



#### Key Metrics

PSON - OTC BB	@\$0.50
Pricing Date	Sept. 15, 2012
18-24 month Price Target	\$3.00
52-week Range	\$.45-\$0.52
Shares Outstanding	73M (fully diluted financing/options)
3-Mo Average Daily Volume	10,000
50-day Moving Average	N/A

3 Month Price History for PSON



**Company Description:** *Petrosonic Energy, Inc. is an emerging provider of innovative technologies to the energy industry. The Company's disruptive & proprietary Sonoprocess™ approach upgrades heavy oil into lighter crude in what may be the most economically and environmentally sound method available in the market. Petrosonic plans to have its first stand-alone 1,000 bopd (barrels of oil per day) facility operational in late 2012 in Albania, and should begin to generate meaningful revenue and profits in 2013.*

## Petrosonic Energy, Inc.

### Rating: Speculative Buy

*Revolutionizing the Heavy Oil Upgrading*

*Industry: Initiating Coverage with Speculative Buy Rating and 5X Upside*

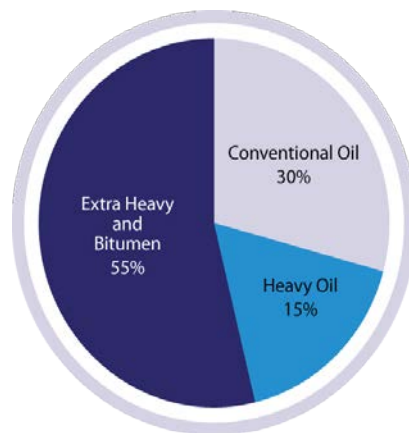
**Investment Conclusion:** We are initiating coverage of Petrosonic Energy, Inc. with a Speculative Buy Rating and \$3.00 target price on 73 million shares fully diluted and 10 X 2016 Free Cash Flow target forecast.

**Investment Thesis:** **Petrosonic Energy Inc. is poised to revolutionize the multi-billion heavy oil refining and de-asphalting industry.** The Company's patent-pending, groundbreaking sonic approach to heavy oil upgrading provides customers with a low-cost, environmentally safe, and significantly economic alternative method for upgrading heavy oil to optimal quality for transport and sale to petroleum refiners.

### Investment Highlights:

**Petrosonic utilizes an innovative and swift sonic energy pulse to upgrade very heavy oil through the removal of asphaltenes, sulfur and heavy metals present in the oil.** This method substantially increases the value in which the refined oil can then be sold to refiners. Without affordable upgrading heavy oil production receives a 30-60% discount for resale to refineries. The *Sonoprocess™* process trial results indicate it to be the most economic and environmentally sound method available in the market today versus conventional alternatives.

- **The economics of the Petrosonic model are highly attractive.** Once the first facility is fully functional, management intends to build other facilities for small producers and sell the process solution to large, heavy oil producers and retain a royalty fee, resulting in huge profit margins. In addition, the generation of additional revenue through the sale of the asphaltting residue could be a sweetener to the whole concept.
- **Approximately 70% of the world's hydrocarbon reserves are bitumen or heavy oil reserves.** Much of heavy oil economics preclude significant extraction:
  - Current extraction methods require millions of gallons of water per day
  - In order to be transported via existing pipeline infrastructure, large amounts of chemical diluents must be added/injected into heavy oil to be pipelined
  - Non-upgraded heavy oil is discounted 30-60% relative to WTI crude to refiner's and limited heavy oil refining capacity exists in North America



- **With a high margin, disruptive technology, we believe that Petrosonic could generate as much as \$2M in net profit in its first year and approach \$25M in free cash flow by year four with only 15 units in production years.** Given the model, the value of the IP, and the huge market opportunity, we believe that after its third year of operations, PSO could well be afforded a forward 12-month multiple of 25x estimated EPS. At 73,000,000 shares outstanding, an \$8-10 per share valuation is reasonable

