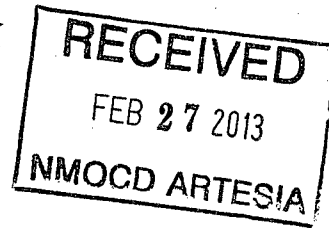




30-015-39974



COG Operating LLC

Eddy County, NM (NAD27 NME)

Paint 32 Fee

#3H

OH - Job #32H12121524

Design: OH

SDI Standard Survey Report

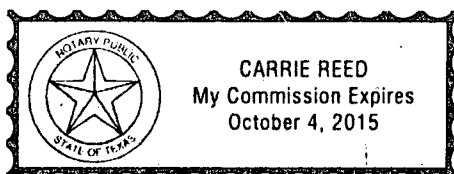
This survey is correct to the best of my knowledge and is supported by actual field data.

Richard

Notarized this date 11th of January, 2013.

Carrie Reed

Notary Signature
County of Midland
State of Texas

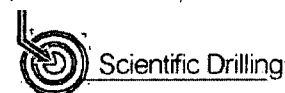


Scientific Drilling



Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3406.00usft (JW #4)
Site:	Paint 32 Fee	MD Reference:	RF @ 3406.00usft (JW #4)
Well:	#3H	North Reference:	Grid
Wellbore:	OH - Job #32H12121524	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM-Regulatory

Project:	Eddy County, NM (NAD27 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:	Paint 32 Fee		
Site Position:		Northing:	619,410.59 usft
From:	Map	Easting:	475,871.20 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	32° 42' 10.199 N
		Longitude:	104° 24' 42.385 W
		Grid Convergence:	-0.04 °

Well:	#3H		
Well Position	+N/-S	0.00 usft	Northing:
	+E/-W	0.00 usft	Easting:
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32° 41' 58.625 N
		Longitude:	104° 24' 42.294 W
		Ground Level:	3,393.00 usft

Wellbore:	OH - Job #32H12121524		
Magnetics:	Model Name	Sample Date	Declination
	BGGM2012	12/13/12	(°)
			Dip Angle
			(°)
			Field Strength
			(nT)

Design:	OH		
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
			(°)
			90.37

Survey Program	Date	01/11/13		
From	To	Survey (Wellbore)	Tool Name	Description
(usft)	(usft)			
100.00	2,267.00	Gyro (OH - Job #32H12121524)	Keeper	Standard Wireline Keeper ver 1.0.2
2,369.00	7,572.00	MWD (OH - Job #32H12121524)	MWD	MWD - Standard

Survey								
Measured Depth	Inclination	Azimuth	True Vertical	North/South	East/West	Closure Azimuth	Closure Distance	
(usft)	(°)	(°)	Depth	(usft)	(usft)	(°)	(usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.30	121.90	100.00	-0.14	0.22	121.90	0.26	
200.00	1.00	202.66	199.99	-1.08	0.11	174.28	1.09	
300.00	1.40	205.43	299.97	-2.99	-0.75	194.12	3.08	
400.00	1.60	209.89	399.94	-5.30	-1.97	200.40	5.66	
500.00	1.60	222.13	499.90	-7.55	-3.60	205.52	8.37	
600.00	1.69	221.94	599.86	-9.68	-5.53	209.72	11.15	
700.00	1.66	224.43	699.81	-11.81	-7.53	212.50	14.01	
800.00	1.67	224.95	799.77	-13.88	-9.57	214.59	16.86	
900.00	1.64	227.15	899.73	-15.88	-11.65	216.26	19.70	
1,000.00	1.90	223.10	999.68	-18.07	-13.83	217.43	22.75	



Scientific Drilling International, Inc.

