AER Directive 054 - Annual Performance Presentation

MacKay River Commercial Project

Approval No. 11715

Presented on June 20, 2017

Reporting Period: November 2013 – March 2017

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Outline

- Introductions

- 3.1.1 Subsurface Issues Related to Resource Evaluation and Recovery: (Kim Mohler)
    - Project Background
    - Geology and Geoscience
    - Drilling and Completions
    - Artificial Lift
    - Instrumentation in Wells
    - Scheme Performance
    - Future Plans

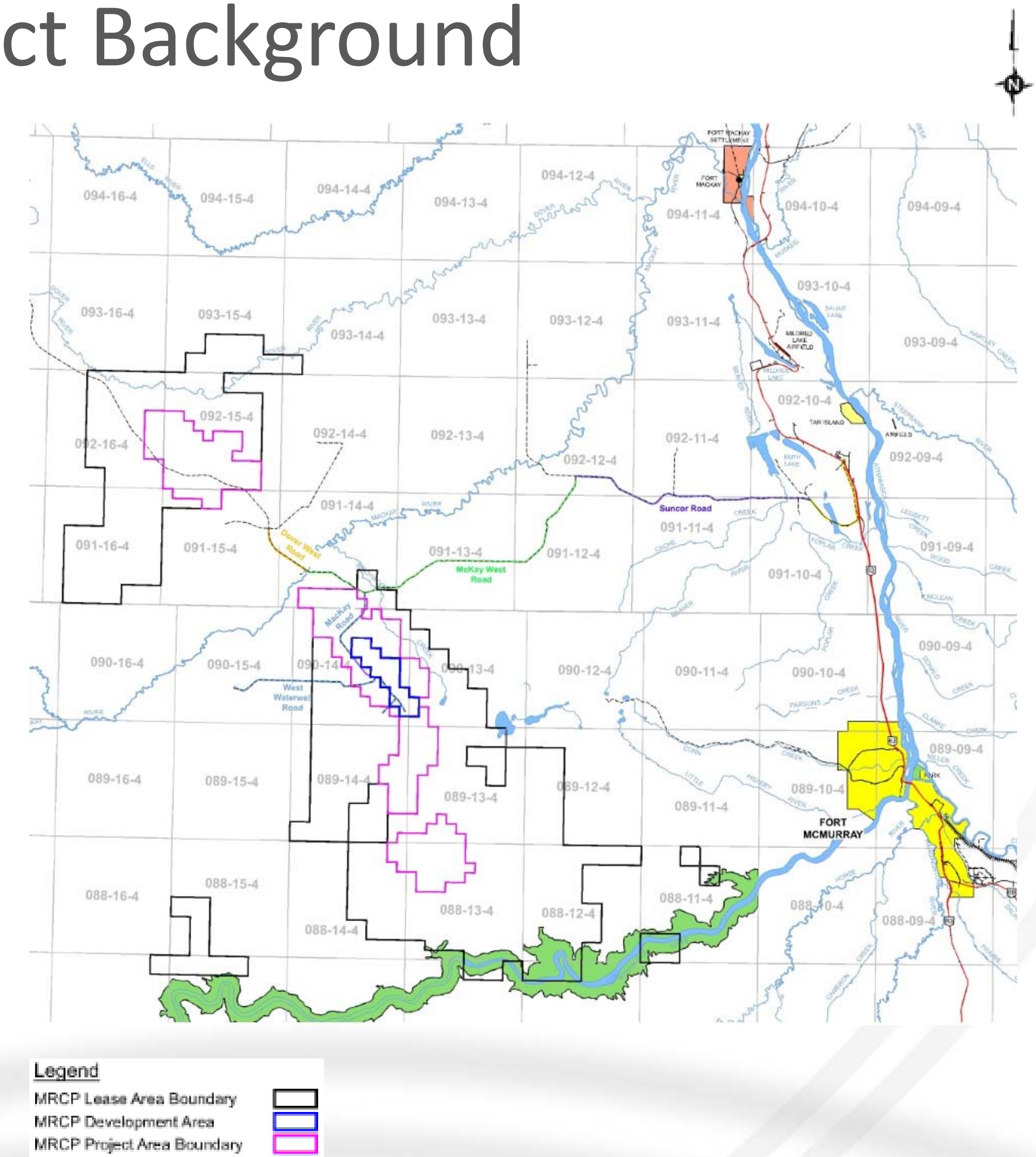
- 3.1.2 Surface Operations, Compliance, and Issues Not Related to Resource Evaluation and Recovery: (Dale Schneider; Devin Newman)
    - Facilities
    - Facility Performance
    - Discussion of Measurement and Reporting
    - Discussion of Water Production, Injection, and Uses
    - Sulphur Production
    - A Summary of Environmental Issues
    - Compliance Statement
    - Non-compliance Events
    - Future Plans

3.1.1 SUBSURFACE ISSUES RELATED TO RESOURCE EVALUATION AND RECOVERY

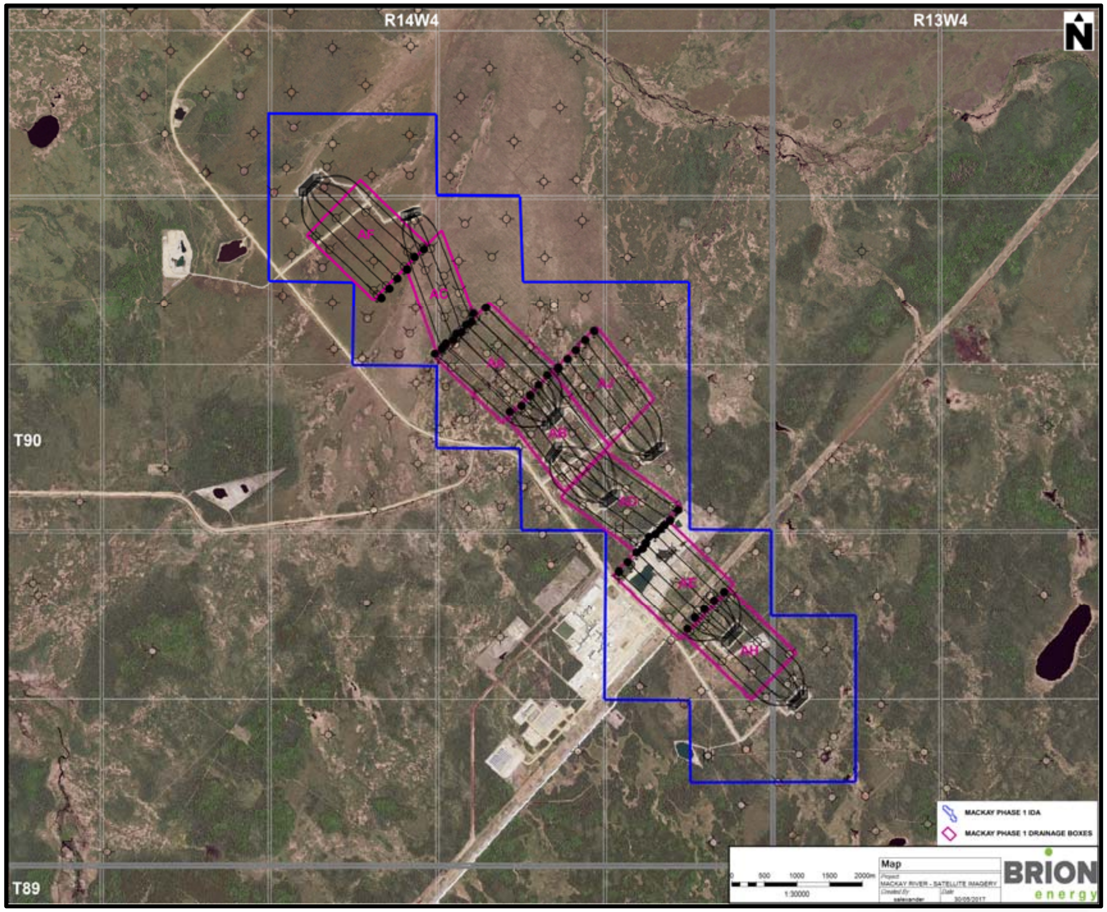
PROJECT BACKGROUND
PART (1)

Project Background

- Brion Energy Corporation ("Brion") owns and operates the MacKay River Commercial Project ("MRCP")
- The MRCP is a bitumen recovery project located within the Regional Municipality of Wood Buffalo ("RMWB") in northeast Alberta; approximately 30 km northwest of Fort McMurray
- The MRCP utilizes steam-assisted gravity drainage (SAGD) technology
- MRCP is planned for phased development to peak capacity of 150,000bbl/d bitumen



MRCP Phase 1 Overview



- Phase 1 has a bitumen capacity of 35,000 bpd
- Construction is complete and steaming began in December, 2016.
- The Phase 1 development area (DA) includes:
  - 8 SAGD surface well pads and associated subsurface drainage patterns
  - 42 SAGD Horizontal well pairs
  - 850m long horizontals
  - 125m well spacing
  - The Central Processing Facility ("CPF")
  - Water source wells and associated pipelines
  - Observation wells
  - Borrow areas
  - Access roads
  - Camps

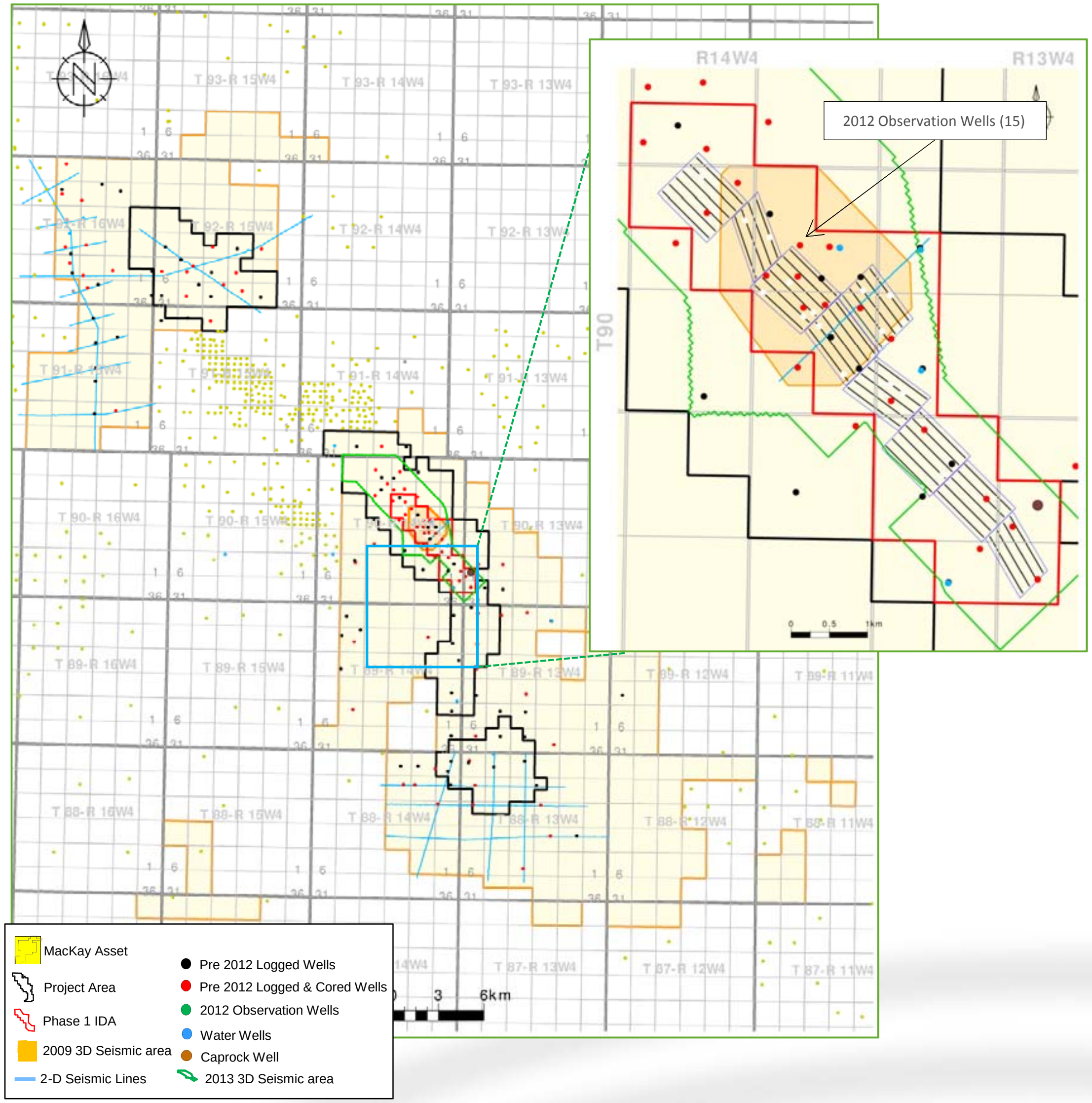
Summary of Activities

- Activities since last Progress Report in Nov. 2013:
  - Finished drilling and completion of all 42 wellpairs for Phase 1 in 2014
  - Pad AI Deferred – 4 wellpairs not drilled and pad facility not installed
  - Observation well network installed 45 wells
  - Phase 1 facility and infrastructure construction completed in 2016
  - Commissioning and start-up of Phase 1 in 2016 and early 2017
  - First steam to well pairs started in December 2016
  - 40 well pairs are in circulation by end of reporting period March 2017
  - 2 well pairs delayed for start-up for FUSE™ (Fast and Uniform SAGD Start-up Enhancement) Dilation test

3.1.1 SUBSURFACE ISSUES RELATED TO RESOURCE EVALUATION AND RECOVERY

GEOLOGY/GEOSCIENCE
PART (2)

Scheme Approval Area Overview: Pre-2013



- Pre-2013 Delineation:
  - Total wells in Project Area (PA)
    - 106 wells
    - 47 cored wells
    - 1 caprock core
  - Total wells in Initial Development Area (IDA)
    - 48 wells
    - 19 cored wells
    - 1 caprock core
  - Specialty Logs in PA
    - 17 resistivity image logs
    - 12 dipole sonic logs
    - 5 formation pressure test logs
  - Seismic:
    - 47.6 km of 2D seismic within PA
    - 5.1 km2 3D seismic over Phase 1 IDA in 2009
    - 31.5km2 3D seismic in 2013

From Brion Nov 21, 2013 Annual Performance Presentation (Approval No. 11715B)

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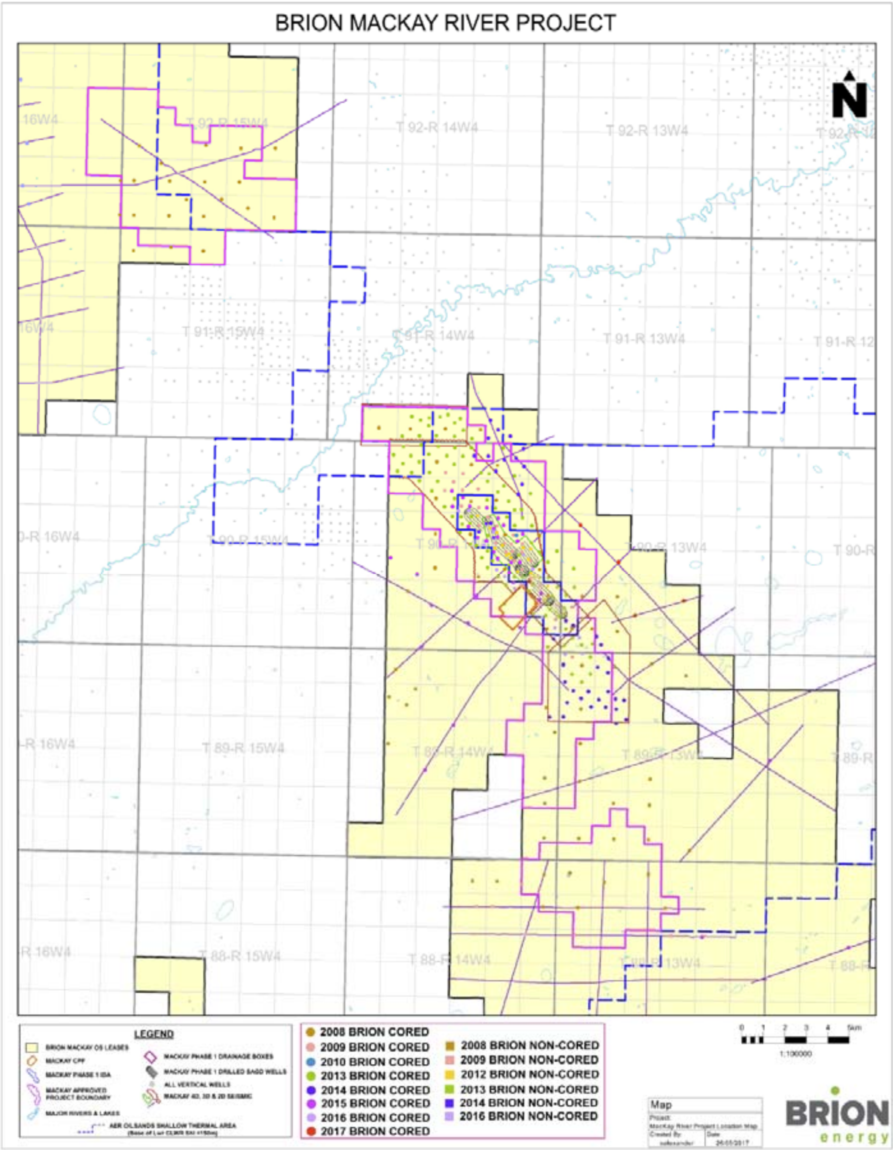
Scheme Approval Area Overview: Current



BRION MacKay River								
	MRCP Project Area				MRCP Phase 1 IDA			
	Total Wells	Cored Wells	Speciality Logged	Petrographically Analysed	Total Wells	Cored Wells	Speciality Logged	Petrographically Analysed
2013 & Prior	206	119	55	17	76	33	17	11
2014 -2017	68	64	58	18	33	29	28	15
TOTAL	274	183	113	35	109	62	45	26

- 274 total vertical wells in PA
- 109 total vertical wells in MRCP IDA
- 42 horizontal well pairs in MRCP IDA
- 68 vertical wells drilled in PA since Brion Nov 2013 Annual Performance Presentation
- 33 vertical wells drilled in MRCP IDA since Brion Nov 2013 Annual Performance Presentation

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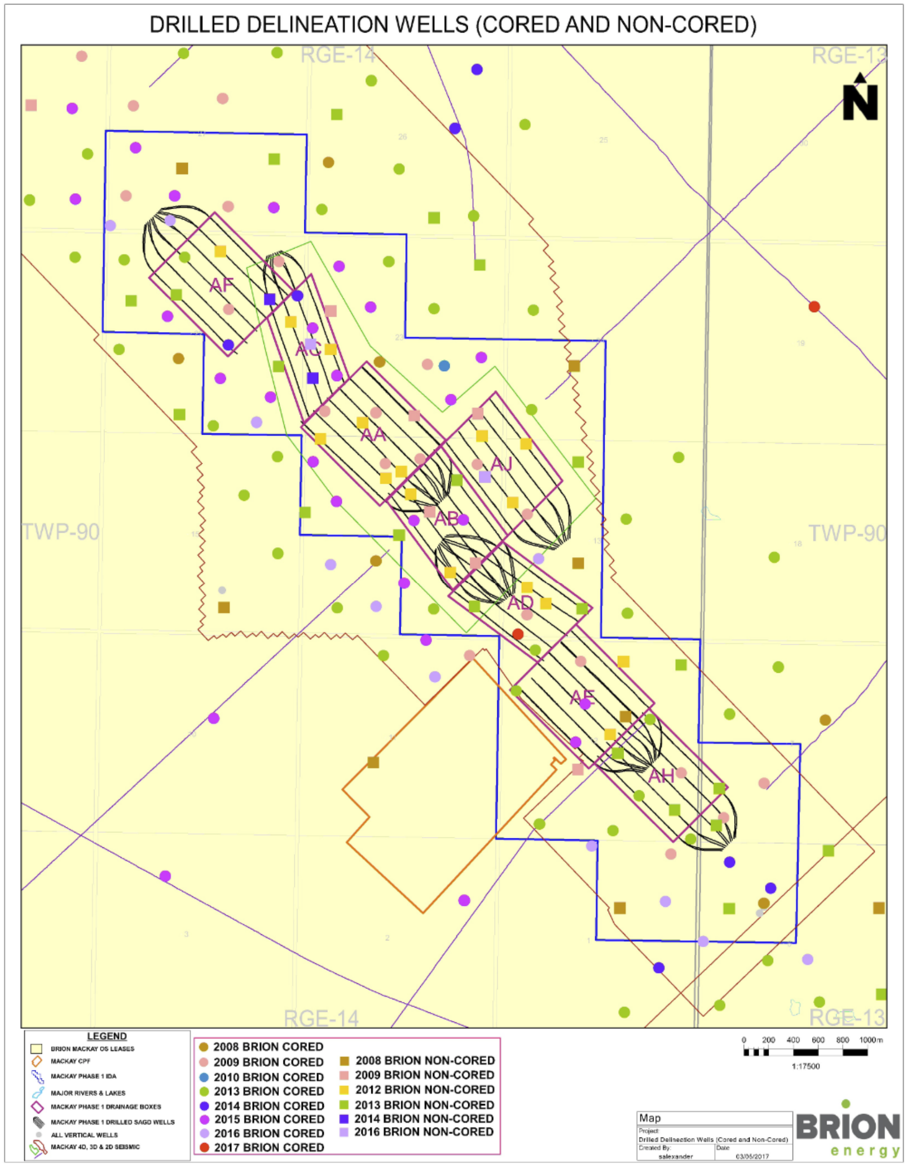
MRCP1 New Wells – Vertical & SAGD



BRION MacKay River				
	MRCP Phase 1 IDA			
	Total Wells	Cored Wells	Speciality Logged	Petrographically Analysed
2008	7	2	0	1
2009	23	17	11	5
2010	1	1	1	0
2011	0	0	0	0
2012	16	0	0	0
2013	29	13	5	5
2014	6	4	2	3
2015	19	19	18	12
2016	7	5	7	0
2017	1	1	1	0
TOTAL	109	62	45	26

- 109 vertical wells in MRCP IDA
- 42 horizontal well pairs in MRCP IDA
- 33 vertical wells drilled in MRCP IDA since Brion Nov 2013 Annual Performance Presentation

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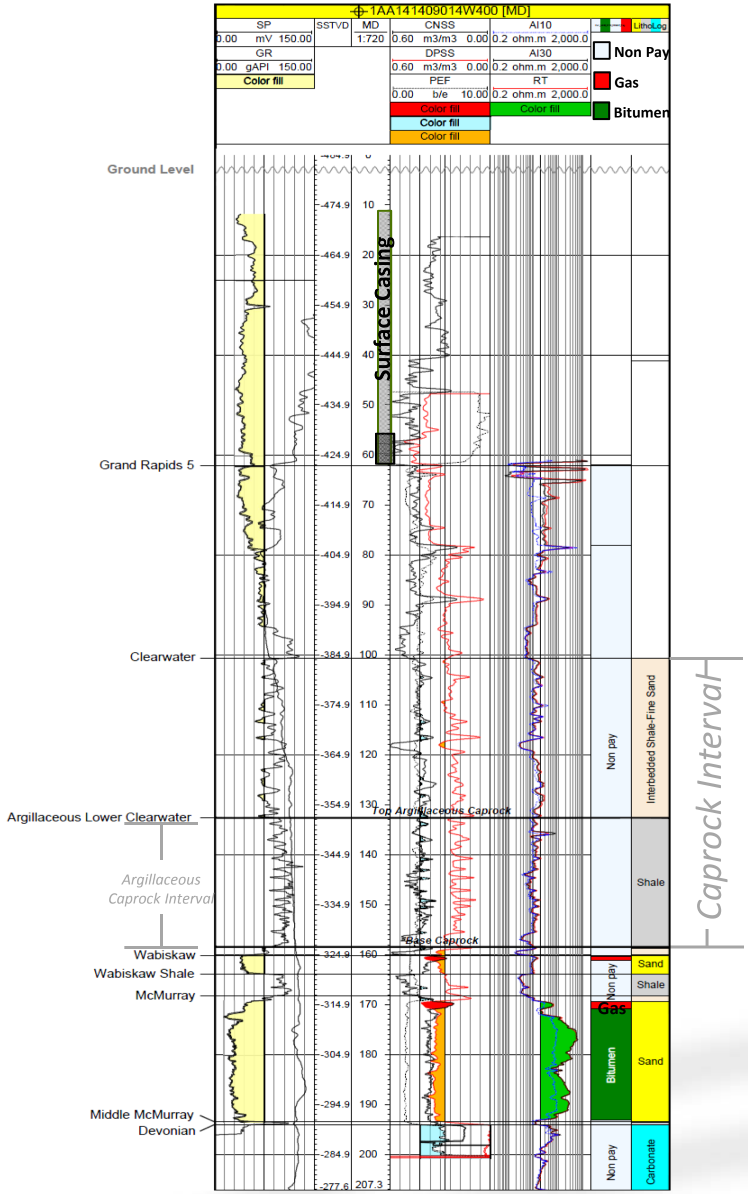
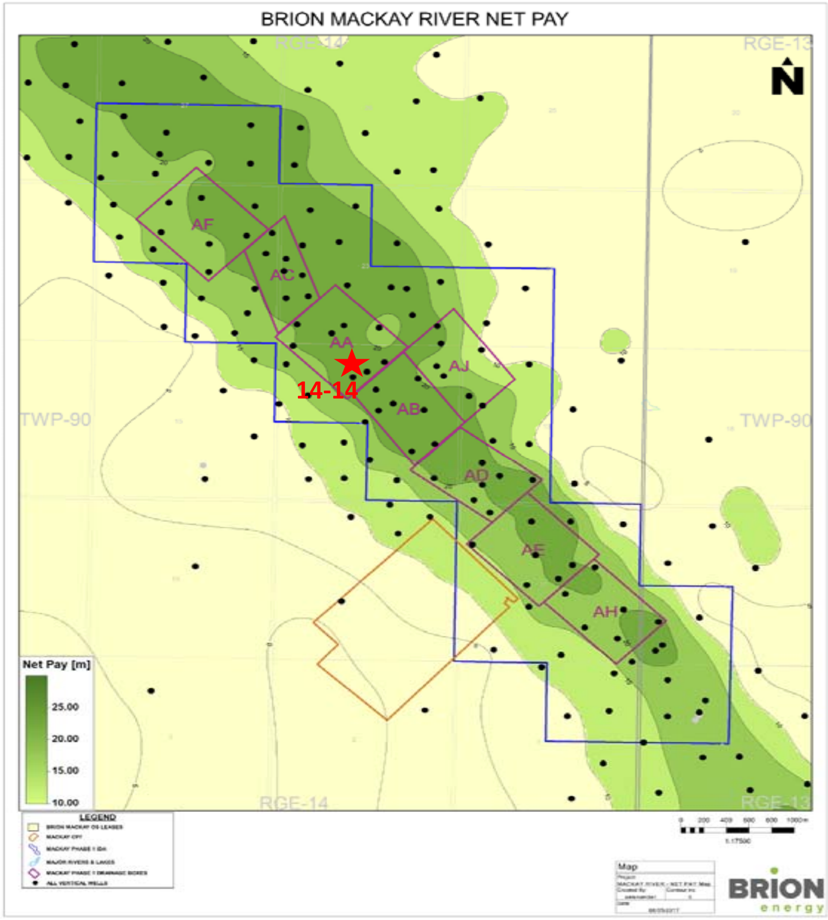
MacKay River Stratigraphy





- Caprock is Argillaceous Lower Clearwater
- Wabiskaw sand above McMurray across IDA
- Target reservoir is Upper McMurray

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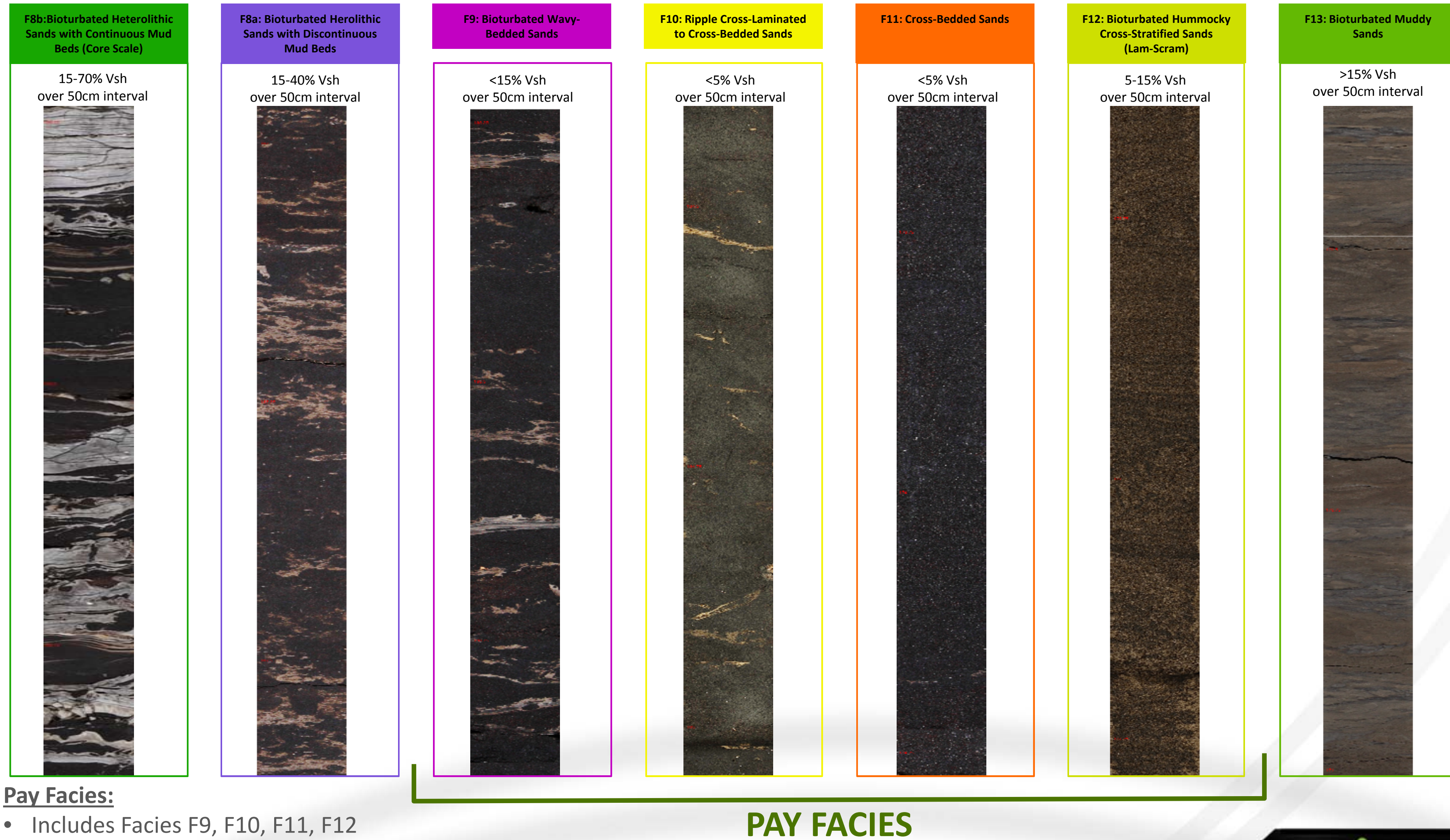
Brion Oil Sands Pay Facies

