



Weatherford®

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30 015 42734

Devon Energy
333 W. Sherridan Ave
Oklahoma City, OK, 73102

Date: July 9, 2015

Attention: Scott Schmidt

NM OIL CONSERVATION
ARTESIA DISTRICT

Re: Devon Energy
Well: Cedar 11 State 1H
Eddy County, New Mexico

JAN 14 2016

RECEIVED

Enclosed, please find the original survey performed on the referenced well by Precision Energy Services, Inc. (P-5 No. 676004), a Weatherford company. Other information required by your office is as follows:

Name & Title <u>Of Surveyor</u>	Well <u>Number</u>	Surveyed <u>Depths</u>	Dates <u>Performed</u>	Type of <u>Survey</u>
Jesus Lopez	1H	2886 MD	6/26/2015	Measurement
MWD Supervisor		12214 MD	7/6/2015	While Drilling

A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Jesus Aguilar
MWD Coordinator

On this, the 1st day of September, 2015, before me a notary public, the undersigned officer, personally appeared Jesus Aguilar, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained.

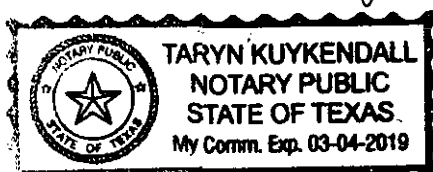
In witness hereof, I hereunto set my hand and official seal.

Notary Public

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 14 2016

RECEIVED



5D Survey Report

Devon Energy**Field Name:** *Eddy Co, NM (Nad 83 NME)***Site Name:** *Cedar 11 State 1H, Cerf 10 State 7H Pad***Well Name:** *Cedar 11 State 1H***Survey:** *Wft MWD Svy*

06 July 2015



Cedar 11 State 1H

Field Name Eddy Co, NM (Nad 83 NME)	Map Units : US ft		Company Name : Devon Energy	
	Vertical Reference Datum (VRD) : Mean Sea Level			
	Projected Coordinate System : NAD83 / New Mexico East (ftUS)			
	Comment :			
Site Name Cedar 11 State 1H, Cerf 10 State 7H Pad	Units : US ft		North Reference : Grid	Convergence Angle : 0.09
	Position	Northing : 542465.05 US ft		Latitude : 32° 29' 28.28"
		Easting : 592170.38 US ft		Longitude : -104° 10' 6.47"
	Elevation above Mean Sea Level: 3281.00 US ft			
Comment :				
Slot Name Cedar 11 State 1H	Position (Offsets relative to Site Centre)			
	+N / -S : 0.00 US ft		Northing : 542465.05 US ft	Latitude : 32° 29' 28.28"
	+E / -W : 0.00 US ft		Easting : 592170.38 US ft	Longitude : -104° 10' 6.47"
	Elevation above Mean Sea Level : 3281.00 US ft			
Comment :				
Well Name Cedar 11 State 1H	Type : Main well		UWI :	
	Rig Height : Well TVD Reference : 25.00 US ft		Comment :	
	Relative to Mean Sea Level: 3306.00 US ft			
	Closure Distance : 4907.05 US ft		Closure Azimuth : 78.8904°	
Vertical Section (Position of Origin Relative to Slot)				
+N / -S : 0.00 US ft +E / -W : 0.00 US ft Az : 90.00°				

Survey Name :Wft MWD Svy

Date : 29/Jun/2015 **Survey Tool :** MWD **Comment :** **Company :** Wft

Magnetic Model

Model Name: BGGM **Date:** 15/Jul/2015 **Field Strength:** 48262.8 nT **Declination:** 7.57° **Dip:** 60.22°

Tie Point

MD: 2800 **Inclination:** 0.53 **Azimuth:** 347.36 **TVD:** 2799.88 **North Offset:** 18.9412 **East Offset:** -5.66558

Well path created using minimum curvature

Survey Points (Relative to Slot centre, TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
2800.00	0.53	347.36	2799.88	18.94	-5.67	-5.67	0.00	542483.99	592164.71	Tie On NOV
2886.00	0.60	358.63	2885.87	19.78	-5.76	-5.76	0.15	542484.83	592164.62	First Wft Svy
2917.00	0.69	8.13	2916.87	20.13	-5.74	-5.74	0.45	542485.18	592164.64	
2948.00	1.24	0.01	2947.86	20.65	-5.71	-5.71	1.82	542485.70	592164.67	
2980.00	2.33	355.83	2979.85	21.64	-5.76	-5.76	3.43	542486.69	592164.62	
3011.00	3.62	358.98	3010.81	23.25	-5.82	-5.82	4.19	542488.30	592164.56	
3043.00	4.34	359.38	3042.73	25.47	-5.86	-5.86	2.25	542490.52	592164.52	
3074.00	5.05	1.36	3073.62	28.01	-5.84	-5.84	2.35	542493.06	592164.54	
3106.00	5.75	0.06	3105.48	31.02	-5.80	-5.80	2.22	542496.07	592164.58	
3137.00	6.47	359.08	3136.31	34.32	-5.83	-5.83	2.35	542499.37	592164.55	
3169.00	6.84	358.80	3168.09	38.02	-5.90	-5.90	1.16	542503.07	592164.48	

