

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

NM OIL CONSERVATION  
ARTESIA DISTRICT  
JUN 17 2015

FORM APPROVED  
OMB NO. 1004-0135  
Expires: July 31, 2010

**SUNDRY NOTICES AND REPORTS ON WELLS**  
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*

5. Lease Serial No. NMNM112907
6. If Indian, Allottee or Tribe Name
7. If Unit or CA/Agreement, Name and/or No.
8. Well Name and No. ROAD RUNNER FEDERAL 1H <i>5 COM</i>
9. API Well No. 30-015-43133-00-X1
10. Field and Pool, or Exploratory WILDCAT
11. County or Parish, and State EDDY COUNTY, NM

**SUBMIT IN TRIPLICATE - Other instructions on reverse side.**

1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other	
2. Name of Operator COG OPERATING LLC Contact: MAYTE X REYES E-Mail: mreyes1@concho.com	
3a. Address ONE CONCHO CENTER 600 W ILLINOIS AVENUE MIDLAND, TX 79701	3b. Phone No. (include area code) Ph: 575.748.6945
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 25 T25S R26E SESE 190FSL 380FEL 32.093925 N Lat, 104.238700 W Lon	

**12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA**

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other Change to Original A PD
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

COG Operating LLC, respectfully requests approval for the following changes to the original approved APD.

*Name change requested on plat.*

*new BHL Lease: NM NM 109748*  
*APD 6/23/15*  
Accepted for record  
NMOC

BHL:  
From BHL: 330' FNL & 380' FEL Section 25. T25S. R26E  
To BHL: 330' FNL & 330' FEL Section 24. T25S. R26E  
C102 and maps attached.

**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL**

Formation:  
From: WC-015 S262524J;BONE SPRING (GAS) [97920]

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

**JUN 22 2015**

14. I hereby certify that the foregoing is true and correct. <b>Electronic Submission #304534 verified by the BLM Well Information System For COG OPERATING LLC, sent to the Carlsbad Committed to AFMSS for processing by CATHY QUEEN on 06/10/2015 (15CQ0242SE)</b>		<b>RECEIVED</b> <b>APPROVED</b> <b>JUN 17 2015</b> BUREAU OF LAND MANAGEMENT CARLSBAD FIELD OFFICE
Name (Printed/Typed) MAYTE X REYES	Title REGULATORY ANALYST	
Signature (Electronic Submission)	Date 06/10/2015	
<b>THIS SPACE FOR FEDERAL OR STATE OFFICE USE</b>		
Approved By	Title	Date
Conditions of approval, if any, are attached. Approval of this notice 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.		
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.		

**\*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\***

**Additional data for EC transaction #304534 that would not fit on the form**

**32. Additional remarks, continued**

To: Cottonwood Draw; Bone Spring [97494]

Drilling Changes:

Drilling program and directional plan.

Flex Hose Variance:

Flex hose Variance report attached.

DISTRICT I  
1923 N. FRENCH DR., ROBERTS, NM 88240  
Phone: (505) 334-6181 Fax: (505) 334-6180

DISTRICT II  
811 S. FIRST ST., ARTESIA, NM 88210  
Phone: (505) 740-1253 Fax: (505) 740-0720

DISTRICT III  
1000 RIO BRAZOS RD., AZTEC, NM 87410  
Phone: (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV  
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505  
Phone: (505) 476-3400 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
**OIL CONSERVATION DIVISION**  
1220 SOUTH ST. FRANCIS DR.  
Santa Fe, New Mexico 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

☐ AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

API Number <b>30-015-43133</b>	Pool Code <b>97494</b>	Pool Name <b>Cottonwood Draw; Bone Spring</b>
Property Code	Property Name <b>ROAD RUNNER FEDERAL COM</b>	Well Number <b>1H</b>
GRID No. <b>229137</b>	Operator Name <b>COG OPERATING, LLC</b>	Elevation <b>3250.3</b>

**Surface Location**

UL or lot No.	Section	Township	Range	Lot Ida	Feet from the	North/South line	Feet from the	East/West line	County
P	25	25-S	26-E		190	SOUTH	380	EAST	EDDY

**Bottom Hole Location If Different From Surface**

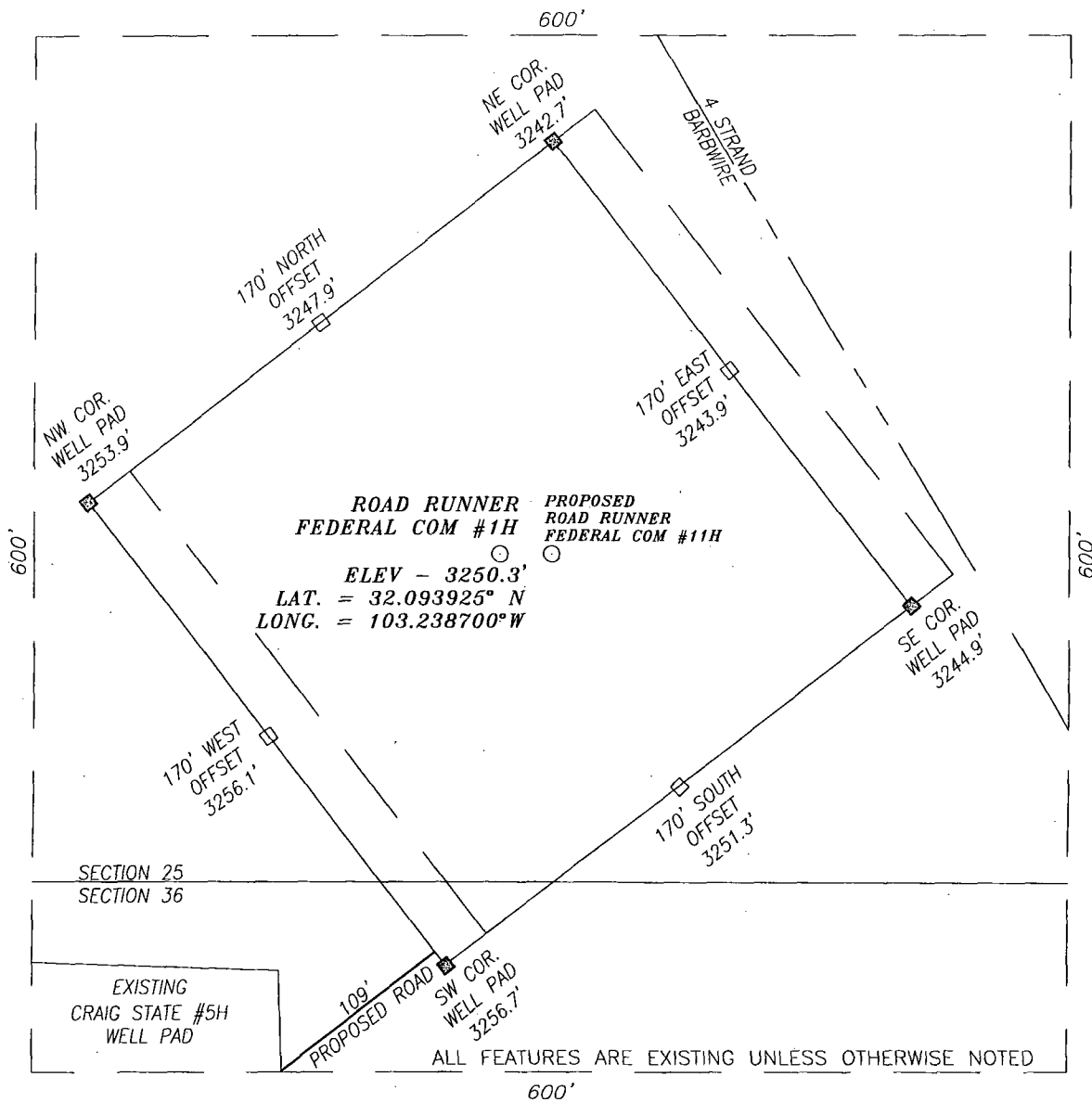
UL or lot No.	Section	Township	Range	Lot Ida	Feet from the	North/South line	Feet from the	East/West line	County
A	24	25-S	26-E		330	NORTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
320			

**NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION**

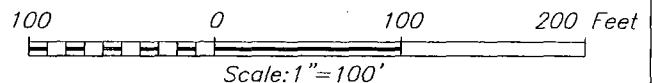
	<p><b>OPERATOR CERTIFICATION</b></p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p><i>Mayte Reyes</i> 5-28-15 Signature Date</p> <p><b>Mayte Reyes</b> Printed Name</p> <p><b>mreyes1@concho.com</b> E-mail Address</p>
	<p><b>SURVEYOR CERTIFICATION</b></p> <p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</p> <p><b>MAY 30, 2014</b> Date of Survey</p> <p>Signature &amp; Seal of Professional Surveyor</p>
	<p><b>CHAD L. HARGROW</b> NEW MEXICO 17777 LICENSED PROFESSIONAL SURVEYOR</p> <p><i>Chad Hargrow</i> 4/29/15 Certificate No. CHAD HARGROW 17777 W.O. # 15-551 DRAWN BY: AF</p>

SECTION 25, TOWNSHIP 25 SOUTH, RANGE 26 EAST, N.M.P.M.,  
EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION

HEADING SOUTH ON 285 TURN RIGHT ON WHITE CITY ROAD (CR-724) AND GO APPROX. 12 MILES THEN TURN (NORTH) RIGHT ONTO JOHN D. FOREHAND ROAD (CR-742); THEN GO APPROX. 1.7 MILE THEN TURN RIGHT ONTO CALICHE ROAD AND 0.3 MILE; THEN TURN LEFT AND GO THROUGH CRAIG STATE #5H WELL PAD TO PROPOSED ROAD ON THE NORTHEAST CORNER; THEN PROPOSED WELL IS APPROX. 290 FEET NORTHEAST.



