

## Due Diligence and Valuation Report

Arrowhead Code: 05-01-03  
 Coverage initiated: 30 March 2011  
 This document: 27 June 2011  
 Fair share value bracket: NOK106 and NOK568  
 Share price on 24June11: NOK19.8<sup>i</sup>

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Company: Badger Explorer ASA  
 Ticker: OSL: BXPL  
 Headquarters: Stavanger, Norway

Chairman: Mr. Marcus Hansson  
 President & CEO: Mr. Kjell Erik Drevdal  
 CFO: Mr. Gunnar Dolven

Website: [www.bxpl.com](http://www.bxpl.com)

### Market Data

52-Week Range:	NOK14.4 – NOK30.9 <sup>ii</sup>
Average Daily Volume:	4,400 <sup>iii</sup>
Market Cap. on 24June11:	NOK366.9MM

### Q1 FY2011 Result Update (Consolidated)

Particulars	Value (NOK '000)	Y-o-Y	Q-o-Q
Revenue	2,928	127%	(46%)
Project Development cost	6,703	(42%)	(9%)
Public Grants	748	593%	(48%)

### Financial Forecast (in NOK) (FY ending - Dec)

Dec. Ending	'11E	'12E	'13E	'14E	'15E	'16E	'17E	'18E
High NI MM	(20)	(24)	27	180	406	810	1,128	1,316
High EPS	(1.1)	(1.3)	1.5	9.7	21.9	43.7	60.8	71.0
Low NI MM	(20)	(24)	(12)	19	98	156	243	282
Low EPS	(1.1)	(1.3)	(0.7)	1.0	5.3	8.4	13.1	15.2

**Company Overview:** Incorporated in 2003, Badger Explorer ASA (BXPL), a Norway based company is involved in developing and marketing drilling and well technology. It is listed on the Oslo stock exchange. BXPL's technology is patented in the USA and Norway and is used for the evaluation of new formations and reservoirs which reduces cost, risk and complexity as compared to traditional exploration drilling. Since April 2005, the company has entered into tie ups with major Oil and Gas companies such as Exxon Mobil, Shell and Statoil who fund the research and development of the Badger Explorer tool. It has two subsidiaries, Badger Plasma Technology AS (100%) and Calidus Engineering Ltd (75%).

**Quarterly Performance: Q1FY2011:** Consolidated revenue which mainly consists of revenue from Calidus Engineering Ltd, declined by 46% Q-o-Q to NOK2.9MM in Q1FY2011. However, it rose by 127% on a Y-o-Y basis. Gross Cash Reserves (including shares in market based liquidity fund) as on 31<sup>st</sup> March 2011 were NOK87.3MM, declining by 11% from 31<sup>st</sup> December 2010.

### Revolutionary Technology backed by Strong Funding

Arrowhead is initiating coverage on BXPL with a fair value bracket of NOK106 in the conservative scenario and NOK568 in the aggressive scenario.

Our **positive thesis** on BXPL is based on the following:  
 (1) strong revenue growth emanating from sale of Badger Explorer tool based on the demand arising from depleting onshore reserves and need for advanced rig less technology for offshore exploration (2) margin expansion stemming from increasing sales of Badger Explorer tools as client partners can afford to drill larger number of target locations per season as compared to traditional drilling (3) patented technology which is environment friendly (No CO<sub>2</sub> emissions or air/sea pollution), reduces cost by 75%, with power consumption being lower than 1% as compared to rigs; (4) strong funding support from major Oil and Gas companies such as ExxonMobil, Shell and Statoil for development of the Badger Explorer tool as well as co-operative agreements with technology providers such as Calidus Engineering Ltd; and (5) favorable business environment in Norway, which is oil rich and has a strong offshore drilling exploration market.

**Risk:** Key risks include delay in product implementation, technological execution risk and financing risk arising from lack of operating revenue.

**Valuation and Assumptions:** Given due diligence and valuation estimates, Arrowhead believes that BXPL's fair share value lies in the NOK106 to NOK568 bracket<sup>iv</sup>. We valued BXPL using DCF valuation method to arrive at the per share value of the company. We believe the shares are attractively priced at current levels. This value is based on the assumption that the company would be able to start production of the Badger Explorer tool in 2013 according to the forecasts outlined in the *Key Variables* section of this report. The valuation does not take into account the increase in the potential price/charge for the Badger Explorer tool for FY2013-FY2019 (US\$10MM in conservative and US\$18MM in aggressive). Arrowhead estimates for revenue do not include success fees, to be charged based on the geophysical data given to the customer.

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## 1. Investment Thesis

We are initiating coverage on BXPL, involved in developing and marketing drilling and well technology with operations primarily in Norway with a fair value bracket of NOK106 in the conservative scenario and NOK568 in the aggressive scenario.

Our **positive thesis** on BXPL is based on:

(1) strong revenue growth emanating from sale of Badger Explorer tool based on the demand arising from depleting onshore reserves and need for advanced rig less technology for offshore exploration (2) margin expansion stemming from increasing sales of Badger Explorer tools as client partners can afford to drill larger number of target locations per season as compared to traditional drilling (3) patented technology which is environment friendly (No CO<sub>2</sub> emissions or air/sea pollution), reduces cost by 75%, with power consumption being lower than 1% as compared to rigs; (4) strong funding support from major Oil and Gas companies such as ExxonMobil, Shell and Statoil for development of the Badger Explorer tool as well as co-operative agreements with technology providers such as Calidus Engineering Ltd; and (5) favorable business environment in Norway, which is oil rich and has a strong offshore drilling exploration market.

We valued BXPL using the DCF valuation approach, to arrive at the per share value of the company. Our positive view on BXPL is supported by strong demand for the Badger Explorer tool in the offshore market. BXPL has a revolutionary technology which is patented (rig less), which is known to reduce the cost, risk and complexity as compared to the traditional exploration method. BXPL's product has favorable prospects with foreseeable increases in demand in the coming years as more and more oil and gas companies look forward to target new exploration locations while saving cost and achieving operational efficiency.<sup>v</sup>

Prime risks associated with investment in BXPL include delay in product launch in lieu of possible failure arising in technology execution. Financing risk arises from lack of operating revenue.

Arrowhead forecasts the revenue to grow at a CAGR of 90% (from NOK12MM in FY2010 to NOK3,734MM in FY2019) in the aggressive scenario and 61% (from NOK12MM in FY2010 to NOK846MM in FY2019) in the conservative scenario. This would be largely driven by growth in demand for hydrocarbons, which are the primary source of energy. Global demand for energy is driven by population growth and higher economic growth especially in developing countries. As onshore reserves deplete, Oil and Gas Exploration and Production companies are increasing their capital expenditure for identifying and exploring new offshore locations, therefore making conditions favorable for BXPL. Further, as crude oil prices continue to rise, it is becoming economically viable to extract hydrocarbons.

BXPL is trading at much lower multiples (EV/Revenue, EV/EBITDA and P/E) as compared to its peers, making it very attractive. The company's EBITDA margins are also expected to more or less in line with its peers. BXPL has the highest growth potential in the share price as compared to its peers. (Refer to the Relative Valuation section: 8.1 for more details).

**2. Business Overview**

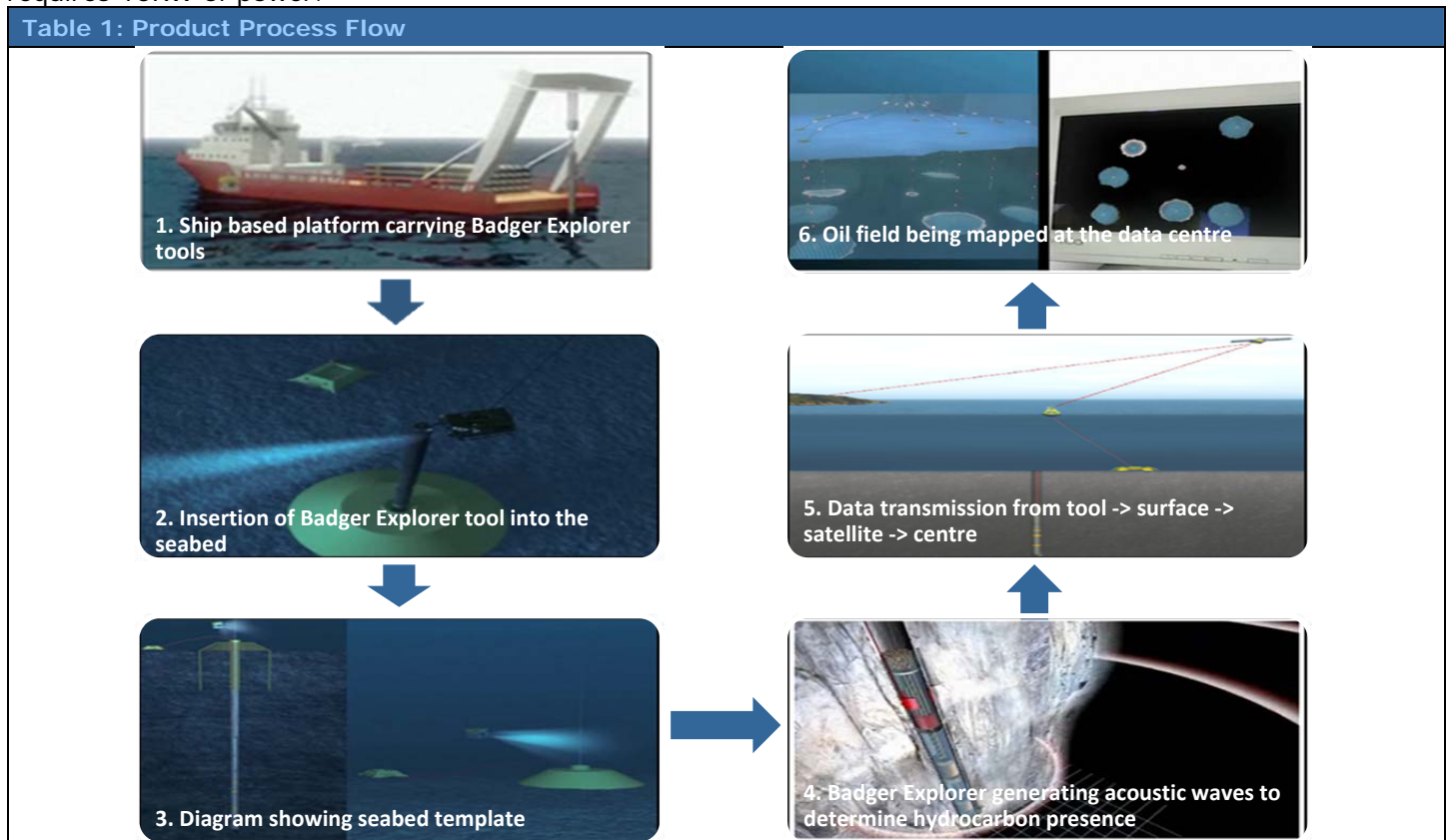
Incorporated in 2003, Badger Explorer ASA (BXPL) is a Norway based company which develops and markets drilling and well technology. Badger Explorer tool is a revolutionary technology used to explore and map the extent of hydrocarbons resource and reserve base. This tool reduces the risk, cost and complexity as compared to the traditional drilling rig. The technology is based on the idea by International Research Institute of Stavanger (IRIS) which was granted patent in 2002 (Norway), 2006 (USA) in and then transferred to Badger Explorer ASA.

