

Well Name: BETELGEUSE 19 FEDERAL 8H

Sub-Division DELAWARE BASIN	Region DELAWARE SLOPE EAST	Field Name HACKBERRY	County DELAWARE	State NM						
Surface Legal Location Sec 20 T19S R31E	APN 300-04-1900	Latitude (°) 32° 38' 41.398" N	Longitude (°) 103° 53' 55.068" W	Orig KB Elevation (ft) 3,435.00						
				Ground Elev MSL (ft) 3,409.00						
				KB - GL (ft) 26.00						
Wellbores										
Wellbore Name OH	Parent Wellbore OH	SAP Well ID 38001	Vertical Section Direction (°) 270.00							
Kick Offs & Key Depths										
Date 3/3/2015	Type Kick Off	Proposed?	Top Depth (ftKB) 7,477.0							
Actual Deviation Survey		Definitive?	Proposed Deviation Survey							
TELEDRIFT / EXTREME, Proposed? No		No								
Deviation Survey										
Date 2/14/2015	Description TELEDRIFT / EXTREME									
MD Tie In (ftKB)	TVD Tie In (ftKB)	Inclination Tie In (°)	Azimuth Tie In (°)	NS Tie In (ft)						
				EW Tie In (ft)						
Survey Data										
Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	NS (ft)	EW (ft)	P.D.S. (ft/1000)	Survey Tool	Survey Company
2/14/2015	57.00	0.30	198.40	57.00	0.04	-0.14	-0.04	0.53	MS	TELEDRIFT
2/15/2015	148.00	0.90	191.40	147.99	0.25	-1.07	-0.25	0.66	MS	TELEDRIFT
2/15/2015	270.00	1.10	187.40	269.98	0.59	-3.17	-0.59	0.17	MS	TELEDRIFT
2/15/2015	378.00	1.00	176.40	375.96	0.88	-5.10	-0.86	0.21	MS	TELEDRIFT
2/18/2015	468.00	1.19	148.49	467.94	0.09	-6.70	-0.09	0.65	MS	EXTREME
2/18/2015	577.00	1.41	193.99	576.92	0.21	-8.95	0.21	0.98	MS	EXTREME
2/18/2015	615.00	1.49	195.40	614.90	0.03	-9.88	-0.03	0.23	MS	EXTREME
2/18/2015	704.00	1.32	192.89	703.88	0.57	-11.99	-0.57	0.20	MS	EXTREME
2/18/2015	795.00	1.32	194.30	794.85	1.06	-14.03	-1.06	0.04	MS	EXTREME
2/18/2015	886.00	1.10	196.80	885.83	1.57	-15.88	-1.57	0.25	MS	EXTREME
2/18/2015	977.00	1.01	194.69	976.82	2.03	-17.49	-2.03	0.11	MS	EXTREME
2/18/2015	1,068.00	0.79	189.29	1,067.81	2.33	-18.89	-2.33	0.26	MS	EXTREME
2/18/2015	1,159.00	0.62	177.82	1,158.80	2.41	-20.00	-2.41	0.24	MS	EXTREME
2/18/2015	1,250.00	0.40	113.82	1,249.80	2.10	-20.62	-2.10	0.63	MS	EXTREME
2/18/2015	1,344.00	0.70	88.19	1,343.79	1.23	-20.71	-1.23	0.42	MS	EXTREME
2/18/2015	1,437.00	1.19	77.89	1,436.78	0.28	-20.47	0.28	0.55	MS	EXTREME
2/18/2015	1,525.00	1.41	72.61	1,524.76	2.21	-19.96	-2.21	0.28	MS	EXTREME
2/18/2015	1,623.00	1.71	70.59	1,622.72	4.74	-19.11	-4.74	0.31	MS	EXTREME