MRCP Upper McMurray Facies



Pay Facies:

- Includes Facies F9, F10, F11, F12
- Typically >30% Porosity
- Weight percent bitumen >8%
- Permeability ~0.9-2.7 Darcy's

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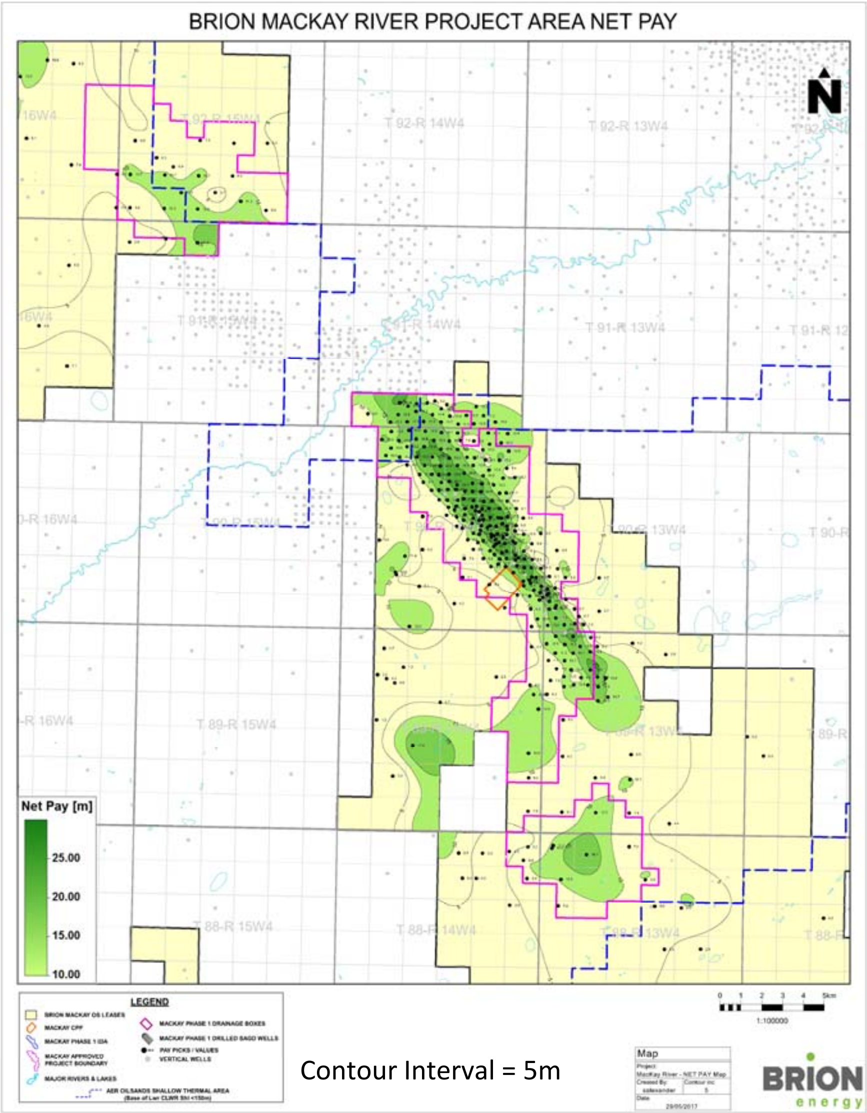
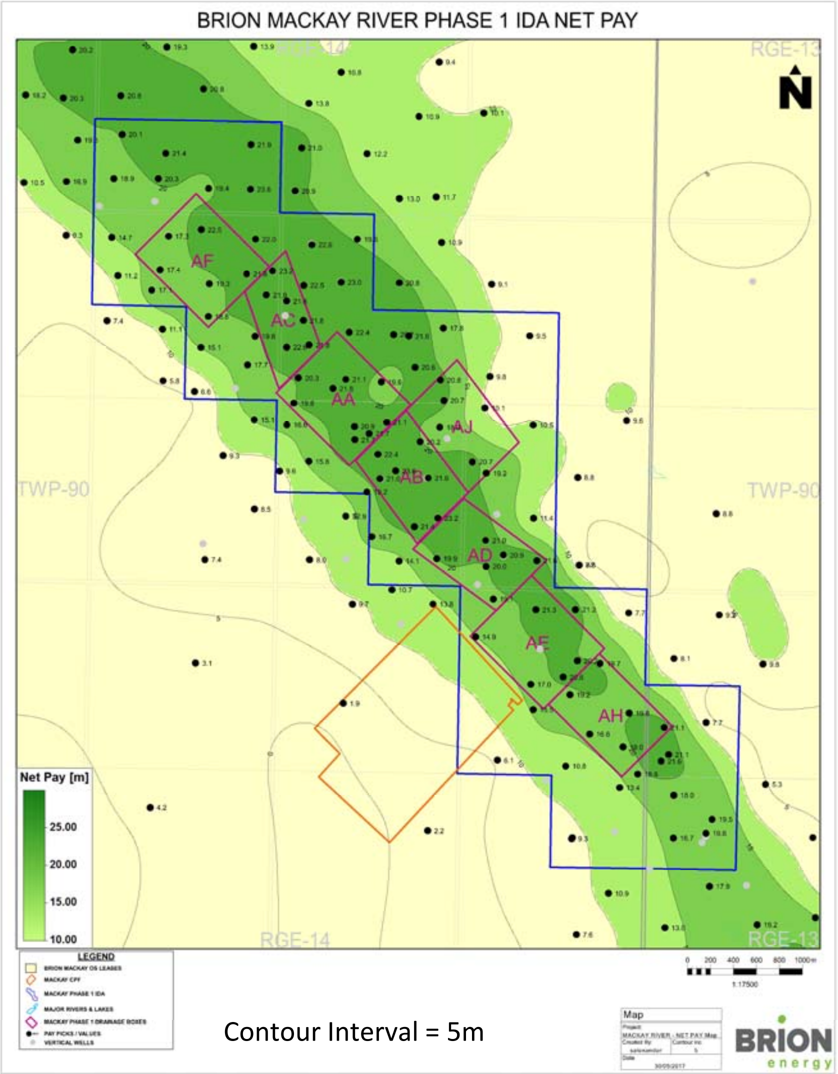
Bitumen Net Pay Map – Project Area



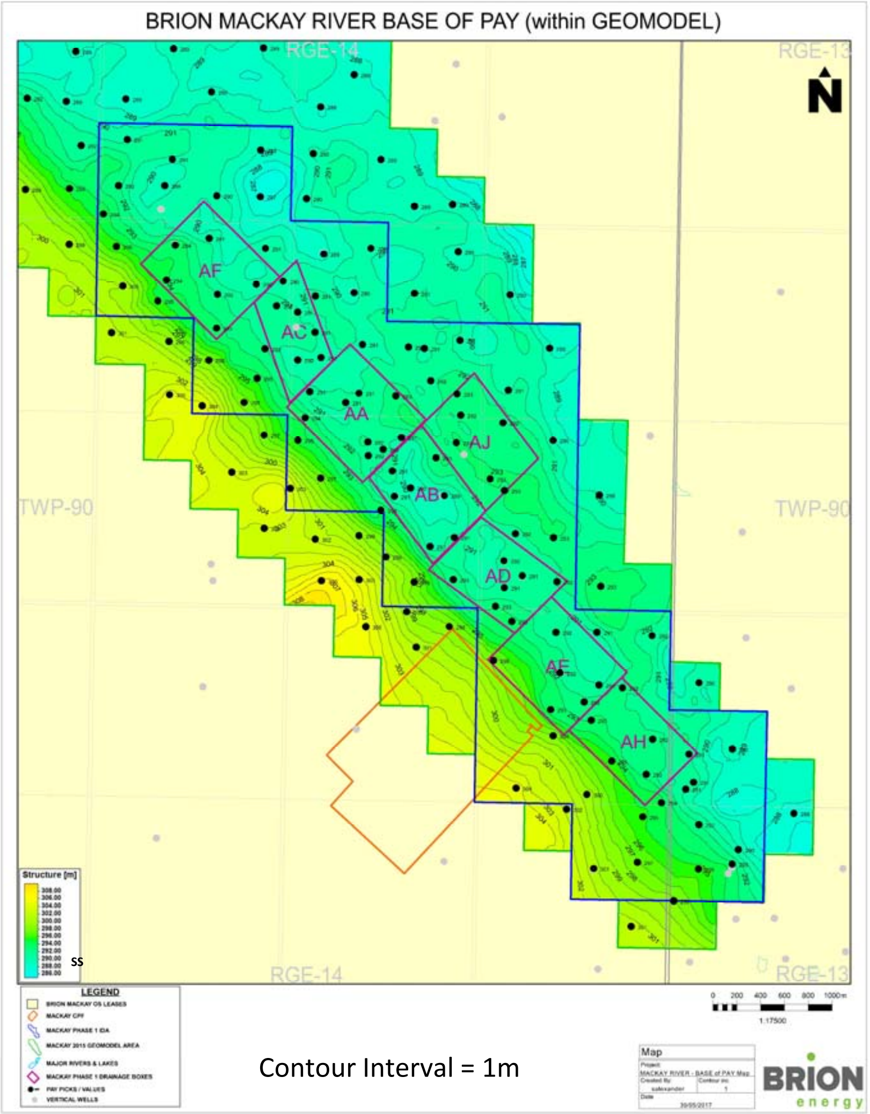
- Pay color fill cut-off at ≥10m
- Thickness ranges from 10-25m in the IDA
- Upper McMurray reservoir shows strong NW-SE trend
- IDA lies 2km South of AER Oil Sands Shallow Thermal Area

Bitumen Net Pay Map – Development Area



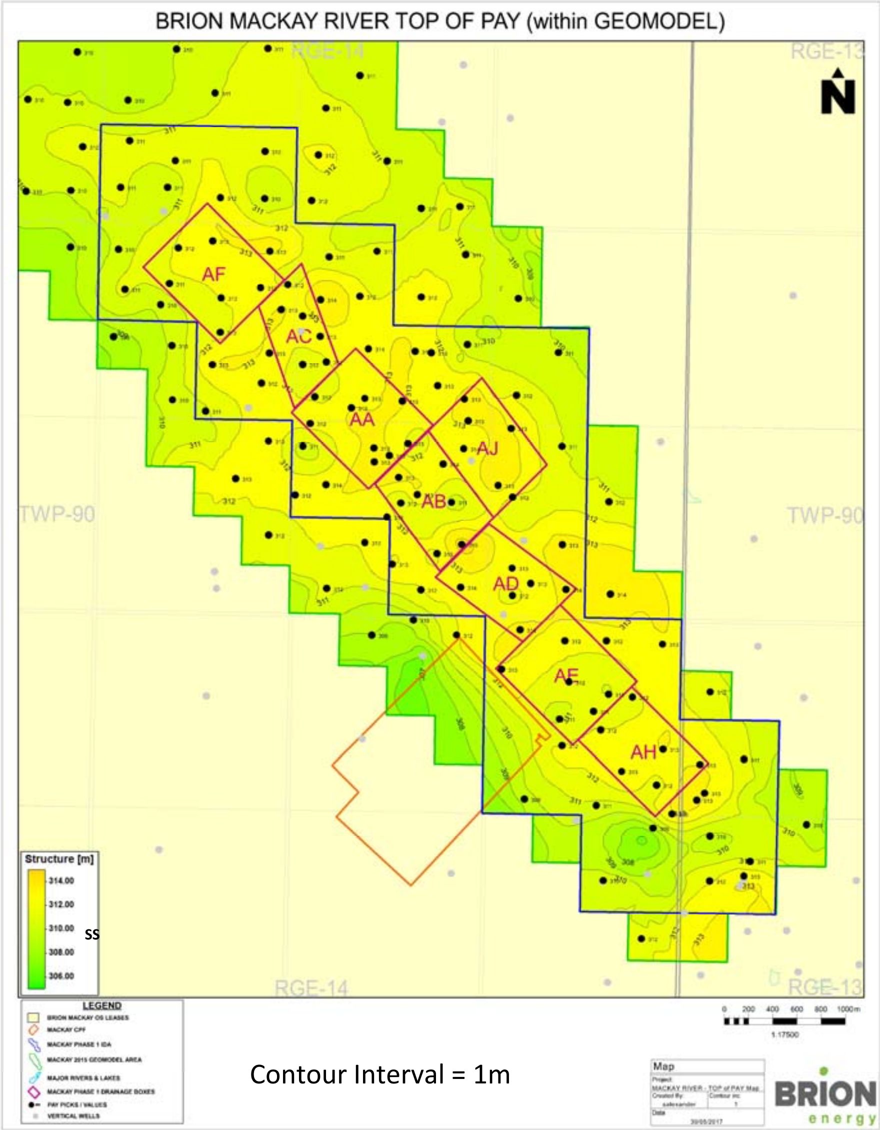
- Pay color fill cut-off at ≥10m
- Thickness ranges from 10-25m in the IDA
- Upper McMurray reservoir shows strong NW-SE trend
- Central processing facility located Southwest of development area
- Majority of 8 drainage boxes are in >20m bitumen pay

Base of Pay Structure Map



- Base of pay is reasonably flat across existing 8 drainage boxes
- Base of pay elevation rises on Southwest side of IDA

Top of Pay Structure Map



- Top of Pay is relatively consistent over the 8 drainage boxes in the IDA
- The Top of Pay fluctuates only ~6m between 308-314m SS across the entire IDA

Geologic and Reservoir Properties – OBIP

FOR OPERATING AREA

Drainage Box	# Well Pairs	Drainage Box Area (m^2)	Average S_o (frac)	Average Φ (frac)	Average K_h (D)	Average K_v (D)	Average Bitumen Pay Thickness (m)	Drainage Box OBIP (10^6 bbl)	Estimated RF (%)*	Estimated Drainage Box RBIP (10^6 bbl)*
AA	6	698,200	0.83	0.34	2.7	1.1	21.3	26.4	54	14.3
AB	5	562,600	0.8	0.34	2.7	1.1	22.6	21.8	57	12.4
AC	4	418,700	0.85	0.34	2.6	1	21.9	16.7	63	10.5
AD	5	560,100	0.77	0.33	2.6	1	20.8	18.6	54	10.1
AE	6	674,700	0.76	0.33	2.2	0.9	20.8	22.1	53	11.7
AF	6	675,400	0.82	0.34	2.6	1	22	26.1	62	16.2
AH	5	594,300	0.77	0.34	2.6	1	20.4	20	48	9.6
AJ	5	562,300	0.75	0.34	2.5	0.9	20.5	18.5	57	10.5
Total	*42*	*4,746,300*	*0.79*	*0.34*	*2.6*	*1*	*21.3*	*170.2*	*56*	*11.9*

OBIP = Original Bitumen In-Place and measured in $10^6 m^3$ units and converted to 10^6 barrels using conversion factor of 6.2898

NRV = Net Rock Volume in $10^6 m^3$ derived from deterministic mapping of SAGDable net pay, or from geomodel calculations

SO = Average bitumen saturation from the SAGD exploitable reservoir interval generated from 1-SWT (in fractions)

PORT = Average porosity from the SAGD exploitable reservoir interval generated from PORT (in fractions)

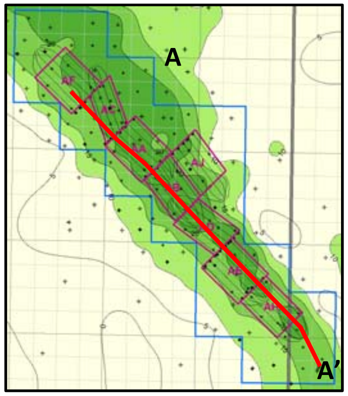
$$OBIP = (NRV \times PORT \times SO)$$

Geologic and Reservoir Properties – OBIP

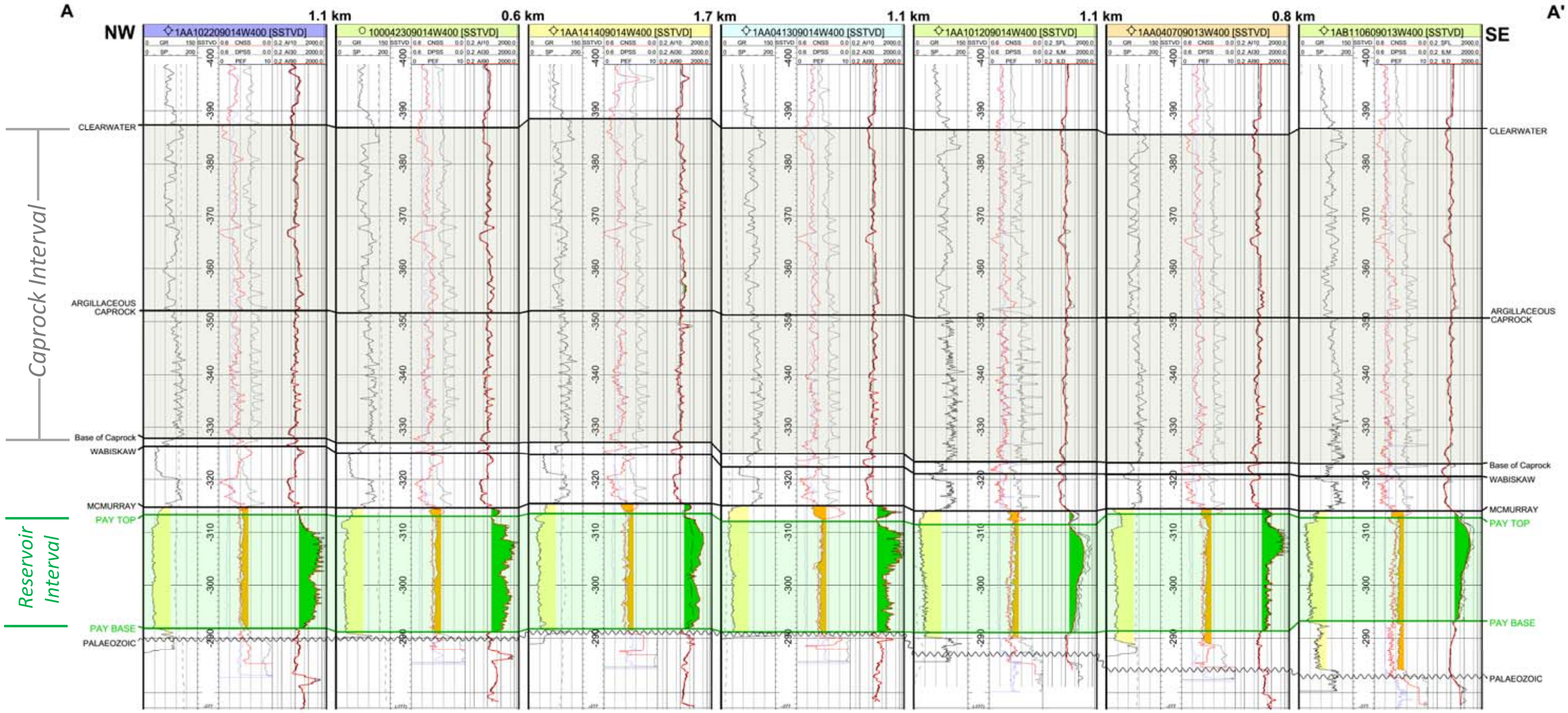
Parameters	Operating Area	Project Area
Top of Reservoir Depth (mTVD)	176	175
Top of Reservoir Depth (TVD masl)	315	311
Base of Reservoir Depth (mTVD)	197	193
Base of Reservoir Depth (TVD masl)	294	293
Net Pay Thickness (m)	21.3	12.8
Porosity (frac)	0.34	0.33
Bitumen Saturation (frac)	0.79	0.75
OBIP (10^6 bbl)	170.2	2890.8
OBIP (10^6 m^3)	27.1	459.6
Initial Pressure (kPaa)	220 (top) – 400 (bottom)	220 (top) – 400 (bottom)*
Original Reservoir Temperature (^oC)	6	6*

** Extrapolated from operating area*

Structural Cross-Section across MRCP



- Good reservoir quality with continuity along Initial Development Area
- Minor structural variation at base of pay
- Thick and laterally continuous caprock with consistent lithology



From Brion Nov 21, 2013 Annual Performance Presentation (Approval No. 11715B)

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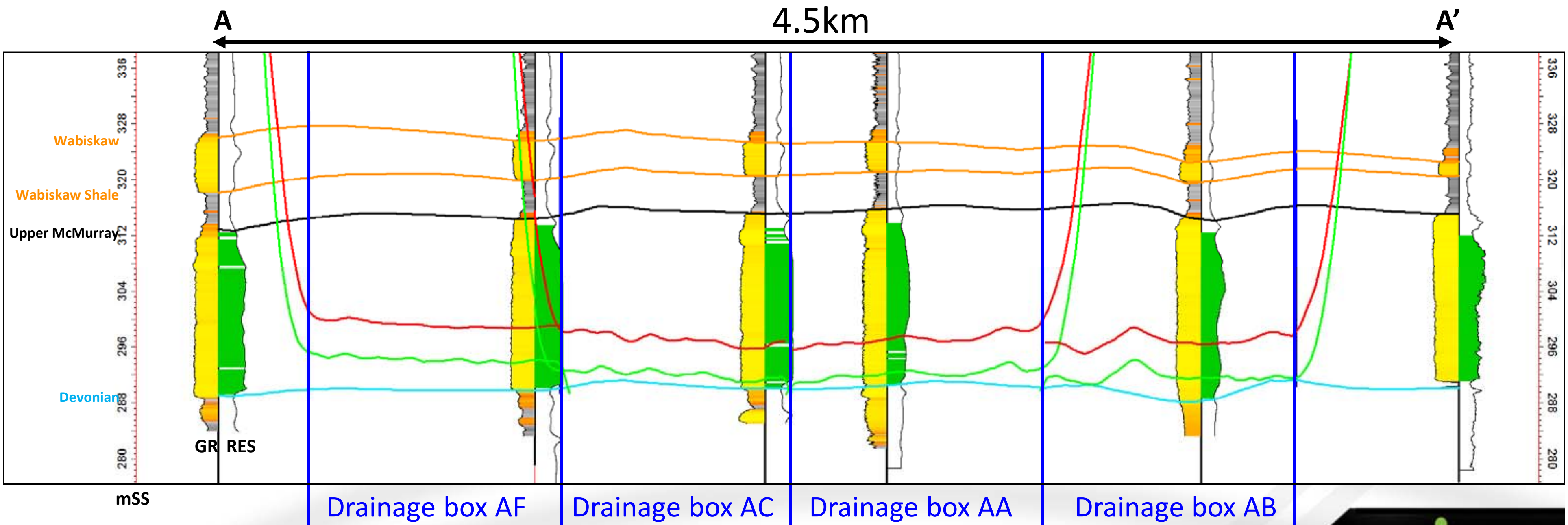
NW–SE Structural Cross-Section: Drainage boxes: AF, AC, AA, AB

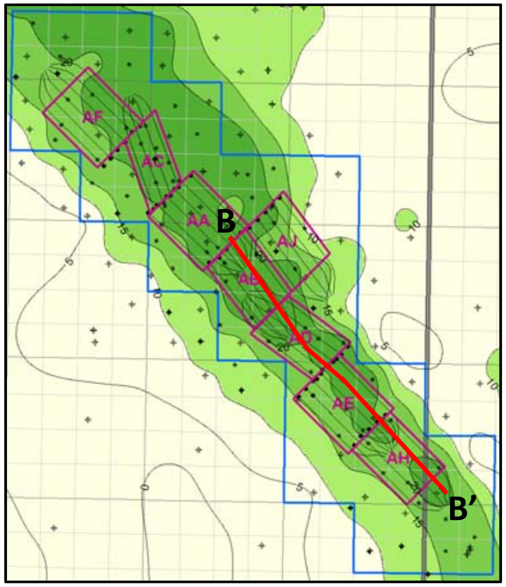
- Clean and consistent reservoir thickness over the 4 drainage boxes
- Bitumen thickness ranges from 15 to 20+m
- Producer wells placed 1m from base of pay
- Injector wells placed 5m above producer

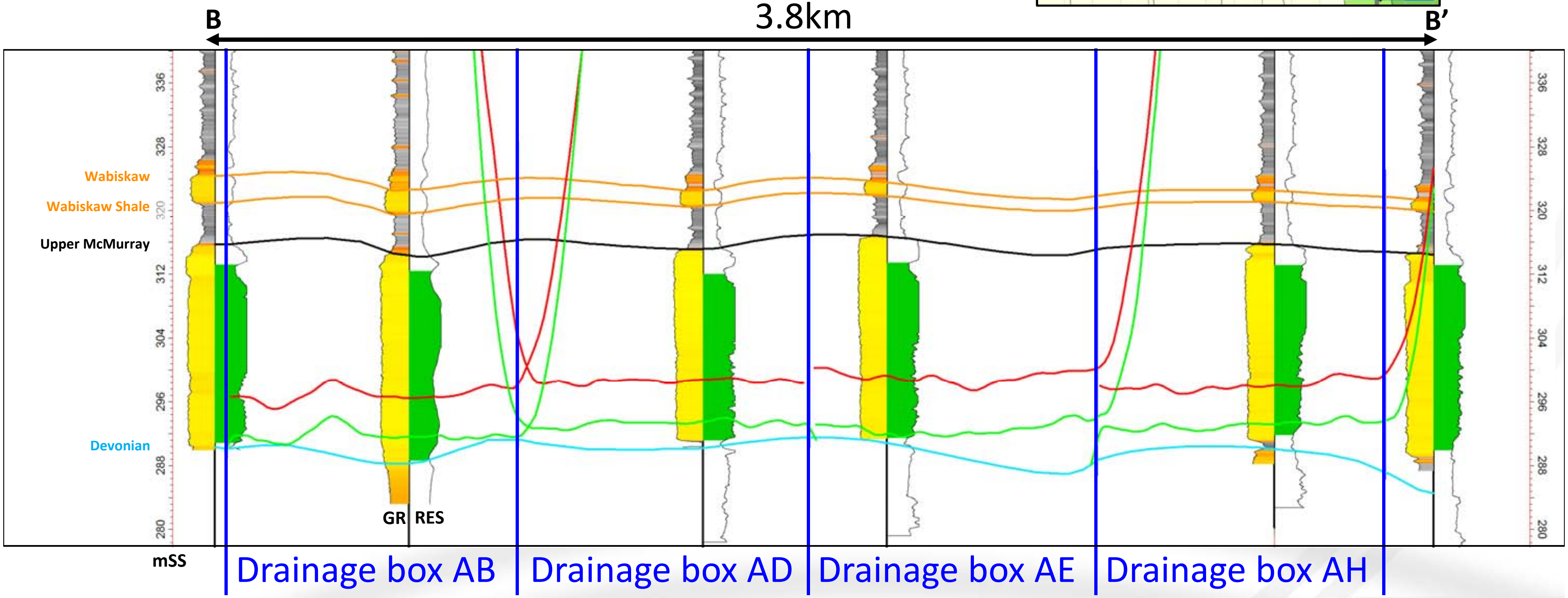


Injectors in Red
Producers in Green

NW–SE Structural Cross-Section: Drainage boxes: AB, AD, AE, AH

- Clean and consistent reservoir thickness over the 4 drainage boxes
- Bitumen thickness ranges from 15 to 20+m
- Producer wells placed 1m from base of pay
- Injector wells placed 5m above producer





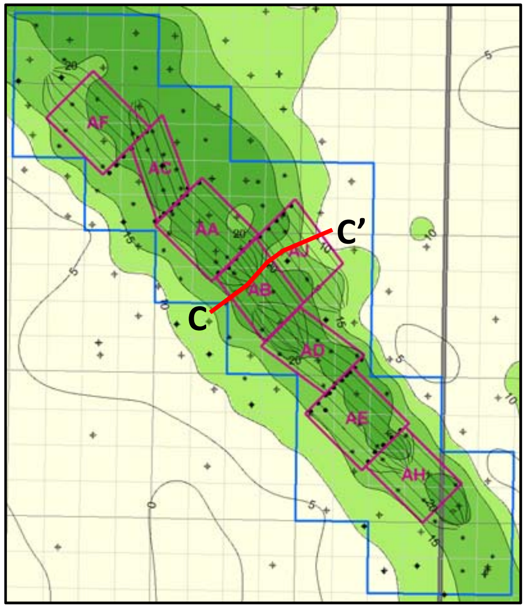
Injectors in Red

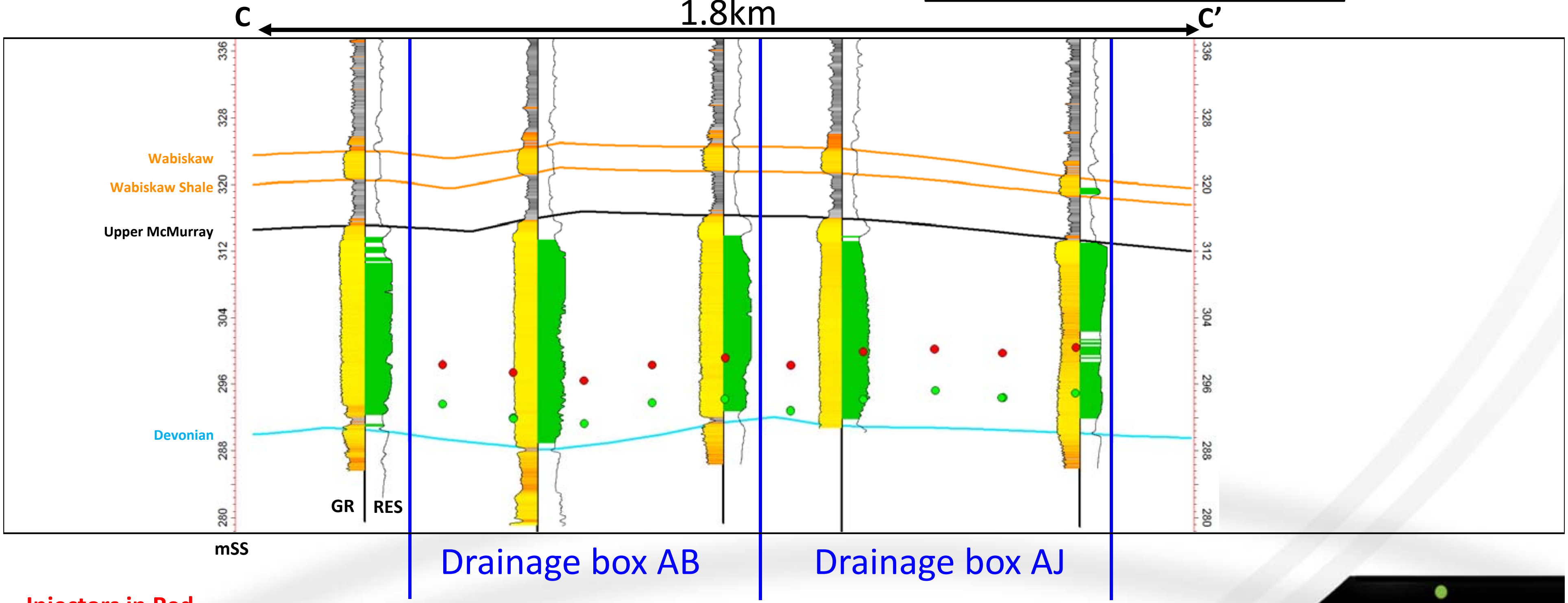
Producers in Green

BRION energy

W–E Structural Cross-Section: Drainage boxes: AB, AJ

- Bitumen thickness ranges from 10 to 20+m
- Producer wells placed 1m from base of pay
- Injector wells placed 5m above producer





