

Results of Directional Survey

API number:	30-025-40040			
OGRID:		Operator:	CIMAREX ENERGY CO. OF COLORADO	
		Property:	QUAIL RIDGE 32 STATE	# 3H

surface	ULSTR:	I	32	T	19S	R	34E
				1650	FSL	330	FEL

BH Loc	ULSTR:	L	32	T	19S	R	34E
15407	MD	10843.1	TVD	1881	FSL	4940	FEL
						340	FWL

Top Perf/OH	ULSTR:	I	32	T	19S	R	34E
10900	MD	10811.6	TVD	1689	FSL	441	FEL

Bot Perf/OH	ULSTR:	L	32	T	19S	R	34E
15334	MD	10841.5	TVD	1881	FSL	4867	FEL
						413	FWL

	MD	N/S	E/W	VD
	10878	37.24	-90.11	10804.33
TOP PERFS/OH	10900	38.87	-110.80	10811.58
	10910	39.61	-120.21	10814.88
	15274	231.49	-4476.56	10840.09
BOT PERFS/OH	15334	231.18	-4536.55	10841.45
	15355	231.07	-4557.54	10841.93

NEXT TO LAST	15355	231.07	-4557.54	10841.93
LAST READING	15407	230.52	-4609.52	10843.11
TD	15407	230.52	-4609.52	10843.11

Surface Location	1650	FS	330	FE
Projected BHL	1881	FS	4940	FE
Location of				
Top Perfs/OH	1689	FS	441	FE
Bottom Perfs/OH	1881	FS	4867	FE

SUMMARY of Subsurface Locations

Surface Location	I-32-19S-34E	1650	FS	330	FE	Vert. Depth
Top Perfs/OH	I-32-19S-34E	1689	FS	441	FE	10811.58
Bottom Perfs/OH	L-32-19S-34E	1881	FS	4867	FE	10841.45
Projected TD	L-32-19S-34E	1881	FS	4940	FE	10843.11

SUR: I-32-19s-34e, 1650/S & 330/E
BHL: L-32-19s-34e, 1881/S & 4940/E
API # 30-025-40040

HOBBS OCD

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CACTUS PIPELINE OF ARIZONA, L.L.C.

OPERATOR CMAREX CO OF COLORADO
600 N MARIENFELD ST
MIDLAND TX 79701

FIELD NAME

COUNTY/PARISH LEA

WELL NAME & NO QUAIL RIDGE 32 ST 3

LEGAL SEC 32-19S-34E

MEASURED DEPTH (FT)	COURSE LENGTH (HUNDREDS OF FT)	ANGLE OF INCLINATION (DEGREES)	DISPLACEMENT PER HUNDRED FT (SINE OF ANGLE X 100)	COURSE DISPLACEMENT (FEET)	ACCUMULATIVE DISPLACEMENT (FEET)	REMARKS
148	1 48	1/2	0 8727	1 29	1 29	
370	2 22	1/2	0 8727	1 94	3 23	
566	1 96	1/2	0 8727	1 71	4 94	
880	3 14	1/2	0 8727	2 74	7 68	
1317	4 37	1/2	0 8727	3 81	11 49	
1548	2 31	1/2	0 8727	2 02	13 51	
1940	3 92	1/2	0 8727	3 42	16 93	
2323	3 83	1/2	0 8727	3 34	20 27	
2801	4 78	1/2	0 8727	4 17	24 44	
2897	0 96	3	5 2336	5 02	29 47	
2929	0 32	3	5 2336	1 67	31 14	
2976	0 47	5 1/3	9 3413	4 39	35 53	
3043	0 67	4 5/9	7 9503	5 33	40 86	
3107	0 64	4 3/4	8 2982	5 31	46 17	
3170	0 63	4 2/3	8 1069	5 11	51 28	
3234	0 64	3 2/3	6 4184	4 11	55 39	
3298	0 64	4 1/3	7 6023	4 87	60 25	
3362	0 64	2 5/7	4 7455	3 04	63 29	
3424	0 62	2 1/2	4 3271	2 68	65 97	
3488	0 64	1 1/2	2 6177	1 68	67 65	
3551	0 63	1 3/4	3 0539	1 92	69 57	
3623	0 72	1	1 8150	1 31	70 88	
3683	0 60	1 1/3	2 3560	1 41	72 29	
3743	0 60	2	3 5248	2 11	74 41	
3825	0 82	1	1 8499	1 52	75 92	
3920	0 95	1 3/4	3 0539	2 90	78 82	
4008	0 88	8/9	1 5707	1 38	80 21	
4043	0 35	2/3	1 2217	0 43	80 63	
4077	0 34	2/3	1 2217	0 42	81 05	
4109	0 32	1 1/9	1 9197	0 61	81 66	
4139	0 30	1 1/5	2 0942	0 63	82 29	
4172	0 33	2/3	1 2217	0 40	82 69	
4331	1 59	1/2	0 8727	1 39	84 08	
4405	0 74	1/2	0 8727	0 65	84 73	
4466	0 61	1/2	0 8727	0 53	85 26	
4528	0 62	1/2	0 8727	0 54	85 80	
4623	0 95	1/2	0 8727	0 83	86 63	
4691	0 68	1/2	0 8727	0 59	87 22	
4749	0 58	1/2	0 8727	0 51	87 73	
4812	0 63	1/2	0 8727	0 55	88 28	
4877	0 65	1/2	0 8727	0 57	88 85	
4941	0 64	1/2	0 8727	0 56	89 40	
5021	0 80	1/2	0 8727	0 70	90 10	
5121	1 00	1/2	0 8727	0 87	90 98	
5221	1 00	1/2	0 8727	0 87	91 85	
5357	1 36	1/2	0 8727	1 19	93 04	
5600	2 43	1/2	0 8727	2 12	95 16	
5945	3 45	1/2	0 8727	3 01	98 17	
6248	3 03	1/2	0 8727	2 64	100 81	
6648	4 00	1/2	0 8727	3 49	104 30	
6948	3 00	1/2	0 8727	2 62	106 92	
7280	3 32	1/2	0 8727	2 90	109 82	
7643	3 63	1/2	0 8727	3 17	112 98	
7889	2 46	1/2	0 8727	2 15	115 13	
8236	3 47	1/2	0 8727	3 03	118 16	
8522	2 86	1/2	0 8727	2 50	120 65	
8825	3 03	1/2	0 8727	2 64	123 30	
9097	2 72	1	1 6929	4 60	127 90	
9580	4 83	1 1/2	2 6351	12 73	140 63	
10058	4 78	1	1 8325	8 76	149 39	

