

HOBBS OCD

Tops and Lithology for the Gramma Ridge 14 24 34 #6

JUL 30 2015

RECEIVED

30-025-42289

	Actual			
	MD	TVDSS	TVD	Thickness
LMAR *	-	-	-	-
BLCN *	-	-	-	-
CRCN *	-	-	-	-
BYCN *	-	-	-	-
BSSL *	9,216	5,733	9,216	17
AVALON1				
*	9,233	5,750	9,233	-2,494
FBSG *	10,222	6,739	6,739	694
SBSG *	10,916	7,433	7,433	4,380
TBSG *	11,815	-8,312	11,813	344

AUG 03 2015

422

Phoenix Technology Services
SURVEY DATA CERTIFICATION



PHOENIX
TECHNOLOGY SERVICES

PHOENIX JOB NUMBER

1412377

OPERATOR

Chevron

WELL NAME

Gamma Ridge 14-24-34 6H

COUNTY & STATE

Lea County, New Mexico

API WELL NUMBER

30-025-42289

PROPOSED DIRECTION

182.97

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
1,180. ft	1,179.98 ft	0.40	355.70	-13 ft	7.18 ft	Teledrift

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
20-Mar-15	1,319.00 ft	0.77	337.34

SURVEY INSTRUMENT

TYPE

Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
28-Apr-15	15,133.00 ft	88.21	185.19

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

PROJECTED	PROJECTED		
TD SURVEY	TD SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
28-Apr-15	15,187.00 ft	88.21	185.19

Rick Reed

PRINT YOUR NAME ABOVE

Rick Reed

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	
	6.76
DECLINATION OR GRID	GRID

5-May

TODAY'S DATE

MWD SUPERVISOR 1

August Holt

DIRECTIONAL DRILLER 1

Craig Cannon

MWD SUPERVISOR 2

Kyle Anderson

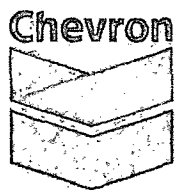
DIRECTIONAL DRILLER 2

Justin Jackson

12329 Cutten Rd.,

Houston, Texas 777066

(713)337-0600 (Voice), (713)337-0599 (Fax)



Chevron

Lea County, NM (NAD27 NME)

Gamma Ridge 14 24 34

6H

Wellbore #1 Job #1412377

Survey: Phoenix MWD Surveys

Standard Survey Report

08 May, 2015





Survey Report



Company:	Chevron	Local Co-ordinate Reference:	Well 6H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gramma Ridge 14 24 34	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Well:	6H	North Reference:	Grid
Wellbore:	Wellbore #1 Job #1412377	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR

Project	Lea County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Gramma Ridge 14 24 34		
Site Position:		Northing:	446,243.20 usft
From:	Map	Easting:	773,870.90 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 13' 25.45288 N
		Longitude:	103° 26' 51.79837 W
		Grid Convergence:	0.47 °

Well	6H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 13' 25.46164 N
		Longitude:	103° 26' 14.01093 W
		Ground Level:	3,476.00 usft

Wellbore	Wellbore #1 Job #1412377				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	2/25/2015	7.24	60.11	48,212

Design	Surveys (Ensign 153)			
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	182.97

Survey Program	Date 5/8/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
133.00	1,209.00	Teledrift Surveys (Wellbore #1 Job #14123	MWD	MWD - Standard
1,209.00	15,187.00	Phoenix MWD Surveys (Wellbore #1 Job #	PHX+MWD+BGGM	PHX+MWD+BGGM v3:standard declination

