EMPIRE ENERGY GROUP LIMITED

(EP184 McArthur Basin – St Vidgeon region)
Photo courtesy of KAG Enterprises Pty Ltd 2013

Noosa Mining and Exploration Conference - July 2014
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Competent Person Report (USA)
For Empire Energy USA LLC, the information in this presentation which relates to reserves is based on information compiled by Ralph E Davis Associates Inc, Houston, Texas and LaRoche Petroleum Consultants, Dallas, Texas who are certified professional engineers with over five years experience. Neither Ralph E Davis Associates Inc., and LaRoche Petroleum Consultants nor any of the their employees have any interest in Empire Energy or the properties reported herein.
Corporate Snap-Shot

- ASX: EEG
- OTC-QX: EEGNY
- Share Price: $0.10
- Mkt Cap: $30mm
- Debt: $41mm
- Cash: $3mm
- EV: $71mm
- GP EBITDAX: $11.0mm
- EBITDAX/Int.: +6.0x
- Shares issued: 308mm
- Options issued: 23.2mm

**Shareholders:**
- Macquarie Bank: 17.4%
- HSBS Custody Noms.: 7.2%
- WYT Noms.: 3.1%
- Armco Barriers: 1.9%
- Insiders: 3.3%
- Total Shareholders: ~2,920
- Av. Daily Volume (30 days): 95,595
Independent exploration and production company focused on the acquisition and development of conventional oil and natural gas reserves.

– Australian assets (Imperial Oil & Gas Ltd – 100% subsidiary)
  - Tenements cover 14.6mm acres of McArthur Basin & Beetaloo Sub Basin
  - Barney Creek Shale Trough ~10 mm acres
  - Proven working hydrocarbon system
  - 100% ownership

– USA (Empire Energy USA, LLC – 100% subsidiary)
  - Producing ~1,373 Boe/d
  - Proved Reserves (1P) = 8.3MMBoe
  - 1P PV10 = US$107mm
  - 2014 drilling program ~21 wells
  - ~214,000 net acres Marcellus & ~136,000 net acres Utica Shale in NY
Northern Territory

Petroleum Exploration

Shale Oil & Gas Potential

AUSTRALIAN BASINS WITH SHALE GAS POTENTIAL

Current shale gas exploration activity
Current shale oil exploration activity
Potential shale oil/gas basins

Reproduced with the permission of Geoscience Australia
Comparatives

Northern Territory:
- McArthur Basin
  - 118.6mm acres
- Beetaloo Sub-Basin
  - 14.3mm acres

*Imperial Oil & Gas*
- 14.6mm acres

USA:
- Marcellus Basin
  - 49.4mm acres
- Eagleford
  - 12.0mm acres

Geological setting of the McArthur Basin (modelled after Rawlings 1999)
Proven working petroleum systems

- **McArthur Basin Trough Targets**
  - Batten & Walker Fault Zones
  - Urapunga Fault Zone

- **Barney Creek Shales**
  - Palaeo-Proterozoic
  - Restricted basin anoxic sulphur-rich carbonaceous black gas shales
  - Shales up to 3,000ft thick
  - Over-pressured formation
  - Free flowing natural gas
  - Dolomite reservoir directly beneath shale formation

- **Velkerri Shales**
  - Meso-Proterozoic
  - Laminated black carbonaceous siltstones & mudstones
  - Shales up to 2,000ft thick
  - Over-pressured formation
  - Recent wells flowed naturally
  - Sandstone reservoir directly beneath shale formation
### Regional Activity

**Target Depth** = 13,500ft  
**Stacked Shales** = 7,500ft  
**Estimated Cost** = $24 mm  
**Objective Limits** of wet gas/oil window

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**Santos – Tanumbirini #1**  
Spudded June ‘14  
Target Depth = 13,500ft  
Target = 7,500ft stacked shales  
Estimated cost = $24 mm  
Objective limits of wet gas/oil window

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**Armour Energy** - Cow Lagoon: Dolomites – free flow gas 850m scf/d
- Lamont Pass 3 – Bitumen, blooming, streaming oil, 1,600ft Barney Creek
- Glyde #1 – Coxco dolomite – free flow gas 3.3mm scf/d, 450ft Barney Creek
- Gas composition – C1 77%; C2 11%; C3 11%; C other ~1%
McArthur Basin

### Acreage
- 14,600,000 acres with carbonaceous shale formations
- ~10,000,000 acres of identified shale basin troughs
- Multi shale play targets

### Targets
- Both conventional and unconventional oil & gas resources
- Barney Creek Shale (up to 3,000ft thick) with limestones/dolomites
- Velkerri Shale (up to 1,800ft thick) with limestones/dolomites