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9/1/2011

CACTUS PIPELINE OF ARIZONA, L.L.C.
1717 E. PULASKI
TULSA, OK 74103
COUNTY OF OSAGE, OKLAHOMA
CORPORATE SEAL & SIGNATURE REQUIRED BY 02/07/15

Justine N. Kidd



Cimarex Energy Co.

Location Lea County, NM
Field (Quail Ridge) Sec 32, T19S, R34E
Facility Quail Ridge 22 State No. 3H

Sit: No 3H SHL
Well: No 3H
Wellbore: No 3H PVE

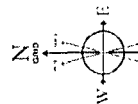
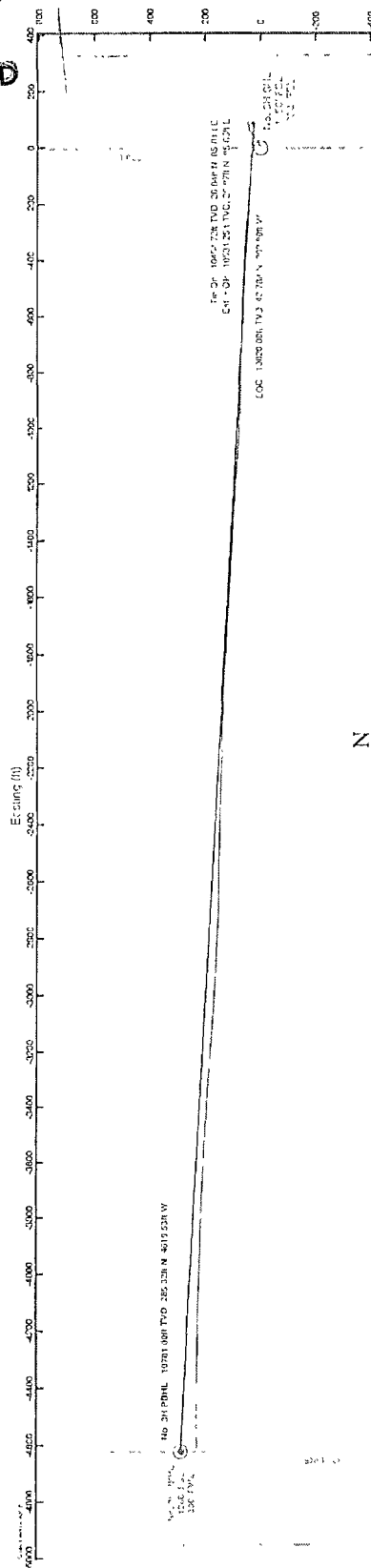
BAKER
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Well Profile Data

Design Comment	MD (ft)	Inc. (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	10457.60	0.120	279.640	10454.72	26.34	85.81	0.00	-83.99
Est. KOP	10537.13	0.120	279.640	10534.25	26.87	85.65	0.00	-83.83
EOC	10938.86	90.505	273.143	10820.00	42.78	-202.80	20.01	205.05
No. 3H PBHL	15412.43	90.505	273.143	10781.00	285.32	-4619.53	0.00	4628.33

True vertical depth (ft)	15412.43
MD (ft)	15412.43
Inc. (°)	90.505
Az (°)	273.143
TVD (ft)	10781.00
Local N (ft)	285.32
Local E (ft)	-4619.53
DLS (°/100ft)	0.00
VS (ft)	4628.33

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ROCKY MOUNTAIN 3D (1000 ft) 3D (1000 ft) 3D (1000 ft)
Magnetic North is 7.0 degrees East of True North (1983-1993)
To correct a well from True to Magnetic North, add 7.0 degrees
To correct a well from Magnetic to True North, subtract 7.0 degrees
For example: If a well is 10 degrees East of True North, it is 17 degrees East of Magnetic North.

SUR: I-32-19s-34e, 1650/S & 330/E
BHL: L-32-19s-34e, 1881/S & 4940/E
API # 30-025-40040



Actual Wellpath Report

No. 3H AWP

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GENERAL INFORMATION			
Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Lea County, NM	Well	No. 3H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 3H AWB
Facility	Quail Ridge 32 State No. 3H		

PROJECTION INFORMATION			
Projection System	NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet	Software System	WellArchitect® 3.0.0
North Reference	Grid	User	Calphik
Scale	0.999972	Report Generated	7/4/2011 at 11:25:42 AM
Convergence at slot	0.41° East	Database/Source file	WA Midland/No. 3H_AWB.xml

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	774883.50	587927.10	32°36'50.300"N	103°34'29.430"W
Facility Reference Pt			774883.50	587927.10	32°36'50.300"N	103°34'29.430"W
Field Reference Pt			774883.50	587927.10	32°36'50.300"N	103°34'29.430"W

VERTICAL DATA			
Calculation method	Minimum curvature	Rig on No. 3H SHL (RT) to GL	18.60ft
Horizontal Reference Pt	Slot	Rig on No. 3H SHL (RT) to Mean Sea Level	3679.60ft
Vertical Reference Pt	Rig on No. 3H SHL (RT)	Rig on No. 3H SHL (RT) to Mud Line at Slot (No. 3H SHL)	18.60ft
MD Reference Pt	Rig on No. 3H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	273.53°



Actual Wellpath Report

No. 3H AWP

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Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Lea County, NM	Well	No. 3H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 3H AWP
Facility	Quail Ridge 32 State No. 3H		

