

PRODUCTIVITY AND BUILDUP TEST REPORT

On Well

WASKADA UNIT No. 5

102/03-03-002-26W1/00

Lower Amaranth: 1130.0 – 2127.3 mKB

Test Date: August 8 – 18, 2011

Prepared for:

PENN WEST ENERGY TRUST

Prepared by:

FEKETE ASSOCIATES INC.

October 25, 2011

PENN WEST ENERGY TRUST

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

ATTENTION: TREVOR THOMPSON

**Re: Productivity & Buildup Test Report
WASKADA UNIT No. 5 102/03-03-002-26W1/00
Lower Amaranth: 1130.0 – 2127.3 mKB
Test Date: August 8 – 18, 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, report PDF, and PAS 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.

Gordon Severin
Well Test & Production Data Analyst

Frank Brunner, R.E.T.
Senior Technical Advisor,
Well Testing

GS/fb

REPORT DISTRIBUTION

Two (2) Copies of the Report to:

PENN WEST ENERGY TRUST
Calgary, Alberta

Attention: TREVOR THOMPSON

Summary of Results

WASKADA UNIT No. 5 102/03-03-002-26W1/00
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TEST RESULTS

PRESSURE SUMMARY		Metric		Field	
Final Calculated Buildup Pressure (2011/08/18)	(p)	2690	kPaa	390	psia
Final Calculated Flowing Sandface Pressure (2011/08/08)	(p _{wfo})	1749	kPaa	254	psia

Final Oil Rate (2011/08/08)	(q _o)	4.0	m ³ /d	25	bb/d
Final Water Rate (2011/08/08)	(q _w)	2.3	m ³ /d	15	bb/d
Cumulative Oil Production (to 2011/08/08)		5384	m ³	33860	bb
Cumulative Water Production (to 2011/08/08)		1879	m ³	11817	bb
Maximum Oil Rate (based on final oil rate)	(q _{omax})	5.2	m ³ /d	33	bb/d

Reservoir Characteristics– Hz Multi-frac Model w/Boundaries		Field		Metric	
Average Reservoir Pressure (History Match)	(p _R)	4134	kPaa	600	psia
Horizontal Permeability	(k _{xy})	0.08	mD	0.08	md
Permeability in X Direction	(k _x)	0.009	mD	0.009	md
Permeability in Y Direction	(k _y)	0.70	mD	0.71	md
Net Vertical Pay	(h)	23	m	75.5	ft
Effective Horizontal Wellbore Length (provided)	(L _e)	997	m	3272	ft
Effective Fracture Half Length	(x _{fy})	11	m	36	ft
Fracture Conductivity	(F _{CD})	19		19	
Reservoir Length (assumed)	(X _e)	1600	m	5249	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

WASKADA UNIT No. 5 102/03-03-002-26W1/00
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BACKGROUND AND TEST OVERVIEW

The WASKADA UNIT No.5 well was drilled vertically to a depth of 562 mKB before starting to build angle. Drilling continued until the Amaranth formation was penetrated, and then, the lateral section of the wellbore was drilled out to a TD of 2145 mKB MD (908.9 mKB TVD). Production casing (139.7 mm) was then landed at TD and cemented in place.

The well was re-entered on March 5, 2010, when a mill/motor assembly was RIH on the end of 73 mm tubing to 2133.5 mKB MD. The wellbore was then circulated clean with water and the tubing and BHA were POOH. On March 7, a Mongoose frac tool assembly (c/w packer) was RIH on the end of 60.3 mm coiled tubing. The packer was set at 2127.0 mKB, and on the following day, the toe was perforated (abrasive cut) over the interval of 2127.0 – 2127.3 mKB MD. The interval was subsequently hydraulically frac'd, placing 10 tonnes of sand blended in 19.8 m³ of water into the formation, and this procedure was repeated 21 times along the length of the horizontal wellbore over the additional gross interval of 1130.0 – 2089.3 mKB. Details of the perforations and stimulation operations are summarized in the table on the following page.

WASKADA UNIT No. 5 102/03-03-002-26W1/00
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BACKGROUND AND TEST OVERVIEW (cont'd)

Stage #	Treatment Interval (m KB MD)	Sand Pumped (tonne)	Fluid Pumped (m3)
1	2127.0 – 2127.3	10	19.82
2	2089.0 – 2089.3	10	19.37
3	2042.0 – 2042.3	10	18.93
4	1994.0 – 1994.3	10	18.48
5	1943.0 – 1943.3	10	18.04
6	1898.0 – 1898.3	10	17.59
7	1850.0 – 1850.3	10	17.15
8	1803.0 – 1803.3	10	16.70
9	1754.0 – 1754.3	10	16.26
10	1704.0 – 1704.3	10	15.81
11	1658.0 – 1658.3	10	15.37
12	1610.0 – 1610.3	10	14.92
13	1564.0 – 1564.3	10	14.48
14	1514.0 – 1514.3	10	14.03
15	1465.0 – 1465.3	10	13.59
16	1418.0 – 1418.3	10	13.14
17	1370.0 – 1370.3	10	12.70
18	1322.0 – 1322.3	10	12.25
19	1274.0 – 1274.3	10	11.81
20	1226.0 – 1226.3	10	11.36
21	1178.0 – 1178.3	10	10.92
22	1130.0 – 1130.3	10	10.47
Total		220	333.19

Following the 22 stage hydraulic fracture treatment, a “WR” plug was RIH on the end of coiled tubing and set at 350 mKB and services were released. The well remained suspended until July 9, at which time, the “WR” plug was retrieved and an N₂ assisted coiled tubing cleanout was conducted to 2056.0 mKB MD.

The well remained standing until July 22, at which time, 73 mm production tubing was RIH and landed at 920 mKB MD. Shortly thereafter, the pump and rods were installed, tested and primed.

WASKADA UNIT No. 5 102/03-03-002-26W1/00
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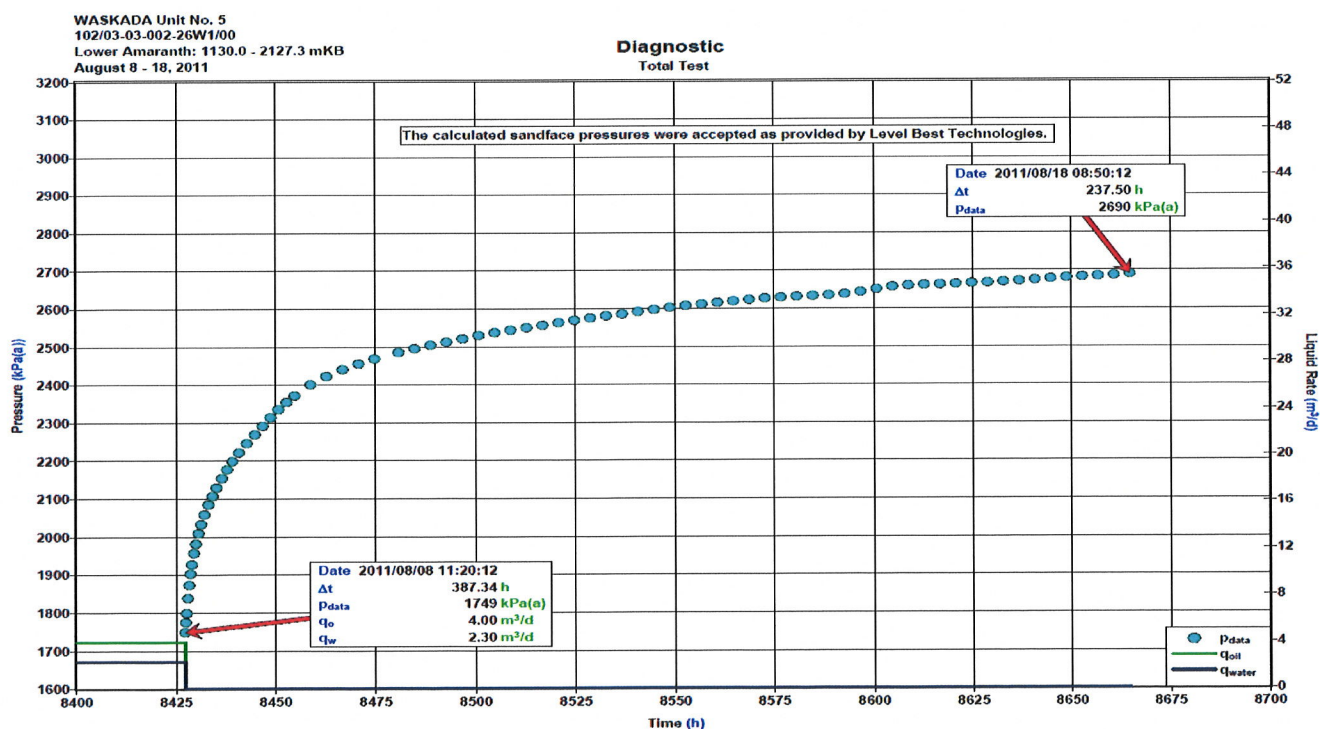
BACKGROUND AND TEST OVERVIEW (cont'd)

Commercial oil and gas production commenced August 23, 2010. Oil production peaked on January 25, 2011, at 51.1 m³/d and fell to a daily average of 4.0 m³/d by August 2011.

On August 8, 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 a final oil rate of 4.0 m³/d and a water rate of 2.3 m³/d. The subsequent automated samplings of the fluid level and corresponding casing pressure were collected until August 18 (Δt = 238 hrs), when the AWS equipment was rigged out. The pressure calculations to MPP (912.41 mKB TVD), were conducted by the AWS service provider and have been accepted as presented.

During the August 23, 2010 to August 4, 2011 production period, a total of 5384 m³ of oil, and 1879 m³ of water were produced.

The plot below displays the calculated bottomhole pressures measured during the test and oil, gas and water rates measured just prior to shut-in on August 8, 2011.



WASKADA UNIT No. 5 102/03-03-002-26W1/00
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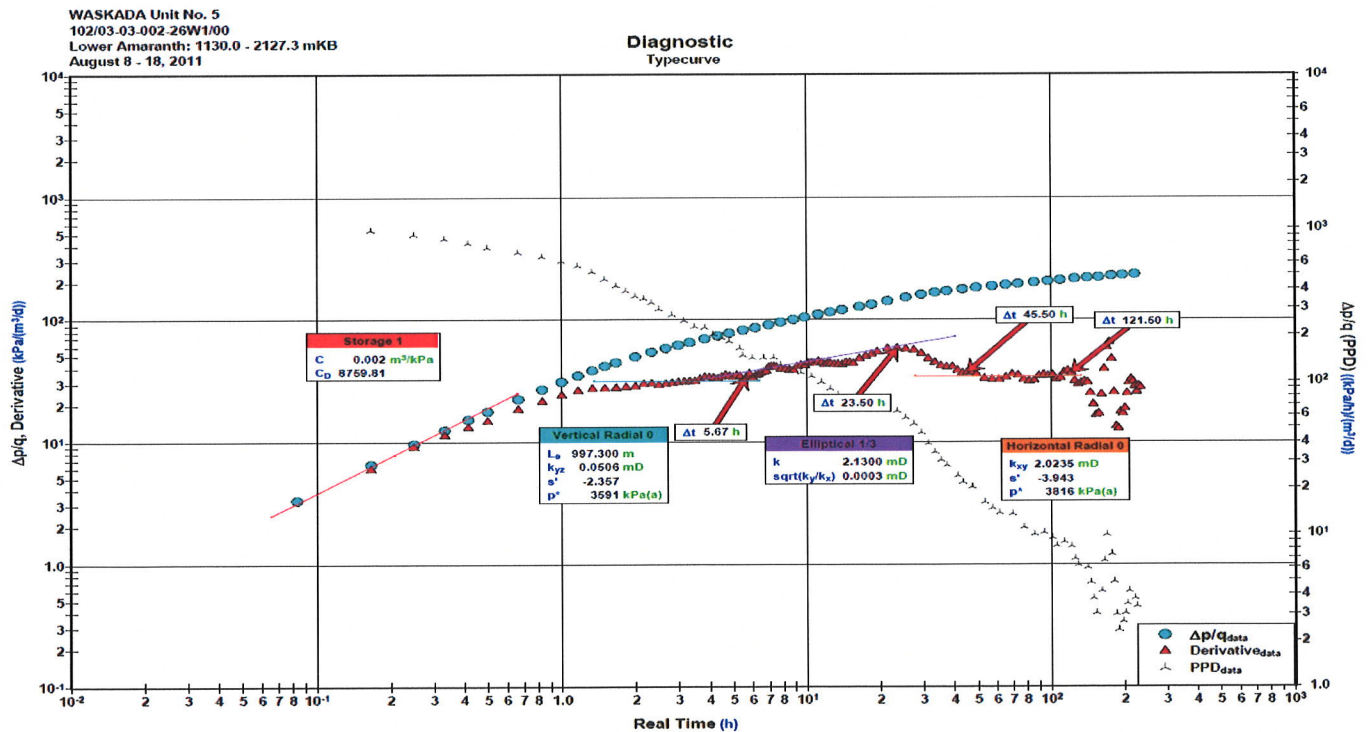
BACKGROUND AND TEST OVERVIEW (cont'd)

The properties of the oil have been taken from the PVT data supplied by Penn West. A saturation pressure (P_b) of 4233 kPaa is reported and the solution gas/oil ratio is estimated to be $43.3 \text{ m}^3/\text{m}^3$.

WASKADA UNIT No. 5 102/03-03-002-26W1/00
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DIAGNOSTIC ANALYSIS

To determine the reservoir flow characteristics affecting the pressure behavior, a type-curve and pressure derivative plot of the buildup was generated (shown below). Although multiple fractures likely impact the flow pattern, conventional horizontal well methodology is initially applied to the buildup trends 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 and vertical radial flow appear to be developed within about 6 hours of shut-in. After vertical radial flow dissipates, the derivative transitions to a $\frac{1}{3}$ slope trend, indicating elliptical flow (transitional flow regime between linear horizontal and horizontal radial flow) to about 24 hours of shut-in. The derivative then exhibits a downward trend to 46 hours, possibly in response to reservoir boundaries and/or heterogeneities such as an improvement in flow capacity, before leveling off. The second horizontal trend could be interpreted as horizontal radial flow and continues to about 122 hours of shut-in. After 122 hours of shut-in time to the end of the test, the derivative is impacted by a wellbore effect likely attributed to liquid movement in the wellbore.



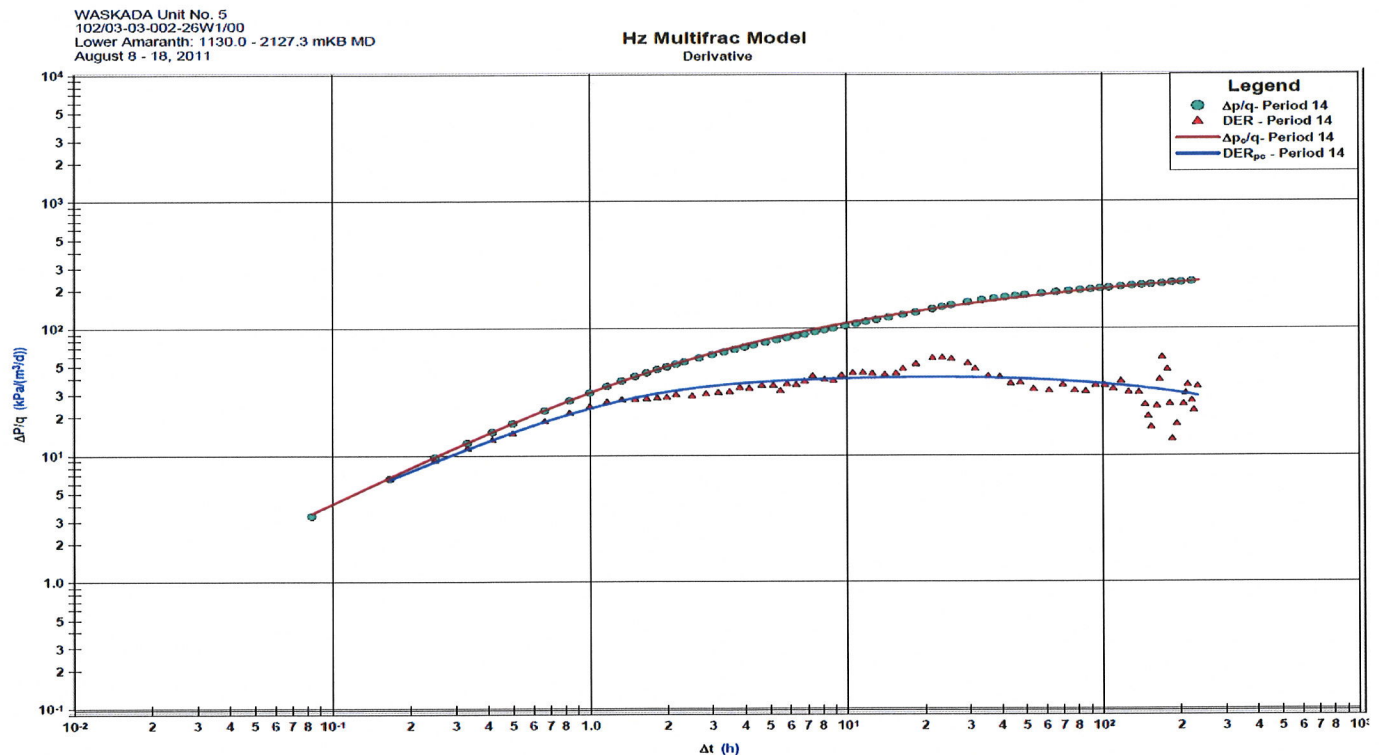
WASKADA UNIT No. 5 102/03-03-002-26W1/00

Lower Amaranth: 1130.0 – 2127.3 mKB

Test Date: August 8 – 18, 2011

CONCLUSIONS

- History matching was undertaken utilizing the **Horizontal Multi-frac Model**. Assuming an effective horizontal wellbore length of 997 m, a reasonable match to the observed pressure data was achieved with a horizontal permeability (k_{xy}) of 0.08 md. Assuming each frac stage generated a single transverse fracture and each is equally effective, the effective fracture half length is calculated to be 11 m. 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 plot below displays the match obtained with the typecurve and pressure derivative.

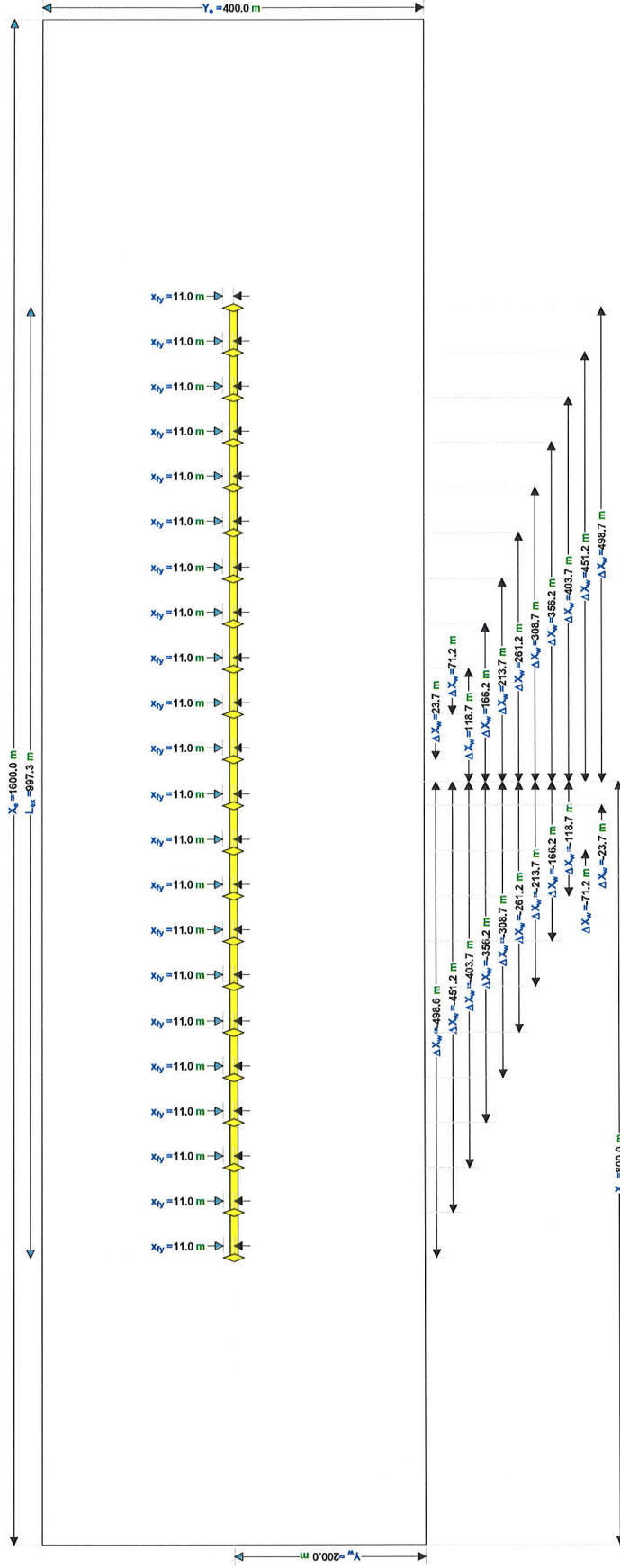


- The final calculated buildup pressure on August 18, 2011 (after 238 hrs of shut-in) was 2690 kPaa. Assuming a $\frac{1}{4}$ section drainage area (1600 x 400 meters), the model calculates a current reservoir pressure of 4134 kPaa.
- Based on the final producing conditions on August 18, 2011 ($q = 4.0 \text{ m}^3/\text{d}$ @ $p_{wf} = 1749 \text{ kPaa}$) and a reservoir pressure of 4134 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 $5.2 \text{ m}^3/\text{d}$.