SDI Standard Survey Report



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3406.00usft (JW #4)
Site:	Paint 32 Fee	MD Reference:	RF @ 3406.00usft (JW #4)
Well:	#3H	North Reference:	Grid
Wellbore:	OH - Job #32H12121524	Survey Calculation Method:	Minimum Curvature
Design:	OH	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	2.09	222.88	1,099.62	-20.61	-16.20	218.17	26.22
1,200.00	2.12	225.61	1,199.55	-23.24	-18.77	218.92	29.87
1,300.00	2.30	223.53	1,299.48	-25.99	-21.47	219.56	33.71
1,400.00	2.86	225.21	1,399.38	-29.20	-24.62	220.13	38.20
1,500.00	3.25	224.75	1,499.24	-32.98	-28.39	220.73	43.51
1,600.00	3.56	224.67	1,599.06	-37.20	-32.57	221.20	49.44
1,700.00	3.89	221.91	1,698.85	-41.93	-37.02	221.44	55.93
1,800.00	4.14	218.74	1,798.60	-47.27	-41.54	221.31	62.93
1,900.00	4.10	218.58	1,898.34	-52.88	-46.03	221.04	70.11
2,000.00	4.13	221.68	1,998.09	-58.36	-50.65	220.95	77.28
2,100.00	3.95	221.57	2,097.84	-63.63	-55.33	221.01	84.32
2,200.00	3.99	224.84	2,197.60	-68.67	-60.07	221.18	91.24
2,267.00	3.69	223.72	2,264.45	-71.88	-63.20	221.32	95.72
2,369.00	3.52	223.54	2,366.25	-76.53	-67.63	221.47	102.13
2,400.00	3.33	251.28	2,397.19	-77.51	-69.14	221.73	103.86
2,432.00	1.23	275.42	2,429.17	-77.77	-70.36	222.14	104.88
2,463.00	2.07	103.85	2,460.16	-77.87	-70.15	222.01	104.81
2,494.00	5.19	88.83	2,491.10	-77.98	-68.20	221.17	103.60
2,525.00	7.91	83.29	2,521.89	-77.70	-64.68	219.78	101.10
2,557.00	11.26	79.21	2,553.44	-76.86	-59.42	217.71	97.15
2,588.00	14.33	81.80	2,583.67	-75.74	-52.65	214.80	92.25
2,619.00	17.15	85.14	2,613.50	-74.81	-44.30	210.63	86.94
2,651.00	20.22	87.86	2,643.81	-74.20	-34.07	204.66	81.65
2,682.00	23.21	89.44	2,672.61	-73.94	-22.60	197.00	77.32
2,713.00	26.26	89.09	2,700.76	-73.78	-9.64	187.44	74.40
2,744.00	29.47	91.68	2,728.17	-73.89	4.85	176.25	74.05
2,775.00	31.30	92.34	2,754.91	-74.44	20.52	164.59	77.22
2,806.00	34.53	91.49	2,780.93	-75.00	37.35	153.53	83.79
2,837.00	39.04	91.38	2,805.75	-75.46	55.90	143.47	93.91
2,868.00	43.59	90.66	2,829.03	-75.82	76.36	134.80	107.61
2,900.00	48.17	88.46	2,851.30	-75.63	99.32	127.29	124.84
2,931.00	52.85	86.89	2,871.01	-74.65	123.22	121.21	144.07
2,945.90	55.30	86.72	2,879.75	-73.97	135.26	118.67	154.17
PP-Paint 32 Fee #3H							
2,962.00	57.95	86.54	2,888.61	-73.18	148.68	116.21	165.72
2,993.00	63.14	87.07	2,903.84	-71.68	175.63	112.20	189.69
3,024.00	68.06	87.86	2,916.65	-70.44	203.82	109.06	215.65
3,056.00	71.58	88.04	2,927.68	-69.36	233.83	106.52	243.90
3,087.00	74.74	87.60	2,936.66	-68.23	263.48	104.52	272.17
3,118.00	78.26	87.16	2,943.90	-66.86	293.59	102.83	301.10
3,149.00	82.13	87.07	2,949.18	-65.32	324.09	101.40	330.60
3,180.00	85.06	88.14	2,952.64	-64.03	354.86	100.23	360.59
3,243.00	88.46	90.67	2,956.20	-63.38	417.75	98.63	422.53
3,336.00	88.66	89.05	2,958.53	-63.15	510.71	97.05	514.60
3,430.00	88.76	87.61	2,960.65	-60.42	604.65	95.71	607.66



Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3406.00usft (JW #4)
Site:	Paint 32 Fee	MD Reference:	RF @ 3406.00usft (JW #4)
Well:	#3H	North Reference:	Grid
Wellbore:	OH - Job #32H12121524	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
3,524.00	89.60	86.89	2,961.99	-55.91	698.53	94.58	700.76
3,617.00	88.59	87.46	2,963.46	-51.32	791.40	93.71	793.06
3,711.00	87.41	88.83	2,966.74	-48.28	885.29	93.12	886.61
3,804.00	87.67	89.18	2,970.74	-46.67	978.19	92.73	979.30
3,899.00	87.93	89.62	2,974.38	-45.67	1,073.12	92.44	1,074.09
3,992.00	88.29	89.88	2,977.45	-45.27	1,166.06	92.22	1,166.94
4,086.00	88.22	89.95	2,980.31	-45.13	1,260.02	92.05	1,260.83
4,179.00	88.37	89.97	2,983.08	-45.06	1,352.98	91.91	1,353.73
4,273.00	89.34	90.32	2,984.96	-45.30	1,446.96	91.79	1,447.67
4,366.00	89.16	89.62	2,986.18	-45.25	1,539.95	91.68	1,540.61
4,460.00	88.29	89.48	2,988.27	-44.52	1,633.92	91.56	1,634.53
4,553.00	88.29	89.53	2,991.04	-43.71	1,726.88	91.45	1,727.43
4,646.00	88.32	89.34	2,993.79	-42.80	1,819.83	91.35	1,820.34
4,741.00	88.37	89.71	2,996.54	-42.01	1,914.79	91.26	1,915.25
4,834.00	88.39	89.23	2,999.17	-41.15	2,007.75	91.17	2,008.17
4,928.00	88.56	89.98	3,001.67	-40.50	2,101.71	91.10	2,102.10
5,022.00	88.64	89.79	3,003.96	-40.31	2,195.68	91.05	2,196.05
5,115.00	88.81	89.27	3,006.03	-39.55	2,288.66	90.99	2,289.00
5,208.00	89.16	89.44	3,007.68	-38.50	2,381.64	90.93	2,381.95
5,302.00	89.26	89.24	3,008.98	-37.42	2,475.62	90.87	2,475.90
5,395.00	88.20	89.44	3,011.04	-36.35	2,568.59	90.81	2,568.85
5,489.00	88.05	90.41	3,014.11	-36.23	2,662.54	90.78	2,662.79
5,583.00	88.02	90.15	3,017.34	-36.69	2,756.48	90.76	2,756.73
5,676.00	88.32	90.78	3,020.31	-37.44	2,849.43	90.75	2,849.68
5,770.00	88.55	89.97	3,022.87	-38.06	2,943.39	90.74	2,943.64
5,863.00	88.81	89.71	3,025.02	-37.80	3,036.37	90.71	3,036.60
5,957.00	89.19	89.51	3,026.66	-37.16	3,130.35	90.68	3,130.57
6,051.00	88.99	89.55	3,028.15	-36.38	3,224.34	90.65	3,224.54
6,144.00	89.25	89.35	3,029.58	-35.49	3,317.32	90.61	3,317.51
6,238.00	88.46	89.79	3,031.46	-34.79	3,411.30	90.58	3,411.48
6,332.00	88.99	90.23	3,033.55	-34.80	3,505.27	90.57	3,505.45
6,426.00	87.88	89.60	3,036.12	-34.66	3,599.24	90.55	3,599.40
6,519.00	87.93	89.97	3,039.52	-34.32	3,692.17	90.53	3,692.33
6,613.00	88.02	89.18	3,042.84	-33.62	3,786.11	90.51	3,786.26
6,706.00	87.49	90.32	3,046.48	-33.21	3,879.04	90.49	3,879.18
6,800.00	88.11	90.32	3,050.09	-33.74	3,972.97	90.49	3,973.11
6,893.00	88.72	89.62	3,052.66	-33.69	4,065.93	90.47	4,066.07
6,987.00	89.16	90.06	3,054.40	-33.43	4,159.91	90.46	4,160.05
7,081.00	89.43	89.35	3,055.56	-32.94	4,253.90	90.44	4,254.03
7,175.00	89.69	89.44	3,056.28	-31.95	4,347.90	90.42	4,348.01
7,268.00	90.24	88.95	3,056.34	-30.64	4,440.89	90.40	4,440.99
7,362.00	88.96	88.25	3,056.99	-28.35	4,534.85	90.36	4,534.94
7,456.00	88.81	89.79	3,058.82	-26.74	4,628.82	90.33	4,628.90



