

30-015-43856

Schlumberger

Cimarex

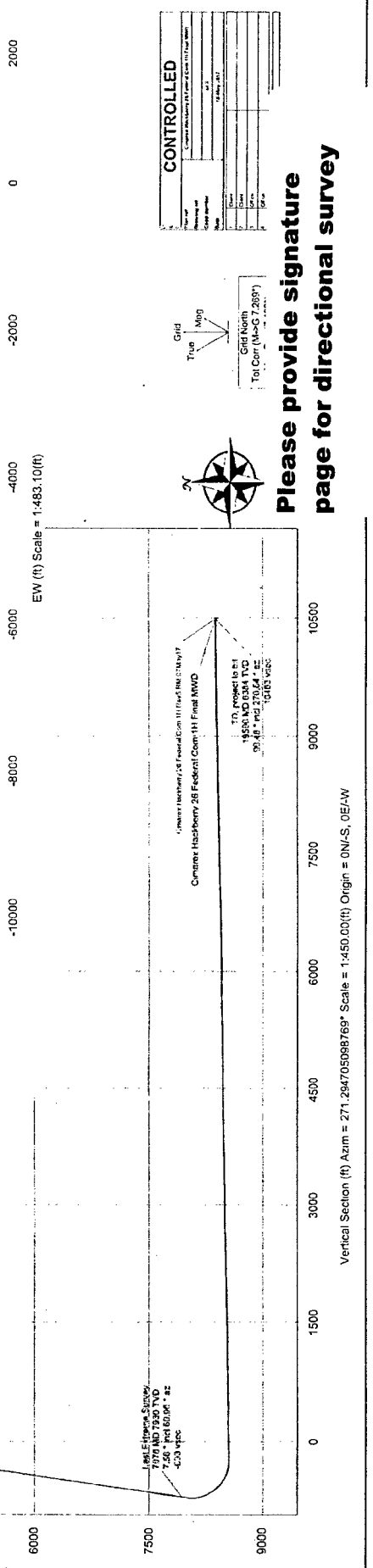
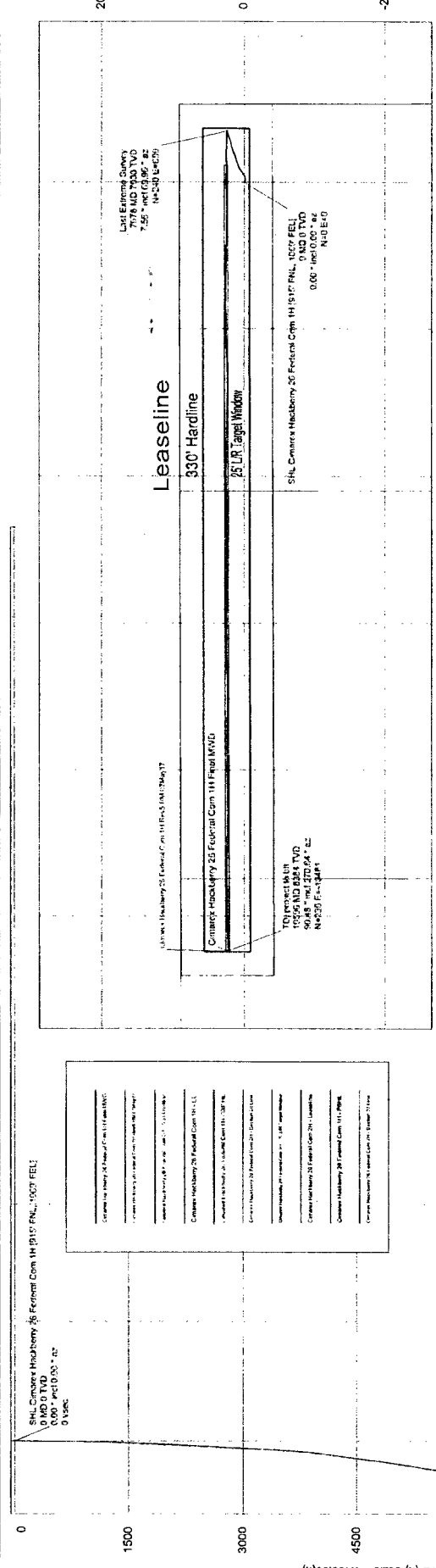
Final PVA

CIMAREX

Borehole: Original Borehole Hackberry 26 Federal Com 1H Well: NM Eddy County (NAD 83) Structure: Cimarex Hackberry 26 Federal Com 1H

Geology & Magnetic Parameters Date: 03/04/2017 Core: Gravity FS: 4323.81 m/s² Gravity FS: 981.14 m/s² (B-5555 Based) Surface Location: UTM Zone 18Q UTM Easting: 62154.51015 UTM Northing: 62154.51015 Scale Factor: 0.9999609

Critical Point	MD	INCL	AZIM	TYD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL Cimarex Hackberry 26 Federal Com 1H (915' FNL, 1069' FEL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Last Extreme Survey	7978.00	7.56	69.96	7930.10	-693.44	240.16	699.05	1.18
TD, project to bit	19596.00	90.48	270.64	9383.83	10483.48	235.67	-10480.84	0.00



CONTROLLED

Grid North
True North
Magnetic North

Grid North
True North
Magnetic North

Grid North
True North
Magnetic North

Please provide signature
page for directional survey

Vertical Section (ft) Azim = 271.294705098769° Scale = 1:450.00(ft) Origin = 0N/-S, 0E/-W