**HARCROW SURVEYING, LLC**  
2314 W. MAIN ST, ARTESIA, N.M. 88210  
PH: (575) 746-2158 FAX: (575) 746-2158  
c.harcrow@harcrowsurveying.com



COG OPERATING, LLC		
ROAD RUNNER FEDERAL COM #1H WELL LOCATED 190 FEET FROM THE SOUTH LINE AND 380 FEET FROM THE EAST LINE OF SECTION 25, TOWNSHIP 25 SOUTH, RANGE 26 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO		
SURVEY DATE: 05/30/2014	PAGE: 1 OF 1	
DRAFTING DATE: 04/28/2015		
APPROVED BY: CH	DRAWN BY: AF	FILE: 15-551



# LEGEND

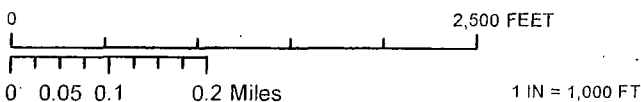
- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

## ROAD RUNNER FEDERAL COM #11H

SEC: 25 TWP: 25 S. RGE: 26 E. ELEVATION: 3250.2'

STATE: NEW MEXICO COUNTY: EDDY 190' FSL & 380' FEL

W.O. # 15-551 LEASE: ROAD RUNNER FED COM SURVEY: N.M.P.M



LOCATION MAP IMAGERY ROAD 01/29/2015 A/P

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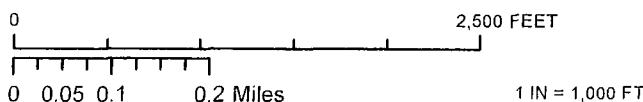


# LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

## ROAD RUNNER FEDERAL COM #1H

SEC: 25 TWP: 25 S. RGE: 26 E. ELEVATION: 3250.2'  
 STATE: NEW MEXICO COUNTY: EDDY 190' FSL & 380' FEL  
 W.O. # 15-551 LEASE: ROAD RUNNER FED COM SURVEY: N.M.P.M



LOCATION MAP

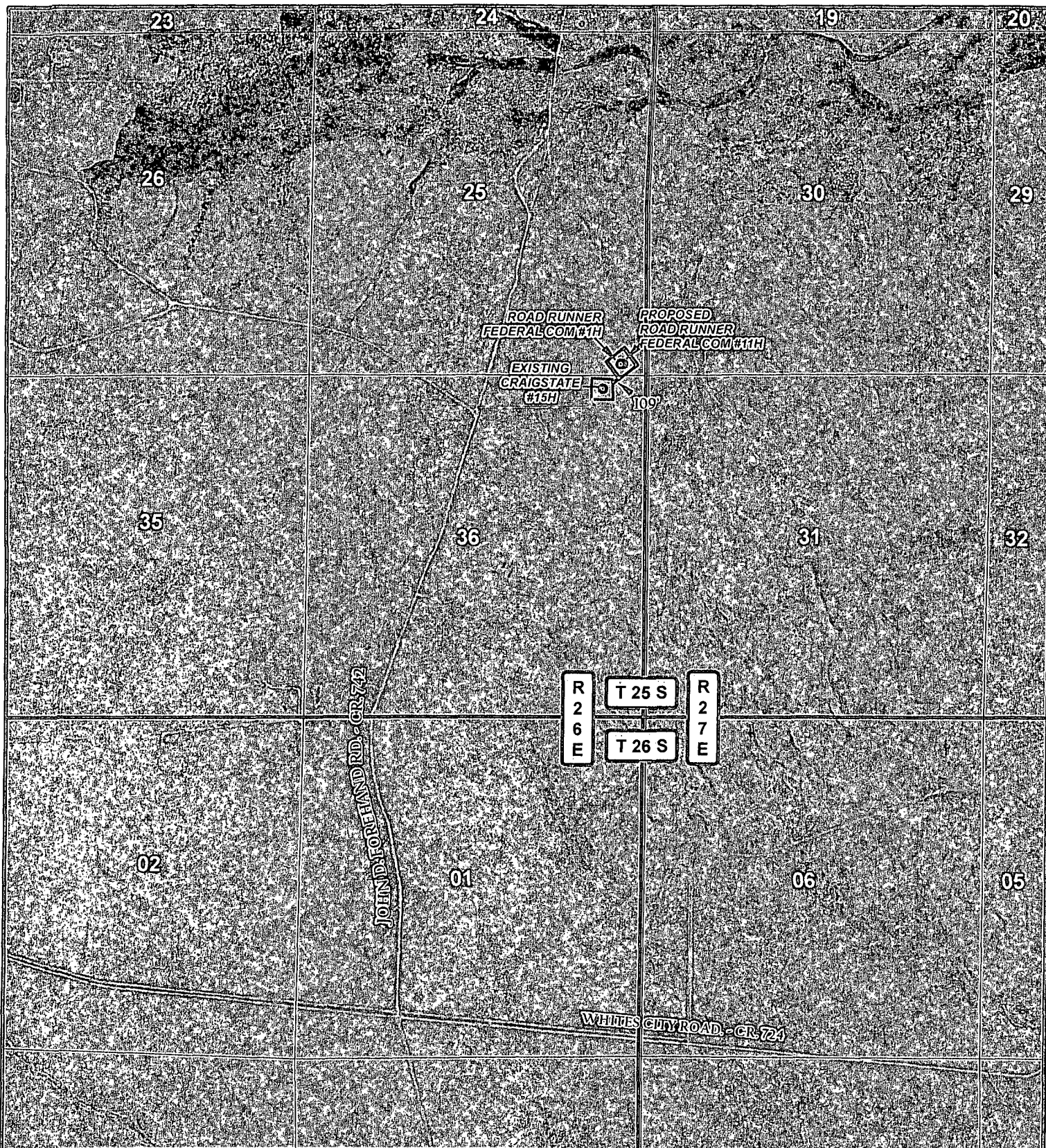
TOPO ROAD

04/29/2015

ALP

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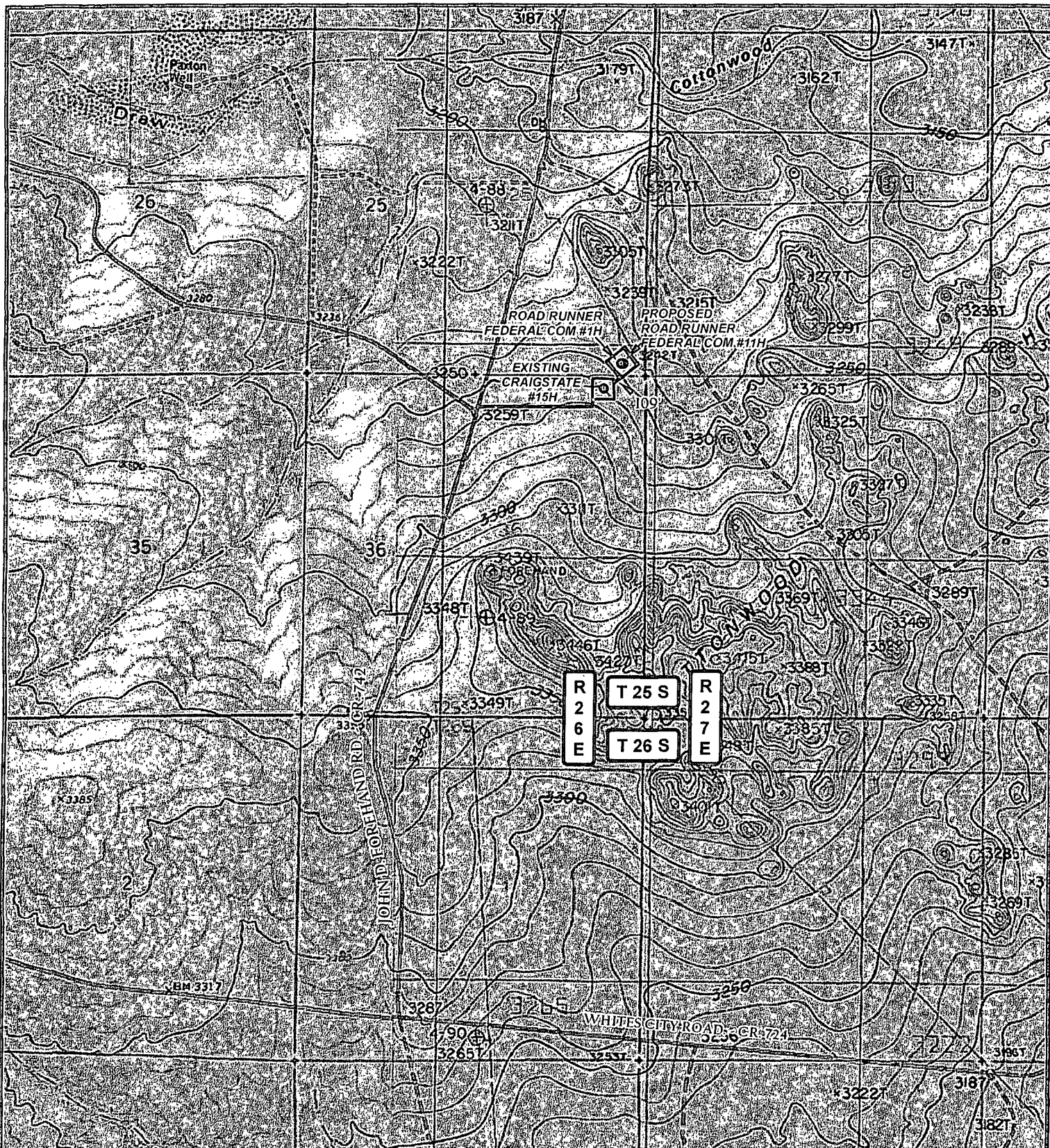
- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

