2014 Annual Performance Presentation

STP - McKay River Thermal Project

Outline

Introductions

3.1.1 Subsurface Overview Related to Resource Evaluation and Recovery

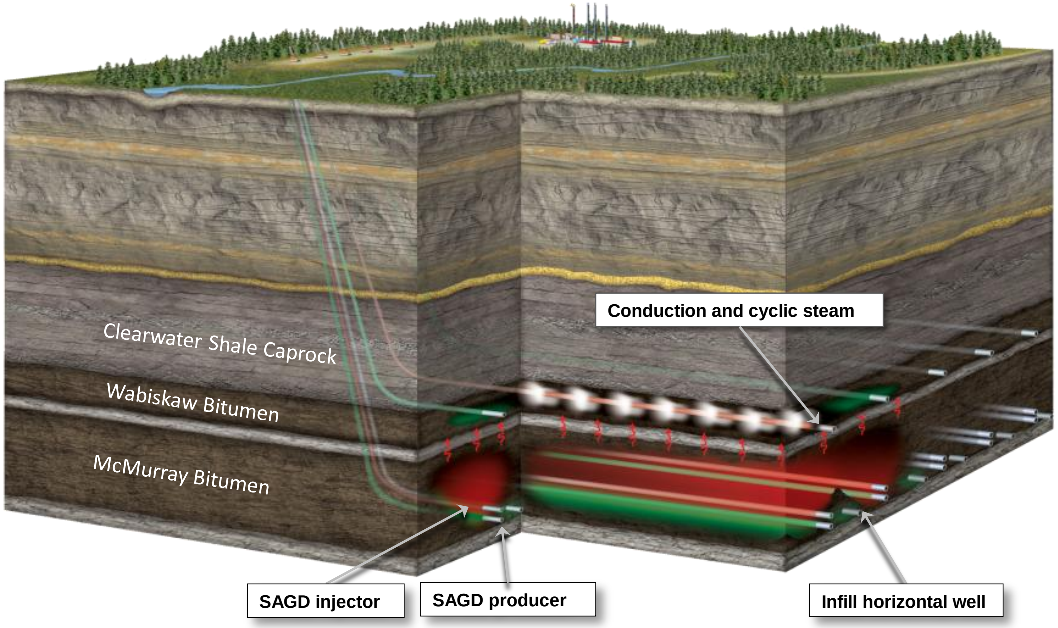
3.1.2 Surface Operations, Compliance, and Issues Not Related to Resource Evaluation and Recovery

Subsurface Summary Table of Contents

PROJECT BACKGROUND

Project Background

STP-McKay: Full Bitumen Exploitation Plan



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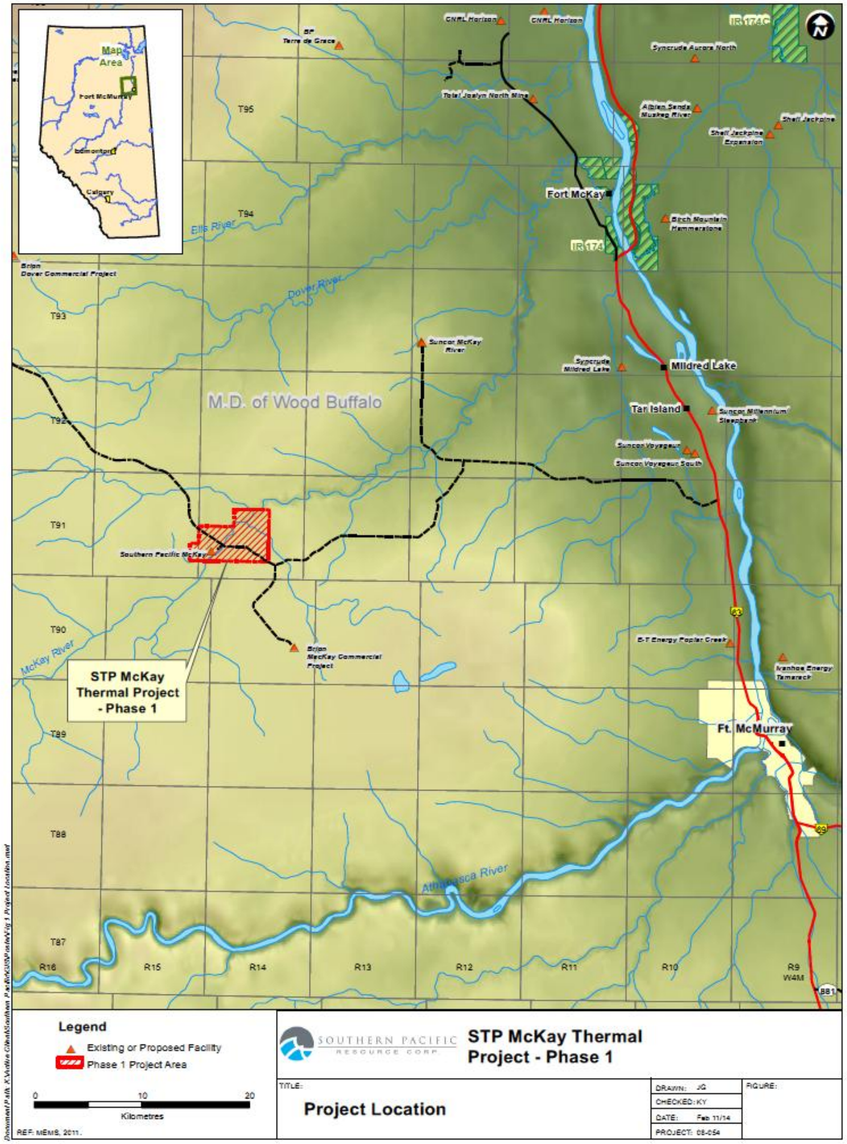
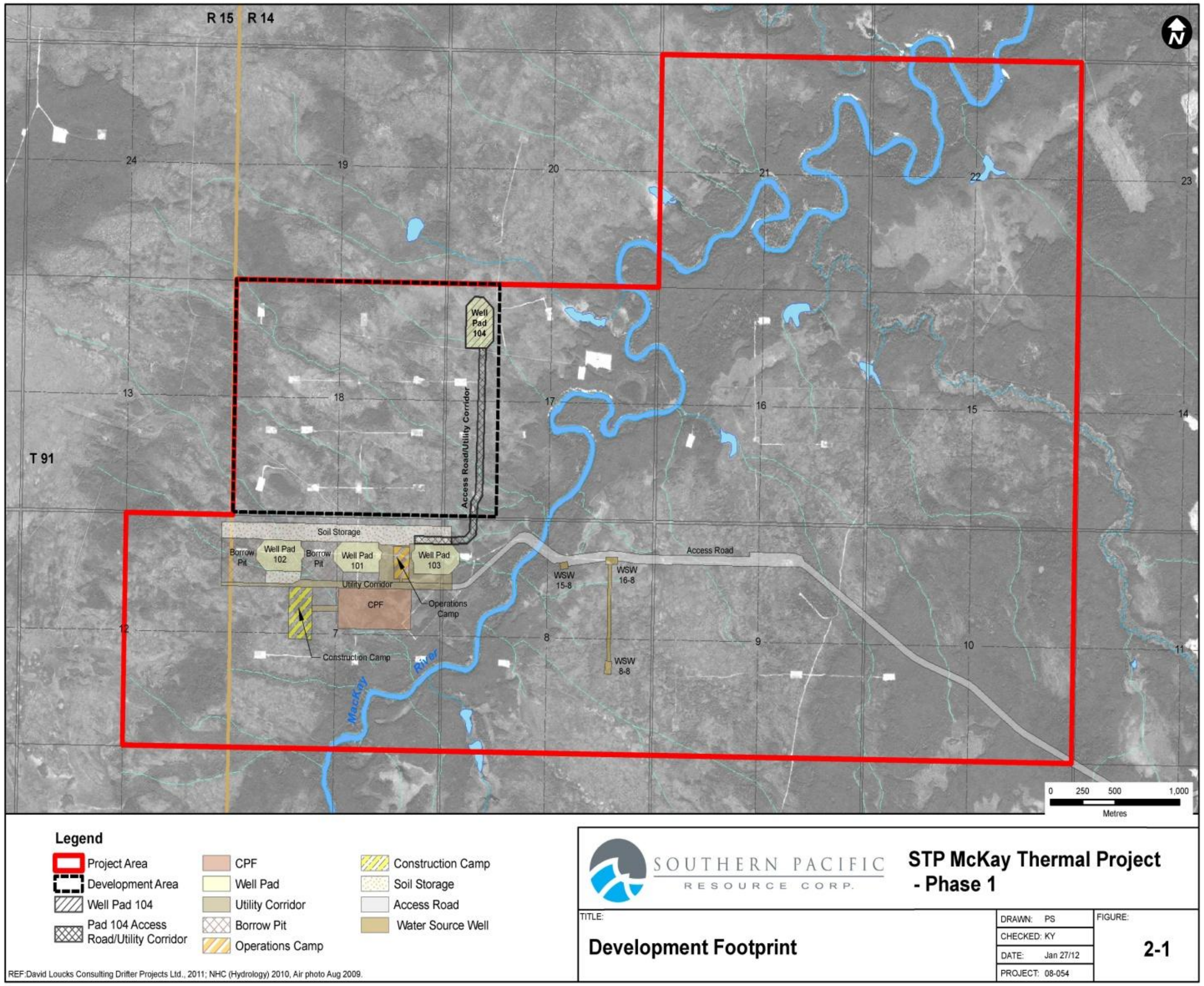
- The STP - McKay Thermal Project uses Steam Assisted Gravity Drainage technology to recover bitumen from the underlying McMurray Formation.
- May 2009 – joint AESRD and ERCB application to construct STP - McKay Thermal Project (Phase 1).
- November 2010 - STP receives project approval:
  - *EPEA Approval No. 255245-00-00*
  - *Oil Sands Conservation Act Approval No. 11461.*
- Phase 1 first steam in July 2012.
- Phase 1 first oil in October 2012.
- The Project consists of a central processing facility (CPF), well pads (2), borrow pits, water source wells (3), observation wells, a water treatment plant, a wastewater treatment plant, access roads and construction and operations camps.
- The facility is approved to produce 1,900m^3/d (~12,000 bpd) of bitumen.
- In November of 2011 an expansion application (Phase 2) was submitted to AESRD and ERCB seeking approval to construct a second CPF on the east side of the MacKay River that would produce an additional 24,000 bpd of bitumen.
- In October of 2012 a Project Update was submitted to amend the Phase 2 application to increase production at the Phase 1 facility from 12,000 bpd to 18,000 bpd while decreasing production at the proposed Phase 2 facility from 24,000 bpd to 18,000 bpd.

Project Background



- The Project is located approximately 45 km northwest of Fort McMurray and 45 km southwest of the community of Fort MacKay in Section 7-91-14W4M
- Project Area is 10.5 sections in Township 91, Range 14, W4M and Township 91, Range 15, W4M.
- Development Area is 1.25 Sections in Township 91, Range 14, W4M.

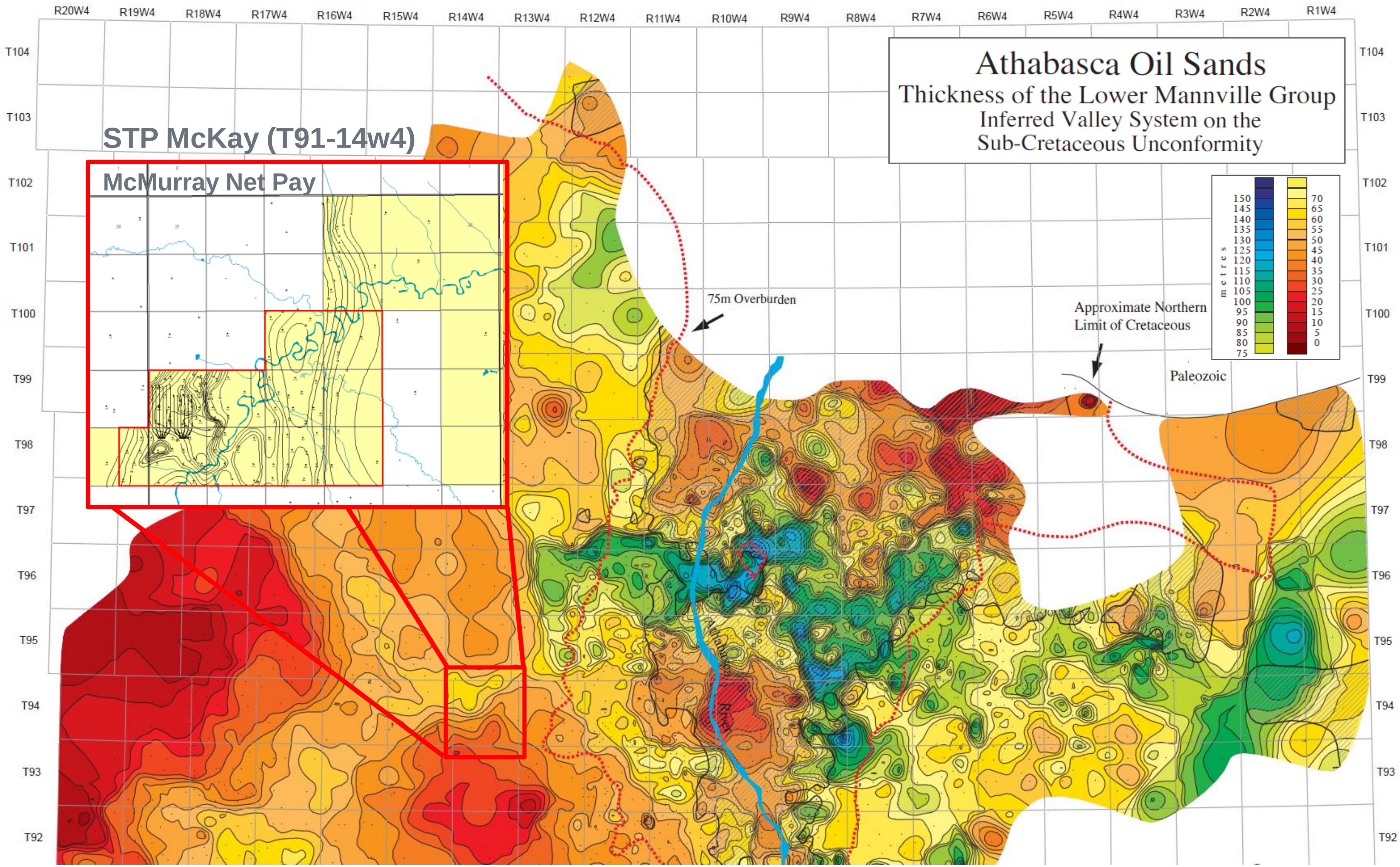
Project Background



- The approved development includes 4 well pads (101- 104).
- The initial development is west of the MacKay River and includes 2 well pads (101 & 102) in close proximity to the CPF.

GEOLOGY/GEOSCIENCE

Geology Overview
Regional Geology – McMurray



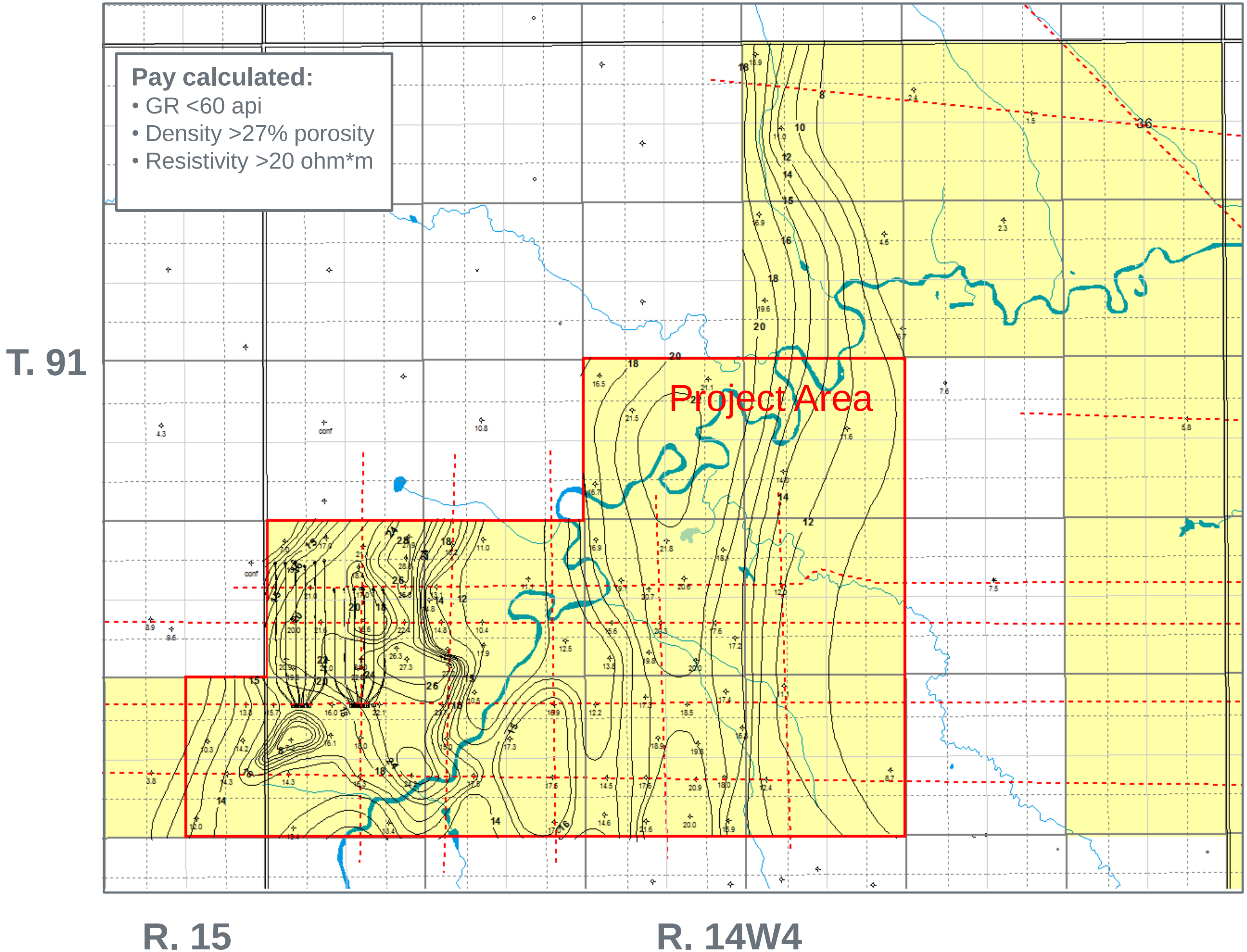
Source: Mike Ranger's Regional Study, 2011

McKay OBIP by Volumetrics

- Approval Area OBIP
  - 89,376 E^3m^3
- Approval Area Reservoir Properties:
  - Porosity: 30-33%, Oil Saturation: 65-75%, Height: 10-27m

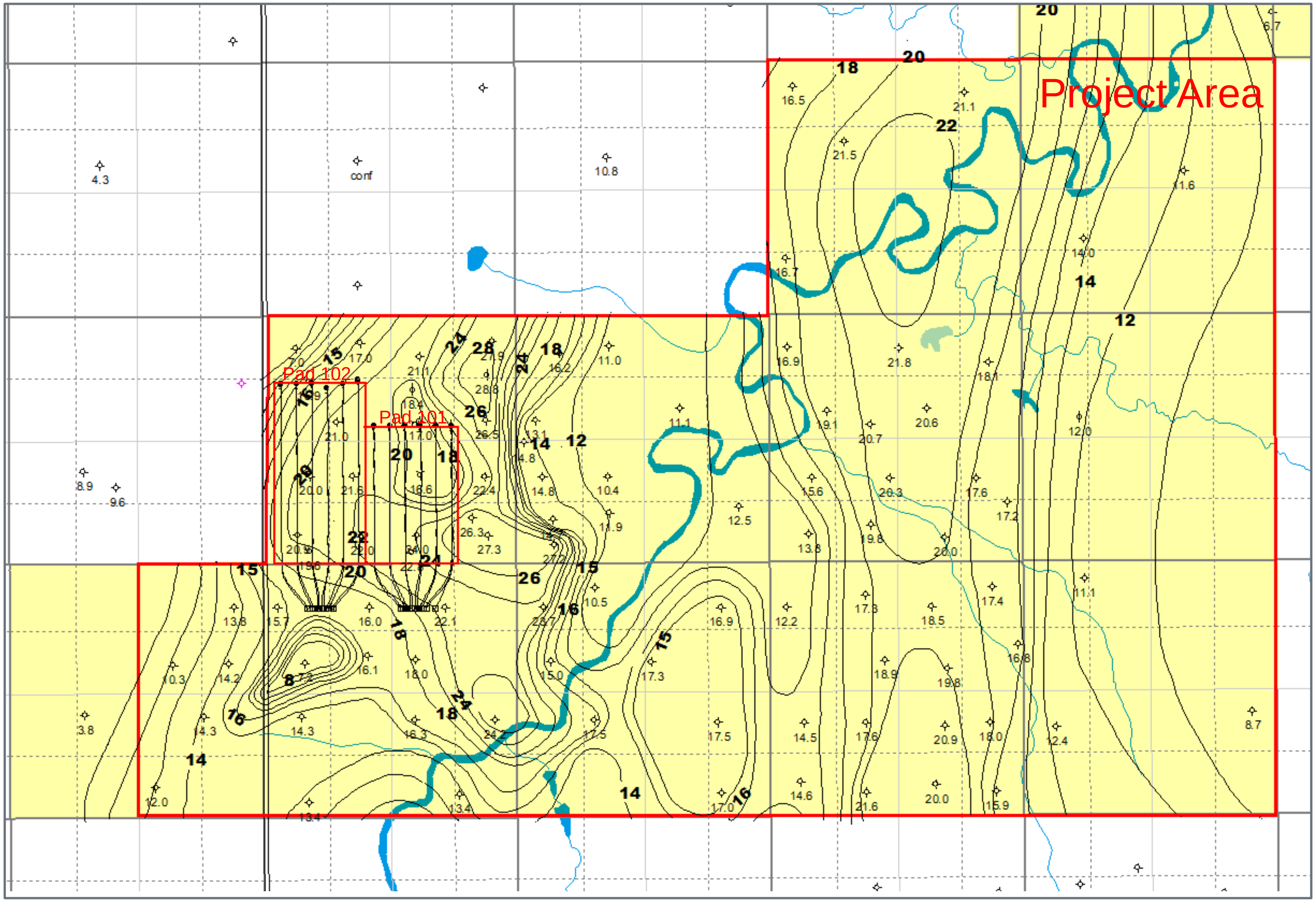
- Initial Operating Area (Pads 101,102) OBIP
  - 5,890 E^3m^3
- Operating Pads Average Reservoir Properties:
  - Porosity: 32%, Oil Saturation: 74%, Height: 17-27m

