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**REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY**

SANTA FE ENERGY
COMPANY

N.E. LOVING "34" FED WELL #1
WELL NAME

EDDY COUNTY, NEW MEXICO
LOCATION

JOB NUMBER

WT0284-G0267
WT0284-S0266

TYPE OF SURVEY

GYROSCOPIC MULTI-SHOT SURVEY
MAGNETIC MULTI-SHOT SURVEY

DATE

02/08/84
02/08/84

SURVEY BY
GARY DE SPAIN

OFFICE
WEST TEXAS

SANTA FE ENERGY
N. E. LOVING "34" FED. WELL NO. 1
EDDY COUNTY, NEW MEXICO BD1-59
FEBRUARY 8, 1984

EASTMAN WHIPSTOCK, INC.
GYROSCOPIC MULTI SHOT SURVEY WT0284-G0267
SURVEYOR: GARY DESPAIN (0-2600')
MAGNETIC MULTI SHOT SURVEY WT0284-S0266
SURVEYOR: GARY DESPAIN (2600'-10,950')



RADIUS OF CURVATURE METHOD

TIME DATE
18:35:51 08-FEB-84

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	COURSE LENGTH FEET	TRUE		R E C T A N G U L A R C O O R D I N A T E S F E E T	D O G L E G S E V E R I T Y D G / 1 0 0 F T
				V E R T I C A L D E P T H F E E T	V E R T I C A L D E P T H F E E T		
0.	0 0	0	0.	0.00	0.00	0.00	0.00
100.	0 15	N 26 E	100.	100.00	0.20 N	0.10 E	0.25
200.	0 30	N 37 E	100.	200.00	0.75 N	0.44 E	0.26
300.	0 30	N 46 E	100.	299.99	1.41 N	1.01 E	0.08
400.	0 30	N 72 E	100.	399.99	1.85 N	1.76 E	0.22
500.	0 30	N 24 W	100.	499.99	2.56 N	2.07 E	0.74
600.	0 30	N 66 W	100.	599.98	3.16 N	1.47 E	0.36
700.	0 30	S 73 W	100.	699.98	3.21 N	0.62 E	0.35
800.	0 30	S 76 W	100.	799.97	2.98 N	0.23 W	0.03
900.	0 15	S 54 W	100.	899.97	2.71 N	0.82 W	0.28
1000.	0 30	N 59 W	100.	999.97	2.68 N	1.43 W	0.46
1100.	0 45	N 69 W	100.	1099.96	3.16 N	2.41 W	0.27
1200.	0 45	N 87 W	100.	1199.96	3.13 N	3.69 W	0.23
1300.	0 45	S 76 W	100.	1299.95	3.50 N	4.99 W	0.22
1400.	0 30	S 63 W	100.	1399.94	2.92 N	6.00 W	0.29
1500.	0 45	S 64 W	100.	1499.94	2.43 N	6.98 W	0.25
1600.	0 45	N 69 W	100.	1599.93	2.38 N	8.25 W	0.60
1700.	0 45	N 82 W	100.	1699.92	2.71 N	9.52 W	0.17
1800.	0 15	S 19 W	100.	1799.91	2.29 N	10.20 W	0.74
1900.	0 15	N 59 E	100.	1899.91	2.07 N	9.94 W	0.47
2000.	0 30	S 55 E	100.	1999.91	2.05 N	9.32 W	0.46
2100.	0 30	S 84 E	100.	2099.91	1.75 N	8.51 W	0.25
2200.	0 45	S 82 E	100.	2199.90	1.62 N	7.43 W	0.25
2300.	0 45	S 88 E	100.	2299.89	1.50 N	6.13 W	0.08
2400.	1 0	S 84 E	100.	2399.88	1.40 N	4.61 W	0.26
2500.	1 0	S 68 E	100.	2499.87	0.98 N	2.92 W	0.28
2600.	1 0	S 59 E	100.	2599.85	0.20 N	1.36 W	0.16
2700.	1 0	S 78 E	100.	2699.84	0.44 S	0.26 E	0.33
2800.	1 0	S 42 E	100.	2799.82	1.30 S	1.74 E	0.62
2900.	1 0	S 45 E	100.	2899.80	2.56 S	2.95 E	0.05