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	VS (US ft)	DLS (%/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
3200.00	7.22	357.82	3198.86	41.82	-6.01	-6.01	1.29	542506.87	592164.37	
3231.00	7.93	357.33	3229.59	45.90	-6.18	-6.18	2.30	542510.95	592164.20	
3263.00	8.38	357.13	3261.26	50.43	-6.40	-6.40	1.41	542515.48	592163.98	
3294.00	9.04	357.07	3291.91	55.12	-6.64	-6.64	2.13	542520.17	592163.74	
3325.00	9.68	356.31	3322.49	60.16	-6.93	-6.93	2.10	542525.21	592163.45	
3357.00	10.21	356.34	3354.01	65.67	-7.29	-7.29	1.66	542530.72	592163.09	
3388.00	10.70	357.76	3384.50	71.29	-7.57	-7.57	1.79	542536.34	592162.81	
3451.00	11.68	1.35	3446.30	83.51	-7.65	-7.65	1.91	542548.56	592162.73	
3545.00	11.74	2.80	3538.34	102.57	-6.96	-6.96	0.32	542567.62	592163.42	
3639.00	11.89	3.35	3630.35	121.79	-5.93	-5.93	0.20	542586.84	592164.45	
3734.00	11.97	4.41	3723.30	141.38	-4.60	-4.60	0.25	542606.43	592165.78	
3828.00	11.05	357.17	3815.41	160.10	-4.29	-4.29	1.82	542625.15	592166.09	
3923.00	10.26	355.66	3908.77	177.63	-5.38	-5.38	0.88	542642.68	592165.00	
4017.00	11.21	357.76	4001.13	195.11	-6.37	-6.37	1.09	542660.16	592164.01	
4111.00	10.75	358.12	4093.41	213.00	-7.02	-7.02	0.49	542678.05	592163.36	
4205.00	10.72	358.33	4185.76	230.50	-7.56	-7.56	0.05	542695.55	592162.82	
4299.00	10.53	358.32	4278.15	247.82	-8.07	-8.07	0.20	542712.87	592162.31	
4393.00	11.53	359.27	4370.41	265.80	-8.44	-8.44	1.08	542730.85	592161.94	
4487.00	11.67	0.43	4462.49	284.70	-8.49	-8.49	0.29	542749.75	592161.89	
4581.00	11.94	0.11	4554.51	303.94	-8.40	-8.40	0.30	542768.99	592161.98	
4675.00	11.72	0.30	4646.51	323.21	-8.33	-8.33	0.24	542788.26	592162.05	
4769.00	12.01	0.13	4738.50	342.53	-8.26	-8.26	0.31	542807.58	592162.12	
4863.00	12.00	0.53	4830.44	362.08	-8.14	-8.14	0.09	542827.13	592162.24	
4957.00	11.88	1.39	4922.41	381.53	-7.82	-7.82	0.23	542846.58	592162.56	
5051.00	11.56	0.80	5014.45	400.62	-7.45	-7.45	0.36	542865.67	592162.93	
5146.00	11.89	1.01	5107.47	419.92	-7.15	-7.15	0.35	542884.97	592163.23	
5239.00	11.69	359.18	5198.51	438.92	-7.11	-7.11	0.46	542903.97	592163.27	
5333.00	11.50	359.25	5290.59	457.81	-7.37	-7.37	0.20	542922.86	592163.01	
5428.00	11.28	358.95	5383.72	476.57	-7.67	-7.67	0.24	542941.62	592162.71	
5522.00	10.45	359.40	5476.03	494.29	-7.92	-7.92	0.89	542959.34	592162.46	
5616.00	10.97	359.47	5568.39	511.76	-8.10	-8.10	0.55	542976.81	592162.28	
5711.00	10.76	358.43	5661.69	529.66	-8.42	-8.42	0.30	542994.71	592161.96	
5805.00	10.11	356.89	5754.14	546.67	-9.11	-9.11	0.75	543011.72	592161.27	
5899.00	10.20	0.13	5846.66	563.23	-9.54	-9.54	0.62	543028.28	592160.84	
5993.00	10.89	358.18	5939.08	580.43	-9.80	-9.80	0.83	543045.48	592160.58	
6087.00	10.79	356.23	6031.40	598.08	-10.66	-10.66	0.40	543063.13	592159.72	
6181.00	11.09	359.65	6123.69	615.90	-11.30	-11.30	0.76	543080.95	592159.08	
6275.00	10.78	358.80	6215.99	633.73	-11.54	-11.54	0.37	543098.78	592158.84	
6369.00	10.99	358.02	6308.29	651.48	-12.03	-12.03	0.27	543116.53	592158.35	
6463.00	10.93	358.46	6400.58	669.34	-12.58	-12.58	0.11	543134.39	592157.80	
6558.00	9.61	356.51	6494.06	686.26	-13.30	-13.30	1.44	543151.31	592157.08	
6652.00	8.06	0.02	6586.94	700.68	-13.78	-13.78	1.75	543165.73	592156.60	
6746.00	6.12	1.95	6680.22	712.28	-13.61	-13.61	2.08	543177.33	592156.77	
6840.00	3.99	0.53	6773.84	720.56	-13.41	-13.41	2.27	543185.61	592156.97	
6934.00	2.11	347.28	6867.71	725.52	-13.76	-13.76	2.12	543190.57	592156.62	
7028.00	0.20	337.08	6961.68	727.36	-14.20	-14.20	2.04	543192.41	592156.18	
7059.00	1.73	60.95	6992.68	727.63	-13.81	-13.81	5.55	543192.68	592156.57	
7091.00	3.69	65.87	7024.64	728.29	-12.45	-12.45	6.16	543193.34	592157.93	
7122.00	5.64	66.38	7055.54	729.31	-10.15	-10.15	6.29	543194.36	592160.23	
7153.00	7.93	65.56	7086.32	730.80	-6.80	-6.80	7.39	543195.85	592163.58	
7185.00	9.71	64.72	7117.94	732.87	-2.35	-2.35	5.58	543197.92	592168.03	
7216.00	11.52	65.54	7148.41	735.27	2.83	2.83	5.86	543200.32	592173.21	
7247.00	13.70	68.37	7178.66	737.90	9.06	9.06	7.31	543202.95	592179.44	
7279.00	15.45	71.02	7209.63	740.69	16.61	16.61	5.85	543205.74	592186.99	
7310.00	17.36	72.69	7239.36	743.41	24.94	24.94	6.35	543208.46	592195.32	
7342.00	19.35	74.58	7269.74	746.24	34.60	34.60	6.49	543211.29	592204.98	
7373.00	21.74	76.11	7298.76	748.98	45.13	45.13	7.90	543214.03	592215.51	
7405.00	24.65	77.53	7328.17	751.84	57.40	57.40	9.26	543216.89	592227.78	
7436.00	28.67	77.57	7355.87	754.84	70.98	70.98	12.97	543219.89	592241.36	

