

SL 2080/N 560/W
BHL 1607/N 578/W
Target 1980/N 560/W 32.4' from target



**REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY**

SAGE ENERGY COMPANY

COMPANY

JOHN ETCHEVERY A WELL NO. 2 F 2080/N 560/W

WELL NAME

LEA COUNTY, NEW MEXICO

29-14-34

LOCATION

JOB NUMBER

430-1131
430-1131
430-1131

TYPE OF SURVEY

GYROSCOPIC MULTI-SHOT SURVEY
MAGNETIC MULTI-SHOT SURVEY
MAGNETIC MULTI-SHOT SURVEY

DATE

21/FEB/90
21/FEB/90
02/MAR/90

SURVEY BY LARRY PARHAM, TIM STEPHENS

OFFICE MIDLAND

EASTMAN CHRISTENSEN

RECORD OF SURVEY

FOR

* OPERATOR : SAGE ENERGY COMPANY *
* WELL NAME : JOHN ETCHEVERY A NO. 2 *
* LOCATION : LEA COUNTY, NEW MEXICO *
* JOB NUMBER : *
* RIG : ZIA RIG 7 *
* DECLINATION : 10.00 E *
* *
* PLANE OF VERTICAL SECTION *
* *
* DIRECTION : N O O E *
* *

EC DISTRICT : WEST TEXAS BASE

SAGE ENERGY COMPANY
JOHN ETCHEVERY A NO. 2
LEA COUNTY, NEW MEXICO

DATE PRINTED : 21-MAR-90
OUR REF. NO. : S01400.4SZ
JOB NUMBER :

PAGE NO. 2

PBHL : N O O E

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	RECTANGULAR COORDINATES	CLOSURE DISTANCE	DIRECTION D M	DOGLEG SEVERITY
0.00	0 0 N 0	0 E	0.00	0.00	0.00	N 0.00 E	0.00	S 90 O	0.00
100.00	0 30 N 34	0 W	100.00	100.00	0.36	N 0.24 W	0.44	N 34 O	0.50
200.00	0 15 N 10	0 W	100.00	200.00	0.97	N 0.49 W	1.08	N 26 49 W	0.29
300.00	0 30 N 12	0 E	100.00	299.99	1.62	N 0.48 W	1.69	N 16 25 W	0.28
400.00	0 0 N 0	0 E	100.00	399.99	2.04	N 0.39 W	2.08	N 10 41 W	0.50
500.00	0 15 N 56	0 W	100.00	499.99	2.17	N 0.57 W	2.24	N 14 39 W	0.25
600.00	0 0 N 0	0 E	100.00	599.99	2.29	N 0.75 W	2.41	N 18 4 W	0.25
700.00	0 0 N 0	0 E	100.00	699.99	2.29	N 0.75 W	2.41	N 18 4 W	0.00
800.00	0 30 S 1	0 E	100.00	799.99	1.85	N 0.74 W	1.99	N 21 45 W	0.50
900.00	0 15 N 42	0 W	100.00	899.99	1.66	N 1.21 W	2.06	N 36 0 W	0.71
1000.00	0 15 S 68	0 W	100.00	999.99	1.76	N 1.61 W	2.38	N 42 29 W	0.29
1100.00	0 15 S 13	0 E	100.00	1099.99	1.40	N 1.79 W	2.28	N 52 0 W	0.32
1200.00	0 15 S 43	0 E	100.00	1199.99	1.02	N 1.59 W	1.89	N 57 20 W	0.13
1300.00	0 15 N 59	0 E	100.00	1299.99	0.96	N 1.19 W	1.53	N 51 1 W	0.31
1400.00	0 0 N 0	0 E	100.00	1399.98	1.08	N 1.01 W	1.47	N 43 3 W	0.25
1500.00	0 0 N 0	0 E	100.00	1499.98	1.08	N 1.01 W	1.47	N 43 3 W	0.00
1600.00	0 15 S 57	0 E	100.00	1599.98	0.96	N 0.82 W	1.26	N 40 41 W	0.25
1700.00	0 15 N 78	0 E	100.00	1699.98	0.88	N 0.41 W	0.97	N 24 43 W	0.19
1800.00	0 30 N 3	0 E	100.00	1799.98	1.34	N 0.01 W	1.34	N 0 24 W	0.50
1900.00	0 15 S 75	0 W	100.00	1899.98	1.70	N 0.45 W	1.76	N 14 44 W	0.62
2000.00	0 45 S 86	0 E	100.00	1999.98	1.09	N 0.39 W	1.15	N 19 38 W	0.99
2100.00	0 30 N 60	0 E	100.00	2099.97	1.33	N 0.66 E	1.49	N 26 27 E	0.44
2200.00	0 15 N 86	0 E	100.00	2199.97	1.52	N 1.28 E	1.99	N 40 10 E	0.30
2300.00	0 45 S 44	0 E	100.00	2299.96	1.22	N 2.07 E	2.40	N 59 36 E	0.62
2400.00	0 45 N 77	0 E	100.00	2399.95	0.86	N 3.27 E	3.39	N 75 16 E	0.74
2500.00	0 15 N 87	0 E	100.00	2499.95	0.98	N 4.14 E	4.25	N 76 39 E	0.51
2600.00	0 45 S 53	0 E	100.00	2599.95	0.73	N 4.96 E	5.01	N 81 36 E	0.58
2700.00	0 15 S 79	0 E	100.00	2699.94	0.38	N 5.75 E	5.76	N 86 14 E	0.54
2800.00	0 30 S 4	0 E	100.00	2799.94	-0.08	N 6.15 E	6.15	S 89 17 E	0.50
2900.00	0 15 S 8	0 E	100.00	2899.94	-0.73	N 6.22 E	6.22	S 89 19 E	0.25

