Great Divide SAGD Facilities - 10587

This presentation contains forward looking information including, expectations for future production and total bitumen recovery, estimates of reserves, future development of the SAGD+® process commercial project at Algar and mini-steam expansion at Pod One and the anticipated impact thereof, growth potential associated with certain additional capital investment options and development projects to be undertaken at Algar, sustainability of production, well and plant performance, the steam to oil ratio (“SOR”), and plant reliability.

Forward looking information is based on management’s expectations regarding the Company’s future growth and financial position; results of operations and production, future commodity prices and foreign exchange rates; future capital and other expenditures (including the amount, nature, and sources of funding thereof), plans for and results of drilling activity; environmental matters; business prospects and opportunities; and future economic conditions. Forward looking information involves significant known and unknown risks and uncertainties, which could cause actual results to differ materially from those anticipated. These risks include, but are not limited to: the risks associated with the oil and gas industry (e.g., operational risks in development, exploration and production; delays or changes in plans with respect to exploration or development projects or capital expenditures; the uncertainty of reserve and resource estimates; the uncertainty of geological interpretations; the uncertainty of estimates and projections relating to production, costs and expenses; and health, safety and environmental risks), risk of commodity price and foreign exchange rate fluctuations, risks associated with the impact of general economic conditions, risks and uncertainties associated with maintaining the necessary regulatory approvals and securing the financing to proceed with the operation and continued expansion of the Great Divide oil sands project.

This presentation includes information pertaining to the reserves as at December 31, 2014, as evaluated by GLJ Petroleum Consultants Ltd., in their report for the year ended December 31, 2014 (the “GLJ Report”). Statements relating to reserves are deemed to be forward looking statements, as they involve the implied assessment, based on certain estimates and assumptions, that the reserves described exist in the quantities predicted or estimated, and can be profitably produced in the future. Certain information and assumptions relating to the reserves reported herein are set out in the Corporation’s Annual Information Form for the year ended December 31, 2014, which is available on the System for Electronic Document Analysis and Retrieval (SEDAR) at www.sedar.com. There is no assurance that the forecast price and cost assumptions contained in the GLJ Report will be attained and variances could be material. The reserves estimates of Connacher’s properties described herein are estimates only. The actual reserves on Connacher’s properties may be greater or less than those calculated.

Design capacity is not necessarily indicative of the stabilized production levels or steam generation capacity that may ultimately be achieved at Connacher’s SAGD project sites. Reported average production levels may not be reflective of sustainable production rates and future production rates may differ materially from the production rates reflected in this presentation due to, among other factors, difficulties or interruptions encountered during the production of bitumen.

Although Connacher believes that the expectations in such forward looking information are reasonable, there can be no assurance that such expectations shall prove to be correct. The forward looking information included in this presentation is expressly qualified in its entirety by this cautionary statement. The forward looking information included herein is made as of the date of this presentation and Connacher assumes no obligation to update or revise any forward looking information to reflect new events or circumstances, except as required by law.
## Agenda

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### Surface Presentations

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<td>Behrang Nafchi</td>
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Subsurface - Background
• Connacher is a focused developer, producer, and bitumen marketer from its in-situ oil sands projects in Alberta’s Athabasca oil sands.

• Primary driver of value is the expansion and continued development of its bitumen production at its Great Divide oil sands operations using in-situ recovery methods

• Oil sands reserves and resources include 441,032 Mbbl of 2P reserves (as of 31 December 2014 per GLJ Petroleum Consultants) (1)

(1) See Slide AppendixB for Reserve Definitions
Pod One

- First Steam September 2007
- First Bitumen October 2007

Algar

- First Steam May 2010
- First Bitumen July 2010
Highlights - 2015 Connacher Presentation

No Changes to Net Pay and other Geology Maps

Infills:
- Pad 102 (7)
- Pad 101 (6)

Mini Expansion at Pod One Approved

Pad 104
- 10 Well Pairs Approved
- 4 Wells Drilled and Producing

Five Infills Approved at Pad 203

SAGD+® Process Commercial Project Approved at Algar

Other
- Pump Performance Update
- Water Recycle
- Facilities and MARP updates
- HSE Updates
Great Divide (Approval 10587) Development

Pod One Current Development

- 23 Well Pairs and 13 Infills producing
  - Pad 101N - 5 Well Pairs
  - Pad 101S - 6 Well Pairs, 6 Infills
  - Pad 102W - 5 Well Pairs, 5 Infills
  - Pad 102S - 3 Well Pairs, 2 Infills
  - Pad 104 - 4 Well Pairs 80m interwell spacing

Pod One Development History

- Original 15 Well Pairs Drilled in 2007
  - all well pair interwell spacing 100m except Pad 104
- 2 Well Pairs Drilled in 2009 (101S and 102S)
- 2 Well Pairs Drilled in 2010 (102S)
- 4 Infills Drilled in 2013 (102W)
- 4 Well Pairs Drilled in 2013 (104)
Great Divide (Approval 10587) Development

Algar Current Development

- 18 Well Pairs Producing
  - Pad 201S - 5 Well Pairs 100m interwell spacing
  - Pad 202S - 6 Well Pairs (1 re-drill) 100m interwell spacing
  - Pad 203S - 7 Well Pairs 100m interwell spacing

Algar Development History

- Original 17 Well Pairs Drilled in 2009
- Replacement Well Pair (202-01) drilled in 2013
- Approved for 5 Infills on Pad 203 in 2014
## Great Divide Summary

<table>
<thead>
<tr>
<th></th>
<th>Pod One @ Sept 30, 2015</th>
<th>Algar @ Sept 30, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Steam</strong></td>
<td>September 2007</td>
<td>May 2010</td>
</tr>
<tr>
<td><strong>First Sales Oil</strong></td>
<td>October 2007</td>
<td>June 2010</td>
</tr>
<tr>
<td><strong>Cumulative Bitumen Produced e³m³</strong></td>
<td>3,023</td>
<td>1,831</td>
</tr>
<tr>
<td><strong>Cumulative Steam Injected e³m³</strong></td>
<td>11,500</td>
<td>8,293</td>
</tr>
<tr>
<td><strong>Cumulative SOR</strong></td>
<td>3.80</td>
<td>4.53</td>
</tr>
<tr>
<td><strong>Number of Producing Well Pairs</strong></td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td><strong>Number of Circulating Well Pairs</strong></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Infill Wells Producing</strong></td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td><strong>Wells Using Gas Lift</strong></td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td><strong>Wells Using Downhole Pumps</strong></td>
<td>34</td>
<td>3</td>
</tr>
<tr>
<td><strong>Operating Pressure Gas Lift</strong></td>
<td>NA</td>
<td>3850 - 3900 kPa</td>
</tr>
<tr>
<td><strong>Operating Pressure Pump</strong></td>
<td>1300 - 2980 kPa</td>
<td>3000 - 3800 kPa</td>
</tr>
<tr>
<td><strong>Directive 51 Operating MOP</strong></td>
<td>6205 kPa Maximum Operating Pressure</td>
<td>6205 kPa Maximum Operating Pressure</td>
</tr>
</tbody>
</table>
Subsurface - Geology
Great Divide Area Type Well

Great Divide Area Stratigraphy

- Base Fish Scales
- Viking
- Joli Fou
- Grand Rapids
- Lower Grand Rapids
- Clearwater
- Wabiskaw
- McMurray
- Top Oil Sand
- McMurray C Bitumen Reservoir
- Paleozoic
- Devonian Carbonates

TVD: 514.6m

- Resistivity (ohmm)
- Density Porosity (dec)
- Neutron Porosity (dec)
- GR (api)

SP (mV): -150.00 to 150.00

1:2000

McMurray Gas Zones

1AA/01-17-082-12W4/00
Great Divide Area Core & Log Data

Log vs Core Comparison
Analytical interpretation of geophysical logs to determine bitumen saturations (wt%) gives good correlation with core derived bitumen saturations (wt%). Examples shown below.

