



# Planned Wellpath Report

Prelim\_1

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## REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Hallertau) Sec5, T26S, R32E	Wellbore	No. 1H PWB
Facility	Hallertau 5 Federal No. 4H		

## REPORT SETUP INFORMATION

Projection System	NAD83 / TM New Mexico SP, Eastern Zone (3001), US feet	Software System	WellArchitect® 3.0.0
North Reference	Grid	User	Calhphik
Scale	0.999955	Report Generated	6/22/2011 at 2:55:29 PM
Convergence at slot	0.34° East	Database/Source file	WA Midland/No._1H_PWB.xml

## WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	17.69	4328.96	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W
Facility Reference Pt			736383.19	388267.27	32°03'57.105"N	103°42'13.264"W
Field Reference Pt			736383.19	388267.27	32°03'57.105"N	103°42'13.264"W

## WELLPATH DATUM

Calculation method	Minimum curvature	Rig on No. 1H SHL (RT) to GL	3253.00ft
Horizontal Reference Pt	Slot	Rig on No. 1H SHL (RT) to Mean Sea Level	3253.00ft
Vertical Reference Pt	Rig on No. 1H SHL (RT)	Rig on No. 1H SHL (RT) to Mud Line at Slot (No. 1H SHL)	3253.00ft
MD Reference Pt	Rig on No. 1H SHL (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	355.52°



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Facility	Hallertau 5 Federal No. 4H		

## WELLPATH DATA (139 stations) † = interpolated/extrapolated station

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]
0.00	0.000	355.524	0.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
100.00†	0.000	355.524	100.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
200.00†	0.000	355.524	200.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
300.00†	0.000	355.524	300.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
400.00†	0.000	355.524	400.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
500.00†	0.000	355.524	500.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
600.00†	0.000	355.524	600.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
700.00†	0.000	355.524	700.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
800.00†	0.000	355.524	800.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
900.00†	0.000	355.524	900.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
1000.00†	0.000	355.524	1000.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
1100.00†	0.000	355.524	1100.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
1200.00†	0.000	355.524	1200.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
1300.00†	0.000	355.524	1300.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
1400.00†	0.000	355.524	1400.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
1500.00†	0.000	355.524	1500.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
1600.00†	0.000	355.524	1600.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
1700.00†	0.000	355.524	1700.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
1800.00†	0.000	355.524	1800.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
1900.00†	0.000	355.524	1900.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
2000.00†	0.000	355.524	2000.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
2100.00†	0.000	355.524	2100.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
2200.00†	0.000	355.524	2200.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
2300.00†	0.000	355.524	2300.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
2400.00†	0.000	355.524	2400.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
2500.00†	0.000	355.524	2500.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
2600.00†	0.000	355.524	2600.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
2700.00†	0.000	355.524	2700.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
2800.00†	0.000	355.524	2800.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
2900.00†	0.000	355.524	2900.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
3000.00†	0.000	355.524	3000.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
3100.00†	0.000	355.524	3100.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
3200.00†	0.000	355.524	3200.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
3300.00†	0.000	355.524	3300.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
3400.00†	0.000	355.524	3400.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
3500.00†	0.000	355.524	3500.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
3600.00†	0.000	355.524	3600.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
3700.00†	0.000	355.524	3700.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
3800.00†	0.000	355.524	3800.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
3900.00†	0.000	355.524	3900.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
4000.00†	0.000	355.524	4000.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
4100.00†	0.000	355.524	4100.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
4200.00†	0.000	355.524	4200.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
4300.00†	0.000	355.524	4300.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
4400.00†	0.000	355.524	4400.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00



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Facility	Hallertau 5 Federal No. 4H		

WELLPATH DATA (139 stations) † = interpolated/extrapolated station											
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]
4500.00†	0.000	355.524	4500.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
4600.00†	0.000	355.524	4600.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
4700.00†	0.000	355.524	4700.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
4800.00†	0.000	355.524	4800.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
4900.00†	0.000	355.524	4900.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
5000.00†	0.000	355.524	5000.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
5100.00†	0.000	355.524	5100.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
5200.00†	0.000	355.524	5200.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
5300.00†	0.000	355.524	5300.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
5400.00†	0.000	355.524	5400.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
5500.00†	0.000	355.524	5500.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
5600.00†	0.000	355.524	5600.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
5700.00†	0.000	355.524	5700.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
5800.00†	0.000	355.524	5800.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
5900.00†	0.000	355.524	5900.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
6000.00†	0.000	355.524	6000.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
6100.00†	0.000	355.524	6100.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
6200.00†	0.000	355.524	6200.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
6300.00†	0.000	355.524	6300.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
6400.00†	0.000	355.524	6400.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
6500.00†	0.000	355.524	6500.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
6600.00†	0.000	355.524	6600.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
6700.00†	0.000	355.524	6700.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
6800.00†	0.000	355.524	6800.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
6900.00†	0.000	355.524	6900.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
7000.00†	0.000	355.524	7000.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
7100.00†	0.000	355.524	7100.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
7200.00†	0.000	355.524	7200.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
7300.00†	0.000	355.524	7300.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
7400.00†	0.000	355.524	7400.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
7500.00†	0.000	355.524	7500.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
7600.00†	0.000	355.524	7600.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
7700.00†	0.000	355.524	7700.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
7800.00†	0.000	355.524	7800.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
7900.00†	0.000	355.524	7900.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
8000.00†	0.000	355.524	8000.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
8100.00†	0.000	355.524	8100.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
8200.00†	0.000	355.524	8200.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
8300.00†	0.000	355.524	8300.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
8400.00†	0.000	355.524	8400.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
8500.00†	0.000	355.524	8500.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
8600.00†	0.000	355.524	8600.00	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
8685.52	0.000	355.524	8685.52	0.00	0.00	0.00	740711.94	388284.96	32°03'57.027"N	103°41'22.959"W	0.00
8700.00†	2.896	355.524	8699.99	0.37	0.36	-0.03	740711.91	388285.32	32°03'57.031"N	103°41'22.959"W	20.00
8800.00†	22.896	355.524	8796.98	22.57	22.50	-1.76	740710.18	388307.46	32°03'57.250"N	103°41'22.978"W	20.00



