



PHOENIX
TECHNOLOGY SERVICES

October 25, 2013

Oil Conservation Division
State of New Mexico
1625 N. French Drive
District 1 - Hobbs
Hobbs, New Mexico 88240

HOBBS OCD

NOV 04 2013

RECEIVED

Attention: Regulatory Department

Re: Apache Corporation
EBDU #107 D (FED)
Lea County, NM
API #30-025-41335
Job No. 1311364

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. (P-5 No. 664171). Other information required by your office is as follows:

Name & Title of Surveyor	Drainhole Number	Surveyed Depths		Dates Performed		Type of Survey
		From	To	Start	End	
Samuel D. Wilson	107	1,809	7,207	10/15/13	10/21/13	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,

Kelly Jo Walter

Kelly Jo Walter
Operations Administrator

Certified mail receipt number: 7011 1570 0001 4364 8752

NOV 05 2013

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PHOENIX TECHNOLOGY SERVICES SURVEY DATA CERTIFICATION


PHOENIX
TECHNOLOGY SERVICES

PHOENIX JOB NUMBER 1311364

OPERATOR

Apache Corporation

WELL NAME

EBDU #107 D (FED)

COUNTY & STATE

Lea County New Mexico

API WELL NUMBER

30-025-41335 /

PROPOSED DIRECTION

359.4

TIE-IN DATA

MEASURED DEPTH	VERTICAL DEPTH	INCLIN	AZIMUTH	N-S COORD	E-W COORD	DATA SOURCE
1,575 ft	5.44 ft	0.5	257.22	5.43	-1.19	Gyro

FIRST SURVEY DATE	FIRST SURVEY DEPTH	INCLIN	AZIMUTH
15-Oct-13	1,809 ft	0.7	258.8

**SURVEY INSTRUMENT
TYPE**

Phoenix MWD

LAST SURVEY DATE	LAST SURVEY DEPTH	INCLIN	AZIMUTH
21-Oct-13	7,207 ft	4.7	2.0

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
21-Oct-13	7,271 ft	4.7	2.0

Samuel D. Wilson

PRINT YOUR NAME ABOVE

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	6.59
DECLINATION OR GRID	Grid

10/21/2013

TODAY'S DATE

MWD SUPERVISOR 1

Samuel D. Wilson

DIRECTIONAL DRILLER 1

Travis Gibson

MWD SUPERVISOR 2

N/A

DIRECTIONAL DRILLER 2

Greg Puntney

1805 Brittmore Road

Houston, Texas 77043

(713)3370609 (Voice), (713)337-0599 (Fax)



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Apache Corporation

Lea County, NM (NAD83 NME)

EBDU

#107

WB1/Job #1311364

Survey: Phoenix MWD Survey

Phoenix Final Survey Report

21 October, 2013





Phoenix Technology Services

Phoenix Final Survey Report



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #107
Project:	Lea County, NM (NAD83 NME)	TVD Reference:	KB @ 3549.00usft (Silver Oak 5)
Site:	EBDU	MD Reference:	KB @ 3549.00usft (Silver Oak 5)
Well:	#107	North Reference:	Grid
Wellbore:	WB1/Job #1311364	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 5)	Database:	GCR DB

Project:	Lea County, NM (NAD83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	EBDU		
Site Position:		Northing:	548,813.80 usft
From:	Map	Easting:	876,234.20 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 30' 14.61505 N
		Longitude:	103° 14' 49.28069 W
		Grid Convergence:	0.58 °

Well:	#107		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Ground Level:	3,531.00 usft
		Latitude:	32° 30' 14.61505 N
		Longitude:	103° 14' 49.28069 W

Wellbore:	WB1/Job #1311364		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010_14	10/11/13	7.17
			Dip Angle
			(°)
			60.44
			Field Strength
			(nT)
			48,586

Design:	Surveys (Silver Oak 5)		
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
			(°)
			359.40

Survey Program	Date 10/21/13		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
1,809.00	7,271.00	Phoenix MWD Survey (WB1/Job #131136	MWD
			Description
			MWD - Standard

Survey	MD	Inc	Azi (azimuth)	TVD	N/S	E/W	V. Sec	DLeg
	(usft)	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(°/100usft)
	1,575.00	0.50	257.22	1,574.98	5.43	-1.19	5.44	0.00
Tie-on	1,809.00	0.70	258.80	1,808.97	4.93	-3.59	4.96	0.09
First Phoenix MWD Survey	1,870.00	0.60	264.50	1,869.96	4.82	-4.27	4.87	0.20
	1,995.00	1.40	325.40	1,994.95	6.02	-5.79	6.08	0.98
	2,121.00	3.10	358.30	2,120.85	10.69	-6.77	10.76	1.64
	2,245.00	5.30	2.50	2,244.51	19.76	-6.61	19.83	1.79
	2,371.00	5.30	6.10	2,369.97	31.37	-5.74	31.42	0.26
	2,496.00	5.20	6.50	2,494.45	42.73	-4.49	42.78	0.09
	2,621.00	5.30	11.30	2,618.92	54.02	-2.72	54.05	0.36
	2,683.00	5.40	13.30	2,680.65	59.67	-1.48	59.68	0.34



Phoenix Technology Services
Phoenix Final Survey Report



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Site:	EBDU	MD Reference:	KB @ 3549.00usft (Silver Oak 5)
Well:	#107	North Reference:	Grid
Wellbore:	WB1/Job #1311364	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Silver Oak 5)	Database:	GCR DB