Typical Composite Log with Interpretation and core data comparison.

<table>
<thead>
<tr>
<th>Well</th>
<th>Log NetPay</th>
<th>Core Net Pay</th>
<th>Log Bitumen Wt %</th>
<th>Core Bitumen Wt %</th>
</tr>
</thead>
<tbody>
<tr>
<td>100/08-17-082-12W400</td>
<td>21.3</td>
<td>23.3</td>
<td>13.6%</td>
<td>14.0%</td>
</tr>
<tr>
<td>1AA/03-17-082-12W400</td>
<td>13.2</td>
<td>12.0</td>
<td>11.6%</td>
<td>12.7%</td>
</tr>
<tr>
<td>1AA/03-21-082-12W400</td>
<td>14.9</td>
<td>13.3</td>
<td>10.2%</td>
<td>10.4%</td>
</tr>
<tr>
<td>1AA/07-16-082-12W400</td>
<td>25.9</td>
<td>27.7</td>
<td>11.5%</td>
<td>12.7%</td>
</tr>
<tr>
<td>1AA/10-21-082-12W400</td>
<td>20.8</td>
<td>17.2</td>
<td>13.2%</td>
<td>14.8%</td>
</tr>
</tbody>
</table>
Great Divide Reservoir Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Pod One</th>
<th>Algar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservoir Thickness (m)</td>
<td>Range: 10 - 30, Average: 22</td>
<td>Range: 10 - 30, Average: 25</td>
</tr>
<tr>
<td>Depth to Top of Reservoir (m)</td>
<td>Range: 450 - 490, Average: 475</td>
<td>Range: 465 - 500, Average: 485</td>
</tr>
<tr>
<td>Reservoir Net Pay (m)</td>
<td>Range: 10 - 25, Average: 21</td>
<td>Range: 10 - 30, Average: 22</td>
</tr>
<tr>
<td>Oil Saturation (%)</td>
<td>Range: 75 - 85, Average: 80</td>
<td>Range: 72 - 80, Average: 76</td>
</tr>
<tr>
<td>Bitumen Density (kg/m³)</td>
<td></td>
<td>1018</td>
</tr>
<tr>
<td>Bitumen Viscosity (cPs)</td>
<td>&gt; 1 million</td>
<td>&gt; 1 million</td>
</tr>
<tr>
<td>Porosity (%)</td>
<td>Range: 32 - 34, Average: 33</td>
<td>Range: 32 - 34, Average: 33</td>
</tr>
<tr>
<td>Vertical Permeability (mD)</td>
<td>Range: 1500 - 4000</td>
<td>Range: 1500 - 4000</td>
</tr>
<tr>
<td>Horizontal Permeability (mD)</td>
<td>Range: 2000 - 5000</td>
<td>Range: 2000 - 5000</td>
</tr>
<tr>
<td>Initial Reservoir Temperature (°C)</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Initial Reservoir Pressure (kPa)</td>
<td></td>
<td>3500</td>
</tr>
<tr>
<td>Initial Bottom Water Pressure (kPa)</td>
<td></td>
<td>2500</td>
</tr>
</tbody>
</table>
3D Seismic has been successfully used by Connacher to define edges, sand thickness and paleo structure, and ultimately reduces the drilling costs.

No new Seismic was shot during the 2014-15 exploratory season.
Great Divide Area Oil Sands Facies and Pay

Zones
Defined by Vshale

Connacher Cut-Offs
Z1 (Sand): 0-10% fines
Z2 (Sandy IHS): 10-20% fines
Z3 (IHS): 20-50% fines
Z4 (Muddy IHS): 50-80% fines
Z5 (Mud): 80-100% fines
Z6 (Breccia): >10% clasts

Pay Base Criteria
Minimum bitumen grade: 7wt%
Minimum Net/Gross ratio: 80%
Maximum included shale interval: 2m
Minimum zone thickness: 10 m

Core displayed is from a number of separate wells
Net Pay Map Great Divide Area

Minimum Criteria:

Continuous Net Pay >10m
Saturation 7% Bitumen by Weight
Porosity >25%

Great Divide Project Approval Area
Great Divide Approved Development Area
Original pressure of the gas cap was 2027 kPa in 1988. Subsequent to depletion, the lowest pressure recorded was 746 kPa in 2003.

Estimated original BW pressure of 2500 kPa (based on lowest (520m Kb) gage in Algar obs well 100/15-13-082-12W4 prior to steam injection May 2010.
Top of Oil Sands Elevation (m)
Base of Oil Sands

![Map of Base of Oil Sands Elevation (m)](image)

- **R12W4**
- **R11W4**
- **T82**

**Base of Oil Sands Elevation (m)**
Paleo Structure Elevation

R12W4

R11W4

T82

Paleo Structure Elevation (m)
The cap-rock in the Great Divide Area consists of a mixture of muddy inclined heterolithic strata (IHS) and a mudstone that average over 10 meters in thickness. The muddy IHS consists of 80% volume of shale that is bio-turbated with mud-lined and sand-filled burrows. Muddy IHS is interpreted to be deposited in a muddy point bar. The light grey mudstone is thinly bedded with the top containing siderite nodules and rootlets. It is interpreted to be deposited in a mud flat to swamp environment. Above are core photos of the cap rock from well 1AA/06-21-82-12W4.
A Mini Frac test was conducted in well 1AB/14-27-082-12W4 in February 2010. Certain concerns were raised about one test being representative for the whole project area and also the closure pressure determined for the Wabiskaw which could have been influenced by local changes in rock mechanical properties.

Consequently a second test was conducted at 1AC/09-22-082-12W4 in April 2013, and this is reported in the table below.

