



NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 13 2017

RECEIVED

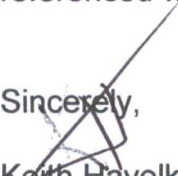
June 27, 2017

Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

Attn: Kanicia Castillo

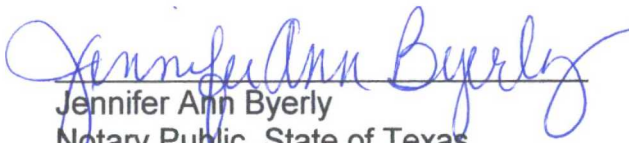
RE: (Inflex Survey) Sidewinder Federal Com 4H - 30.015-44192

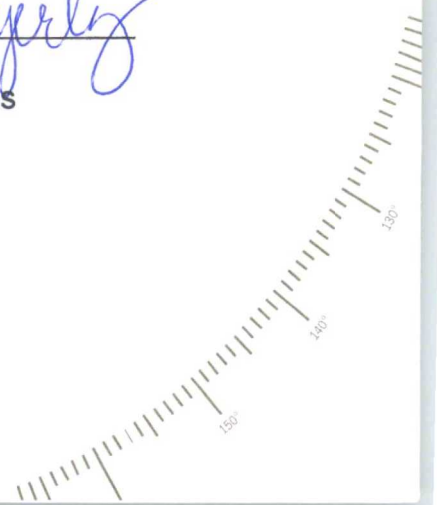
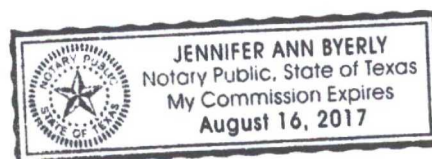
Please find enclosed a copy of the survey from 0' to 9655' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
§
COUNTY OF NUECES §

This instrument was acknowledged before me on the 27th day of June, A.D., 2017, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: COG Operating
Well: Sidewinder Federal Com #4H
API: 30-015-44192
Rig Name: Latshaw 44
County/Eddy State: New Mexico
Latitude: 32.001 Longitude: -104.012
Grid Correction: 0.17 of True North
Depth Reference(KB/GL): 25'
VS-Azi: 357.79



AVERAGED DATA FROM FULL INRUN AND OUTRUN INFLEX SURVEYS

Minimum Curvature Method
Survey Date: 6/17/2017
VES Survey International
1-800-606-4976
Survey Engineer: Eric Warner

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50.00	0.25	42.30	50.00	0.08	0.08	0.07	0.11	42.30	0.51
75.00	0.44	38.03	75.00	0.20	0.20	0.17	0.26	40.75	0.73
100.00	0.51	38.65	100.00	0.36	0.36	0.30	0.47	39.70	0.31
125.00	0.51	40.63	125.00	0.53	0.53	0.44	0.69	39.68	0.08
150.00	0.39	35.72	150.00	0.68	0.68	0.56	0.89	39.42	0.50
175.00	0.23	279.56	175.00	0.76	0.76	0.56	0.95	36.47	2.12
200.00	0.39	252.20	200.00	0.74	0.74	0.43	0.86	30.16	0.87
225.00	0.68	251.01	224.99	0.67	0.67	0.21	0.70	17.41	1.16
250.00	0.88	247.82	249.99	0.55	0.55	-0.11	0.56	348.76	0.80
275.00	0.94	244.13	274.99	0.39	0.39	-0.47	0.61	309.31	0.34
300.00	0.99	242.04	299.99	0.19	0.19	-0.85	0.87	282.96	0.24
325.00	1.04	248.57	324.98	0.01	0.01	-1.25	1.25	270.47	0.51
350.00	1.09	246.77	349.98	-0.17	-0.17	-1.68	1.69	264.33	0.23
375.00	1.03	257.25	374.97	-0.31	-0.31	-2.12	2.14	261.67	0.81
400.00	0.91	255.00	399.97	-0.41	-0.41	-2.53	2.56	260.76	0.51
425.00	0.99	257.61	424.97	-0.51	-0.51	-2.93	2.98	260.15	0.34
450.00	1.05	257.03	449.96	-0.61	-0.61	-3.37	3.42	259.78	0.27
475.00	1.08	261.58	474.96	-0.69	-0.69	-3.82	3.89	259.73	0.36
500.00	1.17	259.43	499.95	-0.77	-0.77	-4.31	4.38	259.81	0.38

VAUGHN ENERGY SERVICES

3400 CR 48 ROBSTOWN, TEXAS 78380 361-767-0602

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
525.00	1.35	267.93	524.95	-0.83	-0.83	-4.85	4.92	260.27	1.03
550.00	1.50	272.13	549.94	-0.83	-0.83	-5.47	5.54	261.38	0.76
575.00	1.63	271.94	574.93	-0.81	-0.81	-6.16	6.21	262.54	0.51
600.00	1.68	272.14	599.92	-0.78	-0.78	-6.88	6.92	263.53	0.19
625.00	1.69	271.16	624.91	-0.76	-0.76	-7.61	7.65	264.31	0.12
650.00	1.72	267.24	649.90	-0.77	-0.77	-8.36	8.39	264.74	0.48
675.00	1.77	268.23	674.89	-0.80	-0.80	-9.12	9.15	264.99	0.24
700.00	1.83	265.37	699.87	-0.84	-0.84	-9.90	9.94	265.13	0.44
725.00	1.78	261.46	724.86	-0.93	-0.93	-10.68	10.72	265.00	0.53
750.00	1.74	252.56	749.85	-1.11	-1.11	-11.43	11.48	264.48	1.11
775.00	1.74	229.54	774.84	-1.47	-1.47	-12.08	12.17	263.08	2.78
800.00	1.91	215.43	799.82	-2.05	-2.05	-12.61	12.78	260.75	1.92
825.00	1.93	218.50	824.81	-2.72	-2.72	-13.12	13.40	258.28	0.41
850.00	1.94	219.41	849.80	-3.38	-3.38	-13.65	14.06	256.10	0.13
875.00	1.89	218.32	874.78	-4.03	-4.03	-14.17	14.73	254.13	0.24
900.00	1.89	216.79	899.77	-4.68	-4.68	-14.67	15.40	252.31	0.20
925.00	1.86	216.16	924.76	-5.34	-5.34	-15.16	16.07	250.60	0.12
950.00	1.62	221.10	949.74	-5.93	-5.93	-15.63	16.72	249.22	1.14
975.00	1.48	223.90	974.73	-6.43	-6.43	-16.09	17.32	248.21	0.65
1,000.00	1.32	224.69	999.73	-6.87	-6.87	-16.51	17.88	247.42	0.63
1,025.00	0.96	211.63	1,024.72	-7.25	-7.25	-16.82	18.32	246.69	1.78
1,050.00	0.76	223.86	1,049.72	-7.55	-7.55	-17.05	18.64	246.12	1.08
1,075.00	0.47	233.59	1,074.72	-7.73	-7.73	-17.25	18.90	245.86	1.21
1,100.00	0.52	232.11	1,099.72	-7.86	-7.86	-17.42	19.11	245.72	0.21
1,125.00	0.39	215.52	1,124.72	-8.00	-8.00	-17.56	19.30	245.51	0.74
1,150.00	0.33	224.39	1,149.72	-8.12	-8.12	-17.66	19.44	245.30	0.35
1,175.00	0.44	242.02	1,174.72	-8.22	-8.22	-17.79	19.60	245.21	0.66
1,200.00	0.50	239.59	1,199.71	-8.32	-8.32	-17.97	19.81	245.17	0.23
1,225.00	0.46	214.06	1,224.71	-8.46	-8.46	-18.13	20.00	244.99	0.86
1,250.00	0.24	202.93	1,249.71	-8.59	-8.59	-18.20	20.13	244.74	0.94
1,275.00	0.18	303.10	1,274.71	-8.61	-8.61	-18.25	20.18	244.74	1.28
1,300.00	0.20	290.91	1,299.71	-8.58	-8.58	-18.33	20.24	244.92	0.19
1,325.00	0.18	1.26	1,324.71	-8.52	-8.52	-18.37	20.25	245.11	0.88
1,350.00	0.38	27.73	1,349.71	-8.41	-8.41	-18.33	20.17	245.35	0.95
1,375.00	0.64	22.64	1,374.71	-8.21	-8.21	-18.23	20.00	245.77	1.06

