



Scientific Drilling

Gyroscopic Survey Report for COG OPERATING

Well Location	EDDY COUNTY, NEW MEXICO
Well Name	HOLDER "CB" NO.4
Rig Name	ARIES WELL SERVICE
Survey Date	10/5/2009
Latitude	32.83 deg
North Reference	True North
Grid Correction	0.00 deg
Depth Reference	RKB
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 0.00Azim (deg)
Definitive Survey	FINAL GYRO SURVEY
Operator	ANGEL GUEBARA

Comments



Well Name: HOLDER "CB" NO 4
 Survey: FINAL GYRO SURVEY
 Survey Date: 10/5/2009

MD	Inc	Azim	TVD	VS	Northing	Easting	DLS	Closure Distance	Closure Angle
ft	deg	deg	ft	ft	ft	ft	deg/100ft	ft	deg
0 00	0 00	0.00	0 00	0 00	0 00	0 00	Invalid	0 00	0.00
100.00	1 04	302 40	99 99	0 49	0 49	-0 77	1 04	0 91	302 40
200.00	1 71	294 33	199 97	1 59	1 59	-2 90	0 69	3 30	298 77
300.00	2 48	308 13	299 90	3 54	3 54	-5 96	0 92	6 93	300 72
400.00	2 65	313 50	399 80	6 47	6 47	-9 34	0 29	11 36	304 71
500.00	1 89	321 49	499 72	9 35	9 35	-12 04	0 81	15 24	307 83
600.00	1 95	321 79	599 66	11 97	11 97	-14 12	0 06	18 51	310 31
700.00	1 84	320 99	699 61	14 55	14 55	-16 18	0 12	21 76	311 98
800.00	1 15	349 97	799 58	16 78	16 78	-17 36	1 00	24 15	314 03
900.00	1 21	354 22	899 55	18 82	18 82	-17 64	0 11	25 79	316 85
1000.00	0 96	358 94	999 54	20 71	20 71	-17 76	0 26	27 28	319 38
1100.00	0 68	5 49	1099 53	22 14	22 14	-17 72	0 29	28 35	321 32
1200.00	0 70	10 43	1199 52	23 33	23 33	-17 55	0 06	29 19	323 05
1300.00	0 41	21 11	1299 51	24 27	24 27	-17 31	0 31	29 81	324 50
1400.00	0 26	54 58	1399 51	24 74	24 74	-17 00	0 24	30 01	325 51
1500.00	0 32	42 91	1499 51	25 07	25 07	-16 62	0 08	30 08	326 45
1600.00	0 26	64 42	1599 51	25 37	25 37	-16 23	0 12	30 12	327 39
1700.00	0 10	55 42	1699 51	25 52	25 52	-15 96	0 16	30 10	327 98
1800.00	0 14	159 65	1799 51	25 45	25 45	-15 84	0 19	29 98	328 10
1900.00	0 21	183 44	1899 51	25 15	25 15	-15 81	0 10	29 70	327 84
2000.00	0 43	186 97	1999 51	24 58	24 58	-15 87	0 22	29 26	327 16
2100.00	0 22	179 92	2099 51	24 02	24 02	-15 91	0 22	28 81	326 48
2200.00	0 73	181 84	2199 50	23 19	23 19	-15 93	0 51	28 14	325 51
2300.00	0 60	171 52	2299 49	22 04	22 04	-15 87	0 17	27 16	324 23
2400.00	0 55	166 62	2399 49	21 05	21 05	-15 69	0 07	26 25	323 31
2500.00	0 76	177 14	2499 48	19 93	19 93	-15 54	0 24	25 27	322 04
2600.00	0 57	168 15	2599 48	18 78	18 78	-15 41	0 22	24 29	320 63
2700.00	0 40	207 69	2699 47	17 98	17 98	-15 47	0 36	23 72	319 29
2800.00	0 66	217 24	2799 47	17 21	17 21	-15 99	0 27	23 49	317 11
2900.00	0 55	211 66	2899 46	16 34	16 34	-16 59	0 13	23 29	314 57
3000.00	0 50	202 80	2999 46	15 53	15 53	-17 01	0 09	23 03	312 40
3100.00	0 58	203 42	3099 45	14 66	14 66	-17 38	0 08	22 74	310 15
3200.00	0 54	201 30	3199 45	13 76	13 76	-17 75	0 05	22 46	307 78
3300.00	0 46	210 27	3299 45	12 98	12 98	-18 12	0 11	22 29	305 60
3400.00	0 37	190 50	3399 44	12 32	12 32	-18 38	0 17	22 13	303 82
3500.00	0 19	190 29	3499 44	11 84	11 84	-18 47	0 18	21 94	302 67
3600.00	0 18	195 04	3599 44	11 53	11 53	-18 54	0 02	21 83	301 88
3700.00	0 02	328 51	3699 44	11 39	11 39	-18 59	0 19	21 80	301 50
3800.00	0 30	359 15	3799 44	11 67	11 67	-18 60	0 29	21 96	302 10



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MD	Inc	Azim	TVD	VS	Northing	Easting	DLS	Closure Distance	Closure Angle
ft	deg	deg	ft	ft	ft	ft	deg/100ft	ft	deg
3900.00	0.18	315.97	3899.44	12.05	12.05	-18.71	0.21	22.26	302.77
4000.00	0.41	313.80	3999.44	12.40	12.40	-19.08	0.23	22.75	303.03
4100.00	0.46	282.91	4099.44	12.74	12.74	-19.73	0.24	23.48	302.85
4200.00	0.32	274.07	4199.43	12.85	12.85	-20.40	0.15	24.11	302.20
4300.00	0.25	140.19	4299.43	12.70	12.70	-20.54	0.53	24.15	301.72
4400.00	0.36	118.95	4399.43	12.38	12.38	-20.12	0.16	23.62	301.59
4500.00	0.49	101.78	4499.43	12.13	12.13	-19.42	0.18	22.90	301.99
4600.00	0.71	143.92	4599.42	11.54	11.54	-18.64	0.48	21.92	301.77
4700.00	0.65	121.04	4699.42	10.75	10.75	-17.78	0.28	20.78	301.15
4800.00	0.68	101.67	4799.41	10.34	10.34	-16.72	0.23	19.65	301.73
4900.00	0.72	101.08	4899.40	10.09	10.09	-15.52	0.04	18.52	303.04
5000.00	0.64	99.75	4999.40	9.88	9.88	-14.35	0.08	17.43	304.54
5100.00	0.70	103.40	5099.39	9.64	9.64	-13.21	0.07	16.35	306.13
5200.00	0.66	94.45	5199.38	9.46	9.46	-12.04	0.11	15.31	308.16
5300.00	0.61	115.77	5299.38	9.18	9.18	-10.98	0.24	14.31	309.90
5400.00	0.47	139.98	5399.37	8.64	8.64	-10.23	0.27	13.39	310.15
5500.00	0.70	166.15	5499.37	7.73	7.73	-9.83	0.35	12.50	308.19
5600.00	0.67	177.61	5599.36	6.56	6.56	-9.66	0.14	11.67	304.17
5700.00	0.29	187.77	5699.36	5.72	5.72	-9.67	0.39	11.23	300.63
5707.00	0.41	187.55	5706.36	5.68	5.68	-9.67	1.73	11.22	300.42