Results of the 2nd Mini Frac at 1AC/09-22-082-12W4

<table>
<thead>
<tr>
<th>Zone Tested</th>
<th>Test Interval (mKb)</th>
<th>BH Fracture Pressure (kPa)</th>
<th>Gradient (kPa/m)</th>
<th>Closure Pressure (kPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearwater Shale</td>
<td>463 - 464</td>
<td>8,635</td>
<td>18.6</td>
<td>6,421</td>
</tr>
<tr>
<td>Wabiskaw Shale</td>
<td>474 - 475</td>
<td>10,534</td>
<td>22.2</td>
<td>7,917</td>
</tr>
<tr>
<td>McMurray Shale</td>
<td>481 - 482</td>
<td>8,057</td>
<td>16.7</td>
<td>6,155</td>
</tr>
<tr>
<td>McMurray Oilsand</td>
<td>517 - 518</td>
<td>6,503</td>
<td>12.6</td>
<td>5,397</td>
</tr>
</tbody>
</table>
Cap Rock Integrity - Pod One Monthly Average BH Injection Pressure

Directive 51 Maximum Operating Pressure = 6,205 kPag
Cap Rock Integrity - Algar Monthly
Average BH Injection Pressure

Directive 51 Maximum Operating Pressure = 6,205 kPag
Subsurface - Recovery Process
Great Divide SAGD Recovery Process

Basic Process

- **Cap Rock**
- **Oil Sands**

Circulation
- High Pressure
- ~90 days
- Steam Lift

Peak SAGD Production
- High Pressure
- ~12 to 18 months
- Gas Lift

Low Pressure SAGD Production
- Low Pressure
- ~4 to 6 years
- Pumps

Additional Process

**Pod One**
- Pressure Balancing under a gas cap and lean zone
- Infill Wells
- Gas Cap Repressurization
- Natural Gas Co-injection (intermittent pressure maintenance)

**Algar**
- Pressure Balancing over a water zone
- SAGD+® Commercial Project
- Natural Gas Co-injection (intermittent pressure maintenance)
<table>
<thead>
<tr>
<th>Description</th>
<th>Stage</th>
<th>Reason</th>
<th>Approvals</th>
</tr>
</thead>
</table>
| Pressure Balancing Under a Top Gas & Lean Zone & Bottom Water | Developed     | • Eliminate steam losses into a gas and lean zone, lower SORs and improve productivity.  
• Required the parallel development of reliability on high temperature downhole pumps. | Operating within existing approvals                                           |
| Gas Co-injection                                      | Implemented    | • Natural gas can replace steam to maintain pressure                                         | Approved for full field at Pod One  
Approved for full field at Algar                                               |
| Gas Cap Repressurization                              | Implemented    | • Reduces steam losses into gas cap and lean zone                                           | Approved                                                                  |
| **SAGD+® Process Trial / Commercial**                 |                | • Trial Finished in 2 wells  
• Commercial Project under construction  
• Reduces bitumen viscosity lower than steam alone to improve production rates, SOR, and recovery. | Commercial SAGD+® Commercial Project approved at Algar                      |
| Infill Wells                                          | 11 Infills on production at Pod One October 30,2015 | • Additional production and reserves at low capital and SORs                                | Approved for 5 Infill Wells at Algar Pad 203                               |
• Temporary production impact during pressure balance
• Improved SOR with low pressure operation
• *Pad 104 is being operated in a similar manner except that the re-pressurization is expected to reduce the quantity of steam losses when the steam reaches the lean zone and pumps are being installed earlier*

Note: Detailed description of the process provided in the attached technical paper presented by Connacher at the 2011 WHOC.
Pressure Balancing (Bottom Water)

Installed ESP to balance Inj Pressure with BW Pressure

Installed Steam Diverter

Production: Well 201-03 - Rod Pump

- Allocated Steam (m3)
- Allocated Oil (m3)
- Injector BHP / 1000 (kPa)
The purpose of gas cap re-pressuring is to increase the pressure in the gas cap and lean zone immediately above Pad 104 and institute a more effective pressure balancing process. Simulations had shown long term benefits to production and SOR by re-pressuring to just below the SAGD operating pressures (~2300 kPa in pump mode). Details of this are discussed in detail in the Pressure Balancing paper at Pod One which is attached to this presentation.

- The re-pressuring process was underway prior to the start up of Pad 104 in 2013. Methane was injected into the 9-17 well at the injection rates shown in the graph below.

- The gas cap pressure at the 7-17 observation well was approximately 1600 kPa prior to gas injection, and the average pressure for September 2015 was 2392 kPa in the gas cap and 2506 kPa in the lean zone.

- Currently the well is injecting just enough gas to maintain the pressure.

- The response to gas injection at the 7-17 observation well is shown in the following slide.
The chart shows the response at various pressure transducers in observation well 7-17 (approximately 600m south of the gas injection at 9-17). The transducers are set at the KB elevations shown on the adjacent log. The interesting observation from this data is the different responses in the gas cap and the lean zone which in this particular well is separated by approximately 3m of shale. The pressure response in the lean zone is noticeably faster than in the gas cap as shown in the lines connecting the chart and the log. From an operational perspective, Connacher is able to pressure the lean zone and gas cap to the target pressure of 2,400 kPa from the 9-17 gas injector.
SAGD+® Commercial Project

Phase 1
- In January 2011, ERCB granted approval for a trial of light hydrocarbon - steam co-injection in the seven well pairs of Pad 203.
- Connacher selected two well pairs 203-2 and 203-3 for an initial test (Phase 1) of the process.
- In Phase 1, a commercially available solvent was co-injected with the steam starting in July 2011 at initial rates of approximately 10% by volume and increased to 15% by volume in October 2011. Compared to an April 2011 baseline, daily average per well bitumen production volumes during the months of August 2011 through October 2011 increased approximately 28% percent with a SOR decrease of 16%. The SOR decrease was limited by the necessity to increase steam injection rates to maintain normal operating pressure.
- Phase 1 injection ended November 2011. Solvent was recovered from the Phase 1 wells until April 2012 just prior to the start of Phase 1.5, 89% of the solvent had been recovered to surface.

Phase 1.5
- Phase 1.5 commenced in May 2012 with solvent injection of approximately 10% until August when injection rates were reduced to approximately 6%, and further reduced in March 2013 to approximately 4%. In 2014 solvent injection rates averaged 5.9%.
- In the 12 months May 2012 through April 2013 bitumen rates increased by approximately 30% compared to the four months prior to the test. The SOR decreased 32% over the same period.
- In July 2013 an ESP was installed in 203-01. Following operational issues the pump was removed in December 2013. The bank of solvent built up during the ESP issues resulted in improved results following the return to gas-lift.
- The SOR for Well 203-01 during the life of the test is 3.0 significantly lower than other wells in the project.
- Solvent injection was stopped in Well 203-1 on April 21, 2015.

Note: details of the measurement of solvent injection and recovery are discussed in the attached Steam Solvent SAGD Paper and the Algar MARP.
In May, 2014 steam was injected into 101-I01 and 101-I03 for ~ 2 weeks.

This steam cycle did not yield any positive results beyond slightly increasing reservoir pressure.

Currently there is no excess steam capacity at Pod One to inject into Pad 101N on a continuous basis.

Current strategy for 101N is to continue to produce using rod pumps.

Oil cuts have remained steady since discontinuing steam injection, and range from 40 to 50 per cent.
NCG Co-injection intended for pressure maintenance and ability to replace steam with NCG during times of steam shortage.

Commercial Scheme Approval issued for Full Field NCG Co-injection at all wells at Pod One and Algar:

- maximum of $10 \times 10^3$ m$^3$ per day
- limited to a maximum of 4 mole per cent with steam (monthly basis)
- limited to a maximum 20 per cent NCG replacement with steam (6 month average basis)
Infill Wells at Pod One - Pad 102W

- Infills were drilled shorter than the adjacent well pairs to avoid penetrating the thin channel edge.
- Temperature logs prior to the steam injection indicated wide variations in temperatures along horizontal sections of the infill wells.
- In order to increase temperature in the wells steam cycles were initiated as shown in the graph to the right.
- Infill well 02 received the smallest volume of steam and responded the fastest and also had the highest temperature measured in the pre-steam survey.