Cimarex Hackberry 26 Federal Com 1H Final MWD Survey Geodetic Report

Report Date: May 18, 2017 - 08:30 AM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Hackberry 26 Federal Com 1H / Cimarex Hackberry 26 Federal Com 1H
Well: Hackberry 26 Federal Com 1H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Hackberry 26 Federal Com 1H Final MWD
Survey Date: April 07, 2017
Tort / AHD / DDI / ERD Ratio: 213.129 ° / 11968.340 R / 6.766 / 1.398
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 38' 9.83603", W 103° 56' 15.26576"
Location Grid N/E Y/X: N 595358.440 RUS, E 663164.160 RUS
CRS Grid Convergence Angle: 0.2134 °
Grid Scale Factor: 0.99992609
Version / Patch: 2.10.254.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 271.295 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3293.900 ft above MSL
Seabed / Ground Elevation: 3270.900 ft above MSL
Magnetic Declination: 7.482 °
Total Gravity Field Strength: 998.5161 mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48328.816 nT
Magnetic Dip Angle: 60.548 °
Declination Date: May 07, 2017
Magnetic Declination Model: HDGM 2016
North Reference: Grid North
Grid Convergence Used: 0.2134 °
Total Corr Mag North->Grid North: 7.2688 °
Local Coord Referenced To: Structure Reference Point

NM OIL CONSERVATION
 ARTESIA DISTRICT

AUG 29 2017

RECEIVED

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
SHL Cimarex Hackberry 26 Federal Com 1H [915' FNL, 1069' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	595358.44	663164.16	N 32 38 9.84	W 103 56 15.27
	149.00	0.71	133.95	149.00	-0.68	-0.64	0.66	0.48	595357.80	663164.82	N 32 38 9.83	W 103 56 15.26
	212.00	0.80	131.04	211.99	-1.30	-1.20	1.28	0.16	595357.24	663165.44	N 32 38 9.82	W 103 56 15.25
	287.00	1.02	133.33	286.98	-2.20	-2.00	2.16	0.30	595356.44	663166.32	N 32 38 9.82	W 103 56 15.24
	393.00	1.10	119.80	392.96	-3.80	-3.16	3.73	0.25	595355.28	663167.89	N 32 38 9.80	W 103 56 15.22
	483.00	0.62	147.61	482.95	-4.83	-4.00	4.74	0.69	595354.44	663168.90	N 32 38 9.80	W 103 56 15.21
	574.00	0.71	165.94	573.95	-5.25	-4.96	5.14	0.25	595353.48	663169.30	N 32 38 9.79	W 103 56 15.21
	664.00	0.62	160.61	663.94	-5.57	-5.96	5.44	0.12	595352.48	663169.60	N 32 38 9.78	W 103 56 15.20
	754.00	0.71	151.89	753.94	-6.01	-6.91	5.86	0.15	595351.53	663170.02	N 32 38 9.77	W 103 56 15.20
	845.00	0.71	135.36	844.93	-6.70	-7.81	6.52	0.22	595350.63	663170.68	N 32 38 9.76	W 103 56 15.19
	940.00	1.19	133.86	939.91	-7.85	-8.91	7.65	0.51	595349.53	663171.81	N 32 38 9.75	W 103 56 15.18
	1035.00	1.10	120.11	1034.90	-9.37	-10.05	9.15	0.30	595348.39	663173.31	N 32 38 9.74	W 103 56 15.16
	1129.00	1.59	105.66	1128.87	-11.43	-10.86	11.18	0.63	595347.58	663175.34	N 32 38 9.73	W 103 56 15.14
	1224.00	1.90	105.66	1223.83	-14.23	-11.64	13.97	0.33	595346.80	663178.13	N 32 38 9.72	W 103 56 15.10
	1318.00	1.81	108.48	1317.78	-17.16	-12.53	16.88	0.14	595345.91	663181.04	N 32 38 9.71	W 103 56 15.07
	1413.00	2.12	104.38	1412.72	-20.30	-13.44	20.00	0.36	595345.00	663184.16	N 32 38 9.70	W 103 56 15.03
	1508.00	2.30	94.73	1507.65	-23.91	-14.03	23.60	0.43	595344.41	663187.76	N 32 38 9.69	W 103 56 14.99
	1603.00	2.21	99.67	1602.58	-27.63	-14.50	27.31	0.23	595343.94	663191.47	N 32 38 9.69	W 103 56 14.95
	1698.00	2.30	95.35	1697.50	-31.34	-14.98	31.01	0.20	595343.00	663195.17	N 32 38 9.69	W 103 56 14.90
	1793.00	2.52	97.77	1792.42	-35.32	-15.44	34.98	0.26	595343.00	663199.14	N 32 38 9.68	W 103 56 14.86
	1825.00	2.21	99.36	1824.39	-36.63	-15.64	36.29	0.99	595342.80	663200.44	N 32 38 9.68	W 103 56 14.84
	1983.00	2.12	103.68	1982.28	-42.50	-16.83	42.13	0.12	595341.61	663206.29	N 32 38 9.67	W 103 56 14.77