Isopach Map of Net Bitumen Pay with 2D Seismic lines



Volumetric Polygons on McMurray Net Bitumen Pay Map

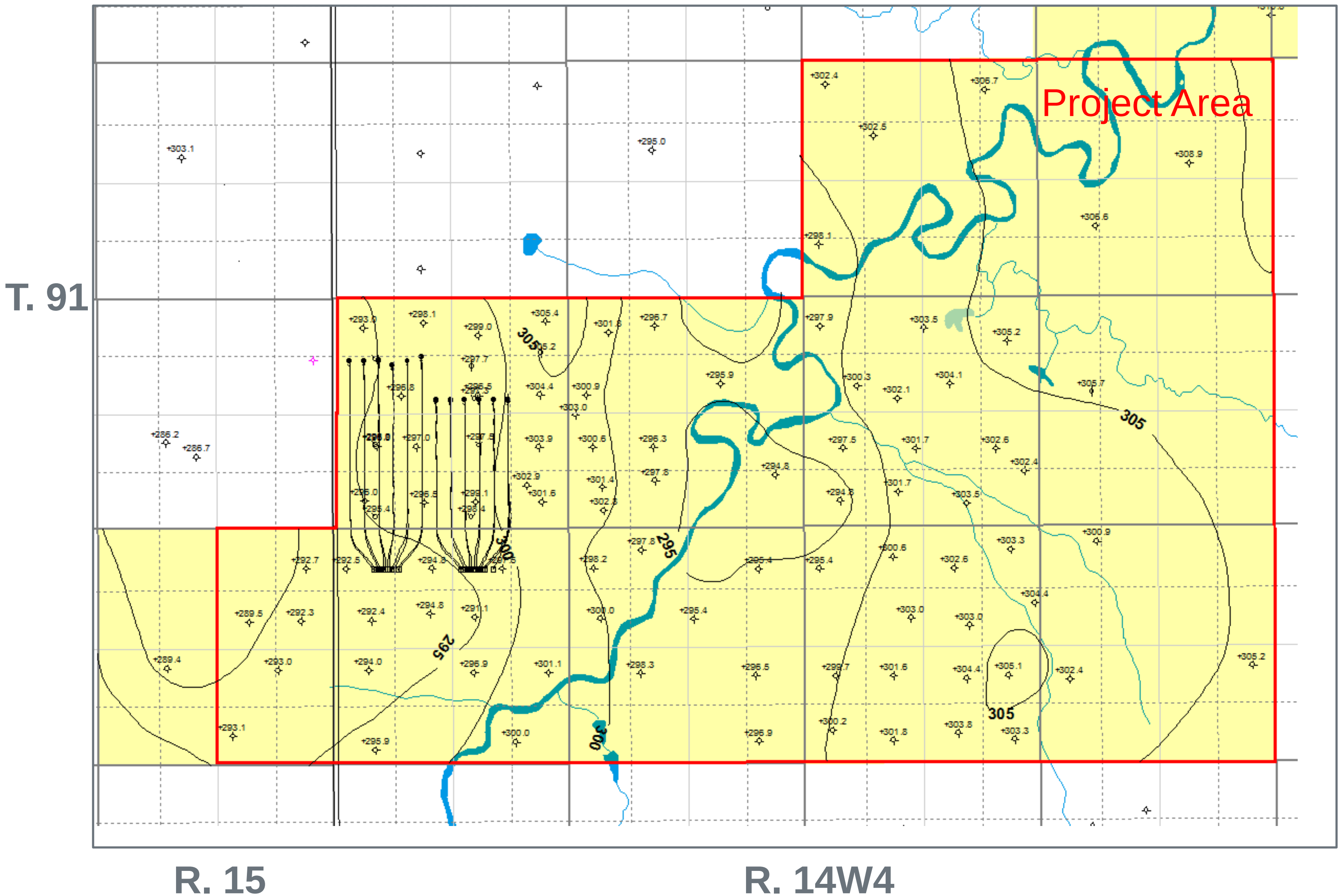
T. 91



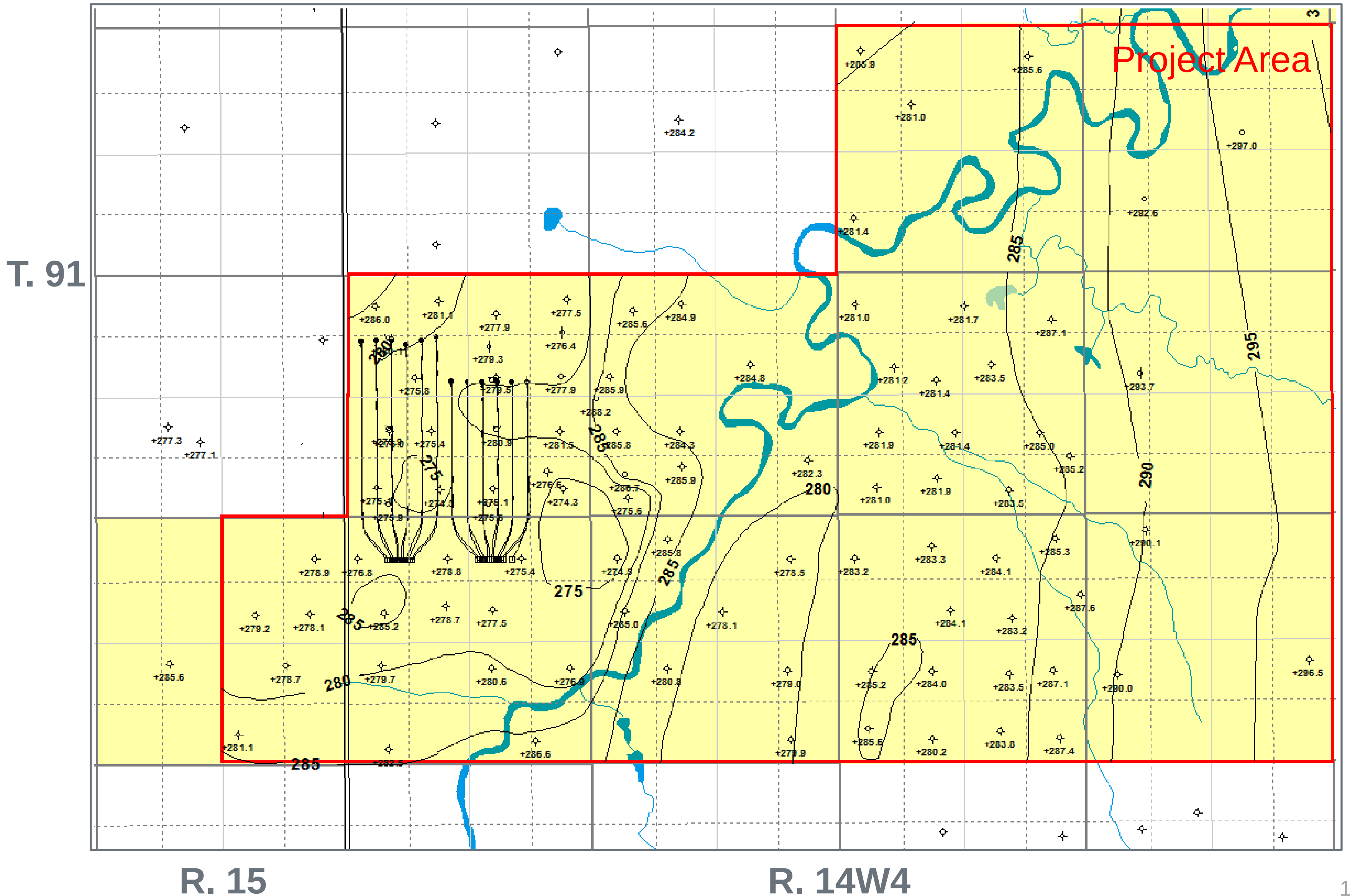
R. 15

R. 14W4

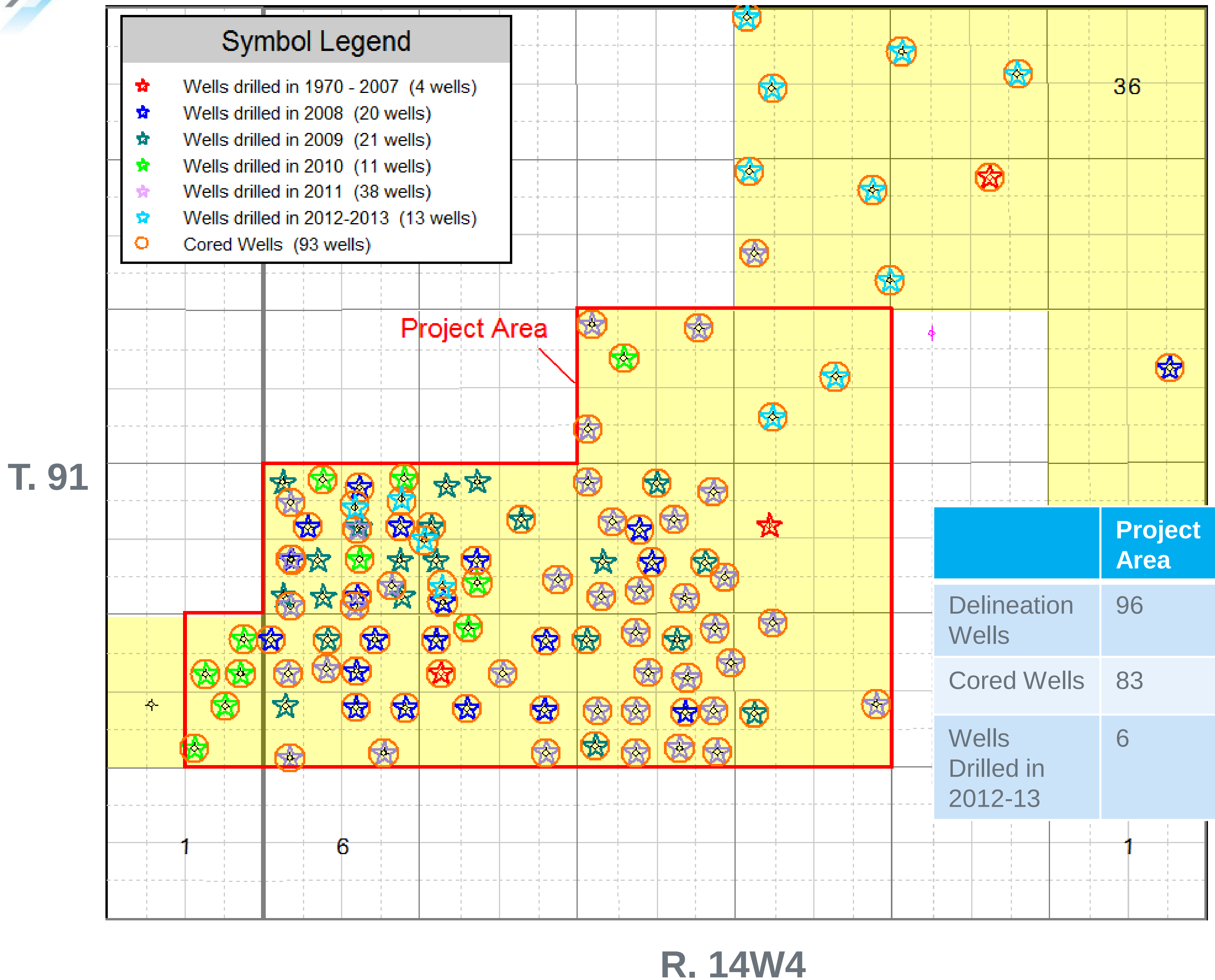
Structure Map on the Top of Bitumen Pay



Structure Map on the Base of Bitumen Pay

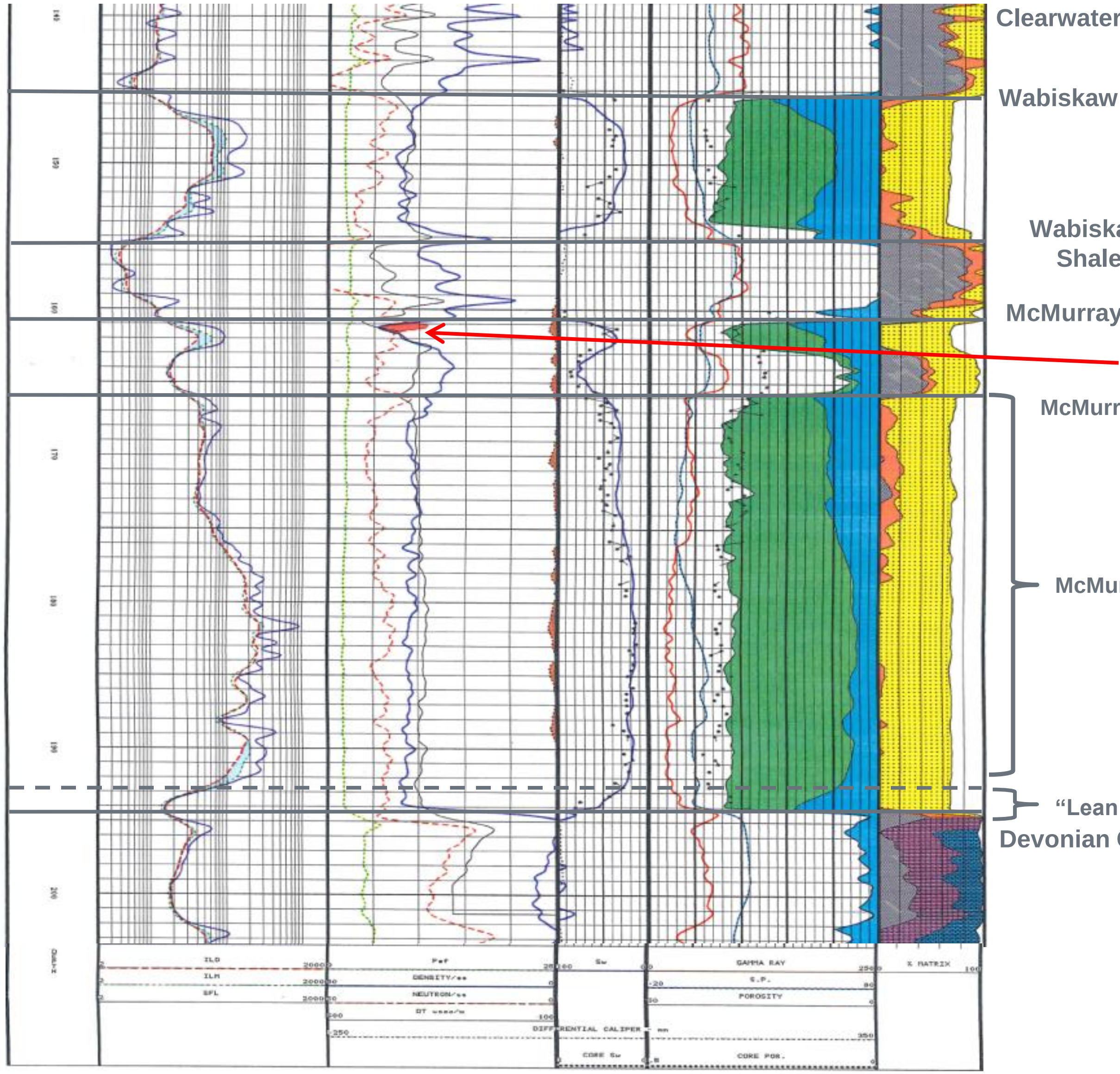


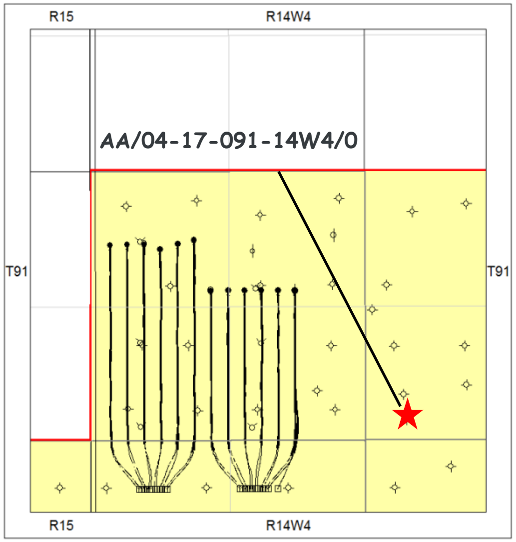
STP-McKay Core Data



	Project Area	STP Lands
Delineation Wells	96	107
Cored Wells	83	93
Wells Drilled in 2012-13	6	13

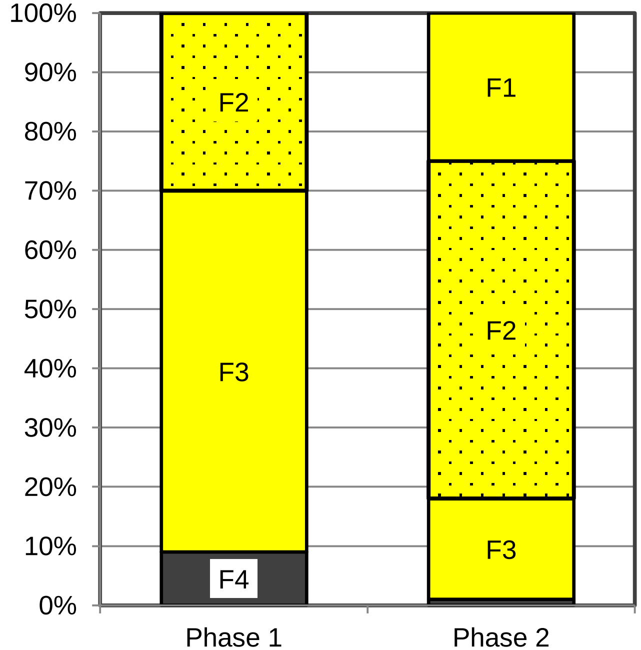
STP-McKay Type Log





Pay calculated:
- GR < 60 api
- Density >27% porosity
- Resistivity >20 ohm*m

STP-McKay McMurray Facies Types



- High quality reservoir identified in Phases 1 & 2
  - No significant lean ("thief") zones in either Phase

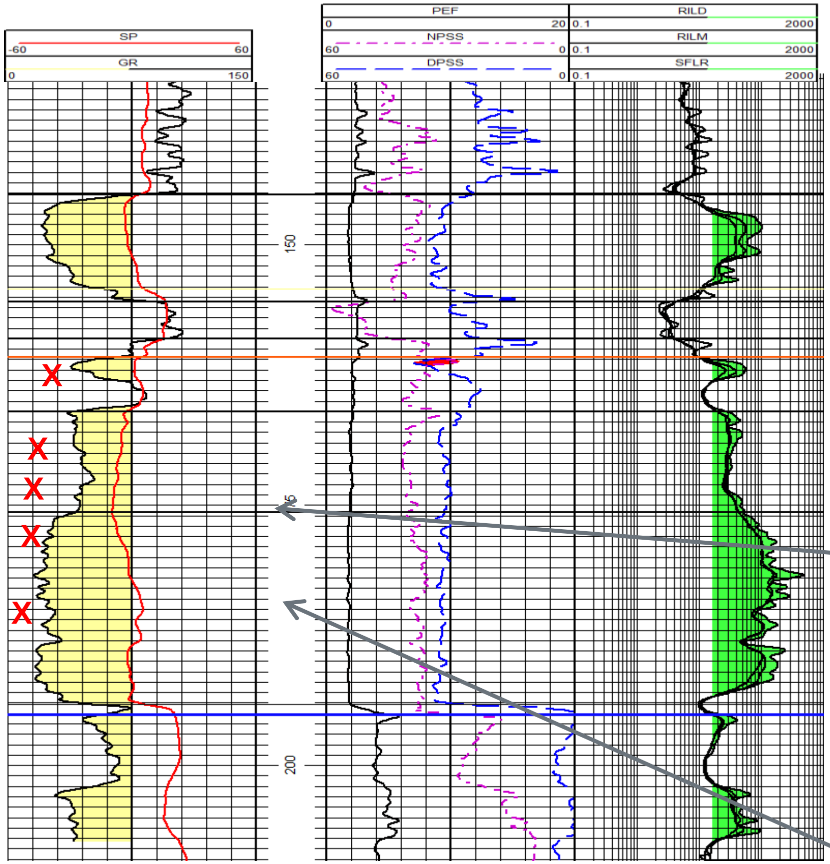
	Facies Name	% Shale	Sample Photo
F1	Upper Clean Sand	2.5%	
F2	Bioturbated Facies	8.1%	
F3	Lower Clean Sand	2.5%	
F4	Interbedded Sand	20.0%	

~ 20 cm

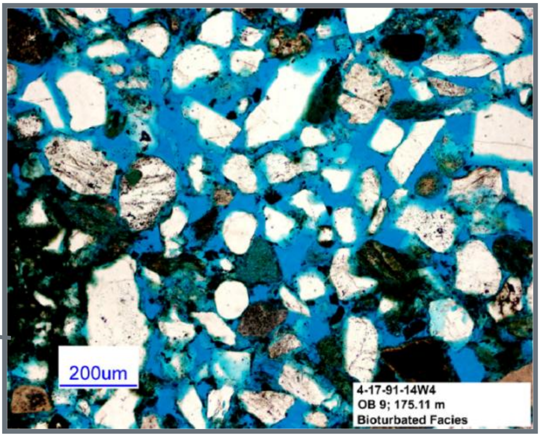
STP-McKay Core Analysis/Thin Section

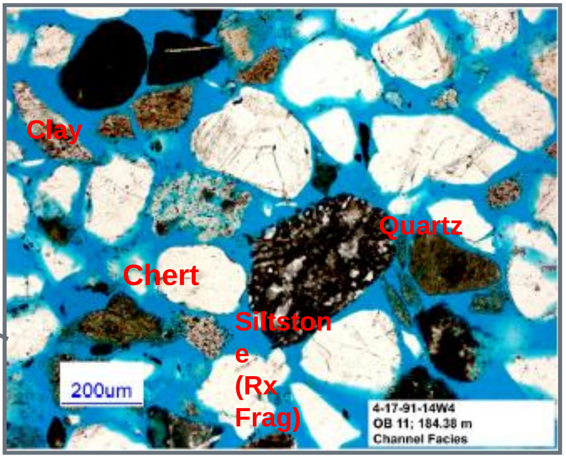
Upper Reservoir (Bioturbated)

- Very Fine to Fine grained (<180 um)
- Moderately sorted, Subangular with elongate grains
- Framework consists of quartz, common chert, siltstones with some feldspars
- Clays are within the microporosity of the chert or are grains that were transported as a clast, but also exist within the pore spaces. Pore space has 10% clay in the pore space.
- **XRD:** Analysis shows 86% qtz, 4% K-feldspar, 2% Plagioclase, 1% dolomite, 1% pyrite and 6% total clay.



X = Thin Section Samples

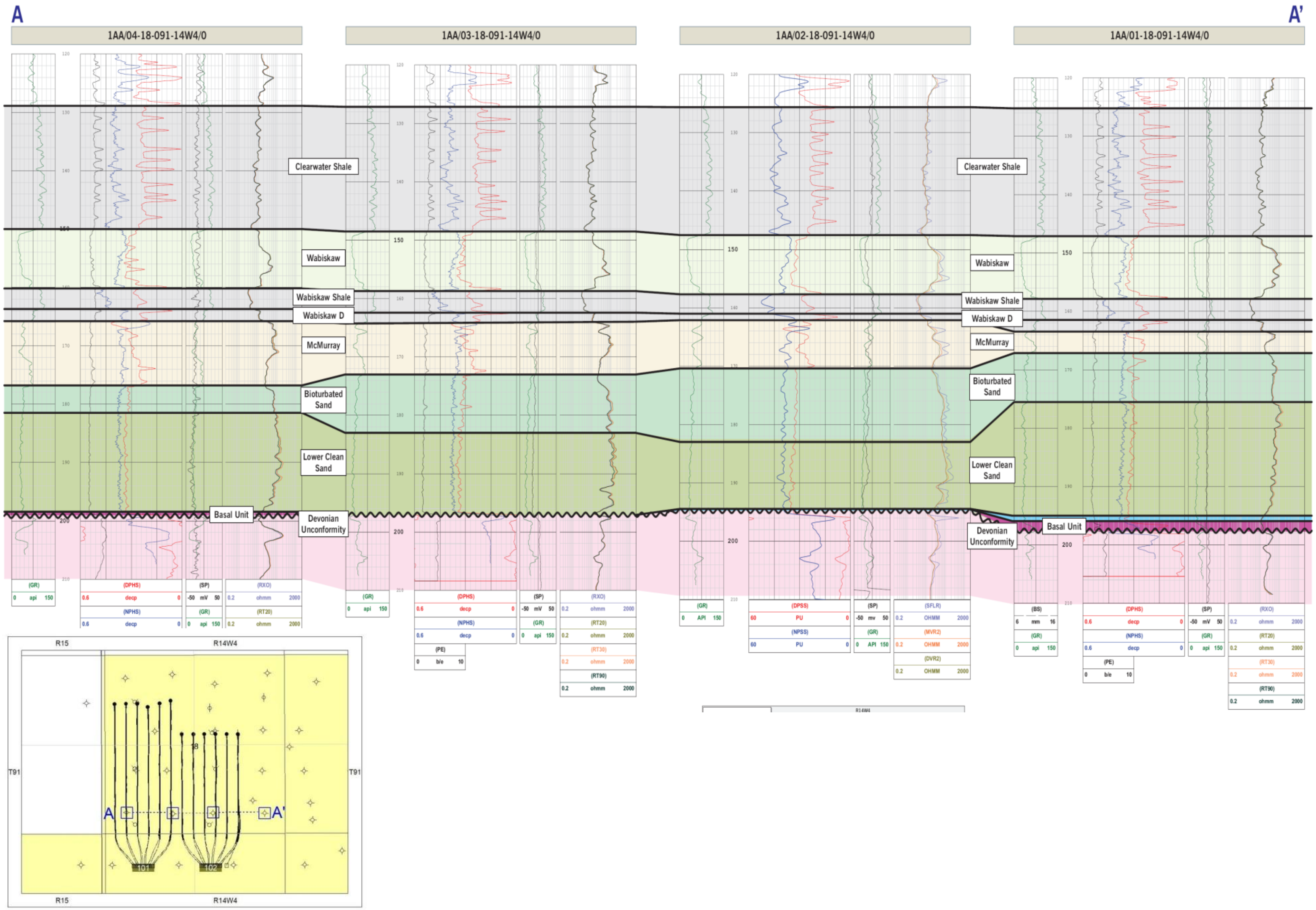




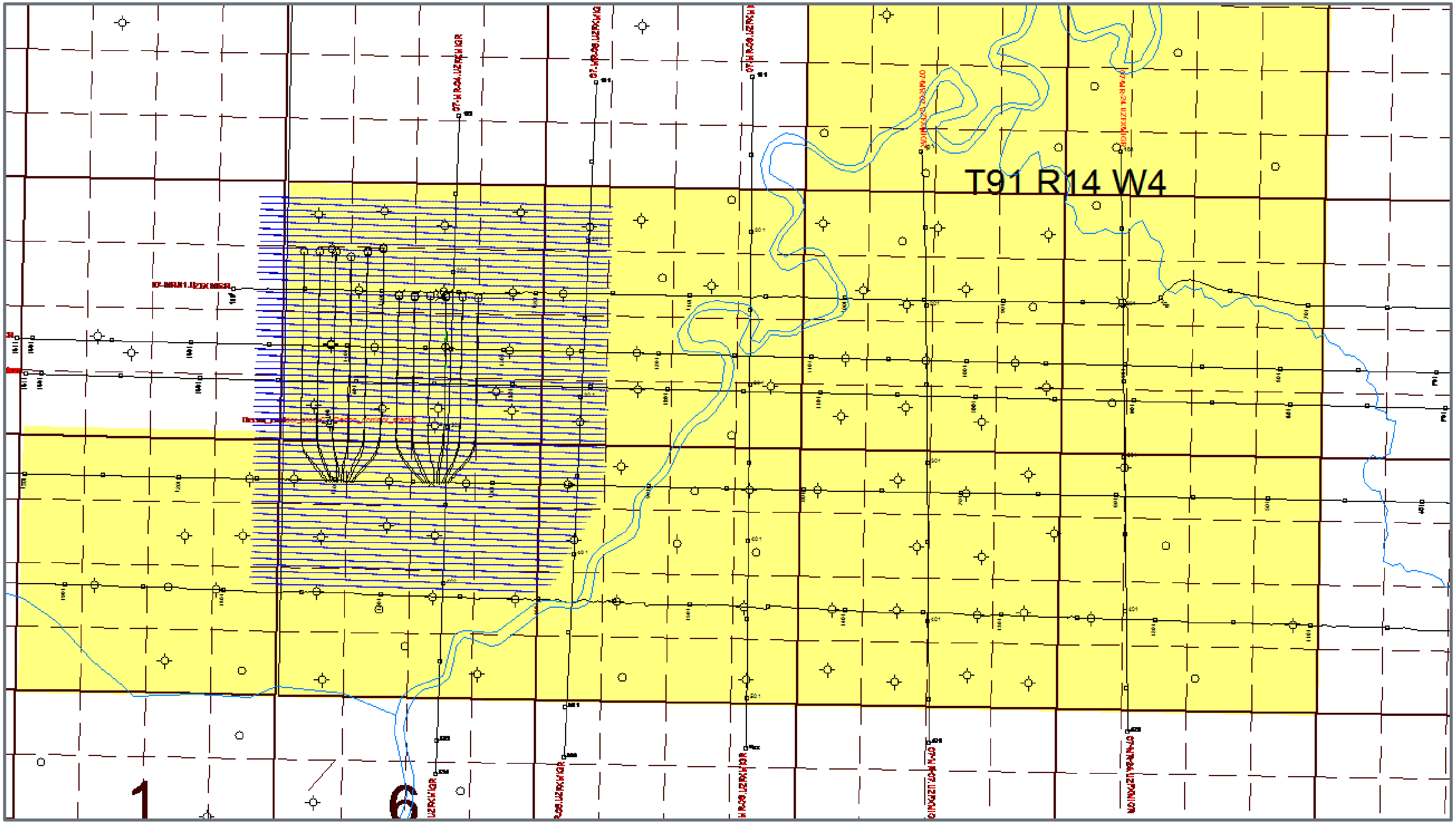
Main Reservoir

- Fine to Medium grained (180-250 um)
- Moderately sorted, Subrounded with elongate and spherical grains
- Framework consists of quartz, chert, siltstones with some feldspars
- Similar clays with less interstitial clay found in the rock matrix.
- **XRD:** Analysis shows 93% qtz, 2% K-feldspar, 1% pyrite and 4% total clay.

Structure Cross-Section

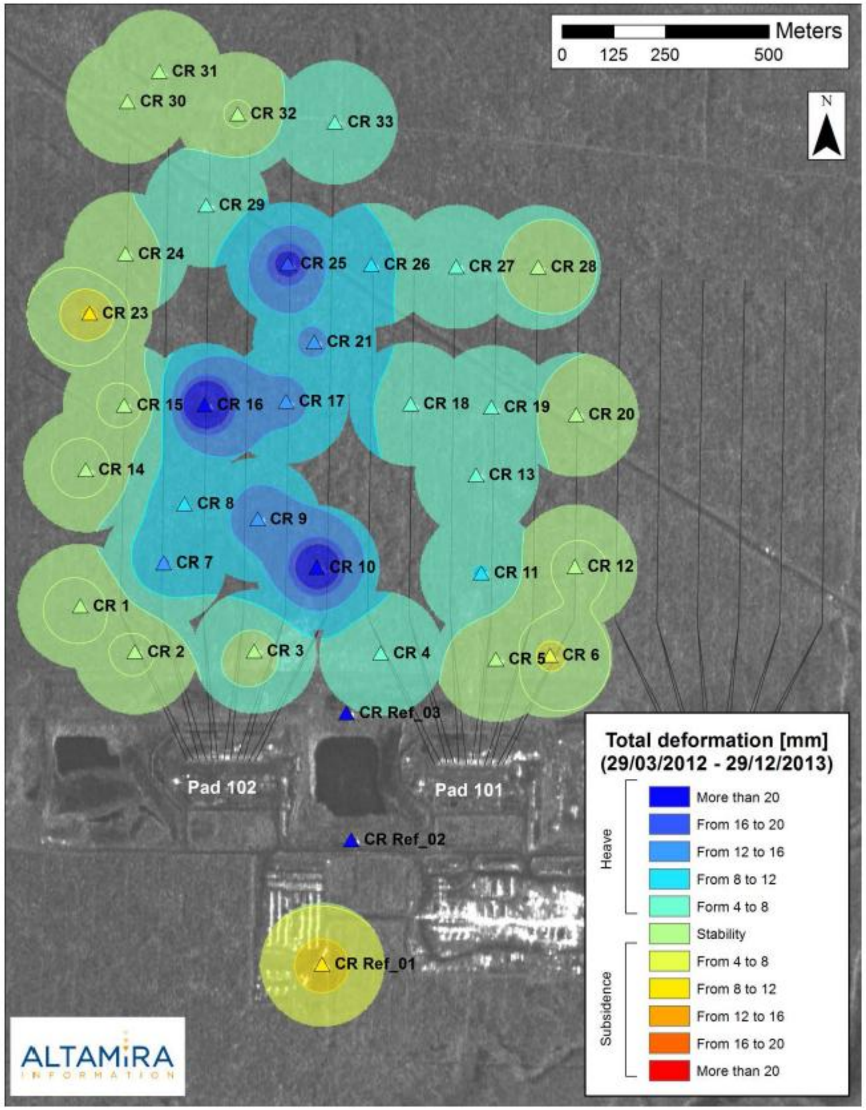


3D Seismic Map



HEAVE MONITORING AND CAPROCK

Surface Monitoring (Heave Monuments)



- 35 Corner reflectors were installed in the first quarter of 2012
- Surface monitoring started on March 2012
- The cumulative movement of the surface since SAGD operations started is insignificant. It ranged between -10 mm (sinking) and 23 mm (heave).