Models

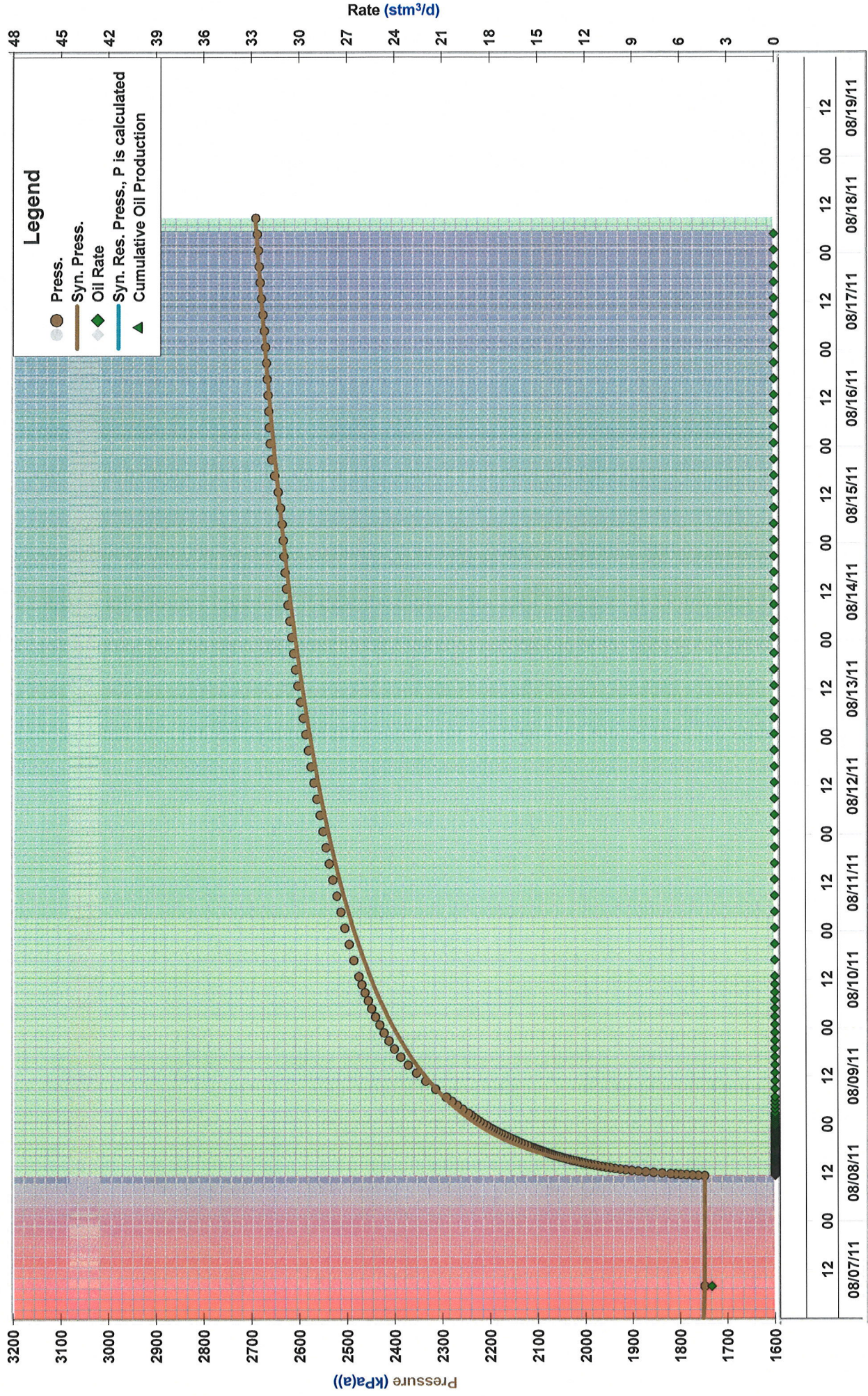
WASKADA Unit No. 5
 102/03-03-002-26W1/00
 Lower Amaranth: 1130.0 - 2127.3 mKB MD
 August 8 - 18, 2011

Hz Multifrac Model
 Schematic



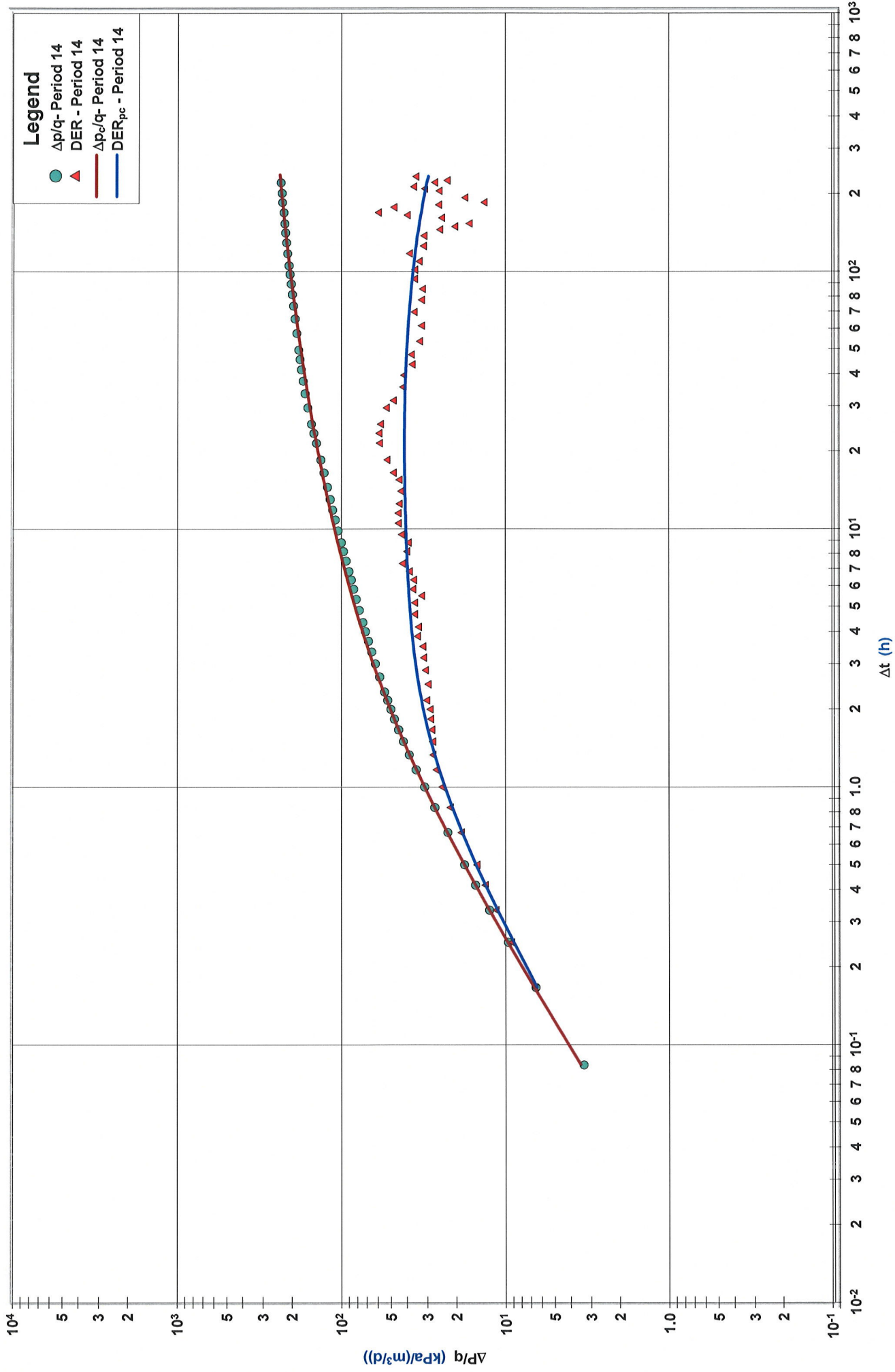
WASKADA Unit No. 5
102/03-03-002-26W1/00
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August 8 - 18, 2011

Hz Multifrac Model Welltest History



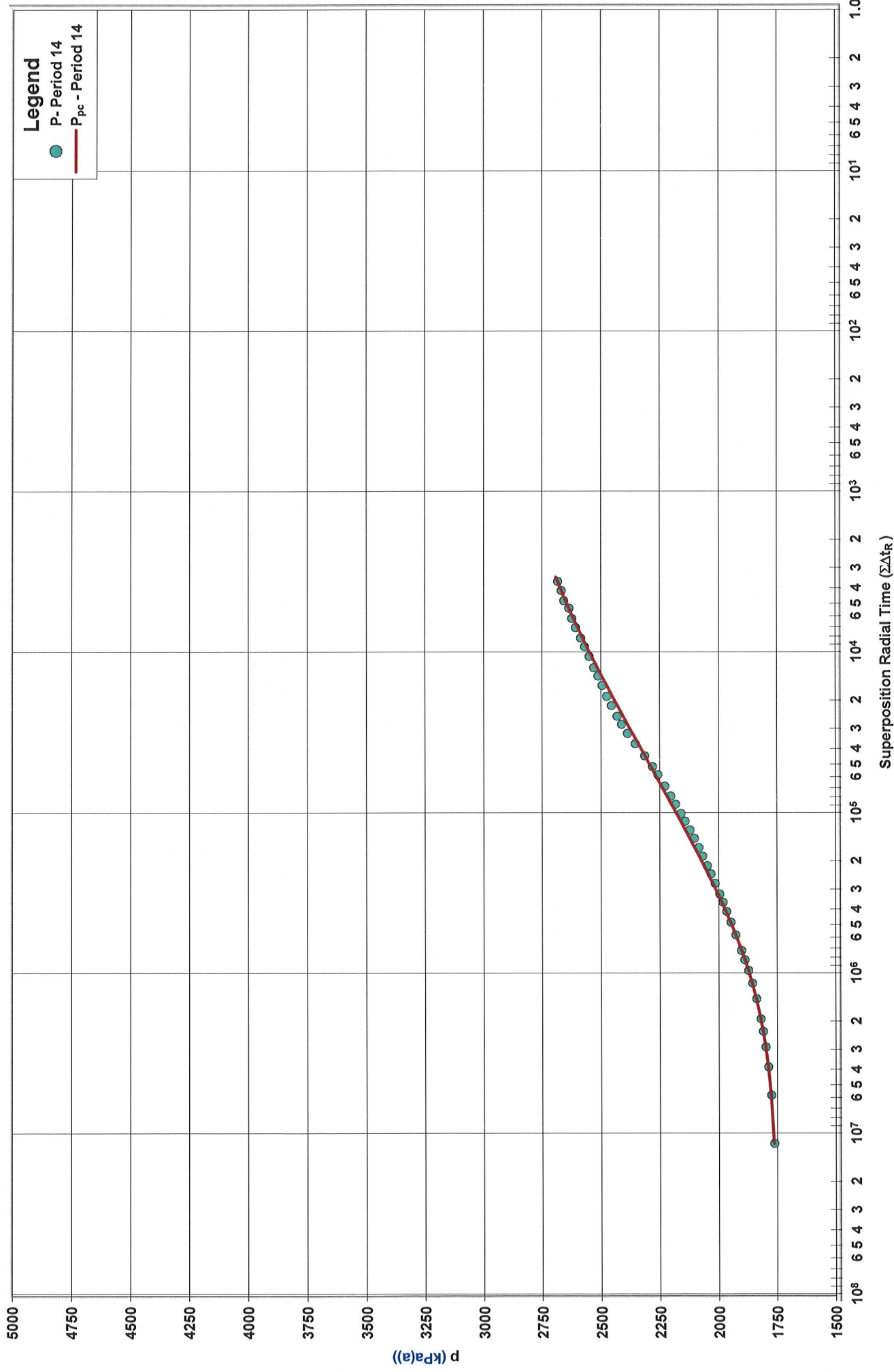
WASKADA Unit No. 5
 102/03-03-002-26W1/00
 Lower Amaranth: 1130.0 - 2127.3 mKB MD
 August 8 - 18, 2011

Hz Multifrac Model Derivative



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102/03-03-002-26W1/00
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Hz Multifrac Model Radial Build-Up



Oil Model - Horizontal Multifrac Model

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August 8 - 18, 2011

Model Results

Skin Damage (s_d)	-2.300	Reservoir Length (X_e)	1600.0 m
Permeability x-direction (k_x)	0.0089 mD	Reservoir Width (Y_e)	400.0 m
Permeability y-direction (k_y)	0.7000 mD	Well Location in X-direction (X_w)	800.0 m
Horizontal to Vertical Permeability Ratio (k_h / k_v)	1.000	Well Location in Y-direction (Y_w)	200.0 m
Number of Fractures (#Frac)	22	Effective Wellbore Length (L_e)	997.300 m
Fracture Half Length (x_{fy})	11.0 m		
Dimensionless Fracture Conductivity (F_{CD})	19.000		

Reservoir Parameters

Initial Pressure (p_i)	6720.0 kPa(a)	Net Pay (h)	23.0 m
Reservoir Temperature (T_R)	45.0 °C	Total Porosity (ϕ_t)	13.00 %
		Wellbore Radius (r_w)	0.091 m
Dimensionless Storage 1 (C_{D1})	5600.0		
Dimensionless Storage 2 (C_{D2})		Drainage Area (A_D)	64.0 ha
Dimensionless Storage Parameter (C_{pD})			

Production

Total Cumulative Production Oil (Cum _{oil})	5.400 10 ³ m ³
Total Cumulative Production Water (Cum _{water})	1.887 10 ³ m ³

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)	1.2210e-06 1/kPa
Gas Compressibility (c_g)	1.6786e-04 1/kPa
Water Compressibility (c_w)	4.4646e-07 1/kPa
Oil Compressibility (c_o)	7.3066e-07 1/kPa

Fluid Properties

Reservoir Temperature (T_{resv})	45.0 °C
Reservoir Pressure (p_{resv})	4600 kPa(a)
Oil Gravity (γ_o)	37.2 °API
Bubble Point Pressure (p_{bp})	4326 kPa(a)
Oil Formation Volume Factor (B_o)	1.122
Oil Viscosity (μ_o)	1.5352 mPa.s
Oil Compressibility (c_o)	1.0674e-06 1/kPa
Solution Gas Ratio (R_s)	43.30 m ³ /m ³
Oil Correlation	Vasquez and Beggs
Oil Viscosity Correlation	Beggs & Robinson

I.P.R.

Liquid IPR

Inflow Performance Relationship

WASKADA Unit No. 5
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Test Data

Bubble Point Pressure (p_{bp}) 4326 kPa(a)
Reservoir Pressure (p_R) 4134 kPa(a)
Test Pressure (p_{wf}) 1749 kPa(a)
Oil Test Rate (q_o) 4.0 m³/d
Water Test Rate (q_w) 2.3 m³/d

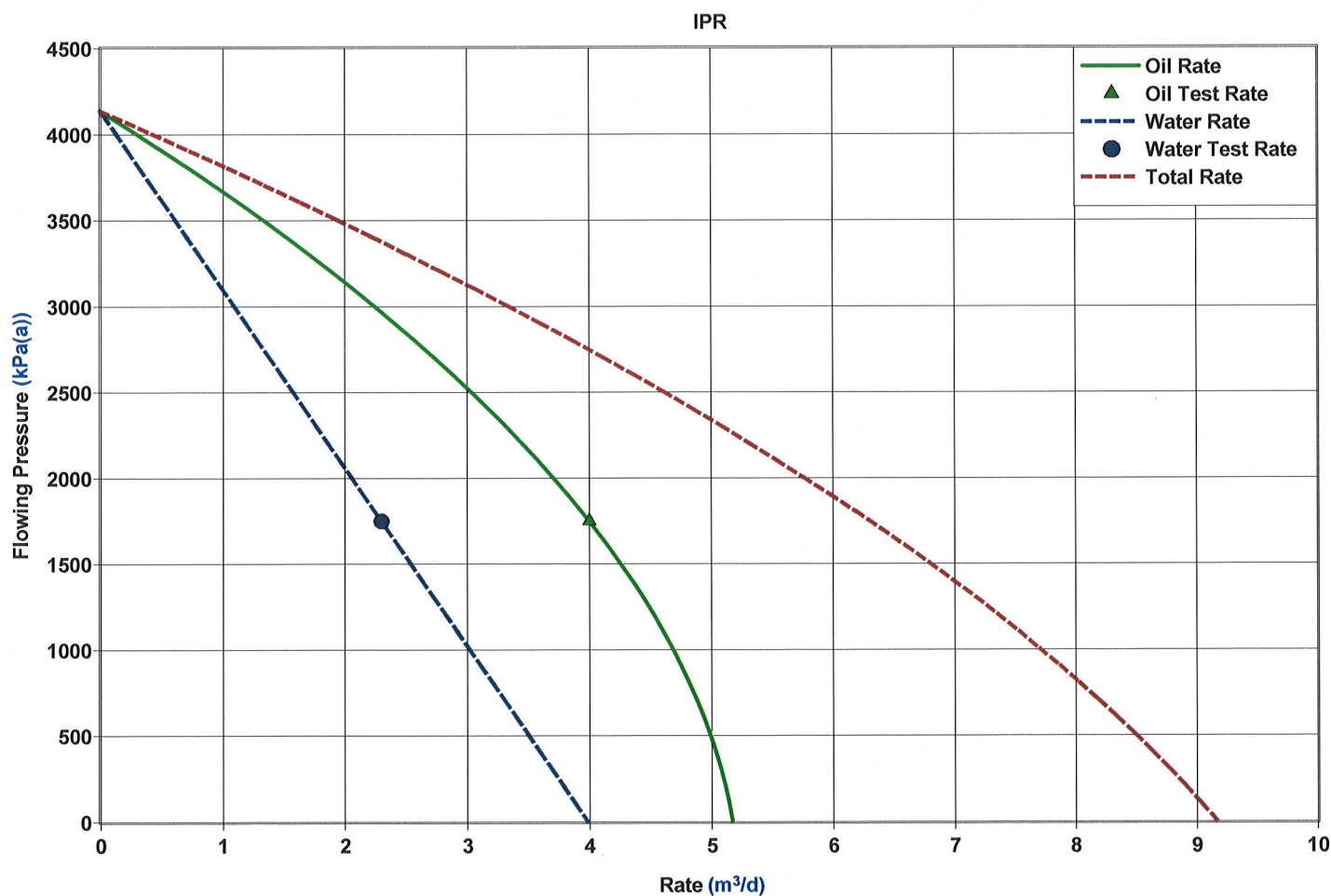
Results

Maximum Oil Rate ($q_{o(max)}$) 5.2 m³/d
Maximum Total Rate ($q_{t(max)}$) 9.2 m³/d
Maximum Water Rate ($q_{w(max)}$) 4.0 m³/d

Note

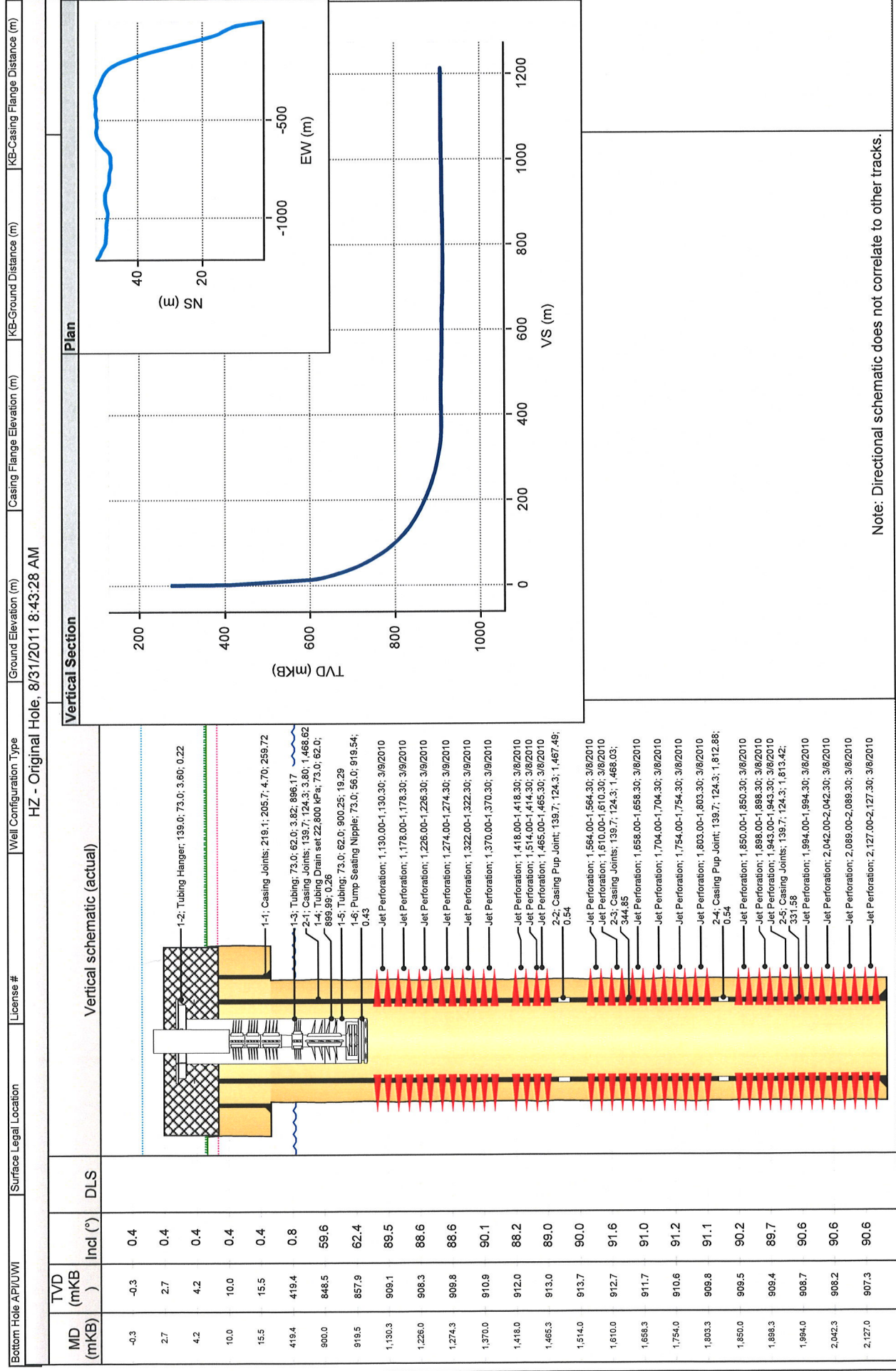
* Test Point
** Bubble Point
Oil IPR based on Vogel's Equation
(Quadratic Curve Factor = 0.2)

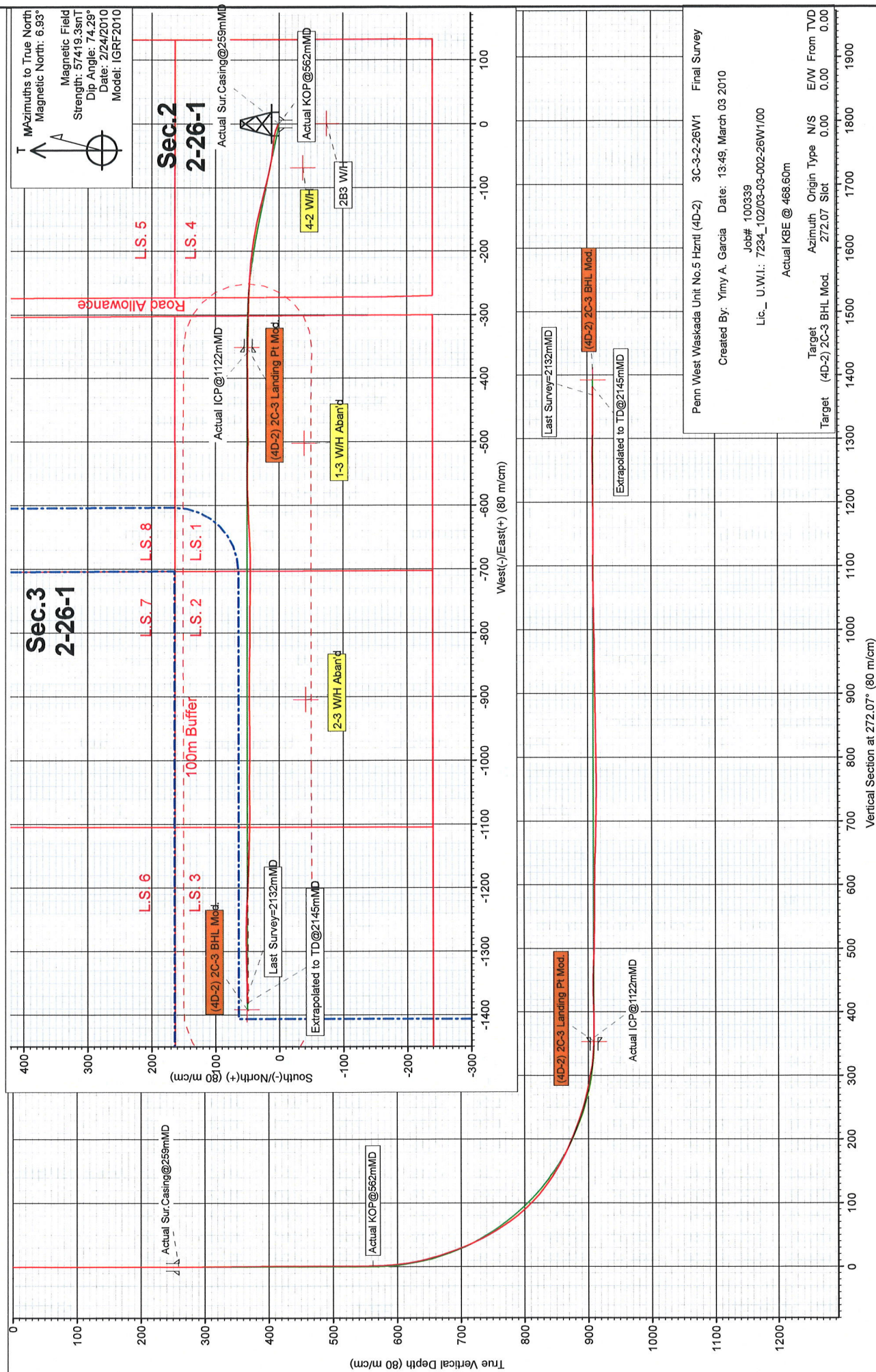
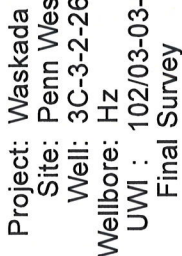
Flowing Pressure	Oil Rate	Water Rate	Total Rate
kPa(a)	m ³ /d	m ³ /d	m ³ /d
0	5.2	4.0	9.2
300	5.1	3.7	8.8
600	4.9	3.4	8.4
900	4.8	3.1	7.9
1200	4.5	2.8	7.4
1500	4.3	2.5	6.8
1749*	4.0	2.3	6.3
1800	3.9	2.3	6.2
2100	3.6	2.0	5.5
2400	3.2	1.7	4.9
2700	2.7	1.4	4.1
3000	2.2	1.1	3.3
3300	1.7	0.8	2.5
3600	1.1	0.5	1.7
3900	0.5	0.2	0.7
4134	0.0	0.0	0.0



