



PATRIOT DRILLING, LLC

OPERATOR: COG Operating, LLC
WELL/LEASE: Spruce Goose Fed Com #2H
COUNTY: Eddy Co., New Mexico
Sec. 12, T 19S, R 31E

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
218	1/2	751	1/2
520	1/4	895	1

HOEBS CGD

APR 10 2017

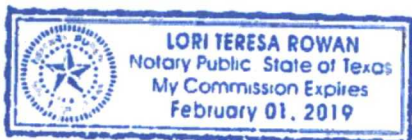
RECEIVED

Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-President

The foregoing instrument was acknowledged before me on this 31st day of August 2016 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling, LLC.

My Commission Expires: 02/01/2019

Lori T. Rowan
Notary Public for Ector Co., Texas

SURVEY CERTIFICATION FORM

3610 Elkins Road Midland, TX 79705 t:432-684-0057 f: 432-686-7964



PHOENIX
TECHNOLOGY SERVICES

Company: COG

Job #: 060299

Well Name: Spruce Goose Federal Com 2H

County/State: Eddy/ New Mexico

Survey Instrument Type: North Seek Rate Gyro

API # 30-015-43878

TIE-IN DATA

Measure Depth (ft)	Vertical Depth (ft)	Inclination (°)	Azimuth (°)	N-S Coordinates	E-W Coordinates	Data Source
0	0	0	0	0	0	Surface

First Survey

Date	Depth (ft)	Inclination (°)	Azimuth (°)
2016-08-14	0	0	0

Last Survey

Date	Depth (ft)	Inclination (°)	Azimuth (°)
2016-08-14	860	0.76	256.83

Projected TD Survey

Date	Depth (ft)	Inclination (°)	Azimuth (°)
0	0	0	0

Grid Correction
-0.28

Gyro Operator: Phoenix Technology Services USA Ltd.

Gyro Supervisor: Jaime Stephenson

To the best of my knowledge I certify this survey data to be correct and true

Date:

8/14/16

Print Name: Andy Askew

Signature:



PHOENIX
TECHNOLOGY SERVICES

Company: COG
Well: Spruce Goose Federal Com 2H
Location: Eddy Co., NM
Rig: Patriot 2

Job Number: _____
Grid Corr.: -0.28
Lat: 32.67
Long: -103.81

Date: 08-14-16
Calculation Method: Minimum Curvature
Proposed Azimuth: _____
RKB - MSL in feet: 20
Tie Into: Surface

Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
							N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
Enter Tie-In Survey on Line 10													
FIELD COPY, NON-DEFINITIVE													
TIE IN	0			0	0	0	0	0					
Gyro	100.00	0.13	127.36	100	100.00	-0.07	0.07 S	0.09 E	0.11	127.36	0.13	0.13	127.36
	200.00	0.15	354.62	100	200.00	-0.01	0.01 S	0.17 E	0.17	92.51	0.26	0.02	227.26
	300.00	0.10	259.87	100	300.00	0.11	0.11 N	0.07 E	0.13	33.00	0.19	-0.05	-94.75
	400.00	0.13	169.09	100	400.00	-0.02	0.02 S	0.01 E	0.02	164.08	0.17	0.03	-90.78
	500.00	0.13	75.13	100	500.00	-0.10	0.10 S	0.14 E	0.17	126.60	0.19	0.00	-93.96
	600.00	0.25	304.66	100	600.00	0.05	0.05 N	0.07 E	0.08	52.21	0.35	0.12	229.53
	700.00	0.38	137.06	100	700.00	-0.07	0.07 S	0.11 E	0.13	120.58	0.63	0.13	-167.60
	800.00	0.67	289.83	100	800.00	-0.11	0.11 S	0.21 W	0.24	242.17	1.02	0.29	152.77
	860.00	0.76	256.83	60	859.99	-0.08	0.08 S	0.93 W	0.93	264.89	0.69	0.15	-55.00