# Planned Wellpath Report

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## REFERENCE WELLPATH IDENTIFICATION

Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Hallertau) Sec5, T26S, R32E	Wellbore	No. 1H PWB
Facility	Hallertau 5 Federal No. 4H		

## WELLPATH DATA (139 stations) † = interpolated/extrapolated station

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]
8900.00†	42.896	355.524	8880.52	76.61	76.37	-5.98	740705.96	388361.33	32°03'57.783"N	103°41'23.023"W	20.00
9000.00†	62.896	355.524	8940.54	155.96	155.48	-12.17	740699.77	388440.43	32°03'58.566"N	103°41'23.090"W	20.00
9100.00†	82.896	355.524	8969.80	251.05	250.28	-19.59	740692.35	388535.23	32°03'59.505"N	103°41'23.169"W	20.00
9135.52	90.000	355.524	8972.00	286.48	285.61	-22.36	740689.58	388570.55	32°03'59.854"N	103°41'23.199"W	20.00
9200.00†	90.000	355.524	8972.00	350.96	349.89	-27.39	740684.55	388634.83	32°04'00.491"N	103°41'23.253"W	0.00
9300.00†	90.000	355.524	8972.00	450.96	449.58	-35.20	740676.75	388734.52	32°04'01.478"N	103°41'23.337"W	0.00
9400.00†	90.000	355.524	8972.00	550.96	549.28	-43.00	740668.94	388834.21	32°04'02.465"N	103°41'23.421"W	0.00
9500.00†	90.000	355.524	8972.00	650.96	648.97	-50.81	740661.14	388933.90	32°04'03.452"N	103°41'23.504"W	0.00
9600.00†	90.000	355.524	8972.00	750.96	748.67	-58.61	740653.33	389033.59	32°04'04.439"N	103°41'23.588"W	0.00
9700.00†	90.000	355.524	8972.00	850.96	848.36	-66.42	740645.53	389133.28	32°04'05.426"N	103°41'23.672"W	0.00
9800.00†	90.000	355.524	8972.00	950.96	948.06	-74.22	740637.72	389232.97	32°04'06.413"N	103°41'23.756"W	0.00
9900.00†	90.000	355.524	8972.00	1050.96	1047.75	-82.03	740629.92	389332.66	32°04'07.399"N	103°41'23.839"W	0.00
10000.00†	90.000	355.524	8972.00	1150.96	1147.45	-89.83	740622.11	389432.35	32°04'08.386"N	103°41'23.923"W	0.00
10100.00†	90.000	355.524	8972.00	1250.96	1247.14	-97.63	740614.31	389532.04	32°04'09.373"N	103°41'24.007"W	0.00
10200.00†	90.000	355.524	8972.00	1350.96	1346.84	-105.44	740606.51	389631.73	32°04'10.360"N	103°41'24.091"W	0.00
10300.00†	90.000	355.524	8972.00	1450.96	1446.53	-113.24	740598.70	389731.42	32°04'11.347"N	103°41'24.175"W	0.00
10400.00†	90.000	355.524	8972.00	1550.96	1546.23	-121.05	740590.90	389831.11	32°04'12.334"N	103°41'24.258"W	0.00
10500.00†	90.000	355.524	8972.00	1650.96	1645.92	-128.85	740583.09	389930.80	32°04'13.321"N	103°41'24.342"W	0.00
10600.00†	90.000	355.524	8972.00	1750.96	1745.62	-136.66	740575.29	390030.49	32°04'14.308"N	103°41'24.426"W	0.00
10700.00†	90.000	355.524	8972.00	1850.96	1845.31	-144.46	740567.48	390130.18	32°04'15.295"N	103°41'24.510"W	0.00
10800.00†	90.000	355.524	8972.00	1950.96	1945.01	-152.27	740559.68	390229.87	32°04'16.282"N	103°41'24.594"W	0.00
10900.00†	90.000	355.524	8972.00	2050.96	2044.70	-160.07	740551.87	390329.56	32°04'17.269"N	103°41'24.677"W	0.00
11000.00†	90.000	355.524	8972.00	2150.96	2144.40	-167.88	740544.07	390429.25	32°04'18.256"N	103°41'24.761"W	0.00
11100.00†	90.000	355.524	8972.00	2250.96	2244.09	-175.68	740536.27	390528.95	32°04'19.243"N	103°41'24.845"W	0.00
11200.00†	90.000	355.524	8972.00	2350.96	2343.79	-183.49	740528.46	390628.64	32°04'20.230"N	103°41'24.929"W	0.00
11300.00†	90.000	355.524	8972.00	2450.96	2443.48	-191.29	740520.66	390728.33	32°04'21.217"N	103°41'25.013"W	0.00
11400.00†	90.000	355.524	8972.00	2550.96	2543.18	-199.10	740512.85	390828.02	32°04'22.204"N	103°41'25.096"W	0.00
11500.00†	90.000	355.524	8972.00	2650.96	2642.87	-206.90	740505.05	390927.71	32°04'23.191"N	103°41'25.180"W	0.00
11600.00†	90.000	355.524	8972.00	2750.96	2742.57	-214.71	740497.24	391027.40	32°04'24.178"N	103°41'25.264"W	0.00
11700.00†	90.000	355.524	8972.00	2850.96	2842.26	-222.51	740489.44	391127.09	32°04'25.165"N	103°41'25.348"W	0.00
11800.00†	90.000	355.524	8972.00	2950.96	2941.96	-230.32	740481.63	391226.78	32°04'26.152"N	103°41'25.432"W	0.00
11900.00†	90.000	355.524	8972.00	3050.96	3041.65	-238.12	740473.83	391326.47	32°04'27.139"N	103°41'25.515"W	0.00
12000.00†	90.000	355.524	8972.00	3150.96	3141.35	-245.93	740466.03	391426.16	32°04'28.126"N	103°41'25.599"W	0.00
12100.00†	90.000	355.524	8972.00	3250.96	3241.04	-253.73	740458.22	391525.85	32°04'29.113"N	103°41'25.683"W	0.00
12200.00†	90.000	355.524	8972.00	3350.96	3340.74	-261.54	740450.42	391625.54	32°04'30.100"N	103°41'25.767"W	0.00
12300.00†	90.000	355.524	8972.00	3450.96	3440.43	-269.34	740442.61	391725.23	32°04'31.087"N	103°41'25.851"W	0.00
12400.00†	90.000	355.524	8972.00	3550.96	3540.13	-277.15	740434.81	391824.92	32°04'32.074"N	103°41'25.934"W	0.00
12500.00†	90.000	355.524	8972.00	3650.96	3639.82	-284.95	740427.00	391924.61	32°04'33.061"N	103°41'26.018"W	0.00
12600.00†	90.000	355.524	8972.00	3750.96	3739.52	-292.75	740419.20	392024.30	32°04'34.047"N	103°41'26.102"W	0.00
12700.00†	90.000	355.524	8972.00	3850.96	3839.21	-300.56	740411.39	392123.99	32°04'35.034"N	103°41'26.186"W	0.00
12800.00†	90.000	355.524	8972.00	3950.96	3938.91	-308.36	740403.59	392223.68	32°04'36.021"N	103°41'26.270"W	0.00
12900.00†	90.000	355.524	8972.00	4050.96	4038.60	-316.17	740395.79	392323.37	32°04'37.008"N	103°41'26.353"W	0.00
13000.00†	90.000	355.524	8972.00	4150.96	4138.30	-323.97	740387.98	392423.06	32°04'37.995"N	103°41'26.437"W	0.00
13100.00†	90.000	355.524	8972.00	4250.96	4237.99	-331.78	740380.18	392522.75	32°04'38.982"N	103°41'26.521"W	0.00
13200.00†	90.000	355.524	8972.00	4350.96	4337.69	-339.58	740372.37	392622.44	32°04'39.969"N	103°41'26.605"W	0.00