Caprock Integrity

- ERCB approved Maximum Operating Pressure (MOP) of 2450 kPa.
  - STP met all ERCB conditions and information requests and received approval June 2011
- Detailed caprock characterization studies were completed by STP and leading industry experts to evaluate sustained, caprock integrity at a MOP of 2450 kPa.
- Caprock integrity studies focused on:
  - Core and geological log evaluations (Weatherford,Advanced Geotechnology)
    - No fault planes observed on logs or in core.
    - No borehole breakouts/drilling induced fractures observed from 17 HMI logs.
  - Laboratory testing (reservoir & geomechanical)
    - Low permeability caprock.
    - Geomechanical properties derived from lab testing.
  - Mini-frac testing for characterizing *in situ* stress state
    - Mini-frac tests conducted at 2 wells.
  - Geomechanical simulation (Taurus Reservoir Solutions)
    - 2450kPa operating pressure is conservative.
- MOP exceeded during approved High Pressure Steam Stimulation (HPSS).

Caprock Integrity – *Mini-Frac Tests*

- Mini-frac tests completed at wells 5-16 and 1-18 by BitCan Geoscience & Engineering.
- Stress gradient results are consistent and similar to those expected in the Athabasca Oil Sands.
- Vertical stress gradient is ~21.5 kPa/m.

Well	5-16-91-14W4	Date	March 2009
Depth (m TVD)	Lithology	Minimum Stress (kPa)	Minimum Stress Gradient (kPa/m)
126	Clearwater Shale	2520	20.0
140	Clearwater Shale	2760	19.7
155	Wabiskaw Shale	2710	17.5
174	McMurray Sandstone	2900	16.7

Well	1-18-91-14W4	Date	April 2011
Depth (m TVD)	Lithology	Minimum Stress (kPa)	Minimum Stress Gradient (kPa/m)
131	Clearwater Shale	No Breakdown	
138	Clearwater Shale	2900	21.0
147	Wabiskaw Sandstone	3060	20.8
156	Wabiskaw Shale	3250	20.8
164	Upper McMurray Sandstone	3300	20.1
186	McMurray Sandstone	3060	16.5

Caprock Integrity – Caprock Fracture Pressure

- Assessment of minimum fracture pressure (S_{min}) at the base of the Clearwater Formation using mini-frac test results.
- S_{min} from both wells 5-16 and 1-18 are consistent.
- S_{min} fracture pressure at the base of the Clearwater Formation caprock is between ~2860 kPa and ~ 3020 kPa.

Well	Depth to Caprock Base (m)	Fracture Gradient (kPa/m)	Smin Fracture Pressure (kPa)
5-16	145	19.7	2857
1-18	144	21.0	3024

Caprock Integrity – Monitoring

- Clearwater Formation:
  - 6 vertical, nested observation wells measuring pressure and temperature.
- Wabiskaw Member:
  - 1 horizontal well measuring temperature and pressure
- Surface heave monitoring program.
- 4D seismic is planned.
- Blanket Gas system to monitor bottomhole injection pressures.

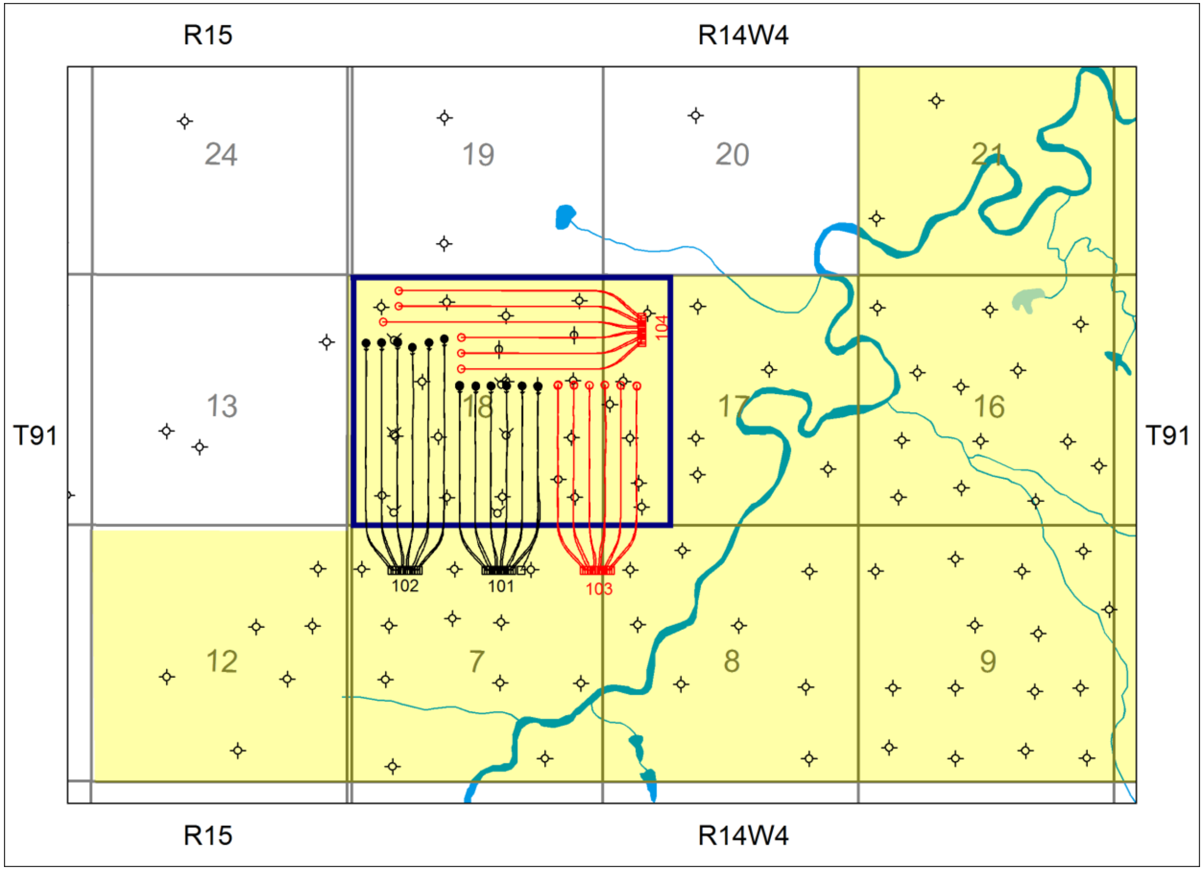
DRILLING/COMPLETIONS

Drilling and Completions – Well Layout

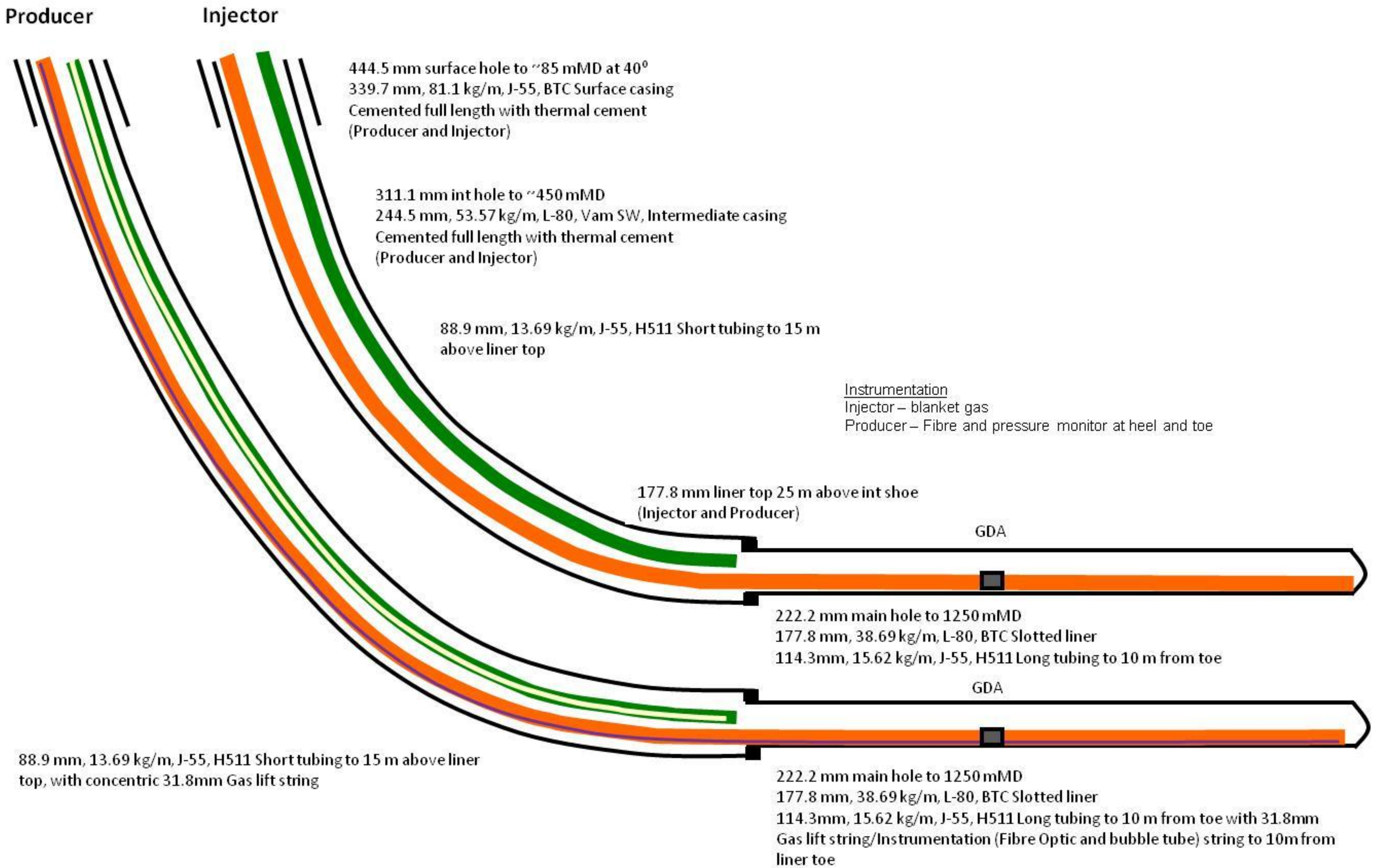
Phase 1 Drilling Program

- Approved Development area outlined in blue
- Drilled to date (black):
  - •Pad 101 (6 pairs)
  - •Pad 102 (6 pairs)
  - •Wabiskaw observation well (lies above 1P1)

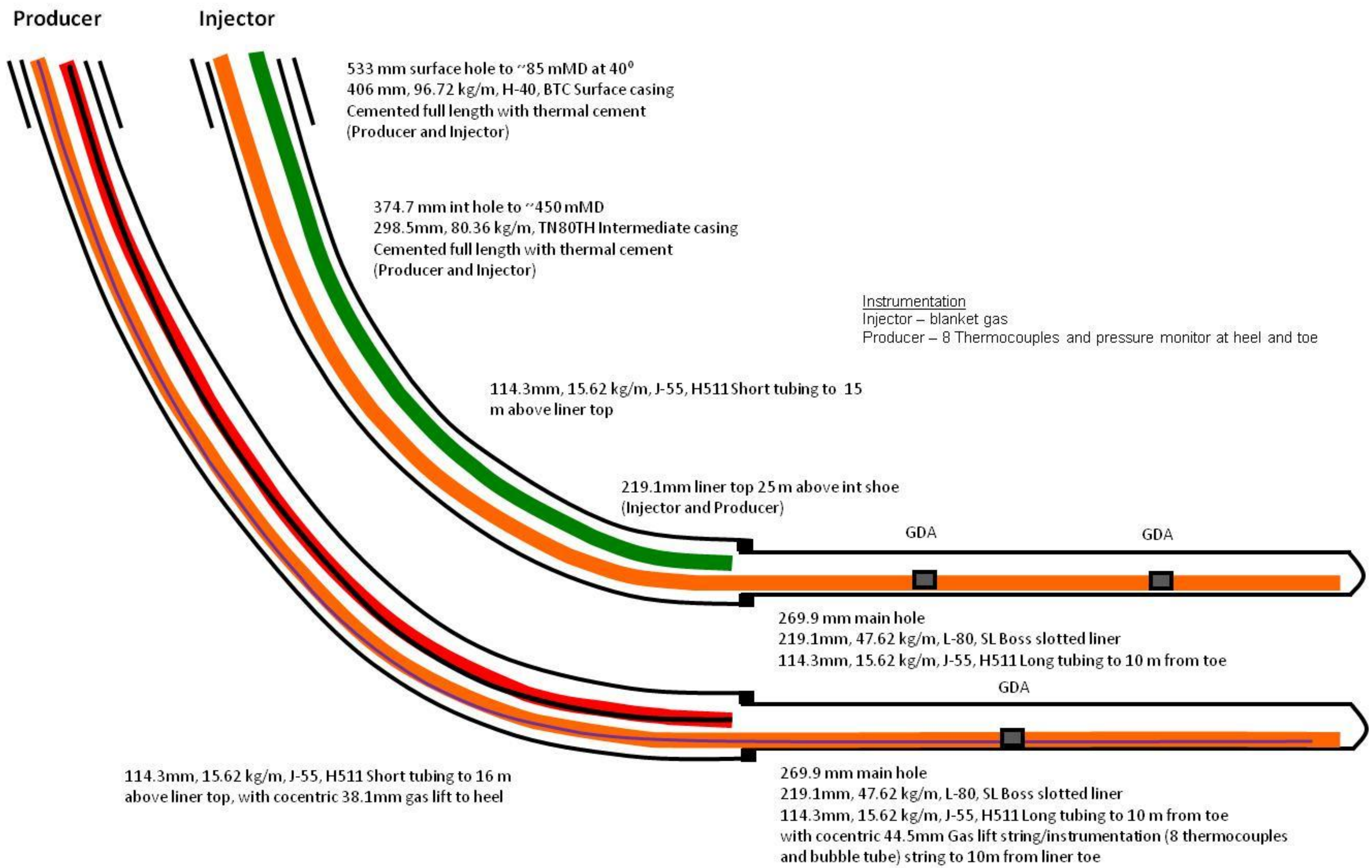
- Approved Pads (red):
  - •Pad 103 (6 pairs)
  - •Pad 104 (6 pairs)



Drilling and Completions – Pad 101 SAGD Well Design for Injection and Production (Gas Lift)



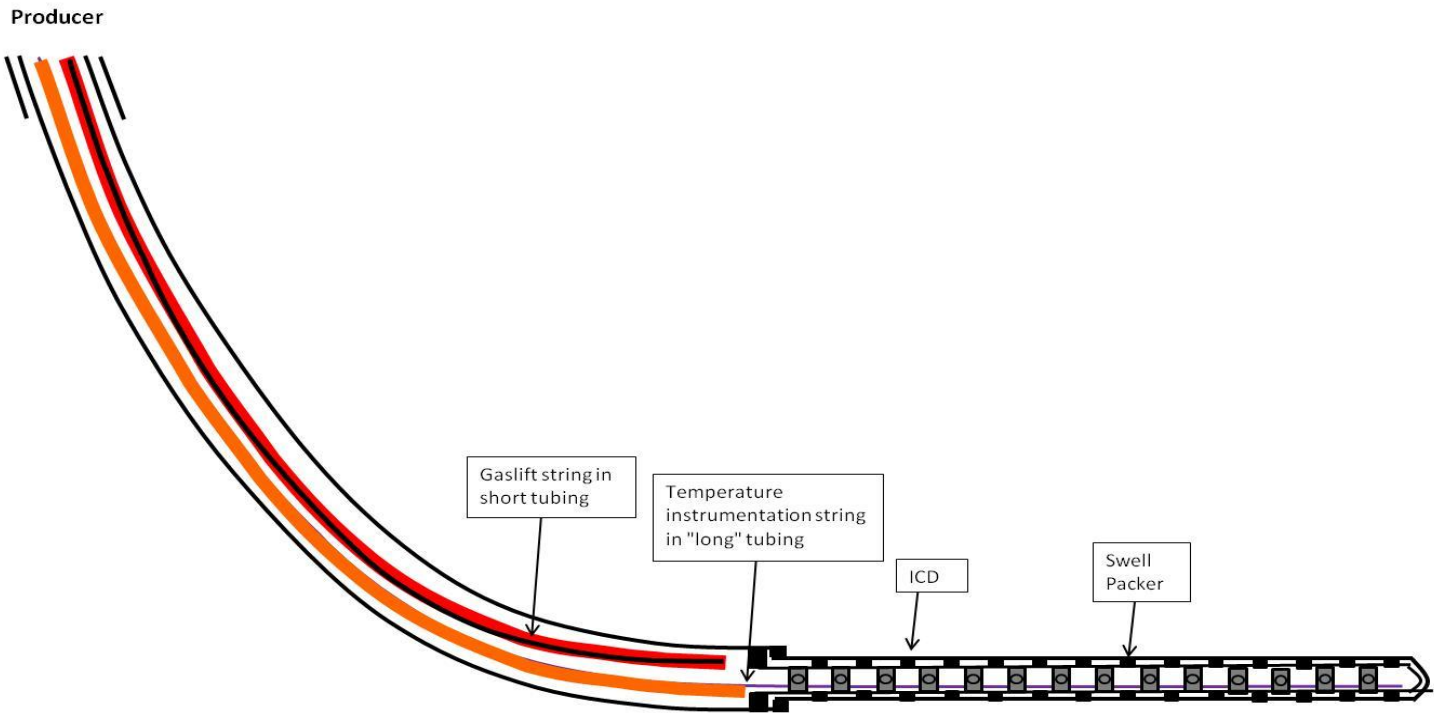
Drilling and Completions – Pad 102 SAGD Well Design for Injection and Production (Gas Lift)



Drilling and Completions – ICD Installation for Production (Gas Lift)

Installation

- Scab liner with swell packers and ICD tools were run.
- Both short and long string terminate at the heel.
- Coil tubing with temperature instrumentation is run to toe.

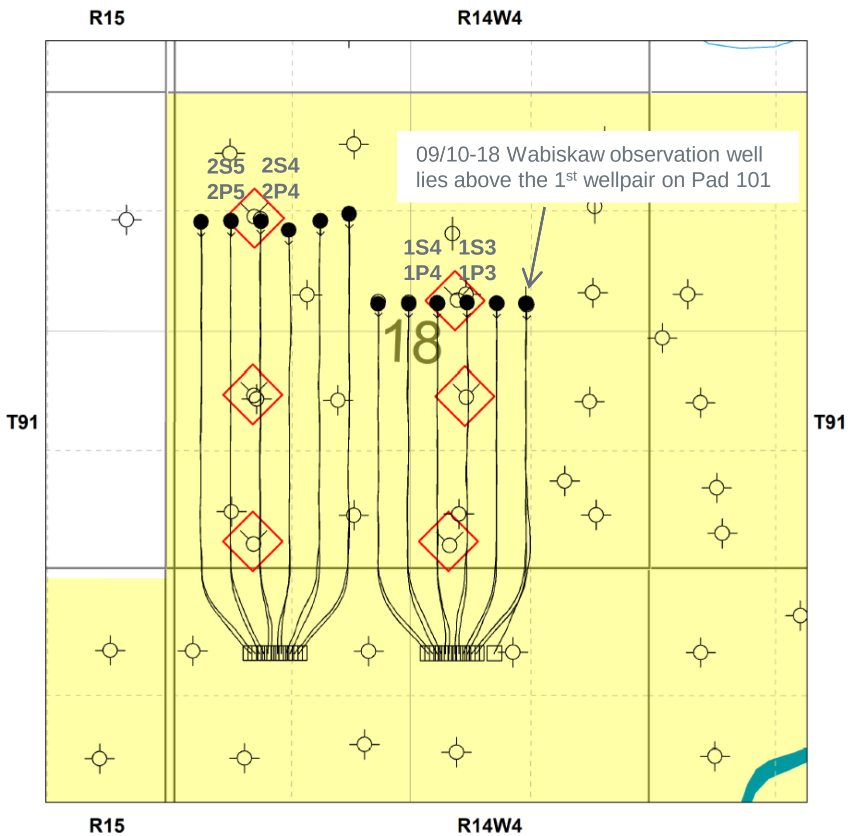


Artificial Lift

- All production wells are equipped for gas lift
- Amount of lift gas required is dependent on operating pressure/temperature of the well.
  - Using 3.5 to 7.2 E3m3/d lift gas volume and well operating range has varied from 1200kPa to 2250kPa.
- Gas lift has been successful in achieving lift through various down hole operating temperatures and pressure.

INSTRUMENTATION

Instrumentation in Wells

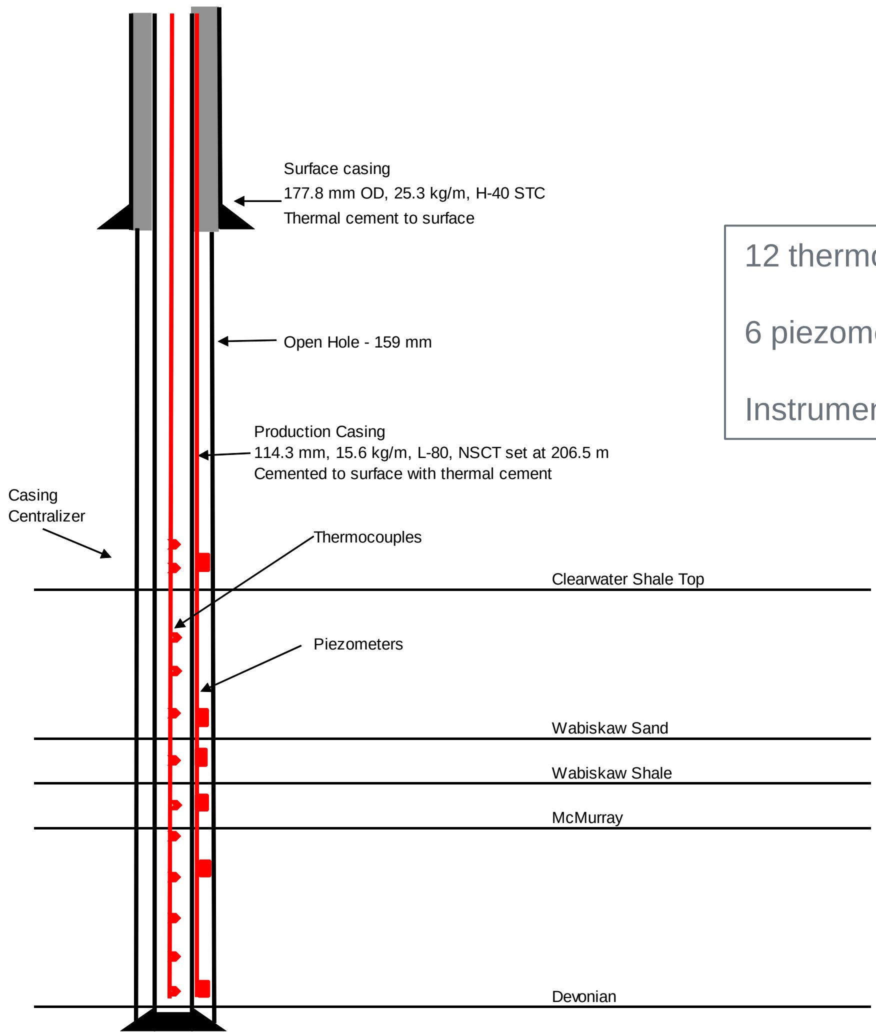


- 6 Vertical, Nested Observation Wells:
  - Pressure and temperature measurements extending from McMurray to Clearwater Formations
  - 10-18 and12-18 wells have experienced 1 TC failure each. 5-18 has experienced 4 TC failures.
  - Transmission issues in early 2013 resolved.
- Horizontal Observation Well:
  - Wabiskaw Member
  - Temperature/Pressure measurements

Well	Temperature	Pressure
100/2-18-91-14W4	12 temperature points	6 pressure points
100/4-18-91-14W4	12 temperature points	6 pressure points
100/5-18-91-14W4	12 temperature points	6 pressure points
100/7-18-91-14W4	11 temperature points	5 pressure points
110/10-18-91-14W4	12 temperature points	6 pressure points
109/12-18-91-14W4	12 temperature points	6 pressure points
109/10-18-914-14W4	High Temperature Fibre/1 PT	1 pressure point

Instrumentation in Wells – Typical Vertical Observation Well

Southern Pacific Resource Corp



12 thermocouples spaced between the Base of McMurray to Clearwater

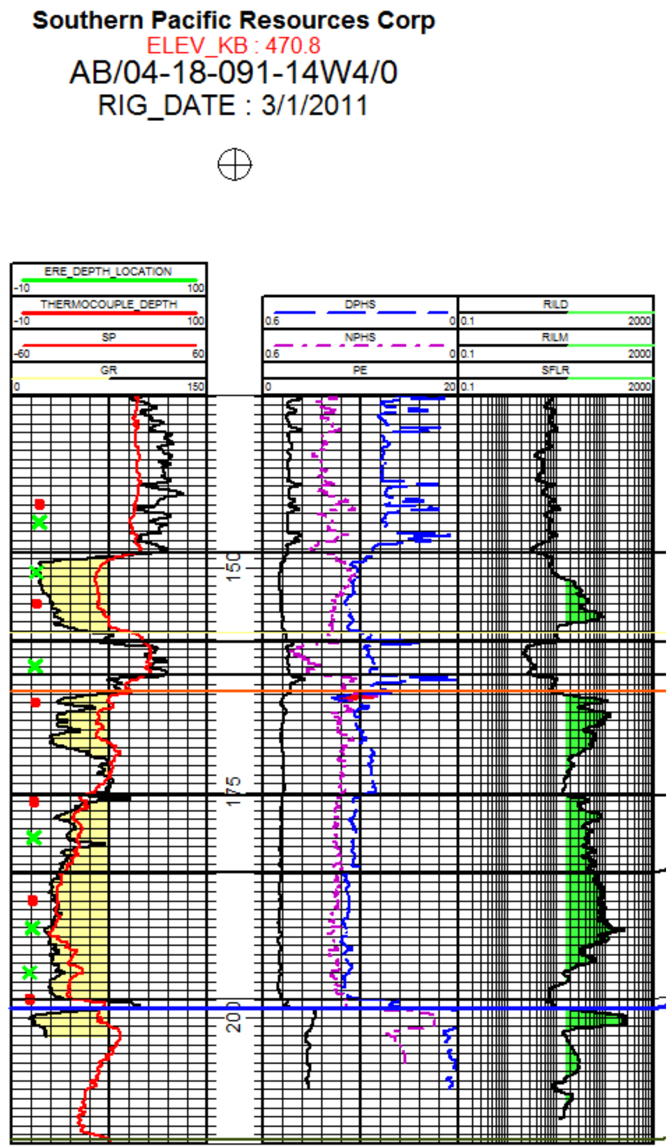
6 piezometers spaced between Base of McMurray to Clearwater

Instrumentation strapped to outside of casing string

Observation Wells

Pressure Gauge and Thermocouple Location

Thermocouple Location



Clearwater Shale

Wabiskaw Sand

Wabiskaw Shale

McMurray Fm

McMurray Reservoir

Devonian Carbonate

~80m to the West

2S5 (~187.5m TVD)

