Oilfield Services Central U.S. Land

Reservoir Development
Drilling & Measurements (Anadrill)
4301 SW 44th St
Oklahoma City, Oklahoma 73119 USA
Phone: (405) 682-2284
Fax: (405) 682-3937

Schlumberger

15-41603

January 31, 2014

Cimarex Energy Co
600 N Marienfeld St
Midland, TX 79701

S32-T25S-R27E 330 FSL 1980 FWL
N 32.07992 W 104.214561

Re:

CLIENT:	Cimarex Energy Co.
WELL:	Cottonwood Hills 32 State Com 3H
FIELD:	Wildcat G-03 S252636M; Bone Spring
RIG:	Cactus 116
COUNTY:	Eddy, New Mexico
API NO:	30-015-41603
JOB NO:	14MLD0073

Enclosed, please find the original copy of the survey performed on the referenced well by Drilling & Measurements , a division of Schlumberger Technology Corporation .
Other information required by your office is as follows.

Name & Title of Surveyor	Drainhole Number	Surveyed Depths		Dates Performed		Type of Survey
Bradley Safarik Field Engineer, I	Cottonwood Hills 32 State Com 3H Original Hole	6854.00 Ft 11843.00 Ft	to	January 18, 2014 January 24, 2014	to	SlimPulse

If any other information is required, please contact the undersigned at the above letterhead and phone number.
Sincerely,

Joseph Hogan
Field Service Manager

Schlumberger

Reservoir Development
Drilling & Measurements (Anadrill)
4301 SW 44th St
Oklahoma City, Oklahoma 73119 USA
Phone: (405) 682-2284
Fax: (405) 682-3937

Well Reference:
S32-T25S-R27E 330 FSL 1980 FWL
N 32.07992 W 104.214561

I, Bradley Safarik certify that; I am employed by Drilling & Measurements (formerly Anadrill), a division of Schlumberger Technology Corporation; that I did on the day(s) of January 18, 2014 through January 24, 2014, conduct or supervise the taking of the SlimPulse surveys from a depth of 6854.00 feet to a depth of 11843.00 feet referenced to driller's depth; that the data is true, correct, complete and within the limitations of the tool as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I am authorized and qualified to make this report; that this survey was conducted at the request of Cimarex Energy Co. for the Cottonwood Hills 32 State Com 3H Well (Original Hole) API No. 30-015-41603 and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation.

By

Bradley Safarik (signature) Bradley Safarik

Field Engineer I

Subscribed and Sworn to before me this 31st day of January (month) 2014 (yr)

My Commission expires:

August 23, 2014

Sue Smith (signature)

Notary Public

Midland Texas

(County State)

SUE SMITH
Notary Public, State of Texas
My Commission Expires
August 23, 2014

Schlumberger

Cimarex Cottonwood Hills 32 State #3H Final Survey Report

(Non-Def Survey)

