



February 5, 2015

30 015 42032

Devon Energy Production Co., L. P.
333 West Sheridan Ave
Oklahoma City, Oklahoma 73102-5010

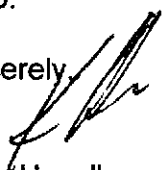
Attn: David Cook

Re: **Betelgeuse 19 Federal 7H**

Please find enclosed a copy of the survey from 0' to 4035.63' ran on the above referenced well.

If I can be of any further service please do not hesitate to call me at 800-606-4976.

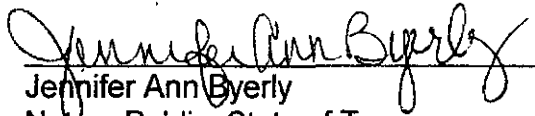
Sincerely,


Keith Havelka
Operations

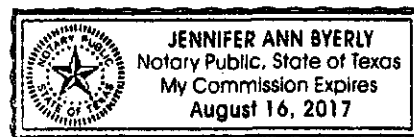
STATE OF TEXAS §

COUNTY OF NUECES §

This instrument was acknowledged before me on the 5 day of Feb, A.D., 2015, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas

VES Survey International
P.O. Box 261021 Corpus Christi, TX 78426
T (361) 767-0602 F (361) 767-0612
www.vesurvey.com





Company: Devon

Lease/Well: Betelgeuse 19 Federal/7H

Location: Sec20 T19S R31E

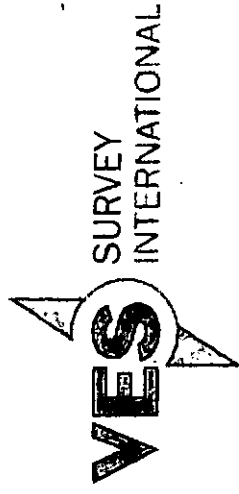
Rig Name: Scan Texas

State/County: New Mexico/Eddy

Latitude: 32.65, Longitude: -103.90

GRID North is 0.23 Degrees East of True North

VS-Azi: 0.00 Degrees



NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 14 2016

RECEIVED

Depth Reference : RKB = 26 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 2/5/2015 / 11:24

VES Survey International
West Texas

(432) 583-5444

Surveyor: Noe Garza

Betelgeuse 19 Federal 7H / API 30-015-42032

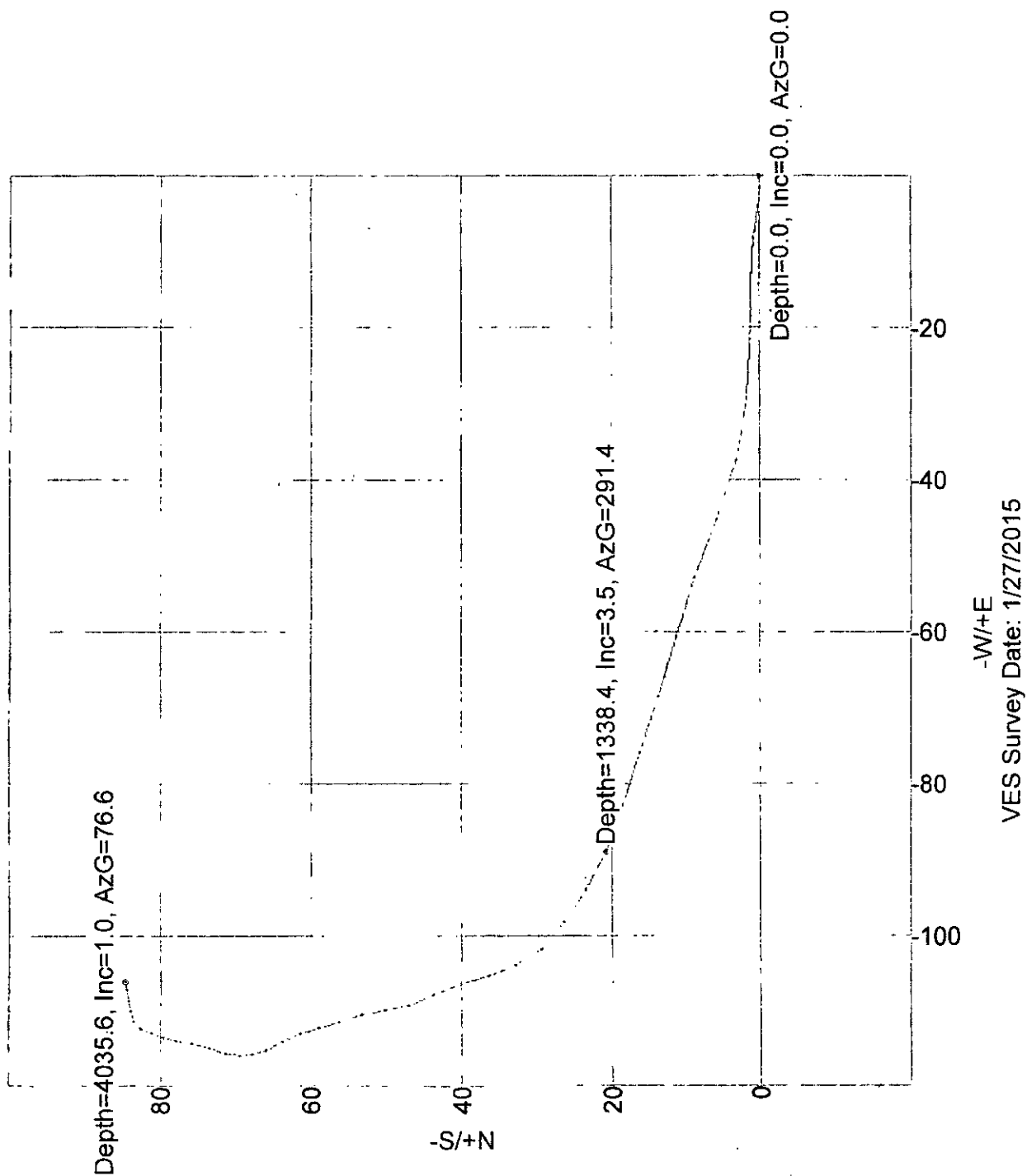
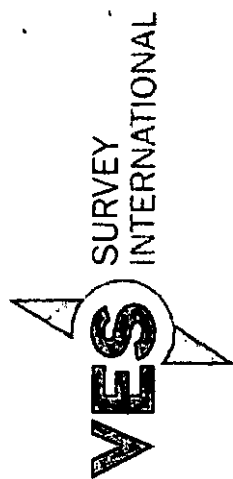
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
114.06	1.52	264.70	114.05	-0.14	-1.50	-0.14	1.51	264.70	1.33
208.24	1.70	286.03	208.19	0.13	-4.09	0.13	4.09	271.83	0.66
302.42	3.36	275.82	302.28	0.80	-8.17	0.80	8.21	275.56	1.82
396.60	4.27	271.45	396.25	1.16	-14.42	1.16	14.47	274.52	1.01
490.78	4.38	270.45	490.16	1.28	-21.52	1.28	21.56	273.41	0.14
584.96	5.14	275.99	584.01	1.75	-29.31	1.75	29.36	273.42	0.94
679.14	4.98	284.79	677.83	3.23	-37.45	3.23	37.59	274.93	0.84
773.32	5.02	293.12	771.65	5.89	-45.19	5.89	45.57	277.43	0.77
867.50	4.99	289.56	865.47	8.88	-52.84	8.88	53.58	279.54	0.33
961.68	5.03	285.25	959.29	11.34	-60.68	11.34	61.73	280.58	0.40
1055.86	4.96	289.64	1053.12	13.79	-68.50	13.79	69.87	281.39	0.41
1150.04	4.56	287.79	1146.97	16.31	-75.90	16.31	77.63	282.13	0.45
1244.22	4.34	288.54	1240.87	18.58	-82.84	18.58	84.90	282.64	0.25
1338.40	3.53	291.42	1334.82	20.78	-88.92	20.78	91.32	283.15	0.88
1432.58	3.36	305.57	1428.84	23.44	-93.87	23.44	96.75	284.02	0.92
1526.76	2.99	301.65	1522.87	26.33	-98.20	26.33	101.67	285.01	0.46
1620.94	2.69	318.45	1616.94	29.28	-101.76	29.28	105.89	286.05	0.93
1715.12	2.41	336.76	1711.03	32.75	-104.01	32.75	109.04	287.48	0.91

