Suncor ESEIEH® Phase 2 Small Scale Pilot Project
2018 AER Performance Presentation
Experimental Scheme Approval No. 12074

Reporting Period September 1, 2017 – August 31, 2018

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ESEIEH® Pilot Project Overview

Enhanced Solvent Extraction Incorporating Electromagnetic Heating

- "ESEIEH®" is an in-situ process using solvent dilution with moderate electromagnetic heating that may:
  - minimize Greenhouse Gas Emissions
  - improve efficiency, eliminating steam and water
  - access more bitumen at shallower depths
  - lower capital intensity and improve economics
  - present a *transformative technology* beyond SAGD
  - Potential for lower upgrading needs
- Partners
  - CCEMC, Suncor, Devon, Nexen, Harris.

ESEIEH® Pilot: Objectives

The primary objective of the Pilot Project is to demonstrate the proof of concept field test for the coupled condensing solvent and electromagnetic heating bitumen recovery process.

The principal objectives are to:

- Quantify bitumen drainage due to radio frequency (RF) reservoir heating and condensing solvent (the ESEIEH® process extraction).
- Test the sensitivity of drainage to operating conditions (power, solvent injection rate or pressure, production rate control, etc.).
- Provide reliable field data to guide predictive numerical modelling and optimization studies.
- Establish key economic indicators including solvent performance, retention, power consumption, and delivery efficiency of RF energy to the reservoir.
- Pioneer the development of ESEIEH® RF hardware and well design with respect to installation, functionality, reliability and efficiency.

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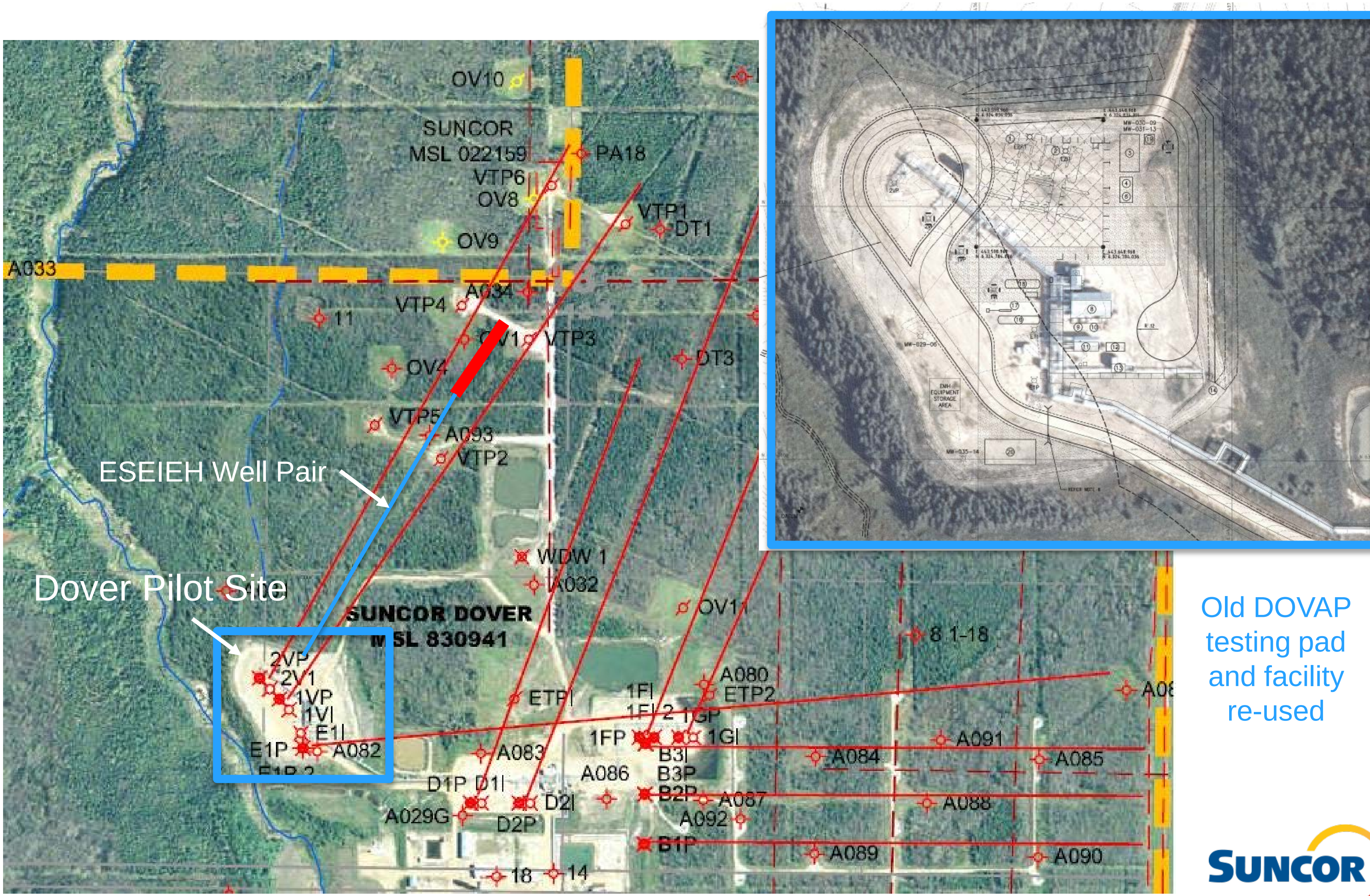
ESEIEH® Pilot: Key Criteria

Key criteria necessary for a successful pilot are :

- Obtain sufficiently accurate field data to guide predictive numerical modelling and optimization studies for commercialization.
- Develop a comprehensive understanding of the effect of operating parameters on production controls.
- Determine the impact of factors such as methane accumulation and related controls on bitumen drainage.
- Validate the antenna design is capable of delivering sufficient power to the formation to sustain the solvent extraction process (up to 4 kW/m).
- Establish that the well design and RF system can be efficiently and reliably installed and operated.
- Establish measurable economic indicators including production rates, solvent retention, power consumption, and delivery efficiency of RF energy to the reservoir.
- Evaluate process economics and determine viability for commercialization.

Project Site



Old DOVAP testing pad and facility re-used

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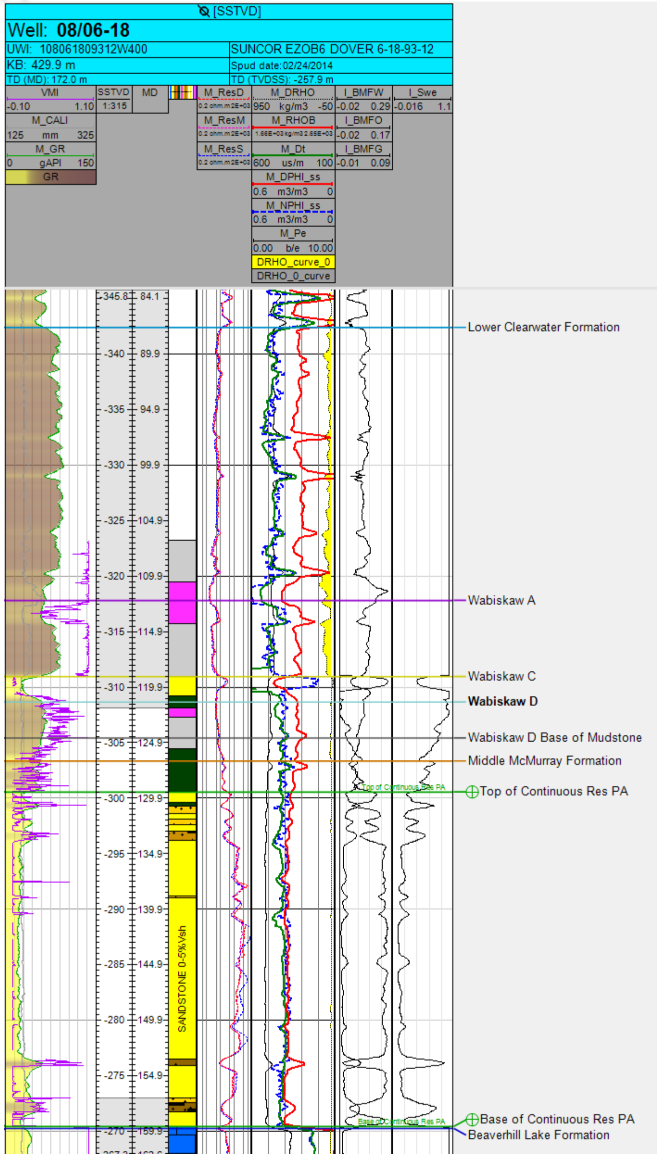
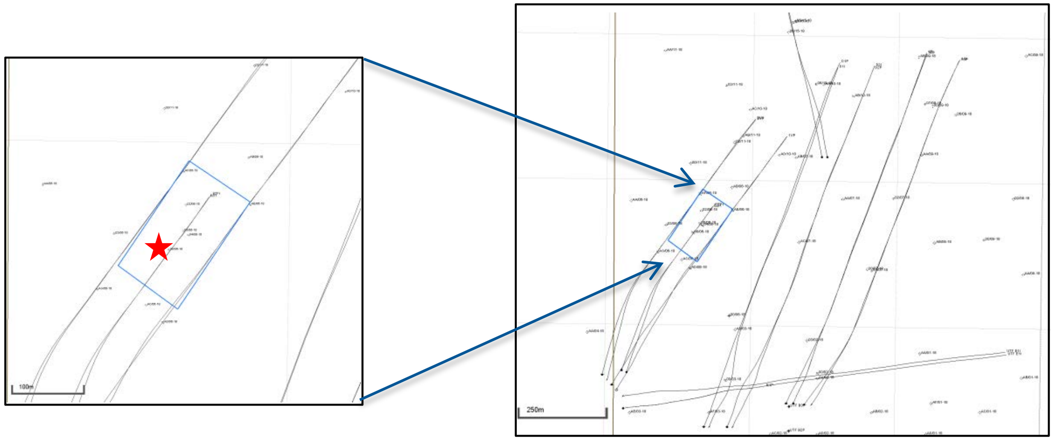
Geoscience

Stratigraphy

★108-06-18-093-12W4 _EZOB-6

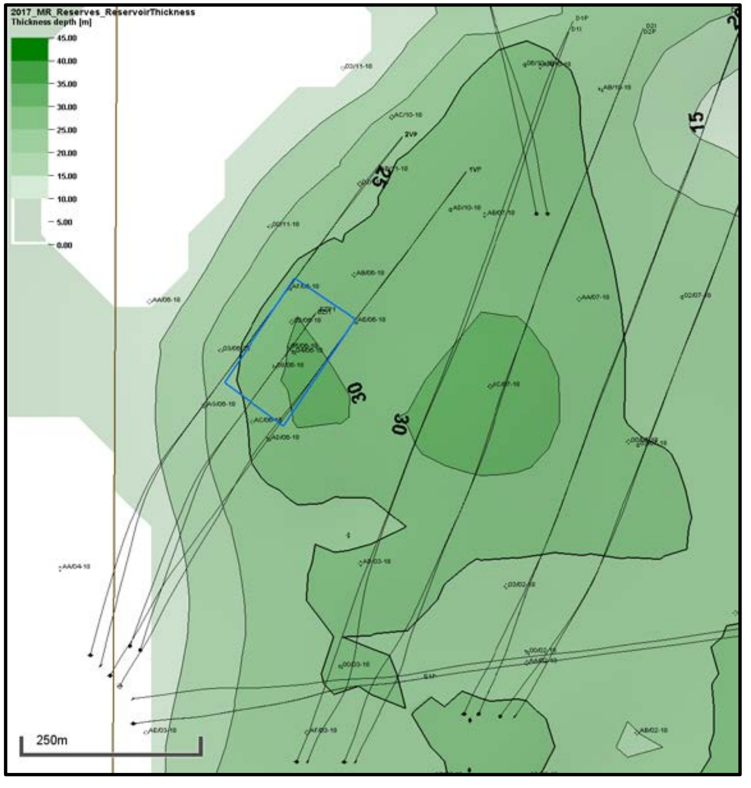




- Caprock in region is mappable, predictable, and laterally consistent (>36m thick)
- McMurray Formation Reservoir predominantly sand with minor breccia ranges 24m – 30m thick
- No top or base lean zones are observed within the reservoir

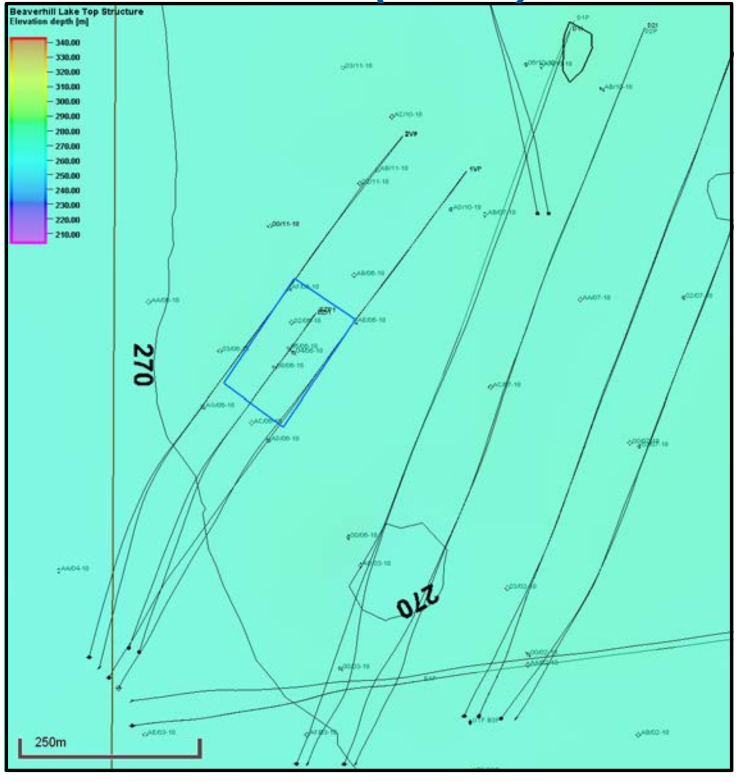
McMurray Pay and Devonian Structure Mapping

McMurray Continuous Reservoir Isopach (CI: 5m)



- Up to 30 m thick Continuous Reservoir
- Reservoir:
  - McMurray Formation reservoir
  - Clean, bitumen saturated sandstone interbedded with breccia.

