



PHOENIX
TECHNOLOGY SERVICES

30-025-44526

June 12, 2018

Oil Conservation Division
State of New Mexico
1625 N. French Drive
Hobbs, New Mexico 88240

Dear District 1 - Hobbs

Re: Kaiser Francis
Bell Lake Unit South 220H
Lea County, NM
API #30-025-44526
Job No. 62614

HOBBS OCD
JUN 18 2018
RECEIVED

Enclosed please find the Survey Data Certification, and the original Plat and one copy of the Survey Report performed on the above referenced well by Phoenix Technology Services, Inc. Other information required by your office is as follows:

Name & Title of Surveyor	Drain Hole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Jerad Steel	220H	144	18,777	4/11/18	4/28/18	MWD

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Best Regards,

Brittany Carley

Brittany Carley
MWD Operations Administrator- EOW

SURVEY DATA CERTIFICATION



PHOENIX
TECHNOLOGY SERVICES

Job #: 62614
 Client: Kaiser Francis
 County & State: Lea County, NM
 Well: Bell Lake Unit South 220H
 API No: 30-025-44526
 Proposed Direction: 359.54

TIE-IN DATA

MD	TVD	INC	AZM	N/-S	E/-W	DATA SOURCE
Data Source Company:						

SURVEY DATA

First Survey Date	First Survey Depth	INC	AZM
11-Apr-18	144 ft	0.51°	150.93°

Last Survey Date	Last Survey Depth	INC	AZM
28-Apr-18	18,777 ft	90.82°	0.22°

Survey Instrument Type

Phoenix MWD Velocity

Projected TD Survey Date	Projected TD Survey Depth	INC	AZM
28-Apr-18	18,835 ft	90.82°	0.22°

CORRECTION INFORMATION

Magnetic Declination Used	6.71 degrees
Grid Convergence Used	0.43 degrees
Total Correction	6.28 degrees

Corrected to True/Grid North

Grid

TO THE BEST OF MY KNOWLEDGE, I
 CERTIFY THIS SURVEY DATA TO BE TRUE
 AND CORRECT.

Jerad Steel 4/28/2018
 Field Engineer Signature Date

Well Planner/Supervisor Date

Kaiser-Francis Oil Company

Lea County, NM (NAD 83)

Bell Lake Unit South

220H

OH / Job 62614

Survey: Phoenix MWD Surveys

Standard Survey Report

30 April, 2018

Survey Report

Company:	Kaiser-Francis Oil Company	Local Co-ordinate Reference:	Well 220H
Project:	Lea County, NM (NAD 83)	TVD Reference:	RKB @ 3653.40usft (Cactus 171)
Site:	Bell Lake Unit South	MD Reference:	RKB @ 3653.40usft (Cactus 171)
Well:	220H	North Reference:	Grid
Wellbore:	OH / Job 62614	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Cactus 171)	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 South			
Site Position:		Northing:	453,977.40 usft	Latitude:	32° 14' 43.88291 N
From:	Map	Easting:	788,854.22 usft	Longitude:	103° 31' 57.83548 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.43 °

Well	220H					
Well Position	+N/-S	0.00 usft	Northing:	453,977.40 usft	Latitude:	32° 14' 43.88291 N
	+E/-W	0.00 usft	Easting:	788,854.22 usft	Longitude:	103° 31' 57.83548 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,630.40 usft

Wellbore	OH / Job 62614				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	MVHD	4/27/2018	6.71	59.96	48,000.58080258

Design	Surveys (Cactus 171)				
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Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.54

Survey Program	Date 4/30/2018				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
144.00	18,835.00	Phoenix MWD Surveys (OH / Job 62614)	MWD+HDGM	OWSG Rev.2 MWD + HDGM	

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
144.00	0.51	150.93	144.00	-0.56	0.31	-0.56	0.35	0.35	0.00
First Phoenix MWD Survey									
234.00	0.49	76.66	234.00	-0.82	0.88	-0.83	0.67	-0.02	-82.52
326.00	0.36	86.73	325.99	-0.71	1.55	-0.73	0.16	-0.14	10.95
419.00	0.25	97.81	418.99	-0.73	2.04	-0.74	0.13	-0.12	11.91
513.00	0.20	20.58	512.99	-0.60	2.31	-0.62	0.30	-0.05	-82.16
607.00	0.16	28.52	606.99	-0.33	2.43	-0.35	0.05	-0.04	8.45
700.00	0.29	108.41	699.99	-0.29	2.71	-0.31	0.33	0.14	85.90
794.00	0.42	38.30	793.99	-0.10	3.15	-0.12	0.45	0.14	-74.59
888.00	0.53	44.49	887.99	0.49	3.67	0.46	0.13	0.12	6.59

