

API # 30-013-35969

COG Operating

Eddy County, NM (NAN27 NME)

Skelly Unit #966

Skelly Unit #966

OH

Plan: Plan #4 - 7-7/8" Hole

SHL = 1500' FSL & 1310' FWL

BHL = 1700' FSL & 940' FWL

PADDOCK TOP = 1700' FSL & 940' FWL

Standard Planning Report

23 February, 2009

SDI Planning Report

Database: DB 16
Company: COG Operating
Project: Eddy County, NM (NAN27 NME)
Site: Skelly Unit #966
Well: Skelly Unit #966
Wellbore: OH
Design: Plan #4 - 7-7/8" Hole

Local Co-ordinate Reference: Well Skelly Unit #966
TVD Reference: Ground Elev @ 3858.00ft (Rig Silver Oak #8)
MD Reference: Ground Elev @ 3858.00ft (Rig Silver Oak #8)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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 #966
Site Position: Northing: 666,481.600 ft Latitude: 32° 49' 52.875 N
From: Map Easting: 644,992.700 ft Longitude: 103° 51' 40.682 W
Position Uncertainty: 0 00 ft Slot Radius: " Grid Convergence: 0 26 °

Well: Skelly Unit #966
Well Position: +N/-S 0 00 ft Northing: 666,481.600 ft Latitude: 32° 49' 52.875 N
+E/-W 0 00 ft Easting: 644,992.700 ft Longitude: 103° 51' 40.682 W
Position Uncertainty: 0.00 ft Wellhead Elevation: ft Ground Level: 3,858.00 ft

Wellbore: OH
Magnetics: Model Name Sample Date Declination (°) Dip Angle (°) Field Strength (nT)
 IGRF200510 2/23/2009 8.03 60.77 49,205

Design: Plan #4 - 7-7/8" Hole
Audit Notes:
Version: Phase: PLAN Tie On Depth: 1,780.00
Vertical Section: Depth From (TVD) +N/-S +E/-W Direction
 0 00 0.00 0.00 297 96

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
1,780.00	1.26	62.35	1,779.83	-3.53	9.79	0.00	0.00	0.00	0.00	
1,950.00	1.26	62.35	1,949.79	-1.80	13.10	0.00	0.00	0.00	0.00	
2,473.78	9.69	296.74	2,471.22	20.77	-21.27	2.00	1.61	-23.98	-131.17	
4,554.96	9.69	296.74	4,522.70	178.40	-334.18	0.00	0.00	0.00	0.00	
5,039.57	0.00	0.00	5,005.00	196.80	-370.70	2.00	-2.00	0.00	180.00	PP-Skelly #966
6,634.57	0.00	0.00	6,600.00	196.80	-370.70	0.00	0.00	0.00	0.00	PBHL-Skelly #966

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MD Reference: Ground Elev @ 3858.00ft (Rig Silver Oak #8)
North Reference: Gnd
Survey Calculation Method: Minimum Curvature

