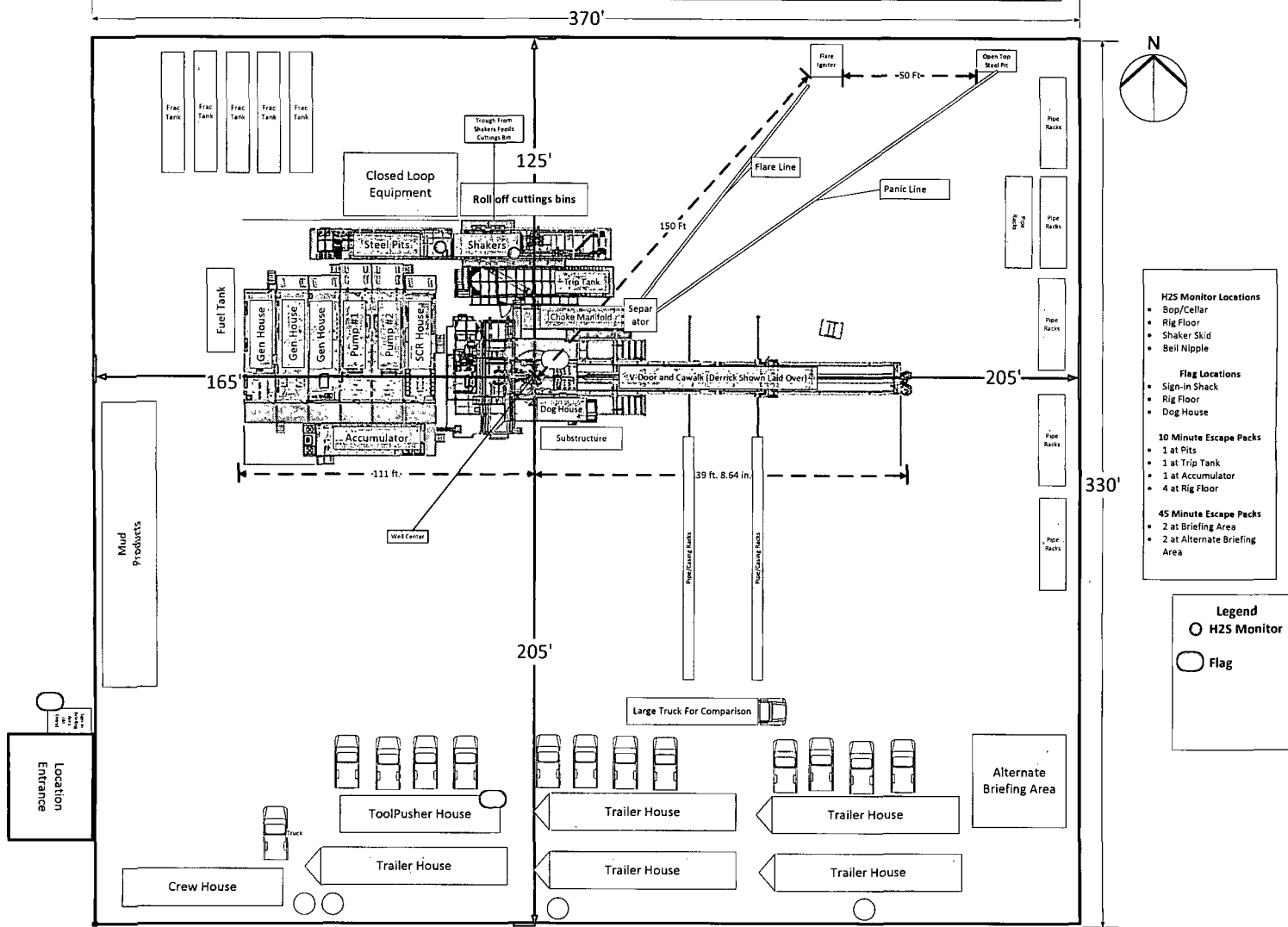


30-025-42289

Ensign 153: Gramma Ridge 14-24-34 6H Pad Layout (330' x 370')



