

Submit 1 Copy To Appropriate District Office
District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Form C-103
Revised August 1, 2011

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

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)		WELL API NO. 30-025-40886 ✓
1. Type of Well: Oil Well ☒ Gas Well ☐ Other ☐ HOBBS OCD		5. Indicate Type of Lease STATE ☐ FEE ☒
2. Name of Operator COG Operating LLC		6. State Oil & Gas Lease No.
3. Address of Operator One Concho Center - 600 W Illinois Ave Midland, TX 79701		7. Lease Name or Unit Agreement Name Pan Head Fee ✓
4. Well Location Unit Letter D : 330 feet from the NORTH line and 330 feet from the WEST line Section 11 Township 17S Range 32E NMPM County LEA ✓		8. Well Number 11H
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 4182'		9. OGRID Number 229137
		10. Pool name or Wildcat Maljamar; Yeso West 44500

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

NOTICE OF INTENTION TO:

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

SUBSEQUENT REPORT OF:

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

OTHER: **Change TVD, Casing & Well #** ☒

OTHER: ☐

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

COG Operating LLC respectfully requests permission to change the well number, KOP, EOC, TVD of EOL and 5 1/2" casing isolation procedure as follows:

New Well Number: Pan Head Fee #21H

Old KOP (kick off point): 6323' MD/ 6323' TVD
Old EOC (EOC): 7081' MD/6800' TVD
Old EOL (end of lateral): 13849' MD/ 6682' TVD

New KOP (kick off point) 5929' MD/5929' TVD
New EOC (End of curve): 6747' /6450' TVD
New EOL (end of lateral): 12159' MD/6450' TVD

Old isolation procedure: tapered 7" X 5 1/2" casing-- 7" casing cemented from KOP to surface and 5 1/2" casing isolated with ECP and DV Tool From KOP to TD.

New isolation procedure: tapered 7" X 5 1/2" casing cemented to surface with 1800 sacks cement.

A revised C-102 and directional plan are attached for your review.

Spud Date:

Rig Release Date:

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

SIGNATURE  TITLE **Permitting Tech** DATE **03/10/2015**

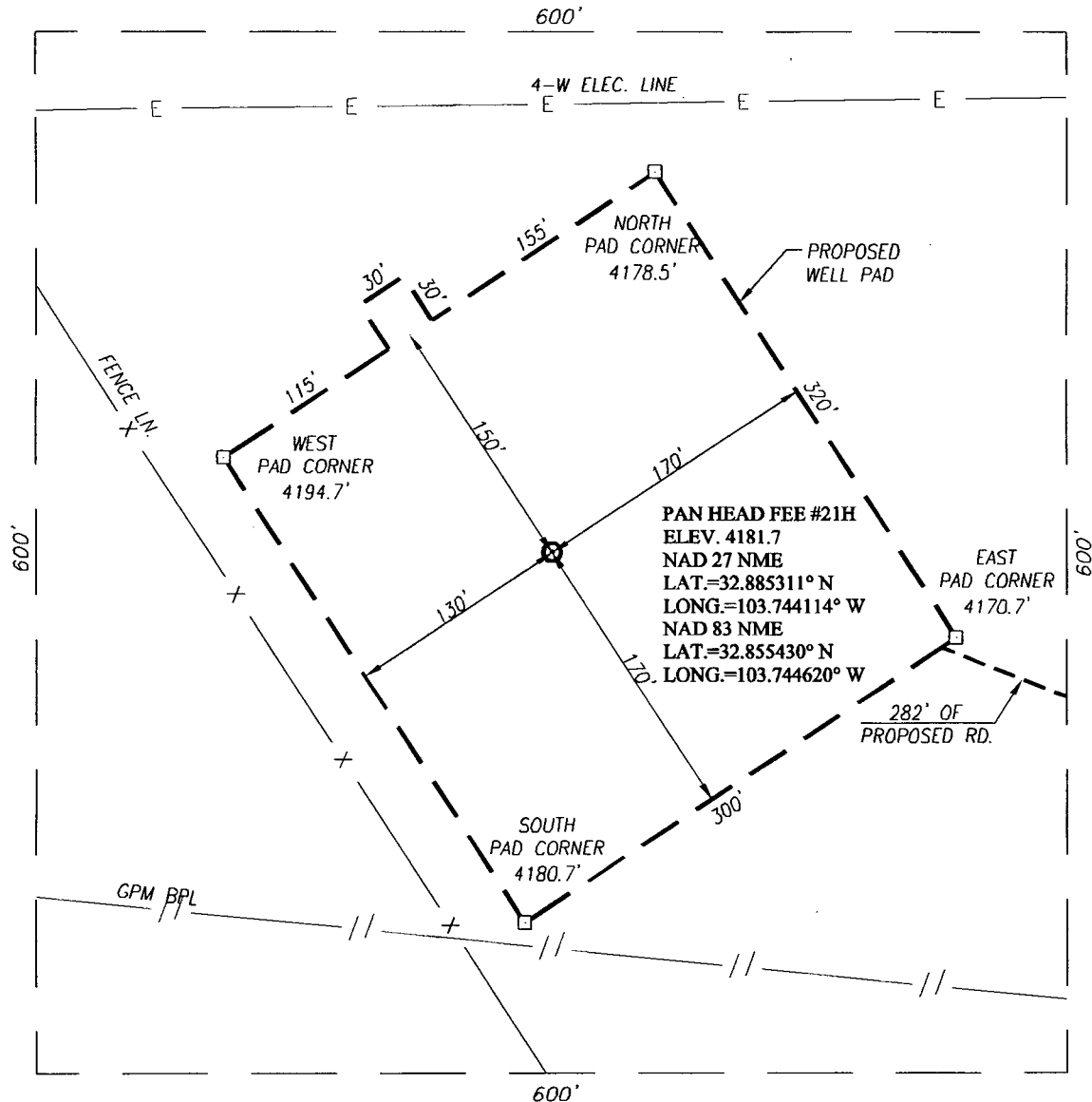
Type or print name **Kelly J. Holly** E-mail address: **kholly@concho.com** PHONE: **432-685-4384**

For State Use Only


Petroleum Engineer

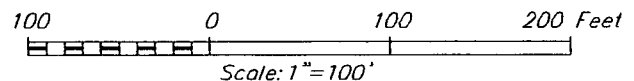
MAR 12 2015


SECTION 11, TOWNSHIP 17 SOUTH, RANGE 32 EAST, N.M.P.M.
LEA COUNTY **NEW MEXICO**



DIRECTIONS TO LOCATION

FROM THE MALJAMAR ROAD AND SAND ROAD GO EAST ON SAND ROAD APPROX 0.5 MILES TO A CATTLE GUARD. GO THROUGH THE CATTLE GUARD AND GO SOUTHEAST ON A LEASE ROAD APPROX 0.5 MILES TO THE PROPOSED ROAD. FOLLOW ROAD SURVEY APPROX 0.1 MILES NORTHEAST; PROPOSED ROAD TURNS AND GOES EAST APPROX 0.2 MILES. PROPOSED ROAD TURNS AND GOES NORTH APPROX 0.25 MILES. CONTINUE FOLLOWING ROAD SURVEY NORTHEAST APPROX 0.1 MILES TO THE PAN HEAD FEE #2H. FOLLOW SURVEY LATH FROM THE SOUTHWEST CORNER OF PAD WEST 282 FEET TO THIS LOCATION.



