Government of South Australia
Department for Manufacturing, Innovation, Trade, Resources and Energy

Roundtable for Unconventional Gas Projects in South Australia

Exhibition Hall, National Wine Centre

Thursday 14 and Friday 15 March 2013 Minutes

Contents

Roundtable for Unconventional Gas Projects in South Australia

Exhibition Hall, National Wine Centre

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Reference Guide for Minutes

Abbreviation	Full Name	Company
AB	Andrew Buffin	Baker Hughes
AD	Anne Daw	Individual
AF	Andrew Freeman	Santos
AG	Akos Gyarmathy	BP Asia Pacific Region
ASP		Australian School of Petroleum
AT	Andrew Taylor	APPEA
BG	Barry Goldstein	DMITRE
BM	Brett Macdonald	Santos
BP		British Petroleum
BR	Brett Rowe	Toll Group
BW	Bill Waterhouse	Strike Energy (Consultant)
CS	Craig Stallon	Santos
CT	Christopher Thompson	Strike Energy
DB	Dion Baggio	Halliburton
DC	Dave Cockshell	DMITRE
DD	Denis Dare	DL Dare and Associates
DH	Don Hogben	DPTI
DM	Daniel Marcano	Saxon Energy Services
DP	Dominic Pepicelli	DMITRE
DS	Denis Sweeney	Schlumberger
DW	Dale Wenham	DMITRE
EA	Elinor Alexander	DMITRE
GB	Gene Baranowski	BP Asia Pacific Region
GC	Geoff Croker	Individual
HAK	Hani Abul Khair	Australian School of Petroleum
IM	Iain McDougall	Barker Wentworth
Jason M	Jason Medd	WA Government
JB	John Barker	DEWNR

JEF	John Ellice Flint	Blue Energy
John M	John Martin	Docklands Science Park
KC	Kate Callaghan	Chevron Australia
KD	Ken Dean	Chevron
MH	Martin Hawthorn	Qld Government
MM	Michael Malavazos	DMITRE
MMc	Mary McGowen	Halliburton
MP	Mark Pitkin	Beach Energy
MS	Mary Seely	Ashurst Australia
NP	Nick Panagopoulos	DMITRE
NW	Nick Wirubov	Intersuisse
PC	Phil Cole	Senex Energy
PG	Paul Goiak	DMITRE
RH	Robbie Heaven	Fox Tucker Lawyers
SB	Steve Begg	Australian School of Petroleum
SG	Simon Gramp	DMITRE
SM	Susan Mallan	Senex Energy
Tavis K	Tavis Kleinig	SA Environment Protection Authority (EPA)
TG	Tino Gulglielmo	Ambassador Oil and Gas
Tim K	Tim Kelly	Conservation Council SA
TW	Tim Wyatt	Senex Energy

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Minutes

Attendees: See attached attendee register

Apologies: See attached apologies listing

Minutes: Yolanda López (DMITRE); Elke Goddard (DMITRE)

Breakout Session 1: Investment Attraction – *Paper #2*

Discussion commenced: 10.55am

Discussion Leaders: David Cockshell (DMITRE) and Elinor Alexander (DMITRE)

1. Implement fit-for-purpose terms (in years) and conditions for exploration, retention and production licenses.

On Tuesday 12 March 2013 Cabinet signed off on a new regulation (implemented today) under the Petroleum Act which created a change to licenses regarding spec. surveys – this is relevant to industry and community.

John M: We need to look at the science of what shall be done more responsibly to solve problems

DC: Investment return – due to confidentiality restrictions, spec. survey results are confidential for a period from 8 – 15 years. Therefore, recently, no one has appeared interested in obtaining certain licenses. We need to make this viable for particular exercises as returns to shareholders is the key outcome.

The total time needed to make changes to the spec. survey process would be approximately 6 – 8 months. We would need to look at a list of 40 / 50 different aspects within the Act that relate to regulation, the result would depend on the outcomes from conversations with industry.

EA: Acreage management – exploration retention in exploration licenses – 5 year terms for each license – if the discoveries are economic.

Due to the technical and economical challenges with retention licenses, a longer term is sought.

EA: The Cooper Basin has recently had expiry of long standing licenses. As companies are exploring they are beginning to drop licenses but now seeing the unconventional potential of the basin, **Elinor would like people's views on acreage management**. EA asked the following questions to be considered:

- How do you get people the tenure and economic incentive in order for people to produce?
- How do we manage acreage within SA? Do we turn over to longer held licenses?

Companies need 3 TCF to justify liquefaction in order to put in pipelines. This is when looking at sandstone above the shale as this is where the gas is (where companies are looking). Where would be the end point location for this pipe, Whyalla? Also, how do we get there? Currently the acreage is owned by multiple people, we need them to talk or have a few major players come together. The pipes would have to be quite large which incurs cost plus plant costs etc.

DC: We need joint venturing of joint ventures – downstream supply and deliverability.

??: Currently, to get this done, companies are getting other people to move in. In Queensland PetroChina were able to provide the cheapest pipeline.

EA: The Moomba to Adelaide pipeline (the infrastructure) is owned by a third party. The market will need to operate

?? : A $300m pipeline can be built by the Chinese for $80m, from a shareholders point of view it would be an easy decision. Possible action item would be how to get the financiers together. The Queensland state government failed, SA needs to do better.

Australia needs to make the cost per metre more competitive, we need to top handle the difficulty regarding natural gas.

How do the financiers get together with regards to the competitors? Industry is not going to finance until you actually talk to each other. Should this be the Government's responsibility to facilitate? Should the government get into a free market?

People know what is in the basin and will be looking / talking about sandstone, tight gas and shale.

After the initial steps are taken, **then the financiers need to get the money to the companies.** Will this cause any implication to the license tenure?

How do you write a feasible study when 5 years is too short? Perhaps 30 years would be more beneficial / practical.

JEF: Actual recovery per area is in the mature phase of the license. We need to get around the postage stamp size areas and work out how we get recovery from the small areas as well?

Lead up period includes many wells therefore can we increase the Cooper Basin's productivity to 10BCF? Attract investors to combine the smaller sized areas and take the next steps. We need a longer license time in order to stop people land banking and to get enough acreage.

Manage the banking side of things – at the moment retention licenses are 5 years. In order to get around this issue, fallow acreage may be a solution. Move to a retention license with a work program in order to monetise it.

With regard to the smaller areas in the key parts of the basin, should we handle these areas differently?

JEF: All should be based on recovery factor.

Cooper basin is managed by competitive tenure programs.

Mechanisms are in place – longer term retention license we will need a work program – don't want it lying fallow re getting pipelines.

AG: Domestic gas obligations – Are there or are there not domestic gas obligations in SA?

EA: Currently unaware of any moves in SA, would say at this stage there aren't.

In SA we favour a free market, Government could set up a good regulatory framework and the free market will operate.

AG: Supports this decision – it's very encouraging.

??: See SA as a market – hard to bring that in to SA with stakeholders.

DC: Security and supply – there are key community expectation such as gas being available. There have been issues where supply has not been met.

JEF: Set more easements for pipelines across the states, people know the costs for building and this drives competition.

EA: Pipeline license – you can take out the preliminary pipeline license as there is licensing framework to do this. Then, look at the tenement map, there have been companies taken out of survey licenses to determine a corridor (whether a pipeline would be needed).

JEF: Two companies only end up owning, this is not very competitive.

??: If people think the pipelines are becoming uncompetitive then it can be regulated.

BG: On a Federal level, there are a number of pipelines where the contracting is seen as an impediment.

Number of pipelines headroom contracted but not used. Bulletin Boards are being set up – anti competitive behavior will need to be looked at by Government. Australia's total lack of gas storage buffer can be seen as an impediment. Gas storage is part of the pipeline in Canada. Need third party gas storage, Australia hasn't the market for that. Our market is too small.

Third party gas storage licenses created, post 2009 could not become a third party operator with Gas Storage License.

If you were able to get third party gas storage who would then pay a tariff for pipeline use it may be possible but at this stage we don't have a big enough market.

BG: There is a need for third party gas storage licenses.

??: Any licenses begun since 2009 – they must have a gas storage license – this will evolve over time.

JEF: The key role of Government is to implement infrastructure.

BG: The deed determines certain easements are not public. There is no clarity of the rules of easement, however this is currently being investigated. We will find out this info as why should people need to reinvent the rigmarole, the generic issues become transparent.

Action item: Deed to determine easement for transport not public – no transparency.

JEF: Fibre optic cabling is now available throughout the state and available by the people. We must have this line along with the pipelines, we shouldn't have to get another license for this.

TG: (*Currently the Chair of Infrastructure Council of SA)*

Create infrastructure hubs. The Parsons Brinckerhoff study has been superseded. Deloitte have been commissioned to provide updated study. Have 5 main recommendations – The need to establish infrastructure hubs, the need to establish infrastructure corridors for rail, community, electricity, pipelines.

We need to assist miners. Need to translate desire for these corridors and integrate with recommendations. The study is available on the DMITRE website (RESIC), including the forward work.

We need to translate this desire for these corridors and combine with current work for planning work and pre-approval.

CS: What will slow down the industry from being successful? Competitors? We regulate ourselves, we recreate equipment and all of this slows down resources in the industry. It also makes it more expensive to conduct business in Australia. What are the things stopping us from opening free trade for suppliers? How can we deliver what's required in a 5 year term? We need to get the economic advantage as well.

BG: How do we work with the Federal Government to create easy visas? Do we send Australians overseas to get experience, and vice versa, or do we have enough resources to train local people?

CS: We currently take over one year to mobilize a rig at the moment – why do we over regulate ourselves?

BG: Ministers from SA and Queensland are on the move to meet.

3. Implement R&D to predict fractures in reservoir targets from geophysical information

SB: The Australian School of Petroleum (ASP) has been developing a Geofrac project (geology shale) to high grade positions for drilling, looking at more productive spots and opportunities to improve productivity. The ASP is a diverse school covering all areas including the sciences to financial aspects.

HAK: We need to prove we have the resources directed towards the research. We currently have the resources for productivity but we need something directed at the School of Petroleum for hiring and to convert to an application for Unconventional Gas. Sometimes we lack when proving sweet spots (people and technology).