Survey Report

Company:	Kaiser-Francis Oil Company	Local Co-ordinate Reference:	Well 220H
Project:	Lea County, NM (NAD 83)	TVD Reference:	RKB @ 3653.40usft (Cactus 171)
Site:	Bell Lake Unit South	MD Reference:	RKB @ 3653.40usft (Cactus 171)
Well:	220H	North Reference:	Grid
Wellbore:	OH / Job 62614	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Cactus 171)	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)
982.00	0.51	77.68	981.98	0.88	4.38	0.85	0.32	-0.02	35.31
1,075.00	0.25	25.53	1,074.98	1.16	4.87	1.12	0.44	-0.28	-56.08
1,169.00	0.38	40.10	1,168.98	1.58	5.16	1.54	0.16	0.14	15.50
1,263.00	0.45	86.18	1,262.98	1.84	5.73	1.80	0.35	0.07	49.02
1,451.00	0.15	120.40	1,450.97	1.77	6.68	1.71	0.18	-0.16	18.20
1,545.00	0.15	13.95	1,544.97	1.82	6.82	1.77	0.26	0.00	-113.24
1,639.00	0.10	290.96	1,638.97	1.97	6.77	1.92	0.18	-0.05	-88.29
1,732.00	0.32	278.24	1,731.97	2.04	6.44	1.99	0.24	0.24	-13.68
1,826.00	0.01	0.44	1,825.97	2.09	6.18	2.04	0.34	-0.33	87.45
1,920.00	0.05	286.38	1,919.97	2.10	6.14	2.06	0.05	0.04	-78.79
2,015.00	0.09	249.05	2,014.97	2.09	6.03	2.04	0.06	0.04	-39.29
2,109.00	0.16	315.22	2,108.97	2.16	5.87	2.11	0.16	0.07	70.39
2,204.00	0.21	311.89	2,203.97	2.37	5.64	2.32	0.05	0.05	-3.51
2,299.00	0.33	349.14	2,298.97	2.75	5.46	2.71	0.22	0.13	39.21
2,392.00	0.21	346.28	2,391.97	3.18	5.37	3.14	0.13	-0.13	-3.08
2,486.00	0.14	309.69	2,485.97	3.42	5.24	3.38	0.14	-0.07	-38.93
2,580.00	0.26	300.20	2,579.97	3.60	4.97	3.56	0.13	0.13	-10.10
2,674.00	0.40	327.69	2,673.97	3.99	4.61	3.95	0.22	0.15	29.24
2,768.00	0.20	333.28	2,767.97	4.41	4.36	4.38	0.21	-0.21	5.95
2,862.00	0.33	301.33	2,861.96	4.70	4.06	4.66	0.20	0.14	-33.99
2,957.00	0.17	267.75	2,956.96	4.83	3.68	4.80	0.22	-0.17	-35.35
3,051.00	0.13	23.87	3,050.96	4.93	3.59	4.90	0.27	-0.04	123.53
3,145.00	0.20	34.20	3,144.96	5.16	3.72	5.13	0.08	0.07	10.99
3,239.00	0.13	12.25	3,238.96	5.40	3.84	5.37	0.10	-0.07	-23.35
3,333.00	0.02	303.28	3,332.96	5.51	3.84	5.48	0.13	-0.12	-73.37
3,428.00	0.13	220.15	3,427.96	5.44	3.76	5.41	0.14	0.12	-87.51
3,523.00	0.32	155.25	3,522.96	5.12	3.80	5.09	0.31	0.20	-68.32
3,617.00	0.46	179.95	3,616.96	4.50	3.91	4.47	0.23	0.15	26.28
3,712.00	0.81	183.48	3,711.95	3.45	3.87	3.42	0.37	0.37	3.72
3,806.00	0.82	183.62	3,805.94	2.11	3.79	2.08	0.01	0.01	0.15
3,901.00	0.56	165.85	3,900.94	0.99	3.86	0.95	0.35	-0.27	-18.71
3,995.00	0.45	182.92	3,994.93	0.17	3.95	0.14	0.20	-0.12	18.16
4,089.00	0.35	175.63	4,088.93	-0.48	3.96	-0.52	0.12	-0.11	-7.76
4,183.00	0.33	183.06	4,182.93	-1.04	3.96	-1.07	0.05	-0.02	7.90
4,277.00	0.12	298.83	4,276.93	-1.26	3.86	-1.29	0.42	-0.22	123.16
4,372.00	0.50	101.12	4,371.93	-1.29	4.18	-1.33	0.65	0.40	170.83
4,467.00	1.16	107.09	4,466.92	-1.66	5.51	-1.70	0.70	0.69	6.28
4,562.00	1.77	104.14	4,561.89	-2.30	7.85	-2.36	0.65	0.64	-3.11
4,656.00	0.12	188.32	4,655.87	-2.75	9.24	-2.82	1.87	-1.76	89.55
4,750.00	0.85	138.21	4,749.87	-3.37	9.69	-3.45	0.83	0.78	-53.31
4,844.00	1.87	118.32	4,843.84	-4.62	11.51	-4.71	1.18	1.09	-21.16
4,938.00	1.69	105.01	4,937.80	-5.70	14.20	-5.82	0.48	-0.19	-14.16
5,032.00	0.80	98.18	5,031.77	-6.15	16.19	-6.28	0.96	-0.95	-7.27

Survey Report

Company:	Kaiser-Francis Oil Company	Local Co-ordinate Reference:	Well 220H
Project:	Lea County, NM (NAD 83)	TVD Reference:	RKB @ 3653.40usft (Cactus 171)
Site:	Bell Lake Unit South	MD Reference:	RKB @ 3653.40usft (Cactus 171)
Well:	220H	North Reference:	Grid
Wellbore:	OH / Job 62614	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Cactus 171)	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)
5,126.00	0.20	90.38	5,125.77	-6.25	17.00	-6.38	0.64	-0.64	-8.30
5,151.00	0.19	266.40	5,150.77	-6.25	17.00	-6.39	1.56	-0.04	704.08
5,216.00	0.61	257.93	5,215.77	-6.33	16.56	-6.46	0.65	0.65	-13.03
5,310.00	0.70	244.01	5,309.76	-6.69	15.55	-6.81	0.19	0.10	-14.81
5,404.00	0.64	135.33	5,403.76	-7.31	15.40	-7.44	1.16	-0.06	-115.62
5,499.00	1.78	118.22	5,498.73	-8.39	17.08	-8.52	1.25	1.20	-18.01
5,593.00	2.55	117.86	5,592.67	-10.05	20.21	-10.22	0.82	0.82	-0.38
5,688.00	3.18	107.64	5,687.55	-11.84	24.59	-12.04	0.85	0.66	-10.76
5,782.00	3.92	101.18	5,781.37	-13.25	30.23	-13.50	0.89	0.79	-6.87
5,877.00	5.23	101.36	5,876.06	-14.74	37.66	-15.04	1.38	1.38	0.19
5,972.00	6.43	104.21	5,970.57	-16.89	47.06	-17.27	1.30	1.26	3.00
6,066.00	7.51	104.02	6,063.87	-19.68	58.12	-20.14	1.15	1.15	-0.20
6,160.00	8.26	103.96	6,156.98	-22.79	70.64	-23.36	0.80	0.80	-0.06
6,254.00	9.75	103.79	6,249.82	-26.32	84.92	-27.00	1.59	1.59	-0.18
6,348.00	11.18	106.11	6,342.26	-30.74	101.41	-31.56	1.59	1.52	2.47
6,442.00	12.45	106.24	6,434.26	-36.11	119.89	-37.07	1.35	1.35	0.14
6,536.00	12.61	107.75	6,526.03	-42.07	139.39	-43.19	0.39	0.17	1.61
6,631.00	12.74	107.42	6,618.71	-48.37	159.26	-49.64	0.16	0.14	-0.35
6,725.00	12.42	106.39	6,710.45	-54.32	178.85	-55.76	0.42	-0.34	-1.10
6,821.00	12.10	106.87	6,804.26	-60.16	198.38	-61.75	0.35	-0.33	0.50
6,915.00	11.50	105.38	6,896.28	-65.50	216.85	-67.24	0.72	-0.64	-1.59
7,010.00	11.10	105.41	6,989.44	-70.44	234.79	-72.32	0.42	-0.42	0.03
7,104.00	11.89	104.95	7,081.55	-75.34	252.87	-77.37	0.85	0.84	-0.49
7,199.00	11.77	104.45	7,174.53	-80.29	271.71	-82.46	0.17	-0.13	-0.53
7,293.00	11.59	104.17	7,266.58	-84.99	290.15	-87.32	0.20	-0.19	-0.30
7,387.00	11.43	104.92	7,358.69	-89.70	308.31	-92.17	0.23	-0.17	0.80
7,482.00	11.35	103.96	7,451.82	-94.38	326.47	-97.00	0.22	-0.08	-1.01
7,577.00	10.24	103.15	7,545.14	-98.55	343.77	-101.31	1.18	-1.17	-0.85
7,671.00	10.71	102.53	7,637.57	-102.35	360.43	-105.24	0.51	0.50	-0.66
7,766.00	12.08	104.09	7,730.70	-106.69	378.69	-109.72	1.48	1.44	1.64
7,860.00	11.81	104.15	7,822.66	-111.43	397.56	-114.62	0.29	-0.29	0.06
7,955.00	11.50	104.97	7,915.71	-116.25	416.13	-119.59	0.37	-0.33	0.86
8,049.00	10.86	105.45	8,007.92	-121.03	433.72	-124.51	0.69	-0.68	0.51
8,143.00	11.77	103.88	8,100.09	-125.69	451.56	-129.31	1.02	0.97	-1.67
8,238.00	11.10	104.01	8,193.21	-130.23	469.84	-134.00	0.71	-0.71	0.14
8,332.00	9.86	104.39	8,285.64	-134.42	486.42	-138.32	1.32	-1.32	0.40
8,427.00	11.24	105.86	8,379.03	-138.97	503.21	-143.01	1.48	1.45	1.55
8,521.00	10.98	106.13	8,471.27	-143.97	520.62	-148.14	0.28	-0.28	0.29
8,616.00	10.46	106.34	8,564.61	-148.90	537.58	-153.22	0.55	-0.55	0.22
8,710.00	9.19	105.54	8,657.23	-153.32	553.00	-157.75	1.36	-1.35	-0.85
8,805.00	8.49	105.02	8,751.10	-157.17	567.09	-161.71	0.74	-0.74	-0.55
8,899.00	7.18	103.17	8,844.22	-160.30	579.51	-164.95	1.42	-1.39	-1.97
8,993.00	6.28	103.63	8,937.57	-162.85	590.23	-167.59	0.96	-0.96	0.49