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	2077.00	2.52	76.57	2076.20	-46.20	-16.76	45.83	1.23	595341.68	663209.99	N 32 38 9.67	W 103 56 14.73
	2171.00	3.14	67.58	2170.09	-50.55	-15.30	50.22	0.81	595343.15	663214.38	N 32 38 9.68	W 103 56 14.68
	2266.00	3.00	66.26	2264.95	-55.19	-13.30	54.90	0.17	595345.14	663219.06	N 32 38 9.70	W 103 56 14.62
	2360.00	3.00	66.48	2358.83	-59.65	-11.33	59.41	0.01	595347.11	663223.56	N 32 38 9.72	W 103 56 14.57
	2455.00	3.23	65.16	2453.68	-64.31	-9.21	64.31	0.25	595349.23	663228.27	N 32 38 9.74	W 103 56 14.52
	2550.00	3.23	65.38	2548.53	-69.12	-6.98	68.98	0.01	595351.47	663233.13	N 32 38 9.76	W 103 56 14.46
	2645.00	3.14	63.44	2643.39	-73.83	-4.70	73.74	0.15	595353.74	663237.89	N 32 38 9.79	W 103 56 14.40
	2740.00	2.92	67.06	2738.25	-78.33	-2.59	78.29	0.31	595355.85	663242.45	N 32 38 9.81	W 103 56 14.35
	2834.00	3.31	64.76	2832.12	-82.94	-0.50	82.95	0.44	595357.94	663247.11	N 32 38 9.83	W 103 56 14.30
	2929.00	3.14	62.65	2926.96	-87.68	1.86	87.75	0.22	595360.30	663251.90	N 32 38 9.85	W 103 56 14.24
	3024.00	3.31	62.47	3021.81	-92.37	4.33	92.49	0.18	595362.77	663256.64	N 32 38 9.88	W 103 56 14.18
	3118.00	3.00	59.56	3115.67	-96.84	6.83	97.02	0.37	595365.27	663261.17	N 32 38 9.90	W 103 56 14.13
	3213.00	3.23	59.96	3210.53	-101.24	9.43	101.48	0.24	595367.87	663265.63	N 32 38 9.93	W 103 56 14.08
	3309.00	3.31	59.65	3306.38	-105.91	12.18	106.21	0.09	595370.62	663270.36	N 32 38 9.95	W 103 56 14.02
	3375.00	3.31	57.54	3372.26	-109.11	14.17	109.46	0.18	595372.61	663273.61	N 32 38 9.97	W 103 56 13.99
	3525.00	3.80	57.65	3521.98	-116.86	19.14	117.32	0.33	595377.58	663281.47	N 32 38 10.02	W 103 56 13.89
	3619.00	4.42	57.54	3615.73	-122.47	22.74	123.02	0.66	595381.18	663287.17	N 32 38 10.06	W 103 56 13.83
	3714.00	4.96	55.73	3710.42	-128.86	27.02	129.50	0.59	595385.45	663293.65	N 32 38 10.10	W 103 56 13.75
	3808.00	6.32	56.35	3803.96	-136.40	32.17	137.16	1.45	595390.61	663301.31	N 32 38 10.15	W 103 56 13.66
	3903.00	7.56	53.44	3898.26	-145.62	38.79	146.54	1.36	595397.23	663310.69	N 32 38 10.21	W 103 56 13.55
	3998.00	8.84	53.13	3992.29	-156.30	46.89	157.40	1.35	595405.33	663321.55	N 32 38 10.29	W 103 56 13.42
	4092.00	8.53	54.54	4085.21	-167.56	55.27	168.85	0.40	595413.71	663333.00	N 32 38 10.38	W 103 56 13.29
	4187.00	8.04	59.56	4179.22	-178.86	62.73	180.32	0.92	595421.16	663344.47	N 32 38 10.45	W 103 56 13.15
	4282.00	8.13	60.45	4273.27	-190.27	69.40	191.89	0.16	595427.84	663356.04	N 32 38 10.52	W 103 56 13.02
	4377.00	8.13	64.76	4367.32	-202.05	75.58	203.81	0.64	595434.02	663367.96	N 32 38 10.58	W 103 56 12.88
	4472.00	8.13	66.66	4461.37	-214.17	81.11	216.06	0.28	595439.54	663380.20	N 32 38 10.63	W 103 56 12.74
	4567.00	8.13	70.76	4555.41	-226.56	85.98	228.57	0.61	595444.42	663392.71	N 32 38 10.68	W 103 56 12.59
	4662.00	7.82	69.17	4649.49	-238.84	90.49	240.95	0.40	595448.93	663405.09	N 32 38 10.72	W 103 56 12.44
	4757.00	7.73	68.29	4743.62	-250.71	95.16	252.93	0.16	595453.59	663417.07	N 32 38 10.77	W 103 56 11.70
