

Results of Directional Survey

DD

API number:	30-025-40586		
OGRID:		Operator:	COG OPERATING LLC
		Property:	SC FEDERAL # 2

surface	ULSTR:	I	22	T 17S	R 32E
				1650 FSL	940 FEL

BH Loc	ULSTR:	I	22	T 17S	R 32E
7098 MD		7095.8	TVD	1719 FSL	906 FEL

Top Perf/OH	ULSTR:	I	22	T 17S	R 32E
5618 MD		5616.0	TVD	1702 FSL	887 FEL

Bot Perf/OH	ULSTR:	I	22	T 17S	R 32E
6770 MD		6767.8	TVD	1718 FSL	899 FEL

	MD	N/S	E/W	VD
	5600.00	52.10	52.60	5598.00
TOP PERFS/OH	5618.00	52.37	52.55	5616.00
	5700.00	53.60	52.30	5698.00
	6700.00	67.20	42.90	6697.80
BOT PERFS/OH	6770.00	67.76	41.50	6767.80
	6800.00	68.00	40.90	6797.80

NEXT TO LAST	7000.00	68.50	37.70	6997.80
LAST READING	7003.00	68.50	37.60	7000.80
TD	7098.00	68.50	34.43	7095.80

Surface Location	1650 FS	940 FE
Projected BHL	1719 FS	906 FE
Location of		
Top Perfs/OH	1702 FS	887 FE
Bottom Perfs/OH	1718 FS	899 FE

SUMMARY of Subsurface Locations

Surface Location	I-22-17S-32E	1650 FS	940 FE	Vert. Depth
Top Perfs/OH	I-22-17S-32E	1702 FS	887 FE	5616.00
Bottom Perfs/OH	I-22-17S-32E	1718 FS	899 FE	6767.80
Projected TD	I-22-17S-32E	1719 FS	906 FE	7095.80

DEC 2 2 2014

HOBBS OCD

DEC 10 2014

RECEIVED

CONOCOPHILLIPS

Maljamar

Lea County, NM (True North)

SC Federal #2

VH - Job #320414-KW-530

Survey: Gyro

SDI Survey Report

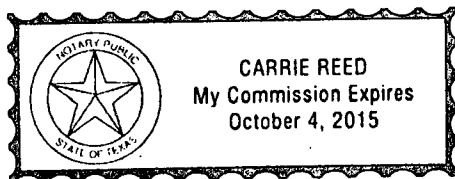
This survey is correct to the best of my knowledge and is supported by actual field data.

Lubhart

Notarized this date 2nd of June, 2014.

Carrie Reed

Notary Signature
County of Midland
State of Texas



San

SDI
SDI Survey Report

Company:	CONOCOPHILLIPS	Local Co-ordinate Reference:	Well SC Federal #2
Project:	Maljamar	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (True North)	MD Reference:	Mean Sea Level (System)
Well:	SC Federal #2	North Reference:	True
Wellbore:	VH - Job #320414-KW-530	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320414-KW-530	Database:	EDM-Regulatory

Project	Maljamar		
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	Lea County, NM (True North)				
Site Position:		Northing:	661,522.60 usft	Latitude:	32° 49' 2.086 N
From:	Lat/Long	Easting:	679,752.77 usft	Longitude:	103° 44' 53.632 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.32 °

Well	SC Federal #2, Vertical				
Well Position	+N/-S	0.0 usft	Northing:	661,522.60 usft	Latitude: 32° 49' 2.086 N
	+E/-W	0.0 usft	Easting:	679,752.77 usft	Longitude: 103° 44' 53.632 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level: 0.0 usft

Wellbore	VH - Job #320414-KW-530				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/18/2014	7.36	60.63	48,695

Design	VH - Job #320414-KW-530			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	28.78

Survey Program		Date	6/16/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	7,003.0	Gyro (VH - Job #320414-KW-530)	Keeper	Keeper Gyro	

