Husky Oil Operations Limited

Sunrise Thermal Project

Commercial Scheme No.10419

Annual Performance Presentation

Alberta Energy Regulator

September 17, 2015

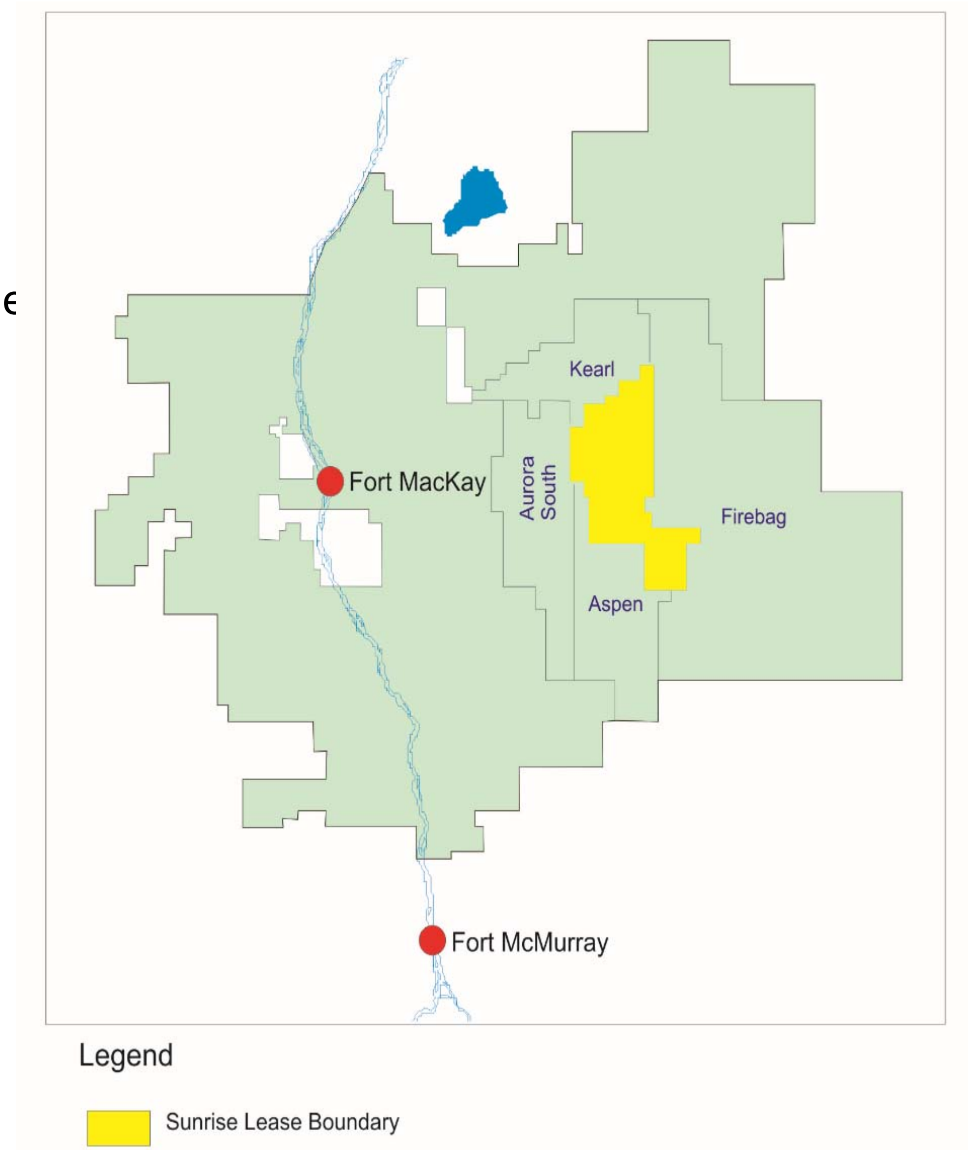
Husky Energy

3.1.1. Subsurface Issues – Table of Contents

1. Brief Background

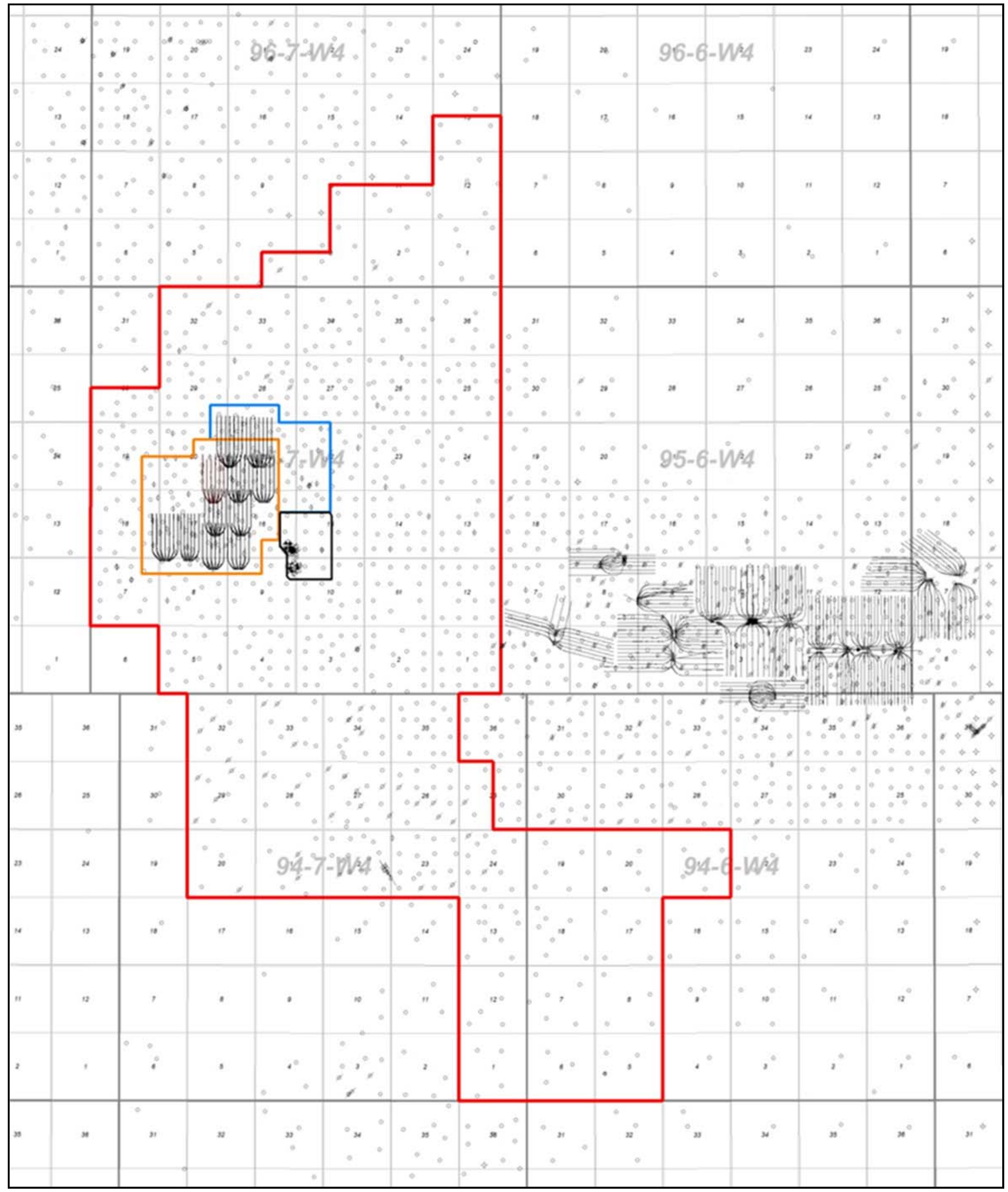
Project Overview

- AER Approval No’s. 10419 and 206355-00-00, as amended
- 31,798 m^3 /d (200,000 BOPD) SAGD Proje
- Phase 1 9,540 m^3/d (60,000 BOPD)
- McMurray Formation
- 7-9º API Bitumen
- 50% Partnership with BP
- First Steam December 12, 2014
- First Production March 8, 2015



Husky Sunrise Project Development Area

- Approval Area:
  - 64 ¼ sections over TWP 94, 95 and 96, RGE 6 and 7 W4M
- Development Area 1 (DA1):
  - Nine Well Pads
  - 55 Well Pairs
- Project Life Development:
  - Approx. 600 well pairs
  - Approx. 40 year life
- Development Area 2 (DA2):
  - Six Well Pads
  - 37 Well Pairs
  - Currently drilled two pads (B05-21 and B06-21)
  - Sustain 9,540 m^3/d (60,000 bbls/d)
- Development Area 3 (DA3):
  - 18 Well Pads
  - 222 Well Pairs
  - Pending AER Approval



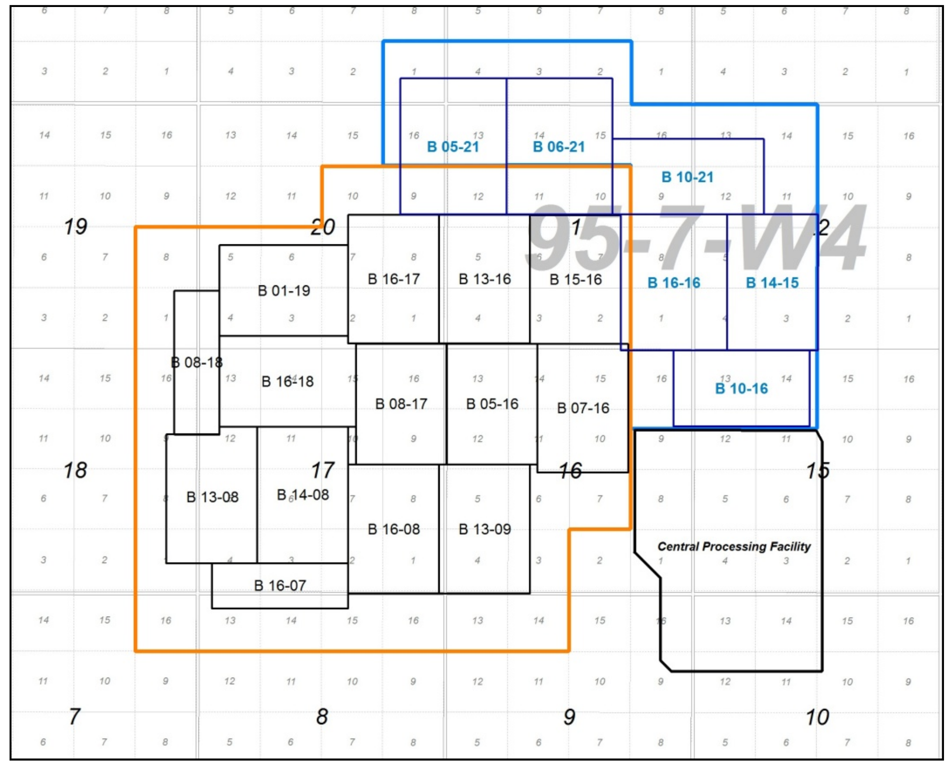
Site Overview

- 92 horizontal well pairs:
  - 55 well pairs in DA1
  - 14 out of 37 well pairs added in DA2
- Field Facilities – 11 well pads constructed, 12 well pads cleared, infield pipelines
- Central Plant Facility:
  - Emulsion treating – 9,540 m^3/d (60,000 bbl/day)
  - Water Treatment – 38,140 m^3/d (240,000 bbl/day)
  - Steam Generation – 28,600 m^3/d (180,000 bbl/day) CWE
  - Utilities
- Water Source & Disposal Wells
- Borrow Sources
- Class 1 Landfill
- Metering and Export Pipelines to Fort Saskatchewan via Norealis Terminal and Cheecham

2. Geology / Geosciences

Average Reservoir Characteristics and OBIP

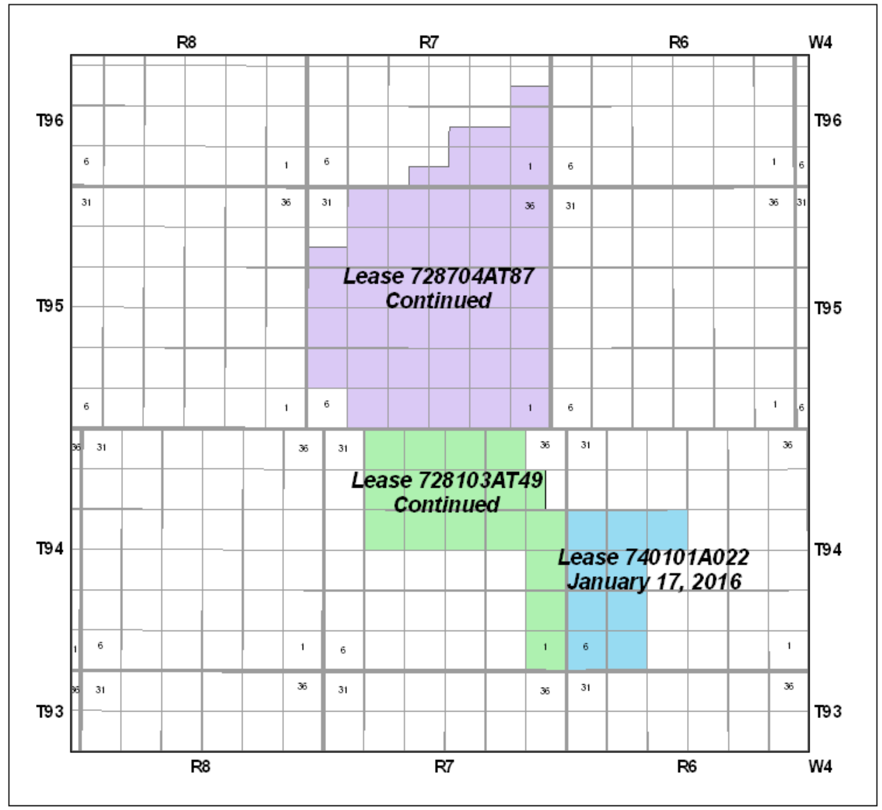
Well Pad	Area (ha)	Porosity (%)	Bitumen Saturation (%)	Developable OBIP 10^3 m^3
B16-07	27.00	30	79	1,628
B13-08	62.10	31	81	3,868
B14-08	45.90	32	82	4,394
B16-08	51.00	32	81	3,219
B13-09	51.00	31	79	2,677
B08-18	28.51	30	78	1,600
B08-17	48.00	31	79	3,334
B05-16	51.00	32	81	3,351
B07-16	51.00	31	84	3,265
B16-18	54.00	32	78	4,326
B01-19	51.00	31	84	3,484
B16-17	51.00	32	82	3,999
B13-16	51.00	33	82	4,325
B15-16	51.00	31	85	4,374
B05-21	63.00	31	81	5,628
B06-21	63.00	31	80	5,160
B10-21	50.00	30	81	4,004
B16-16	63.00	31	78	4,185
B14-15	54.00	30	81	3,700
B10-16	45.00	31	81	2,733



OBIP Project Area

- Methodology
  - Volumetric Calculation
    - OBIP = Area (m2) times HPV (m)
    - HPV = net thickness x net bitumen Saturation x effective Porosity
    - Cut off 6% BWO
  - Geographix Application

Lease No:	OBIP 6% BWO cutoff 10^3 m^3	Gross Thickness (m)	Porosity (%)	Bitumen Saturation (%)
Total	1,410,565	36.0	30.4	77.5



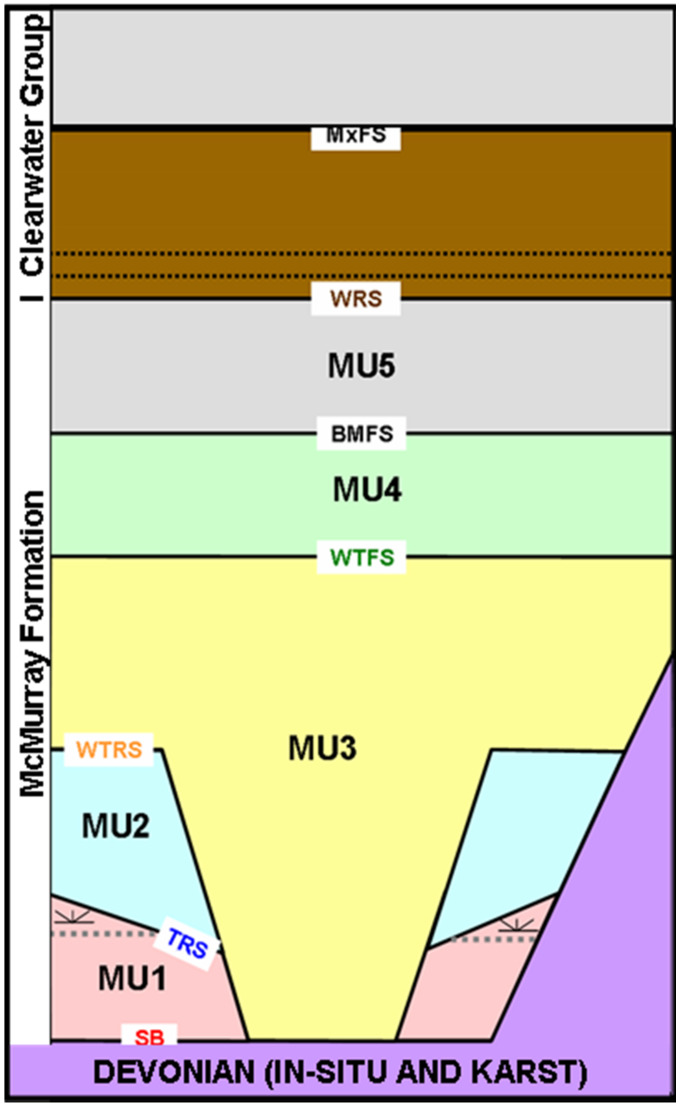
Reservoir Properties

Property	Value
Initial Reservoir Pressure (kPa_g)	450 at 300 masl
Reservoir Temperature (°C)	7
Depth to Reservoir (m)	160 – 200
Average Net Pay (m)	24
Average Horizontal Permeability (mD)	3700
Average Vertical Permeability (mD)	2000

Notes:
masl – meters above sea level
m – meters
mD – milliDarcies

Sunrise Stratigraphic Column

STRATIGRAPHIC RELATIONSHIP



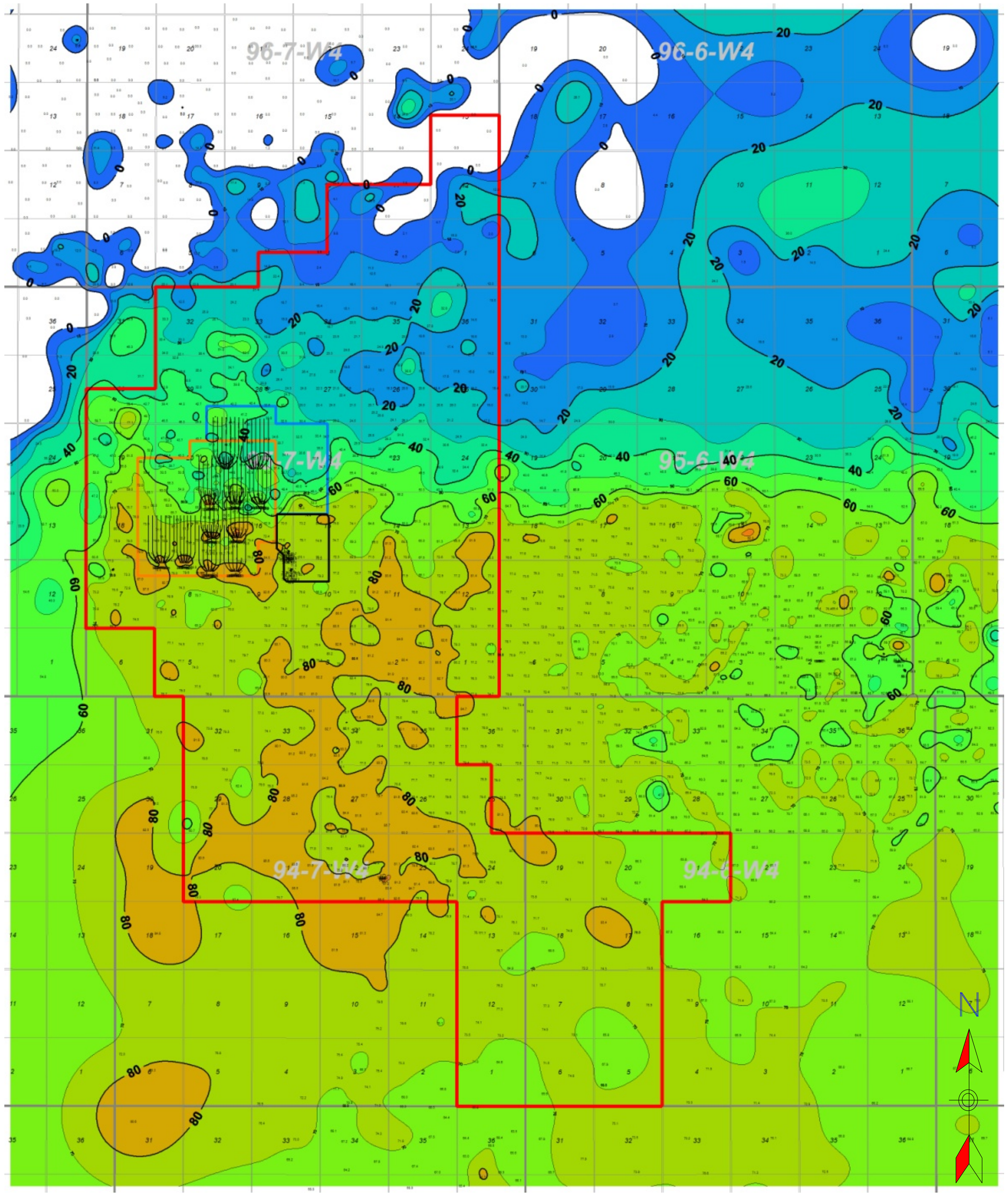
McMurray Fm. Units (MU)

MU5: McMurray Unit 5
MU4: McMurray Unit 4 ("upper McMurray")
MU3: McMurray Unit 3 ("middle McMurray")
MU2: McMurray Unit 2
MU1: McMurray Unit 1 ("lower McMurray")

Stratigraphic Surfaces

MXFS: Maximum Flooding Surface
WRS: Wave Ravinement Surface
BMFS: Bay Margin Flooding Surface
WTFS: Within-Trend Flooding Surface
WTRS: Within-Trend Regressive Surface
TRS: Tidal Ravinement Surface
SB: Sequence Boundary

Clearwater Formation Isopach

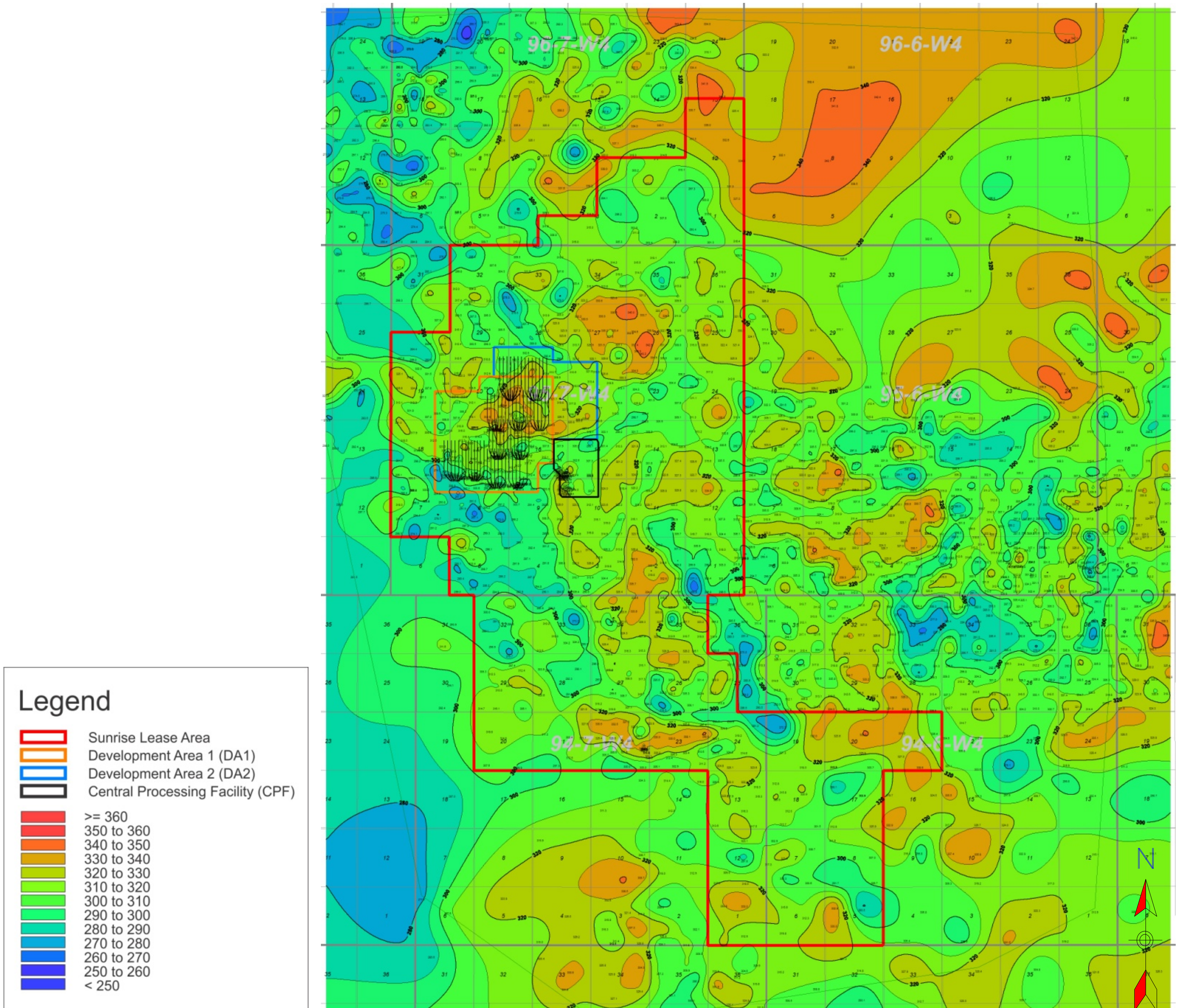


Legend

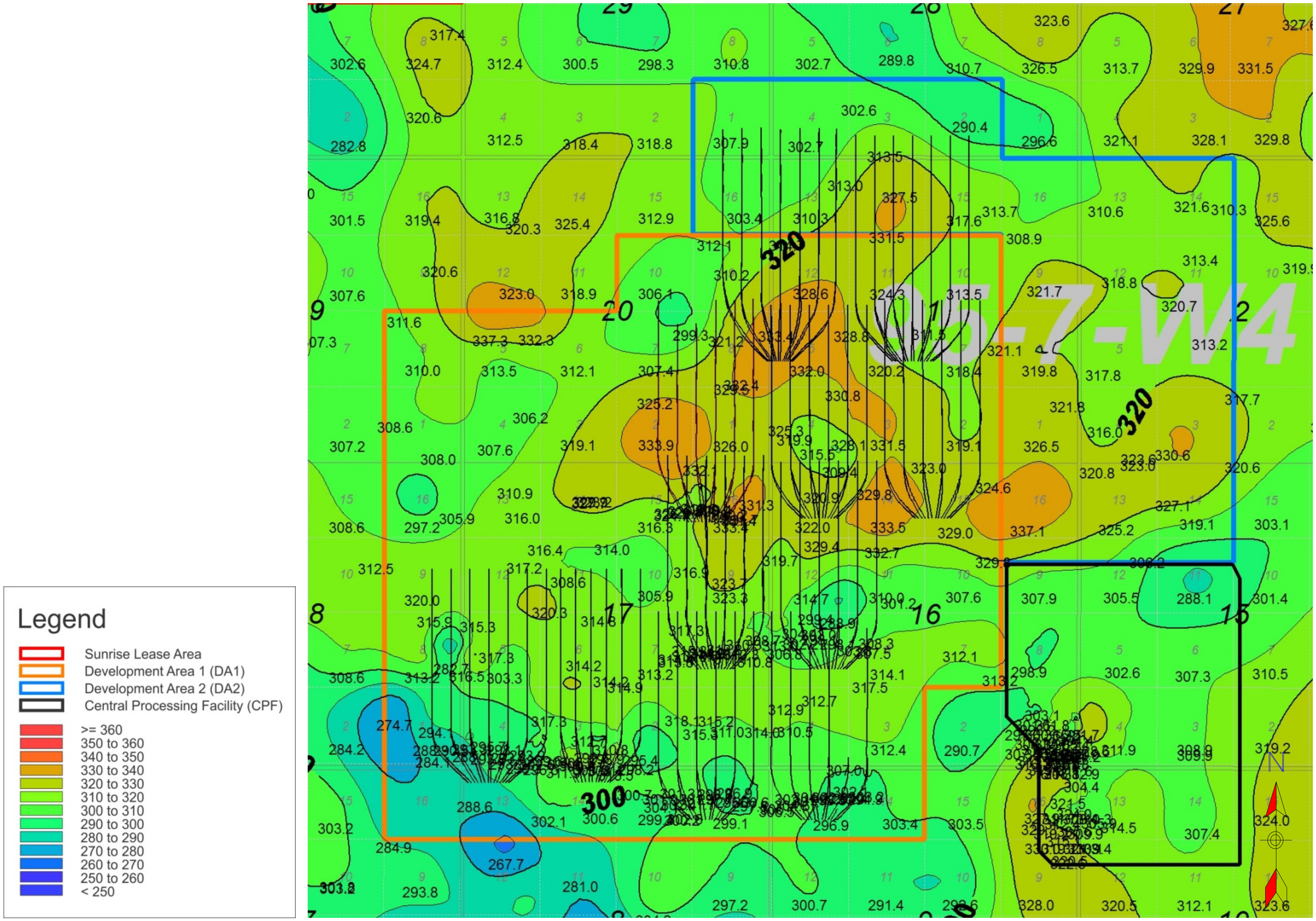
Sunrise Lease Area
Development Area 1 (DA1)
Development Area 2 (DA2)
Central Processing Facility (CPF)

> = 110
105 to 110
100 to 105
95 to 100
90 to 95
85 to 90
80 to 85
75 to 80
70 to 75
65 to 70
60 to 65
55 to 60
50 to 55
45 to 50
40 to 45
35 to 40
30 to 35
25 to 30
20 to 25
15 to 20
10 to 15
5 to 10
0 to 5
< 0

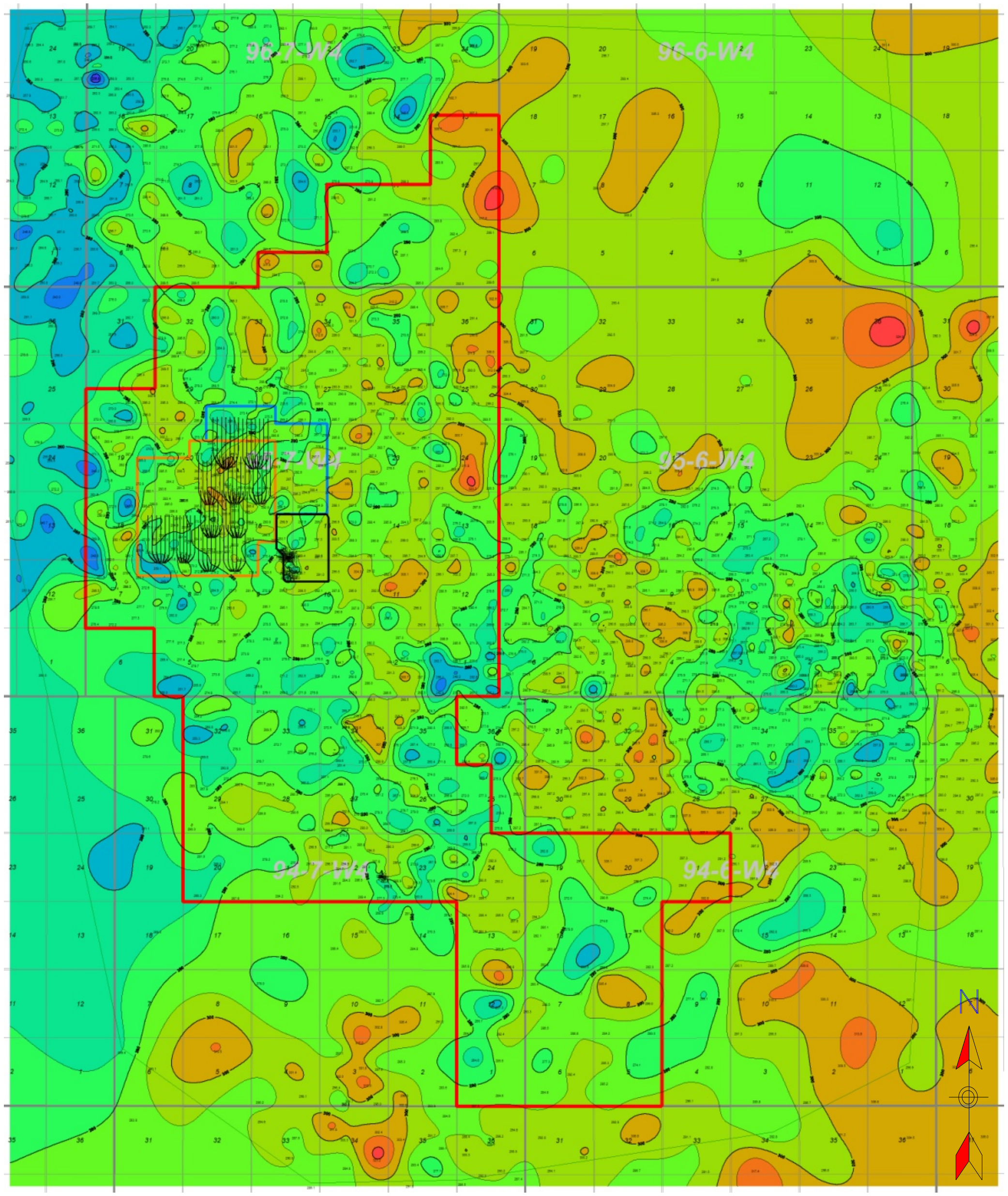
Structure Contour Map Top of Pay



Structure Contour Map Top of Pay



Structure Contour Map Base of Pay

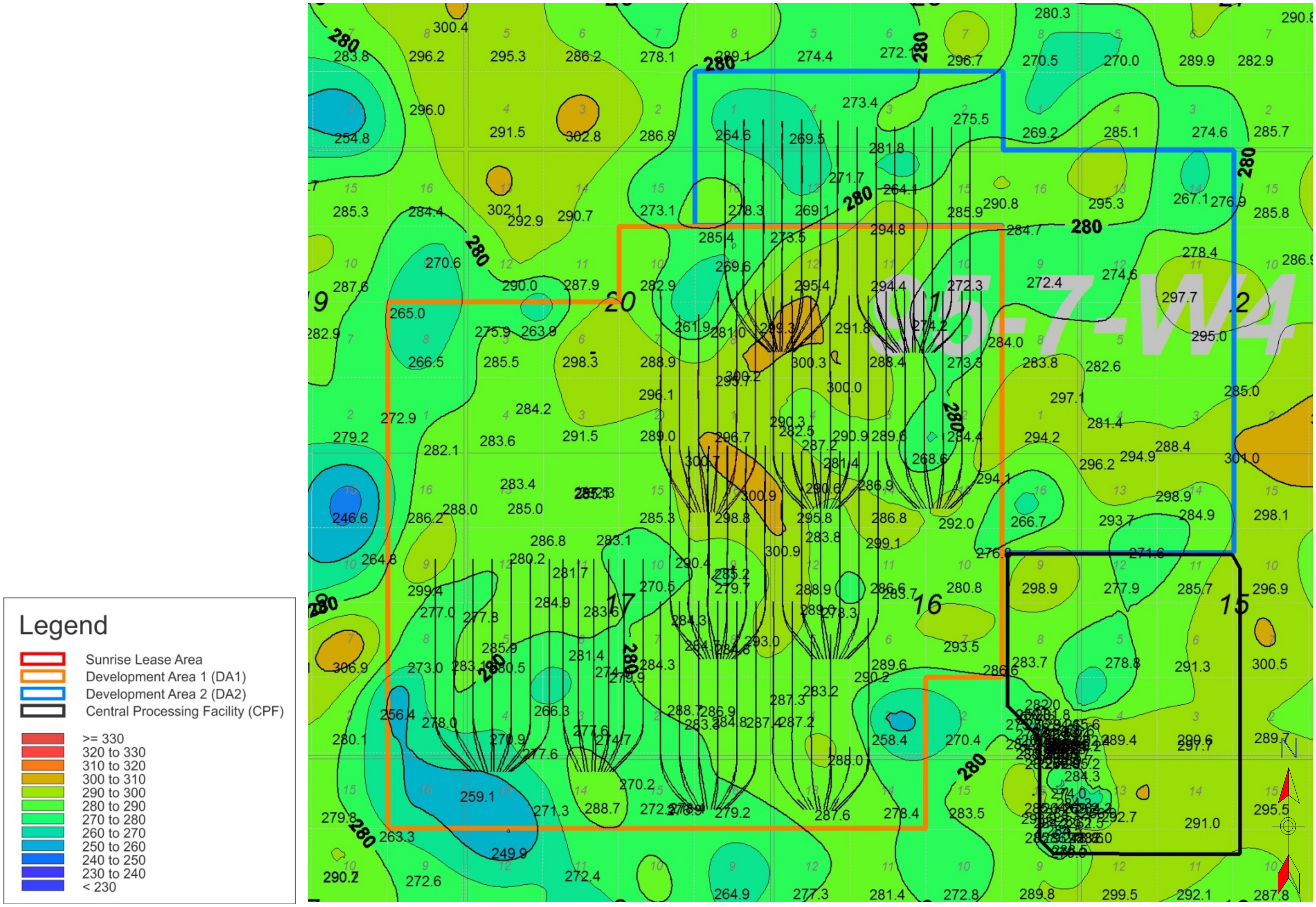


Legend

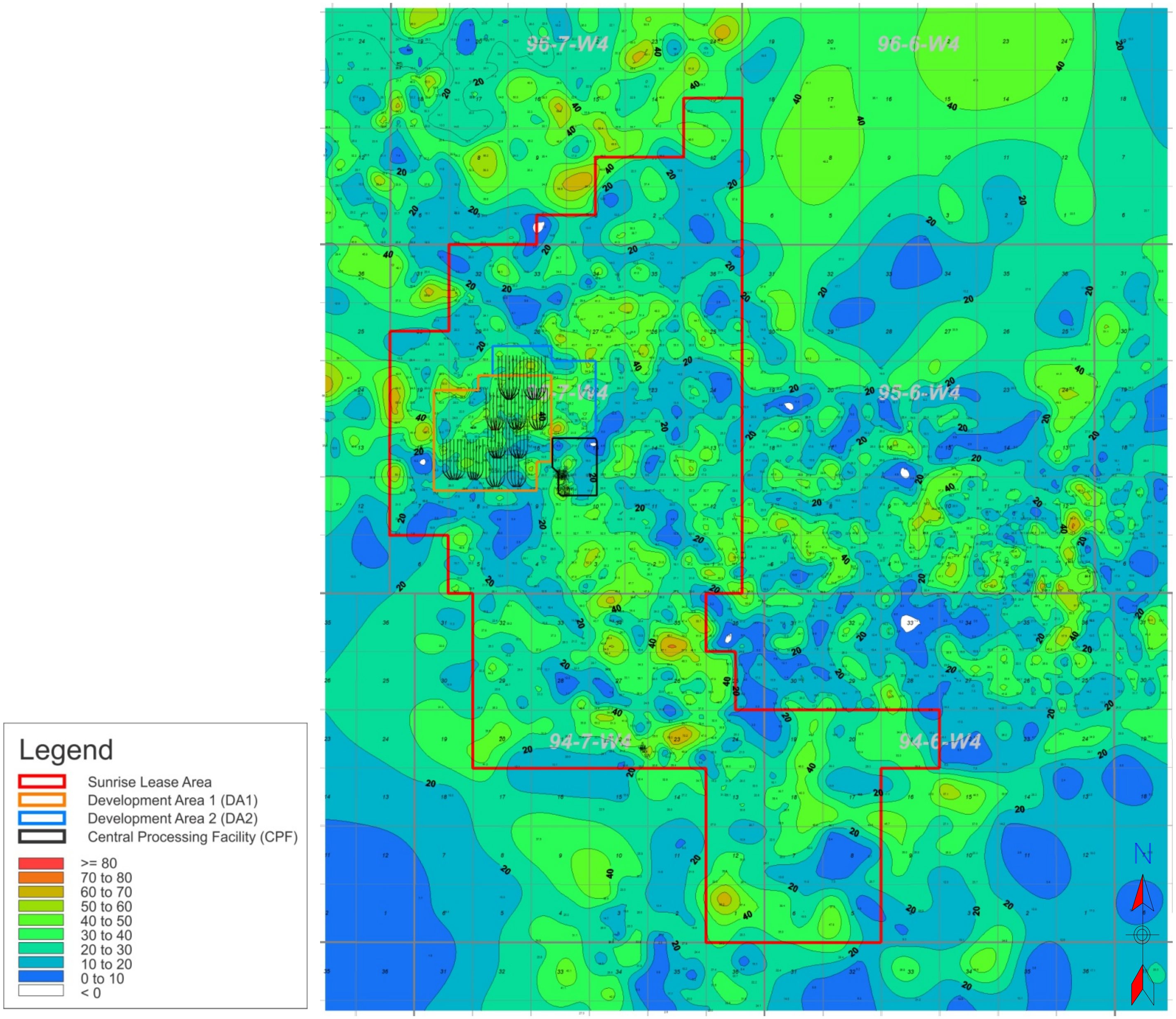
- Sunrise Lease Area
- Development Area 1 (DA1)
- Development Area 2 (DA2)
- Central Processing Facility (CPF)

- >= 330
- 320 to 330
- 310 to 320
- 300 to 310
- 290 to 300
- 280 to 290
- 270 to 280
- 260 to 270
- 250 to 260
- 240 to 250
- 230 to 240
- < 230

