



**REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY**

Doyle Hartman
COMPANY

Northshore Woolworth Well No. 6
WELL NAME

Lea County, New Mexico
LOCATION

JOB NUMBER
WT0483-G0189
WT0483-S0200

TYPE OF SURVEY
Gyroscopic Multi Shot
Magnetic Multi Shot

DATE
4/8/83
4/16/83

SURVEY BY
Gary DeSpain, Doug Jeffers

OFFICE
West Texas

DOYLE HARTMAN
NORTH SHORE WOOLWORTH WELL NO. 6
LEA COUNTY, NEW MEXICO
4/8/83

BD1-271

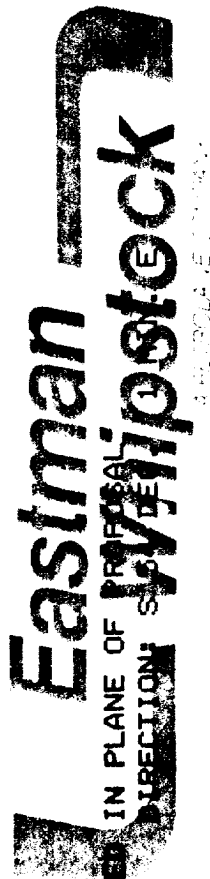
EASTMAN WHIPSTOCK INC.
GYROSCOPIC MULTI SHOT SURVEY
SURVEYOR: GARY DESPAIN
MAGNETIC MULTI SHOT SURVEY
SURVEYOR: DOUG JEFFERS

WT0483-G0189

(0'-400')

WT0483-S0200

(400'-3420')



VERTICAL SECTION CALCULATED IN PLANE OF REFERENCE
DIRECTION: SECTION: 1

RECORD OF SURVEY

RADIUS OF CURVATURE METHOD

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	COURSE LENGTH FEET	TRUE		VERTICAL SECTION FEET	R E C T A N G U L A R		DOGLEG SEVERITY DG/100FT
				VERTICAL DEPTH FEET	VERTICAL SECTION FEET		C O O R D I N A T E S	FEET	
0.	0 0	0	0.	0.00	0.00	0.00	0.00	0.00	0.00
50.	0 30	N 29 E	50.	50.00	-0.03	0.19 N	0.11 E	0.00	1.00
100.	0 30	N 62 W	50.	100.00	-0.34	0.57 N	0.01 W	0.01 W	1.43
150.	0 30	N 20 W	50.	150.00	-0.75	0.89 N	0.29 W	0.29 W	0.72
200.	0 30	N 47 W	50.	199.99	-1.16	1.25 N	0.52 W	0.52 W	0.47
250.	0 45	N 61 W	50.	249.99	-1.70	1.57 N	0.96 W	0.96 W	0.58
300.	0 45	N 52 W	50.	299.99	-2.35	1.93 N	1.51 W	1.51 W	0.24
350.	0 45	N 48 W	50.	349.98	-3.01	2.35 N	2.01 W	2.01 W	0.10
400.	0 45	N 44 W	50.	399.98	-3.66	2.80 N	2.48 W	2.48 W	0.10
454.	0 15	N 50 W	50.	453.98	-4.12	3.13 N	2.83 W	2.83 W	0.93
517.	2 0	S 35 E	63.	516.98	4.29	2.55 N	3.45 W	3.45 W	3.56
581.	5 0	S 25 E	64.	580.83	-0.71	0.83 S	1.50 W	1.50 W	4.77
644.	8 0	S 30 E	63.	643.12	1.11	7.15 S	1.79 E	1.79 E	4.84
707.	10 0	S 47 E	63.	705.64	15.11	14.84 S	7.90 E	7.90 E	5.25
770.	12 30	S 50 E	63.	767.43	27.34	22.98 S	17.10 E	17.10 E	4.07
833.	13 0	S 63 E	63.	828.87	41.20	30.64 S	28.67 E	28.67 E	4.61
896.	13 45	S 69 E	63.	890.17	55.45	36.56 S	41.98 E	41.98 E	2.50
959.	15 30	S 72 E	63.	951.12	70.70	41.87 S	56.97 E	56.97 E	3.03
1022.	15 45	S 71 E	63.	1011.79	86.89	47.25 S	73.06 E	73.06 E	0.58
1085.	15 45	S 72 E	63.	1072.43	103.20	52.68 S	89.28 E	89.28 E	0.43
1148.	15 30	S 71 E	63.	1133.10	119.38	58.06 S	105.37 E	105.37 E	0.58
1212.	16 0	S 70 E	64.	1194.70	136.04	63.86 S	121.75 E	121.75 E	0.89
1275.	15 45	S 71 E	63.	1255.29	152.56	69.61 S	137.99 E	137.99 E	0.59
1338.	16 0	S 72 E	63.	1315.89	169.00	75.08 S	154.34 E	154.34 E	0.59
1401.	16 15	S 73 E	63.	1376.41	185.60	80.34 S	171.02 E	171.02 E	0.59
1464.	15 45	S 72 E	63.	1436.97	202.07	85.57 S	187.58 E	187.58 E	0.91
1527.	15 15	S 71 E	63.	1497.68	218.12	90.91 S	203.55 E	203.55 E	0.90
1590.	16 15	S 59 E	63.	1558.31	234.88	98.12 S	219.02 E	219.02 E	5.40
1653.	17 45	S 58 E	63.	1618.56	253.24	107.75 S	234.73 E	234.73 E	2.43
1716.	17 0	S 59 E	63.	1678.68	272.00	117.58 S	250.77 E	250.77 E	1.28

