

API # 30-015-36596

COG Operating

Eddy County, NM (NAN27 NME)

Skelly Unit #602 (1002)

Skelly Unit #602

OH

Design: Actual

Standard Survey Report

01 December, 2008



Scientific Drilling Survey Report



Company	COG Operating	Local Co-ordinate Reference:	Well Skelly Unit #602
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	Ground Elev @ 3762 00ft (Rig ?)
Site:	Skelly Unit #602 (1002)	MD Reference:	Ground Elev @ 3762 00ft (Rig ?)
Well:	Skelly Unit #602	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM 2003 16 Single User Db

Project	Eddy County, NM (NAN27 NME)		
Map System:	US State Plane 1927 (Exact solution)	System Datum	Mean Sea Level
Geo Datum	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Skelly Unit #602 (1002)			
Site Position:		Northing:	662,219 700 ft	Latitude: 32° 49' 10 925 N
From: Map		Easting:	639,873 300 ft	Longitude: 103° 52' 40 895 W
Position Uncertainty:	0 00 ft	Slot Radius:	"	Grid Convergence 0 25 °

Well	Skelly Unit #602			
Well Position	+N/-S	0 00 ft	Northing:	662,219 700 ft
	+E/-W	0 00 ft	Easting	639,873 300 ft
Position Uncertainty		0 00 ft	Wellhead Elevation:	ft
			Ground Level:	3,762 00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/1/2008	8 06	60 76	49,219

Design	Actual			
Audit Notes:				
Version:	1 0	Phase:	ACTUAL	Tie On Depth: 0 00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0 00	0 00	0 00	140 50

Survey Program	Date	12/1/2008		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100 00	1,760 00	GYRO (OH)	Keeper	Standard Wireline Keeper ver 1 0 2
1,846 00	5,177 00	MWD (OH)	MWD	MWD - Standard

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
100 00	0 59	317 16	100 00	0 38	-0 35	-0 51	0 59	0 59	0 00
200 00	1 25	242 47	199 99	0 25	-1 67	-1 25	1 23	0 66	-74 69
300 00	1 88	203 08	299 95	-1 76	-3 28	-0 73	1 21	0 63	-39 39
400 00	2 30	128 99	399 90	-4 53	-2 36	2 00	2 54	0 42	-74 09
500 00	2 23	117 69	499 82	-6 70	0 92	5 76	0 45	-0 07	-11 30
600 00	1 96	119 63	599 76	-8 45	4 13	9 15	0 28	-0 27	1 94
700 00	1 62	124 29	699 71	-10 09	6 78	12 10	0 37	-0 34	4 66
800 00	1 40	125 70	799 67	-11 60	8 94	14 64	0 22	-0 22	1 41
900 00	1 40	122 20	899 64	-12 97	10 97	16 98	0 09	0 00	-3 50
1,000 00	1 49	147 49	999 61	-14 71	12 70	19 43	0 64	0 09	25 29
1,100 00	1 22	119 07	1,099 59	-16 33	14 33	21 71	0 71	-0 27	-28 42