BLOWOUT PREVENTOR SCHEMATIC

Minimum Requirements

OPERATION : Intermediate and Production Hole Sections

Minimum System Pressure Rating : 5,000 psi

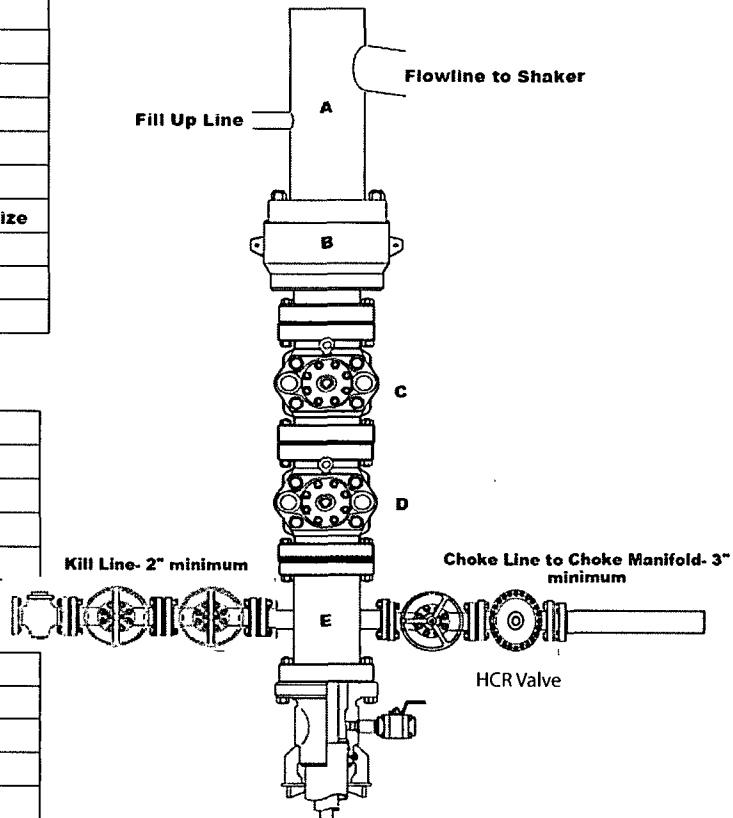
SIZE	PRESSURE	DESCRIPTION
A	N/A	Bell Nipple
B	13 5/8"	5,000 psi Annular
C	13 5/8"	5,000 psi Pipe Ram
D	13 5/8"	5,000 psi Blind Ram
E	13 5/8"	5,000 psi Mud Cross
F		
DSA	As required for each hole size	
C-Sec		
B-Sec	13-5/8" 5K x 11" 5K	
A-Sec	13-3/8" SOW x 13-5/8" 5K	

Kill Line

SIZE	PRESSURE	DESCRIPTION
2"	5,000 psi	Gate Valve
2"	5,000 psi	Gate Valve
2"	5,000 psi	Check Valve

Choke Line

SIZE	PRESSURE	DESCRIPTION
3"	5,000 psi	Gate Valve
3"	5,000 psi	HCR Valve



Installation Checklist

The following item must be verified and checked off prior to pressure testing of BOP equipment.

- ☐ The installed BOP equipment meets at least the minimum requirements (rating, type, size, configuration) as shown on this schematic. Components may be substituted for equivalent equipment rated to higher pressures. Additional components may be put into place as long as they meet or exceed the minimum pressure rating of the system.
- ☐ All valves on the kill line and choke line will be full opening and will allow straight through flow.
- ☐ The kill line and choke line will be straight unless turns use tee blocks or are targeted with running tress, and will be anchored to prevent whip and reduce vibration.
- ☐ Manual (hand wheels) or automatic locking devices will be installed on all ram preventers. Hand wheels will also be installed on all manual valves on the choke line and kill line.
- ☐ A valve will be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve will remain open unless accumulator is inoperative.
- ☐ Upper kelly cock valve with handle will be available on rig floor along with safety valve and subs to fit all drill string connections in use.

After Installation Checklist is complete, fill out the information below and email to Superintendent and Drilling Engineer

