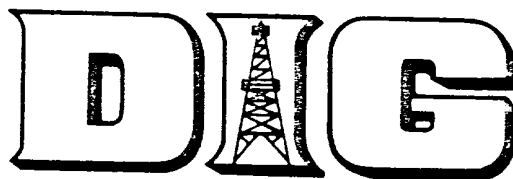


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SUB-SURFACE
DIRECTIONAL
SURVEY
REPORT

PENNZOIL COMPANY

COMPANY

VIERSEN WELL NO. 3

WELL NAME

LEA COUNTY, NEW MEXICO

STATE AND COUNTY

CERTIFIED REPORT

RECEIVED
FEB 9 1987
OCD
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CUSTOMER : PENNZOIL COMPANY

WELL # : VIERSEN WELL NO. 3

LOCATION : LEA COUNTY, NEW MEXICO

DATE : 1-19-87, 1-19-87, 2-01-87

WELL TYPE : GYRO, MULTISHOT, MULTISHOT

WELL # : GS-1808, MS-1807, MS-1815

SURVEYOR : L.MASSEY, L.MASSEY, L.MASSEY

DEPTH : 0'-4175', 4175'-8865', 8865'-11240'

DECL. : 9 DEGREES EAST

LEV. : 3774.6'

WELL # : WT-BB7S

METHOD : RADIUS OF CURVATURE

SECTION : S00E

WELL STATION DATA:

SURF INCL.	HOLE	COURSE	VERTICAL	SUBSEA	VERTICAL	RECTANGULAR	C L O S U R E	DUG-LEG
PTH ANGLE	DIRECTION	LENGTH	DEPTH	DEPTH	SECTION	COORDINATES	DISTANCE	SEVERITY
FEET	DEGS.	FEET	FEET	FEET	FEET	N/S	FEET	DEGS.
40.00	2.00	S 67.00 W	14.00	11234.41	7459.81	-6.99	6.99 N	63.47 E
								63.85' N 83.72 E
								0.00

THIS SURVEY IS CORRECT TO THE
BEST OF MY KNOWLEDGE AND IS
SUPPORTED BY ACTUAL FIELD DATA.

