

FEB - 7 2019

RECEIVED
MWD
SURVEYS

Customer: TAPROCK
Well: Cosmo K #213H
Field/Block: Wolfcamp
Co./Parish: Jal
State: NM

PGS Job #: LNM5178818
MWD Operator: Nabil Meridji
Directional Driller: John Penny
Date of First Survey: July 14, 2018
Date of Last Survey:



Total Correction: 6.19 0 0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

MD	INC	AZM	T.V.D	V. SECT	+N/-S	+E/-W	DIST	ANGLE	DLS	TEMP(F°)	SHK/MB	DATE	TIME	FLOW
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
1	101.76	1.14	343.80	101.75	0.97	0.97	-0.28	1.01	343.80	1.12				GYRO SURVEY
2	196.18	0.92	331.93	196.16	2.54	2.54	-0.90	2.70	340.49	0.32				GYRO SURVEY
3	290.60	1.24	325.35	290.56	4.05	4.05	-1.84	4.45	335.61	0.36				GYRO SURVEY
4	385.02	1.29	325.40	384.96	5.76	5.76	-3.02	6.50	332.35	0.05				GYRO SURVEY
5	479.44	1.11	344.92	479.36	7.52	7.52	-3.86	8.45	332.84	0.47				GYRO SURVEY
6	573.86	1.28	344.67	573.76	9.42	9.42	-4.37	10.39	335.09	0.18				GYRO SURVEY
7	668.28	1.59	355.77	668.15	11.74	11.74	-4.75	12.67	337.98	0.44				GYRO SURVEY
8	762.70	1.90	0.74	762.52	14.61	14.61	-4.83	15.39	341.72	0.37				GYRO SURVEY
9	857.12	1.81	9.36	856.89	17.65	17.65	-4.56	18.23	345.50	0.31				GYRO SURVEY
10	951.54	2.27	18.42	951.26	20.89	20.89	-3.73	21.22	349.88	0.59				GYRO SURVEY
11	1,045.96	2.31	18.93	1045.60	24.46	24.46	-2.52	24.59	354.11	0.05				GYRO SURVEY
12	1,140.38	0.82	1.44	1139.98	26.94	26.94	-1.89	27.00	355.99	1.64				GYRO SURVEY
13	1,234.80	1.15	234.49	1234.40	27.06	27.06	-2.64	27.19	354.42	1.87				GYRO SURVEY
14	1,392.16	2.46	224.33	1391.67	23.73	23.73	-6.29	24.55	345.15	0.85				GYRO SURVEY
15	1,486.58	2.83	220.69	1485.99	20.51	20.51	-9.22	22.49	335.80	0.43				GYRO SURVEY
16	1,581.00	2.59	217.19	1580.31	17.05	17.05	-12.03	20.87	324.80	0.31				GYRO SURVEY
17	1,675.42	2.40	215.33	1674.64	13.74	13.74	-14.46	19.95	313.55	0.22				GYRO SURVEY
18	1,769.84	2.12	217.73	1768.99	10.75	10.75	-16.67	19.83	302.83	0.31				GYRO SURVEY
19	1,864.26	1.87	216.29	1863.35	8.13	8.13	-18.65	20.34	293.56	0.27				GYRO SURVEY
20	1,958.68	2.18	214.40	1957.71	5.40	5.40	-20.57	21.27	284.72	0.34				GYRO SURVEY
21	2,053.10	3.47	218.91	2052.01	1.70	1.70	-23.38	23.45	274.15	1.39				GYRO SURVEY
22	2,147.52	4.97	216.31	2146.17	-3.83	-3.83	-27.60	27.87	262.11	1.60				GYRO SURVEY
23	2,241.94	5.47	216.90	2240.20	-10.72	-10.72	-32.73	34.44	251.86	0.53				GYRO SURVEY
24	2,336.36	4.83	219.61	2334.24	-17.39	-17.39	-37.97	41.76	245.40	0.72				GYRO SURVEY
25	2,430.78	4.58	219.87	2428.34	-23.35	-23.35	-42.92	48.86	241.46	0.27				GYRO SURVEY
26	2,525.20	4.11	217.41	2522.49	-28.93	-28.93	-47.40	55.53	238.60	0.54				GYRO SURVEY

