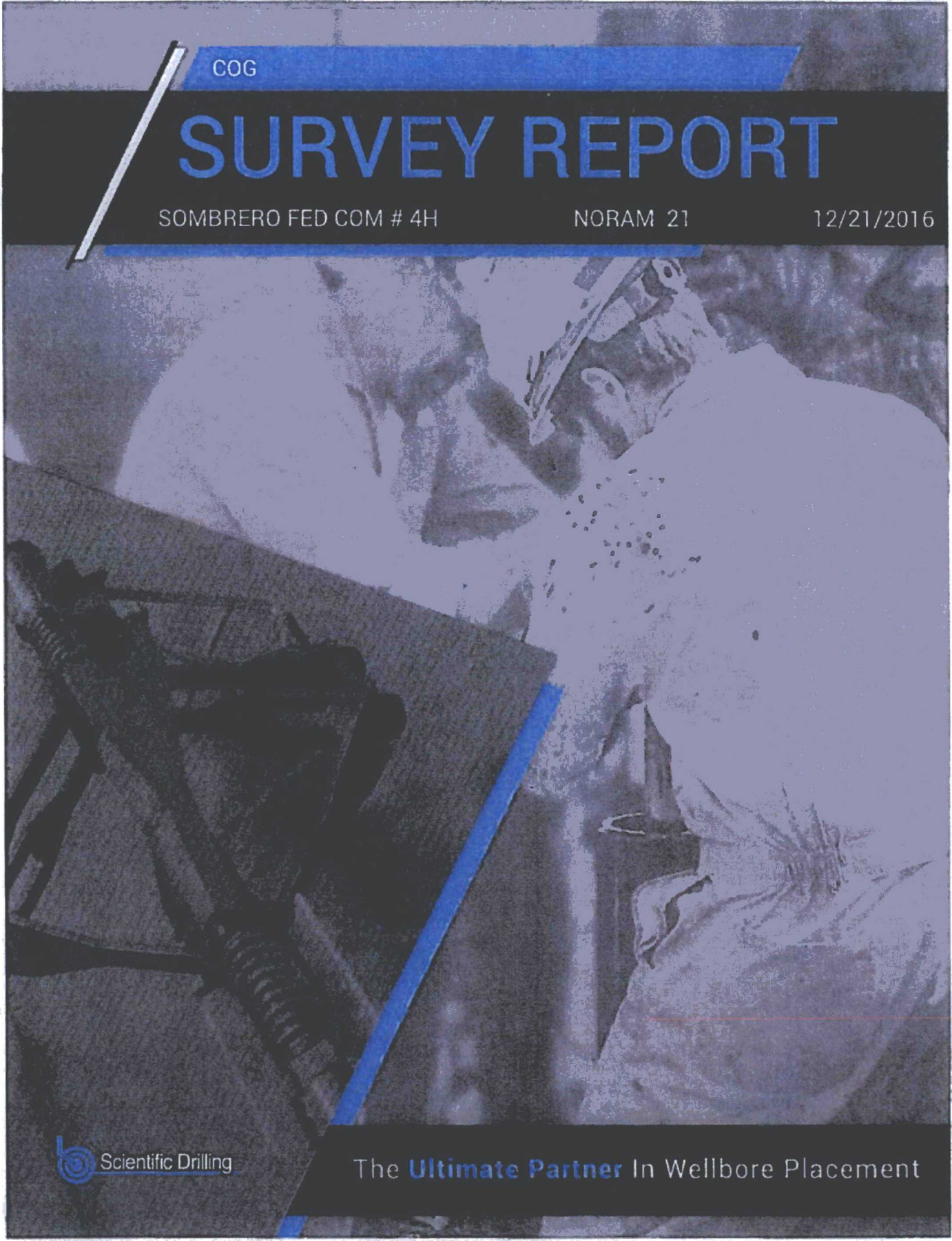




COG

SURVEY REPORT

SOMBRERO FED COM # 4H

NORAM 21

12/21/2016



The **Ultimate Partner** In Wellbore Placement

SURVEY REPORT**SOMBRERO FED COM # 4H****COMPUTED OUTRUN KEEPER GYRO SURVEY**

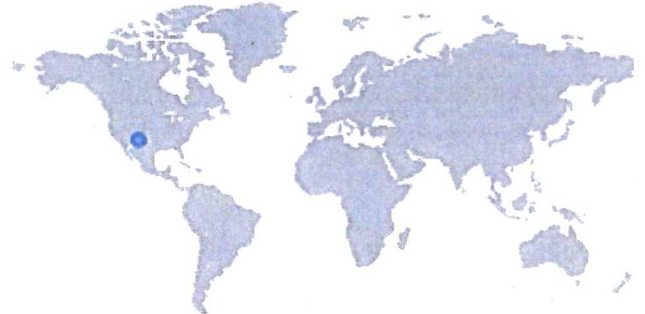
CUSTOMER	COG	SDI JOB NO.	406280
PROJECT	SOMBRERO FED COM # 4H	SDI DISTRICT	Midland
FIELD	SOMBRERO FED COM	SDI KIT/UNIT	

SITE INFORMATION

Site Name	SOMBRERO FED COM	Section
Lat/Long	32.211408° N, 103.430497° W	Township
Northing	441,802.5 ft	Range
Easting	779,235.5 ft	

MAP INFORMATION

North Reference	Grid North
Grid Correction	-0.48 deg
System	US State Plane 1927
Datum	North American Datum 1927 (Clarke 1866)
Map Zone	New Mexico East: 3001

**WELL INFORMATION**

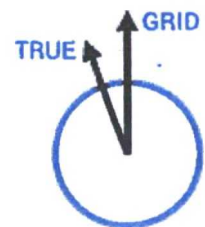
Lat/Long	32.211408° N, 103.430497° W
Northing	441,802.5 ft
Easting	779,235.5 ft
UWI	30-025-43280

DEPTH AND ELEVATION REFERENCE

Ground Level	3474.8 ft above Mean Sea Level
Reference Datum	KB
Reference Height	28.7 ft above G.L.
Reference Elevation	3503.5 ft

VERTICAL SECTION REFERENCE

+N/-S	0 ft
+E/-W	0 ft
Proposal Direction	359.51°
Calculation Method	Minimum Curvature

**LOCAL GRAVITY REFERENCE INFORMATION**

Local Gravity	998.492 mG [computed]
True to Grid	subtract 0.48°

WELL NOTES**OPERATORS**

H.SANGHOTT

SDI Operator Name (Printed)

SIGNATURE

DATE

MD	INC	AZIM	TVD	VS	IN/S	HE/W	DLS	CLOSURE DIST	CLOSURE DR
ft	deg	deg	ft	ft	ft	ft	ft	ft	deg
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	0.00	0.00
100.00	0.45	119.25	100.00	-0.20	-0.19	0.34	0.45	0.40	119.25
125.00	0.45	120.12	125.00	-0.29	-0.29	0.52	0.03	0.59	119.40
150.00	0.51	119.91	150.00	-0.40	-0.40	0.70	0.27	0.80	119.56