Bottom Hole temperature surveys were carried out prior to steaming the infill wells.
### New Infill Wells at Pod One - Pad 101/102

<table>
<thead>
<tr>
<th>Pad</th>
<th>Infill Well</th>
<th>UWI</th>
<th>Production Start Date</th>
<th>Cum Oil Sept.30 2015 (m3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>101S</td>
<td>101-INF07</td>
<td>109/16-17-082-12W4/0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>101S</td>
<td>101-INF08</td>
<td>108/16-17-082-12W4/0</td>
<td>Sept 13, 2014</td>
<td>30871</td>
</tr>
<tr>
<td>101S</td>
<td>101-INF09</td>
<td>105/09-17-082-12W4/0</td>
<td>July 17, 2014</td>
<td>24856</td>
</tr>
<tr>
<td>101S</td>
<td>101-INF10</td>
<td>112/12-16-082-12W4/0</td>
<td>July 24, 2014</td>
<td>26665</td>
</tr>
<tr>
<td>101S</td>
<td>101-INF11</td>
<td>114/12-16-082-12W4/0</td>
<td>Aug 18, 2014</td>
<td>30181</td>
</tr>
<tr>
<td>101S</td>
<td>101-INF12</td>
<td>113/12-16-082-12W4/0</td>
<td>Oct 4, 2014</td>
<td>24369</td>
</tr>
<tr>
<td>102W</td>
<td>102-INF06</td>
<td>112/08-20-082-12W4/0</td>
<td>May 3, 2015</td>
<td>13156</td>
</tr>
<tr>
<td>102W</td>
<td>102-INF13</td>
<td>115/12-16-082-12W4/0</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>102W</td>
<td>102-INF14</td>
<td>116/12-16-082-12W4/0</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Subsurface - Completions
Typical bottom hole pressure and temperature measurement

**Injector well BHP measurement:**

- Blanket gas on annular side of the wellhead which is isolated from steam injection points for short and long strings

**Producer well BHP measurement:**

- Algar (gas lift), read by the short string lift gas pressure at surface. This is landed at the heel of the well. The annulus of the well, function as a bubble tube.
- Pod One, read by instrumentation coils which function as a bubble tube. This is landed at the toe of the well. The coil has a check valve at the end to prevent fluid from backing up inside.

**Injector well BHT measurement**

- Connacher does not measure injector well BHT. This is interpreted from injector reservoir pressure using saturated steam temperature tables.

**Producer well BHT Measurement**

- Connacher uses instrumentation coil strings with fiber or thermocouples to measure producer well BHT at both Algar and Pod One.
Typical Injector Completion

**Injection port**
- Allows for an increased volume of steam injection through the long string (hydraulic limitations)
- Promotes more uniform steam distribution throughout the slotted liner

**Short String**
88.9 mm tubing to ? mKB
73.0 mm tubing ? to ?? mKB

**Long String**
88.9 mm tubing to ? mKB
73.3 mm tubing ? to ?? mKB
88.9 mm tubing ?? to ??? mKB
Typical Producer Gas Lift Completion

Production port
- Allows for an increased volume of fluid to move to surface from the toe (due to pressure drop)
- Promotes more uniform steam chamber development (production optimization) due to production of fluid draining in central region of the well bore
Typical Producer Mechanical Lift

**ESP development**
- Connacher was the first company to run the high temperature limit ESP
  - Previous temperature limit
    - $218^\circ C$
  - Current temperature limit
    - $250^\circ C$

**Production tail pipe**
- Allows for an increased volume of fluid to move to surface from the toe
  - Reduces preferential production from the heel (more uniform chamber)
  - Allows for more cooling prior to reaching pump (less steam at pump)

**Electronic Submersible Pump**
- Metal on metal Progressive cavity pump
- Tubing pump (hydraulic pump jack)
Improved Well Bore Design (Algar)

Injector
- Short inj string
- 7" slotted liner
- Inj port
- Long inj string

Producer
- Instrument string
- Short prd string
- Gas lift coil
- Prd port
- 7" slotted liner
- Long prd string
- Long prd string
Typical Infill Well Completion

- Surface Casing
- Production casing
- Corod
- Guide String
- Tubing
- Instrument String
- Tailpipe tubing
- Pump
- Production Port
- Slotted Liner Hanger
- Liner
Subsurface - Artificial Lift
## Artificial Lift Performance - Pod One

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### Pads 101S, 102W, 102S & 104

These Pads produce from good quality oil sands reservoir and are a good application of ESP’s. The pump history is shown here as an example.

The higher rate wells can accommodate ESP’s whereas lower rate wells and infills operate more efficiently with rod pumps.

Pads 101S, 102W and 102S are similar and a detailed history of all the pumps at Great Divide is provide in the additional files accompanying this presentation.

---

**Pad 101N**

As steam is removed from this Pad rod pumps are the most practical solution.
Artificial Lift Performance - Algar

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</table>

Algar

Artificial lift at Algar was based on gas lift for the early stages of production with a later move to lower pressure operation with pumps being considered.

The selection of pumps is based on well productivity and Connacher’s experience.

ESPs have been used in three wells in Pad 201. These three wells are in, or close to, a limited bottom water zone and the pumps are required to balance pressure and avoid high steam losses.

Recently, and as part of the SAGD+® test, ESPs were installed in three wells in Pad 203. Results show that SOR was reduced by using ESPs for artificial lift. But, due to reservoir characteristics and economics, these wells were converted back to gas lift.
• Surface Casing Vent Flow (SCVF) assemblies were installed on remaining wells at Pads 101 and 102 in October 2015.

• SCVF tests were conducted on all injectors and producers at Pod One and Algar in October, 2015. Results will be reported to the AER through DDS.

• Surface Casing Vent Flow assemblies were installed on new infill wells at Pad 101S.

• A summary table of all historical SCVF results is provided as an additional file to this report.

• Connacher believes that it is currently compliant with all SCVF requirements at the Great Divide Project.
Subsurface - Monitoring
Pod One Observation Wells

100/11-21-82-12W4, Operational April 2011
- Monitor North Pad Performance (47m from Well Pair 101-04)
- Five temperature and five pressure measurements all operational
- Temperature readings suspect - all at original reservoir temperature ~14 °C
- Pressure gauges operational
- Continue collecting data

100/06-21-082-12W4, Operational Dec 2007
- Purpose was to measure rise of steam and to determine if steam moved into any overlying gas caps (39 m from Well Pair 101-05)
- Operational but readings suspect
- Maximum temperature 20 °C.
- Pressure gauges not operational
- Continue collecting data

111/12-16-82-12W4, Operational Mar 2010
- Provided observations on effects of low pressure operations (40 m from Well Pair 101S-P10)
- Five temperature measurements all operational. 2 of 5 Pressure gauges not operational
- Continue collecting data

111/05-21-82-12W4, Operational Mar 2012
- Drilled to acquire information on temperature between well pairs for future infill wells (40m from Well Pair 102-03)
- Five temperature measurements operational. Lower pressure gauge not operational
- Continue collecting data

100/07-17-82-12W4, Operational Mar 2012
- Drilled to acquire information on gas cap repressurizing (33m from Well Pair 104-P03)
- Five temperature and five pressure measurements operational
- Continue collecting data

Net Pay (m)
- 10-15m
- 15-20m
- 20-25m
- 25-30m
- >30m

Highway

Cored Wells
Pod One - Typical Observations Well

Blue line = Piezometer Cables
Red line = MI Thermocouple Cable

Location of Piezometers for Pres 1 and Pres 2

Pres 3 & Temp 5: 430.07mKB
Temp 4: 431.36mKB
Temp 3: 434.05mKB

Pres 2: 456.36mKB
Temp 2: 459.05mKB

Pres 1 & Temp 1: 468.05mKB

Note: As the 3 piezometers are landed within 3m of each other above the heated zone, it is expected that they should read the same temperature to within their range of accuracy.