- **Management Experienced in Heavy Oil Industry.** The CEO and CTO have over 45 years in heavy oil and upgrade technology engineering.
- **Multiple Catalysts with Significant Near-Term Upside:** We believe PSON has significant upside potential in the near-term from multiple catalysts inherent in their strategy:
  - ✓ Operations from their Albania heavy oil upgrading facility are within a few months of activation. Net income of over \$2 million is forecast for year 1.
  - ✓ A \$1.5M to \$2M funding raising is currently underway—but in reality only \$250,000 is needed to complete the Albania facility and get it operational.
  - ✓ Given the high API gravity degrees found in the Albanian heavy oil, and the obvious transport and refining limitations in the region, it is a great example of a replicable Petrosonic stand-alone, heavy oil refining facility.

## The Heavy Oil Upgrading Opportunity: A Quick Heavy Oil Tutorial

When investor's or consumer think of "oil", most think West Texas Intermediate (WTI), which is a type of light crude oil used as a benchmark in oil pricing of the New York and the Chicago Mercantile Exchanges' oil futures. This type of oil is referred to as "sweet" due to its low sulfur content and an American Petroleum Institute (API) gravity of roughly 39.6. API gravity refers to a measure of how heavy or how light a given grade of petroleum is, as compared to water.

According to Schlumberger (NYSE –SLB), the current world oil reserves consist of 9-13 trillion barrels of oil, with 30%, or 3-4 trillion of which consist of lighter sweet crude, or "conventional" oil.

In short, the lower the sulfur and other impurities, and the lighter the gravity, the sweeter the crude. In the United States alone as many as 25 different grades of oil trade everyday—yet you only hear about WTI and the European equivalent Brent Crude.

### What is "Heavy Oil?"

Conversely, heavy crude oil is a type of highly viscous crude oil that does not flow easily and is sometimes referred to as "non-conventional" oil. Typically, "heavy oil" is defined as crude oil with an API gravity of less than 22 API and usually has an API of 8-14.

Heavy oil can be upgraded to high quality, light synthetic oil using specialized refining processing...but that upgrading process many times is so expensive the economics preclude extraction. The key issue with the production of heavy oil is that it has much higher viscosity than conventional crude oil, making it much more difficult and expensive to 'flow' in reservoirs.

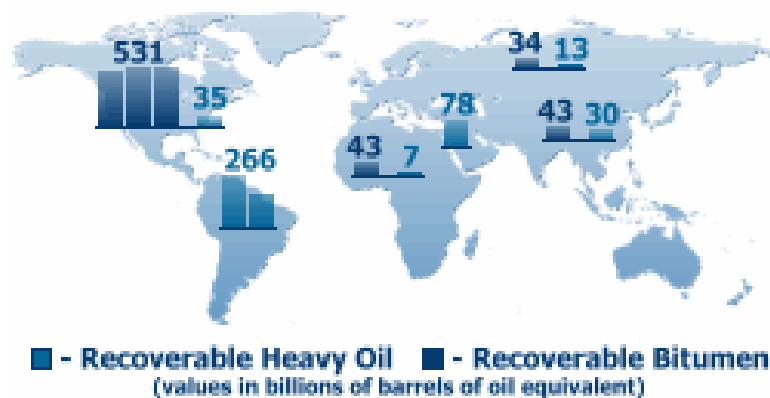
The term "Heavy oil" in the downstream industry relates to specific technical issues with respect to transportation and refining. An extra step must be taken by oil refiners to break down the heavy oil and convert it to usable grades. Usually a diluent is added to carry heavy crude to facilitate its flow in pipelines.

In short, in many cases the additional cost of extracting, upgrading and transporting heavy oil leaves hundreds of billions of barrels in the ground.

## How Much Heavy Oil Is Out There?

Estimated heavy oil production is around 5 million barrels per day and growing. The much-publicized projected reduction in recoverable conventional oil in the next few years has prompted the industry to turn its attention towards the more effective exploitation of non-conventional reserves, and heavy oil resources in particular.