2P5 (~194.2m TVD)

~20m to the East

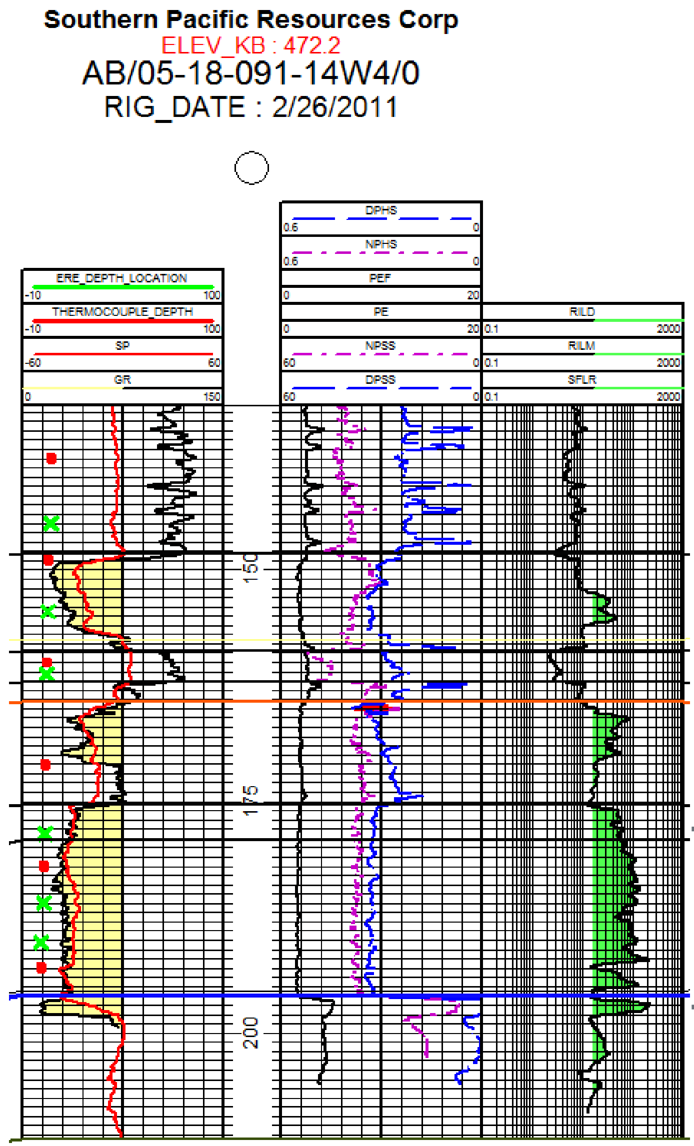
2S4 (~188.3m TVD)

2P4 (~195.5m TVD)

Observation Wells

Pressure Gauge and Thermocouple Location

Thermocouple Location



Clearwater Shale

Wabiskaw Sand

Wabiskaw Shale

McMurray Fm

McMurray Reservoir

Devonian Carbonate

~77m to the West

2S5 (~186.6m TVD)

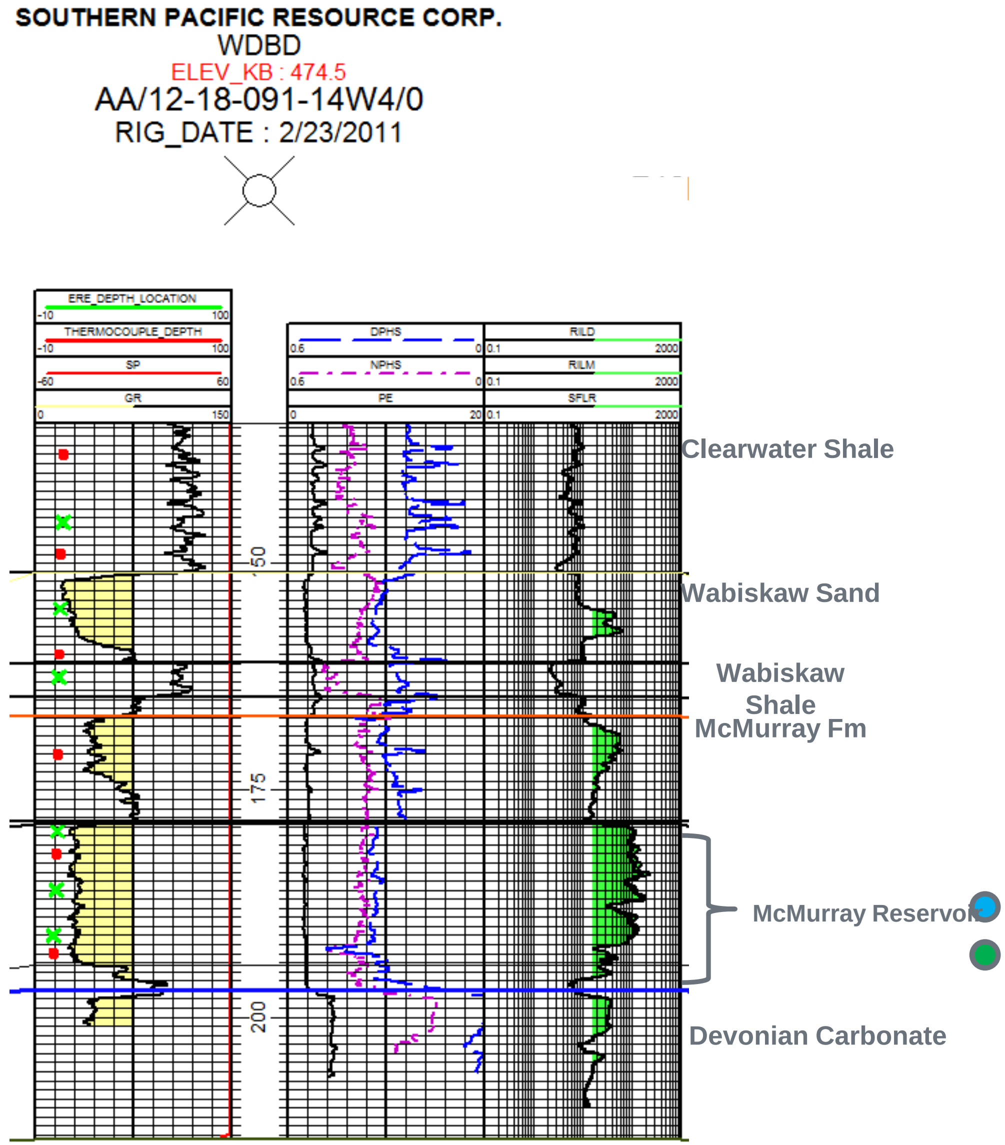
2P5 (~192.5m TVD)

~23m to the East

2S4 (~188.6m TVD)

2P4 (~194.8m TVD)

Observation Wells



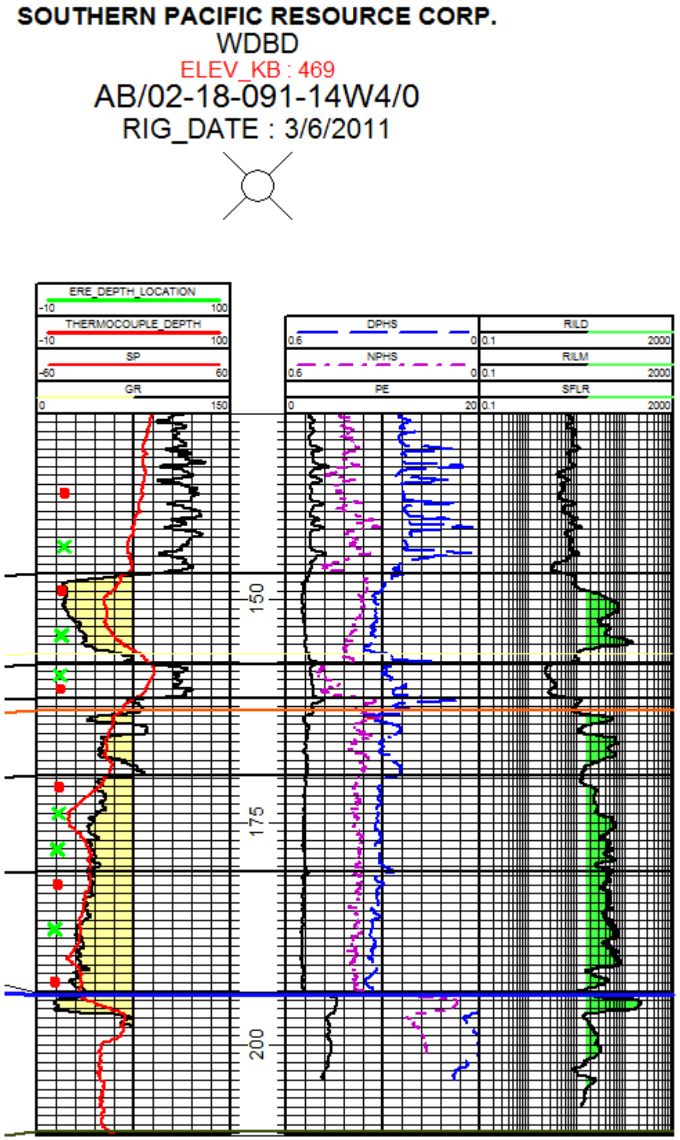
Pressure Gauge and Thermocouple Location

Thermocouple Location

~80m to the West
2S5 (~185.8m TVD)
2P5 (~191.2m TVD)

~20m to the East
2S4 (~187.8m TVD)
2P4 (~192.3m TVD)

Observation Wells



Pressure Gauge and Thermocouple Location

Thermocouple Location

Clearwater Shale

Wabiskaw Sand

Wabiskaw Shale

McMurray Fm

McMurray Reservoir

Devonian Carbonate

~40m to the West

1S4 (~186.7m TVD)

1P4 (~193.2m TVD)

~60m to the East

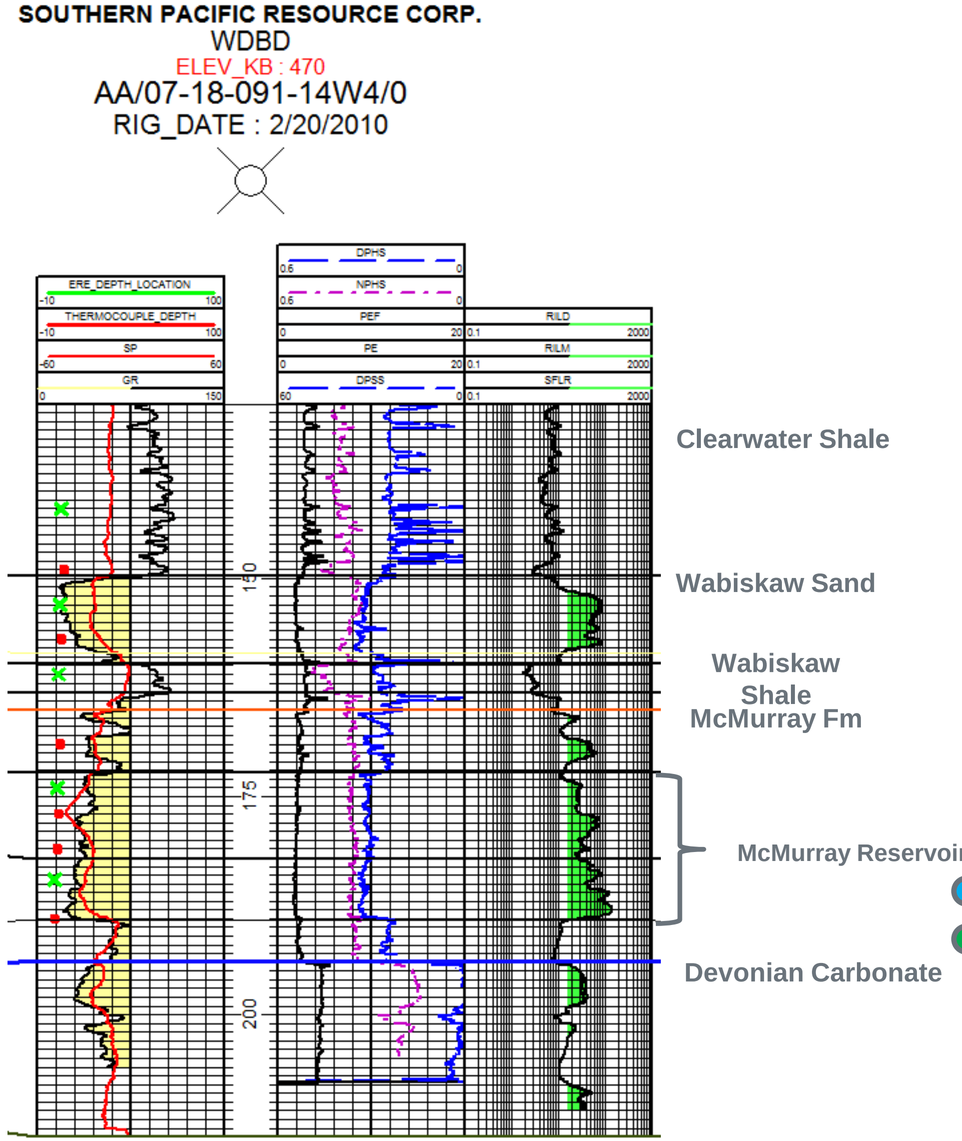
1S3 (~186.5m TVD)

1P3 (~193.5m TVD)

Observation Wells

Pressure Gauge and Thermocouple Location

Thermocouple Location



~93m to the West

1S4 (~183.5m TVD)

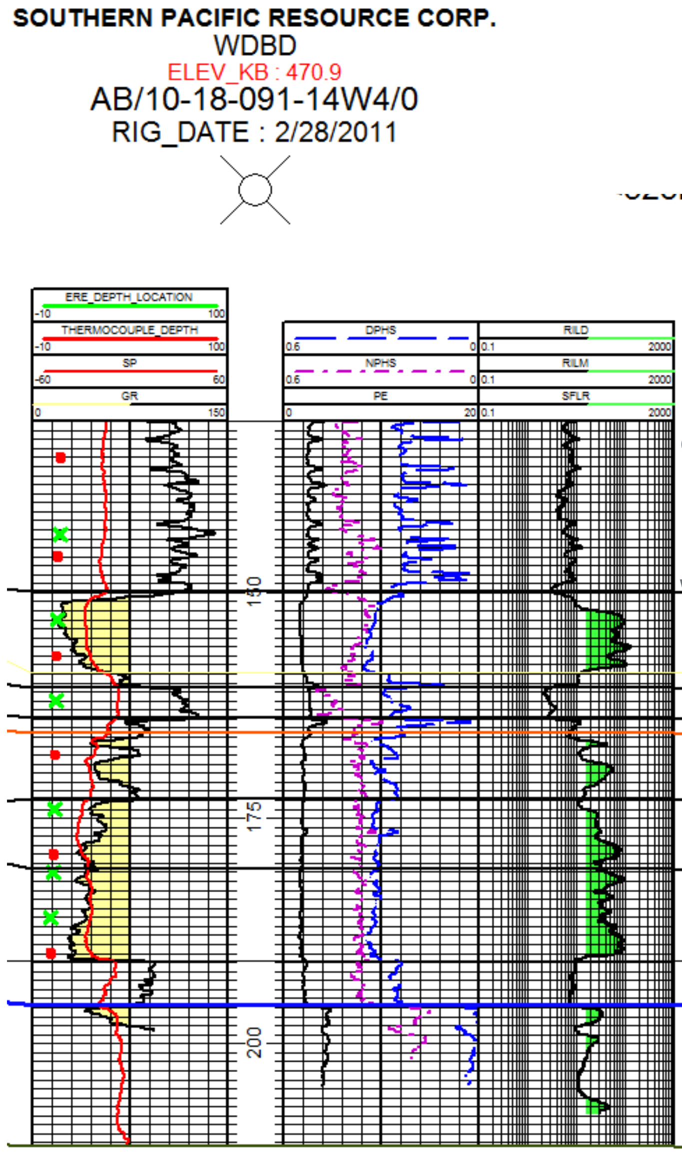
1P4 (~189.1m TVD)

~14 m to the East

1S3 (~184.6m TVD)

1P3 (~190.8m TVD)

Observation Wells



Pressure Gauge and Thermocouple Location

Thermocouple Location

Clearwater Shale

Wabiskaw Sand

Wabiskaw Shale

McMurray Fm

McMurray Reservoir

Devonian Carbonate

~70m to the West

1S4 (~183.5m TVD)

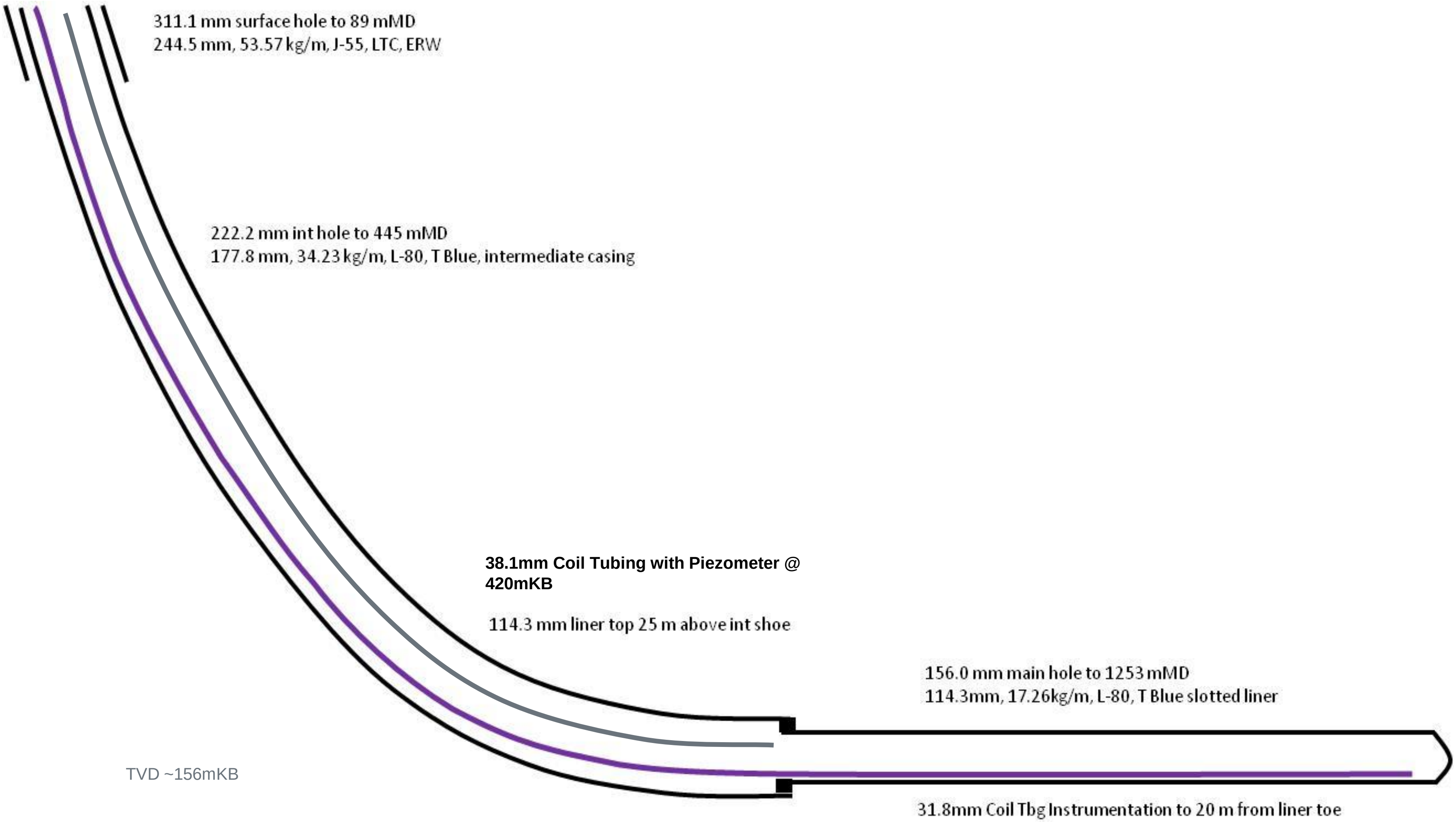
1P4 (~188.9m TVD)

~30m to the East

1S3 (~184m TVD)

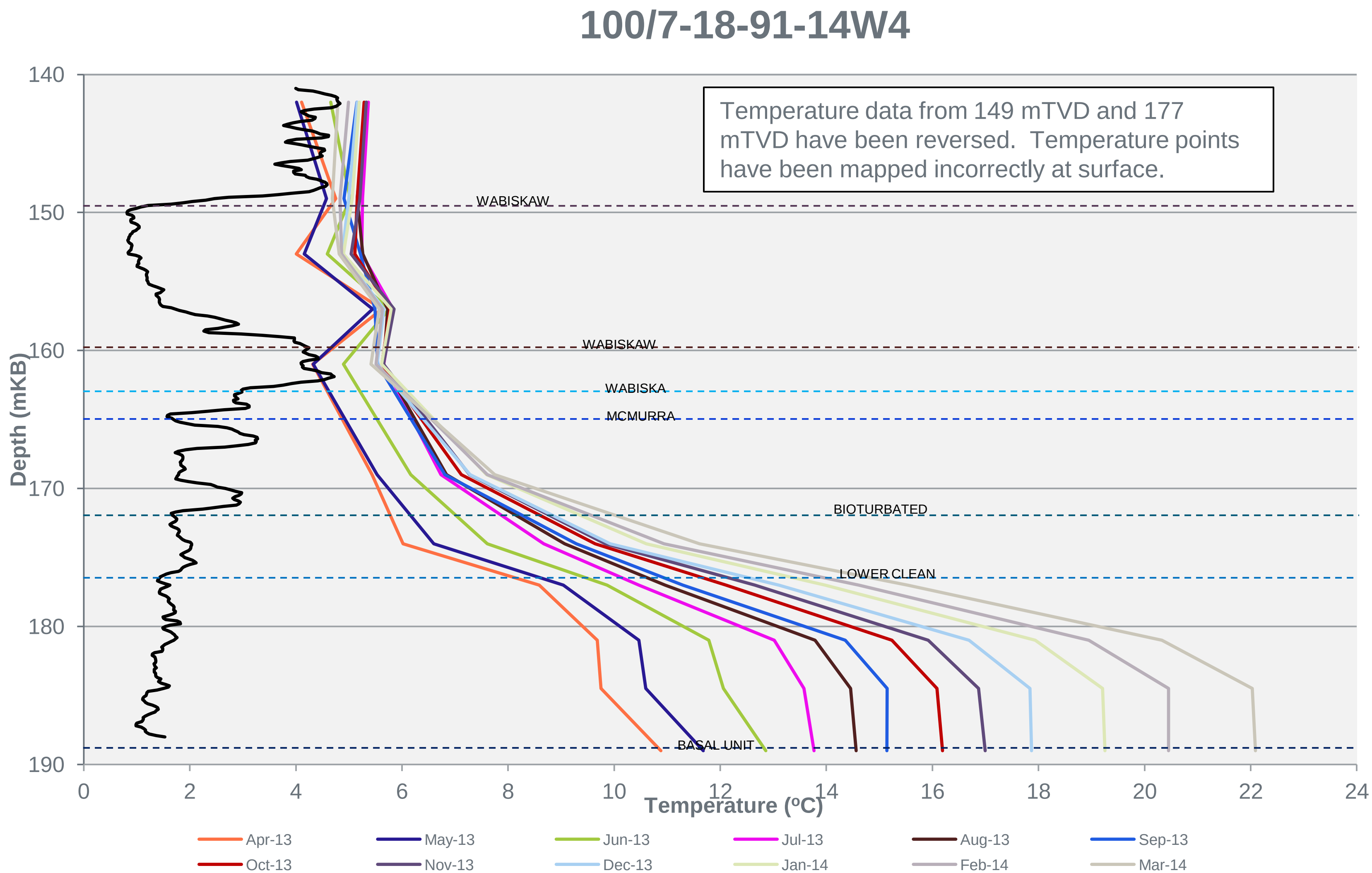
1P3 (~190m TVD)

Drilling and Completions – Pad 101 Wabiskaw Observation Well Design



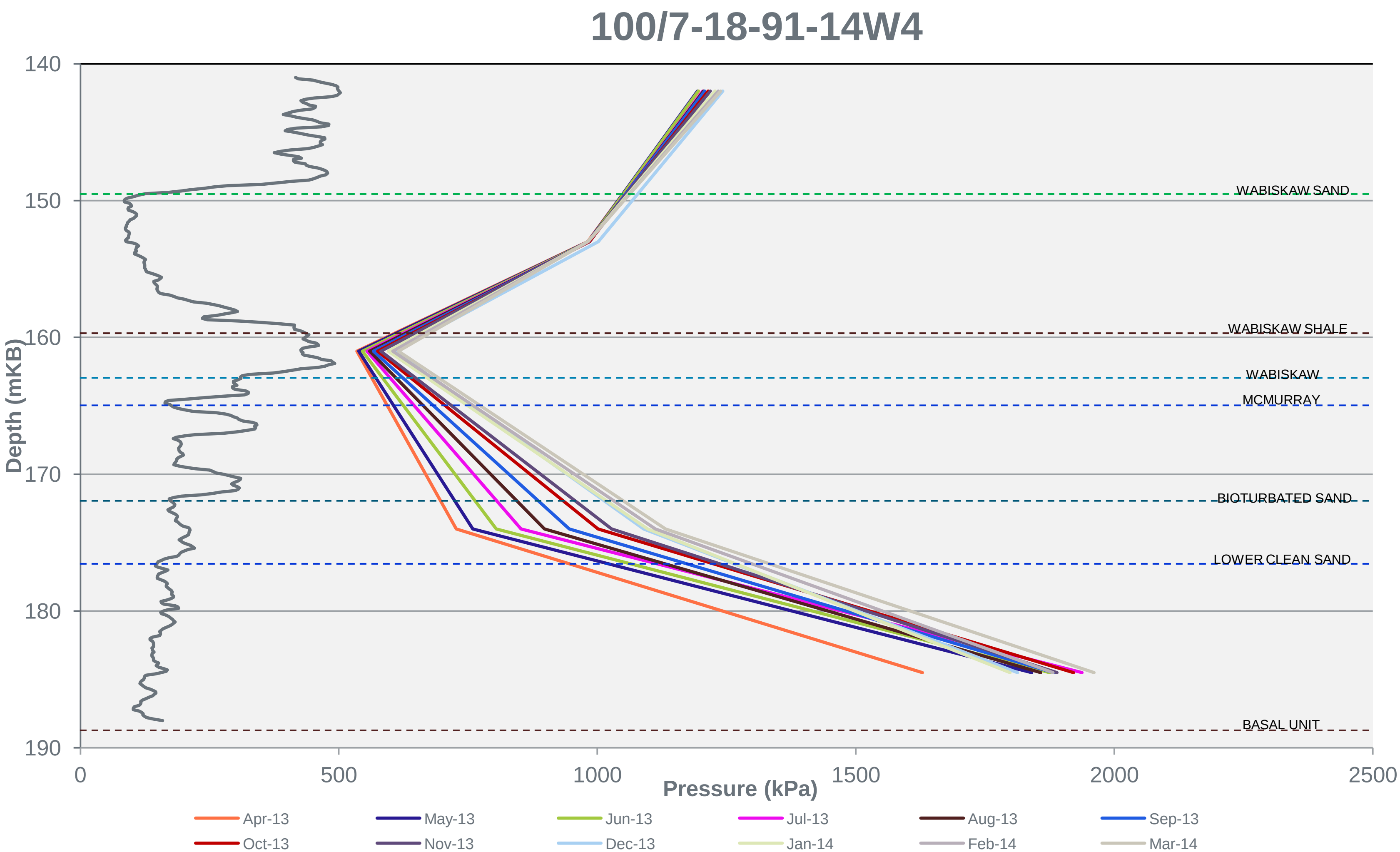
Observation Wells

07-18-091-14W4 Temperature



Observation Wells

07-18-091-14W4 Pressure



Instrumentation in Wells

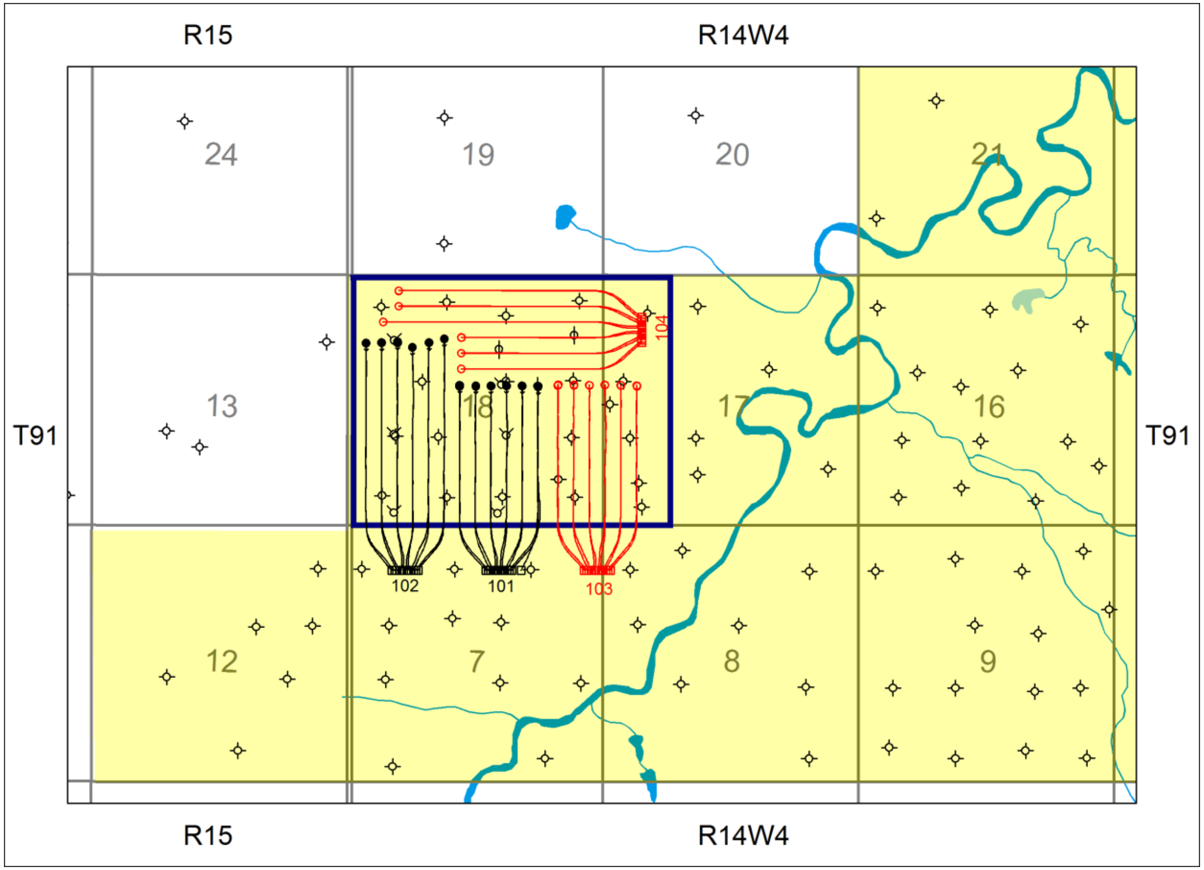
- Continuing to replace failed fiber strings in Pad 1 when opportunities arise.
  - 1P1 and 1P5 fibers have been replaced and are now providing accurate data.
  - 1P6 fiber has been replaced with 6 thermocouples.
- Original Pad one fibers failed as a result of moisture invading the capillary lines. Previous manufacturing process has been revised to ensure proper containment of fiber.
- Pad 2 Thermocouples continue to provide accurate data.
- No appreciable temperature response in McMurray observation wells as of yet. Hottest temperature ~25 Deg C.
- As expected Wabiskaw well has seen no temperature or pressure response.