De-Centralizing Clamps for Piezometer Windows

Open Hole

Hot Zone Top

Surface Casing

Hot Zone Bottom

Prepared by Petrospec Engineering Ltd.
Pod One Obs Well - 111/12-16-82-12 W4

Chamber appears to be fully developed. Steam is suspected to be leaking to gas cap and lean zone. Temperature readings provide support for gas cap repressurization. No valid pressure readings for 2 of 5 gauges after January 1, 2013.
No temperature response to yet. Pressure response to steam injection observed. Note that steam injection to Pad 104 commenced in September 1, 2013.
No valid pressure readings at the lowest gauge after January 1, 2013.
Temperature readings confirm that steam distribution in Pad 101N was a challenge. Note that Pad 101N is on blowdown. Temperature and pressure readings portray a relatively fast response to blowdown.

47m from 101-04
Pressure and Temperature readings are suspect.

39m from 101-05
Algar Observations Wells

100/04-19-082-11W4M Operational February 2011
- 6m from Well Pair 203-04
- Monitors Pad 202 performance
- Five temperature measurements operational
- Five pressure gauges are suspect

100/01-24-082-12W4M Operational February 2011
- 20m from Well Pair 203-06
- Five thermocouples operational
- Four pressure gauges operational

100/15-13-082-12W4M Operational February 2011
- 8m from Well Pair 201-04
- Five thermocouples operational
- One pressure gauge operational

100/09-13-082-12W4M Operational February 2011
- 37m from Well Pair 202-04
- Five thermocouples operational

111/16-13-82-12W4W4 Operational March 2012
- 48m from Well Pair 203-05
- Five thermocouples operational
- Five pressure gauges operational
Temperature readings at 490 m depth suggest that steam is moving to higher IHS zones. This suggests that the IHS zone are discontinuous at this location.
Temperature readings show temperature development in intense IHS zones. Pressure readings at this location are suspect.
Temperature readings supports the development of infill wells at this location. No pressure readings available.

37 m from 202-04
Temperature readings show temperature response in IHS zone.
Temperature readings show temperature development in the IHS zone. It is expected that there will be more temperature response at lower depths in the future. Pressure response is observed in the entire column.
Notes on Obs Well equipment failure

Pod One

12-16-82-12W4
- Thermocouples at all measurement depths are operating properly
- Piezometers at depths of 471m, and 478m are not operating due to gauge failure. There are no plans to replace the equipment

5-12-82-12W4
- Thermocouples at all depths are operating properly
- Piezometer located at 445.5 and 454m are not operating due to gauge failure. There are no plans to replace the equipment

6-21-82-12W4
- Thermocouples at all depths are operating properly
- All piezometers in this well are not operational. There are no plans to replace the equipment

Algar

9-13-82-12W4
- Thermocouples at all depths are operating properly
- All piezometers in this well are not operational. There are no plans to replace the equipment

15-13-82-12W4
- Thermocouples at all the depths are operating properly
- Piezometer located at 516m is the only pressure gauge operating properly. There are no plans to replace the equipment
In 2015, 13 km of ‘old’ Highway 63 (now S/B lanes) resurveyed in 2015 with +/- 10 cm of vertical movement (natural movement) observed at various points. Also a baseline survey was conducted on the ‘new’ N/B lanes of Highway 63. Within Pod One and Algar 30 monitoring and 5 control points were resurveyed in 2015. The maximum vertical deformation was 3cm (at 5 locations), all others were < 2cm. Connacher added 3 new monitoring points in 2015. All lanes of Highway 63, 33 monitoring points, and 5 control points will be resurveyed in 2016.
Pod One 4D Seismic

Geological cross section across seismic data

PP(Primary) conventional seismic is the difference btw the 2005 and 2010 seismic volumes

PS data shows changes in the shear component - Which is an indicator of steam in the rock since 2010

NRMS(Normalized Root Mean Square of the differences btw the 2005 and 2010 surveys) which highlights and confirms change in the reservoir since 2005
Pod One 4D Seismic (2)

NRMS - normalized root mean square represents the % change in the seismic signal since steaming operations began

Shear Data - should represent the extent of the steam chamber

The NRMS represents the percent change in the reservoir since steaming operations commenced in 2007. This roughly corresponds to produced bitumen and should represent the various steam chambers. The shear data is not affected by steam, gas or bitumen heated above 80 C, as this acts like a liquid. The resulting map should show the current extend of the steam chambers. The two maps should be similar and are not, therefore the results of the 4D seismic are inconclusive. Possible reasons for this include plant and highway noise, and errors resulting from using different geophones at different locations in the two surveys.
Subsurface - Scheme Performance
Pod One

- 23 Well Pairs (101N, 101S, 102S, 102W and 104)
- 13 Infills
- SAGD well pairs in 101N, 101S, 102S and 102W were drilled at 100m spacing
- SAGD well pairs in 104 were drilled at 80m spacing
- All infills (except 102INF06 @35m) were drilled at 50m spacing between the SAGD producers

Algar

- 18 Well Pairs (201, 202 and 203)
- All SAGD well pairs except 202-01R were drilled at 100m spacing
- 202-01R was drilled 35m from 201-01 and 65m from 202-02 well pair

Note: In order to accommodate similar production and injection start times well pair 11S (shown) was included with Pad 102S for performance plots and resource calculations.
Pod One Performance

Great Divide SAGD Facilities - 10587
Algar Performance

Great Divide SAGD Facilities - 10587
Pod One - Pad Production & Injection

Bitumen Production (m3/day)  Steam Inj (m3/day)  Produced Water(m3/day)

101N

102S

104

101S

102W

102S

104

101S

102W
Algar - Pad Production and Injection

Great Divide SAGD Facilities - 10587
Great Divide Performance - Cumulative Production by Pad
Great Divide Performance - Cumulative Production per Well by Pad

Cum Bitumen Production m3/well


101N 101S 102S 102W 104 201 202 203
CSOR by Pad for 101N and 202 appear to be trending similarly (increasing CSOR). Reservoir quantity (IHS & Breccia) is the main contributing factor to this performance. Well Pair 202-01 was completed in poor reservoir and a replacement well pair 202-01r was recently drilled in better reservoir and is performing well.
Great Divide Performance - Recovery Developed OBIP by Pad
Great Divide Performance - Recovery Steamed OBIP by Pad
## Pod One Performance - Well Summary

