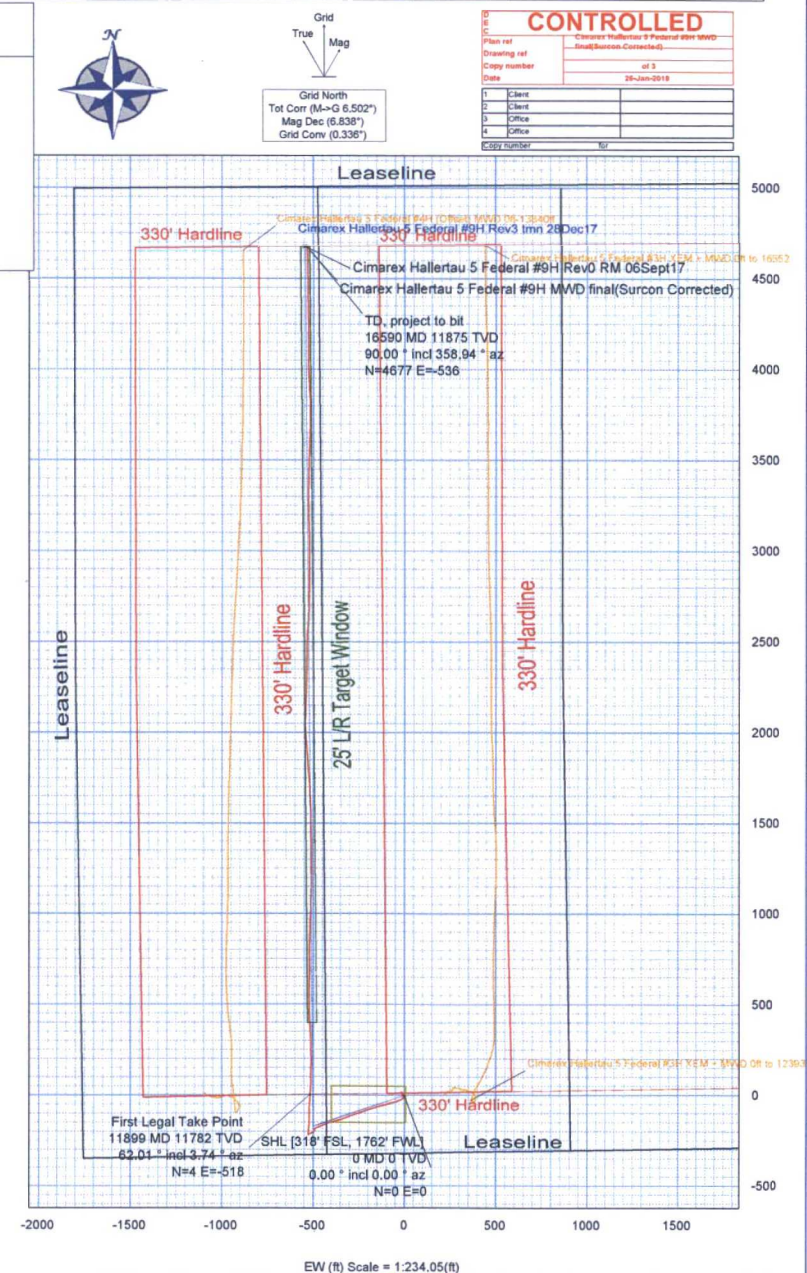
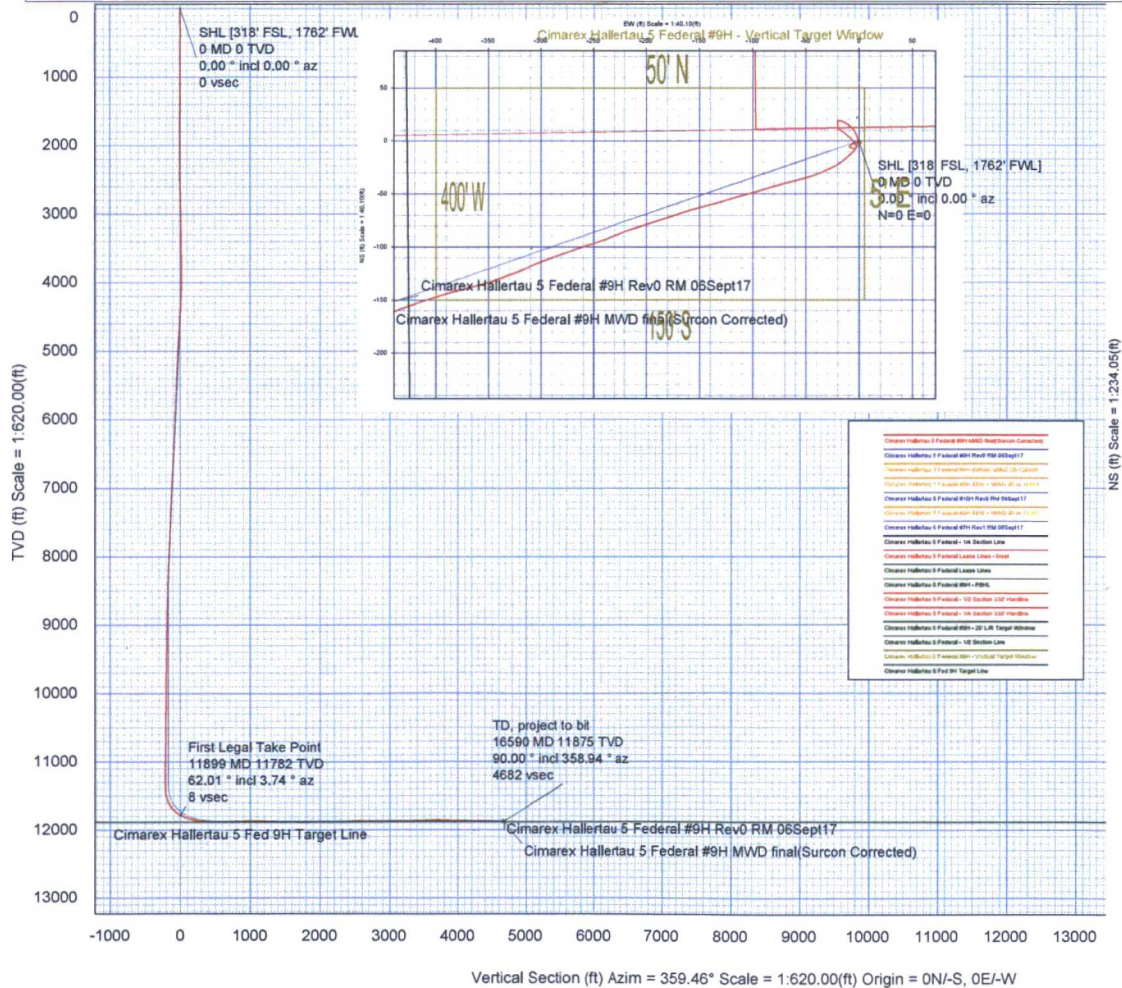


Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Hallertau 5 Federal #9H	NM Lea County (NAD 83)	Cimarex Hallertau 5 Federal #9H

Gravity & Magnetic Parameters				Surface Location				NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous			
Model:	HDGM 2017	Dip:	59.737°	Date:	25-Sep-2017	Lat:	N 32 3 56.93	Northing:	388256.29FTUS	Grid Conv:	0.3362°	Slot:	Cimarex Hallertau	TVD Ref:	RKB(3296.5ft above MSL)
MagDec:	6.838°	FS:	47923.87InT	Gravity FS:	998.426mgm (9.80665 Based)	Lon:	W 103 42 0.50	Easting:	737481.97FTUS	Scale Fact:	0.99995316	Plan:	5 Federal #9H Cimarex Hallertau	5 Federal #9H MWD final(Surcon Corrected)	

	Critical Points							
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [318' FSL, 1762' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First Legal Take Point	11899.00	62.01	3.74	11782.22	8.41	3.53	-517.72	17.84
TD, project to bit	16590.00	90.00	358.94	11874.60	4681.84	4677.00	-535.63	0.00



Cimarex Hallertau 5 Federal #9H MWD final(Surcon Corrected) Survey

Geodetic Report

(Def Survey)

Report Date: January 18, 2018 - 03:47 PM
 Client: Cimarex
 Field: NM Lea County (NAD 83)
 Structure / Slot: Cimarex Hallertau 5 Federal #9H / Cimarex Hallertau 5 Federal #9H
 Well: Cimarex Hallertau 5 Federal #9H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex Hallertau 5 Federal #9H MWD final(Surcon Corrected)
 Survey Date: September 25, 2017
 Tort / AHD / DDI / ERD Ratio: 247.579 ° / 5572.242 ft / 6.285 / 0.469
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 3' 56.93228", W 103° 42' 0.49617"
 Location Grid N/E Y/X: N 388256.290 ftUS, E 737481.970 ftUS
 CRS Grid Convergence Angle: 0.3362 °
 Grid Scale Factor: 0.99995316
 Version / Patch: 2.10.696.0
 Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 359.460 ° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3296.500 ft above MSL
 Seabed / Ground Elevation: 3272.500 ft above MSL
 Magnetic Declination: 6.838 °
 Total Gravity Field Strength: 998.4256mgn (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 47923.871 nT
 Magnetic Dip Angle: 59.737 °
 Declination Date: September 25, 2017
 Magnetic Declination Model: HDGM 2017
 North Reference: Grid North
 Grid Convergence Used: 0.3362 °
 Total Corr Mag North->Grid North: 6.5018 °
 Local Coord Referenced To: Structure Reference Point