Wellbore

Well Name: Penn West Waskada Unit No. 5 HZNTL 3-3-2-26





Cathedral Energy Services

Survey Report

Company:	Penn West Petroleum Ltd.	Local Co-ordinate Reference:	Well 3C-3-2-26W1
Project:	Waskada	TVD Reference:	Actual KBE @ 468.60m
Site:	Penn West Waskada Unit No.5 Hznrl (4D-2)	MD Reference:	Actual KBE @ 468.60m
Well:	3C-3-2-26W1	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Final Survey	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 Hznrl (4D-2)		
Site Position:		Northing:	5,439,192.84 m
From:	Map	Easting:	363,811.64 m
Position Uncertainty:	0.00 m	Slot Radius:	0.00 mm
		Latitude:	49° 5' 25.83 N
		Longitude:	100° 51' 55.39 W
		Grid Convergence:	-1.41 °

Well	3C-3-2-26W1		
Well Position	+N/-S	0.00 m	Northing: 5,439,192.84 m
	+E/-W	0.00 m	Easting: 363,811.64 m
Position Uncertainty	0.00 m	Wellhead Elevation:	m
		Latitude:	49° 5' 25.83 N
		Longitude:	100° 51' 55.39 W
		Ground Level:	464.30 m

Wellbore	Hz		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	2/24/2010	6.93
			Dip Angle (°)
			74.29
			Field Strength (nT)
			57,419

Design	Final Survey		
Audit Notes:	Well Licence:7234		
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (m)	+N/-S (m)	+E/-W (m)
	0.00	0.00	0.00
			Direction (°)
			272.07

Survey Program	Date 3/3/2010		
From (m)	To (m)	Survey (Wellbore)	Tool Name
259.00	2,145.00	Final Survey (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	-468.60	0.00	0.00	0.00	0.00	0.00	0.00	
259.00	0.00	0.00	259.00	-209.60	0.00	0.00	0.00	0.00	0.00	0.00	Actual Sur.Casing@259mMD
273.67	0.40	319.10	273.67	-194.93	0.04	-0.03	0.03	0.05	319.10	0.82	
411.44	0.50	298.90	411.44	-57.16	0.69	-0.87	0.90	1.12	308.38	0.04	
549.20	0.20	96.90	549.19	80.59	0.95	-1.16	1.20	1.50	309.39	0.15	
562.00	0.83	330.48	561.99	93.39	1.03	-1.19	1.22	1.57	311.04	2.26	Actual KOP@562mMD
562.98	0.90	329.70	562.97	94.37	1.05	-1.19	1.23	1.59	311.22	2.17	
576.78	3.10	286.40	576.77	108.17	1.24	-1.61	1.65	2.03	307.77	5.48	
590.55	4.90	296.50	590.50	121.90	1.61	-2.49	2.55	2.97	302.92	4.20	
604.28	6.90	292.30	604.16	135.56	2.19	-3.78	3.85	4.36	300.06	4.47	

Cathedral Energy Services

Survey Report

Company:	Penn West Petroleum Ltd.	Local Co-ordinate Reference:	Well 3C-3-2-26W1
Project:	Waskada	TVD Reference:	Actual KBE @ 468.60m
Site:	Penn West Waskada Unit No.5 Hznll (4D-2)	MD Reference:	Actual KBE @ 468.60m
Well:	3C-3-2-26W1	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Final Survey	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
618.05	9.50	290.30	617.79	149.19	2.89	-5.61	5.71	6.31	297.30	5.70	
631.82	12.80	291.30	631.29	162.69	3.84	-8.10	8.23	8.96	295.39	7.20	
645.62	14.60	287.80	644.70	176.10	4.93	-11.18	11.35	12.22	293.80	4.31	
659.41	16.20	281.50	658.00	189.40	5.85	-14.72	14.92	15.84	291.66	5.03	
673.20	18.80	278.00	671.15	202.55	6.54	-18.80	19.03	19.91	289.17	6.10	
686.97	19.50	278.60	684.16	215.56	7.19	-23.27	23.52	24.36	287.17	1.58	
700.78	20.80	277.40	697.12	228.52	7.85	-27.98	28.25	29.06	285.67	2.96	
714.51	23.20	277.30	709.85	241.25	8.51	-33.08	33.37	34.16	284.42	5.24	
728.25	25.40	277.10	722.37	253.77	9.22	-38.69	39.00	39.78	283.40	4.81	
742.00	27.30	274.00	734.69	266.09	9.80	-44.77	45.09	45.83	282.35	5.12	
755.74	29.80	276.70	746.76	278.16	10.42	-51.30	51.64	52.35	281.48	6.14	
769.48	32.00	279.60	758.55	289.95	11.43	-58.28	58.66	59.39	281.09	5.80	
783.27	34.00	282.00	770.12	301.52	12.84	-65.66	66.08	66.90	281.06	5.20	
797.02	37.20	282.30	781.29	312.69	14.52	-73.48	73.96	74.90	281.18	6.99	
810.82	41.10	284.30	792.00	323.40	16.53	-81.96	82.50	83.61	281.40	8.91	
824.61	43.30	284.50	802.21	333.61	18.84	-90.93	91.55	92.86	281.70	4.79	
838.35	46.20	282.10	811.97	343.37	21.06	-100.34	101.04	102.53	281.85	7.33	
852.10	49.90	283.70	821.16	352.56	23.34	-110.31	111.08	112.75	281.95	8.48	
865.89	52.40	284.20	829.81	361.21	25.93	-120.73	121.58	123.48	282.12	5.50	
879.66	54.90	284.50	837.97	369.37	28.68	-131.47	132.42	134.56	282.31	5.47	
893.43	58.20	281.90	845.56	376.96	31.30	-142.66	143.69	146.05	282.37	8.60	
907.22	61.20	281.00	852.52	383.92	33.66	-154.32	155.44	157.95	282.30	6.74	
921.02	62.50	280.70	859.03	390.43	35.95	-166.27	167.46	170.12	282.20	2.88	
934.82	64.50	280.20	865.18	396.58	38.19	-178.42	179.68	182.46	282.08	4.46	
948.59	65.70	279.10	870.98	402.38	40.28	-190.73	192.06	194.94	281.93	3.40	
962.36	66.80	277.00	876.53	407.93	42.05	-203.21	204.59	207.51	281.69	4.82	
976.10	70.10	276.00	881.57	412.97	43.49	-215.91	217.33	220.24	281.39	7.49	
989.90	71.30	273.80	886.14	417.54	44.60	-228.88	230.34	233.19	281.03	5.21	
1,003.64	72.80	273.30	890.37	421.77	45.41	-241.93	243.41	246.15	280.63	3.44	
1,017.41	74.60	271.80	894.23	425.63	46.00	-255.13	256.62	259.24	280.22	5.02	
1,031.10	77.30	272.40	897.56	428.96	46.49	-268.40	269.90	272.40	279.83	6.05	
1,044.80	78.70	270.70	900.41	431.81	46.85	-281.79	283.30	285.66	279.44	4.76	
1,058.61	79.80	271.80	902.98	434.38	47.14	-295.36	296.87	299.10	279.07	3.35	
1,072.32	80.10	271.20	905.37	436.77	47.50	-308.85	310.36	312.48	278.74	1.45	
1,086.11	82.90	272.20	907.41	438.81	47.90	-322.48	324.00	326.02	278.45	6.46	
1,099.90	86.80	271.10	908.65	440.05	48.30	-336.21	337.73	339.66	278.17	8.81	
1,113.61	88.30	271.40	909.24	440.64	48.60	-349.90	351.43	353.26	277.91	3.35	
1,122.00	89.30	271.20	909.41	440.81	48.79	-358.29	359.81	361.60	277.75	3.65	Actual ICP@1122mMD
1,127.34	89.30	271.20	909.48	440.88	48.90	-363.63	365.15	366.90	277.66	0.00	
1,141.05	90.40	269.30	909.51	440.91	48.96	-377.34	378.86	380.50	277.39	4.80	
1,154.84	91.50	269.50	909.28	440.68	48.81	-391.12	392.63	394.16	277.11	2.43	
1,168.51	91.40	270.30	908.94	440.34	48.79	-404.79	406.28	407.72	276.87	1.77	

Cathedral Energy Services

Survey Report

Company:	Penn West Petroleum Ltd.	Local Co-ordinate Reference:	Well 3C-3-2-26W1
Project:	Waskada	TVD Reference:	Actual KBE @ 468.60m
Site:	Penn West Waskada Unit No.5 Hzntrl (4D-2)	MD Reference:	Actual KBE @ 468.60m
Well:	3C-3-2-26W1	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Final Survey	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
1,182.29	90.00	269.20	908.77	440.17	48.73	-418.57	420.05	421.39	276.64	3.88	
1,196.00	90.70	269.60	908.69	440.09	48.59	-432.28	433.75	435.00	276.41	1.76	
1,209.71	90.40	271.20	908.55	439.95	48.68	-445.99	447.45	448.63	276.23	3.56	
1,223.46	88.80	270.10	908.65	440.05	48.84	-459.73	461.19	462.32	276.06	4.24	
1,237.21	87.80	268.90	909.06	440.46	48.72	-473.48	474.92	475.98	275.87	3.41	
1,250.96	87.90	268.50	909.57	440.97	48.41	-487.21	488.64	489.61	275.67	0.90	
1,264.71	88.50	269.30	910.01	441.41	48.14	-500.95	502.36	503.26	275.49	2.18	
1,278.46	89.40	272.60	910.26	441.66	48.37	-514.70	516.11	516.97	275.37	7.46	
1,292.21	89.20	271.30	910.43	441.83	48.84	-528.44	529.85	530.69	275.28	2.87	
1,305.96	89.40	270.60	910.59	441.99	49.07	-542.19	543.60	544.40	275.17	1.59	
1,319.71	89.30	269.50	910.75	442.15	49.08	-555.93	557.34	558.10	275.05	2.41	
1,333.46	89.40	269.40	910.91	442.31	48.95	-569.68	571.08	571.78	274.91	0.31	
1,347.21	89.60	268.70	911.03	442.43	48.72	-583.43	584.81	585.46	274.77	1.59	
1,360.96	90.00	267.50	911.07	442.47	48.26	-597.17	598.52	599.12	274.62	2.76	
1,374.71	90.20	267.70	911.05	442.45	47.69	-610.91	612.23	612.77	274.46	0.62	
1,388.46	89.00	267.80	911.15	442.55	47.15	-624.65	625.94	626.43	274.32	2.63	
1,402.23	87.50	265.80	911.57	442.97	46.38	-638.39	639.65	640.07	274.16	5.44	
1,416.00	88.10	266.60	912.10	443.50	45.47	-652.12	653.33	653.70	273.99	2.18	
1,429.75	88.60	268.70	912.49	443.89	44.90	-665.85	667.04	667.36	273.86	4.71	
1,443.50	88.90	269.50	912.79	444.19	44.69	-679.60	680.77	681.06	273.76	1.86	
1,457.25	88.90	270.40	913.06	444.46	44.68	-693.34	694.50	694.78	273.69	1.96	
1,471.00	89.00	269.80	913.31	444.71	44.70	-707.09	708.24	708.50	273.62	1.33	
1,484.77	88.90	269.20	913.56	444.96	44.58	-720.86	722.00	722.24	273.54	1.33	
1,498.54	89.30	270.90	913.78	445.18	44.59	-734.63	735.76	735.98	273.47	3.80	
1,512.35	90.00	271.10	913.86	445.26	44.83	-748.43	749.56	749.77	273.43	1.58	
1,526.16	90.20	270.70	913.84	445.24	45.05	-762.24	763.37	763.57	273.38	0.97	
1,539.91	90.10	269.80	913.80	445.20	45.11	-775.99	777.11	777.30	273.33	1.98	
1,553.68	90.20	270.00	913.76	445.16	45.09	-789.76	790.87	791.05	273.27	0.49	
1,567.43	89.90	270.10	913.75	445.15	45.10	-803.51	804.61	804.78	273.21	0.69	
1,581.20	91.40	271.30	913.60	445.00	45.27	-817.28	818.38	818.53	273.17	4.18	
1,594.98	91.50	271.20	913.25	444.65	45.57	-831.05	832.15	832.30	273.14	0.31	
1,608.75	91.60	271.60	912.88	444.28	45.90	-844.81	845.92	846.06	273.11	0.90	
1,622.50	91.20	271.20	912.54	443.94	46.24	-858.55	859.66	859.80	273.08	1.23	
1,636.25	91.10	270.10	912.26	443.66	46.39	-872.30	873.40	873.53	273.04	2.41	
1,650.00	91.10	269.70	912.00	443.40	46.37	-886.05	887.14	887.26	273.00	0.87	
1,663.78	90.90	270.20	911.76	443.16	46.36	-899.82	900.91	901.02	272.95	1.17	
1,677.53	90.90	269.50	911.54	442.94	46.32	-913.57	914.65	914.75	272.90	1.53	
1,691.28	89.70	269.20	911.47	442.87	46.17	-927.32	928.38	928.47	272.85	2.70	
1,705.03	90.30	268.90	911.47	442.87	45.94	-941.07	942.11	942.19	272.79	1.46	
1,718.81	90.00	268.70	911.43	442.83	45.65	-954.85	955.87	955.94	272.74	0.78	
1,732.59	91.20	270.30	911.29	442.69	45.53	-968.62	969.64	969.69	272.69	4.35	
1,746.34	91.30	270.20	910.99	442.39	45.59	-982.37	983.38	983.43	272.66	0.31	

Cathedral Energy Services

Survey Report

Company: Penn West Petroleum Ltd.
Project: Waskada
Site: Penn West Waskada Unit No.5 Hzntrl (4D-2)
Well: 3C-3-2-26W1
Wellbore: Hz
Design: Final Survey

Local Co-ordinate Reference: Well 3C-3-2-26W1
TVD Reference: Actual KBE @ 468.60m
MD Reference: Actual KBE @ 468.60m
North Reference: True
Survey Calculation Method: Minimum Curvature
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
1,760.08	91.10	270.70	910.70	442.10	45.70	-996.11	997.11	997.16	272.63	1.18	
1,773.88	90.90	270.80	910.46	441.86	45.88	-1,009.90	1,010.90	1,010.95	272.60	0.49	
1,787.63	90.80	270.00	910.26	441.66	45.97	-1,023.65	1,024.64	1,024.68	272.57	1.76	
1,801.40	91.20	270.30	910.02	441.42	46.01	-1,037.42	1,038.40	1,038.44	272.54	1.09	
1,815.18	90.70	269.10	909.79	441.19	45.94	-1,051.20	1,052.17	1,052.20	272.50	2.83	
1,828.97	90.70	269.40	909.62	441.02	45.76	-1,064.99	1,065.94	1,065.97	272.46	0.65	
1,842.78	90.90	269.50	909.43	440.83	45.63	-1,078.79	1,079.74	1,079.76	272.42	0.49	
1,856.53	90.00	270.40	909.32	440.72	45.61	-1,092.54	1,093.48	1,093.49	272.39	2.78	
1,870.32	89.70	271.90	909.36	440.76	45.89	-1,106.33	1,107.26	1,107.28	272.38	3.33	
1,884.14	89.70	271.40	909.43	440.83	46.29	-1,120.14	1,121.08	1,121.10	272.37	1.09	
1,897.91	89.70	271.70	909.50	440.90	46.66	-1,133.91	1,134.85	1,134.87	272.36	0.65	
1,911.68	90.30	272.00	909.50	440.90	47.10	-1,147.67	1,148.62	1,148.64	272.35	1.46	
1,925.44	90.30	271.80	909.43	440.83	47.56	-1,161.42	1,162.38	1,162.40	272.34	0.44	
1,939.17	90.40	271.20	909.34	440.74	47.92	-1,175.15	1,176.11	1,176.13	272.34	1.33	
1,952.94	90.70	272.80	909.21	440.61	48.40	-1,188.91	1,189.88	1,189.89	272.33	3.55	
1,966.69	90.60	271.60	909.06	440.46	48.93	-1,202.65	1,203.63	1,203.64	272.33	2.63	
1,980.49	90.20	273.70	908.96	440.36	49.57	-1,216.43	1,217.43	1,217.44	272.33	4.65	
1,994.27	90.40	273.10	908.89	440.29	50.38	-1,230.19	1,231.20	1,231.22	272.35	1.38	
2,008.03	90.60	271.80	908.77	440.17	50.97	-1,243.93	1,244.96	1,244.98	272.35	2.87	
2,021.77	90.60	269.80	908.62	440.02	51.16	-1,257.67	1,258.70	1,258.71	272.33	4.37	
2,035.52	90.40	270.40	908.50	439.90	51.19	-1,271.42	1,272.44	1,272.45	272.31	1.38	
2,049.30	89.80	270.60	908.48	439.88	51.31	-1,285.20	1,286.21	1,286.22	272.29	1.38	
2,063.07	89.30	269.60	908.59	439.99	51.33	-1,298.97	1,299.98	1,299.98	272.26	2.44	
2,076.87	89.40	268.70	908.74	440.14	51.13	-1,312.77	1,313.76	1,313.76	272.23	1.97	
2,090.68	89.60	269.30	908.86	440.26	50.89	-1,326.57	1,327.55	1,327.55	272.20	1.37	
2,104.48	89.90	268.50	908.93	440.33	50.62	-1,340.37	1,341.32	1,341.33	272.16	1.86	
2,118.25	89.80	268.60	908.96	440.36	50.27	-1,354.14	1,355.07	1,355.07	272.13	0.31	
2,132.00	90.20	269.30	908.96	440.36	50.02	-1,367.88	1,368.80	1,368.80	272.09	1.76	Last Survey=2132mMD
2,145.00	90.20	269.30	908.92	440.32	49.86	-1,380.88	1,381.78	1,381.78	272.07	0.00	Extrapolated to TD@2145mMD

Cathedral Energy Services

Survey Report

Company:	Penn West Petroleum Ltd.	Local Co-ordinate Reference:	Well 3C-3-2-26W1
Project:	Waskada	TVD Reference:	Actual KBE @ 468.60m
Site:	Penn West Waskada Unit No.5 Hzntrl (4D-2)	MD Reference:	Actual KBE @ 468.60m
Well:	3C-3-2-26W1	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	Final Survey	Database:	EDM R5000 CATHEDRAL Multi Users

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (m)	+N/-S (m)	+E/-W (m)	Northing (m)	Easting (m)	Latitude	Longitude
2-3 W/H Aban'd - hit/miss target - Shape	0.00	0.00	-0.30	-41.95	-904.69	5,439,173.16	362,906.19	49° 5' 24.47 N	100° 52' 39.99 W
- survey misses target center by 905.66m at 0.00m MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
4-2 W/H - survey misses target center by 78.79m at 0.00m MD (0.00 TVD, 0.00 N, 0.00 E)	0.00	0.00	-0.30	-38.05	-68.99	5,439,156.50	363,741.73	49° 5' 24.59 N	100° 51' 58.80 W
- Point									
2B3 W/H - survey misses target center by 74.99m at 0.00m MD (0.00 TVD, 0.00 N, 0.00 E)	0.00	0.00	-0.30	-74.98	0.37	5,439,117.87	363,810.16	49° 5' 23.40 N	100° 51' 55.38 W
- Point									
(4D-2) 2C-3 BHL Mod - survey misses target center by 10.83m at 2145.00m MD (908.92 TVD, 49.86 N, -1380.88 E)	0.00	0.00	909.60	50.19	-1,391.69	5,439,277.26	362,421.61	49° 5' 27.45 N	100° 53' 4.00 W
- Point									
(4D-2) 2C-3 Landing F - survey misses target center by 1.39m at 1115.44m MD (909.29 TVD, 48.64 N, -351.74 E)	0.00	0.00	909.60	49.99	-351.70	5,439,251.47	363,461.28	49° 5' 27.44 N	100° 52' 12.73 W
- Point									
1-3 W/H Aban'd - survey misses target center by 503.95m at 0.00m MD (0.00 TVD, 0.00 N, 0.00 E)	0.00	0.00	-0.30	-39.98	-502.36	5,439,165.23	363,308.45	49° 5' 24.53 N	100° 52' 20.16 W
- Point									

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (mm)	Hole Diameter (mm)
1,122.00	909.41	Actual ICP@1122mMD		
259.00	259.00	Actual Sur.Casing@259mMD		

Survey Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	+E/-W (m)	Comment
562.00	561.99	1.03	-1.19	Actual KOP@562mMD
2,132.00	908.96	50.02	-1,367.88	Last Survey=2132mMD
2,145.00	908.92	49.86	-1,380.88	Extrapolated to TD@2145mMD

