

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

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.
NMNM120908
6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

7. If Unit or CA/Agreement, Name and/or No.

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

8. Well Name and No.
WINDWARD FEDERAL 11H

2. Name of Operator
COG PRODUCTION LLC
Contact: MAYTE X REYES
E-Mail: mreyes1@concho.com

9. API Well No.
30-025-43707

3a. Address
2208 WEST MAIN STREET
ARTESIA, NM 88210

3b. Phone No. (include area code)
Ph: 575-748-6945

10. Field and Pool or Exploratory Area
WC-025 G-06 S253206M;BS

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sec 30 T24S R32E NWNE 210FNL 560FEL

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE 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	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ 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 must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must 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 Production LLC, respectfully requests approval for the following changes to the original approved APD.

Production Lead Cement:
900 sacks Halliburton Tuned Light @ 3.48 cuft/sk, 10.3 ppg. Tail slurry will remain unchanged.

FTP:
Section 30, T24S, R32E, 330? FNL & 990? FEL

LTP:
Section 31, T24S, R32E, 330? FSL & 990? FEL

- All previous COAs still apply. Additional COA is not required.

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

Electronic Submission #372602 verified by the BLM Well Information System
For COG PRODUCTION LLC, sent to the Hobbs
Committed to AFMSS for processing by DEBORAH MCKINNEY on 04/11/2017 ()

Name (Printed/Typed) MAYTE X REYES

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 04/11/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Mustafa Hague

Title

PETROLEUM ENGINEER

Date 4/11/2017

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

BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD 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 any statement or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

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

K2

Additional data for EC transaction #372602 that would not fit on the form

32. Additional remarks, continued

BHL:

From: Section 31, T24S, R32E, 200' FSL & 1030' FEL

To: Section 31, T24S, R32E, 200? FSL & 990? FEL

C102 attached.



COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 30, T 24 S, R 32 E
Well: Windward Federal 11H
Wellbore: Wellbore #1
Plan: Plan#2 (Windward Federal 11H/Wellbore #1)
McVay 8

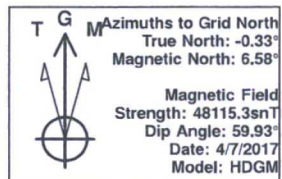
WELL DETAILS: Windward Federal 11H

Ground Elevation:: 3547.80
RKB Elevation: KB=26' @ 3573.80ft (McVay 8)
Rig Name: McVay 8

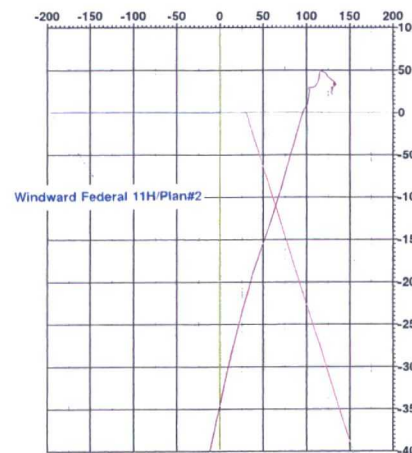
Northing 435203.1000 Easting 693884.3000 Latitude 32° 11' 41.774 N Longitude 103° 42' 23.635 W

Planned Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5000.00	0.00	0.00	5000.00	0.00	0.00	0.00	0.00	0.00
3	5200.20	4.00	270.00	5200.04	0.00	-6.99	2.00	270.00	0.24
4	8734.80	4.00	270.00	8726.01	0.00	-253.80	0.00	0.00	8.89
5	9477.42	90.00	192.80	9195.00	-458.45	-390.79	12.00	-77.23	471.85
6	9808.21	90.00	179.57	9195.00	-786.59	-426.34	4.00	-90.00	801.04
7	19175.60	90.00	179.57	9195.00	-10153.72	-355.74	0.00	0.00	10159.95