Planned 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)
1,780.00	1.26	62.35	1,779.83	-3.53	9.79	-10.31	0.00	0.00	0.00
1,800.00	1.26	62.35	1,799.83	-3.33	10.18	-10.55	0.00	0.00	0.00
1,850.18	1.26	62.35	1,850.00	-2.82	11.16	-11.18	0.00	0.00	0.00
8 5/8" Intermediate Casing									
1,900.00	1.26	62.35	1,899.80	-2.31	12.13	-11.80	0.00	0.00	0.00
1,950.00	1.26	62.35	1,949.79	-1.80	13.10	-12.42	0.00	0.00	0.00
KOP Start Build 2.00°/100'									
2,000.00	0.96	10.98	1,999.78	-1.13	13.67	-12.61	2.00	-0.59	-102.73
2,100.00	2.37	314.77	2,099.74	1.15	12.36	-10.38	2.00	1.40	-56.22
2,200.00	4.28	303.96	2,199.57	4.69	7.80	-4.69	2.00	1.91	-10.80
2,300.00	6.24	299.88	2,299.15	9.48	0.00	4.45	2.00	1.97	-4.09
2,400.00	8.22	297.75	2,398.34	15.52	-11.05	17.04	2.00	1.98	-2.13
2,409.43	8.41	297.60	2,407.68	16.15	-12.26	18.40	2.00	1.99	-1.58
EOC hold 9.19°									
2,473.78	9.69	296.74	2,471.22	20.77	-21.27	28.52	2.00	1.99	-1.34
2,500.00	9.69	296.74	2,497.07	22.76	-25.21	32.94	0.00	0.00	0.00
2,600.00	9.69	296.74	2,595.64	30.33	-40.25	49.77	0.00	0.00	0.00
2,700.00	9.69	296.74	2,694.21	37.91	-55.28	66.60	0.00	0.00	0.00
2,800.00	9.69	296.74	2,792.79	45.48	-70.32	83.43	0.00	0.00	0.00
2,900.00	9.69	296.74	2,891.36	53.05	-85.35	100.26	0.00	0.00	0.00
3,000.00	9.69	296.74	2,989.93	60.63	-100.39	117.10	0.00	0.00	0.00
3,100.00	9.69	296.74	3,088.50	68.20	-115.42	133.93	0.00	0.00	0.00
3,200.00	9.69	296.74	3,187.08	75.78	-130.46	150.76	0.00	0.00	0.00
3,300.00	9.69	296.74	3,285.65	83.35	-145.49	167.59	0.00	0.00	0.00
3,400.00	9.69	296.74	3,384.22	90.92	-160.53	184.42	0.00	0.00	0.00
3,500.00	9.69	296.74	3,482.80	98.50	-175.56	201.25	0.00	0.00	0.00
3,600.00	9.69	296.74	3,581.37	106.07	-190.60	218.08	0.00	0.00	0.00
3,700.00	9.69	296.74	3,679.94	113.65	-205.63	234.92	0.00	0.00	0.00
3,800.00	9.69	296.74	3,778.51	121.22	-220.67	251.75	0.00	0.00	0.00
3,900.00	9.69	296.74	3,877.09	128.80	-235.71	268.58	0.00	0.00	0.00
4,000.00	9.69	296.74	3,975.66	136.37	-250.74	285.41	0.00	0.00	0.00
4,100.00	9.69	296.74	4,074.23	143.94	-265.78	302.24	0.00	0.00	0.00
4,200.00	9.69	296.74	4,172.80	151.52	-280.81	319.07	0.00	0.00	0.00
4,300.00	9.69	296.74	4,271.38	159.09	-295.85	335.91	0.00	0.00	0.00
4,400.00	9.69	296.74	4,369.95	166.67	-310.88	352.74	0.00	0.00	0.00
4,500.00	9.69	296.74	4,468.52	174.24	-325.92	369.57	0.00	0.00	0.00
4,554.96	9.69	296.74	4,522.70	178.40	-334.18	378.82	0.00	0.00	0.00
4,577.32	9.24	296.74	4,544.75	180.06	-337.47	382.50	2.00	-2.00	0.00
Start Drop 2.00°/100'									
4,600.00	8.79	296.74	4,567.15	181.66	-340.64	386.05	2.00	-2.00	0.00
4,700.00	6.79	296.74	4,666.22	187.76	-352.75	399.60	2.00	-2.00	0.00
4,800.00	4.79	296.74	4,765.71	192.30	-361.76	409.69	2.00	-2.00	0.00
4,900.00	2.79	296.74	4,865.48	195.27	-367.66	416.30	2.00	-2.00	0.00
5,000.00	0.79	296.74	4,965.43	196.68	-370.46	419.43	2.00	-2.00	0.00
5,036.75	0.06	296.74	5,002.18	196.80	-370.70	419.70	2.00	-2.00	0.00
EOC hold 0.00°									
5,039.57	0.00	0.00	5,005.00	196.80	-370.70	419.70	2.00	-2.00	0.00
PP-Skelly #966									
6,634.57	0.00	0.00	6,600.00	196.80	-370.70	419.70	0.00	0.00	0.00
PBHL-Skelly #966									

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Wellbore: OH
Design: Plan #4 - 7-7/8" Hole

Local Co-ordinate Reference: Well Skelly Unit #966
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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL-Skelly #966 - plan hits target - Point	0.00	0.00	6,600.00	196.80	-370.70	666,678.400	644,622.000	32° 49' 54.839 N	103° 51' 45.016 W
PP-Skelly #966 - plan hits target - Point	0.00	0.00	5,005.00	196.80	-370.70	666,678.400	644,622.000	32° 49' 54.839 N	103° 51' 45.016 W

