



**REPORT
of
SUB-SURFACE
DIRECTIONAL
SURVEY**

SUN EXPLORATION AND PRODUCTION COMPANY
COMPANY

PITCHFORK FEDERAL NO. 1 -C
WELL NAME

11-25-84

LEA COUNTY, NEW MEXICO
LOCATION

JOB NUMBER

430-0085

TYPE OF SURVEY

SEEKER I GYROSCOPIC SURVEY

DATE

6-10-86

SURVEY BY
STEVE COVINGTON

OFFICE
WEST TEXAS

RECEIVED
JUN 29 1966
FBI
HARRIS OFFICE

FOR

EC DISTRICT : WEST TEXAS BASE

RECEIVED

DEC 29 1986

OCD
HOBBS OFFICE

SUN EXPLORATION AND PRODUCTION COMPANY
PITCHFORK FEDERAL NO. 1
LEA COUNTY, NEW MEXICO

DECLINATION : 0.00 JOB NUMBER :
DATE PRINTED : 22-DEC-86
OUR REF. NO. : S01120.8SU

PAGE NO. 2

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
0.00	0 0	N 0 0 E	0.00	0.00	0.00 N 0.00 E	0.00
100.00	0 3	N 22 0 W	100.00	100.00	0.04 N 0.02 W	0.05
200.00	0 5	S 82 0 E	100.00	200.00	0.12 N 0.04 E	0.12
300.00	0 7	S 25 0 E	100.00	300.00	0.01 N 0.18 E	0.10
400.00	0 17	S 76 0 W	100.00	400.00	0.26 S 0.05 E	0.33
500.00	0 22	S 53 0 W	100.00	500.00	0.50 S 0.46 W	0.15
600.00	0 20	S 66 0 W	100.00	600.00	0.82 S 0.99 W	0.09
700.00	0 24	S 65 0 W	100.00	699.99	1.08 S 1.57 W	0.07
800.00	0 23	S 59 0 W	100.00	799.99	1.40 S 2.16 W	0.04
900.00	0 24	S 44 0 W	100.00	899.99	1.82 S 2.69 W	0.10
1000.00	0 24	S 28 0 W	100.00	999.99	2.38 S 3.10 W	0.11
1100.00	0 27	S 1 0 W	100.00	1099.98	3.09 S 3.28 W	0.20
1200.00	0 30	S 30 0 W	100.00	1199.98	3.88 S 3.50 W	0.24
1300.00	0 42	S 42 0 W	100.00	1299.97	4.73 S 4.12 W	0.24
1400.00	0 46	S 52 0 W	100.00	1399.97	5.60 S 5.06 W	0.14
1500.00	0 48	S 47 0 W	100.00	1499.96	6.49 S 6.10 W	0.08
1600.00	0 45	S 54 0 W	100.00	1599.95	7.35 S 7.14 W	0.11
1700.00	0 47	S 58 0 W	100.00	1699.94	8.09 S 8.24 W	0.06
1800.00	0 36	S 86 0 W	100.00	1799.93	8.46 S 9.37 W	0.38
1900.00	0 32	N 89 0 W	100.00	1899.93	8.49 S 10.36 W	0.08
2000.00	0 15	N 14 0 W	100.00	1999.92	8.09 S 10.86 W	0.53
2100.00	0 21	N 25 0 E	100.00	2099.92	7.58 S 10.81 W	0.22
2200.00	0 22	N 44 0 E	100.00	2199.92	7.06 S 10.45 W	0.12
2300.00	0 23	N 77 0 E	100.00	2299.92	6.74 S 9.89 W	0.21
2400.00	0 26	N 82 0 E	100.00	2399.92	6.61 S 9.18 W	0.06
2500.00	0 35	N 80 0 E	100.00	2499.91	6.47 S 8.31 W	0.15
2600.00	0 43	N 78 0 E	100.00	2599.91	6.25 S 7.19 W	0.14
2700.00	1 13	N 56 0 E	100.00	2699.89	5.60 S 5.65 W	0.61
2800.00	1 32	N 55 0 E	100.00	2799.86	4.24 S 3.67 W	0.32
2900.00	1 53	N 57 0 E	100.00	2899.82	2.53 S 1.14 W	0.44

