

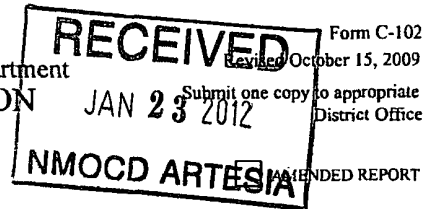
District I
1625 N. French Dr., Hobbs, NM 88240

District II
1301 W. Grand Avenue, Artesia, NM 88210

District III
1000 Rio Brazos Rd., Aztec, NM 87410

District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Frances Dr.
Santa Fe, NM 87505



WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number 30-015-38121	2 Pool Code 97866	3 Pool Name MAR LOCO; GLORIETA-YESO
4 Property Code 302499	5 Property Name GISSLER FEDERAL	6 Well Number 13
7 OGRID No. 229137	8 Operator Name COG OPERATING LLC	9 Elevation 3689.3

10 Surface Location

UL or lot L	Section 5	Township 17 S	Range 30 E	Lot Idn	Feet from the 1650	North/South line SOUTH	Feet from the 330	East/West line WEST	County EDDY
----------------	--------------	------------------	---------------	---------	-----------------------	---------------------------	----------------------	------------------------	----------------

11 Bottom Hole Location If Different From Surface

UL or lot I	Section 5	Township 17 S	Range 30 E	Lot Idn	Feet from the 1699	North/South line SOUTH	Feet from the 352	East/West line EAST	County EDDY
----------------	--------------	------------------	---------------	---------	-----------------------	---------------------------	----------------------	------------------------	----------------

12 Dedicated Acres 160	13 Joint or Infill	14 Consolidation Code	15 Order No.
---------------------------	--------------------	-----------------------	--------------

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.

16					17 OPERATOR CERTIFICATION												
<table><tr><th colspan="4">BOTTOM HOLE</th></tr><tr><th>LAT 27</th><th>LON 27</th><th>SPC27-X</th><th>SPC27-Y</th></tr><tr><td>32.86073</td><td>-103.98612</td><td>606615.9</td><td>677021.9</td></tr></table>					BOTTOM HOLE				LAT 27	LON 27	SPC27-X	SPC27-Y	32.86073	-103.98612	606615.9	677021.9	I hereby certify that the information contained 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 a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore enter by the division. <i>Chasity Jackson</i> 1/16/12 Signature Date Chasity Jackson Printed Name
					BOTTOM HOLE												
LAT 27	LON 27	SPC27-X	SPC27-Y														
32.86073	-103.98612	606615.9	677021.9														
18 SURVEYOR CERTIFICATION 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. 03/26/2010 Date of Survey Signature and Seal of Professional Surveyor Bruce R. Pennell Certificate Number 9062																	
NAD27 GEOGRAPHIC COORDINATES				NAD27 SPC - NM EAST													
LAT: 32.86074		LON: -104.00117		X = 601994.4 Y = 677007.7													

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM 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.
NMNM83591

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on reverse side.7. If Unit or CA/Agreement, Name and/or No.
N/A

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other8. Well Name and No.
GISSLER FEDERAL 132. Name of Operator
COG OPERATING LLCContact CHASITY JACKSON
E-Mail: cjackson@concho.com9. API Well No.
30-015-381213a. Address
550 WEST TEXAS AVENUE SUITE 100
MIDLAND, TX 797013b. Phone No. (include area code)
Ph: 432-686-308710. Field and Pool, or Exploratory
MAR LOCO; GLORIETA YESO

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 5 T17S R30E NWSW 1650FSL 330FWL

11. County or Parish, and State

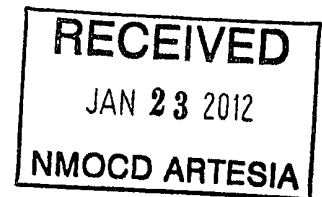
EDDY COUNTY, NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Drilling Operations
	☐ Convert to Injection	☐ Plug Back	☐ 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.)

10/9/11 Test BOP to 3200# for 30min,ok. TOL @ 4324. Hanger @ 4331.
Packer @ 5198, Frac Port @ 5340
Packer @ 5437, Frac Port @ 5580
Packer @ 5679, Frac Port @ 5820
Packer @ 5921, Frac Port @ 6063
Packer @ 6164, Frac Port @ 6293
Packer @ 6427, Frac Port @ 6566
Packer @ 6667, Frac Port @ 6809
Packer @ 6910, Frac Port @ 7051
Packer @ 7152, Frac Port @ 7294
Packer @ 7395, Frac Port @ 7538
Packer @ 7638, Frac Port @ 7781



14. I hereby certify that the foregoing is true and correct

**Electronic Submission #128682 verified by the BLM Well Information System
For COG OPERATING LLC, sent to the Carlsbad**

Name (Printed/Typed) CHASITY JACKSON

Title PREPARER

Signature (Electronic Submission)

Date 01/19/2012

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

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	Office	

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.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

Additional data for EC transaction #128682 that would not fit on the form

32. Additional remarks, continued

Packer @ 7872, Frac Port @ 8010

Packer @ 8110, Frac Port @ 8251

Packer @ 8351, Frac Port @ 8493

Packer @ 8635, Frac Port @ 8729

Packer @ 8874, Frac Port @ 8967

Packer @ 9110, Frac Port @ 9204

Packer @ 9349, Anchor @ 9406

Frac Port @ 9453, 4.5" POP @ 9500.

