

Oilfield Services, Central U.S. Land



Reservoir Development

PathFinder, a Schlumberger Company
9200 West Reno Avenue
Oklahoma City, Oklahoma 73127 USA
Phone: (405) 789-1515
Fax: (405) 789-1519

15-42208

August 8, 2014

Cimarex
600 N MARIENFELD STREET SUITE 600

MIDLAND, TX 79701

Re:

CLIENT: Cimarex Energy Company of CO
WELL: Hornsby 35 Federal Com 3H
FIELD: Hay Hollow, BS
RIG: Cactus 112
COUNTY: Eddy
API NO: 30-015-42208
JOB NO: 14MLD0400

Sec 35, T26S, R27E Eddy NM
N 32.00058 W 104.16500

Enclosed, please find the original copy of the survey performed on the referenced well by PathFinder, a division of Schlumberger Technology Corporation.

Other information required by your office is as follows.

<u>Name & Title of Surveyor</u>	<u>Drainhole Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Charles Okolo MWD	Hornsby 35 Federal Com 3H Original Hole	9328.00 Ft to 10730.00 Ft	June 19, 2014 to June 29, 2014	SlimPulse

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

Joseph Hogan
Field Service Manager

Oilfield Services, Central U.S. Land

Reservoir Development

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Oklahoma City, Oklahoma 73127 USA
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PATHFINDER
A Schlumberger Company

Well Reference:

Sec 35, T26S, R27E Eddy NM
N 32.00058 W 104.16500

I, Charles Okolo certify that; I am employed by PathFinder, a division of Schlumberger Technology Corporation; that I did on the day(s) of June 19, 2014 through June 29, 2014, conduct or supervise the taking of the SlimPulse surveys from a depth of 9328.00 feet to a depth of 10730.00 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 Company of Co for the Hornsby 35 Federal Com 3H Well (Original Hole) API No. 30-015-42208 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
Charles Okolo
MWD

Subscribed and Sworn to before me this 8th day of August (month) 2014 (yr)

My Commission expires:

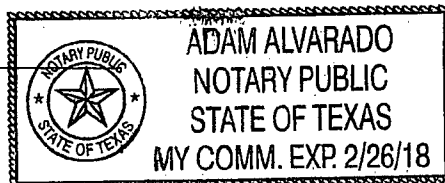
2/26/2018

Adam Alvarado
Notary Public

(signature)

KiBERG
(County State)

TEXAS



SCHLUMBERGER

Survey Report

18-Dec-2014

Client.....: Cimarex Energy Company of
Field.....: Hay Hollow, BS

Well.....: Hornsby 35 Federal Com 3H
API number.....: 30-015-42208
Engineer.....: C.Okolo

Spud date.....: 5-Jun-14
Last survey date.....: 29-Jun-14
Total accepted surveys.....: 44
MD of first survey.....: 9328.00 ft
MD of last survey.....: 10730.00 ft

County.....: Eddy
State.....: New Mexico
Rig.....: Cactus 112

Latitude.....: 32° 0' 2.089" N
Longitude.....: 104° 9' 53.988" W

----- Survey calculation methods-----

Method for positions.....: Minimum curvature
Method for DLS.....: Lubinski

----- Depth reference-----

Permanent datum.....: MSL
Depth reference.....: Driller's Depth
GL above permanent.....: 3274.00
KB above permanent.....: 3298.00
DF above permanent.....: 3298.00

----- Vertical section origin-----

Latitude (+N/S).....: 0.00 ft
Departure (+E/W).....: 0.00 ft

----- Grid Coordinates-----

NAD27 Texas State Plane, Central Zone, US Feet
X.....: 593519.58 ft
Y.....: 363991.26 ft

Azimuth from Vsect Origin to target: 355.28 degrees

----- MWD Survey Reference Criteria-----

-----Run1----- Calculation Date: 19-Jun-2014
Location G.....: 998.68465 mgn Tolerance G.....: 2.50 mgn
Location B.....: 48081.93 nT Tolerance B.....: 300.00 nT
Magnetic Dip: 59.792 degrees Tolerance Dip: 0.45 degrees

-----Run2----- Calculation Date: 20-Jun-2014
Location G.....: 998.68154 mgn Tolerance G.....: 2.50 mgn
Location B.....: 48081.93 nT Tolerance B.....: 300.00 nT
Magnetic Dip: 59.79 degrees Tolerance Dip: 0.45 degrees

-----Run3----- Calculation Date: 26-Jun-2014
Location G.....: 998.68154 mgn Tolerance G.....: 2.50 mgn
Location B.....: 48081.93 nT Tolerance B.....: 300.00 nT
Magnetic Dip: 59.79 degrees Tolerance Dip: 0.45 degrees

-----Run4----- Calculation Date: 4-Jul-2014
Location G.....: 998.68154 mgn Tolerance G.....: 2.50 mgn
Location B.....: 48081.93 nT Tolerance B.....: 300.00 nT
Magnetic Dip: 59.79 degrees Tolerance Dip: 0.45 degrees

BGGM Model: 2014

-----Run1-----
Magnetic dec (+E/W).....: 7.637 degrees
Grid Conv (+E/W).....: 0.08921 degrees
Total Azim Corr (+E/W).....: 7.54779 degrees

-----Run2-----
Magnetic dec (+E/W).....: 7.637 degrees
Grid Conv (+E/W).....: 0.08921 degrees
Total Azim Corr (+E/W).....: 7.54779 degrees

-----Run3-----
Magnetic dec (+E/W).....: 7.637 degrees
Grid Conv (+E/W).....: 0.08921 degrees
Total Azim Corr (+E/W).....: 7.54779 degrees

-----Run4-----

Magnetic dec (+E/W).....: 7.637 degrees
Grid Conv (+E/W).....: 0.08921 degrees
Total Azim Corr (+E/W)....: 7.54779 degrees

