



Weatherford

Evaluation, Drilling & Intervention
10000 West County Rd. 116
P.O. Box 61028
Midland, TX USA 79711
Tel. (432) 561-8892 Fax (432) 561-8895

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

Date: September 28, 2015 **NM OIL CONSERVATION**
ARTESIA DISTRICT

JAN 30 2017

Attention: Garrett Glaze

RECEIVED

Re: Devon Energy
Well: Emerald PWU 20 11H
Eddy County, New Mexico

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 Of Surveyor	Well Number	Surveyed Depths	Dates Performed	Type of Survey
Matthew Keen	11H	3457 MD	10/18/2015	Measurement
MWD Supervisor		13629 MD	10/27/2015	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.

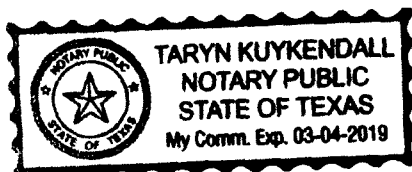
JZ

Jonathan Leger
MWD Ops Coordinator

On this, the 30th day of October, 2015, before me a notary public, the undersigned officer, personally appeared Jonathan Leger, 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.

Taryn Kuykendall
Notary Public





NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 5 8 2017

RECEIVED

5D Survey Report

Devon Energy

Field Name: *Eddy Co, NM (Nad 83 NME)*
Site Name: *Emerald PWU 20 11H*
Well Name: *Emerald PWU 20 11H*
Survey: *Definitive survey*

27 October 2015



devon



Weatherford

Emerald PWU 20 11H

Field Name: Eddy Cr. 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: Emerald PWU 20 11H	Units: US ft	North Reference: Grid	Convergence Angle: 0.12	
	Position:	Northing: 598754.00US ft	Latitude: 32° 38' 44.98"	
		Easting: 611717.60US ft	Longitude: -104° 6' 16.83"	
	Elevation above MSL: 3331.00 US ft		Comment:	
Slot: Emerald PWU 20 11H	Position (Relative to Slot Centre)			
	+N/-S: 0.00US ft	Northing: 598754.00US ft	Latitude: 32° 38' 44.98"	
	+E/-W: 0.00US ft	Easting: 611717.60US ft	Longitude: -104° 6' 16.83"	
	Slot TVD Reference: Ground Elevation			
Elevation above MSL: 3331.00US ft		Comment:		
Well: Emerald PWU 20 11H	Type: Main well		UWI:	
	File Number:	Comment:		
	Closure Distance: 4752.53US ft		Closure Azimuth: 91.97°	
	Vertical Section: Position of Origin (Relative to Slot centre)			
+N/-S: -0.00US ft		+E/-W: -0.00US ft	Az: 90.10°	
Drill floor: Survey Name: Definitive Survey				
Rig Height (Kelly Bushing): Elevation above MSL: 25.00us ft		Inclination: 0.00°	Azimuth: 0.00°	
Survey Name: Definitive Survey				
Date: 03/Sep/2015	Survey Tool: See Survey Tool Ranges below.	Comment:	Company:	
Magnetic Model:				
Model Name: bggm2015	Date: 15/Nov/2015	Field Strength: 48394.1nT	Declination: 7.52°	Dip: 60.42°
Tie Point:				
MD: 0.00 US ft	Inclination: 0.00°	Azimuth: 0.00°	TVD: 0.00 US ft	North Offset: -0.00 US ft East Offset: -0.00 US ft
Survey Tool Ranges:				
Name	Start MD(USft)	End MD(USft)	Source Survey	
MWD	0.00	3270.00	Teledrift Svys	
MWD	3270.00	13710.00	Wrt MWD Svy	
Wellpath created using minimum curvature.				

