

Ref: ARM-CORO-002/RdW:ce

8 November 2013

Secretary
Committee on the Northern Territory's Energy Future
GPO Box 3721
DARWIN NT 0801

Via email: contef@nt.gov.au

Subject: Submission to Committee on the Northern Territory's Energy Future – Inquiry Into Key Challenges And Opportunities

Dear Secretary

We refer to the call for submissions for the above inquiry. Armour Energy Limited (**Armour Energy**) wishes by this letter to respond to the call for submissions, with a focus on addressing the impact of cultural, economic, environmental, geographic, regulatory and other factors on the exploration, development and production of energy producing resources and the availability of developed resources for the domestic energy market.

Armour Energy Limited

Armour Energy is focused on the discovery and development of world class gas and associated liquid resources in an extensive and recently recognised hydrocarbon province in northern Australia. Currently, Armour Energy is focusing on the exploration of the McArthur, South Nicholson and Georgina Basins in the Northern Territory and Queensland for gas and associated petroleum liquids. This region has only recently had its shale gas and conventional gas potential identified by Armour Energy.

Armour Energy's permit areas are characterised by low population densities, cooperative stakeholders and aspects of the natural environment suited to the exploration and development of a future gas and liquids province. Armour places considerable importance on close liaison with traditional owners and all other stakeholders.

The domestic and global demand for gas, combined with the new shale extractive technologies and experienced personnel, provides Armour with an extraordinary opportunity to define and ultimately develop a new liquids rich gas province.

The Board of the Company includes four past Directors of Arrow Energy, and the same expansive approach to exploration and development that drove Arrow's evolution is planned for Armour Energy. The Company's technical team includes a range of industry experts and seasoned professionals who have been selected to support the Board and the CEO in the goal to build Armour Energy into a significant gas exploration and production company.

Further information regarding Armour Energy, its projects, management team and a copy of its Prospectus are available on the Company's website at www.armourenergy.com.au

Armour's operations in the Northern Territory

Armour Energy holds exploration licences and applications for exploration licences over approximately 133,000 km² in Queensland and the Northern Territory. The Company has been granted or is preferred tenderer for 15 Exploration Permits in the Northern Territory (Figure 1).