The company had tied up with some major oil and gas companies such as Exxon Mobil, Shell and Statoil since April 2005; this agreement was extended in 2008. As per the agreement, the client partners will fund the research and development of the Badger Explorer tool and in return will have the first right of refusals for BXPL's full operational capacity during the first three years of commercial services. The company is listed on the Oslo stock exchange in 2007. It has two subsidiaries, Badger Plasma Technology AS (100%) and Calidus Engineering Ltd (75%). BXPL will acquire the remaining 25% stake in Calidus till 2013 as per the agreement made with Calidus in 2007.

**2.1 BXPL's Product Analysis**

**2.1.1 How the product works**

The Badger Explorer tool is a new patented technology which is used to explore and map the extent of hydrocarbon resources. The tool drills and buries itself into the underground. It has logging sensors to detect and sense the presence of hydrocarbons. The tool uses a mechanical drill bit driven by an electrical motor to penetrate the sea bed. While drilling it loosens and crushes the formation and transports the crushed formation to the void space present behind the tool. Any amount of the excess volume is forced and injected into the formation through fractures generated by the Badger Explorer. The tool is powered by electrical motors with the help of electrical cable, which is spooled up inside the unit. This cable is connected to the surface and also helps to continuously transfer data back to the surface. The tool is capable of drilling at a rate of 2meters/hr and requires 10KW of power.



### 2.1.2 Benefits

The Badger Explorer tool enhances the exploration processes and mapping of additional reserves in existing fields. This tool is expected to be superior to the conventional drilling operations in terms of safety, emissions to sea and air (very environmental friendly) and power consumption. Power consumption from the Badger Explorer well is expected to be less than 1% as compared to the rigs. It also reduces cost by 75% as compared to conventional rigs. It is also expected to reduce the environmental disturbance as compared to the traditional drilling rig. The Badger Explorer tool when used in new locations can map the hydrocarbons with far more accuracy than seismic surveying. The company management is also considering the option of using the Badger Explorer tool as a carrier for seismic tools.

### 2.1.3 Product Status

In April 2010, the company performed a closed cavity test and groundbreaking demonstration of the Badger Explorer concept. In October 2010, a full scale proof-of-concept test below ground-and water level was performed. The company was successful in retrieving the Badger Explorer tool from the hole undamaged after having been completely buried. The inspection of the hole and detailed analysis confirmed that the drilling/compaction operation had been successful, leaving a clean and vertical well. These tests took place at the test site in Eastern Norway. This has led to the approval by all the three sponsoring parties (ExxonMobil, Shell and Statoil) to take the development of the product to the next stage. This confirmation and approval by the sponsors is considered as a big accomplishment for the company. Since the testing of the Badger Explorer tool is in progress, there is still some time before the commercial product will be launched.

In 2009, as a part of the preparations for the self-burial test, the entire Badger Explorer prototype tool was tested as one fully integrated unit. The initial stage of the prototype project was funded by The Research Council of Norway (RCN) through its Petromaks program. However, the client partners such as ExxonMobil, Shell and Statoil are expected to fund the remaining development of the tool as per the joint partner agreement.

### 2.1.4 Product Development Stages <sup>vi</sup>

Table 2. Product Development Stages				
Commercial Service	Pre-commercial stage	Testing	Prototype stage	Research and Development (R&D) stage
Launch: Late 2013	Demo 125 Version ("The Badger Explorer Demonstrator") to be developed in this stage. This stage will include redesigning depending upon the results of the experiments conducted from the prototype stage	Self burial test in spring of 2010	<ul style="list-style-type: none"> <li>Started in 2005</li> <li>Demo 50 version2 implemented during 2009</li> <li>Preparation for Demo 125 version commenced on parallel basis</li> </ul>	R&D started in 1999



### 2.1.5 Badger Explorer vs. Traditional Exploration Drilling

Table 3: Comparison between Badger Explorer and Traditional Exploration Drilling	
Traditional Method for Exploration	Exploration using Badger Explorer
<p><b>Needs Rigs:</b></p> <ul style="list-style-type: none"> <li>Needs offshore rigs of various kinds to drill into the seabed.</li> <li>The time, effort and complexity associated with the construction of a rig are high.</li> <li>A large number of rigs are required to be set up in a potential oil field. They are bulky and difficult to move from one place to another.</li> </ul>	<p><b>Rig Less:</b></p> <ul style="list-style-type: none"> <li>Does not need a rig to drill into seabed. 10 – 20 Badger Explorers can be carried on one ship.</li> <li>The device drills at a rate of 2 meters/hour and can achieve a depth of 3,000 meters in around two months.</li> <li>The ship can move to different locations within a potential oil field thereby exploring a larger area than a permanent rig.</li> </ul>
<p><b>Manpower requirement: High</b></p> <ul style="list-style-type: none"> <li>Huge manpower is required to monitor the rig and drilling operations (24x7) adding to the cost.</li> <li>Hiring manpower is a challenge.</li> <li>Safety for personnel is low</li> </ul>	<p><b>Manpower requirement: Low</b></p> <ul style="list-style-type: none"> <li>Drilling with Badger Explorer can be done from remote location and does not need the presence of manpower on the ship.</li> <li>Hiring manpower for remote operations is easy</li> <li>Safety for personnel is high</li> </ul>
<p><b>Power Requirement: High</b></p> <ul style="list-style-type: none"> <li>Higher requirement of power for running an oil rig as power is required for the actual drilling and for maintenance and habitat of the onboard personnel.</li> </ul>	<p><b>Power Requirement: Low</b></p> <ul style="list-style-type: none"> <li>10KW of power required per hour. Power consumption for the Badger Explorer tool is expected to be less than 1% to that of conventional rigs.</li> </ul>
<p><b>Cost structure: High</b></p> <ul style="list-style-type: none"> <li>\$10-\$30MM (shallow water drilling) based on higher fuel, man power and manpower cost.<sup>vii</sup></li> </ul>	<p><b>Cost structure: Low</b></p> <ul style="list-style-type: none"> <li>\$10 - \$18MM per tool (shallow water drilling). Overall cost is estimated to be 75% lower as compared to the traditional drilling operations.</li> </ul>
<p><b>Risks: High</b></p> <ul style="list-style-type: none"> <li>Entire operation of setting up a rig and drilling is complicated and fraught with risks. A major concern is possibility of a blowout which puts into question the safety of the entire rig and the men on it.</li> </ul>	<p><b>Risks: Low</b></p> <ul style="list-style-type: none"> <li>Minimized risk of blowout. Worst case scenario, the device gets damaged due to some reason while drilling. No risk to life. However, if the device fails at any point of time, it cannot be retrieved. Once the badger tool is disconnected from the surface ship, after being lowered into the casing, it is lost if it fails to work properly.</li> </ul>
<p><b>Environmental Hazards: High</b></p> <ul style="list-style-type: none"> <li>It is known to cause environmental hazards such as air (Co2 emissions) and sea pollution (coastal erosions).</li> </ul>	<p><b>Environmental Hazards: Low</b></p> <ul style="list-style-type: none"> <li>No emission to air or sea, either of polluted drill cuttings or CO<sub>2</sub> emission from power generation, since the Badger Explorer buries itself in the underground.</li> </ul>
<p><b>Process: Complex</b></p> <ul style="list-style-type: none"> <li>The drill needs to strike oil or constantly send up rock and mud samples for analysis. Samples from a drill need to be analysed on the rig itself. Each rig in a potential oil field analyses its data individually. Needs manpower which increases cost. If analysis says that oil doesn't exist or the oil field is found to economically not viable, the entire exploration is futile. Rig drilling also requires periodic strengthening of the walls of the well through complex combinations of drilling liquids and metal casings.</li> </ul>	<p><b>Process: Simple</b></p> <ul style="list-style-type: none"> <li>Badger uses seismic/acoustic devices to analyze the rock layers beneath sea bed. Electronic data is transmitted through data link to onshore stations. Onshore station collects data from a number of devices thereby making data collection and its analysis centralized. If oil doesn't exist or drilling is economically not viable, the only cost incurred is drilling Badger device into the seabed.</li> <li>An advantage with Badger Explorer is that the formations will be drilled in gauge hole, with no drilling liquids and without overbalance. The tool will detect the presence of hydrocarbon reserves by seismic/acoustic sensors. Accordingly, the measurement of representative formation petro physical properties is simplified and hence the tool string requirements are simpler than compared to conventional drilling. This will reduce the cost related to the measurement sensor package in the tool and improve the quality of data.</li> </ul>

## 2.2 Company Premiums

- **Patented technology:** The Badger Explorer technology has been patented in the United States and Norway. This smart technology is superior to the conventional drilling operations in terms of safety, power consumptions and is known to reduce the risk of environmental hazards giving the company an added advantage over its competitors. Power consumption for the Badger Explorer well is expected to be less than 1% to that of conventional rigs. The technology is expected to deliver better quality and volume of data collected. Overall cost is estimated to be 75% lower as compared to the traditional drilling operations. Thus, Oil and Gas companies/client partners can afford to drill considerably larger number of targets per season, thereby expanding the market potential for BXPL. The tool is also expected to map presence of hydrocarbons more accurately than seismic surveying.
- **Strong funding support through partnership:** BXPL has tie-ups with large Oil and Gas exploration companies such as ExxonMobil, Shell and Statoil. These client partners are active sponsors for the Badger Explorer tool development. These tie ups will be a strong support during the pre-commercial stage of the Badger Explorer tool. As per the joint partner agreement, which was extended in 2008, the three client partners will be awarded the first right of refusals for BXPL's full operational capacity at market price for the first three years of commercial service.
- **Co-operative agreements with technology providers:** The Company has signed some co-operative agreements with the technology providers such as Calidus Engineering to get access rights to some down-hole technologies as well and logging sensors to design, develop and manufacture some of the vital parts of the Badger Explorer tool. Calidus Engineering Ltd has expertise in the field of down-hole and subsea oil & gas and extreme geothermal engineering. Its two main sectors of business are the design and development of down-hole and subsea systems and the mechanical manufacture of the hardware and subcontract manufacturing.
- **Norway: A favorable business environment:** Increasing demand for hydrocarbons, declining onshore reserves and increasing crude oil prices together has triggered an increase capital expenditure by Oil and Gas companies for exploring new locations. Norway being an oil rich nation; is known to have rich offshore oil and gas reserves, making it a favorable scenario for BXPL.

