



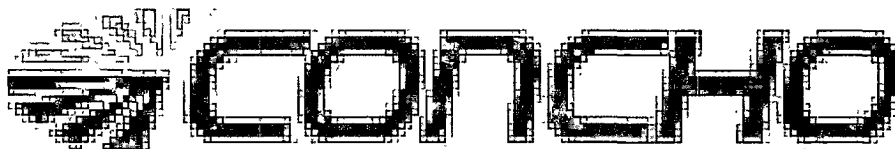
30-015-38176

Ryan Energy Directional Drilling Report

Field: Eddy Co, NM
Site: Folk Federal #28
Well: #28
Wellpath: OH

Prepared For:

COG Operating LLC



Ryan Energy Technology

19510 Oil Center Blvd
Houston, TX 77073
Ph 281-443-1414
Fx 281-443-1676

www.ryanenergy.com

RECEIVED

JUN 17 2011

NMOCD ARTESIA



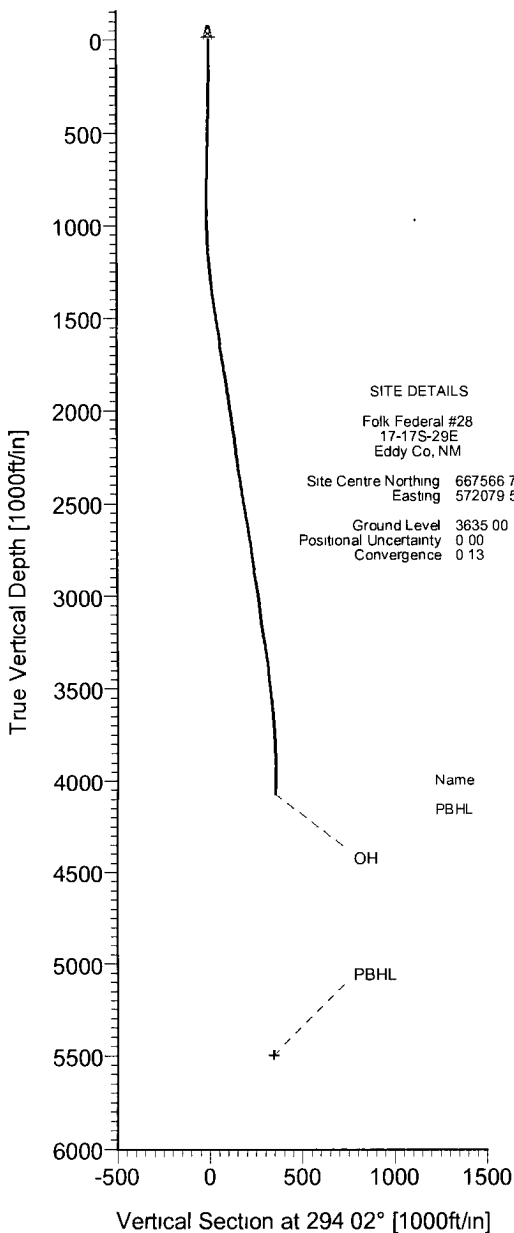
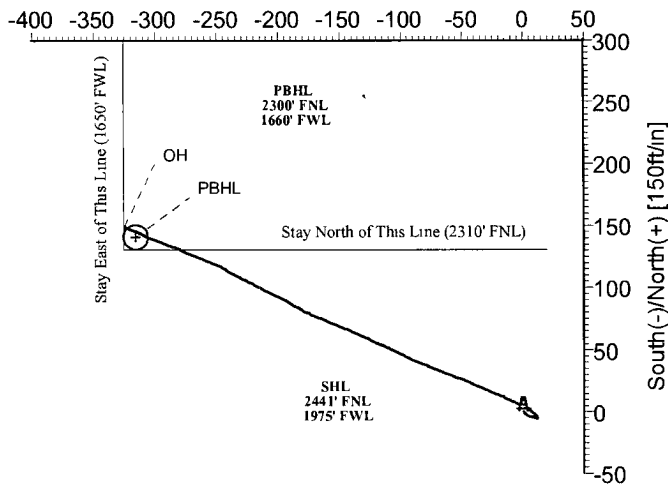
COG Operating LLC

Field: Eddy Co, NM
Site: Folk Federal #28
Well: #28
Wellpath: OH



Azimuths to Grd North
True North -0 13°
Magnetic North 7 77°
Magnetic Field
Strength 48972nT
Dip Angle 60 67°
Date 4/1/2011
Model IGRF2010

West(-)/East(+) [150ft/in]



SITE DETAILS

Folk Federal #28
17-17S-29E
Eddy Co, NM
Site Centre Northing 667566 70
Easting 572079 50
Ground Level 3635 00
Positional Uncertainty 0 00
Convergence 0 13