2/18/2015	1,717.00	1.89	70.42	1,716.67	7.52	-18.13	-7.52	0.19	MS	EXTREME
2/19/2015	1,811.00	2.20	69.32	1,810.61	10.67	-16.97	-10.67	0.33	MS	EXTREME
2/19/2015	1,906.00	1.71	73.58	1,905.58	13.74	-15.92	-13.74	0.54	MS	EXTREME
2/19/2015	1,996.00	1.32	68.48	1,995.53	15.99	-15.16	-15.99	0.46	MS	EXTREME
2/19/2015	2,090.00	1.10	76.39	2,089.51	17.87	-14.55	-17.87	0.29	MS	EXTREME
2/20/2015	2,188.00	1.01	77.10	2,187.49	19.63	-14.14	-19.63	0.09	MS	EXTREME
2/20/2015	2,282.00	0.70	82.90	2,281.48	21.01	-13.88	-21.01	0.34	MS	EXTREME
2/20/2015	2,329.00	0.62	80.70	2,328.48	21.54	-13.81	-21.54	0.18	MS	EXTREME
2/23/2015	2,371.00	0.40	226.81	2,370.47	21.68	-13.87	-21.68	2.33	MS	EXTREME
2/23/2015	2,465.00	0.62	91.12	2,464.47	21.93	-14.11	-21.93	1.01	MS	EXTREME
2/23/2015	2,556.00	0.70	82.28	2,555.47	22.97	-14.04	-22.97	0.14	MS	EXTREME
2/23/2015	2,650.00	0.79	85.80	2,649.46	24.19	-13.92	-24.19	0.11	MS	EXTREME
2/23/2015	2,744.00	0.88	94.72	2,743.45	25.55	-13.93	-25.55	0.17	MS	EXTREME
2/23/2015	2,838.00	1.01	78.98	2,837.44	27.08	-13.83	-27.08	0.31	MS	EXTREME
2/23/2015	2,933.00	1.19	85.58	2,932.42	28.69	-13.59	-28.69	0.23	MS	EXTREME
2/23/2015	3,031.00	1.41	116.60	3,030.40	30.98	-14.05	-30.98	0.74	MS	EXTREME
2/23/2015	3,124.00	1.41	118.01	3,123.37	33.02	-15.10	-33.02	0.04	MS	EXTREME
2/23/2015	3,219.00	1.49	121.39	3,218.34	35.10	-16.30	-35.10	0.12	MS	EXTREME
2/24/2015	3,313.00	1.41	124.12	3,312.31	37.10	-17.58	-37.10	0.11	MS	EXTREME
2/24/2015	3,407.00	1.58	128.38	3,406.27	39.08	-19.04	-39.08	0.22	MS	EXTREME
2/24/2015	3,500.00	1.58	134.80	3,499.24	40.99	-20.73	-40.99	0.19	MS	EXTREME
2/24/2015	3,595.00	1.58	139.98	3,594.20	42.76	-22.66	-42.76	0.15	MS	EXTREME
2/24/2015	3,689.00	1.49	140.81	3,688.17	44.37	-24.60	-44.37	0.10	MS	EXTREME
2/24/2015	3,783.00	1.58	145.61	3,782.14	45.87	-26.82	-45.87	0.16	MS	EXTREME
2/24/2015	3,878.00	1.58	143.89	3,877.10	47.38	-28.76	-47.38	0.05	MS	EXTREME
2/24/2015	3,973.00	1.49	141.52	3,972.07	48.92	-30.78	-48.92	0.12	MS	EXTREME
2/24/2015	3,978.00	1.71	139.90	3,977.06	49.01	-30.89	-49.01	4.49	MS	EXTREME
2/28/2015	4,109.00	1.50	146.09	4,108.01	51.23	-33.81	-51.23	0.21	MWD	WEATHERFORD
2/28/2015	4,154.00	1.56	143.84	4,153.00	51.92	-34.79	-51.92	0.19	MWD	WEATHERFORD
2/28/2015	4,249.00	1.98	194.96	4,247.96	52.25	-37.42	-52.25	1.66	MWD	WEATHERFORD
