



COG Operating LLC

Eddy County, NM (NAN27 NME)

Skelly Unit #771

• Skelly Unit #771

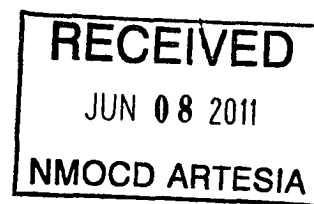
OH

30-015-38104

Design: Actual

Standard Survey Report

14 February, 2011





Scientific Drilling

Survey Report



Company: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Skelly Unit #771
Well: Skelly Unit #771
Wellbore: OH
Design: Actual

Local Co-ordinate Reference: Site Skelly Unit #771
TVD Reference: KB Elev (12') @ 3898 00usft (Silver Oak #1)
MD Reference: KB Elev (12') @ 3898 00usft (Silver Oak #1)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM-Julio

Project Eddy County, NM (NAN27 NME)

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site Skelly Unit #771

Site Position: Northing: 664,952 10 usft Latitude: 32° 49' 37 461 N
From: Map Easting: 651,181 90 usft Longitude: 103° 50' 28 230 W
Position Uncertainty: 0 00 usft Slot Radius: 0 " Grid Convergence: 0 27 °

Well Skelly Unit #771

Well Position +N/-S 0 00 usft Northing: 664,952 10 usft Latitude: 32° 49' 37 461 N
+E/-W 0 00 usft Easting: 651,181 90 usft Longitude: 103° 50' 28 230 W
Position Uncertainty 0 00 usft Wellhead Elevation: usft Ground Level: 3,886 00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2010/02/07	7 91	60 75	49,113

Design Actual

Audit Notes:

Version: 1 0 Phase: ACTUAL Tie On Depth: 0 00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 00	0 00	0 00	161 25

Survey Program: Date: 2011/02/14

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100 00	1,782 00	Gyro Survey (OH)	Keeper	Standard Wireline Keeper ver 1 0 2
1,899 00	5,739 00	MWD Survey (OH)	MWD	MWD - Standard

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
100 00	0 58	328 37	100 00	0 43	-0 27	-0 49	0 58	0 58	0 00
200 00	0 63	319 26	199 99	1 28	-0 89	-1 50	0 11	0 05	-9 11
300 00	0 52	295 91	299 99	1 89	-1 66	-2 33	0 26	-0 11	-23 35
400 00	0 40	289 17	399 98	2 21	-2 39	-2 86	0 13	-0 12	-6 74
500 00	0 43	301 01	499 98	2 51	-3 05	-3 36	0 09	0 03	11 84
600 00	0 36	291 30	599 98	2 82	-3 66	-3 85	0 10	-0 07	-9 71
700 00	0 16	243 34	699 98	2 87	-4 08	-4 03	0 28	-0 20	-47 96
800 00	0 20	244 54	799 98	2 74	-4 36	-3 99	0 04	0 04	1 20
900 00	0 25	270 28	899 98	2 66	-4 74	-4 04	0 11	0 05	25 74