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SUN EXPLORATION AND PRODUCTION COMPANY
PITCHFORK FEDERAL NO. 1
LEA COUNTY, NEW MEXICO

DATE PRINTED : 22-DEC-86
OUR REF. NO. : S01120.8SU
DECLINATION : 0.00 JOB NUMBER :

PAGE NO. 3

MEASURED DEPTH	D R I F T A N G L E D M	D R I F T D I R E C T I O N D M	C O U R S E L E N G T H	T R U E V E R T I C A L D E P T H	R E C T A N G U L A R C O O R D I N A T E S	D O G L E G S E V E R I T Y
3000.00	2 40	N 64 O E	100.00	2999.73	0.54 S 2.38 E	0.75
3100.00	2 53	N 62 O E	100.00	3099.62	1.66 N 6.69 E	0.24
3200.00	2 57	N 64 O E	100.00	3199.49	3.96 N 11.22 E	0.12
3300.00	2 55	N 63 O E	100.00	3299.36	6.25 N 15.79 E	0.06
3400.00	2 48	N 62 O E	100.00	3399.23	8.55 N 20.22 E	0.13
3500.00	2 28	N 58 O E	100.00	3499.13	10.84 N 24.20 E	0.38
3600.00	1 58	N 55 O E	100.00	3599.05	12.98 N 27.42 E	0.51
3700.00	1 14	N 45 O E	100.00	3699.01	14.77 N 29.56 E	0.78
3800.00	1 1	N 44 O E	100.00	3798.99	16.17 N 30.93 E	0.22
3900.00	0 49	N 50 O E	100.00	3898.98	17.26 N 32.10 E	0.22
4000.00	0 29	N 62 O E	100.00	3998.97	17.90 N 33.04 E	0.36
4100.00	0 35	N 87 O W	100.00	4098.97	18.57 N 32.89 E	1.03
4200.00	1 15	N 77 O W	100.00	4198.96	18.79 N 31.31 E	0.68
4300.00	1 24	N 43 O W	100.00	4298.93	19.93 N 29.34 E	0.79
4400.00	1 13	N 32 O W	100.00	4398.90	21.74 N 27.95 E	0.31
4500.00	0 56	N 17 O W	100.00	4498.89	23.45 N 27.17 E	0.40
4600.00	1 2	N 19 O E	100.00	4598.87	25.14 N 27.20 E	0.62
4700.00	1 29	N 14 O W	100.00	4698.85	27.30 N 27.30 E	0.83
4800.00	2 24	N 26 O W	100.00	4798.79	30.48 N 26.14 E	1.00
4900.00	2 30	N 1 O W	100.00	4898.70	34.60 N 25.15 E	1.06
5000.00	2 36	N 21 O E	100.00	4998.60	38.96 N 25.92 E	0.98
5100.00	2 31	N 45 O E	100.00	5098.50	42.68 N 28.34 E	1.07
5200.00	2 15	N 54 O E	100.00	5198.41	45.38 N 31.50 E	0.46
5300.00	1 31	N 47 O E	100.00	5298.36	47.47 N 34.03 E	0.77
5400.00	1 21	N 34 O E	100.00	5398.32	49.37 N 35.65 E	0.36
5500.00	1 10	N 22 O E	100.00	5498.30	51.30 N 36.68 E	0.32
5600.00	1 14	N 20 O E	100.00	5598.28	53.26 N 37.43 E	0.08
5700.00	1 10	N 19 O E	100.00	5698.26	55.23 N 38.13 E	0.07
5800.00	1 17	N 17 O E	100.00	5798.23	57.27 N 38.79 E	0.12
5900.00	1 16	N 17 O E	100.00	5898.21	59.42 N 39.45 E	0.02