FIELD DETAILS

Eddy Co, NM
New Mexico
U S A
Geodetic System US State Plane Coordinate System 1927
Ellipsoid NAD27 (Clarke 1866)
Zone New Mexico, Eastern Zone
Magnetic Model IGRF2010
System Datum Mean Sea Level
Local North Grd North

WELLPATH DETAILS

Rig Ref Datum	OH Paddock	Silver Oak #4 SITE	Origin +N/-S	Origin +E/-W	Starting From TVD
V Section Angle 294 02°			0 00	0 00	0 00

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	5500 00	140 50	-315 20	667707 20	571764 30	32°50'07 422N	104°05'58 880W	Circle (Radius 10)





Ryan Energy Technologies Survey Report



Company: COG Operating LLC	Date: 4/19/2011	Time: 12 57 44	Page: 1
Field: Eddy Co, NM	Co-ordinate(NE) Reference: Site Folk Federal #28, Grid North		
Site: Folk Federal #28	Vertical (TVD) Reference: SITE 3647 0		
Well: #28	Section (VS) Reference: Well (0 00N,0 00E,294 02Azi)		
Wellpath: OH	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Field: Eddy Co, NM New Mexico U S A	Map System: US State Plane Coordinate System 1927	Map Zone: New Mexico, Eastern Zone
Geo Datum: NAD27 (Clarke 1866)	Coordinate System: Site Centre	
Sys Datum: Mean Sea Level	Geomagnetic Model: IGRF2010	

Site: Folk Federal #28 17-17S-29E Eddy Co, NM		
Site Position:	Northing: 667566 70 ft	Latitude: 32 50 6 025 N
From Map	Easting: 572079 50 ft	Longitude: 104 5 55 189 W
Position Uncertainty: 0 00 ft		North Reference: Grnd
Ground Level: 3635 00 ft		Grid Convergence: 0 13 deg

Well: #28	Slot Name:	
Well Position: +N/-S 0 00 ft	Northing: 667566 70 ft	Latitude: 32 50 6 025 N
+E/-W 0 00 ft	Easting : 572079 50 ft	Longitude: 104 5 55 189 W
Position Uncertainty: 0 00 ft		

Wellpath: OH Paddock	Drilled From: Surface	
Current Datum: SITE	Tie-on Depth: 0 00 ft	
Magnetic Data: 4/1/2011	Above System Datum: Mean Sea Level	
Field Strength: 48972 nT	Declination: 7 90 deg	
Vertical Section: Depth From (TVD)	Mag Dip Angle: 60 67 deg	
ft	+N/-S ft	+E/-W ft
0 00	0 00	0 00
		294 02

Survey Program for Definitive Wellpath			Version: 0	
Date: 4/19/2011	Validated: No	Toolcode	Tool Name	
Actual From ft	To ft	Survey		
100 00	830 00	Survey #1 (100 00-830 00)	Gyro	Gyro
966 00	4055 00	Survey #2 (966 00-4055 00)	Ryan MWD	Ryan MWD
4102 00	4102 00	Survey #3 (4102 00-4102 00)	Projection	Projection

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	TIE LINE
100 00	0 74	166 53	100 00	-0 63	0 15	-0 39	0 74	0 74	0 00	Gyro
200 00	0 65	135 18	199 99	-1 66	0 70	-1 32	0 39	-0 09	-31 35	Gyro
300 00	1 00	117 41	299 98	-2 46	1 88	-2 72	0 43	0 35	-17 77	Gyro
400 00	1 10	124 67	399 96	-3 41	3 44	-4 53	0 17	0 10	7 26	Gyro
500 00	1 29	101 66	499 94	-4 18	5 33	-6 57	0 51	0 19	-23 01	Gyro
600 00	1 16	101 83	599 92	-4 62	7 42	-8 66	0 13	-0 13	0 17	Gyro
700 00	0 94	105 43	699 90	-5 04	9 21	-10 46	0 23	-0 22	3 60	Gyro
800 00	0 89	126 15	799 89	-5 72	10 62	-12 03	0 33	-0 05	20 72	Gyro
830 00	0 85	122 73	829 89	-5 98	11 00	-12 48	0 22	-0 13	-11 40	Gyro
966 00	1 00	353 50	965 88	-5 34	11 71	-12 87	1 23	0 11	-95 02	Ryan MWD
1062 00	2 40	311 90	1061 84	-3 17	10 12	-10 54	1 85	1 46	-43 33	Ryan MWD
1157 00	4 30	304 70	1156 67	0 19	5 71	-5 14	2 04	2 00	-7 58	Ryan MWD
1252 00	5 80	297 20	1251 30	4 41	-1 48	3 15	1 72	1 58	-7 89	Ryan MWD
1348 00	7 30	296 50	1346 67	9 35	-11 26	14 09	1 56	1 56	-0 73	Ryan MWD
1443 00	8 50	293 40	1440 77	14 83	-23 10	27 14	1 34	1 26	-3 26	Ryan MWD
1539 00	9 20	293 20	1535 62	20 67	-36 67	41 91	0 73	0 73	-0 21	Ryan MWD
1635 00	8 70	291 70	1630 45	26 38	-50 47	56 84	0 57	-0 52	-1 56	Ryan MWD
1730 00	8 90	290 90	1724 34	31 66	-64 01	71 35	0 25	0 21	-0 84	Ryan MWD
1826 00	8 40	290 20	1819 24	36 73	-77 53	85 76	0 53	-0 52	-0 73	Ryan MWD
1921 00	8 50	295 70	1913 21	42 17	-90 37	99 71	0 86	0 11	5 79	Ryan MWD