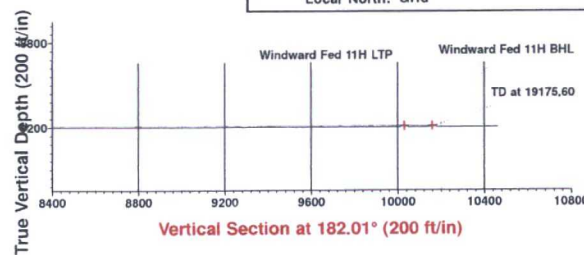
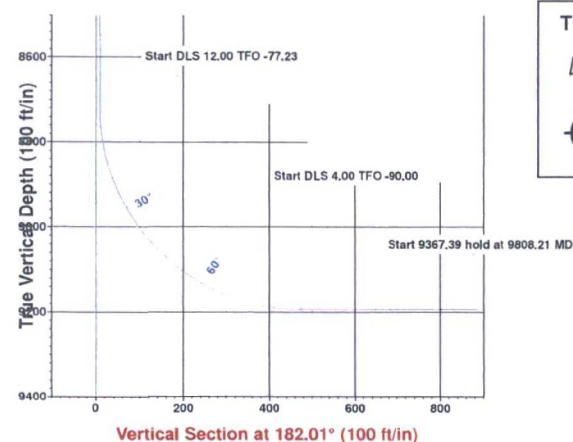
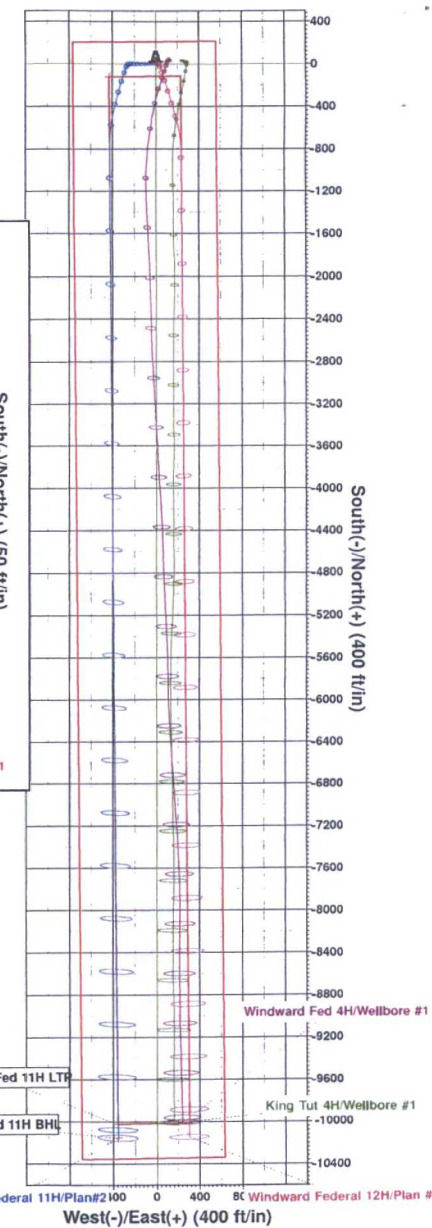


West(-)/East(+) (50 ft/in)

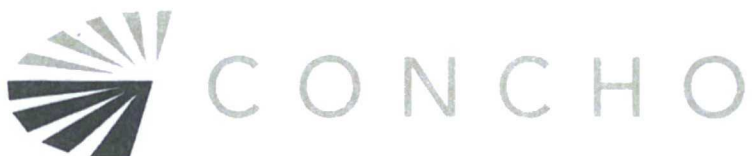


Windward Fed 4H/Wellbore #1 Windward Federal 12H/Plan #1

PROJECT DETAILS: Lea County, NM (NAD27 NME)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



Vertical Section at 182.01° (200 ft/in)



COG Operating L L C

Lea County, NM (NAD27 NME)