Scheme Performance

Scheme Performance

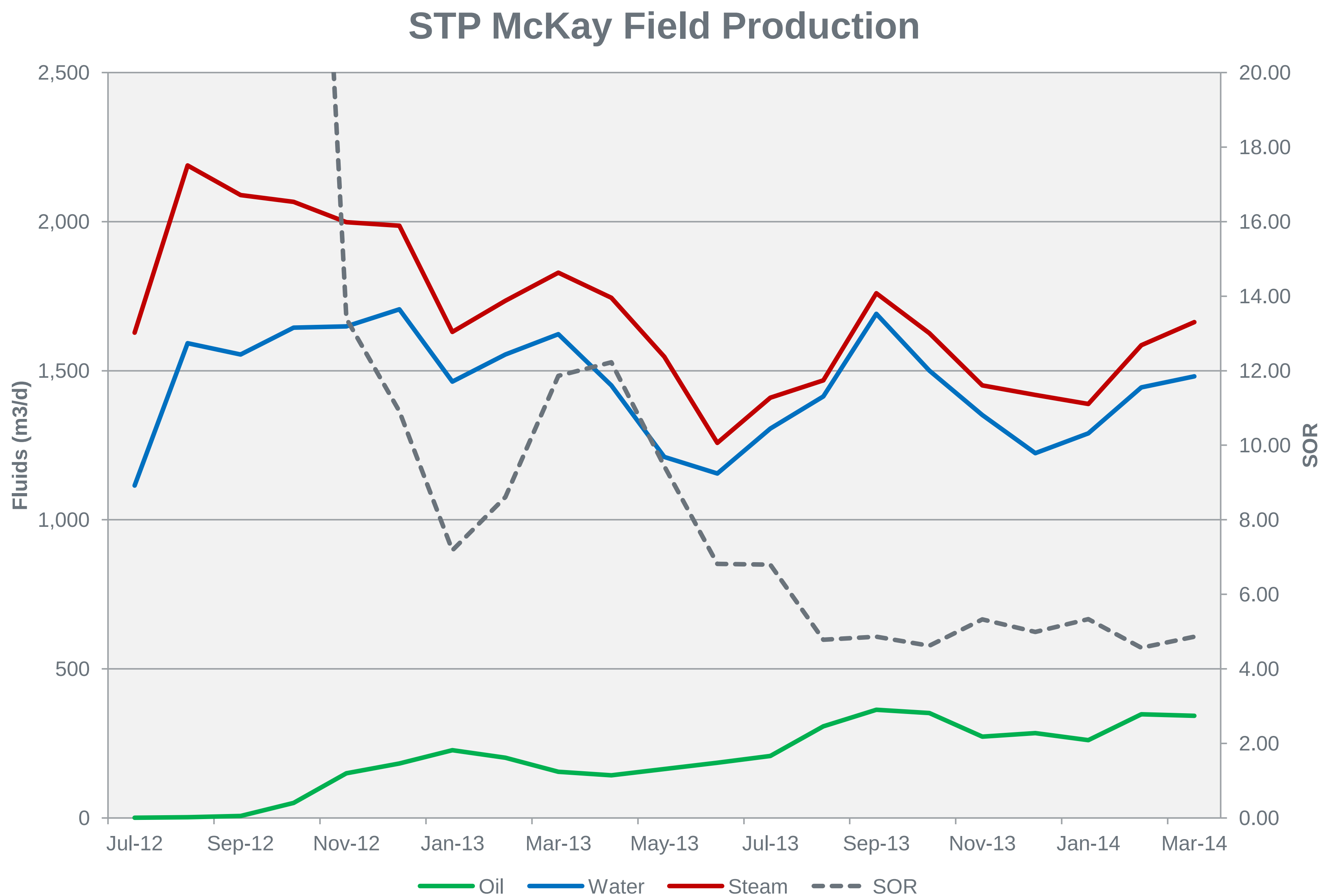
Well	Current Mode
101-1	SAGD
101-2	Shut In
101-3	SAGD
101-4	Shut In
101-5	SAGD
101-6	SAGD
102-1	SAGD
102-2	SAGD
102-3	SAGD
102-4	SAGD
102-5	SAGD
102-6	SAGD

Highlighted wells are currently shut in awaiting a workover.

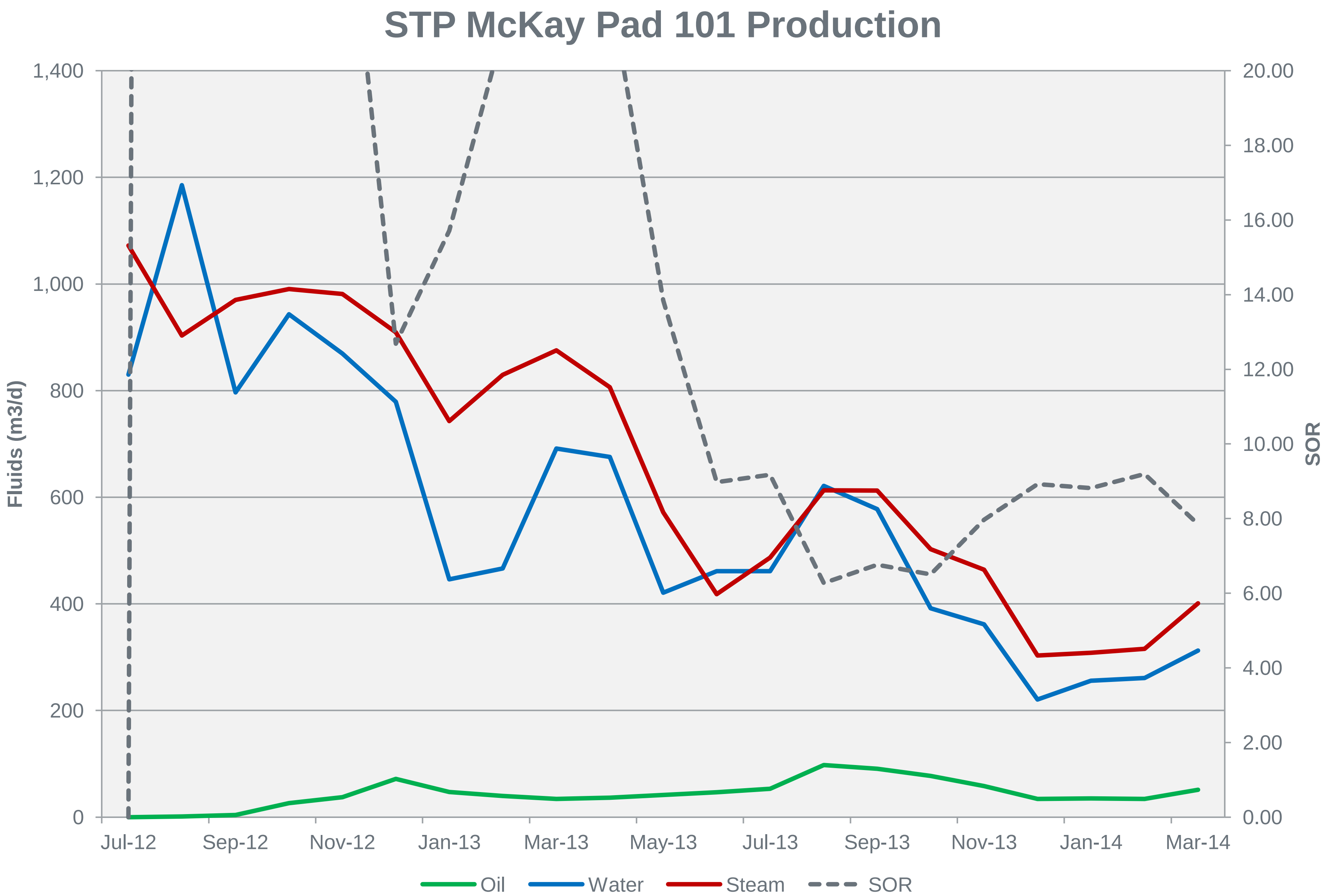


- The Pad 2 wells continue to show improving conformance with production time.
- The Pad 1 wells are experiencing a slow ramp up due to poor temperature conformance and steam breakthrough.
- 1P2 and 1P4 wells are shut in until a workover can be executed.

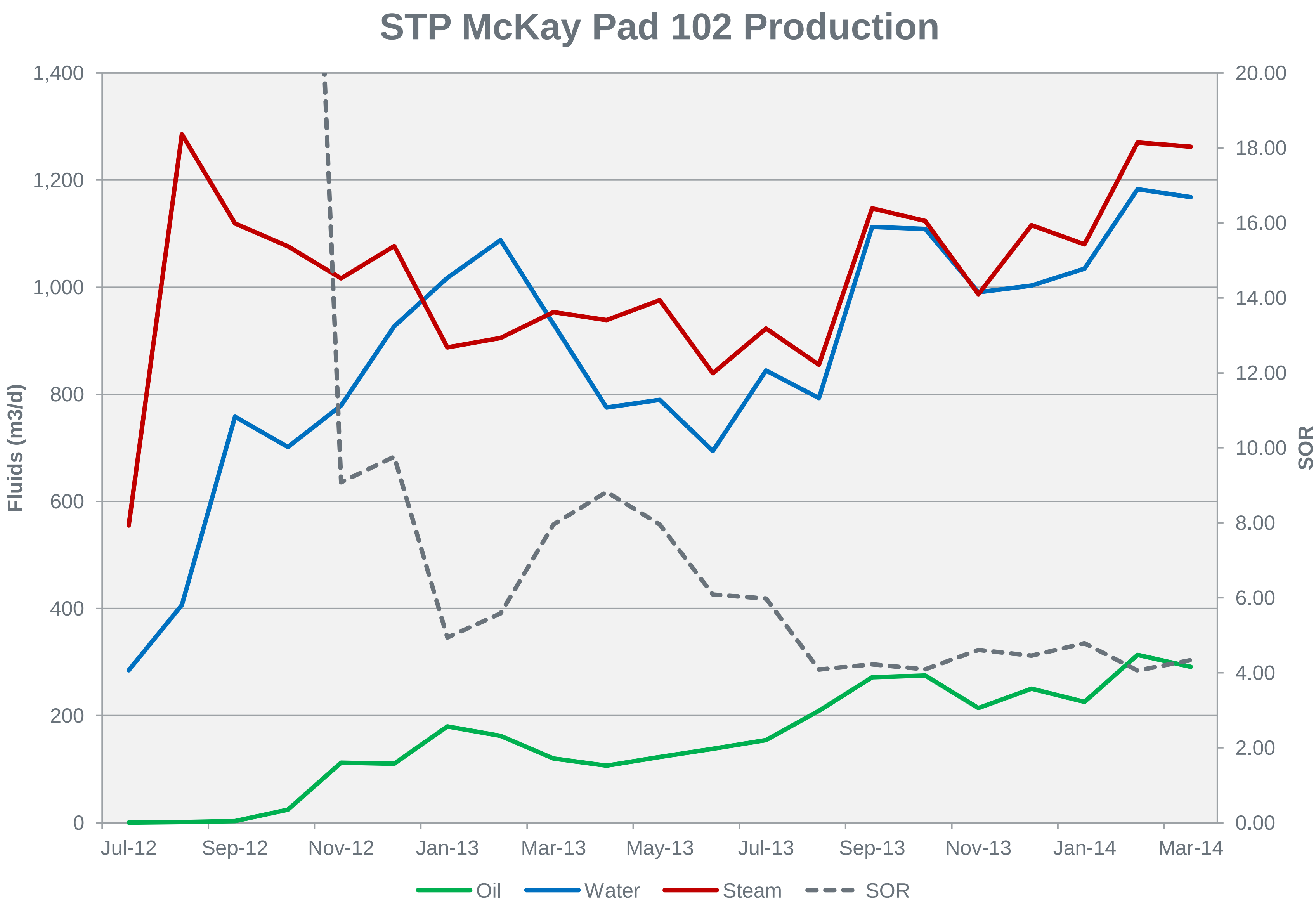
Scheme Performance



Scheme Performance



Scheme Performance



Scheme Performance

Pad	Drainage Area E3 m2	Average Net Pay, m	Porosity, fraction	Sw, fraction	OOIP, E3 m3	Cum Oil, E3 m3	Current Recovery Factor, fraction	Ultimate Recovery Factor, fraction
101	540	18	0.33	0.26	2374	27.9	0.012	0.50
102	720	20	0.33	0.26	3516	99.5	0.028	0.50

- Project is early in stage of SAGD life. Still anticipating initial expected recoveries.
- Early results from 2P1 and 1P5 ICD installations are showing improved production rates and flowing conformance.

Scheme Performance

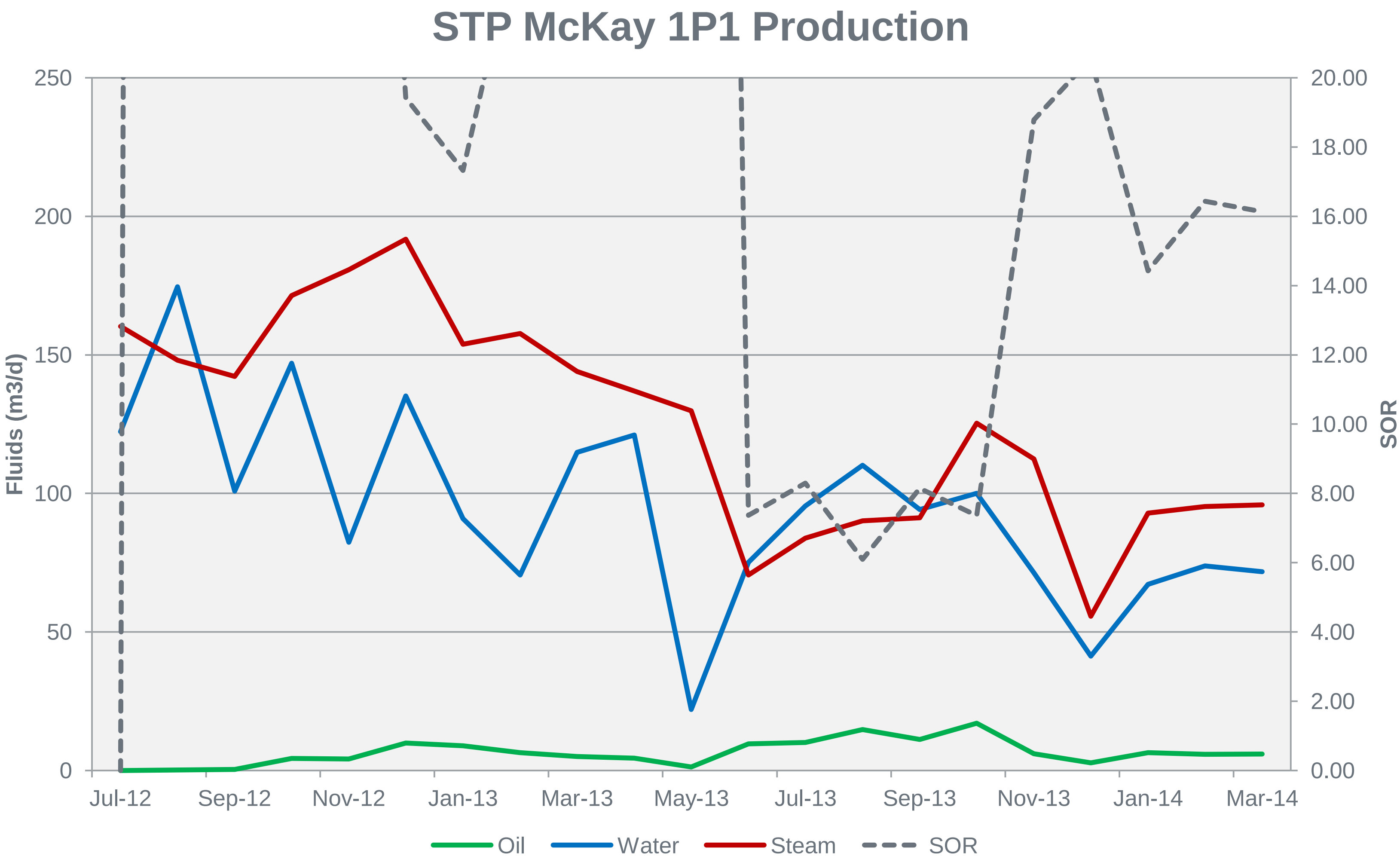
Pattern Examples Based on Recovery to Date

- Oil forecasting is based on theoretical flow equations for growing steam chambers (Butler)

- All examples below are based on cumulative recovery to date and not necessarily expected ultimate recovery.

Scheme Performance

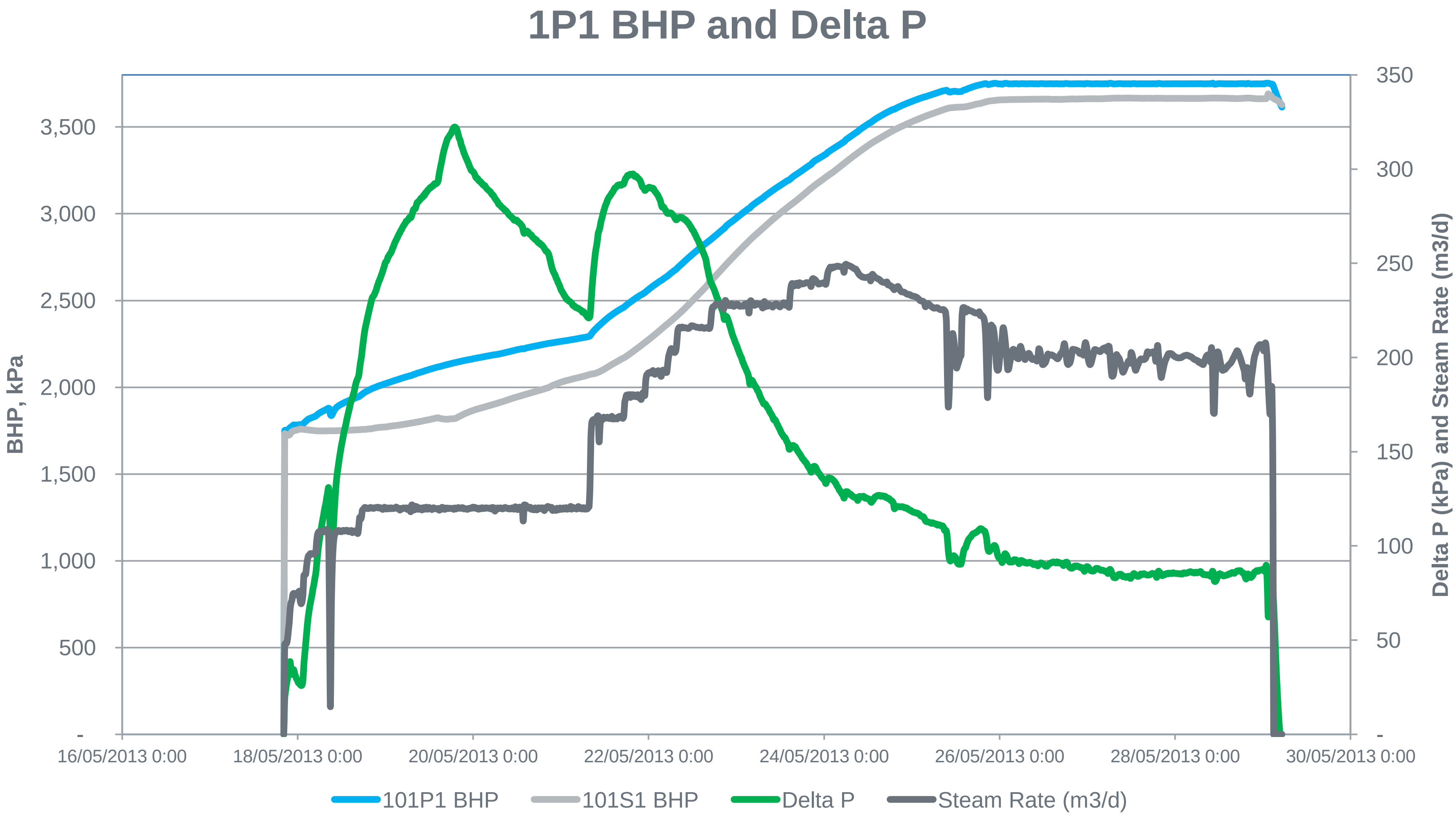
Lower Recovery Example 1P1



- Well is currently producing in SAGD.
- HPSS appeared to assist with initial conversion, but hotspot soon developed near the toe.
- Acid stimulation had no material impact

Scheme Performance

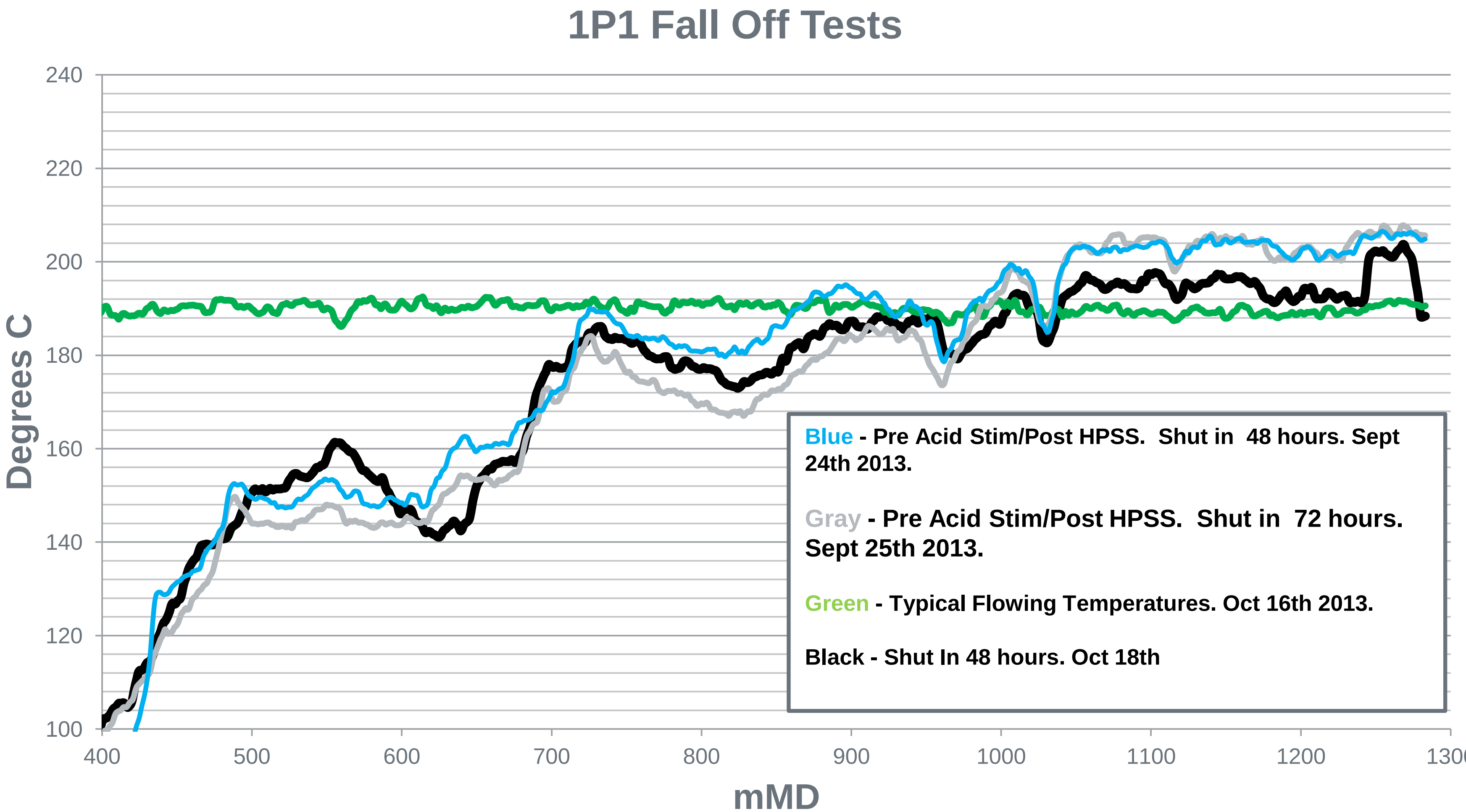
Lower Recovery Example 1P1 HPSS



- Official start of HPSS began on May 21, 2013.

