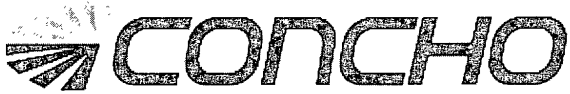


30-025-40388

HOBBS OCD

JAN 09 2012

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COG Operating LLC

Lea County(NAD83)

King Cobra 2 State

#1H

OH

Plan: Plan #2

Pathfinder X & Y Report

06 January, 2012



A Schlumberger Company

JAN 11 2012



Pathfinder
Pathfinder X & Y Report



Company: COG Operating LLC
Project: Lea County(NAD83)
Site: King Cobra 2 State
Well: #1H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference.
TVD Reference.
MD Reference:
North Reference:
Survey Calculation Method:
Database.

Well #1H
KB = 17' @ 3986 0usft (Original Well Elev)
KB = 17' @ 3986 0usft (Original Well Elev)
Grid
Minimum Curvature
EDM 5000 1 Single User Db

Project Lea County(NAD83)

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site King Cobra 2 State

Site Position:		Northing:	617 776 300 usft	Latitude:	32° 41' 44 512 N
From	Map	Easting:	790 350 200 usft	Longitude:	103° 31' 25 951 W
Position Uncertainty:	0 0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0 44 °

Well #1H

Well Position	+N/-S	0 0 usft	Northing:	617.776 300 usft	Latitude	32° 41' 44 512 N
	+E/-W	0 0 usft	Easting	790,350 200 usft	Longitude	103° 31' 25 951 W
Position Uncertainty	0 0 usft		Wellhead Elevation:	usft	Ground Level:	3,969 0 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/29/2011	7 53	60 64	48 893

Design Plan #2

Audit Notes:

Version: Phase: PLAN Tie On Depth: 0 0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 0	0 0	0 0	180 29

Survey Tool Program Date 1/6/2012

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0 0	14,858 4	Plan #2 (OH)	MWD	MWD - Standard



Pathfinder
Pathfinder X & Y Report



Company: COG Operating LLC
Project: Lea County(NAD83)
Site: King Cobra 2 State
Well: #1H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #1H
KB = 17' @ 3986 0usft (Original Well Elev)
KB = 17' @ 3986 0usft (Original Well Elev)
Grid
Minimum Curvature
EDM 5000 1 Single User Db

Planned Survey

MD (usft)	Inc (")	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
0 0	0 00	0 00	0 0	-3.986 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
100 0	0 00	0 00	100 0	-3 886 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
200 0	0 00	0 00	200 0	-3 786 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
300 0	0 00	0 00	300 0	-3 686 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
400 0	0 00	0 00	400 0	-3 586 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
500 0	0 00	0 00	500 0	-3 486 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
600 0	0 00	0 00	600 0	-3 386 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
700 0	0 00	0 00	700 0	-3 286 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
800 0	0 00	0 00	800 0	-3 186 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
900 0	0 00	0 00	900 0	-3 086 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
1 000 0	0 00	0 00	1 000 0	-2 986 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
1 100 0	0 00	0 00	1 100 0	-2 886 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
1 200 0	0 00	0 00	1 200 0	-2 786 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
1 300 0	0 00	0 00	1 300 0	-2 686 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
1 400 0	0 00	0 00	1 400 0	-2 586 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
1 500 0	0 00	0 00	1 500 0	-2 486 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
1 600 0	0 00	0 00	1 600 0	-2 386 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
1 700 0	0 00	0 00	1 700 0	-2 286 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
1 800 0	0 00	0 00	1 800 0	-2 186 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
1 900 0	0 00	0 00	1 900 0	-2 086 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
2 000 0	0 00	0 00	2 000 0	-1 986 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
2 100 0	0 00	0 00	2 100 0	-1 886 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
2 200 0	0 00	0 00	2 200 0	-1 786 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
2 300 0	0 00	0 00	2 300 0	-1 686 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
2 400 0	0 00	0 00	2 400 0	-1 586 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
2 500 0	0 00	0 00	2 500 0	-1 486 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
2 600 0	0 00	0 00	2 600 0	-1 386 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20