Sec. 30, T 24 S. , R 32 E

Windward Federal 11H

Wellbore #1

Plan: Plan#2

Standard Survey Report

10 April, 2017





Integrity Directional Services, LLC

Survey Report



Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 30, T 24 S. , R 32 E
Well: Windward Federal 11H
Wellbore: Wellbore #1
Design: Plan#2

Local Co-ordinate Reference: Well Windward Federal 11H
TVD Reference: KB=26' @ 3573.80ft (McVay 8)
MD Reference: KB=26' @ 3573.80ft (McVay 8)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

Project	Lea County, NM (NAD27 NME)		
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. 30, T 24 S. , R 32 E				
Site Position:		Northing:	435,165.5000 usft	Latitude:	32° 11' 41.651 N
From:	Map	Easting:	689,517.6000 usft	Longitude:	103° 43' 14.453 W
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.33 °

Well	Windward Federal 11H					
Well Position	+N/-S	0.00 ft	Northing:	435,203.1000 usft	Latitude:	32° 11' 41.774 N
	+E/-W	0.00 ft	Easting:	693,884.3000 usft	Longitude:	103° 42' 23.635 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	3,547.80 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	4/7/2017	6.92	59.93	48,115

Design	Plan#2				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	182.01	

Survey Tool Program	Date 4/10/2017				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	19,175.51	Plan#2 (Wellbore #1)	MWD	MWD - Standard	

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00



Integrity Directional Services, LLC

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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
5,100.00	2.00	270.00	5,099.98	0.00	-1.75	0.06	2.00	2.00	0.00
5,200.00	4.00	270.00	5,199.84	0.00	-6.98	0.24	2.00	2.00	0.00



Integrity Directional Services, LLC

Survey Report



Company: COG Operating L L C
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Site: Sec. 30, T 24 S. , R 32 E
Well: Windward Federal 11H
Wellbore: Wellbore #1
Design: Plan#2

