



30-025-44690

Kaiser-Francis Oil Company

Lea County, NM (NAD 83)

~~Well Lake Unit North~~

~~2011~~

OH / 63506

Design: Surveys (Cactus 171)

Standard Survey Report

28 September, 2018

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Kaiser-Francis Oil Company



Survey Report

Company: Kaiser-Francis Oil Company
Project: Lea County, NM (NAD 83)
Site: Bell Lake Unit North
Well: 201H
Wellbore: OH / 63506
Design: Surveys (Cactus 171)

Local Co-ordinate Reference: Well 201H
TVD Reference: RKB @ 3540.00usft (Cactus 171)
MD Reference: RKB @ 3540.00usft (Cactus 171)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

Project	Lea County, NM (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Bell Lake Unit North		
Site Position:		Northing:	486,616.80 usft
From:	Map	Easting:	788,354.75 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 20' 6.88640 N
		Longitude:	103° 32' 0.81690 W
		Grid Convergence:	0.43 °

Well	201H		
Well Position	+N/-S	0.00 usft	Northing: 486,546.90 usft
	+E/-W	0.00 usft	Easting: 788,355.10 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 20' 6.19472 N
		Longitude:	103° 32' 0.81895 W
		Ground Level:	3,517.00 usft

Wellbore	OH / 63506		
Magnetics	Model Name	Sample Date	Declination
	MVHD	9/30/2018	(°) 6.69
			Dip Angle (°) 60.05
			Field Strength (nT) 48,054.40683159

Design	Surveys (Cactus 171)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction (°) 179.59

Survey Program	Date 9/28/2018		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
0.00	18,902.00	Phoenix MWD Surveys (OH / 63506)	MWD+HDGM
			Description
			OWSG Rev.2 MWD + HDGM

Survey									
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Vertical Section	Dogleg Rate	Build Rate	Turn Rate
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
137.00	0.80	194.11	137.00	-0.93	-0.23	0.93	0.58	0.58	0.00
First Phoenix MWD Survey									
228.00	0.90	196.10	227.99	-2.23	-0.59	2.23	0.11	0.11	2.19
320.00	0.48	193.02	319.98	-3.30	-0.87	3.29	0.46	-0.46	-3.35
423.00	0.74	205.74	422.97	-4.32	-1.26	4.31	0.28	0.25	12.35
517.00	0.67	213.07	516.97	-5.33	-1.82	5.31	0.12	-0.07	7.80
610.00	0.98	226.86	609.96	-6.33	-2.70	6.31	0.39	0.33	14.83
704.00	1.42	228.45	703.94	-7.65	-4.16	7.62	0.47	0.47	1.69
798.00	1.45	227.67	797.91	-9.22	-5.91	9.18	0.04	0.03	-0.83
892.00	1.05	240.08	891.88	-10.45	-7.53	10.40	0.51	-0.43	13.20