Devonian Top Structure TVDSS (CI: 5m)

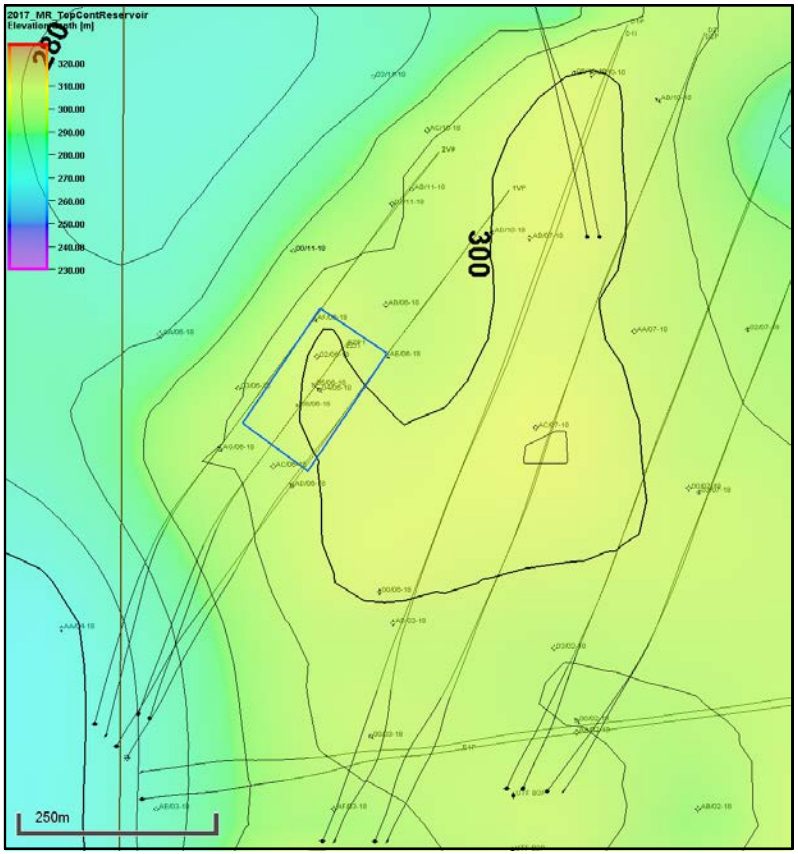


- Pilot site situated atop structurally flat Devonian surface:
  - Several offsetting wells with less than 1m structural variation on Devonian surface
- High resolution 2D Seismic (2003) coverage exists in the region and supports structurally flat Devonian surface.

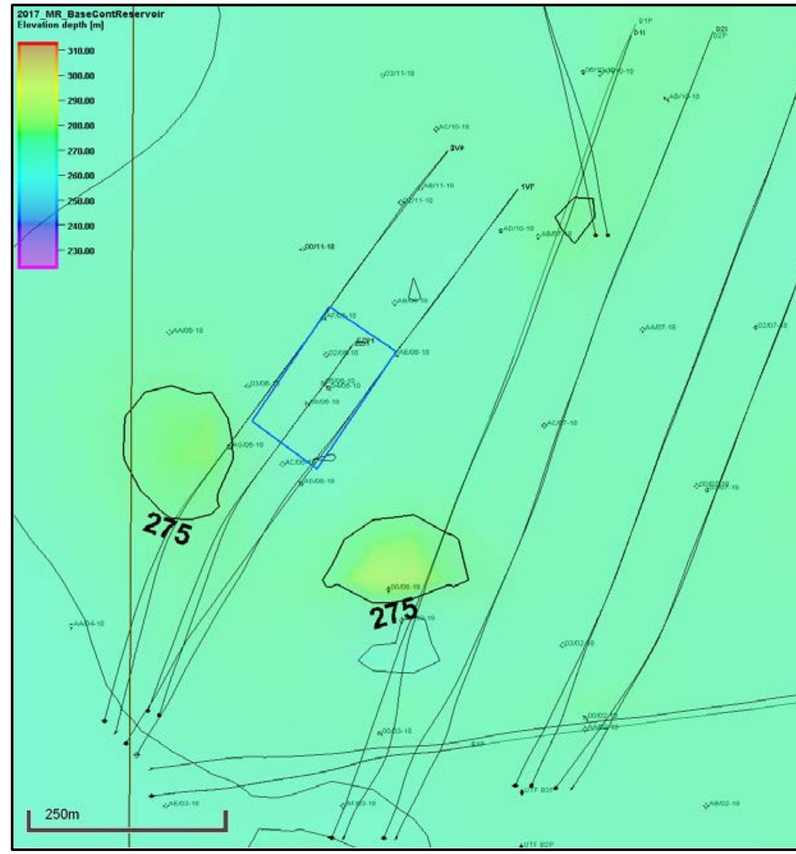
ESEIEH Well Pair Drainage Box

Top and Base of Pay Structure Mapping and Average Properties

Pay Top Structure Map (CI: 5m)



Pay Base Structure Map (CI: 5m)



Porosity	Water Saturation	Rock Vol (m3)	OBIP (bbls)	OBIP(MMbbls)
34%	22%	498967	127779	0.80

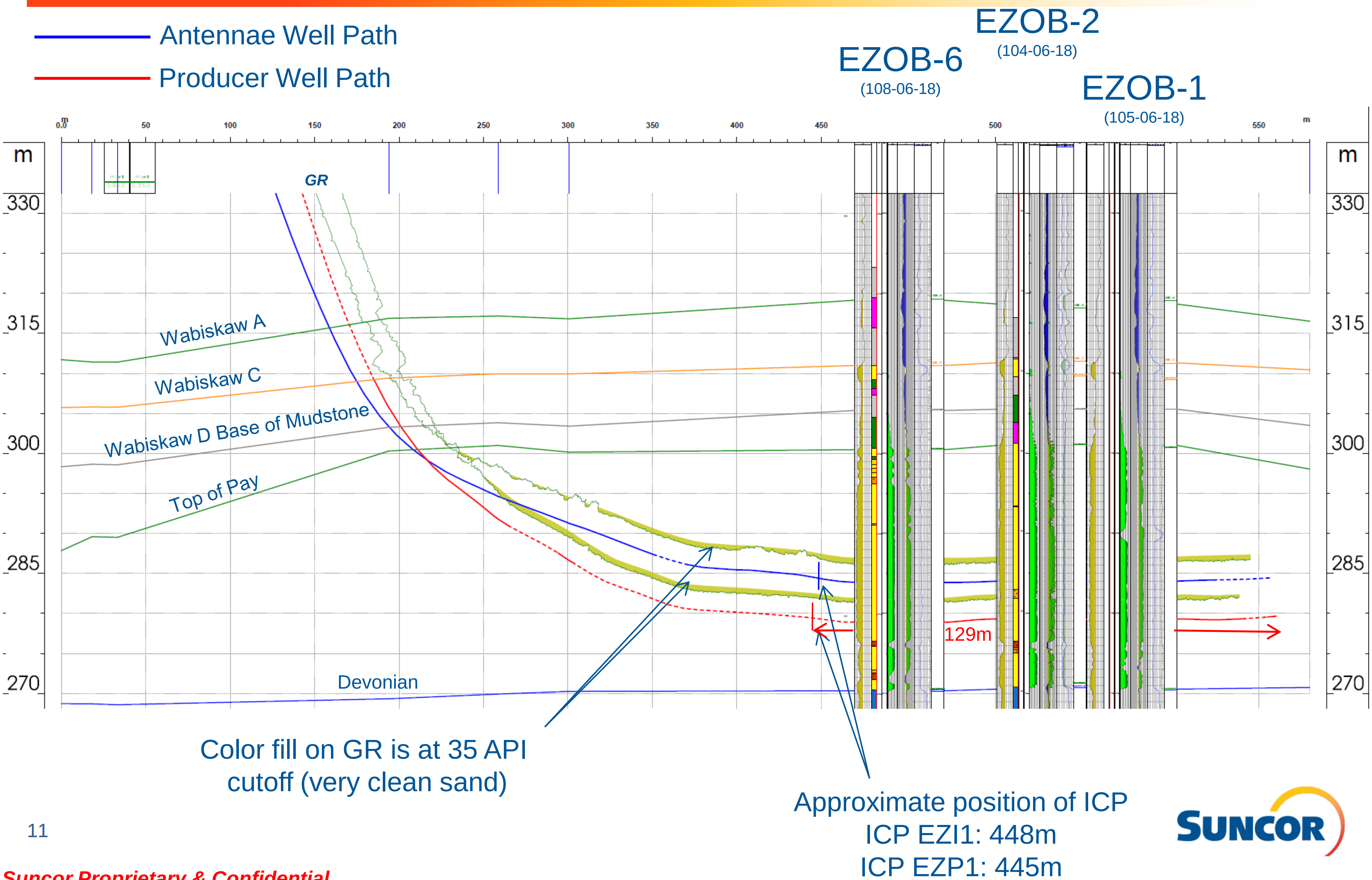
Updated volumes are consistent with Suncor volumetric criteria