Injectors in Red

Producers in Green

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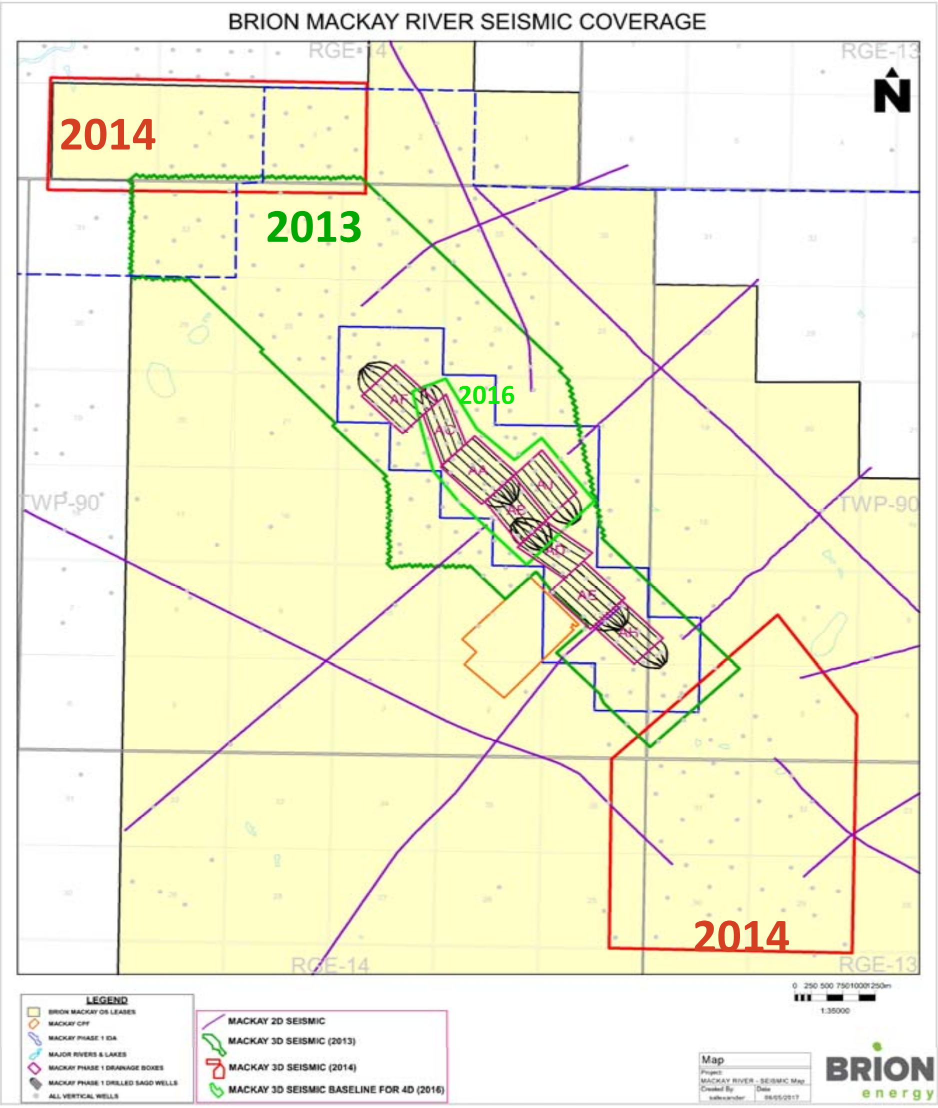
MRCP Seismic



Coverage Across MRCP includes:

- ~96 km of 2D
- ~58.4 km^2 of 3D
- ~3.9 km^2 of 3D baseline for 4D

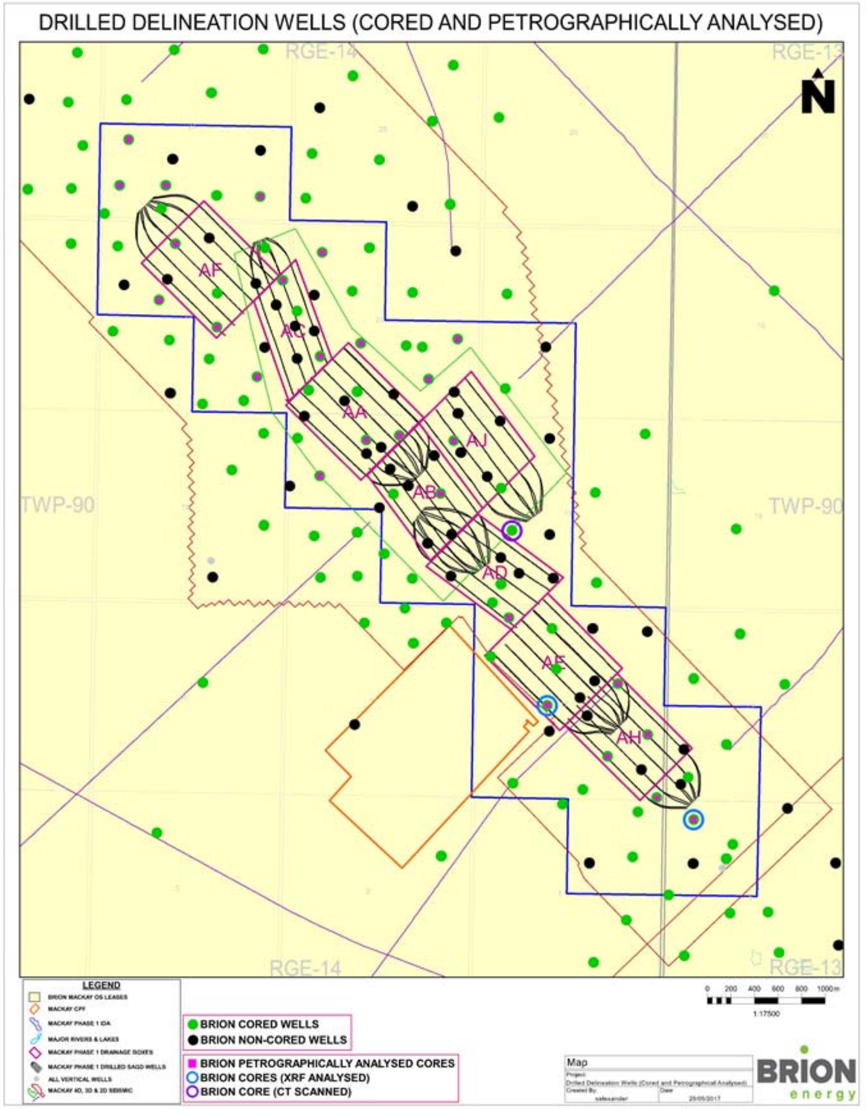
3D acquired in MRCP to help:

- Assess Caprock
- Plan/drill horizontal well trajectories
- Assess McMurray reservoir

4D seismic survey may be acquired at MRCP in 2018

- Will monitor steam chamber growth in IDA
- 3D baseline for 4D was shot in 2016

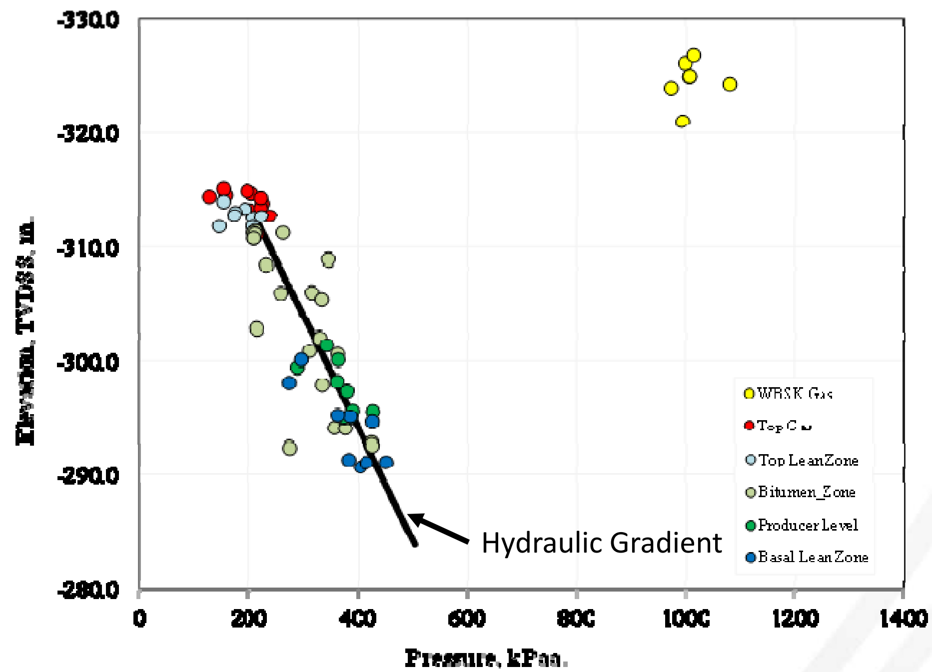
Special Core Analysis – Petrographic Analysis



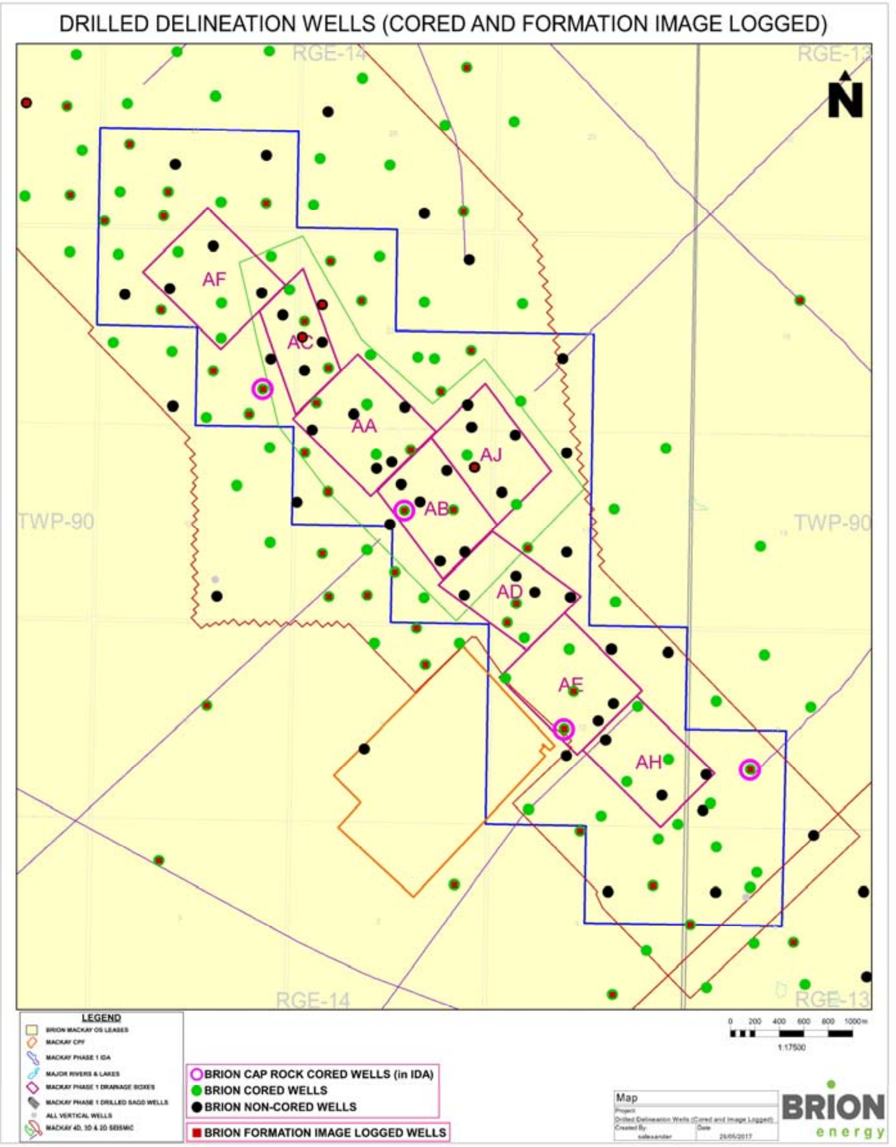
- Brion Energy has conducted a combination of different studies on 26 cored wells in the Initial Development Area.
- Studies done on highlighted wells include:
  - CT Scan - 1
  - XRF - 2
  - SEM - 17
  - XRD - 26
  - Thin sections - 24
  - Grain size analysis - 24

Reservoir Pressure Update

- Initial Upper McMurray Reservoir Pressure:
  - Prior to 2015, pressure data collected indicated an initial reservoir pressure of 1,100 kPaa
  - In 2015-2017, further evaluation of additional data sources provided clarification of pressure regime in MRCP
    - Baseline pressure measurements were collected from FMT logs and observation wells
  - McMurray Formation is at low pressure:
    - Initial pressure of 200 kPaa at the top of reservoir
    - Initial pressure of 400 kPaa at the base of reservoir
  - All data shows a good seal at top:
    - Pressure of 1,000 kPaa in Wabiskaw sand above reservoir indicates competent isolation



Characterization of Caprock



Brion has collected the following dataset for caprock characterization from delineation and coreholes within the IDA:

From 2008 to 2013

- Formation Image logs for 5 wells
- Cored 33 wells
- 1 Caprock core

From 2014 to 2017

- Formation Image logs for 27 wells
- Cored 29 wells
- 3 Caprock cores

MRCP Geomechanics: Mini-frac tests

- Mini-frac tests were conducted between 2009-2016
- The results are in agreement with local and regional trends
- The average caprock fracture gradient measured for the MRCP region within the argillaceous Clearwater is 21.5 kPa/m
- Approved maximum operating pressure (MOP):
  - Based on the methodology detailed in Application 1635432
  - MOP of 2,300 kPaa calculated from base of Clearwater caprock in Phase 1 area of 156 mTVD and a gradient of 14.7 kPa/m
  - Represents a conservative safety factor of 68% below the caprock fracture closure gradient

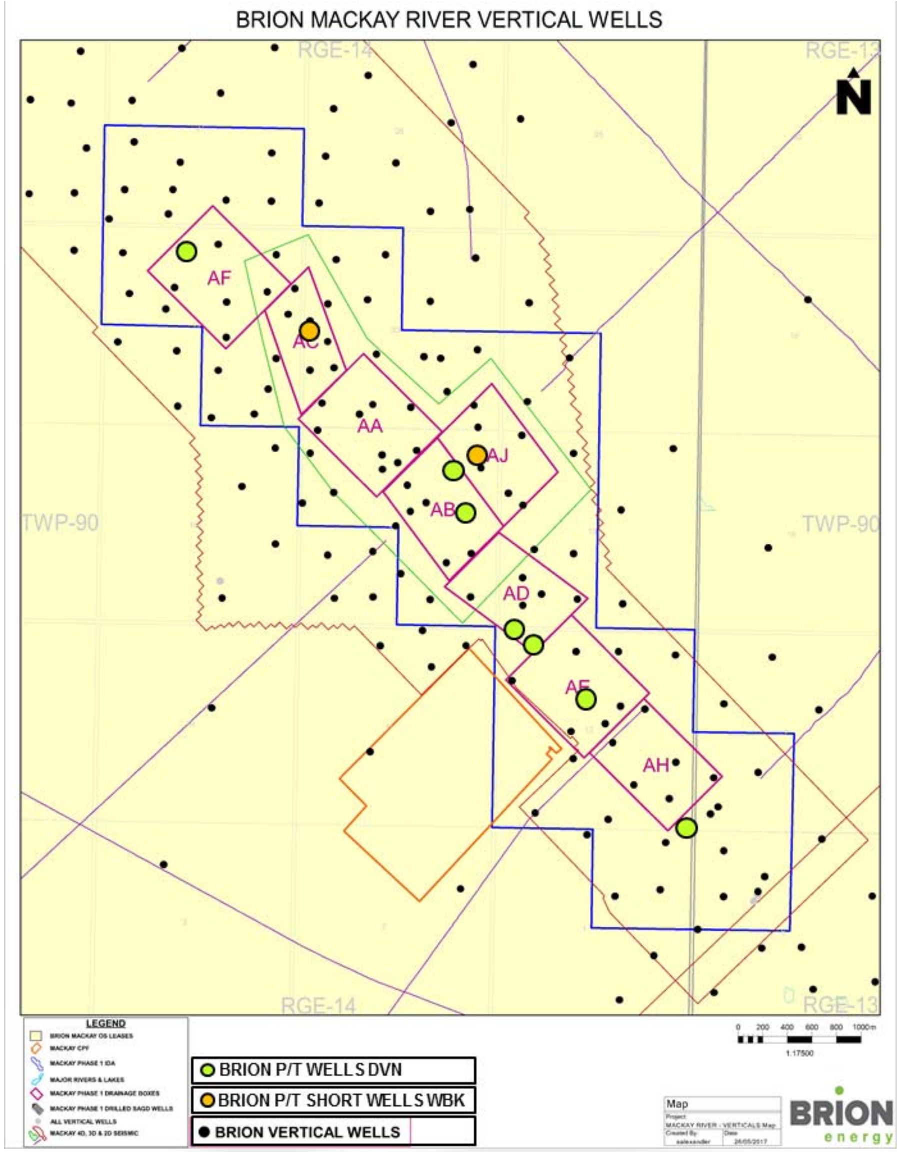
Well	Year	Formation	Fracture Gradient (kPa/m)
100/04-23-90-14W4M	2009	McMurray Oil Sand	16.7
1AA/06-07-90-13W4M	2009	Clearwater Caprock	21.5
1AA/14-28-90-14W4M	2013	McMurray Oil Sand	14.9
		Clearwater Caprock	20.6
		Wabiskaw shale	21.3
100/03-14-090-15W4	2016	McMurray Oil Sand	16.9
		Clearwater Caprock	22.3
		Wabiskaw shale	18.8

MRCP Geomechanics

- Caprock integrity testing and geomechanical
  - Caprock core testing were done in well 1AA/06-07-090-13W4: tri-axial laboratory testing, and X-ray diffraction analysis.
  - Field measured in-situ stress conditions and fracture criteria were also inputs to the geomechanical model, minifrac: 1AA/06-07-090-13W4 / 100/04-23-90-14W4M
  - Geomechanical simulations using ABAQUS, a commercial finite element stress analysis software, ran by BitCan were conducted to provide confirmation that SAGD operations at MRCP will not pose any risk to the caprock integrity.

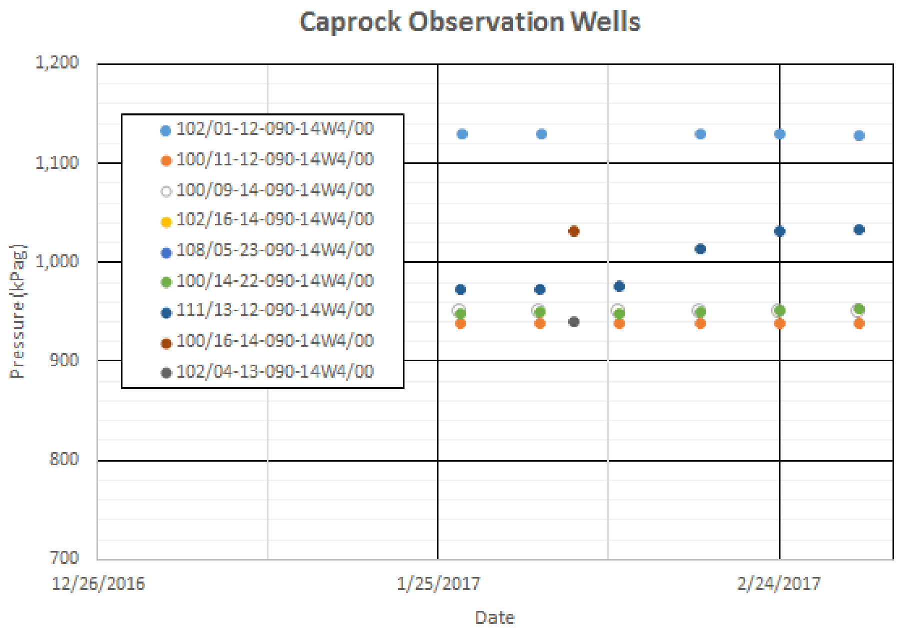
- Update from 2013 reporting period:
  - Brion has collected new minifrac data between 2013-2016 that is consistent with previous results, i.e., there is no change in the geomechanical interpretation.

Caprock Monitoring



- Monitoring caprock pressure and temperature in 9 vertical wells
- Electromagnetic Resonating Element (ERE) gauges for pressure and temperature on exterior of production casing or interior with perforation.
- Wabiskaw Sand Monitoring:
  - 2 vertical wells drilled to base Wabiskaw (isolated from McMurray reservoir): 102/16-14-090-14W4/00 and 108/05-23-090-14W4/00
  - Equipped with interior pressure/temperature ERE
- Caprock Monitoring – Wabiskaw and Clearwater:
  - 7 vertical wells drilled to Devonian: 100/16-14-090-14W4/0, 111/13-12-090-14W4/0, 1AB/14-22-090-14W4/0, 102/01-12-090-14W4/0, 100/09-14-090-14W4/00, 100/11-12-090-14W4/00 and 102/04-13-090-14WA.
  - Pressure and temperature in one to four layers within the caprock intervals on the exterior of production casing.

Caprock Monitoring – Pressure and Temperature



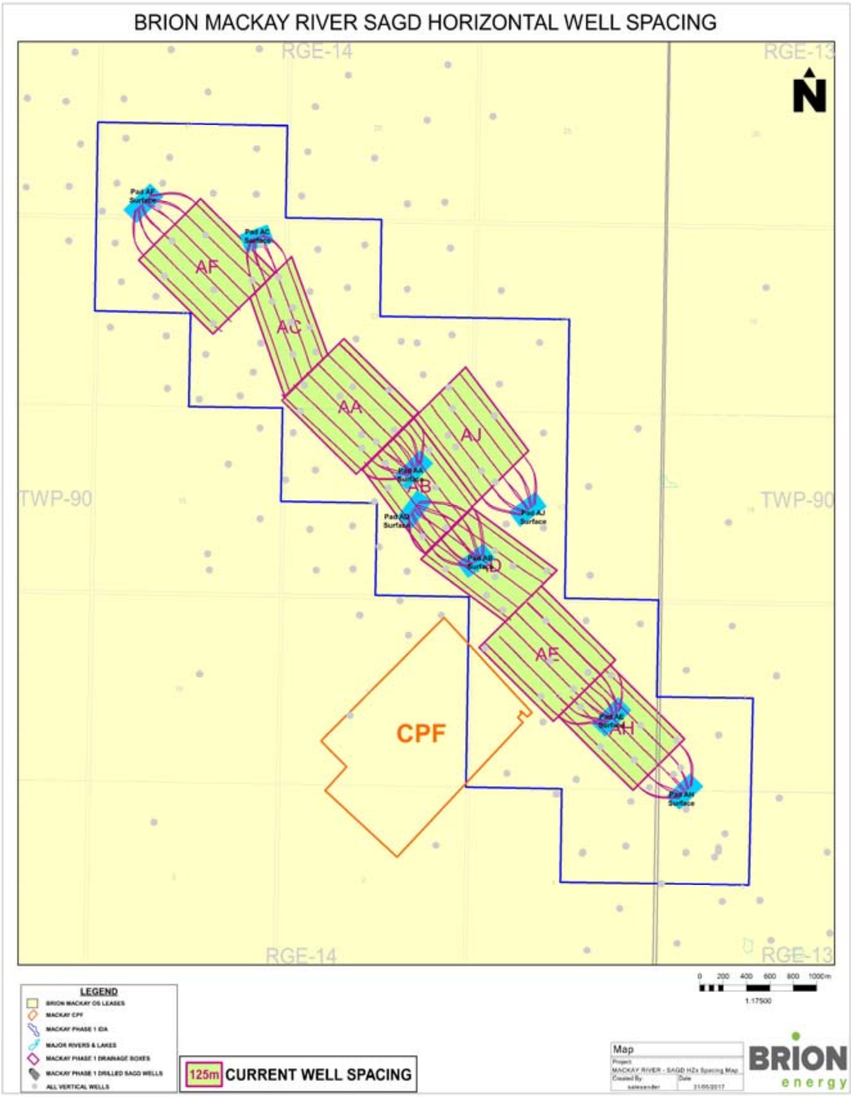
- Caprock average pressures and temperatures:
  - Pressure 938-1,130 kPag
  - Temperature 5-6 °C
  - No changes seen after steaming started
- Caprock observation well data pressure and temperature is reviewed bi-weekly.