ROAD RUNNER FEDERAL COM #11H			
SEC: 25	TWP: 25 S.	RGE: 26 E.	ELEVATION: 3250.2'
STATE: NEW MEXICO		COUNTY: EDDY	190' FSL & 380' FEL
W.O. # 15-551 LEASE: ROAD RUNNER FED SURVEY: N.M.P.M			
LOCATION MAP		IMAGERY	01/29/2015 A/F

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# LEGEND

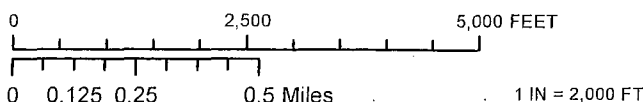
- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

**ROAD RUNNER FEDERAL COM #11H**

SEC: 25 TWP: 25 S. RGE: 26 E. ELEVATION: 3250.2'

STATE: NEW MEXICO COUNTY: EDDY 190' FSL & 380' FEL

W.O. # 15-551 LEASE: ROAD RUNNER FED SURVEY: N.M.P.M

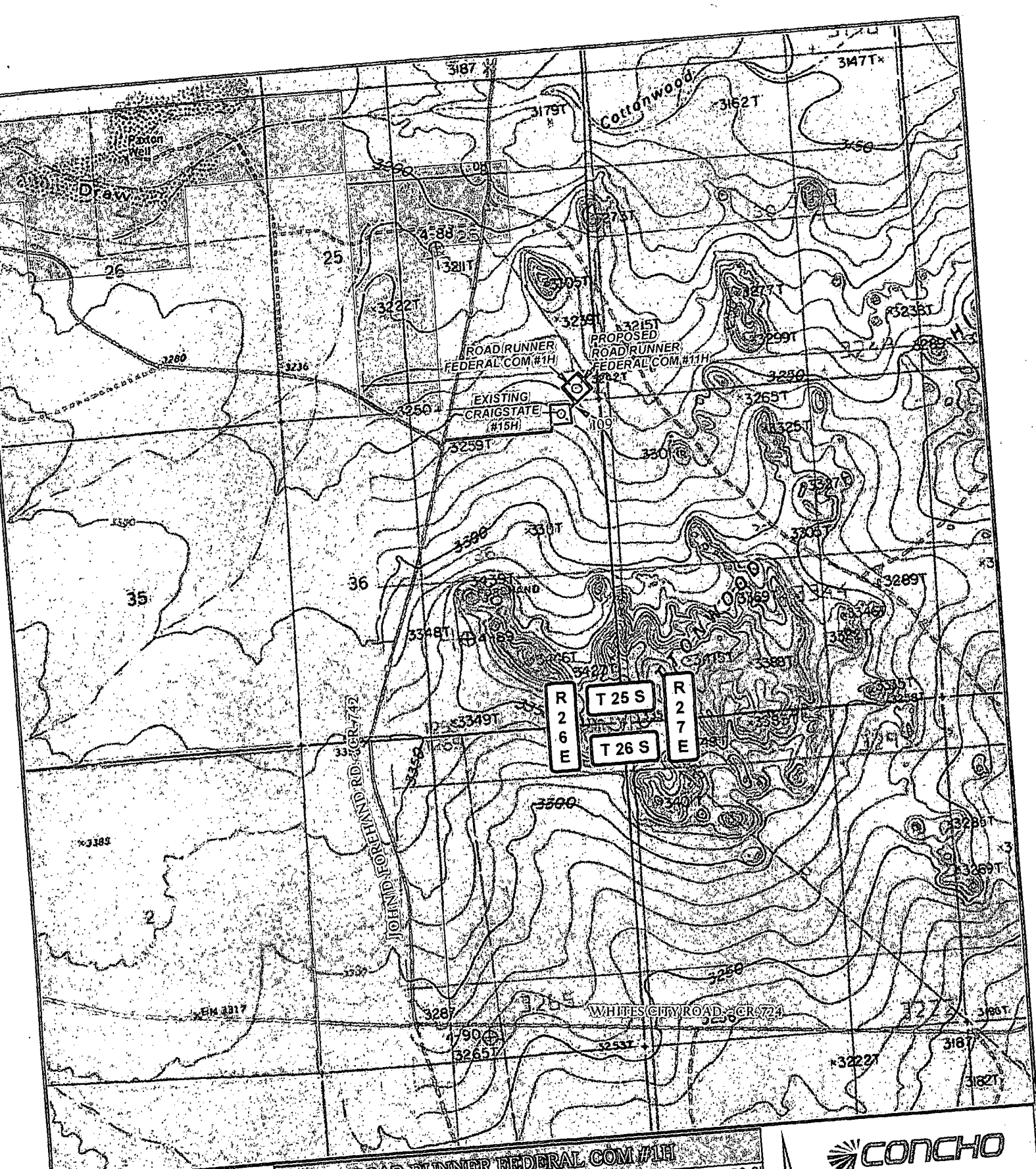


LOCATION MAP TOPO 01/29/2015 AT

**CONCHO**  
COG OPERATING, LLC

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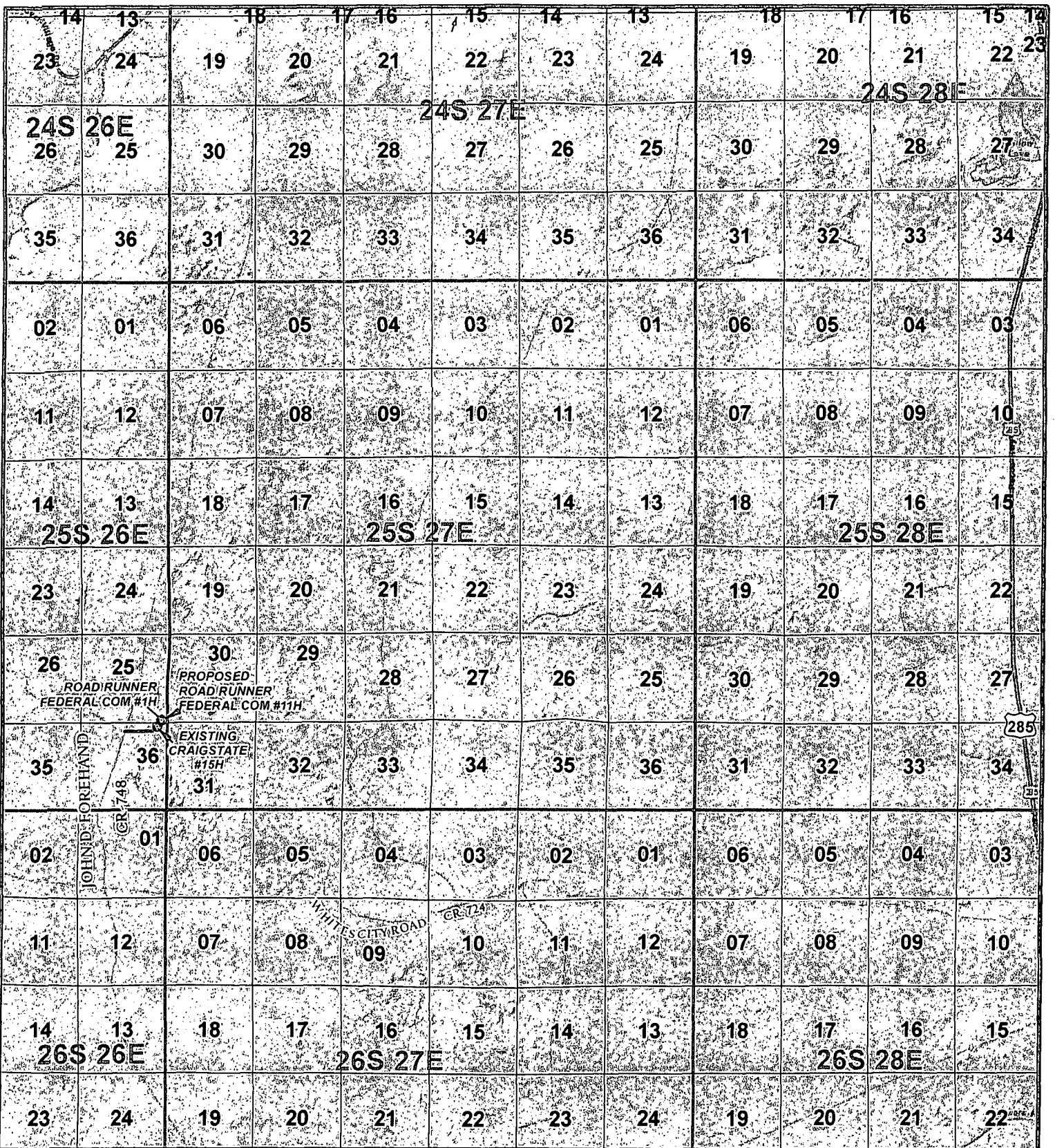
# LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD
- US BLM