	4852.00	8.35	68.77	4837.69	-262.96	100.02	265.29	0.66	595458.45	663429.43	N 32 38 10.82	W 103 56 12.16
	4947.00	8.44	70.36	4931.67	-275.85	104.86	278.29	0.26	595463.29	663442.43	N 32 38 10.86	W 103 56 12.01
	5042.00	8.66	71.29	5025.61	-289.08	109.50	291.63	0.27	595467.93	663455.76	N 32 38 10.91	W 103 56 11.85
	5136.00	8.35	73.09	5118.58	-302.21	113.75	304.86	0.43	595472.18	663469.00	N 32 38 10.95	W 103 56 11.70
	5230.00	8.26	70.18	5211.59	-314.99	118.03	317.74	0.68	595476.46	663481.88	N 32 38 10.99	W 103 56 11.55
	5326.00	8.75	67.28	5306.54	-328.10	123.18	330.97	0.68	595481.61	663495.10	N 32 38 11.04	W 103 56 11.39
	5420.00	8.84	65.78	5399.43	-341.15	128.91	344.15	0.26	595487.34	663508.28	N 32 38 11.10	W 103 56 11.24
	5515.00	8.66	66.88	5493.33	-354.25	134.71	357.38	0.26	595493.14	663521.52	N 32 38 11.16	W 103 56 11.08
	5610.00	8.66	67.98	5587.24	-367.33	140.20	370.59	0.17	595498.63	663534.72	N 32 38 11.21	W 103 56 10.93
	5705.00	8.44	67.28	5681.19	-380.26	145.58	383.65	0.26	595504.00	663547.78	N 32 38 11.26	W 103 56 10.77
	5800.00	8.35	67.06	5775.17	-392.92	150.96	396.43	0.10	595509.39	663560.56	N 32 38 11.32	W 103 56 10.62
	5895.00	8.13	69.17	5869.19	-405.44	156.03	409.07	0.39	595514.46	663573.19	N 32 38 11.36	W 103 56 10.48
	5990.00	8.75	73.80	5963.16	-418.55	160.44	422.28	0.97	595518.87	663586.41	N 32 38 11.41	W 103 56 10.32
	6086.00	8.44	76.40	6068.08	-432.32	164.13	436.14	0.52	595522.56	663600.27	N 32 38 11.44	W 103 56 10.16
	6181.00	8.66	76.49	6152.03	-445.98	167.44	449.87	0.23	595525.87	663614.00	N 32 38 11.48	W 103 56 10.00
	6275.00	8.75	74.28	6244.95	-459.65	171.03	463.64	0.37	595529.46	663627.76	N 32 38 11.51	W 103 56 9.84
	6370.00	8.53	70.67	6338.87	-473.16	175.32	477.24	0.62	595533.75	663641.36	N 32 38 11.55	W 103 56 9.68
	6465.00	8.35	71.07	6432.84	-486.22	179.89	490.41	0.20	595538.32	663654.54	N 32 38 11.60	W 103 56 9.52
	6560.00	8.26	76.09	6526.84	-499.28	183.77	503.56	0.77	595542.20	663667.68	N 32 38 11.64	W 103 56 9.37
	6655.00	8.44	78.20	6620.84	-512.66	186.84	517.01	0.37	595545.26	663681.13	N 32 38 11.69	W 103 56 9.21
	6750.00	8.26	77.81	6714.83	-526.08	189.70	530.51	0.20	595548.13	663694.63	N 32 38 11.72	W 103 56 9.05
	6846.00	8.26	78.78	6809.83	-539.52	192.50	544.01	0.15	595550.93	663708.13	N 32 38 11.75	W 103 56 8.90
	6941.00	8.04	72.87	6903.88	-552.49	195.79	557.05	0.91	595554.21	663721.17	N 32 38 11.75	W 103 56 8.74
	7036.00	8.35	69.78	6997.91	-565.21	200.13	569.88	0.57	595558.55	663733.99	N 32 38 11.80	W 103 56 8.59
	7131.00	8.35	69.29	7091.90	-578.02	204.95	582.37	0.08	595563.37	663746.92	N 32 38 11.84	W 103 56 8.44
	7226.00	7.95	68.69	7185.94	-590.48	209.78	595.37	0.43	595568.20	663759.49	N 32 38 11.89	W 103 56 8.29
	7321.00	7.82	67.36	7280.04	-602.45	214.65	607.46	0.24	595573.07	663771.57	N 32 38 11.94	W 103 56 8.15
	7415.00	8.35	71.46	7373.11	-614.72	219.28	619.83	0.83	595577.71	663783.95	N 32 38 11.98	W 103 56 8.01
	7510.00	8.53	71.86	7467.08	-627.85	223.67	633.07	0.20	595582.09	663797.18	N 32 38 12.03	W 103 56 7.85