11/30/11 Frac w/59,392 gals 15% acid, 2,247,172 gals gel, 253,769# waterfrac gel, 1,808,714# 20/40 white sand, 415,271# 20/40 CRC sand, 68,877# 100 mesh sand.

12/13/11 TIH w/130jts 2-7/8 J55 6.5# tbq. EOT @ 4289.

12/14/11 RIH w/2-1/2x2x24 pump. Hang on well.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5 Lease Serial No.
NMNM83591

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other			6. If Indian, Allottee or Tribe Name		
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other _____			7. Unit or CA Agreement Name and No. N/A		
2. Name of Operator COG OPERATING LLC			8. Lease Name and Well No. GISSLER FEDERAL 13		
3. Address 550 WEST TEXAS AVENUE SUITE 100 MIDLAND, TX 79701			9. API Well No. 30-015-38121		
3a. Phone No. (include area code) Ph: 432-686-3087			10. Field and Pool, or Exploratory MAR LOCO, GLORIETA-YESO		
4. Location of Well (Report location clearly and in accordance with Federal requirements)* Sec 5 T17S R302E Mer At surface NWSW Lot L 1650FSL 330FWL 32.860740 N Lat, 104.001170 W Lon Sec 5 T17S R302E Mer At top prod interval reported below NWSW Lot L 1650FSL 330FWL 32.860740 N Lat, 104.001170 W Lon Sec 5 T17S R30E Mer At total depth NESE Lot L 1699FSL 352FWL			11. Sec., T., R., M., or Block and Survey or Area Sec 5 T17S R302E Mer		
14. Date Spudded 09/13/2011			15. Date T.D. Reached 10/05/2011		
16. Date Completed ☐ D & A ☒ Ready to Prod. 12/14/2011			17. Elevations (DF, KB, RT, GL)* 3689 GL		
18. Total Depth MD 9540 TVD 5190		19. Plug Back T.D. MD 9540 TVD 9540		20. Depth Bridge Plug Set MD TVD	
21. Type Electric & Other Mechanical Logs Run (Submit copy of each) COMPENSATED NEUTRON/HNGS, MCFL/HNGS			22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit analysis) Directional Survey? ☐ No ☒ Yes (Submit analysis)		

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17.500	13.375 H40	48.0		411		500			
12.250	9.625 J55	40.0		1422		500			
8.750	7.000 L80	26.0		4520		750			
6.125	4.500 P110	13.5		9500					

RECEIVED

JAN 23 2012

NMOOD ARTESIA

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
2.875	4289							

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) YESO	5340	9453	5340 TO 9453			OPEN STRATAPORTS
B)						
C)						
D)						

26. Perforation Record

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
5340 TO 9453	ACIDIZE W/59.392 GALS 15% ACID.
5340 TO 9453	FRAC W/2,247,172 GALS GEL, 253.769# WATERFRAC GEL, 1,808,714# 20/40 WHITE SAND, 415,271# 20/40 CRC.

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr API	Gas Gravity	Production Method
12/15/2011	01/12/2012	24	→	69.0	48.0	571.0	38.4	0.60	ELECTRIC PUMPING UNIT
Choke Size	Tbg. Press Flwg SI	Csg. Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas Oil Ratio	Well Status	
N/A	SI	70.0	→	69	48	571	696	POW	

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press Flwg SI	Csg. Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas Oil Ratio	Well Status	
	SI		→						

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #128683 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

28b Production - Interval C									
Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr API	Gas Gravity	Production Method
			→						

Choke Size	Tbg Press Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas Oil Ratio	Well Status
			→					

28c Production - Interval D									
Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr API	Gas Gravity	Production Method
			→						

Choke Size	Tbg Press Flwg SI	Csg Press	24 Hr Rate	Oil BBL	Gas MCF	Water BBL	Gas Oil Ratio	Well Status
			→					

29. Disposition of Gas(Sold, used for fuel, vented, etc)
SOLD

30 Summary of Porous Zones (Include Aquifers).
 Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries

30 Summary of Porous Zones (Include Aquifers).				31. Formation (Log) Markers	
Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
RUSTLER	381		ANHYDRITE	ANHYDRITE	381
YATES	1252		DOLOMITE & SAND	DOLOMITE & SAND	1252
QUEEN	2112		DOLOMITE & SAND	DOLOMITE & SAND	2112
SAN ANDRES	2850		DOLOMITE & LIMESTONE	DOLOMITE & LIMESTONE	2850
GLORIETA	4262		DOLOMITE & ANHYDRITE	DOLOMITE & ANHYDRITE	4262
YESO	4336		SAND & DOLOMITE	SAND & DOLOMITE	4336

32. Additional remarks (include plugging procedure).
 Logs will be mailed.

33. Circle enclosed attachments.
- | | | | |
|---|--------------------|---------------|-----------------------|
| 1. Electrical/Mechanical Logs (1 full set req'd) | 2. Geologic Report | 3. DST Report | 4. Directional Survey |
| 5. Sundry Notice for plugging and cement verification | 6. Core Analysis | 7. Other: | |

34 I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):
Electronic Submission #128683 Verified by the BLM Well Information System.
For COG OPERATING LLC, sent to the Carlsbad

Name (please print) CHASITY JACKSON Title PREPARER

Signature (Electronic Submission) Date 01/19/2012

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.

**** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ****



PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

October 11, 2011

COG, LLC
Fasken Center, Tower II
550 West Texas Ave, Suite 1300
Midland, TX 79701

RE: Gissler Federal #13
1650' FSL & 330' FWL
Sec. 5, T17S, R30E
Eddy County, New Mexico

Dear Sir,

The attached is the Deviation Survey for the above captioned well.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Eddie C. LaRue".

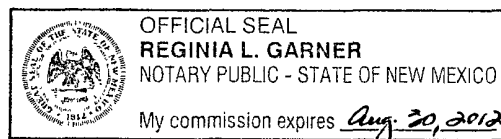
Eddie C. LaRue
Operations Manager

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 11th day of October, 2011.

A handwritten signature in cursive script, appearing to read "Regina L. Garner".

Notary Public



Pason DataHub Deviation Survey
 # Well Dossier 1315970872 - GISSLER FED # 13 H
 #

# Date	Depth	Deviation	Direction
9/14/2011	229	1.10	0.00
9/14/2011	414	0.90	0.00
9/15/2011	579	0.40	0.00
9/15/2011	854	0.40	0.00
9/16/2011	1105	1.50	0.00
9/16/2011	1389	1.00	0.00
9/17/2011	1640	0.40	0.00
9/18/2011	2114	0.10	0.00
9/18/2011	2588	0.50	0.00
9/18/2011	3059	0.70	0.00
9/19/2011	3533	0.50	0.00
9/20/2011	4006	0.30	0.00
9/21/2011	4450	0.20	0.00
9/24/2011	4624	0.50	286.10
9/25/2011	4655	0.40	321.00
9/25/2011	4687	1.90	70.30
9/25/2011	4719	8.40	75.70
9/25/2011	4751	14.60	77.90
9/25/2011	4814	22.90	84.30
9/25/2011	4846	26.90	86.60
9/25/2011	4878	30.40	89.00
9/25/2011	4909	34.00	89.70
9/26/2011	4941	36.40	88.80
9/26/2011	4972	38.60	88.80
9/26/2011	5004	41.10	90.40
9/26/2011	5036	43.50	91.30
9/26/2011	5067	45.30	92.10
9/26/2011	5099	48.00	92.40
9/26/2011	5162	54.30	91.80
9/26/2011	5130	51.40	91.70
9/26/2011	5162	54.30	91.80
9/26/2011	5193	56.70	90.90
9/26/2011	5225	60.00	90.70
9/27/2011	5256	62.40	90.30
9/27/2011	5288	64.90	90.10
9/27/2011	5320	68.00	90.30
9/27/2011	5384	73.10	89.50
9/27/2011	5416	75.50	89.50
9/27/2011	5447	78.70	89.70
9/27/2011	5479	81.90	88.90
9/27/2011	5511	84.60	88.40
9/27/2011	5543	87.70	88.20
9/27/2011	5575	91.00	88.50
9/29/2011	5767	89.90	89.50
9/29/2011	5858	88.70	89.10
9/29/2011	5950	89.80	89.10
9/29/2011	6042	89.40	89.30
9/30/2011	6134	88.00	88.60
9/30/2011	6224	89.10	88.90

#	Date	Depth	Deviation	Direction
9/30/2011	6315	90.70	89.30	
9/30/2011	6407	92.20	89.20	
9/30/2011	6502	90.20	88.90	
9/30/2011	6597	91.30	88.60	
9/30/2011	6692	91.30	91.40	
9/30/2011	6787	89.60	91.40	
10/1/2011	6883	90.30	90.40	
10/1/2011	6978	89.90	90.30	
10/1/2011	7073	89.90	89.90	
10/1/2011	7168	89.30	89.90	
10/1/2011	7264	89.60	89.20	
10/2/2011	7358	90.70	88.90	
10/2/2011	7453	90.60	89.60	
10/2/2011	7548	90.50	88.80	
10/2/2011	7611	90.30	88.80	
10/2/2011	7643	90.60	89.00	
10/2/2011	7738	89.60	89.10	
10/2/2011	7833	91.00	88.90	
10/2/2011	7928	89.50	88.60	
10/2/2011	7991	89.80	89.20	
10/2/2011	8022	90.50	88.80	
10/3/2011	8117	89.80	89.00	
10/3/2011	8211	90.30	89.80	
10/3/2011	8306	90.20	90.10	
10/3/2011	8401	90.80	90.10	
10/3/2011	8496	89.50	89.30	
10/4/2011	8591	90.00	89.50	
10/4/2011	8686	90.60	90.60	
10/4/2011	8781	89.50	90.60	
10/4/2011	8876	90.00	90.90	
10/4/2011	8970	91.20	90.60	
10/4/2011	9065	89.70	90.30	
10/4/2011	9160	90.50	90.30	
10/5/2011	9255	89.90	90.70	
10/5/2011	9351	90.30	90.30	
10/5/2011	9445	89.30	89.70	
10/5/2011	9488	89.70	89.40	
# EOF				