Local Co-ordinate Reference: Well Windward Federal 11H
TVD Reference: KB=26' @ 3573.80ft (McVay 8)
MD Reference: KB=26' @ 3573.80ft (McVay 8)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,200.20	4.00	270.00	5,200.04	0.00	-6.99	0.24	2.00	2.00	0.00
Start 3534.60 hold at 5200.20 MD									
5,300.00	4.00	270.00	5,299.59	0.00	-13.96	0.49	0.00	0.00	0.00
5,400.00	4.00	270.00	5,399.35	0.00	-20.94	0.73	0.00	0.00	0.00
5,500.00	4.00	270.00	5,499.11	0.00	-27.93	0.98	0.00	0.00	0.00
5,600.00	4.00	270.00	5,598.86	0.00	-34.91	1.22	0.00	0.00	0.00
5,700.00	4.00	270.00	5,698.62	0.00	-41.89	1.47	0.00	0.00	0.00
5,800.00	4.00	270.00	5,798.37	0.00	-48.87	1.71	0.00	0.00	0.00
5,900.00	4.00	270.00	5,898.13	0.00	-55.86	1.96	0.00	0.00	0.00
6,000.00	4.00	270.00	5,997.89	0.00	-62.84	2.20	0.00	0.00	0.00
6,100.00	4.00	270.00	6,097.64	0.00	-69.82	2.44	0.00	0.00	0.00
6,200.00	4.00	270.00	6,197.40	0.00	-76.80	2.69	0.00	0.00	0.00
6,300.00	4.00	270.00	6,297.15	0.00	-83.79	2.93	0.00	0.00	0.00
6,400.00	4.00	270.00	6,396.91	0.00	-90.77	3.18	0.00	0.00	0.00
6,500.00	4.00	270.00	6,496.66	0.00	-97.75	3.42	0.00	0.00	0.00
6,600.00	4.00	270.00	6,596.42	0.00	-104.74	3.67	0.00	0.00	0.00
6,700.00	4.00	270.00	6,696.18	0.00	-111.72	3.91	0.00	0.00	0.00
6,800.00	4.00	270.00	6,795.93	0.00	-118.70	4.16	0.00	0.00	0.00
6,900.00	4.00	270.00	6,895.69	0.00	-125.68	4.40	0.00	0.00	0.00
7,000.00	4.00	270.00	6,995.44	0.00	-132.67	4.64	0.00	0.00	0.00
7,100.00	4.00	270.00	7,095.20	0.00	-139.65	4.89	0.00	0.00	0.00
7,200.00	4.00	270.00	7,194.96	0.00	-146.63	5.13	0.00	0.00	0.00
7,300.00	4.00	270.00	7,294.71	0.00	-153.61	5.38	0.00	0.00	0.00
7,400.00	4.00	270.00	7,394.47	0.00	-160.60	5.62	0.00	0.00	0.00
7,500.00	4.00	270.00	7,494.22	0.00	-167.58	5.87	0.00	0.00	0.00
7,600.00	4.00	270.00	7,593.98	0.00	-174.56	6.11	0.00	0.00	0.00
7,700.00	4.00	270.00	7,693.74	0.00	-181.54	6.36	0.00	0.00	0.00
7,800.00	4.00	270.00	7,793.49	0.00	-188.53	6.60	0.00	0.00	0.00
7,900.00	4.00	270.00	7,893.25	0.00	-195.51	6.85	0.00	0.00	0.00
8,000.00	4.00	270.00	7,993.00	0.00	-202.49	7.09	0.00	0.00	0.00
8,100.00	4.00	270.00	8,092.76	0.00	-209.47	7.33	0.00	0.00	0.00
8,200.00	4.00	270.00	8,192.52	0.00	-216.46	7.58	0.00	0.00	0.00
8,300.00	4.00	270.00	8,292.27	0.00	-223.44	7.82	0.00	0.00	0.00
8,400.00	4.00	270.00	8,392.03	0.00	-230.42	8.07	0.00	0.00	0.00
8,500.00	4.00	270.00	8,491.78	0.00	-237.40	8.31	0.00	0.00	0.00
8,600.00	4.00	270.00	8,591.54	0.00	-244.39	8.56	0.00	0.00	0.00
8,700.00	4.00	270.00	8,691.29	0.00	-251.37	8.80	0.00	0.00	0.00
8,734.80	4.00	270.00	8,726.01	0.00	-253.80	8.89	0.00	0.00	0.00
Start DLS 12.00 TFO -77.23									
8,800.00	9.54	216.76	8,790.78	-4.33	-259.32	13.41	12.00	8.49	-81.65
8,900.00	21.06	203.01	8,887.10	-27.60	-271.35	37.08	12.00	11.52	-13.75
9,000.00	32.92	198.85	8,976.06	-70.00	-287.21	80.01	12.00	11.86	-4.16
9,100.00	44.84	196.74	9,053.77	-129.70	-306.21	140.34	12.00	11.93	-2.12
9,200.00	56.80	195.36	9,116.83	-204.08	-327.52	215.42	12.00	11.95	-1.37



Integrity Directional Services, LLC

Survey Report



Company: COG Operating L L C
Project: Lea County, NM (NAD27 NME)
Site: Sec. 30, T 24 S. , R 32 E
Well: Windward Federal 11H
Wellbore: Wellbore #1
Design: Plan#2