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Last Extreme Survey	7604.00	8.53	76.00	7560.04	-641.15	227.53	646.46	0.65	595585.95	663810.57	N 32 38 12.06	W 103 56 7.70
	7699.00	8.44	80.01	7654.00	-654.78	230.44	660.16	0.63	595588.86	663824.27	N 32 38 12.09	W 103 56 7.54
	7794.00	8.53	76.71	7747.96	-668.44	233.27	673.88	0.52	595591.69	663837.99	N 32 38 12.12	W 103 56 7.38
	7889.00	8.26	75.69	7841.94	-681.83	236.58	687.35	0.32	595595.00	663851.46	N 32 38 12.15	W 103 56 7.22
	7978.00	7.56	69.96	7930.10	-693.44	240.16	699.05	1.18	595598.58	663863.15	N 32 38 12.19	W 103 56 7.08
	8038.00	7.80	68.18	7989.56	-700.86	243.03	706.54	0.56	595601.45	663870.64	N 32 38 12.21	W 103 56 6.99
	8070.00	6.28	65.67	8021.32	-704.44	244.56	710.15	4.85	595602.98	663874.25	N 32 38 12.23	W 103 56 6.95
	8102.00	2.67	53.02	8053.22	-706.60	245.73	712.34	11.63	595604.15	663876.44	N 32 38 12.24	W 103 56 6.93
	8134.00	1.92	30.27	8085.20	-706.72	246.45	712.47	11.95	595604.87	663876.58	N 32 38 12.25	W 103 56 6.92
	8165.00	5.07	281.33	8116.14	-704.93	247.01	710.69	10.71	595605.43	663874.80	N 32 38 12.25	W 103 56 6.94
	8197.00	8.72	278.22	8147.90	-701.13	247.65	706.90	11.48	595606.07	663871.01	N 32 38 12.26	W 103 56 6.99
	8228.00	12.71	275.08	8178.36	-695.39	248.28	701.18	13.00	595606.71	663865.29	N 32 38 12.27	W 103 56 7.06
	8259.00	16.78	272.47	8208.33	-687.51	248.78	693.31	13.30	595607.20	663857.42	N 32 38 12.27	W 103 56 7.15
	8291.00	21.17	270.96	8238.58	-677.11	249.07	682.91	13.80	595607.50	663847.02	N 32 38 12.28	W 103 56 7.27
	8322.00	25.44	270.40	8267.05	-664.85	249.22	670.65	13.79	595607.64	663834.76	N 32 38 12.28	W 103 56 7.41
	8354.00	28.14	270.64	8295.61	-650.43	249.35	656.23	8.44	595607.77	663820.34	N 32 38 12.28	W 103 56 7.58
	8385.00	30.65	270.93	8322.62	-635.21	249.56	641.02	8.11	595607.98	663805.13	N 32 38 12.28	W 103 56 7.76
	8417.00	34.47	270.01	8349.58	-618.00	249.69	623.80	12.04	595608.11	663787.91	N 32 38 12.28	W 103 56 7.96
	8448.00	38.70	269.88	8374.47	-599.53	249.67	605.33	13.65	595608.09	663769.44	N 32 38 12.28	W 103 56 8.18
	8480.00	42.92	269.26	8398.68	-578.63	249.51	584.42	13.25	595607.93	663748.53	N 32 38 12.28	W 103 56 8.42
	8511.00	45.74	269.48	8420.86	-556.98	249.27	562.76	9.11	595607.69	663726.88	N 32 38 12.28	W 103 56 8.67
	8543.00	47.73	271.63	8442.79	-533.69	249.51	539.46	7.91	595607.93	663703.58	N 32 38 12.28	W 103 56 8.95
	8573.00	51.17	272.57	8462.29	-510.90	250.35	516.69	11.71	595608.77	663680.81	N 32 38 12.29	W 103 56 9.21
	8605.00	56.11	272.85	8481.26	-485.14	251.57	480.95	15.45	595609.99	663655.08	N 32 38 12.31	W 103 56 9.51
	8637.00	60.76	273.00	8498.00	-457.90	252.96	463.73	14.54	595611.38	663627.86	N 32 38 12.32	W 103 56 9.83
	8668.00	64.29	272.43	8512.30	-430.41	254.26	436.26	11.50	595612.68	663600.39	N 32 38 12.34	W 103 56 10.15
	8700.00	66.80	271.20	8525.55	-401.28	255.18	407.15	8.59	595613.60	663571.28	N 32 38 12.35	W 103 56 10.49
	8731.00	70.23	269.72	8536.90	-372.44	255.41	378.31	11.92	595613.83	663542.44	N 32 38 12.35	W 103 56 10.83
	8762.00	75.35	268.35	8546.07	-342.87	254.90	348.71	17.05	595613.32	663512.85	N 32 38 12.35	W 103 56 11.18
	8794.00	79.82	268.07	8552.95	-311.87	253.93	317.49	13.99	595612.35	663481.62	N 32 38 12.34	W 103 56 11.54
	8824.00	83.44	268.91	8557.32	-282.03	253.14	287.82	12.38	595611.57	663451.96	N 32 38 12.33	W 103 56 11.89
	8856.00	85.58	269.61	8560.38	-250.20	252.73	255.97	7.03	595611.15	663420.11	N 32 38 12.33	W 103 56 12.26
	8888.00	89.02	269.75	8561.88	-218.25	252.56	224.01	10.76	595610.98	663388.16	N 32 38 12.33	W 103 56 12.64
	8919.00	91.19	270.52	8561.83	-187.26	252.63	193.02	7.43	595611.05	663357.16	N 32 38 12.33	W 103 56 13.00
	8945.00	92.02	270.77	8561.10	-161.27	252.92	167.03	3.33	595611.34	663331.17	N 32 38 12.33	W 103 56 13.30
	9060.00	92.34	270.12	8556.72	-46.37	253.81	52.11	0.63	595612.23	663216.27	N 32 38 12.35	W 103 56 14.65
	9155.00	91.44	269.42	8553.59	48.55	253.43	-42.83	1.20	595611.85	663121.33	N 32 38 12.35	W 103 56 15.76
	9250.00	91.00	268.98	8551.57	143.46	252.11	-137.80	0.65	595610.53	663026.37	N 32 38 12.34	W 103 56 16.87
	9344.00	90.20	268.72	8550.58	237.37	250.22	-231.77	0.89	595608.64	662932.40	N 32 38 12.32	W 103 56 17.97
	9439.00	90.10	269.14	8550.34	332.29	248.45	-326.76	0.45	595606.87	662837.43	N 32 38 12.31	W 103 56 19.08
	9534.00	90.69	270.46	8549.68	427.25	248.11	-421.75	1.52	595606.53	662742.44	N 32 38 12.31	W 103 56 20.19
	9629.00	90.45	270.47	8548.74	522.24	248.88	-516.74	0.25	595607.31	662647.45	N 32 38 12.32	W 103 56 21.30
	9724.00	91.27	270.75	8547.31	617.22	249.90	-611.73	0.91	595608.32	662552.48	N 32 38 12.33	W 103 56 22.41
	9818.00	90.65	270.75	8545.74	711.20	251.10	-705.71	0.66	595609.52	662458.51	N 32 38 12.35	W 103 56 23.51
	9913.00	90.72	270.67	8544.60	806.19	252.25	-800.69	0.09	595610.67	662363.53	N 32 38 12.36	W 103 56 24.62
	10008.00	91.24	270.69	8542.97	901.17	253.38	-895.67	0.55	595611.80	662268.56	N 32 38 12.38	W 103 56 25.73
	10103.00	90.48	270.55	8541.55	996.15	254.41	-990.65	0.81	595612.83	662173.58	N 32 38 12.39	W 103 56 26.84
	10198.00	90.86	270.90	8540.44	1091.14	255.61	-1085.64	0.54	595614.03	662078.60	N 32 38 12.40	W 103 56 27.95
	10294.00	90.45	270.67	8539.34	1187.13	256.93	-1181.62	0.49	595615.35	661982.63	N 32 38 12.42	W 103 56 29.07
	10388.00	90.27	270.58	8538.75	1281.12	257.95	-1275.62	0.21	595616.37	661888.64	N 32 38 12.44	W 103 56 30.17
	10482.00	90.86	270.76	8537.82	1375.11	259.05	-1369.61	0.65	595617.47	661794.66	N 32 38 12.45	W 103 56 31.27
	10577.00	91.99	270.69	8535.46	1470.07	260.25	-1464.57	1.19	595618.67	661699.70	N 32 38 12.45	W 103 56 32.38
	10672.00	91.00	269.27	8532.98	1565.01	260.22	-1559.53	0.72	595618.64	661604.75	N 32 38 12.47	W 103 56 33.49
	10768.00	91.69	269.21	8530.73	1660.92	258.95	-1655.50	1.82	595617.37	661508.79	N 32 38 12.46	W 103 56 34.61
	10862.00	90.76	268.97	8528.72	1754.83	257.45	-1749.46	1.02	595615.87	661414.83	N 32 38 12.45	W 103 56 35.71
	10955.00	91.03	269.55	8527.27	1847.76	256.25	-1842.44	0.69	595614.67	661321.86	N 32 38 12.44	W 103 56 36.80
	11050.00	91.72	269.27	8524.99	1942.68	255.27	-1937.41	0.78	595613.69	661226.90	N 32 38 12.43	W 103 56 37.91