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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
985.00	1.08	257.47	984.87	-11.07	-9.13	11.00	0.35	0.03	18.70
1,079.00	1.04	257.11	1,078.85	-11.45	-10.83	11.37	0.04	-0.04	-0.38
1,159.00	1.26	260.03	1,158.84	-11.76	-12.40	11.68	0.28	0.28	3.65
1,266.00	0.62	260.18	1,265.82	-12.07	-14.13	11.97	0.60	-0.60	0.14
1,360.00	0.59	281.16	1,359.82	-12.06	-15.10	11.95	0.24	-0.03	22.32
1,455.00	0.47	278.77	1,454.81	-11.91	-15.97	11.79	0.13	-0.13	-2.52
1,549.00	0.19	261.26	1,548.81	-11.87	-16.50	11.75	0.31	-0.30	-18.63
1,642.00	0.29	233.60	1,641.81	-12.03	-16.85	11.91	0.16	0.11	-29.74
1,736.00	0.15	141.45	1,735.81	-12.27	-16.96	12.15	0.35	-0.15	-98.03
1,831.00	0.06	38.44	1,830.81	-12.33	-16.85	12.21	0.18	-0.09	-108.43
1,926.00	0.35	81.17	1,925.81	-12.25	-16.53	12.13	0.32	0.31	44.98
2,020.00	0.40	58.59	2,019.81	-12.03	-15.97	11.92	0.16	0.05	-24.02
2,114.00	0.27	25.38	2,113.80	-11.66	-15.60	11.55	0.24	-0.14	-35.33
2,209.00	0.47	18.24	2,208.80	-11.09	-15.38	10.98	0.22	0.21	-7.52
2,304.00	0.87	25.54	2,303.80	-10.07	-14.95	9.96	0.43	0.42	7.68
2,399.00	1.07	34.15	2,398.78	-8.68	-14.14	8.58	0.26	0.21	9.06
2,493.00	0.98	44.18	2,492.77	-7.38	-13.08	7.29	0.21	-0.10	10.67
2,587.00	1.17	97.70	2,586.75	-6.93	-11.57	6.85	1.05	0.20	56.94
2,682.00	2.62	130.18	2,681.70	-8.46	-8.95	8.40	1.84	1.53	34.19
2,776.00	4.13	142.91	2,775.54	-12.55	-5.27	12.51	1.78	1.61	13.54
2,871.00	4.13	144.67	2,870.29	-18.07	-1.23	18.06	0.13	0.00	1.85
2,965.00	4.06	136.67	2,964.05	-23.25	3.01	23.27	0.61	-0.07	-8.51
3,060.00	5.09	144.30	3,058.75	-29.12	7.78	29.17	1.26	1.08	8.03
3,155.00	5.25	142.24	3,153.36	-35.98	12.90	36.07	0.26	0.17	-2.17
3,250.00	4.86	160.18	3,248.00	-43.20	16.93	43.32	1.71	-0.41	18.88
3,344.00	4.53	162.40	3,341.68	-50.48	19.40	50.62	0.40	-0.35	2.36
3,439.00	3.97	154.54	3,436.42	-57.03	21.95	57.19	0.85	-0.59	-8.27
3,534.00	4.45	166.66	3,531.17	-63.59	24.21	63.76	1.06	0.51	12.76
3,628.00	4.33	165.41	3,624.89	-70.57	25.95	70.75	0.16	-0.13	-1.33
3,723.00	4.19	164.73	3,719.63	-77.39	27.76	77.58	0.16	-0.15	-0.72
3,818.00	5.77	168.58	3,814.27	-85.42	29.62	85.63	1.70	1.66	4.05
3,912.00	6.15	176.89	3,907.76	-95.08	30.83	95.29	1.00	0.40	8.84
4,007.00	6.00	183.91	4,002.23	-105.11	30.77	105.33	0.80	-0.16	7.39
4,101.00	4.79	182.11	4,095.81	-113.93	30.29	114.15	1.30	-1.29	-1.91
4,195.00	5.32	191.09	4,189.44	-122.13	29.31	122.34	1.01	0.56	9.55
4,290.00	3.89	188.27	4,284.14	-129.64	28.00	129.84	1.52	-1.51	-2.97
4,384.00	2.65	184.41	4,377.98	-134.97	27.37	135.16	1.34	-1.32	-4.11
4,478.00	1.93	183.99	4,471.91	-138.71	27.09	138.90	0.77	-0.77	-0.45
4,573.00	0.13	137.03	4,566.89	-140.39	27.06	140.58	1.94	-1.89	-49.43
4,667.00	0.14	306.87	4,660.89	-140.40	27.04	140.59	0.29	0.01	180.68
4,762.00	0.71	223.79	4,755.88	-140.75	26.54	140.94	0.74	0.60	-87.45
4,857.00	0.57	220.95	4,850.88	-141.53	25.82	141.71	0.15	-0.15	-2.99
4,952.00	0.22	212.38	4,945.88	-142.04	25.41	142.22	0.37	-0.37	-9.02