WELLPATH DATA (195 stations) † = interpolated/extrapolated station												
MD [ft]	Inclination [°]	Azimuth [°]	FWD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
0.00†	0.000	64.970	0.00	0.00	0.00	0.00	774883.50	587927.10	32°36'50.300"N	103°34'29.430"W	0.00	
18.60	0.000	64.970	18.60	0.00	0.00	0.00	774883.50	587927.10	32°36'50.300"N	103°34'29.430"W	0.00	
116.10	0.200	64.970	116.10	-0.15	0.07	0.15	774883.65	587927.17	32°36'50.301"N	103°34'29.428"W	0.21	
216.10	0.180	73.030	216.10	-0.45	0.19	0.46	774883.96	587927.29	32°36'50.302"N	103°34'29.424"W	0.03	
316.10	0.120	53.120	316.10	-0.68	0.30	0.70	774884.20	587927.40	32°36'50.303"N	103°34'29.422"W	0.08	
416.10	0.040	32.380	416.10	-0.77	0.39	0.80	774884.30	587927.49	32°36'50.304"N	103°34'29.420"W	0.08	
516.10	0.060	70.030	516.10	-0.84	0.44	0.87	774884.37	587927.54	32°36'50.304"N	103°34'29.420"W	0.04	
616.10	0.120	272.140	616.10	-0.78	0.46	0.81	774884.31	587927.56	32°36'50.305"N	103°34'29.420"W	0.18	
711.60	0.220	261.790	711.60	-0.50	0.44	0.53	774884.03	587927.54	32°36'50.304"N	103°34'29.423"W	0.11	
807.20	0.300	263.880	807.20	-0.08	0.39	0.10	774883.60	587927.49	32°36'50.304"N	103°34'29.428"W	0.08	
902.70	0.430	277.160	902.70	0.53	0.40	-0.50	774883.00	587927.50	32°36'50.304"N	103°34'29.436"W	0.16	
998.30	0.560	283.650	998.29	1.35	0.56	-1.31	774882.19	587927.66	32°36'50.306"N	103°34'29.445"W	0.15	
1093.80	0.560	287.010	1093.79	2.26	0.81	-2.21	774881.29	587927.91	32°36'50.308"N	103°34'29.456"W	0.03	
1189.40	0.520	290.770	1189.38	3.13	1.10	-3.07	774880.43	587928.20	32°36'50.311"N	103°34'29.465"W	0.06	
1284.90	0.530	289.180	1284.88	3.97	1.40	-3.89	774879.61	587928.50	32°36'50.314"N	103°34'29.475"W	0.02	
1380.50	0.500	290.610	1380.48	4.79	1.69	-4.70	774878.80	587928.79	32°36'50.317"N	103°34'29.484"W	0.03	
1476.00	0.460	292.300	1475.97	5.55	1.98	-5.44	774878.06	587929.08	32°36'50.320"N	103°34'29.493"W	0.04	
1571.60	0.280	291.810	1571.57	6.14	2.21	-6.01	774877.49	587929.31	32°36'50.322"N	103°34'29.500"W	0.19	
1667.10	0.930	70.850	1667.07	5.65	2.55	-5.50	774878.00	587929.65	32°36'50.326"N	103°34'29.494"W	1.21	
1762.70	1.230	71.790	1762.65	3.98	3.13	3.79	774879.71	587930.23	32°36'50.331"N	103°34'29.474"W	0.31	
1858.20	1.240	71.600	1858.13	2.07	3.77	-1.84	774881.66	587930.87	32°36'50.338"N	103°34'29.451"W	0.01	
1953.80	1.250	73.490	1953.70	0.13	4.40	0.14	774883.64	587931.50	32°36'50.344"N	103°34'29.428"W	0.04	
2049.30	1.320	75.540	2049.18	-1.90	4.97	2.21	774885.71	587932.07	32°36'50.349"N	103°34'29.403"W	0.09	
2144.90	1.310	75.640	2144.76	-3.99	5.51	4.33	774887.83	587932.61	32°36'50.354"N	103°34'29.379"W	0.01	
2240.40	1.320	71.670	2240.23	-6.05	6.13	6.44	774889.94	587933.23	32°36'50.360"N	103°34'29.354"W	0.10	
2336.00	1.390	68.630	2335.80	-8.12	6.90	8.56	774892.06	587934.00	32°36'50.368"N	103°34'29.329"W	0.10	
2431.50	1.440	67.870	2431.27	-10.25	7.77	10.75	774894.25	587934.87	32°36'50.376"N	103°34'29.303"W	0.06	
2527.10	1.830	69.760	2526.83	-12.73	8.75	13.30	774896.80	587935.85	32°36'50.386"N	103°34'29.274"W	0.41	
2622.60	2.230	72.390	2622.27	-15.86	9.84	16.50	774900.00	587936.94	32°36'50.396"N	103°34'29.236"W	0.43	
2718.20	3.200	67.750	2717.77	-20.00	11.42	20.74	774904.24	587938.52	32°36'50.412"N	103°34'29.186"W	1.04	
2813.70	3.960	59.170	2813.08	-25.12	14.12	26.04	774909.54	587941.22	32°36'50.438"N	103°34'29.124"W	0.97	
2909.30	4.690	52.960	2908.41	-30.81	18.16	31.99	774915.49	587945.26	32°36'50.478"N	103°34'29.054"W	0.91	
3004.80	4.900	52.680	3003.57	-36.86	22.99	38.35	774921.85	587950.09	32°36'50.525"N	103°34'28.979"W	0.22	
3100.40	4.350	46.720	3098.86	-42.43	27.95	44.24	774927.74	587955.05	32°36'50.573"N	103°34'28.910"W	0.76	
3195.90	4.640	47.650	3194.07	-47.60	33.03	49.73	774933.23	587960.13	32°36'50.623"N	103°34'28.846"W	0.31	
3291.40	3.390	52.000	3289.33	-52.40	37.37	54.81	774938.31	587964.47	32°36'50.666"N	103°34'28.786"W	1.35	
3387.00	2.660	57.220	3384.80	-56.31	40.32	58.90	774942.40	587967.41	32°36'50.695"N	103°34'28.738"W	0.82	
3482.60	1.910	67.460	3480.32	-59.52	42.13	62.24	774945.74	587969.23	32°36'50.713"N	103°34'28.699"W	0.89	
3578.10	1.720	75.000	3575.77	-62.31	43.11	65.09	774948.59	587970.21	32°36'50.722"N	103°34'28.665"W	0.32	
3673.70	1.630	80.240	3671.33	-65.00	43.71	67.82	774951.32	587970.81	32°36'50.728"N	103°34'28.633"W	0.19	
3769.20	1.420	88.130	3766.80	-67.50	43.98	70.34	774953.84	587971.08	32°36'50.730"N	103°34'28.604"W	0.31	
3864.80	1.200	91.540	3862.38	-69.68	43.99	72.53	774956.02	587971.09	32°36'50.730"N	103°34'28.578"W	0.24	
3960.30	1.190	89.480	3957.85	-71.66	43.97	74.52	774958.01	587971.07	32°36'50.730"N	103°34'28.555"W	0.05	
4055.80	1.010	72.950	4053.34	-73.44	44.23	76.31	774959.81	587971.33	32°36'50.732"N	103°34'28.534"W	0.38	
4151.40	1.030	64.710	4148.92	-74.98	44.84	77.90	774961.39	587971.94	32°36'50.738"N	103°34'28.515"W	0.15	