## 2.3 Company Risks

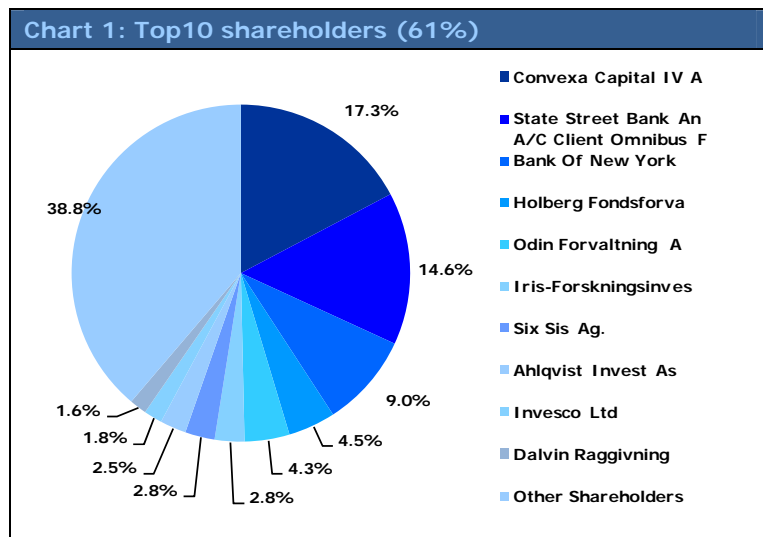
- **Financing risk:** The Badger Explorer tool is currently in the development stage and hence the company does not have any commercial revenue. However, the company is backed by strong financial support from their partners throughout the development of the tool, thereby reducing the risk considerably.
- **Delay in the commercial launch/technological execution:** The development of the Badger Explorer tool is time consuming and complex. The company plans to develop a product in 2013 which will be able to drill between 500meters and 200meters, which is where the demand from the exploration companies lies. The company also has plans to tap the deep exploration market by developing a product that can drill to 3,000meters. As a result, there exists a risk associated with the success related to the testing of the prototype as well as launch of the commercial services which may not be in line with the company management plan.

## 2.4 Corporate Strategy

- **Tie up for funding and technology:** BXPL has followed the strategy of building tie-ups with large Oil and Gas exploration companies such as ExxonMobil, Shell and Statoil, who would also be the end users of their product and hence would also be interested in innovative technology. This kind of a tie-up has generated a win-win situation for both; BXPL as well as the end client. This has enabled the company to receive the necessary funding support for research and development of the Badger Explorer tool from client partners. Secondly, the company has also identified partners who can provide them technical support. One such tie up is with Calidus Engineering to get access rights to some down-hole technologies as well and logging sensors to design, develop and manufacture some of the vital parts of the Badger Explorer tool. Thirdly, the company has patented its technology ensuring that they will enjoy competitive advantage in the future.

## 2.5 BXPL's Shareholding Pattern <sup>viii</sup>

BXPL has a free float of 84% while the top ten shareholders hold 61% of the total share capital. The insider share holdings are given in table no.4 below.



**Table 4: Insider Shareholding**

Insiders	No. of Shares
Marcus Hansson	511,668
Gunnar Dolven (CFO)	309,872
Kjell Erik Drevdal (CEO)	232,600
Mr. Markman (Nilsholmen)	229,422
Mr. Erling Woods (CTO)	4,000



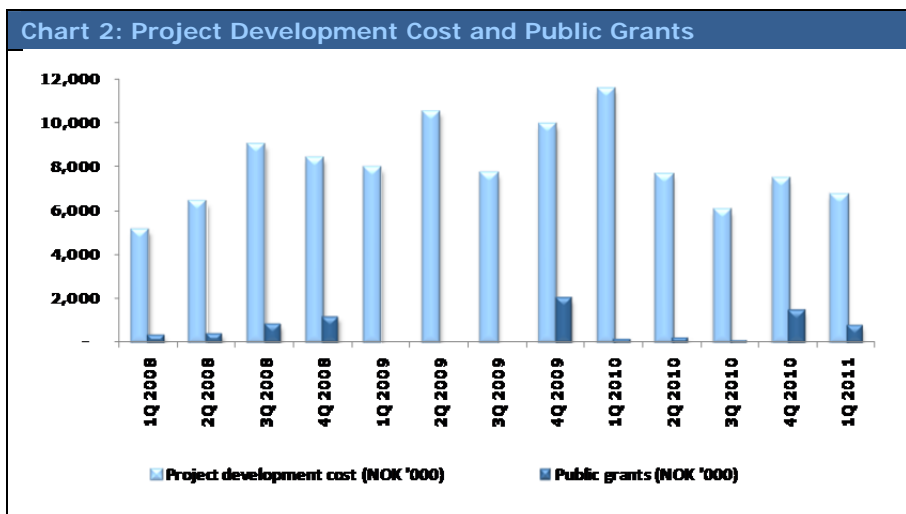
### 3. Financial Analysis <sup>ix</sup>

Financial Analysis has been done for both the historical performance as well as future trends.

#### 3.1 Historical Quarterly Analysis

Table 5: Historical Quarterly Analysis						
Particulars (December ending)	Q1 FY2010	Q1 FY2011	Y-o-Y Change (%)	FY2009	FY2010	Y-o-Y Change (%)
Revenue (NOK'000)	1,289	2,928	127%	8,881	11,531	30%
Project Development Cost	11,525	6,703	(42%)	36,003	32,540	(10%)
Public Grants	108	748	593%	1,977	1,805	(9%)

Consolidated revenue mainly consists of revenue from Calidus Engineering. Revenue from the sale of Badger explorer tools is expected to contribute from FY2013 onwards.

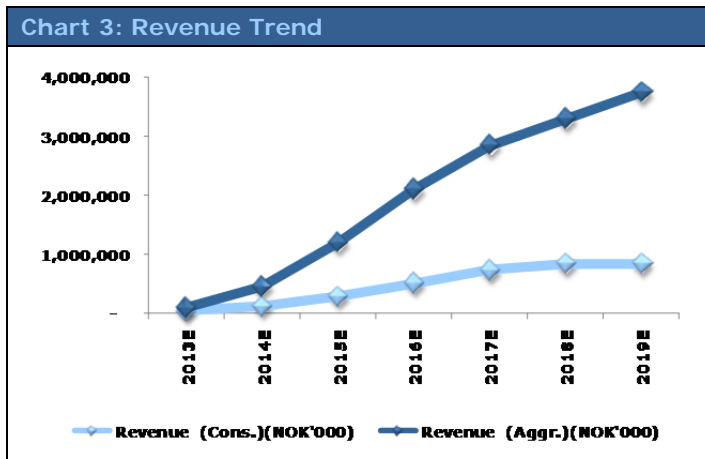


The charts shows the general trend of the project development cost funded by the client partners and the public grants. The company has been receiving public grants and funds from client from time to time for product development.

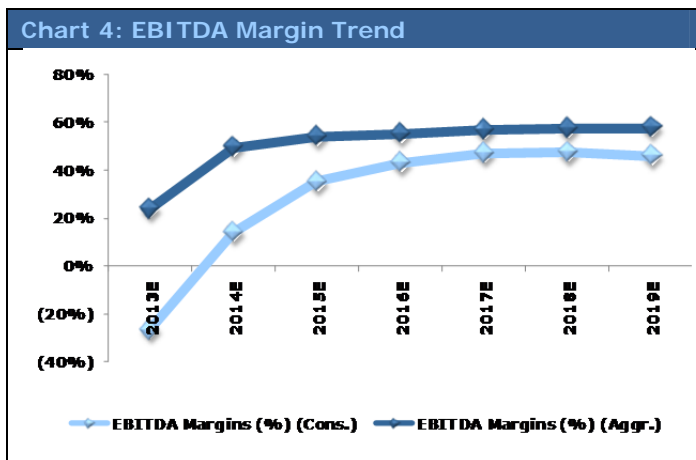
It is clearly evident that it is the company is mainly dependent on the funds provided by the client partners to develop their product. The funds are aligned as per the product development cycle of the Badger Explorer tool.

### 3.2 Future Trend Analysis (2011E -2019E) ×

#### 3.2.1 Revenue and EBITDA Margins Analysis

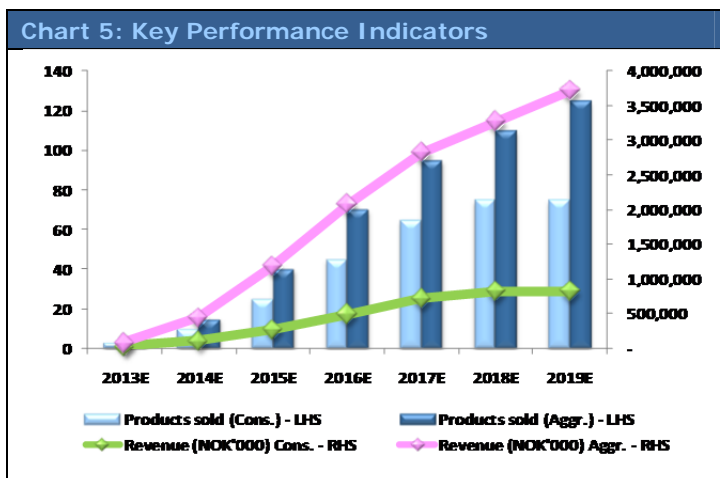


According to the company management, the Badger Explorer tool is expected to contribute to revenue from FY2013 onwards. The growth in revenue will be led by the strong growth in the number of Badger Explorer tools introduced in the market. The demand would be led by higher demand for drilling offshore target locations without rigs to save on cost of exploration drilling, thereby enabling them to drill more targets locations per season. Clients would also prefer to use higher number of tools as this would enable them to extract more accurate information about the area of interest. The distinct gap between the revenue in the conservative and aggressive scenario stems from the steep difference in the pricing range (US\$10MM in conservative and US\$18MM in aggressive).



EBITDA margins are expected to be negative in FY2013 for the conservative scenario due to lower sales of Badger Explorer tool and higher operating expenses. Margins are expected to turn positive and touch 14.2% in FY2014, and then increase steadily in the conservative scenario. In the aggressive scenario, margins are expected to turn positive in FY2013, with revenue being three times higher as compared to the conservative scenario due to higher product sales and higher pricing range. In both the scenarios, EBITDA margins are expected to stabilize from FY2017 onwards.

#### 3.2.2 Key Performance Indicators (KPI)



The key performance indicators for the company are the number of Badger Explorer tools sold, their pricing, USD – NOK currency fluctuation and the risk associated with technological execution. Although the revenue is based on the number of Badger Explorer tools sold, the difference in revenues in the both the scenarios is mainly driven by the difference in the pricing range and the technology execution risk discounts.