ESEIEH Well Pair Drainage Box

Core Hole Evaluation Program

- 3 vertical Observation wells (2013-14)
    - EZOB-1
    - EZOB-2
    - EZOB-6

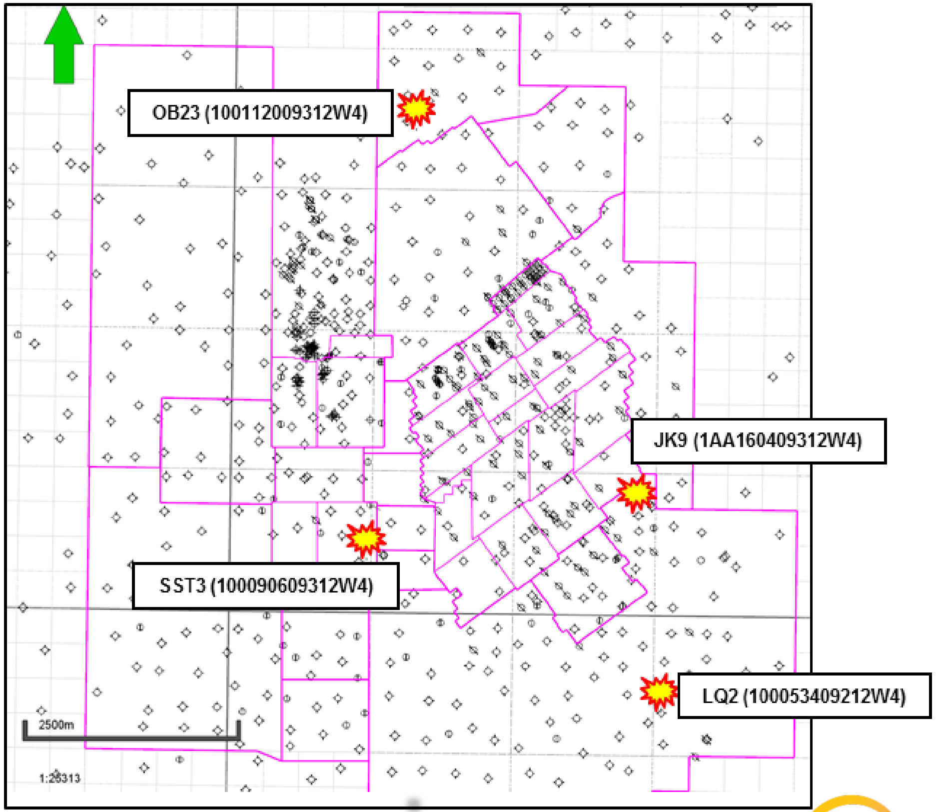
ESEIEH® Horizontal Cross Section



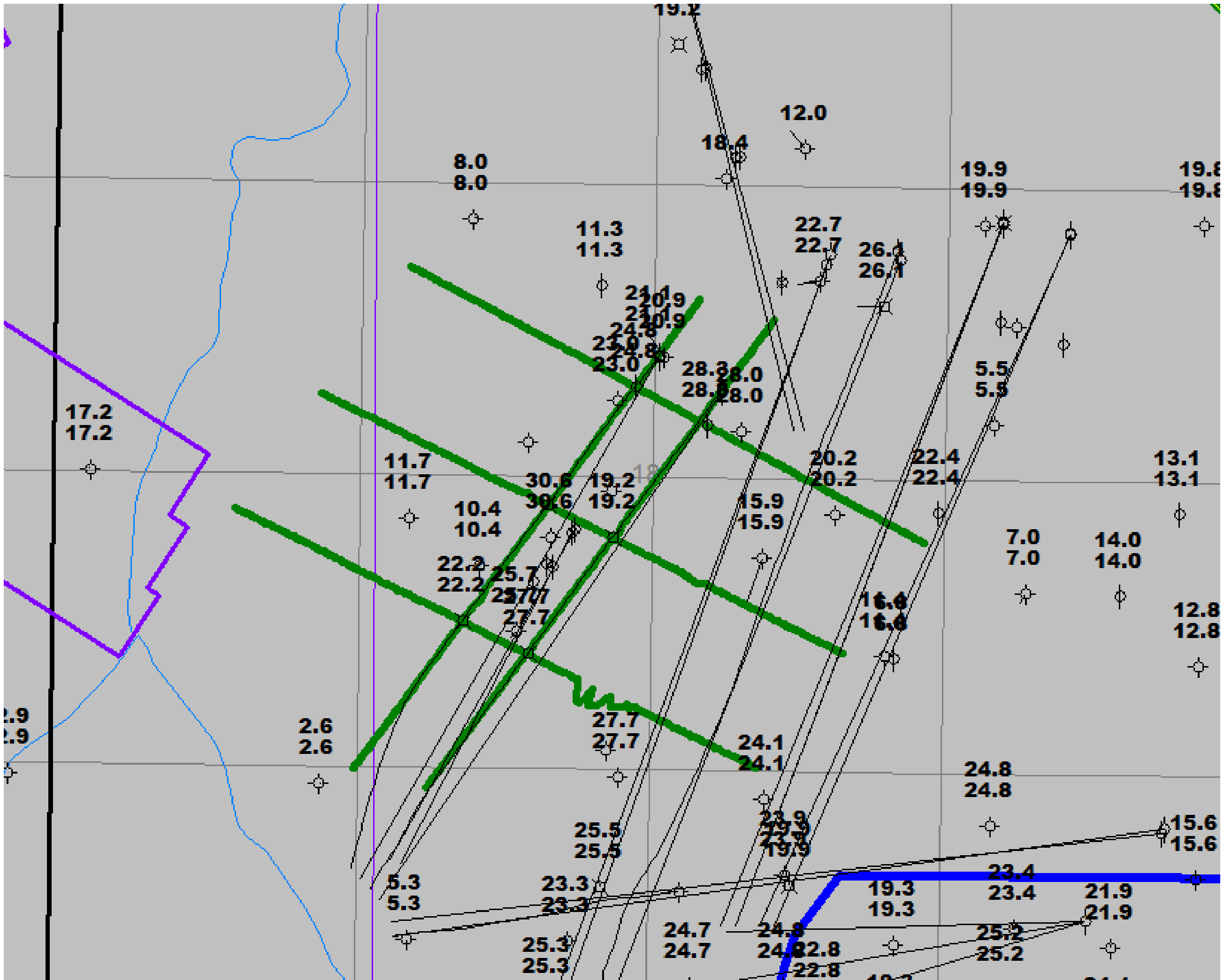
Geomechanics: Mini-frac Test

- New mini-frac tests conducted at OB23 (100/11-20-93-12W4/0)
- Fracture gradient within operating area still holds at or above 21 kPag/m:
  - Fracture gradient measured (kPag/m) from mini-frac test

Formation	OB23 (2017)	JK-9 (2014)	LQ2 (2011)	SST3 (2008)
Clearwater	Evaluation on-going	22.3	21.3	24.1
Wabiskaw A		21.1	21.2	-
Wabiskaw D		22.1	22.6	24.3
McMurray		-	21.1	19.9



ESEIEH® Seismic Lines



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Well Drilling and Completion Operations

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Drilling History

- The well pair (EZ-WP1) was drilled in Feb 2014:
  - 5m separation between injector and producer was achieved 100% of the HZ length
  - 8 5/8” production slotted liner with seamed slots 0.014” x 0.020”
  - 10 ¾” injection slotted liner with straight cut slots 0.012”

- 3 observation wells were drilled within a few meters of the well pair:
  - EZOB-2 is ≈ 5m from EZ-WP1; cored and logged in Sep 2013
  - EZOB-6 is ≈ 4m from EZ-WP1; cored and logged in Mar 2014
  - EZOB-1 is ≈ 2m from EZ-WP1; logged only in Mar 2014

- Installed RF transparent composite casing joints and instrumentation in all observation wells (cemented in place)

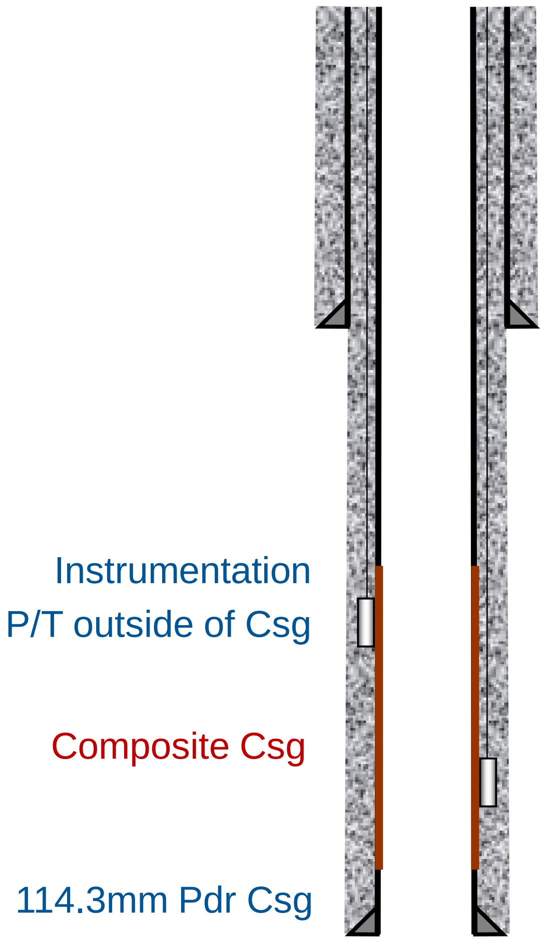
- The antenna liner was pulled in September 2016

Drilling Operations

- Attempted to reinstall the well liner in the injector well (EZ-WI1) in Nov/Dec 2017.
  - However the liner assembly became stuck
  - Reviewed options for the liner assembly which resulted in further design optimizations for the project
- Subsequent drilling operations were able to successfully recover the liner in April 2018
- A root cause analysis identified that the antenna liner assembly required additional engineering
- The drilling plan required modification to ensure successful deployment

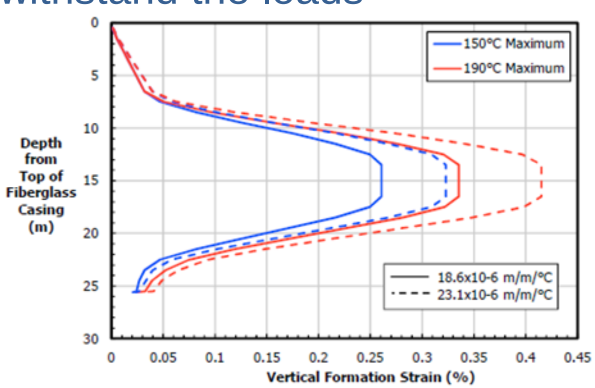
Observation wells Design

- Production casing design with 2 material string in order to guarantee well integrity and hydraulic isolation:
  - 114.3mm 17.26 kg/m K55, Hydril 563 Production casing into the McM formation (reservoir), to ensure well integrity across the caprock
  - 114.3mm composite casing (E-Glass/Epoxy material), with K55 metal fittings, Hydril 563
    - 1 Short joint (~6.17m), and 2 long joints (~9.7 m) of composite casing used per OB well
    - E-Glass/Epoxy specially designed by ACPT to withstand thermal loads (external load tests performed)
- Production casing cementing within the McMurray formation (reservoir)
- RF instrumentation strapped outside of 4 ½" casing from TD to surface
- With this design fluid containment is similar to a standard Mackay OB well as the design is similar down to the reservoir. The only changes are regarding the use of the composite casing, and the instrumentation being strapped to the outside of the casing.



Composite Casing for Observation Wells

- Model was originally used to estimate load rates
- Real data lab test was conducted after:
  - Composite casing tests showed reasonable correlation in tension and less accuracy in compression compared to model
  - Compression results do not fully represent tube behavior as boundary conditions of test significantly different from in situ conditions (small block cut from tube was used so there is loss of continuity of fiber winding around a whole cylinder)
- Refined model was done to predict system behavior:
  - Modeled temperature profile
  - Cement CTE obtained from vendor
  - Formation strain both from model and field measured
- 3 different constrain scenarios used and results show that in the worse case scenario composite casing would be able to withstand the loads



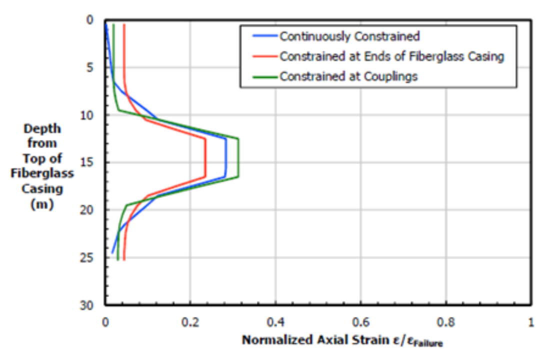
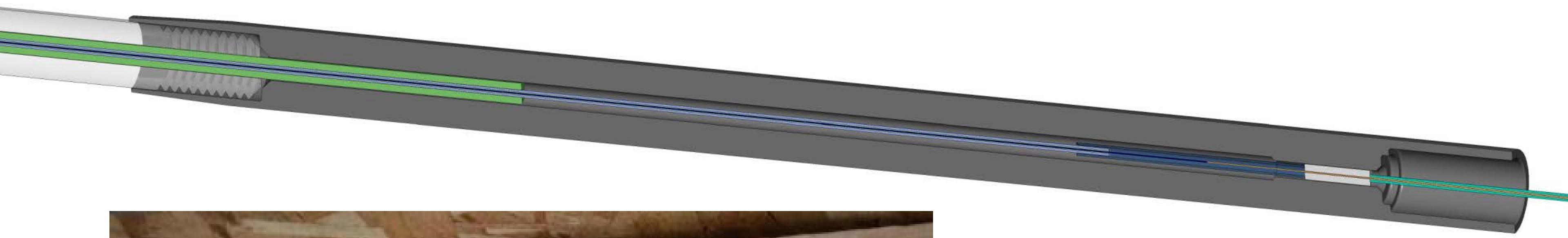
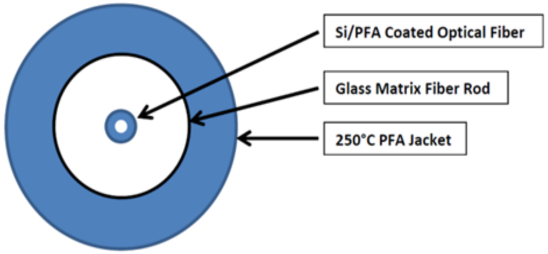


Figure 15. Normalized axial mechanical strains in reservoir heated to 190°C maximum and CTE = $23.1x10^{-6}$ m/m/°C.