Ryan Energy Directional Drilling Report

Field: Eddy Co, NM
Site: Gissler Federal #13H
Well: #13H
Wellpath: OH

Prepared For:

COG Operating LLC



Ryan Energy Technology

19510 Oil Center Blvd
Houston, TX 77073
Ph: 281-443-1414
Fx: 281-443-1676

www.ryanenergy.com



COG Operating LLC

Field: Eddy Co, NM
 Site: Gissler Federal #13H
 Well: #13H
 Wellpath: OH



Azimuths to Grid North
 True North -0.18°
 Magnetic North 7.63°
 Magnetic Field
 Strength 48954nT
 Dip Angle 60.70°
 Date 9/9/2011
 Model IGRF2010

FIELD DETAILS

Eddy Co, NM
 New Mexico
 U.S.A.

Geodetic System US State Plane Coordinate System 1927
 Ellipsoid NAD27 (Clarke 1866)
 Zone New Mexico, Eastern Zone
 Magnetic Model IGRF2010

System Datum Mean Sea Level
 Local North Grd North

WELLPATH DETAILS

OH

Rig Silver Oak 8
 Ref Datum SITE 3689.30ft

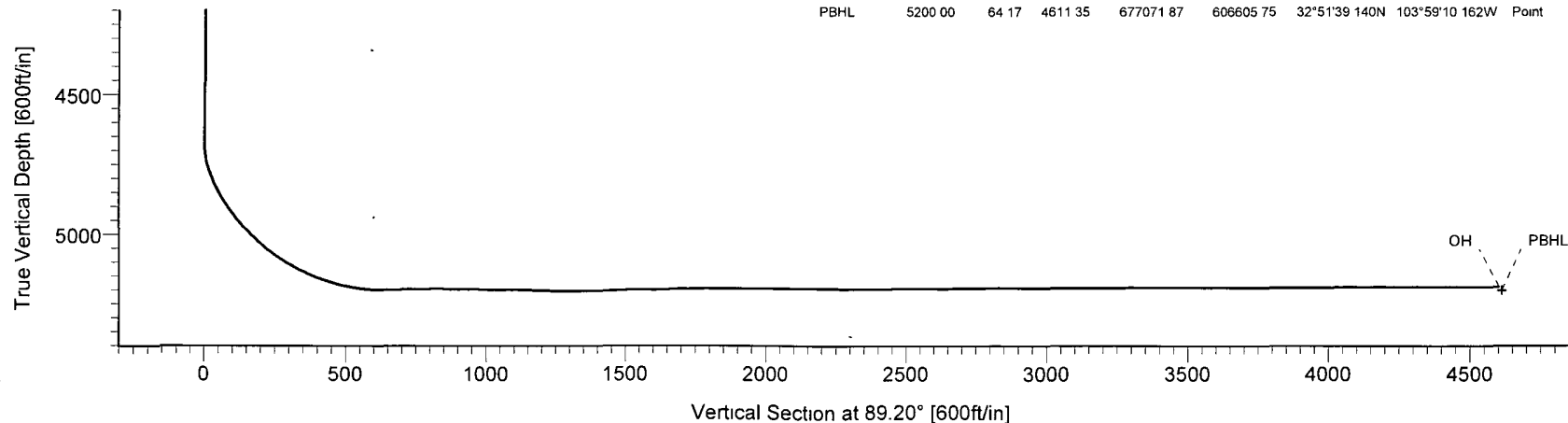
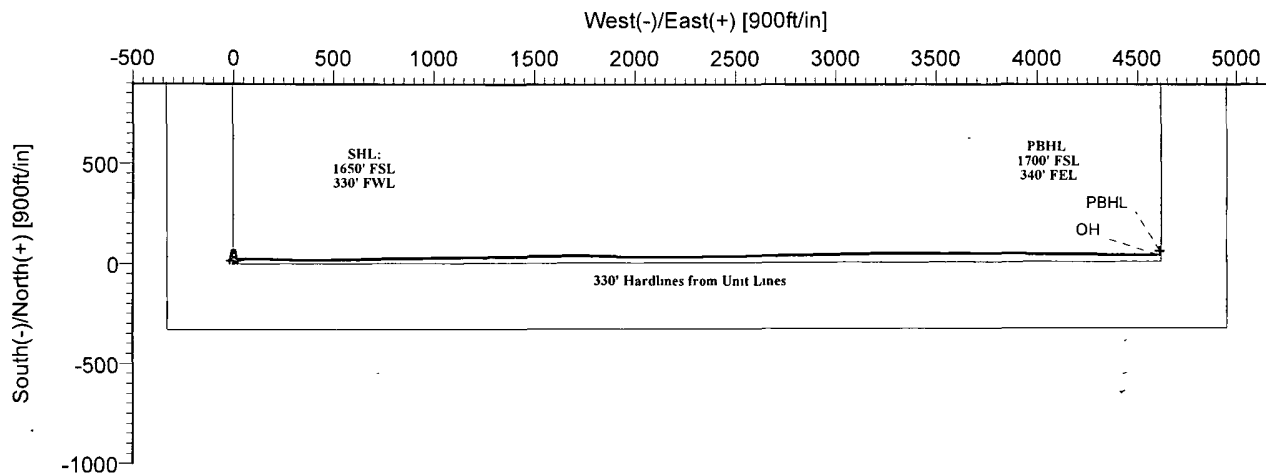
V Section Angle	Origin +N-S	Origin +E-W	Starting From TVD
89.20°	0.00	0.00	0.00