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	11145.00	91.41	269.21	8522.39	2037.59	254.01	-2032.36	0.33	595612.44	661131.95	N 32 38 12.42	W 103 56 39.02
	11239.00	91.03	269.53	8520.39	2131.51	252.98	-2126.34	0.53	595611.40	661037.98	N 32 38 12.42	W 103 56 40.12
	11335.00	91.24	268.93	8518.49	2227.43	251.69	-2222.31	0.66	595610.11	660942.02	N 32 38 12.41	W 103 56 41.24
	11429.00	90.76	267.50	8516.85	2321.28	248.76	-2316.25	1.60	595607.19	660848.09	N 32 38 12.38	W 103 56 42.34
	11524.00	91.41	268.09	8515.05	2416.08	245.11	-2411.16	0.92	595603.53	660753.18	N 32 38 12.35	W 103 56 43.45
	11618.00	92.10	267.88	8512.17	2509.88	241.81	-2505.06	0.77	595600.23	660659.29	N 32 38 12.32	W 103 56 44.55
	11713.00	92.23	267.84	8508.58	2604.64	238.26	-2599.92	0.14	595596.68	660564.44	N 32 38 12.29	W 103 56 45.66
	11806.00	91.86	269.18	8505.26	2697.47	235.84	-2692.83	1.49	595594.29	660477.54	N 32 38 12.27	W 103 56 46.74
	11900.00	90.38	271.21	8503.43	2791.43	236.16	-2786.80	2.67	595591.59	660377.57	N 32 38 12.27	W 103 56 47.84
	11994.00	90.62	270.81	8502.61	2885.42	237.82	-2880.78	0.50	595596.24	660283.59	N 32 38 12.29	W 103 56 48.94
	12089.00	90.55	270.45	8501.64	2980.41	238.87	-2975.77	0.39	595597.29	660188.61	N 32 38 12.31	W 103 56 50.05
	12184.00	90.89	270.82	8500.44	3075.40	239.92	-3070.76	0.53	595598.34	660093.63	N 32 38 12.32	W 103 56 51.16
	12279.00	90.69	270.70	8499.13	3170.38	241.18	-3165.74	0.25	595599.60	659998.66	N 32 38 12.34	W 103 56 52.27
	12374.00	91.48	270.95	8497.33	3265.36	242.55	-3260.71	0.87	595600.97	659903.69	N 32 38 12.35	W 103 56 53.39
	12468.00	91.00	271.24	8495.30	3359.34	244.34	-3354.67	0.60	595602.76	659809.74	N 32 38 12.38	W 103 56 54.48
	12562.00	90.96	271.15	8493.69	3453.33	246.30	-3448.64	0.10	595604.72	659715.78	N 32 38 12.40	W 103 56 55.58
	12658.00	91.10	271.17	8491.97	3549.31	248.25	-3544.61	0.15	595606.67	659619.82	N 32 38 12.42	W 103 56 56.70
	12752.00	91.51	270.97	8489.82	3643.28	250.00	-3638.56	0.49	595608.42	659525.87	N 32 38 12.44	W 103 56 57.80
	12847.00	91.13	271.34	8487.64	3738.26	251.91	-3733.52	0.56	595610.34	659430.92	N 32 38 12.46	W 103 56 58.91
	12942.00	91.13	271.00	8485.76	3833.24	253.85	-3828.48	0.36	595612.28	659335.97	N 32 38 12.49	W 103 57 0.02
	13037.00	91.30	271.08	8483.75	3928.22	255.58	-3923.44	0.20	595614.00	659241.01	N 32 38 12.51	W 103 57 1.13
	13132.00	91.30	269.94	8481.59	4023.18	256.42	-4018.41	1.20	595614.84	659146.05	N 32 38 12.52	W 103 57 2.24
	13227.00	90.89	269.56	8479.78	4118.13	256.01	-4113.40	0.59	595614.43	659051.08	N 32 38 12.52	W 103 57 3.36
	13322.00	90.31	269.57	8478.78	4213.08	255.29	-4208.39	0.61	595613.71	658956.09	N 32 38 12.51	W 103 57 4.47
	13416.00	90.45	269.58	8478.16	4307.04	254.59	-4302.38	0.15	595613.01	658862.10	N 32 38 12.51	W 103 57 5.57
	13511.00	90.72	269.47	8477.19	4401.99	253.80	-4397.37	0.31	595612.22	658767.12	N 32 38 12.51	W 103 57 6.68
	13606.00	90.76	269.87	8475.96	4496.94	253.26	-4492.36	0.42	595611.68	658672.14	N 32 38 12.50	W 103 57 7.79
	13701.00	90.00	269.42	8475.33	4591.90	252.67	-4587.35	0.93	595611.09	658577.15	N 32 38 12.50	W 103 57 8.90
	13796.00	90.21	269.10	8475.16	4686.84	251.44	-4682.35	0.40	595609.86	658482.16	N 32 38 12.49	W 103 57 10.01