Wellname: _____

Representative: _____

Date: _____

CHOKE MANIFOLD SCHEMATIC

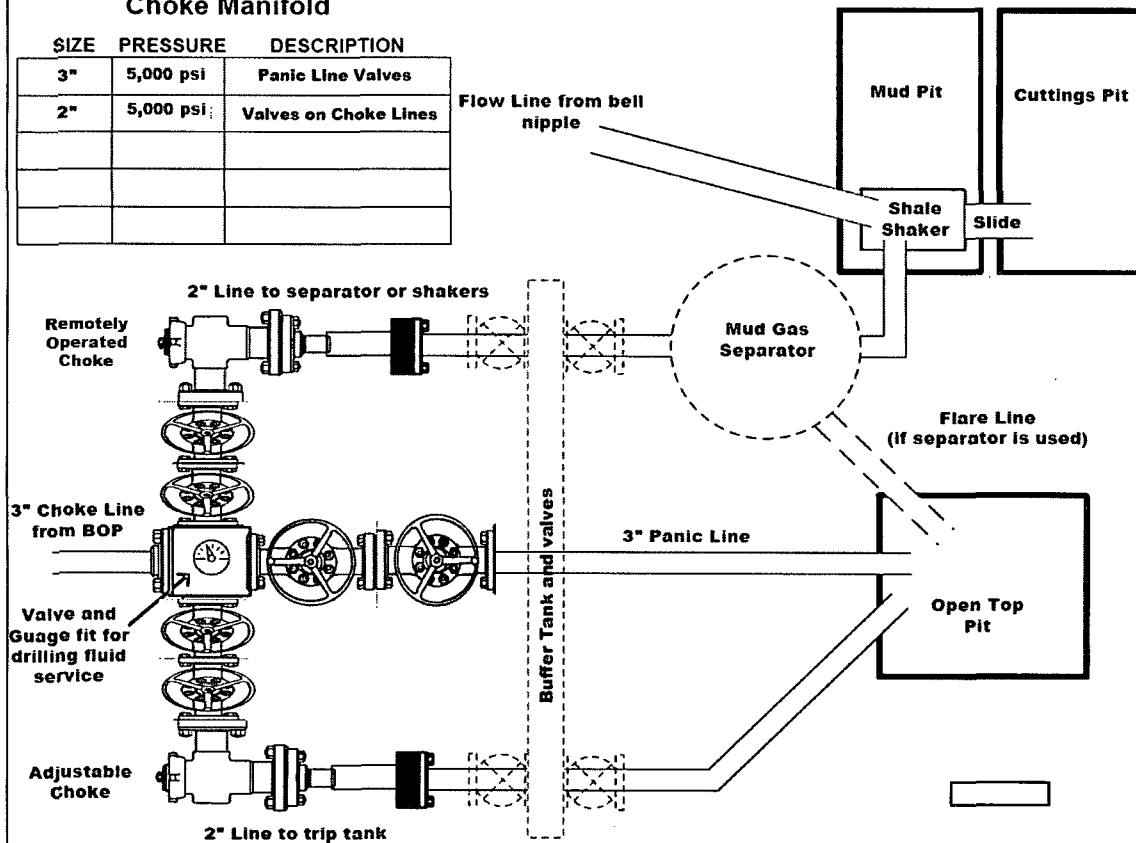
Minimum Requirements

OPERATION : Intermediate and Production Hole Sections

Minimum System Pressure Rating : 5,000 psi

Choke Manifold

SIZE	PRESSURE	DESCRIPTION
3"	5,000 psi	Panic Line Valves
2"	5,000 psi	Valves on Choke Lines



Installation Checklist

The following item must be verified and checked off prior to pressure testing of BOP equipment.

- ☐ The installed BOP equipment meets at least the minimum requirements (rating, type, size, configuration) as shown on this schematic. Components may be substituted for equivalent equipment rated to higher pressures. Additional components may be put into place as long as they meet or exceed the minimum pressure rating of the system.
- ☐ Adjustable Chokes may be Remotely Operated but will have backup hand pump for hydraulic actuation in case of loss of rig air pressure or power.
- ☐ Flare and Panic lines will terminate a minimum of 150' from the wellhead. These lines will terminate at a location as per approved APD.
- ☐ The choke line, kill line, and choke manifold lines will be straight unless turns use tee blocks or are targeted with running tress, and will be anchored to prevent whip and reduce vibration. This excludes the line between mud gas separator and shale shaker.
- ☐ All valves (except chokes) on choke line, kill line, and choke manifold will be full opening and will allow straight through flow. This excludes any valves between mud gas separator and shale shakers.
- ☐ All manual valves will have hand wheels installed.
- ☐ If used, flare system will have effective method for ignition
- ☐ All connections will be flanged, welded, or clamped (no threaded connections like hammer unions)
- ☐ If buffer tank is used, a valve will be used on all lines at any entry or exit point to or from the buffer tank.

After Installation Checklist is complete, fill out the information below and email to Superintendent and Drilling Engineer

Wellname: _____

Representative: _____

Date: _____

BOPE Testing

Minimum Requirements

Closing Unit and Accumulator Checklist

The following item must be performed, verified, and checked off at least once per well prior to low/high pressure testing of BOP equipment. This must be repeated after 6 months on the same well.

- ☐ Precharge pressure for each accumulator bottle must fall within the range below. Bottles may be further charged with nitrogen gas only. Tested precharge pressures must be recorded for each individual bottle and kept on location through the end of the well. Test will be conducted prior to connecting unit to BOP stack.

Check one that applies	Accumulator working pressure rating	Minimum acceptable operating pressure	Desired precharge pressure	Maximum acceptable precharge pressure	Minimum acceptable precharge pressure
☐	1500 psi	1500 psi	750 psi	800 psi	700 psi
☐	2000 psi	2000 psi	1000 psi	1100 psi	900 psi
☐	3000 psi	3000 psi	1000 psi	1100 psi	900 psi

