

Submit 1 Copy To Appropriate District Office

District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised August 1, 2011

WELL API NO.	30 025 40936
5. Indicate Type of Lease	STATE ☒ FEE ☐
6. State Oil & Gas Lease No.	VB-1184
7. Lease Name or Unit Agreement Name	Caza Ridge 14 State
8. Well Number	4H
9. OGRID Number	249099
10. Pool name or Wildcat	Antelope Ridge Bone Sprgs-West
11. Elevation (Show whether DR, RKB, RT, GR, etc.)	3366' GR

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well ☒ Gas Well ☐ Other ☐

2. Name of Operator

Caza Operating, LLC

3. Address of Operator

200 N. Loraine, Suite 1550, Midland, Tx 79701

4. Well Location

Unit Letter P : 330 feet from the South line and 660 feet from the East line
Section 14 Township 23-S Range 34-E NMPM County Lea

11. Elevation (Show whether DR, RKB, RT, GR, etc.)
3366' GR

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☒
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐
DOWNHOLE COMMINGLE ☐

OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ P AND A ☐
CASING/CEMENT JOB ☐

OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Caza Operating, LLC request permission to change plans for the previously approved State APD for the subject well. Caza proposes to TD the vertical 8-3/4" hole @ 10,700' at which point the well will be log. KOP will be $\pm$ 10,822'. We will target our zone on interest @ 11,300' TVD. Upon completing our lateral @ $\pm$ 15,714' we will run 5-1/2" 20 lb P-110 Production casing and cement casing as per the attached design. TOC 4400' FS. Attached is the revised directional plan, revised Casing long string design & revised Cement for the long string.

Spud Date:

June 15, 2013

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE

Richard L. Wright

TITLE Operations Manager

DATE 6-24-2013

Type or print name Richard L. Wright

E-mail address: rwright@cazapetro.com PHONE: 432 682 7424

For State Use Only

APPROVED BY

[Signature]

TITLE

[Signature]

DATE

7-3-2013

Conditions of Approval (if any):

JUL 08 2013

HALLIBURTON

Caza Petroleum Inc
200 N Loraine Ste 1550
Midland, Texas 79701

Caza Ridge 14 State #4H

Lea County, New Mexico
United States of America
S:14 T:23S R:34E
API/UWI 30-025-40936

HOBBS OCD

JUN 26 2013

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Cementing Production Csg

Prepared for: Richard Wright
June 5, 2013
Version: 1

Submitted by:
T. O. Ryan

Halliburton
125 W Missouri, Ste 300
Midland, Texas 79701
+14326824305

HALLIBURTON

Cementing Best Practices

1. **Cement quality and weight:** You must choose cement slurry that is designed to solve the problems specific to each string of pipe.
2. **Waiting time:** You must hold the cement slurry in place and under pressure until it hardens. Cement slurry is a time-dependent liquid and must be allowed to undergo a hydration reaction to produce a competent cement sheath. Fresh cement slurry can be worked (thickening or pump time) as long as it is plastic, and the initial set of cement occurs during the rapid reaction stage. If the cement is not allowed to hydrate; it will be subject to changes in density, dilution, settling, water separation, and gas cutting that can lead to lack of zonal isolation with resultant bridging in the annulus.
3. **Pipe movement:** Pipe movement may be one of the single most influential factors in mud removal. Reciprocation and/or rotation mechanically breaks up gelled mud and constantly changes the flow patterns in the annulus for better cement bonding.
4. **Mud properties:** Plastic viscosity (PV) should be less than 15 centipoise (cp), and less than 10 cp, if possible, yield point (YP) should be less than 10 pound/100-square feet (lb/100 ft²) decreasing down to about 5 lb/100 ft².
5. **Mud gel strength:** A nonthixotropic mud is desirable for good mud removal. Mud left in the hole prior to running casing should have 10-second/10-minute/30-minute gel strength such that the 10-minute is less than double the 10-second and the 30-minute is less than 20 lb/100 ft²). Sufficient shear strength may not be achieved on a primary cement job to remove mud left in the hole should the mud develop more than 25 lb/100 ft².
6. **Mud fluid loss:** Decreasing the filtrate loss into a permeable zone enhances the creation of a thin filter cake. This increases the fluid mud in the hole, which is more easily removed. Generally, an API fluid loss of 7 or 8 milliliter (ml) is sufficient with high-temperature/high-pressure fluid loss (HTHP) no more than double this amount.
7. **Circulation:** Circulate bottoms up twice, or until well conditioned mud is being returned to the surface. There should be no cuttings in the mud returns. An annular velocity of 260 feet per minute is optimum (SPE/IADC 18617), if possible.
8. **Flow rate:** Turbulent flow is more desirable flow regime for mud removal. If turbulence cannot be achieved, better mud removal is found when maximum flow energy is used. The maximum pump rate should be determined to obtain the best flow regime.
9. **Hole size:** The optimum hole size recommended for good mud removal is 1.5 to 2 inches larger than the casing or liner size. Hole sizes larger than 2 inches annular space can be dealt with, but those that are smaller than 1.5 inches present difficult problems.
10. **Pipe Centralization:** This helps to create a uniform flow area perpendicular to flow direction. Cement will take the path of least resistance so that centralization is important in keeping the pipe off the walls of the hole. At least a 70 percent standoff should be achieved for centralization.
11. **Rat hole:** When applicable, a weighted viscous pill in the rat hole prevents cement from swapping with lighter weight mud when displacement stops.
12. **Shoe joint:** A shoe joint is recommended on all primary casings and liners. The length of the shoe joint will vary, although the absolute minimum length is one joint of pipe. If conditions exist, such as not running a bottom plug, two joints should be the minimum length.