CONTINUED ON NEXT PAGE ...



SAGE ENERGY COMPANY
JOHN ETCHEVERY A NO. 2
LEA COUNTY, NEW MEXICO

DATE PRINTED : 21-MAR-90
OUR REF. NO. : S01400.4SZ
JOB NUMBER :

PAGE NO. 3

PBHL : N O O E

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	RECTOR CORD IN A T E S	C L O S U R E DISTANCE	DIRECTION D M	DOGLEG SEVERITY
3000.00	1 0 S 10	0 E	100.00	2999.93	-1.81	1.81 S	6.64	S 74 13 E	0.75
3100.00	1 0 S 28	0 W	100.00	3099.92	-3.50	3.50 S	7.05	S 60 15 E	0.65
3200.00	0 45 S 51	0 W	100.00	3199.90	-4.67	4.67 S	6.96	S 47 52 E	0.43
3300.00	0 45 S 33	0 W	100.00	3299.90	-5.64	5.64 S	7.08	S 37 16 E	0.23
3400.00	0 45 S 20	0 W	100.00	3399.89	-6.81	6.81 S	7.75	S 28 34 E	0.17
3500.00	0 45 S 5	0 E	100.00	3499.88	-8.09	8.09 S	8.83	S 23 36 E	0.32
3600.00	1 0 S 2	0 E	100.00	3599.87	-9.62	9.62 S	10.28	S 20 41 E	0.25
3700.00	0 45 S 5	0 W	100.00	3699.85	-11.14	11.14 S	11.71	S 17 51 E	0.27
3800.00	0 0 N 0	0 E	100.00	3799.85	-11.79	11.79 S	12.31	S 16 40 E	0.75
3900.00	0 15 N 75	0 E	100.00	3899.85	-11.74	11.74 S	12.32	S 17 41 E	0.25
4000.00	0 30 N 41	0 E	100.00	3999.85	-11.40	11.40 S	12.18	S 20 38 E	0.32
4100.00	0 30 N 81	0 E	100.00	4099.85	-10.98	10.98 S	12.08	S 24 39 E	0.34
4200.00	0 30 S 82	0 E	100.00	4199.84	-10.97	10.97 S	12.46	S 28 18 E	0.15
4300.00	0 0 N 0	0 E	100.00	4299.84	-11.03	11.03 S	12.73	S 29 53 E	0.50
4400.00	0 15 S 31	0 W	100.00	4399.84	-11.22	11.22 S	12.83	S 29 2 E	0.25
4500.00	0 0 N 0	0 E	100.00	4499.84	-11.41	11.41 S	12.94	S 28 12 E	0.25
4600.00	0 0 N 0	0 E	100.00	4599.84	-11.41	11.41 S	12.94	S 28 12 E	0.00
4700.00	0 0 N 0	0 E	100.00	4699.84	-11.41	11.41 S	12.94	S 28 12 E	0.00
4800.00	0 0 N 0	0 E	100.00	4799.84	-11.41	11.41 S	12.94	S 28 12 E	0.00
4900.00	0 0 N 0	0 E	100.00	4899.84	-11.41	11.41 S	12.94	S 28 12 E	0.00
5000.00	0 15 N 26	0 W	100.00	4999.84	-11.21	11.21 S	12.73	S 28 14 E	0.25
5100.00	0 45 N 14	0 E	100.00	5099.83	-10.36	10.36 S	11.94	S 29 48 E	0.58
5200.00	0 30 N 15	0 W	100.00	5199.83	-9.28	9.28 S	11.01	S 32 33 E	0.40
5300.00	0 45 N 31	0 W	100.00	5299.82	-8.28	8.28 S	9.93	S 33 35 E	0.30
5326.00	2 45 N 18	0 W	26.00	5325.81	-7.55	7.55 S	9.15	S 34 22 E	7.79
5420.00	3 0 N 28	0 W	94.00	5419.69	-3.22	3.22 S	4.63	S 45 56 E	0.60
5514.00	3 45 N 37	0 W	94.00	5513.53	1.44	1.44 N	1.49	N 13 55 E	0.97
5608.00	5 15 N 44	0 W	94.00	5607.24	7.05	7.05 N	8.32	N 32 9 W	1.70
5702.00	4 45 N 46	0 W	94.00	5700.88	12.84	12.84 N	16.41	N 38 31 W	0.56
5796.00	4 0 N 42	0 W	94.00	5794.60	18.00	18.00 N	23.57	N 40 11 W	0.86

