Statoil Canada Ltd.
Leismer SAGD Project
Approval No. 10935P

Leismer SAGD 2015 (January 1 – December 31, 2014)
Annual D054 Performance Presentation
Alberta Energy Regulator
March 9, 2015

LEISMER PROJECT

Introduction and Overview

- **Introduction**
- **Subsurface Issues Related to Resource Evaluation and Recovery – Directive 054, Section 3.1.1**
- **Surface Operations, Compliance, and Issues Not Related to Resource Evaluation and Recovery – Directive 054, Section 3.1.2**

Subsurface Issues Related to Resource Evaluation and Recovery

SUBSURFACE

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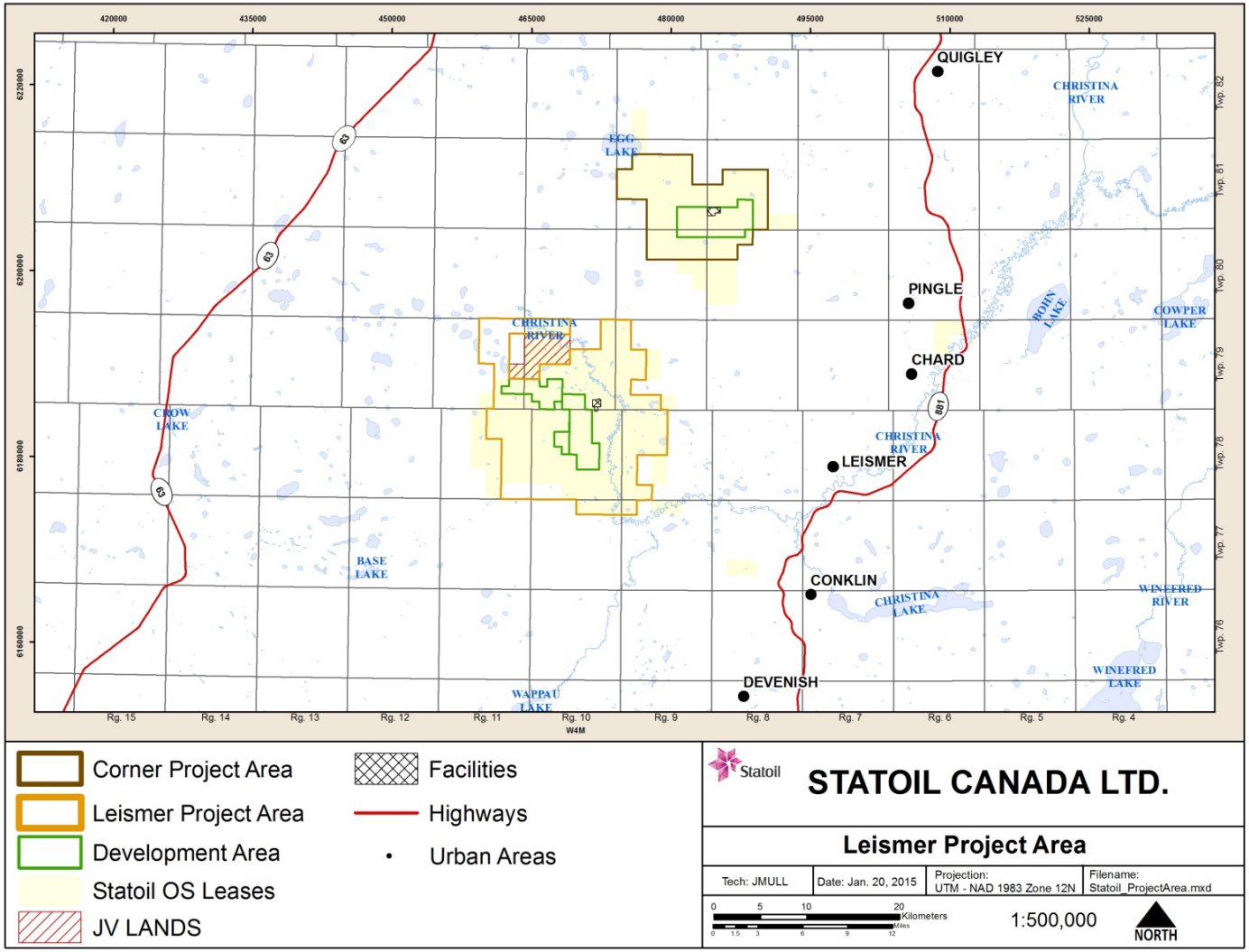
BRIEF BACKGROUND

Subsurface Section 1

Leismer 2015 Annual Performance Presentation

BACKGROUND

Leismer Regional Map



BACKGROUND

2014/15 Leismer Scheme Applications

Project	Date Submitted	Status	Approval Date	New Approval No.	Notes
Leismer Pad L5 VIT	29-Jan-14	Approved	24-Feb-14	10935L	Replace approved conventional tubing in five injection wells on Pad L5 with vacuum insulated tubing (VIT) in the vertical/build section of the wellbore
Leismer Pad L4 AICD	01-Apr-14	Approved	18-Jun-14	10935M	Proposed test of Autonomous Inflow Control Device (AICD) on Leismer Project L4I4 Injector well
Leismer Pad L2 Solvent Soak	09-Apr-14	Approved	18-Jun-14	10935M	Solvent facilitated start-up pilot at Leismer Project Pad L2
Infill wells for Pad L1 and L2	14-Aug-14	Approved	07-Nov-14	10935N	7 infill wells drilled from Pad L1, 6 accessing Pad L1 drainage area and one accessing Pad L2 drainage area
Change in Leismer Project area	18-Dec-14	Approved	19-Jan-15	10935O	Reduction of Leismer Project Area to reflect the reallocation of lands post partnership dissolution
MPFM installation	29-Jan-15	Approved	02-Mar-15	10935P	Install MPFM instead of test separators on Pads L2 and L4, and install an MPFM in addition to the test separator on Pad L1
NCG co-injection	04-Feb-15	Approved	02-Mar-15	10935P	Co-injection of NCG with steam on Pad L4 to enhance recovery

GEOSCIENCE OVERVIEW

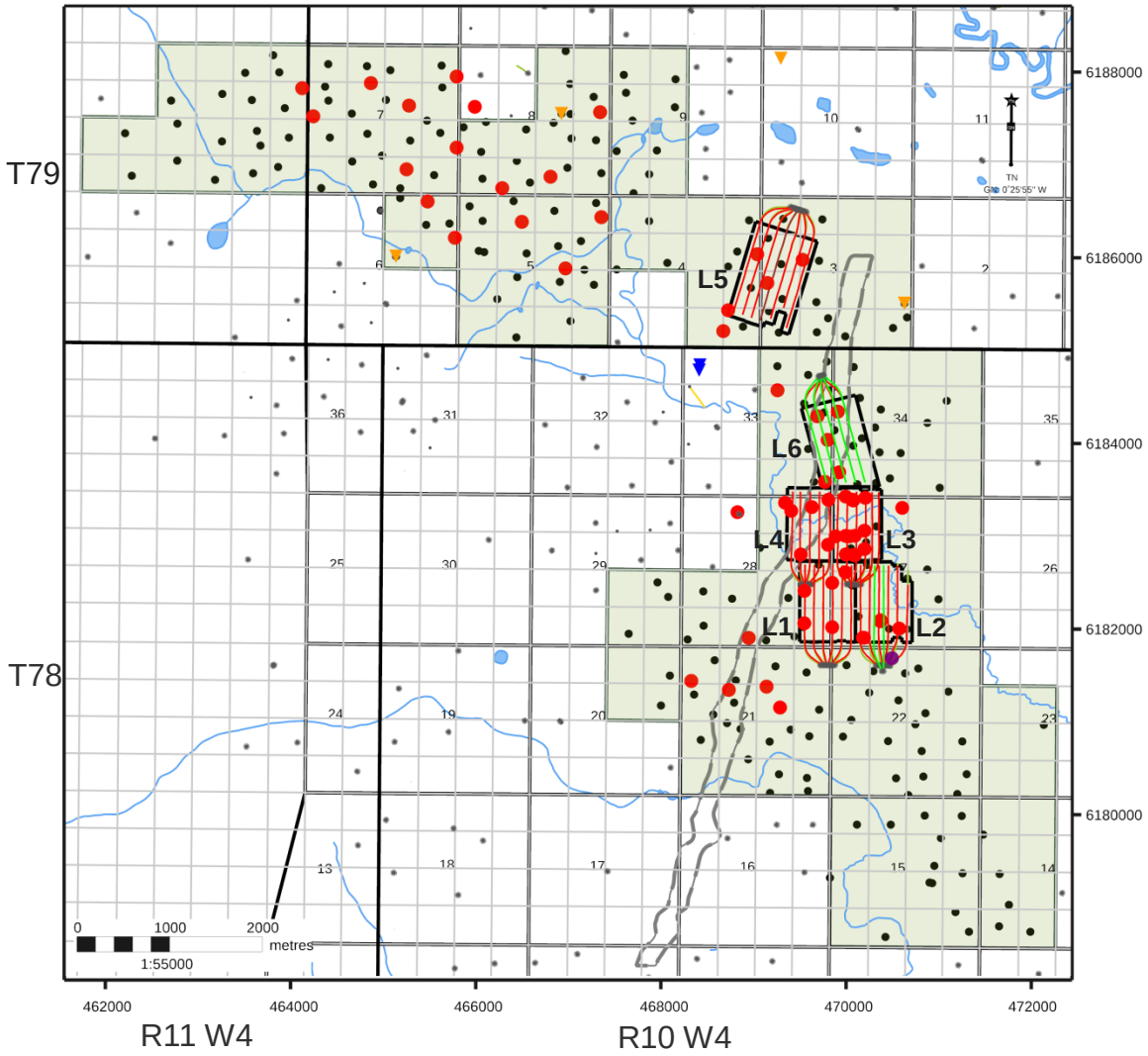
Subsurface Section 2

Leismer 2015 Annual Performance Presentation

GEOSCIENCE OVERVIEW

Leismer Development Area (LDA) Well Count

LEGEND	
OSE - Oil Sands Evaluation Wells (211)	
OBS - Observation Wells pre-2014 (64)	
OBS - Observation Wells in 2014 (1)	
WDW – Granite Wash Disposal (4)	
WDW – McMurray Water Disposal Wells (2)	
SAGD – 30 well pairs in Pads L1-L4 pre-2014	
SAGD – 5 well pairs in Pad L6 in 2014	
SAGD – 2 infill wells in Pad2 in 2014	
Existing Pads (6)	
Leismer Development Area (LDA)	
Water Line	
McMurray O and V Channels (A1 and B1 Equivalent) Potential Associated Gas Zones	



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GEOSCIENCE OVERVIEW

Leismer Reservoir Properties

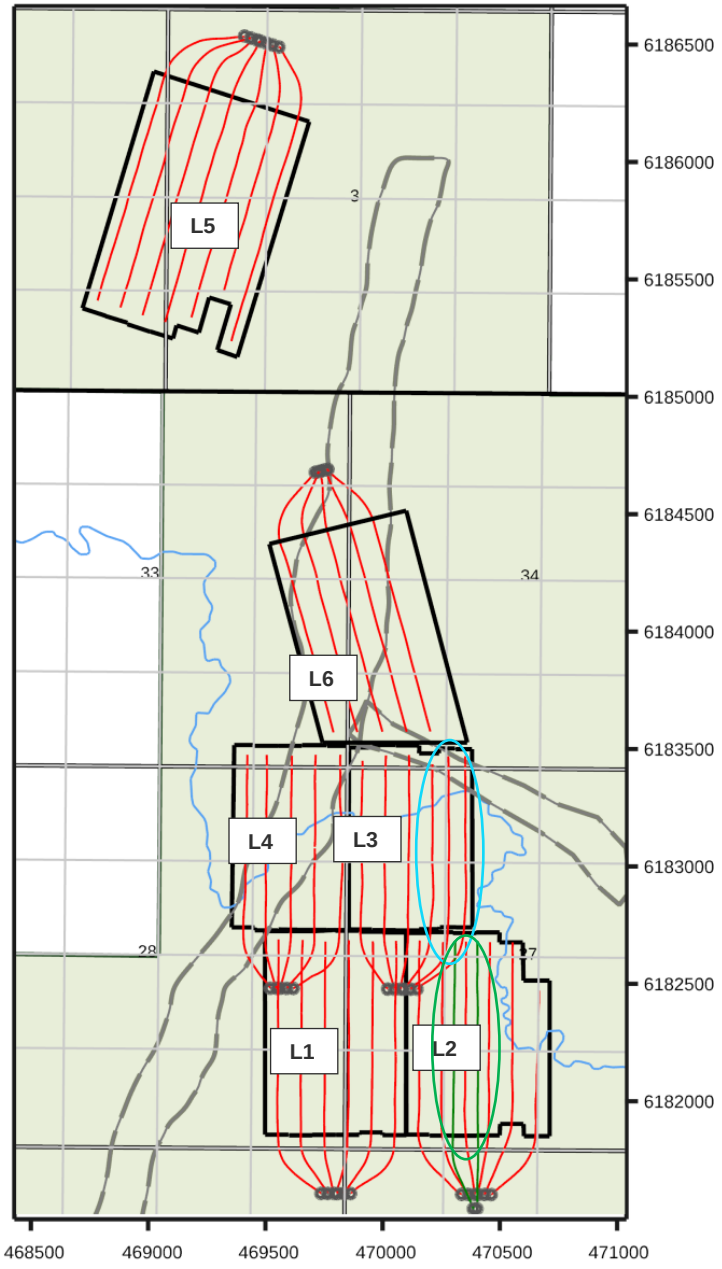
Reservoir Property	LDA Average	Pads L1-L4 Average	Pad L5 Average	Pad L6 Average
Depth (m TVD)	424	429	444	410
Depth (m subsea)	-216	-221	-222	-230
Pay Thickness (m)	17	22.5	19.1	25.4
Effective Porosity (%)	33	34	32.6	33.1
Horizontal Permeability (D)	6	6.5	6	6.5
Oil Saturation (%)	87	87.5	83.7	85.8
Original Reservoir Pressure (kPa)	-	2,400 - 2,600		
Original Reservoir Temperature (^{o}C)	-	14		

GEOSCIENCE OVERVIEW

Interwell Spacing

All well pairs on Pads L1 to L6 have 100 m interwell spacing, except:

- 2 SAGD wells in Pad L3 (L3P1-L3P2, L3P2-L3P3) are 75 m spacing
- 2 Infill Wells in Pad L2 are 50 m from existing SAGD wells



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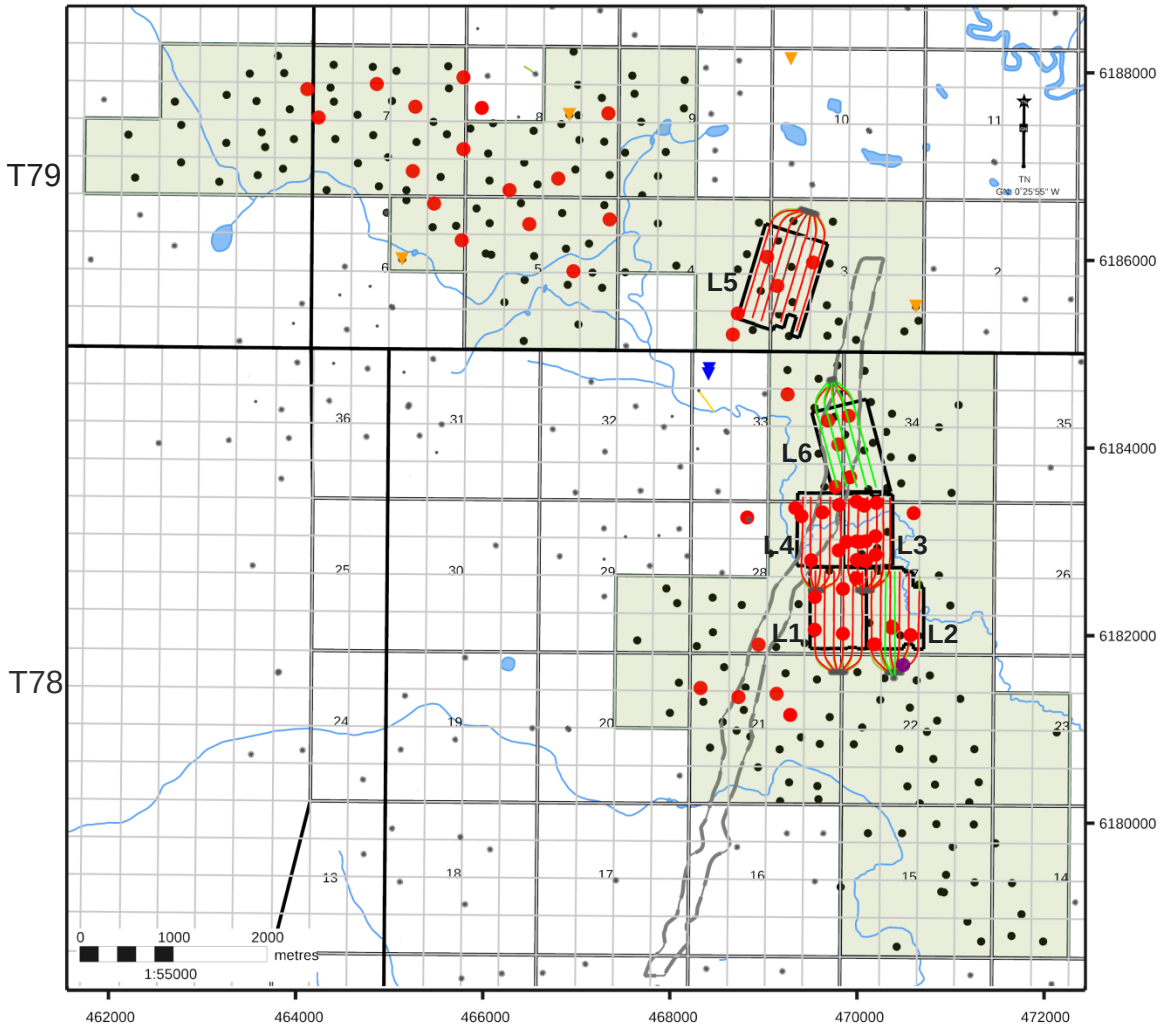
GEOSCIENCE OVERVIEW

Original Bitumen In Place

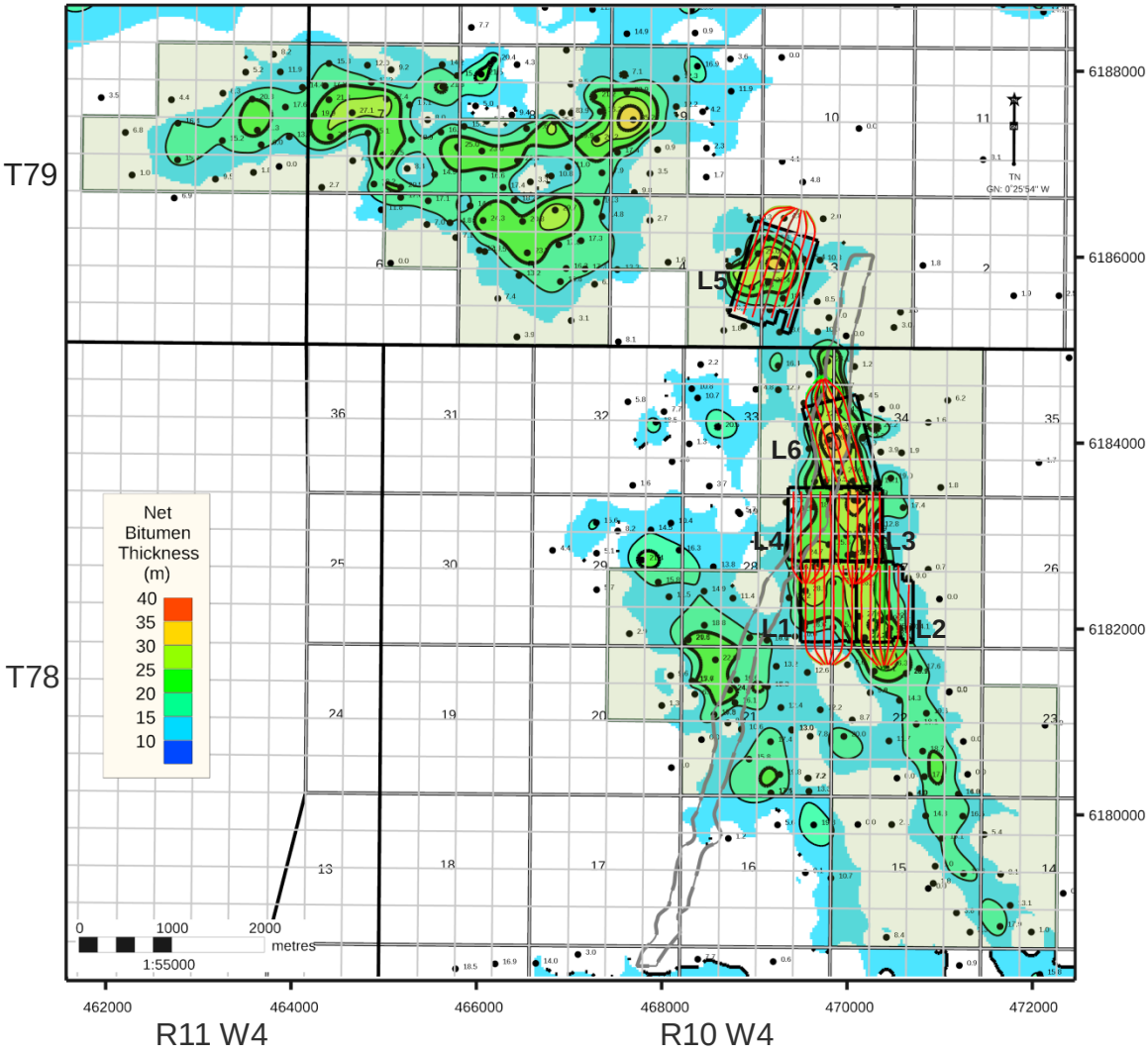
Well Pad (50 m Drainage Boundary)	Area (10^3 m^2)	Gross Rock Volume (10^3 m^3)	McMurray Fm. Total OBIP (10^3 m^3)
L1	523	12,360	3,636
L2	510	12,142	3,437
L3	407	10,609	3,166
L4	378	8,230	2,334
L5	688	13,240	3,613
L6	575	14,625	4,154
Total	3,081	71,206	20,340
LDA Total	18,818	312,050	86,795



Total OBIP = Gross Volume X Gross Porosity X Gross Oil Saturation

GEOSCIENCE OVERVIEW

Net Bitumen Isopach Map



LEGEND	
Existing Pads	
Leismer Development Area (LDA)	
McMurray O and V Channels (A1 and B1 Equivalent) Potential Associated Gas Zones	

Contour Interval: 5m

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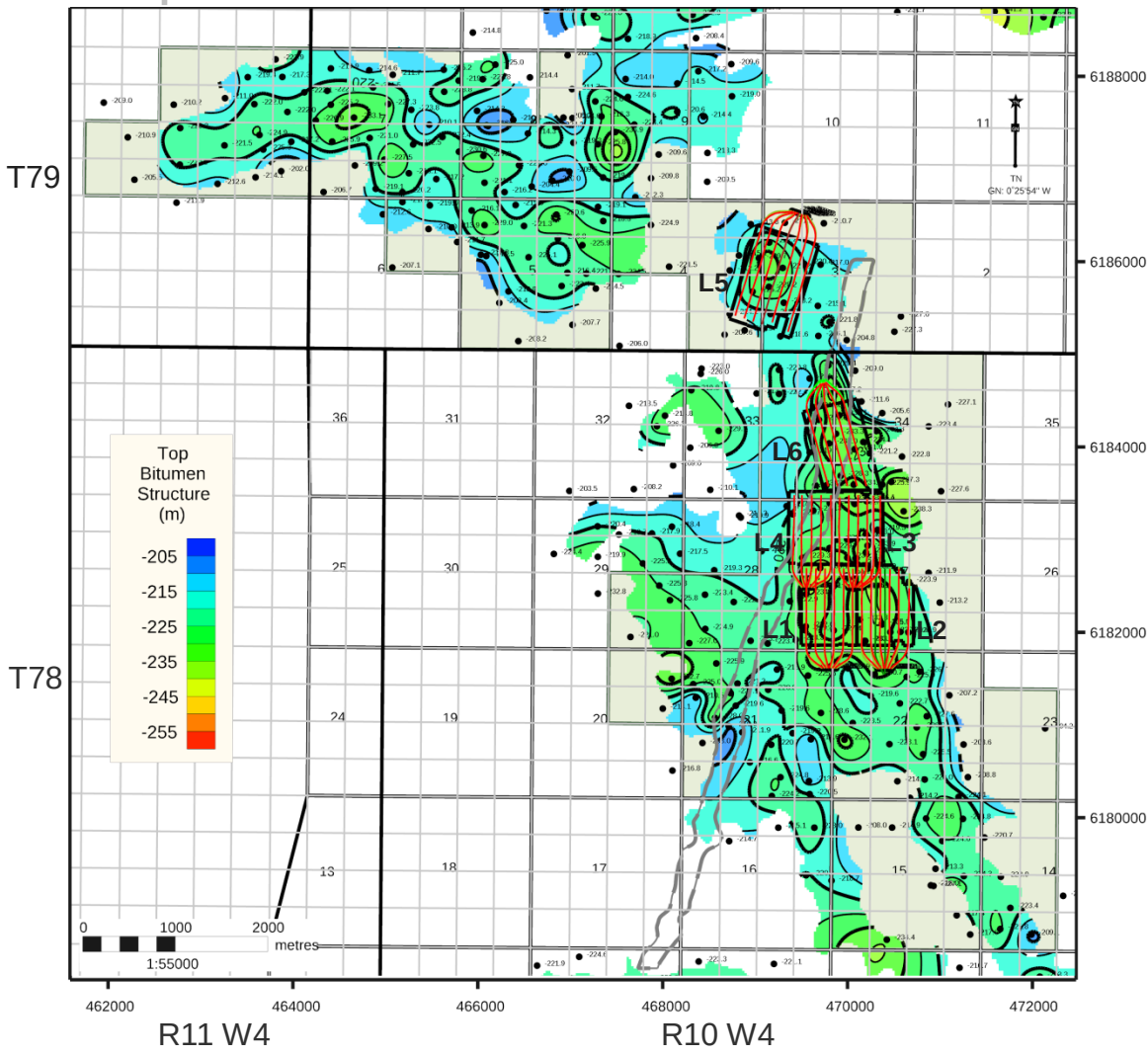
GEOSCIENCE OVERVIEW

Top Bitumen Pay Structure Map



LEGEND

- Existing Pads
- Leismer Development Area (LDA)
- McMurray O and V Channels (A1 and B1 Equivalent) Potential Associated Gas Zones

Contour Interval: 5m

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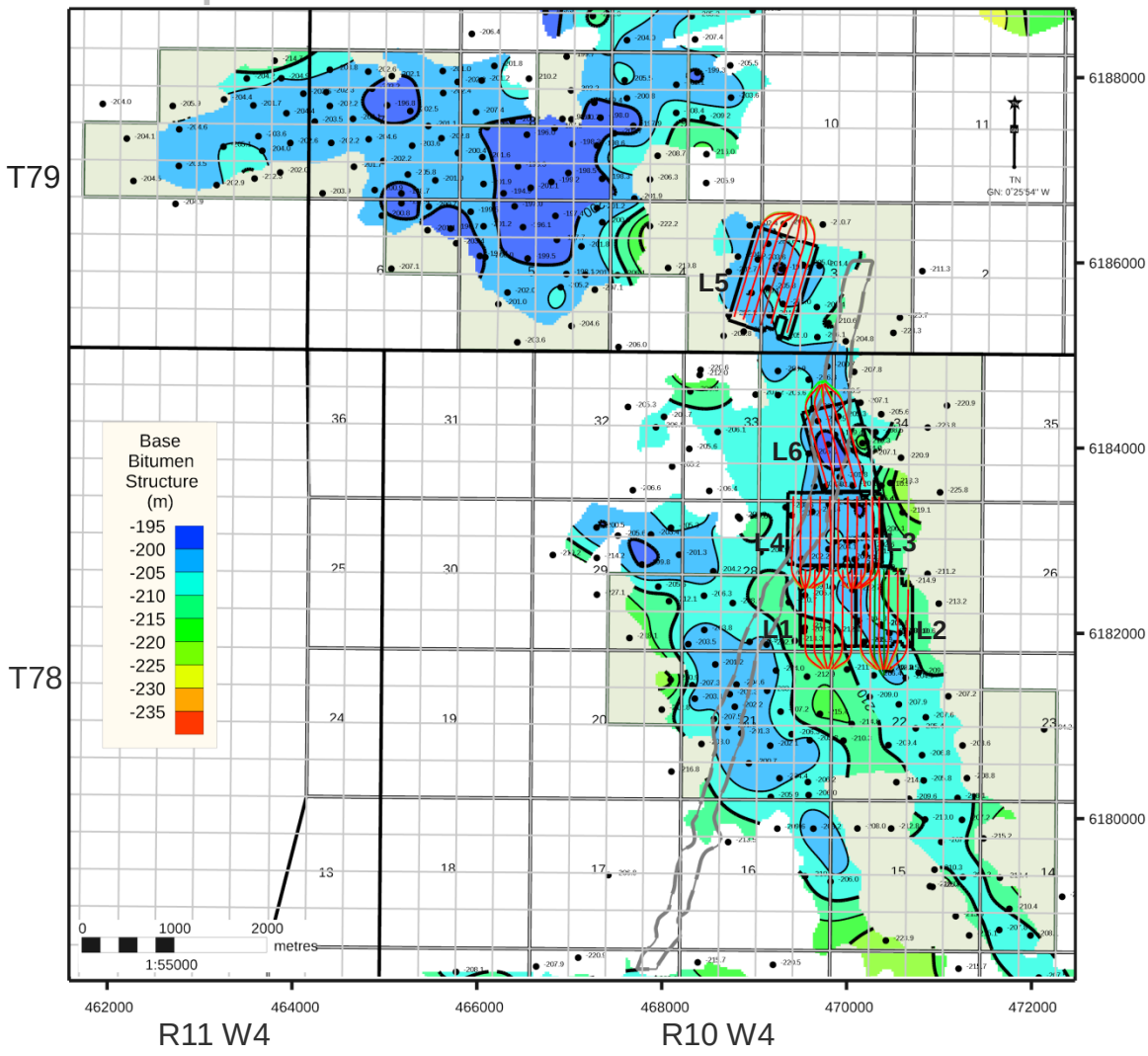
GEOSCIENCE OVERVIEW

Base Bitumen Pay Structure Map



LEGEND

- Existing Pads
- Leismer Development Area (LDA)
- McMurray O and V Channels (A1 and B1 Equivalent) Potential Associated Gas Zones

Contour Interval: 5m

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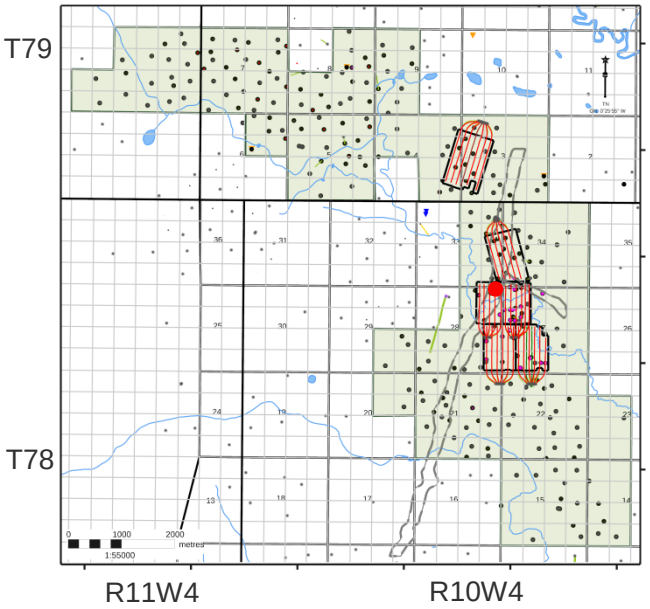
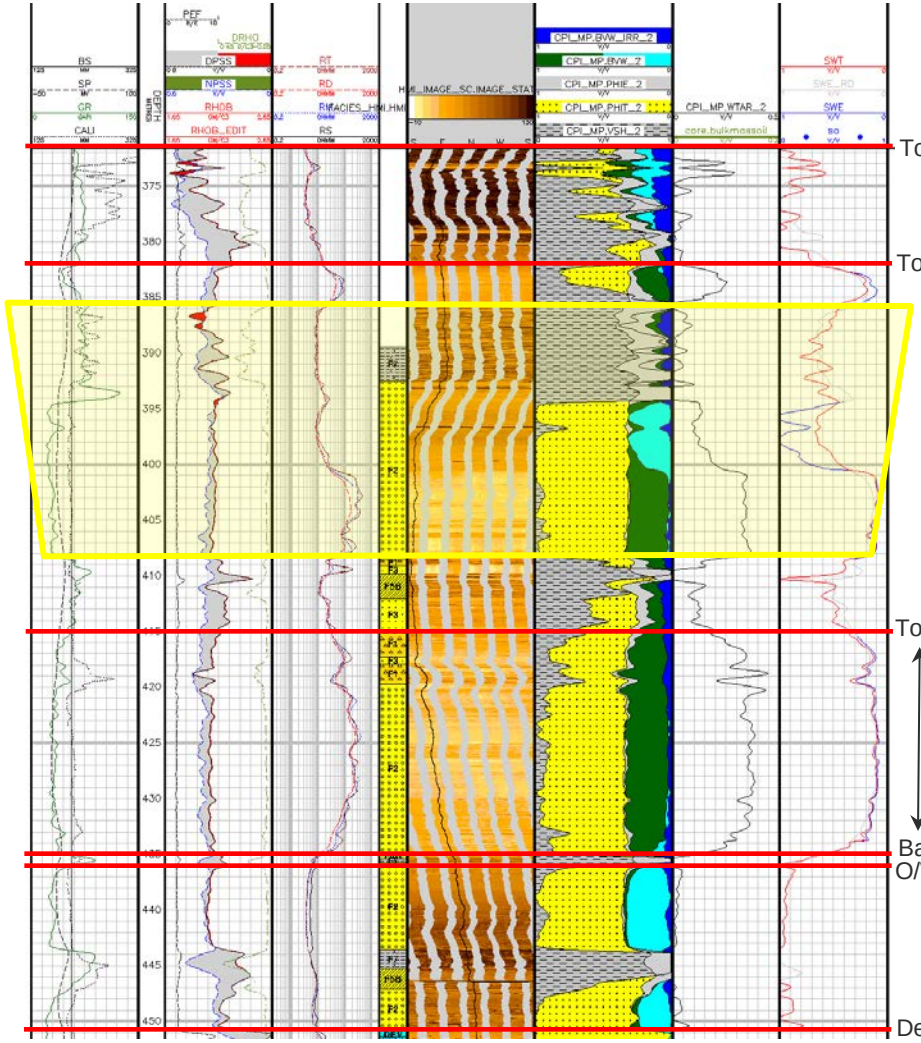
GEOSCIENCE OVERVIEW