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Site.	Skelly Unit #602 (1002)	MD Reference:	Ground Elev @ 3762 00ft (Rig ?)
Well.	Skelly Unit #602	North Reference:	Gnd
Wellbore.	OH	Survey Calculation Method.	Minimum Curvature
Design:	Actual	Database.	EDM 2003 16 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,200 00	1 06	127 94	1,199 57	-17 41	15 99	23 61	0 24	-0 16	8 87
1,300 00	1 44	75 21	1,299 55	-17 66	17 94	25 04	1 16	0 38	-52 73
1,400 00	1 99	76 71	1,399 50	-16 94	20 84	26 33	0 55	0 55	1 50
1,500 00	1 40	84 51	1,499 46	-16 42	23 75	27 78	0 63	-0 59	7 80
1,600 00	0 74	109 44	1,599 44	-16 52	25 57	29 01	0 79	-0 66	24 93
1,700 00	1 32	60 80	1,699 42	-16 18	27 19	29 77	1 00	0 58	-48 64
1,760 00	1 33	63 42	1,759 41	-15 53	28 41	30 05	0 10	0 02	4 37
Last gyro survey									
1,846 00	0 51	50 33	1,845 40	-14 84	29 60	30 28	0 98	-0 95	-15 22
1,909 00	1 44	145 67	1,908 39	-15 31	30 26	31 06	2 49	1 48	151 33
2,003 00	3 37	156 54	2,002 30	-18 82	32 03	34 89	2 10	2 05	11 56
2,066 00	3 16	162 47	2,065 20	-22 18	33 29	38 28	0 63	-0 33	9 41
2,160 00	3 58	176 69	2,159 04	-27 58	34 24	43 06	0 99	0 45	15 13
2,253 00	4 62	186 36	2,251 80	-34 20	33 99	48 01	1 34	1 12	10 40
2,347 00	5 60	183 19	2,345 43	-42 54	33 32	54 02	1 08	1 04	-3 37
2,442 00	6 21	175 39	2,439 92	-52 29	33 47	61 64	1 06	0 64	-8 21
2,504 00	6 74	174 09	2,501 53	-59 25	34 12	67 42	0 89	0 85	-2 10
2,598 00	7 01	159 73	2,594 86	-70 12	36 67	77 43	1 85	0 29	-15 28
2,660 00	6 38	152 24	2,656 44	-76 72	39 59	84 38	1 73	-1 02	-12 08
2,754 00	6 58	138 27	2,749 84	-85 36	45 60	94 87	1 69	0 21	-14 86
2,817 00	6 48	135 24	2,812 43	-90 58	50 51	102 02	0 57	-0 16	-4 81
2,911 00	5 71	134 67	2,905 90	-97 63	57 57	111 95	0 82	-0 82	-0 61
3,036 00	5 21	135 78	3,030 33	-106 07	65 95	123 80	0 41	-0 40	0 89
3,130 00	4 91	136 57	3,123 97	-112 05	71 69	132 06	0 33	-0 32	0 84
3,224 00	5 91	138 97	3,217 55	-118 62	77 64	140 91	1 09	1 06	2 55
3,349 00	5 16	142 89	3,341 96	-127 96	85 25	152 96	0 67	-0 60	3 14
3,443 00	6 17	144 33	3,435 50	-135 43	90 75	162 23	1 08	1 07	1 53
3,569 00	5 70	146 26	3,560 83	-146 14	98 17	175 21	0 41	-0 37	1 53
3,662 00	6 27	143 07	3,653 32	-154 04	103 79	184 88	0 71	0 61	-3 43
3,788 00	6 02	139 08	3,778 60	-164 53	112 25	198 36	0 39	-0 20	-3 17
3,913 00	6 01	138 69	3,902 91	-174 40	120 86	211 45	0 03	-0 01	-0 31
4,038 00	6 13	136 93	4,027 21	-184 19	129 74	224 65	0 18	0 10	-1 41
4,163 00	6 03	137 28	4,151 51	-193 89	138 75	237 87	0 09	-0 08	0 28
4,289 00	6 04	136 66	4,276 81	-203 57	147 79	251 09	0 05	0 01	-0 49
4,445 00	5 62	135 83	4,432 00	-215 02	158 75	266 89	0 27	-0 27	-0 53
4,539 00	5 44	135 27	4,525 56	-221 49	165 09	275 92	0 20	-0 19	-0 60
4,633 00	5 18	135 73	4,619 16	-227 69	171 19	284 58	0 28	-0 28	0 49
4,789 00	4 98	137 84	4,774 55	-237 75	180 65	298 36	0 18	-0 13	1 35
4,833 00	3 80	130 80	4,818 42	-240 12	183 03	301 71	2 94	-2 68	-16 00
4,914 00	3 27	129 13	4,899 26	-243 33	186 86	306 62	0 67	-0 65	-2 06
4,976 00	2 42	106 68	4,961 19	-244 83	189 48	309 44	2 24	-1 37	-36 21
5,039 00	0 59	356 95	5,024 17	-244 88	190 74	310 28	4 25	-2 90	-174 17
5,072 00	1 08	315 74	5,057 17	-244 49	190 52	309 84	2 26	1 48	-124 88
5,133 00	0 24	214 44	5,118 16	-244 18	190 04	309 30	1 89	-1 38	-166 07
5,177 00	0 71	176 31	5,162 16	-244 53	190 01	309 55	1 23	1 07	-86 66
Last MWD survey									