Actual Wellpath Report

No. 3H AWP

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Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Lea County, NM	Well	No. 3H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 3H AWP
Facility	Quail Ridge 32 State No. 3H		

WELLPATH DATA (195 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
4246.90	1.050	65.720	4244.41	-76.51	45.57	79.47	774962.97	587972.67	32°36'50.745"N	103°34'28.497"W	0.03	
4342.50	0.890	64.630	4339.99	-77.93	46.25	80.94	774964.44	587973.35	32°36'50.752"N	103°34'28.480"W	0.17	
4438.00	0.780	58.220	4435.48	-79.11	46.91	82.16	774965.66	587974.01	32°36'50.758"N	103°34'28.465"W	0.15	
4533.60	0.670	54.840	4531.07	-80.08	47.57	83.17	774966.67	587974.67	32°36'50.765"N	103°34'28.453"W	0.12	
4629.10	0.540	60.810	4626.57	-80.90	48.11	84.02	774967.52	587975.21	32°36'50.770"N	103°34'28.443"W	0.15	
4724.70	0.500	60.600	4722.17	-81.62	48.54	84.78	774968.28	587975.64	32°36'50.774"N	103°34'28.435"W	0.04	
4820.20	0.460	68.010	4817.66	-82.32	48.89	85.50	774968.99	587975.98	32°36'50.778"N	103°34'28.426"W	0.08	
4915.80	0.390	54.100	4913.26	-82.92	49.22	86.12	774969.61	587976.32	32°36'50.781"N	103°34'28.419"W	0.13	
5011.30	0.290	56.400	5008.76	-83.36	49.54	86.58	774970.08	587976.64	32°36'50.784"N	103°34'28.413"W	0.11	
5106.90	0.320	84.000	5104.36	-83.82	49.71	87.05	774970.54	587976.80	32°36'50.786"N	103°34'28.408"W	0.16	
5202.40	0.280	101.520	5199.86	-84.31	49.69	87.54	774971.04	587976.79	32°36'50.786"N	103°34'28.402"W	0.10	
5298.00	0.190	100.060	5295.45	-84.70	49.61	87.93	774971.42	587976.71	32°36'50.785"N	103°34'28.398"W	0.09	
5393.50	0.240	120.220	5390.95	-85.02	49.46	88.23	774971.73	587976.55	32°36'50.783"N	103°34'28.394"W	0.13	
5489.10	0.480	135.930	5486.55	-85.47	49.04	88.67	774972.16	587976.14	32°36'50.779"N	103°34'28.389"W	0.25	
5584.60	0.470	133.690	5582.05	-86.07	48.48	89.23	774972.72	587975.58	32°36'50.773"N	103°34'28.383"W	0.02	
5680.20	0.340	123.090	5677.65	-86.62	48.06	89.75	774973.25	587975.15	32°36'50.769"N	103°34'28.376"W	0.16	
5775.70	0.320	123.600	5773.14	-87.09	47.75	90.21	774973.71	587974.85	32°36'50.766"N	103°34'28.371"W	0.02	
5871.30	0.220	114.760	5868.74	-87.50	47.53	90.60	774974.09	587974.63	32°36'50.764"N	103°34'28.367"W	0.11	
5966.80	0.270	119.400	5964.24	-87.87	47.34	90.96	774974.46	587974.44	32°36'50.762"N	103°34'28.362"W	0.06	
6062.40	0.410	109.860	6059.84	-88.40	47.11	91.48	774974.98	587974.21	32°36'50.760"N	103°34'28.356"W	0.16	
6157.90	0.610	124.680	6155.34	-89.16	46.71	92.22	774975.71	587973.81	32°36'50.756"N	103°34'28.348"W	0.25	
6253.50	0.550	150.150	6250.93	-89.85	46.02	92.86	774976.36	587973.12	32°36'50.749"N	103°34'28.340"W	0.27	
6349.00	0.680	171.140	6346.43	-90.22	45.06	93.18	774976.68	587972.16	32°36'50.739"N	103°34'28.337"W	0.27	
6444.60	0.940	165.910	6442.02	-90.58	43.74	93.46	774976.96	587970.84	32°36'50.726"N	103°34'28.333"W	0.28	
6540.10	0.960	181.310	6537.50	-90.85	42.18	93.63	774977.13	587969.28	32°36'50.711"N	103°34'28.332"W	0.27	
6635.70	1.000	180.400	6633.09	-90.93	40.55	93.61	774977.10	587967.65	32°36'50.695"N	103°34'28.332"W	0.04	
6731.20	1.050	177.660	6728.57	-91.06	38.84	93.64	774977.13	587965.94	32°36'50.678"N	103°34'28.332"W	0.07	
6826.80	1.030	180.220	6824.16	-91.20	37.11	93.67	774977.17	587964.21	32°36'50.661"N	103°34'28.332"W	0.05	
6922.30	0.980	177.780	6919.64	-91.33	35.43	93.70	774977.19	587962.53	32°36'50.644"N	103°34'28.331"W	0.07	
7017.90	0.920	182.890	7015.23	-91.42	33.85	93.69	774977.19	587960.95	32°36'50.628"N	103°34'28.332"W	0.11	
7113.40	0.790	197.520	7110.72	-91.27	32.46	93.45	774976.95	587959.55	32°36'50.615"N	103°34'28.334"W	0.26	
7209.00	0.710	199.120	7206.31	-90.96	31.27	93.06	774976.56	587958.37	32°36'50.603"N	103°34'28.339"W	0.09	
7304.50	0.580	200.750	7301.81	-90.65	30.26	92.70	774976.19	587957.36	32°36'50.593"N	103°34'28.344"W	0.14	
7400.10	0.460	207.040	7397.40	-90.36	29.46	92.35	774975.85	587956.56	32°36'50.585"N	103°34'28.348"W	0.14	
7495.60	0.470	207.750	7492.90	-90.04	28.77	91.99	774975.49	587955.87	32°36'50.578"N	103°34'28.352"W	0.01	
7591.20	0.490	208.470	7588.50	-89.71	28.07	91.62	774975.11	587955.17	32°36'50.571"N	103°34'28.356"W	0.02	
7686.70	0.480	213.700	7683.99	-89.34	27.38	91.20	774974.70	587954.47	32°36'50.565"N	103°34'28.361"W	0.05	
7782.30	0.480	221.090	7779.59	-88.89	26.74	90.71	774974.21	587953.84	32°36'50.558"N	103°34'28.367"W	0.06	
7877.80	0.410	260.250	7875.09	-88.32	26.38	90.11	774973.61	587953.48	32°36'50.555"N	103°34'28.374"W	0.32	
7973.40	0.440	268.310	7970.68	-87.62	26.31	89.41	774972.91	587953.41	32°36'50.554"N	103°34'28.382"W	0.07	
8068.90	0.400	309.020	8066.18	-86.98	26.51	88.78	774972.28	587953.61	32°36'50.556"N	103°34'28.390"W	0.31	
8164.40	0.550	341.170	8161.68	-86.54	27.16	88.38	774971.87	587954.25	32°36'50.563"N	103°34'28.394"W	0.31	
8260.00	0.680	356.390	8257.27	-86.29	28.16	88.19	774971.69	587955.25	32°36'50.572"N	103°34'28.396"W	0.22	
8355.50	0.770	322.0	8352.77	-86.22	29.36	88.19	774971.69	587956.46	32°36'50.584"N	103°34'28.396"W	0.13	
8451.10	0.600	349.670	8448.36	-86.09	30.50	88.14	774971.64	587957.59	32°36'50.596"N	103°34'28.397"W	0.24	