- ☐ Accumulator will have sufficient capacity to open the hydraulically-controlled choke line valve (if used), close all rams, close the annular preventer, and retain a minimum of 200 psi above the maximum acceptable precharge pressure (see table above) on the closing manifold without the use of the closing pumps. This test will be performed with test pressure recorded and kept on location through the end of the well
- ☐ Accumulator fluid reservoir will be double the usable fluid volume of the accumulator system capacity. Fluid level will be maintained at manufacturer's recommendations. Usable fluid volume will be recorded. Reservoir capacity will be recorded. Reservoir fluid level will be recorded along with manufacturer's recommendation. All will be kept on location through the end of the well.
- ☐ Closing unit system will have two independent power sources (not counting accumulator bottles) to close the preventers.
- ☐ Power for the closing unit pumps will be available to the unit at all times so that the pumps will automatically start when the closing valve manifold pressure decreases to the pre-set level. It is recommended to check that air line to accumulator pump is "ON" during each tour change.
- ☐ With accumulator bottles isolated, closing unit will be capable of opening the hydraulically-operated choke line valve (if used) plus close the annular preventer on the smallest size drill pipe within 2 minutes and obtain a minimum of 200 psi above maximum acceptable precharge pressure (see table above) on the closing manifold. Test pressure and closing time will be recorded and kept on location through the end of the well.
- ☐ Master controls for the BOPE system will be located at the accumulator and will be capable of opening and closing all preventer and the choke line valve (if used)
- ☐ Remote controls for the BOPE system will be readily accessible (clear path) to the driller and located on the rig floor (not in the dog house). Remote controls will be capable of closing all preventers.
- ☐ Record accumulator tests in drilling reports and IADC sheet

BOPE Test Checklist

The following item must be checked off prior to beginning test

- ☐ BLM will be given at least 4 hour notice prior to beginning BOPE testing
- ☐ Valve on casing head below test plug will be open
- ☐ Test will be performed using clear water.

The following item must be performed during the BOPE testing and then checked off

- ☐ BOPE will be pressure tested when initially installed, whenever any seal subject to test pressure is broken, following related repairs, and at a minimum of 30 days intervals. Test pressure and times will be recorded by a 3rd party on a test chart and kept on location through the end of the well.
- ☐ Test plug will be used
- ☐ Ram type preventer and all related well control equipment will be tested to 250 psi (low) and 5,000 psi (high).
- ☐ Annular type preventer will be tested to 250 psi (low) and 3,500 psi (high).
- ☐ Valves will be tested from the working pressure side with all down stream valves open. The check valve will be held open to test the kill line valve(s)
- ☐ Each pressure test will be held for 10 minutes with no allowable leak off.
- ☐ Master controls and remote controls to the closing unit (accumulator) must be function tested as part of the BOP testing
- ☐ Record BOP tests and pressures in drilling reports and IADC sheet

After Installation Checklist is complete, fill out the information below and email to Superintendent and Drilling Engineer along with any/all BOP and accumulator test charts and reports from 3rd parties.

Wellname: _____

Representative: _____

Date: _____



Project: Lea County, NM (NAD27 NME)
Site: Gamma Ridge 14 24 34
Well: 6H
Design: Wellbore #1 Job #1412377
Rig: Ensign 153

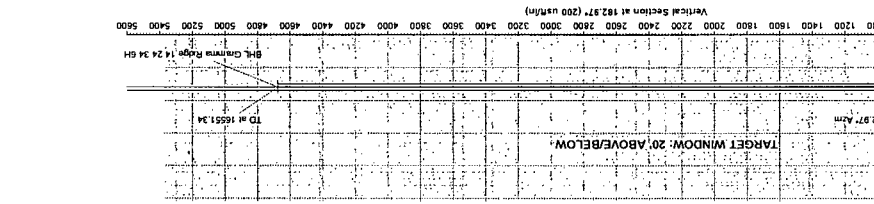
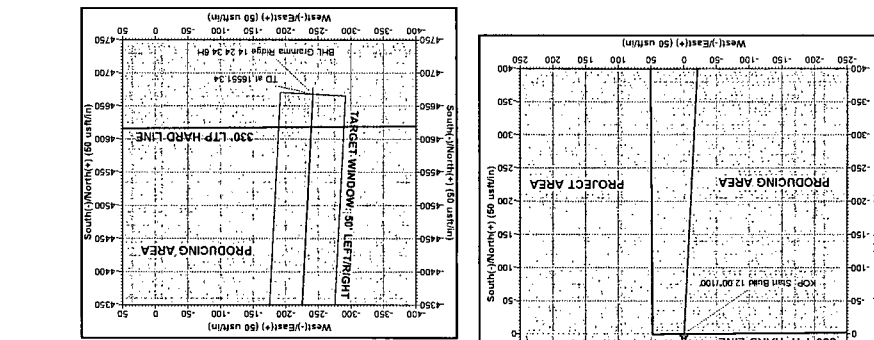
PHOENIX
TECHNOLOGY SERVICES

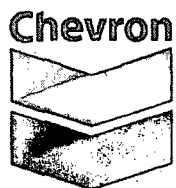


Magnetic Field
Strength: 4826.5 nT
Dip Angle: 80.12°
Date: 1/19/2014
Model: BOCHM014

WELL DETAILS									
Wellbore	6H	Well Name	Gamma Ridge 14 24 34	Well ID	142434	Well Type	Oil	Well Status	Active
Well Depth	1000	Wellbore Length	1000	Wellbore Diameter	4.5	Wellbore Orientation	Vertical	Wellbore Completion	Open
Wellbore Orientation	Vertical	Wellbore Completion	Open	Wellbore Orientation	Vertical	Wellbore Completion	Open	Wellbore Orientation	Vertical
Wellbore Orientation	Vertical	Wellbore Completion	Open	Wellbore Orientation	Vertical	Wellbore Completion	Open	Wellbore Orientation	Vertical

