Cenovus FCCL Ltd.
Christina Lake In-situ Progress Report
Scheme 8591
2016 update

Subsurface
June 6, 2017

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Oil & gas and financial information

Oil & gas information

The estimates of reserves and contingent resources were prepared effective December 31, 2016 and the estimates of bitumen initially-in-place were prepared effective December 31, 2012. All estimates were prepared by independent qualified reserves evaluators, based on definitions contained in the Canadian Oil and Gas Evaluation Handbook and in accordance with National Instrument 51-101 *Standards of Disclosure for Oil and Gas Activities*. Additional information with respect to the significant factors relevant to the resources estimates, the specific contingencies which prevent the classification of the contingent resources as reserves, pricing and additional reserves and other oil and gas information, including the material risks and uncertainties associated with reserves and resources estimates, is contained in our AIF and Form 40-F for the year ended December 31, 2016 and in our Statement of Contingent and Prospective Resources for the year ended December 31, 2016, available on SEDAR at www.sedar.com, EDGAR at www.sec.gov and on our website at cenovus.com.

There is uncertainty that it will be commercially viable to produce any portion of the contingent resources. There is no certainty that any portion of the prospective resources will be discovered. If discovered, there is no certainty that it will be commercially viable to produce any portion of those resources. Actual resources may be greater than or less than the estimates provided.

Certain natural gas volumes have been converted to barrels of oil equivalent (BOE) on the basis of one barrel (bbl) to six thousand cubic feet (Mcf). BOE may be misleading, particularly if used in isolation. A conversion ratio of one bbl to six Mcf is based on an energy equivalency conversion method primarily applicable at the burner tip and does not represent value equivalency at the well head.

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Advisory

This presentation contains information in compliance with:

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

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

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Subsection 3.1.1-1)
Brief background

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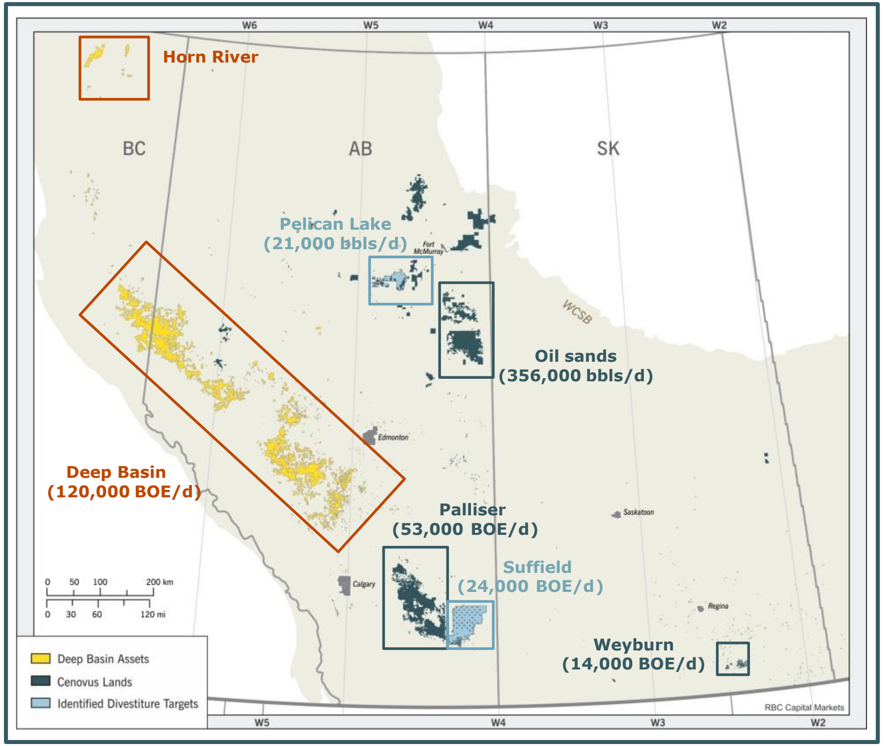
About Cenovus

TSX, NYSE | CVE

Enterprise value	C$29 billion
Shares outstanding	1,229 million
2017F production[1]	
Oil sands	178 Mbbls/d
Conventional	54 Mbbls/d
Total liquids	232 Mbbls/d
Natural gas	350 MMcf/d
Acquired assets	
Oil sands	178 Mbbls/d[1]
Deep Basin	120 MBOE/d[1]
Total production	**588 MBOE/d[1]**
2016 proved & probable reserves	7.8 BBOE
Bitumen	
Economic contingent resources	10.7 Bbbls
Lease rights*	5.0 MM net acres
P&NG rights	7.0 MM net acres
Refining capacity	230 Mbbls/d net



Values are approximate. [1] Forecast production based on December 8, 2016 guidance and reflects 2017 forecast production for the acquired assets as though the acquisition closed on January 1, 2017 and full year volumes were contributed; acquisition closed on May 17, 2017 and pro rata volumes will be reflected in reported results. *Includes an additional 0.5 million net acres of exclusive lease rights to lease on our behalf and our assignee's behalf.

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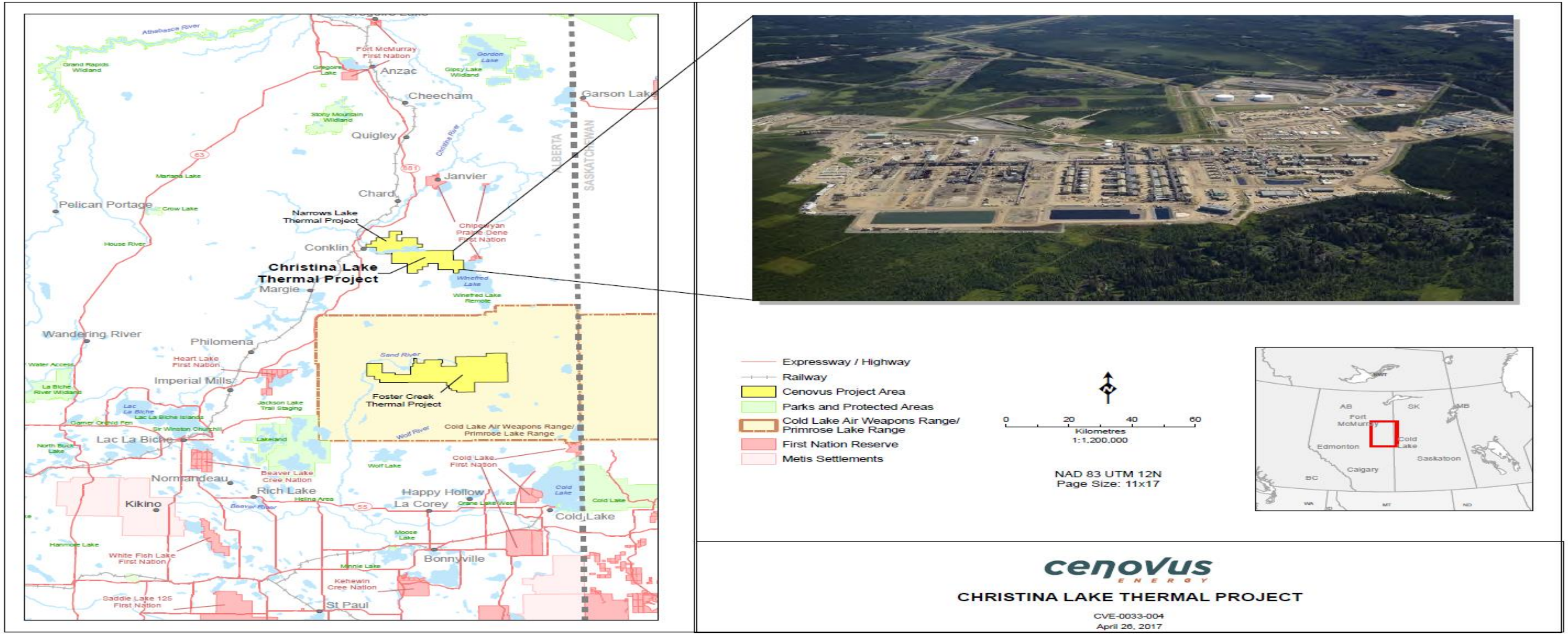
Area map



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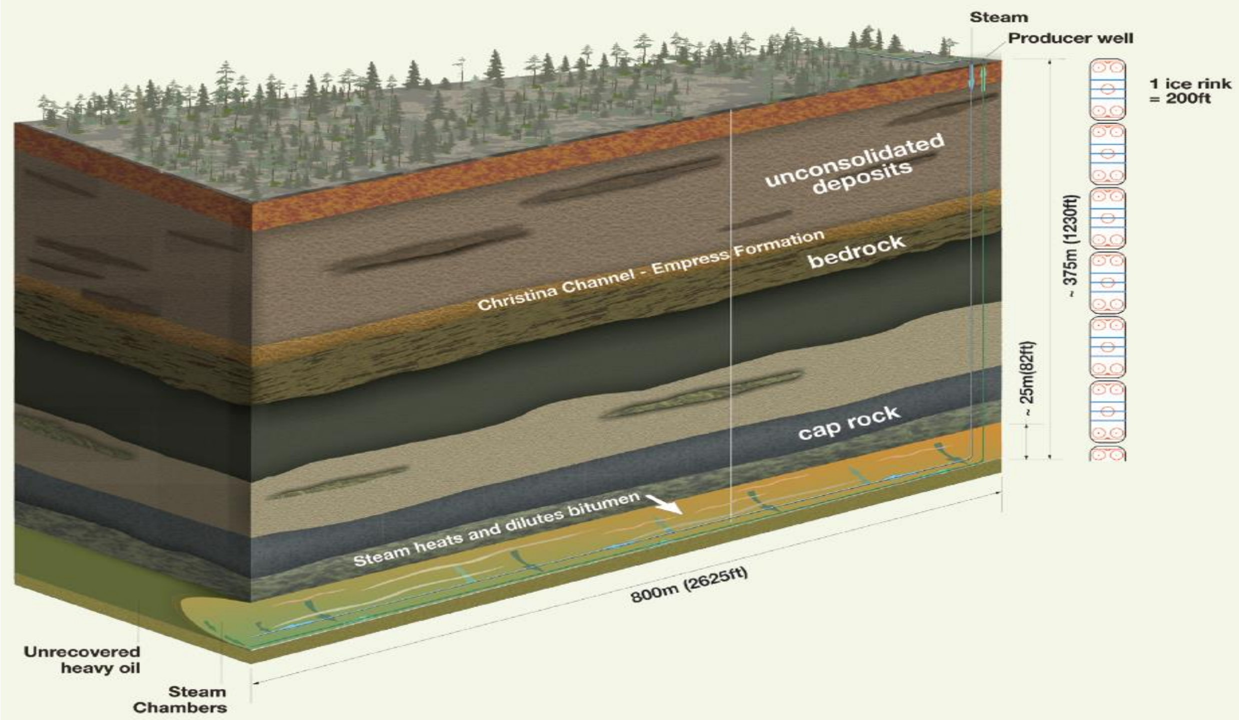
Recovery process

- The Christina Lake Thermal Project uses the dual-horizontal well SAGD (steam-assisted gravity drainage) process to recover oil from the McMurray formation
- Two horizontal wells one above the other approximately 5 m apart
- Steam is injected into the upper well where it heats the oil and allows it to drain into the lower well
- Oil and water emulsion pumped to the surface and treated



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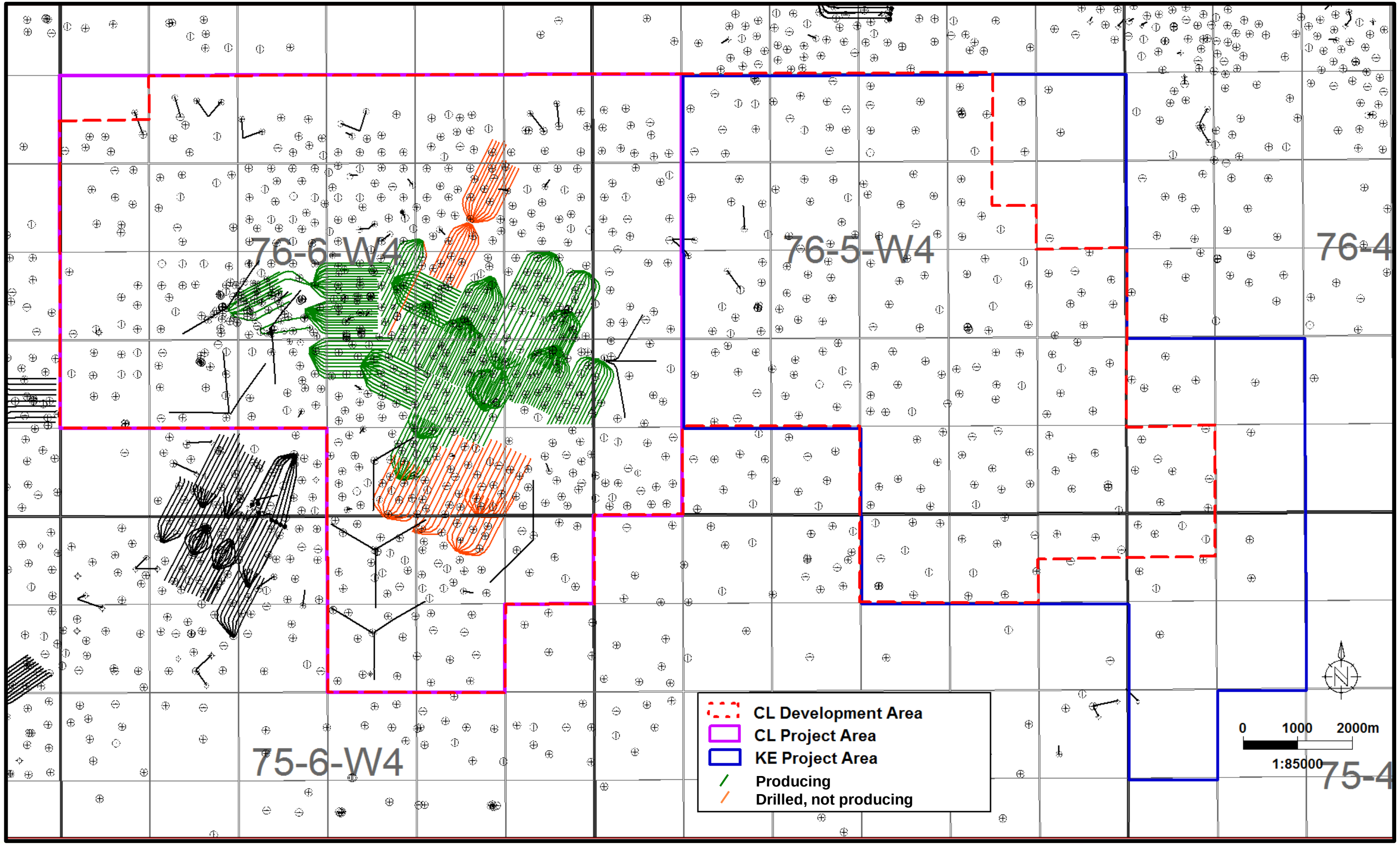
Scheme map



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Subsection 3.1.1 – 2) Geology and Geoscience

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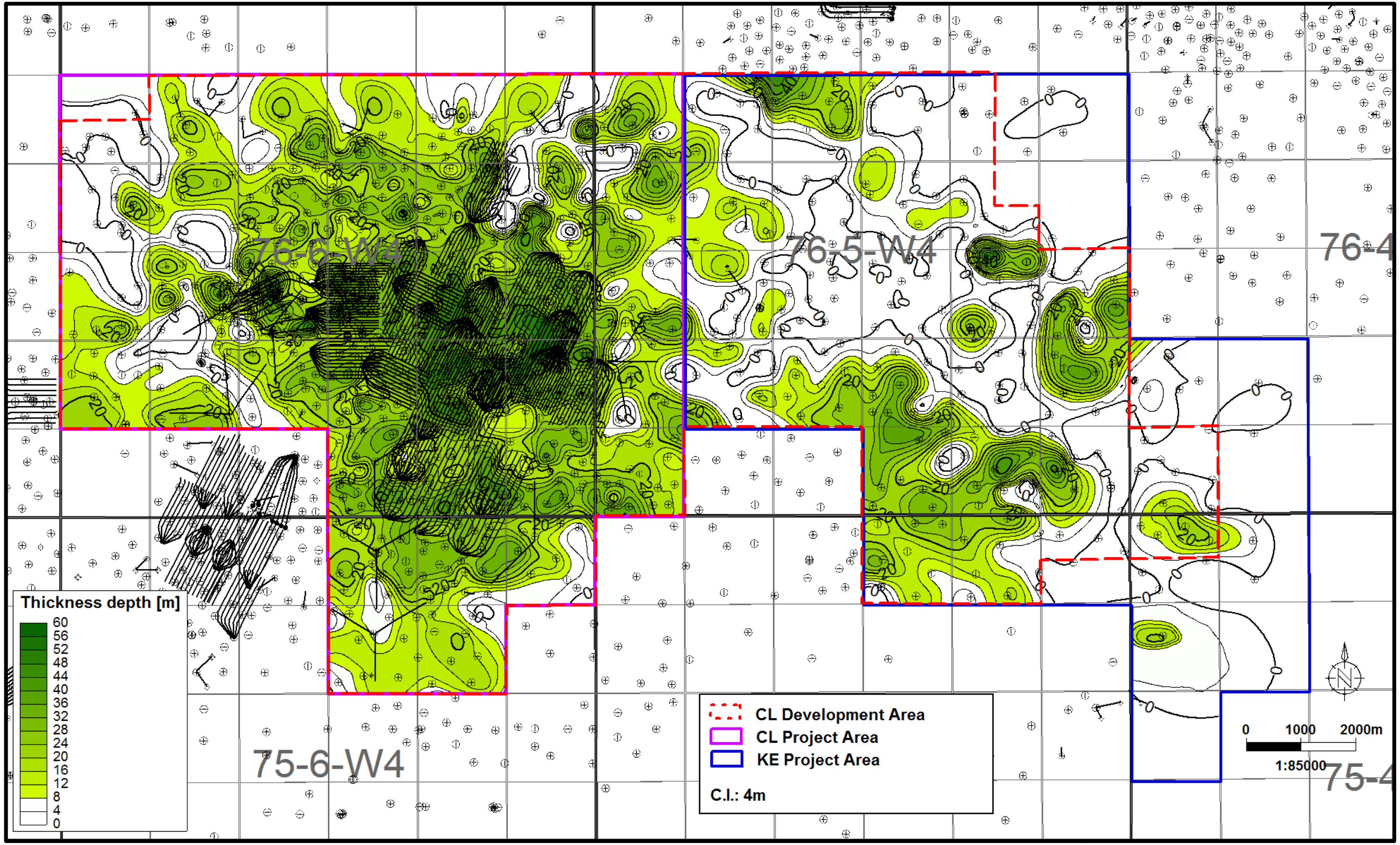
SAGD pay isopach map



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Reservoir properties and SOIP

***Volumes includes Main and Upper Main**

Property	Christina Lake Project Area	Kirby East Project Area	Approved Development Area
Reservoir Depth	350m TVD	350m TVD	350m TVD
Original Reservoir Pressure	2500 kPa	2500 kPa	2500 kPa
Original Reservoir Temperature	12°C	12°C	12°C
Average SAGD Pay h	22m	19m	21m
Average Kv	4.2D	4.2D	4.2D
Average Kh	7.0D	7.0D	7.0D
Average Phi	31%	29%	30%
Average So	81%	76%	79%
SOIP (MMm3)	480	176	657
SOIP (MMBbl)	3,021	1,108	4,136

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All SAGD-able (SOIP) estimates are internal estimates. There is no certainty that any portion of such quantities will be discovered. If disscovered, there is no certainty that it will be commercially viable to produce any portion of such quantities.

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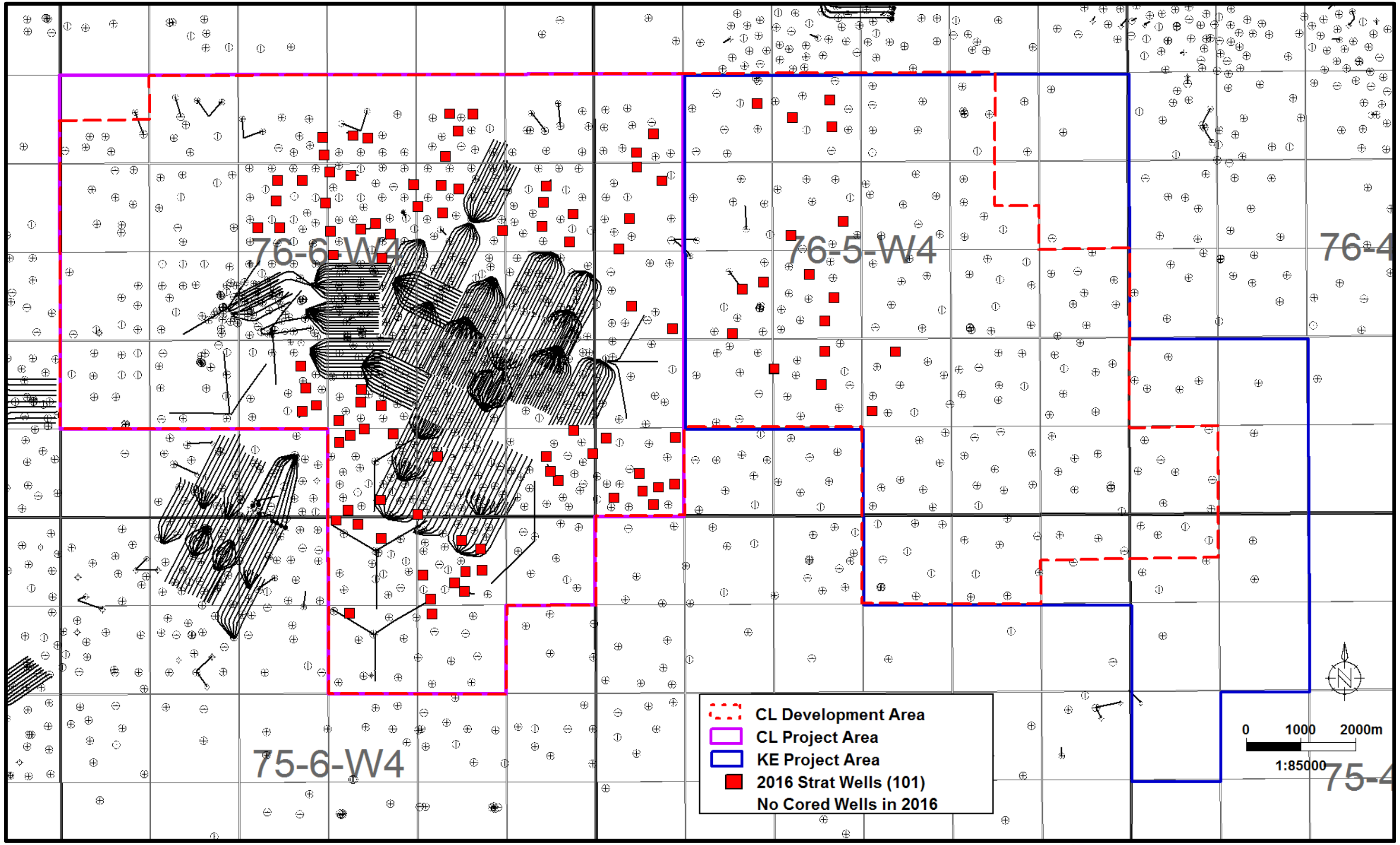
2016/17 Drilling Program and cored wells



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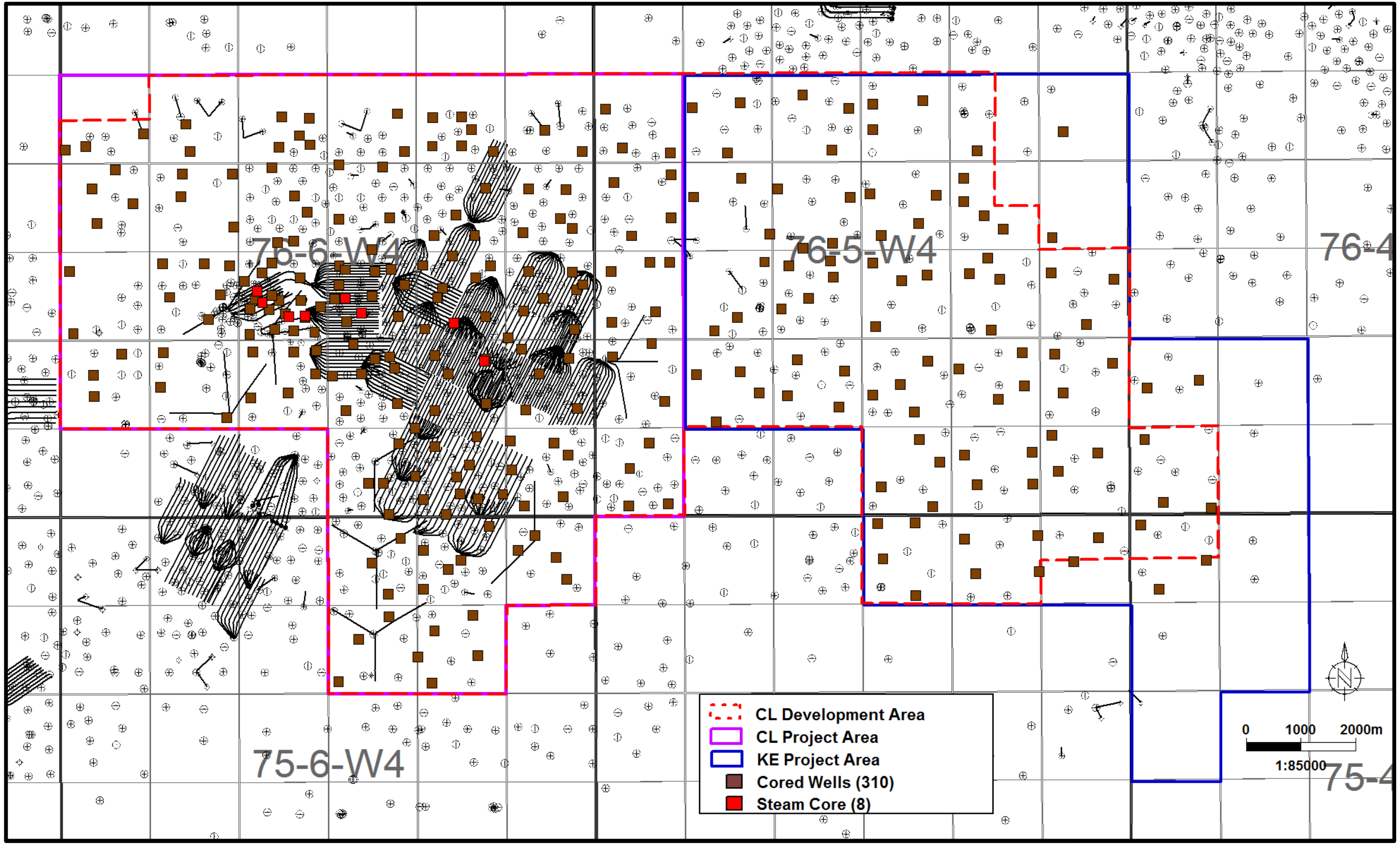
Development area core and steam core