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<th>Cum Steam m³</th>
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## Pod One Performance Well Summary (2)

<table>
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<tr>
<th>Well Pad</th>
<th>Well Pair</th>
<th>Date</th>
<th>Months On</th>
<th>Cum Oil m³</th>
<th>Cum Steam m³</th>
<th>Oil Rate (m³/day)</th>
<th>CSOR</th>
<th>Lift</th>
<th>Comments</th>
</tr>
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<tbody>
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Pod One - Water Balance
Cumulative Steam In / Water Produced

Great Divide SAGD Facilities - 10587
### Pod One - Recoverable Bitumen By Pad

<table>
<thead>
<tr>
<th>Pads</th>
<th>Area (ha)</th>
<th>Avg Porosity (%)</th>
<th>Avg Oil Sat (%)</th>
<th>Avg Net Pay (m)</th>
<th>Pad OBIP (e³m³)</th>
<th>Est Pad Rec (%)</th>
<th>Est Pad Rec (e³m³)</th>
<th>To date Pad Rec (e³m³)</th>
<th>Recovery to Sept 2015 (%)</th>
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<td>33</td>
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**Notes:**

1. Pad 101N is in blowdown and an additional 2% recovery expected.
2. Additional of estimated infill recoveries of approximately 8% for Pads 101S, 102W, 102S, and 104.
3. Estimated Pad Recovery is based on the basic SAGD process.
4. Pad 101N injectors were plugged back approximately 1/3 back from well toes.
5. Initial Pad recoveries are proving to be on the conservative side.
Algar - Recoverable Bitumen by Pad

<table>
<thead>
<tr>
<th>Pads</th>
<th>Area (ha)</th>
<th>Avg Porosity (%)</th>
<th>Avg Oil Sat (%)</th>
<th>Avg Net Pay (m)</th>
<th>Pad OBIP (e³m³)</th>
<th>Est Pad Rec (%)</th>
<th>Est Pad Rec (e³m³)</th>
<th>To date Pad Rec (e³m³)</th>
<th>Recovery to Sept 2015 (%)</th>
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<td>854</td>
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</table>

Notes:

1. Pad 203 has completed SAGD+® on a trial basis. Reserves will be adjusted when the commercial project begins. An additional recovery of 10% of the OBIP is estimated.

2. Estimated Pad Recovery is based on the basic SAGD process.
Subsurface - Future Plans
Algar - Pad 203 Infills

- Commercial Scheme Approval 10587Q
- 5 Infills Approved at Pad 203
Pod One - Pad 104 Well Pairs

- 10 Well Pair Approved for Pad 104 (Approval 10587H)
- Currently there are 4 existing Well Pairs at Pad 104
Great Divide SAGD Expansion Project

- EIA Deemed Complete
- Commercial Scheme Approval
  Received September, 2012
- EPEA Approval Amendment
  Received December, 2013
- Approved for expansion to 44,000 bbl/day
Surface - Facilities
Pod One Plant

- Steam Generation Building
- Boiler Feedwater Tanks
- Surface Water Collection Pond
- Control Room and Admin Building
- Pad 104
- Temporary Incinerator
- Evaporator Building
- Evaporator Towers
- Glycol Building
- Treater / FWKO Building
- Trucking Facility
- Source Water Pumping Building
- Tank Building
- Tank Farm
- Feedwater Tanks
- Pad 104
**Key Points**

Design *Capacity* ~ 1,600 m³/day bitumen

*Steam Generation*: Drum boilers
- Operating pressure 6,300 kPa
- Deliver 4,300 m³/day steam @ 98% + Quality

*Treating*: Diluent addition

*Water Recycle*: IGF, WS Filter, Two vertical tube falling film evaporator towers

*Waste Water*: Waste water shipped to Algar 2nd Stage Evaporators

*Source water*: 3 operating source water wells in the Lower Grand Rapids formation, 1 other source water well approved
Algar Facilities

**Key Points**

Design *Capacity* ~ 1,600 m$^3$/day bitumen

*Steam Generation*: Drum boilers
- Operating pressure 6,700 kPa
- Deliver 4,800 m$^3$/day steam @ 98% + Quality

*Treating*: Diluent addition

*Water Recycle*: IGF, WS Filter, Two vertical tube falling film evaporator towers

*Waste Water*: All water shipped from facility to approved disposal sites

*Source water*: 3 operating source water wells in the Lower Grand Rapids formation, 1 other source water well approved
Great Divide Plant Modifications

Pod One

• Installed nozzles on surge tank for online cleaning
• Replaced VRU discharge carbon steel piping with stainless steel piping to eliminate leaks and corrosion potential
• Extended ladder and cage on T-703 to eliminate safety/hazard potential
• Upgraded flow meter on EDTA injection skid, adding the ability to accurately control the feed rate of EDTA to the evaporators and save chemical
• Decommission and remove utility steam section on Pad 101
• Added an extra inlet emulsion/glycol heat exchanger

Algar

• Boiler maintenance
• Upgraded CoGen fuel gas coriolis meter FT-96604 to a full diagnostic model to allow for MARP verification
• Extended the vent piping of the CoGen’s BFW to grade to allow for easier access
• Added caustic line from upstream fo FCV-51607 to upstream of FCV-12908, allowing operations staff to clean wasting line periodically
• Decommissioned SAGD+® trial equipment from Pad 203
• Started construction on SAGD+® commercial project.
Algar Plant Layout

Great Divide SAGD Facilities - 10587
Pod One and Algar Integration

Dilbit

Diluent

Evap Waste

Great Divide SAGD Facilities - 10587
Surface - Facility Performance
The reliability considers the two steam Boilers at the plant.

For the period October 1, 2014 to September 30, 2015 the steam plant has averaged 98.8% of the original design basis (4,320 m³/day) and 94.04% of the designed total fluid capacity (5,920 m³/day).

This performance compares to the previous 12 months. Which had a steam generation of 96% and a total fluid throughput of 90.2% of plant design capacity.

Reliability has been maintained in all areas of the operation.

Downtime Hours is the reported downtime for the Well Pairs.
The reliability considers the two steam Boilers at the plant. The Cogen steam is not included.

For the 12 months from October 1, 2014, to the of September 30, 2015 the steam plant output has averaged 82.43% of the original design basis (4800 m3/day) and 82.73% of the designed total fluid handling capacity (6400 m3/day).

This performance compares to the previous 12 months which had a steam generation of 82.7% and total fluid throughput of 81.3% of plant design capacity.

Downtime Hours is the reported downtime for the Well Pairs.
Great Divide SAGD Facilities - 10587

Greenhouse Gas Emissions Reported for December, 2014 = 232993.18 t CO₂ equivalent
Greenhouse Gas Emissions Reported for December, 2014 = 271789.56 t CO₂ equivalent
Algar Co-Generation Facility

• Designed to produce 13.1 MW electricity from GT and 588 m$^3$/d of steam from the HRSG
• Horse River sub-station on line June 2011
• Running near capacity with power distributed to both Algar and Pod One
• Steam being used at Algar
Surface - Measurement and Reporting
1. There are no changes to MARP for the reporting period.
Pod One and Algar Profacs

Pod One uses manual oil cuts however procedures implemented 2012 are clearly showing improved results.

