

PRODUCTIVITY AND BUILDUP TEST REPORT

On Well

PENN WEST WASKADA UNIT NO. 5 HZNTL

103/01-02-002-26W1/00

Lower Amaranth: 1180.0 – 1763.3 mKB MD

Test Date: July 20 – 30, 2011

Prepared for:

PENN WEST PETROLEUM LTD.

Prepared by:

FEKETE ASSOCIATES INC.

November 23, 2011

PENN WEST PETROLEUM LTD.
Suite 200, 207 – 9th Ave. S.W.
Calgary, Alberta
T2P 1K3

ATTENTION: TREVOR THOMPSON

**Re: PRODUCTIVITY & BUILDUP TEST REPORT
PENN WEST WASKADA UNIT NO. 5 HZNTL 103/01-02-002-26W1/00
Lower Amaranth: 1180.0 – 1763.3 mKB MD
Test Date: July 20 – 30, 2011**

An acoustic well sounder buildup test was conducted on the subject well to establish the current reservoir pressure, flow characteristics and productivity of the Lower Amaranth formation. The test data have been analyzed and the results are presented in this report.

The raw data, analysis and report PDF files are included in the CD attached to the original copy of this report.

If you should have any further questions or concerns, please do not hesitate to contact the undersigned or Reza Ali at 403.213-4200.

Sincerely,

FEKETE ASSOCIATES INC.

Frank Brunner, R.E.T.
Senior Technical Advisor, WellTest

FB/jf

REPORT DISTRIBUTION

Two (2) Copies of the Report to:

PENN WEST PETROLEUM LTD.
Calgary, Alberta

Attention: TREVOR THOMPSON

Summary of Results

PENN WEST WASKADA UNIT NO. 5 HZNTL 103/01-02-002-26W1/00
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TEST RESULTS

PRESSURE SUMMARY		Metric		Field	
Final Calculated Buildup Pressure (2011/07/30)	(p)	2705	kPaa	392	psia
Final Calculated Flowing Sandface Pressure (2011/07/20)	(p _{wfo})	1940	kPaa	281	psia

PRODUCTION AND DELIVERABILITY					
Final Oil Rate (2011/07/20)	(q _o)	2.2	m ³ /d	14	bbl/d
Final Water Rate (2011/07/20)	(q _w)	0.3	m ³ /d	2	bbl/d
Cumulative Oil Production (to 2011/07/20)		2411	m ³	15164	bbl
Maximum Oil Rate (based on final oil rate)	(q _{omax})	2.6	m ³ /d	16	bbl/d

Reservoir Characteristics– Hz Multi-stage Frac Model		Field		Metric	
Average Reservoir Pressure (History Match)	(p_R)	5873	kPaa	852	psia
Horizontal Permeability	(k _{xy})	0.03	mD	0.03	md
Permeability in X Direction	(k _x)	0.015	mD	0.015	md
Permeability in Y Direction	(k _y)	0.07	mD	0.07	md
Net Vertical Pay	(h)	26	m	85	ft
Effective Horizontal Wellbore Length (provided)	(L _e)	583	m	1913	ft
Number of Effective Frac Stages (assumed)		14		14	
Effective Fracture Half Length	(x _{fy})	15	m	49	ft
Fracture Conductivity	(F _{CD})	50		50	
Reservoir Length (assumed)	(X _e)	1600	m	5250	ft
Reservoir Width (assumed)	(Y _e)	400	m	1312	ft
Location of Well From X Axis (assumed)	(X _w)	800	m	2625	ft
Location of Well From Y Axis (assumed)	(Y _w)	200	m	656	ft

Discussion/ Conclusions

PENN WEST WASKADA UNIT NO. 5 HZNTL 103/01-02-002-26W1/00
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Test Date: July 20 – 30, 2011

BACKGROUND AND TEST OVERVIEW

The subject well was drilled vertically to a depth of 602 mKB before starting to build angle. Drilling continued at a high angle until the Lower Amaranth formation was penetrated, and then, the lateral section of the wellbore was drilled out to a TD of 1781 mKB MD (912.57 mKB TVD). The 139.7 mm production casing was set at TD and cemented in place before the drilling rig was released.

Completion operations commenced on February 20, 2010, when the wellhead was installed. On February 22, a mud motor was RIH on coiled tubing and tagged an obstruction at 1757.2 mKB MD. The obstruction was then drilled out and the well was circulated clean. The following day, after removing the wellhead, the frac head was installed.

On March 4, a Mongoose frac tool assembly was RIH on 60.3 mm coiled tubing. The packer was set at 1763 mKB MD and the toe was perforated (abrasive cut) over the interval 1763.0 – 1763.3 mKB MD. This interval was hydraulically frac'd (placing 10 tonnes of sand into the formation) and plugged back. This procedure was repeated 13 more times over the additional gross interval of 1180.0 – 1720.3 mKB MD. The exact details of the stimulation operation were not available at the time of this report.

Shortly after the fracture treatment was completed, the packer was pulled and a retrievable WR plug was set at 355 mKB MD. On the following day, the frac head was removed and the wellhead was installed. On March 8, the WR plug was recovered and an N₂ assisted coiled tubing cleanout was conducted to 1705 (60 m short of PBTD). Approximately 64 m³ of fluid and 1 m³ of sand were recovered.

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BACKGROUND AND TEST OVERVIEW (cont'd)

The well was left standing until July 17, when a coiled tubing cleanout was conducted to 1765 mKB MD, recovering 24.6 m³ of oil, 30.4 m³ of water and 0.5 m³ of sand. On July 19, a 73 mm production tubing was RIH and landed at 910.12 mKB MD (853.85 mKB TVD). The pump and rods were installed on the following day, however, a successful pressure test could not be achieved. The pump and rods were then pulled and sand was suspected in the pump. On July 21, 19 swabs were pulled, recovering 9.5 m³ of fluid (6.06 m³ of oil and 3.45 m³ of water). The final 3 swabs had a trace of sand. After killing the well with 18 m³ of salt water, pump and rods were installed and pressure tested. The well was then secured.

Commercial oil production commenced on August 23, 2010. Oil production peaked on August 30, 2010, at 22.4 m³/d and fell to a daily average rate of 2.2 m³/d by July 2011.

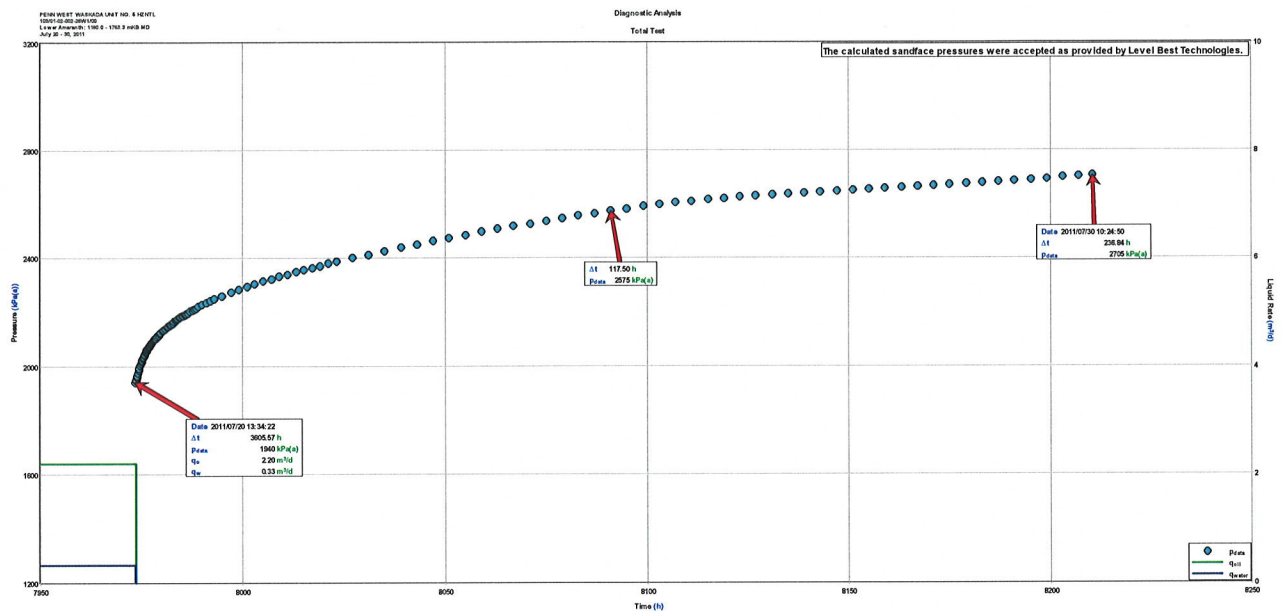
On July 20, 2011, an automated acoustic well sounder, c/w surface pressure recorder, was connected to the annulus and a fluid depression test was initiated. The well was then shut-in at an oil rate of 2.2 m³/d and a water rate of 0.3 m³/d. The subsequent automated samplings of fluid level and corresponding casing pressure were collected until July 30 ($\Delta t = 237$ hours), when the AWS equipment was rigged out. The pressure calculations to MPP (913.74 mKB TVD), were conducted by the AWS service provider and have been accepted as presented.

During the August 23, 2010 to July 20, 2011 production period, a total of 2411 m³ of oil and 1292 m³ of water were produced. No gas rate was reported during the producing period.

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BACKGROUND AND TEST OVERVIEW (cont'd)

The following plot displays the calculated bottomhole pressures and the oil and water rates measured prior to shut-in.



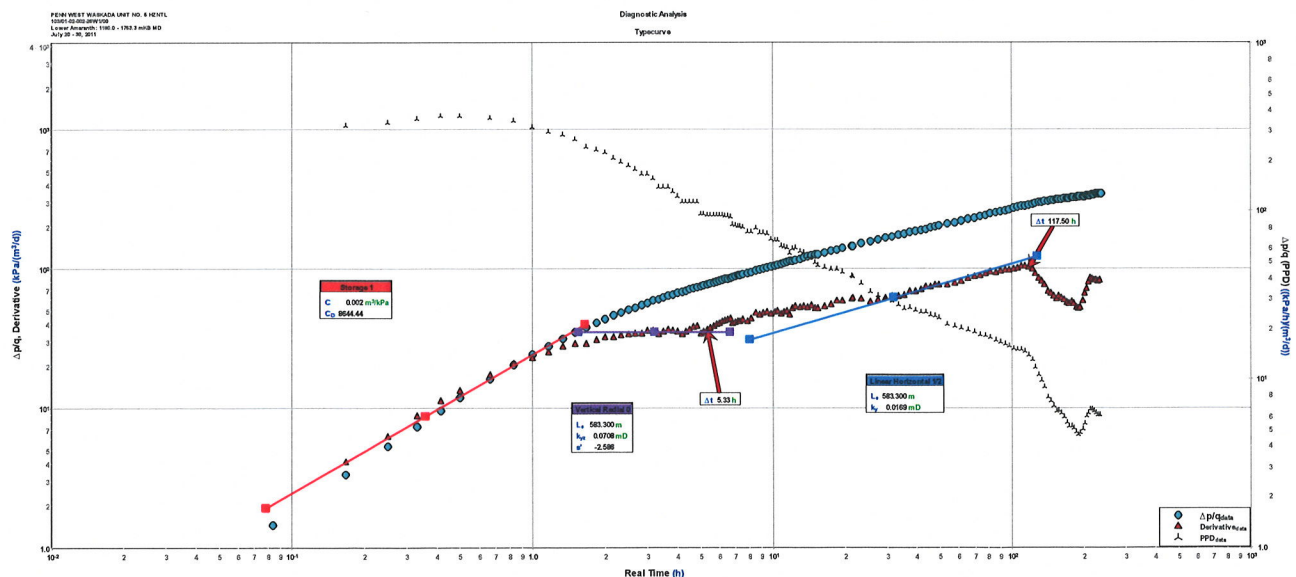
The properties of oil have been taken from the PVT data supplied by Penn West. A bubble point pressure (P_b) of 4326 kPaa is reported and the solution gas-oil-ratio (GOR) is estimated to be $43.3 \text{ m}^3/\text{m}^3$.

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DIAGNOSTIC ANALYSIS

To determine the reservoir flow characteristics affecting the pressure buildup behavior, a type-curve and pressure derivative plot of the buildup was generated. Although multiple fractures likely impact the flow pattern, conventional horizontal well methodology is initially applied to the buildup trend to provide preliminary permeability and skin estimates to commence subsequent history matching. Therefore, any values shown on the following plot should be viewed as qualitative.

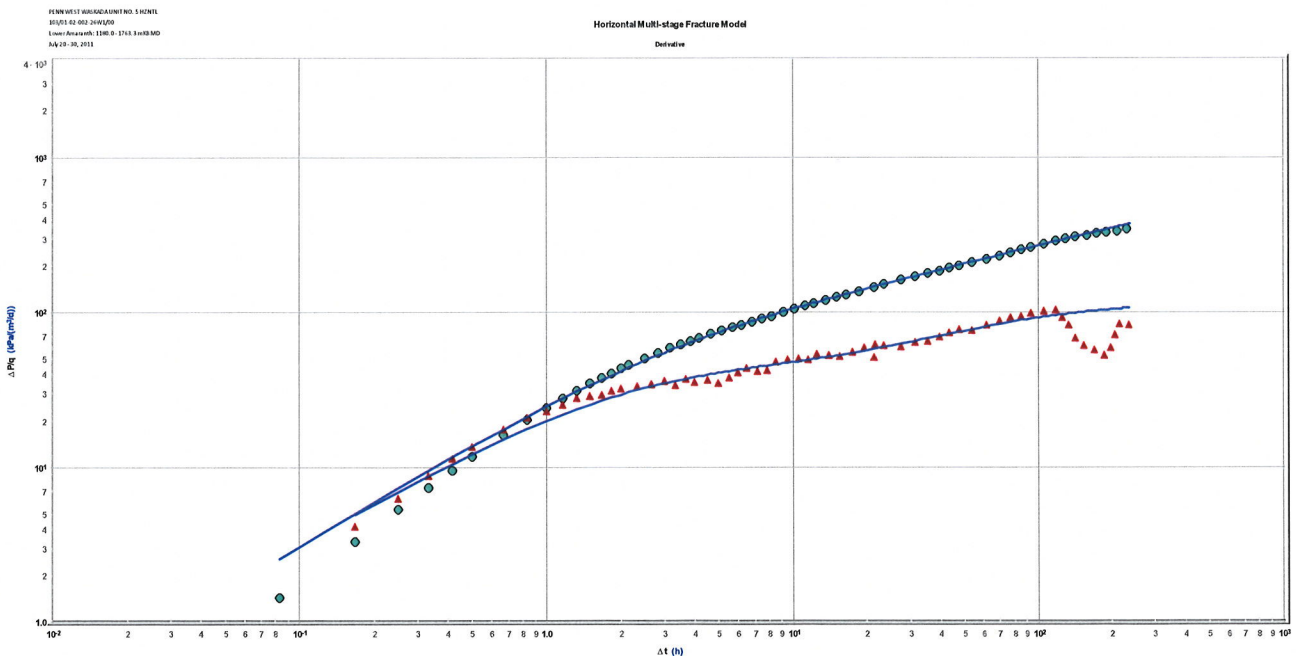
Wellbore storage followed by vertical radial flow is evident within the initial 5 hours of shut-in. Following that, the derivative transitions into a $\frac{1}{2}$ slope trend (indicative of linear horizontal flow) and extends to about 118 hours of shut-in time. The derivative then suddenly drops, and a concave trend develops in the late-time. The concurrent shift and subsequent rise in the primary pressure derivative (PPD) suggests this behavior is associated with a wellbore effect (i.e. phase segregation). On close review of the AWS data, there are no obvious issues with the bottomhole pressure calculation and the change in trend appears to be real. Given the well density in the area, interference effects from offset producers cannot be ruled out. Since horizontal radial flow does not develop during the test, any values presented here should be used with caution.



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CONCLUSIONS

Given the 14 stage fracture treatment along the 583 meter horizontal wellbore, pressure history matching was undertaken using a Horizontal Multi-stage Fracture Model. Several attempts (utilizing dual porosity in one case and nearby intersecting boundaries in another) were initially made to match the late-time concave trend, however, the trend is too sharp and an acceptable match could not be obtained. Therefore, pressure history matching was conducted with a focus on the data prior to 118 hours of shut-in. This match requires a horizontal permeability (k_{xy}) of 0.03 mD. Assuming each frac stage generated a single transverse fracture and each is equally effective, the effective fracture half-length and dimensionless fracture conductivity (F_{CD}) are estimated to be 15 m and 50, respectively. The drainage area could not be determined from the test, and a $\frac{1}{4}$ section drainage area (1600 x 400 meters) is assumed.



The final calculated bottomhole buildup pressure on July 30, 2011 (after 237 hours of shut-in) was 2705 kPaa. Assuming a $\frac{1}{4}$ section drainage area, the Horizontal Multi-stage Fracture Model calculates a current reservoir pressure to be 5873 kPaa. However, if the well is seeing interference from an offset producer, the drainage area may be smaller and the current reservoir pressure may be lower than stated.

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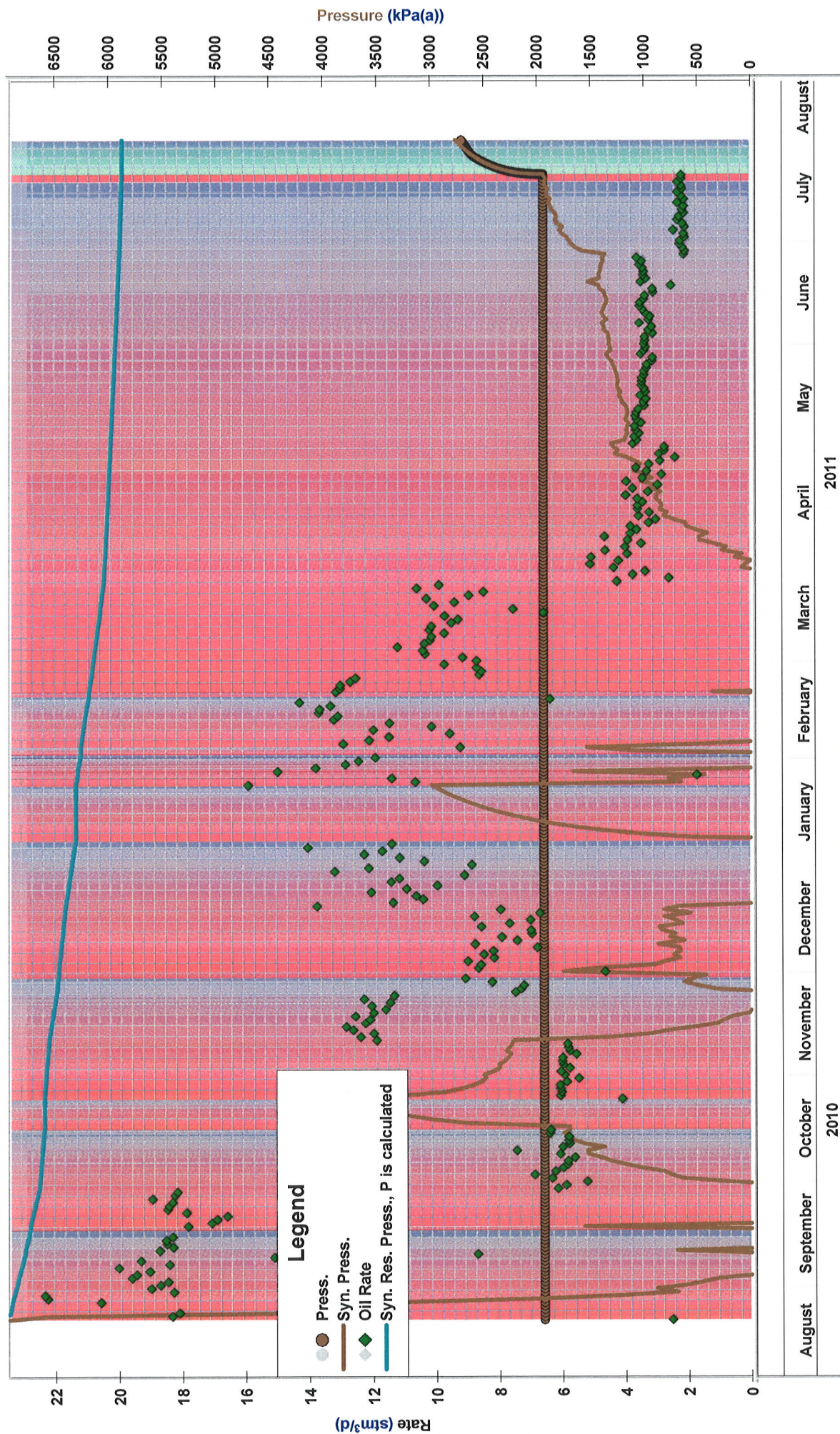
CONCLUSIONS (cont'd)

Based on the final producing conditions on July 20, 2011 (2.2 m³/d at a bottomhole flowing pressure of 1940 kPaa), an inflow performance relationship curve was generated, and indicates a maximum oil rate (assuming the sandface flowing pressure could be lowered to zero) of 2.6 m³/d. Therefore, the well is producing near its maximum capability.