Price range: US\$10MM (Conservative), US\$18MM (Aggressive)

Technology Discounts: 80% (Conservative) and 70% in (Aggressive)

#### 4. Key variable analysis <sup>xi</sup>

##### 4.1 Variable 1 – Forecast for Badger Explorer tools produced

As per management estimates, BXPL is expected to launch their product in FY2013 and hence would start earning revenue from FY2013 onwards. The company has a strong funding support from major Oil and Gas companies such as ExxonMobil, Shell and Statoil for development of the Badger Explorer tool. This will help them to produce larger number for tools per year. Further, the success of the tool will lead to increased adoption beyond North Sea which is the company's current market. These factors would lead to higher sales of the tool which is reflected in the aggressive scenario. However, if the company is unable to tap additional clients other than its three client partners, it would impact the production and could also limit the area of operations to the North Sea. These concerns are reflected in Arrowhead's conservative estimates.

##### Production

Table 6: No of devices	2013	2014	2015	2016	2017	2018	2019
Low estimate	3	10	25	45	65	75	75
High estimate	3	15	40	70	95	110	125

##### 4.2 Variable 2 – Badger Explorer tool price

Arrowhead has assumed a constant price for the forecasted time period FY2013-FY2019. The Badger Explorer tool price is based on the estimates provided by the company management. Currency conversion rate for USD-NOK is assumed to be 5.50.

Table 7: USD\$ ('000)	2011 - 2019
Low estimate	10,000
High estimate	18,000

##### 4.3 Variable 3 – Technological risk

In order to incorporate technology risk, Arrowhead has discounted the revenue by a certain percentage. The company plans to develop a product in 2013, which will be able to drill between 500meters and 200meters. The company also has plans to tap the deep exploration market by developing a product that can drill to 3,000meters. As a result, there exists a risk associated with the success related to the testing of the prototype as well as launch of the commercial services which may not be in line with the company management plan.

Table 8: Discounting %	2011 – 2019
Low estimate	80%
High estimate	70%

**The impact of both the variables on the revenue from the Badger tool would be as follows:**

##### Revenue

Table 9: NOK '000	2013	2014	2015	2016	2017	2018	2019
Low estimate	33,000	110,000	275,000	495,000	715,000	825,000	825,000
High estimate	89,100	445,500	1,188,000	2,079,000	2,821,500	3,267,000	3,712,500

BXPL may classify this revenue as Hardware fee and Service Fees. The company may also charge an additional Success fee depending upon the geophysical data (recorded by the Badger Explorer tool) provided to the customer. However, Arrowhead has not included this success fee in the estimated revenue calculations.

## 5. News <sup>xii</sup>

- **Successful drilling test in clay formation:** On 30<sup>th</sup> May 2011, BXPL announced that has performed and completed a successful drilling test in a clay formation. The test has been conducted at the test site at Sola and is the first of two Milestone 3 tests of the Badger Explore Prototype Program. The Sola test has been carried out in a clay formation that holds other operational challenges than drilling in a sand/limestone formation. The final analysis of the gained test results has yet to be performed.
- **Settlement regarding employee share options program:** On 9<sup>th</sup> May 2011, BXPL has announced that the primary insider, CTO Erling A. Woods has purchased 3,000 shares at a price of NOK 23.5875 per share. Mr. Woods holds 16,667 unexercised share options in the Company at a strike price of NOK10. Currently, Mr. Woods holds 4,000 shares in the Company.
- **Exercise of share options in BXPL:** On 7th May 2011, BXPL's share option program has exercised a total number of 16,666 options. Following the share option exercise, the Board of Directors has resolved to increase the Company's share capital from NOK2,314,036 to NOK 2,316,119 by issuing 16,666 new shares at a par value NOK 0.125. The Company's share will increase to 18,528,955.
- **Acquisition of additional 25% of Calidus Engineering Ltd:** On 15<sup>th</sup> April 2011, BXPL announced that it has acquired additional 25% stake of its subsidiary Calidus Engineering Ltd for a consideration of £932,685. After the acquisition, BXPL holds 75% stake in Calidus. The acquisition model was agreed in 2007 and as per this model, BXPL would slowly acquire 100% stake in Calidus till 2013.
- **Badger Explorer tool update:** On 23<sup>rd</sup> February, 2011, BXPL announced that it has successfully performed the closed cavity test and demonstrated the Badger Explorer concept in full scale. These tests were conducted in Eastern Norway leading to the approval of Milestone 2 by all the three sponsors; ExxonMobil, Shell and Statoil. The Company is now preparing for the pre-commercial phase. During the fourth quarter 2010, BXPL focused on the identification of a proper local clay/shale test site for the completion of step one of Milestone 3 of the prototype phase. Milestone 3 consists of two different tasks drilling & compaction operations in a clay/shale formation and burial of the complete tool in open hole/formation at the test site at Brumunddal. Jig-based drilling tests in clay/shale have been conducted and will be followed by drilling and compaction operations with the complete Badger Explorer tool in a closed cavity. Mobilization for the Brumunddal test will take place mid March 2010. BXPL has in parallel continued the development and building work on the Demo125 pre-commercial version. Furthermore several meetings with the sponsoring partners (ExxonMobil, Shell and Statoil) and potential new sponsors to secure support and funds for the pre-commercial phase have taken place.
- **Steering Committee of the Badger Explorer Prototype Project Approved Test at Brumunddal:** The Steering committee (ExxonMobil, Shell and Statoil) have approved the results of drilling test performed at Brumunddal as Milestone 2 of the Prototype Development Project. The Steering Committee that is headed by ExxonMobil also approved the disbursement of funding in the amount of NOK4MM. The disbursement of funding is connected to having achieved Milestone 2.

### Listing and name information

BXPL is listed on the Oslo Stock Exchange (Ticker: BXPL, Date of Listing – June 2007)

### Contacts

Visiting address: Badger Explorer (BXPL), Forusskogen 1, 4033 Stavanger/Norway

New postal address: Badger Explorer ASA, P.b. 147, 4065 Stavanger

**Contact No.:** +47 52 97 45 00, **Email Id:** [post@bxpl.com](mailto:post@bxpl.com)

## 6. Management and Governance

The Management and Governance team is mainly composed of experienced professionals from the international Oil & Gas – Exploration and Production industry with extensive expertise in drilling and well technology. They also have expertise in finance and financial services sector, planning, strategy building and implementing, restructuring and managing large collaborative R&D projects.

**Table 10: Badger Explorer Management Team**

Name	Position	Experience (Years)	Past Experience	Qualifications
Mr. Marcus Hansson	Chairman	NA	He has extensive experience from the financial services sector as a Portfolio Manager and Stockbroker within Hedge Fund Sales. Currently he works as a business developer and London based investor. Previously, he has held a position as Portfolio Manager within the Proprietary Trading Department at Credit Suisse Europe LTD in London investing money for the Arbitrage Strategies group. For more than 10 years, he has also worked as a Stockbroker and Hedge Fund Sales for Carnegie Investment Bank, SEB Enskilda and Ohman Securities focusing on Long/Short strategies, Special Situations and Risk Arbitrage.	M.Sc. in Business Administration and Economics from the University of Stockholm
Mr. Kjell E. Drevdal	CEO	27	Has worked with NPD, Statoil, Conoco, Hitech, National Oilwell and recently was VP, Business Development of Prosafe Drilling Services AS. He has attended numerous schools within drilling and well technology as well as extensive leadership and management programmes across the world. He has broad experience of working at different positions in the E&P industry.	BSc. Petroleum Engineering
Mr. Gunnar Dolven	CFO	16	He has extensive management experience in the national and international finance sector. He has worked as a senior banker (CEO/COO positions). He has broad experience from long term board of director commitments. Present board positions include Calidus Engineering, Orion Securities AS and MalmOrstad AS.	MBA, MSc in Applied Mathematics
Mr. Kjell Markman	Sr. VP Business Development & Strategy	NA	He has extensive experience in management positions within several major oil companies as well as from large suppliers and service companies delivering goods and services to the Oil and Gas industry. He held senior management positions in companies like Baker Hughes Inteq, National Oilwell, Hitech and Statoil.	MSc in Mechanical Engineering

Mr. Erling Woods	CTO	NA	He has worked with IFE, SINTEF, Kongsberg Defence and Aerospace and Laerdal Medical. Has extensive experience from managing large collaborative R&D projects with participants from numerous institutions and spanning different cultures and geographical areas. He has participated in numerous technical and management courses, including the Solstrand management program.	MSc. in Cybernetics and Dr. Ing
Mr. Thor Arne Haland	Manager Quality, Risk, & Supply Chain	30	He has more than 30 years experience from the aviation industry and has mainly worked in the fields of maintenance and production as well as quality and safety. He held various Vice President Positions in Braathens and SAS Scandinavian Airlines Norge AS.	Mechanical Engineering degree at Stavanger Tekniske Fagskole, Stavanger, Norway in 1988
Mr. Wolfgang Mathis	Product Manager	NA	During his university education, Mr. Mathis studied for one year at the Norwegian University of Science and Technology (NTNU), Trondheim, Norway specializing in Drilling Engineering before finalizing his studies with his master project at Shell in Rijswijk, The Netherlands. In 2003, he joined the oil industry with TDE Thonhauser Data Engineering publishing several publications on drilling process optimization and obtaining his PhD in Drilling Engineering in 2007 whilst working full time. He joined Badger Explorer ASA in October 2007 after having worked on several projects around the world since 2003.	M.Sc. and a PhD in Petroleum Engineering from the University of Leoben, Austria



## 7. Technologies and Markets

### 7.1 Hydrocarbons <sup>xiii</sup>

Hydrocarbons are organic compounds consisting of hydrogen and carbon and are found in fossil fuels such as coal, petroleum/crude oil and natural gas. They are mostly found in crude oil. They can occur in various forms such as gases (methane and propane), liquids (hexane and benzene), waxes or low melting solids (paraffin wax and naphthalene) or polymers (polyethylene, polypropylene and polystyrene). Hydrocarbons in their liquid form are referred as petroleum and those in gaseous form are referred as Natural gas. In solid state, they form asphalt.

### 7.2 Exploration <sup>xiv</sup>

#### 7.2.1 Process

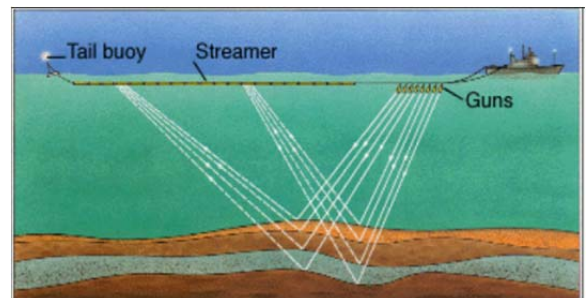
Exploration involves searching for hydrocarbons beneath the earth surface. This process needs sophisticated technology to detect and then determines the extent of hydrocarbons deposits. Initially, geologists use exploration geophysics methods to study the broad features of the sub-surface geology. Some of the geophysics methods used for exploration are gravity survey, magnetic survey, passive seismic or regional seismic reflections. These initial studies generate the lead (structure consisting of hydrocarbons) which is then subject to more detailed seismic surveys resulting in identifying a prospect which is prepared to be drilled. Drilling is the most important activity in hydrocarbons recovery. Explorations wells are then drilled to confirm the presence of hydrocarbons. This involves determining potential of the prospect for generating commercial quantities of economically producible oil and gas. After a well has been drilled, recording devices are lowered into the well to evaluate the rock and fluid properties. These devices are called logging tools and the findings are evaluated to help make future decisions about drilling operations. Drilling exploration also measures area and thickness of the reservoirs, measures permeability and porosity of the geological formation. Modern technology makes use of seismic imaging software and computers to interpret data more accurately.