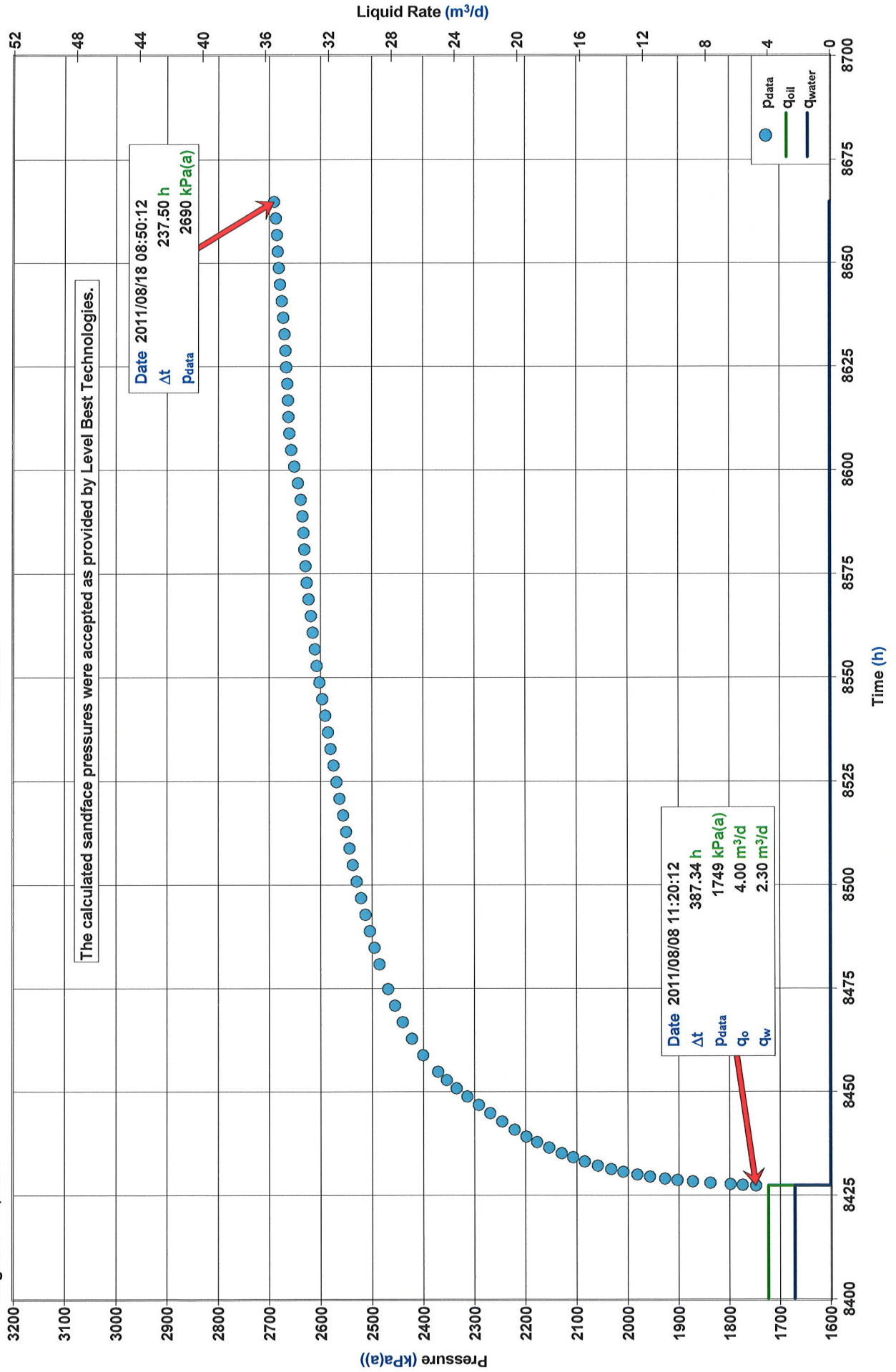
Checked By: _____ Approved By: _____ Date: _____

Diagnostics

WASKADA Unit No. 5
 102/03-03-002-26W1/00
 Lower Amaranth: 1130.0 - 2127.3 mKB
 August 8 - 18, 2011

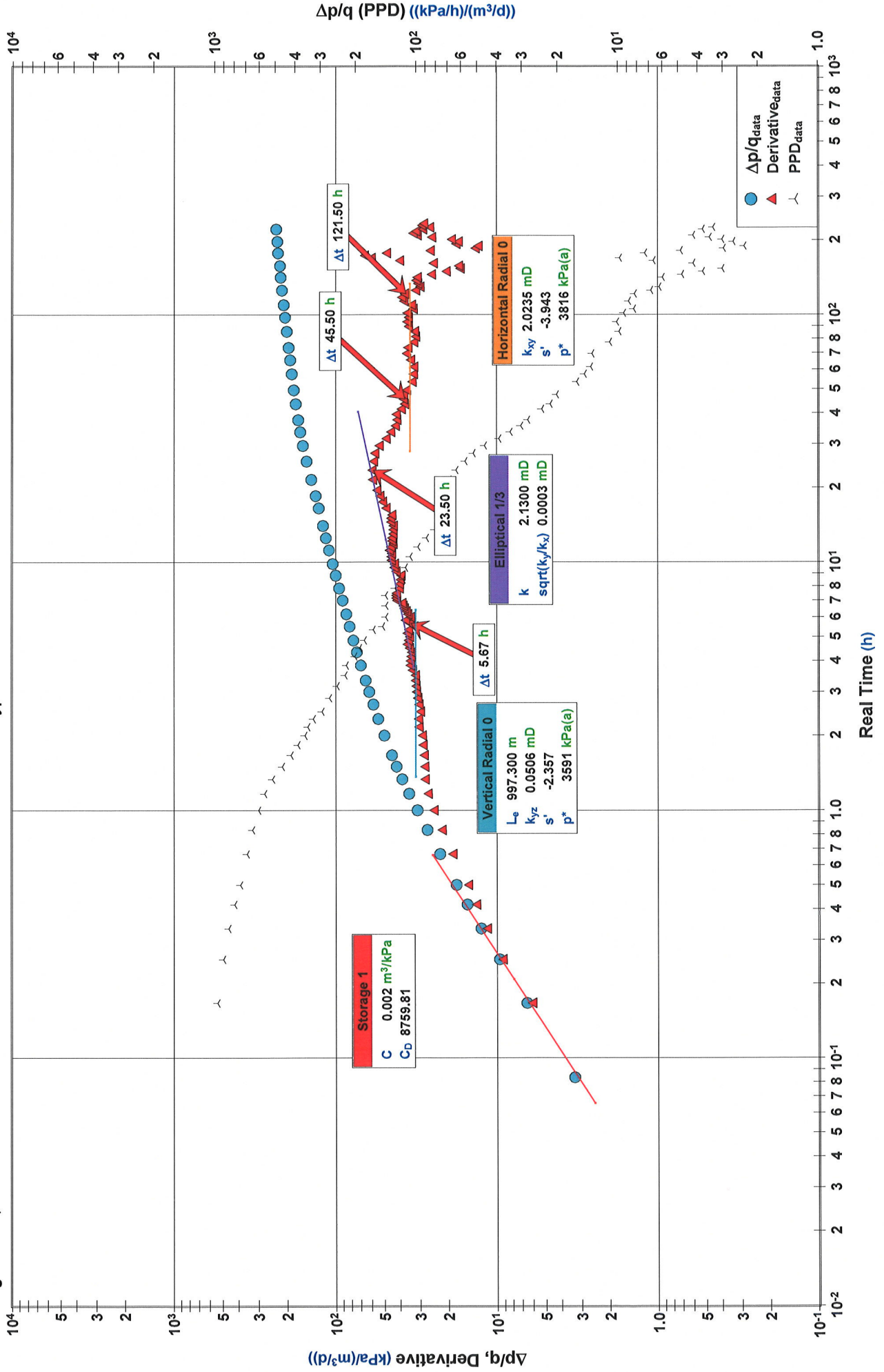
Diagnostic Total Test

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



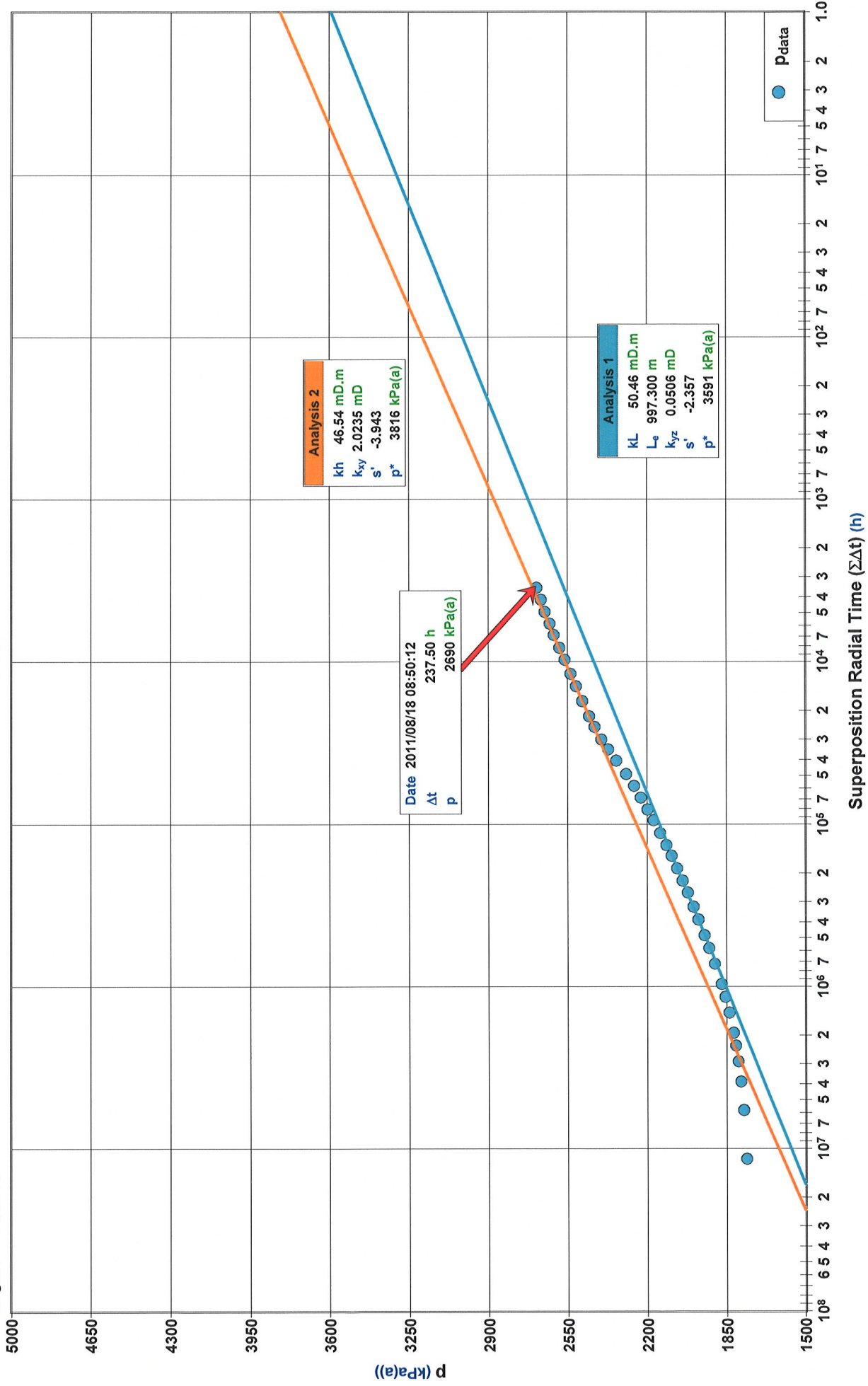
WASKADA Unit No. 5
 102/03-03-002-26W1/00
 Lower Amaranth: 1130.0 - 2127.3 mKB
 August 8 - 18, 2011

Diagnostic Typecurve



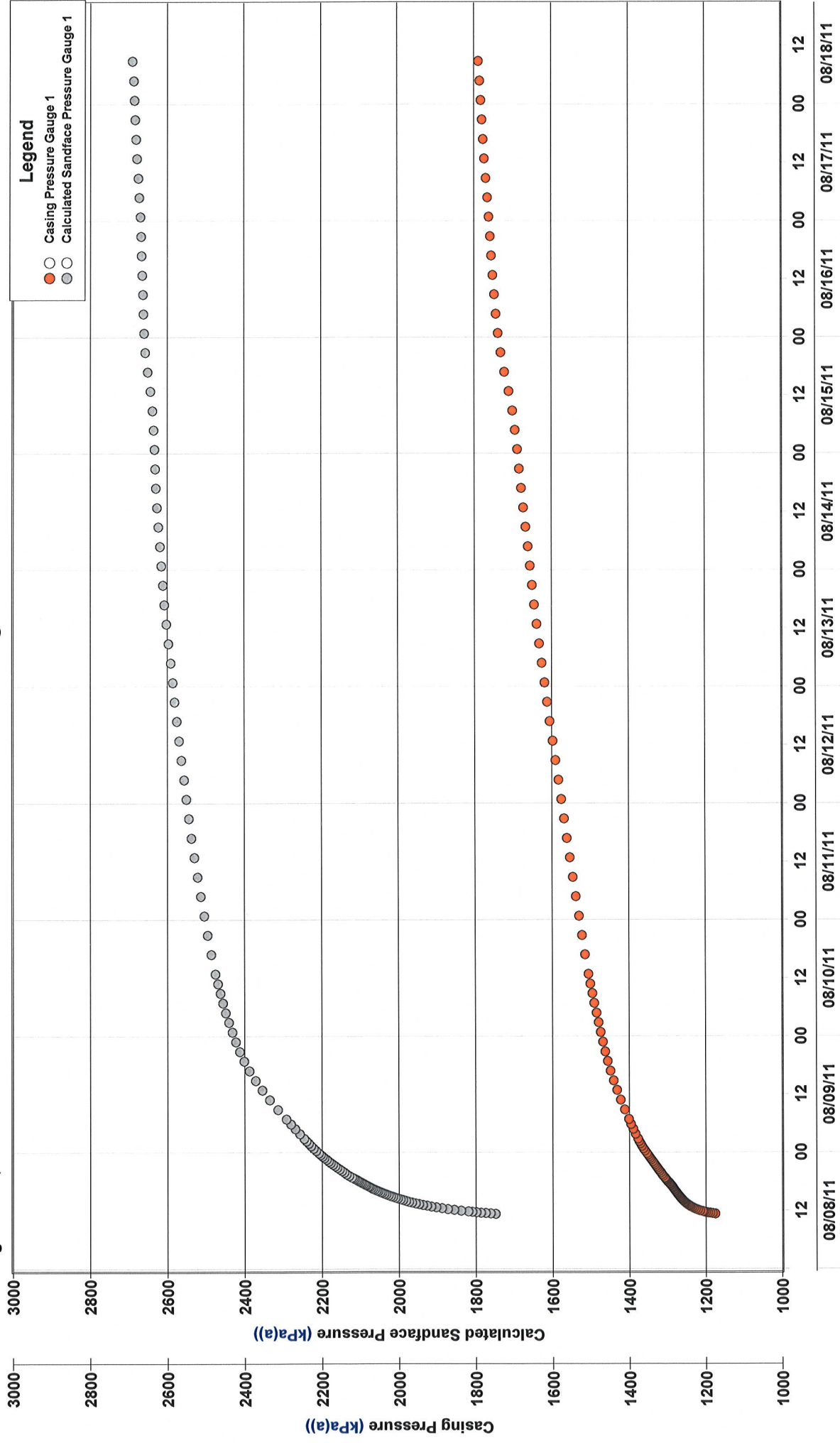
WASKADA Unit No. 5
102/03-03-002-26W1/00
Lower Amaranth: 1130.0 - 2127.3 mKB
August 8 - 18, 2011

Diagnostic Radial



WASKADA Unit No. 5
 102/03-03-002-26W1/00
 Lower Amaranth: 1130.0 - 2127.3 mKB
 August 8 - 18, 2011

Gauge 1



WASKADA Unit No. 5
102/03-03-002-26W1/00
Lower Amaranth: 1130.0 - 2127.3 mKB
August 8 - 18, 2011

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Tubing Pressure	Casing Pressure	Calculated Sandface Pressure	Gas Rate	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	kPa(a)	kPa(a)	10 ³ m ³ /d	m ³ /d	m ³ /d
1	0/08/22 08:00	0.0000	0.0000				0.000	0.0	0.0
2	0/08/23 08:00	24.0000	24.0000					2.5	46.0
3	0/08/24 08:00	48.0000	48.0000					19.4	8.0
4	0/08/25 08:00	72.0000	72.0000					19.1	6.6
5	0/08/26 08:00	96.0000	96.0000					18.7	5.7
6	0/08/27 08:00	120.0000	120.0000					21.6	11.1
7	0/08/28 08:00	144.0000	144.0000					24.6	17.0
8	0/08/29 08:00	168.0000	168.0000					26.6	16.0
9	0/08/30 08:00	192.0000	192.0000					26.8	15.2
10	0/08/31 08:00	216.0000	216.0000					25.4	15.3
11	0/09/01 08:00	240.0000	240.0000					26.3	12.9
12	0/09/02 08:00	264.0000	264.0000					23.8	16.3
13	0/09/03 08:00	288.0000	288.0000					23.5	16.1
14	0/09/04 08:00	312.0000	312.0000					23.9	16.3
15	0/09/05 08:00	336.0000	336.0000					23.7	16.7
16	0/09/06 08:00	360.0000	360.0000					27.6	10.6
17	0/09/07 08:00	384.0000	384.0000					29.0	10.1
18	0/09/08 08:00	408.0000	408.0000					28.8	9.8
19	0/09/09 08:00	432.0000	432.0000					30.2	9.9
20	0/09/10 08:00	456.0000	456.0000					17.9	8.3
21	0/09/11 08:00	480.0000	480.0000					20.6	7.9
22	0/09/12 08:00	504.0000	504.0000					22.2	8.2
23	0/09/13 08:00	528.0000	528.0000					21.7	7.7
24	0/09/14 08:00	552.0000	552.0000					21.9	3.7
25	0/09/15 08:00	576.0000	576.0000					23.5	8.3
26	0/09/16 08:00	600.0000	600.0000					23.2	7.6
27	0/09/17 08:00	624.0000	624.0000					18.4	6.6
28	0/09/18 08:00	648.0000	648.0000					0.0	0.0
29	0/09/19 08:00	672.0000	672.0000					22.6	8.3
30	0/09/20 08:00	696.0000	696.0000					21.6	7.9
31	0/09/21 08:00	720.0000	720.0000					21.4	7.2
32	0/09/22 08:00	744.0000	744.0000					21.0	8.1
33	0/09/23 08:00	768.0000	768.0000					22.6	9.2
34	0/09/24 08:00	792.0000	792.0000					23.4	9.0
35	0/09/25 08:00	816.0000	816.0000					3.9	2.0
36	0/09/26 08:00	840.0000	840.0000					23.2	7.7
37	0/09/27 08:00	864.0000	864.0000					24.0	8.4
38	0/09/28 08:00	888.0000	888.0000					23.1	7.5
39	0/09/29 08:00	912.0000	912.0000					23.0	8.2
40	0/09/30 08:00	936.0000	936.0000					24.7	8.5
41	0/10/01 08:00	960.0000	960.0000					23.7	5.6
42	0/10/02 08:00	984.0000	984.0000					21.0	2.4
43	0/10/03 08:00	1008.0000	1008.0000					25.5	4.9
44	0/10/04 08:00	1032.0000	1032.0000					27.7	7.8
45	0/10/05 08:00	1056.0000	1056.0000					25.0	8.5
46	0/10/06 08:00	1080.0000	1080.0000					24.1	8.6
47	0/10/07 08:00	1104.0000	1104.0000					23.5	8.3
48	0/10/08 08:00	1128.0000	1128.0000					23.4	4.8
49	0/10/09 08:00	1152.0000	1152.0000					22.6	6.7
50	0/10/10 08:00	1176.0000	1176.0000					24.4	8.7
51	0/10/11 08:00	1200.0000	1200.0000					30.0	7.7
52	0/10/12 08:00	1224.0000	1224.0000					24.1	8.4
53	0/10/13 08:00	1248.0000	1248.0000					23.3	8.6
54	0/10/14 08:00	1272.0000	1272.0000					23.4	5.4
55	0/10/15 08:00	1296.0000	1296.0000					23.4	7.2
56	0/10/16 08:00	1320.0000	1320.0000					25.8	8.6
57	0/10/17 08:00	1344.0000	1344.0000					25.6	9.6
58	0/10/18 08:00	1368.0000	1368.0000					0.0	0.0
59	0/10/25 08:00	1536.0000	1536.0000					0.0	0.0
60	0/10/26 08:00	1560.0000	1560.0000					16.5	5.8
61	0/10/27 08:00	1584.0000	1584.0000					24.4	10.4
62	0/10/28 08:00	1608.0000	1608.0000					24.2	10.1
63	0/10/29 08:00	1632.0000	1632.0000					24.4	9.1
64	0/10/30 08:00	1656.0000	1656.0000					24.4	8.5
65	0/10/31 08:00	1680.0000	1680.0000					23.6	9.5
66	0/11/01 08:00	1704.0000	1704.0000					22.1	10.5
67	0/11/02 08:00	1728.0000	1728.0000					23.9	9.1
68	0/11/03 08:00	1752.0000	1752.0000					24.3	9.1
69	0/11/04 08:00	1776.0000	1776.0000					23.2	8.5
70	0/11/05 08:00	1800.0000	1800.0000					24.0	8.9
71	0/11/06 08:00	1824.0000	1824.0000					24.1	9.0
72	0/11/07 08:00	1848.0000	1848.0000					24.1	8.6
73	0/11/08 08:00	1872.0000	1872.0000					22.4	10.0
74	0/11/09 08:00	1896.0000	1896.0000					23.2	8.7
75	0/11/10 08:00	1920.0000	1920.0000					23.4	5.9
76	0/11/11 08:00	1944.0000	1944.0000					23.6	12.7