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 [318' FSL, 1762' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	388256.29	737481.97	N 32° 3' 56.93	W 103° 42' 0.50
	215.00	0.43	324.05	215.00	0.66	0.65	-0.47	0.20	388256.94	737481.50	N 32° 3' 56.94	W 103° 42' 0.50
	307.00	0.16	351.36	307.00	1.07	1.06	-0.70	0.32	388257.35	737481.27	N 32° 3' 56.94	W 103° 42' 0.50
	398.00	0.32	250.42	398.00	1.11	1.10	-0.95	0.42	388257.39	737481.02	N 32° 3' 56.94	W 103° 42' 0.51
	488.00	0.35	141.30	488.00	0.81	0.80	-1.02	0.61	388257.09	737480.95	N 32° 3' 56.94	W 103° 42' 0.51
	579.00	0.72	142.62	579.99	0.13	0.13	-0.50	0.41	388256.42	737481.47	N 32° 3' 56.93	W 103° 42' 0.50
	669.00	0.94	130.84	668.98	-0.81	-0.80	0.40	0.31	388255.49	737482.37	N 32° 3' 56.92	W 103° 42' 0.49
	760.00	0.83	115.80	759.97	-1.59	-1.58	1.56	0.28	388254.71	737483.53	N 32° 3' 56.92	W 103° 42' 0.48
	850.00	0.34	144.92	849.97	-2.10	-2.08	2.30	0.62	388254.21	737484.27	N 32° 3' 56.91	W 103° 42' 0.47
	940.00	0.92	284.11	939.96	-2.14	-2.12	1.75	1.33	388254.17	737483.72	N 32° 3' 56.91	W 103° 42' 0.48
	1030.00	0.86	262.42	1029.95	-2.04	-2.03	0.38	0.38	388254.26	737482.35	N 32° 3' 56.91	W 103° 42' 0.49
	1089.00	0.99	263.55	1088.94	-2.14	-2.15	-0.56	0.22	388254.14	737481.41	N 32° 3' 56.91	W 103° 42' 0.50
	1309.00	0.53	265.24	1308.92	-2.42	-2.45	-3.46	0.21	388253.84	737478.51	N 32° 3' 56.91	W 103° 42' 0.54
	1404.00	0.83	264.04	1403.92	-2.51	-2.56	-4.59	0.32	388253.73	737477.38	N 32° 3' 56.91	W 103° 42' 0.55
	1499.00	0.77	238.36	1498.91	-2.91	-2.96	-5.81	0.38	388253.33	737476.16	N 32° 3' 56.90	W 103° 42' 0.56
	1592.00	0.74	245.08	1591.90	-3.48	-3.54	-6.89	0.10	388252.75	737475.08	N 32° 3' 56.90	W 103° 42' 0.58
	1686.00	0.61	241.90	1685.89	-3.96	-4.03	-7.88	0.14	388252.26	737474.09	N 32° 3' 56.89	W 103° 42' 0.59
	1781.00	0.53	205.68	1780.89	-4.59	-4.67	-8.52	0.38	388251.62	737473.45	N 32° 3' 56.89	W 103° 42' 0.60
	1875.00	0.34	208.52	1874.89	-5.22	-5.31	-8.84	0.20	388250.98	737473.13	N 32° 3' 56.88	W 103° 42' 0.60
	1969.00	0.40	143.29	1968.89	-5.73	-5.81	-8.78	0.43	388250.48	737473.19	N 32° 3' 56.88	W 103° 42' 0.60
	2063.00	0.71	126.41	2062.88	-6.35	-6.42	-8.11	0.37	388249.87	737473.86	N 32° 3' 56.87	W 103° 42' 0.59
	2158.00	1.11	108.03	2157.87	-6.99	-7.06	-6.76	0.52	388249.23	737475.21	N 32° 3' 56.86	W 103° 42' 0.58
	2253.00	1.67	86.42	2252.84	-7.21	-7.26	-4.51	0.80	388249.04	737477.46	N 32° 3' 56.86	W 103° 42' 0.55
	2347.00	0.97	45.55	2346.82	-6.59	-6.61	-2.57	1.20	388249.68	737479.40	N 32° 3' 56.87	W 103° 42' 0.53
	2442.00	1.78	329.97	2441.80	-4.75	-4.77	-2.74	1.90	388251.52	737479.23	N 32° 3' 56.89	W 103° 42' 0.53
	2536.00	1.50	324.73	2535.76	-2.46	-2.50	-4.18	0.34	388253.79	737477.79	N 32° 3' 56.91	W 103° 42' 0.54
	2630.00	1.82	324.94	2629.72	-0.22	-0.28	-5.75	0.34	388256.01	737476.23	N 32° 3' 56.93	W 103° 42' 0.56
	2725.00	1.69	320.76	2724.67	2.11	2.04	-7.50	0.19	388258.33	737474.47	N 32° 3' 56.95	W 103° 42' 0.58
	2819.00	1.45	302.96	2818.64	3.85	3.76	-9.37	0.58	388260.05	737472.60	N 32° 3' 56.97	W 103° 42' 0.60
	2913.00	1.58	317.60	2912.61	5.47	5.37	-11.24	0.43	388261.66	737470.73	N 32° 3' 56.99	W 103° 42' 0.63
	3007.00	1.56	307.54	3006.57	7.23	7.10	-13.13	0.29	388263.39	737468.84	N 32° 3' 57.00	W 103° 42' 0.65
	3102.00	1.46	302.36	3101.54	8.68	8.54	-15.18	0.18	388264.83	737466.79	N 32° 3' 57.02	W 103° 42' 0.67