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1809.30	2.34	340.80	1805.12	36.39	-106.42	36.39	111.52	289.04	0.19
1903.48	2.34	345.99	1899.23	40.07	-106.52	40.07	113.80	290.61	0.22
1997.66	2.47	331.44	1993.32	43.72	-107.95	43.72	116.47	292.05	0.66
2091.84	1.91	344.94	2087.44	47.02	-109.33	47.02	119.01	293.27	0.81
2186.02	1.96	351.53	2181.56	50.12	-109.98	50.12	120.86	294.50	0.24
2280.20	1.95	345.62	2275.69	53.27	-110.61	53.27	122.77	295.72	0.21
2374.38	1.83	341.03	2369.82	56.25	-111.50	56.25	124.88	296.77	0.20
2468.56	1.60	346.14	2463.95	58.95	-112.30	58.95	126.83	297.69	0.30
2562.74	1.60	340.14	2558.10	61.46	-113.06	61.46	128.69	298.53	0.18
2656.92	1.64	329.06	2652.24	63.85	-114.20	63.85	130.84	299.21	0.33
2751.10	1.31	337.45	2746.39	65.99	-115.31	65.99	132.86	299.78	0.42
2845.28	1.04	352.93	2840.55	67.84	-115.82	67.84	134.23	300.36	0.43
2939.46	1.02	357.88	2934.71	69.52	-115.96	69.52	135.21	300.94	0.10
3033.64	1.35	14.72	3028.87	71.43	-115.71	71.43	135.98	301.69	0.51
3127.82	1.35	21.52	3123.03	73.53	-115.02	73.53	136.52	302.59	0.17
3222.00	1.51	10.30	3217.18	75.79	-114.39	75.79	137.22	303.53	0.34
3316.18	1.13	6.70	3311.33	77.93	-114.06	77.93	138.15	304.34	0.41
3410.36	1.03	23.52	3405.50	79.63	-113.62	79.63	138.75	305.03	0.35
3504.54	1.02	21.36	3499.66	81.19	-112.98	81.19	139.12	305.70	0.04
3598.72	0.88	22.51	3593.83	82.64	-112.39	82.64	139.50	306.33	0.16
3692.90	0.87	68.27	3688.00	83.57	-111.45	83.57	139.30	306.86	0.72
3787.08	0.83	78.28	3782.17	83.98	-110.12	83.98	138.48	307.33	0.16
3881.26	0.90	80.01	3876.34	84.24	-108.72	84.24	137.54	307.77	0.08
3975.44	0.96	82.04	3970.51	84.48	-107.21	84.48	136.49	308.24	0.07
4035.63	1.01	76.56	4030.69	84.67	-106.20	84.67	135.82	308.57	0.18



VES Survey International
West Texas
(432) 563-5444

Surveyor: Noe Garza
Betelgeuse 19 Federal 7H / API 30-015-42032





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. Sherridan Ave
Oklahoma City, OK, 73102

Date: February 12, 2015

Attention: Art Alarcon

Re: Devon Energy
Well: Betelgeuse 19 Federal 7H
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:

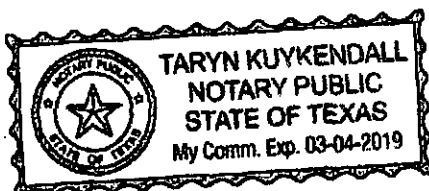
Name & Title Of Surveyor	Well Number	Surveyed Depths	Dates Performed	Type of Survey
Jeremy Orona MWD Supervisor	7H	4122 MD 12761 MD	1/27/2015 2/7/2015	Measurement While Drilling

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.

Jesse Aguilar
MWD Ops Coordinator

On this, the 2nd day of March, 2015, before me a notary public, the undersigned officer, personally appeared Jesse 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

Field Name: Eddy Co, NM (Nad 83 NME)
Site Name: Betelgeuse 19 Federal 7,8H Pad
Well Name: Betelgeuse 19 Federal 7H
Survey: Wft MWD Svy

09 February 2015



Weatherford®

Betelgeuse 19 Federal 7H

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 Betelgeuse 19 Federal 7.8H Pad	Units : US ft	North Reference : Grid	Convergence Angle : 0.23	
	Position	Northing : 598687.58 US ft	Latitude : 32° 38' 42.32"	Longitude : 103° 53' 56.88"
	Easting : 674984.13 US ft	Elevation above Mean Sea Level: 3411.00 US ft		Comment :
Slot Name Betelgeuse 19 Federal 7H	Position (Offsets relative to Site Centre)			
	+N / -S : 0.00 US ft	Northing : 598687.58 US ft	Latitude : 32° 38' 42.32"	Longitude : 103° 53' 56.88"
	+E / -W : 0.00 US ft	Easting : 674984.13 US ft	Slot TVD Reference : Ground Elevation	
Elevation above Mean Sea Level : 3411.00 US ft		Comment :		
Well Name Betelgeuse 19 Federal 7H	Type : Main well		UWI :	
	Rig Height Kelly Bushing : 26.00 US ft		Comment :	
	Relative to Mean Sea Level: 3437.00 US ft		Closure Distance : 5307.81 US ft	
Closure Azimuth : 263.196°		Vertical Section (Position of Origin Relative to Slot)		
+N / -S : 0.00 US ft		+E / -W : 0.00 US ft	Az : 267.09°	