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
7467.00	32.21	77.77	7382.59	758.19	86.32	86.32	11.42	543223.24	592256.70	
7499.00	35.50	77.89	7409.16	761.95	103.75	103.75	10.28	543227.00	592274.13	
7530.00	39.75	77.16	7433.71	766.04	122.22	122.22	13.78	543231.09	592292.60	
7537.50	40.68	76.94	7439.44	767.13	126.94	126.94	12.59	543232.18	592297.32	Crass Prod. Box
7561.00	43.61	76.29	7456.86	770.78	142.28	142.28	12.59	543235.83	592312.66	
7592.00	46.71	75.77	7478.72	776.09	163.61	163.61	10.07	543241.14	592333.99	
7624.00	50.43	74.80	7499.89	782.19	186.80	186.80	11.84	543247.24	592357.18	
7655.00	53.73	75.25	7518.94	788.50	210.43	210.43	10.71	543253.55	592380.81	
7687.00	57.19	76.04	7537.08	795.04	235.96	235.96	11.00	543260.09	592406.34	
7718.00	61.18	76.38	7552.95	801.38	261.81	261.81	12.91	543266.43	592432.19	
7749.00	64.93	77.12	7567.00	807.71	288.71	288.71	12.28	543272.76	592459.09	
7781.00	68.44	77.53	7579.66	814.15	317.37	317.37	11.03	543279.20	592487.75	
7812.00	71.50	78.27	7590.28	820.26	345.85	345.85	10.12	543285.31	592516.23	
7843.00	75.01	78.84	7599.21	826.14	374.94	374.94	11.46	543291.19	592545.32	
7874.00	78.82	78.76	7606.23	832.01	404.55	404.55	12.29	543297.06	592574.93	
7905.00	82.14	78.77	7611.35	837.96	434.53	434.53	10.71	543303.01	592604.91	
7937.00	83.34	79.48	7615.40	843.95	465.71	465.71	4.35	543309.00	592636.09	
7968.00	83.49	80.42	7618.95	849.33	496.03	496.03	3.05	543314.38	592666.41	
8000.00	84.89	81.04	7622.19	854.45	527.45	527.45	4.78	543319.50	592697.83	
8031.00	86.09	81.69	7624.63	859.09	558.00	558.00	4.40	543324.14	592728.38	
8063.00	87.62	82.53	7626.38	863.48	589.65	589.65	5.45	543328.53	592760.03	
8094.00	88.81	83.13	7627.35	867.35	620.39	620.39	4.30	543332.40	592790.77	
8125.00	88.81	83.17	7627.99	871.04	651.16	651.16	0.13	543336.09	592821.54	
8188.00	88.11	83.06	7629.69	878.59	713.69	713.69	1.12	543343.64	592884.07	
8282.00	87.20	83.13	7633.53	889.89	806.93	806.93	0.97	543354.94	592977.31	
8376.00	87.27	84.38	7638.07	900.10	900.26	900.26	1.33	543365.15	593070.64	
8470.00	87.55	86.07	7642.32	907.91	993.83	993.83	1.82	543372.96	593164.21	
8565.00	89.16	87.64	7645.04	913.12	1088.64	1088.64	2.37	543378.17	593259.02	
8659.00	89.23	89.35	7646.36	915.59	1182.60	1182.60	1.82	543380.64	593352.98	
8753.00	89.44	90.01	7647.45	916.12	1276.59	1276.59	0.74	543381.17	593446.97	
8847.00	88.67	90.37	7649.00	915.81	1370.58	1370.58	0.90	543380.86	593540.96	
8941.00	89.02	90.76	7650.90	914.88	1464.55	1464.55	0.56	543379.93	593634.93	
9035.00	89.51	90.40	7652.11	913.93	1558.54	1558.54	0.65	543378.98	593728.92	
9129.00	88.39	90.34	7653.83	913.32	1652.52	1652.52	1.19	543378.37	593822.90	
9223.00	89.86	91.47	7655.26	911.84	1746.49	1746.49	1.97	543376.89	593916.87	
9317.00	90.56	90.53	7654.92	910.20	1840.48	1840.48	1.25	543375.25	594010.86	
9411.00	90.07	91.24	7654.40	908.74	1934.46	1934.46	0.92	543373.79	594104.84	
9505.00	90.49	90.18	7653.94	907.58	2028.45	2028.45	1.21	543372.63	594198.83	
9599.00	90.28	89.52	7653.31	907.82	2122.45	2122.45	0.74	543372.87	594292.83	
9694.00	90.00	88.51	7653.08	909.46	2217.43	2217.43	1.10	543374.51	594387.81	
9788.00	89.51	88.53	7653.48	911.89	2311.40	2311.40	0.52	543376.94	594481.78	
9882.00	89.86	89.43	7654.00	913.56	2405.38	2405.38	1.03	543378.61	594575.76	
9976.00	89.09	87.91	7654.86	915.74	2499.35	2499.35	1.81	543380.79	594669.73	
10070.00	88.60	87.61	7656.75	919.41	2593.26	2593.26	0.61	543384.46	594763.64	
10164.00	88.46	87.03	7659.17	923.81	2687.13	2687.13	0.63	543388.86	594857.51	
10258.00	88.04	88.10	7662.04	927.80	2781.00	2781.00	1.22	543392.85	594951.38	
10352.00	88.32	88.96	7665.02	930.21	2874.92	2874.92	0.96	543395.26	595045.30	
10446.00	88.04	88.81	7668.01	932.04	2968.85	2968.85	0.34	543397.09	595139.23	
10540.00	89.09	89.30	7670.36	933.59	3062.81	3062.81	1.23	543398.64	595233.19	
10635.00	88.67	89.69	7672.22	934.42	3157.79	3157.79	0.60	543399.47	595328.17	
10729.00	88.04	89.79	7674.92	934.85	3251.75	3251.75	0.68	543399.90	595422.13	
10823.00	87.06	89.34	7678.93	935.56	3345.66	3345.66	1.15	543400.61	595516.04	
10917.00	87.97	90.08	7683.01	936.04	3439.56	3439.56	1.25	543401.09	595609.94	
11011.00	89.51	90.21	7685.08	935.80	3533.54	3533.54	1.64	543400.85	595703.92	
11105.00	89.23	90.89	7686.11	934.90	3627.53	3627.53	0.78	543399.95	595797.91	
11199.00	88.74	91.43	7687.78	933.00	3721.49	3721.49	0.78	543398.05	595891.87	
11293.00	89.44	90.99	7689.27	931.01	3815.46	3815.46	0.88	543396.06	595985.84	
11387.00	90.28	90.03	7689.50	930.17	3909.45	3909.45	1.36	543395.22	596079.83	