Job Information**Production Casing**

Well Name: Caza Ridge 14 State

Well #: 4H

Intermediate Casing

0 - 5000 ft (MD)

Outer Diameter

9.625 in

Inner Diameter

8.835 in

Linear Weight

40 lbm/ft

Thread

LTC

Casing Grade

HCK-55

8-3/4" Hole

5000 - 10700 ft (MD)

Inner Diameter

8.750 in

Job Excess

50 %

Kick-off Point

10700 ft (MD)

8-3/4" Hole

10700 - 15714 ft (MD)

10700 - 11265 ft (TVD)

Inner Diameter

8.750 in

Job Excess

35 %

Production Casing

0 - 15714 ft (MD)

0 - 11265 ft (TVD)

Outer Diameter

5.500 in

Inner Diameter

4.892 in

Linear Weight

17 lbm/ft

Required Pump Time - Lead Cement

6+ hours

Required Pump Time - Tail Cement

6 hours

Calculations

Production Casing

Cement : (6300.00 ft fill)		
600.00 ft * 0.2607 ft ³ /ft * 10 %	=	172.09 ft ³
5700.00 ft * 0.2526 ft ³ /ft * 50 %	=	2159.69 ft ³
Total Lead Cement	=	2331.79 ft ³
	=	415.31 bbl
Sacks of Cement	=	1215 sks
Cement : (5014.00 ft fill)		
5014.00 ft * 0.2526 ft ³ /ft * 35 %	=	1709.79 ft ³
Tail Cement	=	1709.79 ft ³
	=	304.53 bbl
Shoe Joint Volume: (40.00 ft fill)		
40.00 ft * 0.1305 ft ³ /ft	=	5.22 ft ³
	=	0.93 bbl
Tail plus shoe joint	=	1715.01 ft ³
	=	305.46 bbl
Total Tail	=	653 sks

Install floating equipment, run casing to bottom, and circulate a minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Fluid 1: Pump 30 bbl

Gel Spacer

2.5 lbm/bbl K-35 (Buffer)

2.5 lbm/bbl FWCA (Gelling Agent)

Fluid Volume: 30 bbl

Fluid 2: Lead with 1220 sks

EconoCem - HLH

0.4 % Halad®-9 (Low Fluid Loss Control)

0.3 % Econolite (Free Water Control)

0.5 % HR-601 (Retarder)

Fluid Weight 12.60 lbm/gal

Slurry Yield: 1.92 ft³/sk

Total Mixing Fluid: 10.52 Gal/sk

Top of Fluid: 4400 ft

Calculated Fill: 6300 ft

Volume: 415.31 bbl

Calculated Sacks: 1215.10 sks

Proposed Sacks: 1220 sks

Fluid 3: Tail-in with 655 sks

SoluCem - H

0.25 lbm/sk D-AIR 5000 (Defoamer)

0.75 % HR-601 (Retarder)