# Planned Wellpath Report

Prelim 1

Page 5 of 5



REFERENCE WELLPATH IDENTIFICATION			
Operator	Cimarex Energy Co.	Slot	No. 1H SHL
Area	Lea County, NM	Well	No. 1H
Field	(Hallertau) Sec5, T26S, R32E	Wellbore	No. 1H PWB
Facility	Hallertau 5 Federal No. 4H		

WELLPATH DATA (139 stations) † = interpolated/extrapolated station											
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]
13300.00†	90.000	355.524	8972.00	4450.96	4437.38	-347.39	740364.57	392722.13	32°04'40.956"N	103°41'26.689"W	0.00
13400.00†	90.000	355.524	8972.00	4550.96	4537.08	-355.19	740356.76	392821.82	32°04'41.943"N	103°41'26.772"W	0.00
13500.00†	90.000	355.524	8972.00	4650.96	4636.77	-363.00	740348.96	392921.51	32°04'42.930"N	103°41'26.856"W	0.00
13544.07	90.000	355.524	8972.00†	4695.02	4680.70	-366.44	740345.52	392965.44	32°04'43.365"N	103°41'26.893"W	0.00

TARGETS										
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape	
1) No. 1H PBHL	13544.07	8972.00	4680.70	-366.44	740345.52	392965.44	32°04'43.365"N	103°41'26.893"W	point	

SURVEY PROGRAM - Ref Wellbore: No. 1H PWB Ref Wellpath: Prelim_1				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
3253.00	13544.07	NaviTrak (Standard)		No. 1H PWB

