion has been approved by Align Research Limited, which is authorised & regulated by the Financial Conduct Authority. FRN No. 768993. © 2017 Align Research Limited.



Align Research Limited
7 Moorhead Lane
ShIPLEY
UK
BD18 4JH

Tel: 0203 609 0910
E: info@alignresearch.co.uk