ROAD RUNNER FEDERAL COM #11H			
SEC: 25	TWP: 25 S.	RGE: 26 E.	ELEVATION: 3250.2
STATE: NEW MEXICO		COUNTY: EDDY	190' FSL & 380' FEL
W.O. # 15-551		LEASE: ROAD RUNNER FED SURVEY: N.M.P.M	
<div> <div>0 2,500 5,000 FEET</div> <div>0 0.125 0.25 0.5 Miles</div> <div>1 IN = 2,000 FT</div> </div>			
LOCATION MAP		LANDSTATUS	04/29/2015

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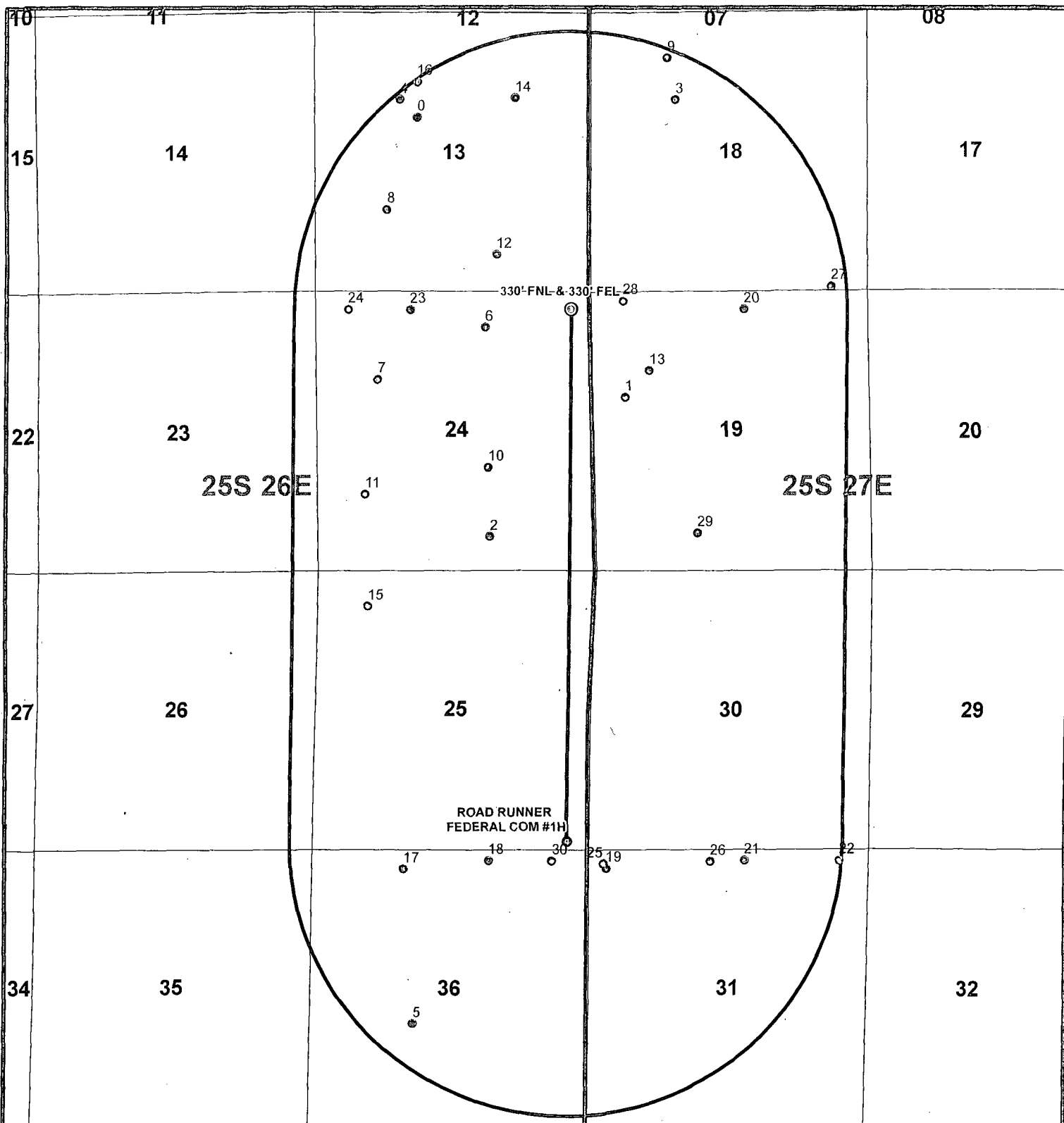
# LEGEND

- WELL
- WELLPAD
- EXISTING ROAD
- PROPOSED ROAD

ROAD RUNNER FEDERAL COM #11H			
SEC: 25	TWP: 25 S.	RGE: 26 E.	ELEVATION: 3250.2'
STATE: NEW MEXICO		COUNTY: EDDY	190' FSL & 380' FEL
W.O. # 15-551 LEASE: ROAD RUNNER FED COM SURVEY: N.M.P.M			
0 2,500 5,000 7,500 10,000 12,500 15,000 17,500 20,000 FEET			
0 0.5 1 2 Miles 1 IN = 7,750 FT			
VICINITY MAP		01/29/2015	ALP

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03 DATA FOR "WELLS WITHIN 1 MI." IS TAKEN FROM THE NEW MEXICO EMNRD WEBSITE. THE DATA HAS BEEN UPDATED THROUGH JANUARY 12, 2015.

<b>LEGEND</b> • WELL • BOTTOMHOLE • WELLS WITHIN 1 MI. 1 MI. BUFFER	<b>ROAD RUNNER FEDERAL COM #1H</b>				
	SEC: 25	TWP: 25 S.	RGE: 26 E.	ELEVATION: 3250.3'	
	STATE: NEW MEXICO		COUNTY: EDDY	190' FSL & 380' FEL	
	W.O. # 15-551 LEASE: ROAD RUNNER FED COM		SURVEY: N.M.P.M		
	 1 IN = 2,500 FT				
1 MILE MAP		01/29/2015		A/P	