	3197.00	1.10	304.83	3196.51	9.87	9.71	-16.95	0.38	388266.00	737465.02	N 32° 3' 57.03	W 103° 42' 0.69
	3292.00	1.04	308.52	3291.50	10.94	10.77	-18.37	0.10	388267.06	737463.60	N 32° 3' 57.04	W 103° 42' 0.71
	3385.00	0.93	332.67	3384.48	12.14	11.96	-19.38	0.46	388268.25	737462.59	N 32° 3' 57.05	W 103° 42' 0.72
	3480.00	0.93	346.30	3479.47	13.58	13.40	-19.92	0.23	388269.69	737462.05	N 32° 3' 57.07	W 103° 42' 0.73
	3575.00	1.00	357.75	3574.46	15.16	14.97	-20.13	0.22	388271.26	737461.84	N 32° 3' 57.08	W 103° 42' 0.73
	3669.00	0.85	343.34	3668.45	16.65	16.46	-20.36	0.29	388272.75	737461.61	N 32° 3' 57.10	W 103° 42' 0.73
	3763.00	1.05	19.32	3762.43	18.13	17.94	-20.28	0.66	388274.23	737461.69	N 32° 3' 57.11	W 103° 42' 0.73
	3857.00	1.19	86.28	3856.42	19.00	18.82	-19.02	1.32	388275.11	737462.95	N 32° 3' 57.12	W 103° 42' 0.72
	3952.00	1.74	101.97	3951.39	18.74	18.58	-16.63	0.71	388274.87	737465.35	N 32° 3' 57.12	W 103° 42' 0.69
	4045.00	2.26	115.66	4044.33	17.62	17.50	-13.59	0.76	388273.79	737468.38	N 32° 3' 57.11	W 103° 42' 0.65
	4139.00	3.02	129.58	4138.23	15.21	15.12	-10.01	1.05	388271.40	737471.96	N 32° 3' 57.08	W 103° 42' 0.61
	4234.00	3.45	136.98	4233.08	11.49	11.43	-6.13	0.63	388267.72	737475.84	N 32° 3' 57.05	W 103° 42' 0.57
	4329.00	3.12	155.10	4327.93	7.03	7.00	-3.09	1.14	388263.29	737478.88	N 32° 3' 57.00	W 103° 42' 0.53
	4422.00	3.41	168.61	4420.78	2.00	1.99	-1.48	0.88	388258.28	737480.49	N 32° 3' 56.95	W 103° 42' 0.51
	4517.00	3.19	191.39	4515.62	-3.36	-3.37	-1.45	1.39	388252.92	737480.52	N 32° 3' 56.90	W 103° 42' 0.51
	4610.00	3.66	220.27	4608.47	-8.14	-8.17	-3.88	1.90	388248.12	737478.09	N 32° 3' 56.85	W 103° 42' 0.54
	4704.00	5.40	226.14	4702.17	-13.44	-13.53	-9.01	1.91	388242.76	737472.96	N 32° 3' 56.80	W 103° 42' 0.60
	4799.00	5.94	231.43	4796.70	-19.54	-19.69	-16.07	0.79	388236.60	737465.90	N 32° 3' 56.74	W 103° 42' 0.68
	4894.00	6.35	245.00	4891.16	-24.74	-24.98	-24.68	1.58	388231.32	737457.29	N 32° 3' 56.69	W 103° 42' 0.78
	4987.00	7.31	246.01	4983.50	-29.23	-29.55	-34.74	1.04	388226.74	737447.23	N 32° 3' 56.64	W 103° 42' 0.90
	5081.00	8.08	253.00	5076.66	-33.48	-33.92	-46.53	1.29	388222.37	737435.45	N 32° 3' 56.60	W 103° 42' 1.04
	5175.00	8.68	255.47	5169.65	-37.06	-37.63	-59.71	0.74	388218.66	737422.26	N 32° 3' 56.56	W 103° 42' 1.19
	5269.00	9.01	254.58	5262.53	-40.67	-41.37	-73.67	0.38	388214.93	737408.30	N 32° 3' 56.53	W 103° 42' 1.36
	5363.00	8.78	253.76	5355.40	-44.50	-45.33	-87.65	0.28	388210.96	737394.32	N 32° 3' 56.49	W 103° 42' 1.52
	5457.00	8.36	253.68	5448.35	-48.30	-49.26	-101.10	0.45	388207.04	737380.87	N 32° 3' 56.45	W 103° 42' 1.67
	5552.00	8.14	254.72	5542.37	-51.89	-52.97	-114.22	0.28	388203.32	737367.76	N 32° 3' 56.41	W 103° 42' 1.83
	5646.00	8.07	252.61	5635.43	-55.50	-56.69	-126.93	0.33	388199.60	737355.04	N 32° 3' 56.38	W 103° 42' 1.98
	5741.00	7.93	255.57	5729.51	-59.00	-60.32	-139.64	0.46	388195.97	737342.33	N 32° 3' 56.34	W 103° 42' 2.12
	5836.00	8.78	253.97	5823.50	-62.51	-63.96	-152.96	0.93	388192.34	737329.02	N 32° 3' 56.31	W 103° 42' 2.28
	5930.00	9.49	251.87	5916.31	-66.77	-68.35	-167.22	0.83	388187.95	737314.76	N 32° 3' 56.27	W 103° 42' 2.44
	6024.00	9.18	252.73	6009.96	-71.27	-72.99	-181.74	0.36	388183.31	737300.24	N 32° 3' 56.22	W 103° 42' 2.61
	6119.00	8.74	251.14	6102.90	-75.72	-77.57	-195.81	0.53	388178.73	737286.17	N 32° 3' 56.18	W 103° 42' 2.78