FORMATION TOP DETAILS									
Formation	Permian	Formation	Permian	Formation	Permian	Formation	Permian	Formation	Permian
Formation	Permian	Formation	Permian	Formation	Permian	Formation	Permian	Formation	Permian
Formation	Permian	Formation	Permian	Formation	Permian	Formation	Permian	Formation	Permian
Formation	Permian	Formation	Permian	Formation	Permian	Formation	Permian	Formation	Permian





Chevron

**Lea County, NM (NAD27 NME)
Gramma Ridge 14 24 34
6H**

Wellbore #1 Job #1412377

Plan: Plan 1 11-20-14

Standard Planning Report

20 November, 2014





Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 6H
Company:	Chevron	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gamma Ridge 14 24 34	North Reference:	Grid
Well:	6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 Job #1412377		
Design:	Plan 1 11-20-14		

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		Gamma 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	27.80 usft	Northing:	446,271.00 usft	Latitude:	32° 13' 25.46164 N
	+E/-W	3,246.10 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 #1 Job #1412377				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	11/19/2014	7.26	60.12	48,246

Design	Plan 1 11-20-14			
Audit Notes:				
Version:	Phase:	PROTOTYPE	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

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,604.54	0.00	0.00	11,604.54	0.00	0.00	0.00	0.00	0.00	0.00	
12,354.54	90.00	182.97	12,082.00	-476.82	-24.72	12.00	12.00	0.00	182.97	
16,551.34	90.00	182.97	12,082.00	-4,668.00	-242.00	0.00	0.00	0.00	0.00	BHL Gamma Ridge 1



Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 6H
Company:	Chevron	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gamma Ridge 14 24 34	North Reference:	Grid
Well:	6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 Job #1412377		
Design:	Plan 1 11-20-14		

Planned 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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,012.00	0.00	0.00	1,012.00	0.00	0.00	0.00	0.00	0.00	0.00
Aluvium / Rustler									
1,094.00	0.00	0.00	1,094.00	0.00	0.00	0.00	0.00	0.00	0.00
Magenta Dolomite									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,541.00	0.00	0.00	1,541.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado									
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,731.00	0.00	0.00	3,731.00	0.00	0.00	0.00	0.00	0.00	0.00
Castille									
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00



Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 6H
Company:	Chevron	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gamma Ridge 14 24 34	North Reference:	Grid
Well:	6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 Job #1412377		
Design:	Plan 1 11-20-14		

Planned 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)
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,415.00	0.00	0.00	5,415.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamar LS									
5,458.00	0.00	0.00	5,458.00	0.00	0.00	0.00	0.00	0.00	0.00
Bell Canyon									
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,366.00	0.00	0.00	6,366.00	0.00	0.00	0.00	0.00	0.00	0.00
Cherry Canyon									
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,789.00	0.00	0.00	7,789.00	0.00	0.00	0.00	0.00	0.00	0.00
Brushy Canyon									
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00
8,700.00	0.00	0.00	8,700.00	0.00	0.00	0.00	0.00	0.00	0.00
8,800.00	0.00	0.00	8,800.00	0.00	0.00	0.00	0.00	0.00	0.00
8,900.00	0.00	0.00	8,900.00	0.00	0.00	0.00	0.00	0.00	0.00
9,000.00	0.00	0.00	9,000.00	0.00	0.00	0.00	0.00	0.00	0.00



Planning Report



Database:	Compass 5000.GCR	Local Co-ordinate Reference:	Well 6H
Company:	Chevron	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gramma Ridge 14/24 34	North Reference:	Grid
Well:	6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 Job #1412377		
Design:	Plan 1 11-20-14		