Actual Wellpath Report

No. 3H AWP
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Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Lea County, NM	Well	No. 3H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 3H AWP
Facility	Quail Ridge 32 State No. 3H		

WELLPATH DATA (195 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [°/100ft]	Comments
8546.60	0.730	353.900	8543.85	-85.87	31.59	87.99	774971.48	587958.69	32°36'50.606"N	103°34'28.398"W	0.15	
8642.20	0.570	345.020	8639.45	-85.62	32.66	87.80	774971.30	587959.76	32°36'50.617"N	103°34'28.401"W	0.20	
8737.80	0.860	339.150	8735.04	-85.17	33.79	87.42	774970.92	587960.89	32°36'50.628"N	103°34'28.405"W	0.31	
8833.30	0.590	312.780	8830.53	-84.49	34.79	86.80	774970.30	587961.89	32°36'50.638"N	103°34'28.412"W	0.44	
8928.90	0.260	296.740	8926.13	-83.91	35.22	86.25	774969.75	587962.32	32°36'50.643"N	103°34'28.418"W	0.36	
9024.40	0.390	97.090	9021.63	-84.04	35.28	86.38	774969.88	587962.38	32°36'50.643"N	103°34'28.417"W	0.67	
9119.90	0.340	103.310	9117.13	-84.64	35.18	86.98	774970.47	587962.27	32°36'50.642"N	103°34'28.410"W	0.07	
9215.50	0.300	113.550	9212.72	-85.16	35.01	87.48	774970.98	587962.11	32°36'50.640"N	103°34'28.404"W	0.07	
9311.00	0.410	106.060	9308.22	-85.73	34.82	88.04	774971.54	587961.91	32°36'50.638"N	103°34'28.398"W	0.12	
9406.60	0.770	120.580	9403.82	-86.63	34.39	88.92	774972.42	587961.49	32°36'50.634"N	103°34'28.387"W	0.40	
9502.10	1.030	133.050	9499.31	-87.87	33.48	90.10	774973.60	587960.58	32°36'50.625"N	103°34'28.374"W	0.34	
9597.70	0.990	138.260	9594.89	-89.12	32.28	91.28	774974.78	587959.38	32°36'50.613"N	103°34'28.360"W	0.10	
9693.20	0.700	147.950	9690.38	-90.04	31.17	92.14	774975.63	587958.27	32°36'50.602"N	103°34'28.350"W	0.34	
9788.80	0.480	182.050	9785.98	-90.39	30.27	92.43	774975.93	587957.37	32°36'50.593"N	103°34'28.347"W	0.42	
9884.30	0.460	210.560	9881.47	-90.23	29.54	92.22	774975.72	587956.64	32°36'50.586"N	103°34'28.349"W	0.24	
9979.90	0.740	227.930	9977.07	-89.62	28.80	91.57	774975.07	587955.90	32°36'50.579"N	103°34'28.357"W	0.35	
10075.40	0.810	235.260	10072.56	-88.66	28.00	90.56	774974.06	587955.10	32°36'50.571"N	103°34'28.369"W	0.13	
10171.00	0.910	246.850	10168.15	-87.45	27.32	89.30	774972.80	587954.42	32°36'50.564"N	103°34'28.383"W	0.21	
10266.50	0.850	257.640	10263.64	-86.09	26.87	87.92	774971.41	587953.97	32°36'50.560"N	103°34'28.400"W	0.18	
10362.10	0.790	274.610	10359.23	-84.75	26.77	86.57	774970.06	587953.87	32°36'50.559"N	103°34'28.415"W	0.26	
10457.60	0.120	279.640	10454.72	-83.99	26.84	85.81	774969.31	587953.94	32°36'50.560"N	103°34'28.424"W	0.70	
10561.00	3.700	271.700	10558.05	-80.55	26.96	82.37	774965.87	587954.06	32°36'50.561"N	103°34'28.465"W	3.46	
10590.00	8.900	271.100	10586.86	-77.37	27.03	79.19	774962.69	587954.13	32°36'50.562"N	103°34'28.502"W	17.93	
