Cenovus Foster Creek in-situ oil sands scheme (8623) update for 2014
Advisory

This presentation contains information in compliance with:

AER Directive 054 - Performance Presentations, Auditing, and Surveillance of In Situ Oil Sands Schemes

Section 3.1.1 Subsurface Issues Related to Resource Evaluation and Recovery

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Additional information regarding Cenovus Energy Inc. is available at cenovus.com.
Current project status
Subsection 3.1.1-1
## Strong integrated portfolio

**TSX, NYSE | CVE**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise value</td>
<td>C$25 billion</td>
</tr>
<tr>
<td>Shares outstanding</td>
<td>829 MM</td>
</tr>
<tr>
<td>2015F production</td>
<td></td>
</tr>
<tr>
<td>Oil &amp; NGLs</td>
<td>204 Mmbls/d</td>
</tr>
<tr>
<td>Natural gas</td>
<td>438 MMcf/d</td>
</tr>
<tr>
<td>2014 proved &amp; probable reserves</td>
<td>3.9 BBOE</td>
</tr>
<tr>
<td>Bitumen</td>
<td></td>
</tr>
<tr>
<td>Economic contingent resources*</td>
<td>9.3 Bbbls</td>
</tr>
<tr>
<td>Discovered bitumen initially in place*</td>
<td>93 Bbbls</td>
</tr>
<tr>
<td>Lease rights**</td>
<td>1.5 MM net acres</td>
</tr>
<tr>
<td>P&amp;NG rights</td>
<td>5.6 MM net acres</td>
</tr>
<tr>
<td>Refining capacity</td>
<td>230 Mmbls/d net</td>
</tr>
</tbody>
</table>

Values are approximate. Forecast production based on midpoints of January 28, 2015 guidance. Cenovus land at December 31, 2014. *See advisory. **Includes an additional 0.5 million net acres of exclusive lease rights to lease on our behalf and our assignee’s behalf.
Foster Creek – current project status

- Phase A - 20k bbls/d on October 2001 (3,180 m³/d)
- 80 MW Cogen on Q1 2003
- Phase B - 30k bbls/d (4,770 m³/d) complete 2004
- Phase C - 60k bbls/d complete 2006 (9,534 m³/d)
- Phases D & E - 120k bbls/d complete 2009 (19,078 m³/d)
- Water treating debottleneck and cooling loop complete 2010
- Phase F - 150k bbls/d complete 2014
- Q1 2015 oil production 135,803 bbls/d (21,580 m³/d)
- Record oil production day 148,971 bbl (23,673 m³)
- Approved for Phases A – J

Note that production volumes refer to total cumulative production capacity

Aerial shot of Foster Creek facility, and steam and emulsion lines
Project status – phase D and E update

Main Plant:
• 120,000 bbls/d (19,078 m³/d) oil treating design capacity commissioned in 2009
• Debottleneck on water treating capacity complete in 2010
  • 2014 annualized average was 118,344 bbls/d (18,806 m³/d)
  • 2014 exit rate, Dec 2014, was 140,066 bbls/d (22,258 m³/d)

Phases A - E well update:
• E16 Wedge Well™ technology pad on production in June 2014
• E20 Wedge Well™ technology pad on production in August 2014
• E02 Wedge Well™ technology pad on production in September 2014
• E03 Wedge Well™ technology pad on production in November 2014
• E19 Wedge Well™ technology pad on production in December 2014
Project status – phase F, G and H expansion

Expansions have the following design capacities:

- Phase F – 30k bbls/d oil, online September 2014
- Phase G – 30k bbls/d oil, first production target 2016
- Phase H – 30k bbls/d oil, deferred

Phase F well update:

- E07 Pad on production in August 2014
- E14 Pad on production in October 2014
- E42 Pad on production in November 2014
- W06 Pad on production in November 2014
- W03 Pad on production in December 2014
- W08 Pad on production in March 2015
Geology / geoscience
Subsection 3.1.1 – 2)
Current Project Status – SAGD Resource

Development Boundary

Project Boundary

3248 MMBbls OBIP (516 MMm3)

4589 MMBbls OBIP (729 MMm3)

Clearwater Development Area

*OBIP calculation methodology available in subsequent slides
## Reservoir characteristics

<table>
<thead>
<tr>
<th>Reservoir Characteristic</th>
<th>West Area</th>
<th>Central Area</th>
<th>East Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth (m subsea)</td>
<td>180 – 225</td>
<td>180 – 225</td>
<td>180 – 225</td>
</tr>
<tr>
<td>Thickness (m)</td>
<td>Up to 30+</td>
<td>Up to 30+</td>
<td>Up to 30+</td>
</tr>
<tr>
<td>Porosity (%)</td>
<td>34%</td>
<td>34%</td>
<td>32%</td>
</tr>
<tr>
<td>Horizontal Permeability (D)</td>
<td>Up to 10 D</td>
<td>Up to 10 D</td>
<td>Up to 8 D</td>
</tr>
<tr>
<td>Vertical Permeability (D)</td>
<td>Up to 8 D</td>
<td>Up to 8 D</td>
<td>Up to 6 D</td>
</tr>
<tr>
<td>Oil Saturation</td>
<td>~0.85 (0.50 in transition)</td>
<td>~0.85 (0.50 in transition)</td>
<td>~0.85 (0.50 in transition)</td>
</tr>
<tr>
<td>Water Saturation</td>
<td>~0.15 (0.50 in transition)</td>
<td>~0.15 (0.50 in transition)</td>
<td>~0.15 (0.50 in transition)</td>
</tr>
<tr>
<td>Original Pressure (kPa)</td>
<td>~2700</td>
<td>~2700</td>
<td>~2700</td>
</tr>
<tr>
<td>Original Temperature (ºC)</td>
<td>12 ºC</td>
<td>12 ºC</td>
<td>12 ºC</td>
</tr>
</tbody>
</table>
Composite type log: central wells

- Basal mud defines base of pay
- Basal mud is discontinuous and ranges from 0-4 metres in thickness
- Provides a good marker during SAGD operations

Location: 11-19-70-4W4
Composite type log: east wells

- Basal mud defines base of pay
- Basal mud is discontinuous and ranges from 0-4 metres in thickness
- Provides a good marker during SAGD operations

Location: 2-21-70-3W4
Composite type log: west wells

- Basal mud defines base of pay
- Basal mud is discontinuous and ranges from 0-4 metres in thickness
- Provides a good marker during SAGD operations

Location: 16-12-70-6W4
Maps and core
Subsection 3.1.1 – 2, c, d and f)
2014 SAGD Pay Isopach (2015 Strats)

- Development Boundary
- Project Boundary
- Clearwater Development Area
- 91 Strat Wells

*OBIP calculation methodology available in subsequent slides

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McMurray to Paleozoic Isopach
Paleozoic Structure
SAGD Pay Top Structure

[Diagram showing geological structure with boundaries and areas labeled, including FC Development Boundary, FC Project Boundary, and Clearwater Development Area]
SAGD Base Structure
Cored Locations (2015)
### Post-steam core locations

<table>
<thead>
<tr>
<th>Post-Steam Core</th>
<th>Year Cored</th>
<th>Associated Well Pair</th>
<th>Distance from Well Pair</th>
<th>% So Clean Sand (from Dean Stark)</th>
<th>% So IHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A5-22-70-4</td>
<td>2005</td>
<td>A3</td>
<td>10</td>
<td>Pre 92</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post</td>
</tr>
<tr>
<td>2D2-22-70-4</td>
<td>2010</td>
<td>D21</td>
<td>27</td>
<td>Pre 90</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post</td>
</tr>
<tr>
<td>5-22-70-4</td>
<td>2011</td>
<td>A3</td>
<td>17</td>
<td>Pre 88</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post</td>
</tr>
<tr>
<td>2B9-15-70-4</td>
<td>2012</td>
<td>FP4</td>
<td>32</td>
<td>Pre 90</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Post</td>
</tr>
<tr>
<td>D14-18-70-3</td>
<td>2013</td>
<td>E0306</td>
<td>21</td>
<td>Pre N/A</td>
<td>%</td>
</tr>
</tbody>
</table>

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Subsection 3.1.1 – 2f)
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Cross-sections
Subsection 3.1.1 – 2, i)
Representative structural cross-section over central area
Representative structural cross-section over East area
Representative structural cross-section over North area
Representative structural cross-section over West area
Geo-mechanical data
Subsection 3.1.1 – 2, j)
Geomechanical data

Caprock studies continue on Colorado Shale cores 104132107004W400 (JP09), 1021417003W400 (E12W8) and 105112107004W400, and 102052307005W400 (2015)

Mechanical testing of T31 Shale being carried out by Professor Chalaturnyk at University of Alberta on 1AA080807006W400
Surface monitoring
Subsection 3.1.1 – 2, k)
2014 surface heave

Active CRs 122
New installs – west area 14
Caprock integrity
Subsection 3.1.1 – 2, m)
Minimum in-situ stress profile

[Graph showing GR, GAPI, RHO, Kg/m³, and stresses in MPa with depth.]

Stress Regime:
- Horizontal frac stress regime, $S_v < S_h\text{max}$
- Unknown transition
- Vertical frac stress regime, $S_v > S_h\text{max}$

Groups:
- Colorado Group
- GrandRapids
- T31
- MCM
Caprock minimum in-situ stress

Minimum in-situ stress values in the caprock vary across the project. Smallest minimum in-situ stress values in each sub-area are shown in the above map.
Criteria for determining caprock integrity

Cenovus determines the minimum in-situ stress of the caprock over the project area through mini frac testing and seismic mapping

Minimum in-situ stresses have shown variability across our development area

Current project contains four regions with different approved MOP values

- North – 6.6 MPag
- Central – 6.7 MPag
- West – 6.9 MPag
- East – 6.9 MPag

Operating pressures in the project vary through the various well stages

- steam stimulation/circulation: (5.5 – 6.6 MPa)*
- ramp-up: (3.5 – 5.5 MPa)
- normal operating conditions: (2.0 – 3.5 MPa)

* - Note that this upper limit is specific to the MOP of each region
Caprock Monitoring Plans

Cenovus monitors caprock integrity through:

1. SAGD injection pressure monitoring

2. Piezometer monitoring in the T31 caprock
   - Previously 3 locations
   - Added an additional 3 locations in 2015

3. Heave monitoring

4. 4D seismic monitoring
Drilling and completions
Subsection 3.1.1 – 3)
Steam Requirements:
- Phase F steam allocated to new phase F pads
- Existing A-E steam allocated to maintain and optimize reservoir pressures at A-E pads.
**Re-drills and re-entries**

List of re-drill and re-entry wells in Foster Creek since January 1, 2014

*Liner failures caused by steam jetting.*

<table>
<thead>
<tr>
<th>Well</th>
<th>Type</th>
<th>Drill Start</th>
<th>Drill End</th>
<th>Reason for remediation</th>
</tr>
</thead>
<tbody>
<tr>
<td>W02P05-1</td>
<td>Step-out</td>
<td>2014-01-14</td>
<td>2014-01-29</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
</tr>
<tr>
<td>E12P06-1</td>
<td>Step-out</td>
<td>2014-04-16</td>
<td>2014-04-29</td>
<td>Intermediate casing failure</td>
</tr>
<tr>
<td>E16P05-1</td>
<td>Step-out</td>
<td>2014-04-20</td>
<td>2014-05-02</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
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<tr>
<td>E08P04</td>
<td>Re-entry</td>
<td>2014-05-21</td>
<td>2014-05-26</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
</tr>
<tr>
<td>E25P05</td>
<td>Re-entry</td>
<td>2014-05-31</td>
<td>2014-06-06</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
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<tr>
<td>E04P01-1</td>
<td>Step-out</td>
<td>2014-05-31</td>
<td>2014-06-12</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
</tr>
<tr>
<td>E24P05-1</td>
<td>Step-out</td>
<td>2014-06-14</td>
<td>2014-06-22</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
</tr>
<tr>
<td>E15P11-1</td>
<td>Step-out</td>
<td>2014-07-13</td>
<td>2014-07-23</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
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<tr>
<td>E03P01-1</td>
<td>Step-out</td>
<td>2014-07-14</td>
<td>2014-07-24</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
</tr>
<tr>
<td>E15I10</td>
<td>Re-entry</td>
<td>2014-08-06</td>
<td>2014-08-13</td>
<td>Re-develop to access new reserves</td>
</tr>
<tr>
<td>E19P11</td>
<td>Re-entry</td>
<td>2014-08-18</td>
<td>2014-08-26</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
</tr>
<tr>
<td>E25P01</td>
<td>Re-entry</td>
<td>2014-10-28</td>
<td>2014-11-07</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
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<tr>
<td>E25I01-1</td>
<td>Step-out</td>
<td>2014-11-10</td>
<td>2014-11-23</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
</tr>
<tr>
<td>E08P01</td>
<td>Re-entry</td>
<td>2014-11-18</td>
<td>2014-11-24</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
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<tr>
<td>E21I01-1</td>
<td>Step-out</td>
<td>2014-11-28</td>
<td>2014-12-08</td>
<td>Re-develop to access new reserves</td>
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<tr>
<td>E12I09-1</td>
<td>Step-out</td>
<td>2014-12-08</td>
<td>2015-01-16</td>
<td>Re-develop to access new reserves</td>
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<tr>
<td>E12P08-1</td>
<td>Step-out</td>
<td>2015-01-18</td>
<td>2015-01-28</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
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<tr>
<td>E24P06-3</td>
<td>Step-out</td>
<td>2015-02-01</td>
<td>2015-02-11</td>
<td>Primary Liner failure in the Hx slotted section of the well</td>
</tr>
</tbody>
</table>
Standard injector completion

- Majority of well pairs at Foster Creek have been started up with single splitter injector designs
- Multiple splitters have demonstrated increased operational flexibility with steam placement
- New pads with multiple splitter designs on production: E14, E42, W03, W06, W08
Standard producer ESP completion

Liner: 177.8 mm, 34.23/38.69 kg/m L-80 QB-2

339.7 mm 81.105 kg/m J-55 ST&C Surface Casing

244.5 mm 59.53 kg/m L80 QB2 Production casing

1/2” Capline for bubble tube and thermocouple

Production Tubing: 88.9mm mm tubing w/ ESP landed ~5m above primary liner hanger

31.75 mm DTS coiled tubing
Standard Wedge Well™ technology completion

339.7 mm 71.40 kg/m
H40 ST&C Surface Casing

244.5 mm 59.53 kg/m
L80 QB2 Production casing

1/2” Capline for bubble tube and thermocouple

Production Tubing:
88.9 mm tubing w/ ESP landed ~5m
above primary liner hanger

31.75 mm DTS coiled tubing

Slotted Liner: 177.8 mm, 38.69 kg/m L-80
QB2
Artificial lift
Subsection 3.1.1 – 4)
Artificial lift

Electric submersible pumps (ESPs)

• all operating SAGD pairs (~ 190 producers) are currently equipped with ESPs. Rod pumps were used previously for wells with difficult start-up.