Scientific Drilling

Survey Report



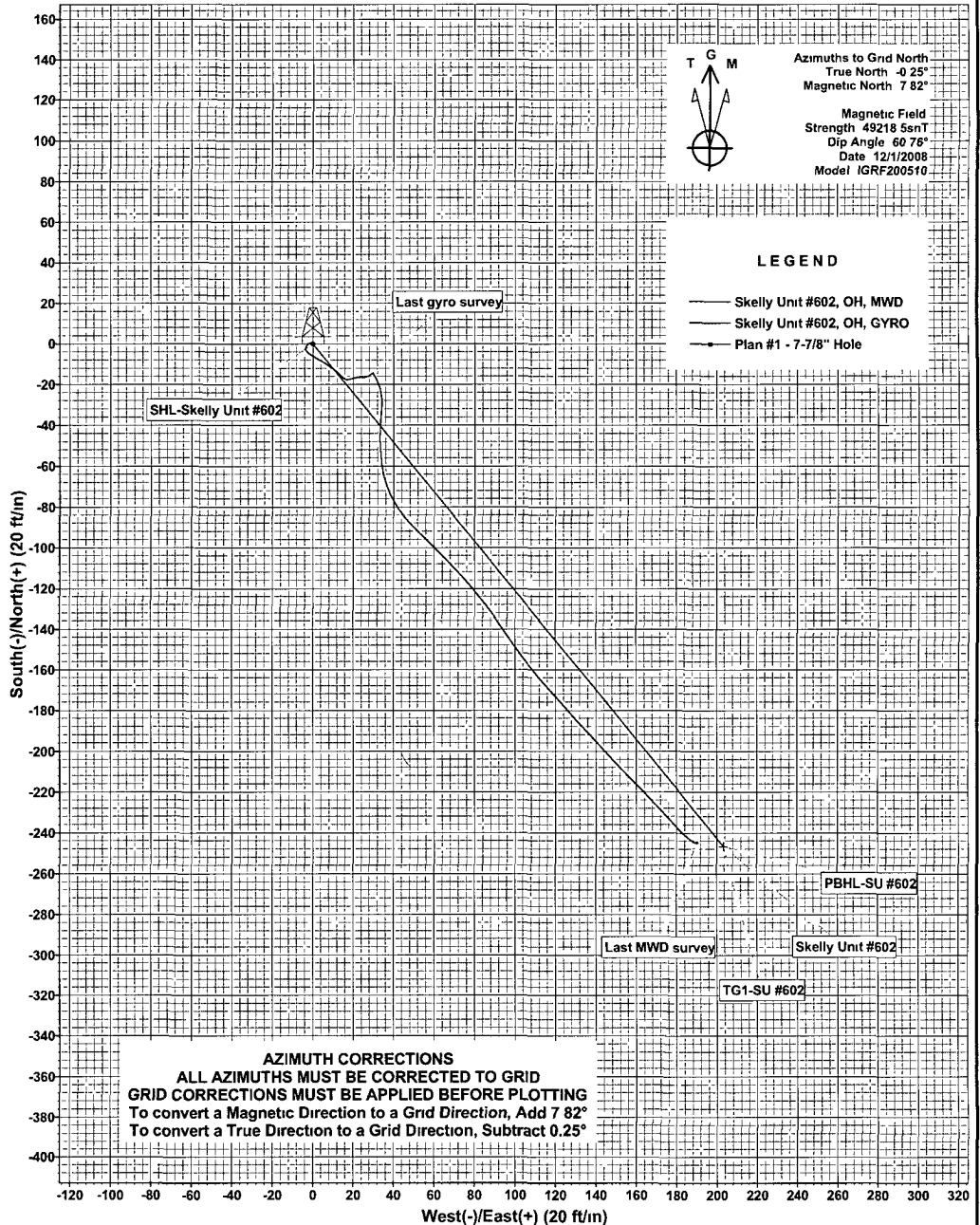
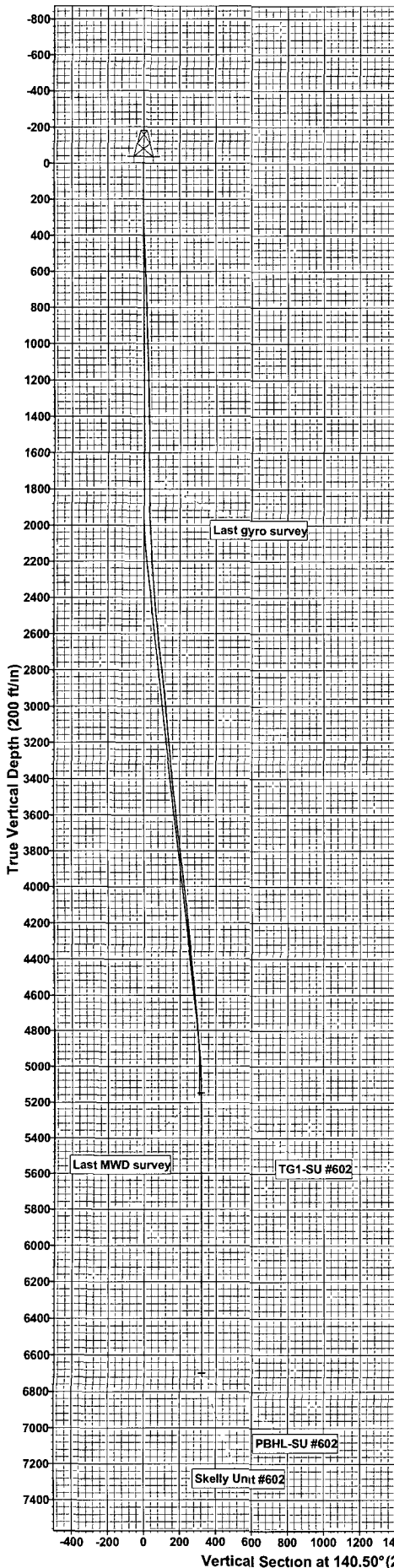
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Project:	Eddy County, NM (NAN27 NME)	TVD Reference.	Ground Elev @ 3762 00ft (Rig ?)
Site:	Skelly Unit #602 (1002)	MD Reference.	Ground Elev @ 3762 00ft (Rig ?)
Well.	Skelly Unit #602	North Reference.	Grid
Wellbore:	OH	Survey Calculation Method.	Minimum Curvature
Design:	Actual	Database:	EDM 2003 16 Single User Db