Survey									
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)		
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0		
100.0	0.77	142.25	100.0	-0.5	0.4	142.25	0.7		
200.0	0.87	134.54	200.0	-1.6	1.4	139.47	2.1		
300.0	0.62	132.75	300.0	-2.5	2.3	137.30	3.4		
400.0	0.54	154.61	400.0	-3.3	2.9	138.57	4.4		
500.0	0.39	140.47	500.0	-4.0	3.3	140.14	5.2		
600.0	0.49	156.56	600.0	-4.6	3.7	141.32	5.9		
700.0	0.33	162.82	700.0	-5.3	4.0	143.21	6.6		
800.0	0.47	139.47	800.0	-5.9	4.3	143.76	7.3		
900.0	0.41	154.40	900.0	-6.5	4.7	144.01	8.1		
1,000.0	0.80	167.86	1,000.0	-7.5	5.0	146.21	9.1		
1,100.0	1.27	141.34	1,099.9	-9.1	5.9	147.07	10.8		

SDI
SDI Survey Report

Company:	CONOCOPHILLIPS	Local Co-ordinate Reference:	Well SC Federal #2
Project:	Maljamar	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (True North)	MD Reference:	Mean Sea Level (System)
Well:	SC Federal #2	North Reference:	True
Wellbore:	VH - Job #320414-KW-530	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320414-KW-530	Database:	EDM-Regulatory

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
1,200.0	1.31	140.64	1,199.9	-10.8	7.3	146.02	13.0	
1,300.0	1.38	112.36	1,299.9	-12.2	9.1	143.10	15.2	
1,400.0	1.55	114.68	1,399.9	-13.2	11.5	138.97	17.5	
1,500.0	1.64	100.08	1,499.8	-14.0	14.1	134.78	19.9	
1,600.0	1.92	86.86	1,599.8	-14.2	17.2	129.47	22.3	
1,700.0	2.98	81.25	1,699.7	-13.7	21.4	122.53	25.4	
1,800.0	3.42	79.98	1,799.5	-12.8	26.9	115.34	29.8	
1,900.0	3.86	79.15	1,899.3	-11.6	33.2	109.28	35.2	
2,000.0	4.02	78.03	1,999.1	-10.2	39.9	104.39	41.2	
2,100.0	3.27	75.80	2,098.9	-8.8	46.1	100.83	46.9	
2,200.0	2.62	75.48	2,198.7	-7.5	51.1	98.40	51.6	
2,300.0	2.07	70.66	2,298.7	-6.4	55.0	96.61	55.4	
2,400.0	1.34	52.48	2,398.6	-5.1	57.6	95.02	57.9	
2,500.0	1.43	48.59	2,498.6	-3.5	59.5	93.39	59.6	
2,600.0	1.22	40.47	2,598.6	-1.9	61.1	91.77	61.2	
2,700.0	1.10	17.75	2,698.5	-0.2	62.1	90.16	62.1	
2,800.0	1.35	355.42	2,798.5	1.9	62.3	88.23	62.3	
2,900.0	1.54	346.03	2,898.5	4.4	61.9	85.94	62.0	
3,000.0	1.54	354.10	2,998.4	7.0	61.4	83.46	61.8	
3,100.0	1.66	349.22	3,098.4	9.8	61.0	80.88	61.8	
3,200.0	1.57	347.48	3,198.4	12.6	60.5	78.26	61.7	
3,300.0	1.51	339.86	3,298.3	15.1	59.7	75.78	61.6	
3,400.0	1.40	336.18	3,398.3	17.5	58.8	73.43	61.3	
3,500.0	1.31	341.41	3,498.3	19.7	57.9	71.22	61.2	
3,600.0	1.32	341.09	3,598.2	21.9	57.2	69.07	61.2	
3,700.0	1.39	342.58	3,698.2	24.1	56.4	66.86	61.4	
3,800.0	1.40	350.61	3,798.2	26.5	55.9	64.65	61.8	
3,900.0	1.40	353.54	3,898.2	28.9	55.5	62.51	62.6	
4,000.0	1.23	346.37	3,998.1	31.1	55.1	60.54	63.3	
4,100.0	1.20	343.01	4,098.1	33.2	54.6	58.69	63.9	
4,200.0	1.16	341.98	4,198.1	35.2	54.0	56.91	64.4	
4,300.0	0.84	327.36	4,298.1	36.7	53.2	55.40	64.7	
4,400.0	0.58	344.42	4,398.1	37.8	52.7	54.33	64.9	
4,500.0	0.89	5.92	4,498.1	39.1	52.7	53.41	65.6	
4,600.0	0.57	19.94	4,598.1	40.3	52.9	52.68	66.5	
4,700.0	0.76	20.06	4,698.0	41.4	53.3	52.15	67.5	
4,800.0	0.76	31.28	4,798.0	42.6	53.9	51.65	68.7	
4,900.0	0.70	25.89	4,898.0	43.7	54.5	51.25	69.9	
5,000.0	0.74	3.95	4,998.0	44.9	54.8	50.65	70.9	
5,100.0	0.66	1.31	5,098.0	46.2	54.9	49.93	71.7	
5,200.0	0.64	356.63	5,198.0	47.3	54.8	49.23	72.4	
5,300.0	0.73	330.25	5,298.0	48.4	54.5	48.39	72.9	
5,400.0	0.90	333.94	5,398.0	49.7	53.8	47.31	73.2	
5,500.0	0.74	329.64	5,498.0	50.9	53.2	46.23	73.6	

