

State of New Mexico  
Energy, Minerals and Natural Resources Department

Susana Martinez  
Governor

David Martin  
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.  
Deputy Cabinet Secretary

Jami Bailey, Division Director  
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 10/25/13

Well information;

Operator Hunt Oil, Well Name and Number Regina Com 25-2-14-15 1H

API# 30-039-31203, Section 14, Township 25 (N)S, Range 2 E(W)

Conditions of Approval:

(See the below checked and handwritten conditions)

- Notify Aztec OCD 24hrs prior to casing & cement.
- Hold C-104 for directional survey & "As Drilled" Plat
- Hold C-104 for NSL, NSP DHC
- Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
  - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
  - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
  - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils

Charlie Torres  
NMOCD Approved by Signature

12-19-2013 ca  
Date

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

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FORM APPROVED  
OMB No. 1004-0137  
Expires July 31, 2010

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		Farmington Field Office Bureau of Land Management		5. Lease Serial No. FEE & Fed (NMSF-081332/081332-B)
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone				6. If Indian, Allottee or Tribe Name
2. Name of Operator: Hunt Oil Company				7. If Unit or CA Agreement, Name and No.
3a. Address: c/o Walsh Engineering 7415 E. Main St, Farmington, NM 87402		3b. Phone No. (include area code) 505-327-4892		8. Lease Name and Well No. Regina Com 25-2-14-15 #1H
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface: 1443' fsl & 2262' fel Sec 14, T25N, R2W At proposed prod. zone: 2023' fsl & 462' fwl Sec 15, T25N, R2W				9. API Well No. 30-039-31203
14. Distance in miles and direction from nearest town or post office* ~10 miles North of Lindrith, NM		12. County or Parish Rio Arriba		13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1386'	16. No. of acres in lease 960 acres	17. Spacing Unit dedicated to this well West Half of Section 14 & entire Section 15 RCVD DEC 9 '13		
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth 14,895' MD / 7151' TVD	20. BLM/BIA Bond No. on file WYB 000609 OIL CONS. DIV.		
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 7394' GL	22. Approximate date work will start* 01/01/2013	23. Estimated duration 30 days DIST. 3		

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- Well plat certified by a registered surveyor.
- A Drilling Plan.
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
- Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
- Operator certification
- Such other site specific information and/or plans as may be required by the BLM.

25. Signature:	Name (Printed/Typed) John Thompson	Date 10/25/2013
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Title: Agent/Engineer

Approved by (Signature):	Name (Printed/Typed) AEM	Date 12/6/13
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Title: AEM

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

\*(Instructions on page 2)

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

NMOCDA

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS".



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Farmington Field Office  
Bureau of Land Management

**OPERATIONS PLAN**

WELL NAME.....Regina Com 25-2-14-15 #1H  
JOB TYPE.....HZ Mancos Shale  
PREPARED BY.....John Thompson

**GENERAL INFORMATION**

Surface Location	1443' FSL, 2262' FEL
S-T-R	(J) Sec. 14-T25N-R02W
Point of Penetration	2023' FSL, 2486' FWL
S-T-R	(K) Sec. 14 T25N-R02W
Bottom Hole Location	2023' FSL, 462' FWL
S-T-R	(L) Sec. 15 T25N-R02W
County, State	Rio Arriba, New Mexico
Elevations	7394' GL/' KB
Total Depth	14,895' +/- (MD); 7,151' (TVD)
Formation Objective	Mancos Shale - Niobrara

**1) ESTIMATED FORMATION TOPS**

San Jose	Surface
Nacimiento Fm	1777' (TVD)
Ojo Alamo SS	3257' (TVD)
Fruitland Fm	3381' (TVD)
Pictured Cliffs SS	3526' (TVD)
Lewis Sh	3698' (TVD)
Huerfanito Bentonite	3958' (TVD)
Chacra	4497' (TVD)
Cliff House	5233' (TVD)
Menefee	5333' (TVD)
Point Lookout	5667' (TVD)
Mancos Sh	5851' (TVD)
LP-Marker 1	6401' (TVD)
LP-Marker 2	6523' (TVD)
LP-Marker 3	6645' (TVD)
Gallup	6694' (TVD)
LP-Marker 4	6735' (TVD)
LP-Marker 5	6815' (TVD)
Ojito SS	6887' (TVD)
LP-Marker 6	6949' (TVD)
LP-Marker 7	7027' (TVD)
Niobrara Top	7067' (TVD)
Niobrara Base	7134' (TVD)
Target	7151' (TVD)

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## DRILLING PLAN

**Surface:** 12-1/4" wellbore will be drilled to ~ 500' with a fresh water mud system, LSND

**Intermediate:** 8-3/4" wellbore will be drilled to ~ 7151' (TVD) with a fresh water system, LSND.

Projected KOP is 6453' TVD w/ 10°/100' build rates.

**Production:** 6-1/8" wellbore will be drilled to ~ 14,895' (TVD) with an oil based mud system. Mud density is expected to range from 8.0 to 8.4 ppg.

### 2) ANTICIPATED DEPTHS OF PROSPECTIVE OIL GAS AND OTHER HYDROCARBONS

Primary objective is the Gallup formation encountered first at 5172' TVD at 7" casing point

See formation listings in #1 above for additional zones of interest.