VAUGHN ENERGY SERVICES

3400 CR 48 ROBSTOWN, TEXAS 78380 361-767-0602

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
1,400.00	0.86	24.03	1,399.71	-7.90	-7.90	-18.10	19.75	246.41	0.87
1,425.00	1.06	20.98	1,424.71	-7.52	-7.52	-17.94	19.46	247.27	0.82
1,450.00	1.35	19.27	1,449.70	-7.02	-7.02	-17.76	19.10	248.43	1.18
1,475.00	1.79	16.48	1,474.69	-6.37	-6.37	-17.56	18.68	250.06	1.79
1,500.00	2.09	8.88	1,499.68	-5.54	-5.54	-17.37	18.24	252.31	1.55
1,525.00	2.23	12.44	1,524.66	-4.62	-4.62	-17.20	17.81	254.97	0.79
1,550.00	2.32	11.24	1,549.64	-3.65	-3.65	-17.00	17.38	257.89	0.40
1,575.00	2.36	11.29	1,574.62	-2.65	-2.65	-16.80	17.00	261.05	0.19
1,600.00	2.40	7.14	1,599.60	-1.62	-1.62	-16.63	16.71	264.43	0.70
1,625.00	2.44	2.38	1,624.57	-0.57	-0.57	-16.54	16.55	268.02	0.82
1,650.00	2.58	358.99	1,649.55	0.52	0.52	-16.53	16.54	271.81	0.82
1,675.00	2.47	0.93	1,674.53	1.62	1.62	-16.53	16.61	275.61	0.54
1,700.00	2.15	357.78	1,699.50	2.63	2.63	-16.54	16.75	279.04	1.40
1,725.00	1.77	340.43	1,724.49	3.46	3.46	-16.69	17.05	281.72	2.79
1,750.00	1.72	331.64	1,749.48	4.16	4.16	-17.00	17.50	283.75	1.09
1,775.00	1.69	333.37	1,774.47	4.82	4.82	-17.34	18.00	285.53	0.23
1,800.00	1.65	331.31	1,799.46	5.46	5.46	-17.68	18.50	287.17	0.30
1,825.00	1.64	324.87	1,824.45	6.07	6.07	-18.06	19.05	288.59	0.74
1,850.00	1.69	315.95	1,849.44	6.63	6.63	-18.52	19.67	289.70	1.05
1,875.00	1.68	322.72	1,874.43	7.19	7.19	-19.00	20.31	290.72	0.80
1,900.00	1.69	324.04	1,899.41	7.78	7.78	-19.44	20.94	291.81	0.15
1,925.00	1.69	324.82	1,924.40	8.38	8.38	-19.87	21.56	292.86	0.10
1,950.00	1.65	324.10	1,949.39	8.97	8.97	-20.29	22.19	293.85	0.21
1,975.00	1.71	331.19	1,974.38	9.59	9.59	-20.68	22.80	294.87	0.87
2,000.00	1.75	347.06	1,999.37	10.29	10.29	-20.95	23.34	296.16	1.92
2,025.00	1.97	22.47	2,024.36	11.06	11.06	-20.87	23.62	297.92	4.59
2,050.00	2.53	42.52	2,049.34	11.86	11.86	-20.33	23.54	300.26	3.84
2,075.00	3.14	55.78	2,074.31	12.65	12.65	-19.39	23.15	303.12	3.56
2,100.00	3.60	65.43	2,099.26	13.36	13.36	-18.11	22.51	306.42	2.93
2,125.00	4.11	67.59	2,124.21	14.03	14.03	-16.57	21.71	310.25	2.10
2,150.00	4.35	73.66	2,149.14	14.64	14.64	-14.83	20.84	314.62	2.03
2,175.00	4.37	74.59	2,174.07	15.16	15.16	-13.01	19.97	319.37	0.30
2,200.00	4.44	72.66	2,198.99	15.70	15.70	-11.16	19.26	324.58	0.66
2,225.00	4.34	75.33	2,223.92	16.23	16.23	-9.33	18.72	330.11	0.92
2,250.00	4.27	78.56	2,248.85	16.65	16.65	-7.50	18.26	335.75	1.01