SDI
SDI Survey Report

Company:	CONOCOPHILLIPS	Local Co-ordinate Reference:	Well SC Federal #2
Project:	Maljamar	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (True North)	MD Reference:	Mean Sea Level (System)
Well:	SC Federal #2	North Reference:	True
Wellbore:	VH - Job #320414-KW-530	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #320414-KW-530	Database:	EDM-Regulatory

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
5,600.0	0.81	341.55	5,598.0	52.1	52.6	45.25	74.1	
5,700.0	0.95	352.62	5,698.0	53.6	52.3	44.27	74.9	
5,800.0	0.96	344.68	5,797.9	55.3	52.0	43.23	75.8	
5,900.0	0.83	353.97	5,897.9	56.8	51.7	42.29	76.8	
6,000.0	0.92	343.24	5,997.9	58.3	51.3	41.38	77.7	
6,100.0	0.69	341.76	6,097.9	59.6	50.9	40.50	78.4	
6,200.0	0.93	327.19	6,197.9	60.9	50.3	39.56	79.0	
6,300.0	0.92	323.34	6,297.9	62.2	49.4	38.44	79.4	
6,400.0	1.04	313.56	6,397.9	63.5	48.2	37.24	79.7	
6,500.0	1.14	311.84	6,497.9	64.8	46.8	35.88	79.9	
6,600.0	1.37	301.60	6,597.8	66.1	45.1	34.31	80.0	
6,700.0	1.45	294.45	6,697.8	67.2	42.9	32.56	79.7	
6,800.0	1.02	285.33	6,797.8	68.0	40.9	31.04	79.3	
6,900.0	0.88	277.43	6,897.8	68.3	39.3	29.91	78.8	
7,000.0	0.96	279.45	6,997.8	68.5	37.7	28.81	78.2	
7,003.0	1.00	280.00	7,000.8	68.5	37.6	28.78	78.2	