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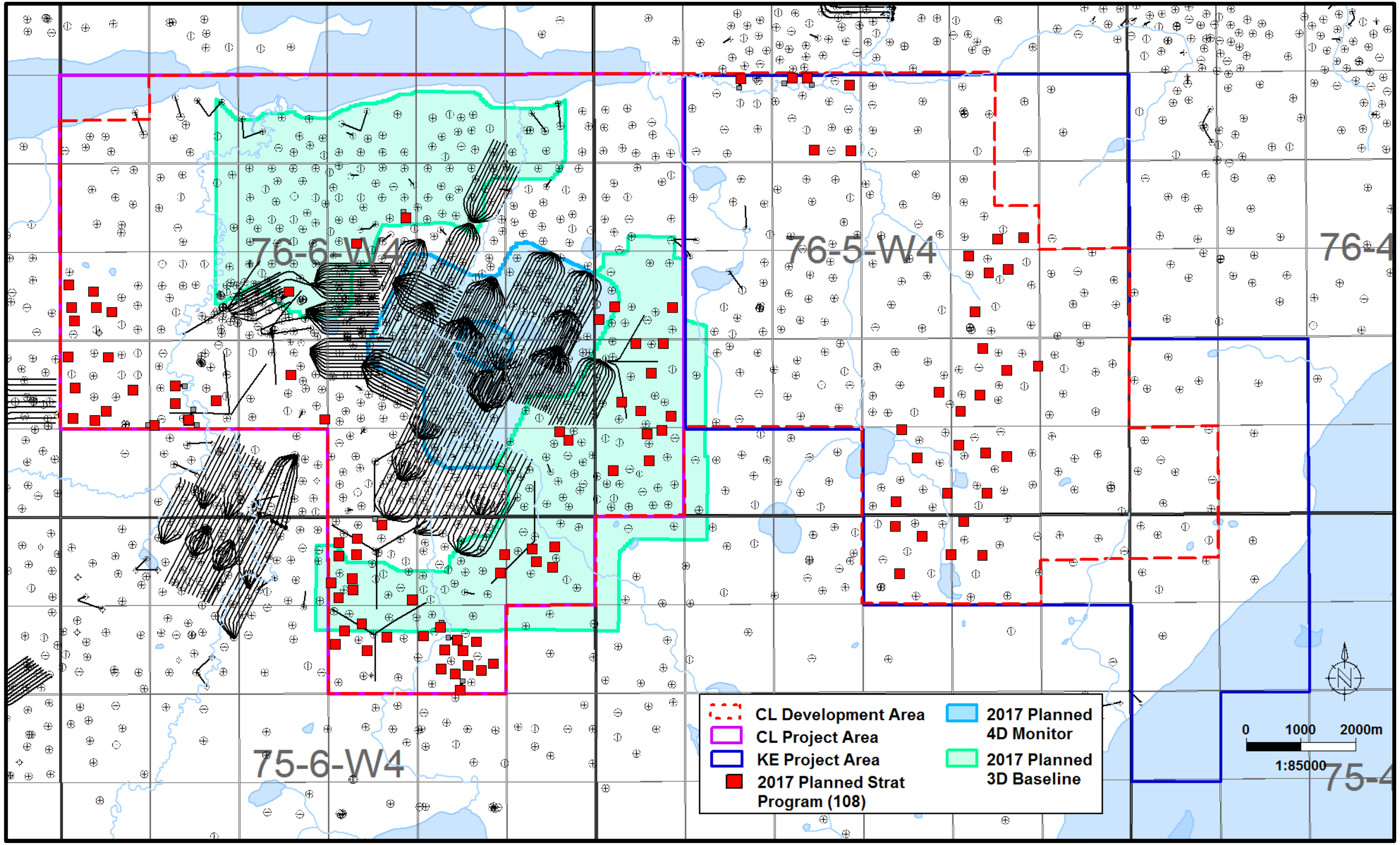
2017 planned strat and seismic program



Geological maps

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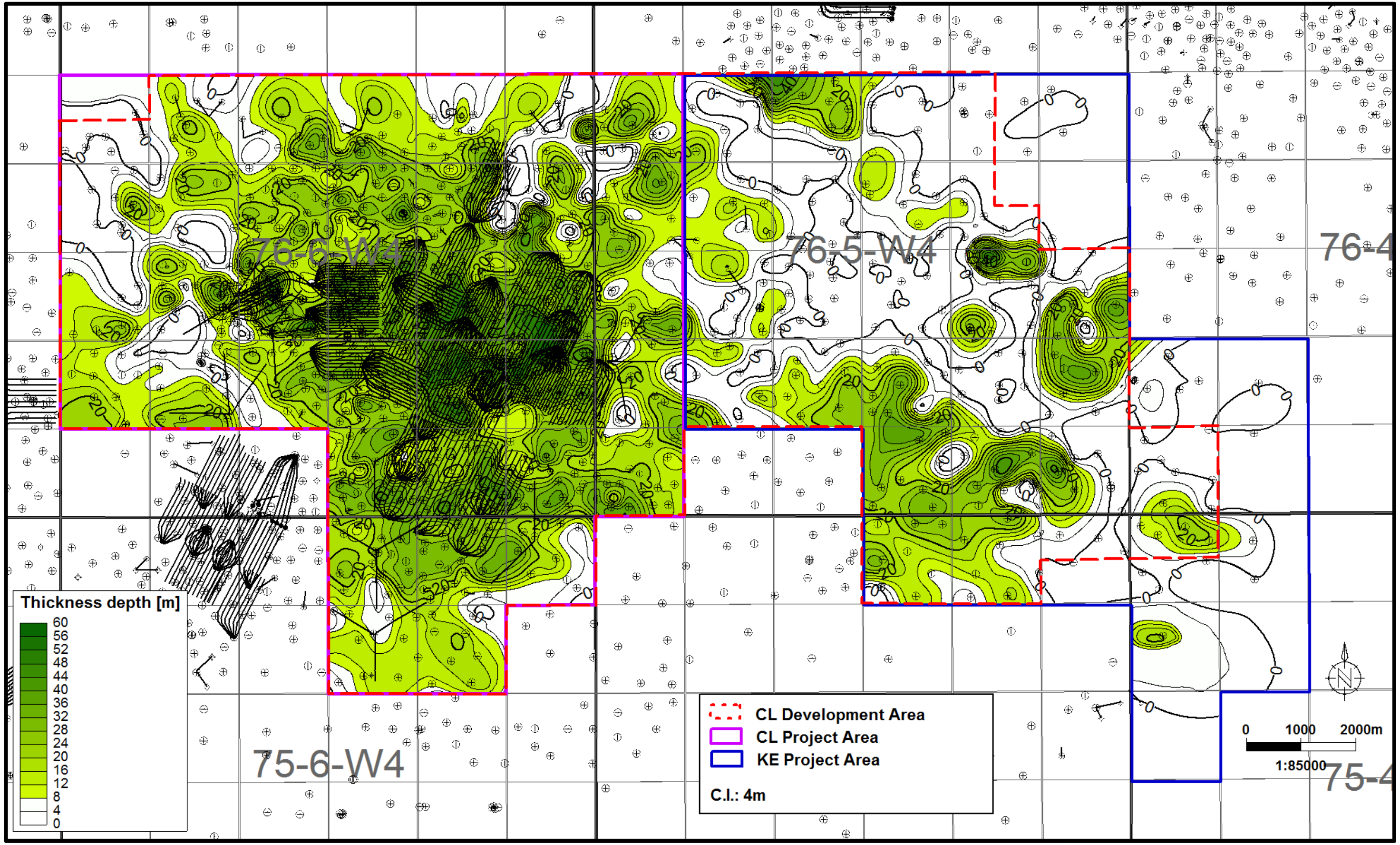
SAGD pay isopach map



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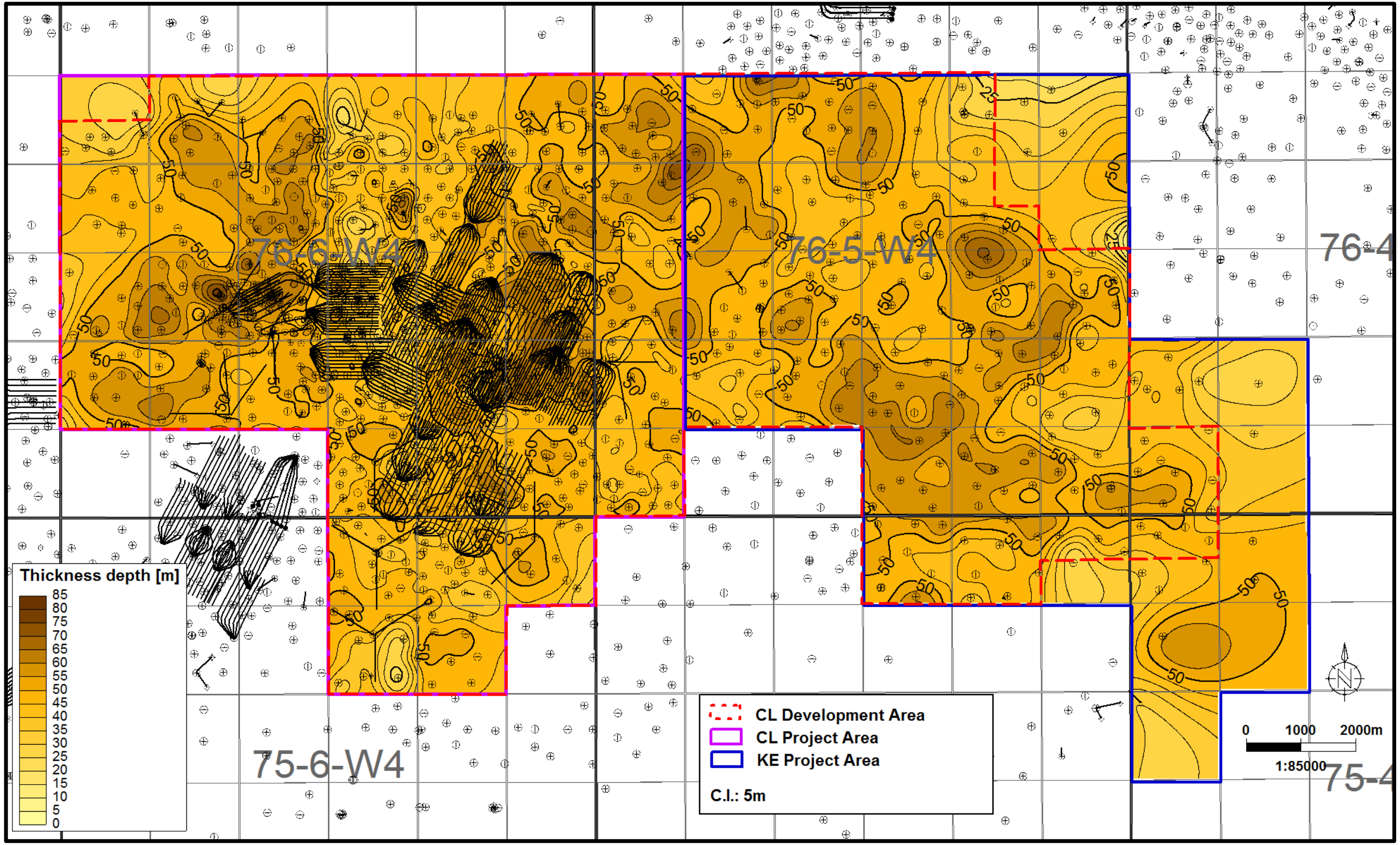
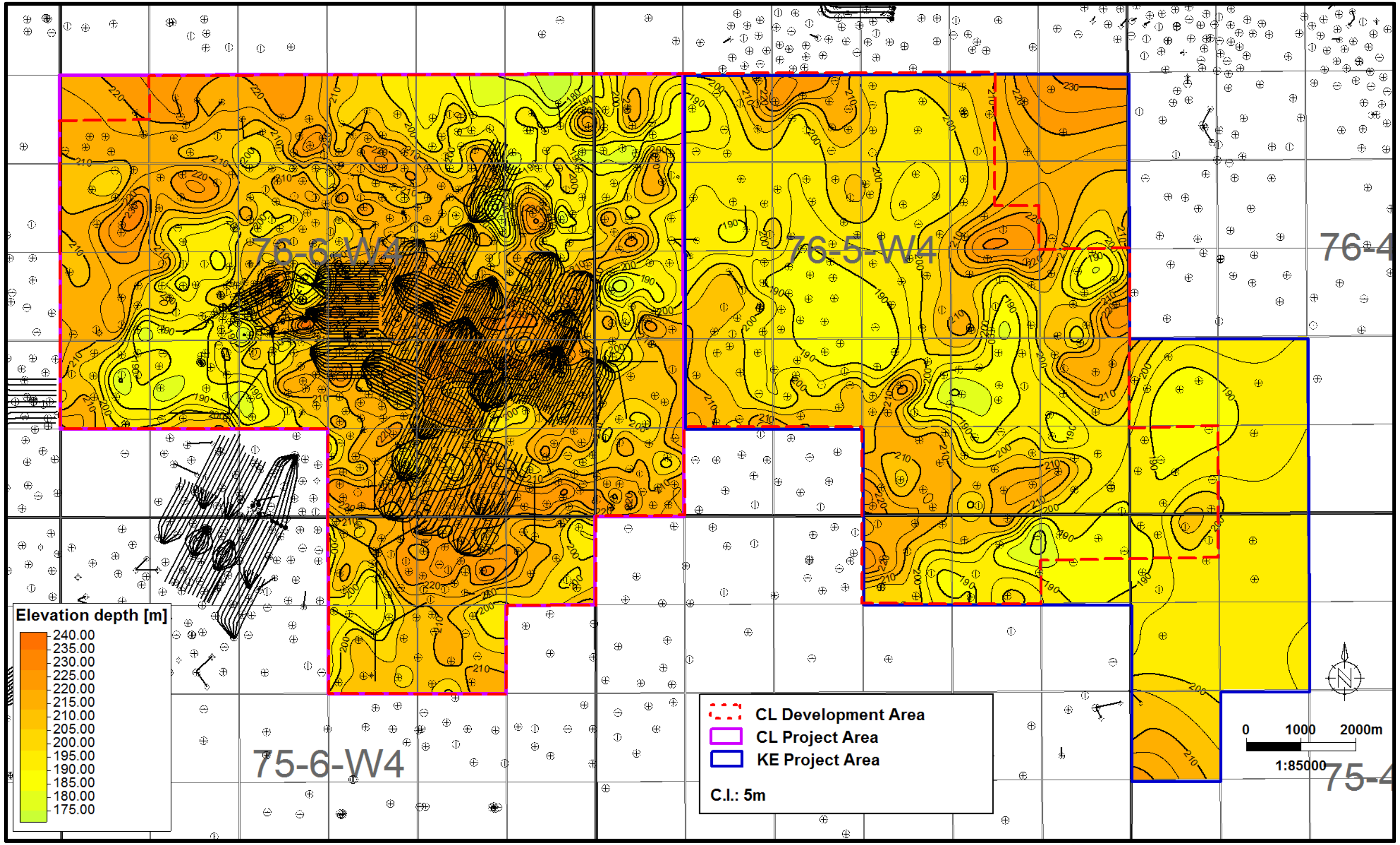
McMurray isopach map



SAGD pay top structure map



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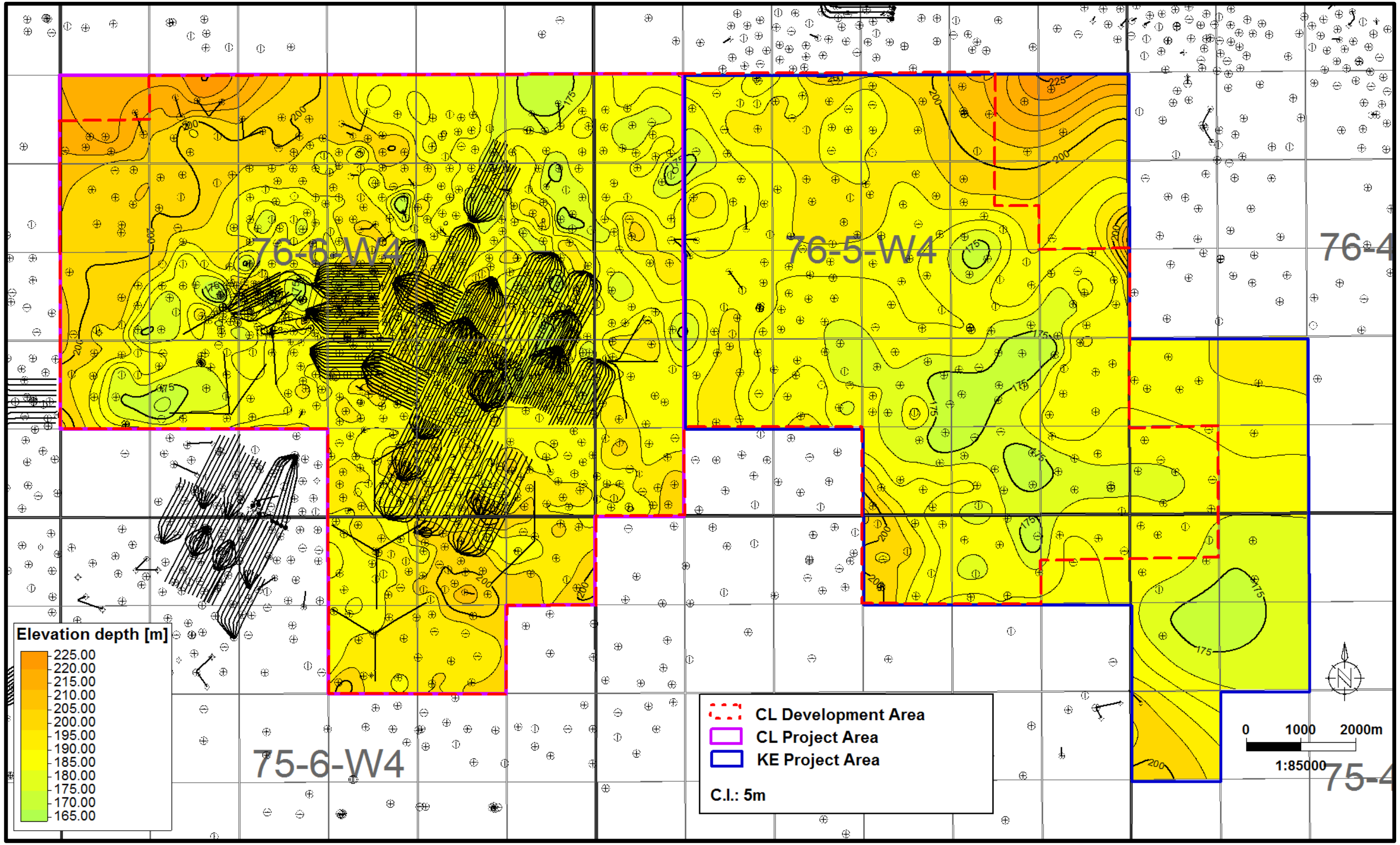
SAGD base structure map



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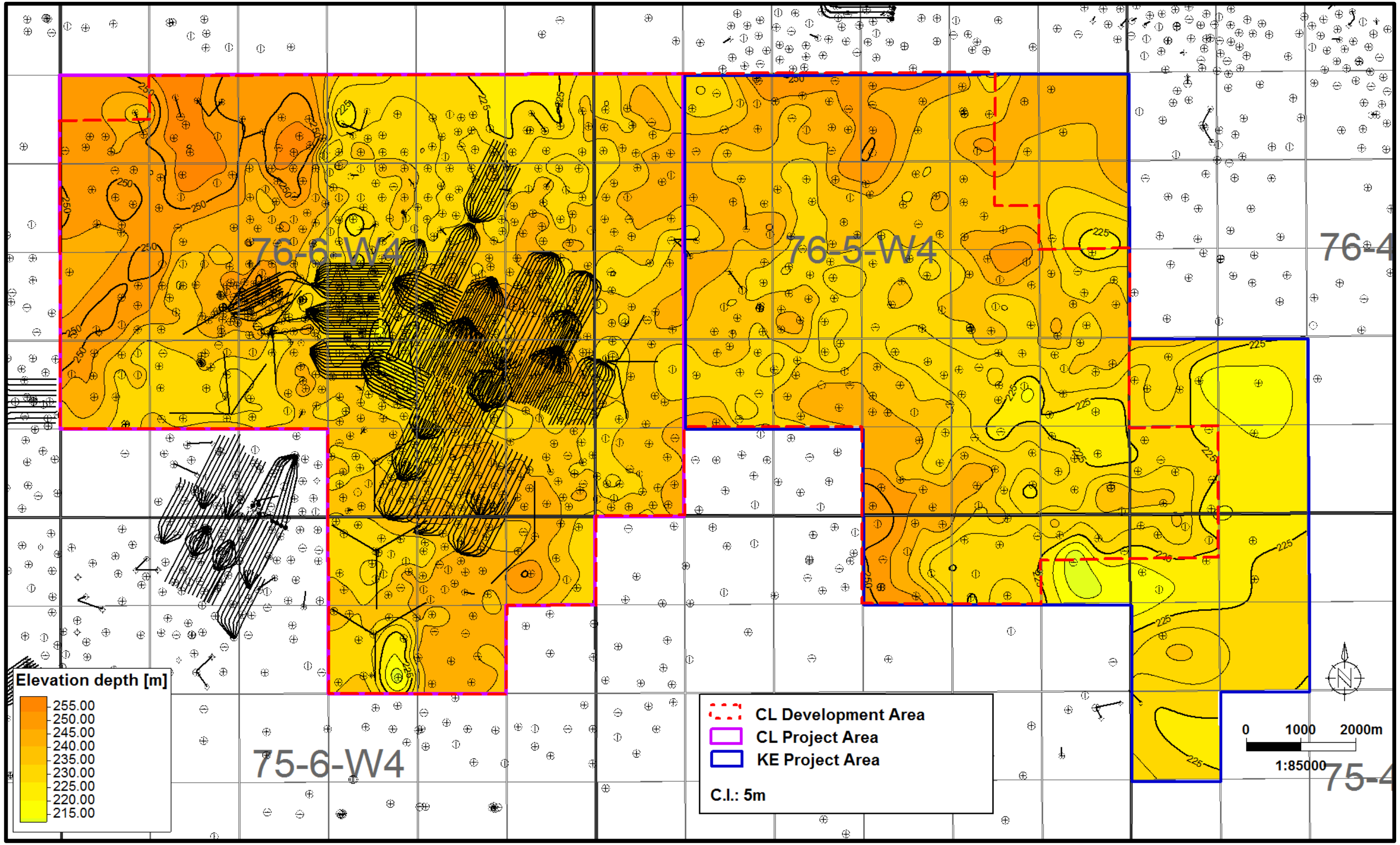
McMurray structure map



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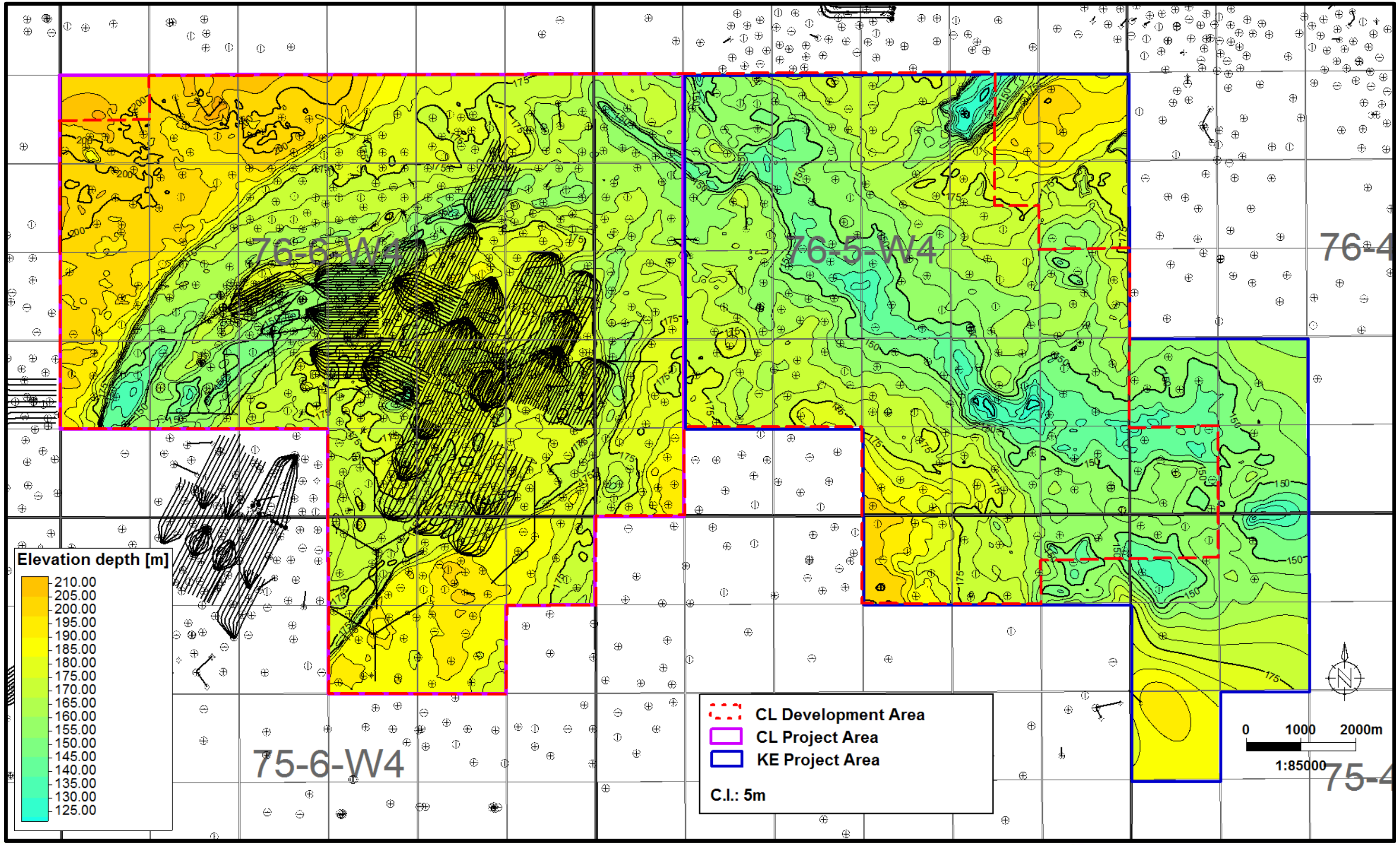
Paleozoic structure map



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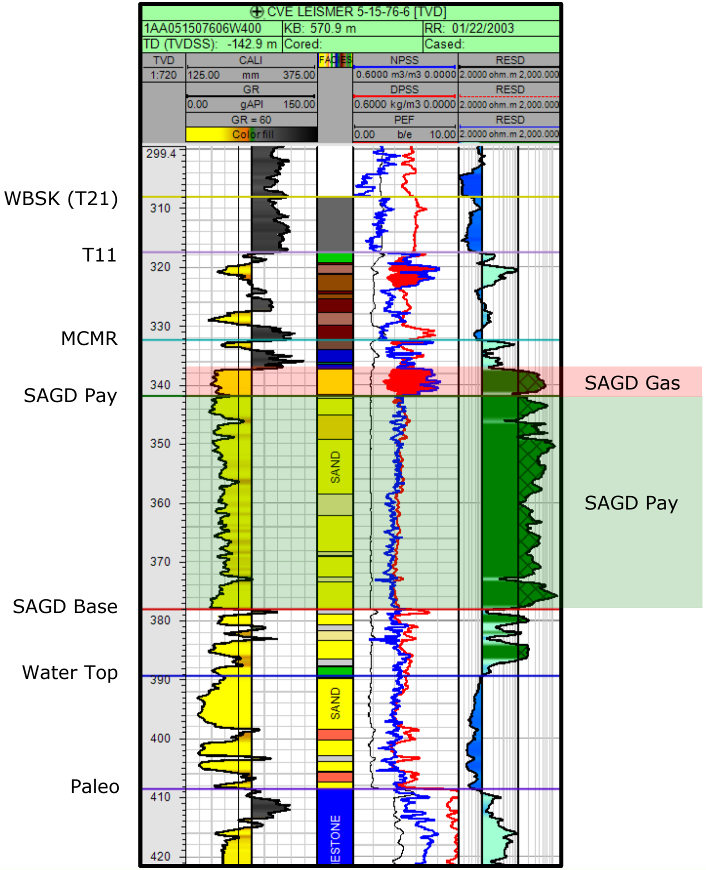
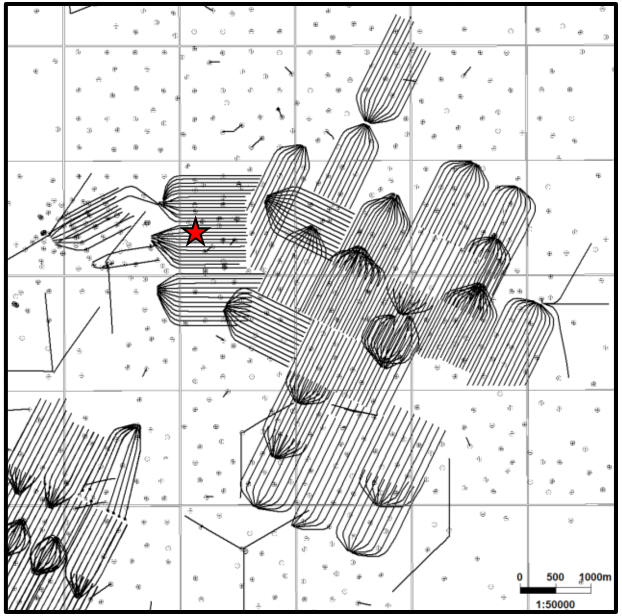
Representative type log: B01 pad