3.1.1 SUBSURFACE ISSUES RELATED TO RESOURCE EVALUATION AND RECOVERY

DRILLING AND COMPLETIONS, ARTIFICIAL LIFT, AND INSTRUMENTATION IN WELLS

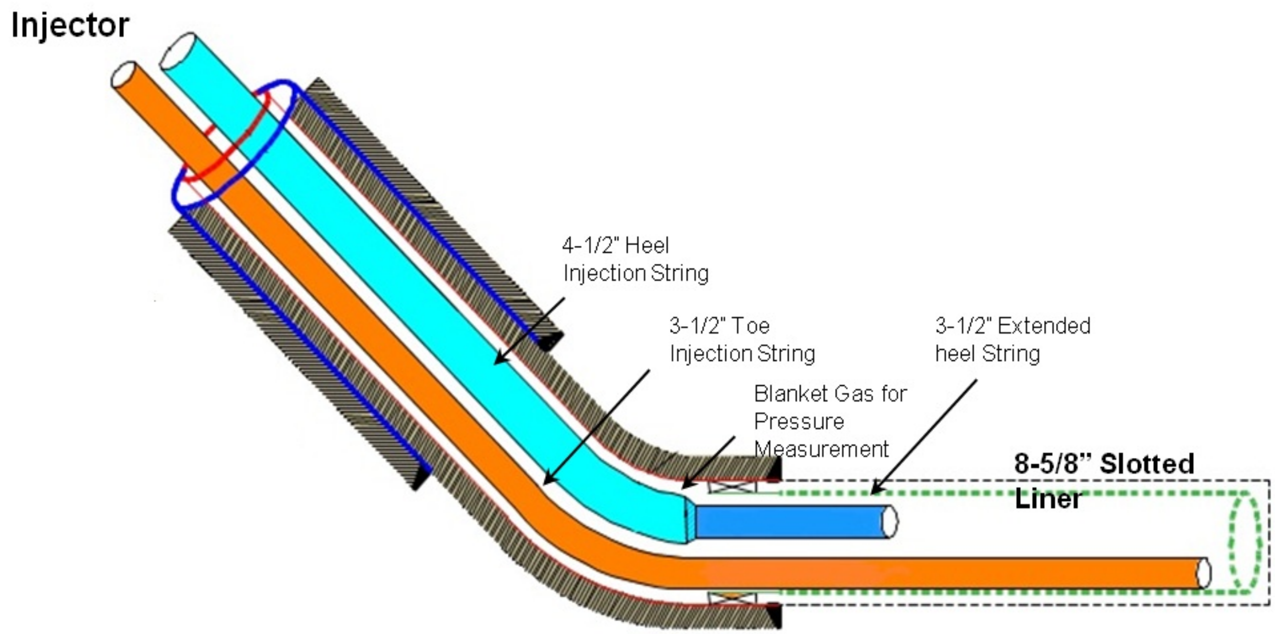
PARTS (3), (4), (5)

MRCP Wellpair Layout



- Drilling Timeline:
  - Pad AA wells were drilled between April 24, 2013 and July 17, 2013
  - Pad AB wells were drilled between July 18, 2013 and September 17, 2013
  - Pad AC wells were drilled between March 3, 2014 and April 23, 2014
  - Pad AD wells were drilled between September 18, 2013 and November 18, 2013
  - Pad AE wells were drilled between January 20, 2013 and April 21, 2013
  - Pad AF wells were drilled between April 23, 2014 and July 8, 2014
  - Pad AH wells were drilled between November 21, 2013 and February 25, 2014
  - Pad AJ wells were drilled between September 30, 2012 and January 15, 2013
- Interwell spacing for the 42 well pairs in the MRCP Development Area is 125 m

MRCP Standard Injector Schematic

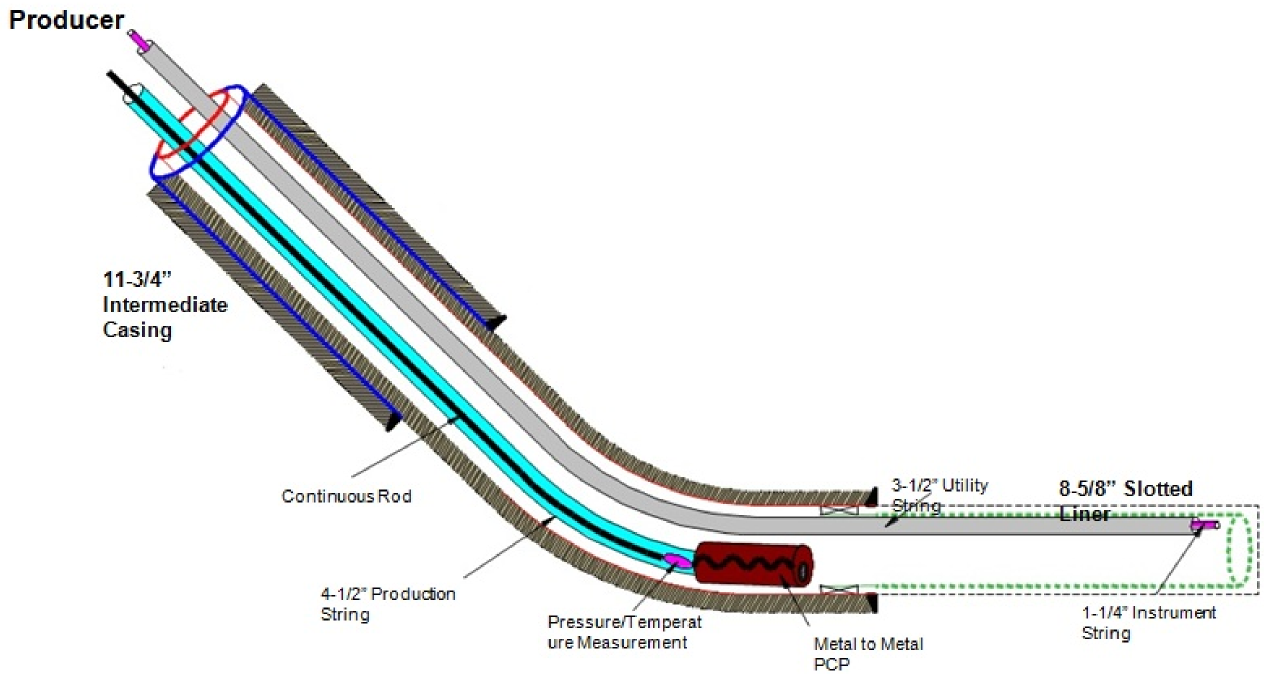


Casing:
- 16” Surface casing at 40 - 45° spud angle (406.4 mm, 96.73 kg/m, K-55, Hydril 521, ~90 mMD).
- 11 3/4” Intermediate casing (298.5 mm, 80.36 kg/m, TN80TH, Tenaris Blue, ~400-455 mMD)

Liner:
- 8 5/8” slotted Liner (219.1 mm, 47.62 kg/m, TN55TH, Tenaris Blue Thermal Liner, ~1250-1305m MD to TD[ )

Tubing:
- 4 1/2” (114.3mm) Heel string, swedged down to 3 1/2” (88.9mm) at 20 m before the liner hanger top for 250 m
- 3 1/2” (88.9mm) toe injection string to the toe

MRCP Standard Producer Schematic



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Liner:

- 8 5/8" slotted Liner (219.1 mm, 47.62 kg/m, Tenaris Blue Thermal Liner, ~1250-1305 mMD to TD)

Artificial Lift and Instrumentation:

- Metal-to-Metal PCP is the base case artificial lift method with 5.3" OD, 8.8 m pump length
- 3 1/2" utility string to toe
- P/T gauge above pump with ¼" capillary line clamped to the 4 ½" Heel string.
- 1/4" Capillary line clamped onto the 4 1/2" Heel string for redundant bubble gas BHP measurement.
- 1 1/4" coil tubing with fibre optic instrumentation string

Some wells will have different liners, instrumentation, or different artificial lift (See section 3.5 – Well Matrix)

Summary of Alternate Completions

System	Principle	Use in
Steam control devices	Reduction of pressure gradient in the liner- better distribution of steam	AA02I, AB02I and AD02I
Inflow control devices	Reservoir inflow equalization	AC01P and AD02P
Alternative sand control using wire wrap screens	Maximization of opened flow area to reduce completion drawdown	AE03P
Alternative sand control using precision punched screens	Improved filter media resistance to wearing using: better metallurgy and change of fluid momentum. Reduced tendency to plugging minimizing the thickness of the slots.	AD03P and AF02P

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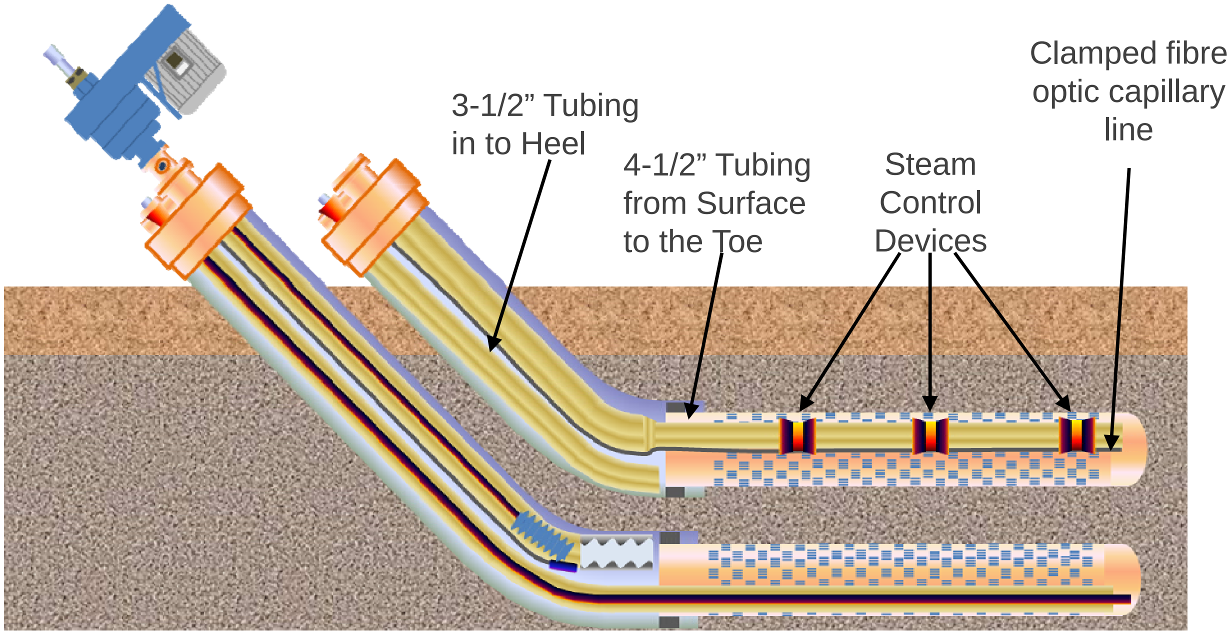
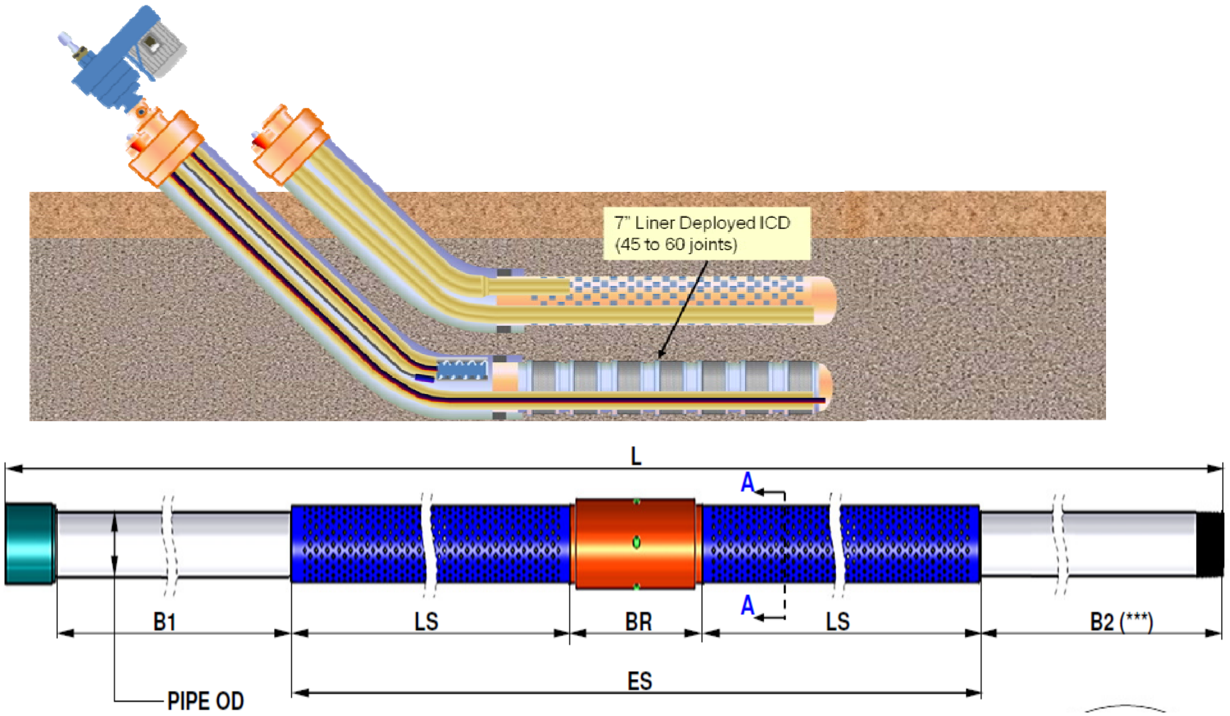
Steam Control Devices Test

Test conducted on 3 steam injection wells



- The injector wells that have steam control devices installed are: AA02I, AD02I and AB02I.
- These wells have a full fibre optic temperature sensor in the injector to allow better monitoring of the steam chamber growth.

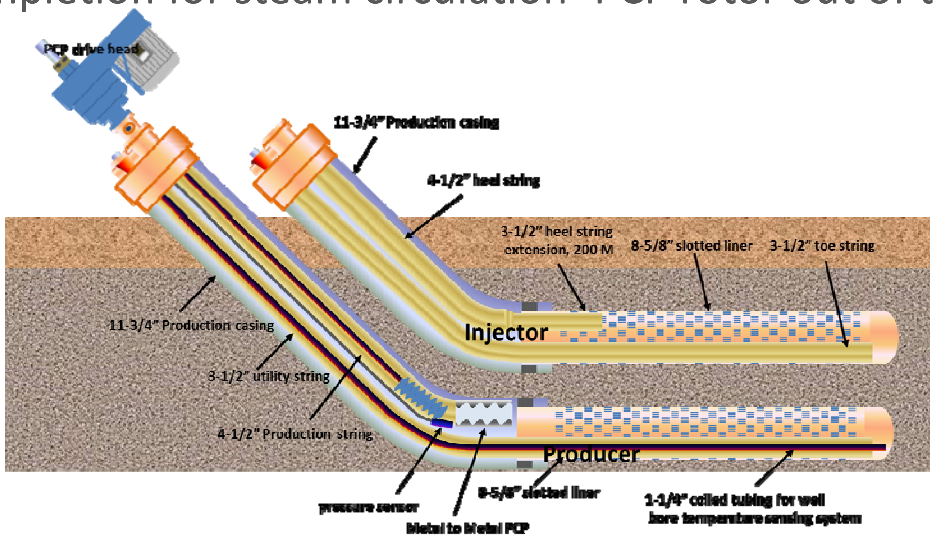
Inflow Control Devices Test



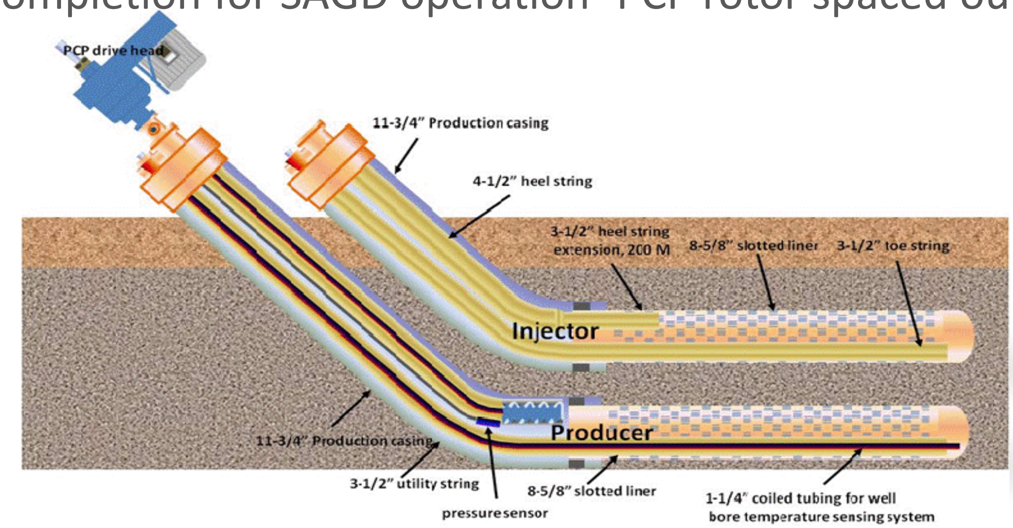
- Brion is conducting two field trials with ICDs in production wells AD02P and AC01P.
- This trial may allow Brion to improve or optimize future phase SAGD well designs with reduced liner/casing sizing which means the ability to drill longer wells at a lower capital cost per well pair.

Artificial Lift - Metal to Metal PCP

Completion for steam circulation- PCP rotor out of the stator



Completion for SAGD operation- PCP rotor spaced out



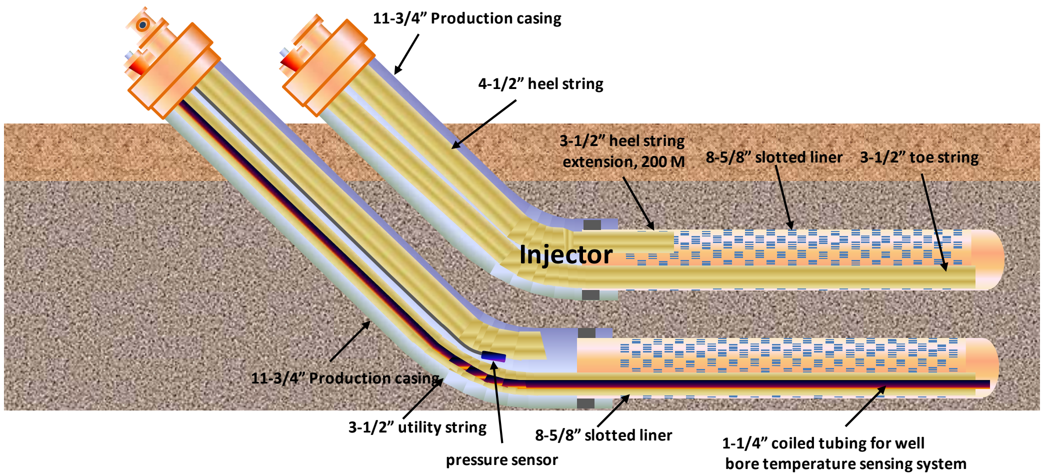
Metal to metal PCPs installed:

PAD AA: 6 pumps
Capacity: 300 m3/d at 100 RPM
Lift: 600 m of water

On PADs:
AB: 5 pumps
AD: 5 pumps
AE: 6 pumps
AF: 6 pumps
AJ: 5 pumps
AH: 5 pumps
Capacity: 220 m3/d at 100 RPM
Lift: 750 m of water

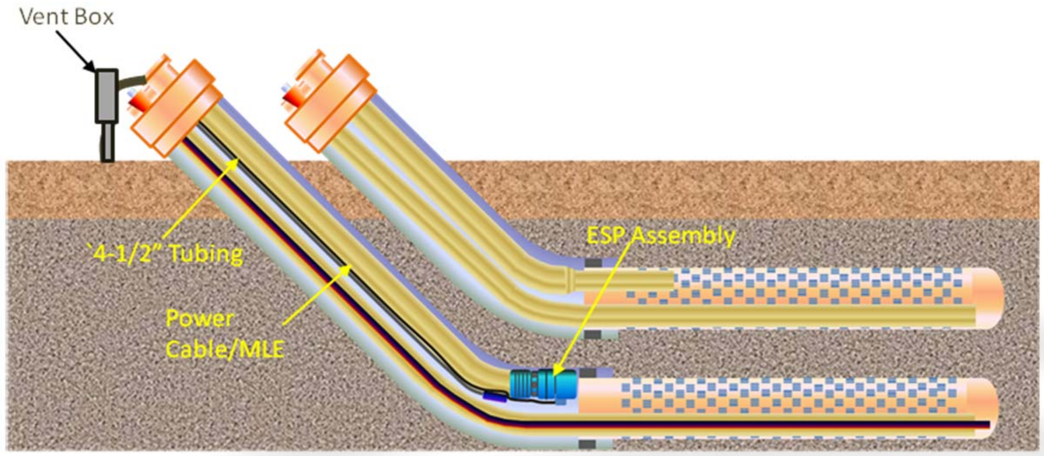
Artificial Lift - Alternative Artificial Lift

Completion for steam circulation



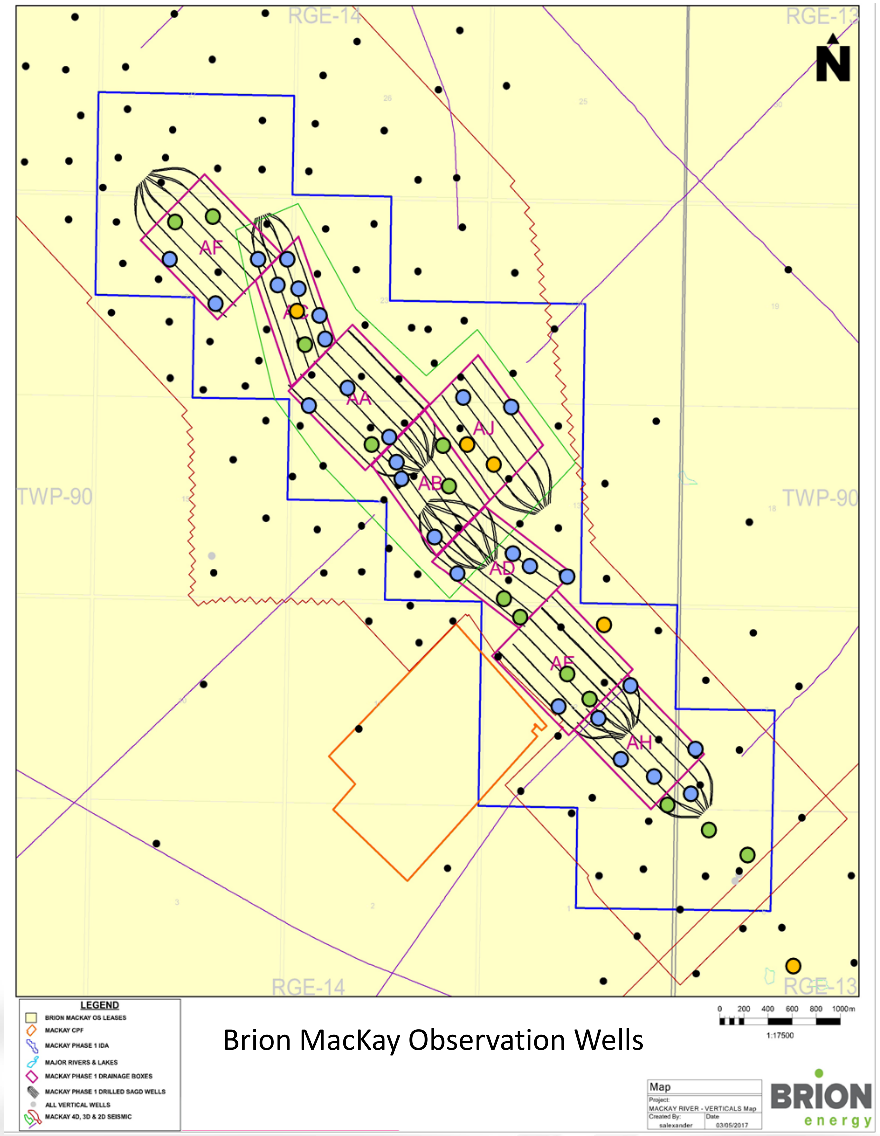
Electrical Submersible pumps to be installed on PAD AC: 4 pumps

Completion for SAGD operation- Expected conversion to SAGD by July 2017



Observation Well Overview

- Total of 45 observation wells for MRCP
- This network has been designed to monitor the following themes:
  1. Caprock Monitoring
  2. Reservoir Top Gas
  3. Bottom Transition Zone
  4. Baffles/barriers above injector
  5. Baffles/barriers between producer/injector
  6. History Match / Chamber Development
     - Early Stage (< 10 m)
     - Late Stage (> 10 m)
  7. Lateral Regional Monitoring (> 100m)
- According to their design, they are classified as:
  1. Obs Wells w/ Just Thermocouples
  2. Obs Wells w/ Thermocouples and EREs
  3. Perforated Obs Wells w/ Thermocouples and/or EREs



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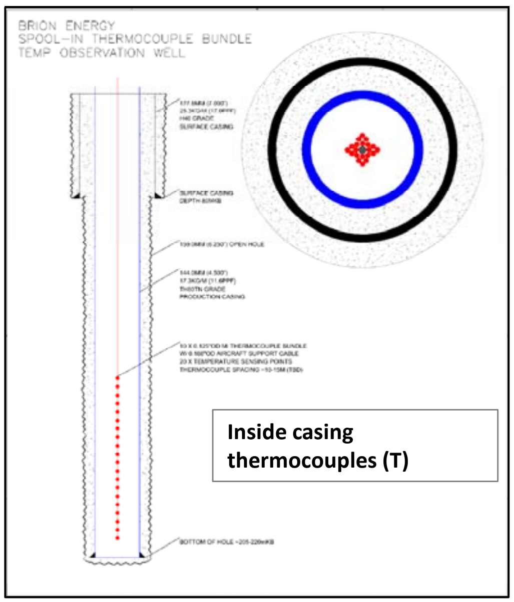
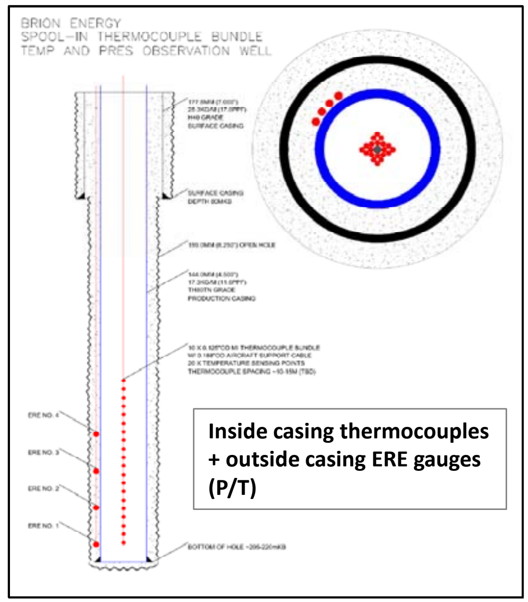
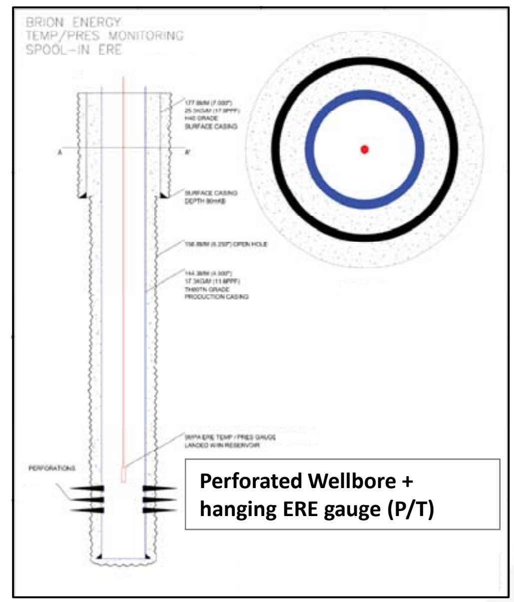
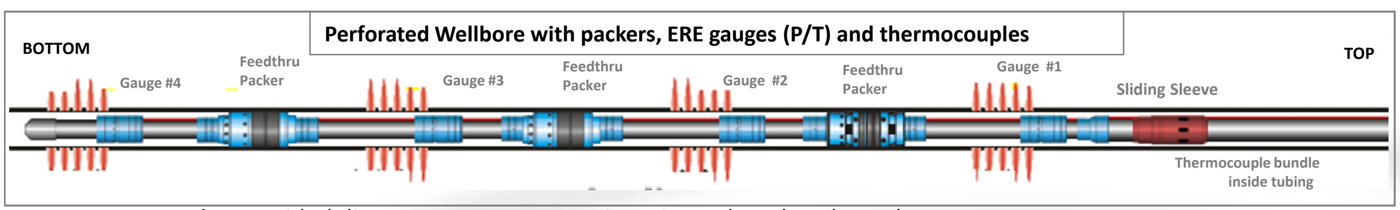
Typical Observation Well Design

Example of the types of observation well design and instrumentation configurations at MRCP:









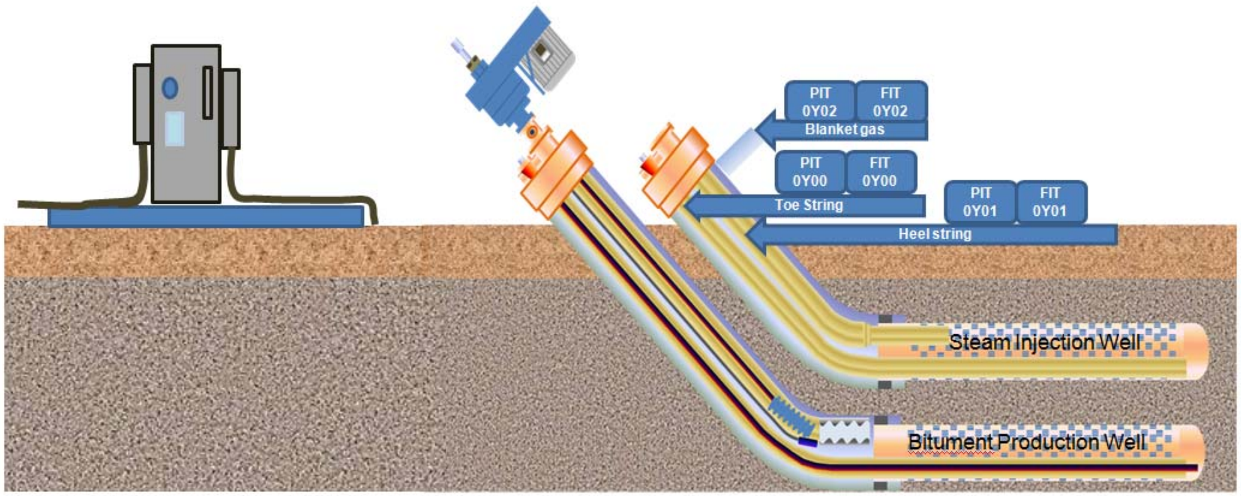
Vendor provided diagrams: Petrospec Engineering Ltd. and Packers Plus

Type of gauge reading:
- (T) Only temperature
- (P/T) Temperature & Pressure

Summary of Downhole Instrumentation

System	Principle	Use in
Pressure and temperature sensor at the heel	Optic sensor	Installed in every producer and on injectors AE02I and AJ03I.
DTS well bore temperature sensing system	Fibre optic DTS	Installed in every producer on PADs: AA, AD, AF, AJ and AH. Installed on injectors: AA02I, AA03I, AD02I, AJ02I and AJ03I.
LxData well bore temperature sensing system	Fibre optic FBG	Installed in every producer on PADs: AB, AC and AE. Installed on injector AB02I.
Pressure sensor at the toe of the well	Fibre optic FBG	On AB02P, AC01P, AE03P and AE04P

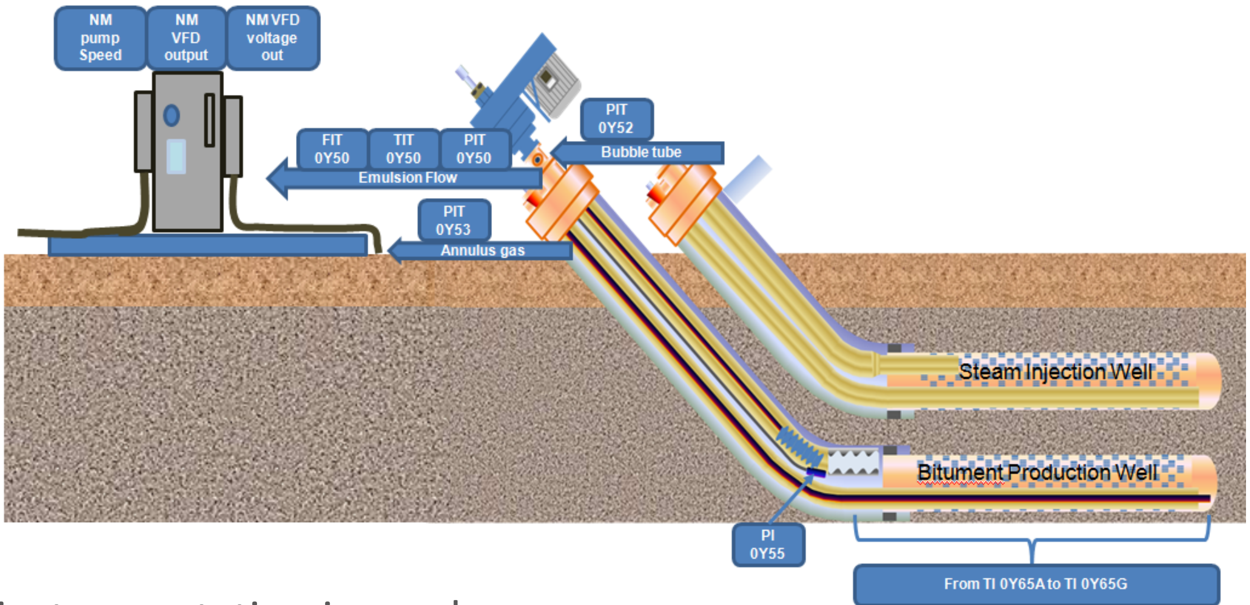
Injection Well Instrumentation



Standard instrumentation in injector

Variable	Units	Instrument / Signal	Type of Instrument
Down hole pressure	kPag	PIT 0Y02	Blanket gas / Pressure Transmitter
Blanket gas injection rate	Sm3/d	FIT 0Y02	Coriolis meter
Toe string steam injection rate	m3/d CWE	FIT 0Y00	Vortex meter
Toe string well head pressure	kPa	PIT 0Y00	Pressure transmitter
Heel string steam injection rate	m3/d CWE	FIT 0Y01	Vortex meter
Toe string well head pressure	kPag	PIT 0Y01	Pressure transmitter

