

30-015-38380



COG Operating LLC

Eddy County, NM (NAD27 NME)

Skelly Unit #806

Skelly Unit #806

OH - Job #32D0412389

Design: Actual

SDI Standard Survey Report

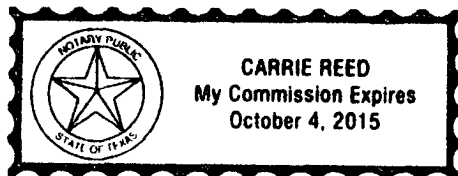
This survey is correct to the best of my knowledge and is supported by actual field data.

[Signature]

Notarized this date 14th of May, 2012.

[Signature]

Notary Signature
County of Midland
State of Texas





Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Skelly Unit #806
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3874.00usft (JW #4)
Site:	Skelly Unit #806	MD Reference:	RF @ 3874.00usft (JW #4)
Well:	Skelly Unit #806	North Reference:	Grid
Wellbore:	OH - Job #32D0412389	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Project	Eddy County, NM (NAD27 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 #806		
Site Position:	From: Map	Northing: 661,476 50 usft	Latitude: 32° 49' 3 084 N
		Easting: 650,871 50 usft	Longitude: 103° 50' 32 057 W
Position Uncertainty:	0 00 usft	Slot Radius: 13-3/16"	Grid Convergence: 0 27 °

Well	Skelly Unit #806		
Well Position	+N/-S 0 00 usft	Northing: 661,476 50 usft	Latitude: 32° 49' 3 084 N
	+E/-W 0 00 usft	Easting: 650,871 50 usft	Longitude: 103° 50' 32 057 W
Position Uncertainty	0 00 usft	Wellhead Elevation: usft	Ground Level: 3,861 00 usft

Wellbore	OH - Job #32D0412389				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	04/04/12	7 66	60 67	48,860

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	100 10

Survey Program	Date 04/09/12				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100 00	1,756 00	Gyro (OH - Job #32D0412389)	Keeper	Standard Wireline Keeper ver 1 0 2	
1,893 00	6,747 00	MWD (OH - Job #32D0412389)	MWD	MWD - Standard	

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	0 00
100 00	0 22	232 58	100 00	-0 12	-0 15	232 58	0 19	
200 00	0 10	251 25	200 00	-0 26	-0 39	236 01	0 47	
300 00	0 14	352 10	300 00	-0 17	-0 49	250 92	0 52	
400 00	0 06	239 86	400 00	-0 07	-0 55	262 36	0 55	
500 00	0 26	336 12	500 00	0 11	-0 69	278 90	0 69	
600 00	0 32	323 31	600 00	0 54	-0 94	299 70	1 09	
700 00	0 38	314 50	700 00	1 00	-1 35	306 43	1 68	
800 00	0 34	319 28	799 99	1 45	-1 78	309 24	2 30	
900 00	0 22	272 67	899 99	1 69	-2 16	307 93	2 74	
1,000 00	0 43	307 17	999 99	1 92	-2 65	305 91	3 28	