### Leases
- EP 184 lease (Native Title) & EP 187 granted (ALRA)
- EPA 180/181/182/183/188(ALRA) completing negotiations.
- EPA's 180/181/182 expected to be finalised by end 2014

### Monetisation
- Proximity to Darwin & Qld LNG plants, & deep water ports
- Natural gas shortfall on East Coast of Australia
- Liquids trucked to Darwin or Gove
- Close access to regional mines

### Upside
- Potential Multi MMBO and TCF plays
- ‘World Class’ scale compared to USA Basins
- Size provides attractions to major corporate partners
Prospective Resource - Estimate

- Take-away ........
  *Up until 2005 the Marcellus shale was thought to be a source/seal formation only?*

- McArthur Basin is Frontier Exploration
- Exploration risk, BUT
- NT shales studied for 30+ years
- 30+ conventional traps identified
- An early stage resource estimate can be derived for Imperial’s acreage..........

- Volumetric Calculation of prospective hydrocarbons based on work by Crick et al.:
  - Velkerri - bbl/ha =124,000 (Crick)
  - Barney Ck - bbl/ha =105,000 (Crick)

- Prospective Resource Estimate (refer to Appendices):
  - Barney Ck P10 = 6,625.6 MMBoe
  - Velkerri P10 = 1,007 MMBoe

- Comparatives (recoverable resources):
  - Bakken (active)* = 3,590 MMBoe
  - Eagle Ford (oil zone)* = 3,350 MMBoe
  - Marcellus (active)* = 178 Tcf

* MBA Petroleum Consultant (2012)
### De-risking exploration

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Action</th>
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<tbody>
<tr>
<td>Convert contingent potential resource to booked reserves</td>
<td>Characterize shales and source rock potentials</td>
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<tr>
<td></td>
<td>Strengthen the geological model</td>
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<td></td>
<td>Core drilling</td>
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<td></td>
<td>Develop step out exploration targets and pilot wells</td>
</tr>
<tr>
<td>Leverage data mining</td>
<td>Reprocess available historical seismic &amp; borehole data</td>
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<td></td>
<td>Information mining</td>
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<td></td>
<td>Leverage neighbour's exploration operations</td>
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<tr>
<td>Derisk</td>
<td>Common risk segment mapping</td>
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<td></td>
<td>Prospect &amp; lead inventory</td>
</tr>
<tr>
<td></td>
<td>Independent Peer certification</td>
</tr>
<tr>
<td>Commercialisation</td>
<td>Leverage people and knowledge</td>
</tr>
<tr>
<td></td>
<td>Appraisal, development and production drilling</td>
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<td></td>
<td>Power generation local supply</td>
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<tr>
<td></td>
<td>Utilize and develop pipelines and deepwater ports, Darwin LNG</td>
</tr>
</tbody>
</table>

**Decreasing level of risk**

- **Step out exploration wells**
- Appraisal/development drilling
Current Exploration Strategy

- **Strategy 2014/15**
  - Continue reprocessing available historical seismic
  - Assess shale source rock potential
    - Core drill 4 to 6 wells - EP 184
    - Geochemical and SRA characterisation of fresh source rock
  - Undertake further outcrop mapping
  - **Compile Prospect Inventory**
  - Input sample analysis and mapping results to geological model
  - Review & incorporate public data from neighbours
    - Santos drilling $24mm well adjacent to EP 187 and EPA 188
    - Armour continuing program adjacent to EP 184 and EP 187
  - Develop step out exploration well targets

- **2014 Objectives - Urapunga Fault Zone (EP184)**
  - Characterise the shale of the Saint Vidgeon Formation
  - Further strengthen the geological model
  - Refine the Common Risk Segment maps
Current Program

EP184 – 2014

- Reprocess & interpret seismic
- Develop hydrology study
- Development of CRS maps
- Prospects & leads inventory
- Core well drilling
  - 4-6 holes to be drilled July 2014
- Outcrop mapping
- **Urapunga fault zone**
  - Extensive  Up to 500ft thick pay zone Barney Creek Fm & equivalents
  - TOC up to 10.4 %
- Assumed Imperial Oil & Gas Valuation = $5mm

Sources: JP Moran Research, ASX releases
Value Add Takeaways

- Proven working hydrocarbon province
- ‘World Class’ scale compared to USA Basins
- Multiple Conventional & Unconventional targets
- Results from drilling over 2014
- Core drilling to develop 2015 step-out drilling plan
- Potential for partnering relationship with assets
Australia - Key Personnel

Bruce McLeod B.Sc (Maths), B.Com, M.Com (Econ) – Executive Chairman
- Chairman & CEO of Empire Energy Group Limited and Empire Energy USA, LLC
- Since the early 1990’s management & financing of listed and unlisted resource & operating companies.
- Previously an Executive Director for BA Australia Limited a subsidiary of Bank of America, responsible for financial & capital markets.

