

D.I.G., INC.

SANTA FE ENERGY RESOURCES, INC.
SINAGUA 18 FEDERAL COM. #2
LEA COUNTY, NEW MEXICO

J-18-20s-34e

Calculated by Minimum Curvature Method
Vert Sect Plane: S 49.61 E

30-025-32694

- RECORD OF SURVEY -

MEASURED DEPTH (FT)	INCL ANGLE (DEG)	D R I F T DIRECTION (DEG)	COURSE LENGTH (FT)	TRUE VERTICAL DEPTH	T O T A L RECTANGULAR COORDINATES (FT)		VERTICAL SECTION (FT)	C L O S U R E DISTANCE DIRECTION (FT) (DEG)		DOGLEG SEVERITY (DG/100')
D.I.G. GYRO 0 - 4670'										
0.00	0.00	N 0.00 E	0.00	0.00	0.00 N	0.00 E	0.00	0.00	N 0.00 E	0.00
100.00	0.50	N 4.00 W	100.00	100.00	0.44 N	0.03 W	-0.31	0.44	N 4.00 W	0.50
200.00	0.75	N 20.00 E	100.00	199.99	1.49 N	0.16 E	-0.84	1.49	N 6.26 E	0.36
300.00	0.75	N 42.00 E	100.00	299.98	2.59 N	0.82 E	-1.05	2.72	N 17.68 E	0.29
400.00	1.00	N 41.00 E	100.00	399.97	3.73 N	1.84 E	-1.02	4.16	N 26.19 E	0.25
500.00	0.75	N 41.00 E	100.00	499.96	4.88 N	2.84 E	-1.00	5.65	N 30.15 E	0.25
600.00	1.00	N 43.00 E	100.00	599.95	6.02 N	3.86 E	-0.96	7.15	N 32.69 E	0.25
700.00	1.00	N 45.00 E	100.00	699.93	7.27 N	5.07 E	-0.85	8.87	N 34.90 E	0.03
800.00	0.75	N 39.00 E	100.00	799.92	8.40 N	6.10 E	-0.79	10.38	N 36.01 E	0.27
900.00	0.50	N 64.00 E	100.00	899.92	9.10 N	6.91 E	-0.63	11.42	N 37.21 E	0.36
1000.00	0.50	N 0.00 E	100.00	999.91	9.72 N	7.30 E	-0.74	12.16	N 36.89 E	0.53
1100.00	0.25	N 55.00 E	100.00	1099.91	10.29 N	7.48 E	-0.97	12.72	N 36.01 E	0.41
1200.00	0.25	N 65.00 E	100.00	1199.91	10.50 N	7.85 E	-0.82	13.12	N 36.79 E	0.04
1300.00	0.25	N 58.00 E	100.00	1299.91	10.71 N	8.24 E	-0.67	13.51	N 37.56 E	0.03
1400.00	0.25	N 57.00 E	100.00	1399.91	10.95 N	8.60 E	-0.54	13.92	N 38.17 E	0.00
1500.00	0.00	N 0.00 E	100.00	1499.91	11.06 N	8.79 E	-0.48	14.13	N 38.46 E	0.25
1600.00	0.25	N 2.00 W	100.00	1599.91	11.28 N	8.78 E	-0.62	14.30	N 37.89 E	0.25
1700.00	0.75	N 65.00 E	100.00	1699.90	11.78 N	9.37 E	-0.50	15.05	N 38.49 E	0.69
1800.00	0.50	N 71.00 E	100.00	1799.90	12.20 N	10.37 E	-0.00	16.01	N 40.38 E	0.26
1900.00	0.50	N 65.00 E	100.00	1899.89	12.52 N	11.18 E	0.40	16.79	N 41.76 E	0.05
2000.00	1.00	N 70.00 E	100.00	1999.89	13.01 N	12.39 E	1.01	17.97	N 43.62 E	0.50
2100.00	1.00	N 73.00 E	100.00	2099.87	13.56 N	14.05 E	1.91	19.53	N 46.02 E	0.05
2200.00	1.25	N 64.00 E	100.00	2199.85	14.29 N	15.86 E	2.82	21.35	N 47.98 E	0.31
2300.00	1.50	N 52.00 E	100.00	2299.82	15.58 N	17.88 E	3.52	23.71	N 48.93 E	0.38
2400.00	1.75	N 51.00 E	100.00	2399.78	17.34 N	20.09 E	4.07	26.54	N 49.20 E	0.25
2500.00	2.00	N 50.00 E	100.00	2499.73	19.43 N	22.62 E	4.64	29.81	N 49.34 E	0.25
2600.00	2.75	N 48.00 E	100.00	2599.64	22.15 N	25.74 E	5.25	33.96	N 49.28 E	0.75
2700.00	3.25	N 47.00 E	100.00	2699.50	25.69 N	29.59 E	5.89	39.19	N 49.04 E	0.50
2800.00	3.00	N 39.00 E	100.00	2799.36	29.66 N	33.31 E	6.15	44.60	N 48.32 E	0.50
2900.00	2.25	N 45.00 E	100.00	2899.25	33.08 N	36.35 E	6.25	49.15	N 47.70 E	0.80
3000.00	2.00	N 46.00 E	100.00	2999.18	35.68 N	38.99 E	6.58	52.85	N 47.54 E	0.25