Local Co-ordinate Reference: Well Windward Federal 11H
TVD Reference: KB=26' @ 3573.80ft (McVay 8)
MD Reference: KB=26' @ 3573.80ft (McVay 8)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,300.00	68.76	194.32	9,162.49	-289.89	-350.21	301.98	12.00	11.96	-1.04
9,400.00	80.73	193.44	9,188.75	-383.39	-373.29	396.22	12.00	11.97	-0.88
9,477.42	90.00	192.80	9,195.00	-458.45	-390.79	471.85	12.00	11.97	-0.82
Start DLS 4.00 TFO -90.00									
9,500.00	90.00	191.90	9,195.00	-480.51	-395.62	494.07	4.00	0.00	-4.00
9,600.00	90.00	187.90	9,195.00	-579.01	-412.80	593.10	4.00	0.00	-4.00
9,700.00	90.00	183.90	9,195.00	-678.46	-423.07	692.85	4.00	0.00	-4.00
9,800.00	90.00	179.90	9,195.00	-778.38	-426.38	792.83	4.00	0.00	-4.00
9,808.21	90.00	179.57	9,195.00	-786.59	-426.34	801.04	4.00	0.00	-4.00
Start 9367.39 hold at 9808.21 MD									
9,900.00	90.00	179.57	9,195.00	-878.38	-425.65	892.74	0.00	0.00	0.00
10,000.00	90.00	179.57	9,195.00	-978.38	-424.90	992.65	0.00	0.00	0.00
10,100.00	90.00	179.57	9,195.00	-1,078.37	-424.14	1,092.56	0.00	0.00	0.00
10,200.00	90.00	179.57	9,195.00	-1,178.37	-423.39	1,192.47	0.00	0.00	0.00
10,300.00	90.00	179.57	9,195.00	-1,278.37	-422.63	1,292.38	0.00	0.00	0.00
10,400.00	90.00	179.57	9,195.00	-1,378.37	-421.88	1,392.29	0.00	0.00	0.00
10,500.00	90.00	179.57	9,195.00	-1,478.36	-421.13	1,492.20	0.00	0.00	0.00
10,600.00	90.00	179.57	9,195.00	-1,578.36	-420.37	1,592.11	0.00	0.00	0.00
10,700.00	90.00	179.57	9,195.00	-1,678.36	-419.62	1,692.02	0.00	0.00	0.00
10,800.00	90.00	179.57	9,195.00	-1,778.35	-418.87	1,791.93	0.00	0.00	0.00
10,900.00	90.00	179.57	9,195.00	-1,878.35	-418.11	1,891.84	0.00	0.00	0.00
11,000.00	90.00	179.57	9,195.00	-1,978.35	-417.36	1,991.75	0.00	0.00	0.00
11,100.00	90.00	179.57	9,195.00	-2,078.35	-416.60	2,091.66	0.00	0.00	0.00
11,200.00	90.00	179.57	9,195.00	-2,178.34	-415.85	2,191.57	0.00	0.00	0.00
11,300.00	90.00	179.57	9,195.00	-2,278.34	-415.10	2,291.48	0.00	0.00	0.00
11,400.00	90.00	179.57	9,195.00	-2,378.34	-414.34	2,391.39	0.00	0.00	0.00
11,500.00	90.00	179.57	9,195.00	-2,478.33	-413.59	2,491.30	0.00	0.00	0.00
11,600.00	90.00	179.57	9,195.00	-2,578.33	-412.84	2,591.20	0.00	0.00	0.00
11,700.00	90.00	179.57	9,195.00	-2,678.33	-412.08	2,691.11	0.00	0.00	0.00
11,800.00	90.00	179.57	9,195.00	-2,778.33	-411.33	2,791.02	0.00	0.00	0.00
11,900.00	90.00	179.57	9,195.00	-2,878.32	-410.58	2,890.93	0.00	0.00	0.00
12,000.00	90.00	179.57	9,195.00	-2,978.32	-409.82	2,990.84	0.00	0.00	0.00
12,100.00	90.00	179.57	9,195.00	-3,078.32	-409.07	3,090.75	0.00	0.00	0.00
12,200.00	90.00	179.57	9,195.00	-3,178.31	-408.31	3,190.66	0.00	0.00	0.00
12,300.00	90.00	179.57	9,195.00	-3,278.31	-407.56	3,290.57	0.00	0.00	0.00
12,400.00	90.00	179.57	9,195.00	-3,378.31	-406.81	3,390.48	0.00	0.00	0.00
12,500.00	90.00	179.57	9,195.00	-3,478.31	-406.05	3,490.39	0.00	0.00	0.00
12,600.00	90.00	179.57	9,195.00	-3,578.30	-405.30	3,590.30	0.00	0.00	0.00
12,700.00	90.00	179.57	9,195.00	-3,678.30	-404.55	3,690.21	0.00	0.00	0.00
12,800.00	90.00	179.57	9,195.00	-3,778.30	-403.79	3,790.12	0.00	0.00	0.00
12,900.00	90.00	179.57	9,195.00	-3,878.29	-403.04	3,890.03	0.00	0.00	0.00
13,000.00	90.00	179.57	9,195.00	-3,978.29	-402.29	3,989.94	0.00	0.00	0.00
13,100.00	90.00	179.57	9,195.00	-4,078.29	-401.53	4,089.85	0.00	0.00	0.00