Survey Report

Company:	Kaiser-Francis Oil Company	Local Co-ordinate Reference:	Well 220H
Project:	Lea County, NM (NAD 83)	TVD Reference:	RKB @ 3653.40usft (Cactus 171)
Site:	Bell Lake Unit South	MD Reference:	RKB @ 3653.40usft (Cactus 171)
Well:	220H	North Reference:	Grid
Wellbore:	OH / Job 62614	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Cactus 171)	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)
9,088.00	5.63	104.44	9,032.06	-165.24	599.79	-170.05	0.69	-0.68	0.85
9,183.00	4.35	99.17	9,126.70	-166.98	607.86	-171.85	1.43	-1.35	-5.55
9,277.00	3.89	96.41	9,220.45	-167.90	614.55	-172.83	0.53	-0.49	-2.94
9,371.00	3.02	90.54	9,314.28	-168.28	620.19	-173.25	1.00	-0.93	-6.24
9,467.00	3.62	115.71	9,410.13	-169.62	625.45	-174.63	1.63	0.63	26.22
9,561.00	3.54	122.66	9,503.94	-172.47	630.57	-177.53	0.47	-0.09	7.39
9,655.00	4.25	120.26	9,597.73	-175.79	636.02	-180.89	0.77	0.76	-2.55
9,749.00	4.37	117.63	9,691.46	-179.21	642.20	-184.36	0.25	0.13	-2.80
9,842.00	3.84	104.49	9,784.22	-181.63	648.35	-186.83	1.16	-0.57	-14.13
9,937.00	1.01	102.80	9,879.13	-182.61	652.25	-187.84	2.98	-2.98	-1.78
10,030.00	0.27	341.31	9,972.12	-182.59	652.98	-187.82	1.26	-0.80	-130.63
10,125.00	0.29	308.04	10,067.12	-182.23	652.72	-187.46	0.17	0.02	-35.02
10,219.00	0.27	245.85	10,161.12	-182.17	652.33	-187.40	0.31	-0.02	-66.16
10,312.00	1.08	264.73	10,254.11	-182.34	651.26	-187.56	0.89	0.87	20.30
10,359.00	4.22	346.08	10,301.07	-180.70	650.40	-185.92	8.93	6.68	173.09
10,406.00	8.99	356.89	10,347.74	-175.35	649.78	-180.57	10.44	10.15	23.00
10,453.00	13.62	358.60	10,393.82	-166.15	649.45	-171.36	9.88	9.85	3.64
10,500.00	18.29	0.91	10,439.00	-153.24	649.43	-158.45	10.03	9.94	4.91
10,547.00	22.97	2.87	10,482.97	-136.69	650.01	-141.91	10.06	9.96	4.17
10,595.00	27.84	4.73	10,526.32	-116.16	651.40	-121.38	10.28	10.15	3.88
10,642.00	31.74	2.52	10,567.10	-92.86	652.85	-98.10	8.62	8.30	-4.70
10,689.00	35.20	359.74	10,606.30	-66.95	653.33	-72.20	8.05	7.36	-5.91
10,736.00	39.71	358.60	10,643.60	-38.38	652.91	-43.62	9.71	9.60	-2.43
10,783.00	43.34	359.61	10,678.78	-7.23	652.43	-12.47	7.85	7.72	2.15
10,830.00	46.95	1.96	10,711.93	26.07	652.91	20.83	8.46	7.68	5.00
10,877.00	50.64	3.44	10,742.89	61.38	654.58	56.13	8.20	7.85	3.15
10,924.00	54.43	4.60	10,771.47	98.59	657.21	93.31	8.30	8.06	2.47
10,971.00	60.18	3.31	10,796.85	138.03	659.92	132.73	12.45	12.23	-2.74
11,018.00	64.75	1.55	10,818.57	179.66	661.67	174.34	10.27	9.72	-3.74
11,066.00	68.35	359.73	10,837.67	223.68	662.16	218.36	8.27	7.50	-3.79
11,113.00	72.65	358.37	10,853.36	267.97	661.42	262.65	9.55	9.15	-2.89
11,160.00	76.61	357.38	10,865.82	313.24	659.73	307.94	8.67	8.43	-2.11
11,207.00	80.54	357.23	10,875.12	359.25	657.57	353.96	8.37	8.36	-0.32
11,254.00	83.24	356.94	10,881.75	405.72	655.20	400.44	5.78	5.74	-0.62
11,301.00	86.13	356.58	10,886.11	452.44	652.55	447.18	6.20	6.15	-0.77
11,348.00	89.58	356.89	10,887.87	499.32	649.88	494.09	7.37	7.34	0.66
11,442.00	89.55	356.90	10,888.58	593.18	644.79	587.98	0.03	-0.03	0.01
11,467.00	89.21	356.47	10,888.85	618.14	643.34	612.95	2.19	-1.36	-1.72
11,561.00	90.76	357.45	10,888.87	712.00	638.36	706.85	1.95	1.65	1.04
11,656.00	91.72	359.86	10,886.82	806.94	636.13	801.81	2.73	1.01	2.54
11,750.00	92.36	359.26	10,883.47	900.88	635.41	895.75	0.93	0.68	-0.64
11,844.00	91.30	359.68	10,880.47	994.83	634.54	989.70	1.21	-1.13	0.45
11,939.00	90.01	0.80	10,879.38	1,089.82	634.94	1,084.68	1.80	-1.36	1.18
12,034.00	88.72	1.16	10,880.44	1,184.79	636.56	1,179.64	1.41	-1.36	0.38