-----Survey Correction Index Description-----

0 = Uncorrected 1 = Sag Corrected
2 = DMAG Corrected 3 = Sag + DMAG Corrected

Survey List													
Seq	MD (ft)	Incl (deg)	Azim (deg)	Course (ft)	TVD (ft)	V Sec (ft)	N/-S (ft)	E/-W (ft)	Closure (ft)	at Azl (deg)	DLS (deg/100ft)	Tool	Correction
1	0.00	0.00	0.00	-999.25	0.00	0.00	0.00	0.00	0	90.00	0.00	TIP	0
2	398.00	1.58	288.53	398.00	397.95	2.17	1.74	-5.20	5.48732	288.53	0.40	Other	0
3	491.00	0.09	6.54	93.00	490.94	2.74	2.22	-6.41	6.78508	289.13	1.68	Other	0
4	585.00	0.22	323.42	94.00	584.94	2.97	2.44	-6.51	6.95245	290.57	0.18	Other	0
5	682.00	0.09	102.55	97.00	681.94	3.10	2.58	-6.55	7.03434	291.47	0.30	Other	0
6	767.00	0.00	7.50	85.00	766.94	3.08	2.56	-6.48	6.9684	291.56	0.11	Other	0
7	861.00	0.00	118.72	94.00	860.94	3.08	2.56	-6.48	6.9684	291.56	0.00	Other	0
8	953.00	0.62	340.95	92.00	952.94	3.57	3.03	-6.64	7.30217	294.53	0.67	Other	0
9	1043.00	0.00	141.35	90.00	1042.93	4.04	3.49	-6.80	7.64597	297.17	0.69	Other	0
10	1132.00	0.09	252.54	89.00	1131.93	4.02	3.47	-6.87	7.69588	296.80	0.10	Other	0
11	1224.00	0.00	296.04	92.00	1223.93	4.01	3.45	-6.94	7.74778	296.43	0.10	Other	0
12	1320.00	0.00	7.50	96.00	1319.93	4.01	3.45	-6.94	7.74778	296.43	0.00	Other	0
13	1419.00	0.09	246.12	99.00	1418.93	3.98	3.42	-7.01	7.79767	295.99	0.09	Other	0
14	1513.00	0.09	140.34	94.00	1512.93	3.90	3.33	-7.03	7.77847	295.35	0.15	Other	0
15	1608.00	0.09	5.52	95.00	1607.93	3.91	3.35	-6.97	7.73626	295.64	0.17	Other	0
16	1707.00	0.00	9.43	99.00	1706.93	3.99	3.42	-6.97	7.76334	296.18	0.09	Other	0
17	1799.00	0.00	7.05	92.00	1798.93	3.99	3.42	-6.97	7.76334	296.18	0.00	Other	0
18	1896.00	0.09	184.33	97.00	1895.93	3.91	3.35	-6.97	7.73532	295.65	0.09	Other	0
19	1991.00	0.00	30.39	95.00	1990.93	3.84	3.27	-6.98	7.7085	295.14	0.09	Other	0
20	2082.00	0.22	60.45	91.00	2081.93	3.91	3.36	-6.83	7.60885	296.21	0.24	Other	0
21	2117.00	0.00	207.05	35.00	2116.93	3.94	3.39	-6.77	7.57124	296.63	0.63	Other	0
22	2238.00	0.09	207.05	121.00	2237.93	3.86	3.31	-6.81	7.57253	295.91	0.07	Other	0
23	2266.00	0.09	292.75	28.00	2265.93	3.85	3.30	-6.84	7.59496	295.74	0.44	Other	0
24	2362.00	0.09	204.63	96.00	2361.93	3.82	3.26	-6.94	7.66921	295.14	0.13	Other	0
25	2456.00	0.22	205.12	94.00	2455.93	3.60	3.03	-7.05	7.67269	293.25	0.14	Other	0
26	2551.00	0.40	223.62	95.00	2550.93	3.22	2.62	-7.36	7.80969	289.62	0.21	Other	0
27	2645.00	0.40	242.12	94.00	2644.93	2.87	2.23	-7.87	8.18273	285.83	0.14	Other	0
28	2740.00	1.71	279.03	95.00	2739.91	3.08	2.30	-9.57	9.838	283.52	1.49	Other	0
29	2836.00	1.71	289.05	96.00	2835.87	4.00	2.99	-12.33	12.69167	283.63	0.31	Other	0
30	2930.00	0.31	233.42	94.00	2929.85	4.43	3.30	-13.86	14.25089	283.38	1.66	Other	0
31	3026.00	1.32	152.34	96.00	3025.84	3.27	2.16	-13.56	13.73081	279.07	1.36	Other	0
32	3124.00	1.32	161.04	98.00	3123.82	1.14	0.10	-12.67	12.66886	270.44	0.20	Other	0
33	3217.00	1.10	172.25	93.00	3216.80	-0.79	-1.80	-12.20	12.33232	261.60	0.35	Other	0
34	3311.00	0.70	160.25	94.00	3310.79	-2.25	-3.24	-11.88	12.31696	254.77	0.47	Other	0
35	3406.00	0.62	130.63	95.00	3405.78	-3.17	-4.12	-11.30	12.02475	249.98	0.36	Other	0
36	3504.00	0.48	109.05	98.00	3503.77	-3.72	-4.60	-10.51	11.46884	246.38	0.25	Other	0
37	3598.00	0.70	113.45	94.00	3597.77	-4.15	-4.95	-9.61	10.81015	242.73	0.24	Other	0
38	3692.00	0.70	111.82	94.00	3691.76	-4.67	-5.39	-8.55	10.1088	237.75	0.02	Other	0
39	3787.00	0.48	109.45	95.00	3786.76	-5.10	-5.74	-7.64	9.55377	233.05	0.23	Other	0
40	3881.00	0.40	158.36	94.00	3880.76	-5.57	-6.18	-7.14	9.44452	229.14	0.40	Other	0
41	3975.00	0.70	174.93	94.00	3974.75	-6.46	-7.06	-6.97	9.91873	224.65	0.36	Other	0
42	4071.00	0.48	126.06	96.00	4070.75	-7.31	-7.88	-6.59	10.27258	219.93	0.55	Other	0
43	4165.00	0.70	114.24	94.00	4164.74	-7.84	-8.34	-5.75	10.13485	214.58	0.27	Other	0
44	4268.00	0.48	129.93	103.00	4267.74	-8.45	-8.88	-4.85	10.11662	208.63	0.26	Other	0
45	4354.00	0.40	148.34	86.00	4353.73	-8.97	-9.37	-4.41	10.35418	205.23	0.19	Other	0
46	4449.00	0.48	140.52	95.00	4448.73	-9.59	-9.96	-3.99	10.72426	201.82	0.11	Other	0
47	4545.00	0.48	173.83	96.00	4544.73	-10.33	-10.67	-3.69	11.28541	199.07	0.29	Other	0
48	4640.00	0.62	192.86	95.00	4639.72	-11.21	-11.56	-3.76	12.1584	198.01	0.24	Other	0
49	4735.00	0.70	105.76	95.00	4734.72	-11.91	-12.22	-3.32	12.66301	195.18	0.96	Other	0
50	4830.00	0.09	144.25	95.00	4829.72	-12.17	-12.44	-2.71	12.73193	192.30	0.67	Other	0
51	4925.00	0.40	51.84	95.00	4924.72	-12.06	-12.30	-2.41	12.52889	191.09	0.44	Other	0
52	5021.00	0.62	49.42	96.00	5020.71	-11.57	-11.75	-1.75	11.87995	188.48	0.23	Other	0
53	5116.00	0.70	41.73	95.00	5115.70	-10.87	-10.98	-0.97	11.0259	185.07	0.13	Other	0
54	5211.00	0.48	81.54	95.00	5210.70	-10.44	-10.49	-0.19	10.49293	181.06	0.48	Other	0
55	5306.00	0.31	87.52	95.00	5305.70	-10.42	-10.42	0.46	10.43143	177.50	0.18	Other	0
56	5403.00	0.48	111.56	97.00	5402.70	-10.61	-10.56	1.10	10.61613	174.08	0.24	Other	0
57	5497.00	0.70	30.83	94.00	5496.69	-10.32	-10.21	1.76	10.36099	170.24	0.83	Other	0
58	5592.00	0.79	31.62	95.00	5591.68	-9.32	-9.16	2.40	9.46367	165.33	0.10	Other	0
59	5689.00	0.48	344.34	97.00	5688.68	-8.38	-8.19	2.64	8.60855	162.16	0.60	Other	0
60	5782.00	0.48	295.73	93.00	5781.68	-7.80	-7.65	2.18	7.95525	164.08	0.42	Other	0
61	5879.00	0.79	285.05	97.00	5878.67	-7.37	-7.30	1.17	7.39333	170.89	0.34	Other	0
62	5969.00	2.11	327.86	90.00	5968.64	-5.69	-5.74	-0.31	5.74443	183.10	1.80	Other	0
63	6063.00	2.29	341.74	94.00	6062.57	-2.33	-2.49	-1.82	3.08181	216.19	0.60	Other	0
64	6159.00	2.59	327.55	96.00	6158.49	1.46	1.16	-3.58	3.76879	288.00	0.70	Other	0
65	6255.00	1.89	338.36	96.00	6254.41	4.89	4.47	-5.33	6.95553	309.95	0.85	Other	0
66	6350.00	1.80	346.36	95.00	6349.36	7.86	7.37	-6.26	9.67273	319.66	0.29	Other	0
67	6443.00	1.49	23.62	93.00	6442.33	10.37	9.90	-6.12	11.6396	328.27	1.17	Other	0
68	6539.00	1.71	2.42	96.00	6538.29	12.89	12.47	-5.56	13.65788	335.97	0.65	Other	0
69	6634.00	1.58	27.54	95.00	6633.25	15.40	15.05	-4.90	15.82811	341.98	0.76	Other	0