Rod pumps

• 34/98 operating wells utilizing Wedge Well™ technology are equipped with rod pumps
• rod pumps at Foster Creek can range from about 0 – 350 m³/d

<table>
<thead>
<tr>
<th></th>
<th>ESPs</th>
<th>Rod pumps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn down (m³/d)</td>
<td>120</td>
<td>0</td>
</tr>
<tr>
<td>Max. rate (m³/d)</td>
<td>1200</td>
<td>350</td>
</tr>
<tr>
<td>Max. operating temp (°C)</td>
<td>218</td>
<td>200+</td>
</tr>
<tr>
<td>Number of pumps</td>
<td>254</td>
<td>34</td>
</tr>
<tr>
<td>Average run life (months)</td>
<td>12.7</td>
<td>5.0</td>
</tr>
</tbody>
</table>
Artificial lift – new technology

**ESPs**
- Working with vendors to increase runtime.

**Rod pumps**
- previously utilizing Wedge Well™ technology
- higher maintenance pump than ESPs, have had problems with sand bridging and can result in slower ramp up to peak production
- All new Wedge Well™ pads to be produced via ESP
Instrumentation in wells
Subsection 3.1.1 – 5)
Foster Creek 2015 piezometer locations
Piezometer details

Three installation types:

Cemented tubing - vibrating wire piezometers mounted on tubulars and cemented in place (14 wells)

Hanging wire – pressure / temperature gauges hung from the wellhead to about 10-15m above perforations (9 wells)

Cemented casing – High temperature Optical pressure sensors strapped and cemented to the production casing (29 wells)

Six new McMurray piezometers installed
Foster Creek temperature and RST data

24 observation wells logged to acquire temperature data
27 observation wells logged to acquire RST data

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Instrumentation in SAGD wells

**SAGD steam injector**
- blanket gas for pressure measurement

**SAGD producer**
- ½” capline strapped to tubing for bubble tubes and single point thermocouple
- Distributed temperature sensing (DTS) strings installed in all new wells

**SAGD using our patented Wedge Well™ technology**
- no downhole instrumentation with rod pumps
- new wells with ESPs to be equipped with ½” capline strapped to production tubing string to measure pressure and temperature

* Schematics can be seen in subsection 3.1.1 – 3 c)
Subsection 3.1.1 – 5 c) and d) – instrumentation data

Requirements under Subsection 3.1.1 5c) and d) are located in the Appendix
Wellbore Integrity Update
Well Integrity – Updates

1. Intermediate Casing Failures:
   - Measured by pressure tests
   - Concentrated within the Joli Fou but have been noted elsewhere in the Colorado Shale Group, 200-300m SS

2014 Intermediate Casing Failures – all CLOSED
   - E12P06; E12P04; GP6; E12P07; E24P02; E12I06

Q1 2015 Intermediate Casing Failures - CLOSED
   - E20P06
2014 Well Integrity – Actions

- Strain monitoring wells installed
  - Baseline data in non-thermally affected zones
    - 1AB/03-23-070-05W4/00 (W20 Pad)
    - 1AD/05-23-070-05W4/00 (W20 Pad)
    - 100/05-28-070-03W4/00 (E26 Pad)
- Modelling, geo-mechanical lab testing, core sampling
- Routine Monitoring
  - Scraper/gauge ring runs
2014 Well Integrity – Actions

Joint Industry Projects

• Thermal Well Casing Connection Evaluation Protocol (TWCCEP)
• Synergistic Impacts of Thermal-Mechanical Loading & Environmental Corrosion Cracking on Tubular Materials for Thermal Wells
• NSERC/Foundation CMG Industrial Research Chair in Reservoir Geomechanics for Unconventional Resources
Well Integrity – Updates

2) Surface Casing Vent Flows: (no steam)

- **Well**
  - AP2-2
  - CP33-1
  - E12P03
  - E24P06-1

- **Action**
  - Repaired
  - Repaired
  - Repaired
  - Repaired

- **Status**
  - Producing
  - Testing
  - Producing
  - Monitoring

- **SWS investigation on-going**
## Well Integrity – Updates

### 3) Surface Casing Corrosion:

<table>
<thead>
<tr>
<th>Corrosion Location</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Casing Exterior</td>
<td>Mitigation on-going</td>
</tr>
<tr>
<td>Surface Casing Interior / Intermediate Casing Exterior</td>
<td>Investigation on-going</td>
</tr>
<tr>
<td>Pack-Off</td>
<td>Investigation on-going</td>
</tr>
</tbody>
</table>
4D seismic
Subsection 3.1.1 – 6)
3D Seismic Within Project Area
4D Seismic Within Project Area

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2014 4D Seismic

Interpreted top of steam elevation
Interpreted top of steam elevation
2014 E02 4D Seismic
2014 W01W02J 4D Seismic

Interpreted top of steam elevation
Scheme performance
Subsection 3.1.1 – 7 a)
Scheme performance prediction

Predict well pair performance based on modified Butler’s equation

Predict well pair CSOR using published CSOR correlations (Edmunds & Chhina 2002)

Generate overall scheme production performance by adding individual well forecasts over time to honour predicted steam capacity and water treating availability
FOSTER CREEK
SAGD Totals

- Oil Rate (CD) m³/d
- Steam Inj Rate m³/d
- Water Rate (CD) m³/d
- Phase Targets (m³/d)
- Cumulative Steam-Oil Ratio m³/m³
- Instantaneous Steam-Oil Ratio (Monthly) m³/m³

Phase A
Phase B
Phase C1
Phase C2
Phase D&E
Phase F on prod

Cumulative Steam-Oil Ratio (SOR) = 2.36

Phase 1C startup and plant turn-around
Plant turn-around
Water debottleneck complete

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Subsection 3.1.1 – 7a, ii)
May 27, 2015
Central - cumulative % recovery SOIP

*Note – A35, AINF-6 & AINF-7 volumes included in E Pad
*Note that SOIP calculation methodology is available in subsequent slides
East - cumulative % recovery SOIP

Foster Creek - East Pads
Cumulative % Recovery SOIP

*Note that SOIP calculation methodology is available in subsequent slides.
West - cumulative % recovery SOIP

*Note that SOIP calculation methodology is available in subsequent slides*
Cumulative steam oil ratio – central pads

B / L and EXP / M Pad SORs high due to shut-in periods of wells on pad that were affected by the Colorado Shale issue

D, C, A, F and G pads have superior SORs as a result of wells drilled utilizing our patented Wedge Well™ technology

D,C and A pad also have started methane co-injection

*Note – A35, AINF-6 & AINF-7 volumes included in E Pad
Cumulative steam oil ratio – East pads

E02 & E03 pads - geology in this area is more heterogeneous than in most areas at Foster Creek and start-up was difficult, requiring several steam stimulations, resulting in a higher CSOR.

E24, E16, E19, E20 and E12 pads – all very good geology and well performance, thus, low SORs.

E10 & E11 pads have seen some water influx in a couple of wells.
Cumulative steam oil ratio – West pads

Foster Creek - West Pads
Cumulative Steam Oil Ratio

- W01 Pad
- W02 Pad
- W03 Pad
- W06 Pad

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Subsection 3.1.1 – 7a, ii)
May 27, 2015
Actual production vs. approval capacity

Foster Creek has met the target rate in Phase A, Phase B, Phase C and Phase D&E applications

- Phase D&E (Pads J, E04, E08, E11, E15, E16, E19, E20, E21, E25, W01, W02, H) – 120,000 bbl/d (19,080 m³/d)
- Phase F (Pads E07, E14, E42, W06, W03, W08) – 30,000 bbl/d (4767 m³/d)
- Target daily production between 120,000- 150,000 bbl/d throughout the remainder of the year

*wells drilled utilizing Wedge Well ™ technology have been drilled and are on production

Note that production volumes refer to cumulative production capacity on a total production basis
LP10 Performance (Secondary Pay)

- LP10 is the only secondary pay well with production history to date
- Produced at low rates with an extremely low SOR
- Currently shut in, no immediate plans to bring back on production
- Secondary pay wells are not being further reviewed at this time in the current low oil price environment
Steam chamber development
Subsection 3.1.1 – 7 b)
Methods for monitoring chamber development

Cenovus uses the following methods for monitoring chamber development:

- Observation wells
- Specialized logging and coring
- Seismic
- Volumetrics
Foster Creek temperature and RST data

24 observation wells logged to acquire temperature data
27 observation wells logged to acquire RST data
Foster Creek temperature wells

- 10m offset C11 Well Pair

TSAT ~216°C

188°C
Foster Creek temperature wells

- 5m from E24W05 wedge well and 30m away from E24-03 well pair
Foster Creek temperature wells

- 9m away from E12-02 well pair

TSAT ~226°C

249°C
East 4D Seismic (2013)

East 4D acquired in 2013 processed and interpreted
Time-lapse seismic: E25 Pair 06
Time-lapse seismic: E20 Pair 02
Time-lapse seismic: E15 Pair 05

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Oil in place: SAGDable OIP (SOIP) vs. Productive OIP (POIP)

Two types of Oil in Place (OIP) are provided:

- SAGDable OIP and Productive OIP

SAGDable OIP defined as:

- \[(\text{Planned Length}) \times (\text{Spacing}) \times (\text{Net SAGD Pay: Base to Top SAGD}) \times (S_o) \times (\varnothing)\]
- used drilled length for existing well pairs but will use planned length for all future pairs
- a “before-drilling” OOIP, used during planning phase
- doesn’t change after well pair plans finalized
- used to plan additional wells (Wedge Well™ technology, bypassed pay producers, re-drills, new pairs)
- this is essentially a “planned” OOIP, as we would aim to drill the full planned length (typically 800m), and drill the producer well as low as possible in relation to Base SAGD

Productive OIP defined as:

- \[(\text{Effective Length}) \times (\text{Spacing}) \times (\text{Effective Pay: Producer to Top SAGD}) \times (S_o) \times (\varnothing)\]
- an “after-drilling” OOIP, based on well pair potential
- changes with time and interpretation (obs. wells, 4D seismic, MWD error, etc.)
- used to plan blowdown strategy
- this reflects actual well pair performance
  - incorporates actual overlapping slotted liner lengths initially (including blank sections <100m)
  - incorporates actual location of the producing well

Productive OIP almost always < SAGDable OIP

Internally updated reserves definitions and methodology in 2010 and review annually. Change in various pads SOIP and POIP values from year to year to better reflect well lengths, placement, recovery factors and production performance
SOIP and POIP intervals

Cutoffs:
- Gamma: <60 API
- Porosity: >27% D
- Rt: >20 ohm-m (equates to 50% So)
- Facies: sand, sand-mud clasts, & sand-mud drapes.
- <1m mud interval
OIP – location of areas

East: 17 pads
Central: 10 pads
West: 4 pads
OIP & percent recovery – central

Ultimate recoveries in the central area are now forecasted higher than originally expected due to:

- Wells drilled utilizing our patented Wedge Well™ technology have been successful
- Indications of lower residual oil than originally expected

C, D & G Pads – currently re-evaluating SOIP, POIP and ultimate recoveries, expectation is that these volumes will increase

<table>
<thead>
<tr>
<th>PAD</th>
<th>SOIP Mm3</th>
<th>POIP Mm3</th>
<th>Cum Oil Mm3 (to Mar 31, 2015)</th>
<th>Recovery % SOIP</th>
<th>Recovery % POIP</th>
<th>Expected Ultimate Recovery Mm3</th>
<th>Ultimate Recovery as % of SOIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>A PAD**</td>
<td>3,228</td>
<td>2,952</td>
<td>2,632</td>
<td>82</td>
<td>89</td>
<td>2,900</td>
<td>90%</td>
</tr>
<tr>
<td>B_L PAD</td>
<td>4,330</td>
<td>3,274</td>
<td>2,171</td>
<td>50</td>
<td>66</td>
<td>2,947</td>
<td>68%</td>
</tr>
<tr>
<td>C PAD**</td>
<td>4,592</td>
<td>3,957</td>
<td>3,672</td>
<td>80</td>
<td>93</td>
<td>3,900</td>
<td>85%</td>
</tr>
<tr>
<td>D PAD**</td>
<td>4,695</td>
<td>4,198</td>
<td>4,418</td>
<td>94</td>
<td>105</td>
<td>4,600</td>
<td>98%</td>
</tr>
<tr>
<td>E_K PAD*</td>
<td>4,625</td>
<td>3,820</td>
<td>3,315</td>
<td>72</td>
<td>87</td>
<td>3,700</td>
<td>80%</td>
</tr>
<tr>
<td>EXP_M PAD</td>
<td>4,156</td>
<td>3,110</td>
<td>1,975</td>
<td>48</td>
<td>64</td>
<td>2,593</td>
<td>62%</td>
</tr>
<tr>
<td>F PAD**</td>
<td>4,211</td>
<td>3,541</td>
<td>3,166</td>
<td>75</td>
<td>89</td>
<td>3,500</td>
<td>83%</td>
</tr>
<tr>
<td>G PAD**</td>
<td>3,265</td>
<td>2,274</td>
<td>2,559</td>
<td>78</td>
<td>113</td>
<td>2,700</td>
<td>83%</td>
</tr>
<tr>
<td>H PAD</td>
<td>721</td>
<td>504</td>
<td>102</td>
<td>14</td>
<td>20</td>
<td>420</td>
<td>58%</td>
</tr>
<tr>
<td>J PAD</td>
<td>4,170</td>
<td>3,118</td>
<td>1,249</td>
<td>30</td>
<td>40</td>
<td>2,227</td>
<td>53%</td>
</tr>
<tr>
<td>Total Central</td>
<td>37,994</td>
<td>30,748</td>
<td>25,260</td>
<td>66</td>
<td>82</td>
<td>29,487</td>
<td>78%</td>
</tr>
<tr>
<td>Total FC</td>
<td>116,819</td>
<td>88,350</td>
<td>52,270</td>
<td>45</td>
<td>59</td>
<td>76,752</td>
<td>66%</td>
</tr>
</tbody>
</table>

*Note - A35, AINF-6 7 AINF-7 excluded from A pad volume and recovery and included in E_K pad.

**Note – includes wells drilled utilizing Wedge Well™ technology

Pad, area, and Foster Creek totals based on sum of wells

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Subsection 3.1.1 – 7c, i, ii)
May 27, 2015

To Mar 31, 2015
OIP and percent recovery - east

Ultimate recovery includes only existing wells.
Cenovus anticipates infill drilling on most pads that will significantly increase the ultimate recovery, but has not quantified these increases at this time.

<table>
<thead>
<tr>
<th>PAD</th>
<th>SOIP Mm3</th>
<th>POIP Mm3</th>
<th>Cum Oil Mm3 (to Mar 31, 2015)</th>
<th>Recovery % SOIP</th>
<th>Recovery % POIP</th>
<th>Expected Ultimate Recovery Mm3</th>
<th>Ultimate Recovery as % of SOIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>E02 PAD</td>
<td>2,993</td>
<td>2,051</td>
<td>1131</td>
<td>38</td>
<td>55</td>
<td>1,749</td>
<td>58%</td>
</tr>
<tr>
<td>E03 PAD</td>
<td>3,042</td>
<td>2,079</td>
<td>1104</td>
<td>36</td>
<td>53</td>
<td>1,985</td>
<td>65%</td>
</tr>
<tr>
<td>E04 PAD</td>
<td>3,568</td>
<td>2,407</td>
<td>647</td>
<td>18</td>
<td>27</td>
<td>1,925</td>
<td>54%</td>
</tr>
<tr>
<td>E07 PAD</td>
<td>2,606</td>
<td>1,849</td>
<td>32</td>
<td>1</td>
<td>2</td>
<td>1,479</td>
<td>57%</td>
</tr>
<tr>
<td>E08 PAD</td>
<td>4,676</td>
<td>4,049</td>
<td>244</td>
<td>5</td>
<td>6</td>
<td>3,239</td>
<td>69%</td>
</tr>
<tr>
<td>E10 PAD</td>
<td>2,061</td>
<td>1,492</td>
<td>435</td>
<td>21</td>
<td>29</td>
<td>1,194</td>
<td>58%</td>
</tr>
<tr>
<td>E11 PAD</td>
<td>3,912</td>
<td>3,409</td>
<td>1884</td>
<td>48</td>
<td>55</td>
<td>2,727</td>
<td>70%</td>
</tr>
<tr>
<td>E12 PAD</td>
<td>7,023</td>
<td>4,831</td>
<td>3656</td>
<td>52</td>
<td>76</td>
<td>4,598</td>
<td>65%</td>
</tr>
<tr>
<td>E15 PAD</td>
<td>7,397</td>
<td>5,646</td>
<td>2522</td>
<td>34</td>
<td>45</td>
<td>4,517</td>
<td>61%</td>
</tr>
<tr>
<td>E16 PAD</td>
<td>3,486</td>
<td>3,119</td>
<td>1856</td>
<td>53</td>
<td>60</td>
<td>2,512</td>
<td>72%</td>
</tr>
<tr>
<td>E19 PAD</td>
<td>6,307</td>
<td>5,850</td>
<td>3200</td>
<td>51</td>
<td>55</td>
<td>4,680</td>
<td>74%</td>
</tr>
<tr>
<td>E20 PAD</td>
<td>5,882</td>
<td>4,909</td>
<td>2891</td>
<td>49</td>
<td>59</td>
<td>4,022</td>
<td>68%</td>
</tr>
<tr>
<td>E21 PAD</td>
<td>3,930</td>
<td>2,863</td>
<td>1203</td>
<td>31</td>
<td>42</td>
<td>2,291</td>
<td>58%</td>
</tr>
<tr>
<td>E24 PAD</td>
<td>5,256</td>
<td>4,931</td>
<td>3162</td>
<td>60</td>
<td>64</td>
<td>4,008</td>
<td>76%</td>
</tr>
<tr>
<td>E25 PAD</td>
<td>4,137</td>
<td>3,390</td>
<td>1469</td>
<td>36</td>
<td>43</td>
<td>2,712</td>
<td>66%</td>
</tr>
<tr>
<td>Total East</td>
<td>66,276</td>
<td>52,875</td>
<td>25,436</td>
<td>38</td>
<td>48</td>
<td>43,638</td>
<td>66%</td>
</tr>
<tr>
<td>Total FC</td>
<td>116,819</td>
<td>88,350</td>
<td>52,270</td>
<td>45</td>
<td>59</td>
<td>76,752</td>
<td>66%</td>
</tr>
</tbody>
</table>

