

OPERATOR _____ COG _____
WELL/LEASE _____ Skelly Unit 766 _____
COUNTY _____ Eddy _____

STATE OF NEW MEXICO
DEVIATION REPORT

30-015-39699

168	0.53
377	1.01
574	0.73
860	0.46
1278	1.16
1857	2.53
1939	2.34
2002	2.16
2066	2.45
2257	4.45
2510	4.00
2606	4.65
2700	4.52
2796	3.86
2890	4.24
3081	4.16
3176	4.72
3461	4.80
3557	5.38
3653	5.31
3749	5.25
3843	4.94
3939	4.98
4033	4.48
4130	4.39
4221	4.75
4317	4.46
4412	4.08
4505	4.05
4789	4.63
4885	4.28
4979	4.89
5074	4.90
5170	4.88
5264	4.73
5359	4.74
5455	4.82
5550	4.73
5645	4.97
5741	5.30
5836	4.52
5931	4.47
6026	4.41
6121	4.50
6215	4.21
6309	4.43
6405	4.26
6500	4.20
6595	4.28
6682	4.02

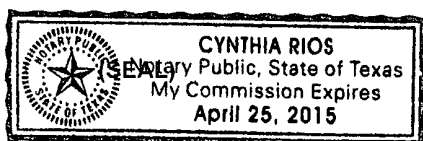
SIGNED BY: _____

RON SCANDOLARI, VP-CONTRACT DRILLING

STATE OF TEXAS

COUNTY OF MIDLAND

ON THIS 22 DAY OF March, 2012, BEFORE ME, C RIOS, A NOTARY
PUBLIC, PERSONALLY APPEARED RON SCANDOLARI, WHO ACKNOWLEDGED AND EXECUTED
THIS DOCUMENT. WITNESS MY HAND AND OFFICIAL SEAL.



Cynthia Rios
NOTARY PUBLIC



COG Operating LLC

Eddy County, NM (NAN27 NME)

Skelly Unit #766

Skelly Unit #766

OH - Job #32D0312278

Survey: MWD

SDI Standard Survey Report

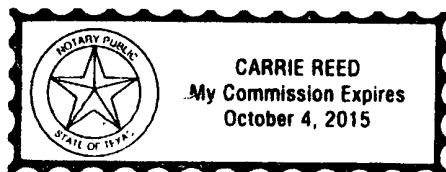
This survey is correct to the best of my knowledge and is supported by actual field data.

Reharter

Notarized this date 25th of April, 2012.

Carrie Reed

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 #766
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	RF @ 3910 00usft (Basic #35)
Site:	Skelly Unit #766	MD Reference:	RF @ 3910 00usft (Basic #35)
Well:	Skelly Unit #766	North Reference:	Grid
Wellbore:	OH - Job #32D0312278	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

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 #766		
Site Position:		Northing:	664,376 30 usft
From:	Map	Easting:	654,091 90 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 49' 31 628 N
		Longitude:	103° 49' 54 160 W
		Grid Convergence:	0 27 °

Well	Skelly Unit #766		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	usft
		Latitude:	32° 49' 31 628 N
		Longitude:	103° 49' 54 160 W
		Ground Level:	3,898 00 usft

Wellbore	OH - Job #32D0312278		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	03/06/12	7 66
			Dip Angle (°)
			60 68
			Field Strength (nT)
			48,874

Design	Actual		
Audit Notes:			
Version:	1 0	Phase:	ACTUAL
		Tie On Depth:	0 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0 00	0 00	0 00
			Direction (°)
			325 93

Survey Program	Date 04/24/12		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
100 00	1,834 00	Gyro (OH - Job #32D0312278)	Keeper
1,939 00	6,731 00	MWD (OH - Job #32D0312278)	MWD
			Description
			Standard Wireline Keeper ver 1 0 2
			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
100 00	0 61	327 72	100 00	0 45	-0 28	327 72	0 53
200 00	0 77	304 38	199 99	1 28	-1 12	318 72	1 70
300 00	0 83	292 75	299 98	1 94	-2 35	309 58	3 04
400 00	0 85	296 15	399 97	2 55	-3 68	304 68	4 47
500 00	0 50	303 61	499 96	3 11	-4 71	303 48	5 65
600 00	0 49	327 96	599 96	3 72	-5 30	305 06	6 47
700 00	0 38	345 19	699 96	4 40	-5 61	308 12	7 13
800 00	0 48	344 74	799 95	5 13	-5 81	311 44	7 74
900 00	0 61	352 49	899 95	6 06	-5 99	315 35	8 52
1,000 00	0 54	3 77	999 94	7 06	-6 02	319 51	9 28



