

Form C-105 Cont'd -- Item 32
Empire Abo Unit "D" 361

<u>Depth Interval</u>	<u>Amount & Kind Material Used</u>
6300-6310'	Acidized w/150 gals 15% HCL-LSTNE-FE acid followed by 1500 gals 10# gelled Ca Cl wtr, 1500 gals gelled LC, 1500 gals 15% HCL- LSTNE-FE acid.



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ARTESIA, OFFICE

REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY

ATLANTIC RICHFIELD COMPANY
COMPANY

EMPIRE ABO UNIT WELL NO. D-361
WELL NAME

EDDY COUNTY, NEW MEXICO
LOCATION

JOB NUMBER

WT-279 S-1030
WT-279 S-1040
WT-279 D-1052
WT-279 G-1068

TYPE OF SURVEY

Magnetic Multi Shot
Magnetic Multi Shot
Magnetic Single Shot
Gyroscopic Multi Shot

DATE

2-13-79
2-19-79
2-19-79
3-15-79

SURVEY BY
Tim Stephens
Mike Teaff
Wayne Harris

Larry Massey

OFFICE
West Texas

ATLANTIC RICHFIELD COMPANY
EMPIRE ABO UNIT WELL NO. D-361
EDDY COUNTY, NEW MEXICO
EASTMAN WHIPSTOCK, INC.

MAGNETIC MULTI SHOT WT-279 S-1039
SURVEYOR: TIM STEPHENS 2-13-79
MAGNETIC MULTI SHOT WT-279 S-1040
SURVEYOR: MIKE TEAFF 2-19-79
GYROSCOPIC MULTI SHOT WT-279 G-1068
SURVEYOR: LARRY MASSEY

PLANE OF PROPOSED DIRECTION IS S 34 DEG. 9 MIN. E

RECORD OF SURVEY

RADIUS OF CURVATURE METHOD

TRUE

MEASURED DEPTH	DRIFT ANGLE	DRIFT DIRECTION	VERTICAL DEPTH	VERTICAL SECTION	RECTANGULAR COORDINATES	CLOSURE DISTANCE	DIRECTION	DOG LEG SEVERITY
FEET	D M	D	FEET	FEET	FEET	FEET	D M	DEG/100FT
0.	0 0	0	0.00	0.00	0.00	0.00	0 0	0.0
62.	0 15	N 27 E	62.00	-.07	.12 N	.06 E	N 27 0 E	.4
153.	0 15	S 66 E	153.00	.03	.24 N	.40 E	N 59 1 E	.4
244.	0 30	S 31 W	244.00	.53	.26 S	.56 E	S 64 54 E	.6
335.	0 45	S 54 W	334.99	.76	.99 S	.11 W	S 6 10 W	.4
426.	0 45	S 57 W	425.98	.77	1.66 S	1.09 W	S 33 12 W	.0
517.	0 45	S 62 W	516.98	.49	2.08 S	2.20 W	S 46 35 W	.4
608.	0 45	S 81 W	607.97	-.03	2.25 S	3.37 W	S 56 15 W	.0
699.	0 45	S 72 W	698.96	-.45	2.53 S	4.53 W	S 60 49 W	.1
759.	0 45	N 89 W	758.96	-.79	2.65 S	5.30 W	S 63 29 W	.4
832.	0 30	N 67 W	831.95	-1.26	2.62 S	6.10 W	S 66 46 W	.3
924.	0 45	N 63 W	923.95	-2.01	2.36 S	7.06 W	S 71 31 W	.4
1016.	0 45	N 67 W	1015.94	-3.04	1.85 S	8.15 W	S 77 12 W	.1
1108.	0 45	N 84 W	1107.93	-3.94	1.55 S	9.31 W	S 80 32 W	.2
1200.	0 45	N 81 W	1199.92	-4.74	1.39 S	10.51 W	S 82 26 W	.0
1292.	0 45	N 77 W	1291.91	-5.60	1.16 S	11.69 W	S 84 19 W	.1
1384.	0 45	N 70 W	1383.91	-6.53	.82 S	12.84 W	S 86 20 W	.1
1476.	1 0	N 83 W	1475.89	-7.57	.50 S	14.21 W	S 88 0 W	.3
1568.	1 0	N 70 W	1567.88	-8.75	.12 S	15.77 W	S 89 33 W	.2
1660.	1 0	N 89 W	1659.87	-9.87	.17 N	17.34 W	N 89 26 W	.4
1752.	1 0	N 78 W	1751.85	-10.92	.35 N	18.93 W	N 88 56 W	.2
1844.	1 0	N 80 W	1843.84	-12.06	.66 N	20.51 W	N 88 10 W	.0
1937.	1 15	N 81 W	1936.82	-13.32	.96 N	22.31 W	N 87 32 W	.3
2029.	1 0	N 74 W	2028.80	-14.63	1.35 N	24.07 W	N 86 47 W	.3
2121.	1 15	N 61 W	2120.79	-16.13	2.04 N	25.73 W	N 85 28 W	.4
2213.	1 15	N 56 W	2212.76	-17.96	3.09 N	27.44 W	N 83 35 W	.1
2305.	1 15	N 65 W	2304.74	-19.76	4.07 N	29.19 W	N 82 3 W	.2
2397.	1 15	N 66 W	2396.72	-21.47	4.91 N	31.02 W	N 81 1 W	.0
2489.	1 0	N 64 W	2488.70	-23.02	5.67 N	32.65 W	N 80 9 W	.3
2581.	0 45	N 77 W	2580.69	-24.15	6.14 N	33.97 W	N 79 46 W	.3