Ryan Energy Technologies Survey Report



Company: COG Operating LLC
Field: Eddy Co, NM
Site: Folk Federal #28
Well: #28
Wellpath: OH

Date: 4/19/2011 Time: 12 57 44 Page: 2
Co-ordinate(NE) Reference: Site Folk Federal #28, Grd North
Vertical (TVD) Reference: SITE 3647 0
Section (VS) Reference: Well (0 00N,0 00E,294 02Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2017 00	7 90	294 20	2008 23	47 95	-102 78	113 39	0 66	-0 62	-1 56	Ryan MWD
2113 00	8 60	294 60	2103 24	53 64	-115 32	127 17	0 73	0 73	0 42	Ryan MWD
2208 00	8 20	293 70	2197 22	59 32	-127 98	141 05	0 44	-0 42	-0 95	Ryan MWD
2303 00	7 80	294 10	2291 29	64 68	-140 07	154 27	0 43	-0 42	0 42	Ryan MWD
2399 00	9 10	292 80	2386 25	70 28	-153 02	168 37	1 37	1 35	-1 35	Ryan MWD
2494 00	8 80	289 80	2480 09	75 65	-166 78	183 13	0 58	-0 32	-3 16	Ryan MWD
2590 00	9 20	299 60	2574 92	81 93	-180 36	198 09	1 65	0 42	10 21	Ryan MWD
2686 00	9 40	297 50	2669 66	89 34	-193 99	213 56	0 41	0 21	-2 19	Ryan MWD
2781 00	8 30	297 50	2763 52	96 09	-206 95	228 14	1 16	-1 16	0 00	Ryan MWD
2876 00	8 30	295 60	2857 53	102 22	-219 22	241 84	0 29	0 00	-2 00	Ryan MWD
2972 00	8 10	298 30	2952 55	108 42	-231 42	255 51	0 45	-0 21	2 81	Ryan MWD
3068 00	7 80	299 00	3047 63	114 78	-243 08	268 75	0 33	-0 31	0 73	Ryan MWD
3163 00	7 80	292 60	3141 75	120 39	-254 67	281 62	0 91	0 00	-6 74	Ryan MWD
3259 00	8 10	290 70	3236 83	125 28	-267 01	294 88	0 42	0 31	-1 98	Ryan MWD
3355 00	7 80	294 30	3331 90	130 35	-279 27	308 15	0 61	-0 31	3 75	Ryan MWD
3450 00	6 90	291 50	3426 12	135 10	-290 45	320 29	1 02	-0 95	-2 95	Ryan MWD
3546 00	6 40	286 30	3521 48	138 71	-300 96	331 36	0 81	-0 52	-5 42	Ryan MWD
3641 00	5 00	299 80	3616 01	142 25	-309 63	340 72	2 03	-1 47	14 21	Ryan MWD
3737 00	3 70	292 70	3711 73	145 53	-316 12	347 98	1 46	-1 35	-7 40	Ryan MWD
3832 00	2 40	287 10	3806 59	147 30	-320 85	353 02	1 40	-1 37	-5 89	Ryan MWD
3875 40	2 07	292 29	3849 96	147 86	-322 44	354 71	0 89	-0 76	11 96	Ryan MWD
3927 00	1 70	301 00	3901 53	148 61	-323 96	356 40	0 90	-0 72	16 88	Ryan MWD
4055 00	0 60	97 20	4029 52	149 50	-324 92	357 64	1 77	-0 86	122 03	Ryan MWD
4102 00	0 60	97 20	4076 52	149 44	-324 43	357 17	0 00	0 00	0 00	PROJECTED to TD