VAUGHN ENERGY SERVICES

3400 CR 48 ROBSTOWN, TEXAS 78380 361-767-0602

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
2,275.00	4.27	79.03	2,273.78	17.01	17.01	-5.67	17.93	341.55	0.14
2,300.00	4.21	80.15	2,298.71	17.35	17.35	-3.86	17.77	347.46	0.41
2,325.00	4.35	81.89	2,323.64	17.64	17.64	-2.02	17.75	353.48	0.77
2,350.00	4.42	83.11	2,348.57	17.89	17.89	-0.12	17.89	359.61	0.47
2,375.00	4.40	82.43	2,373.49	18.13	18.13	1.79	18.22	5.63	0.22
2,400.00	4.45	82.90	2,398.42	18.38	18.38	3.70	18.74	11.38	0.23
2,425.00	4.54	83.11	2,423.34	18.61	18.61	5.64	19.45	16.86	0.37
2,450.00	4.76	84.59	2,448.26	18.83	18.83	7.66	20.33	22.13	1.03
2,475.00	4.94	85.30	2,473.17	19.02	19.02	9.76	21.38	27.18	0.73
2,500.00	4.94	85.60	2,498.08	19.19	19.19	11.91	22.58	31.83	0.11
2,525.00	4.90	85.99	2,522.99	19.34	19.34	14.05	23.91	35.99	0.22
2,550.00	4.44	89.12	2,547.90	19.43	19.43	16.08	25.22	39.61	2.10
2,575.00	3.75	88.95	2,572.84	19.46	19.46	17.87	26.42	42.55	2.76
2,600.00	3.40	87.40	2,597.79	19.51	19.51	19.43	27.53	44.87	1.46
2,625.00	2.42	86.70	2,622.76	19.58	19.58	20.69	28.49	46.59	3.93
2,650.00	1.98	85.89	2,647.74	19.64	19.64	21.65	29.23	47.79	1.76
2,675.00	1.86	85.05	2,672.72	19.70	19.70	22.49	29.90	48.77	0.49
2,700.00	1.47	91.12	2,697.71	19.73	19.73	23.21	30.46	49.63	1.71
2,725.00	1.31	85.32	2,722.71	19.75	19.75	23.81	30.94	50.33	0.86
2,750.00	1.20	102.74	2,747.70	19.71	19.71	24.35	31.33	51.01	1.58
2,775.00	0.80	109.59	2,772.70	19.60	19.60	24.78	31.59	51.66	1.67
2,800.00	0.67	158.23	2,797.69	19.40	19.40	24.99	31.64	52.18	2.48
2,825.00	0.74	227.81	2,822.69	19.16	19.16	24.93	31.44	52.46	3.22
2,850.00	0.93	251.22	2,847.69	18.99	18.99	24.62	31.09	52.36	1.55
2,875.00	1.69	257.62	2,872.68	18.84	18.84	24.07	30.57	51.94	3.08
2,900.00	1.83	257.10	2,897.67	18.67	18.67	23.32	29.87	51.31	0.58
2,925.00	2.19	252.01	2,922.65	18.44	18.44	22.48	29.07	50.64	1.59
2,950.00	2.80	249.30	2,947.63	18.07	18.07	21.45	28.05	49.88	2.50
2,975.00	2.88	246.64	2,972.60	17.61	17.61	20.31	26.88	49.07	0.61
3,000.00	3.16	248.44	2,997.57	17.11	17.11	19.09	25.63	48.13	1.20
3,025.00	3.34	248.57	3,022.53	16.59	16.59	17.77	24.31	46.97	0.71
3,050.00	3.38	246.71	3,047.48	16.03	16.03	16.42	22.95	45.68	0.47
3,075.00	3.37	243.48	3,072.44	15.41	15.41	15.08	21.56	44.38	0.76
3,100.00	3.63	246.42	3,097.39	14.77	14.77	13.70	20.14	42.85	1.24
3,125.00	4.22	241.85	3,122.33	14.02	14.02	12.17	18.56	40.95	2.68

VAUGHN ENERGY SERVICES

3400 CR 48 ROBSTOWN, TEXAS 78380 361-767-0802

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
3,150.00	4.42	241.43	3,147.26	13.12	13.12	10.51	16.81	38.69	0.81
3,175.00	4.47	240.56	3,172.19	12.18	12.18	8.81	15.04	35.88	0.33
3,200.00	4.56	238.81	3,197.11	11.19	11.19	7.12	13.26	32.45	0.66
3,225.00	4.55	241.69	3,222.03	10.21	10.21	5.39	11.54	27.86	0.92
3,250.00	4.54	241.02	3,246.95	9.26	9.26	3.66	9.95	21.55	0.22
3,275.00	4.40	239.75	3,271.88	8.29	8.29	1.96	8.52	13.30	0.68
3,300.00	4.34	237.77	3,296.80	7.31	7.31	0.33	7.31	2.61	0.66
3,325.00	4.25	239.49	3,321.73	6.33	6.33	-1.26	6.46	348.71	0.63
3,350.00	4.30	239.17	3,346.66	5.38	5.38	-2.87	6.10	331.97	0.23
3,375.00	4.23	239.23	3,371.59	4.43	4.43	-4.46	6.29	314.80	0.28
3,400.00	4.23	236.93	3,396.53	3.46	3.46	-6.03	6.95	299.84	0.68
3,425.00	4.20	238.10	3,421.46	2.47	2.47	-7.58	7.97	288.05	0.36
3,450.00	4.18	239.03	3,446.39	1.52	1.52	-9.14	9.26	279.42	0.28
3,475.00	4.07	239.27	3,471.33	0.59	0.59	-10.68	10.70	273.18	0.48
3,500.00	4.06	237.88	3,496.26	-0.33	-0.33	-12.19	12.20	268.45	0.40
3,525.00	4.03	237.24	3,521.20	-1.28	-1.28	-13.68	13.74	264.67	0.22
3,550.00	4.02	237.06	3,546.14	-2.23	-2.23	-15.15	15.32	261.64	0.05
3,575.00	3.93	235.35	3,571.08	-3.19	-3.19	-16.59	16.90	259.12	0.61
3,600.00	3.83	238.27	3,596.02	-4.12	-4.12	-18.01	18.47	257.12	0.87
3,625.00	3.71	236.59	3,620.97	-5.00	-5.00	-19.39	20.03	255.54	0.65
3,650.00	3.64	236.19	3,645.92	-5.89	-5.89	-20.73	21.55	254.14	0.30
3,675.00	3.59	237.12	3,670.87	-6.76	-6.76	-22.05	23.06	252.96	0.32
3,700.00	3.65	237.62	3,695.82	-7.61	-7.61	-23.38	24.58	251.97	0.27
3,725.00	3.65	234.73	3,720.77	-8.49	-8.49	-24.70	26.12	251.02	0.74
3,750.00	3.55	236.58	3,745.72	-9.38	-9.38	-25.99	27.63	250.16	0.60
3,775.00	3.52	236.95	3,770.67	-10.22	-10.22	-27.28	29.14	249.46	0.16
3,800.00	3.51	236.84	3,795.62	-11.06	-11.06	-28.57	30.63	248.84	0.04
3,825.00	3.53	236.74	3,820.58	-11.90	-11.90	-29.85	32.14	248.26	0.09
3,850.00	3.57	237.38	3,845.53	-12.74	-12.74	-31.15	33.66	247.75	0.23
3,875.00	3.80	238.90	3,870.48	-13.59	-13.59	-32.52	35.24	247.32	0.98
3,900.00	3.92	240.01	3,895.42	-14.45	-14.45	-33.97	36.91	246.96	0.55
3,925.00	3.97	240.85	3,920.36	-15.30	-15.30	-35.46	38.62	246.67	0.32
3,950.00	4.04	242.77	3,945.30	-16.12	-16.12	-37.00	40.36	246.46	0.59
3,975.00	4.06	242.81	3,970.24	-16.93	-16.93	-38.57	42.12	246.31	0.10
4,000.00	4.07	243.39	3,995.17	-17.73	-17.73	-40.15	43.89	246.18	0.17