SITE DETAILS

Gissler Federal #13H
 Eddy Co., NM

Site Centre Northing 677007.70
 Easting 601994.40

Ground Level 3689.30
 Positional Uncertainty 0.00
 Convergence 0.18



TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	5200.00	64.17	4611.35	677071.87	606605.75	32°51'39" 140N	103°59'10" 162W	Point

Ryan Energy Technologies
 19510 Oil Center Blvd
 Houston, TX 77073
 Ph 281-443-1414
 Fx 281-443-1676



Wellbath: 9131H1OH
 Created By: Erik De La Pa Date: 10/6/2011
 Checked: _____ Date: _____
 Reviewed: _____ Date: _____
 Approved: _____ Date: _____



Ryan Energy Technologies

Survey Report



Company: COG Operating LLC		Date: 10/6/2011		Time: 13:48:19		Page: 1	
Field: Eddy Co, NM		Co-ordinate(NE) Reference:		Site: Gissler Federal #13H		Grid: North	
Site: Gissler Federal #13H		Vertical (TVD) Reference:		SITE: 3689.3			
Well: #13H		Section (VS) Reference:		Well (0°00N, 0.00E, 89.20Azi)			
Wellpath: OH		Survey Calculation Method:		Minimum Curvature		Db: Sybase	

Field: Eddy Co, NM New Mexico U.S.A.		Map System: US State Plane Coordinate System 1927		Map Zone: New Mexico, Eastern Zone	
Geo Datum: NAD27 (Clarke 1866)		Coordinate System: Site Centre			
Sys Datum: Mean Sea Level		Geomagnetic Model: IGRF2010			

Site: Gissler Federal #13H - Eddy Co., NM					
Site Position:	Northing:	677007.70 ft	Latitude:	32 51	38.652 N
From: Map	Easting:	601994.40 ft	Longitude:	104 0	4.226 W
Position Uncertainty: 0.00 ft			North Reference:	Grid	
Ground Level: 3689.30 ft			Grid Convergence:	0.18 deg	

Well: #13H					
Slot Name:					
Well Position:	+N/-S	0.00 ft	Northing:	677007.70 ft	Latitude: 32 51 38.652 N
	+E/-W	0.00 ft	Easting:	601994.40 ft	Longitude: 104 0 4.226 W
Position Uncertainty: 0.00 ft					

Wellpath: OH				Drilled From: Surface	
Current Datum: SITE		Height: 3689.30 ft		Tie-on Depth: 0.00 ft	
Magnetic Data: 9/9/2011				Above System Datum: Mean Sea Level	
Field Strength: 48954 nT				Declination: 7.81 deg	
Vertical Section: Depth From (TVD)		+N/-S		Mag Dip Angle: 60.70 deg	
ft	ft	ft	ft	Direction	
				deg	
0.00		0.00		0.00	89.20

Survey Program for Definitive Wellpath					
Date: 10/6/2011		Validated: No		Version: 0	
Actual From	To	Survey	Toolcode	Tool Name	
ft	ft				
100.00	4561.00	Survey #1 (100.00-9351.00)	Gyro	Gyro	
4561.00	9488.00	Survey #2 (4561.00-9488.00)	Ryan MWD	Ryan MWD	
9540.00	9540.00	Survey #3 (9540.00-9540.00)	Projection	Projection	