Survey Name : Wft MWD Svy				
Date : 31/Jan/2015	Survey Tool : MWD	Comment :	Company :	
Magnetic Model				
Model Name: BGGM	Date: 30/Jan/2015	Field Strength: 48445.2 nT	Declination: 7.50°	Dip: 60.42°
Tie Point				
MD: 4035.63	Inclination: 1.01	Azimuth: 76.56	TVD: 4030.68	North Offset: 84.67 East Offset: -106.2

Well path created using minimum curvature

Survey Points (Relative to Slot centre, TVD relative to Kelly Bushing)											
PD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	VS (US ft)	CLS (°:00 US ft)	Northing (US ft)	Easting (US ft)	Comment	
4122.00	1.07	71.82	4117.04	85.10	-104.69	100.24	0.00	598772.68	674879.44	First Wft Svy	
4152.00	1.09	69.22	4147.04	85.29	-104.16	99.70	0.18	598772.87	674879.97		
4246.00	0.99	149.85	4241.02	84.90	-102.92	98.47	1.43	598772.48	674881.21		
4340.00	1.79	166.71	4335.00	82.77	-102.17	97.84	0.95	598770.35	674881.96		
4434.00	2.59	169.65	4428.93	79.25	-101.45	97.30	0.86	598766.83	674882.68		
4529.00	3.26	176.33	4523.80	74.45	-100.89	96.98	0.79	598762.03	674883.24		
4623.00	4.21	184.95	4617.60	68.34	-101.02	97.42	1.17	598755.92	674883.11		
4718.00	5.29	191.51	4712.28	60.58	-102.20	98.99	1.27	598748.16	674881.93		
4813.00	6.38	192.63	4806.78	51.13	-104.22	101.49	1.15	598738.71	674879.91		
4907.00	7.37	190.26	4900.11	40.10	-106.44	104.27	1.10	598727.68	674877.69		
5001.00	7.80	189.97	4993.28	27.89	-108.62	107.06	0.46	598715.47	674875.51		
5096.00	7.84	197.06	5087.40	15.35	-111.63	110.71	1.02	598702.93	674872.50		

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Kelly Bushing)										
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
5189.00	7.31	195.59	5179.59	3.58	-115.09	114.75	0.61	598691.16	674869.04	
5284.00	6.54	194.73	5273.90	-7.47	-118.09	118.31	0.82	598680.11	674866.04	
5378.00	6.53	191.42	5367.29	-17.89	-120.50	121.26	0.40	598669.69	674863.63	
5472.00	7.15	191.98	5460.62	-28.85	-122.78	124.08	0.66	598658.73	674861.35	
5567.00	7.28	193.55	5554.86	-40.48	-125.41	127.31	0.25	598647.10	674858.72	
5661.00	8.45	198.04	5647.98	-52.84	-128.95	131.47	1.40	598634.74	674855.18	
5755.00	8.46	198.88	5740.96	-65.95	-133.33	136.50	0.13	598621.63	674850.80	
5850.00	8.04	201.73	5834.97	-78.74	-138.05	141.87	0.62	598608.84	674846.08	
5944.00	7.66	202.31	5928.09	-90.64	-142.86	147.28	0.41	598596.94	674841.27	
6039.00	8.30	202.36	6022.17	-102.84	-147.87	152.90	0.67	598584.74	674836.26	
6133.00	8.19	206.01	6115.20	-115.13	-153.39	159.03	0.57	598572.45	674830.74	
6227.00	8.03	198.56	6208.26	-127.37	-158.41	164.68	1.13	598560.21	674825.72	
6322.00	7.87	197.33	6302.35	-139.87	-162.46	169.35	0.25	598547.71	674821.67	
6416.00	7.41	196.90	6395.52	-151.81	-166.14	173.64	0.49	598535.77	674817.99	
6511.00	6.81	198.25	6489.79	-163.02	-169.69	177.74	0.66	598524.56	674814.44	
6605.00	7.18	193.16	6583.09	-174.04	-172.77	181.38	0.77	598513.54	674811.36	
6699.00	8.33	188.30	6676.23	-186.50	-175.09	184.33	1.41	598501.08	674809.04	
6793.00	9.31	185.46	6769.11	-200.80	-176.80	186.76	1.14	598486.78	674807.33	
6888.00	8.57	185.31	6862.96	-215.50	-178.18	188.89	0.78	598472.08	674805.95	
6982.00	7.38	185.17	6956.05	-228.49	-179.38	190.74	1.27	598459.09	674804.75	
7077.00	8.26	187.03	7050.16	-241.34	-180.76	192.78	0.96	598446.24	674803.37	
7171.00	9.78	193.21	7143.00	-255.81	-183.41	196.16	1.92	598431.77	674800.72	
7265.00	9.24	194.00	7235.71	-270.91	-187.06	200.57	0.59	598416.67	674797.07	
7346.00	8.45	193.17	7315.75	-283.01	-189.99	204.11	0.99	598404.57	674794.14	
7388.00	8.03	194.65	7357.31	-288.85	-191.44	205.85	1.12	598398.73	674792.69	
7420.00	9.25	206.20	7388.95	-293.33	-193.14	207.78	6.61	598394.25	674790.99	
7451.00	11.96	216.36	7419.42	-298.15	-196.14	211.03	10.59	598389.43	674787.99	
7482.00	14.63	222.95	7449.59	-303.60	-200.71	215.87	9.89	598383.98	674783.42	
7513.00	17.69	225.97	7479.36	-309.74	-206.77	222.23	10.23	598377.84	674777.36	
7545.00	20.84	229.02	7509.57	-316.86	-214.56	230.37	10.33	598370.72	674769.57	
7576.00	23.82	232.15	7538.24	-324.32	-223.67	239.85	10.35	598363.26	674760.46	
7608.00	26.09	235.90	7567.25	-332.23	-234.60	251.17	8.64	598355.35	674749.53	
7639.00	29.06	238.80	7594.73	-339.95	-246.69	263.63	10.51	598347.63	674737.44	
7671.00	32.43	240.03	7622.23	-348.27	-260.78	278.12	10.71	598339.31	674723.35	
7702.00	35.16	241.08	7647.99	-356.74	-275.79	293.55	9.01	598330.84	674708.34	
7733.00	39.13	242.81	7672.69	-365.53	-292.31	310.49	13.24	598322.05	674691.82	
7765.00	41.36	245.86	7697.12	-374.47	-310.95	329.56	9.30	598313.11	674673.18	
7796.00	43.48	249.95	7720.01	-382.31	-330.32	349.30	11.22	598305.27	674653.81	
7828.00	45.30	255.04	7742.88	-389.03	-351.66	370.95	12.49	598298.55	674632.47	
7859.00	47.07	258.93	7764.35	-394.05	-373.45	392.97	10.70	598293.53	674610.68	
7891.00	48.13	260.26	7785.92	-398.32	-396.69	416.40	4.52	598289.26	674587.44	
7922.00	49.81	260.59	7806.27	-402.21	-419.75	439.62	5.48	598285.37	674564.38	
7954.00	52.11	261.77	7826.43	-406.01	-444.30	464.34	7.74	598281.57	674539.83	
7985.00	54.64	263.33	7844.92	-409.23	-468.97	489.14	9.11	598278.35	674515.16	
8016.00	57.59	264.89	7862.20	-411.87	-494.57	514.84	10.39	598275.71	674489.56	
8048.00	60.11	266.49	7878.76	-413.92	-521.87	542.21	8.96	598273.66	674462.26	
8079.00	63.16	267.52	7893.48	-415.34	-549.11	569.49	10.26	598272.24	674435.02	
8111.00	65.72	268.31	7907.29	-416.39	-577.96	598.35	8.30	598271.19	674406.17	
8143.00	68.52	269.93	7919.73	-416.84	-607.43	627.81	9.92	598270.74	674376.70	
8174.00	71.43	270.02	7930.34	-416.85	-636.55	656.89	9.29	598270.73	674347.58	
8205.00	74.06	270.03	7939.54	-416.84	-666.16	686.46	8.48	598270.74	674317.97	
8237.00	77.04	270.06	7947.52	-416.81	-697.14	717.40	9.31	598270.77	674286.99	
8268.00	80.24	269.16	7953.63	-417.02	-727.53	747.76	10.71	598270.56	674256.60	
8300.00	83.90	268.01	7958.04	-417.80	-759.21	779.44	11.98	598269.78	674224.92	
8385.00	91.47	267.23	7961.47	-421.33	-844.00	864.30	8.95	598266.25	674140.13	
8479.00	90.21	267.36	7960.09	-425.77	-937.88	958.29	1.35	598261.81	674046.25	
8573.00	90.49	268.51	7959.52	-429.15	-1031.82	1052.28	1.26	598258.43	673952.31	
8668.00	88.46	269.27	7960.39	-430.99	-1126.79	1147.22	2.28	598256.59	673857.34	
8762.00	87.83	269.84	7963.43	-431.72	-1220.74	1241.08	0.90	598255.86	673763.39	