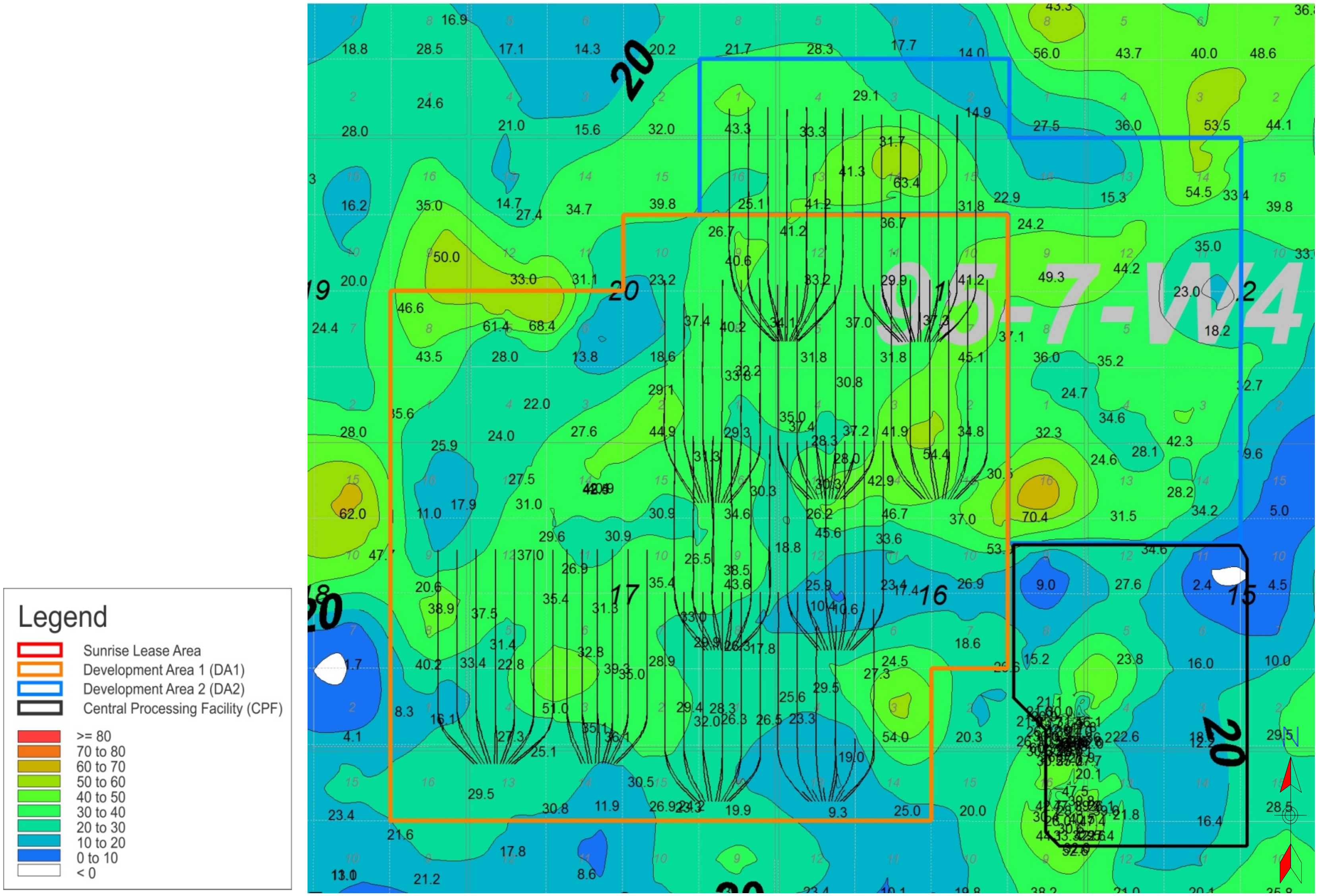
Structure Contour Map Base of Pay



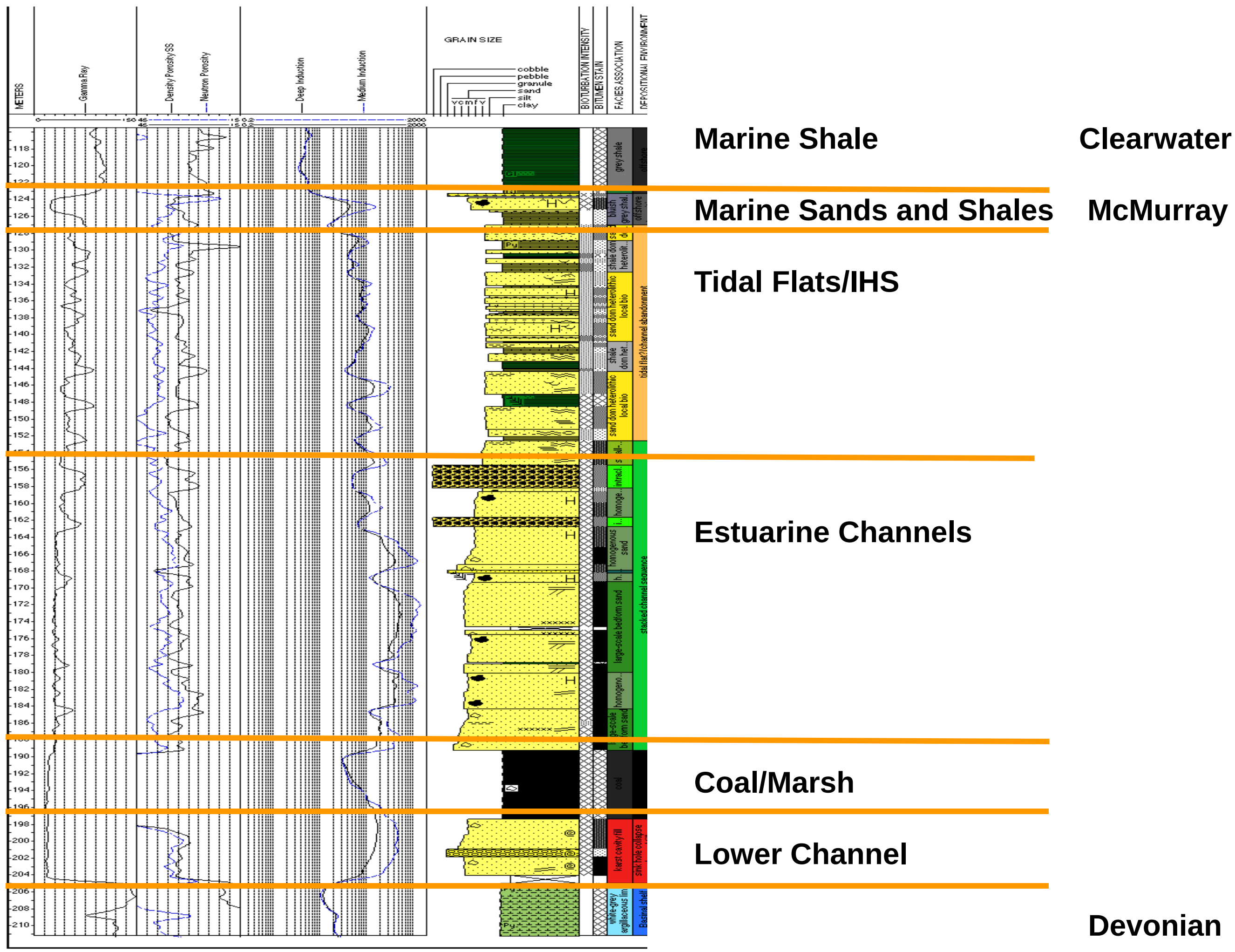
Isopach Map of the Main Pay Zone



Isopach Map of Main Pay Zone

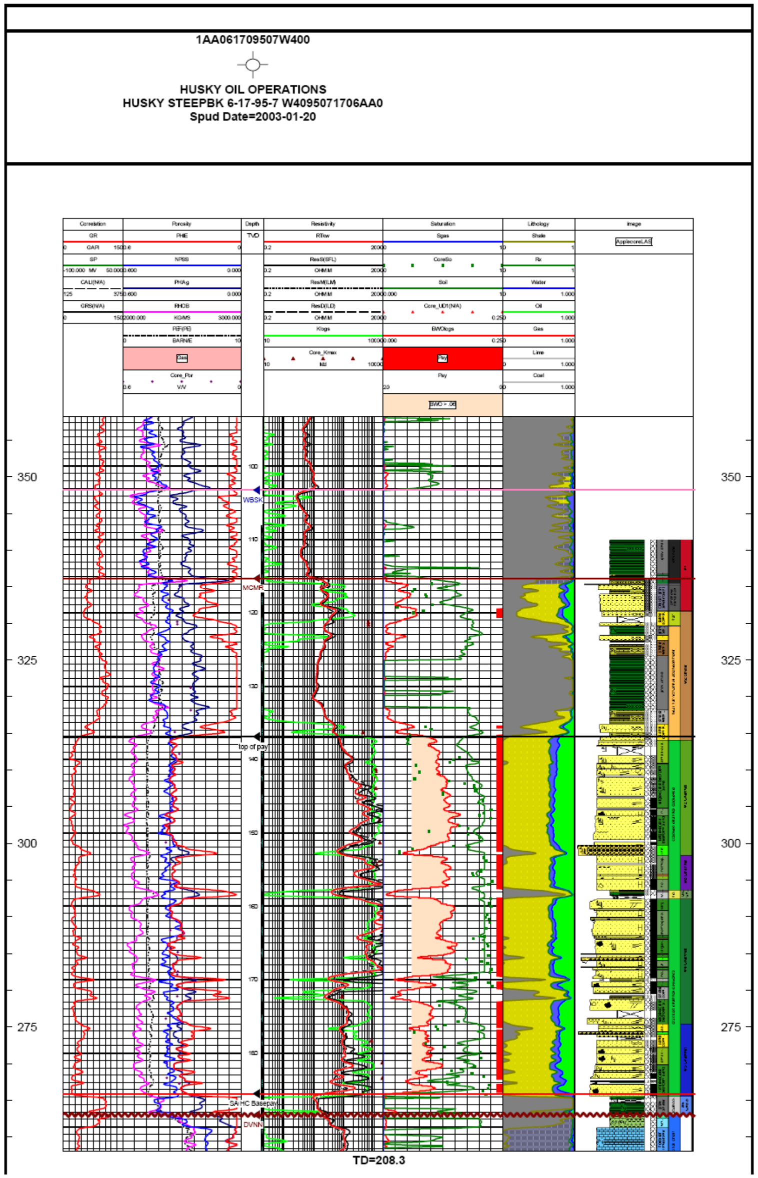


Depositional Environment



Composite Well Log

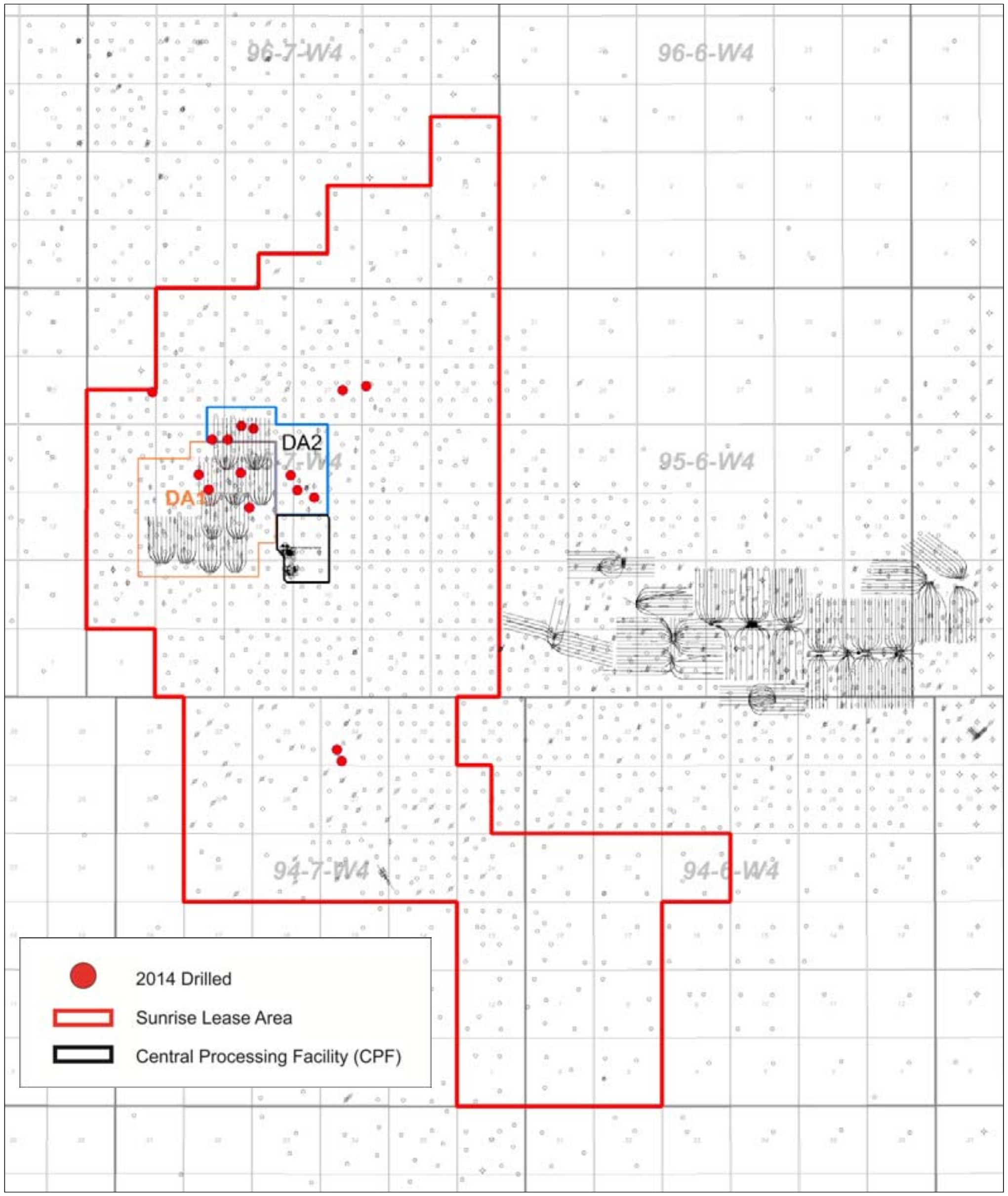
- Well 06-17-095-07W4M



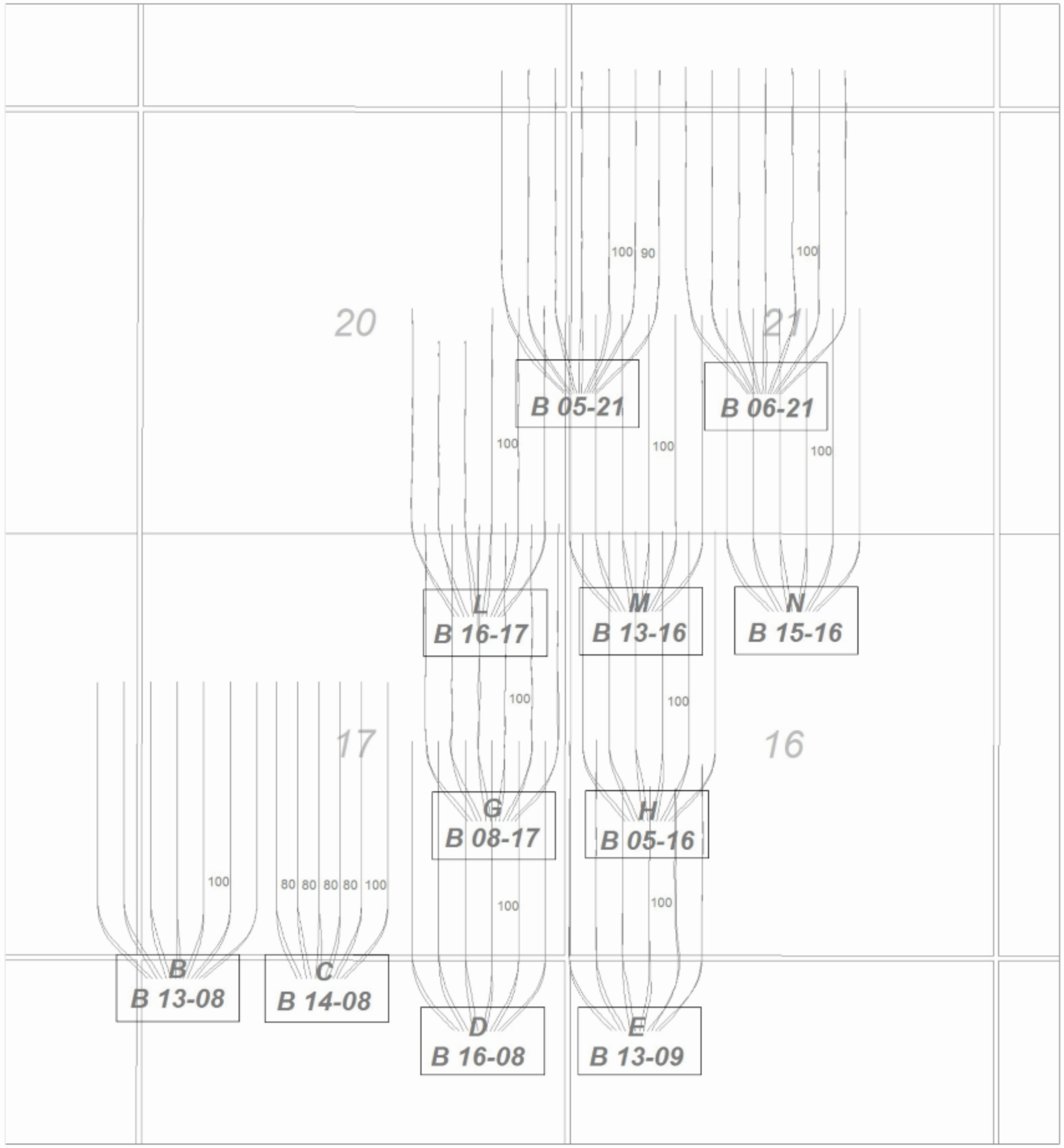
Vertical and Horizontal Wells

2014 Program:
- 16 vertical wells
- No horizontal well program

2015 Program:
- No vertical well program
- 14 horizontal wells pairs (DA2)



Pad Interwell Spacing Schematic



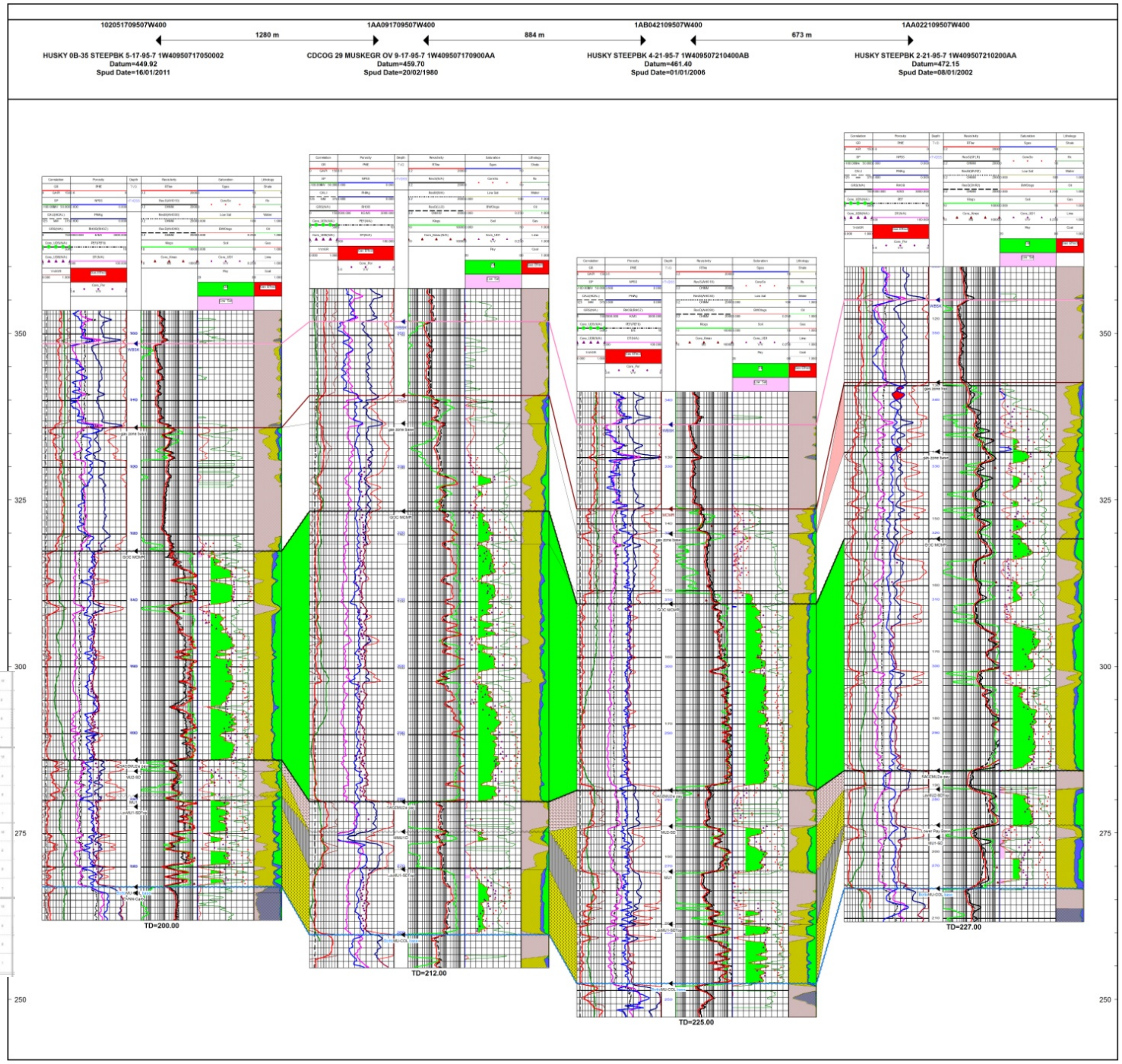
Pad Interwell Spacing

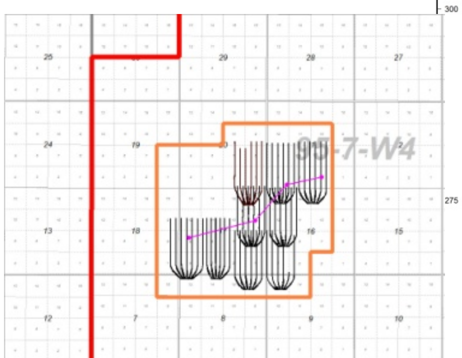
Well Pad	Interwell Spacing (meters)
B13-08	100
B14-08	80
B16-08	100
B13-09	100
B08-17	100
B05-16	100
B16-17	100
B13-16	100
B15-16	100
B05-21	100 (P6-7 90)
B06-21	100

Petrographic Analysis

- No petrographic analysis was done during this reporting period

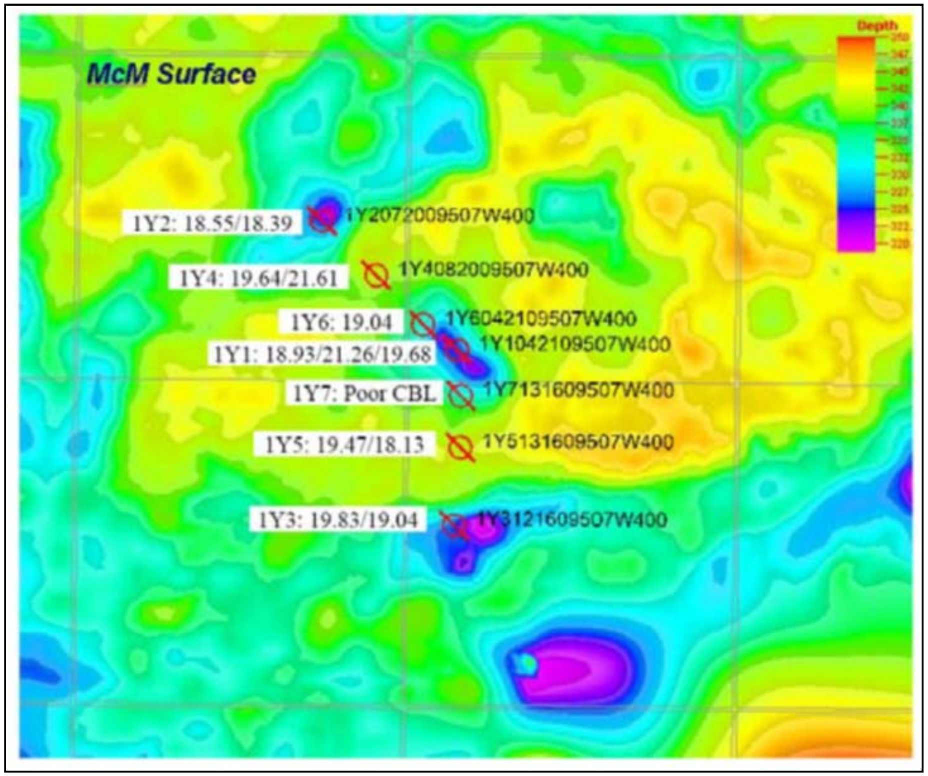
Representative Structural E-W Cross-section through the Approval DA1



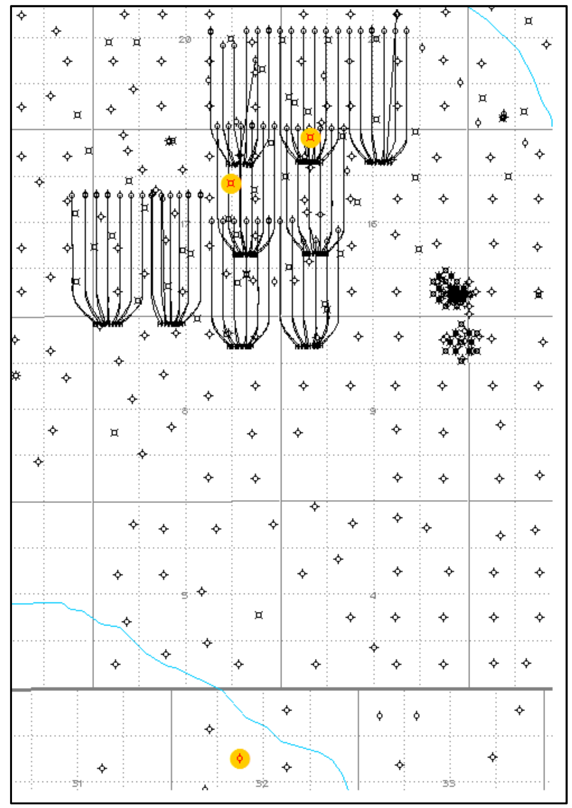


Geomechanical Data

- No geomechanical data completed during this reporting period
- Seven mini-frac tests were conducted in 2010. The measured minimum principal stress gradient in Clearwater shale was between 21.3 kPa/m to 22.5 kPa/m. For MOP calculation 21.3 kPa/m was used.
- Three triaxial tests were performed on caprock in the previous years and the properties are used in geomechanical modeling.

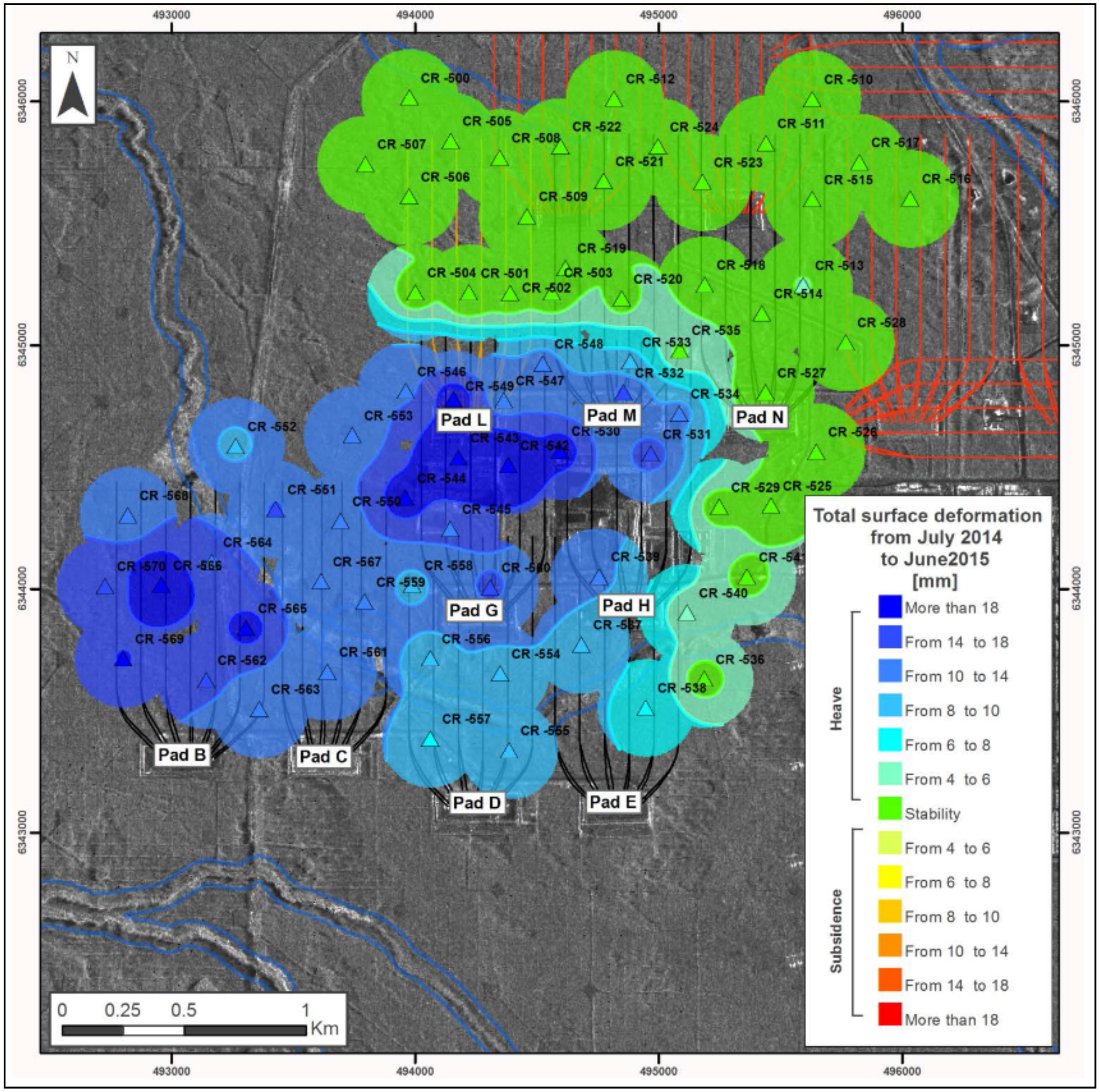


Location of Mini-frac Tests and Stress Gradient



Location of Wells Cored for Triaxial Tests

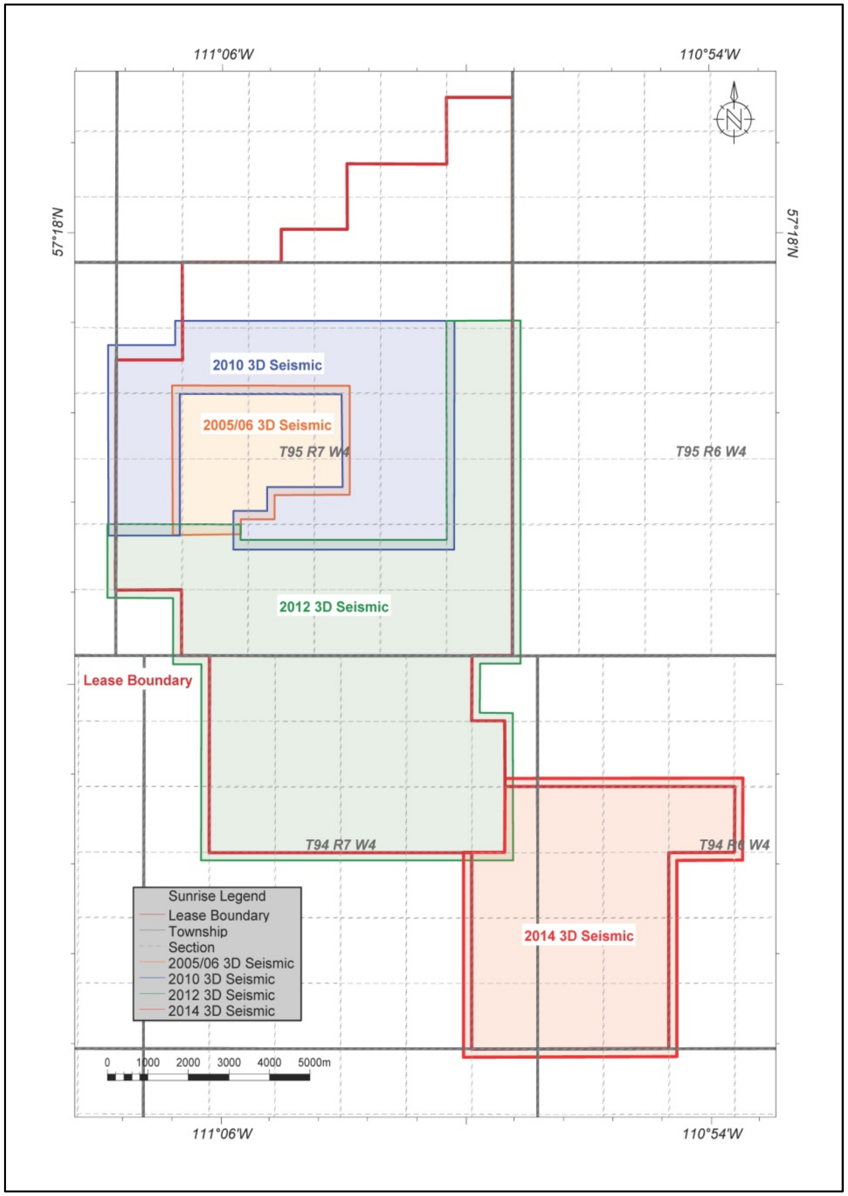
Surface Heave and Cap Rock Integrity



Geomechanical Data

- No geomechanical data acquired during this reporting period

3D Seismic Coverage



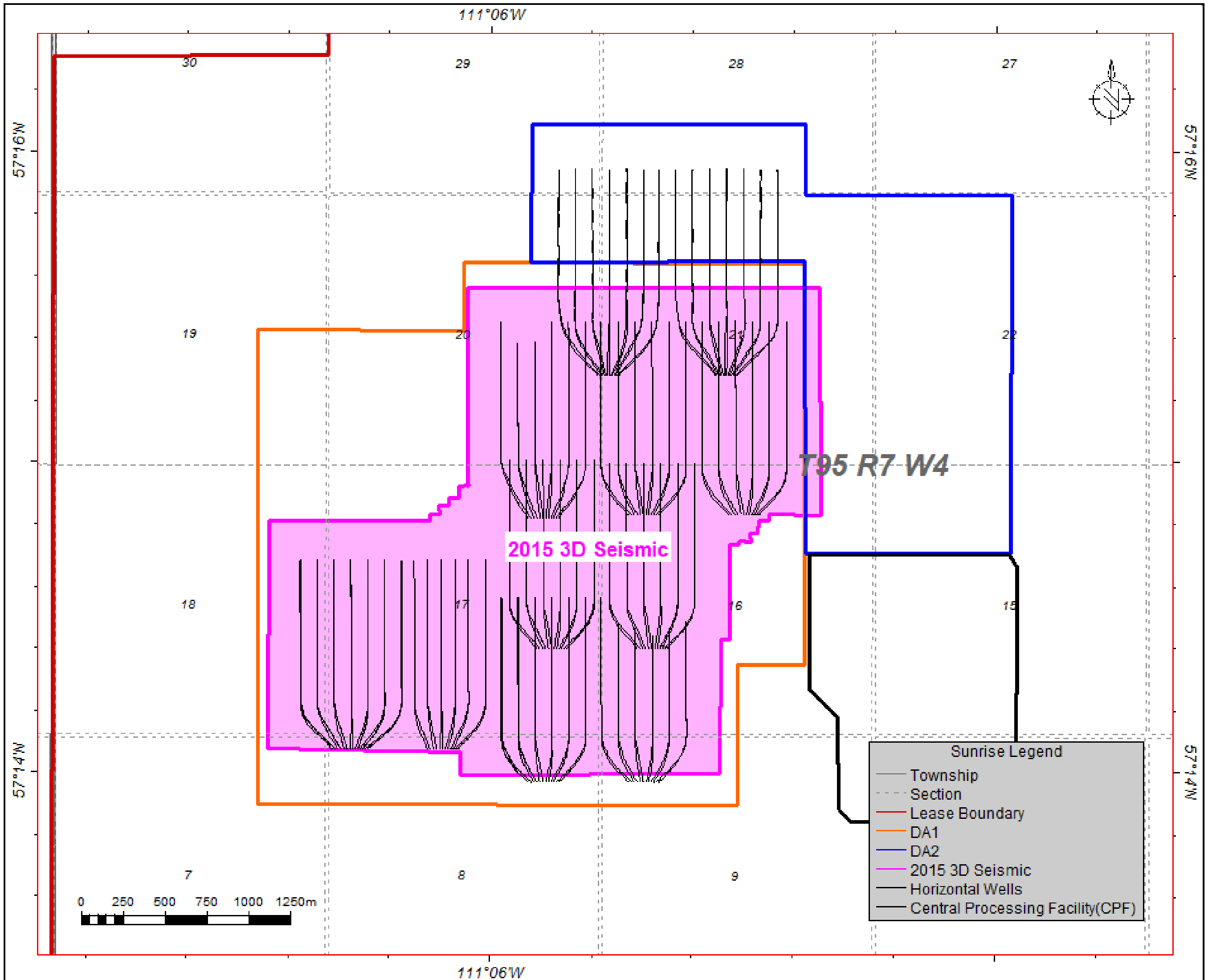
3D Seismic

2014 Program:

- No seismic program

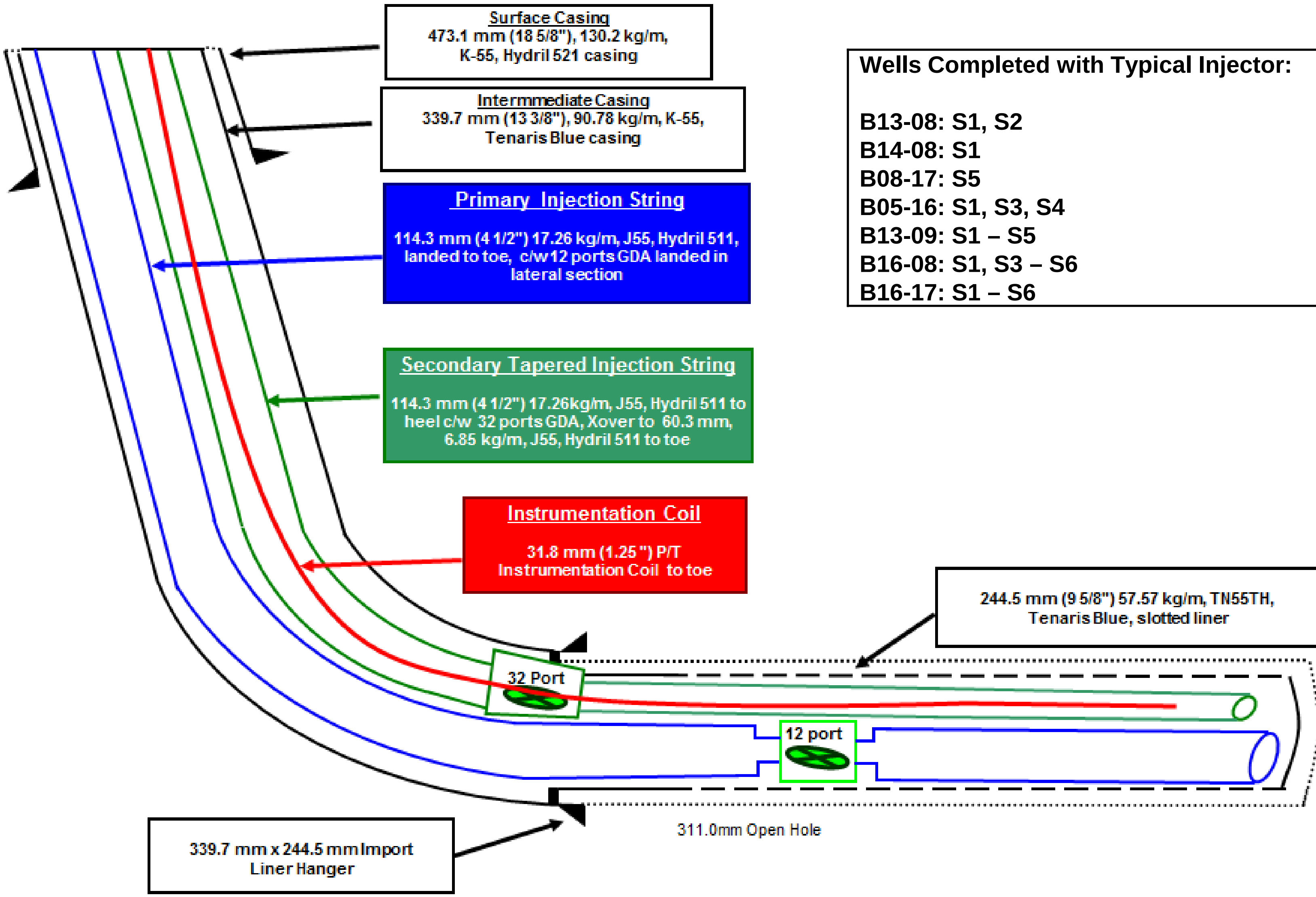
2015 Program:

- New baseline seismic data set acquired in Q1



3. Drilling and Completions

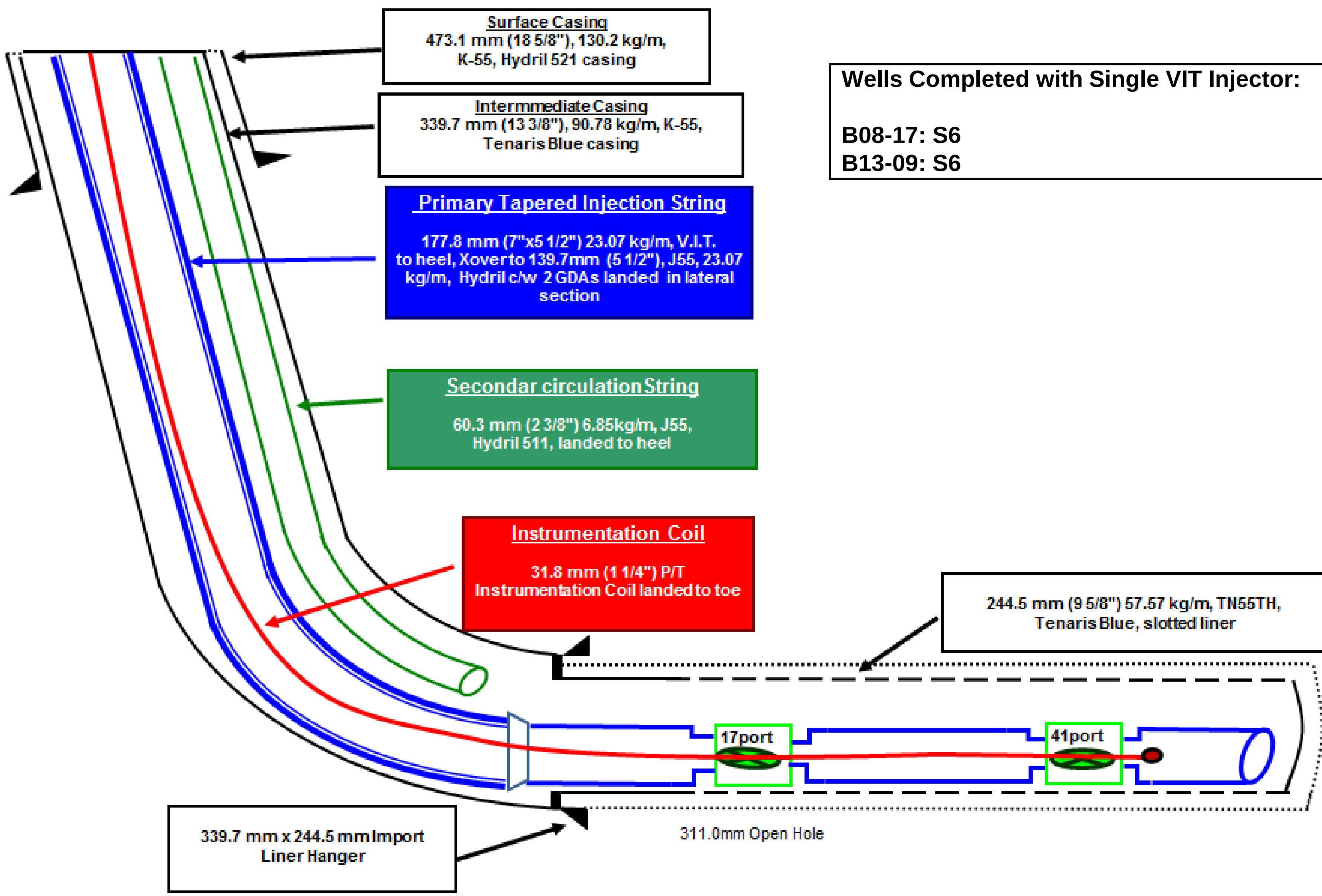
SAGD Well Design: Typical Injector Well (DA1)



Wells Completed with Typical Injector:

B13-08: S1, S2
B14-08: S1
B08-17: S5
B05-16: S1, S3, S4
B13-09: S1 – S5
B16-08: S1, S3 – S6
B16-17: S1 – S6

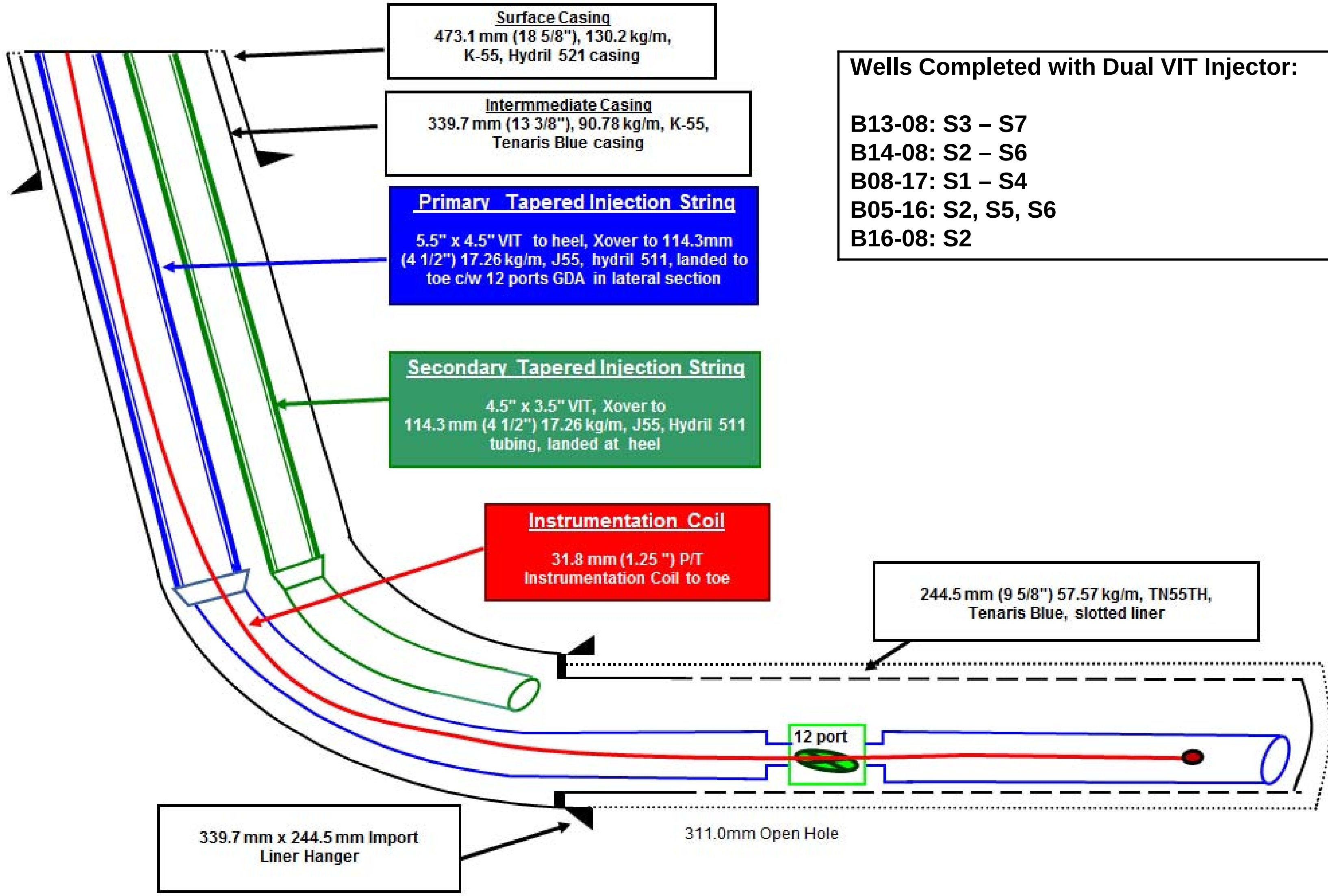
SAGD Well Design: Typical Injector Well - VIT (DA1)



Wells Completed with Single VIT Injector:

B08-17: S6
B13-09: S6

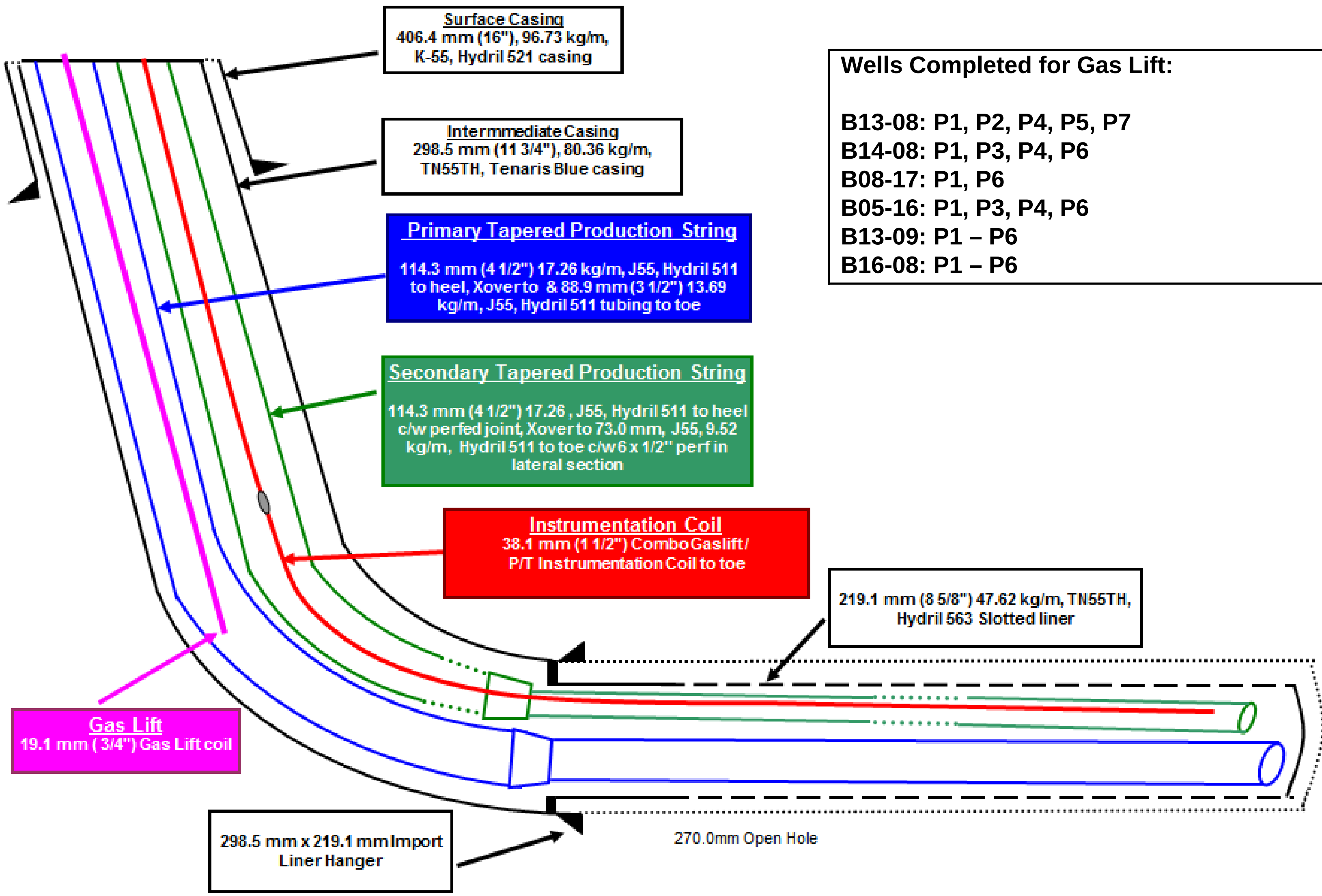
SAGD Well Design: Typical Injector Well – Dual VIT (DA1)



Wells Completed with Dual VIT Injector:

B13-08: S3 – S7
B14-08: S2 – S6
B08-17: S1 – S4
B05-16: S2, S5, S6
B16-08: S2

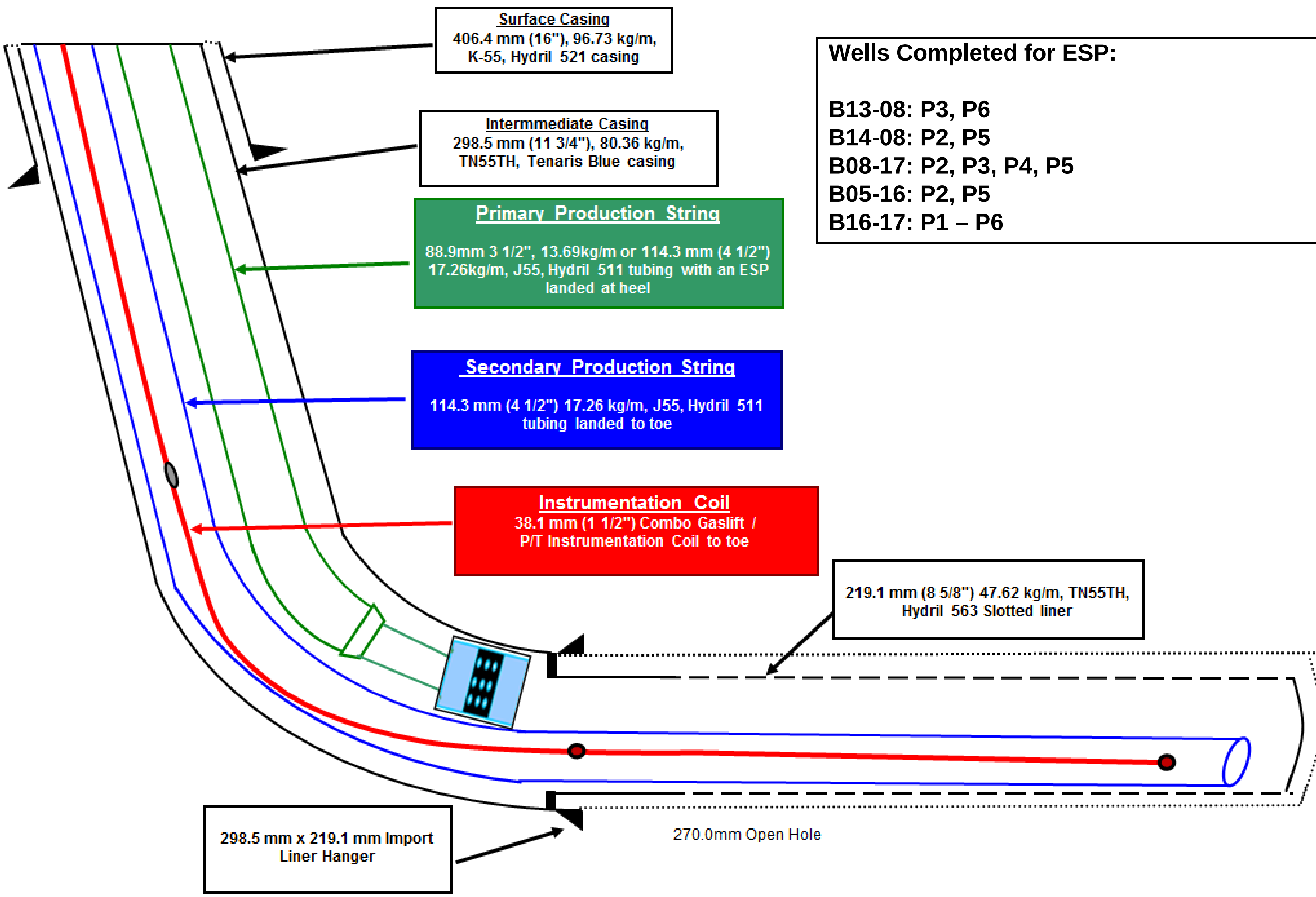
SAGD Well Design: Typical Producer Well – Gas Lift (DA1)