70	6729.00	1.58	94.42	95.00	6728.22	16.30	16.11	-2.98	16.38643	349.51	1.83	Other	0
71	6824.00	1.71	70.95	95.00	6823.19	16.45	16.47	-0.34	16.47762	358.82	0.72	Other	0
72	6918.00	1.70	72.36	94.00	6917.16	17.00	17.21	1.85	17.30421	6.13	0.65	Other	0
73	7012.00	1.19	76.05	94.00	7011.14	17.35	17.71	3.65	18.08708	11.66	0.12	Other	0
74	7109.00	0.88	93.15	97.00	7108.12	17.41	17.92	5.38	18.70506	16.70	0.45	Other	0
75	7204.00	0.62	115.03	95.00	7203.11	17.06	17.66	6.57	18.84095	20.41	0.40	Other	0
76	7300.00	0.40	109.05	96.00	7299.11	16.67	17.33	7.36	18.82635	23.00	0.24	Other	0
77	7395.00	0.22	123.64	95.00	7394.11	16.42	17.12	7.82	18.82246	24.56	0.21	Other	0
78	7489.00	0.79	108.75	94.00	7488.11	16.05	16.81	8.59	18.87747	27.05	0.62	Other	0
79	7583.00	1.01	142.54	94.00	7582.09	15.09	15.95	9.70	18.66636	31.32	0.60	Other	0
80	7678.00	1.10	176.33	95.00	7677.08	13.48	14.37	10.27	17.66445	35.55	0.65	Other	0
81	7774.00	1.01	184.33	96.00	7773.06	11.72	12.61	10.27	16.25918	39.16	0.18	Other	0
82	7870.00	1.49	184.95	96.00	7869.04	9.66	10.52	10.09	14.58062	43.82	0.50	Other	0
83	7965.00	2.29	177.12	95.00	7963.99	6.54	7.39	10.08	12.50449	53.75	0.88	Other	0
84	8057.00	1.29	135.86	92.00	8055.94	3.90	4.82	10.90	11.91393	66.16	1.71	Other	0
85	8152.00	0.40	66.03	95.00	8150.94	3.19	4.18	11.95	12.65629	70.70	1.28	Other	0
86	8248.00	0.40	351.46	96.00	8246.93	3.63	4.65	12.20	13.05771	69.14	0.50	Other	0
87	8343.00	1.89	314.34	95.00	8341.91	5.36	6.31	11.33	12.9695	60.88	1.61	Other	0
88	8438.00	1.41	314.34	95.00	8436.87	7.64	8.46	9.67	12.85114	48.82	0.66	Other	0
89	8533.00	1.41	315.64	95.00	8531.84	9.42	10.11	8.02	12.90762	38.41	0.03	Other	0
90	8629.00	1.32	308.13	96.00	8627.82	11.08	11.64	6.32	13.24824	28.51	0.21	Other	0
91	8722.00	1.19	297.75	93.00	8720.79	12.33	12.75	4.63	13.56602	19.94	0.28	Other	0
92	8817.00	1.01	279.34	95.00	8815.78	13.06	13.35	2.93	13.66527	12.37	0.41	Other	0
93	8913.00	1.19	270.34	96.00	8911.76	13.36	13.49	1.09	13.53579	4.64	0.26	Other	0
94	9006.00	1.01	252.23	93.00	9004.74	13.26	13.25	-0.65	13.26302	357.18	0.42	Other	0
95	9101.00	1.10	248.14	95.00	9099.73	12.80	12.65	-2.30	12.85842	349.72	0.12	Other	0
96	9198.00	0.88	239.44	97.00	9196.71	12.20	11.93	-3.80	12.51746	342.32	0.27	Other	0
97	9280.00	1.10	230.34	82.00	9278.70	11.47	11.10	-4.95	12.15687	335.98	0.33	Other	0
98	9328.00	1.36	212.86	48.00	9326.69	10.76	10.33	-5.61	11.75838	331.49	0.94	SlimPulse	0
99	9360.00	1.61	205.65	32.00	9358.68	10.07	9.61	-6.01	11.33949	327.97	0.99	SlimPulse	0
100	9392.00	1.90	223.86	32.00	9390.66	9.33	8.82	-6.57	11.00161	323.31	1.95	SlimPulse	0
101	9424.00	4.37	248.54	32.00	9422.61	8.63	7.99	-8.08	11.36313	314.70	8.64	SlimPulse	0
102	9456.00	8.45	260.25	32.00	9454.41	8.07	7.15	-11.53	13.36705	301.80	13.32	SlimPulse	0
103	9487.00	12.42	260.06	31.00	9484.89	7.57	6.19	-17.06	18.14952	289.93	12.81	SlimPulse	0
104	9519.00	15.62	259.36	32.00	9515.93	6.81	4.80	-24.69	25.14901	280.99	9.99	SlimPulse	0
105	9550.00	18.91	262.10	31.00	9545.53	6.10	3.34	-33.77	33.92957	275.64	10.94	SlimPulse	0
106	9582.00	22.20	266.55	32.00	9575.49	5.95	2.26	-44.94	44.99628	272.88	11.39	SlimPulse	0
107	9614.00	25.78	271.43	32.00	9604.73	6.82	2.07	-57.94	57.97364	272.04	12.78	SlimPulse	0
108	9645.00	30.00	275.97	31.00	9632.12	8.99	3.04	-72.39	72.45614	272.41	15.24	SlimPulse	0
109	9677.00	34.14	280.13	32.00	9659.24	12.77	5.46	-89.20	89.36517	273.50	14.66	SlimPulse	0
110	9709.00	37.66	282.27	32.00	9685.15	17.93	9.12	-107.60	107.98302	274.84	11.68	SlimPulse	0
111	9741.00	41.94	287.25	32.00	9709.74	24.79	14.37	-127.38	128.18456	276.44	16.66	SlimPulse	0
112	9772.00	44.69	290.91	31.00	9732.30	33.38	21.33	-147.46	148.99437	278.23	12.02	SlimPulse	0
113	9804.00	46.81	295.44	32.00	9754.63	44.12	30.36	-168.51	171.22676	280.21	12.10	SlimPulse	0
114	9835.00	48.85	301.02	31.00	9775.45	56.62	41.24	-188.73	193.18483	282.33	14.88	SlimPulse	0
115	9867.00	51.85	305.50	32.00	9795.87	71.79	54.76	-209.31	216.35524	284.66	14.27	SlimPulse	0
116	9899.00	54.65	309.05	32.00	9815.02	88.94	70.30	-229.69	240.21078	287.02	12.47	SlimPulse	0
117	9930.00	58.33	310.99	31.00	9832.14	107.14	86.92	-249.48	264.18499	289.21	12.97	SlimPulse	0
118	9962.00	60.79	311.04	32.00	9848.35	126.89	105.03	-270.29	289.97878	291.23	7.71	SlimPulse	0
119	9994.00	62.75	312.74	32.00	9863.49	147.38	123.85	-291.28	316.51293	293.04	7.71	SlimPulse	0
120	10025.00	64.98	317.35	31.00	9877.15	168.62	143.55	-310.92	342.45818	294.78	15.17	SlimPulse	0
121	10056.00	67.17	322.15	31.00	9889.72	191.68	165.17	-329.21	368.32435	296.64	15.81	SlimPulse	0
122	10088.00	69.42	327.31	32.00	9901.57	217.27	189.44	-346.36	394.78432	298.68	16.54	SlimPulse	0
123	10119.00	71.17	332.96	31.00	9912.03	243.68	214.74	-360.88	419.93692	300.75	18.06	SlimPulse	0
124	10151.00	71.52	338.23	32.00	9922.27	272.21	242.34	-373.40	445.14521	302.98	15.65	SlimPulse	0
125	10183.00	71.25	341.34	32.00	9932.49	301.43	270.79	-383.88	469.7754	305.20	9.23	SlimPulse	0
126	10254.00	71.92	337.45	71.00	9954.93	366.21	333.83	-407.58	526.844	309.32	5.28	SlimPulse	0
127	10286.00	72.15	337.37	32.00	9964.80	395.18	361.93	-419.28	553.88358	310.80	0.77	SlimPulse	0
128	10318.00	71.46	339.34	32.00	9974.79	424.19	390.10	-430.71	581.11102	312.17	3.84	SlimPulse	0
129	10350.00	70.44	339.35	32.00	9985.23	453.21	418.32	-441.61	608.27852	313.45	4.20	SlimPulse	0
130	10382.00	69.74	340.63	32.00	9996.13	482.23	446.58	-451.90	635.33622	314.66	4.34	SlimPulse	0
131	10414.00	68.75	341.96	32.00	10007.47	511.26	474.93	-461.50	662.21986	315.82	4.96	SlimPulse	0
132	10445.00	67.59	343.98	31.00	10019.00	539.37	502.44	-469.93	687.95059	316.91	7.12	SlimPulse	0
133	10477.00	67.00	345.59	32.00	10031.36	568.40	530.92	-477.68	714.17866	318.02	5.00	SlimPulse	0
134	10508.00	68.64	346.82	31.00	10043.06	596.74	558.80	-484.52	739.60208	319.07	6.44	SlimPulse	0
135	10540.00	70.72	347.54	32.00	10054.17	626.45	588.06	-491.17	766.19875	320.13	6.85	SlimPulse	0
136	10572.00	72.92	348.27	32.00	10064.16	656.60	617.78	-497.54	793.22229	321.15	7.22	SlimPulse	0
137	10603.00	74.58	348.54	31.00	10072.83	686.14	646.94	-503.52	819.79206	322.11	5.40	SlimPulse	0
138	10635.00	76.69	349.37	32.00	10080.77	716.95	677.36	-509.46	847.56237	323.05	7.06	SlimPulse	0
139	10667.00	77.29	351.04	32.00	10087.97	748.01	708.08	-514.76	875.41844	323.98	5.43	SlimPulse	0
140	10699.00	78.26	352.28	32.00	10094.75	779.22	739.03	-519.29	903.22929	324.91	4.84	SlimPulse	0
141	10730.00	79.10	353.09	31.00	10100.84	809.58	769.17	-523.16	930.22983	325.78	3.72	SlimPulse	0
142	10800.00	79.10	353.09	70.00	10114.07	878.27	837.41	-531.43	991.80623	327.60	0.00	PROJ	0