TRUE

MEASURED DEPTH FEET	DRIFT ANGLE	DRIFT DIRECTION	VERTICAL DEPTH FEET	VERTICAL SECTION FEET	RECTANGULAR COORDINATES FEET	CLOSURE DISTANCE FEET	DIRECTION D M	DOG LEG SEVERITY DEG/100FT
2673.	0 45	N 60 W	2672.68	-25.14	6.58 N	35.09 W	N 79 23 W	.2
2765.	0 45	N 55 W	2764.68	-26.25	7.22 N	36.11 W	N 78 41 W	.1
2657.	0 45	N 35 W	2856.67	-27.42	8.07 N	36.95 W	N 77 41 W	.3
2949.	0 45	N 33 W	2948.66	-28.63	9.07 N	37.63 W	N 76 27 W	.0
3041.	1 0	N 34 W	3040.65	-30.03	10.24 N	38.40 W	N 75 4 W	.3
3133.	0 30	N 36 W	3132.64	-31.24	11.23 N	39.09 W	N 73 58 W	.5
3226.	0 30	N 50 W	3225.64	-32.04	11.82 N	39.64 W	N 73 24 W	.1
3318.	0 30	N 42 W	3317.63	-32.82	12.38 N	40.22 W	N 72 54 W	.1
3410.	0 30	N 26 W	3409.63	-33.62	13.04 N	40.67 W	N 72 13 W	.2
3502.	0 30	N 57 W	3501.63	-34.41	13.64 N	41.19 W	N 71 41 W	.3
3594.	0 0	0	3593.63	-34.78	13.85 N	41.53 W	N 71 33 W	.5
3686.	0 15	S 35 E	3685.62	-34.58	13.69 N	41.42 W	N 71 43 W	.3
3778.	0 0	0	3777.62	-34.38	13.52 N	41.30 W	N 71 52 W	.3
3870.	0 45	S 77 E	3869.62	-33.94	13.39 N	40.71 W	N 71 48 W	.8
3910.	0 45	S 83 E	3909.62	-33.57	13.30 N	40.20 W	N 71 42 W	.2
4000.	5 15	S 54 E	3999.47	-29.73	11.59 N	35.86 W	N 72 5 W	5.1
4100.	7 0	S 44 E	4098.90	-19.43	4.60 N	27.82 W	N 80 37 W	2.0
4200.	8 15	S 48 E	4198.01	-6.44	4.62 S	18.28 W	S 75 50 W	1.4
4300.	9 30	S 41 E	4296.81	8.72	15.61 S	7.47 W	S 25 35 W	1.6
4400.	10 45	S 54 E	4395.25	25.79	27.46 S	5.46 E	S 11 15 E	2.6
4500.	12 0	S 58 E	4493.29	44.09	38.49 S	21.81 E	S 29 32 E	1.5
4600.	13 0	S 60 E	4590.91	63.73	49.64 S	40.36 E	S 39 7 E	1.1
4700.	14 30	S 56 E	4688.05	85.30	61.88 S	60.73 E	S 44 28 E	1.6
4800.	16 0	S 42 E	4784.52	110.52	78.73 S	80.81 E	S 45 45 E	4.5
4900.	16 45	S 36 E	4680.47	138.60	100.63 S	98.55 E	S 44 24 E	1.8
5000.	17 30	S 34 E	4976.03	168.04	124.75 S	115.44 E	S 42 47 E	1.0
5100.	18 15	S 34 E	5071.20	198.73	150.19 S	132.60 E	S 41 26 E	.8
5200.	19 0	S 33 E	5165.97	230.67	176.83 S	150.23 E	S 40 21 E	.8
5300.	19 30	S 33 E	5260.37	263.63	204.48 S	168.18 E	S 39 26 E	.5
5400.	16 15	S 32 E	5355.53	294.31	230.36 S	184.67 E	S 38 43 E	3.3