Larry Massey
DIG REPRESENTATIVE

ENNZOIL COMPANY
IERSEN WELL NO. 3
T-BB7S

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87/02/03

MEASURED	INCL.	HOLE	COURSE	TRUE	VERTICAL	SUBSEA	VERTICAL	RECTANGULAR	CLOSURE	DIRECTION	SEVERITY
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	DEPTH	DEPTH	SECTION	COORDINATES	DISTANCE	DIRECTION	DUG-LEI
FEET	DEGS.	DEGS.	FEET	FEET	FEET	FEET	FEET	N/S	E/W	DEGS.	DG/100F
0.00	0.00	* * * * *	0.00	0.00	-3774.60	0.00	0.00	0.00 N	0.00 E	0.00' N 00.00 E	0.00
100.00	.70	N 58.00 E	100.00	100.00	-3674.60	-32	.32 N	.61' N	.52 E	.61' N 58.00 E	.70
200.00	.90	S 82.00 E	100.00	199.99	-3574.61	-61	.61 N	1.95' N	1.86 E	1.95' N 71.86 E	.58
300.00	1.00	S 67.00 E	100.00	299.97	-3474.63	-17	.17 N	3.45' N	3.45 E	3.45' N 87.24 E	.27
400.00	1.20	S 53.00 E	100.00	399.96	-3374.64	.79	.79 S	5.17' S	5.11 E	5.17' S 81.20 E	.33
500.00	1.10	S 49.00 E	100.00	499.94	-3274.66	2.05	2.05 S	6.67' S	6.67 E	6.98' S 72.88 E	.13
600.00	1.10	S 40.00 E	100.00	599.92	-3174.68	3.42	3.42 S	8.01' S	8.01 E	8.71' S 66.87 E	.17
700.00	1.00	S 36.00 E	100.00	699.90	-3074.70	4.87	4.87 S	9.14' S	9.14 E	10.35' S 61.97 E	.12
800.00	.90	S 40.00 E	100.00	799.89	-2974.71	6.17	6.17 S	10.16' S	10.16 E	11.89' S 58.72 E	.12
900.00	1.00	S 49.00 E	100.00	899.87	-2874.73	7.35	7.35 S	11.32' S	11.32 E	13.50' S 57.00 E	.18
000.00	.90	S 48.00 E	100.00	999.86	-2774.74	8.45	8.45 S	12.56' S	12.56 E	15.14' S 56.07 E	.10
100.00	.90	S 39.00 E	100.00	1099.85	-2674.75	9.59	9.59 S	13.64' S	13.64 E	16.68' S 54.90 E	.14
200.00	.90	S 37.00 E	100.00	1199.83	-2574.77	10.83	10.83 S	14.61' S	14.61 E	18.18' S 53.46 E	.03
300.00	.50	S 39.00 E	100.00	1299.83	-2474.77	11.79	11.79 S	15.36' S	15.36 E	19.36' S 52.49 E	.40
400.00	.80	S 51.00 E	100.00	1399.82	-2374.78	12.59	12.59 S	16.16' S	16.16 E	20.49' S 52.08 E	.33
500.00	.60	S 53.00 E	100.00	1499.81	-2274.79	13.34	13.34 S	17.13' S	17.13 E	21.71' S 52.08 E	.20
600.00	.50	S 51.00 E	100.00	1599.81	-2174.79	13.93	13.93 S	17.88' S	17.88 E	22.67' S 52.07 E	.10
700.00	.40	S 23.00 E	100.00	1699.80	-2074.80	14.56	14.56 S	18.35' S	18.35 E	23.42' S 51.58 E	.24
800.00	.40	S 47.00 E	100.00	1799.80	-1974.80	15.12	15.12 S	18.75' S	18.75 E	24.09' S 51.11 E	.17
900.00	.40	S 22.00 E	100.00	1899.80	-1874.80	15.69	15.69 S	19.14' S	19.14 E	24.75' S 50.65 E	.17
000.00	0.00	* * * * *	100.00	1999.80	-1774.80	16.02	16.02 S	19.27' S	19.27 E	25.06' S 50.27 E	.40
00.00	0.00	* * * * *	100.00	2099.80	-1674.80	16.02	16.02 S	19.27' S	19.27 E	25.06' S 50.27 E	0.00
00.00	.10	N 19.00 W	100.00	2199.80	-1574.80	15.93	15.93 S	19.24' S	19.24 E	24.98' S 50.37 E	.10
00.00	.20	S 06.00 E	100.00	2299.80	-1474.80	15.97	15.97 S	19.07' S	19.07 E	24.87' S 50.05 E	.30
00.00	.30	N 35.00 E	100.00	2399.80	-1374.80	16.06	16.06 S	19.39' S	19.39 E	25.18' S 50.38 E	.47

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INNIZOIL COMPANY

IERSEN WELL NO. 3

IT-BB7S

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MEASURED INCL. ANGLE DEGS. HOLE DIRECTION DEGS. COURSE LENGTH FEET TRUE VERTICAL DEPTH FEET SUBSEA DEPTH FEET VERTICAL SECTION FEET RECTANGULAR COORDINATES N/S feet E/W feet CLOSURE DISTANCE FEET DEGS. DOG-LEG SEVERITY DG/1000