*Note – does not include future Wedge Well™ technology recoverables

**Note – includes wells drilled utilizing Wedge Well™ technology

Pad, area, and Foster Creek totals based on sum of wells
OIP and percent recovery – west

W01 & W02 pads came online in late 2011
W03 & W06 pads came online in late 2014

<table>
<thead>
<tr>
<th>PAD</th>
<th>SOIP Mm3</th>
<th>POIP Mm3</th>
<th>Cum Oil Mm³ (to Mar 31, 2015)</th>
<th>Recovery % SOIP</th>
<th>Recovery % POIP</th>
<th>Expected Ultimate Recovery Mm³</th>
<th>Ultimate Recovery as % of SOIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>W01</td>
<td>3,697</td>
<td>3,224</td>
<td>1,215</td>
<td>33</td>
<td>38</td>
<td>2,402</td>
<td>65%</td>
</tr>
<tr>
<td>W02</td>
<td>1,753</td>
<td>1,503</td>
<td>358</td>
<td>20</td>
<td>24</td>
<td>1,226</td>
<td>70%</td>
</tr>
<tr>
<td>W03</td>
<td>2,532</td>
<td>1,998</td>
<td>15</td>
<td>1</td>
<td>1</td>
<td>1,568</td>
<td>62%</td>
</tr>
<tr>
<td>W06</td>
<td>4,566</td>
<td>3,735</td>
<td>36</td>
<td>1</td>
<td>1</td>
<td>2,861</td>
<td>63%</td>
</tr>
<tr>
<td>Total West</td>
<td>12,549</td>
<td>10,460</td>
<td>1,625</td>
<td>13</td>
<td>16</td>
<td>8,057</td>
<td>64%</td>
</tr>
<tr>
<td>Total FC</td>
<td>116,819</td>
<td>94,083</td>
<td>52,322</td>
<td>45</td>
<td>56</td>
<td>81,182</td>
<td>69%</td>
</tr>
</tbody>
</table>

*Note – does not include future Wedge Well™ technology recoverable
Pad, area, and Foster Creek totals based on sum of wells

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Subsection 3.1.1 – 7c, i, ii)
May 27, 2015
Recovery examples

W02 pad low ultimate recovery example with focus on W02-03 well pair

E16 pad medium ultimate recovery example with focus on E16-02 well pair

G pad high ultimate recovery example with focus on GP01 well pair
Recovery examples
cumulative percent recovery SOIP
Current percent recovery of SOIP: pad totals

Foster Creek - % Recovery of SOIP per Pad (Mar 31, 2015)
W02 pad overview

- W02 pad began production in September 2011 (five pairs)
- Generally good quality geology on the edge of the valley, some small variations in SAGD base between well pairs
- Pad started up using ESPs, steam stimulations were successful on every well
- Initial operating pressures ~3 Mpa until pad started communicating with rest of central pad
- Remedial work on P02, P03, and P05 in 2013 - Q1 2014
- Currently at ~20% recovery of SOIP
- CSOR is currently 3.29, expected to drop as pad is in early life
W02 Pad SAGD Pay

Production Date: September 2011
Standoff: 0 – 3 m
# pairs: 5 drilled
Pay trend: moderate to thin, with clast zones
2014 W01W02J 4D Seismic

Interpreted top of steam elevation
W02 pad - extent of chamber development

<table>
<thead>
<tr>
<th>PAD</th>
<th>PAIR</th>
<th>SOIP Mm3</th>
<th>POIP Mm3</th>
<th>Cum Oil Mm3</th>
<th>% Recovery SOIP</th>
<th>% Recovery POIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>W02 PAD</td>
<td>W02-01</td>
<td>443</td>
<td>355</td>
<td>64</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>W02 PAD</td>
<td>W02-02</td>
<td>348</td>
<td>301</td>
<td>50</td>
<td>15</td>
<td>17</td>
</tr>
<tr>
<td>W02 PAD</td>
<td>W02-03</td>
<td>450</td>
<td>395</td>
<td>106</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>W02 PAD</td>
<td>W02-04</td>
<td>389</td>
<td>360</td>
<td>77</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>W02 PAD</td>
<td>W02-05</td>
<td>124</td>
<td>92</td>
<td>62</td>
<td>50</td>
<td>67</td>
</tr>
<tr>
<td>Total</td>
<td>W02 PAD</td>
<td>1,753</td>
<td>1,503</td>
<td>358</td>
<td>20</td>
<td>24</td>
</tr>
</tbody>
</table>

Expected ultimate recovery (70% of SOIP) = 1,226 Mm3

To March 31, 2015
W02 pad has had 3 failed wells. Well failures due to horizontal liner failure from steam jet.

FOSTER CREEK
W02 Pad Performance

W02 pad performance

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Subsection 3.1.1 – 7c, iii)
May 27, 2015
Time-lapse seismic: W02 Pair 3
W02-03 performance plot

W02-03 Well Pair Performance

- Total Oil Rate (m³/d)
- Total Water Rate (m³/d)
- Total Steam Inj Rate (m³/d)
- Cum SOR
- Inst SOR

Redrill

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Subsection 3.1.1 – 7c, iii)
May 27, 2015
W02 pad conclusions

- Pad recovery expected to be ~70% of SOIP
- Pad is merged with central pod
- Optimization of pad underway after remedial work
- Currently at 20% recovery of SOIP
OBIP – medium example E16 pad
Subsection 3.1.1 – 7 c, iii)
E16 pad overview

- E16 pad began production in August 2008 (six pairs)
- Steam stimulation start-up method was successful for all pairs
- Geology consists of thick to moderately thick channel sands that are fairly consistent throughout, pay trend and thickness slopes down dip to the east
- Expected ultimate recovery of this pad is 72% of SOIP
- Overall performance is very good to date, with a CSOR of 2.33
- Wells utilizing our patented Wedge Well™ technology were drilled in Q4 of 2013
E16 Pad SAGD Pay

Production Date: October 2008
Standoff: 0 – 5 m
# pairs: 6 drilled
Pay trend: thick to variable
E16 and E20 4D seismic (2012)
## E16 pad - extent of chamber development

<table>
<thead>
<tr>
<th>PAD</th>
<th>PAIR</th>
<th>SOIP Mm3</th>
<th>POIP Mm3</th>
<th>Cum Oil Mm3</th>
<th>% Recovery SOIP</th>
<th>% Recovery POIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>E16 PAD</td>
<td>E16-01</td>
<td>515</td>
<td>490</td>
<td>357</td>
<td>69</td>
<td>73</td>
</tr>
<tr>
<td>E16 WEDGE</td>
<td>E16W01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E16 PAD</td>
<td>E16-02</td>
<td>689</td>
<td>659</td>
<td>427</td>
<td>62</td>
<td>65</td>
</tr>
<tr>
<td>E16 WEDGE</td>
<td>E16W02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E16 PAD</td>
<td>E16-03</td>
<td>696</td>
<td>575</td>
<td>347</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>E16 WEDGE</td>
<td>E16W03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E16 PAD</td>
<td>E16-04</td>
<td>586</td>
<td>527</td>
<td>256</td>
<td>44</td>
<td>49</td>
</tr>
<tr>
<td>E16 PAD</td>
<td>E16-05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E16 PAD</td>
<td>E16-05</td>
<td>508</td>
<td>442</td>
<td>194</td>
<td>38</td>
<td>44</td>
</tr>
<tr>
<td>E16 WEDGE</td>
<td>E16W05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E16 PAD</td>
<td>E16-06</td>
<td>492</td>
<td>426</td>
<td>194</td>
<td>39</td>
<td>46</td>
</tr>
<tr>
<td>E16 WEDGE</td>
<td>E16W06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>E16 PAD</strong></td>
<td><strong>3,486</strong></td>
<td><strong>3,119</strong></td>
<td><strong>1,775</strong></td>
<td><strong>51</strong></td>
<td><strong>57</strong></td>
</tr>
</tbody>
</table>

Expected ultimate recovery (72% of SOIP) = 2,512 Mm3

To March 31, 2015
E16 Pad Temperatures

12m away from E16-02 well pair

D12-15

37m away from E16-03 well pair

A12-15

TSAT ~233°C

22°C
E16 pad performance

Foster Creek
E16 Pad & E16 Wedge Wells Performance

- Total Oil Rate (m³/d)
- Total Water Rate (m³/d)
- Total Steam Inj Rate (m³/d)
- Cum SOR
- Inst SOR
- Wells On Prod

Wedges on production
CSOR: 2.33

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Subsection 3.1.1 – 7c, iii)
May 27, 2015
E16-02 Geological Profile
Time-lapse seismic: E16 Pair 2
E16-02 well pair performance
E16 pad conclusions

- Ultimate recovery is based on 72% of SOIP
- Differences between POIP and SOIP are primarily due to standoff from SAGD base
- Ramp up took approximately 20 months to hit peak rates
- 4D seismic was shot in 2012, showing good chamber growth along pairs 1 – 4; remedial work was performed on pairs 5/6 which were redrilled to improve conformance and chamber growth
- Wells utilizing our patented Wedge Well™ technology on production June 2014
- Will continue to use observation wells to help determine changes to steam chamber growth in the future
OBIP – high example
G pad
Subsection 3.1.1. – 7c, iii
G pad overview

• G pad began production in October 2005 (six pairs)
• Thick and high quality geology with slight variation in the depth of the SAGD base and a relatively lower SAGD top at the heel of all the wells
• All wedges were started in Q4 of 2009 and Q1 of 2010
• Steam decline in mid 2010 to operate pad at central pod pressure, pad production performance as expected
• Currently total recovery is 76% of SOIP
## G pad - extent of chamber development

<table>
<thead>
<tr>
<th>PAD</th>
<th>PAIR</th>
<th>SOIP Mm3</th>
<th>POIP Mm3</th>
<th>Cum Oil Mm3</th>
<th>% Recovery SOIP</th>
<th>% Recovery POIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>G PAD</td>
<td>GW01</td>
<td>0</td>
<td>0</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G PAD</td>
<td>G1</td>
<td>580</td>
<td>422</td>
<td>327</td>
<td>68</td>
<td>93</td>
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<tr>
<td>G PAD</td>
<td>GW02</td>
<td>0</td>
<td>0</td>
<td>74</td>
<td></td>
<td></td>
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<tr>
<td>G PAD</td>
<td>G2</td>
<td>644</td>
<td>413</td>
<td>306</td>
<td>62</td>
<td>97</td>
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<tr>
<td>G PAD</td>
<td>GW03</td>
<td>0</td>
<td>0</td>
<td>116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G PAD</td>
<td>G3</td>
<td>687</td>
<td>471</td>
<td>369</td>
<td>70</td>
<td>102</td>
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<tr>
<td>G PAD</td>
<td>GW04</td>
<td>0</td>
<td>0</td>
<td>109</td>
<td></td>
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<tr>
<td>G PAD</td>
<td>G4</td>
<td>647</td>
<td>470</td>
<td>308</td>
<td>68</td>
<td>94</td>
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<tr>
<td>G PAD</td>
<td>GW05</td>
<td>0</td>
<td>0</td>
<td>156</td>
<td></td>
<td></td>
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<tr>
<td>G PAD</td>
<td>G5</td>
<td>396</td>
<td>261</td>
<td>267</td>
<td>102</td>
<td>154</td>
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<tr>
<td>G PAD</td>
<td>GW06</td>
<td>0</td>
<td>0</td>
<td>113</td>
<td></td>
<td></td>
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<tr>
<td>G PAD</td>
<td>G6</td>
<td>312</td>
<td>237</td>
<td>224</td>
<td>100</td>
<td>132</td>
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<tr>
<td>G PAD</td>
<td>GW07</td>
<td>0</td>
<td>0</td>
<td>65</td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>G PAD</td>
<td>3,265</td>
<td>2,274</td>
<td>2,490</td>
<td>76</td>
<td>110</td>
</tr>
</tbody>
</table>

- only ½ of the cum production from GW01 is shown, the other ½ is allocated to F Pad

To March 31, 2015
G Pad SAGD Pay

Production Date: October 2005
Standoff: 2 – 6 m
# pairs: 6 drilled
# utilizing Wedge Well™ technology wells: 7
Pay trend: thick to variable
G Pad 4D Seismic (2009 vs 2014)

2009

2014

Poor quality seismic data, acquisition related, existing steam chamber still present
G Pad Temperatures

17m away from G-01 well pair
B10-15

46m away from G-01/02 well pair
D10-15

217°C
TSAT ~216°C

217°C
TSAT ~216°C

New baseline RSTs
G pad performance

FOSTER CREEK
G PAD & G Wedge Wells Performance

- Total Oil Rate (m³/d)
- Total Water Rate (m³/d)
- Total Steam In Rate (m³/d)
- Cum SOR
- Inst SOR
- Wells On Prod

Wedges on production

CSOR: 2.69
G-01 Geological Profile
Time-lapse seismic: G-01 (2009 VS 2014)

2009 seismic quality was affected by the surface constraint. It is hard to interpret steam top.

2014 seismic quality was affected by the surface constraint. It is hard to interpret steam top.
G-01 well pair performance

G-01 Well Pair Performance

- Total Oil Rate (m³/day)
- Total Water Rate (m³/day)
- Total Steam Rate (m³/day)
- Cum. SOR
- Final SOR

Rate (m³/day)

Steam Oil Rate (SOR)

Redrill
Patch in liner

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Subsection 3.1.1 – 7c, iii)
May 27, 2015
G pad conclusions

- **Higher than anticipated recovery a result of:**
  - wells drilled utilizing our patented Wedge Well™ technology have been successful
  - lower than anticipated residual oil saturations (15% vs. less than 10%)
- **G pad expansion, drilled new wells in 2014 at 80 m spacing to the west of G pad**
Pad abandonments
Subsection 3.1.1 – 7c, iv)
Pad abandonments

No pad abandonments are currently planned at Foster Creek in the next 5 years
Steam quality
Subsection 3.1.1 – 7d)
Steam quality

- Steam quality will be impacted by pipeline size and distance
- Currently at Foster Creek the steam qualities under normal operation conditions are as follows:
  - central ~ 95%
  - east ~ 94%
  - west - Designed to be ~ 95% as development continues
- Steam is delivered to pads at approximately 7000 – 9000 kPa
- Steam quality is not expected to impact well performance at this time
Injected fluids
Subsection 3.1.1 – 7e)
Injected fluids

Non-condensable gas
• methane injection started for A Pad in Q1 2012, C Pad in Q4 2011, D Pad in Q3 2010, F Pad in Q2 2014, and G Pad in Q2 2014

Acid treatments
• wells occasionally treated with HCl to minimize skin

Solvent
• have used solvent in start-up work-overs and have approval to use this as a potential start-up process

CO$_2$
• injected in E03I05 and E03I06
• pilot concluded in Q4 2013
2014 key learnings
Subsection 3.1.1 – 7f)
A pad blowdown

Start Rampdown

Start Methane Inj
A Pad blowdown

- Methane injection started in Mar 2012
- Rampdown of steam started Sep 2012
- Currently in last phase of rampdown
- Full blowdown expected Q2 2015
- Continue to balance pressure with methane injection
- Production declines have been better than initially forecast during rampdown
Circulation Startup

RF vs Time Comparison - Steam Circulation vs Steam Stimulation

Circulation Pads
- E07
- E14
- E42
- W03
- W06

Stimulation Pads
- E08
- E10
- E15
- E25

Circulation is go forward startup strategy due to improved conformance and production rampup as compared to a bullhead start.
Wedge Well™ technology update