Production Well Instrumentation



Standard instrumentation in producers

Variable	Units	Instrument / Signal	Type of instrument
Down hole pressure	kPag	PI 0Y55	Optic pressure sensor
Down hole pressure	kPag	PIT 0Y52	Blanket gas/ Pressure transmitter
Blanket gas injection rate	Sm3/d	FIT 0Y52	Coriolis meter
Toe string steam rate	m3/d CWE	FIT 0Y01	Vortex meter
Toe string well head pressure	kPag	PIT 0Y01	Pressure transmitter
Well bore temperature profile	°C	From TI 0Y65A to TI 0Y65G	DTS or FBG fibre optic system
Returns well head pressure	kPag	PIT 0Y50	Pressure transmitter
Returns well head temperature	°C	TIT 0Y50	Temperature transmitters
Returns rate	sm3/d	FIT 0Y50	Coriolis meter

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3.1.1 SUBSURFACE ISSUES RELATED TO RESOURCE EVALUATION AND RECOVERY

SCHEME PERFORMANCE AND FUTURE PLANS
PARTS (6), (7)

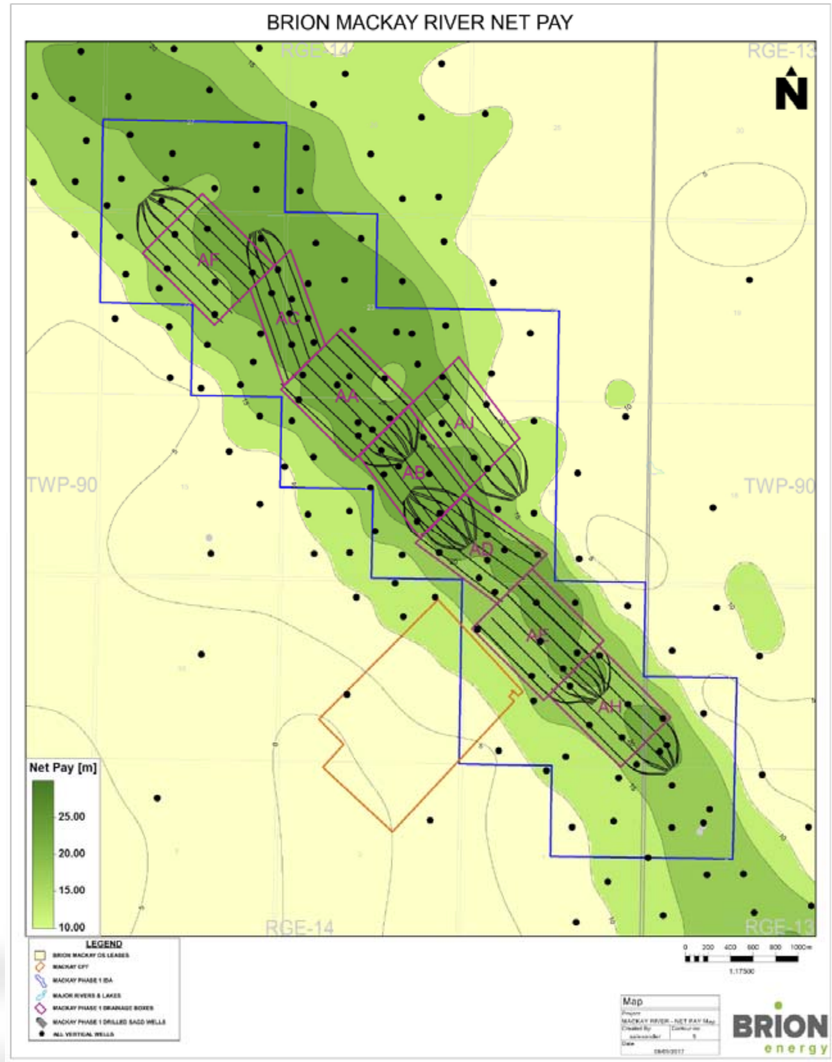
Actual Performance to March 31, 2017

- First steam to wellpairs started in December 2016
  - Winter operation for start-up was managed successfully
- Actual circulation rates and volumes are consistent with the Brion type curves and forecast
- All well pairs were able to build pressure and circulate
  - Some wells/pads required longer period of bullheading until reservoir pressure increased
  - Required a temporary waiver to unload fluid from some wells and establish circulation
- The ability to see the pressure increase across the field indicates fluid mobility in the reservoir

Summary of MRCP Operating Wells

Pad	# of Well Pairs	First Steam to Pad
AA	6	Dec-2016
AB	5	Jan-2017
AC	4	Feb-2017
AD	5	Jan-2017
AE	6	Feb-2017
AF	6	Dec-2016
AH	5	Jan-2017
AJ	5	Dec-2016

- First steam to Pad AJ wellpairs on December 1, 2016
- 40 wellpairs in circulation by end of reporting period



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Well Pair Performance - Steam Circulation

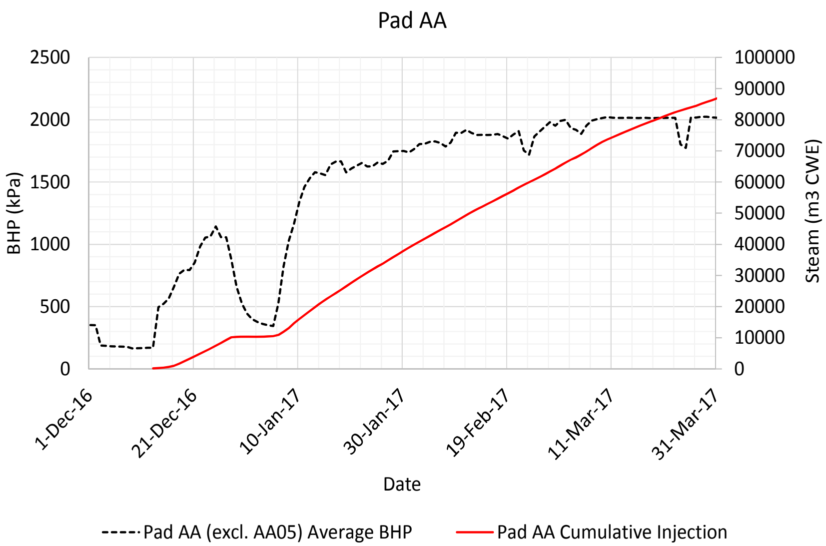
Pad	First Steam Date	Average Pressure (Mar-31-2017)
		kPag
AA (5 wells)	Dec-13-2016	2016
AB (5 wells)	Jan-15-2017	2063
AC (4 wells)	Jan-25-2017	2024
AD (5 wells)	Jan-20-2017	1950
AE (6 wells)	Feb-01-2017	1994
AF (6 wells)	Dec-23-2016	2034
AH (5 wells)	Jan-11-2017	1617
AJ (5 wells)	Dec-07-2016	1878

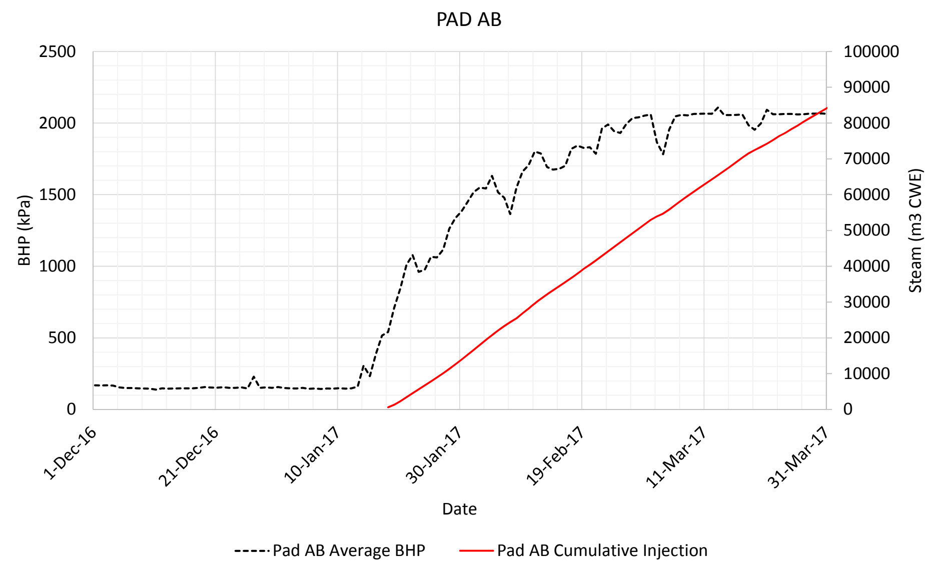
- The estimated bottom hole pressure from blanket gas injection is used by the control system to regulated the steam injection to keep a target downhole pressure.

- Bottom hole pressure in each production well was measured by pressures sensor at the heel before first steam

- After first steam both producer and steam injection wells bottom hole pressure was also estimated by blanket gas injection
  - Approved MOP is 2200 kPag
  - Alarm set at 2125 kPag
  - Shut down at 2175 kPag
  - By March 31 2017, the target BHP was 2120 kPag

Well Pair Performance - Steam Circulation Pads AA and AB

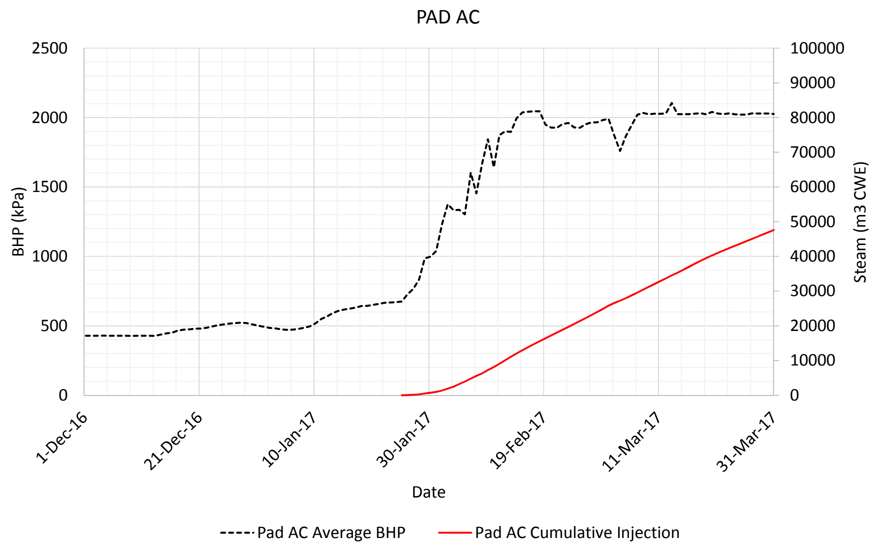


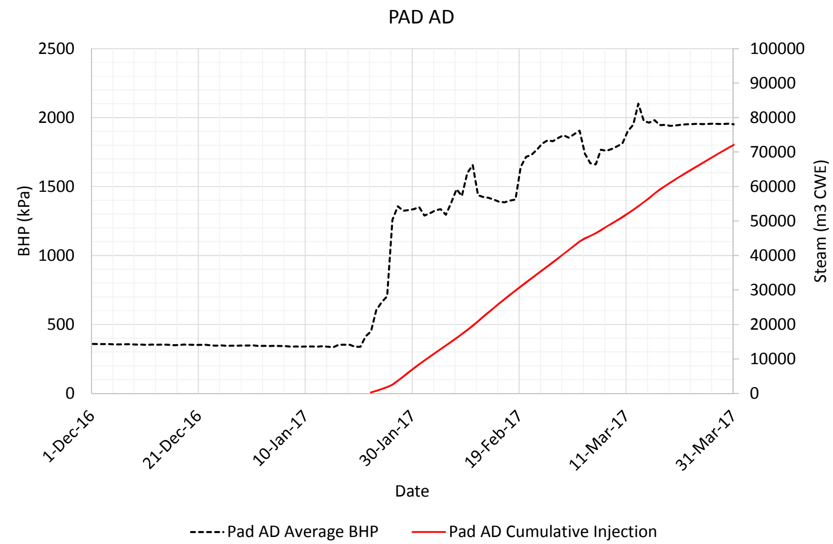


Well Pair	First Steam Date	Injector Cumulative Steam	Producer Cumulative Steam	Cumulative Steam	Injector BHP	Producer BHP
		m3 (CWE)	m3 (CWE)	m3 (CWE)	kPag	kPag
AA01	13-Dec-16	7498	10281	17779	1990	2016
AA02	16-Dec-16	6530	9249	15779	1951	2034
AA03	13-Dec-16	7837	9540	17376	2100	2156
AA04	14-Dec-16	7554	10685	18239	1990	2000
AA05	-					
AA06	21-Dec-16	6554	11146	17701	1800	1874

Well Pair	First Steam Date	Injector Cumulative Steam	Producer Cumulative Steam	Cumulative Steam	Injector BHP	Producer BHP
		m3 (CWE)	m3 (CWE)	m3 (CWE)	kPag	kPag
AB01	18-Jan-17	7363	8216	15579	2040	2058
AB02	16-Jan-17	7193	8440	15633	2040	2104
AB03	17-Jan-17	9309	8958	18267	2040	2011
AB04	15-Jan-17	10704	10118	20822	2040	2088
AB05	28-Jan-17	6515	7534	14050	2041	2052

Well Pair Performance - Steam Circulation Pads AC and AD

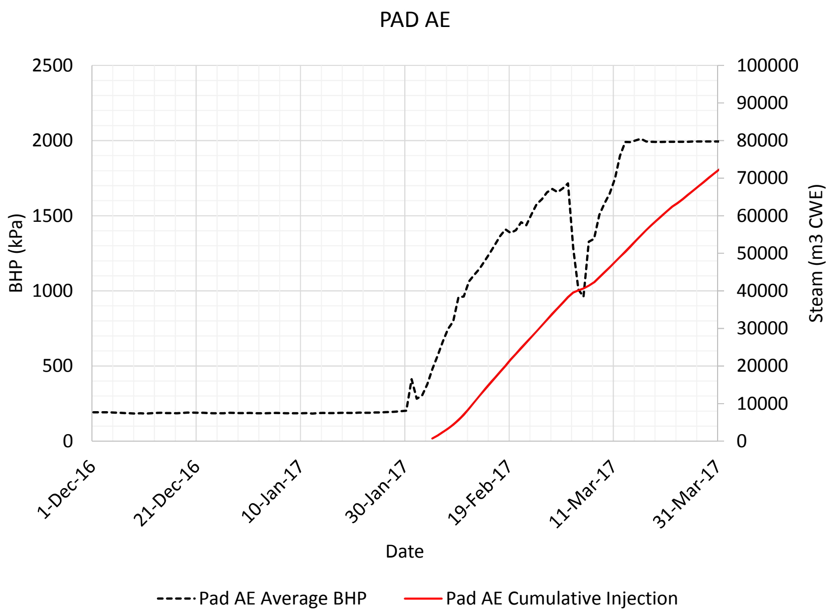


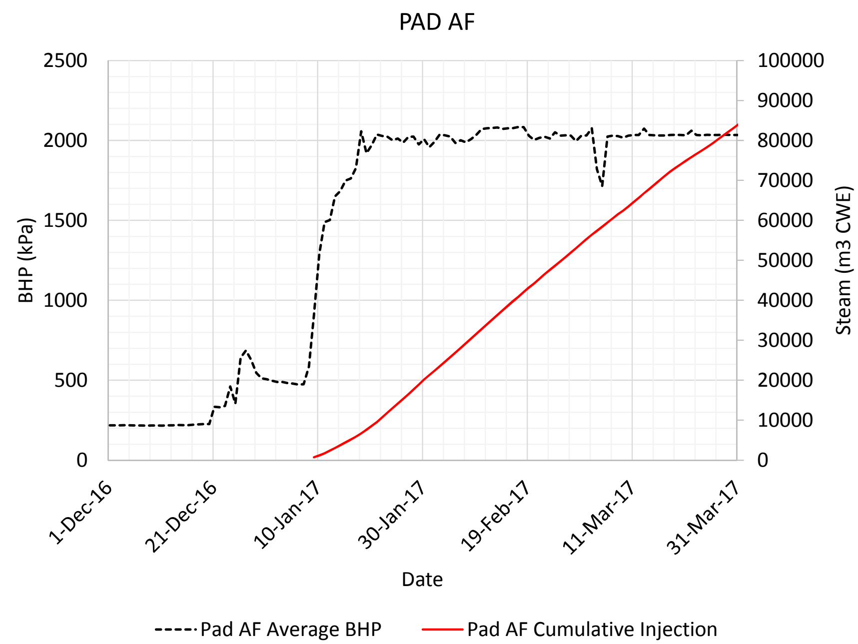


Well Pair	First Steam Date	Injector Cumulative Steam	Producer Cumulative Steam	Cumulative Steam	Injector BHP	Producer BHP
		m3 (CWE)	m3 (CWE)	m3 (CWE)	kPag	kPag
AC01	5-Feb-17	4554	5088	9643	2040	2034
AC02	25-Jan-17	6150	5964	12114	2038	2021
AC03	26-Jan-17	5125	6301	11426	2040	2024
AC04	26-Jan-17	5503	9071	14574	2038	2019

Well Pair	First Steam Date	Injector Cumulative Steam	Producer Cumulative Steam	Cumulative Steam	Injector BHP	Producer BHP
		m3 (CWE)	m3 (CWE)	m3 (CWE)	kPag	kPag
AD01	22-Jan-17	5379	9266	14645	1850	1852
AD02	22-Jan-17	10365	6349	16714	1851	1825
AD03	20-Jan-17	7985	7359	15343	2039	2061
AD04	20-Jan-17	5855	8512	14367	2041	1970
AD05	6-Feb-17	4269	6880	11150	1990	2041

Well Pair Performance - Steam Circulation Pads AE and AF





Well Pair	First Steam Date	Injector Cumulative Steam	Producer Cumulative Steam	Cumulative Steam	Injector BHP	Producer BHP
		m3 (CWE)	m3 (CWE)	m3 (CWE)	kPag	kPag
AE01	3-Feb-17	4211	7505	11716	1986	2048
AE02	2-Feb-17	4301	6359	10660	1990	2059
AE03	2-Feb-17	4221	6963	11183	1991	2034
AE04	1-Feb-17	5248	8496	13744	1991	2037
AE05	1-Feb-17	5044	8655	13699	1850	1865
AE06	8-Feb-17	4464	6853	11318	1850	1922

Well Pair	First Steam Date	Injector Cumulative Steam	Producer Cumulative Steam	Cumulative Steam	Injector BHP	Producer BHP
		m3 (CWE)	m3 (CWE)	m3 (CWE)	kPag	kPag
AF01	9-Jan-17	6830	8044	14874	2040	2020
AF02	9-Jan-17	6051	9404	15455	2040	2017
AF03	8-Jan-17	5675	6780	12455	2040	2032
AF04	25-Dec-16	5790	6651	12441	2040	2045
AF05	23-Dec-16	7257	7267	14524	2040	2045
AF06	14-Jan-17	7681	6562	14243	2040	2044

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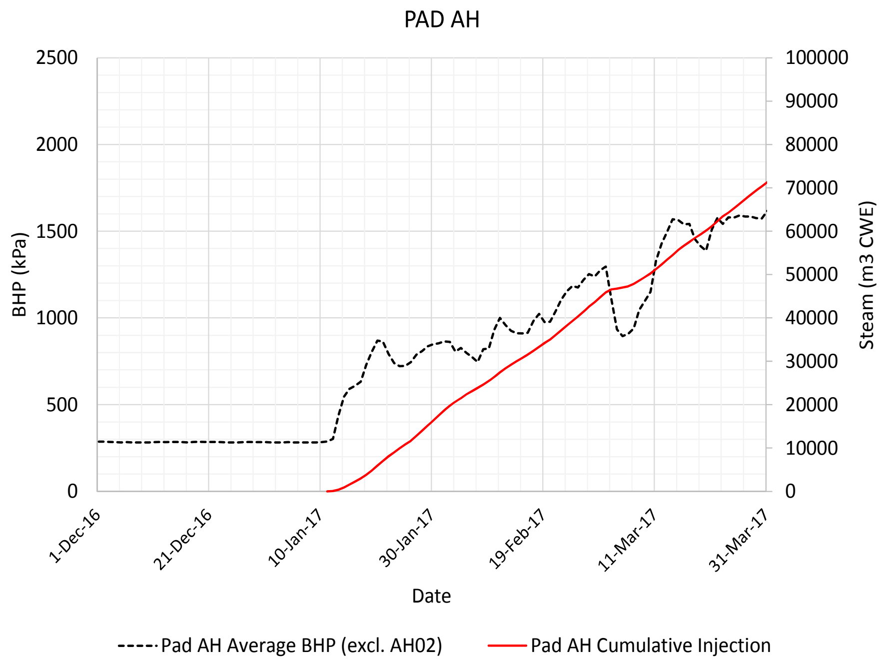
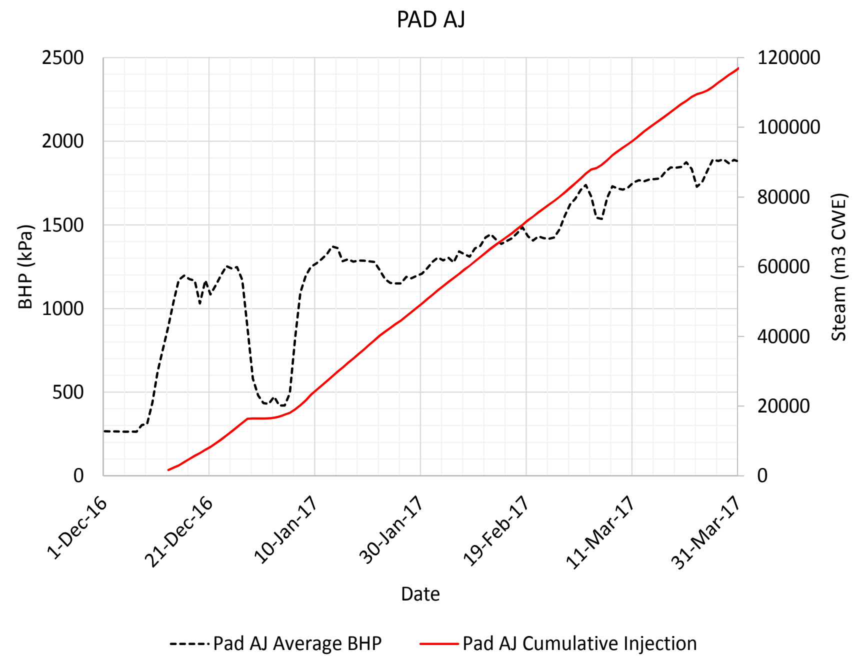
Well Pair Performance - Steam Circulation Pads AH and AJ



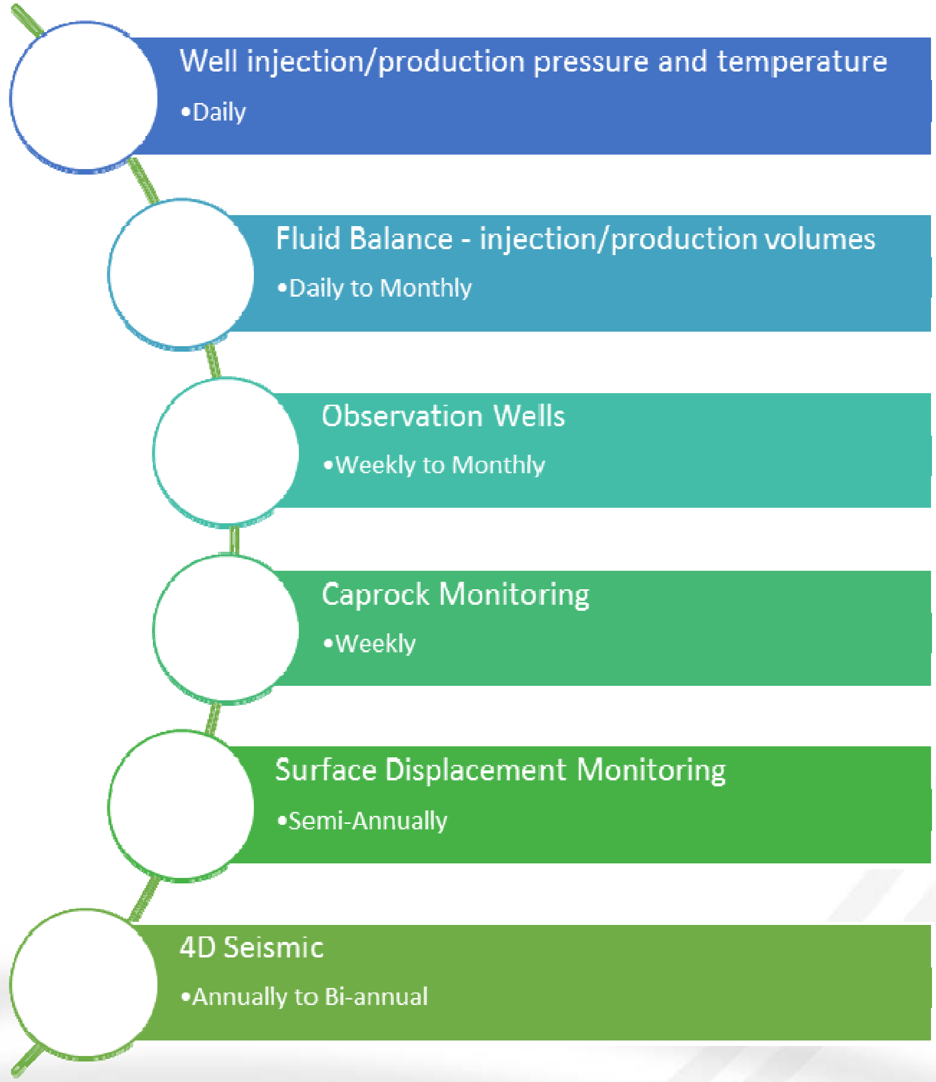


Well Pair	First Steam Date	Injector Cumulative Steam	Producer Cumulative Steam	Cumulative Steam	Injector BHP	Producer BHP
		m3 (CWE)	m3 (CWE)	m3 (CWE)	kPag	kPag
AH01	11-Jan-17	7472	10543	18015	1651	1700
AH02	-					
AH03	12-Jan-17	8113	11565	19679	1601	1662
AH04	13-Jan-17	7512	9163	16675	1449	1451
AH05	13-Jan-17	6746	10246	16993	1580	1656

Well Pair	First Steam Date	Injector Cumulative Steam	Producer Cumulative Steam	Cumulative Steam	Injector BHP	Producer BHP
		m3 (CWE)	m3 (CWE)	m3 (CWE)	kPag	kPag
AJ01	12-Dec-16	9160	12375	21536	2000	1928
AJ02	11-Dec-16	10936	12449	23385	2040	2055
AJ03	9-Dec-16	9556	15191	24747	1839	1711
AJ04	19-Dec-16	10890	12568	23458	1950	1879
AJ05	7-Dec-16	9241	14648	23890	1850	1814

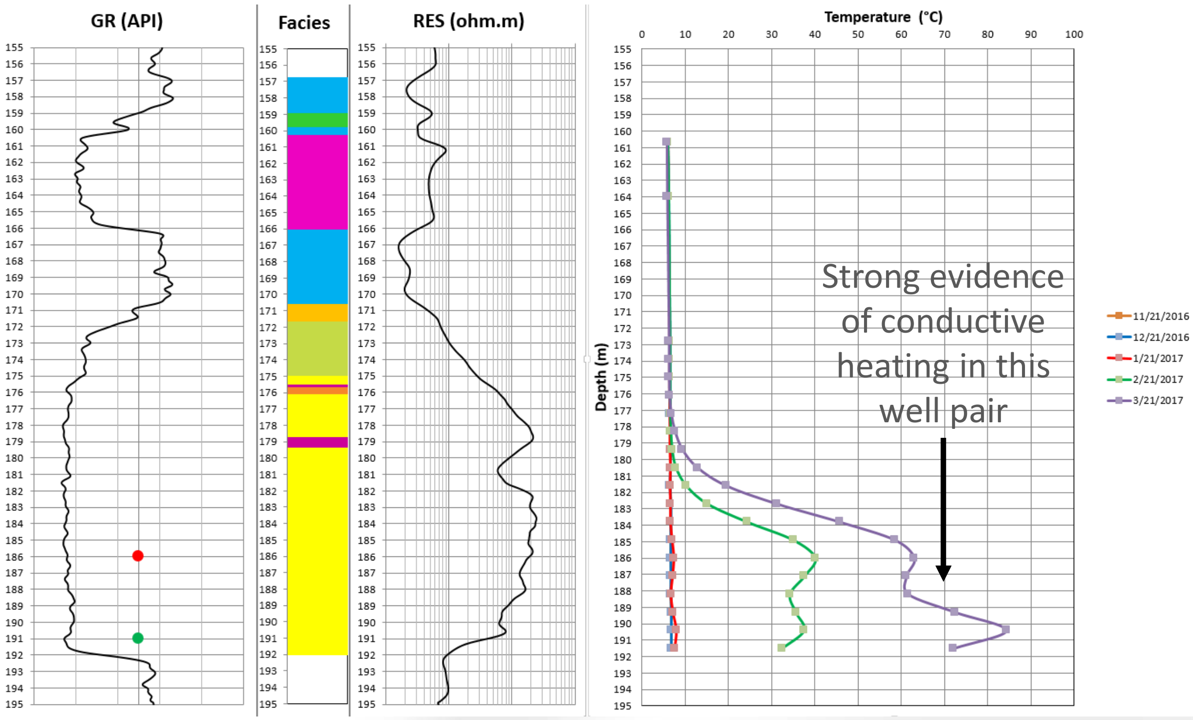
Well and Reservoir Surveillance Program

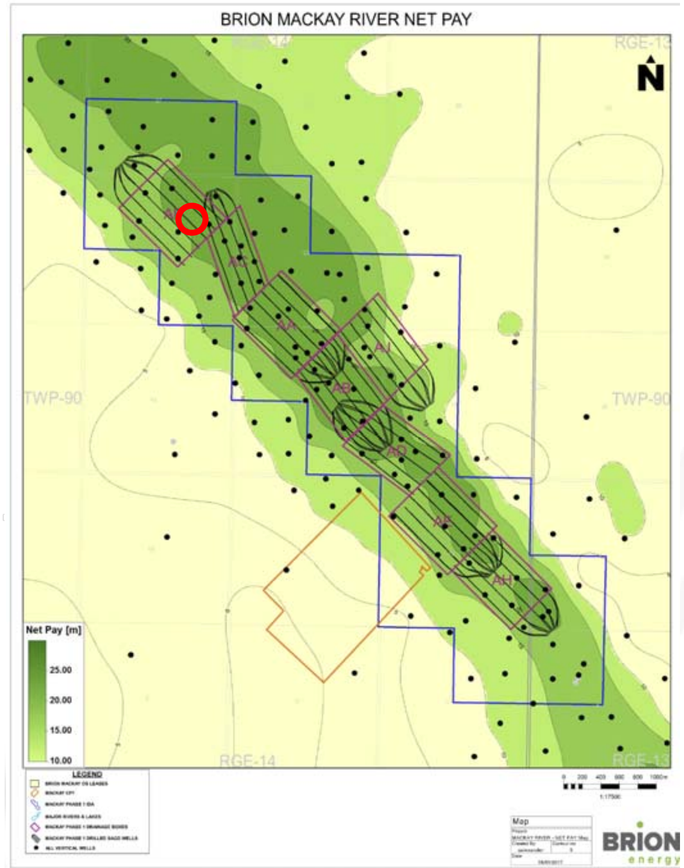
- Integrated approach to reservoir and well surveillance
- Includes collection of data from multiple monitoring sources
- Frequency of evaluation depends on data source, some is daily, some is less frequently
- MRCP is early time in circulation, therefore most data sources are not showing valid or relevant data to end of reporting period
  - Piezometer data plots are not provided for the current report