Fluid Weight 15 lbm/gal

Slurry Yield: 2.63 ft³/sk

Total Mixing Fluid: 11.39 Gal/sk

Top of Fluid: 10700 ft

Calculated Fill: 5014 ft

Volume: 305.46 bbl

Calculated Sacks: 653.34 sks

Proposed Sacks: 655 sks

HOBBS OCD

JUN 26 2013

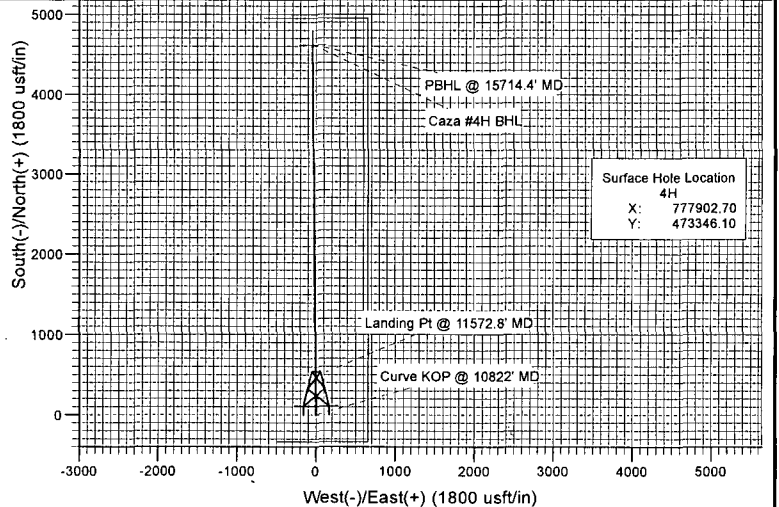
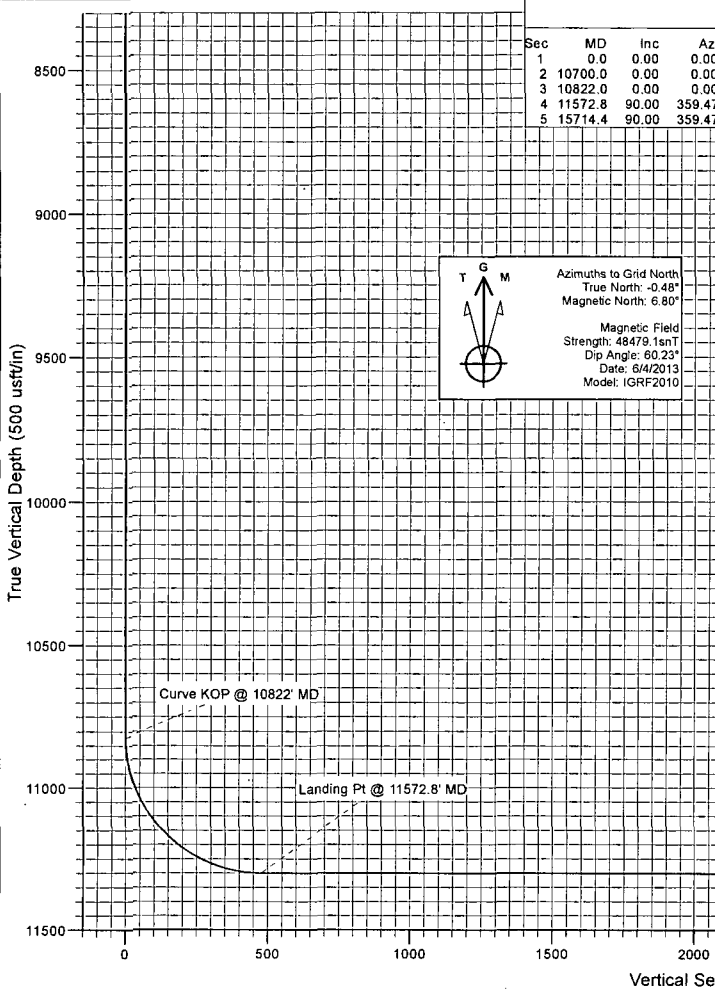
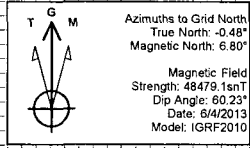
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Project: Lea County, NM
Site: Caza Ridge 14 State
Well: 4H
Wellbore: HZ
Design: Plan #1