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Well TVD Reference)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	VS (US ft)	DLS (%/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
11481.00	90.00	90.18	7689.27	930.00	4003.45	4003.45	0.34	543395.05	596173.83	
11575.00	91.19	89.58	7688.29	930.20	4097.45	4097.45	1.42	543395.25	596267.83	
11669.00	91.19	89.40	7686.34	931.04	4191.42	4191.42	0.19	543396.09	596361.80	
11764.00	90.84	89.36	7684.66	932.06	4286.40	4286.40	0.37	543397.11	596456.78	
11858.00	91.33	89.65	7682.88	932.88	4380.38	4380.38	0.61	543397.93	596550.76	
11952.00	91.26	88.95	7680.75	934.02	4474.35	4474.35	0.75	543399.07	596644.73	
12046.00	89.23	88.35	7680.35	936.24	4568.32	4568.32	2.25	543401.29	596738.70	
12140.00	88.46	87.53	7682.25	939.62	4662.23	4662.23	1.20	543404.67	596832.61	
12214.00	89.02	87.87	7683.87	942.59	4736.16	4736.16	0.89	543407.64	596906.54	Last Wft Svy 1H
12283.80	89.02	87.87	7685.07	945.18	4805.90	4805.90	0.00	543410.23	596976.28	Cross Prod. Box
12293.00	89.02	87.87	7685.22	945.52	4815.09	4815.09	0.00	543410.57	596985.47	Proj. To Bit



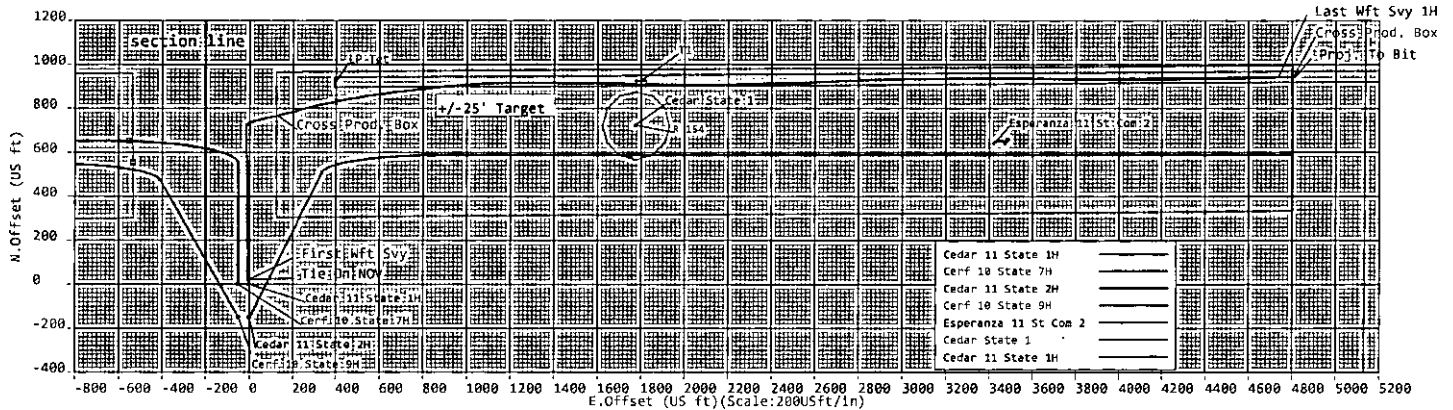
Cedar 11 State 1H
Eddy Co, NM

Plan Data for Cedar 11 State 1H

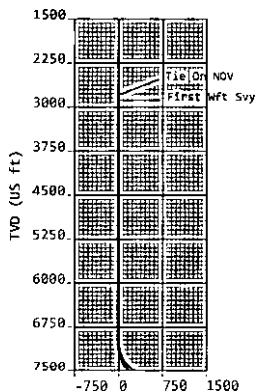
Plan Point Information:									
Dogleg Severity Unit: */100.00ft Position offsets from Slot centre									
MD	Inc	Az	TVD	+N/-S	+E/-W	Northing	Easting	VSec	DLS
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(DLSU)
11139.00	88.74	91.43	7687.78	933.00	3721.49	543398.05	595891.87	3721.49	0.78
11138.77	90.25	89.27	7688.94	932.19	3853.24	543397.24	596023.62	3853.24	2.00
11138.77	90.25	89.27	7688.03	934.84	4051.22	543399.89	596231.68	4051.22	0.00
11551.27	90.00	89.26	7688.00	935.80	4873.72	543400.05	596244.10	4873.72	2.00
12283.51	90.00	89.26	7688.00	944.45	4805.98	543409.50	596976.28	4805.98	0.00

Plan Data for Cedar 11 State 1H

Target Set Information:									
Name: Cedar 11 State 1H									
Position offsets from Slot centre									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape	Comment		
	(USft)	(USft)	(USft)	(USft)	(USft)				
LP Tgt	7581.00	917.69	397.44	543382.74	592567.82	Cuboid			
T1	7656.11	926.20	1800.15	543391.25	593970.53	Cuboid			
PBHL 1H	7688.00	944.45	4805.98	543409.50	596976.28	Cuboid			

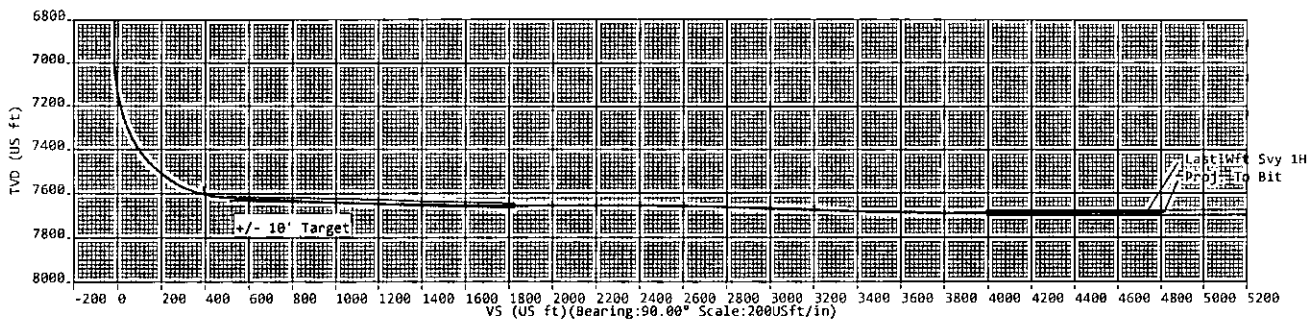
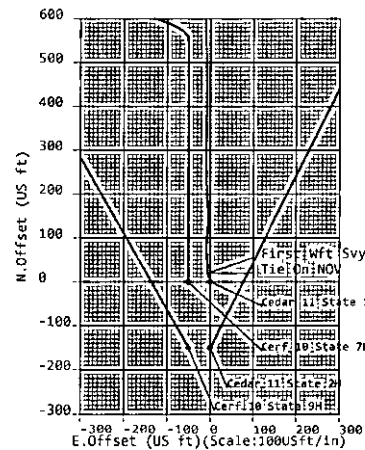