Survey Points: (Relative to Slot centre)(TVD relative to Kelly Bushing)										
HD (US ft)	Incl (°)	As (°)	TVD (US ft)	N. offset (US ft)	E. offset (US ft)	True (US ft)	True CORUS ft	True TVD (US ft)	True N. offset (US ft)	True E. offset (US ft)
0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	0.00	598754.00	611717.60	
304.00	0.50	70.00	304.00	0.45	1.25	1.25	0.16	598754.45	611718.85	
457.44	0.40	110.00	457.43	0.50	2.38	2.38	0.21	598754.50	611719.98	
641.35	0.60	60.00	641.34	0.76	3.82	3.81	0.25	598754.76	611721.42	
825.69	1.40	90.00	825.65	1.24	6.90	6.90	0.50	598755.24	611724.50	
1010.08	0.80	60.00	1010.00	1.89	10.27	10.27	0.44	598755.89	611727.87	
1194.47	0.90	70.00	1194.37	3.03	12.75	12.74	0.10	598757.03	611730.35	
1385.18	0.80	29.00	1385.06	4.70	14.80	14.79	0.32	598758.70	611732.40	
1574.70	0.90	53.00	1574.56	6.76	16.63	16.62	0.19	598760.76	611734.23	
1765.00	1.20	52.00	1764.83	8.88	19.39	19.38	0.16	598762.88	611736.99	
1955.00	1.30	70.00	1954.79	10.84	22.99	22.97	0.21	598764.84	611740.59	
2145.00	0.60	45.00	2144.76	12.29	25.72	25.69	0.42	598766.29	611743.32	
2335.00	0.70	37.00	2334.75	13.92	27.12	27.09	0.07	598767.92	611744.72	
2525.00	0.30	83.00	2524.74	14.90	28.31	28.28	0.28	598768.90	611745.91	
2715.00	0.60	80.00	2714.74	15.14	29.78	29.76	0.16	598769.14	611747.38	
2905.75	0.30	94.00	2905.48	15.27	31.26	31.24	0.17	598769.27	611748.86	
3095.00	0.50	92.00	3094.72	15.21	32.58	32.56	0.11	598769.21	611750.18	
3270.00	0.30	49.00	3269.72	15.49	33.69	33.67	0.20	598769.49	611751.29	Tie-on Rig First Wft Svy
3457.00	0.49	58.17	3456.72	16.23	34.74	34.71	0.11	598770.23	611752.34	
3520.00	0.51	61.14	3519.71	16.51	35.22	35.19	0.05	598770.51	611752.82	
3615.00	0.36	57.63	3614.71	16.87	35.84	35.81	0.16	598770.87	611753.44	
3710.00	0.31	34.63	3709.71	17.24	36.24	36.21	0.15	598771.24	611753.84	
3805.00	0.58	272.50	3804.71	17.47	35.90	35.87	0.83	598771.47	611753.50	
3900.00	1.22	254.91	3899.70	17.23	34.45	34.42	0.73	598771.23	611752.05	
3995.00	1.20	265.90	3994.67	16.90	32.48	32.45	0.24	598770.90	611750.08	
4090.00	1.07	276.38	4089.66	16.92	30.60	30.57	0.26	598770.92	611748.20	
4183.00	1.39	277.38	4182.63	17.17	28.62	28.59	0.34	598771.17	611746.22	
4279.00	1.78	271.39	4278.60	17.35	25.98	25.95	0.44	598771.35	611743.58	
4373.00	2.33	274.13	4372.54	17.52	22.61	22.58	0.59	598771.52	611740.21	
4467.00	1.54	265.16	4466.48	17.56	19.45	19.42	0.90	598771.56	611737.05	
4562.00	1.51	260.38	4561.45	17.24	16.94	16.91	0.14	598771.24	611734.54	
4657.00	1.56	263.77	4656.41	16.89	14.42	14.39	0.11	598770.89	611732.02	
4752.00	1.19	210.88	4751.39	15.90	12.63	12.60	1.34	598769.90	611730.23	
4847.00	1.19	215.64	4846.37	14.25	11.55	11.52	0.10	598768.25	611729.15	
4941.00	0.97	211.78	4940.35	12.78	10.56	10.54	0.25	598766.78	611728.16	
5036.00	0.82	237.57	5035.34	11.74	9.56	9.54	0.45	598765.74	611727.16	
5131.00	1.69	316.00	5130.32	12.38	8.02	7.99	1.81	598766.38	611725.62	
5227.00	2.19	265.49	5226.28	13.25	5.20	5.18	1.79	598767.25	611722.80	
5323.00	3.38	243.16	5322.16	11.83	0.85	0.83	1.66	598765.83	611718.45	
5418.00	4.56	229.16	5416.94	8.10	-4.51	-4.52	1.60	598762.10	611713.09	
5513.00	6.23	229.62	5511.51	2.29	-11.29	-11.29	1.76	598756.29	611706.31	
5608.00	6.43	231.74	5605.93	-4.35	-19.39	-19.39	0.32	598749.65	611698.21	
5701.00	6.40	230.37	5698.35	-10.88	-27.47	-27.46	0.17	598743.12	611690.13	
5797.00	6.34	225.82	5793.76	-17.98	-35.40	-35.37	0.53	598736.02	611682.20	
5892.00	6.50	221.75	5888.16	-25.65	-42.74	-42.69	0.51	598728.35	611674.86	
5987.00	6.18	219.32	5982.58	-33.62	-49.56	-49.50	0.44	598720.38	611668.04	
6083.00	5.95	218.06	6078.04	-41.53	-55.90	-55.83	0.28	598712.47	611661.70	
6178.00	5.10	217.08	6172.60	-48.78	-61.48	-61.40	0.90	598705.22	611656.12	
6273.00	4.33	217.41	6267.28	-55.00	-66.21	-66.11	0.81	598699.00	611651.39	
6368.00	5.05	223.21	6361.96	-60.89	-71.25	-71.14	0.91	598693.11	611646.35	
6464.00	4.68	213.71	6457.62	-67.23	-76.32	-76.20	0.92	598686.77	611641.28	
6559.00	6.24	216.70	6552.18	-74.59	-81.55	-81.42	1.67	598679.41	611636.05	
6654.00	5.68	229.80	6646.67	-81.77	-88.23	-88.09	1.54	598672.23	611629.37	
6749.00	5.89	232.48	6741.19	-87.77	-95.69	-95.53	0.36	598666.23	611621.91	
6844.00	5.34	231.81	6835.73	-93.47	-103.03	-102.86	0.58	598660.53	611614.57	
6938.00	5.66	227.56	6929.30	-99.31	-109.89	-109.71	0.55	598654.69	611607.71	
7033.00	6.60	230.60	7023.76	-105.93	-117.56	-117.38	1.05	598648.07	611600.04	
7128.00	6.17	232.92	7118.17	-112.48	-125.85	-125.66	0.53	598641.52	611591.75	