LDA Pad L4 Example Well – 102/16-28-078-10W4/0





Blue = Water
Green = Oil
Yellow = Sand
Grey = Mud
(Volumetrics)

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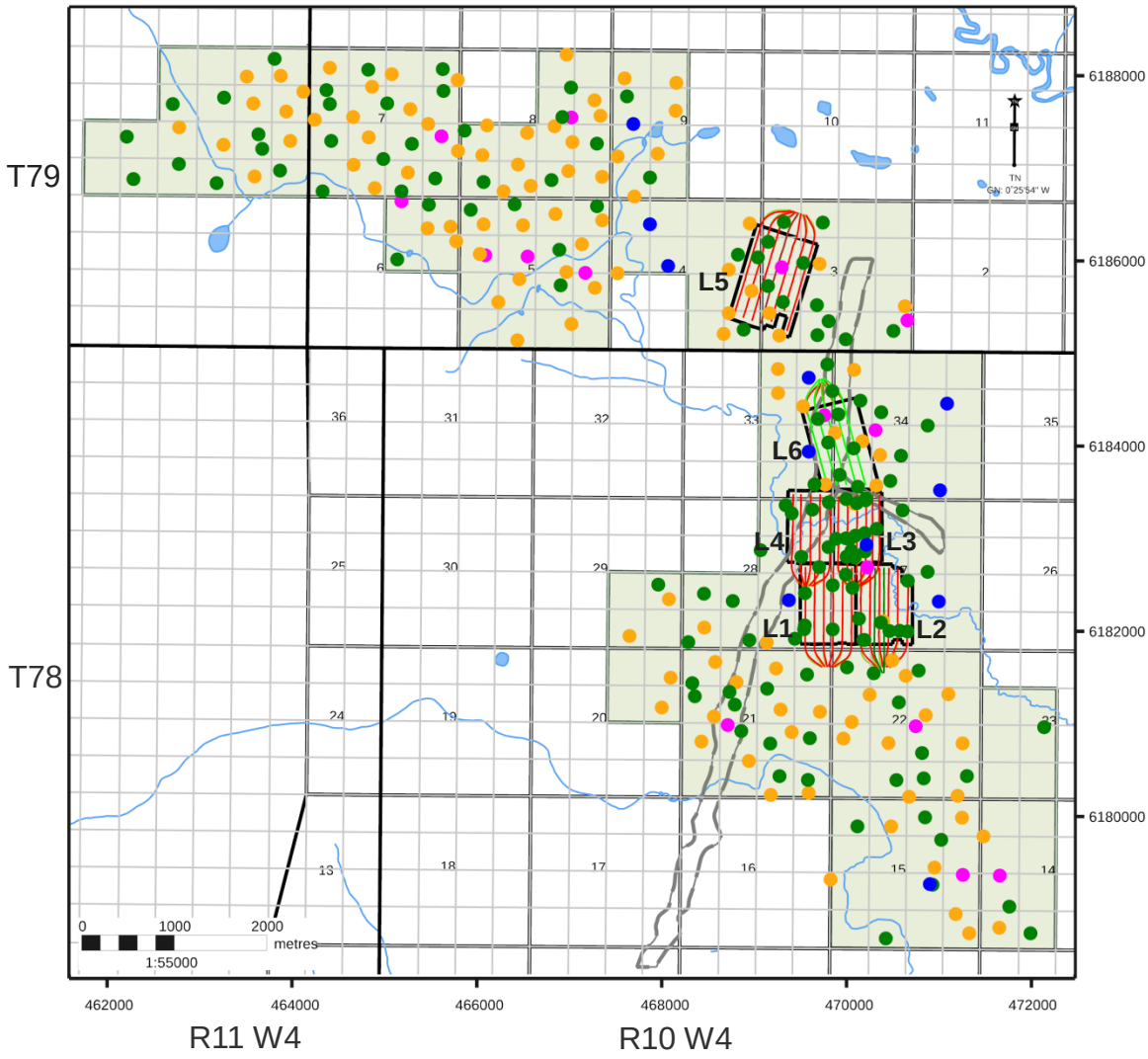
GEOSCIENCE OVERVIEW

LDA Well Data Types

LEGEND	
Image Logs and Cores (137)	
Cores Only (11)	
Image Logs Only (114)	
Standard Logs Only (15)	
Existing Pads (6)	
Leismer Development Area	
Water Line	
McMurray O and V Channels (A1 and B1 Equivalent) Potential Associated Gas Zones	



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GEOSCIENCE OVERVIEW

LDA Core Analysis

- No new cores were obtained or analyzed in 2014 within the LDA

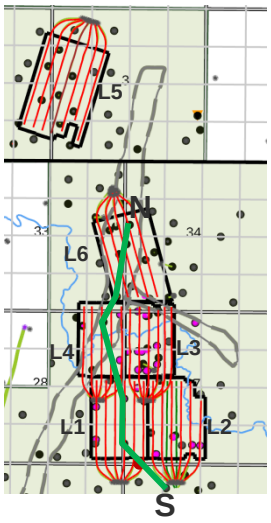
GEOSCIENCE OVERVIEW

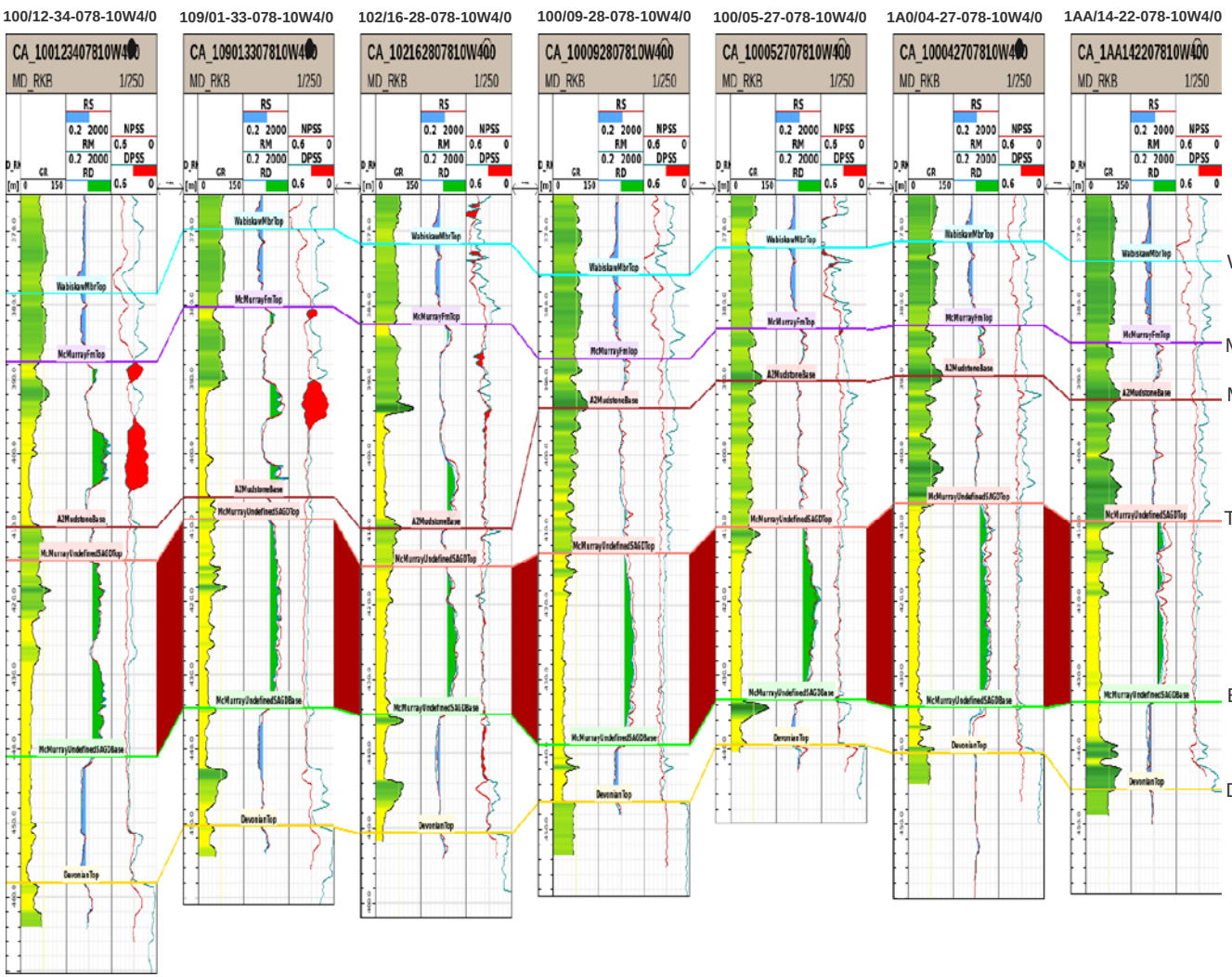
LDA Petrographic Analysis

- No petrographic analyses were conducted in 2014

GEOSCIENCE OVERVIEW

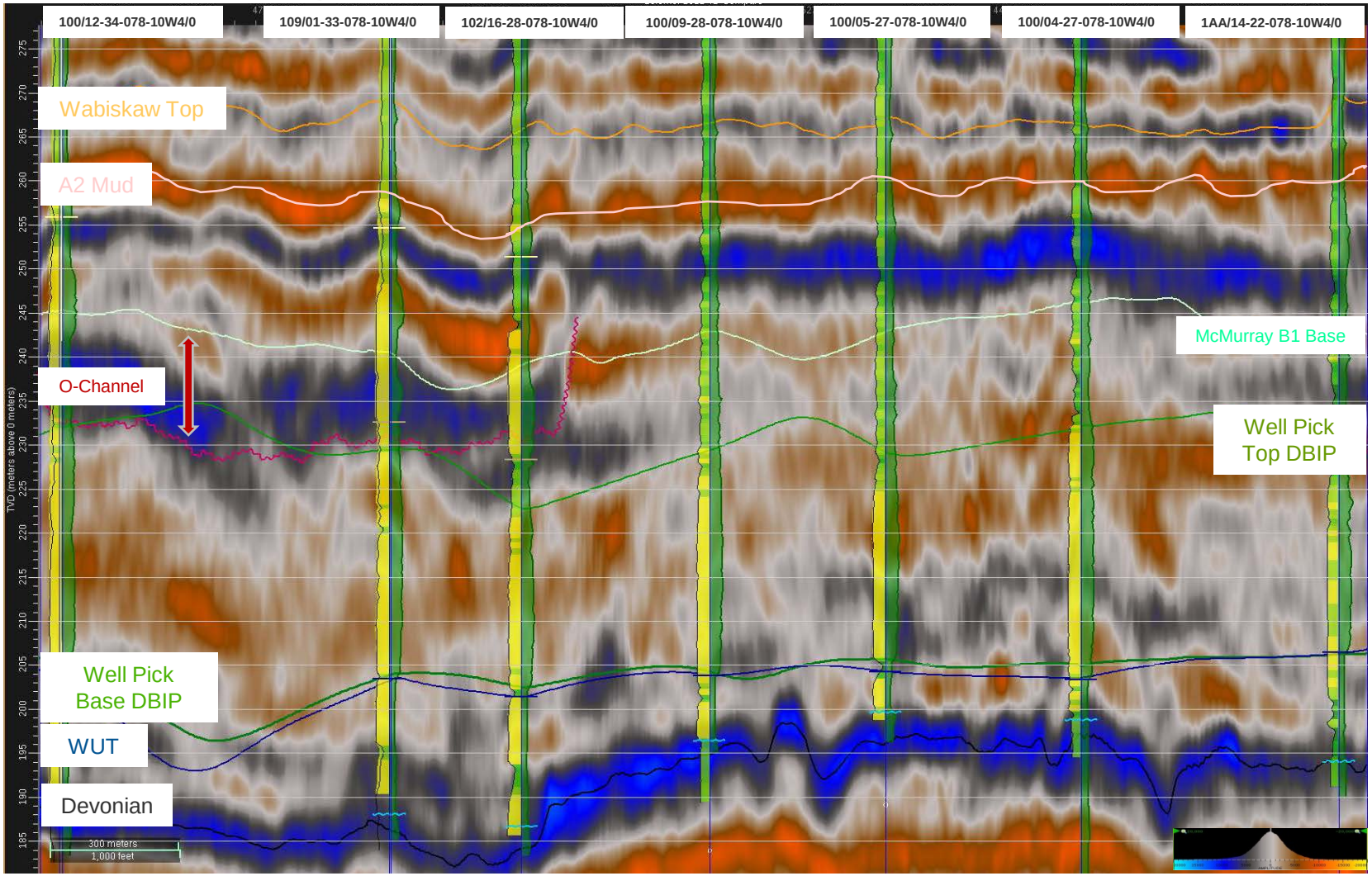
Pad L6 – Pad L2 North to South Petrophysical Log Cross-Section





GEOSCIENCE OVERVIEW

Pad L6 through L2 North to South Seismic Cross-Section



GEOSCIENCE OVERVIEW

LDA Geomechanical Analysis

- No geomechanical analyses were conducted in 2014

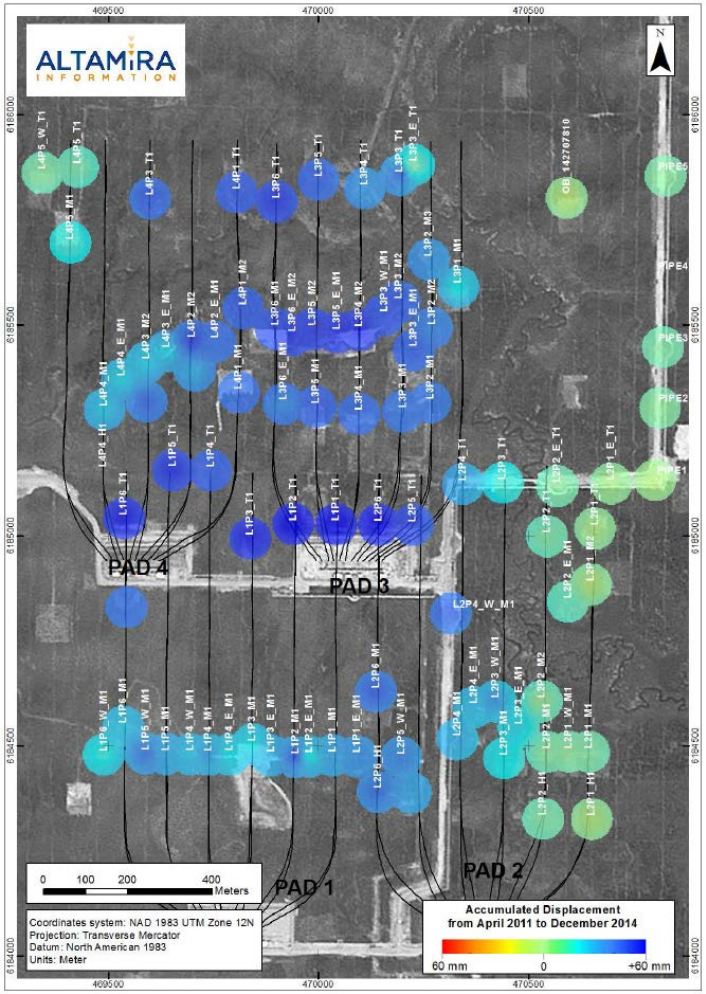
GEOSCIENCE OVERVIEW

Reservoir Fracture Pressure and Caprock Integrity

- No reservoir fracture pressure and caprock integrity tests were conducted in 2014

GEOSCIENCE OVERVIEW

Pads L1-L4 InSAR Cumulative Surface Heave



- Interferometric Synthetic Aperture Radar (InSAR) – satellite-based radar technique used for mapping surface changes
- INSAR deformation monitoring commenced in April of 2011
  - 89 corner reflectors (with supplemental natural points) installed for Pads L1 to L4 and primary steam pipeline
  - 5 corner reflectors (with supplemental natural points) installed for Pad L5
- Results on Pads L1-L4 to December 27th, 2014 show minimal surface heave (Maximum = 65 mm, Mean = 28.5 mm)
- Rough correlation between high-quality reservoir (maximum steam chamber development) and maximum surface heave

DRILLING AND COMPLETIONS

Subsurface Section 3

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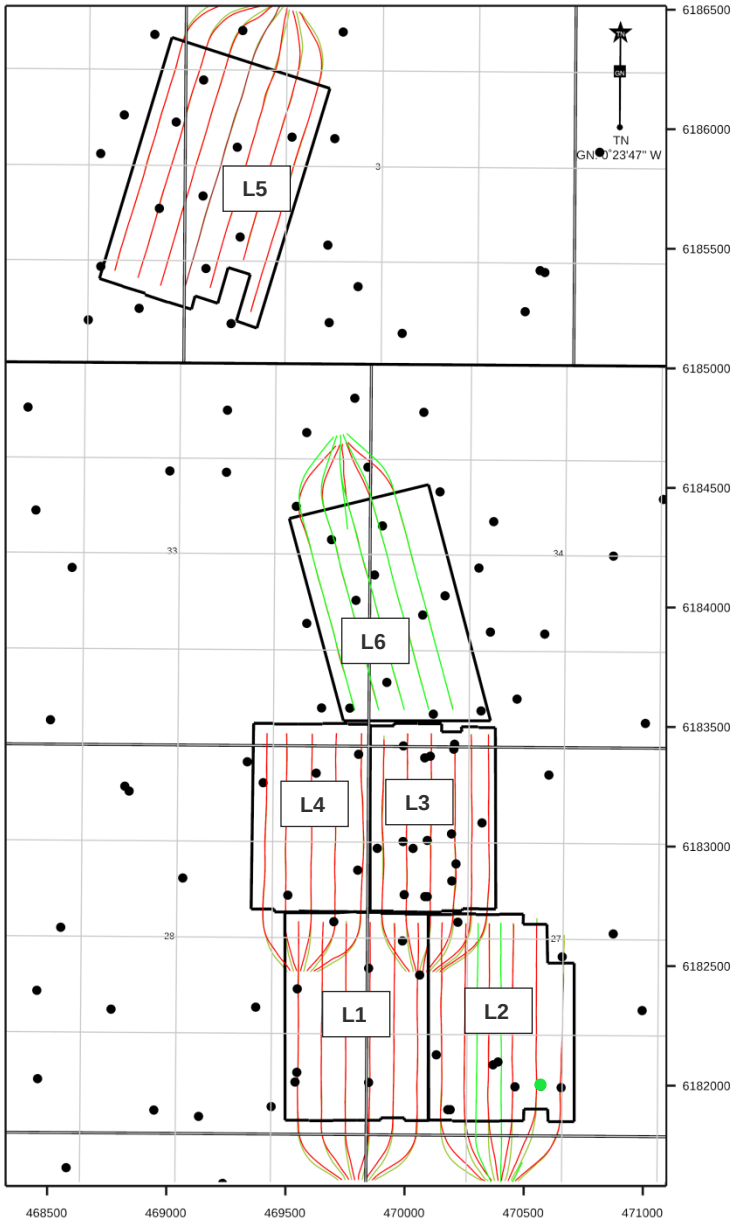
DRILLING AND COMPLETIONS

Well Location/Layout Map

New wells drilled in 2014:

- 5 SAGD well pairs (Pad L6)
- 2 Infill Wells in Pad L2
- 1 OBS well in Pad L2



New wells are in green.

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DRILLING AND COMPLETIONS

Wellbore Design (Pads L1 to L4)

INJECTORS

8-5/8” Slotted Liners (23)

PRODUCERS

7” Slotted Liners (11)

8-5/8” Slotted Liners (4)

7” Wire Wrapped Screens (8)

Testing two liner types side-by-side. Sand control lab testing was used for slot sizing.

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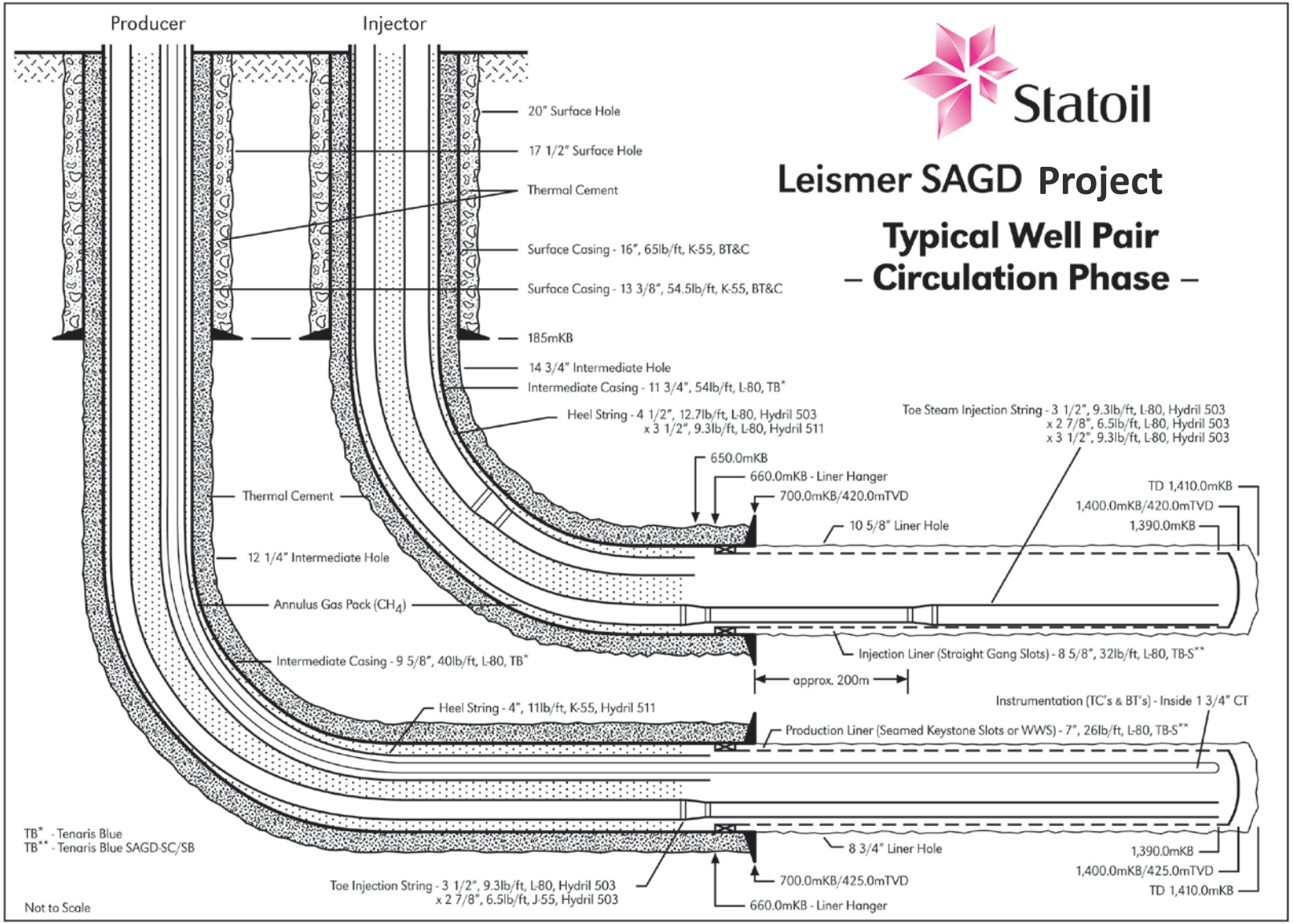
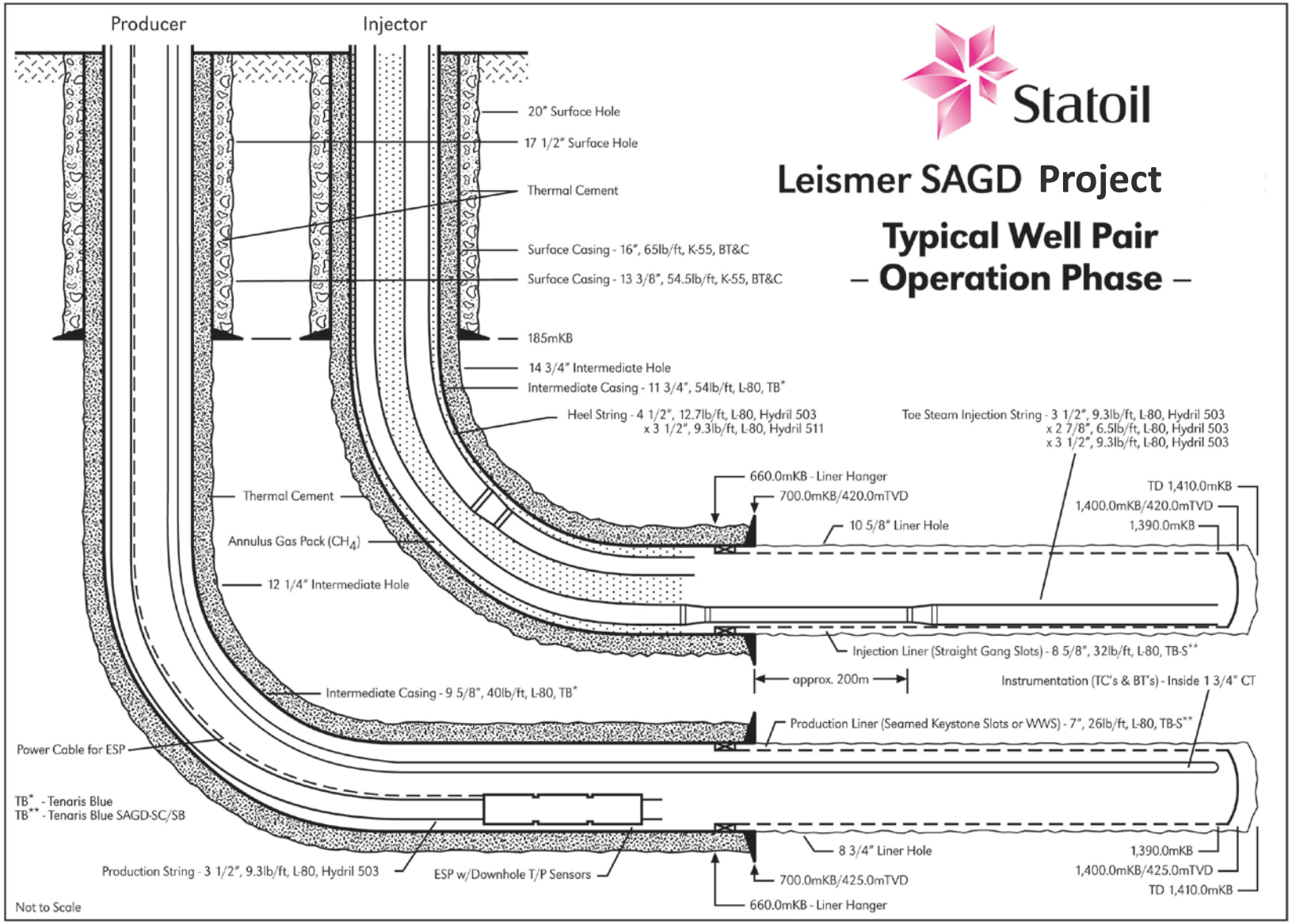

Producer
Injector
Statoil
Leismer SAGD Project
Typical Well Pair
– Circulation Phase –
20" Surface Hole
17 1/2" Surface Hole
Thermal Cement
Surface Casing - 16", 65lb/ft, K-55, BT&C
Surface Casing - 13 3/8", 54.5lb/ft, K-55, BT&C
185mKB
14 3/4" Intermediate Hole
Intermediate Casing - 11 3/4", 54lb/ft, L-80, TB*
Heel String - 4 1/2", 12.7lb/ft, L-80, Hydril 503
x 3 1/2", 9.3lb/ft, L-80, Hydril 511
Toe Steam Injection String - 3 1/2", 9.3lb/ft, L-80, Hydril 503
x 2 7/8", 6.5lb/ft, L-80, Hydril 503
x 3 1/2", 9.3lb/ft, L-80, Hydril 503
650.0mKB
660.0mKB - Liner Hanger
700.0mKB/420.0mTVD
TD 1,410.0mKB
1,400.0mKB/420.0mTVD
1,390.0mKB
10 5/8" Liner Hole
Thermal Cement
12 1/4" Intermediate Hole
Annulus Gas Pack (CH_4)
Intermediate Casing - 9 5/8", 40lb/ft, L-80, TB*
Injection Liner (Straight Gang Slots) - 8 5/8", 32lb/ft, L-80, TB-S**
approx. 200m
Heel String - 4", 11lb/ft, K-55, Hydril 511
Instrumentation (TC's & BT's) - Inside 1 3/4" CT
Production Liner (Seamed Keystone Slots or WWS) - 7", 26lb/ft, L-80, TB-S**
TB* - Tenaris Blue
TB** - Tenaris Blue SAGD-SC/SB
8 3/4" Liner Hole
1,390.0mKB
1,400.0mKB/425.0mTVD
TD 1,410.0mKB
Toe Injection String - 3 1/2", 9.3lb/ft, L-80, Hydril 503
x 2 7/8", 6.5lb/ft, J-55, Hydril 503
700.0mKB/425.0mTVD
660.0mKB - Liner Hanger
Not to Scale


Producer
Injector
Statoil
Leismer SAGD Project
Typical Well Pair
– Operation Phase –
20" Surface Hole
17 1/2" Surface Hole
Thermal Cement
Surface Casing - 16", 65lb/ft, K-55, BT&C
Surface Casing - 13 3/8", 54.5lb/ft, K-55, BT&C
185mKB
14 3/4" Intermediate Hole
Intermediate Casing - 11 3/4", 54lb/ft, L-80, TB*
Heel String - 4 1/2", 12.7lb/ft, L-80, Hydril 503
x 3 1/2", 9.3lb/ft, L-80, Hydril 511
Toe Steam Injection String - 3 1/2", 9.3lb/ft, L-80, Hydril 503
x 2 7/8", 6.5lb/ft, L-80, Hydril 503
x 3 1/2", 9.3lb/ft, L-80, Hydril 503
660.0mKB - Liner Hanger
700.0mKB/420.0mTVD
10 5/8" Liner Hole
TD 1,410.0mKB
1,400.0mKB/420.0mTVD
1,390.0mKB
Thermal Cement
Annulus Gas Pack (CH_4)
12 1/4" Intermediate Hole
Injection Liner (Straight Gang Slots) - 8 5/8", 32lb/ft, L-80, TB-S**
approx. 200m
Instrumentation (TC's & BT's) - Inside 1 3/4" CT
Intermediate Casing - 9 5/8", 40lb/ft, L-80, TB*
Production Liner (Seamed Keystone Slots or WWS) - 7", 26lb/ft, L-80, TB-S**
Power Cable for ESP
TB* - Tenaris Blue
TB** - Tenaris Blue SAGD-SC/SB
8 3/4" Liner Hole
1,390.0mKB
1,400.0mKB/425.0mTVD
TD 1,410.0mKB
Production String - 3 1/2", 9.3lb/ft, L-80, Hydril 503
ESP w/Downhole T/P Sensors
700.0mKB/425.0mTVD
660.0mKB - Liner Hanger
Not to Scale

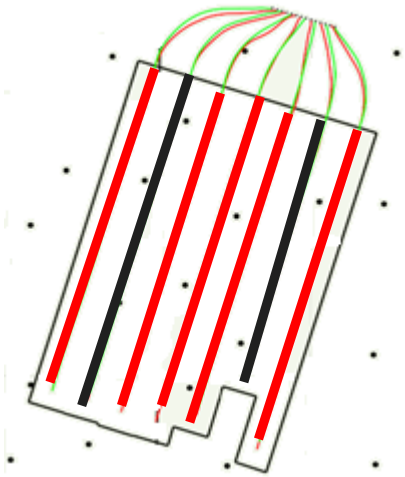
DRILLING AND COMPLETIONS

Wellbore Design (Pad L5)

INJECTORS

Slotted Liner (5)

Flow Control Devices (2)

