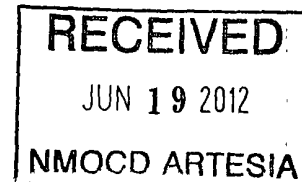


30-015-30289

COG OPERATING

Mar-Locho
Eddy County, NM
Berry A Federal #10
VH - Job #32K0412446



Survey: Gyro

SDI Standard Survey Report

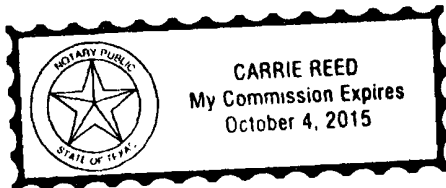
This survey is correct to the best of my knowledge and is supported by actual field data.

A handwritten signature in cursive script, appearing to be "L. L. L. L.", written over a horizontal line.

Notarized this date 14th of May, 2012.

A handwritten signature in cursive script, appearing to be "Carrie Reed", written over a horizontal line.

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Berry A Federal #10
Project:	Mar-Locho	TVD Reference:	WELL @ 0 00usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 00usft (Original Well Elev)
Well:	Berry A Federal #10	North Reference:	Grid
Wellbore:	VH - Job #32K0412446	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0412446	Database:	EDM-Regulatory

Project	Mar-Locho	System Datum:	Mean Sea Level
Map System:	US State Plane 1927 (Exact solution)		
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Eddy County, NM		
Site Position:		Northing:	662,204 41 usft
From:	Lat/Long	Easting:	607,316 96 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 49' 12 000 N
		Longitude:	103° 59' 2 400 W
		Grid Convergence:	0.19 °

Well	Berry A Federal #10, Vertical		
Well Position	+N/-S	0 00 usft	Northing: 662,204 41 usft
	+E/-W	0 00 usft	Easting: 607,316 96 usft
Position Uncertainty	0 00 usft	Wellhead Elevation:	usft
		Latitude:	32° 49' 12 000 N
		Longitude:	103° 59' 2 400 W
		Ground Level:	0 00 usft

Wellbore	VH - Job #32K0412446				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	04/19/12	7 72	60 65	48,871

Design	VH - Job #32K0412446				
Audit Notes:					
Version:	1 0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0 00	0 00	0 00	335 71	

Survey Program	Date	05/19/12		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.00	6,167 00	Gyro (VH - Job #32K0412446)	Keeper	Keeper Gyro

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0 00	0 00	0 00	0.00	0 00	0 00	0 00	0 00
100 00	0 14	69 30	100 00	0 04	0 11	69 30	0 12
200 00	0 29	122 16	200 00	-0 05	0 44	96.23	0 45
300 00	0 55	143 62	300 00	-0 57	0.94	121 16	1 10
400 00	0 79	170 32	399 99	-1 64	1 34	140.62	2 12
500 00	0 86	188 68	499 98	-3 06	1 34	156 25	3 34
600 00	0 71	184 53	599 97	-4 42	1 18	165 01	4 57
700 00	0 70	169 32	699 96	-5 63	1.25	167 52	5 77
800 00	0 82	142 02	799 95	-6 80	1 80	165 17	7 03
900 00	1 00	108 80	899 94	-7 64	3 07	158 14	8 24
1,000.00	1 04	87 55	999 93	-7 89	4 80	148 67	9.23
1,100 00	0 83	34 42	1,099.92	-7 25	6 12	139 85	9 49

Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Berry A Federal #10
Project:	Mar-LoCo	TVD Reference:	WELL @ 0 00usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 00usft (Original Well Elev)
Well:	Berry A Federal #10	North Reference:	Grid
Wellbore:	VH - Job #32K0412446	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0412446	Database:	EDM-Regulatory