Survey Points: (Relative to Slot centre)(TVD relative to Kelly Bushing)										
MD (US ft)	Inc (°)	Az (°)	T.D (US ft)	Northset (US ft)	Eastset (US ft)	W. Offset (US ft)	W. Offset (US ft)	W. Offset (US ft)	W. Offset (US ft)	W. Offset (US ft)
7223.00	5.74	228.84	7212.66	-118.68	-133.50	-133.30	0.63	598635.32	611584.10	
7318.00	6.28	232.89	7307.13	-124.94	-141.22	-141.01	0.72	598629.06	611576.38	
7413.00	7.32	228.41	7401.46	-132.10	-149.89	-149.66	1.23	598621.90	611567.71	
7509.00	6.91	234.51	7496.73	-139.51	-159.17	-158.93	0.89	598614.49	611558.43	
7604.00	5.32	228.02	7591.18	-145.77	-167.10	-166.84	1.82	598608.23	611550.50	
7700.00	5.28	218.11	7686.78	-152.22	-173.13	-172.87	0.95	598601.78	611544.47	
7795.00	4.46	210.23	7781.43	-158.86	-177.69	-177.41	1.11	598595.14	611539.91	
7890.00	3.72	227.98	7876.19	-164.11	-181.84	-181.55	1.53	598589.89	611535.76	
7986.00	2.36	250.83	7972.06	-166.84	-186.02	-185.73	1.87	598587.16	611531.58	
8082.00	0.47	294.61	8068.03	-167.33	-188.25	-187.95	2.13	598586.67	611529.35	
8174.00	0.70	340.01	8160.02	-166.64	-188.78	-188.49	0.54	598587.36	611528.82	
8270.00	1.14	280.80	8256.01	-165.91	-189.92	-189.63	1.03	598588.09	611527.68	
8365.00	0.56	17.20	8351.01	-165.29	-190.71	-190.42	1.39	598588.71	611526.89	
8426.00	0.49	56.39	8412.00	-164.86	-190.40	-190.12	0.59	598589.14	611527.20	
8457.00	2.59	74.44	8442.99	-164.60	-189.62	-189.33	6.87	598589.40	611527.98	
8488.00	6.03	78.60	8473.90	-164.09	-187.35	-187.06	11.14	598589.91	611530.25	
8520.00	9.36	77.77	8505.61	-163.21	-183.16	-182.87	10.41	598590.79	611534.44	
8567.00	14.37	79.26	8551.59	-161.31	-173.68	-173.40	10.68	598592.69	611543.92	
8615.00	17.82	82.21	8597.70	-159.21	-160.55	-160.27	7.38	598594.79	611557.05	
8662.00	23.19	85.30	8641.71	-157.47	-144.19	-143.92	11.65	598596.53	611573.41	
8710.00	26.76	87.20	8685.21	-156.17	-123.97	-123.70	7.62	598597.83	611593.63	
8757.00	31.13	90.55	8726.33	-155.77	-101.24	-100.97	9.91	598598.23	611616.36	
8806.00	35.30	93.29	8767.32	-156.70	-74.43	-74.16	9.04	598597.30	611643.17	
8853.00	39.91	92.81	8804.55	-158.22	-45.80	-45.52	9.83	598595.78	611671.80	
8901.00	44.07	93.19	8840.22	-159.91	-13.74	-13.46	8.68	598594.09	611703.86	
8948.00	49.06	93.36	8872.52	-161.86	20.33	20.61	10.62	598592.14	611737.93	
8980.00	52.01	93.42	8892.86	-163.32	44.98	45.27	9.22	598590.68	611762.58	Cross Prod Box