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SAGE ENERGY COMPANY
JOHN ETCHEVERY A NO. 2
LEA COUNTY, NEW MEXICO

DATE PRINTED : 21-MAR-90
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PAGE NO. 4

PBHL : N O O E

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	R E C T A N G U L A R C O O R D I N A T E S	C L O S U R E DISTANCE	D I R E C T I O N D M	DOGLEG SEVERITY
5890.00	3 45 N 41	0 W	94.00	5888.39	22.76	22.76 N	19.41 W	29.91 N 40 28 W	0.28
5984.00	3 15 N 38	0 W	94.00	5982.21	27.18	27.18 N	23.06 W	35.65 N 40 19 W	0.57
6078.00	3 0 N 41	0 W	94.00	6076.07	31.14	31.14 N	26.32 W	40.77 N 40 13 W	0.32
6172.00	2 15 N 40	0 W	94.00	6169.97	34.41	34.41 N	29.12 W	45.08 N 40 14 W	0.80
6266.00	2 0 N 26	0 W	94.00	6263.91	37.33	37.33 N	31.01 W	48.53 N 39 43 W	0.61
6360.00	1 30 N 13	0 W	94.00	6357.86	40.03	40.03 N	31.97 W	51.22 N 38 37 W	0.68
6454.00	1 30 N 1	0 W	94.00	6451.83	42.46	42.46 N	32.27 W	53.33 N 37 14 W	0.33
6548.00	1 30 N 5	0 E	94.00	6545.80	44.92	44.92 N	32.18 W	55.26 N 35 37 W	0.17
6642.00	1 15 N 1	0 W	94.00	6639.77	47.17	47.17 N	32.10 W	57.06 N 34 14 W	0.31
6736.00	1 15 N 6	0 W	94.00	6733.75	49.22	49.22 N	32.23 W	58.83 N 33 13 W	0.12
6830.00	1 0 N 14	0 W	94.00	6827.73	51.04	51.04 N	32.55 W	60.53 N 32 32 W	0.31
6924.00	1 0 N 16	0 W	94.00	6921.72	52.62	52.62 N	32.97 W	62.10 N 32 4 W	0.04
7018.00	1 0 N 23	0 W	94.00	7015.70	54.17	54.17 N	33.52 W	63.70 N 31 45 W	0.13
7112.00	0 45 N 20	0 W	94.00	7109.69	55.50	55.50 N	34.04 W	65.11 N 31 31 W	0.27
7206.00	0 45 N 28	0 W	94.00	7203.69	56.62	56.62 N	34.54 W	66.33 N 31 23 W	0.11
7300.00	0 30 N 37	0 W	94.00	7297.68	57.49	57.49 N	35.10 W	67.36 N 31 24 W	0.28
7394.00	0 30 N 57	0 W	94.00	7391.68	58.05	58.05 N	35.69 W	68.14 N 31 35 W	0.18
7488.00	0 45 N 76	0 W	94.00	7485.67	58.45	58.45 N	36.63 W	68.98 N 32 4 W	0.34
7582.00	0 30 N 69	0 W	94.00	7579.66	58.76	58.76 N	37.61 W	69.77 N 32 37 W	0.28
7676.00	0 30 N 66	0 W	94.00	7673.66	59.08	59.08 N	38.37 W	70.44 N 33 0 W	0.03
7770.00	0 30 N 75	0 W	94.00	7767.66	59.35	59.35 N	39.14 W	71.09 N 33 24 W	0.08
7864.00	0 30 N 68	0 W	94.00	7861.65	59.61	59.61 N	39.92 W	71.74 N 33 48 W	0.06
7958.00	0 30 N 52	0 W	94.00	7955.65	60.02	60.02 N	40.63 W	72.48 N 34 6 W	0.15
8025.00	0 45 N 56	0 E	67.00	8022.65	60.65	60.65 N	40.60 W	72.99 N 33 48 W	1.53
8119.00	3 30 N 4	0 E	94.00	8116.57	63.56	63.56 N	38.92 W	74.53 N 31 29 W	3.29
8213.00	6 15 N 2	0 E	94.00	8210.22	71.54	71.54 N	38.50 W	81.24 N 28 17 W	2.93
8306.00	7 15 N 3	0 E	93.00	8302.58	82.46	82.46 N	38.03 W	90.81 N 24 45 W	1.08
8400.00	8 15 N 3	0 E	94.00	8395.72	95.12	95.12 N	37.36 W	102.19 N 21 27 W	1.06
8494.00	10 0 N 2	0 E	94.00	8488.53	110.01	110.01 N	36.71 W	115.97 N 18 27 W	1.87
8588.00	11 0 N 2	0 E	94.00	8580.95	127.13	127.13 N	36.11 W	132.15 N 15 52 W	1.06