10624.00	15.800	271.300	10620.06	-70.11	27.18	71.92	774955.42	587954.28	32°36'50.564"N	103°34'28.587"W	20.29	
10656.00	22.300	272.100	10650.29	-59.68	27.50	61.49	774944.99	587954.60	32°36'50.568"N	103°34'28.709"W	20.33	
10688.00	28.600	272.900	10679.17	-45.93	28.12	47.76	774931.26	587955.21	32°36'50.575"N	103°34'28.869"W	19.72	
10720.00	35.100	273.000	10706.34	-29.06	28.99	30.90	774914.40	587956.08	32°36'50.585"N	103°34'29.066"W	20.31	
10752.00	41.500	273.300	10731.44	-9.24	30.08	11.11	774894.61	587957.18	32°36'50.597"N	103°34'29.297"W	20.01	
10784.00	48.000	273.500	10754.15	13.28	31.42	-11.37	774872.13	587958.51	32°36'50.612"N	103°34'29.560"W	20.32	
10816.00	54.500	274.200	10774.17	38.22	33.10	-36.25	774847.25	587960.20	32°36'50.630"N	103°34'29.851"W	20.38	
10848.00	60.900	274.500	10791.26	65.25	35.15	-63.21	774820.29	587962.25	32°36'50.652"N	103°34'30.166"W	20.02	
10878.00	67.400	274.400	10804.33	92.24	37.24	-90.11	774793.39	587964.34	32°36'50.675"N	103°34'30.480"W	21.67	
10910.00	74.100	274.600	10814.88	122.42	39.61	-120.21	774763.29	587966.71	32°36'50.701"N	103°34'30.832"W	20.95	
10935.00	79.400	274.500	10820.60	146.75	41.54	-144.46	774739.04	587968.64	32°36'50.721"N	103°34'31.115"W	21.20	
10973.00	87.800	274.300	10824.84	184.47	44.44	-182.08	774701.43	587971.54	32°36'50.753"N	103°34'31.555"W	22.11	
11005.00	89.800	274.700	10825.51	216.46	46.95	-213.97	774669.54	587974.05	32°36'50.780"N	103°34'31.927"W	6.37	
11069.00	90.200	274.400	10825.51	280.45	52.02	-277.77	774605.74	587979.12	32°36'50.834"N	103°34'32.673"W	0.78	
11133.00	90.700	274.200	10825.00	344.44	56.82	-341.59	774541.92	587983.92	32°36'50.886"N	103°34'33.418"W	0.84	
11197.00	90.000	273.100	10824.61	408.44	60.90	-405.45	774478.06	587987.99	32°36'50.931"N	103°34'34.165"W	2.04	
11261.00	88.700	272.300	10825.34	472.42	63.91	-469.38	774414.14	587991.01	32°36'50.966"N	103°34'34.912"W	2.38	
11325.00	89.300	271.900	10826.46	536.39	66.26	-533.32	774350.19	587993.35	32°36'50.993"N	103°34'35.659"W	1.13	
11389.00	89.600	271.500	10827.07	600.36	68.15	-597.29	774286.23	587995.25	32°36'51.017"N	103°34'36.407"W	0.78	
11453.00	90.000	271.400	10827.29	664.32	69.77	-661.27	774222.25	587996.87	32°36'51.037"N	103°34'37.155"W	0.64	
11515.00	90.700	270.900	10826.92	726.26	71.02	-723.26	774160.26	587998.12	32°36'51.054"N	103°34'37.879"W	1.39	
11578.00	90.700	271.400	10826.15	789.20	72.28	-786.24	774097.28	587999.38	32°36'51.071"N	103°34'38.615"W	0.79	



Actual Wellpath Report

No. 3H AWP

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**BAKER
HUGHES**

Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Lea County, NM	Well	No. 3H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 3H AWP
Facility	Quail Ridge 32 State No. 3H		