Pathfinder
Pathfinder X & Y Report



A Schlumberger Company

Company: COG Operating LLC
Project: Lea County(NAD83)
Site: King Cobra 2 State
Well: #1H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference: Well #1H
TVD Reference: KB = 17' @ 3986 0usft (Original Well Elev)
MD Reference: KB = 17' @ 3986 0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000 1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)		TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
2 700 0	0 00	0 00	0 00	2 700 0	-1 286 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
2 800 0	0 00	0 00	0 00	2 800 0	-1 186 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
2 900 0	0 00	0 00	0 00	2 900 0	-1 086 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
3 000 0	0 00	0 00	0 00	3 000 0	-986 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
3 100 0	0 00	0 00	0 00	3 100 0	-886 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
3 200 0	0 00	0 00	0 00	3 200 0	-786 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
3 300 0	0 00	0 00	0 00	3 300 0	-686 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
3 400 0	0 00	0 00	0 00	3 400 0	-586 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
3 500 0	0 00	0 00	0 00	3 500 0	-486 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
3 600 0	0 00	0 00	0 00	3 600 0	-386 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
3 700 0	0 00	0 00	0 00	3 700 0	-286 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
3 800 0	0 00	0 00	0 00	3 800 0	-186 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
3 900 0	0 00	0 00	0 00	3 900 0	-86 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
4 000 0	0 00	0 00	0 00	4 000 0	14 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
4 100 0	0 00	0 00	0 00	4 100 0	114 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
4 200 0	0 00	0 00	0 00	4 200 0	214 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
4 300 0	0 00	0 00	0 00	4 300 0	314 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
4 400 0	0 00	0 00	0 00	4 400 0	414 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
4 500 0	0 00	0 00	0 00	4 500 0	514 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
4 600 0	0 00	0 00	0 00	4 600 0	614 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
4 700 0	0 00	0 00	0 00	4 700 0	714 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
4 800 0	0 00	0 00	0 00	4 800 0	814 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
4 900 0	0 00	0 00	0 00	4 900 0	914 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
5 000 0	0 00	0 00	0 00	5 000 0	1 014 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
5 100 0	0 00	0 00	0 00	5 100 0	1 114 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
5 200 0	0 00	0 00	0 00	5 200 0	1 214 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
5 300 0	0 00	0 00	0 00	5 300 0	1 314 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20



Pathfinder
Pathfinder X & Y Report



Company: COG Operating LLC
Project: Lea County(NAD83)
Site: King Cobra 2 State
Well: #1H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference:
TVD Reference.
MD Reference.
North Reference:
Survey Calculation Method:
Database.

Well #1H:
KB = 17' @ 3986 0usft (Original Well Elev)
KB = 17' @ 3986 0usft (Original Well Elev)
Grd
Minimum Curvature
EDM 5000 1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)		TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
5,400 0	0 00	0 00	0 00	5,400 0	1 414 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
5 500 0	0 00	0 00	0 00	5 500 0	1 514 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
5 600 0	0 00	0 00	0 00	5 600 0	1,614 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
5 700 0	0 00	0 00	0 00	5 700 0	1 714 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
5 800 0	0 00	0 00	0 00	5 800 0	1 814 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
5 900 0	0 00	0 00	0 00	5,900 0	1,914 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
6 000 0	0 00	0 00	0 00	6 000 0	2 014 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
6 100 0	0 00	0 00	0 00	6 100 0	2,114 0	0 0	0 0	0 0	0 00	617,776 30	790 350 20
6 200 0	0 00	0 00	0 00	6 200 0	2,214 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
6,300 0	0 00	0 00	0 00	6 300 0	2,314 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
6,400 0	0 00	0 00	0 00	6,400 0	2 414 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
6,500 0	0 00	0 00	0 00	6 500 0	2,514 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
6 600 0	0 00	0 00	0 00	6 600 0	2,614 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
6,700 0	0 00	0 00	0 00	6,700 0	2,714 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
6 800 0	0 00	0 00	0 00	6,800 0	2 814 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
6 900 0	0 00	0 00	0 00	6 900 0	2,914 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
7,000 0	0 00	0 00	0 00	7 000 0	3,014 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
7 100 0	0 00	0 00	0 00	7 100 0	3,114 0	0 0	0 0	0 0	0 00	617 776 30	790 350 20
7 200 0	0 00	0 00	0 00	7 200 0	3,214 0	0 0	0 0	0 0	0 00	617,776 30	790 350 20
7,300 0	0 00	0 00	0 00	7 300 0	3,314 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
7 400 0	0 00	0 00	0 00	7,400 0	3,414 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
7,500 0	0 00	0 00	0 00	7 500 0	3,514 0	0 0	0 0	0 0	0 00	617,776 30	790 350 20
7,600 0	0 00	0 00	0 00	7,600 0	3 614 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
7,700 0	0 00	0 00	0 00	7,700 0	3 714 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
7 800 0	0 00	0 00	0 00	7,800 0	3,814 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
7,900 0	0 00	0 00	0 00	7 900 0	3 914 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
8,000 0	0 00	0 00	0 00	8 000 0	4 014 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20