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)	
1,180.00	0.40	355.70	1,179.98	-0.13	7.18	-0.24	0.00	0.00	0.00	
Tie-in to Teledrift Surveys										
1,319.00	0.77	337.34	1,318.97	1.22	6.78	-1.57	0.30	0.27	-13.21	
WB1 First Phoenix Survey										
1,508.00	0.93	345.30	1,507.95	3.87	5.91	-4.17	0.11	0.08	4.21	
1,698.00	1.02	351.65	1,697.92	7.04	5.27	-7.30	0.07	0.05	3.34	
1,887.00	1.21	359.66	1,886.89	10.70	5.01	-10.94	0.13	0.10	4.24	
2,076.00	1.52	358.78	2,075.83	15.20	4.95	-15.43	0.16	0.16	-0.47	
2,265.00	0.20	18.01	2,264.81	18.02	5.00	-18.25	0.71	-0.70	10.17	



Survey Report



Company:	Chevron	Local Co-ordinate Reference:	Well 6H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gamma Ridge 14 24 34	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Well:	6H	North Reference:	Grid
Wellbore:	Wellbore #1 Job #1412377	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR

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)	
2,454.00	0.51	174.68	2,453.81	17.49	5.18	-17.74	0.37	0.16	82.89	
2,644.00	0.44	169.50	2,643.80	15.93	5.39	-16.19	0.04	-0.04	-2.73	
2,833.00	0.38	174.13	2,832.80	14.60	5.58	-14.87	0.04	-0.03	2.45	
3,022.00	0.36	142.89	3,021.79	13.50	6.01	-13.79	0.11	-0.01	-16.53	
3,211.00	0.39	124.97	3,210.79	12.66	6.89	-13.00	0.06	0.02	-9.48	
3,400.00	0.71	91.10	3,399.78	12.27	8.59	-12.70	0.23	0.17	-17.92	
3,589.00	1.04	91.03	3,588.76	12.21	11.47	-12.79	0.17	0.17	-0.04	
3,779.00	1.34	149.67	3,778.72	10.27	14.32	-10.99	0.63	0.16	30.86	
3,969.00	0.75	186.01	3,968.69	7.11	15.31	-7.89	0.45	-0.31	19.13	
4,158.00	1.04	200.82	4,157.67	4.28	14.57	-5.03	0.20	0.15	7.84	
4,347.00	1.01	212.56	4,346.64	1.27	13.07	-1.95	0.11	-0.02	6.21	
4,537.00	0.76	180.70	4,536.62	-1.40	12.15	0.77	0.29	-0.13	-16.77	
4,716.00	1.08	162.05	4,715.59	-4.19	12.66	3.53	0.24	0.18	-10.42	
4,895.00	1.38	174.46	4,894.55	-7.94	13.38	7.24	0.22	0.17	6.93	