Scheme Performance

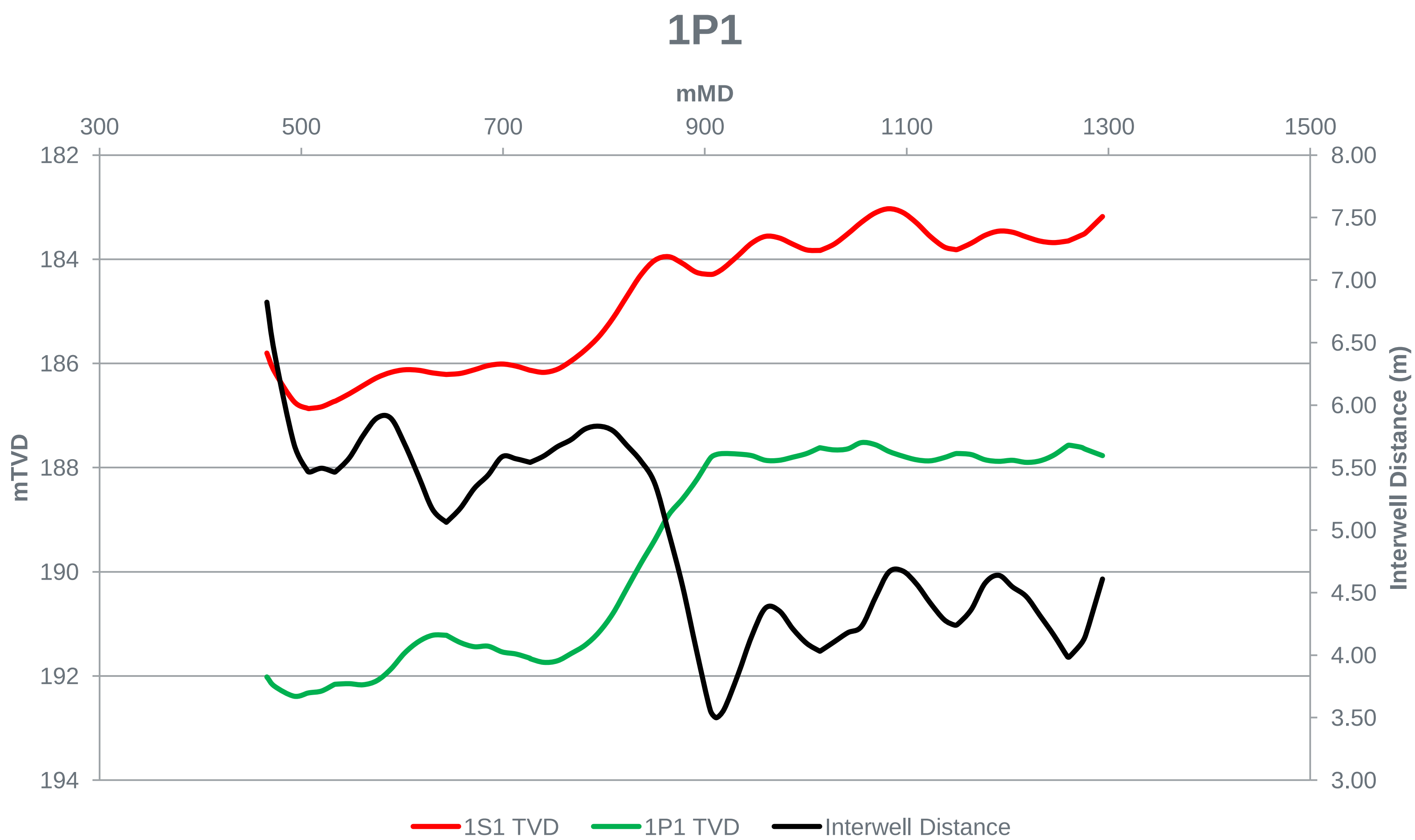
Lower Recovery Example 1P1 Fall Off Test



- Temperatures were continuing to drop off in the heel section after 48 hours of shut in time.

Scheme Performance

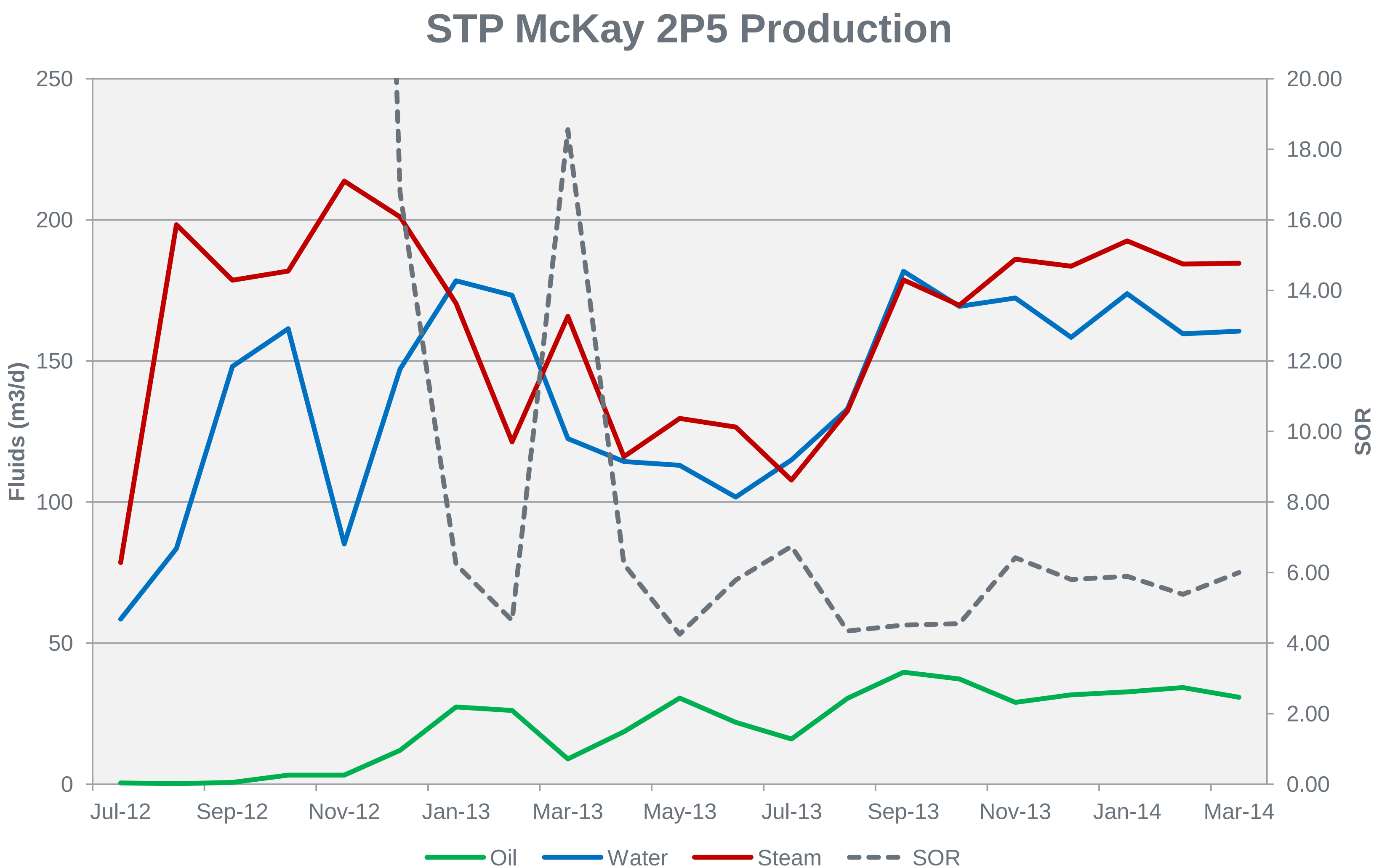
Lower Recovery Example



- Trajectories indicated that communication would likely be at toe and conformance would take longer for the heel.
- 1P1 wellbore spacing and toe up trajectory has resulted in minimal heel drainage.
- Production is being restricted due to hot zone near the toe of the well.

Scheme Performance

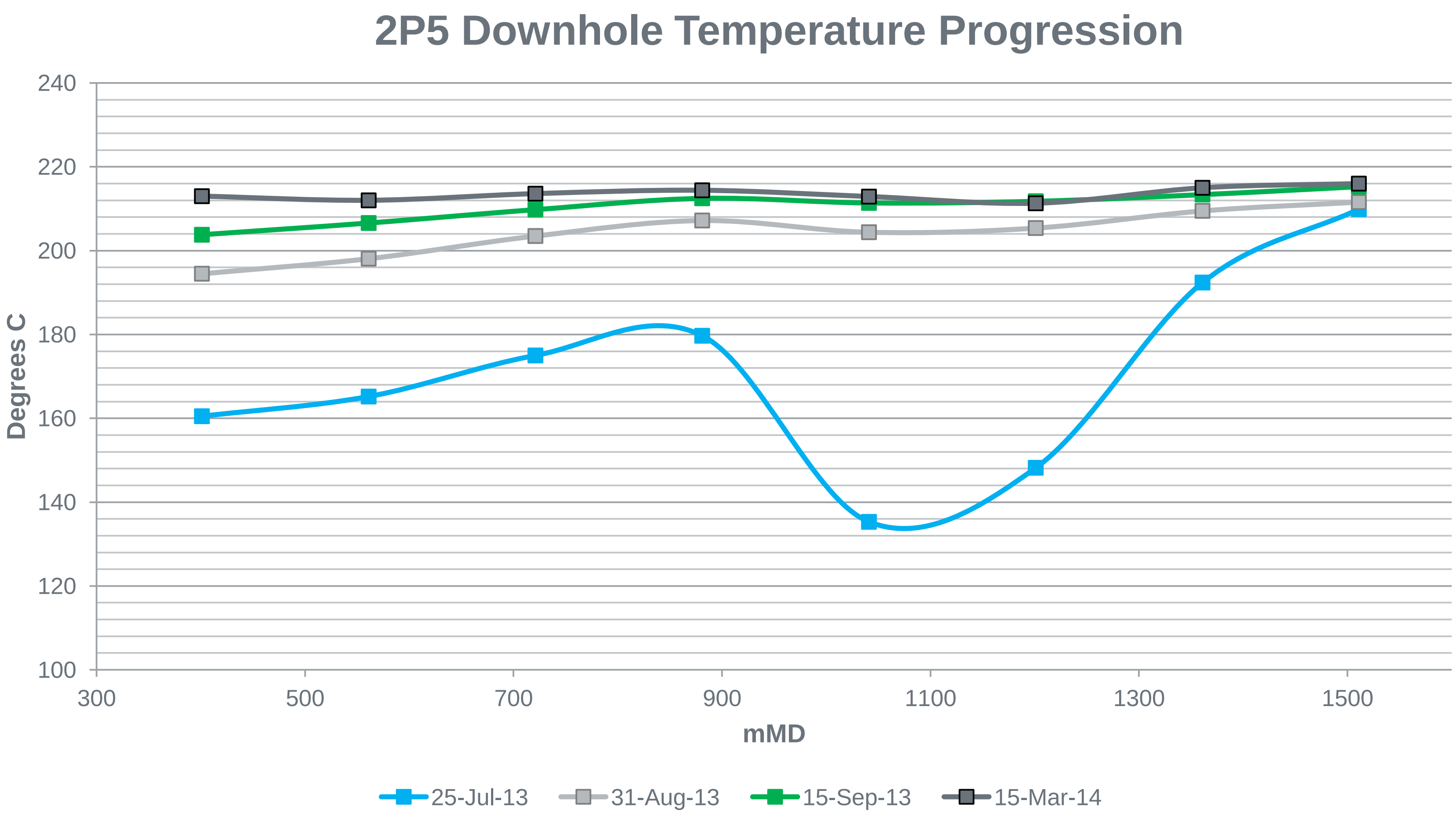
Medium Recovery Example 2P5



- Currently managing production to a hot spot near the toe of the well.
- Continuing to slowly ramp up production as conformance improves.

Scheme Performance

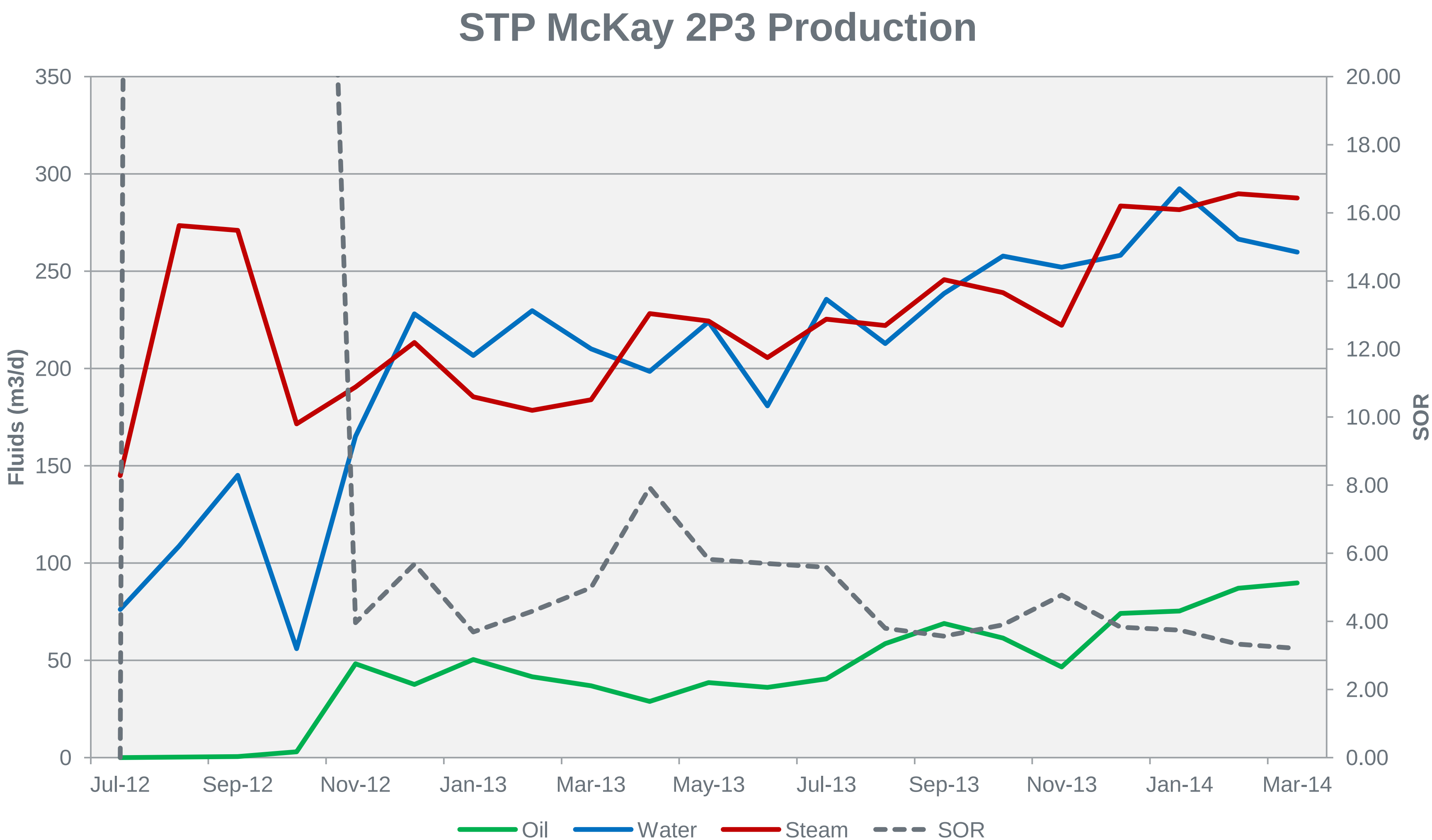
Medium Recovery Example 2P5 Temperature Profile Progression



- Current flowing temperatures are very tightly conformed. Actual near wellbore temperatures are being masked by production of hot fluids from the toe of the well.
- ICD Candidate.

Scheme Performance

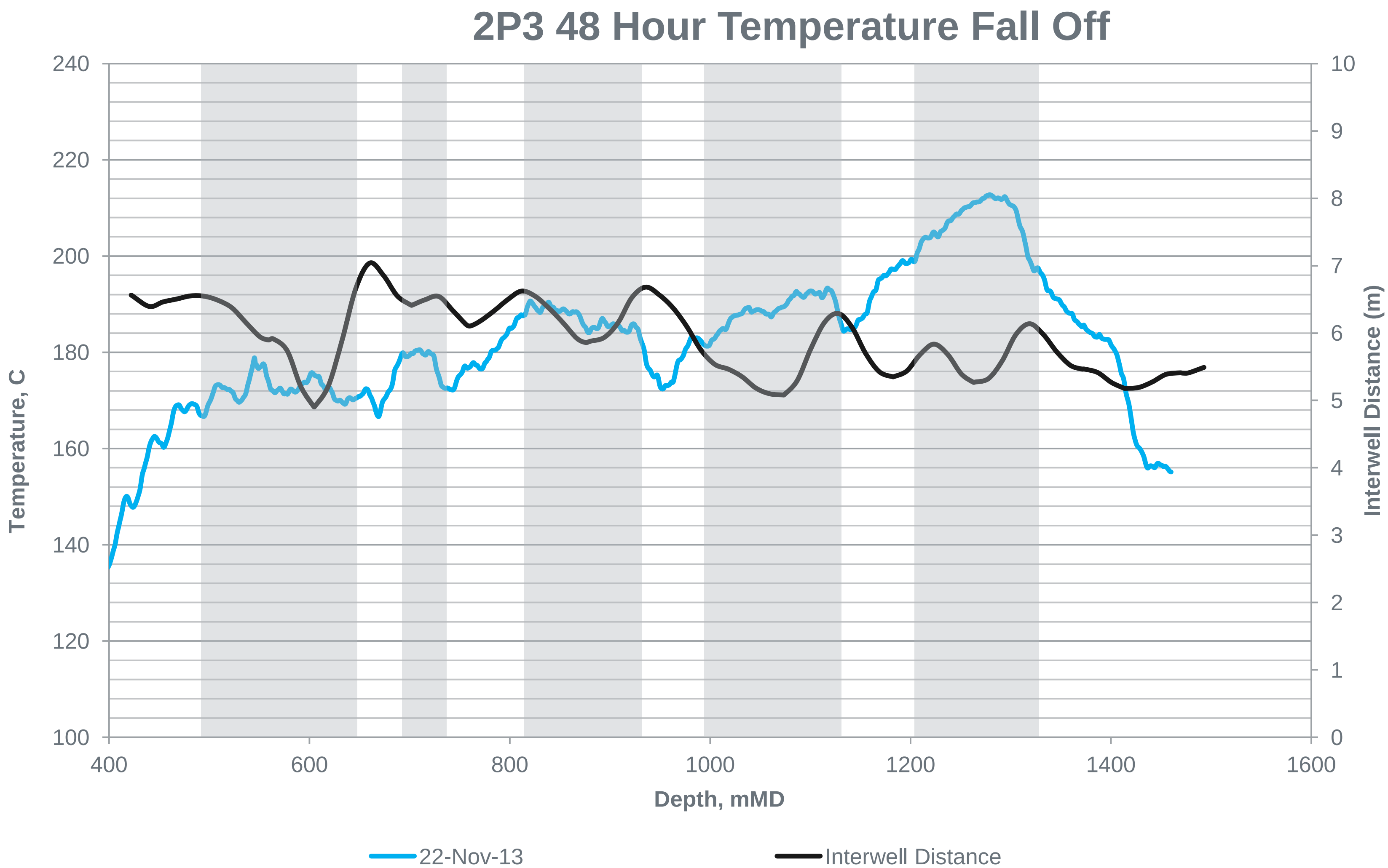
Higher Recovery Example 2P3



- Well continues to ramp up.
- Expect to see additional ramp up as colder sections of the well continue to become more mobile.

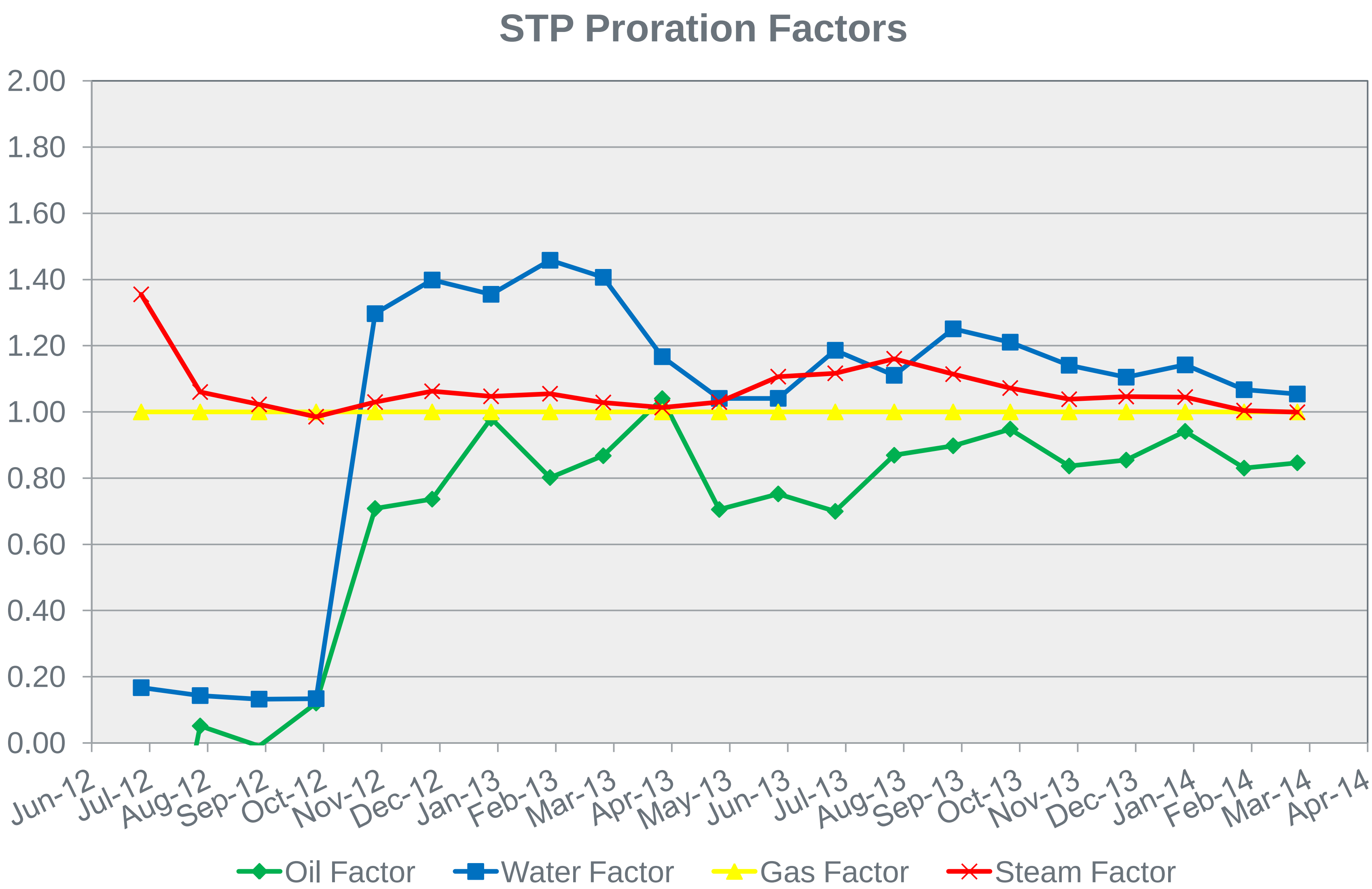
Scheme Performance

Higher Recovery Example 2P3 Temperature Log



- Temperature log indicates well is between 50-60% conformed.
- ICD candidate

Monthly Proration Factors



Appendix for ICD

Why

- STP's biggest challenge has been conformance.
  - Production rate impeded by single point breakthrough.
  - Unbalanced wellbore inflow due to varied wellbore separation and reservoir heterogeneities.

Theory

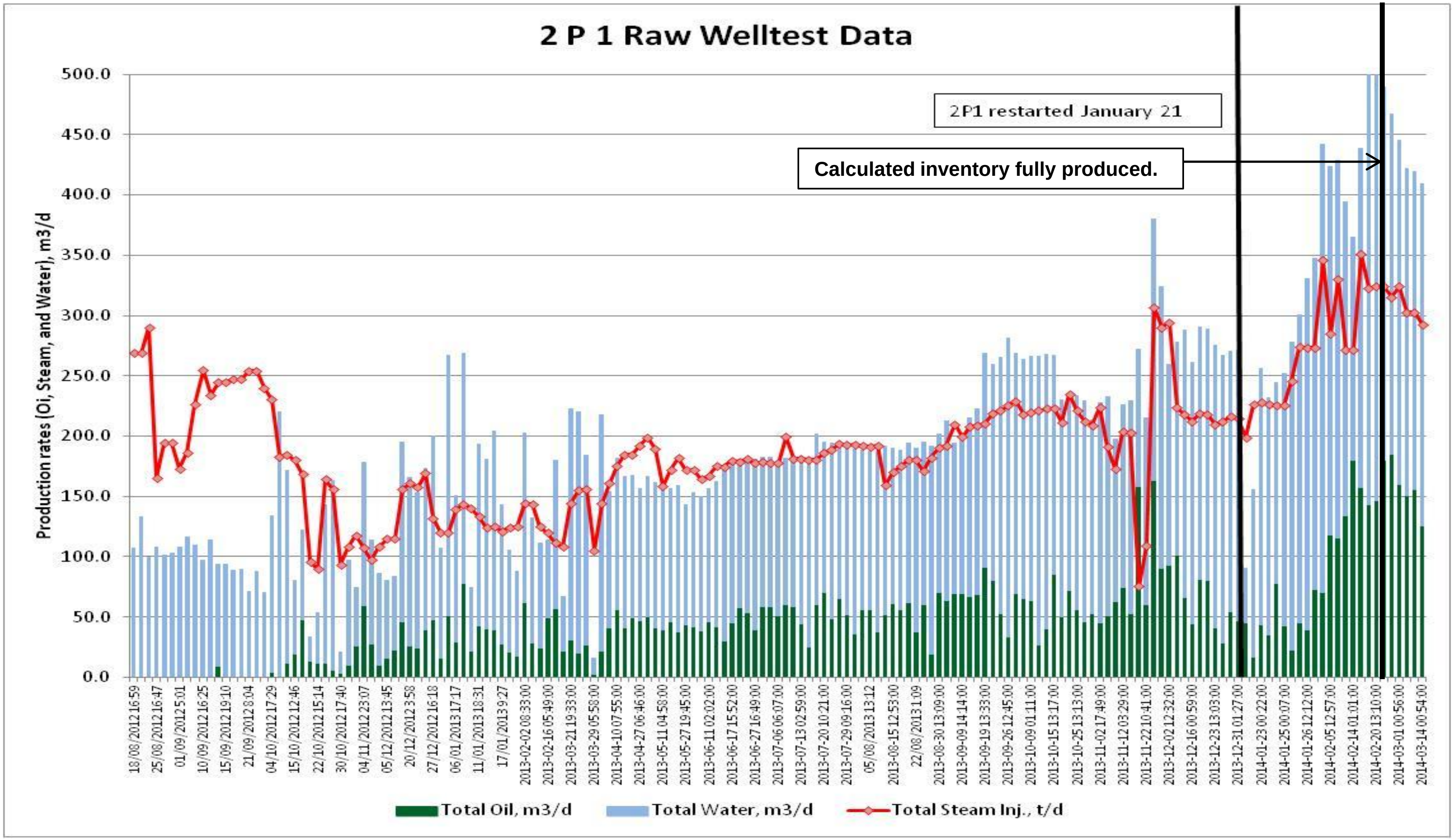
- Producer wellbore is segmented and placement/number of ICD's in each segment varied to promote and control flow by increasing pressure differential.