Comments	MD	Incl	Azim Ghd	TWO	VSEC	NS	EW	DLS	Northing	Easting	Latitude	Longitude
(ft)	(°)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(°/100ft)	(ftUS)	(ftUS)	(N/S °")	(E/W °")
	6213.00	8.16	251.93	6195.88	-79.97	-81.95	-208.91	0.63	388174.33	737273.07	N 32 3 56.13	W 103 42 2.93
	6307.00	8.14	248.62	6288.93	-84.35	-86.44	-221.45	0.50	388169.85	737260.53	N 32 3 56.09	W 103 42 3.08
	6402.00	7.65	248.86	6393.03	-88.86	-91.07	-233.65	0.55	388165.22	737248.53	N 32 3 56.04	W 103 42 3.22
	6496.00	8.30	250.78	6476.12	-93.14	-95.46	-245.93	0.70	388160.84	737236.05	N 32 3 56.00	W 103 42 3.36
	6590.00	9.05	252.85	6589.05	-97.42	-99.87	-259.40	0.86	388156.42	737222.58	N 32 3 55.96	W 103 42 3.52
	6684.00	8.67	250.21	6661.93	-101.87	-104.45	-273.13	0.59	388151.84	737208.85	N 32 3 55.91	W 103 42 3.68
	6778.00	8.22	250.84	6754.91	-106.35	-109.06	-286.14	0.49	388147.24	737195.84	N 32 3 55.87	W 103 42 3.83
	6873.00	7.66	248.73	6849.02	-110.76	-113.58	-298.46	0.66	388142.71	737183.82	N 32 3 55.83	W 103 42 3.97
	6967.00	7.97	245.45	6942.12	-115.63	-118.56	-310.23	0.58	388137.73	737171.76	N 32 3 55.78	W 103 42 4.11
	7062.00	8.48	248.27	7036.15	-120.73	-123.38	-322.77	0.79	388132.52	737159.22	N 32 3 55.73	W 103 42 4.26
	7156.00	7.54	248.59	7129.23	-125.22	-128.38	-335.03	1.00	388127.91	737146.96	N 32 3 55.68	W 103 42 4.40
	7250.00	7.50	251.76	7222.42	-129.18	-132.45	-346.64	0.31	388123.84	737133.55	N 32 3 55.61	W 103 42 4.53
	7345.00	7.63	255.34	7309.70	-132.66	-136.04	-358.83	0.65	388120.25	737120.15	N 32 3 55.56	W 103 42 4.68
	7439.00	7.37	256.02	7392.90	-135.68	-139.18	-371.13	0.29	388117.11	737109.06	N 32 3 55.55	W 103 42 4.82
	7533.00	7.29	253.58	7476.13	-138.72	-142.34	-382.90	0.38	388113.96	737099.00	N 32 3 55.55	W 103 42 4.96
	7627.00	7.07	253.04	7559.38	-141.94	-145.04	-394.51	0.12	388110.63	737087.48	N 32 3 55.51	W 103 42 5.09
	7721.00	6.89	250.86	7642.70	-145.21	-148.04	-405.78	0.24	388107.28	737076.23	N 32 3 55.48	W 103 42 5.22
	7815.00	6.86	250.86	7722.70	-148.58	-151.59	-416.61	0.37	388103.00	737064.23	N 32 3 55.42	W 103 42 5.36
	7909.00	6.47	250.31	7807.04	-152.97	-156.30	-427.07	0.21	388100.71	737052.95	N 32 3 55.41	W 103 42 5.47
	8003.00	6.06	248.12	7890.42	-155.99	-160.32	-437.14	0.35	388096.18	737041.65	N 32 3 55.37	W 103 42 5.59
	8098.00	5.60	247.05	7973.85	-159.79	-164.70	-446.78	0.43	388092.29	737028.52	N 32 3 55.30	W 103 42 5.70
	8193.00	5.15	247.80	8058.34	-163.40	-167.70	-455.67	0.49	388088.60	737016.03	N 32 3 55.30	W 103 42 5.80
	8289.00	4.52	246.73	8143.34	-166.80	-171.18	-463.96	0.67	388085.11	737010.74	N 32 3 55.27	W 103 42 5.90
	8383.00	4.10	247.55	8228.37	-170.82	-174.27	-471.77	0.45	388082.03	737004.23	N 32 3 55.24	W 103 42 6.00
	8477.00	3.54	245.25	8313.13	-174.95	-179.51	-483.51	0.62	388079.28	736998.49	N 32 3 55.18	W 103 42 6.13
	8571.00	2.78	242.69	8398.98	-177.18	-183.62	-491.42	0.81	388074.50	736990.52	N 32 3 55.14	W 103 42 6.24
	8666.00	1.91	231.61	8484.88	-181.36	-188.69	-493.49	1.04	388070.78	736986.51	N 32 3 55.12	W 103 42 6.32
	8760.00	1.73	212.59	8571.29	-186.02	-194.02	-501.28	0.66	388067.61	736982.78	N 32 3 55.07	W 103 42 6.25
	8854.00	1.63	185.01	8658.12	-186.78	-194.46	-494.37	0.88	388064.84	736978.62	N 32 3 55.07	W 103 42 6.25
	8948.00	1.55	198.32	8744.14	-189.33	-196.05	-486.64	0.73	388062.28	736974.86	N 32 3 55.04	W 103 42 6.26
	9044.00	1.26	217.37	8830.19	-191.37	-197.46	-478.54	0.58	388060.25	736969.36	N 32 3 55.02	W 103 42 6.27
	9139.00	0.83	213.24	8916.69	-192.77	-198.58	-469.65	0.46	388058.04	736964.54	N 32 3 55.01	W 103 42 6.28
	9233.00	0.93	223.37	9003.68	-193.88	-199.74	-460.53	0.20	388056.72	736959.45	N 32 3 55.00	W 103 42 6.30
	9422.00	0.90	217.03	9090.67	-195.03	-200.81	-451.27	0.11	388054.56	736954.47	N 32 3 54.98	W 103 42 6.32
	9517.00	0.90	214.04	9178.65	-196.54	-202.06	-442.50	0.50	388053.04	736950.17	N 32 3 54.97	W 103 42 6.33
	9611.00	1.37	214.97	9266.63	-198.31	-203.04	-433.82	0.14	388051.66	736947.91	N 32 3 54.94	W 103 42 6.35
	9706.00	1.24	218.73	9354.60	-199.90	-204.64	-425.12	0.39	388050.12	736945.17	N 32 3 54.93	W 103 42 6.37
	9800.00	1.42	228.73	9442.56	-200.91	-206.18	-416.47	0.67	388048.55	736942.87	N 32 3 54.92	W 103 42 6.39