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Skelly Unit #806
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3874 00usft (JW #4)
Site:	Skelly Unit #806	MD Reference:	RF @ 3874 00usft (JW #4)
Well:	Skelly Unit #806	North Reference:	Grid
Wellbore:	OH - Job #32D0412389	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,100 00	0 40	339 21	1,099 99	2 48	-3 08	308 81	3 95
1,200 00	0 52	3 83	1,199 99	3 25	-3 17	315 74	4 54
1,300 00	0 74	7 18	1,299 98	4 35	-3 06	324 86	5 32
1,400 00	1 15	15 96	1,399 97	5 95	-2 70	335 58	6 54
1,500 00	1 44	33 26	1,499 94	7 97	-1 74	347 69	8 16
1,600 00	2 22	51 93	1,599 89	10 21	0 48	2 67	10 22
1,700 00	2 32	57 85	1,699 81	12 49	3 71	16 57	13 03
1,756 00	2 12	59 98	1,755 77	13 61	5 57	22 26	14 70
Gyro Tie-in							
1,893 00	2 02	40 20	1,892 68	16 72	9 32	29 15	19 14
1,956 00	1 80	60 58	1,955 65	18 05	10 90	31 13	21 09
2,018 00	2 37	92 56	2,017 61	18 47	13 03	35 20	22 61
2,080 00	2 46	101 35	2,079 55	18 15	15 62	40 70	23 95
2,143 00	2 46	111 11	2,142 50	17 40	18 20	46 29	25 18
2,205 00	3 34	106 63	2,204 42	16 41	21 17	52 23	26 79
2,268 00	4 13	104 43	2,267 28	15 31	25 13	58 64	29 43
2,330 00	5 14	104 26	2,329 08	14 07	29 98	64 86	33 12
2,392 00	5 85	105 58	2,390 79	12 54	35 72	70 65	37 86
2,492 00	5 45	105 40	2,490 31	9 91	45 21	77 63	46 28
2,584 00	4 65	98 72	2,581 95	8 19	53 11	81 24	53 73
2,678 00	4 87	102 61	2,675 62	6 74	60 77	83 67	61 14
2,771 00	5 01	103 46	2,768 28	4 93	68 57	85 89	68 74
2,865 00	5 51	110 16	2,861 88	2 42	76 80	88 20	76 83
2,959 00	5 10	108 65	2,955 48	-0 47	84 99	90 32	84 99
3,052 00	5 89	106 89	3,048 05	-3 18	93 47	91 95	93 53
3,146 00	5 45	107 94	3,141 59	-5 96	102 34	93 33	102 51
3,239 00	5 97	99 09	3,234 13	-8 08	111 31	94 15	111 61
3,334 00	5 78	99 76	3,328 63	-9 67	120 91	94 57	121 29
3,426 00	5 45	99 42	3,420 19	-11 17	129 78	94 92	130 26
3,520 00	5 54	99 86	3,513 76	-12 68	138 66	95 23	139 23
3,614 00	5 36	98 89	3,607 34	-14 14	147 46	95 48	148 14
3,706 00	5 15	100 87	3,698 95	-15 58	155 76	95 71	156 54
3,799 00	4 92	99 50	3,791 59	-17 02	163 80	95 93	164 68
3,892 00	5 45	105 22	3,884 21	-18 84	171 99	96 25	173 02
3,987 00	5 65	103 88	3,978 76	-21 15	180 88	96 67	182 12
4,081 00	5 37	106 62	4,072 33	-23 52	189 59	97 07	191 04
4,174 00	5 41	103 06	4,164 92	-25 75	198 03	97 41	199 70
4,268 00	5 19	104 96	4,258 52	-27 85	206 46	97 68	208.33
4,362 00	5 01	102 93	4,352 15	-29 87	214 56	97 92	216 63
4,455 00	5 19	104 08	4,444 78	-31.80	222 60	98 13	224 86
4,548 00	5 19	104 78	4,537 40	-33 89	230 75	98 36	233 22
4,641 00	5 19	103 55	4,630 01	-35 95	238 91	98 56	241 60
4,735 00	5 24	103 14	4,723 63	-37 93	247 22	98 72	250 11
4,829 00	5 10	101 97	4,817 24	-39 77	255.49	98 85	258 56