Pathfinder
Pathfinder X & Y Report



Company: COG Operating LLC
Project: Lea County(NAD83)
Site: King Cobra 2 Slate
Well: #1H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #1H
KB = 17' @ 3986 0usft (Original Well Elev)
KB = 17' @ 3986 0usft (Original Well Elev)
Grd
Minimum Curvature
EDM 5000 1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)		TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
8,100 0	0 00	0 00	0 00	8 100 0	4,114 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
8 200 0	0 00	0 00	0 00	8 200 0	4 214 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
8,300 0	0 00	0 00	0 00	8,300 0	4 314 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
8 400 0	0 00	0 00	0 00	8,400 0	4 414 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
8,500 0	0 00	0 00	0 00	8,500 0	4,514 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
8,600 0	0 00	0 00	0 00	8 600 0	4,614 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
8,700 0	0 00	0 00	0 00	8,700 0	4,714 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
8,800 0	0 00	0 00	0 00	8,800 0	4 814 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
8 900 0	0 00	0 00	0 00	8,900 0	4 914 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
9 000 0	0 00	0 00	0 00	9,000 0	5,014 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
9 100 0	0 00	0 00	0 00	9,100 0	5 114 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
9 200 0	0 00	0 00	0 00	9,200 0	5,214 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
9,300 0	0 00	0 00	0 00	9 300 0	5,314 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
9 400 0	0 00	0 00	0 00	9,400 0	5 414 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
9 500 0	0 00	0 00	0 00	9,500 0	5 514 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
9,600 0	0 00	0 00	0 00	9 600 0	5,614 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
9 700 0	0 00	0 00	0 00	9,700 0	5,714 0	0 0	0 0	0 0	0 00	617 776 30	790,350 20
9,800 0	0 00	0 00	0 00	9 800 0	5 814 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
9 900 0	0 00	0 00	0 00	9 900 0	5,914 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
10,000 0	0 00	0 00	0 00	10 000 0	6 014 0	0 0	0 0	0 0	0 00	617,776 30	790,350 20
10,097 5	0 00	0 00	0 00	10 097 5	6,111 5	0 0	0 0	0 0	0 00	617,776 30	790,350 20
10,100 0	0 30	180 29	0 00	10 100 0	6,114 0	0 0	0 0	0 0	12 00	617 776 29	790,350 20
10 125 0	3 30	180 29	0 00	10 125 0	6,139 0	-0 8	0 0	0 8	12 00	617 775 51	790,350 20
10 150 0	6 30	180 29	0 00	10 149 9	6,163 9	-2 9	0 0	2 9	12 00	617,773 42	790,350 19
10,175 0	9 30	180 29	0 00	10 174 7	6,188 7	-6 3	0 0	6 3	12 00	617 770 02	790,350 17
10,200 0	12 30	180 29	0 00	10,199 2	6 213 2	-11 0	-0 1	11 0	12 00	617,765 34	790,350 14
10,225 0	15 30	180 29	0 00	10 223 5	6,237 5	-16 9	-0 1	16 9	12 00	617 759 38	790,350 11