SB: This also relates to the supply of people **– it would be a good idea to make it attractive for a top name in the field from overseas (someone with a lot of experience from the US for example) to come over and educate.** However this person will need money to work with once here (to fund projects) and the salary to match.

Action item: Attract a top name academic from overseas.

TG: Senior executives from overseas stated that, 'the Unconventional resources business was still in an applied 'R&D phase.' We need to put in place an investment strategy whereby we sign operation agreements with key universities, specifically those who are doing all the research in the Unconventional field. Explore the idea of inviting visiting professors; get the ASP to tap into this avenue of education. Remember that the US doesn't believe they are at the R&D stage yet.

SB: ASP currently have informal relationships with international universities but still need to build / formalize these relationships. We need someone here to drive this project, ask ourselves, who should be taking this on?

JEF: Every university can't be the expert in every area. It is important that different faculties choose after all academia and industry need to work together and communicate in order to cover the different areas. There is a role for someone to work out how we formalize this situation – look at the best funded projects in Norway.

SB: We need to show what we are bringing to the table.

Action item: ASP to instigate meetings with Santos, Beach Energy etc.

DC: Referred people to the list of recommendations which link to the discussion points at hand.

XLIX (49): Drilling Subsidies (10-15%) Re-mobilization subsidies (trialed in WA)

DC mentioned the DMITRE PACE program which involves drilling where you wouldn't normally or applying a different method you would normally.

JEF: Has this been subsided for tax purposes? Remember companies need to make back what they spend.

NW: A current issue buried in Federal Parliament concerns the flow through for tax rebates for private individuals. Think about imputation credits / franking credits for shareholders – can they claim as a tax deduction?

EA: Referred to the Resource Industry Development Board which shares the concern that it will be hard to crack this issue.

TG: Suggested putting in more submissions.

JEF: This always stops at Treasury – no one wants to hear about it in Federal Government.

??: This item is holding back investment.

DC: There is a lot of input from mining but so far this issue has not gone anywhere.

In summary, the first topic / issue is regarding pipelines. The gas find depends on the distance of the pipeline. The pipeline needs to be integrated as part of where you are going to explore in order to get a bankable investment and the number of parties getting the pipeline in.

The role of Government regarding infrastructure corridors is important. Financiers aren't going to finance an over capacity pipeline, there needs to be a role in Government to support that.

Closed: 12.05pm

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Breakout Session 2: Investment Attraction – *Paper #2*

Discussion commenced: 1.10pm

Discussion Leaders: David Cockshell (DMITRE) and Elinor Alexander (DMITRE)

4. Enhance transparency, availability and sharing of data and information. For example – create a www.fracfocusAustralia.org

DC referred to associated recommendations and chose to discuss:

LXV (Best Practice Protocol)

??: Operators in Queensland, in the Bowan Basin, are currently sharing (indirectly) through certification to use neurology and data for adjoining permits. This is to gain resource in the individual's own permit – a good place where industry has implemented action in permits.

Providing Geological data on a current basis, currently there is a two year waiting period until the data becomes available.

JEF: If the next block has more wells then the one next door the state and both parties benefit but the data doesn't change until the two year period is complete. We need collaborative agreement sharing which should be fast-tracked throughout the nation.

Agreement between license holders, currently the operators don't see the data from the next door block therefore there is no competitive advantage (when you do see that data). It would be good for all parties to get a larger amount of data to base decisions on during the period.

Works well for Coal Seam Gas and Unconventional Tight Shale Gas but it doesn't stop at the permit boundary. We should extend the well data across borders as this would be a business opportunity for a third party.

JEF: This helps solve the postage stamp sized blocks.

DC: Keep in mind the Cooper Basin permit sizes are getting smaller.

HAK: Is there a way of getting the data out of the two years?

EA: You need to negotiate with the operator as they can provide the confidentiality agreement. Government cannot provide this data on behalf of the operator under the Act.

DC: A role for Government could be that we will know the technical data that we approve. We could be in the position to be a middle man in the discussion without providing confidential information. Let us know the area / issue you are interested in and Government will direct you to which company you need to speak to.

TG: Regarding the two year period – a suggestion would be to put out a newsletter, indicating when the data has now been made public. This would be vital data for the public campaign which is currently under embargo. This needs to be communicated to the industry as it comes in, not overlooked. Data needs to also make its way to ASP, specifically where the basin needs to be looked at.

Action item: Make available a newsletter, indicating when data has been made public.

DC: The newsletter could also alert research organisations and industry about which wells have become available.

EA: We could also get the Encounter-1 logs available for download, however, this may not be possible for all wells.

TG: We need to get a timeline available that clearly indicates the schedule for well completion reports. Add links to the report via the internet and collaborate how / what is going to happen with that information. This data should go into building a richer state but everyone needs to be aware.

The Government needs to understand where it sits. Is there a role for Government regarding the regional scene? Need to advise the Minister and the public about the resource including links with the ASP and Geofrac. Ensure we understand the resource and feed back this information to the large international investors in order to attract the global players.

TG: What our area does is provide an outstanding amount of data currently.

In 1999 / 2000 (in the Cooper Basin) the Government worked to provide regional seismic horizon maps. We have now made a conscious decision that, currently, there isn't much we can do at present to attract investment.

EA: Make packaging easier for industry – access to data releases excluding confidential information.

HAK: Masters Students may be able to make public their research. Government could direct people via their website.

Production data is confidential for 6 months. Formation tests and sales data is provided monthly and released every 6 months.

EA: We are conscious not to create a burden on companies in relation to submitting more data than what is required under the Act.

Investigate the use of the data required, specifically what is recorded.

JEF: Perhaps the data should be provided every month.

NP: How we want to distribute the data is up to the Government.

DC: Potential water use – all production comes to Government.

Extended production data, Unconventional in particular: measure, disclose and engage.

TG: There will be more data than people want to be able to get.

Unconventional is so new and the early production declines rapidly. For the first couple of years it will be critical to know on a monthly basis.

JEF: Obtaining samples re. the base lines

Action item: EA to speak with DMITRE Engineers re. the possibility of obtaining samples.

Item 5: Lift awareness of resources and reserve definitions and economics

DC referred to recommendation IV: *Bolster investor understanding of resources and reserve definitions*

This needs to start with some of the companies. CEOs repeatedly get confused between reserves and resources. Investors need a clear picture and understanding.

EA: ASX regulates offshore; afterwards, the media takes it over.

JEF: There is an ASX requirement but it needs to come from a certified reserve. Unsure how a roundtable can change it.

SB: Big debate at the moment is how the reserve is calculated at the moment.

DC: It is a question for relatively new Unconventional Gas section.

JEF: People aren't to know the amount of oil until it is acquired and now with new technology more is found.

This has nothing to do with the reporting. The problem arises when the enthusiastic CEOs give a presentation and reclassify 'reserves' and 'resources.' This is why we need to make sure a message is broadcast to ensure the definitions are clear.

TG: When talking about an Unconventional, part can go to the SPE guidelines, selected papers etc and these can be used as resources for people.

DMITRE should make a public resource online in order to educate the public. EA needs to be kept up to date, there should be a way for roundtable members to add suggestions and submit information.

Keep in mind, the companies looking to invest are public shareholders.

Look at Coal Seam Gas for example, when this started the numbers were so big people missed data. Unconventional is a shift regarding the flows and people who care about that are prepared to invest. It is different to geothermal.

HAK: DMITRE could put together an informative video about Unconventional in SA to be distributed to investors.

EA: This is something we can think about as far as public education goes.

DC: The ASX as well.

DC: Referred people to recommendations XXVI(26) and XXVII(27) – suggestions focusing on these two areas.

Each project is specific. Here's the economic rate generally, but certain projects fall under, there is no 'one size fits all' solution. There may be criteria for pipeline access, without putting a number on it, certain parameters are important.

SB: Can compare different portfolios.

TG: This recommendation is feasible in a general sense but there are multiple variables.

JEF: There aren't many other things you can do.

Regarding seismic production data, as blocks get smaller there are huge opportunities to get better quality data upfront. We can look at this tomorrow in the Rig session.

EA: It is the market place determines that determines this. It's not the same as regional TB guidelines.

RH: This doesn't need to be high priority. We need to lift awareness. The mechanics can be drafted in an easy to understand way. The ASX delivers an easy comprehensive talk for those struggling to understand the importance of it.

DC: Whether these are doable or not will be followed up.

JEF: Don't need to reinvent the wheel.

Information is available in the United States and Canada regarding hydraulic fracture 101s etc. We may need to simply provide links to the existing information.

6. Attract investment into exploration, development and production

DC: Referred to the corresponding recommendation:

Attract exploration / appraisal investment so widely and by so many independent Joint Ventures / companies so that supply-side competition keeps gas prices competitive

GB: How things in SA compare to other places who are struggling will immediately show. Australia has an advantage, we allow you to invest and play as a way to commercialise it however we don't put it together well enough to make it attractive enough.

EA: Within the Oceana region, the Fraser Institute Report doesn't give you the breakdown of the overall SA regime. We need to formalise this and use it as a promotional tool (get this upfront). We are underselling the fact that we are giving away data or selling it cheaply. Benchmarking and repackaging is the way to go as across the country there are some differences.

APPEA will champion to their members.

EA: We are trying to understand and build trends. Operators need to give feedback. We have pushed operators to get in contact with APPEA. The Minister and Premier need to get onto the implementation of the data.

People can contribute but the Government needs feedback to see how we're going.

MP: We need to give investors information regarding Unconventional Gas, in particular, here's the vehicle we can utilize. The idea is to get people to look at it and challenge it depending which way they are coming from. Nobody knows that the information is made public and available therefore it is important that people see how we work.

TG: Compile a list in a market cap or value in companies and ascertain level. Promote the fact that we have something of a global scale, investors will make money, and it's a good place to work, therefore, come and work with us.

DC: We currently do a focus view for SA but it may need to be more specific.

EA: Operators are trying to attract their partners to come in we need to make sure we have investor training in place in order to get the investing lined up and ready to go.

TG: We have an entire resource base and we need to keep a spotlight on it. Don't worry about what the resource covers only look at Unconventional.

SB: Supply of people – what is the desire for locally produced geoscientists and engineers? We need to think about how to produce / supply them, are free schools a possibility?