SR & A

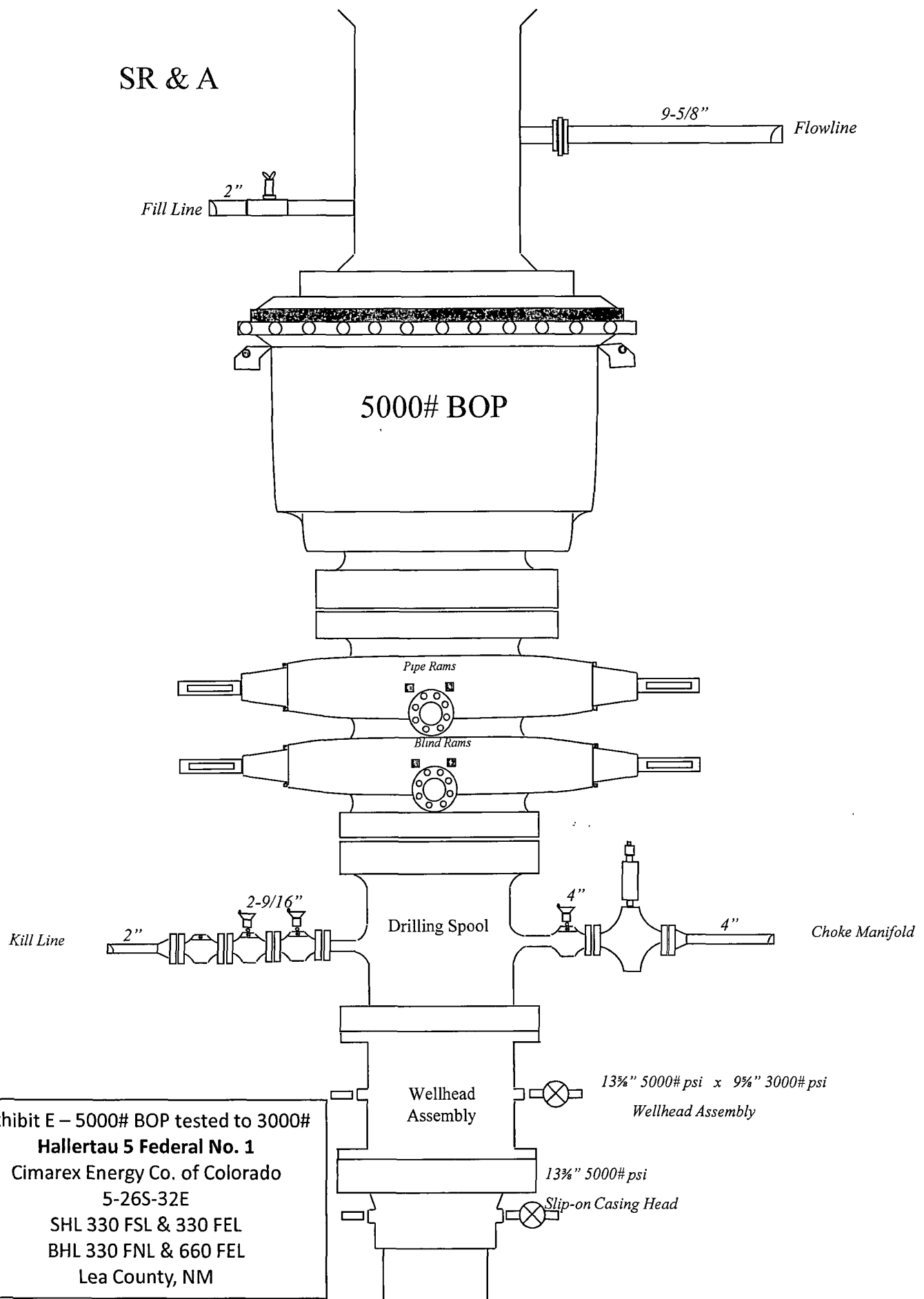
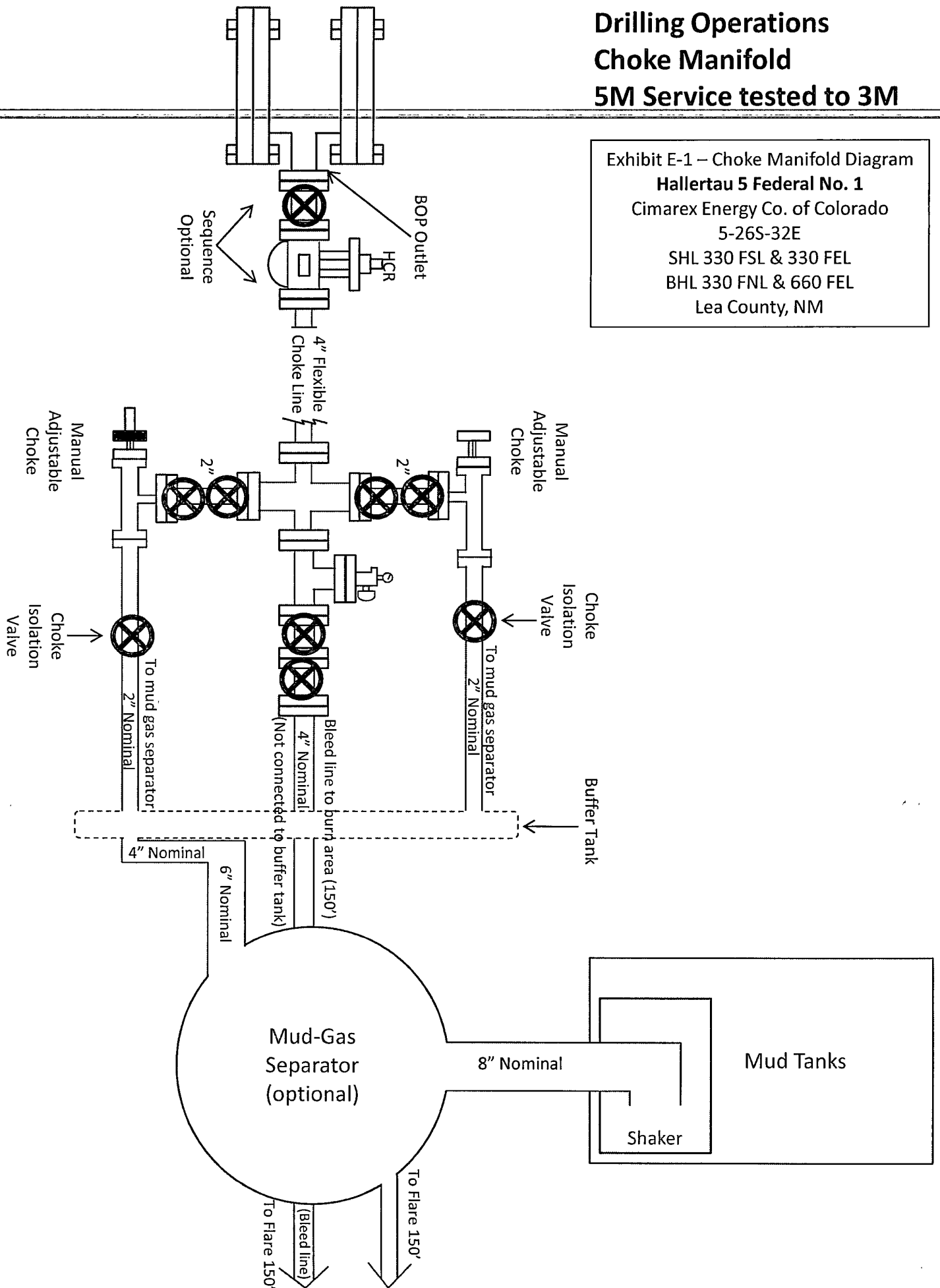


Exhibit E – 5000# BOP tested to 3000#  
**Hallertau 5 Federal No. 1**  
Cimarex Energy Co. of Colorado  
5-26S-32E  
SHL 330 FSL & 330 FEL  
BHL 330 FNL & 660 FEL  
Lea County, NM

# Drilling Operations Choke Manifold 5M Service tested to 3M

Exhibit E-1 – Choke Manifold Diagram  
**Hallertau 5 Federal No. 1**  
 Cimarex Energy Co. of Colorado  
 5-26S-32E  
 SHL 330 FSL & 330 FEL  
 BHL 330 FNL & 660 FEL  
 Lea County, NM