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5,046.00	0.23	202.77	5,039.87	-142.37	25.24	142.55	0.04	0.01	-10.22
5,140.00	0.24	193.52	5,133.87	-142.74	25.12	142.91	0.04	0.01	-9.84
5,235.00	0.04	63.44	5,228.87	-142.91	25.11	143.09	0.28	-0.21	-136.93
5,300.00	0.11	190.52	5,293.87	-142.97	25.12	143.14	0.21	0.11	195.51
5,427.00	0.28	283.16	5,420.87	-143.01	24.79	143.19	0.24	0.13	72.94
5,522.00	0.14	271.94	5,515.87	-142.96	24.45	143.13	0.15	-0.15	-11.81
5,617.00	0.21	255.19	5,610.87	-143.00	24.17	143.17	0.09	0.07	-17.63
5,711.00	0.14	203.23	5,704.87	-143.15	23.95	143.32	0.18	-0.07	-55.28
5,806.00	0.28	205.20	5,799.87	-143.46	23.81	143.63	0.15	0.15	2.07
5,901.00	0.31	205.72	5,894.87	-143.91	23.60	144.07	0.03	0.03	0.55
5,995.00	0.15	161.78	5,988.87	-144.25	23.53	144.42	0.24	-0.17	-46.74
6,090.00	0.16	131.45	6,083.87	-144.46	23.67	144.62	0.09	0.01	-31.93
6,184.00	0.14	97.02	6,177.87	-144.56	23.88	144.73	0.10	-0.02	-36.63
6,279.00	0.21	93.93	6,272.87	-144.59	24.17	144.75	0.07	0.07	-3.25
6,372.00	0.19	106.04	6,365.87	-144.64	24.48	144.81	0.05	-0.02	13.02
6,466.00	0.11	136.21	6,459.87	-144.75	24.70	144.92	0.12	-0.09	32.10
6,561.00	0.10	204.70	6,554.87	-144.89	24.73	145.06	0.12	-0.01	72.09
6,656.00	0.12	206.48	6,649.87	-145.05	24.65	145.23	0.02	0.02	1.87
6,750.00	0.11	145.60	6,743.87	-145.22	24.65	145.39	0.12	-0.01	-64.77
6,845.00	0.13	107.42	6,838.87	-145.32	24.81	145.50	0.08	0.02	-40.19
6,939.00	0.11	132.51	6,932.87	-145.42	24.98	145.59	0.06	-0.02	26.69
7,034.00	0.15	155.89	7,027.87	-145.59	25.09	145.77	0.07	0.04	24.61
7,128.00	0.06	211.76	7,121.87	-145.75	25.12	145.92	0.13	-0.10	59.44
7,223.00	0.06	265.17	7,216.87	-145.79	25.04	145.97	0.06	0.00	56.22
7,318.00	0.09	121.42	7,311.87	-145.84	25.06	146.01	0.15	0.03	-151.32
7,413.00	0.34	136.14	7,406.86	-146.08	25.32	146.25	0.27	0.26	15.49
7,507.00	0.58	130.45	7,500.86	-146.59	25.87	146.77	0.26	0.26	-6.05
7,602.00	0.69	108.16	7,595.86	-147.08	26.78	147.27	0.28	0.12	-23.46
7,697.00	0.86	106.05	7,690.85	-147.45	28.01	147.65	0.18	0.18	-2.22
7,792.00	0.91	115.00	7,785.84	-147.97	29.38	148.18	0.15	0.05	9.42
7,887.00	0.95	124.43	7,880.82	-148.73	30.71	148.95	0.17	0.04	9.93
7,981.00	1.07	117.60	7,974.81	-149.58	32.13	149.81	0.18	0.13	-7.27
8,075.00	1.23	117.13	8,068.79	-150.45	33.81	150.68	0.17	0.17	-0.50
8,169.00	1.18	112.69	8,162.77	-151.28	35.60	151.53	0.11	-0.05	-4.72
8,263.00	1.45	104.61	8,256.74	-151.95	37.64	152.22	0.35	0.29	-8.60
8,358.00	1.60	102.68	8,351.71	-152.55	40.10	152.83	0.17	0.16	-2.03
8,452.00	1.76	105.14	8,445.67	-153.21	42.77	153.51	0.19	0.17	2.62
8,547.00	1.69	102.20	8,540.63	-153.89	45.55	154.21	0.12	-0.07	-3.09
8,642.00	1.57	102.79	8,635.59	-154.47	48.19	154.81	0.13	-0.13	0.62
8,737.00	1.72	98.82	8,730.55	-154.98	50.87	155.34	0.20	0.16	-4.18
8,831.00	2.21	100.33	8,824.49	-155.52	54.04	155.90	0.52	0.52	1.61
8,925.00	1.66	95.65	8,918.44	-155.98	57.18	156.39	0.61	-0.59	-4.98
9,019.00	2.08	91.79	9,012.39	-156.17	60.24	156.60	0.47	0.45	-4.11