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SUN EXPLORATION AND PRODUCTION COMPANY
PITCHFORK FEDERAL NO. 1
LEA COUNTY, NEW MEXICO

DATE PRINTED : 22-DEC-86
OUR REF. NO. : S01120.88U
DECLINATION : 0.00 JOB NUMBER :

PAGE NO. 4

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
6000.00	1 17	N 14 O E	100.00	5998.13	61.59 N 40.05 E	0.07
6100.00	1 15	N 16 O E	100.00	6098.16	63.73 N 40.62 E	0.06
6200.00	1 18	N 18 O E	100.00	6198.13	65.85 N 41.27 E	0.07
6300.00	1 18	N 10 O E	100.00	6298.11	68.05 N 41.82 E	0.18
6400.00	1 12	N 7 O E	100.00	6398.08	70.20 N 42.14 E	0.12
6500.00	1 17	N 1 O W	100.00	6498.06	72.36 N 42.25 E	0.19
6600.00	1 11	N 3 O E	100.00	6598.04	74.52 N 42.29 E	0.13
6700.00	1 13	N 5 O W	100.00	6698.02	76.59 N 42.26 E	0.17
6800.00	1 15	N 0 O E	100.00	6797.99	78.76 N 42.16 E	0.11
6900.00	1 19	N 4 O W	100.00	6897.97	80.99 N 42.08 E	0.11
7000.00	1 16	N 4 O W	100.00	6997.94	83.24 N 41.93 E	0.05
7100.00	1 21	N 2 O W	100.00	7097.92	85.52 N 41.81 E	0.10
7200.00	1 20	N 5 O W	100.00	7197.89	87.85 N 41.66 E	0.07
7300.00	1 20	N 8 O W	100.00	7297.86	90.16 N 41.40 E	0.07
7400.00	1 28	N 9 O W	100.00	7397.83	92.58 N 41.04 E	0.14
7500.00	1 26	N 18 O W	100.00	7497.80	95.04 N 40.45 E	0.23
7600.00	1 28	N 15 O W	100.00	7597.77	97.46 N 39.73 E	0.08
7700.00	1 29	N 21 O W	100.00	7697.74	99.96 N 38.92 E	0.16
7800.00	1 30	N 19 O W	100.00	7797.70	102.38 N 38.04 E	0.05
7900.00	1 28	N 24 O W	100.00	7897.67	104.80 N 37.08 E	0.13
8000.00	1 25	N 26 O W	100.00	7997.64	107.07 N 36.02 E	0.07
8100.00	1 20	N 41 O W	100.00	8097.61	109.07 N 34.70 E	0.37
8200.00	1 25	N 44 O W	100.00	8197.58	110.84 N 33.08 E	0.11
8300.00	1 17	N 49 O W	100.00	8297.55	112.46 N 31.37 E	0.18
8400.00	1 30	N 66 O W	100.00	8397.52	113.76 N 29.33 E	0.46
8500.00	1 16	N 76 O W	100.00	8497.49	114.55 N 27.05 E	0.33
8600.00	1 19	N 73 O W	100.00	8597.47	115.15 N 24.88 E	0.08
8700.00	1 25	N 77 O W	100.00	8697.44	115.77 N 22.58 E	0.14
8800.00	1 40	N 76 O W	100.00	8797.40	116.39 N 19.96 E	0.25
8900.00	1 45	N 76 O W	100.00	8897.36	117.12 N 17.07 E	0.08

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PALESTINE
JUL 29 1986
PDP
HOUSE OFFICE

SUN EXPLORATION AND PRODUCTION COMPANY
PITCHFORK FEDERAL NO. 1
LEA COUNTY, NEW MEXICO

DATE PRINTED : 22-DEC-86
OUR REF. NO. : S01120.8SU
DECLINATION : 0.00 JOB NUMBER :