Models

PENN WEST WASKADA UNIT NO. 5 HZNTL
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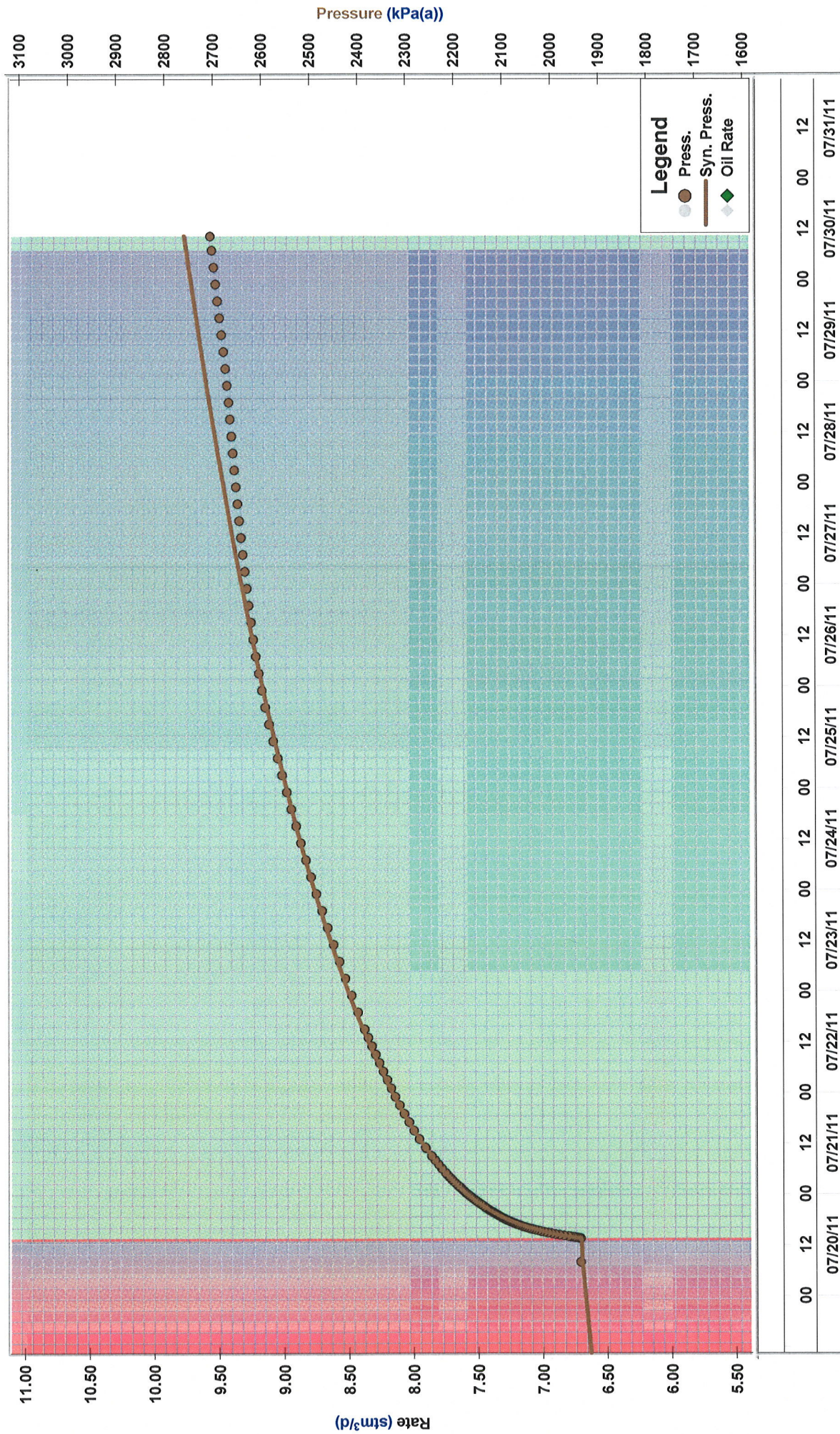
Horizontal Multi-stage Fracture Model Welltest History



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Horizontal Multi-stage Fracture Model

Welltest History



PENN WEST WASKADA UNIT NO. 5 HZNTL

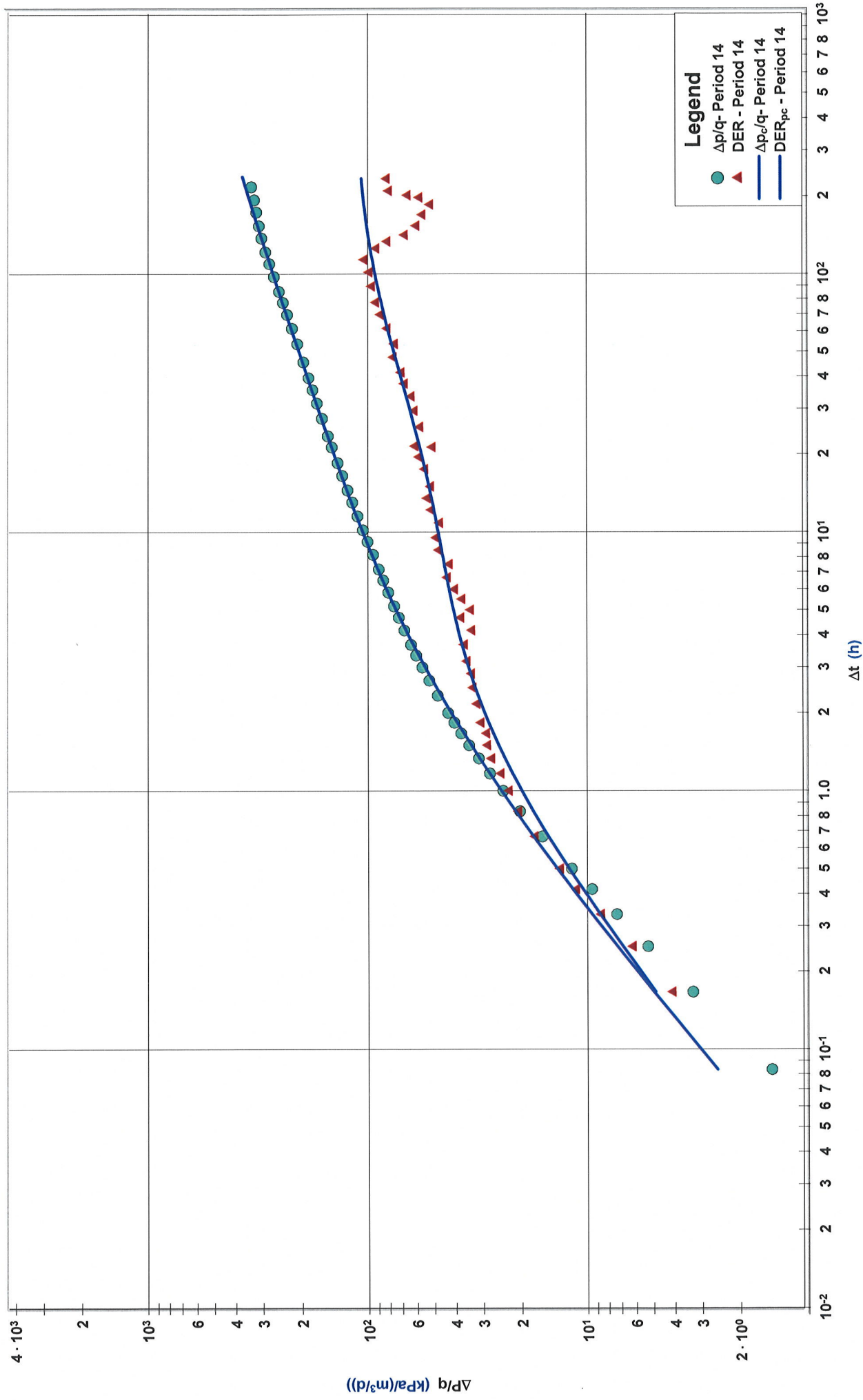
103/01-02-002-26W1/00

Lower Amaranth: 1180.0 - 1763.3 mKB MD

July 20 - 30, 2011

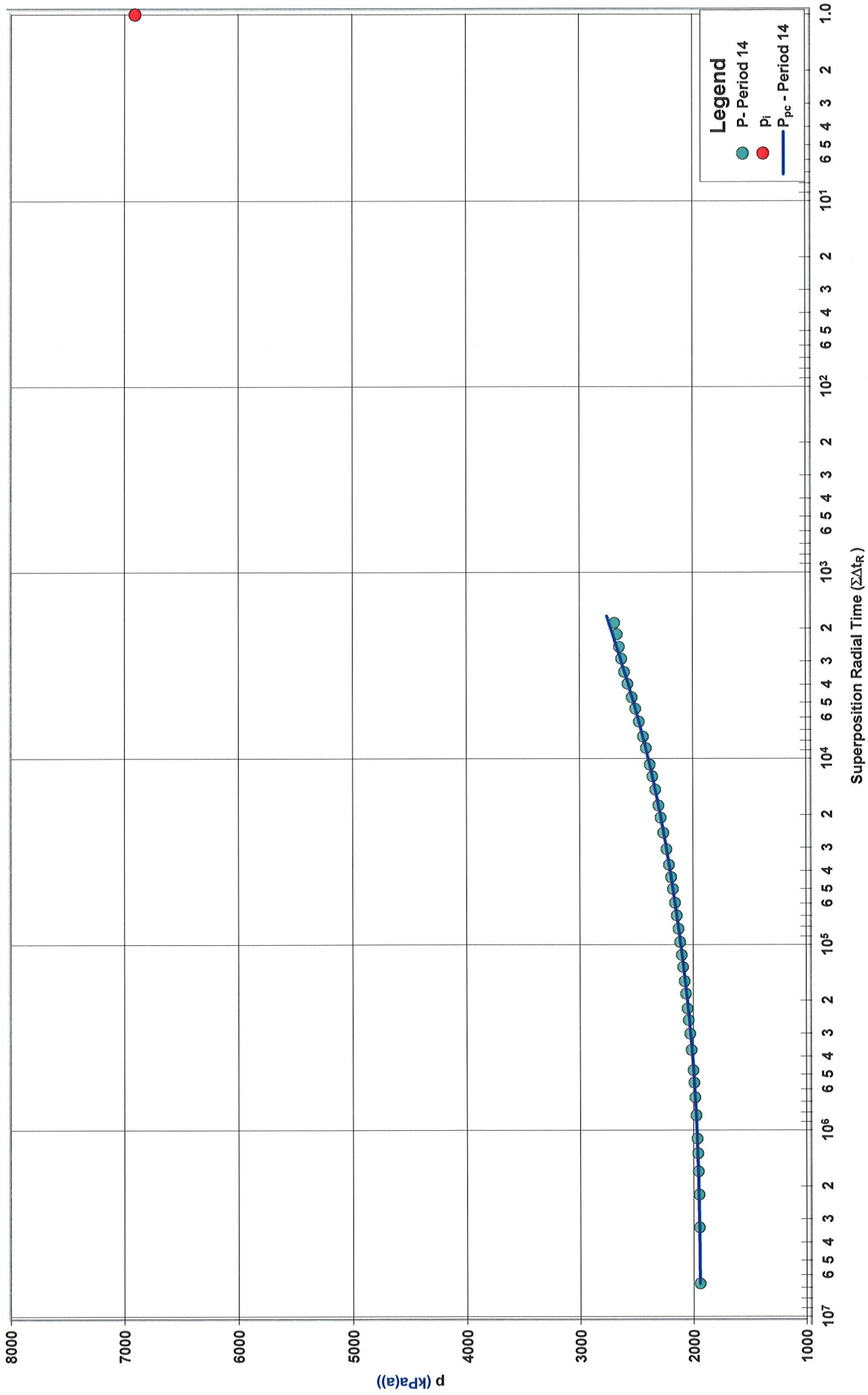
Horizontal Multi-stage Fracture Model

Derivative



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Horizontal Multi-stage Fracture Model Radial Build-Up



Oil Model - Horizontal Multifrac Model

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Model Results

Permeability x-direction (k_x) 0.0150 mD
Permeability y-direction (k_y) 0.0700 mD
Horizontal to Vertical Permeability Ratio (k_h / k_v) 1.000
Number of Fractures (#Fracs) 14
Fracture Half Length (x_{fy}) 15.0 m
Dimensionless Fracture Conductivity (F_{CD}) 50.000

Reservoir Length (X_e) 1600.0 m
Reservoir Width (Y_e) 400.0 m
Well Location in X-direction (X_w) 800.0 m
Well Location in Y-direction (Y_w) 200.0 m
Effective Wellbore Length (L_e) 583.300 m

Reservoir Parameters

Reservoir Temperature (T_R) 50.0 °C
Dimensionless Storage 1 (C_{D1}) 6500.0
Dimensionless Storage 2 (C_{D2}) 7000.0
Dimensionless Storage Parameter (C_{pD}) 0.001

Net Pay (h) 26.0 m
Total Porosity (ϕ_t) 13.00 %
Wellbore Radius (r_w) 0.091 m
Drainage Area (A_D) 64.0 ha

Total Cumulative Production Oil (Cum_{oil}) 2.411 10³m³

Gas Saturation (S_g) 0.00 %
Oil Saturation (S_o) 50.00 %
Water Saturation (S_w) 50.00 %
Formation Compressibility (c_f) 6.3246e-07 1/kPa
Total Compressibility (c_t) 1.2101e-06 1/kPa
Gas Compressibility (c_g) 1.6218e-04 1/kPa
Water Compressibility (c_w) 4.4476e-07 1/kPa
Oil Compressibility (c_o) 7.1057e-07 1/kPa

Fluid Properties

Reservoir Temperature (T_{resv}) 50.0 °C
Reservoir Pressure (p_{resv}) 5500 kPa(a)
Oil Gravity (γ_o) 37.2 °API
Bubble Point Pressure (p_{bp}) 4326 kPa(a)
Oil Formation Volume Factor (B_o) 1.128
Oil Viscosity (μ_o) 1.3773 mPa.s
Oil Compressibility (c_o) 8.9273e-07 1/kPa
Solution Gas Ratio (R_s) 43.30 m³/m³
Oil Correlation Vasquez and Beggs
Oil Viscosity Correlation Beggs & Robinson

I.P.R.

Liquid IPR

Inflow Performance Relationship

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Test Data

Bubble Point Pressure (p_{bp}) 4326 kPa(a)
Reservoir Pressure (p_R) 5873 kPa(a)
Test Pressure (p_{wf}) 1940 kPa(a)
Oil Test Rate (q_o) 2.2 m³/d
Water Test Rate (q_w) 0.3 m³/d

Results

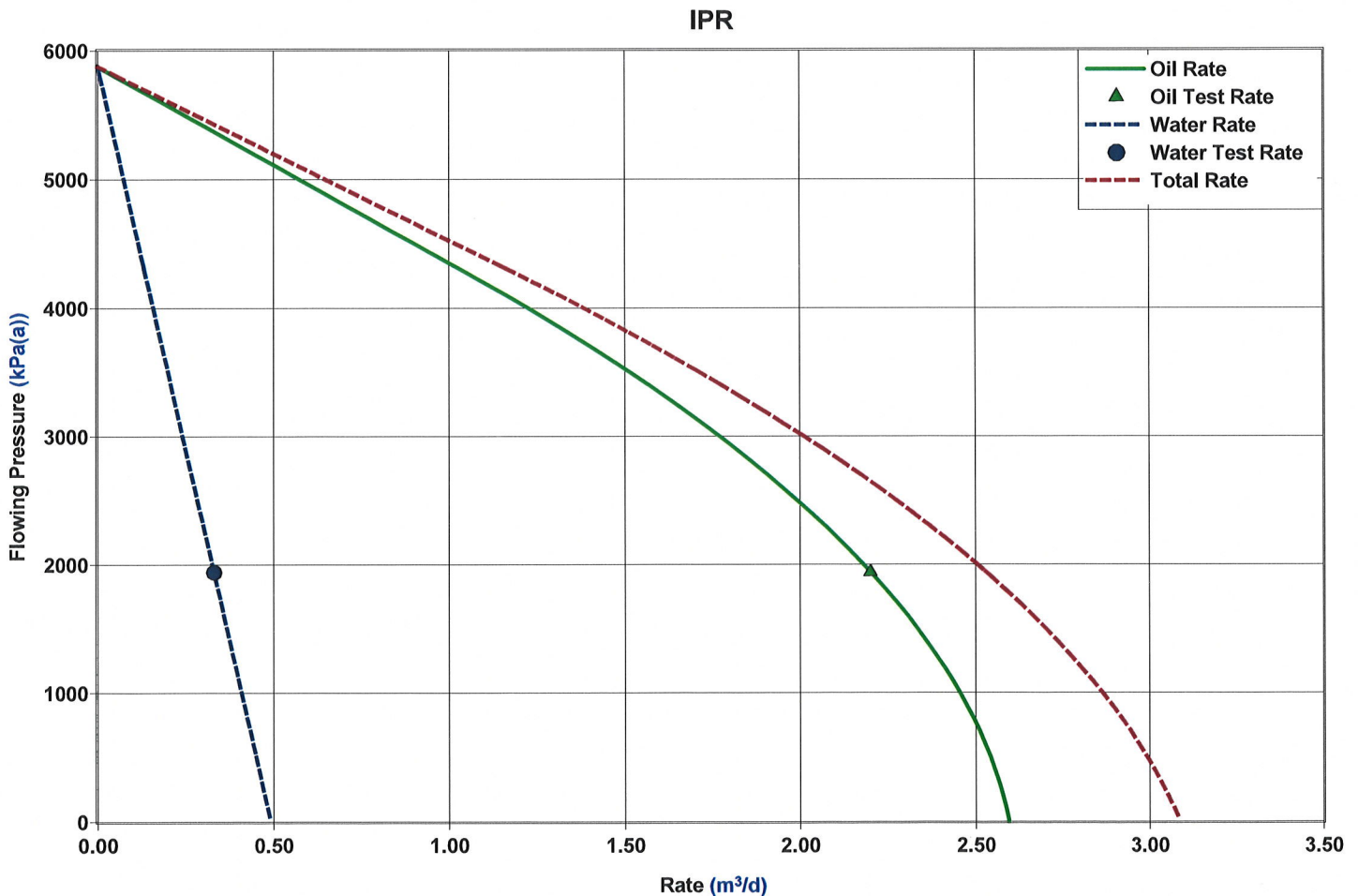
Maximum Oil Rate ($q_{o(max)}$) 2.6 m³/d
Maximum Total Rate ($q_{t(max)}$) 3.1 m³/d
Maximum Water Rate ($q_{w(max)}$) 0.5 m³/d

Note * Test Point

** Bubble Point

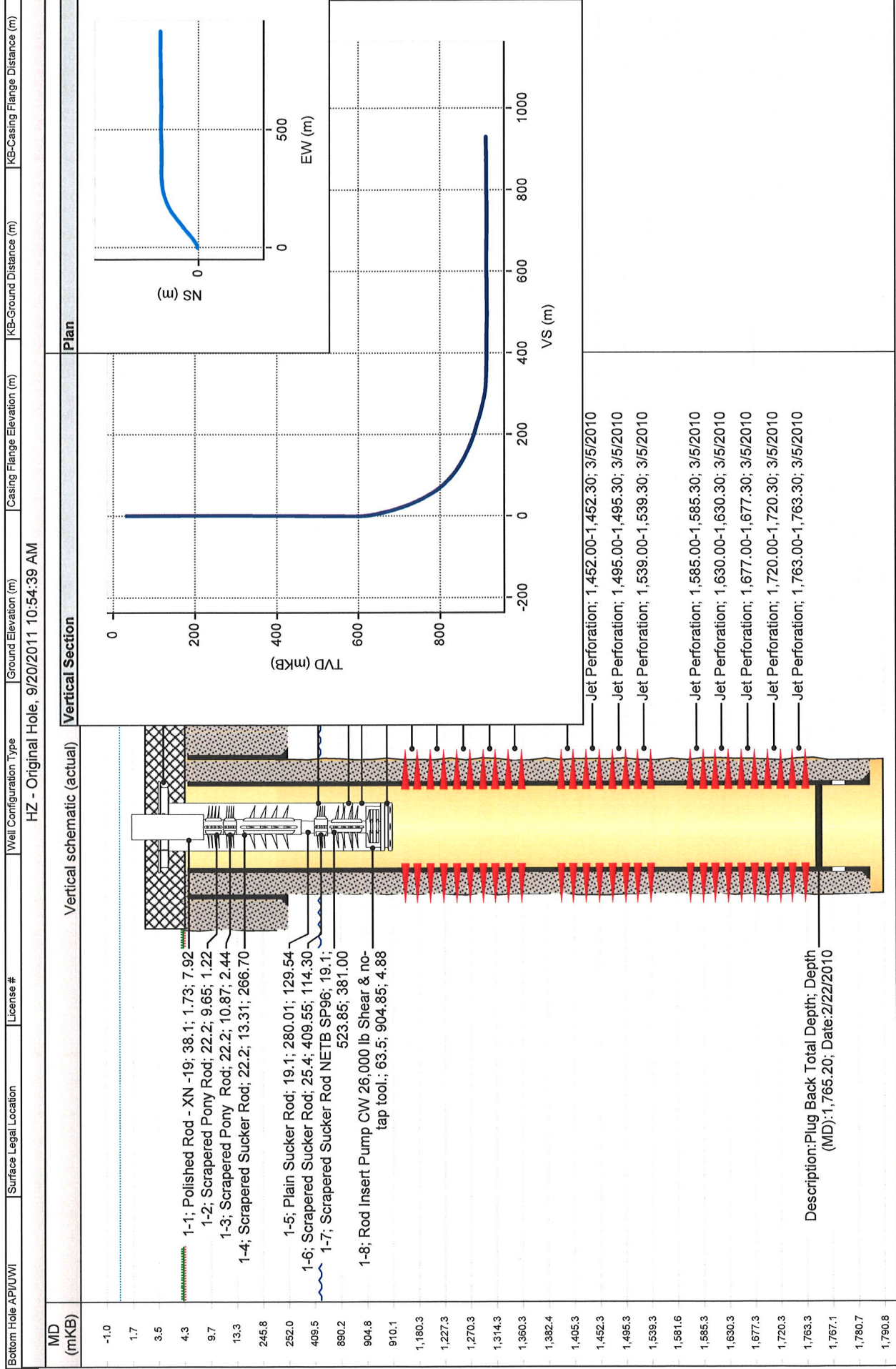
Oil IPR based on Vogel's Equation
(Quadratic Curve Factor = 0.2)

Flowing Pressure	Oil Rate	Water Rate	Total Rate
kPa(a)	m ³ /d	m ³ /d	m ³ /d
0	2.6	0.5	3.1
400	2.6	0.5	3.0
800	2.5	0.4	2.9
1200	2.4	0.4	2.8
1600	2.3	0.4	2.7
1940*	2.2	0.3	2.5
2000	2.2	0.3	2.5
2400	2.0	0.3	2.3
2800	1.9	0.3	2.1
3200	1.7	0.2	1.9
3600	1.5	0.2	1.6
4000	1.2	0.2	1.4
4326**	1.0	0.1	1.1
4400	1.0	0.1	1.1
4800	0.7	0.1	0.8
5200	0.4	0.1	0.5
5600	0.2	0.0	0.2



Wellbore

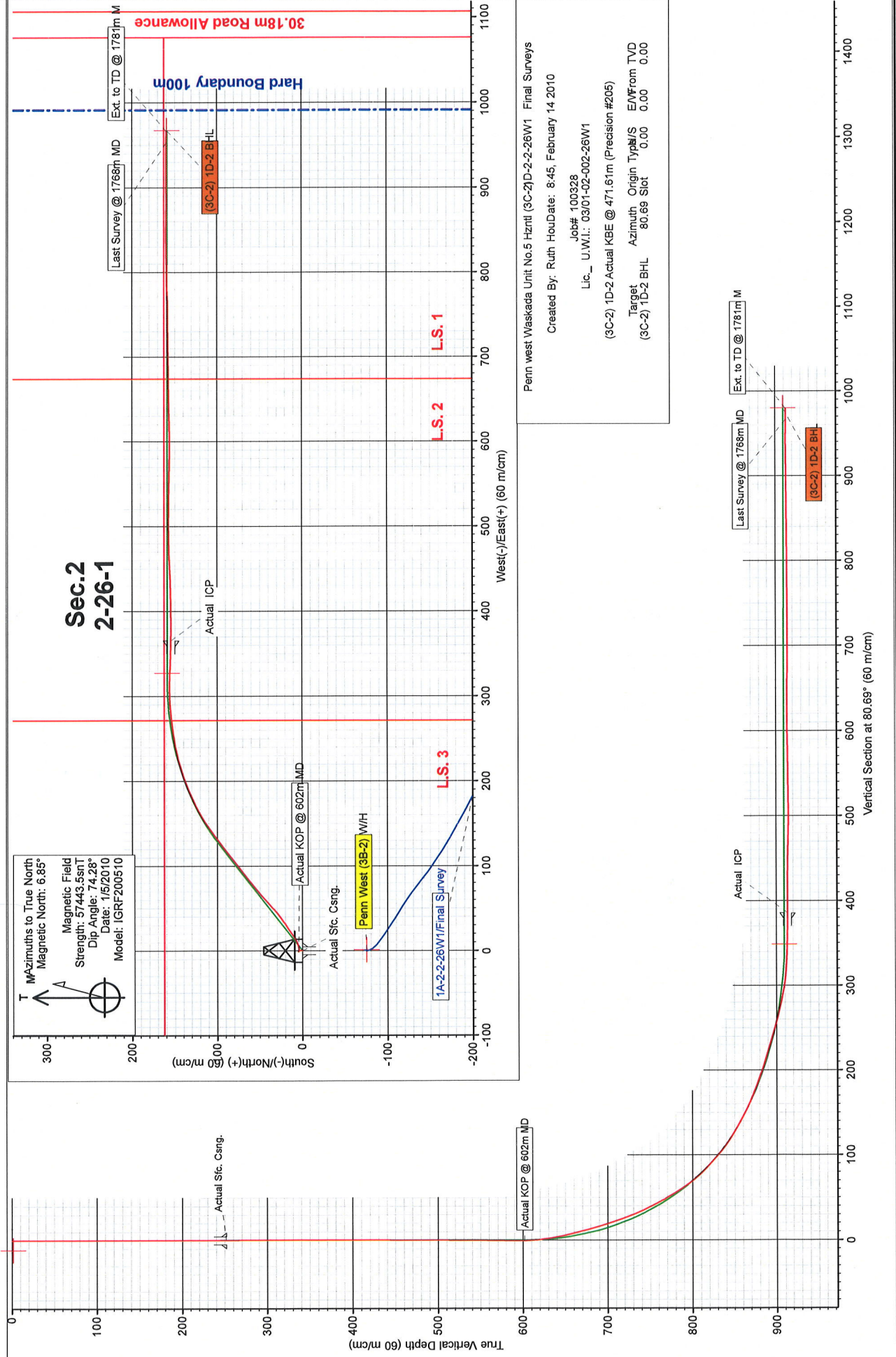
Well Name: Penn West Waskada Unit No. 5 HZNTL A1-2-2-26 (WPM)





