



COG Operating LLC

Eddy County, NM (NAN27 NME)

Skelly Unit #689

Skelly Unit #689

OH

Plan: Plan #1 7-7/8" Hole

SHL = 475' FNL & 214' FWL

BHL = 340' FNL & 340' FWL

Top of Paddock = 99' N of Surface & 91' E of Surface @ 4800' TVD

Standard Planning Report

05 December, 2011





Scientific Drilling
Planning Report



Company:	EDM-Julio	Local Co-ordinate Reference:	Site Skelly Unit #889
Operator:	COG Operating LLC	TVD Reference:	GL Elev. @ 3734.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev. @ 3734.00usft
Site:	Skelly Unit #889	North Reference:	Grid
Well:	Skelly Unit #889	Survey Calculation Method:	Minimum Curvature
Wellhead:	OH		
Design:	Plan #1 7-7/8" Hole		

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 #889			
Site Position:		Northing:	684,459.40 usft	Latitude: 32° 49' 33 140 N
From:	Map	Easting:	638,627.00 usft	Longitude: 103° 52' 55.387 W
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.24 °

Well:	Skelly Unit #889			
Well Position	+N/-S	0.00 usft	Northing:	664,459.40 usft
	+E/-W	0.00 usft	Easting:	638,627.00 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	Ground Level:	3,734.00 usft

Wellbore:	OH				
Magnetic:	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	2011/12/05	(°) 7.72	(°) 60.68	(AT) 48,895

Design:	Plan #1 7-7/8" Hole			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	42.65

Plan Section										
Measured Depth	Horizontal	Azimuth	Vertical	+N/-S	+E/-W	Logging	Build	Turn	TVD	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,203.37	4.07	42.65	2,203.20	5.31	4.89	2.00	2.00	0.00	42.65	
4,803.01	4.07	42.65	4,596.80	130.49	120.21	0.00	0.00	0.00	0.00	
4,806.39	0.00	0.00	4,800.00	135.80	125.10	2.00	-2.00	0.00	180.00	TG1-SU #889
6,906.39	0.00	0.00	6,900.00	135.80	125.10	0.00	0.00	0.00	0.00	PBHL-SU #889



Scientific Drilling
Planning Report



Drill Team: EDM-Julio
Client: COG Operating LLC
Project: Eddy County, NM (NAN27 NME)
Site: Skelly Unit #889
Well: Skelly Unit #889
Wellbore: OH
Design: Plan #1 7-7/8" Hole

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Site Skelly Unit #889
GL Elev. @ 3734.00usft
GL Elev. @ 3734.00usft
Grid
Minimum Curvature