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FID	Shape *	OPERATOR	WELL_NAME	LATITUDE	LONGITUDE	API	SECTION	TOWNSHIP	RANGE	FTG_NS	NS_CD	FTG_EW	EW_CD	TVD_DEPT	COMPL_STAT
0	Point	BILL & PATSY RICH	SULPHATE SISTER 001	32.13177	-104.249	3E+09	13	25.0S	26E	1980 N		1980 W		1987	Plugged
1	Point	ROBERT N ENFIELD	BOLTON FEDERAL 001	32.11717	-104.236	3E+09	19	25.0S	27E	1980 N		660 W		0	Plugged
2	Point	BEARD OIL CO	GRIFFETH FED 001	32.10993	-104.244	3E+09	24	25.0S	26E	660 S		1980 E		0	Plugged
3	Point	ROBERT N ENFIELD	MONA LISA COM 001	32.13267	-104.233	3E+09	18	25.0S	27E	1650 N		1650 W		0	Plugged
4	Point	CHEVRON U S A INC	FEDERAL 13 COM 001	32.13268	-104.25	3E+09	13	25.0S	26E	1650 N		1650 W		0	Plugged
5	Point	COG OPERATING LLC	COTTONWOOD 36 STATE SWD 001	32.08448	-104.249	3E+09	36	25.0S	26E	1980 S		1980 W		5850	Plugged
6	Point	COG OPERATING LLC	LIGHTNING 24 FEDERAL COM 001	32.12082	-104.244	3E+09	24	25.0S	26E	660 N		1980 E		12075	Active
7	Point	CIMAREX ENERGY CO. OF COLORADO	LIBERTY 24 FEDERAL 001	32.11813	-104.251	3E+09	24	25.0S	26E	1650 N		1200 W		12300	Active
8	Point	CIMAREX ENERGY CO. OF COLORADO	FEDERAL 13 COM 002	32.12697	-104.25	3E+09	13	25.0S	26E	1565 S		1400 W		12310	Active
9	Point	CIMAREX ENERGY CO. OF COLORADO	GADWALL 18 FEDERAL COM 001	32.13486	-104.233	3E+09	18	25.0S	27E	850 N		1490 W		12250	Active
10	Point	COG OPERATING LLC	LIGHTNING 24 FEDERAL COM 002	32.11356	-104.244	3E+09	24	25.0S	26E	1980 S		1980 E		9	Active
11	Point	CIMAREX ENERGY CO. OF COLORADO	LIBERTY 24 FEDERAL COM 002	32.11218	-104.252	3E+09	24	25.0S	26E	1475 S		940 W		12339	Active
12	Point	CIMAREX ENERGY CO. OF COLORADO	FEDERAL 13 COM 003	32.12462	-104.244	3E+09	13	25.0S	26E	725 S		1750 E		12184	Active
13	Point	OXY USA INC	MARINE 19 FEDERAL 001	32.11856	-104.234	3E+09	19	25.0S	27E	1480 N		1130 W		12080	Active
14	Point	CIMAREX ENERGY CO. OF COLORADO	FEDERAL 13 COM 004	32.13273	-104.242	3E+09	13	25.0S	26E	1620 N		1400 E		12373	Active
15	Point	CIMAREX ENERGY CO. OF COLORADO	FREEDOM 25 FEE 001C	32.10631	-104.252	3E+09	25	25.0S	26E	660 N		990 W		0	New (Not drilled or compl)
16	Point	CIMAREX ENERGY CO. OF COLORADO	FEDERAL 13 COM 006	32.13361	-104.249	3E+09	13	25.0S	26E	1310 N		1980 W		10565	New (Not drilled or compl)
17	Point	COG OPERATING LLC	CRAIG STATE 003H	32.09259	-104.249	3E+09	36	25.0S	26E	350 N		1770 W		7351	New (Not drilled or compl)
18	Point	COG OPERATING LLC	CRAIG STATE 004H	32.09301	-104.244	3E+09	36	25.0S	26E	190 N		1870 E		0	New (Not drilled or compl)
19	Point	COG OPERATING LLC	JACK FEDERAL 001H	32.09262	-104.237	3E+09	31	25.0S	27E	330 N		380 W		9654	New (Not drilled or compl)
20	Point	OXY USA INC	PEACHES 19 FEDERAL 001H	32.12177	-104.228	3E+09	19	25.0S	27E	330 N		2310 E		7819	New (Not drilled or compl)
21	Point	COG OPERATING LLC	JACK FEDERAL 004H	32.09305	-104.228	3E+09	31	25.0S	27E	190 N		2310 E		0	New (Not drilled or compl)
22	Point	COG OPERATING LLC	JACK FEDERAL 005H	32.09307	-104.222	3E+09	31	25.0S	27E	190 N		500 E		7513	New (Not drilled or compl)
23	Point	CIMAREX ENERGY CO. OF COLORADO	LIBERTY 24 FEDERAL COM 003H	32.12175	-104.249	3E+09	24	25.0S	26E	330 N		1830 W		0	New (Not drilled or compl)
24	Point	CIMAREX ENERGY CO. OF COLORADO	LIBERTY 24 FEDERAL COM 004H	32.12177	-104.253	3E+09	24	25.0S	26E	330 N		660 W		0	New (Not drilled or compl)
25	Point	COG OPERATING LLC	JACK FEDERAL 002H	32.09286	-104.237	3E+09	31	25.0S	27E	240 N		330 W		0	New (Not drilled or compl)
26	Point	COG OPERATING LLC	JACK FEDERAL 003H	32.093	-104.23	3E+09	31	25.0S	27E	206 N		2360 W		3487	New (Not drilled or compl)
27	Point	OXY USA INC	PEACHES 19 FEDERAL 002H	32.12296	-104.223	3E+09	18	25.0S	27E	90 S		642 E		0	New (Not drilled or compl)
28	Point	OXY USA INC	PEACHES 19 FEDERAL 004H	32.1222	-104.236	3E+09	19	25.0S	27E	150 N		660 W		0	New (Not drilled or compl)
29	Point	OXY USA INC	PEACHES 19 FEDERAL 003H	32.11014	-104.231	3E+09	19	25.0S	27E	730 S		1980 W		0	New (Not drilled or compl)
30	Point	COG OPERATING LLC	CRAIG STATE 005H	32.093	-104.24	3E+09	36	25.0S	26E	190 N		660 E		0	New (Not drilled or compl)

## COG Operating LLC, Road Runner Federal 1H

COG, Operating, LLC respectfully requests the following modifications to the approved drilling plan due to changing the proposed bottom hole location as follows:

### Old location:

BHL: 330' FNL & 380' FEL, S25, T25S, R26E

### New location:

BHL: 330' FNL & 330' FEL, S24, T25S, R26E

### Geologic Formations

TVD of target	7376'	Pilot hole depth	NA
MD at TD:	17237'	Deepest expected fresh water:	40'

### Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Lamar	1958'	Barren	
Delaware Group	2002'	Oil/Gas	Possible lost circ
Bone Spring	5521'	Oil/Gas	
2 <sup>nd</sup> Bone Spring Sand	7171'	Target Zone	
3 <sup>rd</sup> Bone Spring Sand	8314'	Oil/Gas	

### Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.
	From	To				
17.5"	0'	350'	13.375"	48	H40	STC
12.25"	0'	1980' <del>1954</del>	9.625"	36	J55	LTC
8.75"	0'	17237'	5-1/2"	17	P110	BTC

# COG Operating LLC, Road Runner Federal 1H

## Cementing Program

Casing	# Sks.	Wt. lb/gal	Yld. ft <sup>3</sup> /sack	H <sub>2</sub> O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	-	-	-	-	-	Lead: No lead
	345	14.8	1.34	6.4	6	Tail: Class C + 2% CaCl <sub>2</sub>
Inter.	500	13.5	1.75	9.2	13	Lead: Class C + 4% Gel + 1% CaCl <sub>2</sub>
	200	14.8	1.34	6.4	6	Tail: Class C + 1% CaCl <sub>2</sub>
Prod.	840	10.3	3.52	21.3	75	Lead: Halliburton Tuned Lite w/ 2# kolseal, 1.5# salt, 1/4# D-Air 5000, 1/8# PEF, etc
	2480	14.4	1.25	5.7	22	Tail: 50:50:2 H blend (FR, Retarder, FL adds as necessary)

Casing String	TOC	% Excess
Surface	0'	88%
Intermediate	0'	97%
Production	0'	42%

Pilot hole depth: NA  
KOP: 6899'

Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
	Are anchors required by manufacturer? No.	

Is this a walking operation? Yes ~~No~~

Will be pre-setting casing? No

Will well be hydraulically fractured? Yes

(if this is a walking rig a sundry w/ other well info. is needed)

## Attachments

- Revised Directional Plan
- Flex hose certification
- Revised survey plat





## COG Operating, LLC

Eddy County, NM (NAD 27)

Sec 25, T25-S, R26-E

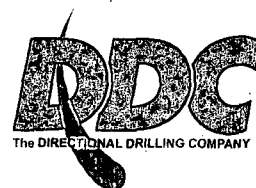
Road Runner Federal Com #1H

Wellbore #1

Plan: Design #1

## DDC Well Planning Report

28 April, 2015





HP  
Well Planning Report



Database:	Compass	Local Co-ordinate Reference:	Well Road Runner Federal Com #1H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3276.0usft (Scandriil Freedom)
Project:	Eddy County, NM (NAD 27)	MD Reference:	Well @ 3276.0usft (Scandriil Freedom)
Site:	Sec 25, T25-S, R26-E	North Reference:	Grid
Well:	Road Runner Federal Com #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project:	Eddy County, NM (NAD 27)		
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:	Sec 25, T25-S, R26-E		
Site Position:		Northing:	397,906.10 usft
From:	Map	Easting:	529,335.90 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 5' 38.128 N
		Longitude:	104° 14' 19.971 W
		Grid Convergence:	0.05 °

Well:	Road Runner Federal Com #1H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	-29.9 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 5' 38.128 N
		Longitude:	104° 14' 19.319 W
		Ground Level:	3,250.0 usft

Wellbore:	Wellbore #1		
Magnetics:	Model Name	Sample Date	Declination
			(°)
	IGRF2015	4/21/2015	7.48
			Dip Angle
			(°)
			Field Strength
			(nT)
			59.86
			48,010

Design:	Design #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			0.27

Plan Sections										
Measured	Inclination	Azimuth	Vertical	N/S	E/W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,898.6	0.00	0.00	6,898.6	0.0	0.0	0.00	0.00	0.00	0.00	
7,652.4	90.46	0.27	7,376.0	481.3	2.2	12.00	12.00	0.04	0.27	
17,236.7	90.46	0.27	7,299.0	10,065.1	46.7	0.00	0.00	0.00	0.00	Road Runner Federal