### 3) MINIMUM SPECIFICATIONS FOR PRESSURE CONTROL EQUIPMENT:

#### Wellhead Equipment 3,000 PSI System (See Exhibit 1)

1. 9 5/8" slip-on / welded x 11" 3,000 psi casing head.
2. One 11" 3,000 psi WP double-ram preventer with one (1) set of blind rams on top & one (1) set of pipe rams on bottom complete with hand wheels and extension arms.
3. The choke and kill lines will be connected to outlets between the bottom and top rams, utilizing either the ram body outlet or a drilling spool with side outlets for 2" kill line and minimum 3" choke line
4. One 11" x 3,000 psi WP Hydril GK (or equivalent) annular preventer.
5. Accumulator - Four Station Koomey (or equivalent) 120 gallon closing unit with remote, backup. The accumulator shall have sufficient capacity to open the hydraulically-controlled gate valve and close all rams plus the annular preventer (if needed), with a 50% safety factor and retain a minimum of 200 psi above the precharge on the closing manifold without the use of the closing unit pumps. The reservoir capacity shall be double the usable accumulator capacity, and the fluid level shall be maintained at the manufacturer's recommendations.
6. The BOP system shall have two (2) independent power sources (electric and air) available for powering the closing unit pumps. Sufficient nitrogen bottles are suitable as a backup power source only, and shall be recharged when the pressure falls below manufacturer's specification.
7. A valve shall be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve shall be maintained in the open position and shall be closed only when the power source for the accumulator system is inoperative.

All BOP equipment will be hydraulically operated with controls accessible both on the rig floor.

The wellhead BOP equipment will be nipped-up on the 9-5/8" x 11" 3,000 psi WP casing head prior to drilling out from under surface casing. All ram preventers and related equipment will be tested to

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3,000 psi for 10 minutes. Surface casing will be tested to 70% of internal yield pressure. All preventers and surface casing will be tested before drilling out of surface casing. BOP equipment will be tested every 14 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe rams will be activated daily and blind rams shall be activated each trip or at least weekly. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE

#### 4) PROPOSED BIT AND CASING PROGRAM

##### CASING, TUBING & CASING EQUIPMENT

String	Start Depth	End Depth	Wellbore	Size	Wt	Grade
Surface	0	500'	12-1/4"	9-5/8"	36 lb/ft	J-55 LT&C
Intermediate TVD	0'	7151'	8-3/4"	7"	23 lb/ft	N-80 LT&C
Production TVD	7151'	14,895'	6-1/8"	4-1/2"	11.6 lb/ft	P-110 LT&C

**9-5/8" Surface Casing:** Run on 9-5/8" casing from bottom, up – LTC float shoe, thread locked. One joint (45') of 9-5/8" 36#/ft, J-55-LTC R-3 casing, thread locked. LTC float collar, thread locked top and bottom. Run to surface w/ 9-5/8" casing doped with lead free dope. Centralize w/ ONE bow spring above shoe, ONE bow spring on shoe joint (use lock ring) & ONE across each collar on every joint to surface. (~13 total centralizers)

**7" Intermediate Casing:** Run on 7", 23#, N-80 casing from bottom, up – 7" LTC Halliburton auto-fill float shoe, thread locked. One joint (45') of 7" 23#, N-80 LTC R-3 casing, thread locked. LTC float collar for DV tool, thread locked top and bottom. Run to surface with 7" 23# N-80 LTC casing doped with lead free dope. Centralize w/ ONE bow spring above shoe, ONE bow spring on shoe joint (use lock ring), ONE on every collar to KOP (6453'), then every other joint to DV tool at 5200'. Place bow spring centralizer on joint directly above and below DV tool. Then alternate bow spring centralizer and turbolizer on every 3<sup>rd</sup> jt to 3000'. (~ 40 centralizers and ~ 8 turbolizers).

**4-1/2" Production Liner:** Run on 4-1/2", 11.6, P-110, casing from bottom, up – 4.5" double valve float shoe, one joint of 4-1/2" casing, landing collar, 4-1/2" casing spaced out w/ external swell packers. Run 4-1/2" casing from top of RSI sleeve system on liner hanger to 700' inside 7" casing shoe (back to vertical), doped w/ BOL 2000 thread dope. Note: Plan to run Baker Hughes Swell packers in lateral, spaced out ~ every 250'. Actual placement of packers will be determined once well has reached TD.

Casing strings will be tested to .22 psi per foot of the casing string length or 1500 psi, whichever is greater but not to exceed 70% of the minimum internal yield.

Minimum casing design factors used:

Collapse:	1.125
Burst:	1.0
Jt. Strength:	1.60

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RCVD DEC 13 '13  
OIL CONS. DIV.  
DIST. 3

## 5) PROPOSED CEMENTING PROGRAM

*Note: Actual slurry and volumes may vary based on actual conditions while drilling (See Cement Program for complete details)*

**9-5/8" Surface Casing:** Circulate hole at least 1-1/2 hole volumes of mud prior to cementing.

Pre-flush with 5 bbls H2O + 20 bbls Mud Flush + 5 bbls H2O. Mix & pump 195 sks 50/50 Poz w/ ¼ #/sk Flocele and 5 #/sk Gilsonite @ 13.5 ppg; 1.81 ft<sup>3</sup>/sk yield. Displace with mud. WOC 4 hours before slacking off and minimum of 12 hours before drilling out. *Proposed Usage: 195 sacks cement.*

**7" Intermediate Casing:** Set DV tool at ~ 5200' MD. Start first stage from 7695' – 5200'. Second stage to be pumped from 5200' to surface. Circulate hole at least 1-1/2 hole volumes of mud.