VAUGHN ENERGY SERVICES

3400 CR 48 ROBSTOWN, TEXAS 78380 361-767-0602

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
4,025.00	4.09	241.05	4,020.11	-18.56	-18.56	-41.73	45.67	246.02	0.67
4,050.00	4.08	241.99	4,045.05	-19.41	-19.41	-43.29	47.44	245.85	0.27
4,075.00	4.00	241.71	4,069.98	-20.24	-20.24	-44.84	49.20	245.71	0.31
4,100.00	3.98	238.03	4,094.92	-21.11	-21.11	-46.35	50.93	245.51	1.03
4,125.00	3.96	238.92	4,119.86	-22.02	-22.02	-47.83	52.65	245.28	0.26
4,150.00	4.00	237.32	4,144.80	-22.93	-22.93	-49.30	54.37	245.05	0.46
4,175.00	3.97	237.34	4,169.74	-23.87	-23.87	-50.76	56.09	244.81	0.12
4,200.00	3.97	238.45	4,194.68	-24.79	-24.79	-52.23	57.81	244.61	0.31
4,225.00	3.96	238.27	4,219.62	-25.70	-25.70	-53.70	59.53	244.43	0.07
4,250.00	3.96	237.51	4,244.56	-26.61	-26.61	-55.16	61.25	244.24	0.21
4,275.00	3.93	236.72	4,269.50	-27.55	-27.55	-56.60	62.95	244.05	0.25
4,300.00	3.79	237.54	4,294.45	-28.46	-28.46	-58.02	64.62	243.87	0.59
4,325.00	3.68	237.09	4,319.39	-29.34	-29.34	-59.39	66.24	243.71	0.46
4,350.00	3.63	234.92	4,344.34	-30.23	-30.23	-60.71	67.82	243.53	0.58
4,375.00	3.60	234.02	4,369.29	-31.15	-31.15	-61.99	69.38	243.32	0.27
4,400.00	3.61	235.01	4,394.24	-32.06	-32.06	-63.27	70.93	243.13	0.25
4,425.00	3.60	235.10	4,419.20	-32.96	-32.96	-64.56	72.48	242.95	0.03
4,450.00	3.65	231.76	4,444.15	-33.90	-33.90	-65.83	74.04	242.75	0.87
4,475.00	3.63	231.31	4,469.09	-34.89	-34.89	-67.07	75.60	242.52	0.14
4,500.00	3.65	233.94	4,494.04	-35.85	-35.85	-68.33	77.16	242.32	0.68
4,525.00	3.68	233.19	4,518.99	-36.80	-36.80	-69.62	78.75	242.14	0.23
4,550.00	3.71	235.44	4,543.94	-37.74	-37.74	-70.93	80.34	241.98	0.59
4,575.00	3.94	235.70	4,568.89	-38.68	-38.68	-72.30	82.00	241.85	0.93
4,600.00	4.09	233.91	4,593.82	-39.69	-39.69	-73.73	83.74	241.70	0.77
4,625.00	4.10	234.67	4,618.76	-40.73	-40.73	-75.18	85.51	241.55	0.22
4,650.00	4.11	232.02	4,643.70	-41.80	-41.80	-76.62	87.28	241.38	0.76
4,675.00	4.07	236.64	4,668.63	-42.84	-42.84	-78.06	89.05	241.24	1.33
4,700.00	4.04	236.43	4,693.57	-43.82	-43.82	-79.54	90.81	241.15	0.14
4,725.00	3.97	236.54	4,718.51	-44.78	-44.78	-81.00	92.55	241.06	0.28
4,750.00	3.93	236.11	4,743.45	-45.74	-45.74	-82.43	94.27	240.98	0.21
4,775.00	3.96	236.60	4,768.39	-46.69	-46.69	-83.86	95.98	240.89	0.18
4,800.00	3.95	236.61	4,793.33	-47.64	-47.64	-85.30	97.70	240.82	0.04
4,825.00	3.97	236.04	4,818.27	-48.60	-48.60	-86.74	99.42	240.74	0.17
4,850.00	3.92	234.36	4,843.21	-49.58	-49.58	-88.15	101.13	240.65	0.50
4,875.00	3.87	236.18	4,868.15	-50.54	-50.54	-89.54	102.82	240.56	0.54