Survey Ref: Well Head Closure Ref: Well Head
Wed Dec 14 1994 23:03:50

Vert Sect Ref: Well Head
File: sfs182ss.dat

D.I.G., INC.

SANTA FE ENERGY RESOURCES, INC.
SINAGUA 18 FEDERAL COM. #2
LEA COUNTY, NEW MEXICO

Calculated by Minimum Curvature Method
Vert Sect Plane: S 49.61 E

- RECORD OF SURVEY -

MEASURED DEPTH (FT)	INCL ANGLE (DEG)	D R I F T DIRECTION (DEG)	COURSE LENGTH (FT)	TRUE VERTICAL DEPTH	T O T A L RECTANGULAR COORDINATES (FT)		VERTICAL SECTION (FT)	C L O S U R E DISTANCE DIRECTION (FT) (DEG)		DOGLEG SEVERITY (DG/100')
3100.00	1.25	N 60.00 E	100.00	3099.14	37.44 N	41.19 E	7.11	55.66	N 47.73 E	0.84
3200.00	1.50	N 58.00 E	100.00	3199.11	38.68 N	43.25 E	7.88	58.02	N 48.19 E	0.25
3300.00	1.50	N 56.00 E	100.00	3299.08	40.10 N	45.44 E	8.62	60.61	N 48.57 E	0.05
3400.00	1.75	N 36.00 E	100.00	3399.04	42.07 N	47.42 E	8.86	63.39	N 48.42 E	0.62
3500.00	1.50	N 34.00 E	100.00	3499.00	44.39 N	49.05 E	8.60	66.16	N 47.86 E	0.26
3600.00	2.00	N 40.00 E	100.00	3598.95	46.81 N	50.91 E	8.44	69.16	N 47.40 E	0.53
3700.00	2.25	N 38.00 E	100.00	3698.88	49.69 N	53.24 E	8.35	72.83	N 46.97 E	0.26
3800.00	2.25	N 34.00 E	100.00	3798.81	52.87 N	55.54 E	8.05	76.68	N 46.41 E	0.16
3900.00	2.25	N 34.00 E	100.00	3898.73	56.12 N	57.74 E	7.61	80.52	N 45.81 E	0.00
4000.00	2.50	N 25.00 E	100.00	3998.64	59.73 N	59.76 E	6.81	84.49	N 45.01 E	0.45
4100.00	2.50	N 32.00 E	100.00	4098.55	63.55 N	61.83 E	5.91	88.67	N 44.21 E	0.31
4200.00	2.25	N 32.00 E	100.00	4198.46	67.07 N	64.03 E	5.31	92.73	N 43.67 E	0.25
4300.00	2.75	N 43.00 E	100.00	4298.37	70.49 N	66.71 E	5.13	97.05	N 43.42 E	0.69