Planned 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)
9,100.00	0.00	0.00	9,100.00	0.00	0.00	0.00	0.00	0.00	0.00
9,173.00	0.00	0.00	9,173.00	0.00	0.00	0.00	0.00	0.00	0.00
Avalon									
9,200.00	0.00	0.00	9,200.00	0.00	0.00	0.00	0.00	0.00	0.00
9,202.00	0.00	0.00	9,202.00	0.00	0.00	0.00	0.00	0.00	0.00
Top of Bone Spring									
9,300.00	0.00	0.00	9,300.00	0.00	0.00	0.00	0.00	0.00	0.00
9,325.00	0.00	0.00	9,325.00	0.00	0.00	0.00	0.00	0.00	0.00
1st Bone Spring Lime									
9,400.00	0.00	0.00	9,400.00	0.00	0.00	0.00	0.00	0.00	0.00
9,500.00	0.00	0.00	9,500.00	0.00	0.00	0.00	0.00	0.00	0.00
9,600.00	0.00	0.00	9,600.00	0.00	0.00	0.00	0.00	0.00	0.00
9,700.00	0.00	0.00	9,700.00	0.00	0.00	0.00	0.00	0.00	0.00
9,800.00	0.00	0.00	9,800.00	0.00	0.00	0.00	0.00	0.00	0.00
9,900.00	0.00	0.00	9,900.00	0.00	0.00	0.00	0.00	0.00	0.00
10,000.00	0.00	0.00	10,000.00	0.00	0.00	0.00	0.00	0.00	0.00
10,100.00	0.00	0.00	10,100.00	0.00	0.00	0.00	0.00	0.00	0.00
10,200.00	0.00	0.00	10,200.00	0.00	0.00	0.00	0.00	0.00	0.00
10,255.00	0.00	0.00	10,255.00	0.00	0.00	0.00	0.00	0.00	0.00
1st Bone Spring Sand									
10,300.00	0.00	0.00	10,300.00	0.00	0.00	0.00	0.00	0.00	0.00
10,400.00	0.00	0.00	10,400.00	0.00	0.00	0.00	0.00	0.00	0.00
10,500.00	0.00	0.00	10,500.00	0.00	0.00	0.00	0.00	0.00	0.00
10,600.00	0.00	0.00	10,600.00	0.00	0.00	0.00	0.00	0.00	0.00
10,700.00	0.00	0.00	10,700.00	0.00	0.00	0.00	0.00	0.00	0.00
10,787.00	0.00	0.00	10,787.00	0.00	0.00	0.00	0.00	0.00	0.00
2nd Bone Spring Sand									
10,800.00	0.00	0.00	10,800.00	0.00	0.00	0.00	0.00	0.00	0.00
10,900.00	0.00	0.00	10,900.00	0.00	0.00	0.00	0.00	0.00	0.00
11,000.00	0.00	0.00	11,000.00	0.00	0.00	0.00	0.00	0.00	0.00
11,100.00	0.00	0.00	11,100.00	0.00	0.00	0.00	0.00	0.00	0.00
11,200.00	0.00	0.00	11,200.00	0.00	0.00	0.00	0.00	0.00	0.00
11,300.00	0.00	0.00	11,300.00	0.00	0.00	0.00	0.00	0.00	0.00
11,400.00	0.00	0.00	11,400.00	0.00	0.00	0.00	0.00	0.00	0.00
11,500.00	0.00	0.00	11,500.00	0.00	0.00	0.00	0.00	0.00	0.00
11,604.54	0.00	0.00	11,604.54	0.00	0.00	0.00	0.00	0.00	0.00
KOP: Start Build 12.00°/100'									
11,625.00	2.46	182.97	11,624.99	-0.44	-0.02	0.44	12.00	12.00	0.00
11,650.00	5.46	182.97	11,649.93	-2.16	-0.11	2.16	12.00	12.00	0.00
11,651.07	5.58	182.97	11,651.00	-2.26	-0.12	2.27	12.00	12.00	0.00
3rd Bone Spring Sand									
11,675.00	8.46	182.97	11,674.74	-5.18	-0.27	5.19	12.00	12.00	0.00
11,700.00	11.46	182.97	11,699.37	-9.50	-0.49	9.51	12.00	12.00	0.00
11,725.00	14.46	182.97	11,723.73	-15.10	-0.78	15.12	12.00	12.00	0.00
11,750.00	17.46	182.97	11,747.76	-21.96	-1.14	21.99	12.00	12.00	0.00
11,775.00	20.46	182.97	11,771.40	-30.07	-1.56	30.11	12.00	12.00	0.00
11,800.00	23.46	182.97	11,794.59	-39.40	-2.04	39.45	12.00	12.00	0.00
11,825.00	26.46	182.97	11,817.25	-49.93	-2.59	50.00	12.00	12.00	0.00
11,850.00	29.46	182.97	11,839.33	-61.64	-3.20	61.72	12.00	12.00	0.00
11,875.00	32.46	182.97	11,860.77	-74.48	-3.86	74.58	12.00	12.00	0.00
11,900.00	35.46	182.97	11,881.50	-88.42	-4.58	88.54	12.00	12.00	0.00
11,925.00	38.46	182.97	11,901.48	-103.43	-5.36	103.57	12.00	12.00	0.00
11,950.00	41.46	182.97	11,920.64	-119.46	-6.19	119.62	12.00	12.00	0.00



Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 6H
Company:	Chevron	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gramma Ridge 14.24 34	North Reference:	Grid
Well:	6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 Job #1412377		
Design:	Plan 1 11-20-14		