Dr John Warburton – Director, Imperial Oil & Gas Pty Ltd
- 30 years technical and leadership experience in International Petroleum E&P including 11 years with BP and 4 years as General Manager Exploration & New Business for LASMO-ENI in Pakistan.
- Expertise covers the Middle East, Kazakhstan, Azerbaijan, North & West Africa, Pakistan, Europe, Australia, New Zealand, PNG, SE Asia, China, Korea and Japan.
- Published 28 internationally recognised technical articles with particular focus on petroleum exploration in complex fold and thrust belts.
- Responsible for traditional owner discussions and relationship development 2010 to 2014.

Geoff Hokin MSc(Hons)  Geology – Exploration and Operations Manager, Imperial Oil & Gas Pty Ltd
- 10 years experience as an exploration and operations geologist in the unconventional gas and coal sectors, with various senior geologist roles including Armour Energy Limited, Metgasco Limited and Arrow Energy Limited.
- Background in Geological and Geophysical Exploration and Basin Setting Analysis and has extensive geological and business experience to non executive company director level in other operations.
- Responsible for traditional owner discussions and relationship development for Imperial 2012 to 2014.

Australian Shale Research Group (ASCS), University of Adelaide, SA
- Imperial Oil & Gas has entered into a Research Agreement with ASCS to provide geological analysis and interpretation services for Imperial’s exploration leases in the McArthur Basin. ASCS consists of a number of highly qualified geologists, petroleum engineers and laboratory technicians. A number have extensive commercial experience.

Professor Martin Kennedy  - Responsible for ASCS
- Professorships in geology & geochemistry, University of Adelaide and California.
- Expertise in carbonate systems & controls of organic rich source rocks.
- Previously 12 years at a research position at the Exxon-Mobil Upstream Research Company.
- Recent research on nano - scale processes that control porosity, TOC and fracability in unconventional reservoirs.

Dr Paolo Abballe
- Project Leader focused on geochemistry, sequence stratigraphy and data interpretation.
- Extensive experience with a marine geology background and specific expertise in compound specific isotope values of organic carbon in sediments.
Appendices
### Summary of Preliminary Results

<table>
<thead>
<tr>
<th>Source Unit</th>
<th>Velkerri Shale</th>
<th>Barney Creek Shale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Samples Taken</strong></td>
<td>68 (35 for SRA)</td>
<td>133 (89 for SRA)</td>
</tr>
<tr>
<td><strong>TOC</strong></td>
<td>Up to 7.5%</td>
<td>Up to 10.4%</td>
</tr>
<tr>
<td><strong>TOC – target zones</strong></td>
<td>2.0% to 7.5%</td>
<td>1.6% to 10.4%</td>
</tr>
<tr>
<td><strong>Pay zones (ft)</strong></td>
<td>Up to 500ft</td>
<td>Up to 500ft over 3,000ft of shale</td>
</tr>
<tr>
<td><strong>T&lt;sub&gt;max&lt;/sub&gt; &amp; Hydrogen Index (HI)</strong></td>
<td>Late immature/ mature</td>
<td>Late mature/ mature</td>
</tr>
<tr>
<td><strong>Window</strong></td>
<td>Oil, oil/gas</td>
<td>Oil, oil/gas</td>
</tr>
<tr>
<td><strong>Generation Phase/Kerogen Type</strong></td>
<td>Marine/II</td>
<td>Marine/I &amp; II</td>
</tr>
<tr>
<td><strong>Calc. % R&lt;sub&gt;o&lt;/sub&gt;, S1, S2 &amp; HI</strong></td>
<td>Good to excellent zone</td>
<td>Good to excellent zone</td>
</tr>
<tr>
<td><strong>Porosity</strong></td>
<td>N/a</td>
<td>0.11% to 6.86%</td>
</tr>
<tr>
<td><strong>Av Porosity</strong></td>
<td>N/a</td>
<td>2.25%</td>
</tr>
<tr>
<td><strong>Av Permeability</strong></td>
<td>N/a</td>
<td>N/a</td>
</tr>
</tbody>
</table>
# Migrated Oil Volumes from Core