DOYLE HARTMAN

NORTH SHORE WOOLWORTH WELL NO.6

LEA COUNTY, NEW MEXICO

BD1-271

COMPUTATION

PAGE NO. 2

TIME DATE

08:54:29 19-APR-83

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	COURSE LENGTH FEET	TRUE		VERTICAL SECTION FEET	R E C T A N G U L A R		DOGLEG SEVERITY DG/100FT
				VERTICAL DEPTH FEET			C O O R D I N A T E S		
1779.	15 45	S 59 E	63.	1739.13		289.69	126.72 S	265.99 E	1.98
1843.	15 15	S 59 E	64.	1800.80		306.73	135.53 S	280.65 E	0.78
1906.	14 15	S 59 E	63.	1861.72		322.71	143.79 S	294.40 E	1.59
1969.	13 30	S 58 E	63.	1922.88		337.77	151.69 S	307.28 E	1.25
2032.	12 45	S 57 E	63.	1984.24		352.05	159.37 S	319.35 E	1.24
2095.	12 15	S 55 E	63.	2045.75		365.68	167.00 S	330.65 E	1.05
2158.	11 45	S 58 E	63.	2107.37		378.76	174.23 S	341.57 E	1.27
2221.	11 0	S 61 E	63.	2169.13		391.13	180.53 S	352.28 E	1.52
2284.	10 45	S 62 E	63.	2231.00		402.91	186.20 S	362.72 E	0.50
2347.	10 15	S 64 E	63.	2292.94		414.25	191.41 S	372.95 E	0.98
2410.	9 0	S 63 E	63.	2354.88		424.61	195.95 S	382.46 E	2.00
2474.	8 45	S 68 E	64.	2418.29		434.21	199.89 S	391.51 E	0.82
2537.	8 0	S 67 E	63.	2480.63		444.63	203.40 S	399.99 E	1.21
2600.	6 45	S 64 E	63.	2543.09		451.10	206.75 S	407.35 E	2.08
2663.	5 30	S 50 E	63.	2605.73		457.79	210.40 S	412.97 E	3.08
2726.	4 15	S 30 E	63.	2668.50		462.96	214.48 S	416.39 E	3.32
2789.	4 15	S 6 E	63.	2731.33		466.71	218.89 S	417.83 E	2.80
2852.	4 15	S 20 W	63.	2794.16		468.95	223.49 S	417.26 E	3.03
2915.	4 0	S 34 W	63.	2856.99		469.66	227.51 S	415.21 E	1.64
2978.	3 45	S 33 W	63.	2919.85		469.84	231.06 S	412.86 E	0.41
3041.	3 0	S 35 W	63.	2982.74		469.97	234.14 S	410.79 E	1.20
3105.	2 45	S 35 W	64.	3046.66		470.03	236.77 S	408.94 E	0.39
3168.	3 0	S 37 W	63.	3109.58		470.02	239.32 S	407.09 E	0.43
3231.	2 45	S 31 W	63.	3172.50		470.13	241.94 S	405.32 E	0.62
3294.	2 0	S 36 W	63.	3235.45		470.25	244.12 S	403.88 E	1.23
3357.	1 45	S 47 W	63.	3298.41		470.05	245.66 S	402.52 E	0.69
3420.	1 45	S 45 W	63.	3361.38		469.71	247.00 S	401.13 E	0.10

FINAL CLOSURE - DIRECTION:

S 58 DEGS 23 MINS E

DISTANCE:

471.08 FEET

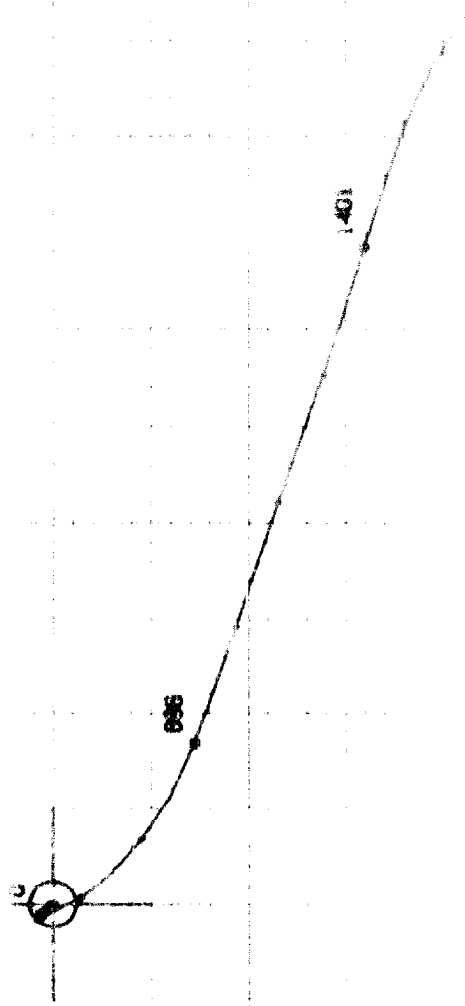
DOYLE HARTMAN
NORTH SHORE WOODWORTH WELL NO. 6
LEA COUNTY, NEW MEXICO

ENCLOSURE WHIPSTOCK (NW)

HORIZONTAL PROJECTION

SCALE 1 IN. = 50 FEET
DEPTH INDICATOR IN

801-271



FINAL STATION
DEPTH 3420 MD. 3361.36 TVD
SOUTH 248.95 EAST 401.13
CLOSURE 471.07 S 58 22 39 E



P. O. Box 5577/Midland, Texas 79704/(915) 563-0511

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Gary DeSpain, in the employ of Eastman Whipstock, Inc., did on the days of 4-8, 1983 thru 4-8, 1983 conduct or supervise the taking of a Gyroscopic Multi Shot survey by the method of magnetic orientation from a depth of 0 feet to 400 feet, with recordings of inclination and direction being obtained at approximate intervals of 50 feet.

This survey was conducted at the request of Doyle Hartman for their North Shore Woolworth #6, Lea County County, State of New Mexico, in the field.

This data for this survey and the calculation were obtained and performed by me according to standards and procedures as set forth by Eastman Whipstock, Inc. and is true and correct to the best of my knowledge.

Gary DeSpain
Directional Supervisor/ Surveyor

The data for this survey has been examined by me and conforms to principles and procedures set forth by Eastman Whipstock, Inc.

Troy Sney

Before me, the undersigned authority, on this day personally appeared Gary DeSpain, known to me to be the person whose name is subscribed to this instrument, who after being by me duly sworn on oath, states that he has knowledge of all the facts stated above and that this instrument is a true statement of facts therein recited.

Subscribed and sworn to before me on this 19TH day of April, 1983

Roy L. Stainke
Notary Public in and for the
County of Midland, Texas
My commission expires 7/9/85





P. O. Box 5577/Midland, Texas 79704/(915) 563-0511

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Doug Jeffers, in the employ of Eastman Whipstock, Inc., did on the days of April 18, 1983 thru April 18, 1983 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 400 feet to 3420 feet, with recordings of inclination and direction being obtained at approximate intervals of 93 feet.

This survey was conducted at the request of Doyle Hartman for their North Shore Woolworth #6, Lea County, State of New Mexico, in the _____ field.

This data for this survey and the calculation were obtained and performed by me according to standards and procedures as set forth by Eastman Whipstock, Inc. and is true and correct to the best of my knowledge.

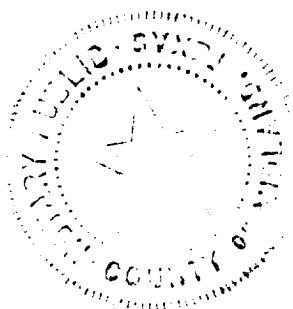
[Signature]
Directional Supervisor/ Surveyor

The data for this survey has been examined by me and conforms to principles and procedures set forth by Eastman Whipstock, Inc.

[Signature]
Before me, the undersigned authority, on this day personally appeared Doug Jeffers, known to me to be the person whose name is subscribed to this instrument, who after being by me duly sworn on oath, states that he has knowledge of all the facts stated above and that this instrument is a true statement of facts therein recited.