According to a U.S. Geological Survey, heavy oils are found across the globe, with an estimated 69% of the world's technically recoverable heavy oil and 82% percent of the technically recoverable natural bitumen located in the Western Hemisphere. Interestingly, the Eastern Hemisphere contains an estimated 85% of the world's light oil reserves. Notable heavy oil reserves are in Venezuela, Canada, Russia, Brazil, China, and the U.S. (Alaska).



## Heavy Oil

### Characteristics

Given the strong economic and security issues related to significant reliance of crude oil reserves of the Middle East and Russia, a substantial amount of money has been spent to engage in the production and refining of heavy oil. As production shifts to heavier oil, refiners must either pre-upgrade the oil (reduce elements and increase API) or accomplish this by initiating major refining changes. Unfortunately, this is no easy task as virtually everything associated with heavy oil is problematic.

- Traditional heavy oil is both more viscous and dense than conventional oil
- Stranded heavy oil due to transportation issues (can't use existing conventional oil pipelines)
- Diluent supply issues
- Limited refining markets as light oil refiners struggle with heavy oil
- Oil prices subject to heavy discounts due to density adjustments as well as high sulfur and metals content
- High capital and operating costs associated with production, refining, and transport
- Current methods include heavy use of water and are not green technologies
- API similar to bitumen from oil sands

## The Sonoprocess™ Technology Summary: Turning Heavy Oil into Lighter Oil Affordably & Environmentally Acceptably

In short, the Sonoprocess technological breakthrough:

- Uses high power sonic cavitation at low frequencies to modify naturally occurring structures within heavy oil without pollution or resources
- Oil producers and refiners can affordably upgrade and pre-treat oil prior to coking, hydrocracking or pipelining
- Relatively low capital cost and operating equipment required
- Low temperature/pressure requirements
- Easy integration within existing facilities



- Efficient design = faster, more uniform and effective process reactions = efficient use of power
- Rapid de-asphalting of heavy oil
- Electromagnetic drive – resonance
- No moving parts, no emissions, no water
- Single unit processes ~ up to 1,000 bopd
- API increases by ~ 5-10 API