KB-3306
GL-3281



Plan Data for Cedar 11 State 1H				
Slot: Cedar 11 State 1H				
Position:				
Offset is from Site centre				
+N/-S: 0.00USft	Northing: 542465.00USft	Latitude: 32°29'28.3"		
+E/-W: 0.00USft	Easting: 592170.38USft	Longitude: -104°10'6.5"		
Elevation Above VRD: 3281.00USft				

Plan Data for Cedar 11 State 1H			
Well: Cedar 11 State 1H			
Type: Main-Well			
File Number:			
Plan Folder: P3		Plan: P3:V1	
Vertical Section: Position offset of origin from Slot centre:			
+N/-S: 0.00USft		Azimuth: 98.00°	
		+E/-W: 0.00USft	
Magnetic Parameters:			
Model:	Field Strength:	Declination:	Dip: Date:
8GGM	48262(nT)	7.57°	60.22° 2015-07-15



Sign Off: Russell Joyner



Directional Survey

Well Name: CEDAR 11 STATE 1H

Sub-Division DELAWARE BASIN WEST		Region SLOPE WEST		Field Name BURTON FLAT		County EDDY		State/Province NM					
Surface Legal Location SEC 11 T21S R27E		API/UWI 3001542734		Latitude (") 32° 29' 21.257" N		Longitude (") 104° 9' 6.425" W		Orig KB Elevation (ft) 3,306.00		Ground Elev MSL (ft) 3,281.00		KB - GL (ft) 25.00	
Wellbores													
Wellbore Name OH		Parent Wellbore OH			SAP Well ID 38555			Vertical Section Direction (") 90.00					
Kick Offs & Key Depths													
Date 6/29/2015				Type CURVE				Top Depth (ftKB) 7,036.0					
Actual Deviation Survey FLO DRIFT, Proposed? No				Definitive? No		Proposed? No		Proposed Deviation Survey					
Deviation Survey													
Date 6/20/2015		Description FLO DRIFT											
MD Tie In (ftKB) 0.00'		TVD Tie In (ftKB) 0.00		Inclination Tie In (") 0.00		Azimuth Tie In (") 0.00		NSTie In (ft) 0.00		EWTie in (ft) 0.00			
Survey Data													
Date	MD (ftKB)	Incl (")	Azm (")	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS ("/100ft)	Survey Tool	Survey Company			
6/21/2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	MWD				
6/20/2015	125.00	0.01	217.31	125.00	-0.01	-0.01	-0.01	0.01	MWD				
6/21/2015	325.00	0.05	219.92	325.00	-0.07	-0.09	-0.07	0.02	MWD				
6/21/2015	416.00	0.24	132.19	416.00	0.04	-0.25	0.04	0.27	MWD				
6/21/2015	448.00	0.07	241.02	448.00	0.08	-0.30	0.08	0.85	MWD				
6/21/2015	540.00	0.14	61.41	540.00	0.12	-0.28	0.12	0.23	MWD				
6/21/2015	635.00	0.15	28.54	635.00	0.29	-0.11	0.29	0.09	MWD				
6/21/2015	736.00	0.05	179.08	736.00	0.35	-0.04	0.35	0.19	MWD				
6/23/2015	823.00	0.06	352.42	823.00	0.34	-0.03	0.34	0.13	MWD				
6/23/2015	916.00	0.12	343.77	916.00	0.31	0.11	0.31	0.07	MWD				
6/23/2015	1,015.00	0.20	46.53	1,015.00	0.41	0.33	0.41	0.18	MWD				
6/23/2015	1,109.00	0.32	53.36	1,109.00	0.74	0.60	0.74	0.13	MWD				
6/24/2015	1,202.00	0.35	11.20	1,202.00	1.00	1.03	1.00	0.26	MWD				
6/24/2015	1,296.00	0.60	1.32	1,295.99	1.07	1.81	1.07	0.28	MWD				
6/24/2015	1,391.00	0.64	347.48	1,390.99	0.96	2.82	0.96	0.16	MWD				
6/24/2015	1,487.00	0.61	357.34	1,486.98	0.82	3.85	0.82	0.12	MWD				
6/24/2015	1,579.00	0.70	348.13	1,578.98	0.69	4.89	0.69	0.15	MWD				
6/24/2015	1,674.00	0.88	336.79	1,673.97	0.28	6.13	0.28	0.25	MWD				
6/24/2015	1,767.00	0.83	329.87	1,766.96	-0.34	7.37	-0.34	0.12	MWD				
6/24/2015	1,860.00	0.61	324.77	1,859.95	-0.96	8.36	-0.96	0.25	MWD				
6/24/2015	2,001.00	0.68	325.95	2,000.94	-1.87	9.66	-1.87	0.05	MWD				
6/24/2015	2,056.00	0.83	340.84	2,055.94	-2.18	10.31	-2.18	0.45	MWD				
6/24/2015	2,146.00	0.81	336.39	2,145.93	-2.65	11.51	-2.65	0.07	MWD				
6/24/2015	2,240.00	0.91	341.03	2,239.92	-3.16	12.82	-3.16	0.13	MWD				