Wells Completed for Gas Lift:

B13-08: P1, P2, P4, P5, P7
B14-08: P1, P3, P4, P6
B08-17: P1, P6
B05-16: P1, P3, P4, P6
B13-09: P1 – P6
B16-08: P1 – P6

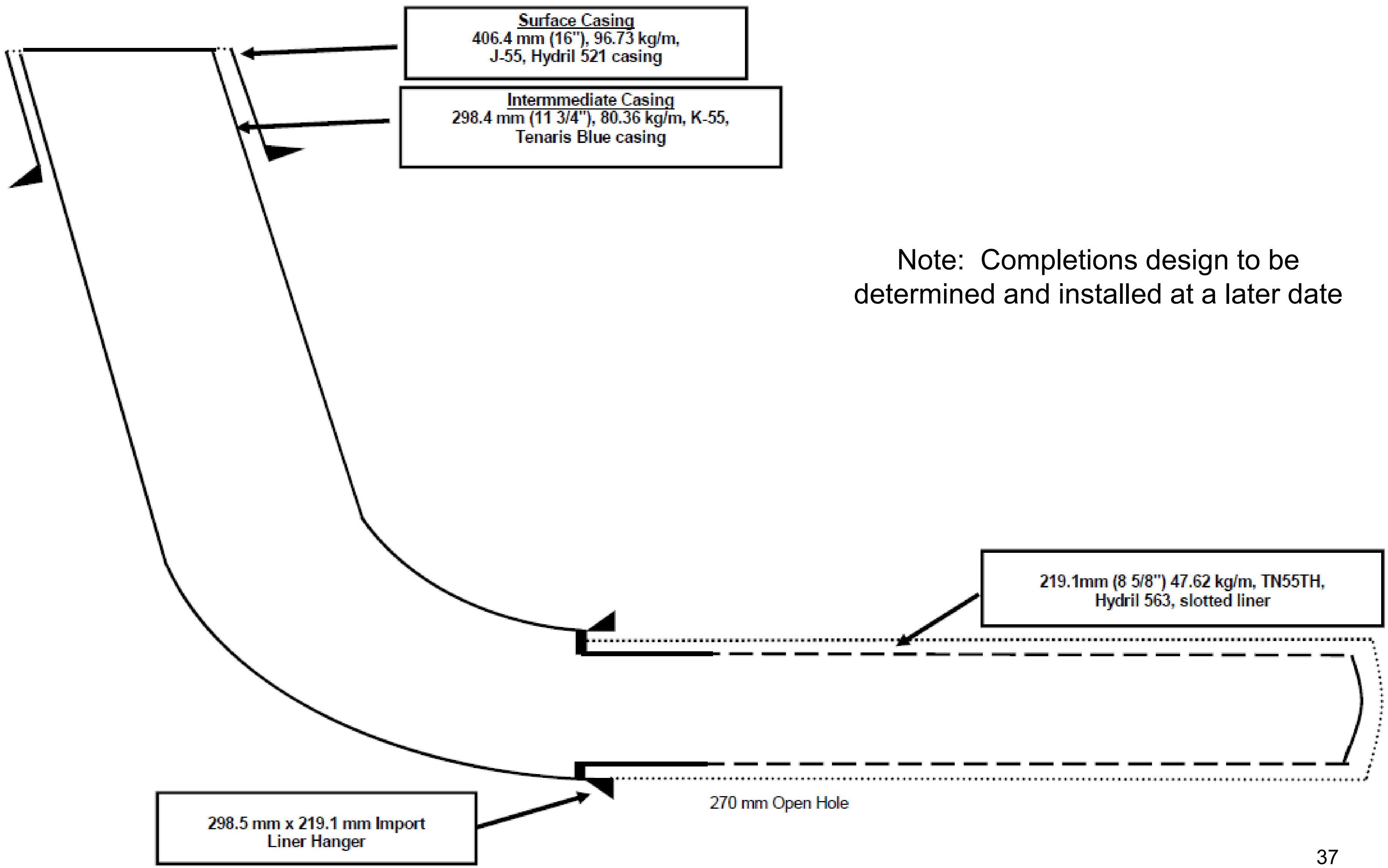
SAGD Well Design: Typical Producer Well – ESP (DA1)



Wells Completed for ESP:

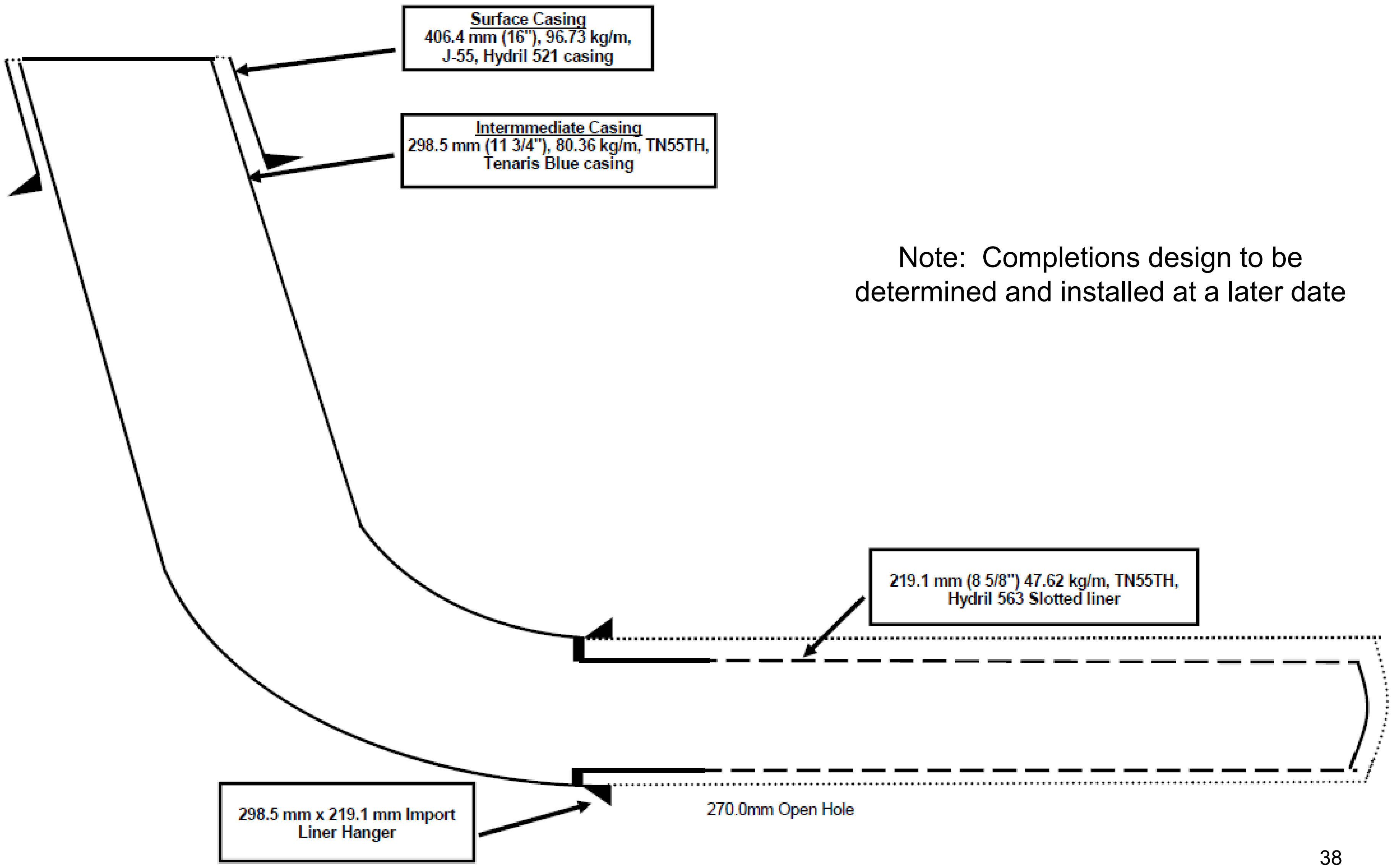
B13-08: P3, P6
B14-08: P2, P5
B08-17: P2, P3, P4, P5
B05-16: P2, P5
B16-17: P1 – P6

SAGD Well Design: Typical Injector Well (DA2)



Note: Completions design to be determined and installed at a later date

SAGD Well Design: Typical Producer Well (DA2)



Note: Completions design to be determined and installed at a later date

4. Artificial Lift

Artificial Lift

- All producer wells on SAGD mode are equipped with either gas-lift or electric submersible pumps (ESP's)

  - Gas-lift operational parameters:
    - Bottom hole Pressure: 1400 kPa – 1700 kPa
    - Bottom hole Temperature: 100 – 200 ºC
    - Surface Temperature: 100 – 160 ºC
    - Gas Injection rate: 1,000 – 8,000 Sm^3/day

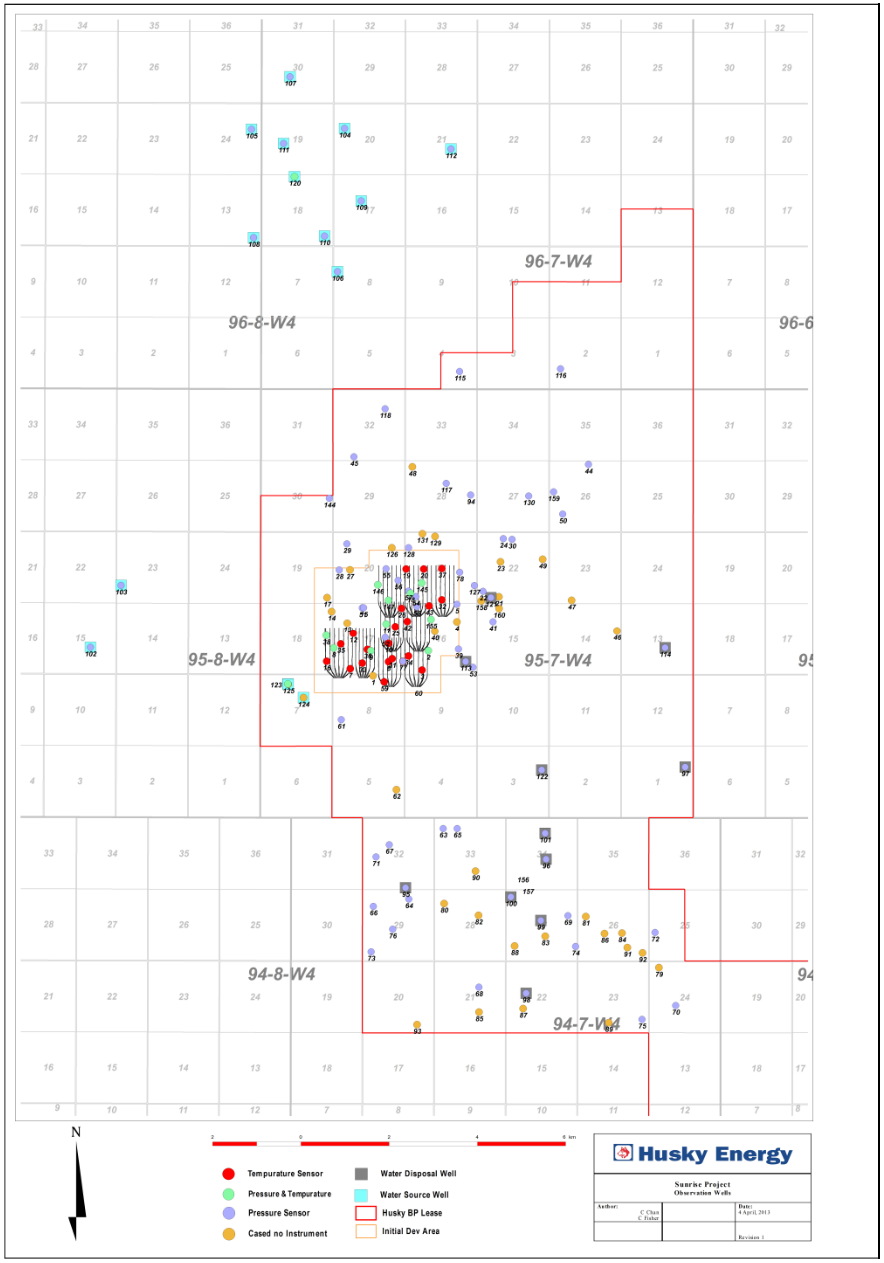
  - ESP operational parameters:
    - Bottom hole Pressure: 1300 kPa – 1700 kPa
    - Bottom hole Temperature: 100 – 200 ºC
    - Surface Temperature: 100 – 160 ºC
    - Emulsion Production rate: 60 – 1,000 m^3/day

Gas Lift Production	**B13-08: P1, P2, P4, P5, P7** **B14-08: P1, P3, P4, P6** **B08-17: P1, P6** **B05-16: P1, P3, P4, P6** **B13-09: P1 – P6*** **B16-08: P1 – P6***
ESP Production	**B13-08: P3, P6** **B14-08: P2, P5** **B08-17: P2, P3, P4, P5** **B05-16: P2, P5** **B16-17: P1 – P6***

* still in start-up; steaming but no production as of July 31, 2015

5. Instrumentation in Wells

Instrumentation – Observation Wells Map



Instrumentation – Observation Wells List

New Well Name	License Number	Downhole Instrumentation - Piezometers (P) or Pressure/Temperature Gauge (PG)	Downhole Instrumentation - Thermocouples	Spud Date
HUSKY OB-1 STEEPBK 15-8-95-7	0387616			1/24/2008
HUSKY OB-2 STEEPBK 6-16-95-7	0388000	P (5)	T	2/23/2008
HUSKY OB-3 STEEPBK 4-16-95-7	0387999		T	1/21/2008
HUSKY OB-4 STEEPBK 10-16-95-7	0387993			1/11/2008
HUSKY OB-5 STEEPBK 15-16-95-7	0387992	P (5)		2/26/2008
HUSKY OB-6 STEEPBK 1-17-95-7	0387662		T	1/5/2008
HUSKY OB-7 STEEPBK 4-17-95-7	0388001		T	1/15/2008
HUSKY OB-8 STEEPBK 5-17-95-7	0387994	P (5)	T	2/11/2008
HUSKY OB-9 STEEPBK 7-17-95-7	0388098	P (5)	T	2/16/2008
HUSKY OB-10 STEEPBK 8-17-95-7	0388099		T	1/7/2008
HUSKY OB-11 STEEPBK 10-17-95-7	0388100	P (4) + B.T. (1)	T	2/20/2008
HUSKY OB-12 STEEPBK 11-17-95-7	0388101		T	1/12/2008
HUSKY OB-13 STEEPBK 12-17-95-7	0388102			1/17/2008
HUSKY OB-14 STEEPBK 16-18-95-7	0387991			1/21/2008
HUSKY OB-15 STEEPBK 14-17-95-7	0323815	P (5) + B.T. (1)	cemented	6/27/2005
HUSKY OB-16 STEEPBK 1-18-95-7	0387995		T	2/5/2008
HUSKY OB-17 STEEPBK 1-19-95-7	0388807			3/10/2008
HUSKY OB-18 STEEPBK 4-21-95-7	0388806	P (3)	T	3/2/2008
HUSKY OB-19 STEEPBK 5-21-95-7	0388805		T	3/12/2008
HUSKY OB-20 STEEPBK 6-21-95-7	0388808		T	3/10/2008
HUSKY OB-21 STEEPBK 3-22-95-7	0388104			2/7/2008
HUSKY OB-22 STEEPBK 4-22-95-7	0391296	P (8)		3/4/2008
HUSKY OB-23 STEEPBK 11-22-95-7	0388105			2/4/2008
HUSKY OB-24 STEEPBK 14-22-95-7	0388106	PG		3/4/2008
HUSKY OB-25 STEEPBK 9-17-95-7	0430827		T	2/10/2011
HUSKY OB-26 STEEPBK 16-17-95-7	0428000		T	1/22/2011
HUSKY OB-27 STEEPBK 5-20-95-7	0428458			1/12/2011
HUSKY OB-28 STEEPBK 5-20-95-7	0428380	P (5)		1/6/2011
HUSKY OB-29 STEEPBK 13-20-95-7	0428593	P (5)		1/6/2011
HUSKY OB-30 STEEPBK 14-22-95-7	0430161	PG		2/17/2011
HUSKY OB-31 STEEPBK 1-17-95-7	0428815		T	2/5/2011
HUSKY OB-32 STEEPBK 2-21-95-7	0428146		T	2/12/2011
HUSKY OB-33 STEEPBK 3-17-95-7	0428809		T	1/20/2011
HUSKY OB 34 STEEPBK 5-16-95-7	0428818		T	2/1/2011
HUSKY OB-35 STEEPBK 5-17-95-7	0428145		T	1/16/2011
HUSKY OB-36 STEEPBK 6-17-95-7	0428403		T	2/8/2011
HUSKY OB-37 STEEPBK 7-21-95-7	0428399		T	2/15/2011
HUSKY OB-38 STEEPBK 9-18-95-7	0428404	P (5)	T	1/11/2011
HUSKY OB-39 STEEPBK 7-16-95-7	0439378	P (5)		1/4/2012
HUSKY OB-40 STEEPBK 11-16-95-7	0428256			2/6/2011
HUSKY OB-41 STEEPBK 12-15-95-7	0429570	P (5)		1/16/2011
HUSKY OB-42 STEEPBK 12-16-95-7	0428713		T	2/13/2011
HUSKY OB-43 STEEPBK 14-16-95-7	0428111		T	2/1/2011
HUSKY OB-44 STEEPBK 15-26-95-7	0430112	PG		2/19/2011
HUSKY OB-45 STEEPBK 3-32-95-7	0430049	PG		3/7/2011
HUSKY OB-46 STEEPBK 9-14-95-7	0430158			3/22/2011
HUSKY OB-47 STEEPBK 3-23-95-7	0430887			3/15/2011
HUSKY OB-48 STEEPBK 13-28-95-7	0429927			3/3/2011
HUSKY OB-49 STEEPBK 9-22-95-7	0430163			3/18/2011
HUSKY OB-50 STEEPBK 4-26-95-7	0430160	PG		2/21/2011
HUSKY OB-51 MFOB D STEEPBK 14-1	0343952	P (8)	cemented	1/7/2006
HUSKY OB-52 STEEPBK 10-17-95-7	0323817	P (5) + B.T. (1)	cemented	2/6/2005
HUSKY OB-53 C STEEPBK 1-16-95-7	0343949	P (4)	cemented	12/15/2005
HUSKY OB-54 1Y01 STEEPBK 4-21-95	0417750	P (2)	cemented	2/16/2010
HUSKY OB-55 1AB STEEPBK 7-20-95-7	0417694	P (2)	cemented	1/26/2010
HUSKY OB-56 STEEPBK 8-20-95-7	0418062	P (2)	cemented	2/21/2010
HUSKY OB-57 1Y6 STEEPBK 4-21-95-7	0417837	P (2)	cemented	2/2/2010
HUSKY OB-58 1Y7 STEEPBK 13-16-95	0417754	P (2)	cemented	2/11/2010
HUSKY OB-59 STEEPBK 15-8-95-7	Y0002686		T	22/03/1964
HUSKY OB-60 B 13-9 P5 STEEPBK 4-1	0434958		T	2/10/2011
HUSKY OB-61 STEEPBK 5-8-95-7	0441331	PG		2/6/2012
HUSKY OB-62 STEEPBK 8-5-95-7	0440567			2/14/2012
HUSKY OB-63 STEEPBK 13-33-94-7	0452132	P (2)		3/17/2013
HUSKY OB-64 STEEPBK 15-29-94-7	0452096	P (4)		3/9/2013
HUSKY OB-65 STEEPBK 14-33-94-7	0452081	P (3)		3/26/2013
HUSKY OB-66 STEEPBK 13-29-94-7	0451950	P (4)		3/13/2013
HUSKY OB-67 STEEPBK 11-32-94-7	0451966	P (3)		3/13/2013
HUSKY OB-68 STEEPBK 10-21-94-7	0451963	P (3)		2/25/2013
HUSKY OB-69 STEEPBK 9-27-94-7	0452011	P (3)		3/4/2013
HUSKY OB-70 STEEPBK 6-24-94-7	0453872	P (3)		2/25/2013
HUSKY OB-71 STEEPBK 5-32-94-7	0452211	P (3)		3/8/2013
HUSKY OB-72 STEEPBK 5-25-94-7	0452259	P (3)		1/10/2013
HUSKY OB-73 STEEPBK 4-29-94-7	0453641	P (3)		2/20/2013
HUSKY OB-74 STEEPBK 1-27-94-7	0451935	P (3)		3/3/2013
HUSKY OB-75 STEEPBK 1-23-94-7	0451815	P (3)		2/19/2013
HUSKY OB-76 STEEPBK 6-29-94-7	0451933	P (3)		3/17/2013
HUSKY OB-77 STEEPBK 1-17-95-7	0452022	P (3)	T	1/3/2013
HUSKY OB-78 STEEPBK 8-21-95-7	0451944	P (3)		1/9/2013
HUSKY OB-79 STEEPBK 13-24-94-7	0451938			2/17/2013
HUSKY OB-80 STEEPBK 13-28-94-7	0451945			3/3/2013
HUSKY OB-81 STEEPBK 12-26-94-7	0452023			2/12/2013
HUSKY OB-82 STEEPBK 10-28-94-7	0451937			3/7/2013
HUSKY OB-83 STEEPBK 7-27-94-7	0452215			1/4/2013
HUSKY OB-84 STEEPBK 7-26-94-7	0451970			1/18/2013
HUSKY OB-85 STEEPBK 7-21-94-7	0452021			2/20/2013
HUSKY OB-86 STEEPBK 6-26-94-7	0452084			2/7/2013
HUSKY OB-87 STEEPBK 5-22-94-7	0452024			3/2/2013
HUSKY OB-88 STEEPBK 4-27-94-7	0452083			1/11/2013
HUSKY OB-89 STEEPBK 3-23-94-7	0452029			2/15/2013
HUSKY OB-90 STEEPBK 7-33-94-7	0453639			3/6/2013
HUSKY OB-91 STEEPBK 2-26-94-7	0453807			2/26/2013
HUSKY OB-92 STEEPBK 1-26-94-7	0452210			2/22/2013
HUSKY OB-93 STEEPBK 1-20-94-7	0451942			2/15/2013
HUSKY OB-94 STEEPBK 9-28-95-7	0451951	PG		1/4/2013
HUSKY KR-OB-95 STEEPBK 2-32-94-7	0452332	P(2)		2/24/2013
HUSKY KR-OB-96 STEEPBK 7-34-94-7	0452291	P(2)		2/4/2013
HUSKY KR-OB-97 STEEPBK 9-1-95-7	0452736	P(2)		2/12/2013
HUSKY KR-OB-98 STEEPBK 11-22-94-	0452280	P(2)		1/25/2013
HUSKY KR-OB-99 STEEPBK 11-27-94-	0452270	P(2)		1/25/2013
HUSKY KR-OB-100 STEEPBK 13-27-94	0452281	P(2)		1/18/2013
HUSKY KR-OB-101 STEEPBK 15-34-94	0452269	P(2)		1/31/2013
HUSKY SRC-OB-102 SUNRISE 7-15-95	0373494	P (2)		2/9/2007
HUSKY SRC-OB-103 SUNRISE 5-23-95	0373506	P (3)		2/13/2007
HUSKY SRC-OB-104 SUNRISE 12-20-9	0389637	P (2)		1/26/2008
HUSKY SRC-OB-105 SUNRISE 9-24-96	0363115	P (2)		9/18/2006
HUSKY SRC-OB-106 SUNRISE 12-8-96	0362523	P (2)		9/13/2006
HUSKY SRC-OB-107 SUNRISE 6-30-96	0389630	P (2)		2/14/2008
HUSKY SRC-OB-108 SUNRISE 1-13-96	0391346	P (2)		2/19/2008
HUSKY SRC-OB-109 SUNRISE 11-17-9	0389636	P (2)		1/19/2008
HUSKY SRC-OB-110 SUNRISE 1-18-96	0362866	P (2)		9/15/2006
HUSKY SRC-OB-111 SUNRISE 6-19-96	0362577	P (2)		9/13/2006
HUSKY SRC-OB-112 SUNRISE 7-21-96	0389635	P (2)		2/3/2008
HUSKY KR-OB-113 AZ1 STEEPBK 1-16	0316284	P		10/22/2004
HUSKY KR-OB-114 STEEPBK 7-13-95-	0305423	P		3/15/2004
HUSKY PM-OB-115 STEEPBK 1-4-96-7	0452212	P (3)		3/14/2013
HUSKY PM-OB-116 STEEPBK 5-2-96-7	0452226	P (3)		3/10/2013
HUSKY PM-OB-117 STEEPBK 10-28-9	0453724	P (3)		3/12/2013
HUSKY PM-OB-118 STEEPBK 10-32-9	0453768	P (3)		3/18/2013
HUSKY SWS-OB-119 SUNRISE 9-21-93	0442976			2/25/2012
HUSKY SRC-OB-120 SUNRISE 14-18-9	0362870	P (2)		9/17/2006
HUSKY SWD-OB-121 STEEPBK 4-22-9	0431972	PG		3/15/2011
HUSKY SWD-OB-122 STEEPBK 9-3-95	0431974	PG		3/24/2011
HUSKY SRC-OB-123 STEEPBK 14-7-95-7	0304979	PG		3/14/2004
HUSKY SRC-OB-124 STEEPBK 10-7-95	0304964			3/9/2004
HUSKY SRC-OB-125 STEEPBK 14-7-95	0305114			3/15/2004
HUSKY OB-126 STEEPBK 16-20-95-7	0461747			1/11/2014
HUSKY OB-127 STEEPBK 8-21-95-7	0461748	P (6)		2/18/2014
HUSKY OB-128 STEEPBK 13-21-95-7	0461549	P (6)		1/16/2014
HUSKY OB-129 STEEPBK 14-21-95-7	0461765			1/20/2014
HUSKY OB-130 STEEPBK 10-27-95-7	0462203	PG		1/7/2014
HUSKY OB-131 STEEPBK 13-21-95-7	0461937			1/28/2014
HUSKY OB-144 STEEPBK 8-30-95-7	0462043	P (4)		3/3/2014
HUSKY OB-145 STEEPBK 5-21-95-7	0462143	P (6)	T	1/21/2014
HUSKY OB- 146 STEEPBK 7-20-95-7	0462141	P (6)	T	1/26/2014
HUSKY OB- 147 STEEPBK 1-20-95-7	0462142	P (5)	T	2/14/2014
HUSKY OB-155 STEEPBK 14-16-95-7	0462196	P (5)	T	2/11/2014
HUSKY KR-OB-156 STEEPBK 4-34-94-	0462284	PG		1/31/2014
HUSKY KR-OB-157 STEEPBK 3-34-94-	0462372	PG		2/5/2014
HUSKY OB-158 STEEPBK 4-22-95-7	0462359			2/3/2014
HUSKY OB-159 STEEPBK 12-26-95-7	0462065	PG		1/7/2014
HUSKY OB-160 STEEPBK 14-15-95-7	0461803			2/8/2014

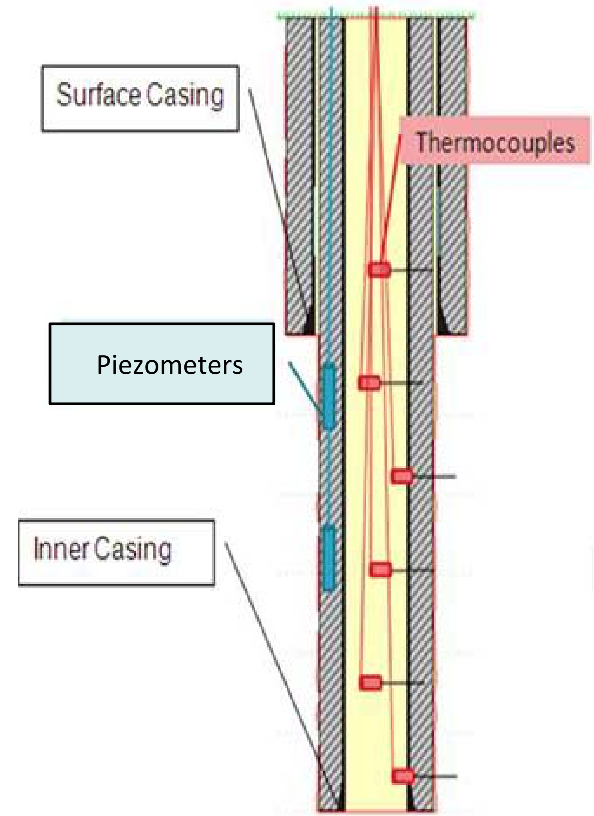
Instrumentation in SAGD OBS Wells

- 81 OBS Wells with Instrumentation:
  - 21 wells with thermocouple only
  - 50 wells with piezometer only
  - 10 wells with piezometer and thermocouples

- 62 OBS Wells connected to SCADA:
  - 21 wells with thermocouple only
  - 31 wells with piezometers only
  - 10 wells with piezometer and thermocouples

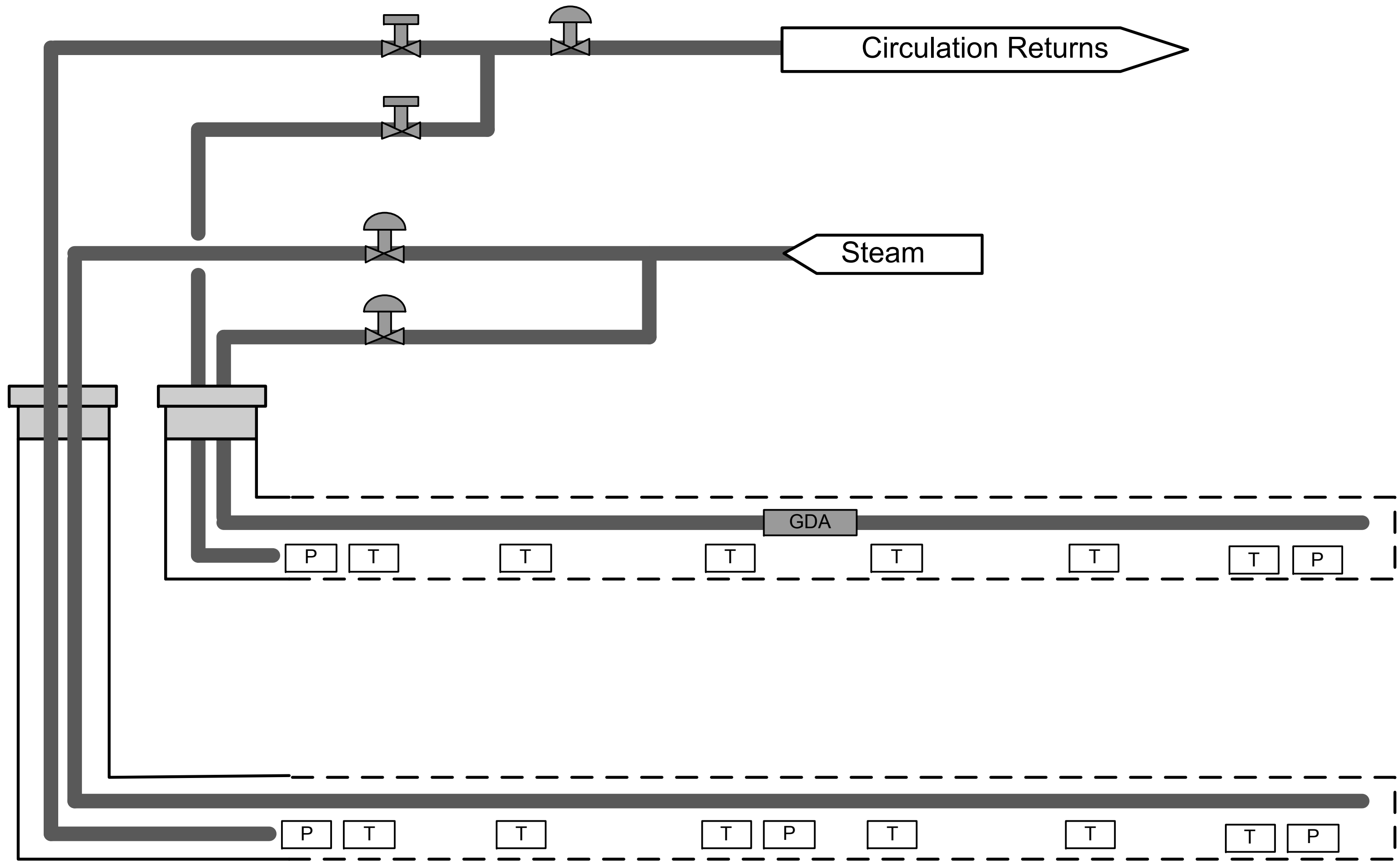
- Thermocouples: Up to 24 thermocouples per well, the majority of which are placed across the pay interval.

- Piezometers: Up to 8 piezometers per well. Cemented behind casing. Placed within the Clearwater, Wabiskaw, IHS and/or the McMurray Intervals.



Typical SAGD Observation Well

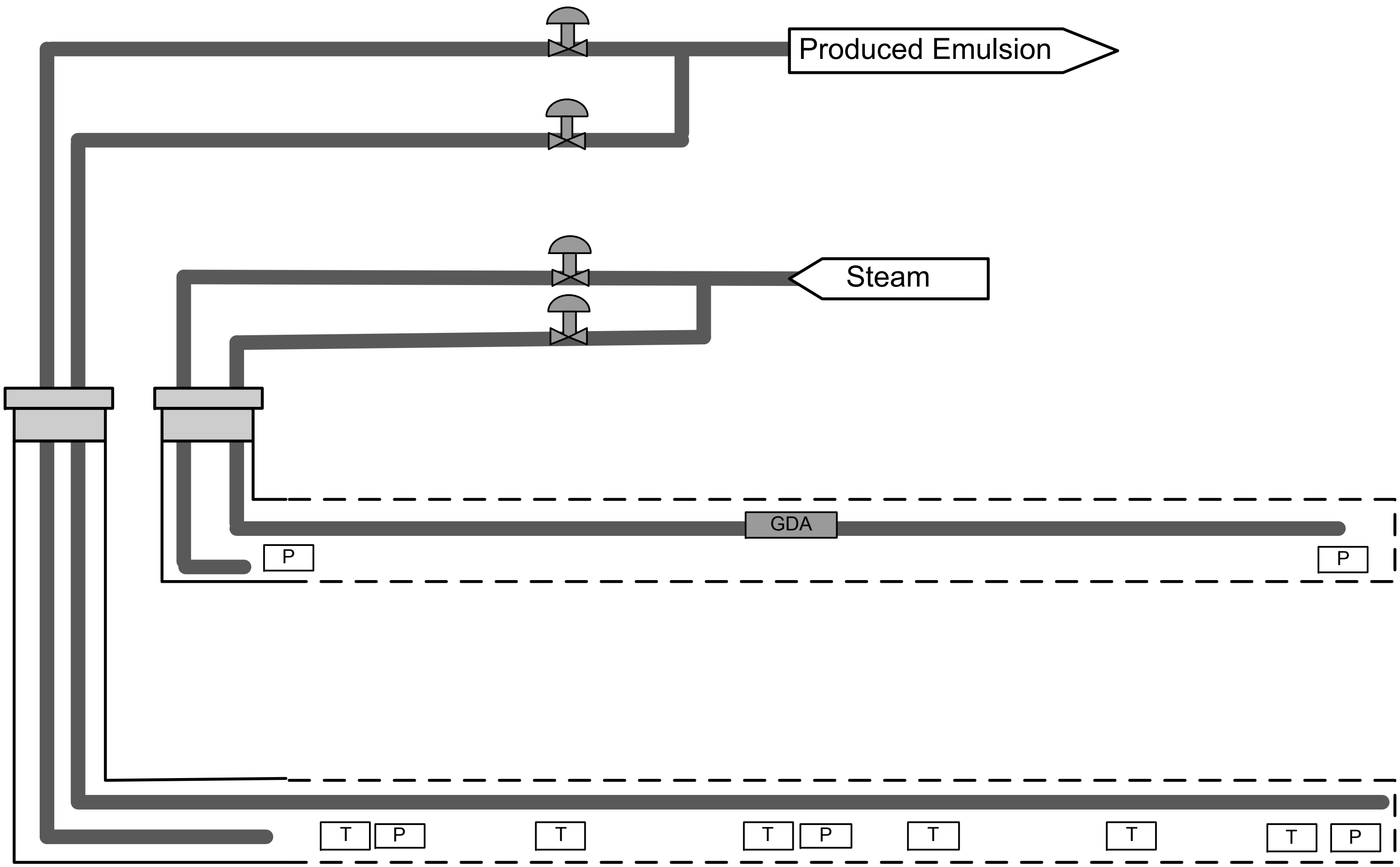
Temperature and Pressure Measurement – Circulation



Legend

GDA	Gravity Drainage Accessory
P	Pressure Measurement
T	Temperature Measurement

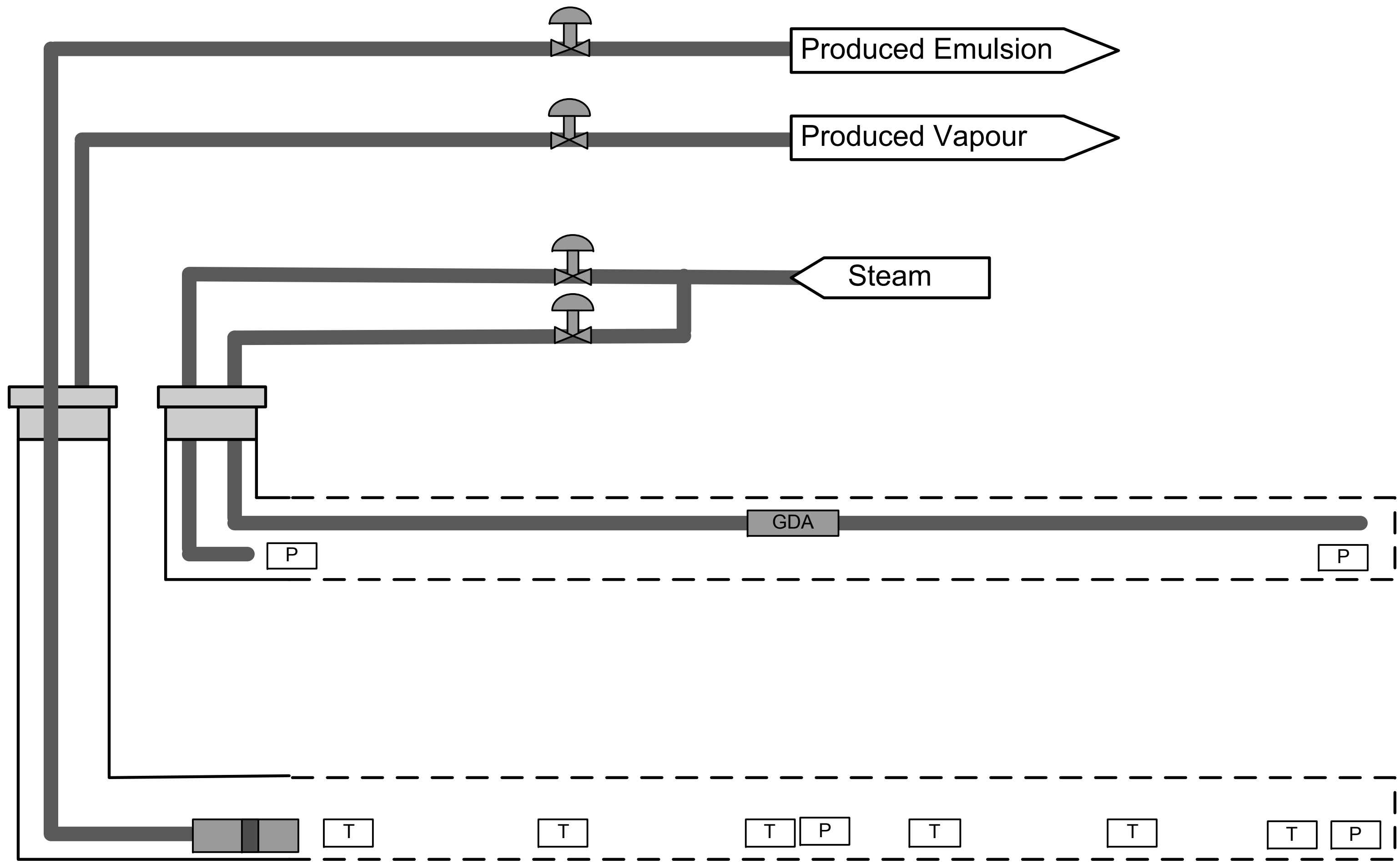
Temperature and Pressure Measurement – Gas Lift



Legend

GDA	Gravity Drainage Accessory
P	Pressure Measurement
T	Temperature Measurement

Temperature and Pressure Measurement – ESP



Legend

GDA Gravity Drainage Accessory
P Pressure Measurement
T Temperature Measurement

6. 4D Seismic

4D Seismic Data:

- No 4D seismic programs were carried out in the reporting period

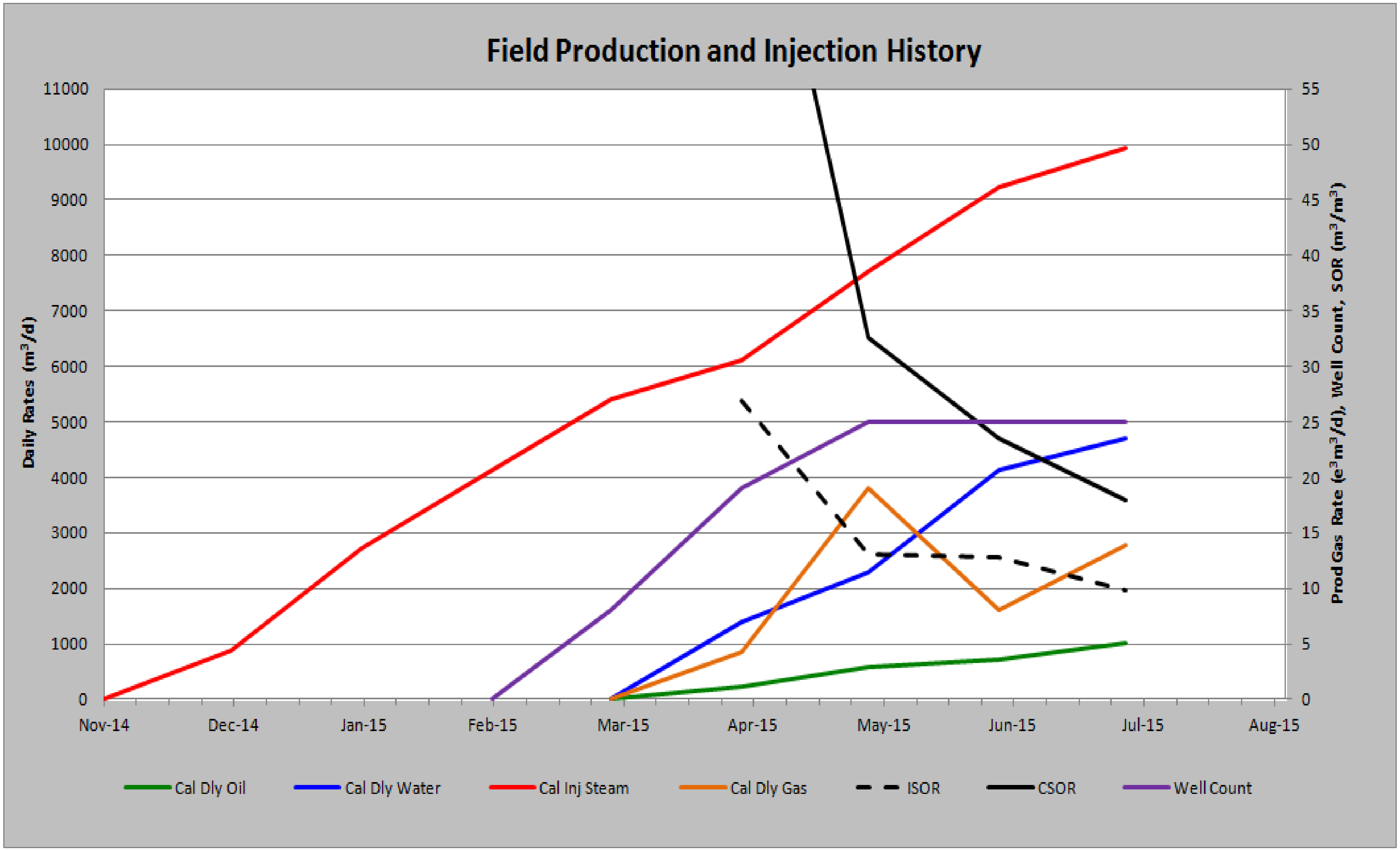
7. Scheme Performance

Scheme Performance Prediction Methodology

- Current performance prediction built on:
  - Actual performance
  - Analysis of analogous SAGD projects
  - Updated geological model supplemented with simulation and analytical models

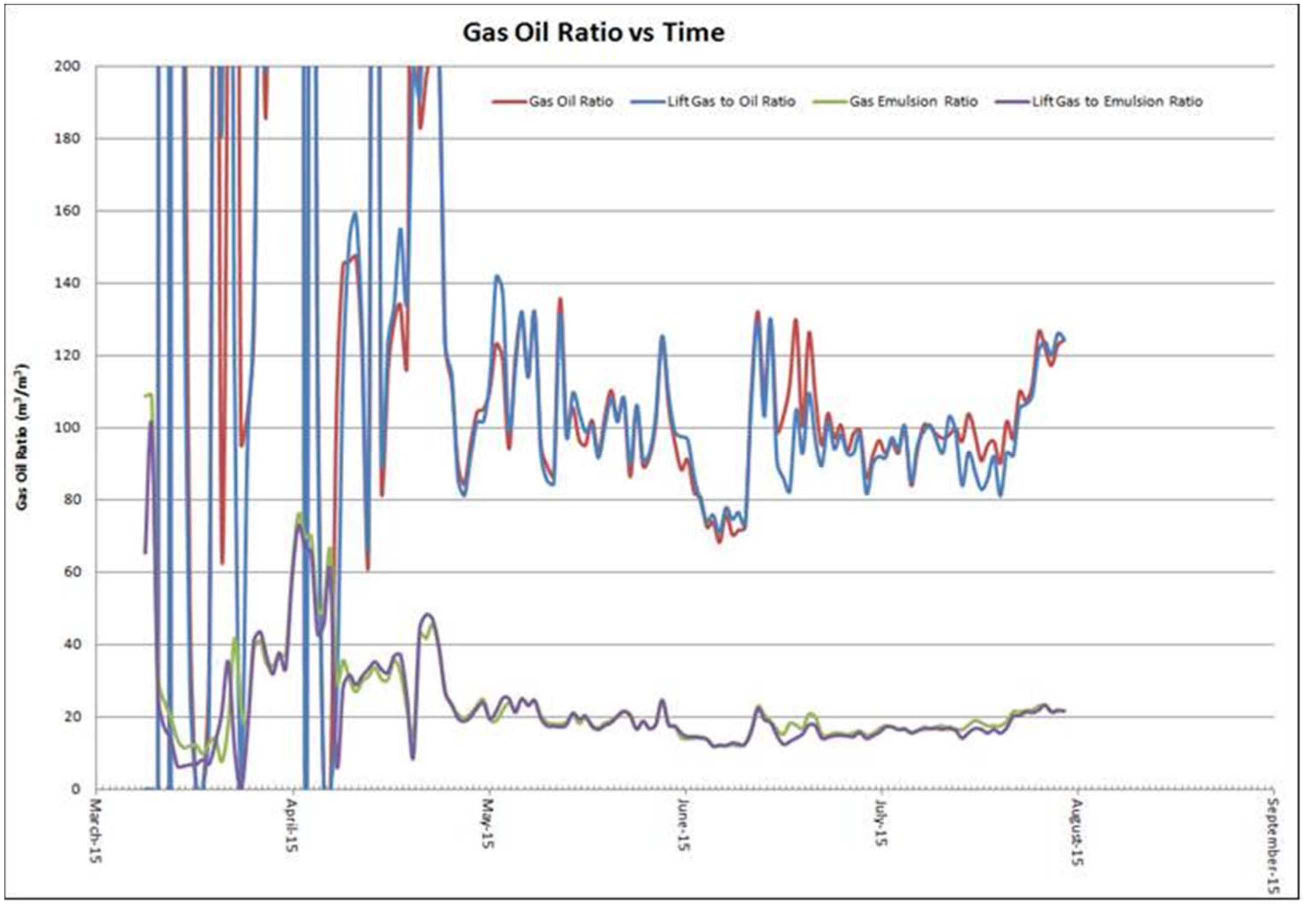
- Simulation and Analytical models will be periodically history matched to actual performance