WELLPATH DATA (195 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS ["/100ft]	Comments
11640.00	90.800	271.200	10825.33	851.15	73.69	-848.22	774035.31	588000.79	32°36'51.089"N	103°34'39.340"W	0.36	
11704.00	91.000	272.100	10824.33	915.11	75.53	-912.18	773971.34	588002.63	32°36'51.112"N	103°34'40.087"W	1.44	
11768.00	91.500	272.400	10822.93	979.07	78.04	-976.12	773907.41	588005.14	32°36'51.141"N	103°34'40.835"W	0.91	
11832.00	91.100	273.500	10821.48	1043.05	81.34	-1040.02	773843.52	588008.43	32°36'51.178"N	103°34'41.581"W	1.83	
11896.00	91.800	273.800	10819.86	1107.03	85.41	-1103.87	773779.67	588012.51	32°36'51.223"N	103°34'42.327"W	1.19	
11960.00	92.700	274.000	10817.35	1170.98	89.76	-1167.67	773715.87	588016.86	32°36'51.270"N	103°34'43.073"W	1.44	
12024.00	91.800	273.500	10814.84	1234.93	93.94	-1231.48	773652.06	588021.04	32°36'51.316"N	103°34'43.819"W	1.61	
12087.00	91.900	273.200	10812.80	1297.90	97.62	-1294.34	773589.20	588024.72	32°36'51.357"N	103°34'44.553"W	0.50	
12151.00	91.600	273.400	10810.85	1361.87	101.30	-1358.20	773525.34	588028.40	32°36'51.398"N	103°34'45.299"W	0.56	
12215.00	90.900	273.200	10809.45	1425.85	104.99	-1422.08	773461.46	588032.08	32°36'51.439"N	103°34'46.046"W	1.14	
12279.00	90.900	272.600	10808.45	1489.84	108.22	-1485.99	773397.55	588035.32	32°36'51.475"N	103°34'46.793"W	0.94	
12343.00	91.400	273.200	10807.16	1553.82	111.46	-1549.90	773333.65	588038.56	32°36'51.512"N	103°34'47.540"W	1.22	
12407.00	91.600	273.000	10805.49	1617.80	114.92	-1613.78	773269.77	588042.02	32°36'51.551"N	103°34'48.286"W	0.44	
12471.00	92.400	273.500	10803.25	1681.76	118.55	-1677.64	773205.91	588045.64	32°36'51.591"N	103°34'49.032"W	1.47	
12535.00	92.900	273.600	10800.29	1745.69	122.51	-1741.45	773142.11	588049.60	32°36'51.635"N	103°34'49.778"W	0.80	
12599.00	93.700	273.700	10796.61	1809.58	126.57	-1805.21	773078.34	588053.67	32°36'51.679"N	103°34'50.523"W	1.26	
12663.00	94.100	273.600	10792.26	1873.43	130.64	-1868.93	773014.62	588057.73	32°36'51.724"N	103°34'51.268"W	0.64	
12727.00	92.900	272.500	10788.35	1937.31	134.04	-1932.72	772950.84	588061.13	32°36'51.762"N	103°34'52.013"W	2.54	
12791.00	91.400	272.100	10785.95	2001.25	136.60	-1996.62	772886.94	588063.70	32°36'51.792"N	103°34'52.760"W	2.43	
12855.00	91.600	271.900	10784.27	2065.20	138.84	-2060.56	772823.00	588065.93	32°36'51.819"N	103°34'53.507"W	0.44	
12918.00	90.500	271.800	10783.12	2128.16	140.87	-2123.52	772760.05	588067.97	32°36'51.843"N	103°34'54.243"W	1.75	
12982.00	89.200	271.800	10783.29	2192.13	142.88	-2187.48	772696.08	588069.98	32°36'51.867"N	103°34'54.991"W	2.03	
13046.00	89.500	271.800	10784.01	2256.10	144.89	-2251.45	772632.12	588071.99	32°36'51.892"N	103°34'55.738"W	0.47	
13110.00	89.700	271.200	10784.46	2320.06	146.57	-2315.42	772568.15	588073.66	32°36'51.913"N	103°34'56.486"W	0.99	
13174.00	90.200	271.100	10784.51	2384.00	147.85	-2379.41	772504.16	588074.94	32°36'51.930"N	103°34'57.234"W	0.80	
13238.00	88.900	271.300	10785.02	2447.94	149.19	-2443.39	772440.18	588076.29	32°36'51.948"N	103°34'57.982"W	2.06	
13302.00	89.000	270.900	10786.19	2511.88	150.42	-2507.37	772376.21	588077.51	32°36'51.964"N	103°34'58.730"W	0.64	
13366.00	89.300	270.600	10787.11	2573.79	151.23	-2569.36	772314.22	588078.33	32°36'51.977"N	103°34'59.454"W	0.68	
13429.00	88.500	271.000	10788.36	2638.71	152.14	-2634.34	772249.24	588079.23	32°36'51.990"N	103°35'00.214"W	1.38	
13492.00	88.200	271.400	10790.17	2701.63	153.46	-2697.30	772186.28	588080.55	32°36'52.008"N	103°35'00.950"W	0.79	
13556.00	88.200	272.000	10792.18	2765.57	155.35	-2761.24	772122.34	588082.45	32°36'52.031"N	103°35'01.697"W	0.94	
13620.00	87.900	272.500	10794.36	2829.51	157.86	-2825.15	772058.43	588084.96	32°36'52.060"N	103°35'02.444"W	0.91	
13684.00	88.200	273.100	10796.54	2893.47	160.99	-2889.04	771994.55	588088.08	32°36'52.096"N	103°35'03.191"W	1.05	
13747.00	88.200	272.900	10798.52	2956.44	164.28	-2951.92	771931.67	588091.38	32°36'52.133"N	103°35'03.926"W	0.32	
13811.00	88.300	273.400	10800.47	3020.40	167.80	-3015.80	771867.80	588094.89	32°36'52.172"N	103°35'04.672"W	0.80	
13874.00	88.200	274.000	10802.40	3083.37	171.86	-3078.63	771804.96	588098.96	32°36'52.216"N	103°35'05.407"W	0.97	
13938.00	88.600	274.400	10804.18	3147.34	176.55	-3142.44	771741.16	588103.64	32°36'52.267"N	103°35'06.152"W	0.88	
14001.00	88.800	274.300	10805.61	3210.32	181.33	-3205.24	771678.36	588108.42	32°36'52.319"N	103°35'06.886"W	0.35	
14066.00	89.000	274.000	10806.86	3275.31	186.03	-3270.06	771613.54	588113.12	32°36'52.370"N	103°35'07.643"W	0.55	
14130.00	89.100	273.600	10807.92	3339.30	190.27	-3333.91	771549.69	588117.36	32°36'52.416"N	103°35'08.389"W	0.64	
14193.00	89.300	273.200	10808.80	3402.29	194.01	-3396.79	771486.81	588121.10	32°36'52.458"N	103°35'09.124"W	0.71	
14257.00	88.400	273.600	10810.08	3466.28	197.80	-3460.66	771422.94	588124.89	32°36'52.500"N	103°35'09.871"W	1.54	
14320.00	88.300	273.400	10811.90	3529.25	201.65	-3523.52	771360.09	588128.74	32°36'52.542"N	103°35'10.605"W	0.35	
14384.00	88.100	272.700	10813.91	3593.22	205.05	-3587.40	771296.21	588132.14	32°36'52.580"N	103°35'11.352"W	1.14	
14448.00	88.500	272.400	10815.81	3657.18	207.90	-3651.31	771232.31	588134.99	32°36'52.613"N	103°35'12.098"W	0.78	