Closed: 2.10pm

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Breakout Session 3: Transport – *Paper #5*

Discussion commenced: 2.45pm

Discussion Leaders: David Cockshell (DMITRE) and Don Hogben (DPTI)

DC introduced Don Hogben. DH explained what DPTI does. DPTI wants to focus on outstanding matters.

DH introduced his colleague Martin Hawthorn (Queensland National Heavy Vehicle Regulator).

MH will be running business around access (access for equipment). Main focus is that the regulator is here for efficiency and effectiveness – effectiveness of productivity and safety, freight task and the asset which remains in the hand of the jurisdiction. MH will be working with DPTI.

1. Incrementally improve the resilience and width of road surfaces between fields, Moomba and supply depots from coasts.

BG: Government needs a joint venture of joint ventures. Operating companies and their service companies need to understand what their needs are and how road use is likely to evolve. In the next number of years these parties need to come together to spend less money in total to build, maintain and upgrade transport. Operate in an efficient way not to jeopardise safety after all, once we have an exemption for one it's for all. It comes down to the companies (including road haulage companies) to get together and clarify the tight spots, eg the conditions of the road etc. Government can help on the regulatory side but industry needs to help on the orchestrative side.

CS: For industry to move forward we need to solve their problems. Question to suppliers: at what point does it get to, before we need to invest in rail rather than just bitumen? Santos is not in a position to pull industry together to get assistance. We need a realistic action to deliver physical results. There needs to be understanding that should be signed up front as resource requirements may be a constraint.

BG: We will get our Minister (Hon. Tom Koutsantonis) together with Queensland counterparts before or at APPPEA to agree from the top down that we do want a line around the Cooper / Eromanga supply chain routes. BG will invite people to write an MOU or attend a meeting to put forth the fact that we need to make a commitment to rail or otherwise. What is it that you need to see to realise the cost sharing, be it tolls / tariffs?

Halliburton: Join industry projects to evaluate which direction to take. Come up with a plan for high power investment. Do we actually want so much up front (a toll option)? We need to make an action plan.

BG: If the traffic can be forecast there may be funding models that share this.

CS: There is the infrastructure and also the regulations once you're there but we must open up borders to new technology with regards to what is already required within Australia.

BG: We have The Office of the Technical Regulator (OTR) but we need a Queensland counterpart to ensure we have all the players.

BM: Don't forget width rules. ADR rules mean that rigs from USA needed to be redesigned at great cost.

BM: Battling with the 80 hours trade rules and surface size, Santos had to redesign the Saxon rigs and produce brand new equipment.

BG: They probably met the Australian standards but not the others.

Santos: The kits are normally on private roads or sitting and working, they don't get used in capital cities (perhaps only 5%) but they still need to comply.

MH: Under current federal law there are possibilities to provide exemption to certain rules. Under the legislation there is a means to facilitate what you are looking for, whether it be issues with moving the equipment, also the volume, number of trips and the infrastructure.

DH: Much of these topics are possible but specifically, where do you need to go? How much of it there is? How often? It's quite possible to compromise on standards eg. escorting etc. which is cheaper than wiring / rewiring. There needs to be an agreement as to how this would be done, specifically when the time frames are short and dependent on the size of it. Regarding width, there is no maximum, it's what the road can handle. We can make changes / improvements to the roads where needed but then there is a question of the dollar figure, some of it needs to be privately funded.

Road safety is a risk exercise. What is the frequency and likelihood when we talk risk and then the management of it?

Action item: Giving guidance on parameters on discretions. Discussion with key players is needed in order to find out what needs doing.

JEF: Numerous roads surfaced on the Queensland border. Here bridges are the issue rather than the width of the road. For example the bridge load bearing number, if there is an issue it holds up production and affects other areas.

Santos: Earlier productivity was limited to using doubles in SA. Now, productivity could increase if we use quads but we can't run the accommodation for certain train lines etc.

MH: Trying to improve on a national scale is important.

Santos: The state regulator should be able to solve this issue.

DH: The access decision stays with the state. There is an asset decision that needs to be made which would be helpful for DPTI at the operational end. What are the most important bits of this issue? Is it maximizing travel time? Need to stage investment, do this by ranking issues in order of importance.

Action item: DH to facilitate a forum and BG will accept email RSVPs.

BW: The state has ignored access to the gas fields and now we want to bitumise this road, how does the state ignore such a critical piece of infrastructure?

BG: The Minister did say that the supply of gas to eastern Australia (that of the Cooper Basin) and the future supply internationally was something that was not just SA's. Sydney was also depending on the infrastructure and SA was not in a position to solve these matters. BG's own view is that where there is a need Government can come in with some amount of financial support but everyone is part of the solution. We want to do everything we can to accelerate this position. Our Minister said that all issues can be brought to him directly.

DH: When we look at major infrastructure investments, cost sharing etc, the Commonwealth did reduce its share. It is always pushing us to look at funding ie the peninsula link and other models. Forget the past, look forward. There is a big investment and we will get what we can out of the Commonwealth but we need to be more creative about finding options.

JEF: Concerned about previously going broke.

BG: How new shareholders can get certainty of dividend can't be based on fiction. What if the state sponsored the debt? Investigate what state Government can do off of the basis of the forecast. This is real, this isn't a risk.

Toll: Increasing different supply chains to feed the area. There was an incident where a high vehicle was trapped in red tape, why couldn't it be moved faster? This didn't help with productivity.

MH: There are many benefits, not only about emissions and freight loads. The National Heavy Vehicle Law includes innovation in vehicle design. We match with road asset and safety criteria, look at productivity and standards, look at how we can work together to see how these vehicles can be more productive.

Toll: Reduce risk and emissions held up by bureaucracy. It's too hard for companies to do this.

BG: Request for all issues – productivity without detriment to safety.

DH: There are still process issues but there will be benefits when the matter reforms.

BW: Remembers rigs being stopped as they cross the Strezlecki track, Transport SA ordered them off the road.

DH: Would like details of this from Bill. DPTI don't need to be unnecessarily pedantic about safety but there is a fine line, people can't cut corners. If people experience issues they need to let us know, let us understand what needs to move and where. We can set up a framework to make sure this can be done with the minimum amount of red tape.

Santos: Pick up cement truck loads issues then work through the issues and demonstrate that we can resolve these issues quickly. Get this into place then solve the more complicated problems as they come along.

BG: Air transport out of the cooper basin?

BW: Santos has built and leased the infrastructure; it should not be Santos' responsibility to run aircrafts.

Santos: This concept should be extended further.

BG: One sponsored by operators, the other is a third party contractor who wants to be involved.

JEF: Senex supports the proposition, could Santos not manage infrastructure? Senex can work with them regarding alternate methods to moving people etc.

BG: There are a number of initiatives, land farms, water management etc. We should be getting this to other places to demonstrate sustainability.

Closed: 3.40pm

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Minutes

Attendees: See attached attendee register

Apologies: See attached apologies listing

Minutes: Allison Harris (DMITRE); Sonia Callisto (DMITRE)

Breakout Session 1: Environment – *Paper #4*

Discussion commenced: 10.45am

Discussion Leaders: Michael Malavazos (DMITRE), Michael Jarosz (DMITRE) and Dale Wenham (DMITRE)

4. Reduction of GHG Emissions

Tim K: Conservation Council SA (TK) – In relation to greenhouse gas emissions and environmental impacts more generally it appears that there is a minimum reporting requirement for industry, but high community expectations. Industry needs to make effort to be transparent in terms of reporting, data and commitments. As a solution, an opportunity exists for NGOs to develop guidelines (to sit alongside the DMITRE guidelines) 'earning a social licence to operate' which will give insight into what is expected by NGOs – the guidelines would not be mandatory or agreed; but it would be an opportunity for engagement.

Action item: **MM to distribute the Conservation Council's draft guidelines for outcome based environmental commitments.**

AF: Sought clarification of the issue - is it that the reports are not being done to an adequate level of detail or that the reports are not visible (i.e. because of confidentiality)? AF suspects that the reporting is done, but there is a confidentially issue which means it's not visible to the community. Need to be mindful that the reporting regime is not changed to get around a confidentiality issue. AF added he would not be keen to add more levels of reporting.

DD: It should be remembered that the greenhouse gas emissions from unconventional gas in the Cooper Basin, in order of magnitude, is: CO2 that is associated with the natural gas produced; fuel emissions used to get the gas out of the ground (drilling rigs, compressors, treatment); and fugitive emissions. Looking at fugitive emissions first is like starting from the wrong end.

Tim K: Confirmed he would like to see reports presented in forms more interpretable by the community, NGER data is not easily interpretable.

MM: In cases where it can be demonstrated that NGER is not capturing what it needs to, argument should be presented to change NGER. Furthermore, emission reporting can be addressed at the state level and local level as well.

Action Item: Discussions needed to justify why industry should go one step further than just the national reporting obligations.

1. Sustainable access to water & 2. Prevention of contamination

BW: Industry, particularly smaller operators, are already using gathering systems for co-produced water (used for mixing cement, drill water, cleaning). Co-produced water needs to be more freely accessible.

BG: Should we set up an out of session group to deal with operations - how to manage the logistics of water?

MM: Co-produced water is monitored and reported in DMITRE's Annual Compliance Report.

AD: The concern in relation to co-produced water is the brine/contaminates left behind in evaporation ponds.

MM: Studies show this is not the case – before rehabilitation occurs a detailed risk assessment (DRA), endorsed by the EPA, is conducted to establish appropriate level of rehabilitation required based on surrounding state of environment and land use and risks to that land use and environment. This is to ensure the area is restored to the same safe level as the surrounding environment prior to abandonment. There is a process in place to manage this recognised risk. This process may need to be communicated better to the community.

Tim K: The story of how water/brines/sludge is managed needs to be communicated better to the public.

DD: Are ponds rehabilitated? MM – Yes, the level of rehabilitation depending on the adjacent land use.

DB: Halliburton have been using above ground water storage containers; lowers the risk for contamination of land/groundwater.

DW: Advised that under the SEO process there are obligations to monitor ponds and to ensure they meet the standards.