- Sections of the wellbore experiencing high vapour production will see an increased pressure drop through the device, allowing for more uniform inflow and drawdown along the length of the well.

Appendix for ICD – 2P1

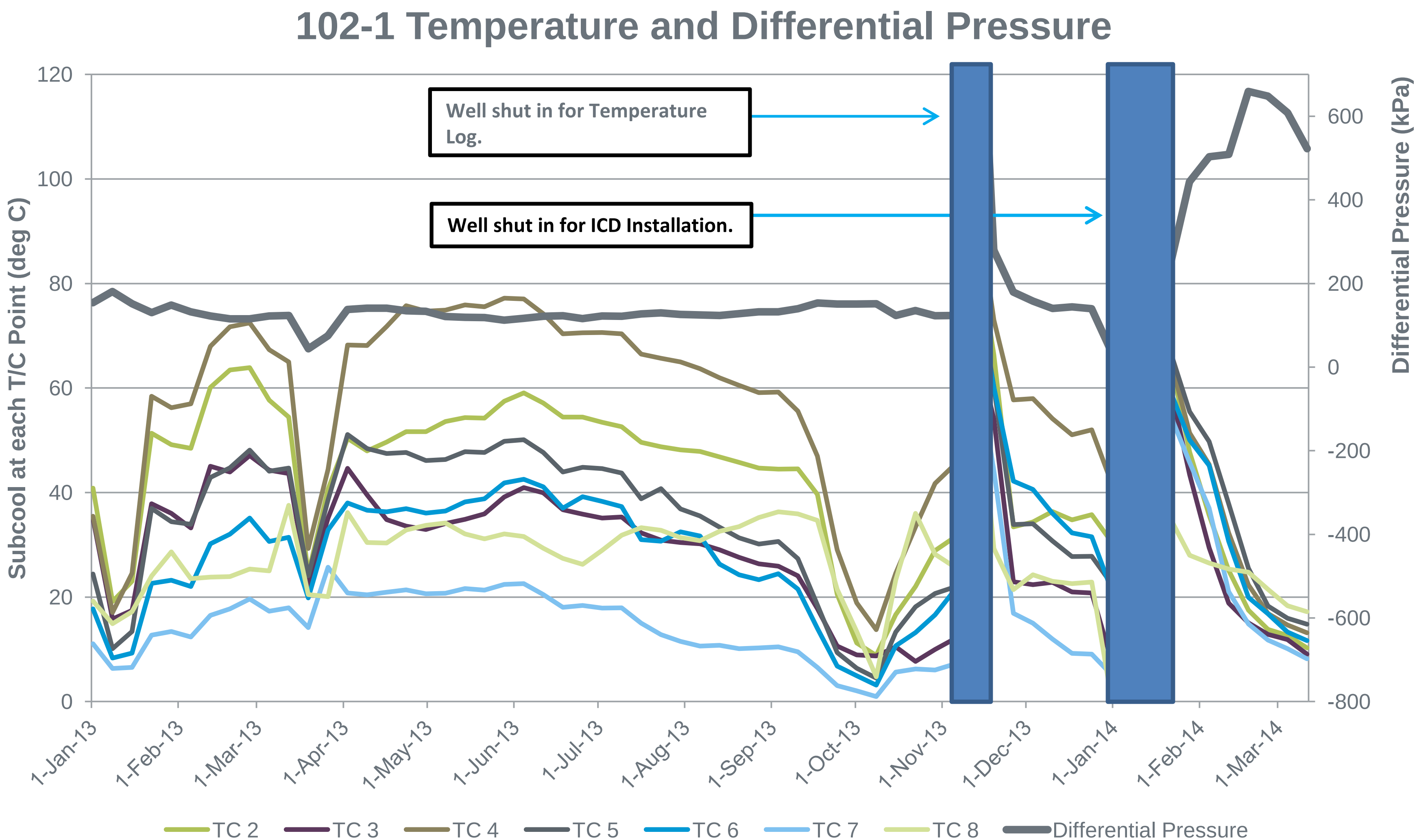
- 2P1 ICD installed in January
- 2P1 restarted production on January 21 and saw initial rates approximately double compared to well capability prior to ICD install
- Improved flowing conformance
- Calculated inventory was fully produced as of Feb 26/2014.
  - Additional dP imposed post ICD has allowed portions of the reservoir to become more productive.
  - Well continues to be more productive after flush production.

Appendix for ICD – 2P1



- Large increase in oilrate and emulsion rate after ICD install.
- Larger Steam demand than pre-ICD.

Appendix for ICD – 2P1

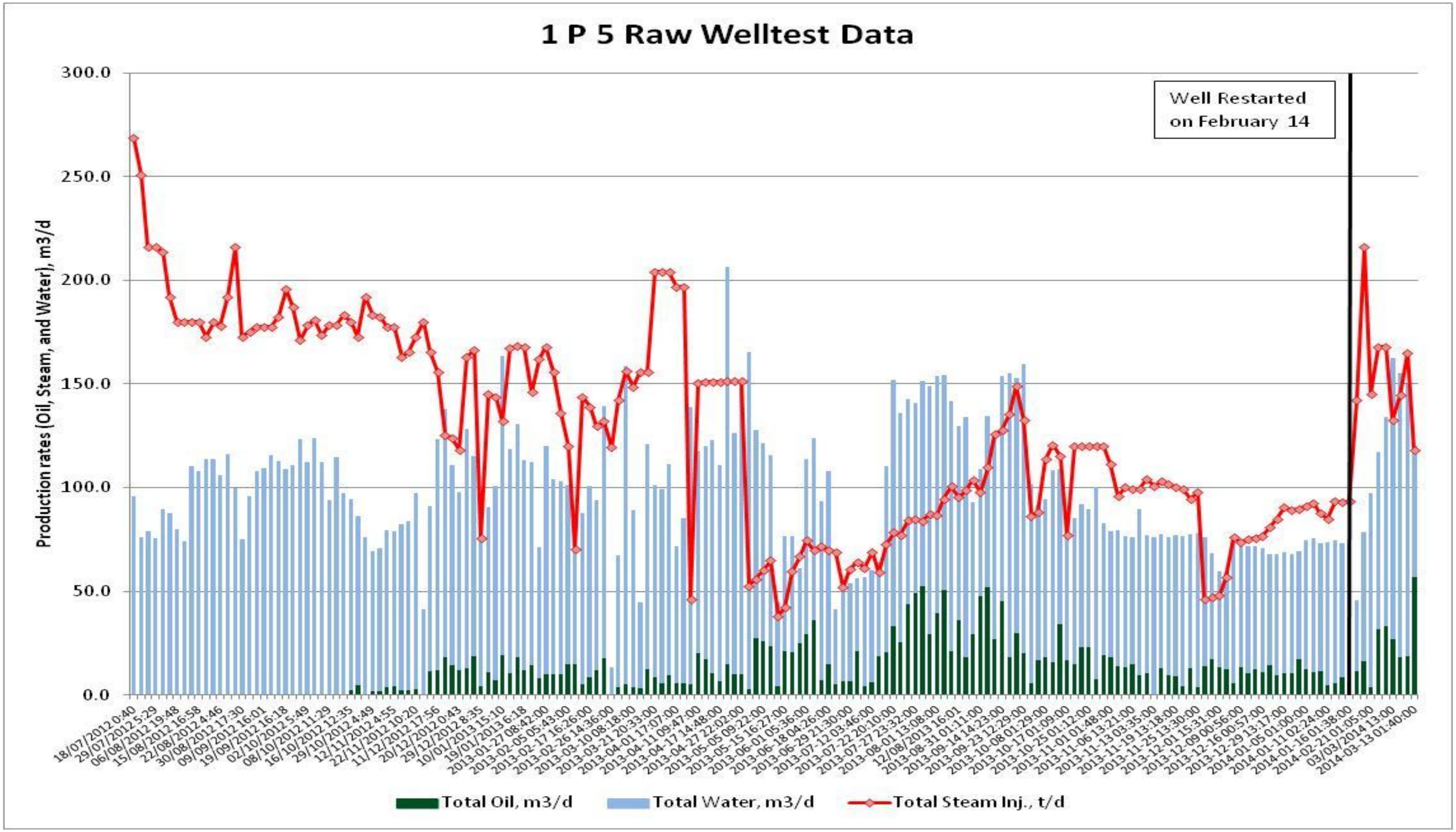


- Hottest point was TC7 pre-ICD.
- Early results indicate improved conformance.

Appendix for ICD – 1P5

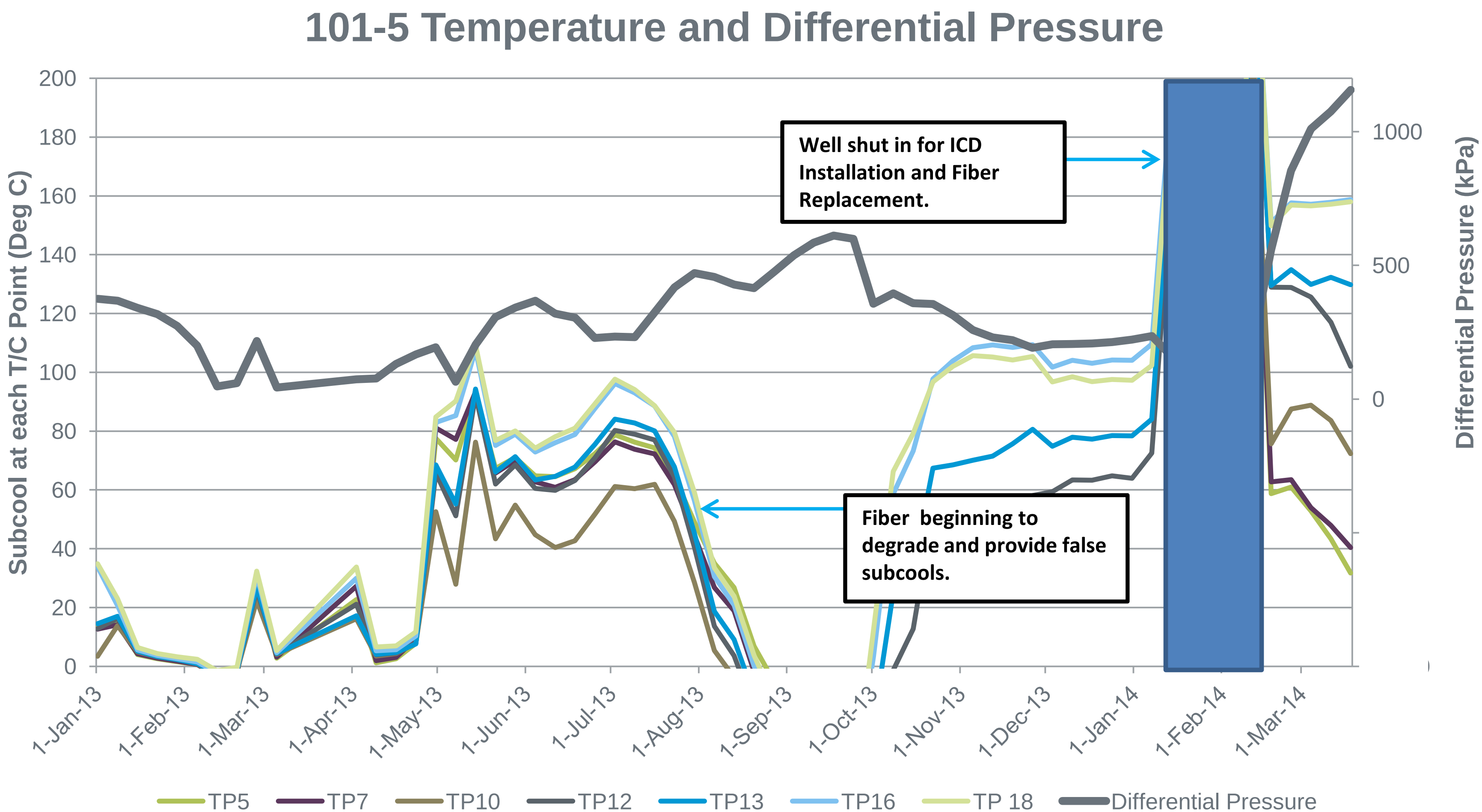
- ICD installed in January
- 1P5 restarted on February 4 and saw initial rates approximately double compared to well capability just prior to ICD install.
- Well was much less mature than 2P1, expecting conformance to take longer than 2P1.
- Calculated inventory was fully produced as of Mar 18/2014.
  - Additional dP imposed post ICD has allowed portions of the reservoir to become more productive.
  - Well continues to be more productive after flush production.

Appendix for ICD - 1P5



- Large increase in oilrate and emulsion rate after ICD install.
- Larger Steam demand than pre-ICD.

Appendix for ICD - 1P5



- Hottest point was TC10 pre-ICD.
- TC5 is hottest point post ICD
- Temperatures pre-ICD are tightly conformed due to production of hot fluids from the midpoint of the well (LS pulling hot fluid to toe).
- Fibre data between May/13 and Aug/13 is suspect. Fiber not functioning after Aug/13.

Appendix for ICD

<u>Learnings</u>

- Early results indicate that devices are:
  - Successful in imparting additional differential pressure.
  - Successful in promoting additional flow from previously less productive areas of the well.
- Fall-off test prior to install is important
  - Understanding of conformance and current flow capability is key.
- STP expects to see an additional ramp up as previously less productive areas of the well mature and become more mobile.

Scheme Performance

Key Learnings

- Implement tighter lateral inter wellpair spacing on future drills.
- Reduce Producer and Injector wellbore spacing.
- Keep consistent separation between Producer and Injector wellbores.
- Potentially implement HPSS with a balanced differential pressure early in a wells life.
- Install ICD’s to achieve uniform drawdown and optimal conformance.
- Acid Wash results indicate plugging mechanisms are not present in early well lift at STP.

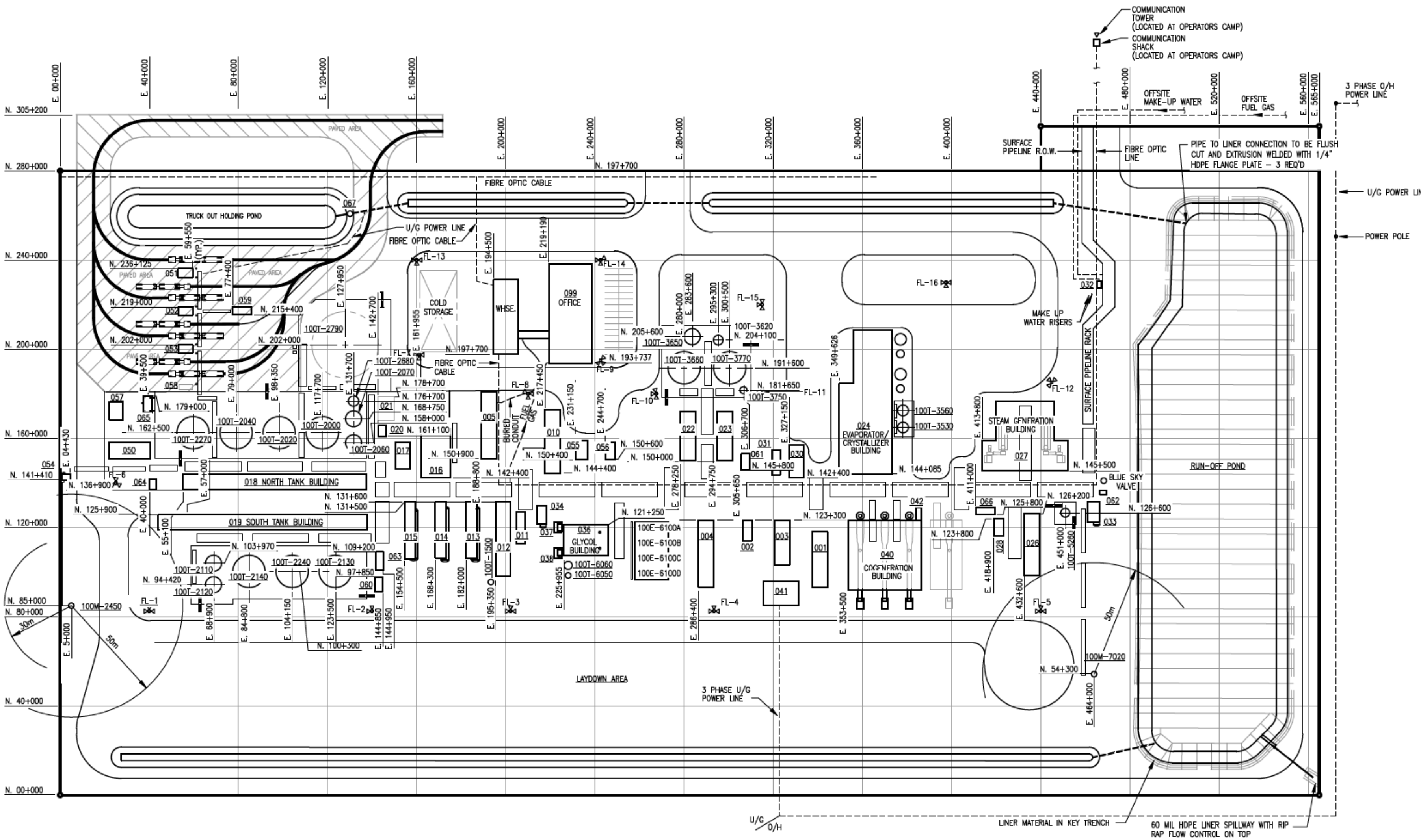
Subsurface Future Plans

- ICD Installations on 1P2 and 2P2.
- Application submitted to drill 12 new down spaced well pairs within the existing 101 and 102 well pads.
- Drilling well pairs from Pad 103 and Pad 104.
  - Planned amendment to increase to 9 wellpairs for each pad.
- Continued development plan for Phase 1, Phase 1 Expansion and Phase 2.
- Future 4D seismic program.
- Monitor Wabiskaw temperatures for optimal development timeframe.

Surface Facilities & Environmental Table of Contents

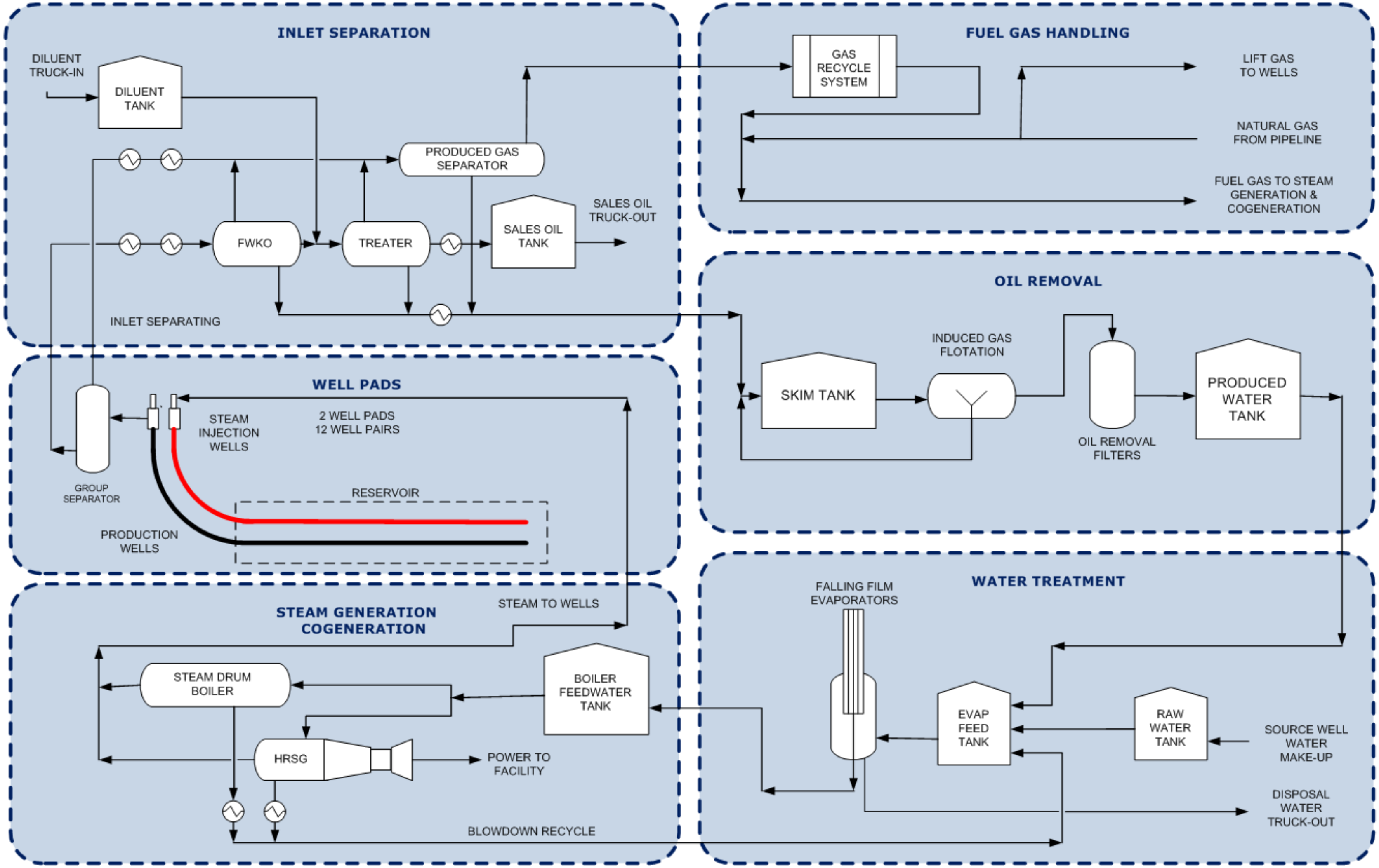
1. Facilities
2. Measurement Accounting & Reporting Plan
3. Water Sources & Uses
4. Water Treatment
5. Environmental Summary
6. Compliance Statement
7. 2013 Regulatory Summary
8. Future Plans

Facility Plot Plan – 2013 Amendments



- No facility amendments completed in 2013

Facilities – Simplified Facility Schematic



Measurement/Reporting

General

- Annual 2013 MARP Update submitted March 6, 2014
- Review of Controls for EPAP Declaration completed, declaration submitted February 17th. Work to date indicates that the majority of measurement related controls are adequate and functioning as intended. 2014 Remediation Plan developed for areas of concern identified.
- Detailed EFM audit completed on all MARP metering in 2013, areas of concern identified, documented, and corrected.
- Some issue with fouling of orifice plates in Produced Water service has led to some metering challenges during the year. Use of backup produced water meter (Mag-type) for reporting, and as a tool to identify fouling of primary meter has been successful at mitigating this concern.
- Accurate produced gas measurement at high lift gas use (>60:1 Sm^3 gas / Sm^3 emulsion) and high facility turndown has been a challenge. Expect gas measurement concerns to alleviate as rates ramp.

Well Production / Injection Volumes

- Well production is prorated from bulk scheme production using intermittent test data via dedicated test separators on Pads 101 and 102. (6 pairs per separator)
- Wells meet or exceed the current minimum well test requirements per Directive 17. With six producers per pad, 11 testing hours every three days is the current operating protocol for each operating producer (12 hour test duration – 1 hour flush, 11 hours test data).
- Manual samples are taken to determine bitumen, water, solids and chloride content and have proven reliable and repeatable.

Measurement/Reporting

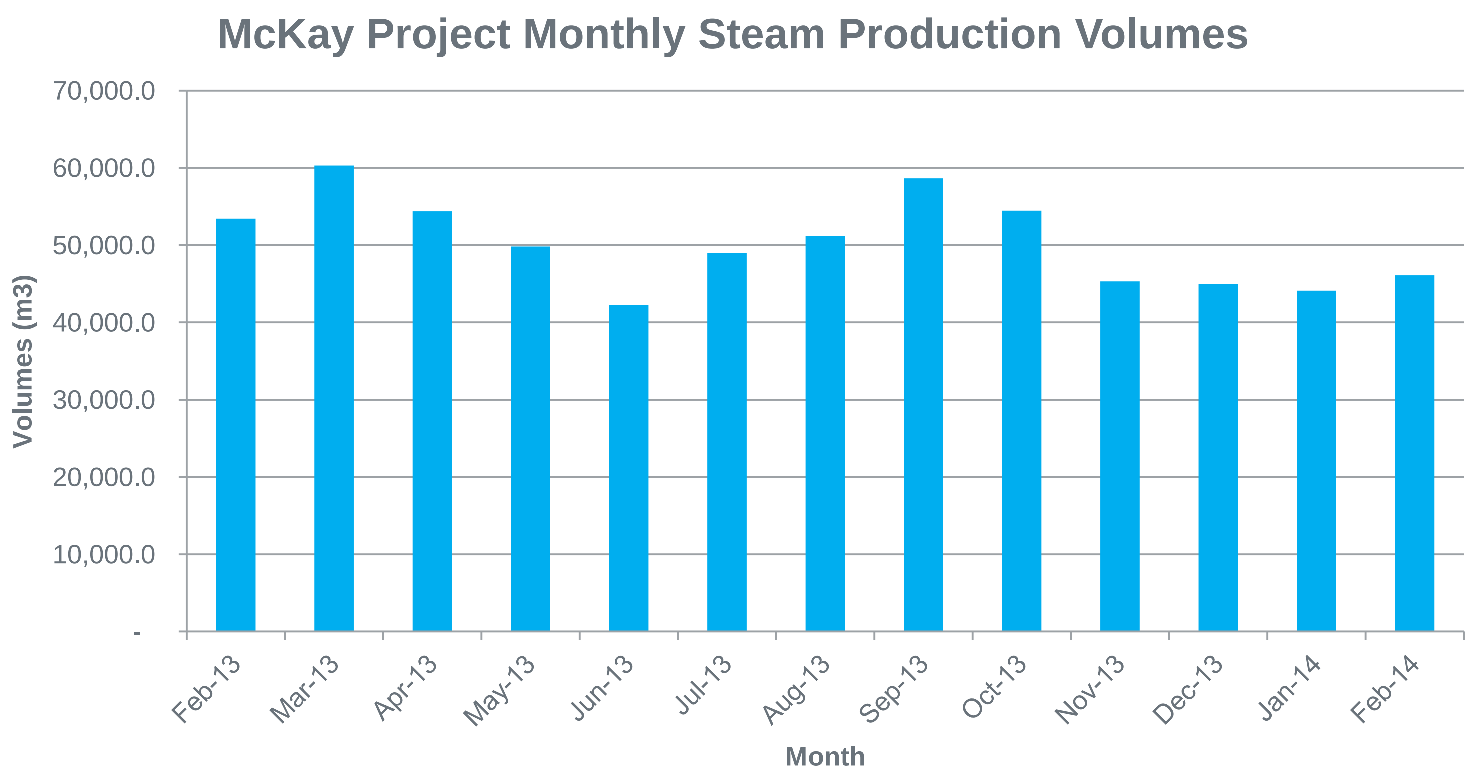
Water Balance

- Balance closure < 5%, but some room for improvement. Tightening the water balance will be an area of focus for 2014.
- Water Recycle Performance per Calculation defined in Directive 81 averaged **98.5%** for the period analyzed.
- Per Disposal Limit formula in Directive 81, (3% of Fresh Volumes + 10% of Produced Water Volumes). The maximum disposal limit for McKay was **8.55%** of inlet volumes for the period analyzed. McKay averaged a disposal of **1.13%** of inlets for the period (**13.3%** of allowable).
- Evaporative / Venting Losses were primarily associated with venting HP Steam due to temporary water long imbalances in the CPF