6/24/2015	2,335.00	0.85	337.86	2,334.90	-3.67	14.19	-3.67	0.08	MWD				
6/24/2015	2,429.00	0.65	336.46	2,428.90	-4.14	15.32	-4.14	0.21	MWD				
6/24/2015	2,523.00	0.71	330.69	2,522.89	-4.64	16.32	-4.64	0.10	MWD				
6/24/2015	2,618.00	0.59	342.41	2,617.88	-5.08	17.30	-5.08	0.19	MWD				
6/24/2015	2,712.00	0.54	335.70	2,711.88	-5.41	18.17	-5.41	0.09	MWD				
6/24/2015	2,800.00	0.53	347.36	2,799.88	-5.67	18.94	-5.67	0.12	MWD				
6/27/2015	2,886.00	0.60	358.63	2,885.87	-5.76	19.78	-5.76	0.15	MWD				
6/27/2015	2,917.00	0.69	8.13	2,916.87	-5.74	20.13	-5.74	0.45	MWD				
6/27/2015	2,948.00	1.24	0.01	2,947.86	-5.71	20.65	-5.71	1.82	MWD				
6/27/2015	2,980.00	2.33	355.83	2,979.85	-5.76	21.64	-5.76	3.43	MWD				
6/27/2015	3,011.00	3.62	358.98	3,010.81	-5.82	23.25	-5.82	4.19	MWD				
6/27/2015	3,043.00	4.34	359.38	3,042.73	-5.86	25.47	-5.86	2.25	MWD				
6/27/2015	3,074.00	5.05	1.36	3,073.62	-5.84	28.01	-5.84	2.35	MWD				
6/27/2015	3,106.00	5.75	0.06	3,105.48	-5.80	31.02	-5.80	2.22	MWD				
6/27/2015	3,137.00	6.47	359.08	3,136.31	-5.83	34.32	-5.83	2.35	MWD				
6/27/2015	3,169.00	6.84	358.80	3,168.09	-5.90	38.02	-5.90	1.16	MWD				
6/27/2015	3,200.00	7.22	357.82	3,198.86	-6.01	41.82	-6.01	1.29	MWD				
6/27/2015	3,231.00	7.93	357.33	3,229.59	-6.18	45.90	-6.18	2.30	MWD				
6/27/2015	3,263.00	8.38	357.13	3,261.26	-6.40	50.43	-6.40	1.41	MWD				
6/27/2015	3,294.00	9.04	357.07	3,291.91	-6.64	55.12	-6.64	2.13	MWD				
6/27/2015	3,325.00	9.68	356.31	3,322.49	-6.93	60.16	-6.93	2.10	MWD				
6/27/2015	3,357.00	10.21	356.34	3,354.01	-7.29	65.67	-7.29	1.66	MWD				
6/27/2015	3,388.00	10.70	357.76	3,384.50	-7.57	71.29	-7.57	1.79	MWD				
6/27/2015	3,451.00	11.68	1.35	3,446.30	-7.65	83.51	-7.65	1.91	MWD				
6/27/2015	3,545.00	11.74	2.80	3,538.34	-6.96	102.57	-6.96	0.32	MWD				
6/27/2015	3,639.00	11.89	3.35	3,630.35	-5.93	121.79	-5.93	0.20	MWD				
6/27/2015	3,734.00	11.97	4.41	3,723.30	-4.60	141.38	-4.60	0.25	MWD				
6/27/2015	3,828.00	11.05	357.17	3,815.41	-4.29	160.10	-4.29	1.82	MWD				
6/27/2015	3,923.00	10.26	355.66	3,908.77	-5.38	177.63	-5.38	0.88	MWD				
6/27/2015	4,017.00	11.21	357.76	4,001.13	-6.37	195.11	-6.37	1.09	MWD				
6/27/2015	4,111.00	10.75	358.12	4,093.41	-7.02	213.00	-7.02	0.49	MWD				
6/27/2015	4,205.00	10.72	358.33	4,185.76	-7.56	230.50	-7.56	0.05	MWD				
6/27/2015	4,299.00	10.53	358.32	4,278.15	-8.07	247.82	-8.07	0.20	MWD				
6/27/2015	4,393.00	11.53	359.27	4,370.41	-8.44	265.80	-8.44	1.08	MWD				
6/27/2015	4,487.00	11.67	0.43	4,462.49	-8.49	284.70	-8.49	0.29	MWD				
6/28/2015	4,581.00	11.94	0.11	4,554.51	-8.40	303.94	-8.40	0.30	MWD				
6/28/2015	4,675.00	11.72	0.30	4,646.51	-8.33	323.21	-8.33	0.24	MWD				
6/28/2015	4,769.00	12.01	0.13	4,738.50	-8.26	342.53	-8.26	0.31	MWD				
6/28/2015	4,863.00	12.00	0.53	4,830.44	-8.14	362.08	-8.14	0.09	MWD				
6/28/2015	4,957.00	11.88	1.39	4,922.41	-7.82	381.53	-7.82	0.23	MWD				
6/28/2015	5,051.00	11.56	0.80	5,014.45	-7.45	400.62	-7.45	0.36	MWD				
6/28/2015	5,146.00	11.89	1.01	5,107.47	-7.15	419.92	-7.15	0.35	MWD				



Directional Survey

Well Name: CEDAR 11 STATE 1H

Sub-Division DELAWARE BASIN WEST		Region SLOPE WEST		Field Name BURTON FLAT		County EDDY		State/Province NM	
Surface Legal Location SEC 11 T21S R27E		API/UWI 3001542734	Latitude (°) 32° 29' 21.257" N	Longitude (°) 104° 9' 6.425" W	Orig KB Elevation (ft) 3,306.00	Ground Elev MSL (ft) 3,281.00	KB - GL (ft) 25.00		