Survey Report

Company:	Kaiser-Francis Oil Company	Local Co-ordinate Reference:	Well 220H
Project:	Lea County, NM (NAD 83)	TVD Reference:	RKB @ 3653.40usft (Cactus 171)
Site:	Bell Lake Unit South	MD Reference:	RKB @ 3653.40usft (Cactus 171)
Well:	220H	North Reference:	Grid
Wellbore:	OH / Job 62614	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Cactus 171)	Database:	USA Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Buid Rate (°/100usft)	Turn Rate (°/100usft)
12,129.00	89.28	0.77	10,882.09	1,279.77	638.16	1,274.60	0.72	0.59	-0.41
12,224.00	89.95	0.95	10,882.73	1,374.75	639.59	1,369.57	0.73	0.71	0.19
12,319.00	89.24	0.72	10,883.40	1,469.74	640.97	1,464.55	0.79	-0.75	-0.24
12,414.00	89.59	0.60	10,884.37	1,564.73	642.06	1,559.52	0.39	0.37	-0.13
12,509.00	90.39	0.49	10,884.39	1,659.72	642.97	1,654.51	0.85	0.84	-0.12
12,603.00	90.24	1.10	10,883.87	1,753.71	644.27	1,748.48	0.67	-0.16	0.65
12,698.00	88.96	0.19	10,884.54	1,848.70	645.34	1,843.46	1.65	-1.35	-0.96
12,793.00	89.22	1.03	10,886.05	1,943.68	646.35	1,938.43	0.93	0.27	0.88
12,887.00	89.79	0.98	10,886.86	2,037.66	648.00	2,032.40	0.61	0.61	-0.05
12,982.00	90.62	1.14	10,886.52	2,132.65	649.76	2,127.36	0.89	0.87	0.17
13,077.00	89.88	1.35	10,886.10	2,227.62	651.82	2,222.32	0.81	-0.78	0.22
13,171.00	89.81	0.83	10,886.36	2,321.60	653.61	2,316.28	0.56	-0.07	-0.55
13,266.00	90.08	1.21	10,886.45	2,416.59	655.30	2,411.25	0.49	0.28	0.40
13,361.00	88.93	0.93	10,887.27	2,511.57	657.08	2,506.21	1.25	-1.21	-0.29
13,456.00	88.59	358.19	10,889.33	2,606.53	656.35	2,601.18	2.91	-0.36	-2.88
13,550.00	88.70	355.30	10,891.55	2,700.34	651.01	2,695.03	3.08	0.12	-3.07
13,644.00	89.24	355.40	10,893.24	2,794.02	643.39	2,788.76	0.58	0.57	0.11
13,740.00	89.18	357.89	10,894.56	2,889.84	637.78	2,884.62	2.59	-0.06	2.59
13,834.00	89.56	358.19	10,895.60	2,983.78	634.56	2,978.59	0.52	0.40	0.32
13,929.00	87.78	358.87	10,897.80	3,078.72	632.12	3,073.54	2.01	-1.87	0.72
14,024.00	86.28	358.57	10,902.72	3,173.56	630.01	3,168.40	1.61	-1.58	-0.32
14,119.00	86.95	358.50	10,908.33	3,268.36	627.58	3,263.22	0.71	0.71	-0.07
14,213.00	87.39	358.79	10,912.97	3,362.22	625.36	3,357.09	0.56	0.47	0.31
14,308.00	87.78	359.00	10,916.98	3,457.12	623.53	3,452.00	0.47	0.41	0.22
14,403.00	88.13	359.31	10,920.37	3,552.05	622.13	3,546.94	0.49	0.37	0.33
14,498.00	86.76	359.47	10,924.60	3,646.95	621.12	3,641.84	1.45	-1.44	0.17
14,592.00	87.48	359.83	10,929.33	3,740.83	620.55	3,735.72	0.86	0.77	0.38
14,688.00	85.05	359.07	10,935.58	3,836.61	619.63	3,831.51	2.65	-2.53	-0.79
14,783.00	84.99	358.96	10,943.83	3,931.24	618.00	3,926.15	0.13	-0.06	-0.12
14,877.00	86.39	359.14	10,950.89	4,024.96	616.45	4,019.88	1.50	1.49	0.19
14,972.00	87.96	0.98	10,955.57	4,119.83	616.55	4,114.75	2.54	1.65	1.94
15,067.00	88.27	1.55	10,958.70	4,214.76	618.64	4,209.66	0.68	0.33	0.60
15,162.00	89.12	1.89	10,960.86	4,309.69	621.49	4,304.56	0.96	0.89	0.36
15,257.00	88.72	0.43	10,962.65	4,404.65	623.42	4,399.50	1.59	-0.42	-1.54
15,352.00	89.22	1.12	10,964.36	4,499.63	624.70	4,494.47	0.90	0.53	0.73
15,447.00	89.38	359.52	10,965.52	4,594.62	625.23	4,589.45	1.69	0.17	-1.68
15,542.00	89.47	359.84	10,966.47	4,689.61	624.70	4,684.44	0.35	0.09	0.34
15,637.00	89.65	359.99	10,967.20	4,784.61	624.56	4,779.44	0.25	0.19	0.16
15,731.00	89.36	359.99	10,968.01	4,878.60	624.54	4,873.43	0.31	-0.31	0.00
15,825.00	90.21	358.73	10,968.37	4,972.59	623.49	4,967.43	1.62	0.90	-1.34
15,919.00	90.81	358.47	10,967.53	5,066.56	621.20	5,061.41	0.70	0.64	-0.28
16,013.00	91.33	358.67	10,965.78	5,160.51	618.85	5,155.38	0.59	0.55	0.21
16,108.00	89.61	359.10	10,965.00	5,255.49	617.00	5,250.37	1.87	-1.81	0.45

Survey Report

Company:	Kaiser-Francis Oil Company	Local Co-ordinate Reference:	Well 220H
Project:	Lea County, NM (NAD 83)	TVD Reference:	RKB @ 3653.40usft (Cactus 171)
Site:	Bell Lake Unit South	MD Reference:	RKB @ 3653.40usft (Cactus 171)
Well:	220H	North Reference:	Grid
Wellbore:	OH / Job 62614	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Cactus 171)	Database:	USA Compass