2500.00	.10	S 14.00 E	100.00	2499.80	-1274.80	16.11	16.11 S	19.67 E	25.42'	S 50.68 E	.37
2600.00	.50	S 66.00 E	100.00	2599.80	-1174.80	16.50	16.50 S	19.99 E	25.92'	S 50.47 E	.45
2700.00	.40	N 39.00 E	100.00	2699.79	-1074.81	16.33	16.33 S	20.70 E	26.36'	S 51.74 E	.55
2800.00	.30	N 67.00 E	100.00	2799.79	-974.81	15.96	15.96 S	21.19 E	26.52'	S 53.00 E	.20
2900.00	.80	N 87.00 E	100.00	2899.79	-874.81	15.75	15.75 S	22.12 E	27.15'	S 54.55 E	.53
3000.00	.90	S 61.00 E	100.00	2999.77	-774.83	16.08	16.08 S	23.54 E	28.51'	S 55.67 E	.48
3100.00	1.00	S 61.00 E	100.00	3099.76	-674.84	16.88	16.88 S	24.99 E	30.16'	S 55.97 E	.10
3200.00	1.00	S 74.00 E	100.00	3199.75	-574.85	17.55	17.55 S	26.60 E	31.87'	S 56.59 E	.23
3300.00	1.00	S 55.00 E	100.00	3299.73	-474.87	18.29	18.29 S	28.17 E	33.59'	S 57.00 E	.33
3400.00	.80	S 58.00 E	100.00	3399.72	-374.88	19.16	19.16 S	29.48 E	35.16'	S 56.98 E	.21
3500.00	.60	S 88.00 E	100.00	3499.71	-274.89	19.51	19.51 S	30.63 E	36.32'	S 57.50 E	.41
3600.00	.90	S 89.00 E	100.00	3599.70	-174.90	19.55	19.55 S	31.94 E	37.45'	S 58.53 E	.30
3700.00	.80	N 69.00 E	100.00	3699.69	-74.91	19.29	19.29 S	33.39 E	38.57'	S 59.98 E	.34
3800.00	.80	N 67.00 E	100.00	3799.68	25.08	18.77	18.77 S	34.69 E	39.44'	S 61.58 E	.03
3900.00	.60	S 77.00 E	100.00	3899.67	125.07	18.66	18.66 S	35.89 E	40.45'	S 62.52 E	.47
4000.00	.80	N 84.00 E	100.00	3999.67	225.07	18.74	18.74 S	37.10 E	41.56'	S 63.20 E	.30
4100.00	.90	N 88.00 E	100.00	4099.65	325.05	18.64	18.64 S	38.58 E	42.84'	S 64.22 E	.12
4200.00	.90	N 81.00 E	75.00	4174.65	400.05	18.52	18.52 S	39.75 E	43.86'	S 65.02 E	.15
GYRO SURVEY ENDS AT 4175',...MULTISHOT SURVEY COMMENCES AT 4175'											
4300.00	.70	N 56.00 E	88.00	4262.64	408.04	18.08	18.08 S	40.89 E	44.70'	S 66.15 E	.45
4400.00	.80	N 36.00 E	93.00	4355.63	581.03	17.23	17.23 S	41.76 E	45.17'	S 67.57 E	.30
4500.00	.50	N 34.00 E	92.00	4447.62	673.02	16.38	16.38 S	42.36 E	45.41'	S 68.86 E	.33
4600.00	.50	N 37.00 E	93.00	4540.62	766.02	15.72	15.72 S	42.83 E	45.62'	S 69.85 E	.03
4700.00	.50	N 56.00 E	93.00	4633.62	859.02	15.16	15.16 S	43.41 E	45.90'	S 70.75 E	.18
4800.00	.60	N 53.00 E	92.00	4725.61	951.01	14.65	14.65 S	44.13 E	46.50'	S 71.64 E	.11
4900.00	.60	N 56.00 E	93.00	4818.61	1044.01	14.08	14.08 S	44.92 E	47.00'	S 72.59 E	.03