Survey Data										
Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (*/100ft)	Survey Tool	Survey Company
6/28/2015	5,239.00	11.69	359.18	5,198.51	-7.11	438.92	-7.11	0.46	MWD	
6/28/2015	5,333.00	11.50	359.25	5,290.59	-7.37	457.81	-7.37	0.20	MWD	
6/28/2015	5,428.00	11.28	358.95	5,383.72	-7.67	476.57	-7.67	0.24	MWD	
6/28/2015	5,522.00	10.45	359.40	5,476.03	-7.92	494.29	-7.92	0.89	MWD	
6/28/2015	5,616.00	10.97	359.47	5,568.39	-8.10	511.76	-8.10	0.55	MWD	
6/28/2015	5,711.00	10.76	358.43	5,661.69	-8.42	529.66	-8.42	0.30	MWD	
6/28/2015	5,805.00	10.11	356.89	5,754.14	-9.11	546.67	-9.11	0.75	MWD	
6/28/2015	5,899.00	10.20	0.13	5,846.66	-9.54	563.23	-9.54	0.62	MWD	
6/28/2015	5,993.00	10.89	358.18	5,939.08	-9.80	580.43	-9.80	0.83	MWD	
6/28/2015	6,087.00	10.79	356.23	6,031.40	-10.66	598.08	-10.66	0.40	MWD	
6/28/2015	6,181.00	11.09	359.65	6,123.69	-11.30	615.90	-11.30	0.76	MWD	
6/28/2015	6,275.00	10.78	358.80	6,215.99	-11.54	633.73	-11.54	0.37	MWD	
6/28/2015	6,369.00	10.99	358.02	6,308.29	-12.03	651.48	-12.03	0.27	MWD	
6/28/2015	6,463.00	10.93	358.46	6,400.58	-12.58	669.34	-12.58	0.11	MWD	
6/28/2015	6,558.00	9.61	356.51	6,494.06	-13.30	686.26	-13.30	1.44	MWD	
6/28/2015	6,652.00	8.06	0.02	6,586.94	-13.78	700.68	-13.78	1.75	MWD	
6/28/2015	6,746.00	6.12	1.95	6,680.22	-13.61	712.28	-13.61	2.08	MWD	
6/29/2015	6,840.00	3.99	0.53	6,773.84	-13.41	720.56	-13.41	2.27	MWD	
6/29/2015	6,934.00	2.11	347.28	6,867.71	-13.76	725.52	-13.76	2.12	MWD	
6/29/2015	7,028.00	0.20	337.08	6,961.68	-14.20	727.36	-14.20	2.04	MWD	
6/29/2015	7,059.00	1.73	60.95	6,992.68	-13.81	727.63	-13.81	5.55	MWD	
6/29/2015	7,091.00	3.69	65.87	7,024.64	-12.45	728.29	-12.45	6.16	MWD	
6/29/2015	7,122.00	5.64	66.38	7,055.54	-10.15	729.31	-10.15	6.29	MWD	
6/29/2015	7,153.00	7.93	65.56	7,086.32	-6.80	730.80	-6.80	7.39	MWD	
6/29/2015	7,185.00	9.71	64.72	7,117.94	-2.35	732.87	-2.35	5.58	MWD	
6/29/2015	7,216.00	11.52	65.54	7,148.41	2.83	735.27	2.83	5.86	MWD	
6/29/2015	7,247.00	13.70	68.37	7,178.66	9.06	737.90	9.06	7.31	MWD	
6/29/2015	7,279.00	15.45	71.02	7,209.63	16.61	740.69	16.61	5.85	MWD	
6/29/2015	7,310.00	17.36	72.69	7,239.36	24.94	743.41	24.94	6.35	MWD	
6/30/2015	7,342.00	19.35	74.58	7,269.74	34.60	746.24	34.60	6.49	MWD	
6/30/2015	7,373.00	21.74	76.11	7,298.76	45.13	748.98	45.13	7.90	MWD	
6/30/2015	7,405.00	24.65	77.53	7,328.17	57.40	751.84	57.40	9.26	MWD	
6/30/2015	7,436.00	28.67	77.57	7,355.87	70.98	754.84	70.98	12.97	MWD	
6/30/2015	7,467.00	32.21	77.77	7,382.59	86.32	758.19	86.32	11.42	MWD	
6/30/2015	7,499.00	35.50	77.89	7,409.16	103.75	761.95	103.75	10.28	MWD	
6/30/2015	7,530.00	39.75	77.16	7,433.71	122.22	766.04	122.22	13.78	MWD	
6/30/2015	7,561.00	43.61	76.29	7,456.86	142.28	770.78	142.28	12.59	MWD	
6/30/2015	7,592.00	46.71	75.77	7,478.72	163.61	776.09	163.61	10.07	MWD	
6/30/2015	7,624.00	50.43	74.80	7,499.89	186.80	782.19	186.80	11.84	MWD	
6/30/2015	7,655.00	53.73	75.25	7,518.94	210.43	788.50	210.43	10.71	MWD	
7/1/2015	7,687.00	57.19	76.04	7,537.08	235.96	795.04	235.96	11.00	MWD	
7/1/2015	7,718.00	61.18	76.38	7,552.95	261.81	801.38	261.81	12.91	MWD	
6/30/2015	7,749.00	64.93	77.12	7,567.00	288.71	807.71	288.71	12.28	MWD	
6/30/2015	7,781.00	68.44	77.53	7,579.66	317.37	814.15	317.37	11.03	MWD	
6/30/2015	7,812.00	71.50	78.27	7,590.28	345.85	820.26	345.85	10.12	MWD	
7/1/2015	7,843.00	75.01	78.84	7,599.21	374.94	826.14	374.94	11.46	MWD	
7/2/2015	7,874.00	78.82	78.76	7,606.23	404.55	832.01	404.55	12.29	MWD	
7/2/2015	7,905.00	82.14	78.77	7,611.35	434.53	837.96	434.53	10.71	MWD	
7/2/2015	7,937.00	83.34	79.48	7,615.40	465.71	843.95	465.71	4.35	MWD	
7/2/2015	7,968.00	83.49	80.42	7,618.95	496.03	849.33	496.03	3.05	MWD	
7/2/2015	8,000.00	84.89	81.04	7,622.19	527.45	854.45	527.45	4.78	MWD	
7/2/2015	8,031.00	86.09	81.69	7,624.63	558.00	859.09	558.00	4.40	MWD	
7/2/2015	8,063.00	87.62	82.53	7,626.38	589.65	863.48	589.65	5.45	MWD	
7/2/2015	8,094.00	88.81	83.13	7,627.35	620.39	867.35	620.39	4.30	MWD	
7/2/2015	8,125.00	88.81	83.17	7,627.99	651.16	871.04	651.16	0.13	MWD	
7/2/2015	8,188.00	88.11	83.06	7,629.69	713.69	878.59	713.69	1.12	MWD	
7/2/2015	8,282.00	87.20	83.13	7,633.53	806.93	889.89	806.93	0.97	MWD	
7/2/2015	8,376.00	87.27	84.38	7,638.07	900.26	900.10	900.26	1.33	MWD	
7/2/2015	8,470.00	87.55	86.07	7,642.32	993.83	907.91	993.83	1.82	MWD	
7/3/2015	8,565.00	89.16	87.64	7,645.04	1,088.64	913.12	1,088.64	2.37	MWD	
7/3/2015	8,659.00	89.23	89.35	7,646.36	1,182.60	915.59	1,182.60	1.82	MWD	
7/3/2015	8,753.00	89.44	90.01	7,647.45	1,276.59	916.12	1,276.59	0.74	MWD	
7/3/2015	8,847.00	88.67	90.37	7,649.00	1,370.58	915.81	1,370.58	0.90	MWD	
7/3/2015	8,941.00	89.02	90.76	7,650.90	1,464.55	914.88	1,464.55	0.56	MWD	
7/3/2015	9,035.00	89.51	90.40	7,652.11	1,558.54	913.93	1,558.54	0.65	MWD	
7/3/2015	9,129.00	88.39	90.34	7,653.83	1,652.52	913.32	1,652.52	1.19	MWD	
7/3/2015	9,223.00	89.86	91.47	7,655.26	1,746.49	911.84	1,746.49	1.97	MWD	
7/3/2015	9,317.00	90.56	90.53	7,654.92	1,840.48	910.20	1,840.48	1.25	MWD	
7/3/2015	9,411.00	90.07	91.24	7,654.40	1,934.46	908.74	1,934.46	0.92	MWD	
7/3/2015	9,505.00	90.49	90.18	7,653.94	2,028.45	907.58	2,028.45	1.21	MWD	
7/3/2015	9,599.00	90.28	89.52	7,653.31	2,122.45	907.82	2,122.45	0.74	MWD	
7/3/2015	9,694.00	90.00	88.51	7,653.08	2,217.43	909.46	2,217.43	1.10	MWD	
7/3/2015	9,788.00	89.51	88.53	7,653.48	2,311.40	911.89	2,311.40	0.52	MWD	
7/3/2015	9,882.00	89.86	89.43	7,654.00	2,405.38	913.56	2,405.38	1.03	MWD	
7/3/2015	9,976.00	89.09	87.91	7,654.86	2,499.35	915.74	2,499.35	1.81	MWD	
7/3/2015	10,070.00	88.60	87.61	7,656.75	2,593.26	919.41	2,593.26	0.61	MWD	
7/3/2015	10,164.00	88.46	87.03	7,659.17	2,687.13	923.81	2,687.13	0.63	MWD	