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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000 00	0 13	315 76	999 98	2 74	-5 03	-4 22	0 18	-0 12	45 48
1,100 00	0 42	246 68	1,099 98	2 68	-5 45	-4 29	0 39	0 29	-69 08
1,200 00	0 17	61 04	1,199 98	2 61	-5 66	-4 29	0 59	-0 25	174 36
1,300 00	0 38	28 07	1,299 97	2 97	-5 37	-4 54	0 25	0 21	-32 97
1,400 00	0 69	47 11	1,399 97	3 67	-4 77	-5 01	0 35	0 31	19 04
1,500 00	1 22	25 60	1,499 96	5 04	-3 87	-6 02	0 63	0 53	-21 51
1,600 00	1 49	31 32	1,599 93	7 11	-2 74	-7 62	0 30	0 27	5 72
1,700 00	1 75	29 46	1,699 89	9 55	-1 31	-9 47	0 27	0 26	-1 86
1,782 00	1 75	34 91	1,781 85	11 67	0 02	-11 04	0 20	0 00	6 65
Gyro Tie-in									
1,899 00	1 16	20 46	1,898 81	14 25	1 46	-13 02	0 59	-0 50	-12 35
1,993 00	0 40	146 10	1,992 81	14 87	1 98	-13 44	1 52	-0 81	133 66
2,087 00	2 49	156 60	2,086 77	12 72	2 97	-11 09	2 23	2 22	11 17
2,182 00	4 07	155 20	2,181 61	7 76	5 20	-5 68	1 67	1 66	-1 47
2,275 00	5 21	168 60	2,274 31	0 63	7 42	1 79	1 68	1 23	14 41
2,370 00	4 44	169 69	2,368 97	-7 22	8 93	9 71	0 82	-0 81	1 15
2,463 00	6 17	170 02	2,461 57	-15 68	10 44	18 21	1 86	1 86	0 35
2,558 00	5 73	172 75	2,556 06	-25 41	11 93	27 90	0 55	-0 46	2 87
2,651 00	6 00	163 46	2,648 57	-34 68	13 90	37 31	1 06	0 29	-9 99
2,746 00	4 88	165 97	2,743 14	-43 36	16 29	46 30	1 20	-1 18	2 64
2,840 00	6 53	167 62	2,836 67	-52 46	18 41	55 59	1 76	1 76	1 76
2,934 00	5 70	158 78	2,930 14	-62 03	21 24	65 57	1 33	-0 88	-9 40
3,028 00	6 40	160 29	3,023 62	-71 32	24 70	75 47	0 76	0 74	1 61
3,122 00	5 90	164 45	3,117 08	-80 90	27 76	85 53	0 71	-0 53	4 43
3,216 00	5 90	146 92	3,210 59	-89 61	31 69	95 04	1 91	0 00	-18 65
3,310 00	5 28	151 95	3,304 14	-97 47	36 36	103 99	0 84	-0 66	5 35
3,404 00	5 34	153 74	3,397 74	-105 21	40 33	112 59	0 19	0 06	1 90
3,499 00	5 17	148 03	3,492 34	-112 81	44 55	121 14	0 58	-0 18	-6 01
3,592 00	5 96	152 28	3,584 90	-120 64	49 02	129 99	0 96	0 85	4 57
3,687 00	5 85	158 36	3,679 40	-129 50	53 10	139 70	0 67	-0 12	6 40
3,780 00	5 39	160 47	3,771 95	-138 02	56 31	148 80	0 54	-0 49	2 27
3,875 00	6 20	157 26	3,866 46	-146 96	59 78	158 38	0 92	0 85	-3 38
3,968 00	6 41	161 68	3,958 90	-156 52	63 35	168 58	0 57	0 23	4 75
4,062 00	6 29	155 64	4,052 32	-166 19	67 13	178 95	0 72	-0 13	-6 43
4,156 00	6 56	162 22	4,145 74	-176 00	70 89	189 44	0 83	0 29	7 00
4,249 00	6 17	159 28	4,238 16	-185 73	74 28	199 75	0 55	-0 42	-3 16
4,344 00	6 28	159 84	4,332 60	-195 38	77 88	210 05	0 13	0 12	0 59
4,437 00	6 05	176 47	4,425 07	-205 05	79 93	219 86	1 93	-0 25	17 88
4,531 00	6 06	172 55	4,518 55	-214 91	80 88	229 51	0 44	0 01	-4 17
4,625 00	6 10	177 13	4,612 02	-224 82	81 78	239 18	0 52	0 04	4 87
4,720 00	5 80	174 24	4,706 51	-234 64	82 51	248 71	0 45	-0 32	-3 04
4,813 00	5 94	178 34	4,799 02	-244 13	83 12	257 89	0 48	0 15	4 41
4,907 00	5 52	178 58	4,892 55	-253 51	83 37	266 85	0 45	-0 45	0 26



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5,001 00	4 70	171 55	4,986 18	-261 84	84 05	274 96	1 10	-0 87	-7 48
5,096 00	2 92	179 31	5,080 96	-268 11	84 65	281 09	1 95	-1 87	8 17
5,190 00	1 35	173 24	5,174 90	-271 60	84 81	284 45	1 69	-1 67	-6 46
5,284 00	0 62	176 18	5,268 88	-273 21	84 98	286 02	0 78	-0 78	3 13
5,377 00	0 65	141 86	5,361 88	-274 12	85 34	287 01	0 40	0 03	-36 90
5,471 00	0 80	147 09	5,455 87	-275 09	86 02	288 15	0 17	0 16	5 56
5,564 00	0 83	267 19	5,548 86	-275 67	85 70	288 59	1 52	0 03	129 14
5,658 00	0 54	274 97	5,642 86	-275 67	84 58	288 23	0 32	-0 31	8 28
5,688 00	0 58	289 85	5,672 86	-275 60	84 30	288 07	0 50	0 13	49 60
Last MWD Survey									
5,739 00	0 58	289 85	5,723 85	-275 43	83 81	287 75	0 00	0 00	0 00
Projection to Bit									