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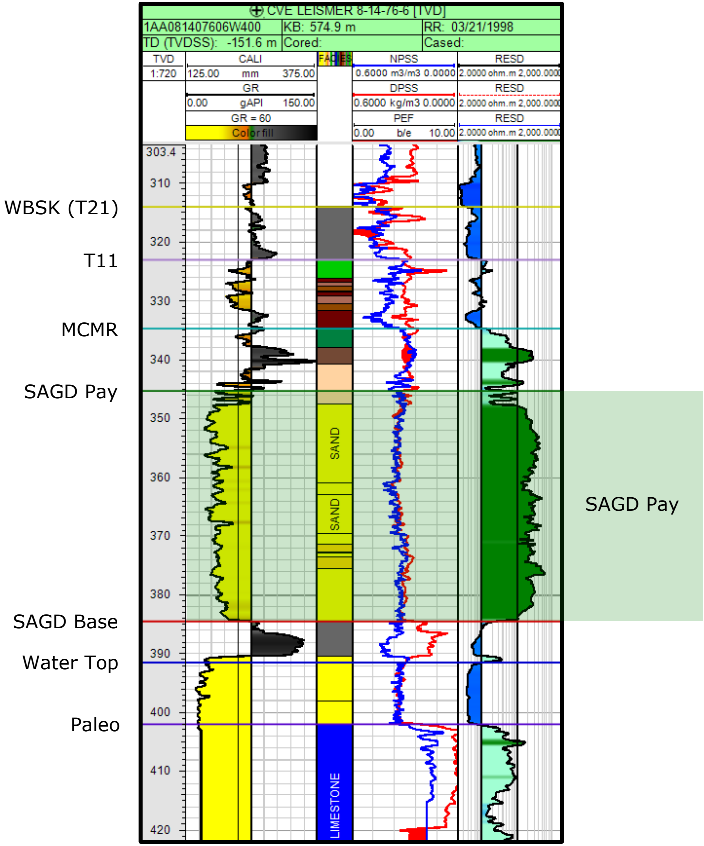
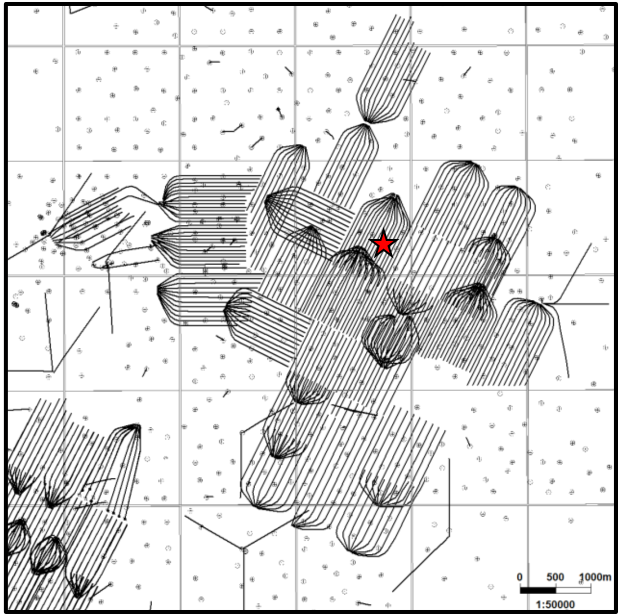
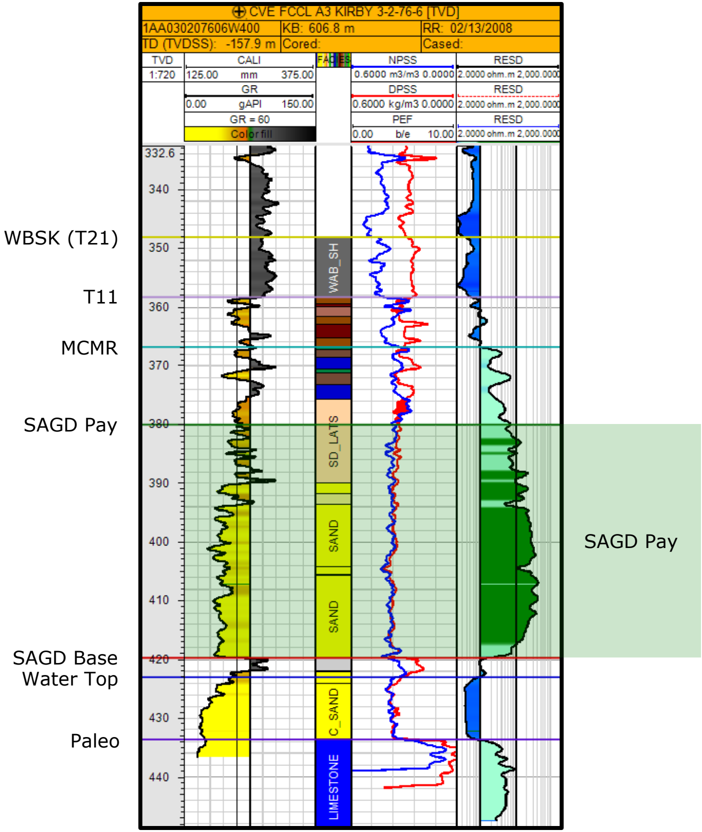
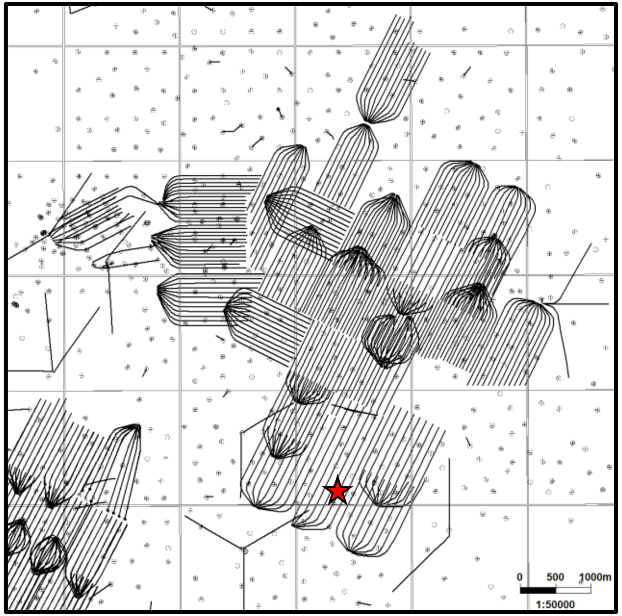
Representative type log: B04 pad





Representative type log: H09 pad





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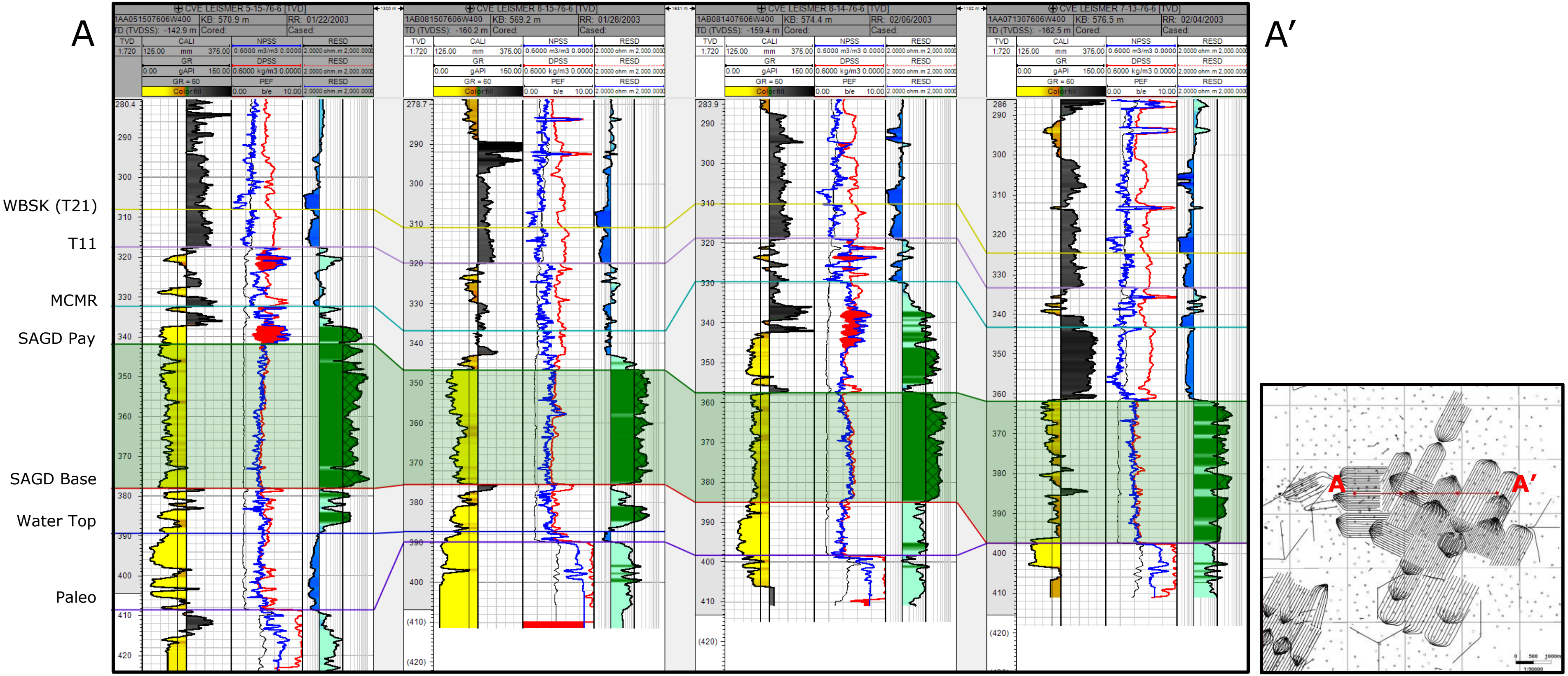
Representative structural cross-section



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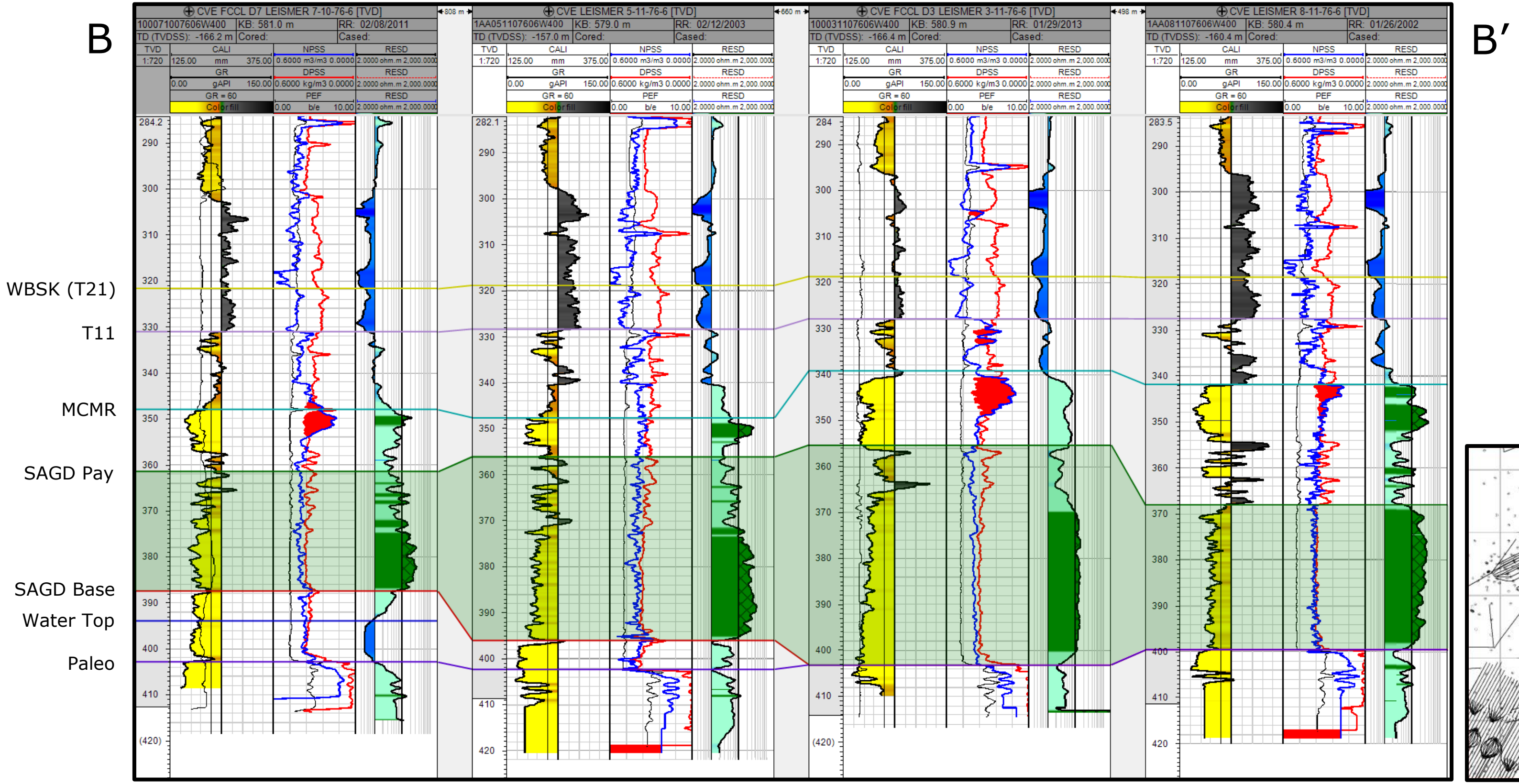
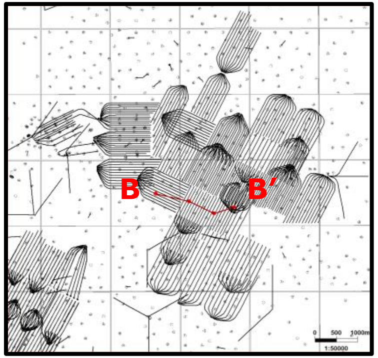
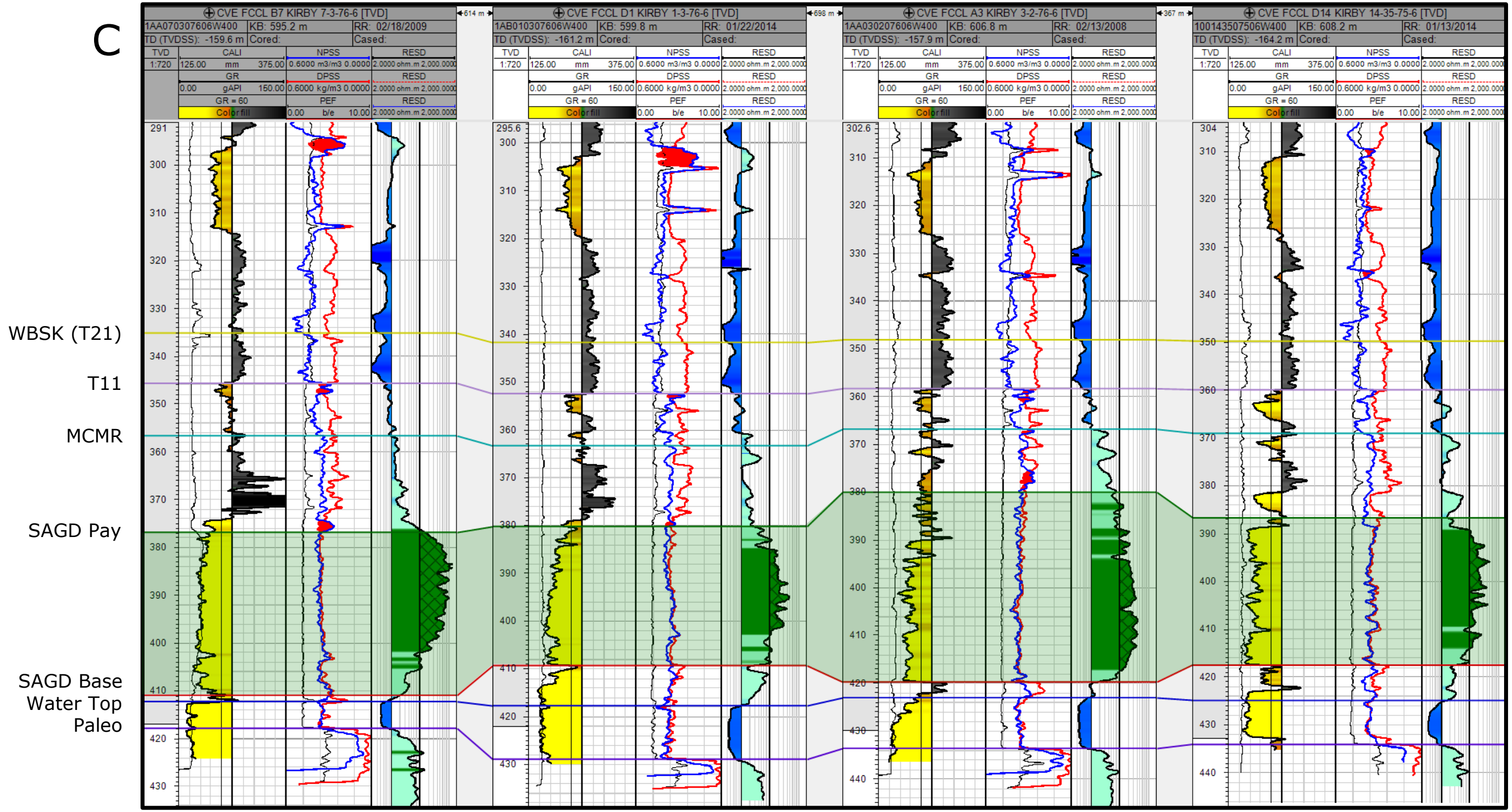
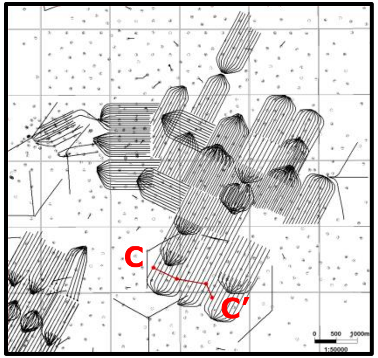
Representative structural cross-section





Representative structural cross-section





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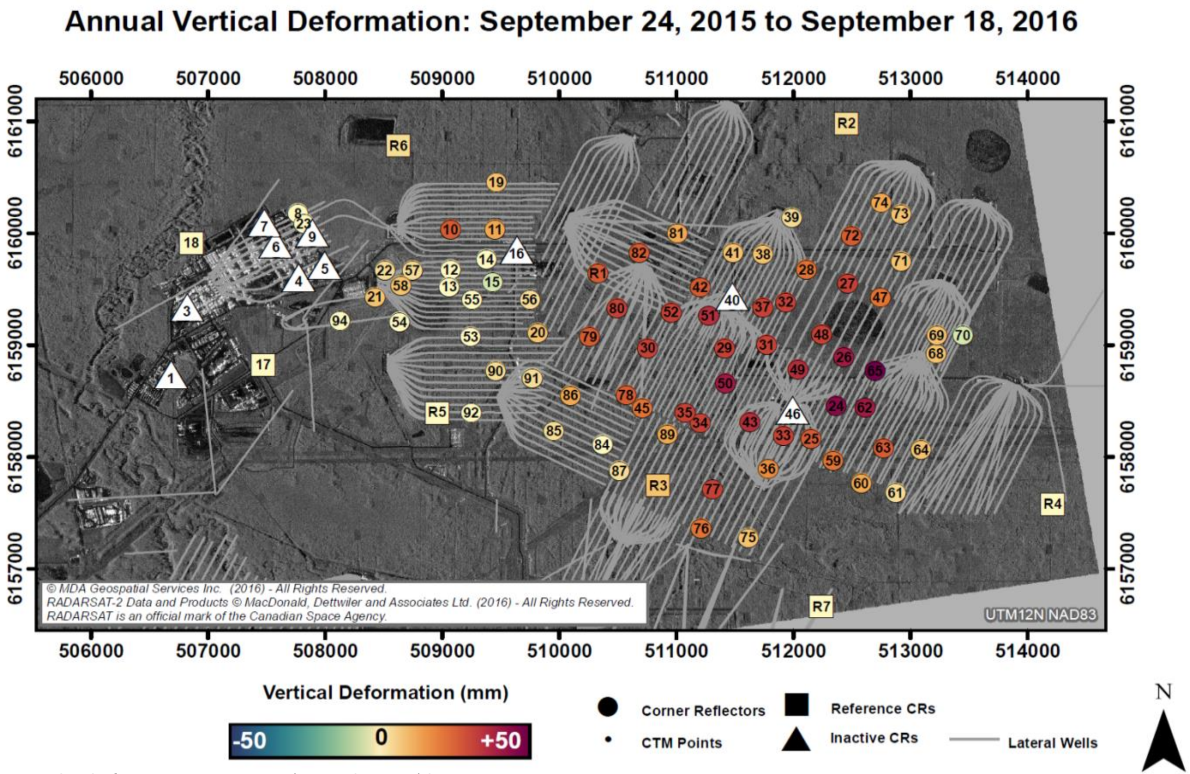
Ground heave monitoring



InSAR Surface Movement Monitoring by MDA Geospatial Services Inc

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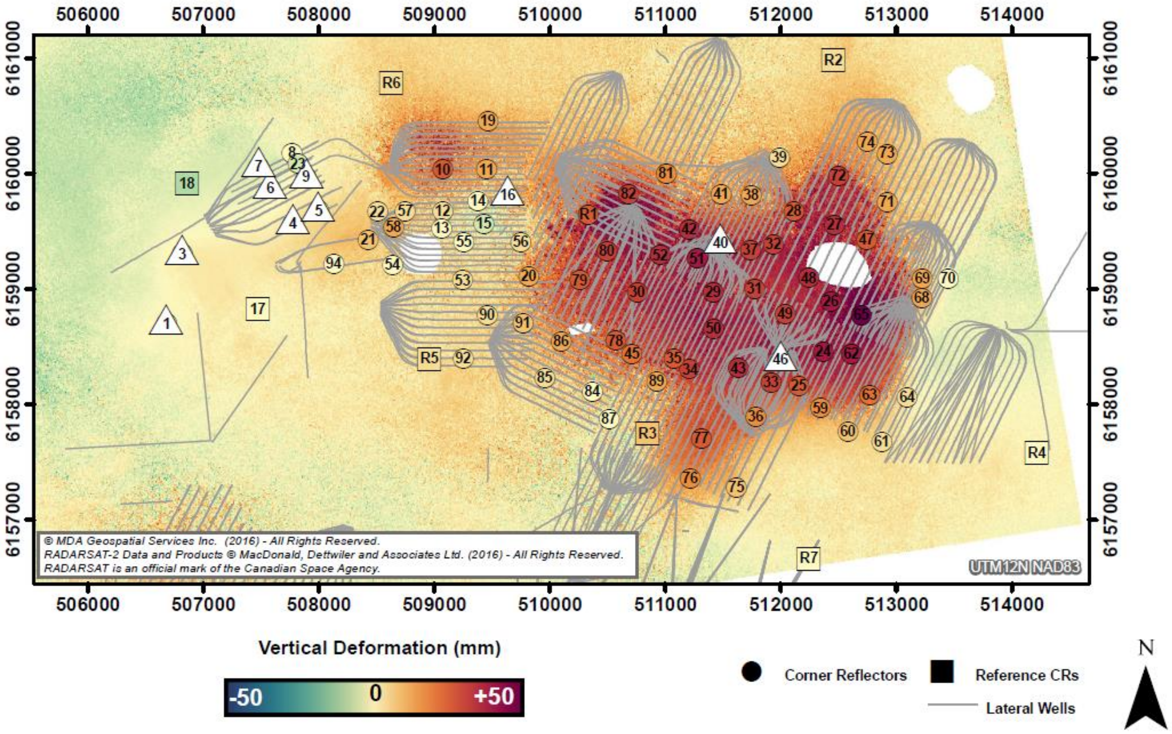
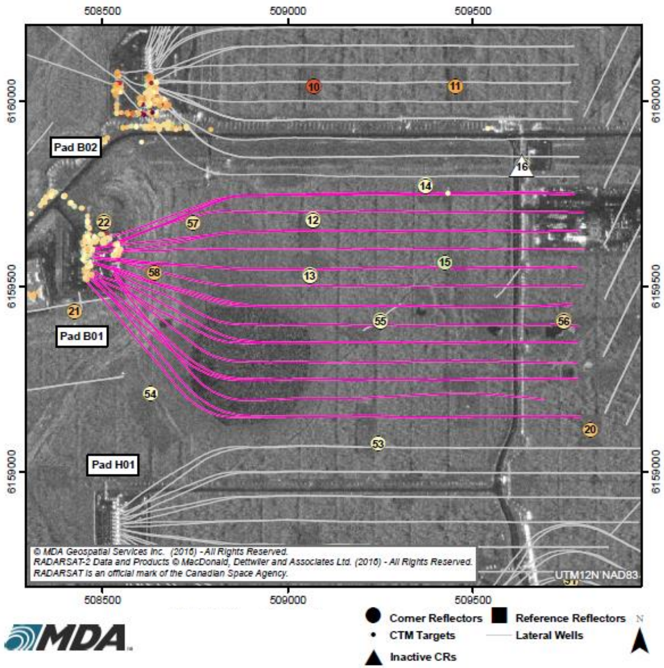
Ground heave monitoring (InSAR)

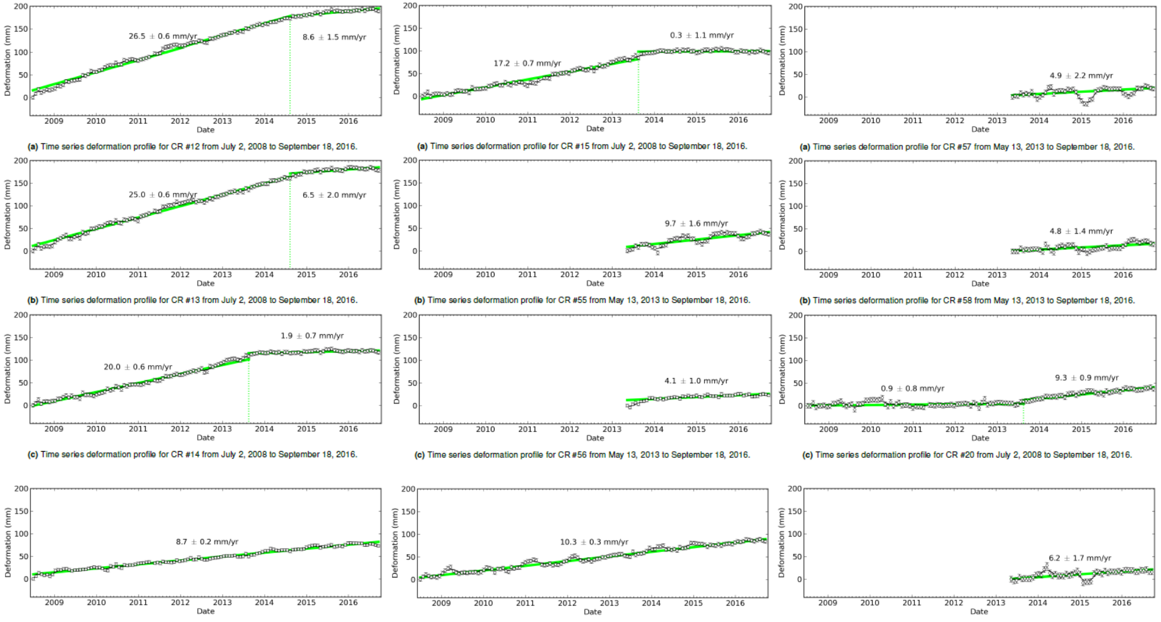
Annual Vertical Deformation: September 24, 2015 to August 25, 2016



InSAR Surface Movement Monitoring by MDA Geospatial Services Inc

Cumulative vertical deformation: B01 Pad





(a) Time series deformation profile for CR #12 from July 2, 2008 to September 18, 2016.

(a) Time series deformation profile for CR #15 from July 2, 2008 to September 18, 2016.

(a) Time series deformation profile for CR #57 from May 13, 2013 to September 18, 2016.

(b) Time series deformation profile for CR #13 from July 2, 2008 to September 18, 2016.

(b) Time series deformation profile for CR #55 from May 13, 2013 to September 18, 2016.

(b) Time series deformation profile for CR #58 from May 13, 2013 to September 18, 2016.

(c) Time series deformation profile for CR #14 from July 2, 2008 to September 18, 2016.

(c) Time series deformation profile for CR #56 from May 13, 2013 to September 18, 2016.

(c) Time series deformation profile for CR #20 from July 2, 2008 to September 18, 2016.