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	COURSE LENGTH FEET	TRUE VERTICAL DEPTH FEET	R E C T A N G U L A R C O O R D I N A T E S FEET	DOGLEG SEVERITY DG/100FT
3000.	1 0	S 73 E	100.	2999.79	3.45 S 4.43 E	0.48
3100.	1 0	S 71 E	100.	3099.77	3.99 S 6.09 E	0.03
3200.	1 0	S 60 E	100.	3199.76	4.71 S 7.67 E	0.19
3300.	1 0	S 48 E	100.	3299.74	5.74 S 9.08 E	0.21
3400.	1 0	S 53 E	100.	3399.73	6.85 S 10.43 E	0.09
3500.	0 45	S 74 E	100.	3499.72	7.53 S 11.79 E	0.40
3600.	0 45	S 15 E	100.	3599.71	8.42 S 12.66 E	0.74
3700.	0 30	S 9 E	100.	3699.70	9.48 S 12.89 E	0.26
3800.	0 45	S 64 E	100.	3799.70	10.33 S 13.51 E	0.62
3900.	0 30	N 82 E	100.	3899.69	10.49 S 14.57 E	0.44
4000.	0 15	S 9 W	100.	3999.69	10.80 S 14.97 E	0.62
4100.	0 15	S 13 E	100.	4099.69	11.33 S 14.99 E	0.10
4200.	0 45	S 43 E	100.	4199.68	12.42 S 15.39 E	0.55
4300.	0 30	S 39 E	100.	4299.68	12.42 S 16.11 E	0.25
4400.	0 15	N 82 E	100.	4399.68	13.15 S 16.69 E	0.43
4500.	0 30	S 19 E	100.	4499.67	13.46 S 17.20 E	0.51
4600.	0 30	S 8 E	100.	4599.67	14.31 S 17.41 E	0.10
4700.	1 0	S 27 E	100.	4699.66	15.55 S 17.80 E	0.55
4800.	0 15	S 62 E	100.	4799.65	16.32 S 18.55 E	0.81
4900.	0 30	S 15 W	100.	4899.65	16.87 S 18.79 E	0.51
5000.	0 30	S 27 W	100.	4999.65	17.69 S 18.48 E	0.10
5100.	0 15	S 30 E	100.	5099.64	18.32 S 18.50 E	0.42
5200.	0 30	N 67 W	100.	5199.64	18.69 S 18.17 E	0.72
5300.	0 30	S 74 W	100.	5299.64	18.64 S 17.31 E	0.33
5400.	0 15	N 86 W	100.	5399.64	18.70 S 16.67 E	0.28
5500.	0 30	N 49 W	100.	5499.63	18.46 S 16.07 E	0.34
5600.	0 45	N 66 W	100.	5599.63	17.87 S 15.15 E	0.31
5700.	0 30	S 88 W	100.	5699.62	17.67 S 14.09 E	0.37
5800.	0 30	N 88 W	100.	5799.62	17.67 S 13.22 E	0.03
5900.	1 0	N 65 W	100.	5899.61	17.36 S 11.96 E	0.57

Eagles
Black

TIME DATE

18:35:51 08-FEB-84

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	COURSE LENGTH FEET	TRUE		RECTANGULAR COORDINATES FEET	DOGLEG SEVERITY DG/100FT
				VERTICAL DEPTH FEET			
6000.	1 0	N 87 W	100.	5999.59		16.94 S 10.27 E	0.38
6100.	0 45	S 87 W	100.	6099.58		16.94 S 8.75 E	0.27
6200.	0 45	N 67 W	100.	6199.57		16.72 S 7.47 E	0.34
6300.	1 0	S 87 W	100.	6299.56		16.46 S 5.98 E	0.46
6400.	1 0	S 82 W	100.	6399.55		16.62 S 4.24 E	0.09
6500.	1 0	S 82 W	100.	6499.53		16.87 S 2.52 E	0.00
6600.	1 15	S 87 W	100.	6599.51		17.06 S 0.56 E	0.27
6700.	1 45	N 87 W	100.	6699.48		17.06 S 2.05 W	0.52
6800.	2 0	S 51 W	100.	6799.42		18.04 S 5.10 W	1.36
6900.	2 0	S 34 W	100.	6899.36		20.61 S 7.45 W	0.59
7000.	2 30	S 32 W	100.	6999.28		23.90 S 9.59 W	0.51
7100.	2 45	S 30 W	100.	7099.18		27.63 S 11.95 W	0.27
7200.	2 45	S 20 W	100.	7129.06		32.17 S 13.97 W	0.48
7300.	2 30	S 9 W	100.	7229.96		36.10 S 15.12 W	0.56
7400.	2 0	S 9 W	100.	7398.88		40.47 S 15.73 W	0.50
7500.	1 45	S 1 W	100.	7498.83		43.73 S 16.02 W	0.36
7600.	1 30	S 2 E	100.	7598.79		46.57 S 15.99 W	0.26
7700.	1 45	S 1 E	100.	7698.75		49.40 S 15.92 W	0.25
7800.	1 30	S 5 E	100.	7798.71		52.24 S 15.77 W	0.27
7900.	1 45	S 7 E	100.	7898.67		55.06 S 15.47 W	0.26
8000.	2 0	S 5 W	100.	7998.61		58.32 S 15.41 W	0.46
8100.	2 30	S 6 W	100.	8098.53		62.23 S 15.79 W	0.50
8200.	3 0	S 27 W	100.	8198.42		66.81 S 17.15 W	1.12
8300.	3 0	S 26 W	100.	8298.28		71.49 S 19.48 W	0.05
8400.	3 0	S 26 W	100.	8398.15		76.19 S 21.77 W	0.00
8500.	2 45	S 28 W	100.	8498.02		80.66 S 24.05 W	0.27
8600.	2 30	S 33 W	100.	8597.91		84.61 S 26.38 W	0.34
8700.	2 15	S 36 W	100.	8697.83		88.02 S 28.72 W	0.28
8800.	2 0	S 32 W	100.	8797.76		91.09 S 30.79 W	0.29
8900.	1 45	S 31 W	100.	8897.71		93.88 S 32.51 W	0.25