Project: Waskada
Site: Penn west Waskada Unit No.5 Hzntrl (3C-2)
Well: 1D-2-2-26W1
Wellbore: Hz

UWI : 03/01-02-002-26W1
Final Surveys



Penn west Waskada Unit No.5 Hzntrl (3C-2)D-2-2-26W1 Final Surveys
Created By: Ruth HouDate: 8:45, February 14 2010
Job# 100328
Lic. UWI: 03/01-02-002-26W1
(3C-2) 1D-2 Actual KBE @ 471.61m (Precision #205)
Target Azimuth Origin TypB/S E/WFrom TVD
(3C-2) 1D-2 BHL 80.69 Slot 0.00 0.00 0.00

Cathedral Energy Services

Survey Report

Company:	Penn West Petroleum Ltd.	Local Co-ordinate Reference:	Well 1D-2-2-26W1
Project:	Waskada	TVD Reference:	(3C-2) 1D-2 Actual KBE @ 471.61m (Precision #2
Site:	Penn west Waskada Unit No.5 Hzntl (3C-2)	MD Reference:	(3C-2) 1D-2 Actual KBE @ 471.61m (Precision #2
Well:	1D-2-2-26W1	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys	Database:	EDM R5000 CATHEDRAL Multi Users

Project	Waskada		
Map System:	Universal Transverse Mercator	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 14N (102 W to 96 W)		

Site	Penn west Waskada Unit No.5 Hzntl (3C-2)		
Site Position:		Northing:	5,439,187.55m
From:	Map	Easting:	364,073.86m
Position Uncertainty:	0.00 m	Slot Radius:	0.00mm
		Latitude:	49° 5' 25.86 N
		Longitude:	100° 51' 42.47 W
		Grid Convergence:	-1.41 °

Well	1D-2-2-26W1		
Well Position	+N/-S	0.00 m	Northing: 5,439,187.55 m
	+E/-W	0.00 m	Easting: 364,073.86 m
Position Uncertainty	0.00 m	Wellhead Elevation:	m
		Latitude:	49° 5' 25.86 N
		Longitude:	100° 51' 42.47 W
		Ground Level:	467.34 m

Wellbore	Hz		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF200510	1/5/2010	6.85
			Dip Angle (°) 74.28
			Field Strength (nT) 57,444

Design	Final Surveys		
Audit Notes:	Well Licence:		
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(m)	(m)	(m)
	0.00	0.00	0.00
			Direction (°) 80.69

Survey Program	Date 2/14/2010		
From (m)	To (m)	Survey (Wellbore)	Tool Name
252.00	1,781.00	Final Surveys (Hz)	MWD
			Description

Survey											
Measured Depth (m)	Inc. (°)	Az. (°)	Vertical Depth (m)	Sub Sea Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Closure Distance (m)	Closure Azimuth (°)	Dogleg Rate (°/30m)	Formations / Comments
0.00	0.00	0.00	0.00	-471.61	0.00	0.00	0.00	0.00	0.00	0.0	
252.00	0.00	0.00	252.00	-219.61	0.00	0.00	0.00	0.00	0.00	0.0	Actual Sfc. Csng.
271.67	1.50	354.10	271.67	-199.94	0.26	-0.03	0.02	0.26	354.10	2.3	
409.44	1.10	349.50	409.40	-62.21	3.35	-0.45	0.10	3.38	352.30	0.1	
547.20	0.70	308.80	547.15	75.54	5.18	-1.35	-0.49	5.35	345.39	0.2	
588.55	1.40	193.00	588.49	116.88	4.84	-1.66	-0.85	5.12	341.08	1.3	
602.00	1.49	146.31	601.94	130.33	4.54	-1.60	-0.84	4.81	340.58	2.6	Actual KOP @ 602m MD
602.28	1.50	145.50	602.22	130.61	4.53	-1.60	-0.84	4.80	340.60	2.5	
616.05	5.00	91.90	615.97	144.36	4.36	-0.89	-0.18	4.45	348.42	9.3	
629.82	8.50	89.60	629.64	158.03	4.35	0.72	1.42	4.41	9.45	7.6	

Cathedral Energy Services

Survey Report

Company:	Penn West Petroleum Ltd.	Local Co-ordinate Reference:	Well 1D-2-2-26W1
Project:	Waskada	TVD Reference:	(3C-2) 1D-2 Actual KBE @ 471.61m (Precision #2
Site:	Penn west Waskada Unit No.5 Hzntl (3C-2)	MD Reference:	(3C-2) 1D-2 Actual KBE @ 471.61m (Precision #2
Well:	1D-2-2-26W1	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys	Database:	EDM R5000 CATHEDRAL Multi Users

Survey											
Measured Depth (m)	Inc. (°)	Az. (°)	Vertical Depth (m)	Sub Sea Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Closure Distance (m)	Closure Azimuth (°)	Dogleg Rate (°/30m)	Formations / Comments
643.62	12.10	81.60	643.21	171.60	4.57	3.18	3.87	5.56	34.80	8.4	
657.41	13.70	72.40	656.66	185.05	5.27	6.16	6.93	8.11	49.44	5.7	
671.20	15.00	64.80	670.02	198.41	6.53	9.33	10.27	11.39	55.03	5.0	
684.97	16.40	60.40	683.27	211.66	8.25	12.64	13.80	15.09	56.87	4.0	
698.78	18.20	57.80	696.46	224.85	10.36	16.16	17.62	19.19	57.33	4.3	
712.51	20.90	56.40	709.40	237.79	12.86	20.01	21.83	23.79	57.28	6.0	
726.25	22.70	56.40	722.15	250.54	15.68	24.26	26.48	28.89	57.12	3.9	
740.00	24.40	55.80	734.76	263.15	18.75	28.82	31.47	34.38	56.96	3.7	
753.74	27.80	54.50	747.09	275.48	22.20	33.78	36.93	40.42	56.68	7.5	
767.48	31.30	54.40	759.05	287.44	26.14	39.29	43.00	47.19	56.36	7.6	
781.27	33.50	49.60	770.69	299.08	30.70	45.10	49.47	54.56	55.76	7.4	
795.02	36.40	47.30	781.96	310.35	35.92	50.99	56.13	62.38	54.84	6.9	
808.71	39.80	48.00	792.73	321.12	41.61	57.24	63.21	70.76	53.98	7.5	
822.41	44.30	50.20	802.90	331.29	47.61	64.17	71.03	79.91	53.43	10.4	
836.22	48.70	50.70	812.41	340.80	53.99	71.90	79.68	89.91	53.10	9.6	
849.93	50.70	51.80	821.27	349.66	60.53	80.05	88.79	100.36	52.91	4.7	
863.72	53.00	51.20	829.79	358.18	67.28	88.54	98.26	111.20	52.77	5.1	
877.51	56.90	53.20	837.71	366.10	74.19	97.46	108.18	122.49	52.72	9.2	
891.22	60.10	52.70	844.87	373.26	81.24	106.79	118.52	134.17	52.74	7.1	
904.95	62.00	51.70	851.52	379.91	88.60	116.28	129.08	146.19	52.69	4.6	
918.66	64.50	52.60	857.69	386.08	96.11	125.95	139.83	158.43	52.65	5.7	
932.45	66.60	52.70	863.40	391.79	103.73	135.92	150.91	170.98	52.65	4.6	
946.12	67.40	56.20	868.74	397.13	111.04	146.16	162.20	183.56	52.78	7.3	
959.90	69.10	59.30	873.85	402.24	117.87	156.98	173.98	196.31	53.10	7.3	
973.61	70.40	63.00	878.59	406.98	124.07	168.25	186.10	209.05	53.59	8.1	
987.32	72.70	65.70	882.93	411.32	129.70	179.97	198.58	221.84	54.22	7.5	
1,001.07	74.00	68.40	886.87	415.26	134.83	192.10	211.38	234.70	54.94	6.3	
1,014.82	73.50	70.70	890.72	419.11	139.44	204.47	224.33	247.49	55.71	4.9	
1,028.57	73.00	73.00	894.68	423.07	143.55	216.98	237.34	260.16	56.51	4.9	
1,042.32	74.70	76.60	898.51	426.90	147.01	229.72	250.48	272.73	57.38	8.4	
1,056.07	75.80	80.20	902.01	430.40	149.68	242.74	263.76	285.18	58.34	8.0	
1,069.82	77.20	82.40	905.22	433.61	151.70	255.96	277.13	297.54	59.35	5.6	
1,083.57	79.10	84.50	908.04	436.43	153.23	269.33	290.57	309.87	60.36	6.1	
1,097.32	82.00	84.30	910.30	438.69	154.56	282.82	304.10	322.30	61.34	6.3	
1,111.07	85.90	86.30	911.75	440.14	155.68	296.45	317.73	334.84	62.29	9.6	
1,124.82	88.60	90.00	912.41	440.80	156.12	310.17	331.34	347.25	63.28	10.0	
1,138.57	88.30	93.70	912.78	441.17	155.68	323.91	344.82	359.38	64.33	8.1	
1,152.32	89.00	92.50	913.11	441.50	154.93	337.63	358.25	371.48	65.35	3.0	
1,166.07	89.30	90.90	913.31	441.70	154.53	351.37	371.74	383.85	66.26	3.6	
1,180.00	89.80	90.80	913.42	441.81	154.32	365.30	385.46	396.56	67.10	1.1	Actual ICP
1,193.61	90.30	89.80	913.41	441.80	154.25	378.91	398.87	409.10	67.85	2.5	
1,207.36	89.70	89.60	913.41	441.80	154.32	392.66	412.45	421.90	68.54	1.4	

Cathedral Energy Services

Survey Report

Company:	Penn West Petroleum Ltd.	Local Co-ordinate Reference:	Well 1D-2-2-26W1
Project:	Waskada	TVD Reference:	(3C-2) 1D-2 Actual KBE @ 471.61m (Precision #2
Site:	Penn west Waskada Unit No.5 Hzntrl (3C-2)	MD Reference:	(3C-2) 1D-2 Actual KBE @ 471.61m (Precision #2
Well:	1D-2-2-26W1	North Reference:	True
Wellbore:	H2	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys	Database:	EDM R5000 CATHEDRAL Multi Users

Survey

Measured Depth (m)	Inc. (°)	Az. (°)	Vertical Depth (m)	Sub Sea Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Closure Distance (m)	Closure Azimuth (°)	Dogleg Rate (°/30m)	Formations / Comments
1,221.11	89.30	89.40	913.53	441.92	154.44	406.41	426.04	434.77	69.19	1.0	
1,234.86	89.50	89.30	913.67	442.06	154.60	420.16	439.63	447.70	69.80	0.5	
1,248.61	89.00	87.10	913.85	442.24	155.03	433.90	453.26	460.76	70.34	4.9	
1,262.38	88.70	88.00	914.13	442.52	155.62	447.66	466.93	473.93	70.83	2.1	
1,276.15	89.30	87.70	914.37	442.76	156.13	461.41	480.59	487.11	71.31	1.5	
1,289.96	89.70	89.00	914.49	442.88	156.53	475.22	494.28	500.33	71.77	3.0	
1,303.77	90.40	88.50	914.48	442.87	156.83	489.02	507.95	513.56	72.22	1.9	
1,317.52	90.40	90.40	914.38	442.77	156.96	502.77	521.54	526.70	72.66	4.1	
1,331.29	90.30	90.00	914.30	442.69	156.91	516.54	535.12	539.85	73.10	0.9	
1,345.04	90.40	91.10	914.21	442.60	156.78	530.29	548.67	552.98	73.53	2.4	
1,358.81	90.20	91.20	914.14	442.53	156.51	544.06	562.21	566.12	73.95	0.5	
1,372.59	91.30	91.60	913.96	442.35	156.17	557.83	575.75	579.28	74.36	2.5	
1,386.36	91.70	90.20	913.60	441.99	155.95	571.59	589.29	592.49	74.74	3.2	
1,400.11	90.80	90.70	913.30	441.69	155.85	585.34	602.84	605.73	75.09	2.2	
1,413.86	89.70	90.20	913.24	441.63	155.74	599.09	616.39	619.00	75.43	2.6	
1,427.61	89.90	88.90	913.29	441.68	155.85	612.84	629.98	632.34	75.73	2.9	
1,441.39	89.90	88.60	913.31	441.70	156.15	626.62	643.62	645.78	76.01	0.7	
1,455.14	89.20	88.00	913.42	441.81	156.55	640.36	657.25	659.22	76.26	2.0	
1,468.89	88.60	89.80	913.68	442.07	156.82	654.10	670.86	672.64	76.52	4.1	
1,482.64	89.50	88.90	913.91	442.30	156.97	667.85	684.45	686.05	76.77	2.8	
1,496.42	89.50	89.30	914.03	442.42	157.19	681.63	698.08	699.52	77.01	0.9	
1,510.20	90.00	89.40	914.09	442.48	157.35	695.41	711.70	712.99	77.25	1.1	
1,523.95	90.00	88.80	914.09	442.48	157.56	709.16	725.30	726.45	77.47	1.3	
1,537.75	90.10	90.40	914.08	442.47	157.66	722.95	738.94	739.95	77.70	3.5	
1,551.54	90.40	88.90	914.02	442.41	157.74	736.74	752.56	753.44	77.91	3.3	
1,565.28	89.70	90.30	914.01	442.40	157.84	750.48	766.13	766.90	78.12	3.4	
1,579.03	91.10	88.70	913.91	442.30	157.96	764.23	779.72	780.39	78.32	4.6	
1,592.82	91.90	87.20	913.55	441.94	158.45	778.01	793.39	793.98	78.49	3.7	
1,606.59	89.80	89.60	913.35	441.74	158.84	791.77	807.04	807.54	78.66	6.9	
1,620.36	90.30	88.90	913.34	441.73	159.02	805.54	820.65	821.08	78.83	1.9	
1,634.15	90.30	88.20	913.26	441.65	159.37	819.32	834.31	834.68	78.99	1.5	
1,647.95	90.00	90.20	913.23	441.62	159.56	833.12	847.96	848.26	79.16	4.4	
1,661.75	89.80	91.20	913.25	441.64	159.39	846.92	861.55	861.79	79.34	2.2	
1,675.52	90.90	89.60	913.17	441.56	159.29	860.69	875.12	875.31	79.51	4.2	
1,689.29	90.90	91.10	912.95	441.34	159.21	874.46	888.69	888.83	79.68	3.3	
1,703.03	90.90	89.40	912.74	441.13	159.15	888.19	902.24	902.34	79.84	3.7	
1,716.83	90.50	89.00	912.57	440.96	159.34	901.99	915.89	915.96	79.98	1.2	
1,730.57	90.50	89.80	912.45	440.84	159.49	915.73	929.47	929.51	80.12	1.7	
1,744.34	90.00	90.30	912.39	440.78	159.47	929.50	943.05	943.08	80.26	1.5	
1,758.08	89.70	90.50	912.42	440.81	159.38	943.24	956.60	956.61	80.41	0.8	
1,768.00	89.60	90.50	912.48	440.87	159.29	953.16	966.37	966.38	80.51	0.3	Last Survey @ 1768m MD
1,781.00	89.60	90.50	912.57	440.96	159.18	966.16	979.18	979.18	80.64	0.0	Ext. to TD @ 1781m M

Cathedral Energy Services

Survey Report

Company:	Penn West Petroleum Ltd.	Local Co-ordinate Reference:	Well 1D-2-2-26W1
Project:	Waskada	TVD Reference:	(3C-2) 1D-2 Actual KBE @ 471.61m (Precision #2
Site:	Penn west Waskada Unit No.5 Hzntrl (3C-2)	MD Reference:	(3C-2) 1D-2 Actual KBE @ 471.61m (Precision #2
Well:	1D-2-2-26W1	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys	Database:	EDM R5000 CATHEDRAL Multi Users

Survey

Measured Depth (m)	Inc. (°)	Az. (°)	Vertical Depth (m)	Sub Sea Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Closure Distance (m)	Closure Azimuth (°)	Dogleg Rate (°/30m)	Formations / Comments
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Targets

Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (m)	+N/-S (m)	+E/-W (m)	Northing (m)	Easting (m)	Latitude	Longitude
(3C-2) 1D-2 BHL	- survey misses target center by 3.09m at 1781.00m MD (912.57 TVD, 159.18 N, 966.16 E)	0.00	0.00	909.61	158.46	966.65	5,439,322.22	365,044.11	49° 5' 30.99 N	100° 50' 54.81 W
(3C-2) 1D-2 Landing F	- survey misses target center by 4.49m at 1141.07m MD (912.85 TVD, 155.52 N, 326.41 E)	0.00	0.00	909.61	158.62	326.65	5,439,338.10	364,404.31	49° 5' 31.00 N	100° 51' 26.36 W
Penn West (3B-2) W/I	- survey misses target center by 74.98m at 1.61m MD (1.61 TVD, 0.00 N, 0.00 E)	0.00	0.00	1.61	-74.97	0.33	5,439,112.59	364,072.35	49° 5' 23.44 N	100° 51' 42.45 W

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (mm)	Hole Diameter (mm)
252.00	252.00	Actual Sfc. Casing		
1,180.00	913.42	Actual ICP		

Survey Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates	Comment
602.00	601.94	4.54	Actual KOP @ 602m MD
1,768.00	912.48	159.29	Last Survey @ 1768m MD
1,781.00	912.57	159.18	Ext. to TD @ 1781m M

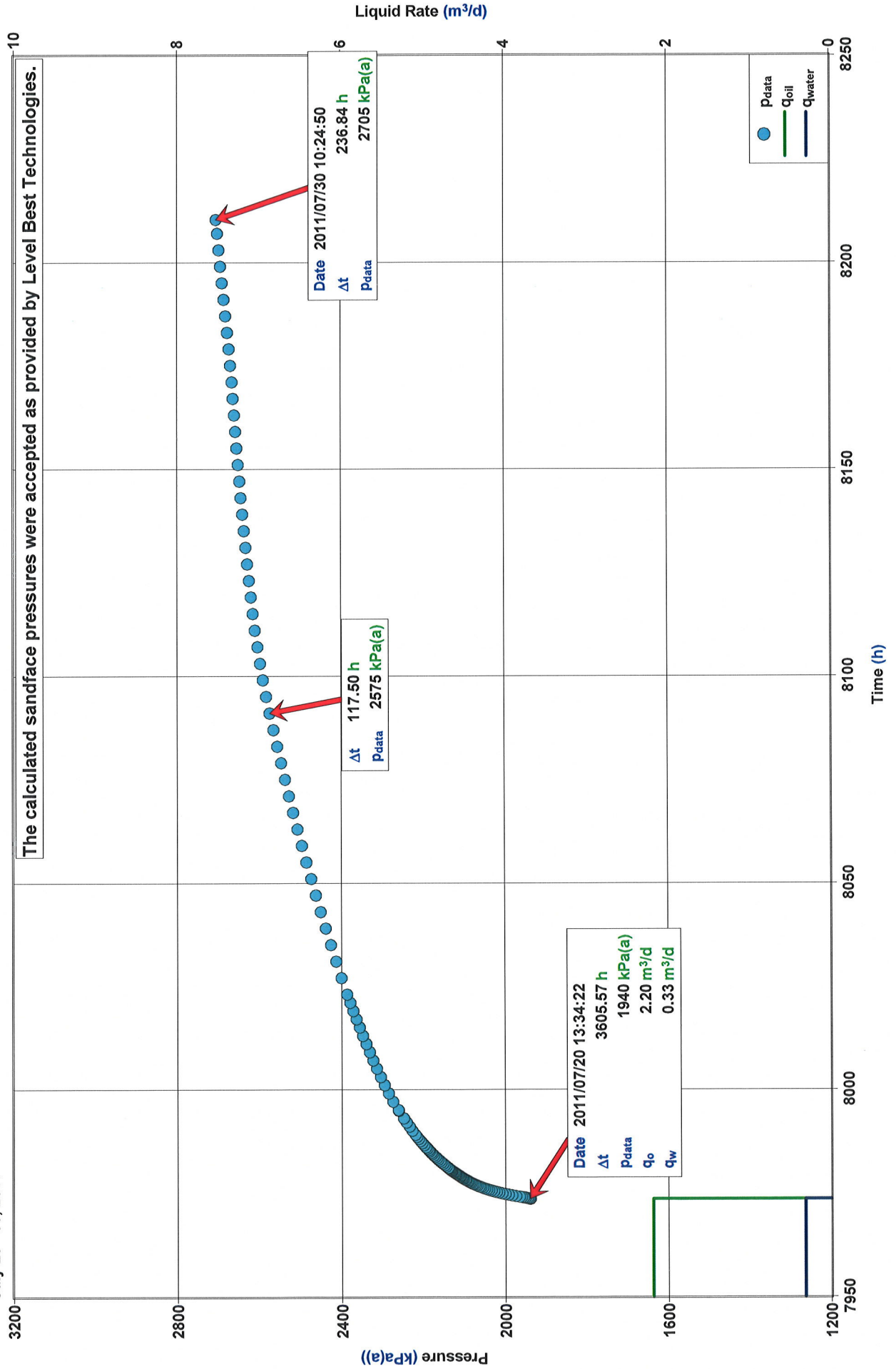
Checked By: _____ Approved By: _____ Date: _____

Diagnostics

PENN WEST WASKADA UNIT NO. 5 HZNTL
 103/01-02-002-26W1/00
 Lower Amaranth: 1180.0 - 1763.3 mKB MD
 July 20 - 30, 2011

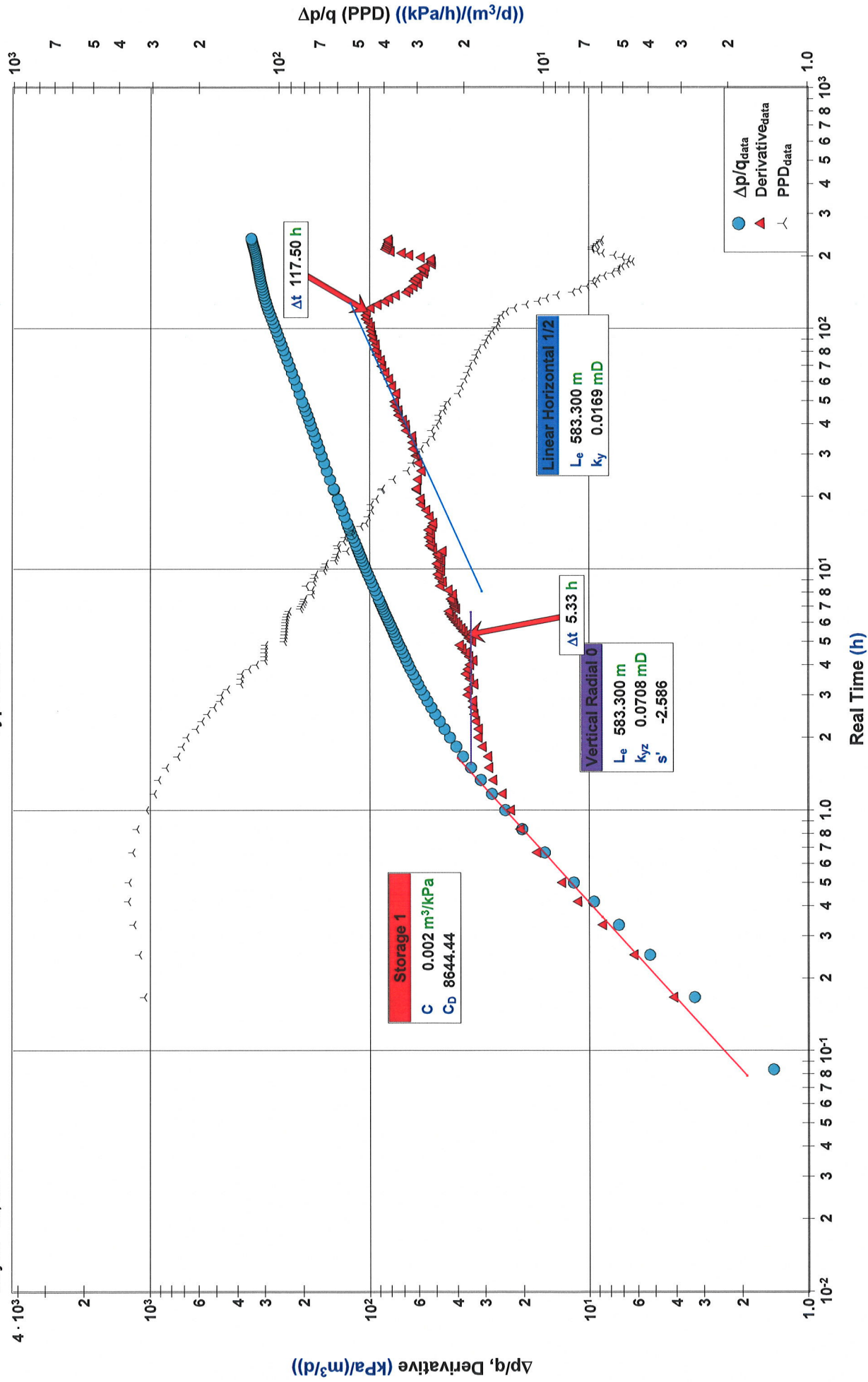
Diagnostic Analysis Total Test

The calculated sandface pressures were accepted as provided by Level Best Technologies.