2/28/2015	4,343.00	3.18	204.90	4,341.86	50.74	-41.36	-50.74	1.36	MWD	WEATHERFORD
2/28/2015	4,437.00	4.18	206.59	4,435.66	48.11	-46.79	-48.11	1.07	MWD	WEATHERFORD
2/28/2015	4,532.00	4.70	202.44	4,530.38	45.07	-53.48	-45.07	0.64	MWD	WEATHERFORD
2/28/2015	4,626.00	5.74	202.11	4,623.99	41.83	-61.39	-41.83	1.11	MWD	WEATHERFORD
2/28/2015	4,720.00	6.69	201.43	4,717.43	38.06	-70.85	-38.06	1.01	MWD	WEATHERFORD
2/28/2015	4,814.00	7.44	201.92	4,810.72	33.79	-81.59	-33.79	0.80	MWD	WEATHERFORD
2/28/2015	4,908.00	7.25	201.55	4,903.95	29.34	-92.75	-29.34	0.21	MWD	WEATHERFORD
2/28/2015	5,002.00	6.72	199.98	4,997.25	25.28	-103.44	-25.28	0.60	MWD	WEATHERFORD
2/28/2015	5,096.00	7.59	196.24	5,090.52	21.67	-114.57	-21.67	1.05	MWD	WEATHERFORD
3/1/2015	5,190.00	7.05	196.90	5,183.75	18.25	-126.05	-18.25	0.58	MWD	WEATHERFORD
3/1/2015	5,285.00	7.53	197.24	5,277.98	14.71	-137.57	-14.71	0.51	MWD	WEATHERFORD
3/1/2015	5,379.00	7.83	203.78	5,371.14	10.31	-149.31	-10.31	0.98	MWD	WEATHERFORD
3/1/2015	5,473.00	7.63	205.68	5,464.29	5.02	-160.79	-5.02	0.35	MWD	WEATHERFORD
3/1/2015	5,568.00	7.50	207.10	5,558.48	0.54	-172.00	-0.54	0.24	MWD	WEATHERFORD
3/1/2015	5,662.00	7.15	210.40	5,651.69	6.29	-182.50	-6.29	0.58	MWD	WEATHERFORD
3/1/2015	5,757.00	6.99	210.19	5,745.97	12.19	-192.60	-12.19	0.17	MWD	WEATHERFORD
3/1/2015	5,851.00	7.29	203.33	5,839.25	17.43	-203.02	-17.43	0.96	MWD	WEATHERFORD
3/1/2015	5,945.00	7.20	204.20	5,932.49	22.21	-213.87	-22.21	0.15	MWD	WEATHERFORD

Provide signature page for Survey

Accepted for record
NMOCD

Well Name: BETELGEUSE 19 FEDERAL 8H

Sub-Division	Region	Field Name	Survey	Station	KB	GL
DELAWARE BASIN	DELAWARE SLOPE EAST	HACKBERRY	EDDY	NM		
Surface Legal Location	Latitude (°)	Longitude (°)	Orig KB Elevation (ft)	Ground Elev MSL (ft)	KB - GL (ft)	
Sec 20-T19S R31E	32° 38' 41.396" N	103° 53' 55.068" W	3,435.00	3,409.00	26.00	
Survey Data						
Date	MD (HKB)	Ind (°)	Acc (ft)	MD (HKB)	VS (ft)	Survey Company
3/1/2015	6,040.00	6.98	204.63	6,026.77	27.05	MWD WEATHERFORD
3/1/2015	6,134.00	6.90	206.27	6,120.06	31.93	MWD WEATHERFORD
3/1/2015	6,228.00	7.12	207.60	6,213.38	37.13	MWD WEATHERFORD
3/1/2015	6,322.00	7.25	199.74	6,306.64	41.83	MWD WEATHERFORD
3/1/2015	6,417.00	7.12	202.55	6,400.90	46.12	MWD WEATHERFORD
3/1/2015	6,512.00	7.59	204.10	6,495.11	50.93	MWD WEATHERFORD
3/1/2015	6,608.00	7.88	203.26	6,588.28	55.95	MWD WEATHERFORD