### 7.3 Offshore Exploration



There are two types of exploration drilling: Onshore (Land) and Offshore (under water) drilling. Due to the remote locations and tougher environmental conditions, offshore exploration is more risky as compared to the onshore drilling. In addition, cost is higher due to remote location as well as use of sophisticated technology required for detection and identification of hydrocarbon presence. Further, there are two types in offshore exploration; shallow shelf oil wells (10-30MM) and deep water wells (+100MM). <sup>xv</sup> However, strong demand for hydrocarbons and restricted access to new opportunities is diverting the oil and gas companies towards offshore exploration.

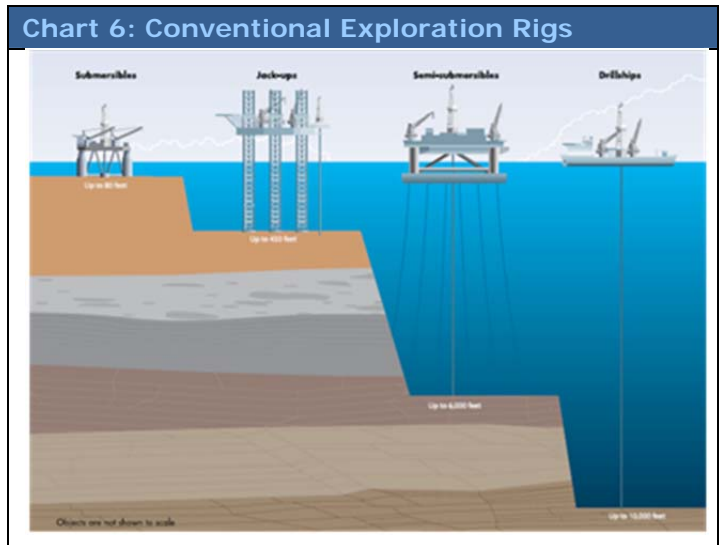
Offshore seismic exploration method uses a ship to transmit seismic waves. The process works by sending sound waves into the seafloor and measuring how long it takes for the rocks underneath to reflect the waves back to the surface. That time period can indicate the varying characteristics of the rocks. Seismic waves reflecting off dense rock layers will behave much differently than if they hit the porous materials. The seismic ship uses a large air gun that releases large burst of compressed air under water to generate seismic waves that travel through the earth's surface to generate seismic reflections. The surveys are conducted with pulses of sound sent from air-guns on a ship toward the bottom of the ocean. Hydrophones are used to record the echoes that bounce back.



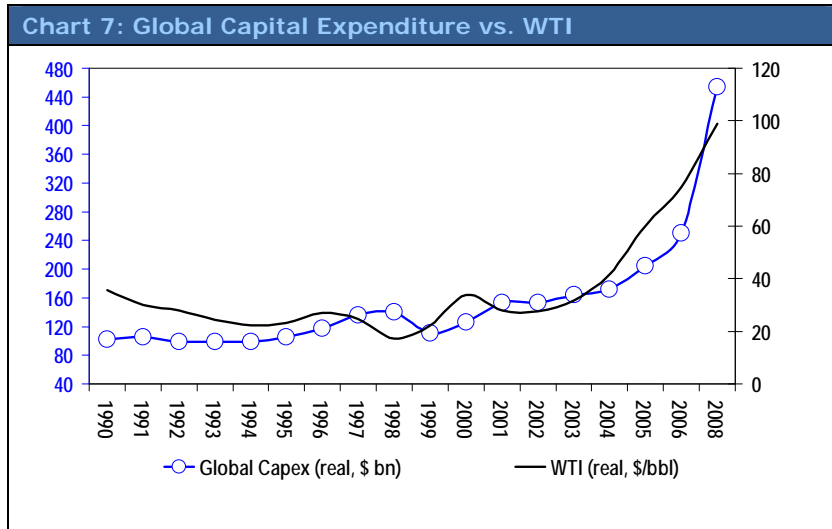
**7.3.1 Offshore Platforms**

Offshore drilling makes use of drilling rigs /platforms. Drilling rigs are machines which are used to drill holes/shafts in the earth's surface. An operational rig requires 1) a dependable power supply, 2) a hoisting system to lower or suspend the equipment in the well, 3) rotating system which consists of the drill bit required to cut the well bore and 4) the circulating system pumps to put fluids into the well bore to cool the drill bit, remove rock chips and control subsurface fluids. These drilling rigs can be of two types: Movable and Permanent.

Offshore drilling includes preparing an artificial drilling template to connect the underwater drilling site to the drilling platform. The template is installed in the floor of the water body by first excavating a shallow hole and then cementing the template into the hole. The template provides a stable guide for accurate drilling.



**7.3.2 Positive outlook for exploration in 2011**



Hydrocarbons are the primary source of world's energy. Global demand for energy is driven by population growth and higher economic growth especially from developing countries. Additionally, as onshore reserves deplete Oil and Gas Exploration and Production companies are increasing their capital expenditure for identifying and exploring new offshore locations, therefore making conditions favorable for BXPL. Higher crude oil prices are also making extraction of hydrocarbons economically viable. The chart shows the trend between the capital expenditure and crude oil prices. It is clearly evident from the chart that historically, increase in crude oil prices has triggered an increase in capital expenditure.<sup>xvi</sup>

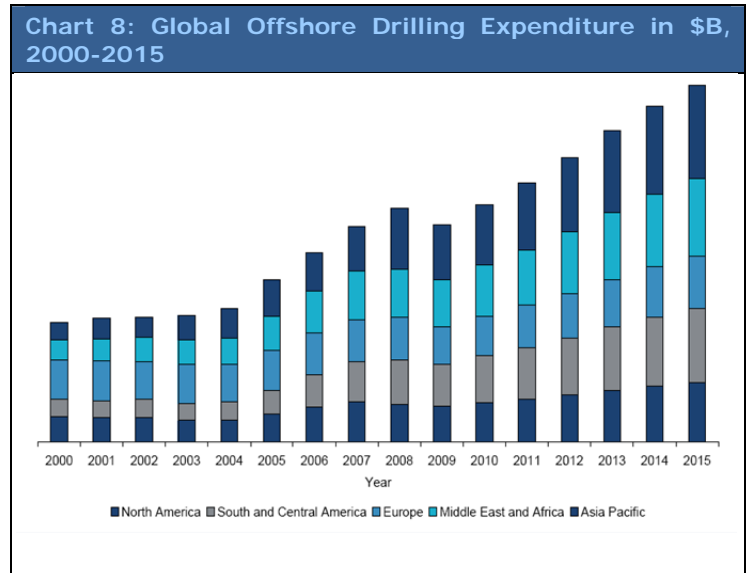
Global spending is expected to increase by 33% over 2010-2014 over 2005-2009, resulting in a total expenditure of \$387B.<sup>xvii</sup> The outlook for 2011<sup>xviii</sup> is quite positive, global capital expenditure is expected to increase by 15% over 2010. This growth is driven by National Oil Companies (NOC) and integrated companies that contribute 97% of the capital expenditure. High refining margins are encouraging industry players to increase their capital expenditure. Capital expenditure increased by 14% in 2010 over 2009, after an 18% Y-o-Y decline in 2009. However, exploration success depends on evolving new technologies that improve exploration process and reduce cost, risk and impact on environment while improving operational efficiency. Global drilling is expected to increase by 12% between the years 2010-2014 as compared to the 2005-2009 period.<sup>xix</sup>

**7.3.3 Shift towards offshore drilling**

As onshore reserves deplete, they will drive the need for increased spending on hydrocarbon exploration. Advanced technology is another important factor that is driving the shift towards offshore drilling. According to the International Energy Agency, roughly 30% of the 85MM barrels per day of oil consumed around the world come from offshore oil wells. It is expected that the percentage of global oil production from offshore wells will increase to 30.85% by 2015 from 29.97% in 2010.<sup>xx</sup>

The global offshore drilling expenditure is expected to increase to \$58.8B in 2010 and \$64.2B in 2011.<sup>xxi</sup> This growth is mainly driven by investments in Asia-Pacific. The availability of adequate Exploration & Production capital from national and integrated Oil and Gas companies is driving investments in offshore drilling activities. Better seismic & drilling technologies and depleting onshore reserves are the driving forces behind increased drilling activities in deepwater offshore regions, especially in the US Gulf of Mexico (USGOM), Brazil, West Africa and the Asia Pacific region. Deep water and subsalt reserve discoveries will further drive investments in the sector.

The global offshore drilling expenditure had shown an increase during the period from 2004 to 2008. According to GBI Research’s estimates, approximately \$350B was spent on offshore drilling from 2000 to 2008. The regions accounting for the major share of the spending were the US Gulf of Mexico (USGOM), West Africa, Brazil and Asia Pacific. However, there was decline in the spending in 2009 due to recession.<sup>xxii</sup>



**7.3.4 Increasing trend towards deep and ultra deep water exploration**

There has been an increasing trend towards deep and ultra deep water exploration. There have been huge deep water discoveries in various regions of the world, from Brazil, the USGOM to West Africa and the Asia Pacific region. Approximately 18,000 offshore wells were drilled globally over 2005-2009. The forecast is of a recovery in 2010, followed by consistently rising numbers up to 2013 to total over 20,000 wells over 2010-2015.<sup>xxiii</sup>

According to Datamonitor, around \$291B was spent in 2005-2009 on offshore drilling. Spend surged in 2005 to 2007 but rose only slightly in 2008 and declined in 2009.<sup>xxiv</sup>

Global spending on rigs had been increasing since 2004 both as a proportion of well costs related to increase in deep water drilling (where the rig costs comprise of a greater proportion of total costs) and due to inflationary effects. This increased spending in the offshore exploration is triggering a need for further more advanced technology such as the BXPL, which eliminates the need to use a rig for drilling.<sup>xxv</sup>

## 7.4 Norway – Rich in oil and natural gas reserves<sup>xxvi</sup>

Norway is rich in crude oil and gas resources and provides much of Europe's crude oil and natural gas needs. In 2009, Norway was the world's second largest exporter of natural gas and the sixth largest exporter of oil. It is the largest oil producer and exporter in Western Europe and the world's second largest exporter of natural gas after Russia. Norway's electricity supply comes from hydroelectric generation and it is an important regional exporter of electricity.