Planned 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)
11,975.00	44.46	182.97	11,938.93	-136.47	-7.07	136.65	12.00	12.00	0.00
12,000.00	47.46	182.97	11,956.31	-154.42	-8.01	154.62	12.00	12.00	0.00
12,025.00	50.46	182.97	11,972.72	-173.24	-8.98	173.48	12.00	12.00	0.00
12,050.00	53.46	182.97	11,988.13	-192.90	-10.00	193.16	12.00	12.00	0.00
12,075.00	56.46	182.97	12,002.48	-213.34	-11.06	213.63	12.00	12.00	0.00
12,100.00	59.46	182.97	12,015.75	-234.50	-12.16	234.82	12.00	12.00	0.00
12,125.00	62.46	182.97	12,027.88	-256.33	-13.29	256.67	12.00	12.00	0.00
12,150.00	65.46	182.97	12,038.86	-278.75	-14.45	279.13	12.00	12.00	0.00
12,175.00	68.46	182.97	12,048.64	-301.73	-15.64	302.13	12.00	12.00	0.00
12,200.00	71.46	182.97	12,057.21	-325.18	-16.86	325.61	12.00	12.00	0.00
12,215.85	73.36	182.97	12,062.00	-340.27	-17.64	340.72	12.00	12.00	0.00
Top of Target									
12,225.00	74.46	182.97	12,064.54	-349.04	-18.10	349.51	12.00	12.00	0.00
12,250.00	77.46	182.97	12,070.60	-373.26	-19.35	373.76	12.00	12.00	0.00
12,275.00	80.46	182.97	12,075.39	-397.76	-20.62	398.30	12.00	12.00	0.00
12,300.00	83.46	182.97	12,078.89	-422.48	-21.90	423.05	12.00	12.00	0.00
12,325.00	86.46	182.97	12,081.09	-447.35	-23.19	447.95	12.00	12.00	0.00
12,350.00	89.46	182.97	12,081.98	-472.30	-24.48	472.93	12.00	12.00	0.00
12,354.52	90.00	182.97	12,082.00	-476.81	-24.72	477.45	12.00	12.00	0.00
Target Line: 12082' TVD @ 0° VS w/90° Inc									
12,354.54	90.00	182.97	12,082.00	-476.82	-24.72	477.46	12.00	12.00	0.00
LP: 90° Inc at 182.97° Azm									
12,400.00	90.00	182.97	12,082.00	-522.23	-27.07	522.93	0.00	0.00	0.00
12,500.00	90.00	182.97	12,082.00	-622.09	-32.25	622.93	0.00	0.00	0.00
12,600.00	90.00	182.97	12,082.00	-721.96	-37.43	722.93	0.00	0.00	0.00
12,700.00	90.00	182.97	12,082.00	-821.83	-42.61	822.93	0.00	0.00	0.00
12,800.00	90.00	182.97	12,082.00	-921.69	-47.78	922.93	0.00	0.00	0.00
12,900.00	90.00	182.97	12,082.00	-1,021.56	-52.96	1,022.93	0.00	0.00	0.00
13,000.00	90.00	182.97	12,082.00	-1,121.42	-58.14	1,122.93	0.00	0.00	0.00
13,100.00	90.00	182.97	12,082.00	-1,221.29	-63.31	1,222.93	0.00	0.00	0.00
13,200.00	90.00	182.97	12,082.00	-1,321.16	-68.49	1,322.93	0.00	0.00	0.00
13,300.00	90.00	182.97	12,082.00	-1,421.02	-73.67	1,422.93	0.00	0.00	0.00
13,400.00	90.00	182.97	12,082.00	-1,520.89	-78.85	1,522.93	0.00	0.00	0.00
13,500.00	90.00	182.97	12,082.00	-1,620.75	-84.02	1,622.93	0.00	0.00	0.00
13,600.00	90.00	182.97	12,082.00	-1,720.62	-89.20	1,722.93	0.00	0.00	0.00
13,700.00	90.00	182.97	12,082.00	-1,820.48	-94.38	1,822.93	0.00	0.00	0.00
13,800.00	90.00	182.97	12,082.00	-1,920.35	-99.56	1,922.93	0.00	0.00	0.00
13,900.00	90.00	182.97	12,082.00	-2,020.22	-104.73	2,022.93	0.00	0.00	0.00
14,000.00	90.00	182.97	12,082.00	-2,120.08	-109.91	2,122.93	0.00	0.00	0.00
14,100.00	90.00	182.97	12,082.00	-2,219.95	-115.09	2,222.93	0.00	0.00	0.00
14,200.00	90.00	182.97	12,082.00	-2,319.81	-120.26	2,322.93	0.00	0.00	0.00
14,300.00	90.00	182.97	12,082.00	-2,419.68	-125.44	2,422.93	0.00	0.00	0.00
14,400.00	90.00	182.97	12,082.00	-2,519.55	-130.62	2,522.93	0.00	0.00	0.00
14,500.00	90.00	182.97	12,082.00	-2,619.41	-135.80	2,622.93	0.00	0.00	0.00
14,600.00	90.00	182.97	12,082.00	-2,719.28	-140.97	2,722.93	0.00	0.00	0.00
14,700.00	90.00	182.97	12,082.00	-2,819.14	-146.15	2,822.93	0.00	0.00	0.00
14,800.00	90.00	182.97	12,082.00	-2,919.01	-151.33	2,922.93	0.00	0.00	0.00
14,900.00	90.00	182.97	12,082.00	-3,018.88	-156.51	3,022.93	0.00	0.00	0.00
15,000.00	90.00	182.97	12,082.00	-3,118.74	-161.68	3,122.93	0.00	0.00	0.00
15,100.00	90.00	182.97	12,082.00	-3,218.61	-166.86	3,222.93	0.00	0.00	0.00
15,200.00	90.00	182.97	12,082.00	-3,318.47	-172.04	3,322.93	0.00	0.00	0.00
15,300.00	90.00	182.97	12,082.00	-3,418.34	-177.21	3,422.93	0.00	0.00	0.00
15,400.00	90.00	182.97	12,082.00	-3,518.21	-182.39	3,522.93	0.00	0.00	0.00



Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 6H
Company:	Chevron	TVD Reference:	RKB @ 3501.00usft (Ensign 153)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gramma Ridge 14 24 34	North Reference:	Grid
Well:	6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 Job #1412377		
Design:	Plan 1'11-20-14		

Planned 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)
15,500.00	90.00	182.97	12,082.00	-3,618.07	-187.57	3,622.93	0.00	0.00	0.00
15,600.00	90.00	182.97	12,082.00	-3,717.94	-192.75	3,722.93	0.00	0.00	0.00
15,700.00	90.00	182.97	12,082.00	-3,817.80	-197.92	3,822.93	0.00	0.00	0.00
15,800.00	90.00	182.97	12,082.00	-3,917.67	-203.10	3,922.93	0.00	0.00	0.00
15,900.00	90.00	182.97	12,082.00	-4,017.53	-208.28	4,022.93	0.00	0.00	0.00
16,000.00	90.00	182.97	12,082.00	-4,117.40	-213.46	4,122.93	0.00	0.00	0.00
16,100.00	90.00	182.97	12,082.00	-4,217.27	-218.63	4,222.93	0.00	0.00	0.00
16,200.00	90.00	182.97	12,082.00	-4,317.13	-223.81	4,322.93	0.00	0.00	0.00
16,300.00	90.00	182.97	12,082.00	-4,417.00	-228.99	4,422.93	0.00	0.00	0.00
16,400.00	90.00	182.97	12,082.00	-4,516.86	-234.16	4,522.93	0.00	0.00	0.00
16,500.00	90.00	182.97	12,082.00	-4,616.73	-239.34	4,622.93	0.00	0.00	0.00
16,551.34	90.00	182.97	12,082.00	-4,668.00	-242.00	4,674.27	0.00	0.00	0.00
TD at 16551.34									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
BHL Gramma Ridge 14 :	0.00	182.97	12,082.00	-4,668.00	-242.00	441,603.00	776,875.00	32° 12' 39.29090 N	103° 26' 17.28046 W
- plan hits target center									
- Rectangle (sides W100.00 H4,200.00 D40.00)									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,012.00	1,012.00	Aluvium / Rustler		0.00	182.97
1,094.00	1,094.00	Magenta Dolomite		0.00	182.97
1,541.00	1,541.00	Salado		0.00	182.97
3,731.00	3,731.00	Castille		0.00	182.97
5,415.00	5,415.00	Lamar LS		0.00	182.97
5,458.00	5,458.00	Bell Canyon		0.00	182.97
6,366.00	6,366.00	Cherry Canyon		0.00	182.97
7,789.00	7,789.00	Brushy Canyon		0.00	182.97
9,173.00	9,173.00	Avalon		0.00	182.97
9,202.00	9,202.00	Top of Bone Spring		0.00	182.97
9,325.00	9,325.00	1st Bone Spring Lime		0.00	182.97
10,255.00	10,255.00	1st Bone Spring Sand		0.00	182.97
10,787.00	10,787.00	2nd Bone Spring Sand		0.00	182.97
11,651.07	11,651.00	3rd Bone Spring Sand		0.00	182.97
12,215.85	12,062.00	Top of Target		0.00	182.97
12,354.52	12,082.00	Target Line: 12082' TVD @ 0° VS w/90°		0.00	182.97



Planning Report



Database:	Compass 5000 GCR	Local Co-ordinate Reference:	Well 6H
Company:	Chevron	TVD Reference:	RKB @ 3501.00usft.(Ensign 153)
Project:	Lea County, NM (NAD27 NME)	MD Reference:	RKB @ 3501.00usft (Ensign 153)
Site:	Gamma Ridge 14 24 34	North Reference:	Grid
Well:	6H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1 Job #1412377		
Design:	Plan 1 11-20-14		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,604.54	11,604.54	0.00	0.00	KOP: Start Build 12.00°/100'
12,354.54	12,082.00	-476.82	-24.72	LP: 90° Inc at 182.97° Azm
16,551.34	12,082.00	-4,668.00	-242.00	TD at 16551.34