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,200 00	1 05	20 87	1,199 90	-5 80	6 85	130 23	8 97
1,300 00	1 05	9 48	1,299 89	-4 04	7 33	118 84	8 37
1,400 00	1 11	9 60	1,399 87	-2 18	7 64	105 91	7 95
1,500 00	1 25	6 04	1,499 85	-0 14	7 92	91 00	7 92
1,600 00	1 14	346 50	1,599 82	1 91	7 80	76 21	8 03
1,700 00	1 48	337 08	1,699 80	4 07	7 07	60 05	8 15
1,800 00	1 74	339 56	1,799 76	6 68	6 03	42 07	9 00
1,900 00	2 20	340 72	1,899 70	9 92	4 87	26 15	11 05
2,000 00	2 63	342 23	1,999 61	13 91	3 53	14 25	14 36
2,100 00	2 76	344 14	2,099 50	18 41	2 18	6 74	18 54
2,200 00	2 89	345 05	2,199 38	23 17	0 87	2 14	23 18
2,300 00	3 01	345 26	2,299 25	28 14	-0 45	359 08	28 14
2,400 00	3 07	346 15	2,399 11	33 28	-1 76	356 97	33 33
2,500 00	3 12	346 49	2,498 96	38 53	-3 04	355 49	38 65
2,600 00	3 23	347 56	2,598 81	43 92	-4 28	354 44	44 13
2,700 00	3 05	348 96	2,698 66	49 29	-5 40	353 75	49 58
2,800 00	2 92	349 25	2,798 52	54 40	-6 38	353 31	54 77
2,900 00	2 82	346 27	2,898 39	59 29	-7 44	352 85	59 76
3,000 00	2 67	346 74	2,998 28	63 95	-8 56	352 38	64 52
3,100 00	2 65	346 72	3,098 17	68 46	-9 62	352 00	69 14
3,200 00	2 53	343 92	3,198 07	72 84	-10 76	351 59	73 63
3,300 00	2 44	341 04	3,297 98	76 97	-12 07	351 09	77 91
3,400 00	2 16	344 16	3,397 90	80 80	-13 27	350 67	81 88
3,500 00	1 94	344 05	3,497 83	84 24	-14 25	350 40	85 43
3,600 00	1 90	342 07	3,597 78	87 44	-15 23	350 12	88 76
3,700 00	1 68	334 27	3,697 73	90 34	-16 38	349 73	91 81
3,800 00	1 76	332 92	3,797 68	93 03	-17 71	349 22	94 70
3,900 00	1 83	324 36	3,897 63	95 69	-19 34	348 57	97 63
4,000 00	1 72	322 59	3,997 58	98 18	-21 18	347 83	100 44
4,100 00	1 92	320 95	4,097 53	100 67	-23 15	347 05	103 30
4,200 00	1 78	320 52	4,197 48	103 17	-25 19	346 28	106 20
4,300 00	1 34	317 64	4,297 44	105 24	-26 97	345 63	108 64
4,400 00	1 37	307 15	4,397 42	106 82	-28 71	344 96	110 61
4,500 00	1 64	302 32	4,497 38	108 31	-30 87	344 09	112 62
4,600 00	1 76	300 40	4,597 34	109 85	-33 40	343 09	114 82
4,700 00	1 98	298 45	4,697 28	111 45	-36 25	341 98	117 20
4,800 00	2 16	299.21	4,797 22	113 19	-39 41	340 80	119 86
4,900 00	2 10	304 58	4,897 15	115 15	-42 56	339 71	122 77
5,000 00	2 87	305 25	4,997 06	117 64	-46 12	338 59	126 36
5,100 00	2 74	309 29	5,096 94	120 60	-50 01	337 48	130 56
5,200 00	2 28	307 98	5,196 84	123 33	-53 43	336 58	134 41
5,300 00	1 92	309 85	5,296 77	125 63	-56 28	335 87	137 66
5,400 00	1 94	312 62	5,396 72	127 85	-58 82	335 30	140 73
5,500 00	1 73	310 63	5,496 66	129 98	-61 21	334 78	143 67

Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG OPERATING	Local Co-ordinate Reference:	Well Berry A Federal #10
Project:	Mar-LoCo	TVD Reference:	WELL @ 0 00usft (Original Well Elev)
Site:	Eddy County, NM	MD Reference:	WELL @ 0 00usft (Original Well Elev)
Well:	Berry A Federal #10	North Reference:	Grid
Wellbore:	VH - Job #32K0412446	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0412446	Database:	EDM-Regulatory

Survey								
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)	
5,600 00	2 31	322 63	5,596 60	132 57	-63 58	334 38	147 02	
5,700 00	2 41	339 06	5,696 52	136 13	-65 55	334 29	151 09	
5,800 00	2 90	340 63	5,796 41	140 48	-67 14	334 46	155 70	
5,900 00	3 56	347 09	5,896 25	145 89	-68 67	334 79	161 25	
6,000 00	3 30	343 20	5,996 07	151 68	-70 20	335 16	167 13	
6,100 00	3 43	346 43	6,095 90	157 34	-71 73	335 49	172 92	
6,167 00	3 61	343 79	6,162 77	161 31	-72 79	335 71	176 98	