Cimarex Hornsby 35 Federal Com 3H ST01 XEM+MWD 9962ft to 16881



Survey Report

(Non-Def Survey)

Report Date: August 06, 2014 - 10:03 AM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Hornsby 35 Federal Com 3H / Cimarex Hornsby 35 Federal Com 3H
Well: Cimarex Hornsby 35 Federal Com 3H
Borehole: ST01
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Hornsby 35 Federal Com 3H ST01 XEM+MWD 9962ft to 16881
Survey Date: July 02, 2014
Tort / AHD / DDI / ERD Ratio: 273.483 ° / 7279.427 ft / 6.519 / 0.715
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 0' 2.08923", W 104° 9' 53.98777"
Location Grid N/E Y/X: N 363991.264 ftUS, E 593519.582 ftUS
CRS Grid Convergence Angle: 0.0892 °
Grid Scale Factor: 0.99991221
Version / Patch: 2.7.1043.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 355.284 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3298.000 ft above
Seabed / Ground Elevation: 3274.000 ft above
Magnetic Declination: 7.628 °
Total Gravity Field Strength: 998.4246mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48069.845 nT
Magnetic Dip Angle: 59.789 °
Declination Date: July 02, 2014
Magnetic Declination Model: BGGM 2014
North Reference: Grid North
Grid Convergence Used: 0.0892 °
Total Corr Mag North->Grid North: 7.5385 °
Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
SHL Hornsby 35 Federal Com 3H	0.00	0.00	355.28	0.00	0.00	0.00	0.00	0.00	0.00	N/A	288.53M
	398.00	1.58	288.53	397.95	2.17	1.74	-5.20	5.49	288.53	0.40	6.54M
	491.00	0.09	6.54	490.94	2.74	2.22	-6.41	6.79	289.13	1.68	323.42M
	585.00	0.22	323.42	584.94	2.97	2.44	-6.51	6.95	290.57	0.18	102.55M
	682.00	0.09	102.55	681.94	3.10	2.58	-6.55	7.03	291.47	0.30	7.5M
	767.00	0.00	7.50	766.94	3.08	2.56	-6.48	6.97	291.56	0.11	118.72M
	861.00	0.00	118.72	860.94	3.08	2.56	-6.48	6.97	291.56	0.00	340.95M
	953.00	0.62	340.95	952.94	3.57	3.03	-6.64	7.30	294.53	0.67	141.35M
	1043.00	0.00	141.35	1042.93	4.04	3.49	-6.80	7.65	297.17	0.69	252.54M
	1132.00	0.09	252.54	1131.93	4.02	3.47	-6.87	7.70	296.80	0.10	296.04M
	1224.00	0.00	296.04	1223.93	4.01	3.45	-6.94	7.75	296.43	0.10	7.5M
	1320.00	0.00	7.50	1319.93	4.01	3.45	-6.94	7.75	296.43	0.00	246.12M
	1419.00	0.09	246.12	1418.93	3.98	3.42	-7.01	7.80	295.99	0.09	140.34M
	1513.00	0.09	140.34	1512.93	3.90	3.33	-7.03	7.78	295.35	0.15	5.52M
	1608.00	0.09	5.52	1607.93	3.91	3.35	-6.97	7.74	295.64	0.17	9.43M

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	1707.00	0.00	9.43	1706.93	3.99	3.42	-6.97	7.76	296.18	0.09	7.05M
	1799.00	0.00	7.05	1798.93	3.99	3.42	-6.97	7.76	296.18	0.00	184.33M
	1896.00	0.09	184.33	1895.93	3.91	3.35	-6.97	7.74	295.65	0.09	30.39M
	1991.00	0.00	30.39	1990.93	3.84	3.27	-6.98	7.71	295.14	0.09	60.45M
	2082.00	0.22	60.45	2081.93	3.91	3.36	-6.83	7.61	296.21	0.24	207.05M
	2117.00	0.00	207.05	2116.93	3.94	3.39	-6.77	7.57	296.63	0.63	207.05M
	2238.00	0.09	207.05	2237.93	3.86	3.31	-6.81	7.57	295.91	0.07	292.75M
	2266.00	0.09	292.75	2265.93	3.85	3.30	-6.84	7.59	295.74	0.44	204.63M
	2362.00	0.09	204.63	2361.93	3.82	3.26	-6.94	7.67	295.14	0.13	205.12M
	2456.00	0.22	205.12	2455.93	3.60	3.03	-7.05	7.67	293.25	0.14	223.62M
	2551.00	0.40	223.62	2550.93	3.22	2.62	-7.36	7.81	289.62	0.21	242.12M
	2645.00	0.40	242.12	2644.93	2.87	2.23	-7.87	8.18	285.83	0.14	279.03M
	2740.00	1.71	279.03	2739.91	3.08	2.30	-9.57	9.84	283.52	1.49	289.05M
	2836.00	1.71	289.05	2835.87	4.00	2.99	-12.33	12.69	283.63	0.31	233.42M
	2930.00	0.31	233.42	2929.85	4.43	3.30	-13.86	14.25	283.38	1.66	152.34M
	3026.00	1.32	152.34	3025.84	3.27	2.16	-13.56	13.73	279.07	1.36	161.04M
	3124.00	1.32	161.04	3123.82	1.14	0.10	-12.67	12.67	270.44	0.20	172.25M
	3217.00	1.10	172.25	3216.80	-0.79	-1.80	-12.20	12.33	261.60	0.35	160.25M
	3311.00	0.70	160.25	3310.79	-2.25	-3.24	-11.88	12.32	254.77	0.47	130.63M
	3406.00	0.62	130.63	3405.78	-3.17	-4.12	-11.30	12.02	249.98	0.36	109.05M
	3504.00	0.48	109.05	3503.77	-3.72	-4.60	-10.51	11.47	246.38	0.25	113.45M
	3598.00	0.70	113.45	3597.77	-4.15	-4.95	-9.61	10.81	242.73	0.24	111.82M
	3692.00	0.70	111.82	3691.76	-4.67	-5.39	-8.55	10.11	237.75	0.02	109.45M
	3787.00	0.48	109.45	3786.76	-5.10	-5.74	-7.64	9.55	233.05	0.23	158.36M
	3881.00	0.40	158.36	3880.76	-5.57	-6.18	-7.14	9.44	229.14	0.40	174.93M
	3975.00	0.70	174.93	3974.75	-6.46	-7.06	-6.97	9.92	224.65	0.36	126.06M
	4071.00	0.48	126.06	4070.75	-7.31	-7.88	-6.59	10.27	219.93	0.55	114.24M
	4165.00	0.70	114.24	4164.74	-7.84	-8.34	-5.75	10.13	214.58	0.27	129.93M
	4268.00	0.48	129.93	4267.74	-8.45	-8.88	-4.85	10.12	208.63	0.26	148.34M
	4354.00	0.40	148.34	4353.73	-8.97	-9.37	-4.41	10.35	205.23	0.19	140.52M
	4449.00	0.48	140.52	4448.73	-9.59	-9.96	-3.99	10.72	201.82	0.11	173.83M
	4545.00	0.48	173.83	4544.73	-10.33	-10.67	-3.69	11.29	199.07	0.29	192.86M
	4640.00	0.62	192.86	4639.72	-11.21	-11.56	-3.76	12.16	198.01	0.24	105.76M
	4735.00	0.70	105.76	4734.72	-11.91	-12.22	-3.32	12.66	195.18	0.96	144.25M
	4830.00	0.09	144.25	4829.72	-12.17	-12.44	-2.71	12.73	192.30	0.67	51.84M
	4925.00	0.40	51.84	4924.72	-12.06	-12.30	-2.41	12.53	191.09	0.44	49.42M
	5021.00	0.62	49.42	5020.71	-11.57	-11.75	-1.75	11.88	188.48	0.23	41.73M
	5116.00	0.70	41.73	5115.70	-10.87	-10.98	-0.97	11.03	185.07	0.13	81.54M
	5211.00	0.48	81.54	5210.70	-10.44	-10.49	-0.19	10.49	181.06	0.48	87.52M
	5306.00	0.31	87.52	5305.70	-10.42	-10.42	0.46	10.43	177.50	0.18	111.56M
	5403.00	0.48	111.56	5402.70	-10.61	-10.56	1.10	10.62	174.08	0.24	30.83M
	5497.00	0.70	30.83	5496.69	-10.32	-10.21	1.76	10.36	170.24	0.83	31.62M
	5592.00	0.79	31.62	5591.68	-9.32	-9.16	2.40	9.46	165.33	0.10	344.34M
	5689.00	0.48	344.34	5688.68	-8.38	-8.19	2.64	8.61	162.16	0.60	295.73M