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Skelly Unit #766
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	RF @ 3910 00usft (Basic #35)
Site:	Skelly Unit #766	MD Reference:	RF @ 3910 00usft (Basic #35)
Well:	Skelly Unit #766	North Reference:	Grid
Wellbore:	OH - Job #32D0312278	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 56	16 40	1,099 94	8 00	-5 85	323 78	9 91
1,200 00	0 83	28 97	1,199 93	9 10	-5 37	329 47	10 56
1,300 00	1 21	28 84	1,299 92	10 66	-4 51	337 08	11 57
1,400 00	1 85	23 25	1,399 88	13 06	-3 36	345 58	13 49
1,500 00	2 35	28 55	1,499 81	16 35	-1 74	353 92	16 44
1,600 00	2 28	26 12	1,599 73	19 93	0 11	0 33	19 94
1,700 00	2 66	28 98	1,699 64	23 75	2 11	5 08	23 84
1,800 00	2 64	33 49	1,799 53	27 70	4 51	9 24	28 07
1,834 00	2 61	31 29	1,833 50	29 02	5 34	10 43	29 50
TG1-Skelly #766 - PBHL-Skelly #766							



Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Skelly Unit #766
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	RF @ 3910 00usft (Basic #35)
Site:	Skelly Unit #766	MD Reference:	RF @ 3910.00usft (Basic #35)
Well:	Skelly Unit #766	North Reference:	Grid
Wellbore:	OH - Job #32D0312278	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM-Regulatory

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 #766		
Site Position:		Northing:	664,376 30 usft
From:	Map	Easting:	654,091 90 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 49' 31 628 N
		Longitude:	103° 49' 54 160 W
		Grid Convergence:	0 27 °

Well	Skelly Unit #766		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	usft
		Latitude:	32° 49' 31 628 N
		Longitude:	103° 49' 54 160 W
		Ground Level:	3,898 00 usft

Wellbore	OH - Job #32D0312278		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	03/06/12	7 66
			Dip Angle
			(°)
			60 68
			Field Strength
			(nT)
			48,874

Design	Actual		
Audit Notes:			
Version:	1 0	Phase:	ACTUAL
		Tie On Depth:	0 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0 00	0 00	0 00
			Direction
			(°)
			325 93

Survey Program	Date 04/24/12		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100 00	1,834 00	Gyro (OH - Job #32D0312278)	Keeper
1,939 00	6,731 00	MWD (OH - Job #32D0312278)	MWD
			Description
			Standard Wireline Keeper ver 1 0 2
			MWD - Standard

Survey			
Measured Depth	Inclination	Azimuth	True Vertical
(usft)	(°)	(°)	Depth
1,834 00	2 61	31 29	1,833 50
			North/South
			(usft)
			29 02
			East/West
			(usft)
			5 34
			Closure Azimuth
			(°)
			10 43
			Closure Distance
			(usft)
			29 50
Gyro Tie-in			
1,939 00	2 34	30 01	1,938 40
2,002 00	2 16	22 47	2,001 35
2,066 00	2 45	356 23	2,065 30
2,130 00	3 21	353 32	2,129 22
2,193 00	4 08	354 16	2,192 09
2,257 00	4 45	347 58	2,255 92
2,320 00	4 83	336 62	2,318 71
2,415 00	4 73	333 97	2,413 38
2,510 00	4 00	336 33	2,508 10
			67 99
			-0 31
			359 74
			67 99