Scientific Drilling

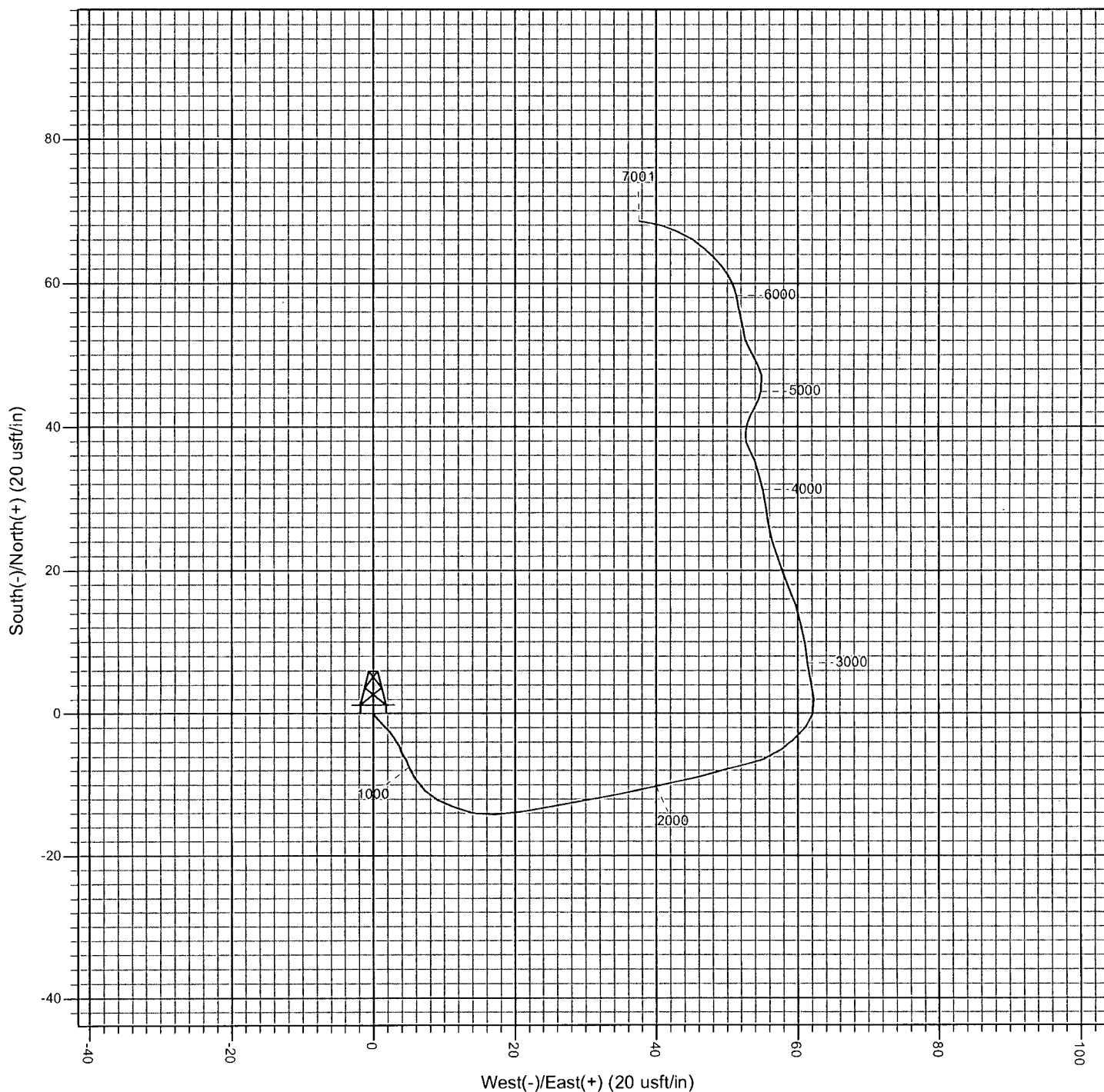
Project: Maljamar
Lea County, NM (True North)
Well: SC Federal #2
Wellbore: VH - Job #320414-KW-530
Design: VH - Job #320414-KW-530

WELL DETAILS: SC Federal #2

Mean Sea Level (System)

Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	661522.60	679752.77	32° 49' 2.086 N	103° 44' 53.632 W	



PROJECT DETAILS: Maljamar	SITE DETAILS: Lea County, NM (True North)
Geodetic System: US State Plane 1927 (Exact solution)	Site Centre Latitude: 32° 49' 2.086 N
Datum: NAD 1927 (NADCON CONUS)	Longitude: 103° 44' 53.632 W
Ellipsoid: Clarke 1866	Positional Uncertainty: 0.0
Zone: New Mexico East 3001	Convergence: 0.32
System Datum: Mean Sea Level	Local North: True