PAGE NO. 5

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
9000.00	1 45	N 78 O W	100.00	8997.31	117.80 N 14.09 E	0.06
9100.00	1 59	N 77 O W	100.00	9097.26	118.51 N 10.91 E	0.24
9200.00	2 5	N 80 O W	100.00	9197.20	119.21 N 7.44 E	0.15
9300.00	2 14	N 82 O W	100.00	9297.13	119.80 N 3.72 E	0.17
9400.00	2 23	N 86 O W	100.00	9397.05	120.22 N 0.29 W	0.22
9500.00	2 35	N 84 O W	100.00	9496.95	120.60 N 4.60 W	0.22
9600.00	2 58	N 85 O W	100.00	9596.83	121.07 N 9.42 W	0.39
9700.00	3 3	N 86 O W	100.00	9696.70	121.48 N 14.65 W	0.10
9800.00	3 21	S 88 O W	100.00	9796.54	121.58 N 20.23 W	0.45
9900.00	3 29	S 87 O W	100.00	9896.36	121.32 N 26.18 W	0.15
10000.00	3 29	N 90 O W	100.00	9996.18	121.16 N 32.26 W	0.18
10100.00	3 25	N 90 O W	100.00	10096.00	121.16 N 38.27 W	0.07
10200.00	3 30	S 87 O W	100.00	10195.82	121.00 N 44.30 W	0.20
10300.00	3 36	S 85 O W	100.00	10295.62	120.57 N 50.47 W	0.16
10400.00	3 38	S 84 O W	100.00	10395.42	119.96 N 56.76 W	0.07
10500.00	3 34	S 87 O W	100.00	10495.23	119.47 N 63.02 W	0.20
10600.00	3 50	N 79 O W	100.00	10595.02	119.92 N 69.44 W	0.94
10700.00	3 56	N 72 O W	100.00	10694.79	121.61 N 75.99 W	0.48
10800.00	3 58	N 74 O W	100.00	10794.55	123.63 N 82.58 W	0.14
10900.00	4 5	N 73 O W	100.00	10894.30	125.62 N 89.31 W	0.14
11000.00	4 11	N 73 O W	100.00	10994.04	127.73 N 96.21 W	0.10
11100.00	4 14	N 75 O W	100.00	11093.77	129.75 N 103.26 W	0.16
11200.00	4 32	N 82 O W	100.00	11193.48	131.27 N 110.74 W	0.61
11300.00	4 36	N 84 O W	100.00	11293.16	132.24 N 118.64 W	0.17
11400.00	3 54	N 83 O W	100.00	11392.89	133.08 N 126.01 W	0.70
11500.00	3 35	N 79 O W	100.00	11492.67	134.10 N 132.45 W	0.41
11600.00	3 36	N 72 O W	100.00	11592.48	135.67 N 138.50 W	0.44
11700.00	3 13	N 68 O W	100.00	11692.29	137.73 N 144.15 W	0.38
11800.00	3 4	N 66 O W	100.00	11792.14	139.89 N 149.26 W	0.26
11900.00	2 43	N 74 O W	100.00	11892.01	141.62 N 154.00 W	0.53

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LEA COUNTY, NEW MEXICO

DATE PRINTED : 22-DEC-86
OUR REF. NO. : S01120.88U
DECLINATION : 0.00 JOB NUMBER :

PAGE NO. 6

MEASURED DEPTH	DRIFT ANGLE D M	DRIFT DIRECTION D M	COURSE LENGTH	TRUE VERTICAL DEPTH	R E C T A N G U L A R C O O R D I N A T E S	DOGLEG SEVERITY
12000.00	2 50	N 73 0 W	100.00	11991.90	142.99 N 158.64 W	0.13
12100.00	2 22	N 79 0 W	100.00	12091.79	144.09 N 163.04 W	0.54
12200.00	1 34	N 89 0 W	100.00	12191.73	144.45 N 166.44 W	0.87
12300.00	0 55	S 68 0 W	100.00	12291.71	144.06 N 168.56 W	0.81
12400.00	0 58	S 46 0 W	100.00	12391.69	143.16 N 169.93 W	0.36
12500.00	1 19	S 21 0 W	100.00	12491.67	141.52 N 171.02 W	0.60
12600.00	1 55	S 0 0 W	100.00	12591.63	138.76 N 171.53 W	0.83
12700.00	1 38	S 19 0 W	100.00	12691.59	135.72 N 172.04 W	0.65
12800.00	1 10	S 42 0 W	100.00	12791.56	133.62 N 173.28 W	0.72
12900.00	1 20	S 55 0 W	100.00	12891.53	132.18 N 174.91 W	0.33
13000.00	1 10	S 59 0 W	100.00	12991.51	131.00 N 176.73 W	0.19
13100.00	0 53	S 64 0 W	100.00	13091.49	130.14 N 178.31 W	0.30
13200.00	0 52	S 65 0 W	100.00	13191.48	129.49 N 179.67 W	0.02
13203.00	0 56	S 67 0 W	3.00	13194.48	129.47 N 179.72 W	2.46