*First Stage:* Pre-flush with 5 bbls H2O + 20 bbls Mud Flush + 5 bbls H2O. Lead with 135 sacks PRB II w/ 5 #/sk Gilsonite and ¼ #/sk Flocele @ 12.3 ppg and 2.27 yield. Calculated volume 306.45 ft<sup>3</sup>; 135 sacks at 100% excess. Tail in w/ 160 sks PRB II w/ 25 #/sks Gilsonite and ¼ #/sk Flocele @ 13.5 ppg and 1.81 yield. Calculated volume 289.60 ft<sup>3</sup>; 160 sacks at 100% excess. Displace casing volume to float collar with water followed by viscous pill and mud. Drop ball to open stage tool, open stage tool and circulate one while WOC 4 hours. *Proposed Usage: 135 sacks lead, 160 sacks tail cement.*

*Second Stage:* Lead w/ 593 sks PRB II w/ ¼ #/sk Flocele and 5 #/sk Gilsonite @ 13.5 ppg and 2.27 ft<sup>3</sup>/sk yield. Calculated volume 1346 ft<sup>3</sup>; 595 sacks. Tail in w/ 120 sks PRB II w/ ¼ #/sk Flocele and 10 #/sk Gilsonite @ 13.5 ppg and 1.81 ft<sup>3</sup>/sk yield. Calculated volume 217.20 ft<sup>3</sup>; 120 sks at 100% excess. Displace with mud. WOC 4 hours before slacking off and minimum of 18 hours before drilling out. *Proposed Usage: 595 sacks lead, 120 sacks tail cement.*

**4-1/2" Production Liner:** No cement – swell packer system

**Set slips with full string weight on all cement jobs. Try to reciprocate pipe, if possible throughout all cement jobs.**

**If cement does not circulate to surface (surface and intermediate), notify BLM and NMOCD immediately and run temperature and/or CBL survey in 8 hrs. to determine TOC.**

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending upon service provider selected. Cement yields may change depending on slurries selected.

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All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

6) **PROPOSED DRILLING FLUIDS PROGRAM**

Hole Size (in)	MD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)	Other
12-1/4"	0 - 500'	Fresh water	8.4 - 8.6	60 - 70	NC	
8-3/4"	0' - 7151'	Fresh Water/ LSND	8.5 - 8.8	40 - 50	6 - 8	
6-1/8"	7151' - 14895'	Oil Based Mud	7.0 - 9.0	15-25	< 1	

- a) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually with electronic pit volume totalizers. Mud test shall be performed every 24 hours after "mudding up" to determine as applicable: density, viscosity, gel strength, filtration and pH.
- ✓ b) A closed loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an approved waste facility. Fresh water cuttings will be disposed either on site in a cuttings pit, lined w/ a 20 mil string re-enforced material and constructed to meet the NMOCD pit guidelines or an approved waste facility.

7 **LOGGING & CORING PROGRAM:**

DST: None

Coring: None

Cased hole logs: Possible Cement Bond Log (CBL)

Open Hole Logs: None

MWD/LWD with Gamma: 8-3/4" Intermediate/Build Section (6453' - 7151') and 6-1/8" Lateral section (7,151' - 14,895')

Mudlogs: ~ 2000' to TD (1 wet, 1 dry sample every 30'. Use 10' intervals thru shows)

8) **ABNORMAL PRESSURES & HYDROGEN SULFIDE:**

The anticipated bottom hole pressure is +/- 3,347 psi based on a 9.0 ppg mud at 7151' TVD of the landing point of the horizontal. No abnormal pressures or temperatures are anticipated based on historical drilling data in the immediate region.

No hydrogen sulfide gas is anticipated, however, if H2S is encountered, the guidelines in Onshore Order No. 6 will be followed.

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9) ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence no sooner than January 1, 2014. It is anticipated that the completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

It is anticipated that the drilling of this well will take 25 days.

OTHER INFORMATION

- 1) There will not be Thru Bit logging done on this well.
- 2) If lost circulation is encountered, sufficient LCM will be added to the mud system to maintain well control. The intermediate casing string design may need to be altered to accommodate another DV tool depending on actual conditions.

