

Results of Directional Survey

API number:	30-025-40797		
OGRID:		Operator:	APACHE CORP
		Property:	LUSK 34 FEDERAL # 1H

surface	ULSTR:	D	34	T 19S	R 32E
				490 FNL	360 FWL

BH Loc	ULSTR:	M	34	T 19S	R 32E
13807	MD	9497.8	TVD	309 FSL	693 FWL
				4971 FNL	

Top Perf/OH	ULSTR:	D	34	T 19S	R 32E
9889	MD	9473.6	TVD	1063 FNL	421 FWL

Bot Perf/OH	ULSTR:	M	34	T 19S	R 32E
13682	MD	9494.4	TVD	434 FSL	682 FWL
				4846 FNL	

	MD	N/S	E/W	VD
	9784	-468.03	55.93	9473.34
TOP PERFS/OH	9889	-572.90	61.24	9473.61
	9906	-589.88	62.10	9473.65
	13608	-4282.40	316.59	9491.91
BOT PERFS/OH	13682	-4356.13	322.39	9494.43
	13703	-4377.05	324.04	9495.14

NEXT TO LAST	13758	-4431.84	328.69	9496.68
LAST READING	13807	-4480.64	332.96	9497.75
TD	13807	-4480.64	332.96	9497.75

Surface Location	490	FN	360	FW
Projected BHL	4971	FN	693	FW
Location of				
Top Perfs/OH	1063	FN	421	FW
Bottom Perfs/OH	4846	FN	682	FW

SUMMARY of Subsurface Locations

Surface Location	D-34-19S-32E	490	FN	360	FW	Vert. Depth
Top Perfs/OH	D-34-19S-32E	1063	FN	421	FW	9473.61
Bottom Perfs/OH	M-34-19S-32E	4846	FN	682	FW	9494.43
Projected TD	M-34-19S-32E	4971	FN	693	FW	9497.75

JUN 19 2013

OPERATOR
WELL/LEASE
COUNTY

Apache
Lusk 34 Federal 1H API # 30-025-40797
Lea 490' FNL & 360' FWL, UL: D 34-19S-32E
BHL: 293' FSL + 673' FWL

062-0092

STATE OF NEW MEXICO
DEVIATION REPORT

165	0.21
339	0.83
768	0.21
992	1.5
1275	1.84
1525	0.14
2120	1.26
1820	0.3
2420	2.16
2710	2.03
3606	0.63
3971	1.03
4365	1.4
4882	0.5
5358	0.5
5738	0.7
5982	0.3
6450	1.1
7641	0.4
8117	0
7891	1.6
8266	0.8
8457	0.6
8568	1
8816	1.4
8911	1.7
9281	2.9
9378	2.1
9473	1.9
9669	1.2
9887	1.11

SUR: D-34-19s-32e, 490/N & 360/W
BHL: M-34-19s-32e, 4971/N & 693.W
api # 30-025-40797

BY:

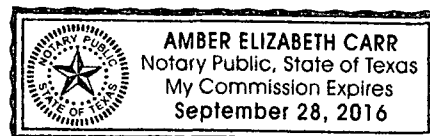
STATE OF TEXAS

COUNTY OF MIDLAND

The foregoing instrument was acknowledged before me on
Steve Moore on behalf of Patterson-UTI Drilling Company LLC.

3/1/13, by

Amber Elizabeth Carr
Notary Public for Midland County, Texas
My Commission Expires:





Apache Corporation

Lea County, NM

Lusk 34 Federal 1H

Sec. 34, T19S - R32E

Wellbore #2 Job #1210294

Survey: Phoenix MWD Surveys

Apache Corp. Survey Report

14 December, 2012

SUR: D-34-19s-32e, 490/N & 360/W
BHL: M-34-19s-32e, 4971/N & 693.W
api # 30-025-40797

RECEIVED

MAY 10 2013

HOBBS OCD





Apache Corp. Survey Report



Company: Apache Corporation
Project: Lea County, NM
Site: Lusk 34 Federal 1H
Well: Sec. 34, T19S - R32E
Wellbore: Wellbore #2 Job #1210294
Design: Wellbore #2 Job #1210294

Local Co-ordinate Reference: Site Lusk 34 Federal 1H
TVD Reference: Est KB @ 3579.00usft (Original Well Elev)
MD Reference: Est KB @ 3579.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass5000

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

Site		Lusk 34 Federal 1H							
Site Position:		Northing:	590,767.20	usft	Latitude:	32° 37' 21.9609 N			
From:	Map	Easting:	717,417.90	usft	Longitude:	103° 45' 41.0930 W			
Position Uncertainty:		0.00	usft	Slot Radius:	13-3/16	"	Grid Convergence:	0.31	°