5,074.00	1.33	182.36	5,073.50	-12.16	13.51	11.45	0.11	-0.03	4.41	
5,253.00	0.88	184.15	5,252.47	-15.61	13.32	14.90	0.25	-0.25	1.00	
5,432.00	0.77	189.85	5,431.45	-18.17	13.02	17.47	0.08	-0.06	3.18	
5,611.00	0.23	183.60	5,610.44	-19.71	12.79	19.02	0.30	-0.30	-3.49	
5,790.00	0.22	202.67	5,789.44	-20.39	12.63	19.70	0.04	-0.01	10.65	
5,969.00	0.20	192.94	5,968.44	-21.01	12.43	20.34	0.02	-0.01	-5.44	
6,148.00	0.12	219.07	6,147.44	-21.46	12.24	20.79	0.06	-0.04	14.60	
6,327.00	0.04	205.73	6,326.44	-21.66	12.10	21.00	0.05	-0.04	-7.45	
6,505.00	0.16	303.90	6,504.44	-21.58	11.86	20.93	0.10	0.07	55.15	
6,684.00	0.25	16.32	6,683.44	-21.06	11.77	20.42	0.14	0.05	40.46	
6,863.00	0.28	335.66	6,862.44	-20.29	11.70	19.66	0.10	0.02	-22.72	
7,042.00	0.35	357.82	7,041.43	-19.34	11.49	18.72	0.08	0.04	12.38	
7,221.00	0.43	347.75	7,220.43	-18.14	11.33	17.53	0.06	0.04	-5.63	
7,400.00	0.57	0.88	7,399.42	-16.60	11.20	15.99	0.10	0.08	7.34	
7,579.00	0.53	359.83	7,578.42	-14.88	11.21	14.28	0.02	-0.02	-0.59	
7,757.00	0.40	354.95	7,756.41	-13.43	11.16	12.84	0.08	-0.07	-2.74	
7,937.00	0.54	345.47	7,936.40	-11.99	10.89	11.41	0.09	0.08	-5.27	
8,125.00	0.67	349.75	8,124.39	-10.05	10.47	9.49	0.07	0.07	2.28	
8,304.00	0.83	353.11	8,303.38	-7.73	10.13	7.20	0.09	0.09	1.88	
8,482.00	1.04	354.55	8,481.35	-4.84	9.82	4.33	0.12	0.12	0.81	
8,661.00	1.40	355.58	8,660.31	-1.05	9.50	0.55	0.20	0.20	0.58	
8,840.00	1.64	359.66	8,839.25	3.70	9.31	-4.17	0.15	0.13	2.28	
9,019.00	1.70	350.79	9,018.17	8.88	8.87	-9.33	0.15	0.03	-4.96	
9,198.00	1.79	350.16	9,197.09	14.25	7.97	-14.65	0.05	0.05	-0.35	
9,377.00	1.71	3.22	9,376.01	19.67	7.64	-20.04	0.23	-0.04	7.30	
9,556.00	1.51	3.95	9,554.94	24.69	7.96	-25.07	0.11	-0.11	0.41	
9,641.00	1.94	1.35	9,639.90	27.25	8.07	-27.63	0.51	0.51	-3.06	
9,680.00	1.96	2.72	9,678.88	28.58	8.11	-28.96	0.13	0.05	3.51	
9,878.00	1.04	356.82	9,876.81	33.75	8.18	-34.13	0.47	-0.46	-2.98	