4400.00	2.50	N 35.00 E	100.00	4398.26	74.03 N	69.59 E	5.04	101.60	N 43.23 E	0.44
4500.00	2.75	N 39.00 E	100.00	4498.16	77.68 N	72.35 E	4.77	106.16	N 42.97 E	0.31
4600.00	2.25	N 46.00 E	100.00	4598.06	80.91 N	75.28 E	4.91	110.51	N 42.94 E	0.58
4670.00	2.50	N 46.00 E	70.00	4668.00	82.92 N	77.36 E	5.19	113.41	N 43.01 E	0.36
BAKER HUGHES MULTISHOT 5291' - 9757'										
5291.00	2.14	N 59.30 E	621.00	5288.50	98.25 N	97.08 E	10.27	138.12	N 44.66 E	0.10
5384.00	1.94	N 51.89 E	93.00	5381.44	100.11 N	99.81 E	11.15	141.36	N 44.91 E	0.36
5477.00	1.73	N 63.95 E	93.00	5474.39	101.70 N	102.31 E	12.02	144.25	N 45.17 E	0.47
5570.00	1.83	N 73.73 E	93.00	5567.35	102.73 N	104.99 E	13.40	146.89	N 45.62 E	0.34
5663.00	1.10	N 86.95 E	93.00	5660.31	103.19 N	107.31 E	14.87	148.88	N 46.12 E	0.86
5756.00	1.35	S 70.98 E	93.00	5753.29	102.88 N	109.24 E	16.53	150.06	N 46.72 E	0.57
5849.00	1.27	S 77.79 E	93.00	5846.27	102.31 N	111.28 E	18.46	151.16	N 47.41 E	0.19
5942.00	0.58	S 59.71 E	93.00	5939.26	101.85 N	112.69 E	19.83	151.90	N 47.89 E	0.80
6035.00	0.81	S 46.46 E	93.00	6032.25	101.16 N	113.58 E	20.95	152.10	N 48.31 E	0.30
6128.00	0.59	S 89.52 E	93.00	6125.24	100.71 N	114.53 E	21.98	152.51	N 48.68 E	0.59
6221.00	0.77	S 36.52 E	93.00	6218.24	100.20 N	115.38 E	22.95	152.82	N 49.03 E	0.68
6314.00	0.73	S 53.97 E	93.00	6311.23	99.35 N	116.23 E	24.15	152.91	N 49.48 E	0.25
6408.00	0.46	S 86.92 E	94.00	6405.22	98.98 N	117.10 E	25.05	153.32	N 49.79 E	0.45
6501.00	0.42	S 34.04 E	93.00	6498.22	98.67 N	117.66 E	25.68	153.56	N 50.02 E	0.42
6593.00	0.78	S 54.34 E	92.00	6590.22	98.03 N	118.36 E	26.62	153.68	N 50.37 E	0.45