175.00	0.51	108.27	175.00	-0.49	-0.49	0.90	0.42	1.02	118.37
200.00	0.56	102.30	200.00	-0.56	-0.55	1.13	0.30	1.25	115.93
225.00	0.53	90.35	224.99	-0.59	-0.57	1.36	0.47	1.48	112.87
250.00	0.57	101.38	249.99	-0.61	-0.60	1.60	0.44	1.71	110.55
275.00	0.63	85.77	274.99	-0.63	-0.61	1.86	0.69	1.96	108.29
300.00	0.64	88.72	299.99	-0.62	-0.60	2.13	0.14	2.22	105.72
325.00	0.64	95.44	324.99	-0.63	-0.61	2.41	0.30	2.49	104.20
350.00	0.66	90.79	349.99	-0.65	-0.63	2.70	0.24	2.77	103.07
375.00	0.63	99.79	374.99	-0.68	-0.65	2.98	0.42	3.05	102.34
400.00	0.78	100.58	399.98	-0.73	-0.71	3.28	0.59	3.36	102.15
425.00	0.88	92.43	424.98	-0.78	-0.75	3.64	0.61	3.72	101.58
450.00	0.92	92.47	449.98	-0.80	-0.76	4.03	0.15	4.10	100.71
475.00	1.06	85.26	474.97	-0.79	-0.75	4.46	0.75	4.52	99.57
500.00	1.08	80.03	499.97	-0.73	-0.69	4.92	0.40	4.97	98.01
525.00	1.15	81.26	524.96	-0.66	-0.61	5.40	0.31	5.44	96.48
550.00	1.16	82.07	549.96	-0.59	-0.54	5.90	0.07	5.92	95.23
575.00	1.31	79.67	574.95	-0.51	-0.45	6.43	0.62	6.45	94.04
600.00	1.43	83.43	599.95	-0.43	-0.37	7.02	0.60	7.03	93.00
625.00	1.46	82.78	624.94	-0.36	-0.29	7.65	0.15	7.65	92.19
650.00	1.51	80.90	649.93	-0.27	-0.20	8.29	0.28	8.29	91.38
675.00	1.50	82.67	674.92	-0.18	-0.11	8.94	0.19	8.94	90.68
700.00	1.61	81.23	699.91	-0.09	-0.01	9.61	0.46	9.61	90.06
725.00	1.74	81.47	724.90	0.01	0.10	10.33	0.52	10.33	89.45
750.00	1.83	78.22	749.89	0.14	0.24	11.10	0.54	11.10	88.78
775.00	1.81	75.75	774.88	0.31	0.42	11.87	0.32	11.88	87.99
800.00	1.76	73.71	799.87	0.51	0.62	12.62	0.32	12.64	87.18
825.00	1.93	71.04	824.85	0.75	0.87	13.39	0.75	13.42	86.30
850.00	1.96	72.75	849.84	1.01	1.13	14.20	0.26	14.24	85.45