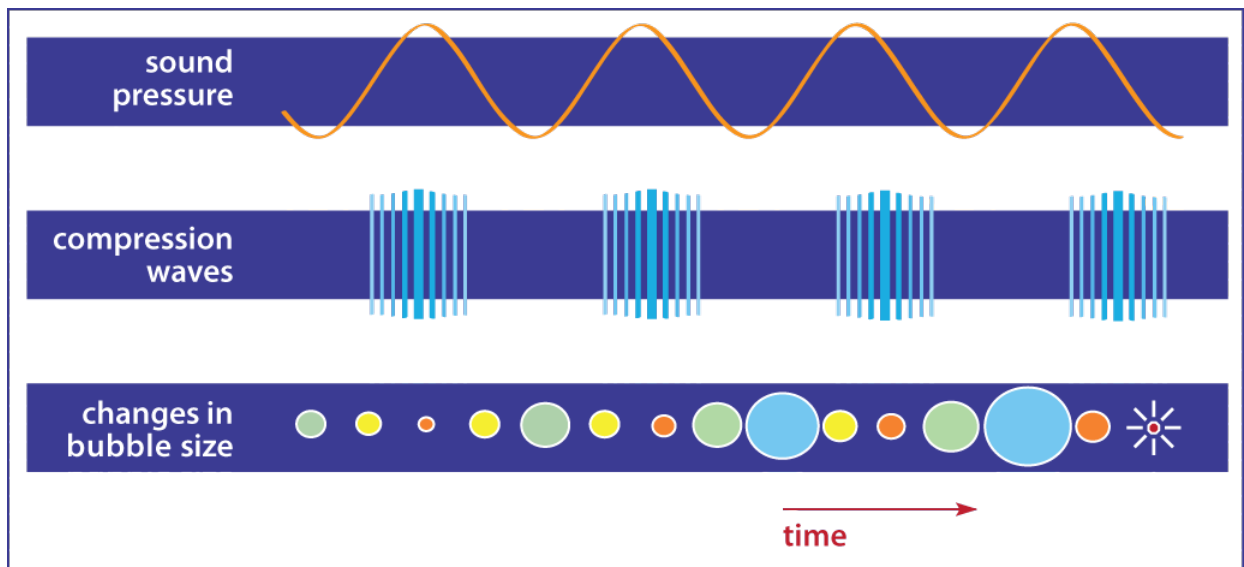
## The Secret Sauce

The Petrosonic heavy oil process enables heavy sour oil (HSO) and bitumen (from most heavy oil and oil sands fields in the world) to be converted from an API gravity of 8-14 degrees to a value-added synthetic crude oil of between 18 and 23 API. This is achieved through the reduction of undesirable constituents of the raw heavy oil and/or bitumen. The process incorporates two stages: solvent de-asphalting and distillation. While solvent de-asphalting and distillation are both proven and well known technologies, the innovation associated with the Petrosonic upgrading process lies in the rapid de-asphalting achieved by sonication of the de-asphalting phase with the Petrosonic reactor stage.

## How it Works

The Company's technology incorporates the use of high powered, low frequency sonic cavitation to modify the heavy oil and bitumen found in heavy oil, into the lighter crude. A patented electromagnetic drive puts a large steel bar into resonance, or oscillation, and is extremely efficient and reliable as there are no moving parts.