VAUGHN ENERGY SERVICES

3400 CR 48 ROBSTOWN, TEXAS 78380 361-767-0602

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
4,900.00	3.89	235.82	4,893.10	-51.49	-51.49	-90.94	104.51	240.48	0.13
4,925.00	3.83	236.23	4,918.04	-52.43	-52.43	-92.34	106.18	240.41	0.26
4,950.00	3.81	235.51	4,942.98	-53.36	-53.36	-93.72	107.84	240.34	0.21
4,975.00	3.69	232.91	4,967.93	-54.32	-54.32	-95.04	109.47	240.25	0.82
5,000.00	3.59	234.68	4,992.88	-55.26	-55.26	-96.32	111.05	240.16	0.61
5,025.00	3.49	234.86	5,017.83	-56.15	-56.15	-97.58	112.58	240.09	0.39
5,050.00	3.49	233.85	5,042.79	-57.03	-57.03	-98.82	114.10	240.01	0.25
5,075.00	3.45	233.90	5,067.74	-57.93	-57.93	-100.05	115.61	239.93	0.15
5,100.00	3.47	233.20	5,092.70	-58.82	-58.82	-101.26	117.11	239.85	0.18
5,125.00	3.44	233.13	5,117.65	-59.73	-59.73	-102.47	118.60	239.76	0.09
5,150.00	3.42	234.14	5,142.60	-60.61	-60.61	-103.67	120.09	239.69	0.26
5,175.00	3.46	232.12	5,167.56	-61.51	-61.51	-104.87	121.58	239.61	0.51
5,200.00	3.48	232.71	5,192.51	-62.44	-62.44	-106.07	123.08	239.52	0.16
5,225.00	3.50	232.63	5,217.47	-63.36	-63.36	-107.28	124.59	239.43	0.08
5,250.00	3.45	233.42	5,242.42	-64.27	-64.27	-108.49	126.10	239.36	0.27
5,275.00	3.33	229.81	5,267.38	-65.19	-65.19	-109.65	127.56	239.27	0.98
5,300.00	3.27	233.81	5,292.34	-66.08	-66.08	-110.78	128.99	239.18	0.95
5,325.00	3.22	233.63	5,317.30	-66.91	-66.91	-111.92	130.39	239.13	0.23
5,350.00	3.13	232.94	5,342.26	-67.74	-67.74	-113.02	131.77	239.06	0.39
5,375.00	3.10	232.24	5,367.22	-68.56	-68.56	-114.10	133.12	239.00	0.19
5,400.00	3.10	232.45	5,392.18	-69.39	-69.39	-115.17	134.46	238.93	0.05
5,425.00	3.11	232.15	5,417.15	-70.22	-70.22	-116.24	135.81	238.87	0.07
5,450.00	3.17	231.33	5,442.11	-71.07	-71.07	-117.32	137.16	238.79	0.30
5,475.00	3.24	231.75	5,467.07	-71.94	-71.94	-118.41	138.55	238.72	0.32
5,500.00	3.55	233.01	5,492.03	-72.84	-72.84	-119.59	140.02	238.66	1.26
5,525.00	3.80	230.13	5,516.98	-73.84	-73.84	-120.84	141.61	238.57	1.24
5,550.00	3.87	229.00	5,541.92	-74.92	-74.92	-122.12	143.27	238.47	0.41
5,575.00	3.84	228.87	5,566.86	-76.03	-76.03	-123.38	144.93	238.36	0.11
5,600.00	3.86	230.04	5,591.81	-77.12	-77.12	-124.66	146.58	238.26	0.33
5,625.00	3.85	229.93	5,616.75	-78.20	-78.20	-125.95	148.25	238.16	0.06
5,650.00	3.85	229.41	5,641.69	-79.28	-79.28	-127.23	149.91	238.07	0.14
5,675.00	3.72	228.03	5,666.64	-80.37	-80.37	-128.47	151.54	237.97	0.62
5,700.00	3.75	226.79	5,691.59	-81.48	-81.48	-129.67	153.14	237.86	0.35
5,725.00	3.69	227.01	5,716.53	-82.58	-82.58	-130.85	154.73	237.74	0.26
5,750.00	3.66	226.51	5,741.48	-83.68	-83.68	-132.02	156.31	237.63	0.18

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
5,775.00	3.58	225.04	5,766.43	-84.78	-84.78	-133.15	157.85	237.51	0.49
5,800.00	3.68	224.25	5,791.38	-85.91	-85.91	-134.26	159.39	237.39	0.45
5,825.00	3.70	225.95	5,816.33	-87.04	-87.04	-135.40	160.96	237.26	0.44
5,850.00	3.73	226.48	5,841.28	-88.16	-88.16	-136.57	162.55	237.16	0.20
5,875.00	3.97	227.97	5,866.22	-89.30	-89.30	-137.80	164.21	237.05	1.03
5,900.00	4.08	230.57	5,891.16	-90.45	-90.45	-139.13	165.95	236.97	0.84
5,925.00	4.12	231.53	5,916.10	-91.57	-91.57	-140.52	167.72	236.91	0.33
5,950.00	4.09	232.89	5,941.03	-92.67	-92.67	-141.93	169.51	236.86	0.41
5,975.00	4.08	233.46	5,965.97	-93.73	-93.73	-143.36	171.28	236.82	0.17
6,000.00	3.93	233.70	5,990.91	-94.77	-94.77	-144.76	173.03	236.79	0.57
6,025.00	3.91	234.00	6,015.85	-95.78	-95.78	-146.15	174.73	236.76	0.12
6,050.00	3.89	233.58	6,040.79	-96.78	-96.78	-147.52	176.43	236.73	0.14
6,075.00	3.89	234.85	6,065.73	-97.78	-97.78	-148.89	178.13	236.71	0.35
6,100.00	3.89	234.86	6,090.68	-98.75	-98.75	-150.28	179.82	236.69	0.01
6,125.00	3.86	231.41	6,115.62	-99.76	-99.76	-151.63	181.51	236.66	0.94
6,150.00	3.82	232.83	6,140.56	-100.79	-100.79	-152.95	183.18	236.62	0.42
6,175.00	3.75	233.06	6,165.51	-101.79	-101.79	-154.27	184.82	236.58	0.26
6,200.00	3.65	234.29	6,190.46	-102.74	-102.74	-155.57	186.44	236.56	0.52
6,225.00	3.66	234.11	6,215.40	-103.68	-103.68	-156.86	188.03	236.54	0.05
6,250.00	3.52	233.10	6,240.36	-104.60	-104.60	-158.12	189.59	236.51	0.59
6,275.00	3.55	232.77	6,265.31	-105.53	-105.53	-159.35	191.13	236.48	0.13
6,300.00	3.50	230.19	6,290.26	-106.49	-106.49	-160.56	192.66	236.45	0.66
6,325.00	3.44	233.93	6,315.21	-107.42	-107.42	-161.75	194.17	236.41	0.94
6,350.00	3.46	233.18	6,340.17	-108.32	-108.32	-162.96	195.67	236.39	0.19
6,375.00	3.41	232.55	6,365.12	-109.22	-109.22	-164.15	197.17	236.36	0.24
6,400.00	3.42	234.73	6,390.08	-110.10	-110.10	-165.35	198.65	236.34	0.52
6,425.00	3.50	237.64	6,415.03	-110.94	-110.94	-166.60	200.16	236.34	0.78
6,450.00	3.94	244.62	6,439.98	-111.72	-111.72	-168.02	201.77	236.38	2.52
6,475.00	4.27	247.40	6,464.92	-112.44	-112.44	-169.66	203.54	236.47	1.53
6,500.00	4.57	248.88	6,489.84	-113.16	-113.16	-171.44	205.42	236.57	1.30
6,525.00	4.51	251.62	6,514.76	-113.83	-113.83	-173.31	207.34	236.70	0.90
6,550.00	4.41	251.78	6,539.69	-114.44	-114.44	-175.15	209.22	236.84	0.37
6,575.00	4.45	254.65	6,564.61	-114.99	-114.99	-177.00	211.07	236.99	0.90
6,600.00	4.25	255.06	6,589.54	-115.49	-115.49	-178.83	212.88	237.15	0.81
6,625.00	4.10	254.50	6,614.48	-115.97	-115.97	-180.59	214.62	237.29	0.60