COG OPERATING, LLC

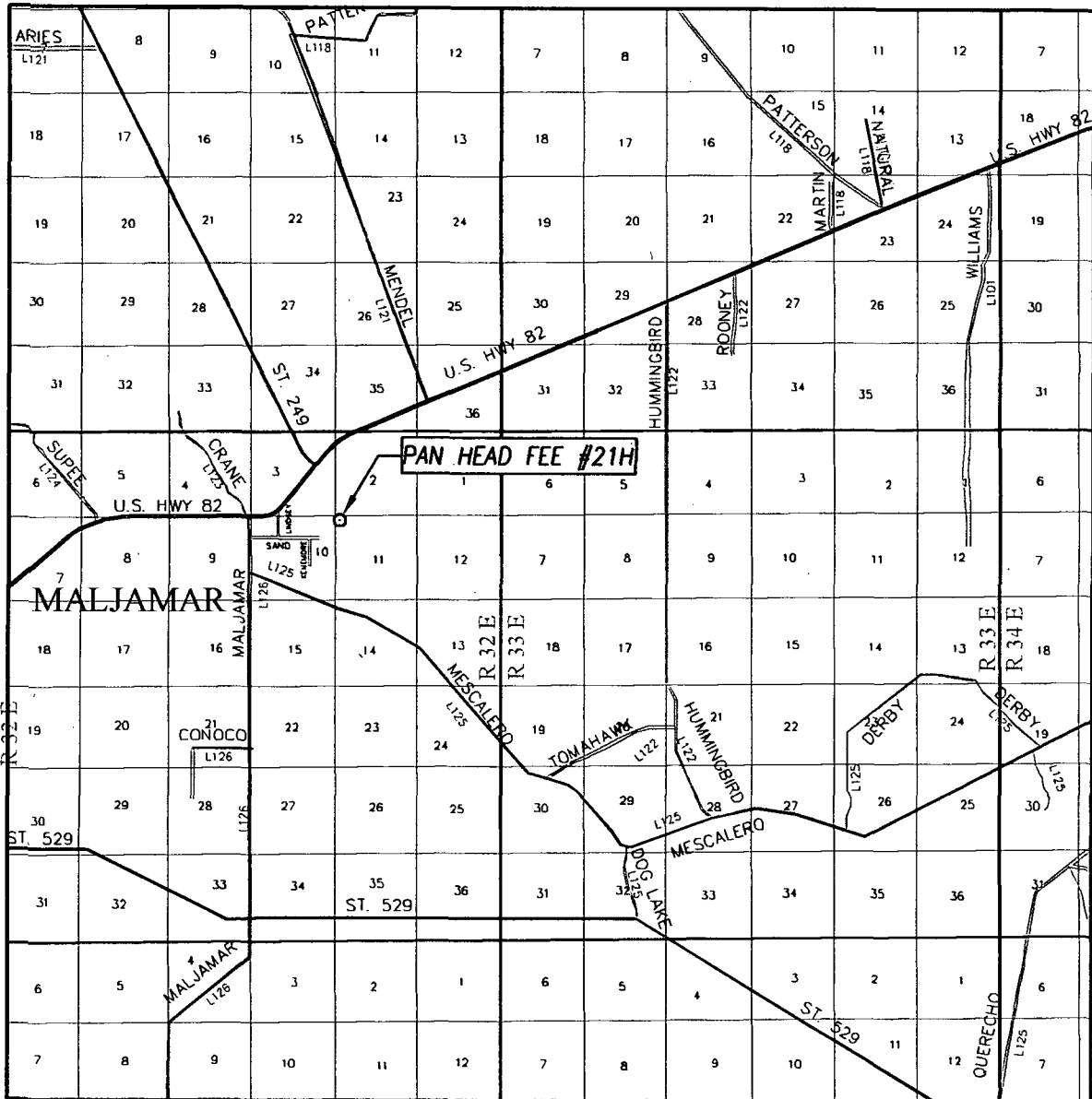
PAN HEAD FEE #21H WELL
LOCATED 330 FEET FROM THE NORTH LINE
AND 330 FEET FROM THE WEST LINE OF SECTION 11,
TOWNSHIP 17 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO

PROVIDING SURVEYING SERVICES
 SINCE 1946
JOHN WEST SURVEYING COMPANY
 412 N. DAL PASO
 HOBBS, N.M. 88240
 (575) 393-3117 www.jwsc.biz

Survey Date: 10/11/12	CAD Date: 10/24/14	Drawn By: LSL
W.O. No.: 14131154	Rev: 12/10/14	Rel. W.O.: 13130516

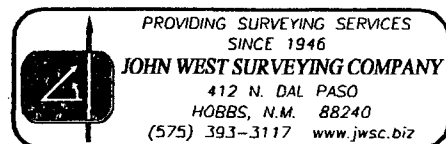
Sheet 1 of 1

VICINITY MAP

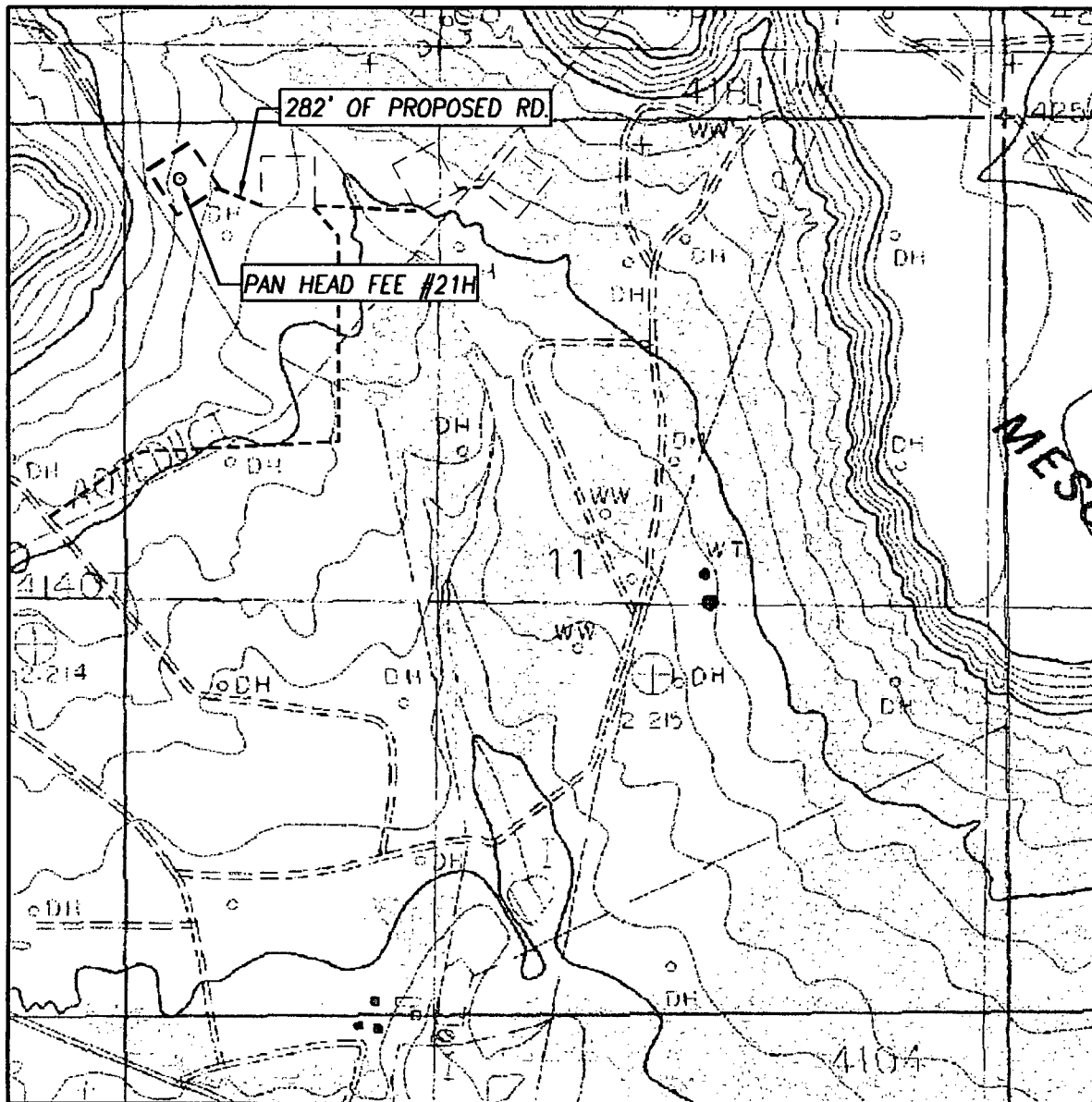


SCALE: 1" = 2 MILES

SEC. 11 TWP. 17-S RGE. 32-E
 SURVEY N.M.P.M.
 COUNTY LEA STATE NEW MEXICO
 DESCRIPTION 330' FNL & 330' FWL
 ELEVATION 4182'
 OPERATOR COG OPERATING, LLC
 LEASE PAN HEAD FEE



LOCATION VERIFICATION MAP



SCALE: 1" = 1000'

CONTOUR INTERVAL:
DOG LAKE, N.M. - 10'

SEC. 11 TWP. 17-S RGE. 32-E

SURVEY N.M.P.M.

COUNTY LEA STATE NEW MEXICO

DESCRIPTION 330' FNL & 330' FWL

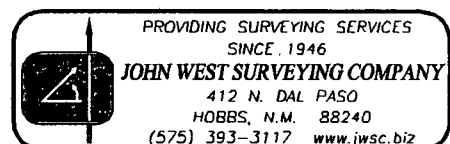
ELEVATION 4182'

OPERATOR COG OPERATING, LLC

LEASE PAN HEAD FEE

U.S.G.S. TOPOGRAPHIC MAP

DOG LAKE, N.M.





COG Operating LLC

Lea County, New Mexico

Pan Head Fee

Pan Head Fee Well No. 21H

Original Hole

SHL: 330 FNL 330 FWL Sect 11-T17S-R32E Unit D

BHL: 988 FNL 330 FWL Sect 14-T17S-R32E Unit D

Plan: rev0

Standard_report

14 February, 2015



Standard_report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Pan Head Fee Well No. 21H
Project:	Lea County, New Mexico	TVD Reference:	RKB=4182+12 @ 4194.00usft (United #43)