Well Name: CEDAR 11 STATE 1H

Sub-Division	Region	Field Name	County	State/Province		
DELAWARE BASIN WEST	SLOPE WEST	BURTON FLAT	EDDY	NM		
Surface Legal Location	API/UWI	Latitude (")	Longitude (")	Orig KB Elevation (ft)	Ground Elev MSL (ft)	KB - GL (ft)
SEC 11 T21S R27E	3001542734	32° 29' 21.257" N	104° 9' 6.425" W	3,306.00	3,281.00	25.00

Survey Data										
Date	MD (ftKB)	Incl (")	Azm (")	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS ("/100ft)	Survey Tool	Survey Company
7/4/2015	10,258.00	88.04	88.10	7,662.04	2,781.00	927.80	2,781.00	1.22	MWD	
7/4/2015	10,352.00	88.32	88.96	7,665.02	2,874.92	930.21	2,874.92	0.96	MWD	
7/4/2015	10,446.00	88.04	88.81	7,668.01	2,968.85	932.04	2,968.85	0.34	MWD	
7/4/2015	10,540.00	89.09	89.30	7,670.36	3,062.81	933.59	3,062.81	1.23	MWD	
7/4/2015	10,635.00	88.67	89.69	7,672.22	3,157.79	934.42	3,157.79	0.60	MWD	
7/4/2015	10,729.00	88.04	89.79	7,674.92	3,251.75	934.85	3,251.75	0.68	MWD	
7/4/2015	10,823.00	87.06	89.34	7,678.93	3,345.66	935.56	3,345.66	1.15	MWD	
7/4/2015	10,917.00	87.97	90.08	7,683.01	3,439.56	936.04	3,439.56	1.25	MWD	
7/4/2015	11,011.00	89.51	90.21	7,685.08	3,533.54	935.80	3,533.54	1.64	MWD	
7/4/2015	11,105.00	89.23	90.89	7,686.11	3,627.53	934.90	3,627.53	0.78	MWD	
7/4/2015	11,199.00	88.74	91.43	7,687.78	3,721.49	933.00	3,721.49	0.78	MWD	
7/4/2015	11,293.00	89.44	90.99	7,689.27	3,815.46	931.01	3,815.46	0.88	MWD	
7/4/2015	11,387.00	90.28	90.03	7,689.50	3,909.45	930.17	3,909.45	1.36	MWD	
7/4/2015	11,481.00	90.00	90.18	7,689.27	4,003.45	930.00	4,003.45	0.34	MWD	
7/5/2015	11,575.00	91.19	89.58	7,688.29	4,097.45	930.20	4,097.45	1.42	MWD	
7/5/2015	11,669.00	91.19	89.40	7,686.34	4,191.42	931.04	4,191.42	0.19	MWD	
7/5/2015	11,764.00	90.84	89.36	7,684.66	4,286.40	932.06	4,286.40	0.37	MWD	
7/5/2015	11,858.00	91.33	89.65	7,682.88	4,380.38	932.88	4,380.38	0.61	MWD	
7/5/2015	11,952.00	91.26	88.95	7,680.75	4,474.35	934.02	4,474.35	0.75	MWD	
7/5/2015	12,046.00	89.23	88.35	7,680.35	4,568.32	936.24	4,568.32	2.25	MWD	
7/5/2015	12,140.00	88.46	87.53	7,682.25	4,662.23	939.62	4,662.23	1.20	MWD	
7/5/2015	12,214.00	89.02	87.87	7,683.87	4,736.16	942.59	4,736.16	0.89	MWD	
7/5/2015	12,293.00	89.02	87.87	7,685.22	4,815.09	945.52	4,815.09	0.00	BIT	