3/1/2015	6,700.00	7.55	204.34	6,681.45	60.98	MWD WEATHERFORD
3/1/2015	6,794.00	7.01	204.01	6,774.69	65.86	MWD WEATHERFORD
3/2/2015	6,888.00	6.41	203.37	6,868.05	70.27	MWD WEATHERFORD
3/2/2015	6,983.00	6.83	203.00	6,962.42	74.58	MWD WEATHERFORD
3/2/2015	7,077.00	6.89	207.94	7,055.74	79.41	MWD WEATHERFORD
3/2/2015	7,171.00	6.74	206.29	7,149.08	84.49	MWD WEATHERFORD
3/2/2015	7,266.00	6.24	211.44	7,243.47	89.65	MWD WEATHERFORD
3/2/2015	7,360.00	5.68	216.62	7,336.96	95.09	MWD WEATHERFORD
3/2/2015	7,415.00	5.81	214.16	7,391.69	98.28	MWD WEATHERFORD
3/3/2015	7,450.00	6.50	211.56	7,426.48	100.31	MWD WEATHERFORD
3/3/2015	7,482.00	7.80	213.67	7,458.24	102.46	MWD WEATHERFORD
3/3/2015	7,513.00	11.14	214.77	7,488.81	105.34	MWD WEATHERFORD
3/3/2015	7,544.00	14.15	215.08	7,519.05	109.23	MWD WEATHERFORD
3/3/2015	7,576.00	17.04	215.61	7,549.87	114.20	MWD WEATHERFORD
3/3/2015	7,607.00	20.46	216.78	7,579.22	120.09	MWD WEATHERFORD
3/3/2015	7,639.00	24.03	215.82	7,608.84	127.26	MWD WEATHERFORD
3/3/2015	7,670.00	27.42	216.61	7,638.76	135.21	MWD WEATHERFORD
3/3/2015	7,702.00	31.06	218.10	7,664.88	144.70	MWD WEATHERFORD
3/3/2015	7,733.00	33.77	217.19	7,690.85	154.85	MWD WEATHERFORD
3/3/2015	7,765.00	36.77	215.20	7,716.97	165.75	MWD WEATHERFORD
3/3/2015	7,797.00	39.62	212.72	7,742.12	176.79	MWD WEATHERFORD
3/3/2015	7,828.00	42.44	210.91	7,765.50	187.50	MWD WEATHERFORD
3/3/2015	7,860.00	45.61	209.39	7,788.51	198.66	MWD WEATHERFORD
3/3/2015	7,891.00	48.50	210.37	7,809.63	209.97	MWD WEATHERFORD
3/3/2015	7,923.00	51.30	211.27	7,830.24	222.52	MWD WEATHERFORD
3/3/2015	7,954.00	54.17	211.82	7,849.01	235.42	MWD WEATHERFORD
3/3/2015	7,986.00	56.07	213.23	7,867.30	249.54	MWD WEATHERFORD
3/4/2015	8,017.00	58.49	213.57	7,884.06	263.90	MWD WEATHERFORD
3/4/2015	8,049.00	61.72	213.35	7,900.01	279.19	MWD WEATHERFORD
3/4/2015	8,080.00	64.64	213.46	7,913.99	294.42	MWD WEATHERFORD
3/4/2015	8,111.00	67.75	213.55	7,926.50	310.07	MWD WEATHERFORD
3/4/2015	8,143.00	69.18	214.30	7,938.25	326.69	MWD WEATHERFORD
3/4/2015	8,174.00	71.27	215.08	7,948.74	343.29	MWD WEATHERFORD
3/4/2015	8,206.00	73.26	215.72	7,958.48	360.95	MWD WEATHERFORD
3/4/2015	8,237.00	75.79	216.70	7,966.78	378.59	MWD WEATHERFORD
3/4/2015	8,268.00	77.52	217.93	7,973.91	396.68	MWD WEATHERFORD
3/4/2015	8,300.00	78.88	221.04	7,980.46	416.79	MWD WEATHERFORD