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
2,746.00	5.10	11.20	2,743.39	65.30	-0.26	65.30	0.57	
2,808.00	4.80	5.80	2,805.16	70.59	0.54	70.58	0.89	
2,871.00	4.60	3.60	2,867.94	75.73	0.97	75.72	0.43	
2,933.00	4.50	0.30	2,929.75	80.64	1.13	80.63	0.45	
2,996.00	4.50	0.80	2,992.56	85.59	1.18	85.57	0.06	
3,058.00	4.20	358.70	3,054.38	90.29	1.16	90.27	0.55	
3,121.00	3.90	358.10	3,117.22	94.74	1.04	94.72	0.48	
3,246.00	4.60	355.20	3,241.87	103.98	0.48	103.97	0.59	
3,308.00	4.00	351.60	3,303.70	108.60	-0.04	108.59	1.06	
3,433.00	3.80	348.70	3,428.41	116.97	-1.49	116.98	0.22	
3,558.00	5.10	350.20	3,553.03	126.51	-3.25	126.53	1.04	
3,683.00	4.70	352.80	3,677.57	137.06	-4.84	137.11	0.37	
3,746.00	4.50	352.70	3,740.37	142.08	-5.47	142.12	0.32	
3,870.00	4.70	356.10	3,863.97	151.97	-6.44	152.03	0.27	
3,995.00	4.60	359.50	3,988.56	162.09	-6.83	162.15	0.23	
4,057.00	4.50	357.90	4,050.37	167.01	-6.94	167.07	0.26	
4,120.00	4.50	358.40	4,113.17	171.95	-7.10	172.01	0.06	
4,182.00	4.30	356.90	4,174.99	176.70	-7.29	176.77	0.37	
4,245.00	4.50	356.80	4,237.80	181.53	-7.56	181.59	0.32	
4,308.00	4.90	355.80	4,300.59	186.68	-7.90	186.75	0.65	
4,370.00	4.90	356.30	4,362.36	191.96	-8.26	192.04	0.07	
4,433.00	4.70	354.70	4,425.14	197.21	-8.67	197.29	0.38	
4,495.00	4.80	355.30	4,486.93	202.33	-9.12	202.41	0.18	
4,558.00	4.70	356.50	4,549.71	207.53	-9.49	207.62	0.22	
4,620.00	4.50	356.40	4,611.51	212.50	-9.80	212.59	0.32	
4,745.00	4.20	0.60	4,736.15	221.97	-10.06	222.06	0.35	
4,870.00	5.00	359.50	4,860.75	231.99	-10.06	232.08	0.64	
4,995.00	4.80	2.10	4,985.29	242.66	-9.92	242.75	0.24	
5,058.00	5.00	3.30	5,048.06	248.04	-9.66	248.13	0.36	
5,120.00	5.10	6.20	5,109.82	253.48	-9.21	253.56	0.44	
5,183.00	5.10	5.50	5,172.57	259.05	-8.64	259.12	0.10	
5,245.00	5.10	6.20	5,234.33	264.53	-8.08	264.60	0.10	
5,308.00	4.90	4.00	5,297.09	270.00	-7.59	270.06	0.44	
5,370.00	4.80	4.30	5,358.87	275.23	-7.21	275.29	0.17	
5,433.00	5.00	6.40	5,421.64	280.58	-6.70	280.64	0.43	
5,495.00	4.80	4.50	5,483.41	285.85	-6.20	285.90	0.42	
5,621.00	4.90	0.00	5,608.96	296.49	-5.78	296.53	0.31	
5,684.00	5.20	1.00	5,671.71	302.04	-5.73	302.08	0.50	
5,809.00	5.00	358.60	5,796.22	313.14	-5.77	313.19	0.23	
5,928.00	4.90	357.90	5,914.78	323.41	-6.08	323.45	0.10	
6,053.00	5.50	5.00	6,039.26	334.71	-5.76	334.75	0.70	
6,178.00	5.00	6.70	6,163.74	346.09	-4.60	346.12	0.42	
6,303.00	5.70	356.60	6,288.19	357.70	-4.33	357.72	0.94	
6,428.00	5.40	357.10	6,412.61	369.77	-5.00	369.80	0.24	
6,553.00	4.40	357.10	6,537.15	380.43	-5.54	380.47	0.80	



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Design:	Surveys (Silver Oak 5)	Database:	GCR DB

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
6,678.00	4.30	346.60	6,661.79	389.78	-6.86	389.83	0.64
6,741.00	5.40	351.60	6,724.57	395.01	-7.85	395.07	1.87
6,803.00	5.70	356.80	6,786.28	400.97	-8.44	401.03	0.94
6,928.00	5.40	353.90	6,910.69	413.01	-9.41	413.09	0.33
7,053.00	5.10	355.80	7,035.17	424.40	-10.45	424.49	0.28
7,115.00	4.30	352.70	7,096.96	429.46	-10.94	429.55	1.35
7,207.00	4.70	2.00	7,188.67	436.65	-11.25	436.74	0.90
Last Phoenix MWD Survey							
7,271.00	4.70	2.00	7,252.46	441.89	-11.07	441.98	0.00
Projection to TD							

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,575.00	1,574.98	5.43	-1.19	Tie-on
1,809.00	1,808.97	4.93	-3.59	First Phoenix MWD Survey
7,207.00	7,188.67	436.65	-11.25	Last Phoenix MWD Survey
7,271.00	7,252.46	441.89	-11.07	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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