Wells drilled with Wedge Well™ technology

<table>
<thead>
<tr>
<th>Wells Drilled with Wedge Well™ Technology</th>
<th>On Production Date</th>
<th># Wells</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Pad</td>
<td>July 2005</td>
<td>7</td>
</tr>
<tr>
<td>B / L Pad</td>
<td>September 2011</td>
<td>5</td>
</tr>
<tr>
<td>C Pad</td>
<td>May 2009</td>
<td>8</td>
</tr>
<tr>
<td>D Pad</td>
<td>January 2008</td>
<td>6</td>
</tr>
<tr>
<td>E / K Pad</td>
<td>November 2010</td>
<td>5</td>
</tr>
<tr>
<td>Exp / M Pad</td>
<td>November 2011</td>
<td>5</td>
</tr>
<tr>
<td>F Pad</td>
<td>November 2009</td>
<td>6</td>
</tr>
<tr>
<td>G Pad</td>
<td>November 2009</td>
<td>5</td>
</tr>
<tr>
<td>E24 Pad</td>
<td>October 2012</td>
<td>10</td>
</tr>
<tr>
<td>E12 Pad</td>
<td>October 2013</td>
<td>9</td>
</tr>
<tr>
<td>E16 Pad</td>
<td>May 2014</td>
<td>6</td>
</tr>
<tr>
<td>E20 Pad</td>
<td>August 2014</td>
<td>8</td>
</tr>
<tr>
<td>E02 Pad</td>
<td>September 2014</td>
<td>6</td>
</tr>
<tr>
<td>E03 Pad</td>
<td>September 2014</td>
<td>5</td>
</tr>
<tr>
<td>E19 Pad</td>
<td>December 2014</td>
<td>6</td>
</tr>
</tbody>
</table>
East vs Central Wedge Well™ performance

- Majority of East Wedge Well™ pads came online in 2014
- Type curves fall within the range of the 5 most of the recent Central pads
Pad performance plots
Subsection 3.1.1 – 7h)
Subsection 3.1.1 – 7 h) – pad performance plots

Requirements under Subsection 3.1.1 7 h) are located in the Appendix
Future plans 2015 initiatives
Subsection 3.1.1 - 8
Steam Rampdown

C Pad on blowdown Q1, 2013

D pad on blowdown Feb, 2015

A pad on last phase of rampdown

F & G pads started coinjection May 2014
Plan to start up all new well pairs with steam circulation as geology permits. The upcoming pads are in the West development area and include W05, W07, W10, W15, W18 and W23.
Pressure Sink Project Update

- Producer & injector wells drilled & completed in 2014
- Received D51 approval on March 4, 2015
- Engineering completed Q1 2015
- Anticipated construction from Q2 – Q3
- Scheduled to commission by end of Q4
Lower Grand Rapids Disposal

- **LGR disposal at ED1**
  - Received AER approval to recomplete an existing McM disposal well into a LGR disposal well
  - Reconfigured WDHZ2 for LGR disposal
  - Brought online on August 2, 2014
2015 initiatives

- Alternate liner trials continue on various pads
- Liner and tubing deployed FCDs
- Lower Grand Rapids disposal evaluation
- Co-injection
  - surfactant
  - solvent
- Insulated tubing
  - Evaluating vendors and technology
Flow Control Devices

- **Currently testing 8 flow control devices**
  - 4 liner deployed ICDs
  - 3 tubing deployed ICDs
  - 1 liner deployed OCDs
- **Improvements in temperature conformance have been observed at most installations to date**
- **Evaluation still ongoing**

<table>
<thead>
<tr>
<th>Well Name</th>
<th>Well Type</th>
<th>Date Run</th>
<th>Deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>W05P05</td>
<td>Producer</td>
<td>11/29/2013</td>
<td>Liner Deployed</td>
</tr>
<tr>
<td>W08P01</td>
<td>Producer</td>
<td>12/5/2013</td>
<td>Liner Deployed</td>
</tr>
<tr>
<td>GP5-1</td>
<td>Producer</td>
<td>1/14/2014</td>
<td>Liner Deployed</td>
</tr>
<tr>
<td>E15P11-1</td>
<td>Producer</td>
<td>7/22/2014</td>
<td>Liner Deployed</td>
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<tr>
<td>E16P06</td>
<td>Producer</td>
<td>11/29/2014</td>
<td>Tubing Deployed</td>
</tr>
<tr>
<td>FP2-1</td>
<td>Producer</td>
<td>3/19/2015</td>
<td>Tubing Deployed</td>
</tr>
<tr>
<td>DF1 Fisher</td>
<td>Producer</td>
<td>1/9/2014</td>
<td>Tubing Deployed</td>
</tr>
<tr>
<td>E15I10</td>
<td>Injector</td>
<td>5/1/2014</td>
<td>Liner Deployed</td>
</tr>
</tbody>
</table>
2015-2016 Drilling Plans

**East Pads:**
- E22, E26

**West Pads:**
- W19, W23
2015 steam strategy plans

- Cenovus allocates steam to maintain targeted steam chamber operating pressures from pad to pad
- As steam rampdown progresses, steam demand for the project will be reduced, allowing the startup of new pads
- In 2014 Cenovus increased steam generating capacity through the addition of Phase F
- Some steam from the existing A-E facility was used to initiate steam simulation immediately prior to receiving incremental steam from Phase F. A-E pads have been maintained at longer term pressure targets
- New steam has been allocated to Phase F pads and existing well pads
Future projects

- Current capacity is 150,000 bbls/d (23,836 m3/d)

Future phase update

- Cenovus plans to continue advancing phase G in 2015 and targets first oil in the first half of 2016
- Due to significant decrease in crude oil prices, construction work on phases H and J have been deferred
Osprey Pilot

Subsurface
Osprey Pilot (Clearwater Formation)

Facilities:
- 2 horizontal wells
- Rod pumps
- 2 BFW tanks & 2 boiler blowdown tanks
- 1 OTSG & steam separator
- Commissioned December 2013
- First steam injection April 30th, 2014
- 4 km south of FC F pad

Operations:
- Low pressure CSS pilot
- Emulsion ties into F Pad
- Fuel gas from F Pad
- Water source for steam from blowdown disposal line
- Osprey disposal ties into the Foster Creek disposal line

Location: 11-02-70-4W4M
Overview (As of Dec 31, 2014)

**OS1**
- Circulation from August 21 – November 9
- Completed 1 cycle
- Cum Injection: 535 m$^3$ Cum Produced Bitumen: 621 m$^3$

**OS2**
- Circulation from April 30 – July 8
- Completed 4 cycles
- Cum Injection: 1165 m$^3$ Cum Produced Bitumen: 1166 m$^3$
Osprey 2014 Performance Summary

OS2 1st steam cycle: Sept 17, 2014

OS1 1st steam cycle: Dec 19, 2014
Learnings

Produced bitumen quality is better than the core analysis:
Less viscous: 40,000 cP vs 20,000 cP
Lighter: 10.9 API vs 10.2 API

Post circulation production results were better than expected
# Summary of Reservoir Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth (m)</td>
<td>450</td>
</tr>
<tr>
<td>Thickness (m)</td>
<td>10-12</td>
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<tr>
<td>Average Porosity (%)</td>
<td>~33%</td>
</tr>
<tr>
<td>Average Gas Saturation (%)</td>
<td>~10%</td>
</tr>
<tr>
<td>Average Water Saturation (%)</td>
<td>~30%</td>
</tr>
<tr>
<td>Average Bitumen Saturation (%)</td>
<td>~60%</td>
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</tbody>
</table>
Future Plans

• Currently evaluating Osprey learnings to guide future plans
• No finalized plans at this time
Thank you
Cenovus Foster Creek in-situ oil sands scheme (8623) update for 2014
Advisory

This presentation contains information in compliance with:

AER Directive 054 - Performance Presentations, Auditing, and Surveillance of In Situ Oil Sands Schemes

Section 3.1.2 Surface Operations, Compliance, and Issues Not Related to Resource Evaluation and Recovery

This document contains forward-looking information prepared and submitted pursuant to Alberta regulatory requirements and is not intended to be relied upon for the purpose of making investment decisions, including without limitation, to purchase, hold or sell any securities of Cenovus Energy Inc. The resources estimates contained herein are not reported in accordance with National Instrument 51-101 and are provided solely for the purpose of complying with Alberta regulatory requirements.

Additional information regarding Cenovus Energy Inc. is available at cenovus.com.
Strong integrated portfolio

TSX, NYSE | CVE

<table>
<thead>
<tr>
<th>Enterprise value</th>
<th>C$25 billion</th>
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</thead>
<tbody>
<tr>
<td>Shares outstanding</td>
<td>829 MM</td>
</tr>
<tr>
<td>2015F production</td>
<td></td>
</tr>
<tr>
<td>Oil &amp; NGLs</td>
<td>204 Mbbls/d</td>
</tr>
<tr>
<td>Natural gas</td>
<td>438 MMcf/d</td>
</tr>
<tr>
<td>2014 proved &amp; probable reserves</td>
<td>3.9 BBOE</td>
</tr>
<tr>
<td>Bitumen</td>
<td></td>
</tr>
<tr>
<td>Economic contingent resources*</td>
<td>9.3 Bbbls</td>
</tr>
<tr>
<td>Discovered bitumen initially in place*</td>
<td>93 Bbbls</td>
</tr>
<tr>
<td>Lease rights**</td>
<td>1.5 MM net acres</td>
</tr>
<tr>
<td>P&amp;NG rights</td>
<td>5.6 MM net acres</td>
</tr>
<tr>
<td>Refining capacity</td>
<td>230 Mbbls/d net</td>
</tr>
</tbody>
</table>

Values are approximate. Forecast production based on midpoints of January 28, 2015 guidance. Cenovus land at December 31, 2014. *See advisory. **Includes an additional 0.5 million net acres of exclusive lease rights to lease on our behalf and our assignee’s behalf.
Current project status

- Phase A - 20k bbls/d on October 2001 (3,180 m³/d)
- 80 MW Cogen on Q1 2003
- Phase B - 30k bbls/d (4,770 m³/d)
- Phase C - 60k bbls/d complete 2006 (9,534 m³/d)
- Phases D & E - 120k bbls/d complete 2009 (19,078 m³/d)
- Water treating debottleneck and cooling loop complete 2010
- Q1 2014 oil production 109,412 bbls/d (17,395 m³/d)
- Record oil production day 130,580 bbl (20,761 m³)
- Approved for Phases A – H, potential capacity 240k bbls/d (38,271 m³/d)

Note that production volumes refer to total cumulative production capacity
Facilities
Foster Creek A/E plot plan
Simplified process schematic for A/E
Phases F, G & H

- Engineering & Procurement completed
  - Phase F&G 99%, Phase H 95%

- Construction
  - Phase F 98% complete
    - Area 8 completion May 22/15
    - Insulation & Tracing completion Aug 2015
    - Construction complete Aug 2015

- Phase G 49% complete
  - Major equipment 100%
  - Field piping @ 49%
  - Field E&I @0.6%

- Phase H 16% complete (Construction presently on hold)
  - Piling @100%, cutting and capping @ 87%, concrete @ 61%
Phase F commissioning

• Complete:
  • Area 02 (Steam generation)
  • Area 03 (Oil treating), with the exception of the Flash Treater
  • Area 04 (Tankage & Vapor Recovery)
  • Area 05 (utilities)
  • Area 07 (De-oiling)

• Remaining:
  • Area 08 (Water Treatment) – WLS, LSF’s, ion exchange, and auxiliaries
  • Area 03 - Flash Treater Package
Facility performance
Plant performance

Foster Creek Performance

- Bitumen
- SOR

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Subsection 3.1.2 – 2a)
Emulsion treatment
Area 03: Emulsion treatment

- Two inlet degassers (A/E & FGH)
- Five process trains (A/F), one FWKO + two Treaters per train
- Three Sulphur Removal Units (A/E & FGH) for sweetening produced and recovered gas
Area 03: Emulsion treatment

- Very stable operation
- Installing Nuclear Density profilers in the All the Phase-A-E Treaters for better monitoring and controls of the treating vessels.
- Phase-F Treaters to be done in future
- Project in progress to automate the emulsion line gas slug mitigation logic in Phase-A-E and Phase-FGH.
Area 07: Produced water de-oiling
Area 07: Produced water de-oiling

• Five de-oiling trains (A/F)

• First train
  • one skim tank, one ISF and three ORFs
  • ISF capacity (375 m³/hr)
  • Re-configured this train to series operation Skim Tank > Pump > ISF > ORF. Achieved ~500 m³/hr flow when inlet qualities are good

• Second train
  • one skim tank, one smaller ISF and three ORFs
  • ISF capacity is 250 m³/hr. Some flow bypasses ISF.

• Third - fifth trains
  • one skim tank, two ISFs and four ORFs
  • ISF capacity (375 m³/hr per unit)
Area 07: Produced water de-oiling

• Skim tanks
  • Designed for < 4 hours retention time based on nominal capacity
    Actual retention time is much lower
  • Improper oil skimming (XV valve & gravity flow out of tank)
  • There is no solid removal mechanism. Only few nozzles around the perimeter of the tank.
  • No Chemical is added to skim tanks

• ISFs
  • Vertical units with about 5-6 minutes of retention time
  • Flocculent injected at inlet
  • Two units are modified with micro-bubbler pumps instead of eductors
Area 07: Produced water de-oiling

• Oil removal filters (ORF) walnut shell media
• De-oiled produced water oil treatment performance
  (January 2014 to March 2015)
  • Skim tanks inlet average avg. ~128 ppm
  • ISFs inlet average avg. ~115 ppm
  • ORFs inlet average avg. ~21 ppm
  • ORFs outlet average avg. ~9 ppm
Area 07: Produced water de-oiling

- AE plant capacity increased from 2090 to 2353 sm$^3$/hr by continuous optimization of the system.
- Can operate at maximum capacity only when O&G from Area-3 is in normal range < 200 ppm.
- Total De-oiling system capacity = 2353 + 617 = 2970 m$^3$/hr.
Area 08: Water treatment
Area 08: Produced water treatment

- Two Eimco units tested to 1200 m³/hr
- One Densadeg designed for 500 m³/hr
- Lime softener filters (LSF) – walnut shell media
- SAC followed by WAC ion exchange units

2014 Average BFW quality

- silica <30 ppm
- TDS <3000 ppm
- hardness <0.05 ppm
- iron <0.30 ppm

Phase F water plant will be commissioned in Q3-2015
Area 08: Brackish water

- Continued brackish water piping replacement with duplex SS
- *Directive 081* project will take over a portion of this piping to convert it to glycol service
- Continue with corrosion monitoring
Directive 081 update

- Project engineering completed; major equipment ordered
- Adding new glycol capacity to remove cooling load off brackish
- Removal of dependency on brackish water for cooling
- Increased produced water treating capacity by adding one LSF and one SAC to maximize produced water use
- AER variance issued (May 2015) for modified Dir 081 limits at FC. The variance expires Dec. 31, 2017
Area 2/12: Steam Generation

- Two cogen units (40 MW each)
- Five 180 MM Btu/hr OTSGs
  - Re-rated in 2014 to increase BFW rate from 83.3 to 95 m3/hr
  - Will operate at high BFW rate only during one OTSG outage
- Ten 275 MM Btu/hr OTSGs
  - Continuous Emission Monitoring Systems (CEMS) on B-0206, B-0210 and FC3-B-0201
  - Operated B-0206 & B-0208 at 87% Steam quality (April - Dec 2014)
- Four 250 MM Btu/hr Second Stage OTSGs
Area 02: Second stage OTSG – FC3

- **Phase-F 2nd Stage OTSGs (6 pass, 250 MMBTU/H, TIWW)**
  - Four OTSGs, FC3-B-0201/02/03/04 were commissioned in May-2014
  - Operated at 70% steam quality
  - BFW+BBD blend to maximize steam production
  - 1.9 million Sm3 BBD used to produce steam (May 2014 to end of March 2015)

- **Failures:**
  - Tube failures were observed in all four boilers in Q4-2014 or Q1-2015.
  - Failures were found in the economizer shock tube or low fin tubes where heat flux is highest
  - All the failures have been repaired and boilers put back to operation.
Area 02: Second stage OTSG

• Failure Mechanism:
  • The failures caused by overheating due to internal scale deposition
  • Currently studying the scaling mechanism. Possible contributors
    • Scaling was accelerated due to presence of the corrosion particles in the commissioning water
    • Multiple trips of the BFW pumps during commissioning and start up
    • Mixing of BFW and BBD could lead to precipitation of the solids
    • Too long of operation without cleaning
Area 02: Second stage OTSG

• Corrective Actions:
  • Reduced the firing rate to 90%
  • Utilizing BBD water only (No mixing)
  • Pigging frequency was set to three months
  • Reduce boiler trips

• A multi-discipline taskforce was formed to improve
  • Boiler operation reliability
  • Understand the scaling mechanism
  • Review and optimize the boiler chemical program
  • Install additional instrumentation to monitor the dP and tube wall temperature of the economizers
  • OTSGs have been operating with BBD only since early March
  • OTSGs will be pigged after ~ 90 days of operation
Power generation

Average Intensity: 2.55 MW/1000 m³ bitumen

One CoGen unit down for major repair

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Subsection 3.1.2 – 2d)
Gas usage