Steam Chamber Monitoring Example: Observation Well AF06E

- Associated to Wellpair: AF06 toe (3 m away)
  - AF06 Wellpair active since Dec 2016
  - 14,000 m³ of steam circulated at 2,000 kPag as of March 31, 2017
- Data from observation wells, along with producer temperature profiles, pressure communication tests, and semi-SAGD determine when the well pair is ready for conversion to SAGD





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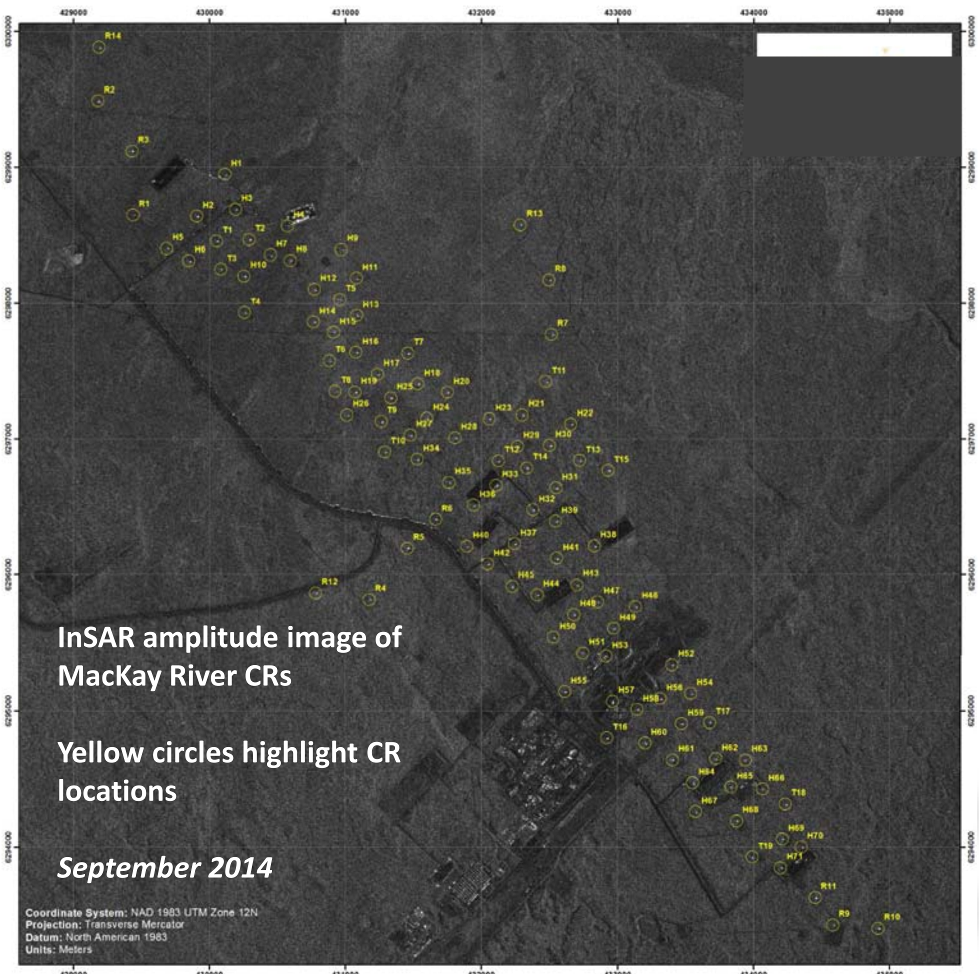
Surface Displacement Monitoring

- Brion has an extensive network installed for surface displacement and heave monitoring
- Summary
  - Detection and measurement of ground motion by InSAR technology – processing stacks of images acquired by multiple radar missions



2014

- Installed & calibrated 104 corner reflectors (CRs)
  - 6 CRs per well pad
  - Maximum distance of 250 m
- Baseline data gathered

2015-2016

- Baseline Study issued (Sept 2015)

2017

- First Semi-Annual report (March 2017)

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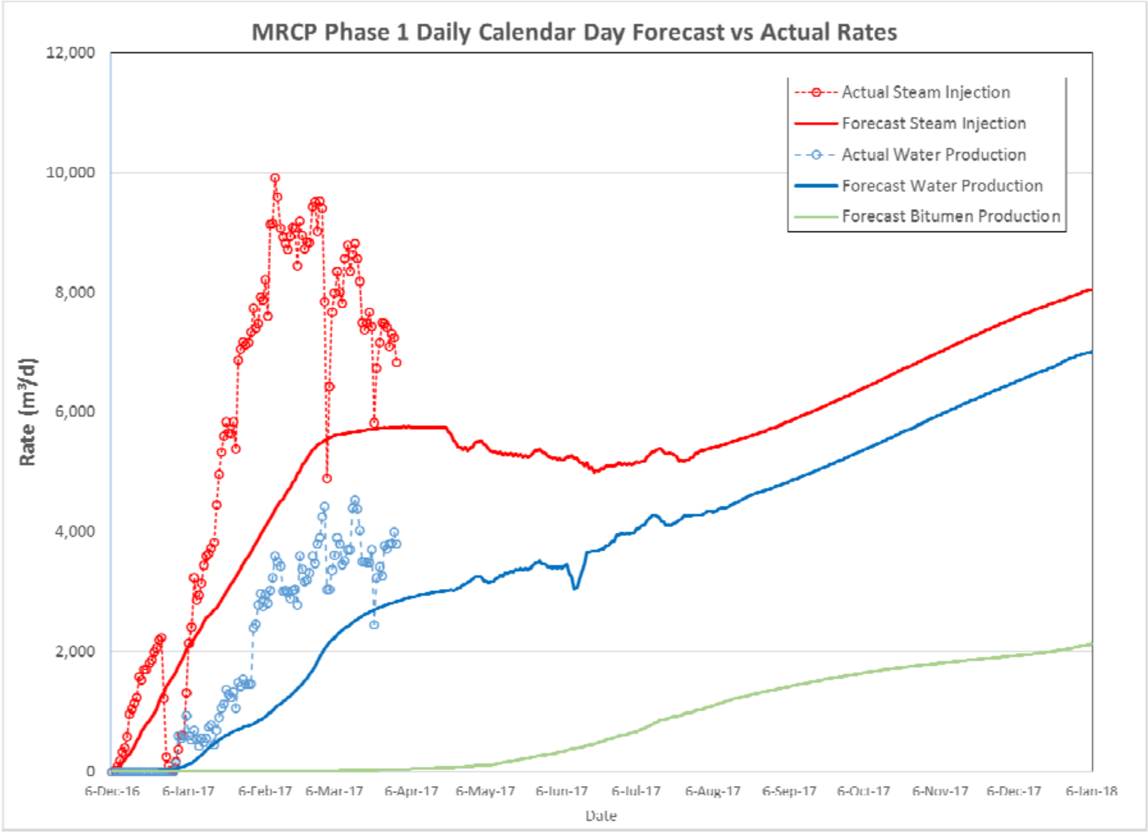
Actual Performance to March 31, 2017



- Calendar Day forecast includes a 12% downtime factor in first year
- Low oil content in circulated fluids to the end of March
- Reported monthly oil production during circulation (not shown on chart as daily rates are below scale):
  - February – 253.7 m^3
  - March – 257.7 m^3

Injected Fluids

- Only steam has been injected into the injection and production wells as of March 31, 2017
- Planning to use Brion MRCP synbit as a load fluid when converting to PCPs
- Have approval for the FUSE^{TM} test using a viscosity modifying water and polymer mixture on two well pairs

Key Learnings To-Date

- In circulation, the reservoir has built pressure from original reservoir pressure of 400 kPag to 2,000 kPag as expected, but some wells required additional measures
  - Bullheading was introduced to address high reservoir mobility in 19 wells for short term with success in meeting target pressures and switching back to circulation
  - Approved MOP of 2,300 kPaa is not sufficient to overcome the fluid column at a TVD of 220 m
  - An application was made and approved to unload wells with a temporary elevated pressure (2,650 kPaa) to establish circulation

- Multi-Phase Pump (MPP) at the pads are critical equipment for circulation
  - Used to drawdown the surface pressure for the returns during circulation

Steam Strategy

- MRCP operation is still in early time
- The wellpair requirement for steam in the next year is expected to be well below the steam capacity of the CPF
- Brion is managing steam distribution to the wellpairs based on prioritization methodology
- There are no plans to expand the current steam or water treating capacity

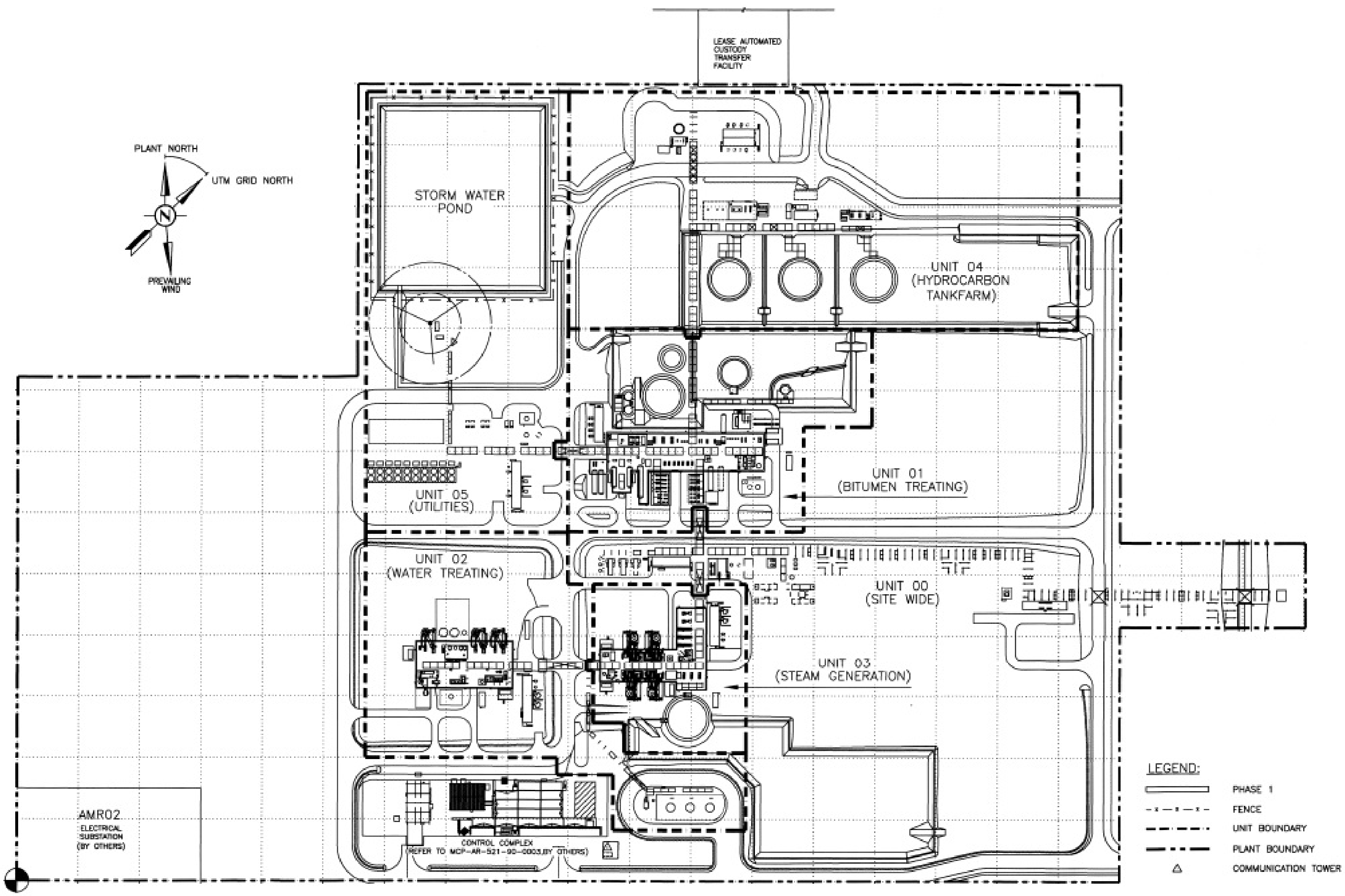
Future Initiatives

- Appraisal Program:
  - 2017/2018 Winter Appraisal program is currently being prepared
    - May include vertical delineation wells
- New Wellpair Additions:
  - MacKay Phase 1A:
    - Brion received regulatory approval for 17 downspaced wellpairs in 2015
    - Currently planned for field construction to start in 2018
  - Next Wellpair additions
    - Initiating internal project development process for the first group of sustaining wellpairs
    - Application to AER planned for end of 2018
- FUSE™ (Fast and Uniform SAGD Start-up Enhancement) process
  - Amendment to apply FUSE™ dilation with viscosity enhancing polymer in well pairs AH02 and AA05
    - Approval received March 3, 2017
    - Execution planning currently in progress
    - Planning to execute dilation test in July and August 2017
- Pad/Well Abandonments:
  - There are no pad or well abandonments planned in the next reporting cycle

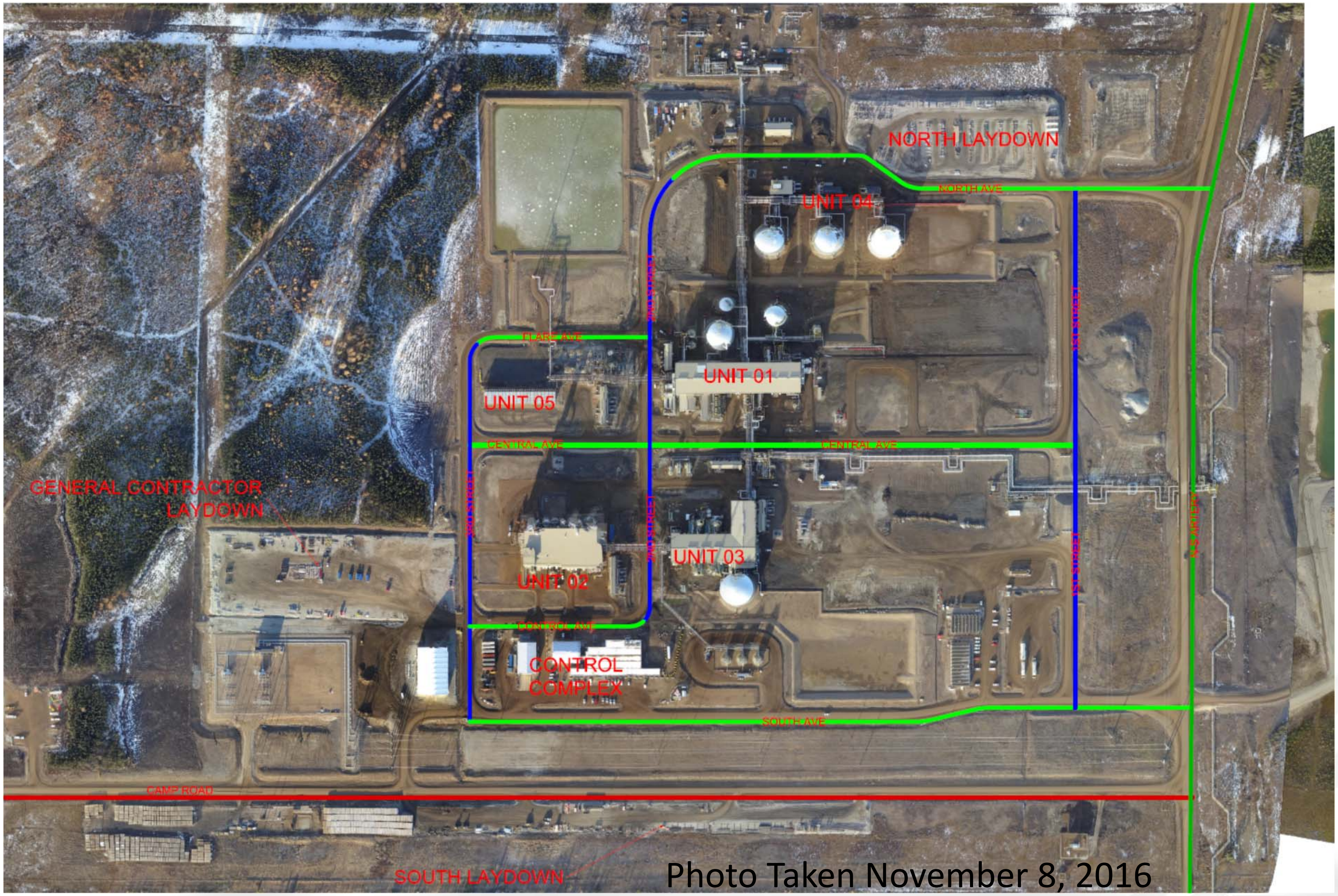
3.1.2 SURFACE OPERATIONS, COMPLIANCE AND ISSUES NOT RELATED TO RESOURCE EVALUATION

FACILITY PERFORMANCE, MEASUREMENT AND REPORTING
PARTS (1), (2), (3)

MRCP Central Processing Facility Phase 1 Plot Plan



MRCP Central Processing Facility – Aerial View



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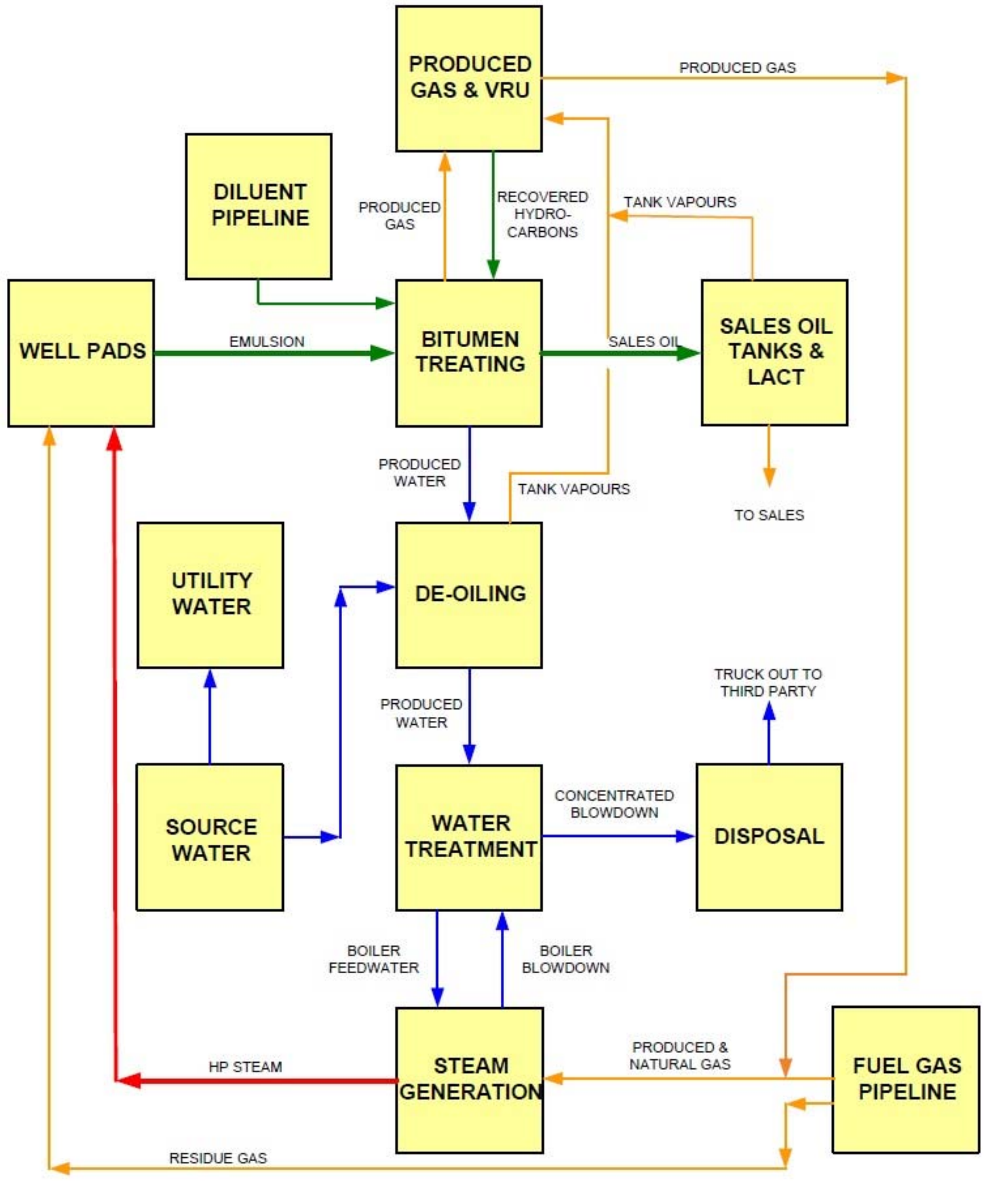
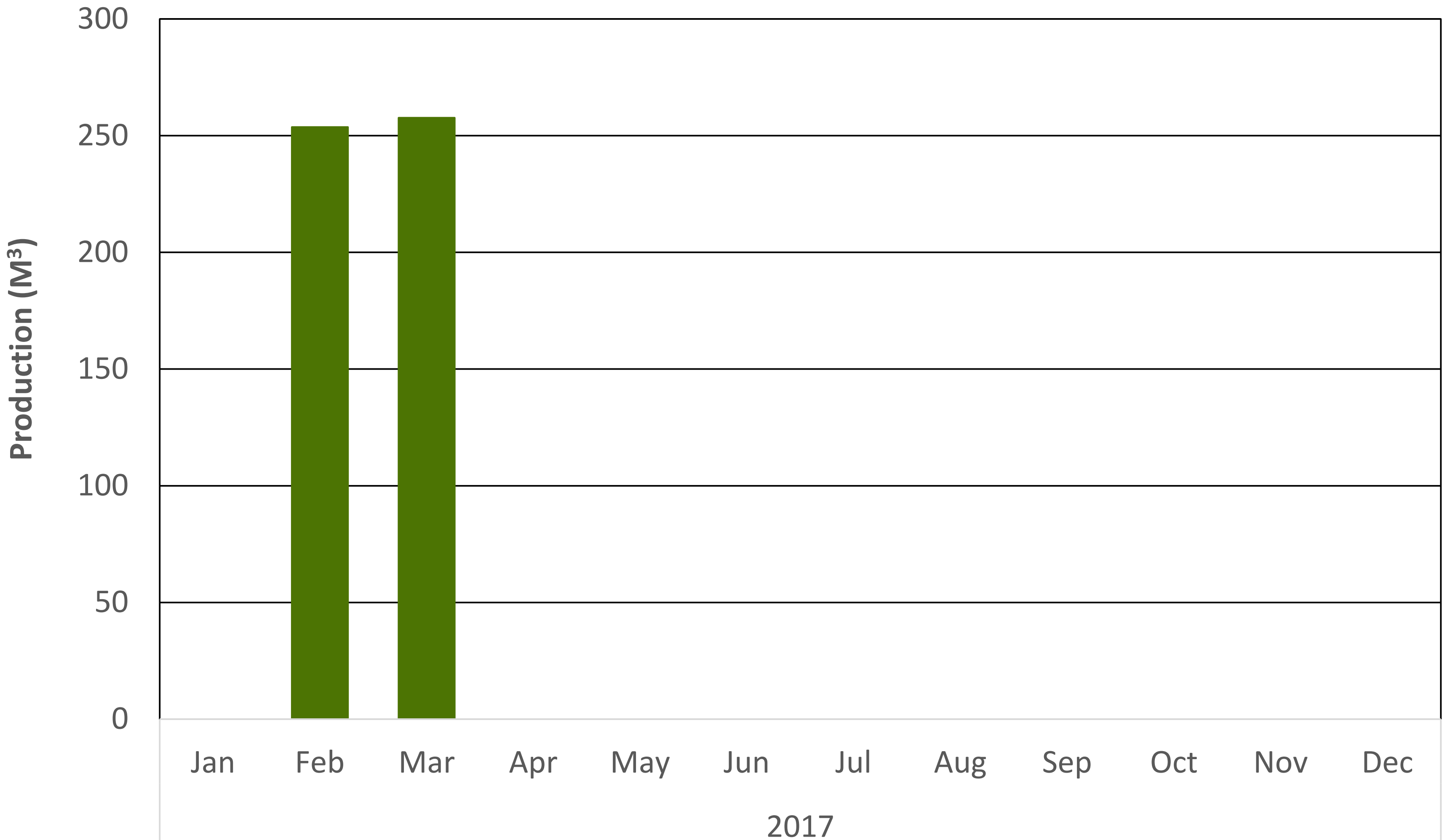
MRCP CPF General Block Flow Diagram



Bitumen Production (2017 - YTD)



*No production prior to 2017

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Water Treatment Technology

- High pH Vertical Tube Falling Film Mechanical Vapor Compression (MVC) Evaporators for produced water treating:
  - First Stage Evaporators x (2)
  - Second Stage Evaporator x (1)
- Forced Circulation MVC driven Concentrator for further concentrating of evaporator blowdown to Reduced Liquid Discharge (RLD)

Water Treatment Successes and Challenges

- Successes:
  - The water balance during startup, specifically the make-up water and disposal water volume is meeting expectations
  - The performance of evaporators and concentrator are meeting design expectations in general

- Challenges:
  - Off-spec BFW conditions are encountered, continue to optimize the chemical treating program for improved BFW quality
  - Equipment scaling due to hard non saline water as service water, plan in place to mitigate.

Steam Generation Technology

- Natural circulation elevated drum steam generators designed for sub-ASME feed water quality
  - (4) x steam generators
  - Low NOx combustion system
- Steam Generation Success:
  - Boilers are successfully commissioned and operating. The steam generated is meeting the field steam demands.
- Steam Generation Challenge:
  - Boiler water off spec. results in higher blowdown rate.