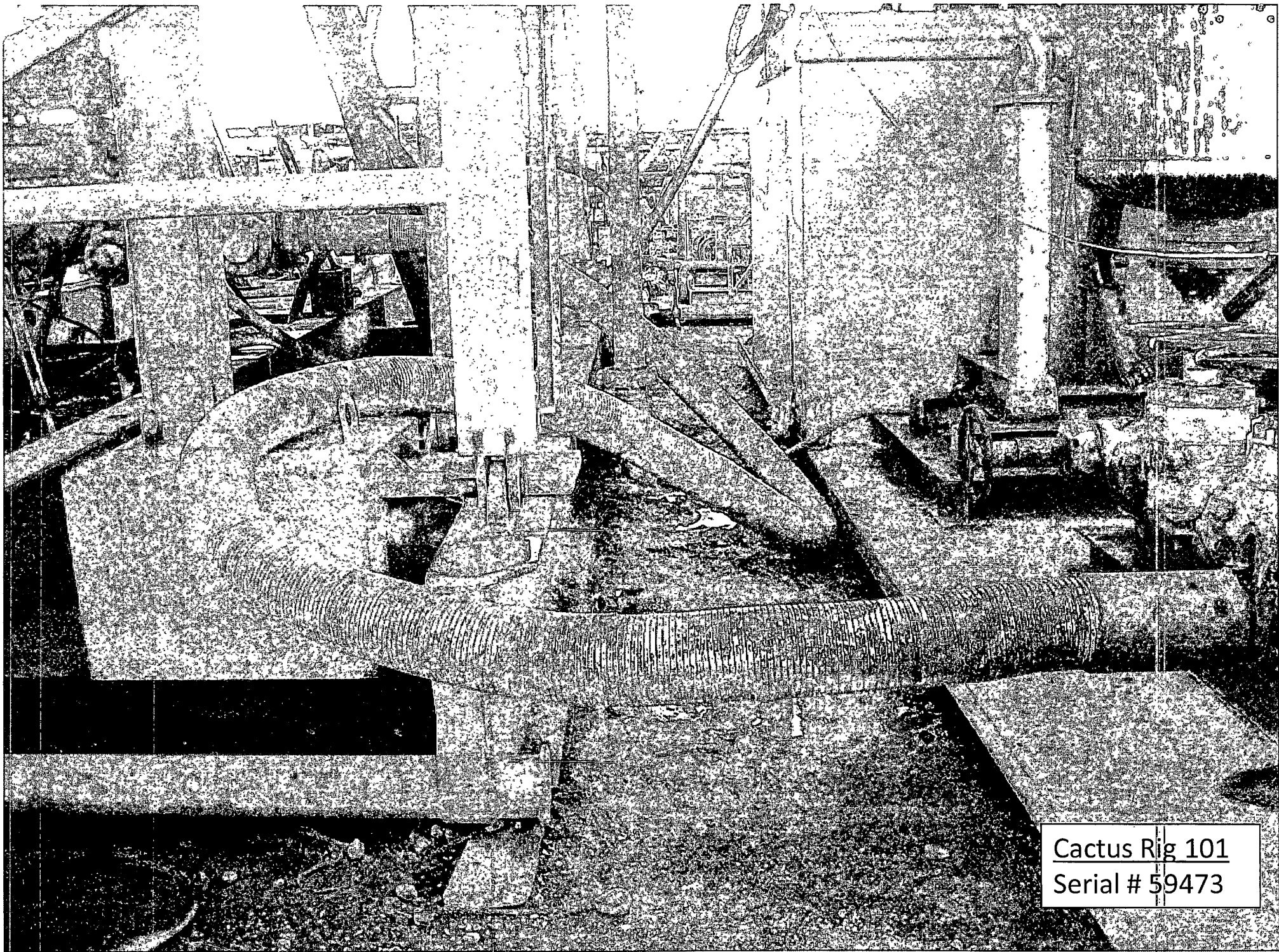
Midwest Hose  
& Specialty, Inc.

## Specification Sheet Choke & Kill Hose

The Midwest Hose & Specialty Choke & Kill hose is manufactured with only premium components. The reinforcement cables, inner liner and cover are made of the highest quality material to handle the tough drilling applications of today's industry. The end connections are available with API flanges, API male threads, hubs, hammer unions or other special fittings upon request. Hose assembly is manufactured to API 7K. This assembly is wrapped with fire resistant vermiculite coated fiberglass insulation, rated at 2000 degrees with stainless steel armor cover.

<b>Working Pressure:</b>	5,000 or 10,000 psi working pressure
<b>Test Pressure:</b>	10,000 or 15,000 psi test pressure
<b>Reinforcement:</b>	Multiple steel cables
<b>Cover:</b>	Stainless Steel Armor
<b>Inner Tube:</b>	Petroleum resistant, Abrasion resistant
<b>End Fitting:</b>	API flanges, API male threads, threaded or butt weld hammer unions, unbolt and other special connections
<b>Maximum Length:</b>	110 Feet
<b>ID:</b>	2-1/2", 3", 3-1/2", 4"
<b>Operating Temperature:</b>	-22 deg F to +180 deg F (-30 deg C to +82 deg C)