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LEA COUNTY, NEW MEXICO

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Vert Sect Plane: S 49.61 E

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MEASURED DEPTH (FT)	INCL ANGLE (DEG)	D R I F T DIRECTION (DEG)	COURSE LENGTH (FT)	TRUE VERTICAL DEPTH	T O T A L RECTANGULAR COORDINATES (FT)		VERTICAL SECTION (FT)	C L O S U R E DISTANCE DIRECTION (FT) (DEG)		DOGLEG SEVERITY (DG/100')
6687.00	0.17	S 7.87 E	94.00	6684.21	97.52 N	118.90 E	27.37	153.77	N 50.64 E	0.72
6780.00	0.42	S 59.18 W	93.00	6777.21	97.21 N	118.62 E	27.36	153.36	N 50.67 E	0.42
6873.00	0.71	S 7.65 W	93.00	6870.21	96.46 N	118.25 E	27.56	152.60	N 50.80 E	0.60
6966.00	0.41	S 16.16 W	93.00	6963.20	95.57 N	118.08 E	28.01	151.91	N 51.02 E	0.33
7059.00	1.06	S 12.28 W	93.00	7056.20	94.41 N	117.81 E	28.55	150.97	N 51.29 E	0.70
7152.00	0.75	S 5.90 E	93.00	7149.18	92.96 N	117.69 E	29.40	149.97	N 51.69 E	0.45
7245.00	0.48	S 17.63 W	93.00	7242.18	91.99 N	117.63 E	29.99	149.33	N 51.97 E	0.39
7338.00	0.92	S 6.67 W	93.00	7335.17	90.87 N	117.43 E	30.55	148.48	N 52.26 E	0.49
7431.00	0.73	S 10.80 E	93.00	7428.16	89.55 N	117.45 E	31.43	147.70	N 52.68 E	0.34
7524.00	0.57	S 62.04 W	93.00	7521.16	88.75 N	117.15 E	31.72	146.98	N 52.85 E	0.84
7617.00	0.91	S 34.23 W	93.00	7614.15	87.92 N	116.33 E	31.63	145.82	N 52.92 E	0.52
7710.00	0.55	S 43.28 W	93.00	7707.14	86.99 N	115.61 E	31.69	144.68	N 53.04 E	0.41
7803.00	0.72	S 4.03 W	93.00	7800.14	86.08 N	115.26 E	32.01	143.86	N 53.25 E	0.49
7896.00	1.01	S 21.63 W	93.00	7893.13	84.74 N	114.92 E	32.62	142.78	N 53.60 E	0.42
7989.00	1.11	S 39.13 W	93.00	7986.11	83.28 N	114.05 E	32.90	141.21	N 53.86 E	0.36
8082.00	1.08	S 41.72 W	93.00	8079.09	81.92 N	112.90 E	32.90	139.49	N 54.03 E	0.06
8175.00	0.74	S 70.76 W	93.00	8172.08	81.07 N	111.75 E	32.58	138.06	N 54.04 E	0.60
8268.00	1.13	S 62.69 W	93.00	8265.07	80.45 N	110.36 E	31.93	136.57	N 53.91 E	0.44
8361.00	1.10	S 64.17 W	93.00	8358.05	79.64 N	108.74 E	31.22	134.79	N 53.78 E	0.04
8454.00	0.08	S 41.92 E	93.00	8451.05	79.21 N	107.98 E	30.92	133.92	N 53.74 E	1.21
8547.00	0.97	N 69.44 E	93.00	8544.04	79.43 N	108.77 E	31.37	134.68	N 53.86 E	1.01
8640.00	0.47	N 50.36 E	93.00	8637.03	79.95 N	109.80 E	31.82	135.82	N 53.94 E	0.59
8733.00	0.94	N 9.41 W	93.00	8730.03	80.95 N	109.96 E	31.30	136.55	N 53.64 E	0.87
8826.00	1.13	N 22.35 E	93.00	8823.01	82.55 N	110.19 E	30.43	137.68	N 53.16 E	0.64
8919.00	0.89	N 17.59 W	93.00	8916.00	84.09 N	110.32 E	29.54	138.71	N 52.69 E	0.78
9012.00	0.87	N 39.63 W	93.00	9008.99	85.32 N	109.65 E	28.23	138.93	N 52.11 E	0.36
9105.00	1.33	S 77.57 W	93.00	9101.98	85.63 N	108.15 E	26.88	137.94	N 51.63 E	1.30
9198.00	1.42	S 60.54 W	93.00	9194.95	84.83 N	106.09 E	25.83	135.84	N 51.35 E	0.45
9291.00	1.09	S 79.71 W	93.00	9287.93	84.11 N	104.22 E	24.88	133.92	N 51.09 E	0.57
9384.00	1.41	S 82.49 W	93.00	9380.90	83.80 N	102.21 E	23.55	132.17	N 50.65 E	0.35
9478.00	1.80	S 72.61 W	94.00	9474.87	83.21 N	99.66 E	21.99	129.82	N 50.14 E	0.51
9571.00	1.79	S 78.74 W	93.00	9567.82	82.49 N	96.84 E	20.31	127.21	N 49.58 E	0.21
9664.00	2.07	S 74.93 W	93.00	9660.77	81.77 N	93.79 E	18.45	124.43	N 48.92 E	0.33