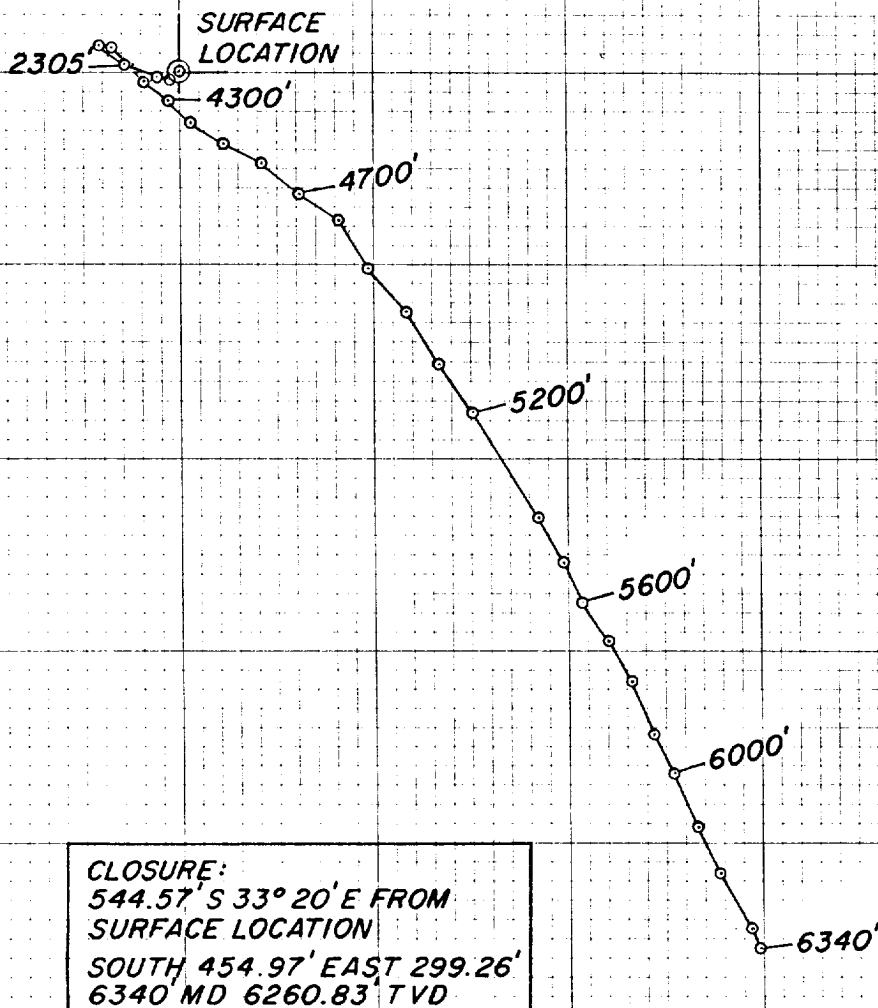
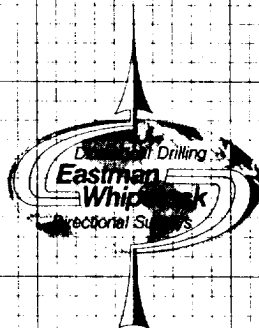
MEASURED DEPTH FEET	DRIFT ANGLE D M	TRUE VERTICAL DEPTH FEET	DRIFT DIRECTION D	VERTICAL SECTION FEET	RECTANGULAR COORDINATES FEET	CLOSURE DISTANCE FEET	DIRECTION D M	DOG SEVERITY DEG/100FT	LEG
5500.	13 45	5452.12	S 29 E	320.13	252.66 S	197.81 E	S 38 3 E	2.6	
5600.	13 45	5549.25	S 27 E	343.76	273.64 S	208.96 E	S 37 22 E	.5	
5700.	14 30	5646.23	S 27 E	367.98	295.38 S	220.04 E	S 36 41 E	.8	
5800.	15 15	5742.88	S 25 E	393.39	318.46 S	231.30 E	S 35 59 E	.9	
5900.	15 15	5839.36	S 26 E	419.39	342.20 S	242.62 E	S 35 20 E	.3	
6000.	16 0	5935.66	S 26 E	446.05	366.40 S	254.43 E	S 34 47 E	.8	
6100.	16 30	6031.66	S 26 E	473.75	391.56 S	266.69 E	S 34 16 E	.5	
6200.	17 15	6127.36	S 27 E	502.52	417.53 S	279.65 E	S 33 49 E	.8	
6300.	17 45	6222.73	S 28 E	532.39	444.21 S	293.53 E	S 33 27 E	.6	
6340.	17 45	6260.83	S 28 E	544.51	454.97 S	299.26 E	S 33 20 E	0.0	

FINAL CLOSURE - DIRECTION: S 33 DEGS 20 MINS 5 SECS E

DISTANCE: 544.57 FEET

ATLANTIC RICHFIELD COMPANY
EMPIRE ABO UNIT WELL NO. D-361
EDDY COUNTY, NEW MEXICO

SCALE: 1" = 100'





P. O. Box 5577/Midland, Texas 79701/(915) 563-0511
TWX 910-881-5066/Cable: EASTCO

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Tim Stephens, in the employ of Eastman Whipstock, Inc., did on the days of February 13, 19 79 thru February 13, 19 79 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 0 feet to 759 feet, with recordings of inclination and direction being obtained at approximate intervals of 91 feet.