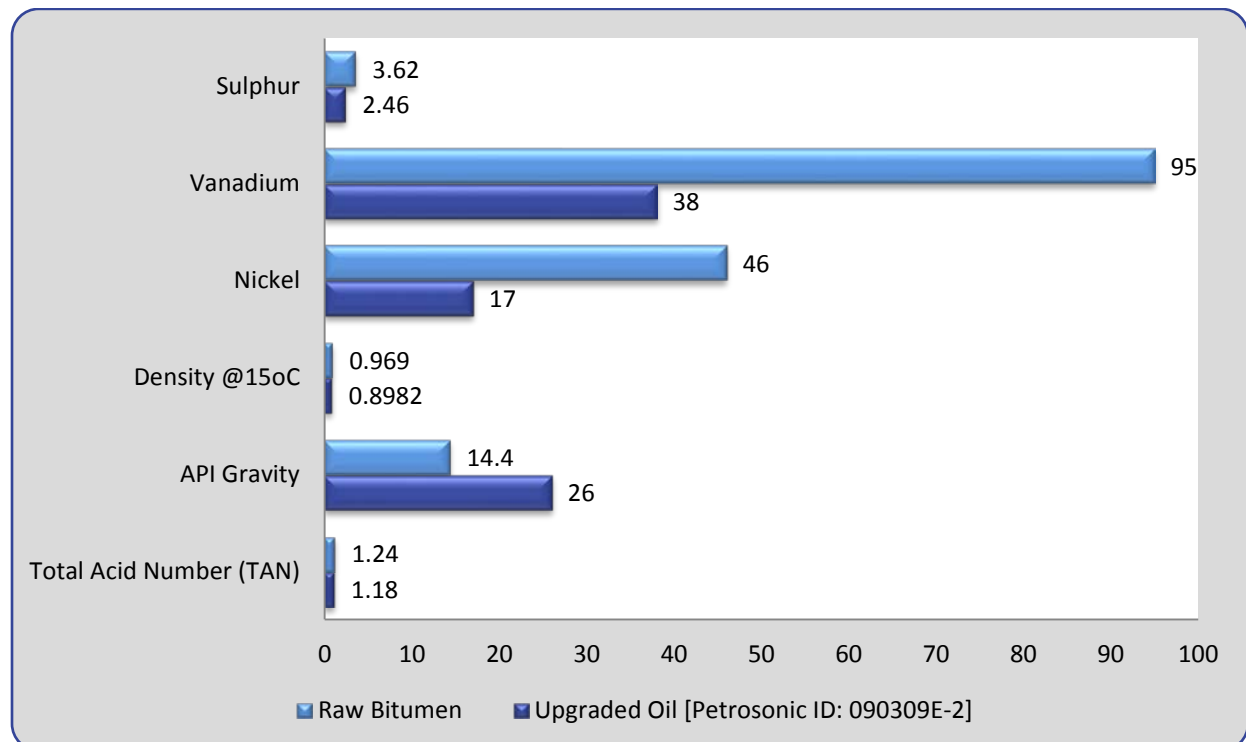
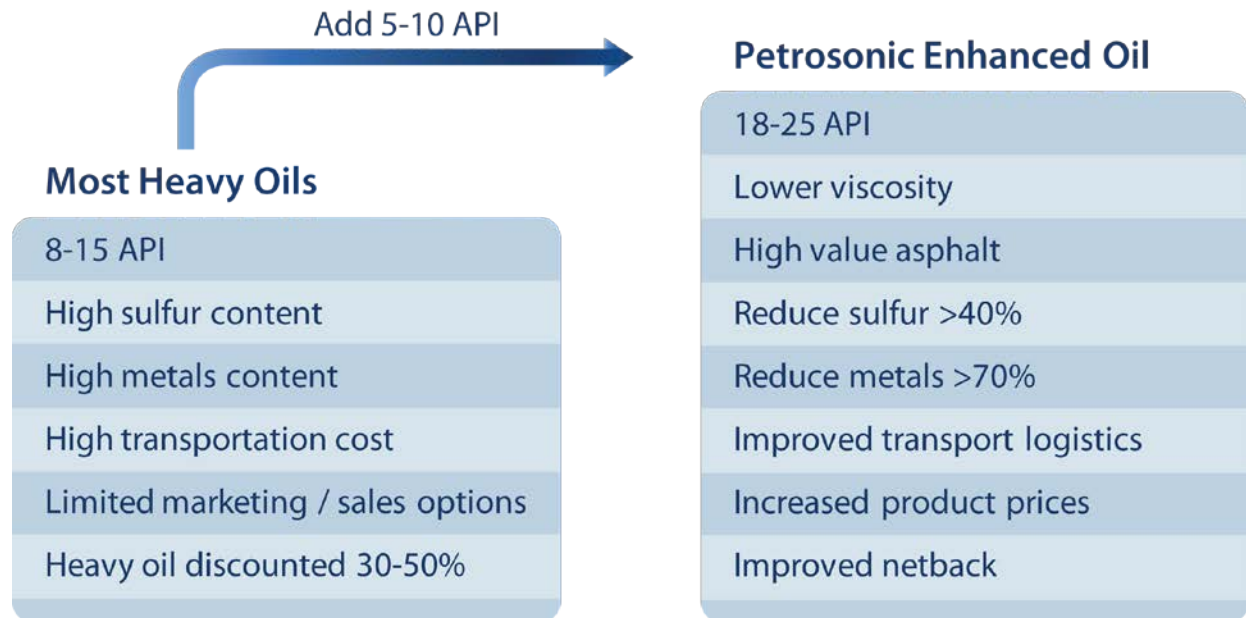
The system is designed to allow oil producers to upgrade the heavy oil without requiring the use of water, and for better flow in transportation of the fluid. The reaction chambers are attached at the mid-node points one half wavelength from the drive system, enabling the reactors to apply energy to physical, chemical and biological processes resulting in more sustainable processes, fewer reagents, less energy, and greater effectiveness.



## Density Improves from 10 API to >21 API

- Bubble implosion generates intense localized heat and pressure and results in disruption of the bonds
- Micro bubbles grow, become unstable, then collapse from negative sound wave pressure fronts

## Test Results



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## The Green Technological Breakthrough