MEASURED DEPTH FEET	DRIFT ANGLE D M	DRIFT DIRECTION D	COURSE LENGTH FEET	TRUE		RECTANGULAR COORDINATES FEET	DOGLEG SEVERITY DG/100FT
				VERTICAL DEPTH FEET			
9000.	1 45	S 25 W	100.	8997.66		96.58 S 33.94 W	0.18
9100.	1 45	S 27 W	100.	9097.61		99.32 S 35.28 W	0.06
9200.	2 15	S 20 W	100.	9197.55		102.52 S 36.67 W	0.56
9300.	2 15	S 18 W	100.	9297.47		106.24 S 37.95 W	0.08
9400.	2 0	S 12 W	100.	9397.41		109.82 S 38.91 W	0.33
9500.	2 15	S 16 W	100.	9497.34		113.41 S 39.80 W	0.29
9600.	2 0	S 18 W	100.	9597.27		116.96 S 40.89 W	0.26
9700.	2 0	S 18 W	100.	9697.21		120.28 S 41.96 W	0.00
9800.	2 0	S 15 W	100.	9797.15		123.62 S 42.96 W	0.10
9900.	2 0	S 23 W	100.	9897.09		126.92 S 44.09 W	0.28
10000.	1 45	S 31 W	100.	9997.03		129.83 S 45.58 W	0.36
10100.	1 30	S 37 W	100.	10096.99		132.18 S 47.16 W	0.30
10200.	1 30	S 60 W	100.	10196.96		133.91 S 49.11 W	0.60
10300.	1 45	S 65 W	100.	10296.92		135.22 S 51.62 W	0.29
10400.	1 45	S 45 W	100.	10396.87		136.96 S 54.11 W	0.61
10500.	1 45	S 60 W	100.	10496.83		138.81 S 56.53 W	0.46
10600.	1 30	S 44 W	100.	10596.79		140.55 S 58.76 W	0.52
10700.	1 30	S 68 W	100.	10696.75		142.01 S 60.91 W	0.62
10800.	1 30	S 59 W	100.	10796.72		143.17 S 63.25 W	0.24
10900.	1 0	S 69 W	100.	10896.69		144.13 S 65.21 W	0.54
10950.	1 15	S 74 W	50.	10946.68		144.44 S 66.14 W	0.54