SECTION DETAILS											Annotation
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target	
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	10700.0	0.00	0.00	10700.0	0.0	0.0	0.00	0.00	0.0		
3	10822.0	0.00	0.00	10822.0	0.0	0.0	0.00	0.00	0.0		Curve KOP @ 10822' MD
4	11572.8	90.00	359.47	11300.0	478.0	-4.4	11.99	359.47	478.0		Landing Pt @ 11572.8' MD
5	15714.4	90.00	359.47	11300.0	4619.4	-42.7	0.00	0.00	4619.6	Caza #4H BHL	PBHL @ 15714.4' MD



DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Caza #4H BHL	11300.0	4619.4	-42.8	477965.50	777859.90	32° 18' 39.020 N	103° 26' 2.272 W

Caza #4H RHI

PBHL @ 15714.4' MD

Plan #1
4H
WELL @ 3391.0usft (Patriot 4)
Ground Elevation @ 3366.0
NAD 1927 (NADCON CONUS)
Well 4H, Grid North

Vertical Section at 359.47° (500 usft/in)

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well 4H
Company:	Caza Operating, LLC	TVD Reference:	WELL @ 3391.0usft (Patriot 4)
Project:	Lea County, NM	MD Reference:	WELL @ 3391.0usft (Patriot 4)
Site:	Caza Ridge 14 State	North Reference:	Grid
Well:	4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Project	Lea County, NM		
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	Caza Ridge 14 State		
Site Position:		Northing:	473,346.10 usft
From:	Map	Easting:	777,902.70 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Latitude:	32° 17' 53.308 N
		Longitude:	103° 26' 2.225 W
		Grid Convergence:	0.48 °

Well	4H		
Well Position	+N/-S	0.0 usft	Northing: 473,346.10 usft
	+E/-W	0.0 usft	Easting: 777,902.70 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 17' 53.308 N
		Longitude:	103° 26' 2.225 W
		Ground Level:	3,366.0 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/4/2013	7.28	60.23	48,479

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	359.47

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
10,700.0	0.00	0.00	10,700.0	0.0	0.0	0.00	0.00	0.00	0.00	
10,822.0	0.00	0.00	10,822.0	0.0	0.0	0.00	0.00	0.00	0.00	
11,572.8	90.00	359.47	11,300.0	478.0	-4.4	11.99	11.99	0.00	359.47	
15,714.4	90.00	359.47	11,300.0	4,619.4	-42.7	0.00	0.00	0.00	0.00	Caza #4H BHL