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Database: EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,200.00	90.00	179.57	9,195.00	-4,178.29	-400.78	4,189.76	0.00	0.00	0.00
13,300.00	90.00	179.57	9,195.00	-4,278.28	-400.02	4,289.67	0.00	0.00	0.00
13,400.00	90.00	179.57	9,195.00	-4,378.28	-399.27	4,389.58	0.00	0.00	0.00
13,500.00	90.00	179.57	9,195.00	-4,478.28	-398.52	4,489.48	0.00	0.00	0.00
13,600.00	90.00	179.57	9,195.00	-4,578.27	-397.76	4,589.39	0.00	0.00	0.00
13,700.00	90.00	179.57	9,195.00	-4,678.27	-397.01	4,689.30	0.00	0.00	0.00
13,800.00	90.00	179.57	9,195.00	-4,778.27	-396.26	4,789.21	0.00	0.00	0.00
13,900.00	90.00	179.57	9,195.00	-4,878.27	-395.50	4,889.12	0.00	0.00	0.00
14,000.00	90.00	179.57	9,195.00	-4,978.26	-394.75	4,989.03	0.00	0.00	0.00
14,100.00	90.00	179.57	9,195.00	-5,078.26	-393.99	5,088.94	0.00	0.00	0.00
14,200.00	90.00	179.57	9,195.00	-5,178.26	-393.24	5,188.85	0.00	0.00	0.00
14,300.00	90.00	179.57	9,195.00	-5,278.25	-392.49	5,288.76	0.00	0.00	0.00
14,400.00	90.00	179.57	9,195.00	-5,378.25	-391.73	5,388.67	0.00	0.00	0.00
14,500.00	90.00	179.57	9,195.00	-5,478.25	-390.98	5,488.58	0.00	0.00	0.00
14,600.00	90.00	179.57	9,195.00	-5,578.25	-390.23	5,588.49	0.00	0.00	0.00
14,700.00	90.00	179.57	9,195.00	-5,678.24	-389.47	5,688.40	0.00	0.00	0.00
14,800.00	90.00	179.57	9,195.00	-5,778.24	-388.72	5,788.31	0.00	0.00	0.00
14,900.00	90.00	179.57	9,195.00	-5,878.24	-387.97	5,888.22	0.00	0.00	0.00
15,000.00	90.00	179.57	9,195.00	-5,978.23	-387.21	5,988.13	0.00	0.00	0.00
15,100.00	90.00	179.57	9,195.00	-6,078.23	-386.46	6,088.04	0.00	0.00	0.00
15,200.00	90.00	179.57	9,195.00	-6,178.23	-385.70	6,187.95	0.00	0.00	0.00
15,300.00	90.00	179.57	9,195.00	-6,278.23	-384.95	6,287.85	0.00	0.00	0.00
15,400.00	90.00	179.57	9,195.00	-6,378.22	-384.20	6,387.76	0.00	0.00	0.00
15,500.00	90.00	179.57	9,195.00	-6,478.22	-383.44	6,487.67	0.00	0.00	0.00
15,600.00	90.00	179.57	9,195.00	-6,578.22	-382.69	6,587.58	0.00	0.00	0.00
15,700.00	90.00	179.57	9,195.00	-6,678.21	-381.94	6,687.49	0.00	0.00	0.00
15,800.00	90.00	179.57	9,195.00	-6,778.21	-381.18	6,787.40	0.00	0.00	0.00
15,900.00	90.00	179.57	9,195.00	-6,878.21	-380.43	6,887.31	0.00	0.00	0.00
16,000.00	90.00	179.57	9,195.00	-6,978.21	-379.67	6,987.22	0.00	0.00	0.00
16,100.00	90.00	179.57	9,195.00	-7,078.20	-378.92	7,087.13	0.00	0.00	0.00
16,200.00	90.00	179.57	9,195.00	-7,178.20	-378.17	7,187.04	0.00	0.00	0.00
16,300.00	90.00	179.57	9,195.00	-7,278.20	-377.41	7,286.95	0.00	0.00	0.00
16,400.00	90.00	179.57	9,195.00	-7,378.20	-376.66	7,386.86	0.00	0.00	0.00
16,500.00	90.00	179.57	9,195.00	-7,478.19	-375.91	7,486.77	0.00	0.00	0.00
16,600.00	90.00	179.57	9,195.00	-7,578.19	-375.15	7,586.68	0.00	0.00	0.00
16,700.00	90.00	179.57	9,195.00	-7,678.19	-374.40	7,686.59	0.00	0.00	0.00
16,800.00	90.00	179.57	9,195.00	-7,778.18	-373.65	7,786.50	0.00	0.00	0.00
16,900.00	90.00	179.57	9,195.00	-7,878.18	-372.89	7,886.41	0.00	0.00	0.00
17,000.00	90.00	179.57	9,195.00	-7,978.18	-372.14	7,986.32	0.00	0.00	0.00
17,100.00	90.00	179.57	9,195.00	-8,078.18	-371.38	8,086.23	0.00	0.00	0.00
17,200.00	90.00	179.57	9,195.00	-8,178.17	-370.63	8,186.13	0.00	0.00	0.00
17,300.00	90.00	179.57	9,195.00	-8,278.17	-369.88	8,286.04	0.00	0.00	0.00
17,400.00	90.00	179.57	9,195.00	-8,378.17	-369.12	8,385.95	0.00	0.00	0.00
17,500.00	90.00	179.57	9,195.00	-8,478.16	-368.37	8,485.86	0.00	0.00	0.00