Gas Consumption: 0.19 e3m3/m3 bitumen
Solution Gas Recovery = 98.2%
Flared gas volume (e$^3$m$^3$/month)

- 2014 total flared gas 2002.9 e$^3$m$^3$, (2 e$^3$m$^3$/d), 0.29 m$^3$/m$^3$ oil, compared to 716.1 e$^3$m$^3$ in 2013

- 2014 Q3-Q4 high flaring due to various activities and issues related to new Phase-F start up
  - Phase-F NRSU outage
  - Phase-F PG cooler leakage
  - Phase-F Boiler trips
  - Pad-C shutdown outage
Greenhouse gas emissions
Emissions

• 2014 GHG emissions including CoGen 2.537 MM tonnes CO$_2$e (2.193 MM tonnes in 2013)
  • total annual emissions (tonnes CO$_2$e) less Deemed GHG Emissions from Electricity Generation 2.287 MM tonnes or reported emissions intensity 0.3330 tonnes CO$_2$e/m$^3$ bitumen

• Fugitive emissions 197.1 tonnes (291.7 t in 2013)
  • fugitive emissions include unintentional equipment leaks such as loose flanges, PSVs not sealing properly, equipment wear, etc. Does not include equipment vents that are intentionally designed to vent.
  • using Target Emissions Services to monitor FEMs with LDAR camera to detect leaks which are then repaired
Area 04: Vapor Recovery Unit (VRU)

- One screw compressor + eight liquid ring compressors
- Construction in progress for
  - Addition of a new screw compressor K-0422
  - VRU header twinning to resolve hydraulics limitations
  - Expected to be commissioned in Q2/Q3-2015
Area 04: Slop handling

• Eight slop tanks each about 870 m³

• Tricanter to treat slop fluid and reduce waste
  • Processing 200 to 350 m³/d of slop fluid
  • Water and oil on spec and returned to facility
  • Investigating what other fluids could be treated with this system

• AE plant Flash Treaters not being used
• Phase-F one Flash Treater to be commissioned
Measurement and reporting
Simplified MARP schematic

- Fresh Source from Wells
- Saline Source from Wells
- P/L Fuel
- Truck
- BT
- Salt Cavern(s)
- LACT
- Blow Down & Waste to Disp.
- Gas
- Oil
- Water
- Domestic use
- Blow Down to Disp.
- Steam to Field
- Blow Down & Waste to Disp.
- PW & REGEN to Disp.
- Lease Fuel to IF
- BD OR BRKWR to SC
- LeaSe Fuel
- IF
- PW to IF
- Utility to BT
- Brackish Produced Gas
- SAGD Production
- Fresh Source from Wells
- Domestic use
MARP approvals

- FGH MARP was approved in April 2011
- Salt caverns are separated from the rest of the plant for production reporting
Methods for estimating injection and production volumes

• Production well metering/estimates:
  • Wellhead meters are quadrant edge orifice plate meters for the first 34 pads, manual BS&W samples
  • W08 first new well pad with test separator design, all new pads will incorporate test separators
  • W08 uses Phase Dynamics for water cut, still working with vendor to calibrate (using manual BS&W samples in the interim)
• Other initiatives
  • Two MPFMss being piloted in the east (AGARs not very consistently reliable)
  • Plan to test NMR (nuclear magnetic resonance) technology for BS&W and a new proportional sampler (bench test)
  • AGAR MPFM installed on W06 pad well pairs WP7 and WP8 which may come on this fall
Methods for estimating injection and production volumes

• Production is prorated to plant volumes:
  • Oil: sales – diluent +/- inventories + blending shrinkage
  • Water: water entering battery and transferred to the IF (sum of the ORFS +/- inventories + transfers)

• Steam injection meters:
  • Injection well head meters are nozzle-style and V-cone
  • Steam is measured at each injector
  • Steam leaving the plant is calculated using the sum of the boiler feedwater meters minus the blowdown water meters. The plant steam is then prorated to each well.
Proration factors

- Oil and water estimates are obtained from the wellhead meters and manual samples
- Oil and water production is calculated from meters at the plant
- Proration factors are found by dividing the actual production by the estimated
- Gas allocated to each well is determined by GOR for the battery
Oil and water proration factors

New testing procedures and new Field Data Capture Program

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Subsection 3.1.2 – 3b)
Steam proration factors

2015 steam proration

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Injection facility water imbalance

Investigating Jan/Feb exceedances
Optimization of test durations

- Wellhead flow meters are used to measure the flow rate of existing wells at Foster Creek.
- This variance from standard testing duration was granted by exemption letter because the wells all have individual flow meters so flow is continuously measured.
- Quadrant edge orifice meters have been proven to compare well to coriolis meters.
- New test separators have coriolis meters and watercut analyzer on liquid leg (first units are Phase Dynamics – currently working with vendor on calibrations).
Description of water production, injection and uses
Current brackish source network
Fresh source wells

PW06 3-22-70-4

PW07 4-22-70-4
2014 monthly saline water use (m³)

- Saline water use during 2014 was 3,716,543.8 m³ (0.54 m³/m³ oil)
- Saline water use during Q1 2015 was 966,085.2 m³ (0.50 m³/m³ oil)
- 2014 Saline Source/Use:
  - 75% Grand Rapids (SAGD)
  - 25% McMurray (SAGD)
- Saline water used for cooling and makeup
2014 monthly fresh water use (m³)

- Fresh water used during 2014 was 522,391.9 m³ (.076 m³/m³ bitumen)
- Fresh water used during Q1 2015 was 197,949.1 m³ (0.102 m³/m³ oil)
- Phase F start up increased fresh water use for BFW make up purposes.

- Fresh Water use is expected to drop significantly after the commissioning of Phase F water treatment plant, currently scheduled for July 2015.
Produced water
Steam generation

Produced Water

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Subsection 3.1.2 - 4d
Water recycle

![Water Recycle Ratio Chart]

- Approval 90%
- 2014 Avg 94.3%
- Q1 2015 Avg 90.7%
# Water quality parameters

<table>
<thead>
<tr>
<th></th>
<th>McMurray</th>
<th>Grand Rapids</th>
<th>Produced</th>
<th>Boiler feed water</th>
<th>Boiler blowdown</th>
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<tbody>
<tr>
<td>TDS</td>
<td>9400</td>
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<td>SiO2</td>
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<td>Cl</td>
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<td>3600</td>
<td>861</td>
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<td>Na</td>
<td>3500</td>
<td>2100</td>
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<td>K</td>
<td>12</td>
<td>7.6</td>
<td>21</td>
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<td>Ca</td>
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<td>Alkalinity (as CaCO3)</td>
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<td>8.25</td>
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<td>Fe</td>
<td>2.6</td>
<td>0.6</td>
<td>0.5</td>
<td>&lt;0.02</td>
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</table>
Foster Creek McMurray water disposal

- Class 1B (28 wells) approval 11351F, Class II (1 well) Approval 11059C
- Ten new wells on ED3 pad started disposal operations in July 2014
- Water disposal includes water from operations (produced, regens, blowdown) and brines from cavern washing and displacements
- Regens are performed using softened water (brackish + produced, no fresh water) and combined with produced water for disposal
- Well workovers include coil cleanouts and acid stimulations
- Volumes are measured on each individual well by turbine or magnetic meters and pressure is measured at common headers located at the disposal pads
Foster Creek McMurray water disposal wells

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<thead>
<tr>
<th>UWI</th>
<th>Approval No.</th>
<th>Classification</th>
</tr>
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<tbody>
<tr>
<td>102/02-02-070-04W4</td>
<td>11351F</td>
<td>Class IB</td>
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<tr>
<td>100/03-02-070-04W4</td>
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<td>Class IB</td>
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<td>100/08-02-070-04W4</td>
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<td>103/10-02-070-04W4</td>
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<td>104/11-02-070-04W4</td>
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<tr>
<td>100/06-34-069-04W4</td>
<td>11315F</td>
<td>Class 1B</td>
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Foster Creek McMurray water disposal wells

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<th>Classification</th>
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<td>102/06-34-069-04W4</td>
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<td>Class IB</td>
</tr>
<tr>
<td>102/05-34-069-04W4</td>
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<tr>
<td>102/11-19-069-03W4</td>
<td>11315F</td>
<td>Class 1B</td>
</tr>
</tbody>
</table>
Current disposal well locations

**Legend**

**Disposal Wells:**

**ED1 Pad:**
- WDHZ 1 – 100/03-02-070-04W4
- WDHZ 2 – 100/02-02-070-04W4
- WDHZ 3 – 102/02-02-070-04W4
- WDHZ 4 – 100/08-02-070-04W4
- WD6 – 104/11-02-070-03W4
- WD7 – 105/11-02-070-03W4
- WD8 – 104/10-02-070-03W4
- WD9 – 102/10-02-070-03W4
- WD10 – 103/10-02-070-03W4

**ED2 Pad:**
- WD11 – 102/11-34-069-04W4
- WD12 – 100/12-34-069-04W4
- WD13 – 103/11-34-069-04W4
- WD14 – 102/12-34-069-04W4
- WD15 – 100/06-34-069-04W4
- WD16 – 100/05-34-069-04W4
- WD17 – 102/06-34-069-04W4
- WD18 – 102/05-34-069-04W4
- WD19 – 100/03-34-069-04W4
- WD20 – 100/04-34-069-04W4

**ED3 Pad:**
- WD21 – 100/02-30-069-03W4
- WD22 – 100/03-30-069-03W4
- WD23 – 100/16-19-069-03W4
- WD24 – 100/14-19-069-03W4
- WD25 – 100/16-19-069-03W4
- WD26 – 102/14-19-069-03W4
- WD27 – 100/09-19-069-03W4
- WD28 – 100/11-19-069-03W4
- WD29 – 100/10-19-069-03W4
- WD30 – 102/11-19-069-03W4

**Abandoned Disposal well:**
- WD5 – 103/11-02-070-03W4
McMurray class 1B approval

No. 11351F MWHIP 6,250 kPag

Avg. Operating Temp
55-60°C
Foster Creek McMurray water disposal comments

• Disposal rates jumped in October 2014 due to the Phase F (FC3) emulsion processing area commissioning. Produced water (PW) from the processing was sent to disposal since water treatment system had not been commissioned. This increased disposal rates, despite a reduction in BD disposal from running the second stage OTSGs (SSOTSGs). In November 2014, one boiler failed in FC3 while other boilers were undergoing planned maintenance. As a result, only 1-2 SSOTGs were running for the months of November/December. This also resulted in increased BD disposal.

• Disposal rates increased in March 2015 as a result of increased produced water disposal from FC3 commissioning. This was attributed to increasing the inlet emulsion rates to achieve plant design rates for commissioning.
McMurray class II approval

No. 11059C MWHIP 6,255 kPa

Avg. Operating Temp
40-50°C
## Waste disposal

<table>
<thead>
<tr>
<th>Foster Creek Waste Streams</th>
<th>2014 Volume (m³)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slop oil/Desand Fluid</td>
<td>26,683</td>
<td>NewAlta Elk Point/Tervita Coronation/Tervita Lindbergh Cavern</td>
</tr>
<tr>
<td>Drilling waste</td>
<td>53,797</td>
<td>Newalta Elk Point/Tervita Lindbergh Cavern/Tervita Bonnyville Landfill</td>
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<tr>
<td>Lime sludge</td>
<td>17,316</td>
<td>Newalta Elk Point/Tervita Lindbergh Cavern/Tervita Bonnyville Landfill</td>
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<tr>
<td>Contaminated soils</td>
<td>1,408</td>
<td>Newalta Elk Point/Tervita Lindbergh Cavern/Tervita Bonnyville Landfill/ RBW Edmonton</td>
</tr>
<tr>
<td>Sweetening liquids/sludge</td>
<td>9,340</td>
<td>Absolute Environmental Class Ia Disposal Well/ Cancen New Sarepta/Tervita Unity Cavern</td>
</tr>
<tr>
<td>Acid Workover Program</td>
<td>434</td>
<td>Tervita Lindbergh Cavern</td>
</tr>
</tbody>
</table>
Sulphur production
Sulphur recovery overview

- Central facility non-regenerative sweetening unit (NRSU) has been used since April 2007 to meet sulphur recovery requirements
- Second unit added in 2010 at Phase A-E – can be used in parallel or for backup
- Additional unit at Phase F
- High operating costs for chemical and disposal
- Balance recoveries on a daily/monthly basis
- Sulphur recovery – Q1 2014: 69.7%, Q2 2014: 75.8%, Q3 2014: 71.0%, Q4 2014: 77.4%, Q1 2015 83.0%
Sulphur recovery

Quarterly Average Sulphur Inlet (t/d)
Daily Inlet (t/d)
Quarterly Sulphur Emissions (t/d)
Recovery (quarterly)
Calendar Quarter Sulphur Emissions
Recovery
Calendar Quarter Sulphur Inlet
Daily Inlet Sulphur

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Subsection 5.1.2 - 6c)
SO$_2$ emissions (tonnes per day)
Sulphur recovery comments

• Sulphur recovery system being reviewed to ensure it has sufficient capacity
• Re-designed and installed new inlet gas sparger (distributor) in all three NRSUs to improve flow rate and reliability. This new sparger significantly reduces fouling and plugging.
• Planning to perform capacity test with the new sparger in Q3 - 2015
• Reviewing pressure drop profile in the system. Initiated project to change inlet valve in NRSU 2 to reduce pressure drop.
• C Pad compressor reliability has been improved to handle casing gas flows.
• Continued use of non-regenerative sweetening unit (NRSU) technology
• Developing casing gas gathering pipeline model to ensure appropriate capacity at lower pressure drop.
Environmental issues summary
Environmental non-compliance 2014

• AER Events:
  • Two NOx exceedances
  • Four CEMS availability contraventions
  • Twenty-one environmental spills were reported and remedial action taken
  • Four 7-day letters submitted
    • D55 secondary containment failure; Pipeline overpressure; Waste delivered to wrong facility; Bottom hole over-pressure

• AESRD Events:
  • Four 7-day letters submitted
    • Non-Compliance to License approval conditions

• Federal Events:
  • No non-compliance events
AER scheme applications – filed in 2014, approval received

<table>
<thead>
<tr>
<th>Application</th>
<th>Filing Date</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>W07 and 10 Pads Alternate Spacing</td>
<td>January 21, 2014</td>
<td>February 10, 2014</td>
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<tr>
<td>W18 Reconfiguration</td>
<td>February 20, 2014</td>
<td>March 27, 2014</td>
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<tr>
<td>MOP Increase</td>
<td>February 28, 2014</td>
<td>May 29, 2014</td>
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<tr>
<td>Microbial Enhanced Start-up</td>
<td>March 10, 2014</td>
<td>August 19, 2014</td>
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## AER scheme applications – filed in 2014, approval received continued

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<tr>
<th>Application</th>
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<tr>
<td>Dual lateral production well J Pad</td>
<td>March 14, 2014</td>
<td>August 19, 2014</td>
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<tr>
<td>E22, W19, W20 &amp; W23 Reconfiguration</td>
<td>April 7, 2014</td>
<td>July 7, 2014</td>
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<td>Temporary MOP Increase</td>
<td>April 22, 2014</td>
<td>April 30, 2014</td>
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<td>Change of metering equipment W06/E21</td>
<td>May 30, 2014</td>
<td>August 1, 2014</td>
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<tr>
<td>Pressure sink well application</td>
<td>May 30, 2014</td>
<td>October 3, 2014</td>
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AER scheme applications – filed in 2014, approval received continued

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<td>D081 Heat Integration Project</td>
<td>July 14, 2014</td>
<td>October 3, 2014</td>
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<td>Steam Dilation</td>
<td>July 30, 2014</td>
<td>October 14, 2014</td>
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<tr>
<td>Propane Solvent Aided Process (SAP) Test</td>
<td>August 18, 2014</td>
<td>January 26, 2015</td>
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AER scheme applications – filed in 2014, approval received continued

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<th>Application</th>
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<td>Air Injection Pilot Rampdown, Blowdown FI1 &amp; FI2</td>
<td>September 4, 2014</td>
<td>October 3, 2014</td>
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<tr>
<td>Coinjection of NCG (Methane) Central and East Pod</td>
<td>October 7, 2014</td>
<td>March 26, 2015</td>
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<tr>
<td>Methane Removal Well</td>
<td>October 8, 2014</td>
<td>February 5, 2015</td>
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<td>Increase CH4 inj. Rate at Pads A, C &amp; D</td>
<td>October 14, 2014</td>
<td>February 5, 2015</td>
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AER scheme applications – filed in 2014, approval received continued

