

30-015.39317

CAVALOZ DRILLING

P.O. BOX 1500 (575) 3910699 FAX (575) 391- 3824 HOBBS, NEW MEXICO 88241

INCLINATION REPORT

DATE: 1/24/12

WELL NAME AND NUMBER BKU FED #559
LOCATION EDDY COUNTY
OPERATOR: COG LLC
DRILLING CONTRACTOR: CAVALOZ DRILLING RIG #1

THE UNDERSIGNED HEREBY CERTIFIES THAT HE IS AN AUTHORIZED REPRESENTATIVE OF THE DRILLING CONTRACTOR WHO DRILLED THE ABOVE DESCRIBED WELL AND THAT HE HAS CONDUCTED DEVIATION TEST AND OBTAINED THE FOLLOWING RESULTS:

DEGREE	DEPTH	DEGREE	DEPTH	DEGREE	DEPTH
0.7	201				
0.1	322				
1.7	656				
2.3	1033				

DRILLING CONTRACTOR:
CAVALOZ DRILLING

BY: Bob Wegner
BOB WEGNER
DRILLING SUPERINTENDENT

SUBSCRIBED AND SWORN TO BEFORE ME ON THE 24th DAY OF Jan., 2012

MY COMMISSION EXPIRES: 02/01/15

Jessica Bueno



OFFICIAL SEAL
JESSICA BUENO
NOTARY PUBLIC - STATE OF NEW MEXICO
My commission expires: 02/01/15

COG Operating, LLC

Eddy County, NM

Burch Keely Unit #559

Burch Keely Unit #559

Wellbore #1

Survey: MWD Survey #1

Standard Survey Report

23 January, 2012

SHL: 1120' FNL & 2480' FWL

Top of Paddock: 980' FNL & 2300' FWL @ 4300' TVD

BHL: 980' FNL & 2300' FWL



BV
Survey Report



Company:	COG Operating, LLC	Local Co-ordinate Reference:	Site Burch Keely Unit #559
Project:	Eddy County, NM	TVD Reference:	KB @ 3665 00ft
Site:	Burch Keely Unit #559	MD Reference:	KB @ 3665 00ft
Well:	Burch Keely Unit #559	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project:	Eddy County, NM		
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		Burch Keely Unit #559			
Site Position:		Northing:	668,944.70 ft	Latitude:	32° 50' 18.946 N
From:	Map	Easting:	598,977.30 ft	Longitude:	104° 0' 39.901 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.17 °

Well: Burch Keely Unit #559						
Well Position	+N/-S	0 00 ft	Northing:	668,944 70 ft	Latitude:	32° 50' 18 946 N
	+E/-W	0 00 ft	Easting:	598,977 30 ft	Longitude:	104° 0' 39 901 W
Position Uncertainty		0 00 ft	Wellhead Elevation:	3,665 00 ft	Ground Level:	3,652 00 ft

Wellbore:	Wellbore #1				
Magnetics:	Model Name:	Sample Date:	Declination:	Dip Angle:	Field Strength:
	IGRF2010	1/16/2012	(°) 7 76	(°) 60 66	(nT) 48,877

Design: Wellbore #1				
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 977.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	352.98

Survey Program		Date	1/23/2012	
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	977.00	Gyro Survey #1 (OH)	Gyro	
1,083.00	4,687.00	MWD Survey #1 (Wellbore #1)	MWD	

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)
977.00	1.85	40.11	976.78	17.53	5.87	16.68	0.00	0.00	0.00
1,083.00	2.00	49.50	1,082.72	20.04	8.38	18.86	0.33	0.14	8.86
1,176.00	1.70	46.80	1,175.67	22.04	10.62	20.57	0.34	-0.32	-2.90
1,271.00	1.90	54.20	1,270.63	23.92	12.92	22.16	0.32	0.21	7.79
1,366.00	1.70	9.50	1,365.59	26.23	14.43	24.27	1.45	-0.21	-47.05
1,460.00	2.20	322.80	1,459.54	29.05	13.57	27.17	1.72	0.53	-49.68
1,554.00	3.80	309.40	1,553.41	32.46	10.07	30.99	1.85	1.70	-14.26
1,648.00	5.10	310.20	1,647.12	37.13	4.47	36.31	1.38	1.38	0.85
1,742.00	4.70	298.20	1,740.78	41.65	-2.11	41.60	1.17	-0.43	-12.77
1,837.00	4.40	295.00	1,835.48	45.03	-8.85	45.77	0.41	-0.32	-3.37