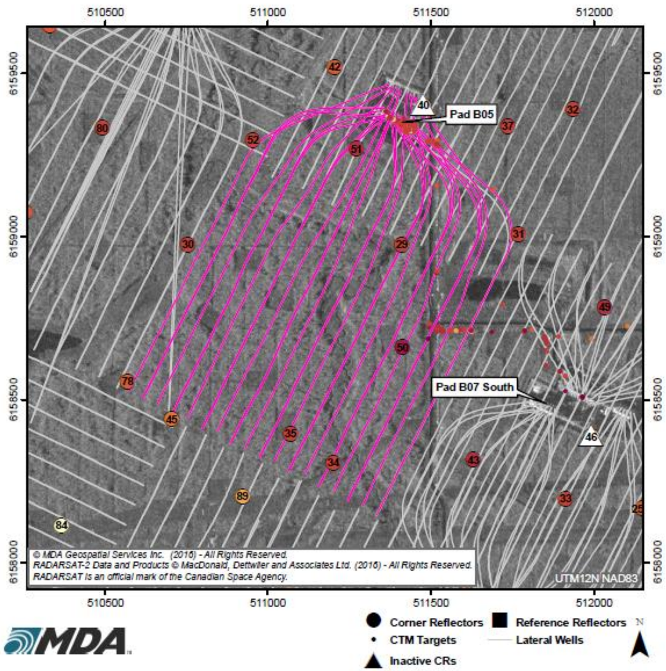
(a) Time series deformation profile for CR #22 from July 2, 2008 to September 18, 2016.

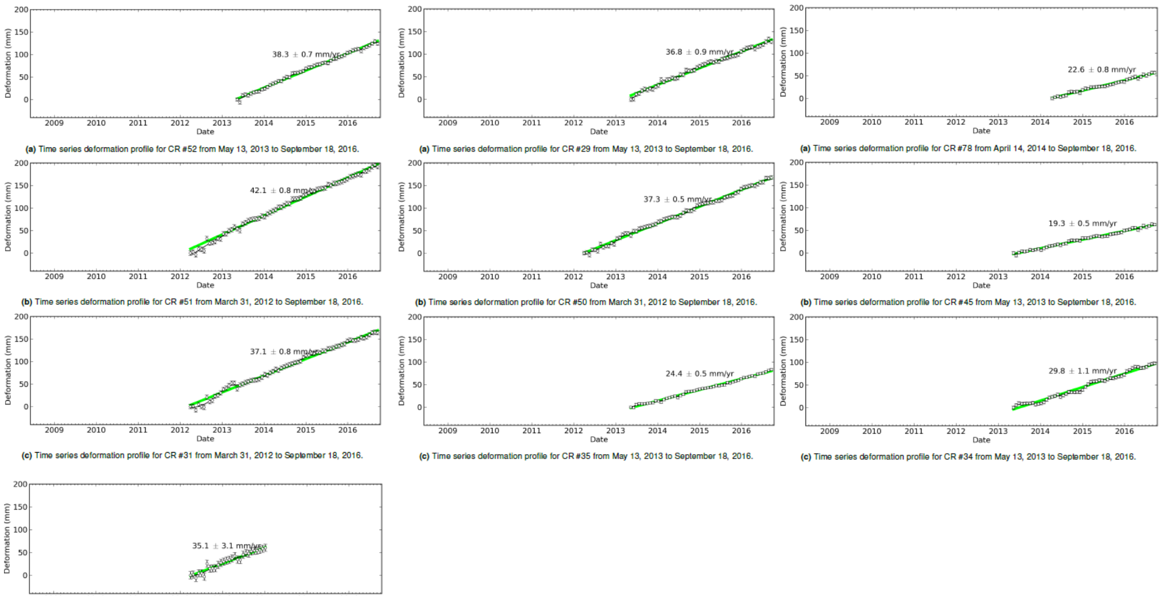
(b) Time series deformation profile for CR #21 from July 2, 2008 to September 18, 2016.

(c) Time series deformation profile for CR #54 from May 13, 2013 to September 18, 2016.

11 corner reflectors, 283 CTM Targets

Cumulative vertical deformation: B05 Pad





(a) Time series deformation profile for CR #52 from May 13, 2013 to September 18, 2016.

(a) Time series deformation profile for CR #29 from May 13, 2013 to September 18, 2016.

(a) Time series deformation profile for CR #78 from April 14, 2014 to September 18, 2016.

(b) Time series deformation profile for CR #51 from March 31, 2012 to September 18, 2016.

(b) Time series deformation profile for CR #50 from March 31, 2012 to September 18, 2016.

(b) Time series deformation profile for CR #45 from May 13, 2013 to September 18, 2016.

(c) Time series deformation profile for CR #31 from March 31, 2012 to September 18, 2016.

(c) Time series deformation profile for CR #35 from May 13, 2013 to September 18, 2016.

(c) Time series deformation profile for CR #34 from May 13, 2013 to September 18, 2016.

(a) Time series deformation profile for CR #40 from March 31, 2012 to October 28, 2013.

10 corner reflectors, 26 CTM Targets

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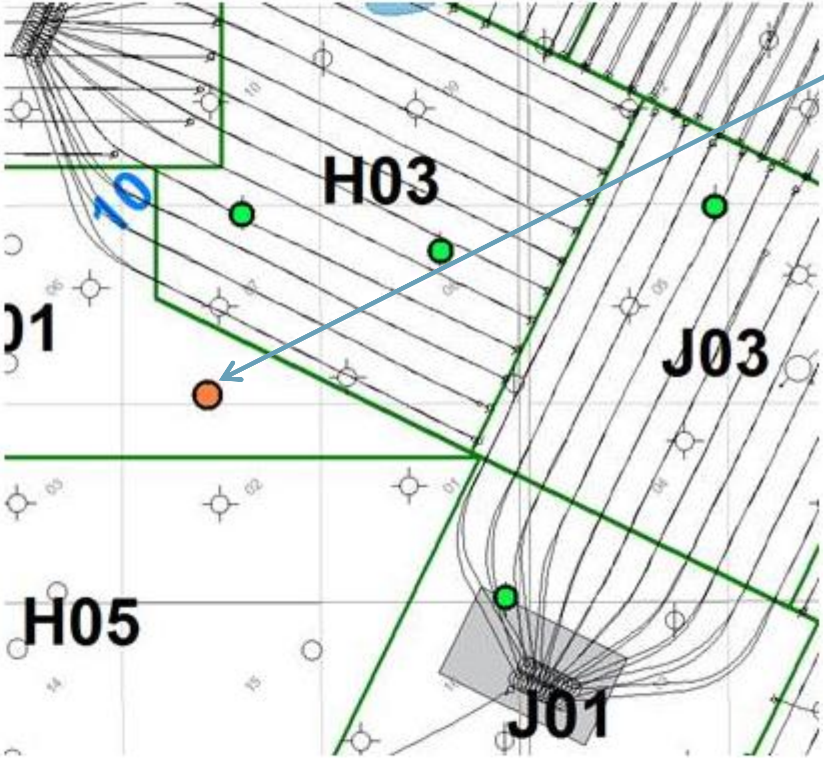
Strain monitoring



1AC/07-10-076-06W4
~250 m (185-435 m TVD)

- Strain monitoring gauges were installed winter 2016
- Only baseline data has been acquired
- The strain monitoring data gathered will be used in models and simulations that will improve our understanding of mechanisms that cause casing impairments

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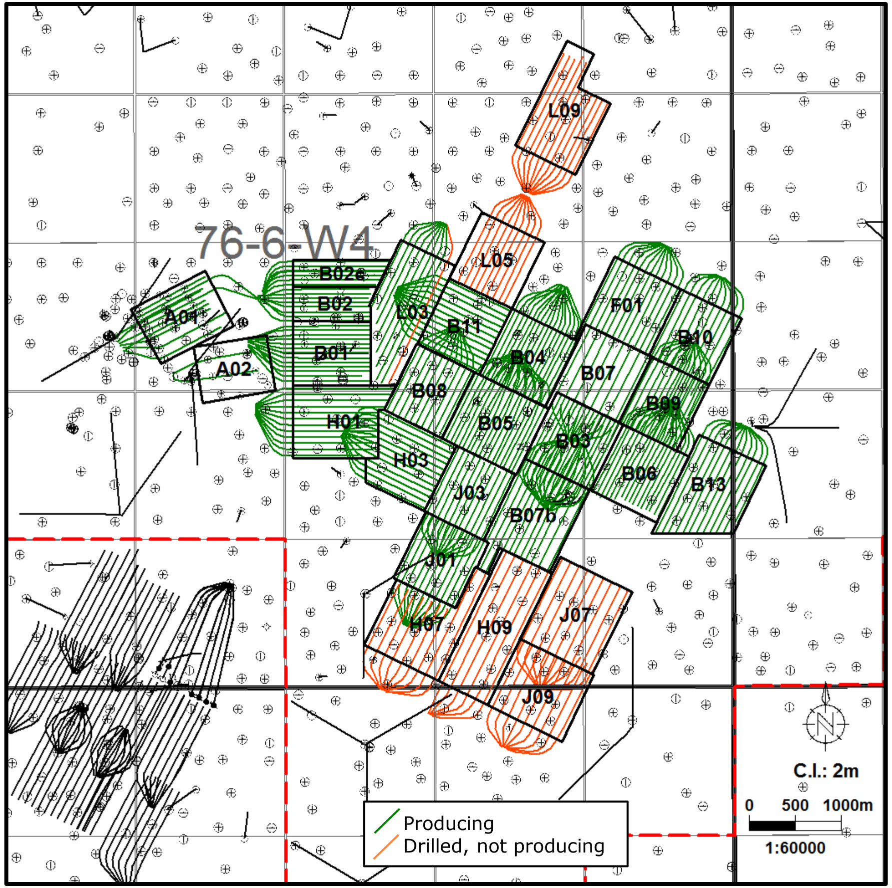
Subsection 3.1.1 – 3) Drilling and Completions

Drilled SAGD wells



Pad	Pairs	Wedges*
A01	6	2
A02	2	-
B01	7	6
B02	10	6
B03	8	8
B04	8	8
B05	9	9
B06	8	9
B07	8	-
B07b	11	-
B08	10	-
B09	11	-
B10	10	-
B11	12	-
B13	12	-
F01	12	-
H01	12	-
H03	12	-
H07	9	-
H09	6	-
J01	11	-
J03	11	-
J07	9	-
J09	9	-
L03	9	-
L05	9	-
L09	11	-

*Wedge Well™ Technology

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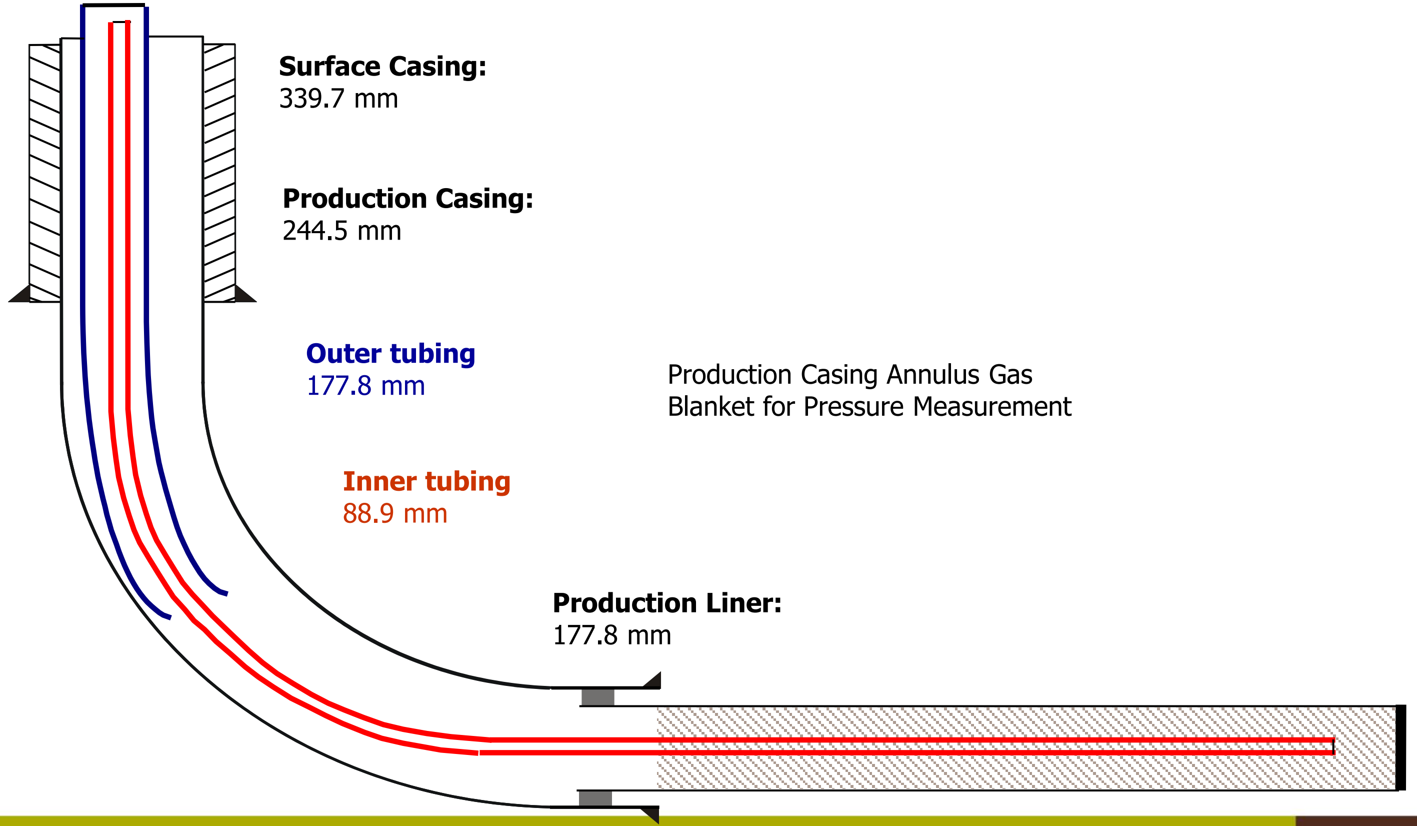
Sample producer circulation completion



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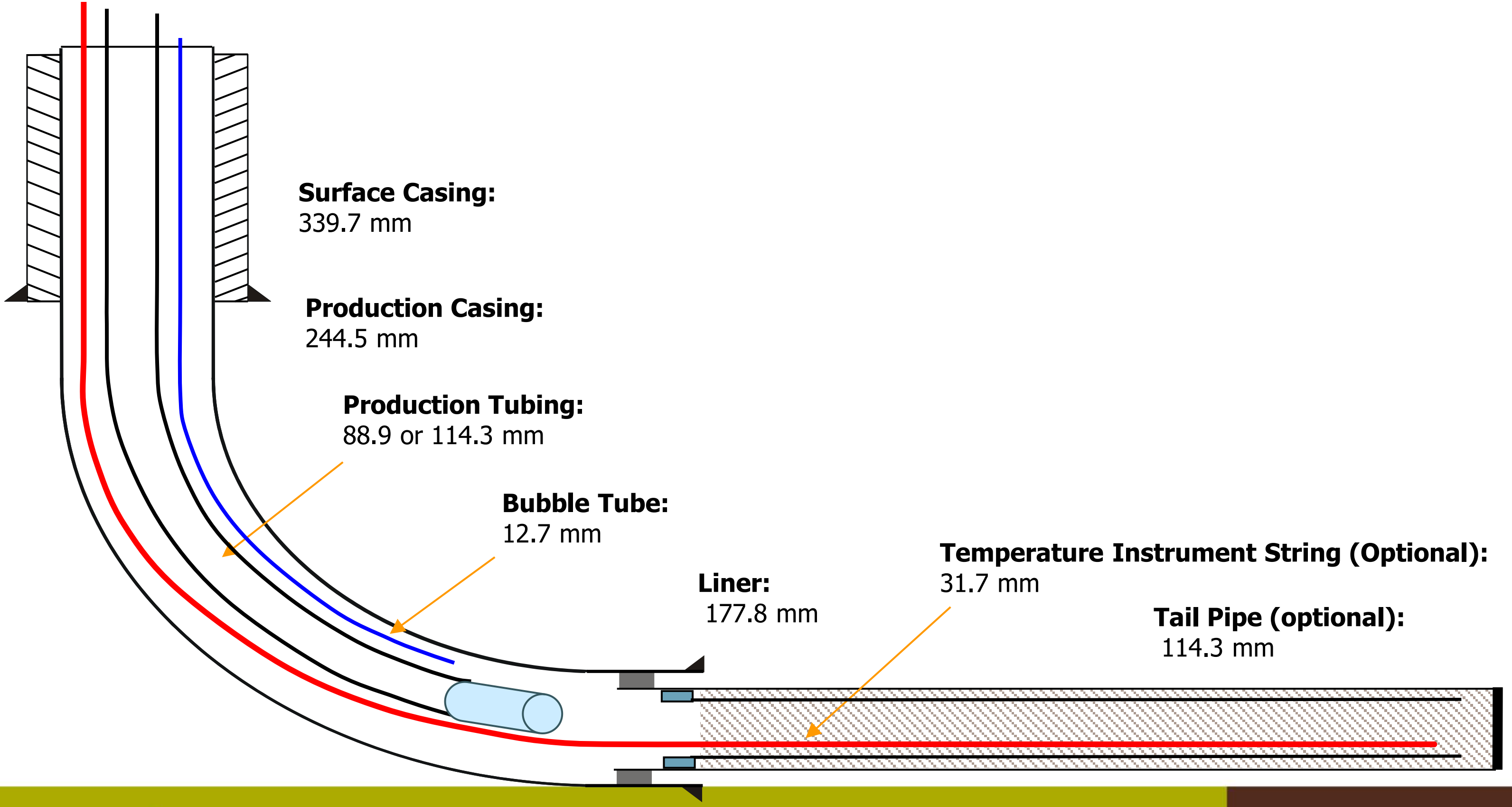
Sample ESP producer completion



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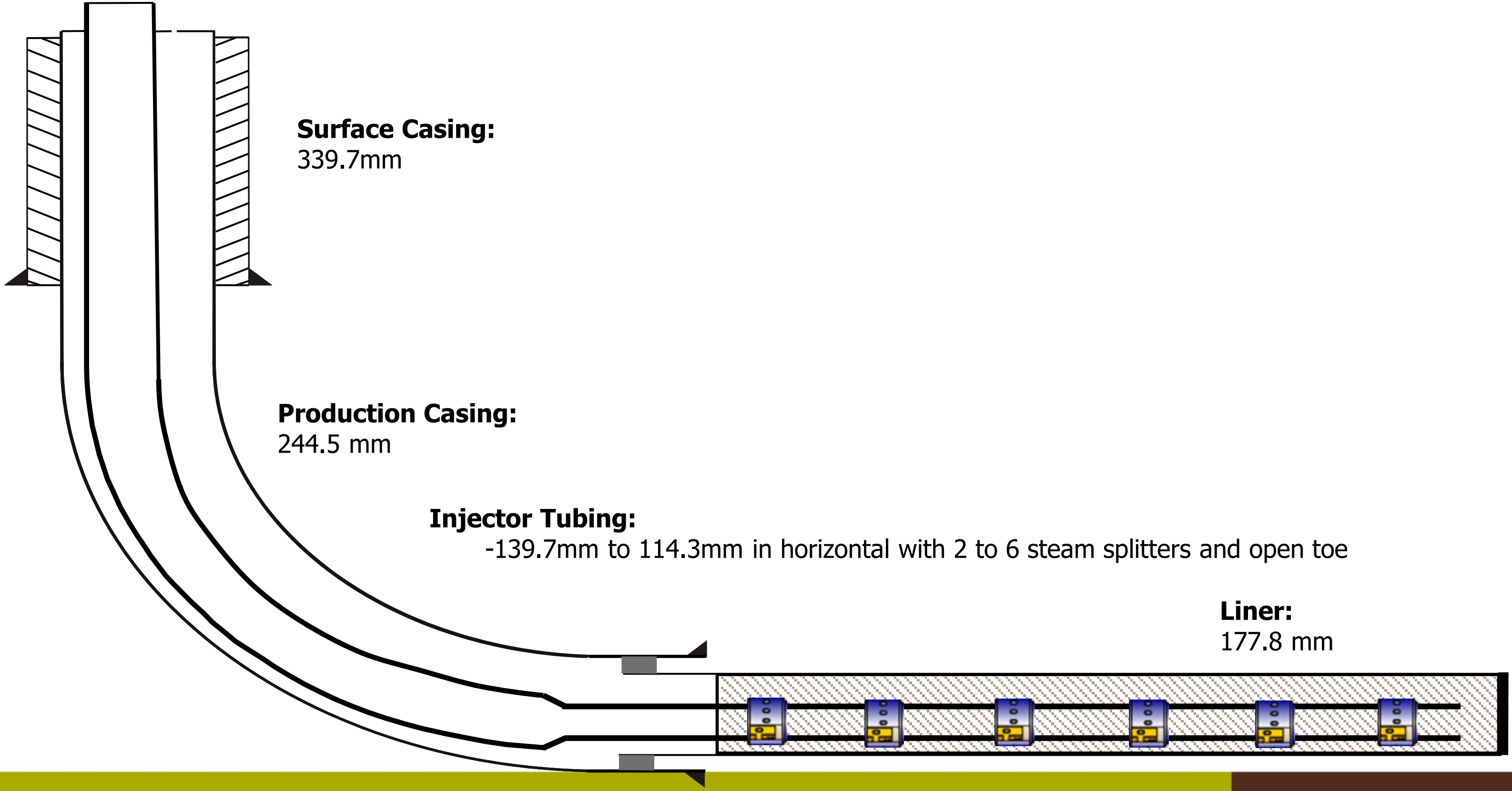
Sample injector completion



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Flow control devices

- **Currently testing 4 flow control devices**
  - 2 liner deployed ICDs
  - 2 tubing deployed ICDs
- **Production from wells commenced in 2015**
- **ICD effectiveness review ongoing**

Well Name	Well Type	Production Date	Deployment
F01P08	Producer	08/09/2015	Tubing Deployed
F01P10	Producer	08/03/2015	Tubing Deployed
B07P10	Producer	12/10/2015	Liner Deployed
H01P03	Producer	12/18/2016	Liner Deployed

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Subsection 3.1.1 – 4) Artificial Lift

Review of artificial lift by well

Pad	Start date	Total producers (including Wedge Wells)	Lift Type
A Pad	2002	6	SAGD ESP
A02 Pad	2008	2	SAGD ESP
B01 Pad	2008	13	SAGD ESP
B02 Pad	2006	8	SAGD ESP
B02c Pad*	2013	6	SAGD ESP
B03 Pad	2011	15	SAGD ESP
B04 Pad	2011	15	SAGD ESP
B05 Pad	2012	18	SAGD ESP
B06 Pad	2012	15	SAGD ESP
B07 Pad	2012	8	SAGD ESP
B07b Pad	2015	10	SAGD ESP
B08 Pad	2013	10	SAGD ESP
B09 Pad	2014	11	SAGD ESP
B10 Pad	2016	10	SAGD ESP
B11 Pad	2013	12	SAGD ESP
B13 Pad	2017	6	SAGD ESP
H01 Pad	2016	12	SAGD ESP
H03 Pad	2016	12	SAGD ESP
L03 Pad	2016	6	SAGD ESP
J01 Pad	2016	5	SAGD ESP
J03 Pad	2016	11	SAGD ESP
F01 Pad	2015	12	SAGD ESP

Pump Category	Production Range [m3/d]
Category A	200 - 500
Category B	500 - 750
Category C	750 -1000
Category D	1000 - 1400

**Note: B02C refers to the 6 well pairs on the north side of the B02 Pad Approved Drainage Box, which were drilled at a 50m lateral downhole spacing*

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Artificial lift performance

ESP (223 Operating):

- All 2016 & 2017 wells were put into ESP mode post-steam stimulation
- No new pads were in gas-lift mode
- Typical operating pressure 1,800 – 4,000 kPag
- No temperature limitations, go as hot as ~235^{o}C BHT
- Average emulsion flow rate ~ 200-1400 m^3/d

Operational challenges:

- Designing ESPs with adequate downturn for late-life
- Gas Handling for high GOR wells

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Subsection 3.1.1 – 5) Instrumentation

SAGD well pressure instrumentation

Pressure Measurement:

- Producer – Mostly ½" capillary tubes
- Injector – Casing blanket gas

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SAGD well temperature instrumentation

Type 'K' Thermocouples (2 types)

- Single point installed at the heel
- 6 point that is installed along the producer horizontal

Distributed Temperature Sensing (DTS)

- Temperature reading every ~1 m along entire wellbore
- Instrumentation of choice for 2016 and onward

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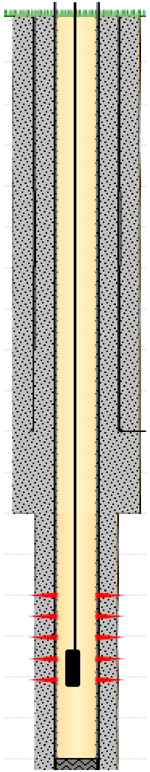
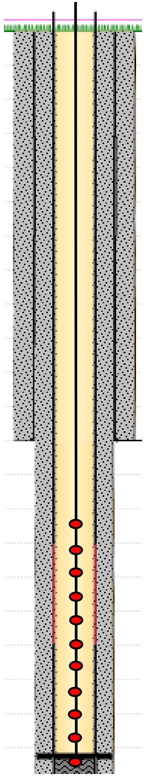
Instrumentation in observation wells (typical completions)

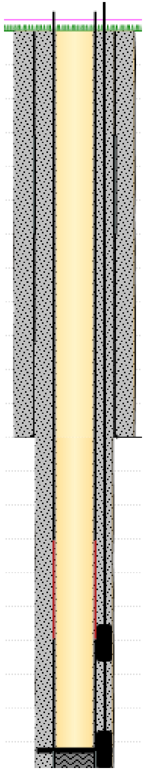
Hanging Piezometer



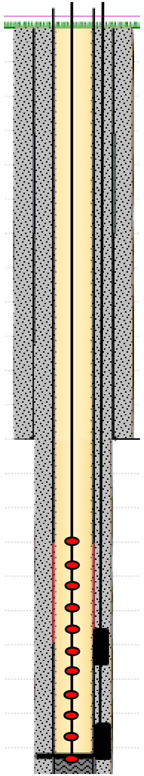
Hanging Thermocouples



Cemented Piezometers



Cemented Piezometers and Hanging Thermocouples



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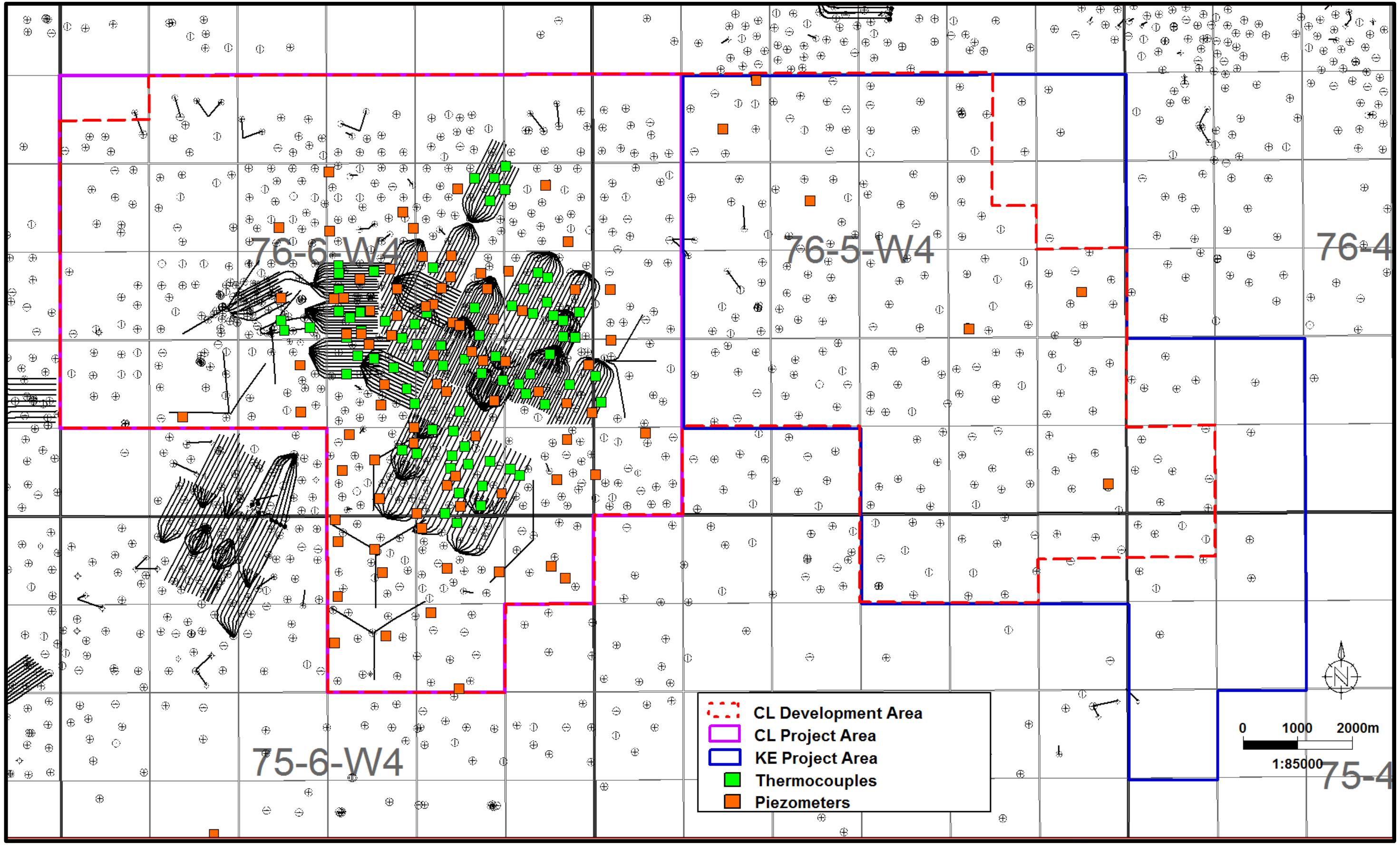
Surveillance wells