Survey Report



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Site:	Gamma Ridge 14 24 34	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Well:	6H	North Reference:	Grid
Wellbore:	Wellbore #1 Job #1412377	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR

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)
10,057.00	0.68	250.65	10,055.79	35.02	7.08	-35.34	0.78	-0.20	-59.31
10,236.00	2.60	267.42	10,234.71	34.49	2.02	-34.55	1.09	1.07	9.37
10,415.00	1.17	11.19	10,413.65	36.10	-1.68	-35.96	1.73	-0.80	57.97
10,594.00	1.38	68.95	10,592.61	38.66	0.69	-38.65	0.70	0.12	32.27
10,773.00	1.99	124.49	10,771.54	37.68	5.26	-37.90	0.93	0.34	31.03
10,952.00	1.21	62.29	10,950.48	36.80	9.50	-37.24	1.00	-0.44	-34.75
11,131.00	0.99	17.25	11,129.45	39.15	11.63	-39.70	0.48	-0.12	-25.16
11,310.00	0.63	76.13	11,308.44	40.87	13.04	-41.49	0.48	-0.20	32.89
11,489.00	1.14	44.43	11,487.42	42.37	15.24	-43.11	0.38	0.28	-17.71
11,608.00	1.93	32.85	11,606.37	44.90	17.16	-45.73	0.71	0.66	-9.73
11,694.00	0.40	49.77	11,692.35	46.31	18.18	-47.19	1.80	-1.78	19.67
11,738.00	3.10	169.99	11,736.33	45.24	18.50	-46.14	7.54	6.14	273.23
11,783.00	5.89	184.43	11,781.19	41.74	18.53	-42.64	6.64	6.20	32.09
11,828.00	10.29	195.65	11,825.73	35.56	17.27	-36.41	10.34	9.78	24.93
11,873.00	13.75	201.02	11,869.74	26.70	14.27	-27.40	8.07	7.69	11.93
11,917.00	18.48	203.03	11,912.00	15.39	9.66	-15.87	10.82	10.75	4.57
11,961.00	22.64	201.72	11,953.19	1.10	3.79	-1.30	9.51	9.45	-2.98
12,006.00	31.53	197.93	11,993.22	-18.18	-3.05	18.31	20.12	19.76	-8.42
12,051.00	41.34	195.73	12,029.38	-43.74	-10.72	44.24	21.99	21.80	-4.89
12,095.00	52.14	190.93	12,059.50	-74.89	-17.97	75.72	25.79	24.55	-10.91
12,136.00	58.47	184.78	12,082.84	-108.25	-22.51	109.27	19.75	15.44	-15.00
12,181.00	63.35	182.36	12,104.71	-147.48	-24.93	148.57	11.82	10.84	-5.38
12,226.00	67.31	181.50	12,123.49	-188.34	-26.31	189.45	8.97	8.80	-1.91
12,270.00	69.71	180.75	12,139.61	-229.27	-27.11	230.37	5.68	5.45	-1.70
12,315.00	70.65	180.84	12,154.87	-271.60	-27.70	272.67	2.10	2.09	0.20
12,360.00	73.36	181.93	12,168.77	-314.38	-28.73	315.45	6.45	6.02	2.42
12,405.00	77.97	182.05	12,179.91	-357.94	-30.25	359.03	10.25	10.24	0.27
12,449.00	81.16	182.45	12,187.87	-401.17	-31.95	402.29	7.30	7.25	0.91
12,494.00	85.35	182.28	12,193.16	-445.82	-33.79	446.97	9.32	9.31	-0.38
12,539.00	88.57	182.14	12,195.55	-490.71	-35.52	491.89	7.16	7.16	-0.31
12,628.00	88.91	181.88	12,197.50	-579.64	-38.64	580.86	0.48	0.38	-0.29
12,717.00	88.63	181.02	12,199.41	-668.59	-40.89	669.81	1.02	-0.31	-0.97
12,807.00	88.69	180.16	12,201.52	-758.56	-41.82	759.70	0.96	0.07	-0.96
12,897.00	88.38	182.39	12,203.82	-848.50	-43.82	849.63	2.50	-0.34	2.48
12,986.00	86.36	179.38	12,207.90	-937.38	-45.20	938.46	4.07	-2.27	-3.38
13,075.00	88.63	181.57	12,211.79	-1,026.28	-45.94	1,027.28	3.54	2.55	2.46
13,164.00	89.08	183.95	12,213.57	-1,115.15	-50.22	1,116.26	2.72	0.51	2.67
13,254.00	87.09	180.67	12,216.58	-1,205.01	-53.85	1,206.18	4.26	-2.21	-3.64
13,343.00	86.30	178.96	12,221.71	-1,293.86	-53.56	1,294.90	2.11	-0.89	-1.92
13,433.00	86.16	178.97	12,227.63	-1,383.65	-51.94	1,384.48	0.16	-0.16	0.01
13,523.00	87.34	180.92	12,232.73	-1,473.50	-51.85	1,474.21	2.53	1.31	2.17
13,612.00	88.74	183.95	12,235.78	-1,562.35	-55.63	1,563.14	3.75	1.57	3.40
13,701.00	88.86	184.29	12,237.64	-1,651.10	-62.03	1,652.10	0.41	0.13	0.38
13,791.00	89.14	183.87	12,239.21	-1,740.86	-68.43	1,742.07	0.56	0.31	-0.47



Survey Report



Company:	Chevron	Local Co-ordinate Reference:	Well 6H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gamma Ridge 14 24 34	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Well:	6H	North Reference:	Grid
Wellbore:	Wellbore #1 Job #1412377	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR

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)
13,880.00	89.75	183.96	12,240.07	-1,829.65	-74.50	1,831.05	0.69	0.69	0.10
13,970.00	87.96	183.69	12,241.87	-1,919.43	-80.51	1,921.02	2.01	-1.99	-0.30
14,059.00	89.05	183.58	12,244.19	-2,008.22	-86.15	2,009.98	1.23	1.22	-0.12
14,148.00	89.24	182.14	12,245.52	-2,097.09	-90.59	2,098.97	1.63	0.21	-1.62
14,238.00	89.83	181.74	12,246.25	-2,187.04	-93.63	2,188.95	0.79	0.66	-0.44
14,327.00	88.93	183.09	12,247.22	-2,275.95	-97.38	2,277.94	1.82	-1.01	1.52
14,417.00	87.90	183.99	12,249.70	-2,365.74	-102.94	2,367.90	1.52	-1.14	1.00
14,507.00	87.93	183.68	12,252.98	-2,455.48	-108.95	2,457.83	0.35	0.03	-0.34
14,596.00	88.69	182.95	12,255.60	-2,544.29	-114.10	2,546.79	1.18	0.85	-0.82
14,685.00	87.71	183.42	12,258.40	-2,633.11	-119.04	2,635.74	1.22	-1.10	0.53
14,775.00	88.16	183.41	12,261.64	-2,722.89	-124.40	2,725.68	0.50	0.50	-0.01
14,865.00	87.82	183.19	12,264.80	-2,812.69	-129.58	2,815.62	0.45	-0.38	-0.24
14,954.00	90.45	183.74	12,266.14	-2,901.51	-134.95	2,904.60	3.02	2.96	0.62
15,044.00	89.30	184.71	12,266.34	-2,991.26	-141.58	2,994.58	1.67	-1.28	1.08
15,133.00	88.21	185.19	12,268.27	-3,079.91	-149.26	3,083.50	1.34	-1.22	0.54
WB1 Final Phoenix Survey									
15,187.00	88.21	185.19	12,269.96	-3,133.66	-154.14	3,137.44	0.00	0.00	0.00
WB1 Projection to TD									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,180.00	0.00			Tie-in to Teledrift Surveys
1,319.00	1,318.97	1.22	6.78	WB1 First Phoenix Survey
15,133.00	12,268.27	-3,079.91	-149.26	WB1 Final Phoenix Survey
15,187.00	12,269.96	-3,133.66	-154.14	WB1 Projection to TD

Checked By: _____ Approved By: _____ Date: _____

Phoenix Technology Services SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER 1412377

OPERATOR Chevron

WELL NAME Gramma Ridge 14-24-34 6H

COUNTY & STATE

Lea County, New Mexico

API WELL NUMBER 30-025-42289

PROPOSED DIRECTION

180

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
11,608. ft	11,606.37 ft	1.93	32.85	44.90 ft	17.16 ft	MWD PHX

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
9-May-15	11,723.00 ft	8.86	212.32

SURVEY INSTRUMENT

TYPE

Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
21-May-15	16,770.00 ft	90.48	179.02

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

PROJECTED	PROJECTED		
TD SURVEY	TD SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
21-May-15	16,823.00 ft	90.48	179.02

August Holt

PRINT YOUR NAME ABOVE

August Holt

SIGN YOUR NAME ABOVE

21-May

TODAY'S DATE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	6.76
DECLINATION OR GRID	GRID

MWD SUPERVISOR 1

August Holt

DIRECTIONAL DRILLER 1

Craig Cannon

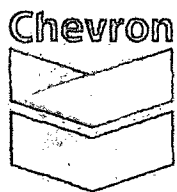
MWD SUPERVISOR 2

Kyle Anderson

DIRECTIONAL DRILLER 2

Justin Jackson

12329 Cutten Rd., Houston, Texas 777066 (713)337-0600 (Voice), (713)337-0599 (Fax)



Chevron

Lea County, NM (NAD27 NME)