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Tubing Pressure	Casing Pressure	Calculated Sandface Pressure	Gas Rate	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	kPa(a)	kPa(a)	10 ³ m ³ /d	m ³ /d	m ³ /d
77	0/11/12 08:00	1968.0000	1968.0000					23.1	15.0
78	0/11/13 08:00	1992.0000	1992.0000					24.1	12.8
79	0/11/14 08:00	2016.0000	2016.0000					23.4	11.3
80	0/11/15 08:00	2040.0000	2040.0000					24.6	13.3
81	0/11/16 08:00	2064.0000	2064.0000					25.1	12.9
82	0/11/17 08:00	2088.0000	2088.0000					22.9	8.8
83	0/11/18 08:00	2112.0000	2112.0000					22.7	13.7
84	0/11/19 08:00	2136.0000	2136.0000					24.5	15.2
85	0/11/20 08:00	2160.0000	2160.0000					23.4	13.7
86	0/11/21 08:00	2184.0000	2184.0000					22.6	11.3
87	0/11/22 08:00	2208.0000	2208.0000					23.5	12.5
88	0/11/23 08:00	2232.0000	2232.0000					23.4	15.9
89	0/11/24 08:00	2256.0000	2256.0000					25.0	14.2
90	0/11/25 08:00	2280.0000	2280.0000					23.1	17.3
91	0/11/26 08:00	2304.0000	2304.0000					23.9	16.9
92	0/11/27 08:00	2328.0000	2328.0000					17.3	6.4
93	0/11/28 08:00	2352.0000	2352.0000					17.1	6.3
94	0/11/29 08:00	2376.0000	2376.0000					19.5	5.7
95	0/11/30 08:00	2400.0000	2400.0000					21.5	6.5
96	0/12/01 08:00	2424.0000	2424.0000					0.0	0.0
97	0/12/02 08:00	2448.0000	2448.0000					11.0	3.6
98	0/12/03 08:00	2472.0000	2472.0000					20.5	5.0
99	0/12/04 08:00	2496.0000	2496.0000					20.3	5.7
100	0/12/05 08:00	2520.0000	2520.0000					31.9	2.5
101	0/12/06 08:00	2544.0000	2544.0000					29.0	2.1
102	0/12/07 08:00	2568.0000	2568.0000					30.1	2.5
103	0/12/08 08:00	2592.0000	2592.0000					29.0	2.4
104	0/12/09 08:00	2616.0000	2616.0000					24.1	1.6
105	0/12/10 08:00	2640.0000	2640.0000					31.1	1.5
106	0/12/11 08:00	2664.0000	2664.0000					26.3	1.9
107	0/12/12 08:00	2688.0000	2688.0000					28.1	1.7
108	0/12/13 08:00	2712.0000	2712.0000					24.7	2.5
109	0/12/14 08:00	2736.0000	2736.0000					24.8	2.5
110	0/12/15 08:00	2760.0000	2760.0000					30.4	2.4
111	0/12/16 08:00	2784.0000	2784.0000					27.2	2.5
112	0/12/17 08:00	2808.0000	2808.0000					31.4	5.4
113	0/12/18 08:00	2832.0000	2832.0000					39.4	5.9
114	0/12/19 08:00	2856.0000	2856.0000					30.1	5.7
115	0/12/20 08:00	2880.0000	2880.0000					35.7	5.7
116	0/12/21 08:00	2904.0000	2904.0000					40.7	5.2
117	0/12/22 08:00	2928.0000	2928.0000					33.6	5.8
118	0/12/23 08:00	2952.0000	2952.0000					34.6	7.0
119	0/12/24 08:00	2976.0000	2976.0000					35.1	6.2
120	0/12/25 08:00	3000.0000	3000.0000					40.0	6.5
121	0/12/26 08:00	3024.0000	3024.0000					36.2	6.1
122	0/12/27 08:00	3048.0000	3048.0000					33.0	6.4
123	0/12/28 08:00	3072.0000	3072.0000					37.9	6.4
124	0/12/29 08:00	3096.0000	3096.0000					37.0	5.4
125	0/12/30 08:00	3120.0000	3120.0000					30.2	6.0
126	0/12/31 08:00	3144.0000	3144.0000					42.3	6.2
127	1/01/01 08:00	3168.0000	3168.0000					38.9	6.0
128	1/01/02 08:00	3192.0000	3192.0000					28.5	5.9
129	1/01/03 08:00	3216.0000	3216.0000					33.3	6.7
130	1/01/04 08:00	3240.0000	3240.0000					35.8	5.3
131	1/01/05 08:00	3264.0000	3264.0000					39.3	3.5
132	1/01/06 08:00	3288.0000	3288.0000					37.5	6.2
133	1/01/07 08:00	3312.0000	3312.0000					45.1	6.5
134	1/01/08 08:00	3336.0000	3336.0000					36.5	4.3
135	1/01/09 08:00	3360.0000	3360.0000					0.0	0.0
136	1/01/24 08:00	3720.0000	3720.0000					0.0	0.0
137	1/01/25 08:00	3744.0000	3744.0000					51.1	5.8
138	1/01/26 08:00	3768.0000	3768.0000					34.1	5.5
139	1/01/27 08:00	3792.0000	3792.0000					36.5	5.0
140	1/01/28 08:00	3816.0000	3816.0000					5.5	0.8
141	1/01/29 08:00	3840.0000	3840.0000					46.5	4.8
142	1/01/30 08:00	3864.0000	3864.0000					42.8	5.6
143	1/01/31 08:00	3888.0000	3888.0000					39.8	5.7
144	1/02/01 08:00	3912.0000	3912.0000					38.5	5.4
145	1/02/02 08:00	3936.0000	3936.0000					36.9	4.1
146	1/02/03 08:00	3960.0000	3960.0000					0.0	0.0
147	1/02/04 08:00	3984.0000	3984.0000					0.0	0.0
148	1/02/05 08:00	4008.0000	4008.0000					28.5	4.7
149	1/02/06 08:00	4032.0000	4032.0000					40.0	5.6
150	1/02/07 08:00	4056.0000	4056.0000					37.4	6.2
151	1/02/08 08:00	4080.0000	4080.0000					35.5	8.2
152	1/02/09 08:00	4104.0000	4104.0000					29.6	5.4

WASKADA Unit No. 5
102/03-03-002-26W1/00
Lower Amaranth: 1130.0 - 2127.3 mKB
August 8 - 18, 2011

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Tubing Pressure	Casing Pressure	Calculated Sandface Pressure	Gas Rate	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	kPa(a)	kPa(a)	10 ³ m ³ /d	m ³ /d	m ³ /d
153	1/02/10 08:00	4128.0000	4128.0000					37.0	5.8
154	1/02/11 08:00	4152.0000	4152.0000					31.4	7.3
155	1/02/12 08:00	4176.0000	4176.0000					35.5	7.3
156	1/02/13 08:00	4200.0000	4200.0000					34.8	6.6
157	1/02/14 08:00	4224.0000	4224.0000					34.5	6.8
158	1/02/15 08:00	4248.0000	4248.0000					24.1	6.6
159	1/02/16 08:00	4272.0000	4272.0000					2.2	0.1
160	1/02/17 08:00	4296.0000	4296.0000					23.4	10.4
161	1/02/18 08:00	4320.0000	4320.0000					21.7	9.5
162	1/02/19 08:00	4344.0000	4344.0000					19.4	8.3
163	1/02/20 08:00	4368.0000	4368.0000					19.8	9.6
164	1/02/21 08:00	4392.0000	4392.0000					8.3	4.0
165	1/02/22 08:00	4416.0000	4416.0000					1.6	1.0
166	1/02/23 08:00	4440.0000	4440.0000					1.6	1.0
167	1/02/24 08:00	4464.0000	4464.0000					10.7	4.9
168	1/02/25 08:00	4488.0000	4488.0000					10.5	5.7
169	1/02/26 08:00	4512.0000	4512.0000					10.4	7.8
170	1/02/27 08:00	4536.0000	4536.0000					10.3	6.7
171	1/02/28 08:00	4560.0000	4560.0000					20.8	7.5
172	1/03/01 08:00	4584.0000	4584.0000					24.2	8.0
173	1/03/02 08:00	4608.0000	4608.0000					21.6	8.0
174	1/03/03 08:00	4632.0000	4632.0000					22.7	8.8
175	1/03/04 08:00	4656.0000	4656.0000					21.3	7.0
176	1/03/05 08:00	4680.0000	4680.0000					6.4	3.1
177	1/03/06 08:00	4704.0000	4704.0000					6.9	3.1
178	1/03/07 08:00	4728.0000	4728.0000					6.4	2.8
179	1/03/08 08:00	4752.0000	4752.0000					6.3	2.4
180	1/03/09 08:00	4776.0000	4776.0000					22.5	9.8
181	1/03/10 08:00	4800.0000	4800.0000					21.6	10.4
182	1/03/11 08:00	4824.0000	4824.0000					22.6	11.7
183	1/03/12 08:00	4848.0000	4848.0000					22.5	8.5
184	1/03/13 08:00	4872.0000	4872.0000					23.5	10.9
185	1/03/14 08:00	4896.0000	4896.0000					23.0	10.0
186	1/03/15 08:00	4920.0000	4920.0000					24.0	9.6
187	1/03/16 08:00	4944.0000	4944.0000					16.3	6.7
188	1/03/17 08:00	4968.0000	4968.0000					18.7	11.8
189	1/03/18 08:00	4992.0000	4992.0000					24.9	10.6
190	1/03/19 08:00	5016.0000	5016.0000					23.3	9.7
191	1/03/20 08:00	5040.0000	5040.0000					25.5	11.1
192	1/03/21 08:00	5064.0000	5064.0000					4.0	1.3
193	1/03/22 08:00	5088.0000	5088.0000					3.8	1.1
194	1/03/23 08:00	5112.0000	5112.0000					4.7	1.2
195	1/03/24 08:00	5136.0000	5136.0000					4.4	1.0
196	1/03/25 08:00	5160.0000	5160.0000					4.2	0.9
197	1/03/26 08:00	5184.0000	5184.0000					2.6	0.8
198	1/03/27 08:00	5208.0000	5208.0000					3.7	1.1
199	1/03/28 08:00	5232.0000	5232.0000					0.4	0.1
200	1/03/29 08:00	5256.0000	5256.0000					4.3	1.4
201	1/03/30 08:00	5280.0000	5280.0000					5.1	1.1
202	1/03/31 08:00	5304.0000	5304.0000					4.2	1.3
203	1/04/01 08:00	5328.0000	5328.0000					5.0	1.2
204	1/04/02 08:00	5352.0000	5352.0000					3.9	1.2
205	1/04/03 08:00	5376.0000	5376.0000					4.6	1.5
206	1/04/04 08:00	5400.0000	5400.0000					5.0	1.1
207	1/04/05 08:00	5424.0000	5424.0000					4.4	1.3
208	1/04/06 08:00	5448.0000	5448.0000					4.9	1.1
209	1/04/07 08:00	5472.0000	5472.0000					5.8	0.4
210	1/04/08 08:00	5496.0000	5496.0000					4.8	1.0
211	1/04/09 08:00	5520.0000	5520.0000					4.6	1.3
212	1/04/10 08:00	5544.0000	5544.0000					4.8	1.3
213	1/04/11 08:00	5568.0000	5568.0000					4.1	1.2
214	1/04/12 08:00	5592.0000	5592.0000					3.8	1.1
215	1/04/13 08:00	5616.0000	5616.0000					4.5	1.1
216	1/04/14 08:00	5640.0000	5640.0000					4.0	1.1
217	1/04/15 08:00	5664.0000	5664.0000					4.5	1.6
218	1/04/16 08:00	5688.0000	5688.0000					4.5	1.3
219	1/04/17 08:00	5712.0000	5712.0000					7.7	4.2
220	1/04/18 08:00	5736.0000	5736.0000					8.0	4.3
221	1/04/19 08:00	5760.0000	5760.0000					8.9	3.8
222	1/04/20 08:00	5784.0000	5784.0000					7.3	4.3
223	1/04/21 08:00	5808.0000	5808.0000					8.4	3.9
224	1/04/22 08:00	5832.0000	5832.0000					6.6	3.8
225	1/04/23 08:00	5856.0000	5856.0000					8.8	4.5
226	1/04/24 08:00	5880.0000	5880.0000					7.7	3.9
227	1/04/25 08:00	5904.0000	5904.0000					6.3	4.4
228	1/04/26 08:00	5928.0000	5928.0000					7.4	4.0

WASKADA Unit No. 5
102/03-03-002-26W1/00
Lower Amaranth: 1130.0 - 2127.3 mKB
August 8 - 18, 2011

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Tubing Pressure	Casing Pressure	Calculated Sandface Pressure	Gas Rate	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	kPa(a)	kPa(a)	10 ³ m ³ /d	m ³ /d	m ³ /d
229	1/04/27 08:00	5952.0000	5952.0000					8.1	4.1
230	1/04/28 08:00	5976.0000	5976.0000					8.2	4.5
231	1/04/29 08:00	6000.0000	6000.0000					8.7	4.8
232	1/04/30 08:00	6024.0000	6024.0000					7.3	4.1
233	1/05/01 08:00	6048.0000	6048.0000					8.8	5.0
234	1/05/02 08:00	6072.0000	6072.0000					8.3	4.6
235	1/05/03 08:00	6096.0000	6096.0000					8.3	5.0
236	1/05/04 08:00	6120.0000	6120.0000					9.1	4.8
237	1/05/05 08:00	6144.0000	6144.0000					8.8	6.0
238	1/05/06 08:00	6168.0000	6168.0000					9.0	4.8
239	1/05/07 08:00	6192.0000	6192.0000					8.7	4.9
240	1/05/08 08:00	6216.0000	6216.0000					8.9	5.0
241	1/05/09 08:00	6240.0000	6240.0000					9.0	5.1
242	1/05/10 08:00	6264.0000	6264.0000					8.5	5.4
243	1/05/11 08:00	6288.0000	6288.0000					8.8	4.9
244	1/05/12 08:00	6312.0000	6312.0000					8.9	5.1
245	1/05/13 08:00	6336.0000	6336.0000					8.9	4.9
246	1/05/14 08:00	6360.0000	6360.0000					8.7	5.2
247	1/05/15 08:00	6384.0000	6384.0000					8.5	4.9
248	1/05/16 08:00	6408.0000	6408.0000					8.6	5.0
249	1/05/17 08:00	6432.0000	6432.0000					8.3	5.3
250	1/05/18 08:00	6456.0000	6456.0000					8.8	5.1
251	1/05/19 08:00	6480.0000	6480.0000					8.4	4.8
252	1/05/20 08:00	6504.0000	6504.0000					8.5	5.2
253	1/05/21 08:00	6528.0000	6528.0000					8.7	5.0
254	1/05/22 08:00	6552.0000	6552.0000					8.7	5.3
255	1/05/23 08:00	6576.0000	6576.0000					8.7	5.8
256	1/05/24 08:00	6600.0000	6600.0000					8.5	5.2
257	1/05/25 08:00	6624.0000	6624.0000					8.5	5.4
258	1/05/26 08:00	6648.0000	6648.0000					8.3	5.4
259	1/05/27 08:00	6672.0000	6672.0000					8.3	5.3
260	1/05/28 08:00	6696.0000	6696.0000					7.9	5.4
261	1/05/29 08:00	6720.0000	6720.0000					7.8	5.2
262	1/05/30 08:00	6744.0000	6744.0000					4.4	2.8
263	1/05/31 08:00	6768.0000	6768.0000					3.5	2.0
264	1/06/01 08:00	6792.0000	6792.0000					8.4	5.5
265	1/06/02 08:00	6816.0000	6816.0000					8.5	5.0
266	1/06/03 08:00	6840.0000	6840.0000					8.4	5.2
267	1/06/04 08:00	6864.0000	6864.0000					8.4	5.9
268	1/06/05 08:00	6888.0000	6888.0000					7.8	5.0
269	1/06/06 08:00	6912.0000	6912.0000					8.1	4.6
270	1/06/07 08:00	6936.0000	6936.0000					7.9	5.2
271	1/06/08 08:00	6960.0000	6960.0000					8.9	5.1
272	1/06/09 08:00	6984.0000	6984.0000					8.1	5.0
273	1/06/10 08:00	7008.0000	7008.0000					8.0	5.5
274	1/06/11 08:00	7032.0000	7032.0000					8.4	5.6
275	1/06/12 08:00	7056.0000	7056.0000					8.6	5.6
276	1/06/13 08:00	7080.0000	7080.0000					8.8	6.2
277	1/06/14 08:00	7104.0000	7104.0000					7.6	2.6
278	1/06/15 08:00	7128.0000	7128.0000					7.4	2.8
279	1/06/16 08:00	7152.0000	7152.0000					7.3	2.3
280	1/06/17 08:00	7176.0000	7176.0000					6.7	2.5
281	1/06/18 08:00	7200.0000	7200.0000					6.8	2.8
282	1/06/19 08:00	7224.0000	7224.0000					5.5	3.1
283	1/06/20 08:00	7248.0000	7248.0000					7.6	2.6
284	1/06/21 08:00	7272.0000	7272.0000					7.3	2.5
285	1/06/22 08:00	7296.0000	7296.0000					7.4	2.9
286	1/06/23 08:00	7320.0000	7320.0000					5.4	3.4
287	1/06/24 08:00	7344.0000	7344.0000					5.5	3.5
288	1/06/25 08:00	7368.0000	7368.0000					5.6	3.4
289	1/06/26 08:00	7392.0000	7392.0000					5.5	3.5
290	1/06/27 08:00	7416.0000	7416.0000					5.8	3.6
291	1/06/28 08:00	7440.0000	7440.0000					5.3	3.5
292	1/06/29 08:00	7464.0000	7464.0000					5.3	3.1
293	1/06/30 08:00	7488.0000	7488.0000					5.5	3.4
294	1/07/01 08:00	7512.0000	7512.0000					5.7	3.5
295	1/07/02 08:00	7536.0000	7536.0000					5.6	3.8
296	1/07/03 08:00	7560.0000	7560.0000					5.3	3.6
297	1/07/04 08:00	7584.0000	7584.0000					5.4	3.6
298	1/07/05 08:00	7608.0000	7608.0000					6.2	4.5
299	1/07/06 08:00	7632.0000	7632.0000					5.3	3.6
300	1/07/07 08:00	7656.0000	7656.0000					5.5	3.6
301	1/07/08 08:00	7680.0000	7680.0000					5.4	3.4
302	1/07/09 08:00	7704.0000	7704.0000					5.3	3.6
303	1/07/10 08:00	7728.0000	7728.0000					3.8	1.7
304	1/07/11 08:00	7752.0000	7752.0000					3.9	2.1

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Tubing Pressure	Casing Pressure	Calculated Sandface Pressure	Gas Rate	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	kPa(a)	kPa(a)	10 ³ m ³ /d	m ³ /d	m ³ /d
305	1/07/12 08:00	7776.0000	7776.0000					3.8	2.0
306	1/07/13 08:00	7800.0000	7800.0000					4.1	1.9
307	1/07/14 08:00	7824.0000	7824.0000					3.8	1.9
308	1/07/15 08:00	7848.0000	7848.0000					3.9	1.8
309	1/07/16 08:00	7872.0000	7872.0000					4.1	1.9
310	1/07/17 08:00	7896.0000	7896.0000					3.8	1.6
311	1/07/18 08:00	7920.0000	7920.0000					3.9	1.5
312	1/07/19 08:00	7944.0000	7944.0000					4.1	1.6
313	1/07/20 08:00	7968.0000	7968.0000					0.0	0.0
314	1/07/23 08:00	8040.0000	8040.0000					0.0	0.0
315	1/07/24 08:00	8064.0000	8064.0000					4.0	1.6
316	1/07/25 08:00	8088.0000	8088.0000					4.0	1.7
317	1/07/26 08:00	8112.0000	8112.0000					3.7	1.8
318	1/07/27 08:00	8136.0000	8136.0000					4.1	1.8
319	1/07/28 08:00	8160.0000	8160.0000					4.4	1.9
320	1/07/29 08:00	8184.0000	8184.0000					1.0	0.4
321	1/07/30 08:00	8208.0000	8208.0000					3.2	1.4
322	1/07/31 08:00	8232.0000	8232.0000					4.2	1.8
323	1/08/01 08:00	8256.0000	8256.0000					4.0	1.9
324	1/08/02 08:00	8280.0000	8280.0000					3.8	1.9
325	1/08/03 08:00	8304.0000	8304.0000					4.0	1.9
326	1/08/04 08:00	8328.0000	8328.0000					4.0	2.0
327	1/08/05 08:00	8352.0000	8352.0000					4.0	1.8
328	1/08/06 08:00	8376.0000	8376.0000					4.0	1.7
329	1/08/07 08:00	8400.0000	8400.0000		1175.65			4.0	2.3
330	1/08/08 11:20	8427.3367	8427.3367		1175.65	1748.63		4.0	2.3
331	1/08/08 11:25	8427.4200	8427.4200		1182.52	1761.90		0.0	0.0
332	1/08/08 11:30	8427.5033	8427.5033		1189.02	1774.79			
333	1/08/08 11:35	8427.5867	8427.5867		1195.05	1787.19			
334	1/08/08 11:40	8427.6700	8427.6700		1200.28	1798.76			
335	1/08/08 11:45	8427.7533	8427.7533		1204.91	1809.71			
336	1/08/08 11:50	8427.8367	8427.8367		1208.75	1819.82			
337	1/08/08 12:00	8428.0033	8428.0033		1215.60	1838.43			
338	1/08/08 12:10	8428.1700	8428.1700		1221.69	1856.39			
339	1/08/08 12:20	8428.3367	8428.3367		1226.95	1872.82			
340	1/08/08 12:30	8428.5033	8428.5033		1231.71	1888.47			
341	1/08/08 12:40	8428.6700	8428.6700		1235.89	1902.79			
342	1/08/08 12:50	8428.8367	8428.8367		1239.59	1915.86			
343	1/08/08 13:00	8429.0033	8429.0033		1242.88	1927.28			
344	1/08/08 13:10	8429.1700	8429.1700		1245.89	1938.04			
345	1/08/08 13:20	8429.3367	8429.3367		1248.72	1947.79			
346	1/08/08 13:30	8429.5033	8429.5033		1251.41	1957.00			
347	1/08/08 13:40	8429.6700	8429.6700		1253.96	1966.11			
348	1/08/08 13:50	8429.8367	8429.8367		1256.36	1974.20			
349	1/08/08 14:00	8430.0033	8430.0033		1258.61	1981.70			
350	1/08/08 14:10	8430.1700	8430.1700		1260.75	1989.11			
351	1/08/08 14:20	8430.3367	8430.3367		1262.80	1996.00			
352	1/08/08 14:30	8430.5033	8430.5033		1264.76	2002.81			
353	1/08/08 14:40	8430.6700	8430.6700		1266.65	2009.10			
354	1/08/08 14:50	8430.8367	8430.8367		1268.48	2015.35			
355	1/08/08 15:00	8431.0033	8431.0033		1270.24	2021.07			
356	1/08/08 15:10	8431.1700	8431.1700		1271.95	2027.22			
357	1/08/08 15:20	8431.3367	8431.3367		1273.61	2032.86			
358	1/08/08 15:30	8431.5033	8431.5033		1275.23	2038.47			
359	1/08/08 15:40	8431.6700	8431.6700		1276.81	2043.56			
360	1/08/08 15:50	8431.8367	8431.8367		1278.36	2048.63			
361	1/08/08 16:00	8432.0033	8432.0033		1279.87	2053.67			
362	1/08/08 16:10	8432.1700	8432.1700		1281.37	2058.71			
363	1/08/08 16:20	8432.3367	8432.3367		1282.86	2063.25			
364	1/08/08 16:30	8432.5033	8432.5033		1284.33	2067.79			
365	1/08/08 16:40	8432.6700	8432.6700		1285.82	2072.35			
366	1/08/08 16:50	8432.8367	8432.8367		1287.33	2076.44			
367	1/08/08 17:00	8433.0033	8433.0033		1288.91	2080.12			
368	1/08/08 17:10	8433.1700	8433.1700		1290.61	2084.43			
369	1/08/08 17:20	8433.3367	8433.3367		1292.44	2088.39			
370	1/08/08 17:30	8433.5033	8433.5033		1294.33	2091.92			
371	1/08/08 17:40	8433.6700	8433.6700		1296.22	2095.94			
372	1/08/08 17:50	8433.8367	8433.8367		1298.10	2099.46			
373	1/08/08 18:00	8434.0033	8434.0033		1299.96	2103.46			
374	1/08/08 18:10	8434.1700	8434.1700		1301.79	2106.94			
375	1/08/08 18:20	8434.3367	8434.3367		1303.57	2110.86			
376	1/08/08 18:30	8434.5033	8434.5033		1305.31	2114.74			
377	1/08/08 18:40	8434.6700	8434.6700		1307.00	2118.57			
378	1/08/08 18:50	8434.8367	8434.8367		1308.66	2122.37			
379	1/08/08 19:10	8435.1700	8435.1700		1311.91	2129.39			
380	1/08/08 19:30	8435.5033	8435.5033		1315.08	2135.84			