	13891.00	90.17	268.98	8474.84	4781.76	249.85	-4777.34	0.13	595608.27	658387.18	N 32 38 12.48	W 103 57 11.12
	13986.00	90.62	269.25	8474.19	4876.69	248.38	-4872.32	0.55	595606.80	658292.21	N 32 38 12.47	W 103 57 12.23
	14079.00	90.58	269.65	8473.21	4969.64	247.49	-4965.31	0.43	595605.91	658199.22	N 32 38 12.46	W 103 57 13.32
	14173.00	91.41	269.49	8471.58	5063.58	246.78	-5059.30	0.90	595605.20	658105.25	N 32 38 12.46	W 103 57 14.42
	14268.00	91.68	269.63	8469.02	5158.50	245.05	-5154.26	0.32	595604.48	658010.29	N 32 38 12.45	W 103 57 15.53
	14363.00	91.06	269.69	8466.75	5253.44	245.49	-5249.23	0.66	595603.91	657915.33	N 32 38 12.45	W 103 57 16.64
	14457.00	92.20	269.85	8464.08	5347.36	245.11	-5343.19	1.22	595603.53	657821.38	N 32 38 12.45	W 103 57 17.74
	14552.00	91.34	269.52	8461.14	5442.28	244.59	-5438.14	0.97	595603.01	657726.43	N 32 38 12.45	W 103 57 18.85
	14646.00	90.69	269.87	8459.48	5536.23	244.09	-5532.12	0.79	595602.51	657632.46	N 32 38 12.45	W 103 57 19.95
	14740.00	90.96	270.37	8458.12	5630.20	244.29	-5626.11	0.60	595602.71	657538.47	N 32 38 12.46	W 103 57 21.05
	14835.00	91.20	270.57	8456.33	5725.17	245.07	-5721.09	0.33	595603.49	657443.50	N 32 38 12.47	W 103 57 22.16
	14930.00	89.86	270.42	8455.45	5820.16	245.89	-5816.08	1.42	595604.31	657348.52	N 32 38 12.48	W 103 57 23.27
	15024.00	90.44	271.01	8455.21	5914.15	247.06	-5910.08	0.88	595605.48	657254.53	N 32 38 12.49	W 103 57 24.37
	15119.00	90.38	270.64	8454.53	6009.14	248.43	-6005.06	0.39	595606.85	657159.55	N 32 38 12.51	W 103 57 25.48
	15214.00	90.00	270.49	8454.21	6104.14	249.37	-6100.06	0.43	595607.79	657064.56	N 32 38 12.52	W 103 57 26.59
	15308.00	90.86	269.53	8453.51	6198.11	249.38	-6194.05	1.37	595607.80	656970.58	N 32 38 12.53	W 103 57 27.69
	15404.00	90.48	269.45	8452.38	6294.05	248.53	-6290.04	0.40	595606.95	656874.59	N 32 38 12.52	W 103 57 28.81
	15497.00	90.55	269.21	8451.55	6386.99	247.44	-6383.03	0.27	595605.86	656781.61	N 32 38 12.51	W 103 57 29.90
	15593.00	90.24	268.97	8450.89	6482.92	245.92	-6479.02	0.41	595604.34	656685.63	N 32 38 12.50	W 103 57 31.02
	15687.00	91.48	268.95	8449.48	6576.83	244.21	-6572.99	1.32	595602.63	656591.67	N 32 38 12.49	W 103 57 32.12
	15782.00	91.65	268.44	8448.88	6671.70	242.05	-6667.93	0.57	595600.47	656496.74	N 32 38 12.47	W 103 57 33.23
	15877.00	91.06	269.22	8444.63	6766.58	240.11	-6762.82	1.03	595598.53	656401.79	N 32 38 12.45	W 103 57 34.34
	15971.00	92.23	270.03	8441.94	6860.50	239.49	-6856.84	1.51	595597.91	656307.84	N 32 38 12.45	W 103 57 35.44
	16065.00	91.51	269.78	8438.87	6954.42	239.34	-6950.79	0.81	595597.76	656213.90	N 32 38 12.45	W 103 57 36.54
	16159.00	92.13	269.23	8435.88	7048.33	238.52	-7044.74	0.88	595596.95	656119.96	N 32 38 12.45	W 103 57 37.63
	16254.00	91.27	269.92	8433.06	7143.24	237.82	-7139.69	1.16	595596.24	656025.01	N 32 38 12.44	W 103 57 38.75
	16350.00	90.86	269.88	8431.28	7239.20	237.65	-7235.67	0.43	595595.08	655929.04	N 32 38 12.45	W 103 57 39.87
	16445.00	91.10	269.71	8429.66	7334.15	237.31	-7330.66	0.31	595595.74	655834.06	N 32 38 12.45	W 103 57 40.98
	16539.00	91.20	270.25	8427.77	7428.11	237.28	-7424.64	0.58	595595.70	655740.08	N 32 38 12.45	W 103 57 42.08