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
875.00	2.04	73.05	874.82	1.26	1.39	15.03	0.34	15.09	84.73
900.00	2.14	70.66	899.81	1.53	1.67	15.90	0.52	15.98	84.00
925.00	2.42	70.85	924.79	1.85	2.00	16.83	1.13	16.95	83.23
950.00	2.61	70.10	949.76	2.21	2.36	17.87	0.78	18.02	82.46
975.00	2.80	68.94	974.73	2.61	2.78	18.97	0.77	19.17	81.67
1000.00	2.81	66.16	999.70	3.07	3.24	20.10	0.55	20.36	80.83
1025.00	2.96	66.05	1024.67	3.57	3.75	21.25	0.61	21.58	79.99
1050.00	3.22	66.07	1049.64	4.11	4.30	22.48	1.03	22.89	79.17
1075.00	3.29	66.03	1074.60	4.67	4.87	23.78	0.28	24.27	78.41
1100.00	3.39	66.53	1099.55	5.25	5.46	25.11	0.43	25.70	77.73
1125.00	3.52	67.77	1124.51	5.82	6.05	26.50	0.59	27.18	77.15
1150.00	3.42	68.11	1149.46	6.37	6.61	27.90	0.39	28.68	76.67
1175.00	3.39	68.60	1174.42	6.91	7.16	29.28	0.16	30.15	76.26
1200.00	3.17	69.30	1199.38	7.41	7.68	30.62	0.92	31.57	75.93
1225.00	2.92	69.34	1224.34	7.87	8.15	31.86	0.98	32.89	75.66
1250.00	2.42	70.42	1249.31	8.27	8.55	32.96	2.02	34.05	75.46
1275.00	2.22	71.09	1274.29	8.59	8.88	33.91	0.80	35.06	75.32
1300.00	2.19	70.36	1299.28	8.90	9.20	34.82	0.17	36.02	75.20
1325.00	2.09	71.54	1324.26	9.20	9.50	35.70	0.45	36.95	75.09
1350.00	2.09	66.79	1349.24	9.52	9.83	36.55	0.69	37.85	74.95
1375.00	2.01	68.48	1374.23	9.85	10.17	37.38	0.40	38.74	74.78
1400.00	1.83	70.31	1399.21	10.14	10.46	38.16	0.77	39.57	74.67
1425.00	1.71	69.47	1424.20	10.40	10.73	38.89	0.46	40.34	74.58
1450.00	1.75	70.40	1449.19	10.65	10.99	39.60	0.17	41.09	74.49
1475.00	1.51	70.37	1474.18	10.88	11.23	40.27	0.97	41.80	74.42
1500.00	1.33	72.71	1499.17	11.07	11.42	40.85	0.74	42.42	74.38
1525.00	0.88	81.90	1524.17	11.18	11.54	41.32	1.93	42.90	74.40
1550.00	0.73	86.05	1549.16	11.22	11.57	41.67	0.64	43.25	74.48
1575.00	0.67	91.35	1574.16	11.22	11.58	41.97	0.37	43.54	74.57
1600.00	0.67	96.64	1599.16	11.20	11.56	42.26	0.25	43.81	74.70
1625.00	0.62	94.90	1624.16	11.17	11.53	42.54	0.21	44.08	74.83
1650.00	0.61	91.12	1649.16	11.15	11.52	42.81	0.17	44.33	74.94