Gramma Ridge 14 24 34 |

6H

Wellbore #2 / Job #1412377

Survey: Phoenix MWD Surveys

Standard Survey Report

21 May, 2015





Survey Report



Company:	Chevron	Local Co-ordinate Reference:	Well 6H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gramma Ridge 14 24 34	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Well:	6H	North Reference:	Grid
Wellbore:	Wellbore #2 / Job #1412377	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR

Project	Lea County, NM (NAD27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Gramma Ridge 14 24 34				
Site Position:		Northing:	446,243.20 usft	Latitude:	32° 13' 25.45288 N
From:	Map	Easting:	773,870.90 usft	Longitude:	103° 26' 51.79837 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.47 °

Well	6H					
Well Position	+N/-S	0.00 usft	Northing:	446,271.00 usft	Latitude:	32° 13' 25.46164 N
	+E/-W	0.00 usft	Easting:	777,117.00 usft	Longitude:	103° 26' 14.01093 W
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,476.00 usft	

Wellbore	Wellbore #2 / Job #1412377				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	2/25/2015	7.24	60.11	48,212

Design	Surveys (Ensign 153)				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	11,608.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	185.38	

Survey Program	Date 5/21/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
133.00	1,209.00	Teledrift Surveys (Wellbore #1 / Job #1412	MWD	MWD - Standard	
1,209.00	11,608.00	Phoenix MWD Surveys (Wellbore #1 / Job	PHX+MWD+BGGM	PHX+MWD+BGGM v3: standard declination	
11,694.00	16,823.00	Phoenix MWD Surveys (Wellbore #2 / Job	PHX+MWD+HDGM	PHX+MWD+HDGM	

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)	
11,608.00	1.93	32.85	11,606.37	44.90	17.16	-46.31	0.00	0.00	0.00	
Tie-in to WB1										
11,694.00	6.14	212.28	11,692.24	42.23	15.49	-43.49	9.38	4.90	208.64	
11,723.00	8.86	212.32	11,720.99	39.03	13.46	-40.12	9.38	9.38	0.14	
11,764.00	11.82	226.26	11,761.33	33.45	8.74	-34.13	9.40	7.22	34.00	
11,809.00	18.25	223.59	11,804.77	25.15	0.54	-25.09	14.37	14.29	-5.93	
11,854.00	27.97	216.21	11,846.11	11.50	-10.58	-10.46	22.50	21.60	-16.40	
11,898.00	36.11	210.45	11,883.39	-8.04	-23.27	10.19	19.74	18.50	-13.09	
11,943.00	42.90	205.48	11,918.10	-33.33	-36.60	36.62	16.63	15.09	-11.04	



Survey Report



Company:	Chevron	Local Co-ordinate Reference:	Well 6H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gamma Ridge 14 24 34	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Well:	6H	North Reference:	Grid
Wellbore:	Wellbore #2 / Job #1412377	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR

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)
11,988.00	47.52	202.71	11,949.79	-62.49	-49.60	66.86	11.16	10.27	-6.16
12,033.00	50.99	201.54	11,979.16	-94.07	-62.43	99.50	7.96	7.71	-2.60
12,078.00	53.66	200.70	12,006.66	-127.29	-75.26	133.78	6.11	5.93	-1.87
12,122.00	56.38	200.04	12,031.89	-161.08	-87.80	168.61	6.30	6.18	-1.50
12,167.00	58.57	199.46	12,056.08	-196.79	-100.62	205.36	4.99	4.87	-1.29
12,212.00	60.79	198.88	12,078.80	-233.48	-113.37	243.08	5.06	4.93	-1.29
12,257.00	63.94	198.74	12,099.67	-271.21	-126.22	281.85	7.01	7.00	-0.31
12,302.00	67.63	198.45	12,118.12	-310.10	-139.31	321.80	8.22	8.20	-0.64
12,346.00	70.20	198.23	12,133.95	-349.07	-152.22	361.81	5.86	5.84	-0.50
12,391.00	72.61	198.66	12,148.30	-389.53	-165.72	403.35	5.43	5.36	0.96
12,436.00	75.64	197.72	12,160.60	-430.64	-179.23	445.55	7.03	6.73	-2.09
12,480.00	79.54	195.13	12,170.06	-471.85	-191.37	487.72	10.56	8.86	-5.89
12,525.00	82.31	191.31	12,177.16	-515.10	-201.52	531.72	10.40	6.16	-8.49
12,570.00	83.72	186.68	12,182.63	-559.20	-208.50	576.29	10.68	3.13	-10.29
12,614.00	84.06	182.77	12,187.32	-602.80	-212.10	620.03	8.87	0.77	-8.89
12,704.00	86.00	180.13	12,195.12	-692.42	-214.37	709.47	3.63	2.16	-2.93
12,794.00	87.51	181.65	12,200.21	-782.26	-215.76	799.04	2.38	1.68	1.69
12,883.00	89.55	182.79	12,202.50	-871.15	-219.21	887.87	2.63	2.29	1.28
12,972.00	89.11	184.59	12,203.54	-959.96	-224.94	976.82	2.08	-0.49	2.02
13,062.00	85.97	184.40	12,207.40	-1,049.59	-231.98	1,066.72	3.50	-3.49	-0.21
13,151.00	86.92	186.42	12,212.92	-1,138.02	-240.36	1,155.54	2.50	1.07	2.27
13,240.00	87.17	187.90	12,217.51	-1,226.20	-251.44	1,244.38	1.68	0.28	1.66
13,330.00	87.31	187.94	12,221.84	-1,315.24	-263.82	1,334.18	0.16	0.16	0.04
13,419.00	89.05	188.30	12,224.67	-1,403.30	-276.39	1,423.03	2.00	1.96	0.40
13,509.00	86.22	187.42	12,228.38	-1,492.37	-288.68	1,512.86	3.29	-3.14	-0.98
13,598.00	86.10	185.08	12,234.34	-1,580.63	-298.35	1,601.65	2.63	-0.13	-2.63
13,688.00	86.14	184.32	12,240.43	-1,670.13	-305.71	1,691.43	0.84	0.04	-0.84
13,777.00	88.69	182.26	12,244.45	-1,758.88	-310.81	1,780.27	3.68	2.87	-2.31
13,867.00	88.04	181.50	12,247.01	-1,848.79	-313.76	1,870.06	1.11	-0.72	-0.84
13,956.00	87.34	181.36	12,250.60	-1,937.69	-315.98	1,958.78	0.80	-0.79	-0.16
14,045.00	89.21	181.35	12,253.28	-2,026.62	-318.08	2,047.52	2.10	2.10	-0.01
14,135.00	89.55	180.48	12,254.25	-2,116.60	-319.52	2,137.24	1.04	0.38	-0.97
14,224.00	89.39	182.24	12,255.08	-2,205.57	-321.63	2,226.01	1.99	-0.18	1.98
14,314.00	87.84	182.94	12,257.25	-2,295.45	-325.70	2,315.87	1.89	-1.72	0.78
14,403.00	87.40	182.89	12,260.95	-2,384.26	-330.22	2,404.72	0.50	-0.49	-0.06
14,493.00	89.58	183.00	12,263.32	-2,474.10	-334.84	2,494.60	2.43	2.42	0.12
14,583.00	89.02	184.04	12,264.42	-2,563.92	-340.37	2,584.54	1.31	-0.62	1.16
14,672.00	88.71	183.68	12,266.18	-2,652.70	-346.36	2,673.49	0.53	-0.35	-0.40
14,761.00	90.09	181.96	12,267.11	-2,741.59	-350.73	2,762.39	2.48	1.55	-1.93
14,851.00	89.16	182.10	12,267.70	-2,831.53	-353.92	2,852.24	1.04	-1.03	0.16
14,941.00	89.81	183.23	12,268.51	-2,921.42	-358.11	2,942.13	1.45	0.72	1.26
15,030.00	88.01	184.23	12,270.20	-3,010.21	-363.90	3,031.07	2.31	-2.02	1.12
15,120.00	86.95	184.07	12,274.16	-3,099.89	-370.40	3,120.96	1.19	-1.18	-0.18