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Skelly Unit #766
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	RF @ 3910.00usft (Basic #35)
Site:	Skelly Unit #766	MD Reference:	RF @ 3910 00usft (Basic #35)
Well:	Skelly Unit #766	North Reference:	Grid
Wellbore:	OH - Job #32D0312278	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)
2,606 00	4 65	326 90	2,603 83	74 31	-3 78	357 09	74 41
2,700 00	3 89	326 36	2,697 57	80 16	-7 62	354 57	80 52
2,796 00	3 86	319 03	2,793 35	85 31	-11 55	352 29	86 09
2,890 00	4 24	318 02	2,887 12	90 28	-15 94	349 98	91 68
2,985 00	4 94	323 25	2,981 81	96 17	-20 74	347 83	98 38
3,081 00	4 16	322 31	3,077 51	102 24	-25 34	346 08	105 33
3,176 00	4 72	314 41	3,172 22	107 70	-30 24	344 32	111 87
3,271 00	4 15	313 79	3,266 94	112 82	-35 52	342 53	118 27
3,367 00	5 28	320 91	3,362 61	118 65	-40 81	341 02	125 47
3,461 00	4 80	321 30	3,456 25	125 07	-45 99	339 81	133 26
3,557 00	5 38	322 37	3,551 87	131 77	-51 25	338 75	141 39
3,653 00	5 31	324 44	3,647 45	138 95	-56 58	337 84	150 03
3,749 00	5 25	324 58	3,743 05	146 14	-61 71	337 11	158 64
3,843 00	4 94	324 06	3,836 67	152 93	-66 58	336 47	166 79
3,939 00	4 98	325 97	3,932 31	159.73	-71 34	335 93	174 93
4,033 00	4 48	318 63	4,026 00	165 86	-76 05	335 37	182 47
4,127 00	4 39	321 95	4,119 71	171 45	-80 69	334 80	189 49
4,221 00	4 75	320 25	4,213 41	177 28	-85 40	334 28	196 77
4,317 00	4 46	327 30	4,309 11	183.47	-89 96	333 88	204 34
4,412 00	4 08	308 30	4,403 85	188 68	-94 61	333 37	211 07
4,505 00	4 05	311 42	4,496 61	192 90	-99 66	332 68	217 12
4,601 00	3 98	311 27	4,592 38	197 34	-104 71	332 05	223 40
4,695 00	4 77	311 04	4,686 10	202 06	-110 11	331 41	230 11
4,789 00	4 63	311 79	4,779 79	207 15	-115 89	330 78	237 36
4,885 00	4 28	308 30	4,875 50	211 95	-121 59	330 16	244 35
4,933 10	4 59	307 78	4,923 45	214 25	-124 52	329 84	247 80
TG1-Skelly #766							
4,979 00	4 89	307 34	4,969 20	216 56	-127 53	329 51	251 32
5,074 00	4 90	307 16	5,063 85	221 46	-133 98	328 83	258 84
5,169 00	4 88	304 74	5,158 50	226 22	-140 53	328 15	266 32
5,264 00	4 73	306 49	5,253 17	230 85	-147 00	327 51	273 68
5,359 00	4 74	311 26	5,347 85	235 77	-153 10	327 00	281 12
5,455 00	4 82	311 34	5,443 51	241 05	-159 11	326 57	288 83
5,550 00	4 73	312 92	5,538 18	246 35	-164 98	326 19	296 49
5,645 00	4 97	323 17	5,632 84	252 31	-170 31	325 98	304 41
5,741 00	5 30	324 19	5,728 46	259 24	-175 40	325 92	313 00
5,836 00	4 52	324 89	5,823 11	265 86	-180 12	325 88	321 13
5,931 00	4 47	325 19	5,917 82	271 96	-184 38	325 86	328 57
6,026 00	4 41	322 76	6,012 53	277 91	-188 71	325 82	335 92
6,121 00	4 50	324 30	6,107.24	283 84	-193 09	325 77	343 29
6,215 00	4 21	323 80	6,200 97	289 62	-197 28	325 74	350 43
6,309 00	4 43	326 85	6,294 71	295 44	-201 31	325 73	357 51
6,405 00	4 26	325 85	6,390 43	301 50	-205 34	325 74	364 78
6,500 00	4 20	322 74	6,485 17	307 19	-209 42	325 72	371 78
6,595 00	4 28	322 94	6,579 91	312 78	-213 66	325 66	378 80