Pathfinder
Pathfinder X & Y Report



Company: COG Operating LLC
Project: Lea County(NAD83)
Site: King Cobra 2 State
Well: #1H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database

Well #1H
KB = 17' @ 3986 0usft (Original Well Elev)
KB = 17' @ 3986 0usft (Original Well Elev)
Grd
Minimum Curvature
EDM 5000 1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Ázi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
10,250 0	18 30	180 29	10,247 4	6,261 4	-24 1	-0 1	24 1	12 00	617,752 15	790,350 08
10,275 0	21 30	180 29	10,270 9	6,284 9	-32 6	-0 2	32 6	12 00	617,743 69	790,350 04
10,300 0	24 30	180 29	10,294 0	6,308 0	-42 3	-0 2	42 3	12 00	617,734 00	790,349 99
10,325 0	27 30	180 29	10,316 5	6,330 5	-53 2	-0 3	53 2	12 00	617,723 12	790,349 93
10,350 0	30 30	180 29	10,338 4	6,352 4	-65 2	-0 3	65 2	12 00	617,711 08	790,349 87
10,375 0	33 30	180 29	10,359 6	6,373 6	-78 4	-0 4	78 4	12 00	617,697 90	790,349 80
10,400 0	36 30	180 29	10,380 2	6,394 2	-92 7	-0 5	92 7	12 00	617,683 64	790,349 73
10,425 0	39 30	180 29	10,399 9	6,413 9	-108 0	-0 5	108 0	12 00	617,668 32	790,349 66
10,450 0	42 30	180 29	10,418 8	6,432 8	-124 3	-0 6	124 3	12 00	617,651 98	790,349 57
10,475 0	45 30	180 29	10,436 9	6,450 9	-141 6	-0 7	141 6	12 00	617,634 68	790,349 49
10,500 0	48 30	180 29	10,454 0	6,468 0	-159 8	-0 8	159 8	12 00	617,616 46	790,349 39
10,525 0	51 30	180 29	10,470 1	6,484 1	-178 9	-0 9	178 9	12 00	617,597 37	790,349 30
10,550 0	54 30	180 29	10,485 2	6,499 2	-198 8	-1 0	198 8	12 00	617,577 46	790,349 20
10,575 0	57 30	180 29	10,499 3	6,513 3	-219 5	-1 1	219 5	12 00	617,556 78	790,349 09
10,600 0	60 30	180 29	10,512 2	6,526 2	-240 9	-1 2	240 9	12 00	617,535 40	790,348 99
10,625 0	63 30	180 29	10,524 1	6,538 1	-262 9	-1 3	262 9	12 00	617,513 37	790,348 87
10,650 0	66 30	180 29	10,534 7	6,548 7	-285 5	-1 4	285 5	12 00	617,490 75	790,348 76
10,675 0	69 30	180 29	10,544 1	6,558 1	-308 7	-1 6	308 7	12 00	617,467 61	790,348 64
10,700 0	72 30	180 29	10,552 4	6,566 4	-332 3	-1 7	332 3	12 00	617,444 00	790,348 52
10,725 0	75 30	180 29	10,559 3	6,573 3	-356 3	-1 8	356 3	12 00	617,420 00	790,348 40
10,750 0	78 30	180 29	10,565 0	6,579 0	-380 6	-1 9	380 6	12 00	617,395 66	790,348 28
10,775 0	81 30	180 29	10,569 5	6,583 5	-405 2	-2 0	405 2	12 00	617,371 06	790,348 16
10,800 0	84 30	180 29	10,572 6	6,586 6	-430 0	-2 2	430 0	12 00	617,346 26	790,348 03
10,825 0	87 30	180 29	10,574 4	6,588 4	-455 0	-2 3	455 0	12 00	617,321 33	790,347 91
10,844 5	89 64	180 29	10,575 0	6,589 0	-474 5	-2 4	474 5	12 00	617,301 82	790,347 81
10,900 0	89 64	180 29	10,575 3	6,589 3	-530 0	-2 7	530 0	0 00	617,246 34	790,347 53
11,000 0	89 64	180 29	10,575 9	6,589 9	-630 0	-3 2	630 0	0 00	617,146 35	790,347 02