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well 4H
Company:	Caza Operating, LLC	TVD Reference:	WELL @ 3391.0usft (Patriot 4)
Project:	Lea County, NM	MD Reference:	WELL @ 3391.0usft (Patriot 4)
Site:	Caza Ridge 14 State	North Reference:	Grid
Well:	4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well 4H
Company:	Caza Operating, LLC	TVD Reference:	WELL @ 3391.0usft (Patriot 4)
Project:	Lea County, NM	MD Reference:	WELL @ 3391.0usft (Patriot 4)
Site:	Caza Ridge 14 State	North Reference:	Grid
Well:	4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	
9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	
10,200.0	0.00	0.00	10,200.0	0.0	0.0	0.0	0.00	0.00	
10,300.0	0.00	0.00	10,300.0	0.0	0.0	0.0	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well 4H
Company:	Caza Operating, LLC	TVD Reference:	WELL @ 3391.0usft (Patriot 4)
Project:	Lea County, NM	MD Reference:	WELL @ 3391.0usft (Patriot 4)
Site:	Caza Ridge 14 State	North Reference:	Grid
Well:	4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
10,400.0	0.00	0.00	10,400.0	0.0	0.0	0.0	0.00	0.00	
10,500.0	0.00	0.00	10,500.0	0.0	0.0	0.0	0.00	0.00	
10,600.0	0.00	0.00	10,600.0	0.0	0.0	0.0	0.00	0.00	
10,700.0	0.00	0.00	10,700.0	0.0	0.0	0.0	0.00	0.00	
10,800.0	0.00	0.00	10,800.0	0.0	0.0	0.0	0.00	0.00	
10,822.0	0.00	0.00	10,822.0	0.0	0.0	0.0	0.00	0.00	Curve KOP @ 10822' MD
10,900.0	9.35	359.47	10,899.7	6.3	-0.1	6.3	11.99	11.99	
11,000.0	21.34	359.47	10,995.9	32.8	-0.3	32.8	11.99	11.99	
11,100.0	33.32	359.47	11,084.6	78.6	-0.7	78.6	11.99	11.99	
11,200.0	45.31	359.47	11,161.8	141.8	-1.3	141.8	11.99	11.99	
11,300.0	57.30	359.47	11,224.2	219.7	-2.0	219.7	11.99	11.99	
11,400.0	69.28	359.47	11,269.1	308.9	-2.9	308.9	11.99	11.99	
11,500.0	81.27	359.47	11,294.5	405.4	-3.8	405.4	11.99	11.99	
11,572.8	90.00	359.47	11,300.0	477.9	-4.4	478.0	11.99	11.99	Landing Pt @ 11572.8' MD
11,600.0	90.00	359.47	11,300.0	505.1	-4.7	505.2	0.02	0.02	
11,700.0	90.00	359.47	11,300.0	605.1	-5.6	605.2	0.00	0.00	
11,800.0	90.00	359.47	11,300.0	705.1	-6.5	705.2	0.00	0.00	
11,900.0	90.00	359.47	11,300.0	805.1	-7.4	805.2	0.00	0.00	
12,000.0	90.00	359.47	11,300.0	905.1	-8.4	905.2	0.00	0.00	
12,100.0	90.00	359.47	11,300.0	1,005.1	-9.3	1,005.2	0.00	0.00	
12,200.0	90.00	359.47	11,300.0	1,105.1	-10.2	1,105.2	0.00	0.00	
12,300.0	90.00	359.47	11,300.0	1,205.1	-11.1	1,205.2	0.00	0.00	
12,400.0	90.00	359.47	11,300.0	1,305.1	-12.1	1,305.2	0.00	0.00	
12,500.0	90.00	359.47	11,300.0	1,405.1	-13.0	1,405.2	0.00	0.00	
12,600.0	90.00	359.47	11,300.0	1,505.1	-13.9	1,505.2	0.00	0.00	
12,700.0	90.00	359.47	11,300.0	1,605.1	-14.8	1,605.2	0.00	0.00	
12,800.0	90.00	359.47	11,300.0	1,705.1	-15.8	1,705.2	0.00	0.00	
12,900.0	90.00	359.47	11,300.0	1,805.1	-16.7	1,805.2	0.00	0.00	
13,000.0	90.00	359.47	11,300.0	1,905.1	-17.6	1,905.2	0.00	0.00	
13,100.0	90.00	359.47	11,300.0	2,005.1	-18.5	2,005.2	0.00	0.00	
13,200.0	90.00	359.47	11,300.0	2,105.1	-19.5	2,105.2	0.00	0.00	
13,300.0	90.00	359.47	11,300.0	2,205.1	-20.4	2,205.2	0.00	0.00	
13,400.0	90.00	359.47	11,300.0	2,305.1	-21.3	2,305.2	0.00	0.00	
13,500.0	90.00	359.47	11,300.0	2,405.1	-22.2	2,405.2	0.00	0.00	
13,600.0	90.00	359.47	11,300.0	2,505.1	-23.2	2,505.2	0.00	0.00	
13,700.0	90.00	359.47	11,300.0	2,605.0	-24.1	2,605.2	0.00	0.00	
13,800.0	90.00	359.47	11,300.0	2,705.0	-25.0	2,705.2	0.00	0.00	
13,900.0	90.00	359.47	11,300.0	2,805.0	-25.9	2,805.2	0.00	0.00	
14,000.0	90.00	359.47	11,300.0	2,905.0	-26.9	2,905.2	0.00	0.00	
14,100.0	90.00	359.47	11,300.0	3,005.0	-27.8	3,005.2	0.00	0.00	
14,200.0	90.00	359.47	11,300.0	3,105.0	-28.7	3,105.2	0.00	0.00	
14,300.0	90.00	359.47	11,300.0	3,205.0	-29.6	3,205.2	0.00	0.00	
14,400.0	90.00	359.47	11,300.0	3,305.0	-30.6	3,305.2	0.00	0.00	
14,500.0	90.00	359.47	11,300.0	3,405.0	-31.5	3,405.2	0.00	0.00	
14,600.0	90.00	359.47	11,300.0	3,505.0	-32.4	3,505.2	0.00	0.00	
14,700.0	90.00	359.47	11,300.0	3,605.0	-33.3	3,605.2	0.00	0.00	
14,800.0	90.00	359.47	11,300.0	3,705.0	-34.3	3,705.2	0.00	0.00	
14,900.0	90.00	359.47	11,300.0	3,805.0	-35.2	3,805.2	0.00	0.00	
15,000.0	90.00	359.47	11,300.0	3,905.0	-36.1	3,905.2	0.00	0.00	
15,100.0	90.00	359.47	11,300.0	4,005.0	-37.0	4,005.2	0.00	0.00	
15,200.0	90.00	359.47	11,300.0	4,105.0	-38.0	4,105.2	0.00	0.00	
15,300.0	90.00	359.47	11,300.0	4,205.0	-38.9	4,205.2	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well 4H
Company:	Caza Operating, LLC	TVD Reference:	WELL @ 3391.0usft (Patriot 4)
Project:	Lea County, NM	MD Reference:	WELL @ 3391.0usft (Patriot 4)
Site:	Caza Ridge 14 State	North Reference:	Grid
Well:	4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
15,400.0	90.00	359.47	11,300.0	4,305.0	-39.8	4,305.2	0.00	0.00	
15,500.0	90.00	359.47	11,300.0	4,405.0	-40.7	4,405.2	0.00	0.00	
15,600.0	90.00	359.47	11,300.0	4,505.0	-41.7	4,505.2	0.00	0.00	
15,700.0	90.00	359.47	11,300.0	4,605.0	-42.6	4,605.2	0.00	0.00	
15,714.4	90.00	359.47	11,300.0	4,619.4	-42.7	4,619.6	0.00	0.00	PBHL @ 15714.4' MD