McKay Water Balance - 2013
Feb 1, 2013 - Mar 15, 2014

Inlet Flow		
Produced Water	551,898.9	m^3
Source Water	144,240.4	m^3
Total Inlet	**696,139.3**	**m^3**
Accumulation		
Opening Inventory (Produced)	5,073.7	m^3
Closing Inventory (Produced)	4,679.0	m^3
Opening Inventory (Fresh)	1,595.6	m^3
Closing Inventory (Fresh)	1,463.0	m^3
Total Accumulation	**(527.3)**	**m^3**
Outlet Flow		
Steam Injection to Wells	635,439.6	m^3
Evaporative and Venting Losses	23,418.0	m^3
Disposal Volumes	7,923.1	m^3
Water in Sales	316.7	m^3
Total Outlet	**667,097.3**	**m^3**
Difference (Inlet - (Outlet + Accum))	**29,569.3**	m^3
% Imbalance	**4.25%**	

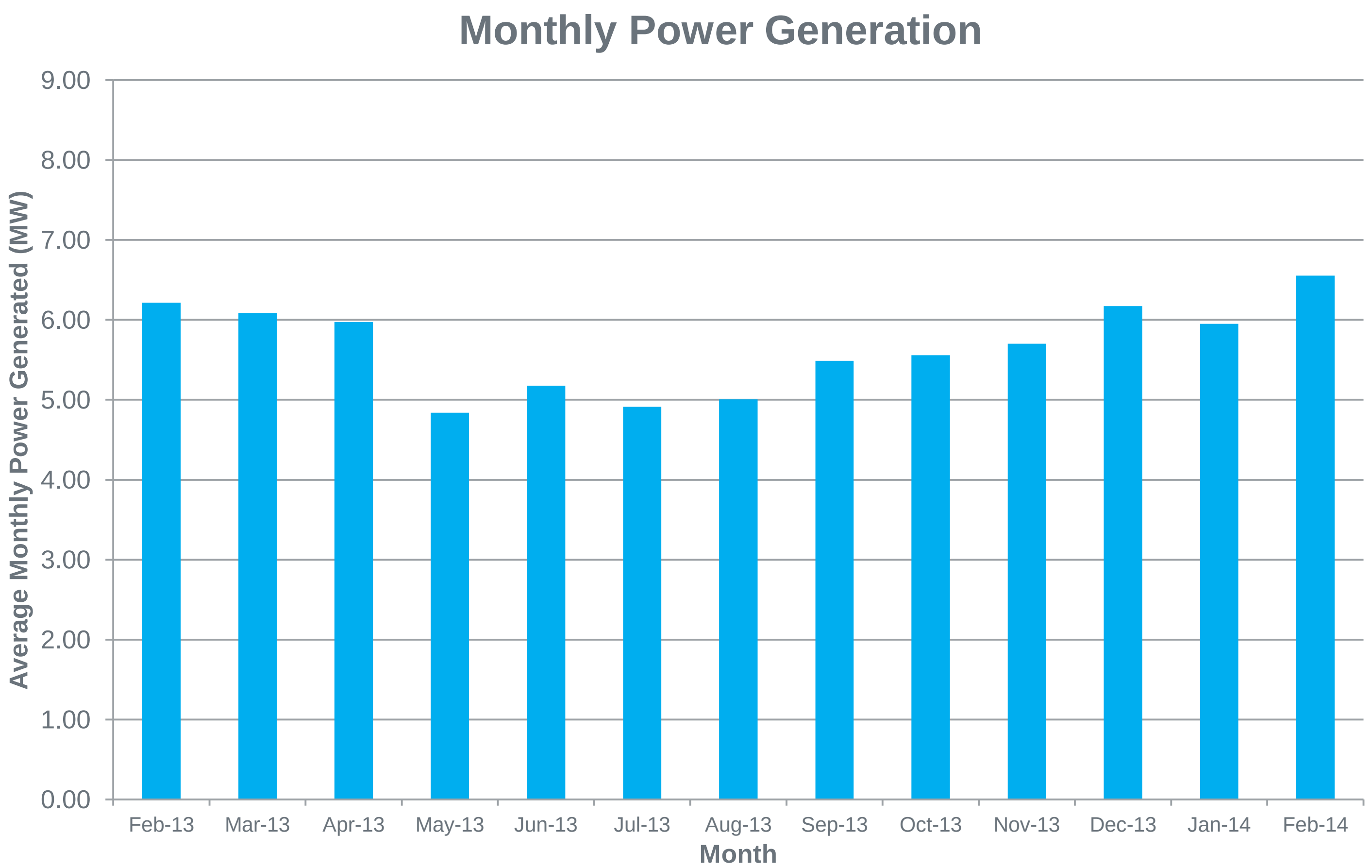
Steam Generation



Process Steam is produced at the McKay Project via:

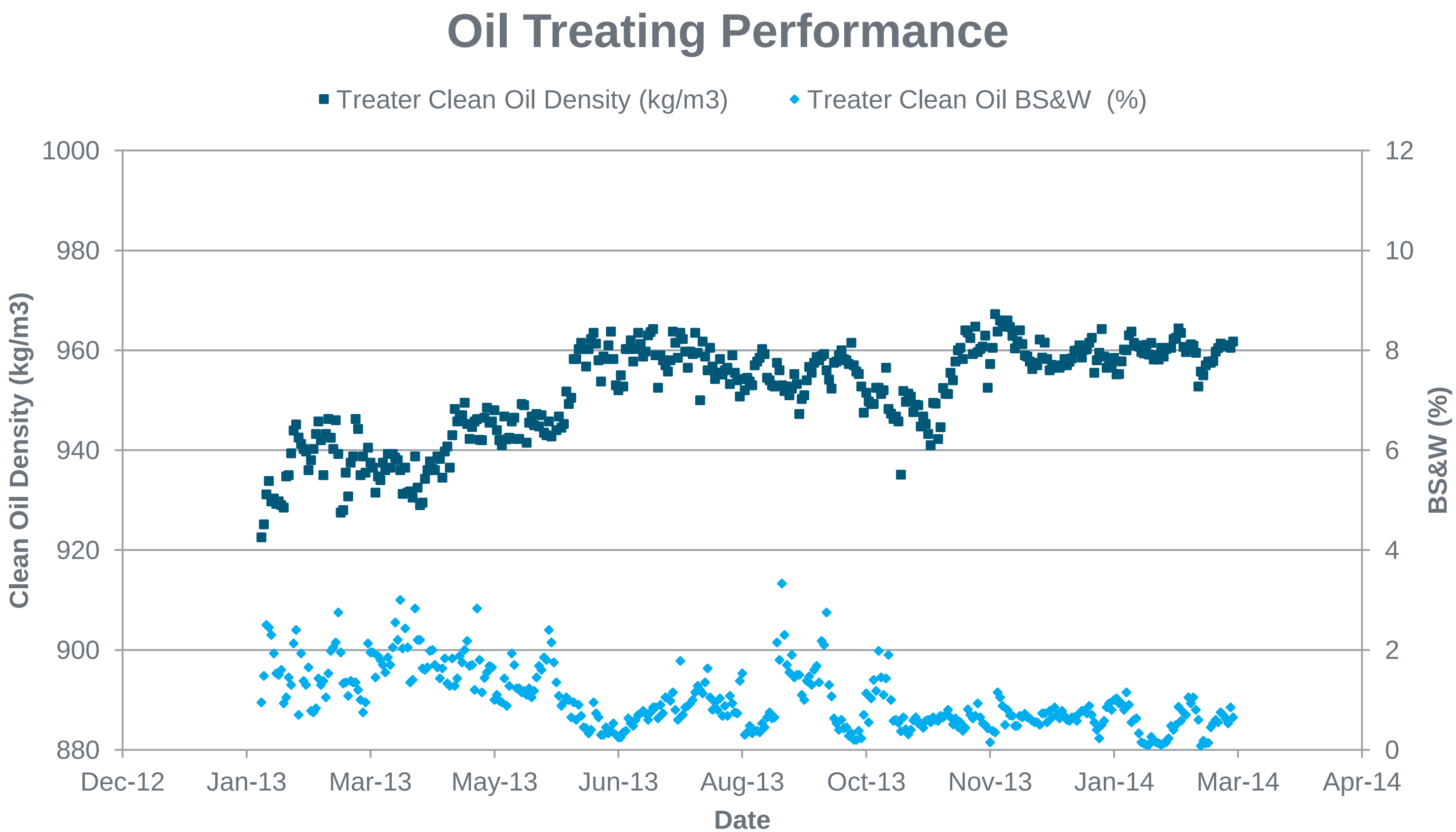
- 2 x 100 T/hr Drum-type Natural Circulation Boilers.
- 3 x 5.67 MW Gas Turbines equipped with duct fired HRSG’s (2 operating, 1 standby).
- No signifcant process issues with Steam Generation equipment in 2013.

Power Generation



- Power is produced at the McKay Project via 3 x 5.67 MW Gas Turbines.
- Under normal operation two turbines are operating while one is on standby.
- The McKay Project produces all its own power and has no connection to grid power, all power generated is consumed on-site.

Oil Treatment



- Inlet Emulsion at McKay is treated conventionally via diluent blending and oil-water separation in two stages (FWKO / Treater).
- Treating typically at target density of 960 kg/m^3 with product oil < 1.0% BS&W (product from tankage typically < 0.5% BS&W)

Water Sources & Uses

Fresh Water Uses - make-up water for the project to be drawn from the McKay Channel Empress Formation. Details on the *Water Act* licence are as follows:

	Licence No. 00262149-00-00 (issued December 6, 2010)	**Licence No. 00262149-01-00 (issued July 4, 2013)**
8-8-91-14-W4M	853 m^3/ day	853 m^3/ day
16-8-91-14-W4M	1,223 m^3/ day	2,401 m^3/ day
15-8-91-14-W4M		2,475 m^3/ day
Daily Maximum Diversion	2,076 m^3/ day	5,729 m^3/ day
Annual Maximum Diversion	**419,750 m^3**	**419,750 m^3**

From Jan 1, 2013 to Dec 31, 2013: **147,147 m^3** withdrawn

8-8-91-14-W4M: 31,123 m^3

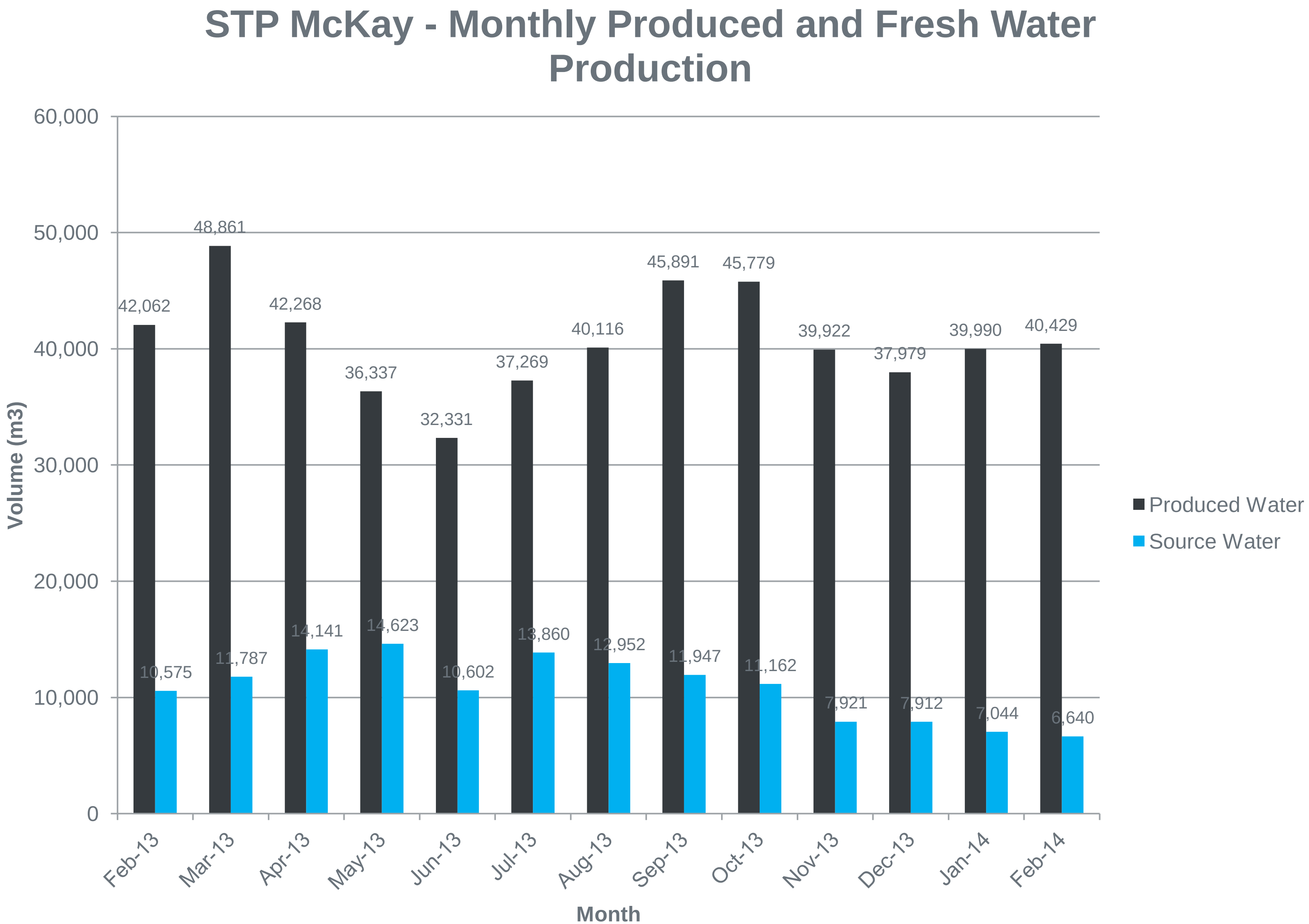
16-8-91-14-W4M: 72,558 m^3

15-8-91-14-W4M: 43,466 m^3

The total withdrawn from Jan.1 2014 to March 15, 2014 is: **18,322 m^3**

On July 4, 2013 ESRD approved STP's *Water Act* licence amendment application extending the license expiry for licence 00262149-01-00 from July 5, 2013 to July 5, 2018.

Water Sources and Uses



Water Sources & Uses

Fresh Water Uses – temporary diversion licences (TDLs) at various dugouts and creeks were obtained for road dust suppression and winter road building:

Licence No.	Status	Licensed Volume (m^3)
00307799	Expired April 2013	13,333
00307800	Expired April 2013	13,333
00307806	Expired April 2013	13,333
00314347	Expired August 2013	30,000
00314348	Expired August 2013	20,000
00314349	Expired August 2013	20,000
00314352	Expired August 2013	15,000
00320691	Expired March 2013	15,000
00334520	Active until August 2014	85,000

Water Sources and Uses

Produced and Fresh Water Quality Summary

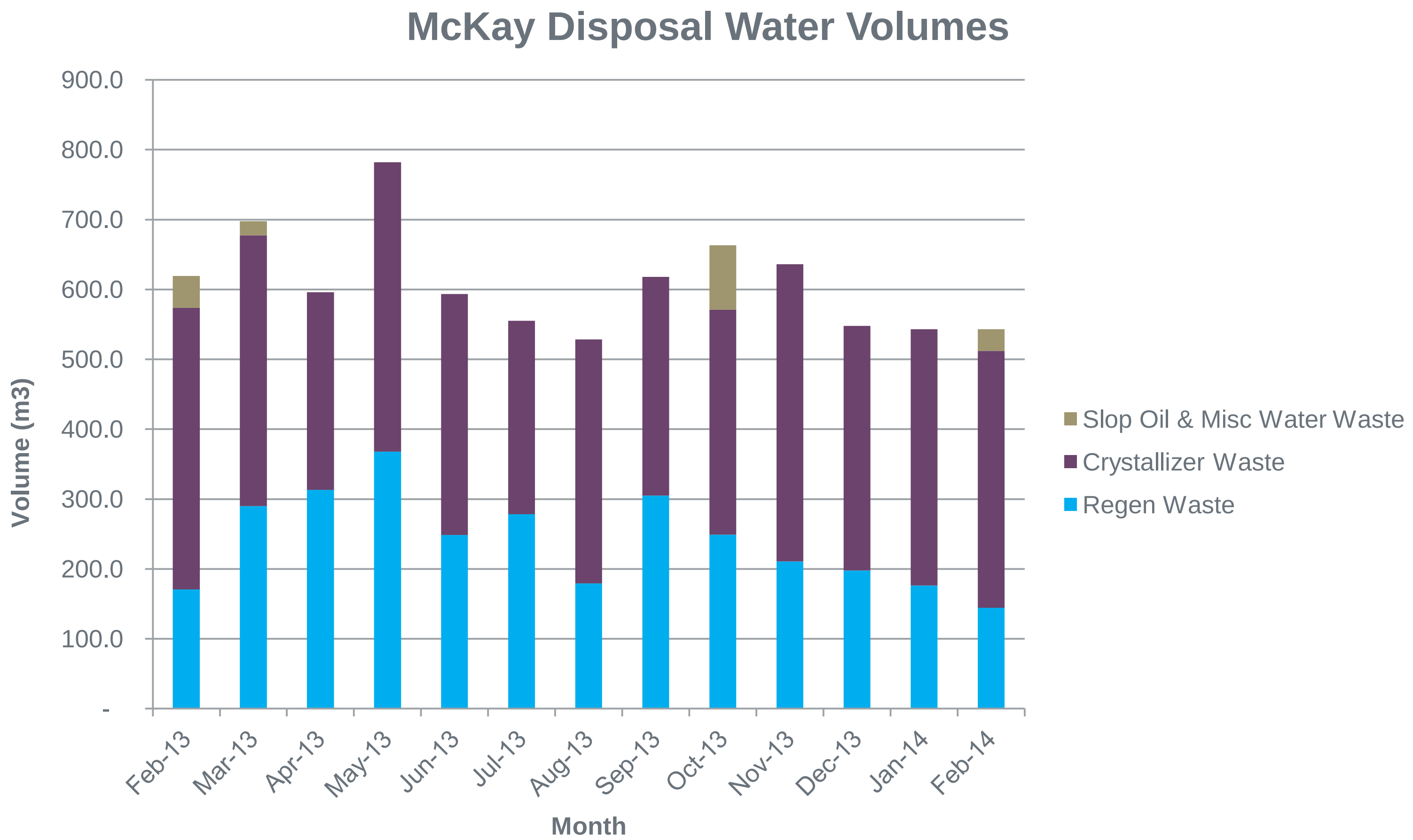
		Produced Water	Source Water
Na	mg/L	253	172
K	mg/L	17.4	7.3
Ca	mg/L	1.2	91.2
Mg	mg/L	Trace	39.9
Ba	mg/L	2.5	0.03
Sr	mg/L	Trace	0.93
Fe	mg/L	Trace	0.47
Cl	mg/L	165	Trace
HCO3	mg/L	285.9	510
SO4	mg/L	11.9	414
CO3	mg/L	20.4	0
TDS	mg/L	609	1110
Reactive Silica	mg/L	95	Not Measured
pH		8.57	7.28

Water Treatment

Water Treatment Technology

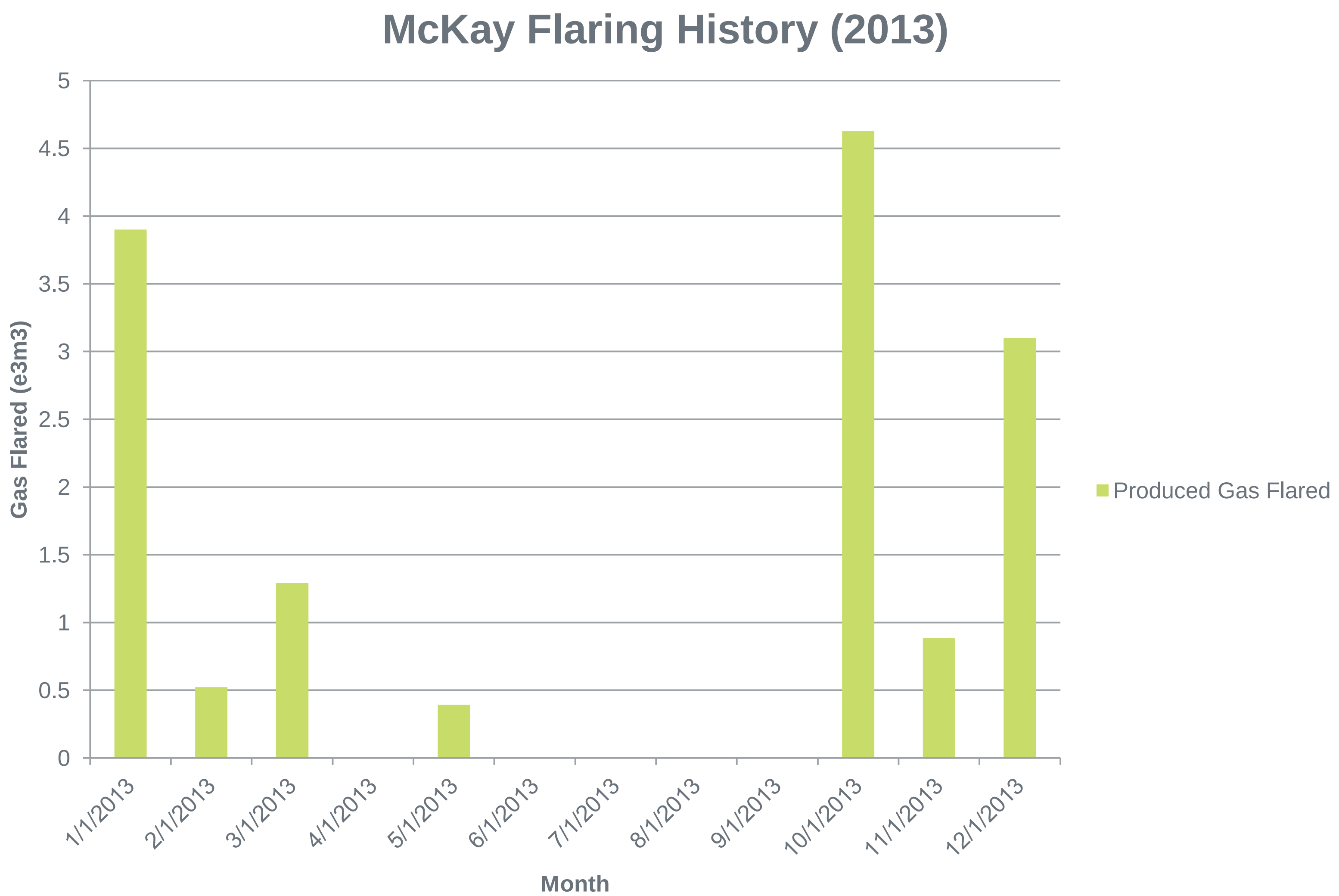
- Mechanical Vapour Recompression (MVR) Evaporator technology is utilized for produced water treatment and production of boiler feedwater.
- Feed to MVR System is pretreated with MgO to facilitate silica removal.
- Make-up Water is treated using conventional cation exchange softening.
- Evaporator concentrate is directed to a steam-driven crystallizer unit for further concentration and distillate recovery.

Waste Disposal Summary



•All Disposal Water at McKay is trucked out to third party disposal sites.
•Focus on Fresh Water use Optimization has reduced Regen Waste volumes over last several months.
•Minimal Slop Oil/Water Haul Required in 2013

McKay 2013 Monthly Flared Volumes



Environmental Summary

Sulphur Production & Ambient Air Monitoring

- EPEA approval limit for SO_2 emissions from 2 steam generators and CPF flare stack is 0.50 tonnes/ day
- SO_2 emissions from January 1, 2013 to December 31, 2013 were 38.18 tonnes
- Sulphur is tracked via monthly third party sampling and compositional analysis of the mixed gas stream to the Steam Generators.
- Average SO_2 emission was 0.10 tonnes / day; peak emission was 0.21 tonnes / day. This puts plant inlet sulfur at an average of 0.05 tonnes / day, and peak of 0.105 tonnes / day
- STP is compliant with all requirements of ID2001-3
- 4 passive air monitoring stations at McKay that monitor H_2S and SO_2. 2013 results are as expected and within compliance limits.
- Passive air monitoring results from January 1, 2013 to December 31, 2013 :
  - Average monthly H_2S concentration was 0.06 ppb; peak concentration was 0.11 ppb
  - Average monthly SO_2 concentration was 0.50 ppb; peak concentration was 1.3 ppb (SO$_2$ AAAQO 30-day limit = 11 ppb)

Continuous ambient air quality monitoring station was in operation from January 1, 2013 to December 31, 2013. Results are as expected and within compliance limits.

  - H_2S annual average concentration was 0.19 ppb; peak 1-hour concentration was 16.83 ppb; peak 24-hour concentration was 1.16 ppb
  - SO_2 annual average concentration was 0.29 ppb; peak 1-hour concentration was 15.62 ppb; peak 24-hour concentration was 3.67 ppb
  - NO_x annual average concentration was 2.06 ppb; peak 1-hour concentration was 32.08 ppb; peak 24-hour concentration was 17.19 ppb

Environmental Summary

- ERCB Commercial Scheme Approval No. 11461 - no compliance issues in 2013; one compliance issue in January 2014
- EPEA Approvals No. 255245-00-01 (facility) & 287052-00-00 (Wastewater System) 2013 non-compliance summary:

ESRD Reference No.	Description	Resolved (Y/N)
266456	VRU Failure - Venting	Y
267345	Treated Wastewater Exceedance	Y
270484	Manual Stack Emissions Exceedance	Y
272876	Groundwater Exceedance	Y
276074	VRU Failure - Venting	Y
276960	Wastewater spill	Y
AER FIS No.	**Description**	**Resolved (Y/N)**
20140065	Process Water (Steam Condensate) spill	Y

- Water Act Diversion License No. 00262149 - no compliance issues in 2013.

Environmental Summary

Corporate Initiatives

- Active Member of Canadian Association of Petroleum Producers (CAPP)
- Active member of the CAPP Joint Oil Sands Monitoring Initiative Committee (JOSM)
- Funding member of the Alberta Biodiversity Monitoring Institute (ABMI) & Ecological Monitoring Committee for the Lower Athabasca (EMCLA)
- Active member of the Fort McKay First Nation Sustainability Department
- Member of the ESRD Project Level Conservation, Reclamation and Closure Plan Working Group

Compliance Statement

Southern Pacific Resource Corp. is currently in compliance with all conditions of it’s OSCA and EPEA Approvals, the company is also aware of and meeting all of it’s regulatory requirements.

2013 Regulatory Summary

- ESRD Lands Inspection conducted on June 19, 2013 – no non-compliance issues identified.

Regulatory Amendment Filings

- EPEA Approval Amendment Application - Correction of an air emissions limit calculation error (utility boiler NOx limit changed from 0.3 kg/hr to 0.35 kg/hr) and an increase in the duration that all three cogeneration units can run concurrently (from 1 hour to 12 hours per month).
  Submitted on April 11, 2013; Approved on May. 9, 2013
- Directive 78, Category 2 Amendment Application – Approval to conduct a High Pressure Steam Injection Test.
  Submitted on March 27, 2013; Approved on April 24, 2013
- Directive 78, Category 2 Amendment Application – Approval to conduct a High Pressure Steam Stimulation.
  Submitted on June 6, 2013; Approved on July 8, 2013
- Directive 78, Category 1 Amendment Application - Modification to Approved High Pressure Steam Stimulation.
  Submitted on Aug. 23, 2013; Approved on Aug. 29, 2013
- Directive 78, Category 1 Amendment Application - Inflow Control Device Installation in 2P1.
  Submitted on Dec. 20, 2013; Approved on January 7, 2014
- Directive 78, Category 1 Amendment Application - Inflow Control Device Installation in 1P5.
  Submitted on Jan. 10, 2014; Approved on January 20, 2014

Key Approval Filings

- Soil Management Plan Proposal
  Submitted to ESRD on Jan. 31, 2014

Future Plans

- Phase 1
  - Continue to pursue optimization opportunities in the plant and well pads.

- Phase 1 Expansion / Phase 2
  - Continue to advance the regulatory process.
  - Continue engineering design and development.
  - Continued stakeholder engagement.

QUESTIONS?

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