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9,113.00	2.92	98.41	9,106.30	-156.57	64.32	157.03	0.94	0.89	7.04
9,207.00	2.91	105.64	9,200.18	-157.57	68.98	158.05	0.39	-0.01	7.69
9,301.00	2.37	98.62	9,294.08	-158.50	73.20	159.02	0.67	-0.57	-7.47
9,395.00	1.18	71.67	9,388.03	-158.49	76.04	159.03	1.51	-1.27	-28.67
9,490.00	1.55	70.29	9,483.01	-157.75	78.18	158.30	0.39	0.39	-1.45
9,585.00	1.90	82.32	9,577.96	-157.10	80.95	157.68	0.53	0.37	12.66
9,680.00	3.11	73.78	9,672.87	-156.17	84.99	156.78	1.33	1.27	-8.99
9,774.00	4.50	74.66	9,766.66	-154.48	90.99	155.13	1.48	1.48	0.94
9,869.00	4.76	86.87	9,861.35	-153.28	98.52	153.98	1.07	0.27	12.85
9,964.00	1.31	115.84	9,956.21	-153.54	103.44	154.28	3.86	-3.63	30.49
10,058.00	1.49	239.10	10,050.20	-154.64	103.35	155.37	2.62	0.19	131.13
10,153.00	1.02	217.61	10,145.17	-155.94	101.78	156.67	0.69	-0.49	-22.62
10,247.00	1.36	152.35	10,239.16	-157.59	101.78	158.32	1.40	0.36	-69.43
10,342.00	1.67	119.65	10,334.13	-159.28	103.51	160.01	0.95	0.33	-34.42
10,436.00	6.19	161.51	10,427.89	-164.76	106.31	165.52	5.39	4.81	44.53
10,484.00	11.92	165.29	10,475.28	-172.02	108.39	172.79	12.00	11.94	7.88
10,530.00	17.05	166.35	10,519.80	-183.17	111.19	183.96	11.17	11.15	2.30
10,578.00	19.65	173.55	10,565.36	-198.04	113.76	198.84	7.18	5.42	15.00
10,625.00	23.21	172.55	10,609.10	-215.08	115.85	215.90	7.61	7.57	-2.13
10,673.00	28.02	173.53	10,652.37	-235.67	118.35	236.51	10.06	10.02	2.04
10,719.00	32.88	175.93	10,692.02	-258.88	120.45	259.73	10.89	10.57	5.22
10,767.00	37.67	179.95	10,731.20	-286.56	121.39	287.42	11.08	9.98	8.38
10,813.00	41.73	181.97	10,766.59	-315.93	120.88	316.79	9.26	8.83	4.39
10,861.00	45.07	184.36	10,801.46	-348.85	119.03	349.69	7.75	6.96	4.98
10,908.00	50.15	182.66	10,833.14	-383.48	116.93	384.31	11.13	10.81	-3.62
10,956.00	56.28	181.21	10,861.87	-421.88	115.65	422.70	13.00	12.77	-3.02
11,002.00	61.08	179.07	10,885.77	-461.17	115.58	461.98	11.17	10.43	-4.65
11,050.00	64.85	177.93	10,907.59	-503.90	116.70	504.72	8.13	7.85	-2.38
11,096.00	69.48	177.25	10,925.43	-546.24	118.49	547.08	10.16	10.07	-1.48
11,142.00	73.41	177.88	10,940.07	-589.80	120.34	590.65	8.64	8.54	1.37
11,189.00	77.19	179.36	10,951.99	-635.24	121.43	636.09	8.60	8.04	3.15
11,237.00	80.51	179.82	10,961.27	-682.33	121.76	683.18	6.98	6.92	0.96
11,283.00	83.59	182.04	10,967.64	-727.87	121.02	728.72	8.23	6.70	4.83
11,378.00	87.10	182.92	10,975.35	-822.45	116.92	823.27	3.81	3.69	0.93
11,472.00	88.08	182.77	10,979.30	-916.25	112.26	917.03	1.05	1.04	-0.16
11,567.00	89.10	182.61	10,981.64	-1,011.12	107.80	1,011.86	1.09	1.07	-0.17
11,661.00	88.47	182.61	10,983.63	-1,105.00	103.52	1,105.71	0.67	-0.67	0.00
11,756.00	89.55	182.72	10,985.27	-1,199.88	99.11	1,200.56	1.14	1.14	0.12
11,851.00	89.41	183.09	10,986.13	-1,294.76	94.29	1,295.40	0.42	-0.15	0.39
11,945.00	89.75	182.43	10,986.82	-1,388.64	89.77	1,389.25	0.79	0.36	-0.70
12,039.00	91.33	183.34	10,985.94	-1,482.52	85.04	1,483.09	1.94	1.68	0.97
12,134.00	89.78	182.24	10,985.02	-1,577.39	80.41	1,577.93	2.00	-1.63	-1.16
12,228.00	89.36	182.56	10,985.72	-1,671.31	76.48	1,671.81	0.56	-0.45	0.34
12,322.00	88.82	180.79	10,987.21	-1,765.25	73.73	1,765.74	1.97	-0.57	-1.88



Survey Report

Company: Kaiser-Francis Oil Company
Project: Lea County, NM (NAD 83)
Site: Bell Lake Unit North
Well: 201H
Wellbore: OH / 63506
Design: Surveys (Cactus 171)

Local Co-ordinate Reference: Well 201H
TVD Reference: RKB @ 3540.00usft (Cactus 171)
MD Reference: RKB @ 3540.00usft (Cactus 171)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,417.00	88.24	179.03	10,989.65	-1,860.22	73.88	1,860.70	1.95	-0.61	-1.85
12,511.00	88.44	179.17	10,992.37	-1,954.17	75.35	1,954.66	0.26	0.21	0.15
12,606.00	88.01	179.74	10,995.32	-2,049.12	76.26	2,049.61	0.75	-0.45	0.60
12,701.00	88.02	178.12	10,998.61	-2,144.04	78.03	2,144.54	1.70	0.01	-1.71
12,795.00	87.91	178.72	11,001.95	-2,237.94	80.62	2,238.46	0.65	-0.12	0.64
12,889.00	87.50	178.29	11,005.71	-2,331.84	83.07	2,332.37	0.63	-0.44	-0.46
12,984.00	87.40	177.71	11,009.94	-2,426.68	86.38	2,427.24	0.62	-0.11	-0.61
13,078.00	87.33	177.85	11,014.26	-2,520.51	90.02	2,521.09	0.17	-0.07	0.15
13,173.00	87.40	178.16	11,018.63	-2,615.36	93.32	2,615.96	0.33	0.07	0.33
13,268.00	88.65	178.03	11,021.90	-2,710.24	96.48	2,710.87	1.32	1.32	-0.14
13,363.00	88.70	177.69	11,024.10	-2,805.15	100.03	2,805.80	0.36	0.05	-0.36
13,457.00	88.65	177.68	11,026.27	-2,899.05	103.82	2,899.72	0.05	-0.05	-0.01
13,552.00	88.87	178.48	11,028.33	-2,993.97	107.01	2,994.66	0.87	0.23	0.84
13,646.00	87.87	178.74	11,031.00	-3,087.91	109.28	3,088.61	1.10	-1.06	0.28
13,741.00	88.77	180.78	11,033.79	-3,182.86	109.68	3,183.56	2.35	0.95	2.15
13,836.00	88.78	180.98	11,035.82	-3,277.83	108.22	3,278.52	0.21	0.01	0.21
13,931.00	88.42	181.01	11,038.14	-3,372.78	106.57	3,373.46	0.38	-0.38	0.03
14,025.00	88.25	179.07	11,040.87	-3,466.74	106.51	3,467.41	2.07	-0.18	-2.06
14,120.00	88.45	179.29	11,043.60	-3,561.69	107.87	3,562.37	0.31	0.21	0.23
14,215.00	88.71	179.41	11,045.96	-3,656.66	108.94	3,657.34	0.30	0.27	0.13
14,309.00	88.95	180.37	11,047.88	-3,750.63	109.13	3,751.32	1.05	0.26	1.02
14,403.00	89.78	179.22	11,048.92	-3,844.63	109.46	3,845.31	1.51	0.88	-1.22
14,497.00	89.50	179.96	11,049.51	-3,938.62	110.13	3,939.31	0.84	-0.30	0.79
14,592.00	89.47	178.67	11,050.36	-4,033.61	111.27	4,034.30	1.36	-0.03	-1.36
14,686.00	90.32	179.03	11,050.54	-4,127.59	113.16	4,128.29	0.98	0.90	0.38
14,780.00	89.76	179.21	11,050.47	-4,221.58	114.60	4,222.29	0.63	-0.60	0.19
14,874.00	88.34	179.49	11,052.03	-4,315.56	115.67	4,316.27	1.54	-1.51	0.30
14,969.00	87.81	179.23	11,055.22	-4,410.50	116.73	4,411.22	0.62	-0.56	-0.27
15,064.00	88.36	179.11	11,058.39	-4,505.43	118.10	4,506.16	0.59	0.58	-0.13
15,159.00	88.68	179.57	11,060.85	-4,600.39	119.20	4,601.13	0.59	0.34	0.48
15,253.00	88.25	178.64	11,063.37	-4,694.35	120.66	4,695.09	1.09	-0.46	-0.99
15,348.00	88.82	177.92	11,065.80	-4,789.27	123.51	4,790.03	0.97	0.60	-0.76
15,442.00	88.75	179.49	11,067.79	-4,883.22	125.64	4,884.00	1.67	-0.07	1.67
15,537.00	88.50	179.65	11,070.07	-4,978.19	126.35	4,978.97	0.31	-0.26	0.17
15,631.00	89.10	180.01	11,072.04	-5,072.17	126.63	5,072.95	0.74	0.64	0.38
15,725.00	89.71	181.32	11,073.01	-5,166.16	125.54	5,166.92	1.54	0.65	1.39
15,820.00	89.33	180.98	11,073.81	-5,261.14	123.63	5,261.89	0.54	-0.40	-0.36
15,914.00	88.84	180.69	11,075.31	-5,355.11	122.26	5,355.85	0.61	-0.52	-0.31
16,008.00	87.95	178.63	11,077.94	-5,449.07	122.82	5,449.81	2.39	-0.95	-2.19
16,103.00	90.12	178.58	11,079.54	-5,544.02	125.13	5,544.77	2.28	2.28	-0.05
16,197.00	89.73	177.91	11,079.67	-5,637.98	128.01	5,638.75	0.82	-0.41	-0.71
16,292.00	90.81	178.12	11,079.22	-5,732.92	131.30	5,733.71	1.16	1.14	0.22
16,386.00	92.74	179.31	11,076.31	-5,826.84	133.41	5,827.65	2.41	2.05	1.27



Survey Report

Company: Kaiser-Francis Oil Company
Project: Lea County, NM (NAD 83)
Site: Bell Lake Unit North
Well: 201H
Wellbore: OH / 63506
Design: Surveys (Cactus 171)

Local Co-ordinate Reference: Well 201H
TVD Reference: RKB @ 3540.00usft (Cactus 171)
MD Reference: RKB @ 3540.00usft (Cactus 171)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,480.00	92.90	181.59	11,071.68	-5,920.72	132.67	5,921.52	2.43	0.17	2.43
16,574.00	92.77	182.73	11,067.03	-6,014.54	129.13	6,015.31	1.22	-0.14	1.21
16,668.00	91.72	182.86	11,063.35	-6,108.35	124.55	6,109.09	1.13	-1.12	0.14
16,763.00	89.85	184.05	11,062.05	-6,203.16	118.83	6,203.85	2.33	-1.97	1.25
16,858.00	89.31	183.45	11,062.74	-6,297.96	112.62	6,298.60	0.85	-0.57	-0.63
16,952.00	89.05	184.42	11,064.09	-6,391.72	106.17	6,392.32	1.07	-0.28	1.03
17,047.00	88.70	184.05	11,065.96	-6,486.45	99.15	6,486.99	0.54	-0.37	-0.39
17,141.00	89.76	182.87	11,067.22	-6,580.26	93.48	6,580.76	1.69	1.13	-1.26
17,236.00	89.08	181.88	11,068.18	-6,675.18	89.54	6,675.64	1.26	-0.72	-1.04
17,330.00	88.23	180.22	11,070.39	-6,769.13	87.82	6,769.58	1.98	-0.90	-1.77
17,424.00	89.68	180.29	11,072.10	-6,863.11	87.40	6,863.56	1.54	1.54	0.07
17,519.00	89.41	180.44	11,072.86	-6,958.11	86.80	6,958.55	0.33	-0.28	0.16
17,613.00	90.32	179.95	11,073.08	-7,052.10	86.48	7,052.54	1.10	0.97	-0.52
17,707.00	90.52	180.52	11,072.39	-7,146.10	86.09	7,146.53	0.64	0.21	0.61
17,802.00	90.93	180.63	11,071.19	-7,241.09	85.14	7,241.51	0.45	0.43	0.12
17,896.00	91.30	180.75	11,069.36	-7,335.06	84.01	7,335.48	0.41	0.39	0.13
17,991.00	91.49	180.00	11,067.04	-7,430.03	83.38	7,430.44	0.81	0.20	-0.79
18,086.00	91.73	179.99	11,064.37	-7,524.99	83.39	7,525.40	0.25	0.25	-0.01
18,181.00	91.89	179.35	11,061.37	-7,619.94	83.94	7,620.35	0.69	0.17	-0.67
18,275.00	91.73	180.54	11,058.41	-7,713.90	84.03	7,714.30	1.28	-0.17	1.27
18,370.00	91.39	179.35	11,055.82	-7,808.86	84.12	7,809.26	1.30	-0.36	-1.25
18,464.00	91.67	178.79	11,053.31	-7,902.81	85.65	7,903.22	0.67	0.30	-0.60
18,558.00	91.23	178.90	11,050.93	-7,996.76	87.54	7,997.18	0.48	-0.47	0.12
18,653.00	91.27	178.07	11,048.86	-8,091.71	90.05	8,092.14	0.87	0.04	-0.87
18,747.00	92.10	178.30	11,046.09	-8,185.62	93.03	8,186.07	0.92	0.88	0.24
18,842.00	92.51	177.47	11,042.28	-8,280.47	96.53	8,280.95	0.97	0.43	-0.87
Final Phoenix MWD Survey									
18,902.00	92.51	177.47	11,039.65	-8,340.36	99.18	8,340.85	0.00	0.00	0.00
Projection to TD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
137.00	137.00	-0.93	-0.23	First Phoenix MWD Survey
18,842.00	11,042.27	-8,280.47	96.53	Final Phoenix MWD Survey
18,902.00	11,039.65	-8,340.36	99.18	Projection to TD