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Skelly Unit #806
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3874 00usft (JW #4)
Site:	Skelly Unit #806	MD Reference:	RF @ 3874 00usft (JW #4)
Well:	Skelly Unit #806	North Reference:	Grid
Wellbore:	OH - Job #32D0412389	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
4,917 49	5 02	101 31	4,905 38	-41 34	263 13	98 93	266 35
T1-Skelly #806							
4,924 00	5 01	101 26	4,911 87	-41 45	263 68	98 93	266 92
5,018 00	4 98	101 49	5,005 52	-43 07	271 71	99 01	275 10
5,109 00	4 92	103 81	5,096 18	-44 79	279 37	99 11	282 94
5,203 00	4 75	102 41	5,189 84	-46 58	287 08	99 22	290 84
5,297 00	4 67	105 20	5,283 53	-48 42	294 58	99 34	298 53
5,391 00	5 36	99 59	5,377 17	-50 16	302 60	99 41	306 73
5,484 00	5 47	96 35	5,469 75	-51 37	311 29	99 37	315 50
5,578 00	5 60	97 79	5,563 31	-52 49	320 28	99 31	324 56
5,671 00	5 08	98 17	5,655 91	-53 69	328 86	99 27	333 21
5,764 00	4 81	98 58	5,748 56	-54 86	336 79	99 25	341 23
5,858 00	4 79	96 70	5,842 23	-55 90	344 58	99 21	349 09
5,951 00	4 78	95 61	5,934 91	-56 73	352 29	99 15	356 83
6,045 00	5 10	94 76	6,028 56	-57 46	360 36	99 06	364 91
6,139 00	4 75	88 70	6,122 21	-57 72	368 41	98 90	372 91
6,233 00	5 01	93 35	6,215 87	-57 87	376 40	98 74	380 82
6,327 00	5 11	95 80	6,309 51	-58 54	384 66	98 65	389 09
6,389 00	5 09	104 61	6,371 26	-59 51	390 07	98 67	394 58
6,452 00	5 77	114 44	6,433 98	-61 52	395 66	98 84	400 41
6,546 00	5 76	114 21	6,527 50	-65 41	404 26	99 19	409 52
6,640 00	5 54	113 76	6,621 05	-69 18	412 72	99 52	418 47
6,695 00	5 46	112 84	6,675 79	-71 26	417 56	99 69	423 60
Last MWD Survey - PBHL-Skelly #806							
6,747 00	5 46	112 84	6,727 56	-73 18	422 12	99 84	428 41
Projection to Bit							

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,756 00	1,755 77	13 61	5 57	Gyro Tie-in
6,695 00	6,675 79	-71 26	417 56	Last MWD Survey
6,747 00	6,727 56	-73 18	422 12	Projection to Bit



Azimuths to Grid North
True North -0 27°
Magnetic North 7 39°

Magnetic Field
Strength 48860 2snT
Dip Angle 60 67°
Date: 04/04/2012
Model IGRF2010

To convert Magnetic North to Grid, Add 7 39°
To convert True North to Grid, Subtract 0 27°

Skelly Unit #806
Eddy County, NM (NAN27 NME)
Northing: (Y) 661476.50
Easting: (X) 650871.50
Plan #3 vs Actual - 7-7/8" Hole

WELL DETAILS: Skelly Unit #806						
+N/-S	+E/-W	Northing	Ground Level Easting	3861 00 Latitude	Longitude	
0 00	0 00	661476 50	650871 50	32° 49' 3 084 N	103° 50' 32 057 W	

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	1756 00	2 12	59 98	1755 77	13 61	5 57	0 00	0 00	3 10	
2	1950 00	2 12	59 98	1949 64	17 20	11 78	0 00	0 00	8 59	
3	2142 18	5 11	103 03	2141 44	17 04	23 21	2 00	65 12	19 86	
4	6718 93	5 11	103 03	6700 00	-74 90	420 40	0 00	0 00	427 02	PBHL-Skelly #806

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL-Skelly #806	6700 00	-74 90	420 40	661401 60	651291 90	32° 49' 2 324 N	103° 50' 27.135 W
- plan hits target center							

SITE DETAILS: Skelly Unit #806			
Site Centre Northing	661476 50		
Easting	650871 50		
Positional Uncertainty	0 00		
Convergence	0 27		
Local North	Grid		

PROJECT DETAILS: Eddy County, NM (NAN27 NME)	
Geodetic System	US State Plane 1927 (Exact solution)
Datum	NAD 1927 (NADCON CONUS)
Ellipsoid	Clarke 1866
Zone	New Mexico East 3001
System Datum	Mean Sea Level

FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	DipAngle DipDir
4900 00	4911 75	Top of Paddock	0 00

LEGEND	
—	Skelly Unit #806, OH - Job #32D0412389, Gyro
—	Skelly Unit #806, OH - Job #32D0412389, MWD
—	Plan #3 - 7-7/8" Hole