5D Survey Report

Survey Points (Relative to Slot centre, TVD relative to Kelly Bushings)										
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
8857.00	86.78	269.63	7967.90	-432.16	1315.63	1335.87	1.13	598255.42	673668.50	
8951.00	86.85	269.08	7973.12	-433.22	-1409.48	1429.66	0.59	598254.36	673574.65	
9045.00	87.13	269.07	7978.06	-434.73	-1503.34	1523.47	0.30	598252.85	673480.79	
9140.00	88.60	268.19	7981.60	-437.00	-1598.24	1618.37	1.80	598250.58	673385.89	
9234.00	90.07	267.41	7982.69	-440.61	-1692.16	1712.35	1.77	598246.97	673291.97	
9328.00	90.28	267.15	7982.40	-445.07	-1786.06	1806.35	0.36	598242.51	673198.07	
9422.00	90.00	266.97	7982.17	-449.89	-1879.93	1900.35	0.35	598237.69	673104.20	
9517.00	90.28	266.63	7981.94	-455.20	-1974.78	1995.35	0.46	598232.38	673009.35	
9611.00	90.70	266.19	7981.14	-461.08	-2068.59	2089.34	0.65	598226.50	672915.54	
9706.00	90.35	266.10	7980.27	-467.47	-2163.38	2184.32	0.38	598220.11	672820.75	
9800.00	89.72	266.13	7980.21	-473.84	-2257.16	2278.30	0.67	598213.74	672726.97	
9895.00	90.56	266.27	7979.98	-480.13	-2351.95	2373.29	0.90	598207.45	672632.18	
9989.00	91.40	266.60	7978.37	-485.98	-2445.75	2467.27	0.96	598201.60	672538.38	
10083.00	91.68	267.10	7975.84	-491.14	-2539.58	2561.24	0.61	598196.44	672444.55	
10178.00	90.42	267.07	7974.10	-495.97	-2634.44	2656.22	1.33	598191.61	672349.69	
10272.00	89.65	267.19	7974.04	-500.68	-2728.32	2750.22	0.83	598186.90	672255.81	
10367.00	89.30	267.76	7974.91	-504.86	-2823.22	2845.21	0.70	598182.72	672160.91	
10461.00	89.30	267.60	7976.06	-508.67	-2917.14	2939.20	0.17	598178.91	672066.99	
10555.00	89.79	267.45	7976.81	-512.73	-3011.05	3033.19	0.55	598174.85	671973.08	
10649.00	91.33	265.63	7975.89	-518.40	-3104.86	3127.18	2.54	598169.18	671879.27	
10744.00	91.26	265.16	7973.74	-526.03	-3199.53	3222.11	0.50	598161.55	671784.60	
10838.00	91.12	265.44	7971.79	-533.73	-3293.19	3316.04	0.33	598153.85	671690.94	
10933.00	91.12	265.93	7969.93	-540.87	-3387.91	3411.00	0.52	598146.71	671596.22	
11027.00	90.77	265.97	7968.38	-547.51	-3481.66	3504.97	0.37	598140.07	671502.47	
11121.00	90.42	266.53	7967.41	-553.66	-3575.45	3598.95	0.70	598133.92	671408.68	
11215.00	89.79	266.76	7967.24	-559.16	-3669.29	3692.95	0.71	598128.42	671314.84	
11309.00	89.58	267.22	7967.75	-564.09	-3763.16	3786.94	0.54	598123.49	671220.97	
11404.00	90.35	267.09	7967.81	-568.81	-3858.04	3881.94	0.82	598118.77	671126.09	
11499.00	90.84	266.75	7966.82	-573.91	-3952.90	3976.94	0.63	598113.67	671031.23	
11594.00	90.56	266.94	7965.66	-579.14	-4047.75	4071.93	0.36	598108.44	670936.38	
11688.00	93.15	266.17	7962.62	-584.79	-4141.52	4165.87	2.87	598102.79	670842.61	
11782.00	93.71	266.49	7957.00	-590.79	-4235.16	4259.69	0.69	598096.79	670748.97	
11876.00	93.57	267.09	7951.03	-596.05	-4328.82	4353.50	0.65	598091.53	670655.31	
11970.00	93.50	267.65	7945.23	-600.35	-4422.54	4447.32	0.60	598087.23	670561.59	
12065.00	93.71	267.87	7939.26	-604.06	-4517.28	4542.12	0.32	598083.52	670466.85	
12159.00	92.87	267.70	7933.87	-607.68	-4611.06	4635.96	0.91	598079.90	670373.07	
12253.00	92.45	267.80	7929.50	-611.37	-4704.88	4729.85	0.46	598076.21	670279.25	
12348.00	91.75	267.56	7926.02	-615.21	-4799.74	4824.78	0.78	598072.37	670184.39	
12442.00	91.54	267.68	7923.32	-619.11	-4893.62	4918.74	0.26	598068.47	670090.51	
12536.00	91.05	268.33	7921.20	-622.39	-4987.54	5012.70	0.87	598065.19	669996.59	
12631.00	90.91	268.58	7919.57	-624.95	-5082.49	5107.66	0.30	598062.63	669901.64	
12670.00	90.77	268.84	7919.00	-625.83	-5121.48	5146.64	0.76	598061.75	669862.65	
12761.00	90.77	268.84	7917.78	-627.67	-5212.45	5237.59	0.00	598059.91	669771.68	Last Wft Svy 7H
12819.00	90.92	268.84	7916.92	-628.84	-5270.43	5295.56	0.26	598058.74	669713.70	Proj. To Bit 7H