Field Production and Injection History



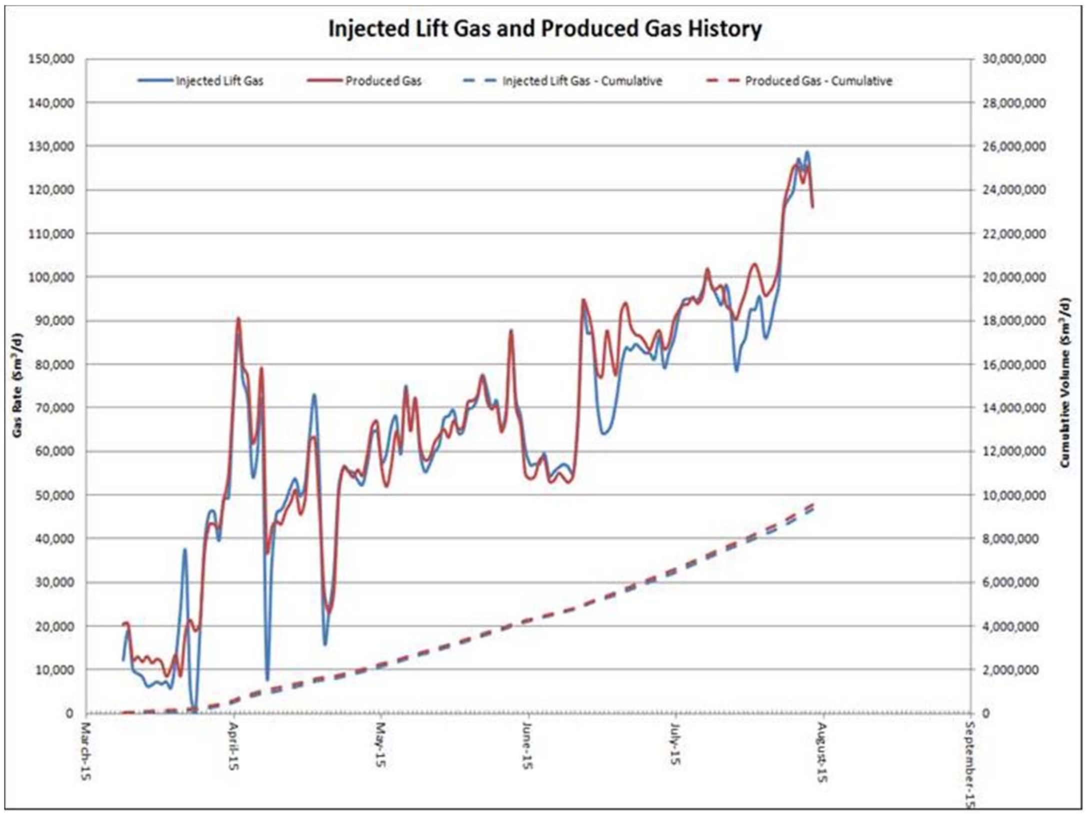
Field Production and Injection History cont'd

- Total gas oil ratio (GOR) is approximately 100 m^3/m^3 in May 2015
- The reservoir gas to oil ratio is estimated to be less than 5 m^3/m^3



Field Production and Injection History cont'd

- Fluctuations in the produced gas rate are influenced by the daily lift gas injection rates
- Fluctuations in lift gas were due to variations in well operations and the number of well on lift gas
- Total production is the sum of lift gas injected and the production reservoir gas
- The majority (greater than 95%) of the produced gas is associated with the injected lift gas



Production

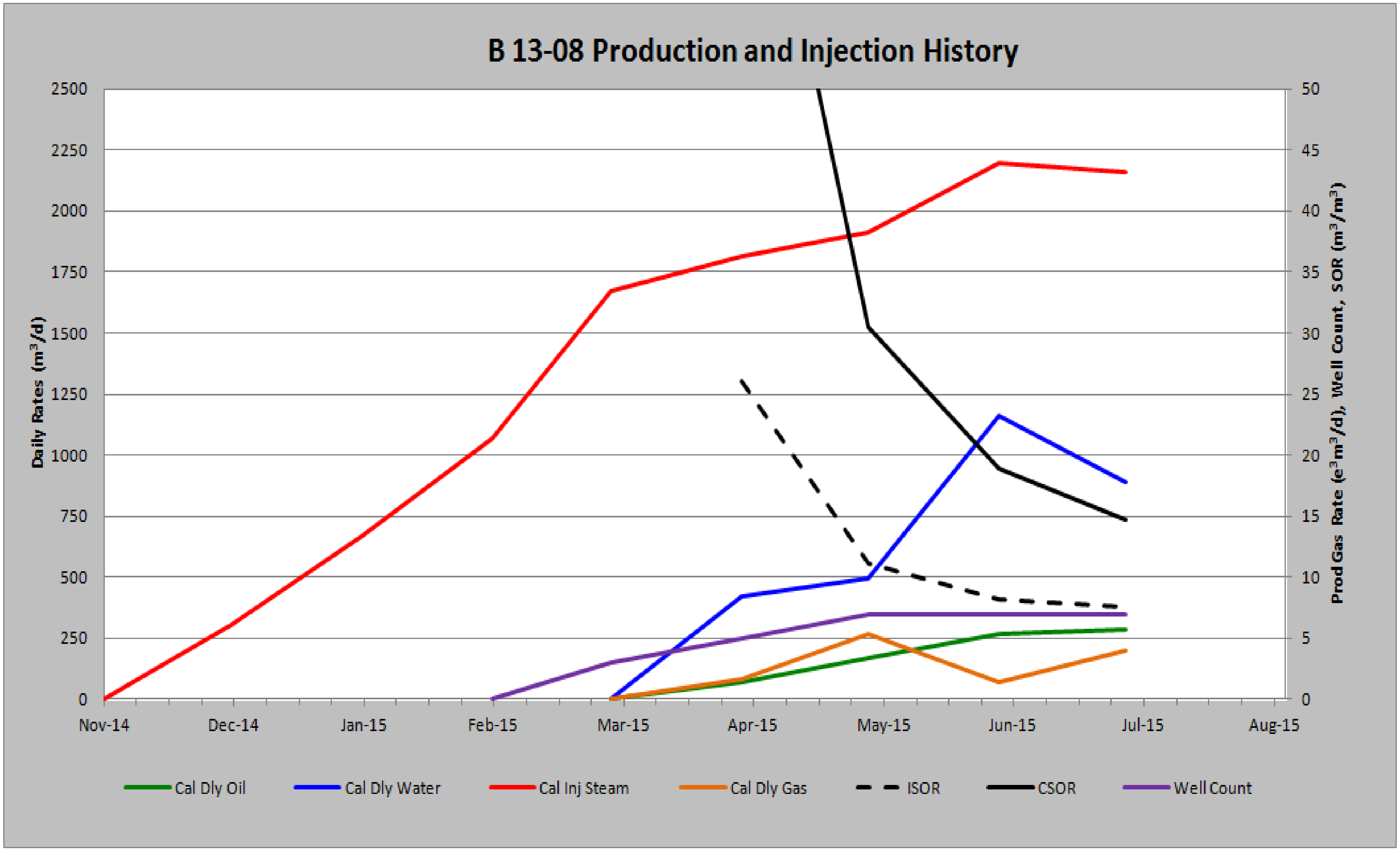
- Highest daily average over a one month period for bitumen production during the reporting period was 1009 m^3/d
- The cumulative oil production for the reporting period was 77,931 m^3
- Producing well pairs are currently in ramp up phase and will continue to increase production rates as the steam chambers develop
- 30 of the 55 total well pairs are still within the start-up phase. All 55 well pairs will be converted to SAGD during the next reporting period
- The average SOR over the reporting period was 12.9 m^3/m^3
- As of July 31, 2015 the cumulative SOR for Sunrise is 18.0 m^3/m^3
- The instantaneous and cumulative SOR are expected to drop as bitumen production ramps up and the remaining well pairs are converted from start-up to SAGD

Production vs. Approval Capacity Variance

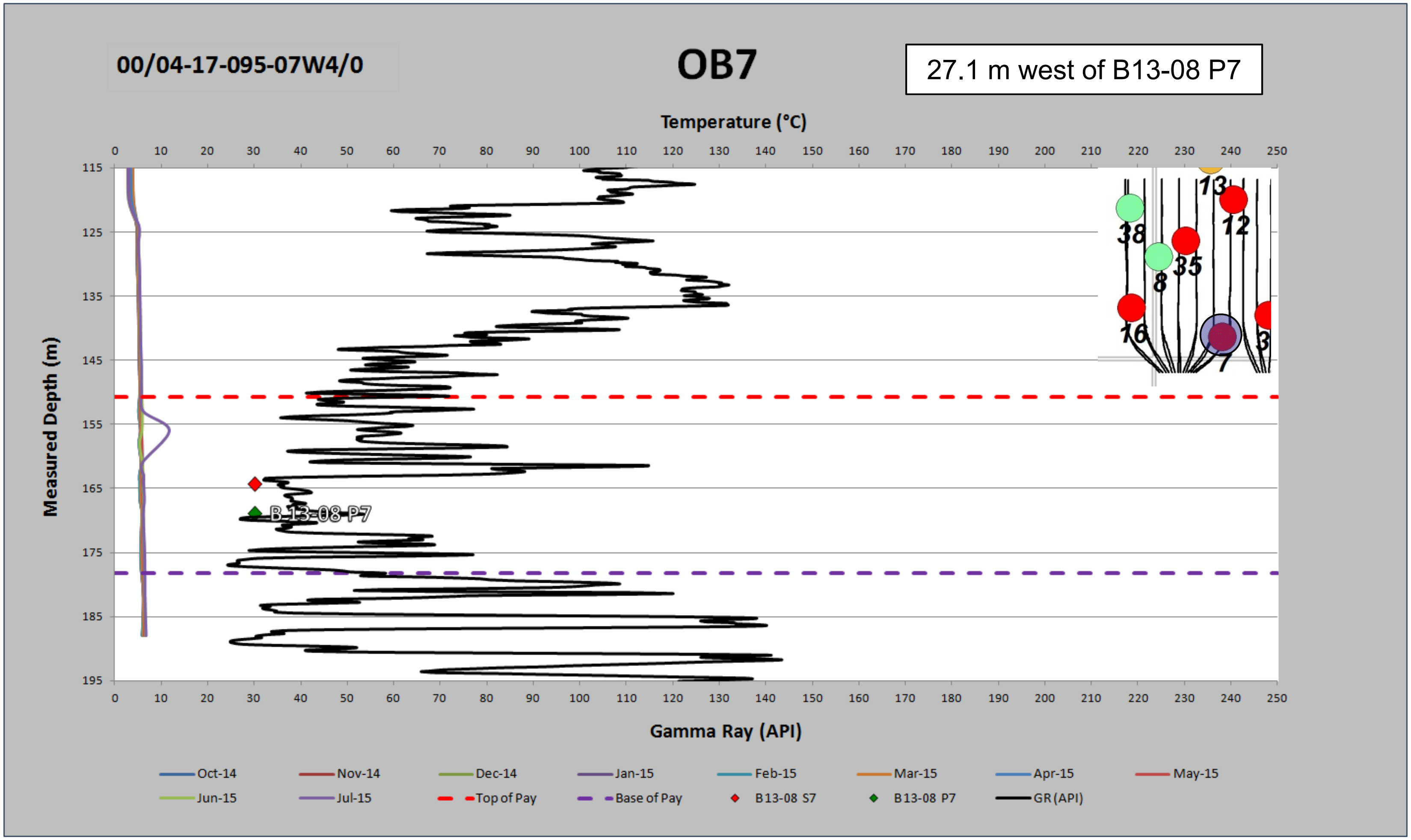
- Start-up / Ramp-up Phase:
  - 25 of 55 well pairs currently producing on early SAGD and are ramping up
  - Remaining 30 well pairs are still in start-up phase and are scheduled for SAGD conversion during the next reporting period

- The majority of the ramp-up towards approval capacity is expected to occur during the next reporting period

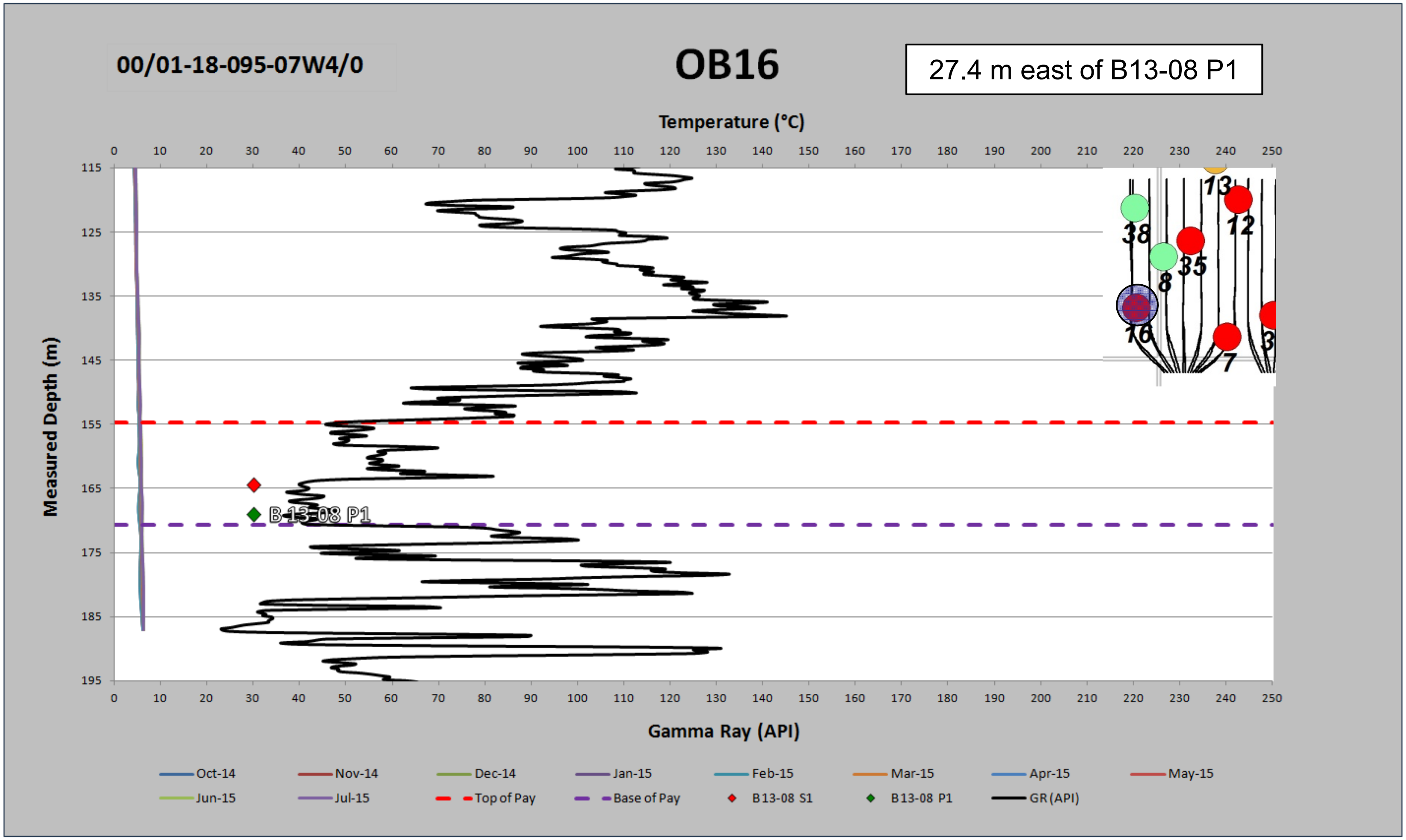
Pad B13-08 (B) Production and Injection History (High Recovery Pad)



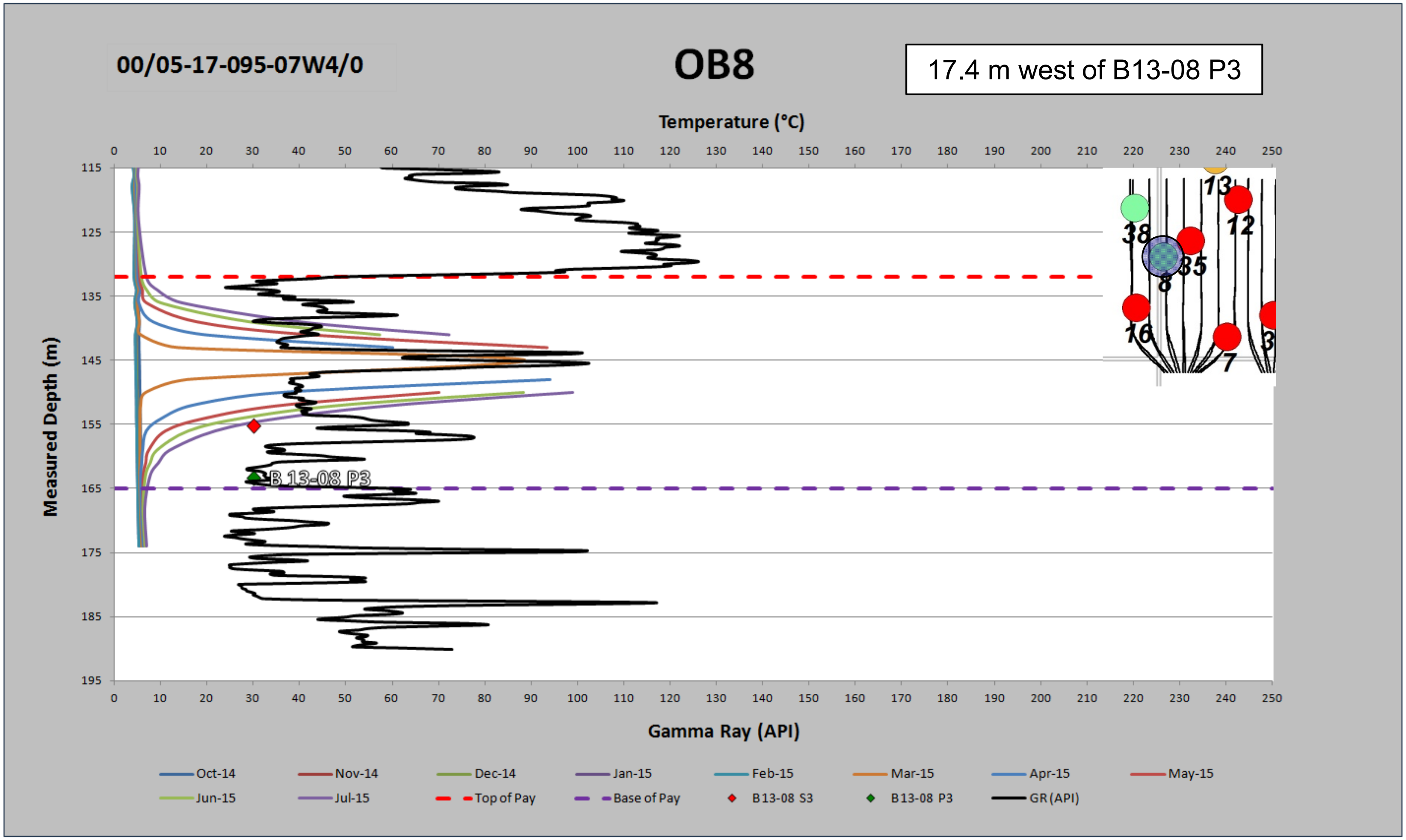
Pad B13-08 (B) Heel Observation Well



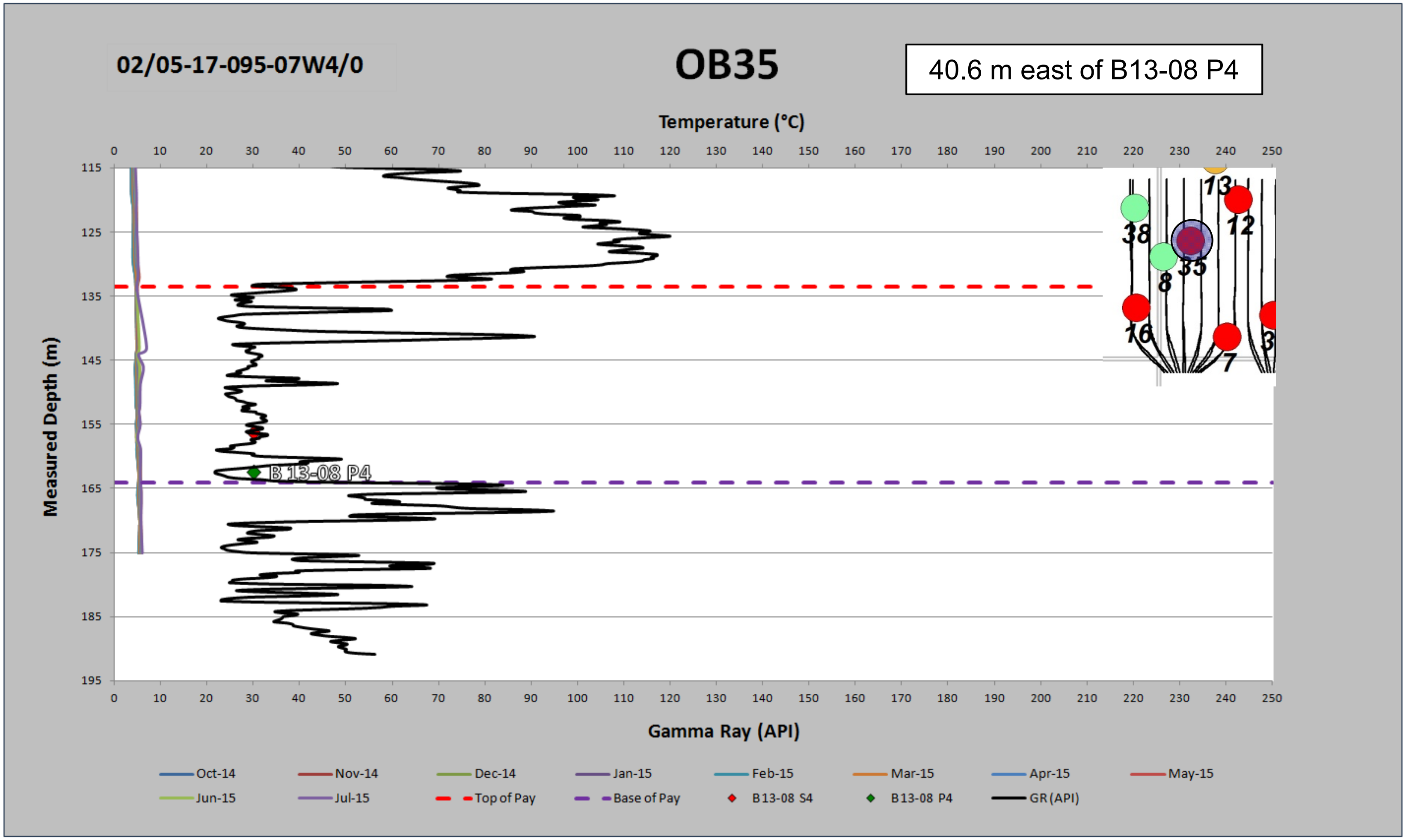
Pad B13-08 (B) Heel Observation Well



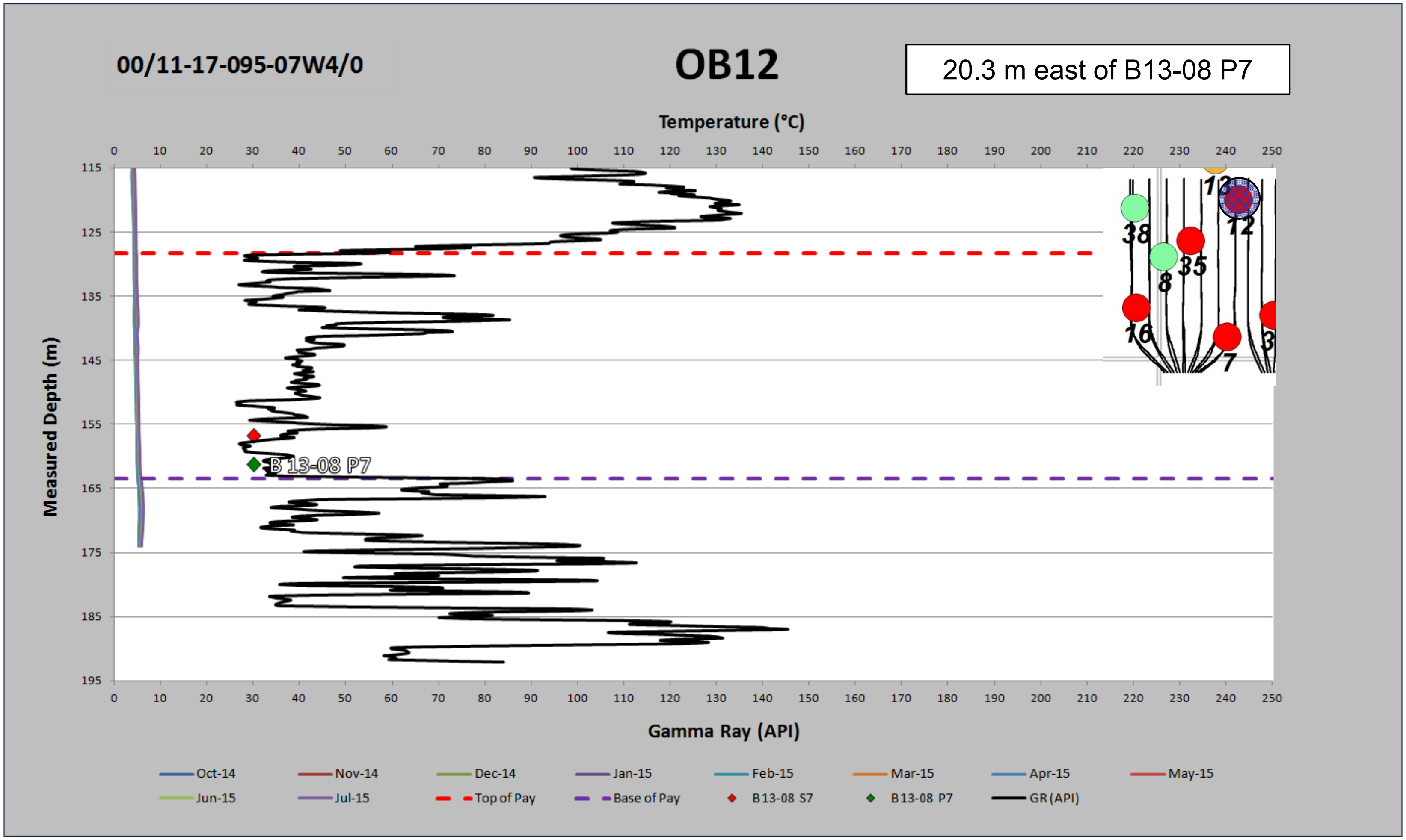
Pad B13-08 (B) Mid Observation Well



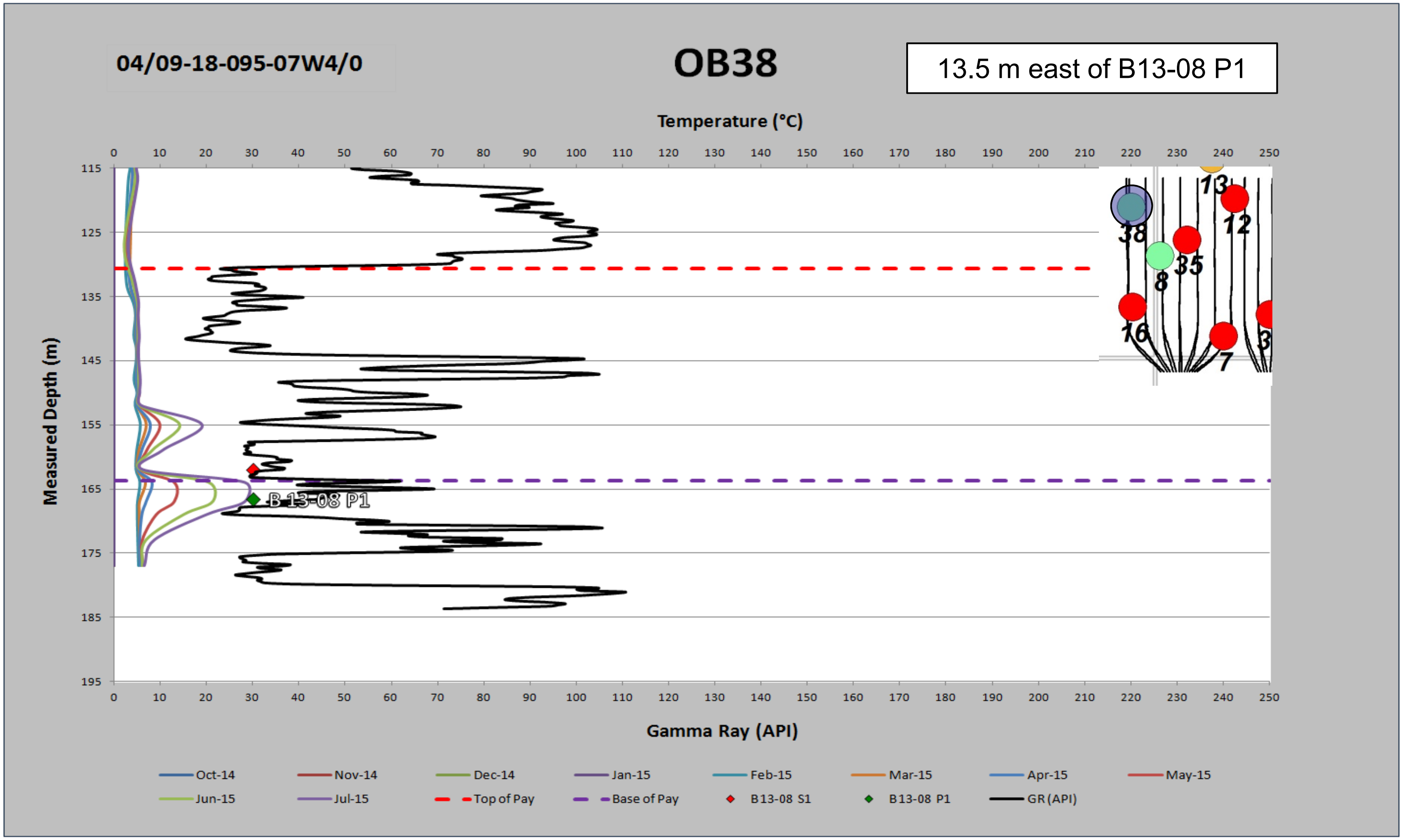
Pad B13-08 (B) Mid Observation Well



Pad B13-08 (B) Toe Observation Well



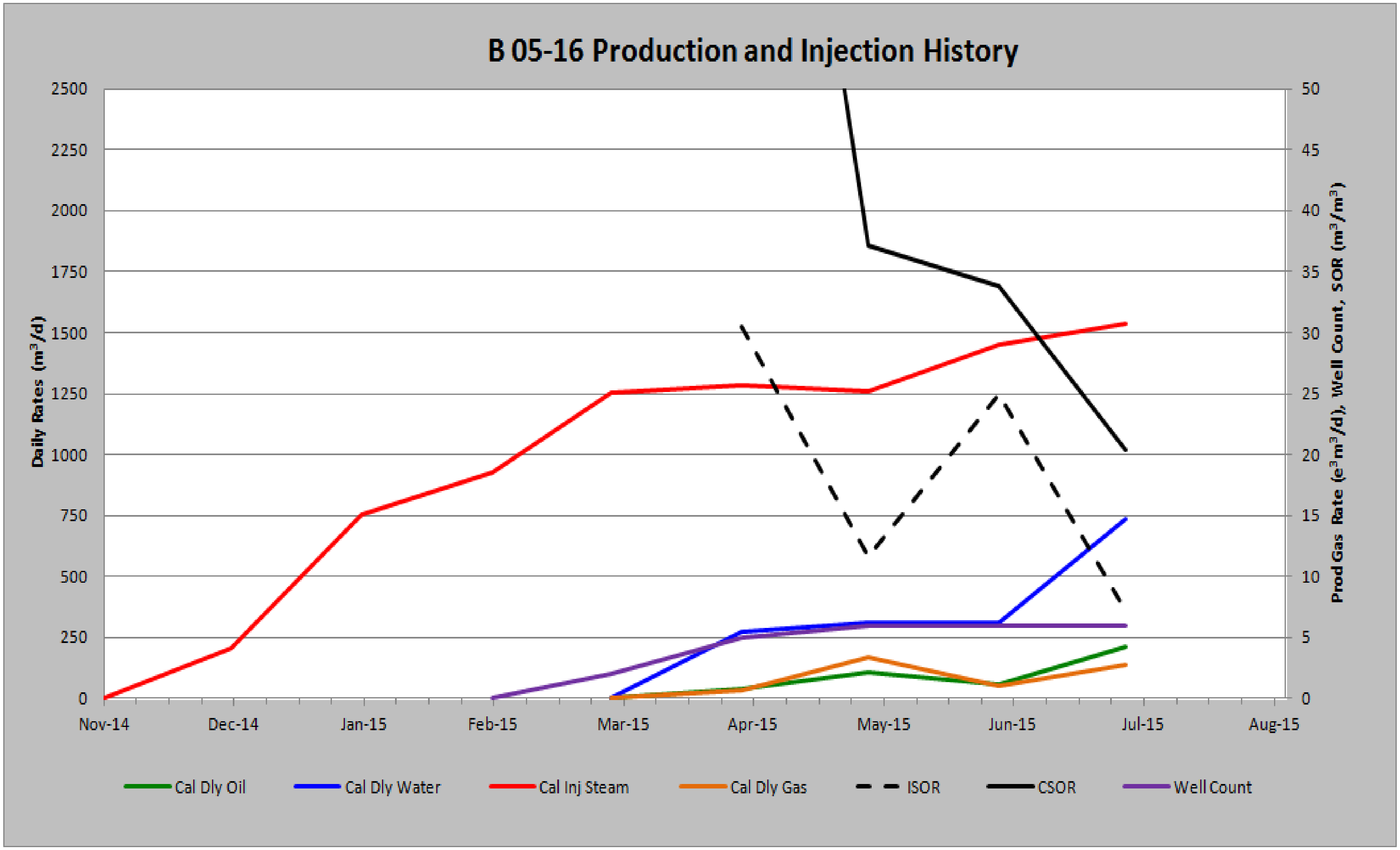
Pad B13-08 (B) Toe Observation Well



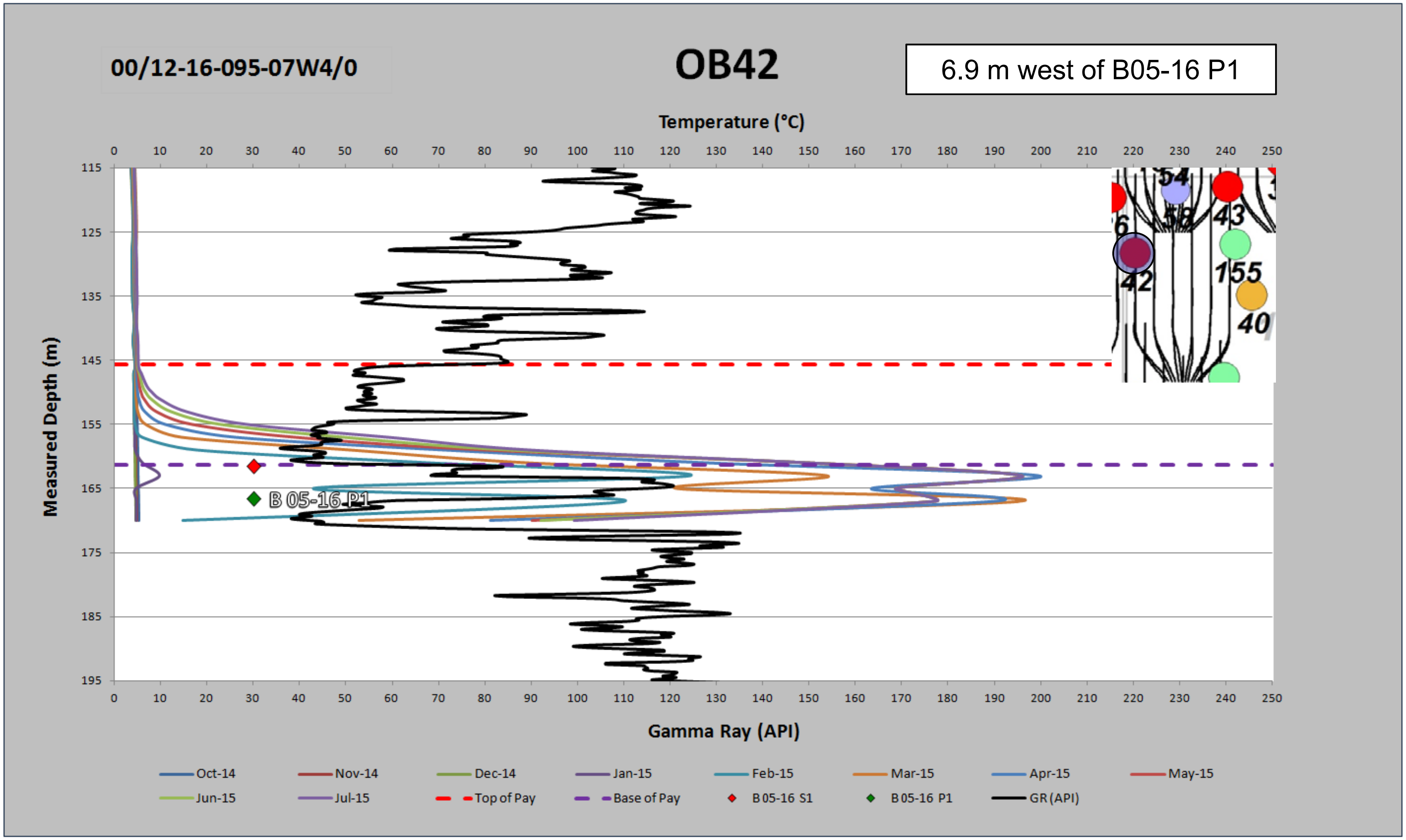
Discussion of Pad B13-08 (B) Performance

- Pad startup was initiated in December 2014
- All wells were bullheaded for approximately 3 months prior to conversion to SAGD
- Injection pressure during the reporting period ranged from 500 to 1670 kPa_g
- Bitumen rates have been ramping up as steam chamber development progresses
- Pad B13-08 (B) performance indicators as of July 31, 2015:
  - Cum. Oil : 24,312 m^3
  - Cum. Steam Injected: 358,396 m^3
  - Cum. Water Produced: 90,242 m^3
  - CSOR: 14.7

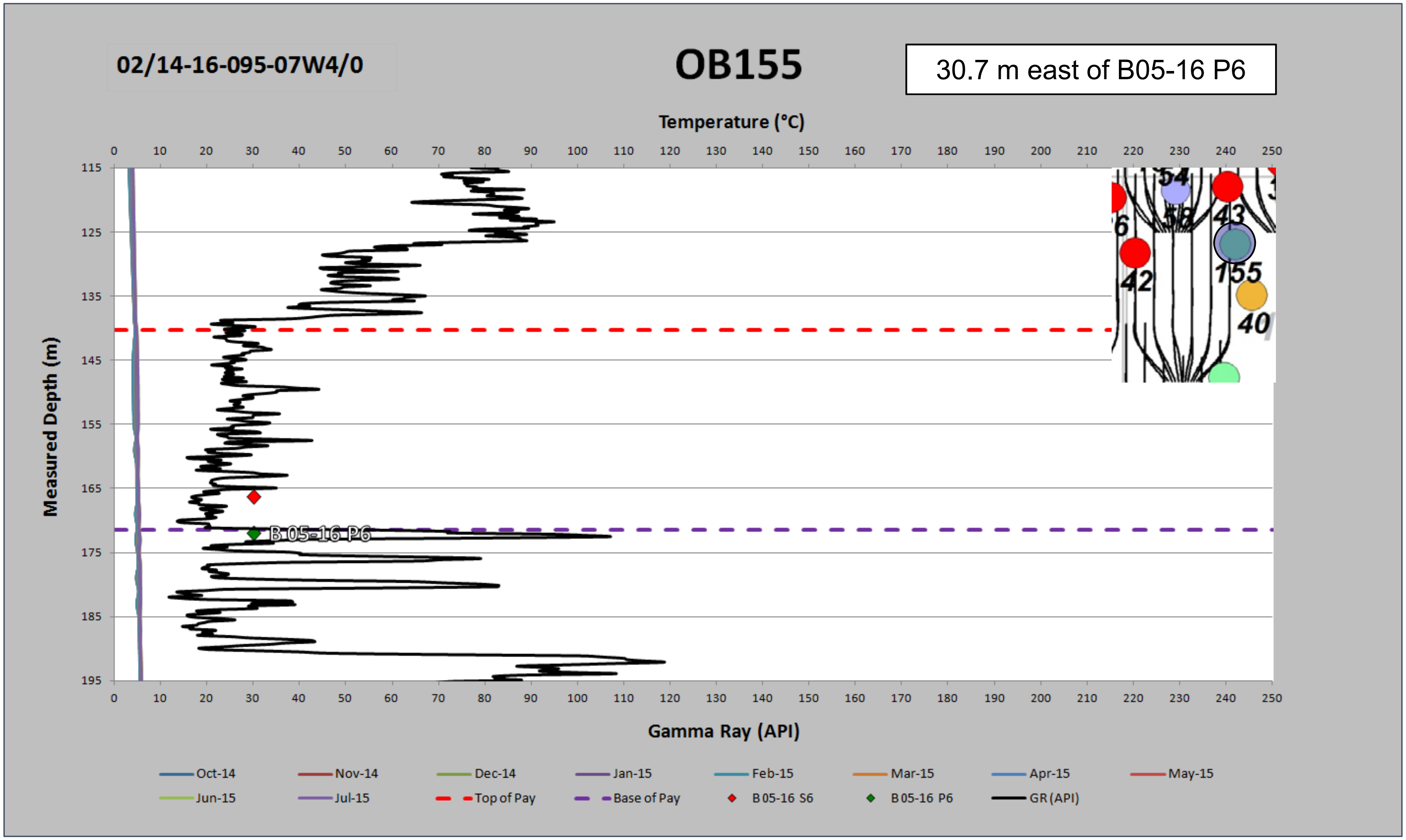
Pad B05-16 (H) Production and Injection History (Medium Recovery Pad)