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SAGE ENERGY COMPANY
JOHN ETCHEVERY A NO. 2
LEA COUNTY, NEW MEXICO

DATE PRINTED : 21-MAR-90
OUR REF. NO. : S01400.4SZ
JOB NUMBER :

PAGE NO. 5

PBHL : N O O E

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	VERTICAL SECTION	RECTANGULAR COORDINATES	CLOSURE DISTANCE	DIRECTION D M	DOGLEG SEVERITY	
8681.00	12 45	N 1	0 E	93.00	8671.96	146.26	146.26 N	35.61 W	150.53 N 13 41 W	1.89
8775.00	13 0	N 1	0 W	94.00	8763.59	167.20	167.20 N	35.61 W	170.96 N 12 1 W	0.54
8869.00	13 0	N 0	0 E	94.00	8855.18	188.35	188.35 N	35.80 W	191.72 N 10 46 W	0.24
8963.00	12 45	N 0	0 E	94.00	8946.82	209.29	209.29 N	35.80 W	212.33 N 9 42 W	0.27
9056.00	12 15	N 2	0 E	93.00	9037.61	229.42	229.42 N	35.45 W	232.14 N 8 47 W	0.71
9150.00	12 30	N 3	0 E	94.00	9129.43	249.54	249.54 N	34.57 W	251.93 N 7 53 W	0.35
9244.00	11 30	N 8	0 E	94.00	9221.38	268.99	268.99 N	32.70 W	270.97 N 6 56 W	1.53
9338.00	11 15	N 11	0 E	94.00	9313.53	287.27	287.27 N	29.64 W	288.80 N 5 53 W	0.68
9431.00	11 30	N 8	0 E	93.00	9404.70	305.36	305.36 N	26.61 W	306.52 N 4 59 W	0.69
9525.00	11 0	N 11	0 E	94.00	9496.89	323.45	323.45 N	23.58 W	324.31 N 4 10 W	0.82
9619.00	11 0	N 11	0 E	94.00	9589.17	341.05	341.05 N	20.16 W	341.65 N 3 23 W	0.00
9713.00	11 0	N 11	0 E	94.00	9681.44	358.66	358.66 N	16.74 W	359.05 N 2 40 W	0.00
9806.00	10 15	N 12	0 E	93.00	9772.85	375.46	375.46 N	13.32 W	375.70 N 2 2 W	0.83
9900.00	10 15	N 14	0 E	94.00	9865.35	391.76	391.76 N	9.56 W	391.88 N 1 24 W	0.38
9994.00	9 30	N 15	0 E	94.00	9957.95	407.37	407.37 N	5.52 W	407.41 N 0 47 W	0.82
10088.00	9 0	N 17	0 E	94.00	10050.73	421.89	421.89 N	1.36 W	421.89 N 0 11 W	0.63
10181.00	9 0	N 19	0 E	93.00	10142.58	435.73	435.73 N	3.14 E	435.74 N 0 25 E	0.34
10275.00	8 15	N 19	0 E	94.00	10235.52	449.06	449.06 N	7.73 E	449.12 N 0 59 E	0.80
10369.00	8 0	N 23	0 E	94.00	10328.58	461.46	461.46 N	12.49 E	461.62 N 1 33 E	0.66
10463.00	8 0	N 24	0 E	94.00	10421.66	473.45	473.45 N	17.71 E	473.78 N 2 8 E	0.15

CLOSURE - DISTANCE : 473.78
DIRECTION : N 2 8 E

REPORT UNITS : Feet
SURVEY CALCULATION METHOD : Radius of curvature

Accepted by :
Checked by :

SURVEY RUN INFORMATION

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GYROSCOPIC MULTI-SHOT SURVEY	430-1131
SURVEYOR: LARRY PARHAM	(0'-4400')
MAGNETIC MULTI-SHOT SURVEY	430-1131
SURVEYOR: LARRY PARHAM	(4400'-5300')