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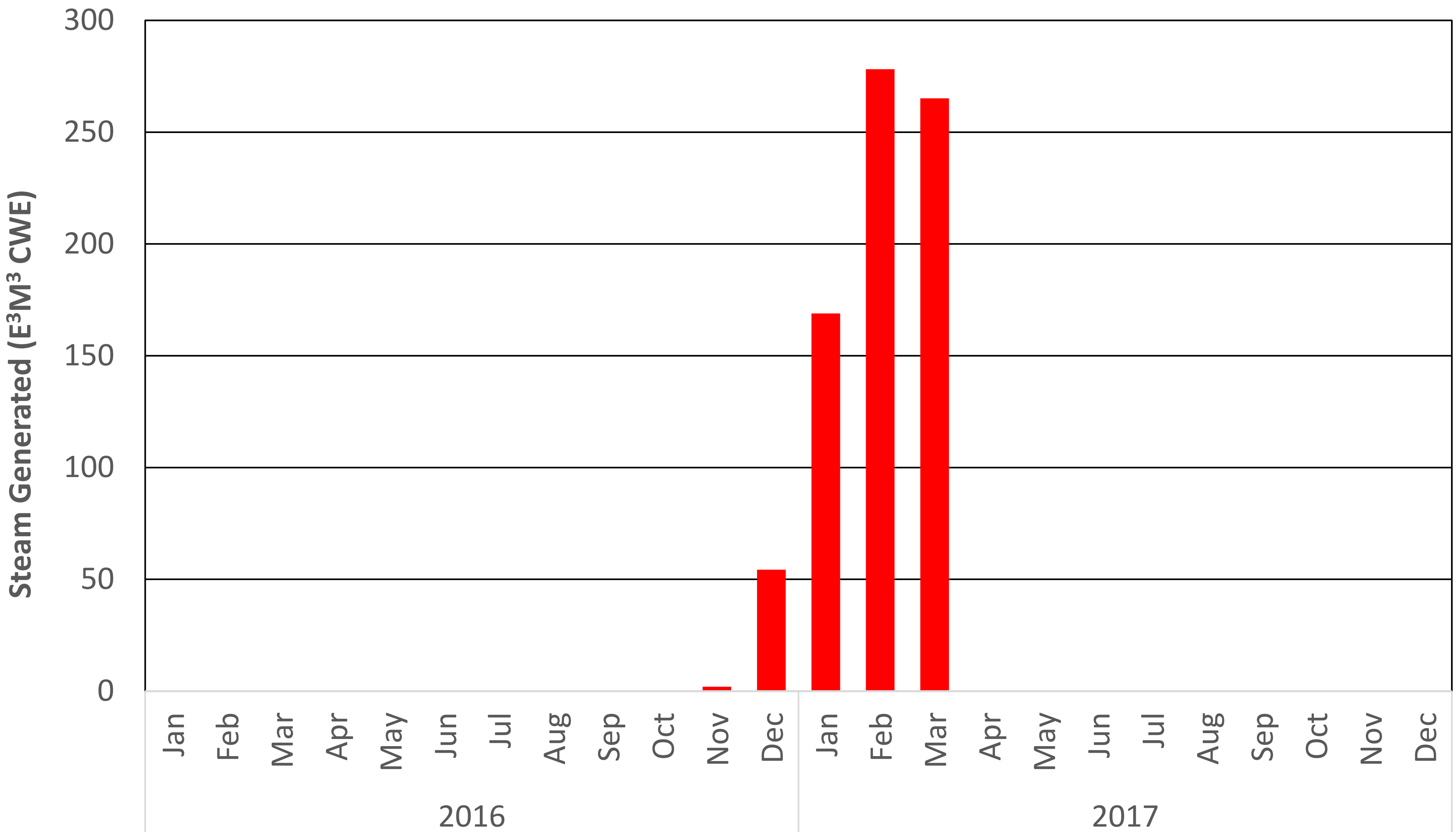
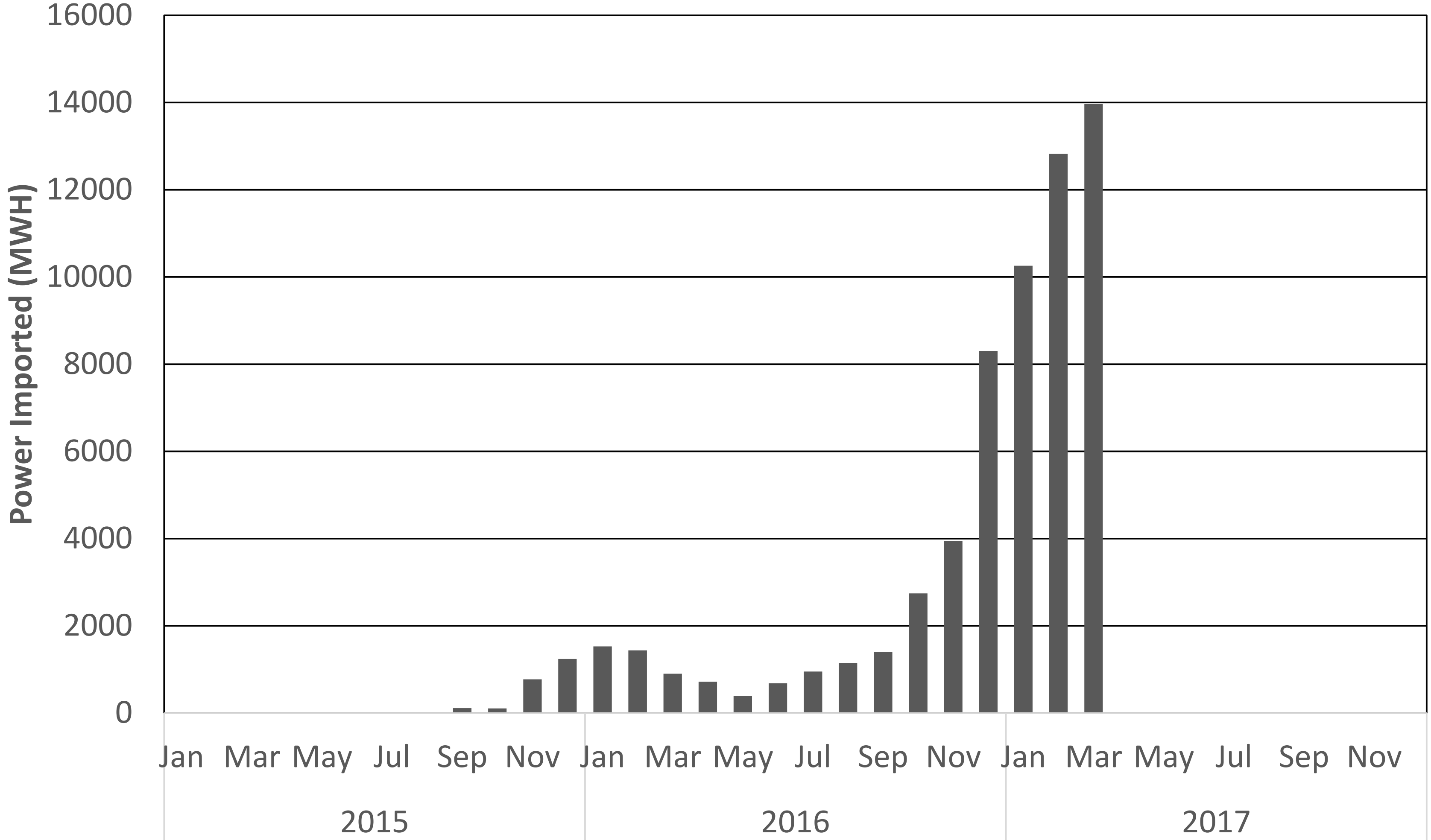
Steam Produced (2016 - Date)



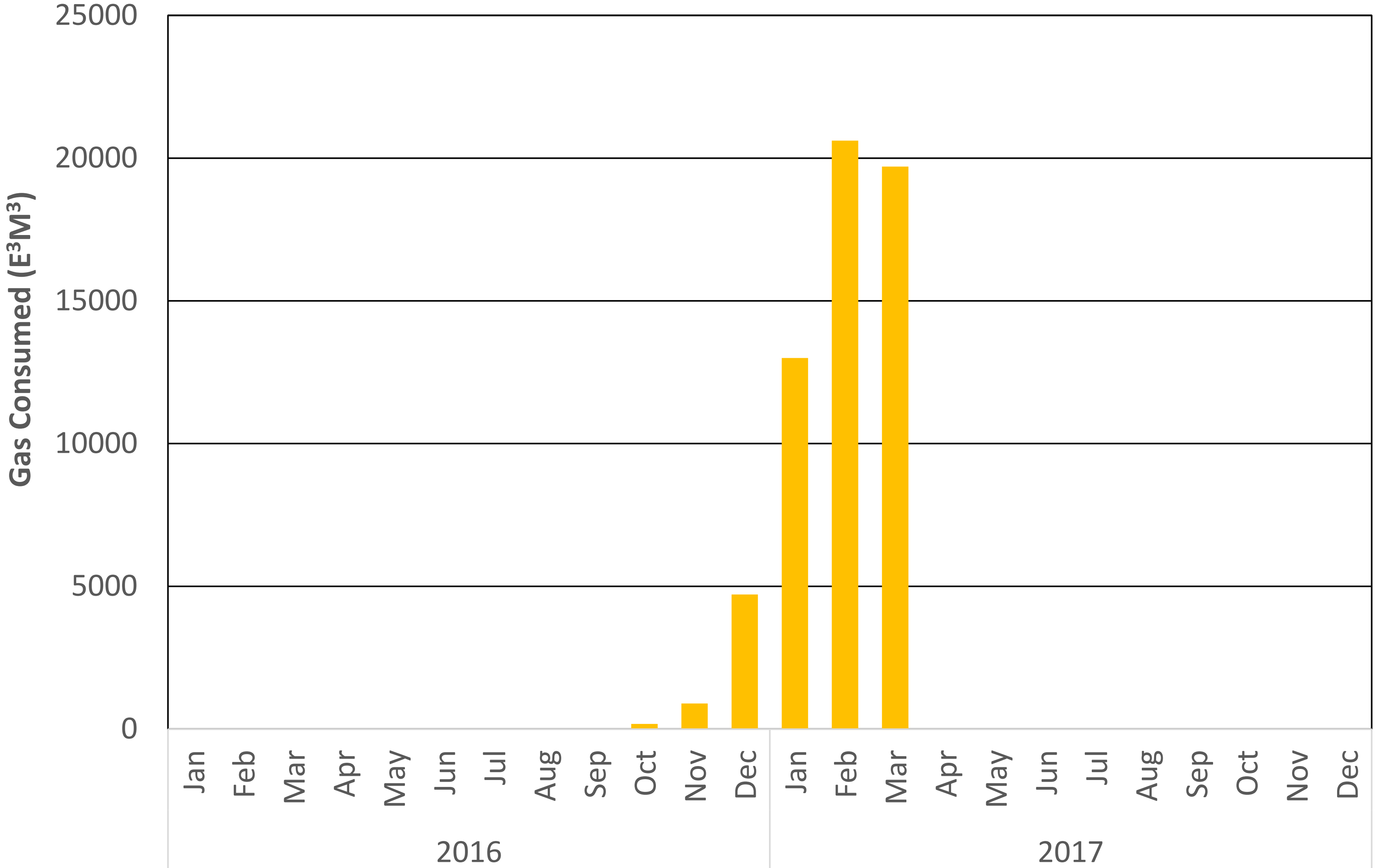
Note: Steam Quality from Drum Boilers is maintained at 99%.

Power Imported/Consumed (2015 to Date)



Note: Power energized September 2015. Power consumed September 2015 – August 2016 used for construction activities.

Gas Consumption (2016 -Date)



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Measurement Accounting & Reporting Plan (MARP)

- AER Audit - MARP submitted in March, 2017
- Mackay River Report Codes:
  - Production Battery AB BT 0142085
  - Injection Facility AB IF 0142086
  - Meter Station (Fuel Gas) AB MS 0136386
  - Custody Transfer Point (Diluent) AB PL 0142114
  - Custody Transfer Point (Product) AB PL 0144307

3.1.2 SURFACE OPERATIONS, COMPLIANCE AND ISSUES NOT RELATED TO RESOURCE EVALUATION

DISCUSSION OF WATER PRODUCTION, INJECTION, AND USES
PART (4)

Non-Saline Water

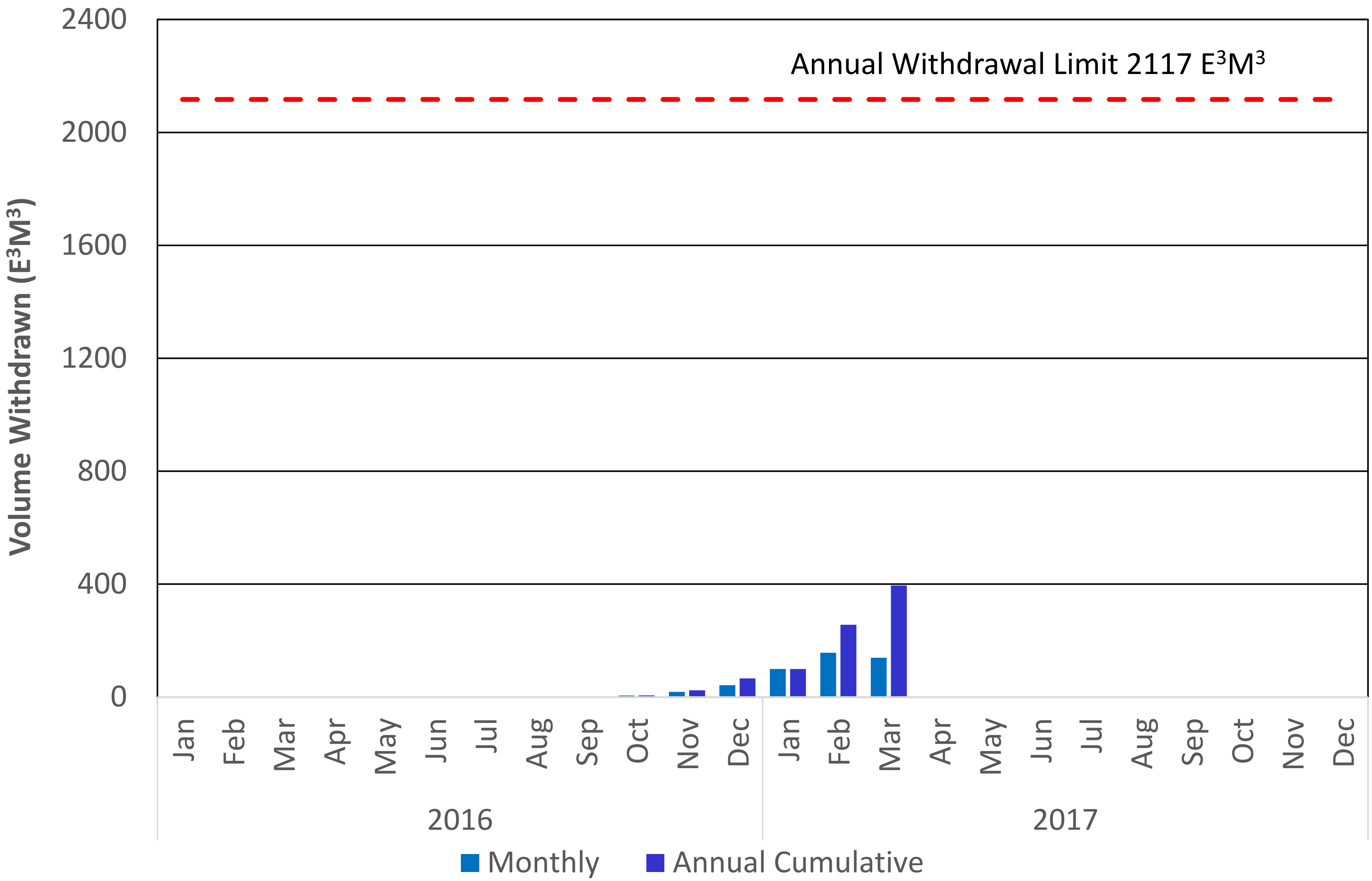
Source Water Wells

- Water Act Licence No. 00266369-01-03:
  - Approved Annual Withdrawal Volume = 2,116,964 m^3/year from the Empress Channel
    - 13-10-90-15W4, max rate 2,930 m^3/d
    - 14-11-90-15W4M, max rate 3,000 m^3/d
    - 02-13-90-15W4M, max rate 2,900 m^3/d
    - 08-13-90-15W4M, max rate 3,100 m^3/d

Domestic Water Wells

- Water Act Licence No. 00316276-00-00:
  - Approved Annual Withdrawal Volume = 82,125 m^3/yr from the Grand Rapids 4
    - 16-02-90-14W4M North, max rate 400 m^3/d
    - 16-02-90-14W4M South, max rate 360 m^3/d

Raw Water Withdrawal – Source Wells (2016 - 2017)



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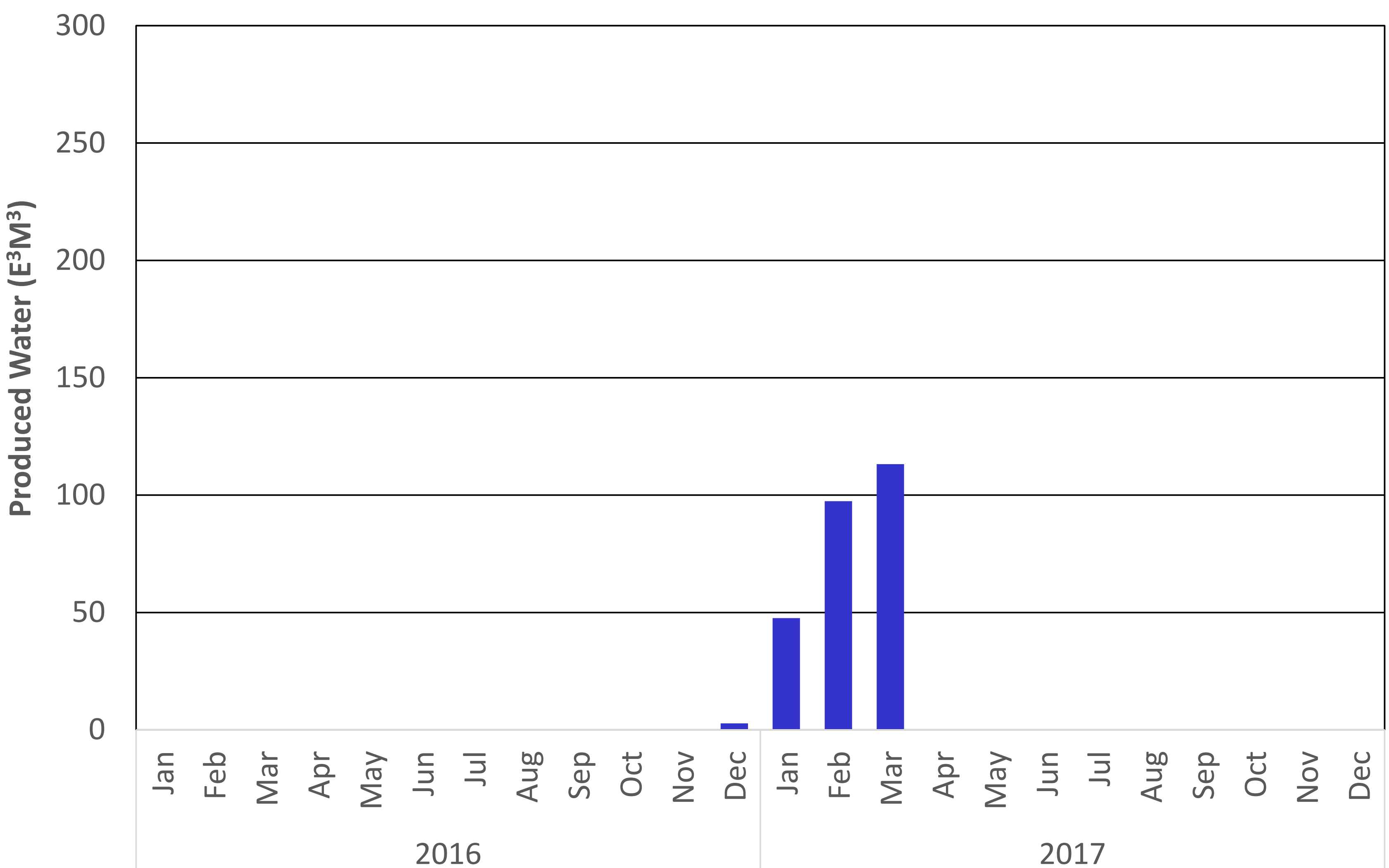
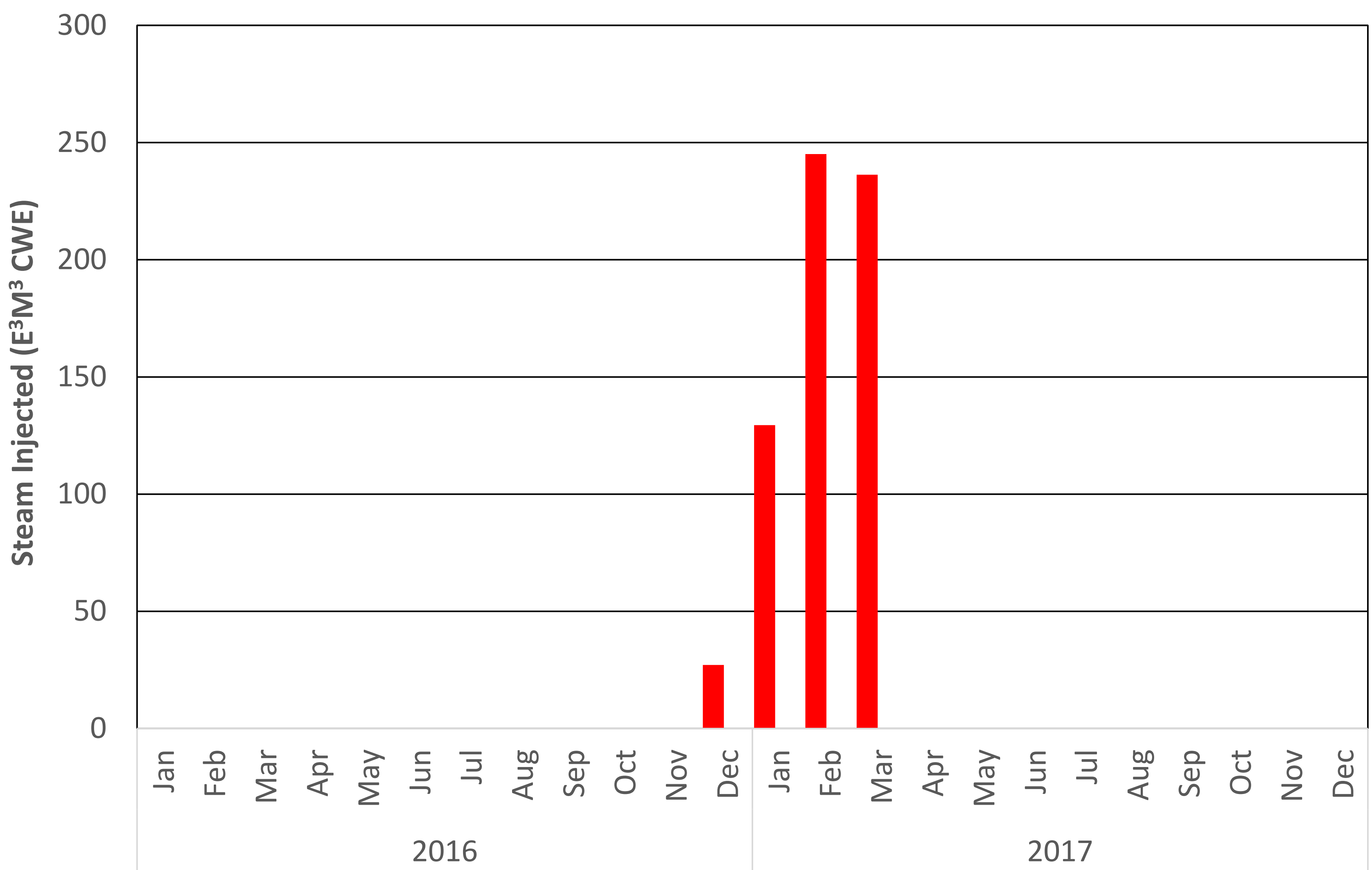
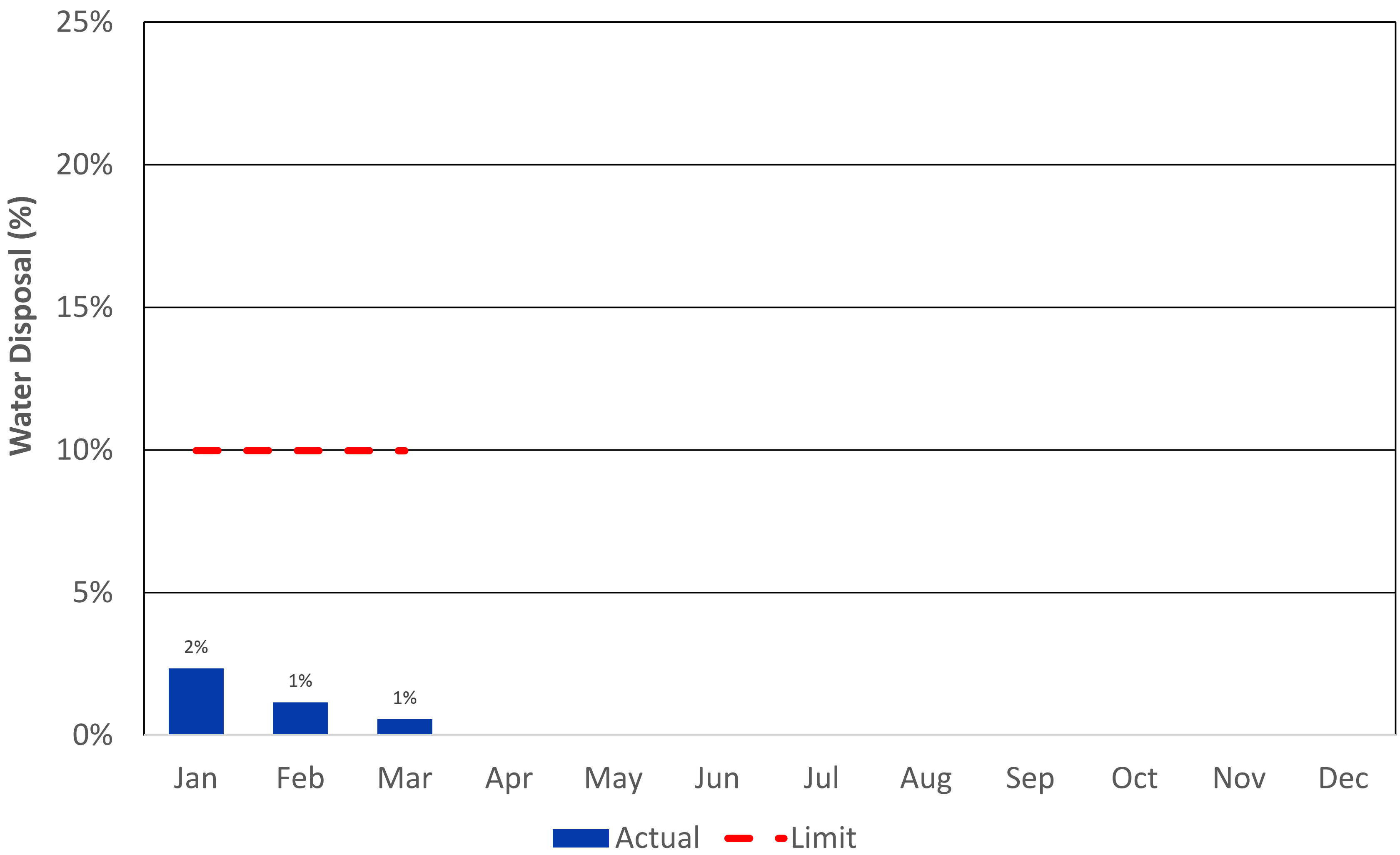
Produced Water (2016 - Date)



Steam Injected (2016 - 2017)



Water Disposal % (2017)



*No water disposal prior to 2017

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Blowdown, Waste and Disposal Wells

Blowdown Recycle

- Continuous blowdown from boilers is injected into the HP steam line.
- Intermittent blowdown from boilers is recycled to Water Treatment.

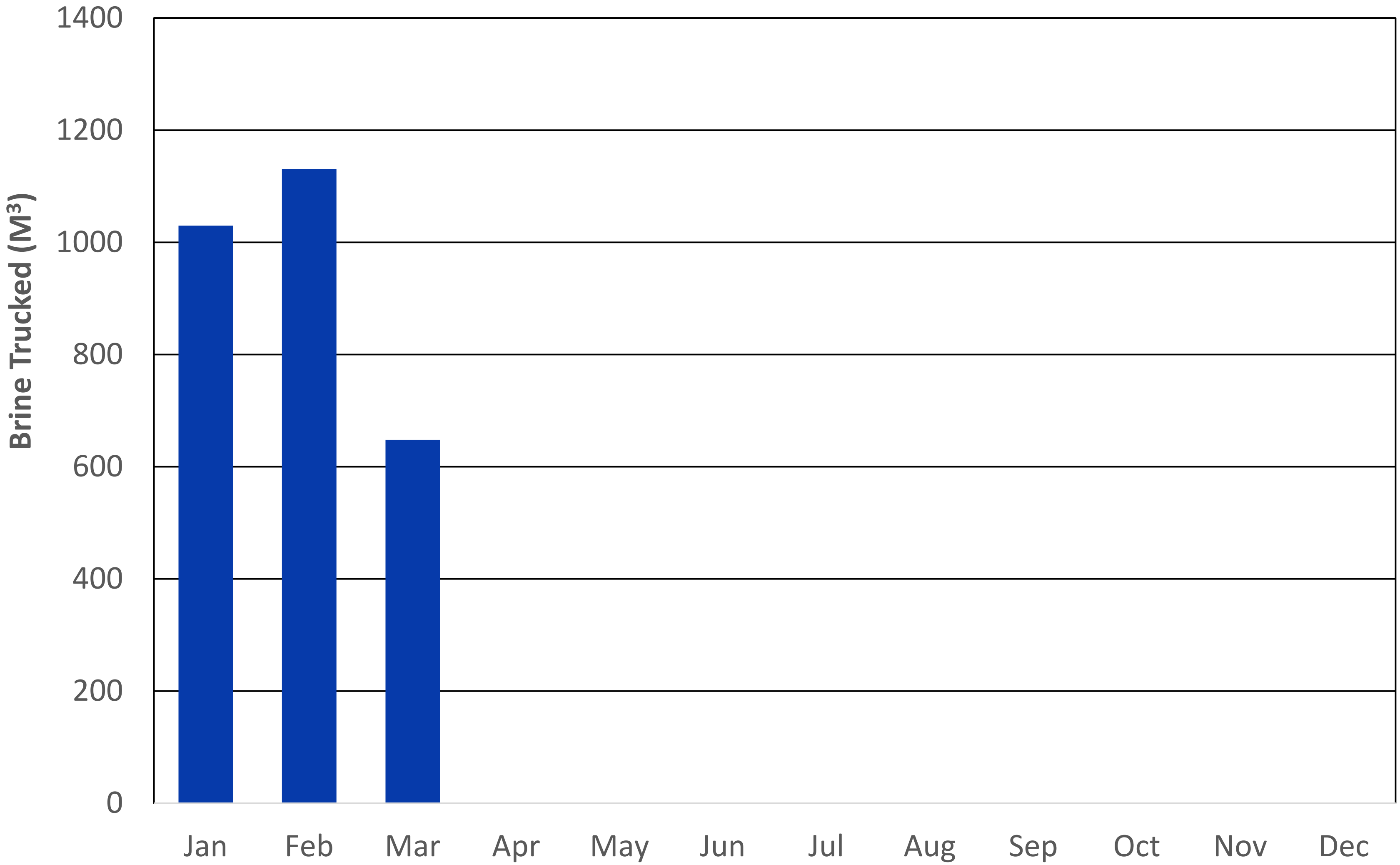
Waste and Disposal Wells

- Waste Tracker software and AER manifests are used to track and submit data to AER.
- No disposal wells are associated with MRCP Phase 1.

Off-Site Brine Water Disposal

- Concentrated brine reject from water treatment is disposed of off-site.
- Location of disposal site:
  - Tervita Lindbergh
  - ABBT-100/06-12-090-14-W4/00
- Sources of brine water:
  - Evaporator Waste Water Tanks
  - Concentrator Feed/Waste Tanks

Off-Site Brine Water Disposal (2017)



*No off-site brine water disposal prior to 2017

3.1.2 SURFACE OPERATIONS, COMPLIANCE AND ISSUES NOT RELATED TO RESOURCE EVALUATION

FUTURE PLANS

PART (9)

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Future Plans – Surface Facilities

- Brion is currently focused on the successful start up of MRCP Phase 1. No changes to surface facilities are proposed at this time.
- Routine maintenance may require temporary shutdowns of equipment

3.1.2 SURFACE OPERATIONS, COMPLIANCE AND ISSUES NOT RELATED TO RESOURCE EVALUATION

REGULATORY AND ENVIRONMENT
PARTS (5), (6), (7), (8)

Directive 078 - Scheme Approval Amendments

	Amendments to Scheme Approval No. 11715		
Amendment No.	**Application No.**	**Purpose**	**Approval Date**
11715A	1712804	Drainage patterns AF and AG were combined into a single subsurface drainage pattern (AF)	12-Jun-12
11715B	1762244	Equipment reconciliation and design changes at the MRCP CPF	5-Sep-13
11715C	1834479	Amalgamation of MacKay Operating Corporation and Brion Energy Corporation into a single corporate entity.	15-Sep-15
11715D	1838850	Addition of 17 down-spaced well pairs in four subsurface drainage patterns (AA, AB, AC and AF) and deferral of the development of AI drainage pattern.	9-Nov-15
NA	1875952	Temporary exceedance of the approved Maximum Operating Pressure in order to unload liquid from the bottom of the MRCP wells and induce returns.	21-Dec-16
11715E	1877223	Approval to test the FUSE^{TM} process on two SAGD well pairs in order to evaluate its applicability to future well pairs at MRCP.	03-Mar-17

Application 1848515 – Minor Facility Design Changes

- Brion submitted a Directive 078 application on December 30, 2015 to reconcile final Central Processing Facility (CPF) design with the assumptions made in the original integrated application for the MRCP.