CLOSURE - DISTANCE : 221.50
DIRECTION : N 54 14 W

REPORT UNITS : Feet

SURVEY CALCULATION METHOD : Radius of curvature

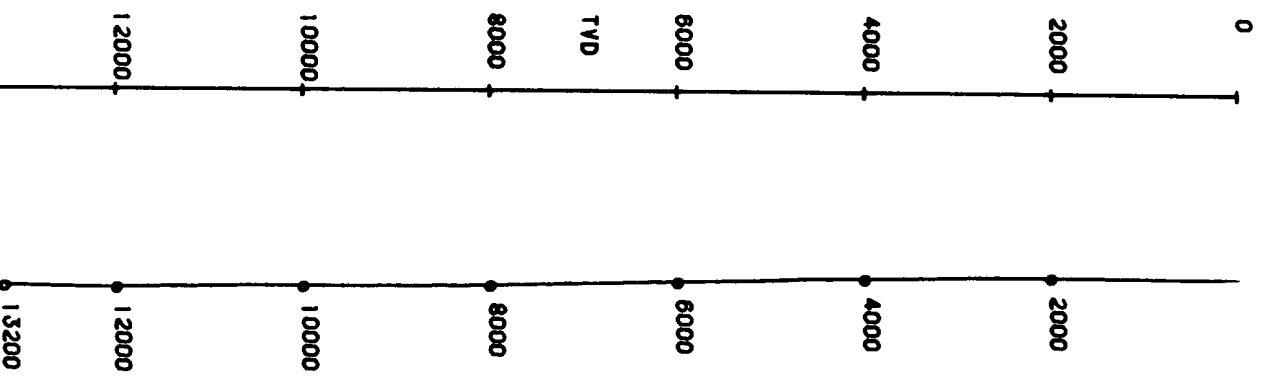
SURVEY RUN INFORMATION

=====

SEEKER I GYROSCOPIC SURVEY
SURVEYOR: STEVE COVINGTON
430-0085
(0'-13,203')