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Vert Sect Plane: S 49.61 E

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MEASURED DEPTH (FT)	INCL ANGLE (DEG)	D R I F T DIRECTION (DEG)	COURSE LENGTH (FT)	TRUE VERTICAL DEPTH	T O T A L RECTANGULAR COORDINATES (FT)		VERTICAL SECTION (FT)	C L O S U R E DISTANCE DIRECTION (FT) (DEG)		DOGLEG SEVERITY (DG/100')
9757.00	1.19	N 87.48 W	93.00	9753.73	81.37 N	91.20 E	16.74	122.23	N 48.26 E	1.08
D.I.G. MULTISHOT 9868' - 13903'										
9868.00	2.75	S 15.00 W	111.00	9864.68	78.85 N	89.36 E	16.97	119.18	N 48.58 E	2.48
9961.00	4.25	S 20.00 E	93.00	9957.51	73.46 N	89.96 E	20.92	116.14	N 50.77 E	2.74
10055.00	6.00	S 46.00 E	94.00	10051.14	66.77 N	94.69 E	28.86	115.86	N 54.81 E	3.05
10149.00	7.25	S 46.00 E	94.00	10144.51	59.24 N	102.49 E	39.68	118.38	N 59.97 E	1.33
10243.00	8.75	S 53.00 E	94.00	10237.60	50.81 N	112.47 E	52.74	123.41	N 65.69 E	1.90
10336.00	10.00	S 66.00 E	93.00	10329.37	43.27 N	125.50 E	67.55	132.75	N 70.98 E	2.64
10430.00	12.00	S 71.00 E	94.00	10421.64	36.77 N	142.19 E	84.48	146.87	N 75.50 E	2.36
10524.00	13.25	S 76.00 E	94.00	10513.36	30.98 N	161.89 E	103.23	164.82	N 79.17 E	1.77
10618.00	12.75	S 69.00 E	94.00	10604.96	24.66 N	182.03 E	122.66	183.69	N 82.29 E	1.76
10712.00	12.50	S 70.00 E	94.00	10696.69	17.46 N	201.27 E	141.98	202.02	N 85.04 E	0.35
10805.00	13.00	S 61.00 E	93.00	10787.40	8.94 N	219.88 E	161.67	220.06	N 87.67 E	2.20
10899.00	13.75	S 51.00 E	94.00	10878.86	3.21 S	237.81 E	183.21	237.83	S 89.23 E	2.58
10993.00	15.25	S 42.00 E	94.00	10969.88	19.43 S	254.76 E	206.63	255.50	S 85.64 E	2.88
11087.00	16.75	S 36.00 E	94.00	11060.24	39.58 S	271.00 E	232.06	273.88	S 81.69 E	2.37
11180.00	15.75	S 41.00 E	93.00	11149.53	59.95 S	287.16 E	257.56	293.35	S 78.21 E	1.85
11274.00	12.75	S 46.00 E	94.00	11240.63	76.79 S	303.00 E	280.53	312.57	S 75.78 E	3.45
11368.00	9.75	S 51.00 E	94.00	11332.82	89.01 S	316.65 E	298.85	328.92	S 74.30 E	3.35
11462.00	9.00	S 41.00 E	94.00	11425.57	99.57 S	327.66 E	314.08	342.45	S 73.10 E	1.90
11555.00	10.00	S 39.00 E	93.00	11517.29	111.33 S	337.51 E	329.21	355.40	S 71.74 E	1.13
11649.00	11.75	S 33.00 E	94.00	11609.60	125.70 S	347.86 E	346.40	369.88	S 70.13 E	2.21
11743.00	11.75	S 34.00 E	94.00	11701.63	141.66 S	358.43 E	364.79	385.41	S 68.43 E	0.22
11837.00	13.25	S 33.00 E	94.00	11793.40	158.63 S	369.64 E	384.33	402.25	S 66.77 E	1.61
11931.00	14.75	S 29.00 E	94.00	11884.61	178.14 S	381.31 E	405.86	420.87	S 64.96 E	1.90
12024.00	14.50	S 29.00 E	93.00	11974.59	198.67 S	392.70 E	427.84	440.09	S 63.16 E	0.27
12118.00	16.75	S 32.00 E	94.00	12065.12	220.46 S	405.58 E	451.77	461.63	S 61.47 E	2.54
12212.00	17.00	S 34.00 E	94.00	12155.07	243.34 S	420.45 E	477.91	485.78	S 59.94 E	0.67
12306.00	17.25	S 37.00 E	94.00	12244.90	265.86 S	436.52 E	504.75	511.11	S 58.66 E	0.98
12399.00	17.75	S 41.00 E	93.00	12333.60	287.57 S	454.12 E	532.22	537.51	S 57.66 E	1.40
12493.00	20.00	S 49.00 E	94.00	12422.56	308.94 S	475.66 E	562.47	567.18	S 57.00 E	3.64
12587.00	21.75	S 47.00 E	94.00	12510.38	331.36 S	500.53 E	595.95	600.28	S 56.49 E	2.01
12681.00	23.00	S 53.00 E	94.00	12597.32	354.30 S	527.94 E	631.68	635.80	S 56.13 E	2.77