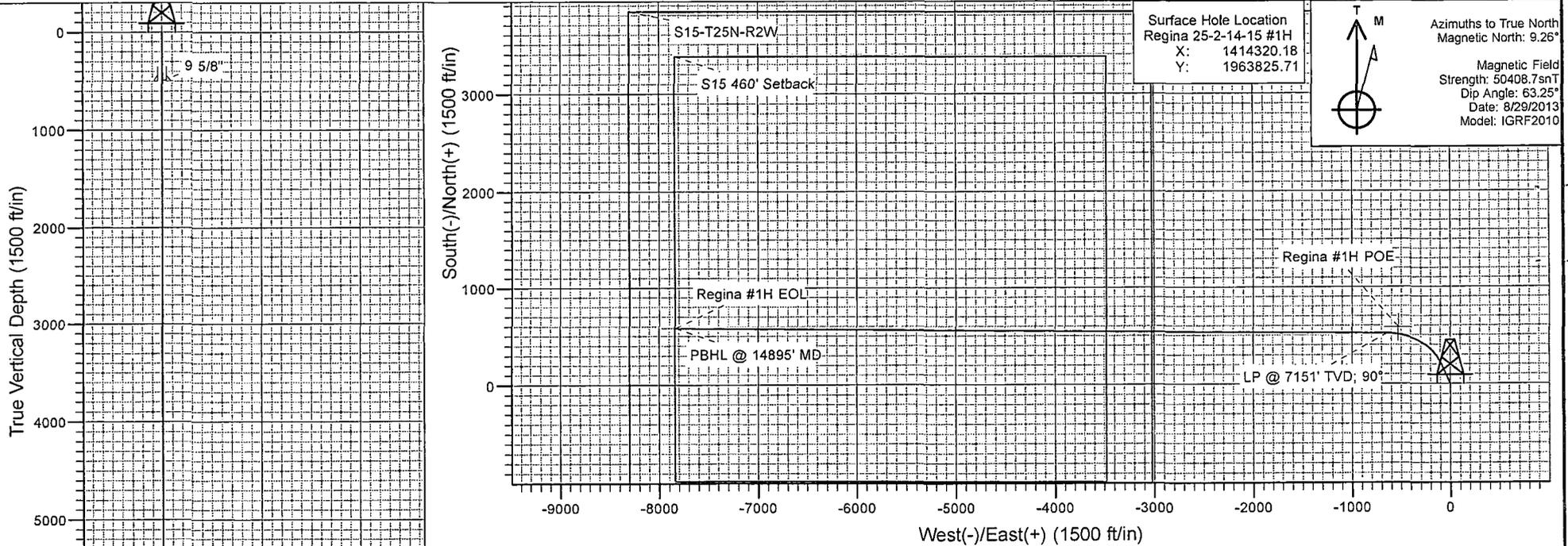


Project: Rio Arriba County, NM  
 Site: Section 14-T25N-R2W  
 Well: Regina 25-2-14-15 #1H  
 Wellbore: HZ  
 Design: Plan #1



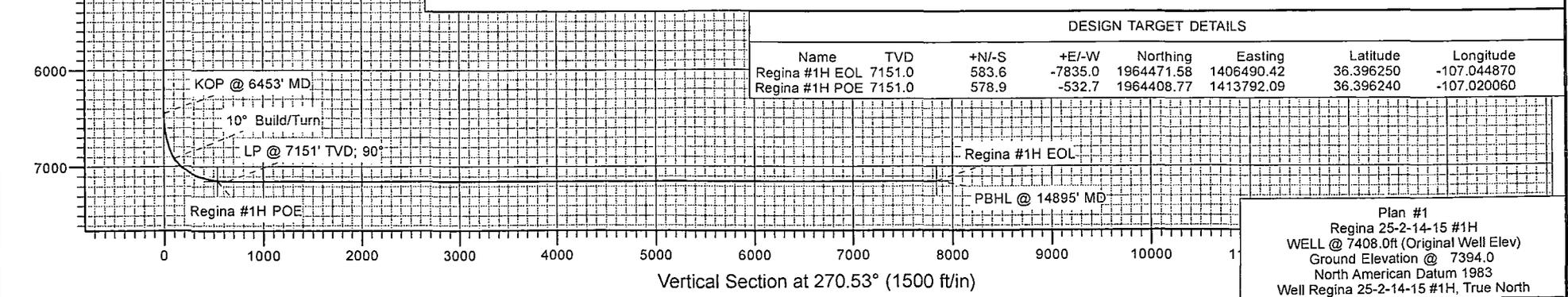
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	6453.0	0.00	0.00	6453.0	0.0	0.0	0.00	0.00	0.0		KOP @ 6453' MD
3	6998.5	54.54	335.24	6919.8	218.5	-100.8	10.00	335.24	102.8		10° Build/Turn
4	7695.0	90.00	270.53	7151.0	517.0	-635.3	10.00	-74.67	640.0		LP @ 7151' TVD; 90°
	514895.0	90.00	270.53	7151.0	583.6	-7835.0	0.00	0.00	7840.0	Regina #1H EOL	PBHL @ 14895' MD



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Regina #1H EOL	7151.0	583.6	-7835.0	1964471.58	1406490.42	36.396250	-107.044870
Regina #1H POE	7151.0	578.9	-532.7	1964408.77	1413792.09	36.396240	-107.020060



Plan #1  
 Regina 25-2-14-15 #1H  
 WELL @ 7408.0ft (Original Well Elev)  
 Ground Elevation @ 7394.0  
 North American Datum 1983  
 Well Regina 25-2-14-15 #1H, True North



Cathedral Energy Services  
Planning Report



<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Regina 25-2-14-15 #1H
<b>Company:</b>	Hunt Oil Co.	<b>TVD Reference:</b>	WELL @ 7408.0ft (Original Well Elev)
<b>Project:</b>	Rio Arriba County, NM	<b>MD Reference:</b>	WELL @ 7408.0ft (Original Well Elev)
<b>Site:</b>	Section 14-T25N-R2W	<b>North Reference:</b>	True
<b>Well:</b>	Regina 25-2-14-15 #1H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	HZ		
<b>Design:</b>	Plan #1		