Cactus Rig 101  
Serial # 59473

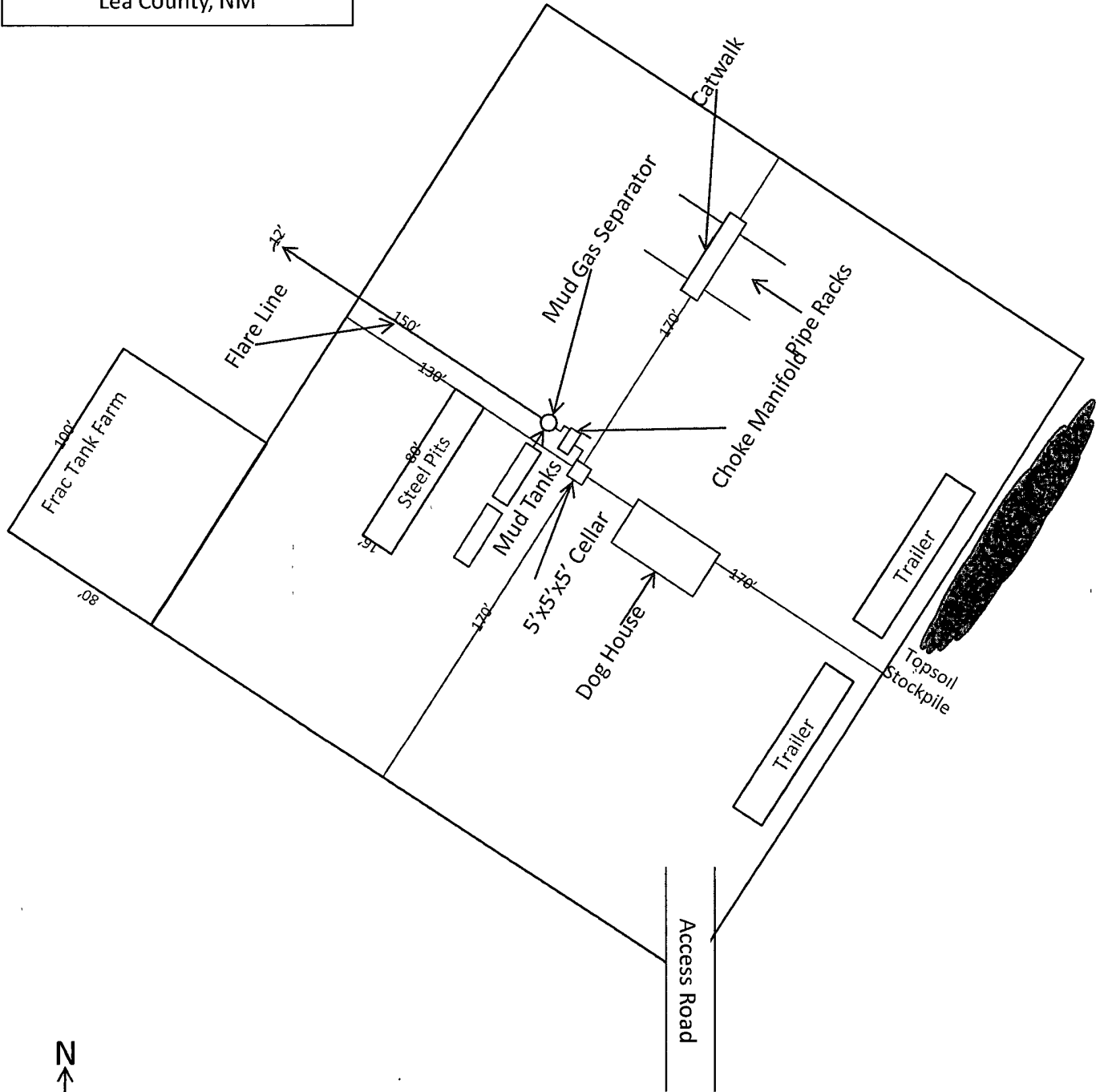
# M I D W E S T

## HOSE AND SPECIALTY INC.

INTERNAL HYDROSTATIC TEST REPORT		
Customer: CACTUS		P.O. Number: Rig#101 Asset#M5358
<b>HOSE SPECIFICATIONS</b>		
Type: CHOKELINE	Length: 35'	
I.D. 4" INCHES	O.D. 8" INCHES	
WORKING PRESSURE 10,000 PSI	TEST PRESSURE 15,000 PSI	BURST PRESSURE PSI
<b>COUPLINGS</b>		
Type of End Fitting 4 1/16 10K FLANGE		
Type of Coupling: SWEDGED	MANUFACTURED BY MIDWEST HOSE & SPECIALTY	
<b>PROCEDURE</b>		
<i>Hose assembly pressure tested with water at ambient temperature.</i>		
TIME HELD AT TEST PRESSURE 15 MIN.	ACTUAL BURST PRESSURE: 0 PSI	
<b>COMMENTS:</b> s/n#59473 Asset#M5358 Hose is covered with stainless steel armour cover and wrapped with fire resistant vermiculite coated fiberglass insulation rated for 1500 degrees complete with lifting eyes		
Date: 5/19/2010	Tested By: BOBBY FINK	Approved: MENDI JACKSON

# Cactus 101

Exhibit D - Rig Diagram  
**Hallertau 5 Federal No. 1**  
Cimarex Energy Co. of Colorado  
5-26S-32E  
SHL 330 FSL & 330 FEL  
BHL 330 FNL & 660 FEL  
Lea County, NM



1" = 50'

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- 1 All Company and Contract personnel admitted on location must be trained by a qualified H<sub>2</sub>S safety instructor to the following:
  - A. Characteristics of H<sub>2</sub>S
  - B. Physical effects and hazards
  - C. Proper use of safety equipment and life support systems.
  - D. Principle and operation of H<sub>2</sub>S detectors, warning system and briefing areas.
  - E. Evacuation procedure, routes and first aid.
  - F. Proper use of 30 minute pressure demand air pack.
  
- 2 H<sub>2</sub>S Detection and Alarm Systems:
  - A. H<sub>2</sub>S detectors and audio alarm system to be located at bell nipple, end of flow line (mud pit) and on derrick floor or doghouse.
  
- 3 Windsock and/or wind streamers:
  - A. Windsock at mudpit area should be high enough to be visible.
  - B. Windsock at briefing area should be high enough to be visible.
  
- 4 Condition Flags and Signs:
  - A. Warning sign on access road to location.
  - B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H<sub>2</sub>S present in dangerous concentration). Only emergency personnel admitted to location.
  
- 5 Well control equipment:
  - A. See exhibit "E"
  
- 6 Communication:
  - A. While working under masks chalkboards will be used for communication.
  - B. Hand signals will be used where chalk board is inappropriate.
  - C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.
  
- 7 Drillstem Testing:

No DSTs or cores are planned at this time.
  
- 8 Drilling contractor supervisor will be required to be familiar with the effects H<sub>2</sub>S has on tubular goods and other mechanical equipment.
  
- 9 If H<sub>2</sub>S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H<sub>2</sub>S scavengers if necessary.

H<sub>2</sub>S Contingency Plan  
**Hallertau 5 Federal No. 1**  
 Cimarex Energy Co. of Colorado  
 Unit P, Section 5  
 T26S-R32E; Lea County, NM

**Emergency Procedures**

In the event of a release of gas containing H<sub>2</sub>S, the first responder(s) must:

- ★ Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- ★ Evacuate any public places encompassed by the 100 ppm ROE.
- ★ Be equipped with H<sub>2</sub>S monitors and air packs in order to control the release.
- ★ Use the "buddy system" to ensure no injuries occur during the response.
- ★ Take precautions to avoid personal injury during this operation.
- ★ Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- ★ Have received training in the:
  - ◆ Detection of H<sub>2</sub>S, and
  - ◆ Measures for protection against the gas,
  - ◆ Equipment used for protection and emergency response.

**Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO<sub>2</sub>). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

**Characteristics of H<sub>2</sub>S and SO<sub>2</sub>**

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H <sub>2</sub> S	1.189 Air=1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21 Air=1	2 ppm	N/A	1000 ppm

**Contacting Authorities**

Cimarex Energy Co. of Colorado's personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Cimarex Energy Co. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

H<sub>2</sub>S Contingency Plan Emergency Contacts  
**Hallertau 5 Federal No. 1**  
 Cimarex Energy Co. of Colorado  
 Unit P, Section 5  
 T26S-R32E; Lea County, NM

<b>Company Office</b>			
Cimarex Energy Co. of Colorado		800-969-4789	
Co. Office and After-Hours Menu			
<b>Key Personnel</b>			
<b>Name</b>	<b>Title</b>	<b>Office</b>	<b>Mobile</b>
Doug Park	Drilling Manager	432-620-1934	972-333-1407
Dee Smith	Drilling Super	432-620-1933	972-882-1010
Jim Evans	Drilling Super	432-620-1929	972-465-0564
Roy Shirley	Field Super		432-634-2136
<b>Artesia</b>			
Ambulance		911	
State Police		575-746-2703	
City Police		575-746-2703	
Sheriff's Office		575-746-9888	
<b>Fire Department</b>		<b>575-746-2701</b>	
Local Emergency Planning Committee		575-746-2122	
New Mexico Oil Conservation Division		575-748-1283	
<b>Carlsbad</b>			
Ambulance		911	
State Police		575-885-3137	
City Police		575-885-2111	
Sheriff's Office		575-887-7551	
<b>Fire Department</b>		<b>575-887-3798</b>	
Local Emergency Planning Committee		575-887-6544	
US Bureau of Land Management		575-887-6544	
<b>Santa Fe</b>			
New Mexico Emergency Response Commission (Santa Fe)		505-476-9600	
New Mexico Emergency Response Commission (Santa Fe) 24 Hrs		505-827-9126	
New Mexico State Emergency Operations Center		505-476-9635	
<b>National</b>			
National Emergency Response Center (Washington, D.C.)		800-424-8802	
<b>Medical</b>			
Flight for Life - 4000 24th St ; Lubbock, TX		806-743-9911	
Aerocare - R3, Box 49F; Lubbock, TX		806-747-8923	
Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM		505-842-4433	
SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM		505-842-4949	
<b>Other</b>			
Boots & Coots IWC		800-256-9688	or 281-931-8884
Cudd Pressure Control		432-699-0139	or 432-563-3356
Halliburton		575-746-2757	
B.J. Services		575-746-3569	

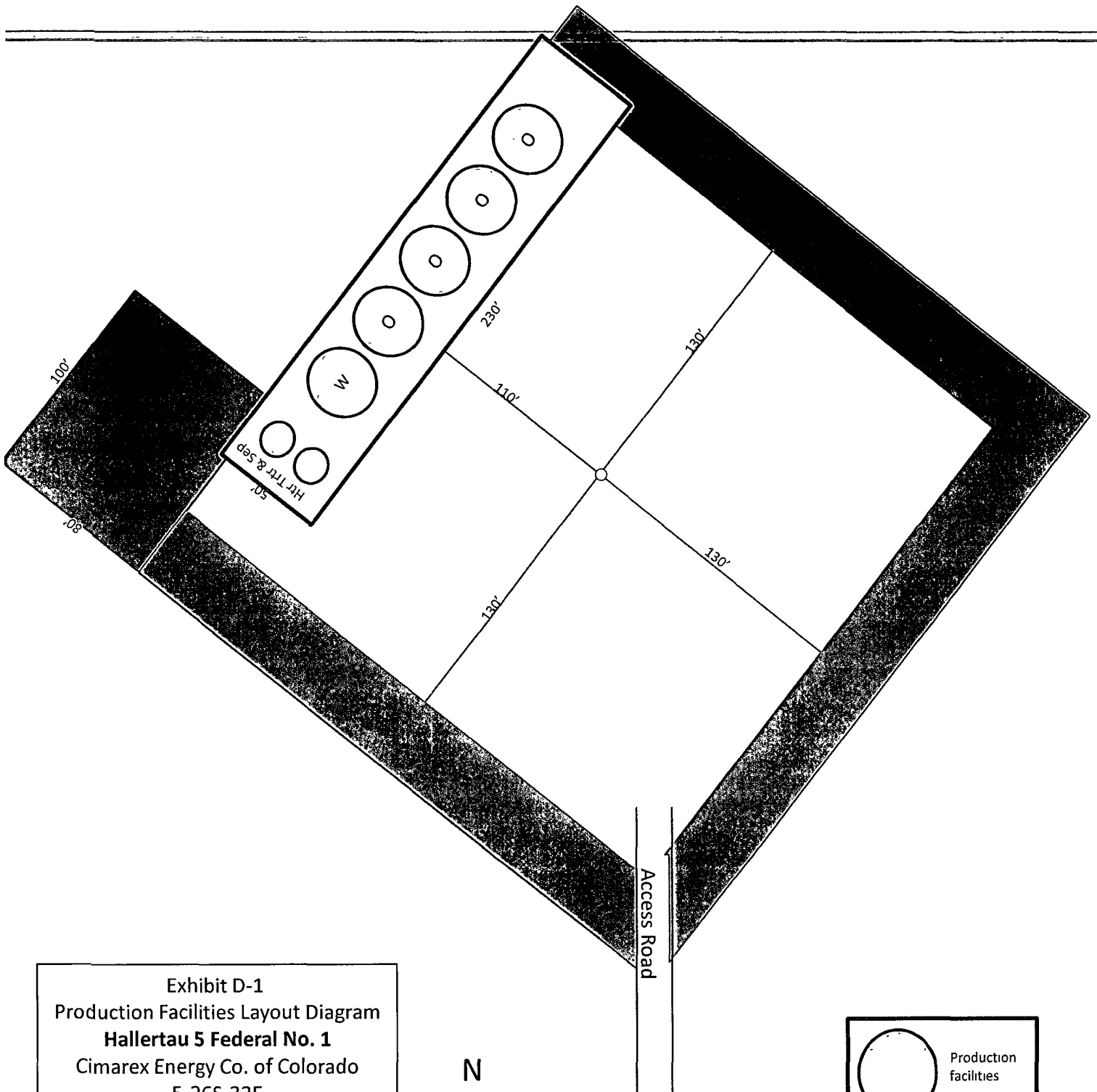
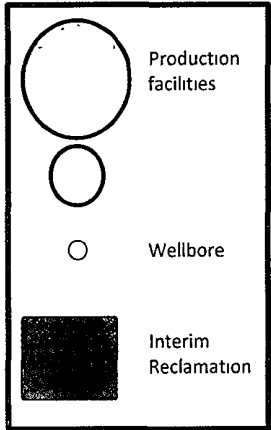