	9894.00	1.19	255.33	9530.58	-202.08	-207.56	-407.38	0.23	388046.90	736940.12	N 32 3 54.91	W 103 42 6.42
	9988.00	0.98	251.05	9618.56	-203.48	-208.50	-398.49	0.06	388045.22	736937.08	N 32 3 54.91	W 103 42 6.42
	10084.00	0.99	240.74	9706.54	-204.73	-209.20	-389.60	0.27	388043.75	736934.11	N 32 3 54.91	W 103 42 6.42
	10179.00	0.94	252.83	9794.52	-205.86	-210.75	-380.71	0.24	388042.14	736931.38	N 32 3 54.89	W 103 42 6.44
	10274.00	1.22	239.35	9882.50	-207.09	-212.68	-371.82	0.33	388040.54	736928.67	N 32 3 54.87	W 103 42 6.46
	10368.00	1.12	244.88	9970.47	-208.36	-214.16	-362.93	0.09	388038.90	736926.17	N 32 3 54.86	W 103 42 6.49
	10463.00	1.58	253.95	10058.42	-209.62	-215.85	-354.04	0.53	388037.30	736923.66	N 32 3 54.84	W 103 42 6.52
	10558.00	2.23	256.54	10146.35	-210.86	-217.51	-345.15	0.66	388035.79	736921.15	N 32 3 54.83	W 103 42 6.53
	10653.00	2.20	255.37	10234.22	-211.84	-218.50	-336.26	0.06	388034.28	736918.61	N 32 3 54.82	W 103 42 6.54
	10747.00	1.62	244.02	10322.09	-212.68	-219.17	-327.37	0.73	388032.76	736916.07	N 32 3 54.81	W 103 42 6.57
	10841.00	1.15	197.70	10410.29	-213.73	-220.20	-318.48	0.09	388031.24	736913.52	N 32 3 54.80	W 103 42 6.60
	10936.00	0.96	193.47	10498.24	-214.85	-221.66	-309.59	1.25	388029.72	736910.97	N 32 3 54.80	W 103 42 6.62
	11031.00	0.63	181.88	10586.25	-215.92	-223.11	-300.70	0.24	388028.20	736908.42	N 32 3 54.80	W 103 42 6.63
	11125.00	0.11	80.00	10674.22	-217.09	-224.18	-291.81	0.52	388026.68	736905.87	N 32 3 54.79	W 103 42 6.65
	11219.00	0.25	12.51	10762.19	-218.27	-225.25	-282.92	0.72	388025.16	736903.32	N 32 3 54.78	W 103 42 6.65
	11313.00	0.59	281.47	10850.16	-219.46	-226.44	-274.03	0.25	388023.64	736900.77	N 32 3 54.77	W 103 42 6.66
	11395.00	0.25	322.40	10938.13	-220.65	-227.63	-265.14	0.74	388022.12	736900.25	N 32 3 54.76	W 103 42 6.65
	11489.00	4.94	348.64	11026.10	-221.84	-228.82	-256.25	5.71	388020.60	736897.70	N 32 3 54.75	W 103 42 6.64
	11520.00	1.45	11.45	11114.07	-223.03	-230.01	-247.36	9.64	388019.08	736895.15	N 32 3 54.74	W 103 42 6.65
	11530.00	1.87	1145.91	11202.04	-224.22	-231.20	-238.47	12.61	388017.56	736892.60	N 32 3 54.73	W 103 42 6.65
	11552.00	15.70	4.50	11290.01	-225.41	-232.39	-229.58	10.03	388016.04	736890.05	N 32 3 54.72	W 103 42 6.64
	11583.00	18.81	4.50	11378.00	-226.60	-233.58	-220.69	12.65	388014.52	736887.50	N 32 3 54.71	W 103 42 6.64
	11614.00	21.80	5.81	11466.00	-227.79	-234.77	-211.80	10.11	388013.00	736885.94	N 32 3 54.70	W 103 42 6.63
	11646.00	25.43	6.27	11554.00	-228.98	-235.96	-202.91	9.87	388011.48	736884.38	N 32 3 54.69	W 103 42 6.61
	11678.00	29.47	7.03	11642.00	-230.17	-237.15	-194.02	11.22	388009.96	736882.82	N 32 3 54.68	W 103 42 6.60
	11708.00	34.06	8.07	11730.00	-231.36	-238.34	-185.13	13.16	388008.44	736881.26	N 32 3 54.67	W 103 42 6.59
	11740.00	38.69	9.07	11818.00	-232.55	-239.53	-176.24	14.85	388006.92	736879.70	N 32 3 54.66	W 103 42 6.58
	11771.00	43.47	9.59	11906.00	-233.74	-240.72	-167.35	15.35	388005.40	736878.14	N 32 3 54.65	W 103 42 6.58
	11803.00	47.69	10.36	11994.00	-234.93	-241.91	-158.46	13.54	388003.88	736876.58	N 32 3 54.64	W 103 42 6.58
	11834.00	52.13	4.18	12082.00	-236.12	-243.10	-149.57	15.96	388002.36	736875.02	N 32 3 54.63	W 103 42 6.56
	11866.00	56.78	4.41	12170.00	-237.31	-244.29	-140.68	14.54	388000.84	736873.46	N 32 3 54.62	W 103 42 6.54
	11897.00	61.68	3.89	12258.00	-238.50	-245.48	-131.79	15.87	388000.32	736871.90	N 32 3 54.61	W 103 42 6.54
	11929.00	63.84	2.94	12346.00	-239.69	-246.67	-122.90	17.84	388000.80	736870.34	N 32 3 54.60	W 103 42 6.51
	12000.00	75.86	0.37	12434.00	-240.88	-247.86	-114.01	17.84	388000.28	736868.78	N 32 3 54.59	W 103 42 6.51
	12091.00	75.86	0.37	12522.00	-242.07	-249.05	-105.12	17.84	388000.76	736867.22	N 32 3 54.58	W 103 42 6.51
	12122.00	77.24	359.47	12610.00	-243.26	-250.24	-96.23	17.84	388000.24	736865.66	N 32 3 54.57	W 103 42 6.51
	12154.00	82.19	358.49	12698.00	-244.45	-251.43	-87.34	17.84	388000.72	736864.10	N 32 3 54.56	W 103 42 6.50
	12186.00	85.46	358.54	12786.00	-245.64	-252.62	-78.45	17.84	388000.20	736862.54	N 32 3 54.55	W 103 42 6.45
	12239.00	88.99	355.99	12874.00	-246.83	-253.81	-69.56	11.21	388000.68	736860.98	N 32 3 54.54	W 103 42 6.45
	12309.00											