HP  
Well Planning Report



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Company:	COG Operating, LLC	TVD Reference:	Well @ 3276.0usft (Scandriil Freedom)
Project:	Eddy County, NM (NAD 27)	MD Reference:	Well @ 3276.0usft (Scandriil Freedom)
Site:	Sec 25, T25-S, R26-E	North Reference:	Grid
Well:	Road Runner Federal Com #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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 (°/100usft)	Turn Rate (°/100usft)
Build 12°/100									
6,898.6	0.00	0.00	6,898.6	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.17	0.27	6,900.0	0.0	0.0	0.0	12.00	12.00	0.00
7,000.0	12.17	0.27	6,999.2	10.7	0.0	10.7	12.00	12.00	0.00
7,100.0	24.17	0.27	7,094.1	41.8	0.2	41.9	12.00	12.00	0.00
SBSG sand									
7,187.7	34.69	0.27	7,170.3	84.9	0.4	84.9	12.00	12.00	0.00
7,200.0	36.17	0.27	7,180.4	92.0	0.4	92.0	12.00	12.00	0.00
7,300.0	48.17	0.27	7,254.4	159.0	0.7	159.0	12.00	12.00	0.00
7,400.0	60.17	0.27	7,312.8	239.9	1.1	239.9	12.00	12.00	0.00
7,500.0	72.17	0.27	7,353.1	331.2	1.5	331.3	12.00	12.00	0.00
7,600.0	84.17	0.27	7,373.6	428.9	2.0	428.9	12.00	12.00	0.00
EOB @ 90.46° Inc / 0.27° Azm / 7376° TVD									
7,652.4	90.46	0.27	7,376.0	481.3	2.2	481.3	12.00	12.00	0.00
7,700.0	90.46	0.27	7,375.7	528.9	2.5	528.9	0.00	0.00	0.00
7,800.0	90.46	0.27	7,374.9	628.9	2.9	628.9	0.00	0.00	0.00
7,900.0	90.46	0.27	7,374.1	728.8	3.4	728.9	0.00	0.00	0.00
8,000.0	90.46	0.27	7,373.3	828.8	3.8	828.9	0.00	0.00	0.00
8,100.0	90.46	0.27	7,372.5	928.8	4.3	928.9	0.00	0.00	0.00
8,200.0	90.46	0.27	7,371.6	1,028.8	4.8	1,028.8	0.00	0.00	0.00
8,300.0	90.46	0.27	7,370.8	1,128.8	5.2	1,128.8	0.00	0.00	0.00
8,400.0	90.46	0.27	7,370.0	1,228.8	5.7	1,228.8	0.00	0.00	0.00
8,500.0	90.46	0.27	7,369.2	1,328.8	6.2	1,328.8	0.00	0.00	0.00
8,600.0	90.46	0.27	7,368.4	1,428.8	6.6	1,428.8	0.00	0.00	0.00
8,700.0	90.46	0.27	7,367.6	1,528.8	7.1	1,528.8	0.00	0.00	0.00
8,800.0	90.46	0.27	7,366.8	1,628.8	7.6	1,628.8	0.00	0.00	0.00
8,900.0	90.46	0.27	7,366.0	1,728.8	8.0	1,728.8	0.00	0.00	0.00
9,000.0	90.46	0.27	7,365.2	1,828.8	8.5	1,828.8	0.00	0.00	0.00
9,100.0	90.46	0.27	7,364.4	1,928.8	8.9	1,928.8	0.00	0.00	0.00
9,200.0	90.46	0.27	7,363.6	2,028.8	9.4	2,028.8	0.00	0.00	0.00
9,300.0	90.46	0.27	7,362.8	2,128.8	9.9	2,128.8	0.00	0.00	0.00
9,400.0	90.46	0.27	7,362.0	2,228.8	10.3	2,228.8	0.00	0.00	0.00
9,500.0	90.46	0.27	7,361.2	2,328.8	10.8	2,328.8	0.00	0.00	0.00
9,600.0	90.46	0.27	7,360.4	2,428.8	11.3	2,428.8	0.00	0.00	0.00
9,700.0	90.46	0.27	7,359.6	2,528.8	11.7	2,528.8	0.00	0.00	0.00
9,800.0	90.46	0.27	7,358.8	2,628.8	12.2	2,628.8	0.00	0.00	0.00
9,900.0	90.46	0.27	7,358.0	2,728.8	12.7	2,728.8	0.00	0.00	0.00
10,000.0	90.46	0.27	7,357.2	2,828.8	13.1	2,828.8	0.00	0.00	0.00
10,100.0	90.46	0.27	7,356.4	2,928.8	13.6	2,928.8	0.00	0.00	0.00
10,200.0	90.46	0.27	7,355.6	3,028.7	14.1	3,028.8	0.00	0.00	0.00
10,300.0	90.46	0.27	7,354.8	3,128.7	14.5	3,128.8	0.00	0.00	0.00
10,400.0	90.46	0.27	7,354.0	3,228.7	15.0	3,228.8	0.00	0.00	0.00
10,500.0	90.46	0.27	7,353.2	3,328.7	15.4	3,328.8	0.00	0.00	0.00
10,600.0	90.46	0.27	7,352.4	3,428.7	15.9	3,428.8	0.00	0.00	0.00
10,700.0	90.46	0.27	7,351.5	3,528.7	16.4	3,528.8	0.00	0.00	0.00
10,800.0	90.46	0.27	7,350.7	3,628.7	16.8	3,628.8	0.00	0.00	0.00
10,900.0	90.46	0.27	7,349.9	3,728.7	17.3	3,728.8	0.00	0.00	0.00
11,000.0	90.46	0.27	7,349.1	3,828.7	17.8	3,828.8	0.00	0.00	0.00
11,100.0	90.46	0.27	7,348.3	3,928.7	18.2	3,928.8	0.00	0.00	0.00
11,200.0	90.46	0.27	7,347.5	4,028.7	18.7	4,028.8	0.00	0.00	0.00
11,300.0	90.46	0.27	7,346.7	4,128.7	19.2	4,128.7	0.00	0.00	0.00
11,400.0	90.46	0.27	7,345.9	4,228.7	19.6	4,228.7	0.00	0.00	0.00
11,500.0	90.46	0.27	7,345.1	4,328.7	20.1	4,328.7	0.00	0.00	0.00





HP  
Well Planning Report



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Site:	Sec 25, T25-S, R26-E	North Reference:	Grid
Well:	Road Runner Federal Com #1H	Survey/Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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 (°/100usft)	Turn Rate (°/100usft)	
11,600.0	90.46	0.27	7,344.3	4,428.7	20.5	4,428.7	0.00	0.00	0.00	
11,700.0	90.46	0.27	7,343.5	4,528.7	21.0	4,528.7	0.00	0.00	0.00	
11,800.0	90.46	0.27	7,342.7	4,628.7	21.5	4,628.7	0.00	0.00	0.00	
11,900.0	90.46	0.27	7,341.9	4,728.7	21.9	4,728.7	0.00	0.00	0.00	
12,000.0	90.46	0.27	7,341.1	4,828.7	22.4	4,828.7	0.00	0.00	0.00	
12,100.0	90.46	0.27	7,340.3	4,928.7	22.9	4,928.7	0.00	0.00	0.00	
12,200.0	90.46	0.27	7,339.5	5,028.7	23.3	5,028.7	0.00	0.00	0.00	
12,300.0	90.46	0.27	7,338.7	5,128.7	23.8	5,128.7	0.00	0.00	0.00	
12,400.0	90.46	0.27	7,337.9	5,228.7	24.3	5,228.7	0.00	0.00	0.00	
12,500.0	90.46	0.27	7,337.1	5,328.7	24.7	5,328.7	0.00	0.00	0.00	
12,600.0	90.46	0.27	7,336.3	5,428.6	25.2	5,428.7	0.00	0.00	0.00	
12,700.0	90.46	0.27	7,335.5	5,528.6	25.7	5,528.7	0.00	0.00	0.00	
12,800.0	90.46	0.27	7,334.7	5,628.6	26.1	5,628.7	0.00	0.00	0.00	
12,900.0	90.46	0.27	7,333.9	5,728.6	26.6	5,728.7	0.00	0.00	0.00	
13,000.0	90.46	0.27	7,333.1	5,828.6	27.0	5,828.7	0.00	0.00	0.00	
13,100.0	90.46	0.27	7,332.3	5,928.6	27.5	5,928.7	0.00	0.00	0.00	
13,200.0	90.46	0.27	7,331.5	6,028.6	28.0	6,028.7	0.00	0.00	0.00	
13,300.0	90.46	0.27	7,330.6	6,128.6	28.4	6,128.7	0.00	0.00	0.00	
13,400.0	90.46	0.27	7,329.8	6,228.6	28.9	6,228.7	0.00	0.00	0.00	
13,500.0	90.46	0.27	7,329.0	6,328.6	29.4	6,328.7	0.00	0.00	0.00	
13,600.0	90.46	0.27	7,328.2	6,428.6	29.8	6,428.7	0.00	0.00	0.00	
13,700.0	90.46	0.27	7,327.4	6,528.6	30.3	6,528.7	0.00	0.00	0.00	
13,800.0	90.46	0.27	7,326.6	6,628.6	30.8	6,628.7	0.00	0.00	0.00	
13,900.0	90.46	0.27	7,325.8	6,728.6	31.2	6,728.7	0.00	0.00	0.00	
14,000.0	90.46	0.27	7,325.0	6,828.6	31.7	6,828.7	0.00	0.00	0.00	
14,100.0	90.46	0.27	7,324.2	6,928.6	32.1	6,928.7	0.00	0.00	0.00	
14,200.0	90.46	0.27	7,323.4	7,028.6	32.6	7,028.7	0.00	0.00	0.00	
14,300.0	90.46	0.27	7,322.6	7,128.6	33.1	7,128.6	0.00	0.00	0.00	
14,400.0	90.46	0.27	7,321.8	7,228.6	33.5	7,228.6	0.00	0.00	0.00	
14,500.0	90.46	0.27	7,321.0	7,328.6	34.0	7,328.6	0.00	0.00	0.00	
14,600.0	90.46	0.27	7,320.2	7,428.6	34.5	7,428.6	0.00	0.00	0.00	
14,700.0	90.46	0.27	7,319.4	7,528.6	34.9	7,528.6	0.00	0.00	0.00	
14,800.0	90.46	0.27	7,318.6	7,628.6	35.4	7,628.6	0.00	0.00	0.00	
14,900.0	90.46	0.27	7,317.8	7,728.5	35.9	7,728.6	0.00	0.00	0.00	
15,000.0	90.46	0.27	7,317.0	7,828.5	36.3	7,828.6	0.00	0.00	0.00	
15,100.0	90.46	0.27	7,316.2	7,928.5	36.8	7,928.6	0.00	0.00	0.00	
15,200.0	90.46	0.27	7,315.4	8,028.5	37.3	8,028.6	0.00	0.00	0.00	
15,300.0	90.46	0.27	7,314.6	8,128.5	37.7	8,128.6	0.00	0.00	0.00	
15,400.0	90.46	0.27	7,313.8	8,228.5	38.2	8,228.6	0.00	0.00	0.00	
15,500.0	90.46	0.27	7,313.0	8,328.5	38.6	8,328.6	0.00	0.00	0.00	
15,600.0	90.46	0.27	7,312.2	8,428.5	39.1	8,428.6	0.00	0.00	0.00	
15,700.0	90.46	0.27	7,311.4	8,528.5	39.6	8,528.6	0.00	0.00	0.00	
15,800.0	90.46	0.27	7,310.5	8,628.5	40.0	8,628.6	0.00	0.00	0.00	
15,900.0	90.46	0.27	7,309.7	8,728.5	40.5	8,728.6	0.00	0.00	0.00	
16,000.0	90.46	0.27	7,308.9	8,828.5	41.0	8,828.6	0.00	0.00	0.00	
16,100.0	90.46	0.27	7,308.1	8,928.5	41.4	8,928.6	0.00	0.00	0.00	
16,200.0	90.46	0.27	7,307.3	9,028.5	41.9	9,028.6	0.00	0.00	0.00	
16,300.0	90.46	0.27	7,306.5	9,128.5	42.4	9,128.6	0.00	0.00	0.00	
16,400.0	90.46	0.27	7,305.7	9,228.5	42.8	9,228.6	0.00	0.00	0.00	
16,500.0	90.46	0.27	7,304.9	9,328.5	43.3	9,328.6	0.00	0.00	0.00	
16,600.0	90.46	0.27	7,304.1	9,428.5	43.7	9,428.6	0.00	0.00	0.00	
16,700.0	90.46	0.27	7,303.3	9,528.5	44.2	9,528.6	0.00	0.00	0.00	
16,800.0	90.46	0.27	7,302.5	9,628.5	44.7	9,628.6	0.00	0.00	0.00	
16,900.0	90.46	0.27	7,301.7	9,728.5	45.1	9,728.6	0.00	0.00	0.00	