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	5782.00	0.48	295.73	5781.68	-7.80	-7.65	2.18	7.96	164.08	0.42	285.05M
	5879.00	0.79	285.05	5878.67	-7.37	-7.30	1.17	7.39	170.89	0.34	327.86M
	5969.00	2.11	327.86	5968.64	-5.69	-5.74	-0.31	5.74	183.10	1.80	341.74M
	6063.00	2.29	341.74	6062.57	-2.33	-2.49	-1.82	3.08	216.19	0.60	327.55M
	6159.00	2.59	327.55	6158.49	1.46	1.16	-3.58	3.77	288.00	0.70	338.36M
	6255.00	1.89	338.36	6254.41	4.89	4.47	-5.33	6.96	309.95	0.85	346.36M
	6350.00	1.80	346.36	6349.36	7.86	7.37	-6.26	9.67	319.66	0.29	23.62M
	6443.00	1.49	23.62	6442.33	10.37	9.90	-6.12	11.64	328.27	1.17	2.42M
	6539.00	1.71	2.42	6538.29	12.89	12.47	-5.56	13.66	335.97	0.65	27.54M
	6634.00	1.58	27.54	6633.25	15.40	15.05	-4.90	15.83	341.98	0.76	94.42M
	6729.00	1.58	94.42	6728.22	16.30	16.11	-2.98	16.39	349.51	1.83	70.95M
	6824.00	1.71	70.95	6823.19	16.45	16.47	-0.34	16.48	358.82	0.72	72.36M
	6918.00	1.10	72.36	6917.16	17.00	17.21	1.85	17.30	6.13	0.65	76.05M
	7012.00	1.19	76.05	7011.14	17.35	17.71	3.65	18.09	11.66	0.12	93.15M
	7109.00	0.88	93.15	7108.12	17.41	17.92	5.38	18.71	16.70	0.45	115.03M
	7204.00	0.62	115.03	7203.11	17.06	17.66	6.57	18.84	20.41	0.40	109.05M
	7300.00	0.40	109.05	7299.11	16.67	17.33	7.36	18.83	23.00	0.24	123.64M
	7395.00	0.22	123.64	7394.11	16.42	17.12	7.82	18.82	24.56	0.21	108.75M
	7489.00	0.79	108.75	7488.11	16.05	16.81	8.59	18.88	27.05	0.62	142.54M
	7583.00	1.01	142.54	7582.09	15.09	15.95	9.70	18.67	31.32	0.60	176.33M
	7678.00	1.10	176.33	7677.08	13.48	14.37	10.27	17.66	35.55	0.65	184.33M
	7774.00	1.01	184.33	7773.06	11.72	12.61	10.27	16.26	39.16	0.18	184.95M
	7870.00	1.49	184.95	7869.04	9.66	10.52	10.09	14.58	43.82	0.50	177.12M
	7965.00	2.29	177.12	7963.99	6.54	7.39	10.08	12.50	53.75	0.88	135.86M
	8057.00	1.29	135.86	8055.94	3.90	4.82	10.90	11.91	66.16	1.71	66.03M
	8152.00	0.40	66.03	8150.94	3.19	4.18	11.95	12.66	70.70	1.28	351.46M
	8248.00	0.40	351.46	8246.93	3.63	4.65	12.20	13.06	69.14	0.50	328.34M
	8343.00	1.89	328.34	8341.91	5.36	6.31	11.33	12.97	60.88	1.61	314.34M
	8438.00	1.41	314.34	8436.87	7.64	8.46	9.67	12.85	48.82	0.66	315.64M
	8533.00	1.41	315.64	8531.84	9.42	10.11	8.02	12.91	38.41	0.03	308.13M
	8629.00	1.32	308.13	8627.82	11.08	11.64	6.32	13.25	28.51	0.21	297.75M
	8722.00	1.19	297.75	8720.79	12.33	12.75	4.63	13.57	19.94	0.28	279.34M
	8817.00	1.01	279.34	8815.78	13.06	13.35	2.93	13.67	12.37	0.41	270.34M
	8913.00	1.19	270.34	8911.76	13.36	13.49	1.09	13.54	4.64	0.26	252.23M
	9006.00	1.01	252.23	9004.74	13.26	13.25	-0.65	13.26	357.18	0.42	248.14M
	9101.00	1.10	248.14	9099.73	12.80	12.65	-2.30	12.86	349.72	0.12	239.44M
	9198.00	0.88	239.44	9196.71	12.20	11.93	-3.80	12.52	342.32	0.27	230.34M
	9280.00	1.10	230.34	9278.70	11.47	11.10	-4.95	12.16	335.98	0.33	212.86M
	9328.00	1.36	212.86	9326.69	10.76	10.33	-5.61	11.76	331.49	0.94	205.65M
	9360.00	1.61	205.65	9358.68	10.07	9.61	-6.01	11.33	327.96	0.97	223.86M
	9392.00	1.90	223.86	9390.66	9.33	8.82	-6.58	11.00	323.29	1.95	248.54M
Last XEM Survey	9424.00	4.37	248.54	9422.61	8.63	7.99	-8.08	11.36	314.69	8.62	260.25M