ENNZOIL COMPANY
IERSEN WELL NO. 3
T-BE7S

PAGE 3
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MEASURED DEPTH FEET	INCL. ANGLE DEGS.	HOLE DIRECTION DEGS.	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	SUBSEA DEPTH FEET	VERTICAL SECTION FEET	N/S	RECTANGULAR COORDINATES E/W	C L O S U R E DISTANCE FEET	DIRECTION DEGS.	DOG-LEG SEVERITY DG/100F
1912.00	.40	N 38.00 E	93.00	4911.60	1137.00	13.53	13.53 S	45.52 E	47.48' S 73.44 E		.27
1004.00	.50	N 22.00 E	92.00	5003.60	1229.00	12.91	12.91 S	45.88 E	47.66' S 74.28 E		.17
097.00	.50	N 05.00 E	93.00	5096.60	1322.00	12.12	12.12 S	46.06 E	47.63' S 75.26 E		.16
190.00	.60	N 00.00 E	93.00	5189.59	1414.99	11.23	11.23 S	46.10 E	47.45' S 76.31 E		.12
282.00	.90	N 13.00 E	92.00	5281.58	1506.98	10.04	10.04 S	46.24 E	47.32' S 77.75 E		.37
315.00	1.00	N 15.00 E	33.00	5314.58	1539.98	9.51	9.51 S	46.37 E	47.34' S 78.41 E		.32
468.00	1.00	N 12.00 E	153.00	5467.56	1692.96	6.91	6.91 S	47.00 E	47.50' S 81.63 E		.03
560.00	1.10	N 18.00 E	92.00	5559.54	1784.94	5.28	5.28 S	47.43 E	47.72' S 83.64 E		.16
553.00	1.20	N 27.00 E	93.00	5652.52	1877.92	3.56	3.56 S	48.14 E	48.28' S 85.77 E		.22
746.00	1.40	N 12.00 E	93.00	5745.50	1970.90	1.58	1.58 S	48.65 E	48.87' S 88.15 E		.42
338.00	1.20	N 11.00 E	92.00	5837.47	2062.87	-4.7	.47 N	49.26 E	49.27' N 89.46 E		.22
731.00	1.20	N 00.00 E	93.00	5930.45	2155.85	-2.40	2.40 N	49.45 E	49.51' N 87.22 E		.25
124.00	1.20	N 09.00 W	93.00	6023.43	2248.83	-4.34	4.34 N	49.30 E	49.49' N 84.96 E		.20
16.00	1.00	N 06.00 E	92.00	6115.42	2340.82	-6.10	6.10 N	49.25 E	49.63' N 82.93 E		.38
109.00	.80	N 04.00 E	93.00	6208.41	2433.81	-7.56	7.56 N	49.38 E	49.95' N 81.30 E		.22
101.00	1.00	N 06.00 E	92.00	6300.39	2525.79	-9.00	9.00 N	49.50 E	50.32' N 79.70 E		.22
94.00	1.00	N 26.00 E	93.00	6393.38	2618.78	-10.55	10.55 N	49.95 E	51.05' N 78.07 E		.37
87.00	1.10	N 42.00 E	93.00	6486.36	2711.76	-11.96	11.96 N	50.90 E	52.29' N 76.78 E		.33
79.00	1.10	N 43.00 E	92.00	6578.35	2803.75	-13.26	13.26 N	52.09 E	53.75' N 75.72 E		.02
72.00	1.00	N 44.00 E	93.00	6671.33	2896.73	-14.50	14.50 N	53.27 E	55.20' N 74.77 E		.11
65.00	1.00	N 45.00 E	93.00	6764.32	2989.72	-15.66	15.66 N	54.40 E	56.61' N 73.95 E		.02
57.00	.90	N 53.00 E	92.00	6856.30	3081.70	-16.66	16.66 N	55.55 E	58.00' N 73.31 E		.18
50.00	1.00	N 76.00 E	93.00	6949.29	3174.69	-17.31	17.31 N	56.94 E	59.51' N 73.09 E		.42
43.00	1.00	N 77.00 E	93.00	7042.28	3267.68	-17.69	17.69 N	58.51 E	61.13' N 73.18 E		.02
35.00	1.00	N 74.00 E	92.00	7134.26	3359.66	-18.10	18.10 N	60.07 E	62.73' N 73.24 E		.06

ENNZOIL COMPANY
IERSEN WELL NO. 3
T-BB75

PAGE 4
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87/02/03

MEASURED	INCL.	HOLE	COURSE	TRUE	SURSEA	VERTICAL	RECTANGULAR	CLOSURE	DUG-LEI
DEPTH	ANGLE	DIRECTION	LENGTH	DEPTH	DEPTH	SECTION	COURDINATES	DISTANCE	SEVERITY
FEET	DEGS.	DEGS.	FEET	FEET	FEET	FEET	N/S	E/W	DEGS.
7228.00	1.00	N 77.00 E	93.00	7227.25	3452.65	-18.50	18.50 N	61.64 E	06
7321.00	1.10	N 78.00 E	93.00	7320.23	3545.63	-18.87	18.87 N	63.30 E	11
7413.00	1.10	N 73.00 E	92.00	7412.22	3637.62	-19.31	19.31 N	65.01 E	10
7506.00	1.20	N 71.00 E	93.00	7505.20	3730.60	-19.89	19.89 N	66.79 E	12
7599.00	1.10	N 71.00 E	93.00	7598.18	3823.58	-20.50	20.50 N	68.55 E	11
691.00	1.40	N 85.00 E	92.00	7690.16	3915.56	-20.91	20.91 N	70.51 E	46
784.00	1.20	N 77.00 E	93.00	7783.13	4008.53	-21.24	21.24 N	72.59 E	29
877.00	1.50	N 80.00 E	93.00	7876.11	4101.51	-21.68	21.68 N	74.74 E	33
969.00	1.60	N 77.00 E	92.00	7968.07	4193.47	-22.18	22.18 N	77.18 E	14
062.00	1.70	N 84.00 E	93.00	8061.04	4286.44	-22.62	22.62 N	79.82 E	24
154.00	1.80	S 89.00 E	92.00	8152.99	4378.39	-22.74	22.74 N	82.62 E	26
247.00	1.80	N 85.00 E	93.00	8245.95	4471.35	-22.84	22.84 N	85.54 E	20
340.00	1.40	N 79.00 E	93.00	8338.91	4564.31	-23.20	23.20 N	88.11 E	47
132.00	1.50	N 81.00 E	92.00	8430.88	4656.28	-23.61	23.61 N	90.40 E	12
725.00	1.40	N 82.00 E	93.00	8523.85	4749.25	-23.96	23.96 N	92.73 E	11
118.00	1.60	N 56.00 E	93.00	8616.82	4842.22	-24.82	24.82 N	94.98 E	76
710.00	1.90	N 30.00 E	92.00	8708.78	4934.18	-26.86	26.86 N	96.88 E	91
103.00	2.00	N 29.00 E	93.00	8801.72	5027.12	-29.61	29.61 N	98.44 E	11
134.00	2.00	N 26.00 E	31.00	8832.70	5058.10	-30.57	30.57 N	98.94 E	34
65.00	2.20	N 24.00 E	31.00	8863.68	5089.08	-31.60	31.60 N	99.42 E	69
MULTISHOT SURVEY ENDS AT 8865'									
82.00	2.00	N 21.00 E	17.00	8880.67	5106.07	-32.18	32.18 N	99.66 E	1.34
75.00	2.80	N 12.00 E	93.00	8973.59	5198.99	-35.91	35.91 N	100.76 E	.95
58.00	2.70	N 08.00 E	93.00	9066.48	5291.88	-40.30	40.30 N	101.54 E	.23
52.00	3.40	N 07.00 E	94.00	9160.35	5385.75	-45.26	45.26 N	102.19 E	.75
55.00	3.50	N 01.00 E	93.00	9253.18	5478.58	-50.84	50.84 N	102.58 E	.40