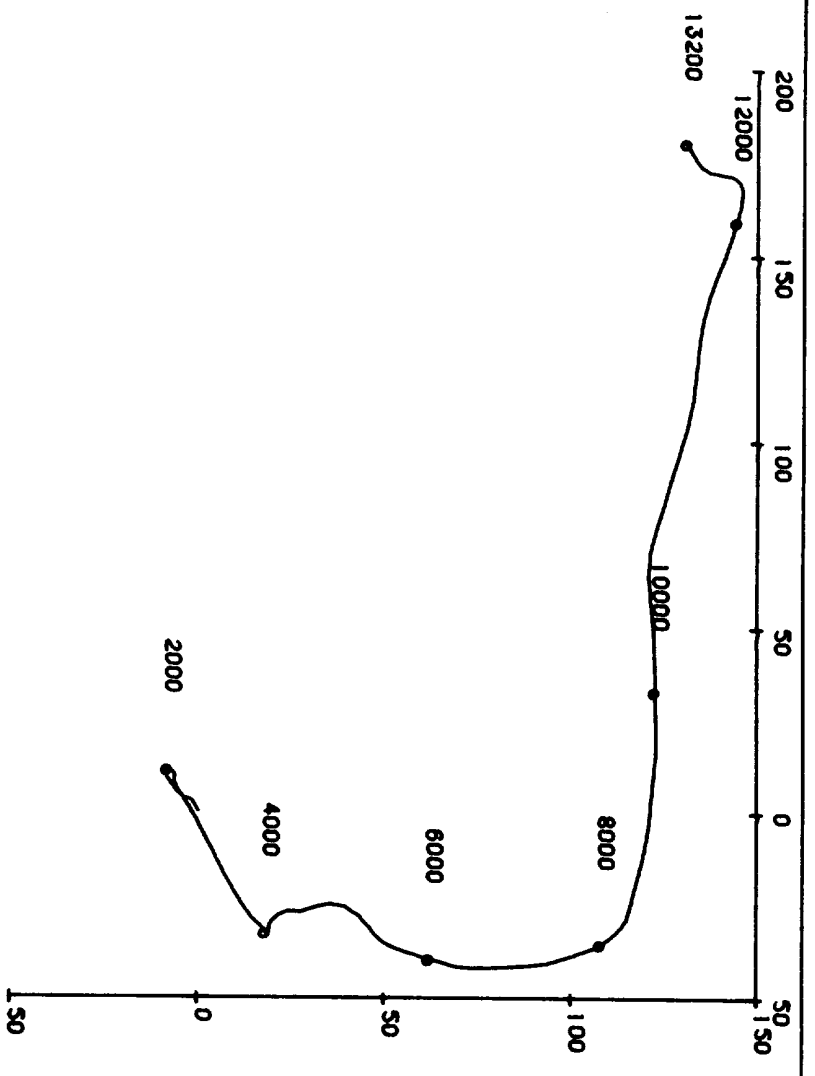


REC-511111
DEC 29 1986
D-72
HARRIS OFFICE



V. SECTION PLANE,
NO°00'E
SURVEY, S01123.83U

SCALE 1"=2000FT.



SCALE 1"=50FT.
NOTE: COORDINATES RELATIVE
TO SLOT

SUN EXPLORATION AND PRODUCTION COMPANY
PITCHFORK FEDERAL NO. 1
LEA COUNTY, NEW MEXICO
WELL, PITCHFORK NO. 1
SLOT, 1

RECEIVED

DEC 29 1986

OCD
HOBBS OFFICE



(915) 563-0511
P.O. Box 6341/Terminal Station/Midland, TX 79711-0341

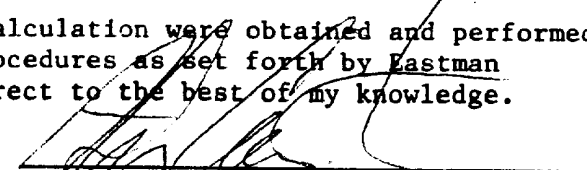
SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, STEVE COVINGTON, in the employ of Eastman Whipstock, Inc., did on the days of JUNE 10, 1986 thru JUNE 10, 1986 conduct or supervise the taking of a SEEKER I GYROSCOPIC survey by the method of magnetic orientation from a depth of 0' feet to 13203' feet, with recordings of inclination and direction being obtained at approximate intervals of 100' feet.

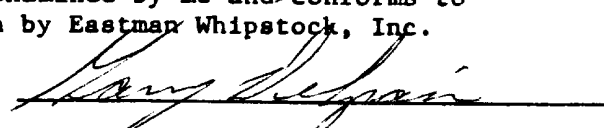
This survey was conducted at the request of SUN EXPLORATION AND PRODUCTION CO. for their PITCHFORK FED. NO. 1, LEA County, State of NEW MEXICO, in the _____ field.

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.