Report Date:	January 24, 2014 - 02:44 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex Energy	**Vertical Section Azimuth:**	0.798 ° (Grid North)
Field:	Wildcat G-03 S252636M; Bone Spring	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Cottonwood Hills 32 State #3H / Cottonwood Hills 32 State #3H	**TVD Reference Datum:**	RKB
Well:	Cottonwood Hills 32 State #3H	**TVD Reference Elevation:**	3247.000 ft above
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3229.000 ft above
UWI / API#:	30-015-41603	**Magnetic Declination:**	7.669 °
Survey Name:	Cimarex Cottonwood Hills 32 State #3H Final Survey Report	**Total Gravity Field Strength:**	998.4915mgn (9.80665 Based)
Survey Date:	January 13, 2014	**Gravity Model:**	DOX
Tort / AHD / DDI / ERD Ratio:	242.168 ° / 4862.175 ft / 6.272 / 0.648	**Total Magnetic Field Strength:**	48175.397 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.859 °
Location Lat / Long:	N 32° 4' 47.72182", W 104° 12' 52.42942"	**Declination Date:**	January 13, 2014
Location Grid N/E Y/X:	N 392833.300 ftUS, E 578122.700 ftUS	**Magnetic Declination Model:**	BGGM 2013
CRS Grid Convergence Angle:	0.0631 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99991064	**Grid Convergence Used:**	0.0631 °
Version / Patch:	2.7.1043.0	**Total Corr Mag North->Grid North:**	7.6058 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	TF (°)
Tie-In	0.00	0.00	0.80	0.00	0.00	0.00	0.00	N/A	286.03M
	113.00	1.10	286.03	112.99	0.28	0.30	-1.04	0.97	290.33M
	148.00	1.32	290.33	147.99	0.51	0.53	-1.74	0.68	291.21M
	197.00	1.58	291.21	196.97	0.93	0.97	-2.90	0.53	294.11M
	261.00	1.80	294.11	260.94	1.64	1.70	-4.64	0.37	294.02M
	318.00	1.71	294.02	317.91	2.33	2.41	-6.24	0.16	285.63M
	527.00	2.02	285.63	526.80	4.50	4.68	-12.63	0.20	277.81M
	617.00	2.11	277.81	616.75	5.11	5.33	-15.80	0.33	280.01M
	736.00	2.20	280.01	735.66	5.74	6.02	-20.22	0.10	283.3M
	826.00	2.42	283.30	825.59	6.43	6.76	-23.77	0.29	278.82M
	918.00	0.70	278.82	917.55	6.93	7.29	-26.22	1.87	265.5M
	1009.00	1.01	265.50	1008.54	6.93	7.32	-27.57	0.40	246.43M
	1099.00	1.80	246.43	1098.51	6.27	6.69	-29.65	1.01	238.92M
	1194.00	1.71	238.92	1193.47	4.91	5.36	-32.23	0.26	240.23M
	1288.00	1.41	240.23	1287.43	3.58	4.06	-34.44	0.32	126.81M
	1382.00	0.62	126.81	1381.42	2.69	3.18	-35.04	1.86	95.61M
	1479.00	2.99	95.61	1478.37	2.17	2.62	-32.10	2.56	62.21M
	1574.00	1.89	62.21	1573.29	2.72	3.11	-28.24	1.85	66.74M
	1669.00	2.99	66.74	1668.20	4.48	4.82	-24.58	1.17	94.73M
	1763.00	3.30	94.73	1762.06	5.29	5.56	-19.63	1.65	93.5M
	1857.00	1.80	93.50	1855.97	5.03	5.25	-15.46	1.60	92.4M
	1951.00	1.19	92.40	1949.94	4.94	5.12	-13.01	0.65	106.51M
	2046.00	0.79	106.51	2044.92	4.73	4.89	-11.40	0.49	95.04M