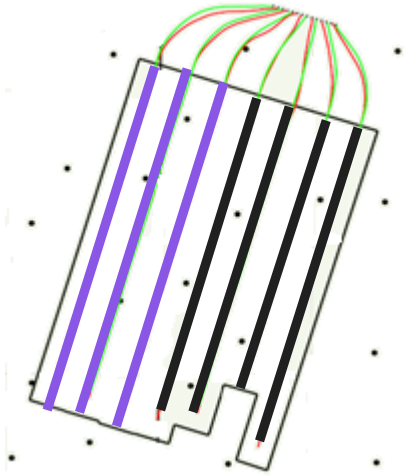


- Flow Control Devices (FCDs) are built into the liner joints
- FCDs are orifice-based and add restriction to balance injection distribution, or restrict steam entering the producer
- Well configuration is based on geology and for field testing purposes

PRODUCERS

Wire Wrapped Screens (3)

Flow Control Devices (4)



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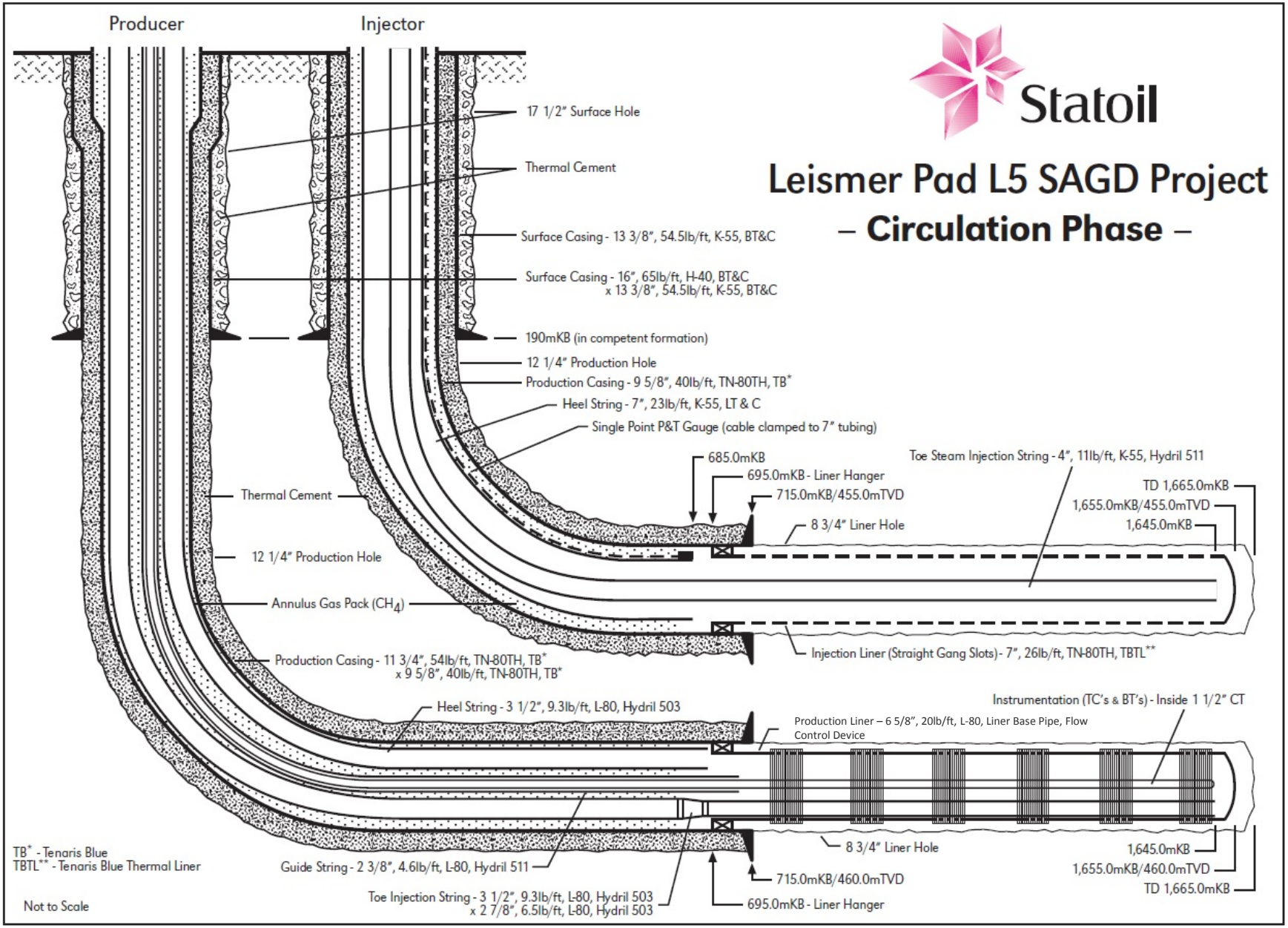
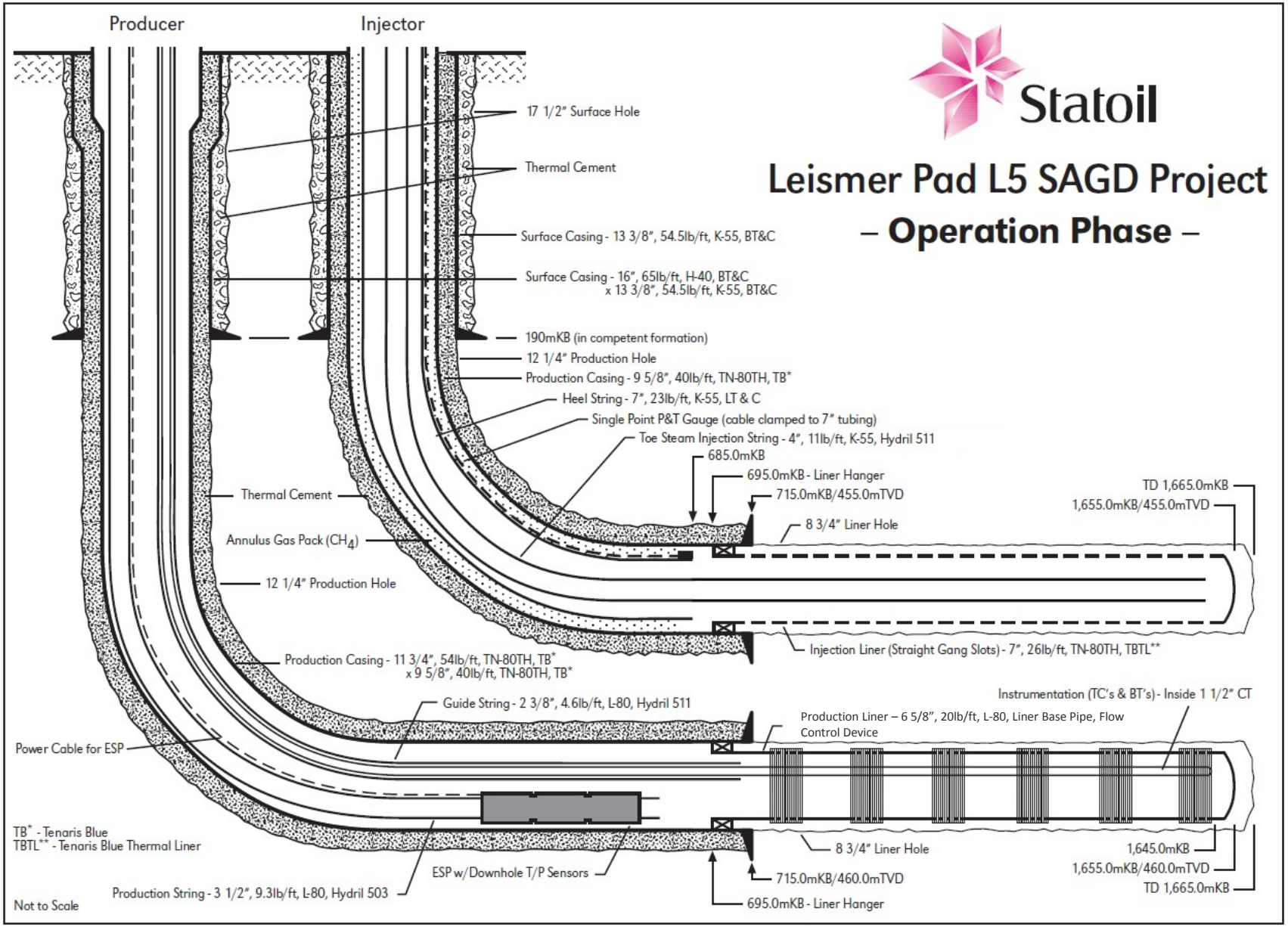

Producer
Injector
Statoil
Leismer Pad L5 SAGD Project
– Circulation Phase –
17 1/2" Surface Hole
Thermal Cement
Surface Casing - 13 3/8", 54.5lb/ft, K-55, BT&C
Surface Casing - 16", 65lb/ft, H-40, BT&C
x 13 3/8", 54.5lb/ft, K-55, BT&C
190mKB (in competent formation)
12 1/4" Production Hole
Production Casing - 9 5/8", 40lb/ft, TN-80TH, TB*
Heel String - 7", 23lb/ft, K-55, LT & C
Single Point P&T Gauge (cable clamped to 7" tubing)
685.0mKB
695.0mKB - Liner Hanger
715.0mKB/455.0mTVD
8 3/4" Liner Hole
Toe Steam Injection String - 4", 11lb/ft, K-55, Hydril 511
TD 1,665.0mKB
1,655.0mKB/455.0mTVD
1,645.0mKB
Thermal Cement
12 1/4" Production Hole
Annulus Gas Pack (CH_4)
Production Casing - 11 3/4", 54lb/ft, TN-80TH, TB*
x 9 5/8", 40lb/ft, TN-80TH, TB*
Injection Liner (Straight Gang Slots)- 7", 26lb/ft, TN-80TH, TBTL**
Heel String - 3 1/2", 9.3lb/ft, L-80, Hydril 503
Instrumentation (TC's & BT's) - Inside 1 1/2" CT
Production Liner – 6 5/8", 20lb/ft, L-80, Liner Base Pipe, Flow Control Device
8 3/4" Liner Hole
1,645.0mKB
1,655.0mKB/460.0mTVD
TD 1,665.0mKB
TB* - Tenaris Blue
TBTL** - Tenaris Blue Thermal Liner
Guide String - 2 3/8", 4.6lb/ft, L-80, Hydril 511
715.0mKB/460.0mTVD
Toe Injection String - 3 1/2", 9.3lb/ft, L-80, Hydril 503
x 2 7/8", 6.5lb/ft, L-80, Hydril 503
695.0mKB - Liner Hanger
Not to Scale


Producer
Injector
Statoil
Leismer Pad L5 SAGD Project
– Operation Phase –
17 1/2" Surface Hole
Thermal Cement
Surface Casing - 13 3/8", 54.5lb/ft, K-55, BT&C
Surface Casing - 16", 65lb/ft, H-40, BT&C
x 13 3/8", 54.5lb/ft, K-55, BT&C
190mKB (in competent formation)
12 1/4" Production Hole
Production Casing - 9 5/8", 40lb/ft, TN-80TH, TB*
Heel String - 7", 23lb/ft, K-55, LT & C
Single Point P&T Gauge (cable clamped to 7" tubing)
Toe Steam Injection String - 4", 11lb/ft, K-55, Hydril 511
685.0mKB
695.0mKB - Liner Hanger
715.0mKB/455.0mTVD
TD 1,665.0mKB
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8 3/4" Liner Hole
Thermal Cement
Annulus Gas Pack (CH_4)
12 1/4" Production Hole
Injection Liner (Straight Gang Slots) - 7", 26lb/ft, TN-80TH, TBTL**
Production Casing - 11 3/4", 54lb/ft, TN-80TH, TB*
x 9 5/8", 40lb/ft, TN-80TH, TB*
Instrumentation (TC's & BT's) - Inside 1 1/2" CT
Guide String - 2 3/8", 4.6lb/ft, L-80, Hydril 511
Production Liner – 6 5/8", 20lb/ft, L-80, Liner Base Pipe, Flow Control Device
Power Cable for ESP
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ESP w/Downhole T/P Sensors
715.0mKB/460.0mTVD
Production String - 3 1/2", 9.3lb/ft, L-80, Hydril 503
695.0mKB - Liner Hanger
Not to Scale

DRILLING & COMPLETIONS

Pressures in SAGD Start-up and Circulation

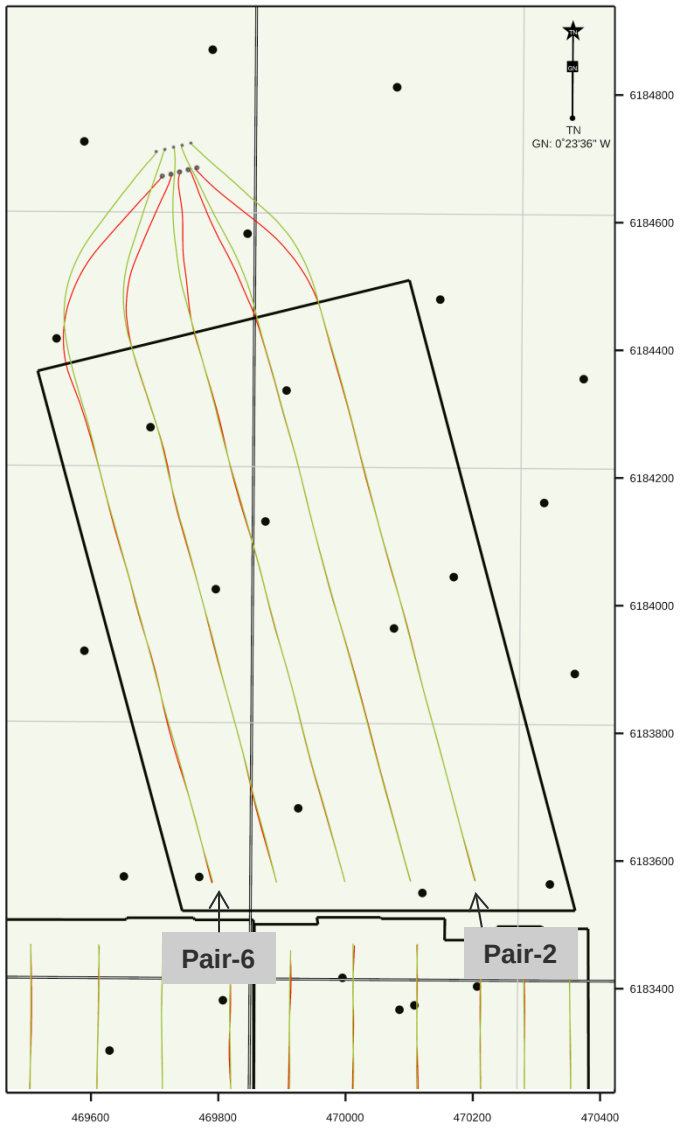
- **Maximum Operating Pressure (MOP):**
  - MOP of 5,500 kPa per AER Approval

- **Bottomhole Operating Pressure:**
  - Bottomhole operating pressure during circulation and SAGD is generally targeted between 3,000 and 3,500 kPa
    - Blanket gas is used to measure pressure on the injectors
    - Combination between BTs and PT gauges on the producers

DRILLING & COMPLETIONS

Pad L6

- 5 well pairs drilled
- Drilling operations from September to December 2014
- Horizontal lengths 800 - 900 m
- First steam 2016



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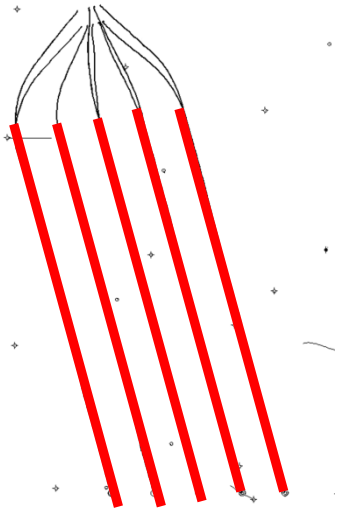
DRILLING AND COMPLETIONS

Wellbore Design (Pad L6)

INJECTORS

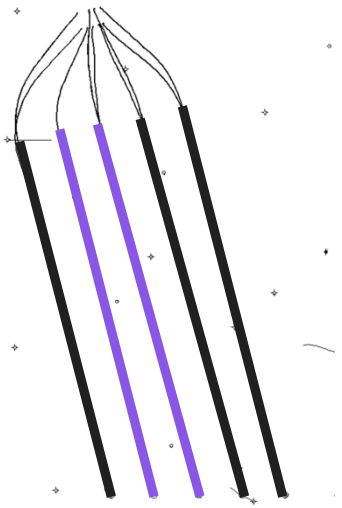
Slotted Liner (5)



PRODUCERS

Wire Wrapped Screens (2)

Flow Control Devices (3)



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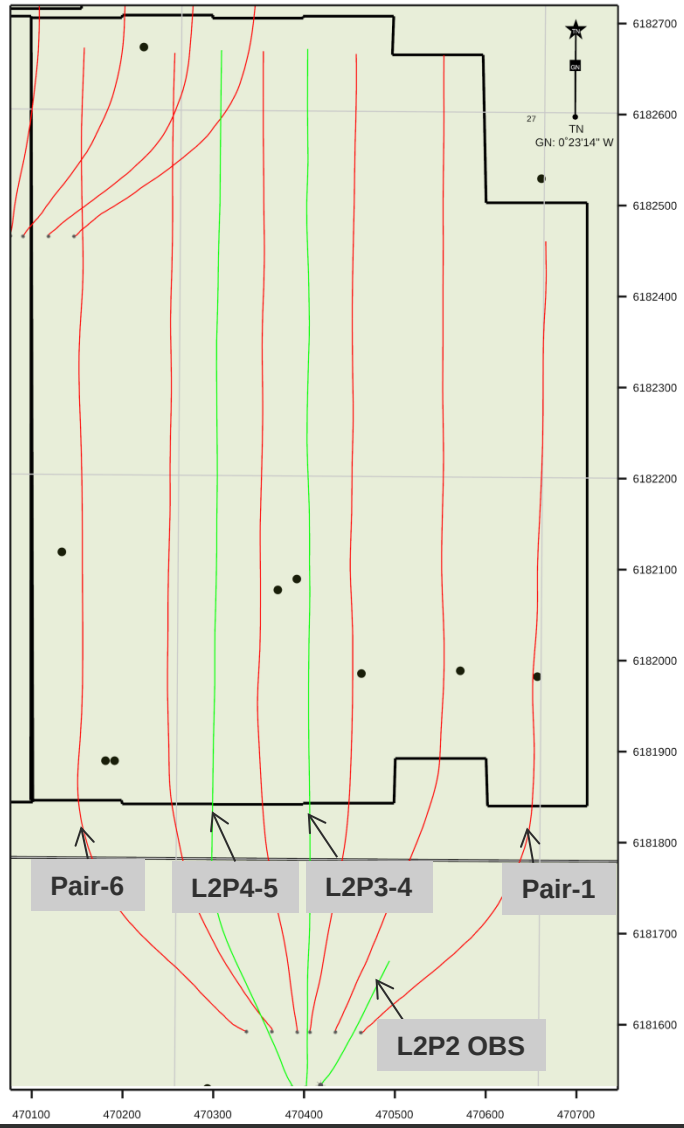
DRILLING AND COMPLETIONS

Pad L2 Modifications – Infill Wells

- Drilled 2 infill wells on Pad L2
- Drilling operations from August to September 2014
- Planned horizontal length = 800 m
- L2P3-4 started circulation December 2014
- L2P4-5 planned start-up for Q2 2015



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DRILLING AND COMPLETIONS

Infill Well Placement and Timing

- Vertical placement strategy relative to neighbouring producers and provide examples
  - Infill wells are generally positioned within the bypassed bitumen region that is created when the two adjoining steam chambers spread as they rise. Avoiding direct contact with the steam chambers is critical to drilling a successful infill well; thus, understanding the steam chamber shape, extent and boundaries is very important
  - Examples include Well L2P3-4 and L2P4-5
- Infill well timing
  - The actual timing will be dependent on adjacent SAGD well pair performance, steam chamber growth, drilling rig availability, facility tie-ins, and ongoing infill well production optimization

DRILLING & COMPLETIONS

L2P2 and L2P1 - Status

L2P2

- Developed plan in consultation with AER to drill observation (OBS) well in close proximity to L2P2 to monitor aquifers
  - Drilled OBS well in September 2014
- Directive 051 approval granted December 2011; Statoil must execute the agreed upon mitigation plan
- Completions work completed June 2014
- Started circulation October 31, 2014

L2P1

- Liner breached after low subcool events
- ESP pulled in December 2012. Well suspended since January 2013
- Investigating different options to repair and re-start the well

ARTIFICIAL LIFT

Subsurface Section 4

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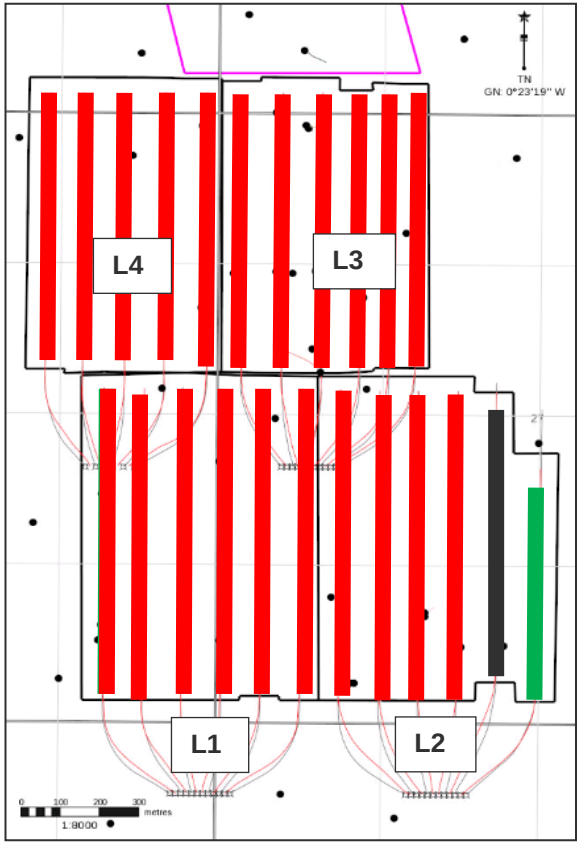
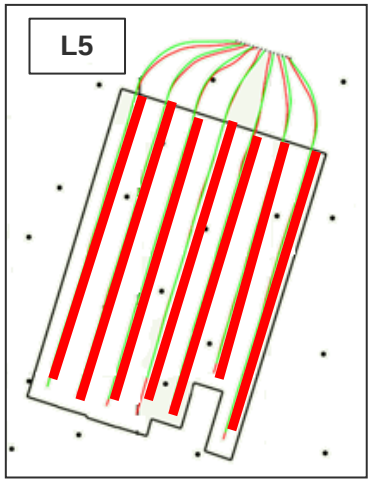
ARTIFICIAL LIFT

Pads L1 to L5





Current LDA Artificial Lift Installs

- **ESP 250 °C motors (28)**
- **Circulation (Started Oct 2014) → L2P2**
- **Suspended → L2P1**

Design lift capacity: 200 - 550 m^3/cd

Operating temperature: 210 - 235°C

Operating pressure: 2,800 – 3,000 kPa

INSTRUMENTATION IN WELLS

Subsurface Section 5

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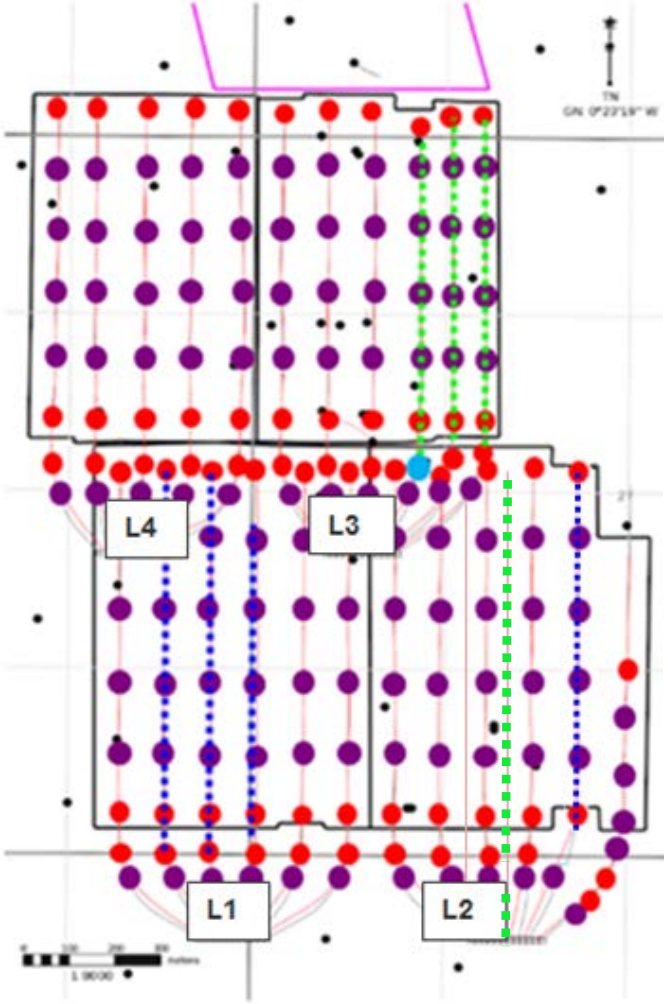
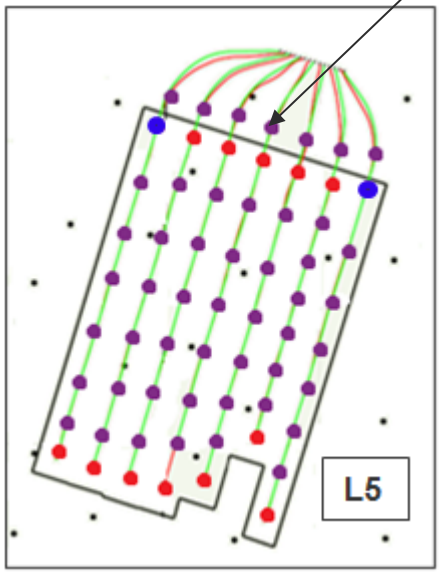
2015-03-09

INSTRUMENTATION

Leismer Downhole Producer Instrumentation (Pads L1 to L5)





Thermocouple in tangent sections to monitor ESPs, allows optimization of ESP performance

FBG:
- 40 temperature points on SAGD wells
- 40 temperature points on L2P3/4, with 1 pressure at toe, and 1 P/T at heel

DTS - multimode fiber (spatial resolution 0.5 - 1m) *Note: DTS on L1P3, L1P4 and L1P5 have failed*

Bubble Tube and Thermocouple

Thermocouple

Thermocouple, Bubble Tube, and Fiber Optic P/T Gauge

Thermocouple, Single point P/T Gauge

Notes:
- L2P1 configuration modified to revised TD

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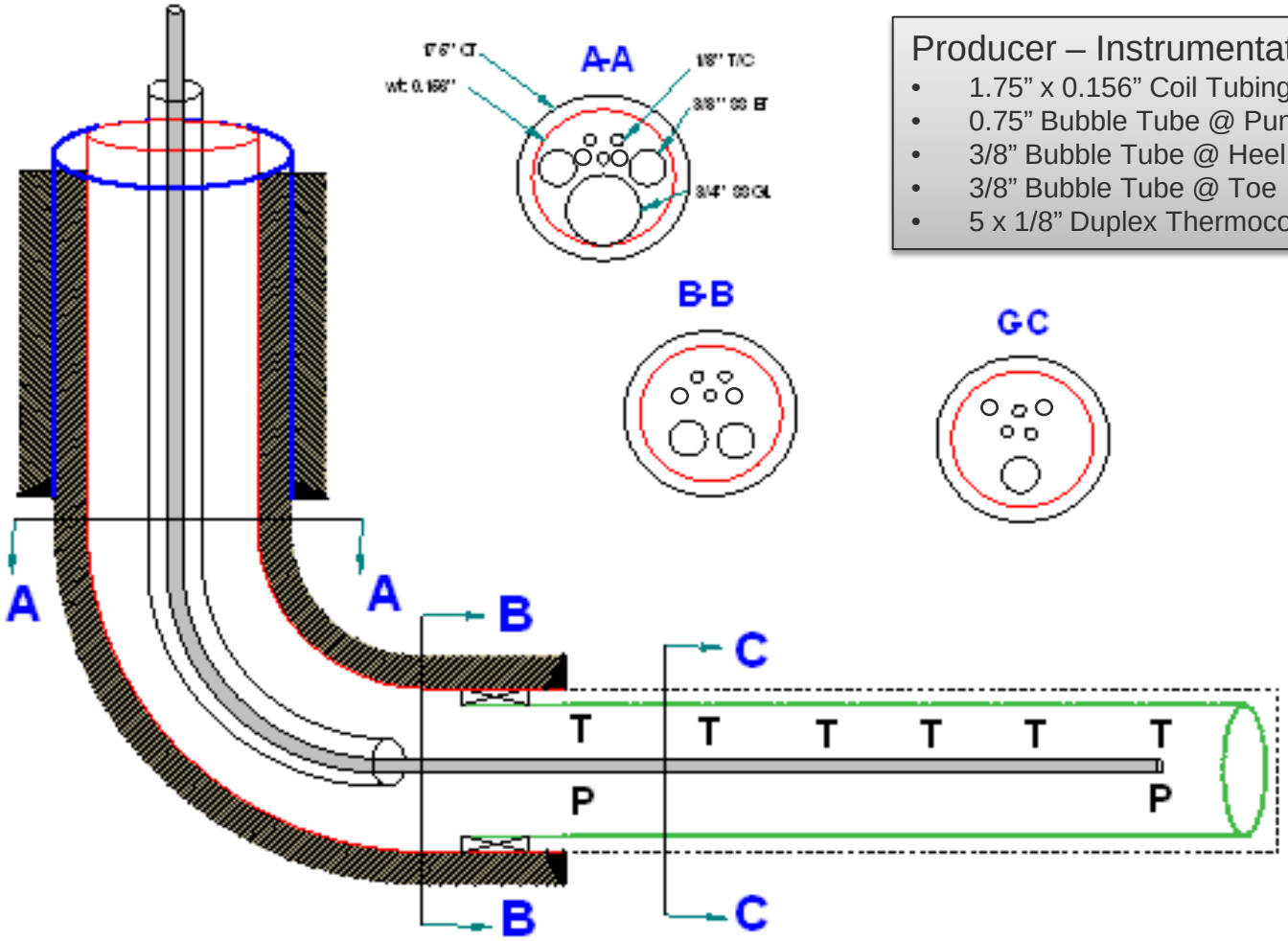
INSTRUMENTATION

Lessons Learned

- Pressure measurement:
  - Piezometers on injector wells have been susceptible to data integrity issues
  - Fiber optic Pressure/Temperature gauge testing has been positive with reasonable matching to bubble tubes/blanket gas, and with strong reliability
- Temperature measurement:
  - Thermocouples in producers are reliable and used for subcool calculation along the horizontal wellbore
  - Thermocouples and fiber optic lines have been installed in the same wells to test fiber technology
  - DTS (Distributed Temperature Sensing) fiber has been unsuccessful but usage is limited. Continuing to test.
  - FBG (Fiber Bragg Grating) fiber has been successful with reasonable matching to thermocouples and reliable measurements

INSTRUMENTATION

Leismer Typical SAGD Wellbore Schematic (Pads L1 to L5)

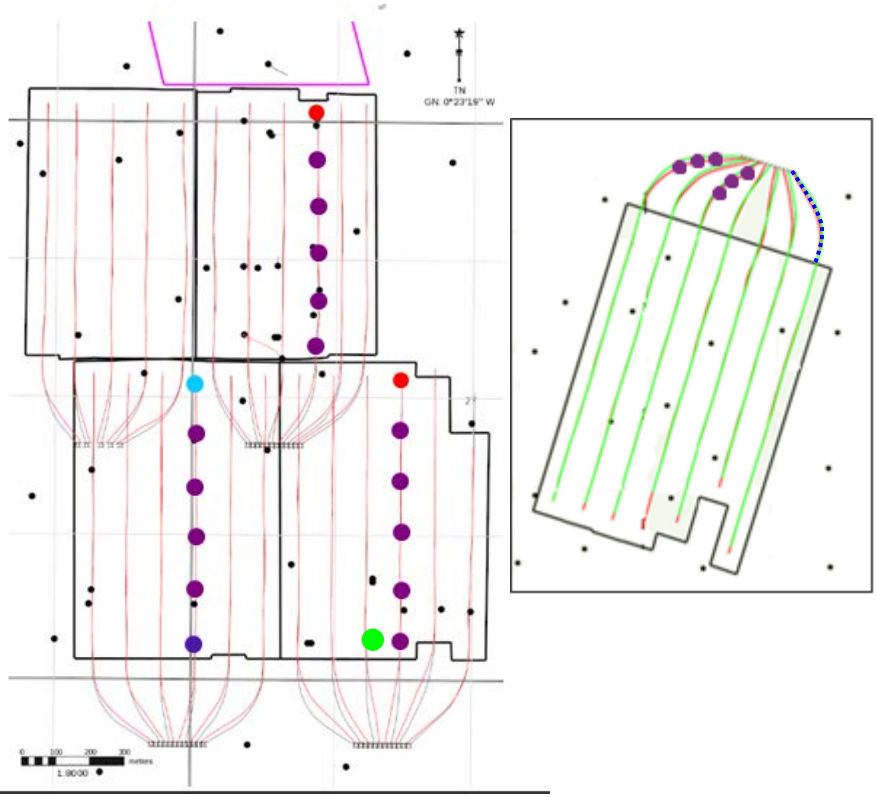


Producer – Instrumentation

- 1.75” x 0.156” Coil Tubing
- 0.75” Bubble Tube @ Pump
- 3/8” Bubble Tube @ Heel
- 3/8” Bubble Tube @ Toe
- 5 x 1/8” Duplex Thermocouples