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
1675.00	0.71	90.42	1674.15	11.15	11.51	43.10	0.41	44.61	75.04
1700.00	0.59	82.65	1699.15	11.16	11.53	43.38	0.60	44.89	75.12
1725.00	0.52	87.96	1724.15	11.18	11.55	43.62	0.35	45.12	75.17
1750.00	0.57	91.93	1749.15	11.17	11.55	43.86	0.24	45.35	75.24
1775.00	0.52	96.30	1774.15	11.16	11.53	44.09	0.24	45.58	75.34
1800.00	0.44	84.37	1799.15	11.15	11.53	44.30	0.50	45.78	75.41
1825.00	0.40	101.62	1824.15	11.14	11.52	44.48	0.53	45.95	75.48
1850.00	0.32	106.37	1849.15	11.10	11.49	44.64	0.35	46.09	75.57
1875.00	0.33	109.32	1874.15	11.06	11.44	44.77	0.10	46.21	75.66
1900.00	0.26	103.30	1899.15	11.02	11.40	44.89	0.34	46.32	75.75
1925.00	0.28	83.80	1924.15	11.01	11.40	45.01	0.37	46.43	75.79
1950.00	0.20	73.49	1949.15	11.03	11.42	45.11	0.35	46.53	75.80
1975.00	0.15	89.44	1974.15	11.04	11.43	45.19	0.30	46.61	75.80
2000.00	0.28	37.67	1999.15	11.09	11.48	45.26	0.89	46.69	75.77
2025.00	0.02	75.96	2024.15	11.14	11.53	45.30	1.06	46.74	75.72
2050.00	0.04	299.56	2049.15	11.15	11.53	45.29	0.20	46.74	75.71
2075.00	0.04	146.73	2074.15	11.14	11.53	45.29	0.30	46.74	75.72
2100.00	0.05	131.58	2099.15	11.13	11.51	45.31	0.07	46.75	75.74
2125.00	0.06	60.00	2124.15	11.13	11.51	45.33	0.26	46.76	75.75
2150.00	0.05	30.00	2149.15	11.14	11.53	45.34	0.12	46.78	75.73
2175.00	0.10	11.86	2174.15	11.17	11.56	45.35	0.20	46.80	75.70
2200.00	0.19	332.90	2199.15	11.23	11.62	45.34	0.51	46.80	75.63
2225.00	0.10	344.60	2224.15	11.29	11.68	45.31	0.36	46.79	75.55
2250.00	0.09	293.64	2249.15	11.32	11.71	45.29	0.34	46.78	75.51
2275.00	0.12	304.66	2274.15	11.34	11.73	45.25	0.15	46.74	75.47
2300.00	0.10	353.71	2299.15	11.38	11.77	45.22	0.39	46.73	75.41
2325.00	0.13	344.63	2324.15	11.43	11.82	45.21	0.12	46.73	75.35
2350.00	0.20	357.09	2349.15	11.50	11.89	45.20	0.32	46.74	75.27
2375.00	0.19	342.74	2374.15	11.58	11.97	45.19	0.20	46.75	75.16
2400.00	0.26	343.35	2399.15	11.68	12.07	45.16	0.29	46.74	75.04
2425.00	0.23	310.73	2424.15	11.77	12.15	45.11	0.57	46.71	74.92
2450.00	0.18	296.45	2449.15	11.82	12.20	45.03	0.27	46.66	74.84