Casing Points

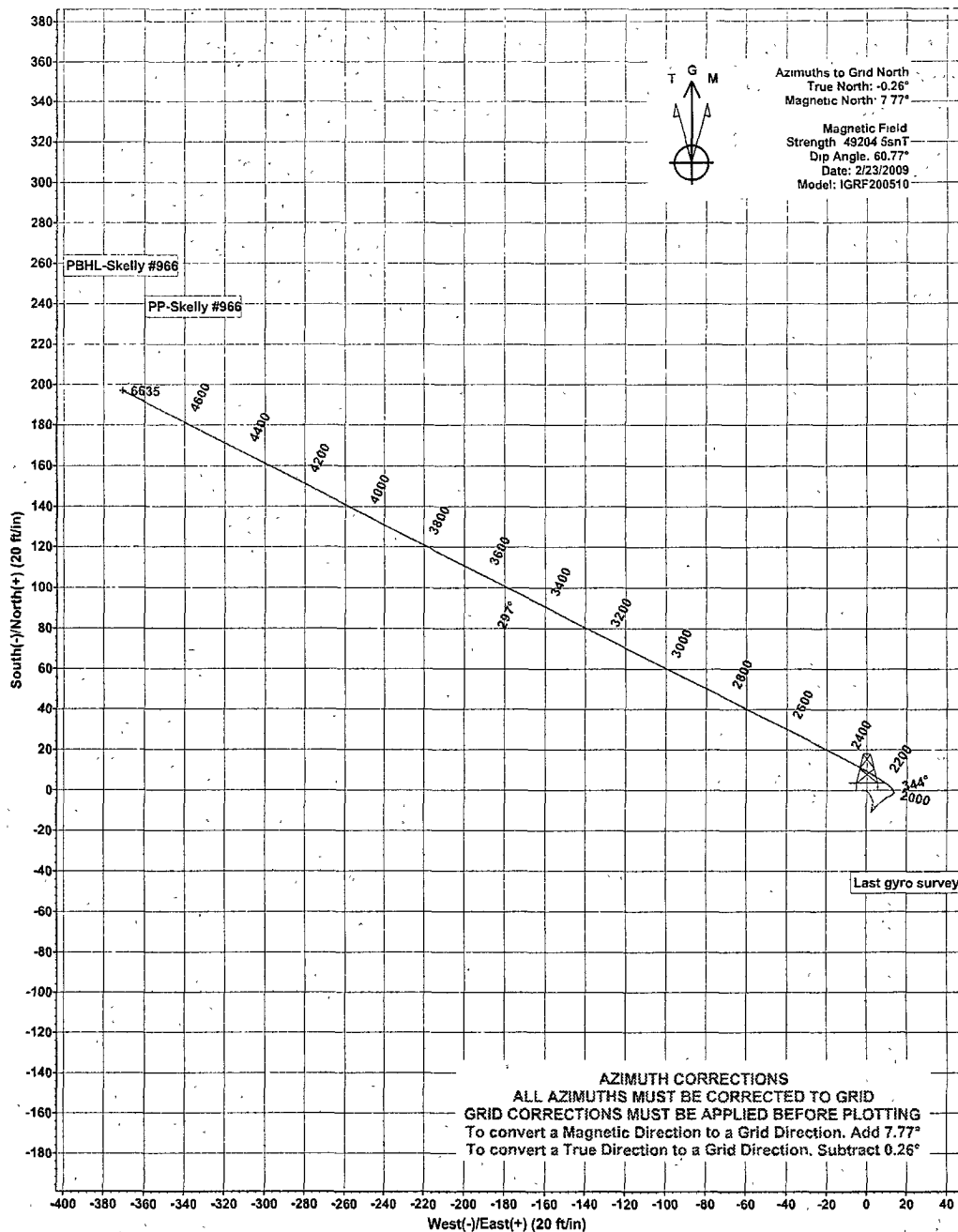
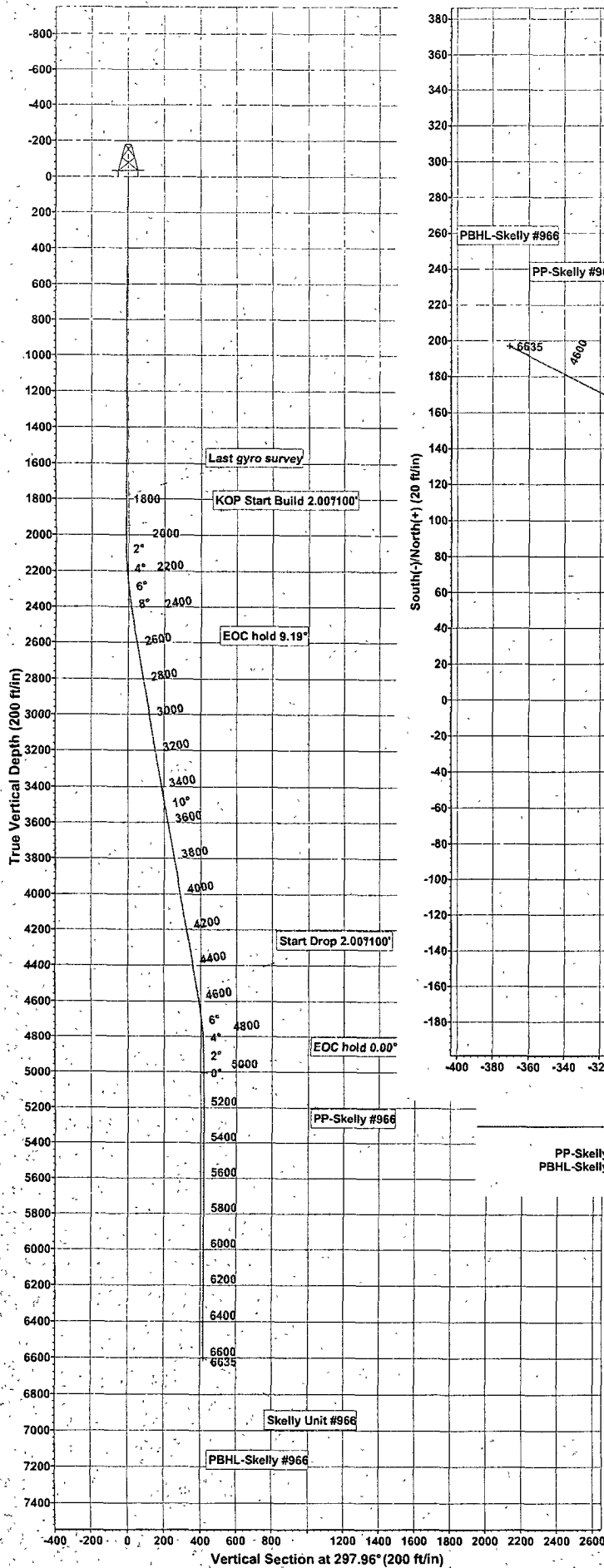
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,850.18	1,850.00	8 5/8" Intermediate Casing	8-5/8	10-5/8