INSTRUMENTATION

Leismer Downhole Injector Instrumentation (Pads L1 to L5)



- Bubble Tube and Thermocouple
- Thermocouple
- Piezometer and Thermocouple

  Note: significant piezometer issues
- Bubble Tube, Piezometer and Thermocouple

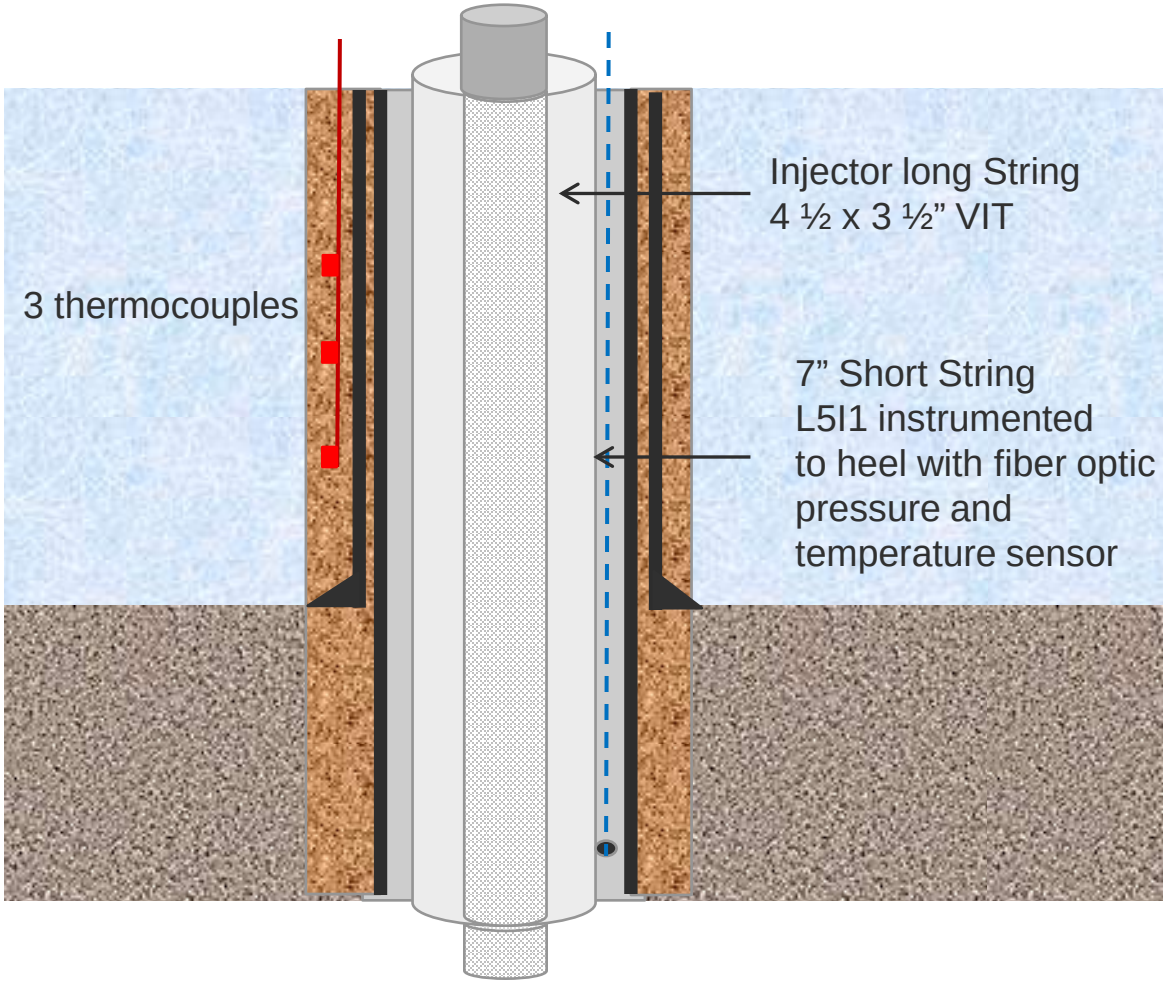
  Note: significant piezometer issues
- Fiber Optic – Pressure and Temperature sensor

Notes:
- L2I1 sheared during injector re-completion

INSTRUMENTATION

Pad L5: Injection Well Schematic

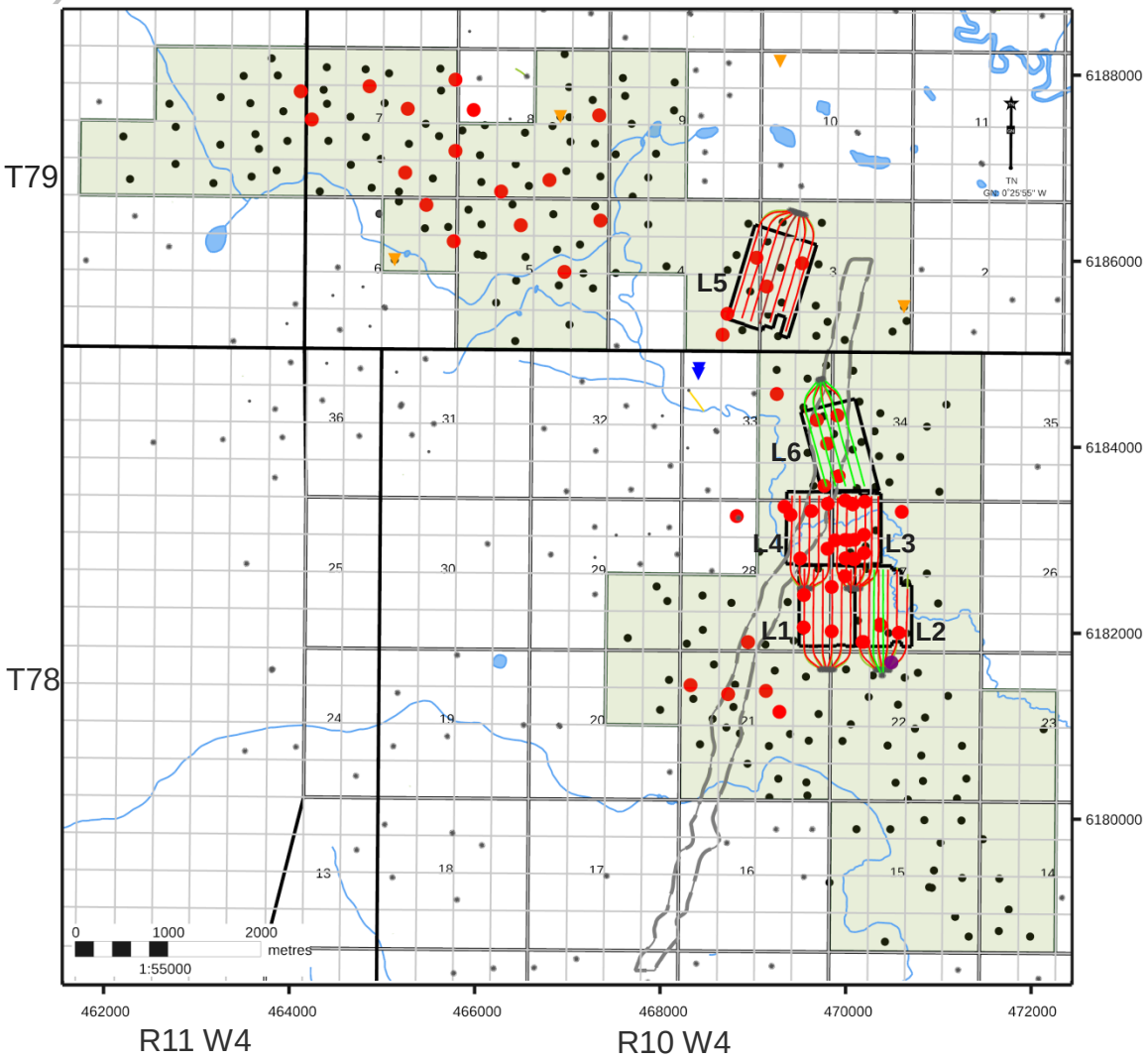
- Thermocouple cable strapped to 13-3/8” surface casing on 4 wells
- 3 temperature points per cable: 40 m, 82 m and 175 m
- Only 1 point functioning at 175 m. Other 3 failed during install. All thermocouples at 40 m and 82 m are functioning
- During start-up, temperatures reached 140°C to 200°C within a few days and held relatively constant through remainder of circulation.
- Data used in an on-going cement integrity study



INSTRUMENTATION

Leismer Observation (OBS) Wells

LEGEND
OSE - Oil Sands Evaluation Wells (211)
OBS - Observation Wells pre-2014 (64)
OBS - Observation Wells in 2014 (1)
WDW – Granite Wash Disposal (4)
WDW – McMurray Water Disposal Wells (2)
SAGD – 30 well pairs in Pads L1-L4 pre-2014
SAGD – 5 well pairs in Pad L6 in 2014
SAGD – 2 infill wells in Pad2 in 2014
Existing Pads (6)
Leismer Development Area (LDA)
Water Line
McMurray O and V Channels (A1 and B1 Equivalent) Potential Associated Gas Zones



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INSTRUMENTATION

Leismer OBS Well - Distances

OBS Well	Distance
L1P2T	20.5 m from L1P2
L1P3T	6.5 m from L1P3
L1P3H	5.4 m from L1I3
L1P6T	2.3 m from L1I6
L1P6H	6.2 m from L1I6
L2P1H	7.7 m from L2P1
L2P2H	20.7 m from L2I2
L2P4M	22.9 m from L2P4
L2P4M2	42.4 m from L2P4
L2P6H	32.3 m from L2I6
L2P6H2	41.7 m from L2I6
L4P1M	17.0 m from L4I1

OBS Well	Distance
L4P1M	17.0 m from L4I1
L4P1T	2.9 m from L4P1
L4P3T	24.7 m from L4I3
L4P4H	11.2 m from L4P4
L4P5T	9.1 m from L4I5
L4P5T2	75.4 m from L4I5
L5-05-03	39.0 m from L5P4
L5-11-03	43.0 m from L5P1
L5-09-04	35.0 m from L5P6
L6-01-33	18.0 m from L6P6
L6-04-34	40.0 m from L6P4
L6-08-33	30.0 m from L6P5
L6-09-33	13.0 m from L6P5
L6-12-34	15.0 m from L6P3

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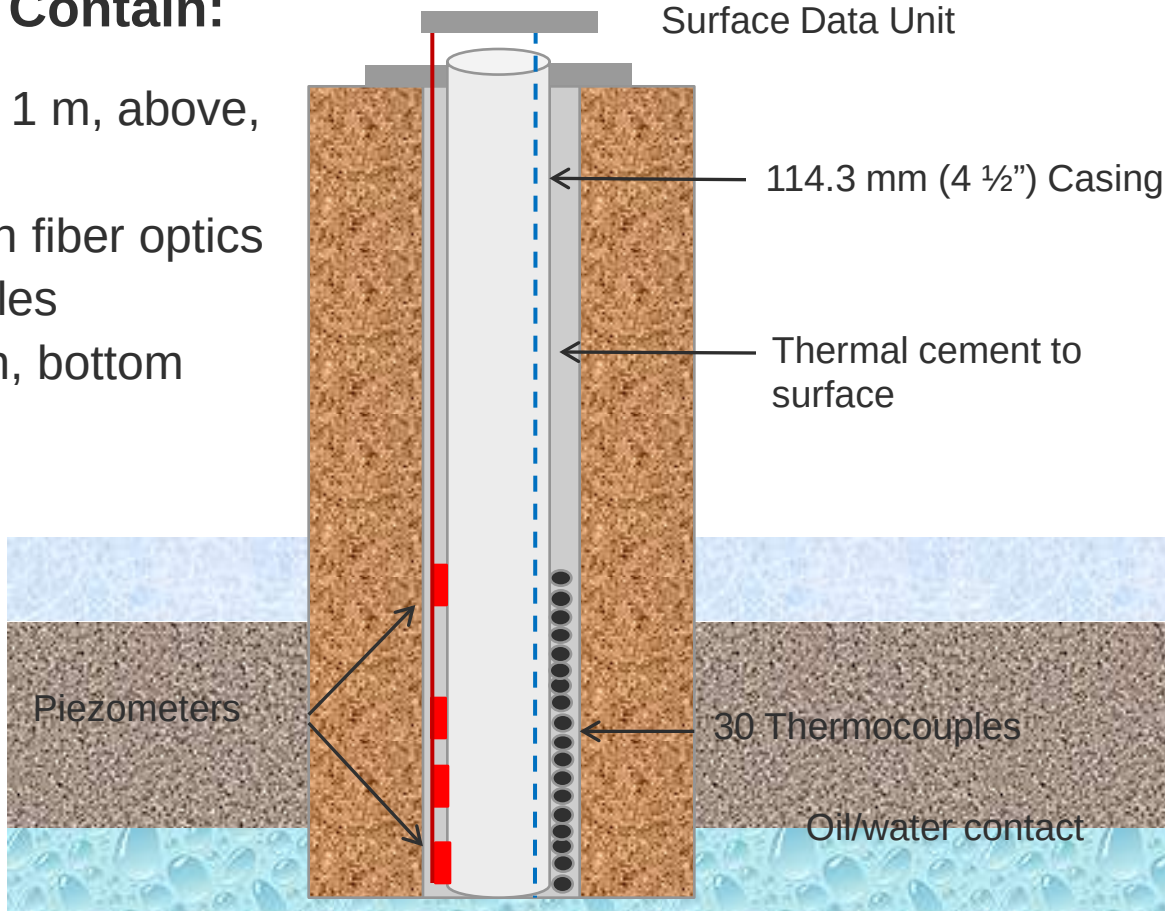
INSTRUMENTATION

Typical SAGD OBS Well Schematic

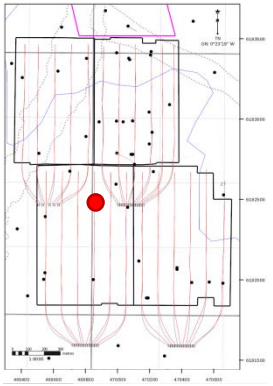
Leismer SAGD OBS Wells Contain:

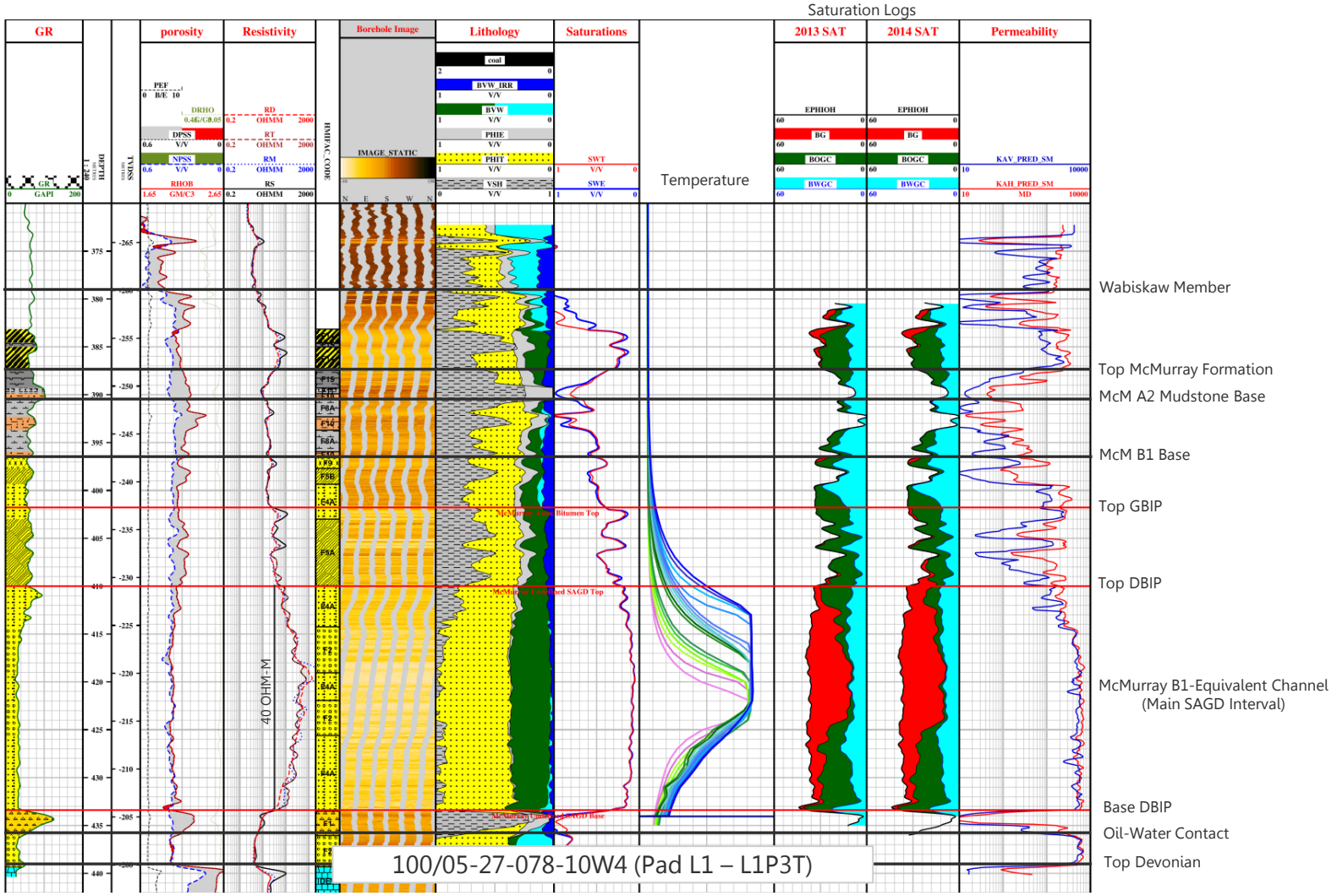
- 30 thermocouples, spaced at 1 m, above, below, and within SAGD pay
- Some wells are equipped with fiber optics (DTS) instead of thermocouples
- 3 to 4 piezometers in bitumen, bottom water, and top lean/gas zone



INSTRUMENTATION

OBS Well Time-Lapse RPM Saturation Logging





Statoil

4D SEISMIC

Subsurface Section 6

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4D SEISMIC

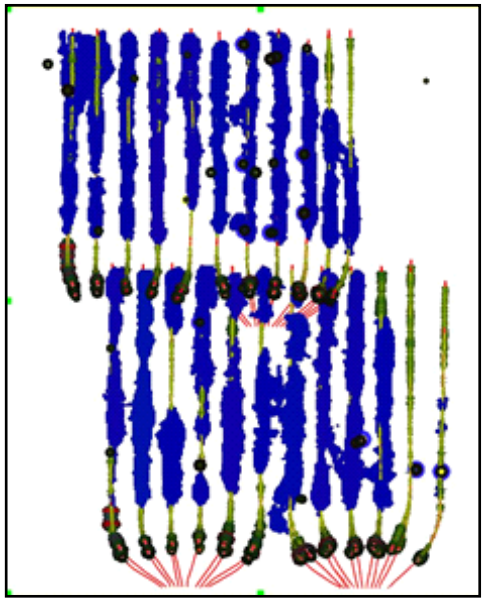
Acquisition History

- Q1 **2009**: 4.92 km^2 baseline survey acquired (pre-steam) over L1-4
- Q1 **2012**: 8.6km^2 3D survey
  - 1st 4D survey (4.92 km^2 of active SAGD pads L1-4)
  - New baseline survey for L5 + L6 (3.68 km^2)
- Q1 **2013**: 4.5 km^2 3D survey
  - 2nd repeat survey (active SAGD pads L1-4)
- Q1 **2014**: 2.12 km^2 4D survey (active SAGD pads L3 +L4)

4D SEISMIC

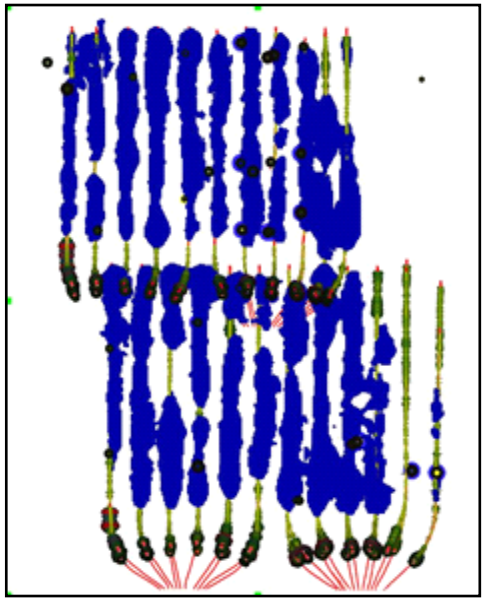
Survey Comparison

Diff 2009-2012



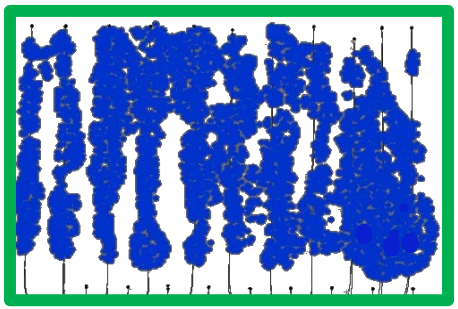
Steam injection and bitumen production effects for approximately 15 months

Diff 2009-2013



Steam injection and bitumen production effects for approximately 28 months

Diff 2009-2014



Steam injection and bitumen production effects for approximately 40 months
(2014 monitor only included Pads L3 & L4)

- 4D seismic anomalies indicate a high degree of conformance along SAGD well pairs
- Irregularities are mainly attributable to reservoir heterogeneity and, in some cases, to heat transfer below the producer elevation into the basal McMurray Fm. (i.e., bottom water)

SCHEME PERFORMANCE

Subsurface Section 7

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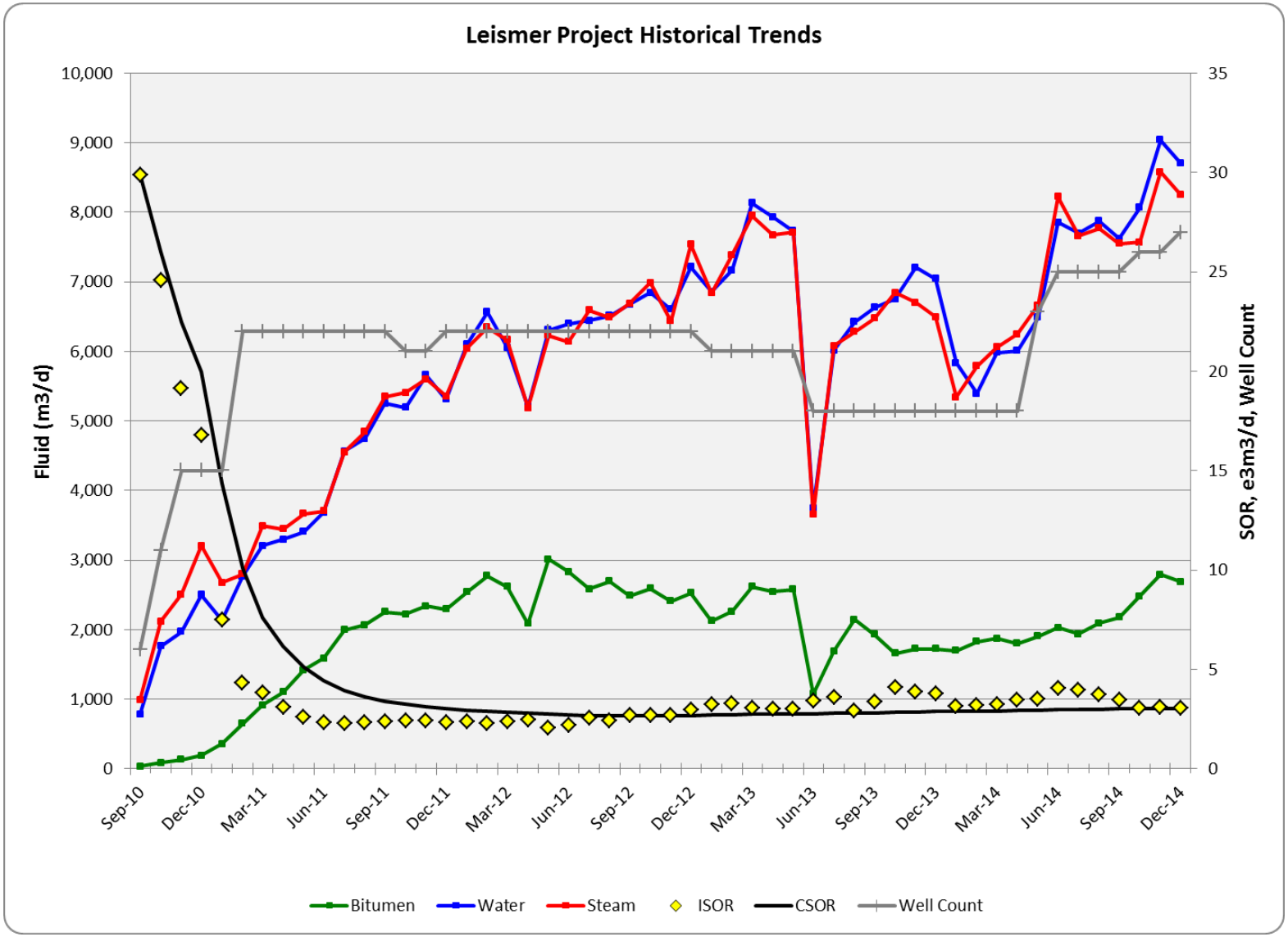
SCHEME PERFORMANCE



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SCHEME PERFORMANCE

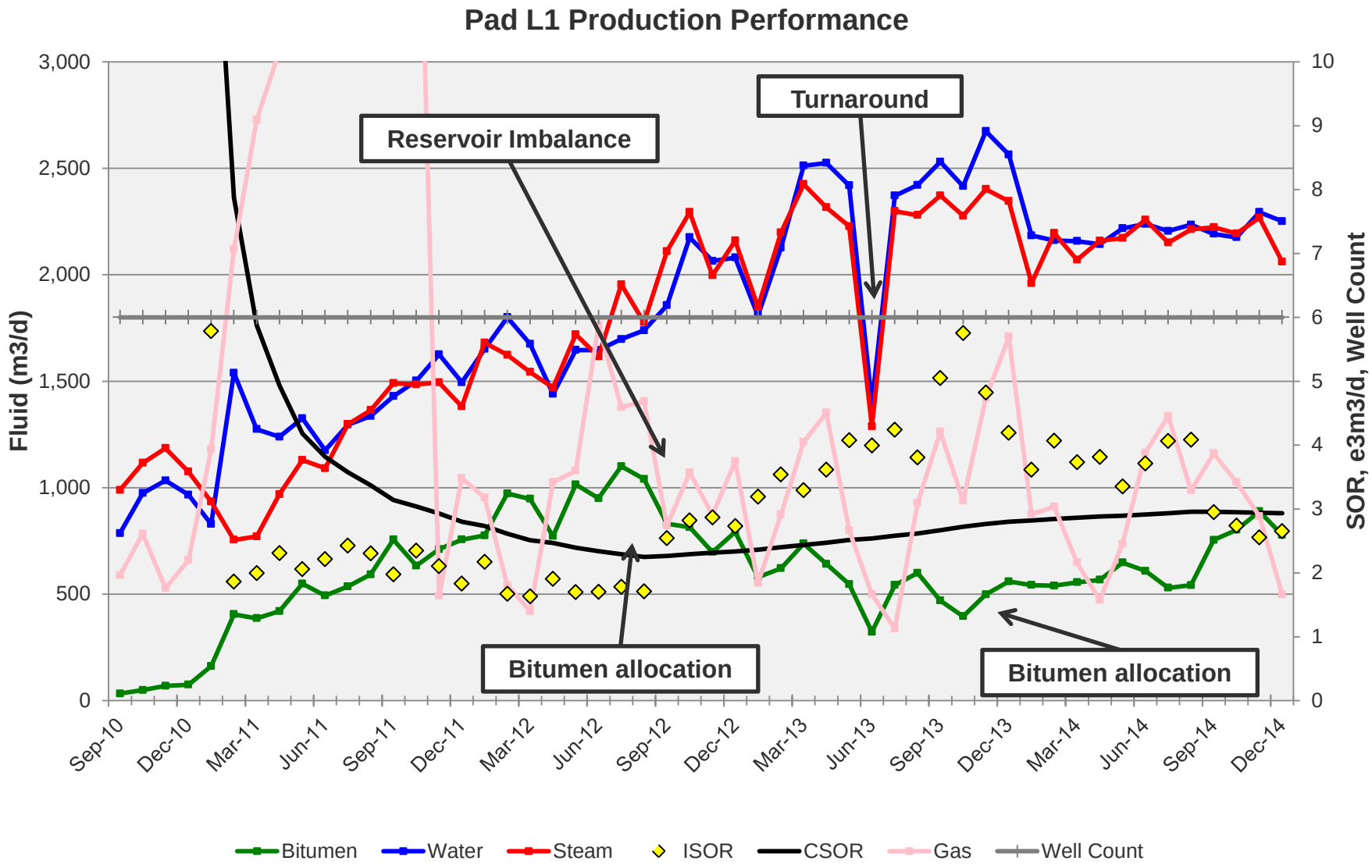
Pad Recoveries

Well Pad (50 m Drainage Boundary)	McMurray Formation SAGD-able OBIP (10^3 m^3)	Cumulative Production (10^3 m^3)	SAGD-able Recovery To Date (%)	Predicted SAGD-able Recovery Factor after 15 years (%)
L1	2,772	966	34.9	63
L2	2,911	751[a]	25.8	54
L3[b]	1,005	371	37.0	67
L4	1,730[c]	609	35.2	68
L5	2,938	35	1.2	52

[a] Due to poor contribution from L2Pair1 and L2Pair2
[b] Excludes wells in AER Approval No. 11834A
[c] Relatively lower OBIP attributable to overall reservoir characteristics, especially thinning from a younger McMurray Fm. A1-Equivalent Channel (“O Channel”)

- SAGD-able OBIP, Cumulative Production, and Recovery Factor (RF) valid as of December 31, 2013
- Predicted (SAGD-able) RF based on 2D mapping and simulations using SAGD-able OBIP (OBIP above producer well)
- Reference “Supplemental Information Request Application Nos.1693442 and 1694622, Amendment to Approval No. 10935E, Leismer Project”

SCHEME PERFORMANCE



SCHEME PERFORMANCE

Pad L1 Production Performance

Reservoir Imbalance (July-August 2012)

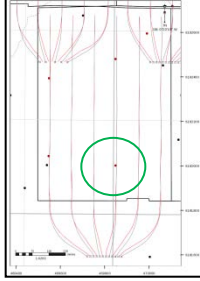
- Managed by controlling field operating parameters

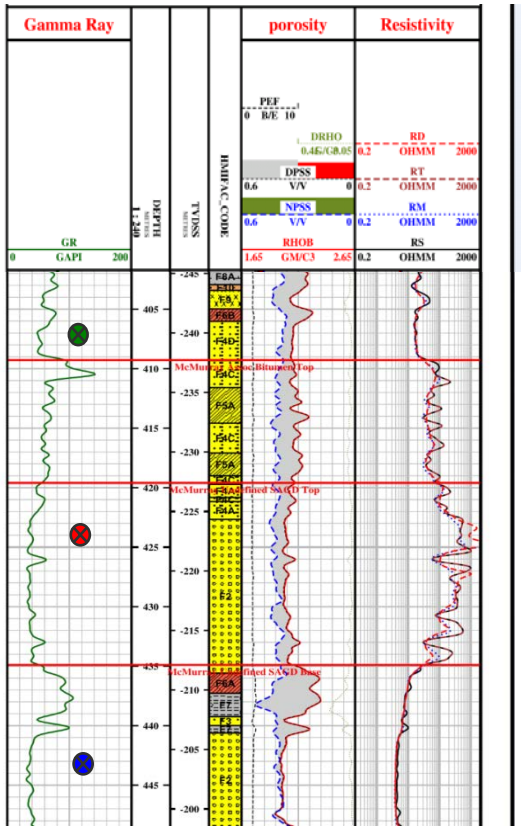
Bitumen Allocation (August 2012 and November/December 2013)