Database:	Compass	Local Co-ordinate Reference:	Well Road Runner Federal Com #1H
Company:	COG Operating, LLC	TVD Reference:	Well @ 3276.0usft (Scandrift Freedom)
Project:	Eddy County, NM (NAD 27)	MD Reference:	Well @ 3276.0usft (Scandrift Freedom)
Site:	Sec 25, T25-S, R26-E	North Reference:	Grid
Well:	Road Runner Federal Com #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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 (°/100usft)	Turn Rate (°/100usft)
17,000.0	90.46	0.27	7,300.9	9,828.5	45.6	9,828.6	0.00	0.00	0.00
17,100.0	90.46	0.27	7,300.1	9,928.5	46.1	9,928.6	0.00	0.00	0.00
17,200.0	90.46	0.27	7,299.3	10,028.4	46.5	10,028.6	0.00	0.00	0.00
PBHL @ 17237' MD / 7299' TVD									
17,236.7	90.46	0.27	7,299.0	10,065.1	46.7	10,065.2	0.00	0.00	0.00

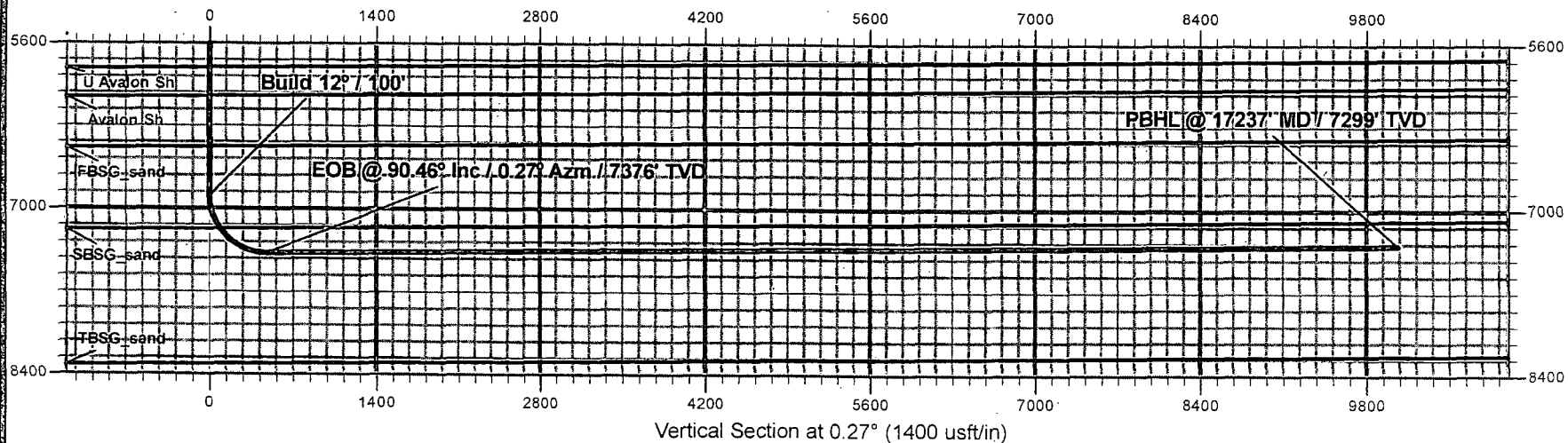
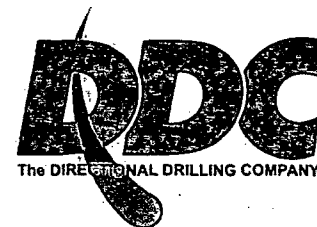
Design Targets									
Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	
Shape							Latitude	Longitude	
Road Runner Federal #1		0.00	0.00	7,299.0	10,065.1	46.7	407,971.20	529,352.70	32° 7' 17.738 N 104° 14' 18.673 W
- plan hits target center									
- Point									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
196.0	196.0	Rustler		-0.46	0.27	
333.0	333.0	TOS		-0.46	0.27	
1,766.0	1,766.0	BOS (Fletcher)		-0.46	0.27	
1,958.0	1,958.0	LMAR (Top Delaware)		-0.46	0.27	
2,002.0	2,002.0	BLCN		-0.46	0.27	
2,859.0	2,859.0	CYCN		-0.46	0.27	
3,948.0	3,948.0	BYCN		-0.46	0.27	
5,521.0	5,521.0	Bone Sprg (BSGL)		-0.46	0.27	
5,807.0	5,807.0	U Avalon Sh		-0.46	0.27	
6,050.0	6,050.0	L Avalon Sh		-0.46	0.27	
6,482.0	6,482.0	FBSG_sand		-0.46	0.27	
7,187.7	7,170.3	SBSG_sand		-0.46	0.27	

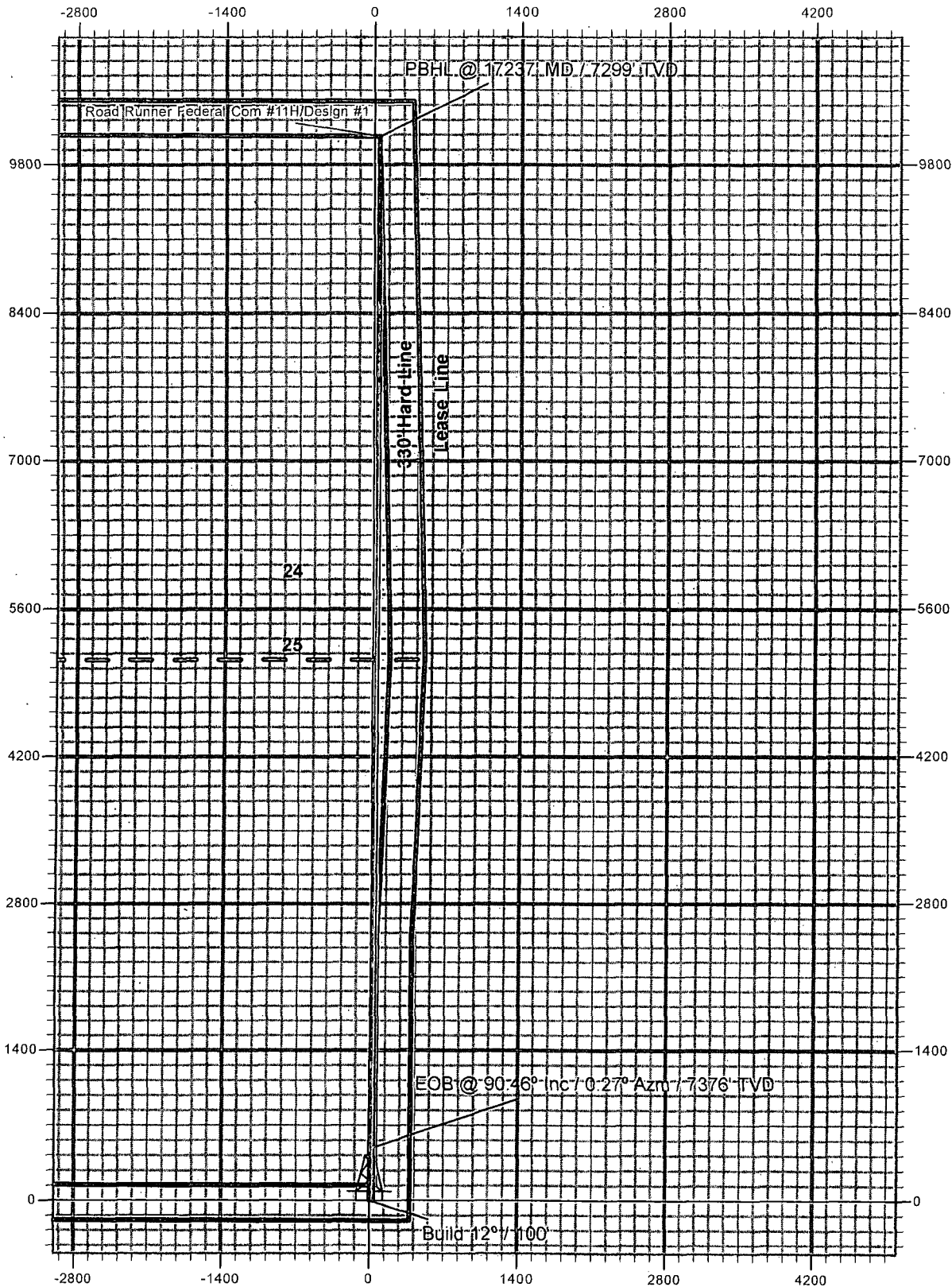
Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
6,898.6	6,898.6	0.0	0.0	Build 12° / 100'
7,652.4	7,376.0	481.3	2.2	EOB @ 90.46° Inc / 0.27° Azm / 7376' TVD
17,236.7	7,299.0	10,065.1	46.7	PBHL @ 17237' MD / 7299' TVD