Well	Sec. 34, T19S - R32E					
Well Position	+N/-S	0.00 usft	Northing:	590,767.20 usft	Latitude:	32° 37' 21.9609 N
	+E/-W	0.00 usft	Easting:	717,417.90 usft	Longitude:	103° 45' 41.0930 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft	Ground Level:	3,561.00 usft

Wellbore	Wellbore #2 Job #1210294				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	12/01/12	7.52	60.49	48,688

Design		Wellbore #2 Job #1210294			
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	9,000.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	175.89	



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Local Co-ordinate Reference: Site Lusk 34 Federal 1H
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass5000

Survey Program		Date	12/14/12			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description		
100.00	9,000.00	Gyrodata Gyro (Job # 1210294)	NS-GYRO-MS	North sensing gyrocompassing m/s		
9,000.00	13,807.00	Phoenix MWD Surveys (Wellbore #2 Job #	MWD	MWD - Standard		

Survey											
MD (usft)	Inc (°)	Azi (azimuth): (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	
9,000.00	2.08	253.37	-5,419.12	8,998.12	57.70	40.34	-54.66	0.00	590,824.90	717,458.24	
Tie on Point @ 9000' MD											
9,054.00	10.10	181.10	-5,472.81	9,051.81	52.67	39.31	-49.72	17.91	590,819.87	717,457.21	
First Phoenix MWD Surveys @ 9054' MD											
9,086.00	11.50	192.70	-5,504.24	9,083.24	46.76	38.55	-43.87	8.06	590,813.96	717,456.45	
9,118.00	15.60	193.20	-5,535.35	9,114.35	39.45	36.87	-36.71	12.82	590,806.65	717,454.77	
9,149.00	20.00	191.90	-5,564.85	9,143.85	30.20	34.82	-27.63	14.25	590,797.40	717,452.72	
9,181.00	24.70	189.80	-5,594.44	9,173.44	18.25	32.55	-15.87	14.90	590,785.45	717,450.45	
9,213.00	29.30	185.60	-5,622.95	9,201.95	3.86	30.65	-1.65	15.55	590,771.06	717,448.55	
9,244.00	32.90	181.50	-5,649.49	9,228.49	-12.11	29.69	14.21	13.47	590,755.09	717,447.59	
9,275.00	36.90	177.70	-5,674.92	9,253.92	-29.84	29.84	31.90	14.68	590,737.36	717,447.74	
9,307.00	40.50	174.80	-5,699.89	9,278.89	-49.79	31.17	51.90	12.59	590,717.41	717,449.07	
9,339.00	43.70	175.60	-5,723.63	9,302.63	-71.17	32.96	73.35	10.14	590,696.03	717,450.86	
9,370.00	46.30	176.70	-5,745.55	9,324.55	-93.04	34.43	95.26	8.75	590,674.16	717,452.33	
9,402.00	49.50	177.60	-5,767.00	9,346.00	-116.75	35.60	119.00	10.22	590,650.45	717,453.50	
9,434.00	52.90	177.50	-5,787.05	9,366.05	-141.66	36.67	143.92	10.63	590,625.54	717,454.57	
9,465.00	56.50	177.70	-5,804.96	9,383.96	-166.93	37.73	169.21	11.62	590,600.27	717,455.63	
9,496.00	60.00	178.10	-5,821.27	9,400.27	-193.27	38.69	195.55	11.34	590,573.93	717,456.59	
9,528.00	63.60	177.80	-5,836.39	9,415.39	-221.45	39.70	223.73	11.28	590,545.75	717,457.60	
9,560.00	66.70	177.00	-5,849.83	9,428.83	-250.45	41.02	252.75	9.95	590,516.75	717,458.92	
9,591.00	70.30	176.50	-5,861.19	9,440.19	-279.25	42.66	281.58	11.71	590,487.95	717,460.56	
9,623.00	73.50	176.00	-5,871.13	9,450.13	-309.59	44.65	312.00	10.11	590,457.61	717,462.55	



Apache Corp. Survey Report



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Site: Lusk 34 Federal 1H
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Wellbore: Wellbore #2 Job #1210294
Design: Wellbore #2 Job #1210294

Local Co-ordinate Reference: Site Lusk 34 Federal 1H
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass5000