Measured Depth (usft)	Inclination (°)	Asimuth (°)	Vertical Depth (usft)	MD (usft)	TVD (usft)	Vertical Section (usft)	Logging 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
West HL-SU #889 - North HL-SU #889									
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8-5/8" Casing									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Start Build 2.00°/100'									
2,100.00	2.00	42.65	2,099.98	1.28	1.18	1.75	2.00	2.00	0.00
2,200.00	4.00	42.65	2,199.84	5.13	4.73	6.98	2.00	2.00	0.00
2,203.37	4.07	42.65	2,203.20	5.31	4.89	7.22	2.00	2.00	0.00
EOC hold 4.07°									
2,300.00	4.07	42.65	2,299.59	10.35	9.53	14.07	0.00	0.00	0.00
2,400.00	4.07	42.65	2,399.33	15.56	14.34	21.16	0.00	0.00	0.00
2,500.00	4.07	42.65	2,499.08	20.78	19.14	28.26	0.00	0.00	0.00
2,600.00	4.07	42.65	2,598.83	26.00	23.95	35.35	0.00	0.00	0.00
2,700.00	4.07	42.65	2,698.58	31.22	28.76	42.44	0.00	0.00	0.00
2,800.00	4.07	42.65	2,798.33	36.43	33.56	49.53	0.00	0.00	0.00
2,900.00	4.07	42.65	2,898.07	41.65	38.37	56.63	0.00	0.00	0.00
3,000.00	4.07	42.65	2,997.82	46.87	43.17	63.72	0.00	0.00	0.00
3,100.00	4.07	42.65	3,097.57	52.08	47.98	70.81	0.00	0.00	0.00
3,200.00	4.07	42.65	3,197.32	57.30	52.78	77.91	0.00	0.00	0.00
3,300.00	4.07	42.65	3,297.07	62.52	57.59	85.00	0.00	0.00	0.00
3,400.00	4.07	42.65	3,396.82	67.73	62.40	92.09	0.00	0.00	0.00
3,500.00	4.07	42.65	3,496.56	72.95	67.20	99.19	0.00	0.00	0.00
3,600.00	4.07	42.65	3,596.31	78.17	72.01	106.28	0.00	0.00	0.00
3,700.00	4.07	42.65	3,696.06	83.38	76.81	113.37	0.00	0.00	0.00
3,800.00	4.07	42.65	3,795.81	88.60	81.62	120.47	0.00	0.00	0.00
3,900.00	4.07	42.65	3,895.56	93.82	86.43	127.56	0.00	0.00	0.00
4,000.00	4.07	42.65	3,995.30	99.03	91.23	134.65	0.00	0.00	0.00
4,004.71	4.07	42.65	4,000.00	99.28	91.46	134.99	0.00	0.00	0.00
Top of Paddock									
4,100.00	4.07	42.65	4,095.05	104.25	96.04	141.74	0.00	0.00	0.00
4,200.00	4.07	42.65	4,194.80	109.47	100.84	148.84	0.00	0.00	0.00
4,300.00	4.07	42.65	4,294.55	114.69	105.65	155.93	0.00	0.00	0.00
4,400.00	4.07	42.65	4,394.30	119.90	110.45	163.02	0.00	0.00	0.00
4,500.00	4.07	42.65	4,494.04	125.12	115.26	170.12	0.00	0.00	0.00
4,600.00	4.07	42.65	4,593.79	130.34	120.07	177.21	0.00	0.00	0.00
4,603.01	4.07	42.65	4,596.80	130.49	120.21	177.42	0.00	0.00	0.00
Start Drop 2.00°/100'									
4,700.00	2.13	42.65	4,693.64	134.35	123.76	182.66	2.00	-2.00	0.00
4,800.00	0.13	42.65	4,793.61	135.79	125.10	184.63	2.00	-2.00	0.00
4,806.39	0.00	42.65	4,800.00	135.80	125.10	184.64	2.00	-2.00	0.00
EOC hold 0.00° - TG1-SU #889									
6,906.39	0.00	0.00	6,900.00	135.80	125.10	184.64	0.00	0.00	0.00
PBHL-SU #889									



Scientific Drilling Planning Report



Drill Site: EDM-Julio
Company: COG Operating LLC
Location: Eddy County, NM (NAN27 NME)
Well: Skelly Unit #689
State: Skelly Unit #689
Wellhead: OH
Design: Plan #1 7-7/8" Hole

Local Coordinates Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Site Skelly Unit #689
GL Elev. @ 3734.00usft
GL Elev. @ 3734.00usft
Grid
Minimum Curvature

Drilling Targets

Target Name	Drill Angle (°)	Drill Dir. (°)	TVD (usft)	MLD (usft)	E/W (usft)	Northings (usft)	Eastings (usft)	Latitude	Longitude
West HL-SU #689	0.00	0.01	0.00	145.80	115.10	664,605.20	638,742.10	32° 49' 34.578 N	103° 52' 54.031 W
- plan misses target center by 185.76usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Rectangle (sides W0.00 H100.00 D0.00)									
North HL-SU #689	0.00	0.01	0.00	145.80	115.10	664,605.20	638,742.10	32° 49' 34.578 N	103° 52' 54.031 W
- plan misses target center by 185.76usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Rectangle (sides W100.00 H0.00 D0.00)									
TG1-SU #689	0.00	0.00	4,800.00	135.80	125.10	664,595.20	638,752.10	32° 49' 34.479 N	103° 52' 53.915 W
- plan hits target center									
- Point									
PBHL-SU #689	0.00	0.01	6,900.00	135.80	125.10	664,595.20	638,752.10	32° 49' 34.479 N	103° 52' 53.915 W
- plan hits target center									
- Circle (radius 10.00)									

Casing Data

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,900.00	1,900.00	8-5/8" Casing	8-5/8	12-1/4