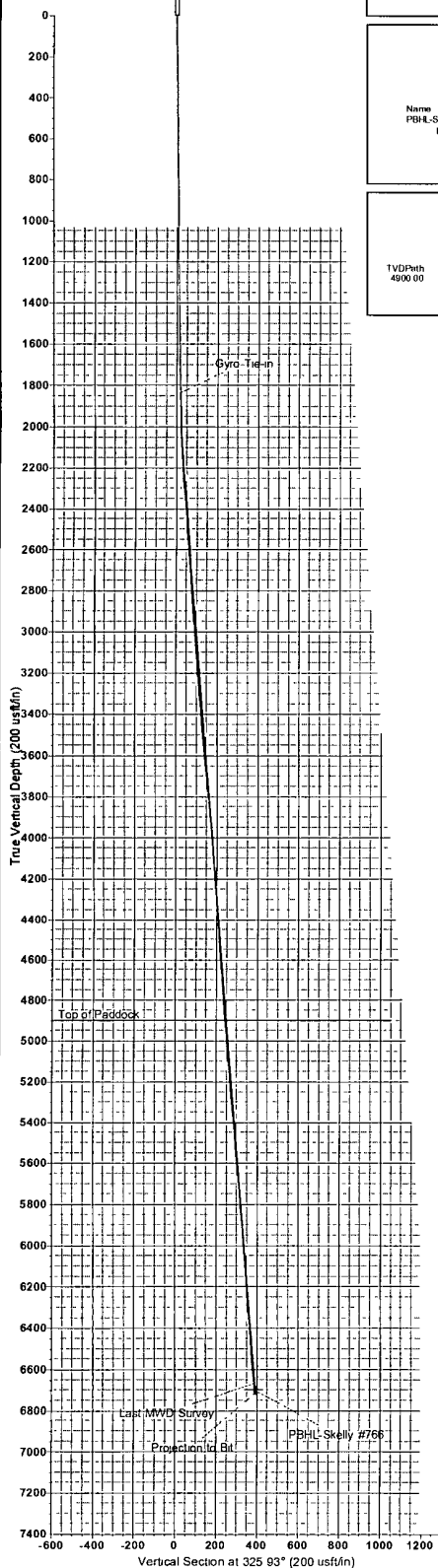
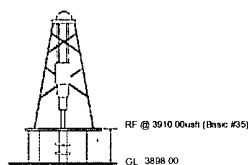
Scientific Drilling International, Inc.
SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Skelly Unit #766
Project:	Eddy County, NM (NAN27 NME)	TVD Reference:	RF @ 3910 00usft (Basic #35)
Site:	Skelly Unit #766	MD Reference:	RF @ 3910 00usft (Basic #35)
Well:	Skelly Unit #766	North Reference:	Grid
Wellbore:	OH - Job #32D0312278	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)
6,682 00	4.02	324 79	6,666 68	317 87	-217 38	325 63	385 09
Last MWD Survey							
6,715 72	4 02	324.79	6,700 32	319 80	-218 74	325 63	387 45
PBHL-Skelly #766							
6,731 00	4 02	324 79	6,715 56	320 67	-219 36	325 63	388 52
Projection to Bit							

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,834 00	1,833 50	29 02	5 34	Gyro Tie-in
6,682 00	6,666 68	317 87	-217 38	Last MWD Survey
6,731 00	6,715 56	320 67	-219 36	Projection to Bit



WELL DETAILS Skelly Unit #700

+N-S	+E-W	Northing	Ground Level	3898.00	Latitude	Longitude	Station
0.00	0.00	664376.30	Easting		32° 49' 31.828 N	103° 48' 54.160 W	

SITE DETAILS Skelly Unit #700

Site Centre Northing 664376 30
Easting 654091 90

Positional Uncertainty	0.00
Convergence	0.27
Local North	Grid

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dlog	TFace	VSec	Target
1	1834 00	2 61	31 29	1833 50	26 02	5 34	0 00	0 00	21 04	
2	1950 00	2 61	31 26	1949 38	33 53	8 09	0 00	0 00	23 24	
3	2198 47	4 53	32 15	2188 48	44 57	5 25	2 00	-103 95	33 98	
4	8715 19	4 53	321 25	8700 00	374 70	-219 90	0 00	0 00	391 99	PBH Sixty #700

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude	Shape
PBH-LS-Sientia #766 plan has target center	6700.00	324.70	-219.80	664701.00	653872.30	32° 49' 34.851 N	103° 49' 56.715 W	Circle (Radius: 50.00)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
4900.00	4909.54	Top of Padlock	0.00	

CASING DETAILS

TVD	MD	Name	Size
1850.00		8-5/8" Casing	8 5/8

PROJECT DETAILS Eddy County NM (NAN27NME)

Geodetic System US State Plane 1927 (Exact sol)
Datum NAD 1927 (NADCON CONUS)
Ellipsoid Clarke 1866
Zone New Mexico East 3001

System Datum: Mean Sea Level