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27	2,619.62	3.71	220.63	2616.69	-33.93	-33.93	-51.44	61.62	236.59	0.48		GYRO SURVEY		
28	2,714.04	3.19	222.24	2710.94	-38.19	-38.19	-55.19	67.12	235.32	0.56		GYRO SURVEY		
29	2,808.46	4.48	217.27	2805.15	-43.07	-43.07	-59.19	73.20	233.96	1.41		GYRO SURVEY		
30	2,902.88	5.04	220.27	2899.24	-49.18	-49.18	-64.11	80.80	232.51	0.65		GYRO SURVEY		
31	2,997.30	4.51	223.64	2993.33	-55.03	-55.03	-69.35	88.53	231.57	0.63		GYRO SURVEY		
32	3,091.72	4.21	225.41	3087.48	-60.15	-60.15	-74.38	95.66	231.04	0.35		GYRO SURVEY		
33	3,186.14	4.83	227.44	3181.60	-65.27	-65.27	-79.78	103.08	230.71	0.68		GYRO SURVEY		
34	3,280.56	5.41	230.89	3275.65	-70.77	-70.77	-86.16	111.50	230.60	0.70		GYRO SURVEY		
35	3,374.98	5.10	230.91	3369.67	-76.23	-76.23	-92.88	120.15	230.62	0.33		GYRO SURVEY		
36	3,469.40	4.81	231.23	3463.74	-81.35	-81.35	-99.22	128.31	230.65	0.31		GYRO SURVEY		
37	3,563.82	4.71	232.38	3557.83	-86.20	-86.20	-105.38	136.14	230.72	0.15		GYRO SURVEY		
38	3,658.24	4.42	223.04	3651.95	-91.22	-91.22	-110.93	143.62	230.57	0.84		GYRO SURVEY		
39	3,752.66	4.31	211.45	3746.10	-96.90	-96.90	-115.26	150.58	229.95	0.94		GYRO SURVEY		
40	3,847.08	4.78	202.27	3840.23	-103.57	-103.57	-118.60	157.46	228.87	0.92		GYRO SURVEY		
41	3,941.50	4.75	202.33	3934.32	-110.82	-110.82	-121.58	164.51	227.65	0.03		GYRO SURVEY		
42	4,035.92	3.91	193.71	4028.47	-117.56	-117.56	-123.82	170.74	226.49	1.12		GYRO SURVEY		
43	4,130.34	3.29	210.45	4122.71	-123.03	-123.03	-125.96	176.07	225.68	1.29		GYRO SURVEY		
44	4,224.76	3.30	227.18	4216.97	-127.21	-127.21	-129.33	181.41	225.47	1.01		GYRO SURVEY		
45	4,319.18	4.21	239.33	4311.19	-130.83	-130.83	-134.30	187.49	225.75	1.28		GYRO SURVEY		
46	4,413.60	4.77	247.40	4405.32	-134.10	-134.10	-140.90	194.52	226.42	0.89		GYRO SURVEY		
47	4,508.02	5.22	263.64	4499.39	-136.09	-136.09	-148.80	201.64	227.55	1.57		GYRO SURVEY		
48	4,602.44	4.97	272.13	4593.43	-136.41	-136.41	-157.15	208.10	229.04	0.84		GYRO SURVEY		
49	4,696.86	4.45	257.34	4687.54	-137.06	-137.06	-164.81	214.36	230.25	1.39		GYRO SURVEY		
50	4,791.28	3.84	233.56	4781.72	-139.74	-139.74	-170.93	220.78	230.73	1.91		GYRO SURVEY		
51	4,885.70	3.67	213.23	4875.94	-144.15	-144.15	-175.13	226.82	230.54	1.41		GYRO SURVEY		
52	4,980.12	3.53	227.78	4970.18	-148.62	-148.62	-178.93	232.61	230.29	0.98		GYRO SURVEY		
53	5,074.54	3.26	228.78	5064.43	-152.35	-152.35	-183.11	238.20	230.24	0.29		GYRO SURVEY		