- The application was closed by the AER and Brion was requested to provide this information in its next AER Directive 54 Scheme Presentation.

- Detailed descriptions of changes can be found in AER application No. 1848515. Highlights are as follows:
  - Tank sizes were updated
  - Vapour recovery units were updated
  - Process buildings were updated
  - Lab building locations were updated
  - The number of evaporator/concentrator packages decreased from 4 to 3
  - Updated MW for glycol heater and steam generators
  - Increased flare stack height
  - Updated process flow diagrams
  - Updated material balance
  - Updated project energy balance
  - Updated chemical consumption rate

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EPEA and Water Act Amendments

Amendments to Water Act Licence No. 266369		
Amendment No.	**Purpose**	**Approval Date**
266369-01-00	Licence Renewal	10-Sep-14
266369-01-01	Replaced two of the three existing wells in the licence with three new wells	23-Feb-15
266369-01-02	Rewording of approval for operational clarity	6-Aug-16
266369-01-03	Changes to monitoring well network and report submission dates	16-Feb-17
266369-01-04	Changes to reporting measurement intervals	17-May-17

Amendments to EPEA Approval No. 254465		
Amendment No.	**Purpose**	**Approval Date**
254465-00-01	Updates to equipment layout, size and type	28-Feb-14
254465-00-02	Updates to equipment sizing, emission sources and changes to regional initiatives	18-Mar-16

Compliance Statement

To the best of our knowledge, Brion's MRCP is compliant with all regulatory approvals and regulations with the exception of the following:

- Building trench primary containment failure, leakage into interstitial space in Unit 002 Water Treatment and Unit 003 Steam Generation buildings
  - Voluntarily self disclosed on Feb. 1, 2017
  - Corrective Actions are underway

Regulatory Compliance Issues

Date	Type	Details	Resolution
12/9/2013	Pipelines/Pipelines Installations Technical *Voluntary Self-Disclosure*	Failure to file a licence amendment application to reflect a change in the pipeline parameters which does not result in a cat/type change or a change in level designation. Change in pipe specifications, segment locations, and status of the pipeline (permitted from operational) for the below-ground freshwater gathering pipeline system.	Coming into compliance actions completed.
1/8/2014	Pipelines/Pipelines Installations Technical *Voluntary Self-Disclosure*	Failure to file a licence amendment application to reflect a change in the pipeline parameters which does not result in a cat/type change or a change in level designation. Change in pipe specifications, segment lengths, and status of the pipeline (permitted from operational) for the above-ground fuel gas pipeline system.	Coming into compliance actions completed.
1/26/2015	Wells Technical and Well Abandonment Audits *Voluntary Self-Disclosure*	Failure to file a licence amendment application when required, and failure to complete surface abandonment within specified timeframe. Due to a recent regulatory change (AER *Manual 008: Oil Sands and Coal Exploration Application Guide*), in order to convert oil sands exploration wells to observation wells, *Public Lands Act* dispositions (Mineral Surface Lease) need to be secured prior to AER *Directive 056: Energy Development Applications and Schedules* well licence application submission - 22 wells.	Coming into compliance actions completed.
5/22/2015	Well Abandonment Audits *Voluntary Self-Disclosure*	Failure to report surface abandonments through the DDS system (Licence Abandonment: Well Licence Abandonment) within 30 days of completing the operation. (Section 2.3 and 4.6). Eight Oil Sands Evaluation Wells.	Coming into compliance actions completed.
2/1/2017	Crude Bitumen Group Battery *Voluntary Self-Disclosure*	Building trench primary containment failure, leakage into interstitial space in Unit 002 Water Treatment and Unit 003 Steam Generation buildings.	Coming into compliance actions still ongoing and expected to be completed by June 2017.

Reportable Spills

Date	Type	Details	Resolution
2/3/2014	Onsite (SAGD Drilling)	During the cementing of the intermediate section of SAGD well 3I (SAGD Well Pad AH), a vacuum truck was transferring excess cement returns were the rig to a cement storage bin. 2.5m3 of cement leaked onto the rig matting due to a poor seal of the end-dump door.	Spill cleaned up, area remediated, and contaminated material disposed of at an authorized waste management facility.
3/8/2014	Onsite (SAGD Drilling)	During the drilling of 2P intermediate, 5.5m3 of gel-chem drilling fluids was released onto the rig matting due to a 6” value (Mud Tank #8) being left in an open position during the transfer of drilling fluids from one mud tank to another. 5.0 m3 recovered and returned to mud system.	Spill cleaned up, area remediated, and contaminated material disposed of at an authorized waste management facility.
7/7/2015	Offsite (Site-wide Services - AOSTRA/Suncor Road)	Near 4 km of the AOSTRA/Suncor Road, the Prairie North Construction Limited (Prairie North) driver lost control of the service truck and rolled the vehicle into the ditch. During the accident, a barrel of used engine oil and containers of lubricants became detached from the service truck and was released into the ditch. At the time of the accident, the Suncor Energy Response Team created an earthern berm to keep the spilled material contained. Absorbent pads and Oil Gator absorbent were used to absorb some of the released material. Equipment and waste bins were mobilized to the site of the incident. Debris from the accident were removed and disposed of. Two 15m3 contaminated soil bins were used in the cleanup of all impacted soils, and the contaminated soils have been transported to Tervita’s Edmonton Sludge Facility.	Spill cleaned up, area remediated, and contaminated material disposed of at an authorized waste management facility.
2/11/2017	Onsite (Operations - SAGD Pad AD) F44287	SAGD Pad AD (Pad AD) was running in start up mode (lower than design pressure for sparging steam). A 6m3 release of well returns (approximately 98% water, 2% bitumen) at the Pad AD multi-phase pump recycle cooler. Steam traps were not functioning to maintain consistent flow and were removed from service. As minimum heat could not be maintained within the cooler building, the established standard for using temporary heat or process fluid for heating was not sufficient to prevent freeze-up. Of all the SAGD pads, Pad AD had been in service the least amount of time, had the lowest returns, and there were extremely cold temperatures a few days prior (-30C), all of which may have played a part in the release. It is believed that there was a blockage in the coil tubing as a result of either gummy returns, or cold weather and freezing.	Spill cleaned up, area remediated, and contaminated material disposed of at an authorized waste management facility.

AER Inspections

Date	Inspection Type	Location / Licence No.	Results	Resolution (if required)
11/6/2013	Well Site Lease	09-06-094-17W4M W 0387299	Satisfactory	N/A
11/6/2013	Well Site Lease	13-26-094-17W4M W 0392383	Satisfactory	N/A
2/12/2014	Pipeline Construction	05-14-090-14W4M P54003	Satisfactory	N/A
2/20/2014	Drilling Operations	13-06-090-13W4M W 0460669	Satisfactory	N/A
2/20/2014	Drilling Operations	12-30-089-13W4M W 0461998	Satisfactory	N/A
3/19/2014	Pipeline Construction	05-14-090-14W4M P54003	Satisfactory	N/A
1/22/2015	Drilling Operations	11-23-090-14W4M W 0472784	Satisfactory	N/A
6/7/2016	Lease Inspection (Oil/Bitumen Satellite) Follow-up inspection of Brion Energy vegetation clearing as a result of the Horse River Wildfire	16-22-090-14W4 F44294	Satisfactory	N/A
9/23/2016	Exhaust Stack Emissions Inspection of the MacKay Central Plant Continuous Emissions Monitoring System	06-12-090-14W4 F44287	Satisfactory	N/A
2/2/2017	Seismic	093-12W4 MRCP 2017 2D Seismic Program GEO160029	Satisfactory	N/A
2/11/2017	Crude Bitumen Group Battery	06-12-090-14W4 F44287	Satisfactory	N/A
2/11/2017	Oil/Bitumen Satellite	05-13-090-14W4M F44295	Satisfactory	N/A

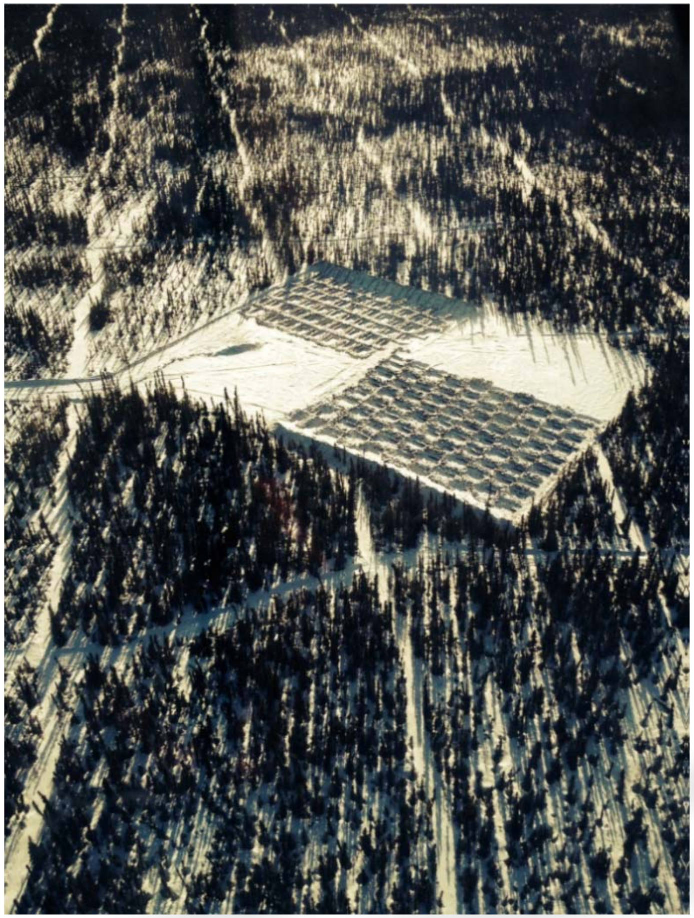
- 12 AER inspections since the last progress report
- All satisfactory with no issues identified

EPEA Monitoring Programs

Monitoring Programs required under EPEA Approval	
Program	**Progress and Results**
Groundwater Monitoring	- 12 monitoring wells installed at Plant and 5 monitoring wells installed at Pad AJ - All EPEA required pre-operational baseline sampling events have been conducted - Additional baseline sampling also collected - Post start-up sampling events will commence in 2017
Wetland Monitoring	- Comprehensive report submitted on Dec. 16, 2016 - Annual Monitoring has been occuring since 2013
Wetland Reclamation Trial	- Authorized Mar. 24, 2015 - Two wetland reclamation trials proposed, Trial #2 is currently underway
Wildlife Mitigation and Monitoring	- First comprehensive report submitted to AER on May. 15, 2015 (Due every 3 years) - All wildlife mitigations and monitoring programs have been implemented and are ongoing
Caribou Mitigation and Monitoring	- First comprehensive report submitted to AER on May. 15, 2015 (Due every 3 years) - All mitigations and monitoring programs have been implemented and are ongoing - Caribou Habitat Restoration Trials conducted in 2014
Soil Monitoring	- Due Jan. 31, 2019
Project-Level Conservation, Reclamation and Closure Plan	- Currently under development - Due Oct. 31, 2017
Reclamation Monitoring Program	- Authorized Dec. 10, 2015 - No permanent infrastructure to reclaim at this time - Ongoing Reclamation at Borrow Areas 12, 38 and 118 - Annual summary included in the annual Conservation & Reclamation report submitted to AER

Caribou Habitat Restoration Trial

Mounding Application on OSE Well



Lichen Transplant

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Ambient Air Quality Monitoring

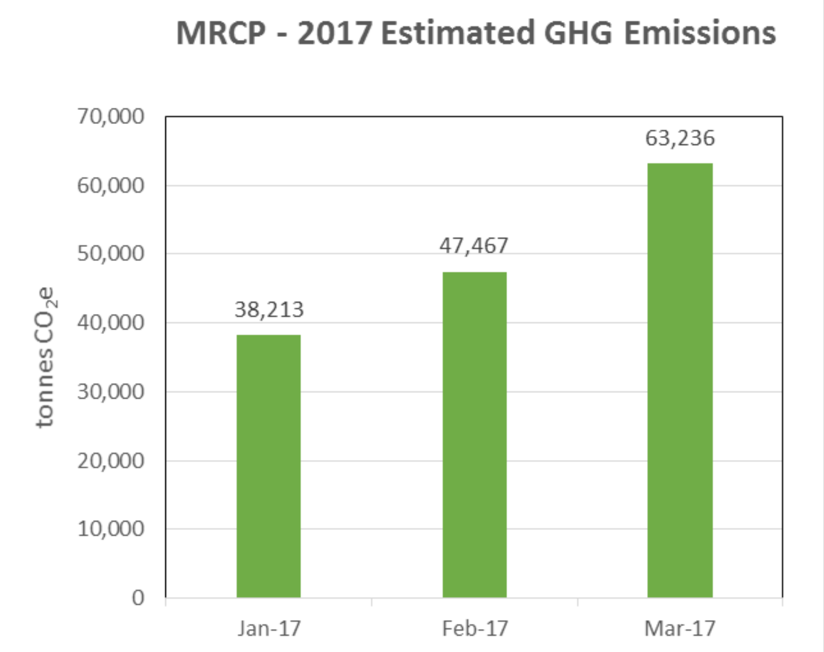
- One continuous air monitoring station ("Brion-MacKay River Monitoring Station")
  - The Wood Buffalo Environmental Association (WBEA) completes the collection, validation and reporting of emissions data from the Brion-MacKay River Monitoring Station
  - Measured parameters include Hydrogen Sulphide (H_2S), Nitrogen Dioxide ($N0_2$), Sulphur Dioxide (SO_2), Total Hydrocarbons (THC), wind speed and wind direction
  - Air monitoring began in January 2016, no significant trends in ambient air monitoring observed
- Four passive exposure air monitoring stations
  - Measured parameters include Sulphur Dioxide (SO_2), and Hydrogen Sulphide (H_2S)
  - Data collection began in October 2016, no significant trends in ambient air monitoring observed
- As of 31-Mar-2017 there have been no exceedances of the Alberta Ambient Air Quality Objectives (AAAQO)

Sulphur Production

- No sulphur emissions as of 31-March-2017
- Total inlet sulphur for the MacKay Central Plant is expected to be less than 1 tonne/day
  - A sulphur recovery unit is not anticipated
  - Current maximum daily design = 0.26 tonne/day
  - Brion will analyze produced gas on a monthly basis to determine sulphur content
- Sulphur emission trends will be monitored and reported throughout operations

Greenhouse Gas (GHG) Emissions

- Brion has been voluntarily reporting to Alberta Environment and Parks (AEP) and Environment Canada since 2012
- Total Emissions (tonnes CO_2e):
  - 2014 = 17,442
  - 2015 = 16,177
  - 2016 = 16,002
- Total Emissions for 2017 (as of 31-Mar-2017) = 148,916 tonnes CO_2e



*data to be verified in 2018

Regional Monitoring and Initiatives

Brion participates and/or funds the following initiatives:

- Oil Sands Environmental Monitoring Program (OSEMP)
- Canada's Oil Sands innovation Alliance (COSIA) Monitoring Working Group
- Wood Buffalo Environmental Association (WBEA)
- Alberta Biodiversity Monitoring Institute (ABMI)
- Black Bear Partnership Project
- Alberta Upstream Petroleum Research Fund (AUPRF)

Future Plans – Regulatory Applications

- No Scheme, EPEA or Water Act Licence amendments are proposed for the remainder of 2017
- Winter drilling and seismic programs are anticipated
  - Subject to Shareholder approval
- MacKay Phase 1A:
  - Brion has received Scheme approval for 17 downspaced wellpairs
  - Field construction planned to start in 2018
  - Public land amendments, D56 and D51 applications to be filed
- Sustaining wellpairs
  - Scheme application to AER planned for end of 2018

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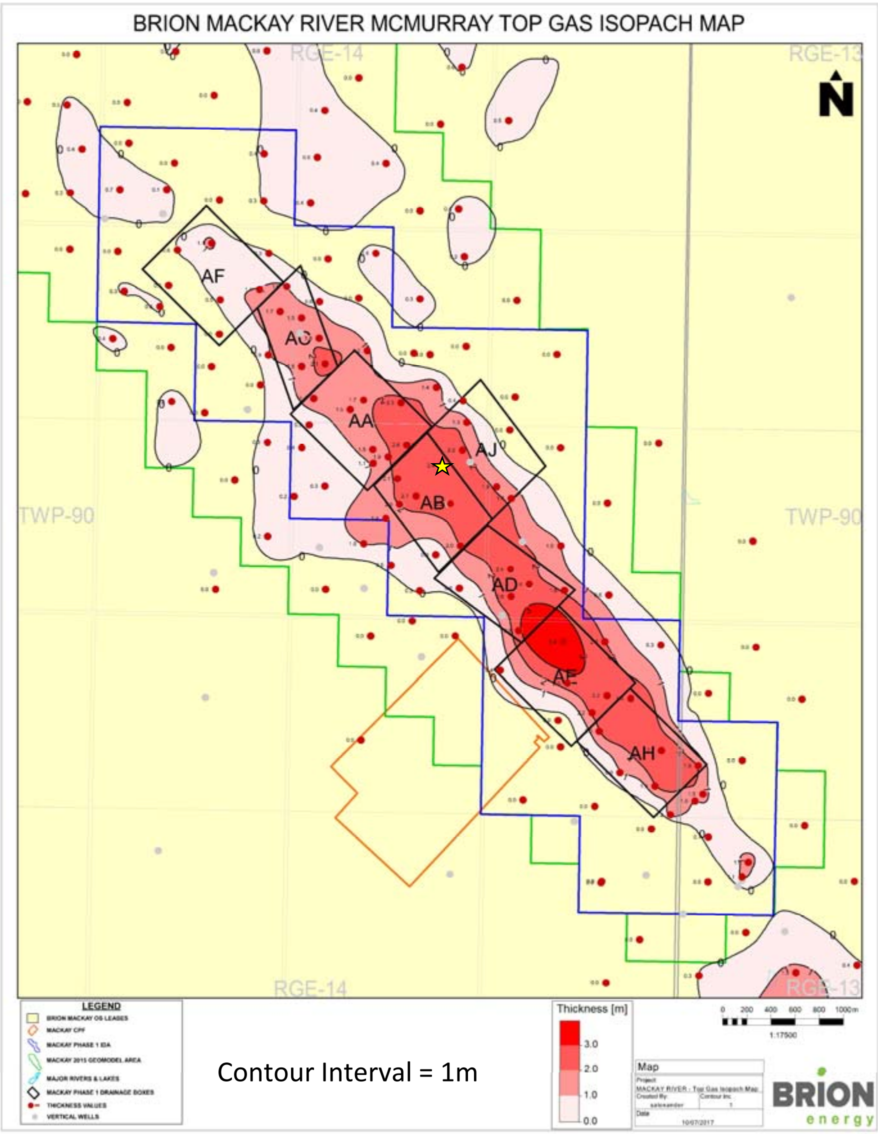
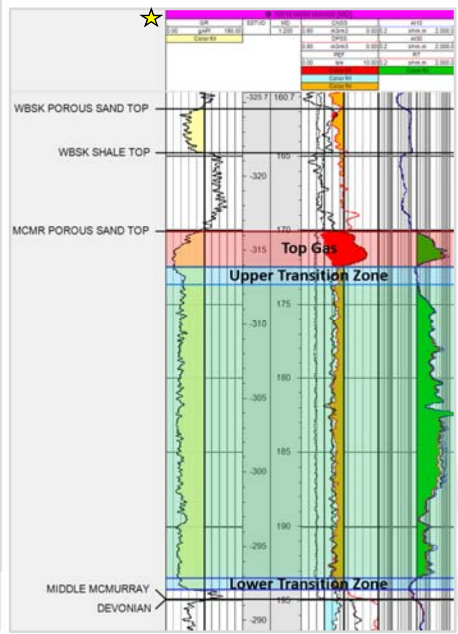
SUPPLEMENTAL INFORMATION REQUESTS

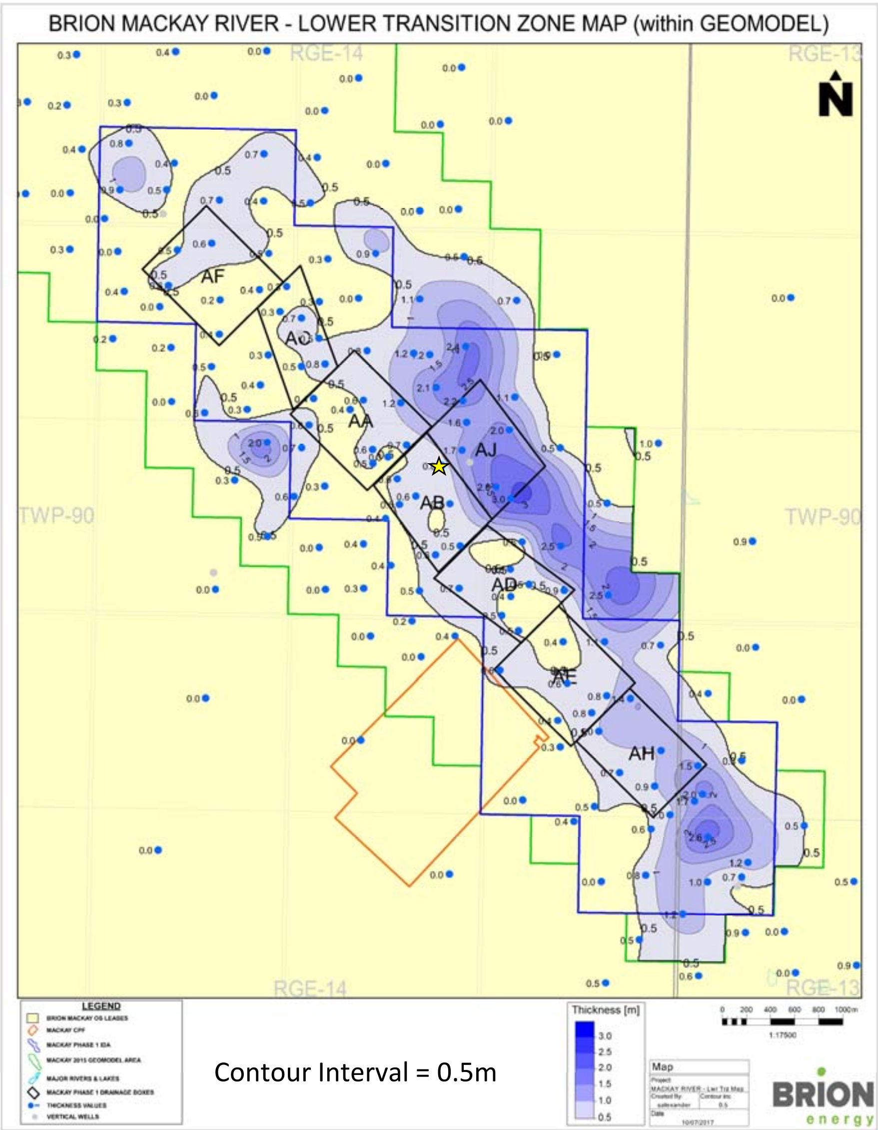
Top Gas Isopach Map



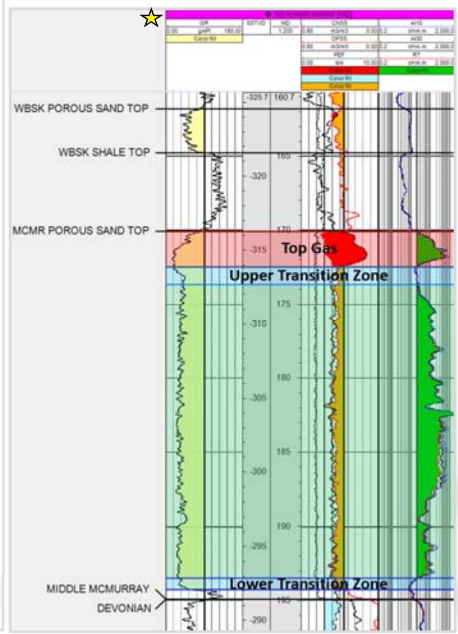
- Top gas zone present in the upper McMurray over the IDA
- Ranges in thickness from approximately 0 to 3 meters



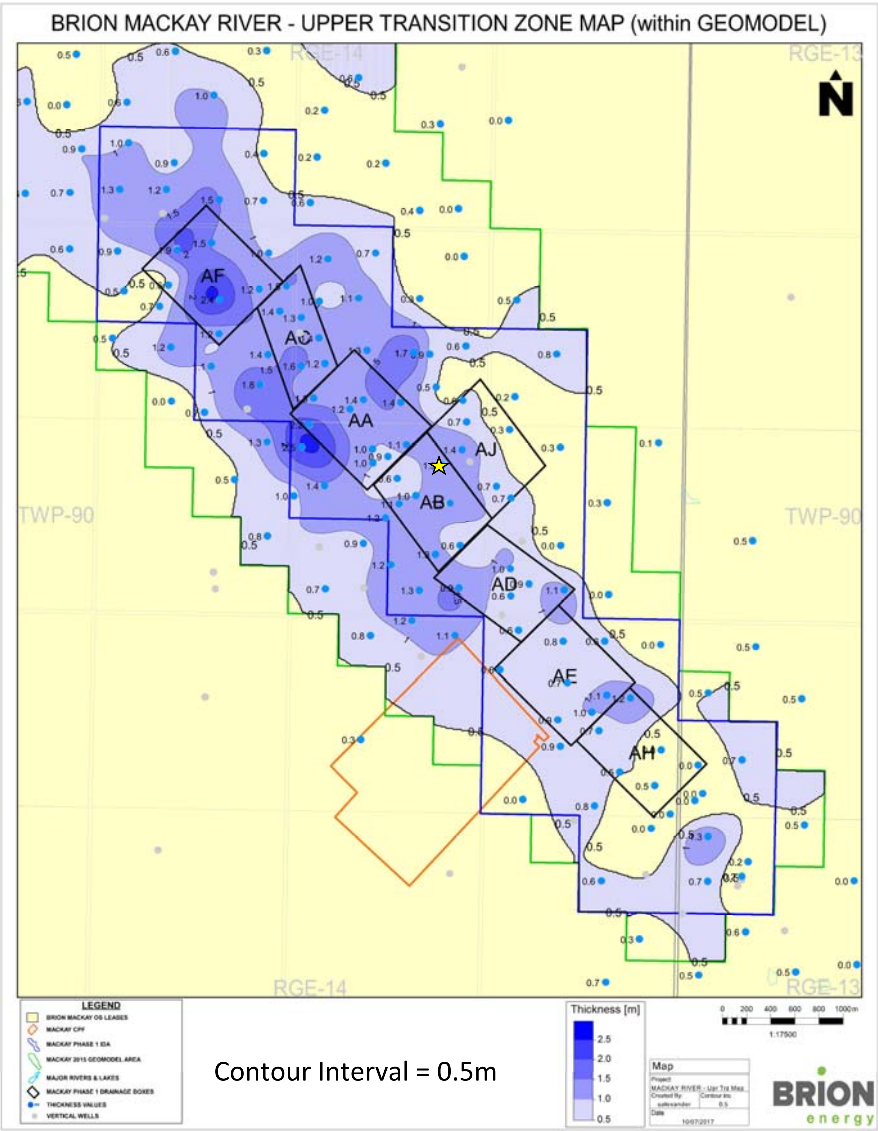
Lower Transition Zone Map



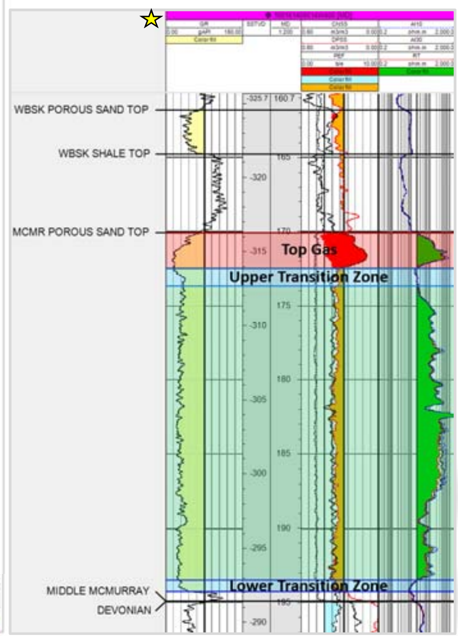
- Criteria:
  - Porous & clean sandy facies with >50% water saturation (GR ≤ 75API, DPSS≥27%, RT<20ohmm, sandy facies)
  - In communication with and below pay zone
- Characteristics:
  - Thin: <1.0m over most of the Phase 1 drainage boxes
  - Limited Lateral Extent: thins toward edges of geomodel area



Upper Transition Zone Map



- Criteria:
  - Porous & clean sandy facies with >50% water saturation (GR ≤ 75API, DPSS≥27%, RT<20ohmm, sandy facies)
  - In communication with and above pay zone
- Characteristics:
  - Thin: <1.5m over most of the Phase 1 drainage boxes
  - Limited Lateral Extent: thins toward edges of geomodel area



Geologic and Reservoir Properties – OBIP

Parameters	Operating Area	Project Area
Top of Reservoir Depth (mTVD)	176	175
Top of Reservoir Depth (TVD masl)	315	311
Base of Reservoir Depth (mTVD)	197	193
Base of Reservoir Depth (TVD masl)	294	293
Net Pay Thickness (m)	21.3	12.8
Porosity (frac)	0.34	0.33
Bitumen Saturation (frac)	0.79	0.75
OBIP (10^6 bbl)	170.2	2890.8
OBIP (10^6 m^3)	27.1	459.6
Initial Pressure (kPaa)	220 (top) – 400 (bottom)	220 (top) – 400 (bottom)*
Original Reservoir Temperature (^oC)	6	6*

** Extrapolated from operating area*

Summary of Slide Updates

Slide Number	Description of Update
19	Replaced the cross-section with an updated one
22	4D seismic survey ~~to~~ may be acquired at MRCP in 2018
25	Slide replaced as original was misleading
47	Column for average initial reservoir pressure removed
57	2,550 Kpaa was corrected to 2,650 Kpaa

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