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Subsection 3.1.1–5c) & d) instrumentation data

Requirements under subsection 3.1.1 5c) and d) are located in Appendices 2 & 3

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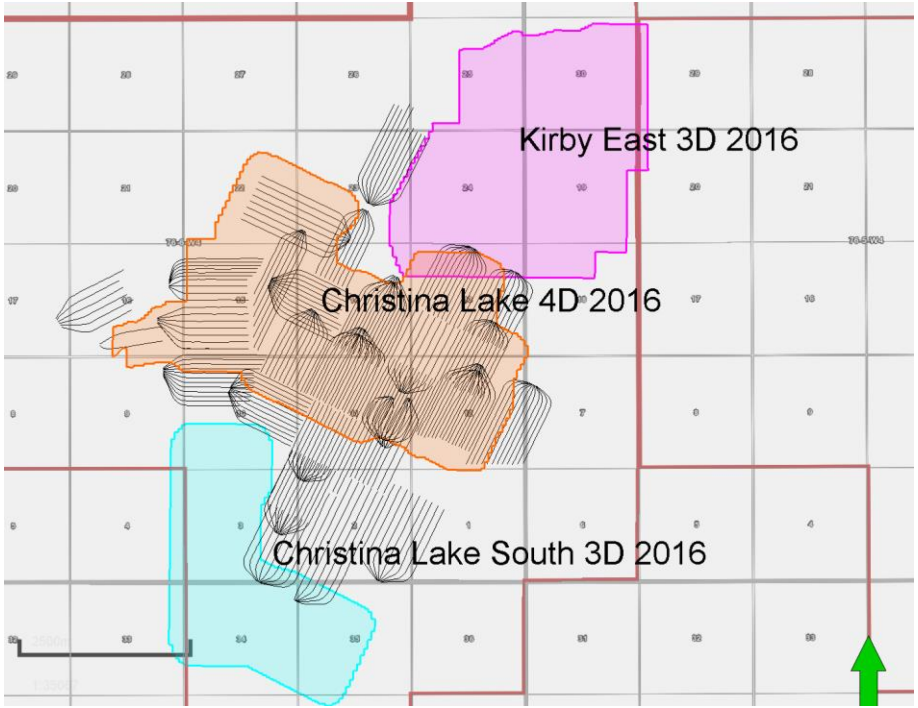
Subsection 3.1.1 – 6) Seismic

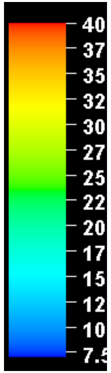
Seismic lines location map

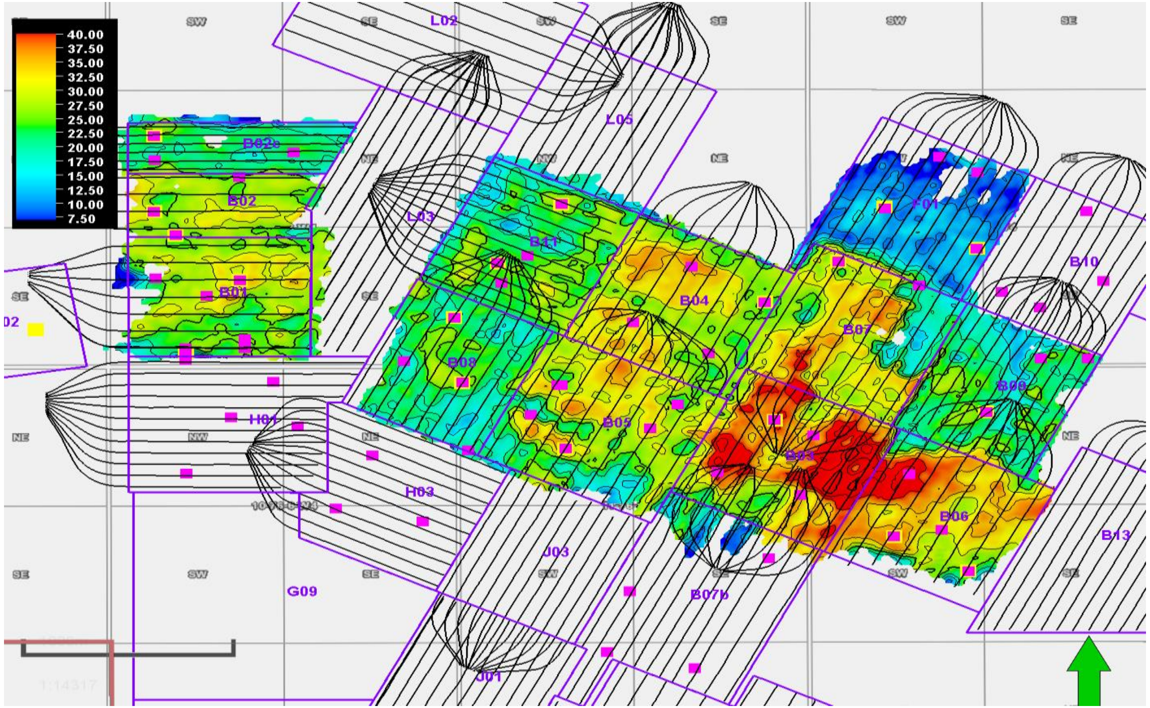


Name	Purpose	Area (km2)
Kirby East 3D	Baseline	10.55
CL 4D	Monitor	14.10
Cl South 3D	Baseline	6.96

Interpreted steam-affected chamber thickness to producer wells (m)

steam-affected chamber thickness (m)



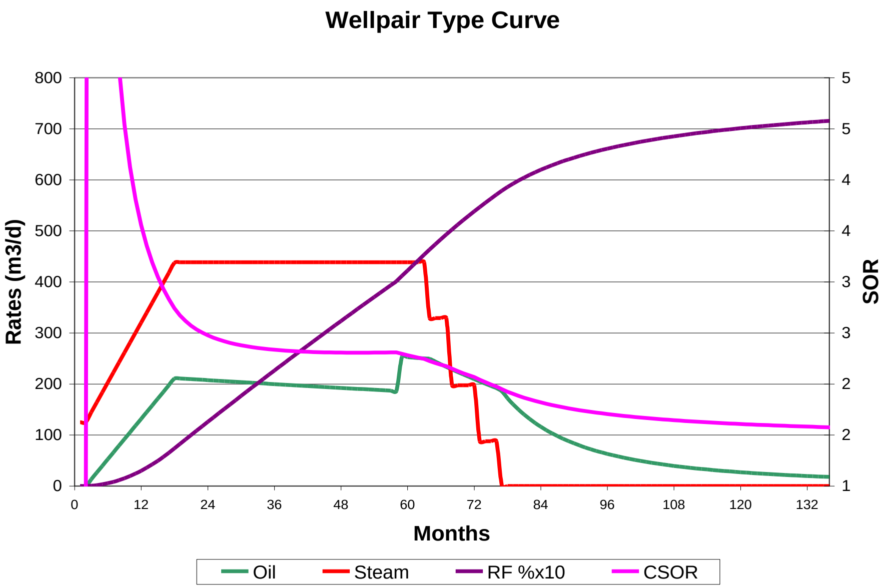


Thermocouple obs well

RST obs well

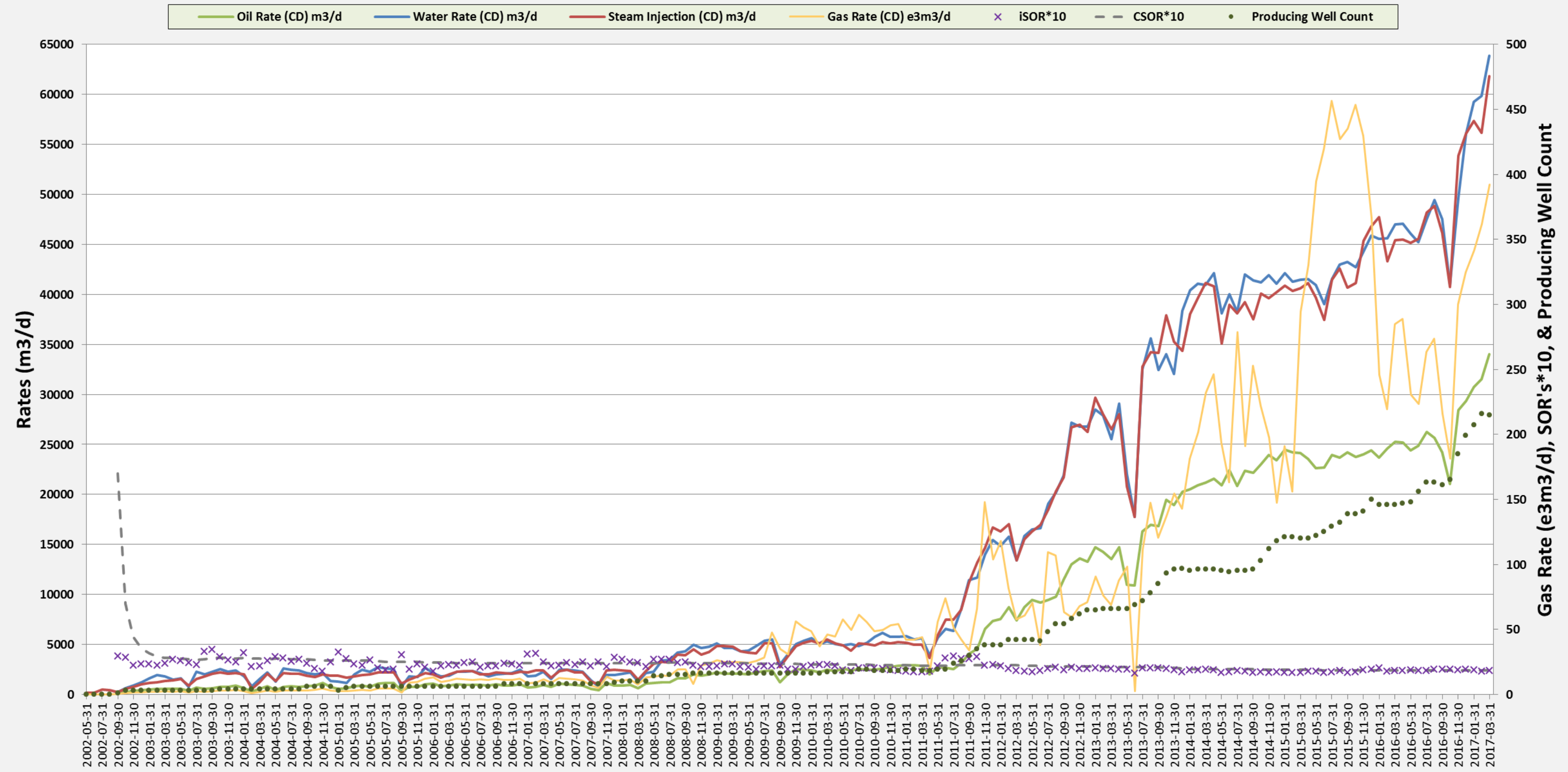
Subsection 3.1.1 – 7) Scheme performance

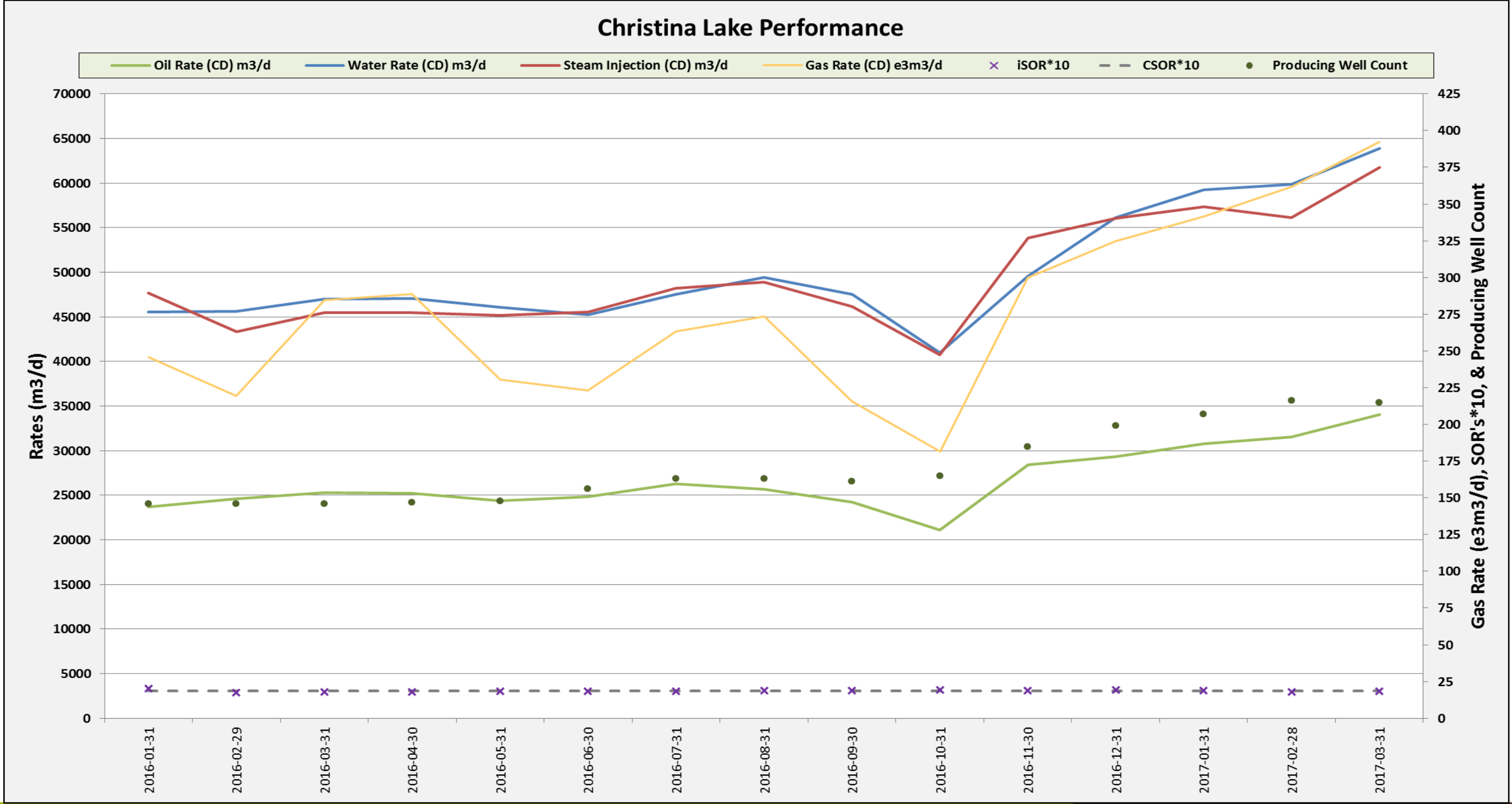
Scheme performance prediction



availability

Christina Lake Performance





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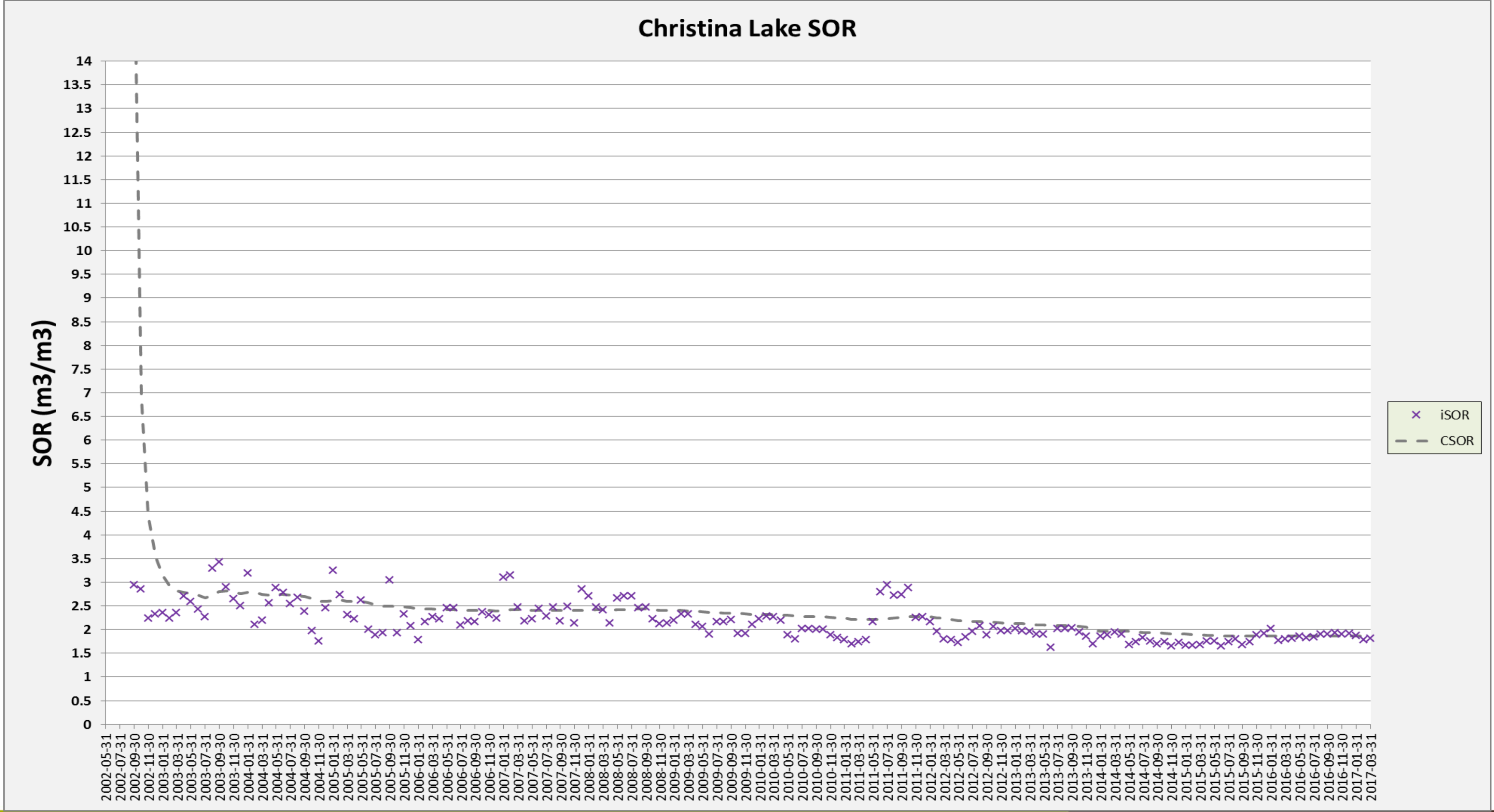

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Oil in Place Definitions

SAGD-able Oil In Place (SOIP) Quantification

- Oil volume within a drainage box area between the SAGD base surface to SAGD Pay Top surface
  - Drainage box area = drainage box length x wellpair spacing
    - Default drainage box length is the length of overlapping injector/producer slots + 20m heel/toe extension
      - Modified to account for well to well interactions and surveillance data
- The porosity and oil saturation within this volume are generated from stratigraphic wireline log data

Estimated Ultimate Recovery

- Cum oil produced to date + forecasted production

All oil in place quantities and estimated ultimate recovery quantities are internal estimates. There is no certainty that any portion of such quantities will be discovered. If discovered, there is no certainty that it will be commercially viable to produce any portion of such quantities.

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OIP and RF per pad

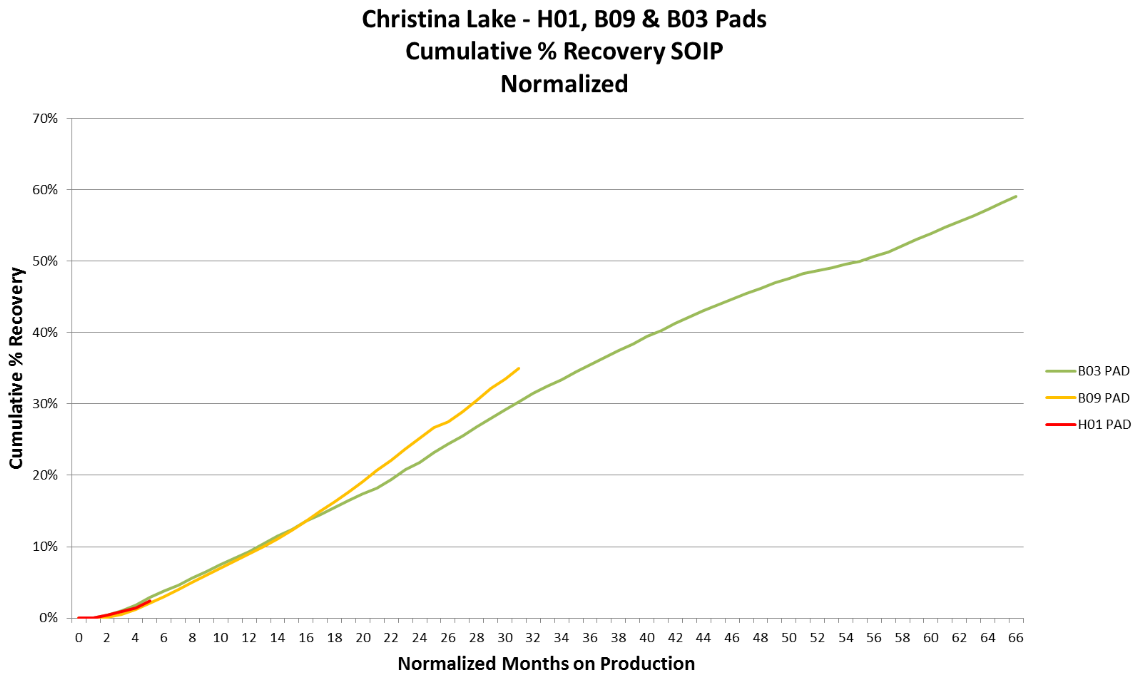
PAD	Area (m3)	Height (m)	Porosity (%)	So (%)	SOIP (Mm3)	Cum Oil Mm3 (to Mar 31, 2017)	Recovery % SOIP	Estimated Ultimate Recovery (Mm3)	Ultimate Recovery as % of SOIP
A01 PAD	514,091	30	33%	77%	4,013	2,223	55%	2,264	56%
A02 PAD	174,295	33	32%	83%	1,552	432	28%	653	42%
B01 PAD	594,458	36	31%	85%	5,497	3,550	65%	4,303	78%
B02 PAD	323,950	37	30%	85%	3,111	2,436	78%	2,641	85%
B02C PAD	296,275	35	31%	83%	2,662	1,516	57%	1,647	62%
B03 PAD	637,645	48	31%	81%	7,783	4,596	59%	5,378	69%
B04 PAD	642,947	43	30%	81%	6,811	4,944	73%	5,371	79%
B05 PAD	731,534	45	30%	81%	8,212	4,329	53%	5,936	72%
B06 PAD	605,198	35	31%	81%	5,410	3,439	64%	3,963	73%
B07 PAD	642,341	44	29%	81%	5,690	4,420	78%	5,105	90%
B07B PAD	884,240	34	31%	77%	7,899	1,020	13%	4,548	58%
B08 PAD	568,267	35	34%	85%	5,615	2,500	45%	3,873	69%
B09 PAD	558,380	48	30%	86%	6,790	2,374	35%	4,943	73%
B10 PAD	595,522	35	30%	80%	4,997	325	6%	3,955	79%
B11 PAD	603,192	40	31%	83%	6,147	3,353	55%	4,072	66%
F01 PAD	649,357	34	29%	77%	4,589	1,154	25%	3,135	68%
H01 PAD	753,516	29	33%	82%	5,993	145	2%	4,418	74%
H03 PAD	645,148	31	33%	79%	5,190	184	4%	4,138	80%
J01 PAD	593,254	22	33%	79%	3,375	24	1%	2,158	64%
J03 PAD	561,300	42	32%	80%	6,112	92	1%	4,562	75%
L03 PAD	707,586	35	33%	85%	7,068	219	3%	4,110	58%
Total CL	**12,282,495**				**114,517**	**43,275**	**38%**	**81,173**	**71%**

**As of March 31, 2017*

Recovery examples

- H01 pad - low recovery example
- B09 pad - medium recovery example
- B03 pad - high recovery example

Recovery examples cumulative percent recovery SOIP



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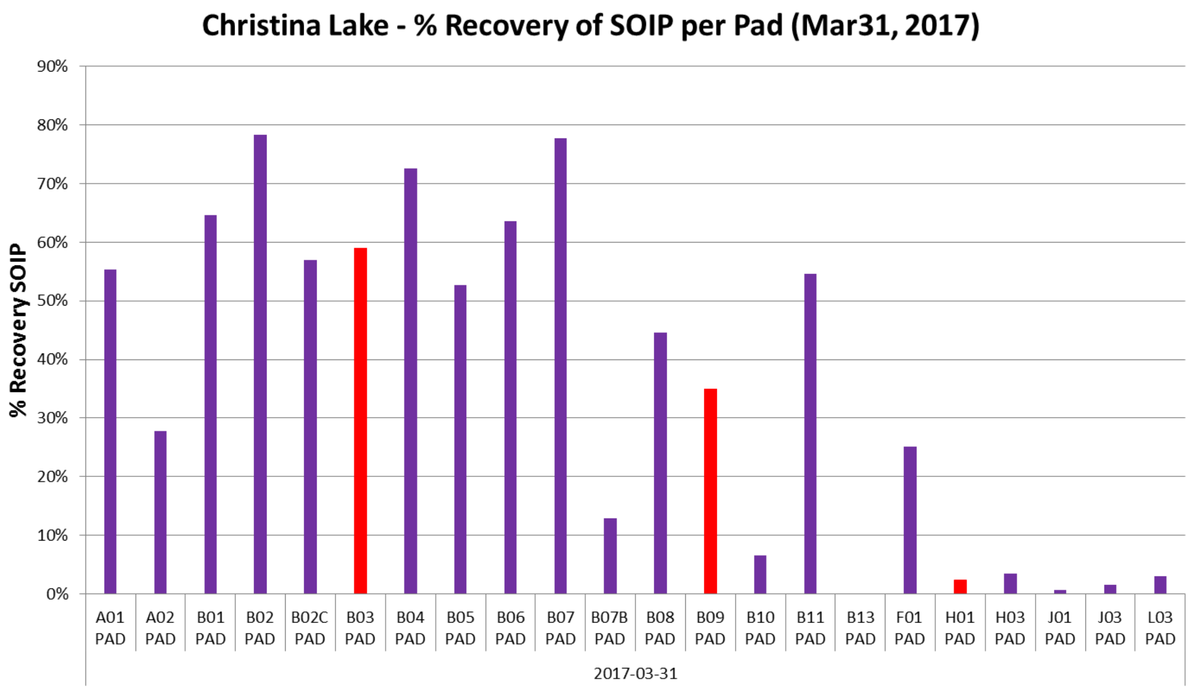
Current percent recovery of SOIP: pad totals



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OBIP – low example H01 pad

Subsection 3.1.1 – 7 c, iii)

H01 pad overview

- H01 pad started production in November 2016
    - 12 well pairs
- Heterogeneous quality geology
- Current:
    - Operating pressure ~2.6 MPa
    - SOIP recovery ~2%
    - CSOR ~4.4