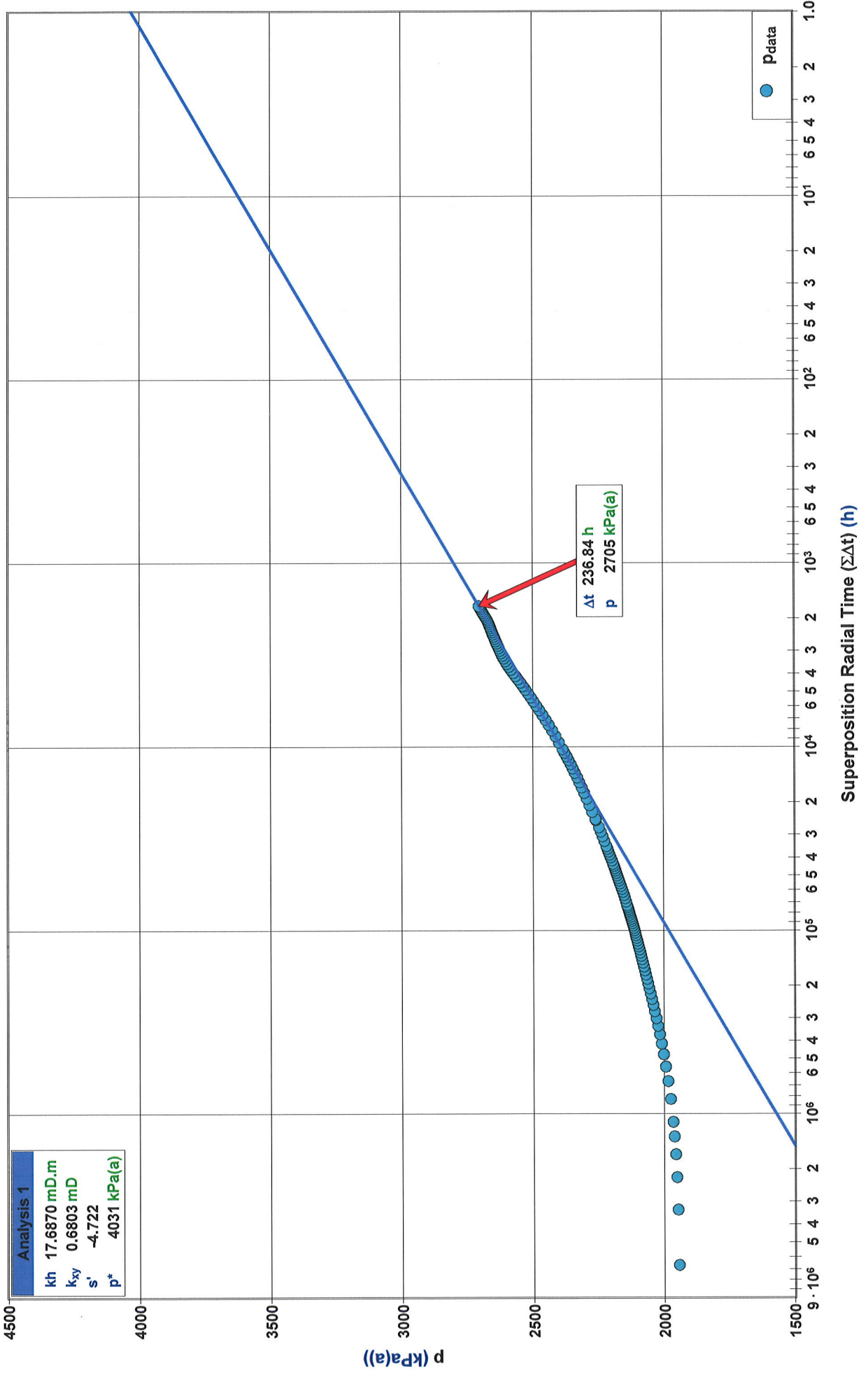
PENN WEST WASKADA UNIT NO. 5 HZNTL
 103/01-02-002-26W1/00
 Lower Amaranth: 1180.0 - 1763.3 mKB MD
 July 20 - 30, 2011

Diagnostic Analysis Typecurve



PENN WEST WASKADA UNIT NO. 5 HZNTL
 103/01-02-002-26W1/00
 Lower Amaranth: 1180.0 - 1763.3 mKB MD
 July 20 - 30, 2011

Diagnostic Analysis Radial



Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Calculated Sandface Pressure	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	m ³ /d	m ³ /d
1	2010/08/22 08:00:00	0.0000	0.0000		0.0	0.0
2	2010/08/23 08:00:00	24.0000	24.0000		2.5	38.0
3	2010/08/24 08:00:00	48.0000	48.0000		18.3	9.8
4	2010/08/25 08:00:00	72.0000	72.0000		18.1	8.1
5	2010/08/26 08:00:00	96.0000	96.0000		11.1	16.0
6	2010/08/27 08:00:00	120.0000	120.0000		12.7	31.0
7	2010/08/28 08:00:00	144.0000	144.0000		20.6	19.9
8	2010/08/29 08:00:00	168.0000	168.0000		22.3	18.7
9	2010/08/30 08:00:00	192.0000	192.0000		22.4	17.7
10	2010/08/31 08:00:00	216.0000	216.0000		18.3	11.6
11	2010/09/01 08:00:00	240.0000	240.0000		19.0	9.8
12	2010/09/02 08:00:00	264.0000	264.0000		18.7	11.3
13	2010/09/03 08:00:00	288.0000	288.0000		18.5	11.1
14	2010/09/04 08:00:00	312.0000	312.0000		19.6	11.8
15	2010/09/05 08:00:00	336.0000	336.0000		19.5	12.1
16	2010/09/06 08:00:00	360.0000	360.0000		19.1	12.1
17	2010/09/07 08:00:00	384.0000	384.0000		20.0	11.6
18	2010/09/08 08:00:00	408.0000	408.0000		18.4	10.4
19	2010/09/09 08:00:00	432.0000	432.0000		19.3	10.5
20	2010/09/10 08:00:00	456.0000	456.0000		15.1	11.6
21	2010/09/11 08:00:00	480.0000	480.0000		8.7	5.5
22	2010/09/12 08:00:00	504.0000	504.0000		18.7	11.4
23	2010/09/13 08:00:00	528.0000	528.0000		18.3	10.8
24	2010/09/14 08:00:00	552.0000	552.0000		18.5	5.1
25	2010/09/15 08:00:00	576.0000	576.0000		18.5	10.8
26	2010/09/16 08:00:00	600.0000	600.0000		18.3	10.0
27	2010/09/17 08:00:00	624.0000	624.0000		14.5	8.7
28	2010/09/18 08:00:00	648.0000	648.0000		0.0	0.0
29	2010/09/19 08:00:00	672.0000	672.0000		17.8	10.9
30	2010/09/20 08:00:00	696.0000	696.0000		17.1	10.4
31	2010/09/21 08:00:00	720.0000	720.0000		16.9	9.5
32	2010/09/22 08:00:00	744.0000	744.0000		16.6	10.6
33	2010/09/23 08:00:00	768.0000	768.0000		17.9	12.0
34	2010/09/24 08:00:00	792.0000	792.0000		18.5	11.8
35	2010/09/25 08:00:00	816.0000	816.0000		18.4	15.3
36	2010/09/26 08:00:00	840.0000	840.0000		18.3	10.1
37	2010/09/27 08:00:00	864.0000	864.0000		19.0	11.0
38	2010/09/28 08:00:00	888.0000	888.0000		18.3	9.8
39	2010/09/29 08:00:00	912.0000	912.0000		18.2	10.7
40	2010/09/30 08:00:00	936.0000	936.0000		6.1	4.7
41	2010/10/01 08:00:00	960.0000	960.0000		5.9	3.1
42	2010/10/02 08:00:00	984.0000	984.0000		5.2	1.3
43	2010/10/03 08:00:00	1008.0000	1008.0000		6.3	2.7
44	2010/10/04 08:00:00	1032.0000	1032.0000		6.9	4.3
45	2010/10/05 08:00:00	1056.0000	1056.0000		6.2	4.7
46	2010/10/06 08:00:00	1080.0000	1080.0000		6.0	4.7
47	2010/10/07 08:00:00	1104.0000	1104.0000		5.8	4.5
48	2010/10/08 08:00:00	1128.0000	1128.0000		5.8	2.6
49	2010/10/09 08:00:00	1152.0000	1152.0000		5.6	3.7
50	2010/10/10 08:00:00	1176.0000	1176.0000		6.1	4.8
51	2010/10/11 08:00:00	1200.0000	1200.0000		7.5	4.2
52	2010/10/12 08:00:00	1224.0000	1224.0000		6.0	4.6
53	2010/10/13 08:00:00	1248.0000	1248.0000		5.8	4.7
54	2010/10/14 08:00:00	1272.0000	1272.0000		5.8	3.0
55	2010/10/15 08:00:00	1296.0000	1296.0000		5.8	3.9
56	2010/10/16 08:00:00	1320.0000	1320.0000		6.4	4.8
57	2010/10/17 08:00:00	1344.0000	1344.0000		6.4	5.3
58	2010/10/18 08:00:00	1368.0000	1368.0000		0.0	0.0
59	2010/10/25 08:00:00	1536.0000	1536.0000		0.0	0.0
60	2010/10/26 08:00:00	1560.0000	1560.0000		4.1	3.2
61	2010/10/27 08:00:00	1584.0000	1584.0000		6.1	5.7
62	2010/10/28 08:00:00	1608.0000	1608.0000		6.0	5.5
63	2010/10/29 08:00:00	1632.0000	1632.0000		6.1	5.0
64	2010/10/30 08:00:00	1656.0000	1656.0000		6.1	4.7
65	2010/10/31 08:00:00	1680.0000	1680.0000		5.9	5.2
66	2010/11/01 08:00:00	1704.0000	1704.0000		5.5	5.8
67	2010/11/02 08:00:00	1728.0000	1728.0000		5.9	5.0
68	2010/11/03 08:00:00	1752.0000	1752.0000		6.0	5.0
69	2010/11/04 08:00:00	1776.0000	1776.0000		5.8	4.7
70	2010/11/05 08:00:00	1800.0000	1800.0000		6.0	4.9
71	2010/11/06 08:00:00	1824.0000	1824.0000		6.0	5.0
72	2010/11/07 08:00:00	1848.0000	1848.0000		6.0	4.7
73	2010/11/08 08:00:00	1872.0000	1872.0000		5.6	5.5
74	2010/11/09 08:00:00	1896.0000	1896.0000		5.8	4.8
75	2010/11/10 08:00:00	1920.0000	1920.0000		5.8	3.3
76	2010/11/11 08:00:00	1944.0000	1944.0000		5.8	4.6

PENN WEST WASKADA UNIT NO. 5 HZNTL
103/01-02-002-26W1/00
Lower Amaranth: 1180.0 - 1763.3 mKB MD
July 20 - 30, 2011

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Calculated Sandface Pressure	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	m ³ /d	m ³ /d
77	2010/11/12 08:00:00	1968.0000	1968.0000		11.9	5.3
78	2010/11/13 08:00:00	1992.0000	1992.0000		12.4	4.5
79	2010/11/14 08:00:00	2016.0000	2016.0000		12.0	4.0
80	2010/11/15 08:00:00	2040.0000	2040.0000		12.6	4.7
81	2010/11/16 08:00:00	2064.0000	2064.0000		12.9	4.6
82	2010/11/17 08:00:00	2088.0000	2088.0000		12.2	2.5
83	2010/11/18 08:00:00	2112.0000	2112.0000		12.1	3.9
84	2010/11/19 08:00:00	2136.0000	2136.0000		12.6	6.9
85	2010/11/20 08:00:00	2160.0000	2160.0000		12.0	6.2
86	2010/11/21 08:00:00	2184.0000	2184.0000		11.6	5.1
87	2010/11/22 08:00:00	2208.0000	2208.0000		12.0	5.7
88	2010/11/23 08:00:00	2232.0000	2232.0000		11.5	4.7
89	2010/11/24 08:00:00	2256.0000	2256.0000		12.3	4.1
90	2010/11/25 08:00:00	2280.0000	2280.0000		11.3	5.0
91	2010/11/26 08:00:00	2304.0000	2304.0000		7.5	3.2
92	2010/11/27 08:00:00	2328.0000	2328.0000		7.3	3.1
93	2010/11/28 08:00:00	2352.0000	2352.0000		7.2	3.0
94	2010/11/29 08:00:00	2376.0000	2376.0000		8.2	2.8
95	2010/11/30 08:00:00	2400.0000	2400.0000		9.1	3.1
96	2010/12/01 08:00:00	2424.0000	2424.0000		0.0	0.0
97	2010/12/02 08:00:00	2448.0000	2448.0000		4.6	1.7
98	2010/12/03 08:00:00	2472.0000	2472.0000		8.7	2.4
99	2010/12/04 08:00:00	2496.0000	2496.0000		8.6	2.7
100	2010/12/05 08:00:00	2520.0000	2520.0000		9.0	3.1
101	2010/12/06 08:00:00	2544.0000	2544.0000		8.2	2.6
102	2010/12/07 08:00:00	2568.0000	2568.0000		8.5	3.1
103	2010/12/08 08:00:00	2592.0000	2592.0000		8.2	3.0
104	2010/12/09 08:00:00	2616.0000	2616.0000		6.8	1.9
105	2010/12/10 08:00:00	2640.0000	2640.0000		8.8	1.8
106	2010/12/11 08:00:00	2664.0000	2664.0000		7.4	2.4
107	2010/12/12 08:00:00	2688.0000	2688.0000		7.9	2.1
108	2010/12/13 08:00:00	2712.0000	2712.0000		7.0	3.1
109	2010/12/14 08:00:00	2736.0000	2736.0000		7.0	3.1
110	2010/12/15 08:00:00	2760.0000	2760.0000		8.6	2.9
111	2010/12/16 08:00:00	2784.0000	2784.0000		7.7	3.0
112	2010/12/17 08:00:00	2808.0000	2808.0000		7.0	3.0
113	2010/12/18 08:00:00	2832.0000	2832.0000		8.8	3.3
114	2010/12/19 08:00:00	2856.0000	2856.0000		6.7	3.1
115	2010/12/20 08:00:00	2880.0000	2880.0000		8.0	3.1
116	2010/12/21 08:00:00	2904.0000	2904.0000		13.8	5.3
117	2010/12/22 08:00:00	2928.0000	2928.0000		11.4	6.0
118	2010/12/23 08:00:00	2952.0000	2952.0000		10.4	6.4
119	2010/12/24 08:00:00	2976.0000	2976.0000		10.6	5.7
120	2010/12/25 08:00:00	3000.0000	3000.0000		12.1	6.0
121	2010/12/26 08:00:00	3024.0000	3024.0000		10.9	5.6
122	2010/12/27 08:00:00	3048.0000	3048.0000		10.0	5.9
123	2010/12/28 08:00:00	3072.0000	3072.0000		11.4	5.9
124	2010/12/29 08:00:00	3096.0000	3096.0000		11.2	4.9
125	2010/12/30 08:00:00	3120.0000	3120.0000		9.1	5.5
126	2010/12/31 08:00:00	3144.0000	3144.0000		13.2	8.3
127	2011/01/01 08:00:00	3168.0000	3168.0000		12.1	8.0
128	2011/01/02 08:00:00	3192.0000	3192.0000		8.9	7.8
129	2011/01/03 08:00:00	3216.0000	3216.0000		10.4	9.0
130	2011/01/04 08:00:00	3240.0000	3240.0000		11.2	7.0
131	2011/01/05 08:00:00	3264.0000	3264.0000		12.3	4.7
132	2011/01/06 08:00:00	3288.0000	3288.0000		11.7	8.2
133	2011/01/07 08:00:00	3312.0000	3312.0000		14.1	8.6
134	2011/01/08 08:00:00	3336.0000	3336.0000		11.4	5.8
135	2011/01/09 08:00:00	3360.0000	3360.0000		0.0	0.0
136	2011/01/24 08:00:00	3720.0000	3720.0000		0.0	0.0
137	2011/01/25 08:00:00	3744.0000	3744.0000		15.9	7.8
138	2011/01/26 08:00:00	3768.0000	3768.0000		10.7	7.3
139	2011/01/27 08:00:00	3792.0000	3792.0000		11.4	6.7
140	2011/01/28 08:00:00	3816.0000	3816.0000		1.7	1.1
141	2011/01/29 08:00:00	3840.0000	3840.0000		15.0	5.7
142	2011/01/30 08:00:00	3864.0000	3864.0000		13.8	6.6
143	2011/01/31 08:00:00	3888.0000	3888.0000		12.9	6.8
144	2011/02/01 08:00:00	3912.0000	3912.0000		12.4	6.4
145	2011/02/02 08:00:00	3936.0000	3936.0000		11.9	4.9
146	2011/02/03 08:00:00	3960.0000	3960.0000		0.0	0.0
147	2011/02/04 08:00:00	3984.0000	3984.0000		0.0	0.0
148	2011/02/05 08:00:00	4008.0000	4008.0000		9.2	5.6
149	2011/02/06 08:00:00	4032.0000	4032.0000		12.9	6.6
150	2011/02/07 08:00:00	4056.0000	4056.0000		12.1	7.4
151	2011/02/08 08:00:00	4080.0000	4080.0000		11.5	9.8
152	2011/02/09 08:00:00	4104.0000	4104.0000		9.6	6.5

PENN WEST WASKADA UNIT NO. 5 HZNTL
103/01-02-002-26W1/00
Lower Amaranth: 1180.0 - 1763.3 mKB MD
July 20 - 30, 2011

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Calculated Sandface Pressure	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	m ³ /d	m ³ /d
153	2011/02/10 08:00:00	4128.0000	4128.0000		12.0	6.9
154	2011/02/11 08:00:00	4152.0000	4152.0000		10.1	8.7
155	2011/02/12 08:00:00	4176.0000	4176.0000		11.5	8.7
156	2011/02/13 08:00:00	4200.0000	4200.0000		13.2	3.9
157	2011/02/14 08:00:00	4224.0000	4224.0000		13.1	4.0
158	2011/02/15 08:00:00	4248.0000	4248.0000		13.7	4.2
159	2011/02/16 08:00:00	4272.0000	4272.0000		13.7	3.1
160	2011/02/17 08:00:00	4296.0000	4296.0000		13.3	3.3
161	2011/02/18 08:00:00	4320.0000	4320.0000		14.3	3.5
162	2011/02/19 08:00:00	4344.0000	4344.0000		6.4	1.5
163	2011/02/20 08:00:00	4368.0000	4368.0000		0.0	0.0
164	2011/02/21 08:00:00	4392.0000	4392.0000		13.2	3.5
165	2011/02/22 08:00:00	4416.0000	4416.0000		13.0	4.6
166	2011/02/23 08:00:00	4440.0000	4440.0000		13.0	4.3
167	2011/02/24 08:00:00	4464.0000	4464.0000		12.7	3.3
168	2011/02/25 08:00:00	4488.0000	4488.0000		12.5	3.8
169	2011/02/26 08:00:00	4512.0000	4512.0000		8.6	4.0
170	2011/02/27 08:00:00	4536.0000	4536.0000		8.6	3.5
171	2011/02/28 08:00:00	4560.0000	4560.0000		8.7	2.8
172	2011/03/01 08:00:00	4584.0000	4584.0000		9.7	3.2
173	2011/03/02 08:00:00	4608.0000	4608.0000		8.7	3.2
174	2011/03/03 08:00:00	4632.0000	4632.0000		9.2	3.5
175	2011/03/04 08:00:00	4656.0000	4656.0000		10.3	4.5
176	2011/03/05 08:00:00	4680.0000	4680.0000		10.4	5.4
177	2011/03/06 08:00:00	4704.0000	4704.0000		11.2	5.5
178	2011/03/07 08:00:00	4728.0000	4728.0000		10.4	5.0
179	2011/03/08 08:00:00	4752.0000	4752.0000		10.2	4.3
180	2011/03/09 08:00:00	4776.0000	4776.0000		10.1	4.9
181	2011/03/10 08:00:00	4800.0000	4800.0000		9.7	5.1
182	2011/03/11 08:00:00	4824.0000	4824.0000		10.2	5.8
183	2011/03/12 08:00:00	4848.0000	4848.0000		10.1	4.2
184	2011/03/13 08:00:00	4872.0000	4872.0000		9.5	4.9
185	2011/03/14 08:00:00	4896.0000	4896.0000		9.3	4.4
186	2011/03/15 08:00:00	4920.0000	4920.0000		9.7	4.2
187	2011/03/16 08:00:00	4944.0000	4944.0000		6.6	3.0
188	2011/03/17 08:00:00	4968.0000	4968.0000		7.5	5.2
189	2011/03/18 08:00:00	4992.0000	4992.0000		10.1	4.7
190	2011/03/19 08:00:00	5016.0000	5016.0000		9.4	4.3
191	2011/03/20 08:00:00	5040.0000	5040.0000		10.3	4.9
192	2011/03/21 08:00:00	5064.0000	5064.0000		9.0	4.7
193	2011/03/22 08:00:00	5088.0000	5088.0000		8.5	4.0
194	2011/03/23 08:00:00	5112.0000	5112.0000		10.6	4.5
195	2011/03/24 08:00:00	5136.0000	5136.0000		9.9	3.6
196	2011/03/25 08:00:00	5160.0000	5160.0000		4.3	1.5
197	2011/03/26 08:00:00	5184.0000	5184.0000		2.6	1.3
198	2011/03/27 08:00:00	5208.0000	5208.0000		3.8	1.9
199	2011/03/28 08:00:00	5232.0000	5232.0000		3.4	2.0
200	2011/03/29 08:00:00	5256.0000	5256.0000		4.3	2.3
201	2011/03/30 08:00:00	5280.0000	5280.0000		5.1	1.8
202	2011/03/31 08:00:00	5304.0000	5304.0000		4.2	2.2
203	2011/04/01 08:00:00	5328.0000	5328.0000		5.1	2.0
204	2011/04/02 08:00:00	5352.0000	5352.0000		3.9	2.0
205	2011/04/03 08:00:00	5376.0000	5376.0000		4.6	2.4
206	2011/04/04 08:00:00	5400.0000	5400.0000		4.0	1.4
207	2011/04/05 08:00:00	5424.0000	5424.0000		3.5	1.7
208	2011/04/06 08:00:00	5448.0000	5448.0000		3.9	1.4
209	2011/04/07 08:00:00	5472.0000	5472.0000		4.6	0.5
210	2011/04/08 08:00:00	5496.0000	5496.0000		3.8	1.3
211	2011/04/09 08:00:00	5520.0000	5520.0000		3.6	1.7
212	2011/04/10 08:00:00	5544.0000	5544.0000		3.8	1.7
213	2011/04/11 08:00:00	5568.0000	5568.0000		3.2	1.5
214	2011/04/12 08:00:00	5592.0000	5592.0000		3.0	1.5
215	2011/04/13 08:00:00	5616.0000	5616.0000		3.6	1.4
216	2011/04/14 08:00:00	5640.0000	5640.0000		3.2	1.5
217	2011/04/15 08:00:00	5664.0000	5664.0000		3.6	2.1
218	2011/04/16 08:00:00	5688.0000	5688.0000		3.6	1.6
219	2011/04/17 08:00:00	5712.0000	5712.0000		3.4	1.6
220	2011/04/18 08:00:00	5736.0000	5736.0000		3.6	1.6
221	2011/04/19 08:00:00	5760.0000	5760.0000		4.0	1.5
222	2011/04/20 08:00:00	5784.0000	5784.0000		3.3	1.6
223	2011/04/21 08:00:00	5808.0000	5808.0000		3.8	1.5
224	2011/04/22 08:00:00	5832.0000	5832.0000		3.0	1.4
225	2011/04/23 08:00:00	5856.0000	5856.0000		4.0	1.7
226	2011/04/24 08:00:00	5880.0000	5880.0000		3.4	1.5
227	2011/04/25 08:00:00	5904.0000	5904.0000		2.8	1.6
228	2011/04/26 08:00:00	5928.0000	5928.0000		3.3	1.5