	2145.00	0.62	95.04	2143.91	4.51	4.65	-10.21	0.22	113.63M
	2240.00	0.62	113.63	2238.91	4.27	4.40	-9.23	0.21	100.22M
	2333.00	0.70	100.22	2331.90	3.98	4.10	-8.21	0.19	86.91M
	2428.00	0.88	86.91	2426.89	3.94	4.03	-6.91	0.27	86.43M
	2523.00	0.88	86.43	2521.88	4.04	4.12	-5.45	0.01	96.14M
	2713.00	0.70	96.14	2711.86	4.04	4.08	-2.84	0.12	90.91M
	2807.00	0.79	90.91	2805.86	3.99	4.01	-1.63	0.12	80.8M
	2997.00	0.40	80.80	2995.85	4.10	4.10	0.34	0.21	6.72M
	3051.00	0.40	6.72	3049.84	4.32	4.32	0.55	0.89	283.3M
	3146.00	0.31	283.30	3144.84	4.71	4.70	0.34	0.50	278.82M
	3240.00	0.31	278.82	3238.84	4.80	4.80	-0.16	0.03	71.84M
	3376.00	0.22	71.84	3374.84	4.94	4.94	-0.28	0.38	282.03M
	3524.00	0.09	282.03	3522.84	5.05	5.05	-0.12	0.20	286.11M
	3658.00	0.70	286.11	3656.84	5.29	5.30	-1.01	0.46	278.82M
	3751.00	0.88	278.82	3749.83	5.54	5.57	-2.26	0.22	272.14M
	3848.00	1.01	272.14	3846.82	5.66	5.71	-3.85	0.18	260.54M
	3942.00	1.10	260.54	3940.80	5.52	5.60	-5.57	0.25	257.02M
	4039.00	1.19	257.02	4037.78	5.11	5.22	-7.47	0.12	231.71M
	4133.00	1.80	231.71	4131.75	3.95	4.08	-9.58	0.94	224.02M
	4227.00	2.29	224.02	4225.69	1.65	1.82	-12.04	0.60	222.7M
	4322.00	2.68	222.70	4320.60	-1.39	-1.18	-14.87	0.41	206.31M
	4416.00	1.32	206.31	4414.54	-4.00	-3.76	-16.84	1.56	156.52M
	4512.00	0.88	156.52	4510.52	-5.67	-5.43	-17.04	1.05	149.31M
	4606.00	1.19	149.31	4604.51	-7.16	-6.93	-16.25	0.36	143.34M
	4701.00	1.41	143.34	4699.48	-8.93	-8.72	-15.05	0.27	140.7M
	4795.00	1.41	140.70	4793.46	-10.73	-10.54	-13.63	0.07	152.61M
	4891.00	1.41	152.61	4889.43	-12.67	-12.50	-12.33	0.30	163.2M
	4986.00	1.58	163.20	4984.40	-14.95	-14.80	-11.42	0.34	168.12M
	5080.00	1.89	168.12	5078.35	-17.70	-17.55	-10.72	0.37	167.24M
	5174.00	2.11	167.24	5172.29	-20.90	-20.76	-10.02	0.24	171.33M
	5269.00	2.20	171.33	5267.23	-24.39	-24.27	-9.36	0.19	169.53M
	5363.00	2.29	169.53	5361.16	-28.02	-27.90	-8.75	0.12	179.24M
	5456.00	2.29	179.24	5454.08	-31.70	-31.58	-8.39	0.42	187.1M
	5554.00	2.02	187.10	5552.01	-35.37	-35.25	-8.57	0.41	188.73M
	5648.00	2.11	188.73	5645.95	-38.73	-38.61	-9.04	0.11	177.3M
	5744.00	2.02	177.30	5741.89	-42.17	-42.04	-9.23	0.44	164.34M
	5839.00	1.58	164.34	5836.84	-45.10	-44.98	-8.80	0.63	160.12M
	5934.00	1.49	160.12	5931.81	-47.51	-47.40	-8.02	0.15	141.14M
	6029.00	1.32	141.14	6026.78	-49.51	-49.41	-6.92	0.52	135.73M
	6124.00	1.71	135.73	6121.75	-51.35	-51.28	-5.24	0.44	121.54M
	6218.00	1.89	121.54	6215.70	-53.13	-53.10	-2.94	0.51	90.92M
	6313.00	3.12	90.92	6310.61	-53.94	-53.96	0.98	1.87	64.72M
	6407.00	2.02	64.72	6404.52	-53.22	-53.29	5.03	1.68	31.54M
	6502.00	1.10	31.54	6499.49	-51.70	-51.80	7.03	1.32	70.43M
	6596.00	0.88	70.43	6593.47	-50.67	-50.79	8.18	0.74	90.73M