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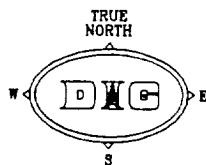
SANTA FE ENERGY RESOURCES, INC.
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LEA COUNTY, NEW MEXICO

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Vert Sect Plane: S 49.61 E

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MEASURED DEPTH (FT)	INCL ANGLE (DEG)	D R I F T DIRECTION (DEG)	COURSE LENGTH (FT)	TRUE VERTICAL DEPTH	T O T A L RECTANGULAR COORDINATES (FT)		VERTICAL SECTION (FT)	C L O S U R E DISTANCE DIRECTION (FT) (DEG)		DOGLEG SEVERITY (DG/100')
12774.00	22.25	S 51.00 E	93.00	12683.16	376.31 S	556.13 E	667.42	671.49	S 55.92 E	1.16
12868.00	20.50	S 49.00 E	94.00	12770.69	398.31 S	582.39 E	701.68	705.57	S 55.63 E	2.02
12962.00	18.25	S 37.00 E	94.00	12859.40	420.88 S	603.68 E	732.52	735.91	S 55.12 E	4.85
13056.00	22.00	S 30.00 E	94.00	12947.66	447.90 S	621.35 E	763.48	765.95	S 54.21 E	4.73
13150.00	26.25	S 24.00 E	94.00	13033.44	482.15 S	638.62 E	798.83	800.19	S 52.95 E	5.21
13243.00	29.75	S 19.00 E	93.00	13115.55	522.78 S	654.50 E	837.26	837.66	S 51.38 E	4.53
13337.00	29.50	S 19.00 E	94.00	13197.27	566.71 S	669.63 E	877.25	877.25	S 49.76 E	0.27
13431.00	32.00	S 15.00 E	94.00	13278.05	612.67 S	683.61 E	917.67	917.98	S 48.13 E	3.43
13525.00	32.00	S 15.00 E	94.00	13357.77	660.78 S	696.51 E	958.67	960.08	S 46.51 E	0.00
13618.00	33.00	S 16.00 E	93.00	13436.20	708.93 S	709.86 E	1000.05	1003.24	S 45.04 E	1.22
13712.00	32.00	S 14.00 E	94.00	13515.48	757.70 S	722.95 E	1041.62	1047.27	S 43.66 E	1.56
13806.00	32.00	S 14.00 E	94.00	13595.20	806.04 S	735.00 E	1082.11	1090.83	S 42.36 E	0.00
13903.00	29.50	S 11.00 E	97.00	13678.56	854.43 S	745.77 E	1121.68	1134.12	S 41.12 E	3.02

SANTA FE ENERGY RESOURCES, INC.
SINAGUA 18 FEDERAL COM. #2
LEA COUNTY, NEW MEXICO



HORIZONTAL PLAN
SCALE: 200 FEET/DIVISION