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Calculated Sandface Pressure	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	m ³ /d	m ³ /d
229	2011/04/27 08:00:00	5952.0000	5952.0000		3.6	1.5
230	2011/04/28 08:00:00	5976.0000	5976.0000		3.2	1.5
231	2011/04/29 08:00:00	6000.0000	6000.0000		2.9	1.4
232	2011/04/30 08:00:00	6024.0000	6024.0000		2.4	1.2
233	2011/05/01 08:00:00	6048.0000	6048.0000		2.9	1.4
234	2011/05/02 08:00:00	6072.0000	6072.0000		2.7	1.3
235	2011/05/03 08:00:00	6096.0000	6096.0000		2.7	1.5
236	2011/05/04 08:00:00	6120.0000	6120.0000		3.7	0.7
237	2011/05/05 08:00:00	6144.0000	6144.0000		3.6	0.8
238	2011/05/06 08:00:00	6168.0000	6168.0000		3.7	0.7
239	2011/05/07 08:00:00	6192.0000	6192.0000		3.5	0.7
240	2011/05/08 08:00:00	6216.0000	6216.0000		3.7	0.7
241	2011/05/09 08:00:00	6240.0000	6240.0000		3.7	0.7
242	2011/05/10 08:00:00	6264.0000	6264.0000		3.5	0.8
243	2011/05/11 08:00:00	6288.0000	6288.0000		3.6	0.7
244	2011/05/12 08:00:00	6312.0000	6312.0000		3.7	0.7
245	2011/05/13 08:00:00	6336.0000	6336.0000		3.6	0.7
246	2011/05/14 08:00:00	6360.0000	6360.0000		3.6	0.7
247	2011/05/15 08:00:00	6384.0000	6384.0000		3.4	1.0
248	2011/05/16 08:00:00	6408.0000	6408.0000		3.4	1.0
249	2011/05/17 08:00:00	6432.0000	6432.0000		3.3	1.1
250	2011/05/18 08:00:00	6456.0000	6456.0000		3.5	1.1
251	2011/05/19 08:00:00	6480.0000	6480.0000		3.3	1.0
252	2011/05/20 08:00:00	6504.0000	6504.0000		3.4	1.1
253	2011/05/21 08:00:00	6528.0000	6528.0000		3.5	1.1
254	2011/05/22 08:00:00	6552.0000	6552.0000		3.5	1.1
255	2011/05/23 08:00:00	6576.0000	6576.0000		3.5	1.2
256	2011/05/24 08:00:00	6600.0000	6600.0000		3.4	1.1
257	2011/05/25 08:00:00	6624.0000	6624.0000		3.4	1.1
258	2011/05/26 08:00:00	6648.0000	6648.0000		3.3	1.1
259	2011/05/27 08:00:00	6672.0000	6672.0000		3.3	1.1
260	2011/05/28 08:00:00	6696.0000	6696.0000		3.1	1.1
261	2011/05/29 08:00:00	6720.0000	6720.0000		3.1	1.1
262	2011/05/30 08:00:00	6744.0000	6744.0000		3.5	1.2
263	2011/05/31 08:00:00	6768.0000	6768.0000		3.4	1.0
264	2011/06/01 08:00:00	6792.0000	6792.0000		3.3	1.2
265	2011/06/02 08:00:00	6816.0000	6816.0000		3.4	1.1
266	2011/06/03 08:00:00	6840.0000	6840.0000		3.4	1.1
267	2011/06/04 08:00:00	6864.0000	6864.0000		3.4	1.2
268	2011/06/05 08:00:00	6888.0000	6888.0000		3.1	1.1
269	2011/06/06 08:00:00	6912.0000	6912.0000		3.2	1.0
270	2011/06/07 08:00:00	6936.0000	6936.0000		3.1	1.1
271	2011/06/08 08:00:00	6960.0000	6960.0000		3.5	1.1
272	2011/06/09 08:00:00	6984.0000	6984.0000		3.2	1.1
273	2011/06/10 08:00:00	7008.0000	7008.0000		3.2	1.2
274	2011/06/11 08:00:00	7032.0000	7032.0000		3.4	1.2
275	2011/06/12 08:00:00	7056.0000	7056.0000		3.4	1.2
276	2011/06/13 08:00:00	7080.0000	7080.0000		3.5	1.3
277	2011/06/14 08:00:00	7104.0000	7104.0000		3.5	1.1
278	2011/06/15 08:00:00	7128.0000	7128.0000		3.4	1.1
279	2011/06/16 08:00:00	7152.0000	7152.0000		3.4	1.0
280	2011/06/17 08:00:00	7176.0000	7176.0000		3.1	1.0
281	2011/06/18 08:00:00	7200.0000	7200.0000		3.1	1.1
282	2011/06/19 08:00:00	7224.0000	7224.0000		2.5	1.3
283	2011/06/20 08:00:00	7248.0000	7248.0000		3.5	1.1
284	2011/06/21 08:00:00	7272.0000	7272.0000		3.3	1.0
285	2011/06/22 08:00:00	7296.0000	7296.0000		3.4	1.2
286	2011/06/23 08:00:00	7320.0000	7320.0000		3.4	1.1
287	2011/06/24 08:00:00	7344.0000	7344.0000		3.4	1.1
288	2011/06/25 08:00:00	7368.0000	7368.0000		3.5	1.1
289	2011/06/26 08:00:00	7392.0000	7392.0000		3.5	1.1
290	2011/06/27 08:00:00	7416.0000	7416.0000		3.6	1.1
291	2011/06/28 08:00:00	7440.0000	7440.0000		2.1	0.4
292	2011/06/29 08:00:00	7464.0000	7464.0000		2.1	0.3
293	2011/06/30 08:00:00	7488.0000	7488.0000		2.2	0.3
294	2011/07/01 08:00:00	7512.0000	7512.0000		2.3	0.4
295	2011/07/02 08:00:00	7536.0000	7536.0000		2.2	0.4
296	2011/07/03 08:00:00	7560.0000	7560.0000		2.1	0.4
297	2011/07/04 08:00:00	7584.0000	7584.0000		2.1	0.4
298	2011/07/05 08:00:00	7608.0000	7608.0000		2.5	0.5
299	2011/07/06 08:00:00	7632.0000	7632.0000		2.1	0.4
300	2011/07/07 08:00:00	7656.0000	7656.0000		2.2	0.4
301	2011/07/08 08:00:00	7680.0000	7680.0000		2.3	1.2
302	2011/07/09 08:00:00	7704.0000	7704.0000		2.3	1.3
303	2011/07/10 08:00:00	7728.0000	7728.0000		2.1	1.0
304	2011/07/11 08:00:00	7752.0000	7752.0000		2.2	1.3

PENN WEST WASKADA UNIT NO. 5 HZNTL
103/01-02-002-26W1/00
Lower Amaranth: 1180.0 - 1763.3 mKB MD
July 20 - 30, 2011

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Calculated Sandface Pressure	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	m ³ /d	m ³ /d
305	2011/07/12 08:00:00	7776.0000	7776.0000		2.1	1.2
306	2011/07/13 08:00:00	7800.0000	7800.0000		2.3	1.1
307	2011/07/14 08:00:00	7824.0000	7824.0000		2.1	1.2
308	2011/07/15 08:00:00	7848.0000	7848.0000		2.2	1.1
309	2011/07/16 08:00:00	7872.0000	7872.0000		2.3	1.2
310	2011/07/17 08:00:00	7896.0000	7896.0000		2.2	1.0
311	2011/07/18 08:00:00	7920.0000	7920.0000		2.2	0.9
312	2011/07/19 08:00:00	7944.0000	7944.0000		2.3	1.0
313	2011/07/20 08:00:00	7968.0000	7968.0000		2.2	0.3
314	2011/07/20 13:34:22	7973.5728	7973.5728	1939.56	2.2	0.3
315	2011/07/20 13:39:22	7973.6561	7973.6561	1942.72	0.0	0.0
316	2011/07/20 13:44:22	7973.7394	7973.7394	1946.83		
317	2011/07/20 13:49:22	7973.8228	7973.8228	1951.19		
318	2011/07/20 13:54:22	7973.9061	7973.9061	1955.69		
319	2011/07/20 13:59:22	7973.9894	7973.9894	1960.49		
320	2011/07/20 14:04:22	7974.0728	7974.0728	1965.43		
321	2011/07/20 14:14:22	7974.2394	7974.2394	1974.74		
322	2011/07/20 14:24:22	7974.4061	7974.4061	1984.20		
323	2011/07/20 14:34:22	7974.5728	7974.5728	1992.85		
324	2011/07/20 14:44:22	7974.7394	7974.7394	2000.88		
325	2011/07/20 14:54:22	7974.9061	7974.9061	2008.44		
326	2011/07/20 15:04:22	7975.0728	7975.0728	2015.89		
327	2011/07/20 15:14:22	7975.2394	7975.2394	2022.46		
328	2011/07/20 15:24:22	7975.4061	7975.4061	2028.60		
329	2011/07/20 15:34:22	7975.5728	7975.5728	2034.69		
330	2011/07/20 15:44:22	7975.7394	7975.7394	2040.34		
331	2011/07/20 15:54:22	7975.9061	7975.9061	2045.51		
332	2011/07/20 16:04:22	7976.0728	7976.0728	2050.65		
333	2011/07/20 16:14:22	7976.2394	7976.2394	2055.31		
334	2011/07/20 16:24:22	7976.4061	7976.4061	2059.94		
335	2011/07/20 16:34:22	7976.5728	7976.5728	2064.10		
336	2011/07/20 16:44:22	7976.7394	7976.7394	2068.67		
337	2011/07/20 16:54:22	7976.9061	7976.9061	2072.36		
338	2011/07/20 17:04:22	7977.0728	7977.0728	2076.03		
339	2011/07/20 17:14:22	7977.2394	7977.2394	2079.70		
340	2011/07/20 17:24:22	7977.4061	7977.4061	2083.34		
341	2011/07/20 17:34:22	7977.5728	7977.5728	2086.56		
342	2011/07/20 17:44:22	7977.7394	7977.7394	2089.76		
343	2011/07/20 17:54:22	7977.9061	7977.9061	2092.53		
344	2011/07/20 18:04:22	7978.0728	7978.0728	2095.72		
345	2011/07/20 18:14:22	7978.2394	7978.2394	2098.49		
346	2011/07/20 18:24:22	7978.4061	7978.4061	2101.67		
347	2011/07/20 18:34:22	7978.5728	7978.5728	2104.42		
348	2011/07/20 18:44:22	7978.7394	7978.7394	2106.72		
349	2011/07/20 18:54:22	7978.9061	7978.9061	2109.45		
350	2011/07/20 19:04:22	7979.0728	7979.0728	2111.73		
351	2011/07/20 19:14:22	7979.2394	7979.2394	2114.45		
352	2011/07/20 19:24:22	7979.4061	7979.4061	2116.72		
353	2011/07/20 19:34:22	7979.5728	7979.5728	2119.43		
354	2011/07/20 19:44:22	7979.7394	7979.7394	2121.70		
355	2011/07/20 19:54:22	7979.9061	7979.9061	2124.39		
356	2011/07/20 20:04:22	7980.0728	7980.0728	2126.64		
357	2011/07/20 20:14:22	7980.2394	7980.2394	2129.29		
358	2011/07/20 20:24:22	7980.4061	7980.4061	2131.48		
359	2011/07/20 20:34:22	7980.5728	7980.5728	2133.67		
360	2011/07/20 20:44:22	7980.7394	7980.7394	2135.82		
361	2011/07/20 20:54:22	7980.9061	7980.9061	2137.94		
362	2011/07/20 21:04:22	7981.0728	7981.0728	2140.06		
363	2011/07/20 21:14:22	7981.2394	7981.2394	2142.18		
364	2011/07/20 21:24:22	7981.4061	7981.4061	2144.25		
365	2011/07/20 21:34:22	7981.5728	7981.5728	2146.33		
366	2011/07/20 21:44:22	7981.7394	7981.7394	2148.41		
367	2011/07/20 21:54:22	7981.9061	7981.9061	2150.49		
368	2011/07/20 22:04:22	7982.0728	7982.0728	2152.56		
369	2011/07/20 22:14:22	7982.2394	7982.2394	2154.64		
370	2011/07/20 22:24:22	7982.4061	7982.4061	2156.72		
371	2011/07/20 22:34:22	7982.5728	7982.5728	2158.80		
372	2011/07/20 22:44:22	7982.7394	7982.7394	2160.88		
373	2011/07/20 22:54:22	7982.9061	7982.9061	2162.96		
374	2011/07/20 23:04:22	7983.0728	7983.0728	2165.04		
375	2011/07/20 23:14:22	7983.2394	7983.2394	2167.12		
376	2011/07/20 23:24:22	7983.4061	7983.4061	2169.20		
377	2011/07/20 23:34:22	7983.5728	7983.5728	2171.28		
378	2011/07/20 23:44:22	7983.7394	7983.7394	2173.36		
379	2011/07/20 23:54:22	7983.9061	7983.9061	2175.44		
380	2011/07/21 00:04:22	7984.0728	7984.0728	2177.52		
381	2011/07/21 00:14:22	7984.2394	7984.2394	2179.60		
382	2011/07/21 00:24:22	7984.4061	7984.4061	2181.68		
383	2011/07/21 00:34:22	7984.5728	7984.5728	2183.76		
384	2011/07/21 00:44:22	7984.7394	7984.7394	2185.84		
385	2011/07/21 00:54:22	7984.9061	7984.9061	2187.92		
386	2011/07/21 01:04:22	7985.0728	7985.0728	2190.00		
387	2011/07/21 01:14:22	7985.2394	7985.2394	2192.08		
388	2011/07/21 01:24:22	7985.4061	7985.4061	2194.16		
389	2011/07/21 01:34:22	7985.5728	7985.5728	2196.24		
390	2011/07/21 01:44:22	7985.7394	7985.7394	2198.32		
391	2011/07/21 01:54:22	7985.9061	7985.9061	2200.40		
392	2011/07/21 02:04:22	7986.0728	7986.0728	2202.48		
393	2011/07/21 02:14:22	7986.2394	7986.2394	2204.56		
394	2011/07/21 02:24:22	7986.4061	7986.4061	2206.64		
395	2011/07/21 02:34:22	7986.5728	7986.5728	2208.72		
396	2011/07/21 02:44:22	7986.7394	7986.7394	2210.80		
397	2011/07/21 02:54:22	7986.9061	7986.9061	2212.88		
398	2011/07/21 03:04:22	7987.0728	7987.0728	2214.96		
399	2011/07/21 03:14:22	7987.2394	7987.2394	2217.04		
400	2011/07/21 03:24:22	7987.4061	7987.4061	2219.12		
401	2011/07/21 03:34:22	7987.5728	7987.5728	2221.20		

PENN WEST WASKADA UNIT NO. 5 HZNTL
103/01-02-002-26W1/00
Lower Amaranth: 1180.0 - 1763.3 mKB MD
July 20 - 30, 2011

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Calculated Sandface Pressure	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	m ³ /d	m ³ /d
381	2011/07/21 04:04:22	7988.0728	7988.0728	2211.37		
382	2011/07/21 04:34:22	7988.5728	7988.5728	2215.51		
383	2011/07/21 05:04:22	7989.0728	7989.0728	2219.15		
384	2011/07/21 06:04:22	7990.0728	7990.0728	2226.91		
385	2011/07/21 07:04:22	7991.0728	7991.0728	2233.76		
386	2011/07/21 08:04:22	7992.0728	7992.0728	2241.10		
387	2011/07/21 09:04:22	7993.0728	7993.0728	2247.98		
388	2011/07/21 10:52:09	7994.8692	7994.8692	2259.94		
389	2011/07/21 11:04:22	7995.0728	7995.0728	2261.02		
390	2011/07/21 13:04:22	7997.0728	7997.0728	2273.74		
391	2011/07/21 15:04:22	7999.0728	7999.0728	2284.50		
392	2011/07/21 17:04:22	8001.0728	8001.0728	2294.52		
393	2011/07/21 19:04:22	8003.0728	8003.0728	2304.41		
394	2011/07/21 21:04:22	8005.0728	8005.0728	2313.67		
395	2011/07/21 23:04:22	8007.0728	8007.0728	2322.87		
396	2011/07/22 01:04:22	8009.0728	8009.0728	2331.20		
397	2011/07/22 03:04:22	8011.0728	8011.0728	2339.51		
398	2011/07/22 05:04:22	8013.0728	8013.0728	2348.02		
399	2011/07/22 07:04:22	8015.0728	8015.0728	2355.64		
400	2011/07/22 09:04:22	8017.0728	8017.0728	2363.79		
401	2011/07/22 11:04:22	8019.0728	8019.0728	2371.44		
402	2011/07/22 13:04:22	8021.0728	8021.0728	2378.98		
403	2011/07/22 15:04:22	8023.0728	8023.0728	2386.51		
404	2011/07/22 19:04:22	8027.0728	8027.0728	2400.11		
405	2011/07/22 23:04:22	8031.0728	8031.0728	2413.17		
406	2011/07/23 03:04:22	8035.0728	8035.0728	2426.14		
407	2011/07/23 07:04:22	8039.0728	8039.0728	2438.40		
408	2011/07/23 11:04:22	8043.0728	8043.0728	2450.81		
409	2011/07/23 15:04:22	8047.0728	8047.0728	2462.59		
410	2011/07/23 19:04:22	8051.0728	8051.0728	2474.07		
411	2011/07/23 23:04:22	8055.0728	8055.0728	2485.54		
412	2011/07/24 03:04:22	8059.0728	8059.0728	2496.47		
413	2011/07/24 07:04:22	8063.0728	8063.0728	2506.92		
414	2011/07/24 11:04:22	8067.0728	8067.0728	2517.44		
415	2011/07/24 15:04:22	8071.0728	8071.0728	2527.34		
416	2011/07/24 19:04:22	8075.0728	8075.0728	2537.27		
417	2011/07/24 23:04:22	8079.0728	8079.0728	2546.56		
418	2011/07/25 03:04:22	8083.0728	8083.0728	2556.22		
419	2011/07/25 07:04:22	8087.0728	8087.0728	2565.42		
420	2011/07/25 11:04:22	8091.0728	8091.0728	2574.51		
421	2011/07/25 15:04:22	8095.0728	8095.0728	2583.00		
422	2011/07/25 19:04:22	8099.0728	8099.0728	2590.89		
423	2011/07/25 23:04:22	8103.0728	8103.0728	2597.79		
424	2011/07/26 03:04:22	8107.0728	8107.0728	2604.19		
425	2011/07/26 07:04:22	8111.0728	8111.0728	2610.20		
426	2011/07/26 11:04:22	8115.0728	8115.0728	2615.47		
427	2011/07/26 15:04:22	8119.0728	8119.0728	2620.05		
428	2011/07/26 19:04:22	8123.0728	8123.0728	2624.76		
429	2011/07/26 23:04:22	8127.0728	8127.0728	2628.75		
430	2011/07/27 03:04:22	8131.0728	8131.0728	2632.86		
431	2011/07/27 07:04:22	8135.0728	8135.0728	2637.01		
432	2011/07/27 11:04:22	8139.0728	8139.0728	2640.77		
433	2011/07/27 15:04:22	8143.0728	8143.0728	2644.49		
434	2011/07/27 19:04:22	8147.0728	8147.0728	2647.75		
435	2011/07/27 23:04:22	8151.0728	8151.0728	2651.27		
436	2011/07/28 03:04:22	8155.0728	8155.0728	2654.61		
437	2011/07/28 07:04:22	8159.0728	8159.0728	2657.72		
438	2011/07/28 11:04:22	8163.0728	8163.0728	2660.56		
439	2011/07/28 15:04:22	8167.0728	8167.0728	2663.54		
440	2011/07/28 19:04:22	8171.0728	8171.0728	2666.34		
441	2011/07/28 23:04:22	8175.0728	8175.0728	2669.83		
442	2011/07/29 03:04:22	8179.0728	8179.0728	2673.34		
443	2011/07/29 07:04:22	8183.0728	8183.0728	2677.26		
444	2011/07/29 11:04:22	8187.0728	8187.0728	2681.55		
445	2011/07/29 15:04:22	8191.0728	8191.0728	2685.71		
446	2011/07/29 19:04:22	8195.0728	8195.0728	2689.96		
447	2011/07/29 23:04:22	8199.0728	8199.0728	2693.87		
448	2011/07/30 03:04:22	8203.0728	8203.0728	2697.73		
449	2011/07/30 07:04:22	8207.0728	8207.0728	2701.59		
450	2011/07/30 10:24:50	8210.4139	8210.4139	2704.78		

Reservoir Information

Legend

Wells

Project Wells



From: Trevor Thompson [mailto:Trevor.Thompson@pennwest.com]

Sent: September-20-11 11:11 AM

To: Reza Ali

Subject: 103-01-02-002-26W1 Buildup Data

Net Pay: 26m

Porosity: 13%

Sw: 50%

Penn West Exploration
Penn West Waskada Unit No.5 Hz 102/03-03-002-26W1/00
52134-2011-0649

SUMMARY OF PVT DATA

Reported Reservoir Conditions

Reservoir Pressure	7 398	kPa(g)
Reservoir Temperature	45.0	°C

Pressure-Volume Relations

Saturation Pressure	4 233	kPa(g)
Avg. Single-Phase Compressibility	9.71	E-7 v/v/kPa (34 474 to 4 233 kPa(g))
Thermal Exp. @ 34 474 kPa(g)	1.02398	V at 45.0 °C / V at 15.0 °C

Differential Vaporization Data
(at 4 233 kPa(g) and 45.0 °C)

Solution Gas/Oil Ratio	43.3	m ³ / m ³ of residual oil at 15.0 °C
Relative Oil Volume	1.151	m ³ / m ³ of residual oil at 15.0 °C
Density of Reservoir Fluid	788.5	kg/m ³

Reservoir Fluid Viscosity

1.53 mPa·s at 4 233 kPa(g) and 45.0 °C
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Separator Test Results

Separator Conditions		Formation Volume Factor	Total Solution Gas/Oil Ratio	Tank Oil Gravity
kPa(g)	°C	(A)	(B)	(°API at 15.6 °C)
1 103	2.0	1.122	37.9	37.2

(A) Cubic metres of saturated oil per cubic metre of stock tank oil at 15.0 °C.