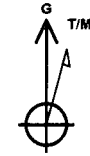
Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #3H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	RF @ 3406.00usft (JW #4)
Site:	Paint 32 Fee	MD Reference:	RF @ 3406.00usft (JW #4)
Well:	#3H	North Reference:	Grid
Wellbore:	OH - Job #32H12121524	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
7,524.00	88.81	90.06	3,060.23	-26.65	4,696.80	90.33	4,696.88
Last MWD Survey							
7,572.00	88.81	90.06	3,061.23	-26.70	4,744.79	90.32	4,744.87
Projection to Bit - PBHL-Paint 32 Fee #3H							

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment	
7,524.00	3,060.23	-26.65	4,696.80	Last MWD Survey	
7,572.00	3,061.23	-26.70	4,744.79	Projection to Bit	



Paint 32 Fee #3H
Eddy County, NM (NAD27 NME)
Northing: (Y) 618241.00
Easting: (X) 475878.10
Plan #7 vs Actual 8-3/4" Hole



Azimuths to Grid North
True North: 0.04°
Magnetic North: 0.04°

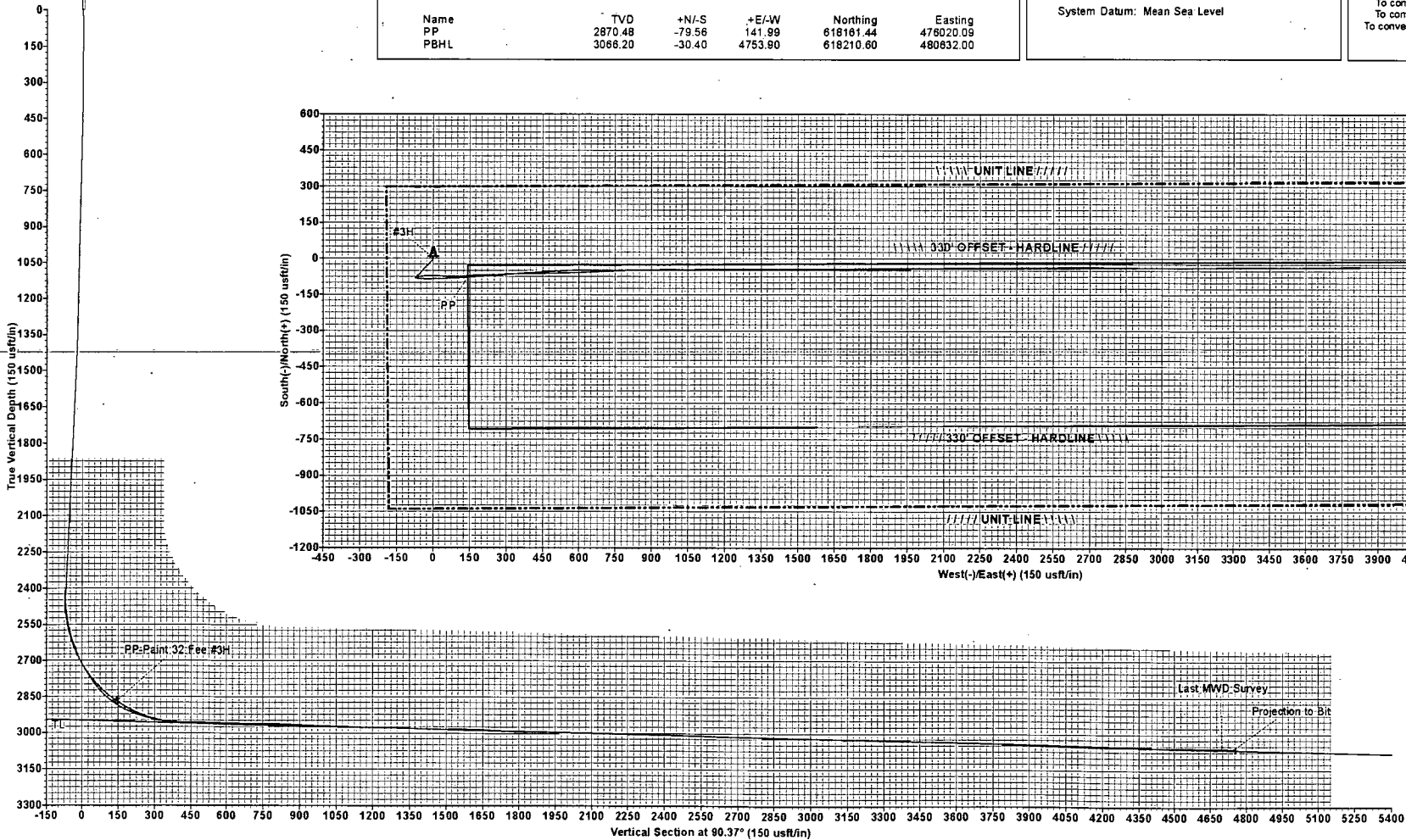
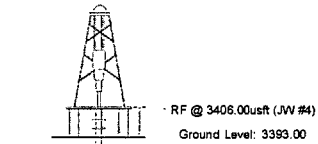
Magnetic Field
Strength: 0.00T
Dip Angle: 0.00°
Date: 12/13/2012
Model: BGGM2012