Tavis K: The EPA also has a Waste Management Hierarchy that must be followed - recycling/reusing water as the higher goal, disposal as the final option.

John M: Suggested using an ion exchange method to treat water; this process treats the water so that it can be reused and it can be applied to large volumes of water. This process is becoming more economically sound.

MM: Water monitoring is outlined under the SEOs; base line monitoring is conducted on a risk based prescribed frequency basis.

Tim K: Raised concern in relation to the spread of Buffel Grass; it is a significant risk, both in terms of spreading and creating a fire risk. Operators must be proactive in identifying, containing and managing the risk.

MM: Advised that weed control is managed under the SEO process and Native Vegetation Legislation. Incidents in relation to declared weeds are treated as a Serious Incident.

JB: Added that weed control is one of the key issues dealt with by NRM Boards through SEO and EIR processes.

MM: Well Integrity has been identified as a big issue under the Golden Rules. Licensees are required to report to DMITRE quarterly well integrity monitoring. Where barriers are identified as compromised remedial work must be undertaken immediately. This is an ongoing process.

BG: A bigger effort needs to made to demonstrate that we are doing this work safely. Policy should not be based on perception; it should be based on evidence.

Action item: **BAG to raise greenhouse gas emission reporting issue at a national level; to breakdown NGER data so that it can be communicated more effectively.**

Closed: 12.10pm

Roundtable for Unconventional Gas Projects in South Australia

Exhibition Hall, National Wine Centre

Thursday, 14 March 2013

Minutes

Breakout Session 2: Environment – *Paper #4*

Discussion commenced: 13.05pm

Discussion Leaders: Michael Malavazos (DMITRE), Michael Jarosz (DMITRE) and Dale Wenham (DMITRE)

MS: What is the intention of Recommendation XIV – *Multiple Joint Ventures cooperate in basin-wide monitoring for environmental impacts (to reap economies of scale)*?

MM: There are many Basin-wide impacts that are better dealt with across the Basin as one, rather than individual companies doing their own monitoring.

Tim K: Supports this idea, as it is important to get the regional scale of information together to obtain baseline data.

MM: DMITRE is just about to put out a contract to tender to engage a consultant to look at the impact of burrow pits, it would be beneficial to do something similar in relation to flora and fauna. Licensees will be impacted because their areas will be scrutinised.

Tavis K: How will Recommendation XVIII – *Set a program for basin-wide, base-line, water resource characterisation* – be progressed?

MM: At this stage we do not have a collective agreement on how to best do it.

Action item: **Scope how Basin-wide, base-line water resource characterisation will be progressed.**

??: Is it worth trying to connect the dots with the shallower aquifers by doing a regional born EM?

??: Recommendation XXXIII – *Post activity audits can attest to the efficacy (or otherwise) of environmental protection plans*. There is no clarity in that statement about a continuous improvement process.

BG: The SEOs are the environmental protection plan. They are reviewed on 5 year cycles, which is an operator responsibility. Efficacy audits must be undertaken. It may be beneficial to redescribe the SEOs into something more fit for public consumption.

MM: The SEO is a list of objectives and assessment criteria. Operators need to make assessments against the SEO to see what they are achieving. Assessments against the SEO also prove whether the SEO is still relevant for new impacts. There is a need to improve on the assessment criteria, and objectives themselves, to ensure that the essence of the SEO has been captured. There is scope for improvement.

Tim K: It is important to encourage different viewpoints on SEOs, including NGOs and other 3rd parties, to ensure it is useful and relevant.

JB: There is a need to clarify land access and to look for ways to streamline it. Must seek a normalised, efficient, fair and transparent process for agreeing the terms for land access for all landowners, not just for the Right to negotiate and Indigenous Land Use Agreement processes.

BG: SA is the only jurisdiction that publishes the data on our website. It would be useful to create templates with the basic terms that could become part of the negotiation process, this would reduce red tape and legal fees and provide better transparency. This would require the willingness/ agreement from licensees and landowner.

Jason M: There is a role for farming groups to collaborate to come up with their own framework; it' is essentially a commercial negotiation, so the Government should not be involved.

AT: In WA, APPEA is working with farmers/landowners to develop a framework of how operators work with pastoralists. It has been found that the process has been more complex when dealing with traditional landowners due to complexities and specifics each group has.

??: XXII – *Use of co-produced water for drilling and fracture stimulation fluids*. Required cooperation with all of the Joint Ventures that are producing the water to co-fund the transport facilities to get the water where it's needed.

Tim K: XLIII – *Fund targeted environmental research in ways that build public trust in outputs* – would like to see a strategy developed around that. It is important that industry does not lead the science too much; the science should be providing guidance and helping all parties. It should involve more than industry funded research, independent research is required.

MM: Agreed, the scope of these research projects needs to be developed broadly, more than just between DMITRE and Licensees.

AD: As a landholder it is important that consultation is flagged with interested parties. It needs to be effective and engaged at the local level.

AF: XXVII – *Pad drilling to minimise footprint, capex and opex* – is this closely related to maximising resource recovery?

BG: Pad drilling is driven by economics as well as footprint. In terms of transparency, it may be useful to see this described in the SEO to demystify the issue.

AT: Who would you look to for independent science to validate research?

BG: DMITRE would look to DEWNR and other State Government colleagues with a particular expertise to advise.

Tim K: Federal Government has a role in working out how to get independently funded science. Scientific questions need to be able to be solved.

BG: Supports user pays research; industry should be funding the science, as it is not up to the Government to pay for.

BG: We should get hold of all inventory of all future mines; their power and water demands (which already exists) and make sure it's something we look at when looking at options for the supply of water and power to ensure opportunities don't get overlooked.

Action item: DMITRE to put this information up on the website.

Closed: 14.05pm

Roundtable for Unconventional Gas Projects in South Australia

Exhibition Hall, National Wine Centre

Thursday, 14 March 2013

Minutes

Breakout Session 3: Regulatory Framework – *Paper #3*

Discussion commenced: 14.25pm

Discussion Leaders: Michael Malavazos (DMITRE)

MM: Two key regulations came out of the previous Roundtable meetings – Recommendations 9 and 7. The recommendations are a reflection of what many of the stakeholders aspire to for a regulatory regime.

DMITRE has a close open and trustworthy relationship with its co-regulators, trying to reduce red tape by developing administrative arrangements and MOUs so that we work together as one Government.

An SEO is a regulatory instrument, which can be changed as conditions change – for example new threats/technologies etc. SEOs still require some improvements, which requires stakeholder engagement.

Operator assessments –DMITRE spend a lot of time dealing with individual companies to work out how good their systems are and how trustworthy they are in doing in what they say they are doing.

Reporting requirements – Annual Compliance Reports are provided against the SEOs; DMITRE is open to see how companies can better report their performance. The Report also includes what surveillance activities DMITRE carried out. DMITRE are unable to inspect every well site, this is determined by activity categories.

DD: Are many complaints made in relation to the Regulations?

MM: No, there are not many complaints, there are occasionally contestability issues. DMITRE are currently working through the 3rd review of the Regulations, and an issues paper will be released for consultation soon. The Productivity Commission scored DMITRE very highly due to the one-stop-shop view and co-regulatory approach which has resulted in reduced red tape.

??: Cross border relationships are a key failing of The Roadmap; interaction between states is not addressed.

MM: At a working level the relationship between states works well as they are all like minded when it comes to regulation.

AT: It would be helpful to make the conversations between states, at a policy level, more transparent.

Action item: DMITRE to commit to being an advocate for cross border interaction and administration.

EA: From a promotional perspective, SA's regulatory environment is part of the mix to attract investment in Australia. Making regulation more streamlined across the border may be beneficial for companies, but it does nothing to attract investment to SA.

??: While it is great for SA to have the best regulations, the ability to attract investment would be enhanced if States had similar regulations, because resources need to move across borders.

MM: For the most part, across border problems don't seem apparent, it generally runs pretty smoothly. Regulations in other states are fairly similar, the differences come in terms of how the regulations are administered. There needs to be a willingness from States to work together.

Recommendation I – *Foster consistent reporting of exploration, appraisal and development results* – no one was clear about what this recommendation refers to.

Action item: MM to discuss well integrity regulatory requirements with Anne Daw

Tavis K: In relation to confidentiality of fracking fluid ingredients – how is this handled by DMITRE. Does DMITRE receive full disclosure?

MM: DMITRE does get full disclosure, excluding proprietary components. This issue is being addressed at the Coal Seam Gas Working Group – NICNAS and CSIRO have been commissioned to find out the best way to deal with this and to determine the criteria to assess fracking fluid against. Disclosure is an interesting issue, some contractors are more willing than other reveal the content, because it can be a sensitive commercial issue. Ultimately it should be about what the effect the fluid has on the environment - containment is the focus of the SEO.

AT: WA has recently introduced a full disclosure policy, there has been some reluctance to use IP products because of patent protection, and not wanting the chemical components to be revealed. As a result of this some, companies are using chemicals that are older which are often lower in efficiency and higher concentration.

Closed: 15.25pm

Roundtable for Unconventional Gas Projects in South Australia

Exhibition Hall, National Wine Centre

Thursday, 14 March 2013

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Day One Final Discussion and Close

Discussion Leader: Barry Goldstein (DMITRE)

Barry Goldstein lead the closing discussion as follows:

Establishing joint ventures of joint ventures to look at water transport and inform regulation in terms of shifting equipment and other regulated activities within the field.

Regarding Joint Venture and transport, how do we demonstrate this to the public? What we say is what we do relative to fugitive emissions and other matters of public interest.

Open to all attendees, and each person is asked to emphasise items.

BW: Water, specifically collecting in central places:

- Cooper Creek and North
- Where the use is and where is practical
- Trends in Western Flank

PC: 125 recommendations

- Process to next stage
- Transport – rated 110?

BG: The ranking system will be superseded

- No. 2 idea we are going to run out of competence
- Spoken to Premier and Minister and key companies at APPEA. They will get together and meet with the intention of getting people to move to recovery places eg TAFE etc. This needs to be done within the next 12 to 18 months

Santos: Important to see action in the follow up. How do we facilitate this quickly?