MD	INC	AZIM	TVD	VS	+N/S	+E/W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
2475.00	0.07	283.56	2474.15	11.84	12.23	44.98	0.47	46.61	74.80
2500.00	0.11	288.92	2499.15	11.85	12.24	44.95	0.15	46.58	74.77
2525.00	0.12	337.46	2524.14	11.88	12.27	44.91	0.37	46.56	74.72
2550.00	0.11	324.26	2549.14	11.93	12.31	44.89	0.11	46.55	74.66
2575.00	0.15	1.54	2574.14	11.98	12.36	44.88	0.36	46.55	74.60
2600.00	0.18	319.06	2599.14	12.04	12.42	44.85	0.49	46.54	74.52
2625.00	0.18	303.42	2624.14	12.09	12.48	44.79	0.20	46.50	74.44
2650.00	0.16	301.58	2649.14	12.13	12.52	44.73	0.09	46.45	74.37
2675.00	0.09	273.70	2674.14	12.15	12.54	44.68	0.38	46.41	74.33
2700.00	0.18	224.31	2699.14	12.13	12.51	44.64	0.55	46.36	74.34
2725.00	0.01	264.45	2724.14	12.10	12.48	44.61	0.69	46.32	74.37
2750.00	0.07	19.65	2749.14	12.11	12.50	44.61	0.28	46.33	74.35
2775.00	0.12	16.61	2774.14	12.15	12.53	44.62	0.19	46.35	74.31
2800.00	0.08	339.85	2799.14	12.19	12.58	44.62	0.28	46.36	74.26
2825.00	0.08	48.62	2824.14	12.22	12.60	44.63	0.38	46.38	74.23
2850.00	0.10	33.69	2849.14	12.25	12.63	44.66	0.11	46.41	74.20
2875.00	0.13	36.26	2874.14	12.29	12.67	44.68	0.12	46.45	74.17
2900.00	0.21	103.38	2899.14	12.30	12.69	44.75	0.80	46.51	74.17
2925.00	0.33	88.10	2924.14	12.29	12.68	44.86	0.56	46.62	74.22
2950.00	0.34	87.71	2949.14	12.30	12.68	45.01	0.05	46.76	74.26
2975.00	0.41	77.93	2974.14	12.32	12.70	45.17	0.36	46.92	74.29
3000.00	0.29	65.71	2999.14	12.36	12.75	45.31	0.57	47.07	74.29
3025.00	0.26	74.44	3024.14	12.40	12.79	45.43	0.20	47.19	74.28
3050.00	0.30	72.88	3049.14	12.43	12.82	45.54	0.18	47.31	74.27
3075.00	0.28	78.04	3074.14	12.46	12.86	45.67	0.15	47.44	74.28
3100.00	0.34	72.00	3099.14	12.50	12.89	45.80	0.28	47.58	74.28
3125.00	0.35	68.68	3124.14	12.55	12.94	45.94	0.09	47.73	74.27
3150.00	0.35	64.32	3149.14	12.61	13.00	46.08	0.11	47.88	74.24
3175.00	0.26	68.45	3174.14	12.66	13.06	46.20	0.38	48.01	74.22
3200.00	0.44	52.58	3199.14	12.74	13.14	46.33	0.80	48.16	74.17
3225.00	0.52	40.39	3224.14	12.88	13.28	46.48	0.51	48.34	74.05
3250.00	0.33	34.41	3249.14	13.03	13.42	46.59	0.77	48.49	73.93