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<tr>
<th>Application</th>
<th>Filing Date</th>
<th>Approval</th>
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<tr>
<td>Hot Spot Surfactant Trial (E24P02)</td>
<td>October 24, 2014</td>
<td>March 18, 2015</td>
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<tr>
<td>Downhole Heater Enhanced start-up</td>
<td>December 17, 2014</td>
<td>February 11, 2015</td>
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Approval amendments – AESRD EPEA

Phase J EPEA Approval

• Approved December 17, 2014 (68492-01-03)
Annual reporting - 2014

The following reports were submitted March 2014 as per EPEA Approval 00068492-01-03:

• Annual Groundwater Reports
• Annual C&R Plan
• Annual Air Monitoring Report
• Annual Industrial Runoff Report
Monitoring programs

Cenovus is required to implement the following monitoring programs as part of EPEA Approval 00068492-01-03:

<table>
<thead>
<tr>
<th>EPEA Requirement</th>
<th>Report Name</th>
<th>Due Date</th>
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<tr>
<td>Schedule VIII, Condition 4</td>
<td>Wildlife Mitigation Program</td>
<td>October 31, 2012</td>
<td>Implemented</td>
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<tr>
<td>Schedule VIII, Condition 19</td>
<td>Updated Wildlife Mitigation Program</td>
<td>June 30, 2015</td>
<td>Not due yet</td>
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<td>Schedule VIII, Condition 13</td>
<td>Wildlife Monitoring Program</td>
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<td>Updated Wildlife Monitoring Program</td>
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<td>Schedule VIII, Condition 9</td>
<td>Woodland Caribou Mitigation and Monitoring Plan</td>
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<td>Schedule VIII, Condition 20</td>
<td>Updated Woodland Caribou Mitigation and Monitoring Plan</td>
<td>May 15, 2015</td>
<td>Submitted</td>
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<td>Schedule IX, Condition 41</td>
<td>Updated Wetland Reclamation Trial Program</td>
<td>June 30, 2015</td>
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<td>Schedule IX, Condition 47</td>
<td>Reclamation Monitoring Program</td>
<td>July 31, 2013</td>
<td>Implemented</td>
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<td>Schedule XI, Condition 2</td>
<td>Updated Wetland Monitoring Program</td>
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<td>Schedule VII, Condition 1</td>
<td>Soil Monitoring and Management Program Proposal</td>
<td>February 1, 2014</td>
<td>Submitted / Approved</td>
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<td>February 1, 2019</td>
<td>Not due yet</td>
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<tr>
<td>Schedule IX, Condition 28</td>
<td>Project-Level Conservation, Reclamation and Closure Plan</td>
<td>June 30, 2016 (industry-wide extension granted)</td>
<td>Not due yet</td>
</tr>
<tr>
<td>Schedule IX, Condition 17</td>
<td>Decommissioning Plan and Land Reclamation Plan</td>
<td>Within six months of the plant ceasing operation</td>
<td>Not due yet</td>
</tr>
</tbody>
</table>
Goals of monitoring programs

Wildlife and Caribou Mitigation and Monitoring:

- The monitoring programs propose mitigation measures, metrics, targets, and monitoring objectives
- Monitoring and mitigation is based on an outcomes based approach to facilitate continuous improvement
- First Comprehensive Wildlife Report was submitted May 15th, 2015

Mitigation measures are designed in relation to project-related issues that have the potential to affect:

- Wildlife habitat availability and use, including noise and other sensory disturbance
- Wildlife mortality
- Obstruction of movement
Goals of monitoring continued

Wetland monitoring:

• Objective is to assess and quantify potential impacts of project infrastructure on surrounding wetlands using selected metrics and targets

• Effects of roads, well pads, borrow pits and CPFs will be monitored throughout the life of the project by assessing key parameters including water quality, water levels, vegetation species composition, cover and vigour
Co-operative initiatives

Cenovus participates in various co-operative efforts to address industry issues:

• Regional environmental monitoring
• Environmental research
• Stakeholder consultation
• Innovation and continuous improvement
Cooperative initiatives - Examples

- Canada’s Oil Sands Innovation Alliance (COSIA)
- Contributed to over thirty projects including: Wildwatch, LiDEA, Fladry, Geodesign, Functional Quality Land Metric, etc.
- Support for three chairs at the University of Alberta
- Contributor to the Joint Canada-Alberta Oil Sands Monitoring (JOSM)
- Lakeland Industry and Community Association (LICA)
  - Airshed Monitoring
  - Beaver River Watershed Alliance
Cooperative initiatives continued

- Regional Industry Caribou Collaboration project
- Alberta Chamber of Resources (ARC)
- Chair of the Caribou Committee
- Ecological Monitoring Committee for the Lower Athabasca (EMCLA)
- CAPP Environment Committee
Reclamation

- The Reclamation Monitoring Program was approved in August of 2014.
- Final reclamation activities have been initiated and/or completed on small portions of the commercial footprint (remote from the CPF) that are no longer required.
- Interim reclamation is present on approximately 25% of the commercial footprint not currently being used in construction or operations.
- There is currently no facility abandonment scheduled, consequently no well pad reclamation has commenced.
Reclamation continued

Restoration of legacy 2D seismic footprints was initiated in 2012 and continued through 2013 to 2014:

- TWP 72 & 73, RGE 1 & 2, W4M
- Objective is successional advancement, increasing the growth and abundance of conifers and course wood on linear features, reducing trafficability
- Treatments employed on linear features include mounding, stand modification and tree planting
- Treatment progress to-date has covered 237 km
Statement of Compliance
Compliance statement

Cenovus maintains and tracks compliance through the CenTrac conditions/commitment database, Incident Management System (IMS), routine inspections, and dedicated regulatory and environmental staff.

Cenovus believes its operations are in compliance with AER approvals and regulatory requirements.
Non-compliance
Non-compliance events

AER non-compliant events:

- **July 22, 2014**
  Notice of Noncompliance – Outstanding Serious SCVF/GM @100/03-22-070-04W04
  **Corrective action** –
  AER extension granted till July 31, 2015 to repair

- **October 20, 2014**
  Notice of Low Risk Noncompliance with Directive 050 Oilfield Drilling Waste @ 120/03-17-070-03W4/00 & 102/03-17-070-03W4/02 License #: 0445344
  **Corrective action**-Cenovus submitted DDS Drilling Waste Management Disposal Form.
  Compliance was achieved October 22, 2014
Self-Disclosures

Cenovus Voluntary Self-Disclosures:

• June 12, 2014
  Non-Compliant with Directive 050 Post Disposal Notification Requirements. Post disposal notification for the 104/04-01-070-04W4/00 well not completed within the 24 months of rig release (rig release June 7, 2012).
  **Corrective action**
  Cenovus submitted DDS Drilling Waste Management Disposal Form. Compliance was achieved June 18, 2014

• June 18, 2014
  Secondary Containment System Non-Compliant With Directive 55 (T-305 desand tank and T-301B pop tank containment, some holes identified in the liner).
  **Corrective action**
  Cenovus repaired the containment. Compliance was achieved July 30, 2014
Self-Disclosures

- October 29, 2014
  Maximum bottom hole injection pressure exceedance @ 103/4-1-70-4W4
  Approval No. 8623
  **Corrective action**
  Operator was reminded of the importance to fully understand and follow Cenovus’s procedures.

- December 3, 2014
  Pad C Methane over injection rate Scheme Approval 8623WW
  **Corrective action**
  Cenovus changed the orifice plate size and control module was updated.
Future plans
Future projects

Current capacity is 150,000 bbls/d, target for Phases F, G & H to peak at 210,000 bbls/d. Evaluating opportunities to increase capacity.

Currently scoping plant optimization opportunities for Phases A-E

Phases F, G & H update

• New steam generation and production treating facilities being constructed next to the existing plant
• Phase F: 30,000 bbls/d, Phase G: 30,000 bbls/d, Phase H: 30,000 bbls/d, for total new capacity of 90,000 bbls/d (4,770 m³/d + 4,770 m³/d + 4,770 m³/d = 14,310 m³/d)
• Potential for another 35,000 bbls/d of optimization work
• The majority of new expansion is planned to be drilled west of the plant

Note that production volumes refer to production capacity on an incremental basis
Future projects continued

Current success in SOR & WOR, and increased efficiencies in plant operations at Foster Creek indicates that Phases A – H may be capable of production greater than 240,000 bbls/d

Upcoming regulatory applications

- Currently evaluating opportunities to increase project capacity to 310,000 bbl/d (49,286 m³/d)
- Additional wells to recover un-swept reserves including injector-producer well pairs and single well producers
- Continued exit strategies for mature pads
- Future phase & sustaining development well pads

Currently drilling, completing and performing facilities work for sustaining and Phase F and G wells in 2014 through 2015

Note that production volumes refer to production capacity on an incremental basis
Osprey Pilot

Surface
Calgary | June 24, 2015
Self-disclosure

October 29, 2014
Over pressure (5700 kPa) on maximum bottom hole pressure (5500 kPa) on OS1 (103/04-01-070-04W4M).

Corrective Action
Operator error was the root cause of this incident. Operators will be reminded of the importance to fully understand and follow procedures during all tasks.
End
Self-disclosure

October 29, 2014

Over pressure (5700 kPa) on maximum bottom hole pressure (5500 kPa) on OS1 (103/04-01-070-04W4M).

Corrective Action

Operator error was the root cause of this incident. Operators will be reminded of the importance to fully understand and follow procedures during all tasks.
End
Steam rampdown/blowdown update #8
Advisory

This document contains forward-looking information prepared and submitted pursuant to Alberta regulatory requirements and is not intended to be relied upon for the purpose of making investment decisions, including without limitation, to purchase, hold or sell any securities of Cenovus Energy Inc. Additional information regarding Cenovus Energy Inc. is available at cenovus.com.
Agenda

- Foster Creek Thermal Project is our 50/50 joint venture with ConocoPhillips in which Cenovus FCCL Ltd. is the operator

- **Pad Updates (A, C, D, F & G)**
  - Operational review
  - Temperature monitoring
  - Fluid saturation updates
  - Compositional analysis

- **Next steps**
  - Pads A, C, D, F & G

Blowdown: Pads C & D
Rampdown: Pads A, F, & G
Pad A – update

- Operational review
- Temperature monitoring
- Fluid Saturation updates
- Compositional analysis
Methane injection

Clause (23) Sub Clause (1) of Scheme Approval 8623

The operator shall conduct the ramping down and ceasing of steam injection, and injecting of non-condensable gas, at Well Pads A, C, D subject to the following conditions:

(1) The non-condensable gas injected will only be methane (fuel gas)
Pad A – operational overview

**Injectors:**
- AI1, AI4 and AI32 equipped and operational for methane injection
- AI2 and AI3 abandoned
- Methane injection started in March 2012
- Pad cum injection of 20,210 Se³m³ of methane to Feb 28, 2015

**Producers:**
- AP1, AP2, AP3, and AP32 are operational
- AP4 (offline)
- All five wells utilizing Wedge Well™ technology are in operation
  - Currently injecting steam in A-inf1
## Pad A– injection summary

<table>
<thead>
<tr>
<th>Injector</th>
<th>Methane Injection Start Date</th>
<th>Cum gas injected to Feb 28, 2015 (Se3m3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI1</td>
<td>Mar 2012</td>
<td>7,535</td>
</tr>
<tr>
<td>AI4</td>
<td>Apr 2012</td>
<td>5,944</td>
</tr>
<tr>
<td>AI32</td>
<td>Mar 2012</td>
<td>6,731</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20,210</td>
</tr>
</tbody>
</table>

Cum gas since March 2012.

Well pairs

Wells utilizing Wedge Well™ technology
Pad A – production & injection
Pad A – oil voidage

- Percentage Gas injected volume per oil produced

**Gas - Chamber Conditions**

20,210 m³, Methane Injected (Std Conditions)
11,596 m³, Methane Produced, excluding solution gas (Std Conditions)
8,614 m³, Net Methane Injected (Std Conditions)

8,648 kg/m³, Density of Methane in Chamber

657,394 m³, Net Methane Injected at Reservoir Conditions

**% Gas Volume Injected vs Oil Voidage**

Since Start of A Pad Production, 1997

657,394 m³ of net methane injected (reservoir conditions)
2,652,981 m³ of oil produced (as of Feb 28, 2015)

24.78% oil voidage displaced by injected methane
Pad A – injection strategy

May 2015 to June 2015

• Operating in last steam cut phase
• Methane gas volumes adjusted to maintain reservoir pressure / balance with offset pads

June 2015 onwards

• Steam injection stopped, blowdown
• Methane gas volumes adjusted to maintain reservoir pressure / balance with offset pads
Pad A – predictive forecast
Temperature logs & fluid saturation

Clause (23) sub clause (2) of scheme approval 8623

Temperature measurement must be conducted a minimum of twice each calendar year at the designated observation wells listed below. A suitable baseline temperature measurement must be available or obtained at each designated observation well listed below prior to commencement of steam ramp down at each pad.

03/12-22-070-04W4/0 (C12-22)
11/05-22-070-04W4/0 (A5-22)

Clause (23) sub clause (3) of scheme approval 8623

Fluid saturation measurements must be conducted a minimum of once every calendar year using well logging at a minimum of one observation well at each well pad. A suitable baseline fluid saturation measurement must be available or obtained at a minimum of one observation well at each well pad prior to the commencement of steam ramp down at each well pad.
Pad A: Temperature & Fluid Monitoring

- Pad A logging history

<table>
<thead>
<tr>
<th>Target steam (percent)</th>
<th>Temperature log</th>
<th>RST log</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>January 2012</td>
<td>February 2012</td>
</tr>
<tr>
<td>70</td>
<td>December 2012</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>March 2013</td>
<td>March 2013</td>
</tr>
<tr>
<td>60</td>
<td>December 2013</td>
<td>December 2013</td>
</tr>
<tr>
<td>45</td>
<td>March 2014</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>December 2014</td>
<td>December 2014</td>
</tr>
<tr>
<td>30</td>
<td>March 2015</td>
<td></td>
</tr>
</tbody>
</table>
Pad A– C12-22 updated (103122207004W400)

- 16m offset to A4 well pair
- March 2014 224 °C
- Current logged temperature 206 °C
- Chamber is 80 percent steam (100 percent last year)
- December 2014 temperature curve is suspect
- March 2014 to March 2015; 18 °C decrease, temperature curves are comparable
- Temperature curves remain consistent while ramping steam down to 15 percent.
- Noted increase in gas saturation, build in chamber
- Slight decrease in oil saturation
Steam chamber core well

3m offset to A3 well pair

March 2014 170 °C

Current logged temperature 215 °C

45 °C increase from previous year

Chamber is 100 percent steam (35 percent last year)

Possible response to wedge well-1, which started steaming November 2014

No appreciable change in oil saturations

Base of steam has moved down from 197.5 m asl to 193m asl
Compositional analysis

Clause (23) sub clause (4) of scheme approval No. 8623

Compositional analyses of the casing gas at the 08/12-22-070-04W4/2 (AP4), 11/07-22-070-04W4/0 (CP16), and 24/13-14-070-04W4/2 (DP20) wells and compositional analyses of the produced gas on a group basis for each well pad must be obtained monthly, commencing prior to the start of steam ramp down at each well pad.
Pad A – methane C1 mole composition
Pad C– update

- Operational review
- Temperature monitoring
- Fluid Saturation updates
- Compositional analysis

Blowdown: Pads C & D
Rampdown: Pads A, F, & G
Methane injection

Clause (23) sub clause (1) of scheme approval 8623

The operator shall conduct the ramping down and ceasing of steam injection, and injecting of non-condensable gas, at Well Pads A, C, D subject to the following conditions:

(1) The non-condensable gas injected will only be methane (fuel gas)
Pad C– operational overview

**Injectors:**
- CI11, CI12, CI13, CI14, CI15, and CI16 equipped and operational for methane injection
  - Injecting methane in CI11 and CI12
- Methane injection started in November 2011
  - Full blowdown March 4, 2013
- Pad cum injection of 80,252 Se$^3$m$^3$ of methane to February 28, 2015

**Producers:**
- CP11, CP13, CP14, and CP15 are operational
- CP12 (Abandoned)
- CP16 (Offline)
- CP33-1 (Abandoned)

**Six wells utilizing Wedge Well™ technology are in operation**
- CW07 (Offline)
- CW08 (Offline)
## Pad C – injection summary

<table>
<thead>
<tr>
<th>Injector</th>
<th>Methane injection start date</th>
<th>Cum gas injected to February 28, 2015 (Se³m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI11</td>
<td>November 2011</td>
<td>12,858</td>
</tr>
<tr>
<td>CI12</td>
<td>February 2012</td>
<td>15,859</td>
</tr>
<tr>
<td>CI13</td>
<td>February 2012</td>
<td>13,642</td>
</tr>
<tr>
<td>CI14</td>
<td>November 2011</td>
<td>10,117</td>
</tr>
<tr>
<td>CI15</td>
<td>March 2012</td>
<td>15,091</td>
</tr>
<tr>
<td>CI16</td>
<td>February 2012</td>
<td>12,662</td>
</tr>
<tr>
<td>CI33</td>
<td>November 2012</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>80,252</td>
</tr>
</tbody>
</table>

Cum gas since November 2011.