Sign Off: Russell Joyner

Well Name: BETELGEUSE 19 FEDERAL 7H

Sub-Division		Region		Field Name		Borehole		Wellbore	
DELAWARE BASIN		DELAWARE SLOPE EAST		HACKBERRY		EDD		KWL	
Surface Legal Location		Latitude (°)		Longitude (°)		Orig KB Elevation (ft)		Ground Elev. MSL (ft)	
SEC20-T19S R31E		32° 38' 42.321" N		103° 53' 56.878" W		3,437.20		3,411.20	
Wellbore		Parent Wellbore		SAP Well ID		Vertical Section Direction (°)			
OR				37648		267.09			
Kick Offs & Key Depths									
Date				Type		Top Depth (ft)			
2/1/2015				Kick Off		7,408.0			
Actual Deviation Survey				Definitive?		Proposed?		Proposed Deviation Survey	
GYRO / MWD, Proposed? Yes				No		Yes			
Deviation Survey									
Date				Description					
1/28/2015				GYRO / MWD					
MD Tie in (ft)		TVD Tie in (ft)		Inclination Tie in (°)		Azimuth Tie in (°)		NS Tie in (ft)	
								EW Tie in (ft)	
Survey Data									
Date	MD (ft)	Incl (°)	Azm (°)	TVD (ft)	VS (ft)	NS (ft)	EW (ft)	DLS (ft/1000)	Survey Tool
1/28/2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	GYRO
1/28/2015	114.08	1.52	264.70	114.05	1.51	-0.14	-1.51	1.33	GYRO
1/28/2015	208.24	1.70	288.03	208.19	4.08	0.13	-4.09	0.66	GYRO
1/28/2015	302.42	3.36	275.82	302.28	8.13	0.60	-8.18	1.82	GYRO
1/28/2015	396.60	4.27	271.45	396.25	14.35	1.16	-14.43	1.01	GYRO
1/28/2015	490.78	4.38	270.45	490.16	21.44	1.28	-21.53	0.14	GYRO
1/28/2015	584.98	5.14	275.99	584.01	29.20	1.75	-29.33	0.94	GYRO
1/28/2015	679.14	4.98	284.79	677.83	37.26	3.23	-37.47	0.84	GYRO
1/28/2015	773.32	5.02	293.12	771.65	44.86	5.90	-45.22	0.77	GYRO
1/28/2015	867.50	4.99	289.59	865.47	52.35	8.88	-52.87	0.33	GYRO
1/28/2015	961.68	5.03	285.25	959.29	60.05	11.34	-60.71	0.40	GYRO
1/28/2015	1,055.86	4.96	289.64	1,053.11	67.74	13.80	-68.53	0.41	GYRO
1/28/2015	1,150.04	4.56	287.79	1,148.97	75.00	16.31	-75.93	0.45	GYRO
1/28/2015	1,244.22	4.34	288.54	1,240.87	81.82	18.59	-82.87	0.24	GYRO
1/28/2015	1,338.40	3.53	291.42	1,334.82	87.78	20.78	-88.95	0.89	GYRO
1/28/2015	1,432.58	3.36	305.57	1,428.83	92.58	23.44	-93.89	0.92	GYRO
1/28/2015	1,526.76	2.99	301.65	1,522.87	96.76	26.34	-98.23	0.46	GYRO
1/28/2015	1,620.94	2.69	318.45	1,616.94	100.17	29.28	-101.78	0.94	GYRO
1/28/2015	1,715.12	2.41	336.78	1,711.02	102.23	32.75	-104.03	0.91	GYRO
1/28/2015	1,809.30	2.34	340.80	1,805.12	103.46	36.39	-105.44	0.19	GYRO
1/28/2015	1,903.48	2.34	345.99	1,899.22	104.37	40.07	-106.54	0.22	GYRO
1/28/2015	1,997.66	2.47	331.44	1,993.32	105.62	43.72	-107.98	0.66	GYRO
1/28/2015	2,091.84	1.91	344.94	2,087.43	106.83	47.02	-109.38	0.80	GYRO
1/28/2015	2,186.02	1.96	351.53	2,181.56	107.31	50.12	-110.00	0.24	GYRO
1/28/2015	2,280.20	1.95	345.62	2,275.69	107.79	53.27	-110.64	0.21	GYRO
1/28/2015	2,374.38	1.83	341.03	2,369.81	108.52	56.24	-111.52	0.21	GYRO
1/28/2015	2,468.56	1.60	346.14	2,463.95	109.19	58.94	-112.33	0.29	GYRO
1/28/2015	2,562.74	1.60	340.14	2,558.10	109.82	61.46	-113.09	0.18	GYRO
1/28/2015	2,656.92	1.64	329.06	2,652.24	110.84	63.85	-114.23	0.33	GYRO
1/28/2015	2,751.10	1.31	337.45	2,746.39	111.83	66.00	-115.33	0.42	GYRO
1/28/2015	2,845.28	1.04	352.93	2,840.55	112.26	67.84	-115.85	0.44	GYRO
1/28/2015	2,939.46	1.02	357.68	2,934.71	112.31	69.53	-115.99	0.09	GYRO
1/28/2015	3,033.64	1.35	14.72	3,028.87	111.97	71.44	-115.74	0.51	GYRO
1/28/2015	3,127.82	1.35	21.52	3,123.03	111.17	73.54	-115.05	0.17	GYRO
1/28/2015	3,222.00	1.51	10.30	3,217.18	110.43	75.79	-114.43	0.34	GYRO
1/28/2015	3,316.18	1.13	6.70	3,311.33	109.89	77.94	-114.10	0.41	GYRO
1/28/2015	3,410.36	1.03	23.52	3,405.50	109.46	79.64	-113.65	0.35	GYRO
1/28/2015	3,504.54	1.02	21.36	3,499.66	108.74	81.19	-113.01	0.04	GYRO
1/28/2015	3,598.72	0.88	22.51	3,593.83	108.08	82.64	-112.42	0.15	GYRO
1/28/2015	3,692.90	0.87	68.27	3,688.00	107.10	83.58	-111.48	0.72	GYRO
1/28/2015	3,787.08	0.83	78.28	3,782.17	105.74	83.98	-110.16	0.16	GYRO
1/28/2015	3,881.26	0.90	80.01	3,876.34	104.34	84.25	-108.75	0.08	GYRO
1/28/2015	3,975.44	0.96	82.04	3,970.50	102.82	84.48	-107.24	0.07	GYRO
1/28/2015	4,035.63	1.01	76.56	4,030.68	101.79	84.68	-106.23	0.18	GYRO
1/30/2015	4,122.00	1.07	71.82	4,117.04	100.27	85.10	-104.72	0.12	MWD
1/30/2015	4,152.00	1.09	69.22	4,147.04	99.72	85.29	-104.19	0.18	MWD
1/30/2015	4,246.00	0.99	149.85	4,241.02	98.50	84.91	-102.95	1.43	MWD
1/30/2015	4,340.00	1.79	166.71	4,335.00	97.87	82.78	-102.20	0.95	MWD
1/30/2015	4,434.00	2.59	169.65	4,428.93	87.33	79.26	-101.48	0.86	MWD
1/30/2015	4,529.00	3.26	176.33	4,523.80	97.01	74.45	-100.92	0.79	MWD
1/30/2015	4,623.00	4.21	184.95	4,617.60	87.45	68.35	-101.05	1.17	MWD
1/30/2015	4,718.00	5.29	191.51	4,712.28	99.02	60.58	-102.22	1.27	MWD
1/30/2015	4,813.00	6.38	192.63	4,806.78	101.52	51.14	-104.25	1.15	MWD
1/30/2015	4,907.00	7.37	190.26	4,900.11	104.29	40.11	-106.47	1.10	MWD
1/30/2015	5,001.00	7.80	189.97	4,993.28	107.09	27.89	-108.65	0.46	MWD
1/30/2015	5,096.00	7.84	197.06	5,087.40	110.74	15.35	-111.66	1.02	MWD
1/30/2015	5,186.00	7.31	195.59	5,176.62	114.65	3.97	-115.00	0.63	MWD
1/30/2015	5,284.00	6.54	194.73	5,273.90	118.32	7.44	-118.10	0.79	MWD
1/30/2015	5,378.00	6.53	191.42	5,367.29	121.27	-17.85	-120.52	0.40	MWD
1/30/2015	5,472.00	7.15	191.98	5,460.62	124.09	-28.81	-122.79	0.68	MWD
1/30/2015	5,567.00	7.28	193.55	5,554.87	127.32	-40.45	-125.43	0.25	MWD
1/31/2015	5,661.00	8.45	198.04	5,647.98	131.48	-52.81	-128.96	1.40	MWD
1/31/2015	5,755.00	8.46	198.88	5,740.96	136.51	-65.92	-133.34	0.13	MWD
1/31/2015	5,850.00	8.04	201.73	5,834.98	141.88	-78.70	-138.06	0.62	MWD
1/31/2015	5,944.00	7.66	202.31	5,928.10	147.29	-90.60	-142.87	0.41	MWD
1/31/2015	6,039.00	8.30	202.36	6,022.18	152.91	-102.80	-147.88	0.67	MWD

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Well Name: BETELGEUSE 19 FEDERAL 7H