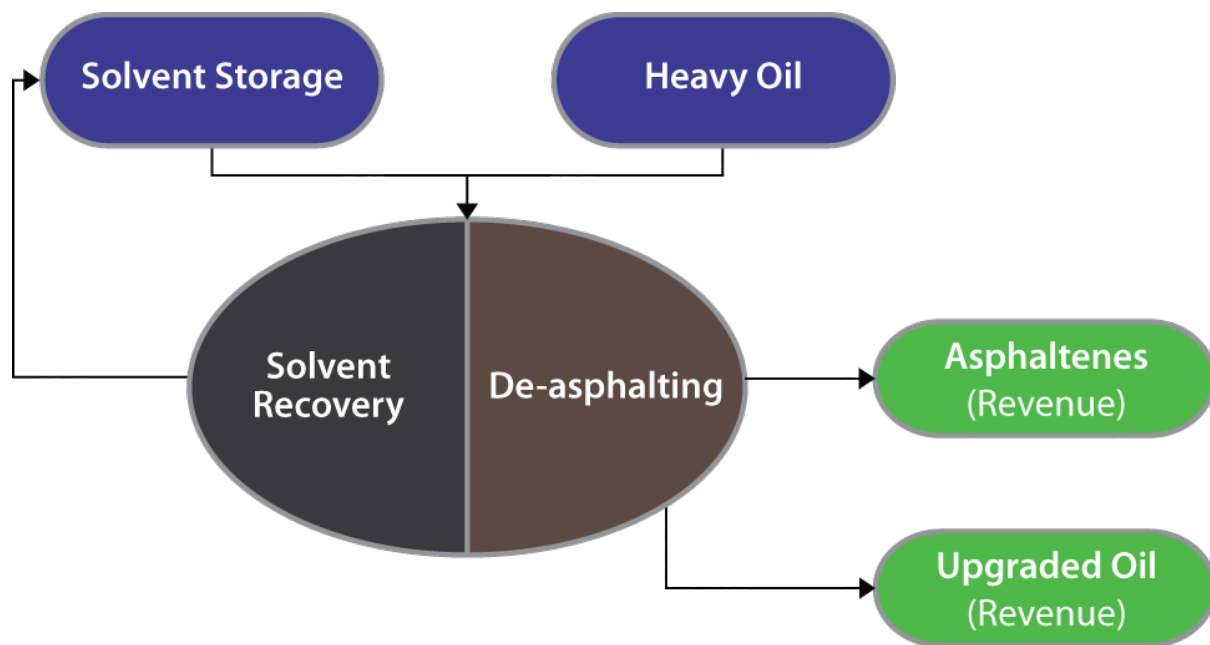
The major environmental advantages of the Sonoprocess™ over the conventional methods are the elimination of the need to use water and the elimination of waste, as the process separates the oil and the bitumens, the residue of which can be sold to other parties, thereby increasing the overall value of the modified product.

The economies of scale are also significantly more beneficial, as a single Petrosonic unit can produce (upgrades) up to 1,000 barrels per day. Other advantages are 40% lower sulfur and 70% lower metal content of refined oil along with a 99% decrease in viscosity from the feed heavy oil.

As noted above, the company also anticipates that 15-20% of the bitumen by product can be sold in the asphalt market. All in all, the process requires much lower capital expenditures and operational costs and will also decrease in transportation costs of the refined oil.

## What is De-Asphalting?

With oil sands, the de-asphalting phase is the process that dissolves bitumen in a hydrocarbon, or paraffinic solvent. The Sonoprocess™ filters the DAO (de-asphalted oil) from the hydrocarbon asphaltenes. Asphaltenes contain heavy metal contents of sulfur, vanadium, and nickel. In addition to obvious economic and environmental benefits, one of the major selling points of the product is its amazing throughput.



Combining unique solvents with Sonoprocess™ achieves a physical separation or “partial upgrading” resulting in a benign de-asphalted oil product which can be sold to existing refineries.

MOST Important-- Sonoprocess™ reduces the de-asphalting time from 6-10+ hours to 2 minutes...50 orders of magnitude improvement!

## The Final Stage

At the completion of the two-stage Petrosonic upgrading process, the upgraded oil is required to be separated from the solvent through a standard solvent recovery process such as an evaporator or distillation column. Given the significant differential in boiling points of the upgraded oil and the solvent for recovery, the separation process is economical and readily applicable to recover solvent with a solvent residual of less than 4% remaining in the oil. Such a small solvent residual in the oil is well within the expected quality parameters for pipeline and refinery specifications.