Site:	Pan Head Fee	MD Reference:	RKB=4182+12 @ 4194.00usft (United #43)
Well:	Pan Head Fee Well No. 21H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	rev0	Database:	Dbase Nov0914

Project		Lea County, New Mexico	
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		Pan Head Fee				
Site Position:		Northing:	675,378.00	usft	Latitude:	32.85531054
From:	Map	Easting:	680,940.30	usft	Longitude:	-103.74411423
Position Uncertainty:		0.00	usft	Slot Radius:	13-3/16	"
					Grid Convergence:	0.32 °

Well	Pan Head Fee Well No. 21H; Surf Loc: 330 FNL 330 FWL Sect 11-T17S-R32E Unit D					
Well Position	+N/-S	0.00 usft	Northing:	675,378.00 usft	Latitude:	32.85531054
	+E/-W	0.00 usft	Easting:	680,940.30 usft	Longitude:	-103.74411423
Position Uncertainty	0.00 usft		Wellhead Elevation:	usft	Ground Level:	4,182.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/14/2015	7.26	60.65	48,604

Design:	rev0			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	179.67

Survey Tool Program		Date 2/14/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	12,159.24	rev0 (Original Hole)	MWD	MWD - Standard



Standard_report

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Well:	Pan Head Fee Well No. 21H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	rev0	Database:	Dbase Nov0914