This survey was conducted at the request of Atlantic Richfield Comopany for their Empire Abo Unit Well No.D-361 Eddy County, State of New Mexico, in the field.

The data for this survey and the calculations 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.

Tim Stephens
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.

James Blackledge

Before me, the undersigned authority, on this day personally appeared Tim Stephens, 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 20th day of March, 19 79.

Anna M. Smith
Notary Public in and for the County of
Midland, Texas
My commission expires 5-24-80



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SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Mike Teaff, in the employ of Eastman Whipstock, Inc., did on the days of February 19, 19 79 thru February 19, 19 79 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 759 feet to 3910 feet, with recordings of inclination and direction being obtained at approximate intervals of 92 feet.

This survey was conducted at the request of Atlantic Richfield Company for their Empire Abo Unit Well No. D-361 Eddy County, State of New Mexico, in the _____ field.

The data for this survey and the calculations 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.

Mike Teaff
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.

James Backlage

Before me, the undersigned authority, on this day personally appeared Mike Teaff, 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 20th day of March, 19 79.

Anna M. Smith
Notary Public in and for the County of
Midland, Texas
My commission expires 5-24-80



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SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Wayne Harris, in the employ of Eastman Whipstock, Inc., did on the days of February 18, 19 79 thru February 28, 19 79 conduct or supervise the taking of a Magnetic Single Shot survey by the method of magnetic orientation from a depth of 3910 feet to 6069 feet, with recordings of inclination and direction being obtained at approximate intervals of Random feet.

This survey was conducted at the request of Atlantic Richfield Company for their Empire Abo Unit Well No. D-361 Eddy County, State of New Mexico, in the _____ field.

The data for this survey and the calculations 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.

Wayne Harris
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.

Ann Warner

Before me, the undersigned authority, on this day personally appeared Wayne Harris, 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 20th day of March, 19 79.

Anna M. Smith
Notary Public in and for the County of
Midland, Texas
My commission expires 5-24-80



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SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Larry Massey, in the employ of Eastman Whipstock, Inc., did on the days of March 15, 19 79 thru March 15, 19 79 conduct or supervise the taking of a Gyroscopic Multi Shot survey by the method of magnetic orientation from a depth of 4000 feet to 6340 feet, with recordings of inclination and direction being obtained at approximate intervals of Random feet.

This survey was conducted at the request of Atlantic Richfield Company for their Empire Abo Unit Well No. D-361 Eddy County, State of New Mexico, in the _____ field.

The data for this survey and the calculations 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.

Larry Massey
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.

James Blackledge

Before me, the undersigned authority, on this day personally appeared Larry Massey, 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 20th day of March, 19 79.

Anna M. Smith
Notary Public in and for the County of
Midland, Texas
My commission expires 5-24-80

FIELD Empire Abo COUNTY Eddy OCC NUMBER _____
OPERATOR Atlantic Richfield Company ADDRESS P. O. Box 1710, Hobbs, New Mexico 88240
LEASE Empire Abo Unit D WELL NO. 361 SURVEY 300' FNL & 500'
FEL, 34-17S-28E

RECORD OF INCLINATION

<u>DEPTH (FEET)</u>	<u>ANGLE OF INCLINATION (DEGREES)</u>
519	1/2
993	3/4
1480	1
2000	1
2494	1
2988	3/4
3500	0
4050	6 1/2 S 46 E
4170	8
4312	9 1/4
4539	12 1/4 S 60 E
4824	16 1/2 S 37 E
4946	16 1/2 S 35 E
5120	18 S 35 E
5212	19 S 34 E
5344	18 S 34 E
5500	14 S 30 E
5658	14 S 26 E
5814	15 S 26 E
5925	15 S 27 E
6069	16 S 27 E
6414	

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APR - 2 1979

Certification of personal knowledge inclination data:

D. C. C.
REGIONAL OFFICE

I hereby certify that I have personally assembled the data and facts placed on this form, and such information given above is true and complete to the best of my knowledge.

HONDO DRILLING COMPANY

BY: [Signature]
Walter Frederickson
Vice President

Sworn and subscribed to before me the undersigned authority, on this the

10th day of March, 1979.

Margaret B. Anderson Notary Public in and for Midland County, Texas
Margaret B. Anderson