Wells utilizing Wedge Well™ technology
Pad C – production & injection
Pad C – oil voidage

• Percentage gas injected volume per oil produced

Gas - Chamber Conditions

<table>
<thead>
<tr>
<th>Volume</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>79,295 Se3m3</td>
<td>Methane Injected (Std Conditions)</td>
</tr>
<tr>
<td>21,754 Se3m3</td>
<td>Methane Produced, excluding solution gas (Std Conditions)</td>
</tr>
<tr>
<td>57,541 Se3m3</td>
<td>Net Methane Injected (Std Conditions)</td>
</tr>
</tbody>
</table>

8.648 kg/m³, Density of Methane in Chamber

4,391,532 m³, Net Methane Injected at Reservoir Conditions

% Gas Volume Injected vs Oil Voidage

Since Start of C Pad Production, 2001

4,391,532 m³ of net methane injected (reservoir conditions)
3,718,575 m³ of oil produced (as of Feb 28, 2015)

118.1% oil voidage displaced by injected methane
Pad C – injection strategy

March 2013 onwards

- Pad steam injection shut-in, full pad blowdown
- Methane gas volumes adjusted to maintain reservoir pressure / balance with offset pads
- Currently injecting methane in C11 & C12
Pad C – predictive forecast
Temperature logs & fluid saturation

Clause (23) sub clause (2) of scheme approval 8623

Temperature measurement must be conducted a minimum of twice each calendar year at the designated observation wells listed below. A suitable baseline temperature measurement must be available or obtained at each designated observation well listed below prior to commencement of steam ramp down at each pad.

02/06-22-070-04W4/0 (B6-22)
00/07-22-070-04W4/0 (A7-22)

Clause (23) sub clause (3) of scheme approval 8623

Fluid saturation measurements must be conducted a minimum of once every calendar year using well logging at a minimum of one observation well at each well pad. A suitable baseline fluid saturation measurement must be available or obtained at a minimum of one observation well at each well pad prior to the commencement of steam ramp down at each well pad.
## Pad C: temperature & fluid monitoring

### Pad C logging history

<table>
<thead>
<tr>
<th>Target Steam (Percent)</th>
<th>Temperature Log</th>
<th>RST Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>January 2012</td>
<td>December 2011</td>
</tr>
<tr>
<td>50</td>
<td>August 2012</td>
<td>August 2012</td>
</tr>
<tr>
<td>30</td>
<td>December 2012</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>March 2013</td>
<td>March 2013</td>
</tr>
<tr>
<td>0</td>
<td>December 2013</td>
<td>December 2013</td>
</tr>
<tr>
<td>0</td>
<td>March 2014</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>December 2014</td>
<td>December 2014</td>
</tr>
<tr>
<td>0</td>
<td>March 2015</td>
<td></td>
</tr>
</tbody>
</table>
Pad C – A7-22 updated (100072207004W400)

- 3m offset C15 well pair
- March 2014 192 °C
- Current logged temperature is 175 °C
- December 2014 and March 2015 temperature curves are comparable
- Chamber is 40 percent steam (60 percent last year)
- Temperatures before steam ramp down were 210 °C (below calculated saturation temperature (TSAT)).
- No appreciable changes in saturations
- RST log shows slight increase in gas saturation near injector well
- RST log shows slight increase in oil sat at the producer well, possibly mobile bitumen
Pad C– B6-22 updated (102062207004W400)

- 10m offset C11 well pair
- March 2014 205 °C
- Current logged temperature is 188 °C
- December 2014 and March 2015 temperature curves are comparable
- Chamber is 55 percent steam (80 percent last year)
- No appreciable changes in saturations
- Slight increase in oil saturation above producer (possibly mobile bitumen)
Compositional analysis

Clause (23) sub clause (4) of scheme approval No. 8623

Compositional analyses of the casing gas at the 08/12-22-070-04W4/2 (AP4), 11/07-22-070-04W4/0 (CP16), and 24/13-14-070-04W4/2 (DP20) wells and compositional analyses of the produced gas on a group basis for each well pad must be obtained monthly, commencing prior to the start of steam ramp down at each well pad.
Pad C – methane C1 mole composition
Pad D – update

- Operation review
- Temperature monitoring
- Fluid saturation updates
- Compositional analysis

Blowdown: Pads C & D
Rampdown: Pads A, F, & G
Methane injection

Clause (23) sub clause (1) of scheme approval 8623

The operator shall conduct the ramping down and ceasing of steam injection, and injecting of non-condensable gas, at Well Pads A, C, D subject to the following conditions:

(1) The non-condensable gas injected will only be methane (fuel gas)
Pad D – operational overview

**Injectors:**
- DI17, DI19, DI20, DI22 and DI34 equipped and operational for methane injection
  - Full blowdown (excluding D17) as of March 19, 2015
  - DI19 and DI34 currently injecting methane
  - DI17 currently injecting steam (application to proceed to blowdown submitted)
  - DI18 and DI21 – Abandoned well
  - DI34 - steam shut-in as of December 10, 2012
  - Methane injection initially started in August 2010 at low rates
  - Pad cumulative injection of 23,485 Se³m³ of methane to February 28, 2015

**Producers:**
- DP17, DP20, DP21, DP22, DF-1, & DP34 operational
  - DP18 - Abandoned well
  - DP19 - Production issues, well not producing

**Four wells drilled using our Wedge Well™ technology operational**
- DW01 (offline)
- DW06 (offline)
## Pad D– injection summary

<table>
<thead>
<tr>
<th>Injector</th>
<th>Methane injection start date</th>
<th>Cum gas injected to February 28, 2015 ($\text{Se}^3\text{m}^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI17</td>
<td>May 2012</td>
<td>268</td>
</tr>
<tr>
<td>DI19</td>
<td>August 2010</td>
<td>3,482</td>
</tr>
<tr>
<td>DI20</td>
<td>August 2010</td>
<td>3,491</td>
</tr>
<tr>
<td>DI21</td>
<td>August 2010</td>
<td>267</td>
</tr>
<tr>
<td>DI22</td>
<td>August 2010</td>
<td>2,551</td>
</tr>
<tr>
<td>DI34</td>
<td>April 2012</td>
<td>13,425</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>23,485</td>
</tr>
</tbody>
</table>

Cum gas since Aug 2010.

Well pairs

Wells utilizing Wedge Well™ technology
Pad D – all wells production and injection
Application no. 1825625 to proceed with blowdown submitted.
Steam shut off in Dec, 2012 as per Aug, 2012 amendment and Approval 8623HH.
Pad D rampdown wells – production and injection

Currently in full blowdown (March 2015)
Pad D – oil voidage

- Percentage gas injected volume per oil produced

  **Gas - Chamber Conditions**

  - 23,494 m³, Methane Injected (Std Conditions)
  - 6,583 m³, Methane Produced, excluding solution gas (Std Conditions)
  - 18,911 m³, Net Methane Injected (Std Conditions)

  - 8.648 kg/m³, Density of Methane in Chamber

  - 1,290,653 m³, Net Methane Injected at Reservoir Conditions

  **% Gas Volume Injected vs Oil Voidage**

  Since Start of D Pad Production, 2001

  - 1,290,653 m³ of net methane injected (reservoir conditions)
  - 4,406,706 m³ of oil produced (as of Feb 28, 2015)

  **29.3% oil voidage displaced by injected methane**
Pad D – current injection strategy

Phase 5: March 2015 onwards

- Full blowdown on pad (excluding D17)
- Application to proceed to blowdown on D17
- Methane gas volumes adjusted to maintain reservoir pressure / balance with offset pads
- Currently injecting methane on DI19 and DI34
Pad D – predictive forecast

DI17 remains on steam
Temperature logs & fluid saturation

**Clause (23) sub clause (2) of scheme approval 8623**

Temperature measurement must be conducted a minimum of twice each calendar year at the designated observation wells listed below. A suitable baseline temperature measurement must be available or obtained at each designated observation well listed below prior to commencement of steam ramp down at each pad.

00/13-14-070-04W4/0 (C13-14)  00/02-22-070-04W4/0 (D2-22)
02/16-15-070-04W4/0 (D16-15)  02/04-23-070-04W4/0 (B4-23)
03/16-15-070-04W4/0 (C16-15)

**Clause (23) sub clause (3) of scheme approval 8623**

Fluid saturation measurements must be conducted a minimum of once every calendar year using well logging at a minimum of one observation well at each well pad. A suitable baseline fluid saturation measurement must be available or obtained at a minimum of one observation well at each well pad prior to the commencement of steam ramp down at each well pad.
Pad D: temperature & fluid monitoring

- Pad D logging history

<table>
<thead>
<tr>
<th>Target Steam (Percent)</th>
<th>Temperature Log</th>
<th>RST Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>December 2011</td>
<td>December 2011</td>
</tr>
<tr>
<td>100</td>
<td>March 2012</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>December 2012</td>
<td>December 2012</td>
</tr>
<tr>
<td>100</td>
<td>March 2013</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>December 2013</td>
<td>December 2013</td>
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<tr>
<td>80</td>
<td>March 2014</td>
<td>March 2014</td>
</tr>
<tr>
<td>30</td>
<td>December 2014</td>
<td>December 2014</td>
</tr>
<tr>
<td>0</td>
<td>March 2015</td>
<td></td>
</tr>
</tbody>
</table>
D Pad – D2-22 updated (100022207004W400)

- 20m offset D21 well pair
- March 2014 225 °C
- Current logged temperature 214 °C
- December 2014 and March 2015 temperature curves are comparable
- Chamber is 95 percent steam (100 percent last year)
- No appreciable changes in saturations
Pad D - D16-15 updated 102161507004W400

- 10m offset D22 well pair
- March 2014 220 °C
- Current logged temperature 210 °C
- December 2014 and March 2015 temperature curves are comparable
- Chamber is 90 percent steam (100 percent last year)
- No appreciable change in oil saturation in main chamber
- Slight decrease in gas saturation
Pad D– C13-14 updated (100131407004W400)

- 9m offset D21 well pair
- March 2014 223 °C
- Current logged temperature 211 °C
- December 2014 and March 2015 temperature curves are comparable
- Chamber is 90 percent steam (100 percent last year)
- No appreciable change in oil saturation in main chamber
- Slight increase in gas saturation; decrease in oil saturation above producer
• 4m offset D19 well pair
• March 2014 193 °C
• Current logged temperature 179 °C
• December 2014 and March 2015 temperature curves are comparable
• Chamber is 45 percent steam (60 percent last year)
• No appreciable change in oil saturation in main chamber
• Slight increase in oil saturation at producer
Pad D – C16-15 updated (103161507004W400)

- Baseline
- 19m offset D34 well pair
- March 2014 227 °C
- Current logged temperature 217 °C
- December 2014 and March 2015 temperature curves are comparable
- Chamber is 100 percent steam (100 percent last year)

TSAT ~216°C

217°C
Compositional analysis

Clause (23) sub clause (4) of scheme approval No. 8623

Compositional analyses of the casing gas at the 08/12-22-070-04W4/2 (AP4), 11/07-22-070-04W4/0 (CP16), and 24/13-14-070-04W4/2 (DP20) wells and compositional analyses of the produced gas on a group basis for each well pad must be obtained monthly, commencing prior to the start of steam ramp down at each well pad.
Pad D – methane C1 mole composition
Pad F – update

- Operation review
- Temperature monitoring
- Fluid saturation updates
- Compositional analysis

Blowdown: Pads C & D
Rampdown: Pads A, F, & G
Methane injection

Clause (24) sub clause (1) of scheme approval 8623

The operator shall conduct the ramping down and ceasing of steam injection, and injecting of non-condensable gas, at Well Pads F and G, subject to the following conditions:

(1) The non-condensable gas injected will only be methane (fuel gas)
Pad F – operational overview

**Injectors:**
- FI01, FI02, FI03, FI04, FI05, and FI06 equipped for methane injection
  - Injecting methane in FI03, FI04, and FI06
  - Steaming FI01-FI06
- Methane injection started in May 2014
  - Pad cum injection of 3,554 Se$^3$m³ of methane to Feb 28, 2015

**Producers:**
- FP01, FP02, FP03, FP04, and FP06 are operational
  - FP05 (offline)

**Five wells utilizing Wedge Well™ technology are in operation**
- FW06 (offline)
Pad F – injection summary

<table>
<thead>
<tr>
<th>Injector</th>
<th>Methane injection start date</th>
<th>Cum gas injected to February 28, 2015 (Se³m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FI01</td>
<td>November 2014</td>
<td>435</td>
</tr>
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<td>November 2014</td>
<td>190</td>
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<td>FI03</td>
<td>May 2014</td>
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<td>859</td>
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<td>May 2014</td>
<td>664</td>
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<td>FI06</td>
<td>May 2014</td>
<td>652</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3,554</td>
</tr>
</tbody>
</table>

Cum gas since May 2014.

Wells utilizing Wedge Well™ technology
Pad F – production & injection
Pad F– Oil Voidage

- Percentage gas injected volume per oil produced

**Gas - Chamber Conditions**

<table>
<thead>
<tr>
<th>Volume</th>
<th>Description</th>
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</thead>
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<tr>
<td>3,554 m³</td>
<td>Se3m3, Methane Injected (Std Conditions)</td>
</tr>
<tr>
<td>3,554 m³</td>
<td>Net Methane Injected (Std Conditions)</td>
</tr>
<tr>
<td>0 m³</td>
<td>Methane Produced, excluding solution gas (Std Conditions)</td>
</tr>
<tr>
<td>8.648 kg/m³</td>
<td>Density of Methane in Chamber</td>
</tr>
<tr>
<td>271,237 m³</td>
<td>Net Methane Injected at Reservoir Conditions</td>
</tr>
</tbody>
</table>

**% Gas Volume Injected vs Oil Voidage**

*Since Start of F Pad Production, 2005*

<table>
<thead>
<tr>
<th>Volume</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>271,237 m³</td>
<td>m³ of net methane injected (reservoir conditions)</td>
</tr>
<tr>
<td>3,091,348 m³</td>
<td>m³ of oil produced (as of Feb 28, 2015)</td>
</tr>
</tbody>
</table>

8.77% oil voidage displaced by injected methane
Pad F – injection strategy

May 2015 to October 2015

- Rampdown wells F3-F6 with 10 to 15 percent steam cuts
- Continue steaming F1-F2
- Methane gas volumes adjusted to maintain reservoir pressure / balance with offset pads

October 2015 onwards

- Steam injection stopped on F3-F6, blowdown
- Continue steaming F1-F2
- Methane gas volumes adjusted to maintain reservoir pressure / balance with offset pads
Pad F – predictive forecast

FI01 & FI02 continue steaming
Temperature logs & fluid saturation

Clause (24) sub clause (2) of scheme approval 8623

Temperature measurement must be conducted a minimum of twice each calendar year at the designated observation wells listed below. A suitable baseline temperature measurement must be available or obtained at each designated observation well listed below prior to commencement of steam ramp down at each well pad.