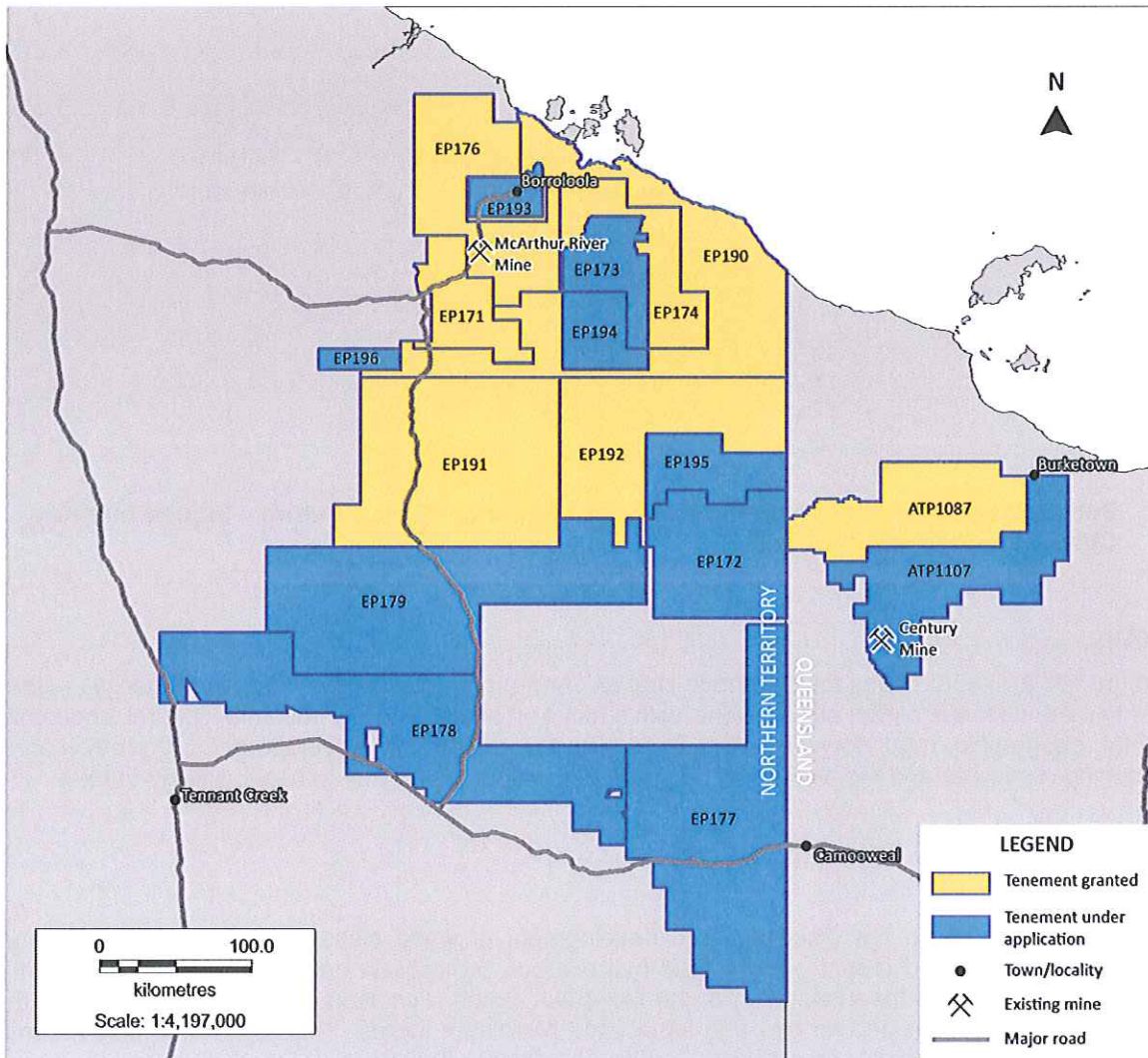


Figure 1 – Armour Energy's exploration permits in Northern Territory and Queensland

In 2012, Armour drilled the Cow Lagoon 1 vertical well in EP176 to a depth of 1804m and discovered gas flows and shows in the Lynott and Reward Formations. Gas influxes and flares were observed and continued from these formations up to 15 days after they were drilled. The Cow Lagoon Anticline is located within the Batten Trough, in the McArthur Basin, Northern Territory.

Armour subsequently made a significant gas discovery during the drilling of its Glyde 1 well in EP171 with gas flows and flares during drilling and a subsequent flow test confirming a flow of up to 3.3 million standard cubic feet per day (Figure 2). The gas was high in methane with negligible carbon dioxide, an important factor towards confirming an economic gas resource due to the lower processing costs required to remove carbon dioxide.

In April 2013, Armour Energy announced unrisked Mean Prospective Resources of 264.4 billion cubic feet (BCF) relating to twenty-three (23) targeted areas in the Coxco Dolomite of the Teena Formation, a conventional, free-flowing reservoir in the Batten Trough, McArthur Basin. This type of conventional gas accumulation was discovered by Armour Energy in the course of drilling the Glyde 1 ST1 lateral well in August 2012 and occurs within the porous and permeable dolomites and breccias of the Coxco Dolomite.



Figure 2 - Gas flare during testing at Glyde 1 in 2012

As with the Cow Lagoon 1, Glyde 1 and Glyde 1 ST1 wells, Armour Energy continues to gather extensive data to further substantiate the unconventional resource potential of the Barney Creek Shale Formation in the Northern Territory. Several studies are underway that will aid further targeting of a future lateral well with hydraulic stimulation in the Barney Creek Shale Formation.

The gas discovery at the Glyde 1 vertical well drilled in August 2012 substantiated MBA Petroleum Consultants' estimate of Mean Prospective Resources of 18.8 trillion cubic feet (TCF) in the Barney Creek Shale within EP 171 and EP 176.

Armour is currently undertaking its 2013 drilling campaign in the Northern Territory. The program commenced with the Myrtle Basin 1 vertical well which was drilled in EP176 just 5km to the south of the Daly Waters to McArthur River Pipeline to a depth of 861 metres penetrating the top of the Barney Creek Shale in the Myrtle Sub-basin of the McArthur Basin.

At the time of writing, the Company is drilling Lamont Pass 3 in the Company's EP190 and has encountered oil shows and background and connection gases at various intervals as well as penetrating live oil in fractures at a depth of 535 metres.

The Company's 2013 Northern Territory campaign has been designed to further evaluate:

1. Conventional gas accumulations within the Coxco Dolomite to potentially convert up to 264 BCF of Mean Prospective Resources to Contingent Resources from 23 identified prospects; and
2. The unconventional potential of the Barney Creek Shale Formation.