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Tubing Pressure	Casing Pressure	Calculated Sandface Pressure	Gas Rate	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	kPa(a)	kPa(a)	10 ³ m ³ /d	m ³ /d	m ³ /d
381	1/08/08 19:50	8435.8367	8435.8367		1318.21	2142.25			
382	1/08/08 20:10	8436.1700	8436.1700		1321.28	2148.10			
383	1/08/08 20:30	8436.5033	8436.5033		1324.29	2153.89			
384	1/08/08 20:50	8436.8367	8436.8367		1327.24	2160.12			
385	1/08/08 21:10	8437.1700	8437.1700		1330.18	2165.84			
386	1/08/08 21:30	8437.5033	8437.5033		1333.17	2171.62			
387	1/08/08 21:50	8437.8367	8437.8367		1336.24	2177.49			
388	1/08/08 22:10	8438.1700	8438.1700		1339.38	2182.93			
389	1/08/08 22:30	8438.5033	8438.5033		1342.53	2188.38			
390	1/08/08 22:50	8438.8367	8438.8367		1345.68	2193.84			
391	1/08/08 23:10	8439.1700	8439.1700		1348.79	2198.74			
392	1/08/08 23:30	8439.5033	8439.5033		1351.87	2203.60			
393	1/08/08 23:50	8439.8367	8439.8367		1354.89	2208.41			
394	1/08/09 00:20	8440.3367	8440.3367		1359.28	2215.21			
395	1/08/09 00:50	8440.8367	8440.8367		1363.44	2221.76			
396	1/08/09 01:20	8441.3367	8441.3367		1367.36	2228.06			
397	1/08/09 01:50	8441.8367	8441.8367		1371.03	2234.10			
398	1/08/09 02:20	8442.3367	8442.3367		1374.47	2240.41			
399	1/08/09 02:50	8442.8367	8442.8367		1377.78	2246.06			
400	1/08/09 03:50	8443.8367	8443.8367		1384.14	2257.61			
401	1/08/09 04:50	8444.8367	8444.8367		1390.12	2269.30			
402	1/08/09 05:50	8445.8367	8445.8367		1395.79	2280.67			
403	1/08/09 06:50	8446.8367	8446.8367		1401.36	2291.96			
404	1/08/09 08:50	8448.8367	8448.8367		1412.14	2314.19			
405	1/08/09 10:50	8450.8367	8450.8367		1422.42	2335.43			
406	1/08/09 12:50	8452.8367	8452.8367		1432.05	2354.43			
407	1/08/09 14:50	8454.8367	8454.8367		1441.04	2371.73			
408	1/08/09 16:50	8456.8367	8456.8367		1449.10	2387.52			
409	1/08/09 18:50	8458.8367	8458.8367		1456.31	2400.80			
410	1/08/09 20:50	8460.8367	8460.8367		1462.79	2412.20			
411	1/08/09 22:50	8462.8367	8462.8367		1468.74	2422.49			
412	1/08/10 00:50	8464.8367	8464.8367		1474.44	2431.41			
413	1/08/10 02:50	8466.8367	8466.8367		1480.05	2440.24			
414	1/08/10 04:50	8468.8367	8468.8367		1485.59	2448.45			
415	1/08/10 06:50	8470.8367	8470.8367		1491.00	2455.39			
416	1/08/10 08:50	8472.8367	8472.8367		1496.29	2462.21			
417	1/08/10 10:50	8474.8367	8474.8367		1501.33	2468.76			
418	1/08/10 12:50	8476.8367	8476.8367		1506.08	2475.00			
419	1/08/10 16:50	8480.8367	8480.8367		1514.86	2485.58			
420	1/08/10 20:50	8484.8367	8484.8367		1522.84	2495.30			
421	1/08/11 00:50	8488.8367	8488.8367		1530.57	2504.18			
422	1/08/11 04:50	8492.8367	8492.8367		1538.40	2512.62			
423	1/08/11 08:50	8496.8367	8496.8367		1546.38	2521.21			
424	1/08/11 12:50	8500.8367	8500.8367		1554.24	2529.68			
425	1/08/11 16:50	8504.8367	8504.8367		1561.67	2537.12			
426	1/08/11 20:50	8508.8367	8508.8367		1568.73	2543.60			
427	1/08/12 00:50	8512.8367	8512.8367		1575.73	2550.02			
428	1/08/12 04:50	8516.8367	8516.8367		1582.94	2556.11			
429	1/08/12 08:50	8520.8367	8520.8367		1590.42	2563.05			
430	1/08/12 12:50	8524.8367	8524.8367		1597.98	2568.96			
431	1/08/12 16:50	8528.8367	8528.8367		1605.25	2575.12			
432	1/08/12 20:50	8532.8367	8532.8367		1612.08	2580.81			
433	1/08/13 00:50	8536.8367	8536.8367		1618.65	2585.66			
434	1/08/13 04:50	8540.8367	8540.8367		1625.30	2591.17			
435	1/08/13 08:50	8544.8367	8544.8367		1632.11	2596.84			
436	1/08/13 12:50	8548.8367	8548.8367		1638.77	2602.36			
437	1/08/13 16:50	8552.8367	8552.8367		1644.87	2607.28			
438	1/08/13 20:50	8556.8367	8556.8367		1650.40	2611.04			
439	1/08/14 00:50	8560.8367	8560.8367		1655.76	2615.17			
440	1/08/14 04:50	8564.8367	8564.8367		1661.33	2618.98			
441	1/08/14 08:50	8568.8367	8568.8367		1667.17	2623.08			
442	1/08/14 12:50	8572.8367	8572.8367		1672.95	2626.58			
443	1/08/14 16:50	8576.8367	8576.8367		1678.36	2629.15			
444	1/08/14 20:50	8580.8367	8580.8367		1683.43	2631.36			
445	1/08/15 00:50	8584.8367	8584.8367		1688.45	2632.98			
446	1/08/15 04:50	8588.8367	8588.8367		1693.98	2635.17			
447	1/08/15 08:50	8592.8367	8592.8367		1700.88	2638.32			
448	1/08/15 12:50	8596.8367	8596.8367		1710.25	2643.61			
449	1/08/15 16:50	8600.8367	8600.8367		1721.31	2650.76			
450	1/08/15 20:50	8604.8367	8604.8367		1731.13	2657.11			
451	1/08/16 00:50	8608.8367	8608.8367		1738.14	2660.45			
452	1/08/16 04:50	8612.8367	8612.8367		1743.18	2662.20			
453	1/08/16 08:50	8616.8367	8616.8367		1747.40	2663.08			
454	1/08/16 12:50	8620.8367	8620.8367		1751.29	2664.65			
455	1/08/16 16:50	8624.8367	8624.8367		1754.84	2666.39			
456	1/08/16 20:50	8628.8367	8628.8367		1758.09	2667.81			

WASKADA Unit No. 5
 102/03-03-002-26W1/00
 Lower Amaranth: 1130.0 - 2127.3 mKB
 August 8 - 18, 2011

Pressure/Production Summary

Item	Date Clock Time	Time	Cumulative Time	Tubing Pressure	Casing Pressure	Calculated Sandface Pressure	Gas Rate	Oil Rate	Water Rate
	YYYY/MM/DD HH:mm:ss	h	h	kPa(a)	kPa(a)	kPa(a)	10 ³ m ³ /d	m ³ /d	m ³ /d
457	1/08/17 00:50	8632.8367	8632.8367		1761.41	2669.83			
458	1/08/17 04:50	8636.8367	8636.8367		1765.17	2672.32			
459	1/08/17 08:50	8640.8367	8640.8367		1769.32	2675.24			
460	1/08/17 12:50	8644.8367	8644.8367		1773.32	2678.52			
461	1/08/17 16:50	8648.8367	8648.8367		1776.66	2681.09			
462	1/08/17 20:50	8652.8367	8652.8367		1779.42	2683.03			
463	1/08/18 00:50	8656.8367	8656.8367		1782.04	2684.82			
464	1/08/18 04:50	8660.8367	8660.8367		1785.03	2687.02			
465	1/08/18 08:50	8664.8367	8664.8367		1788.63	2690.39			

Reservoir Information

Simmi Saharan

Subject: FW: 4 more buildups

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

Sent: September-07-11 8:48 AM

To: Reza Ali

Subject: 4 more buildups

Reza,

Can you look at these 4 wells too. Let me know how the others are going.

105/9-36-1-26W1:

Net Pay: 27m

Porosity: 13%

Sw: 50%

102/15-11-2-25W1

Net Pay: 26.5m

Porosity: 13%

Sw: 50%

102/4-33-1-25W1

Net Pay: 26.5m

Porosity: 13%

Sw: 50%

102/3-3-2-26W1

Net Pay: 23m

Porosity: 13%

Sw: 50%

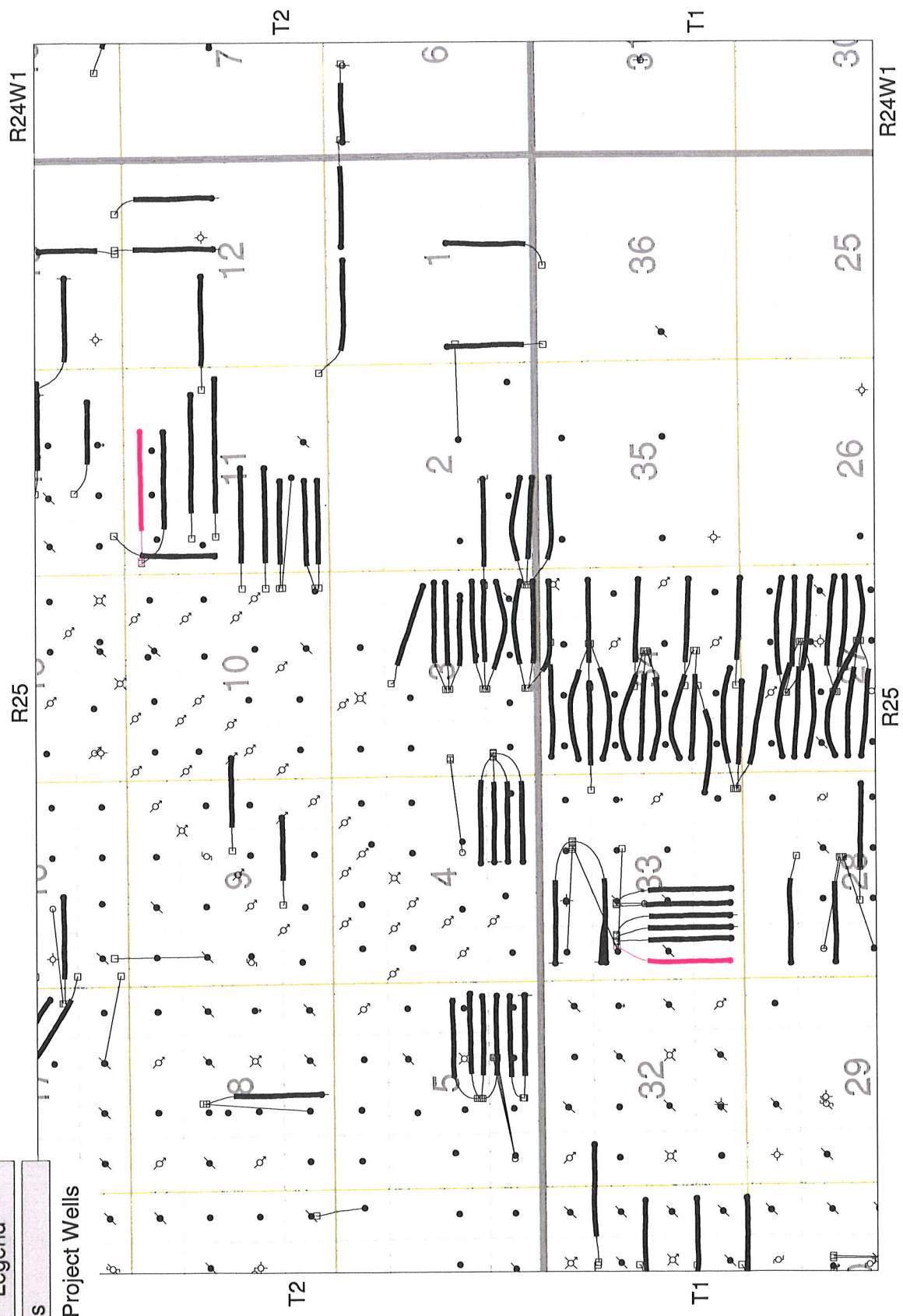
Thank you,

Trevor

Legend

Wells

Project Wells



Test Data

102-03-03-002-26w1 Production Data.txt

Production Date	Daily Oil M3/d	Daily water (m3/d)
2010-Aug-23	2.52	45.99
2010-Aug-24	19.36	8.01
2010-Aug-25	19.12	6.56
2010-Aug-26	18.74	5.71
2010-Aug-27	21.6	11.09
2010-Aug-28	24.58	17.02
2010-Aug-29	26.64	16
2010-Aug-30	26.75	15.17
2010-Aug-31	25.35	15.34
2010-Sep-01	26.33	12.94
2010-Sep-02	23.84	16.29
2010-Sep-03	23.54	16.06
2010-Sep-04	23.86	16.25
2010-Sep-05	23.67	16.72
2010-Sep-06	27.58	10.56
2010-Sep-07	28.99	10.14
2010-Sep-08	28.78	9.84
2010-Sep-09	30.19	9.91
2010-Sep-10	17.9	8.28
2010-Sep-11	20.61	7.93
2010-Sep-12	22.2	8.19
2010-Sep-13	21.7	7.73
2010-Sep-14	21.92	3.66
2010-Sep-15	23.46	8.27
2010-Sep-16	23.2	7.64
2010-Sep-17	18.36	6.65
2010-Sep-18	0	0
2010-Sep-19	22.58	8.31
2010-Sep-20	21.63	7.94
2010-Sep-21	21.41	7.24
2010-Sep-22	21.02	8.08
2010-Sep-23	22.64	9.15
2010-Sep-24	23.41	8.99
2010-Sep-25	3.89	1.95
2010-Sep-26	23.19	7.68
2010-Sep-27	24.01	8.39
2010-Sep-28	23.11	7.49
2010-Sep-29	23.01	8.15
2010-Sep-30	24.7	8.51
2010-Oct-01	23.66	5.58
2010-Oct-02	21.01	2.4
2010-Oct-03	25.46	4.88
2010-Oct-04	27.68	7.82
2010-Oct-05	25.04	8.52
2010-Oct-06	24.06	8.6
2010-Oct-07	23.47	8.25
2010-Oct-08	23.41	4.79
2010-Oct-09	22.58	6.66
2010-Oct-10	24.41	8.73
2010-Oct-11	29.96	7.65
2010-Oct-12	24.12	8.44
2010-Oct-13	23.27	8.6
2010-Oct-14	23.37	5.42
2010-Oct-15	23.35	7.17
2010-Oct-16	25.77	8.64
2010-Oct-17	25.62	9.57
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
2010-Oct-24	0	0
2010-Oct-25	0	0
2010-Oct-26	16.49	5.8

102-03-03-002-26w1 Production Data.txt

2010-Oct-27	24.38	10.35
2010-Oct-28	24.21	10.09
2010-Oct-29	24.37	9.05
2010-Oct-30	24.43	8.48
2010-Oct-31	23.59	9.52
2010-Nov-01	22.07	10.52
2010-Nov-02	23.85	9.07
2010-Nov-03	24.29	9.05
2010-Nov-04	23.23	8.52
2010-Nov-05	24.01	8.88
2010-Nov-06	24.13	9.03
2010-Nov-07	24.12	8.61
2010-Nov-08	22.39	9.97
2010-Nov-09	23.23	8.74
2010-Nov-10	23.38	5.93
2010-Nov-11	23.57	12.69
2010-Nov-12	23.15	14.99
2010-Nov-13	24.15	12.79
2010-Nov-14	23.35	11.32
2010-Nov-15	24.63	13.31
2010-Nov-16	25.05	12.86
2010-Nov-17	22.95	8.8
2010-Nov-18	22.67	13.74
2010-Nov-19	24.49	15.18
2010-Nov-20	23.37	13.71
2010-Nov-21	22.62	11.31
2010-Nov-22	23.47	12.49
2010-Nov-23	23.35	15.93
2010-Nov-24	25.02	14.21
2010-Nov-25	23.09	17.26
2010-Nov-26	23.94	16.91
2010-Nov-27	17.31	6.36
2010-Nov-28	17.11	6.32
2010-Nov-29	19.51	5.74
2010-Nov-30	21.5	6.5
2010-Dec-01	0	0
2010-Dec-02	11.01	3.56
2010-Dec-03	20.52	5.04
2010-Dec-04	20.33	5.7
2010-Dec-05	31.88	2.52
2010-Dec-06	28.96	2.14
2010-Dec-07	30.11	2.49
2010-Dec-08	29.02	2.41
2010-Dec-09	24.07	1.56
2010-Dec-10	31.09	1.48
2010-Dec-11	26.33	1.94
2010-Dec-12	28.08	1.69
2010-Dec-13	24.72	2.52
2010-Dec-14	24.78	2.52
2010-Dec-15	30.37	2.4
2010-Dec-16	27.2	2.45
2010-Dec-17	31.43	5.43
2010-Dec-18	39.42	5.94
2010-Dec-19	30.13	5.66
2010-Dec-20	35.7	5.69
2010-Dec-21	40.74	5.15
2010-Dec-22	33.63	5.81
2010-Dec-23	34.56	6.98
2010-Dec-24	35.14	6.18
2010-Dec-25	39.99	6.55
2010-Dec-26	36.22	6.1
2010-Dec-27	33.04	6.37
2010-Dec-28	37.87	6.37
2010-Dec-29	36.98	5.36
2010-Dec-30	30.21	5.97
2010-Dec-31	42.3	6.22

102-03-03-002-26w1 Production Data.txt

2011-Jan-01	38.85	6.03
2011-Jan-02	28.46	5.88
2011-Jan-03	33.32	6.73
2011-Jan-04	35.81	5.25
2011-Jan-05	39.29	3.55
2011-Jan-06	37.51	6.17
2011-Jan-07	45.09	6.45
2011-Jan-08	36.55	4.32
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	51.09	5.85
2011-Jan-26	34.15	5.46
2011-Jan-27	36.55	5.02
2011-Jan-28	5.52	0.8
2011-Jan-29	46.45	4.78
2011-Jan-30	42.75	5.59
2011-Jan-31	39.78	5.71
2011-Feb-01	38.47	5.4
2011-Feb-02	36.91	4.1
2011-Feb-03	0	0
2011-Feb-04	0	0
2011-Feb-05	28.55	4.74
2011-Feb-06	40.02	5.59
2011-Feb-07	37.44	6.21
2011-Feb-08	35.51	8.23
2011-Feb-09	29.56	5.44
2011-Feb-10	37.04	5.84
2011-Feb-11	31.38	7.29
2011-Feb-12	35.49	7.31
2011-Feb-13	34.76	6.6
2011-Feb-14	34.45	6.81
2011-Feb-15	24.06	6.61
2011-Feb-16	2.22	0.11
2011-Feb-17	23.39	10.39
2011-Feb-18	21.73	9.51
2011-Feb-19	19.37	8.32
2011-Feb-20	19.82	9.58
2011-Feb-21	8.26	3.95
2011-Feb-22	1.61	1.02
2011-Feb-23	1.61	0.97
2011-Feb-24	10.65	4.9
2011-Feb-25	10.5	5.74
2011-Feb-26	10.41	7.78
2011-Feb-27	10.34	6.73
2011-Feb-28	20.76	7.46
2011-Mar-01	24.19	7.97
2011-Mar-02	21.64	7.98
2011-Mar-03	22.74	8.82
2011-Mar-04	21.26	6.95
2011-Mar-05	6.44	3.06
2011-Mar-06	6.94	3.11
2011-Mar-07	6.41	2.79

102-03-03-002-26w1 Production Data.txt

2011-Mar-08	6.3	2.43
2011-Mar-09	22.5	9.84
2011-Mar-10	21.58	10.38
2011-Mar-11	22.62	11.7
2011-Mar-12	22.51	8.51
2011-Mar-13	23.53	10.94
2011-Mar-14	22.99	10
2011-Mar-15	24.03	9.55
2011-Mar-16	16.27	6.74
2011-Mar-17	18.68	11.8
2011-Mar-18	24.88	10.6
2011-Mar-19	23.27	9.71
2011-Mar-20	25.48	11.06
2011-Mar-21	4.01	1.26
2011-Mar-22	3.8	1.08
2011-Mar-23	4.74	1.21
2011-Mar-24	4.43	0.97
2011-Mar-25	4.23	0.88
2011-Mar-26	2.59	0.76
2011-Mar-27	3.73	1.14
2011-Mar-28	0.42	0.14
2011-Mar-29	4.33	1.36
2011-Mar-30	5.07	1.08
2011-Mar-31	4.18	1.31
2011-Apr-01	5.04	1.18
2011-Apr-02	3.9	1.17
2011-Apr-03	4.6	1.45
2011-Apr-04	5.03	1.06
2011-Apr-05	4.38	1.31
2011-Apr-06	4.92	1.07
2011-Apr-07	5.85	0.42
2011-Apr-08	4.81	0.98
2011-Apr-09	4.56	1.3
2011-Apr-10	4.81	1.31
2011-Apr-11	4.09	1.16
2011-Apr-12	3.8	1.15
2011-Apr-13	4.49	1.11
2011-Apr-14	4.05	1.15
2011-Apr-15	4.52	1.63
2011-Apr-16	4.52	1.25
2011-Apr-17	7.67	4.15
2011-Apr-18	8.04	4.33
2011-Apr-19	8.86	3.84
2011-Apr-20	7.28	4.31
2011-Apr-21	8.38	3.92
2011-Apr-22	6.59	3.8
2011-Apr-23	8.83	4.52
2011-Apr-24	7.68	3.85
2011-Apr-25	6.32	4.36
2011-Apr-26	7.38	3.95
2011-Apr-27	8.13	4.06
2011-Apr-28	8.18	4.55
2011-Apr-29	8.73	4.85
2011-Apr-30	7.28	4.11
2011-May-01	8.82	4.95
2011-May-02	8.3	4.59
2011-May-03	8.3	5.05
2011-May-04	9.13	4.83
2011-May-05	8.82	5.98
2011-May-06	9.02	4.83
2011-May-07	8.66	4.94
2011-May-08	8.9	5.03
2011-May-09	9	5.11
2011-May-10	8.49	5.42
2011-May-11	8.85	4.9
2011-May-12	8.93	5.14

102-03-03-002-26w1 Production Data.txt

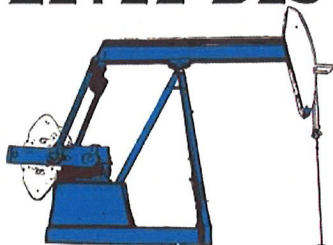
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2011-May-14	8.7	5.23
2011-May-15	8.47	4.89
2011-May-16	8.55	4.95
2011-May-17	8.33	5.31
2011-May-18	8.79	5.13
2011-May-19	8.4	4.83
2011-May-20	8.49	5.16
2011-May-21	8.72	5.03
2011-May-22	8.67	5.27
2011-May-23	8.67	5.83
2011-May-24	8.49	5.2
2011-May-25	8.49	5.42
2011-May-26	8.28	5.4
2011-May-27	8.27	5.34
2011-May-28	7.86	5.44
2011-May-29	7.82	5.24
2011-May-30	4.38	2.81
2011-May-31	3.54	2.02
2011-Jun-01	8.39	5.5
2011-Jun-02	8.52	4.97
2011-Jun-03	8.41	5.23
2011-Jun-04	8.43	5.89
2011-Jun-05	7.81	5
2011-Jun-06	8.13	4.63
2011-Jun-07	7.89	5.18
2011-Jun-08	8.88	5.12
2011-Jun-09	8.13	5
2011-Jun-10	8.01	5.52
2011-Jun-11	8.41	5.58
2011-Jun-12	8.61	5.58
2011-Jun-13	8.85	6.19
2011-Jun-14	7.63	2.61
2011-Jun-15	7.38	2.76
2011-Jun-16	7.31	2.31
2011-Jun-17	6.74	2.53
2011-Jun-18	6.8	2.78
2011-Jun-19	5.51	3.13
2011-Jun-20	7.59	2.57
2011-Jun-21	7.25	2.53
2011-Jun-22	7.42	2.88
2011-Jun-23	5.4	3.39
2011-Jun-24	5.46	3.48
2011-Jun-25	5.6	3.36
2011-Jun-26	5.48	3.54
2011-Jun-27	5.75	3.6
2011-Jun-28	5.34	3.54
2011-Jun-29	5.28	3.08
2011-Jun-30	5.45	3.44
2011-Jul-01	5.69	3.53
2011-Jul-02	5.63	3.81
2011-Jul-03	5.28	3.58
2011-Jul-04	5.36	3.6
2011-Jul-05	6.18	4.48
2011-Jul-06	5.26	3.62
2011-Jul-07	5.45	3.57
2011-Jul-08	5.39	3.41
2011-Jul-09	5.28	3.64
2011-Jul-10	3.76	1.66
2011-Jul-11	3.85	2.1
2011-Jul-12	3.75	1.99
2011-Jul-13	4.1	1.85
2011-Jul-14	3.75	1.89
2011-Jul-15	3.9	1.81
2011-Jul-16	4.11	1.91
2011-Jul-17	3.84	1.64

102-03-03-002-26w1 Production Data.txt

2011-Jul-18	3.91	1.52
2011-Jul-19	4.1	1.64
2011-Jul-20	0	0
2011-Jul-21	0	0
2011-Jul-22	0	0
2011-Jul-23	0	0
2011-Jul-24	3.96	1.63
2011-Jul-25	4.03	1.69
2011-Jul-26	3.69	1.76
2011-Jul-27	4.08	1.82
2011-Jul-28	4.37	1.92
2011-Jul-29	0.98	0.41
2011-Jul-30	3.19	1.42
2011-Jul-31	4.21	1.82
2011-Aug-01	4.05	1.87
2011-Aug-02	3.79	1.87
2011-Aug-03	4.01	1.85
2011-Aug-04	4.02	1.95
2011-Aug-05	4.02	1.79
2011-Aug-06	4.03	1.72
2011-Aug-07	4.04	2.3
2011-Aug-14	0	0
2011-Aug-17	4.22	1.97
2011-Aug-21	3.98	1.9
2011-Aug-22	3.85	1.84
2011-Aug-23	3.98	1.73
2011-Aug-08	4.04	1.86
2011-Aug-10	0	0
2011-Aug-13	0	0
2011-Aug-15	0	0
2011-Aug-25	3.97	1.79
2011-Aug-11	0	0
2011-Aug-16	4.09	2.38
2011-Aug-12	3.64	3.21
2011-Aug-18	4.02	2.15
2011-Aug-09	0	0
2011-Aug-19	4.13	1.92
2011-Aug-20	4.07	2.22
2011-Aug-24	4.14	1.88

**ACOUSTIC PRESSURE SURVEY
BUILD-UP TEST**

LEVEL BEST



TECHNOLOGIES LTD.