## Competitive Analysis

The most widely used practice for refining heavy oil is Fluid Catalytic Cracking, or FCC. This method has been in use in some form or other since the 1940's and is used by most top-tier oil companies.

The FCC process involves using a catalyst to break down the heavy oil at the molecular level at high temperatures and pressures. Most configurations are a reactor and regenerator type, where the pre-heated heavy oil is injected into a riser and vaporized and 'cracked' into smaller molecules by mixing it with the hot catalyst from the regenerator in the reactor.

The two main by products are the 'light oil' comparable to crude and a carbon waste referred to as 'coke'. Catalysts are usually powder and contain silica and alumina. Large FCC plants, like Chevron's Pascagoula, Mississippi plant can produce over 60,000 barrels per day but require billions of dollars in investment. These large economies of scale are typical for the FCC process, which is a major negative.

Additionally, the high temperature and pressure environments in FCC require intense engineering and maintenance and produce expensive 'coke' waste byproducts is expensive. Plus, a great deal of water is required for steam generation.

One of the innovative methods in processing heavy oil is the HCAT method developed by Headwaters Inc. (NYSE – HW). This approach is really just an improvement on the existing FCC process. A liquid 'precursor' is introduced at the bottom of the feedstock heavy oil and generates a highly active molecular catalyst allowing further refinement of the FCC process. Another variation on the FCC process has been developed by Ivanhoe Energy (NASDAQ - IVAN) for exclusive use in 'oil sand' production. Oil sands are loose sand containing sandstone and certain bitumens. This type of refining uses common sand as a heat transfer agent and converts waste 'coke' product into steam energy. Ivanhoe claims that this type of heavy oil refinement can be used on economies of scale as low as 10,000 to 20,000 barrels per day. This still requires heavy engineering and operational costs and maintenance.

Finally, the Steam Assisted Gravity Drainage (SAGD) process is used by MEG Energy (MEG.TO) and Statoil (NYSE – STO) among others as a method where dual wells are drilled hundreds of yards beneath the surface, and the top well injects steam into the bitumen. This process separates the bitumen from

the sand and allows it to collect with the water in the other well, and it is then pumped to the surface and separated from water waste product. The water is treated and recycled. MEG boasts that it can recycle 90% of the waste water. There is still a heavy use of water for the process, and it can only be used in oil sands. Additionally, economies of scale are 25,000 barrels per day or more.

## Summary of SonoProcess™ Advantages and Benefits over Existing Technology

- Ability to integrate into existing production treatment facilities from 500–10,000 bpd
- Clean technology – no emissions
- No water use
- Solutions for stranded fields/facilities
- Improves quality of heavy oil and increases revenue for producers
- Improves heavy oil from 10 to >25 API
- 40% lower sulfur, 70% lower metals, 99% lower viscosity
- Reduces transportation costs
- Low pressure and temperature
- Much lower Capex and Opex than conventional upgraders

## The Amazing SonoProcess™ Plant Economics

The De-asphalting and blending process results in an @10 API increase with virtually no environmental or resource cost. The project “netback” of additional money earned per barrel of oil for the heavy oil producer averages about \$9.25 per barrel at \$100 oil prices

Key Assumptions	
Product Prices	\$/Barrel
Heavy Oil	\$65
Light Oil	\$100
Solvent	\$120
Asphalt	\$80
Solvent Percentage	200%
Solvent Recovery	95%
Asphalt Recovery	15%

1000 BBL/DAY UNIT - PRO FORMA FINANCIALS <sup>1</sup>	
<u>Revenue</u>	
Upgraded Oil	\$24,624
Asphalt	\$3,888
Total Revenue	\$28,512
<u>Cost of Production</u>	
Heavy Oil	\$21,060
Solvent	\$3,888
Material & Labor	\$567
Total Production Cost	\$25,515
Gross Margin	\$2,997
<b>Net Income</b>	<b>\$2,103</b>