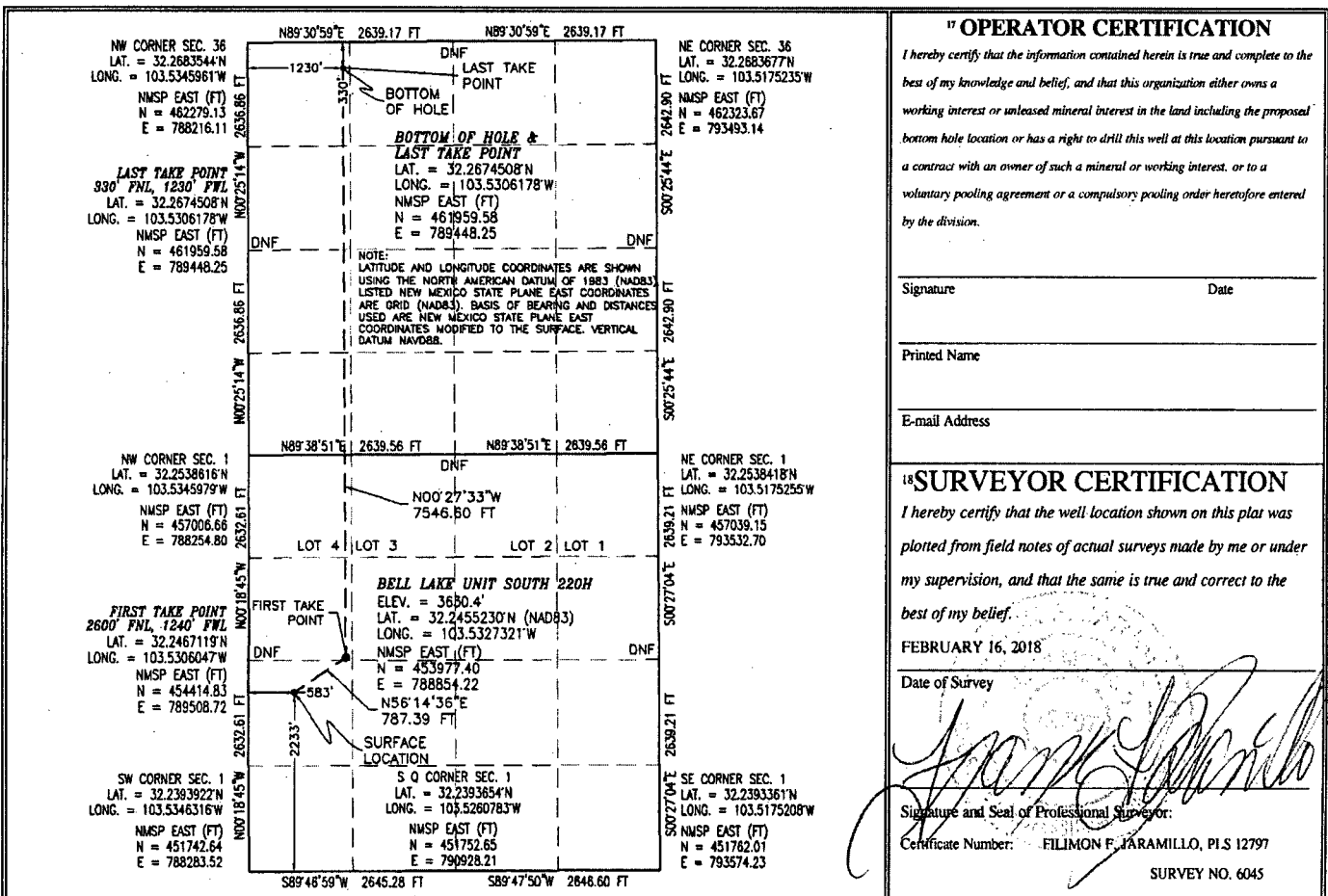
Survey

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)
16,203.00	89.45	358.91	10,965.78	5,350.47	615.35	5,345.36	0.26	-0.17	-0.20
16,297.00	89.76	359.15	10,966.42	5,444.46	613.76	5,439.35	0.42	0.33	0.26
16,392.00	89.78	359.36	10,966.80	5,539.45	612.53	5,534.35	0.22	0.02	0.22
16,486.00	89.85	359.49	10,967.11	5,633.44	611.58	5,628.35	0.16	0.07	0.14
16,581.00	90.10	359.83	10,967.15	5,728.44	611.02	5,723.35	0.44	0.26	0.36
16,676.00	90.56	0.21	10,966.60	5,823.44	611.05	5,818.34	0.63	0.48	0.40
16,771.00	90.95	1.17	10,965.35	5,918.42	612.20	5,913.32	1.09	0.41	1.01
16,865.00	88.87	0.37	10,965.50	6,012.41	613.46	6,007.29	2.37	-2.21	-0.85
16,960.00	89.45	0.83	10,966.89	6,107.39	614.46	6,102.26	0.78	0.61	0.48
17,055.00	89.93	1.57	10,967.40	6,202.37	616.45	6,197.22	0.93	0.51	0.78
17,150.00	89.56	0.45	10,967.83	6,297.35	618.12	6,292.19	1.24	-0.39	-1.18
17,244.00	88.79	358.89	10,969.18	6,391.34	617.58	6,386.17	1.85	-0.82	-1.66
17,339.00	88.84	358.81	10,971.15	6,486.30	615.67	6,481.14	0.10	0.05	-0.08
17,434.00	91.35	358.73	10,970.99	6,581.27	613.63	6,576.13	2.64	2.64	-0.08
17,529.00	92.21	358.17	10,968.04	6,676.18	611.07	6,671.06	1.08	0.91	-0.59
17,623.00	91.04	358.08	10,965.37	6,770.10	607.99	6,765.00	1.25	-1.24	-0.10
17,718.00	90.72	358.87	10,963.91	6,865.05	605.46	6,859.97	0.90	-0.34	0.83
17,812.00	91.72	358.56	10,961.91	6,959.00	603.36	6,953.93	1.11	1.06	-0.33
17,907.00	90.53	358.07	10,960.05	7,053.94	600.56	7,048.89	1.35	-1.25	-0.52
18,001.00	89.04	357.69	10,960.40	7,147.87	597.09	7,142.85	1.64	-1.59	-0.40
18,095.00	89.05	357.76	10,961.97	7,241.79	593.35	7,236.79	0.08	0.01	0.07
18,189.00	91.30	357.59	10,961.68	7,335.70	589.54	7,330.73	2.40	2.39	-0.18
18,284.00	91.10	357.34	10,959.69	7,430.59	585.34	7,425.65	0.34	-0.21	-0.26
18,379.00	90.21	358.92	10,958.60	7,525.53	582.24	7,520.61	1.91	-0.94	1.66
18,473.00	90.13	358.54	10,958.32	7,619.50	580.16	7,614.60	0.41	-0.09	-0.40
18,568.00	89.88	0.13	10,958.32	7,714.49	579.06	7,709.60	1.69	-0.26	1.67
18,662.00	90.22	0.20	10,958.23	7,808.49	579.33	7,803.59	0.37	0.36	0.07
18,757.00	90.79	0.36	10,957.40	7,903.49	579.79	7,898.58	0.62	0.60	0.17
18,777.00	90.82	0.22	10,957.12	7,923.49	579.89	7,918.58	0.72	0.15	-0.70
Final Phoenix MWD Survey									
18,835.00	90.82	0.22	10,956.29	7,981.48	580.11	7,976.56	0.00	0.00	0.00
Projection to TD									