WASKADA UNIT NO. 5 HZNTL 3-3-2-26

102/03-03-002-26W1/0

Surface Location: 102/04-02-002-26W1/0 (HZTL)

License: 007234

Field: WASKADA MB

Formation: AMRANTH

Pool: LOWER AMARANTH A

AUGUST 2011

DATA COLLECTION SERVICES

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

Date: 2011-Aug-10

**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 3-3-2-26

102/03-03-002-26W1/0

WASKADA MB

POOL: LOWER AMARANTH A

2011-AUG-08 TO 2011-AUG-18

TEST SUMMARY:

- An acoustic well sounder instrument was installed into the casing on 2011-08-08 at 11:20 hours. The fluid level was at 94.8 joints.
- The well was shut-in on 2011-08-08 at 11:20 hours to start the build-up.
- The build-up test was concluded on 2011-08-18 at 08:50 hours.
- A final bottomhole pressure of 2,690 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 8.0 hours of shut-in is 0.70 kPa/hr.

PRESSURE DATA CALCULATIONS:

- The bottomhole pressures were calculated using the following information:

Atmospheric Pressure	93.0 kPa
Formation Depth	912.41 m KB (TVD) / 1,628.65 m KB
Oil Gravity	37.79 °API
Water Gravity	1.067
Gas Gravity	0.750
Oil Production	5.50 m ³ /d
Water Production	3.26 m ³ /d
Gas Production	0.36 E ³ m ³ /d
Bottomhole Temperature	50.00 °C

ATTACHMENTS:

ACOUSTIC WELLSOUNDER PRESSURE SURVEY DATA

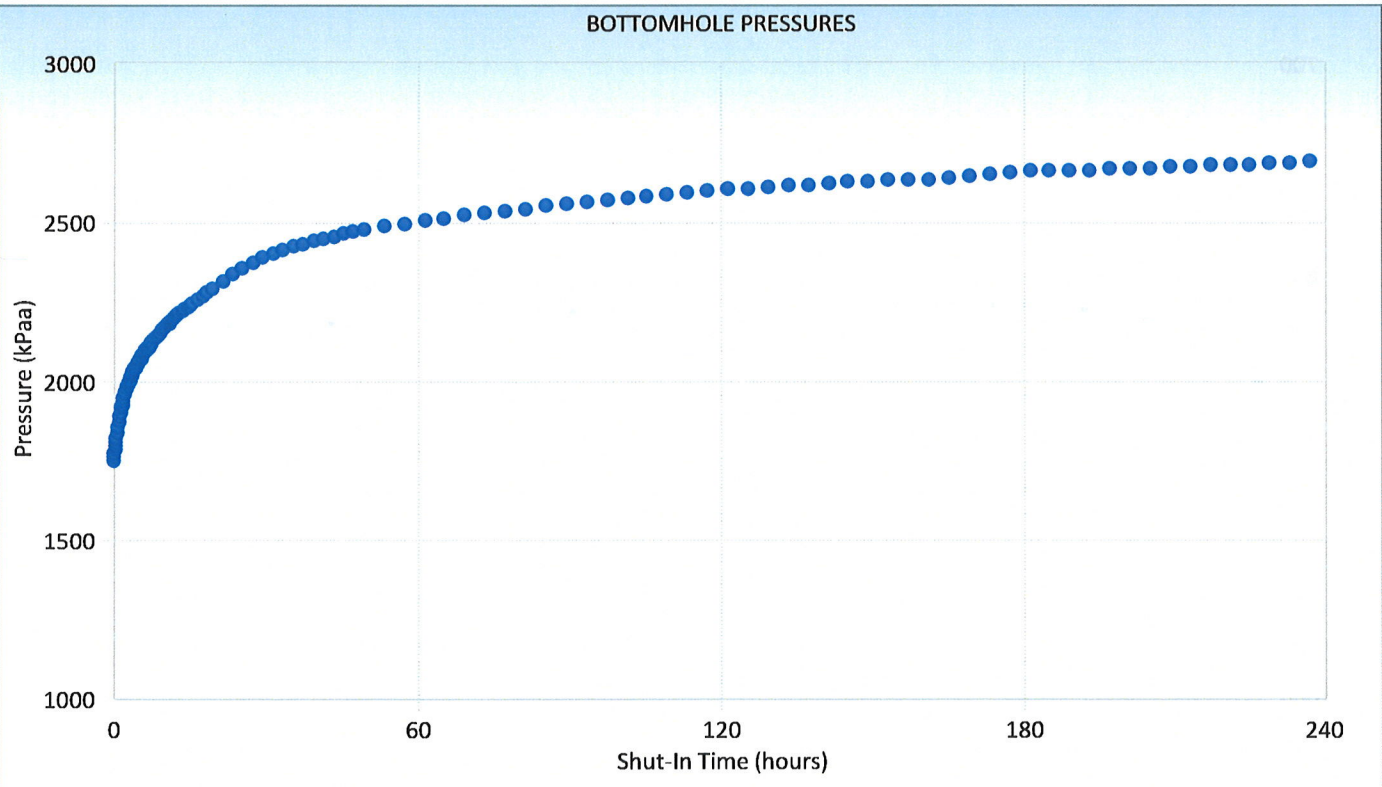
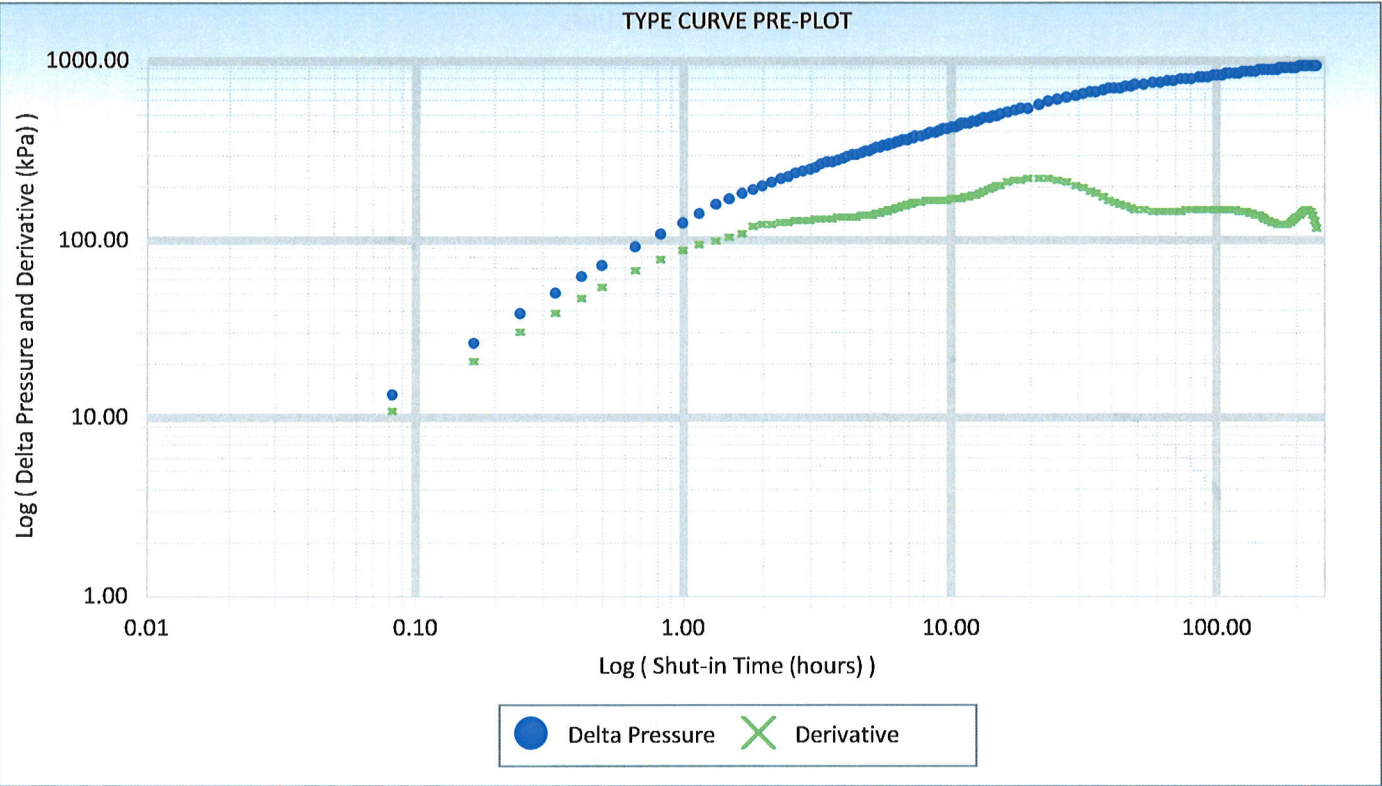
TYPE CURVE PRE-PLOT

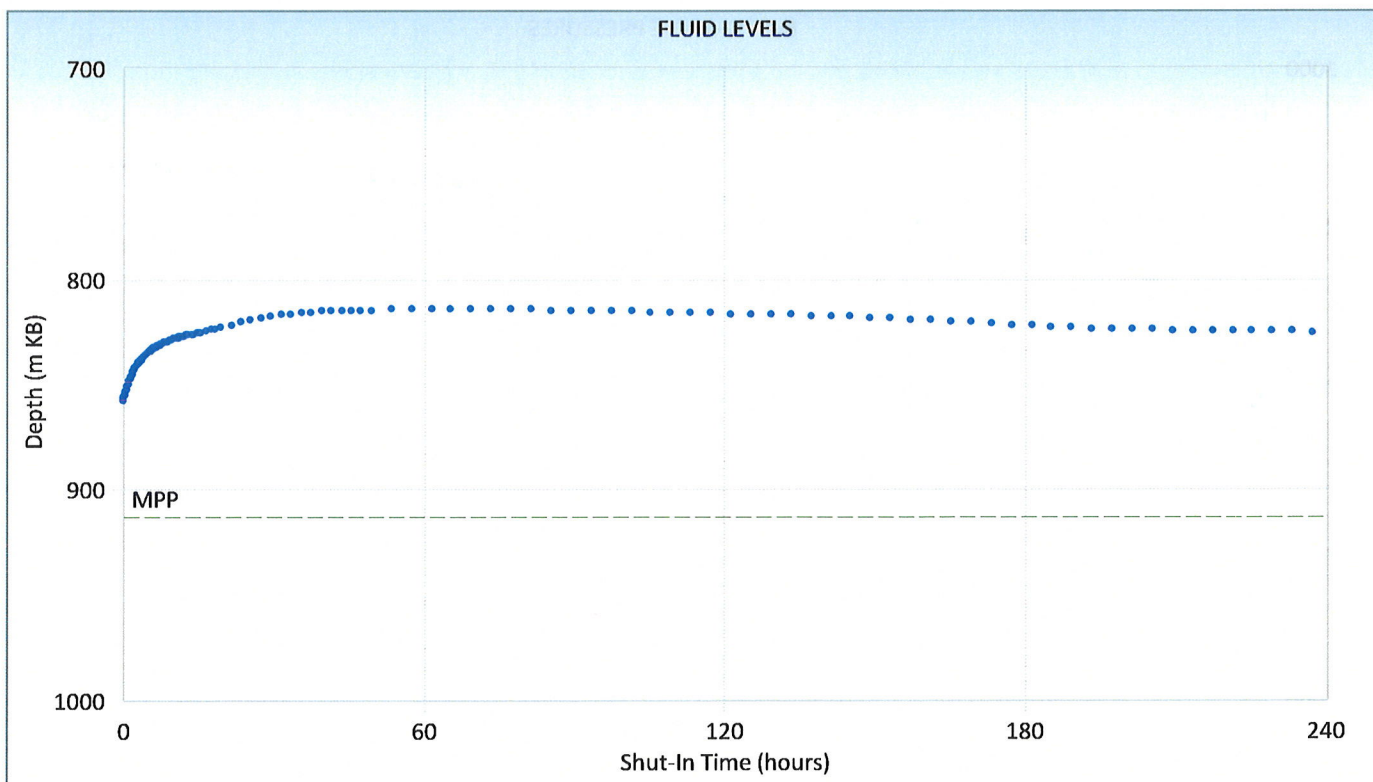
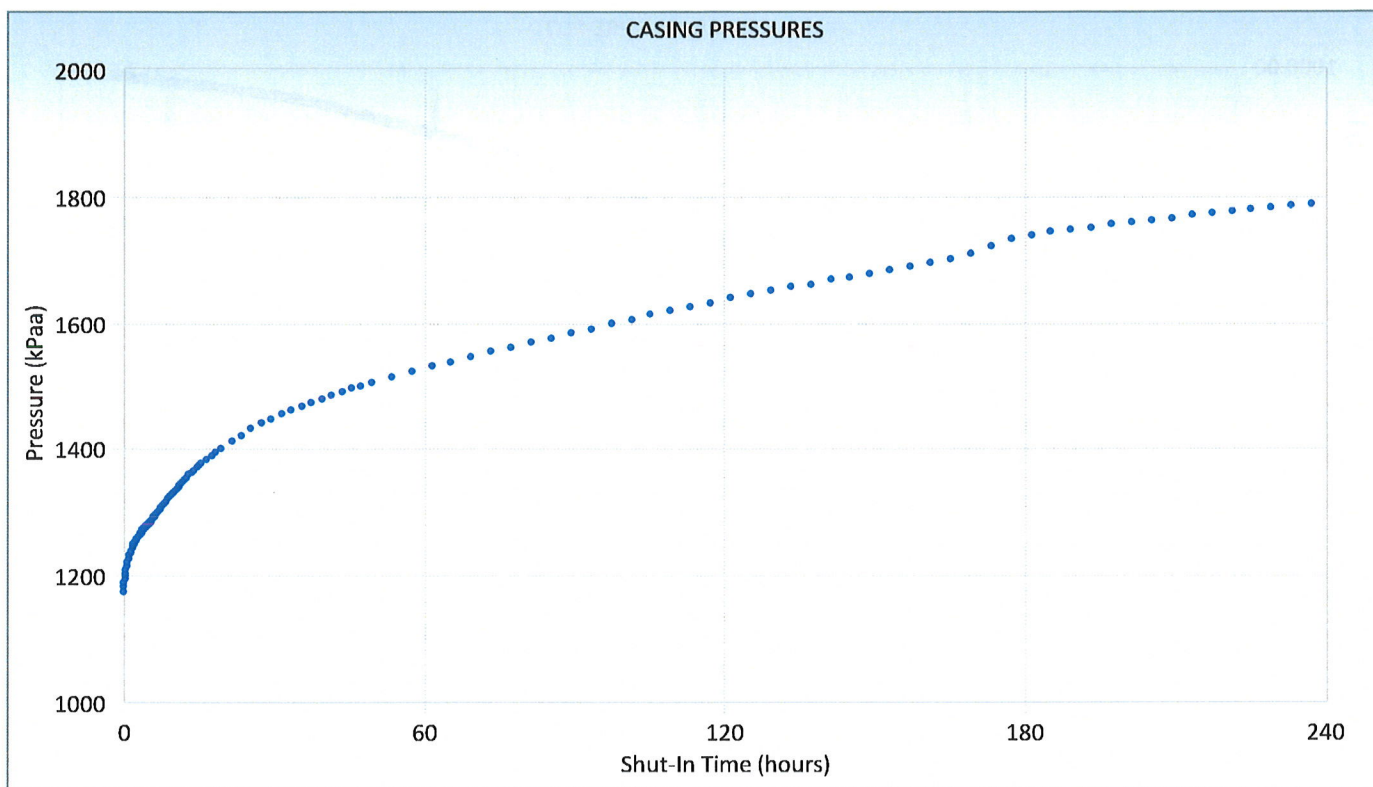
BOTTOMHOLE PRESSURE VERSUS TIME

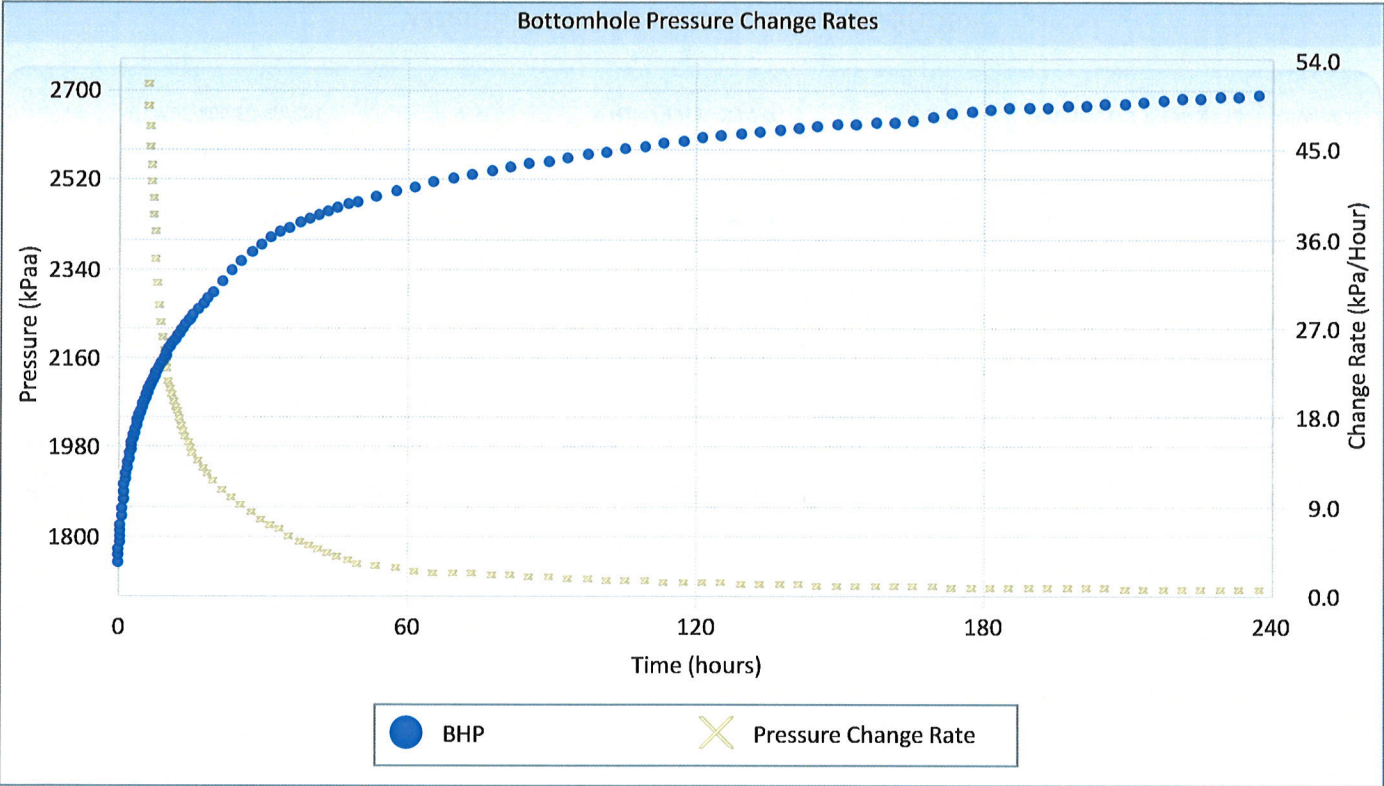
CASING PRESSURE VERSUS TIME

FLUID LEVEL VERSUS TIME









ACOUSTIC WELLSOUNDER PRESSURE SURVEY

COMPANY: PENN WEST PETROLEUM	POOL: LOWER AMARANTH A	U.W.I.: 102/03-03-002-26W1/0
FIELD: WASKADA MB	WELL STATUS: OIL	WELL NAME: WASKADA UNIT NO. 5 HZNTL 3 -3-2-26
SHUT-IN: 2011-Aug-08 @ 11:20:12	LICENSE: 007234	SURFACE LCN.: 102/04-02-002-26W1/0 (HZTL)

ELEVATIONS:	FLUID PROPERTIES:	TEMPERATURES:
Kelly Bushing (KB): 468.80 m	Gas Gravity: 0.750	Surface: 0.00 °C
Ground Level (GL): 464.30 m	Oil Gravity: 37.790 °API	Reservoir: 50.00 °C
KB to GL: 4.50 m	Water Gravity: 1.067	