Survey										
MD	Incl	Azim	TVD	+N/-S	+E/-W	VS	DLS	Build	Turn	Tool/Comment
ft	deg	deg	ft	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
100.00	0.89	321.51	100.00	0.61	-0.48	-0.47	0.89	0.89	0.00	Gyro
200.00	0.83	330.25	199.98	1.84	-1.33	-1.30	0.14	-0.06	8.74	Gyro
300.00	0.30	313.66	299.98	2.65	-1.87	-1.84	0.55	-0.53	-16.59	Gyro
400.00	1.06	285.06	399.97	3.08	-2.96	-2.91	0.81	0.76	-28.60	Gyro
500.00	0.64	276.16	499.96	3.38	-4.41	-4.36	0.44	-0.42	-8.90	Gyro
600.00	0.38	252.27	599.96	3.33	-5.28	-5.23	0.33	-0.26	-23.89	Gyro
700.00	0.16	116.46	699.96	3.17	-5.47	-5.42	0.51	-0.22	-135.81	Gyro
800.00	0.41	72.00	799.96	3.22	-5.00	-4.96	0.32	0.25	-44.46	Gyro
900.00	0.91	88.63	899.95	3.35	-3.87	-3.82	0.53	0.50	16.63	Gyro
1000.00	1.24	78.53	999.93	3.58	-2.01	-1.96	0.38	0.33	-10.10	Gyro
1100.00	1.28	72.89	1099.91	4.13	0.11	0.17	0.13	0.04	-5.64	Gyro
1200.00	1.08	73.25	1199.89	4.73	2.08	2.15	0.20	-0.20	0.36	Gyro
1300.00	1.10	72.48	1299.87	5.29	3.90	3.97	0.02	0.02	-0.77	Gyro
1400.00	0.86	93.68	1399.85	5.53	5.57	5.64	0.43	-0.24	21.20	Gyro
1500.00	0.59	93.36	1499.84	5.45	6.83	6.90	0.27	-0.27	-0.32	Gyro
1600.00	0.23	111.02	1599.84	5.35	7.53	7.60	0.38	-0.36	17.66	Gyro
1700.00	0.12	312.23	1699.84	5.35	7.64	7.71	0.34	-0.11	-158.79	Gyro
1800.00	0.34	11.61	1799.84	5.71	7.62	7.70	0.30	0.22	59.38	Gyro
1900.00	0.32	106.09	1899.84	5.92	7.95	8.03	0.48	-0.02	94.48	Gyro
2000.00	0.09	14.14	1999.84	5.92	8.24	8.32	0.34	-0.23	-91.95	Gyro



Ryan Energy Technologies Survey Report



Company: COG Operating LLC Date: 10/6/2011 Time: 13:48:19 Page: 2
Field: Eddy Co. NM Co-ordinate(NE) Reference: Site: Gissler Federal #13H Grid North
Site: Gissler Federal #13H Vertical (TVD) Reference: SITE 3689.3
Well: #13H Section (VS) Reference: Well (0'00N,0'00E,89.20Az)
Wellpath: OH Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/S ft	+E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2100.00	0.37	21.21	2099.84	6.30	8.37	8.46	0.28	0.28	7.07	Gyro
2200.00	0.12	47.34	2199.84	6.67	8.57	8.66	0.27	-0.25	26.13	Gyro
2300.00	0.47	345.98	2299.84	7.14	8.54	8.64	0.43	0.35	-61.36	Gyro
2400.00	0.45	26.62	2399.83	7.89	8.62	8.73	0.32	-0.02	40.64	Gyro
2500.00	0.49	331.31	2499.83	8.61	8.59	8.71	0.44	0.04	-55.31	Gyro
2600.00	0.71	354.98	2599.82	9.61	8.33	8.47	0.33	0.22	23.67	Gyro
2700.00	0.37	314.56	2699.82	10.45	8.05	8.19	0.49	-0.34	-40.42	Gyro
2800.00	0.67	325.25	2799.82	11.16	7.48	7.64	0.31	0.30	10.69	Gyro
2900.00	0.52	354.60	2899.81	12.09	7.11	7.28	0.33	-0.15	29.35	Gyro
3000.00	0.38	322.78	2999.81	12.80	6.87	7.04	0.28	-0.14	-31.82	Gyro
3100.00	0.83	309.16	3099.80	13.53	6.10	6.29	0.47	0.45	-13.62	Gyro
3200.00	0.87	321.20	3199.79	14.57	5.07	5.27	0.18	0.04	12.04	Gyro
3300.00	0.46	327.73	3299.78	15.51	4.38	4.59	0.42	-0.41	6.53	Gyro
3400.00	0.25	286.03	3399.78	15.91	3.95	4.17	0.32	-0.21	-41.70	Gyro