<b>Project</b>	Rio Arriba County, NM		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Central Zone		Using geodetic scale factor

<b>Site</b>	Section 14-T25N-R2W				
<b>Site Position:</b>		<b>Northing:</b>	1,963,825.71 ft	<b>Latitude:</b>	36.394650
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,414,320.18 ft	<b>Longitude:</b>	-107.018250
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200in	<b>Grid Convergence:</b>	-0.46 °

<b>Well</b>	Regina 25-2-14-15 #1H					
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,963,825.71 ft	<b>Latitude:</b>	36.394650
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	1,414,320.18 ft	<b>Longitude:</b>	-107.018250
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft	<b>Ground Level:</b>	7,394.0 ft

<b>Wellbore</b>	HZ				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	8/29/2013	9.26	63.25	50,409

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	270.53

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,453.0	0.00	0.00	6,453.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,998.5	54.54	335.24	6,919.8	218.5	-100.8	10.00	10.00	0.00	335.24	
7,695.0	90.00	270.53	7,151.0	517.0	-635.3	10.00	5.09	-9.29	-74.67	
14,895.0	90.00	270.53	7,151.0	583.6	-7,835.0	0.00	0.00	0.00	0.00	Regina #1H EOL



Cathedral Energy Services  
Planning Report



Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Regina 25-2-14-15 #1H
Company:	Hunt Oil Co.	TVD Reference:	WELL @ 7408.0ft (Original Well Elev)
Project:	Rio Arriba County, NM	MD Reference:	WELL @ 7408.0ft (Original Well Elev)
Site:	Section 14-T25N-R2W	North Reference:	True
Well:	Regina 25-2-14-15 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	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	9 5/8"
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	
1,777.0	0.00	0.00	1,777.0	0.0	0.0	0.0	0.00	0.00	Nacimiento
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	
3,257.0	0.00	0.00	3,257.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,381.0	0.00	0.00	3,381.0	0.0	0.0	0.0	0.00	0.00	Fruitland
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	
3,526.0	0.00	0.00	3,526.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,698.0	0.00	0.00	3,698.0	0.0	0.0	0.0	0.00	0.00	Lewis
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	
3,958.0	0.00	0.00	3,958.0	0.0	0.0	0.0	0.00	0.00	Huerfanito Bentonite
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	
4,497.0	0.00	0.00	4,497.0	0.0	0.0	0.0	0.00	0.00	Chacra



Cathedral Energy Services  
Planning Report



Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Regina 25-2-14-15 #1H
Company:	Hunt Oil Co.	TVD Reference:	WELL @ 7408.0ft (Original Well Elev)
Project:	Rio Arriba County, NM	MD Reference:	WELL @ 7408.0ft (Original Well Elev)
Site:	Section 14-T25N-R2W	North Reference:	True
Well:	Regina 25-2-14-15 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
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	
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	
5,233.0	0.00	0.00	5,233.0	0.0	0.0	0.0	0.00	0.00	Cliff House
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	
5,333.0	0.00	0.00	5,333.0	0.0	0.0	0.0	0.00	0.00	Menefee
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	
5,667.0	0.00	0.00	5,667.0	0.0	0.0	0.0	0.00	0.00	Point Lookout
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	
5,851.0	0.00	0.00	5,851.0	0.0	0.0	0.0	0.00	0.00	Mancos
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	
6,401.0	0.00	0.00	6,401.0	0.0	0.0	0.0	0.00	0.00	LP - Marker 1
6,453.0	0.00	0.00	6,453.0	0.0	0.0	0.0	0.00	0.00	KOP @ 6453' MD
6,500.0	4.70	335.24	6,499.9	1.7	-0.8	0.8	10.00	10.00	
6,523.2	7.02	335.24	6,523.0	3.9	-1.8	1.8	10.00	10.00	LP - Marker 2
6,600.0	14.70	335.24	6,598.4	17.0	-7.9	8.0	10.00	10.00	
6,648.8	19.58	335.24	6,645.0	30.1	-13.9	14.1	10.00	10.00	LP - Marker 3
6,700.0	24.70	335.24	6,692.4	47.6	-21.9	22.4	10.00	10.00	
6,701.7	24.87	335.24	6,694.0	48.3	-22.3	22.7	10.00	10.00	Gallup
6,747.8	29.48	335.24	6,735.0	67.4	-31.1	31.7	10.00	10.00	LP - Marker 4
6,800.0	34.69	335.24	6,779.2	92.5	-42.7	43.5	10.00	10.00	
6,844.8	39.18	335.24	6,815.0	117.0	-53.9	55.0	10.00	10.00	LP - Marker 5
6,900.0	44.69	335.24	6,856.0	150.4	-69.4	70.8	10.00	10.00	
6,945.4	49.23	335.24	6,887.0	180.6	-83.3	84.9	10.00	10.00	Ojito Zone
6,998.5	54.54	335.24	6,919.8	218.5	-100.8	102.8	10.00	10.00	10° Build/Turn
7,000.0	54.58	335.06	6,920.6	219.6	-101.3	103.3	10.00	2.65	
7,049.8	56.04	329.27	6,949.0	255.8	-120.4	122.8	10.00	2.94	LP - Marker 6
7,100.0	57.78	323.65	6,976.4	290.8	-143.6	146.3	10.00	3.47	
7,200.0	61.93	313.13	7,026.7	355.2	-201.0	204.3	10.00	4.15	
7,200.6	61.96	313.07	7,027.0	355.6	-201.4	204.7	10.00	4.56	LP - Marker 7
7,292.3	66.43	304.16	7,067.0	406.9	-265.9	269.7	10.00	4.87	Niobrara
7,300.0	66.82	303.45	7,070.0	410.8	-271.8	275.6	10.00	5.17	
7,400.0	72.26	294.49	7,105.0	456.0	-353.7	357.9	10.00	5.44	
7,500.0	78.08	286.07	7,130.7	489.4	-444.3	448.8	10.00	5.82	
7,516.8	79.09	284.70	7,134.0	493.8	-460.2	464.7	10.00	5.98	Base Niobrara
7,600.0	84.14	278.02	7,146.1	509.9	-540.8	545.5	10.00	6.07	
7,695.0	90.00	270.53	7,151.0	517.0	-635.3	640.0	10.00	6.17	LP @ 7151' TVD; 90° - Target
7,700.0	90.00	270.53	7,151.0	517.0	-640.3	645.0	0.00	0.00	
7,800.0	90.00	270.53	7,151.0	517.9	-740.3	745.0	0.00	0.00	