- Email BAG and he will action ASAP

- Consultation needs to be open and transparent so nobody feels kept in the dark (no surprises)

BG: Our environmental objectives are about specific location and the time they start (a year before there's a focus on land), this then comes to be public consultation

- Conversations have been had including people who aren't in favour of these operations. The outcomes of the meeting were open and non-aggressive

Recommendations in red text are those discussed today.

Anyone who has additional recommendations please put them forth as this is a conversation which will continue.

Recap action items

- We will identify the fast-tracking that can be done
- Take on board the environmental concerns and our ability to maintain them

Closed: 4.12pm

Roundtable for Unconventional Gas Projects in South Australia

Exhibition Hall, National Wine Centre

Friday, 15 March 2013

Minutes

Attendees: See attached attendee register

Apologies: See attached apologies listing

Minutes: Yolanda López (DMITRE)

Introduction: Barry Goldstein opened with inviting attendees to take part in a brief opening discussion.

SG: Buses loose power with LNG therefore they can't handle the route – need dedicated engineering

AD: Data being accounted for
- Data re health from overseas
- Asking government to provide, inform policy

LNG for transport – micro LNG plants
- Get in touch with manufacturers
- Contract fuel price for years

AF: There should be LNG between Melbourne & Sydney

BG: This is a big issue for transport
- May go electric
- Savings per capita – cost per user will be less (production)

BR: Longer term unconventional, short term – lower unit costs for operators

BG: Problem with LNG – distance you can travel, emissions from diesel is better than LNG

GC: Water requirement is still unknown

BG: Clarified from Halliburton – understanding is 30 mega litres

- Enable people tenure
- Oil going up within 2 – 5 years
- Oil producers and gas producers work together re logistical issues
- If there needs to be more than 60 mega litres / day

GC: This is not enough per day

BG: Needs to be reused

Roundtable for Unconventional Gas Projects in South Australia

Exhibition Hall, National Wine Centre

Friday, 15 March 2013

Minutes

Attendees: See attached attendee register

Apologies: See attached apologies listing

Minutes: Allison Harris (DMITRE)

Breakout Session 1: Sharing Crews / Rigs – *Paper #6*

Discussion commenced: 9.40am

Discussion Leaders: David Cockshell (DMITRE) and Dominic Pepicelli (DMITRE)

1. What will make multi-client seismic surveys attractive to both venders and licence holders?

a. Number of years confidentiality

DC: New regulations under the Petroleum & Geothermal Energy Act come into operation today, which will increase the confidentiality period to 15 years.

KD: This change will have a significant impact on the number of surveys that will be shot and adds a huge amount of data to the data set.

??: Never seen it work well in more mature areas. It will only work if operators work together, to work out which zone they want to hone in on. The result will be a hybrid, different cable links, short hole depths. More seismic lines will be put into a very fragile environment, so we should be very careful of this development.

DC: One of the key issues is the commerciality. You need to get a return from spending multi millions of dollars on a seismic survey in order to make it viable. If it is not viable the surveys will not happen.

KD: They may not meet everyone's needs but they will set their parameters to be appropriate to the people that are going to buy the surveys.

DC: The benefit of increasing the confidentiality period is that it will result in a large set of consistent high quality data. A large part of the Cooper Basin is already covered by 3D surveys. There is a fine balance between what makes it commercial and what makes sense.

DS: Is the solution a group shoot rather than a multi client approach? There needs to be an effective way to cover vast amounts of acreage across multiple licences.

DC: Associated Activity Licences are available to expand out the survey area.

DS: The problem will exacerbate, you will need greater offsets, bigger surveys - data well outside your block for it to be useful.

KD: The unintended consequence is, as the block sizes get smaller, you'll be locking out smaller companies that cannot get access to the seismic surveys.

BW: Why isn't DMITRE the client, to on sell to prospective companies?

DC: The cost is substantive; Government does not have the budget to spend $10m to undertake one survey.

AD: Would thermal imaging be appropriate for some of this?

DC: There is a fair bit of thermal imaging around, satellite imagery of varying types. It is part of the toolkit.

2. What should be done to make efficient use of seismic crews?

DC: At the moment there are two seismic crews operating in the Cooper Basin, the possibility of several others is being mooted. For some years there's only been one crew. Competition can drive benefits to the explorers.

KD: The more crews the better. There needs to be a good work program available, currently programs are only discussed through scout meetings. Information sharing not as active as it once was, this needs improving. Seismic contactors need to know they can keep the crew for long periods. There is no continuity of work at the moment.

SM: The issue is about tenement security. It's not just the seismic crews, it is the ancillary activity (camp facilities, transport, work area clearances) that determines the time frames. It's a limiting factor.

KD: Do geophysicists get together regularly to share information?

DC: An action could be to set up a forum if one does not already exist?

SM: Information exchange is usually done informally. Who is the onus on to get continuity?

KD: One meeting would produce a lot of knowledge in terms of how to plan future activities.

DC: A timeframe chart would enable people to see where the slots are, but may be inhibited by a company's willingness to share that information.

Action item: Develop better scheduling coordination between companies.

3. What should be done to make efficient use of drilling rigs, work-over rigs and other types of rigs?

DP: The market will be the main driver of the efficient use of rigs.

BW: It should be up to the operators to talk to one another, which isn't happening a lot at the moment.

IM: Sharing Fitness For Purpose information would be beneficial. Currently, assessments are having to be re-done by each operator. A lot of time and money could be saved if the assessments didn't have to keep being repeated. It would also help DMITRE to manage the rigs to a certain standard.

DP: This is especially true with the increasing number of rigs coming in.

MM: Sharing FFP information is a commercial issue and should be left to the operators to sort out between themselves.

DP: DMITRE is attempting to make it more consistent by developing FFP guidelines. The guidelines are not prescriptive, but may help with the inconsistencies.

CT: The onus is on operators, because they have the duty of care and are the ones that are responsible. You should not rely on the rig contractors in this regard.

DC: It would be beneficial to come up with a Basin wide approach to sharing rigs.

SM: Senex and Beach have a good arrangement sharing information and crews, it is possible.

DB: Multi spread in the Basin at the moment, there have been the same crews in the Basin for several years. But there are still significant gaps in the drilling schedule. Crews can be stagnant for a 3rd of the year waiting for jobs. Better communication is needed - Perhaps something could be organised at the end of the Drillsearch conference?

Closed: 10.40am

Roundtable for Unconventional Gas Projects in South Australia

Exhibition Hall, National Wine Centre

Friday, 15 March 2013

Minutes

Breakout Session 1: Supply-chains – *Paper #7*

Discussion commenced: 9.40am

Discussion Leaders: Paul Goiak (DMITRE) and Barry Goldstein (DMITRE)

BG: Part of the challenge of a high cost country is getting the products competitive on an international basis. If we don't get productivity competitive there will be a consequence. We need to learn from past experience, start from the existing knowledge base. Supply chains need to be more than 'drive in drive out,' they need to be efficient. If companies can reveal what are their supply chain requirements people can compete with this and bring down cost. Early warning is good and we don't want to sand bag the perspective.

It may be good to make a Gantt chart that includes rig versus years (from Thursday's session). This is what we will be asking people to speak about this afternoon, trying to elucidate what is the supply chain. Questions:

How are we going to get the people / get an individual doing more than they are now regarding productivity? Facilitate people to acquire more skills.

??: Rather than just cooperate look for commitment to bring these people in. There is a resource shortage but we need to fill the initial stage, then people can be brought in by service companies but firstly a commitment needs to be made. From there develop cooperation to develop home grown resources.

BG: What is the hurdle service companies are facing that makes them unable to make the commitment? What do you they need to see?

??: Commitment shown by Chevron has stopped. To put down large amounts of money – that is the start of commitment.

BG: Knowing the cost for deliverability / LNG / investment we need more of the likes of Chevron coming in. We need to see the financial capacity of the players in a basin.

KC: There are different phases, currently those phases include:

- The exploration of play
- The development
- The construction
- Operations

There are different labor requirements for each phase. It's great the Government is thinking forward, they may even be getting a little ahead. Look at what we need for exploration plays etc and then build it up.

Action item: BG to provide chart with the different rigs with information.

BG: We can then see where we are in terms of progressing. Need to break this out into phases to recognise the mile stones and in order to be competitive each company needs to move in their supply chains. Also, can we get the Joint Ventures to work together in a way as to not go out separately but together with their number of rigs / plays? Become a bigger customer earlier.

KC: The big focus is on construction workforce and the operations workforce which is larger. They need to be experienced / technical people.

??: 15 year forecast in probabilistic terms: from 6000 wells to 1500 wells on something like a P90 where we want to compete. We need a good sense of where we are on the trail, start slow and then hit points. Also need a really good sense of where these inflection points will be (on all sides) as this adds to the decision of importing etc. It is fundamental to get to some agreement on projections including equipment, materials etc.

BG: Paul needs to get a clear understanding of the 'what ifs,' where the inflection points may be, therefore we need to start to plan now.

PG: PG's background is in manufacturing. He has been able to see many disciplines – where are the opportunities in this state? Looking for the high level themes which we need to focus on, do we need to develop centres of excellence? Educate local people on Unconventional Gas? Where should we be locating and clustering our industries to support the Cooper Basin? Realistic feedback is needed, especially through research and development. Where are the holes in this and where can Australia play a major role? Do we need to be talking about developing capability in Australia? Also, pre qualification in SA / Australia, we need to get an understanding from industry as industries can assist.

KC: Current leading WA projects have proved there is a large pay off for local business if you can get it right. Do this by advertising well in advance for local business, successfully bidding for work, ensure safety ratings are meeting international standards. Supply-chain in WA Government has supported local business through website projects. Connect and advertise all the information available to the public. A similar website may be good for SA. Chevron make use of the local WA Chamber of

Commerce and Industry as they can provide an independent third party assessment regarding local steel manufacturers. Make clear the hurdles that need to be met.

BG: The construction phase – we envisage the next big construction project would be another gas plant in the north, based on the fact that we already have some there. As far as going to Darwin, we don't anticipate an LNG plant in SA. We do anticipate head room in existing plants. In future, this may float from one to the other; we need to see how the resource performs.

CT: Prequalification issue – encourage local supply of what is expected in the local oil and gas industry. Provide technical consultants as these standards need to be there to service suppliers not only bits of equipment. In SA the companies are small and can't produce enough people.