Integrity Directional Services, LLC

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Wellbore: Wellbore #1
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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Multi User Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,600.00	90.00	179.57	9,195.00	-8,578.16	-367.62	8,585.77	0.00	0.00	0.00
17,700.00	90.00	179.57	9,195.00	-8,678.16	-366.86	8,685.68	0.00	0.00	0.00
17,800.00	90.00	179.57	9,195.00	-8,778.16	-366.11	8,785.59	0.00	0.00	0.00
17,900.00	90.00	179.57	9,195.00	-8,878.15	-365.35	8,885.50	0.00	0.00	0.00
18,000.00	90.00	179.57	9,195.00	-8,978.15	-364.60	8,985.41	0.00	0.00	0.00
18,100.00	90.00	179.57	9,195.00	-9,078.15	-363.85	9,085.32	0.00	0.00	0.00
18,200.00	90.00	179.57	9,195.00	-9,178.14	-363.09	9,185.23	0.00	0.00	0.00
18,300.00	90.00	179.57	9,195.00	-9,278.14	-362.34	9,285.14	0.00	0.00	0.00
18,400.00	90.00	179.57	9,195.00	-9,378.14	-361.59	9,385.05	0.00	0.00	0.00
18,500.00	90.00	179.57	9,195.00	-9,478.14	-360.83	9,484.96	0.00	0.00	0.00
18,600.00	90.00	179.57	9,195.00	-9,578.13	-360.08	9,584.87	0.00	0.00	0.00
18,700.00	90.00	179.57	9,195.00	-9,678.13	-359.33	9,684.78	0.00	0.00	0.00
18,800.00	90.00	179.57	9,195.00	-9,778.13	-358.57	9,784.69	0.00	0.00	0.00
18,900.00	90.00	179.57	9,195.00	-9,878.12	-357.82	9,884.60	0.00	0.00	0.00
19,000.00	90.00	179.57	9,195.00	-9,978.12	-357.06	9,984.51	0.00	0.00	0.00
19,100.00	90.00	179.57	9,195.00	-10,078.12	-356.31	10,084.41	0.00	0.00	0.00
19,175.60	90.00	179.57	9,195.00	-10,153.72	-355.74	10,159.95	0.00	0.00	0.00
TD at 19175.60									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Windward Fed 11H F	0.00	0.00	0.00	-124.41	-429.23	435,078.6884	693,455.0731	32° 11' 40.567 N	103° 42' 28.638 W
- plan misses target center by 446.89ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
Windward Fed 11H Bl	0.00	0.00	9,195.00	-10,153.72	-355.74	425,049.4000	693,528.5600	32° 10' 1.315 N	103° 42' 28.461 W
- plan hits target center									
- Point									
Windward Fed 11H L	0.00	0.00	9,195.00	-10,023.79	-356.82	425,179.3330	693,527.4762	32° 10' 2.600 N	103° 42' 28.465 W
- plan misses target center by 0.10ft at 19045.67ft MD (9195.00 TVD, -10023.79 N, -356.72 E)									
- Point									