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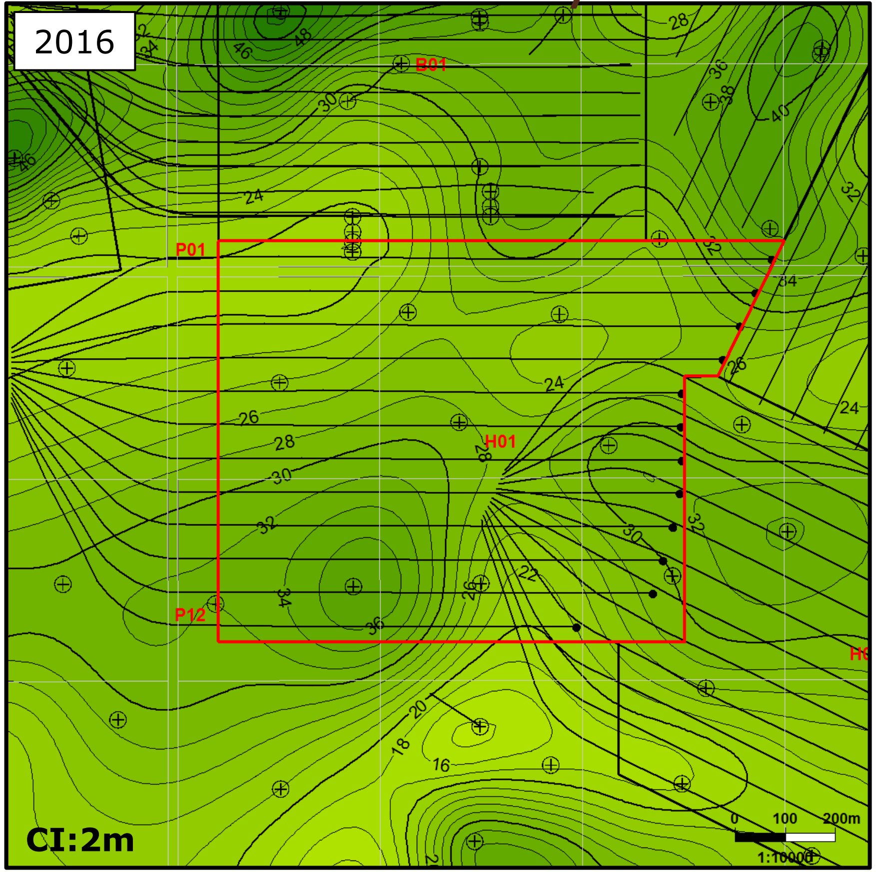
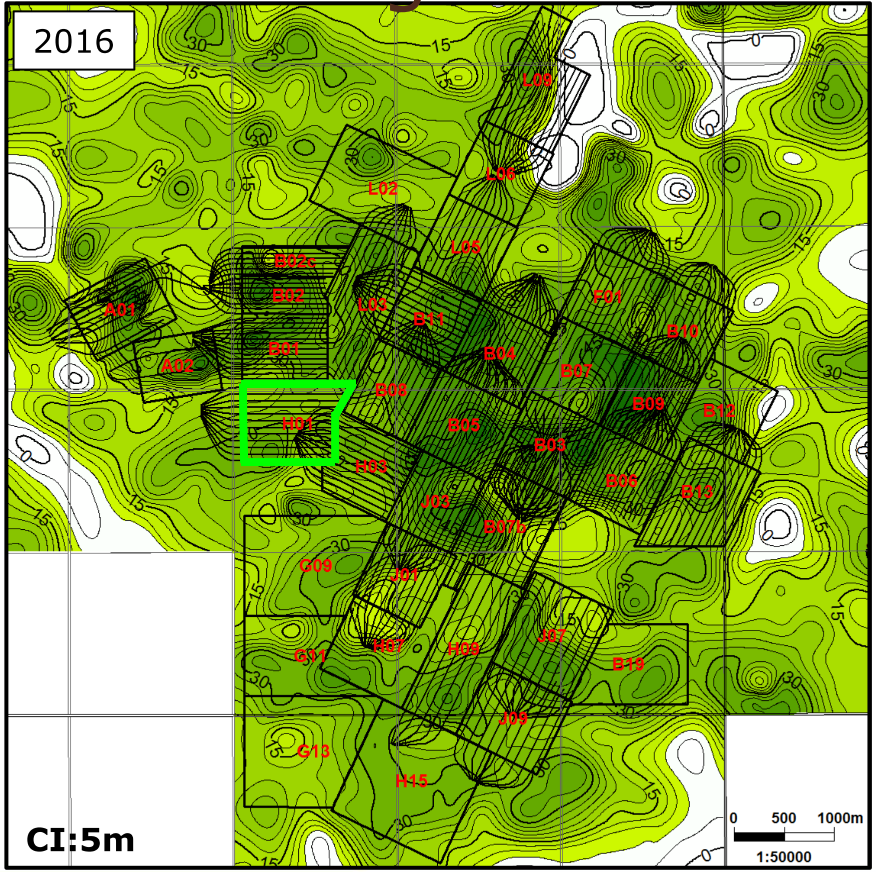
SAGD Pay



Regional



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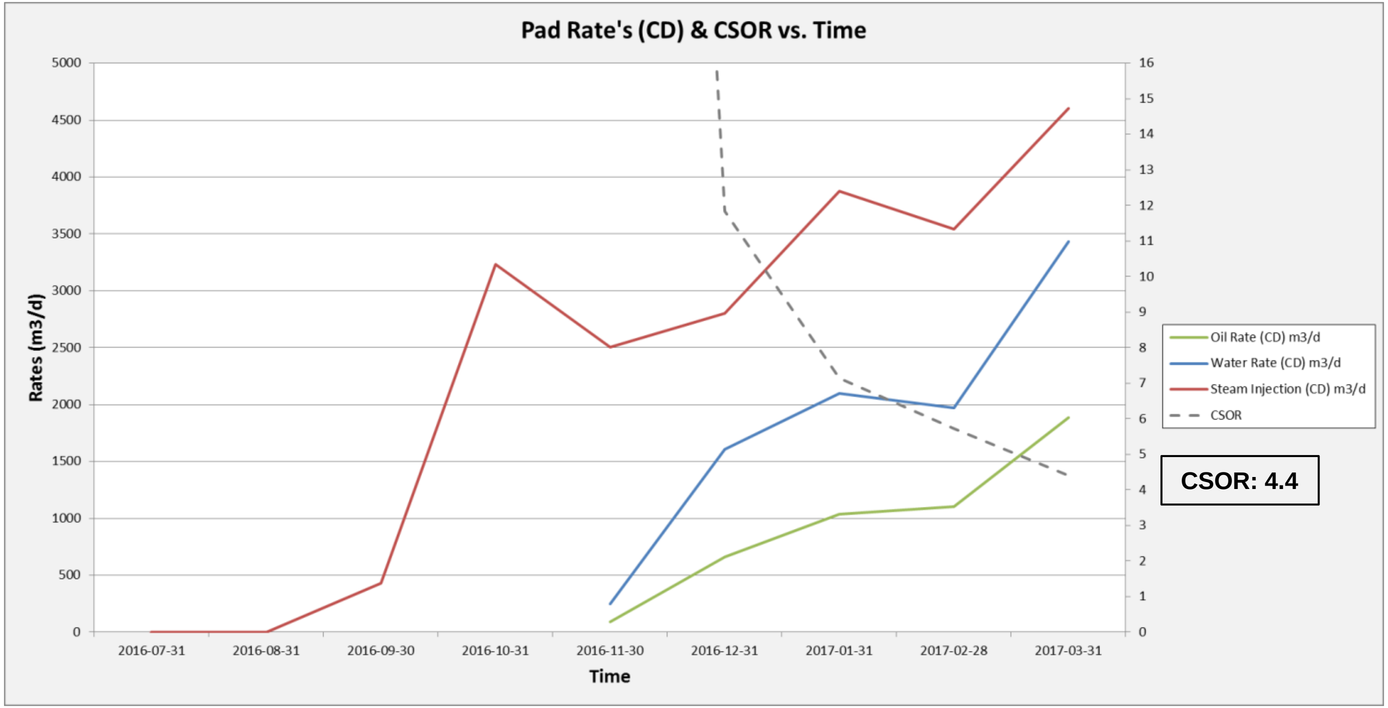
H01 pad performance



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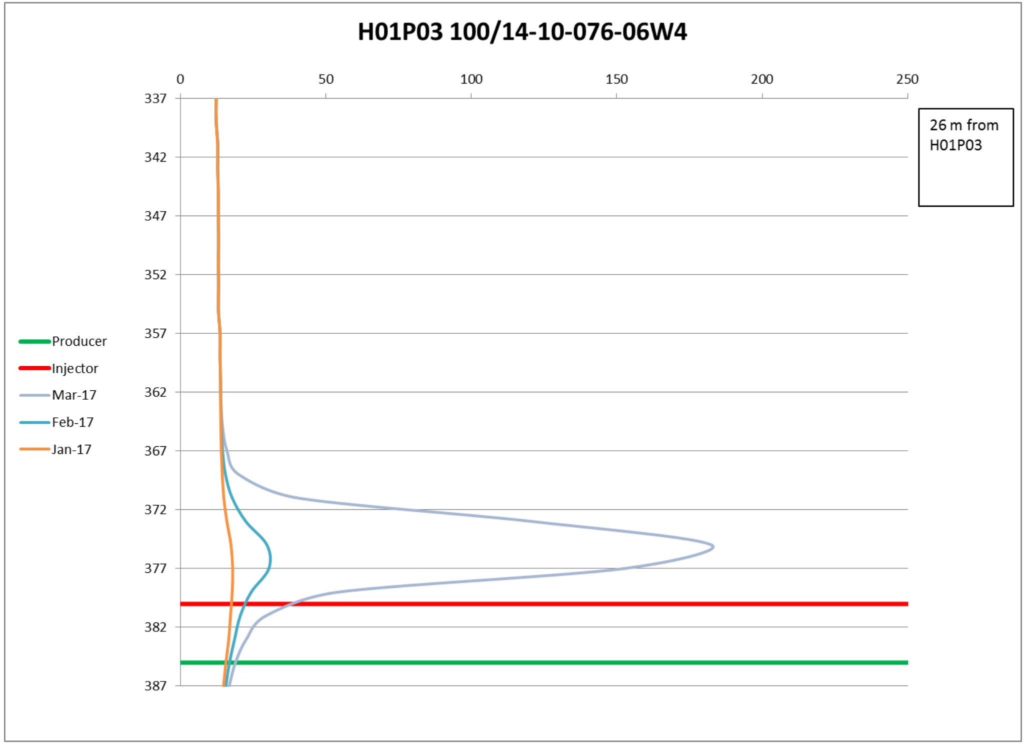
H01 pad temperatures



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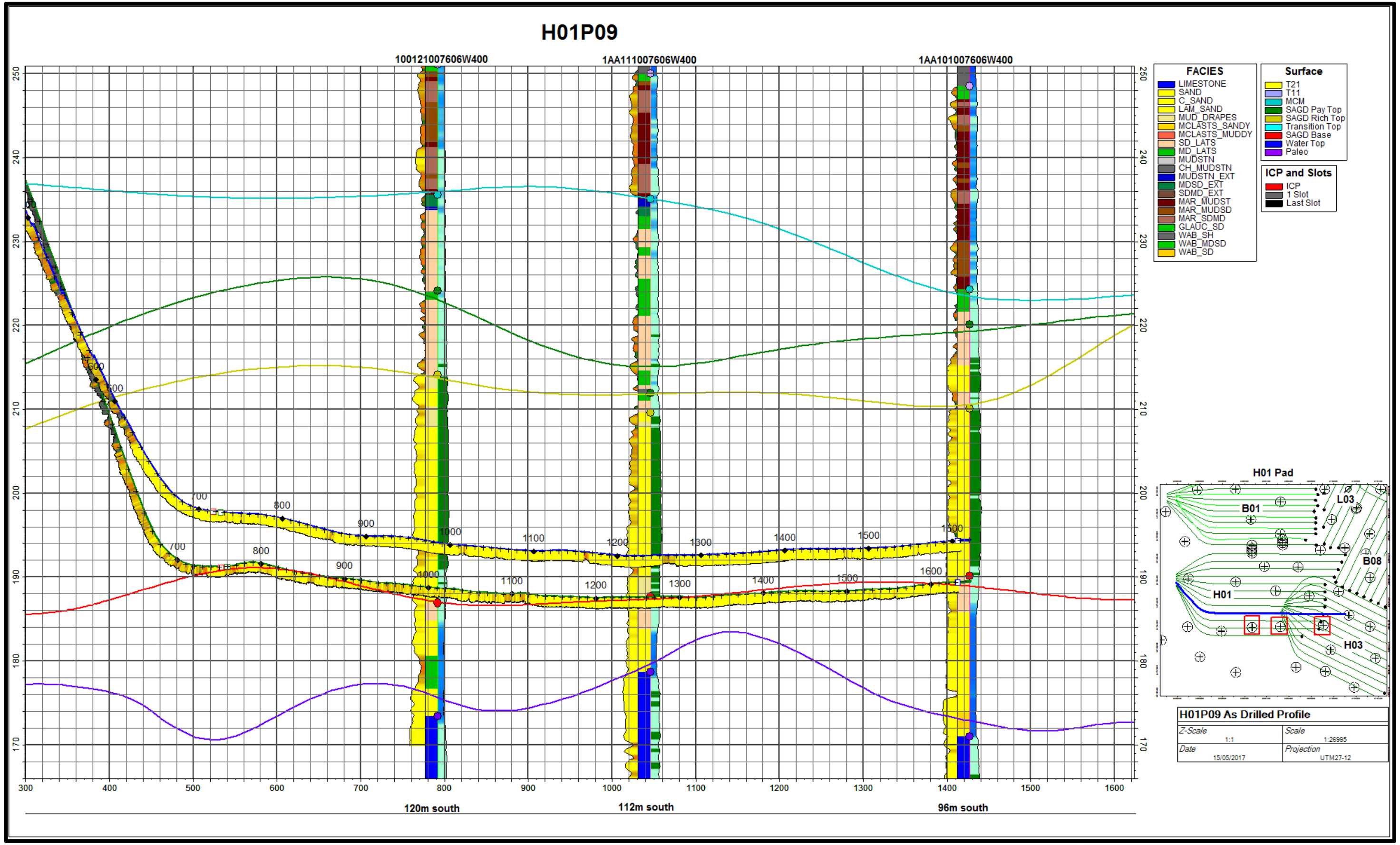
H01P09 geological profile



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OBIP – medium example B09 pad

Subsection 3.1.1 – 7 c, iii)

B09 pad overview

- B09 pad started production in September 2014
  - 11 well pairs
- SAGD base sloping to the west
- Current:
  - Operating pressure ~2.7 MPa
  - SOIP recovery ~35%
  - CSOR ~1.8
- B09 pad is in communication with B06 pad and B10 pad

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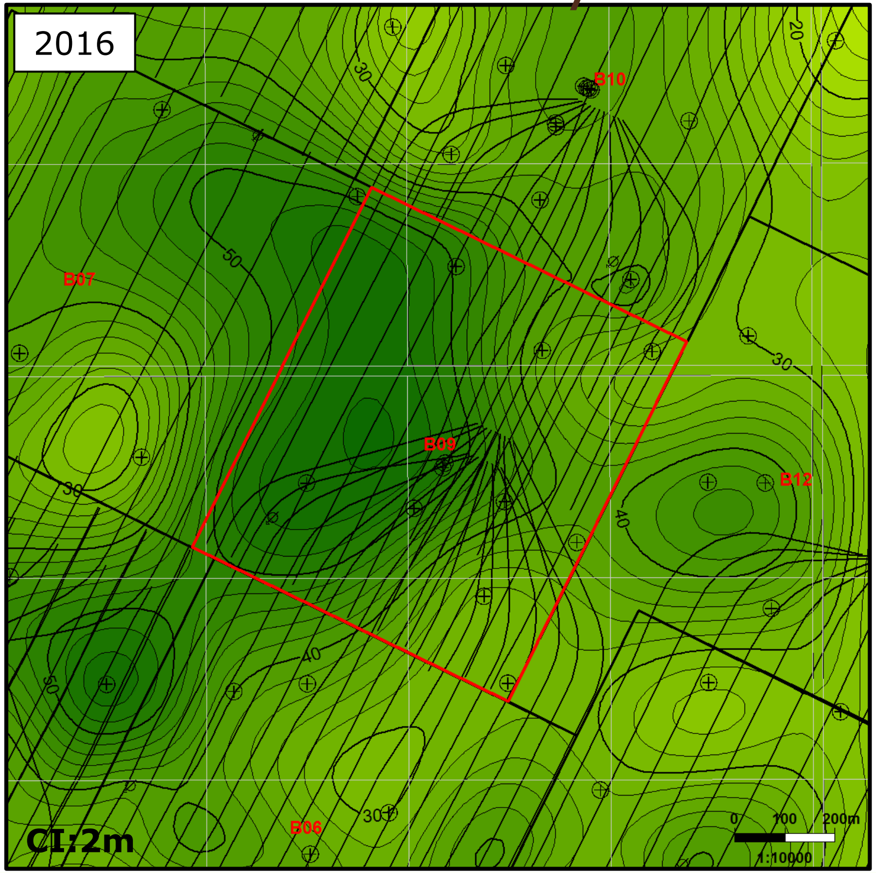
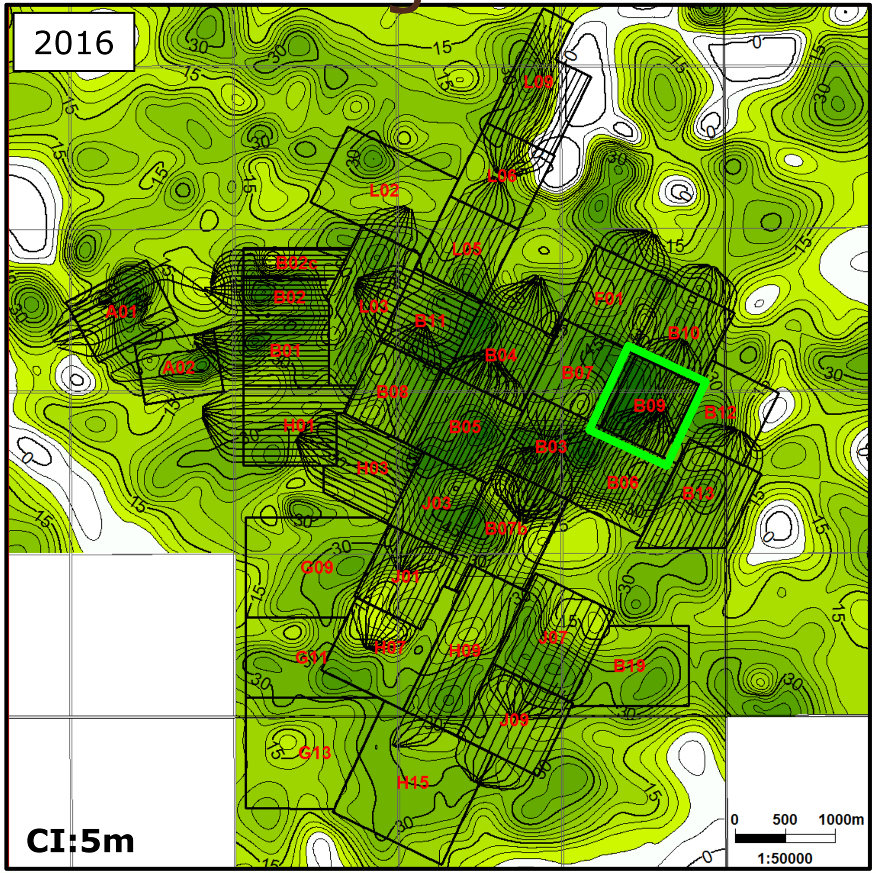
SAGD Pay



Regional



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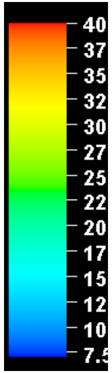
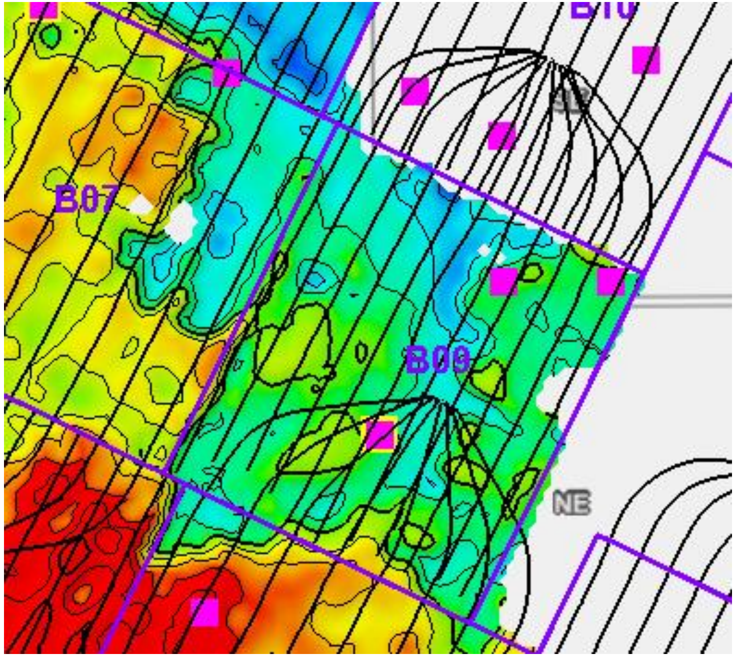
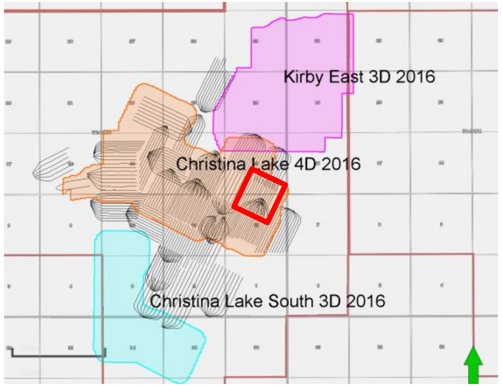
B09 seismic

steam-affected
chamber
thickness (m)







Interpreted steam-affected chamber thickness to producer wells (m)

Thermocouple obs well

RST obs well

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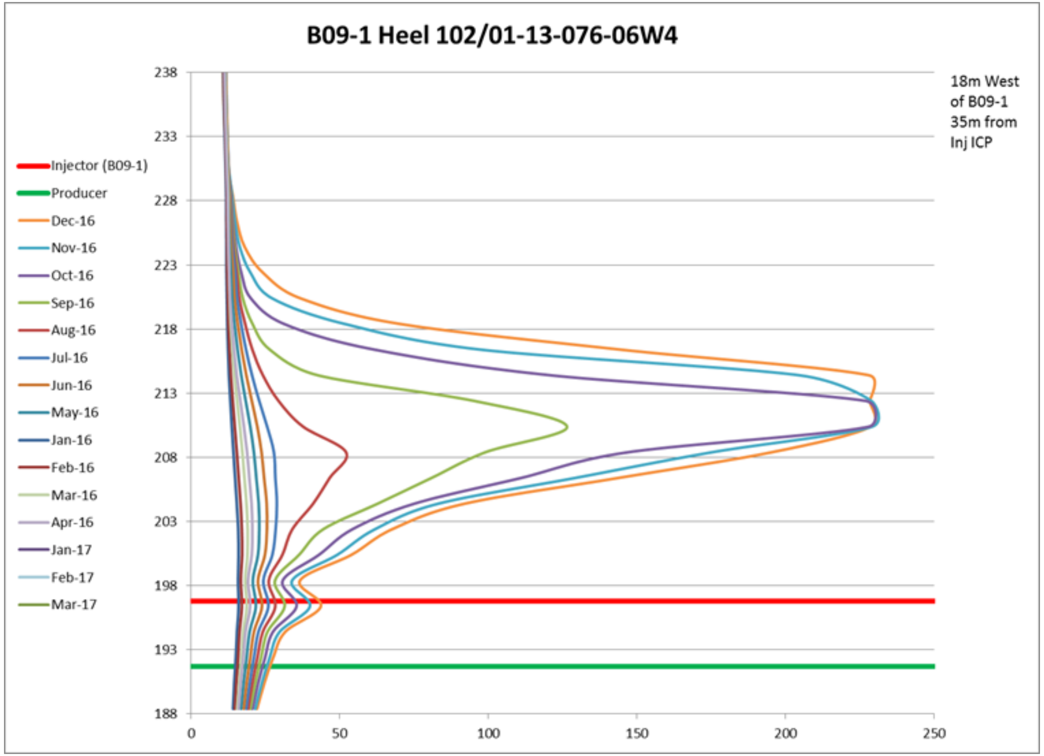
B09 pad temperatures



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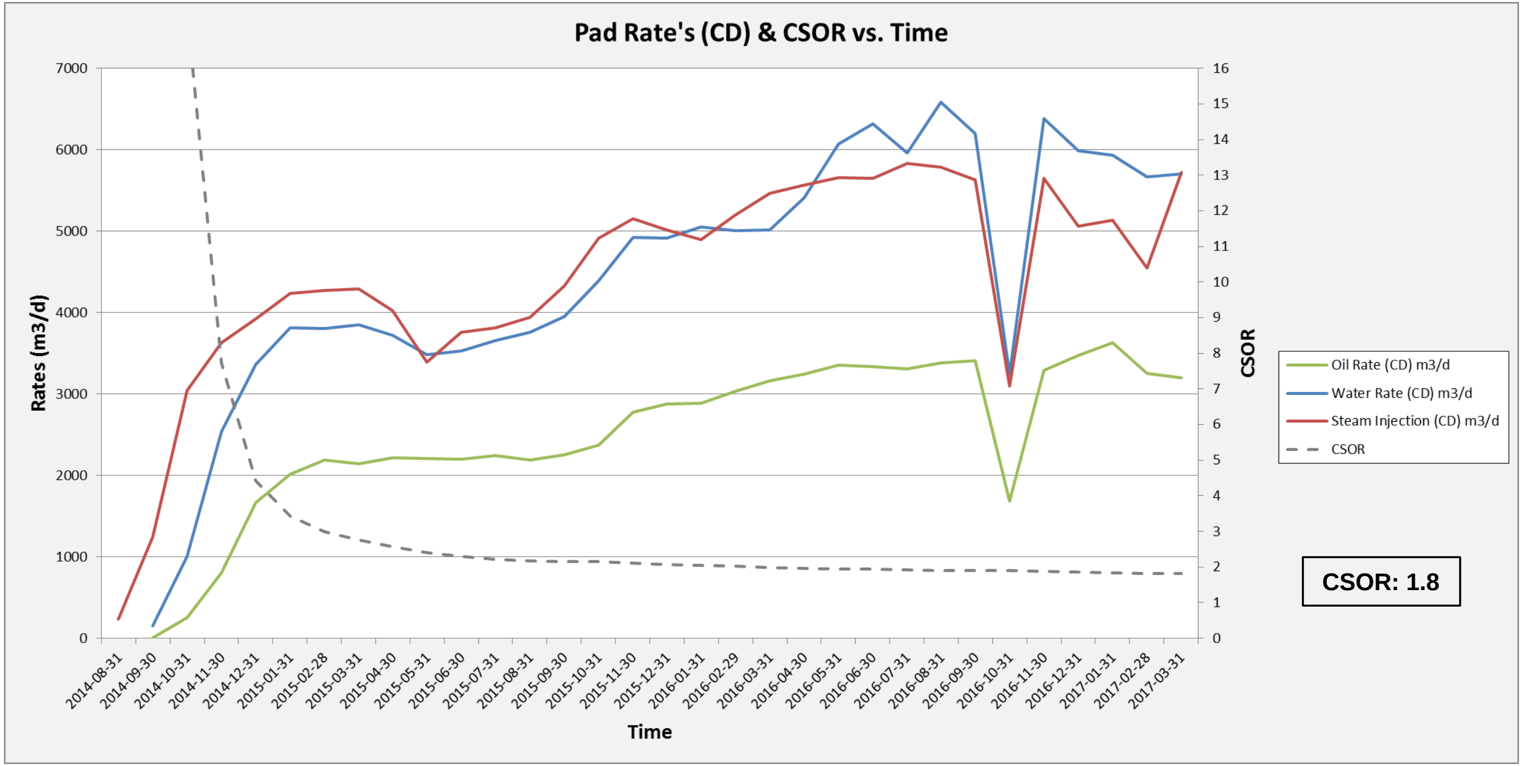
B09 pad performance