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,950.00	1,950.00	0.00	0.00	KOP Start Build 2.00°/100'
2,409.43	2,407.46	17.24	-32.47	EOC hold 9.19°
4,577.32	4,547.54	179.56	-338.23	Start Drop 2.00°/100'
5,036.75	5,005.00	196.80	-370.70	EOC hold 0.00°

COG Operating

Scientific Drilling for COG Operating
 Site: Eddy County, NM (NAN27 NME)
 Well: Skelly Unit #966
 Wellbore: OH
 Design: Plan #4 - 7-7/8" Hole



AZIMUTH CORRECTIONS
 ALL AZIMUTHS MUST BE CORRECTED TO GRID
 GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
 To convert a Magnetic Direction to a Grid Direction, Add 7.77°
 To convert a True Direction to a Grid Direction, Subtract 0.26°

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP-Skelly #966	5005.00	196.80	-370.70	666678.400	644622.000	32°49' 54.839 N	103°51' 45.016 W	Point
PBHL-Skelly #966	6600.00	196.80	-370.70	666678.400	644622.000	32°49' 54.839 N	103°51' 45.016 W	Point

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	1780.00	1.26	62.35	1779.83	-3.53	9.79	0.00	0.00	-10.31	
2	1950.00	1.26	62.35	1949.79	-1.80	13.10	0.00	0.00	-12.42	
3	2473.78	9.69	296.74	2471.22	20.77	-21.27	2.00	-131.17	28.52	
4	4554.96	9.69	296.74	4522.70	178.40	-334.18	0.00	0.00	378.82	
5	5039.57	0.00	0.00	5005.00	196.80	-370.70	2.00	180.00	419.70	PP-Skelly #966
6	6634.57	0.00	0.00	6600.00	196.80	-370.70	0.00	0.00	419.70	PBHL-Skelly #966

WELL DETAILS: Skelly Unit #966

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	666481.600	644992.700	32°49' 52.875 N	103°51' 40.682 W	

PROJECT DETAILS: Eddy County, NM (NAN27 NME)				Plan: Plan #4 - 7-7/8" Hole (Skelly Unit #966/OH)			
Geodetic System: US State Plane 1927 (Exact solution)				Created By: Julio Pina			
Datum: NAD 1927 (NADCON CONUS)				Date: 23-Feb-09			
Ellipsoid: Clarke 1866				Checked: _____			
Zone: New Mexico East 3001				Reviewed: _____			
System Datum: Mean Sea Level				Approved: _____			