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
3275.00	0.29	63.38	3274.14	13.11	13.51	46.69	0.63	48.60	73.86
3300.00	0.32	61.19	3299.14	13.17	13.57	46.81	0.12	48.74	73.83
3325.00	0.33	36.34	3324.14	13.26	13.67	46.91	0.56	48.86	73.76
3350.00	0.22	41.24	3349.14	13.36	13.76	46.99	0.46	48.96	73.68
3375.00	0.23	51.31	3374.14	13.43	13.83	47.06	0.17	49.05	73.62
3400.00	0.34	53.52	3399.14	13.50	13.90	47.16	0.43	49.16	73.57
3425.00	0.49	51.19	3424.14	13.61	14.01	47.30	0.60	49.33	73.50
3450.00	0.44	21.13	3449.13	13.77	14.17	47.42	0.98	49.49	73.36
3475.00	0.25	17.44	3474.13	13.91	14.31	47.47	0.79	49.58	73.22
3500.00	0.29	22.96	3499.13	14.01	14.42	47.51	0.19	49.65	73.11
3525.00	0.34	29.26	3524.13	14.14	14.54	47.57	0.25	49.74	73.00
3550.00	0.35	35.02	3549.13	14.26	14.67	47.65	0.14	49.85	72.89
3575.00	0.36	28.94	3574.13	14.39	14.80	47.73	0.16	49.97	72.77
3600.00	0.38	32.88	3599.13	14.53	14.94	47.81	0.12	50.09	72.65
3625.00	0.45	29.69	3624.13	14.68	15.09	47.91	0.31	50.23	72.51
3650.00	0.43	14.86	3649.13	14.86	15.27	47.98	0.47	50.35	72.35
3675.00	0.41	27.44	3674.13	15.03	15.44	48.04	0.37	50.46	72.18
3700.00	0.34	29.05	3699.13	15.17	15.58	48.12	0.29	50.58	72.06
3725.00	0.32	34.09	3724.13	15.29	15.71	48.20	0.14	50.69	71.95
3750.00	0.47	33.85	3749.13	15.43	15.85	48.29	0.59	50.82	71.83
3775.00	0.55	35.68	3774.13	15.61	16.03	48.42	0.33	51.00	71.68
3800.00	0.73	30.73	3799.13	15.85	16.26	48.57	0.76	51.22	71.49
3825.00	0.68	32.03	3824.12	16.11	16.53	48.73	0.21	51.46	71.27
3850.00	0.75	23.26	3849.12	16.38	16.80	48.87	0.51	51.68	71.03
3875.00	0.76	23.83	3874.12	16.68	17.10	49.00	0.06	51.90	70.76
3900.00	0.80	30.22	3899.12	16.98	17.41	49.16	0.39	52.15	70.50
3925.00	0.73	27.35	3924.12	17.28	17.70	49.32	0.33	52.40	70.26
3950.00	0.60	29.42	3949.11	17.53	17.95	49.46	0.53	52.62	70.05
3975.00	0.62	40.10	3974.11	17.75	18.17	49.61	0.46	52.83	69.88
4000.00	0.56	51.75	3999.11	17.93	18.35	49.79	0.54	53.07	69.77
4025.00	0.64	63.19	4024.11	18.06	18.49	50.01	0.57	53.32	69.71
4050.00	0.44	68.50	4049.11	18.16	18.59	50.22	0.81	53.55	69.69