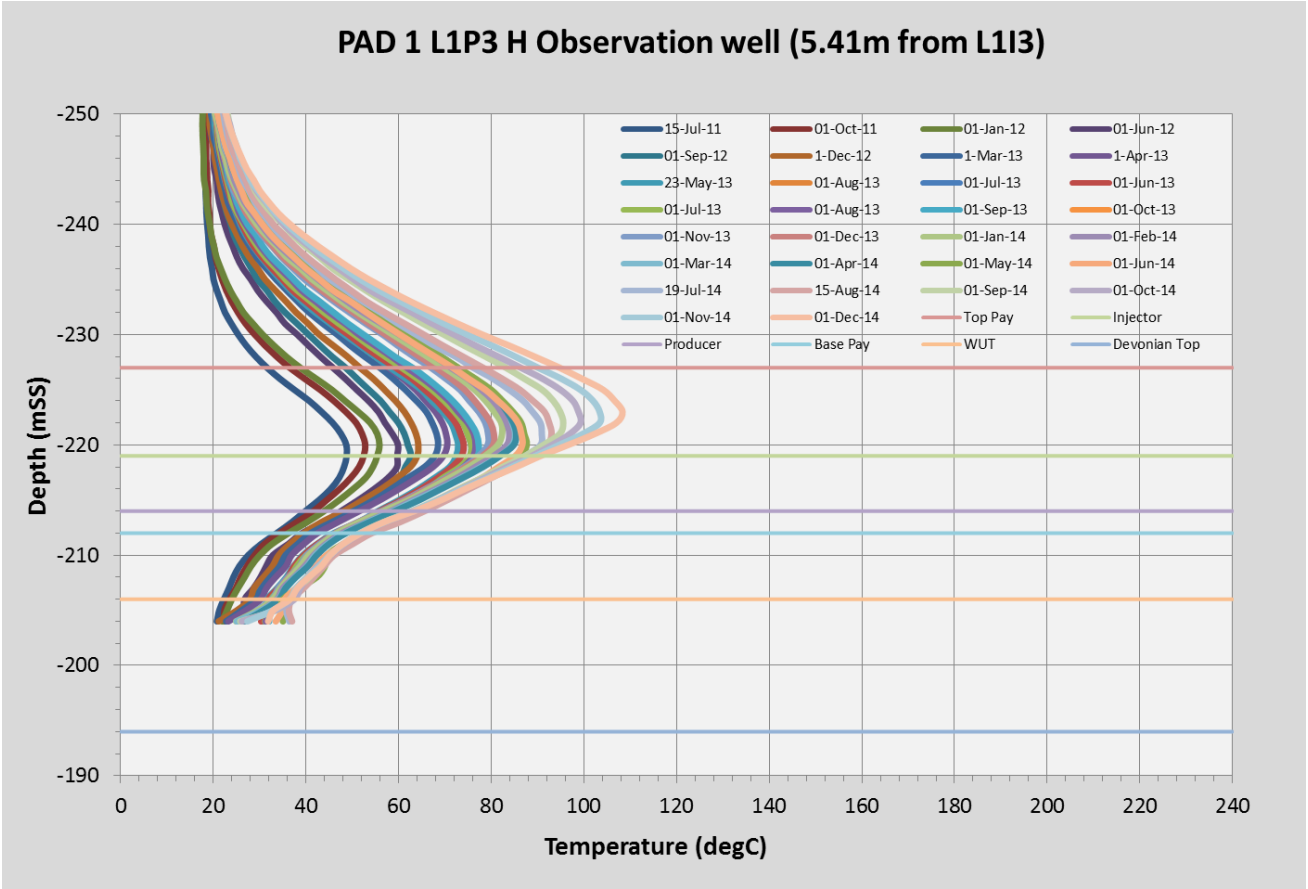
- Water cut procedure/calibration modification resulted in under allocation of bitumen to Pad L1

SCHEME PERFORMANCE

Pad L1 OBS Well Temperature Profile – 102/04-27-078-10W4/0

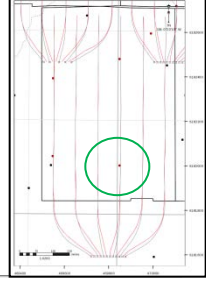


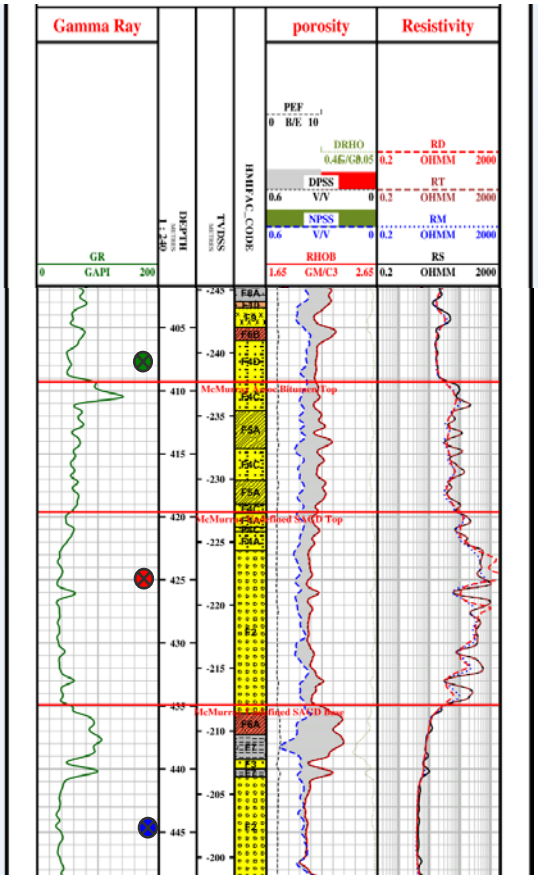


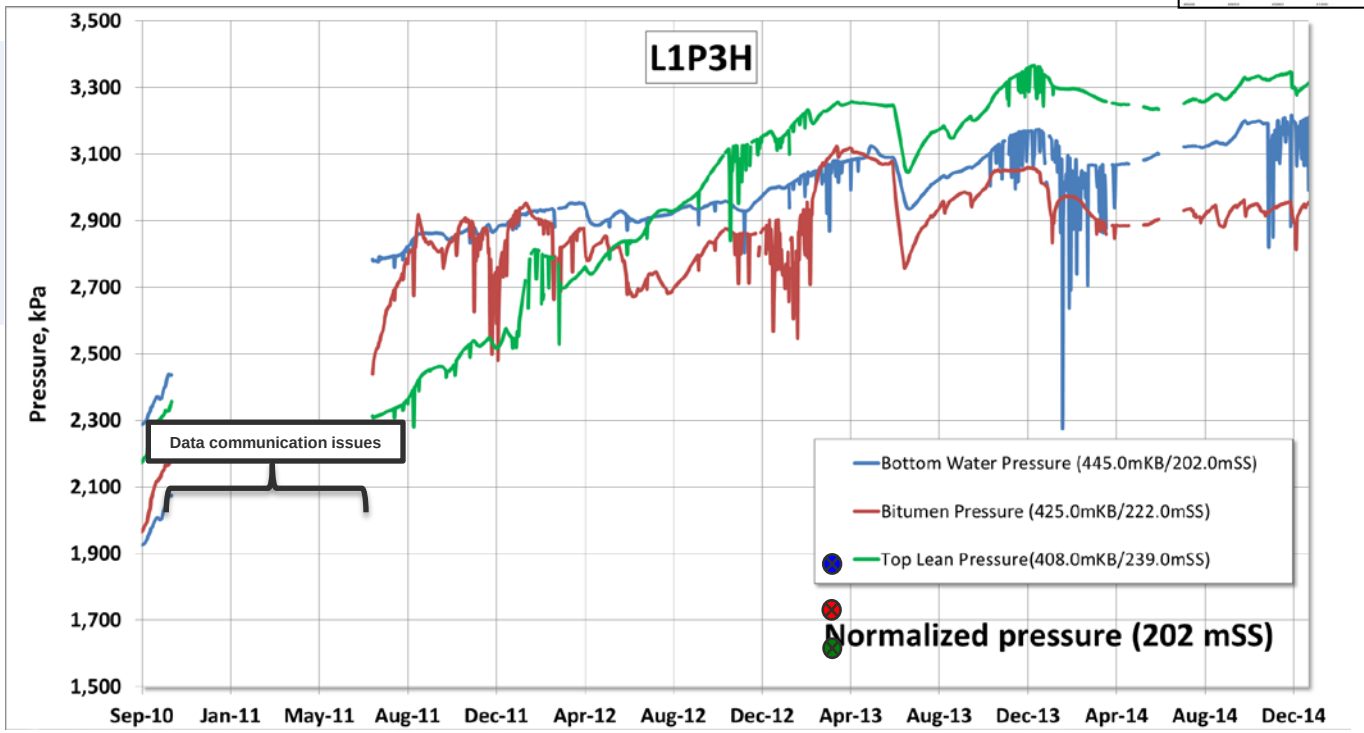


SCHEME PERFORMANCE

Pad L1 OBS Well Pressure Profile – 102/04-27-078-10W4/0







Pad L1 operating pressure strategy for 2015: maintain an optimal pressure differential between the bottom water and SAGD chamber

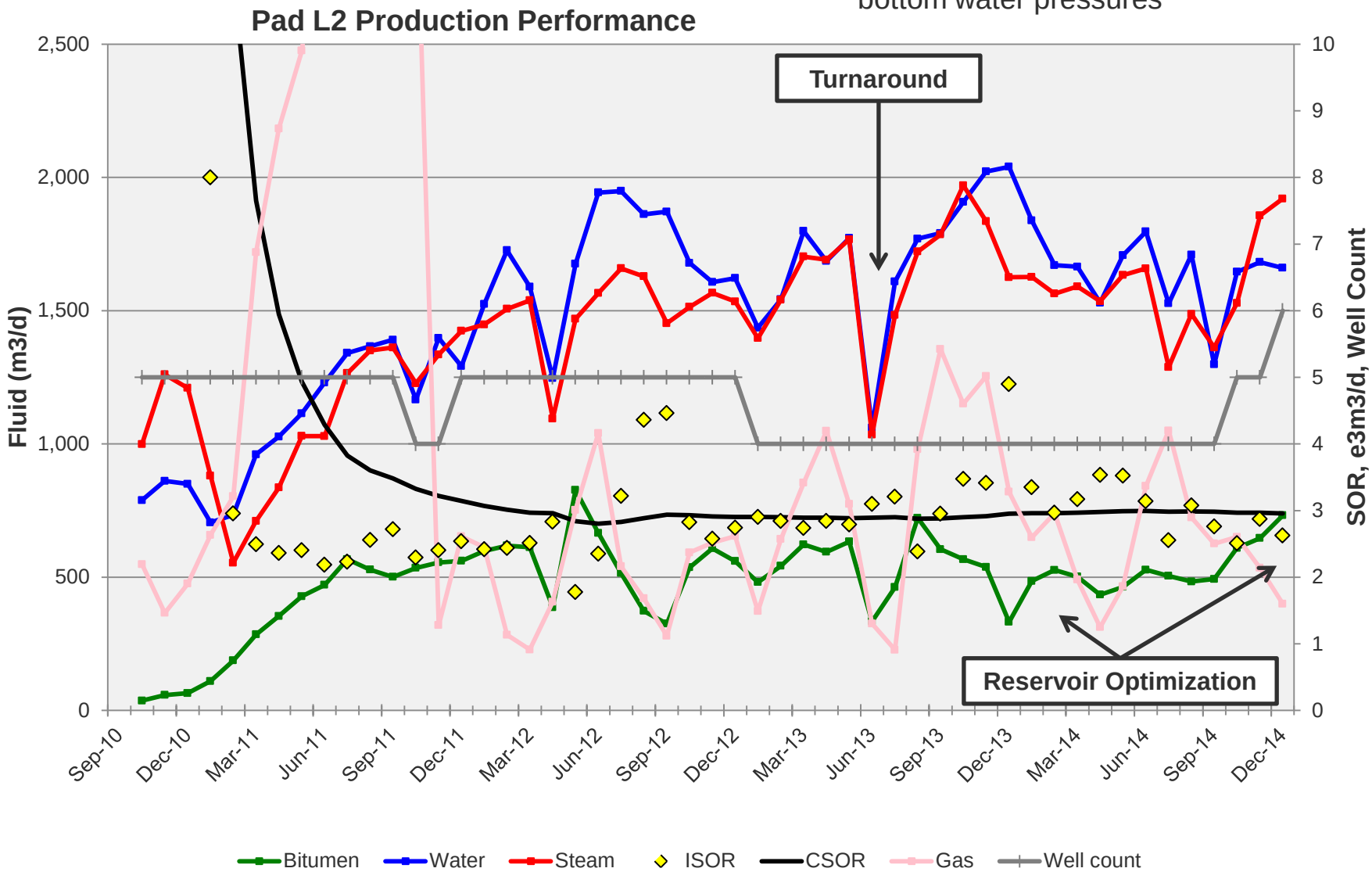
SCHEME PERFORMANCE

Pad L1 Highlights

- First steam September 2010
- 6 well pairs in SAGD mode
- Average 2014 iSOR of 3.43
- Pad cSOR of 2.9 up to December 31, 2014

SCHEME PERFORMANCE

Nov 2013 – Q3 2014: Steam injection rate was managed relative to chamber and bottom water pressures



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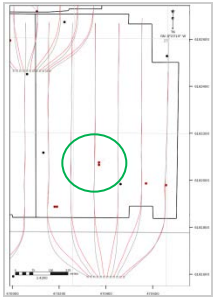
SCHEME PERFORMANCE

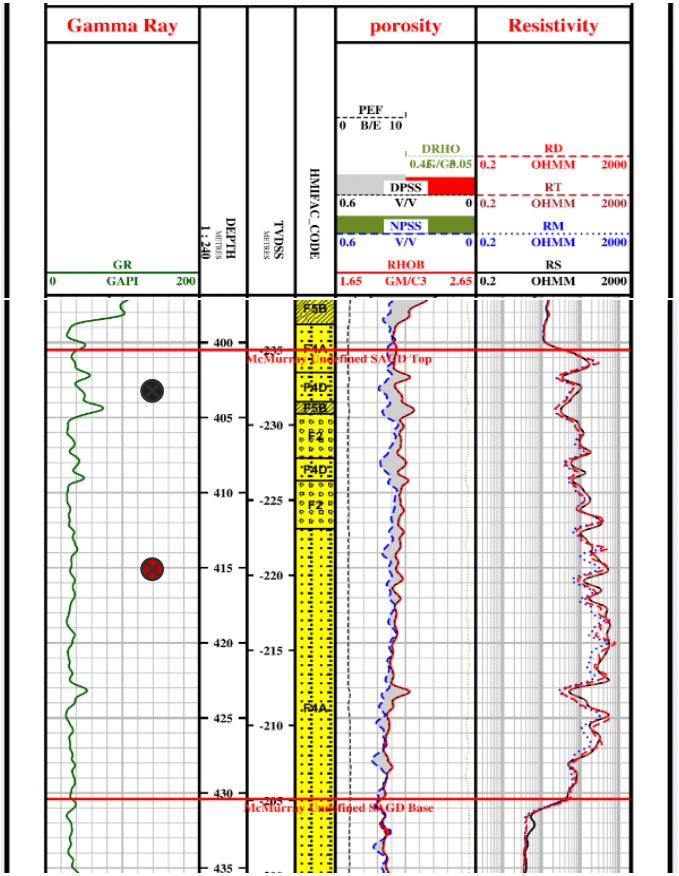
Pad L2 Solvent Facilitated Start-up Pilot

- Wells included in solvent facilitated start-up program:
  - L2I2 and L2P2
- Composition of solvent
  - Diesel
- Amount of solvent injected
  - 140 m^3 (70 m^3 for L2I2 and 70 m^3 for L2P2)
- Key Learning: The geological condition around the wellbore is a critical parameter that needs to be identified before commencement of the solvent facilitated start-up process

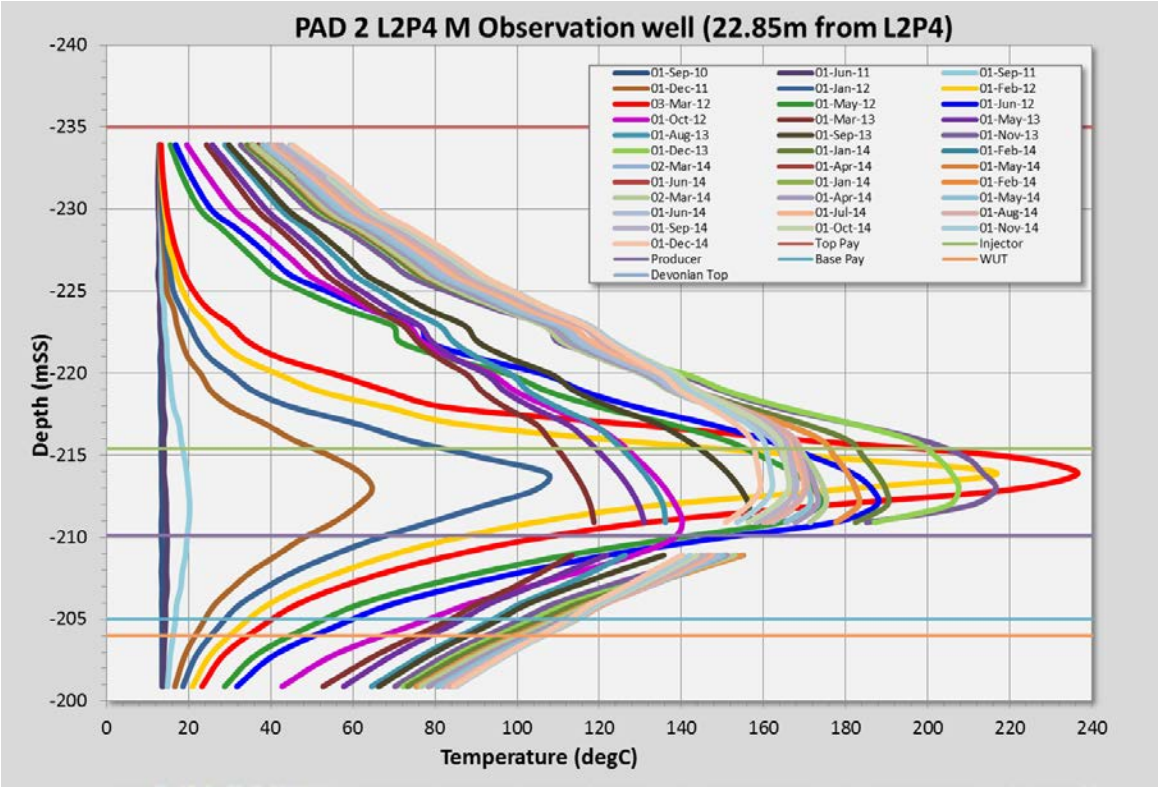
SCHEME PERFORMANCE

Pad L2 OBS Well Temperature Profile – 103/03-27-078-10W4/0





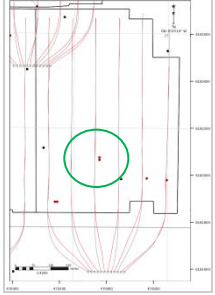
Observed step change of temperature feature from March to May 2012. Shale baffle penetrated with heat

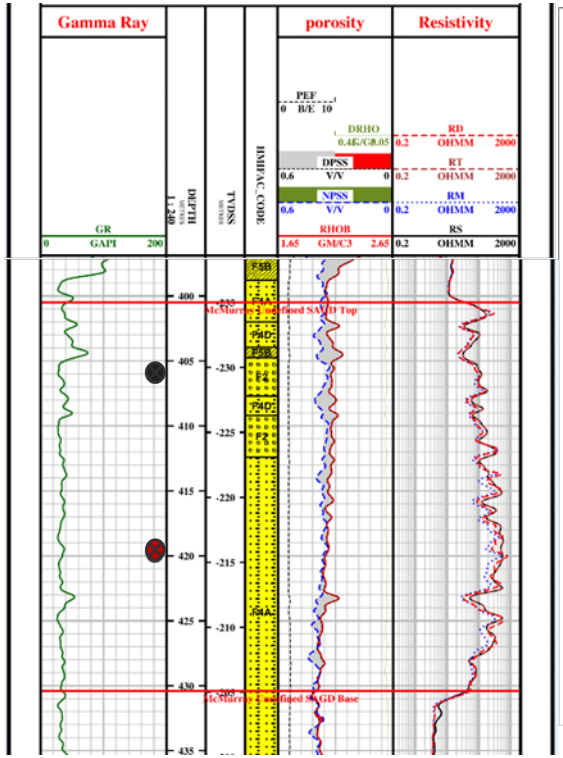


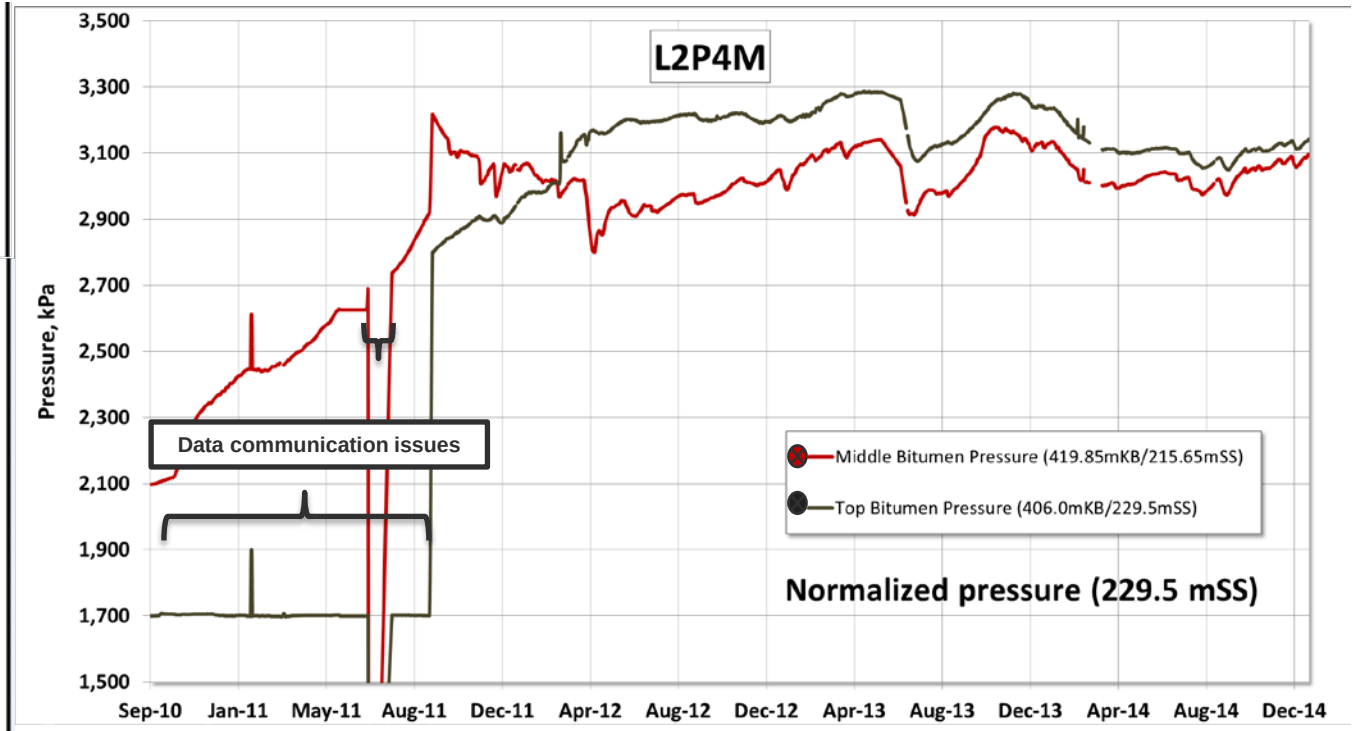
Statoil

SCHEME PERFORMANCE

Pad L2 OBS Well Pressure Profile – 103/03-27-078-10W4/0







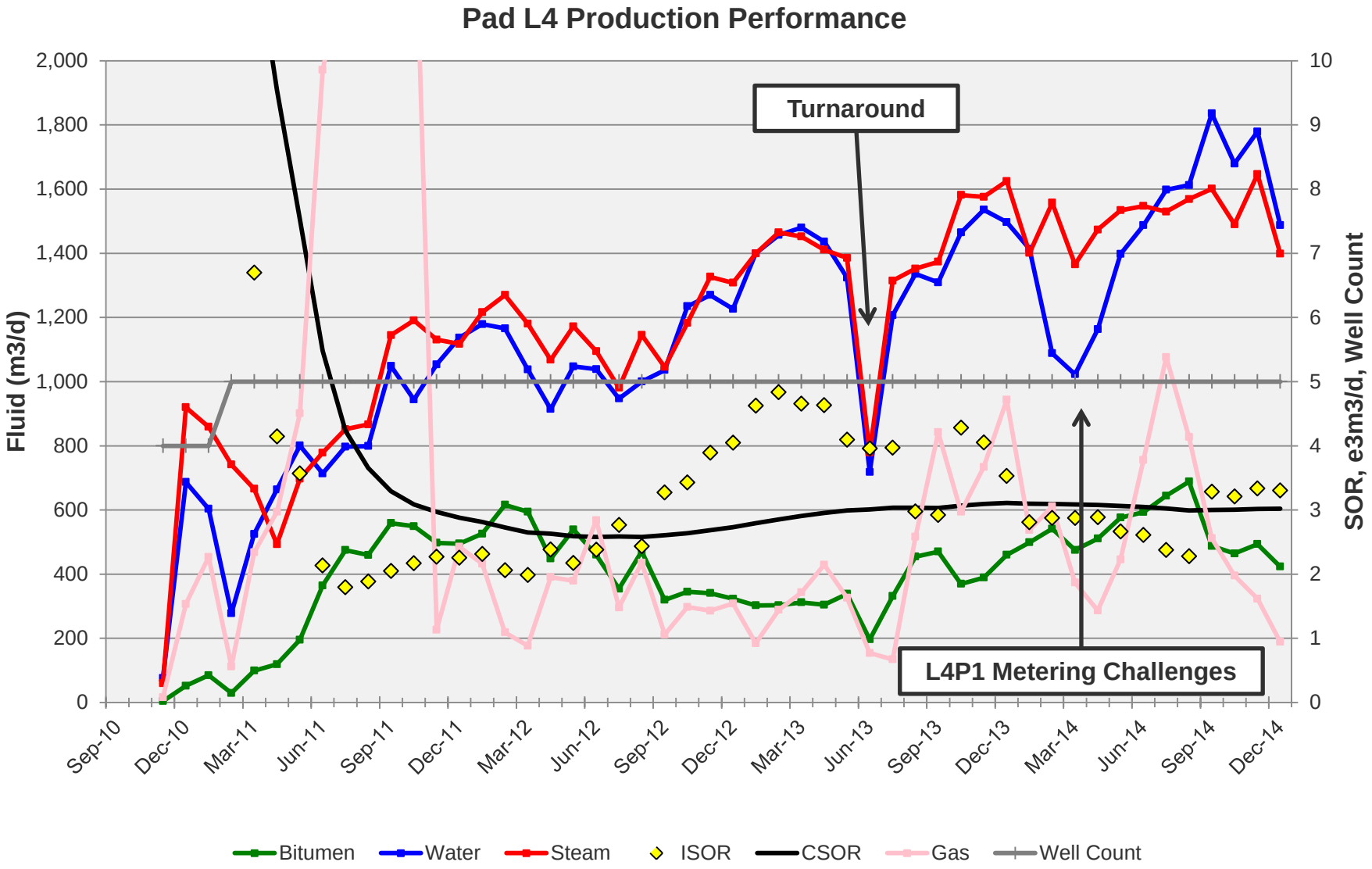
Statoil

SCHEME PERFORMANCE

Pad L2 Highlights

- First steam October 2010
- 4 well pairs in SAGD mode
  - L2Pair1 inactive
  - L2Pair2 started circulation on October 31, 2014
- Average 2014 iSOR of 2.97
- Pad cSOR of 2.97 up to December 31, 2014

SCHEME PERFORMANCE



SCHEME PERFORMANCE

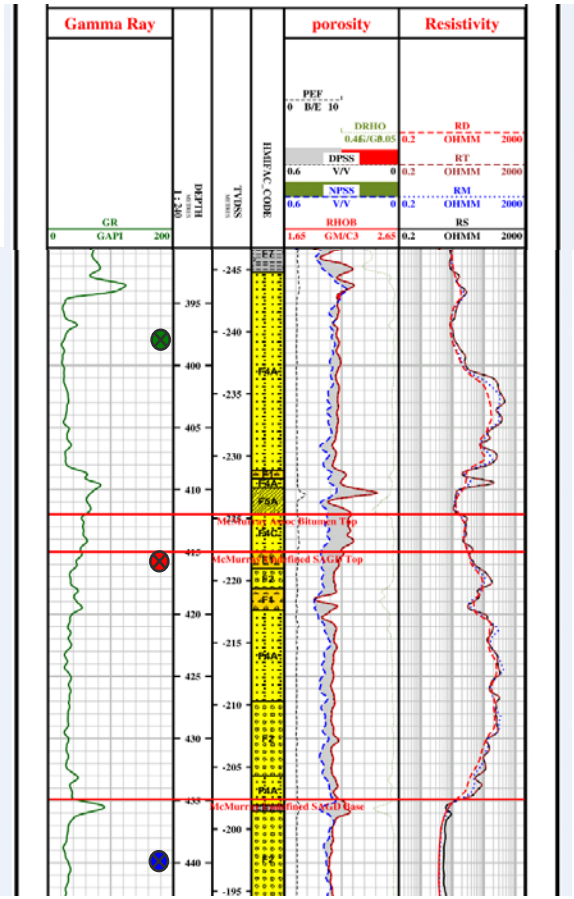
Pad L4 Production Performance

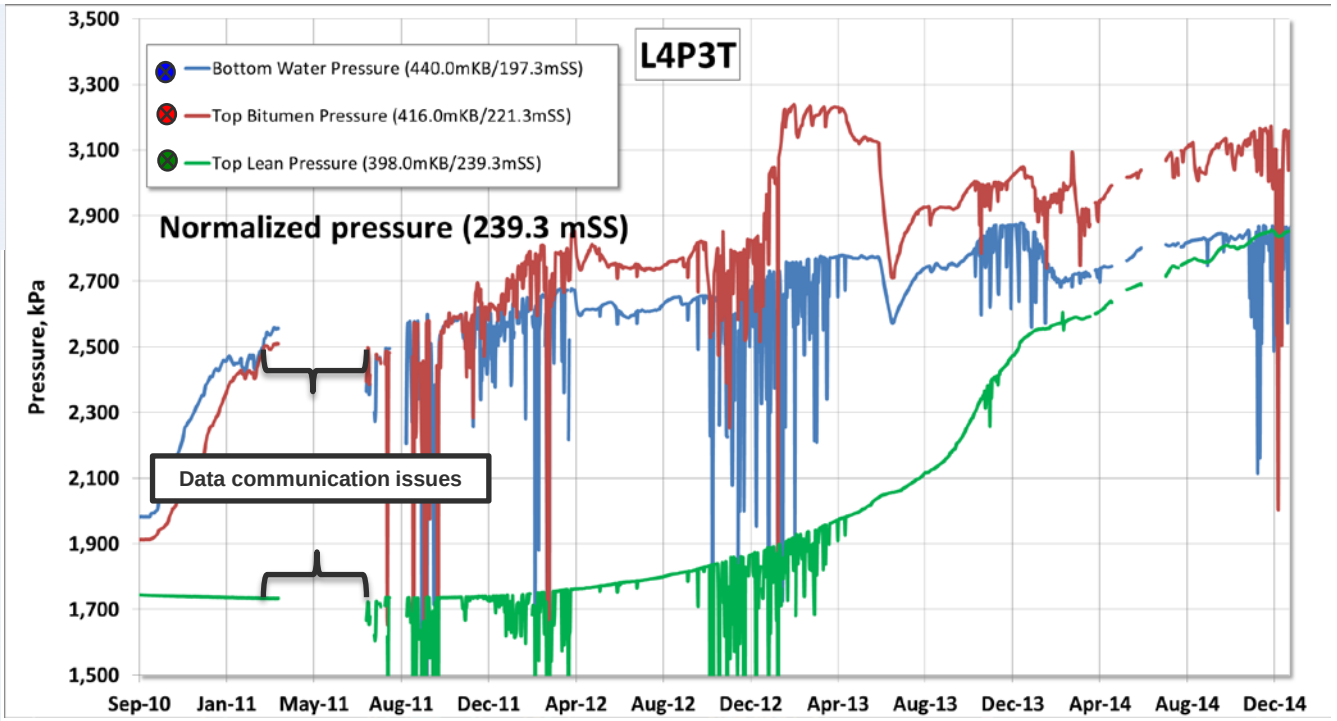
L4P1 Metering Challenges

- Steam injection and produced water rate curves deviated as a function of L4P1 performance. Well conditions impacted the performance of the water cut analyzer.
- However, despite this deviation the net oil and net water proration factors for those months are still within the limits defined for the AER.

SCHEME PERFORMANCE

Pad L4 OBS Well Pressure Profile – 102/16-28-078-10W4/0





Pad L4 operating pressure strategy for 2015: maintain an optimal pressure differential between the bottom water and SAGD chamber.