Armour's resource position within its Northern Territory exploration permits is as follows:

Conventional	Contingent Resource	Coxco Dolomite	2.4 Bcf 1C, 6.0 Bcf 2C, 10.3 Bcf 3C
Conventional	Prospective Resource	Coxco Dolomite	Mean 264.4 Bcf
Unconventional	Prospective Resource	Barney Creek Shale	Mean 18.8 Tcf 2.0bn bbl condensate

Relevant existing infrastructure

Amadeus Gas Pipeline

The Amadeus Gas Pipeline ("AGP") is the backbone of NT gas transmission network and transports gas from the offshore Blacktip project and the Amadeus Basin to demand centres throughout the Northern Territory. The AGP includes the Mereenie spur line, Tennant Creek and Katherine laterals and the Pine Creek outlet. The internal diameter is mainly 350 mm, with a maximum operating pressure of 9,600 kPa (apart from the 116 km Mereenie spur line which is a 250 mm pipeline and designed for 10,150 kPa).

Daly Waters to McArthur River Pipeline

The Daly Waters to McArthur River pipeline is connected to the AGP and traverses Armour's exploration permits. It was completed in 1995 and supplies gas for power generation to Xstrata's McArthur River mine. The pipeline has an internal diameter of 150mm and its maximum operating pressure is 10,200 kPa, although gas supplied at the Daly Waters inlet is generally around 9,000 kPa. The pipeline capacity is approximately 3.5 PJ/a and the length of the pipeline is approximately 330km.

McArthur River Mine

McArthur River Mine (MRM) is located within Armour Energy's exploration permits and is the Northern Territory's largest mine producing 360,000 tonnes per annum of zinc, lead and silver concentrate which is exported to Asian and European smelters. MRM's operations commenced in 1995 and its current gas demand is approximately 2.2 PJ/a (based on 18 MW base load demand). In August 2012, MRM announced a major expansion of its mining operations by doubling its concentrate output to 800,000 tonnes per annum from 1Q 2014. EDL is building a new power station to cater for the expansion and the forecast demand is estimated at 40 MW base load or approximately 3.5 PJ/a.

Gove Bauxite Mine and Alumina Refinery

Gove is located 650km east of Darwin in north east Arnhem Land on Aboriginal land. The operation is situated on extensive deposits of high grade bauxite, a burnished red ore with high aluminium oxide content. Gove is one of the largest private employers in the Northern Territory. Each year the operation spends more than \$300 million on local goods and suppliers and contributes more than \$500 million to the Northern Territory's Gross Regional Product. Gove's gas requirement is approximately 30 PJ/a. Gove currently uses low sulphur fuel oil for its generation and calcinations requirements. Rio Tinto's threat to shut down operations at Gove is well publicised. It is expected the mine will be unable to secure gas supply in the short term because of the lack of availability of large uncontracted gas reserves in the Northern Territory.

Energy supply opportunities for the Northern Territory

Armour Energy's operations in the Northern Territory are still at the exploration stage and subject to a number of uncertainties which the Company will seek to further evaluate over the next 2-3 years. However the results from drilling and other work carried out to date are very encouraging and indicate the potential for a very large gas resource which Armour Energy hopes will result in gas production in the region of 300 petajoules per annum in the future.

The Company will adopt a staged approach to commercialisation of this resource initially targeting the domestic Northern Territory market with smaller gas supply volumes and later either the development or expansion of LNG export projects and/or linking its projects to pipelines in Queensland for supply to east coast domestic and Gladstone based LNG export projects.

In June 2013, Armour Energy signed a Heads of Agreement with APA Group that includes new infrastructure and/or pipeline expansions from Armour Energy's Northern Territory permits to deliver gas to end markets in Queensland and elsewhere on the East Coast.

Specific gas supply opportunities for the Northern Territory that could be serviced from Armour Energy's projects in the future are:

- (a) gas for power generation to supply the local electricity market;
- (b) gas for the existing mines of Gove and McArthur River;
- (c) gas for a number of potential new mines in the Northern Territory (via a direct pipeline connected to the AGP) for onsite power generation; and
- (d) due to the lack of existing pipeline and electricity network infrastructure, a small scale Northern Territory CNG/LNG project could be an option for supply to few major mines.

Given the enormous potential for the development of the gas market in the Northern Territory, the related benefits for the Territory and its residents are substantial and include the following:

- (a) creation of large numbers of new jobs;
- (b) more jobs and increased incomes in disadvantaged regional areas;
- (c) hundreds of millions of dollars of payments to contractors and native title owners, many in regional areas;
- (d) substantial payments to landowners for access to their land; and
- (e) hundreds of millions of dollars in government revenue to support existing and new services for local communities.

Risks and recommendations for the Northern Territory Government

To secure this vision for Armour Energy and to achieve substantial growth of the gas industry in the Northern Territory (which will in turn create all of the related benefits for the Territory's residents and communities as outlined above), it is critical that a regulatory framework for the gas industry is implemented and managed in a manner that achieves a number of goals.

1. International competitiveness

The gas industry is operating in areas from which gas is becoming more expensive to produce and in a market which is becoming more integrated with international markets. Explorers and producers must therefore consider not only the local competitive environment but the international landscape as well. It has never been more important that the local industry maintain an absolute focus on minimising costs of production while at the same time operating in a safe and sustainable manner.