(1) Annual operating results assuming 360 days per year at 90% efficiency

## PSON Financial Summary: The Money Shot

Perhaps the real “magic” in the Petrosonic process is the value of the company scaling to 20 units in production by year 5:

- Capital investment of \$1 million supplements additional \$850,000 already invested in the plant, acquisition cost and operating expenses
- Assumes 1 initial unit in production, scaling to 20 units in Year 5
- FMV of \$270MM or \$3.70 per share based on discount rate of 15% and cap rate of 10% on 73,000,000 shares outstanding

SUMMARY FINANCIAL TABLE					
(\$000's)	Year 1	Year 2	Year 3	Year 4	Year 5
Units in Production	1	5	10	15	20
Annual Volume <sup>1</sup>	324,000	1,620,000	3,420,000	4,860,000	6,480,000
Revenue	2,997	14,985	29,970	44,955	59,940
Net Income	2,103	11,801	24,276	36,818	49,630
Free Cash Flow	685	4,711	12,596	20,548	28,770

(1) Total barrels processed based on 1,000 bbl per day unit, 360 day year @ 90% efficiency

## The Petrosonic Team

### Art Agolli – Chief Executive Officer, Director

Mr. Agolli has more than 16 years of successful experience in developing heavy oil and energy projects. He was Co-Founder and VP of Bankers Petroleum Ltd. ("Bankers") from its inception in 2004 until August 2008. Mr. Agolli is also the Founder and Chairman of BA Capital, a merchant bank serving the oil and gas industry. He is also a Co-Founder of Sonoro Energy a Canadian TSX listed oil company with operations in Iraq. Mr. Agolli previously was a business development executive with Koch Industries, the largest privately held company in North America. Mr. Agolli holds a Master's Degree in Management from Grand Valley State University and an International Relations and Business Degree from the same university. He is a member of the Association of International Petroleum Negotiators (Houston, USA).

**Steve Krasnyak – Senior Technical Advisor, P. Eng.** Steve Krasnyak has 30 years of experience as a processes petroleum engineer. Mr., Krasnyak was the founder of Colt Engineering, one of

the largest engineering firms in Canada. Colt Engineering started with 12 employees and grew to 5,500 when it was acquired by Worley Parsons for \$1.2 billion in 2010. He is currently a senior technical expert for Worley Parsons Canada. Steve is the author of around 36 patents worldwide and is also the author of a Fischer Trops bitumen based GTL and upgrading technology.

#### **Vangjel Moco – Technical Manager, Albania**

Mr. Moco is a petroleum engineer and has 32 years of experience with heavy oil operations in Albania. Mr. Moco was the Chief Engineer for the Albanian National Oil Company (Albpetrol) and for the past 10 years has been working for various international oil and gas companies operating in Albania.

#### **Claudio Arato – Technology Consultant**

Mr. Arato is a chemical Engineer with more than 15 years of experience. Mr. Arato has been for the past 5 years the Technology Director for Sonoro Energy. Mr. Arato is one of the authors of the various patents for the Petrosonic technology and has been a key contributor to the commercialization of the technology.

#### **Paul Sharpe – Intellectual Property Advisor**

Paul Sharpe is a Partner, with Perley-Robertson, Hill & McDougall LLP in Ottawa, Canada. He is recognized as one of the top Intellectual Property lawyers in Canada. He is also a Board member of Karnalyte Resources, a Canadian potash mining company listed on the TSX.

### **Summary**

In our view, PSON has significant advantages over other companies and heavy oil refining methods in the space. These include:

- Low capital and operational costs
- Ability to scale on small level
- Clean technology
- Does not require the use of water
- Speed of process
- Overall efficacy
- Potential by-product sales

Our DCF valuation on our financial model at 73,000,000 shares outstanding is @\$3 a share fully diluted. Given the model, the value of the IP, and the multi-\$billion heavy oil upgrade market opportunity, PSON could very well earn a

forward 12-month multiple of 10-15x of estimated EBITDA, which would make the price-per-share more like \$8-\$10 a share.

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## Forward Looking Statements

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