Pathfinder
Pathfinder X & Y Report



Company: COG Operating LLC
Project: Lea County(NAD83)
Site: King Cobra 2 State
Well: #1H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well #1H
KB = 17' @ 3986 0usft (Original Well Elev)
KB = 17' @ 3986 0usft (Original Well Elev)
Grid
Minimum Curvature
EDM 5000 1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
11 100 0	89 64	180 29	10 576 5	6 590 5	-730 0	-3 7	730 0	0 00	617,046 35	790 346 52
11 200 0	89 64	180 29	10 577 2	6 591 2	-829 9	-4 2	830 0	0 00	616 946 35	790 346 02
11 300 0	89 64	180 29	10 577 8	6 591 8	-929 9	-4 7	930 0	0 00	616,846 36	790 345 51
11 400 0	89 64	180 29	10 578 4	6 592 4	-1 029 9	-5 2	1,030 0	0 00	616,746 36	790 345 01
11 500 0	89 64	180 29	10 579 0	6 593 0	-1,129 9	-5 7	1,130 0	0 00	616,646 36	790 344 50
11 600 0	89 64	180 29	10 579 7	6 593 7	-1 229 9	-6 2	1 230 0	0 00	616,546 37	790 344 00
11 700 0	89 64	180 29	10 580 3	6 594 3	-1,329 9	-6 7	1,329 9	0 00	616 446 37	790 343 49
11 800 0	89 64	180 29	10 580 9	6 594 9	-1,429 9	-7 2	1,429 9	0 00	616,346 37	790 342 99
11 900 0	89 64	180 29	10 581 5	6 595 5	-1,529 9	-7 7	1,529 9	0 00	616,246 38	790 342 49
12 000 0	89 64	180 29	10 582 2	6 596 2	-1 629 9	-8 2	1 629 9	0 00	616,146 38	790 341 98
12 100 0	89 64	180 29	10 582 8	6 596 8	-1 729 9	-8 7	1 729 9	0 00	616,046 38	790 341 48
12 200 0	89 64	180 29	10 583 4	6 597 4	-1 829 9	-9 2	1,829 9	0 00	615,946 38	790 340 97
12 300 0	89 64	180 29	10 584 0	6 598 0	-1,929 9	-9 7	1,929 9	0 00	615 846 39	790 340 47
12 400 0	89 64	180 29	10 584 7	6 598 7	-2,029 9	-10 2	2,029 9	0 00	615 746 39	790 339 96
12 500 0	89 64	180 29	10 585 3	6 599 3	-2 129 9	-10 7	2 129 9	0 00	615,646 39	790 339 46
12 600 0	89 64	180 29	10 585 9	6 599 9	-2,229 9	-11 2	2,229 9	0 00	615,546 40	790 338 96
12 700 0	89 64	180 29	10 586 5	6 600 5	-2,329 9	-11 7	2,329 9	0 00	615 446 40	790 338 45
12 800 0	89 64	180 29	10 587 2	6 601 2	-2,429 9	-12 3	2,429 9	0 00	615 346 40	790 337 95
12 900 0	89 64	180 29	10 587 8	6 601 8	-2,529 9	-12 8	2,529 9	0 00	615,246 41	790 337 44
13 000 0	89 64	180 29	10 588 4	6 602 4	-2,629 9	-13 3	2,629 9	0 00	615,146 41	790 336 94
13 100 0	89 64	180 29	10 589 0	6 603 0	-2,729 9	-13 8	2,729 9	0 00	615,046 41	790 336 44
13 200 0	89 64	180 29	10 589 7	6 603 7	-2 829 9	-14 3	2,829 9	0 00	614 946 42	790 335 93
13 300 0	89 64	180 29	10 590 3	6 604 3	-2 929 9	-14 8	2,929 9	0 00	614 846 42	790 335 43
13 400 0	89 64	180 29	10 590 9	6 604 9	-3,029 9	-15 3	3 029 9	0 00	614,746 42	790 334 92
13 500 0	89 64	180 29	10 591 5	6 605 5	-3,129 9	-15 8	3,129 9	0 00	614 646 43	790 334 42
13 600 0	89 64	180 29	10 592 1	6 606 1	-3,229 9	-16 3	3,229 9	0 00	614,546 43	790 333 91
13 700 0	89 64	180 29	10 592 8	6 606 8	-3,329 9	-16 8	3,329 9	0 00	614,446 43	790 333 41