Norway's economy is highly dependent on its offshore Oil and Natural Gas sector, which provides the government with its largest single source of revenue and the largest contribution to GDP. According to the Norwegian Petroleum Directorate crude oil, natural gas, and pipeline transport services accounted for almost 50% of Norway's exports value, 22% of GDP, and 27% of government revenues in 2009.

According to Norwegian Petroleum Directorate (NPD)<sup>xxvii</sup>, oil production peaked in 2001 at 3.42MM barrels per day and has steadily declined to about 104.4MMm<sup>3</sup> per day (1.8MM barrels per day) in 2010. It is expected to drop further to 98.3MMm<sup>3</sup> in 2011 and 88.9MMm<sup>3</sup> by 2015. However, gas sales increased by 3% Y-o-Y to 105.6Bm<sup>3</sup> in 2010 and are expected to be 109.1Bm<sup>3</sup> in 2011 and 112.2Bm<sup>3</sup> in 2015.<sup>xxviii</sup> Natural gas production has been steadily increasing since 1993, reaching 3.65Tcf in 2009.<sup>xxix</sup>

According to The Oil and Gas Journal (OGJ), Norway had 6.68B barrels of proven oil reserves as of January 1, 2010, the largest oil reserves in Western Europe. All of Norway's oil reserves are located offshore on the Norwegian Continental Shelf (NCS), which is divided into three sections: the North Sea, the Norwegian Sea and the Barents Sea. The bulk of Norway's oil production occurs in the North Sea, with smaller amounts in the Norwegian Sea and new exploration and production activity occurring in the Barents Sea.

### 7.4.1 Natural Gas

According to The Oil and Gas Journal (OGJ), Norway had 81.7Tcf of proven natural gas reserves as of January 2010. Norway is expanding its exploration and development by increasing the number of wells drilled and using enhanced recovery in mature wells.

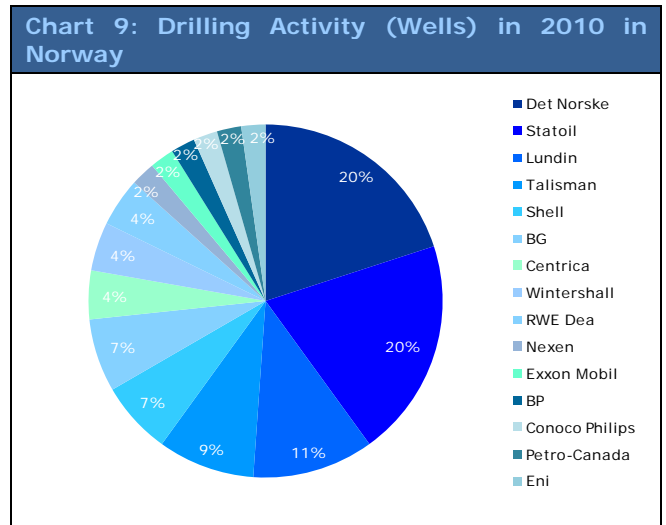
Norway has been increasing its production every year since 1994 to reach 3.65Tcf in 2009 and. Norway's single largest natural gas field is Troll, which is projected to produce 1.09Tcf in 2010, according to the Norway Petroleum Directorate, representing about one-third of Norway's total natural gas production. Other important fields include Ormen Lange (0.791Tcf), and Asgard (0.417Tcf). These three fields account for over 60% of Norway's total natural gas production. Despite the depletion of its major natural gas fields in the North Sea, Norway has been able to sustain annual increases in total natural gas production by incorporating new fields. As is the case with the oil sector, Statoil dominates natural gas production in Norway. A number of international oil and gas companies, including ExxonMobil, ConocoPhillips, Shell, and Eni have a sizable presence in the natural gas and oil sectors, working in partnership with Statoil.

Norway is the second-largest supplier of natural gas to the European Union, behind Russia. The largest recipients of Norway's natural gas pipeline exports in 2009 were Germany (1,062Bcf), the United Kingdom (837Bcf), and France (563Bcf).

**7.4.2 Investments in Norway**

According to the Norwegian Petroleum Directorate (NPD) <sup>xxx</sup>, the upstream investment (recovery and production of crude oil and natural gas) on the Norwegian shelf is expected to reach NOK150B (\$25.6B) in 2011 from NOK 130B (\$22.2B) in 2010 mainly because of some of the major new projects coming into action, such as Statoil's Gudrun and Valemon in the North Sea.

Of the 45 wells drilled in Norway in 2010, 35 were exploration wells and 10 were appraisals. 32 wells (71%) were drilled in the North Sea, 12 (27%) in the Norwegian Sea and one well (2%) in the Barents Sea. <sup>xxx</sup>



**7.4.3 Arctic Potential**



Approximately 13% of the world's undiscovered oil reserves, 30% of its undiscovered natural gas reserves, and 20% of its gas condensate, are within the polar circle. According to earlier estimations, up to 25% of the world's hydrocarbon fuels and much more of other rare and extremely sought-after mineral resources lie at the bottom of the Arctic Ocean. <sup>xxxii</sup>

According to Russia's natural resources ministry, Barents Sea has roughly 7.6B "tonnes of equivalent fuel" with Kara Sea in the east and the Laptev Sea expected to have higher reserves. This is equivalent to 39B barrels of oil or 6.6Tm<sup>3</sup> of gas. <sup>xxxiii</sup>

Norway and Russia are ready to exploit Arctic resources, which is now more accessible due to melting ice. Norway can now target areas to the east, after signing a maritime delimitation treaty with Russia in September 2010, settling a four-decade dispute (dispute over a 175,000 square kilometer block of the Barents Sea and Arctic Ocean). As per the treaty, Russia and Norway will observe another 15

years status quo as it was defined in the mid-1970s. This agreement will broaden cooperation in the energy sector, fishing and environmental protection. <sup>xxxiv</sup>

**7.4.4 Norway - Challenges**

Recently, Norwegian Petroleum Directorate (NPD) has slashed its undiscovered oil and gas resource estimate from 1.82Tm<sup>3</sup> in 2009 to 1.26Tm<sup>3</sup> in 2010. This decrease of 31% (570Bm<sup>3</sup> ~ six years of production of Norway) was mainly due the discovery of four dry drilled in Barents and Norwegian Sea and another two dry wells drilled in North Sea. <sup>xxxv</sup> This is a challenge for Norway as their reserves deplete. This emphasizes the need for opening new areas of exploration.

The prospective Lofoten region in the Arctic also remains closed due to environmental concerns and fishing interests. Disappointing exploration results and less encouraging seismic surveys are adding to Norway's concerns. Continued failure may increase pressure on the government to open up protected waters off the Lofoten and Vesteraalen islands in the Norwegian Sea.



## 8. Valuation

The Fair Market Value for all of BXPL shares stands between NOK1,970MM and NOK10,525MM as of 27<sup>th</sup> June 2011. The Fair Market Value for one of BXPL's publicly traded regular shares stands between NOK106 and NOK568 as of 14<sup>th</sup> June 2011. The valuation approach followed is the Discounted Cash Flow method.

### 8.1 Discounted Cash flow Method

Valuation	
<b>WACC</b>	
Risk-free rate	3.74% <sup>xxxvi</sup>
Beta	0.51 <sup>xxxvii</sup>
Market premium	16.6% <sup>xxxviii</sup>
Additional Risk Premium	0%
Cost of Equity	10.3%
Cost of Debt	3.5%
Terminal Growth Rate	1%

Figures are in thousands NOK, unless indicated otherwise.

#### KEY VARIABLES

Forecast for number of Badger Explorer tools sold per year	Price of each Badger Explorer tool	Technology Execution Risk Discounts %
Refer to <i>Key Variables Analysis</i> section	US\$10MM (Cons.) US\$18MM (Aggr.)	80% (Cons.) 70% (Aggr.)

Year beginning 1st July	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E
<b>FCFE (High)</b>									
Net cash from operating activities	(18,402)	(21,649)	32,175	182,745	408,848	813,341	1,130,890	1,319,442	1,510,103
Capital Expenditure	0	0	0	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)
Net Debt Addition	0	30,000	(1,500)	(3,000)	(4,500)	(6,000)	(7,500)	(7,500)	0
Free Cash Flow to Equity	(18,402)	8,351	30,675	176,745	401,348	804,341	1,120,390	1,308,942	1,507,103
Discount factor	0.91	0.83	0.76	0.69	0.63	0.58	0.53	0.48	0.44
Present Value of FCF	(16,790)	6,952	23,297	122,469	253,729	463,937	589,600	628,461	660,193
<b>FCFE (Low)</b>									
Net cash from operating activities	(18,402)	(21,649)	(7,095)	21,951	100,578	159,149	246,160	285,255	277,141
Capital Expenditure	0	0	0	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)
Net Debt Addition	0	30,000	(1,500)	(3,000)	(4,500)	(6,000)	(7,500)	(7,500)	0
Free Cash Flow to Equity	(18,402)	8,351	(8,595)	15,951	93,078	150,149	235,660	274,755	274,141
Discount factor	0.91	0.83	0.76	0.69	0.63	0.58	0.53	0.48	0.44
Present Value of FCF	(16,790)	6,952	(6,528)	11,052	58,843	86,605	124,015	131,918	120,088

Arrowhead Fair Value Bracket	High	Low
Terminal Value (TV)	17,689,475	3,217,698
Present Value of TV	7,748,948	1,409,526
Present value of FCF	2,731,848	516,157
Present Value of FCF + TV	10,480,795	1,925,682
Cash	(44,179)	(44,179)
<b>Equity Value Bracket</b>	<b>10,524,974</b>	<b>1,969,861</b>
Shares on issue (000's)	18,529	18,529
<b>Fair Share Value Bracket (NOK)</b>	<b>NOK 568</b>	<b>NOK 106</b>
Current Market price (NOK)	NOK 20	NOK 20
Current Market Cap. (NOK) MM	367	367
<b>Target Market Cap. Bracket (NOK) MM</b>	<b>10,525</b>	<b>1,970</b>

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### Approach for DCF Valuation

**Time Horizon:** The Arrowhead fair valuation for BXPL is based on a Discounted Cash Flow (DCF) method. The time period chosen for the valuation is 102 months (2011-2019).

**Terminal Value:** Terminal Value is estimated to depend on a terminal growth rate of 1%, representing an increase in the sale of Badger Explorer tools.

**Prudential nature of valuation:** It should be noted that this Arrowhead Fair Value Bracket estimate is a relatively prudential estimate, as it discounts the eventuality of any of BXPL's other projects and revenue from Badger Plasma.

**Key variables:** The upper and lower bounds in the estimation correspond to the extreme positions taken by the following key variables:

#### Variable 1 – Forecast for Badger Explorer tools produced

No of devices	2013	2014	2015	2016	2017	2018	2019
Low estimate	3	10	25	45	65	75	75
High estimate	3	15	40	70	95	110	125

#### Variable 2 – Badger Explorer Tool Price/Charge

USD\$ ('000)	2011 - 2019
Low estimate	10,000
High estimate	18,000

#### Variable 3 – Technological risk

Discounting factor	2011 - 2019
Low estimate	80%
High estimate	70%

Note: Refer the Key variable Section 4, for more details.