Formations

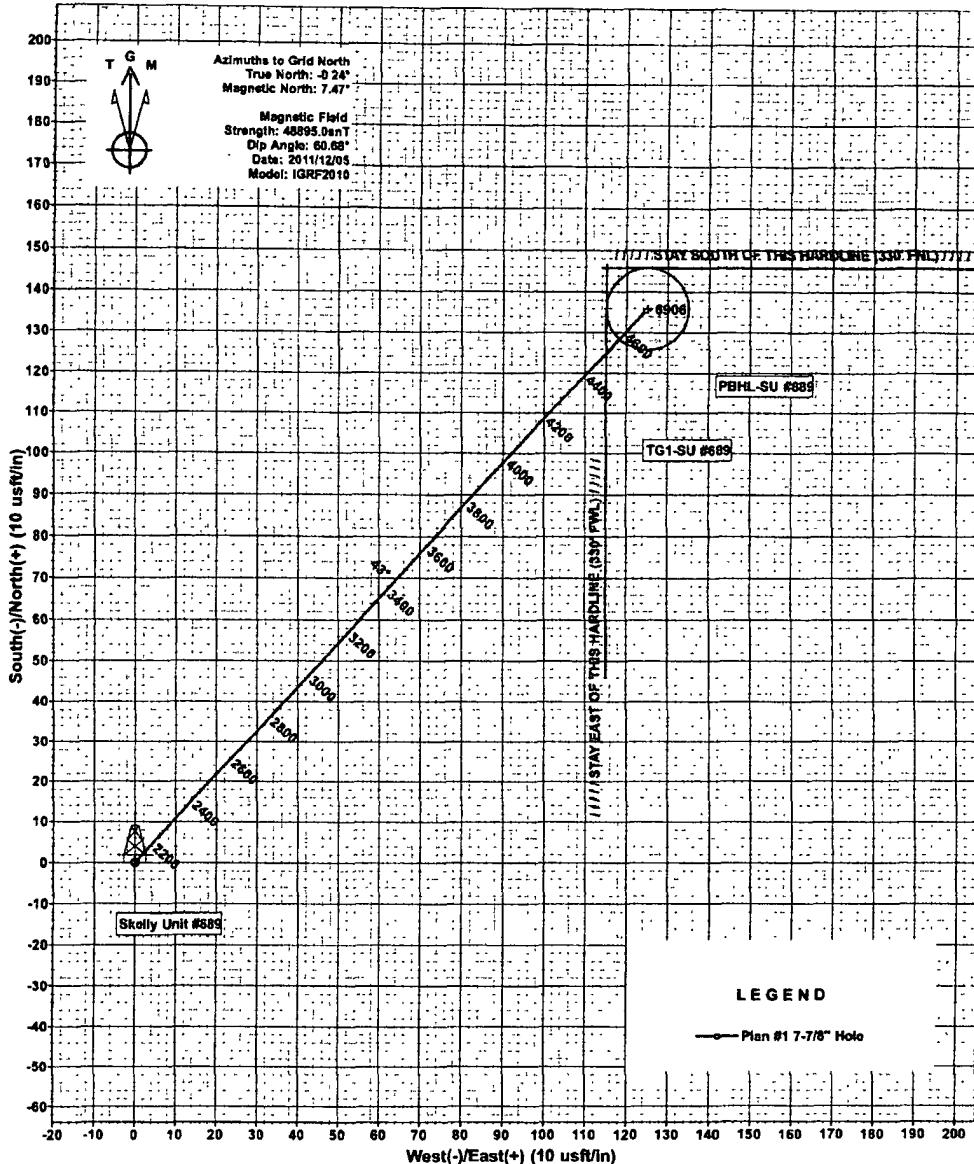
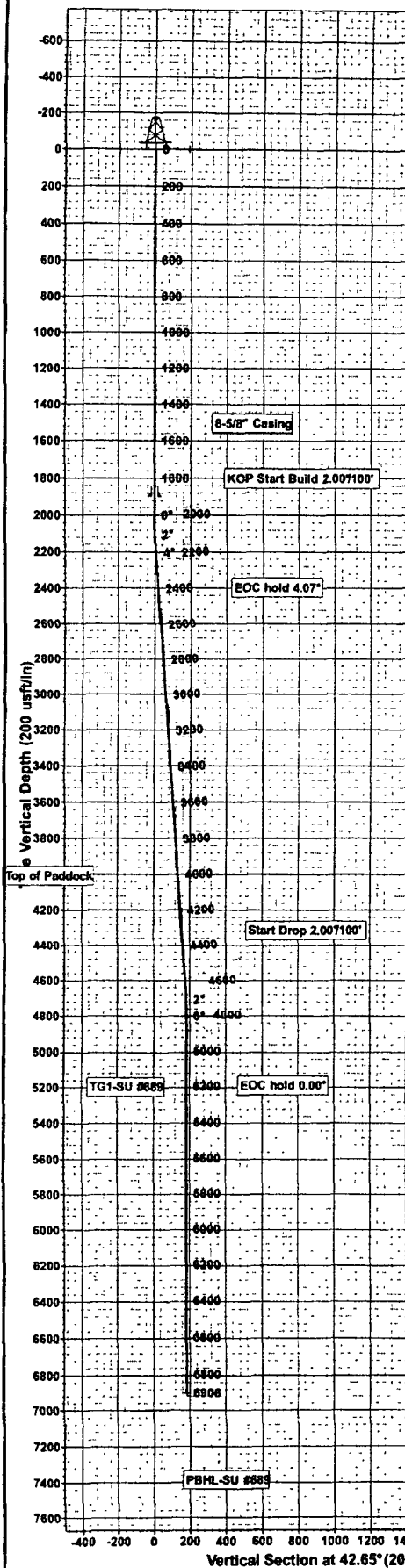
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,004.71	4,000.00	Top of Paddock		0.00	