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	



Standard_report

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Site:	Pan Head Fee	MD Reference:	RKB=4182+12 @ 4194.00usft (United #43)
Well:	Pan Head Fee Well No. 21H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	rev0	Database:	Dbase Nov0914

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)	
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	



Standard_report

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Well:	Pan Head Fee Well No. 21H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	rev0	Database:	Dbase Nov0914

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)	
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
5,929.13	0.00	0.00	5,929.13	0.00	0.00	0.00	0.00	675,378.00	680,940.30	
KOP Begin 11°/100' build										
6,000.00	7.80	179.67	5,999.78	-4.81	0.03	11.00	4.81	675,373.19	680,940.33	
6,100.00	18.80	179.67	6,096.95	-27.78	0.16	11.00	27.78	675,350.22	680,940.46	
6,200.00	29.80	179.67	6,187.96	-68.86	0.40	11.00	68.86	675,309.14	680,940.70	
6,300.00	40.80	179.67	6,269.45	-126.55	0.73	11.00	126.55	675,251.45	680,941.03	
6,400.00	51.80	179.67	6,338.44	-198.73	1.15	11.00	198.73	675,179.27	680,941.45	
6,500.00	62.80	179.67	6,392.38	-282.74	1.64	11.00	282.75	675,095.26	680,941.94	
6,600.00	73.80	179.67	6,429.31	-375.51	2.18	11.00	375.51	675,002.49	680,942.48	
6,700.00	84.80	179.67	6,447.85	-473.62	2.75	11.00	473.62	674,904.38	680,943.05	
6,747.31	90.00	179.67	6,450.00	-520.86	3.02	11.00	520.87	674,857.14	680,943.32	
Begin 90.00 lateral section										
6,800.00	90.00	179.67	6,450.00	-573.55	3.33	0.00	573.56	674,804.45	680,943.63	
6,900.00	90.00	179.67	6,450.00	-673.55	3.91	0.00	673.56	674,704.45	680,944.21	
7,000.00	90.00	179.67	6,450.00	-773.55	4.49	0.00	773.56	674,604.45	680,944.79	
7,100.00	90.00	179.67	6,450.00	-873.54	5.07	0.00	873.56	674,504.46	680,945.37	
7,200.00	90.00	179.67	6,450.00	-973.54	5.64	0.00	973.56	674,404.46	680,945.94	
7,300.00	90.00	179.67	6,450.00	-1,073.54	6.22	0.00	1,073.56	674,304.46	680,946.52	
7,400.00	90.00	179.67	6,450.00	-1,173.54	6.80	0.00	1,173.56	674,204.46	680,947.10	
7,500.00	90.00	179.67	6,450.00	-1,273.54	7.38	0.00	1,273.56	674,104.46	680,947.68	
7,600.00	90.00	179.67	6,450.00	-1,373.54	7.96	0.00	1,373.56	674,004.46	680,948.26	



Standard_report

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Site:	Pan Head Fee	MD Reference:	RKB=4182+12 @ 4194.00usft (United #43)
Well:	Pan Head Fee Well No. 21H	North Reference:	Grid
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Design:	rev0	Database:	Dbase Nov0914