Survey Report



Company:	Chevron	Local Co-ordinate Reference:	Well 6H
Project:	Lea County, NM (NAD27 NME)	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gramma Ridge 14 24 34	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Well:	6H	North Reference:	Grid
Wellbore:	Wellbore #2 / Job #1412377	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Ensign 153)	Database:	Compass 5000 GCR

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)
15,209.00	87.56	183.70	12,278.42	-3,188.58	-376.43	3,209.83	0.80	0.69	-0.42
15,298.00	88.71	184.04	12,281.32	-3,277.33	-382.43	3,298.75	1.35	1.29	0.38
15,388.00	89.55	183.68	12,282.69	-3,367.12	-388.49	3,388.71	1.02	0.93	-0.40
15,477.00	89.05	183.64	12,283.77	-3,455.93	-394.17	3,477.66	0.56	-0.56	-0.04
15,567.00	88.74	183.71	12,285.51	-3,545.73	-399.94	3,567.60	0.35	-0.34	0.08
15,656.00	88.46	183.80	12,287.68	-3,634.51	-405.76	3,656.54	0.33	-0.31	0.10
15,746.00	89.44	184.20	12,289.33	-3,724.27	-412.04	3,746.50	1.18	1.09	0.44
15,836.00	89.11	184.04	12,290.47	-3,814.03	-418.50	3,836.47	0.41	-0.37	-0.18
15,925.00	88.80	183.47	12,292.10	-3,902.83	-424.33	3,925.42	0.73	-0.35	-0.64
16,014.00	88.57	181.24	12,294.14	-3,991.72	-427.99	4,014.27	2.52	-0.26	-2.51
16,104.00	89.33	180.69	12,295.79	-4,081.69	-429.50	4,103.98	1.04	0.84	-0.61
16,193.00	87.59	180.44	12,298.18	-4,170.65	-430.38	4,192.63	1.98	-1.96	-0.28
16,282.00	89.41	180.20	12,300.51	-4,259.62	-430.88	4,281.25	2.06	2.04	-0.27
16,371.00	91.17	180.26	12,300.06	-4,348.61	-431.24	4,369.89	1.98	1.98	0.07
16,459.00	91.71	179.10	12,297.85	-4,436.58	-430.74	4,457.42	1.45	0.61	-1.32
16,549.00	90.42	179.49	12,296.17	-4,526.56	-429.64	4,546.90	1.50	-1.43	0.43
16,638.00	90.59	178.95	12,295.39	-4,615.54	-428.43	4,635.38	0.64	0.19	-0.61
16,642.00	90.59	178.95	12,295.35	-4,619.54	-428.35	4,639.36	0.00	0.00	0.00
HL Crossing: 16642' MD									
16,727.00	90.61	178.97	12,294.46	-4,704.52	-426.81	4,723.82	0.03	0.02	0.02
16,770.00	90.48	179.02	12,294.05	-4,747.52	-426.06	4,766.55	0.32	-0.30	0.12
WB2 Final Phoenix Survey									
16,823.00	90.48	179.02	12,293.61	-4,800.51	-425.15	4,819.22	0.00	0.00	0.00
WB2 Projection to TD									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,608.00	11,606.37	44.90	17.16	Tie-in to WB1
16,642.00	12,295.35	-4,619.54	-428.35	HL Crossing: 16642' MD
16,770.00	12,294.05	-4,747.52	-426.06	WB2 Final Phoenix Survey
16,823.00	12,293.61	-4,800.51	-425.15	WB2 Projection to TD

Checked By: _____ Approved By: _____ Date: _____