Actual Wellpath Report

No. 3H AWP

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**BAKER
HUGHES**

Operator	Cimarex Energy Co.	Slot	No. 3H SHL
Area	Lea County, NM	Well	No. 3H
Field	(Quail Ridge) Sec 32, T19S, R34E	Wellbore	No. 3H AWB
Facility	Quail Ridge 32 State No. 3H		

WELLPATH DATA (195 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	DLS [1/100ft]	Comments
14511.00	88.800	272.500	10817.29	3720.15	210.59	-3714.23	771169.38	588137.68	32°36'52.644"N	103°35'12.834"W	0.50	
14575.00	88.600	272.000	10818.74	3784.12	213.10	-3778.16	771105.45	588140.19	32°36'52.673"N	103°35'13.581"W	0.84	
14638.00	88.500	271.700	10820.34	3847.07	215.13	-3841.11	771042.51	588142.23	32°36'52.698"N	103°35'14.317"W	0.50	
14702.00	88.400	271.300	10822.07	3911.00	216.81	-3905.07	770978.55	588143.90	32°36'52.719"N	103°35'15.064"W	0.64	
14764.00	88.300	272.000	10823.85	3972.94	218.59	-3967.01	770916.61	588145.69	32°36'52.741"N	103°35'15.788"W	1.14	
14828.00	88.200	271.900	10825.81	4036.89	220.77	-4030.95	770852.68	588147.86	32°36'52.767"N	103°35'16.536"W	0.22	
14892.00	87.700	271.900	10828.10	4100.82	222.89	-4094.87	770788.75	588149.98	32°36'52.792"N	103°35'17.283"W	0.78	
14955.00	87.900	272.000	10830.52	4163.75	225.03	-4157.79	770725.84	588152.12	32°36'52.818"N	103°35'18.018"W	0.35	
15019.00	88.100	271.700	10832.75	4227.69	227.10	-4221.72	770661.91	588154.19	32°36'52.842"N	103°35'18.765"W	0.56	
15083.00	88.200	271.400	10834.82	4291.61	228.83	-4285.66	770597.97	588155.92	32°36'52.864"N	103°35'19.513"W	0.49	
15147.00	88.400	271.100	10836.71	4355.54	230.22	-4349.62	770534.02	588157.31	32°36'52.882"N	103°35'20.260"W	0.56	
15210.00	88.400	270.600	10838.47	4418.44	231.16	-4412.58	770471.05	588158.25	32°36'52.896"N	103°35'20.996"W	0.79	
15274.00	88.700	270.000	10840.09	4482.32	231.49	-4476.56	770407.07	588158.58	32°36'52.904"N	103°35'21.744"W	1.05	
15355.00	88.700	269.400	10841.93	4563.12	231.07	-4557.54	770326.10	588158.16	32°36'52.905"N	103°35'22.691"W	0.74	
15407.00	88.700	269.400	10843.11	4614.97	230.52	-4609.52	770274.12	588157.62	32°36'52.903"N	103°35'23.299"W	0.00	Project to Bit

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
No. 3H PBHL		10781.00	285.33	-4619.53	770264.11	588212.42	32°36'53.446"N	103°35'23.411"W	point

WELLPATH COMPOSITION - Ref Wellbore: No. 3H AWB Ref Wellpath: No. 3H AWP

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.60	10457.60	Generic gyro - northseeking (Standard)	Gyro	No. 3H AWB
10457.60	15407.00	NaviTrak (Standard)	MWD	No. 3H AWB



Cimarex Energy Co. of Colorado

Quail Ridge 32 State #3H

SHL 1650' FSL & 330' FEL

BHL 1980' FSL & 330' FWL

Sec 32 - T19S - R34E, Lea County NM

M Ketter API. 30-015-40040 7/14/2011

DV Tool @ 1917'

13-3/8" 48# H40 STC @ 1377'

Cmt'd w/1000 sxs, circ'd cmt

9 5/8" 40# N80 LTC @ 5404'

Cmt'd w/2670 sxs, circ'd cmt

Quantity	Description	Length	Selling Depth
	K&B	19	19
1	2-7/8" 6 5#, L80, 8rd, EUE Tbg	4 10	23 10
310	2-7/8" 6 5#, L80, 8rd, EUE Tbg	10123 63	10146 73
1	2-7/8" 6 5#, L80, 8rd, EUE Tbg	4 12	10150 85
5	Pumps	94 10	10244 95
1	Intake	3 20	10248 15
1	Protector	8 20	10256 35
1	Motor	26 60	10282 95
1	Phoenix	2 00	10284 95
1	Desander	4 20	10289 15
2	2-7/8" 6 5#, L80, 8rd, EUE Tbg	65 34	10354 49

Perfs: 10,900'-902', 11,134'-136', 11,368'-370', 11,602'-604',
11,836'-838', 12,070'-072', 12,304'-306', 12,538'-540', 12,772'-
774', 13,006'-008', 13,240'-242', 13,708'-710', 13,942'-944',
14,176'-178', 14,410'-412', 14,643'-645', 14,867'-878', 15,109'-
111', 15,332'-334'.

KOP @ 10,545'

Cmt'd w/2395 sxs; Circ

TD 15,407' (MD), 10,843' (TVD)

PBTD 15,340'