Cathedral Energy Services  
Planning Report



Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Regina 25-2-14-15 #1H
Company:	Hunt Oil Co.	TVD Reference:	WELL @ 7408.0ft (Original Well Elev)
Project:	Rio Arriba County, NM	MD Reference:	WELL @ 7408.0ft (Original Well Elev)
Site:	Section 14-T25N-R2W	North Reference:	True
Well:	Regina 25-2-14-15 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
7,900.0	90.00	270.53	7,151.0	518.9	-840.3	845.0	0.00	0.00	
8,000.0	90.00	270.53	7,151.0	519.8	-940.3	945.0	0.00	0.00	
8,100.0	90.00	270.53	7,151.0	520.7	-1,040.3	1,045.0	0.00	0.00	
8,200.0	90.00	270.53	7,151.0	521.6	-1,140.2	1,145.0	0.00	0.00	
8,300.0	90.00	270.53	7,151.0	522.6	-1,240.2	1,245.0	0.00	0.00	
8,400.0	90.00	270.53	7,151.0	523.5	-1,340.2	1,345.0	0.00	0.00	
8,500.0	90.00	270.53	7,151.0	524.4	-1,440.2	1,445.0	0.00	0.00	
8,600.0	90.00	270.53	7,151.0	525.3	-1,540.2	1,545.0	0.00	0.00	
8,700.0	90.00	270.53	7,151.0	526.3	-1,640.2	1,645.0	0.00	0.00	
8,800.0	90.00	270.53	7,151.0	527.2	-1,740.2	1,745.0	0.00	0.00	
8,900.0	90.00	270.53	7,151.0	528.1	-1,840.2	1,845.0	0.00	0.00	
9,000.0	90.00	270.53	7,151.0	529.0	-1,940.2	1,945.0	0.00	0.00	
9,100.0	90.00	270.53	7,151.0	530.0	-2,040.2	2,045.0	0.00	0.00	
9,200.0	90.00	270.53	7,151.0	530.9	-2,140.2	2,145.0	0.00	0.00	
9,300.0	90.00	270.53	7,151.0	531.8	-2,240.2	2,245.0	0.00	0.00	
9,400.0	90.00	270.53	7,151.0	532.7	-2,340.2	2,345.0	0.00	0.00	
9,500.0	90.00	270.53	7,151.0	533.7	-2,440.2	2,445.0	0.00	0.00	
9,600.0	90.00	270.53	7,151.0	534.6	-2,540.2	2,545.0	0.00	0.00	
9,700.0	90.00	270.53	7,151.0	535.5	-2,640.2	2,645.0	0.00	0.00	
9,800.0	90.00	270.53	7,151.0	536.4	-2,740.2	2,745.0	0.00	0.00	
9,900.0	90.00	270.53	7,151.0	537.4	-2,840.2	2,845.0	0.00	0.00	
10,000.0	90.00	270.53	7,151.0	538.3	-2,940.2	2,945.0	0.00	0.00	
10,100.0	90.00	270.53	7,151.0	539.2	-3,040.2	3,045.0	0.00	0.00	
10,200.0	90.00	270.53	7,151.0	540.1	-3,140.2	3,145.0	0.00	0.00	
10,300.0	90.00	270.53	7,151.0	541.1	-3,240.2	3,245.0	0.00	0.00	
10,400.0	90.00	270.53	7,151.0	542.0	-3,340.2	3,345.0	0.00	0.00	
10,500.0	90.00	270.53	7,151.0	542.9	-3,440.2	3,445.0	0.00	0.00	
10,600.0	90.00	270.53	7,151.0	543.8	-3,540.1	3,545.0	0.00	0.00	
10,700.0	90.00	270.53	7,151.0	544.8	-3,640.1	3,645.0	0.00	0.00	
10,800.0	90.00	270.53	7,151.0	545.7	-3,740.1	3,745.0	0.00	0.00	
10,900.0	90.00	270.53	7,151.0	546.6	-3,840.1	3,845.0	0.00	0.00	
11,000.0	90.00	270.53	7,151.0	547.5	-3,940.1	3,945.0	0.00	0.00	
11,100.0	90.00	270.53	7,151.0	548.5	-4,040.1	4,045.0	0.00	0.00	
11,200.0	90.00	270.53	7,151.0	549.4	-4,140.1	4,145.0	0.00	0.00	
11,300.0	90.00	270.53	7,151.0	550.3	-4,240.1	4,245.0	0.00	0.00	
11,400.0	90.00	270.53	7,151.0	551.2	-4,340.1	4,345.0	0.00	0.00	
11,500.0	90.00	270.53	7,151.0	552.2	-4,440.1	4,445.0	0.00	0.00	
11,600.0	90.00	270.53	7,151.0	553.1	-4,540.1	4,545.0	0.00	0.00	
11,700.0	90.00	270.53	7,151.0	554.0	-4,640.1	4,645.0	0.00	0.00	
11,800.0	90.00	270.53	7,151.0	554.9	-4,740.1	4,745.0	0.00	0.00	
11,900.0	90.00	270.53	7,151.0	555.9	-4,840.1	4,845.0	0.00	0.00	
12,000.0	90.00	270.53	7,151.0	556.8	-4,940.1	4,945.0	0.00	0.00	
12,100.0	90.00	270.53	7,151.0	557.7	-5,040.1	5,045.0	0.00	0.00	
12,200.0	90.00	270.53	7,151.0	558.6	-5,140.1	5,145.0	0.00	0.00	
12,300.0	90.00	270.53	7,151.0	559.6	-5,240.1	5,245.0	0.00	0.00	
12,400.0	90.00	270.53	7,151.0	560.5	-5,340.1	5,345.0	0.00	0.00	
12,500.0	90.00	270.53	7,151.0	561.4	-5,440.1	5,445.0	0.00	0.00	
12,600.0	90.00	270.53	7,151.0	562.3	-5,540.1	5,545.0	0.00	0.00	
12,700.0	90.00	270.53	7,151.0	563.3	-5,640.1	5,645.0	0.00	0.00	
12,800.0	90.00	270.53	7,151.0	564.2	-5,740.1	5,745.0	0.00	0.00	
12,900.0	90.00	270.53	7,151.0	565.1	-5,840.0	5,845.0	0.00	0.00	
13,000.0	90.00	270.53	7,151.0	566.0	-5,940.0	5,945.0	0.00	0.00	