## 8.1 Relative Valuation

### Approach for Relative Valuation

BXPL provides equipment as well as the technology for rig less exploration. Since the technology is patented, the entry barriers are very high, which gives the company a competitive advantage over its peers. Due to the patented technology, the company does not have any close competitors. However, Arrowhead has identified some peers who provide similar services and equipments/rigs on contract basis for offshore exploration drilling. These peers also service clients who target the same geographic location; North Sea, Norwegian Sea or Arctic Sea as BXPL. The companies in the peer set have been selected based on following main criteria (1) companies providing exploration drilling equipments for offshore drilling on contract basis; and (2) companies whose end clients target the same geographic location for drilling as BXPL.

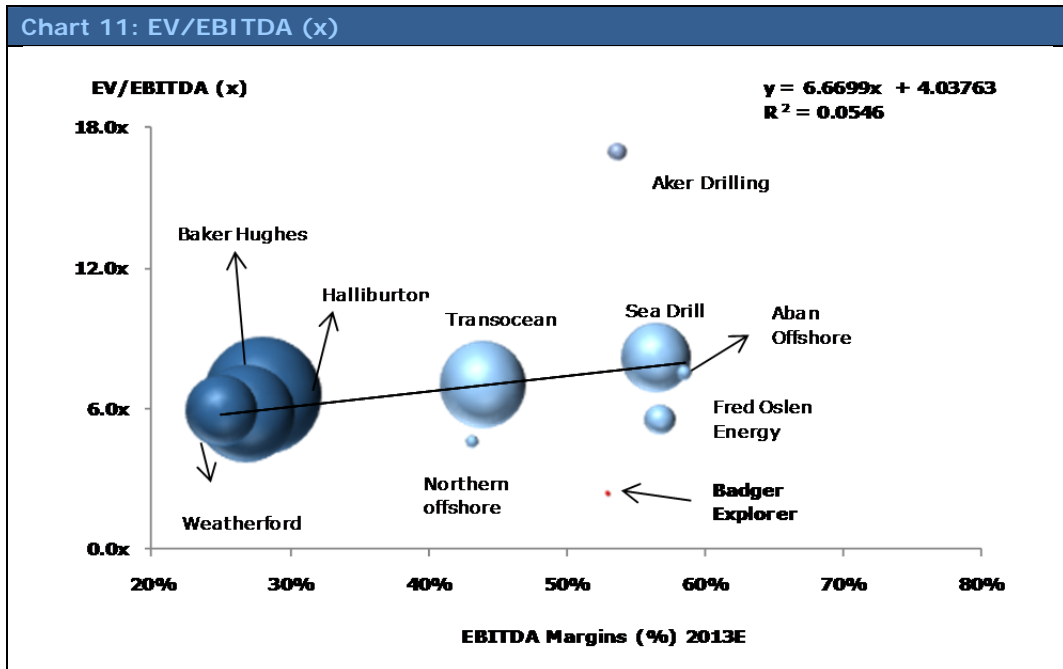
Currently, BXPL does not have any revenue from sale of Badger Explorer tool as the tool is still in the pre-commercial stage. Since BXPL's revenue is expected to flow in from 2013 onwards we have chosen to compare financial performance of Badger Explorer with financial estimates of its peers in 2013.

The table below gives the financial performance for the peers in 2013. For comparison purpose, we have chosen the aggressive scenario for Badger Explorer.

Comparable Companies (Peer Set) <sup>xi</sup>	Ticker	As on 31 <sup>st</sup> March 2011			2013E						
		Price	Mcap (NOK MM)	EV (NOK MM)	Revenue (NOK MM)	EBITDA (NOK MM)	EBITDA Margin (%)	EPS (NOK)	EV/EBITDA (x)	EV/Revenue (x)	P/E (x)
Halliburton	HAL US	\$49.8	251,721	262,176	142,645	39,868	28%	21.53	6.6x	1.8x	12.8x
Baker Hughes	BHI US	\$73.4	176,231	190,025	123,515	33,117	27%	31.01	5.8x	1.4x	12.6x
Weatherford International	WFT US	\$22.6	92,640	130,049	87,570	21,840	25%	11.23	5.9x	1.5x	10.8x
Transocean	RIG US	\$78.8	138,475	184,228	59,314	26,032	44%	37.96	7.0x	3.1x	11.6x
ABAN Offshore	ABAN IN	INR 643.3	3,465	20,173	4,388	2,571	59%	15.82	7.5x	4.6x	5.0x
Fred Olsen Energy	FOE NO	NOK 242.8	16,193	20,240	6,455	3,661	57%	34.83	5.5x	3.1x	6.9x
Northern Offshore	NOF NO	NOK 14.4	2,274	2,451	1,252	541	43%	1.83	4.6x	2.0x	8.0x
Seadrill	SDRL NO	NOK 200.7	88,662	137,322	29,399	16,613	57%	21.83	8.2x	4.7x	9.8x
AKER Drilling	AKD NO	NOK 20.1	5,678	18,417	2,027	1,088	54%	1.22	16.9x	9.1x	16.5x
Badger Explorer (Aggr.) <sup>xii</sup>	BXPL NO	NOK 21.5	398	360	286	150	53%	7.18	2.4x	1.3x	3.0x

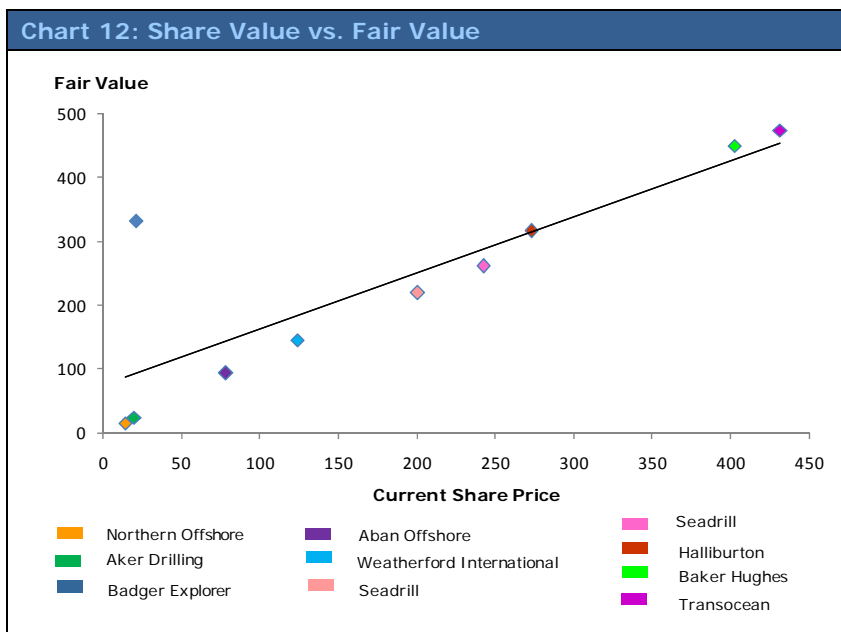
BXPL is trading at much lower multiples (EV/Revenue, EV/EBITDA and P/E) as compared to its peers, making it very attractive. The company's EBITDA margins are also expected to be more or less in line with its peers. High margins for Badger Explorer are expected to be driven by strong revenue growth coming from sale of Badger Explorer tool based on the demand arising from depleting onshore reserves and need for advanced rig less technology for offshore exploration.

**EV/EBITDA Analysis**



Based on the regression analysis, we observe that there is a positive correlation between EV/EBITDA and EBITDA margins. The coefficient of determination (R-square) is 5% indicating that there is a low degree of correlation between EV/EBITDA and EBITDA margins. Badger Explorer is expected to have EBITDA margins which would be more or less in line with its peers.

Arrowhead has used the aggressive scenario of BXPL for comparison purpose. It should be noted that companies highlighted in 'dark blue' represent companies who are in similar business as Badger Explorer but are diversified. Companies highlighted in 'light blue' are BXPL's close peers. BXPL is highlighted in 'red'.



The chart shows the potential growth in share price for BXPL and its peers. Arrowhead has assumed the aggressive scenario for comparison purpose.

Most of the peers lie close to the trend line. However, BXPL is an exception. This is due to the significantly higher growth potential as compared to its peers. This is mainly due to the competitive advantage gained by BXPL with its revolutionary technology, which makes it attractive among peers.

## **Important information on Arrowhead methodology**

The principles of the valuation methodology employed by Arrowhead BID are variable to a certain extent depending on the subsectors in which the research is conducted, but all Arrowhead valuation research possesses an underlying set of common principles and a generally common quantitative process.

With Arrowhead Commercial and Technical Due Diligence, Arrowhead extensively researches the fundamentals, assets and liabilities of a company, and builds solid estimates for revenue and expenditure over a coherently determined forecast period.

Elements of past performance, such as price/earning ratios, indicated as applicable, are present mainly for reference purposes. Still, elements of real-world past performance enter the valuation through their impact on the commercial and technical due diligence.

Elements of comparison, such as multiple analyses may be to some limited extent integrated in the valuation on a project-by-project or asset-by-asset basis. In the case of this BXPL report, there are no multiple analyses integrated in the valuation.

## **Arrowhead BID Fair Market Value Bracket**

The Arrowhead Fair Market Value is given as a bracket. This is based on quantitative key variable analysis, such as key price analysis for revenue and cost drivers or analysis and discounts on revenue estimates for projects, especially relevant to those projects estimated to provide revenue near the end of the chosen forecast period. Low and high estimates for key variables are produced as a tool for valuation.

In principle, an investor who is comfortable with the high-brackets of our key variable analysis will align with the high-bracket in the Arrowhead Fair Value Bracket, and likewise in terms of low estimates. The investor will also take into account the company intangibles – as presented in the first pages of this document in the analysis on strengths and weaknesses and on other essential company information. These intangibles serve as supplementary decision factors for adding or subtracting a premium in the investor's own analysis.

The bracket should be understood as a tool provided by Arrowhead BID for the reader of this report and the reader should not solely rely on this information to make his decision on any particular security. The reader must also understand that on one hand, global capital markets contain inefficiencies, especially in terms of information, and that on the other hand, corporations and their commercial and technical positions evolve rapidly: this present edition of the Arrowhead valuation is for a short to medium-term alignment analysis (one to twelve months). The reader should refer to important disclosures on page 27 of this report.