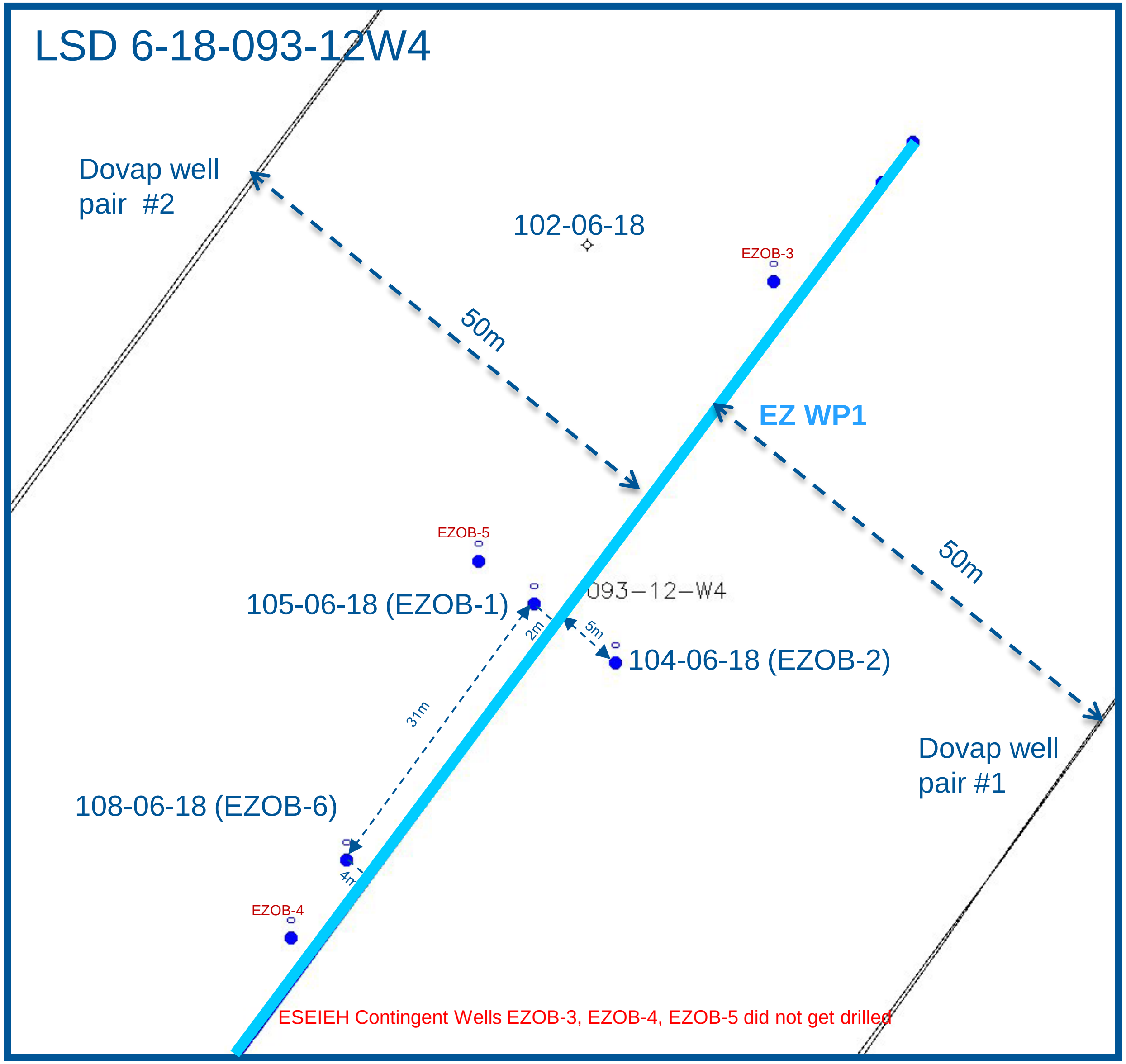
RF Instrumentation Design

- Instrumentation line and attachment to piezometer were specially developed for this project:
  - PFA jacket used instead of common stainless steel capillary line
  - Fiber developed by AFL in conjunction with Harris
  - Attachment to piezometer develop by Harris and final assembly develop by Opsens Solutions
- Final assembly successfully passed test in an environment chamber under expected In-Situ pressure and temperature
- Feed through connector on wellhead guarantee isolation of PFA jacket





Well placement



- EZOB-2 is ≈ 5m from EZ-WP1
- EZOB-6 is ≈ 4m from EZ-WP1
- EZOB-1 is ≈ 2m from EZ-WP1

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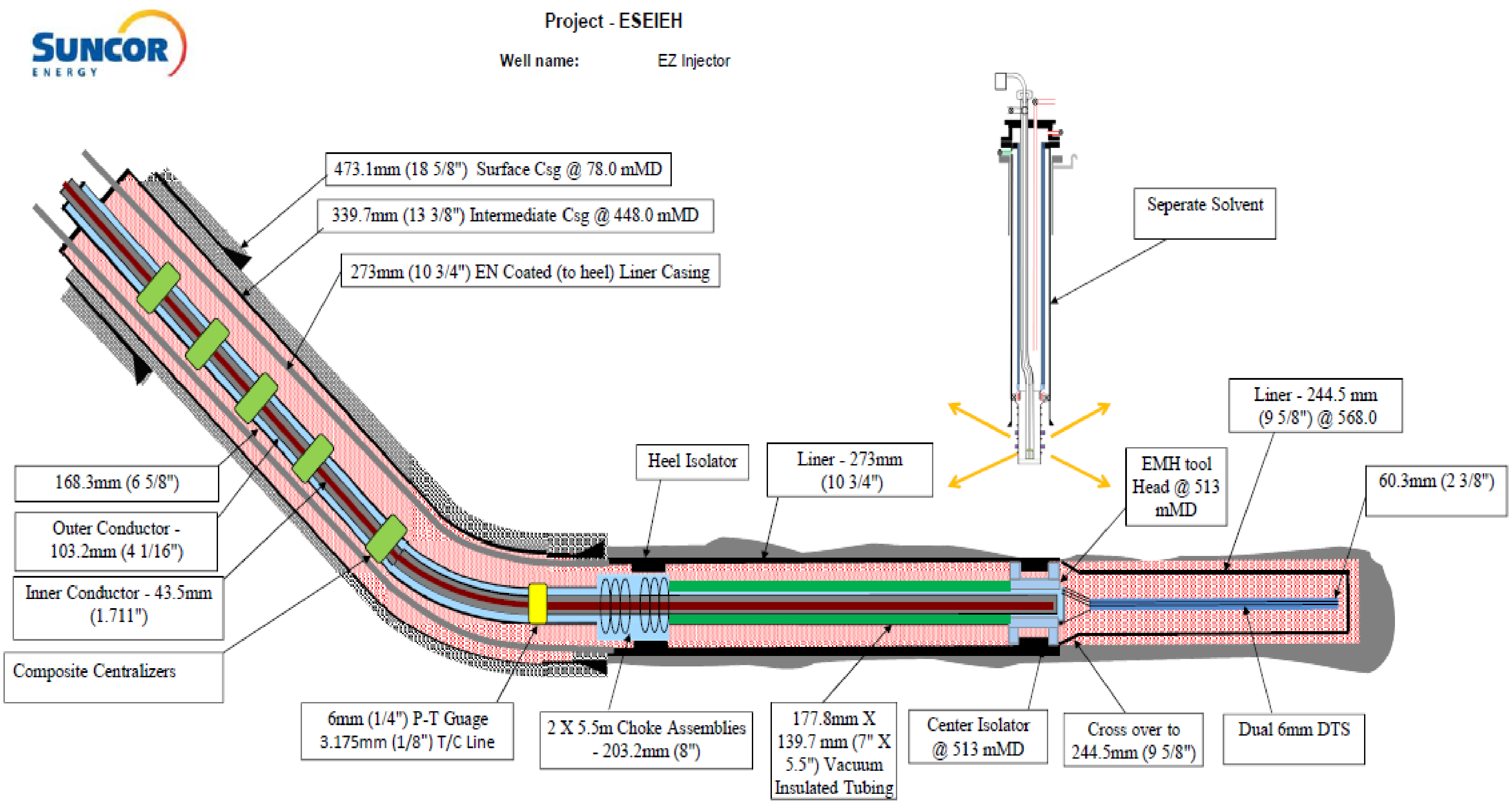
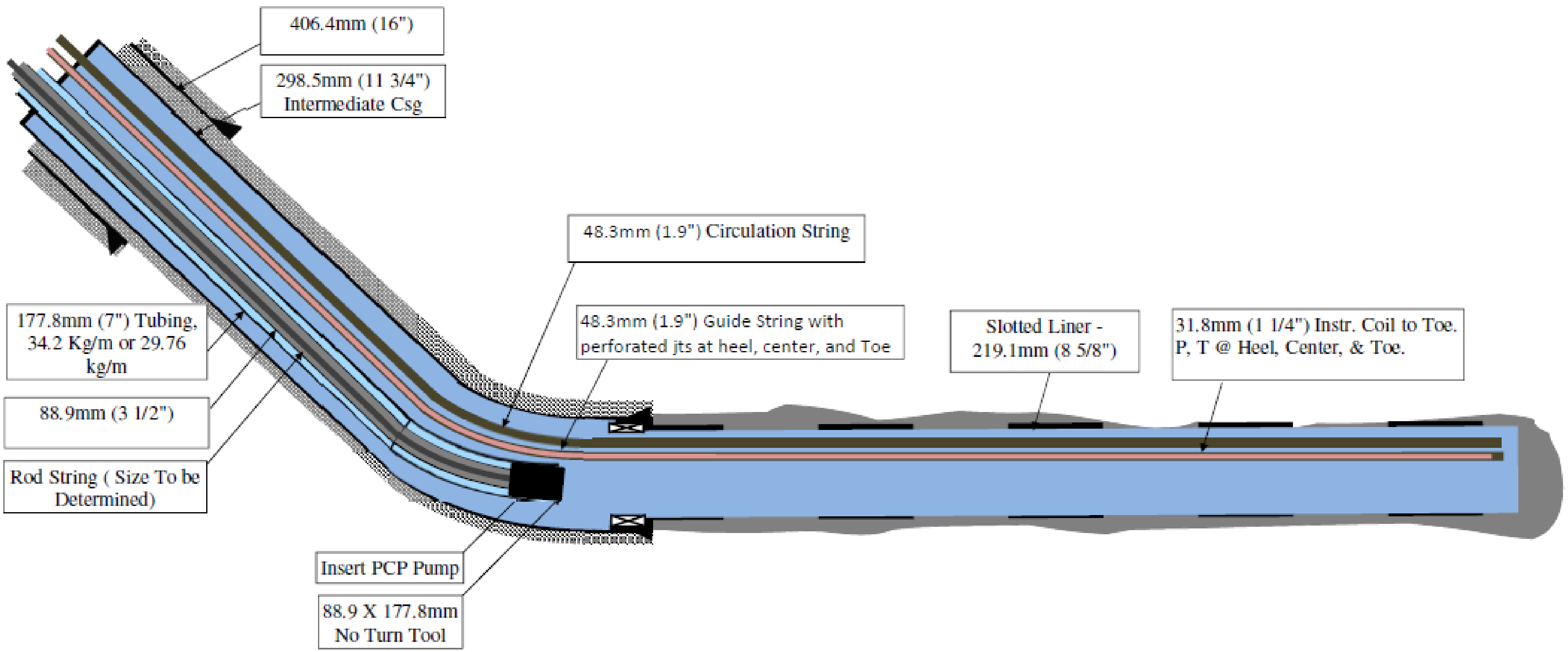
Completion Rig on ESEIEH® Injector/Antenna Well

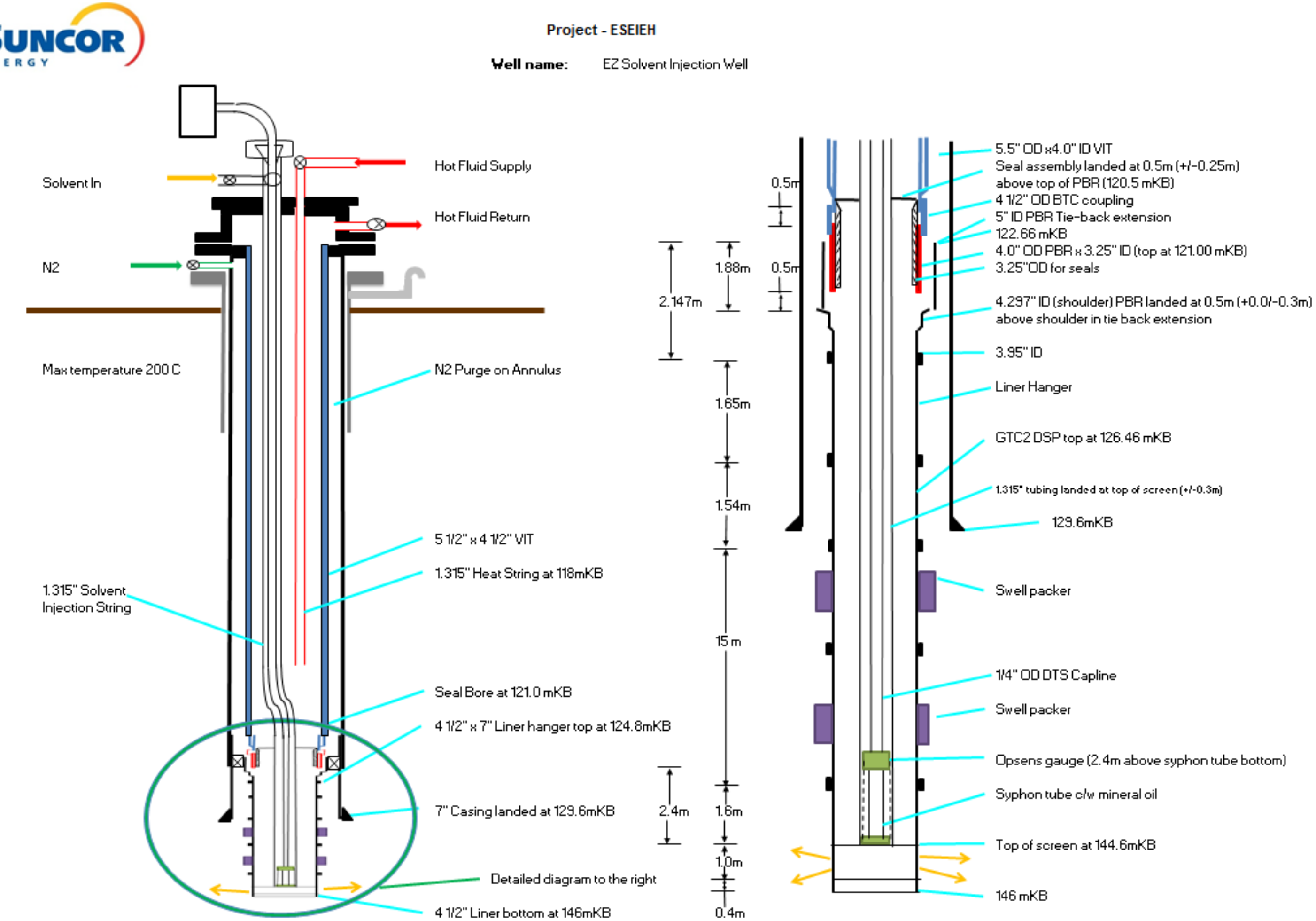
Well Completion – Antenna Well (Updated)



Well Completion – ESEIEH® Production Well



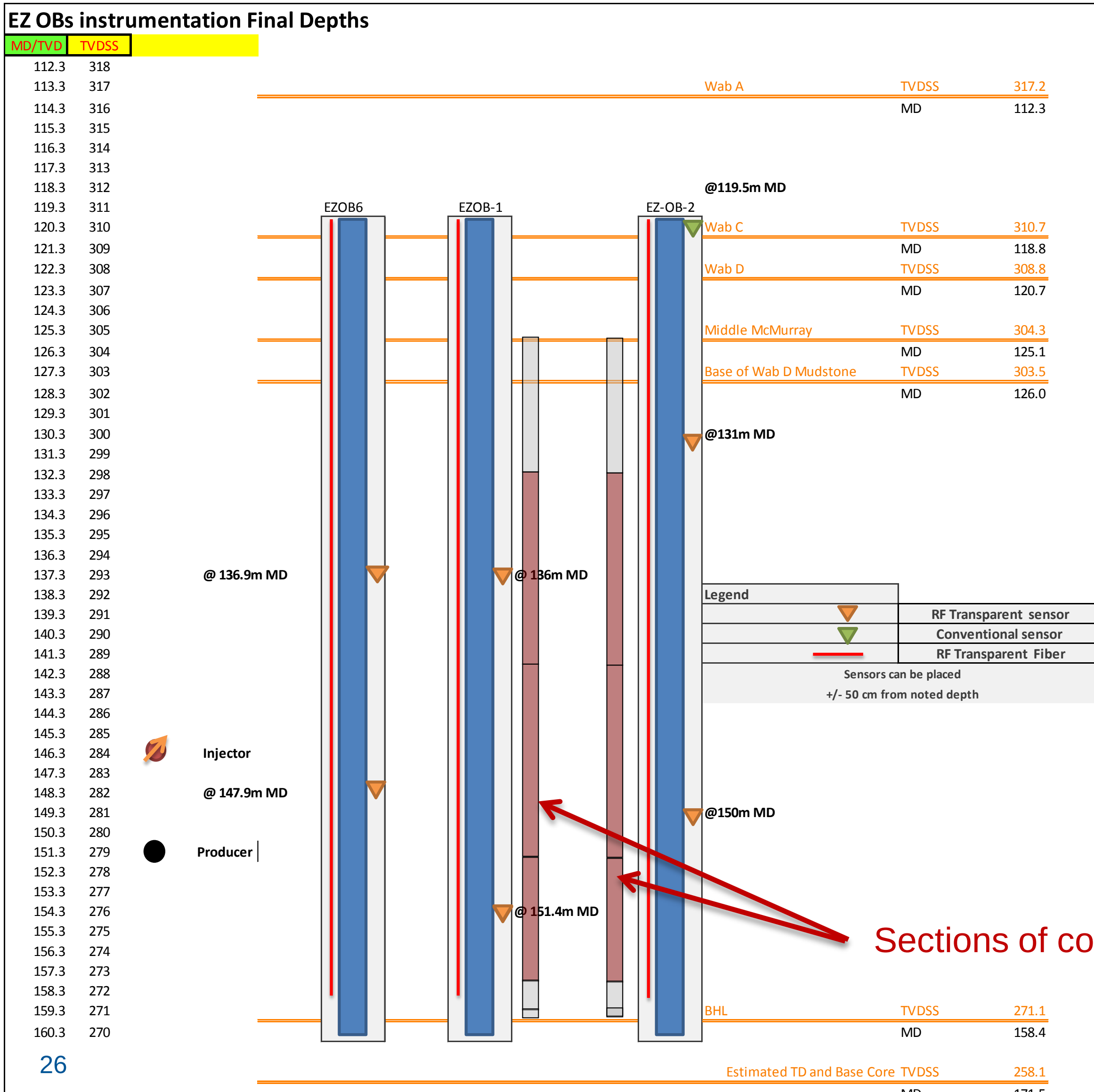
Well Completion – ESEIEH® Vertical Injection Well (Planned)



Artificial Lift

- Producer well was completed at the end of November 2014 with PCP, landed at 85° inclination in a 3°/30m slant section, 2m TVD above liner depth:
  - 2 x pumps available with theoretical volumetric capacity of $4m^3/d$ or $8m^3/d$ at 100 rpm
  - Larger capacity 7-750 pump to be re-installed.
- A specialized tool was installed on the producer to allow operations to pull the rotor out of the stator without needing a service rig on site. This was added so that in the event of an unplanned shutdown, the pump would not become plugged and inoperable due to cold bitumen inside.
- Artificial lift was run for a short period of time in July, 2015, and was on again briefly for short periods of time in early 2016
  - The producer was run in 2016 to achieve D13 compliance because wells had not been applied for under the experimental scheme. This has since been corrected through conversations with the AER. The producer pump has not been run since this time.

Observation Wells



- Each well equipped with a RF transparent Temperature Optic Fiber from surface to TD
- Each well equipped with 2 RF transparent optic Fiber Pressure & Temperature Sensors, located in the McMurray
- EZ-OB2 equipped with a standard Pressure & Temperature Sensor in the WAB C

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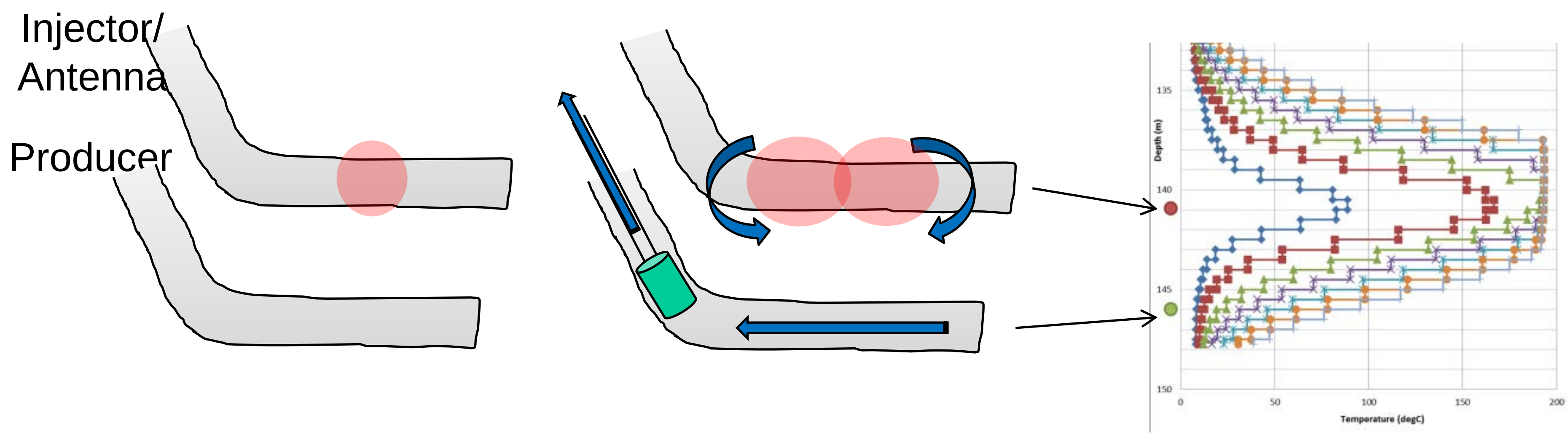
Operating Plan

Summary of Operating Plan

1 Initialization / Antenna Ramp-up → **2** Initial Flow Establishment → **3** Initial Inter-wellbore Bitumen Mobility



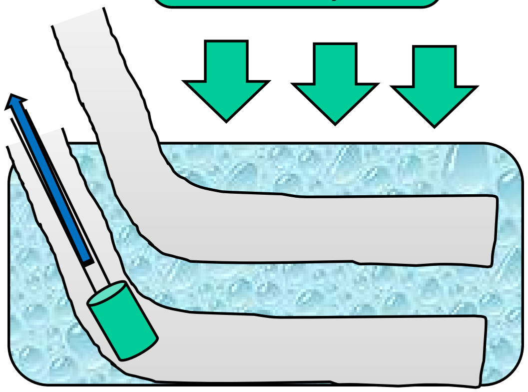
- Review all instrumentation outputs
- Begin ramp-up of antenna power levels
- Heat is initially localized to center of antenna

- As heated fluids expand they are produced to control reservoir pressure
- Pump operation is initiated with diesel circulation

- Look for indications of initial mobile bitumen
- Manage pressure differential between wells to prevent “pushing” reservoir fluids

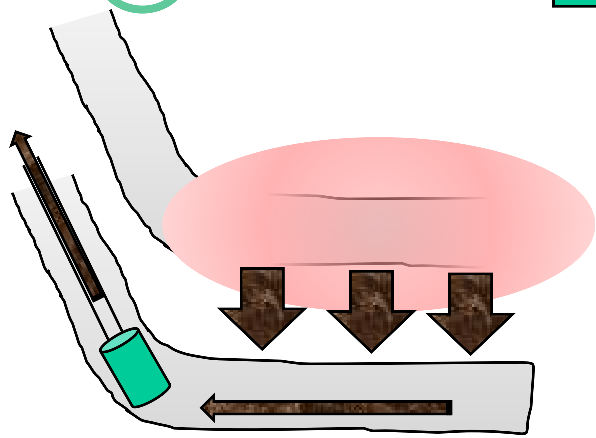
Summary of Operating Plan

4 Draw-down / Reservoir Deliverability Test



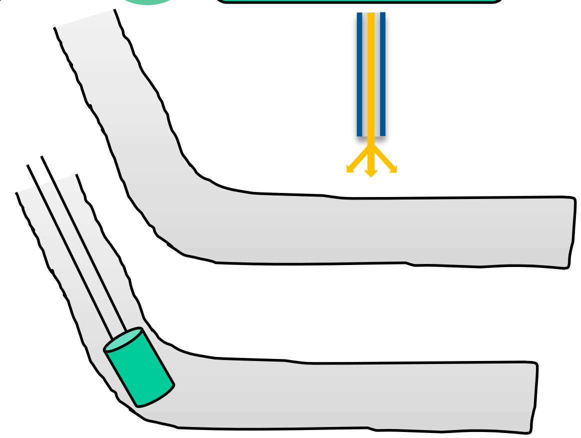
- Confirm reservoir deliverability can sustain pump operation w/o diesel circulation

5



- Produce hot reservoir fluids to create void space for propane

6 Propane Injection



- Draw down liquid level below injector elevation
- Initiate propane injection at high antenna power

7 Power Optimization

- Once producer conformance is achieved, reduce power to long term optimum level

8 Process Testing

- Once ESEIEH base objectives have been met, test variants of process variables, such as power and pressure

Summary of Operating Plan

- Steward to reservoir pressure of 1750 kPag (MOP of 2230 kPag)
- Steady heating and passive displacement of inter-wellbore region
- Prevent solvent breakthrough from the injection well to the producer directly below
- Build a healthy solvent chamber
- Find optimum power levels and solvent injection rates, and maximize solvent recovery
- Once ESEIEH® successfully demonstrated →test boundaries of process (low power, etc.)

Summary of Operations To Date

- First RF energy was delivered to the reservoir on May 31, 2015:
  - Part of commissioning activities
  - Power run for short durations (~15 min) at 10-15 kW
- Pilot officially started on July 10, 2015 and power began ramping up:
  - Reached 60kW before a high VSWR (Voltage Standing Wave Ratio - measure of reflected power) and transmitter trip led to shutting down the antenna to troubleshoot
- Since the initial transmitter trip, efforts have been made to condition the antenna tool head area to improve the ability to deliver power:
  - Nitrogen applied to the injector casing annulus July 23-25, 2015 to displace fluid in the toolhead
  - 17m^3 of diesel was injected into the casing annulus on August 11, 2015
  - An additional 10m^3 of diesel was injected on August 27, 2015 - 2m^3 in the solvent line and 8m^3 down the casing
- Downhole pump was run briefly, but the decision was made to shut it down on July 18th, 2015 and leave it off in order to maintain reservoir integrity until fluid mobility could be established.

Summary of Operations To Date

- VSWR began increasing steadily after the initial warm up stage was initiated in July of 2015
- The antenna was run at low power levels to keep the VSWR below a set limit, but VSWR continued to rise slowly over time
- It was believed that high conductivity fluids were the cause of the rising VSWR measurement, and that the heating process was exacerbating the problem
- The diesel injection reported in the previous annual report did not result in a measureable improvement, but it was believed that the diesel may have been lost to the formation instead of flushing the area of interest due to the low density and viscosity.
- It was then decided that we would attempt displacement with a higher viscosity fluid with a density that would better match that of water, and diluted bitumen was selected. The first dilbit test seemed to indicate a there may have been a VSWR improvement, so a second dilbit injection was conducted, but no improvement was observed.

Summary of Operations To Date

- Multiple fluid displacement activities were conducted to push conductive fluid away from the tool head at the center of the injector well:
- 26m3 of dilbit at the start of September, 2015
- 53m3 of dilbit at the end of September/beginning of October , 2015
- Another attempt was made to form a desiccated area around the antenna by increasing the applied power at the antenna. The premise was that not enough energy was being applied to overcome the influx of fluids, and that by applying high power would boil off the nearby water improving the antenna efficiency and effective antenna length:
  - During a power ramp the transmitter shut off, cause was later found to be arc in IOB caused by debris
  - Prior to discovery of IOB damage a 15 minute transmitter tuning operation triggered an LEL alarm in the luminol cooling system
  - Investigation into the cause of the LEL alarm determined that FOD (foreign object and debris) had contaminated the luminol system, and combined with the high power, caused luminol breakdown. The IOB was removed to determine whether this issue was isolated to the IOB, or whether there were subsurface issues as well. Upon removal of the IOB, a TDR scan of the subsurface tool head determined that it had been damaged and would need to be removed

Summary of Operations To Date

- Upon pulling the subsurface RF assembly, it was determined that an event had occurred subsurface resulting in damage to the tool and the injector liner
- A rigorous root cause analysis was conducted to determine possible causes of the tool failure:
- Evidence indicates that the initial arcing event took place during the initial antenna ramp up
- The facility was safely shutdown in May 2016 due to the fires in Fort McMurray, and was staffed but nonoperational until December 2016.
- The facility was unstaffed in December 2016 and the facility remained nonoperational and in safemode while the project team continued working on surface and subsurface redesign
- The surface facility redesign was completed in July 2017 and surface construction was completed in December 2017 with the exception of the final wellhead tie-ins
- The project began staffing up for operations in late 2017 but hiring was put on hold pending liner redesign

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Surface facilities

Surface Facilities

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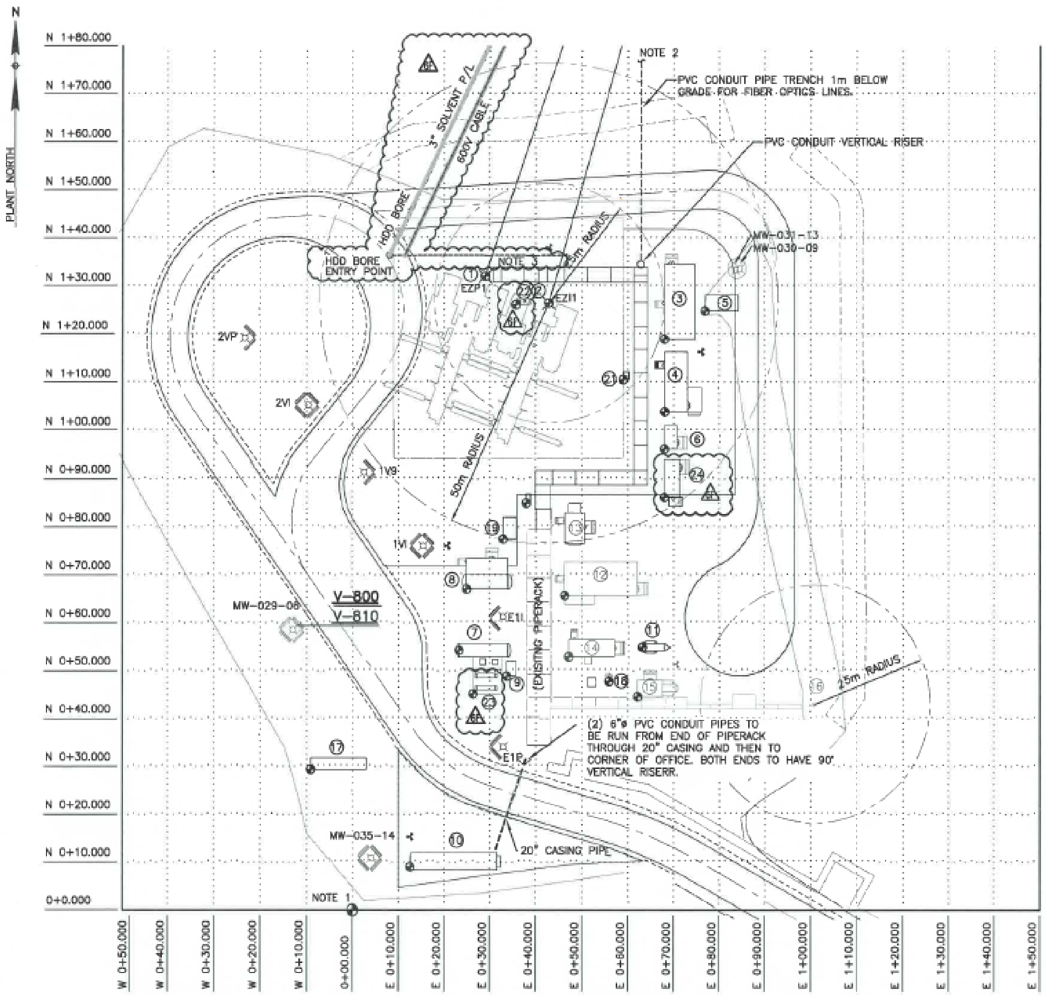
Surface Facilities

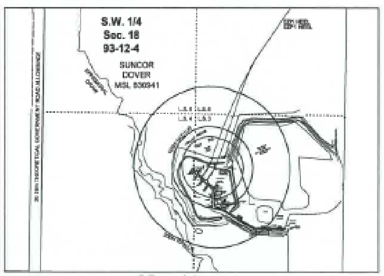
Surface Facilities

Surface Facilities – Plot Plan (Updated)



ITEM#	EQP.#	DESCRIPTION	NORTH	EAST
1	EZ-P1	PRODUCTION WELL	N 1+31.960	E 0+29.060
2	EZ-I1	SOLVENT INJECTION WELL	N 1+26.410	E 0+42.880
3	100-PK-102	TRANSMITTER BUILDING	N 1+18.895	E 0+68.000
4	100-PK-103	DIELECTRIC FLUID CONDITIONING SYSTEM	N 1+03.700	E 0+68.000
5	100-PK-106	TRANSMITTER COOLER	N 1+24.800	E 0+76.900
6	100-PK-101	INSTRUMENT AIR PACKAGE	N 0+96.000	E 0+68.000
7	100-PK-107	SOLVENT BULLET & PUMPS	N 0+54.300	E 0+23.400
8	100-PK-104	PRODUCT STORAGE VESSEL & BLDG	N 0+67.100	E 0+25.000
9	100-PK-B792	SOLVENT PROPANE CHARGE PUMP SKID	N 0+49.000	E 0+33.800
10	B-100	DRILLING CONTROL CENTER	N 0+09.000	E 0+12.600
11	GEN-100	EMERGENCY GENSET	N 0+54.600	E 0+63.100
12		SEPARATOR BUILDING (EXISTING)	N 0+65.765	E 0+46.260
13		VRU BUILDING (EXISTING)	N 0+76.275	E 0+46.260
14		MCC BUILDING (EXISTING)	N 0+52.600	E 0+47.200
15	V-B781	FLARE KNOCK-OUT DRUM (EXISTING)	N 0+44.600	E 0+62.130
16	S-B783	FLARE STACK (EXISTING)	N 0+42.945	E 1+00.805
17	B-200	EMH EQUIPMENT STORAGE AREA	N 0+29.100	W 0+09.200
18	TRANS-100	TRANSFORMER	N 0+55.800	E 0+47.450
19	100-PK-110	DIESEL INJECTION PACKAGE	N 0+77.500	E 0+33.000
20	100-PK-120	METHANOL INJECTION PACKAGE	N 0+85.000	E 0+38.000
21	100-PK-130	THERMAL ACCUMULATOR PACKAGE	N 1+10.425	E 0+58.930
22	F-220/221	FILTER SKID	N 1+26.104	E 0+35.746
23	100-PV-200A/B	FUEL GAS BULLETS	N 0+45.200	E 0+26.463
24	100-PK-300	DF2 PACKAGE	N 0+86.200	E 0+68.000

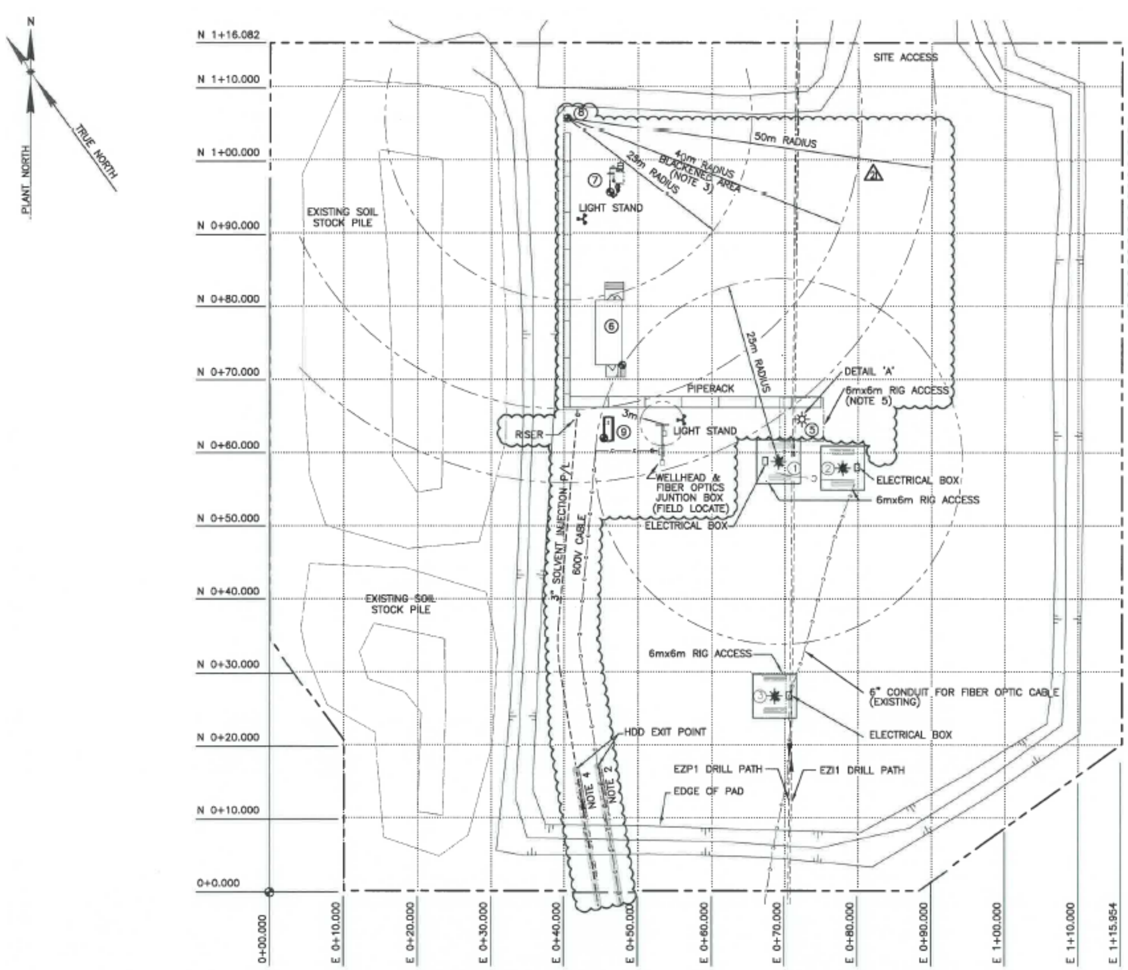
* FOR EQUIPMENT NORTHING AND EASTING LOCATIONS, REFER TO DATUM POINT ON PLOT PLAN SHOWN THUS