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 ° ' '')
	15219.00	91.23	0.12	11868.22	3311.71	3306.89	-527.72	2.00	391563.02	736954.28	N 32 4 29.69	W 103 42 6.40
	15313.00	91.01	0.75	11866.38	3405.68	3400.87	-527.01	0.71	391656.99	736954.99	N 32 4 30.62	W 103 42 6.39
	15408.00	92.30	2.08	11863.64	3500.58	3495.79	-524.66	1.95	391751.91	736957.33	N 32 4 31.55	W 103 42 6.36
	15502.00	92.18	1.95	11859.97	3594.42	3589.66	-521.36	0.19	391845.78	736960.64	N 32 4 32.48	W 103 42 6.31
	15596.00	90.73	1.91	11857.58	3688.30	3683.58	-518.19	1.54	391939.69	736963.80	N 32 4 33.41	W 103 42 6.27
	15689.00	87.31	359.44	11859.17	3781.24	3776.54	-517.10	4.54	392032.64	736964.90	N 32 4 34.33	W 103 42 6.25
	15783.00	88.82	355.99	11862.35	3875.13	3870.39	-520.84	4.00	392126.49	736961.15	N 32 4 35.26	W 103 42 6.29
	15877.00	89.38	357.33	11863.82	3969.00	3964.22	-526.32	1.54	392220.31	736955.68	N 32 4 36.19	W 103 42 6.34
	15971.00	88.15	359.57	11865.85	4062.96	4058.15	-528.86	2.72	392314.25	736953.13	N 32 4 37.12	W 103 42 6.37
	16065.00	89.83	0.33	11867.51	4156.94	4152.14	-528.94	1.96	392408.22	736953.05	N 32 4 38.05	W 103 42 6.36
	16159.00	88.88	359.64	11868.56	4250.92	4246.13	-528.97	1.25	392502.21	736953.03	N 32 4 38.98	W 103 42 6.35
	16252.00	90.17	358.85	11869.33	4343.92	4339.11	-530.19	1.63	392595.19	736951.80	N 32 4 39.90	W 103 42 6.36
	16346.00	88.88	359.32	11870.11	4437.91	4433.10	-531.69	1.46	392689.17	736950.30	N 32 4 40.83	W 103 42 6.37
	16440.00	87.87	359.10	11872.78	4531.87	4527.05	-532.99	1.10	392783.12	736949.01	N 32 4 41.76	W 103 42 6.38
	16538.00	90.00	358.94	11874.60	4629.85	4625.01	-534.67	2.18	392881.08	736947.33	N 32 4 42.73	W 103 42 6.39
TD, project to bit	16590.00	90.00	358.94	11874.60	4681.84	4677.00	-535.63	0.00	392933.06	736946.37	N 32 4 43.24	W 103 42 6.40