Planned Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
7,700.00	90.00	179.67	6,450.00	-1,473.53	8.54	0.00	1,473.56	673,904.47	680,948.84
7,800.00	90.00	179.67	6,450.00	-1,573.53	9.12	0.00	1,573.56	673,804.47	680,949.42
7,900.00	90.00	179.67	6,450.00	-1,673.53	9.70	0.00	1,673.56	673,704.47	680,950.00
8,000.00	90.00	179.67	6,450.00	-1,773.53	10.28	0.00	1,773.56	673,604.47	680,950.58
8,100.00	90.00	179.67	6,450.00	-1,873.53	10.86	0.00	1,873.56	673,504.47	680,951.16
8,200.00	90.00	179.67	6,450.00	-1,973.53	11.44	0.00	1,973.56	673,404.47	680,951.74
8,300.00	90.00	179.67	6,450.00	-2,073.52	12.02	0.00	2,073.56	673,304.48	680,952.32
8,400.00	90.00	179.67	6,450.00	-2,173.52	12.60	0.00	2,173.56	673,204.48	680,952.90
8,500.00	90.00	179.67	6,450.00	-2,273.52	13.18	0.00	2,273.56	673,104.48	680,953.48
8,600.00	90.00	179.67	6,450.00	-2,373.52	13.76	0.00	2,373.56	673,004.48	680,954.06
8,700.00	90.00	179.67	6,450.00	-2,473.52	14.34	0.00	2,473.56	672,904.48	680,954.64
8,800.00	90.00	179.67	6,450.00	-2,573.52	14.92	0.00	2,573.56	672,804.48	680,955.22
8,900.00	90.00	179.67	6,450.00	-2,673.51	15.50	0.00	2,673.56	672,704.49	680,955.80
9,000.00	90.00	179.67	6,450.00	-2,773.51	16.08	0.00	2,773.56	672,604.49	680,956.38
9,100.00	90.00	179.67	6,450.00	-2,873.51	16.66	0.00	2,873.56	672,504.49	680,956.96
9,200.00	90.00	179.67	6,450.00	-2,973.51	17.24	0.00	2,973.56	672,404.49	680,957.54
9,300.00	90.00	179.67	6,450.00	-3,073.51	17.82	0.00	3,073.56	672,304.49	680,958.12
9,400.00	90.00	179.67	6,450.00	-3,173.51	18.40	0.00	3,173.56	672,204.49	680,958.70
9,500.00	90.00	179.67	6,450.00	-3,273.50	18.98	0.00	3,273.56	672,104.50	680,959.28
9,600.00	90.00	179.67	6,450.00	-3,373.50	19.56	0.00	3,373.56	672,004.50	680,959.86
9,700.00	90.00	179.67	6,450.00	-3,473.50	20.14	0.00	3,473.56	671,904.50	680,960.44
9,800.00	90.00	179.67	6,450.00	-3,573.50	20.72	0.00	3,573.56	671,804.50	680,961.02
9,900.00	90.00	179.67	6,450.00	-3,673.50	21.30	0.00	3,673.56	671,704.50	680,961.60
10,000.00	90.00	179.67	6,450.00	-3,773.50	21.88	0.00	3,773.56	671,604.50	680,962.18
10,100.00	90.00	179.67	6,450.00	-3,873.49	22.46	0.00	3,873.56	671,504.51	680,962.76
10,200.00	90.00	179.67	6,450.00	-3,973.49	23.04	0.00	3,973.56	671,404.51	680,963.34
10,300.00	90.00	179.67	6,450.00	-4,073.49	23.62	0.00	4,073.56	671,304.51	680,963.92



Standard_report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Pan Head Fee Well No. 21H
Project:	Lea County, New Mexico	TVD Reference:	RKB=4182+12 @ 4194.00usft (United #43)
Site:	Pan Head Fee	MD Reference:	RKB=4182+12 @ 4194.00usft (United #43)
Well:	Pan Head Fee Well No. 21H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	rev0	Database:	Dbase Nov0914