SCHEME PERFORMANCE

Pad L4 Highlights

- First steam November 2010
- 5 well pairs in SAGD mode
- Average 2014 iSOR of 2.86
- Pad cSOR of 3.04 up to December 31, 2014

SCHEME PERFORMANCE

Wellhead Steam Quality

- Steam quality lost during transportation to well pads due to heat losses
  - Wellhead steam quality estimated at 95%
- Steam is delivered to pads at about 7,000 – 9,000 kPa and is currently dropped to 5,000 kPa at the pad prior to injection at a specific injection wellhead

SCHEME PERFORMANCE

Leismer Lessons Learned → SAGD

- High plant reliability helped achieve successful SAGD ramp-up
- Integrated reservoir surveillance is a key factor in optimization of well pair performance
- Gaining understanding of LDA performance over long term (i.e. effects of lean and bottom water zones)
- Temperature response and upward steam chamber development suggests shale baffles can be overcome

SCHEME PERFORMANCE

Leismer Pad Abandonments

- No pad abandonments anticipated at Leismer within next five years

FUTURE PLANS

Subsurface Section 8

Leismer 2015 Annual Performance Presentation

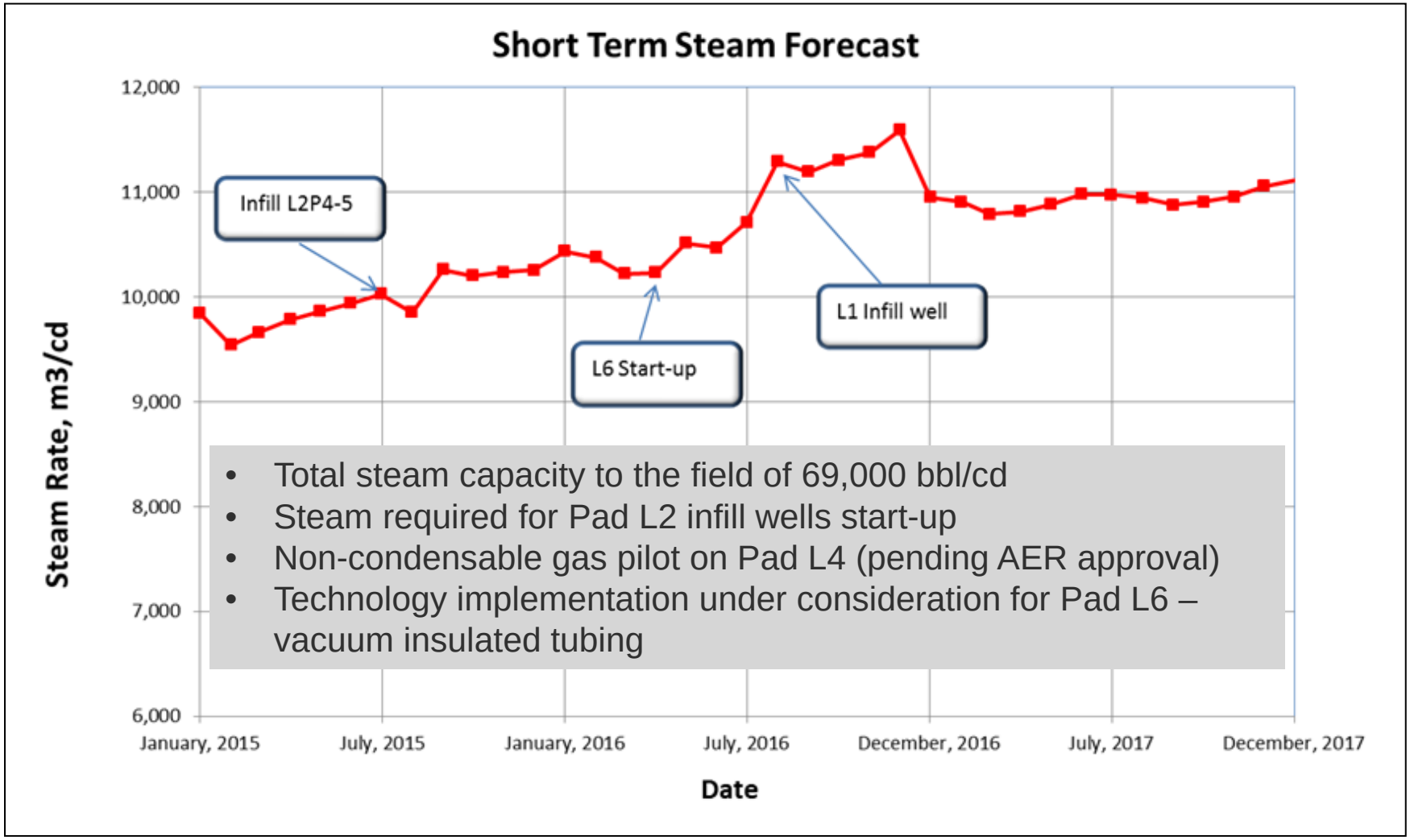
SUBSURFACE – FUTURE PLANS

Leismer Future Development Plans

- Testing non condensable gas co-injection on Pad L4
- Pad L2 infill wells production in Q1/Q2 2015
- Pad L1 infill well drilling during Q2/Q3 2015; first steam Q3 2016
- Pad L6 completions Q4 2015; first steam Q2 2016

SUBSURFACE – FUTURE PLANS

Leismer Steam Requirements



- Total steam capacity to the field of 69,000 bbl/cd
- Steam required for Pad L2 infill wells start-up
- Non-condensable gas pilot on Pad L4 (pending AER approval)
- Technology implementation under consideration for Pad L6 – vacuum insulated tubing

There's never been a better time for good ideas

Presentation: Leismer 2015 Annual Performance Presentation (D054) to Alberta Energy Regulator

Presenters name: Anne Downey et al.
Presenters title: VP Operations, Statoil Canada Ltd.
E-mail address: andow@statoil.com
Tel: 403-767-4170

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Statoil

Statoil Canada Ltd.
Leismer SAGD Project
Approval No. 10935P

Leismer SAGD 2015 (January 1 – December 31, 2014)
Annual D054 Performance Presentation
Alberta Energy Regulator
March 9, 2015

SURFACE

Table of Contents

Statoil

FACILITIES

Surface Section 1

Leismer 2015 Annual Performance Presentation

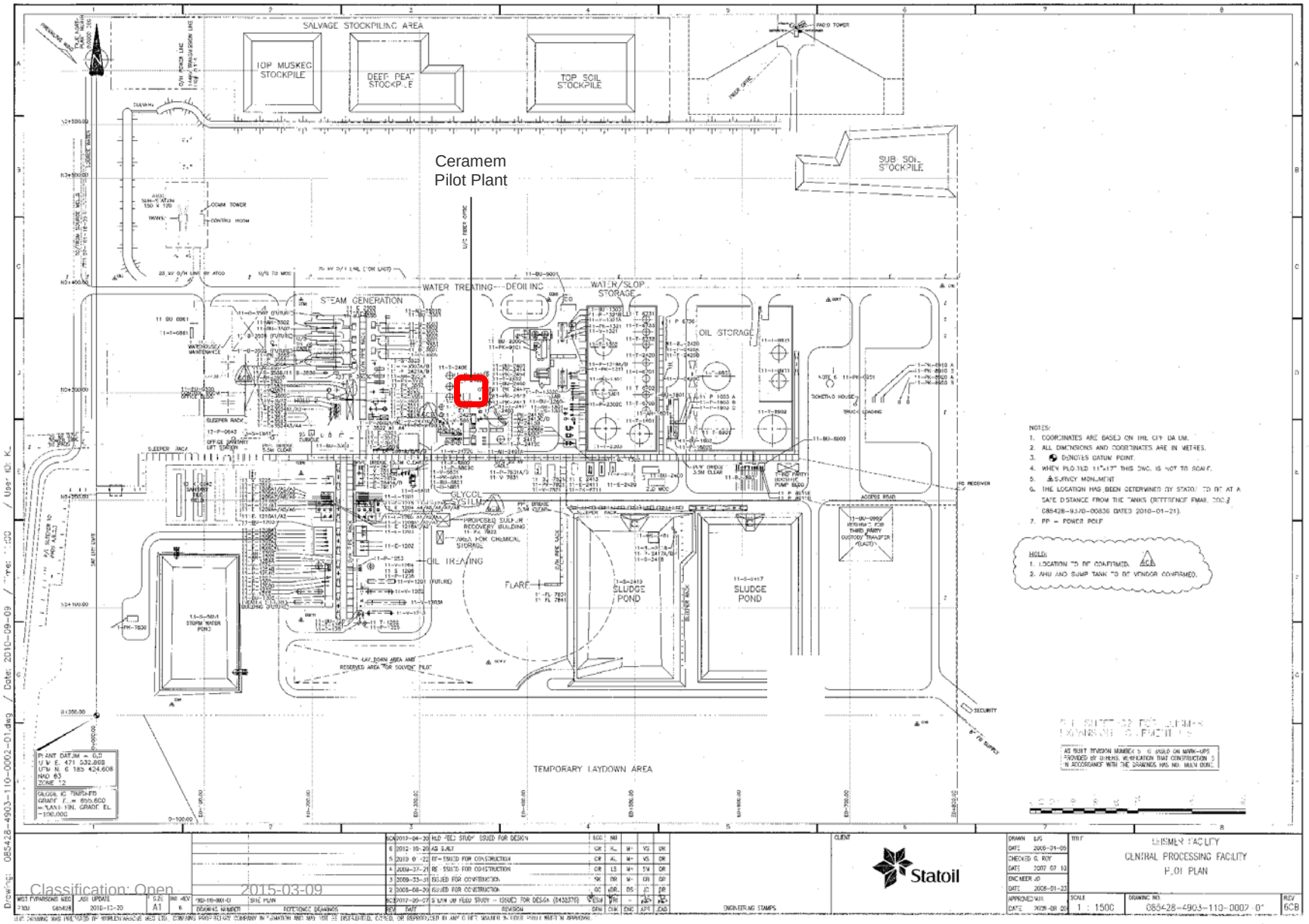
FACILITIES

Leismer Central Processing Facility (CPF)

Statoil

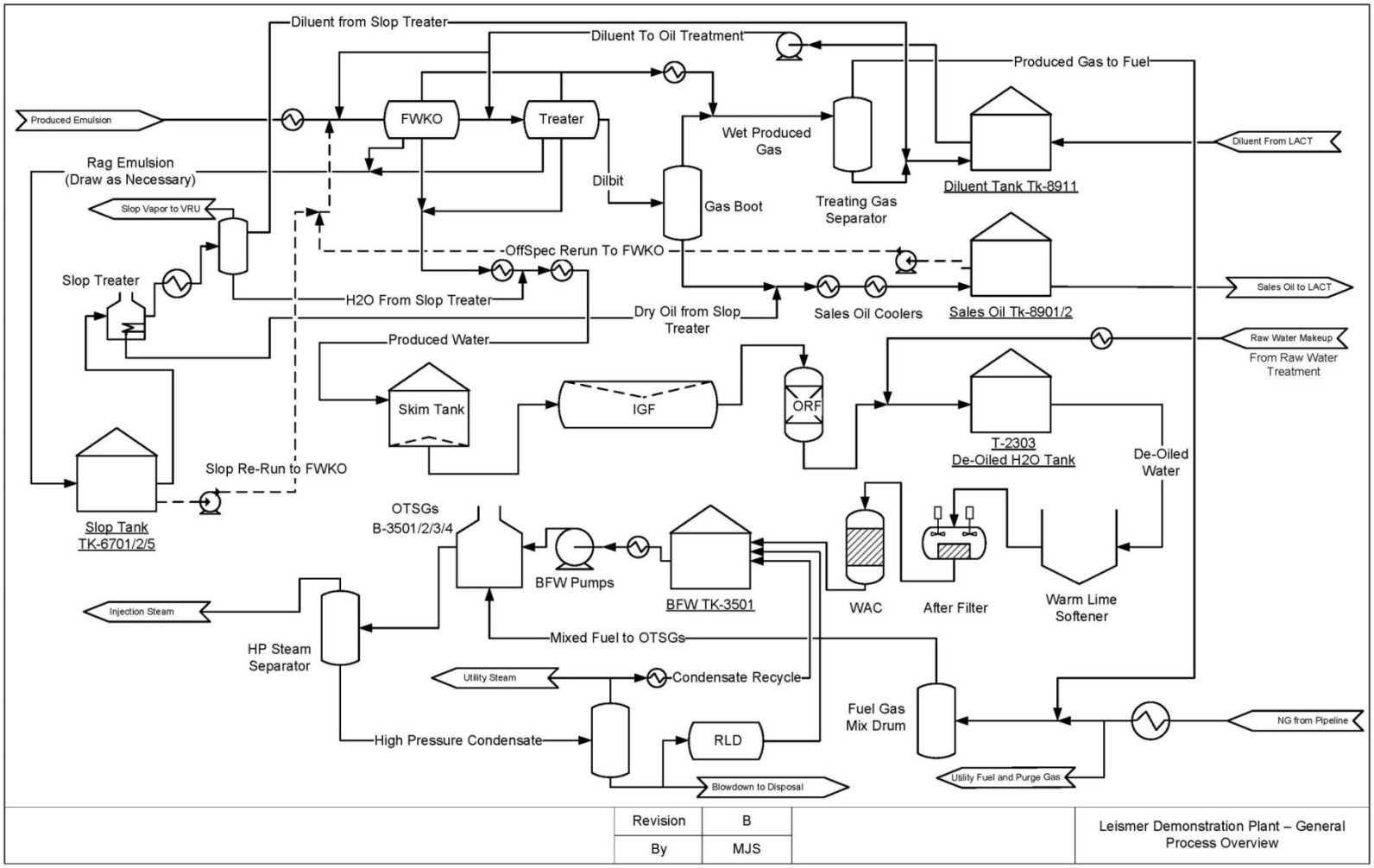
FACILITIES

CPF Plot Plan



FACILITIES

Simplified Leismer Plant Schematic



Statoil

FACILITIES PERFORMANCE

Surface Section 2

Leismer 2014 Annual Performance Presentation

FACILITIES PERFORMANCE

Bitumen Treatment

- Treater and Free Water Knock Out (FWKO) operations
  - Production train consists of one FWKO and two treaters
  - Achieved high unit reliability throughout year
  - Cleaned and inspected inlet emulsion and BFW exchangers
  - No major issues to report
- Chemical treatment
  - Chemical treatment optimized throughout the year
- Produced Water (PW) coolers
  - Fouling of coolers continues to be a challenge
  - Boiler blowdown cleaning system installed. Reduced acid cleanings by ~30%
  - On-going testing of chemical injection prior to coolers
- Slop volumes
  - Small volumes of slop being generated

FACILITIES PERFORMANCE

Water Treatment

- De-Oiling
  - No major issues to report; system operating as per design
- Warm Lime Softener (WLS) operations
  - Minor operational challenges throughout the year
  - Continue to optimize recycle
  - Blowdown recycle into WLS with no adverse affects; adjust recycle to meet water specifications
  - Meeting Boiler Feed Water (BFW) specifications >95% of the time
  - Process sludge pond primary liner leak – operating at lower volumes as dual liner design and additional clay layer ensures containment. Repair options still under review

FACILITIES PERFORMANCE

Water Treatment

- Weak Acid Cation (WAC) Operation
  - No major issues to report, system operating as per design
  - WAC throughputs extended to reduce chemical usage
- Ceramem pilot project commissioned – testing to begin in 2015
- Brackish Water Source
  - June 21, 2014 – system start-up
  - November 17, 2014 – system shut down due to negative reservoir retention
  - System shutdown and left in a safe condition

LEISMER FACILITY PERFORMANCE

Once Through Steam Generators

Statoil

FACILITIES PERFORMANCE

Steam Generation

- System consists of four Once Through Steam Generators (OTSGs)
- Operating at average 80% steam quality
- Steam generators operating as per design
- Issues
  - Experienced a number of tube leaks and pigging spool flange leaks which resulted in short outages for the affected OTSG

FACILITIES PERFORMANCE

Well Pads

- Pad L1 test separator commissioned and put in-service
- Pad L2
  - Infill well L2-P3/4 began drilling August 14, 2014 – first steam to infill December 18, 2014
  - L2P2 observation well drilled and completed
  - L2P2 started steaming October 31, 2014
- Pad L3
  - Fire January 15, 2014
    - Repaired damaged electric and instrumentation cables
    - Root cause – Heat Medium Oil degradation
    - System redesigned, cleaned and complete fluid change out on all 4 pads
  - Solvent co-injection completed December 31, 2014

FACILITIES PERFORMANCE

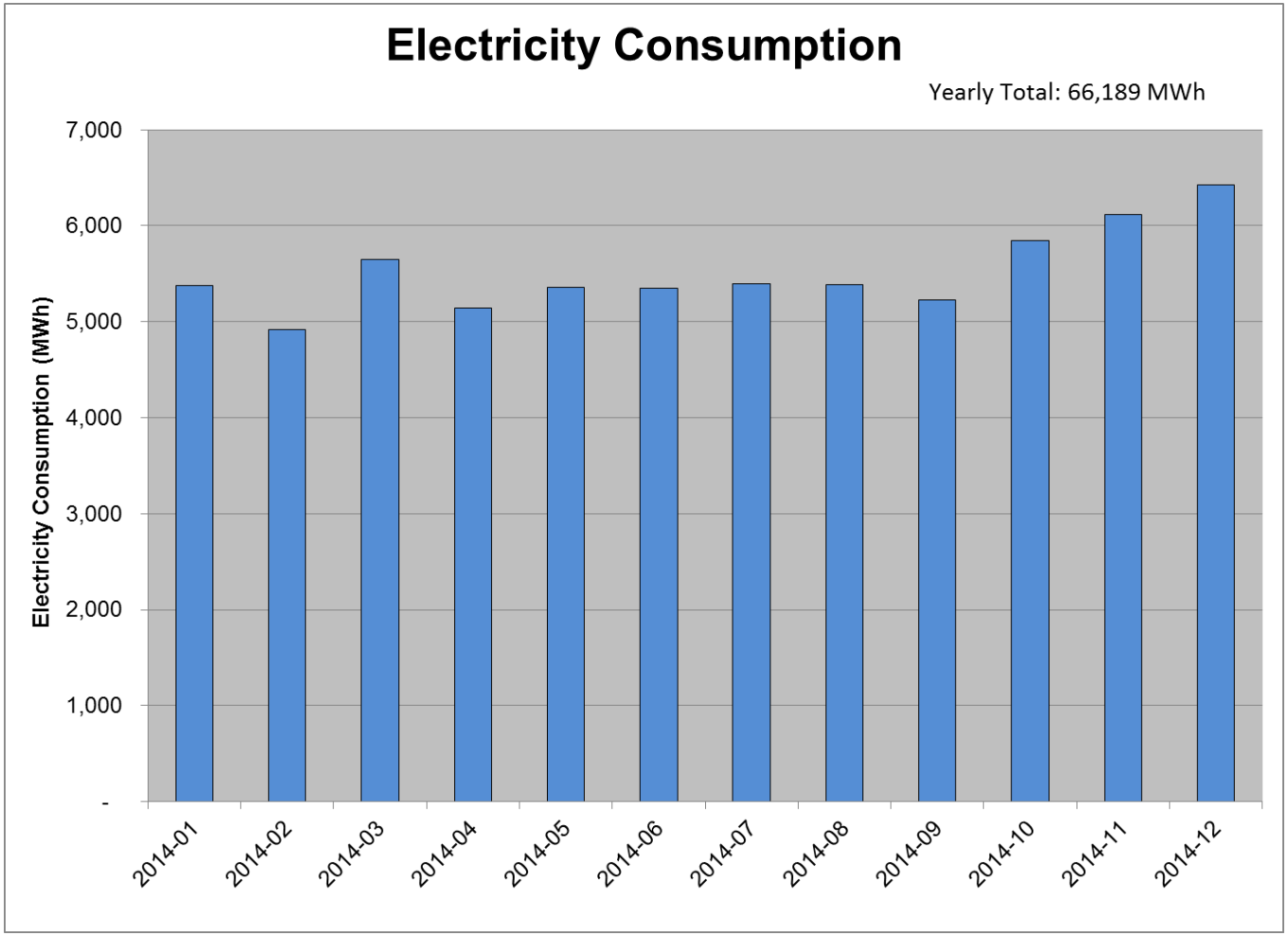
Well Pads

- Pad L5
  - Started steaming May 13, 2014
  - ESP conversions completed October 25, 2014
- Pad L6
  - Construction started in June
  - SAGD well pair drilling completed November 30, 2014
- Issues
  - Heat medium heater modifications complete and heat medium fluid changed out
  - Multi-phase pump (MPP) operations
    - Pad L1 MPP modifications for seal flush in-service
    - MPP on all pads experienced minor maintenance issues that affected reliability

FACILITIES PERFORMANCE

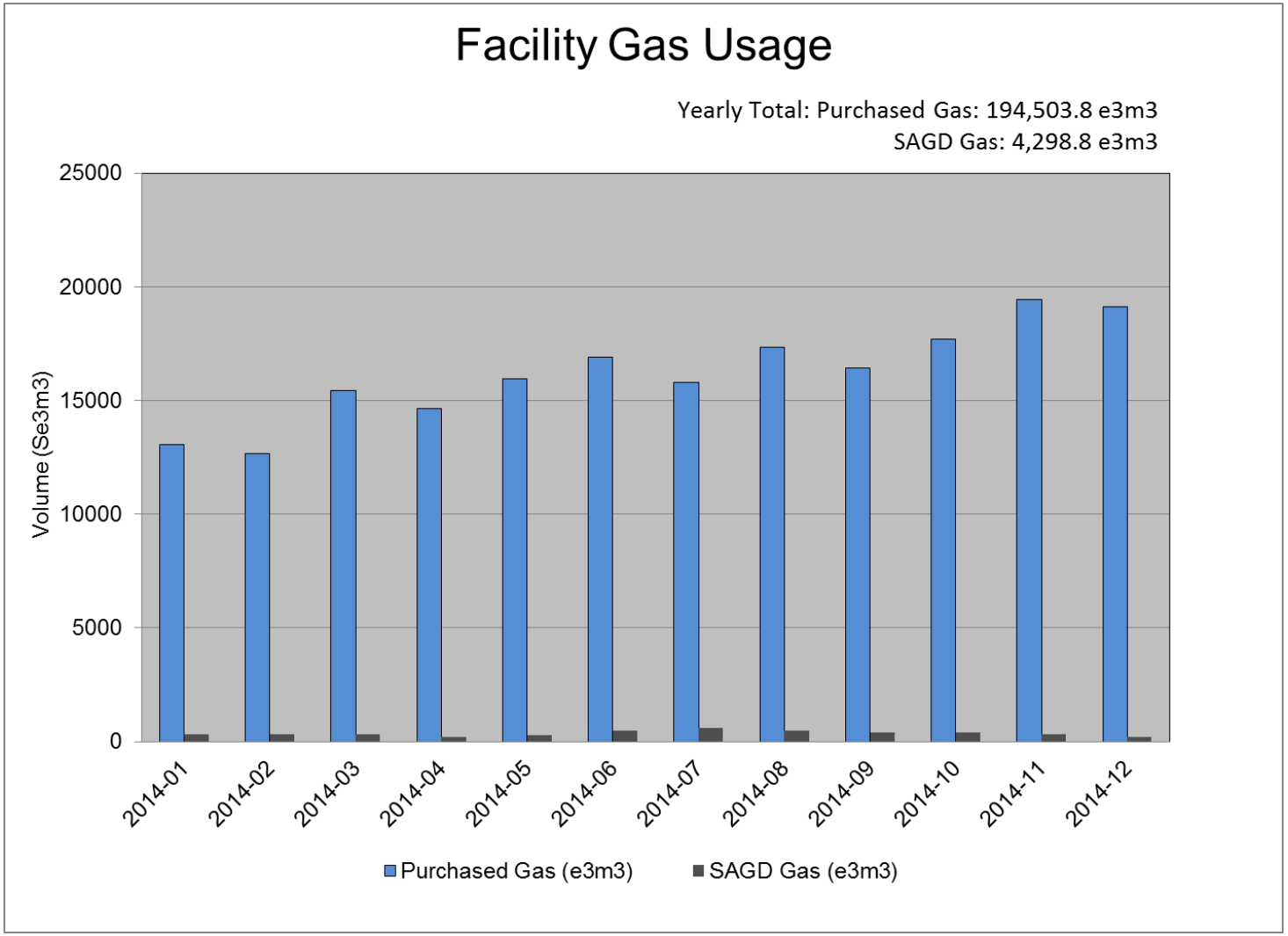
Electricity Consumption

- Currently no independent power generated at Leismer CPF



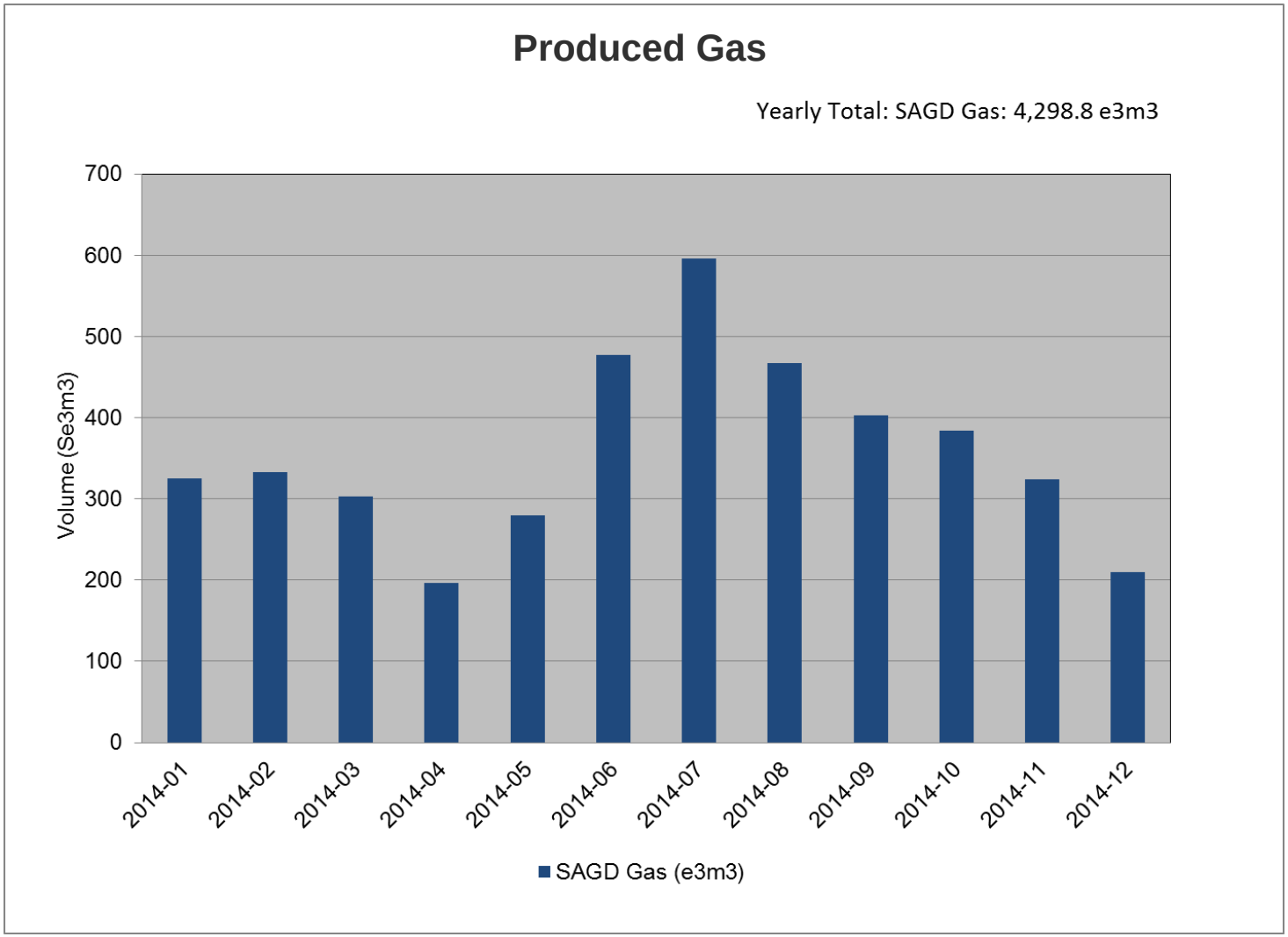
FACILITIES PERFORMANCE

Facility Gas Usage – Purchased Gas



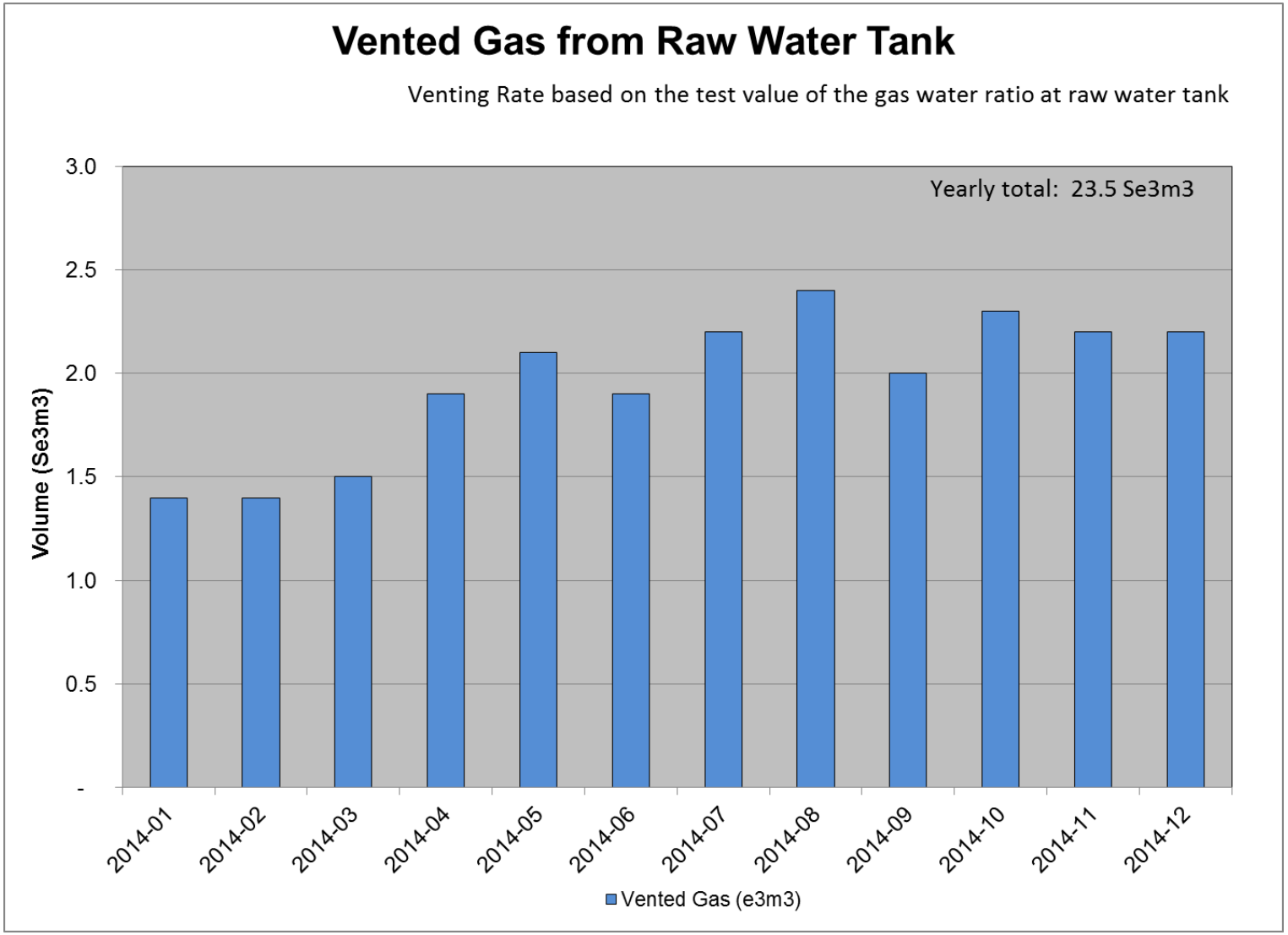
FACILITIES PERFORMANCE

Produced Gas



FACILITIES PERFORMANCE

Facility Gas Usage – Continuous Venting



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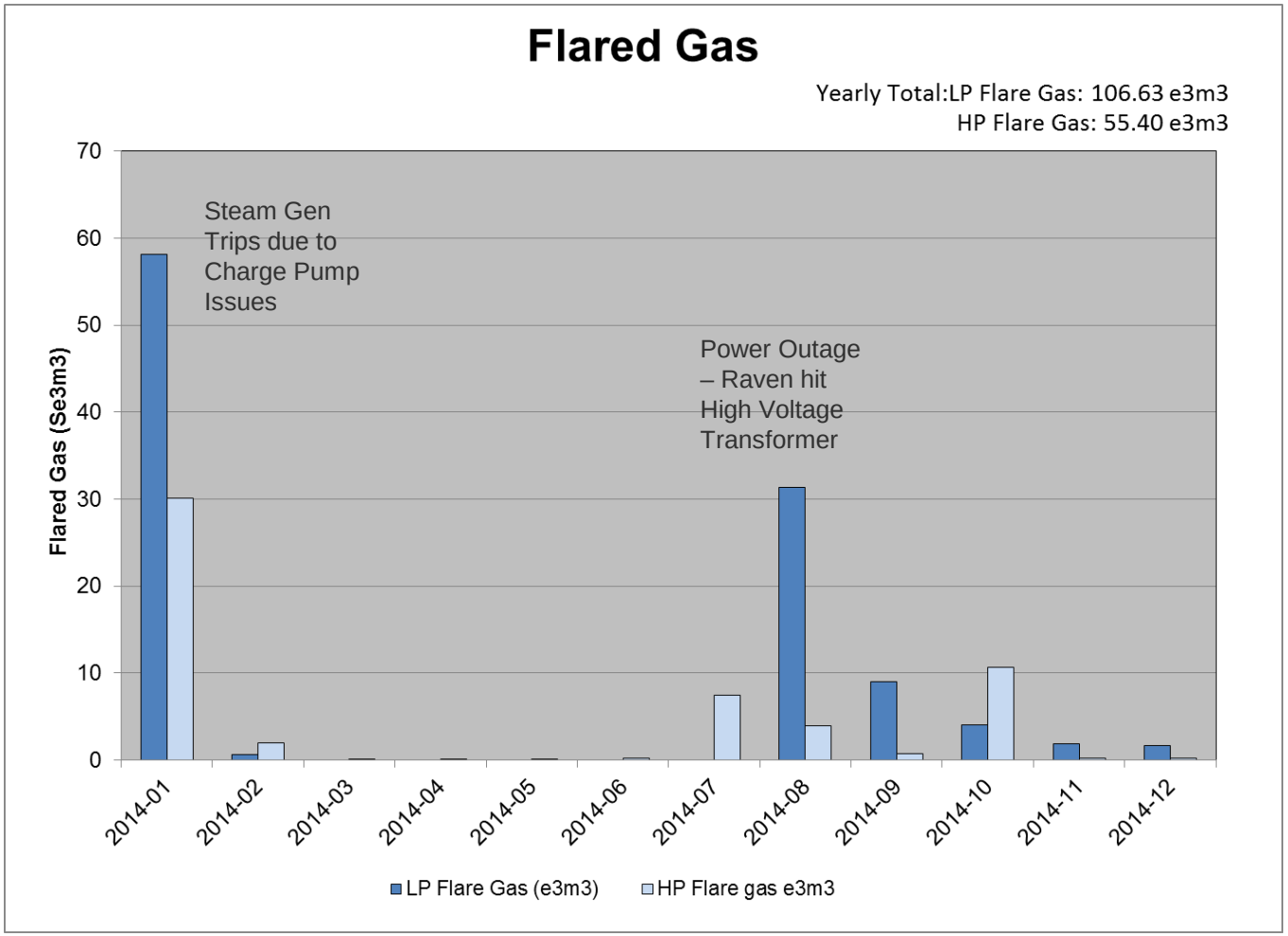
FACILITIES PERFORMANCE