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	TF (°)
	6691.00	1.01	90.73	6688.46	-50.41	-50.55	9.70	0.38	98.42M
	6785.15	0.88	98.42	6782.60	-50.51	-50.67	11.25	0.19	101.24M
	6809.00	0.70	101.24	6806.44	-50.56	-50.73	11.57	0.77	97.39M
TF 0 SR 75	6854.00	0.86	97.39	6851.44	-50.65	-50.82	12.18	0.37	22.13M
	6886.00	2.28	22.13	6883.43	-50.08	-50.26	12.65	6.95	6.24M
	6918.00	6.61	6.24	6915.33	-47.66	-47.84	13.09	13.94	354.63M
	6945.00	9.02	354.63	6942.08	-44.00	-44.19	13.06	10.63	26.79L
	6977.00	12.02	347.56	6973.54	-38.26	-38.44	12.11	10.19	24.36L
	7009.00	14.41	343.28	7004.69	-31.22	-31.37	10.25	8.07	10.19R
	7040.00	16.72	344.72	7034.55	-23.26	-23.37	7.96	7.55	59.29L
TF 36 / 100% @ 7112'	7073.00	18.17	337.59	7066.03	-13.97	-14.03	4.75	7.82	73.74L
Seen 29' TF 18 /75 % 3' TF TF 36 / 100% Ahead 40' TF 36 / 100%	7104.00	19.05	329.97	7095.42	-5.18	-5.18	0.37	8.34	1.18R
seen 32' TF 36 100 % ahead 8' of TF 36/100%; 32' TF 48 / 100%	7135.00	22.38	330.15	7124.41	4.25	4.32	-5.10	10.74	26.8R
Seen 8' Tf 36/100%; 26' TF 48 /100% Ahead 40' TF 48 / 100%	7167.00	26.99	335.18	7153.48	16.04	16.20	-11.18	15.82	45.32R
Seen 32' TF 48 /100% Ahead 40' TF 48 / 100%	7199.00	30.21	341.36	7181.58	30.19	30.43	-16.80	13.65	61.47R
Seen 32' TF 48 / 100 % Ahead 40 TF / 100%	7230.00	32.02	347.18	7208.12	45.53	45.83	-21.12	11.32	82.23R
Seen 32' TF 48 /100% Ahead 9' TF 48/100%; 12' TF 36 / 100%; 22' TF 24 /100%	7262.00	32.61	353.23	7235.17	62.33	62.67	-24.02	10.27	44.31R
Seen 9' TF 48/100%; 12' TF 36/100%; 10' TF 24 / 100% Ahead 41' TF 24 /100%	7293.00	34.89	357.02	7260.95	79.46	79.83	-25.47	10.01	2.2R
Seen 32' TF 24 / 100% Ahead 41' TF 24 100%	7324.00	38.98	357.27	7285.72	98.05	98.43	-26.39	13.20	14.01R
Seen 33' TF 24 / 100%	7357.00	43.83	359.01	7310.47	119.84	120.23	-27.09	15.10	21.64R
All TF 24 / 100%	7388.00	48.30	1.37	7331.97	142.16	142.55	-26.99	15.42	5.21R
13' TF 24 / 90%	7419.00	52.39	1.84	7351.75	166.02	166.40	-26.32	13.25	9.44R
52' 24 / 70%	7483.00	60.89	3.45	7386.92	219.39	219.75	-23.82	13.45	6.89R
30' 24 / 70%	7513.00	63.56	3.81	7400.89	245.90	246.23	-22.14	8.96	12.42L
19' 24 / 40%	7546.00	64.71	3.53	7415.29	275.56	275.87	-20.24	3.57	40.61L
32' 24 / 40%	7578.00	65.54	2.75	7428.75	304.56	304.85	-18.65	3.41	11.29L
16' 24 / 70%	7608.00	66.97	2.44	7440.83	332.01	332.28	-17.41	4.86	19.18R
33' 24 / 70%	7641.00	70.50	3.74	7452.80	362.73	362.99	-15.75	11.31	8.58R
	7702.00	76.04	4.60	7470.35	421.03	421.23	-11.49	9.18	12.86R
	7766.00	84.00	6.42	7481.43	483.79	483.91	-5.43	12.75	8.12L
	7797.00	87.01	5.99	7483.86	514.55	514.63	-2.09	9.81	92.07L
	7830.00	86.91	3.12	7485.61	547.43	547.48	0.52	8.69	86.57R
	7861.00	87.01	4.77	7487.26	578.34	578.36	2.65	5.32	52.25R
	7893.00	88.42	6.59	7488.53	610.20	610.18	5.82	7.19	100.52L
95' HIA // 40' HIA	7988.00	87.52	1.70	7491.90	704.95	704.84	12.68	5.23	35.65L
	8083.00	89.11	0.56	7494.69	799.90	799.77	14.55	2.06	64.1R
	8177.00	89.79	1.96	7495.60	893.89	893.74	16.62	1.66	93.93L
	8272.00	89.62	359.48	7496.09	988.88	988.73	17.81	2.62	72.79R
95' HIA // 43 HIA	8367.00	90.28	1.61	7496.17	1083.87	1083.72	18.71	2.35	98.9R
	8462.00	90.07	2.95	7495.88	1178.84	1178.64	22.49	1.43	74.2R
	8555.00	90.65	5.00	7495.29	1271.69	1271.41	28.94	2.29	107.99L
	8650.00	89.76	2.26	7494.95	1366.56	1366.21	34.95	3.03	136.36L
	8745.00	89.11	1.64	7495.89	1461.54	1461.15	38.19	0.95	82.33L
	8839.00	89.48	358.90	7497.05	1555.52	1555.13	38.63	2.94	95.91R
	8933.00	89.45	359.19	7497.93	1649.47	1649.11	37.06	0.31	34.12R
	9027.00	90.07	359.61	7498.32	1743.44	1743.11	36.08	0.80	110.85L
	9123.00	89.83	358.98	7498.40	1839.41	1839.10	34.90	0.70	76.72L
	9218.00	90.00	358.26	7498.54	1934.34	1934.07	32.61	0.78	93.28R
	9313.00	89.83	1.23	7498.69	2029.31	2029.06	32.19	3.13	67.44L
	9408.00	90.10	0.58	7498.74	2124.31	2124.05	33.69	0.74	104.84L
	9502.00	89.07	356.69	7499.42	2218.22	2218.00	31.45	4.28	67.75R
95' HIA Ahead 41' HIA	9599.00	91.75	3.24	7498.73	2315.15	2314.93	31.39	7.30	118.33L
95' HIA Ahead 41' HIA	9693.00	89.72	359.48	7497.52	2409.11	2408.88	33.62	4.55	84.94L
95' HIA Ahead 41 HIA	9787.00	89.86	357.90	7497.87	2503.04	2502.85	31.47	1.69	82.88R
95' HIA Ahead 41 IH	9882.00	90.17	0.38	7497.84	2598.00	2597.83	30.04	2.63	143.53L
	9976.00	87.52	358.42	7499.74	2691.94	2691.79	29.06	3.51	27.34R
	10071.00	89.59	359.49	7502.13	2786.85	2786.74	27.33	2.45	119.14L
	10165.00	87.11	355.03	7504.64	2880.60	2880.56	22.84	5.43	50.85R
	10259.00	89.45	357.90	7507.66	2974.27	2974.33	17.05	3.94	19.06R
	10354.00	92.17	358.84	7506.32	3069.17	3069.27	14.35	3.03	151.99L

