

Scientific Drilling

COG RESOURCES

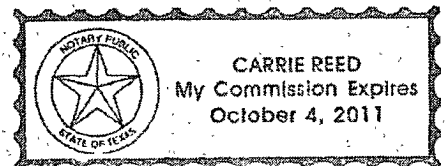
Field: Empire
Site: Eddy County, NM
Well: Folk Federal #12
Wellpath: DH - Job #32D0809306
Survey: 08/15/09-08/21/09

This survey is correct to the best of my knowledge
and is supported by actual field data.

.....Richard.....Company Representative

Notorized this date 14th of September, 2009.

Carrie Reed
Notary Signature
County of Midland
State of Texas





Scientific
Drilling

Scientific Drilling International Survey Report

Company: COG RESOURCES	Date: 08/25/2009	Time: 09:15:22	Page: 1
Field: Empire	Co-ordinate(NE) Reference:	Site: Eddy County, NM, Grid North	
Site: Eddy County, NM	Vertical (TVD) Reference:	Site: 0.0	
Well: Folk Federal #12	Section (VS) Reference:	Well: (0.00N,0.00E,181.07Azi)	
Wellpath: VH - Job #32K0809310	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 08/15/09	Start Date: 08/15/2009
Company: Scientific Drilling Internatio	Engineer: Melendez/Parades
Tool: Keeper;Keeper Gyro	Lied-to: From Surface

Site: Eddy County, NM

Site Position:	Northing:	ft	Latitude:
From: Local Only	Easting:	ft	Longitude:
Position Uncertainty: 0.00 ft			North Reference: Grid
Ground Level: 0.00 ft			Grid Convergence: deg

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.00	0.00	359.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.77	59.27	100.00	-0.35	0.34	0.58	0.77	0.67	59.27
200.00	0.42	86.67	199.99	-0.74	0.71	1.52	0.44	1.68	65.04
300.00	0.45	91.66	299.99	-0.76	0.72	2.28	0.05	2.39	72.52
400.00	0.54	97.25	399.99	-0.71	0.65	3.14	0.10	3.21	78.35
500.00	0.87	86.49	499.98	-0.72	0.63	4.36	0.35	4.41	81.73
600.00	1.07	82.31	599.96	-0.92	0.81	6.05	0.21	6.10	82.41
700.00	0.90	86.82	699.95	-1.12	0.97	7.76	0.19	7.82	82.84
749.00	1.34	117.34	748.94	-0.89	0.73	8.65	1.48	8.68	85.16



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Scientific Drilling International Survey Report

Company: COG RESOURCES	Date: 08/25/2009	Time: 14:47:46	Page: 1
Field: Empire	Co-ordinate(NE) Reference:	Site: Eddy County, NM, Grid North	
Site: Eddy County, NM	Vertical (TVD) Reference:	SITE 0.0	
Well: Folk Federal #12	Section (VS) Reference:	Well (0 00N,0.00E,181.07Azi)	
Wellpath: DH - Job #32D0809306	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey: 08/15/09-08/21/09	Start Date: 08/15/2009
MWD 868'-5360'	
Company: Scientific Drilling Internatio.	Engineer: McCormick/Ramirez
Tool: MWD/MWD	Tied-to: From: Definitive Path

Site: Eddy County, NM	
Site Position:	Northing: ft
From: Local Only	Eastng: ft
Position Uncertainty: 0.00 ft	Latitude:
Ground Level: 0.00 ft	Longitude:
	North Reference: Grid
	Grid Convergence: deg