02/09-15-070-04W4/0 (B9-15)
03/08-15-070-04W4/0 (A8-15)

Clause (24) sub clause (3) of scheme approval 8623

Fluid saturation measurement must be conducted a minimum of once every calendar year using well logging at a minimum of one observation well at each well pad. A suitable baseline fluid saturation measurement must be available or obtained at a minimum of one observation well at each well pad prior to the commencement of steam ramp down at each well pad.
Pad F: temperature & fluid monitoring

- Pad F logging history

<table>
<thead>
<tr>
<th>Target Steam (Percent)</th>
<th>Temperature Log</th>
<th>RST Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>December 2014</td>
<td>December 2014</td>
</tr>
<tr>
<td>70</td>
<td>March 2015</td>
<td></td>
</tr>
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</table>
Pad F – A8-15 (103081507004W400)

- Baseline
- 70m offset to F1 Well Pair
- 27m offset to F W1 well, with ~110 °C at heel
- Observation well behavior not representative of Pad F
  - Current logged temperature 21 °C
  - Slight decrease in oil saturation
Pad F – B9-15 (102091507004W400)

- 30m offset to F4 Well Pair
- Jan 2014 232 °C
- Current logged temperature 176 °C
- March 2015 temperature decrease
- December 2014 temperature curve comparable to previous runs
- Chamber is 40 percent steam (100 percent last year)
- No appreciable change to oil saturations
- Slight increase to gas saturation
Compositional analysis

Clause (24) sub clause (4) of scheme approval 8623

Compositional analyses of casing gas and compositional analyses of the produced gas on a group basis for each well pad must be obtained monthly, commencing prior to the start of steam ramp down at each well pad.
Pad F – methane C1 mole composition
Pad G– Update

- Operation review
- Temperature monitoring
- Fluid saturation updates
- Compositional analysis

Blowdown: Pads C & D
Rampdown: Pads A, F, & G
Methane injection

Clause (24) sub clause (1) of scheme approval 8623

The operator shall conduct the ramping down and ceasing of steam injection, and injecting of non-condensable gas, at Well Pads F and G, subject to the following conditions:

(1) The non-condensable gas injected will only be methane (fuel gas)
Pad G – operational overview

**Injectors:**
- GI01, GI02, GI03, GI04, GI05, and GI06 equipped for methane injection
  - Injecting methane in GI01-GI06
  - Steaming GI01-GI07
- Methane injection started in May 2014
  - Pad cum injection of 2,306 Se3m3 of methane to February 28, 2015

**Producers:**
- GP01, GP03, GP05, GP06 and GP07 are operational
  - GP02 (offline)
  - GP04 (offline)
  - GP08 (offline)

Seven wells utilizing Wedge Well™ technology are in operation
Pad G – injection summary

<table>
<thead>
<tr>
<th>Injector</th>
<th>Methane injection start date</th>
<th>Cum gas injected to February 28, 2015 (Se³m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GI01</td>
<td>May 2014</td>
<td>303</td>
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<tr>
<td>GI02</td>
<td>May 2014</td>
<td>361</td>
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<td>GI03</td>
<td>May 2014</td>
<td>395</td>
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<tr>
<td>GI04</td>
<td>July 2014</td>
<td>355</td>
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<tr>
<td>GI05</td>
<td>May 2014</td>
<td>438</td>
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<td>GI06</td>
<td>May 2014</td>
<td>454</td>
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<tr>
<td>Total</td>
<td>May 2014</td>
<td>2,306</td>
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</table>

Cum gas since May 2014.

Well pairs 
Wells utilizing Wedge Well™ technology
Pad G – production & injection
Pad G – oil voidage

- Percentage gas injected volume per oil produced

**Gas - Chamber Conditions**

\[
\begin{align*}
2,306 \text{ Sm}^3 & \text{, Methane Injected (Std Conditions)} \\
0 \text{ Sm}^3 & \text{, Methane Produced, excluding solution gas (Std Conditions)} \\
2,306 \text{ Sm}^3 & \text{, Net Methane Injected (Std Conditions)}
\end{align*}
\]

8.648 kg/m³, Density of Methane in Chamber

175,965 m³, Net Methane Injected at Reservoir Conditions

**% Gas Volume Injected vs Oil Voidage**

*Since Start of G Pad Production, 2005*

\[
\frac{175,965 \text{ m}^3}{2,592,627 \text{ m}^3} = 6.79\% \text{ oil voidage displaced by injected methane}
\]
Pad G – injection strategy

May 2015 to November 2015

- Rampdown wells G1-G6 with 10 to 15 percent steam cuts
- Continue steaming G7
- Methane gas volumes adjusted to maintain reservoir pressure / balance with offset pads

November 2015 onwards

- Steam injection stopped on G1-G6, blowdown
- Continue steaming G7
- Methane gas volumes adjusted to maintain reservoir pressure / balance with offset pads
Pad G – predictive forecast

GI07 remains on steam
Temperature logs & fluid saturation

Clause (24) sub clause (2) of scheme approval 8623
Temperature measurement must be conducted a minimum of twice each calendar year at the designated observation wells listed below. A suitable baseline temperature measurement must be available or obtained at each designated observation well listed below prior to commencement of steam ramp down at each well pad.

00/10-15-070-04W4/0 (C10-15)
03-10-15-070-04W4/0 (D10-15)
04-10-15-070-04W4/0 (B10-15)

Clause (24) sub clause (3) of scheme approval 8623
Fluid saturation measurement must be conducted a minimum of once every calendar year using well logging at a minimum of one observation well at each well pad. A suitable baseline fluid saturation measurement must be available or obtained at a minimum of one observation well at each well pad prior to the commencement of steam ramp down at each well pad.
Pad G: Temperature & Fluid Monitoring

- Pad G logging history

<table>
<thead>
<tr>
<th>Target Steam (Percent)</th>
<th>Temperature Log</th>
<th>RST Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>Dec 2014</td>
<td>Dec 2014</td>
</tr>
<tr>
<td>75</td>
<td>March 2015</td>
<td></td>
</tr>
<tr>
<td>Pad G – C10-15 (100101507004W400)</td>
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<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 31m offset to G3 well pair
- January 2014 228 °C
- Current logged temperature 217 °C
- December 2014 and March 2015 temperature curves are comparable
- Chamber is 100 percent steam (100 percent last year)
- No appreciable change in oil saturation in main chamber
- Slight change in oil saturation in ‘IHS’ facies and at producer level
- Slight decrease in gas saturation
Pad G – B10-15 (104101507004W400)

- Baseline
- 17m offset to G1 well pair
- January 2014 246 °C
- Current logged temperature 217 °C
- December 2014 and March 2015 temperature curves are comparable
- Chamber is 100 percent steam
Pad G – D10-15 (103101507004W400)

- Baseline
- 46m offset to G1 & G2 well pairs
- January 2011 234 °C
- Current logged temperature 217 °C
- December 2014 and March 2015 temperature curves are comparable
- Chamber is 100 percent steam
Compositional analysis

Clause (24) sub clause (4) of scheme approval 8623

Compositional analyses of casing gas and compositional analyses of the produced gas on a group basis for each well pad must be obtained monthly, commencing prior to the start of steam ramp down at each well pad.
Pad G – methane C1 mole composition
Next Steps

- Pads C & D* in full blowdown
  - *Application no. 1825625 to proceed to full blowdown on D17 submitted
- Pad A – working towards full blowdown in June 2015
- Pads F & G currently in rampdown
  - Targeting full blowdown in late 2015
- Continue temperature and fluid saturation measurement testing
  - Evaluating frequency of testing
- Continue gas compositional sampling on all pads
  - Evaluating frequency of testing
- Further evaluation of methane injection effects
Questions?
Cenovus Foster Creek in-situ oil sands scheme (8623) update for 2014
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<th>Page(s)</th>
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</tr>
<tr>
<td>Pressure data</td>
<td>38-61</td>
</tr>
<tr>
<td>Fibre temperature data</td>
<td>63-146</td>
</tr>
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</table>
Pad plots

Subsection 3.1.1 – 7 h)
Cenovus - Foster Creek
FOSTER CREEK
G PAD & G Wedge Wells™ Performance

- Total Oil Rate (m³/d)
- Total Water Rate (m³/d)
- Total Steam Inj Rate (m³/c)
- Cum SOR
- Inst SOR
- Wells On Prod

Rate (m³/day) vs. Time (Jan'14 to Mar'16)

Steam Oil Ratio (SOR)/Wells On Prod

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FOSTER CREEK
H Pad Performance

- Total Oil Rate (m³/d)
- Total Water Rate (m³/d)
- Total Steam Inj Rate (m³/d)
- Cum SOR
- Init SOR
- Wells On Prod

Rate (m³/day)

Steam Oil Ratio (SOR)/Wells On Prod

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Foster Creek east area
FOSTER CREEK
E15 Pad Performance

- Total Oil Rate (m3/d)
- Total Water Rate (m3/d)
- Total Steam Inj Rate (m3/d)
- Curr SCR
- Inst SCR
- Wells On Prod

Rate (m3/day)


Stream Oil Ratio (SCOR) Wells On Prod

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FOSTER CREEK
E25 Pad Performance

- Total Oil Rate (m³/day)
- Total Water Rate (m³/day)
- Total Steam Inj Rate (m³/day)
- Cum SCR
- Inst SOR
- Wells On Prod

Rate (m³/day)

Steam Oil Ratio (SOR)/Wells On Prod

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Instrumentation in wells

Subsection 3.1.1 – 5 c, d)
Piezometer data
Foster Creek piezometer locations
Foster Creek 2015 piezometer locations

<table>
<thead>
<tr>
<th>71-5W4</th>
<th>71-4W4</th>
<th>71-3W4</th>
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</thead>
<tbody>
<tr>
<td>McMurray</td>
<td>Clearwater</td>
<td>Lower Grand Rapids</td>
</tr>
</tbody>
</table>

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Subsection 3.1.1-5b
Piezometer details

Three installation types:

Cemented tubing - vibrating wire piezometers mounted on tubulars and cemented in place (14 wells)

Hanging wire – pressure / temperature gauges hung from the wellhead to about 10-15m above perforations (9 wells)

Cemented casing – High temperature Optical pressure sensors strapped and cemented to the production casing (10 wells)

8 new McMurray piezometers installed in Q1 2014
## Piezometer details

<table>
<thead>
<tr>
<th>Date</th>
<th>UWI</th>
<th>Units / Zones</th>
<th>TVD (mKb)</th>
<th>MD (mKb)</th>
<th>Reported Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-01-20</td>
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Subsection 3.1.1-5b
### Piezometer details continued

<table>
<thead>
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<th>Date</th>
<th>UWI</th>
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<th>Reported Value</th>
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Subsection 3.1.1-5b
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Subsection 3.1.1-Sb

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Subsection 3.1.1-G
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Subsection 3.1.1-5b
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Subsection 3.1.1-5b
Piezometer details continued

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- LWH: Location Without Height
- Fluids: Base McMurray
- Fluids / Zones: Base McMurray
- TVE (pLb): 491.8
- MD (pLb): 491.8
- Reported Value: 2730
- Units: psi

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Subsection 3.1.1-5b

53
Foster Creek Grand Rapids Temperatures
Observation Well Piezometer Data
Temperature data
Foster Creek temperature and RST data

24 observation wells logged to acquire temperature data
27 observation wells logged to acquire RST data

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Wells selected for Temperature logging
Wells selected for RST logging
Observation well temperature data

49 observation wells were logged with temperature fiber between January 2014 and March 2015.

Some wells were logged 2-3 times between January 2014 and March 2015.
Foster Creek Obs Well Temperature Data
D Pad D2 FISHER 2-22-70-4  Dec-18-2014

Depth (m)

Temperature (deg C)
Foster Creek Obs Well Temperature Data
C Pad A7 FISHER 7-22-70-4  Dec-18-2014

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
W01 Pad A8 FISHER 8-20-70-4 Jan-06-2014

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
D Pad B4 FISHER 4-23-70-4  Dec-16-2014

Temperature (°C)

Depth (m)
Foster Creek Obs Well Temperature Data
F Pad A8 FISHER 8-15-70-4 Dec-20-2014

Temperature (deg C) vs Depth (m)
Foster Creek Obs Well Temperature Data

Temperature (deg C)
Depth (m)
Foster Creek Obs Well Temperature Data
A Pad 12C FISHER 12-22-70-4  Dec-15-2014

Temperature (deg C) vs Depth (m) graph showing a temperature anomaly around 400 meters depth.
Foster Creek Obs Well Temperature Data
D Pad C16  FISHER 16-15-70-4  Dec-17-2014

Temperature (deg C) vs Depth (m)

12:15:07
Foster Creek Obs Well Temperature Data

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E11 Pad B4 FISHER 4-17-70-3  Jan-07-2015

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E04 Pad A15 FISHER 15-18-70-3  Jan-08-2015

Temperature (deg C) vs Depth (m)
Foster Creek Obs Well Temperature Data
E25 Pad A16 FISHER 16-20-70-3  Jan-10-2015

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E15 Pad C8 FISHER 8-16-70-3  Jan-11-2015

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E20 Pad A6 FISHER 6-22-70-3  Jan-11-2015
Foster Creek Obs Well Temperature Data
C Pad A7 FISHER 7-22-70-4  Mar-04-2015

Temperature (deg C) vs Depth (m)
Foster Creek Obs Well Temperature Data
D Pad D2 FISHER 2-22-70-4  Mar-05-2015

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
G Pad C10 FISHER 10-15-70-4  Mar-02-2015

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
D Pad C13 FISHER 13-14-70-4  Mar-03-2015

Temperature (deg C) vs Depth (m)
Foster Creek Obs Well Temperature Data
C Pad B6 FISHER 6-22-70-4  Mar-05-2015

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
A Pad 12C FISHER 12-22-70-4  Mar-05-2015

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
D Pad C16 FISHER 16-15-70-4  Mar-04-2015

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
A Pad 5-22 FISHER 5-22-70-4  Mar-06-2015

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E Pad 13C FISHER 13-15-70-4 Jan-09-2014

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
E02 Pad A15 FISHER 15-13-70-4  Jan-22-2014
Foster Creek Obs Well Temperature Data
E02 Pad D7 FISHER 7-13-70-4  Jan-22-2014

Temperature (deg C) vs Depth (m)
Foster Creek Obs Well Temperature Data
E03 Pad C4 FISHER 4-18-70-4  Jan-24-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E04 Pad A15 FISHER 15-18-70-3 Jan-14-2014
Foster Creek Obs Well Temperature Data
E10 Pad  FISHER 03-17-70-3  Jan-12-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E11 Pad 12C FISHER 12-08-70-3  Jan-10-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E12 Pad  2A15 FISHER 15-17-70-3  Jan-24-2014

Temperature (deg C) vs Depth (m)
Foster Creek Obs Well Temperature Data
E12 Pad  B6 FISHER 06-17-70-3  Jan-19-2014

Temperature (deg C) vs Depth (m)

11:30:27
Foster Creek Obs Well Temperature Data
E12 Pad  B7 FISHER 07-17-70-3   Jan-19-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E15 Pad  C8 FISHER 08-16-70-3  Jan-10-2014

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
E16 Pad  A12 FISHER 12-15-70-3  Jan-11-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E19 Pad  B5 FISHER 05-22-70-3  Jan-13-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E19 Pad D14 FISHER 14-16-70-3 Jan-12-2014

Temperature (deg C) vs Depth (m)

16:14:05
Foster Creek Obs Well Temperature Data
E20 Pad  A6 FISHER 6-22-70-3  Jan-16-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E20 Pad  B7 FISHER 7-22-70-3  Jan-13-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E20 Pad  D3 FISHER 3-21-70-3  Jan-16-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E24 Pad  B1 FISHER 1-20-70-3  Jan-20-2014

Temperature (deg C) vs Depth (m)
Foster Creek Obs Well Temperature Data
E24 Pad  B4 FISHER 4-21-70-3  Jan-21-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
E24 Pad  D7 FISHER 2-20-70-3  Jan-21-2014

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
E25 Pad  A16 FISHER 16-20-70-3  Jan-23-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
G Pad  B10 FISHER 10-15-70-4  Jan-17-2014

Temperature (deg C)
Depth (m)
Foster Creek Obs Well Temperature Data
G Pad  C7 FISHER 7-15-70-4  Jan-17-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
G Pad  C10 FISHER 10-15-70-4  Jan-18-2014

Temperature (deg C) vs Depth (m)

11:00:07
Foster Creek Obs Well Temperature Data
W01 Pad  A8 FISHER 8-20-70-4  Jan-12-2014

Temperature (deg C) vs Depth (m)

10:03:30
Foster Creek Obs Well Temperature Data
W02 Pad  9-17 FISHER 16-17-70-4  Jan-15-2014

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
A Pad 12C  FISHER 12-22-70-4  Mar-12-2014

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
C Pad  A7  FISHER 7-22-70-3  Mar-12-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
C Pad  B6  FISHER 6-22-70-4  Mar-14-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
D Pad  B4  FISHER 4-23-70-4  Mar-13-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
D Pad  C13  FISHER 13-14-70-4  Mar-13-2014

Temperature (deg C) vs. Depth (m)
Foster Creek Obs Well Temperature Data
D Pad  C16  FISHER 16-15-70-4  Mar-12-2014

Temperature (deg C)

Depth (m)
Foster Creek Obs Well Temperature Data
D Pad  D16  FISHER 16-15-70-4  Mar-13-2014