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
9,654.00	77.10	175.40	-5,879.00	9,458.00	-339.49	46.90	341.98	11.76	590,427.71	717,464.80
9,685.00	80.70	175.30	-5,884.97	9,463.97	-369.80	49.36	372.39	11.62	590,397.40	717,467.26
9,717.00	82.80	175.90	-5,889.56	9,468.56	-401.38	51.79	404.06	6.82	590,365.82	717,469.69
9,748.00	85.20	176.30	-5,892.80	9,471.80	-432.13	53.89	434.88	7.85	590,335.07	717,471.79
9,784.00	89.90	177.20	-5,894.34	9,473.34	-468.03	55.93	470.84	13.29	590,299.17	717,473.83
9,906.00	89.80	177.00	-5,894.65	9,473.65	-589.88	62.10	592.81	0.18	590,177.32	717,480.00
10,000.00	89.80	176.60	-5,894.98	9,473.98	-683.73	67.35	686.80	0.43	590,083.47	717,485.25
10,095.00	90.00	175.90	-5,895.15	9,474.15	-778.52	73.56	781.79	0.77	589,988.68	717,491.46
10,189.00	90.30	175.40	-5,894.90	9,473.90	-872.25	80.69	875.79	0.62	589,894.95	717,498.59
10,284.00	90.50	175.20	-5,894.24	9,473.24	-966.93	88.47	970.79	0.30	589,800.27	717,506.37
10,379.00	89.60	175.30	-5,894.16	9,473.16	-1,061.60	96.34	1,065.78	0.95	589,705.60	717,514.24
10,473.00	89.60	175.50	-5,894.81	9,473.81	-1,155.30	103.88	1,159.77	0.21	589,611.90	717,521.78
10,568.00	89.80	175.20	-5,895.31	9,474.31	-1,249.98	111.58	1,254.77	0.38	589,517.22	717,529.48
10,663.00	88.90	176.10	-5,896.39	9,475.39	-1,344.70	118.79	1,349.76	1.34	589,422.50	717,536.69
10,758.00	89.00	176.00	-5,898.13	9,477.13	-1,439.46	125.33	1,444.74	0.15	589,327.74	717,543.23
10,853.00	89.10	175.50	-5,899.70	9,478.70	-1,534.19	132.37	1,539.73	0.54	589,233.01	717,550.27
10,948.00	88.60	176.10	-5,901.61	9,480.61	-1,628.91	139.32	1,634.71	0.82	589,138.29	717,557.22
11,043.00	89.40	176.80	-5,903.27	9,482.27	-1,723.71	145.21	1,729.69	1.12	589,043.49	717,563.11
11,138.00	89.50	176.50	-5,904.18	9,483.18	-1,818.55	150.76	1,824.67	0.33	588,948.65	717,568.66
11,233.00	89.50	175.30	-5,905.01	9,484.01	-1,913.30	157.55	1,919.67	1.26	588,853.90	717,575.45
11,328.00	89.20	176.40	-5,906.09	9,485.09	-2,008.04	164.42	2,014.66	1.20	588,759.16	717,582.32
11,423.00	90.20	176.30	-5,906.58	9,485.58	-2,102.85	170.47	2,109.66	1.06	588,664.35	717,588.37
11,518.00	90.40	175.90	-5,906.09	9,485.09	-2,197.62	176.93	2,204.65	0.47	588,569.58	717,594.83
11,614.00	90.60	176.50	-5,905.25	9,484.25	-2,293.41	183.29	2,300.65	0.66	588,473.79	717,601.19
11,708.00	90.90	175.90	-5,904.02	9,483.02	-2,387.19	189.52	2,394.64	0.71	588,380.01	717,607.42
11,804.00	90.60	176.70	-5,902.76	9,481.76	-2,482.99	195.72	2,490.63	0.89	588,284.21	717,613.62
11,897.00	90.90	176.20	-5,901.55	9,480.55	-2,575.80	201.48	2,583.61	0.63	588,191.40	717,619.38