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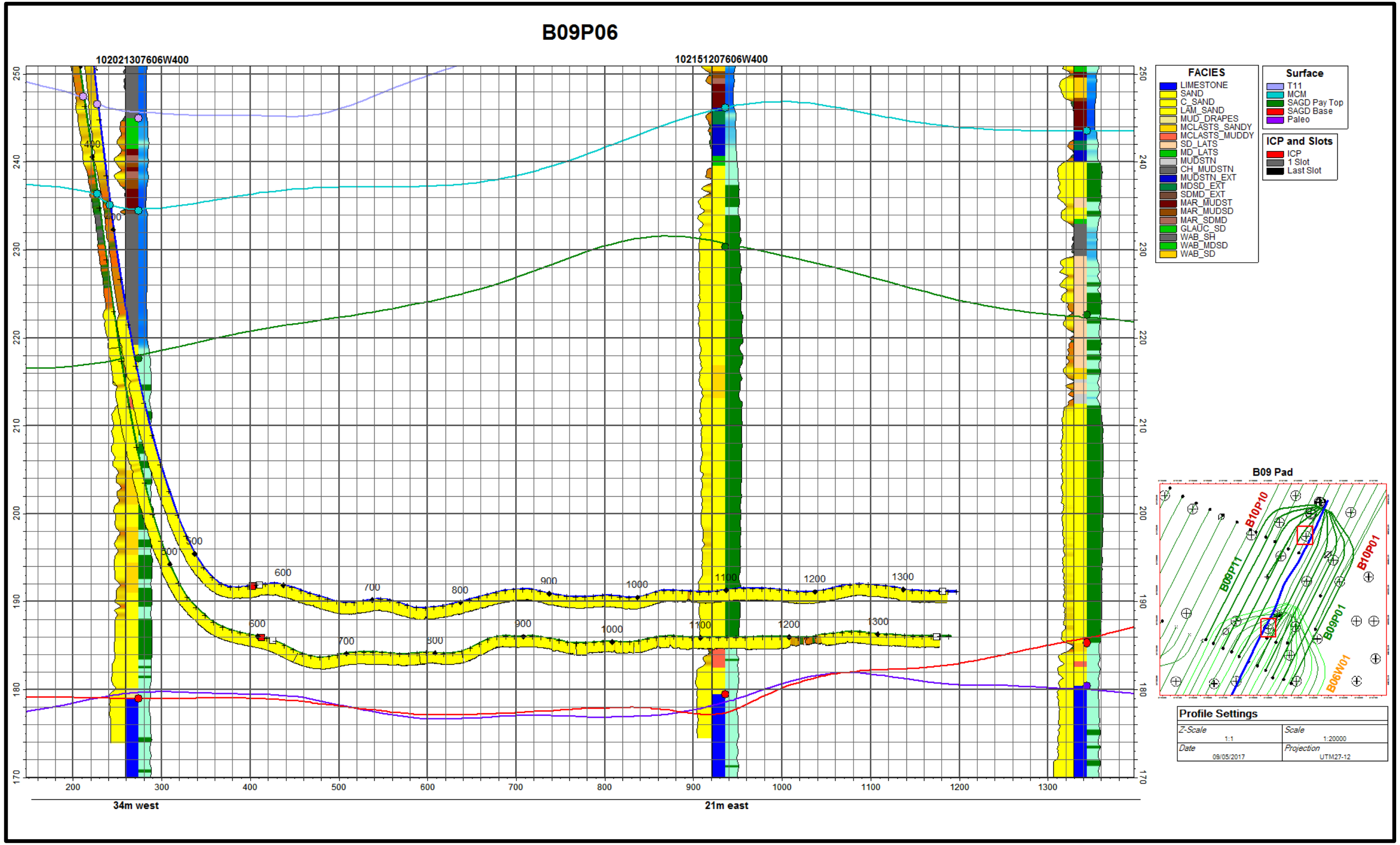
B09P06 geological profile



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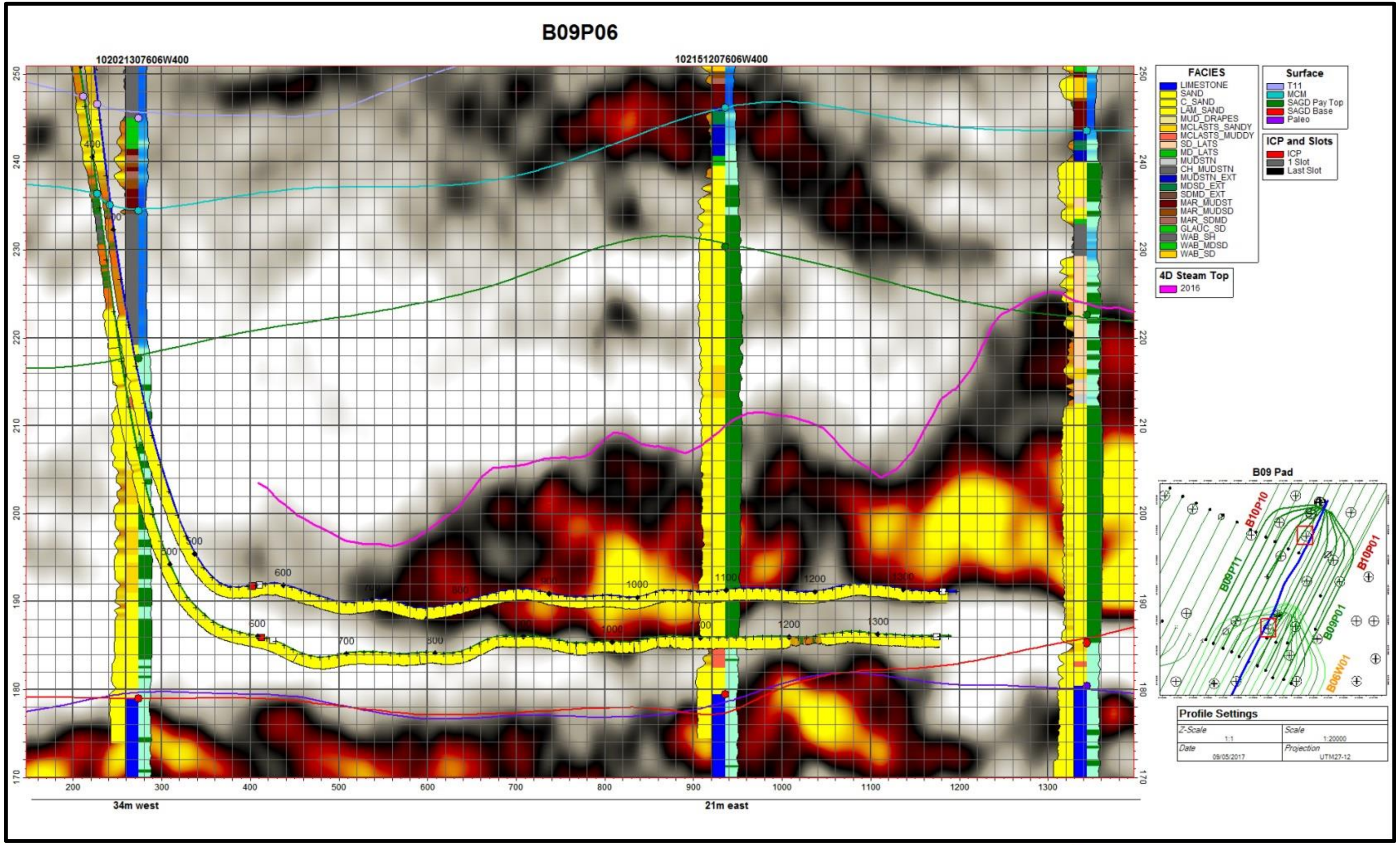
B09P06 Seismic profile



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OBIP – high example B03 pad

Subsection 3.1.1. – 7c, iii

B03 pad overview

- B03 Pad started production in October 2011
    - 8 well pairs, 8 wedge wells
- Gas lift operations up to first 6 months, initial operating pressure ~4.8 MPa
- Co-injection started February 2017
- B03P06, B03P07, and B03B08 were abandoned and redrilled ~10m below the original wells
- Current:
    - Operating pressure ~2.8 MPa
    - SOIP recovery ~59%
    - CSOR ~1.7

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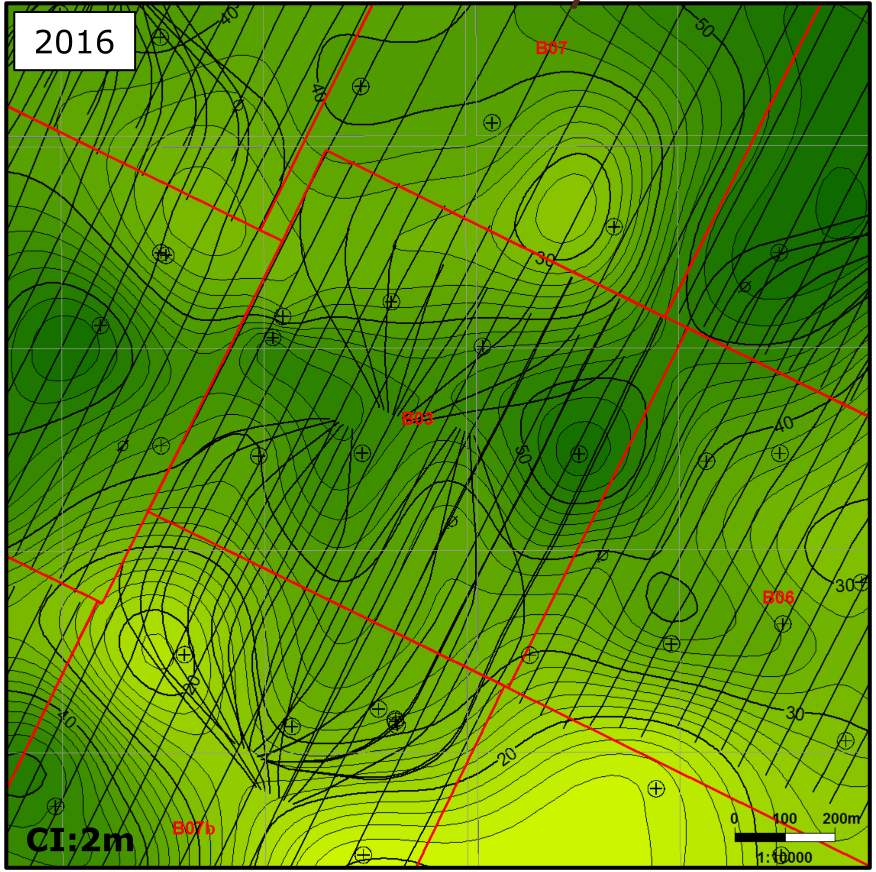
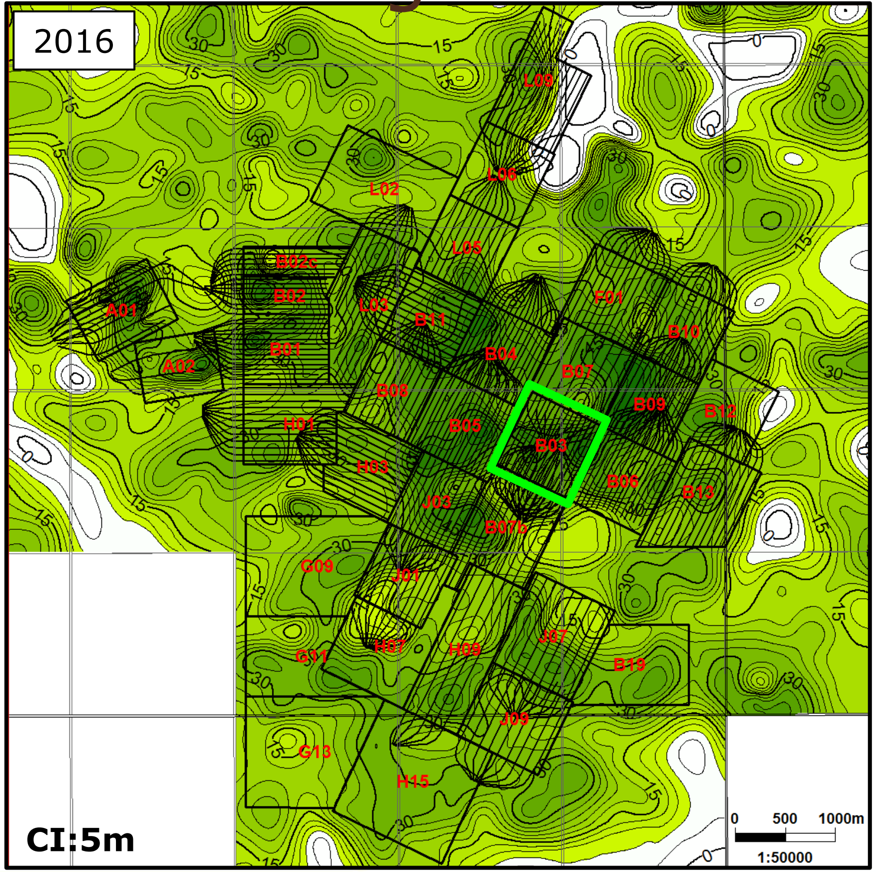
SAGD Pay



Regional



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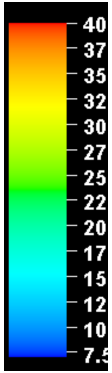
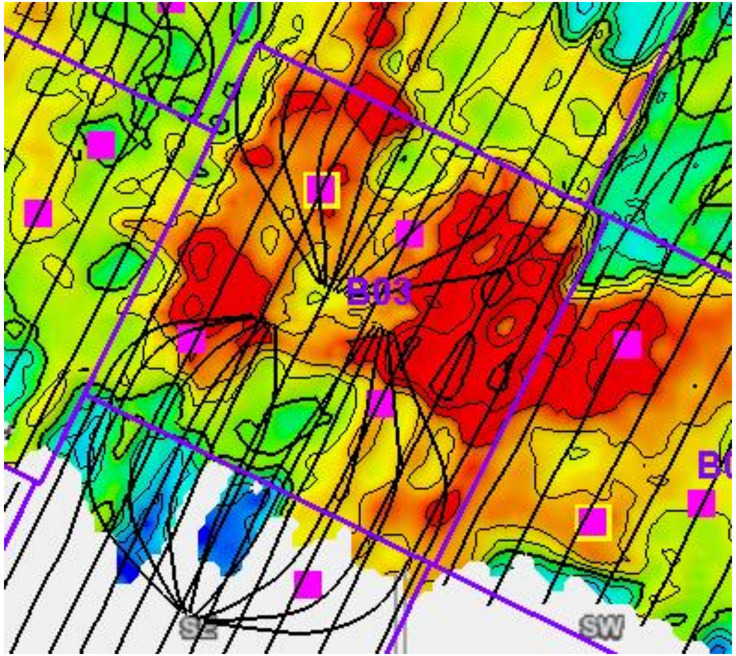
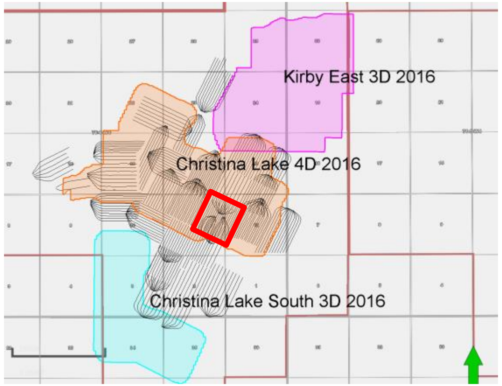
B03 seismic

steam-affected chamber thickness (m)







Thermocouple obs well

RST obs well

Interpreted steam-affected chamber thickness to producer wells (m)

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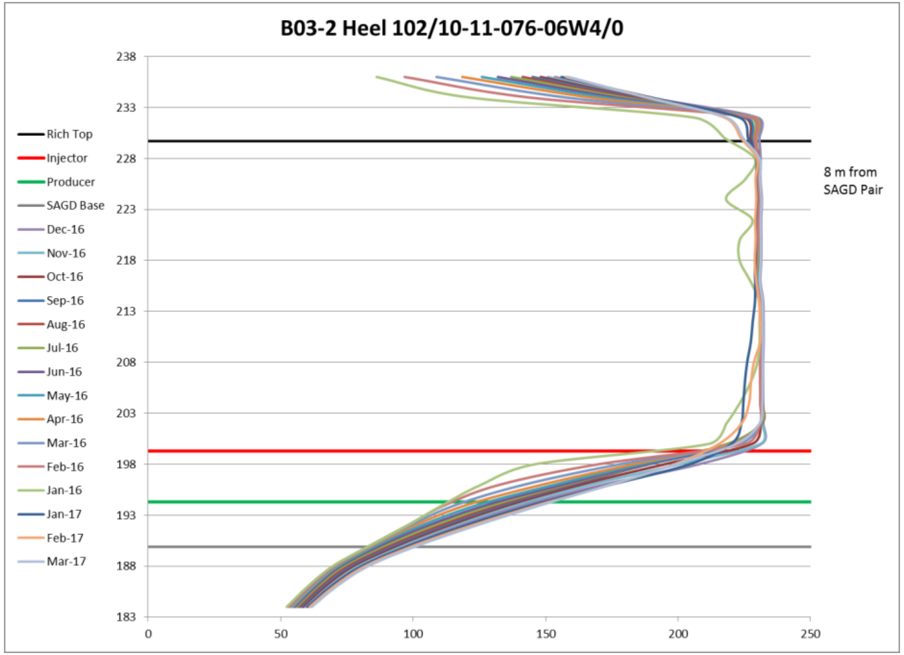
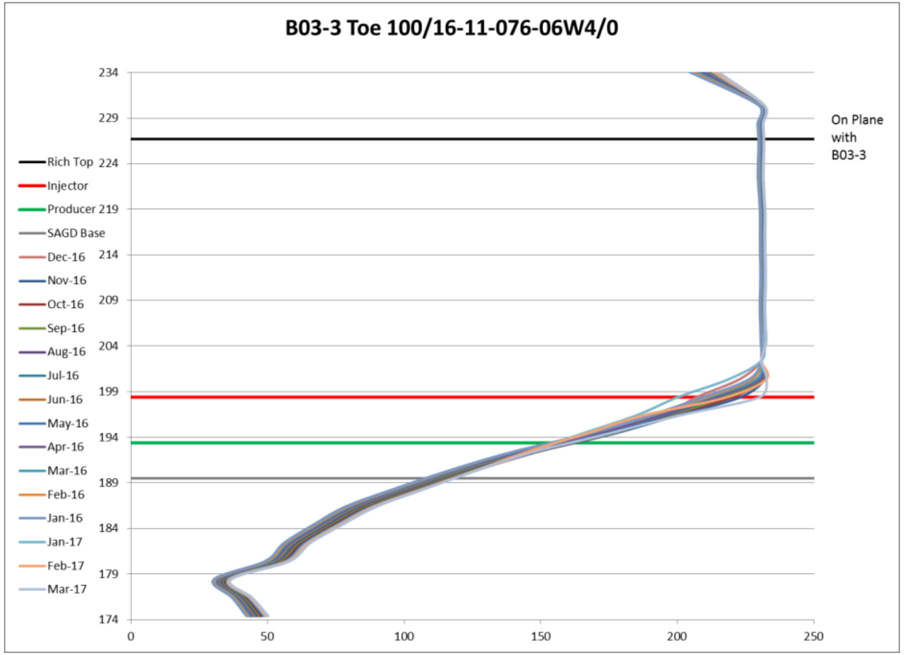
B03 pad temperatures





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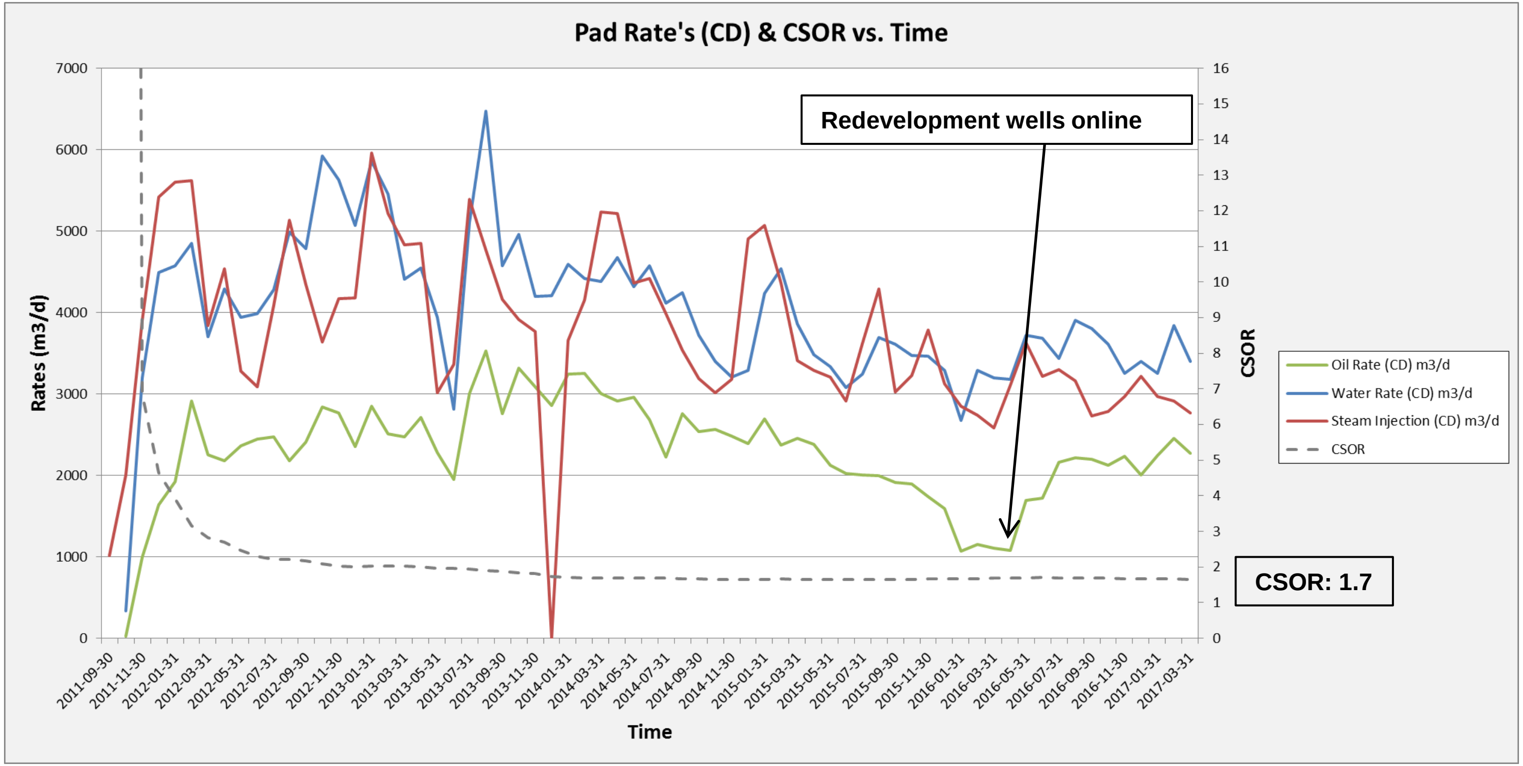
B03 pad performance



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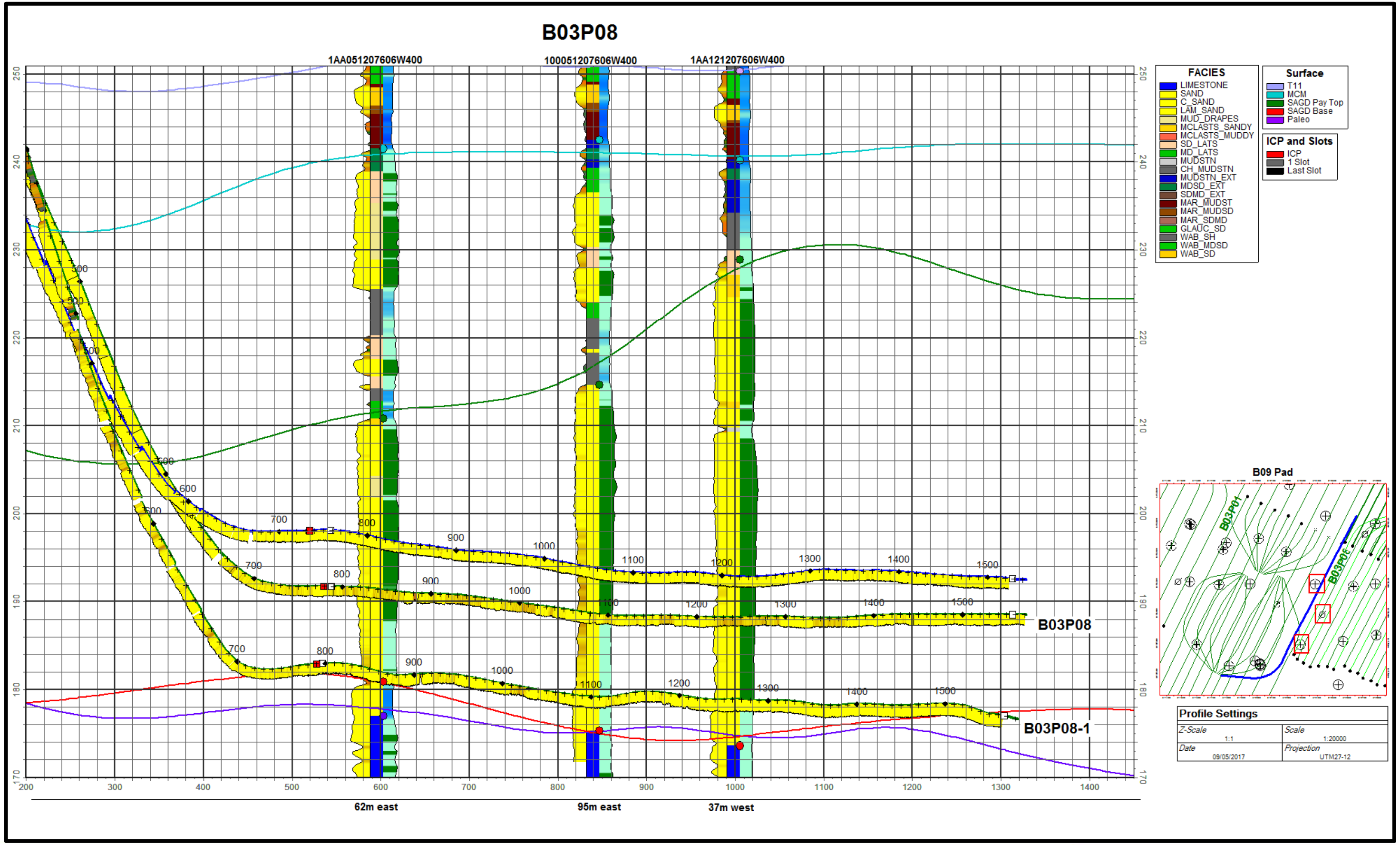
B03P08 geological profile