3/4/2015	8,331.00	81.78	223.13	7,985.66	437.28	MWD WEATHERFORD
3/5/2015	8,350.00	83.63	223.00	7,988.08	450.14	MWD WEATHERFORD
3/5/2015	8,444.00	91.47	226.76	7,992.09	516.35	MWD WEATHERFORD
3/5/2015	8,539.00	92.17	229.98	7,999.07	587.32	MWD WEATHERFORD
3/5/2015	8,633.00	90.84	231.31	7,986.60	659.97	MWD WEATHERFORD
3/5/2015	8,728.00	89.65	231.06	7,966.20	733.99	MWD WEATHERFORD
3/6/2015	8,822.00	89.02	230.80	7,987.29	806.97	MWD WEATHERFORD
3/6/2015	8,917.00	89.51	231.43	7,988.51	880.91	MWD WEATHERFORD
3/6/2015	9,011.00	90.14	232.45	7,988.80	954.92	MWD WEATHERFORD
3/6/2015	9,105.00	90.07	233.65	7,988.62	1,030.04	MWD WEATHERFORD
3/6/2015	9,200.00	90.98	236.56	7,987.75	1,107.94	MWD WEATHERFORD
3/6/2015	9,295.00	91.33	240.19	7,985.84	1,188.81	MWD WEATHERFORD
3/6/2015	9,390.00	91.68	243.36	7,983.34	1,272.47	MWD WEATHERFORD
3/6/2015	9,484.00	91.19	246.27	7,980.99	1,357.50	MWD WEATHERFORD
3/6/2015	9,578.00	89.30	247.19	7,980.58	1,443.85	MWD WEATHERFORD
3/6/2015	9,672.00	89.02	248.74	7,981.98	1,530.97	MWD WEATHERFORD
3/6/2015	9,767.00	88.39	250.50	7,984.11	1,620.00	MWD WEATHERFORD
3/7/2015	9,861.00	87.90	251.22	7,987.15	1,708.75	MWD WEATHERFORD
3/7/2015	9,956.00	87.83	252.72	7,990.69	1,799.02	MWD WEATHERFORD
3/7/2015	10,050.00	87.62	254.70	7,994.42	1,889.17	MWD WEATHERFORD
3/7/2015	10,145.00	88.32	258.61	7,997.79	1,981.53	MWD WEATHERFORD
3/7/2015	10,239.00	89.79	261.89	7,999.34	2,074.14	MWD WEATHERFORD
3/7/2015	10,334.00	89.93	264.24	7,999.57	2,168.44	MWD WEATHERFORD
3/7/2015	10,428.00	89.16	266.92	8,000.32	2,262.15	MWD WEATHERFORD
3/7/2015	10,522.00	89.72	269.47	8,001.24	2,356.09	MWD WEATHERFORD
3/7/2015	10,617.00	88.86	271.08	8,001.59	2,451.09	MWD WEATHERFORD
3/8/2015	10,711.00	90.21	271.39	8,001.53	2,545.06	MWD WEATHERFORD
3/9/2015	10,806.00	90.56	271.52	8,000.89	2,640.03	MWD WEATHERFORD
3/9/2015	10,900.00	90.56	271.00	7,999.97	2,734.00	MWD WEATHERFORD
3/9/2015	10,994.00	90.77	271.04	7,998.88	2,827.98	MWD WEATHERFORD
3/10/2015	11,088.00	90.91	270.62	7,997.36	2,931.96	MWD WEATHERFORD
3/10/2015	11,183.00	91.19	270.25	7,995.62	3,026.94	MWD WEATHERFORD
3/10/2015	11,287.00	90.63	271.10	7,994.12	3,120.92	MWD WEATHERFORD

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Sub-Division	Region	Field Name		County	State					
DELAWARE BASIN	DELAWARE SLOPE EAST	HACKBERRY		EDDY	NM					