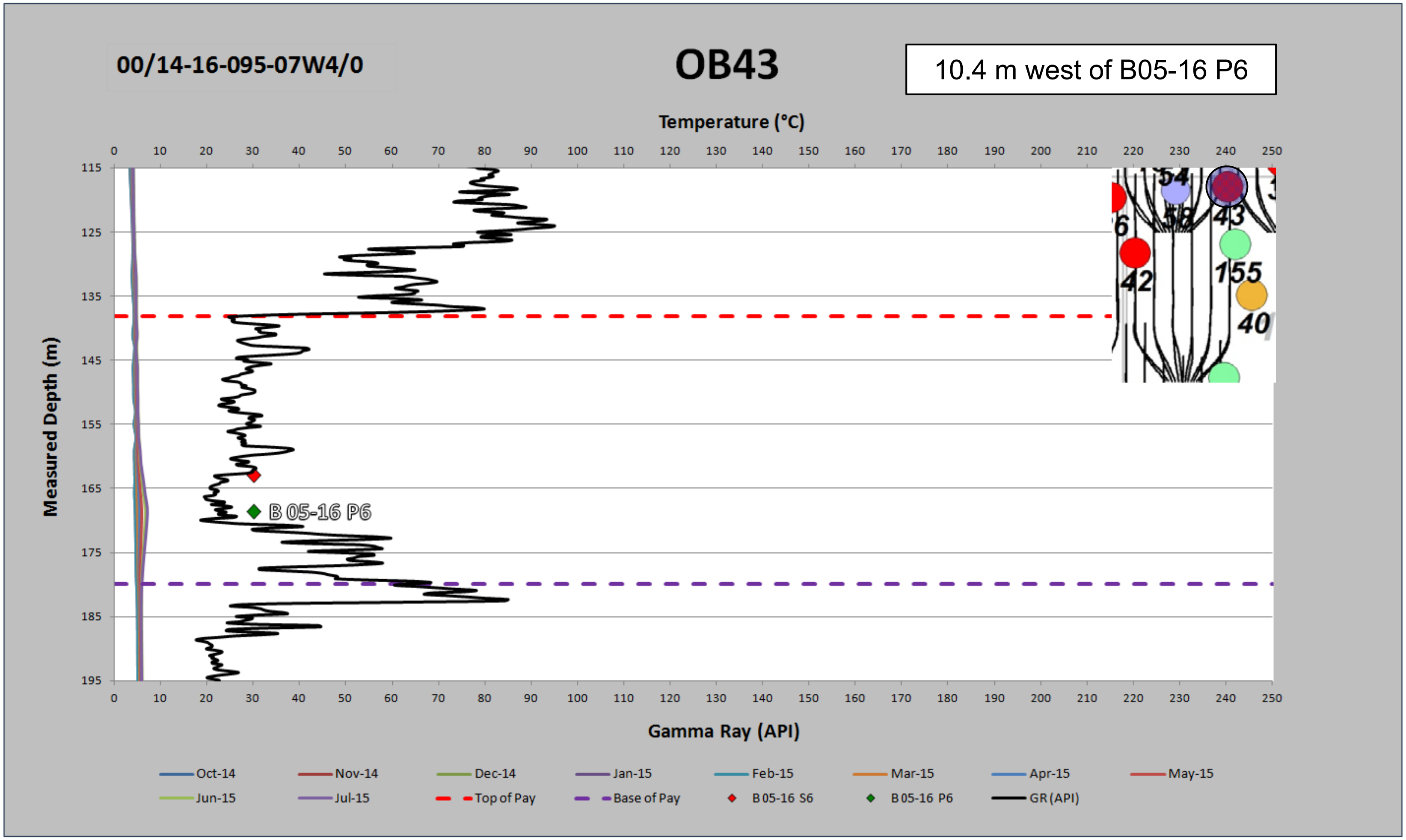
Pad B05-16 (H) Heel Observation Well



Pad B05-16 (H) Mid Observation Well



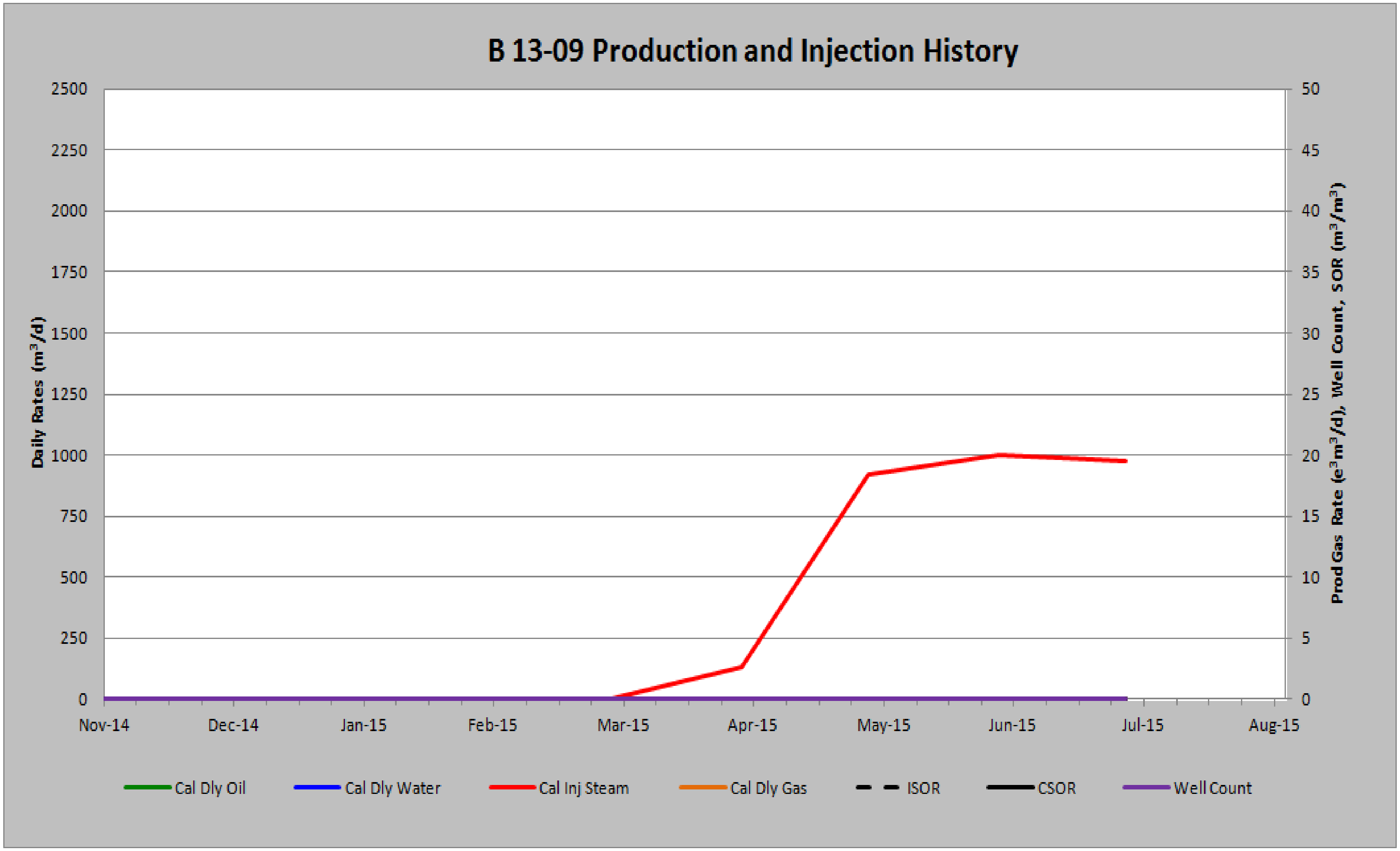
Pad B05-16 (H) Toe Observation Well



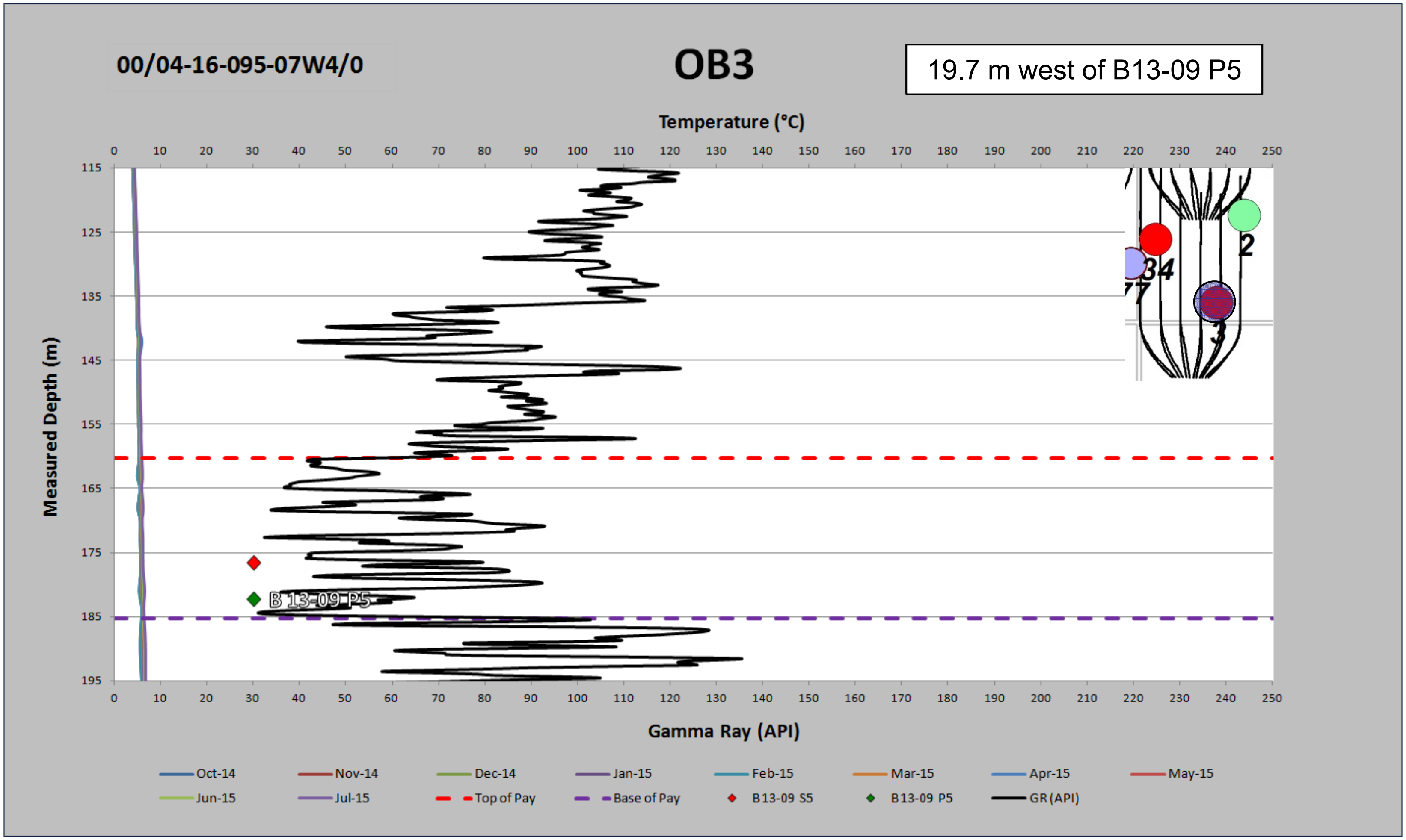
Discussion of Pad B05-16 (H) Performance

- Pad startup was initiated in December 2014
- All wells were bullheaded for approximately 3 months prior to conversion to SAGD
- Injection pressure during the reporting period ranged from 415 to 1660 kPa_g
- Bitumen rates have been ramping up as steam chamber development progresses
- Pad B05-16 (H) performance indicators as of July 31, 2015:
  - Cum. Oil : 12,951 m^3
  - Cum. Steam Injected: 263,241 m^3
  - Cum. Water Produced: 50,149 m^3
  - CSOR: 20.3

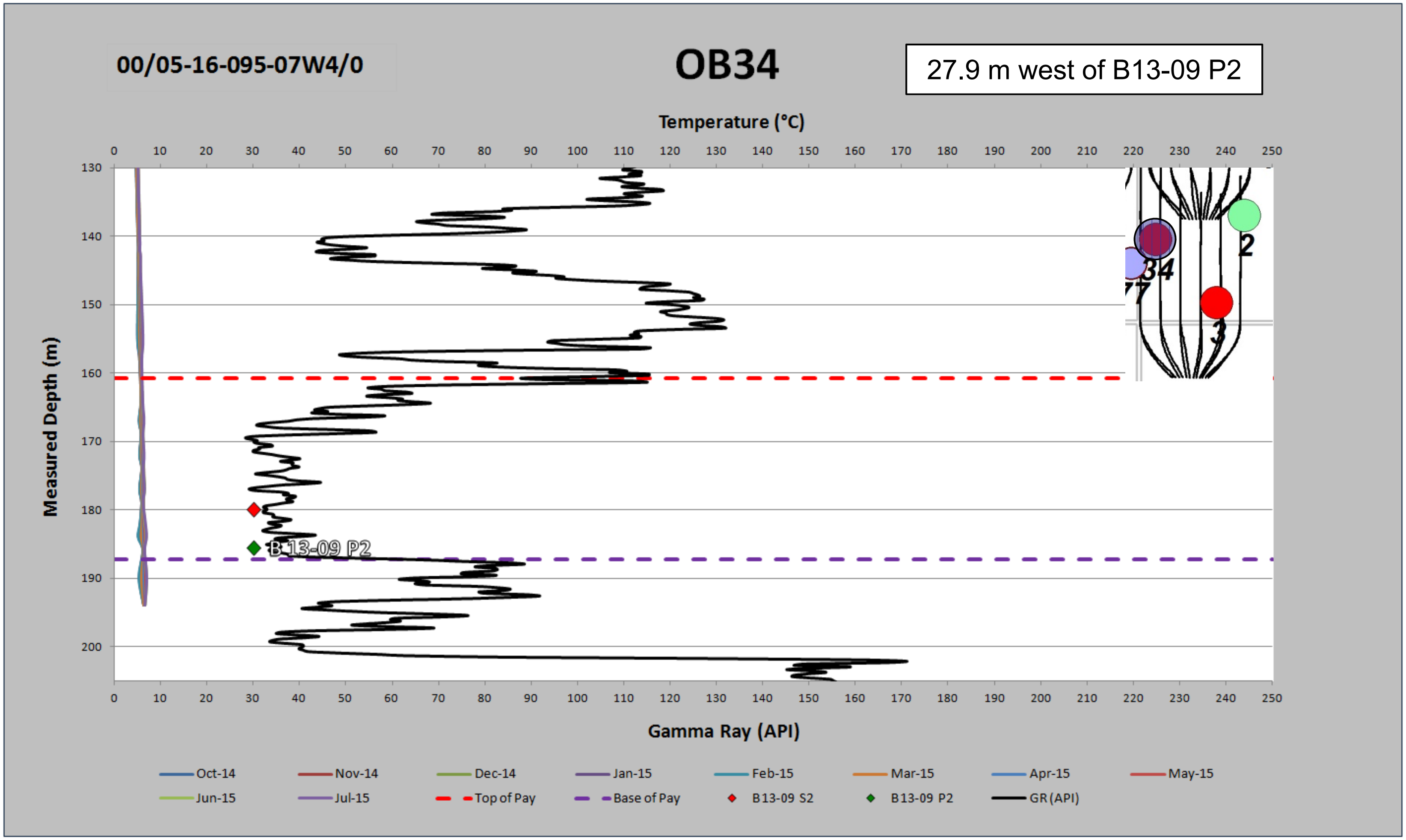
Pad B13-09 (E) Production and Injection History (Low Recovery Pad)



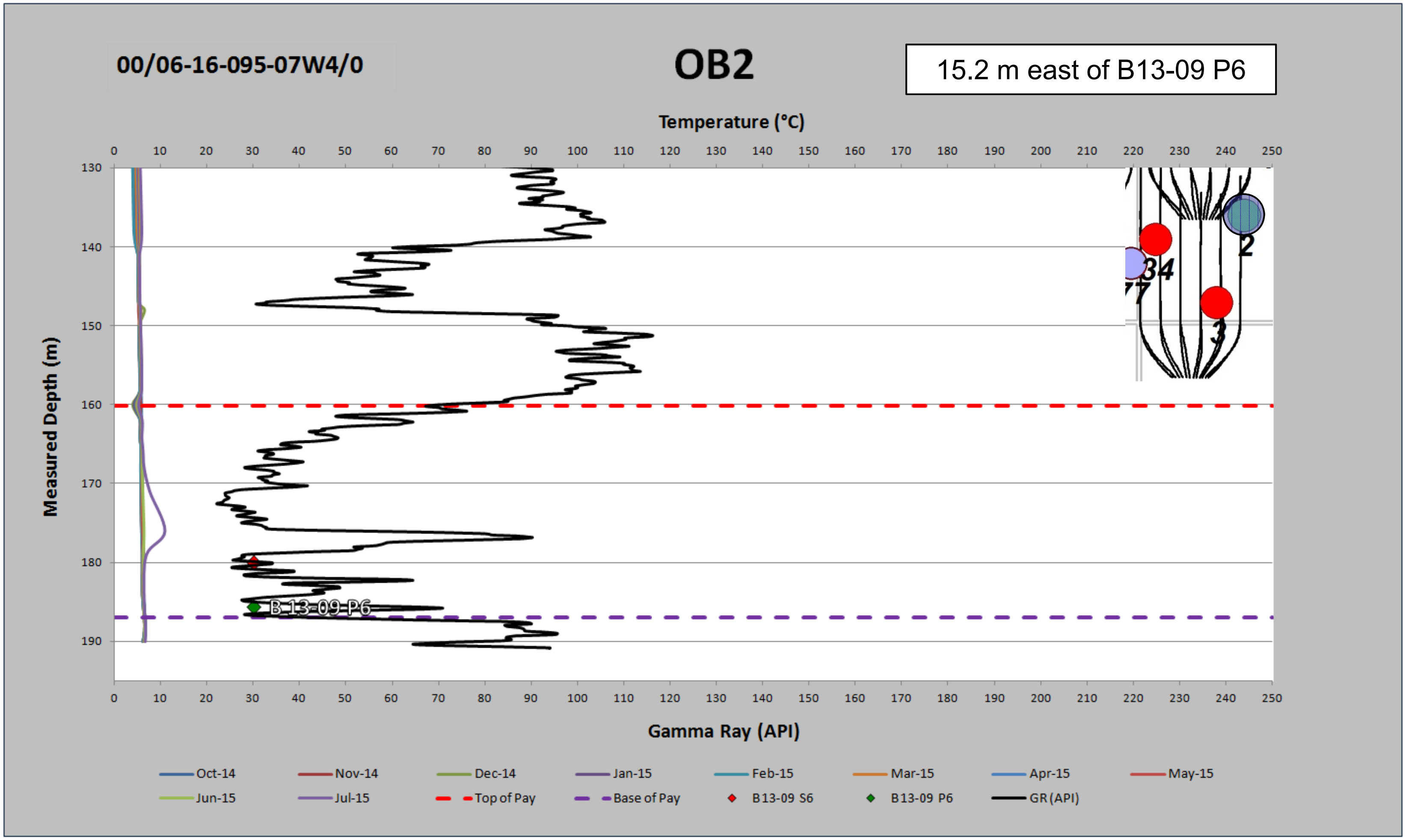
Pad B13-09 (E) Heel Observation Well



Pad B13-09 (E) Mid Observation Well



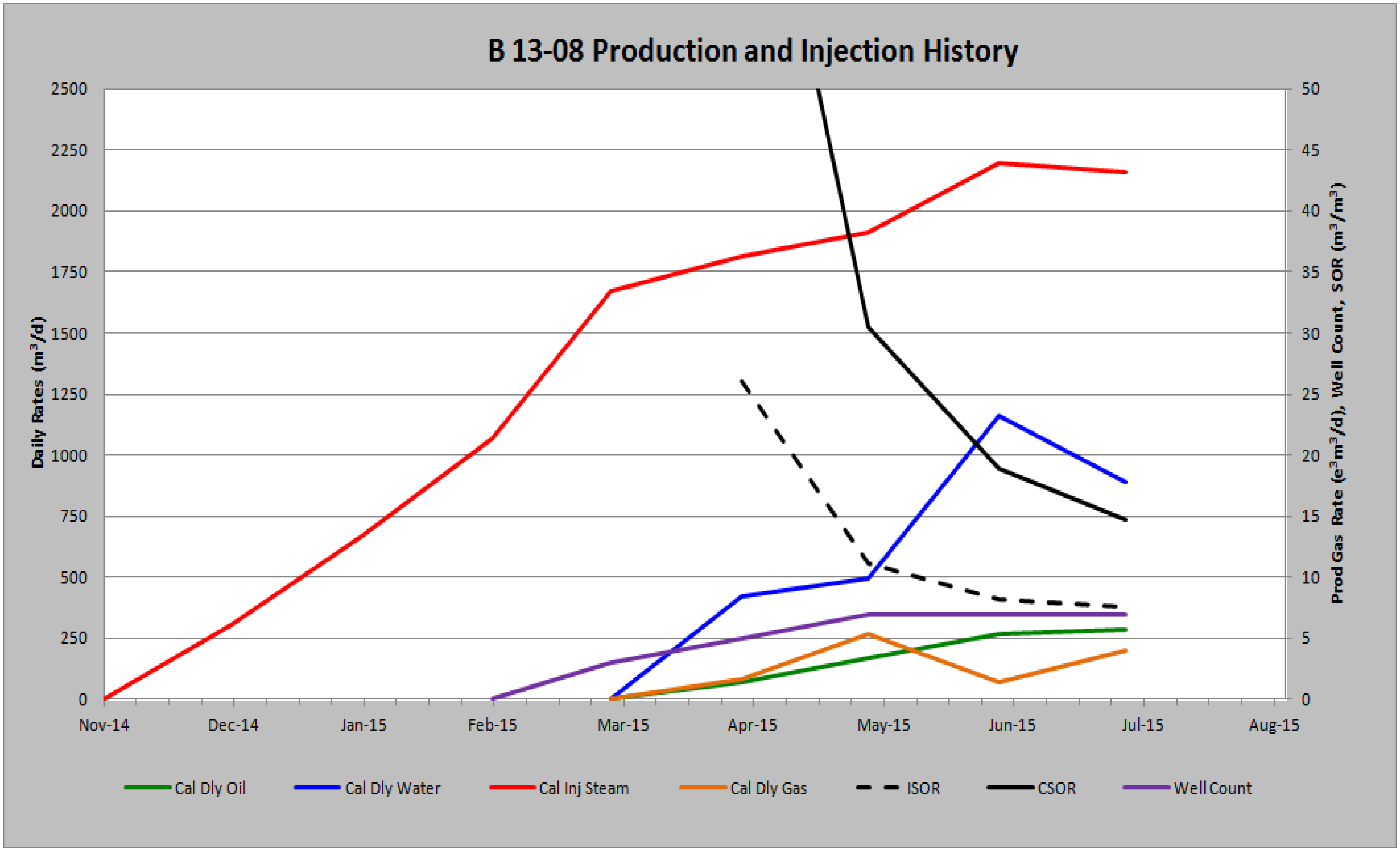
Pad B13-09 (E) Toe Observation Well



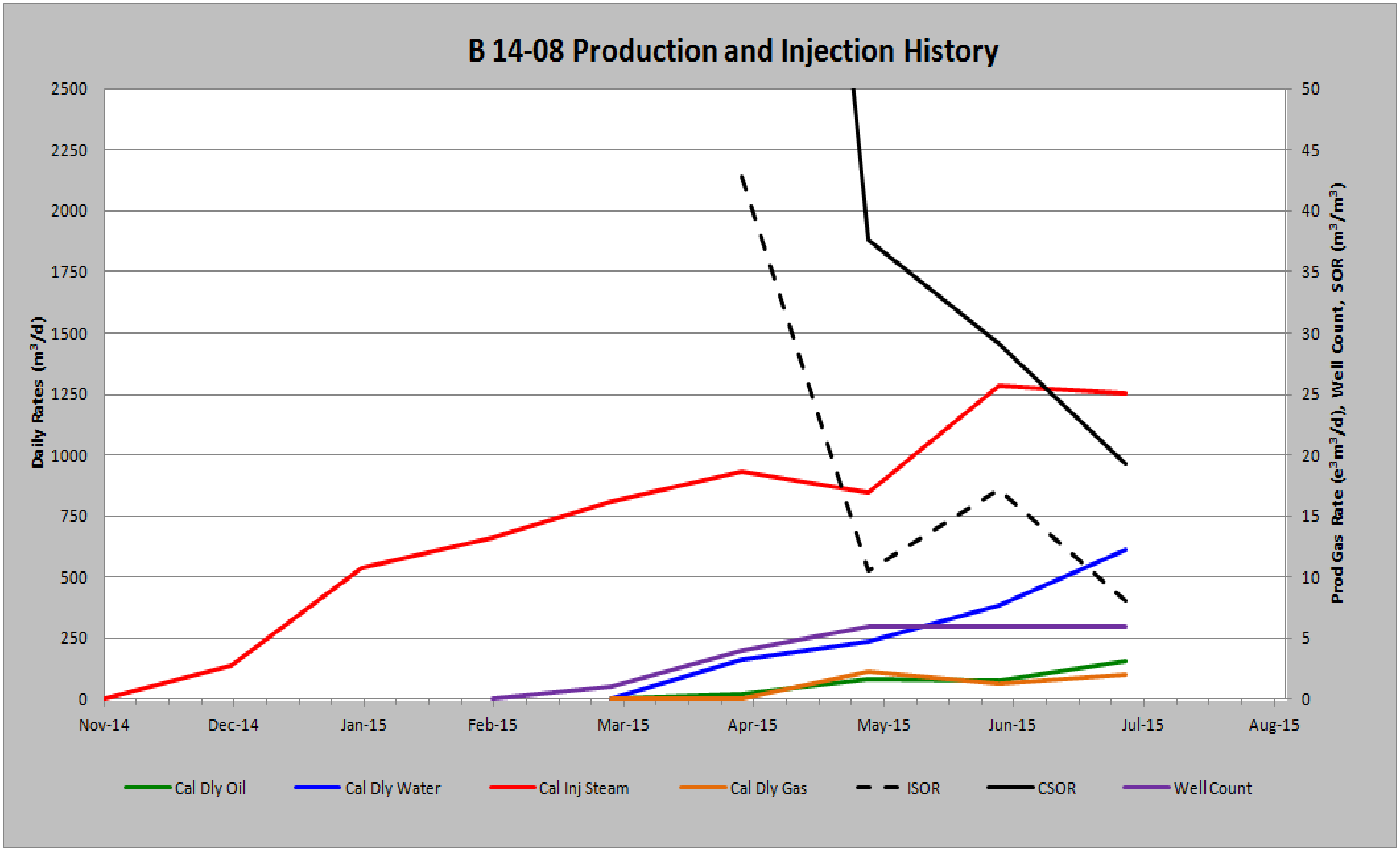
Discussion of Pad B13-09 (E) Performance

- Pad start-up was initiated in April 2015
- All wells currently in start-up
- Injection pressure during the reporting period ranged from 700 to 1725 kPa_g
- Well pairs will be converted to production in Q3 2015
- Pad B13-09 (E) performance indicators as of July 31, 2015:
  - Cum. Oil : 0 m^3
  - Cum. Steam Injected: 92,779 m^3
  - Cum. Water Produced: 0 m^3
  - CSOR: N/A

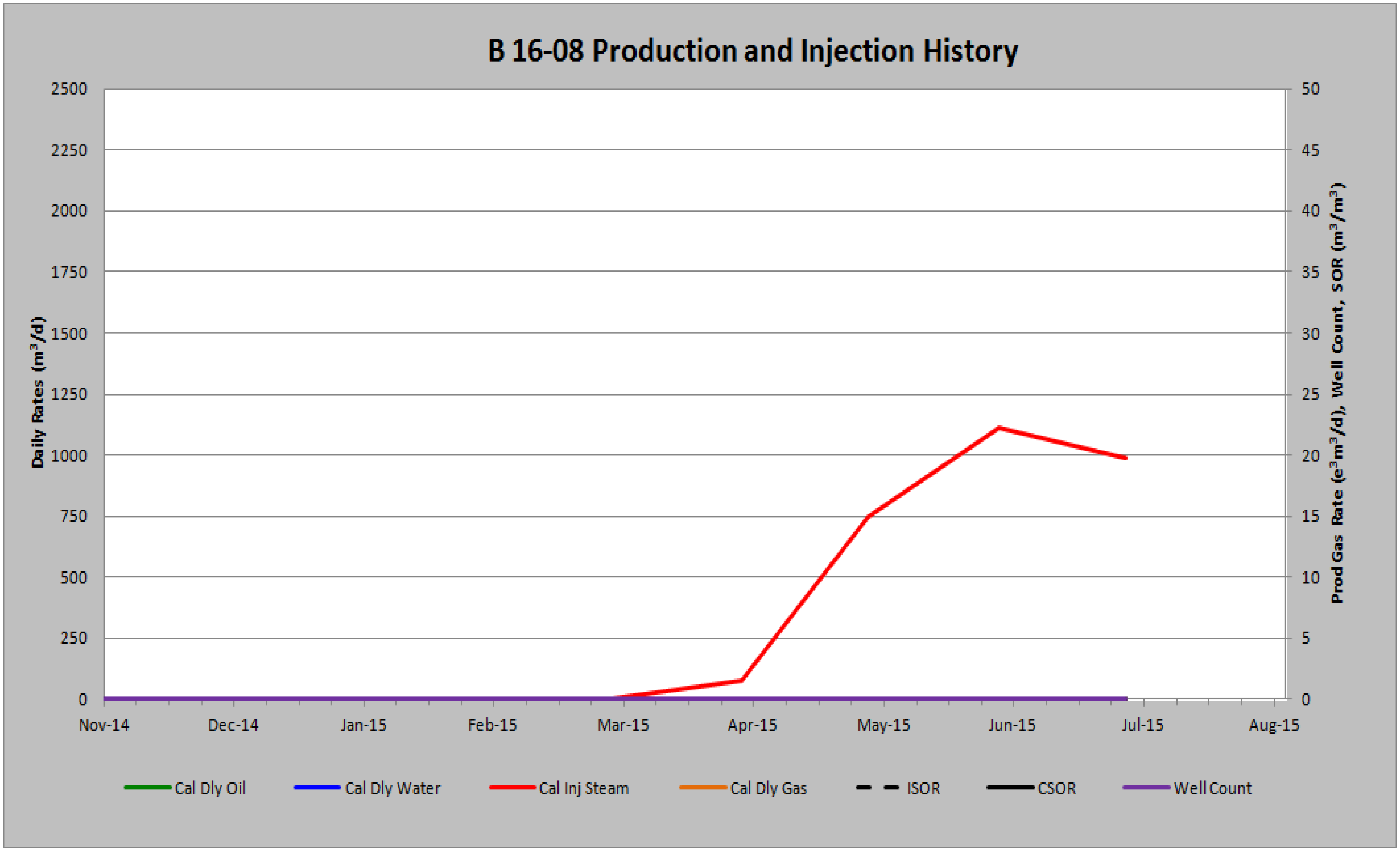
Pad B13-08 (B) Production and Injection History



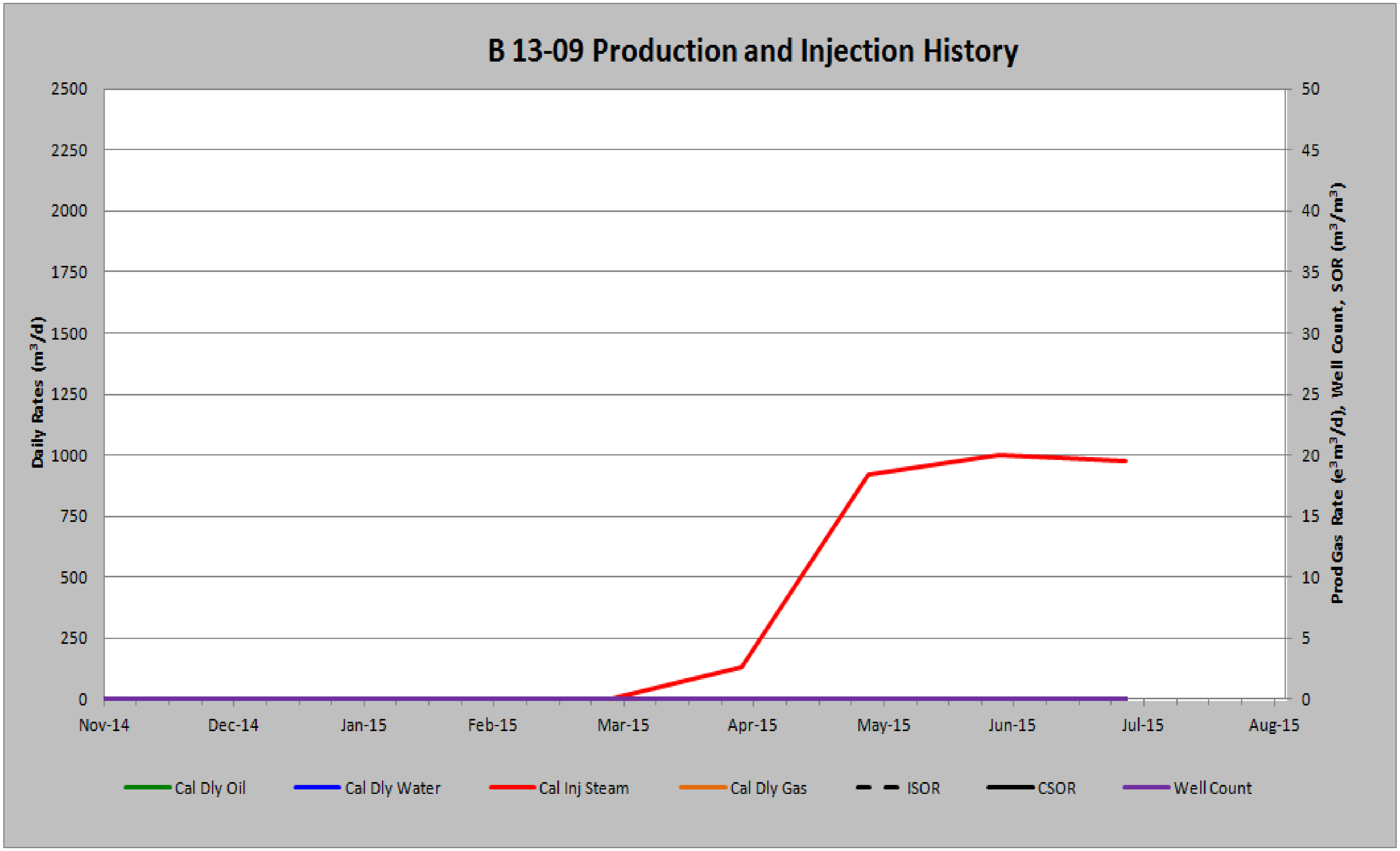
Pad B14-08 (C) Production and Injection History



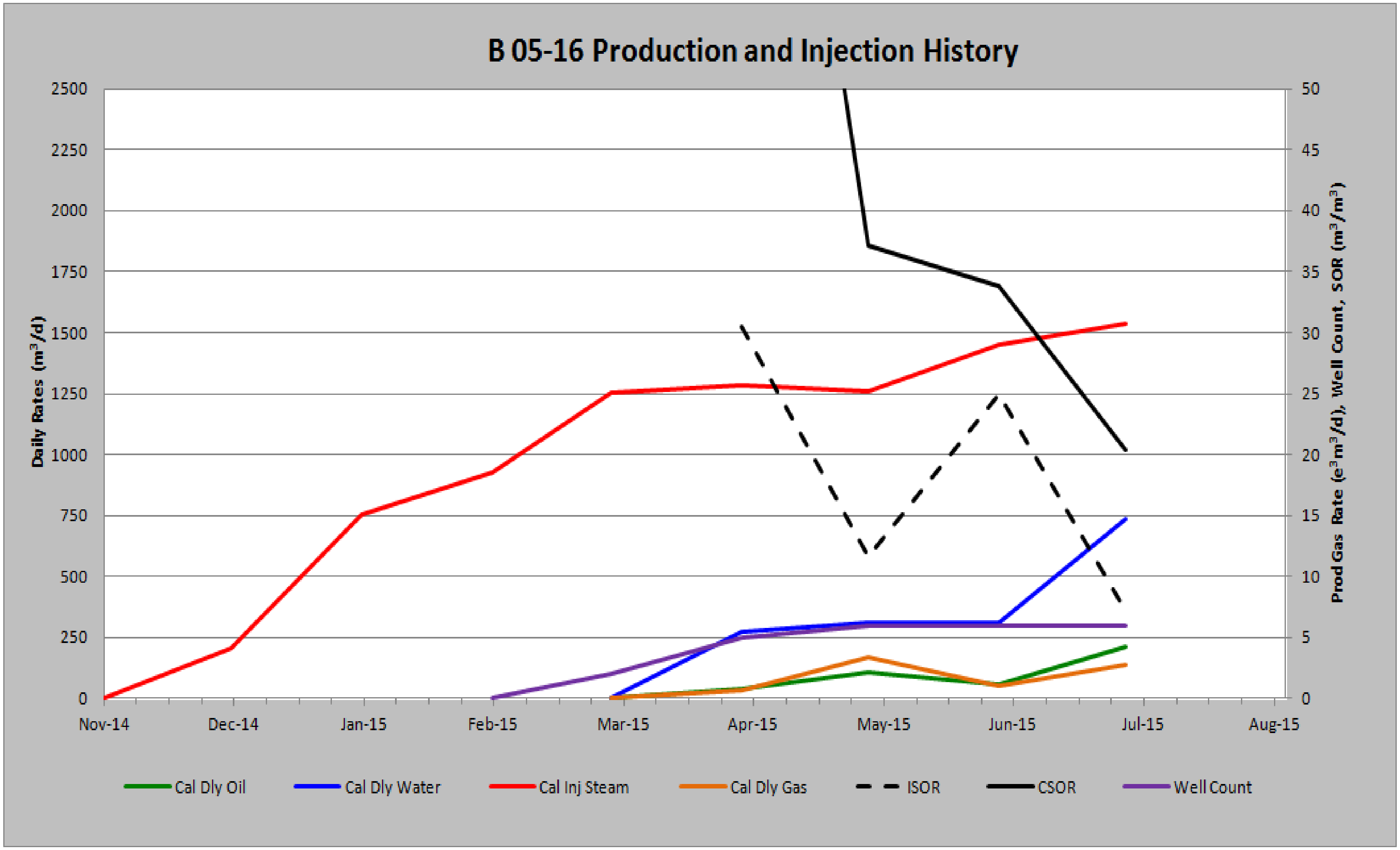
Pad B16-08 (D) Production and Injection History



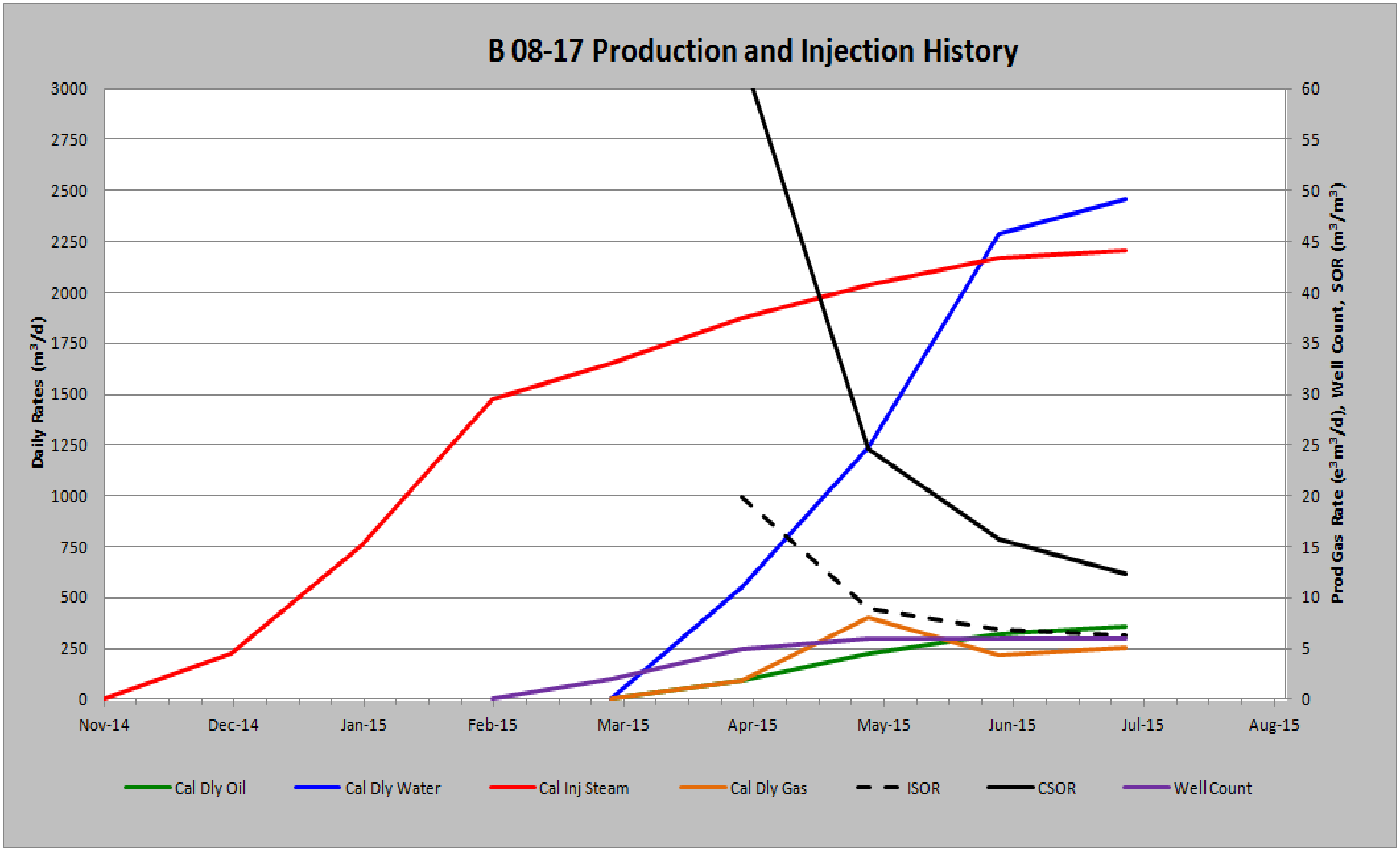
Pad B13-09 (E) Production and Injection History



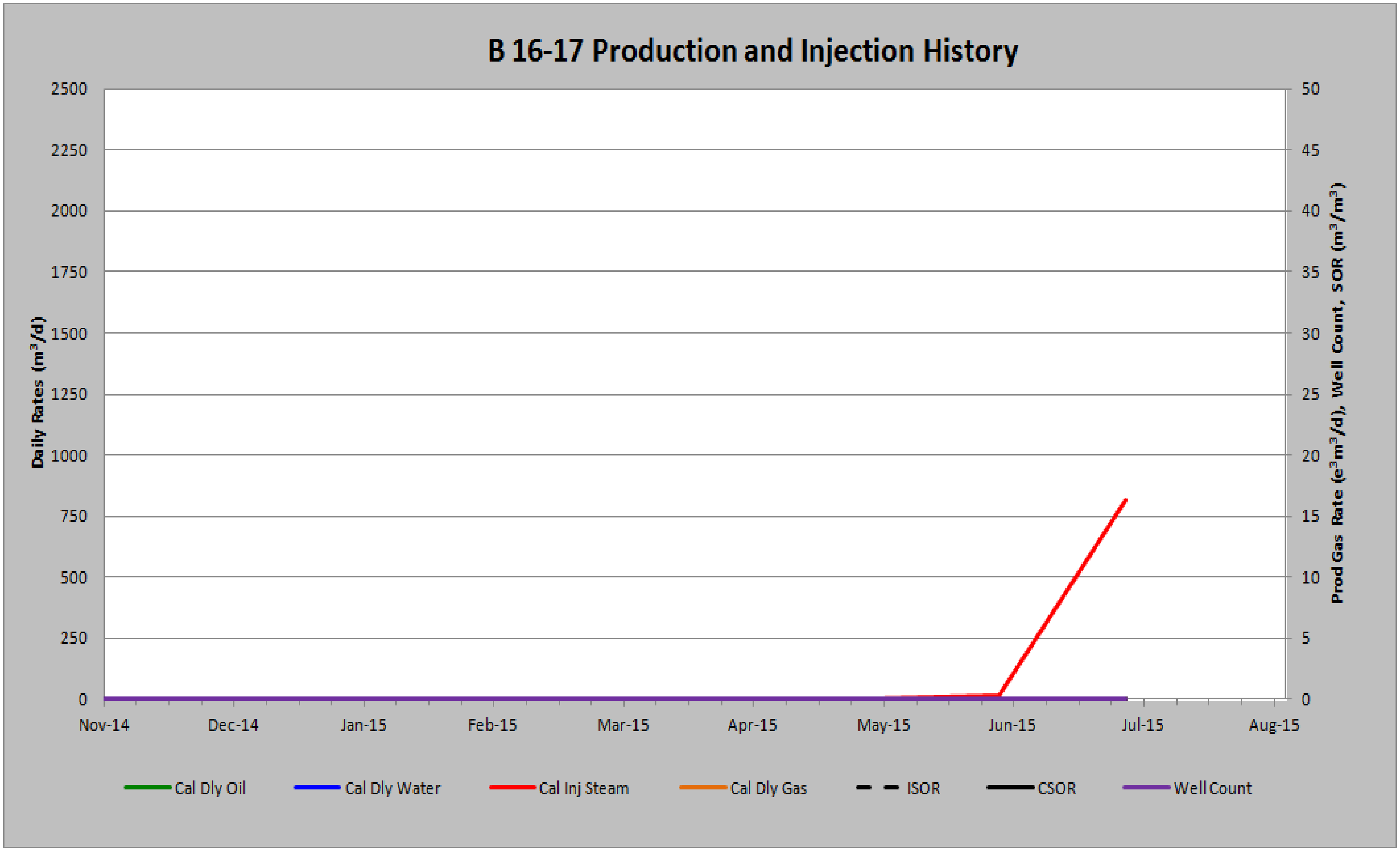
Pad B05-16 (H) Production and Injection History



Pad B08-17 (G) Production and Injection History



Pad B16-17 (L) Production and Injection History



Start-up Strategy

- On the first four pads (B13-08 (B), B14-08 (C), B08-17 (G) and B05-16(H) bullheading was the selected as the start-up strategy; straight steam injection into the reservoir without taking any returns

- Bullheading strategy was chosen in order to inject steam as soon as it was available
  - Advantages: commencement of reservoir warm-up as soon as possible; retention of all heat energy in the reservoir.
  - Disadvantages: no pressure control mechanism, so injection had to be slow to prevent reservoir from pressuring up; lack of ability to control steam quality in the well; evacuation of reservoir fluids is not possible.

- Key learnings:
  - Bullheading worked well in high injectivity wells (specifically, Pad B08-17 (G)).
  - In wells with lower injectivity, circulation was preferable as it provides a pressure control mechanism and allowed for evacuation of bitumen around the well pair.