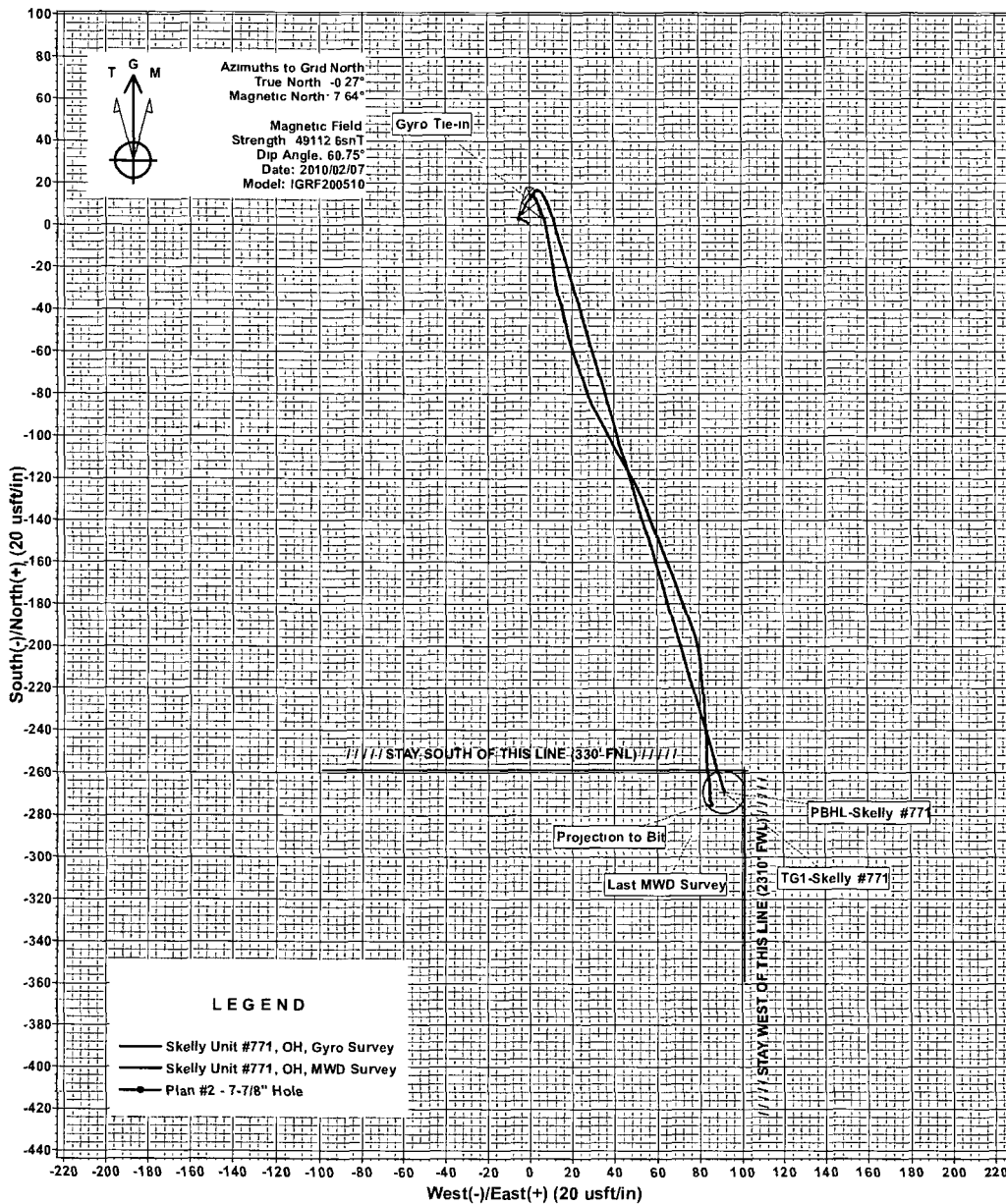
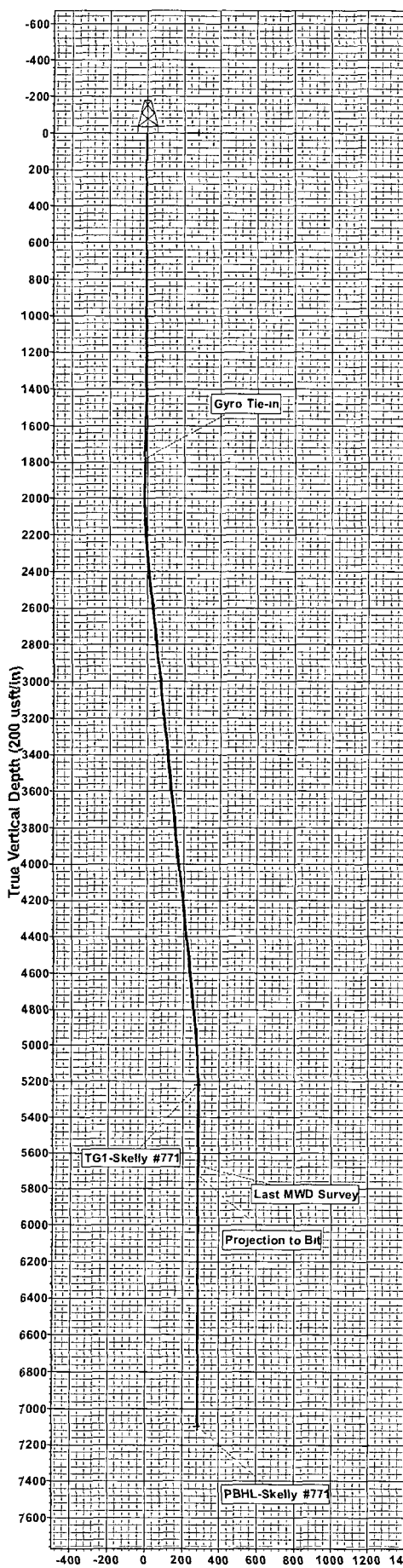
Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,782 00	1,781 85	11 67	0 02	Gyro Tie-in
5,688 00	5,672 86	-275 60	84 30	Last MWD Survey
5,739 00	5,723 85	-275 43	83 81	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____



Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Skelly Unit #771
Wellbore: OH
Design: Plan #2 - 7-7/8" Hole



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
North HL-Skelly #771	0 00	-259 20	101 40	664692.90	651283.30	32°49' 34.892 N	103°50' 27.056 W	Rectangle (Sides L0.00 W200.00)	
West HL-Skelly #771	0 00	-259 20	101 40	664692.90	651283.30	32°49' 34.892 N	103°50' 27.056 W	Rectangle (Sides L100.00 W0.00)	
TG1-Skelly #771	5220 00	-269 20	91 40	664682.90	651273.30	32°49' 34.793 N	103°50' 27.174 W	Point	
PBHL-Skelly #771	7100 00	-269 20	91 40	664682.90	651273.30	32°49' 34.793 N	103°50' 27.174 W	Circle (Radius: 10.00)	

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSet	Target	
1	1782.00	1.75	34.91	1781.85	11 67	0 02	0.00	0 00	-11.04		
2	1950.00	1.75	34.91	1949.77	15.88	2.96	0.00	0 00	-14.08		
3	2303.70	5.85	163.58	2302.92	3.01	11 16	2.00	139.76	0 74		
4	4942.62	5.85	163.58	4928.11	-254.90	87 18	0 00	0 00	269.40		
5	5235.02	0 00	0 00	5220.00	-269.20	91 40	2 00	180.00	284.29	TG1-Skelly #771	
6	7115.02	0 00	0 00	7100.00	-269.20	91 40	0 00	0 00	284.29	PBHL-Skelly #771	

WELL DETAILS: Skelly Unit #771

+N/-S	+E/-W	Northing	Ground Level	3886.00	Latitude	Longitude	Slot
0.00	0.00	664952.10	651181.90	32°49' 37.461 N	103°50' 28.230 W		

PROJECT DETAILS: Eddy County, NM (NAN27 NME)				Plan: Plan #2 - 7-7/8" Hole (Skelly Unit #771/OH)			
Geodetic System: US State Plane 1927 (Exact solution)	Created By: Julio Pina	Date: 07-Feb-10					
Datum: NAD 1927 (NADCON CONUS)							
Ellipsoid: Clarke 1866	Checked	Date:					
Zone: New Mexico East 3001							
System Datum: Mean Sea Level	Reviewed:	Date:					
	Approved:	Date:					