BG: If we can increment the spreadsheet of wells down to competencies, equipment and materials that are required through different junctures there is potential for people who have capacity / the qualifications. We need to let them know early what they need to do in order to spend the money for skills. Ensure we have done as much as we can to add local (Australian) resources.

PG: The Roadmap has been a benefit, we are now able to get the information to service the industry. We have begun to group the services and determine where to play / and not to play. We need to work with companies collectively regarding goods that different companies may need early on. Get specifics to see a realistic shortlist of things in order to make happen.

KC: Suggestion – look at interstate projects and focus on who missed out on work. Need to work on policy to see how / why they were successful and competitive internationally.

BG: Introduced Steve Begg (SB). Asked him to think of himself as a portal to the industry, how do you tailor the training of students?

SB: Through the advisory board. Their discussions involve all different areas of education, they are specific to petroleum.

BG: Will provide the representatives from any company that is associated with the Roundtable contact details to SB, he can broadcast what the University is churning out.

SB: The ASP program started 10 years ago. It is designed to be a program that enables people to hire people for the industry (all students go into industry). There aren't any home grown academics that can get work here. The ASP is run like a P&L (fixed costs), the only income is student fees therefore the ASP needs to know how many students they need to produce each year.

BG: Would we be able to get the companies to offer free flow lectures to the ASP? We need info from industry.

SB: Perhaps shared positions may be an option, for example working for 6 months at a time.

AF: What capacity do you have to produce larger amounts of graduates in future?

SB: Currently the ASP is at full capacity, it's not clear at the moment that the market demand is greater than graduates from states, if this were the case there would have to be enough staff to help.

BG: Fyfe are a major player in pipelines. How do we cluster some other services where certain companies are lacking experienced people in?

MP: This would be done on a case by case basis. We may need to do more in the facilities area, we will look for strategic partners to work with and may need to look at this more strategically in order to turn this around.

BG: Recommended convening a meeting to come up with concepts early. Companies have the competence but they lack the capacity in a way they can offer a combined lot of services. The Cooper Basin has gone from one large venture and this has been an incubator for SMEs. Now at a fork in the road we have enough competing exploration enterprises. Competition is well served and one of the key drivers is that you don't have everyone grouped. Competition gets more money into a basin, however this means more money offered for bids. We don't want this to destroy wealth. We can get the Cooper Basin to become smaller blocks but small companies can't do it for the Unconventional Gas flows, we need larger companies to help. Regarding exploration, turning SMEs to LMEs, we want billion dollar companies rather than smaller ones. How do we enable those companies to be efficient? We can improve our website along with the ASP. We want TAFE to churn out the people. We will set up working groups but we need companies to share views in a staged way over the next 15 years in order to be successful. Reduce the perception of risk in order for them to come into the market as early as possible. If we can send younger people to companies to get experience and in return people here get cost benefit. We set up international training etc, looking for commitment to talk, to take risk so that you can cooperate to become competitive.

CT: Can't give an exact overview of supply-chain needs as we can be talking a range of chemical feed stocks. Need to know the project before we can go forward, this is driven by the product outcomes.

SB: Cement engineers are an example where we need another model to educate these students at a degree level. Need a post graduate degree, may need a partnership and / or industry specific training. There could be a centre set up with the University.

??: Australia has low productivity in the field and skilled workers need to be trained to also become supervisors.

BG: There needs to be some lessons learnt from the high pressure drilling in the Cooper Basin.

GC: Be as open as you can. We are looking for geothermal therefore we are not too competitive.

??: Please ask Geoff about any information, the need of early wells has been discussed. Productivity – be cautious about stating that we are low producing. We have harsh conditions. There is support from Halliburton and other companies which enables you to conquer new challenges.

PG: Are there any broad issues around safety that we should be talking about in the industry?

BG: Safety is not a new concept in the industry. Silicosis has come out of the woodwork as a public concern, which is another industrial hazard which gets managed in an appropriate way. Industry needs to communicate better, get some FAQs across the board as a matter of public trust. APPEA run safety conferences every year to focus on OH&S.

AF: How about incentives? How do we start the ball rolling? Talk to the Government and take up the line to see if there could be tax incentives.

BG: Our Minister has asked 'should we take the royalties from gas sold to SA enterprises and use that as a reduction on payroll tax to manufacturing?' How does the general population see a benefit across the country? BG is not a fan of this concept but happy to listen. Co-locating of people at Tonsley to make this easier, from operator's perspective is an aspiration. We need to understand the trigger points to change companies' minds to make that jump.

PG: We are in early stages of trying to understand what a centre of excellence may look like at Tonsley. Keep an eye out over the next three to six months for changes / updates.

BG: Minister has agreed and is trying to arrange a dinner with industry leaders and the Premier to have the conversation.

??: Training hubs around offshore – Australian Maritime Complex expanded to offshore, good traction.

Closed: 10.45am

Roundtable for Unconventional Gas Projects in South Australia

Exhibition Hall, National Wine Centre

Friday, 15 March 2013

Minutes

Presentation 1

Santos Ltd

Presented by Craig Stallon

The East Coast domestic gas market will triple in demand in the next couple of years. The supply side may not keep up with demand – resulting in a tight market place.

Santos currently running 4-6 rigs in the Cooper Basin; and has 300-400 wells which translate to 4000-6000 fracs. Compare this to 9-15 drill rigs running in 5 years, which will require 700-1000 new people in the industry. Can the industry be grown at a rate that will mean it is sustainable and economic?

Santos see 3 main issues that need to be dealt with:

1. Resources

   There is a need to grow the right resources for the region, a need to make SA the centre of excellence for onshore types of development.

   There is a need to invest in SA – for example an industry hub at Tonsely Park, which would be linked with TAFE/Universities. A hub like this will assist increasing the number of skilled people that will be needed down the track. Exchange programs will be required to obtain experience, and it would be beneficial to open the boarders to bring in experience from the US. Need to start this process today or it won't be done in time.

2. Roads Infrastructure

   Currently, when bringing a new rig into Australia, companies are spending 12-18 months retrailorising rigs, putting in different electrical standards, etc. These process drive costs and timeframes up.

   Need to find a way, with the Government, to work out how we can get access to resources so rigs can be brought in within a shorter time frame.

3. Critical Infrastructure

   Current infrastructure will not sustain the increase in people and activity because of the number of limitations. Santos would like to see the industry band together, to put together a hub outside the Moomba complex where service companies could have their own facilities, and therefore could service everyone.

   It is important to get ahead of the game; all issues are solvable if we work together.

Santos believes the focus should be on:

1. Resources – if we don't grow these today we won't have the people with experience required.

2. Logistics Hubs – to ensure that no one individual is constrained; that the suppliers can get their economies of scale right and not be constrained by infrastructure.

3. Reducing the regulatory burden - Bringing rigs and equipment in and mapping electrical standards between the US and Australia.

4. Increase the availability of the Strzelecki Track – floods impact all operations. Productivity will not be sustainable when there's 15-30 running.

MP: Do you see the development of multiple depots across the Cooper Basin?

CS: Multiple depots would be logical, but it is unknown whether it is achievable. If the volume is there it makes sense to do it. You could centralise a hub, for example in Innamincka, and try to get a township happening.

BG: DMITRE will be establishing forums to set up joint ventures for joint ventures to discuss the options that are available.

??: Is it possible to set up a 'standard exchange zone' for the Cooper Basin where US standards are accepted.

BG: DMITRE are going to take this up with QLD. Creating all-round exemptions will to add to productivity. BAG would like to see a red line around the Cooper Basin creating a trade zone.

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Presentation 2

Beach Energy Ltd

Presented by Mark Pitkin, Coordinator Unconventional Resources

Looked at the magnitude of what has happened with shale gas in the USA, specifically the key players in the Barnett. Exploration in the 1990s took off quickly.

Haynesville – high rate shale field

Eagleford – liquids associated with gas

Marcellus – primary location

Look back at the annual production coming from the shale in US, equaled 3 BCF (Barnett to TCF per annum).

The Barnett started working on the horizontal wells (kicked off 2004) grew to 9000 wells by 2010 totaling 5BCF per day. They found the right way to access the resource. In 2008 they were up to producing 2500 wells per year. This is the type of success SA would hope for. We are looking for a modest representation of this.

180 rigs in the Barnett, when gas dropped off so did the rig count in the 2009 Global Financial Crisis.

Haynesville kept going due to lease requirements maintained a very high rate.

Southwestern Press Release – last 6 years shown got the Barnett going. Southwestern went immediately to horizontal wells having learnt from the Barnett.

Started lateral 800 to (now) 1500m increasing stages and lengths.

Haynesville is producing the same as the Barnett. Haynesville now has 2200 wells in production.

Cost and efficiency makes these plays successful, the drilling days are down to 25 days.

Southwestern's first well took 55 days to drill by 2007 and went down to 15 by driving down drilling days and cost effectiveness.

DMITRE has approximately 170 wells per year predicted and every 2-3 days a well finishes. There are 4-8 fraccing stages a day but with the right technology can place 8 stages per day, this however depends on the methodology you are employing.

Should be approximately 30 trucks per day going down the main road and 15-20 mega litres of water per day with well connections every 2-3 days.

The key thing is to get drilling rates down, technical knowledge transfer, acquisitions / learning, bring in skilled professionals and labor. Are there currently visa opportunities or short term incentives?

- Logging – take out some logging from zones with little interest
- Rig availability – new build or retrofit? There are issues with existing rigs but there may be rigs from the US that could be brought in
- Trucking services, there will always be rigs moving
- Mud chemicals, the price defines the options to do something locally
- Cementing services and all services – should we get a long term contract or is it beneficial to go to a spot price system, does this make it cheaper?
- Standardise pieces of equipment and efficiency will go up
- Need access to global providers. Assistance with yards, equipment modifications, visas and skills professionals
- Lay down staging areas
- Transport efficiencies – look at other ways to get more infrastructure required at ports
- Water access management – think smartly, use coproduced fluids. Some management system dispose of it in the right method. It is important to maintain area within the standards we went into the basin with

Question:

CT: Long term contracts? Competition is always better, the US always has competition and keeps prices low this, in turn, fosters innovation and opportunity to learn from multiple service companies

BG: 15 rigs at a time isn't enough for competition. Need to get information from North America, refer to the McKenzie study. We need to innovate right down the cost line to international stages, how much competition can we obtain?