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Survey Calculation Method: Minimum Curvature
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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
11,992.00	91.30	176.20	-5,899.72	9,478.72	-2,670.57	207.77	2,678.59	0.42	588,096.63	717,625.67
12,087.00	90.40	176.90	-5,898.31	9,477.31	-2,765.39	213.49	2,773.58	1.20	588,001.81	717,631.39
12,182.00	91.10	176.50	-5,897.07	9,476.07	-2,860.22	218.95	2,868.56	0.85	587,906.98	717,636.85
12,277.00	90.00	177.20	-5,896.16	9,475.16	-2,955.07	224.17	2,963.54	1.37	587,812.13	717,642.07
12,372.00	90.30	177.40	-5,895.91	9,474.91	-3,049.97	228.65	3,058.51	0.38	587,717.23	717,646.55
12,466.00	89.70	175.90	-5,895.91	9,474.91	-3,143.80	234.14	3,152.50	1.72	587,623.40	717,652.04
12,561.00	90.10	175.80	-5,896.07	9,475.07	-3,238.55	241.02	3,247.50	0.43	587,528.65	717,658.92
12,656.00	90.80	175.80	-5,895.33	9,474.33	-3,333.29	247.97	3,342.49	0.74	587,433.91	717,665.87
12,751.00	90.90	175.70	-5,893.92	9,472.92	-3,428.02	255.01	3,437.48	0.15	587,339.18	717,672.91
12,847.00	91.30	175.60	-5,892.08	9,471.08	-3,523.73	262.29	3,533.46	0.43	587,243.47	717,680.19
12,942.00	89.50	176.40	-5,891.41	9,470.41	-3,618.49	268.92	3,628.46	2.07	587,148.71	717,686.82
13,037.00	88.50	176.30	-5,893.07	9,472.07	-3,713.28	274.97	3,723.44	1.06	587,053.92	717,692.87
13,132.00	88.60	175.90	-5,895.47	9,474.47	-3,808.03	281.43	3,818.41	0.43	586,959.17	717,699.33
13,228.00	88.00	175.90	-5,898.32	9,477.32	-3,903.74	288.29	3,914.36	0.62	586,863.46	717,706.19
13,323.00	88.10	175.60	-5,901.55	9,480.55	-3,998.43	295.32	4,009.31	0.33	586,768.77	717,713.22
13,418.00	87.50	175.60	-5,905.20	9,484.20	-4,093.08	302.61	4,104.24	0.63	586,674.12	717,720.51
13,513.00	87.70	175.90	-5,909.18	9,488.18	-4,187.73	309.64	4,199.15	0.38	586,579.47	717,727.54
13,608.00	87.80	175.70	-5,912.91	9,491.91	-4,282.40	316.59	4,294.08	0.24	586,484.80	717,734.49
13,703.00	88.30	175.30	-5,916.14	9,495.14	-4,377.05	324.04	4,389.02	0.67	586,390.15	717,741.94
13,758.00	88.50	175.00	-5,917.68	9,496.68	-4,431.84	328.69	4,444.00	0.66	586,335.36	717,746.59
Last Phoenix MWD Surveys @ 13758' MD										
13,807.00	89.00	175.00	-5,918.75	9,497.75	-4,480.64	332.96	4,492.98	1.02	586,286.56	717,750.86

Projection to TD @ 13807' MD



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Compass5000

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,000.00	8,998.12	57.70	40.34	Tie on Point @ 9000' MD
9,054.00	9,051.81	52.67	39.31	First Phoenix MWD Surveys @ 9054' MD
13,758.00	9,496.68	-4,431.84	328.69	Last Phoenix MWD Surveys @ 13758' MD
13,807.00	9,497.75	-4,480.64	332.96	Projection to TD @ 13807' MD

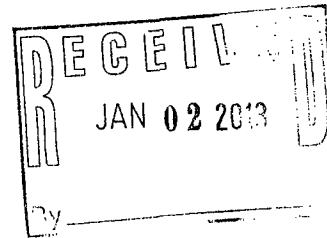
Checked By: _____ Approved By: _____ Date: _____



PHOENIX
TECHNOLOGY SERVICES

December 18, 2012

Apache Corporation
Attention: Regulatory Department
2000 Post Oak Boulevard Suite 100
Houston, Texas 77056



Re: Apache Corporation
Lusk 34 Fed 1H
Lea County, NM
API #30-025-40797
Job No. 1210294

RECEIVED
JAN 07 2013

Dear Regulatory Department;

Phoenix Technology Services, Inc. has filed the Survey Data Certification, Surveys, and Lease Plat for the above referenced Well with the Texas Railroad Commission via certification online. A copy of the filing is attached for your records.

Name of Surveyor	Drainhole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Derek Webster	1H	9,054	13,758	12-07-12	12-13-12	MWD

Thank you for the opportunity to be of service. Please contact me if you have any questions or require additional information.

Best Regards,

Kelly Jo Walter
Operations Administrator

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER	1210294	OPERATOR	Apache Corp
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WELL NAME	Lusk 34 Fed 1H	COUNTY & STATE	Lea County, NM
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API WELL NUMBER	30-025-40797	PROPOSED DIRECTION	175.89
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TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
9,000 ft	8,998.12 ft	2.1 ft	253.4 ft	57.70 ft	40.34 ft	GYRO

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
7-Dec-12	9,054 ft	10.1	181.1

SURVEY INSTRUMENT TYPE
Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
13-Dec-12	13,758 ft	88.5	175

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

PROJECTED TD SURVEY DATE	PROJECTED TD SURVEY DEPTH	INCLIN	AZIMUTH
13-Dec-12	13,807 ft	89	175

DEREK WEBSTER

PRINT YOUR NAME ABOVE

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	7.29
DECLINATION OR GRID	GRID

13-Dec-12

TODAY'S DATE

MWD SUPERVISOR 1

Derek Webster

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