(B) Total standard cubic metres of gas per cubic metre of stock tank oil at 15.0 °C.

Penn West Exploration
Penn West Waskada Unit No.5 Hz 102/03-03-002-26W1/00
52134-2011-0649

VOLUMETRIC DATA
(at 45.0 °C)

Saturation Pressure (Psat)	4 233 kPa(g)
Density at Psat	788.5 kg/m ³
Thermal Exp. @ 34 474 kPa(g)	1.02398 V at 45.0 °C / V at 15.0 °C

AVERAGE SINGLE-PHASE COMPRESSIBILITIES

Pressure Range kPa(g)			Single-Phase Compressibility v/v/kPa
34 474	to	27 579	8.69 E -7
27 579	to	20 684	9.15 E -7
20 684	to	13 790	9.81 E -7
13 790	to	4 233	11.35 E -7

Penn West Exploration
Penn West Waskada Unit No.5 Hz 102/03-03-002-26W1/00
52134-2011-0649

RESERVOIR FLUID VISCOSITY
(at 45 °C)

Pressure kPa(g)	Oil Viscosity mPa·s	Gas Viscosity * mPa·s	Oil/Gas Viscosity Ratio
34 474	2.19		
27 579	2.04		
20 684	1.89		
13 790	1.74		
10 342	1.66		
7 398	1.60		
5 516	1.56		
4 233	1.53		
3 806	1.52	0.0118	129
3 103	1.54	0.0115	134
2 413	1.60	0.0113	142
1 724	1.72	0.0109	157
1 062	1.91	0.0105	182
717	2.07	0.0102	202
0	3.01		

* Gas Viscosity data calculated from correlation of Lee A.L., Gonzalez M.H., and Eakin B.E., "The Viscosity of Natural Gases", Journal of Petroleum Technology, August, 1966, pp. 997-1000.

Test Data

103-01-02-002-26w1-00 Production Data.txt		
Production Date	Daily Oil (m3/d)	Daily water (m3/d)
2010-Aug-23	2.52	37.99
2010-Aug-24	18.34	9.85
2010-Aug-25	18.11	8.07
2010-Aug-26	11.05	15.97
2010-Aug-27	12.73	30.99
2010-Aug-28	20.59	19.85
2010-Aug-29	22.26	18.67
2010-Aug-30	22.35	17.69
2010-Aug-31	18.29	11.55
2010-Sep-01	19	9.75
2010-Sep-02	18.71	11.27
2010-Sep-03	18.47	11.12
2010-Sep-04	19.61	11.79
2010-Sep-05	19.46	12.13
2010-Sep-06	19.05	12.11
2010-Sep-07	20.03	11.62
2010-Sep-08	18.43	10.45
2010-Sep-09	19.33	10.53
2010-Sep-10	15.11	11.59
2010-Sep-11	8.7	5.54
2010-Sep-12	18.74	11.45
2010-Sep-13	18.31	10.82
2010-Sep-14	18.51	5.13
2010-Sep-15	18.53	10.84
2010-Sep-16	18.33	10.01
2010-Sep-17	14.51	8.71
2010-Sep-18	0	0
2010-Sep-19	17.84	10.89
2010-Sep-20	17.09	10.4
2010-Sep-21	16.92	9.49
2010-Sep-22	16.6	10.58
2010-Sep-23	17.89	11.98
2010-Sep-24	18.49	11.78
2010-Sep-25	18.44	15.28
2010-Sep-26	18.33	10.06
2010-Sep-27	18.97	10.99
2010-Sep-28	18.26	9.81
2010-Sep-29	18.18	10.67
2010-Sep-30	6.15	4.68
2010-Oct-01	5.89	3.07
2010-Oct-02	5.23	1.32
2010-Oct-03	6.34	2.69
2010-Oct-04	6.89	4.3
2010-Oct-05	6.23	4.68
2010-Oct-06	5.99	4.73
2010-Oct-07	5.84	4.54
2010-Oct-08	5.83	2.63
2010-Oct-09	5.62	3.66
2010-Oct-10	6.08	4.8
2010-Oct-11	7.46	4.21
2010-Oct-12	6	4.64
2010-Oct-13	5.79	4.73
2010-Oct-14	5.82	2.98
2010-Oct-15	5.81	3.94
2010-Oct-16	6.41	4.75
2010-Oct-17	6.38	5.26
2010-Oct-18	0	0
2010-Oct-19	0	0
2010-Oct-20	0	0
2010-Oct-21	0	0
2010-Oct-22	0	0
2010-Oct-23	0	0

103-01-02-002-26w1-00 Production Data.txt

2010-Oct-24	0	0
2010-Oct-25	0	0
2010-Oct-26	4.11	3.19
2010-Oct-27	6.07	5.69
2010-Oct-28	6.03	5.55
2010-Oct-29	6.07	4.97
2010-Oct-30	6.08	4.66
2010-Oct-31	5.87	5.24
2010-Nov-01	5.49	5.78
2010-Nov-02	5.94	4.99
2010-Nov-03	6.05	4.97
2010-Nov-04	5.78	4.69
2010-Nov-05	5.98	4.88
2010-Nov-06	6.01	4.97
2010-Nov-07	6	4.74
2010-Nov-08	5.57	5.48
2010-Nov-09	5.78	4.81
2010-Nov-10	5.82	3.26
2010-Nov-11	5.84	4.57
2010-Nov-12	11.88	5.32
2010-Nov-13	12.39	4.54
2010-Nov-14	11.98	4.02
2010-Nov-15	12.63	4.73
2010-Nov-16	12.85	4.57
2010-Nov-17	12.24	2.52
2010-Nov-18	12.09	3.94
2010-Nov-19	12.56	6.88
2010-Nov-20	11.98	6.21
2010-Nov-21	11.6	5.12
2010-Nov-22	12.04	5.66
2010-Nov-23	11.46	4.65
2010-Nov-24	12.28	4.14
2010-Nov-25	11.33	5.03
2010-Nov-26	7.49	3.21
2010-Nov-27	7.31	3.06
2010-Nov-28	7.22	3.04
2010-Nov-29	8.23	2.76
2010-Nov-30	9.08	3.13
2010-Dec-01	0	0
2010-Dec-02	4.64	1.71
2010-Dec-03	8.66	2.42
2010-Dec-04	8.58	2.74
2010-Dec-05	9	3.09
2010-Dec-06	8.17	2.62
2010-Dec-07	8.49	3.06
2010-Dec-08	8.19	2.95
2010-Dec-09	6.79	1.92
2010-Dec-10	8.77	1.81
2010-Dec-11	7.43	2.38
2010-Dec-12	7.92	2.07
2010-Dec-13	6.97	3.09
2010-Dec-14	6.99	3.1
2010-Dec-15	8.57	2.94
2010-Dec-16	7.68	3
2010-Dec-17	7.01	3.01
2010-Dec-18	8.79	3.29
2010-Dec-19	6.71	3.14
2010-Dec-20	7.96	3.15
2010-Dec-21	13.76	5.31
2010-Dec-22	11.36	5.98
2010-Dec-23	10.41	6.43
2010-Dec-24	10.63	5.69
2010-Dec-25	12.05	6.04

103-01-02-002-26W1-00 Production Data.txt

2010-Dec-26	10.93	5.62
2010-Dec-27	9.96	5.87
2010-Dec-28	11.42	5.87
2010-Dec-29	11.16	4.94
2010-Dec-30	9.1	5.5
2010-Dec-31	13.2	8.3
2011-Jan-01	12.13	8.04
2011-Jan-02	8.87	7.84
2011-Jan-03	10.38	8.97
2011-Jan-04	11.15	7
2011-Jan-05	12.27	4.73
2011-Jan-06	11.7	8.22
2011-Jan-07	14.05	8.6
2011-Jan-08	11.4	5.76
2011-Jan-09	0	0
2011-Jan-10	0	0
2011-Jan-11	0	0
2011-Jan-12	0	0
2011-Jan-13	0	0
2011-Jan-14	0	0
2011-Jan-15	0	0
2011-Jan-16	0	0
2011-Jan-17	0	0
2011-Jan-18	0	0
2011-Jan-19	0	0
2011-Jan-20	0	0
2011-Jan-21	0	0
2011-Jan-22	0	0
2011-Jan-23	0	0
2011-Jan-24	0	0
2011-Jan-25	15.93	7.81
2011-Jan-26	10.65	7.28
2011-Jan-27	11.4	6.7
2011-Jan-28	1.72	1.06
2011-Jan-29	15	5.68
2011-Jan-30	13.8	6.64
2011-Jan-31	12.86	6.79
2011-Feb-01	12.45	6.41
2011-Feb-02	11.92	4.87
2011-Feb-03	0	0
2011-Feb-04	0	0
2011-Feb-05	9.23	5.64
2011-Feb-06	12.93	6.65
2011-Feb-07	12.11	7.38
2011-Feb-08	11.48	9.78
2011-Feb-09	9.56	6.47
2011-Feb-10	11.98	6.94
2011-Feb-11	10.14	8.67
2011-Feb-12	11.47	8.69
2011-Feb-13	13.22	3.87
2011-Feb-14	13.1	3.99
2011-Feb-15	13.7	4.21
2011-Feb-16	13.67	3.12
2011-Feb-17	13.33	3.32
2011-Feb-18	14.31	3.51
2011-Feb-19	6.38	1.54
2011-Feb-20	0	0
2011-Feb-21	13.16	3.53
2011-Feb-22	13.03	4.59
2011-Feb-23	13.02	4.35
2011-Feb-24	12.71	3.28
2011-Feb-25	12.54	3.84
2011-Feb-26	8.62	4.02

103-01-02-002-26w1-00 Production Data.txt

2011-Feb-27	8.56	3.48
2011-Feb-28	8.71	2.82
2011-Mar-01	9.73	3.2
2011-Mar-02	8.71	3.2
2011-Mar-03	9.15	3.54
2011-Mar-04	10.34	4.53
2011-Mar-05	10.41	5.43
2011-Mar-06	11.21	5.52
2011-Mar-07	10.36	4.96
2011-Mar-08	10.18	4.31
2011-Mar-09	10.14	4.87
2011-Mar-10	9.73	5.14
2011-Mar-11	10.2	5.8
2011-Mar-12	10.14	4.21
2011-Mar-13	9.51	4.86
2011-Mar-14	9.3	4.44
2011-Mar-15	9.72	4.24
2011-Mar-16	6.58	3
2011-Mar-17	7.55	5.24
2011-Mar-18	10.06	4.71
2011-Mar-19	9.41	4.31
2011-Mar-20	10.3	4.91
2011-Mar-21	8.96	4.72
2011-Mar-22	8.49	4.04
2011-Mar-23	10.6	4.52
2011-Mar-24	9.9	3.64
2011-Mar-25	4.25	1.48
2011-Mar-26	2.6	1.28
2011-Mar-27	3.75	1.92
2011-Mar-28	3.35	1.97
2011-Mar-29	4.35	2.3
2011-Mar-30	5.1	1.81
2011-Mar-31	4.2	2.21
2011-Apr-01	5.07	1.99
2011-Apr-02	3.92	1.96
2011-Apr-03	4.62	2.43
2011-Apr-04	3.99	1.36
2011-Apr-05	3.48	1.67
2011-Apr-06	3.91	1.36
2011-Apr-07	4.64	0.53
2011-Apr-08	3.82	1.25
2011-Apr-09	3.62	1.66
2011-Apr-10	3.82	1.67
2011-Apr-11	3.24	1.48
2011-Apr-12	3.02	1.46
2011-Apr-13	3.56	1.41
2011-Apr-14	3.22	1.47
2011-Apr-15	3.59	2.08
2011-Apr-16	3.59	1.6
2011-Apr-17	3.43	1.56
2011-Apr-18	3.6	1.63
2011-Apr-19	3.97	1.45
2011-Apr-20	3.26	1.62
2011-Apr-21	3.75	1.48
2011-Apr-22	2.95	1.43
2011-Apr-23	3.95	1.7
2011-Apr-24	3.44	1.45
2011-Apr-25	2.83	1.64
2011-Apr-26	3.3	1.49
2011-Apr-27	3.64	1.53
2011-Apr-28	3.23	1.45
2011-Apr-29	2.88	1.4
2011-Apr-30	2.4	1.19

103-01-02-002-26w1-00 Production Data.txt

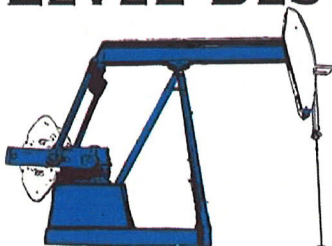
2011-May-01	2.91	1.43
2011-May-02	2.74	1.33
2011-May-03	2.74	1.46
2011-May-04	3.74	0.68
2011-May-05	3.61	0.84
2011-May-06	3.69	0.67
2011-May-07	3.54	0.69
2011-May-08	3.65	0.7
2011-May-09	3.68	0.71
2011-May-10	3.48	0.76
2011-May-11	3.63	0.68
2011-May-12	3.66	0.72
2011-May-13	3.63	0.68
2011-May-14	3.56	0.73
2011-May-15	3.37	1.03
2011-May-16	3.4	1.04
2011-May-17	3.32	1.12
2011-May-18	3.5	1.08
2011-May-19	3.34	1.02
2011-May-20	3.38	1.09
2011-May-21	3.47	1.06
2011-May-22	3.45	1.11
2011-May-23	3.45	1.23
2011-May-24	3.38	1.1
2011-May-25	3.38	1.14
2011-May-26	3.3	1.14
2011-May-27	3.29	1.12
2011-May-28	3.13	1.14
2011-May-29	3.11	1.1
2011-May-30	3.49	1.18
2011-May-31	3.39	1.02
2011-Jun-01	3.34	1.16
2011-Jun-02	3.39	1.05
2011-Jun-03	3.35	1.1
2011-Jun-04	3.36	1.24
2011-Jun-05	3.11	1.05
2011-Jun-06	3.24	0.97
2011-Jun-07	3.14	1.09
2011-Jun-08	3.53	1.08
2011-Jun-09	3.24	1.05
2011-Jun-10	3.19	1.16
2011-Jun-11	3.35	1.17
2011-Jun-12	3.43	1.18
2011-Jun-13	3.52	1.3
2011-Jun-14	3.51	1.07
2011-Jun-15	3.39	1.13
2011-Jun-16	3.36	0.95
2011-Jun-17	3.1	1.04
2011-Jun-18	3.12	1.14
2011-Jun-19	2.53	1.28
2011-Jun-20	3.49	1.05
2011-Jun-21	3.33	1.03
2011-Jun-22	3.41	1.18
2011-Jun-23	3.4	1.08
2011-Jun-24	3.44	1.11
2011-Jun-25	3.53	1.07
2011-Jun-26	3.46	1.13
2011-Jun-27	3.62	1.15
2011-Jun-28	2.12	0.36
2011-Jun-29	2.09	0.31
2011-Jun-30	2.16	0.35
2011-Jul-01	2.25	0.36
2011-Jul-02	2.23	0.39

103-01-02-002-26w1-00 Production Data.txt

2011-Jul-03	2.09	0.36
2011-Jul-04	2.12	0.36
2011-Jul-05	2.45	0.45
2011-Jul-06	2.09	0.37
2011-Jul-07	2.16	0.36
2011-Jul-08	2.32	1.17
2011-Jul-09	2.27	1.25
2011-Jul-10	2.12	1.02
2011-Jul-11	2.17	1.29
2011-Jul-12	2.12	1.22
2011-Jul-13	2.32	1.14
2011-Jul-14	2.12	1.16
2011-Jul-15	2.2	1.12
2011-Jul-16	2.32	1.18
2011-Jul-17	2.17	1.01
2011-Jul-18	2.21	0.93
2011-Jul-19	2.32	1.01
2011-Jul-20	2.29	1.12
2011-Jul-21	2.06	1.12
2011-Jul-22	2.27	1.02
2011-Jul-23	2.3	1.04
2011-Jul-24	0	0
2011-Jul-25	0	0
2011-Jul-26	0	0
2011-Jul-27	0	0
2011-Jul-28	0	0
2011-Jul-29	0	0
2011-Jul-30	0	0
2011-Jul-31	0	0
2011-Aug-01	2.29	1.15
2011-Aug-02	2.14	1.15
2011-Aug-03	2.27	1.14
2011-Aug-04	4.4	2.33
2011-Aug-05	4.4	2.14
2011-Aug-06	4.41	2.05
2011-Aug-07	4.42	2.75
2011-Aug-14	4.68	2.28
2011-Aug-17	4.62	2.35
2011-Aug-21	4.35	2.28
2011-Aug-22	4.22	2.21
2011-Aug-23	4.36	2.07
2011-Aug-08	4.42	2.23
2011-Aug-10	0	0
2011-Aug-13	4.69	2.37
2011-Aug-15	4.4	2.28
2011-Aug-25	4.34	2.14
2011-Aug-11	0	0
2011-Aug-16	4.47	2.85
2011-Aug-12	3.98	3.84
2011-Aug-18	4.4	2.58
2011-Aug-09	0	0
2011-Aug-19	4.52	2.3
2011-Aug-20	4.45	2.66
2011-Aug-24	4.53	2.25

**ACOUSTIC PRESSURE SURVEY
BUILD-UP TEST**

LEVEL BEST



TECHNOLOGIES LTD.

WASKADA UNIT NO. 5 HZNTL A1-2-2-26

103/01-02-002-26W1/0

Surface Location: 103/03-02-002-26W1/0 (HZTL)

License: 007209

Field: WASKADA MB

Formation: AMRANTH

Pool: LOWER AMARANTH A

JULY 2011

DATA COLLECTION SERVICES

Prepared by: Sean Chakowski, C.E.T. (NR-Tec Ltd.)

Date: 2011-Aug-03

**Prepared for: BRAD CALDWELL
PENN WEST PETROLEUM**

NR-Tec Ltd.

P.O. Box 36028 Lakeview RPO, Calgary, Alberta, Canada T3E 7C6

Tel: (403) 283-1416 Fax: (403) 206-7783

<http://www.nr-tec.com>

PENN WEST PETROLEUM

ACOUSTIC PRESSURE SURVEY (BUILD-UP)

WASKADA UNIT NO. 5 HZNTL A1-2-2-26

103/01-02-002-26W1/0

WASKADA MB

POOL: LOWER AMARANTH A

2011-JUL-20 TO 2011-JUL-30

TEST SUMMARY:

- An acoustic well sounder instrument was installed into the casing on 2011-07-20 at 11:01 hours. The fluid level was at 89.8 joints. An annular fluid depression test was conducted.
- The well was shut-in on 2011-07-20 at 13:34 hours to start the build-up.
- The build-up test was concluded on 2011-07-30 at 10:24 hours.
- A final bottomhole pressure of 2,705 kPa (absolute) was calculated at the mid-point of the producing interval after 9.9 days of shut-in.
- The rate of change in pressure during the last 7.3 hours of shut-in is 0.96 kPa/hr.

PRESSURE DATA CALCULATIONS:

- The bottomhole pressures were calculated using the following information:

Atmospheric Pressure	93.0 kPa
Formation Depth	913.74 m KB (TVD) / 1,471.65 m KB
Oil Gravity	37.79 °API
Water Gravity	1.067
Gas Gravity	0.750
Oil Production	2.20 m ³ /d
Water Production	0.33 m ³ /d
Gas Production	0.16 E ³ m ³ /d
Bottomhole Temperature	50.00 °C

ATTACHMENTS:

ACOUSTIC WELLSOUNDER PRESSURE SURVEY DATA

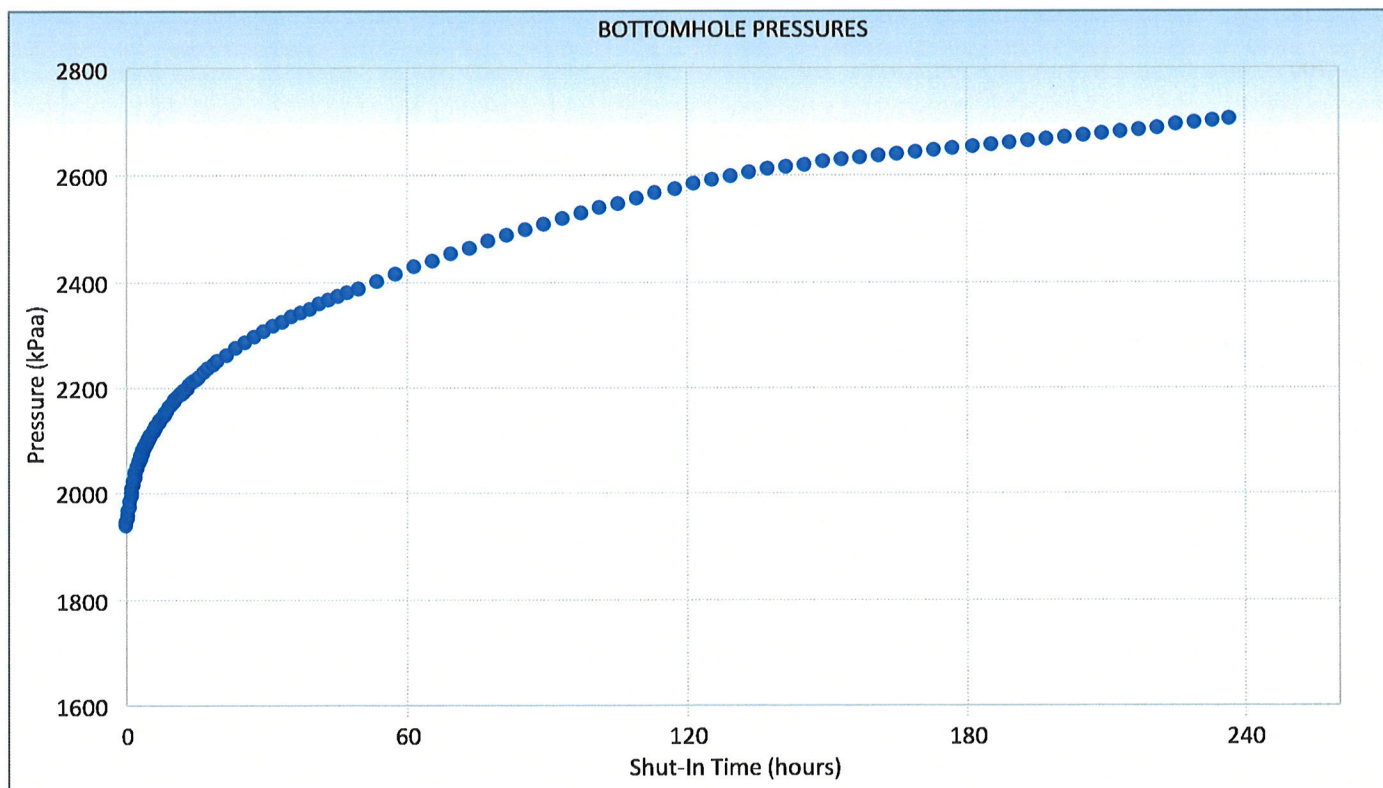
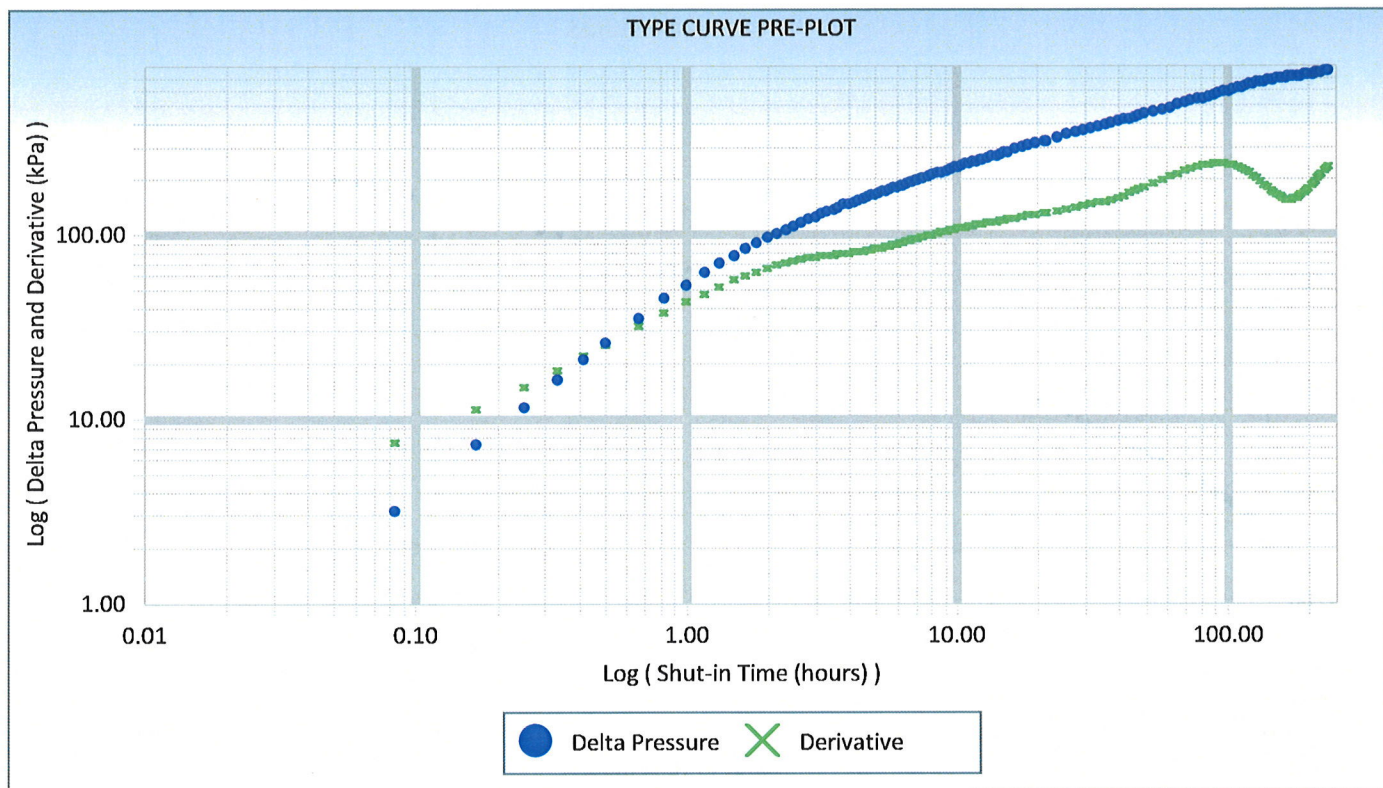
TYPE CURVE PRE-PLOT

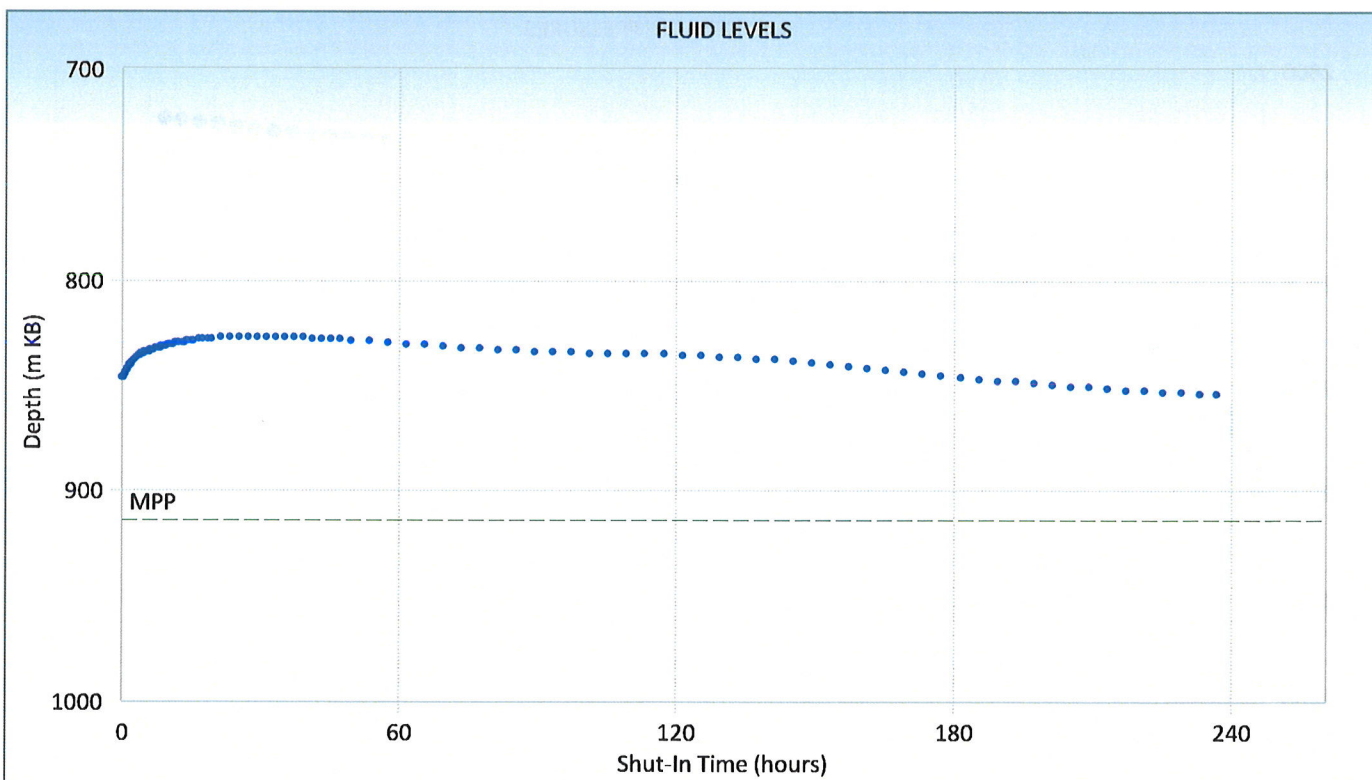
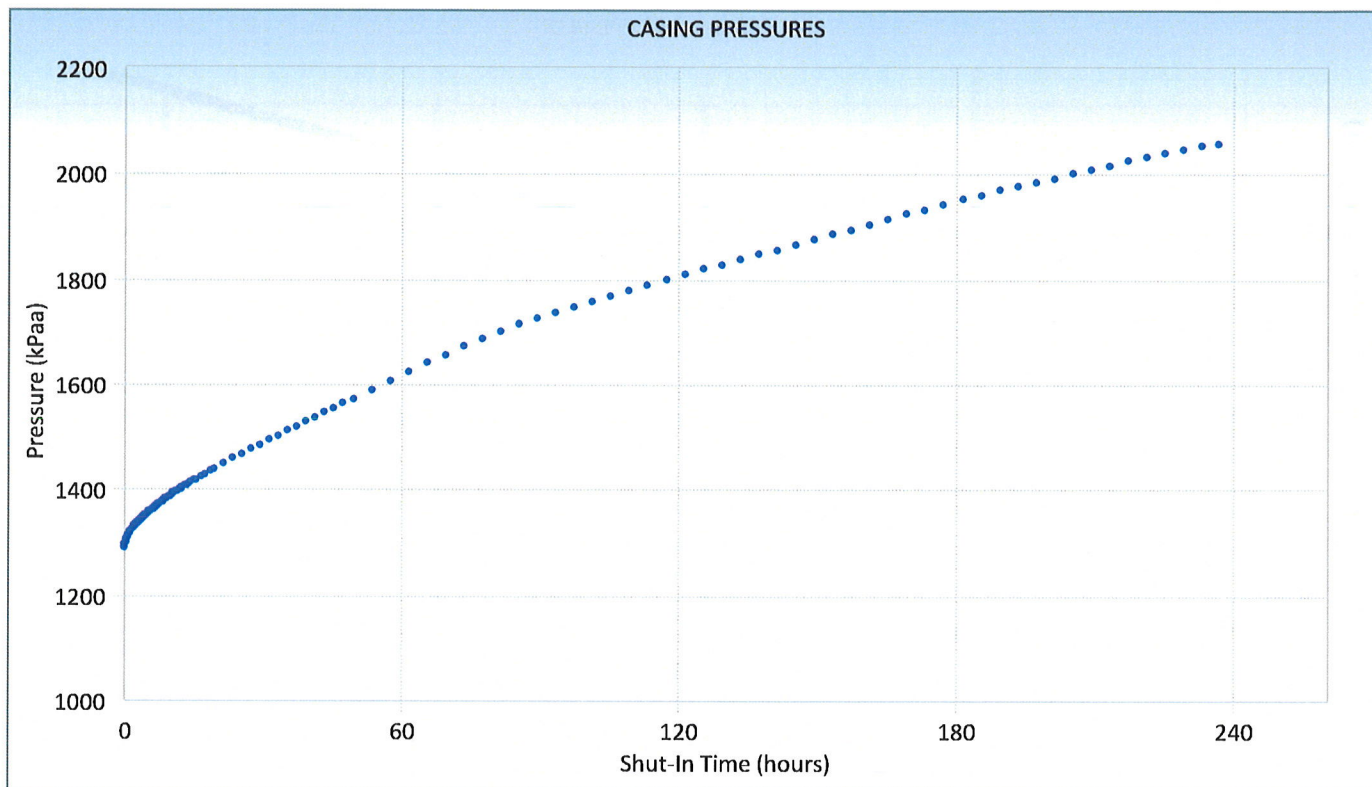
BOTTOMHOLE PRESSURE VERSUS TIME

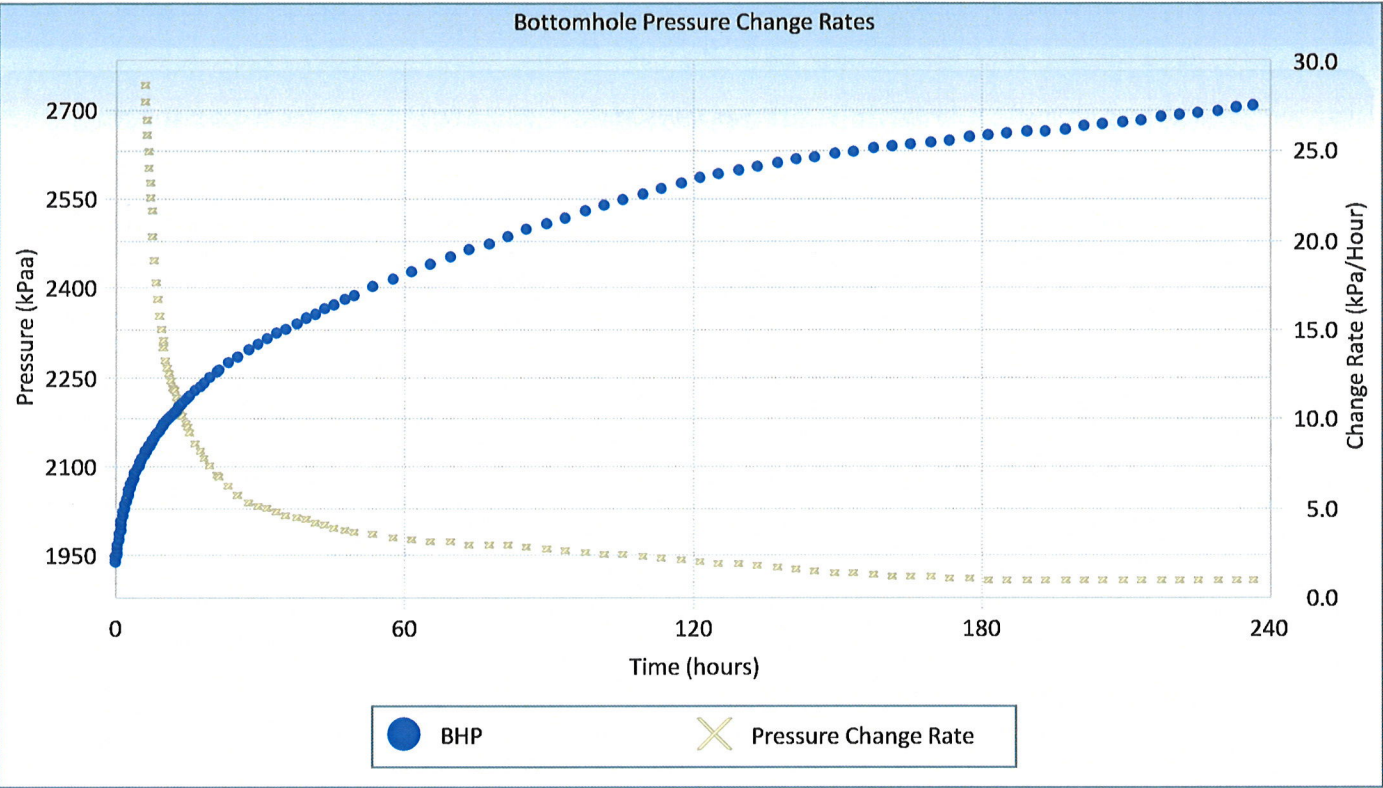
CASING PRESSURE VERSUS TIME

FLUID LEVEL VERSUS TIME









ACOUSTIC WELLSOUNDER PRESSURE SURVEY

COMPANY: PENN WEST PETROLEUM	POOL: LOWER AMARANTH A	U.W.I.: 103/01-02-002-26W1/0
FIELD: WASKADA MB	WELL STATUS: OIL	WELL NAME: WASKADA UNIT NO. 5 HZNTL A1-2-2-26
SHUT-IN: 2011-Jul-20 @ 13:34:22	LICENSE: 007209	SURFACE LCN.: 103/03-02-002-26W1/0 (HZTL)

ELEVATIONS:	FLUID PROPERTIES:	TEMPERATURES:
Kelly Bushing (KB): 471.60 m	Gas Gravity: 0.750	Surface: 2.50 °C
Ground Level (GL): 467.30 m	Oil Gravity: 37.790 °API	Reservoir: 50.00 °C
KB to GL: 4.30 m	Water Gravity: 1.067	

PRODUCTION RATES:	PRODUCING INTERVAL:
Gas: 0.16 E ³ m ³ /d	Top: 913.42 m KB (TVD)
Oil: 2.20 m ³ /d	1,180.00 m KB (MD)
Water: 0.33 m ³ /d	Bottom: 912.45 m KB (TVD)
	1,763.30 m KB (MD)
	Mid-Point: 913.74 m KB (TVD)
	1,471.65 m KB (MD)

NOTES:

All calculated depths have been corrected to True Vertical Depth.

NO.	TEST TIME		DATE	TIME	JOINTS TO LIQUID	SURFACE PRESSURE (kPaa)	GAS COLUMN			OIL COLUMN			EMULSION COLUMN			PRESSURE @ MPP
	(hours)						HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	
1	(2.546)		2011-Jul-20	11:01:38	89.75	1156.9	828.7	0.108	89.5	20.9	7.880	164.5	59.8	8.160	488.3	1899.2
2	(2.487)		2011-Jul-20	11:05:10	89.81	1160.2	829.1	0.108	89.8	20.5	7.880	161.9	59.8	8.160	488.3	1900.2
3	(2.237)		2011-Jul-20	11:20:10	90.09	1174.2	830.6	0.110	91.1	19.0	7.879	149.7	59.8	8.160	488.3	1903.2
4	(1.987)		2011-Jul-20	11:35:10	90.36	1187.7	832.1	0.111	92.4	17.5	7.879	138.2	59.8	8.160	488.3	1906.5
5	(1.737)		2011-Jul-20	11:50:10	90.63	1201.0	833.5	0.112	93.6	16.1	7.878	126.9	59.8	8.160	488.2	1909.7
6	(1.487)		2011-Jul-20	12:05:10	90.90	1214.1	834.9	0.114	94.8	14.7	7.877	115.8	59.8	8.160	488.2	1912.9
7	(1.237)		2011-Jul-20	12:20:10	91.18	1227.0	836.3	0.115	96.1	13.3	7.876	104.4	59.8	8.160	488.2	1915.7
8	(0.987)		2011-Jul-20	12:35:10	91.44	1239.9	837.7	0.116	97.3	12.0	7.876	94.1	59.8	8.159	488.2	1919.5
9	(0.737)		2011-Jul-20	12:50:10	91.71	1252.8	839.0	0.117	98.5	10.6	7.875	83.6	59.8	8.159	488.2	1923.0
10	(0.487)		2011-Jul-20	13:05:10	91.97	1265.6	840.3	0.119	99.7	9.3	7.874	73.6	59.8	8.159	488.2	1927.1
11	(0.237)		2011-Jul-20	13:20:10	92.20	1278.4	841.4	0.120	100.8	8.2	7.873	64.9	59.8	8.159	488.2	1932.3
12	0.000		2011-Jul-20	13:34:22	92.34	1289.9	842.0	0.121	101.9	7.6	7.873	59.7	59.8	8.158	488.1	1939.6
13	0.083		2011-Jul-20	13:39:22	92.36	1293.5	842.1	0.121	102.2	7.6	7.872	59.6	59.7	8.158	487.4	1942.7
14	0.167		2011-Jul-20	13:44:22	92.35	1297.0	842.1	0.122	102.5	7.6	7.872	59.6	59.8	8.158	487.8	1946.8
15	0.250		2011-Jul-20	13:49:22	92.32	1299.9	841.9	0.122	102.7	7.6	7.872	59.7	59.9	8.158	488.8	1951.2
16	0.333		2011-Jul-20	13:54:22	92.28	1302.7	841.7	0.122	102.9	7.6	7.872	59.8	60.1	8.157	490.2	1955.7
17	0.417		2011-Jul-20	13:59:22	92.22	1305.0	841.5	0.122	103.1	7.6	7.872	60.0	60.4	8.157	492.4	1960.5
18	0.500		2011-Jul-20	14:04:22	92.15	1307.1	841.1	0.123	103.2	7.6	7.872	60.2	60.7	8.157	494.9	1965.4
19	0.667		2011-Jul-20	14:14:22	92.01	1310.8	840.5	0.123	103.4	7.7	7.872	60.6	61.3	8.157	500.0	1974.7
20	0.833		2011-Jul-20	14:24:22	91.85	1313.8	839.7	0.123	103.6	7.8	7.872	61.0	62.0	8.157	505.8	1984.2
21	1.000		2011-Jul-20	14:34:22	91.70	1316.4	838.9	0.124	103.7	7.8	7.872	61.4	62.7	8.156	511.3	1992.9
22	1.167		2011-Jul-20	14:44:22	91.56	1318.7	838.3	0.124	103.8	7.9	7.872	61.9	63.3	8.156	516.5	2000.9
23	1.333		2011-Jul-20	14:54:22	91.43	1320.9	837.6	0.124	103.9	7.9	7.872	62.3	63.9	8.156	521.4	2008.4
24	1.500		2011-Jul-20	15:04:22	91.30	1322.9	837.0	0.124	104.0	8.0	7.872	62.7	64.5	8.156	526.3	2015.9
25	1.667		2011-Jul-20	15:14:22	91.19	1324.9	836.4	0.124	104.1	8.0	7.872	63.0	65.0	8.156	530.4	2022.5
26	1.833		2011-Jul-20	15:24:22	91.09	1326.8	835.9	0.125	104.2	8.1	7.872	63.4	65.5	8.156	534.2	2028.6
27	2.000		2011-Jul-20	15:34:22	90.99	1328.7	835.4	0.125	104.3	8.1	7.872	63.7	66.0	8.155	538.0	2034.7
28	2.167		2011-Jul-20	15:44:22	90.90	1330.4	834.9	0.125	104.4	8.1	7.872	64.1	66.4	8.155	541.5	2040.3