This international dimension can quite easily be incorporated into the Northern Territory's existing legislation and regulations. Currently, "good oilfield practice" is the legal benchmark for a variety of petroleum-related activities and operations in the Northern Territory; however the term is not referenced to local, domestic or international standards. A reference to international standards should be included in the definition of "good oilfield practice" to ensure operators within the Northern Territory are meeting (or even exceeding) 'best practice' on an international level.

To allow operators to do so however, the Northern Territory has to afford a level of discretion to operators. The remainder of this submission highlights this point.

2. Outcome focussed

Armour Energy's exploration permits in the Northern Territory border authorities to prospect in Queensland. Armour Energy is therefore operating in two fundamentally different regulatory environments for permits which neighbour each other, separated only by the Northern Territory/Queensland border.

Armour Energy's experience to date is that the Northern Territory regulations are very prescriptive. By way of contrast, the Queensland and South Australian departments have implemented:

- (a) clear guidelines which are based on outcomes and which delegate to the operator the authority and responsibility;
 - a. By way of example, the applicable legislation, Permit document and Environmental Authority impose strict terms and conditions on operations. The Operator is however free to operate in

whichever way it thinks most appropriate, so long as such operations comply with the requirements imposed by the legislation, Permit document and Environmental Authority.

- (b) electronic filing systems of standard forms with interlinking requirements to landholder notification;
 - a. For example, an Operator is required to notify of an intention to drill a well and provide details of that proposed well. That notification is then lodged online and subsequently served on landowners and occupiers at least 10 business days before the drilling of the well commences. There is no approval process for the drilling of the well – it is instead the Operator's responsibility to ensure that the well and the well design complies with all applicable laws, regulations, the terms and conditions of the permit and the Environmental Authority.
- (c) specified conditions that trigger informing the department; and
- (d) a clear framework that is auditable and puts the responsibility on the operator for self-governance within that compliance framework.

The Northern Territory framework, which is not unlike that of Western Australia, may be a result of the Government's previous experience with offshore gas projects where detailed programming and extensive change of scope requirements are implemented in that environment based on overlapping marine operations and highly sensitive environmental operating conditions. Further, the Northern Territory Department Mines of Energy (NTDME) has also stated that onshore petroleum exploration operations have previously left wells in an unsatisfactory condition and companies have departed or become insolvent before completing their rehabilitation obligations and regulations which are very prescriptive are seen as preventing this re-occurring.

Amour Energy recognises the goals of the NTDME are valid in this regard, but the Company notes the ability of experienced operators to manage their operations in accordance with good oilfield practice. The challenge with the current regulatory framework is largely a problem related to exploration operations in relatively unknown areas. Most difficulties have occurred in real time when informing the NTDME of minor variations to approved field programs. This has proved challenging and has created unnecessary operating inefficiencies and delays without tangible benefits (and often unavoidable costs associated with same).

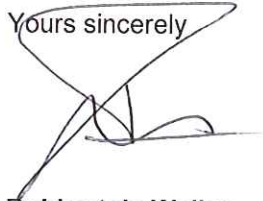
Armour Energy recommends that the Northern Territory develop models which take into consideration the practical considerations of the onshore oil and gas industry, which is quite different to offshore, and create obligations for the operator to remain compliant within the boundaries of their own rigorous risk assessment processes or suffer serious consequences for lack of compliance.

As outlined above, a good example of this can be seen in Queensland, where some of the toughest regulations, frameworks and approval conditions for resource projects have been imposed. Such regulations ensure that Operators deliver safe operations, high standards of environmental protection, protection of water supplies and farming land and providing fair conditions for landholders. These regulations have been imposed whilst facilitating rapid growth in the onshore petroleum industry.

We recommend the Northern Territory Government seriously consider a similar framework and also investigates examples from overseas (eg United Kingdom). Companies such as Armour Energy continuously evaluate and prioritise where capital is to be spent. In this context it is important that the Northern Territory provides an attractive regulatory environment that incentivises investment and minimizes red and green tape, whilst ensuring proper controls are in place to protect the environment, cultural heritage and concerns of other key stakeholders.

The regulatory environment for the gas industry in the Northern Territory must set a framework that facilitates the achievement of these goals or risk a failure for the industry to develop to its full potential or at all. The Northern Territory Government must focus on getting the balance right between growing a world-class gas industry, protecting the environment and delivering opportunities to Northern Territory residents, through an attractive regulatory environment.

Yours sincerely

A handwritten signature in black ink, appearing to read "Robbert de Weijer", written over a horizontal line.

Robbert de Weijer
Chief Executive Officer