Survey Type: Def Survey

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

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	24.000	1/98.425	30.000	30.000	NAL_MWD_IFR1-Depth Only	Original Borehole / Cimarex Hallertau 5 Federal #9H MWD final(Surcon Corrected)
	1	24.000	24.000	Act Stns	30.000	30.000	NAL_MWD_IFR1-Depth Only	Original Borehole / Cimarex Hallertau 5 Federal #9H MWD final(Surcon Corrected)
	1	24.000	16590.000	Act Stns	30.000	30.000	NAL_MWD_IFR1	Original Borehole / Cimarex Hallertau 5 Federal #9H MWD

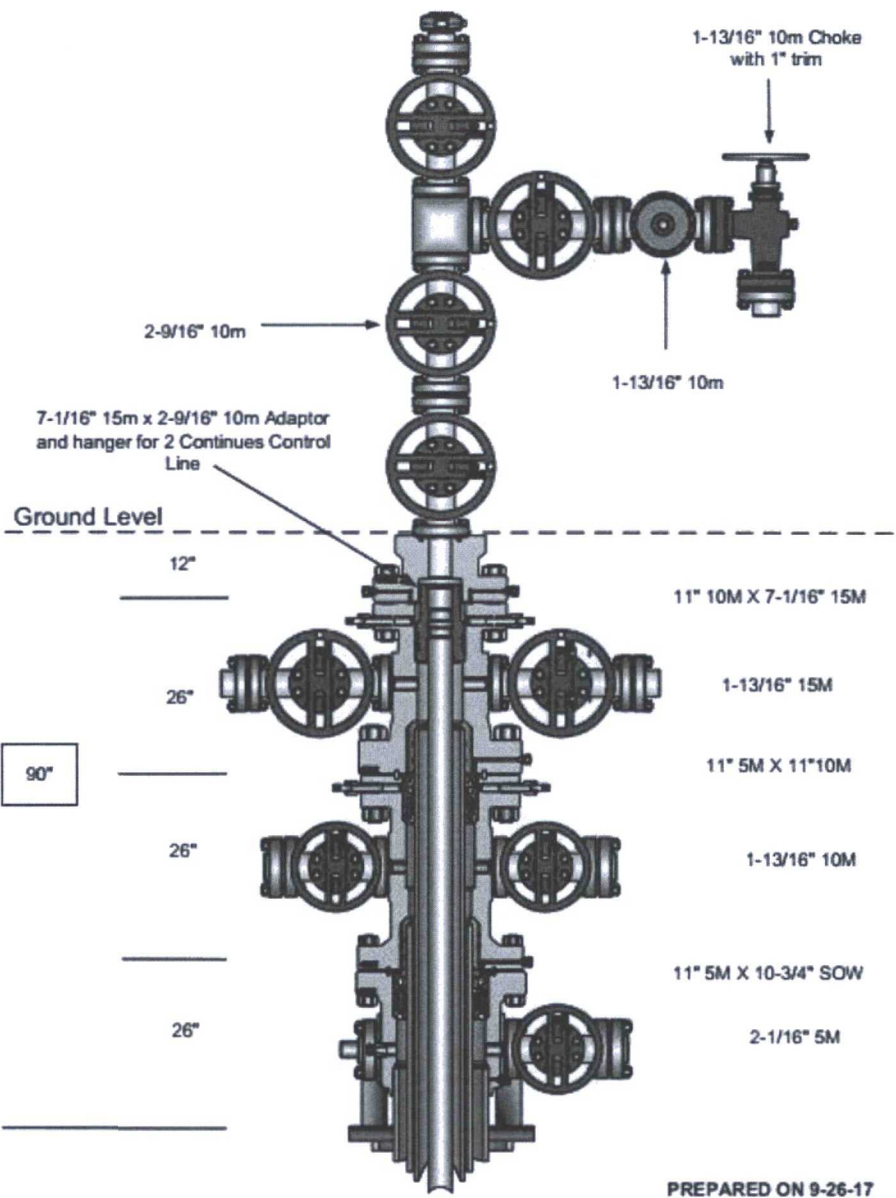
TUBULAR PROGRAM
 1,210' 10-3/4" 40.5 # J55 BTC
 11,397' 7-5/8" 29.7 # HCL80 LTC
 605' 7-5/8" 29.7 # HCL-80 BTC
 11,397' 5-1/2" 23# P110 LTC
 5,126' 5" 18# P110 BTC
 2-7/8" 6.5 # L80 EUE



CACTUS FOR SERVICE
 WEAR BUSHING IN CASING HEAD

HALLERTAU
5 FED 9H

LEA CO., NM



PREPARED ON 9-26-17