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
	16935.00	90.62	269.94	8426.24	7524.07	237.44	-7520.63	0.69	595595.86	655644.10	N 32 38 12.45	W 103 57 43.20
	16728.00	91.24	270.64	8424.74	7617.04	237.91	-7613.61	1.01	595596.33	655551.13	N 32 38 12.46	W 103 57 44.29
	16822.00	90.96	270.60	8422.93	7711.02	238.93	-7707.59	0.30	595597.35	655457.16	N 32 38 12.48	W 103 57 45.39
	16916.00	90.82	270.12	8421.47	7805.00	239.52	-7801.58	0.53	595597.94	655363.18	N 32 38 12.48	W 103 57 46.48
	17011.00	91.31	270.15	8419.70	7899.96	239.74	-7896.56	0.52	595598.16	655268.20	N 32 38 12.49	W 103 57 47.60
	17106.00	91.20	269.26	8417.62	7994.90	239.25	-7991.53	0.94	595597.67	655173.23	N 32 38 12.49	W 103 57 48.71
	17200.00	90.96	268.72	8415.85	8088.81	237.60	-8085.50	0.63	595596.02	655079.27	N 32 38 12.48	W 103 57 49.81
	17295.00	91.00	269.13	8414.23	8183.71	235.81	-8180.47	0.43	595594.24	654984.31	N 32 38 12.46	W 103 57 50.92
	17390.00	91.51	269.35	8412.15	8278.63	234.55	-8275.44	0.58	595592.98	654889.35	N 32 38 12.45	W 103 57 52.03
	17485.00	90.76	269.10	8410.26	8373.55	233.27	-8370.41	0.83	595591.69	654794.38	N 32 38 12.44	W 103 57 53.14
	17580.00	90.65	270.22	8408.10	8468.50	232.71	-8465.40	1.18	595591.13	654699.40	N 32 38 12.44	W 103 57 54.25
	17675.00	90.38	271.01	8408.24	8563.49	233.73	-8560.39	0.88	595592.15	654604.42	N 32 38 12.45	W 103 57 55.36
	17769.00	91.17	270.68	8406.97	8657.47	235.11	-8654.37	0.91	595593.53	654510.44	N 32 38 12.47	W 103 57 56.46
	17864.00	91.20	270.75	8405.01	8752.45	236.30	-8749.34	0.08	595594.72	654415.48	N 32 38 12.48	W 103 57 57.57
	17959.00	90.65	271.03	8403.47	8847.43	237.77	-8844.32	0.65	595596.19	654320.51	N 32 38 12.50	W 103 57 58.68
	18053.00	91.00	270.62	8402.12	8941.42	239.13	-8938.30	0.57	595597.55	654226.54	N 32 38 12.52	W 103 57 59.78
	18149.00	90.89	271.13	8400.54	9037.41	240.59	-9034.28	0.54	595599.01	654130.57	N 32 38 12.54	W 103 58 0.90
	18241.00	93.75	272.43	8396.81	9129.32	243.45	-9126.14	3.41	595601.87	654038.71	N 32 38 12.57	W 103 58 1.97
	18336.00	90.41	271.77	8393.36	9224.23	246.92	-9221.00	3.58	595605.34	653943.86	N 32 38 12.61	W 103 58 3.08
	18430.00	90.34	270.49	8392.75	9316.22	248.78	-9314.98	1.36	595607.20	653849.89	N 32 38 12.63	W 103 58 4.18
	18526.00	90.55	269.33	8392.00	9414.19	248.63	-9410.98	1.23	595607.05	653753.90	N 32 38 12.62	W 103 58 5.30
	18620.00	90.48	268.96	8391.16	9508.12	247.22	-9504.96	0.40	595605.64	653659.92	N 32 38 12.62	W 103 58 6.40
	18715.00	90.41	269.22	8390.42	9603.05	245.71	-9599.95	0.28	595604.14	653564.94	N 32 38 12.61	W 103 58 7.51
	18810.00	90.55	269.54	8389.62	9697.99	244.69	-9694.94	0.37	595603.11	653469.96	N 32 38 12.60	W 103 58 8.63
	18905.00	90.52	269.26	8388.74	9792.94	243.69	-9789.93	0.30	595602.11	653374.97	N 32 38 12.59	W 103 58 9.74
	18999.00	90.82	268.97	8387.80	9886.86	242.24	-9883.91	0.33	595600.66	653281.00	N 32 38 12.58	W 103 58 10.84
	19095.00	90.52	268.79	8386.85	9982.77	240.36	-9979.89	0.21	595598.79	653185.03	N 32 38 12.57	W 103 58 11.96
	19190.00	90.45	269.25	8386.04	10074.67	238.74	-10074.87	0.49	595597.16	653090.05	N 32 38 12.55	W 103 58 13.07
	19285.00	90.41	269.08	8385.33	10172.63	237.35	-10169.86	0.18	595595.78	652995.07	N 32 38 12.54	W 103 58 14.18
	19379.00	90.17	269.13	8384.85	10266.56	235.89	-10263.85	0.26	595594.31	652901.09	N 32 38 12.53	W 103 58 15.28
	19475.00	90.14	269.76	8384.59	10362.51	234.96	-10359.84	0.66	595593.38	652805.10	N 32 38 12.53	W 103 58 16.40
	19558.00	90.48	270.64	8384.15	10445.49	235.25	-10442.84	1.14	595593.67	652722.11	N 32 38 12.53	W 103 58 17.37
TD, project to bit	19596.00	90.48	270.64	8383.83	10483.48	235.67	-10480.84	0.00	595594.09	652684.12	N 32 38 12.54	W 103 58 17.82

Survey Type: Def Survey

Survey Error Model: ISOWSA 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 Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	23.000	1/98.425	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Hackberry 26 Federal Com 1H Final MWD
	1	23.000	23.000	Act Stns	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Hackberry 26 Federal Com 1H Final MWD
	1	23.000	8070.000	Act Stns	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Hackberry 26 Federal Com 1H
	1	8070.000	19596.000	Act Stns	30.000	SLB_MWD+DMAG	Original Borehole / Cimarex Hackberry 26 Federal Com 1H