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
5000	5000	0	0	Start Build 2.00
5200	5200	0	-7	Start 3534.60 hold at 5200.20 MD
8735	8726	0	-254	Start DLS 12.00 TFO -77.23
9477	9195	-458	-391	Start DLS 4.00 TFO -90.00
9808	9195	-787	-426	Start 9367.39 hold at 9808.21 MD
19,176	9195	-10,154	-356	TD at 19175.60



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Checked By: _____	Approved By: _____	Date: _____
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Lesser Prairie-Chicken.

13 3/8	surface csg in a	17 1/2	inch hole.	Design Factors			SURFACE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	54.50	J 55	ST&C	10.42	2.73	1.11	905	49,323	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500			Tail Cmt	does not	circ to sfc.	Totals:	905	49,323	
<u>Comparison of Proposed to Minimum Required Cement Volumes</u>									
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
17 1/2	0.6946	570	895	683	31	8.80	1438	2M	1.56

9 5/8 casing inside the 13 3/8					Design Factors		INTERMEDIATE		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	40.00	J 55	LT&C	2.80	1.05	0.88	4,640	185,600	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig:							Totals:	4,640	185,600
The cement volume(s) are intended to achieve a top of					0	ft from surface or a		905	overlap.
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
12 1/4	0.3132	1130	2095	1517	38	10.20	2467	3M	0.81
Burst Frac Gradient(s) for Segment(s): A, B, C, D = 0.85, b, c, d									
All > 0.70, OK.									

5 1/2	casing inside the		9 5/8	Design Factors			PRODUCTION		
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight	
"A"	17.00	P 110	LT&C	2.85	1.75	2.37	8,734	148,478	
"B"	17.00	P 110	LT&C	5.62	1.47	2.37	10,520	178,840	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,921						Totals:	19,254	327,318	
B	would be:			56.78	1.67	if it were a vertical wellbore.			
No Pilot Hole Planned		MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC	
		19254	9195	9195	8734	90	12	9477	
The cement volume(s) are intended to achieve a top of				4140	ft from surface or a		500	overlap.	
Hole	Annular	1 Stage	1 Stage	Min	1 Stage	Drilling	Calc	Req'd	Min Dist
Size	Volume	Cmt Sx	CuFt Cmt	Cu Ft	% Excess	Mud Wt	MASP	BOPE	Hole-Cplg
8 3/4	0.2526	3630	6517	3828	70	9.40			1.35
Class 'H' tail cmt yld > 1.20									