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
First PathFinder Survey	9456.00	8.45	260.25	9454.41	8.07	7.15	-11.53	13.57	301.79	13.32	0.59L
	9487.00	12.42	260.06	9484.89	7.57	6.18	-17.06	18.15	289.92	12.81	3.37L
	9519.00	15.62	259.36	9515.93	6.81	4.79	-24.69	25.15	280.99	10.01	15.2R
	9550.00	18.91	262.10	9545.53	6.10	3.33	-33.77	33.93	275.64	10.93	27.5R
	9582.00	22.20	266.55	9575.49	5.94	2.26	-44.94	45.00	272.87	11.37	31.25R
	9614.00	25.78	271.43	9604.73	6.82	2.07	-57.94	57.98	272.04	12.78	28.74R
	9645.00	30.00	275.97	9632.12	8.98	3.04	-72.39	72.46	272.41	15.23	29.86R
	9677.00	34.14	280.13	9659.24	12.77	5.45	-89.20	89.37	273.50	14.66	20.49R
	9709.00	37.66	282.27	9685.16	17.93	9.11	-107.60	107.98	274.84	11.68	38.62R
	9741.00	41.94	287.25	9709.74	24.79	14.36	-127.38	128.18	276.43	16.67	43.74R
Tie-In ST01	9772.00	44.69	290.91	9732.30	33.38	21.33	-147.46	148.99	278.23	12.01	58.44R
	9804.00	46.81	295.44	9754.63	44.11	30.36	-168.51	171.23	280.21	12.11	65.64R
	9835.00	48.85	301.02	9775.45	56.61	41.23	-188.73	193.18	282.32	14.87	50.43R
	9867.00	51.85	305.50	9795.87	71.78	54.76	-209.31	216.35	284.66	14.28	46.53R
	9899.00	54.65	309.05	9815.02	88.94	70.29	-229.70	240.21	287.02	12.47	24.27R
	9930.00	58.33	310.99	9832.14	107.13	86.92	-249.48	264.19	289.21	12.97	1.02R
	9962.00	60.79	311.04	9848.35	126.89	105.02	-270.30	289.98	291.23	7.69	108.13R
	10068.00	59.86	314.48	9900.84	194.74	167.52	-337.91	377.16	296.37	2.95	118.72L
	10086.00	59.09	312.82	9909.98	206.33	178.23	-349.13	391.99	297.04	9.02	151.4L
	10116.00	58.98	312.75	9925.41	225.29	195.70	-368.00	416.80	298.00	0.42	142.84R
Cross Hard Line	10164.00	58.62	313.07	9950.28	255.63	223.65	-398.08	456.60	299.33	0.94	39.37R
	10196.00	59.88	314.26	9966.64	276.18	242.64	-417.97	483.29	300.14	5.07	47.67R
	10227.00	62.96	317.99	9981.47	297.29	262.27	-436.82	509.50	300.98	14.50	62.45R
	10259.00	64.19	320.56	9995.72	320.47	283.98	-455.51	536.78	301.94	8.15	31.31R
	10291.00	65.57	321.48	10009.30	344.42	306.51	-473.73	564.24	302.90	5.04	50.3R
	10323.00	67.58	324.07	10022.02	369.18	329.89	-491.49	591.94	303.87	9.73	40.01R
	10354.00	69.99	326.21	10033.24	394.17	353.60	-508.00	618.95	304.84	10.09	52.86R
	10386.00	71.71	328.58	10043.74	420.88	379.06	-524.29	646.97	305.87	8.82	64.01R
	10417.00	73.75	332.84	10052.95	447.80	404.87	-538.76	673.93	306.92	14.68	68.14R
	10449.00	75.36	336.89	10061.47	476.70	432.79	-551.85	701.32	308.11	13.20	80.19R
Cross Hard Line	10468.00	75.70	338.86	10066.22	494.25	449.83	-558.78	717.35	308.84	10.21	79.7R
	10481.00	75.94	340.21	10069.40	506.38	461.64	-563.19	728.21	309.34	10.21	62.38R
	10513.00	77.38	343.00	10076.79	536.63	491.19	-573.01	754.72	310.60	9.60	57.43R
	10544.00	79.17	345.83	10083.09	566.44	520.42	-581.16	780.12	311.84	10.64	58.58R
	10576.00	80.92	348.71	10088.62	597.64	551.16	-588.10	806.00	313.14	10.42	57.63R
	10608.00	83.73	353.13	10092.90	629.25	582.46	-593.10	831.28	314.48	16.26	90R
	10638.00	83.73	354.90	10096.17	659.07	612.12	-596.21	854.49	315.75	5.86	62.18R
	10670.00	84.04	355.49	10099.58	690.88	643.83	-598.88	879.30	317.07	2.07	114.28R
	10702.00	83.49	356.72	10103.06	722.69	675.56	-601.04	904.23	318.34	4.19	113.98R
	10733.00	82.59	358.77	10106.82	753.43	706.31	-602.25	928.21	319.55	7.18	108.98R
	10765.00	81.89	0.84	10111.14	785.04	738.01	-602.36	952.63	320.78	6.77	114.6R

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	10797.00	81.12	2.55	10115.86	816.49	769.65	-601.42	976.76	322.00	5.81	68.63R