Subscribed and sworn to before me on this 19TH day of April, 1983

[Signature]
Notary Public in and for the
County of Midland, Texas
My commission expires 7/9/85



NEW MEXICO OIL CONSERVATION COMMISSION
WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-102
Supersedes C-12H
Effective 1-1-65

All distances must be from the outer boundaries of the Section.

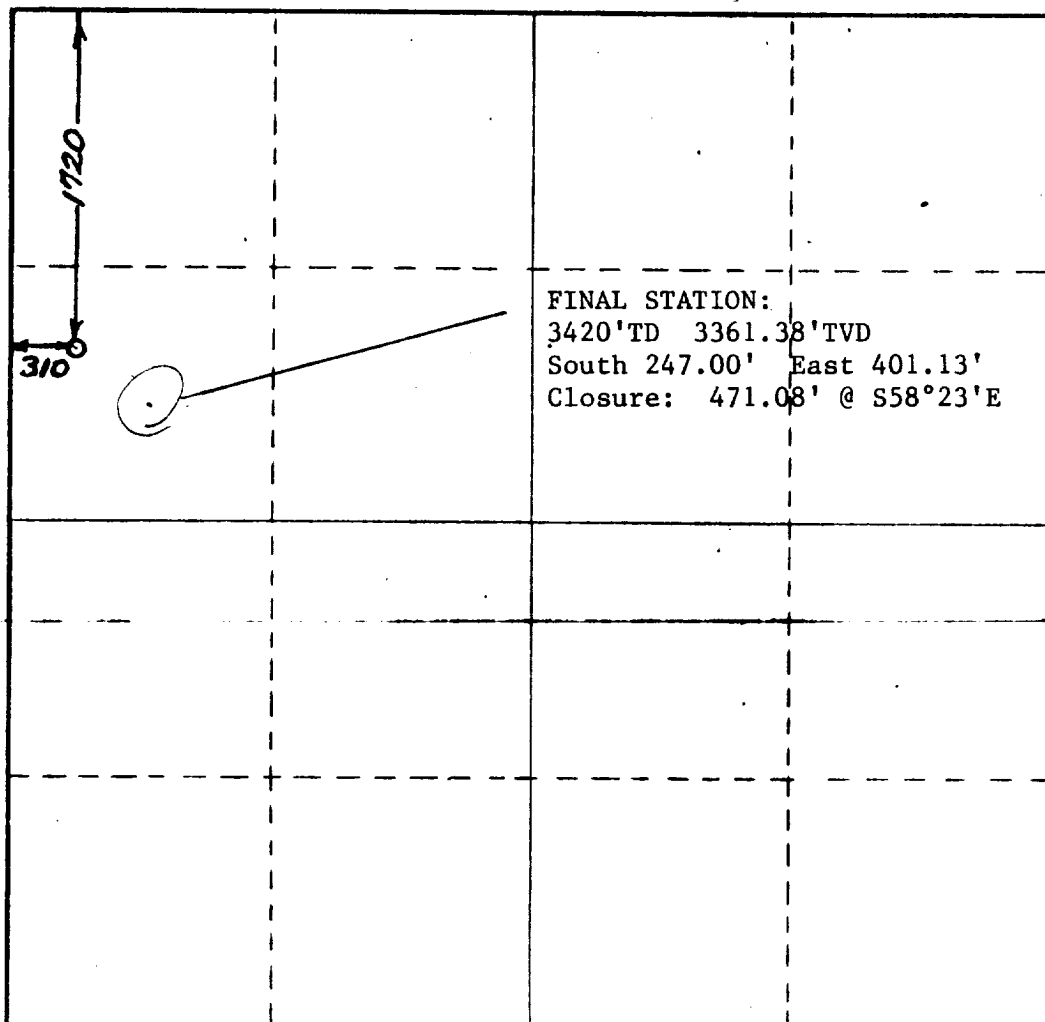
Operator Doyle Hartman			Lease Northshore-Woolworth		Well No. 6
Unit Letter E	Section 33	Township 24 South	Range 37 East	County Lea	
Actual Footage Location of Well: 1720 feet from the North line and 310 feet from the West line					
Ground Level Elev. 3162.0	Producing Formation Yates-Seven Rivers		Pool Jalmat (Gas)		Dedicated Acreage: 160 Acres

- Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
- If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
- If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Larry A. Nermyr

Name

Larry A. Nermyr

Position

Engineer

Company

Doyle Hartman

Date

February 11, 1983

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

December 10, 1982

Registered Professional Engineer and/or Licensed Surveyor

Truman Gaskin
Truman Gaskin

Certificate No.

2126