FINAL CLOSURE -

DIRECTION: S 24 DEGS 36 MINS W

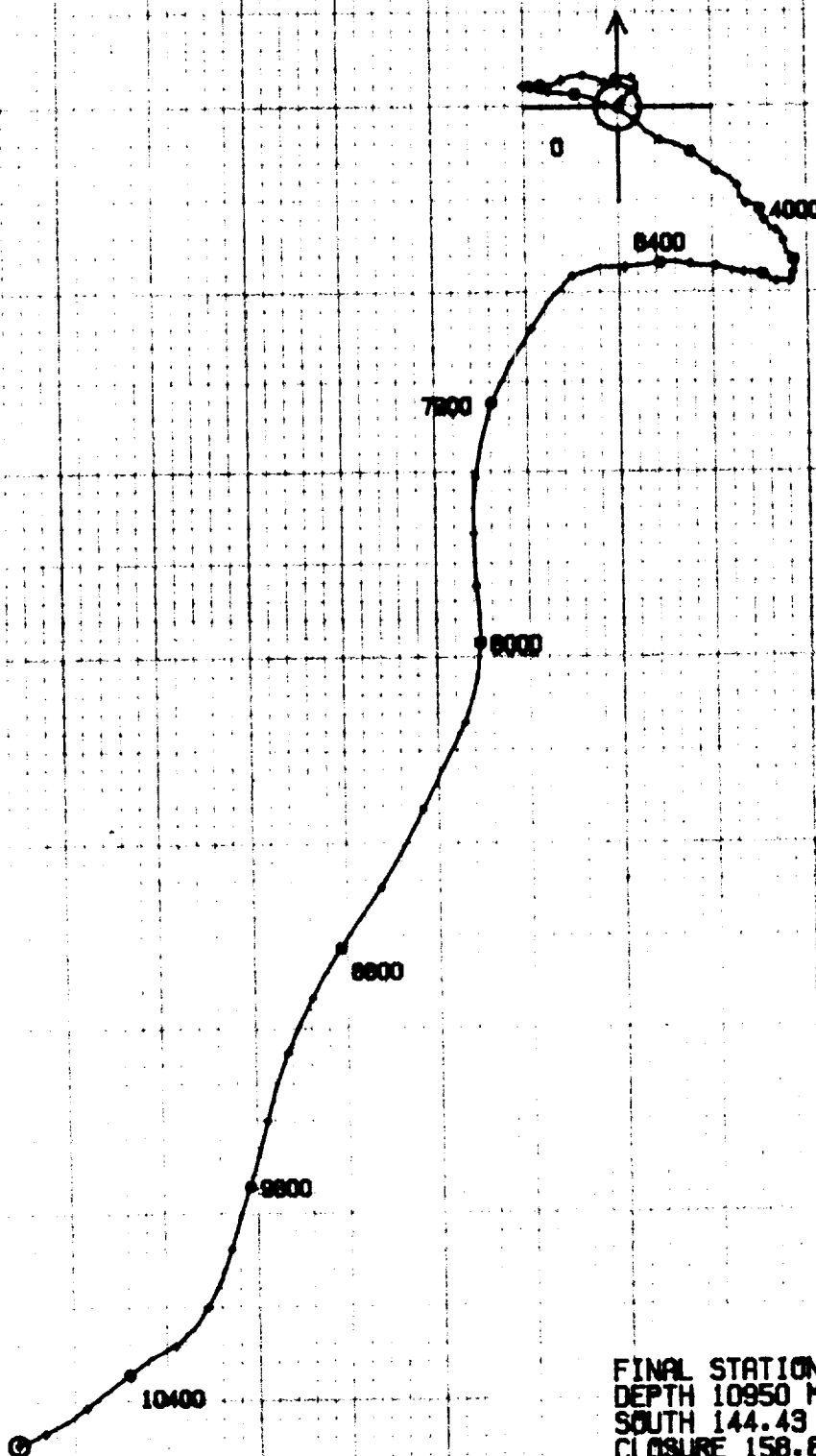
DISTANCE: 158.86 FEET

SANTA FE ENERGY
N. E. LOVING 34 FED. WELL NO. 1
EDDY COUNTY, NEW MEXICO BDI-59

EASTMAN WHIPSTOCK, INC.

HORIZONTAL PROJECTION

SCALE 1 IN. = 20 FEET
DEPTH INDICATOR: MD



FINAL STATION:
DEPTH 10950 MD. 10946.68 TVD
SOUTH 144.43 WEST 86.19
CLOSURE 158.86 S 24 38 12 W



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 February 7, 19 84 thru February 8, 19 84 conduct or supervise the taking of a Gyroscopic Multi Shot survey by the method of magnetic orientation from a depth of 0 feet to 2600 feet, with recordings of inclination and direction being obtained at approximate intervals of 100 feet.

This survey was conducted at the request of Santa Fe Energy for their N.E. Loving "34" Fed. No. 1, Eddy 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.

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 8TH day of MARCH, 19 84

Doy G. Stenke
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, Gary DeSpain, in the employ of Eastman Whipstock, Inc., did on the days of February 8, 19 84 thru February 8, 1984 conduct or supervise the taking of a Magnetic Multi Shot survey by the method of magnetic orientation from a depth of 2600 feet to 10,950 feet, with recordings of inclination and direction being obtained at approximate intervals of 100 feet.

This survey was conducted at the request of Santa Fe Energy for their N.E. Loving "34" Fed. No. 1, Eddy 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.

