



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

APR 22 2013

HOBBS OCD
JUN 19 2013

RECEIVED

April 17, 2013

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

30-025-40944

RE: Corazon 4 State SWD #1
3800' FNL & 2500' FEL
Sec. 4, T21S, R33E
Lea County, New Mexico

Dear Sir,

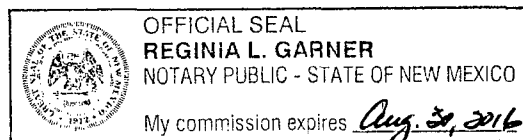
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 17th day of April, 2013.

Notary Public

JUN 27 2013

Well Dossier 1364798848 - Corazon 4 State SWD 1

# Date	Depth	Deviation	Direction
4/1/2013	272	0.10	0.00
4/2/2013	415	1.00	0.00
4/2/2013	810	0.90	0.00
4/3/2013	1223	0.40	0.00
4/3/2013	1627	0.60	0.00
4/6/2013	1839	0.03	0.00
4/6/2013	2121	0.62	80.19
4/6/2013	2403	0.50	76.90
4/6/2013	2683	0.70	70.52
4/7/2013	2964	0.88	59.45
4/7/2013	3245	1.93	77.03
4/7/2013	3339	2.20	0.00
4/7/2013	3464	2.02	78.70
4/7/2013	3526	2.02	73.60
4/7/2013	3807	2.20	77.03
4/7/2013	3869	2.02	77.91
4/8/2013	4122	1.58	61.81
4/9/2013	4309	2.29	54.22
4/9/2013	4498	2.73	56.72
4/9/2013	4685	0.88	75.27
4/9/2013	4872	0.35	92.75
4/10/2013	5028	0.44	151.84
4/10/2013	5059	0.53	128.66
4/10/2013	5247	0.56	120.39
4/10/2013	5468	1.30	91.80
4/13/2013	5824	0.70	0.00
4/14/2013	6231	0.70	0.00
4/14/2013	6636	0.60	0.00
4/14/2013	7168	0.90	0.00

EOF



A Schlumberger Company

DIRECTIONAL SURVEY REPORT

30-025-40944

COG OPERATING
CORAZON 4 STATE SWD 1
LEA COUNTY, NEW MEXICO

HOBBS OCD

JUN 19 2013

RECEIVED

PREPARED BY: KIRK DAVIS

Pathfinder

6213 WCR, 112
Midland, Texas, 79706-3725, USA
Tel. (432)-687-1647
Fax (432)-687-1544



DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY: A) JOHN OVERTON
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 4/06/13 TO 4/10/13
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: LEA COUNTY
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

COG OPERATING
CORAZON 4 STATE SWD 1
LEA COUNTY, NM
RIG: SILVER OAK 1

9. SURVEY CERTIFIED FROM: 1839 TO 5467 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 77.47 FEET ON A BEARING OF 71.86 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 5519.00 FEET,
ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

A handwritten signature in black ink, appearing to be "K.D.", written over a horizontal line.

KIRK DAVIS
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 04/06/2013
Date Completed: 04/10/2013

COG OPERATING LLC
CORAZON 4 STATE SWD 1 / API#: 30-025-40944
LEA COUNTY, NM
Rig:SILVEROAK 1
PathFinder Office Supervisor: MARCUS MITCHAM
PathFinder Field Engineers:JOHN OVERTON

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.30.42.3337 N LON:103.34.35.8401 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 733267.1000 Y: 550718.6000
North Aligned To:GRID NORTH
Total Magnetic Correction: 6.98° EAST TO GRID
Vertical Section Plane: 0.00
Survey Vert. Reference: 18.00' Kelly Bushing To Ground
Altitude:3804.70' Ground To MSL

Measured Depth	5519.00	(feet)
Inclination	1.32	(deg)
Azimuth	91.81	(deg)
True Vertical Depth	5517.86	(feet)
Vertical Section	24.12	(feet)
Survey X cord	733340.72	(feet)
Survey Y cord	550742.72	(feet)
Survey Lat	32.51182423 N	(deg)
Survey Lon	103.57638289 W	(deg)
Rectangular Corr. N/S	24.12 N	(feet)
Rectangular Corr. E/W	73.62 E	(feet)
Closure Distance	77.47	(feet)
Direction of Closure	71.86	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

COG OPERATING LLC
CORAZON 4 STATE SWD 1 / API#: 30-025-40944
LEA COUNTY, NM
Rig:SILVEROAK 1
PathFinder Office Supervisor: MARCUS MITCHAM
PathFinder Field Engineers: JOHN OVERTON

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Vertical Section Plane: 0.00
Survey Vert. Reference: 18.00' Kelly Bushing To Ground
Altitude:3804.70' Ground To MSL

Survey Calculations by RX5 V6.04D using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)	DLS (dg/100ft)	
ASSUME VERTICAL WELLBORE AT 1639'MD.										
1639.00	0.00	0.00	1639.00	0.00	0.00	0.00	0.00	0.00@ 0.00	0.00	
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
1839.00	0.26	24.03	1839.00	200.00	0.41	0.41 N	0.18 E	0.45@ 24.03	0.13	
2121.00	0.62	80.19	2120.99	282.00	1.26	1.26 N	1.95 E	2.32@ 57.14	0.19	
2403.00	0.53	76.85	2402.98	282.00	1.82	1.82 N	4.72 E	5.06@ 68.97	0.03	
2683.00	0.79	70.52	2682.96	280.00	2.75	2.75 N	7.80 E	8.27@ 70.56	0.10	
2964.00	0.88	59.45	2963.93	281.00	4.50	4.50 N	11.49 E	12.34@ 68.62	0.07	
3245.00	1.93	77.03	3244.84	281.00	6.66	6.66 N	17.96 E	19.15@ 69.66	0.40	
3526.00	2.02	73.60	3525.67	281.00	9.12	9.12 N	27.32 E	28.80@ 71.55	0.05	
3807.00	2.20	77.03	3806.48	281.00	11.72	11.72 N	37.33 E	39.12@ 72.56	0.08	
4122.00	1.58	61.81	4121.31	315.00	15.13	15.13 N	47.05 E	49.42@ 72.17	0.25	
4309.00	2.29	54.22	4308.21	187.00	18.54	18.54 N	52.35 E	55.53@ 70.50	0.40	
4498.00	2.73	56.72	4497.02	189.00	23.21	23.21 N	59.18 E	63.57@ 68.58	0.24	
4685.00	0.88	75.27	4683.92	187.00	26.02	26.02 N	64.29 E	69.35@ 67.96	1.03	
4872.00	0.35	92.75	4870.91	187.00	26.36	26.36 N	66.25 E	71.30@ 68.30	0.30	
5059.00	0.53	128.66	5057.91	187.00	25.79	25.79 N	67.49 E	72.25@ 69.09	0.17	
5247.00	0.56	120.39	5245.90	188.00	24.78	24.78 N	68.96 E	73.28@ 70.23	0.05	
5467.00	1.32	91.81	5465.87	220.00	24.16	24.16 N	72.42 E	76.35@ 71.55	0.40	
STRAIGHT LINE PROJECTION TO BIT DEPTH AT 5519'MD.										
5519.00	1.32	91.81	5517.86	52.00	24.12	24.12 N	73.62 E	77.47@ 71.86	0.00	