	10828.00	81.24	2.86	10120.62	846.87	800.25	-599.97	1000.18	323.14	1.06	6.65R
	10860.00	82.09	2.96	10125.26	878.25	831.87	-598.37	1024.72	324.27	2.67	1.08R
	10892.00	83.14	2.98	10129.37	909.70	863.56	-596.72	1049.67	325.36	3.28	6.76R
	10987.00	87.70	3.52	10136.95	1003.45	958.08	-591.35	1125.88	328.32	4.83	83.05L
	11082.00	87.87	2.13	10140.62	1097.56	1052.89	-586.68	1205.31	330.87	1.47	43.64L
	11177.00	88.73	1.31	10143.44	1191.92	1147.80	-583.83	1287.75	333.04	1.25	117.99L
	11272.00	88.56	0.99	10145.69	1286.39	1242.76	-581.92	1372.25	334.91	0.38	32R
	11368.00	89.04	1.29	10147.70	1381.87	1338.72	-580.01	1458.96	336.57	0.59	34.64R
	11463.00	89.59	1.67	10148.84	1476.31	1433.68	-577.56	1545.64	338.06	0.70	113.63L
	11558.00	89.45	1.35	10149.63	1570.74	1528.64	-575.05	1633.23	339.38	0.37	156.8L
	11653.00	89.31	1.29	10150.66	1665.21	1623.61	-572.87	1721.71	340.57	0.16	31.26L
	11748.00	89.59	1.12	10151.57	1759.70	1718.58	-570.87	1810.92	341.62	0.34	111.8R
	11843.00	89.55	1.22	10152.28	1854.20	1813.56	-568.93	1900.71	342.58	0.11	49.76R
	11938.00	89.66	1.35	10152.94	1948.67	1908.54	-566.80	1990.92	343.46	0.18	121.43L
	12034.00	89.55	1.17	10153.60	2044.15	2004.51	-564.69	2082.53	344.27	0.22	45R
	12127.00	89.69	1.31	10154.22	2136.65	2097.49	-562.67	2171.65	344.98	0.21	115.5L
	12222.00	89.38	0.66	10154.99	2231.17	2192.47	-561.04	2263.11	345.65	0.76	LS
	12317.00	88.66	0.66	10156.61	2325.74	2287.45	-559.95	2354.99	346.24	0.76	59.04R
	12412.00	89.11	1.41	10158.46	2420.24	2382.41	-558.23	2446.94	346.81	0.92	9.46R
	12508.00	89.35	1.45	10159.75	2515.68	2478.37	-555.84	2539.94	347.36	0.25	131.19L
	12603.00	88.93	0.97	10161.18	2610.16	2573.34	-553.83	2632.26	347.85	0.67	93.51L
	12697.00	88.90	0.48	10162.96	2703.72	2667.32	-552.64	2723.97	348.29	0.52	151.27R
	12789.00	88.28	0.82	10165.22	2795.29	2759.28	-551.60	2813.88	348.70	0.77	90R
	12887.00	88.28	1.01	10168.16	2892.78	2857.23	-550.03	2909.69	349.10	0.19	54.45R
	12982.00	88.38	1.15	10170.93	2987.25	2952.17	-548.24	3002.64	349.48	0.18	2.24L
	13078.00	89.66	1.10	10172.57	3082.74	3048.13	-546.36	3096.71	349.84	1.33	9.19R
	13172.00	90.34	1.21	10172.57	3176.24	3142.11	-544.46	3188.94	350.17	0.73	137.29L
	13268.00	89.17	0.13	10172.98	3271.81	3238.10	-543.34	3283.37	350.47	1.66	76.43R
	13363.00	89.24	0.42	10174.30	3366.44	3333.09	-542.89	3377.02	350.75	0.31	169.77R
	13458.00	88.52	0.55	10176.16	3461.03	3428.07	-542.08	3470.67	351.01	0.77	13.6R
	13552.00	93.27	1.70	10174.69	3554.51	3522.01	-540.24	3563.21	351.28	5.20	172.39R
	13648.00	90.65	2.05	10171.41	3649.81	3617.90	-537.10	3657.55	351.56	2.75	55.56L
	13743.00	90.89	1.70	10170.13	3744.17	3712.84	-533.99	3751.04	351.82	0.45	79.69L
	13838.00	90.93	1.48	10168.62	3838.58	3807.79	-531.35	3844.68	352.06	0.24	131.71L
	13933.00	90.52	1.02	10167.42	3933.06	3902.76	-529.28	3938.49	352.28	0.65	93.81L
	14028.00	90.48	0.42	10166.59	4027.63	3997.75	-528.09	4032.48	352.47	0.63	46.97R
	14123.00	90.76	0.72	10165.56	4122.22	4092.74	-527.14	4126.55	352.66	0.43	124.33R
	14218.00	90.48	1.13	10164.54	4216.76	4187.72	-525.61	4220.57	352.85	0.52	176.8L
	14313.00	88.69	1.03	10165.22	4311.26	4282.70	-523.82	4314.61	353.03	1.89	33.35L
	14408.00	91.03	359.49	10165.46	4405.90	4377.68	-523.39	4408.86	353.18	2.95	90L
	14503.00	91.03	359.29	10163.75	4500.64	4472.66	-524.40	4503.30	353.31	0.21	131.5L
	14597.00	89.11	357.12	10163.63	4594.50	4566.61	-527.34	4596.96	353.41	3.08	42.88R