An Agar oil cut meter is installed at Algar and work is progressing on the calibration however oil cuts are still reported from manual cuts.

The profac at Algar is calculated from the interconnect pipeline volumes whereas the Pod One profac is calculated from truck receipts less the Algar pipeline volumes and is subject to typical truck measurement differences.

Pod One

Algar
Surface - Water Recycle
Source Water Wells - Pod One

<table>
<thead>
<tr>
<th>Year</th>
<th>Pod One Water Withdrawals (m³/year)</th>
<th>Licenced Maximum Annual Diversion (m³/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>107471</td>
<td>292,000</td>
</tr>
<tr>
<td>2012</td>
<td>132670</td>
<td>292,000</td>
</tr>
<tr>
<td>2013</td>
<td>92462</td>
<td>292,000</td>
</tr>
<tr>
<td>2014</td>
<td>99722</td>
<td>292,000</td>
</tr>
<tr>
<td>2015</td>
<td>89630</td>
<td>292,000</td>
</tr>
</tbody>
</table>

Water Act Licence 00240458-01-00

<table>
<thead>
<tr>
<th>Well Location</th>
<th>Production Interval (meters below grade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-17-082-12 W4M</td>
<td>300 - 350</td>
</tr>
<tr>
<td>09-17-082-12 W4M</td>
<td>300 - 350</td>
</tr>
<tr>
<td>08-17-082-12 W4M</td>
<td>300 - 350</td>
</tr>
<tr>
<td>02-17-082-12 W4M (standby)</td>
<td>324 - 330</td>
</tr>
</tbody>
</table>

Pod One Water Wells
1F1/08-17-082-12W4/00
1F1/09-17-082-12W4/00
1F1/16-17-082-12W4/00

All wells use the Grand Rapids Formation for source water.
Source Water Wells - Algar

<table>
<thead>
<tr>
<th>Year</th>
<th>Algar Water Withdrawals (m³/year)</th>
<th>Licenced Maximum Annual Diversion (m³/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>68222</td>
<td>330,000</td>
</tr>
<tr>
<td>2012</td>
<td>96164</td>
<td>330,000</td>
</tr>
<tr>
<td>2013</td>
<td>78917</td>
<td>330,000</td>
</tr>
<tr>
<td>2014</td>
<td>40683</td>
<td>330,000</td>
</tr>
<tr>
<td>2015</td>
<td>33598</td>
<td>330,000</td>
</tr>
</tbody>
</table>

All wells use the Grand Rapids Formation for source water.
Evaporator Waste Integration

Pod 1

Evap waste
T-728

Truck-Transfer

Truck-Out

T-726

T-728

Algar Evap. System

FT 72608

Algar

Source Water
Wells

FT 51704 52604 53204

FT 90304

Utility Water

55805

T-740

Process Make-up Recycled to Process
• Evaporators produce high quality boiler feed water efficiently while generating a highly concentrated brine for disposal.

• At Algar a second stage evaporator further concentrates both the Algar brine and a portion of the Pod One brine to improve water reuse and minimize disposal.

• Disposal concentrations are close to crystallizer performance.

• Chemical optimization has significantly improved evaporator reliability.
Water Recycle Ratio

- The series evaporator operation at Algar provides high recycle rates and improved reliability.

- The Algar operation accommodates waste from the parallel evaporators at Pod One and brine is shipped from Pod One to Algar.

- By treating part of the Pod One blow-down at Algar the average yearly water recycle ratio for both plants is approximately 98.9%.
Surface - Future Plans
Pod One - Mini Steam Expansion

- Commercial Scheme Approval 10587P.
- 500 t/d of steam.
- Allows for 2 Well Pair at Pad 104.
- Steam Generator (17.26 MW).
- 2 Evaporator Units.
- SIR 1 Submitted for EPEA Amendment.
- No additional water allocation required.
SAGD+® Process Commercial

- Commercial Scheme Approval 10587K.
- Light hydrocarbon (solvent) and steam co-injection at all well pairs at Algar.
- Solvent to be recovered at facility for re-injection.
- EPEA 67(3) No objection received May, 2014.
- Construction began August, 2014 but not yet completed.
- Commercial Scheme Approval 10587K.
- 3 inch light hydrocarbon pipeline to all well pads.
- Installed on existing pipe rack.
- Construction completed but not yet commissioned.
Near Future Development to include:

- Pad 232 (Phase 1A)
- Borrow Pit
- Utility Corridor
Surface - Sulphur Production
Pod One Sulphur Emissions

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Average Sulphur Dioxide Emissions (t/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4 - 2014</td>
<td>0.55</td>
</tr>
<tr>
<td>Q1 - 2015</td>
<td>0.45</td>
</tr>
<tr>
<td>Q2 - 2015</td>
<td>0.42</td>
</tr>
<tr>
<td>Q3 - 2015</td>
<td>0.41</td>
</tr>
</tbody>
</table>

- Pod One EPEA $SO_2$ emission limit is 1.98 t/day
- Peak $SO_2$ emissions were 0.65 t/day on Oct 12&14, 2015

- Plant Total $SO_2 = Flared SO_2 + Steam Generators SO_2$
- There has been no material change in sulphur production observed over the past year of production at Pod One
- Connacher will continue to monitor produced gas $H_2S$ concentrations, sulphur emissions and evaluate plans for sulphury recovery installations
- $SO_2$ production is well below emission limits
Algar Sulphur Emissions

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Average Sulphur Dioxide Emissions (t/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q4 - 2014</td>
<td>0.71</td>
</tr>
<tr>
<td>Q1 - 2015</td>
<td>0.75</td>
</tr>
<tr>
<td>Q2 - 2015</td>
<td>0.77</td>
</tr>
<tr>
<td>Q3 - 2015</td>
<td>0.74</td>
</tr>
</tbody>
</table>

- Algar EPEA SO$_2$ emission limit is 1.98 t/day
- Peak SO$_2$ emissions were 1.11 t/day on Feb 17, 2015

- Plant Total SO$_2$ = Flared SO$_2$ + Steam Generators SO$_2$
- There has been no material change in sulphur production observed over the past year of production at Algar
- Connacher will continue to monitor produced gas H$_2$S concentrations, sulphur emissions and evaluate plans for sulphury recovery installations
- SO$_2$ production is well below emission limits
There are a total of 8 passive air monitoring stations at Pod One and Algar. These sites monitor for SO\(_2\) and H\(_2\)S. For the reporting period there were no exceedances of the AAAQO.