Planned Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
10,400.00	90.00	179.67	6,450.00	-4,173.49	24.20	0.00	4,173.56	671,204.51	680,964.50
10,500.00	90.00	179.67	6,450.00	-4,273.49	24.78	0.00	4,273.56	671,104.51	680,965.08
10,600.00	90.00	179.67	6,450.00	-4,373.49	25.36	0.00	4,373.56	671,004.51	680,965.66
10,700.00	90.00	179.67	6,450.00	-4,473.48	25.94	0.00	4,473.56	670,904.52	680,966.24
10,800.00	90.00	179.67	6,450.00	-4,573.48	26.52	0.00	4,573.56	670,804.52	680,966.82
10,900.00	90.00	179.67	6,450.00	-4,673.48	27.10	0.00	4,673.56	670,704.52	680,967.40
11,000.00	90.00	179.67	6,450.00	-4,773.48	27.68	0.00	4,773.56	670,604.52	680,967.98
11,100.00	90.00	179.67	6,450.00	-4,873.48	28.26	0.00	4,873.56	670,504.52	680,968.56
11,200.00	90.00	179.67	6,450.00	-4,973.48	28.84	0.00	4,973.56	670,404.52	680,969.14
11,300.00	90.00	179.67	6,450.00	-5,073.47	29.42	0.00	5,073.56	670,304.53	680,969.72
11,400.00	90.00	179.67	6,450.00	-5,173.47	30.00	0.00	5,173.56	670,204.53	680,970.30
11,500.00	90.00	179.67	6,450.00	-5,273.47	30.58	0.00	5,273.56	670,104.53	680,970.88
11,600.00	90.00	179.67	6,450.00	-5,373.47	31.16	0.00	5,373.56	670,004.53	680,971.46
11,700.00	90.00	179.67	6,450.00	-5,473.47	31.74	0.00	5,473.56	669,904.53	680,972.04
11,800.00	90.00	179.67	6,450.00	-5,573.47	32.32	0.00	5,573.56	669,804.53	680,972.62
11,900.00	90.00	179.67	6,450.00	-5,673.46	32.90	0.00	5,673.56	669,704.54	680,973.20
12,000.00	90.00	179.67	6,450.00	-5,773.46	33.48	0.00	5,773.56	669,604.54	680,973.78
12,100.00	90.00	179.67	6,450.00	-5,873.46	34.06	0.00	5,873.56	669,504.54	680,974.36
12,159.24	90.00	179.67	6,450.00	-5,932.70	34.40	0.00	5,932.80	669,445.30	680,974.70
PBHL/TD									



Standard_report

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well Pan Head Fee Well No. 21H
Project:	Lea County, New Mexico	TVD Reference:	RKB=4182+12 @ 4194.00usft (United #43)
Site:	Pan Head Fee	MD Reference:	RKB=4182+12 @ 4194.00usft (United #43)
Well:	Pan Head Fee Well No. 21H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	rev0	Database:	Dbase Nov0914

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,929.13	5,929.13	0.00	0.00	KOP Begin 11°/100' build
6,747.31	6,450.00	-520.86	3.02	Begin 90.00 lateral section
12,159.24	6,450.00	-5,932.70	34.40	PBHL/TD



COG Operating LLC

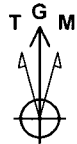
Well: Pan Head Fee Well No. 21H
 Site: Pan Head Fee
 Project: Lea County, New Mexico
 Design: rev0
 Rig: United #43

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5929.13	0.00	0.00	5929.13	0.00	0.00	0.00	0.00	0.00	KOP Begin 11°/100' build
3	6747.31	90.00	179.67	6450.00	-520.86	3.02	11.00	179.67	520.87	Begin 90.00 lateral section
4	12159.24	90.00	179.67	6450.00	-5932.70	34.40	0.00	0.00	5932.80	PBHL/TD

Surface Location: RKB=4182+12 @ 4194.00usft (United #43)
 US State Plane 1927 (Exact solution)
 New Mexico East 3001

Northing: 675378.00 Easting: 680940.30 Latitude: 32.85531054 Longitude: -103.74411423
 Total Correction (M => G) To convert a Magnetic Direction to a Grid Direction, Add 6.94°



Azimuths to Grid North
 True North: -0.32°
 Magnetic North: 6.94°

Magnetic Field
 Strength: 48603.5snT
 Dip Angle: 60.65°
 Date: 2/14/2015
 Model: IGRF2010