VAUGHN ENERGY SERVICES

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Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
6,650.00	4.01	252.71	6,639.41	-116.47	-116.47	-182.28	216.31	237.42	0.64
6,675.00	3.93	252.90	6,664.35	-116.98	-116.98	-183.94	217.98	237.54	0.31
6,700.00	3.84	251.99	6,689.30	-117.49	-117.49	-185.55	219.62	237.66	0.44
6,725.00	3.79	247.55	6,714.24	-118.06	-118.06	-187.11	221.25	237.75	1.20
6,750.00	3.71	246.36	6,739.19	-118.70	-118.70	-188.62	222.86	237.82	0.46
6,775.00	3.56	246.73	6,764.14	-119.33	-119.33	-190.07	224.43	237.88	0.60
6,800.00	3.43	245.55	6,789.09	-119.95	-119.95	-191.46	225.93	237.93	0.59
6,825.00	3.30	242.99	6,814.05	-120.59	-120.59	-192.78	227.39	237.97	0.79
6,850.00	3.35	242.15	6,839.01	-121.25	-121.25	-194.07	228.84	238.00	0.28
6,875.00	3.26	239.76	6,863.96	-121.95	-121.95	-195.33	230.27	238.02	0.66
6,900.00	3.29	238.78	6,888.92	-122.68	-122.68	-196.56	231.70	238.03	0.26
6,925.00	3.39	236.68	6,913.88	-123.46	-123.46	-197.79	233.16	238.03	0.64
6,950.00	3.47	237.08	6,938.84	-124.28	-124.28	-199.04	234.65	238.02	0.34
6,975.00	3.44	235.74	6,963.79	-125.11	-125.11	-200.30	236.16	238.01	0.35
7,000.00	3.39	233.19	6,988.75	-125.98	-125.98	-201.51	237.64	237.99	0.63
7,025.00	3.23	229.01	7,013.70	-126.88	-126.88	-202.63	239.08	237.95	1.16
7,050.00	3.10	224.60	7,038.67	-127.83	-127.83	-203.64	240.43	237.88	1.11
7,075.00	3.14	223.43	7,063.63	-128.80	-128.80	-204.59	241.76	237.81	0.31
7,100.00	3.17	220.93	7,088.59	-129.82	-129.82	-205.51	243.08	237.72	0.56
7,125.00	3.18	222.90	7,113.55	-130.85	-130.85	-206.43	244.41	237.63	0.44
7,150.00	3.18	225.80	7,138.51	-131.84	-131.84	-207.40	245.76	237.56	0.64
7,175.00	3.17	227.20	7,163.48	-132.80	-132.80	-208.41	247.12	237.49	0.31
7,200.00	3.25	227.31	7,188.44	-133.75	-133.75	-209.43	248.50	237.44	0.33
7,225.00	3.27	227.73	7,213.40	-134.71	-134.71	-210.48	249.90	237.38	0.12
7,250.00	3.16	228.83	7,238.36	-135.64	-135.64	-211.53	251.28	237.33	0.52
7,275.00	2.92	232.39	7,263.32	-136.48	-136.48	-212.55	252.60	237.29	1.19
7,300.00	2.86	236.13	7,288.29	-137.22	-137.22	-213.58	253.86	237.28	0.80
7,325.00	2.81	240.96	7,313.26	-137.87	-137.87	-214.63	255.09	237.29	0.98
7,350.00	2.81	242.01	7,338.23	-138.45	-138.45	-215.71	256.31	237.31	0.21
7,375.00	2.89	241.73	7,363.20	-139.04	-139.04	-216.80	257.55	237.33	0.36
7,400.00	3.19	240.97	7,388.16	-139.67	-139.67	-217.96	258.88	237.35	1.18
7,425.00	3.52	243.43	7,413.12	-140.35	-140.35	-219.26	260.33	237.38	1.44
7,450.00	3.52	242.89	7,438.07	-141.04	-141.04	-220.63	261.86	237.41	0.13
7,475.00	3.68	243.07	7,463.02	-141.76	-141.76	-222.02	263.42	237.44	0.64
7,500.00	3.69	241.61	7,487.97	-142.50	-142.50	-223.44	265.02	237.47	0.38

VAUGHN ENERGY SERVICES

3400 CR 48 ROBSTOWN, TEXAS 78380 361-767-0602

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
7,525.00	3.63	239.70	7,512.92	-143.28	-143.28	-224.84	266.61	237.49	0.53
7,550.00	3.66	243.77	7,537.87	-144.04	-144.04	-226.23	268.19	237.52	1.04
7,575.00	3.42	244.58	7,562.82	-144.71	-144.71	-227.62	269.73	237.55	0.98
7,600.00	3.16	244.95	7,587.78	-145.32	-145.32	-228.92	271.15	237.59	1.02
7,625.00	2.95	249.23	7,612.75	-145.84	-145.84	-230.15	272.46	237.64	1.23
7,650.00	3.07	250.06	7,637.71	-146.30	-146.30	-231.38	273.75	237.70	0.49
7,675.00	3.11	248.48	7,662.67	-146.77	-146.77	-232.64	275.07	237.75	0.38
7,700.00	3.03	246.73	7,687.64	-147.28	-147.28	-233.87	276.39	237.80	0.50
7,725.00	2.96	248.96	7,712.60	-147.78	-147.78	-235.08	277.67	237.85	0.55
7,750.00	2.83	250.24	7,737.57	-148.21	-148.21	-236.26	278.91	237.90	0.58
7,775.00	2.76	247.78	7,762.54	-148.65	-148.65	-237.40	280.10	237.95	0.55
7,800.00	2.70	251.33	7,787.51	-149.07	-149.07	-238.52	281.27	238.00	0.72
7,825.00	2.72	248.89	7,812.49	-149.47	-149.47	-239.63	282.42	238.05	0.47
7,850.00	2.99	252.41	7,837.46	-149.88	-149.88	-240.80	283.64	238.10	1.27
7,875.00	3.51	256.11	7,862.42	-150.26	-150.26	-242.17	285.00	238.18	2.27
7,900.00	3.93	260.00	7,887.36	-150.59	-150.59	-243.75	286.52	238.29	1.94
7,925.00	4.16	258.44	7,912.30	-150.92	-150.92	-245.48	288.17	238.42	1.04
7,950.00	4.21	258.23	7,937.23	-151.29	-151.29	-247.27	289.88	238.54	0.18
7,975.00	4.22	259.14	7,962.17	-151.65	-151.65	-249.07	291.61	238.66	0.27
8,000.00	4.34	261.07	7,987.10	-151.97	-151.97	-250.91	293.35	238.80	0.75
8,025.00	4.39	262.75	8,012.02	-152.24	-152.24	-252.79	295.10	238.94	0.55
8,050.00	4.39	263.88	8,036.95	-152.46	-152.46	-254.69	296.84	239.09	0.35
8,075.00	4.28	263.56	8,061.88	-152.67	-152.67	-256.57	298.56	239.25	0.45
8,100.00	4.35	263.60	8,086.81	-152.88	-152.88	-258.44	300.27	239.39	0.30
8,125.00	4.25	262.21	8,111.74	-153.11	-153.11	-260.30	302.00	239.54	0.58
8,150.00	4.35	259.62	8,136.67	-153.41	-153.41	-262.16	303.74	239.66	0.87
8,175.00	4.53	250.44	8,161.59	-153.91	-153.91	-264.02	305.61	239.76	2.92
8,200.00	4.67	245.87	8,186.51	-154.66	-154.66	-265.88	307.59	239.81	1.58
8,225.00	4.70	245.30	8,211.43	-155.50	-155.50	-267.74	309.62	239.85	0.21
8,250.00	4.65	242.18	8,236.34	-156.40	-156.40	-269.56	311.65	239.88	1.04
8,275.00	4.46	226.60	8,261.27	-157.54	-157.54	-271.17	313.61	239.84	4.99
8,300.00	4.42	222.02	8,286.19	-158.93	-158.93	-272.52	315.47	239.75	1.43
8,325.00	4.44	222.91	8,311.12	-160.35	-160.35	-273.82	317.32	239.65	0.28
8,350.00	4.09	221.04	8,336.05	-161.73	-161.73	-275.06	319.09	239.55	1.52
8,375.00	3.44	220.56	8,360.99	-162.97	-162.97	-276.14	320.64	239.45	2.57