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54	5,168.96	3.16	227.92	5158.70	-155.86	-155.86	-187.06	243.49	230.20	0.12			GYRO SURVEY		
55	5,263.38	3.88	224.64	5252.94	-159.88	-159.88	-191.24	249.27	230.10	0.79			GYRO SURVEY		
56	5,357.80	4.10	219.00	5347.14	-164.78	-164.78	-195.61	255.76	229.89	0.48			GYRO SURVEY		
57	5,452.22	4.22	223.98	5441.31	-169.90	-169.90	-200.14	262.53	229.67	0.40			GYRO SURVEY		
58	5,546.64	4.47	221.90	5535.46	-175.14	-175.14	-205.01	269.64	229.49	0.31			GYRO SURVEY		
59	5,641.06	4.57	223.23	5629.58	-180.62	-180.62	-210.05	277.02	229.31	0.15			GYRO SURVEY		
60	5,735.48	4.63	214.85	5723.70	-186.48	-186.48	-214.80	284.46	229.04	0.71			GYRO SURVEY		
61	5,829.90	4.55	213.77	5817.82	-192.72	-192.72	-219.06	291.77	228.66	0.12			GYRO SURVEY		
62	5,924.32	4.80	219.89	5911.92	-198.86	-198.86	-223.67	299.29	228.36	0.59			GYRO SURVEY		
63	6,018.74	5.00	224.55	6006.00	-204.82	-204.82	-229.09	307.30	228.20	0.47			GYRO SURVEY		
64	6,113.16	4.71	226.77	6100.08	-210.41	-210.41	-234.80	315.28	228.14	0.37			GYRO SURVEY		
65	6,207.58	4.83	229.69	6194.17	-215.64	-215.64	-240.66	323.13	228.14	0.29			GYRO SURVEY		
66	6,302.00	4.79	229.45	6288.26	-220.78	-220.78	-246.69	331.05	228.17	0.05			GYRO SURVEY		
67	6,396.42	4.60	233.76	6382.36	-225.58	-225.58	-252.74	338.76	228.25	0.42			GYRO SURVEY		
68	6,490.84	4.52	242.56	6476.49	-229.53	-229.53	-259.09	346.14	228.46	0.75			GYRO SURVEY		
69	6,585.26	4.65	244.99	6570.60	-232.86	-232.86	-265.85	353.42	228.79	0.25			GYRO SURVEY		
70	6,679.68	4.71	245.06	6664.71	-236.11	-236.11	-272.84	360.82	229.13	0.06			GYRO SURVEY		
71	6,774.10	4.75	241.58	6758.81	-239.61	-239.61	-279.79	368.36	229.42	0.31			GYRO SURVEY		
72	6,868.52	4.60	243.42	6852.91	-243.16	-243.16	-286.61	375.86	229.69	0.22			GYRO SURVEY		
73	6,962.94	4.61	240.52	6947.03	-246.72	-246.72	-293.30	383.27	229.93	0.25			GYRO SURVEY		
74	7,057.36	4.29	239.79	7041.17	-250.36	-250.36	-299.65	390.48	230.12	0.34			GYRO SURVEY		
75	7,151.78	4.00	234.78	7135.34	-254.04	-254.04	-305.39	397.24	230.24	0.49			GYRO SURVEY		
76	7,246.20	3.71	231.50	7229.55	-257.84	-257.84	-310.47	403.57	230.29	0.39			GYRO SURVEY		
77	7,340.62	3.31	231.28	7323.79	-261.44	-261.44	-314.98	409.35	230.31	0.42			GYRO SURVEY		
78	7,435.04	3.15	231.58	7418.06	-264.76	-264.76	-319.14	414.67	230.32	0.17			GYRO SURVEY		
79	7,529.46	3.25	228.59	7512.33	-268.14	-268.14	-323.18	419.93	230.32	0.21			GYRO SURVEY		
80	7,623.88	2.93	223.89	7606.61	-271.65	-271.65	-326.86	425.01	230.27	0.43			GYRO SURVEY		