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS	CLOSURE DIST	CLOSURE DIR
ft	deg	deg	ft	ft	ft	ft	"/100ft	ft	deg
4075.00	0.35	73.16	4074.11	18.21	18.65	50.39	0.37	53.73	69.69
4100.00	0.44	71.06	4099.11	18.27	18.70	50.55	0.37	53.90	69.70
4125.00	0.43	73.79	4124.11	18.32	18.76	50.73	0.09	54.09	69.71
4150.00	0.38	85.25	4149.11	18.35	18.79	50.91	0.38	54.27	69.74
4175.00	0.42	94.12	4174.11	18.35	18.79	51.08	0.29	54.43	69.80
4200.00	0.45	92.48	4199.10	18.34	18.78	51.27	0.14	54.60	69.88
4225.00	0.47	79.58	4224.10	18.35	18.79	51.47	0.42	54.80	69.94
4250.00	0.40	85.77	4249.10	18.38	18.82	51.66	0.32	54.98	69.98
4275.00	0.40	101.25	4274.10	18.36	18.81	51.83	0.43	55.14	70.06
4300.00	0.48	115.74	4299.10	18.30	18.74	52.01	0.54	55.29	70.18
4325.00	0.56	121.21	4324.10	18.19	18.64	52.21	0.39	55.44	70.36
4350.00	0.65	117.02	4349.10	18.06	18.51	52.44	0.38	55.61	70.56
4375.00	0.83	122.69	4374.10	17.89	18.35	52.72	0.79	55.82	70.81
4400.00	0.78	112.48	4399.09	17.73	18.18	53.03	0.62	56.06	71.08
4425.00	1.01	118.71	4424.09	17.55	18.01	53.38	1.02	56.34	71.36
4450.00	1.15	120.28	4449.09	17.32	17.78	53.79	0.57	56.66	71.71
4475.00	1.38	122.06	4474.08	17.03	17.49	54.27	0.94	57.02	72.13
4500.00	1.50	124.35	4499.07	16.68	17.15	54.79	0.51	57.41	72.62
4525.00	1.58	124.43	4524.06	16.29	16.77	55.35	0.35	57.83	73.14
4550.00	1.56	122.23	4549.05	15.91	16.39	55.92	0.27	58.27	73.66
4575.00	1.71	123.85	4574.04	15.52	16.00	56.51	0.66	58.74	74.19
4600.00	1.81	123.78	4599.03	15.09	15.57	57.15	0.41	59.24	74.76
4625.00	1.85	121.86	4624.02	14.65	15.14	57.82	0.28	59.77	75.33
4650.00	1.97	122.46	4649.01	14.20	14.70	58.53	0.50	60.35	75.90
4675.00	1.95	123.24	4673.99	13.73	14.23	59.25	0.14	60.93	76.49
4700.00	2.01	124.29	4698.98	13.24	13.75	59.97	0.29	61.52	77.08
4725.00	1.84	129.44	4723.96	12.73	13.25	60.64	0.98	62.07	77.67
4750.00	1.53	134.71	4748.95	12.24	12.76	61.18	1.37	62.50	78.22
4775.00	1.22	139.39	4773.94	11.80	12.33	61.59	1.34	62.82	78.68
4800.00	1.18	135.57	4798.94	11.41	11.94	61.95	0.35	63.09	79.09
4825.00	1.26	139.12	4823.93	11.02	11.55	62.31	0.44	63.37	79.50
4850.00	1.28	130.71	4848.93	10.63	11.16	62.70	0.75	63.68	79.91

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS "/100ft	CLOSURE DIST ft	CLOSURE DIR deg
4875.00	1.19	126.16	4873.92	10.29	10.83	63.12	0.51	64.04	80.27
4900.00	1.27	124.39	4898.92	9.97	10.52	63.56	0.34	64.42	80.60
4925.00	1.39	112.38	4923.91	9.70	10.24	64.07	1.21	64.88	80.91
4950.00	1.27	112.67	4948.90	9.47	10.02	64.60	0.46	65.38	81.18
4975.00	1.38	109.18	4973.90	9.26	9.82	65.14	0.53	65.88	81.43
5000.00	1.21	107.33	4998.89	9.08	9.64	65.68	0.71	66.38	81.65
5025.00	0.96	104.42	5023.88	8.94	9.51	66.13	0.99	66.81	81.82
5050.00	0.72	113.20	5048.88	8.83	9.39	66.48	1.11	67.14	81.96
5075.00	0.64	100.79	5073.88	8.74	9.31	66.76	0.67	67.41	82.06
5100.00	0.70	105.09	5098.88	8.67	9.24	67.04	0.32	67.68	82.15
5125.00	0.75	110.60	5123.88	8.57	9.14	67.35	0.36	67.96	82.27
5150.00	0.72	103.52	5148.87	8.47	9.05	67.65	0.39	68.25	82.38
5175.00	0.87	108.97	5173.87	8.37	8.95	67.98	0.70	68.57	82.50
5200.00	0.93	107.82	5198.87	8.24	8.83	68.36	0.23	68.93	82.64
5225.00	1.01	107.26	5223.87	8.11	8.70	68.76	0.32	69.31	82.79
5250.00	1.06	107.48	5248.86	7.97	8.56	69.19	0.20	69.72	82.94
5275.00	1.05	107.54	5273.86	7.83	8.43	69.63	0.02	70.14	83.10
5300.00	1.01	105.37	5298.85	7.70	8.30	70.06	0.24	70.55	83.24