Survey Annotations

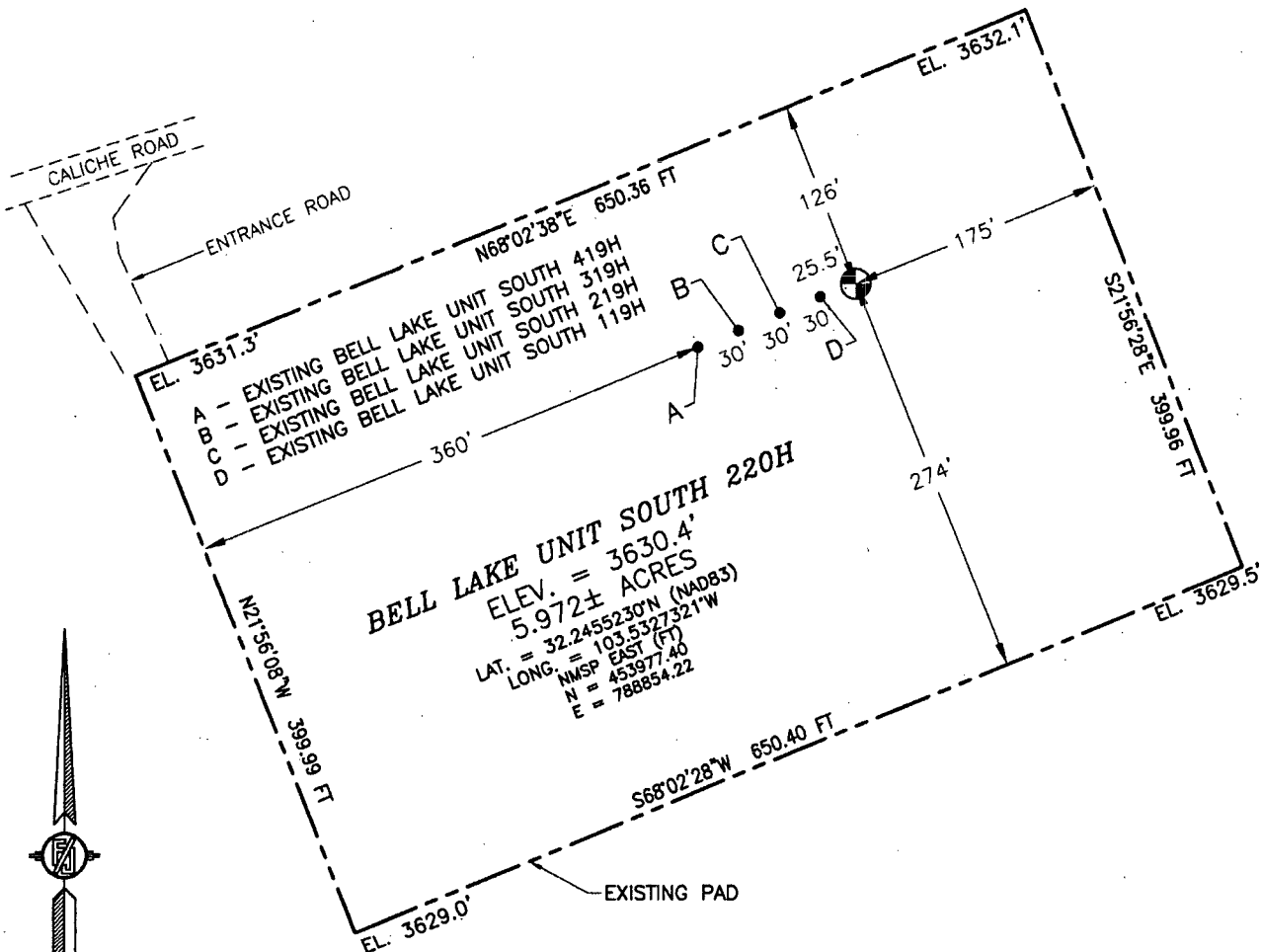
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
144.00	144.00	-0.56	0.31	First Phoenix MWD Survey
18,777.00	10,957.12	7,923.49	579.89	Final Phoenix MWD Survey
18,835.00	10,956.29	7,981.48	580.11	Projection to TD

Form C-102
Revised August 1, 2011
it one copy to appropriate
District Office
] AMENDED REPORT



SECTION 1, TOWNSHIP 24 SOUTH, RANGE 33 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE. ELEVATION VALUES ARE NAVD88.



012 60 120 240

SCALE 1" = 120'

DIRECTIONS TO LOCATION

FROM STATE HIGHWAY 128 AND CR 21 (DELAWARE BASIN) GO NORTH ON CR 21 2.5 MILES, TURN LEFT ON BELL LAKE ROAD AND GO WEST 1.4 MILES, TURN LEFT AND GO SOUTH 125' TO THE NORTHWEST PAD CORNER FOR THIS LOCATION.

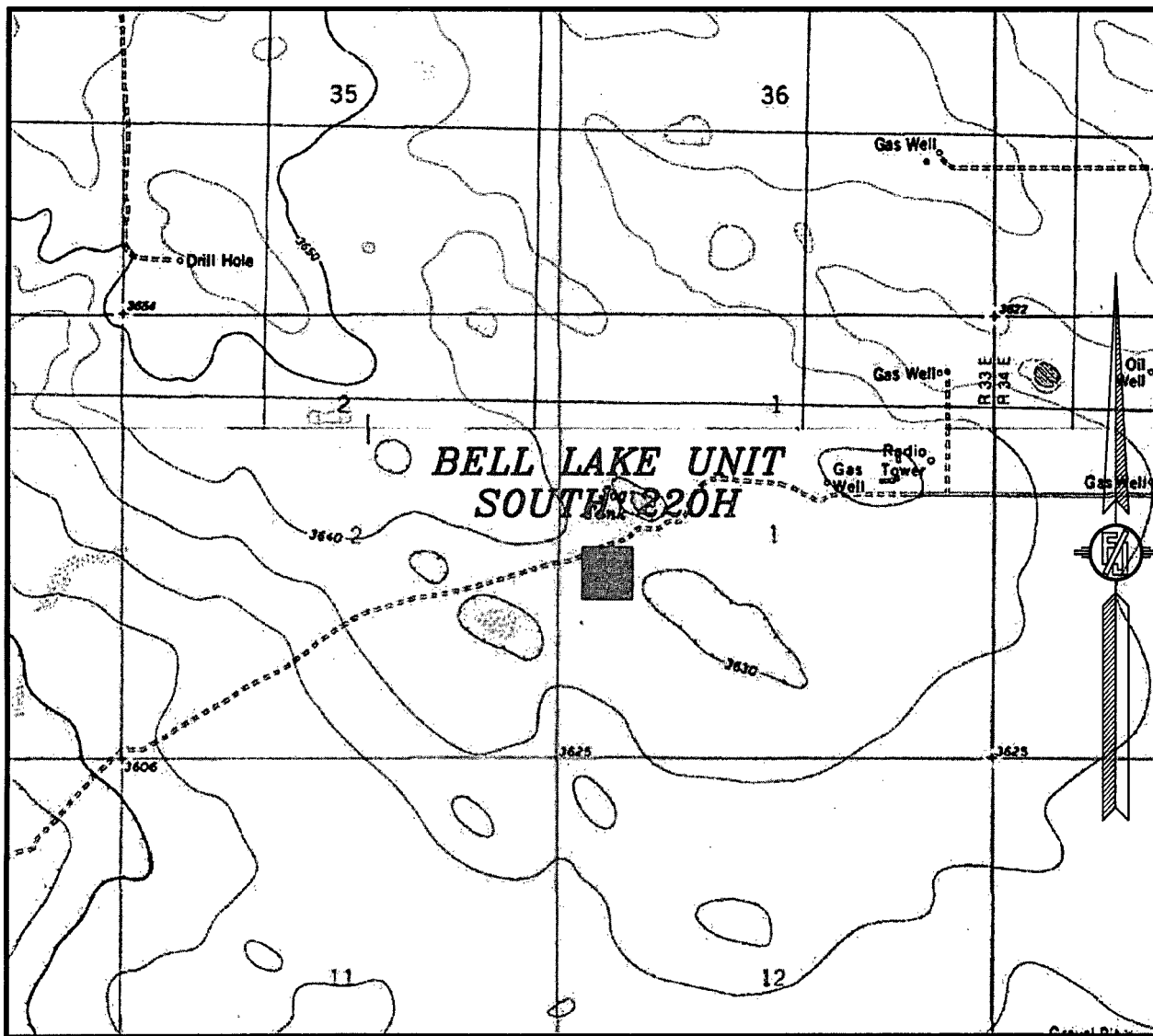
KAISER-FRANCIS OIL CO.
BELL LAKE UNIT SOUTH 220H
LOCATED 2233 FT. FROM THE SOUTH LINE
AND 583 FT. FROM THE WEST LINE OF
SECTION 1, TOWNSHIP 24 SOUTH,
RANGE 33 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