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	14693.00	90.79	358.68	10163.72	4690.40	4662.54	-530.86	4692.66	353.50	2.39	147.33R
	14788.00	89.48	359.52	10163.49	4785.18	4757.52	-532.35	4787.21	353.62	1.64	71.93R
	14882.00	89.79	0.47	10164.09	4878.86	4851.52	-532.36	4880.64	353.74	1.06	55.48R
	14978.00	92.75	4.78	10161.96	4974.02	4947.36	-527.97	4975.45	353.91	5.45	55.92R
	15073.00	94.44	7.29	10156.01	5067.16	5041.64	-518.00	5068.18	354.13	3.18	164.71R
	15167.00	89.90	8.53	10152.45	5158.79	5134.65	-505.08	5159.43	354.38	5.01	106.62L
	15262.00	88.49	3.80	10153.78	5252.05	5229.06	-494.88	5252.43	354.59	5.19	68.65L
	15357.00	89.48	1.27	10155.47	5346.26	5323.95	-490.68	5346.51	354.73	2.86	63.44L
	15452.00	89.93	0.37	10155.96	5440.82	5418.93	-489.32	5440.98	354.84	1.06	139.82L
	15548.00	88.32	359.01	10157.42	5536.52	5514.92	-489.84	5536.63	354.92	2.20	47.55R
	15643.00	89.18	359.95	10159.49	5631.24	5609.89	-490.70	5631.31	355.00	1.34	107.83L
	15738.00	88.73	358.55	10161.23	5725.99	5704.86	-491.95	5726.03	355.07	1.55	124.75L
	15831.00	88.21	357.80	10163.71	5818.84	5797.78	-494.91	5818.86	355.12	0.98	114.23L
	15928.00	87.59	356.42	10167.26	5915.72	5894.59	-499.79	5915.74	355.15	1.56	36.72L
	16023.00	89.83	354.75	10169.40	6010.69	5989.27	-507.10	6010.70	355.16	2.94	66.44R
	16117.00	90.58	356.47	10169.07	6104.68	6082.99	-514.30	6104.69	355.17	2.00	142.62R
	16212.00	89.14	357.57	10169.30	6199.63	6177.86	-519.24	6199.64	355.20	1.91	36.79R
	16308.00	90.21	358.37	10169.84	6295.52	6273.80	-522.64	6295.53	355.24	1.39	127.18R
	16403.00	89.55	359.24	10170.04	6390.34	6368.77	-524.62	6390.34	355.29	1.15	45.67R
	16498.00	89.97	359.67	10170.44	6485.09	6463.77	-525.52	6485.10	355.35	0.63	52.36R
	16593.00	94.51	5.58	10166.73	6579.17	6558.53	-521.19	6579.20	355.46	7.84	145.64L
	16688.00	90.76	3.02	10162.36	6672.88	6653.14	-514.08	6672.97	355.58	4.78	90L
	16782.00	90.76	2.45	10161.11	6766.08	6747.02	-509.59	6766.24	355.68	0.61	72.52L
Last Survey 06- Aug-2014	16835.00	90.93	1.91	10160.33	6818.69	6799.98	-507.57	6818.89	355.73	1.07	HS
TD - PTB	16881.00	90.93	1.91	10159.58	6864.37	6845.94	-506.04	6864.62	355.77	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	24.000	Act Stns	30.000	30.000	SLB_MWD-POOR-Depth Only	Original Borehole / Cimarex Hornsby 35 Federal Com 3H
	1	24.000	398.000	1/98.425	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Hornsby 35 Federal Com 3H
	1	398.000	9424.000	Act Stns	30.000	30.000	SLB_MWD-POOR	Original Borehole / Cimarex Hornsby 35 Federal Com 3H
	1	9424.000	9962.000	Act Stns	30.000	30.000	SLB_MWD-STD	Original Borehole / Cimarex Hornsby 35 Federal Com 3H
	1	9962.000	16835.000	Act Stns	30.000	30.000	SLB_MWD-STD	ST01 / Cimarex Hornsby 35 Federal Com 3H ST01 XEM+MWD

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
		1	16835.000	16881.000	Act Stns	30.000	30.000	SLB_BLIND+TREND		ST01 / Cimarex Hornsby 35 Federal Com 3H ST01 XEM+MWD	