PRODUCTION RATES:	TUBING:	PRODUCING INTERVAL:
Gas: 0.36 E ³ m ³ /d	Total Joints: 95.006	Top: 909.50 m KB (TVD)
Oil: 5.50 m ³ /d	Tubing Bottom: 920.00 m KB (MD)	1,130.00 m KB (MD)
Water: 3.26 m ³ /d	Average Joint Length: 9.636 m	Bottom: 908.96 m KB (TVD)
		2,127.30 m KB (MD)
		Mid-Point: 912.41 m KB (TVD)
		1,628.65 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	0.000		2011-Aug-08	11:20:12	94.80	1175.7	853.1	0.110	94.1	0.9	7.879	7.3	53.9	8.757	471.6	1748.6
2	0.083		2011-Aug-08	11:25:12	94.65	1182.5	852.5	0.111	94.6	0.9	7.879	7.3	54.5	8.756	477.5	1761.9
3	0.167		2011-Aug-08	11:30:12	94.50	1189.0	851.8	0.112	95.1	0.9	7.879	7.3	55.2	8.756	483.3	1774.8
4	0.250		2011-Aug-08	11:35:12	94.35	1195.1	851.1	0.112	95.5	0.9	7.878	7.4	55.9	8.756	489.3	1787.2
5	0.333		2011-Aug-08	11:40:12	94.20	1200.3	850.4	0.113	95.9	0.9	7.878	7.4	56.6	8.756	495.2	1798.8
6	0.417		2011-Aug-08	11:45:12	94.05	1204.9	849.7	0.113	96.2	0.9	7.878	7.4	57.2	8.755	501.2	1809.7
7	0.500		2011-Aug-08	11:50:12	93.90	1208.8	849.0	0.114	96.5	0.9	7.878	7.5	57.9	8.755	507.2	1819.8
8	0.667		2011-Aug-08	12:00:12	93.62	1215.6	847.7	0.114	96.9	1.0	7.878	7.5	59.2	8.755	518.4	1838.4
9	0.833		2011-Aug-08	12:10:12	93.34	1221.7	846.4	0.115	97.3	1.0	7.879	7.6	60.5	8.755	529.8	1856.4
10	1.000		2011-Aug-08	12:20:12	93.08	1228.9	845.2	0.115	97.6	1.0	7.879	7.8	61.7	8.754	540.5	1872.8
11	1.167		2011-Aug-08	12:30:12	92.83	1231.7	844.0	0.116	97.8	1.0	7.879	7.9	62.9	8.754	551.0	1888.5
12	1.333		2011-Aug-08	12:40:12	92.60	1235.9	842.8	0.116	98.0	1.0	7.879	8.0	64.1	8.754	560.8	1902.8
13	1.500		2011-Aug-08	12:50:12	92.39	1239.6	841.8	0.117	98.2	1.0	7.879	8.1	65.1	8.754	569.9	1915.9
14	1.667		2011-Aug-08	13:00:12	92.21	1242.9	840.9	0.117	98.4	1.0	7.879	8.2	66.0	8.753	577.8	1927.3
15	1.833		2011-Aug-08	13:10:12	92.04	1245.9	840.0	0.117	98.6	1.1	7.880	8.3	66.9	8.753	585.3	1938.0
16	2.000		2011-Aug-08	13:20:12	91.89	1248.7	839.2	0.118	98.7	1.1	7.880	8.4	67.6	8.753	592.0	1947.8
17	2.167		2011-Aug-08	13:30:12	91.75	1251.4	838.5	0.118	98.8	1.1	7.880	8.4	68.4	8.753	598.3	1957.0
18	2.333		2011-Aug-08	13:40:12	91.61	1254.0	837.7	0.118	99.0	1.1	7.880	8.5	69.1	8.753	604.7	1966.1
19	2.500		2011-Aug-08	13:50:12	91.49	1256.4	837.1	0.118	99.1	1.1	7.880	8.6	69.7	8.753	610.2	1974.2
20	2.667		2011-Aug-08	14:00:12	91.38	1258.6	836.5	0.119	99.2	1.1	7.880	8.6	70.3	8.753	615.2	1981.7
21	2.833		2011-Aug-08	14:10:12	91.27	1260.8	835.9	0.119	99.3	1.1	7.880	8.7	70.9	8.753	620.3	1989.1
22	3.000		2011-Aug-08	14:20:12	91.17	1262.8	835.4	0.119	99.4	1.1	7.880	8.7	71.4	8.752	625.0	1996.0
23	3.167		2011-Aug-08	14:30:12	91.07	1264.8	834.8	0.119	99.5	1.1	7.880	8.8	71.9	8.752	629.7	2002.8
24	3.333		2011-Aug-08	14:40:12	90.98	1266.7	834.4	0.119	99.6	1.1	7.881	8.8	72.4	8.752	634.0	2009.1
25	3.500		2011-Aug-08	14:50:12	90.89	1268.5	833.9	0.120	99.7	1.1	7.881	8.9	72.9	8.752	638.2	2015.4
26	3.667		2011-Aug-08	15:00:12	90.81	1270.2	833.4	0.120	99.8	1.1	7.881	8.9	73.4	8.752	642.1	2021.1
27	3.833		2011-Aug-08	15:10:12	90.72	1271.9	832.9	0.120	99.9	1.1	7.881	9.0	73.9	8.752	646.4	2027.2
28	4.000		2011-Aug-08	15:20:12	90.64	1273.6	832.5	0.120	100.0	1.1	7.881	9.0	74.3	8.752	650.2	2032.9



NO.	TEST			JOINTS	SURFACE	GAS COLUMN			OIL COLUMN			EMULSION COLUMN			PRESSURE
	TIME					TO	PRESSURE	HEIGHT	GRADIENT	PRESSURE	HEIGHT	GRADIENT	PRESSURE	HEIGHT	
	(hours)	DATE	TIME	LIQUID	(kPaa)	(m)	(kPa/m)	(kPa)	(m)	(kPa/m)	(kPa)	(m)	(kPa/m)	(kPa)	(kPaa)
29	4.167	2011-Aug-08	15:30:12	90.56	1275.2	832.0	0.120	100.1	1.1	7.881	9.0	74.7	8.752	654.1	2038.5
30	4.333	2011-Aug-08	15:40:12	90.49	1276.8	831.6	0.120	100.2	1.2	7.881	9.1	75.1	8.752	657.5	2043.6
31	4.500	2011-Aug-08	15:50:12	90.42	1278.4	831.2	0.121	100.2	1.2	7.881	9.1	75.5	8.752	660.9	2048.6
32	4.667	2011-Aug-08	16:00:12	90.35	1279.9	830.8	0.121	100.3	1.2	7.881	9.1	75.9	8.752	664.4	2053.7
33	4.833	2011-Aug-08	16:10:12	90.28	1281.4	830.4	0.121	100.4	1.2	7.881	9.2	76.3	8.751	667.8	2058.7
34	5.000	2011-Aug-08	16:20:12	90.22	1282.9	830.1	0.121	100.5	1.2	7.881	9.2	76.6	8.751	670.7	2063.3
35	5.167	2011-Aug-08	16:30:12	90.16	1284.3	829.8	0.121	100.6	1.2	7.881	9.2	77.0	8.751	673.7	2067.8
36	5.333	2011-Aug-08	16:40:12	90.10	1285.8	829.4	0.121	100.7	1.2	7.881	9.2	77.3	8.751	676.7	2072.3
37	5.500	2011-Aug-08	16:50:12	90.05	1287.3	829.1	0.122	100.7	1.2	7.881	9.2	77.6	8.751	679.1	2076.4
38	5.667	2011-Aug-08	17:00:12	90.01	1288.9	828.9	0.122	100.8	1.2	7.881	9.3	77.8	8.751	681.1	2080.1
39	5.833	2011-Aug-08	17:10:12	89.96	1290.6	828.6	0.122	101.0	1.2	7.881	9.3	78.1	8.751	683.6	2084.4
40	6.000	2011-Aug-08	17:20:12	89.92	1292.4	828.4	0.122	101.1	1.2	7.881	9.3	78.3	8.751	685.6	2088.4
41	6.167	2011-Aug-08	17:30:12	89.89	1294.3	828.2	0.122	101.2	1.2	7.881	9.3	78.5	8.751	687.1	2091.9
42	6.333	2011-Aug-08	17:40:12	89.85	1296.2	828.0	0.122	101.3	1.2	7.881	9.3	78.7	8.751	689.1	2095.9
43	6.500	2011-Aug-08	17:50:12	89.82	1298.1	827.8	0.123	101.5	1.2	7.881	9.3	78.9	8.751	690.6	2099.5
44	6.667	2011-Aug-08	18:00:12	89.78	1300.0	827.6	0.123	101.6	1.2	7.881	9.3	79.1	8.751	692.6	2103.5
45	6.833	2011-Aug-08	18:10:12	89.75	1301.8	827.4	0.123	101.7	1.2	7.881	9.4	79.3	8.750	694.1	2106.9
46	7.000	2011-Aug-08	18:20:12	89.71	1303.6	827.2	0.123	101.8	1.2	7.881	9.4	79.5	8.750	696.1	2110.9
47	7.167	2011-Aug-08	18:30:12	89.67	1305.3	826.9	0.123	102.0	1.2	7.881	9.4	79.8	8.750	698.1	2114.7
48	7.333	2011-Aug-08	18:40:12	89.63	1307.0	826.7	0.123	102.1	1.2	7.881	9.4	80.0	8.750	700.1	2118.6
49	7.500	2011-Aug-08	18:50:12	89.59	1308.7	826.5	0.124	102.2	1.2	7.881	9.4	80.2	8.750	702.1	2122.4
50	7.833	2011-Aug-08	19:10:12	89.52	1311.9	826.1	0.124	102.4	1.2	7.881	9.4	80.6	8.750	705.6	2129.4
51	8.167	2011-Aug-08	19:30:12	89.46	1315.1	825.7	0.124	102.6	1.2	7.881	9.5	81.0	8.750	708.7	2135.8
52	8.500	2011-Aug-08	19:50:12	89.40	1318.2	825.4	0.125	102.8	1.2	7.881	9.5	81.3	8.750	711.7	2142.3
53	8.833	2011-Aug-08	20:10:12	89.35	1321.3	825.1	0.125	103.1	1.2	7.881	9.5	81.6	8.749	714.3	2148.1
54	9.167	2011-Aug-08	20:30:12	89.30	1324.3	824.8	0.125	103.3	1.2	7.881	9.5	81.9	8.749	716.8	2153.9
55	9.500	2011-Aug-08	20:50:12	89.24	1327.2	824.4	0.125	103.5	1.2	7.881	9.6	82.3	8.749	719.9	2160.1
56	9.833	2011-Aug-08	21:10:12	89.19	1330.2	824.1	0.126	103.7	1.2	7.881	9.6	82.6	8.749	722.4	2165.8
57	10.167	2011-Aug-08	21:30:12	89.14	1333.2	823.8	0.126	103.9	1.2	7.880	9.6	82.9	8.749	725.0	2171.6
58	10.500	2011-Aug-08	21:50:12	89.09	1336.2	823.5	0.126	104.1	1.2	7.880	9.6	83.2	8.749	727.5	2177.5
59	10.833	2011-Aug-08	22:10:12	89.05	1339.4	823.3	0.127	104.3	1.2	7.880	9.6	83.4	8.749	729.6	2182.9
60	11.167	2011-Aug-08	22:30:12	89.01	1342.5	823.1	0.127	104.6	1.2	7.880	9.6	83.6	8.748	731.7	2188.4
61	11.500	2011-Aug-08	22:50:12	88.97	1345.7	822.8	0.127	104.8	1.2	7.880	9.7	83.9	8.748	733.7	2193.8
62	11.833	2011-Aug-08	23:10:12	88.94	1348.8	822.6	0.128	105.0	1.2	7.880	9.7	84.0	8.748	735.3	2198.7
63	12.167	2011-Aug-08	23:30:12	88.91	1351.9	822.5	0.128	105.2	1.2	7.880	9.7	84.2	8.748	736.8	2203.6
64	12.500	2011-Aug-08	23:50:12	88.88	1354.9	822.3	0.128	105.5	1.2	7.880	9.7	84.4	8.748	738.4	2208.4
65	13.000	2011-Aug-09	00:20:12	88.84	1359.3	822.0	0.129	105.8	1.2	7.880	9.7	84.6	8.748	740.4	2215.2
66	13.500	2011-Aug-09	00:50:12	88.80	1363.4	821.8	0.129	106.1	1.2	7.879	9.7	84.9	8.747	742.5	2221.8
67	14.000	2011-Aug-09	01:20:12	88.76	1367.4	821.6	0.130	106.4	1.2	7.879	9.7	85.1	8.747	744.6	2228.1
68	14.500	2011-Aug-09	01:50:12	88.72	1371.0	821.3	0.130	106.7	1.2	7.879	9.8	85.4	8.747	746.6	2234.1
69	15.000	2011-Aug-09	02:20:12	88.67	1374.5	821.0	0.130	106.9	1.2	7.879	9.8	85.7	8.747	749.2	2240.4
70	15.500	2011-Aug-09	02:50:12	88.63	1377.8	820.8	0.131	107.2	1.2	7.879	9.8	85.9	8.747	751.3	2246.1
71	16.500	2011-Aug-09	03:50:12	88.54	1384.1	820.2	0.131	107.6	1.2	7.879	9.8	86.4	8.746	756.0	2257.6
72	17.500	2011-Aug-09	04:50:12	88.44	1390.1	819.6	0.132	108.0	1.3	7.878	9.9	87.0	8.746	761.3	2269.3
73	18.500	2011-Aug-09	05:50:12	88.34	1395.8	819.0	0.132	108.4	1.3	7.878	9.9	87.7	8.746	766.6	2280.7
74	19.500	2011-Aug-09	06:50:12	88.24	1401.4	818.4	0.133	108.8	1.3	7.878	9.9	88.3	8.745	771.9	2292.0
75	21.500	2011-Aug-09	08:50:12	88.04	1412.1	817.2	0.134	109.5	1.3	7.878	10.0	89.5	8.745	782.5	2314.2
76	23.500	2011-Aug-09	10:50:12	87.85	1422.4	816.0	0.135	110.2	1.3	7.878	10.1	90.7	8.744	792.7	2335.4
77	25.500	2011-Aug-09	12:50:12	87.69	1432.1	815.0	0.136	110.9	1.3	7.878	10.2	91.6	8.744	801.4	2354.4
78	27.500	2011-Aug-09	14:50:12	87.55	1441.0	814.1	0.137	111.5	1.3	7.877	10.2	92.5	8.743	809.0	2371.7
79	29.500	2011-Aug-09	16:50:12	87.42	1449.1	813.3	0.138	112.0	1.3	7.877	10.3	93.3	8.743	816.1	2387.5
80	31.500	2011-Aug-09	18:50:12	87.32	1456.3	812.6	0.138	112.5	1.3	7.877	10.4	94.0	8.743	821.6	2400.8
81	33.500	2011-Aug-09	20:50:12	87.24	1462.8	812.1	0.139	113.0	1.3	7.877	10.4	94.5	8.742	826.0	2412.2
82	35.500	2011-Aug-09	22:50:12	87.17	1468.7	811.7	0.140	113.4	1.3	7.876	10.4	94.9	8.742	829.9	2422.5
83	37.500	2011-Aug-10	00:50:12	87.12	1474.4	811.3	0.140	113.9	1.3	7.876	10.5	95.3	8.742	832.6	2431.4
84	39.500	2011-Aug-10	02:50:12	87.07	1480.1	811.0	0.141	114.3	1.3	7.876	10.5	95.6	8.741	835.4	2440.2
85	41.500	2011-Aug-10	04:50:12	87.03	1485.6	810.7	0.141	114.7	1.3	7.876	10.5	95.8	8.741	837.7	2448.4



NO.	TEST	DATE	TIME	JOINTS TO LIQUID	SURFACE PRESSURE (kPaa)	GAS COLUMN			OIL COLUMN			EMULSION COLUMN			PRESSURE @ MPP
	TIME (hours)					HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	HEIGHT (m)	GRADIENT (kPa/m)	PRESSURE (kPa)	
86	43.500	2011-Aug-10	08:50:12	87.01	1491.0	810.6	0.142	115.1	1.3	7.875	10.5	96.0	8.741	838.8	2455.4
87	45.500	2011-Aug-10	08:50:12	86.99	1496.3	810.5	0.143	115.5	1.3	7.875	10.5	96.1	8.741	839.9	2462.2
88	47.500	2011-Aug-10	10:50:12	86.97	1501.3	810.4	0.143	115.9	1.3	7.875	10.6	96.2	8.740	841.0	2468.8
89	49.500	2011-Aug-10	12:50:12	86.95	1506.1	810.2	0.144	116.3	1.3	7.875	10.6	96.3	8.740	842.1	2475.0
90	53.500	2011-Aug-10	16:50:12	86.93	1514.9	810.1	0.144	117.0	1.3	7.874	10.6	96.5	8.740	843.2	2485.6
91	57.500	2011-Aug-10	20:50:12	86.91	1522.8	810.0	0.145	117.6	1.3	7.874	10.6	96.6	8.739	844.2	2495.3
92	61.500	2011-Aug-11	00:50:12	86.90	1530.6	809.9	0.146	118.2	1.3	7.873	10.6	96.7	8.739	844.8	2504.2
93	65.500	2011-Aug-11	04:50:12	86.90	1538.4	809.9	0.147	118.9	1.3	7.873	10.6	96.7	8.738	844.7	2512.6
94	69.500	2011-Aug-11	08:50:12	86.90	1546.4	809.9	0.148	119.5	1.3	7.872	10.6	96.7	8.738	844.7	2521.2
95	73.500	2011-Aug-11	12:50:12	86.90	1554.2	809.9	0.148	120.2	1.3	7.872	10.6	96.7	8.738	844.7	2529.7
96	77.500	2011-Aug-11	16:50:12	86.91	1561.7	810.0	0.149	120.8	1.3	7.871	10.6	96.6	8.737	844.1	2537.1
97	81.500	2011-Aug-11	20:50:12	86.93	1568.7	810.1	0.150	121.4	1.3	7.871	10.6	96.5	8.737	842.9	2543.6
98	85.500	2011-Aug-12	00:50:12	86.95	1575.7	810.2	0.151	122.0	1.3	7.870	10.6	96.3	8.737	841.7	2550.0
99	89.500	2011-Aug-12	04:50:12	86.98	1582.9	810.4	0.151	122.6	1.3	7.869	10.6	96.1	8.736	840.0	2556.1
100	93.500	2011-Aug-12	08:50:12	87.00	1590.4	810.6	0.152	123.3	1.3	7.869	10.5	96.0	8.736	838.8	2563.0
101	97.500	2011-Aug-12	12:50:12	87.04	1598.0	810.8	0.153	123.9	1.3	7.868	10.5	95.8	8.736	836.5	2569.0
102	101.500	2011-Aug-12	16:50:12	87.07	1605.3	811.0	0.154	124.5	1.3	7.868	10.5	95.6	8.735	834.8	2575.1
103	105.500	2011-Aug-12	20:50:12	87.10	1612.1	811.2	0.154	125.1	1.3	7.867	10.5	95.4	8.735	833.1	2580.8
104	109.500	2011-Aug-13	00:50:12	87.14	1618.7	811.5	0.155	125.7	1.3	7.867	10.5	95.1	8.735	830.8	2585.7
105	113.500	2011-Aug-13	04:50:12	87.17	1625.3	811.7	0.156	126.3	1.3	7.866	10.5	94.9	8.734	829.1	2591.2
106	117.500	2011-Aug-13	08:50:12	87.20	1632.1	811.8	0.156	126.9	1.3	7.866	10.4	94.7	8.734	827.4	2596.8
107	121.500	2011-Aug-13	12:50:12	87.23	1638.8	812.0	0.157	127.5	1.3	7.865	10.4	94.5	8.734	825.7	2602.4
108	125.500	2011-Aug-13	16:50:12	87.26	1644.9	812.2	0.158	128.0	1.3	7.865	10.4	94.4	8.733	824.0	2607.3
109	129.500	2011-Aug-13	20:50:12	87.30	1650.4	812.5	0.158	128.5	1.3	7.864	10.4	94.1	8.733	821.7	2611.0
110	133.500	2011-Aug-14	00:50:12	87.33	1655.8	812.7	0.159	129.0	1.3	7.864	10.4	93.9	8.733	820.1	2615.2
111	137.500	2011-Aug-14	04:50:12	87.37	1661.3	812.9	0.159	129.5	1.3	7.863	10.4	93.7	8.732	817.8	2619.0
112	141.500	2011-Aug-14	08:50:12	87.41	1667.2	813.2	0.160	130.0	1.3	7.863	10.3	93.4	8.732	815.6	2623.1
113	145.500	2011-Aug-14	12:50:12	87.46	1672.9	813.5	0.160	130.5	1.3	7.862	10.3	93.1	8.732	812.8	2626.6
114	149.500	2011-Aug-14	16:50:12	87.52	1678.4	813.9	0.161	131.0	1.3	7.862	10.3	92.7	8.732	809.5	2629.1
115	153.500	2011-Aug-14	20:50:12	87.58	1683.4	814.3	0.162	131.5	1.3	7.861	10.2	92.3	8.731	806.2	2631.4
116	157.500	2011-Aug-15	00:50:12	87.65	1688.4	814.7	0.162	132.0	1.3	7.861	10.2	91.9	8.731	802.3	2633.0
117	161.500	2011-Aug-15	04:50:12	87.72	1694.0	815.2	0.163	132.5	1.3	7.860	10.2	91.5	8.731	798.5	2635.2
118	165.500	2011-Aug-15	08:50:12	87.80	1700.9	815.7	0.163	133.2	1.3	7.860	10.1	91.0	8.731	794.1	2638.3
119	169.500	2011-Aug-15	12:50:12	87.89	1710.3	816.2	0.164	134.1	1.3	7.859	10.1	90.4	8.730	789.2	2643.6
120	173.500	2011-Aug-15	16:50:12	87.98	1721.3	816.8	0.165	135.1	1.3	7.858	10.0	89.8	8.730	784.3	2650.8
121	177.500	2011-Aug-15	20:50:12	88.06	1731.1	817.3	0.166	136.0	1.3	7.857	10.0	89.4	8.729	780.0	2657.1
122	181.500	2011-Aug-16	00:50:12	88.14	1738.1	817.8	0.167	136.7	1.3	7.856	10.0	88.9	8.729	775.7	2660.5
123	185.500	2011-Aug-16	04:50:12	88.21	1743.2	818.2	0.168	137.1	1.3	7.856	10.0	88.4	8.728	771.9	2662.2
124	189.500	2011-Aug-16	08:50:12	88.28	1747.4	818.6	0.168	137.6	1.3	7.855	9.9	88.0	8.728	768.2	2663.1
125	193.500	2011-Aug-16	12:50:12	88.33	1751.3	818.9	0.168	137.9	1.3	7.855	9.9	87.7	8.728	765.5	2664.7
126	197.500	2011-Aug-16	16:50:12	88.37	1754.8	819.2	0.169	138.3	1.3	7.855	9.9	87.5	8.728	763.4	2666.4
127	201.500	2011-Aug-16	20:50:12	88.41	1758.1	819.4	0.169	138.6	1.3	7.854	9.9	87.2	8.728	761.2	2667.8
128	205.500	2011-Aug-17	00:50:12	88.44	1761.4	819.6	0.169	138.9	1.3	7.854	9.9	87.0	8.728	759.6	2669.8
129	209.500	2011-Aug-17	04:50:12	88.47	1765.2	819.8	0.170	139.3	1.3	7.854	9.9	86.9	8.727	758.0	2672.3
130	213.500	2011-Aug-17	08:50:12	88.50	1769.3	820.0	0.170	139.6	1.3	7.853	9.9	86.7	8.727	756.4	2675.2
131	217.500	2011-Aug-17	12:50:12	88.52	1773.3	820.1	0.171	140.0	1.3	7.853	9.9	86.6	8.727	755.4	2678.5
132	221.500	2011-Aug-17	16:50:12	88.54	1776.7	820.2	0.171	140.3	1.3	7.853	9.8	86.4	8.727	754.3	2681.1
133	225.500	2011-Aug-17	20:50:12	88.56	1779.4	820.3	0.171	140.5	1.3	7.853	9.8	86.3	8.727	753.2	2683.0
134	229.500	2011-Aug-18	00:50:12	88.58	1782.0	820.5	0.172	140.8	1.3	7.852	9.8	86.2	8.727	752.2	2684.8
135	233.500	2011-Aug-18	04:50:12	88.60	1785.0	820.6	0.172	141.1	1.3	7.852	9.8	86.1	8.726	751.1	2687.0
136	237.500	2011-Aug-18	08:50:12	88.61	1788.6	820.6	0.172	141.4	1.3	7.852	9.8	86.0	8.726	750.6	2690.4