VAUGHN ENERGY SERVICES

3400 CR 48 ROBSTOWN, TEXAS 78380 361-767-0602

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
8,400.00	3.19	219.55	8,385.95	-164.08	-164.08	-277.07	322.01	239.37	1.04
8,425.00	3.04	217.90	8,410.91	-165.14	-165.14	-277.92	323.28	239.28	0.72
8,450.00	2.82	220.52	8,435.88	-166.13	-166.13	-278.72	324.48	239.20	1.01
8,475.00	2.59	223.04	8,460.85	-167.01	-167.01	-279.51	325.61	239.14	1.03
8,500.00	2.38	220.28	8,485.83	-167.82	-167.82	-280.23	326.64	239.08	0.98
8,525.00	2.25	218.70	8,510.81	-168.60	-168.60	-280.88	327.59	239.03	0.59
8,550.00	2.22	217.55	8,535.79	-169.37	-169.37	-281.48	328.50	238.96	0.21
8,575.00	2.13	220.18	8,560.77	-170.11	-170.11	-282.07	329.39	238.91	0.53
8,600.00	2.26	220.73	8,585.75	-170.83	-170.83	-282.69	330.30	238.86	0.49
8,625.00	2.28	221.27	8,610.73	-171.58	-171.58	-283.34	331.24	238.80	0.12
8,650.00	2.30	219.56	8,635.71	-172.34	-172.34	-283.99	332.19	238.75	0.29
8,675.00	2.30	216.75	8,660.69	-173.13	-173.13	-284.61	333.13	238.69	0.45
8,700.00	2.34	217.56	8,685.67	-173.94	-173.94	-285.22	334.07	238.62	0.20
8,725.00	2.31	217.95	8,710.65	-174.74	-174.74	-285.84	335.02	238.56	0.13
8,750.00	2.41	214.47	8,735.63	-175.57	-175.57	-286.45	335.97	238.50	0.69
8,775.00	2.34	219.51	8,760.61	-176.40	-176.40	-287.07	336.94	238.43	0.88
8,800.00	2.38	215.96	8,785.59	-177.21	-177.21	-287.70	337.90	238.37	0.61
8,825.00	2.33	218.49	8,810.57	-178.03	-178.03	-288.32	338.86	238.31	0.46
8,850.00	2.29	216.73	8,835.55	-178.82	-178.82	-288.94	339.80	238.25	0.33
8,875.00	2.28	217.57	8,860.53	-179.62	-179.62	-289.54	340.73	238.19	0.14
8,900.00	2.19	213.68	8,885.51	-180.41	-180.41	-290.11	341.63	238.12	0.70
8,925.00	2.09	215.91	8,910.49	-181.18	-181.18	-290.64	342.49	238.06	0.55
8,950.00	2.04	216.63	8,935.47	-181.90	-181.90	-291.17	343.32	238.01	0.22
8,975.00	2.02	215.76	8,960.46	-182.62	-182.62	-291.69	344.14	237.95	0.14
9,000.00	2.00	216.32	8,985.44	-183.33	-183.33	-292.21	344.96	237.90	0.10
9,025.00	2.05	215.73	9,010.43	-184.04	-184.04	-292.73	345.78	237.84	0.20
9,050.00	2.02	215.89	9,035.41	-184.76	-184.76	-293.25	346.60	237.79	0.11
9,075.00	2.08	214.61	9,060.40	-185.49	-185.49	-293.76	347.42	237.73	0.31
9,100.00	2.10	215.70	9,085.38	-186.24	-186.24	-294.29	348.27	237.67	0.18
9,125.00	2.14	215.09	9,110.36	-186.99	-186.99	-294.82	349.12	237.62	0.17
9,150.00	2.08	215.89	9,135.35	-187.74	-187.74	-295.36	349.97	237.56	0.24
9,175.00	2.02	215.66	9,160.33	-188.46	-188.46	-295.88	350.80	237.50	0.27
9,200.00	2.02	214.49	9,185.31	-189.18	-189.18	-296.39	351.62	237.45	0.17
9,225.00	1.97	216.48	9,210.30	-189.89	-189.89	-296.89	352.43	237.40	0.35
9,250.00	2.04	215.70	9,235.28	-190.60	-190.60	-297.41	353.24	237.35	0.28