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	TF (°)
	10450.00	89.97	357.67	7504.53	3165.05	3165.20	11.42	2.60	49.11R
95' HIA //43' HIA	10544.00	91.58	359.53	7503.26	3258.97	3259.16	9.13	2.62	98.3R
95"HIA // 43 HIA	10639.00	91.03	3.28	7501.09	3353.92	3354.08	11.46	3.99	73.08L
	10734.00	91.34	2.26	7499.13	3448.84	3448.95	16.05	1.12	49.14R
94' HIA Bias 91.8°	10828.00	92.92	4.09	7495.63	3542.69	3542.74	21.25	2.57	123.7L
95' HIA Bias 90.8°	10923.00	92.30	3.16	7491.31	3637.47	3637.45	27.25	1.18	155.17L
95' HIA Bias 90.3°	11019.00	90.83	2.48	7488.69	3733.37	3733.29	31.97	1.69	47.11R
	11108.00	94.09	6.00	7484.86	3822.11	3821.94	38.54	5.39	167.93L
	11202.00	89.55	5.03	7481.88	3915.71	3915.43	47.56	4.94	68.07L
	11296.00	89.86	4.26	7482.36	4009.50	4009.12	55.18	0.88	98.75L
	11392.00	89.66	2.96	7482.77	4105.38	4104.93	61.22	1.37	70.95L
	11486.00	90.14	1.57	7482.93	4199.35	4198.85	64.94	1.56	118.1L
	11579.00	89.59	0.54	7483.15	4292.35	4291.83	66.65	1.26	65.4L
	11675.00	89.97	359.71	7483.52	4388.34	4387.83	66.86	0.95	83.97L
	11769.00	90.10	358.48	7483.46	4482.29	4481.82	65.37	1.32	35.84R
	11843.00	90.28	358.61	7483.21	4556.24	4555.79	63.49	0.30	HS
TD	11920.00	90.28	358.61	7482.84	4633.18	4632.77	61.63	0.00	

Survey Type: Non-Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	18.000	Act Stns	30.000	30.000	SLB_MWD-POOR-Depth Only	Original Borehole / Cimarex Cottonwood Hills 32 State #3H
	1	18.000	6785.150	Act Stns	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Cottonwood Hills 32 State #3H
	1	6785.150	11920.000	Act Stns	30.000	30.000	SLB_MWD-STD	Original Borehole / Cimarex Cottonwood Hills 32 State #3H