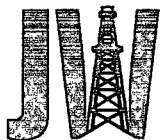
To convert a Magnetic Direction to a Grid Direction,
To convert a True Direction to a Grid Direction, Add 0.04°

WELL DETAILS:									
		Ground Level:		3393.00					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude				
0.00	0.00	618241.00	475878.10	32° 41' 58.625 N	104° 24' 42.284 W				
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
2267.00	3.69	223.72	2264.45	-71.88	-63.20	0.00	0.00	-62.74	
2441.50	3.69	223.72	2438.59	-80.00	-70.97	0.00	0.00	-70.45	
3235.58	88.80	85.00	2960.00	-59.29	414.27	11.51	-138.72	414.84	
3392.32	88.80	89.70	2963.83	-52.05	570.74	3.00	90.08	571.07	
7576.78	88.80	89.70	3066.20	-30.40	4753.90	0.00	0.00	4754.00	PBHL
DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting				
PP	2870.48	-79.56	141.99	618161.44	476020.09				
PBHL	3066.20	-30.40	4753.90	618210.60	480632.00				

SITE DETAILS: Paint 32 Fee	
Site Centre Northing:	619410.59
Easting:	475871.20
Positional Uncertainty:	0.00
Convergence:	-0.04°
Local North:	Grid
PROJECT DETAILS: Eddy County, NM (NAD27 NME)	
Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	New Mexico East 3001
System Datum:	Mean Sea Level

Map System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone Name:	New Mexico East 3001
Local Origin:	Well #3H, Grid North
Latitude:	32° 41' 58.625 N
Longitude:	104° 24' 42.294 W
Grid East:	475878.10
Grid North:	618241.00
Scale Factor:	1.000
Geomagnetic Model:	BGGM2012
Sample Date:	13-Dec-12
Magnetic Declination:	
Dip Angle from Horizontal:	
Magnetic Field Strength:	
To convert a Magnetic Direction to a Grid Direction, To convert a Magnetic Direction to a True Direction, To convert a True Direction to a Grid Direction, Add 0.04°	





DRILLING INC. Oil Well Drilling Contractor

Post Office Box 160 Artesia, New Mexico 88211-0160 Office (575) 748-8704 Fax (575) 748-8719

December 27, 2012

COG Operating, LLC
One Concho Center 600 W. Illinois Ave.
Midland, Texas 79701

Re: Paint 32 Fee # 3 H
Sec. 32, T-18-S, R-26-E
Eddy County, New Mexico

Attn: Jim Evans

The following is a Deviation Survey on the referenced well in Eddy County, New Mexico:

257' - 1°	1162' - 2°	1935' - 4°
519' - 1.5°	1653' - 3.5°	2277' - 3.25°
771' - 1.75°		

MD. #32, HDPD/C

Sincerely,

Gary W. Chappell
Contracts Manager

STATE OF NEW MEXICO)
COUNTY OF EDDY)

The foregoing was acknowledged before me this 27th day of December, 2012 by Gary W. Chappell.

NOTARY PUBLIC



Official Seal
BARBARA M. JOHNSON
Notary Public
State of New Mexico
My Commission Expires