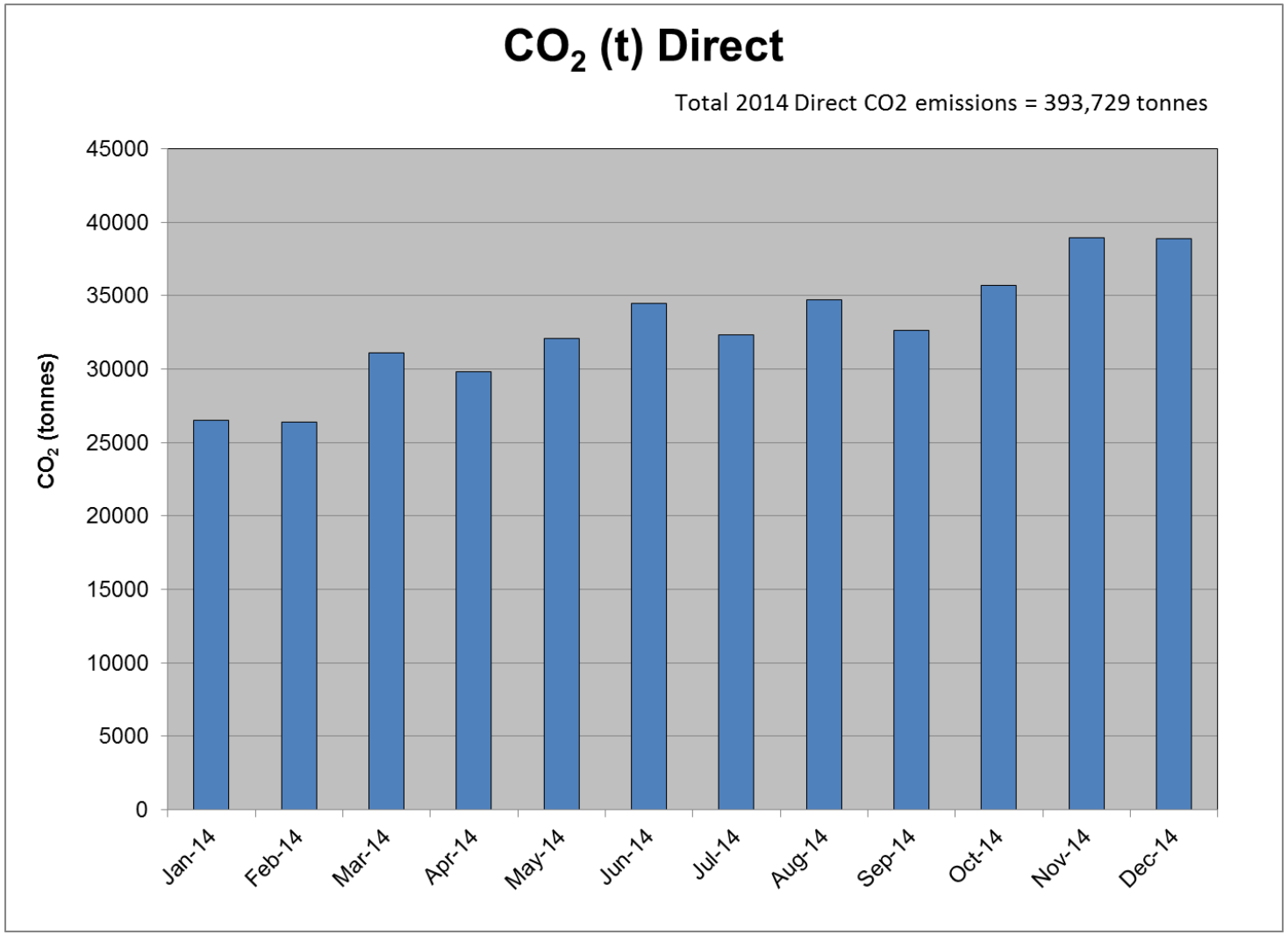
Gas Flaring

- Solution gas recovery percentage was 96.2%



FACILITIES PERFORMANCE

CO_2 Emissions



LEISMER FACILITY PERFORMANCE

Plant Performance and Expectations

- Surface facilities have operated close to design
- Reliability continues to be significantly higher than anticipated
- Overall plant performance has met expectations

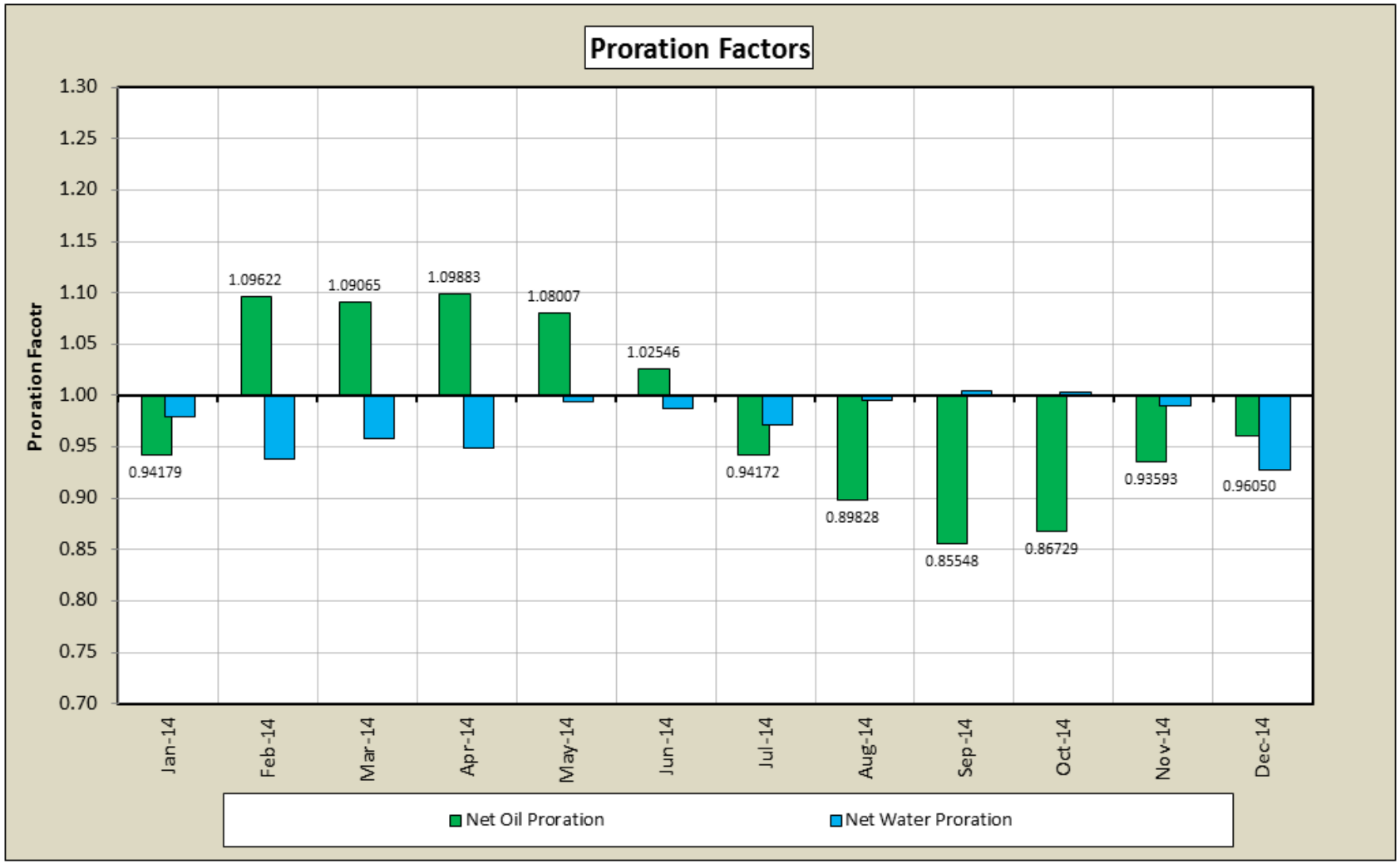
MEASUREMENT AND REPORTING

Surface Section 3

Leismer 2015 Annual Performance Presentation

MEASUREMENT AND REPORTING

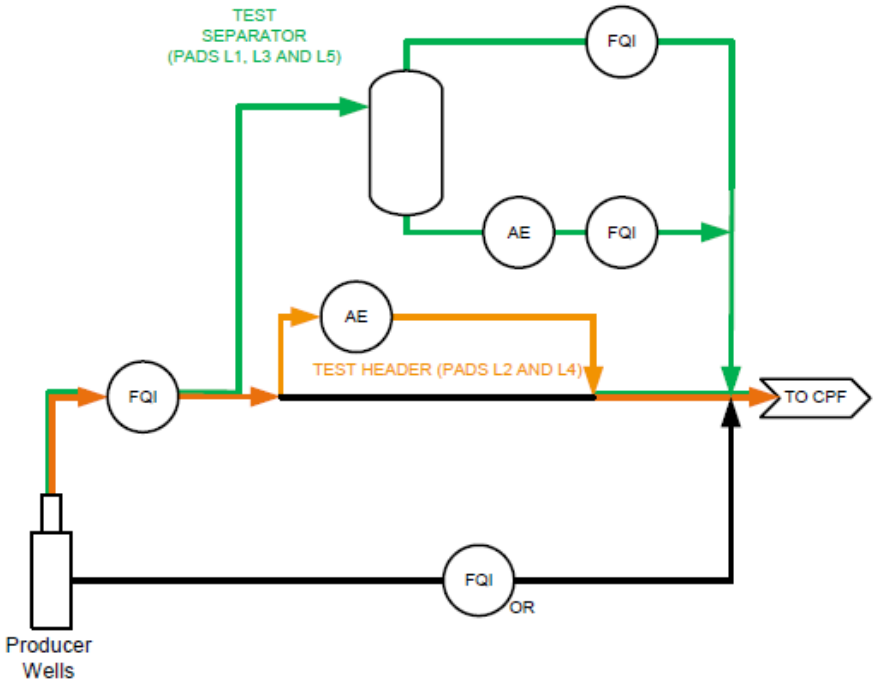
Proration Factors



MEASUREMENT AND REPORTING

SAGD Well Testing

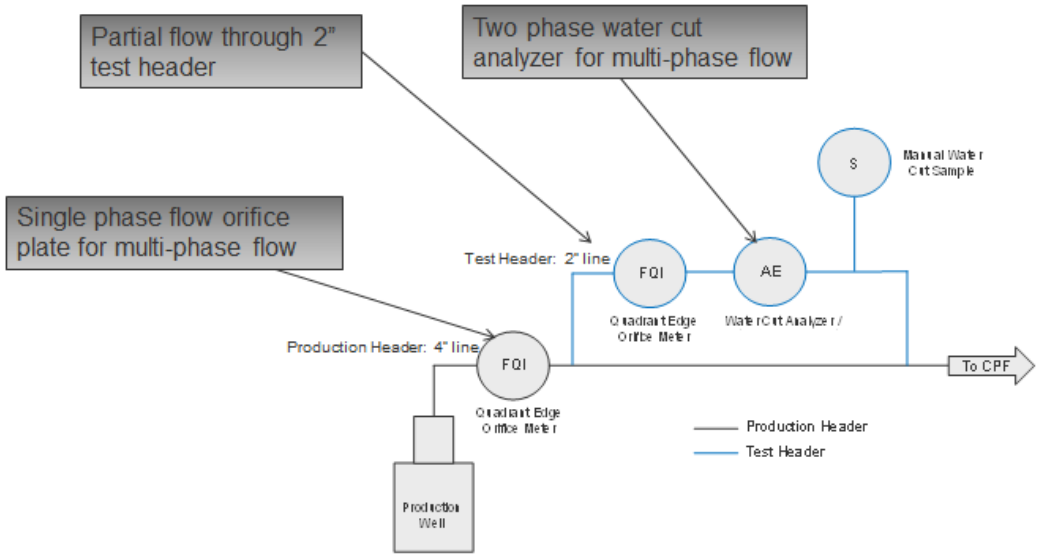
- Well tests used to calculate daily bitumen and water production
- Well test frequency increased (11 hours well tests with 1 hour purge) to improve production calculation
  - Typical frequency is 6 – 7 per month per well
- All pads are equipped with a water cut analyzer
  - L2/L4 rates = water cut x FQI at individual wellhead
- Pads L1, L3 and L5 are equipped with a test separator



MEASUREMENT AND REPORTING

SAGD Well Testing Bottlenecks and Optimization

- Bottlenecks
  - Partial flow through 2” test header
  - Single phase flow devices for multiphase flow
  - Relying on two phase water cut analyzer for multiphase flow



- Optimization
  - Calibration of water cut analyzers on a regular basis
  - Implemented common well testing validation strategy
  - Continuous analysis of well testing data
  - Comparing and evaluating various technologies

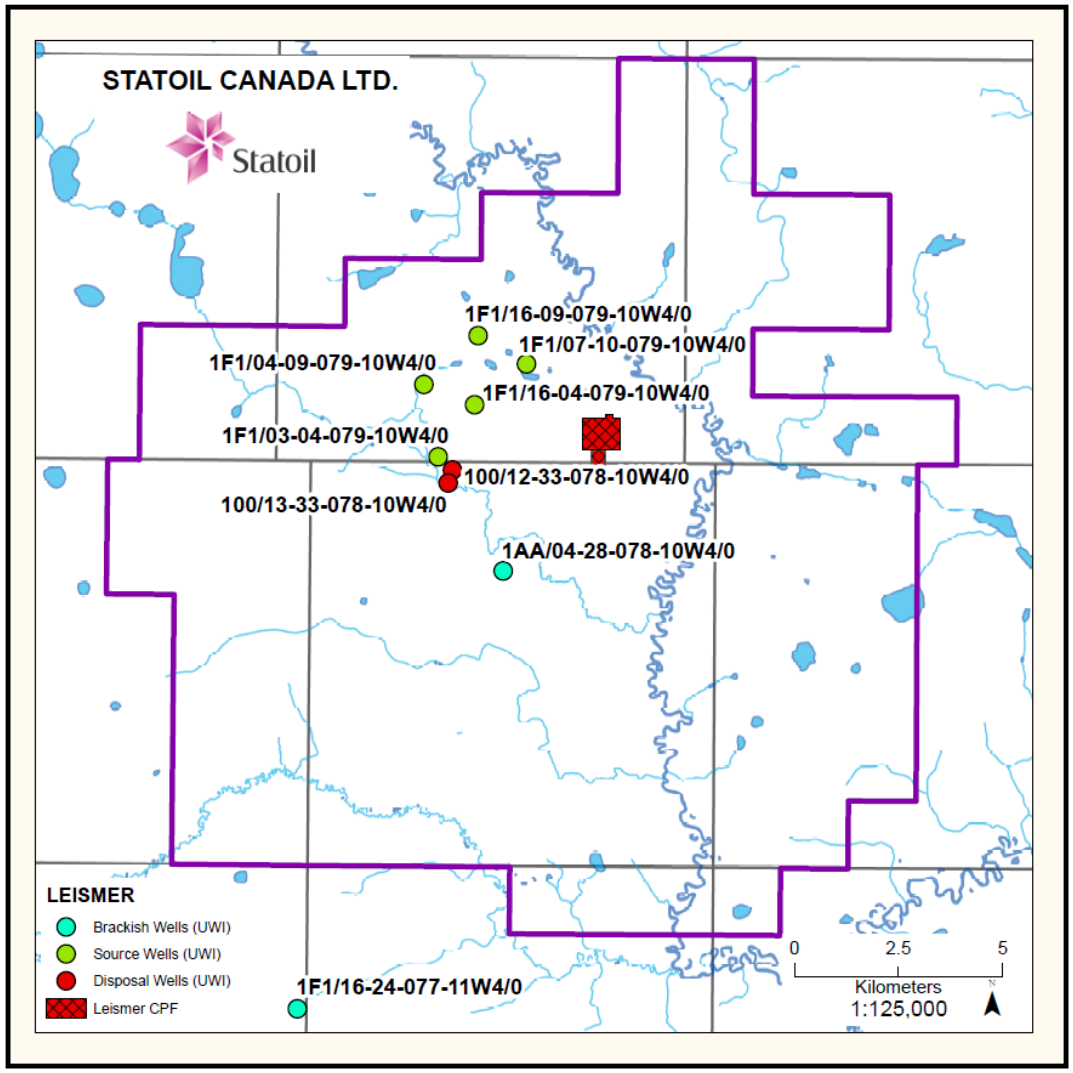
WATER PRODUCTION, INJECTION, AND USES

Surface Section 4

Leismer 2015 Annual Performance Presentation

WATER PRODUCTION, INJECTION, AND USES

Unique Well Identifiers



WATER PRODUCTION, INJECTION, AND USES

CPF Water Use

- Leismer's source water network includes 5 wells completed in Lower Grand Rapids Formation (LGR)
- Clearwater B brackish water well was tied in and first used in 2014

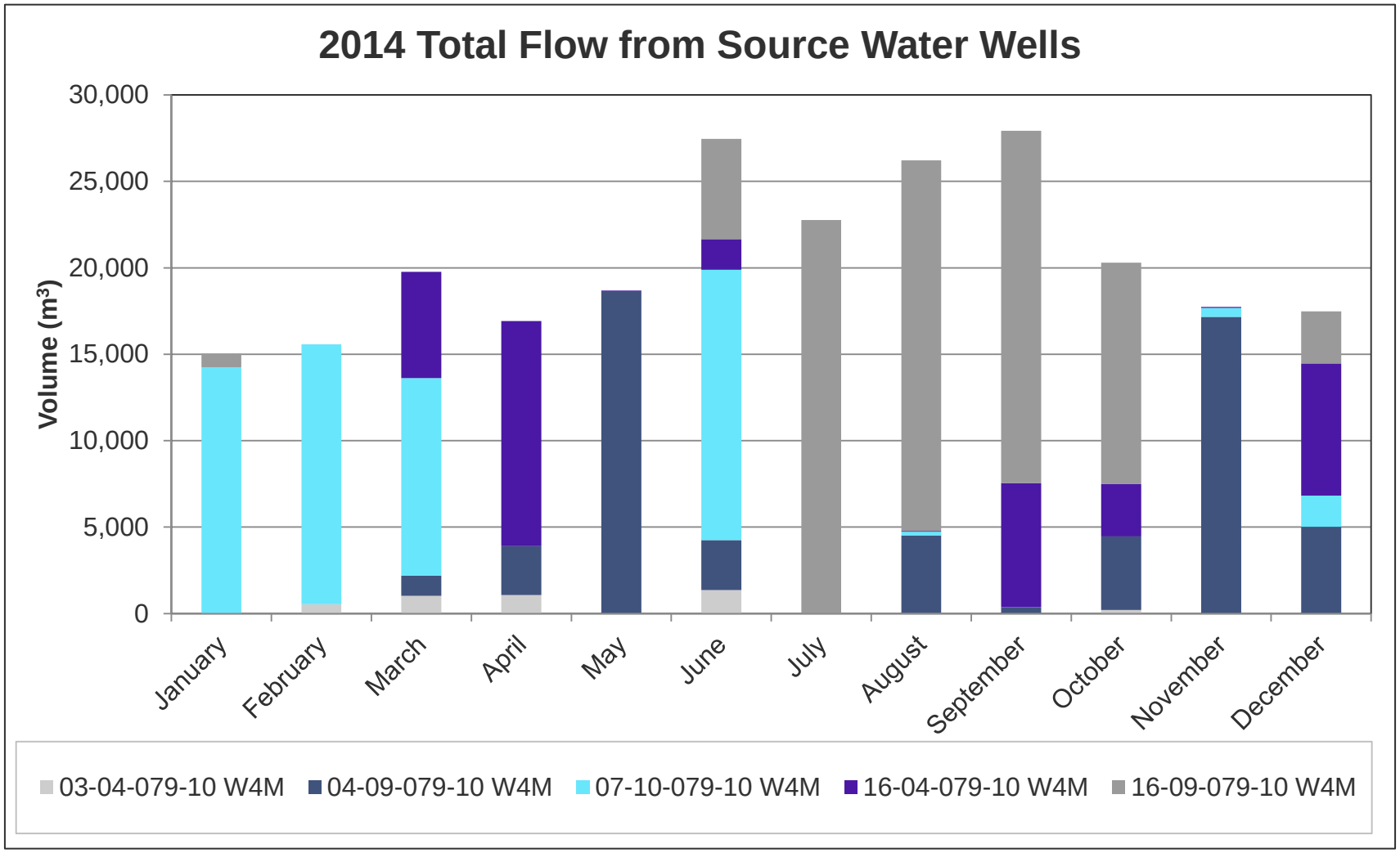
WATER PRODUCTION, INJECTION, AND USES

CPF Water Use

- Water Diversion Licence (WDL) 00239880 for 317,915 m^3/yr (871 m^3/cd)
  - Total non-saline water pumped from source wells at Leismer in 2014 was 245,850 m^3 (674 m^3/d), 77% of allowable WDL amount
    - Of the total amount drawn from the source wells:
      - 97% went to Leismer CPF for process use
      - 2.5% was used for drilling
      - 1% for domestic use
- Temporary Diversion Licence (TDL) 00328877 for 255,500 m^3/yr (700 m^3/cd)
  - No water was used as part of this TDL in 2014
- A total of 5566 m^3 of brackish water was used in 2014

WATER PRODUCTION, INJECTION, AND USES

Lower Grand Rapids Water Volumes



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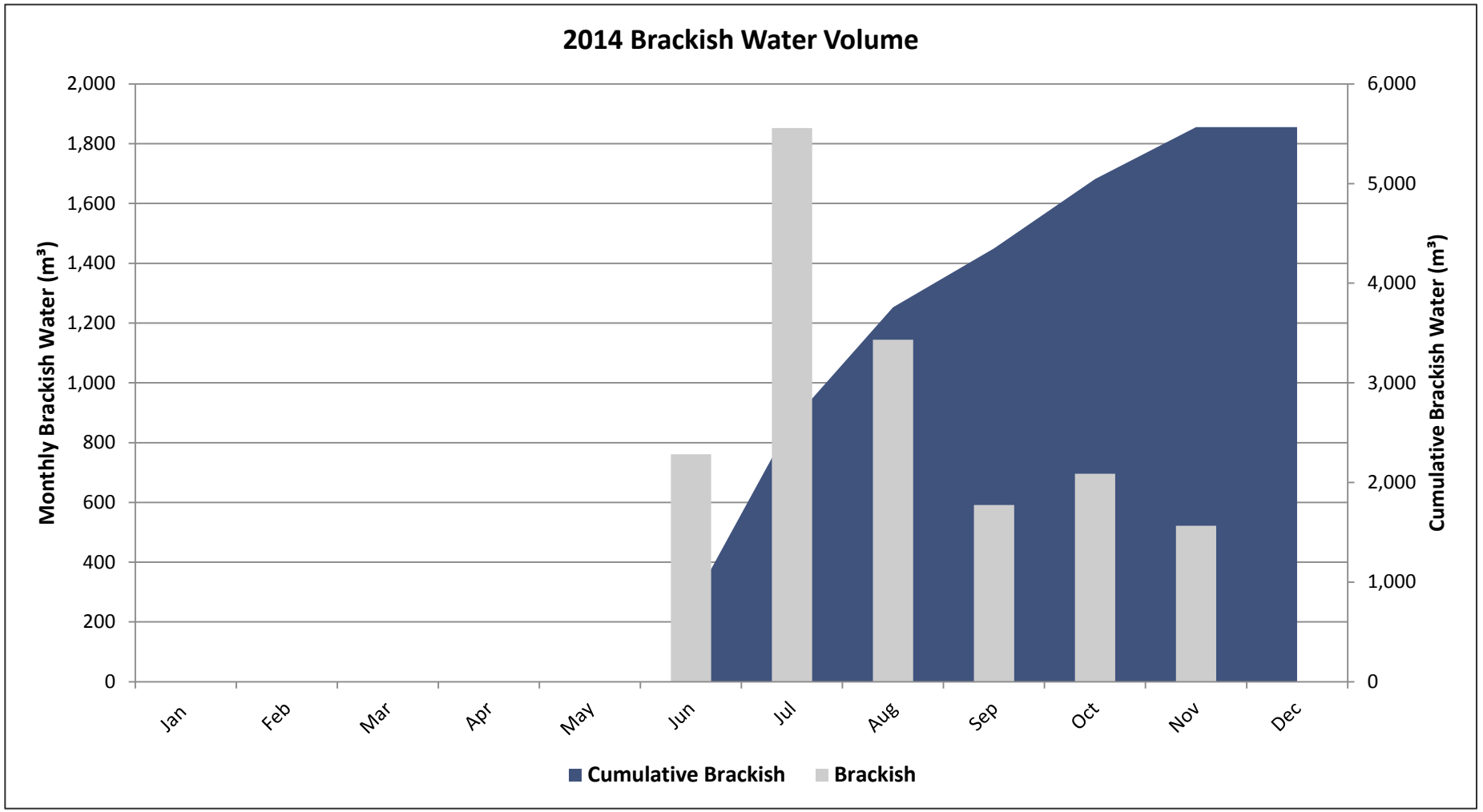
WATER PRODUCTION, INJECTION, AND USES

Clearwater B - Brackish Water Volumes



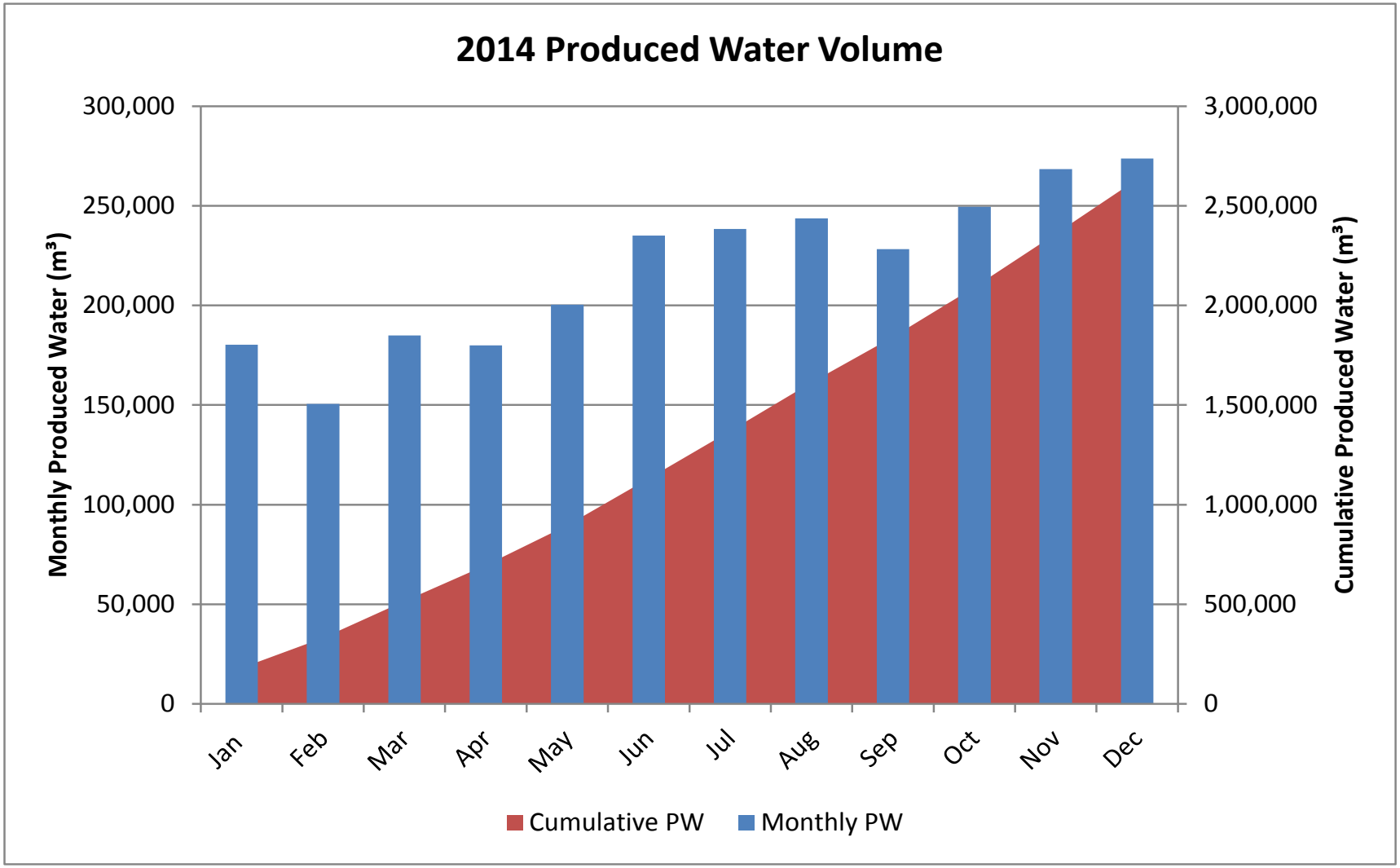
WATER PRODUCTION, INJECTION, AND USES

Typical Water Quality

Parameter	Units	Brackish	Source Water	Produced Water	Disposal Water
TDS	mg/L	5,700	1,450	1,850	45,000
pH		8.5	8.8	7.6	12.1
Hardness	mg/L as CaCO3	70	4.4	18	2.0
Total Alkalinity	mg/L as CaCO3	880	810	230	6,800
SiO2	mg/L	0	0	275	300
Cl	mg/L	2,800	250	850	18,000