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81	7,718.30	2.92	218.38	7700.91	-275.27	-275.27	-330.02	429.75	230.17	0.30		GYRO SURVEY		
82	7,812.72	2.56	206.60	7795.22	-279.04	-279.04	-332.46	434.04	229.99	0.71		GYRO SURVEY		
83	7,907.14	2.58	198.94	7889.55	-282.93	-282.93	-334.09	437.80	229.74	0.36		GYRO SURVEY		
84	8,001.56	2.23	190.61	7983.89	-286.75	-286.75	-335.12	441.05	229.45	0.52		GYRO SURVEY		
85	8,095.98	1.87	176.32	8078.25	-290.09	-290.09	-335.36	443.42	229.14	0.66		GYRO SURVEY		
86	8,190.40	1.36	169.00	8172.63	-292.72	-292.72	-335.05	444.91	228.86	0.58		GYRO SURVEY		
87	8,284.82	1.04	160.97	8267.03	-294.63	-294.63	-334.55	445.80	228.63	0.38		GYRO SURVEY		
88	8,379.24	0.58	139.56	8361.44	-295.81	-295.81	-333.96	446.13	228.47	0.58		GYRO SURVEY		
89	8,473.66	0.52	100.36	8455.85	-296.25	-296.25	-333.24	445.88	228.36	0.40		GYRO SURVEY		
90	8,568.08	0.49	70.51	8550.27	-296.19	-296.19	-332.43	445.24	228.30	0.28		GYRO SURVEY		
91	8,662.50	0.50	74.83	8644.69	-295.94	-295.94	-331.65	444.49	228.26	0.04		GYRO SURVEY		
92	8,756.92	0.59	87.68	8739.10	-295.81	-295.81	-330.76	443.75	228.19	0.16		GYRO SURVEY		
93	8,851.34	0.57	92.47	8833.52	-295.81	-295.81	-329.81	443.03	228.11	0.06		GYRO SURVEY		
94	8,945.76	0.54	100.45	8927.93	-295.92	-295.92	-328.90	442.43	228.02	0.09		GYRO SURVEY		
95	9,040.18	0.69	118.09	9022.35	-296.26	-296.26	-327.97	441.97	227.91	0.25		GYRO SURVEY		
96	9,134.60	0.76	110.04	9116.76	-296.74	-296.74	-326.88	441.48	227.77	0.13		GYRO SURVEY		
97	9,229.02	0.92	112.78	9211.17	-297.25	-297.25	-325.60	440.88	227.61	0.17		GYRO SURVEY		
98	9,323.44	0.68	118.43	9305.58	-297.81	-297.81	-324.41	440.38	227.45	0.27		GYRO SURVEY		
99	9,417.86	0.83	119.25	9399.99	-298.41	-298.41	-323.32	439.98	227.29	0.16		GYRO SURVEY		
100	9,512.28	1.09	134.64	9494.40	-299.37	-299.37	-322.09	439.73	227.09	0.39		GYRO SURVEY		
101	9,606.70	1.38	142.53	9588.80	-300.91	-300.91	-320.76	439.81	226.83	0.36		GYRO SURVEY		
102	9,701.12	1.63	157.83	9683.19	-303.05	-303.05	-319.56	440.41	226.52	0.50		GYRO SURVEY		
103	9,795.54	1.89	172.98	9777.56	-305.84	-305.84	-318.86	441.83	226.19	0.56		GYRO SURVEY		
104	9,889.96	2.30	192.95	9871.92	-309.24	-309.24	-319.10	444.35	225.90	0.88		GYRO SURVEY		
105	9,984.38	2.32	182.23	9966.26	-312.99	-312.99	-319.59	447.33	225.60	0.46		GYRO SURVEY		
106	10,078.80	2.52	166.25	10060.60	-316.92	-316.92	-319.18	449.79	225.20	0.74		GYRO SURVEY		
107	10,173.22	2.60	161.24	10154.93	-320.96	-320.96	-317.99	451.82	224.73	0.25		GYRO SURVEY		