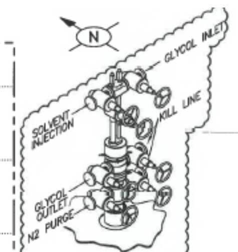


AREA LOCATION PLAN
LSD 03-18-093-12 W4M
REFERENCE SURVEY DRAWING: 4010-EZP-FACILITIES
CHALLENGER GEOMATICS LTD

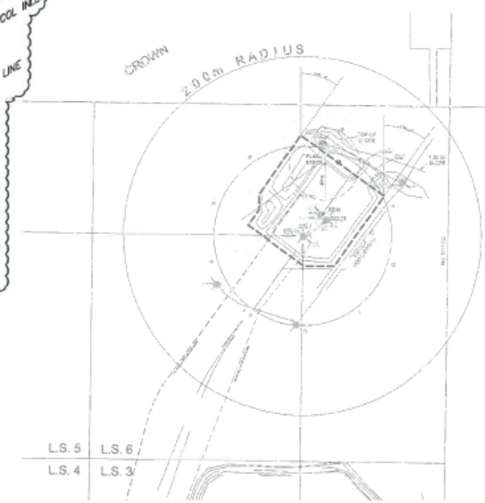
NOTES:
1. PLANT DATUM E 0+00.000 AND N 0+00.000 IS LOCATED AT UTM E 443,590.000 AND N 6,324,690.000 BASED IN NAD 83 Z12.
2. 6" PVC CONDUIT FROM OBSERVATION WELLPAD 06-18-093-12 W4M.
3. 3" SOLVENT LINE TO BE TRENCHED U/G WITH A 2m COVERAGE ALONG WITH 600V CABLE AT 1m COVERAGE TO TIE-IN TO FACILITY FROM HDD BORE.

Surface Facilities – Plot Plan (Updated)





DETAIL 'A'
WELLHEAD ORIENTATION



AREA LOCATION PLAN
LSD 06-18-093-12 W4M
REFERENCE SURVEY DRAWING: 40160-4120931806_EZOB6
CHALLENGER GEOMATICS LTD

EQUIPMENT LIST

ITEM#	EQP.#	DESCRIPTION	NORTH	EAST
1	EZOB1	OBSERVATION WELL	N 0+58.777	E 0+69.156
2	EZOB2	OBSERVATION WELL	N 0+57.910	E 0+77.972
3	EZOB6	OBSERVATION WELL	N 0+26.883	E 0+68.637
5	EZ-12	SOLVENT INJECTION WELL	N 0+64.563	E 0+72.309
6	100-PK-500	HEAT MEDIUM & SOLVENT VAPORIZER PKG.	N 0+72.000	E 0+47.900
7	100-PK-580	FLARE KNOCK-OUT DRUM	N 0+95.600	E 0+46.200
8	100-S-580	FLARE STACK	N 1+05.900	E 0+40.500
9	100-V-590	FLARE PURGE TANK (PROPANE)	N 0+62.000	E 0+43.350

NOTES:

1. PLANT DATUM E 0+00.000 AND N 0+00.000 IS LOCATED AT UTM E 443,745.680 AND N 6,325,220.340 BASED IN NAD 83 Z12.
2. 6" PVC CONDUIT TO ESEIEH PHASE II DOVAP SITE 03-18-093-12 W4M TRENCH U/G WITH 1m COVERAGE TO TIE-IN POINT.
3. THE BLACKENED AREA OUTSIDE OF LEASE SHOULD BE CLEARED OF ANY DEBRIS, MEANING INFLAMMABLE MATERIAL, AS PER THE PRAIRIE PROTECTION REGULATION, AR 135/72.
4. 3" SOLVENT LINE TRENCH U/G WITH 2m OF COVERAGE TO TIE-IN @ HDD BORE EXIT POINT.
5. ALL PIPING, STRUCTURAL STEEL AND CABLE TO BE REMOVABLE INSIDE THE 6mx6m RIG ACCESS.

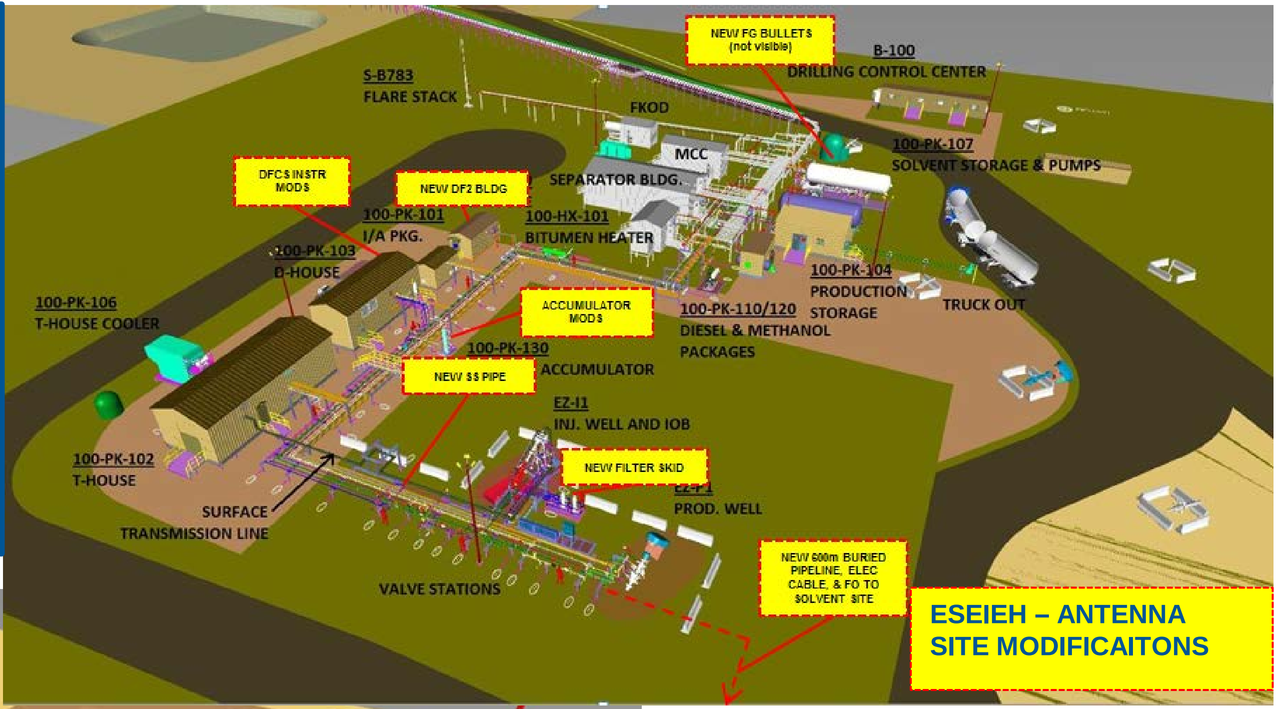
ESEIEH® Pilot Surface Modifications

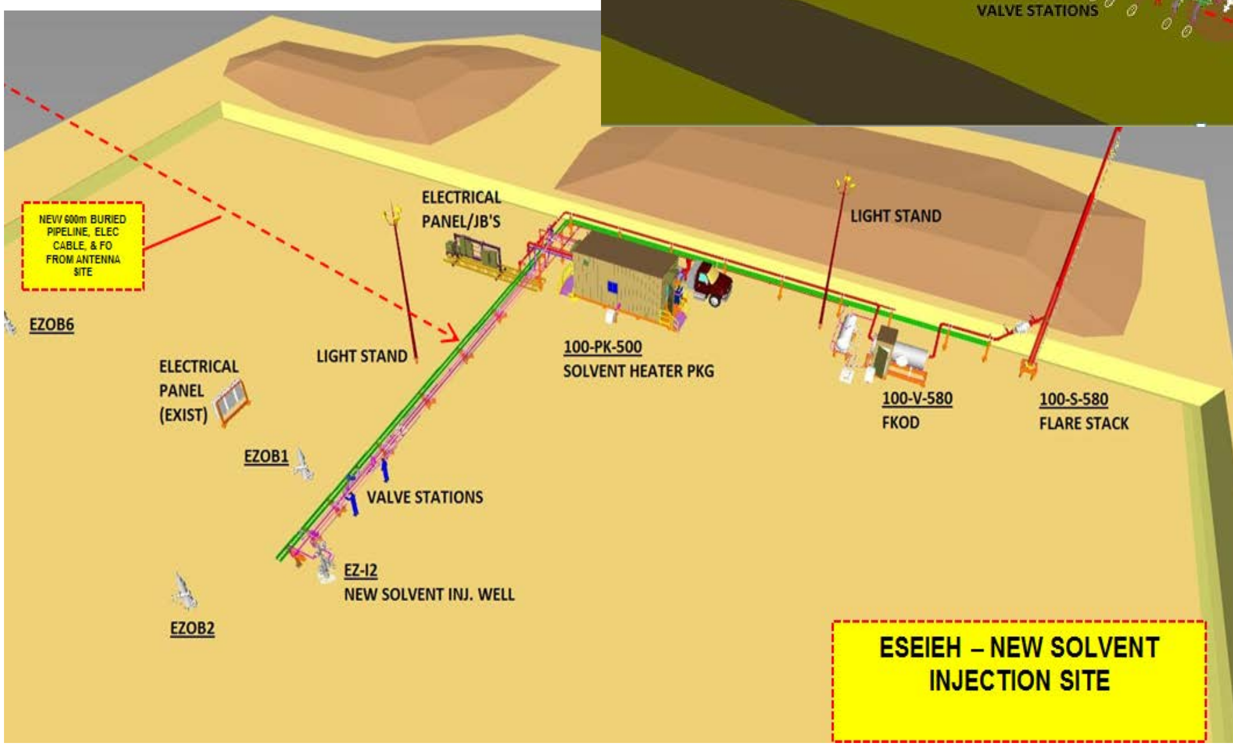
SCOPE

Antenna Site
- Add DF2 circulation & filtration building
- Complete instrument addition and modifications in DFCS building
- Install new SS DFCS piping
- Convert accumulator into separator via pipe modifications
- Install new DFCS filter skid new Antenna Well Head
- Decouple fuel gas from solvent system with new propane bullets

Solvent Injection Site
- Use existing Obs pad site and install all new solvent heater system and facilities as shown

Underground
- New 450m of 2" solvent pipe, 600V cable and FO from Antenna site to solvent site