<table>
<thead>
<tr>
<th>Source Unit</th>
<th>Well</th>
<th>Barney Creek GR-10</th>
<th>Velkerri - Lansen Creek Broadmere 1</th>
<th>Urapunga</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Interval (ft)</td>
<td></td>
<td>120-820ft(1)</td>
<td>88-508ft</td>
<td>433-715ft(2)</td>
</tr>
<tr>
<td>Effective Net Source (ft)</td>
<td></td>
<td>500ft</td>
<td>330ft</td>
<td>330ft</td>
</tr>
<tr>
<td>Av Rock-Eval Data:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrogen Index</td>
<td></td>
<td>727</td>
<td>320</td>
<td>390</td>
</tr>
<tr>
<td>S1 (kg/MT)</td>
<td></td>
<td>2.3</td>
<td>2</td>
<td>4.2</td>
</tr>
<tr>
<td>S2 (kg/MT)</td>
<td></td>
<td>21.4</td>
<td>10.9</td>
<td>19.3</td>
</tr>
<tr>
<td>Van Krevelen Kerogen Type</td>
<td></td>
<td>I</td>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>Transformation Ratio*</td>
<td></td>
<td>0.23</td>
<td>0.49</td>
<td>0.32</td>
</tr>
<tr>
<td>(Bbl/ha x 10³)</td>
<td></td>
<td>105</td>
<td>168</td>
<td>80</td>
</tr>
</tbody>
</table>

(1) Additional further Effective Source of 130ft at 2,000-2,130
(2) Additional further Effective Source of 133ft at 1,064-1,200ft
* Based on initial HI of 800 for Type I and 500 for Type II Kerogen

# Preliminary Contingent Prospective Resource

<table>
<thead>
<tr>
<th>Lead</th>
<th>Areal closure</th>
<th>Velkerri*</th>
<th>Barney Ck (&amp; equivalents)**</th>
<th>Total Estimated Oil Volumes Generated (mmBbl)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Square Klm</td>
<td>P50</td>
<td>P10</td>
<td>P50</td>
</tr>
<tr>
<td>EP180 (Habgood)</td>
<td>303</td>
<td>2,374</td>
<td>3,182</td>
<td>24,927</td>
</tr>
<tr>
<td>EP181</td>
<td>2,939</td>
<td>2,603</td>
<td>30,854</td>
<td>27,332</td>
</tr>
<tr>
<td>EP182</td>
<td>3,547</td>
<td>4,333</td>
<td>37,244</td>
<td>45,497</td>
</tr>
<tr>
<td>EP183</td>
<td>260</td>
<td>1,943</td>
<td>2,730</td>
<td></td>
</tr>
<tr>
<td>EP184</td>
<td>185</td>
<td>2,749</td>
<td>1,943</td>
<td>28,865</td>
</tr>
<tr>
<td>EP187 Barney Creek</td>
<td>86</td>
<td>903</td>
<td>14,310</td>
<td></td>
</tr>
<tr>
<td>EP187 Velkerri</td>
<td>1,154</td>
<td>1,154</td>
<td>14,310</td>
<td></td>
</tr>
<tr>
<td>EP188 Barney Creek</td>
<td>313</td>
<td>215</td>
<td>3,287</td>
<td>2,260</td>
</tr>
<tr>
<td>EP188 Velkerri</td>
<td>471</td>
<td>5,840</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7,287</td>
<td>14,245</td>
<td>20,150</td>
<td>76,508</td>
</tr>
</tbody>
</table>

P10 total of OOIP (mmBbl) 152,662

P10 Theoretical recoverable resource at 5% (mmbbl) 7,633

* Avg bbl/ha = 124,000 (Crick I et al. 1988)

** Avg Bbl/ha = 105,000 (Crick I et al. 1988)

The unconventional Prospective contingent Resource Total hydrocarbon was estimated through a depth map to the top of the Barney Creek Formation, constructed by Ausmec Geoscience using data from mineral wells and surface geology, combined with an estimate of the thermal maturity provided by the Adelaide Research Institute. Calculations of prospective hydrocarbons are based on the Report by: Crick, I. H., Boreham, C. J., Cook, A.C., & Powell. T.G. 1988 Petroleum Geology and geochemistry of Middle Proterozoic McArthur Basin, Northern Australia II: Assessment of source rock potential. AAPG Bulletin, 72. 1495-1514. Prospective Resources under this classification are as yet undiscovered and as such carry significant exploration risk.

NB: Estimates are not peer reviewed and are preliminary based on previous academic papers and early stage risk segment mapping. Independent third party analysis will be undertaken following stratigraphic drilling programs.
Contact

Australia

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