OBIP and Recoveries by Pad

- OBIP for each pad is calculated from the formula:

$$OBIP = L \times W \times H \times (1-S_w) \times \Phi \times 1/B_o$$

Where

L = Length of Drainage Area

W = Width of Drainage Area

H = Net* Thickness from the Top of Pay to the Base of Pay

Φ = Average Net* Porosity in the Pay zone

S_w = Average Net* Water Saturation in the Pay zone

B_o = Oil Volume factor/Shrinkage factor (taken as 1)

*Net properties calculated using a 6% BWO Cut-off

OBIP and Recoveries by Pad

Well PAD	Wells	OBIP (10^3 m^3)	Recovery to date July 31, 2015 (10^3 m^3)	Recovery Factor %	Estimated Ultimate Recovery (10^3 m^3)	Ultimate RF%
B 13-08	7	3,868	24.3	0.6%	1,934	50%
B 14-08	6	4,394	10.2	0.2%	2,197	50%
B 16-08	6	3,219	0	0%	1,610	50%
B 13-09	6	2,677	0	0%	1,339	50%
B 05-16	6	3,351	13.0	0.4%	1,676	50%
B 13-16	6	4,325	0	0%	2,163	50%
B 15-16	6	4,374	0	0%	2,187	50%
B 08-17	6	3,334	30.5	0.9%	1,667	50%
B 16-17	6	3,999	0	0%	2,000	50%
B 06-21	7	5,160	0	0%	2,580	50%
B 05-21	7	5,628	0	0%	2,814	50%
Total	**69**	**44,329**	**77.9**	**0.2%**	**22,167**	**50%**

5-Year Outlook of Expected Pad Abandonment

- No pad abandonment is anticipated in the next 5 years

Temperature, Pressure and Quality of Steam

- High pressure steam separator delivers steam at a 100% quality
- Steam quality losses are experienced during transportation to the pads
- Steam quality at the wellhead is estimated to be 95%

Composition of Other Injected/Produced Fluids

- Not applicable to the Sunrise Thermal Project

Summary of Key Learnings

- Early time well conformance a challenge

- Low steam pressure and temperatures increase the amount of time required to conductively heat zones with low initial injectivity (high bitumen saturation sands)

- Steady operating conditions are key to obtaining good steam chamber conformance

8. Future Plans

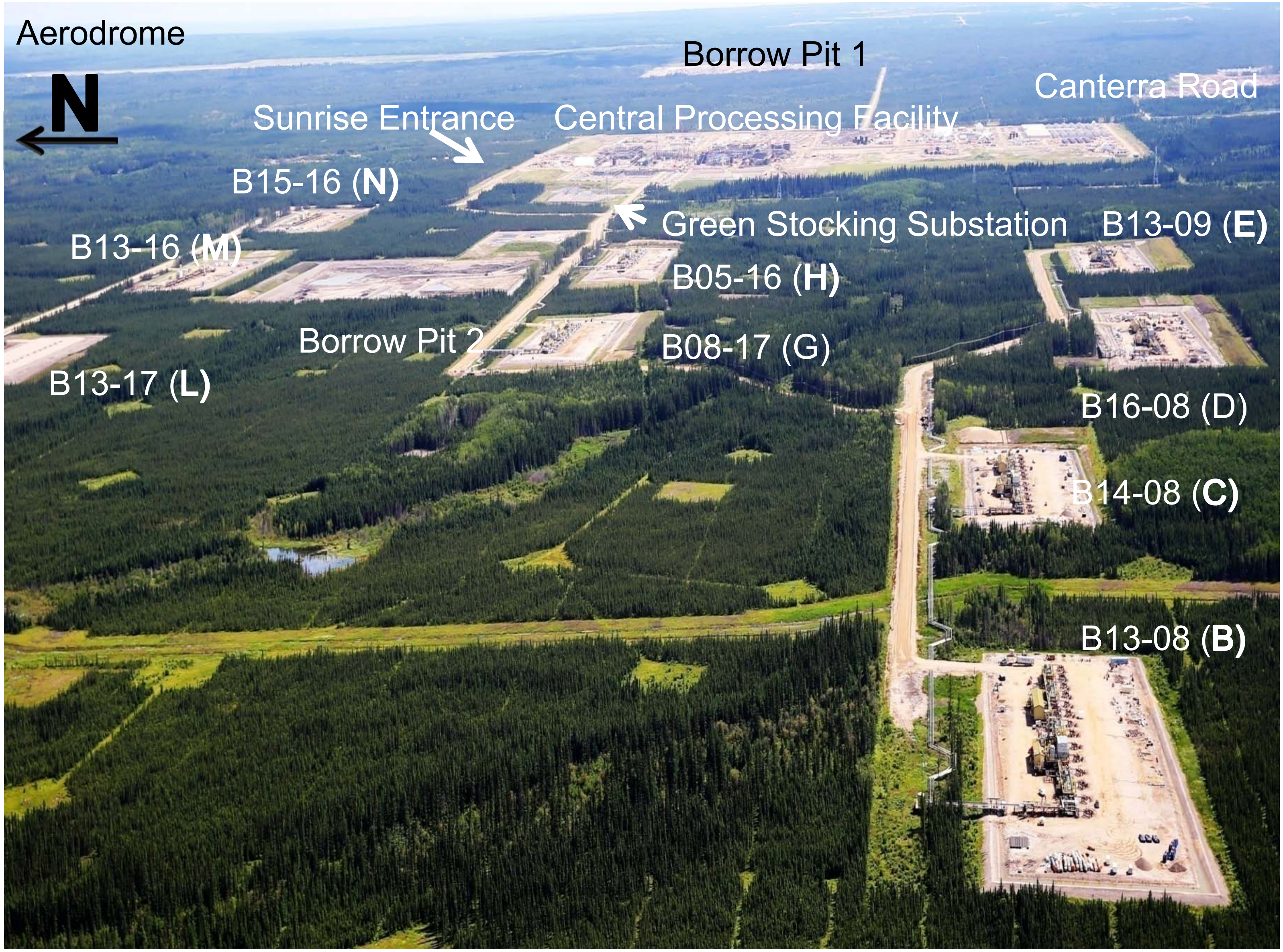
Future Plans (2015/2016)

- DA2 Development:
  - No drilling planned for 2016
  - Well elevation Amendment Application
  - Well pad surface facilities Amendment Application
- DA3 Development:
  - Pending AER Approval
- DA4 Development:
  - Category 3 Amendment Application
- SAGD Operations:
  - Continue to optimize SAGD operations, bring on and ramp up existing wells
  - On-going temperature surveillance
  - On-going observation wells monitoring

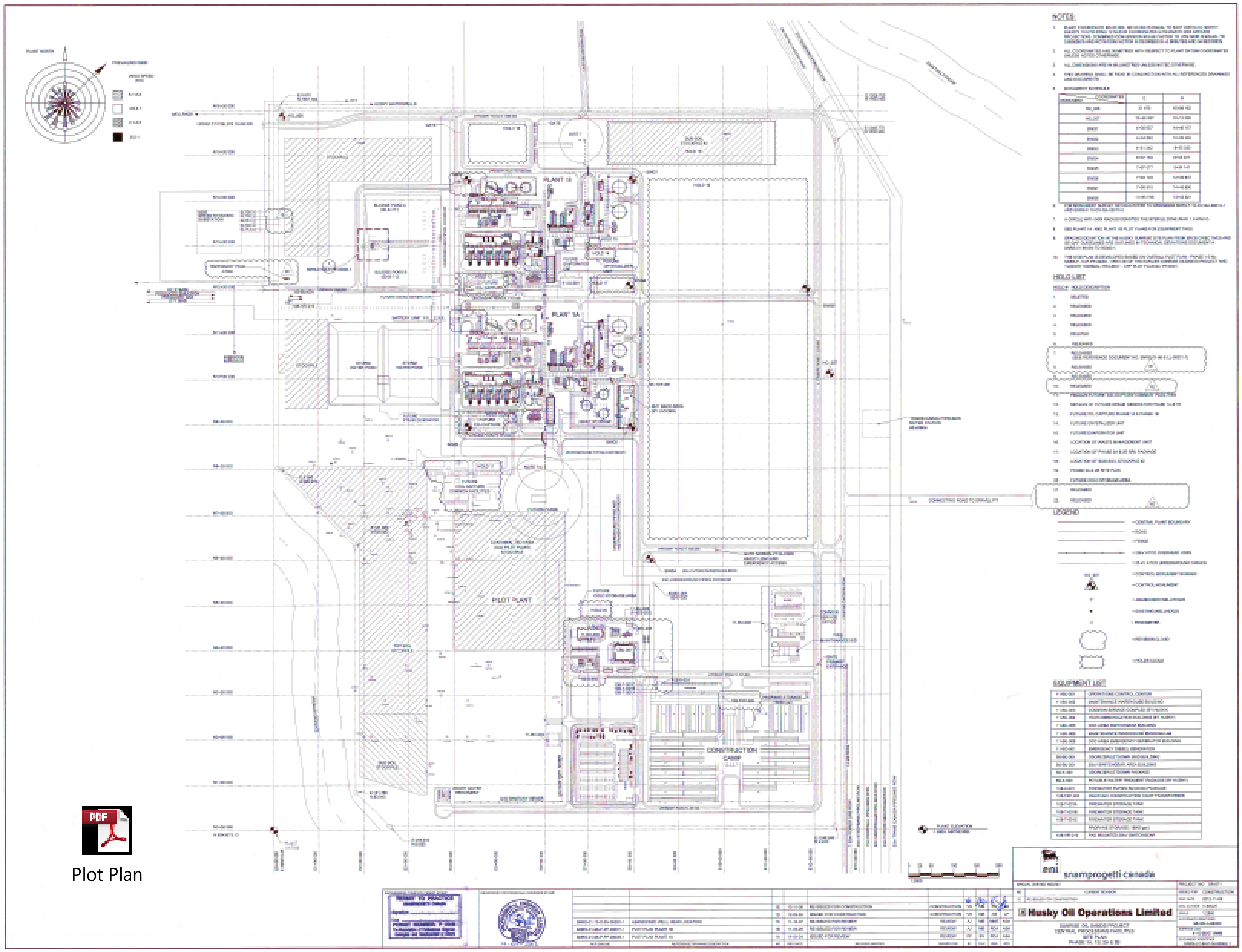
3.1.2. Surface Issues - Table of Contents

1. Facilities

Sunrise Layout

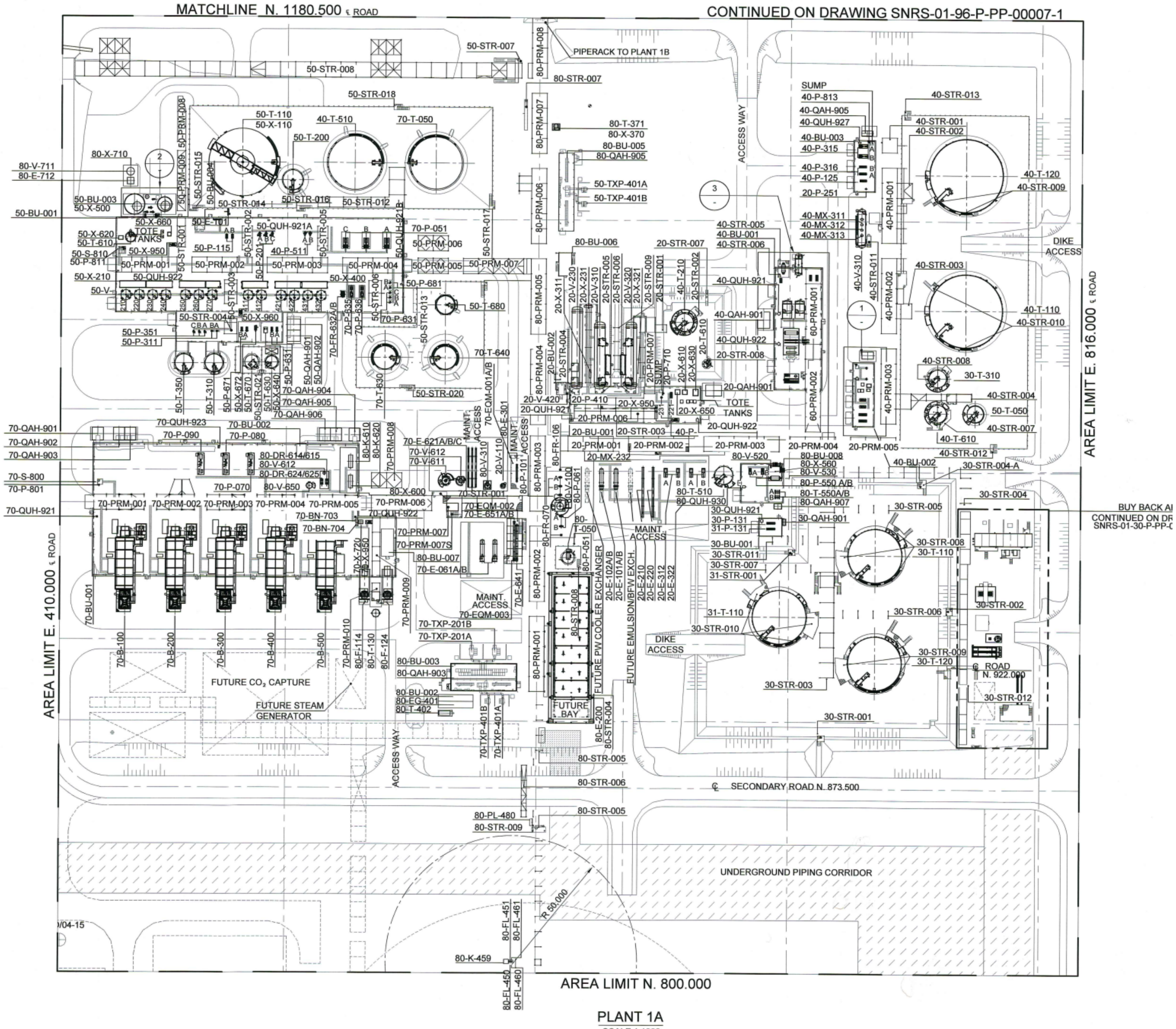


Facility Plot Plan (CPF)

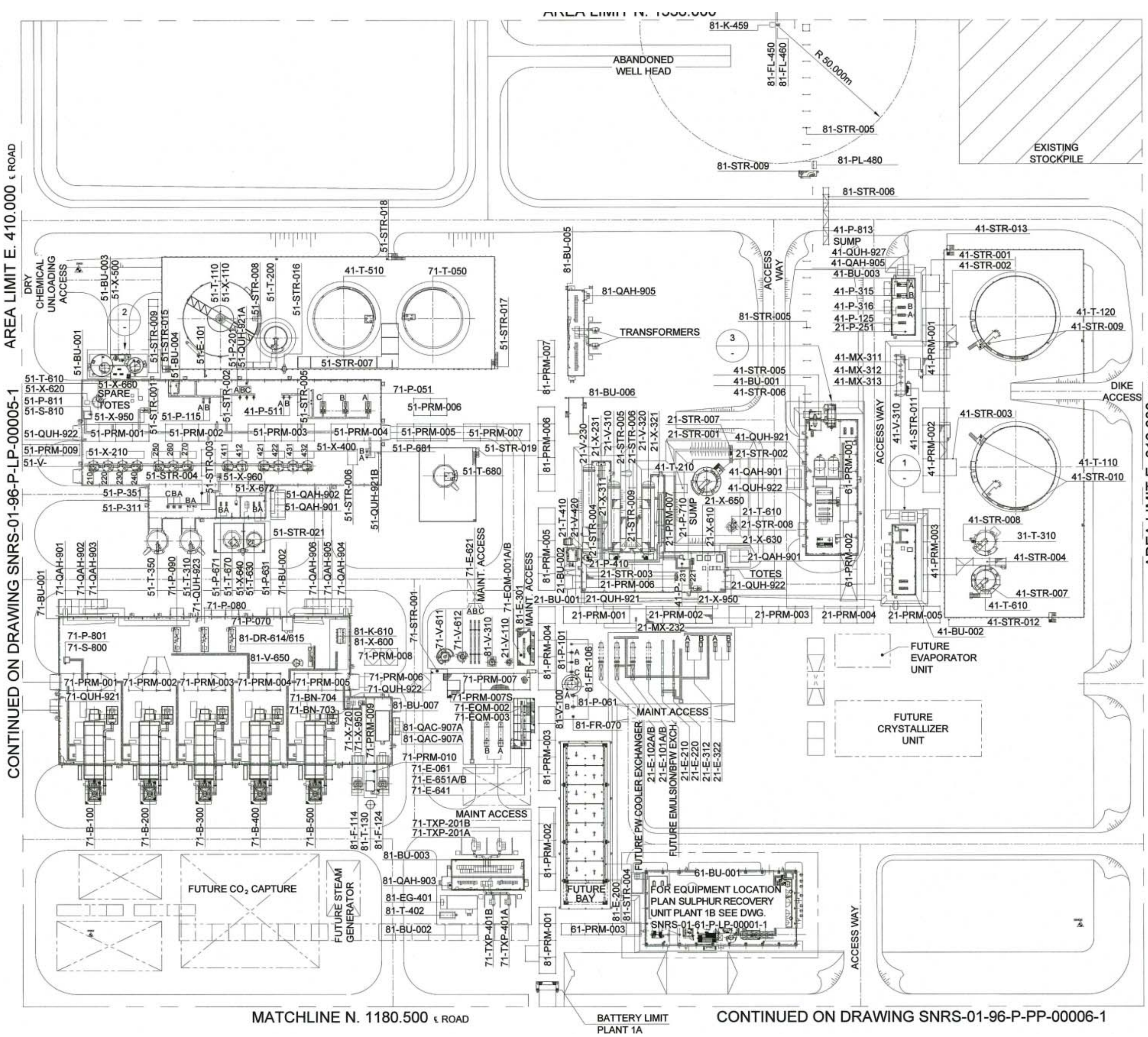


Plot Plan

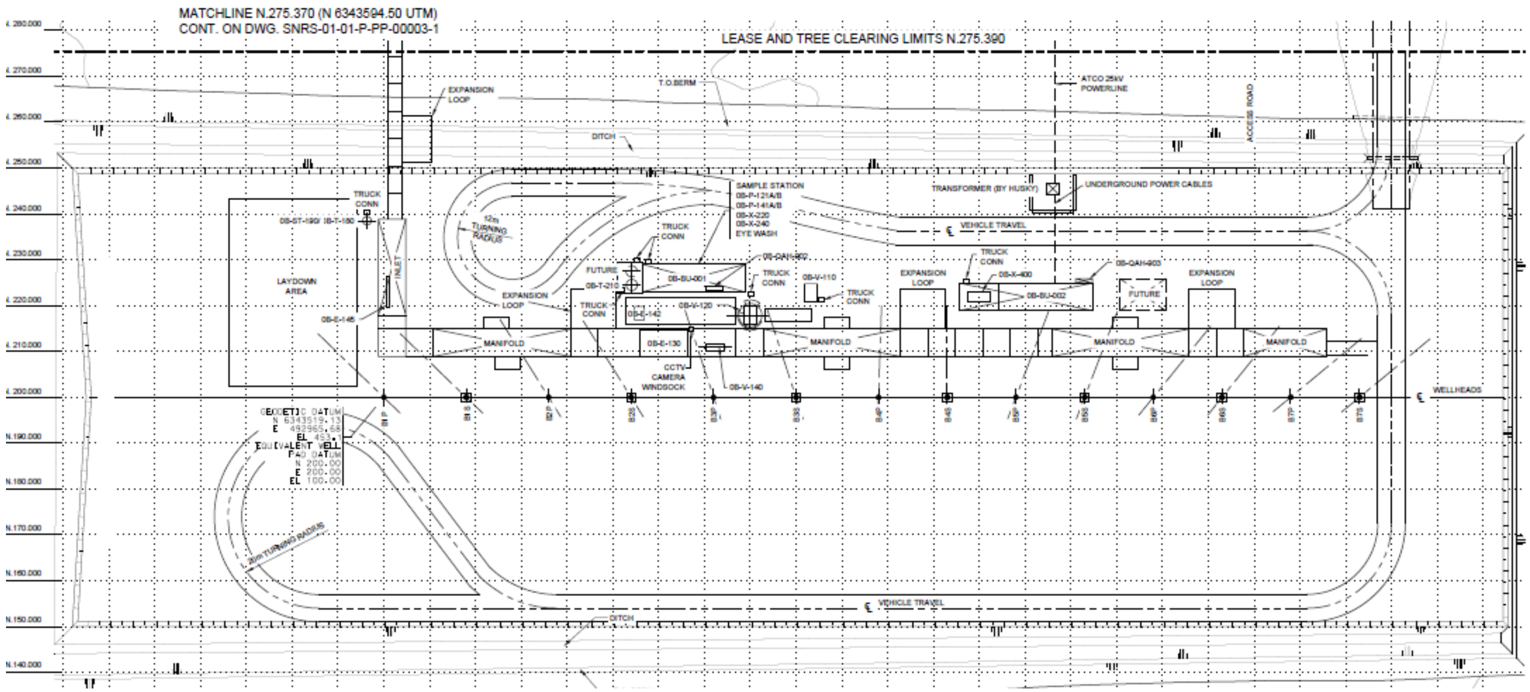
Facility Plot Plan (1A CPF)



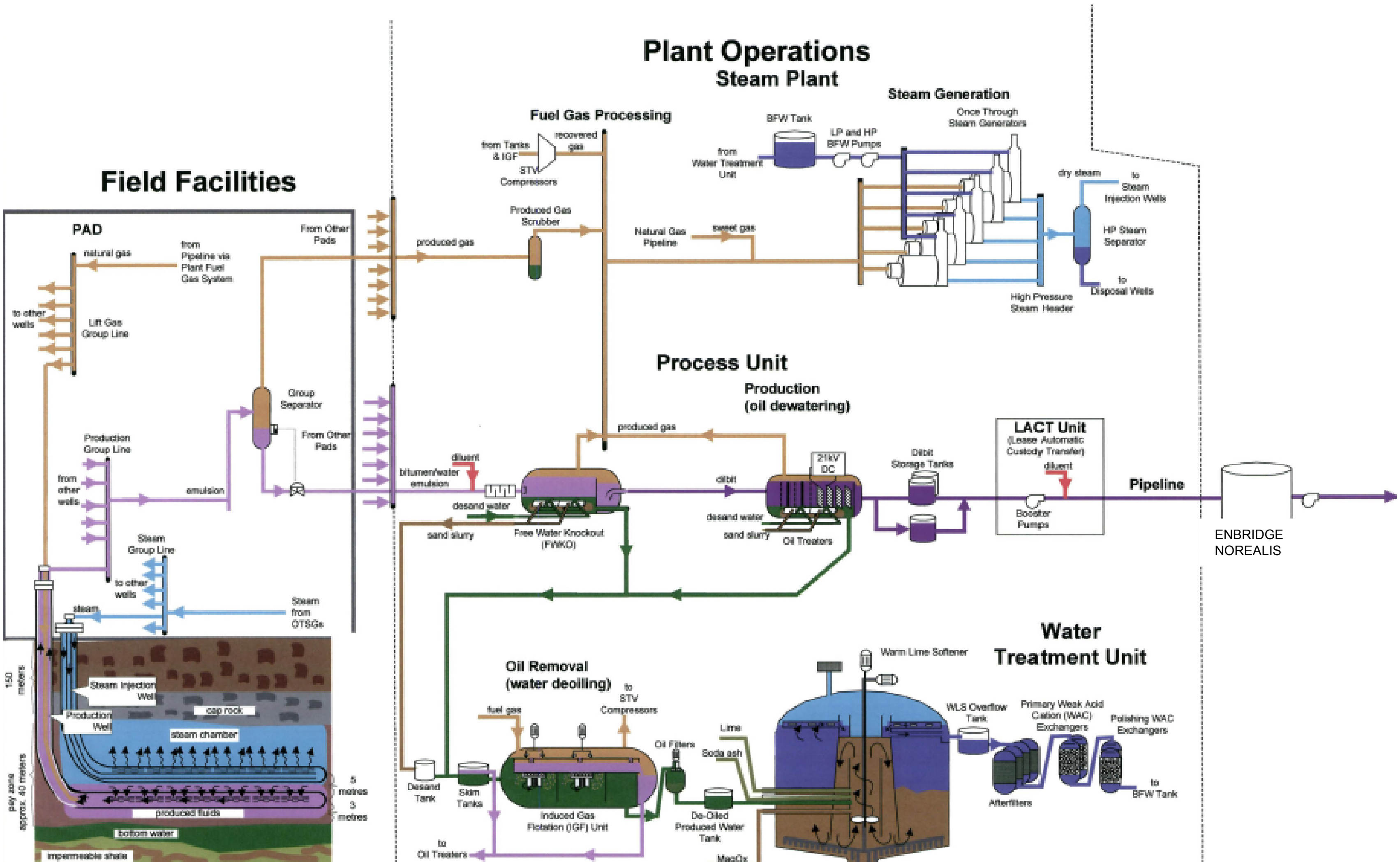
Facility Plot Plan (1B CPF)



Field Facility Plot Plan (Typical)



Simplified Plant Schematic



Steam Assisted Gravity Drainage (SAGD) Wells

Facility Modifications

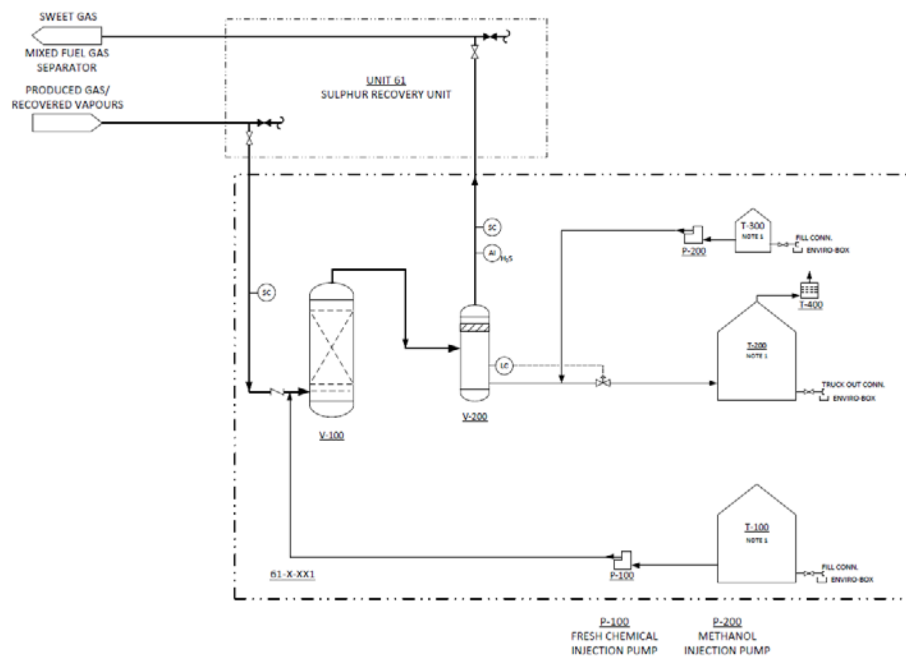
- Sulphur scrubber package (currently temporary – authorized until October 31, 2015)
- Dilbit tank converted to diluent usage (currently temporary – authorized until May 2016)
- OTSG Modifications / FGR Isolation / Duty Re-rate
- Diluent TVP (anticipated ready for 2016)
- Temporary water treatment – removed Q1 2015
- Suncor PAW pipeline
- Kearl casing gas scrubbers and incinerators
- Replacement of temporary fuel depot with permanent depot

Facility Modifications – cont'd

- Produced water tank connection to the vapour recovery unit
- Additional produced water cooler
- Additional boiler feed water pump
- Spent lime pond containment
- Quaternary water to SRU make-up water RO package
- Temporary quaternary start-up water - removed Q1 2015

Facility Modifications – Temporary Sulphur Scrubber Package

- Permanent LoCat SRU delayed
- Temporary Triazine based unit installed
- High lift gas rates and low inlet pressure limiting recovery



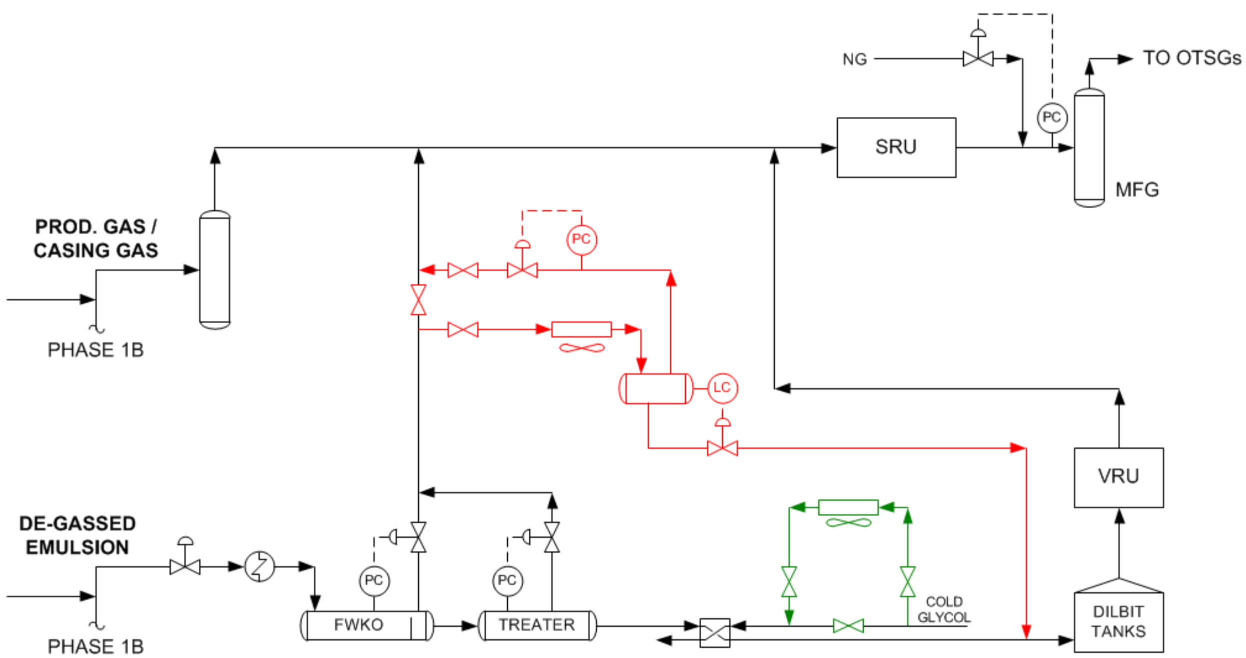
Facility Modifications – Temporary Diluent

- No Diluent Storage tanks on site
- Initial diluent requirements were below the minimum flow rate required for diluent pipeline leak detection and metering
- Frequent diluent supply outages are also occurring
- Small jumper and temporary pump added to allow 31-T-110 (Dilbit Tank) to operate as a Diluent Storage tank at low rates and during pipeline outages
- Investigating permanent Diluent Storage on-site

Facility Modifications – Diluent TVP

Diluent composition significantly lighter than the original design anticipated

- Original CPF design based on 75 kPa Reid Vapour Pressure (RVP) diluent
- Current diluent RVP ranges between 95 kPa and > 103 kPa
- Completion is Q2 2016



Facility Modifications – OTSGs

OTSG Modifications / FGR Isolation:

- High vibration issues
- Refractory Repairs

OTSG Duty Re-rate:

- Re-rate to allow for operational flexibility and to allow increased generation to cover for downtime/pigging
- Approval from ABSA has been obtained to increase the nameplate steam capacity of each OTSG by 10%

2. Facilities Performance

Operating Issues and Limitations

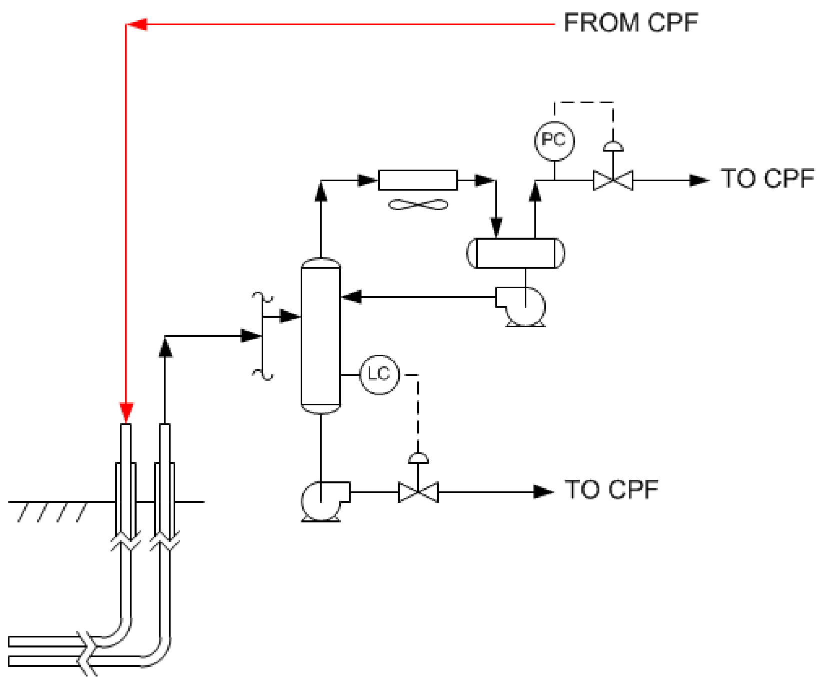
Operating issues / limitations:

- Permanent SRU not online in time resulting in the need for a temporary SRU
- Potential mercaptan issues in SRU
- OTSG refractory damage / vibration / FGR Isolation
- Light diluent vaporizing into fuel gas
- Glycol heater damper control issues
- Test separator functionality (turn-down / cold production / hydraulic design issues)
- Kearl make-up water line corrosion and control issues (within CPF)
- Low Flow Rates (turn-down issues) and low inlet temperatures
- Poor separation in the Free Water Knock Out and Treaters (turn-down / temperature)
- Fines in bitumen resulting in the need to truck slop oil offsite

Field Facilities

The field facilities consists of:

- Steam and production pipelines
- Injection and production wells
- Group separator
- Test separator package
- Produced gas condenser
- Produced gas separator
- Emulsion and condensate pumps



The performance of the field facilities:

- Low return temperature
- High gas lift rates
- Instrumentation issues (group separator level control and min flow control)
- Treater package issues (turndown and temperature issues)

Oil Treating

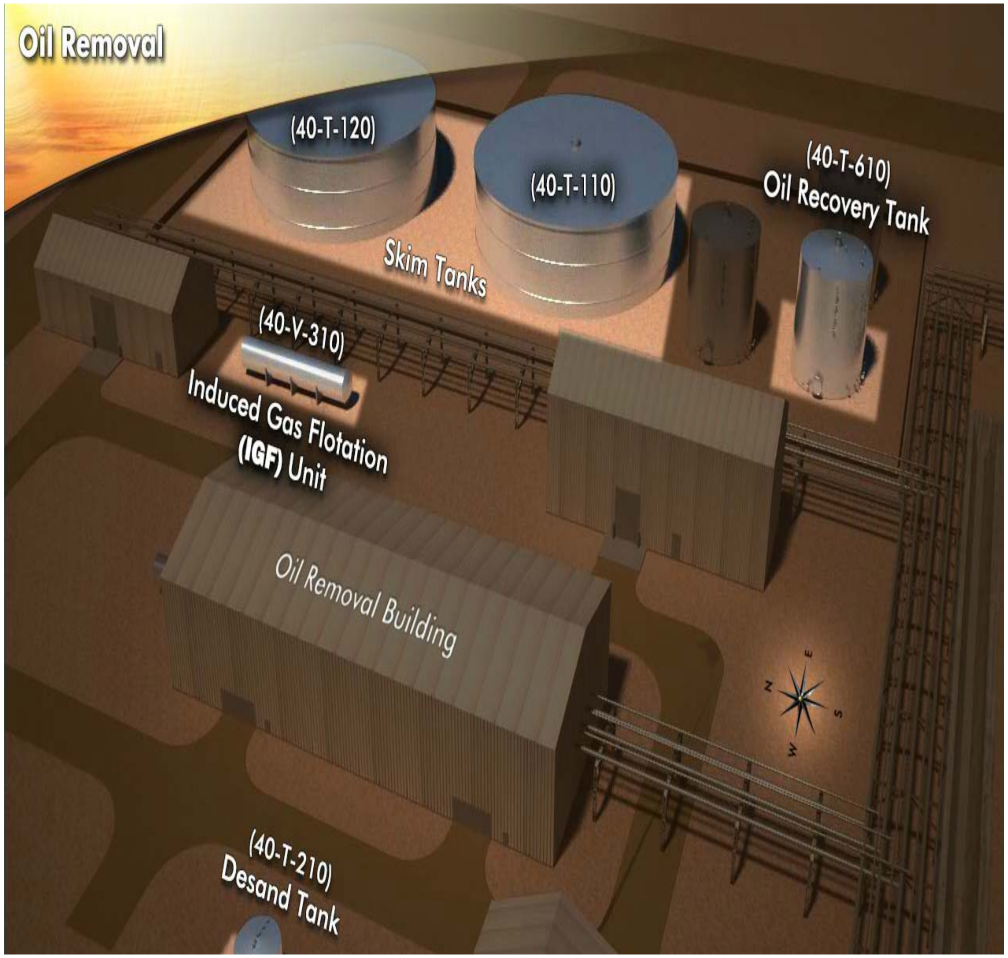
Oil Treating consists of:

- Emulsion Coolers
- 1 Free Water Knock Out
- 2 Treaters
- Sales Oil Coolers
- Produced Water Coolers

The Oil Treating equipment has faced challenges due to low inlet temperatures and flow rates well below the design turn-down rate. Oil and water upsets are occurring frequently. Diluent over-blending required to meet separation specifications. High diluent flash rates are also occurring.

Oil Treating KPI's are:

- <0.5% BS&W in Oil (average ~0.4 ppm)
- <1000 ppm Oil in PW (average 381 ppm)



Process Water De-Oiling

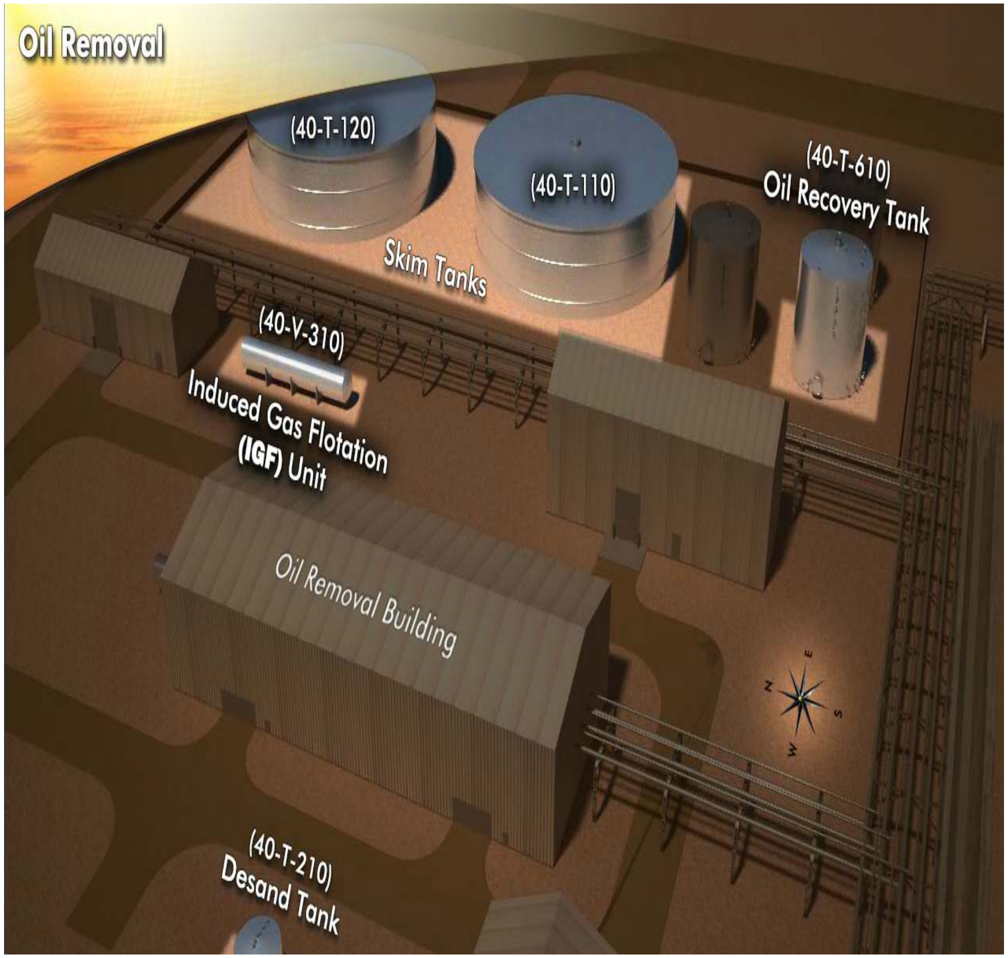
The de-oiling process consists of:

- 2 Skim Tanks
- 1 IGF
- 2 Oil Removal Filters
- 1 Oil Recovery Tank
- 1 Desand Tank

The performance of the de-oiling equipment has been close to spec and is performing well

De-Oiling KPI's are:

- FWKO – 1000 ppm (average <400 ppm)
- IGF Inlet – 100 ppm (average <100 ppm)
- IGF Out – 40 ppm (average <40 ppm)
- ORF Outlet – 20 ppm (average <10 ppm)



Water Treatment

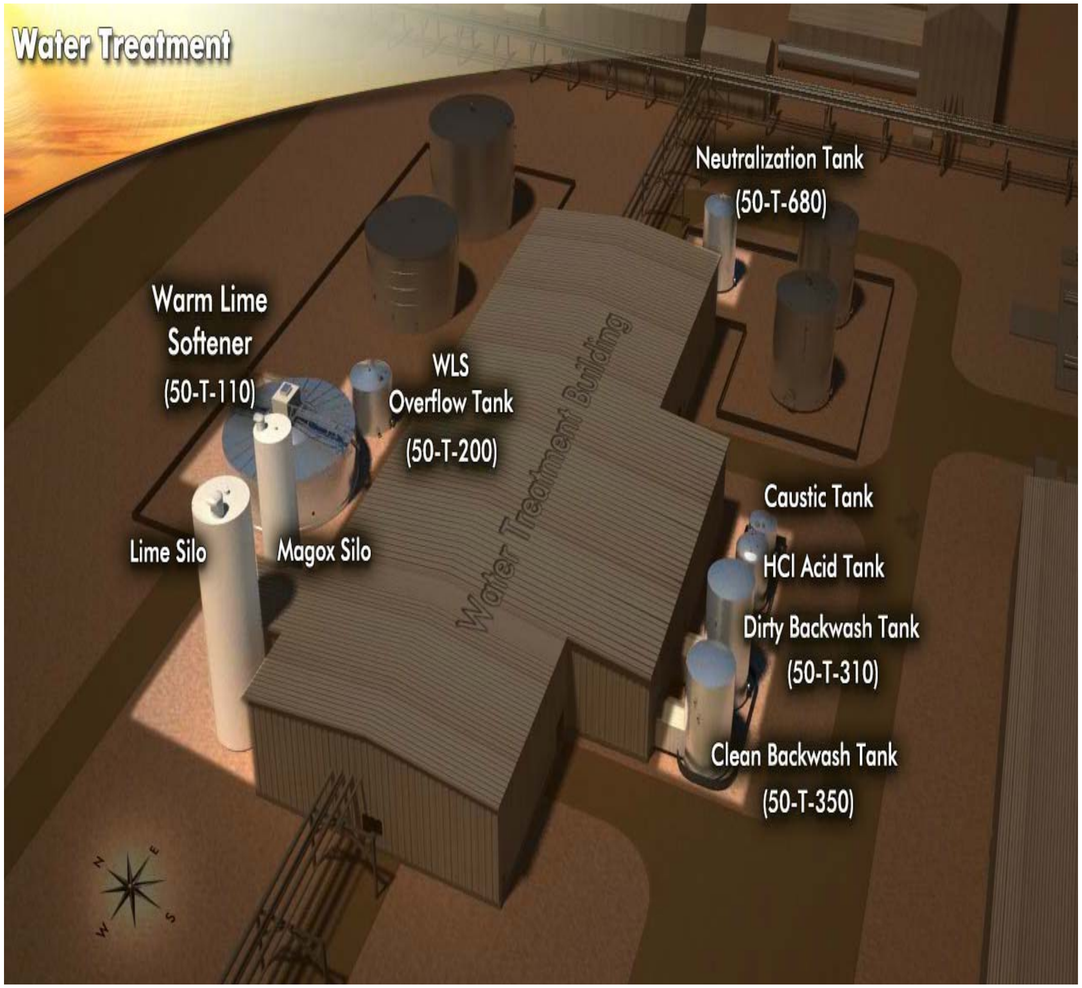
The Water Treatment process consists of:

- Warm Lime Softener
- After Filters
- Weak Acid Cation (WAC) Exchangers/Polishers
- Neutralization / Backwash Systems
- Water treatment chemical feed systems
- Sludge Ponds

The performance of the water treatment equipment has been close to spec and is performing well

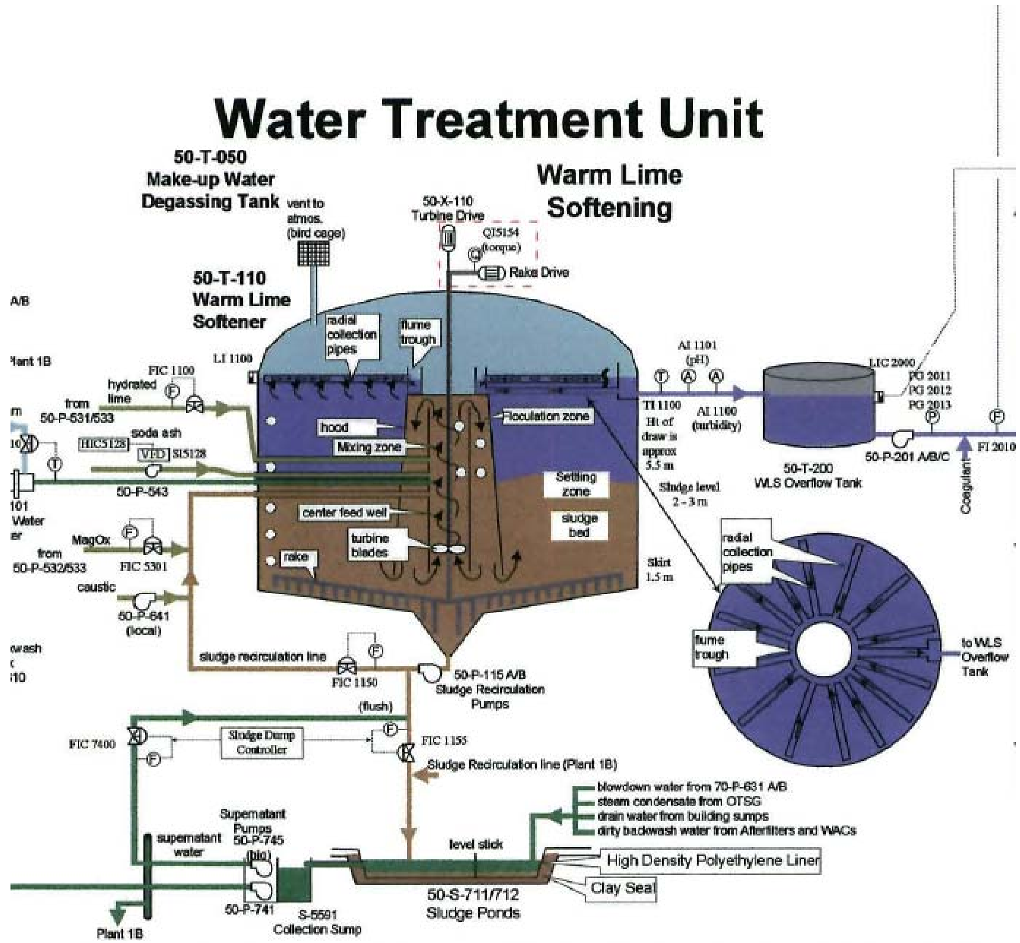
Water Treatment KPI's are:

- Total dissolved hardness: < 0.5 mg/L
- Silica: < 50 mg/L
- Turbidity < 2 NTU
- Oil in Water < 1.0
- Total iron: < 300 ppb
- pH: 9.8 to 10.2



WLS - Warm Lime Softener

- Primary water treatment to produce boiler feedwater:
  - Feed sources:
    1. De-oiled produced water
    2. Fresh water make-up (Suncor PAW / Kearl)
  - Reduces water contaminants:
    1. Hardness - primarily Calcium and Magnesium
    2. Silica - main contaminant due to thermal recovery process
    3. Turbidity - suspended solids
- Produces sludge as waste product - stored in ponds
- Produces water effluent with hardness ~20ppm and silica ~50ppm



Temporary Sulphur Scrubber Package

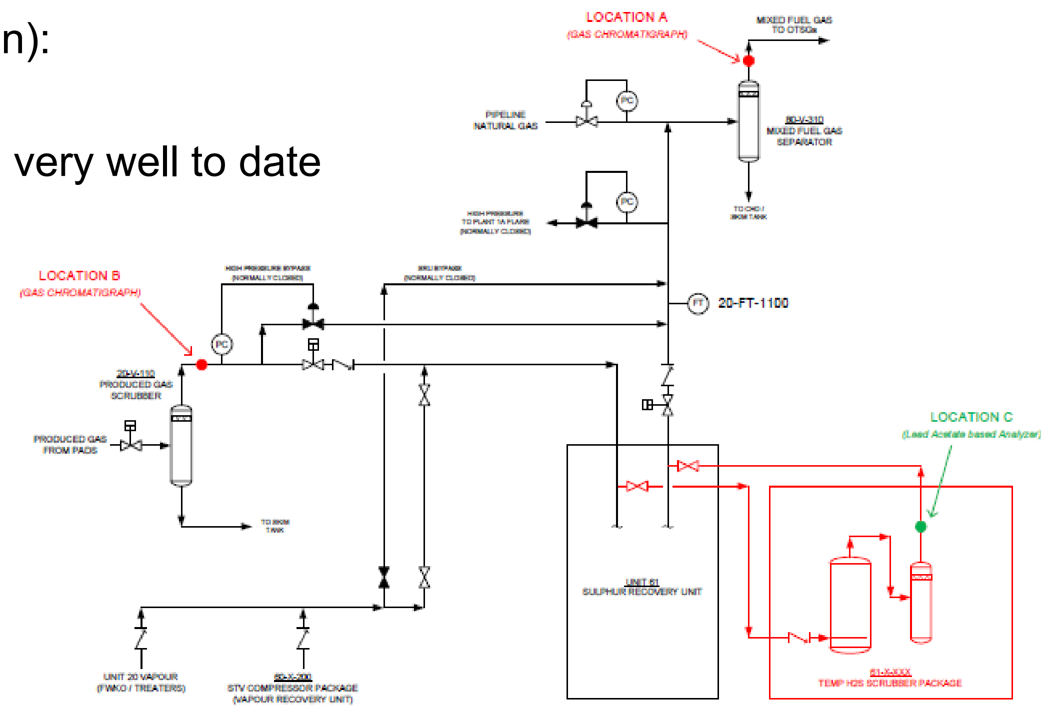
- The temporary Sulphur Scrubber Package uses triazine to react with H_2S and mercaptans

- Higher than anticipated lift gas rates and low inlet pressure require bypassing a portion of the produced gas around unit

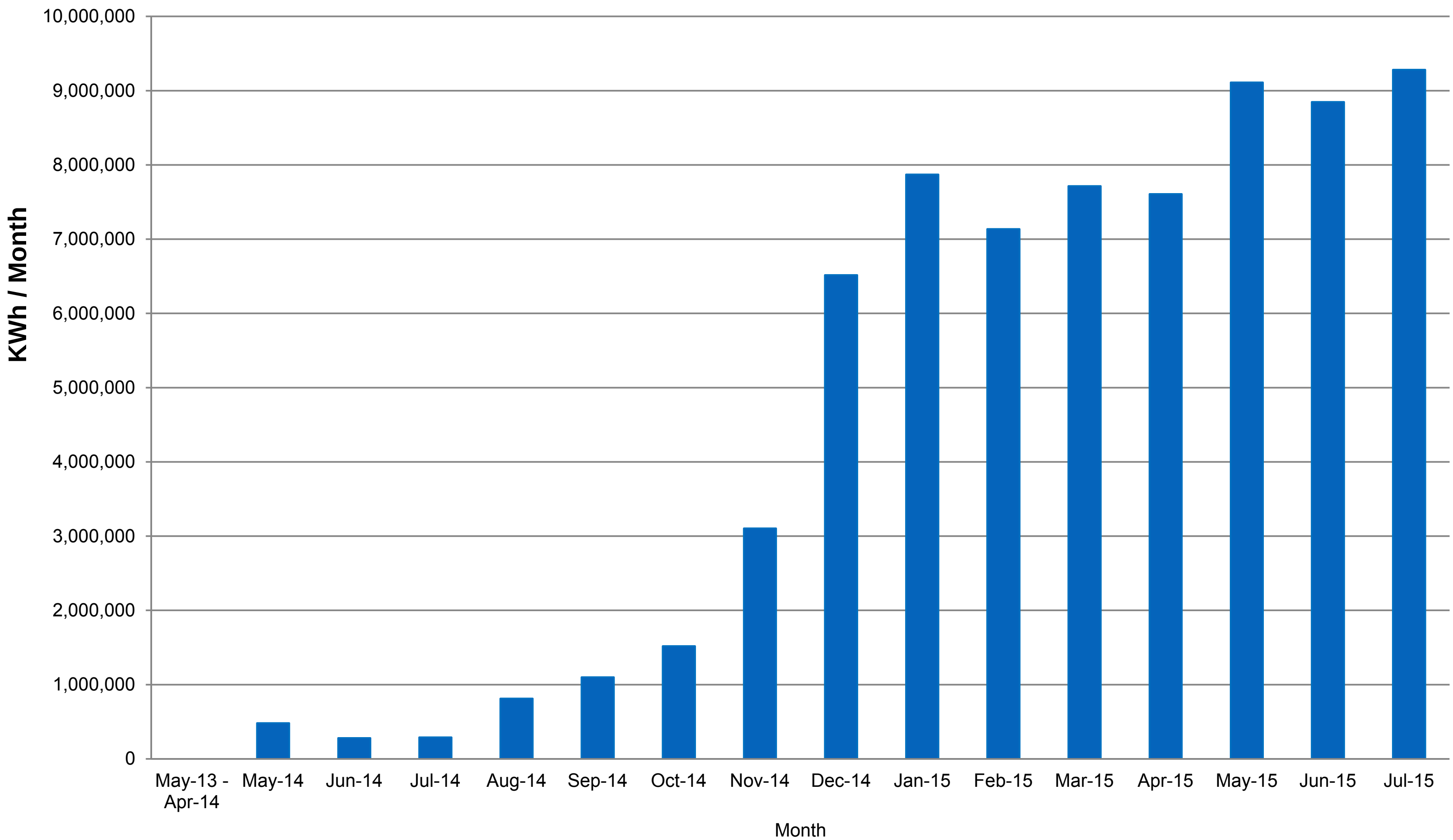
Performance (processed gas portion):