Sub-Division		Region	Field Name		County	State				
DELAWARE BASIN		DELAWARE SLOPE EAST	HACKBERRY		EDD	NM				
Surface Legal Location:		Latitude (°)	Longitude (°)		Orig KB Elevation (ft)	Ground Elev MSL (ft)				
SEC20.T19S.R31E		32° 38' 42.321" N	103° 53' 56.878" W		3,437.20	3,411.20				
Survey Data										
Date	MO (WGS)	End (°)	Asm (°)	TVO (WGS)	TVS (ft)	TMS (ft)	EW (ft)	DLS (ft/1000)	Survey Tool	Survey Company
1/31/2015	6,133.00	8.19	206.01	6,115.21	159.05	115.09	-153.40	0.57	MWD	WEATHERFORD
1/31/2015	6,227.00	8.03	198.56	6,208.27	164.69	127.33	-158.43	1.13	MWD	WEATHERFORD
1/31/2015	6,322.00	7.87	197.33	6,302.38	169.36	139.83	-162.48	0.25	MWD	WEATHERFORD
1/31/2015	6,416.00	7.41	196.90	6,395.52	173.65	151.78	-166.15	0.49	MWD	WEATHERFORD
1/31/2015	6,511.00	6.81	198.25	6,489.79	177.75	162.69	-169.70	0.68	MWD	WEATHERFORD
1/31/2015	6,605.00	7.18	193.16	6,583.09	181.39	174.00	-172.78	0.77	MWD	WEATHERFORD
1/31/2015	6,699.00	8.33	188.30	6,676.23	184.34	186.46	-175.10	1.41	MWD	WEATHERFORD
1/31/2015	6,793.00	9.31	185.46	6,769.12	186.77	200.77	-176.81	1.14	MWD	WEATHERFORD
1/31/2015	6,888.00	8.57	185.31	6,862.96	188.90	215.46	-178.20	0.78	MWD	WEATHERFORD
1/31/2015	6,982.00	7.38	185.17	6,956.05	190.75	228.45	-179.39	1.27	MWD	WEATHERFORD
1/31/2015	7,077.00	8.26	187.03	7,050.17	192.79	241.30	-180.77	0.96	MWD	WEATHERFORD
1/31/2015	7,171.00	9.78	193.21	7,143.01	196.17	255.78	-183.42	1.92	MWD	WEATHERFORD
1/31/2015	7,265.00	9.24	194.00	7,235.71	200.58	270.87	-187.07	0.59	MWD	WEATHERFORD
1/31/2015	7,346.00	8.45	193.17	7,315.75	204.12	282.98	-190.00	0.89	MWD	WEATHERFORD
2/1/2015	7,388.00	8.03	194.65	7,357.32	205.86	288.82	-191.45	1.12	MWD	WEATHERFORD
2/1/2015	7,420.00	9.25	206.20	7,388.95	207.79	293.29	-193.15	6.61	MWD	WEATHERFORD
2/1/2015	7,451.00	11.96	216.36	7,419.43	211.04	298.11	-196.15	10.59	MWD	WEATHERFORD
2/1/2015	7,482.00	14.63	222.95	7,449.59	215.88	303.57	-200.73	9.89	MWD	WEATHERFORD
2/1/2015	7,513.00	17.69	225.97	7,479.37	222.24	309.71	-206.78	10.23	MWD	WEATHERFORD
2/1/2015	7,545.00	20.84	229.02	7,509.57	230.38	316.82	-214.56	10.33	MWD	WEATHERFORD
2/1/2015	7,576.00	23.82	232.15	7,538.24	239.86	324.28	-223.69	10.35	MWD	WEATHERFORD
2/1/2015	7,608.00	26.09	235.90	7,567.26	251.18	332.19	-234.62	8.64	MWD	WEATHERFORD
2/1/2015	7,639.00	29.06	238.80	7,594.73	263.84	339.92	-245.70	10.51	MWD	WEATHERFORD
2/1/2015	7,671.00	32.43	240.03	7,622.23	278.13	348.23	-260.79	10.71	MWD	WEATHERFORD
2/1/2015	7,702.00	35.16	241.08	7,647.99	293.56	356.70	-275.81	9.01	MWD	WEATHERFORD
2/2/2015	7,733.00	39.13	242.81	7,672.70	310.50	365.49	-292.33	13.24	MWD	WEATHERFORD
2/2/2015	7,765.00	41.36	245.86	7,697.12	329.57	374.43	-310.96	9.30	MWD	WEATHERFORD
2/2/2015	7,796.00	43.48	249.95	7,720.01	349.31	382.28	-330.33	11.22	MWD	WEATHERFORD
2/2/2015	7,828.00	45.30	255.04	7,742.88	370.96	388.99	-351.67	12.49	MWD	WEATHERFORD
2/2/2015	7,859.00	47.07	258.93	7,764.35	392.98	394.02	-373.46	10.70	MWD	WEATHERFORD
2/2/2015	7,891.00	48.13	260.26	7,785.93	416.41	398.28	-396.70	4.52	MWD	WEATHERFORD
2/2/2015	7,922.00	49.81	260.59	7,806.28	439.63	402.17	-419.76	5.48	MWD	WEATHERFORD
2/2/2015	7,954.00	52.11	261.77	7,826.43	464.35	405.98	-444.32	7.74	MWD	WEATHERFORD
2/2/2015	7,985.00	54.64	263.33	7,844.93	489.15	409.20	-468.98	9.11	MWD	WEATHERFORD
2/2/2015	8,016.00	57.59	264.89	7,862.21	514.85	411.83	-494.58	10.39	MWD	WEATHERFORD
2/2/2015	8,048.00	60.11	266.49	7,878.76	542.22	413.88	-521.88	8.96	MWD	WEATHERFORD
2/2/2015	8,079.00	63.16	267.52	7,893.49	569.50	415.30	-549.12	10.26	MWD	WEATHERFORD