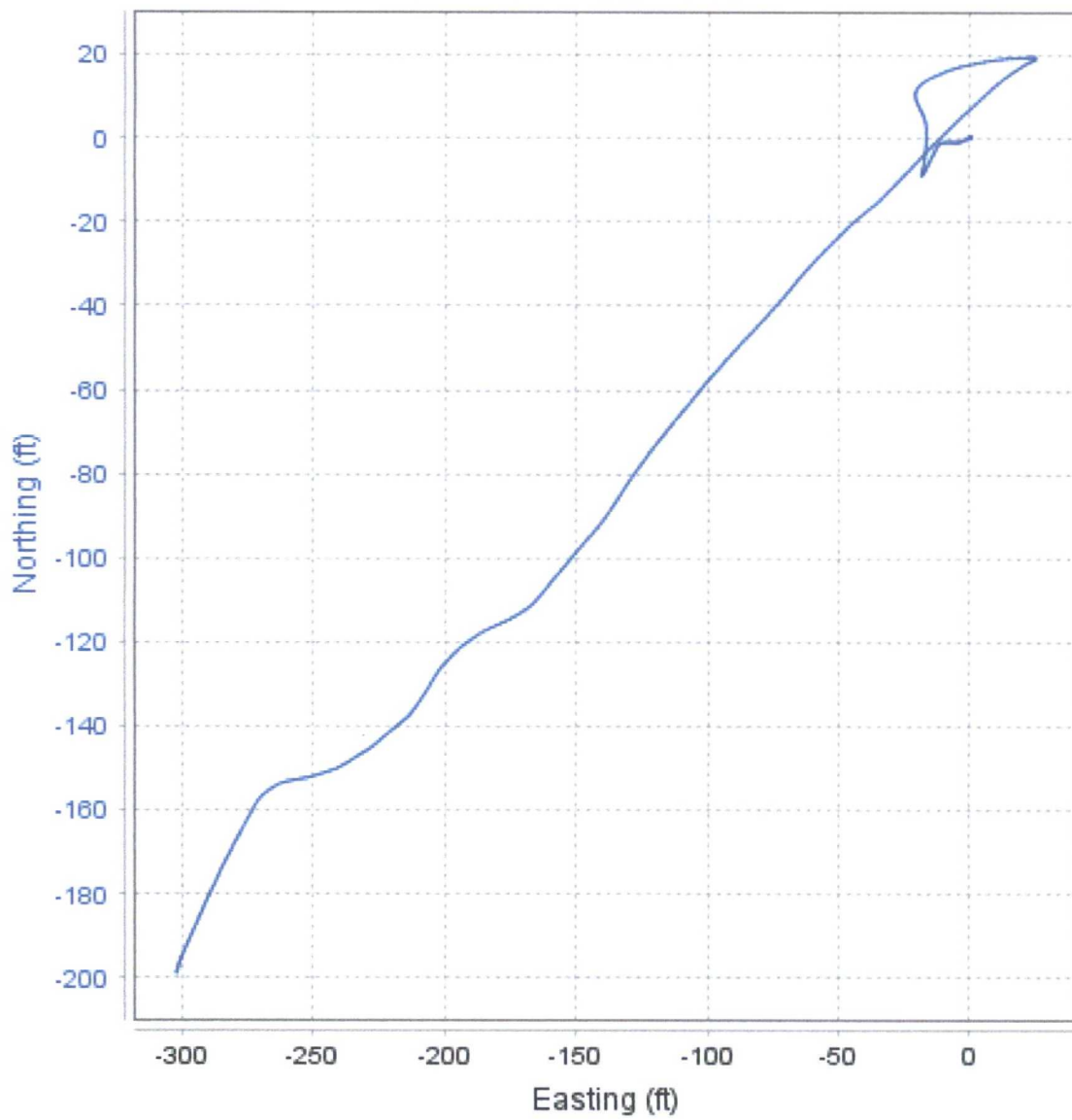
VAUGHN ENERGY SERVICES

3400 CR 48 ROBSTOWN, TEXAS 78380 361-767-0602

Depth ft	AccInclination deg	AzimuthGC deg	TVD ft	VS ft	Northing ft	Easting ft	Closure Distance ft	Closure Angle deg	DLS/100ft deg/100
9,275.00	2.08	215.04	9,260.27	-191.33	-191.33	-297.93	354.07	237.29	0.19
9,300.00	2.09	216.25	9,285.25	-192.07	-192.07	-298.46	354.92	237.24	0.19
9,325.00	2.08	215.74	9,310.23	-192.81	-192.81	-298.99	355.77	237.18	0.10
9,350.00	2.11	214.68	9,335.22	-193.55	-193.55	-299.52	356.62	237.13	0.21
9,375.00	1.70	216.42	9,360.20	-194.23	-194.23	-300.00	357.39	237.08	1.67
9,400.00	1.11	211.97	9,385.20	-194.73	-194.73	-300.35	357.95	237.04	2.40
9,425.00	0.85	210.85	9,410.19	-195.10	-195.10	-300.57	358.34	237.01	1.04
9,450.00	0.88	213.56	9,435.19	-195.42	-195.42	-300.77	358.68	236.99	0.22
9,475.00	0.92	210.36	9,460.19	-195.75	-195.75	-300.98	359.04	236.96	0.24
9,500.00	1.01	205.90	9,485.18	-196.12	-196.12	-301.18	359.41	236.93	0.46
9,525.00	1.02	201.77	9,510.18	-196.53	-196.53	-301.36	359.78	236.89	0.30
9,550.00	1.02	202.61	9,535.17	-196.94	-196.94	-301.53	360.14	236.85	0.06
9,575.00	1.08	206.38	9,560.17	-197.35	-197.35	-301.72	360.53	236.81	0.36
9,600.00	1.17	204.70	9,585.17	-197.80	-197.80	-301.93	360.95	236.77	0.39
9,625.00	1.22	204.49	9,610.16	-198.27	-198.27	-302.14	361.39	236.73	0.19
9,650.00	1.16	205.06	9,635.16	-198.74	-198.74	-302.36	361.83	236.68	0.25
9,655.00	1.14	205.02	9,640.15	-198.83	-198.83	-302.40	361.91	236.67	0.37

Horizontal Displacement is
361.91 ft at 236.67 deg

Plan View



VAUGHN ENERGY SERVICES

3400 CR 48 ROBSTOWN, TEXAS 78380 361-767-0602



NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 13 2017

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I Eric Warner certify that I am employed by VES Survey International. That I did on the day(s) of 06/17/17 through 06/17/17 conduct or supervise the taking of a Rate Gyro survey from a depth of 0.00 feet to a depth of 9,655.00 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Vaughn Energy Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of COG Operating for the Sidewinder Federal Com Well # 4H API # 30-015-44192 in Eddy County / Parish New Mexico; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by VES Survey International.

A handwritten signature in blue ink, appearing to read "Eric Warner", is written over a horizontal line.

Eric Warner
Service Technician
VES Survey International