## 9. Appendix

### BXPL's Financial Summary

Table 12: Financial Summary		<i>High Bracket estimates</i>									
<i>Year Ending- December</i>	2009A	2010A	2011E	2012E	2013E	2014E	2015E	2016E	2018E	2018E	2019E
Revenue (NOK 000)	8,881	11,531	16,566	17,394	107,364	464,312	1,207,376	2,098,957	2,842,056	3,288,173	3,734,308
Revenue Growth (%)	66%	30%	44%	5%	517%	332%	160%	74%	35%	16%	14%
Gross Margin	70%	73%	90%	95%	70%	65%	62%	61%	62%	63%	63%
EBITDA Margin	(178%)	(166%)	(126%)	(141%)	24%	49%	54%	55%	57%	57%	58%
Net Profit Margin	(126%)	(169%)	(118%)	(137%)	25%	39%	34%	39%	40%	40%	40%
ROA	(5%)	(9%)	(10%)	(12%)	13%	48%	52%	51%	42%	33%	27%
ROE	(6%)	(11%)	(12%)	(17%)	16%	52%	54%	52%	42%	33%	27%
Asset turnover	4%	6%	9%	9%	50%	123%	155%	133%	105%	82%	68%
Equity Capital turnover	4%	6%	10%	12%	64%	134%	160%	134%	106%	82%	68%
Price / Earnings ratio	(28.7x)	(17.5x)	(18.7x)	(15.3x)	13.5x	2.0x	0.9x	0.5x	0.3x	0.3x	0.2x
Debt / Equity	0.0x	0.0x	0.0x	0.2x	0.2x	0.1x	0.0x	0.0x	0.0x	0.0x	0.0x
EV/Revenue	37.0x	28.5x	19.8x	18.9x	3.1x	0.7x	0.3x	0.2x	0.1x	0.1x	0.1x
EV/EBITDA	(20.8x)	(17.2x)	(15.7x)	(13.4x)	12.8x	1.4x	0.5x	0.3x	0.2x	0.2x	0.2x

### BXPL's Financial Summary

Table 13: Financial Summary		<i>Low Bracket estimates</i>									
<i>Year Ending- December</i>	2009A	2010A	2011E	2012E	2013E	2014E	2015E	2016E	2018E	2018E	2019E
Revenue (NOK 000)	8,881	11,531	16,566	17,394	51,264	128,812	294,376	514,957	735,556	846,173	846,808
Revenue Growth (%)	66%	30%	44%	5%	195%	151%	129%	75%	43%	15%	0%
Gross Margin	70%	73%	90%	95%	70%	65%	62%	61%	62%	63%	63%
EBITDA Margin	(178%)	(166%)	(126%)	(141%)	(27%)	14%	35%	43%	47%	47%	46%
Net Profit Margin	(126%)	(169%)	(118%)	(137%)	(24%)	15%	33%	30%	33%	33%	32%
ROA	(5%)	(9%)	(10%)	(12%)	(7%)	10%	36%	37%	37%	30%	23%
ROE	(6%)	(11%)	(12%)	(17%)	(10%)	13%	40%	39%	38%	30%	23%
Asset turnover	4%	6%	9%	9%	29%	68%	108%	122%	112%	91%	70%
Equity Capital turnover	4%	6%	10%	12%	40%	88%	121%	129%	114%	91%	71%
Price / Earnings ratio	(28.7x)	(17.5x)	(18.7x)	(15.3x)	(30.2x)	19.1x	3.8x	2.4x	1.5x	1.3x	1.3x
Debt / Equity	0.0x	0.0x	0.0x	0.2x	0.2x	0.2x	0.1x	0.0x	0.0x	0.0x	0.0x
EV/Revenue	37.0x	28.5x	19.8x	18.9x	6.4x	2.6x	1.1x	0.6x	0.4x	0.4x	0.4x
EV/EBITDA	(20.8x)	(17.2x)	(15.7x)	(13.4x)	(24.2x)	18.0x	3.2x	1.5x	1.0x	0.8x	0.8x

**BXPL's Balance Sheet Forecast – High Estimates**

<b>Table 14: Consolidated Balance Sheet</b>		all figures in 000' NOK , unless stated differently <i>High Bracket estimates</i>									
<i>Year Ending December 31</i>	2009A	2010A	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E
Total current assets	146,587	56,965	33,527	31,766	44,827	199,738	593,921	1,391,911	2,506,781	3,810,867	5,314,106
Total Non-current assets	73,440	151,440	154,181	161,965	170,091	178,745	185,843	191,989	197,351	202,059	206,213
<b>TOTAL ASSETS</b>	<b>220,027</b>	<b>208,405</b>	<b>187,708</b>	<b>193,731</b>	<b>214,918</b>	<b>378,483</b>	<b>779,763</b>	<b>1,583,900</b>	<b>2,704,132</b>	<b>4,012,926</b>	<b>5,520,319</b>
Total current Liabilities	5,635	8,303	6,463	6,463	6,463	6,463	6,463	6,463	6,463	6,463	6,463
Total Non-current Liabilities	13,855	18,015	17,999	47,935	41,980	25,500	21,000	15,000	7,500	-	-
<b>TOTAL LIABILITIES</b>	<b>19,490</b>	<b>26,318</b>	<b>24,462</b>	<b>54,398</b>	<b>48,443</b>	<b>31,963</b>	<b>27,463</b>	<b>21,463</b>	<b>13,963</b>	<b>6,463</b>	<b>6,463</b>
Total Shareholder's Equity	200,537	182,087	163,246	139,333	166,474	346,520	752,301	1,562,437	2,690,169	4,006,463	5,513,856
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>220,027</b>	<b>208,405</b>	<b>187,708</b>	<b>193,731</b>	<b>214,918</b>	<b>378,483</b>	<b>779,764</b>	<b>1,583,900</b>	<b>2,704,132</b>	<b>4,012,926</b>	<b>5,520,319</b>

**BXPL's Balance Sheet Forecast – Low Estimates**

<b>Table 15: Consolidated Balance Sheet</b>		all figures in 000' NOK , unless stated differently <i>Low Bracket estimates</i>									
<i>Year Ending December 31</i>	2009A	2010A	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E
Total current assets	146,587	56,965	33,527	31,766	8,362	10,458	85,586	229,385	459,525	729,424	999,700
Total Non-current assets	73,440	151,440	154,181	161,965	170,091	178,745	185,843	191,989	197,351	202,059	206,213
<b>TOTAL ASSETS</b>	<b>220,027</b>	<b>208,405</b>	<b>187,708</b>	<b>193,731</b>	<b>178,453</b>	<b>189,203</b>	<b>271,429</b>	<b>421,374</b>	<b>656,876</b>	<b>931,483</b>	<b>1,205,913</b>
Total current Liabilities	5,635	8,303	6,463	6,463	6,463	6,463	6,463	6,463	6,463	6,463	6,463
Total Non-current Liabilities	13,855	18,015	17,999	47,935	44,785	36,285	21,000	15,000	7,500	-	-
<b>TOTAL LIABILITIES</b>	<b>19,490</b>	<b>26,318</b>	<b>24,462</b>	<b>54,398</b>	<b>51,248</b>	<b>42,748</b>	<b>27,463</b>	<b>21,463</b>	<b>13,963</b>	<b>6,463</b>	<b>6,463</b>
Total Shareholder's Equity	200,537	182,087	163,246	139,333	127,204	146,455	243,966	399,911	642,913	925,020	1,199,450
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>220,027</b>	<b>208,405</b>	<b>187,708</b>	<b>193,731</b>	<b>178,453</b>	<b>189,204</b>	<b>271,429</b>	<b>421,374</b>	<b>656,876</b>	<b>931,483</b>	<b>1,205,913</b>



## 10. Analyst Certifications and Important Disclosures

### Analyst certifications

I, Thomas Renaud, certify that all of the views expressed in this research report accurately reflect my personal views about the subject security and the subject company, based on the collection and analysis of public information and public company disclosures

I, Snehal Mahajan, certify that all of the views expressed in this research report accurately reflect my personal views about the subject security and the subject company, based on the collection and analysis of public information and public company disclosures

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## 11. Notes and References

- i Source: Bloomberg, June 24, 2011
- ii 52 weeks to June 24<sup>th</sup>, 2011. Source: Bloomberg, June 24, 2011
- iii 3 months to June 24<sup>th</sup>, 2011. Source: Bloomberg, June 24, 2011
- iv Arrowhead Business and Investment Decisions Fair Value Bracket – AFVBTM. See information on valuation on pages 20-24 of this report and important disclosures on page 27 of this report.
- v See *Key Variables* section of the report.
- vi Source: Badger Explorer’s Company websites, Annual and Quarterly reports
- vii Source: [http://en.wikipedia.org/wiki/Hydrocarbon\\_exploration](http://en.wikipedia.org/wiki/Hydrocarbon_exploration)
- viii Source: Quarterly Report, Q1 2011.
- ix All historical financial data is sourced from company filings and website
- x Arrowhead estimates
- xi Source: Arrowhead BID estimate
- xii Source: Badger Explorer corporate website – News section
- xiii Source: [http://en.wikipedia.org/wiki/Hydrocarbon\\_exploration](http://en.wikipedia.org/wiki/Hydrocarbon_exploration),
- xiv Source: <http://www.lrc.usace.army.mil/GrtLakes/OilGas/Chapter2.pdf>
- xv Source: [http://en.wikipedia.org/wiki/Hydrocarbon\\_exploration](http://en.wikipedia.org/wiki/Hydrocarbon_exploration)
- xvi Source: [www.shebacss.com/docs/events/energy/ep004.ppt](http://www.shebacss.com/docs/events/energy/ep004.ppt)
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- xxii Source: [http://www.investorideas.com/Research/PDFs/Offshore\\_Drilling.pdf](http://www.investorideas.com/Research/PDFs/Offshore_Drilling.pdf)
- xxiii Source: <http://about.datamonitor.com/media/archives/3803>
- xxiv Source: <http://about.datamonitor.com/media/archives/3803>
- xxv Source: <http://business.ezinemark.com/the-world-offshore-drilling-spend-forecast-2009-2013-market-research-report-31eec0fd86c.html>
- xxvi Source: [www.eia.doe.gov](http://www.eia.doe.gov) (Norway Country Analysis)
- xxvii Source: <http://peakoil.com/geology/norway-cuts-4-4-bln-barrels-from-oilgas-reserves/>
- xxviii Source: <http://peakoil.com/geology/norway-cuts-4-4-bln-barrels-from-oilgas-reserves/>
- xxix Source: <http://www.bloomberg.com/news/2010-12-02/norway-oil-gas-investments-to-reach-record-in-2011-update1-.html>
- xxx Source: [http://www.offshore-mag.com/index/article-display/9382271606/articles/offshore/volume-71/issue-2/departments/offshore-europe/development\\_brings\\_norway\\_short\\_term\\_gains.html](http://www.offshore-mag.com/index/article-display/9382271606/articles/offshore/volume-71/issue-2/departments/offshore-europe/development_brings_norway_short_term_gains.html)

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- xxxvi Source: Bloomberg, retrieved April 27, 2011
- xxxvii Source: The 0.51 beta used in the valuation is sourced from Bloomberg.
- xxxviii Source: Bloomberg
- xxxix Source: Bloomberg
- xl Source: Bloomberg
- xli Source: Arrowhead Estimates