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									
Caza #4H BHL	0.00	0.00	11,300.0	4,619.4	-42.8	477,965.50	777,859.90	32° 18' 39.020 N	103° 26' 2.272 W
- plan misses target center by 0.1usft at 15714.4usft MD (11300.0 TVD, 4619.4 N, -42.7 E)									
- Point									

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
10,822.0	10,822.0	0.0	0.0	Curve KOP @ 10822' MD	
11,572.8	11,300.0	477.9	-4.4	Landing Pt @ 11572.8' MD	
15,714.4	11,300.0	4,619.4	-42.7	PBHL @ 15714.4' MD	

Well name:

Caza Ridge 14 State # 4H

Operator: **Caza Operating, LLC**

String type: **Production: Frac**

Location: **New Mexico**

Design parameters:

Collapse

Mud weight: 10.00

Minimum design factors:

Collapse:

DF 1.125

Environment:

H2S considered? No

Surface temperature: 75.00 °F

Design is based on evacuated pipe.

Bottom hole temperature: 148 °F

Temperature gradient: 0.65 °F/100ft

Minimum section length: 1,500 ft

Minimum Drift: 3.750 in

Cement top: 4,314 ft

Burst:

DF 1.13

Burst

Max anticipated surface pressure:

10,271.14 psi

Internal gradient:

0.00 psi/ft

Tension:

Directional Info - Build & Hold

Calculated BHP

10,271.14 psi

8 Rd STC: 1.80

(J) Kick-off point 10822 ft

8 Rd LTC: 1.80

(J) Departure at shoe: 4619 ft

Annular backup:

4.00 ppg

Buttress: 1.60

(J) Maximum dogleg: 12 °/100ft

Premium: 1.50

(J) Inclination at shoe: 89.97 °

Body yield: 1.50

(B)

Annular surface pressure:

1,000 psi

Tension is based on buoyed weight.

Neutral pt: 9,590.78 ft

Run Seq	Segment Length (ft)	Size (in)	Nominal Weight (lbs/ft)	Grade	End Finish	True Vert Depth (ft)	Measured Depth (ft)	Drift Diameter (in)	Internal Capacity (ft³)
1	15714	5.5	20.00	P-110	LT&C	11302	15714	4.653	1956.6

Run Seq	Collapse Load (psi)	Collapse Strength (psi)	Collapse Design Factor	Burst Load (psi)	Burst Strength (psi)	Burst Design Factor	Tension Load (Kips)	Tension Strength (Kips)	Tension Design Factor
1	5871	11100	1.891	9271	12630	1.36	192	548	2.86 J

Prepared

Date:

June 21, 2013

by: Wright

Midland, Texas

Remarks:

Collapse is based on a vertical depth of 11302 ft, a mud weight of 10 ppg. The casing is considered to be evacuated for collapse purposes.

Collapse strength is based on the Westcott, Dunlop & Kemler method of biaxial correction for tension.

Burst strength is not adjusted for tension.

Collapse strength is (biaxially) derated for doglegs in directional wells by multiplying the tensile stress by the cross section area to calculate a tensile load which is added to the axial load.

Engineering responsibility for use of this design will be that of the purchaser.