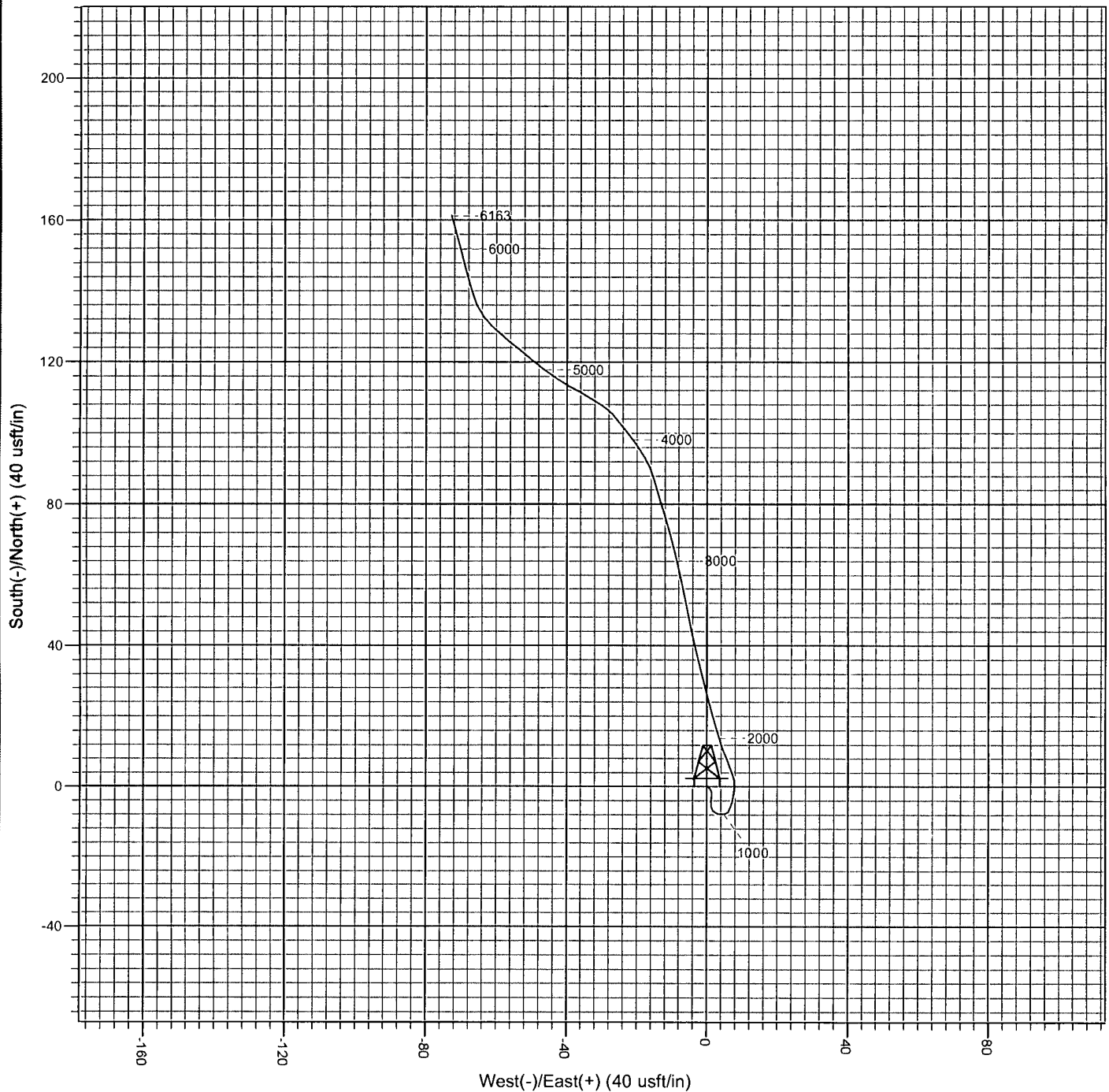


Scientific Drilling
Directional Drilling Operations

Project: Mar-Locho
Eddy County, NM
Well: Berry A Federal #10
Wellbore: VH - Job #32K0412446
Design: VH - Job #32K0412446

WELL DETAILS: Berry A Federal #10
WELL @ 0.00usft (Original Well Elev)
Ground Level: 0.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	662204 41	607316.96	32° 49' 12.000 N	103° 59' 2.400 W	



PROJECT DETAILS: Mar-Locho	SITE DETAILS: Eddy County, NM
Geodetic System: US State Plane 1927 (Exact solution)	Site Centre Latitude: 32° 49' 12.000 N
Datum: NAD 1927 (NADCON CONUS)	Longitude: 103° 59' 2.400 W
Ellipsoid: Clarke 1866	Positional Uncertainty: 0.00
Zone: New Mexico East 3001	Convergence: 0.19
System Datum: Mean Sea Level	Local North: Grid