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DIRECTIONAL
INVESTMENT
GUIDANCE, INC.

SURVEY CERTIFICATION

STATE TEXAS

COUNTY OF MIDLAND

I, Larry Massey, in the employ of D.I.G., Inc., did on the days of January 19, 1987 through January 19, 1987 conduct or supervise the taking of a Gyroscopic Multiple Shot survey by the method of magnetic orientation from a depth of 0 feet to 4175 feet, with recordings of inclination being obtained at approximate intervals of 100 feet.

This survey was conducted at the request of Pennzoil Company for their Viersen Well No. 3, Lea County, State of New Mexico in the Shipp Strawn field.

The data for this survey were obtained by me according to standards and procedures as set forth by D.I.G., Inc., and is true and correct to the best of my knowledge.

Larry Massey
Larry Massey

The data for this survey has been examined by me and conforms to the principles and procedures as set forth by D.I.G., Inc.

Ralph Rice

Ralph Rice



DIRECTIONAL
INVESTMENT
GUIDANCE, INC.

SURVEY CERTIFICATION

STATE TEXAS

COUNTY OF MIDLAND

I, Larry Massey, in the employ of D.I.G., Inc., did on the days of January 19, 1987 through January 19, 1987 conduct or supervise the taking of a Magnetic Multiple Shot survey by the method of magnetic orientation from a depth of 4175 feet to 8865 feet, with recordings of inclination being obtained at approximate intervals of 93 feet.

This survey was conducted at the request of Pennzoil Company for their Viersen Well No. 3, Lea County, State of New Mexico in the Shipp Strawn field.

The data for this survey were obtained by me according to standards and procedures as set forth by D.I.G., Inc., and is true and correct to the best of my knowledge.

Larry Massey
Larry Massey

The data for this survey has been examined by me and conforms to the principles and procedures as set forth by D.I.G., Inc.

Ralph Rice
Ralph Rice

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DIRECTIONAL
INVESTMENT
GUIDANCE, INC.

SURVEY CERTIFICATION

STATE TEXAS

COUNTY OF MIDLAND

I, Larry Massey, in the employ of D.I.G., Inc., did on the days of February 1, 1987 through February 1, 1987 conduct or supervise the taking of a Magnetic Multiple Shot survey by the method of magnetic orientation from a depth of 8865 feet to 11240 feet, with recordings of inclination being obtained at approximate intervals of 93 feet.

This survey was conducted at the request of Pennzoil Company for their Viersen Well No. 3, Lea County, State of New Mexico in the Shipp Strawn field.

The data for this survey were obtained by me according to standards and procedures as set forth by D.I.G., Inc., and is true and correct to the best of my knowledge.

Larry Massey
Larry Massey

The data for this survey has been examined by me and conforms to the principles and procedures as set forth by D.I.G., Inc.

Ralph Rice
Ralph Rice