TEST NO.	TIME (hours)	DATE	TIME	JOINTS TO LIQUID	SURFACE PRESSURE (kPaa)	GAS COLUMN			OIL COLUMN			EMULSION COLUMN			PRESSURE @ MPP
						HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	
29	2.333	2011-Jul-20	15:54:22	90.82	1332.2	834.5	0.125	104.5	8.2	7.873	64.4	66.8	8.155	544.5	2045.5
30	2.500	2011-Jul-20	16:04:22	90.74	1333.8	834.1	0.125	104.6	8.2	7.873	64.7	67.1	8.155	547.6	2050.6
31	2.667	2011-Jul-20	16:14:22	90.67	1335.4	833.7	0.126	104.7	8.2	7.873	64.9	67.5	8.155	550.3	2055.3
32	2.833	2011-Jul-20	16:24:22	90.60	1337.0	833.3	0.126	104.7	8.3	7.873	65.2	67.8	8.155	553.0	2059.9
33	3.000	2011-Jul-20	16:34:22	90.54	1338.5	833.0	0.126	104.8	8.3	7.873	65.4	68.1	8.155	555.3	2064.1
34	3.167	2011-Jul-20	16:44:22	90.47	1340.0	832.7	0.126	104.9	8.3	7.873	65.7	68.4	8.155	558.0	2068.7
35	3.333	2011-Jul-20	16:54:22	90.42	1341.4	832.4	0.126	105.0	8.4	7.873	65.9	68.7	8.154	560.0	2072.4
36	3.500	2011-Jul-20	17:04:22	90.37	1342.9	832.1	0.126	105.1	8.4	7.873	66.2	68.9	8.154	561.9	2076.0
37	3.667	2011-Jul-20	17:14:22	90.32	1344.3	831.9	0.126	105.2	8.4	7.873	66.4	69.2	8.154	563.9	2079.7
38	3.833	2011-Jul-20	17:24:22	90.27	1345.7	831.6	0.127	105.2	8.5	7.873	66.6	69.4	8.154	565.9	2083.3
39	4.000	2011-Jul-20	17:34:22	90.23	1347.0	831.4	0.127	105.3	8.5	7.873	66.8	69.6	8.154	567.4	2086.6
40	4.167	2011-Jul-20	17:44:22	90.19	1348.4	831.2	0.127	105.4	8.5	7.873	66.9	69.8	8.154	569.0	2089.8
41	4.333	2011-Jul-20	17:54:22	90.16	1349.8	831.0	0.127	105.5	8.5	7.873	67.1	69.9	8.154	570.2	2092.5
42	4.500	2011-Jul-20	18:04:22	90.12	1351.1	830.8	0.127	105.6	8.5	7.873	67.3	70.1	8.154	571.8	2095.7
43	4.667	2011-Jul-20	18:14:22	90.09	1352.4	830.6	0.127	105.7	8.6	7.873	67.4	70.3	8.154	573.0	2098.5
44	4.833	2011-Jul-20	18:24:22	90.05	1353.8	830.4	0.127	105.8	8.6	7.873	67.6	70.5	8.154	574.6	2101.7
45	5.000	2011-Jul-20	18:34:22	90.02	1355.1	830.2	0.127	105.9	8.6	7.872	67.7	70.6	8.153	575.7	2104.4
46	5.167	2011-Jul-20	18:44:22	90.00	1356.4	830.1	0.128	105.9	8.6	7.872	67.8	70.7	8.153	576.5	2106.7
47	5.333	2011-Jul-20	18:54:22	89.97	1357.7	830.0	0.128	106.0	8.6	7.872	67.9	70.9	8.153	577.7	2109.5
48	5.500	2011-Jul-20	19:04:22	89.95	1359.0	829.8	0.128	106.1	8.6	7.872	68.0	71.0	8.153	578.5	2111.7
49	5.667	2011-Jul-20	19:14:22	89.92	1360.3	829.7	0.128	106.2	8.7	7.872	68.2	71.1	8.153	579.7	2114.4
50	5.833	2011-Jul-20	19:24:22	89.90	1361.6	829.6	0.128	106.3	8.7	7.872	68.3	71.2	8.153	580.5	2116.7
51	6.000	2011-Jul-20	19:34:22	89.87	1362.9	829.4	0.128	106.4	8.7	7.872	68.4	71.4	8.153	581.7	2119.4
52	6.167	2011-Jul-20	19:44:22	89.85	1364.2	829.3	0.128	106.5	8.7	7.872	68.5	71.5	8.153	582.6	2121.7
53	6.333	2011-Jul-20	19:54:22	89.82	1365.4	829.1	0.129	106.6	8.7	7.872	68.6	71.6	8.153	583.8	2124.4
54	6.500	2011-Jul-20	20:04:22	89.80	1366.7	829.0	0.129	106.7	8.7	7.872	68.7	71.7	8.153	584.6	2126.6
55	6.667	2011-Jul-20	20:14:22	89.77	1367.9	828.8	0.129	106.7	8.7	7.872	68.8	71.9	8.153	585.8	2129.3
56	6.833	2011-Jul-20	20:24:22	89.75	1369.1	828.7	0.129	106.8	8.8	7.872	68.9	72.0	8.152	586.6	2131.5
57	7.000	2011-Jul-20	20:34:22	89.73	1370.3	828.6	0.129	106.9	8.8	7.872	69.0	72.1	8.152	587.4	2133.7
58	7.167	2011-Jul-20	20:44:22	89.71	1371.5	828.5	0.129	107.0	8.8	7.872	69.1	72.2	8.152	588.2	2135.8
59	7.333	2011-Jul-20	20:54:22	89.69	1372.6	828.4	0.129	107.1	8.8	7.872	69.2	72.3	8.152	589.0	2137.9
60	7.500	2011-Jul-20	21:04:22	89.67	1373.8	828.3	0.129	107.1	8.8	7.872	69.3	72.4	8.152	589.8	2140.1
61	7.833	2011-Jul-20	21:24:22	89.63	1376.0	828.1	0.130	107.3	8.8	7.872	69.5	72.6	8.152	591.5	2144.2
62	8.167	2011-Jul-20	21:44:22	89.60	1378.2	827.9	0.130	107.5	8.8	7.872	69.6	72.7	8.152	592.7	2148.0
63	8.500	2011-Jul-20	22:04:22	89.56	1380.4	827.7	0.130	107.6	8.9	7.872	69.8	72.9	8.152	594.3	2152.2
64	8.833	2011-Jul-20	22:24:22	89.52	1382.6	827.4	0.130	107.8	8.9	7.872	70.0	73.1	8.152	596.0	2156.3
65	9.167	2011-Jul-20	22:44:22	89.49	1384.7	827.3	0.130	107.9	8.9	7.872	70.2	73.3	8.151	597.2	2160.0
66	9.500	2011-Jul-20	23:04:22	89.45	1386.8	827.0	0.131	108.1	8.9	7.871	70.3	73.5	8.151	598.9	2164.1
67	9.833	2011-Jul-20	23:24:22	89.42	1388.9	826.9	0.131	108.2	9.0	7.871	70.5	73.6	8.151	600.1	2167.6
68	10.167	2011-Jul-20	23:44:22	89.39	1390.9	826.7	0.131	108.4	9.0	7.871	70.6	73.8	8.151	601.3	2171.2
69	10.500	2011-Jul-21	00:04:22	89.36	1392.9	826.5	0.131	108.5	9.0	7.871	70.8	73.9	8.151	602.6	2174.7
70	10.833	2011-Jul-21	00:24:22	89.33	1394.9	826.4	0.131	108.6	9.0	7.871	70.9	74.1	8.151	603.8	2178.2
71	11.167	2011-Jul-21	00:44:22	89.31	1396.8	826.2	0.132	108.8	9.0	7.871	71.0	74.2	8.151	604.6	2181.2
72	11.500	2011-Jul-21	01:04:22	89.28	1398.7	826.1	0.132	108.9	9.0	7.871	71.2	74.3	8.150	605.9	2184.7
73	11.833	2011-Jul-21	01:24:22	89.26	1400.6	825.9	0.132	109.1	9.1	7.871	71.3	74.4	8.150	606.7	2187.6
74	12.167	2011-Jul-21	01:44:22	89.24	1402.4	825.8	0.132	109.2	9.1	7.871	71.4	74.5	8.150	607.6	2190.5
75	12.500	2011-Jul-21	02:04:22	89.21	1404.3	825.7	0.132	109.3	9.1	7.871	71.5	74.7	8.150	608.8	2193.9
76	13.000	2011-Jul-21	02:34:22	89.18	1407.0	825.5	0.133	109.5	9.1	7.871	71.6	74.9	8.150	610.1	2198.2
77	13.500	2011-Jul-21	03:04:22	89.14	1409.7	825.3	0.133	109.7	9.1	7.871	71.8	75.1	8.150	611.7	2202.9
78	14.000	2011-Jul-21	03:34:22	89.11	1412.3	825.1	0.133	109.9	9.1	7.871	72.0	75.2	8.150	613.0	2207.2
79	14.500	2011-Jul-21	04:04:22	89.08	1414.9	824.9	0.133	110.1	9.2	7.870	72.1	75.4	8.149	614.3	2211.4
80	15.000	2011-Jul-21	04:34:22	89.05	1417.4	824.7	0.134	110.3	9.2	7.870	72.3	75.5	8.149	615.5	2215.5
81	15.500	2011-Jul-21	05:04:22	89.03	1420.0	824.6	0.134	110.5	9.2	7.870	72.4	75.6	8.149	616.4	2219.2
82	16.000	2011-Jul-21	06:04:22	88.98	1425.0	824.3	0.134	110.9	9.2	7.870	72.6	75.9	8.149	618.5	2226.9
83	17.500	2011-Jul-21	07:04:22	88.95	1430.1	824.1	0.135	111.2	9.2	7.870	72.7	76.1	8.148	619.7	2233.8
84	18.500	2011-Jul-21	08:04:22	88.91	1435.1	823.9	0.135	111.6	9.3	7.869	72.9	76.3	8.148	621.4	2241.1
85	19.500	2011-Jul-21	09:04:22	88.88	1440.2	823.7	0.136	112.0	9.3	7.869	73.1	76.4	8.148	622.7	2248.0



NO.	TEST	DATE	TIME	JOINTS	SURFACE	GAS COLUMN			OIL COLUMN			EMULSION COLUMN			PRESSURE
	TIME			TO	PRESSURE	HEIGHT	GRADIENT	PRESSURE	HEIGHT	GRADIENT	PRESSURE	HEIGHT	GRADIENT	PRESSURE	@ MPP
	(hours)			LIQUID	(kPaa)	(m)	(kPa/m)	(kPa)	(m)	(kPa/m)	(kPa)	(m)	(kPa/m)	(kPa)	(kPaa)
86	21.296	2011-Jul-21	10:52:09	88.83	1449.2	823.4	0.137	112.7	9.3	7.869	73.3	76.7	8.147	624.8	2259.9
87	21.500	2011-Jul-21	11:04:22	88.83	1450.2	823.4	0.137	112.8	9.3	7.869	73.3	76.7	8.147	624.8	2261.0
88	23.500	2011-Jul-21	13:04:22	88.78	1459.8	823.1	0.138	113.6	9.3	7.868	73.5	77.0	8.147	626.9	2273.7
89	25.500	2011-Jul-21	15:04:22	88.76	1468.9	823.0	0.139	114.3	9.4	7.868	73.6	77.1	8.146	627.7	2284.5
90	27.500	2011-Jul-21	17:04:22	88.75	1477.8	823.0	0.140	115.0	9.4	7.867	73.7	77.1	8.145	628.1	2294.5
91	29.500	2011-Jul-21	19:04:22	88.74	1486.5	822.9	0.141	115.7	9.4	7.866	73.7	77.2	8.145	628.5	2304.4
92	31.500	2011-Jul-21	21:04:22	88.74	1495.1	822.9	0.141	116.4	9.4	7.866	73.7	77.2	8.144	628.4	2313.7
93	33.500	2011-Jul-21	23:04:22	88.74	1503.7	822.9	0.142	117.1	9.4	7.865	73.7	77.2	8.144	628.4	2322.9
94	35.500	2011-Jul-22	01:04:22	88.76	1512.3	823.0	0.143	117.9	9.4	7.865	73.6	77.1	8.143	627.5	2331.2
95	37.500	2011-Jul-22	03:04:22	88.78	1520.8	823.1	0.144	118.6	9.4	7.864	73.5	76.9	8.143	626.5	2339.5
96	39.500	2011-Jul-22	05:04:22	88.80	1529.6	823.3	0.145	119.3	9.3	7.863	73.5	76.8	8.142	625.6	2348.0
97	41.500	2011-Jul-22	07:04:22	88.84	1538.4	823.5	0.146	120.1	9.3	7.863	73.3	76.6	8.142	623.8	2355.6
98	43.500	2011-Jul-22	09:04:22	88.87	1547.3	823.7	0.147	120.8	9.3	7.862	73.2	76.5	8.141	622.5	2363.8
99	45.500	2011-Jul-22	11:04:22	88.91	1556.1	823.9	0.148	121.6	9.3	7.862	73.0	76.2	8.141	620.7	2371.4
100	47.500	2011-Jul-22	13:04:22	88.95	1564.9	824.1	0.148	122.4	9.3	7.861	72.8	76.0	8.140	619.0	2379.0
101	49.500	2011-Jul-22	15:04:22	88.99	1573.6	824.4	0.149	123.1	9.2	7.860	72.6	75.8	8.140	617.2	2386.5
102	53.500	2011-Jul-22	19:04:22	89.09	1590.5	825.0	0.151	124.6	9.2	7.859	72.1	75.3	8.139	612.8	2400.1
103	57.500	2011-Jul-22	23:04:22	89.20	1607.3	825.6	0.153	126.1	9.1	7.858	71.6	74.7	8.138	608.1	2413.2
104	61.500	2011-Jul-23	03:04:22	89.31	1624.1	826.2	0.154	127.6	9.1	7.856	71.1	74.2	8.137	603.4	2426.1
105	65.500	2011-Jul-23	07:04:22	89.43	1640.5	826.9	0.156	129.1	9.0	7.855	70.5	73.5	8.136	598.3	2438.4
106	69.500	2011-Jul-23	11:04:22	89.54	1656.6	827.6	0.158	130.5	8.9	7.854	70.0	73.0	8.135	593.6	2450.8
107	73.500	2011-Jul-23	15:04:22	89.65	1672.1	828.2	0.159	131.9	8.9	7.852	69.5	72.4	8.134	589.0	2462.6
108	77.500	2011-Jul-23	19:04:22	89.74	1688.5	828.7	0.161	133.2	8.8	7.851	69.1	72.0	8.133	585.3	2474.1
109	81.500	2011-Jul-23	23:04:22	89.82	1700.4	829.1	0.162	134.4	8.8	7.850	68.8	71.6	8.132	582.0	2485.5
110	85.500	2011-Jul-24	03:04:22	89.89	1713.4	829.5	0.163	135.6	8.7	7.849	68.4	71.2	8.131	579.1	2496.5
111	89.500	2011-Jul-24	07:04:22	89.95	1725.5	829.8	0.165	136.7	8.7	7.848	68.2	70.9	8.131	576.6	2506.9
112	93.500	2011-Jul-24	11:04:22	89.99	1736.9	830.1	0.166	137.7	8.7	7.848	68.0	70.7	8.130	574.9	2517.4
113	97.500	2011-Jul-24	15:04:22	90.03	1747.7	830.3	0.167	138.6	8.6	7.847	67.8	70.5	8.129	573.3	2527.3
114	101.500	2011-Jul-24	19:04:22	90.06	1758.1	830.4	0.168	139.5	8.6	7.846	67.7	70.4	8.129	572.0	2537.3
115	105.500	2011-Jul-24	23:04:22	90.10	1768.3	830.7	0.169	140.4	8.6	7.845	67.5	70.2	8.128	570.4	2546.6
116	109.500	2011-Jul-25	03:04:22	90.13	1778.4	830.8	0.170	141.3	8.6	7.845	67.4	70.0	8.128	569.1	2556.2
117	113.500	2011-Jul-25	07:04:22	90.17	1788.5	831.0	0.171	142.2	8.6	7.844	67.2	69.8	8.127	567.5	2565.4
118	117.500	2011-Jul-25	11:04:22	90.21	1798.5	831.3	0.172	143.1	8.5	7.843	67.0	69.6	8.126	565.8	2574.5
119	121.500	2011-Jul-25	15:04:22	90.26	1808.4	831.5	0.173	144.0	8.5	7.842	66.8	69.4	8.126	563.8	2583.0
120	125.500	2011-Jul-25	19:04:22	90.32	1818.1	831.9	0.174	144.9	8.5	7.842	66.6	69.1	8.125	561.4	2590.9
121	129.500	2011-Jul-25	23:04:22	90.40	1827.6	832.3	0.175	145.7	8.4	7.841	66.2	68.7	8.125	558.3	2597.8
122	133.500	2011-Jul-26	03:04:22	90.49	1837.0	832.8	0.176	146.6	8.4	7.840	65.8	68.3	8.124	554.7	2604.2
123	137.500	2011-Jul-26	07:04:22	90.59	1846.5	833.3	0.177	147.5	8.3	7.839	65.4	67.8	8.124	550.8	2610.2
124	141.500	2011-Jul-26	11:04:22	90.71	1855.9	833.9	0.178	148.4	8.3	7.838	65.0	67.2	8.123	546.1	2615.5
125	145.500	2011-Jul-26	15:04:22	90.85	1865.5	834.7	0.179	149.4	8.2	7.837	64.4	66.6	8.122	540.7	2620.0
126	149.500	2011-Jul-26	19:04:22	90.99	1875.2	835.4	0.180	150.3	8.2	7.837	63.9	65.9	8.122	535.3	2624.8
127	153.500	2011-Jul-26	23:04:22	91.15	1884.9	836.2	0.181	151.3	8.1	7.836	63.4	65.2	8.121	529.2	2628.8
128	157.500	2011-Jul-27	03:04:22	91.31	1894.6	837.0	0.182	152.3	8.0	7.835	62.9	64.4	8.121	523.1	2632.9
129	161.500	2011-Jul-27	07:04:22	91.47	1904.3	837.8	0.183	153.3	8.0	7.834	62.4	63.7	8.120	517.1	2637.0
130	165.500	2011-Jul-27	11:04:22	91.64	1913.9	838.7	0.184	154.3	7.9	7.833	61.8	62.9	8.120	510.7	2640.8
131	169.500	2011-Jul-27	15:04:22	91.81	1923.5	839.5	0.185	155.2	7.8	7.832	61.4	62.1	8.119	504.4	2644.5
132	173.500	2011-Jul-27	19:04:22	91.99	1932.9	840.4	0.186	156.2	7.8	7.831	60.9	61.3	8.119	497.8	2647.7
133	177.500	2011-Jul-27	23:04:22	92.16	1942.1	841.2	0.187	157.2	7.7	7.830	60.4	60.6	8.118	491.6	2651.3
134	181.500	2011-Jul-28	03:04:22	92.33	1951.1	842.0	0.188	158.1	7.7	7.829	59.9	59.8	8.118	485.5	2654.6
135	185.500	2011-Jul-28	07:04:22	92.50	1959.8	842.8	0.189	159.0	7.6	7.828	59.4	59.1	8.117	479.4	2657.7
136	189.500	2011-Jul-28	11:04:22	92.67	1968.3	843.6	0.190	159.9	7.5	7.828	58.9	58.3	8.117	473.4	2660.6
137	193.500	2011-Jul-28	15:04:22	92.83	1976.5	844.3	0.190	160.7	7.5	7.827	58.4	57.6	8.116	467.9	2663.5
138	197.500	2011-Jul-28	19:04:22	92.99	1984.5	845.1	0.191	161.6	7.4	7.826	57.9	57.0	8.116	462.3	2666.3
139	201.500	2011-Jul-28	23:04:22	93.13	1992.4	845.7	0.192	162.4	7.3	7.825	57.5	56.4	8.115	457.5	2669.8
140	205.500	2011-Jul-29	03:04:22	93.27	2000.3	846.4	0.193	163.2	7.3	7.824	57.0	55.8	8.115	452.8	2673.3
141	209.500	2011-Jul-29	07:04:22	93.40	2008.3	847.0	0.194	164.0	7.2	7.824	56.6	55.3	8.115	448.4	2677.3
142	213.500	2011-Jul-29	11:04:22	93.52	2016.2	847.5	0.194	164.8	7.2	7.823	56.2	54.8	8.114	444.4	2681.5



NO.	TEST TIME (hours)	DATE	TIME	JOINTS TO LIQUID	SURFACE PRESSURE (kPaa)	GAS COLUMN			OIL COLUMN			EMULSION COLUMN			PRESSURE @ MPP (kPaa)
						HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	
143	217.500	2011-Jul-29	15:04:22	93.64	2023.9	848.0	0.195	165.6	7.1	7.822	55.8	54.3	8.114	440.4	2685.7
144	221.500	2011-Jul-29	19:04:22	93.75	2031.4	848.5	0.196	166.3	7.1	7.822	55.4	53.8	8.113	436.8	2690.0
145	225.500	2011-Jul-29	23:04:22	93.86	2038.6	849.0	0.197	167.1	7.0	7.821	55.1	53.4	8.113	433.2	2693.9
146	229.500	2011-Jul-30	03:04:22	93.96	2045.4	849.5	0.197	167.8	7.0	7.820	54.7	53.0	8.112	429.9	2697.7
147	233.500	2011-Jul-30	07:04:22	94.05	2051.8	849.8	0.198	168.4	7.0	7.820	54.4	52.6	8.112	427.0	2701.6
148	236.841	2011-Jul-30	10:24:50	94.12	2056.9	850.2	0.199	168.9	6.9	7.819	54.2	52.4	8.112	424.7	2704.8



ANNULAR FLUID DEPRESSION TEST

COMPANY: PENN WEST PETROLEUM	POOL: LOWER AMARANTH A	U.W.I.: 103/01-02-002-26W1/0
FIELD: WASKADA MB	WELL STATUS: OIL	WELL NAME: WASKADA UNIT NO. 5 HZNTL A1-2-2-26
	LICENSE: 007209	SURFACE LCN.: 103/03-02-002-26W1/0 (HZTL)

ELEVATIONS:

Kelly Bushing (KB): 471.60 m
 Ground Level (GL): 467.30 m
 KB to GL: 4.30 m

FLUID PROPERTIES:

Gas Gravity: 0.750
 Oil Gravity: 37.790 °API
 Water Gravity: 1.067

SURFACE UNIT:

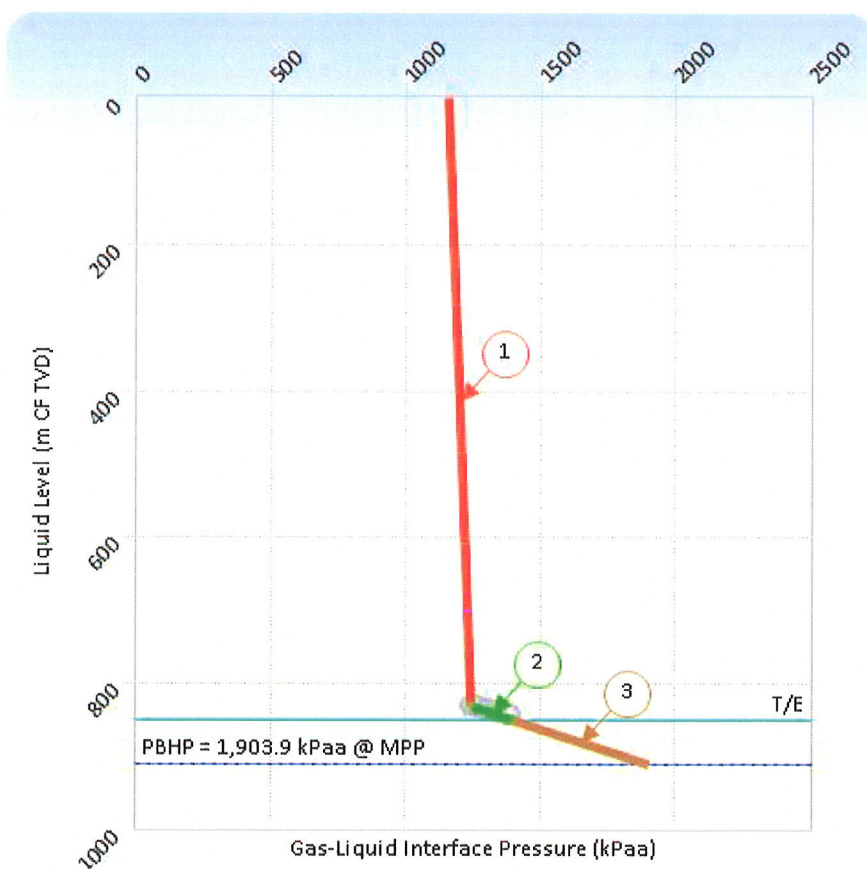
Tubing Pressure: 1198.0 kPa
 Pumping Speed: 5.5 SPM
 Stroke Length: 175.3/69.0 cm/inch

PRODUCTION RATES:

Gas: 0.16 E³m³/d
 Oil: 2.20 m³/d
 Water: 0.33 m³/d

PRODUCING INTERVAL:

Top: 913.42 m KB (TVD)
 1,180.00 m KB (MD)
 Bottom: 912.45 m KB (TVD)
 1,763.30 m KB (MD)
 Mid-Point: 913.74 m KB (TVD)
 1,471.65 m KB (MD)



TEST START: 2011-JUL-20 @ 11:01:38					
No.	Elapsed Time (hours)	Joints To Fluid	Liquid Level (m CF TVD)	Surface Pressure (kPaa)	Interface Pressure (kPaa)
1	0.000	89.75	828.73	1156.9	1246.4
2	0.059	89.81	829.07	1160.2	1250.1
3	0.309	90.09	830.61	1174.2	1265.3
4	0.559	90.36	832.07	1187.7	1280.1
5	0.809	90.63	833.51	1201.0	1294.6
6	1.059	90.90	834.91	1214.1	1308.9
7	1.309	91.18	836.35	1227.0	1323.1
8	1.559	91.44	837.66	1239.9	1337.2
9	1.809	91.71	839.00	1252.8	1351.2
10	2.059	91.97	840.26	1265.6	1365.3
11	2.309	92.20	841.36	1278.4	1379.2
12	2.546	92.34	842.03	1289.9	1391.8

NO.	Column Length (m)	Average Gradient (kPa/m)	Column Pressure (kPa)	Column Type
1	828.6	0.108	89.4	Gas Column
2	21.0	7.510	157.7	Oil Column
3	59.8	8.383	501.3	Emulsion Column