Run Abortions

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/S (usft)	+E/W (usft)	Comment
2,000.00	2,000.00	0.00	0.00	KOP Start Build 2.00°/100'
2,203.37	2,203.20	5.31	4.89	EOC hold 4.07°
4,603.01	4,596.80	130.49	120.21	Start Drop 2.00°/100'
4,806.39	4,800.00	135.80	125.10	EOC hold 0.00°



Scientific Drilling for COG Operating LLC
 Site: Eddy County, NM (NAN27 NME)
 Well: Skelly Unit #689
 Wellbore: OH
 Design: Plan #1 7-7/8" Hole



Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
North HL-SU #689	0.00	145.80	115.10	664605.20	638742.10	32°49' 34.578 N	103°52' 54.031 W	Rectangle (Sides: L 0.00 W100.00)
West HL-SU #689	0.00	145.80	115.10	664605.20	638742.10	32°49' 34.578 N	103°52' 54.031 W	Rectangle (Sides: L1 00.00 W0.00)
TG1-SU #689	4800.00	135.80	125.10	664595.20	638752.10	32°49' 34.478 N	103°52' 53.915 W	Point
PBHL-SU #689	6900.00	135.80	125.10	664595.20	638752.10	32°49' 34.478 N	103°52' 53.915 W	Circle (Radius: 10.0 0)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	
3	2203.37	4.07	42.65	2203.20	5.31	4.89	2.00	42.65	7.22	
4	44603.01	4.07	42.65	4596.80	130.49	120.21	0.00	0.00	177.42	
5	4806.39	0.00	0.00	4800.00	135.80	125.10	2.00	180.00	184.64	TG1-SU #689
6	6906.39	0.00	0.00	6900.00	135.80	125.10	0.00	0.00	184.64	PBHL-SU #689

WELL DETAILS: Skelly Unit #689

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	664459.40	638627.00	32°49' 33.140 N	103°52' 53.387 W	

PROJECT DETAILS: Eddy County, NM (NAN27 NME) Plan: Plan #1 7-7/8" Hole (Skelly Unit #689/OH)

Geodetic System: US State Plane 1927 (Exact solution)	Created By: Julio Pina	Date: 05-Dec-11
Datum: NAD 1927 (NADCON CONUS)	Checked: _____	Date: _____
Ellipsoid: Clarke 1886	Reviewed: _____	Date: _____
Zone: New Mexico East 3001	Approved: _____	Date: _____
System Datum: Mean Sea Level		