Cathedral Energy Services  
Planning Report



Database: USA EDM 5000 Multi Users DB  
 Company: Hunt Oil Co.  
 Project: Rio Arriba County, NM  
 Site: Section 14-T25N-R2W  
 Well: Regina 25-2-14-15 #1H  
 Wellbore: HZ  
 Design: Plan #1

Local Co-ordinate Reference:  
 TVD Reference:  
 MD Reference:  
 North Reference:  
 Survey Calculation Method:

Well Regina 25-2-14-15 #1H  
 WELL @ 7408.0ft (Original Well Elev)  
 WELL @ 7408.0ft (Original Well Elev)  
 True  
 Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
13,100.0	90.00	270.53	7,151.0	567.0	-6,040.0	6,045.0	0.00	0.00	
13,200.0	90.00	270.53	7,151.0	567.9	-6,140.0	6,145.0	0.00	0.00	
13,300.0	90.00	270.53	7,151.0	568.8	-6,240.0	6,245.0	0.00	0.00	
13,400.0	90.00	270.53	7,151.0	569.7	-6,340.0	6,345.0	0.00	0.00	
13,500.0	90.00	270.53	7,151.0	570.7	-6,440.0	6,445.0	0.00	0.00	
13,600.0	90.00	270.53	7,151.0	571.6	-6,540.0	6,545.0	0.00	0.00	
13,700.0	90.00	270.53	7,151.0	572.5	-6,640.0	6,645.0	0.00	0.00	
13,800.0	90.00	270.53	7,151.0	573.4	-6,740.0	6,745.0	0.00	0.00	
13,900.0	90.00	270.53	7,151.0	574.4	-6,840.0	6,845.0	0.00	0.00	
14,000.0	90.00	270.53	7,151.0	575.3	-6,940.0	6,945.0	0.00	0.00	
14,100.0	90.00	270.53	7,151.0	576.2	-7,040.0	7,045.0	0.00	0.00	
14,200.0	90.00	270.53	7,151.0	577.1	-7,140.0	7,145.0	0.00	0.00	
14,300.0	90.00	270.53	7,151.0	578.1	-7,240.0	7,245.0	0.00	0.00	
14,400.0	90.00	270.53	7,151.0	579.0	-7,340.0	7,345.0	0.00	0.00	
14,500.0	90.00	270.53	7,151.0	579.9	-7,440.0	7,445.0	0.00	0.00	
14,600.0	90.00	270.53	7,151.0	580.8	-7,540.0	7,545.0	0.00	0.00	
14,700.0	90.00	270.53	7,151.0	581.8	-7,640.0	7,645.0	0.00	0.00	
14,800.0	90.00	270.53	7,151.0	582.7	-7,740.0	7,745.0	0.00	0.00	
14,895.0	90.00	270.53	7,151.0	583.6	-7,835.0	7,840.0	0.00	0.00	PBHL @ 14895' MD