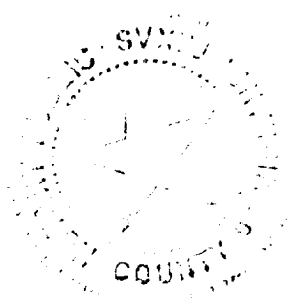
Gary DeSpain
Directional Supervisor/ Surveyor

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

Terry Gray
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 8TH day of MARCH, 19 84

Roy C. Stenke
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-128
Effective 1-1-65

All distances must be from the outer boundaries of the Section

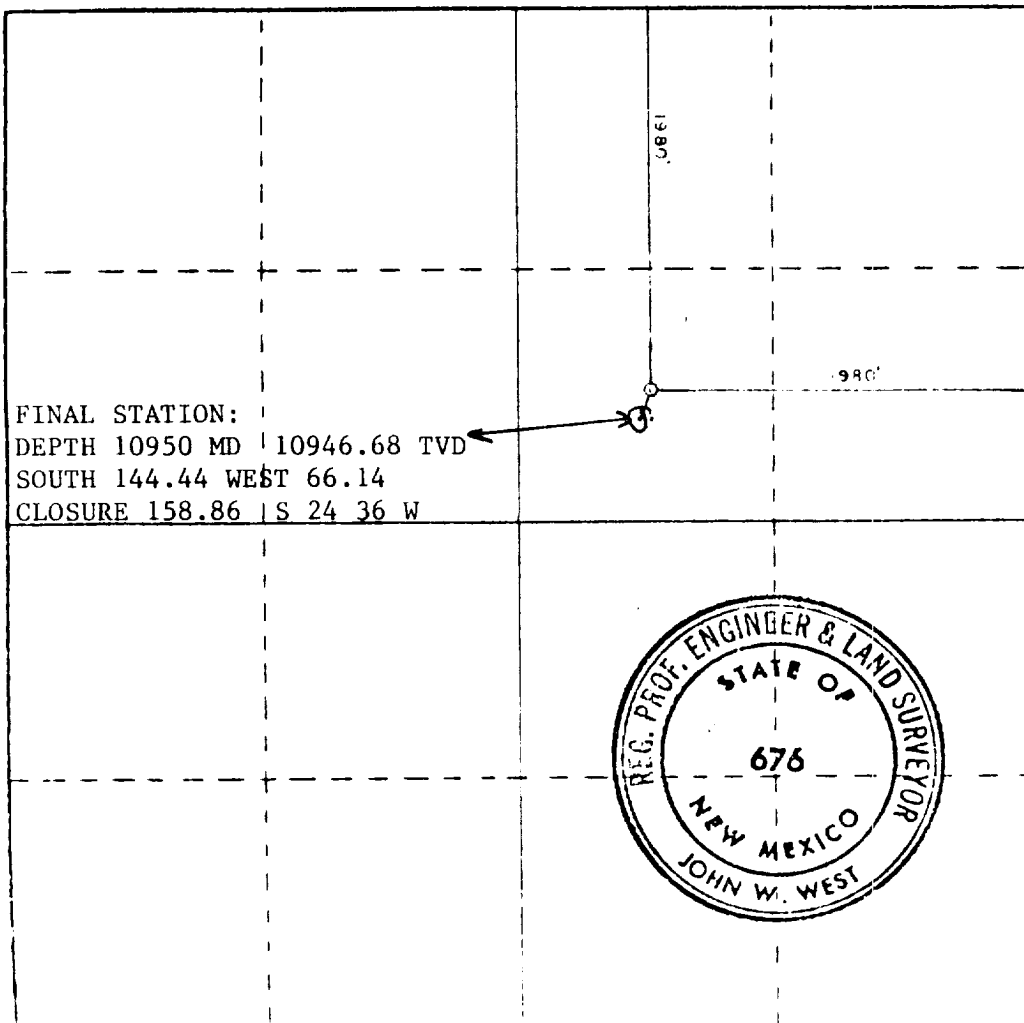
Operator SANTA FE ENERGY CO.		Lease NORTHEAST LOVING ³⁴ FEDERAL 34		Well No. 1
Grid Letter G	Section 34	Township 22 SOUTH	Range 28 EAST	County EDDY
Approximate Footage Location of Well:				
1980	feet from the	NORTH	line and	1980
				feet from the
				EAST
Ground Level Elev. 3051.4	Producing Formation		Pool	Dedicated Acreage

1. Outline the acreage dedicated to the subject well by colored pencil or hatchure marks on the plat below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
3. 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.

Name _____

Position _____

Company _____

Date _____

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

NOVEMBER 5, 1983

Registered Professional Engineer
and Land Surveyor

John W. West

Certificate No. **JOHN W. WEST** 576
RONALD J. EIDSON 3239