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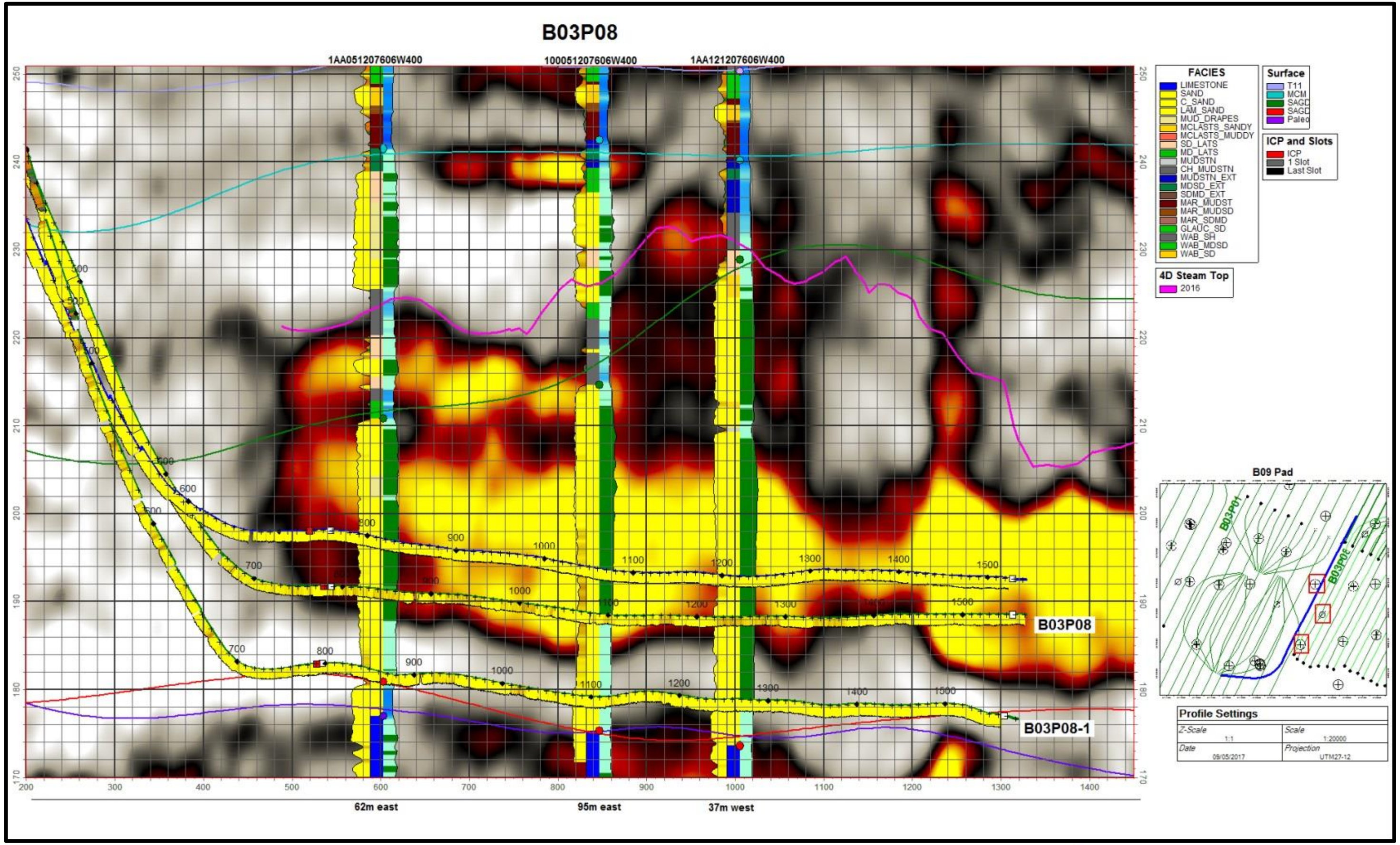
B03P08 seismic profile



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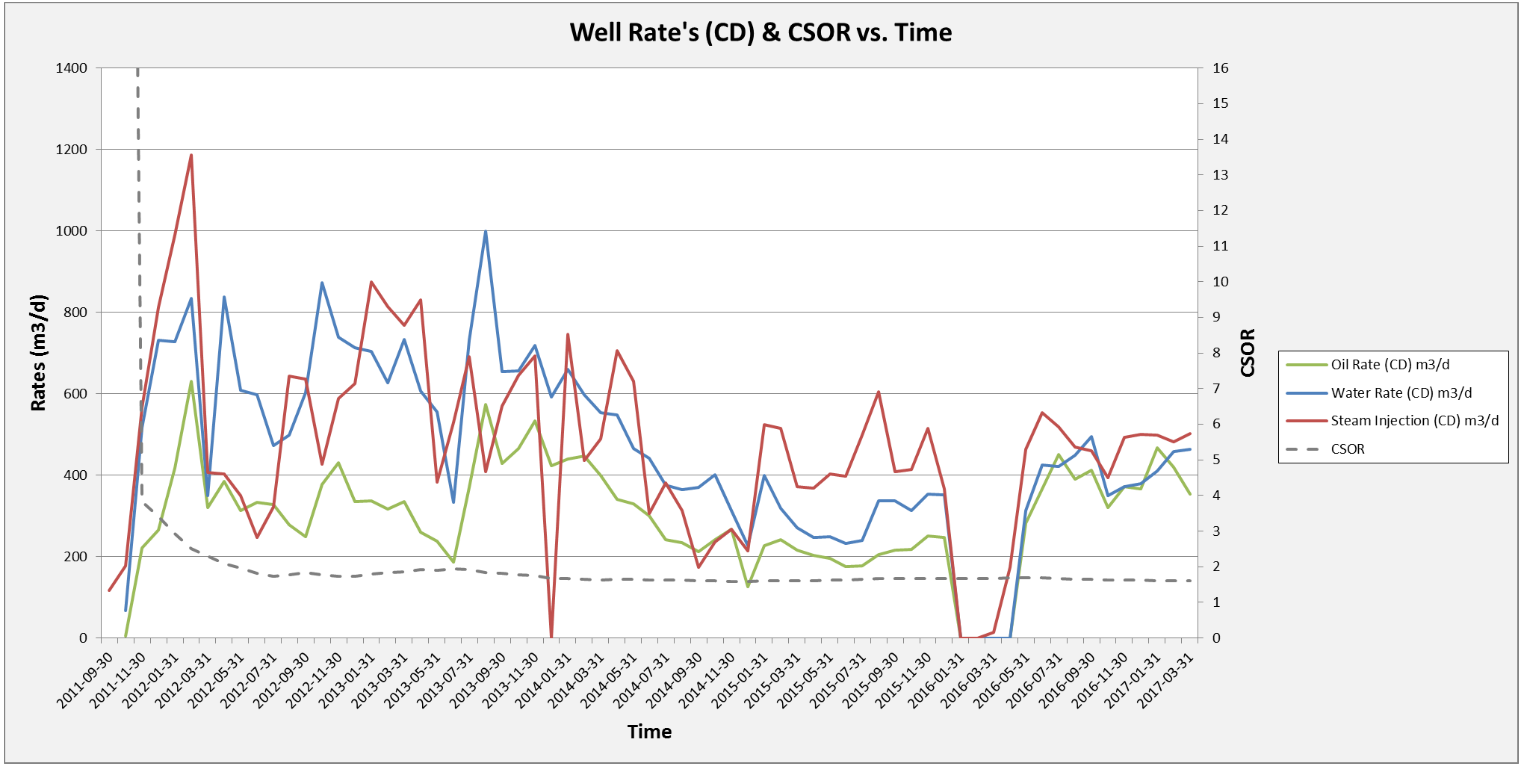
B03-08 well pair performance



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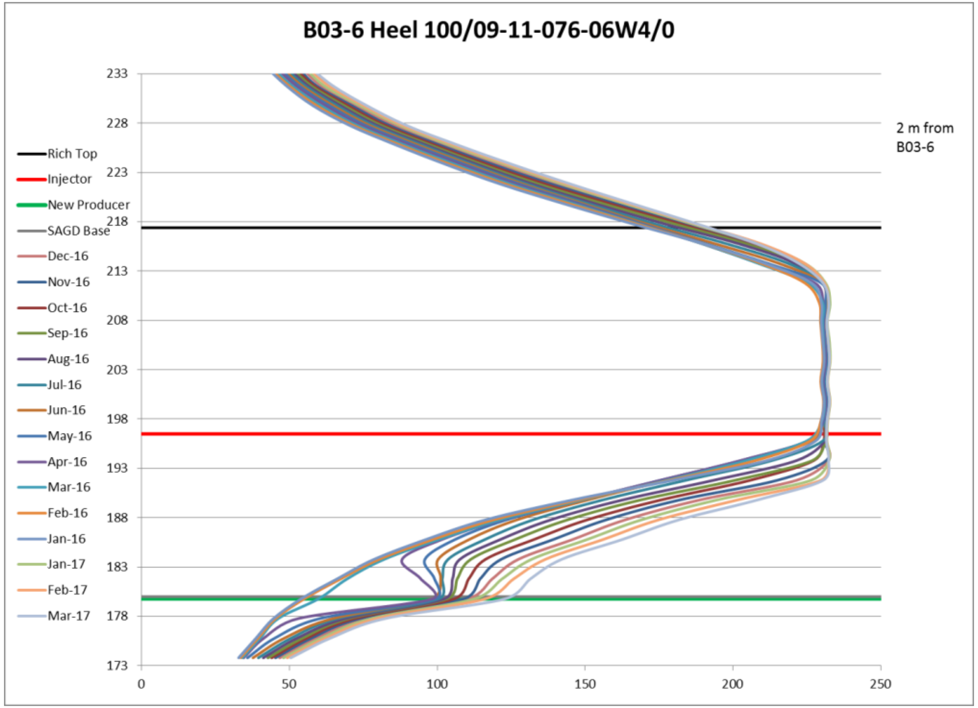
B03P06 temperatures



Subsection 3.1.1 – 7c) & 7d) Abandonment Plans and Steam Quality

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Five year outlook – pad abandonments

- There are no anticipated pad abandonments for any of the Christina Lake wells in the next five years.

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Wellhead steam quality

- Steam quality will be impacted by pipeline size and distance
- Current steam quality injected into all pads is calculated to be greater than 95%
- Currently steam header pressure is operated at 7-8 MPa_g with a corresponding steam temperature of 295°C
- Steam quality is not expected to impact well performance

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Subsection 3.1.1 – 7e) Injected fluids

Co-injection and Blowdown Trials

Full-blowdown on A01 pad

- **Full blowdown as of November 2014**
  - November 2014: steam ramp down began on the entire pad
  - February 2015: full steam shut-in to all wells on the pad. Pressure maintenance continued through natural gas injection.
    - current chamber average operating pressure ~ 2,000 kPa_g
    - no negative impact has been observed with the pad operations as a result of full methane injection.
    - average concentration for Jan 2016 - March 2017
      - average methane injection rate 40 e^3m^3/d
      - CSOR of 2.44

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B01/B02 pad rampdown/blowdown pilot

Temporary wind-down test on B01 and B02 pads started June 2015

- timeframe: 2 years
- well pairs: B01-1 to B01-4 including WWs 01-03; B02-1 to B02-4 included
- steam will be brought back on after test is complete

B01-1 to B01-4: Blowdown test

- shut-in steam on all four wells
- using gas cap (top down blowdown) to maintain pressure
- CSOR has been maintained at 1.62

B02-1 to B02-4: Steam ramp-down test

- cut steam by 25% every 3 months (75%, 50%, 25%, 0%)
- final steam cut delayed due to regional bottom water pressures increasing and risk of influx
- CSOR has been maintained at 1.81

Key learnings thus far:

- gas management during blowdown

- neighboring SAGD pads appear unaffected by blowdown at this time

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Field wide co-injection and blowdown

Approval received February 2017

B01/B02 pilot

- Both pads meet and exceed scheme approval criteria for coinjection and blowdown
- Cenovus planning to continue with blowdown on B01 and B02 pad past June 2017 for operational learning
- Steam will be brought back as per original pilot commitment

Additional pads started co-injection in Feb 2017

- B02C, B03 and B04 pads

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Subsection 3.1.1 – 7e) Injected fluids

A02-2 SAP Project

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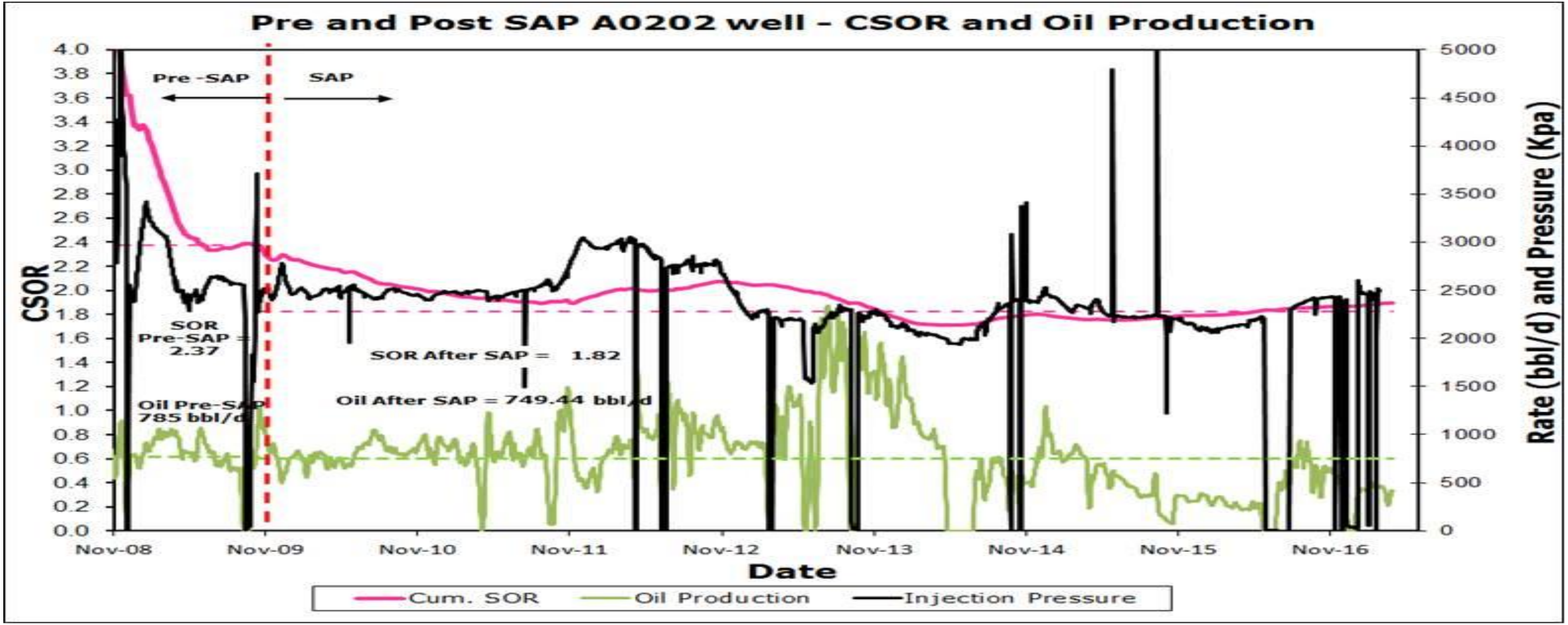
A02P02



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A0202 SAP (solvent aided process)

- **Started butane co-injection in November 2009**
- **Cumulative SOR of 1.90**
- **Cumulative solvent recovery factor of 72.9%**
- **SAP has shown benefit of reducing SOR**
- **Stopped butane co-injection and operated A0202 on steam in Q4 2016**
- **Commenced NCG co-injection on A0202 in Q1 2017**
- **A0201 Early SAP injection well pair started injecting butane in Q4 2016**

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Subsection 3.1.1 – 7f)
2016 key learnings

Wabiskaw Zone at Christina Lake

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Background

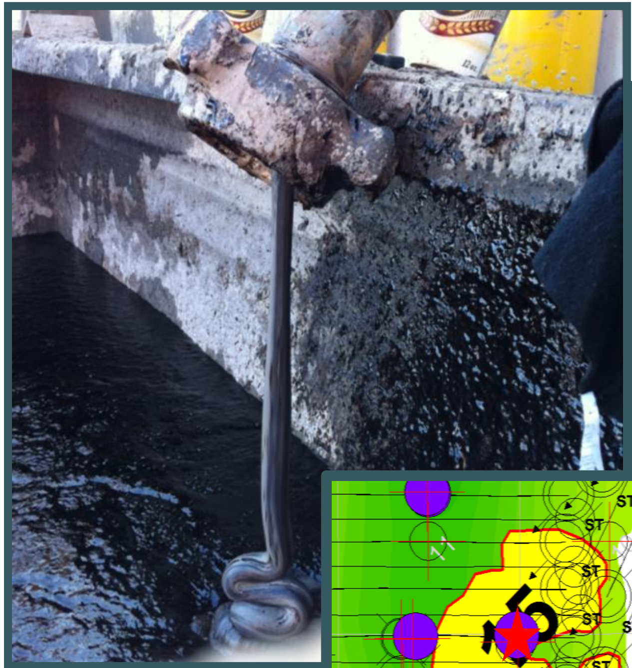
Unexpected Discovery:
steam-core drill in April 2013

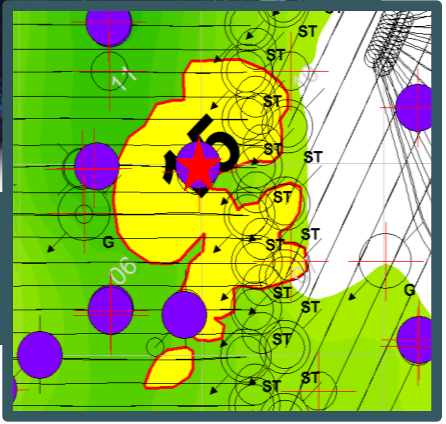
6,500kPa Overpressure:
conductive thermal expansion in WBSK
(above 5,400kPa MOP)

4D Seismic Identification

WBSK Producer:
107/06-15, 9,600m^3 oil, depressurization

Monitoring:
enhanced observation capabilities in the area





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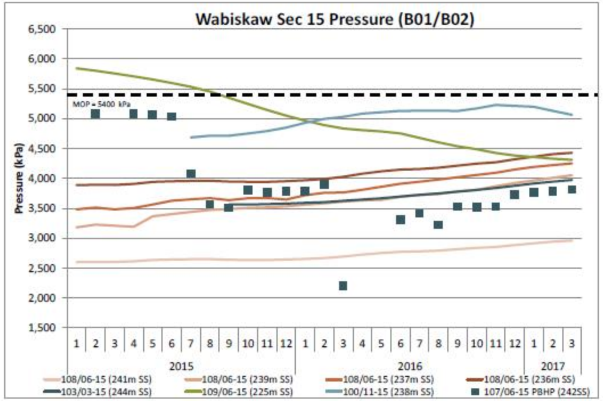
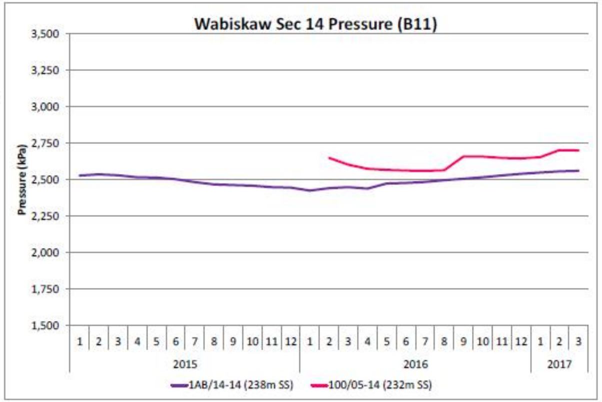
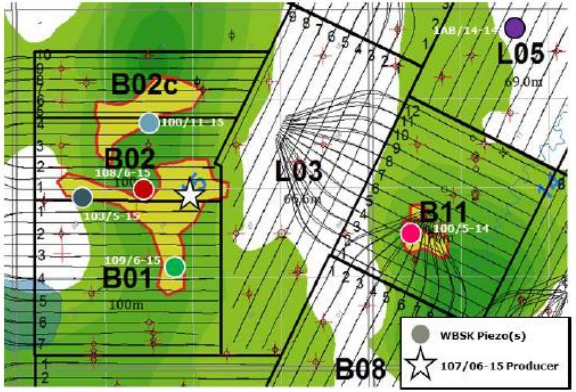
Last 30d Avg Production: 17 bbl/d
Cumulative Prod to Date: 60,352 bbls

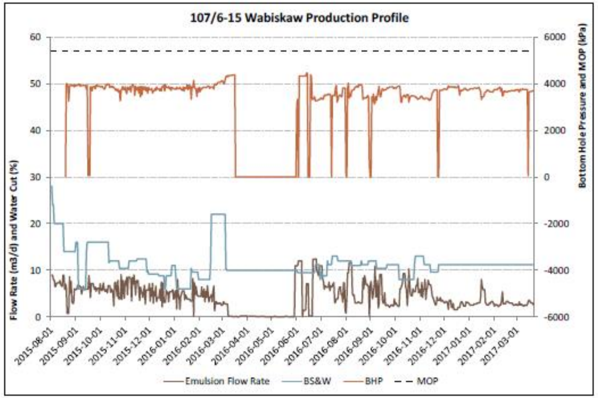
Wabiskaw Depressurization Dashboard

2017-03-24









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Conclusion

- None of the Wabiskaw is currently observed to be over MOP
- Monitoring is in place to detect any future over pressuring before it reaches MOP
- Potential overpressure in 4D seismic in Zone 2 proved to be low pressure, hints at gas accumulation and McMurray/Wabiskaw communication in this area, which reduces overpressure risk
- Mitigation plans are in place if pressures climb towards MOP
- Undertaking efforts to optimize chemical injection
- Evaluating wellbore optimization including VIT

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ESP Troubleshooting

ESP Troubleshooting Improvements

- Developed and implemented an ESP troubleshooting process consistent with Foster Creek
- Troubleshooting tree is a staged approach that gradually gets more invasive → Has resulted in less induced failures

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New Pad/Phase Timing

New pad/phase timing

- The key learning from starting Phase F was that 100% new emulsion in a new plant significantly impairs start-up and ramp-up of the new phase and pads

- Resolved problem by mixing in CDE (mature) emulsion with new emulsion. However, unable to ramp up new pads as quickly

- This will be considered for future phase and pad start-ups in order to avoid start-up setbacks

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Subsection 3.1.1 – 7g) Information requests

Information requests

No Information requests for 2016

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Subsection 3.1.1 – 7h)
Pad production plots

Pad production plots

Requirements under subsection 3.1.1 7h) are located in Appendix 4

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Subsection 3.1.1 – 8)
Future plans

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Resource recovery strategy

Well/pad placement:

- 2017/2018 well pairs will be drilled as per the existing (or future) applications and approvals
- Well spacing/trajectories planned to be submitted for approval prior to construction/drilling

No changes in the overall resource recovery strategy (operating pressure, composition of injected fluid)

Any deviations will be applied for as future amendments

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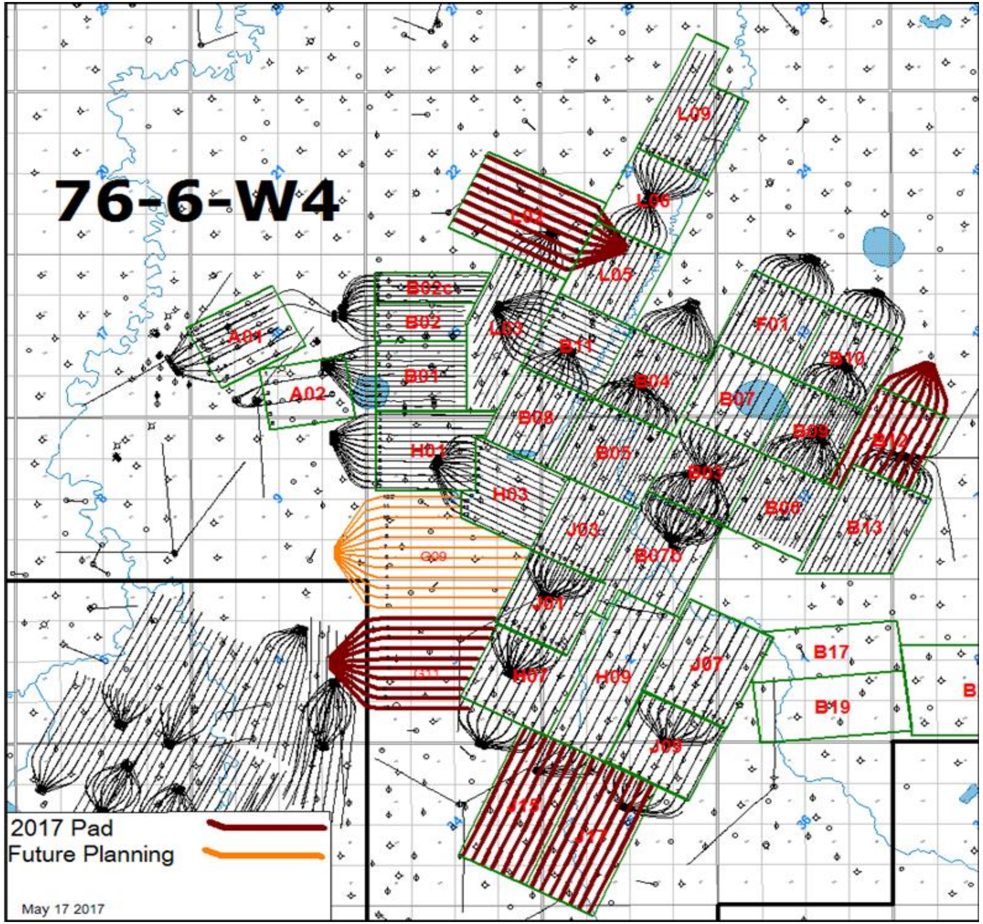
SAGD drilling plans 2017

Pad	Pad type	Well count	Timing
L02	Production	8 Well Pairs	Q2 2017
B12	Production	8 Well Pairs	Q3 2017
G11	Production	10 Well Pairs	Q4 2017
J15	Production	7 Well Pairs	Q4 2017
J17	Production	7 Well Pairs	Q4 2017
G09	Production	12 Well Pairs	TBD



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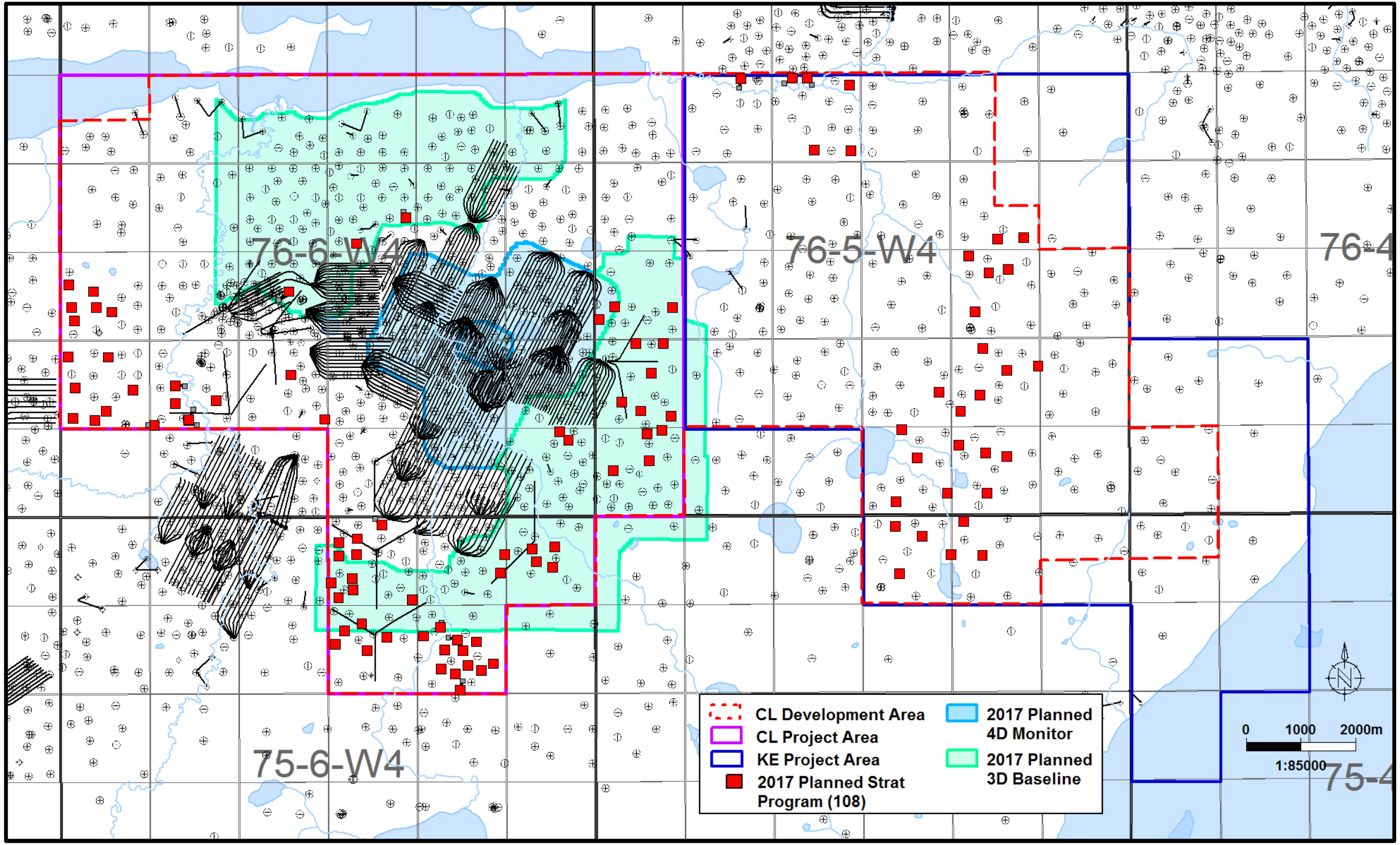
2017 planned strat and seismic program



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2017-2018 steam strategy plans

- **Cenovus allocates steam to maintain targeted steam chamber operating pressures from pad to pad**
- **Steam rampdown is used to optimize steam allocation across the field by freeing up steam to be used in starting up new pads**
- **Overall strategy is to optimize field SOR**

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