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Regina #1H EOL - hit/miss target - Shape - Point	0.00	0.00	7,151.0	583.6	-7,835.0	1,964,471.58	1,406,490.42	36.396250	-107.044870
Regina #1H POE - plan misses target center by 69.6ft at 7600.0ft MD (7146.1 TVD, 509.9 N, -540.8 E) - Point	0.00	0.00	7,151.0	578.9	-532.7	1,964,408.77	1,413,792.09	36.396240	-107.020060

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
500.0	500.0	9 5/8"	9.625	12.250



Cathedral Energy Services  
Planning Report



Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Regina 25-2-14-15 #1H
Company:	Hunt Oil Co.	TVD Reference:	WELL @ 7408.0ft (Original Well Elev)
Project:	Rio Arriba County, NM	MD Reference:	WELL @ 7408.0ft (Original Well Elev)
Site:	Section 14-T25N-R2W	North Reference:	True
Well:	Regina 25-2-14-15 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,777.0	1,777.0	Nacimiento			
3,257.0	3,257.0	Ojo Alamo			
3,381.0	3,381.0	Fruitland			
3,526.0	3,526.0	Pictured Cliffs			
3,698.0	3,698.0	Lewis			
3,958.0	3,958.0	Huerfano Bentonite			
4,497.0	4,497.0	Chacra			
5,233.0	5,233.0	Cliff House			
5,333.0	5,333.0	Menefee			
5,667.0	5,667.0	Point Lookout			
5,851.0	5,851.0	Mancos			
6,401.0	6,401.0	LP - Marker 1			
6,523.2	6,523.0	LP - Marker 2			
6,648.8	6,645.0	LP - Marker 3			
6,701.7	6,694.0	Gallup			
6,747.8	6,735.0	LP - Marker 4			
6,844.8	6,815.0	LP - Marker 5			
6,945.4	6,887.0	Ojito Zone			
7,049.8	6,949.0	LP - Marker 6			
7,200.6	7,027.0	LP - Marker 7			
7,292.3	7,067.0	Niobrara			
7,516.8	7,134.0	Base Niobrara			
7,695.0	7,151.0	Target			

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,453.0	6,453.0	0.0	0.0	KOP @ 6453' MD
6,998.5	6,919.8	218.5	-100.8	10° Build/Turn
7,695.0	7,151.0	517.0	-635.3	LP @ 7151' TVD; 90°
14,895.0	7,151.0	583.6	-7,835.0	PBHL @ 14895' MD

Surface Use Plan of Operations  
**Hunt Oil Company**

**Regina Com 25-2-14-15 #1H**

Activities associated with the proposed project will include construction of an access road and well pad, drilling, stimulation and completion of the proposed Regina Com 25-2-14-15 #1H well, installation of surface facilities necessary to produce the gas well, and installation of a pipeline to transport natural gas to sales. The total new surface disturbance for the proposed project would be approximately 9.79 acres.

**a. Existing Roads:**

Access to the proposed project site would be gained by traveling south on U.S. Highway 550 from Bloomfield, NM. Turn right on NM State Hwy 57 at Blanco Trading Post and continue southwesterly to County Road 7635. Continue approximately 5 miles westerly on BLM Collector and Local roads to the proposed access road on the left. See Figure #1 for a map of the proposed well site and access route to the proposed well in relation to a town, village or other locatable public access point. All existing roads used to access the proposed location shall be maintained in the same or better condition than presently found.

**b. New or Reconstructed Access Roads:**

Approximately 3,535' of new access road will be built for this well. The new access road would be a BLM Resource road developed to Basic Design Requirements for Constructed Roads from the Gold Book and BLM Handbook 9113, including a 30' average clearing width and 14' driving surface. The road would be developed with a 2% crown and ditched. Drainage ditches will be placed on both sides of the road and will be "V" shaped with each leg of the "V" being approximately 3'. Water turnouts will be placed as necessary along the length of the new road. No fence cuts or cattle guards have been proposed. Culverts will be placed as necessary where the road intersects existing drainages. The sides of the access road will be revegetated along with the pipeline ROW in August or September after the facilities are installed. The road would provide access to one well location, the proposed Regina Com 25-2-14-15 #1H. The operator intends to monitor the road annually, as the potential for excessive erosion and/or surface disturbance is limited to the periodic maintenance at the Regina Com 25-2-14-15 #1H well. Successful road development adhering to Gold Book standards would further prevent excessive road maintenance. See Appendix B for Road Maintenance Plan. New surface disturbance as a result of access road development would be approximately 2.44 acres.

**c. Location of Existing Wells:**

The proposed Regina Com 25-2-14-15 #1H well is located in the southeast quarter of Section 14, Township 25 North, Range 2 West, NMPM, in Rio Arriba County, NM. There are eight (15) active wells within a one mile radius to the proposed well. Plat #1 shows existing wells within a one mile radius of the proposed well.

**d. Location of Production Facilities:**