Pathfinder
Pathfinder X & Y Report



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Company: COG Operating LLC
Project: Lea County(NAD83)
Site: King Cobra 2 State
Well: #1H
Wellbore: OH
Design: Plan #2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference
Survey Calculation Method:
Database

Well #1H
KB = 17' @ 3986 0usft (Original Well Elev)
KB = 17' @ 3986 0usft (Original Well Elev)
Grid
Minimum Curvature
EDM 5000 1 Single User Db

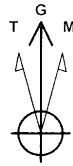
Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	V Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
13.800 0	89.64	180.29	10.593 4	6.607 4	-3.429 9	-17.3	3.429 9	0.00	614.346 44	790.332 91
13.900 0	89.64	180.29	10.594 0	6.608 0	-3.529 9	-17.8	3.529 9	0.00	614.246 44	790.332 40
14.000 0	89.64	180.29	10.594 6	6.608 6	-3.629 9	-18.3	3.629 9	0.00	614.146 44	790.331 90
14.100 0	89.64	180.29	10.595 3	6.609 3	-3.729 9	-18.8	3.729 9	0.00	614.046 45	790.331 39
14.200 0	89.64	180.29	10.595 9	6.609 9	-3.829 9	-19.3	3.829 9	0.00	613.946 45	790.330 89
14.300 0	89.64	180.29	10.596 5	6.610 5	-3.929 8	-19.8	3.929 9	0.00	613.846 45	790.330 39
14.400 0	89.64	180.29	10.597 1	6.611 1	-4.029 8	-20.3	4.029 9	0.00	613.746 46	790.329 88
14.500 0	89.64	180.29	10.597 8	6.611 8	-4.129 8	-20.8	4.129 9	0.00	613.646 46	790.329 38
14.600 0	89.64	180.29	10.598 4	6.612 4	-4.229 8	-21.3	4.229 9	0.00	613.546 46	790.328 87
14.700 0	89.64	180.29	10.599 0	6.613 0	-4.329 8	-21.8	4.329 9	0.00	613.446 47	790.328 37
14.800 0	89.64	180.29	10.599 6	6.613 6	-4.429 8	-22.3	4.429 9	0.00	613.346 47	790.327 86
14.858 4	89.64	180.29	10.600 0	6.614 0	-4.488 2	-22.6	4.488 3	0.00	613.288 09	790.327 57

Checked By _____	Approved By _____	Date _____
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Project: Lea County(NAD83)
Site: King Cobra 2 State
Well: #1H
Wellbore: OH
Plan: Plan #2 (#1H/OH)



Azimuths to Grid North
True North -0.44°
Magnetic North 7.09°
Magnetic Field
Strength 48892.9nT
Dip Angle 60.64°
Date 11/29/2011
Model IGRF200510