3500.00	0.22	286.82	3499.78	16.02	3.56	3.78	0.03	-0.03	0.79	Gyro
3600.00	0.09	268.35	3599.78	16.07	3.30	3.52	0.14	-0.13	-18.47	Gyro
3700.00	0.36	143.98	3699.78	15.82	3.40	3.62	0.42	0.27	-124.37	Gyro
3800.00	0.31	127.57	3799.78	15.40	3.80	4.02	0.11	-0.05	-16.41	Gyro
3900.00	0.06	252.26	3899.78	15.22	3.97	4.18	0.35	-0.25	124.69	Gyro
4000.00	0.40	206.80	3999.78	14.89	3.76	3.97	0.36	0.34	-45.46	Gyro
4100.00	0.35	262.51	4099.78	14.54	3.30	3.50	0.35	-0.05	55.71	Gyro
4200.00	0.14	216.52	4199.78	14.40	2.92	3.12	0.27	-0.21	-45.99	Gyro
4300.00	0.24	358.85	4299.77	14.51	2.85	3.05	0.36	0.10	142.33	Gyro
4400.00	0.53	276.13	4399.77	14.77	2.38	2.59	0.55	0.29	-82.72	Gyro
4453.00	0.56	258.43	4452.77	14.75	1.88	2.09	0.32	0.06	-33.40	Gyro
4561.00	0.30	329.40	4560.77	14.88	1.22	1.43	0.50	-0.24	65.71	Ryan MWD
4592.00	0.40	294.30	4591.77	15.00	1.08	1.29	0.75	0.32	-113.23	Ryan MWD
4624.00	0.50	286.10	4623.77	15.08	0.85	1.06	0.37	0.31	-25.62	Ryan MWD
4655.00	0.40	321.00	4654.77	15.20	0.65	0.86	0.92	-0.32	112.58	Ryan MWD
4687.00	1.90	70.30	4686.76	15.47	1.08	1.30	6.46	4.69	341.56	Ryan MWD
4719.00	8.40	75.70	4718.61	16.23	3.85	4.07	20.35	20.31	16.87	Ryan MWD
4751.00	14.60	77.80	4749.96	17.66	10.06	10.31	19.42	19.37	6.56	Ryan MWD
4782.00	20.40	81.50	4779.51	19.28	19.23	19.50	19.04	18.71	11.94	Ryan MWD
4814.00	22.90	84.30	4809.25	20.73	30.94	31.23	8.45	7.81	8.75	Ryan MWD
4846.00	26.90	86.60	4838.27	21.77	44.37	44.67	12.86	12.50	7.19	Ryan MWD
4878.00	30.40	89.00	4866.35	22.34	59.70	60.00	11.51	10.94	7.50	Ryan MWD
4909.00	34.00	89.70	4892.58	22.53	76.21	76.52	11.67	11.61	2.26	Ryan MWD
4941.00	36.40	88.80	4918.72	22.77	94.65	94.96	7.67	7.50	-2.81	Ryan MWD
4972.00	38.60	88.80	4943.32	23.17	113.52	113.83	7.10	7.10	0.00	Ryan MWD
5004.00	41.00	90.40	4967.90	23.30	134.00	134.31	8.15	7.50	5.00	Ryan MWD
5036.00	43.50	91.30	4991.59	22.98	155.51	155.82	8.04	7.81	2.81	Ryan MWD
5067.00	45.30	92.10	5013.73	22.33	177.19	177.49	6.08	5.81	2.58	Ryan MWD
5099.00	48.00	92.40	5035.70	21.42	200.44	200.72	8.46	8.44	0.94	Ryan MWD
5130.00	51.40	91.70	5055.75	20.58	224.06	224.33	11.10	10.97	-2.26	Ryan MWD
5162.00	54.30	91.80	5075.07	19.80	249.56	249.81	9.07	9.06	0.31	Ryan MWD
5193.00	56.70	90.90	5092.63	19.20	275.09	275.34	8.10	7.74	-2.90	Ryan MWD
5225.00	60.00	90.70	5109.42	18.82	302.33	302.56	10.33	10.31	-0.62	Ryan MWD
5256.00	62.40	90.30	5124.35	18.58	329.49	329.72	7.82	7.74	-1.29	Ryan MWD
5288.00	64.90	90.10	5138.55	18.48	358.16	358.39	7.83	7.81	-0.62	Ryan MWD
5320.00	68.00	90.30	5151.34	18.38	387.49	387.71	9.70	9.69	0.62	Ryan MWD
5352.00	71.40	89.80	5162.44	18.36	417.50	417.72	10.73	10.62	-1.56	Ryan MWD
5384.00	73.10	89.50	5172.19	18.54	447.98	448.19	5.39	5.31	-0.94	Ryan MWD
5416.00	75.50	89.50	5180.85	18.81	478.78	479.00	7.50	7.50	0.00	Ryan MWD
5447.00	78.70	89.70	5187.77	19.02	508.99	509.21	10.34	10.32	0.65	Ryan MWD