The temporary SRU has performed very well to date

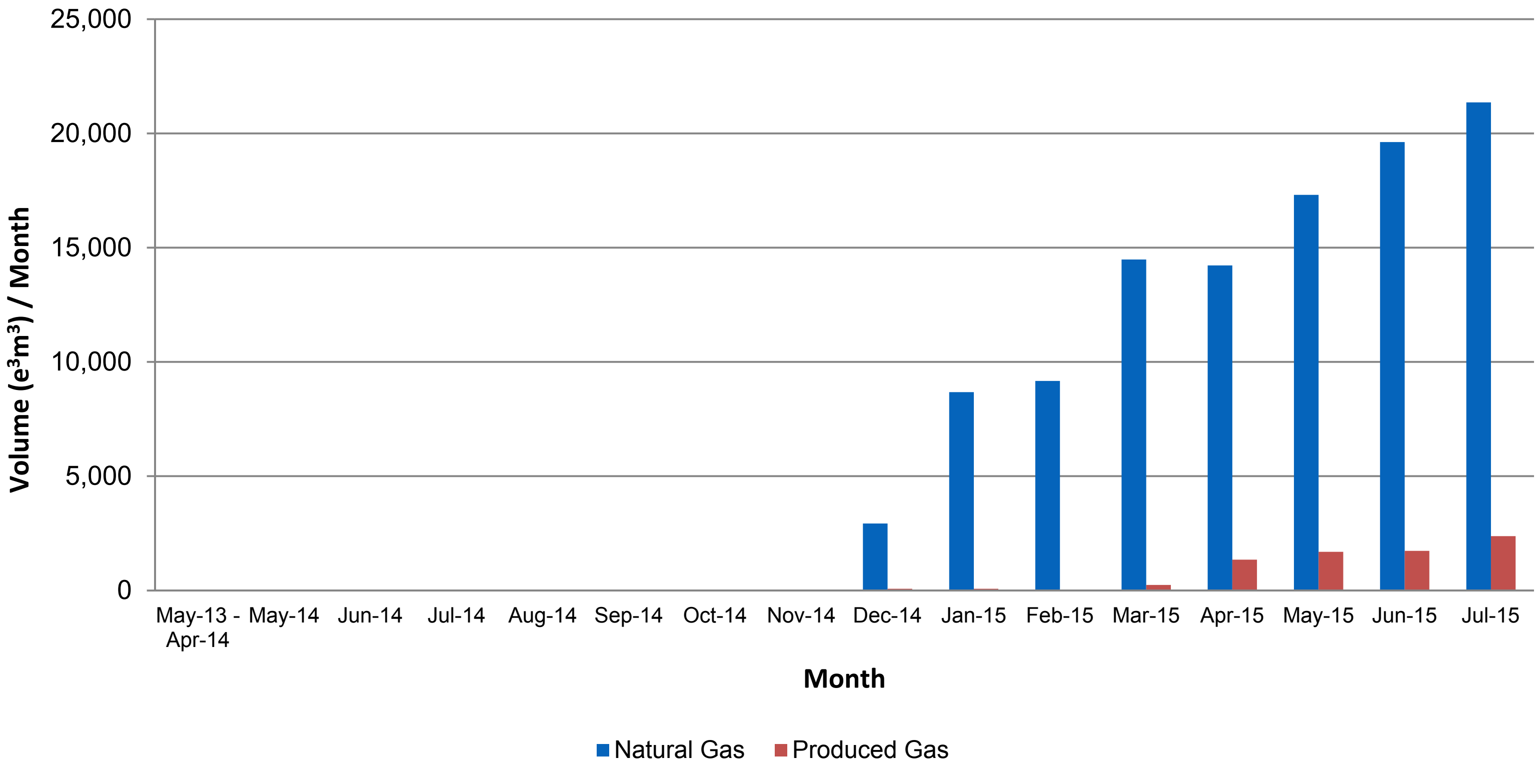
- H_2S outlet average 0-10 ppm
  (typically >99% recovery)
- Mercaptan outlet 0-40 ppm
  (typically 60-80+% recovery)



Power Consumption



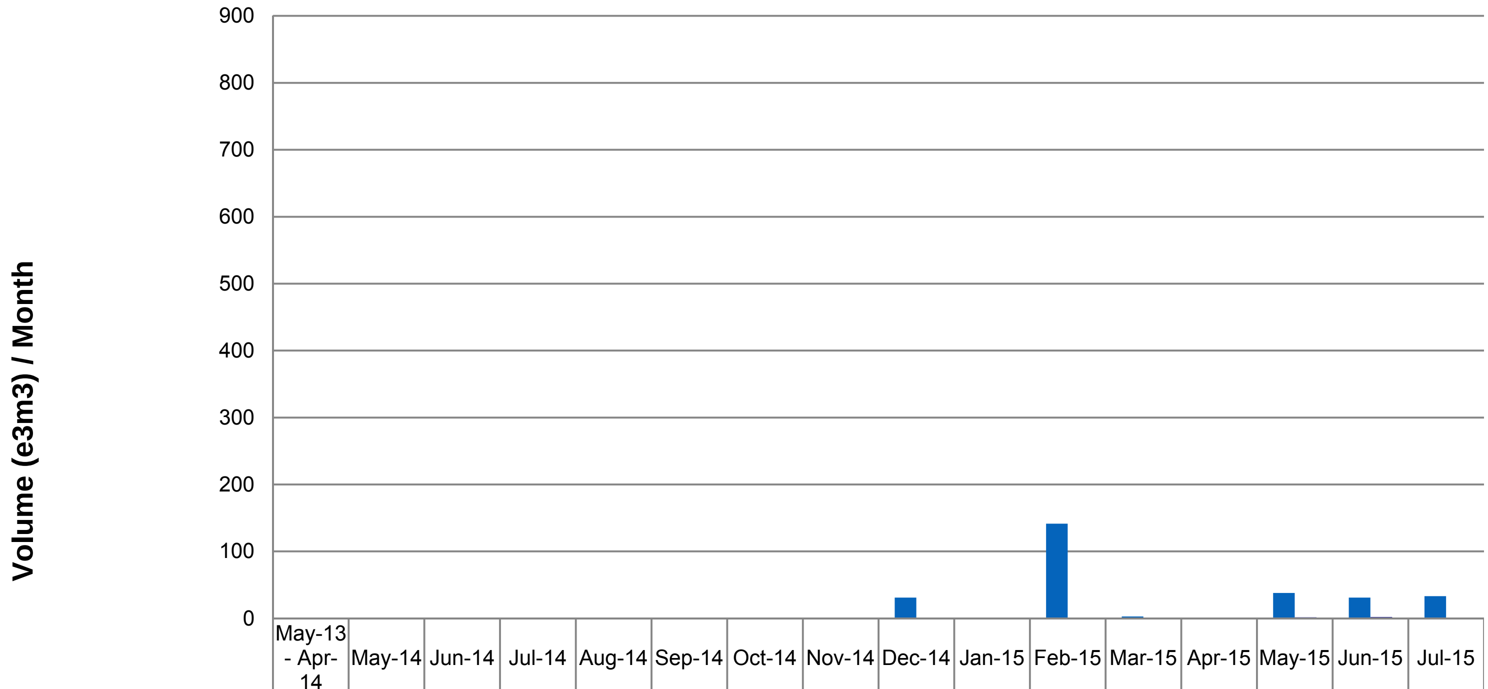
Gas Usage



25,000
20,000
15,000
10,000
5,000
0
Volume (e³m³) / Month
May-13 - Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Month
Natural Gas
Produced Gas

Flaring and Venting

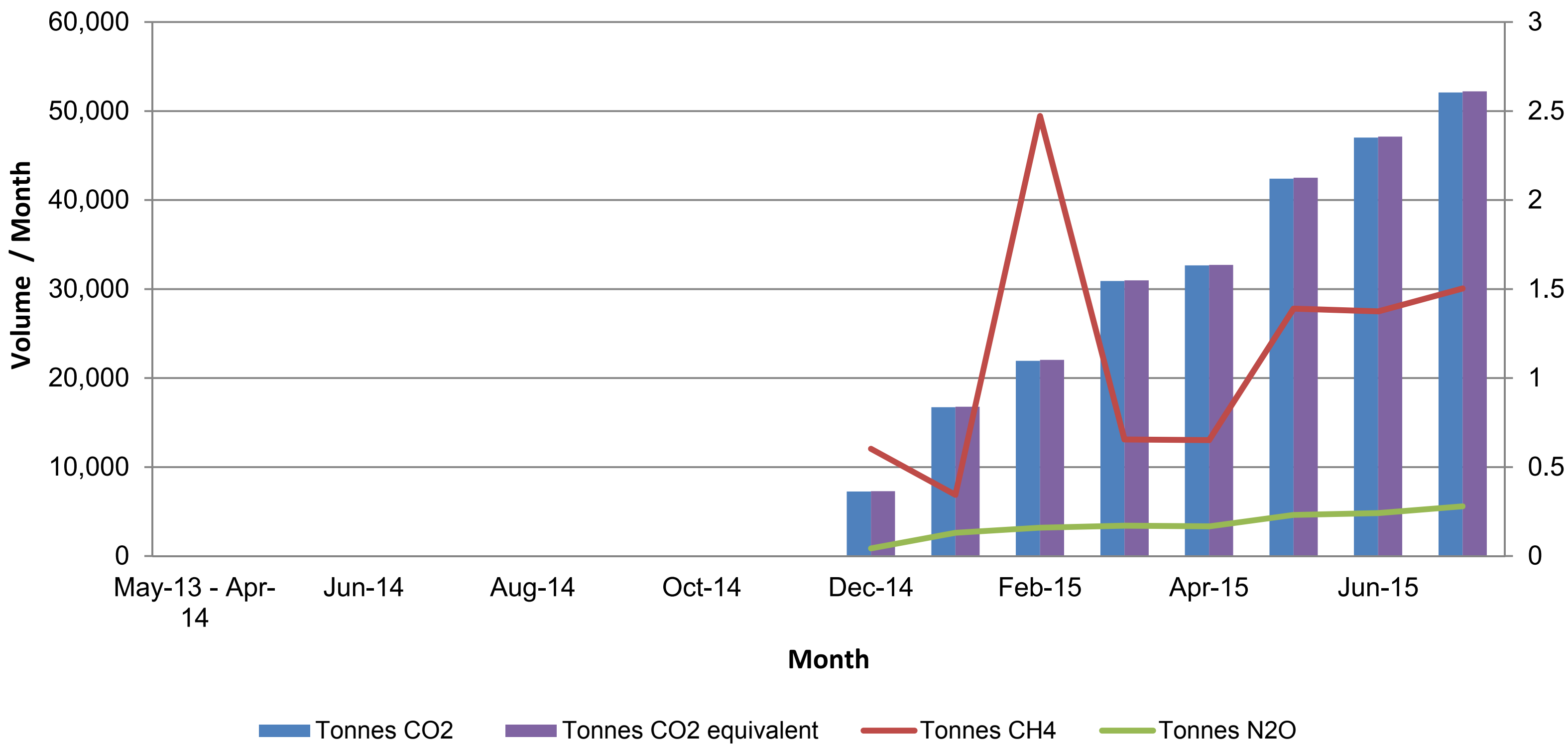
- No occurrence exceeded 30,000 m^3 /day
- Two days where total flaring time exceeded 4 hours (combined time) within the reporting period:
  - April 9, 2015 – totalling 5 hours and 24 minutes within a 24 reporting period
  - May 25, 2015 – totalling 5 hours 29 minutes within a 24 reporting period
- All solution gas is recovered to the CPF for treatment in the SRU and combustion in the OTSGs



	May-13 - Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15
Total Gas Flared (e3m3)									31.00	0.00	141.51	2.87	0.31	37.95	30.97	33.20
Total Gas Vented (e3m3)									0.00	0.00	0.00	0.00	0.00	1.70	2.10	0.10

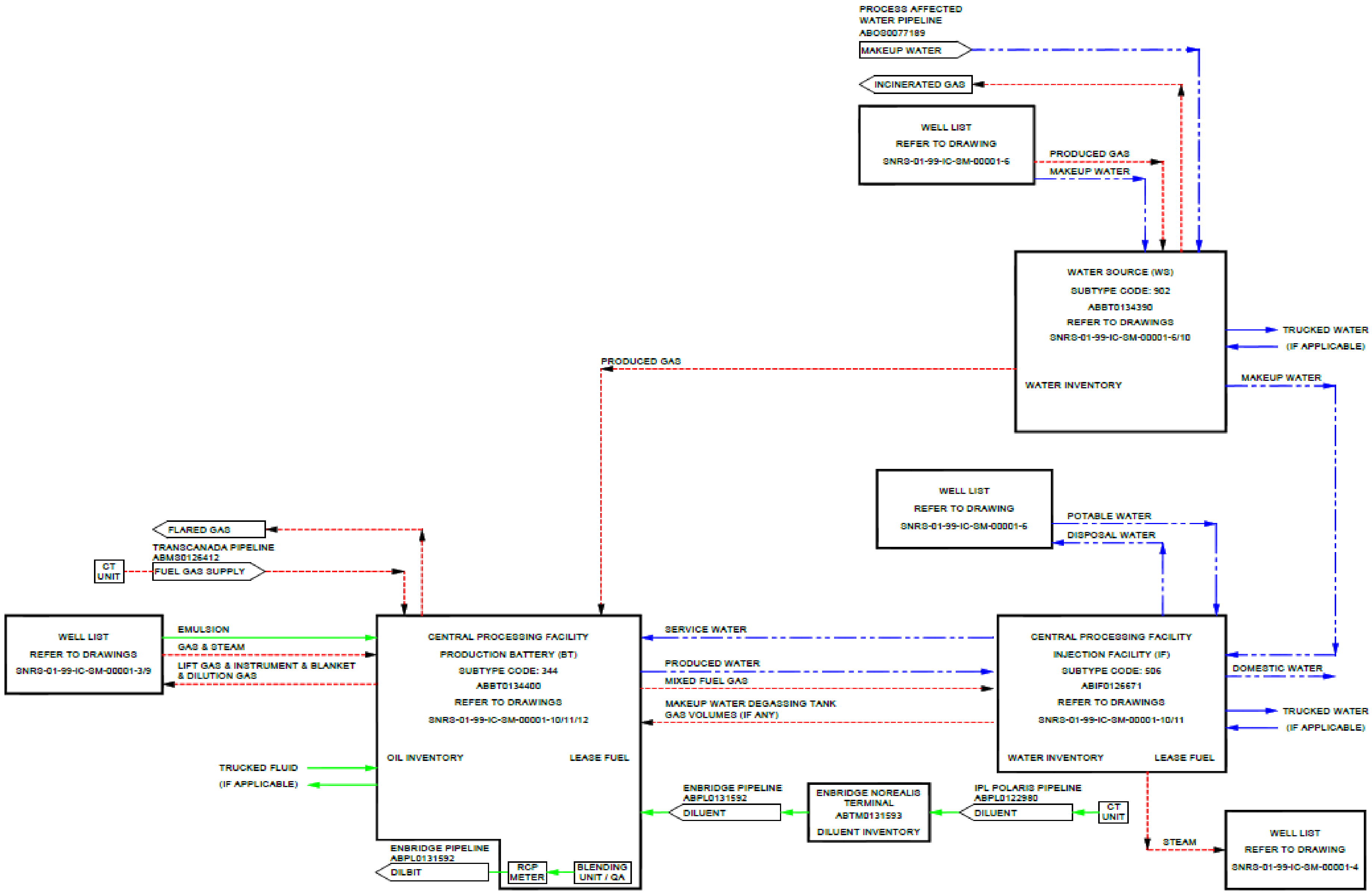
Green House Gas (GHG)

- Emission sources considered include stationary combustion associated with steam generators and glycol heaters, flaring, venting and fugitive emissions. Does not include GHG emissions from fugitives and mobile sources, propane and diesel combustion.



3. Measurement and Reporting

Measurement and Reporting - Overview



Measurement and Reporting
Water Source Battery ABBT0134390

- Suncor PAW water receipt started November 2014
- Kearl MUW wells partially started up:
    - 09-24-096-08W4
    - 01-13-096-08W4
    - 06-30-096-07W4
    - 12-08-096-07W4
    - 11-17-095-07W4
  - Kearl MUW used for commissioning and backup purposes
  - No reportable gas production for the evaluation period
- Water source battery water balance closed at:

Date	Water Balance [%]
Jan-15	0.9
Feb-15	0.8
Mar-15	0.8
Apr-15	0.7
May-15	0.3
Jun-15	0.3
Jul-15	0.8

Measurement and Reporting
Injection Facility ABIF0126671

- Primary and secondary Boiler Feed Water (BFW) measurement balances within less than 5%
- Reported Spent Lime Pond inventory:
  - Sources: temporary water treatment plant waste, startup steam condensate, OTSG blowdown, service water, leachate from landfill.
  - Users: water treatment, commissioning and startup users: line fills, tank bottoms.
- Trucked in/out water loads are accounted for
- No solvents or non-condensable gases injected to the reservoir
- Injection Facility closing water balance and steam allocation:

Date	Water Balance [%]	Steam Allocation [adim]
Dec-14	2.2	1.00975
Jan-15	4.8	1.01648
Feb-15	4.4	1.03588
Mar-15	2.8	0.98104
Apr-15	4.8	0.91857
May-15	5.3	0.94290
Jun-15	0.1	0.97404
Jul-15	0.4	0.95518

Measurement and Reporting
In Situ Oil Sands Battery ABBT0134400

- Primary and secondary produced water measurement balances within less than 5%
- Temporary diluent storage approved until May 2016
- Diluent flash accounted for in produced gas and bitumen calculations
- Blending shrinkage used in bitumen production accounting
- Trucked in/out water and oil loads are accounted for the reporting period

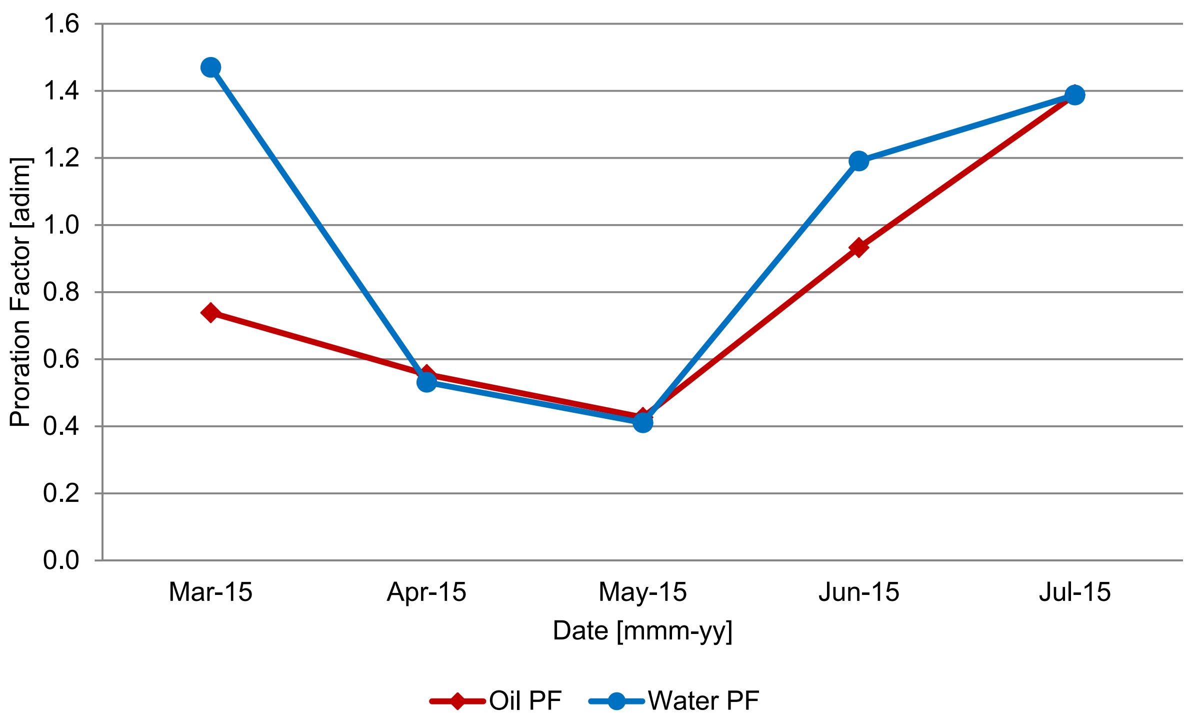
Monthly Battery GOR	
Date	GOR e^3m^3/m^3
Apr-15	0.01521
May-15	0.03224
Jun-15	0.01110
Jul-15	0.01377

Measurement and Reporting
In Situ Oil Sands Battery ABBT0134400

- Well testing:
  - Oil proration battery. Oil and water estimated by well tests
  - Technical issues identified with well testing equipment (VSD submitted August 24, 2015)
  - ESP well emulsion production measured at each wellhead
  - Total emulsion produced per well pad measured
  - Gas lifted well emulsion production estimated by difference as per above measurement, split between well based process conditions
  - BSW measured per well, once a week

Measurement and Reporting
In Situ Oil Sands Battery ABBT0134400

- Proration factors



4. Water Production, Injection and Uses

Water Usage

Sunrise Water Sources:

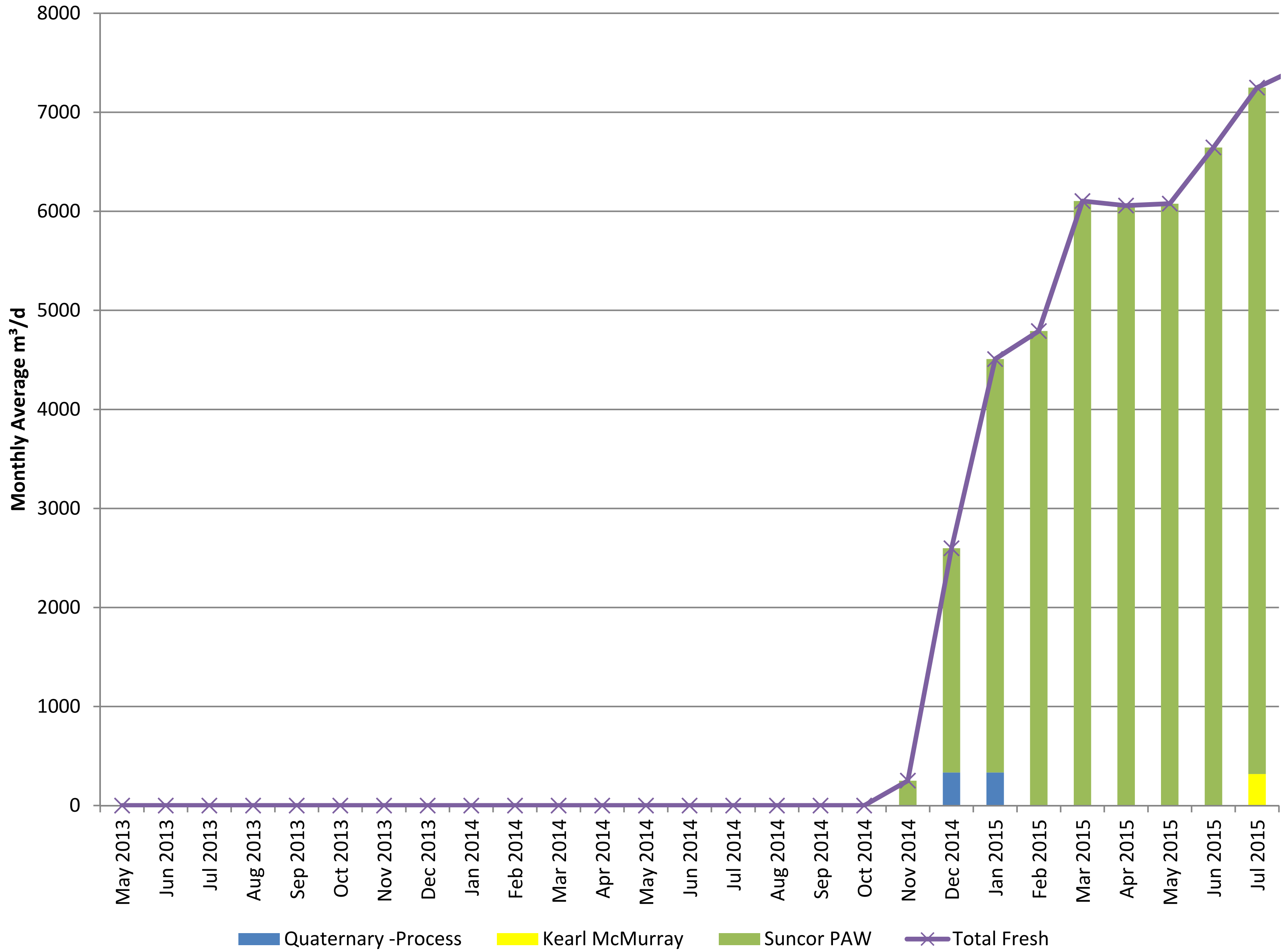
- Quaternary (Fresh)
  - Primarily used for domestic / potable services (safety showers, camps, fire suppression, etc.)
  - Approved for 10 m^3/d for SRU RO package feed (starting Sept/Oct 2015)
  - Approved for up to 410,000 m^3 over 3 months during start-up. Only 20,675 m^3 consumed during start-up.

- Kearl McMurray (Fresh)
  - Process make-up
  - Currently approved to 6,000 m^3/d maximum of 13,000 m^3/d license limit
  - 8 Wells with Electric Submersible Pumps
  - Consumption to July 31, 2015: ~10,000 m^3 (2,190,000 m^3/y limit)

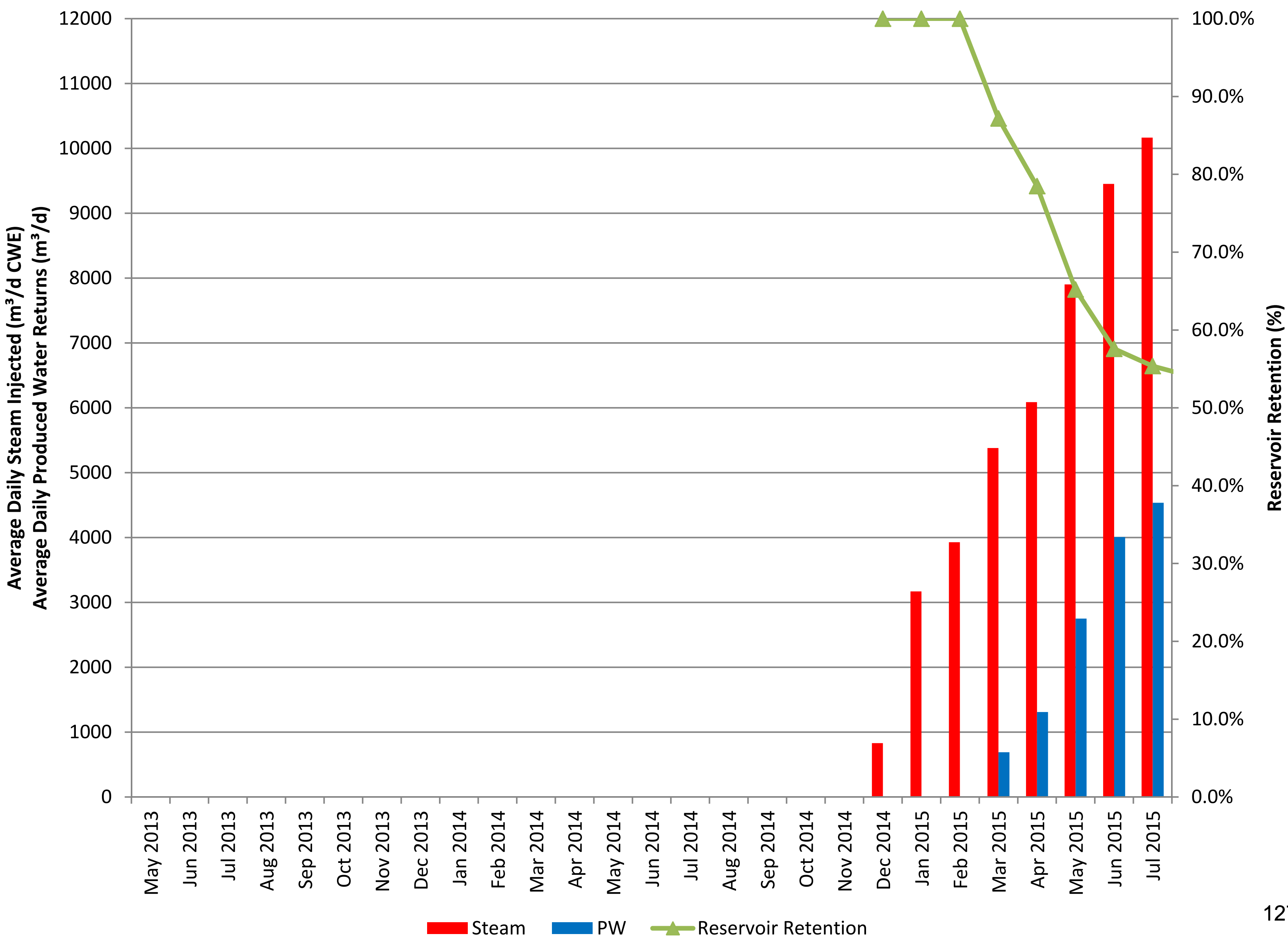
- Suncor Process Affected Water (PAW) (Fresh)
  - Process Make-up
  - Currently approved to 10,000 m^3/d maximum of 13,000 m^3/d license limit
  - Sourced from Suncor Oil Sands Facility (tailings water)
  - Consumption to July 31, 2015: ~1,310,000 m^3 (3,650,000 m^3/y limit)

- No Brackish Water Sources are currently available to Sunrise

Total Fresh Water Consumption



Produced Water & Steam Injected



Water Disposal Limits

- Directive 81:
  - Replaces *Bulletin 2006-11: Water Recycle, Reporting and Balancing Information for In Situ Thermal Schemes*, and supersedes and replaces *Information Letter (IL) 89-05: Water Recycle Guidelines and Water Use Information – Reporting for In Situ Oil Sands Facilities in Alberta*

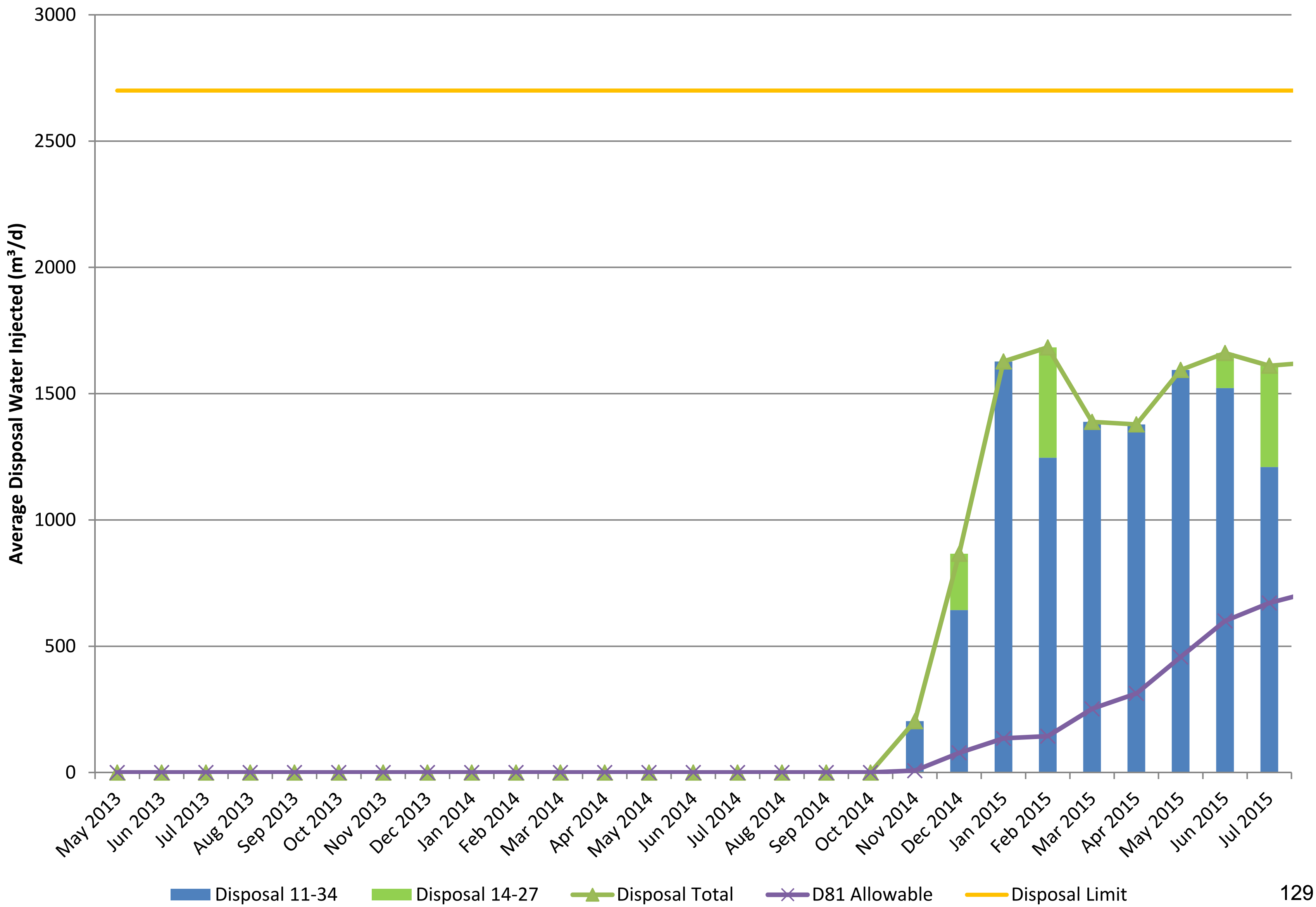
- All produced water sent to water treatment

- All pond supernatant water recycled to water treatment

- Portion of steam blowdown recycled to water treatment, remainder disposed via deep well injection

- Blowdown Disposal wells currently licensed to 2,700 m^3/d

Water Disposal

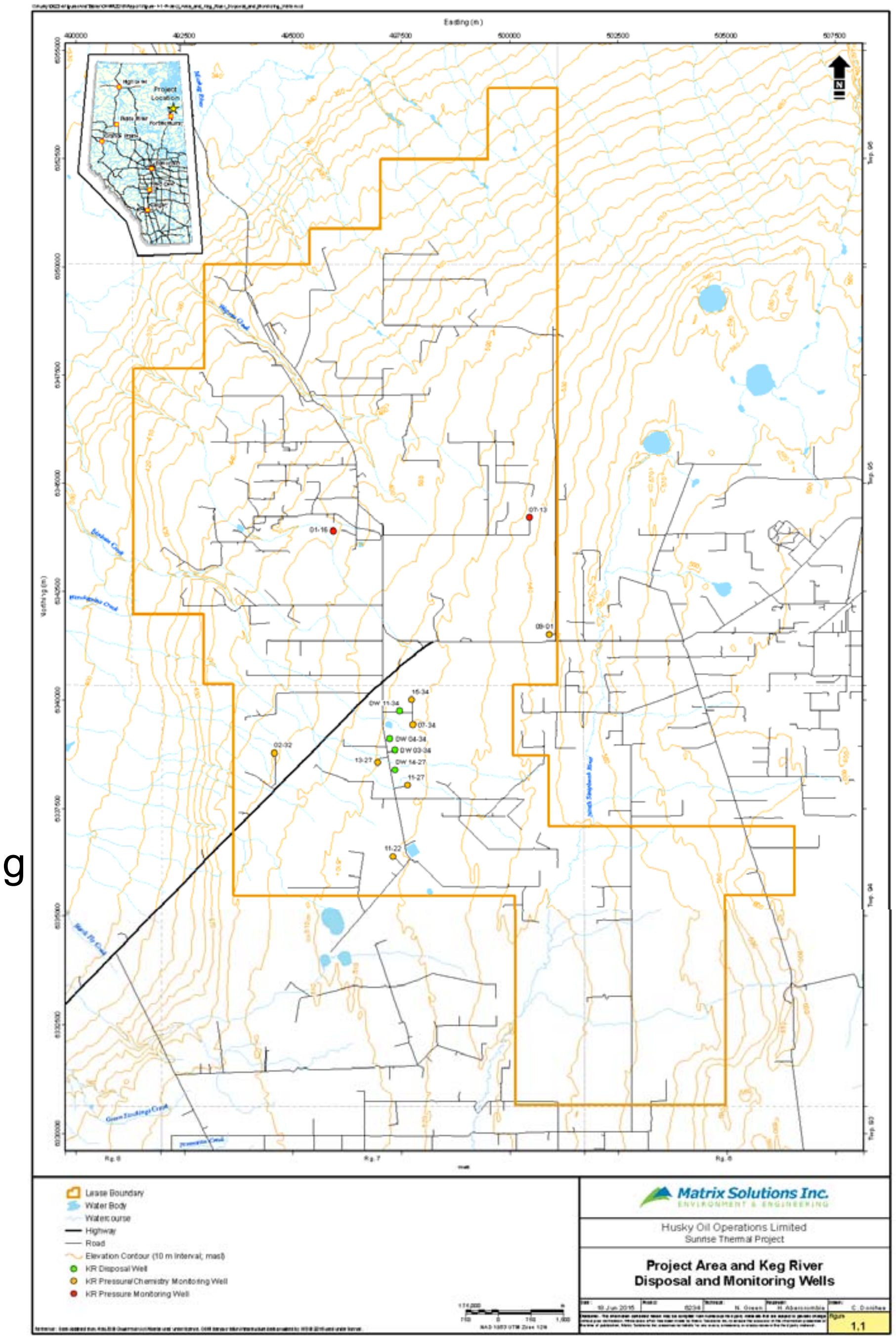


Disposal Wells

- AER Class 1 Approved Disposal Wells (Approval No. 11754C)
  - 100/11-34-094-07W4/00
  - 100/14-27-094-07W4/00
  - 102/03-34-094-07W4/00
  - 100/04-34-094-07W4/00

- Pressure Disposal Monitoring Wells
  - 100/01-16-095-07W4/00
  - 100/07-13-095-07W4/00

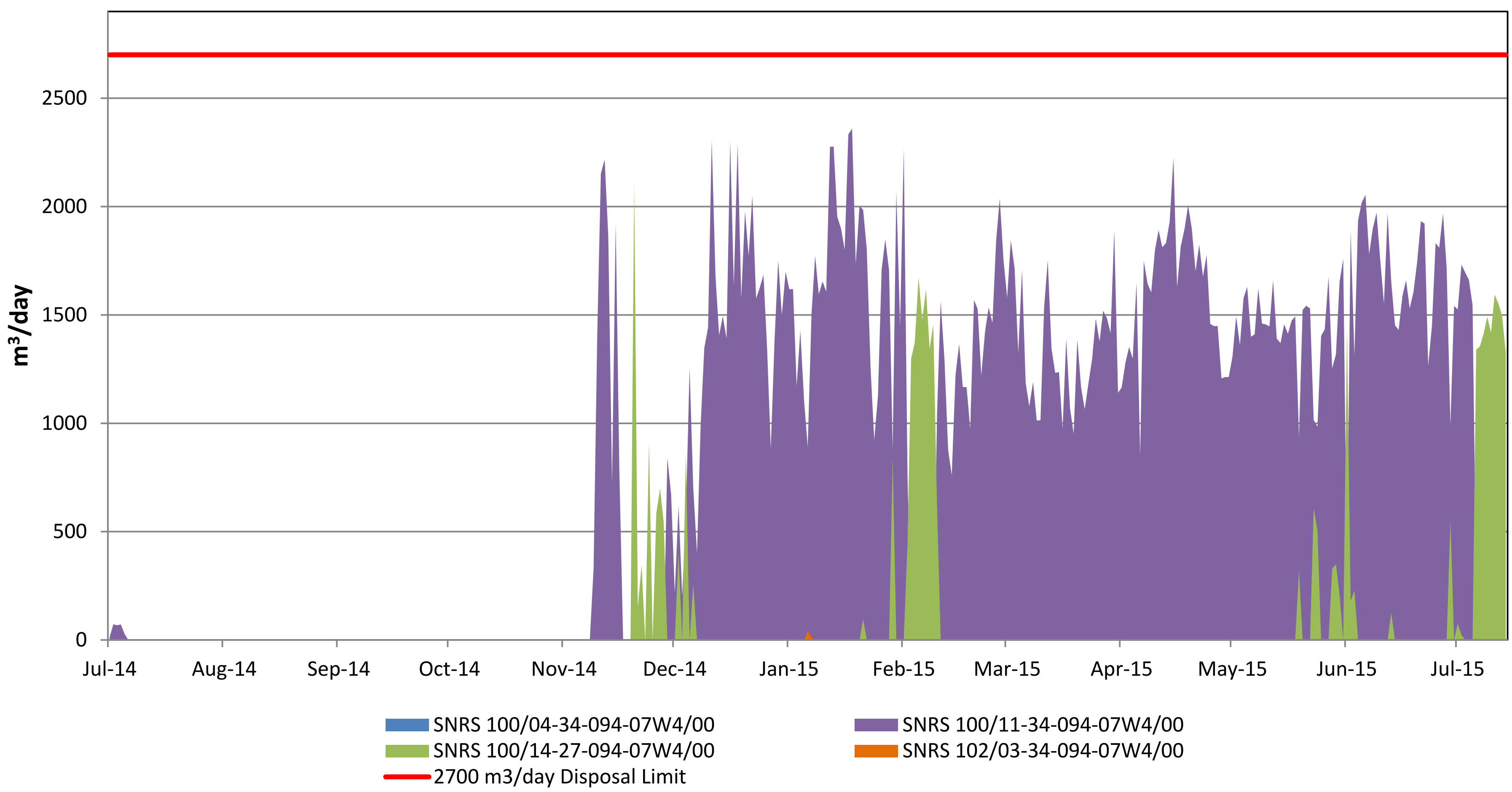
- Pressure/Chemistry Disposal Monitoring Wells
  - 100/15-34-094-07W4/00
  - 100/07-34-094-07W4/00
  - 100/13-27-094-07W4/00
  - 100/11-27-094-07W4/00
  - 100/02-32-094-07W4/00
  - 100/11-22-094-07W4/00
  - 100/09-01-095-07W4/00



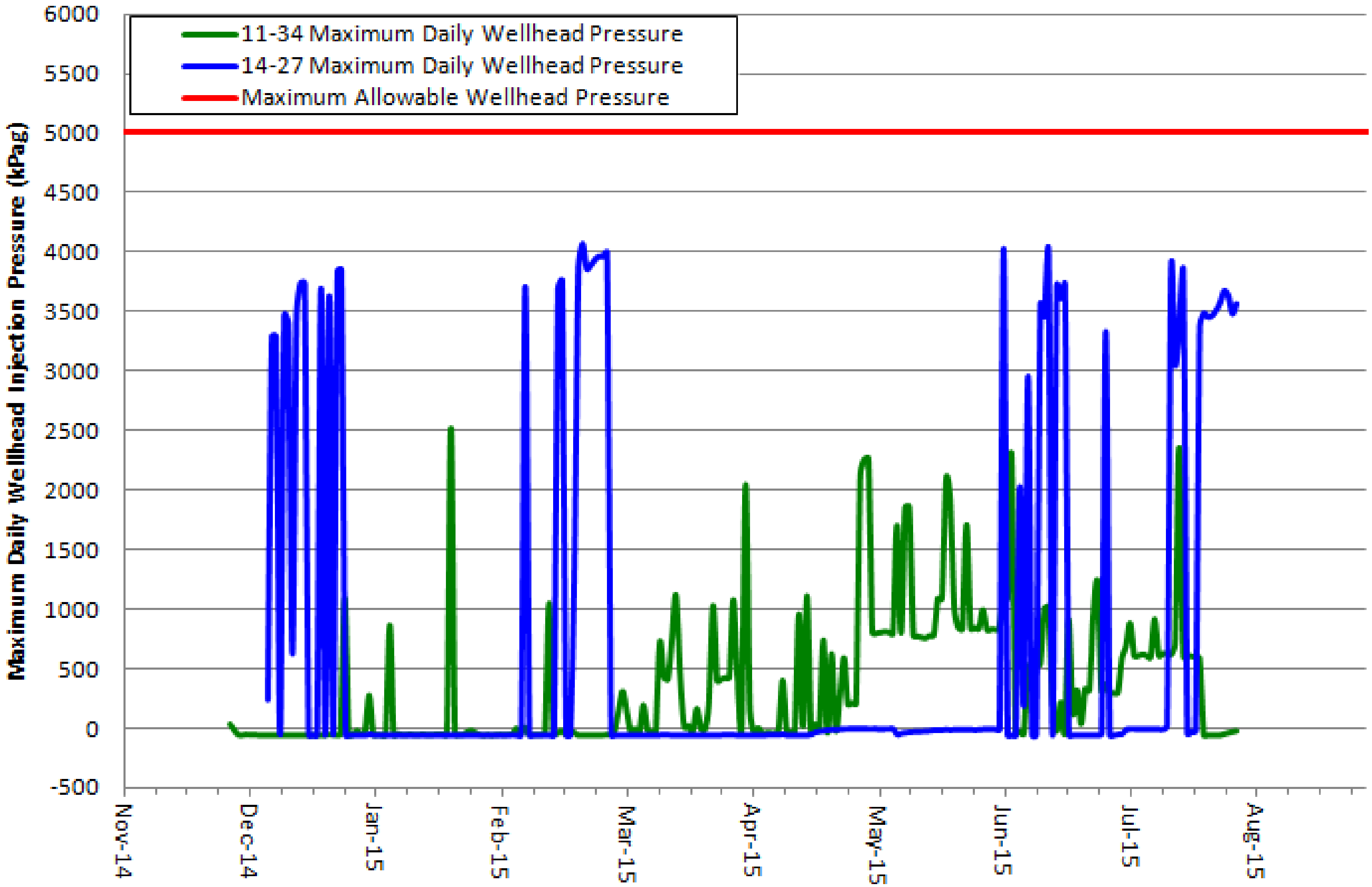
Disposal Summary

- Keg River monitoring wells are responding to disposal at wells 100/11-34-094-07W4 and 100/14-27-094-07W4
- Local and intermediate disposal flow systems have been updated to reflect pressure responses
- Potential for a flow restriction between the disposal wells. Husky will continue to monitor
- Chemistry data indicates that no process water has reached the monitoring wells as of January 2015
- Total fluid volume of 174, 092 m^3 have been disposed as of March 31, 2015
- No exceedences in either maximum well head injection pressure (MWHIP) (5000 kPa_g or in daily disposal volume (2,700 m^3/day) for the reporting period