Survey

MD ft.	Incl deg	Azimi deg	TVD ft.	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
749.00	1.34	117.34	748.94	-0.89	0.73	8.65	0.00	8.68	85.16
868.00	1.21	83.94	867.91	-0.43	0.23	11.14	0.62	11.14	88.84
963.00	1.77	128.45	962.88	0.33	-0.58	13.28	1.31	13.30	92.50
1059.00	3.24	146.88	1058.79	3.48	-3.77	15.93	1.73	16.37	103.33
1154.00	4.78	162.69	1153.56	9.45	-9.80	18.57	1.98	21.00	117.83
1250.00	5.93	168.98	1249.14	18.10	-18.49	20.71	1.34	27.76	131.76
1345.00	6.35	178.40	1343.59	28.15	-28.56	21.79	1.15	35.92	142.65
1441.00	7.51	182.05	1438.89	39.72	-40.13	21.72	1.29	45.63	151.58
1536.00	8.82	181.05	1532.93	53.21	-53.62	21.36	1.39	57.72	158.28
1632.00	10.41	187.99	1627.58	69.18	-69.57	20.02	2.05	72.39	163.94
1728.00	9.28	184.85	1722.16	85.52	-85.87	18.16	1.30	87.77	168.06
1823.00	8.68	182.46	1816.00	100.33	-100.67	17.21	0.74	102.13	170.30
1919.00	9.82	187.86	1910.75	115.70	-116.02	15.78	1.49	117.08	172.26
2046.00	8.80	186.95	2036.08	136.12	-136.39	13.12	0.81	137.02	174.51
2142.00	8.52	185.81	2130.98	150.51	-150.75	11.51	0.34	151.19	175.63
2237.00	7.98	186.57	2225.00	164.09	-164.30	10.04	0.58	164.61	176.50
2333.00	10.29	181.72	2319.78	179.30	-179.50	9.02	2.53	179.72	177.12
2428.00	8.95	186.00	2413.44	195.14	-195.33	8.00	1.60	195.49	177.66
2556.00	8.71	185.94	2539.92	214.72	-214.87	5.95	0.19	214.95	178.41
2683.00	8.66	185.48	2665.47	233.84	-233.95	4.04	0.07	233.99	179.01
2811.00	8.48	185.55	2792.04	252.85	-252.94	2.21	0.14	252.95	179.50
2906.00	9.96	177.98	2885.81	268.04	-268.12	1.82	2.01	268.13	179.61
3002.00	10.38	183.28	2980.30	284.97	-285.05	1.62	1.07	285.06	179.67
3098.00	10.26	184.19	3074.75	302.15	-302.21	0.50	0.21	302.21	179.90
3193.00	8.86	186.70	3168.43	317.88	-317.92	-0.97	1.54	317.92	180.17
3289.00	8.83	188.36	3263.29	332.55	-332.55	-2.90	0.27	332.56	180.50
3328.00	8.75	186.58	3301.83	338.47	-338.46	-3.68	0.73	338.48	180.62
3424.00	8.08	189.88	3396.80	352.40	-352.36	-5.67	0.86	352.41	180.92
3551.00	7.21	185.97	3522.67	369.17	-369.08	-8.03	0.80	369.17	181.25
3615.00	6.36	182.99	3586.22	376.71	-376.61	-8.64	1.44	376.71	181.31
3679.00	5.00	174.38	3649.90	383.02	-382.93	-8.55	2.50	383.03	181.28
3742.00	4.24	175.50	3712.70	388.07	-387.98	-8.10	1.21	388.07	181.20
3806.00	3.80	183.52	3776.54	392.54	-392.46	-8.04	1.11	392.54	181.17
3902.00	2.83	192.18	3872.38	398.05	-397.95	-8.74	1.13	398.05	181.26
3965.00	2.50	184.43	3935.31	400.94	-400.84	-9.17	0.77	400.95	181.31
4061.00	2.74	182.89	4031.21	405.33	-405.22	-9.45	0.26	405.33	181.34
4157.00	3.00	183.11	4127.09	410.13	-410.02	-9.70	0.27	410.14	181.36
4252.00	2.79	193.21	4221.97	414.88	-414.75	-10.36	0.58	414.88	181.43
4348.00	2.65	180.10	4317.86	419.38	-419.25	-10.90	0.66	419.39	181.49
4443.00	2.88	182.73	4412.75	423.96	-423.83	-11.02	0.28	423.97	181.49
4539.00	2.64	183.66	4508.64	428.58	-428.44	-11.27	0.25	428.59	181.51
4634.00	2.89	188.93	4603.53	433.14	-432.99	-11.79	0.38	433.15	181.56



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Site: Eddy County, NM
Well: Folk Federal #12
Wellpath: DH - Job #32D0809306

Date: 08/25/2009 Time: 14:47:46 Page: 2
Co-ordinate(N/E) Reference: Site: Eddy County, NM, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,181.07Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
4729.00	2.83	184.83	4698.41	437.85	-437.70	-12.36	0.22	437.87	181.62
4825.00	2.92	179.02	4794.29	442.66	-442.50	-12.51	0.32	442.68	181.62
4921.00	2.97	186.12	4890.17	447.58	-447.42	-12.74	0.38	447.60	181.63
4985.00	2.80	176.90	4954.08	450.79	-450.63	-12.83	0.77	450.81	181.63
5080.00	3.11	161.12	5048.96	455.53	-455.38	-11.87	0.91	455.54	181.49
5144.00	3.25	162.14	5112.86	458.88	-458.75	-10.75	0.24	458.88	181.34
5208.00	3.30	173.08	5176.76	462.42	-462.31	-9.97	0.98	462.42	181.24
5303.00	3.47	179.96	5271.59	468.00	-467.90	-9.64	0.46	468.00	181.18
5360.00	3.15	181.77	5328.50	471.29	-471.19	-9.69	0.59	471.29	181.18