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
PBHL-SU #602	0 00	0 00	6,700 00	-246 60	203 30	661,973 100	640,076 600	32° 49' 8 476 N	103° 52' 38 525 W
- actual wellpath misses by 1537 90ft at 5177 00ft MD (5162 16 TVD, -244 53 N, 190 01 E)									
- Point									
TG1-SU #602	0 00	0 00	5,150 00	-246 60	203 30	661,973 100	640,076 600	32° 49' 8 476 N	103° 52' 38 525 W
- actual wellpath misses by 13 48ft at 5164 85ft MD (5150 01 TVD, -244 40 N, 190 00 E)									
- Point									

Checked By _____	Approved By _____	Date _____
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COG Operating

Scientific Drilling for COG Operating
 Site: Eddy County, NM (NAN27 NME)
 Well: Skelly Unit #602
 Wellbore: OH
 Design: Plan #1 vs Actual - 7-7/8" Hole



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
TG1-SU #602	5150 00	-246 60	203 30	661973 100	640076 600	32°49' 8 476 N	103°52' 38 525 W	Point
PBHL-SU #602	6700 00	-246 60	203 30	661973 100	640076 600	32°49' 8 476 N	103°52' 38 525 W	Point

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
2	1900 00	0 00	0 00	1900 00	0 00	0 00	0 00	0 00	0 00	
3	2210 26	6 21	140 50	2209 66	-12 95	10 68	2 00	140 50	16 78	
4	4856 45	6 21	140 50	4840 34	-233 65	192 62	0 00	0 00	302 81	
5	5166 72	0 00	0 00	5150 00	-246 60	203 30	2 00	180 00	319 60	TG1-SU #602
6	6716 72	0 00	0 00	6700 00	-246 60	203.30	0 00	0 00	319 60	PBHL-SU #602

WELL DETAILS Skelly Unit #602

+N/-S	+E/-W	Northing	Easting	Ground Level	Latitude	Longitude	Slot
0 00	0 00	662219 700	639873 300	3762 00	32°49' 10 925 N	103°52' 40 895 W	

PROJECT DETAILS		Eddy County, NM (NAN27 NME)		Plan Plan #1 - 7-7/8" Hole (Skelly Unit #602/OH)	
Geodetic System	US State Plane 1927 (Exact solution)	Created By	Julio Pina	Date	01-Dec-08
Datum	NAD 1927 (NADCON CONUS)	Checked		Date	
Ellipsoid	Clarke 1866	Reviewed		Date	
Zone	New Mexico East 3001	Approved		Date	
System Datum	Mean Sea Level				