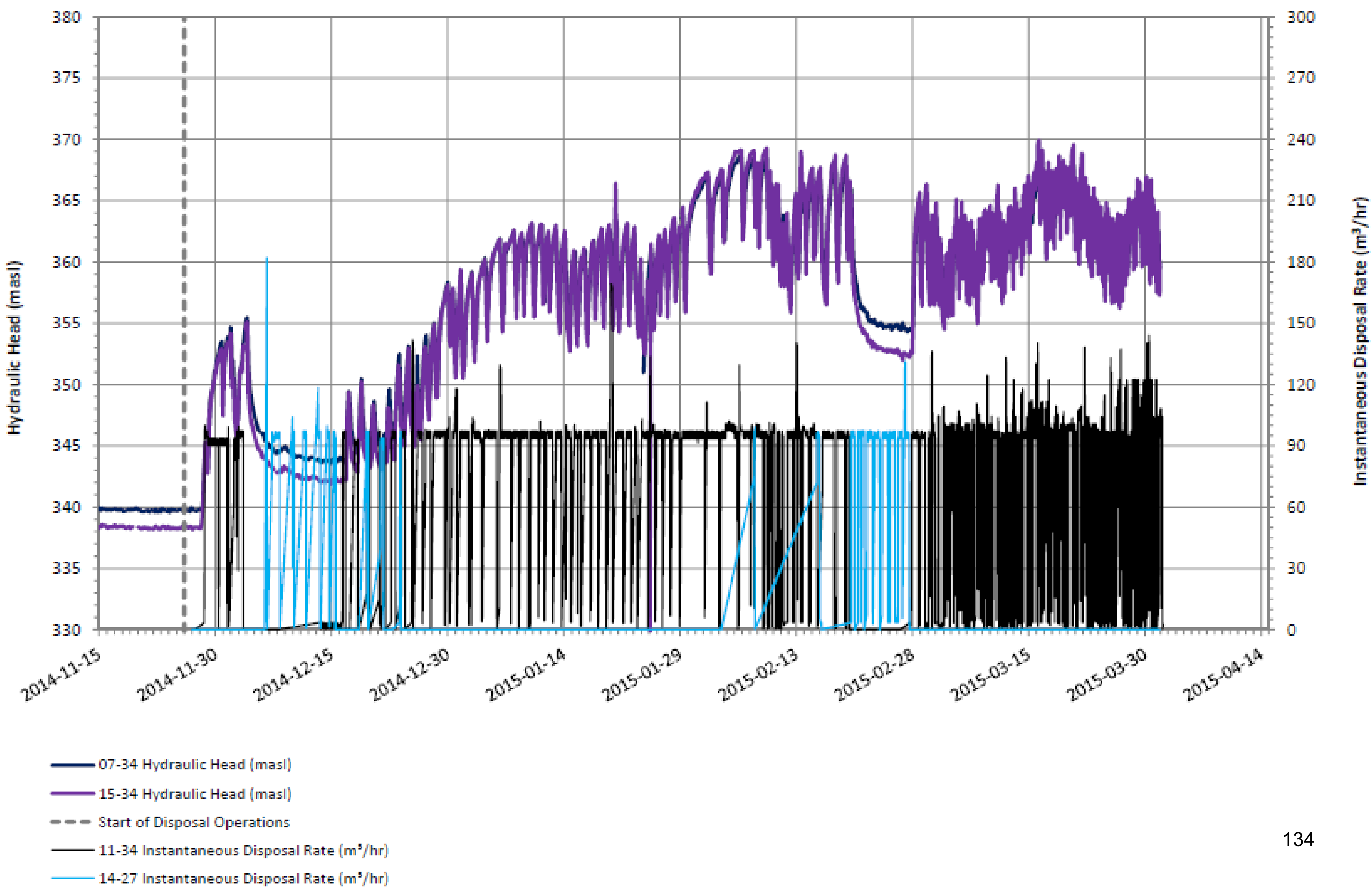
Disposal Wellhead Injection Volumes



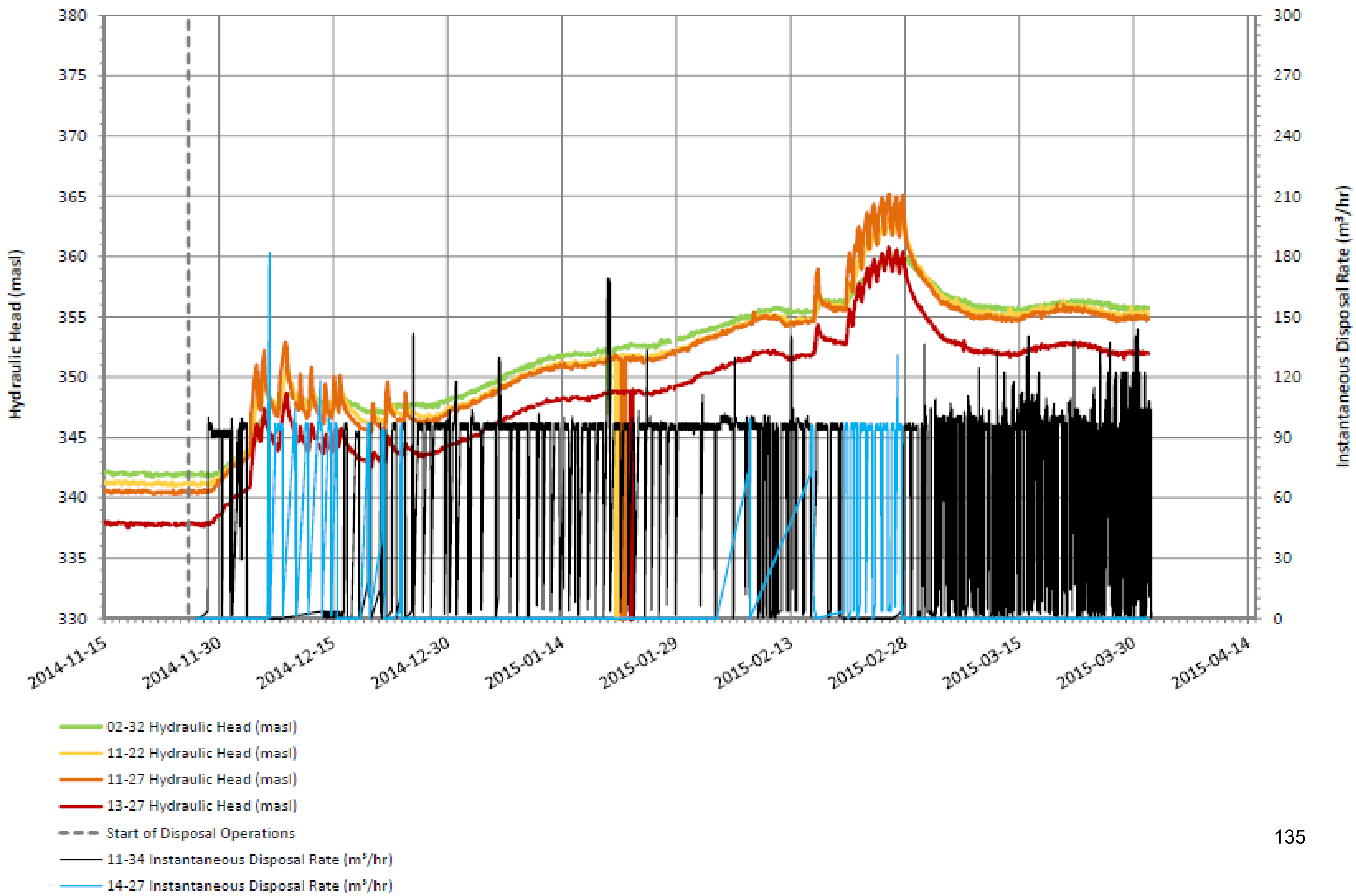
Disposal Well – Maximum Daily Wellhead Injection Pressure



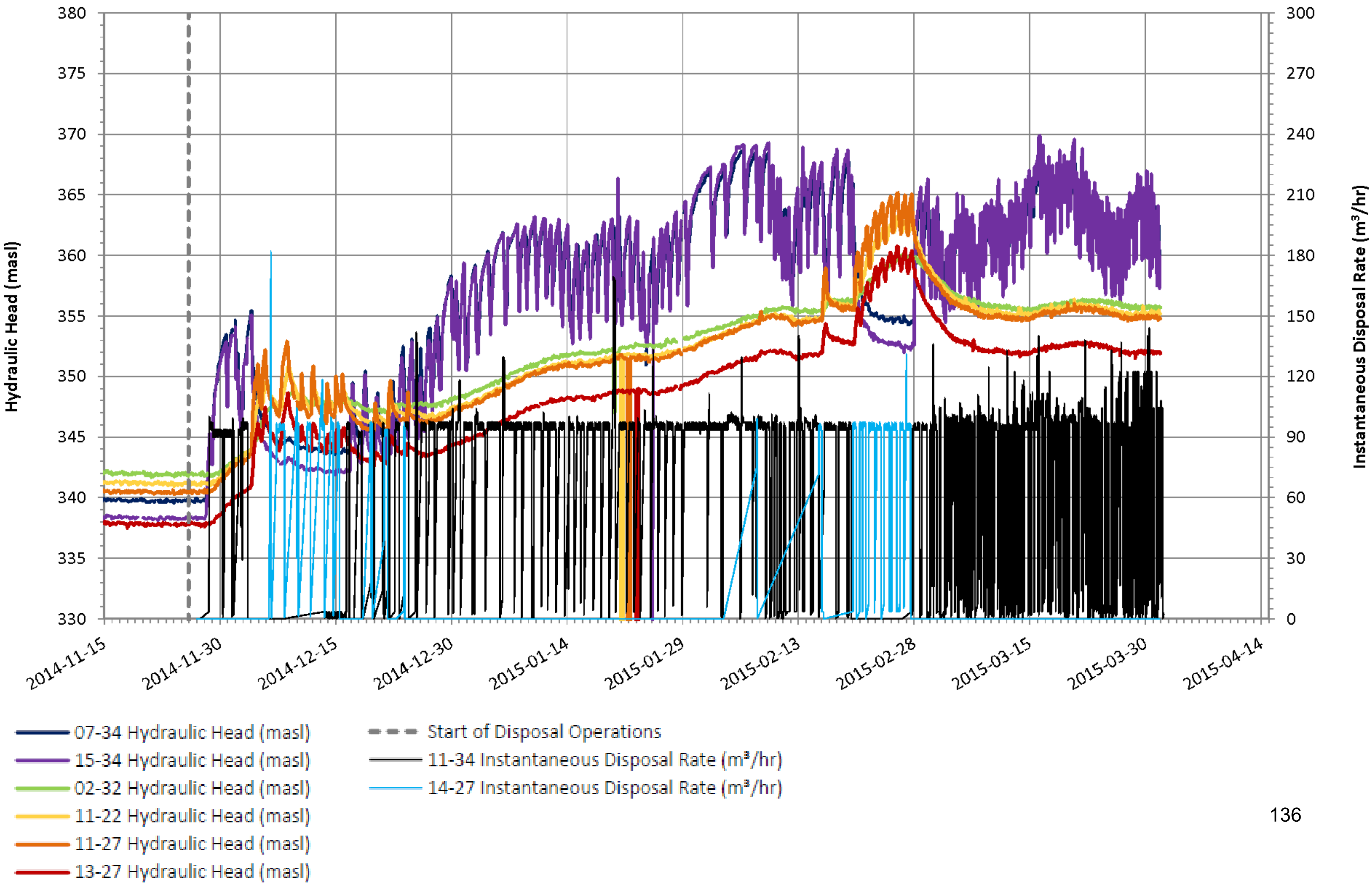
100/11-34-094-07W4 Local Flow System



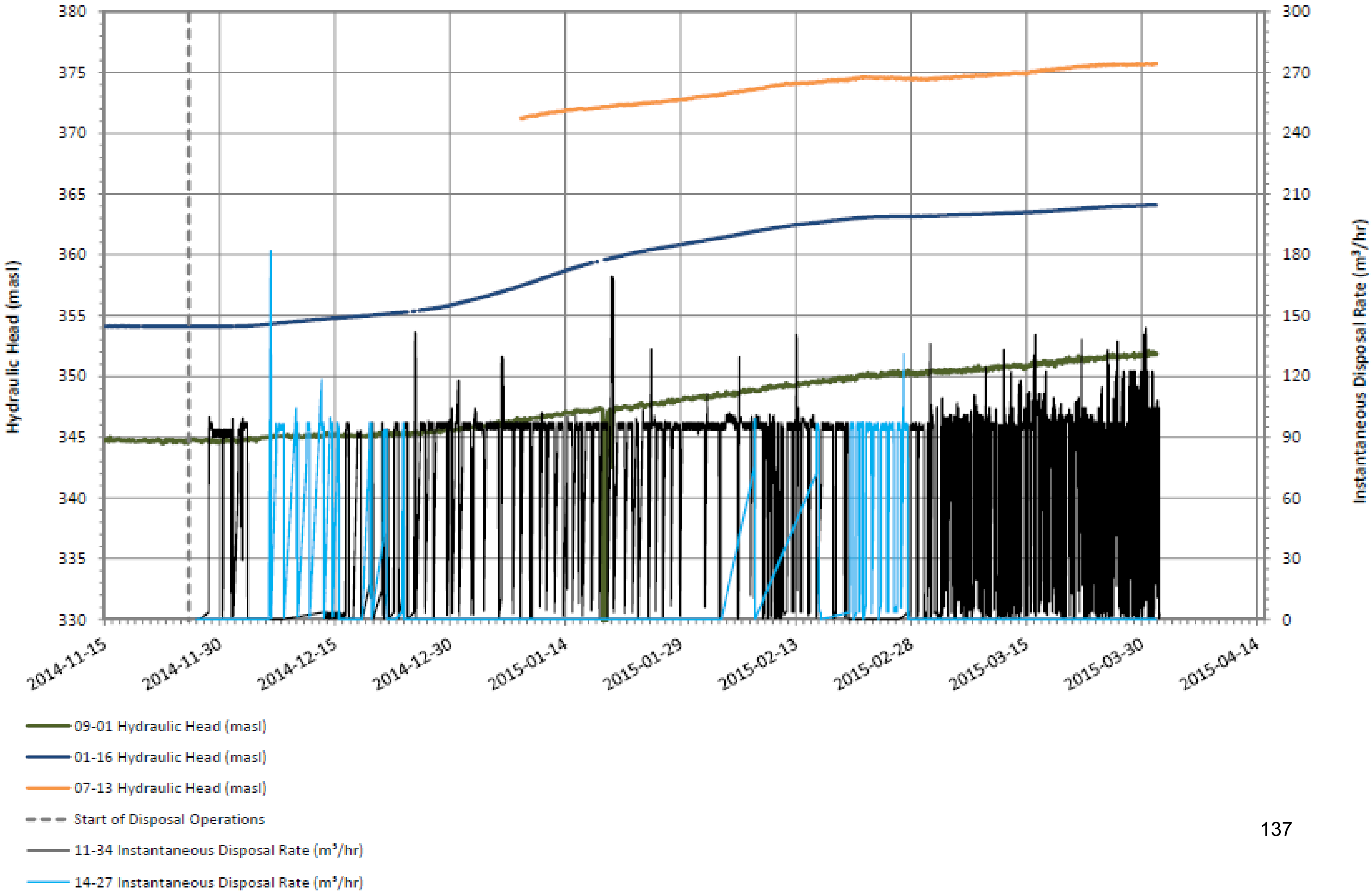
100/14-27-094-07W4 Local Flow System



Keg River Pressure Monitoring



Intermediate Flow System



Data Gaps

Pressure Data Gaps:

100/07-13-095-07W4/00 - Monitoring Well

- Only monitoring well with gaps lasting longer than a month
- Restarted transmission in July 2014 but unable to move in equipment to replace malfunctioning motherboard until January 2015; winter access only
- Intermittent data issues were experienced from June 2014 to January 2015

100/14-27-094-07W4/00 - Disposal Well

- SCADA system was set up to record a frequency of years not seconds and wellhead pressure was not recorded for first two days of injection
- No exceedences (MWHIP of 5000 kPa_g) were reported

Chemistry Data Gaps:

100/02-32-094-07W4/00 - Pump Failure

- Pump failure while sampling; only the dissolved gases collected
- AER notified immediately
- Pump repaired and a full chemistry sample collected during the July 2015 sampling event

Landfill Waste Handling

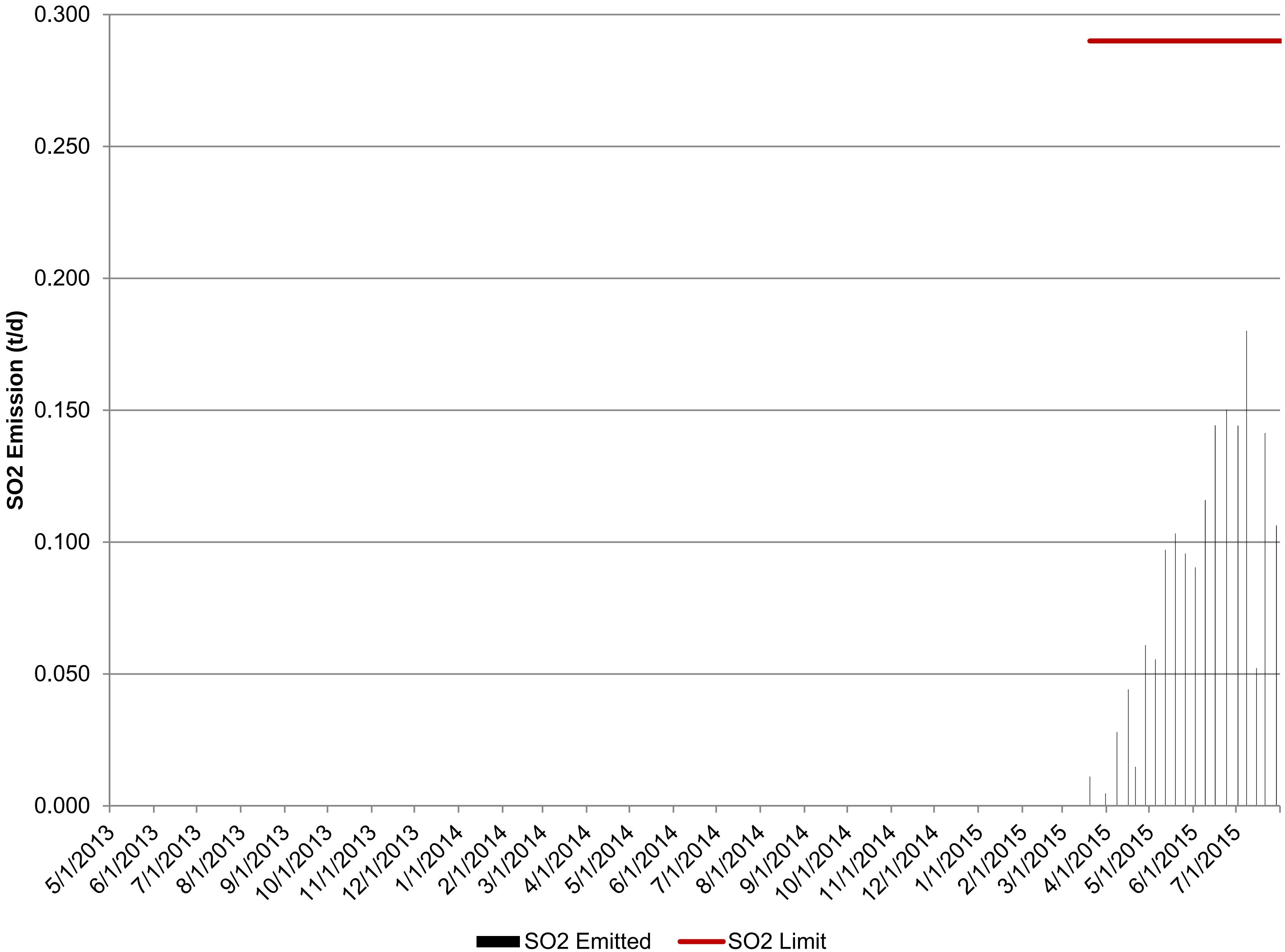
- Class 2 Oil Field Landfill Onsite Approval No. WM139

Types and Quantities of Waste Place in the Sunrise Landfill in 2013	
Waste Type	Volume (m^3)
CEMENT	980
DRWSGC	3,400
SOILCO	905
Total	5,285

Types and Quantities of Waste Place in the Sunrise Landfill in 2014	
Waste Type	Volume (m^3)
CEMENT	630
CONMAT	200
SOILRO	227
DRWSGC	2,060
SOILCO	1,680
Total	4,797

5. Sulphur Production

SO_2 Emissions



Sulphur Dioxide (SO_2) Sources

- Ten Once-Through Steam Generators (OTSG) - five operational during the reporting period

- Two High Pressure Flare Stacks - one operational during the reporting period

- Two Low Pressure Flare Stacks - one operational during the reporting period

Sulphur Recovery Unit (LoCat)

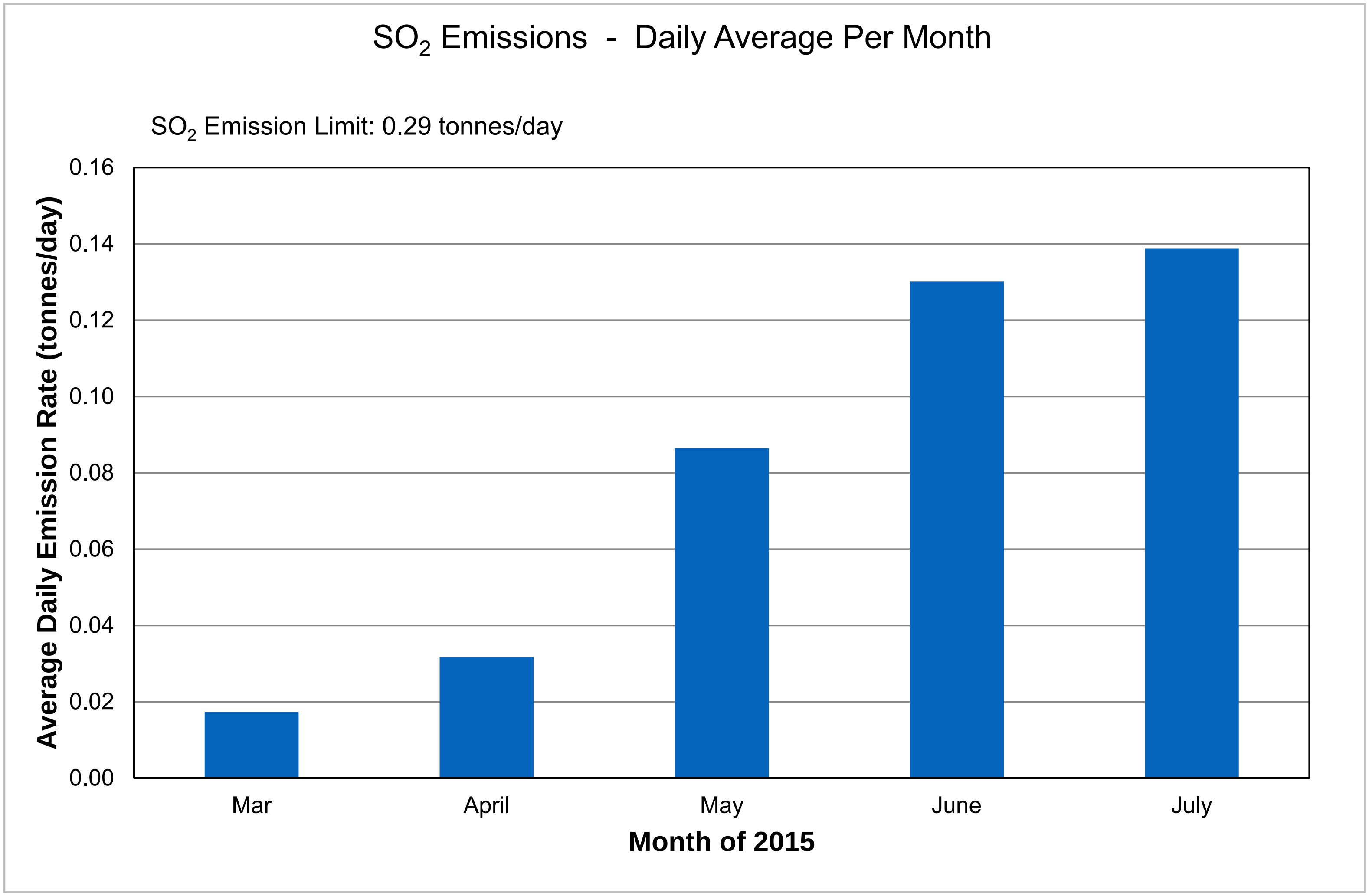
- Permanent SRU anticipated online in late September or early October 2015.

- Permanent SRU consists of:
  - Sour Gas Compression Package (suction cooler, sour gas compressors, outlet separator, and related ancillary equipment)
  - Sour Gas Cooler
  - Coalescing Filter
  - Liquid Full Absorber
  - Absorber KO Pot
  - LoCat ® Oxidizer
  - Solution Cooler/Heater
  - Process Air Blowers
  - Vacuum Belt Package
  - Chemical Storage Tanks
  - Circulation, Slurry, and Chemical Feed Pumps and Ancillary Equipment

Quarterly SO_2 Emissions

2015 Q1 (March 12th – March 31st)	0.5 tonnes
2015 Q2 (April 1st – June 30th)	7.5 tonnes
2015 Q3 (July 1st – July 31st)	4.3 tonnes
* The fluid return from FF commenced on March 12, 2015	

SO_2 Emissions Trends



Peak and Average SO_2 Emissions

- March 8, 2015 to July 31, 2015:

SO_2 Emissions	
Average Daily	0.09 tonnes
Maximum Daily (highest)	0.19 tonnes

- Limit under EPEA Approval is 0.29 tonnes/day

- No exceedences

- Temporary Sulphur Recovery Package started July 10, 2015

Ambient Air Monitoring

- Husky installed Permanent Air Monitoring Station (Wapasu AMS; AMS 17)
- Part of WBEA network of ambient monitoring stations and functions as a dual compliance and enhanced deposition station
- Reporting and monitoring is performed by WBEA
- No process related exceedences recorded during the reporting period
- PM2.5 and O_3 exceedences recorded as result of wildfires in the region
- Current monitored data available the following link
  - http://www.wbea.org/monitoring-stations-and-data/monitoring-stations/wapasu
- Historical monitored data available the following link
  - http://www.wbea.org/monitoring-stations-and-data/historical-monitoring-data

6. Environmental Issues

Environmental Issues – Compliance

- EPEA Approval 206355-00-00 (as amended):
  - Husky was in compliance with all regulatory approvals, decisions, regulations and conditions; except for compliance items identified in this presentation
- Alberta Environment and Parks (AEP, formerly ESRD):
  - No compliance issues during this reporting period
  - Reported one dead bird that struck a maintenance building window on the CPF
- Fisheries and Oceans Canada (DFO, Federal):
  - No compliance issues during this reporting period

Environmental Issues – Compliance (EPEA)

Spent Lime Pond Action Leakage Rate

- August 19, 2014: Husky noted groundwater influx in the leak detection sump on North/South that resulted measured leak above the allowable Action Leakage Rate (ALR)
- August 29, 2014: AER granted alternative calculation of the Sunrise ALR. The authorization was issued with 4 conditions including monthly and annual testing and reporting
- February 10, 2015: During on-going monitoring at the spent lime ponds, an increasing chloride trend was noted in the chemical analysis of the surrounding groundwater adjacent to the spent lime ponds. A 7-Day Letter was submitted under file ref number 294542
- The use of the North Pond halted and repair is ongoing

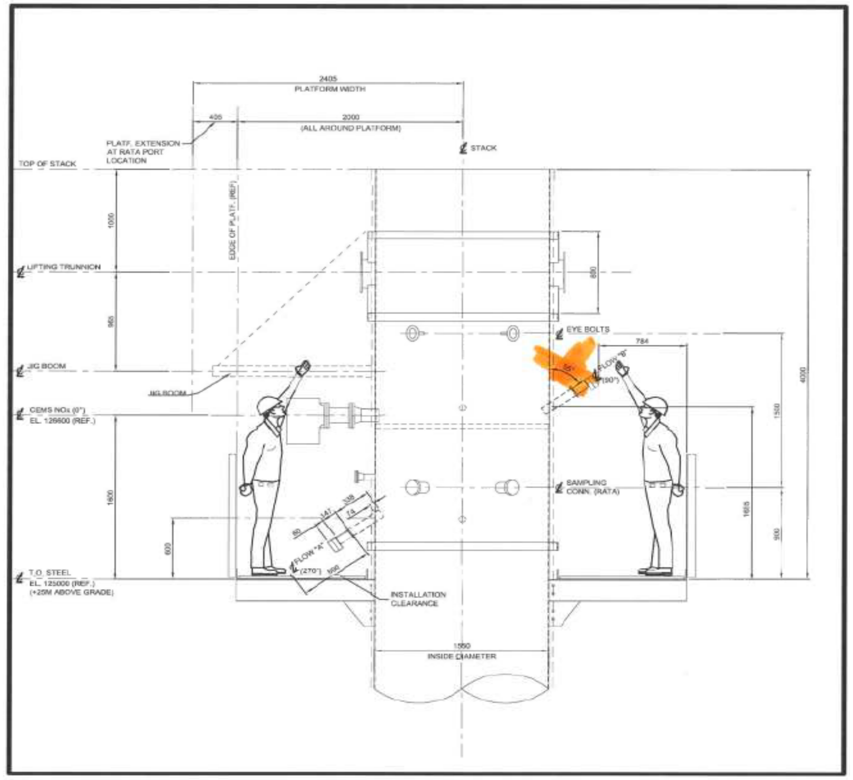
Environmental Issues – Compliance (EPEA)

Uncontrolled Snow Storage Run-Off

- <u>Event:</u> On August 2015 Husky identified that a snow storage area on the CPF was constructed such that the snow bypassed the CPF stormwater pond
- <u>Corrective Action:</u> Husky disclosed the uncontrolled release to the AER on August 28, 2014 and remediated the issue

CEMS Variance

- <u>Event:</u> The Continuous Emission Monitoring System (CEMS) installation did not meet the requirements of the Alberta Stack Sampling Code.
- <u>Corrective Action:</u> On September 24, 2014, a variance was granted by the AER to allow the CEMS on the OTSG in Plant 1A to meet the Alberta Stack Sampling Code



Environmental Issues – Compliance (EPEA/PLA)

Missing Waste Water Treatment Plant Samples

- Event: On December 3, 2013, a shipment of samples being transported from the Sunrise waste water treatment did not make to the lab
- Corrective Action: A 7 Day Letter was submitted for the missing CBOD samples

Loss of Communication for Potable Water Wells 12-22-095-07W4 and 01-23-095-07W4M

- Event: Between July and August 2013 data loggers in these wells malfunctioned and Husky was unable to retrieve a water level reading for the month of July 2013
- Corrective Action: Two 7 Day Letters were submitted and communication with the data loggers was repaired

Trespass Under the Public Lands Act

- Event: Discovered on March 10, 2015. Possible trespass reported to AER under the Public Lands Act on MSL 101714 and LOC 080864 while removing material from SML 070061 borrow pit. These dispositions are located in the NE 17-095-07W4 borrow pit
- Corrective Action: Submitted VSD to AER on March 10, 2015. Areas of trespass will be captured by TFA and affected areas will be surveyed and included in future amendments to capture resizing of the LOC and MSL

Environmental Issues – Compliance (EPEA)

Water Impoundment at Pit 1

- Event: On July 2013 found water impoundment on the lease which flooded a section of the surrounding forest
- Corrective Action: A 7 Day Letter was submitted and area was re-graded to allow for proper drainage of the surrounding watershed

Disposal of DOW Fluid at the Sunrise Landfill

- Event: During routine leachate removal a pump truck released sludge into the leachate collection sump
- Corrective Action: Submitted VSD on October 25, 2013. The majority of the sludge was removed from the leachate collection sump

Environmental Issues - Releases

Spill Material	Number of incidents	Total Volume (m^3)	AER Notification
Sewage Spill	14	69.71	7-day letters submitted
Refined Product Spill (Diesel and hydraulic oil)	2	0.69	7-day letter submitted
Process affected water	4	39.4	Release report submitted
Cement return	1	0.14	Release report submitted
Tank Venting	9	5,858	7-day letter and DDS report submitted
Surface water	2	10,000	Release report submitted
Emulsion	1	0.02	Release report submitted

- Husky also tracks all non-reportable spills incidents within the Corporate Incident Management System (Omnisafe)
- All spills incidents are reviewed weekly to ensure corrective actions are included and preventative measures are included

Environmental - EPEA Approval Amendments

Approval Date	Application Number	Application Name
2013-06-19	005-206355 (linked to SRU)	Phase 1 HP Flare Wind Guard Removal
2013-08-07	Not assigned	Kearl Wells Makeup Water
2013-08-08	Not assigned	Phase 1 Blowdown Pond Design Changes
2013-09-20	005-206355 (linked to SRU)	Phase 1 - OTSGs and Glycol Heaters Power Rating Changes, and Changes to Emergency Generators
2013-09-20	005-206355	Addition of a Sulphur Recovery Unit (SRU)
2013-10-21	Not assigned	Inlet Separator and Diluent TVP Mitigation
2013-11-06	001-00331927	Surface Water Term License (Drilling, Construction, Dust Suppression, Ice Roads)
Pending	006-206355	Phase 2/DA3 Amendment and Facility Renewal (including Phase 1 Tank Update) – submitted October 2013
2014-04-22	Not assigned	Permanent Fuel Depot and Phase 1 Emergency Generators
2014-09-23	Not assigned	Temporary Water Treatment Plant
2014-11-05	Not assigned	Wastewater Tank
2014-12-22	00362155	Temp. Diversion License - Use of Quaternary Water in SRU RO Unit
2015-04-10	Not assigned	Temporary SO_2 Emission Relief #1
2015-07-09	Not assigned	Use of Quaternary Water in SRU RO Unit
In Progress	Not assigned	Temporary Suspension of Flue Gas Recirculation (update due Oct 15th)
Pending	006-206355 (linked to Ph.2)	Phase 1 OTSG Duty Re-Rate
2015-02-11	Not assigned	Temporary Diluent Storage

Environmental – Biodiversity

- As a requirement of the regulatory approval, Husky conducts an Environmental Monitoring Program with biannual data compilation and report submission

- Monitoring program and findings includes:
    - Surface water quality and quantity
        - Data collected thus far do not suggest Project effects on water quality in Project area.
    - Wetlands
        - No trends are evident based on dataset thus far.
    - Wildlife
        - No evident trend for habitat use and distribution for wildlife species based on dataset thus far. Canadian Toads not yet detected at Project site.
    - Biodiversity
        - Trend showing preliminary higher instances of song bird species associated with edge and open habitat.
        - Appears that rare plant species detected during EIA are persisting in Project area.
        - Mammal relative abundance and diversity does not appear to be negatively affected by anthropogenic disturbances in Project area based on dataset thus far.

Environmental – Wildlife

- Caribou Mitigation and Monitoring Plan
  - Approved by AER January 2015
  - Approved, but not developed, Project facilities to be located within the Richardson Caribou Range are limited to a potential road and single well pad
  - Development potentially within the Range may occur between 2027 and 2034
  - Updated plan due October 2017

- Wildlife Monitoring, Enhancement and Monitoring Program
  - Approved by AEP December 2012
  - Objectives and targets developed and monitored to address four key wildlife issues identified in the Environmental Impact Assessment (EIA):
    - Habitat Availability
    - Habitat Effectiveness
    - Disruption of Movement Patterns
    - Wildlife Mortality
  - Husky regularly monitors and reviews mitigation strategies to ensure ongoing effectiveness and evaluate areas for improvement

Environmental - Industrial Wastewater

- Disposal Locations:
  - Four Disposal wells: 100/14-27-094-07W4, 100/11-34-094-07W4, 102/03-34-094-07W4 and100/04-34-094-074W
  - 174,092 m^3 of boiler blow-down was disposed
  - Keg River Monitoring Wells (sampling)
- Domestic Wastewater:
  - Domestic wastewater from construction and operational activities was treated on the CPF by the operation of a domestic wastewater treatment plant (WWTP).
  - Domestic wastewater is treated and released to an unnamed tributary of Wapasu Creek located south of the CPF
- Industrial Run-off
  - Total of 11 discharge locations:
    - Pad B13-08 (B), Pad B14-08 (C), Pad B16-08 (D), Pad B13-09 (E), Pad B08-17 (G), Pad B05-16 (H), Pad B16-17 (L), Pad B13-16 (M) and Pad B15-16 (N)
      Total volumes discharged:
      - 2013: 969,817 m^3
      - 2014: 845,491 m^3
      - 2015 (July): 187,150 m^3
  - All discharges were in compliance with EPEA approval

Environmental – Soils

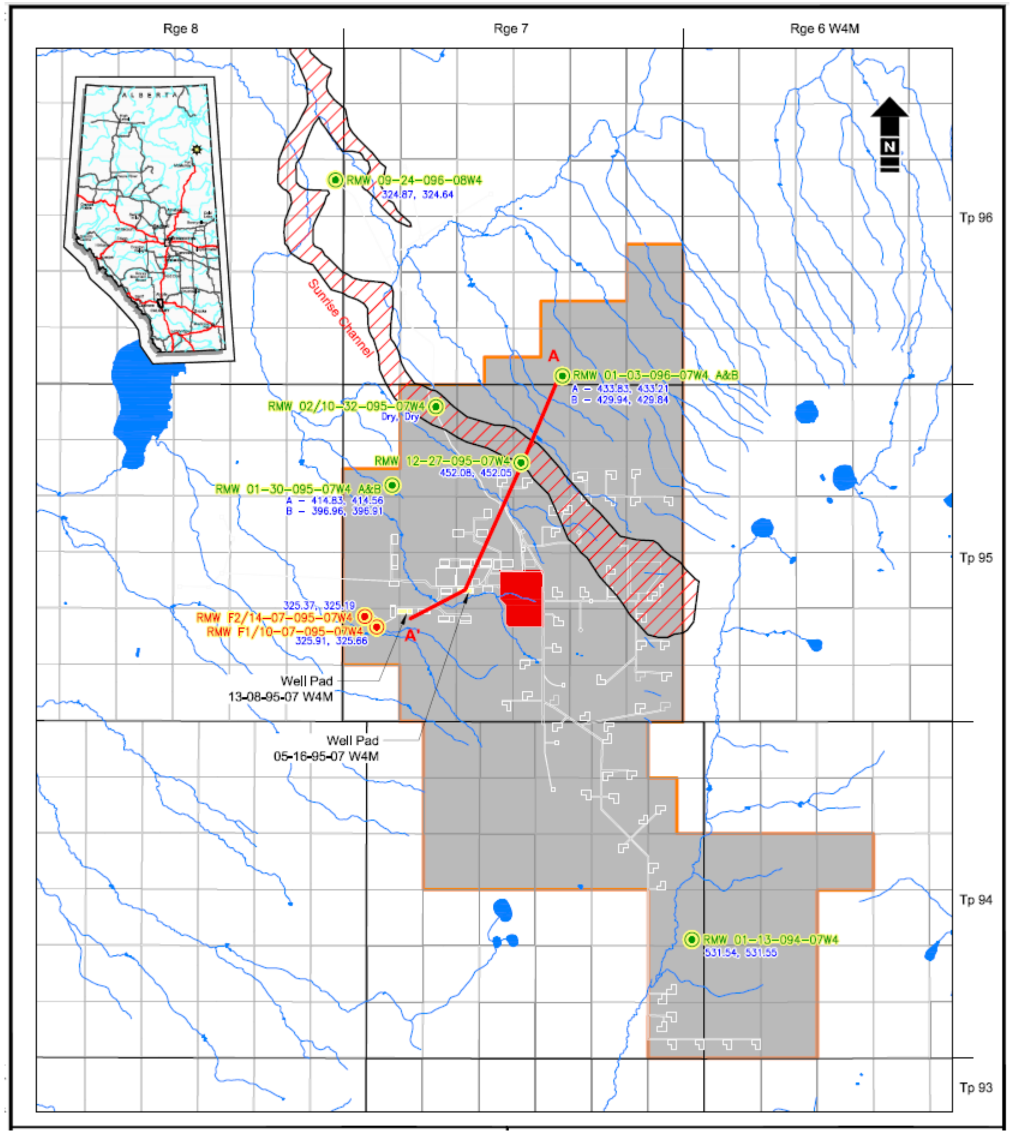
- Prepared a Baseline Soil Monitoring Program (BSMP) Proposal and submitted to ESRD in September 2012
- ESRD accepted the Proposal in June 2013
- The drilling component of the BSMP was conducted in September 2013. The scope of work included:
  - Completed a thorough ground disturbance program to locate and mark all underground utilities and infrastructure within the subject areas before the start of the drilling program
  - Advanced a total of 79 boreholes at nine (9) well pads, CPF stormwater pond, spent lime ponds, Plant 1A and 1B process areas and background locations to assess pre-operational soil conditions
  - Soil samples were submitted to a third party laboratory and analyzed for salinity, hydrocarbons and metals based on the potential contaminants of concern for the process areas
- A report summarizing the BSMP results was prepared and submitted to the AER in September 2014 to fulfill the requirements of the Sunrise EPEA Approval Section 4.7.4.
- The next Soil Monitoring Program Proposal is due in September 2018

Environmental – Air

- Site Air Monitoring Contains Source monitoring and Ambient Air Monitoring
- Source Monitoring
  - Three CEMS (one in operation for the reporting period)
  - Engineering calculations aided by Gas metering and Sampling or Inline GC
  - Fugitive emission Leak Surveys
- Ambient Air Monitoring
  - Permanent Air Monitoring Station
  - Participation in Wood Buffalo Environmental Association network of ambient air monitoring stations (Wapasu Station)
  - Continuous process area Monitoring for LEL and H_2S

Environmental – Groundwater Monitoring

- Baseline Sampling Completed Fall 2014
- Final Baseline Report submitted March 2015
- 2015 Expansion to Groundwater Monitoring Program:
  - B05-21 well pad: two wells installed in the Quaternary
  - 05-16: Repaired PMW 05-16-095-07W4 NW well
  - One regional Quaternary Channel Well RMW 10-27-095-07W4



Environmental – Initiatives

Husky participates in and/or funds many regional environmental initiatives and committees pertaining to the Sunrise Project, including the following:

- Monitoring Avian Productivity and Survivorship (MAPS) in the Boreal Region
- Participation in Wood Buffalo Environmental Committee (WBEA)
- Cumulative Environmental Management Association (CEMA)
- Ecological Monitoring Committee for the Lower Athabasca (EMCLA)
- Faster Forests Program (COSIA)
- CAPP Species Management and Caribou Shadow Committees
- Petroleum Technology Alliance Canada (PTAC) Ecological Research Planning Committee
- Joint Oil Sands Monitoring (JOSM)
- Alberta Environmental Monitoring, Evaluation and Reporting Agency (AEMERA)

Environmental – Reclamation

- Objectives of the Annual Report (demonstrate and document):
  - Compliance with the development and reclamation approval
  - Site conditions and successful reclamation
  - General project development (surface disturbances) and reclamation activities
  - Problem areas and resolution

- Site Clearing and Timber Salvage:
  - Site clearing and construction occurred for the Pit 2 West Expansion, three (3) Development Area 2 well pads, associated Development Area 2 utility corridors and all Keg River observation well pads.
  - There was a total develop footprint of approximately 56 ha during the reporting period
  - No merchantable timber encountered during the construction activities

- Vegetation Monitoring:
  - Annual weed monitoring and control as per Husky's best practices

- Reclamation Activities:
  - Test plots for reclamation at Gravel Pit 1 were started in 2013. A total of approximately 2 ha in Gravel Pit 1 is undergoing progressive reclamation as of July 2015.

7. Compliance Statement

Compliance

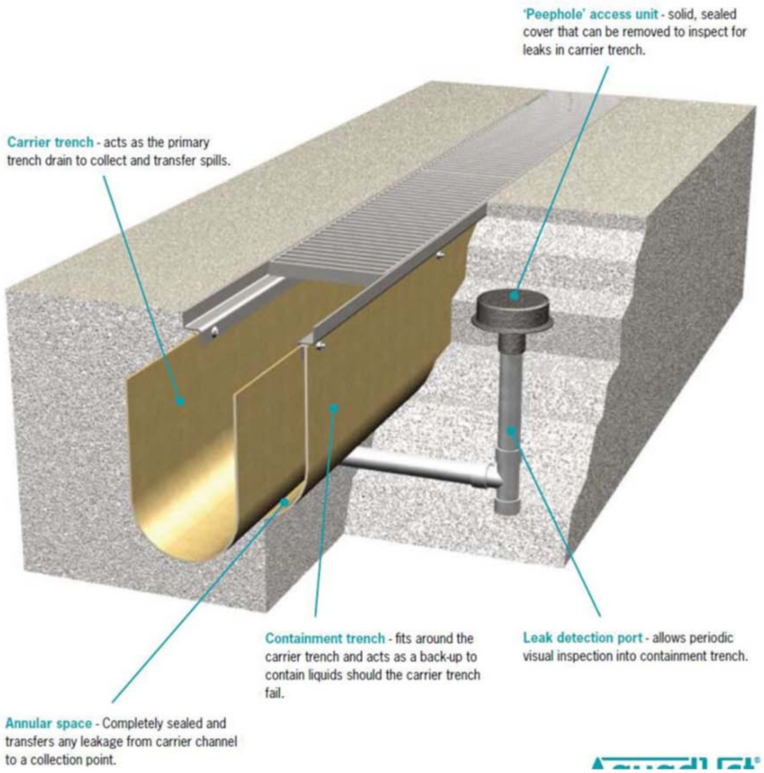
- OSCA Commercial Scheme Approval 10419 (as amended):
  - Husky was in compliance with all regulatory approvals, decisions, regulations and conditions; except for compliance items identified in this presentation

8. Non-Compliance Events

Non-Compliance Event - Directive 055

Building Trenches

- Event: Potential loss of secondary containment of the floor trenches of some of the process buildings in Plant 1A. Husky notified the AER of the potential loss of containment on March 17, 2015
- Corrective Action: Husky implemented a process to keep the containment trenches free of liquids. A third party consultant was retained to test the containment trenches for integrity in both the Plant 1A and 1B. Any identified deficiencies are being repaired



Non-Compliance Event - Disposal

14-27 Casing Pressure

- Event: On December 24, 2014, Husky disclosed to the AER regarding a casing pressure fluctuation in water disposal well 14-27-094-07W4 (14-27). Initial hypothesis was that elevated casing pressure had occurred due to thermal expansion of annular fluid above the packer
- Corrective Action: The 14-27 well was temporarily shut-in and a pressure data logger was installed. Some of the casing fluid removed and pressure test was conducted on the well, and the well passed

14-27 Tubing Packer Integrity

- Event: On June 17, 2015, it was noticed that the casing pressure trend of the 14-27 well was following the trends of the disposal pump discharge pressure (located in CPF) and wellhead tubing pressure. Husky submitted a self-disclosure to AER on June 30, 2015, regarding elevated casing pressure and suspected tubing/packer integrity failure and DDS report
- Corrective Action: Submitted VSD, halted the use of the well on June 19. A test was performed at the well and the tubing/packer integrity was proven to be compromised. A service rig was mobilized to the location and an expansion joint above the packer was proven to be the cause of the pressure anomaly. The joint was replaced and the 14-27 passed a subsequent packer test

Self Declarations – Anomalous Pressure Reading

- Wells:
  - 104/01- 20-095-07W400 G6S (Pad B08-17) License No. 427806
  - 100/02- 20-095-07W400 G1S (Pad B08-17) License No. 427673
  - 108/11-17- 095-07W400 C4S (Pad B14-08) License No. 428324
  - 103/10-17- 095-07W400 C5S (Pad B14-08) License No. 428385
  - 108/12-17-0 95-07W400 B6P (Pad B13-08) License No. 428457

<u>Summary</u>:

- Reported anomalous pressure readings February 09, 2015
- Blanket gas pressure readings above approved Maximum Operating Pressure (MOP) of 1750 kPa due to cold ambient temperatures and subsequent formation of hydrates in the blanket gas which plug the surface lines, causing errant pressure readings
  - Blanket gas lines are not heat traced
  - Steaming of lines to remove hydrates and operation of blanket gas exchanger will reduce these occurrences

<u>Mitigation and Status Update:</u>

- Updated AER field office May 11, 2015
- Lines have been steamed to remove hydrates
- Blanket gas exchangers are working on all four (4) operating well pads – April 2015
- No further incidents of hydrates

Self Declarations – Anomalous Pressure Reading

- Wells:
  - 108/11-17-095-07W400 C4S (Pad B14-08) License No. 428324
  - 107/11-17-095-07W400 C1P (Pad B14-08) License No. 428255
  - 102/11-17-095-07W400 B7S (Pad B13-08) License No. 428082
  - 103/02-20-095-07W400 G2S (Pad B08-17) License No. 427822
  - 103/10-17-095-07W400 C5S (Pad B14-08) License No. 428385

Summary:

- Reported anomalous pressure readings February 09, 2015
- Blanket gas pressure readings above approved MOP of 1750 kPa due to instrumentation calibration activities
  - Commissioning and maintenance activities being performed on the instrumentation

Mitigation:

- Completion of the initial commissioning activities
- On-going maintenance activities by Husky operators

Self Declarations – Anomalous Pressure Reading

- Observation Well (#9) 100/07-17-095-07W4/00 License No. 388098

<u>Summary</u>:

- Inaccurate observation well anomalous pressure reading reported March 4, 2015
  - Equipped with five (5) pressure sensors (piezometers)
  - Located between well pairs 5 and 6 on Pad B14-08 (C)
  - Erratic pressure readings were identified at one intermediate sensor
  - Well pairs were on circulation in preparation for production
  - At no time were steam injection pressures above approved MOP of 1750 kPa

<u>Mitigation:</u>

- Husky performed corrective work and obs well 100/07-17-095-07W4/00 is functioning

Self Declarations – Anomalous Pressure Reading

- Well 104/11-17-095-07W400 (CS2), License No. 428140

<u>CS2 Summary</u>:

- Reported anomalous pressure readings (2) March 4, 2015
- Toe ERD pressure reading above approved MOP of 1750 kPa
  - February 27, 2015 – 1763 kPa
  - March 3, 2015 – 1781 kPa
- Husky operator was using the blanket gas pressure as the primary pressure indication to operate and control; the ERD was used as a secondary pressure indication

<u>Mitigation:</u>

- Husky operator will monitor both blanket gas and ERD pressures to ensure MOP is not reached
- Toe ERD has been programmed to provide notification to the operator at 1725 kPa
- Husky is confident these pressures were not transmitted to the caprock in Pad B14-08 (C); the observation well no. 8 showed no indication of high pressures near the caprock

Self Declarations – Yearly Water Use Report Correction

- Husky Water Act License 00267760-00-00 – water use correction submitted to AER April 14, 2015

  Summary:
  - 2014 Annual Water Use Report (WUR) stated that no water was diverted from well 16-22B in 2014. The 16-22B well served as the primary camp supply from April 19 to 21, 2014 during the shock chlorination of the 01-23 well. The volumes of fluid pumped during that time was 525.7 m^3
  - 2014 monthly water level submitted online to the WUR system were not correct for the barometric pressure and did not match the water levels submitted in the 2014

  Mitigation:
  - Husky updated the water levels for 2014 in the Water Use Report to reflect the correct water level management
  - Ensure on-going reporting uses and correct barometric pressure calculations

Surface Casing Vent Flow (SCVF) - Summary

- One SCVF reported within the reporting period - 110/11-17-095-07W4/0 (C1S)

  C1S Summary:

  - Discovered and reported as "serious" - May 29, 2015
  - Testing by Doull Site Assessments confirmed the following:
    - C1S passed a bubble test
    - Peak methane concentrations during 24 hour test was 4 ppm
    - Gas sample could not be collected on the vent flow due to an insufficient concentration of methane present in the vent
  - AER deferred repair on the vent until abandonment

8. Future Plans

Future Plans (2015/2016)

- Commission and start-up Pads B16-17 (L), B13-16 (M), and B15-16 (N)
- Permanent Diluent Storage Application
- Install and commission spare Produced Water Cooler
- Phase 1 Debottleneck Application