Exhibit D-1  
 Production Facilities Layout Diagram  
**Hallertau 5 Federal No. 1**  
 Cimarex Energy Co. of Colorado  
 5-26S-32E  
 SHL 330 FSL & 330 FEL  
 BHL 330 FNL & 660 FEL  
 Lea County, NM



Surface Use Plan  
Hallertau 5 Federal No. 1  
Cimarex Energy Co. of Colorado  
Unit P, Section 5  
T26S-R32E; Lea County, NM

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1. Existing Roads: Area maps, Exhibit "A" shows the proposed well site as staked. Exhibit "B" is a reproduction of Eddy Co. General Highway Map. Exhibit "C" is a reproduction of a USGS Topographic Map, and Exhibit "C-1" is a well site layout map, showing proposed road to location and existing road. Existing road shown on Exhibits "C" and "C-1" will be maintained in a condition equal to or better than current conditions.
  - A. The maximum width of the driving surface will be 15.' The road will be crowned and ditched with a 2% slope from the tip of the crown to the edge of the driving surface. The ditches will be 1' deep with 3:1 slopes. The driving surface will be made of 6" rolled and compacted caliche.
  - B. From the junction of Orla and Ross, go West on Ross for 0.9 miles to proposed lease road.
2. Planned Access Roads: 123' of new, on-lease access road is proposed.
3. Planned Pipelines and Electric Lines:  
E-line ROW will be provided by nearest service provider and follow existing lease roads where possible. Separate pipeline ROW will be obtained by gas purchaser.
4. Location of Existing Wells in a One-Mile Radius - Exhibit A
  - A. Water wells - None known
  - B. Disposal wells - None known
  - C. Drilling wells - None known
  - D. Producing wells - As shown on Exhibits "A"
  - E. Abandoned wells - As shown on Exhibits "A"
5. Location of Proposed Production Facilities:  
If on completion this well is a producer, a tank battery will be used and the necessary production equipment will be installed at the wellsite. See production facilities layout diagram. Any changes to the facilities or off-site facilities will be accompanied by a Sundry Notice.
6. Location and Type of Water Supply:  
Water will be purchased locally from a commercial source and trucked over the access roads.
7. Source of Construction Material:  
If possible, native caliche will be obtained from the excavation of drill site. Topsoil will be pushed back from the drill site and existing caliche will be ripped and compacted. Then topsoil will be stockpiled on location as depicted on Exhibit "D" (rig layout). If additional material is needed, it will be purchased from a BLM-approved pit as near as possible to the well



Surface Use Plan  
**Hallertau 5 Federal No. 1**  
Cimarex Energy Co. of Colorado  
Unit P, Section 5  
T26S-R32E; Lea County, NM

8. Ancillary Facilities:

- A. No camps or airstrips to be constructed.

9. Well Site Layout:

- A. Exhibit "D" shows location and rig layout.
- C. Mud pits in the closed circulating system will be steel pits and the cuttings will be stored in steel containment pits.
- D. Cuttings will be stored in steel pits until they are hauled to a state-approved disposal facility.
- E. If the well is a producer, those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements.

10. Plans for Restoration of Surface:

Rehabilitation of the location will start in a timely manner after all drilling operations cease. The type of reclamation will depend on whether the well is a producer or a dry hole.

Drainage systems, if any, will be reshaped to the original configuration with provisions made to alleviate erosion. These may need to be modified in certain circumstances to prevent inundation of the location's pad and surface facilities. After the area has been shaped and contoured, topsoil from the spoil pile will be placed over the disturbed area to the extent possible. Revegetation procedures will comply with BLM standards.

If the well is a dry hole, the pad and road area will be recountoured to match the existing terrain. Topsoil will be spread to the extent possible. Revegetation will comply with BLM standards.

Should the well be a producer, those areas of the location not essential to production facilities and operations will be reclaimed and seeded per BLM requirements. Please see Production Facilities Layout Diagram, exhibit D-1.

11 Other Information

- A. Topography consists of a sloping plane with loose tan sands. Vegetation is mainly yucca, mesquite and shin oak.
- B. The wellsite is on surface owned by Department of the Interior, Bureau of Land Management. The land is used mainly for farming, cattle ranching, recreational use, and oil and gas production.
- C. In lieu of an archaeological survey report, Cimarex will be submitting an MOA application for this well pad and access road since they are within the MOA boundary.
- D. There are no known dwellings within 1½ miles of this location.

Operator Certification Statement

Hallertau 5 Federal No. 1

Cimarex Energy Co. of Colorado

Unit P, Section 5

T26S-R32E; Lea County, NM

---

Operator's Representative

Cimarex Energy Co. of Colorado

600 N. Marienfeld St., Ste. 600

Midland, TX 79701

Office Phone: (432) 571-7800

Zeno Farris

**CERTIFICATION:** I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 18th day of July, 2011

NAME: Zeno Farris  
Zeno Farris

TITLE: Manager Operations Administration

ADDRESS: 600 N. Marienfeld St., Ste. 600  
Midland, TX 79701

TELEPHONE: (432) 620-1938

EMAIL: zfarris@cimarex.com

Field Representative: Same as above