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Presentation 3

Senex Energy Ltd

Presented by Susan Mallan, General Manager Operational Services & Compliance

Majority of Senex's production comes from the Growler and Snatcher Fields. Most of the company's SA permits are held in Joint Venture with a variety of partners. Unconventional wells are 100% Senex owned.

In terms of Unconventional Gas, the campaign is currently in the exploration phase. Senex are not producing gas in SA at all.

Last year the producing fields produced 4600 barrels, this year the target is 1 million barrels. Senex exceeded the half yearly target this year.

Five unconventional wells have been drilled to date. A new rig will be coming in in July, followed by a fracture stimulation campaign. Senex is trying to build critical mass, continuity of supply.

85% of Senex expenditure has been in SA in the last 12 months. Half of Senex' top 10 suppliers are Australian companies –with three being South Australian. Most key services come from SA, such as consulting engineering firms, environmental providers, freight, transport, construction, camp facility providers.

BG: Where do you see Senex being able to fit in with joint venture of joint venture operations?

SM: The entry level discussions Senex has with Beach so far is not joint contracting, more scheduling sharing. Key areas of focus are around logistic constraints - air strips, roads etc – Senex would be keen to be involved in that space to see how it can be done better. SM would not want to see the process become too prescriptive, as there is an onus on service companies to take a risk and to educate themselves on upcoming programs.

BG: What if DMITRE was to create a bulletin board for seismic and drilling schedules.

??: The major players already know what the major clients are doing.

BG: For a competitive supply chain we may want to go a step further? Is there a way to breed competition through transparency by having a government managed bulletin board?

CS: That kind of publication may not deliver the results we're is looking for.

SM: It would be an interesting balance between transparency and rewarding those who put in the effort. The service companies that take the time to enquire know what is going on, those that don't bother won't know. Should the onus be on the regulator?

BG: It may not achieve much, would rather it be a commercial arrangement.

MMc: In terms of trying to bring in more competition, we're not at the volumes where we can look at bringing in a lot of people and service providers and still make it profitable for everybody. This needs to be considered.

BG: Operating companies want to see the service companies coming in, the service companies want the operating companies give clarity about what they are coming in for. What can be done to reduce uncertainty to help the decision makers in the service companies to decide earlier that it's time to mobilise? This will assist in trying to expedite the economies of scale for successful operations.

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Presentation 4

Halliburton

Presented by Mary McGowen, Chemicals and Environmental Compliance Advisor

Began with discussion, look at needs as a service company, what keeps Halliburton doing what they do?

Why is fracturing too expensive? We don't have the volume like the United States does.

Daily water in mega litres was taken the P90 from the Roadmap and calculated a conservative estimate from this. Extra water from coproduced water after dealing with fracture needs; there is polymer needed from this and is important from international sources – these are major road blocks from our end.

Issues Halliburton have include keeping track of time as we are waiting for water most of the time. How do we get the water there? Is there an action plan in order to bring water to fraccing faster?

Idea: BG: On western flank, expect that there will be considerable water, in the past have produced 30 mega litres per day.

Andrew: Is there an issue around the water quality?

Often times Halliburton has to clean the water before using it. This may be an entire business for a water specialist, from a location and quality perspective. **Someone within DMITRE perhaps, we need a working group to go through these issues. Halliburton has posed the problem to SA Water.**

Also, need to get chemicals on location etc. Sealed roads in the basin would be preferred as a super highway won't make a difference, at present, once you come out into the basin you get stuck.

Halliburton needs to give specific details to Government in order for them to help ie provide statistics / metrics.

BG: Be the focal point when it comes to road versus rail (refer Paul Goiak).

Currently Demobilising 200 – 250m out of Moomba.

Two problems, local rain and flooding in this area.

Create plans that don't depend upon dry season. We need to weather proof operations.

The issue is clay and soil in the Cooper Basin when moving large trucks.

Sealed roads - not only wet versus dry but also focus on heavier vehicles.

Santos: Rollerdon machine may be helpful, however its maximum speed is 40km/h, this is not particularly efficient or cost effective.

If you didn't have to wait for supplies what would be the amount of money saved?

MM: Reduce mobilistation days from 5,being able to half the cost would be huge.

BG: Watch the patchwork of certain bridges being changed so that there isn't a bottle neck. Need to ensure paved roads aren't going to get ruined when there's a flood. This is a topic for the operators in the Basin. Government can then know what they want from us.

Part of the problem is that all vehicles must meet road ready specifications, there aren't any desert or unique vehicles used here that are in places such as Libya.

What are we allowed to bring in? Regulatory commissions.

It would be good to have a one stop shop for chemicals and a water storage facility.

What could help is if the operators could schedule where they need the fraccing and when. Make a timeline and keep them together.

Operators could use higher pressure well heads this would help reduce time and ensure safer well heads.

Government body for extremely heavy vehicles, there needs to be across state consistency.

How do we get effective exemptions, is this through DMITRE?

Inductions – in Queensland every person / company has to go through inductions. We need to get these online (CSG side of things) it would be good if there was one standardised induction for all.

BG suggestion: Locals need to be located in United Sates etc so we can be seen to be an exchange of information and in turn educate the workforce. Government can fund scholarships etc.

Trade design rules.

What is the volume point that becomes a problem? Frac crews are currently supporting 2-3 rigs (are capable at present) with one spread, beyond 5, Halliburton need to bring in more equipment.

Easier for someone who has a foothold already to expand.

Question: Is this graph a P90 amongst the PMEs? Do these number work for you? What are the projections for the next several years regarding other companies?

- Hard for the companies to say if this projection reflects their success due to their individual future plans

Action item: Layer on what is probabilistic, based on Unconventional.

Next year there will be approximately 8 wells fraccing, therefore we are ahead of schedule at present (based on graph).

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Presentation 5

Baker Hughes

Presented by Andrew Buffin, Reservoir Development Manager

On the asset life cycle South Australia is in the exploration phase, it seems we are about to move into appraisal phase. This is where things are going to ramp up. As an industry, we need to feel comfortable that we truly believe that we will move from exploration to appraisal and development. Is this the case?

MP: It is a difficult question to answer because it is the operators that are taking the risk. We are moving into the appraisal stage, Beach have drilled 8 wells this year. A commitment is required from service companies to come with us.

AB: Chevron are making the commitment, what is happening in the Cooper Basin is good enough to move into the appraisal phase.

BG: The information that we are sure of is the rig count, and what the companies are planning on doing in the next few years is budget certain. Is there another litmus test, other than rig counts, that would help service companies in their decision making processes?

CS: Where is the threshold line that allows a company to invest to support the industry? To get the economy of scale, you have to commit to a certain volume of work. Knowing that information helps the service companies to take the extra risk (getting additional rigs in, etc).

TW: A rig count only tells you what's happening today, decisions need to be forward facing at least 12-20 months. What is most beneficial is to look at well projections going forward. It needs rolling dialogue.

BG: Business will grow on basis of new deliverability.

TW: Preparations need to start now. The key is setting up work groups to challenge ourselves, come up with specific tactics along the way on a repetitive and continual basis.

??: Capital commitment is substantial, but one of the biggest pieces of the puzzle is getting the human capital right, but you need a degree of certainty to do this.

MMc: It wasn't too many years ago service companies were being told the Cooper Basin was dying. In a couple of years time after all these risks have been taken, will we be told the Basin is dying again?

??: LNG has rejuvenated the Cooper Basin.

AB: Gas production over time graph shows how the industry took off in the US after the horizontal wells began producing. There will be a revolution but we haven't seen it take off just yet.

??: A lecturer at SPE a few weeks ago used the same graph, but he made the point about having sufficient information, holes, stats to prove it is a gas producible area. We don't have this information for the Cooper Basin yet, as there are very few wells that have been drilled to get unconventional gas information.

AB: Operators are taking a lot of the lessons learnt from the US and applying them as much as possible to Shale. There appears to be commitment to go into the appraisal section, everyone is prepared to take this risk and make this jump. There is a lot of information to be collected, the cost of collecting the data should not be ignored.

AB: We need to have a favourable legislative and fiscal environment, favourable public sentiment and access to sufficient amount of water. There needs to be a commitment to get data; buy the data; to take on board a service company to help with the data acquisition.

Conclusions:

- There is a need for training, knowledge transfer and exchange programs. A need to bring expertise here to Australia and to send our young people aboard to receive training and have them return to Australia to work.
- There is a need for retention incentives to stop talent drift. Visa solutions are required to make it easier to get appropriate professions to come Australia.
- Capital investment to get an understanding of the activity levels going forward.
- Retainers to keep the appropriate expertise in SA and the Cooper Basin.
- Supply Chain – need to try and get Australian wide standards or at least a Cooper Basin zone.

??: It is important to remember that there are still risks even though we are moving towards the development phase, it's a marginal play. This is why we need to drive down capital costs, service costs because we are running a risk. On the whole we need to shoot for something that is economical.

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Presentation 6

Ensign Energy Services

Presented by Travis Beinke, Commercial Manager and Peter Koutsoukos, Project Engineering Manager

Ensign is a drilling contractor. The company originated in Canada and North America.

They cater for in house engineering expertise, designing and building their own rigs. These items are developed along with customer needs and continues to evolve.

Initially grew through acquisition and has now switched to focus on building own rigs.

Current have rigs in Australia and will bring in additional rigs into Australia.

ADR Rigs in the last five years were initially through the Coal Seam Gas market. There has now been a large increase in activity that will add another 6 towards the end of 2013.

Requirements and local suppliers needed, however current challenges faced:

- People: increase number of rigs coming in – need 40-50 people per rig
- Need an additional 200 personnel by 2014
- At this stage rely on expat experience – currently have a number of expats working on a … basis

Currently work on an RTO, nationwide standard of qualification. Ensign has applied this throughout Australia.

Ensign invest in ADR training which is the future of their company. They have already built two in North America and have sent Australian crews across for training.

The majority of oil field equipment comes from North America as it is still more economical to do it this way rather than buying from Australia. There have been increased suppliers in Australia but it is still not economical, especially when it comes to specialised equipment.