WATER PRODUCTION, INJECTION, AND USES

Produced Water



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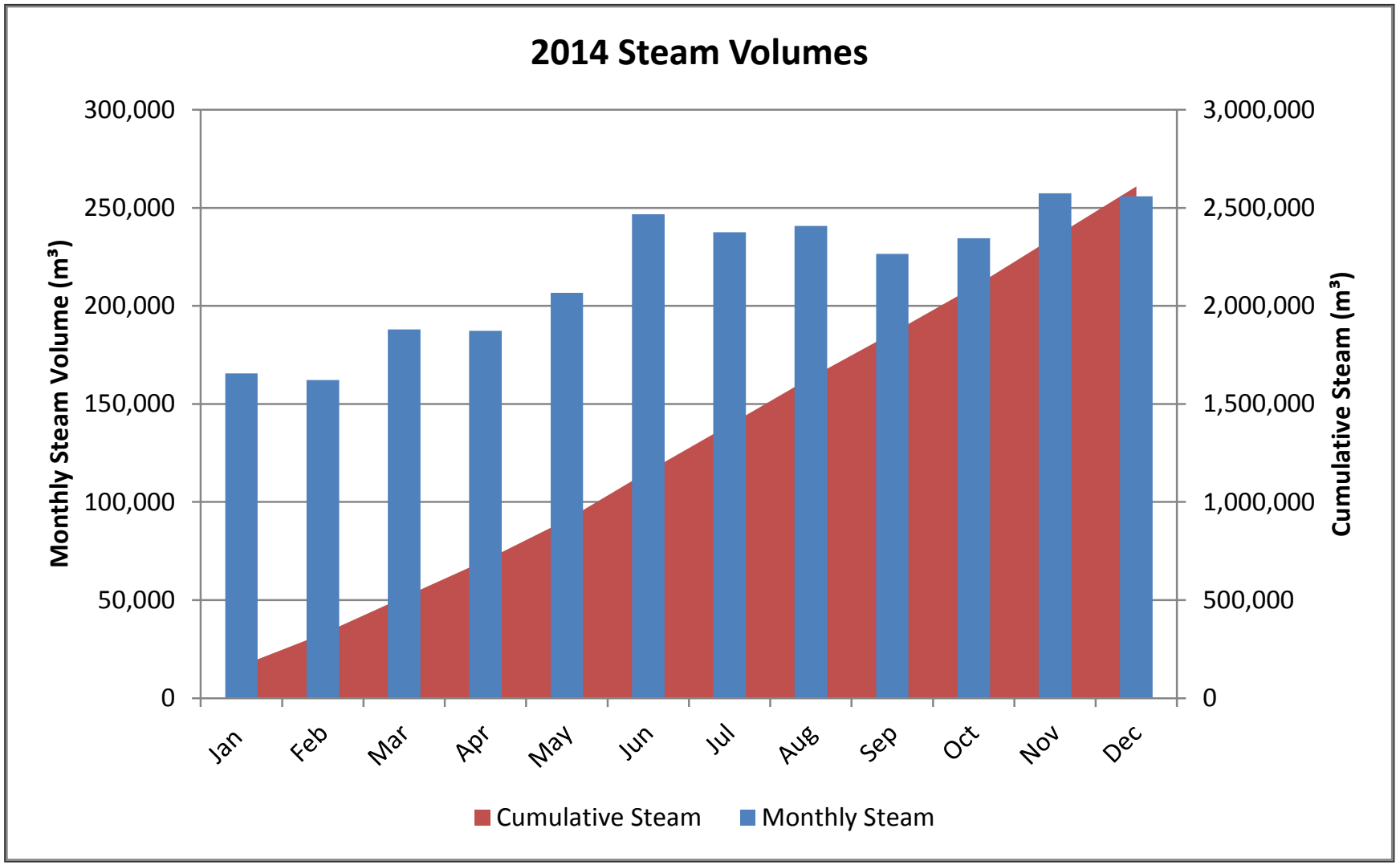
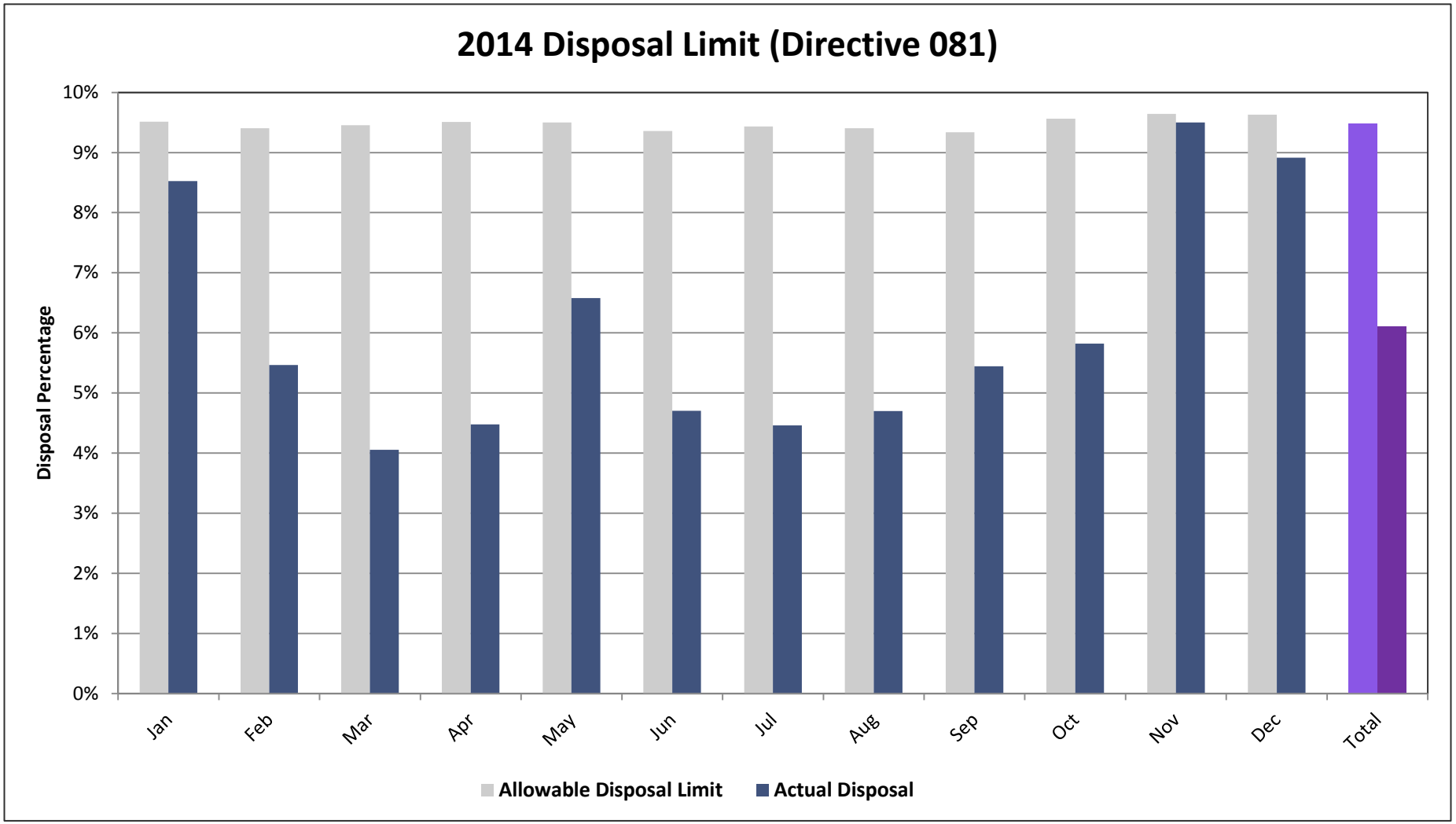
WATER PRODUCTION, INJECTION, AND USES

Injected Steam



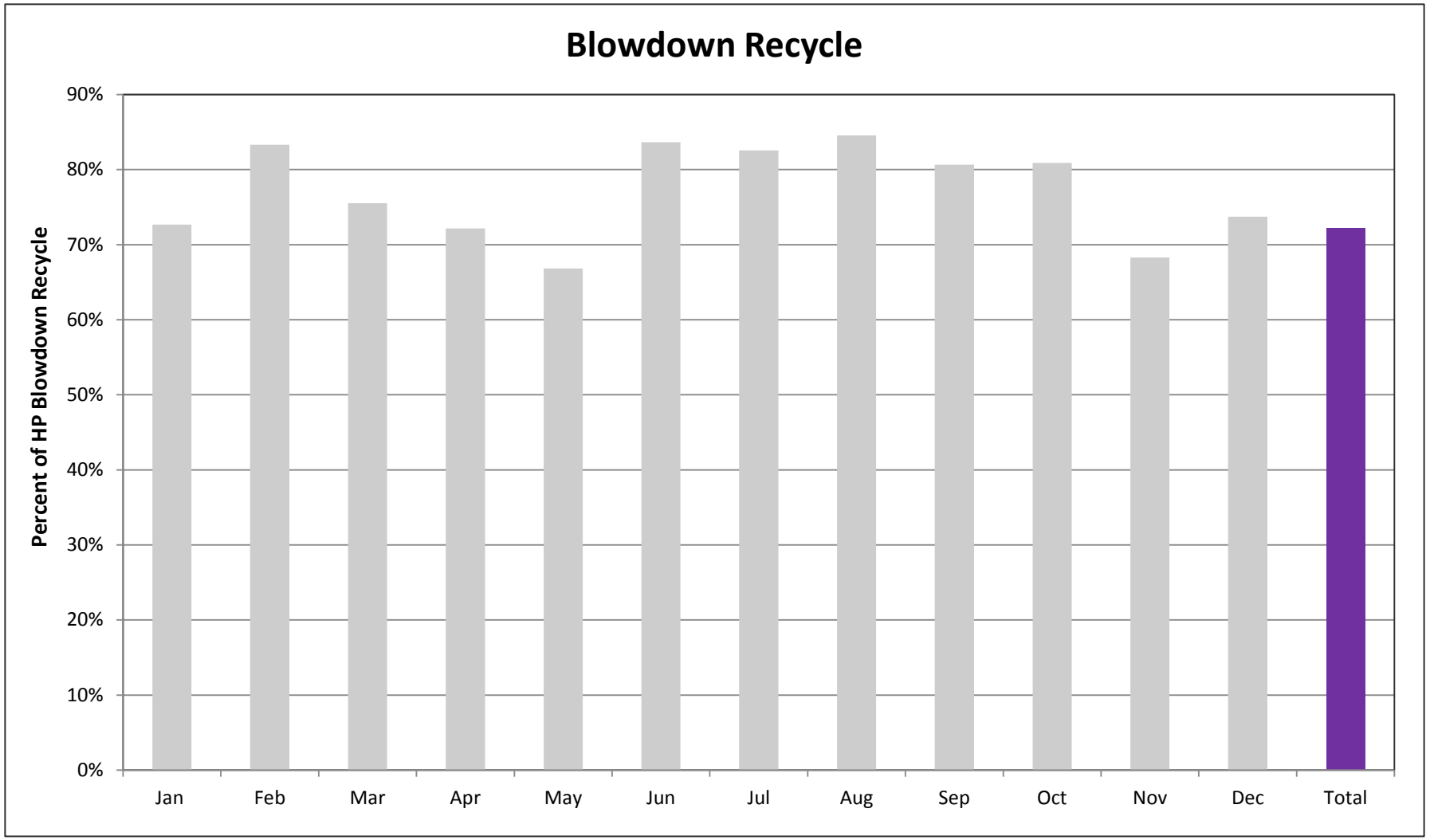
WATER PRODUCTION, INJECTION, AND USES

Disposal Limit (Directive 081)



WATER PRODUCTION, INJECTION, AND USES

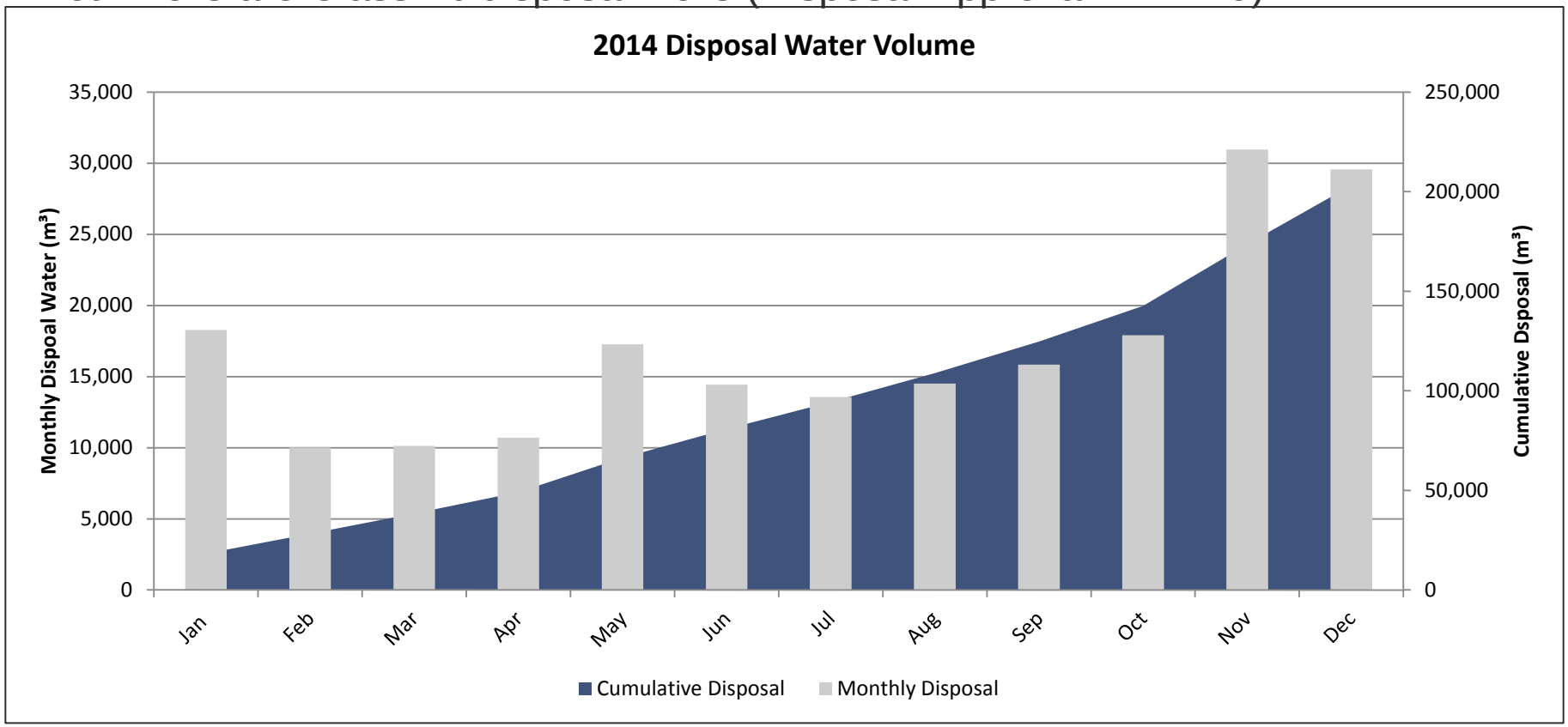
Blowdown Recycle Percentage



WATER PRODUCTION, INJECTION, AND USES

Disposal Volumes

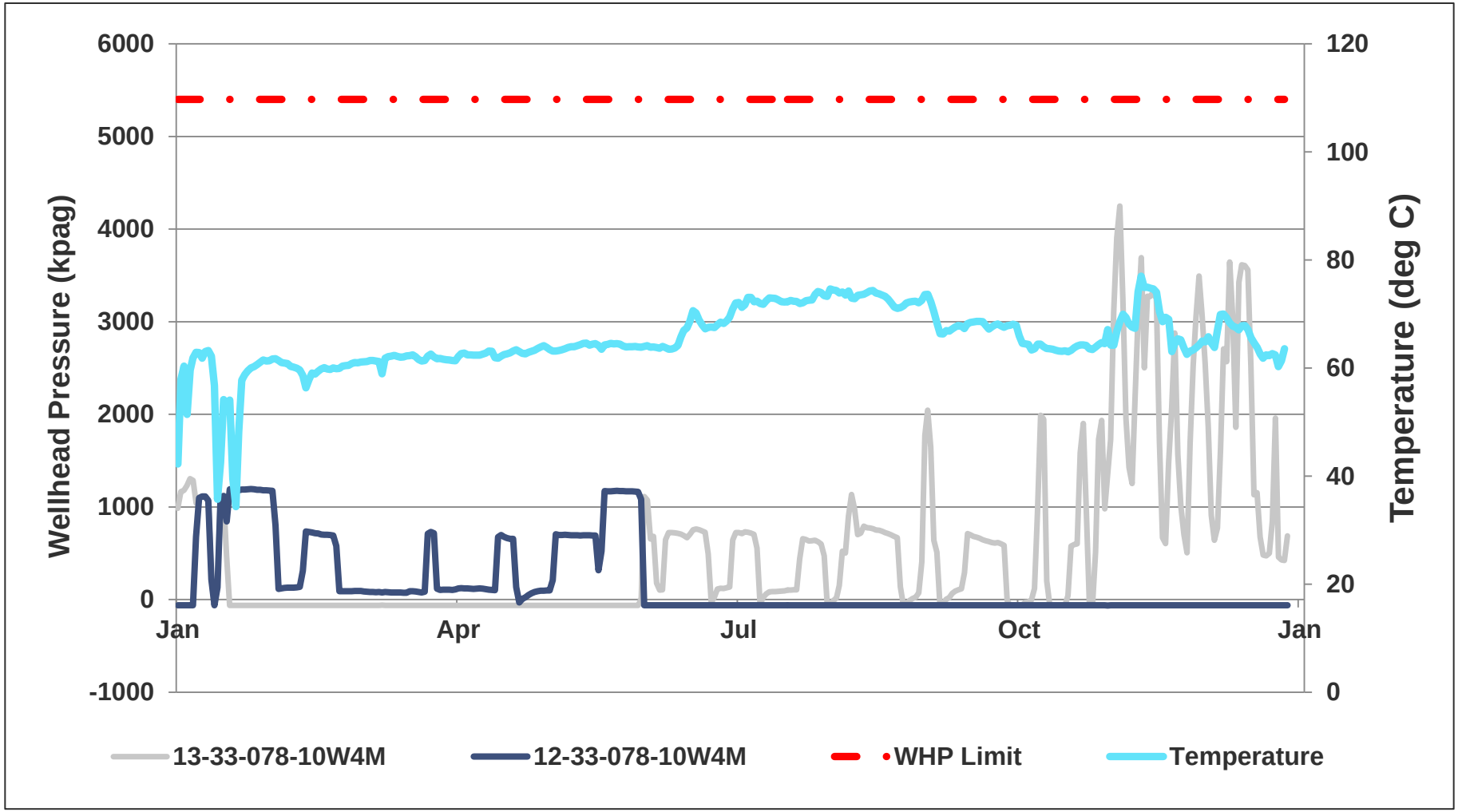
- Leismer has two disposal wells on site (one operating, one standby)
- Both wells are Class 1b disposal wells (Disposal Approval # 11479)



Statoil

WATER PRODUCTION, INJECTION, AND USES

Disposal Pressure and Temperature



Statoil

WATER PRODUCTION, INJECTION, AND USES

Off-site Waste Disposal

- Slop Handling – 3,480 m^3 of water was trucked off site with slop oil to the Lindbergh cavern facility
- Solids Disposal
  - Water treatment related solids (lime softening sludge) is allowed to settle in the sludge pond at site

SULPHUR PRODUCTION

Surface Section 5

Leismer 2015 Annual Performance Presentation

SULPHUR PRODUCTION

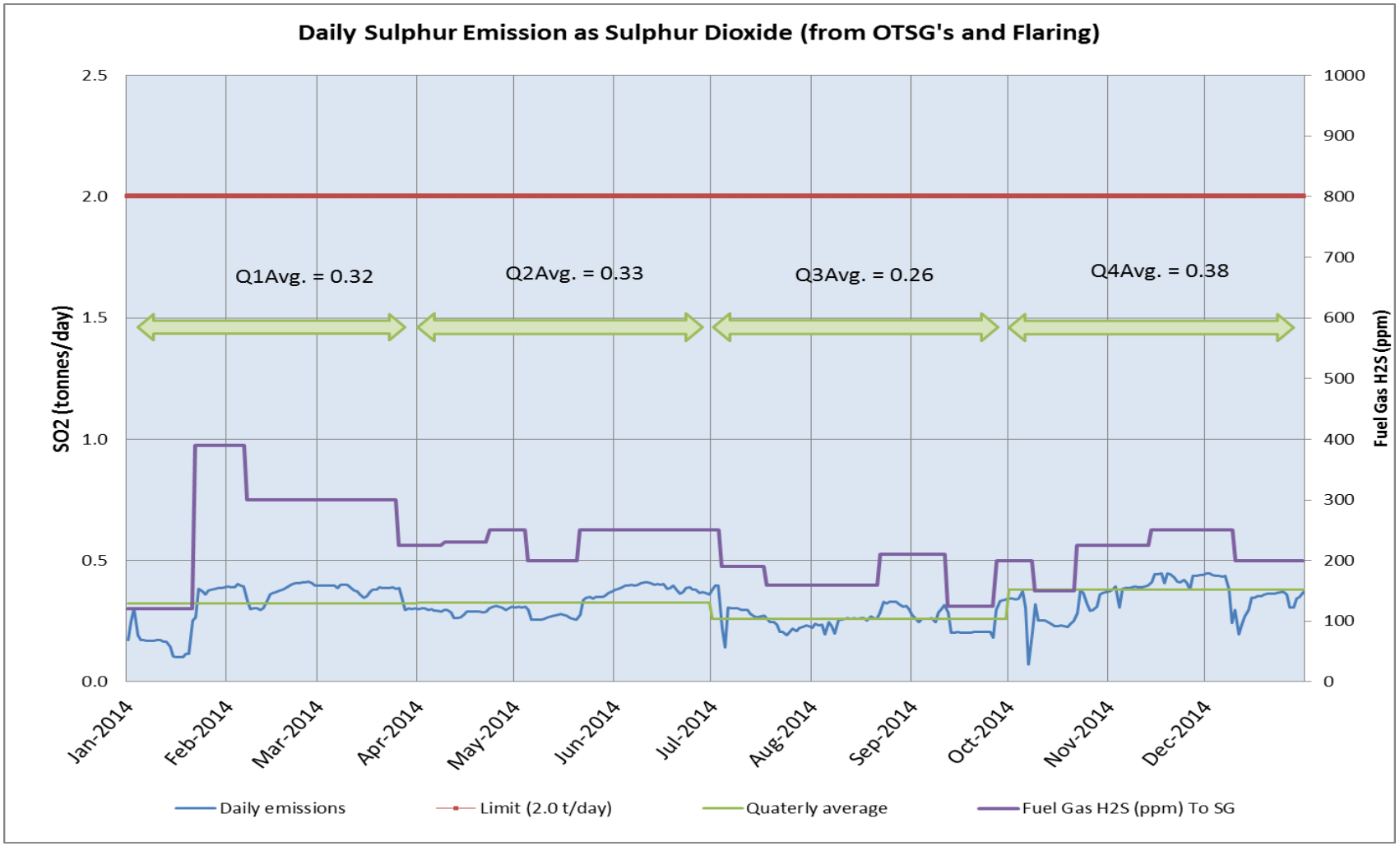
Sulphur and Sulphur Dioxide

- Leismer average daily sulphur dioxide (SO_2) emissions 0.31 tonnes/day (15.7% of approval limit)[1]
- Total annual SO_2 emissions for 2014 – 114.9 tonnes
- Leismer peak daily SO_2 emission – 0.45 tonnes
- Leismer does not currently have sulphur recovery facilities
- Statoil shall ensure that sulphur recovery will be operational before total sulphur emissions reach one tonne/day on a calendar quarter-year average basis

[1]EPEA Kai Kos Dehseh approval limit is 2.0 tonnes/calendar day of SO_2 emissions

SULPHUR PRODUCTION

Annual Trend of Sulphur Dioxide Emissions



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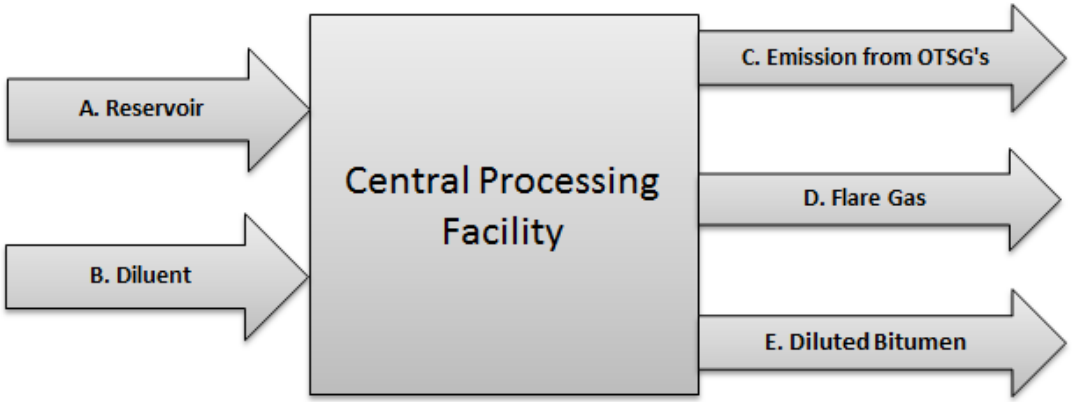
SULPHUR PRODUCTION

Leismer Sulphur Balance



Sulphur Balance (tonnes S)

Month	Sulphur from Reservoir	Sulphur from Diluent Receipts	Emissions from OTSG's	Emissions from Flare Gas	Sulphur in Diluted Bitumen
Jan 2014	3135	1.7	3.3	0.292	3133
Feb 2014	3062	2.1	5.2	0.009	3059
Mar 2014	3918	2.8	5.8	0.000	3915
Apr 2014	3538	2.6	4.4	0.000	3536
May 2014	3702	2.1	4.7	0.000	3699
Jun 2014	3781	1.9	5.8	0.001	3777
Jul 2014	3615	2.2	4.1	0.017	3613
Aug 2014	3919	2.0	4.1	0.046	3917
Sep 2014	3922	2.4	3.7	0.030	3920
Oct 2014	4556	2.4	4.4	0.049	4554
Nov 2014	5005	3.2	6.1	0.007	5002
Dec 2014	5043	3.4	5.5	0.007	5041

SULPHUR PRODUCTION

Leismer Ambient Air Monitoring

Alberta Environment and and Sustainable Resource Development (ESRD) approval limits based on Alberta ambient air quality objectives:

SO_2 (1 hour average) 172 ppbv

H_2S (1 hour average) 10 ppbv

Passive Ambient Air Monitoring 2014:

Month	SO2 Peak Reading (ppb)	H2S Peak Reading (ppb)	ESRD Approval Limit SO2 – 1 Hour Average (ppbv)	ESRD Approval Limit H2S – 1 Hour Average (ppbv)
January 2014	2.1	0.2	172	10
February 2014	1.4	0.18	172	10
March 2014	1.0	0.21	172	10
April 2014	0.6	0.05	172	10
May 2014	0.8	0.06	172	10
June 2014	0.9	0.09	172	10
July 2014	0.5	0.06	172	10
August 2014	0.6	0.11	172	10
September 2014	0.4	0.08	172	10
October 2014	0.5	0.11	172	10
November 2014	1.2	0.25	172	10
December 2014	1.1	0.21	172	10

Continuous Ambient Air Monitoring 2014:

Month	SO2 Peak Reading – 1 Hour Average (ppb)	H2S Peak Reading – 1 Hour Average (ppb)	Operational Time SO2 (%)	Operational Time H2S (%)
July 2014	7	1	94.8	98.5
August 2014	6	1	94.5	98.8
September 2014	5	1	96.7	99.2

ENVIRONMENTAL ISSUES

Surface Section 6

Leismer 2015 Annual Performance Presentation

ENVIRONMENTAL ISSUES

Environmental Approval Compliance Issues

- EPEA Approval 241311-00-04
  - January 2014
    - Exceeded NOx limit of 13 kg/h on January 5th, 2014. Reached 13.72 kg/h. Combustion air controller malfunctioned - dampers misaligned causing excess air condition. Reference # 280642
  - June 2014
    - Rainwater was not collected on Pad 5 and ran into the collection system. Water was running off-lease in the NW corner of the pad. Final grading was completed and topographical survey done July 5th. Reference # 284905
  - August 2014
    - Exceeded NOx limit of 13 kg/h on August 14th, 2014 during maintenance of the CEMS Unit. Reached 21.57 kg/h. Reference # 288206
- **Alberta Energy Regulator (AER)**
  - Non-compliance events reportable to AER are provided in Surface Section 8

ENVIRONMENTAL ISSUES

Leismer Approvals and Amendments

- EPEA Approval 241311-00-03
  - Received March 14th, 2014
  - Changes to the approval included:
    1. Corner Amendment Project application (003-241311, submitted February 21st, 2013).
    2. Leismer Amendment Phase 2 Project (LAP2) application (003-241311, submitted April 19th, 2013).
    3. New template from ESRD
- EPEA Approval 241311-00-04
  - Received July 28th, 2014
  - Changes to the approval included the asset swap between Statoil and PTTEP Canada Ltd. application (004-241311, submitted June 17th, 2014)

ENVIRONMENTAL ISSUES

Leismer Approvals and Amendments

- Water Diversion Licences:
  - Groundwater WDL 00239880 (June 2012 – June 2017): SAGD water source
  - Groundwater TDL 00350338 (May 2014 – May 2015): supplemental SAGD water source for bringing additional wells online. Replaces groundwater TDL 00322877 (May 2013 – May 2014)
  - Groundwater WDL 00297242 (Nov 2011 - Nov 2021): industrial use licence for downhole use
  - Surface Water WDL 00273542 (Nov 2011 – Nov 2021): 9 lakes for OSE/winter use (amended/reduced in October 2014 from 15 lakes)
  - Surface Water TDL 00337964 (Oct 2013 – Oct 2014): covers 8 additional lakes for OSE
  - Surface Water TDL 00352573 (May 2014 – May 2015): Stormwater Pond at CPF, uses included OSE, dust control and construction. Replaces TDL 00329405 (May 2013 – May 2014)

ENVIRONMENTAL ISSUES

Leismer Approvals and Amendments

- Water Diversion Licences, continued:
  - Groundwater WDL 00322141 (Aug 2013 – Aug 2023): Waddell Camp – use includes industrial (Waddell camp supply), commercial (drilling), earthworks (construction, dust suppression and ice roads)
  - TDL 00340844 (Dec 2013 – Dec 2014): Quaternary well licence for OSE, drilling, completions, freeze down, construction
  - Groundwater TDL 00358039 (October 2014 – October 2015): Quaternary well – uses include construction related to oil and gas activity
  - Surface Water TDL 00353096 (July 2014 – July 2015): surface water runoff from seven Pads, uses include oil sands exploration (i.e. drilling, construction, dust control, misc.)

ENVIRONMENTAL ISSUES

Leismer Monitoring Programs

- *EPEA* Approval reports and proposals submitted:
  - Monthly Air Reports
  - Soil Monitoring Program Proposal (January 2014)
  - Annual Groundwater Monitoring Report (March 2014)
  - Annual Conservation and Reclamation Report (March 2014)
  - Annual Air Report (March 2014)
  - Annual Industrial Wastewater Report (March 2014)
  - Annual Industrial Runoff Report (March 2014)
  - Annual Wetland Monitoring Report (March 2014)
  - Caribou Mitigation and Monitoring Program Proposal (August 2014)
  - Revised Groundwater Monitoring Program Proposal (December 2014)

ENVIRONMENTAL ISSUES

Leismer Monitoring Programs, Continued

- *EPEA* Program Proposals approved:
  - Wetland Monitoring Program Proposal – approved February 2014
  - Caribou Mitigation and Monitoring Program Proposal – approved October 2014
- Water Act reports:
  - WDL – monthly and annual Water Use reporting
  - TDL – no formal report unless requested

ENVIRONMENTAL ISSUES

Other SCL Environment Initiatives

- Founding member of the Canada's Oil Sands Innovation Alliance (COSIA)
- Member of the Integrated CO_2 Network (ICO_2N)
- Canadian Association of Petroleum Producers (CAPP)
  - Actively participating in various environmental working groups
  - Submitted Responsible Canadian Energy (RCE) 2013 Progress Report
- SCL participates in regional initiatives:
  - Alberta Biodiversity Monitoring Institute (ABMI) including Ecological Monitoring Committee for Lower Athabasca (EMCLA);
  - Regional Aquatics Monitoring Program (RAMP);
  - Wood Buffalo Environmental Association (WBEA);
  - Cumulative Effects Management Association (CEMA)
  - Industrial Footprint Reduction Options Group (iFROG) : Multi-stakeholder reclamation research collaboration focused on road and pad reclamation within treed poor fens.

ENVIRONMENTAL ISSUES

Other SCL Environment Initiatives, Continued

- The Woody Debris Rollback Program concept was proven in 2012, 2013, and 2014, maintaining the same number of wildlife cameras (60). A COSIA Joint Industry Project (JIP) is progressing with Devon and Connacher as partners, which will assess the effectiveness of a lower application rate on several new sites in 2015.
- Continuation of SCL's Surface Water Monitoring Program (SWMP) in 2014, with seasonal sampling in the Leismer and Corner lease areas.
- A Planning Optimization Tool was developed in 2013 and continues to be utilized in a joint project with Devon to minimize footprint and avoid sensitive areas.
- Reclamation activities commenced for four borrow sites and one gravel stockpile site in Fall 2014.
- No SAGD pad abandonments planned within next four years.

COMPLIANCE STATEMENT

Surface Section 7

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COMPLIANCE STATEMENT

Approval and Regulatory Requirements Compliance Statement

- Statoil believes that it is in compliance with the AER Scheme Approval and regulatory requirements

NON-COMPLIANCE EVENTS

Surface Section 8

Leismer 2015 Annual Performance Presentation

NON-COMPLIANCE EVENTS

AER Non-Compliance Events

- January 2014
  - Unplanned Flaring 01/03/2014: Black smoke occurring over the 6 minute notification time period due to VRU issues. DDS # 733381
  - Reportable Spill 01/09/2014: 2-3 m3 of concentrated groundwater from the Water Treatment Plant at Leismer Lodge was released to grade when a hauling truck backed over the line carrying the water while hauling snow. A permanent underground line was installed to prevent reoccurrence. Reference # 279291
  - Unplanned Flaring 01/21/2014: Approximately 4 hours of unplanned flaring due to charge pump trip which caused the VRU to shut down. DDS # 736377
- April 2014
  - Reportable Spill 04/19/2014: Approximately 5 m3 of diluent was released from a 6” drain valve on the 30” main product line at Cheecham Terminal. Approximately 3.5 m3 was maintained in the tank farm secondary containment berm area and 1.5 m3 exposed to the outer drainage ditch on-lease. All contamination has been removed and disposed of. Reference # 20140910

NON-COMPLIANCE EVENTS

AER Non-Compliance Events

- August 2014
  - Unplanned Flaring 08/08/2014: Unplanned flaring for 7 hours starting due to a power outage caused by a raven landing on the ATCO substation. DDS # 765236
- September 2014
  - Reportable Spill 09/02/2014: A vacuum truck flipped over on Leismer Road 2, spilling approximately 30L of hydraulic fluid. All contamination has been removed and disposed of. Reference # 289075
  - Reportable Spill 09/30/2014: After cleaning drilling mud tanks and preparing them for new mud, a valve was left partially open when the vacuum truck operator removed the hose from the truck after cleaning. Once the transfer of new mud into the tank began, mud spilled out the partially closed valve. Approximately 2 cubic meters of new intermediate polymer mud was released onto the rig matting and 20L of mud spilled to grade through cracks in the rig matting. All contamination has been removed and disposed of. Reference # 20142471
- October 2014
  - Planned Flaring 10/06/2014: Planned shut down resulted in flaring on October 6 at 23:30 continuing until October 7 at 21:00. DDS # 774512

SURFACE REVIEW - FUTURE PLANS

Surface Section 9

Leismer 2015 Annual Performance Presentation

SURFACE REVIEW – FUTURE PLANS

2015 Plans

- Pad L2 – steam injection and production from pilot infill well L2P4/5
- Pad L1 infill wells – drilling in Q2 2015
- Non Condensable Gas Co-injection Pilot – Pad L4
- Pad L6 - facilities construction, first steam Q2 2016

There's never been a better time for good ideas

Presentation: Leismer 2015 Annual Performance Presentation (D054) to Alberta Energy Regulator

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