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108	10,267.64	1.30	188.79	10249.29	-324.05	-324.05	-317.47	453.65	224.41	1.66				GYRO SURVEY
109	10,362.06	0.75	254.30	10343.70	-325.28	-325.28	-318.23	455.05	224.37	1.27				GYRO SURVEY
110	10,456.48	1.92	323.11	10438.10	-324.18	-324.18	-319.77	455.35	224.61	1.90				GYRO SURVEY
111	10,550.90	1.80	316.78	10532.47	-321.83	-321.83	-321.73	455.07	224.99	0.25				GYRO SURVEY
112	10,645.32	1.06	299.29	10626.86	-320.32	-320.32	-323.51	455.26	225.28	0.90				GYRO SURVEY
113	10,739.74	1.74	317.84	10721.25	-318.83	-318.83	-325.23	455.45	225.57	0.86				GYRO SURVEY
114	10,834.16	1.54	326.24	10815.63	-316.72	-316.72	-326.90	455.16	225.91	0.33				GYRO SURVEY
115	10,928.58	2.05	305.64	10910.00	-314.68	-314.68	-328.98	455.24	226.27	0.86				GYRO SURVEY
116	11,023.00	2.30	282.91	11004.36	-313.27	-313.27	-332.19	456.61	226.68	0.94				GYRO SURVEY
117	11,117.42	2.50	298.51	11098.70	-311.87	-311.87	-335.85	458.31	227.12	0.72				GYRO SURVEY
118	11,211.84	1.39	275.50	11193.06	-310.77	-310.77	-338.80	459.74	227.47	1.41				GYRO SURVEY
119	11,306.26	1.41	242.80	11287.45	-311.20	-311.20	-340.98	461.64	227.61	0.83				GYRO SURVEY
120	11,400.68	1.77	239.62	11381.84	-312.47	-312.47	-343.27	464.19	227.69	0.39				GYRO SURVEY
121	11,495.10	1.83	222.08	11476.21	-314.32	-314.32	-345.54	467.12	227.71	0.58				GYRO SURVEY
122	11,590.00	1.01	240.57	11570.60	-315.86	-315.86	-347.28	469.43	227.71	0.98				GYRO SURVEY
123	11,683.94	0.32	240.06	11665.02	-316.40	-316.40	-348.24	470.51	227.74	0.73				GYRO SURVEY
124	11,744	0.50	214.50	11725.07	-313.18	-316.72	-348.56	470.97	227.74	0.42	138 °F	Green	09/09/18 23:10	303 (gpm)
125	11,858	0.40	189.10	11839.07	-313.98	-317.53	-348.91	471.76	227.70	0.19	138 °F	Green	09/09/18 16:59	303 (gpm)
126	11,952	3.80	7.20	11933.00	-311.21	-314.76	-348.57	469.65	227.92	4.47	138 °F	Green	09/09/18 20:00	303 (gpm)
127	11,999	10.90	11.30	11979.59	-305.31	-308.85	-347.50	464.91	228.37	15.14	142 °F	Green	09/09/18 21:42	303 (gpm)
128	12,046	18.50	9.10	12025.02	-293.60	-297.11	-345.45	455.64	229.30	16.21	142 °F	Green	09/10/18 00:36	303 (gpm)
129	12,093	25.20	10.20	12068.62	-276.40	-279.88	-342.49	442.31	230.74	14.28	142 °F	Green	09/10/18 02:25	303 (gpm)
130	12,141	30.20	10.60	12111.10	-254.50	-257.94	-338.46	425.55	232.69	10.42	142 °F	Green	09/10/18 04:03	303 (gpm)
131	12,188	35.70	10.60	12150.53	-229.43	-232.82	-333.76	406.94	235.10	11.70	144 °F	Green	09/10/18 05:32	303 (gpm)
132	12,236	40.10	11.40	12188.39	-200.56	-203.89	-328.12	386.31	238.14	9.22	144 °F	Green	09/10/18 06:37	303 (gpm)
133	12,283	42.40	10.30	12223.73	-170.19	-173.46	-322.30	366.01	241.71	5.13	145 °F	Green	09/10/18 07:35	303 (gpm)
134	12,330	44.00	8.60	12257.99	-138.51	-141.72	-317.02	347.26	245.91	4.21	145 °F	Green	09/10/18 08:36	303 (gpm)

MWD SURVEYS

Customer: TAPROCK
Well: Cosmo K #213H
Field/Block: Wolfcamp
Co./Parish: Jal
State: NM

PGS Job #: LNM5178818
MWD Operator: Nabil Meridji
Directional Driller: John Penny
Date of First Survey: July 14, 2018
Date of Last Survey:



Total Correction: 6.19 0 0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

	MD	INC	AZM	T.V.D	V. SECT	+N/-S	+E/-W	DIST	ANGLE	DLS	TEMP(F°)	SHK/VIB	DATE	TIME	FLOW
135	12,377	48.60	6.00	12290.45	-104.86	-108.03	-312.74	330.87	250.94	10.57	145 °F	Green	09/10/18	09:27	303 (gpm)
136	12,425	56.80	2.00	12319.52	-66.84	-69.98	-310.15	317.95	257.29	18.32	147 °F	Green	09/10/18	10:19	303 (gpm)
137	12,472	59.80	0.50	12344.22	-26.88	-30.01	-309.29	310.74	264.46	6.94	147 °F	Green	09/10/18	11:15	303 (gpm)
138	12,519	60.00	359.90	12367.79	13.78	10.65	-309.14	309.33	271.97	1.18	149 °F	Green	09/10/18	12:53	303 (gpm)
139	12,566	57.80	358.60	12392.07	54.02	50.89	-309.67	313.82	279.33	5.25	149 °F	Green	09/10/18	13:33	303 (gpm)
140	12,614	57.40	358.60	12417.79	94.55	91.41	-310.66	323.82	286.40	0.83	151 °F	Green	09/10/18	14:19	303 (gpm)
141	12,709	59.10	359.30	12467.78	175.32	172.17	-312.13	356.47	298.88	1.90	151 °F	Green	09/10/18	15:51	303 (gpm)
142	12,756	66.40	0.60	12489.28	217.08	213.93	-312.15	378.42	304.42	15.72	151 °F	Green	09/10/18	16:45	303 (gpm)
143	12,803	71.30	358.70	12506.24	260.89	257.74	-312.43	405.03	309.52	11.09	151 °F	Green	09/10/18	17:44	303 (gpm)
144	12,850	76.30	357.80	12519.35	306.00	302.84	-313.81	436.11	313.98	10.80	151 °F	Green	09/10/18	18:35	303 (gpm)
145	12,897	85.00	358.00	12526.97	352.32	349.14	-315.51	470.58	317.90	18.52	154 °F	Green	09/10/18	20:04	303 (gpm)
146	12,944	89.40	357.70	12529.27	399.23	396.04	-317.27	507.45	321.30	9.38	154 °F	Green	09/10/18	21:51	303 (gpm)
147	12,992	92.40	358.50	12528.52	447.21	444.00	-318.86	546.64	324.32	6.47	154 °F	Green	09/10/18	22:29	303 (gpm)
148	13,087	88.80	358.00	12527.52	542.17	538.94	-321.76	627.68	329.16	3.83	154 °F	Green	09/11/18	00:37	303 (gpm)
149	13,208	89.80	356.20	12529.00	663.05	659.77	-327.88	736.75	333.57	1.70	156 °F	Green	09/11/18	23:37	303 (gpm)
150	13,302	91.30	354.40	12528.10	756.80	753.44	-335.59	824.80	335.99	2.49	162 °F	Green	09/12/18	00:36	303 (gpm)
151	13,396	93.10	357.20	12524.49	850.53	847.11	-342.47	913.71	337.99	3.54	163 °F	Green	09/12/18	02:32	303 (gpm)
152	13,490	93.10	359.50	12519.40	944.37	940.92	-345.17	1,002.24	339.85	2.44	163 °F	Green	09/12/18	04:22	303 (gpm)
153	13,585	90.80	2.30	12516.17	1039.27	1,035.84	-343.68	1,091.37	341.64	3.81	163 °F	Green	09/12/18	06:19	303 (gpm)
154	13,678	90.90	0.50	12514.79	1132.20	1,128.80	-341.40	1,179.30	343.17	1.94	163 °F	Green	09/12/18	07:16	303 (gpm)
155	13,773	88.90	358.50	12514.96	1227.19	1,223.78	-342.23	1,270.74	344.38	2.98	169 °F	Green	09/12/18	08:18	303 (gpm)
156	13,868	91.40	357.90	12514.71	1322.16	1,318.73	-345.22	1,363.17	345.33	2.71	169 °F	Green	09/12/18	09:27	303 (gpm)
157	13,962	89.10	354.20	12514.30	1415.97	1,412.48	-351.69	1,455.61	346.02	4.63	172 °F	Green	09/12/18	10:38	303 (gpm)
158	14,056	93.10	355.20	12512.49	1509.61	1,506.04	-360.37	1,548.56	346.54	4.39	172 °F	Green	09/12/18	12:31	306 (gpm)
159	14,151	95.90	356.30	12505.04	1604.12	1,600.48	-367.39	1,642.11	347.07	3.17	172 °F	Green	09/12/18	14:14	306 (gpm)
160	14,245	96.50	359.10	12494.89	1697.51	1,693.84	-371.14	1,734.03	347.64	3.03	172 °F	Green	09/12/18	17:19	306 (gpm)
161	14,339	96.10	5.60	12484.56	1790.77	1,787.15	-367.31	1,824.50	348.39	6.89	174 °F	Green	09/12/18	20:04	306 (gpm)

MWD SURVEYS

Customer: TAPROCK
Well: Cosmo K #213H
Field/Block: Wolfcamp
Co./Parish: Jal
State: NM

PGS Job #: LNM5178818
MWD Operator: Nabil Meridji
Directional Driller: John Penny
Date of First Survey: July 14, 2018
Date of Last Survey:



Total Correction: 6.19 0 0

Vertical Section Plane: 359.42

Nominal Dip Angle: 59.85

Magnetic Field Strength: 47963.6

MD	INC	AZM	T.V.D	V. SECT	+N / -S	+E / -W	DIST	ANGLE	DLS	TEMP(F°)	SHK/VIB	DATE	TIME	FLOW	
162	14,433	90.60	10.90	12479.07	1883.43	1,879.94	-353.84	1,912.95	349.34	8.12	174 °F	Green	09/13/18	00:00	306 (gpm)
163	14,528	89.50	11.20	12478.98	1976.48	1,973.18	-335.63	2,001.52	350.35	1.20	174 °F	Green	09/13/18	01:51	306 (gpm)
164	14,622	84.10	9.90	12484.23	2068.53	2,065.41	-318.45	2,089.82	351.23	5.91	174 °F	Green	09/13/18	04:57	306 (gpm)
165	14,717	79.00	2.80	12498.20	2161.71	2,158.71	-308.03	2,180.57	351.88	9.13	172 °F	Green	09/13/18	07:38	306 (gpm)
166	14,812	83.90	356.70	12512.33	2255.58	2,252.57	-308.48	2,273.60	352.20	8.18	172 °F	Green	09/13/18	11:32	306 (gpm)
167	14,906	87.60	354.90	12519.30	2349.12	2,346.04	-315.34	2,367.14	352.34	4.37	172 °F	Green	09/13/18	13:14	306 (gpm)
168	15,000	86.90	353.50	12523.81	2442.62	2,439.45	-324.83	2,460.98	352.42	1.66	172 °F	Green	09/13/18	15:29	306 (gpm)
169	15,094	92.50	353.50	12524.30	2536.08	2,532.81	-335.47	2,554.93	352.46	5.96	172 °F	Green	09/13/18	16:55	306 (gpm)
170	15,189	92.80	356.40	12519.91	2630.67	2,627.33	-343.82	2,649.73	352.54	3.07	174 °F	Green	09/13/18	18:54	306 (gpm)
171	15,272	94.00	357.30	12514.99	2713.44	2,710.06	-348.37	2,732.36	352.67	1.81	174 °F	Green	09/13/18	23:32	350 (gpm)
172	15,377	91.90	357.50	12509.58	2818.23	2,814.80	-353.13	2,836.87	352.85	2.01	176 °F	Green	09/15/18	21:03	288 (gpm)
173	15,471	91.90	357.20	12506.47	2912.12	2,908.65	-357.47	2,930.53	352.99	0.32	181 °F	Green	09/15/18	22:07	288 (gpm)
174	15,565	92.10	359.70	12503.18	3006.04	3,002.55	-360.01	3,024.06	353.16	2.67	183 °F	Green	09/15/18	23:27	288 (gpm)
175	15,659	91.70	2.20	12500.07	3099.95	3,096.48	-358.46	3,117.16	353.40	2.69	183 °F	Green	09/16/18	00:46	288 (gpm)
176	15,754	89.70	2.30	12498.91	3194.82	3,191.39	-354.73	3,211.05	353.66	2.11	183 °F	Green	09/16/18	03:00	288 (gpm)
177	15,848	89.40	2.90	12499.65	3288.67	3,285.29	-350.46	3,303.93	353.91	0.71	183 °F	Green	09/16/18	05:51	288 (gpm)
178	15,937	90.30	4.40	12499.88	3377.43	3,374.11	-344.80	3,391.68	354.17	1.97	192 °F	Green	09/18/18	08:14	285 (gpm)
179	16,031	90.60	4.20	12499.14	3471.08	3,467.84	-337.75	3,484.25	354.44	0.38	196 °F	Green	09/18/18	09:48	285 (gpm)
180	16,125	90.70	3.90	12498.07	3564.77	3,561.60	-331.11	3,576.96	354.69	0.34	196 °F	Green	09/18/18	11:24	285 (gpm)
181	16,219	89.50	3.90	12497.91	3658.48	3,655.38	-324.72	3,669.78	354.92	1.28	196 °F	Green	09/18/18	13:02	285 (gpm)
182	16,313	89.50	2.20	12498.73	3752.29	3,749.24	-319.72	3,762.85	355.13	1.81	198 °F	Green	09/18/18	14:41	285 (gpm)
183	16,408	89.80	0.40	12499.31	3847.23	3,844.21	-317.56	3,857.30	355.28	1.92	198 °F	Green	09/18/18	16:32	285 (gpm)
184	16,502	89.70	359.50	12499.72	3941.22	3,938.21	-317.64	3,951.00	355.39	0.96	198 °F	Green	09/18/18	18:09	285 (gpm)
185	16,579	92.80	0.60	12498.04	4018.19	4,015.18	-317.58	4,027.72	355.48	4.27	198 °F	Green	09/18/18	21:33	285 (gpm)
186	16,690	93.00	0.60	12492.43	4129.02	4,126.03	-316.42	4,138.15	355.61	0.18	189 °F	Green	09/19/18	22:27	292 (gpm)
187	16,784	92.50	0.20	12487.92	4222.90	4,219.92	-315.76	4,231.72	355.72	0.68	189 °F	Green	09/20/18	00:38	292 (gpm)
188	16,879	91.00	358.60	12485.01	4317.85	4,314.87	-316.76	4,326.48	355.80	2.31	189 °F	Green	09/20/18	03:14	292 (gpm)

MWD SURVEYS

Customer: TAPROCK
Well: Cosmo K #213H
Field/Block: Wolfcamp
Co./Parish: Jal
State: NM

PGS Job #: LNM5178818
MWD Operator: Nabil Meridji
Directional Driller: John Penny
Date of First Survey: July 14, 2018
Date of Last Survey:



Total Correction: 6.19 0 0

Vertical Section Plane: 359.42 Nominal Dip Angle: 59.85 Magnetic Field Strength: 47963.6

	MD	INC	AZM	T.V.D	V. SECT	+N/-S	+E/-W	DIST	ANGLE	DLS	TEMP(F°)	SHK/VIB	DATE	TIME	FLOW
189	16,973	90.60	358.70	12483.70	4411.83	4,408.83	-318.97	4,420.35	355.86	0.44	192 °F	Green	09/20/18	05:36	292 (gpm)
190	17,068	90.20	358.50	12483.04	4506.82	4,503.80	-321.29	4,515.24	355.92	0.47	194 °F	Green	09/20/18	08:08	292 (gpm)
191	17,163	91.90	359.70	12481.30	4601.80	4,598.77	-322.78	4,610.08	355.99	2.19	196 °F	Green	09/20/18	11:04	292 (gpm)
192	17,257	89.80	358.70	12479.90	4695.78	4,692.74	-324.10	4,703.92	356.05	2.47	198 °F	Green	09/20/18	13:35	292 (gpm)
193	17,351	94.10	0.70	12476.71	4789.70	4,786.66	-324.59	4,797.65	356.12	5.04	198 °F	Green	09/20/18	16:09	292 (gpm)
194	17,445	92.40	0.10	12471.38	4883.53	4,880.50	-323.93	4,891.24	356.20	1.92	198 °F	Green	09/20/18	20:09	305 (gpm)
195	17,540	90.50	359.70	12468.97	4978.49	4,975.47	-324.10	4,986.01	356.27	2.04	198 °F	Green	09/22/18	00:53	305 (gpm)
196	17,634	90.30	1.40	12468.32	5072.47	5,069.45	-323.20	5,079.75	356.35	1.82	199 °F	Green	09/22/18	05:23	305 (gpm)
197	17,729	91.80	0.60	12466.58	5167.41	5,164.42	-321.54	5,174.42	356.44	1.79	180 °F	Green	09/22/18	6:00	305 (gpm)
198	17,823	91.50	358.30	12463.87	5261.37	5,258.37	-322.44	5,268.25	356.49	2.47	201 °F	Green	09/22/18	7:21	305 (gpm)
199	17,917	91.70	356.90	12461.24	5355.28	5,352.25	-326.38	5,362.19	356.51	1.50	203 °F	Green	09/22/18	8:47	305 (gpm)
200	18,012	92.00	355.50	12458.18	5450.08	5,446.99	-332.67	5,457.14	356.51	1.51	203 °F	Green	09/22/18	10:36	305 (gpm)
201	18,106	90.40	354.20	12456.21	5543.75	5,540.58	-341.11	5,551.07	356.48	2.19	203 °F	Green	09/22/18	12:35	305 (gpm)
202	18,201	91.10	353.00	12454.96	5638.25	5,634.98	-351.69	5,645.95	356.43	1.46	203 °F	Green	09/22/18	14:26	305 (gpm)
203	18,295	88.20	351.00	12455.54	5731.45	5,728.05	-364.77	5,739.65	356.36	3.75	181 °F	Green	09/22/18	16:25	305 (gpm)
204	18,390	89.80	350.40	12457.20	5825.33	5,821.78	-380.12	5,834.18	356.26	1.80	181 °F	Green	09/22/18	18:31	305 (gpm)
205	18,484	88.20	349.60	12458.84	5918.05	5,914.34	-396.44	5,927.61	356.17	1.90	181 °F	Green	09/22/18	20:08	305 (gpm)
206	18,578	87.80	349.00	12462.12	6010.53	6,006.65	-413.88	6,020.89	356.06	0.77	181 °F	Green	09/22/18	21:43	305 (gpm)
207	18,673	89.90	350.10	12464.02	6104.10	6,100.05	-431.11	6,115.26	355.96	2.50	181 °F	Green	09/22/18	23:27	305 (gpm)
208	18,767	90.90	350.40	12463.37	6196.89	6,192.68	-447.03	6,208.80	355.87	1.11	181 °F	Green	09/23/18	1:54	305 (gpm)
209	18,778	90.20	349.90	12463.26	6207.75	6,203.52	-448.91	6,219.74	355.86	7.82	181 °F	Green	09/23/18	2:52	305 (gpm)
PTB	18,823	90.20	349.90	12463.11	6252.13	6,247.82	-456.80	6,264.50	355.82	0.00	181 °F	Green	09/23/18	2:52	305 (gpm)