Apply API as a minimum on all rigs, engage local business and vendors as very few have the API certification capacity.

Local people don't understand what Ensign require and are therefore not cost competitive.

Logistics – when faced with several rigs moving at same time the issue of a shortage of specialised rig moving equipment in Australia comes about. This includes cranes, wide trucks and rig move times are impacted which then impacts costs.

The Department for Transport and Roads is an area where we have seen improvements but it can be challenging at times to move larger, taller than standard loads. Sometimes there are agreements to close roads or apply for permits. Ensign understands what is required by Australian standard but it is a grey area as to who to consult and what does / doesn't comply.

Investment – minimise shut down after rain and other events as this impacts everyone down the line.

Supply – we would like to see locally stocked supplies (at Moomba or nearby) this would allow Ensign to cut costs.

Cut down on costs flying in specialised personnel, we need that specialised knowledge close to home.

Need resources for recertification of OEM equipment as we can't always conduct the recertification without the knowledge from specialists.

Previously Ensign brought in existing drilling rigs (operating in North America) and there were an enormous amount of work to make the rig compliant with the standards in Australia.

Electric motors and junction boxes are not accepted here purely because it's a different standard, this needs to be changed. It is possible to get this changed over time.

When we call out a third party assessor they look at it very black and white. This means we change all the electric motors on a rig which creates an extreme amount of cost for the company.

If the third party understood the mapping from one standard to another (USA to Australia) it would make it much easier. This may be a training issue, it may be that the people undertaking the assessment don't understand the work they are doing. This is something that can be fixed by talking to relevant authorities.

The gatekeeper is not qualified to see that the mapping and this can't be done from different areas of the world. There is a trade barrier which is deliberate, free trade agreement? Would be good to have a free trade **zone** agreement.

Sometimes the company in the US doesn't even stock the part Australia needs because they don't need it originally.

Key issue – the people who are looking at the equipment didn't have the kind of certification to be in the position to say that this maps ok. The issue is the people don't have

the certificate to make the call. You would have to be dual ticketed, work in Australia but understand all the standards internationally.

Transport – aligning with operators in order to drive costs down. From time to time the suspension or particular trailer design is not recognised in Australia. Ensign have employed consultants to try and map it to Australian certified equipment but this is timely and not cost effective. Usually we don't have the luxury of time and it's easier to refit the equipment but it's expensive.

Need to change what the certificates require when you buy parts for rigs.

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Presentation 7

Saxon Energy Services

Presented by Daniel Marcano, Country Manager, Australia

Saxon's key challenges include determining the right type of rig with enough time in advance to enable upgrades or manufacturing the drilling equipment and bringing it into the country. This is easier said than done – requires 14 to 18 month to organise, not including tendering processes. Being able to have this conversation as early as possible with the drilling contractors will allow risks to be addressed earlier.

Need to be able to justify investment, need a certain amount of work to be guaranteed to enable a good return on your investment for the first 3 or 4 years of operation.

There is a need to increase the number of skilled workers – the supply of people today is not ready to meet the future demand; this is a fact. It takes years to get people's experience and knowledge up to the appropriate levels required. The education needs to start now in order to be ready.

When a drilling company is preparing to start some rigs in Australia, there are 3 options: attract skilled/competent people from other companies; bring in resources from abroad or train and promote internally; this becomes difficult and costly once you get to a certain level.

Local people Vs expats – there are limited financial incentives to bring expats over to Australia; having a high local content is good business from every point of view. However the number of skilled local people is extremely limited today. The attrition of people means there needs to be a constant stream of experienced people to fill the positions.

Saxon have been forced to increase their international content, which mean dealing with visa issues. The length of time it takes to apply is too long.

What can be done to help?

Funding Opportunities –more funding incentives for short compliance courses (OHS and on job advance skills); funding for online resource development and training facilities; skills transfer funding and looking at investing in new projects; and literacy and numeracy support.

Rig Crew Training and Development Initiative – Involving Government, operators and drilling contractors to help increase the supply of people to meet the demand that is coming. Government sponsored people put on rigs to do on the job training. This will increase pool of people with some minimum training.

DM: It is unlikely that rigs will be manufactured in Australia because it is not cost effective.

AB: Would Saxon really be willing to train government sponsored people on their rigs?

DM: Yes, but the problem with doing this in the Cooper Basin is the accommodation issues; travelling costs etc. If Governments and operators are willing to work together to increase the amount of accommodation on the rigs and make it easier for people to move back and forth then Saxon could train people on their rigs – basic rig skills.

CS: Santos provide a similar model of training already. A range of consultative suppliers in Adelaide provide course work; students then mirror the operators out in the field. Santos provides the accommodation and on costs. They are not paid employees as such, but the earn a Certificate III or IV.

BG: Good Idea to progress further.

AB: Santos have a TAFE facility at O'Halloran Hill for operations – surface equipment/well heads/generators/compressors/ ex-cooper kit – for people to work on and learn about before they go out into the field. The TAFE is being shut down, so this facility will need to be moved. This is where the Tonsely Park redevelopment idea comes in – create a Centre of Excellence, aggregating service companies around a location with training on the periphery.

BG: Paul Goiak (PG) and Megan Antcliff from DMITRE are working on this idea, in close contact with Santos.

PG: The Federal Manufacturing and Innovation Policy Statement came out a few weeks ago, attached to that is some funding that could be attributed to precincts. Part of the work DMITRE are doing is trying to work out how to combine State and Federal funding to make this work and maximise it. What DMITRE will need relative quickly is to develop a high level picture of what the Centre of Excellence will look like so we can articulate this in our submission – need to be able to show that we have a clear picture of how it will work.

BG: Co-location / training will be one of the focus groups that will be developed as a result of this meeting.

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Day Two Final Discussion and Close

Discussion Leader: Barry Goldstein (DMITRE)

BG asked that each attendee voice what they have taken from these sessions, add comments and give feedback.

? Learnt what the water requirements are and what we can do with technologies to assist.

PG: Explore air transport in the Cooper Basin, get one air strip that could land really big equipment this may also employ more people

? Very interesting but still a lot of work to do

DH: Openings regarding logistics in the field are different to the past

? Narrow down the recommendations to a few we can excel in

PC: Interesting aspect is the openness from all parties

MMc: Like to see the super shopping / supply assistance

MP: Couple ideas that can be auctioned right away. Excited about the Tonsley project, more efficient local tailored induction process

? Would like to see an economic analysis, see how much things actually cost to get done, specifically costs regarding a P90. Would be good to download spreadsheets from the web. Unsure whether the assumptions and models are correct but competition is good

? Learn from the intense conventional drilling in the next few years

? Drilling in-fills is a rational way of getting through the learning curve

? Wireline logging – don't need thirty stages

Tim K: Positive outcomes, learning from North America, learn from previous lessons. It is critical to have dialogue regarding compressing efficiencies, no one has figured it out

? Want to spend more time dealing with DMITRE and keep communication open

? Good communication dialogue, it's going to be interesting to see if we can come up with solutions

? Skills shortage – any initiatives come from this will assist the industry as a whole

? Great opportunity to solve the infrastructure problem. It's time for major construction companies to take the load, there's no reason we shouldn't be building rigs etc in Adelaide, at Tonsley Park

? How the supply chain works, specifically balance risk and reward. Should try and learn from previous ventures, what extent has Queensland shared in these issues? Skills in the industry, should look also at other jurisdictions. Proven we are good at solving transport / road issues but need to address the basin issues

? If Moomba is seen as a major hub we need to assist major service providers

MM: Move away from exploration appraisal

? The Northern Territory are working with similar issues

? Need national consistency when breaking down some barriers. Need a clear, concise direction

? Issues can be overcome by collaboration – facilitate competition

? Excited about the next couple of years, specifically critical mass of operations

? Seen community issues in Queensland, we need to educate how we are taking away risks

? Need to make this resource acceptable to community

? Look forward to seeing progress

? How are we going to implement these ideas? It's going to take a lot of work to do this in time

? Government sponsored industry supported training centre

? International relations

? Demonstrates that we are ahead of other states. Keep the dialogue going and we can progress further

BG: doesn't want anyone lagging behind (interstate), he doesn't want less of a market for gas companies

? Regardless of our jurisdictions we come across the same issues. Thanks to SA's Roadmap it makes Queensland issues easier to work out

Santos' points raised a year ago have been in the top ten recommendations, it's time to break the subcommittees and take on strong points and see them through. We can't leave them unresolved yet again

BG: Top 5 working groups as a result of these discussions are as follows (look at companies aware of issues, who is best for the job, work with Queensland):

- Roads / transport – including electrical wiring – wharf to drill site solution
- Water – waste water in basin – logistical issue - minimum cost distribution issues – other sources of water (flood season etc) – include co-regulators on panel
- Collocation / training – incentives – look towards meeting at APPEA
- $3.5 million funding – greenhouse gas research – remote sensing UCL – point source measurements – want CSIRO / GA – can get methane listing via NASA (don't want to reinvent the wheel)
- Joint ventures coming together – Moomba hub / industrial hubs in the Cooper Basin

? Well head, access to data, hard to get data out of GA however accessing data is key

BG recapped the key points resulting from the two day sessions:

Investment Attraction

Will clarify retention license issues.

Make sure we cover how pipelines know the marketed signal.

Endeavour to get people into the ASP to help educate.

Say when well data has come in more rapidly perhaps via newsletter, schedule of due dates and availability.

Will foster basin wide baseline studies. Ensure each of the operators know what the other is doing. JVs working together on environmental monitoring, it may be less costly to work collaboratively, constructive for public and industry.

Do a better job at all levels and being clear about 'resource' / 'reserve' regarding Unconventional.

Transport

JV working group – QLD and SA

Question of rail – cost of entry

Working directly with QLD and Minister to talk and ensure no surprises

Aircraft – what is the in / out – tie with rig forecast

Skills shortage – working group

Bullet board for rigs and crews – understand rig count

Training – certification – there is currently a bottleneck regarding USA versus Australia

Environment

Fact sheets – work with APPEA and QLD

Sharing rigs and crews

Operators sharing surveys – good for service companies

BG thanked guests

Closed: 4.30pm