8996.00	53.48	93.44	8902.54	-164.08	57.70	57.98	9.19	598589.92	611775.30	
9028.00	55.92	92.56	8921.03	-165.44	83.77	84.06	7.95	598588.56	611801.37	
9060.00	58.93	92.04	8938.26	-166.52	110.72	111.01	9.51	598587.48	611828.32	
9090.00	63.25	91.63	8952.76	-167.36	136.96	137.25	14.45	598586.64	611854.56	
9122.00	69.28	90.74	8965.63	-167.96	166.23	166.52	19.01	598586.04	611883.83	
9145.00	73.41	90.82	8972.99	-168.26	188.02	188.31	17.96	598585.74	611905.62	
9177.00	78.32	90.94	8980.80	-168.74	219.03	219.33	15.35	598585.26	611936.63	
9209.00	81.29	91.71	8986.46	-169.47	250.52	250.81	9.58	598584.53	611968.12	
9240.00	84.10	92.56	8990.41	-170.61	281.24	281.54	9.46	598583.39	611998.84	
9304.00	88.74	91.79	8994.40	-173.03	345.05	345.35	7.35	598580.97	612062.65	
9399.00	90.07	90.37	8995.39	-174.82	440.02	440.33	2.05	598579.18	612157.62	
9494.00	90.42	90.78	8994.98	-175.78	535.02	535.32	0.57	598578.22	612252.62	
9589.00	90.21	89.59	8994.46	-176.08	630.01	630.32	1.27	598577.92	612347.61	
9684.00	90.28	89.18	8994.05	-175.06	725.01	725.31	0.44	598578.94	612442.61	
9780.00	89.86	88.79	8993.94	-173.36	820.99	821.29	0.60	598580.64	612538.59	
9874.00	89.93	89.04	8994.11	-171.58	914.98	915.27	0.28	598582.42	612632.58	
9967.00	90.35	88.79	8993.88	-169.82	1007.96	1008.25	0.53	598584.18	612725.56	
10063.00	91.05	89.22	8992.71	-168.16	1103.94	1104.23	0.86	598585.84	612821.54	
10158.00	90.91	88.73	8991.08	-166.46	1198.91	1199.19	0.54	598587.54	612916.51	
10252.00	90.84	88.46	8989.65	-164.15	1292.87	1293.15	0.30	598589.85	613010.47	
10347.00	91.75	88.63	8987.50	-161.74	1387.81	1388.09	0.97	598592.26	613105.41	
10442.00	90.77	88.95	8985.41	-159.74	1482.77	1483.04	1.09	598594.26	613200.37	
10538.00	90.42	89.06	8984.41	-158.07	1578.75	1579.02	0.38	598595.93	613296.35	
10633.00	89.86	88.52	8984.18	-156.06	1673.72	1673.99	0.82	598597.94	613391.32	
10728.00	89.65	89.64	8984.59	-154.54	1768.71	1768.98	1.20	598599.46	613486.31	
10824.00	89.79	90.05	8985.06	-154.28	1864.71	1864.97	0.45	598599.72	613582.31	
10919.00	89.86	90.59	8985.35	-154.81	1959.70	1959.97	0.57	598599.19	613677.30	
11015.00	90.35	91.27	8985.17	-156.37	2055.69	2055.96	0.87	598597.63	613773.29	
11109.00	89.93	91.00	8984.94	-158.23	2149.67	2149.94	0.53	598595.77	613867.27	
11204.00	89.44	91.08	8985.46	-159.95	2244.65	2244.93	0.52	598594.05	613962.25	
11299.00	89.02	90.96	8986.74	-161.64	2339.63	2339.91	0.46	598592.36	614057.23	