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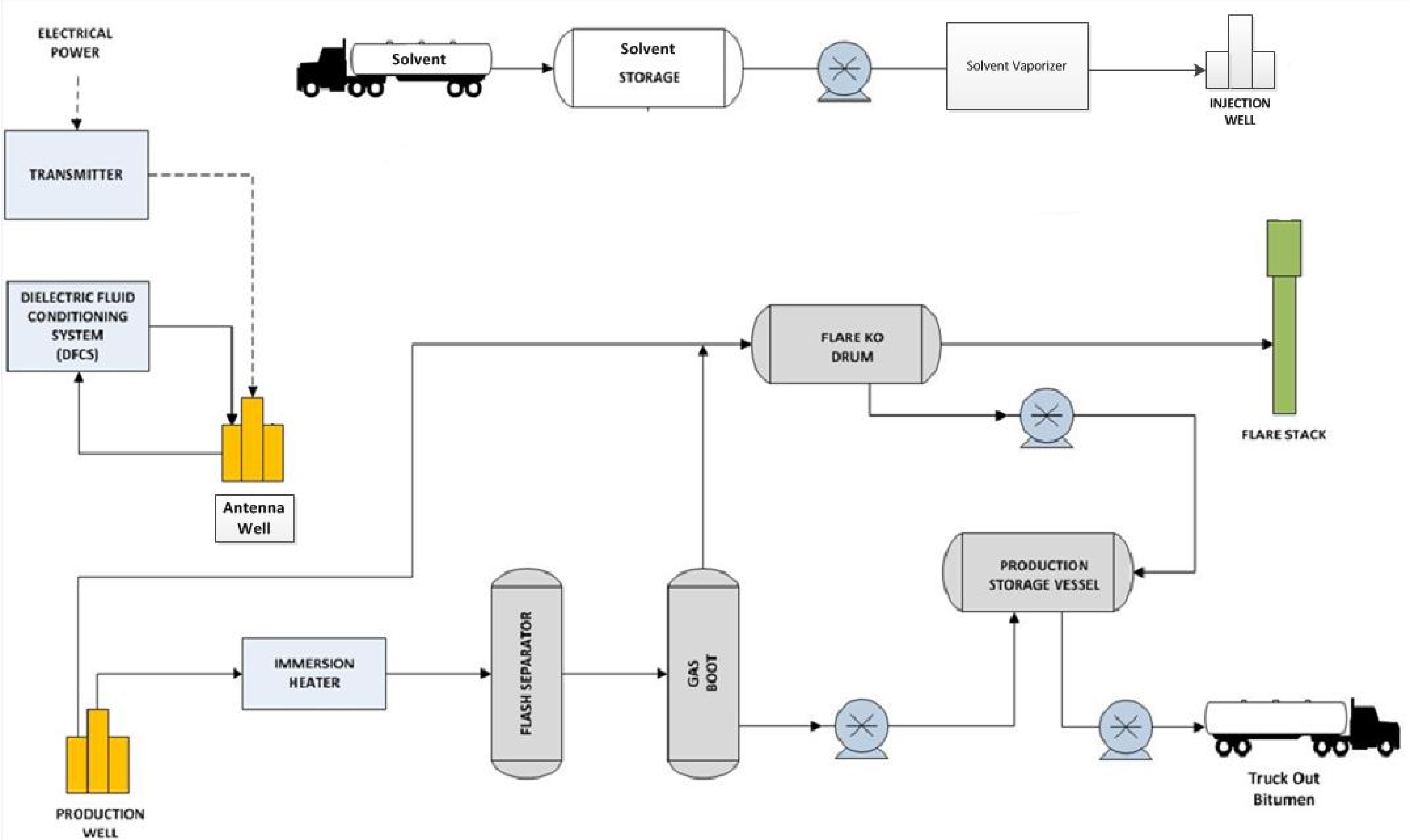
Surface Facilities – Simplified Schematic (Updated)



Summary of Facility Performance

- As part of the root cause analysis, as well as the design changes to the subsurface completion, a number facility changes were implemented at the ESEIEH facility.
- New modifications and additions to the existing facility (Antenna site)
  - Filter skids on the inlet to the IOB for FOD removal
  - DF2 – Dielectric Fluid Conditioning System (DFCS) to fill the sealed liner and prevent fluid ingress
  - DFCS carbon steel pipe replaced with stainless steel pipe
  - Upgraded sample quills to be installed for more representative sampling
  - 2 new fuel gas tanks to allow for changing the solvent from propane to butane
  - Add new instrumentation in DFCS
- New facilities at the observation well pad to accommodate the vertical solvent injection well:
  - Glycol heater
  - Nitrogen pack
  - FKOD Flare stack
- The existing facility and observation well pad will be connected via an underground 2 inch solvent pipeline and separate 600V cable

ESEIEH® Pilot Performance Presentation

Regulatory and Environment

Regulatory Summary

- Regulatory Approvals and Licenses:
  - AER Experimental Scheme Approval No. 12074 issued May 1, 2013
  - EPEA Amending Approval No. 705-02-02 issued July 19, 2013
  - Measurement, Accounting and Reporting Plan (MARP) approved February 19, 2014
  - Facility License F-47236 issued March 24, 2014
  - Well License 0462395 (EZP1) issued December 13, 2013
  - Well License 0462501 (EZI1) issued December 16, 2013
  - RMWB Development Permit 2013-DP-01311 issued November 27, 2013
  - MARP was updated on February 27, 2015
  - Scheme approval (12074A) extension granted until November 30, 2018
  - Waivers for placement of flare stack and spacing of flare stack obtained
  - D78 amendment not required for changes as per AER
  - Date extended for project (12074B) confidentiality (Dec, 2022) and Scheme (Dec, 2023)

Regulatory Compliance

- AER Non-Compliance:
- Suncor Energy Inc. is in compliance with all regulatory approvals, decisions, regulations and conditions not otherwise identified in this presentation or otherwise disclosed.

Environmental Summary

- Environmental:
  - Disturbance: no new disturbance associated with the pilot facilities and horizontal well pair. These are within existing Dover well pad.
  - Storm water: surface run-off contained on the site through the use of existing berms. Water collected, sampled and released if it meets EPEA requirements
  - Domestic wastewater: contained and trucked to an approved treatment facility
  - Spill containment: consists of storage and secondary containment that complies with Directive 055 requirements. Other measures will include: collection of surface run-off; spill prevention and loss control systems ; groundwater monitoring ; proper maintenance, operating procedures and inspections ; spill contingency and response plans.
  - Air emissions: monitoring and sampling as per the EPEA approval requirements
  - Groundwater: monitoring and sampling as per the EPEA approval requirements

ESEIEH® Pilot Performance Presentation

Future Plans

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Future Plans

- An injector well was constructed at 11-18-93-12W4; an application for approval to inject will be submitted at a later date
- Install new liner with the finalized antenna well design
- Recomplete the antenna well with the finalized antenna well design
- Install the revised solvent injection configuration
- Evaluate the merits of changing the injected hydrocarbon from propane to an alternative hydrocarbon
- Facility upgrades related to the subsurface design changes
- Review and update the existing operating plan and make changes in light of learnings from previous operations and design changes
- Current schedule has antenna start up occurring in early 2019, with 12 to 24 months of operation to follow

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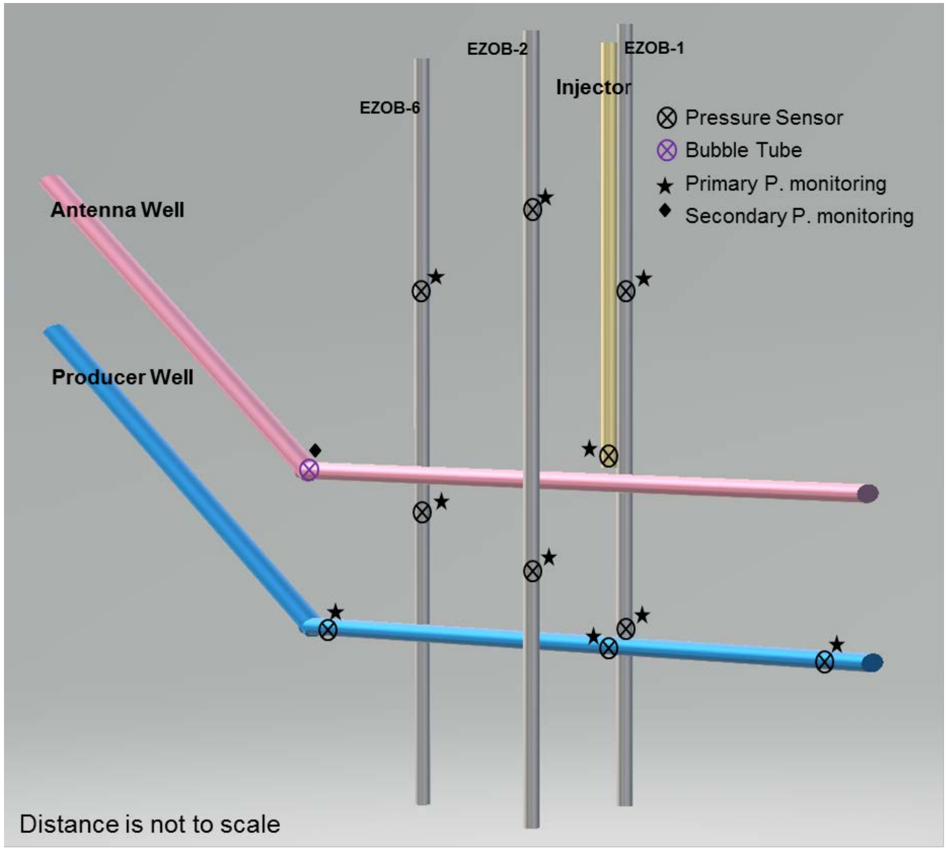
Reservoir Pressure Monitoring – New Design



EZOB-2 is ≈ 5m from EZ-WP1

EZOB-6 is ≈ 4m from EZ-WP1 (Heel Region)

EZOB-1 is ≈ 2m from EZ-WP1

Antenna liner re-designed as a sealed-bore

- Injection capability of the antenna removed

Vertical solvent injector drilled & completed in:

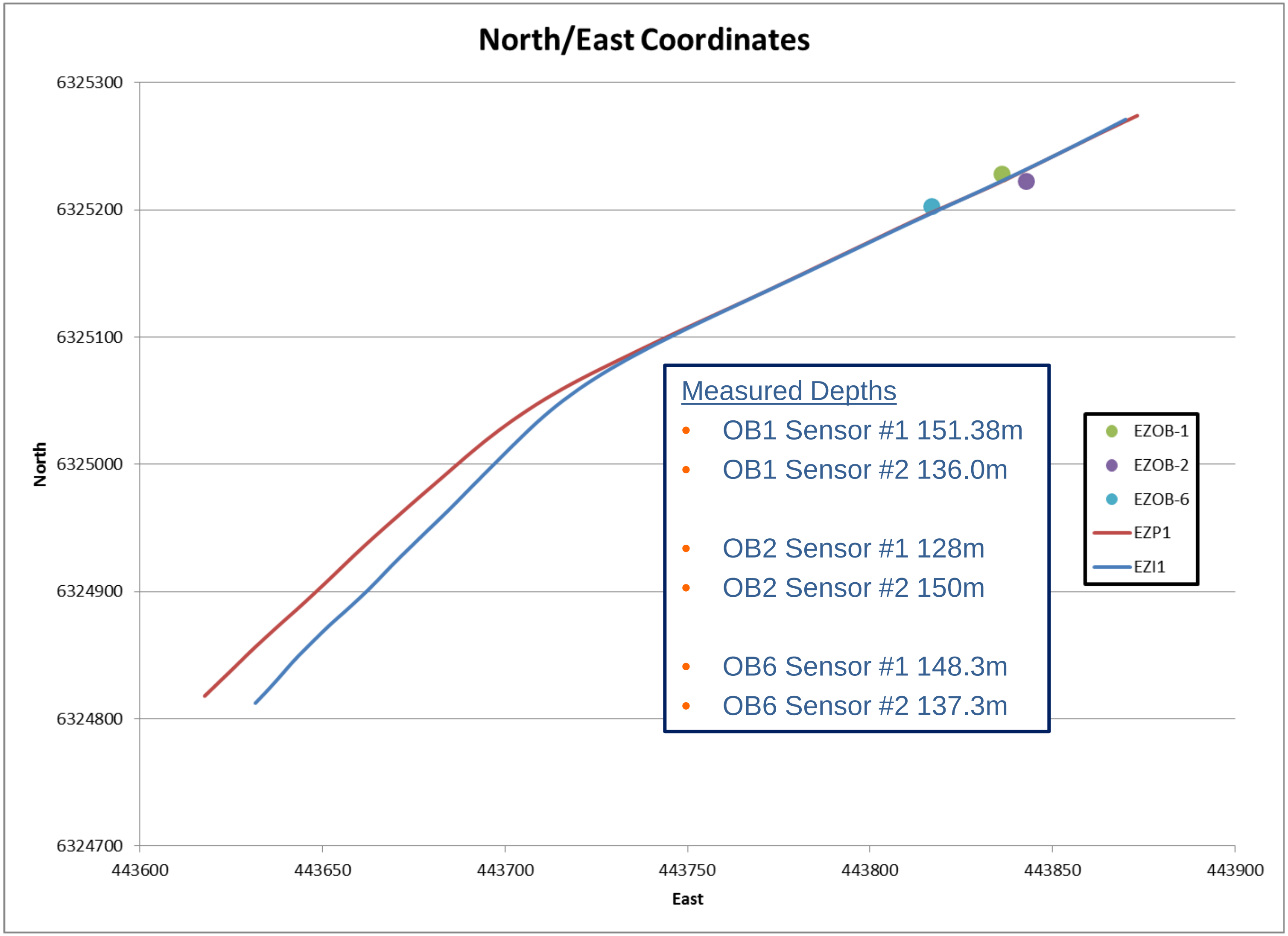
- Close proximity to EZ-OB1 and EZOB2,
- Close proximity to the antenna mid-point,
- Vertical injector well equipped with downhole pressure gauge,
- Injector pressure sensor ~2 meters from antenna mid-point.

Bubble tube to be installed in the antenna well

- Bubble tube landed in intermediate annulus
- Low-rate, continuous N2 injection
- Landed ~30 meters above antenna elevation
- ~260 meters from ICP

Bubble tube designated as a secondary pressure monitoring sensor.

Appendix – Observation Well Instrumentation Location



Measured Depths

- OB1 Sensor #1 151.38m
- OB1 Sensor #2 136.0m

- OB2 Sensor #1 128m
- OB2 Sensor #2 150m

- OB6 Sensor #1 148.3m
- OB6 Sensor #2 137.3m