2/2/2015	8,111.00	65.72	268.31	7,907.29	598.36	416.35	-577.97	8.30	MWD	WEATHERFORD
2/2/2015	8,143.00	68.52	269.93	7,919.73	627.82	416.80	-607.44	9.92	MWD	WEATHERFORD
2/2/2015	8,174.00	71.43	270.02	7,930.35	656.91	416.81	-636.57	9.39	MWD	WEATHERFORD
2/2/2015	8,205.00	74.05	270.03	7,939.54	686.47	416.80	-666.17	8.45	MWD	WEATHERFORD
2/2/2015	8,237.00	77.04	270.07	7,947.53	717.41	416.77	-697.15	9.34	MWD	WEATHERFORD
2/2/2015	8,268.00	80.24	269.16	7,953.64	747.77	416.98	-727.54	10.72	MWD	WEATHERFORD
2/2/2015	8,300.00	83.90	268.01	7,958.05	779.45	417.76	-759.22	11.98	MWD	WEATHERFORD
2/3/2015	8,385.00	91.45	267.47	7,961.50	864.31	421.11	-844.02	8.90	MWD	WEATHERFORD
2/3/2015	8,479.00	90.21	267.36	7,960.14	958.30	425.35	-937.91	1.32	MWD	WEATHERFORD
2/3/2015	8,573.00	90.49	268.51	7,959.56	1,052.28	428.74	-1,031.85	1.26	MWD	WEATHERFORD
2/3/2015	8,668.00	88.46	269.27	7,960.43	1,147.23	430.58	-1,126.82	2.28	MWD	WEATHERFORD
2/3/2015	8,762.00	87.83	269.84	7,963.47	1,241.09	431.31	-1,220.77	0.90	MWD	WEATHERFORD
2/3/2015	8,857.00	86.78	269.63	7,967.94	1,335.88	431.75	-1,315.66	1.13	MWD	WEATHERFORD
2/3/2015	8,951.00	86.85	269.08	7,973.16	1,429.66	432.80	-1,409.51	0.59	MWD	WEATHERFORD
2/4/2015	9,045.00	87.13	269.07	7,978.19	1,523.48	434.32	-1,503.37	0.30	MWD	WEATHERFORD
2/4/2015	9,140.00	88.60	268.19	7,981.64	1,618.37	436.59	-1,598.27	1.80	MWD	WEATHERFORD
2/4/2015	9,234.00	90.07	267.41	7,982.73	1,712.36	440.20	-1,692.19	1.77	MWD	WEATHERFORD
2/4/2015	9,328.00	90.28	267.15	7,982.44	1,806.35	444.66	-1,786.08	0.36	MWD	WEATHERFORD
2/4/2015	9,422.00	90.00	266.97	7,982.21	1,900.35	449.48	-1,879.96	0.35	MWD	WEATHERFORD
2/4/2015	9,517.00	90.28	266.83	7,981.98	1,995.35	454.78	-1,974.81	0.46	MWD	WEATHERFORD
2/4/2015	9,611.00	90.70	266.19	7,981.18	2,089.34	460.67	-2,068.62	0.65	MWD	WEATHERFORD
2/4/2015	9,706.00	90.35	266.10	7,980.31	2,184.32	467.05	-2,163.40	0.38	MWD	WEATHERFORD
2/4/2015	9,800.00	89.72	266.13	7,980.25	2,278.31	473.42	-2,257.18	0.67	MWD	WEATHERFORD
2/4/2015	9,895.00	90.56	266.27	7,980.02	2,373.30	479.72	-2,351.98	0.90	MWD	WEATHERFORD
2/4/2015	9,989.00	91.40	266.60	7,978.41	2,467.28	485.56	-2,445.78	0.96	MWD	WEATHERFORD
2/4/2015	10,083.00	91.68	267.10	7,975.88	2,561.24	490.73	-2,539.60	0.61	MWD	WEATHERFORD
2/4/2015	10,178.00	90.42	267.07	7,974.14	2,656.22	495.56	-2,634.46	1.33	MWD	WEATHERFORD
2/4/2015	10,272.00	89.65	267.19	7,974.08	2,750.22	500.26	-2,728.34	0.83	MWD	WEATHERFORD
2/4/2015	10,367.00	89.30	267.76	7,974.96	2,845.22	504.45	-2,823.25	0.70	MWD	WEATHERFORD
2/4/2015	10,461.00	89.30	267.60	7,976.10	2,939.20	508.25	-2,917.18	0.17	MWD	WEATHERFORD
2/4/2015	10,555.00	89.79	267.45	7,976.85	3,033.20	512.31	-3,011.07	0.55	MWD	WEATHERFORD
2/5/2015	10,649.00	91.33	265.83	7,975.93	3,127.18	517.98	-3,104.89	2.54	MWD	WEATHERFORD
2/5/2015	10,744.00	91.26	265.16	7,973.78	3,222.12	525.81	-3,199.56	0.50	MWD	WEATHERFORD
2/5/2015	10,838.00	91.12	265.44	7,971.83	3,316.05	533.31	-3,293.22	0.33	MWD	WEATHERFORD
2/5/2015	10,933.00	91.12	265.93	7,969.98	3,411.00	540.46	-3,387.93	0.52	MWD	WEATHERFORD
2/5/2015	11,027.00	90.77	265.97	7,968.43	3,504.97	547.09	-3,481.89	0.37	MWD	WEATHERFORD
2/5/2015	11,121.00	90.42	266.53	7,967.45	3,598.96	553.24	-3,575.48	0.70	MWD	WEATHERFORD
2/5/2015	11,215.00	89.79	266.76	7,967.28	3,692.65	558.74	-3,669.32	0.71	MWD	WEATHERFORD
2/5/2015	11,309.00	89.58	267.22	7,967.79	3,786.95	563.68	-3,763.19	0.54	MWD	WEATHERFORD
2/5/2015	11,404.00	90.35	267.09	7,967.85	3,881.95	568.39	-3,858.07	0.82	MWD	WEATHERFORD