Survey Points: (Relative to Slot centre)(TVD relative to Kelly Bushing)									
MD (US ft)	Incl (°)	AZ (°)	TVD (US ft)	Bl. Offset (US ft)	F. Offset (US ft)	Bl. Offset (US ft)	Bl. Offset (US ft)	Bl. Offset (US ft)	Bl. Offset (US ft)
11395.00	89.58	90.57	8987.91	-162.92	2435.61	2435.90	0.71	598591.08	614153.21
11490.00	90.98	90.44	8987.45	-163.76	2530.61	2530.89	1.48	598590.24	614248.21
11586.00	91.40	90.23	8985.46	-164.32	2626.58	2626.87	0.49	598589.68	614344.18
11680.00	91.68	90.02	8982.93	-164.53	2720.55	2720.83	0.37	598589.47	614438.15
11776.00	91.75	89.90	8980.06	-164.46	2816.51	2816.79	0.14	598589.54	614534.11
11871.00	91.95	89.87	8976.99	-164.27	2911.46	2911.74	0.21	598589.73	614629.06
11966.00	90.84	89.16	8974.68	-163.47	3006.42	3006.70	1.39	598590.53	614724.02
12061.00	91.33	88.89	8972.88	-161.85	3101.39	3101.67	0.59	598592.15	614818.99
12156.00	90.42	89.30	8971.43	-160.35	3196.37	3196.64	1.05	598593.65	614913.97
12251.00	89.16	89.11	8971.78	-159.03	3291.36	3291.63	1.34	598594.97	615008.96
12347.00	89.72	88.78	8972.71	-157.26	3387.34	3387.60	0.68	598596.74	615104.94
12442.00	89.58	88.85	8973.29	-155.30	3482.31	3482.58	0.16	598598.70	615199.91
12538.00	89.51	88.66	8974.06	-153.21	3578.29	3578.55	0.21	598600.79	615295.89
12632.00	89.58	88.95	8974.80	-151.25	3672.26	3672.52	0.32	598602.75	615389.86
12727.00	89.23	89.15	8975.79	-149.68	3767.25	3767.50	0.42	598604.32	615484.85
12822.00	88.67	88.95	8977.53	-148.10	3862.27	3862.47	0.63	598605.90	615579.82
12917.00	89.30	90.45	8979.21	-147.61	3957.20	3957.45	1.71	598606.39	615674.80
13012.00	89.58	90.99	8980.14	-148.80	4052.18	4052.44	0.64	598605.20	615769.78
13106.00	89.79	91.09	8980.66	-150.51	4146.17	4146.42	0.25	598603.49	615863.77
13201.00	89.58	91.48	8981.18	-152.64	4241.14	4241.40	0.47	598601.36	615958.74
13296.00	91.47	91.50	8980.31	-155.11	4336.10	4336.37	1.99	598598.89	616053.70
13391.00	91.89	91.20	8977.53	-157.34	4431.03	4431.30	0.54	598596.66	616148.63
13485.00	92.24	91.15	8974.14	-159.27	4524.95	4525.22	0.38	598594.73	616242.55
13581.00	92.24	90.95	8970.39	-161.03	4620.86	4621.14	0.21	598592.97	616338.46
13629.00	92.45	90.94	8968.42	-161.82	4668.82	4669.09	0.44	598592.18	616386.42
13644.93	92.45	90.94	8967.74	-162.08	4684.73	4685.01	0.00	598591.92	616402.33
13710.00	92.45	90.94	8964.96	-163.15	4749.73	4750.01	0.00	598590.85	616467.33

Last Wft Svy

Cross Prod

Box

Proj to Bit