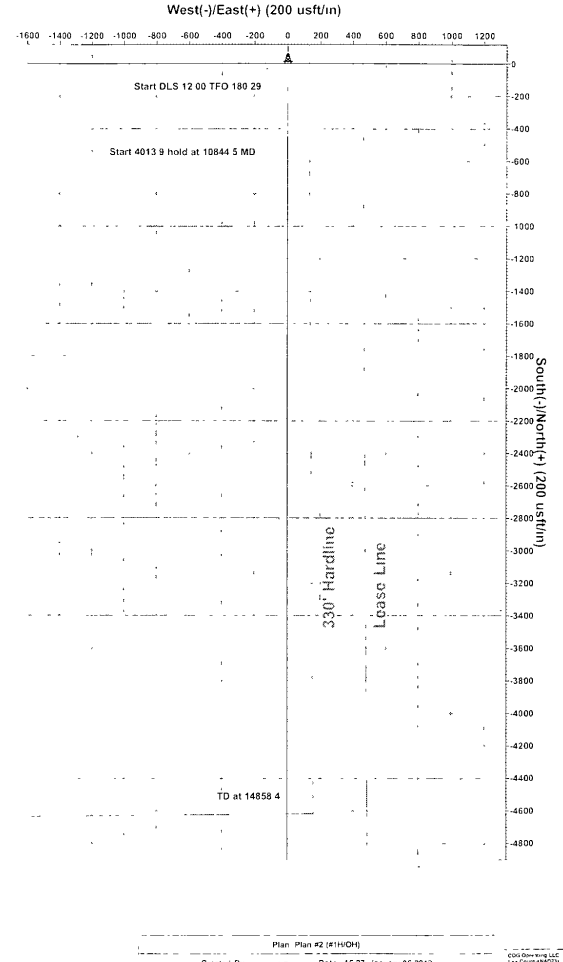
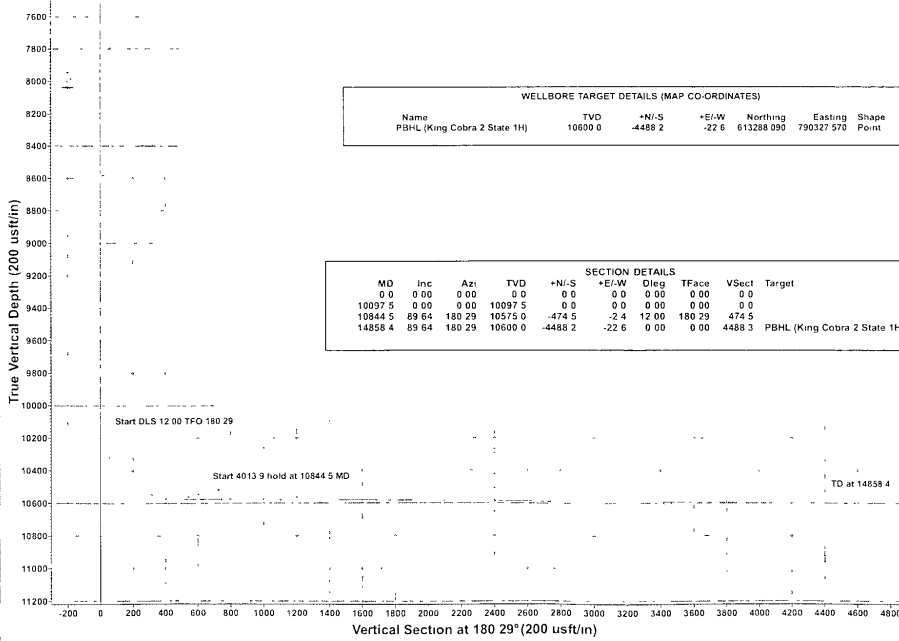
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PROJECT DETAILS Lea County(NAD83)
Geodetic System US State Plane 1983
Datum North American Datum 1983
Ellipsoid GRS 1980
Zone New Mexico Eastern Zone
System Datum Mean Sea Level
Local North Grid

WELL DETAILS #1H						
Ground Elevation		3969.0				
RKB Elevation		KB = 17' @ 3986.0usft (Original Well Elev)				
Rig Name		Original Well Elev				
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	617776.300	790350.200	32°41'44.512 N	103°31'25.951 W	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)					
Name	TVD	+N/-S	+E/-W	Northing	Easting Shape
PBHL (King Cobra 2 State 1H)	10600.0	-4488.2	-22.6	613288.090	790327.570 Point

SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
10097.5	0.00	0.00	10097.5	0.0	0.0	0.00	0.00	0.0	
10844.5	89.64	180.29	10575.0	-474.5	-2.4	12.00	180.29	474.5	
14858.4	89.64	180.29	10600.0	-4488.2	-22.6	0.00	0.00	4488.3	PBHL (King Cobra 2 State 1H)



Plan Plan #2 (#1H/OH)
Created By Michael Trout Date 15/27 January 06 2012
Checked: Date:

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Lea County(NAD83)
King Cobra 2 State
PBL
Original Well Elev
MD = 12