Ryan Energy Technologies Survey Report



Company: COG Operating, LLC Date: 10/6/2011 Time: 13:48:19 Page: 3
Field: Eddy Co. NM Co-ordinate(NE) Reference: Site: Gissler, Federal #13H Grid North:
Site: Gissler Federal #13H Vertical (TVD) Reference: SITE 3689.3
Well: #13H Section (VS) Reference: Well (0 00N, 0 00E, 89.20Azi)
Wellpath: OH Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
5479.00	81.80	88.90	5193.19	19.41	540.52	540.74	10.00	9.69	-2.50	Ryan MWD
5511.00	84.60	88.40	5196.98	20.16	572.29	572.51	8.89	8.75	-1.56	Ryan MWD
5543.00	87.70	88.20	5199.12	21.11	604.20	604.43	9.71	9.69	-0.62	Ryan MWD
5574.00	90.90	88.50	5199.50	22.00	635.18	635.42	10.37	10.32	0.97	Ryan MWD
5606.00	91.60	88.60	5198.81	22.81	667.16	667.41	2.21	2.19	0.31	Ryan MWD
5638.00	91.90	88.10	5197.83	23.73	699.13	699.39	1.82	0.94	-1.56	Ryan MWD
5675.00	91.20	88.20	5196.83	24.92	736.10	736.37	1.91	-1.89	0.27	Ryan MWD
5767.00	89.90	89.50	5195.94	26.77	828.07	828.36	2.00	-1.41	1.41	Ryan MWD
5858.00	88.70	89.10	5197.06	27.88	919.06	919.36	1.39	-1.32	-0.44	Ryan MWD
5950.00	89.80	89.10	5198.26	29.32	1011.04	1011.35	1.20	1.20	0.00	Ryan MWD
6042.00	89.40	89.30	5198.90	30.61	1103.02	1103.34	0.49	-0.43	0.22	Ryan MWD
6134.00	88.00	88.60	5200.99	32.29	1194.98	1195.32	1.70	-1.52	-0.76	Ryan MWD
6224.00	89.10	88.90	5203.27	34.26	1284.93	1285.28	1.27	1.22	0.33	Ryan MWD
6315.00	90.70	89.30	5203.43	35.69	1375.92	1376.28	1.81	1.76	0.44	Ryan MWD
6407.00	92.20	89.20	5201.10	36.89	1467.88	1468.25	1.63	1.63	-0.11	Ryan MWD
6502.00	90.20	88.90	5199.11	38.47	1562.84	1563.22	2.13	-2.11	-0.32	Ryan MWD
6597.00	91.30	88.60	5197.86	40.54	1657.80	1658.21	1.20	1.16	-0.32	Ryan MWD
6692.00	91.30	91.40	5195.71	40.54	1752.77	1753.17	2.95	0.00	2.95	Ryan MWD
6787.00	89.60	91.40	5194.96	38.22	1847.74	1848.09	1.79	-1.79	0.00	Ryan MWD
6883.00	90.30	90.40	5195.05	36.71	1943.72	1944.05	1.27	0.73	-1.04	Ryan MWD
6978.00	89.90	90.30	5194.88	36.13	2038.72	2039.03	0.43	-0.42	-0.11	Ryan MWD
7073.00	89.90	89.90	5195.05	35.96	2133.72	2134.01	0.42	0.00	-0.42	Ryan MWD
7168.00	89.30	89.90	5195.71	36.13	2228.72	2229.00	0.63	-0.63	0.00	Ryan MWD
7264.00	89.60	89.20	5196.63	36.88	2324.71	2325.00	0.79	0.31	-0.73	Ryan MWD
7358.00	90.70	88.90	5196.39	38.44	2418.69	2418.99	1.21	1.17	-0.32	Ryan MWD
7453.00	90.60	89.60	5195.31	39.68	2513.68	2513.99	0.74	-0.11	0.74	Ryan MWD
7548.00	90.50	88.80	5194.40	41.01	2608.66	2608.98	0.85	-0.11	-0.84	Ryan MWD
7643.00	90.60	89.00	5193.48	42.83	2703.64	2703.98	0.24	0.11	0.21	Ryan MWD
7738.00	89.60	89.10	5193.32	44.41	2798.63	2798.98	1.06	-1.05	0.11	Ryan MWD
7833.00	91.00	88.90	5192.82	46.07	2893.61	2893.97	1.49	1.47	-0.21	Ryan MWD
7928.00	89.50	88.60	5192.41	48.14	2988.58	2988.96	1.61	-1.58	-0.32	Ryan MWD
8022.00	90.50	88.80	5192.41	50.27	3082.56	3082.96	1.08	1.06	0.21	Ryan MWD
8117.00	89.80	89.00	5192.16	52.10	3177.54	3177.96	0.77	-0.74	0.21	Ryan MWD
8211.00	90.30	89.80	5192.08	53.08	3271.53	3271.96	1.00	0.53	0.85	Ryan MWD
8306.00	90.20	90.10	5191.66	53.16	3366.53	3366.95	0.33	-0.11	0.32	Ryan MWD
8401.00	90.80	90.10	5190.83	53.00	3461.53	3461.93	0.63	0.63	0.00	Ryan MWD
8496.00	89.50	89.30	5190.58	53.49	3556.52	3556.92	1.61	-1.37	-0.84	Ryan MWD
8591.00	90.00	89.50	5191.00	54.49	3651.52	3651.92	0.57	0.53	0.21	Ryan MWD
8686.00	90.60	90.60	5190.50	54.41	3746.51	3746.91	1.32	0.63	1.16	Ryan MWD
8781.00	89.50	90.60	5190.42	53.41	3841.51	3841.88	1.16	-1.16	0.00	Ryan MWD
8876.00	90.00	90.90	5190.83	52.17	3936.50	3936.84	0.61	0.53	0.32	Ryan MWD
8970.00	91.20	90.60	5189.85	50.94	4030.48	4030.80	1.32	1.28	-0.32	Ryan MWD
9065.00	89.70	90.30	5189.10	50.19	4125.47	4125.77	1.61	-1.58	-0.32	Ryan MWD
9160.00	90.50	90.30	5188.94	49.69	4220.47	4220.75	0.84	0.84	0.00	Ryan MWD
9255.00	89.80	90.70	5188.69	48.87	4315.47	4315.73	0.85	-0.74	0.42	Ryan MWD
9351.00	90.30	90.30	5188.60	48.03	4411.46	4411.70	0.67	0.52	-0.42	Ryan MWD
9445.00	89.30	89.70	5188.93	48.03	4505.46	4505.69	1.24	-1.06	-0.64	Ryan MWD
9488.00	89.70	89.40	5189.31	48.37	4548.46	4548.69	1.16	0.93	-0.70	Ryan MWD
9540.00	89.70	89.40	5189.58	48.91	4600.45	4600.69	0.00	0.00	0.00	Projection