Connacher is required to complete continuous ambient air monitoring station for SO\(_2\), H\(_2\)S and NO\(_2\), as well as wind speed and wind direction. This monitoring is required 6 months per year. For the reporting period all measured concentrations were within the AAAQO’s.
Surface - Environment
## Great Divide Applications / Authorizations

<table>
<thead>
<tr>
<th>Approval Date</th>
<th>Authorization No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 4, 2013</td>
<td>10587M</td>
<td>Pod One Full Field NCG Co-injection Scheme Approval</td>
</tr>
<tr>
<td>December 12, 2013</td>
<td>10587N</td>
<td>Pod One - Pad 101 and Pad 102 Infills (9) Scheme Approval</td>
</tr>
<tr>
<td>January 8, 2014</td>
<td>10587O</td>
<td>SAGD+® Trail Pad 104 Scheme Approval</td>
</tr>
<tr>
<td>March 21, 2014</td>
<td>10587P</td>
<td>Mini-Expansion at Pod One Scheme Approval</td>
</tr>
<tr>
<td>Pending</td>
<td></td>
<td>EPEA Approval Amendment for Mini-Expansion at Pod One</td>
</tr>
<tr>
<td>June 10, 2014</td>
<td>F36853</td>
<td>Pod One Facility Licence Amendment</td>
</tr>
<tr>
<td>August 1, 2014</td>
<td>F40209</td>
<td>SAGD+® Commercial Project Facility Licence Amendment</td>
</tr>
<tr>
<td>August 13, 2014</td>
<td>56423</td>
<td>SAGD+® Commercial Project Solvent Pipeline Licence</td>
</tr>
<tr>
<td>September 10, 2014</td>
<td>10587Q</td>
<td>Algar - Pad 203 Infills (5) Scheme Approval</td>
</tr>
<tr>
<td>October 1, 2014</td>
<td>10587R</td>
<td>Algar Full Field NCG Co-injection Scheme Approval</td>
</tr>
<tr>
<td>Pending</td>
<td></td>
<td>Algar Water Act Licence 240527-00-00 Renewal</td>
</tr>
<tr>
<td>Pending</td>
<td></td>
<td>Pod One Water Act Licence 240458-01-00 Renewal</td>
</tr>
</tbody>
</table>
## Great Divide Inspections, Audits and VSDs

<table>
<thead>
<tr>
<th>Inspection Date</th>
<th>Licence Number</th>
<th>Location</th>
<th>Inspection Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 8, 2014</td>
<td>51876</td>
<td>01-24-082-12 W4M</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>October 8, 2014</td>
<td>54978</td>
<td>01-24-082-12 W4M</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>October 8, 2014</td>
<td>51620</td>
<td>14-18-082-11 W4M</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>October 8, 2014</td>
<td>48792</td>
<td>13-16-082-12 W4M</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>October 8, 2014</td>
<td>40209</td>
<td>15-18-082-11 W4M</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>January 1, 2015</td>
<td>36853</td>
<td>13-16-082-12 W4M</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>July 1, 2015</td>
<td>240008-00-04 (EPEA)</td>
<td>13-16-082-12 W4M</td>
<td>Satisfactory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Audit Date</th>
<th>Licence Number</th>
<th>Location</th>
<th>Issue and Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2014</td>
<td>10587</td>
<td>Great Divide SAGD</td>
<td>Injection Pressure audit. Technical data submitted. Closed</td>
</tr>
<tr>
<td>January 2015</td>
<td>W0450332</td>
<td>Pad 202 PO1-1</td>
<td>Unsatisfactory; failure to submit drilling waste records within 24 months of rig release. Closed</td>
</tr>
<tr>
<td>March 2015</td>
<td>W0455341</td>
<td>AC/09-22-082-12W4M</td>
<td>Unsatisfactory; failure to submit drilling waste records within 24 months of rig release. Closed</td>
</tr>
<tr>
<td>April 2015</td>
<td>W0445265</td>
<td>07/02-17-082-12W4M</td>
<td>Unsatisfactory; failure to submit drilling waste records within 24 months of rig release. Closed</td>
</tr>
<tr>
<td>VSD</td>
<td>Licence Number</td>
<td>Location</td>
<td>Issue and Resolution</td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>September 2014</td>
<td>W0374122</td>
<td>Pad 101N-I03</td>
<td>CLC failed to complete casing inspection log &amp; install casing corrosion coupon in well by July 30th, 2015. Closed Nov 21/2015</td>
</tr>
<tr>
<td>September 2014</td>
<td>multiple</td>
<td>various at Great Divide</td>
<td>CLC acquired several inactive pipelines within the Great Divide area that were not properly suspended or abandoned. Ongoing; AER granted an extension to complete pipeline discontinuation activities to March 31, 2016</td>
</tr>
<tr>
<td>January 2015</td>
<td>W0450336</td>
<td>105/01-13-082-12W4M</td>
<td>Low risk NC, failure to submit drilling waste records within 24 months identified by an internal audit. Closed</td>
</tr>
</tbody>
</table>
Great Divide Monitoring Programs

Connacher currently implements the following monitoring programs at the Great Divide Project:

- Groundwater monitoring program;
- Wildlife monitoring program (approved in late 2014);
- Ambient air monitoring program;
- Industrial wastewater and Industrial runoff monitoring program; and,
- Soil monitoring program.

As required by its EPEA Approval, Connacher has recently submitted to the AER the following:

- Caribou Mitigation Plan and Monitoring Program;
- Wildlife Mitigation Plan and Monitoring Program.
- Wetland Monitoring Program Proposal (December 2014)
- Soil Monitoring Program Proposal (January 2015)
Appendix A - List of Additional Material Submitted
Additional Material Attached to Submission:

Pressure & temperature data form observation wells for Pod One & Algar in prescribed AER Format

Energy Usage & Balance for Algar & Great Divide

Electrical Use at Pod One & Algar

SCVF GM Testing Results

Connacher Heave monitoring Data

Pump Histories
Appendix B - Bitumen Reserves and Resources
1) Proved reserves are those reserves that can be estimated with a high degree of certainty to be recoverable. It is likely that the actual remaining quantities recovered will exceed the estimated proved reserves.

2) Probable reserves are those additional reserves that are less certain to be recovered than proved reserves. It is equally likely that the actual remaining quantities recovered will be greater or less than the sum of the estimated proved plus probable reserves.

3) Possible reserves are those additional reserves that are less certain to be recovered than probable reserves. It is unlikely that the actual remaining quantities recovered will exceed the sum of the estimated proved plus probable plus possible reserves. Possible reserves were 128 million barrels as at Dec 31, 2014 per GLJ. There is a 10% probability that the quantities actually recovered will equal or exceed the sum of the proved plus probable plus possible reserves.
Appendix C - Individual Well Performance
Pod One Pad 101N Individual Well Performance

Bitumen Production (m3/day) | Steam Inj (m3/day) | Produced Water (m3/day)

Great Divide SAGD Facilities - 10587
Pod One Pad 101S Individual Well Performance

101-06

101-08

101-09

101-10

101-INF09p

101-INF10p

Bitumen Production (m3/day)
Steam Inj (m3/day)
Produced Water (m3/day)
Pod One Pad 102S Individual Well Performance

Pod One Pad 102W Individual Well Performance

Bitumen Production (m³/day)  Steam Inj (m³/day)  Produced Water (m³/day)

102-01  102-03  102-05  102-INF03p  102-INF05p

102-02  102-04  102-INF02p  102-INF04p  102-INF06p

Great Divide SAGD Facilities - 10587
Pod One Pad 104 Individual Well Performance

Great Divide SAGD Facilities - 10587
Algar Pad 203 Individual Well Performance

203-01 [Graph]
203-02 [Graph]
203-03 [Graph]
203-04 [Graph]
203-05 [Graph]
203-06 [Graph]
203-07 [Graph]