Surface Legal Location	AP (K&B)	Latitude (°)	Longitude (°)	Orig KB Elevation (ft)	Ground Elev MSL (ft)	KB - GL (ft)				
Sec 20 T19S R31E	3001541900	32° 38' 41.396" N	103° 53' 55.068" W	3,435.00	3,409.00	26.00				
Survey Data										
Date	MD (K&B)	Ind (°)	Azm (°)	TVD (K&B)	VS (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Survey Tool	Survey Company
3/10/2015	11,381.00	90.14	272.09	7,993.49	3,214.88	1,784.91	3,214.88	1.18	MWD	WEATHERFORD
3/10/2015	11,475.00	90.21	271.70	7,993.20	3,308.83	1,781.80	3,308.83	0.42	MWD	WEATHERFORD
3/10/2015	11,570.00	90.28	271.50	7,992.80	3,403.79	1,779.15	3,403.79	0.22	MWD	WEATHERFORD
3/10/2015	11,664.00	90.63	271.61	7,992.05	3,497.75	1,778.60	3,497.75	0.39	MWD	WEATHERFORD
3/10/2015	11,758.00	90.84	271.33	7,990.85	3,591.72	1,774.19	3,591.72	0.37	MWD	WEATHERFORD
3/10/2015	11,853.00	90.98	271.07	7,989.34	3,686.68	1,772.20	3,686.68	0.31	MWD	WEATHERFORD
3/10/2015	11,947.00	91.47	270.76	7,987.33	3,780.65	1,770.70	3,780.65	0.62	MWD	WEATHERFORD
3/10/2015	12,041.00	91.96	270.95	7,984.51	3,874.60	1,769.29	3,874.60	0.56	MWD	WEATHERFORD
3/11/2015	12,136.00	91.68	271.65	7,981.50	3,969.52	1,767.14	3,969.52	0.79	MWD	WEATHERFORD
3/11/2015	12,230.00	91.19	271.95	7,978.14	4,063.45	1,764.19	4,063.45	0.61	MWD	WEATHERFORD
3/11/2015	12,324.00	91.47	272.10	7,976.96	4,157.36	1,760.87	4,157.36	0.34	MWD	WEATHERFORD
3/11/2015	12,419.00	90.84	271.33	7,975.05	4,252.30	1,758.02	4,252.30	1.05	MWD	WEATHERFORD
3/11/2015	12,513.00	90.63	270.95	7,973.84	4,346.27	1,756.15	4,346.27	0.46	MWD	WEATHERFORD
3/11/2015	12,608.00	90.91	270.96	7,972.58	4,441.25	1,754.57	4,441.25	0.29	MWD	WEATHERFORD
3/11/2015	12,702.00	91.12	270.40	7,970.90	4,535.23	1,753.46	4,535.23	0.64	MWD	WEATHERFORD
3/11/2015	12,797.00	91.76	270.40	7,968.51	4,630.20	1,752.79	4,630.20	0.67	MWD	WEATHERFORD
3/11/2015	12,891.00	92.24	270.10	7,965.23	4,724.14	1,752.38	4,724.14	0.60	MWD	WEATHERFORD
3/11/2015	12,986.00	92.69	270.39	7,961.14	4,819.05	1,751.98	4,819.05	0.56	MWD	WEATHERFORD
3/11/2015	13,080.00	93.43	270.36	7,956.13	4,912.91	1,751.36	4,912.91	0.79	MWD	WEATHERFORD
3/11/2015	13,174.00	94.20	270.05	7,949.87	5,006.70	1,751.03	5,006.70	0.88	MWD	WEATHERFORD
3/12/2015	13,268.00	94.41	270.42	7,941.32	5,120.38	1,750.56	5,120.38	0.37	MWD	WEATHERFORD
3/12/2015	13,378.00	94.41	270.10	7,934.39	5,210.11	1,750.15	5,210.11	0.35	BIT	WEATHERFORD