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Site:	Burch Keely Unit #559	MD Reference:	KB @ 3665 00ft
Well:	Burch Keely Unit #559	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000 1 Single User Db

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)
1,932.00	4.60	298.20	1,930.19	48.37	-15.51	49.90	0.34	0.21	3.37
2,027.00	5.20	293.90	2,024.84	51.91	-22.80	54.31	0.74	0.63	-4.53
2,120.00	5.00	292.80	2,117.47	55.19	-30.39	58.49	0.24	-0.22	-1.18
2,214.00	4.70	296.00	2,211.13	58.47	-37.63	62.63	0.43	-0.32	3.40
2,308.00	4.70	298.00	2,304.82	61.96	-44.49	66.94	0.17	0.00	2.13
2,400.00	4.30	294.50	2,396.53	65.16	-50.95	70.90	0.53	-0.43	-3.80
2,494.00	5.50	294.60	2,490.19	68.50	-58.26	75.11	1.28	1.28	0.11
2,589.00	5.60	299.10	2,584.74	72.65	-66.45	80.22	0.47	0.11	4.74
2,682.00	4.80	296.20	2,677.36	76.58	-73.90	85.03	0.91	-0.86	-3.12
2,776.00	5.20	297.60	2,771.00	80.28	-81.21	89.61	0.44	0.43	1.49
2,870.00	5.50	294.60	2,864.59	84.13	-89.08	94.39	0.44	0.32	-3.19
2,963.00	5.40	297.50	2,957.17	88.01	-97.01	99.20	0.32	-0.11	3.12
3,059.00	4.80	293.10	3,052.79	91.67	-104.71	103.78	0.75	-0.63	-4.58
3,153.00	4.60	301.60	3,146.48	95.19	-111.54	108.10	0.77	-0.21	9.04
3,247.00	4.70	300.70	3,240.17	99.13	-118.06	112.81	0.13	0.11	-0.96
3,342.00	4.70	302.80	3,334.85	103.23	-124.68	117.69	0.18	0.00	2.21
3,438.00	5.40	303.70	3,430.48	107.86	-131.74	123.15	0.73	0.73	0.94
3,532.00	4.60	294.80	3,524.12	111.90	-138.85	128.03	1.18	-0.85	-9.47
3,627.00	4.00	296.00	3,618.85	114.95	-145.28	131.84	0.64	-0.63	1.26
3,720.00	4.00	295.90	3,711.63	117.79	-151.12	135.37	0.01	0.00	-0.11
3,813.00	4.20	303.30	3,804.39	121.07	-156.88	139.34	0.61	0.22	7.96
3,908.00	4.10	301.00	3,899.14	124.73	-162.70	143.68	0.20	-0.11	-2.42
4,001.00	4.10	302.70	3,991.90	128.24	-168.35	147.85	0.13	0.00	1.83
4,094.00	4.40	307.70	4,084.65	132.22	-173.97	152.49	0.51	0.32	5.38
4,188.00	3.40	302.90	4,178.43	135.94	-179.16	156.81	1.12	-1.06	-5.11
4,282.00	1.60	301.10	4,272.33	138.13	-182.62	159.41	1.92	-1.91	-1.91
4,375.00	0.30	339.30	4,365.32	139.03	-183.82	160.45	1.48	-1.40	41.08
4,469.00	0.20	286.20	4,459.32	139.31	-184.07	160.75	0.26	-0.11	-56.49
4,563.00	0.30	259.70	4,553.32	139.31	-184.47	160.80	0.16	0.11	-28.19
4,645.00	0.30	256.90	4,635.32	139.22	-184.89	160.77	0.02	0.00	-3.41
4,687.00	0.30	256.90	4,677.32	139.17	-185.10	160.74	0.00	0.00	0.00
PBHL#1[BK#559]									

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,309.67	4,300.00	Paddock		0.00	

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Survey Report



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Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,083 00	1,082 72	20 04	8 38	First MWD Survey
4,645 00	4,635 32	139 22	-184 89	Last MWD Survey
4,687 00	4,677 32	139.17	-185 10	Proj to Bit

Checked By: _____ Approved By: _____ Date: _____