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 STEVE COVINGTON, 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 17 day of December, 1986



Timothy R. Stephens
Notary Public, State of Texas
My Commission Expires 4-1-89



Notary Public in and for the
County of Midland, Texas
My commission expires _____

RECEIVED
DEC 13 1968
U.S. AIR FORCE
HEADQUARTERS

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

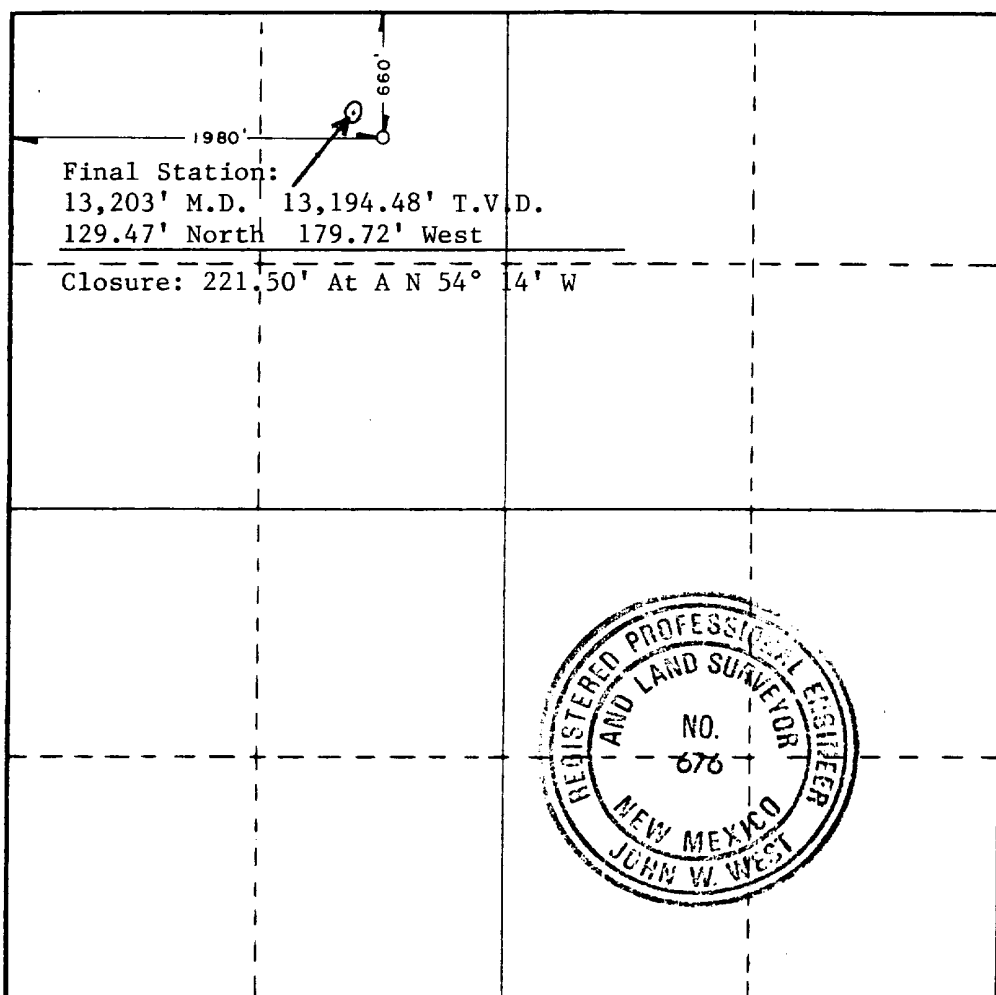
Operator SUN EXPLORATION AND PRODUCTION COMPANY			Lease PITCHFORK FEDERAL		Well No. 1
Unit Letter C	Section 11	Township 25 SOUTH	Range 34 EAST	County LEA	
Actual Footage Location of Well:					
660 feet from the		NORTH	line and	1980 feet from the	
				WEST	line
Ground Level Elev. 3361.0'	Producing Formation		Pool		Dedicated Acreage: Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure 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

MARCH 13, 1986

Registered Professional Engineer
 and/or Land Surveyor

[Signature]

Certificate No. **JOHN W. WEST, 676**
RONALD J. EIDSON, 3239

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