FEBRUARY 16, 2018

SURVEY NO. 6045

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

1, TOWNSHIP 24 SOUTH, RANGE 33 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
LOCATION VERIFICATION MAP



USGS QUAD MAP:
BELL LAKE

NOT TO SCALE

KAISER-FRANCIS OIL CO.
BELL LAKE UNIT SOUTH 220H
LOCATED 2233 FT. FROM THE SOUTH LINE
AND 583 FT. FROM THE WEST LINE OF
SECTION 1, TOWNSHIP 24 SOUTH,
RANGE 33 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

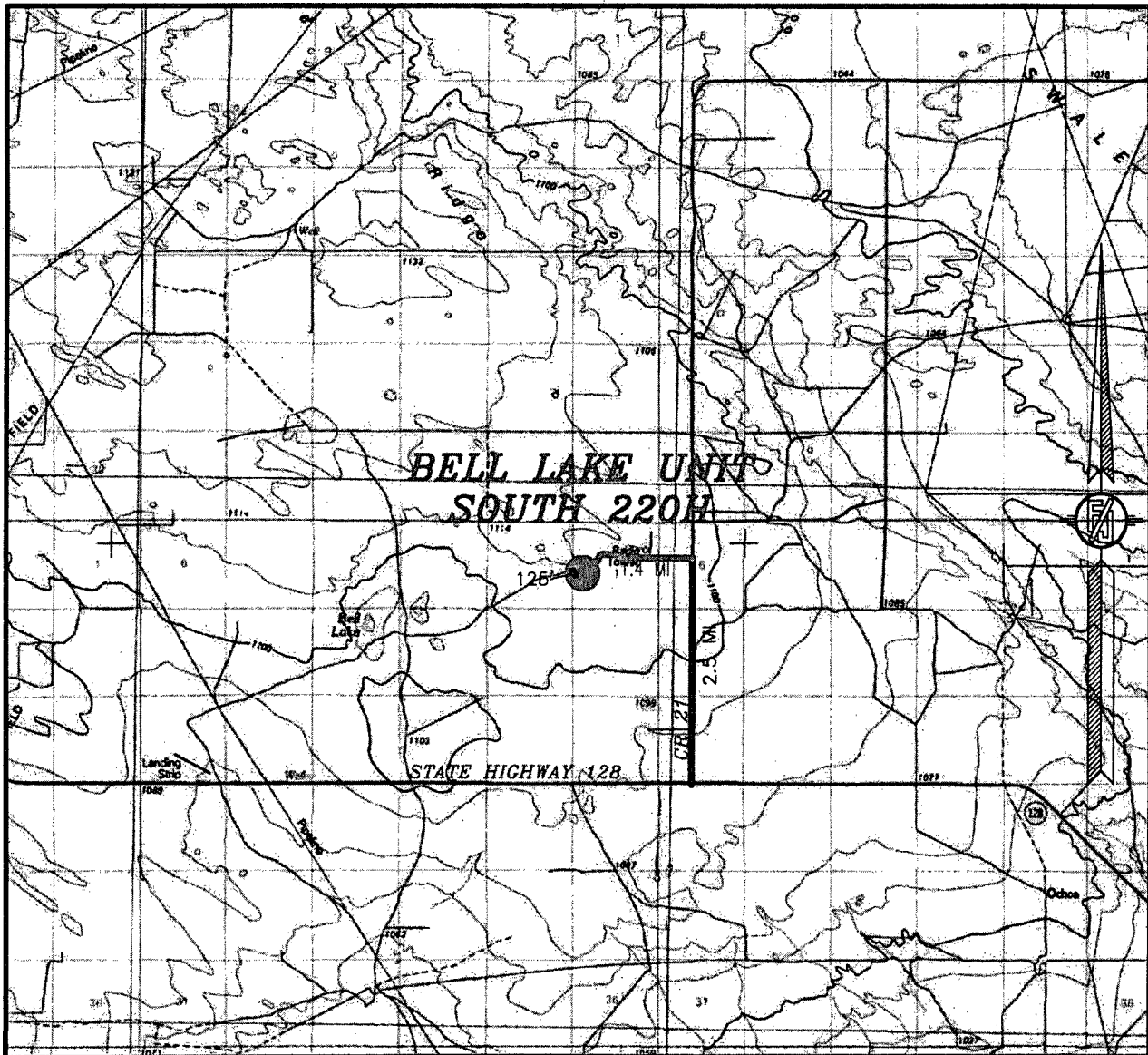
FEBRUARY 16, 2018

SURVEY NO. 6045

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 **CARLSBAD, NEW MEXICO**

301 SOUTH CANAL
(575) 234-3341

SECTION 1, TOWNSHIP 24 SOUTH, RANGE 33 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DIRECTIONS TO LOCATION

FROM STATE HIGHWAY 128 AND CR 21 (DELAWARE BASIN) GO NORTH
ON CR 21 2.5 MILES, TURN LEFT ON BELL LAKE ROAD AND GO
WEST 1.4 MILES, TURN LEFT AND GO SOUTH 125' TO THE
NORTHWEST PAD CORNER FOR THIS LOCATION.