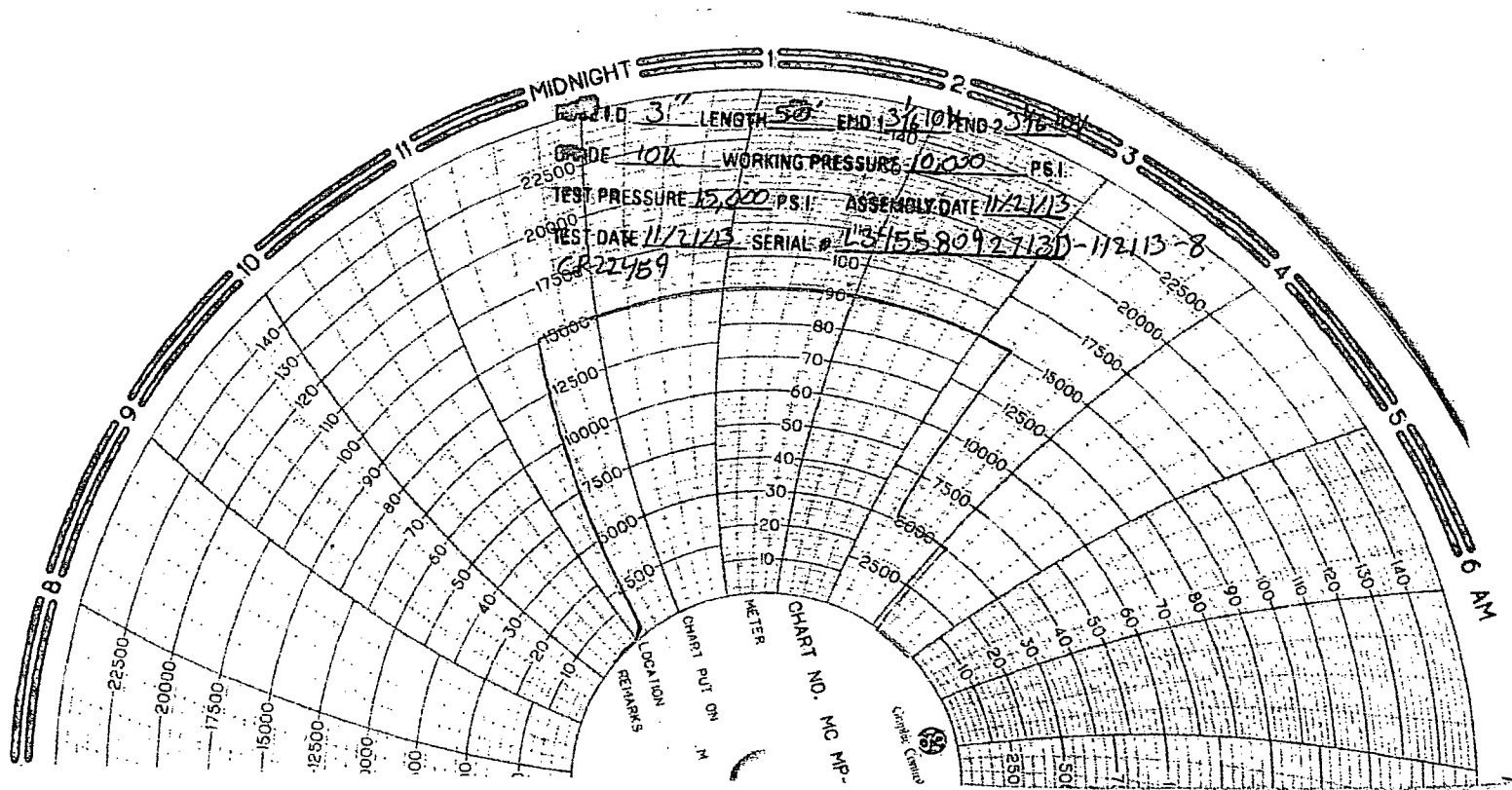


Eddy County, NM (NAD 27)  
Sec 25, T25-S, R26-E  
Road Runner Federal Com #1H  
Design #1



Eddy County, NM (NAD 27)  
Sec 25, T25-S, R26-E  
Road Runner Federal Com #1H  
Design #1









GATES E & S NORTH AMERICA, INC  
DU-TEX  
134 44TH STREET  
CORPUS CHRISTI, TEXAS 78405

PHONE: 361-887-9807  
FAX: 361-887-0812  
EMAIL: crpe&s@gates.com  
WEB: www.gates.com

### 10K CHOKE & KILL ASSEMBLY PRESSURE TEST CERTIFICATE

Customer :	SPECIALTY SALES, INC.	Test Date:	11/21/2013
Customer Ref. :	49680-S	Hose Serial No.:	D-112113-8
Invoice No. :	197465	Created By:	Norma M.
Product Description:	10K3.050.0CK31/1610KFLGE/E		
End Fitting 1 :	3 1/16 10K FLG	End Fitting 2 :	3 1/16 10K FLG
Gates Part No. :	47773-4290	Assembly Code :	L34558092713D-112113-8
Working Pressure :	10,000 PSI	Test Pressure :	15,000 PSI

Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Fifth Edition, June 2010, Test pressure 9.6.7 and per Table 9 to 15,000 psi in accordance with this product number. Hose burst pressure 9.6.7.2 exceeds the minimum of 2.5 times the working pressure per Table 9.

Quality Manager :  
Date :  
Signature :

QUALITY
11/22/2013

Technical Supervisor :  
Date :  
Signature :

PRODUCTION
11/22/2013

PECOS DISTRICT  
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating, LLC.
LEASE NO.:	NMNM-109748
WELL NAME & NO.:	Road Runner Federal 1H
SURFACE HOLE FOOTAGE:	0190' FSL & 0380' FEL
BOTTOM HOLE FOOTAGE:	0330' FNL & 0330' FEL Sec. 24, T. 25 S., R 26 E.
LOCATION:	Section 25, T. 25 S., R 26 E., NMPM
COUNTY:	Eddy County, New Mexico

**The original COAs still stand with the following drilling modifications:**

**I. DRILLING**

**A. DRILLING OPERATIONS REQUIREMENTS**

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,  
(575) 361-2822

1. **Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. Operator has stated that they will have monitoring equipment in place prior to drilling out of the surface shoe. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located; this does not include the dog house or stairway area.

4. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The top and bottom of Salt are to be recorded on the Completion Report.

## **B. CASING**

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

### **Wait on cement (WOC) for Water Basin:**

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

### **High Cave/Karst**

Possibility of water flows in the Salado and Castile.

Possibility of lost circulation in the Delaware.

**A MINIMUM OF TWO CASING STRINGS CEMENTED TO SURFACE IS REQUIRED IN HIGH CAVE/KARST AREAS. THE CEMENT MUST BE IN A SOLID SHEATH. THEREFORE, ONE INCH OPERATIONS ARE NOT SUFFICIENT TO PROTECT CAVE KARST RESOURCES. A CASING DESIGN THAT HAS A ONE INCH JOB PERFORMED DOES NOT COUNT AS A SOLID SHEATH. IF THE PRIMARY CEMENT JOB ON THE SURFACE CASING DOES NOT CIRCULATE, THEN THE NEXT TWO CASING STRINGS MUST BE CEMENTED TO SURFACE.**

1. The **13-3/8** inch surface casing shall be set at approximately **350** feet and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

**Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.**

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

☒ Cement to surface as proposed by operator. If cement does not circulate, contact the appropriate BLM office.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

### C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.
2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).
3. **In the case where the only BOP installed is an annular preventer, it shall be tested to a minimum of 2000 psi (which may require upgrading to 3M or 5M annular).**
4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.
5. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi.
6. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer.**



- c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- d. The results of the test shall be reported to the appropriate BLM office.
- e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**
- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

#### **D. DRILL STEM TEST**

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

#### **E. WASTE MATERIAL AND FLUIDS**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**JAM 061715**