Well Name: BETELGEUSE 19 FEDERAL 7H

Sub-Division	Region	Field Name		EDDY		Survey				
DELAWARE BASIN	DELAWARE SLOPE EAST	HACKBERRY								
Surface Legal Location	APN	Latitude (°)	Longitude (°)	Orig KB Elevation (ft)	Ground Elev MSL (ft)	KB - GL (ft)				
SEC20.T19S R31E	380154203P	32° 38' 42.321" N	103° 53' 56.878" W	3,437.20	3,411.20	26.00				
Survey Data										
Date	MD (ft)	Incl (°)	Azth (°)	TVD (ft)	VS (ft)	N/S (ft)	EW (ft)	DLS (ft/100ft)	Survey	Survey Company
2/5/2015	11,499.00	90.84	266.75	7,966.86	3,976.94	-573.50	-3,952.93	0.83	MWD	WEATHERFORD
2/5/2015	11,594.00	90.56	266.94	7,965.70	4,071.94	-578.73	-4,047.78	0.36	MWD	WEATHERFORD
2/5/2015	11,688.00	93.15	266.17	7,962.66	4,165.87	-584.37	-4,141.55	2.87	MWD	WEATHERFORD
2/5/2015	11,782.00	93.71	266.49	7,957.04	4,259.70	-590.38	-4,235.19	0.69	MWD	WEATHERFORD
2/6/2015	11,876.00	93.57	267.09	7,951.07	4,353.51	-595.63	-4,328.85	0.85	MWD	WEATHERFORD
2/6/2015	11,970.00	93.50	267.65	7,945.27	4,447.33	-599.93	-4,422.57	0.60	MWD	WEATHERFORD
2/6/2015	12,065.00	93.71	267.87	7,939.30	4,542.13	-603.64	-4,517.31	0.32	MWD	WEATHERFORD
2/6/2015	12,159.00	92.87	267.70	7,933.91	4,635.97	-607.27	-4,611.08	0.91	MWD	WEATHERFORD
2/6/2015	12,253.00	92.45	267.80	7,928.54	4,729.88	-610.95	-4,704.91	0.48	MWD	WEATHERFORD
2/6/2015	12,348.00	91.75	267.56	7,926.06	4,824.79	-614.80	-4,799.77	0.78	MWD	WEATHERFORD
2/6/2015	12,442.00	91.54	267.68	7,923.36	4,918.75	-618.70	-4,893.65	0.26	MWD	WEATHERFORD
2/6/2015	12,538.00	91.05	268.33	7,921.24	5,012.71	-621.97	-4,987.57	0.87	MWD	WEATHERFORD
2/6/2015	12,631.00	90.91	268.58	7,919.61	5,107.67	-624.53	-5,082.52	0.30	MWD	WEATHERFORD
2/6/2015	12,670.00	90.77	268.84	7,919.04	5,146.65	-625.41	-5,121.50	0.78	MWD	WEATHERFORD
2/6/2015	12,761.00	90.77	268.84	7,917.82	5,237.60	-627.25	-5,212.48	0.00	BIT	WEATHERFORD