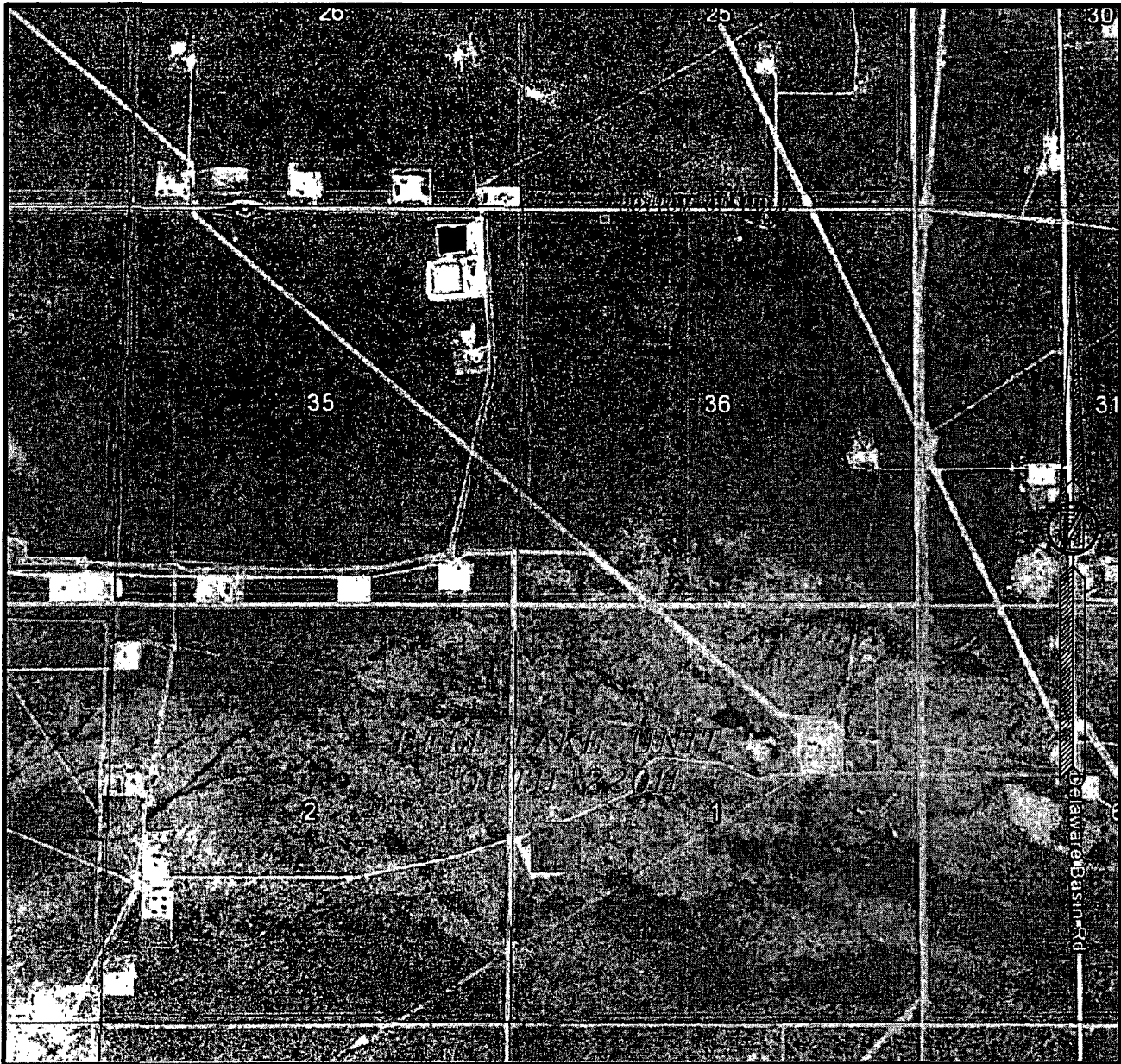
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RANGE 33 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

FEBRUARY 16, 2018

SURVEY NO. 6045

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 1, TOWNSHIP 24 SOUTH, RANGE 33 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

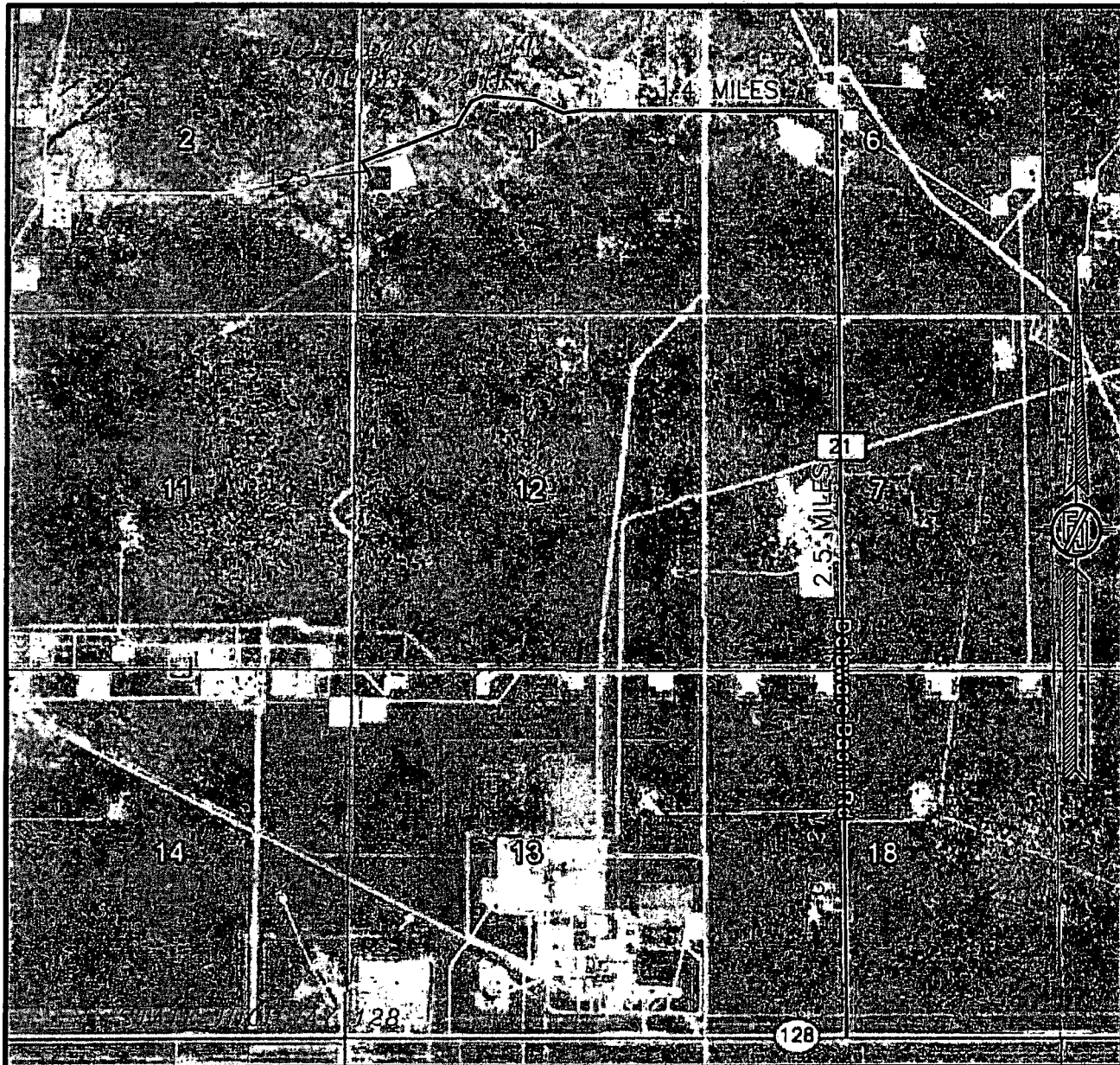
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RANGE 33 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

FEBRUARY 16, 2018

SURVEY NO. 6045

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 1, TOWNSHIP 24 SOUTH, RANGE 33 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO
ACCESS AERIAL ROUTE MAP



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

KAISER-FRANCIS OIL CO.
BELL LAKE UNIT SOUTH 220H
LOCATED 2233 FT. FROM THE SOUTH LINE
AND 583 FT. FROM THE WEST LINE OF
SECTION 1, TOWNSHIP 24 SOUTH,
RANGE 33 EAST, N.M.P.M.
LEA COUNTY, STATE OF NEW MEXICO

FEBRUARY 16, 2018

SURVEY NO. 6045

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO