TENNECO OIL COMPANY
UNORTHODOX SURFACE LOCATION AND
DIRECTIONAL DRILLING APPLICATION
BASIN DAKOTA POOL
SECTION 10, T29N, R13W
SAN JUAN COUNTY, NEW MEXICO
CASE #8915

BEFORE EXAMINER STOGNER
OIL CONSERVATION DIVISION
TCO EXHIBIT NO. 1
CASE NO. 8915

201 LEGALS

NOTICE OF PUBLICATIONSTATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
SANTA FE - NEW MEXICO

The State of New Mexico by its Oil Conservation Division hereby gives notice pursuant to law and Rules and Regulations of said Regulations of said Division promulgated thereunder of the following public hearing to be held at 8:15 am on JUNE 12, 1986, at the Oil Conservation Division Conference Room, State Land Office Building, Santa Fe, New Mexico before David R. Catanach, Examiner, or Michael E. Stogner, Alternate Examiner, both duly appointed for said as provided by law.

STATE OF NEW MEXICO TO:
All named parties and persons
having any right, title, interest
or claim in the following cases
and notice to the public.

(NOTE: All land descriptions herein refer to the New Mexico Principal Meridian whether or not so stated.)

CASE 8909

In the matter of the hearing called by the Oil Conservation Division on its own motion to amend Rule 312 to provide for administrative approval of applicaitons for treating plants, to require a cash or surety bond sufficient for surface reclamation of the treating plant facility site, and to additionally condition the bond upon land surface reclamation to OCD standards.

CASE 8914

Application of Chase Energy, Inc. for salt water disposal, San Juan County, New Mexico.

Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Slick Rock-Dakota Oil Pool in the open-hole interval from 750 feet to 758 feet in their DEB Well No. 18 located 510 feet from the South line and 420 feet from the East line (Unit P) of Section 36, Township 30 North, Range 17 West.

CASE 8915

Application of Tenneco Oil Company for directional drilling, San Juan County, New Mexico.

Applicant, in the above-styled cause, seeks authority for the directional drilling of four wells to the Basin-Dakota Pool on its City of Farmington Lease, all in Section 10, Township 29 North, Range 13 West, Farmington city limits, as follows:

1) Well No. 1
Surface Location (S.L.) - 2160' FSL - 1591' FEL
Bottom Hole Location (B.H.L.) - 1750' FSL - 1775' FEL

2) Well No. 1-E
S.L. - 2203' FSL - 1653' FEL
B.H.L. - 1650' FN & EL

3) Well No. 2
S.L. - 2159' FSL - 1712' FEL
B.H.L. - 1650' FS & WL

4) Well No. 2-E
S.L. - 2246' FSL - 1712' FEL
B.H.L - 1650' FN & WL

Wells Nos. 1 and 1-E to be dedicated to the E/2 of said Section 10 and Wells Nos. 2 and 2E to be dedicated to the W/2 of said Section 10.

GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico on this 21st day of May, 1986.

SEAL
STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
R.L. STAMETS
DIRECTOR

Legal No. 18386 published in the Farmington Daily Times, Farmington, New Mexico on Friday, May 30, 1986.

Tenneco Oil
Exploration and Production
A Tenneco Company

6162 South Willow Drive
P.O. Box 3249
Englewood, Colorado 80155
(303) 740-4800

Western Rocky Mountain Division

June 4, 1986

CERTIFIED MAIL
Return Receipt Requested

New Mexico Oil Conservation Commission
R. L. Stamets
P.O. Box 2088
Santa Fe, New Mexico 87501

New Mexico Oil Conservation Commission
Frank Chavez
1000 Rio Brazos Road
Aztec, New Mexico 87410

Offset Operators and Surface Owners as shown on attached mailing list.

Gentlemen:

The purpose of this letter is to notify you that an application for an unorthodox location and directional drilling (copy enclosed) has been filed by Tenneco Oil Company. This application may affect an interest which you have in Section 10, T29N, R13W, NMPM, San Juan County, New Mexico, as shown in the attached application. This application has been set for hearing by the Oil Conservation Division on June 25, 1986 at the State Land Office, Santa Fe, New Mexico. You have the right to appear at this hearing, either in opposition or in support of the application.

Sincerely,

TENNECO OIL COMPANY

Scott McKinney

Scott McKinney
Senior Regulatory Analyst

SM/cc

Attachments

2

STATE OF NEW MEXICO
DEPARTMENT OF ENERGY AND MINERALS
OIL CONSERVATION DIVISION

RECEIVED
JUL [illegible] 1990
OIL CONSERVATION DIVISION

IN THE MATTER OF THE APPLICATION OF TENNECO OIL EXPLORATION AND PRODUCTION COMPANY, FOR APPROVAL OF FOUR UNORTHODOX SURFACE LOCATIONS AND DIRECTIONAL DRILLING, BASIN DAKOTA GAS POOL, SAN JUAN COUNTY, NEW MEXICO.

CASE:

A P P L I C A T I O N

Comes now TENNECO OIL COMPANY, by and through its attorneys, Kellahin & Kellahin, and applies to the New Mexico Oil Conservation Division for approval of the following four unorthodox surface locations and directional drilling, all within Section 10, T29N, R13W, NMPM, San Juan County, New Mexico.

(1) City of Farmington Com #1 Well:

Surface: 2160' FSL and 1591' FEL
BHL: 1750' FSL and 1775' FEL
Dedication: E/2
Vertical Depth: 6015'

(2) City of Farmington Com #1-E Well:

Surface: 2203' FSL and 1653' FEL
BHL: 1650' FNL and 1650' FEL
Dedication: E/2
Vertical Depth: 6015'

(3) City of Farmington #2 Well:

Surface: 2159' FSL and 1712' FEL
BHL: 1650' FSL and 1650' FWL
Dedication: W/2
Vertical Depth: 6024'

3

(4) City of Farmington #2-E Well:

Surface: 1712' FEL and 2246' FSL
BHL: 1650' FNL and 1650' FWL
Dedication: W/2
Vertical Depth: 6009'

1. The subject wells are located in the City of Farmington with the proposed surface locations being unorthodox and the proposed bottom hole locations being standard pursuant to the Basin Dakota Gas Pool Rules.

2. The subject wells are intended to be drilled to the Basin Dakota Gas Pool but applicant seeks approval of the subject wells for any formations from the surface to the base of the Basin Dakota Pool.

3. Applicant has notified those offsetting operators and surface owners surrounding the proposed unorthodox surface well locations. Any interested party is advised to notify the Division, the applicant, or to consult the Division rules and regulations concerning his rights. In addition, any interested party is entitled to attend the hearing and present evidence or statements either for or against the application.

4. Each of the subject wells shall be directional drilled and applicant seeks approval of the Division to intentionally deviate the wells as provided for in Division Rule 111.

5. For each of the bottom hole locations, applicant seeks authority to drill the subject well to a point within a 50' radius target of the requested bottom hole location.

6. The unorthodox surface locations are necessitated because of topographical restrictions on the surface.

7. Approval of the application will prevent waste, protect correlative rights and promote conservation.

WHEREFORE, Applicant requests that this application be set for hearing and that after notice and hearing, the application be granted as requested.

Kellahin & Kellahin

By Karen Aubrey

Karen Aubrey
P. O. Box 2265
Santa Fe, New Mexico 87501

Attorneys for Applicant

OFFSET OPERATORS

E. L. Fundingsland
7400 East Orchard Road
Suite 240
Englewood, Colorado 80111

Ladd Petroleum Corporation
370 17th Street
Suite 1700
Denver, Colorado 80202-5617

Pioneer Production Corporation
P.O. Box 2542
Amarillo, Texas 79189

TENNECO OIL COMPANY
P. O. BOX 3249
ENGLEWOOD, CO. 80155

Property owners within 100 feet of the following described property.

Northwest Quarter of the Southeast Quarter of
Section Ten (10), Township Twenty-Nine (29),
Range Thirteen (13), San Juan County, New Mexico.
RECORD OWNER: TENNECO OIL COMPANY

	OWNER	ADDRESS	LEGAL DESCRIPTION
A.	CITY OF FARMINGTON	P. O. BOX 900 FARMINGTON, NM 87499	10-29-13 pt NE1/4SE1/4 & W1/2NE1/4SE1/4
B.	JOHN S. & HELENE SCOTT	5301 MARCY PLACE FARMINGTON, NM 87499	10-29-13 pt NW1/4SE1/4
B.	LAWRENCE A. & NANCY R. BREWER	4109 SKYLINE DRIVE FARMINGTON, NM 87499	10-29-13 pt NW1/4SE1/4
B.	H.D. & ADA M. ROSEBROUGH, TRUSTEES	P. O. BOX 1020 FARMINGTON, NM 87499	10-29-13 pt NW1/4SE1/4
C.	CLARENCE RUSSEL & DELORES J. ZIMMERMAN, c/o EDWIN THOMAS & LORETTA JEAN BOYLES	1700 NORTH CARLTON FARMINGTON, NM 87401	10-29-13 pt NW 1/4SE1/4
D.	JOHN H. & ROBBIE M. PARKER, TRUSTEE	1125 EAST UTE FARMINGTON, NM 87401	10-29-13 pt NENWSE1/4
E.	GERI C. WALDROUP	1107 DELHI TERRACE FARMINGTON, NM 87401	CRESTVIEW PARK PART OF LOT 7
E.	JOHN A. & MAXINE L. DEAN c/o JAMES R. & SHERYL J. FREEMAN assigned to DIMMICK REALTY	1111 EAST UTE STREET FARMINGTON, NM 87401	CRESTVIEW PARK PART OF LOT 7
F.	LARRY L. & SABRINA L. HAWKINS	NO. 44 ROAD 5285 BLOOMFIELD, NM 87413	NA-VINE SUBDIVISION LOTS 1 & 2
G.	WILLIAM JAY HAMM	1005 EAST NAVAJO, UNIT 2 FARMINGTON, NM 87401	THE WILLOWS CONDO UNIT 2
G	FRANK P. & MARTHA J. AMEDES	1005 EAST NAVAJO, UNIT 3 FARMINGTON, NM 87401	THE WILLOWS CONDO UNIT 3

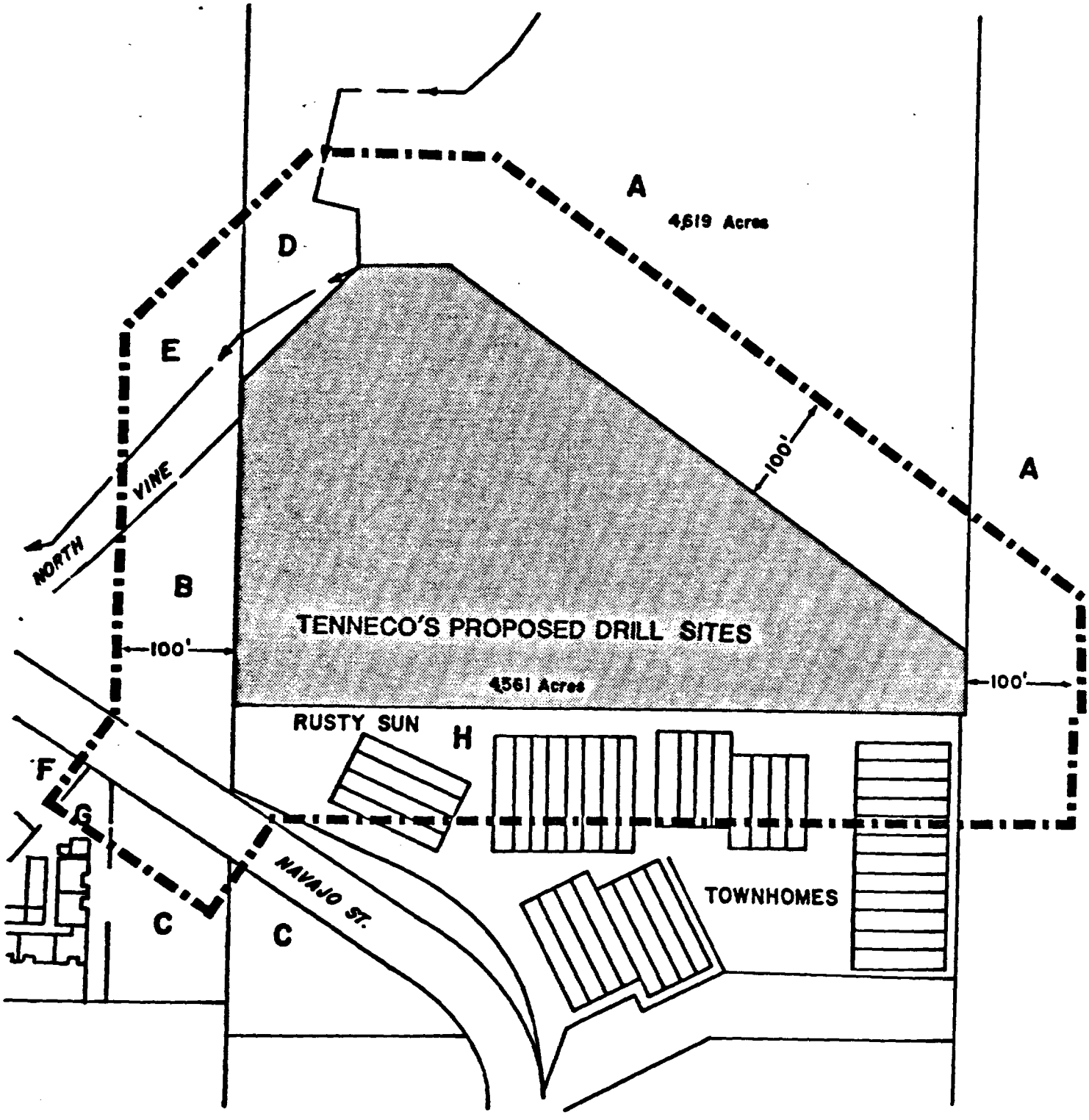
7

G.	BRUCE D. & KAREN A. BROWN	1005 EAST NAVAJO, UNIT 4 FARMINGTON, NM 87401	THE WILLOWS CONDO UNIT 4
G.	DUANE F. DAWSON	1005 EAST NAVAJO, UNIT 6 FARMINGTON, NM 87401	THE WILLOWS CONDO UNIT 6
G.	MARTIN J. & BRENDA K. HUSLIG	P. O. BOX 3353 FARMINGTON, NM 87499	THE WILLOWS CONDO UNIT 7
G.	EUGENE F. & GLADYS R. ISLAS	1005 EAST NAVAJO, UNIT 8 FARMINGTON, NM 87401	THE WILLOWS CONDO UNIT 8
G.	JOHN L. & TORI L. JIMERFIELD & DONALD D. ROBBINS	1220 EAST 18TH STREET FARMINGTON, NM 87401	THE WILLOWS CONDO UNIT 9
G.	ALAN C. & BEVERLY A MOFFETT, RICHARD K. OLSON LEASE W/OPTION TO PURCHASE	1011 NORTH DUSTIN FARMINGTON, NM 87401	THE WILLOWS CONDO UNIT 10
		RUSTY SUN TOWNHOMES BUILDING A	
H.	WILLIAM L. WILLIAMS	P. O. BOX N EDWARDS, CO. 81632	RUSTY SUN TOWNHOMES BUILDING A, UNIT 1010 BUILDING E, UNIT 1078
H.	MARY COOK MAHAN	1012 EAST NAVAJO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES BUILDING A, UNIT 1012 BUILDING D, UNIT 1052
H.	TERRY D. & SANDRA L IRBY	1014 EAST NAVAJO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES BUILDING A, UNIT 1014
H.	GEORGE H. & CHARLOTTE G. PEACOCK	1016 EAST NAVAJO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES UNIT 1016
		RUSTY SUN TOWNHOMES BUILDING B	
H.	KAY S. COGGINS, TRUSTEE	1018 EAST NAVAJO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES UNIT 1018
H.	RON D. COFFEE	1020 EAST NAVAJO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES UNIT 1020
H.	4-A PARTNERSHIP c/o TARMO V. & KAY L SUITT	2504 CALLE DE RINCON BONITO SANTA FE, NM 87501	RUSTY SUN TOWNHOMES UNIT 1022
H.	RAYMOND E. COMSTOCK	1016 EAST NAVAJO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES UNIT 1024
H.	J. PAUL MATHENY c/o WALTER B. (SKIP) & LINDA FRAKER	1026 EAST NAVAJO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES UNIT 1026

H.	GLENDA PAULINE WATSON	4300 BRYN MAWR, N.E. #20 ALBUQUERQUE, NM 87107	RUSTY SUN TOWNHOMES UNIT 1028
H.	ROBERT D. & ROSANNE S. McNEIL	P. O. BOX 471 FARMINGTON, NM 87499	RUSTY SUN TOWNHOMES UNIT 1030
H.	IRMA ARELLANO	P. O. BOX 537 BLOOMFIELD, NM 87413	RUSTY SUN TOWNHOMES UNIT 1032
H.	CHARLES L. PEARSON, TRUSTEE	1050 EAST NAVAJO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES BUILDING D, UNIT 1050
		RUSTY SUN TOWNHOMES BUILDING D	
H.	CHARLES A. BATES	P. O. BOX 30187 STATION D ALBUQUERQUE, NM 87190	RUSTY SUN TOWNHOMES BUILDING D, UNIT 1054
H.	MARY ANN HILL HUNTSMAN, TRUSTEE	13120 DEILA RONGA LANE NE ALBUQUERQUE, NM 87111	RUSTY SUN TOWNHOMES BUILDING D, UNIT 1056
H.	EULA E. GRIFFITH, TRUSTEE	1058 EAST NAVAJO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES BUILDING D. UNIT 1058
H.	JOHN W. EDEN	107 NORTH ORCHARD FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES BUILDING D, UNIT 1060 BUILDING E, UNIT 1076 THE WILLOWS CONDOMINIUMS UNIT 1
	JAMES E. & ROSALEA CALDWELL	BOX 987 FARMINGTON, NM 87499	RUSTY SUN TOWNHOMES BUILDING D, UNIT 1062
H.	MICHAEL D. & LOUISE FARRELL	P. O. BOX 215 BLOOMFIELD, NM 87413	RUSTY SUN TOWNHOMES BUILDING D, UNIT 1064 THE WILLOWS CONDOMINIUMS UNIT 5
		RUSTY SUN TOWNHOMES BUILDING E	
H.	HENRY W. FAUSCH	2124 TESORO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES BUILDING E., UNIT 1066
H.	ANDRE E. & LYNN HALL ZUPANS	1068 EAST NAVAJO FARMINGTON, NM 87401	RUSTY SUN TOWNHOMES BUILDING E, UNIT 1068
H.	A. LEONARD & SUSAN O. NACHT 972/173	1510 ALAMO COLORADO SPRINGS, CO. 80907	RUSTY SUN TOWNHOMES BUILDING E. UNIT 1070 UNIT 1072
H	HURBERT N. & KATHERINE PETERSON 974/323	P. O. BOX 174 EAGLE, CO 81631	RUSTY SUN TOWNHOMES BUILDING E, UNIT 1074

* SEE MAP EXHIBIT A

EXHIBIT "A"



TENNECO'S SURFACE OWNERSHIP

SURFACE OWNERS WITHIN 100' OF TENNECO'S PROPERTY LINE

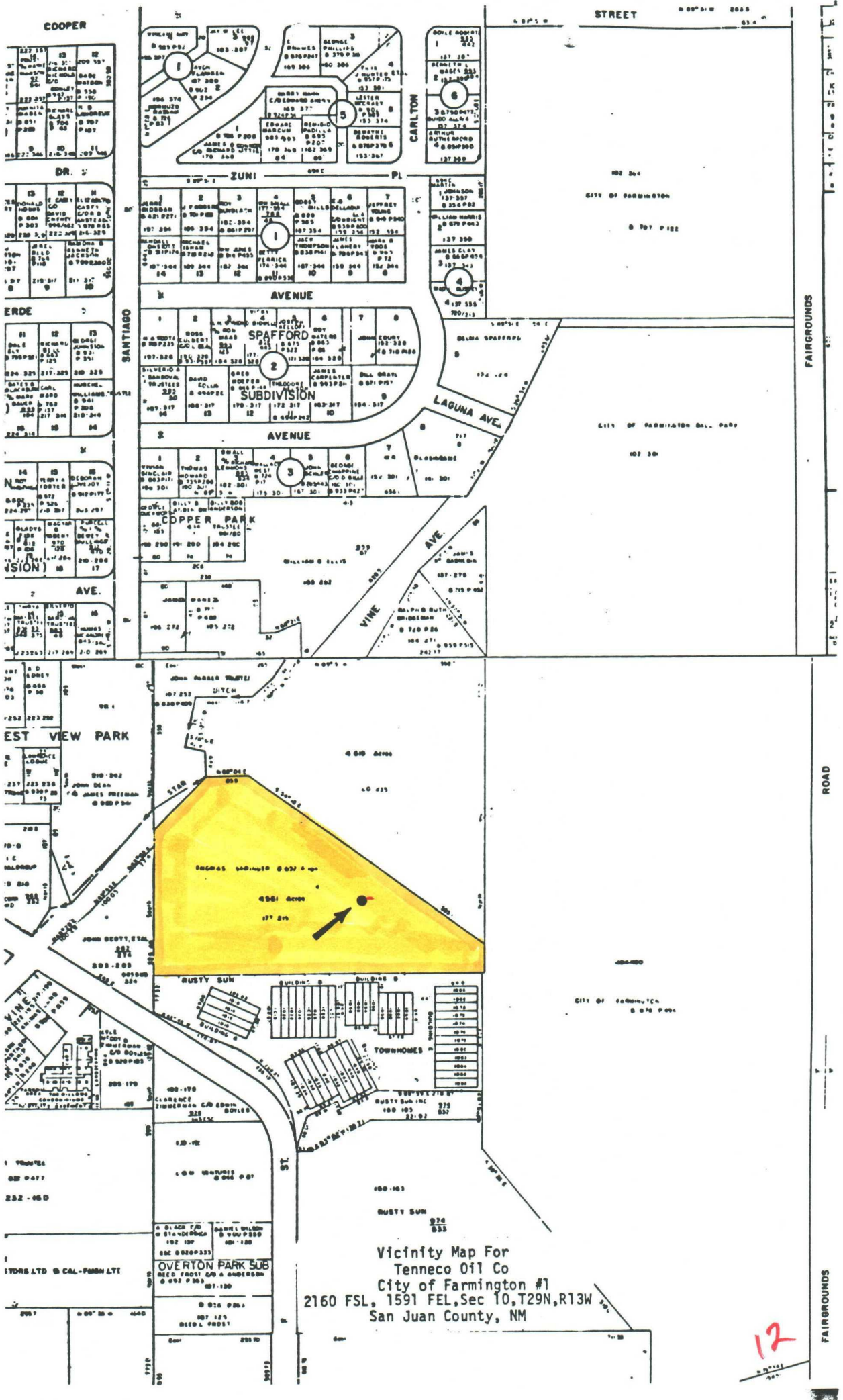
A-through-H SEE ATTACHED OWNERSHIP LIST

UNORTHODOX SURFACE LOCATION
AND DIRECTIONAL DRILLING APPLICATION

WELL NAME:	CITY OF FARMINGTON COM #1
SURFACE LOCATION:	2160' FSL and 1591' FEL
BOTTOM-HOLE LOCATION:	1750' FSL and 1775' FEL
SPACING:	E/2 of Section 10, Township 29 North, Range 13 West, N.M.P.M. San Juan County, New Mexico

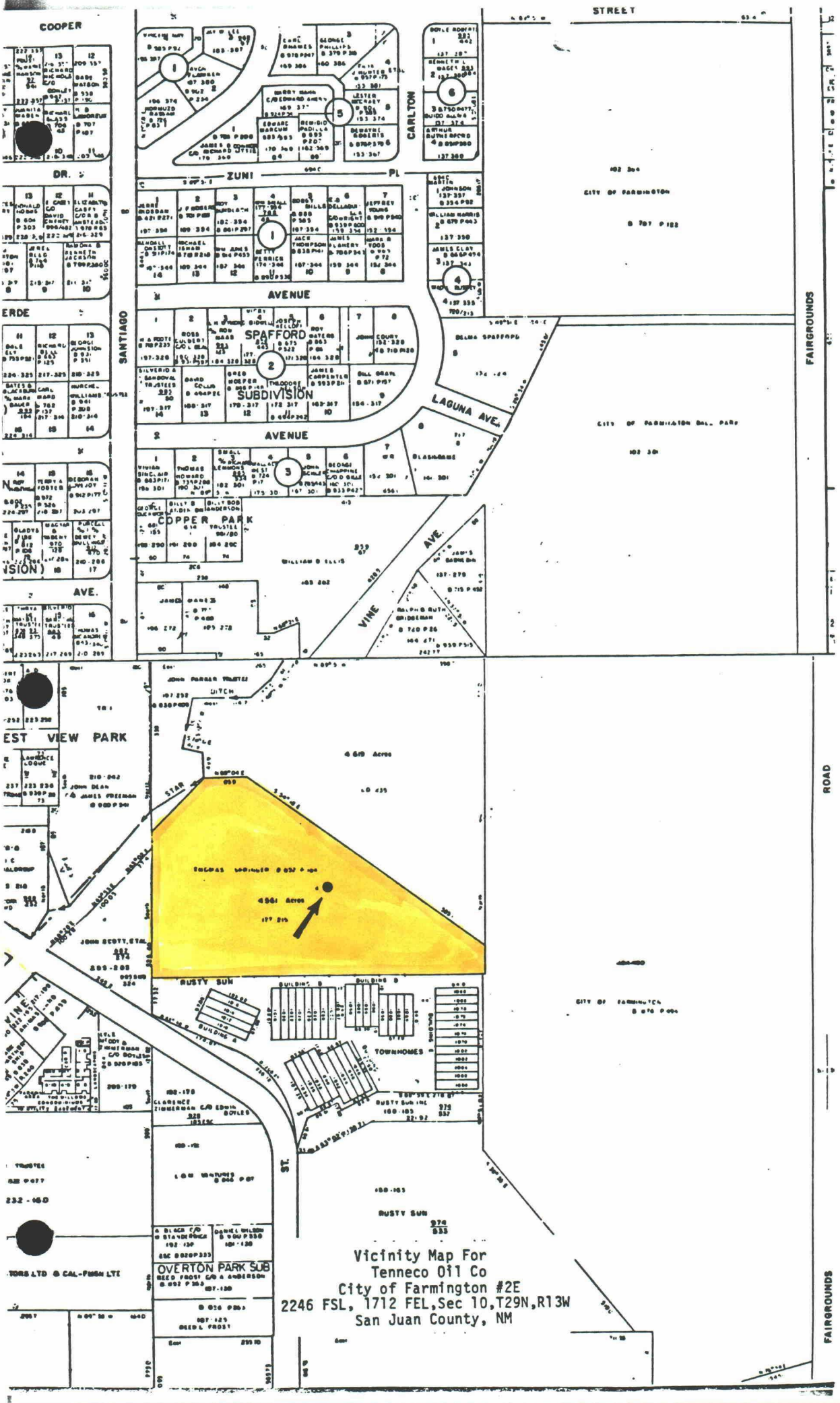
Tenneco Oil Company plans to drill the captioned Dakota formation well in the fourth quarter of 1986. The well is located in the city of Farmington, New Mexico. Due to topographical restrictions, the proposed surface location is unorthodox, and the proposed bottom-hole location is standard pursuant to the Basin Dakota Pool Rules. Tenneco seeks approval by the New Mexico Oil Conservation Division allowing for an unorthodox surface location and to directionally drill the captioned well.

The enclosed documentation demonstrates that all of the requirements as stipulated by the New Mexico Oil Conservation Division have been met.



Vicinity Map For
Tenneco Oil Co
City of Farmington #1
2160 FSL, 1591 FEL, Sec 10, T29N, R13W
San Juan County, NM

12


COOPER
DR.
ERDE
AVE.
STREET
CARLTON
ZUNI
PL
AVENUE
SPAFFORD
SUBDIVISION
SANTIAGO
LAGUNA AVE.
FAIRGROUNDS
COPPER PARK
VINE
AVE.
EST VIEW PARK
STAR
RUSTY SUN
TOWNHOMES
ROAD
ST.
OVERTON PARK SUB
4.619 Acres
4.561 Acres
Vicinity Map For
Tenneco Oil Co
City of Farmington #2E
2246 FSL, 1712 FEL, Sec 10, T29N, R13W
San Juan County, NM

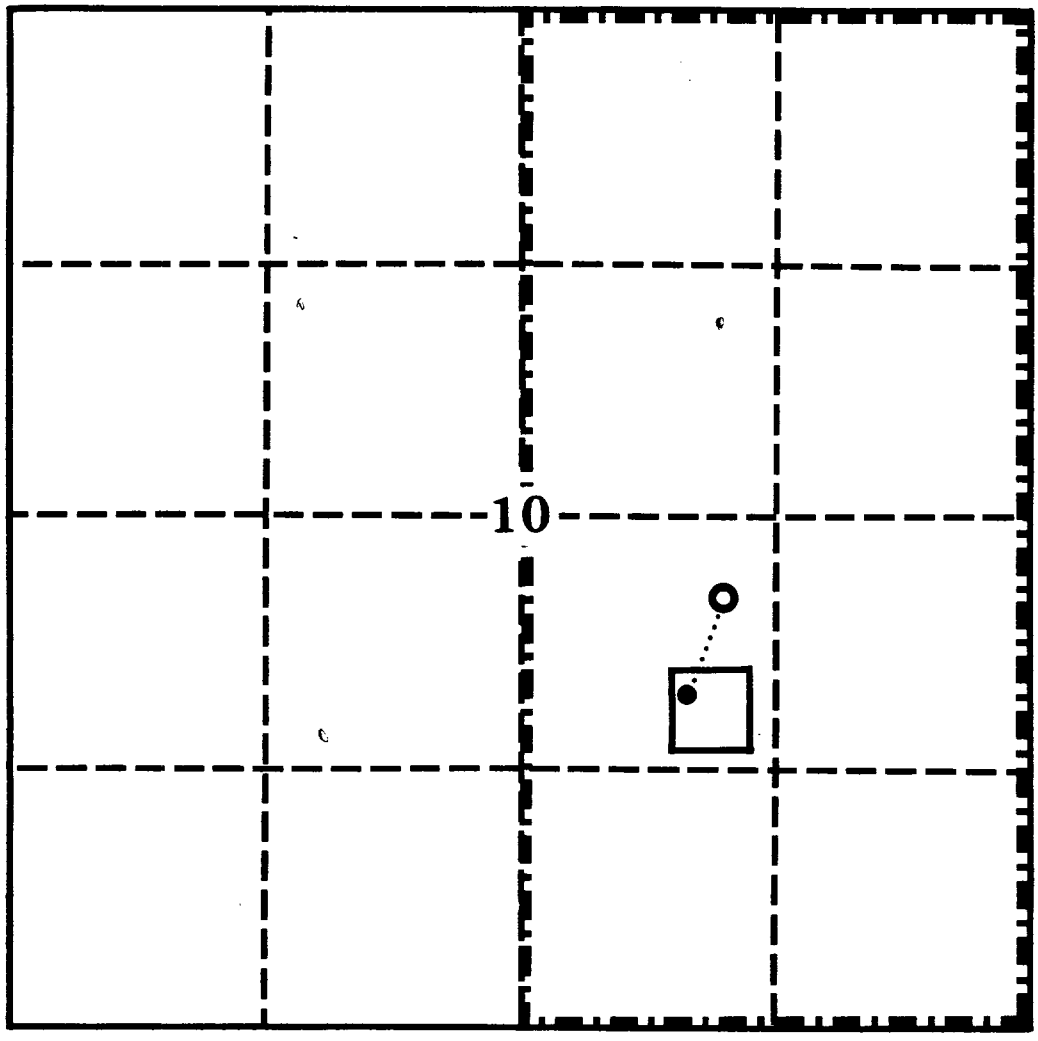
72

SURFACE ○

2160 FSL, 1591 FEL
SEC. 10, T29N, R13W
SAN JUAN COUNTY, NEW MEXICO

BOTTOM HOLE ●

1750 FSL, 1775 FEL
SEC. 10, T29N, R13W
SAN JUAN COUNTY, NEW MEXICO



□ DRILLING WINDOW

▬·▬·▬ DEDICATED ACREAGE

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

TENNECO

CITY OF FARMINGTON COM #1
SAN JUAN COUNTY, NEW MEXICO

SURFACE AND BOTTOM HOLE LOCATION PLAT

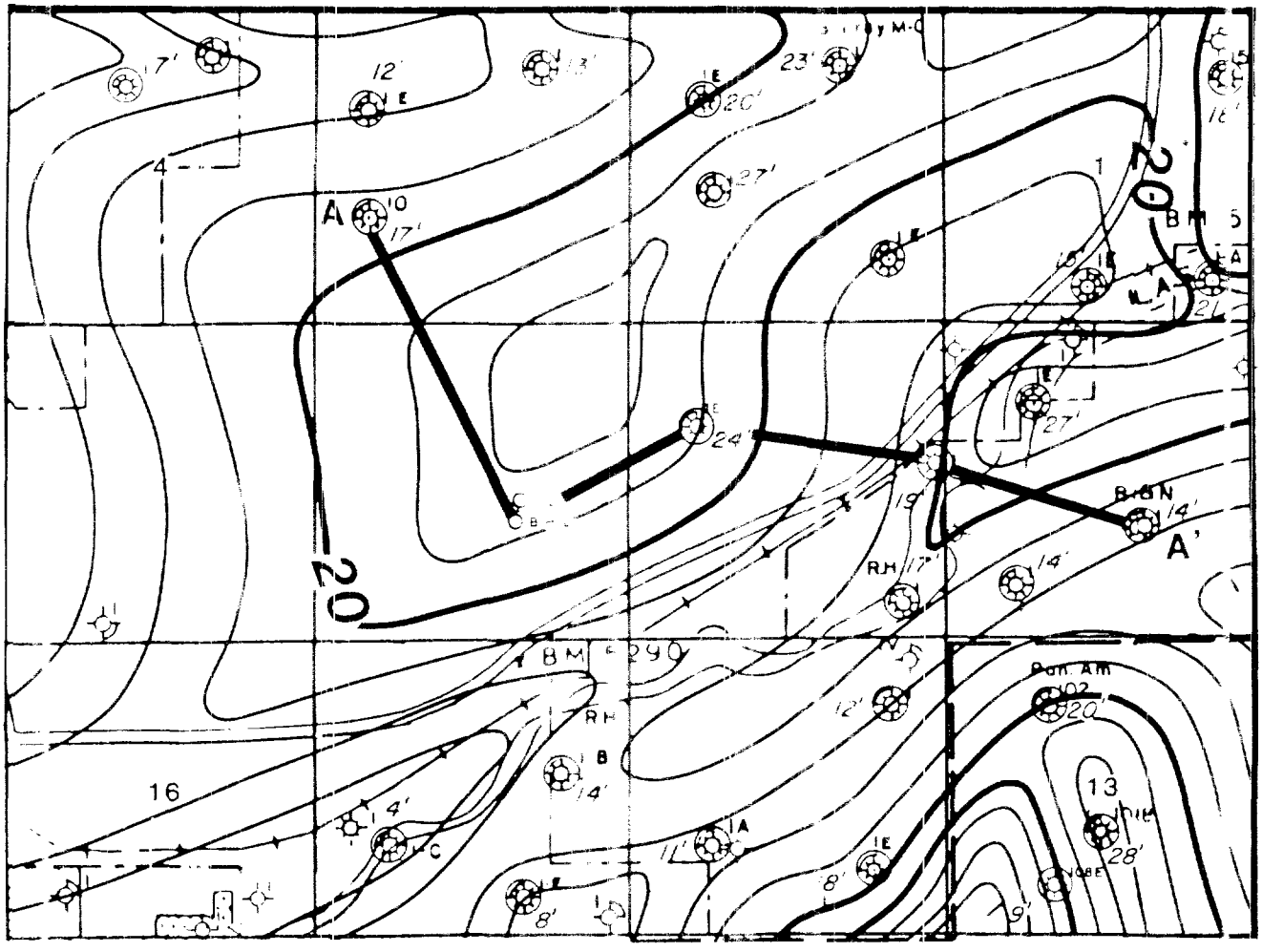
0 1000 2000 FEET

13

DRAFTED BY:

CHECKED BY:

R 13 W



- DRY HOLE
- PICTURED CLIFFS GAS WELL
- MESAVERDE GAS WELL
- DAKOTA GAS WELL
- DATA POINT WELL

Tenneco Oil
Exploration and Production

SOUTH FARMINGTON-GALLEGOS AREA
SAN JUAN COUNTY, NEW MEXICO

DAKOTA "B1" SAND NET PAY ISOPACH

C.I. 4'

1 MILE

A

NW

F.L.FUNDINGSLAND
S.D.SUNICAL No. 10
NWSWSec. 3, T29N-R13W

PROPOSED LOCATION
Sec. 10, T29N-R13W

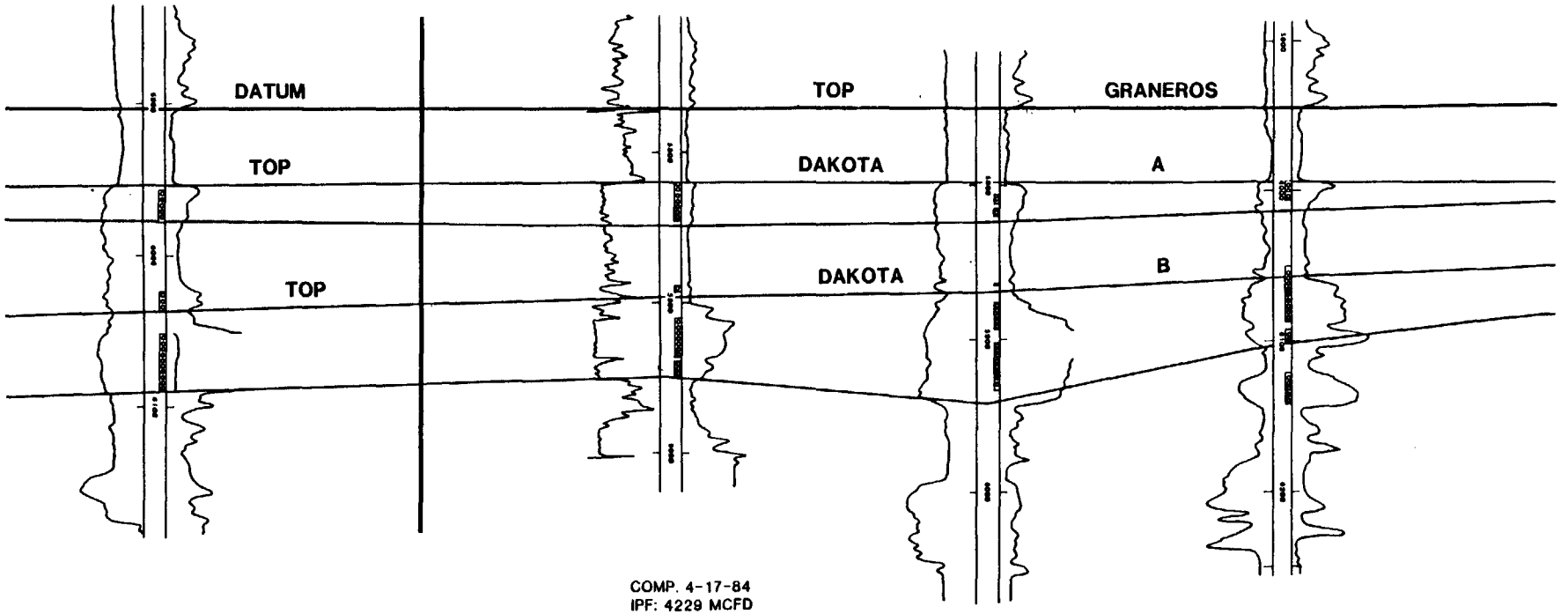
TENNECO
IRVIN COM No. 1E
SENW Sec. 11, T29N-R13W

TENNECO
IRVIN COM #1
SENE Sec. 11, T29N-R13W

REDFERN & HERD
SMITH No. 1
NWSE Sec. 12, T29N-R13W

A'

SE



COMP. 11-13-64
IPF: 4287 MCFD
CUM: 637 MMCF
as of 1/1/86

COMP. 4-17-84
IPF: 4229 MCFD
CUM: 196 MMCF
as of 1/1/86

COMP. 1-12-70
IPF: 7295 MCFD
CUM: 1069 MMCF
as of 1/1/86

COMP. 3-3-60
IPF: 3163 MCFD
CUM: 1200 MMCF
as of 1/1/86

HORIZONTAL SCALE: 735'

VERTICAL SCALE: 40'

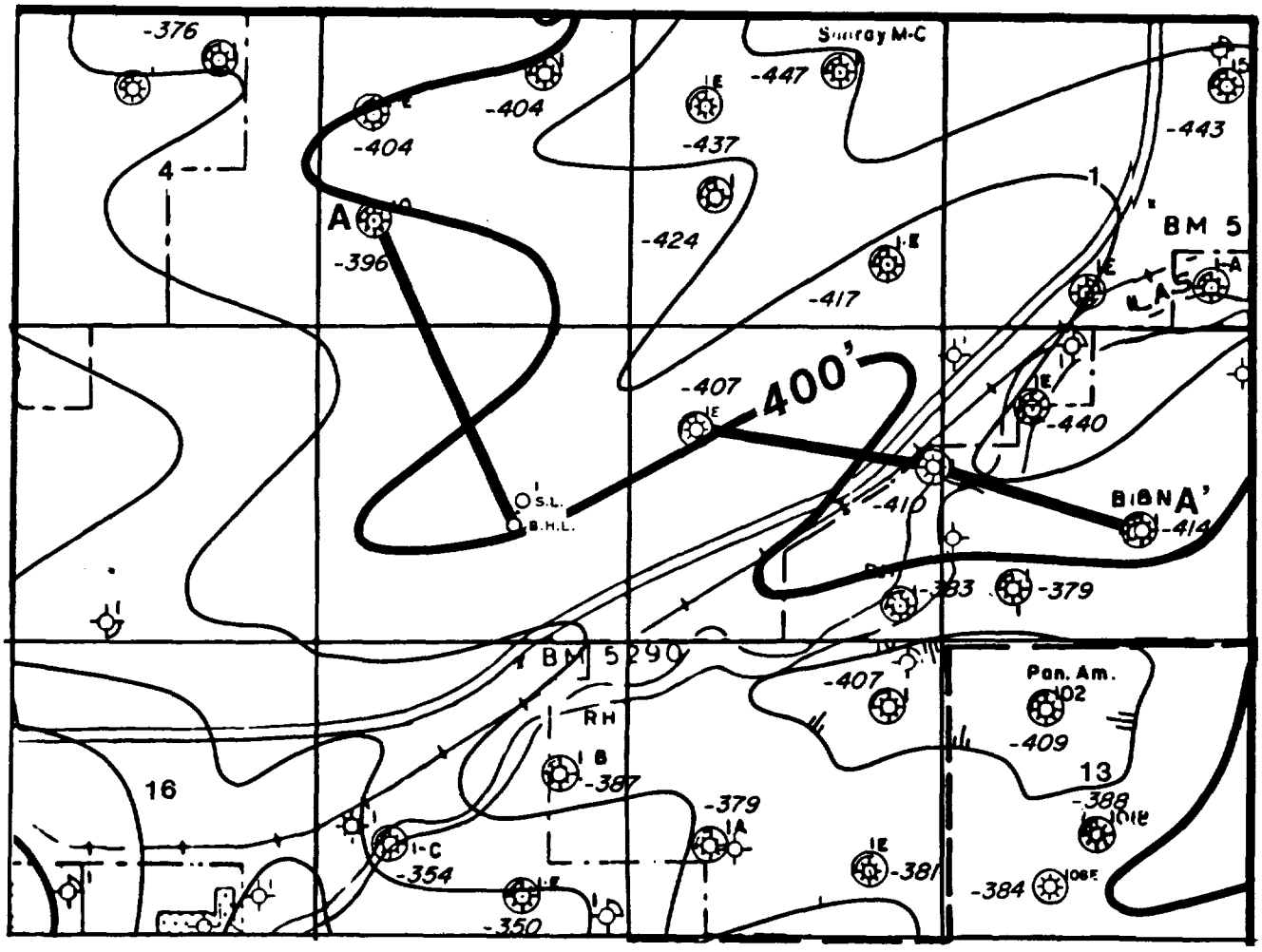
Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

CITY OF FARMINGTON AREA
SAN JUAN COUNTY, NEW MEXICO

DAKOTA STRATIGRAPHIC
CROSS SECTION

5

R 13 W



- DRY HOLE
- PICTURED CLIFFS GAS WELL
- MESAVERDE GAS WELL
- DAKOTA GAS WELL
- DATA POINT WELL

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

TENNECO

SOUTH FARMINGTON-GALLEGOS AREA
SAN JUAN COUNTY, NEW MEXICO

STRUCTURE CONTOUR MAP

DATUM: BASE OF GREENHORN LIMESTONE

C.I. 25'

1 MILE

DRAFTED BY:

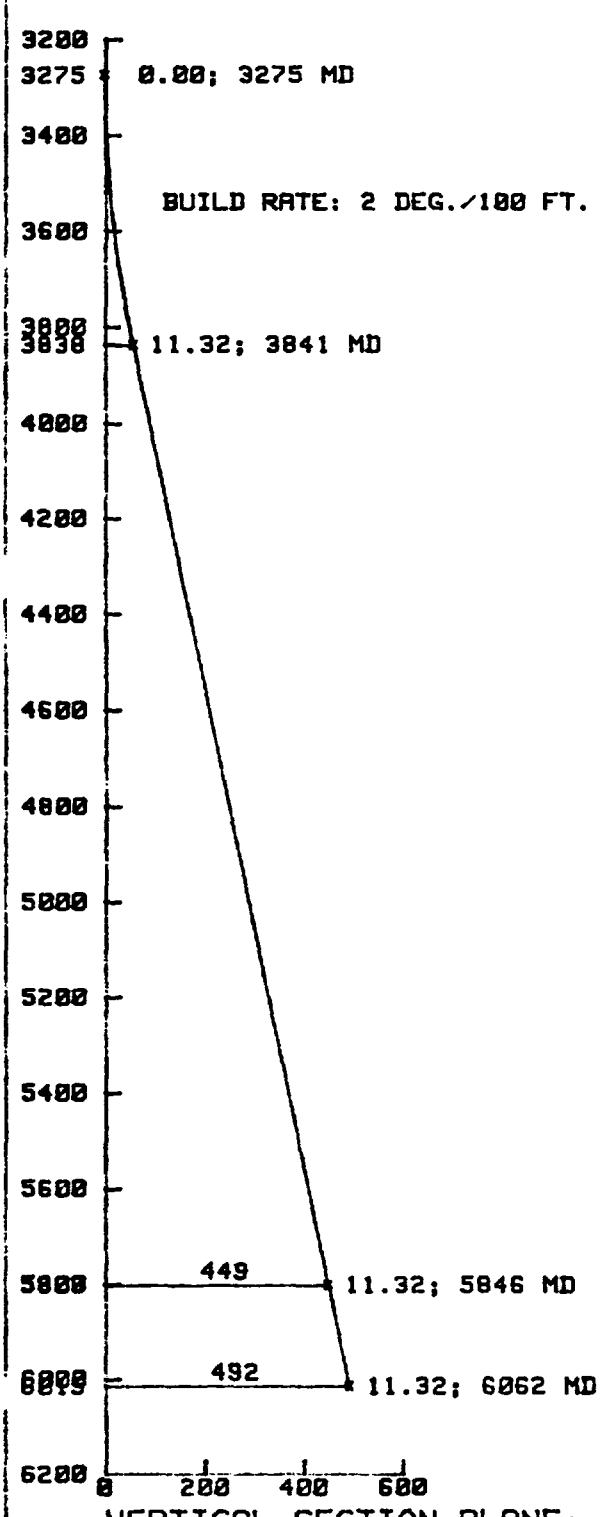
16

17 JUN 1986 @ 13:57

TENNECO OIL COMPANY
CITY OF FARMINGTON #1
SEC 10-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO

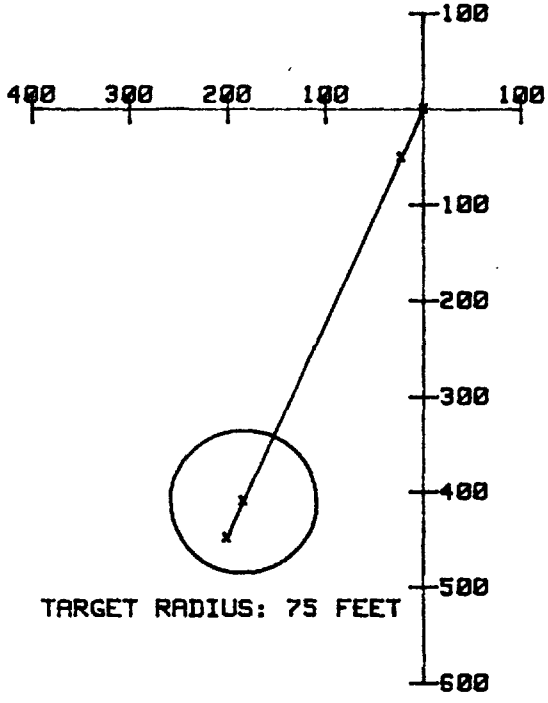
DATADRIL
Division of Smith International, Inc.

VERTICAL PLAN
SCALE: 200 FEET/DIVISION



VERTICAL SECTION PLANE: S 24.17 W

HORIZONTAL PLAN
SCALE: 100 FEET/DIVISION



SUR. LOC.: 2160 FSL, 1591 FEL
BHL: 1750 FSL, 1775 FEL

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Sii DATADRIL
Division of Smith International, Inc.

TENNECO OIL COMPANY
CITY OF FARMINGTON #1
SEC 10-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO

SUR. LOC.: 2160 FSL, 1591 FEL
BHL: 1750 FSL, 1775 FEL

FILE NAME: TENNCOF1

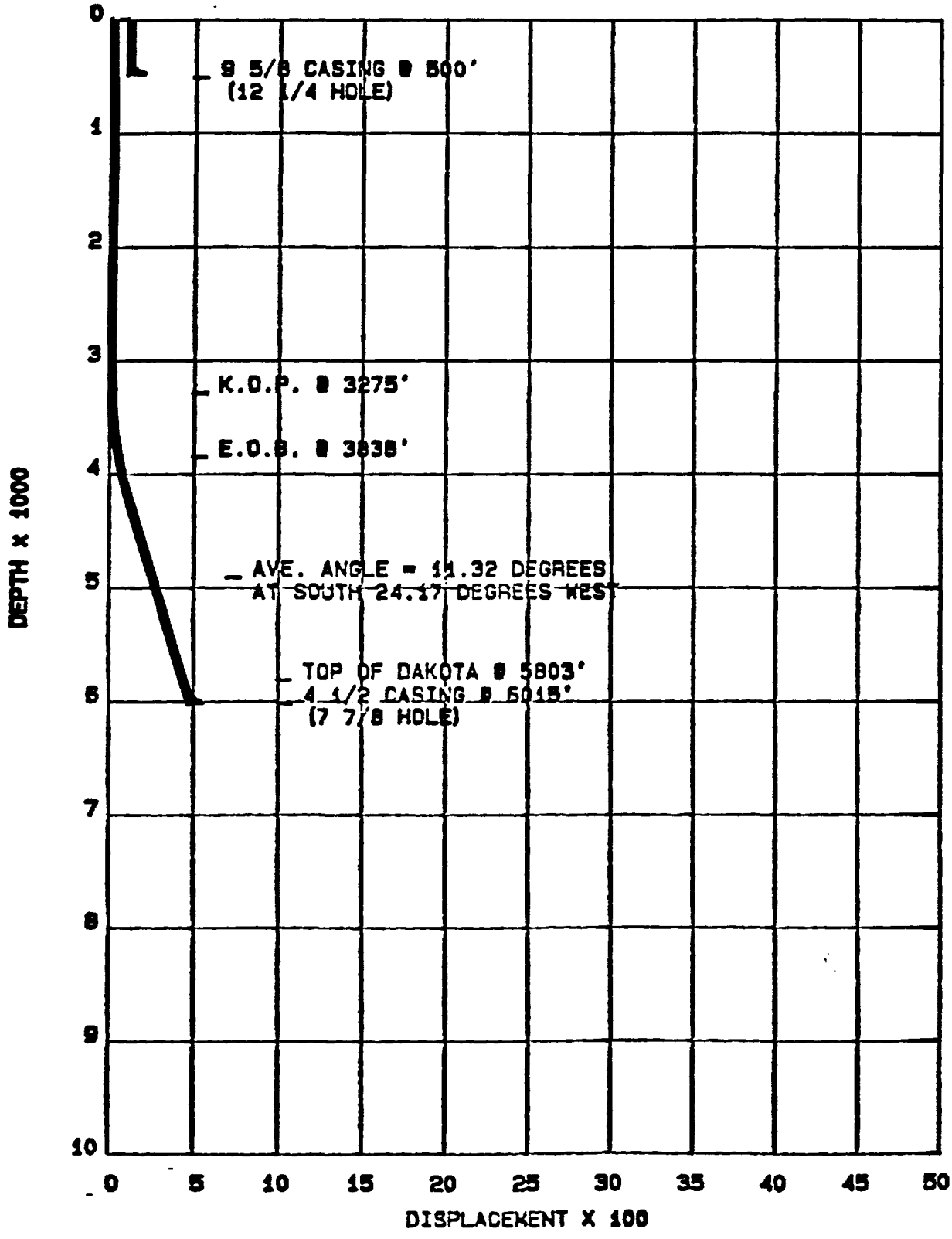
***** RECORD OF PROPOSAL *****

RADIUS OF CURVATURE METHOD
PROPOSAL COMPUTED BY THE DATADRIL C.A.D.D.S. SYSTEM
VERTICAL SECTION PLANE: S 24.17 W

MEASURED DEPTH (FT)	COURSE LENGTH (FT)	INCL. ANGLE (DEG)	DRIFT DIRECTION (DEG)	TRUE VERTICAL DEPTH	TOTAL RECT COORDINATES (FT)		VERTICAL SECTION (FT)	DOGLEG SEVERITY (DEG/100')
0.00	0.00	0.00	S 24.17 W	0.00	0.00 N	0.00 E	0.00	0.00
START OF BUILD #1								
3275.00	3275.00	0.00	S 24.17 W	3275.00	0.00 N	0.00 E	0.00	0.00
3375.00	100.00	2.00	S 24.17 W	3374.98	1.59 S	.71 W	1.75	2.00
3475.00	100.00	4.00	S 24.17 W	3474.84	6.37 S	2.86 W	6.98	2.00
3575.00	100.00	6.00	S 24.17 W	3574.45	14.32 S	6.43 W	15.69	2.00
3675.00	100.00	8.00	S 24.17 W	3673.70	25.44 S	11.42 W	27.88	2.00
3775.00	100.00	10.00	S 24.17 W	3772.47	39.71 S	17.82 W	43.52	2.00
END OF BUILD #1...START OF HOLD SECTION								
3841.24	66.24	11.32	S 24.17 W	3837.56	50.89 S	22.84 W	55.78	2.00
TARGET LOCATION: 5803 TVD								
5845.71	2004.47	11.32	S 24.17 W	5803.00	410.00 S	184.00 W	449.40	0.00
BOTTOM HOLE LOCATION (TD): 6015 TVD								
6061.92	216.21	11.32	S 24.17 W	6015.00	448.74 S	201.38 W	491.85	0.00

WELLBORE SCHEMATIC

CITY OF FARMINGTON # 1



TENNECO OIL COMPANY
CITY OF FARMINGTON #1
SECTION 10, TOWNSHIP 29N, RANGE 13W
SAN JUAN COUNTY, NEW MEXICO

DRILLING PROCEDURE:

1. Move in and rig up rotary tools.

2. Drill and survey to 500'± with a 12 1/4" bit using a gel-water mud.

3. Run 9 5/8" surface casing to 500'± and cement with sufficient quantity to circulate cement to the surface. Wait on cement 12 hours. Install and pressure test casinghead and BOP equipment.

4. Drill out surface casing. Drill and survey to kick off point at 3275' with a 7 7/8" bit using a fresh water-polymer mud.

5. Run a multi-shot survey to determine bottom hole location at kick off point. Using a downhole motor and build assembly, orient tools and drill ahead building angle at approximately 2°/100' until an angle of 11 degrees is achieved. Using a hold assembly, drill and survey to the proposed target making any inclination or course corrections that may be necessary. Run a multi-shot survey to determine bottom hole location at T.D.

6. Log well.

7. If productive, run 4 1/2" casing to T.D. Cement in 3 stages with stage tools at 4900' and 2000'.

8. If non-productive, plug and abandon as per regulatory agency specifications.

ENERGY AND MINERALS DEPARTMENT

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OPERATOR		

OIL CONSERVATION DIVISION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

JUN 19 1986

Form C-103
Revised 10-1-78

5a. Indicate Type of Lease: State [ ] Fee [X]

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

OIL WELL [ ] GAS WELL [X] OTHER-

7. Unit Agreement Name

Name of Operator
Tenneco Oil Co.

8. Farm or Lease Name
City of Farmington

Address of Operator
P. O. Box 3249 Englewood, CO 80155

9. Well No.
1

Location of Well
UNIT LETTER J, 2160 FEET FROM THE South LINE AND 1591 FEET FROM THE East LINE, SECTION 10 TOWNSHIP 29N RANGE 13W NMPM.

10. Field and Pool, or Wildcat
Basin Dakota

15. Elevation (Show whether DF, RT, GR, etc.)
5343' GL

12. County
San Juan

16.

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING [ ]
TEMPORARILY ABANDON [ ]		COMMENCE DRILLING OPNS. [ ]	PLUG AND ABANDONMENT [ ]
PULL OR ALTER CASING [ ]	CHANGE PLANS [ ]	CASING TEST AND CEMENT JOB [ ]	
		OTHER [ ]	
OTHER Name Change [ ]			

17. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 1103.

Tenneco request permission to change the name on the reference well to the City of Farmington Com #1 due to pending communitization.

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

SIGNED Keith McKinney TITLE Sr. Regulatory Analyst DATE June 19, 1986

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

21

30-045-26733

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OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-101
Revised 1-1-65

5A. Indicate Type of Lease: STATE ☐ FEE ☒

5. State Oil & Gas Lease No.

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work: DRILL ☒ DEEPEN ☐ PLUG BACK ☐

1b. Type of Well: OIL WELL ☐ GAS WELL ☒ OTHER — SINGLE ZONE ☒ MULTIPLE ZONE ☐

7. Unit Agreement Name

8. Farm or Lease Name: City of Farmington

2. Name of Operator: TENNECO OIL ~~E & P~~ Company

9. Well No.: 1

3. Address of Operator: P. O. BOX 3249, ENGLEWOOD, CO. 80155

10. Field and Pool, or Wildcat: Basin Dakota

4. Location of Well: UNIT LETTER J LOCATED 2160 FEET FROM THE South LINE AND 1591 FEET FROM THE East LINE OF SEC. 10 TWP. 29N RGE. 13W NMPM

12. County: San Juan

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
6054' MD	Dakota	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
5343' GL	General	4 Corners Drilling	4 Qtr 1986

23.

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
12 1/4"	9 5/8"	36# K-55	± 500' KB	275 SX, 314 CF	Surface
7 8/8"	4 1/2"	10.50# K-55	± 6054' MD	705 SX, 1144 CF	Surface - 3 Stage

See attached drilling procedure.

Application has been made to the City of Farmington for a special use permit for drilling.

APPROVAL EXPIRES 11-26-86
UNLESS DRILLING IS COMMENCED.
SPUD NOTICE MUST BE SUBMITTED
WITHIN 10 DAYS.

RECEIVED
MAY 21 1986
OIL CON. DIV.
DIST. 3

Note: Bottom-hole location to be 1750' FSL, 1775' FEL Sec. 10, T29W R13W

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

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

Signed Scott McKinney Title Sr. Regulatory Analyst Date 5-19-86

(This space for State Use)

APPROVED BY Ernie Busch TITLE GEOLOGIST DISTRICT #3 DATE 5-26-86

CONDITIONS OF APPROVAL, IF ANY:

RECEIVED
JUN 02 1986
OIL CON. DIV.
DIST. 3

Unfold C-102 for Directional Drilling and

TENNECO OIL CO.
WRMD Accounting

22

OIL CONSERVATION DIVISION

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-102
Revised 10-1-78

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

Operator	Lease	Well No.
TENNECO OIL COMPANY	City of Farmington	1

Unit Letter	Section	Township	Range	County
J	10	29 North	13 West	San Juan

Actual Footage Location of Well:
2160 feet from the South line and 1591 feet from the East line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
5343.4'	DAKOTA	BASIN DAKOTA	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

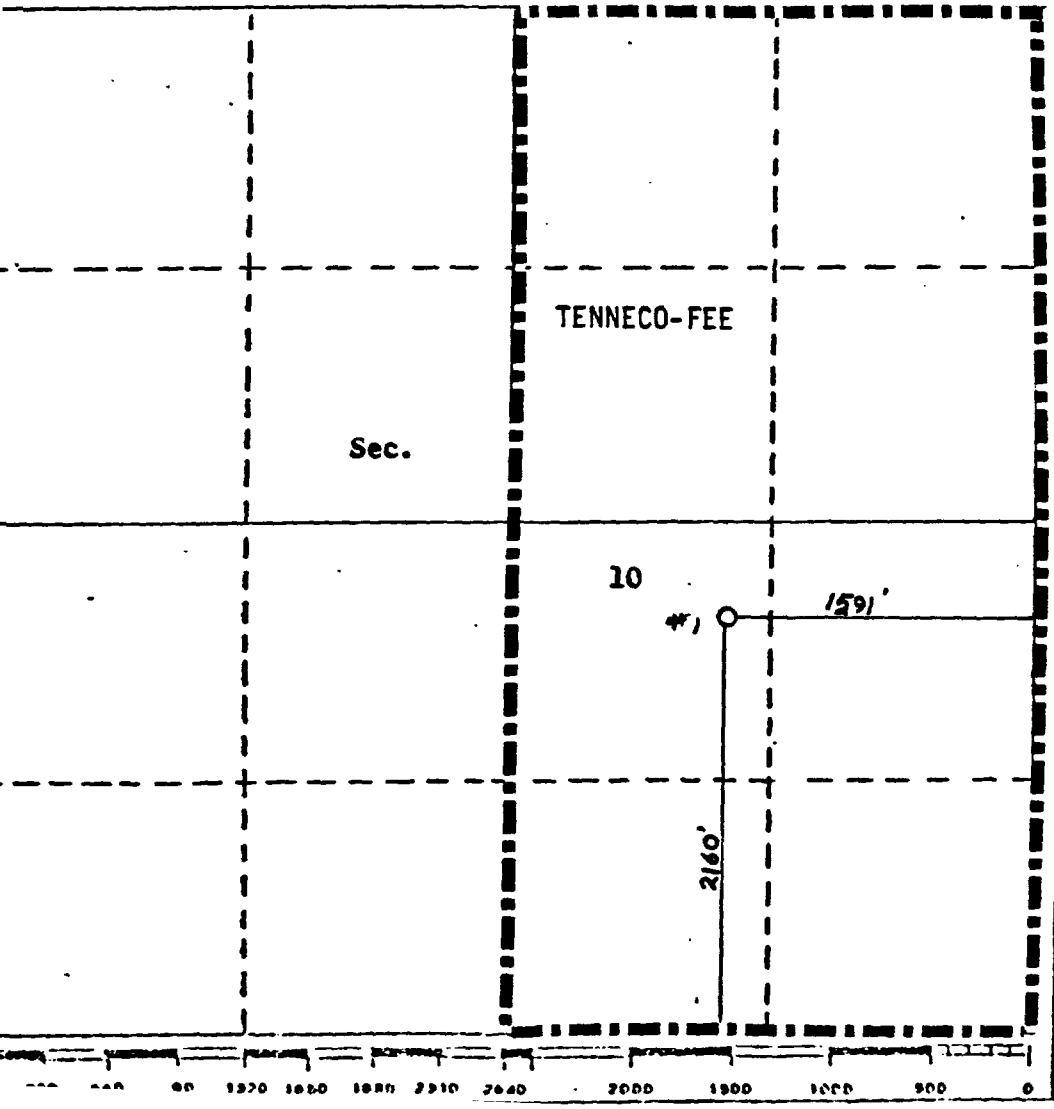
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

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 ~~Pending Force-pooling~~

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 Division.



CERTIFICATION

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

Scott McKinney

Name: Scott McKinney

Position: Sr. Regulatory Analyst

Company: Tenneco Oil Co.

Date: May 16, 1986

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: May 9, 1986

Registered Professional Engineer and/or Land Surveyor

Certificate No.

23

DRILLING PROCEDURE

TENNECO OIL COMPANY
ROCKY MOUNTAIN DIVISION
6162 SOUTH WILLOW DRIVE
ENGLEWOOD, COLORADO 80155

DATE:	May 12, 1986	
LEASE:	City of Farmington	WELL NO: 1
LOCATION:	Surface: 2160' FSL, 1591' FEL Section 10, T29N, R13W San Juan County, New Mexico Bottom Hole Location: 1750' FSL, 1775' FEL Sec. 10, T29N, R13W San Juan County, NM	FIELD: Basin Dakota
ELEVATION	5343' G.L., 5355' K.B.	
TOTAL DEPTH:	6015' T.V.D., 6054' M.D.	
PROJECTED HORIZON:	Dakota	

SUBMITTED BY: W. C. Coy & Coleman DATE: 5-14-86

APPROVED BY: [signature] DATE: 5-14-86

CC: Administration
DSB Well File
Field File

ESTIMATED FORMATION TOPS

	T.V.D.	(Subsea)	Fm Pressure	
Ojo	Surface	(+5343')		
Fruitland	1041'	(+4314')	Normal	
Pictured Cliffs	1216'	(+4139')	Normal	
Lewis	1456'	(+3899')		
Cliff House	2785'	(+2570')		
Menefee ✓ M.V. Sandstone	2893'	(+2462')		
Point Lookout	3657'	(+1698')	Normal	
Mancos	4016'	(+1339')	Normal	
Gallup	4942'	(+413')	Under Pressured	Potential Lost Circulation ✓
Greenhorn	5693'	(-338')		
Graneros	5746'	(-391')		
Dakota	5803'	(-448')	2075 psi	Gas
TD	6015'	6054' M.D.		

M.V. non productive

DRILLING, CASING AND CEMENT PROGRAM

1. Move in, rig up rotary tools and rental solids control equipment. Floor valves and safety valves for each type of string connection must be cleaned and on the rig floor - available for use at all times.

2. Drill a 12-1/4" hole to ± 500' with a gel-water system. Reserve pit to consist of a buried steel tank. Vacuum truck to remove waste material as needed and haul to an approved disposal site.

3. Rig up and run 9-5/8", 36#, K-55, ST&C casing to bottom. Cement with 275 sx (313.5 ft^3) Class B + 2% $CaCl_2$ in sufficient quantity to circulate cement to surface. If conditions warrant the use of loss circulation agents, 1/4 #/sx celloflakes may be added. Centralize as necessary. If necessary, do 1" top cement job..

4. While waiting on cement, screw on a 9-5/8" X 11"-3M casinghead. NU BOPE. Rig up BOPE testers and test all BOP related equipment to rated working pressure. Pressure test 9-5/8" casing to 1500 psi. Record all tests on the IADC report sheet.

5. Drill out of 9 5/8" casing with 7 7/8" bit and a clear water New-Drill System. Solids control equipment to be working at all times. (Closed system).

   NOTE: 1. Operate BOP pipe rams daily and blind rams on trips.
   2. Establish a reduced rate kill speed and circulating pressure EACH TOUR.

6. On the trip out prior to drilling into the Dakota, check operation of all BOPE. Drill 5' - 10' into the Dakota (look for drilling breaks). Check for flow. If no flow, continue drilling. If well is flowing, procede with weight up of mud system.

7. Log open hole as directed by the G.E. Department.

8. If productive, run the 4 1/2" longstring as designed. Equip casing with guide shoe, float collar one joint up, a lower stage tool at the top of the Gallup @ ± 4900', and an upper stage tool into the Lewis @ ± 2000'. Centralize and use baskets as necessary.

9. Cement production casing as follows:

PRODUCTION CEMENTING PROGRAM

FIRST STAGE	MIX
Type	Class "H" + 0.6% Halad 322 + 1/4#/sx Flocele
Sacks	200 (212 ft^3)
	Actual volumes will be calculated from Caliper Log
	No excess
Slurry yield	1.06
Mix weight	16.4
Water req's.	4.3 gal/sx

SECOND STAGE	LEAD MIX	TAIL MIX
Multiple stage cementer at 4900'		
Type	65/35/3 + 10% salt + 10% Cal Seal + 1/4#/sx Flocele	Class "B" + 2% CaCl + 1/4#/sx Flocele
Sacks	225 (452.25 ft^3)	50 (59 ft^3)
Actual volumes will be calculated from Caliper Log – no excess		
Slurry yield	2.01	1.18
Mix weight	12.6	15.6
Water req's.	10.55 gal/sx	5.2 gal/sx

THIRD STAGE	LEAD MIX	TAIL MIX
Multiple stage cementer at 2000'		
Type	65/35/3 + 10% gel + 10% salt + 10% Cal Seal + 1/4#/sx Flocele	Class "B" + 2% CaCl + 1/4#/sx Flocele
Sacks	180 (361.8 ft^3)	50 (59 ft^3)
Actual volumes will be calculated from Caliper Log plus 20% excess.		
Slurry yield	2.01	1.18
Mix weight	12.6	15.6
Water req's.	10.55 gal/sx	5.2 gal/sx

Precede the three stages with 1000 gal. chemical wash and 500 gal. Super Flush. If cement is not circulated to the surface on the third stage, run a temperature survey after 8 hours to determine top of cement. Circulate 4 hours between stages.

10. Set slips with casing in full tension and cut off.

11. Move off rotary tools. Install tree and clean up location. Clean out buried "reserve pit" tank.

12. If non-productive, P & A as required by State of New Mexico, Oil Conservation Division.

CASING PROGRAM

INTERVAL	LENGTH	SIZE	WEIGHT	GRADE	OPTIMUM MAKE-UP TORQUE
0-500	500	9-5/8	36. #	K-55	STC 4230
0-6054	6054	4-1/2	10.5#	K-55	STC 1460

MUD PROGRAM ✓

0-500' Spud mud. Gel, water with lime for hole cleaning capabilities. Mud wt. 8.6, vis 40 - 50, W.L. N/C.

500'-3500' Prior to drilling out cement, mud up with a New Drill System for a low solids, high shear thinning drilling fluid. Mix .4 - .5#/bbl. New Drill. (A liquid co-polymer that is a primary shale encapsulator & viscosifier). Minimize excessive solids accumulation by monitoring solids control equipment (closed system). Mud wt. 8.6 - 8.8, vis 30, W.L. 15 - 25.

3500'-T D Utilizing the New Drill System, raise viscosity to 34 - 36 with the addition of 5 - 8#/bbl. gel by 5000' or as hole dictates. At 5500' bring mud weight up to 9.0 - 9.4 ppg range. Keep at least 600 sacks Barite on location at all times. At T.D. raise viscosity to 40 and a fluid loss of 6 - 8 cc. Minimize excessive solids accumulation by monitoring solids control equipment. (Closed system).

If a drilling break is experienced in this interval, drill no more than 5', pull up off bottoom, shut down pump and check for flow. If well is flowing, shut it in. Notify company representative, tool pusher and mud engineer in that order.

EVALUATION

Cores and DST's:

NONE.

Deviation Program

1. Survey surface hole at 100' intervals. Maximum allowable deviation at 500' is 1-1/2°

2. Prior to drilling out below the 9 5/8" surface casing run a single shot survey to determine inclination and direction. Run single shot survey every 500' and record survey on IADC report sheet. Maximum allowable deviation of the production hole at 3275± is 3°. Maximum rate of change is 1° per 100'. From 3275'± the production hole will be directionally drilled to a bottom hole location of 1750' FSL, 1775' FEL, Sec. 10, T-29N, R-13W with a target radius of 100'. The direction will be south 24.17° west with a displacement of 449.39, and the angle of the hole will be 10°±. Maximum rate of change will be 2° per 100'.

Samples: Every 30' from 1000' to T.D.

Logs: Run # 1: GR:SP:DIL/GR:CDL:CNL:Cal - T.D. to surface
Run # 2: DIL:GR:SP:FDC-CNL-GR-CAL - T.D. minimum 2000'

BLOWOUT EQUIPMENT

11" - 3000 BOP with rotating head to comply with TOC requirements as shown in BOE arrangement, Figure C. Preventer must be checked for operation every 24 hours with each check recorded on the IADC Drilling Report Sheet.

REPORTS

Drilling Reports for the past 24 hours will include depth, footage, time distribution, activity breakdown, mud properties, bit record, bottom hole assembly, types of logs and depths ran, daily and cumulative mud cost, deviation surveys, and other pertinent information to be called into Division Office by 7:30 AM Monday thru Friday.

TENNECO OIL COMPANY
P.O. Box 3249
ENGLEWOOD, COLORADO 80155
PHONE: 303-740-4800

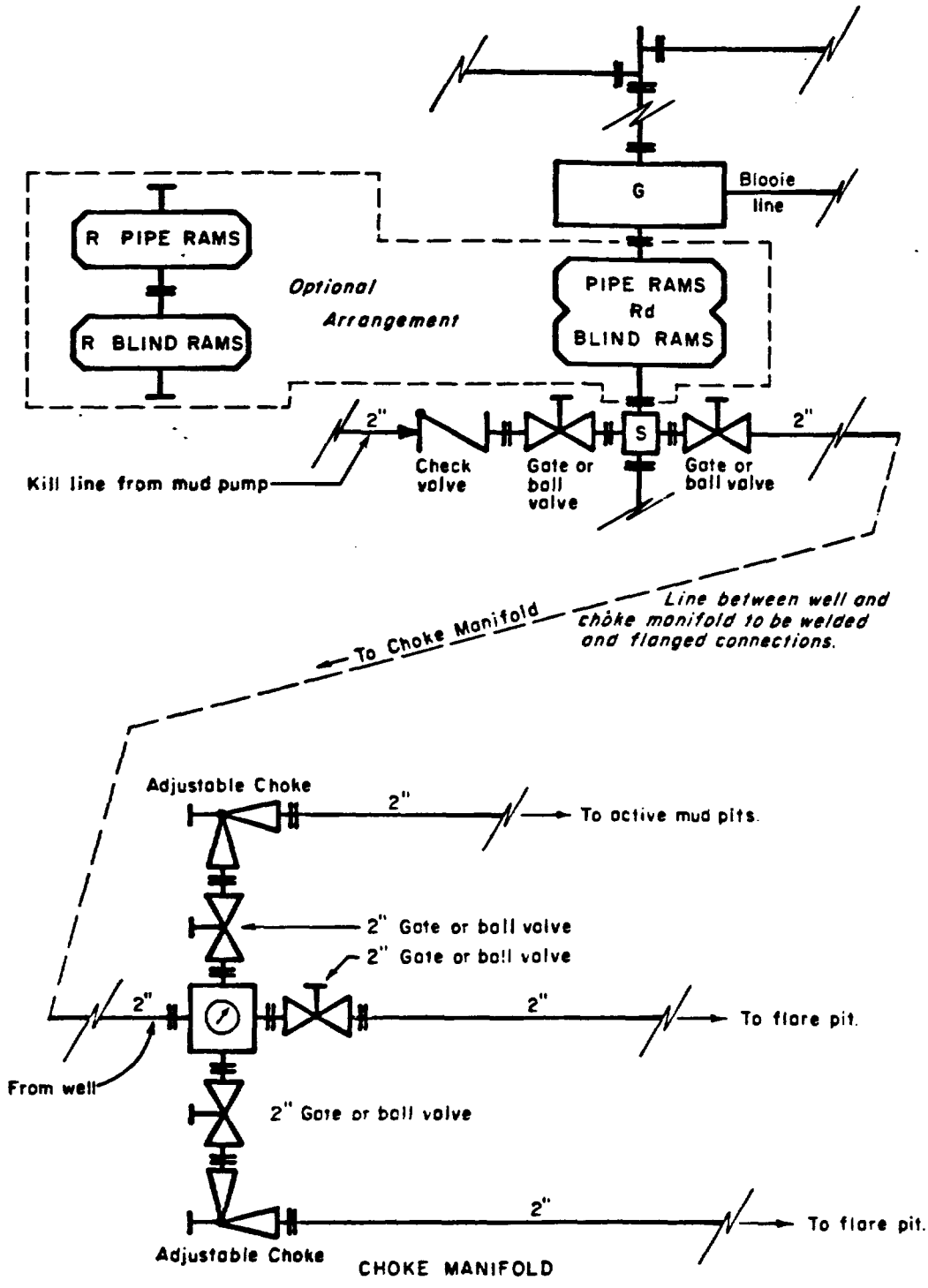
OFFICE DIRECTORY

John Owen	740-4819
Ted McAdam	740-2588
Mark Kangas	740-4804

In case of emergency or after hours call the following in the preferred order.

(1)	D. S. Barnes	740-4814	Office
	Division Drilling Superintendent	936-0704	Home
(2)	Ted McAdam	740-2588	Office
	Drilling Engineering Supervisor	978-0724	Home
(3)	Harry Hufft	741-3189	Home
	Division Production Manager	740-4892	Office

2742M



CHOKE MANIFOLD

All equipment to be 3,000 psi working pressure except as noted.

Rd Double ram type preventer with two sets of rams.

R Single ram type preventer with one set of rams.

S Drilling spool with side outlet connections for choke and kill lines.

G Rotating head 150 psi working pressure minimum

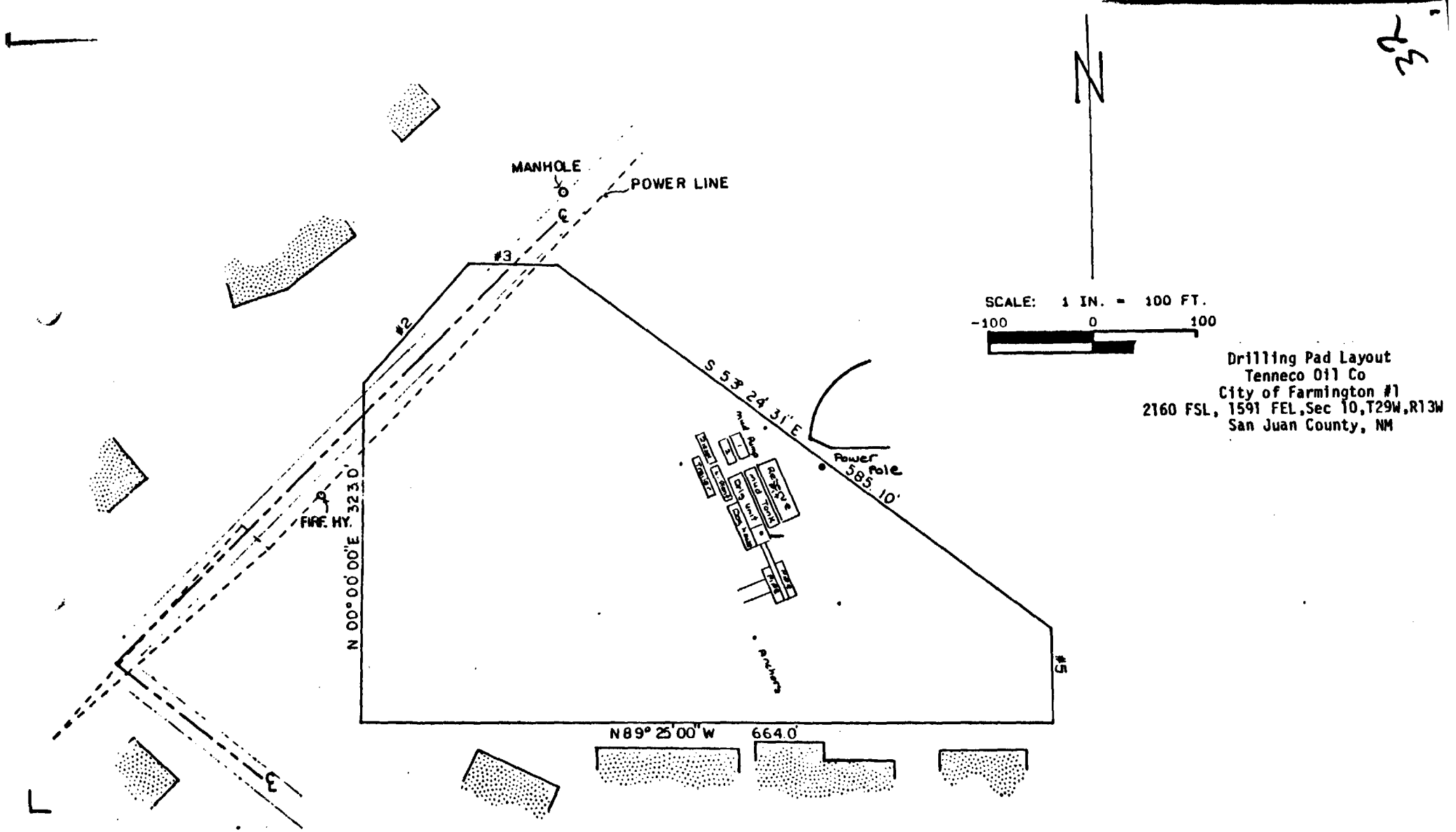
ARRANGEMENT C

TENNECO OIL COMPANY
ROCKY MOUNTAIN DIVISION

REQUIRED MINIMUM
BLOWOUT PREVENTER AND
CHOKE MANIFOLD

J. MAGILL 10-26-79 EVI

Sundance Standard

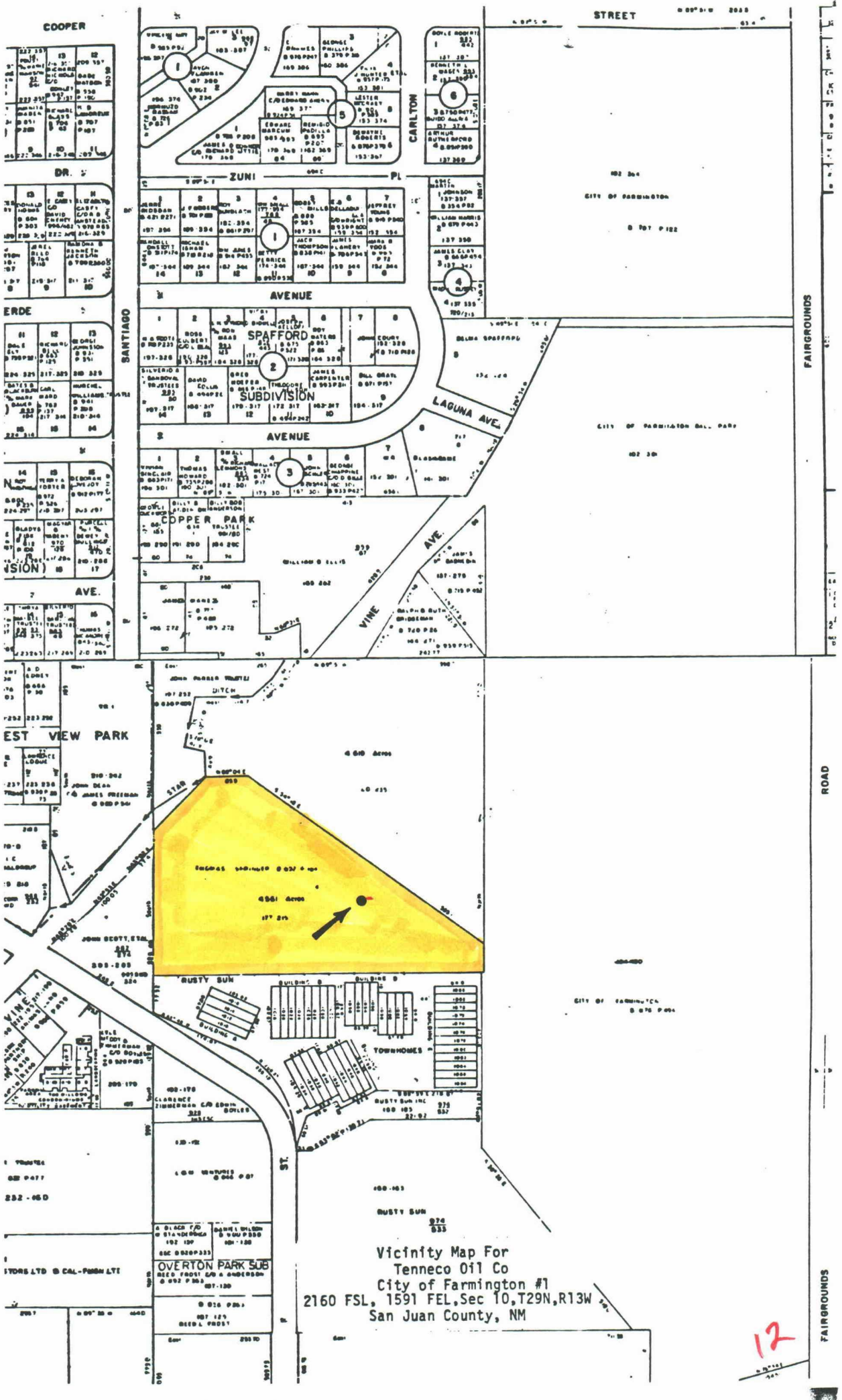

N
MANHOLE
POWER LINE
#3
#2
#5
S 53° 24' 31" E
585.10'
Power Pole
FIRE HY.
N 00° 00' 00" E 323.0'
N 89° 25' 00" W 664.0'
SCALE: 1 IN. = 100 FT.
-100
0
100
Drilling Pad Layout
Tenneco Oil Co
City of Farmington #1
2160 FSL, 1591 FEL, Sec 10, T29W, R13W
San Juan County, NM

UNORTHODOX SURFACE LOCATION
AND DIRECTIONAL DRILLING APPLICATION

WELL NAME:	CITY OF FARMINGTON #1E
SURFACE LOCATION:	2203' FSL and 1653' FEL
BOTTOM-HOLE LOCATION:	1650' FNL and 1650' FEL
SPACING:	E/2 of Section 10, Township 29 North, Range 13 West, N.M.P.M. San Juan County, New Mexico

Tenneco Oil Company plans to drill the captioned Dakota formation well in the fourth quarter of 1987. The well is located in the city of Farmington, New Mexico. Due to topographical restrictions, the proposed surface location is unorthodox, and the proposed bottom-hole location is standard pursuant to the Basin Dakota Pool Rules. Tenneco seeks approval by the New Mexico Oil Conservation Division allowing for an unorthodox surface location and to directionally drill the captioned well.

The enclosed documentation demonstrates that all of the requirements as stipulated by the New Mexico Oil Conservation Division have been met.



Vicinity Map For
Tenneco Oil Co
City of Farmington #1
2160 FSL, 1591 FEL, Sec 10, T29N, R13W
San Juan County, NM

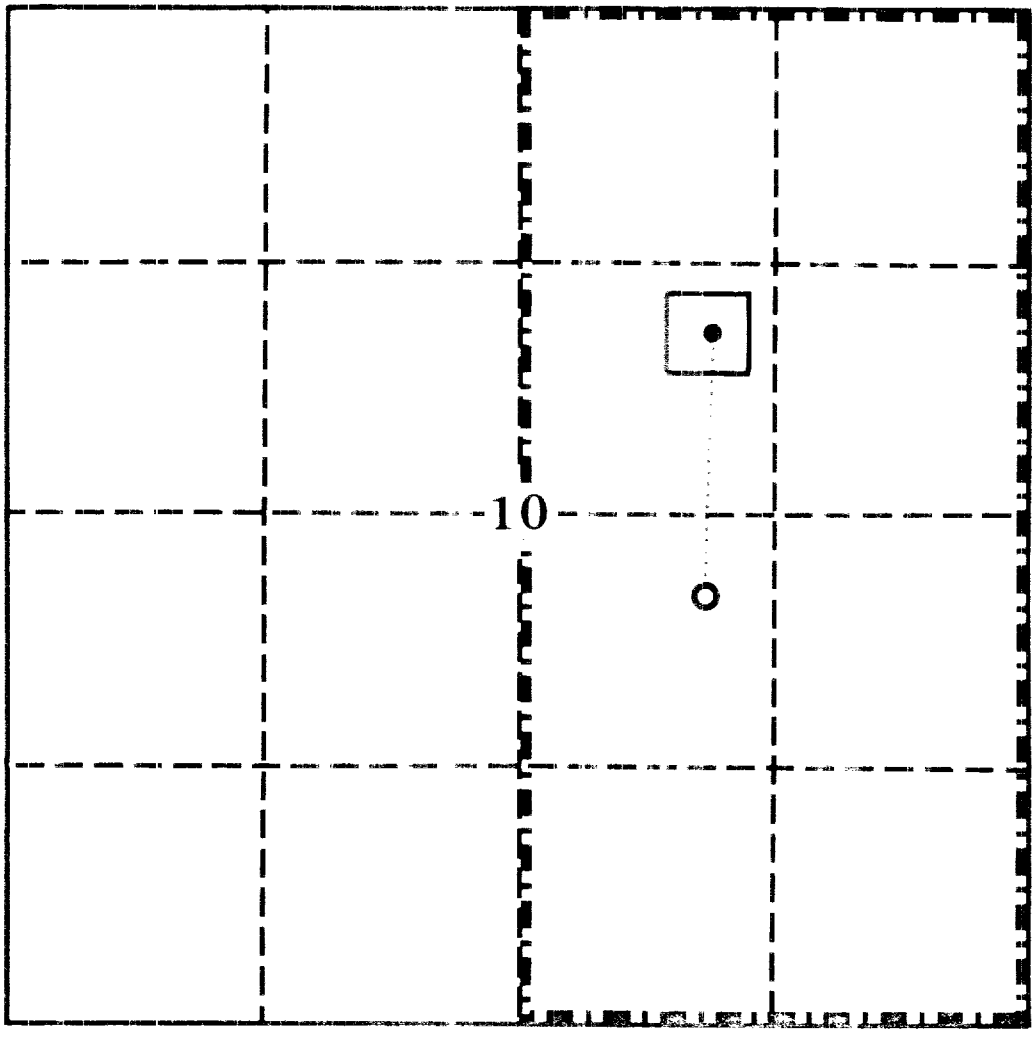
12

SURFACE ○

2203 FSL, 1653 FEL
SEC. 10, T29N, R13W
SAN JUAN COUNTY, NEW MEXICO

BOTTOM HOLE ●

1650 FNL, 1650 FEL
SEC. 10 T29N, R13W
SAN JUAN COUNTY, NEW MEXICO



DRILLING WINDOW

DEDICATED ACREAGE

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

TENNECO

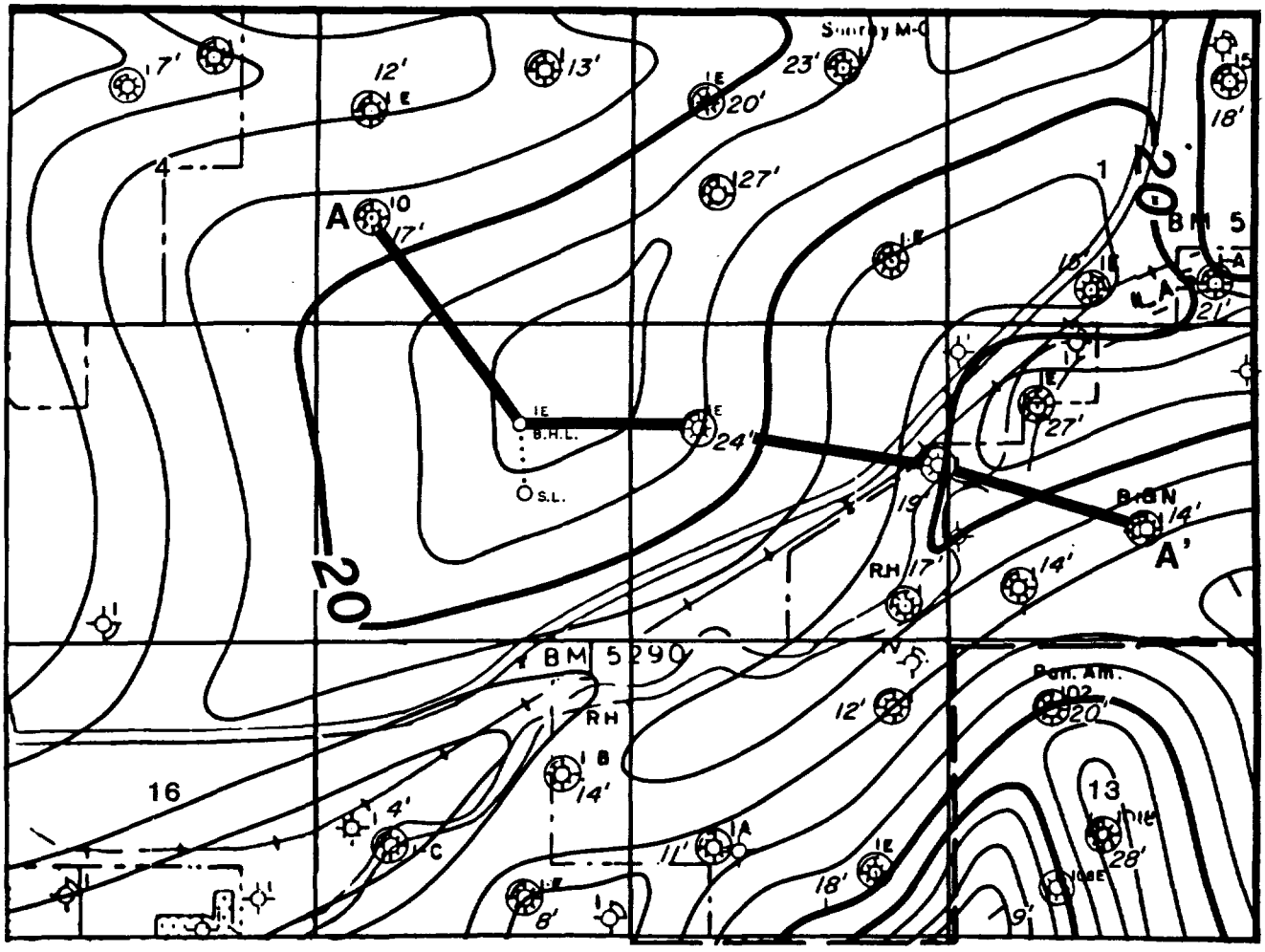
CITY OF FARMINGTON COM #1E
SAN JUAN COUNTY, NEW MEXICO

SURFACE AND BOTTOM HOLE
LOCATION PLAT

0 1000 2000 FEET

DRAFTED BY CHECKED BY

R 13 W



- DRY HOLE
- PICTURED CLIFFS GAS WELL
- MESAVERDE GAS WELL
- DAKOTA GAS WELL
- DATA POINT WELL

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

TENNECO

SOUTH FARMINGTON-GALLEGOS AREA
SAN JUAN COUNTY, NEW MEXICO

DAKOTA "B1" SAND NET PAY ISOPACH

C.I. 4'

1 MILE

DRAFTED BY

36

A

A'

NW

SE

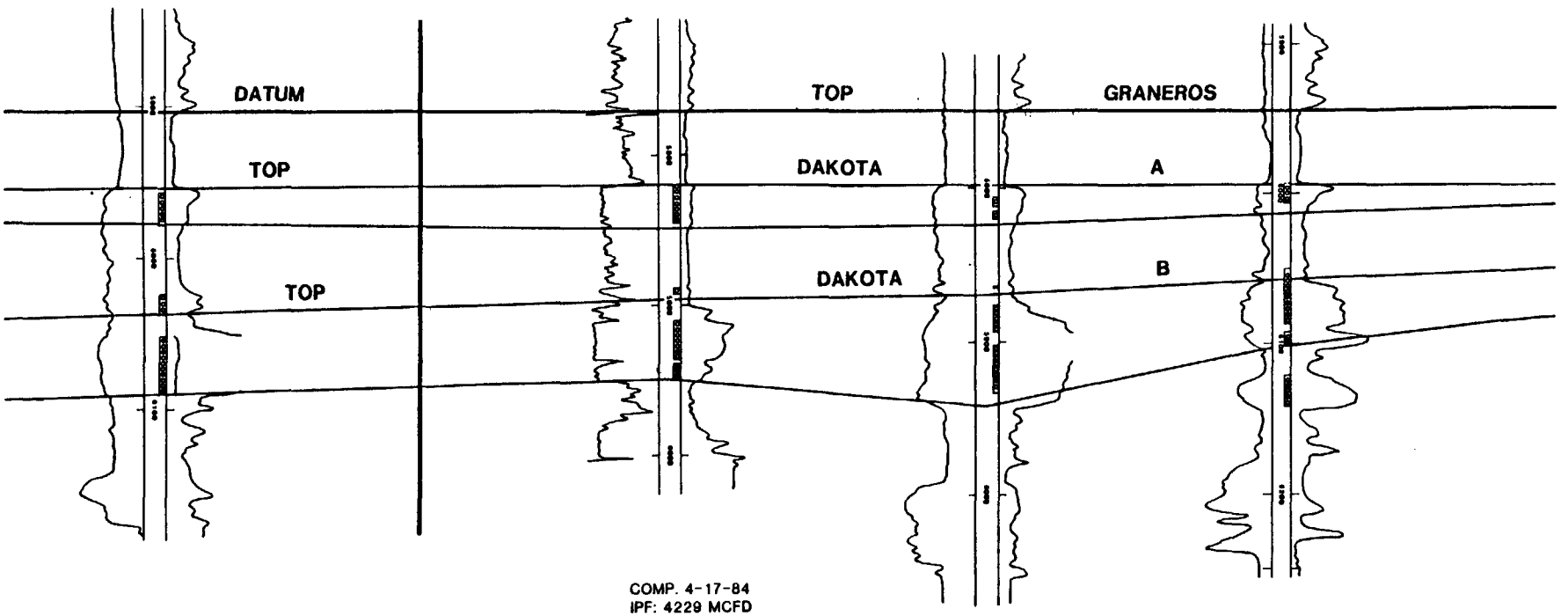
F.L.FUNDINGSLAND
S.D.SUNICAL No. 10
NWSW Sec. 3, T29N-R13W

PROPOSED LOCATION
Sec. 10, T29N-R13W

TENNECO
IRVIN COM No. 1E
SENW Sec. 11, T29N-R13W

TENNECO
IRVIN COM #1
SENE Sec. 11, T29N-R13W

REDFERN & HERD
SMITH No. 1
NWSE Sec. 12, T29N-R13W



COMP. 11-13-64
IPF: 4267 MCFD
CUM: 637 MMCF
as of 1/1/86

COMP. 4-17-84
IPF: 4229 MCFD
CUM: 196 MMCF
as of 1/1/86

COMP. 1-12-70
IPF: 7295 MCFD
CUM: 1069 MMCF
as of 1/1/86

COMP. 3-3-60
IPF: 3163 MCFD
CUM: 1200 MMCF
as of 1/1/86

HORIZONTAL SCALE: 735'

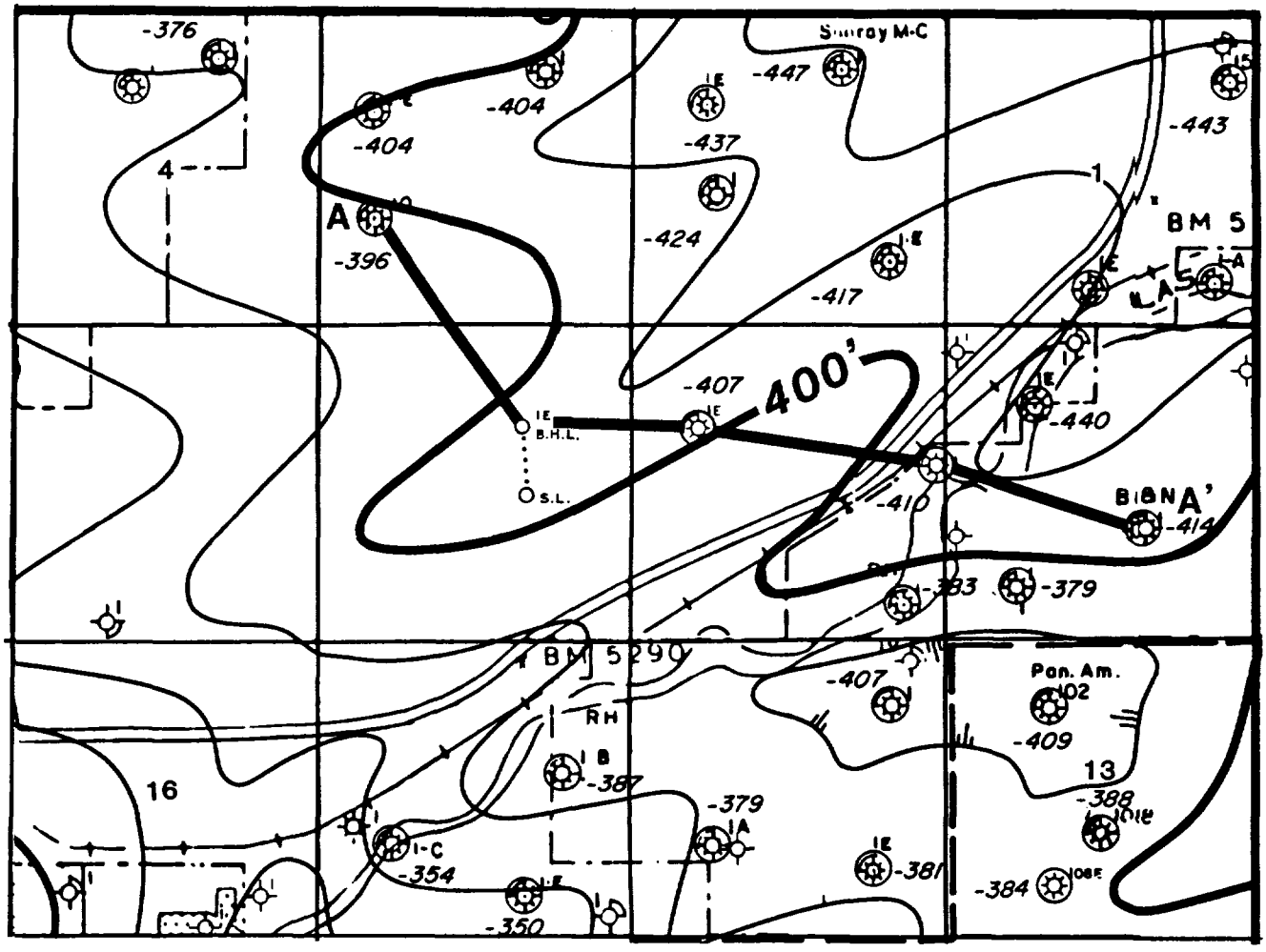
VERTICAL SCALE: 40'

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

CITY OF FARMINGTON AREA
SAN JUAN COUNTY, NEW MEXICO

DAKOTA STRATIGRAPHIC
CROSS SECTION

R 13 W



- DRY HOLE
- PICTURED CLIFFS GAS WELL
- MESAVERDE GAS WELL
- DAKOTA GAS WELL
- DATA POINT WELL

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

TENNECO

SOUTH FARMINGTON-GALLEGOS AREA
SAN JUAN COUNTY, NEW MEXICO

STRUCTURE CONTOUR MAP

DATUM: BASE OF GREENHORN LIMESTONE

C.I. 25'

1 MILE

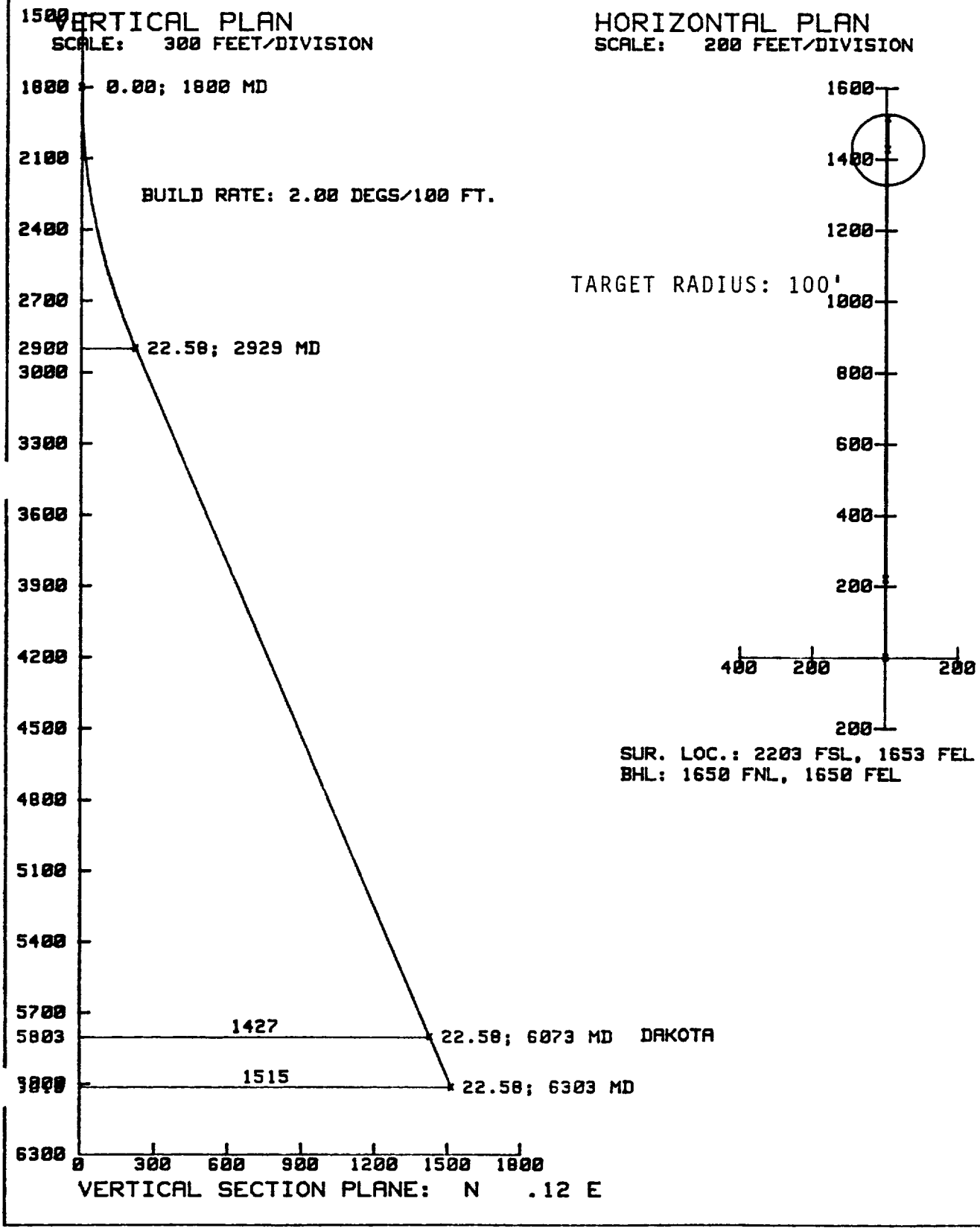
DRAFTED BY:

38

3 JUN 1986 @ 8:46

TENNECO OIL COMPANY
CITY OF FARMINGTON #1E
SEC 10-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO

DATADRIL
Division of Smith International, Inc.



39

Sii DATADRIL
Division of Smith International, Inc.

TENNECO OIL COMPANY
CITY OF FARMINGTON #1E
SEC 10-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO

SUR. LOC.: 2203 FSL, 1653 FEL
BHL: 1650 FNL, 1650 FEL

FILE NAME: TENNCOF1E

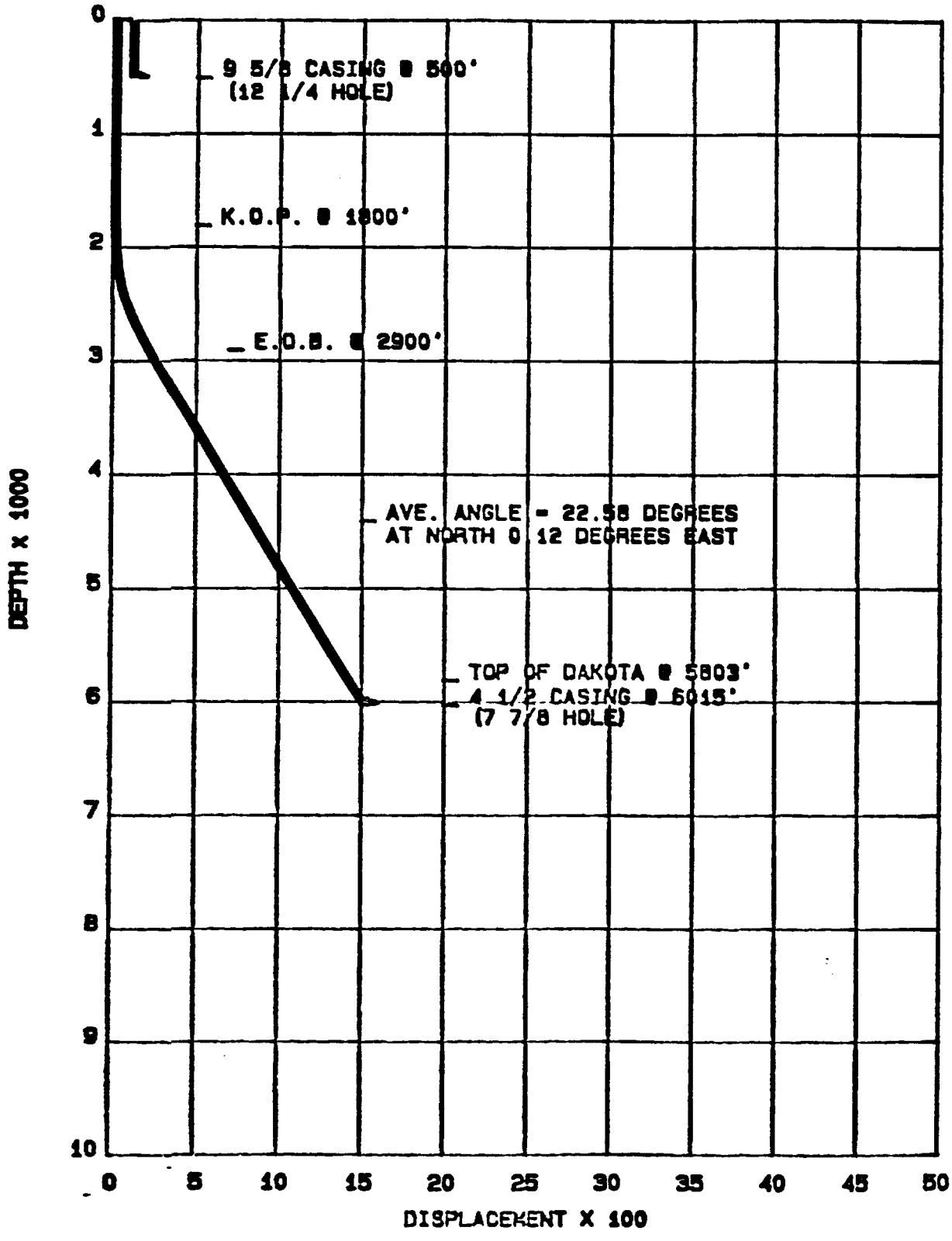
***** RECORD OF PROPOSAL *****

RADIUS OF CURVATURE METHOD
PROPOSAL COMPUTED BY THE DATADRIL C.A.D.D.S. SYSTEM
VERTICAL SECTION PLANE: N .12 E

MEASURED DEPTH (FT)	COURSE LENGTH (FT)	INCL. ANGLE (DEG)	DRIFT DIRECTION (DEG)	TRUE VERTICAL DEPTH	TOTAL RECT COORDINATES (FT)	(FT)	VERTICAL SECTION (FT)	DOGLEG SEVERITY (DEG/100')
0.00	0.00	0.00	N .12 E	0.00	0.00 N	0.00 E	0.00	0.00
START OF BUILD #1								
1800.00	1800.00	0.00	N .12 E	1800.00	0.00 N	0.00 E	0.00	0.00
1900.00	100.00	2.00	N .12 E	1899.98	1.75 N	0.00 E	1.75	2.00
2000.00	100.00	4.00	N .12 E	1999.84	6.98 N	.01 E	6.98	2.00
2100.00	100.00	6.00	N .12 E	2099.45	15.69 N	.03 E	15.69	2.00
2200.00	100.00	8.00	N .12 E	2198.70	27.88 N	.06 E	27.88	2.00
2300.00	100.00	10.00	N .12 E	2297.47	43.52 N	.09 E	43.52	2.00
2400.00	100.00	12.00	N .12 E	2395.62	62.60 N	.13 E	62.60	2.00
2500.00	100.00	14.00	N .12 E	2493.06	85.10 N	.18 E	85.10	2.00
2600.00	100.00	16.00	N .12 E	2589.64	110.98 N	.23 E	110.98	2.00
2700.00	100.00	18.00	N .12 E	2685.27	140.21 N	.29 E	140.21	2.00
2800.00	100.00	20.00	N .12 E	2779.82	172.77 N	.36 E	172.77	2.00
2900.00	100.00	22.00	N .12 E	2873.17	208.60 N	.44 E	208.60	2.00
END OF BUILD #1...START OF HOLD SECTION								
2929.16	29.16	22.58	N .12 E	2900.15	219.66 N	.46 E	219.66	2.00
TARGET LOCATION: 5803 TVD								
6073.08	3143.92	22.58	N .12 E	5803.00	1427.00 N	3.00 E	1427.00	0.00
BOTTOM HOLE LOCATION (TD): 6015 TVD								
6302.68	229.61	22.58	N .12 E	6015.00	1515.17 N	3.19 E	1515.18	0.00

WELLBORE SCHEMATIC

CITY OF FARMINGTON # 1-E



TENNECO OIL COMPANY
CITY OF FARMINGTON #1-E
SECTION 10, TOWNSHIP 29N, RANGE 13W
SAN JUAN COUNTY, NEW MEXICO

DRILLING PROCEDURE:

1. Move in and rig up rotary tools.

2. Drill and survey to 500'± with a 12 1/4" bit using a gel-water mud.

3. Run 9 5/8" surface casing to 500'± and cement with sufficient quantity to circulate cement to the surface. Wait on cement 12 hours. Install and pressure test casinghead and BOP equipment.

4. Drill out surface casing. Drill and survey to kick off point at 1800' with a 7 7/8" bit using a fresh water-polymer mud.

5. Run a multi-shot survey to determine bottom hole location at kick off point. Using a downhole motor and build assembly, orient tools and drill ahead building angle at approximately 2°/100' until an angle of 22 degrees is achieved. Using a hold assembly, drill and survey to the proposed target making any inclination or course corrections that may be necessary. Run a multi-shot survey to determine bottom hole location at T.D.

6. Log well.

7. If productive, run 4 1/2" casing to T.D. Cement in 3 stages with stage tools at 4400' and 1620'.

8. If non-productive, plug and abandon as per regulatory agency specifications.

ENERGY AND MINERALS DEPARTMENT

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OIL CONSERVATION DIVISION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

JUN 19 1986

Form C-103
Revised 10-1-78

5a. Indicate Type of Lease: State ☐ Fee ☒

5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM C-101) FOR SUCH PROPOSALS.)

OIL WELL ☐ GAS WELL ☒ OTHER-

7. Unit Agreement Name

2. Name of Operator: Tenneco Oil Co.

8. Farm or Lease Name: City of Farmington

3. Address of Operator: P. O. Box 3249 Englewood, CO 80155

9. Well No.: 1E

4. Location of Well: UNIT LETTER J, 2203 FEET FROM THE South LINE AND 1653 FEET FROM THE East LINE, SECTION 10 TOWNSHIP 29N RANGE 13W NMPM.

10. Field and Pool, or Wildcat: Basin Dakota

15. Elevation (Show whether DF, RT, GR, etc.): 5345' GL

12. County: San Juan

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
		OTHER ☐	
Name Change ☐			

17. Describe Proposed or Completed Operations (*Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work*) SEE RULE 1103.

Tenneco request permission to change the name on the reference well to the City of Farmington Com 1E due to the pending communitization.

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

SIGNED Jack McGinnis TITLE Sr. Regulatory Analyst DATE June 19, 1986

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

43

30-045-26734

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OPERATOR	

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-101
Revised 1-1-65

5A. Indicate Type of Lease: STATE ☐ FEE ☒

5. State Oil & Gas Lease No.:

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

Type of Work: DRILL ☒ DEEPEN ☐ PLUG BACK ☐

Type of Well: OIL WELL ☐ GAS WELL ☒ OTHER — SINGLE ZONE ☒ MULTIPLE ZONE ☐

7. Unit Agreement Name:

8. Farm or Lease Name: City of Farmington

Name of Operator: TENNECO OIL ~~E & P~~ Company

9. Well No.: 1E

Address of Operator: P. O. BOX 3249, ENGLEWOOD, CO. 80155

10. Field and Pool, or Wildcat: Basin Dakota

Location of Well: UNIT LETTER J LOCATED 2203 FEET FROM THE South LINE AND 1653 FEET FROM THE East LINE OF SEC. 10 TWP. T29N RGE. 13W NMPM

12. County: San Juan

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
± 6270' MD	Dakota	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
~~5344'~~ GL 5345	General	4 Corners Drilling	4 Qtr 1986

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
12 1/4"	9 5/8"	36# K-55	± 500' KB	275 SX, 314CF	Surface
7 7/8"	4 1/2"	10.50# K-55	± 6270' MD	930 SX, 1546CF	Surface 3 Stages

See attached drilling procedure.

APPROVAL EXPIRES 11-24-86
UNLESS DRILLING IS COMMENCED.
SPUD NOTICE MUST BE SUBMITTED
WITHIN 10 DAYS.

Application has been made to the City of Farmington for a special use permit to drill.

Note: Bottom-hole location to be 1650' FNL & 1650' FEL Sec. 10 T29N R13W

RECEIVED
MAY 21 1986
OIL CON. DIV.
DIST. 3

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

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

Signed Scott McKinney Title Sr. Regulatory Analyst Date 5-19-86

(This space for State Use)

APPROVED BY Ernie Busch TITLE GEOLOGIST DISTRICT #3 DATE ~~5-23-86~~ MAY 23 1986

CONDITIONS OF APPROVAL, IF ANY:

Hold C-104 for Directional Drilling and acreage consolidation

RECEIVED
JUN 02 1986
TENNECO OIL CO.
WPMD Accounting

44

OIL CONSERVATION DIVISION

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-102
Revised 10-1-78

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

Operator	Lease	Well No.
TENNECO OIL COMPANY	City of Farmington	1 E

Unit Letter	Section	Township	Range	County
J	10	29 North	13 West	San Juan

Actual Footage Location of Well:
2203 feet from the South line and 1653 feet from the East line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
5344.9	Dakota	Basin Dakota	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

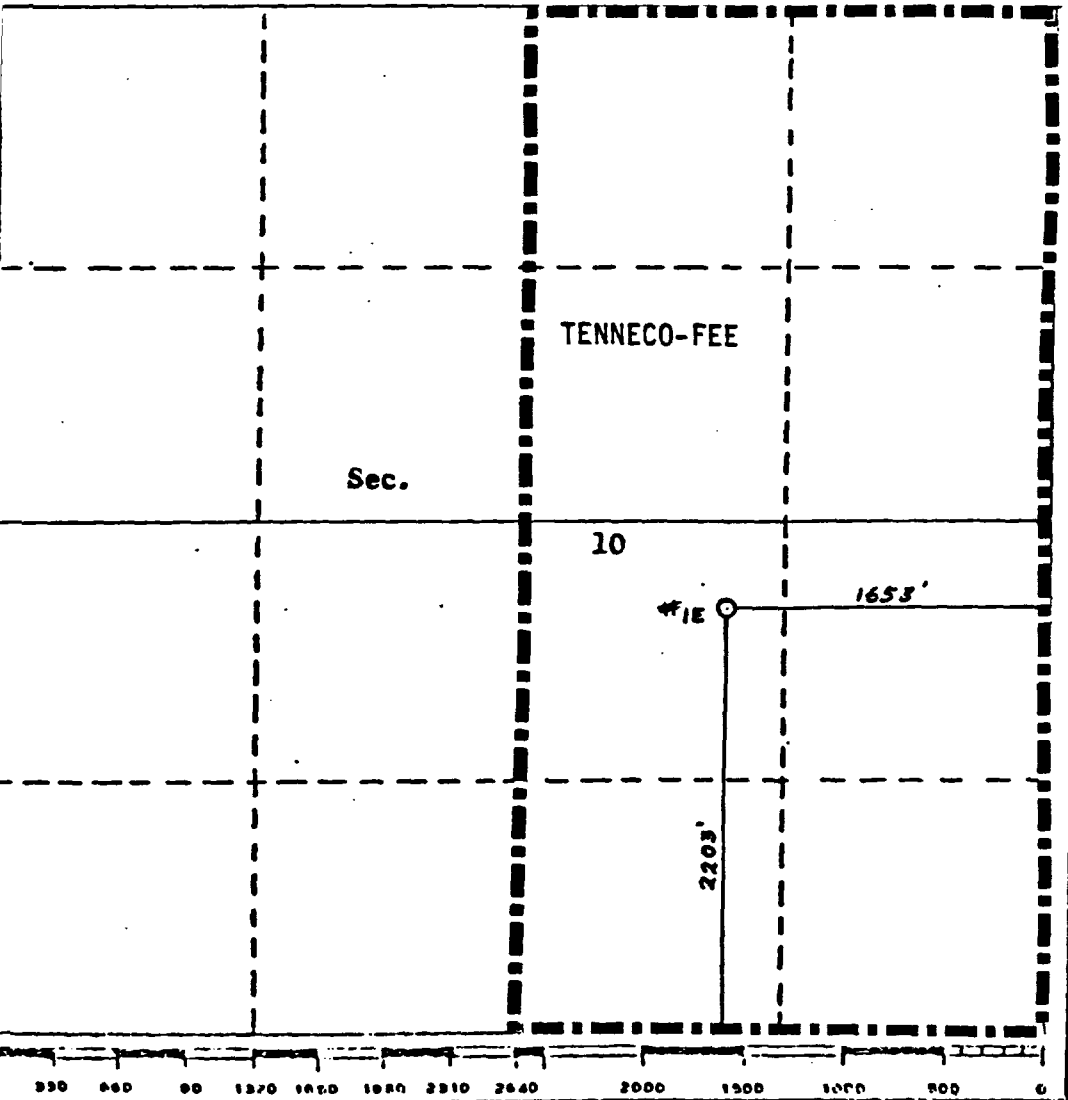
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

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 Pending Force-Pooling

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 Division.



CERTIFICATION

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

Scott McKinney

Name: Scott McKinney

Position: Sr. Regulatory Analyst

Company: Tenneco Oil Co.

Date: May 16, 1986

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.

ROY A. RUSH
NEW MEXICO
8894
REGISTERED PROFESSIONAL LAND SURVEYOR

Date Surveyed: May 1986

Registered Professional Engineer and/or Land Surveyor

Certificate No.

DRILLING PROCEDURE

TENNECO OIL COMPANY
ROCKY MOUNTAIN DIVISION
6162 SOUTH WILLOW DRIVE
ENGLEWOOD, COLORADO 80155

DATE:	May 12, 1986	
LEASE:	City of Farmington	WELL NO: 1 - E
LOCATION:	Surface: 2203' FSL, 1653' FEL Section 10, T29N, R13W San Juan County, New Mexico Bottom Hole Location: 1650' FNL, 1650' FEL Sec. 10, T29N, R13W San Juan County, NM	FIELD: Basin Dakota
ELEVATION	5343' G.L., 5355' K.B.	
TOTAL DEPTH:	6015' T.V.D., 6270' M.D.	
PROJECTED HORIZON:	Dakota	

SUBMITTED BY: W. C Coy & Colvin DATE: 5-14-86

APPROVED BY: [signature] DATE: 5-14-86

CC: Administration
DSB Well File
Field File

ESTIMATED FORMATION TOPS

	T.V.D.	(Subsea)	Fm Pressure	
Ojo	Surface	+5344		
Fruitland	1047'	(+4314')	Normal	
Pictured Cliffs	1216'	(+4139')	Normal	
Lewis	1456'	(+3899')		
Cliff House	2785'	(+2570')		
Menefee	2893'	(+2462')		
Point Lookout	3657'	(+1698')	Normal	
Mancos	4016'	(+1339')	Normal	
Gallup	4942'	(+413')	Under Pressured	Potential Lost Circulation
Greenhorn	5693'	(-338')		
Graneros	5746'	(-391')		
Dakota	5803'	(-448')	2075 psi	Gas
TD	6015'	6270' M.D.		

DRILLING, CASING AND CEMENT PROGRAM

1. Move in, rig up rotary tools and rental solids control equipment. Floor valves and safety valves for each type of string connection must be cleaned and on the rig floor – available for use at all times.

2. Drill a 12-1/4" hole to ± 500' with a gel-water system. Reserve pit to consist of a buried steel tank. Vacuum truck to remove waste material as needed and haul to an approved disposal site.

3. Rig up and run 9-5/8", 36#, K-55, ST&C casing to bottom. Cement with 275 sx (313.5 ft^3) Class B + 2% $CaCl_2$ in sufficient quantity to circulate cement to surface. If conditions warrant the use of loss circulation agents, 1/4 #/sx celloflakes may be added. Centralize as necessary. If necessary, do 1" top cement job..

4. While waiting on cement, screw on a 9-5/8" X 11"-3M casinghead. NU BOPE. Rig up BOPE testers and test all BOP related equipment to rated working pressure. Pressure test 9-5/8" casing to 1500 psi. Record all tests on the IADC report sheet.

5. Drill out of 9 5/8" casing with 7 7/8" bit and a clear water New-Drill System. Solids control equipment to be working at all times. (Closed system).

   NOTE: 1. Operate BOP pipe rams daily and blind rams on trips.
   2. Establish a reduced rate kill speed and circulating pressure EACH TOUR.

   On the trip out prior to drilling into the Dakota, check operation of all BOPE. Drill 5' – 10' into the Dakota (look for drilling breaks). Check for flow. If no flow, continue drilling. If well is flowing, procede with weight up of mud system.

7. Log open hole as directed by the G.E. Department.

8. If productive, run the 4 1/2" longstring as designed. Equip casing with guide shoe, float collar one joint up, a lower stage tool into the Gallup @ ± 4400' M.D., and an upper stage tool into the Lewis @ ± 1620' M.D. Centralize and use baskets as necessary.

9. Cement production casing as follows:

PRODUCTION CEMENTING PROGRAM

FIRST STAGE	LEAD MIX	TAIL MIX
Type	65/35 Pozmix Cement + 6% gel, 1/4#/sx D-29 celloflake	Class "B" + 1/4#/sx D-29 Celloflake + .5% D-60 Flac
Sacks	160 (294.4 ft^3)	(150 177 ft^3)
	Actual volumes will be calculated from Caliper Log	
	No excess	
Slurry yield	1.84	1.18
Mix weight	12.2	15.6
Water req's.	10.2 gal/sx	5.2

SECOND STAGE	LEAD MIX	TAIL MIX
Multiple stage cementer at 4400'		
Type	65/35 Pozmix + 6% Gel + 1/4#/sx D-29 Celloflake + 2% CaCl	Class "B" + 2% CaCl + 1/4#/sx D-29 Celloflake
Sacks	310 (570.4 ft^3)	50 (59 ft^3)
	Actual volumes will be calculated from Caliper Log - no excess	
Slurry yield	1.84	1.18
Mix weight	12.2	15.2
Water req's.	10.2 gal/sx	5.2 gal/sx

THIRD STAGE	LEAD MIX	TAIL MIX
Multiple stage cementer at 1620'		
Type	65/35/6+ 2% CaCl + 1/4#/sx D-29 Celloflake	Class "B" + 2% CaCl + 1/4#/sx D-29 Celloflake
Sacks	210 (386.4 ft^3)	50 (59 ft^3)
	Actual volumes will be calculated from Caliper Log plus 20% excess.	
Slurry yield	1.84	1.18
Mix weight	12.2	15.2
Water req's.	10.2 gal/sx	5.2 gal/sx

Precede the three stages with 1000 gal. chemical wash and 500 gal. Super Flush. If cement is not circulated to the surface on the third stage, run a temperature survey after 8 hours to determine top of cement. Circulate 4 hours between stages.

10. Set slips with casing in full tension and cut off.

11. Move off rotary tools. Install tree and clean up location. Clean out buried "reserve pit" tank.

12. If non-productive, P & A as required by State of New Mexico, Oil Conservation Division.

CASING PROGRAM

INTERVAL	LENGTH	SIZE	WEIGHT	GRADE	OPTIMUM MAKE-UP TORQUE
0-500	500	9-5/8	36. #	K-55	STC 4230
0-6270	6270	4-1/2	10.5#	K-55	STC 1460

MUD PROGRAM

0-500' Spud mud. Gel, water with lime for hole cleaning capabilities. Mud wt. 8.6, vis 40 - 50, W.L. N/C.

500'-3500' Prior to drilling out cement, mud up with a New Drill System for a low solids, high shear thinning drilling fluid. Mix .4 - .5#/bbl. New Drill. (A liquid co-polymer that is a primary shale encapsulator & viscosifier). Minimize excessive solids accumulation by monitoring solids control equipment (closed system). Mud wt. 8.6 - 8.8, vis 30, W.L. 15 - 25.

3500'-T D Utilizing the New Drill System, raise viscosity to 34 - 36 with the addition of 5 - 8#/bbl. gel by 5000' or as hole dictates. At 5500' bring mud weight up to 9.0 - 9.4 ppg range. Keep at least 600 sacks Barite on location at all times. At T.D. raise viscosity to 40 and a fluid loss of 6 - 8 cc. Minimize excessive solids accumulation by monitoring solids control equipment. (Closed system).

If a drilling break is experienced in this interval, drill no more than 5', pull up off bottoom, shut down pump and check for flow. If well is flowing, shut it in. Notify company representative, tool pusher and mud engineer in that order.

EVALUATION

Cores and DST's:

NONE.

Deviation Program

1. Survey surface hole at 100' intervals. Maximum allowable deviation at 500' is 1-1/2°

2. Prior to drilling out below the 9 5/8" surface casing run a single shot survey to determine inclination and direction. Run single shot survey every 500' and record survey on IADC report sheet. Maximum allowable deviation of the production hole at 1800 ± is 2°. Maximum rate of change is 1° per 100'. From 1800'± the production hole will be directionally drilled to a bottom hole location of 1650' FNL, 1650' FEL, Sec. 10, T-29N, R-13W with a target radius of 100'. The direction will be north 0.08° west with a displacement of 1427', and the angle of the hole will be 21.22° ±. Maximum rate of change will be 2° per 100'.

Samples: N/R

Logs: Run # 1: GR:SP:DIL/GR:CDL:CNL:Cal - T.D. to surface
Run # 2: DIL:GR:SP:FDC-CNL-GR-CAL - T.D. minimum 2000'

BLOWOUT EQUIPMENT

11" - 3000 BOP with rotating head to comply with TOC requirements as shown in BOE arrangement, Figure C. Preventer must be checked for operation every 24 hours with each check recorded on the IADC Drilling Report Sheet.

REPORTS

Drilling Reports for the past 24 hours will include depth, footage, time distribution, activity breakdown, mud properties, bit record, bottom hole assembly, types of logs and depths ran, daily and cumulative mud cost, deviation surveys, and other pertinent information to be called into Division Office by 7:30 AM Monday thru Friday.

TENNECO OIL COMPANY
P.O. Box 3249
ENGLEWOOD, COLORADO 80155
PHONE: 303-740-4800

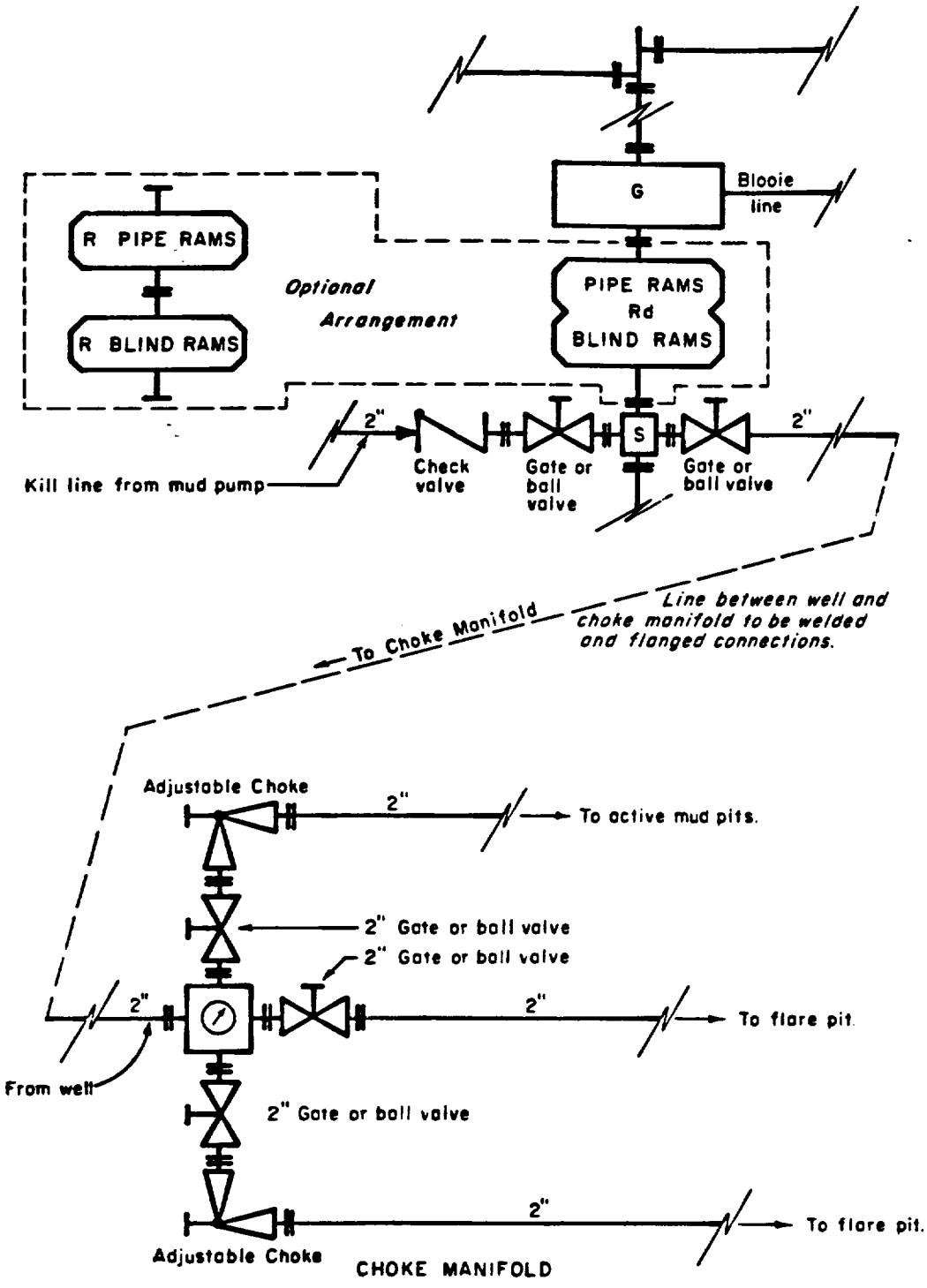
OFFICE DIRECTORY

John Owen	740-4819
Ted McAdam	740-2588
Mark Kangas	740-4804

In case of emergency or after hours call the following in the preferred order.

(1)	D. S. Barnes	740-4814	Office
	Division Drilling Superintendent	936-0704	Home
(2)	Ted McAdam	740-2588	Office
	Drilling Engineering Supervisor	978-0724	Home
(3)	Harry Hufft	741-3189	Home
	Division Production Manager	740-4892	Office

3830D



CHOKE MANIFOLD

All equipment to be 3,000 psi working pressure except as noted.

Rd Double ram type preventer with two sets of rams.

R Single ram type preventer with one set of rams.

S Drilling spool with side outlet connections for choke and kill lines.

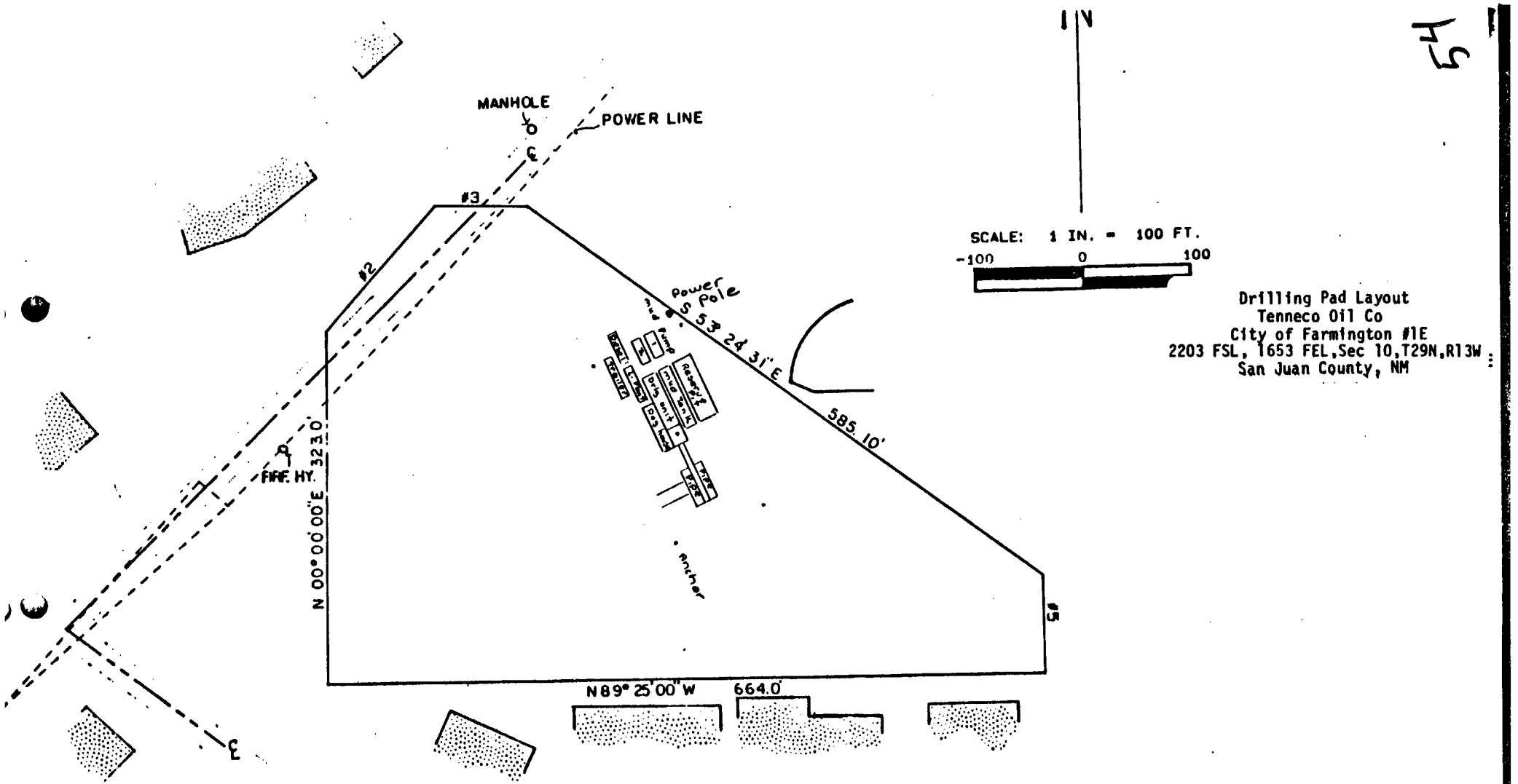
G Rotating head 150 psi working pressure minimum

ARRANGEMENT C

TENNECO OIL COMPANY
ROCKY MOUNTAIN DIVISION

REQUIRED MINIMUM
BLOWOUT PREVENTER AND
CHOKE MANIFOLD

J. MAGILL 10-26-78 EVI



LAWRENCE A. BREWER & ASSOCIATES, INC.

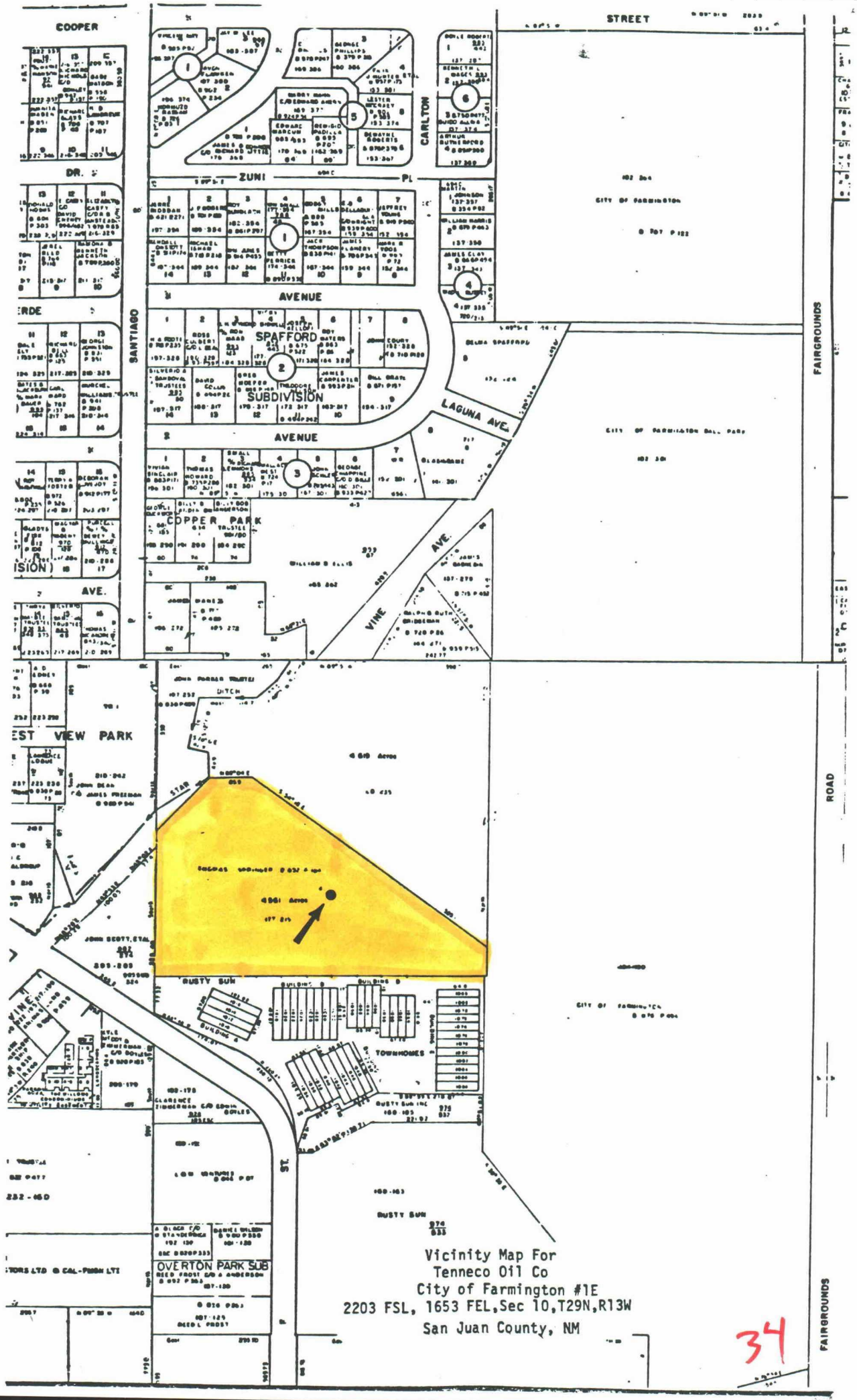
UNORTHODOX SURFACE LOCATION
AND DIRECTIONAL DRILLING APPLICATION

WELL NAME:	CITY OF FARMINGTON #2
SURFACE LOCATION:	2159' FSL and 1712' FEL
BOTTOM-HOLE LOCATION:	1650' FSL and 1650' FWL
SPACING:	W/2 of Section 10, Township 29 North, Range 13 West, N.M.P.M. San Juan County, New Mexico

Tenneco Oil Company plans to drill the captioned Dakota formation well in the fourth quarter of 1986. The well is located in the city of Farmington, New Mexico. Due to topographical restrictions, the proposed surface location is unorthodox, and the proposed bottom-hole location is standard pursuant to the Basin Dakota Pool Rules. Tenneco seeks approval by the New Mexico Oil Conservation Division allowing for an unorthodox surface location and to directionally drill the captioned well.

The enclosed documentation demonstrates that all of the requirements as stipulated by the New Mexico Oil Conservation Division have been met.

55

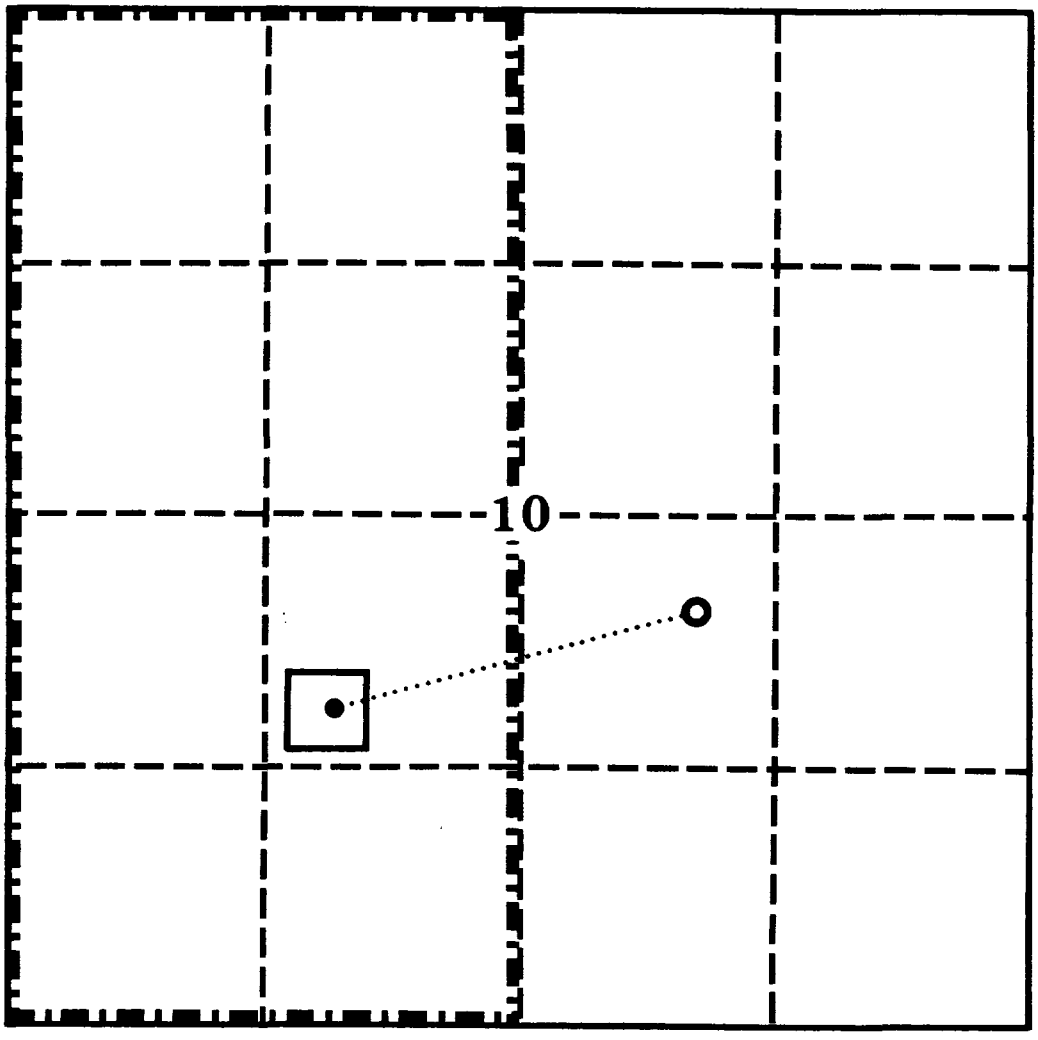

COOPER
DR.
ERDE
AVE.
SANTIAGO
ZUNI
PL
CARLTON
AVENUE
SPAFFORD
SUBDIVISION
COPPER PARK
LAGUNA AVE.
VINE
AVE.
STREET
FAIRGROUNDS
EST VIEW PARK
STAR
DITCH
ROAD
DUSTY SUN
TOWNHOMES
ST.
OVERTON PARK SUB
Vicinity Map For
Tenneco Oil Co
City of Farmington #1E
2203 FSL, 1653 FEL, Sec 10, T29N, R13W
San Juan County, NM
34

SURFACE ○

2159 FSL, 1712 FEL
SEC. 10, T29N, R13W
SAN JUAN COUNTY, NEW MEXICO

BOTTOM HOLE ●

1650 FSL, 1650 FWL
SEC. 10, T29N, R13W
SAN JUAN COUNTY, NEW MEXICO



□ DRILLING WINDOW

▪·▪·▪ DEDICATED ACREAGE

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

TENNECO

CITY OF FARMINGTON #2
SAN JUAN COUNTY, NEW MEXICO

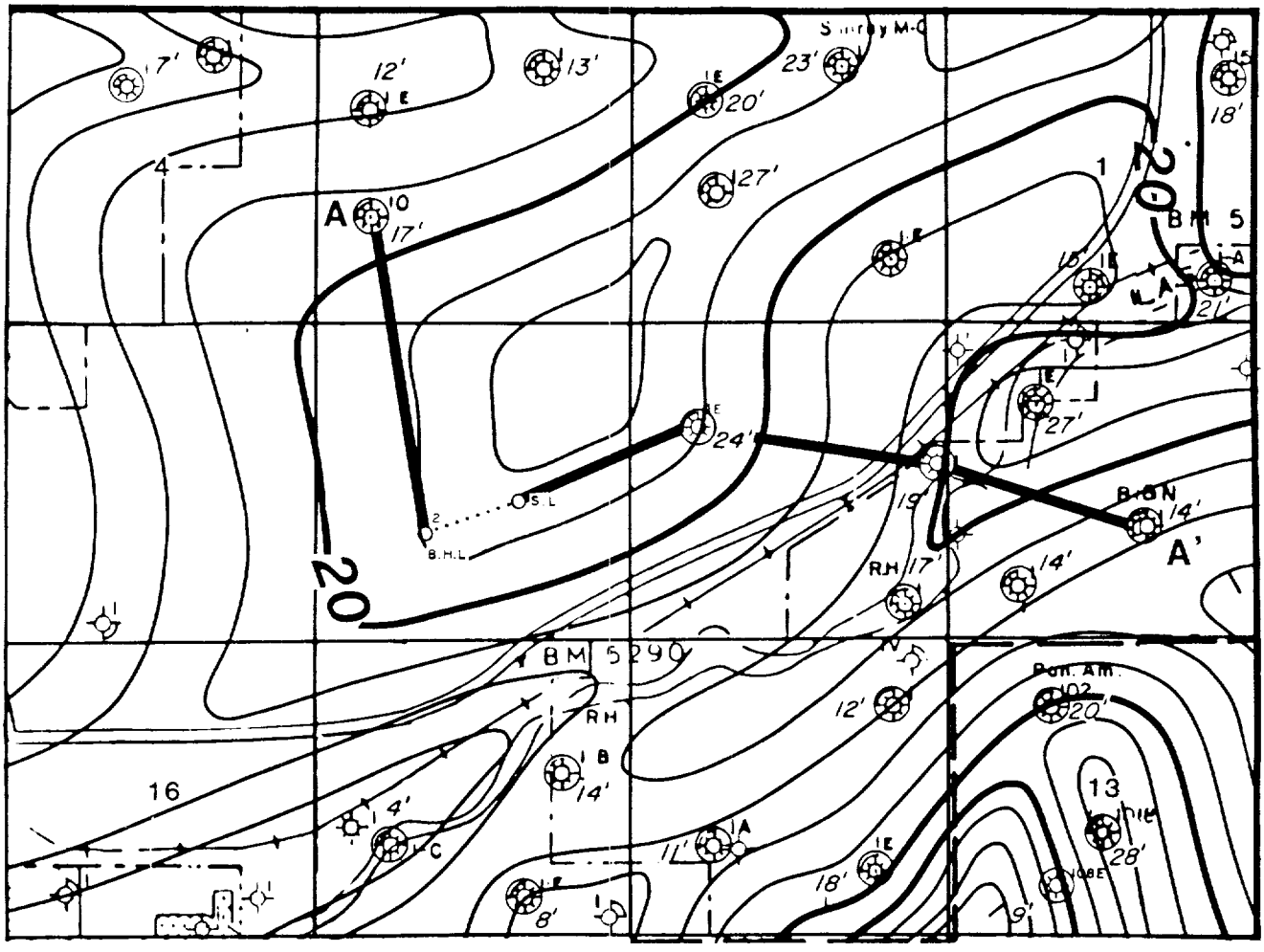
SURFACE AND BOTTOM HOLE LOCATION PLAT

0 1000 2000 FEET

57

DRAFTED BY: CHECKED BY:

R 13 W



- DRY HOLE
- PICTURED CLIFFS GAS WELL
- MESAVERDE GAS WELL
- DAKOTA GAS WELL
- DATA POINT WELL

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

TENNECO

SOUTH FARMINGTON-GALLEGOS AREA
SAN JUAN COUNTY, NEW MEXICO

DAKOTA "B1" SAND NET PAY ISOPACH

C.I. 4'

1 MILE

DRAFTED BY

A

A'

NW

SE

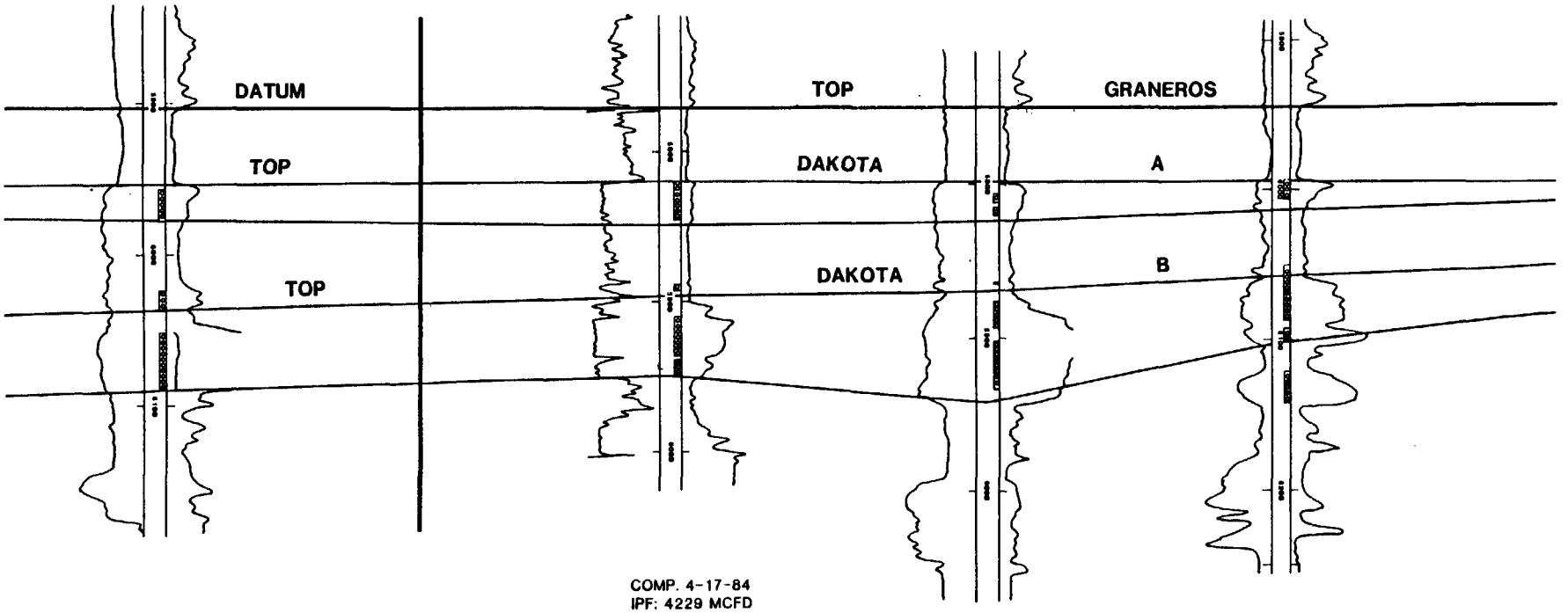
F.L.FUNDINGSLAND
S.D.SUNICAL No. 10
NWSW Sec. 3, T29N-R13W

PROPOSED LOCATION
Sec. 10, T29N-R13W

TENNECO
IRVIN COM No. 1E
SENW Sec. 11, T29N-R13W

TENNECO
IRVIN COM #1
SENE Sec. 11, T29N-R13W

REDFERN & HERD
SMITH No. 1
NWSE Sec. 12, T29N-R13W



COMP. 11-13-64
IPF: 4267 MCFD
CUM: 637 MMCF
as of 1/1/86

COMP. 4-17-84
IPF: 4229 MCFD
CUM: 196 MMCF
as of 1/1/86

COMP. 1-12-70
IPF: 7295 MCFD
CUM: 1069 MMCF
as of 1/1/86

COMP. 3-3-60
IPF: 3163 MCFD
CUM: 1200 MMCF
as of 1/1/86

HORIZONTAL SCALE: 735'

VERTICAL SCALE: 40'

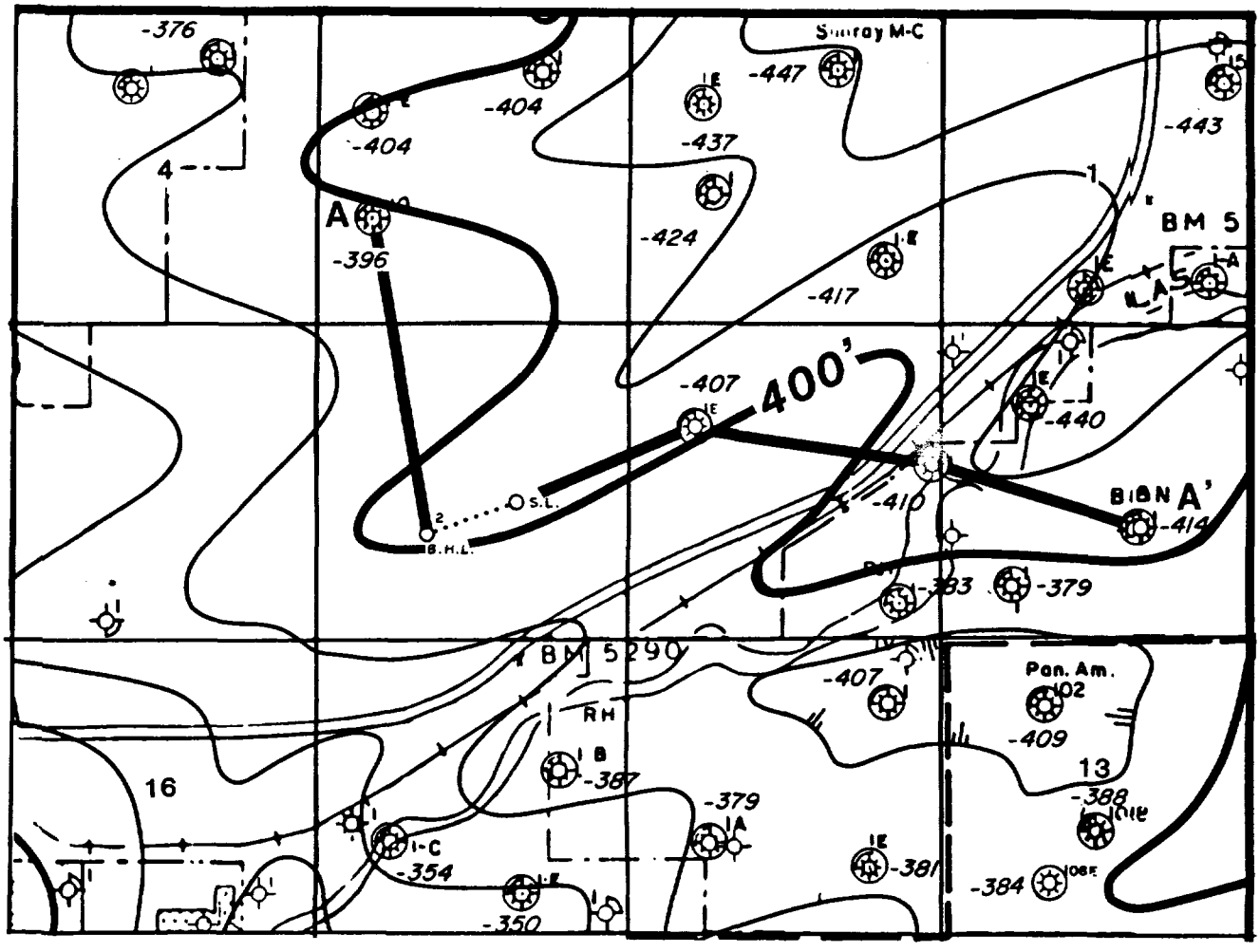
Tennece Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

CITY OF FARMINGTON AREA
SAN JUAN COUNTY, NEW MEXICO

DAKOTA STRATIGRAPHIC
CROSS SECTION

9

R 13 W



- DRY HOLE
- PICTURED CLIFFS GAS WELL
- MESAVERDE GAS WELL
- DAKOTA GAS WELL
- DATA POINT WELL

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

TENNECO

SOUTH FARMINGTON-GALLEGOS AREA
SAN JUAN COUNTY, NEW MEXICO

STRUCTURE CONTOUR MAP

DATUM: BASE OF GREENHORN LIMESTONE

C.I. 25'

1 MILE

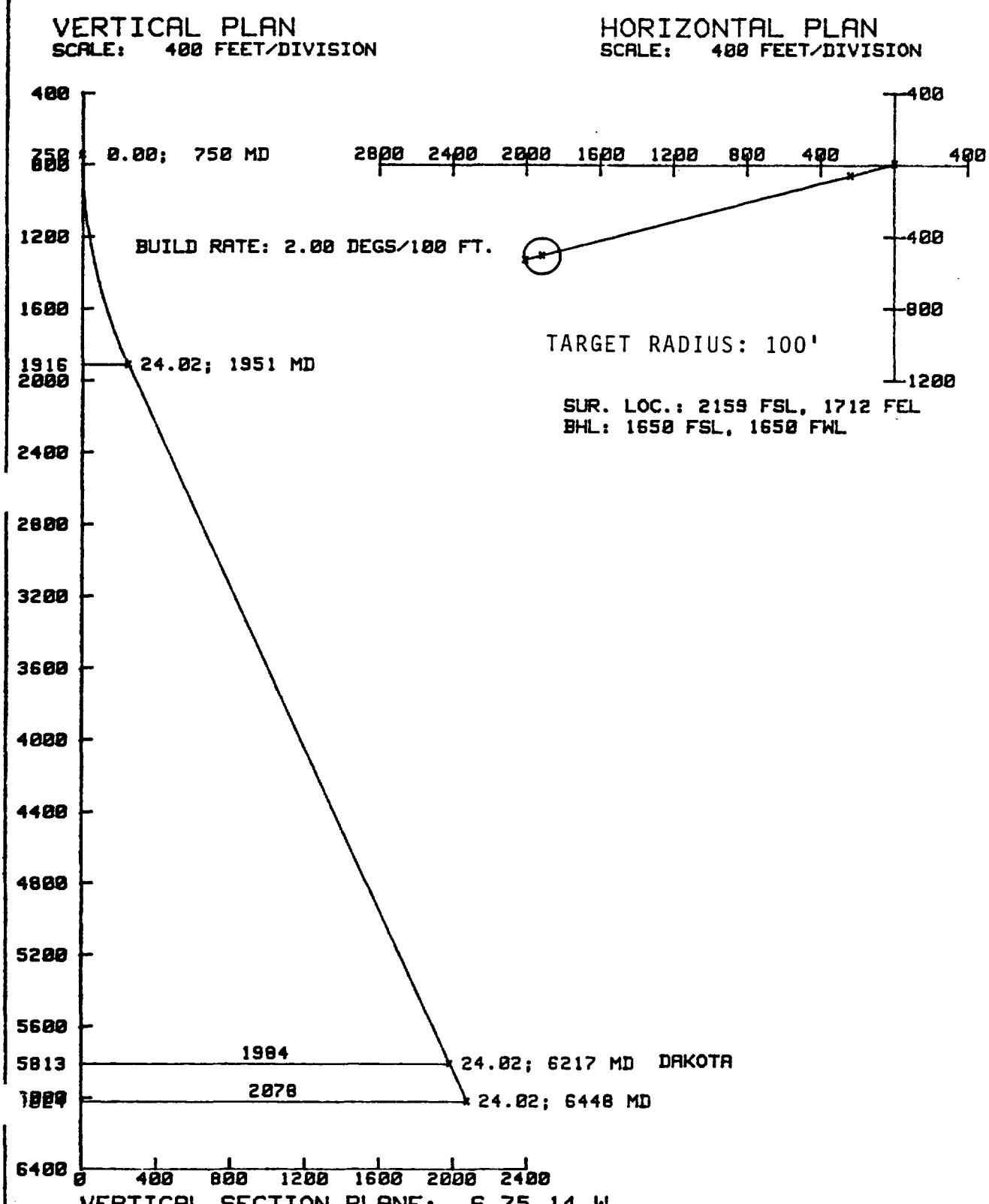
60

DRAFTED BY:

3 JUN 1986 @ 8:54

TENNECO OIL COMPANY
CITY OF FARMINGTON #2
SEC 10-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO

SMITH DATADRIL
Division of Smith International, Inc.



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Sii DATADRIL
Division of Smith International, Inc.

TENNECO OIL COMPANY
CITY OF FARMINGTON #2
SEC 10-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO

SUR. LOC.: 2159 FSL, 1712 FEL
BHL: 1650 FSL, 1650 FWL

FILE NAME: TENNCOF2

***** RECORD OF PROPOSAL *****

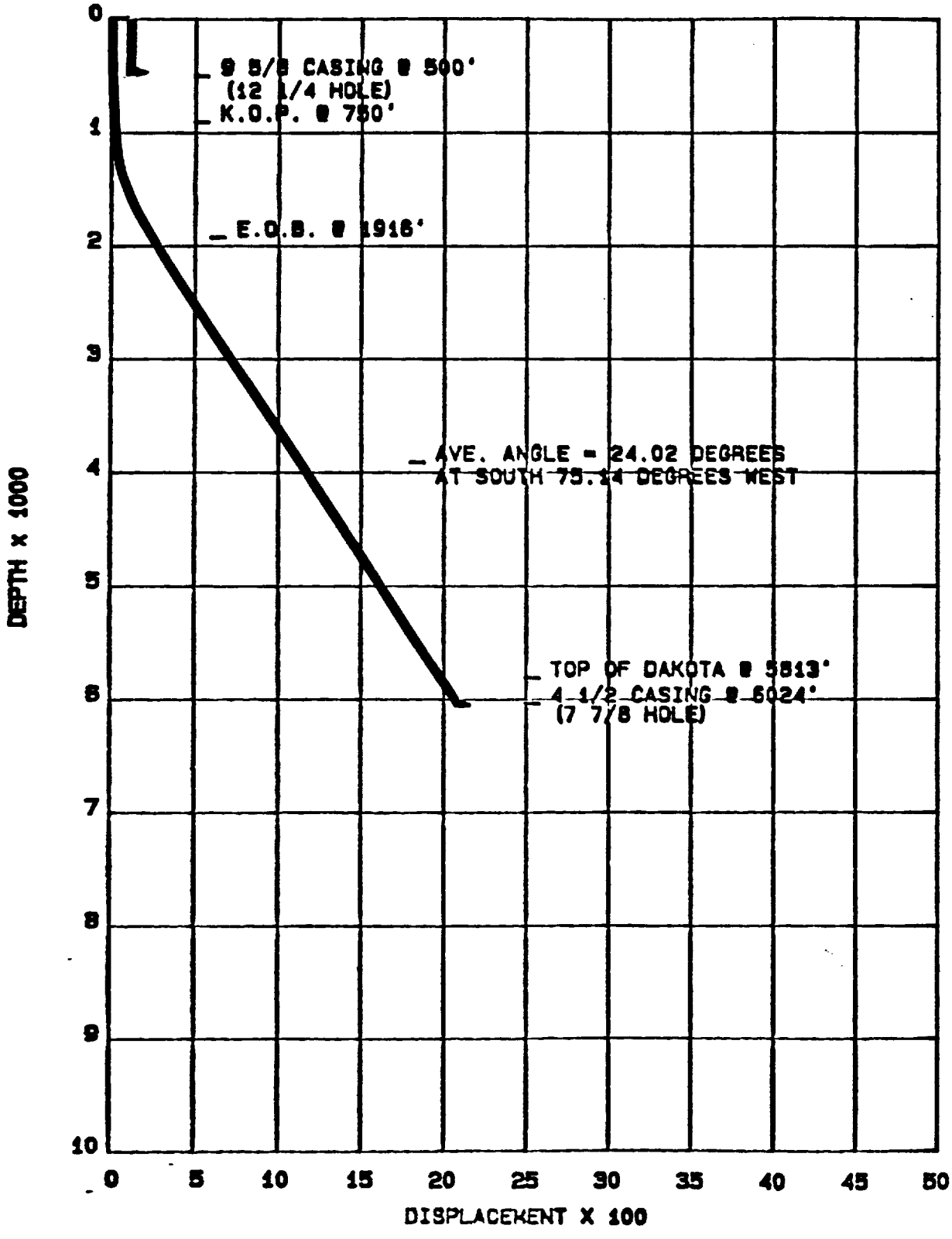
RADIUS OF CURVATURE METHOD
PROPOSAL COMPUTED BY THE DATADRIL C.A.D.D.S. SYSTEM
VERTICAL SECTION PLANE: S 75.14 W

MEASURED DEPTH (FT)	COURSE LENGTH (FT)	INCL. ANGLE (DEG)	DRIFT DIRECTION (DEG)	TRUE VERTICAL DEPTH	TOTAL RECT COORDINATES (FT)		VERTICAL SECTION (FT)	DOGLEG SEVERITY (DEG/100')
0.00	0.00	0.00	S 75.14 W	0.00	0.00 N	0.00 E	0.00	0.00
START OF BUILD #1								
750.00	750.00	0.00	S 75.14 W	750.00	0.00 N	0.00 E	0.00	0.00
850.00	100.00	2.00	S 75.14 W	849.98	.45 S	1.69 W	1.75	2.00
950.00	100.00	4.00	S 75.14 W	949.84	1.79 S	6.75 W	6.98	2.00
1050.00	100.00	6.00	S 75.14 W	1049.45	4.03 S	15.17 W	15.69	2.00
1150.00	100.00	8.00	S 75.14 W	1148.70	7.15 S	26.95 W	27.88	2.00
1250.00	100.00	10.00	S 75.14 W	1247.47	11.16 S	42.07 W	43.52	2.00
1350.00	100.00	12.00	S 75.14 W	1345.62	16.06 S	60.51 W	62.60	2.00
1450.00	100.00	14.00	S 75.14 W	1443.06	21.83 S	82.25 W	85.10	2.00
1550.00	100.00	16.00	S 75.14 W	1539.64	28.47 S	107.26 W	110.98	2.00
1650.00	100.00	18.00	S 75.14 W	1635.27	35.96 S	135.52 W	140.21	2.00
1750.00	100.00	20.00	S 75.14 W	1729.82	44.32 S	166.99 W	172.77	2.00
1850.00	100.00	22.00	S 75.14 W	1823.17	53.51 S	201.62 W	208.60	2.00
1950.00	100.00	24.00	S 75.14 W	1915.21	63.53 S	239.39 W	247.67	2.00
END OF BUILD #1...START OF HOLD SECTION								
1950.80	.80	24.02	S 75.14 W	1915.95	63.61 S	239.70 W	248.00	2.00
TARGET LOCATION: 5813 TVD								
6217.19	4266.39	24.02	S 75.14 W	5813.00	509.00 S	1918.00 W	1984.39	0.00
BOTTOM HOLE LOCATION (TD): 6024 TVD								
6448.19	231.00	24.02	S 75.14 W	6024.00	533.11 S	2008.87 W	2078.40	0.00

62

WELLBORE SCHEMATIC

CITY OF FARMINGTON # 2



TENNECO OIL COMPANY
CITY OF FARMINGTON #2
SECTION 10, TOWNSHIP 29N, RANGE 13W
SAN JUAN COUNTY, NEW MEXICO

DRILLING PROCEDURE:

1. Move in and rig up rotary tools.

2. Drill and survey to 500'± with a 12 1/4" bit using a gel-water mud.

3. Run 9 5/8" surface casing to 500'± and cement with sufficient quantity to circulate cement to the surface. Wait on cement 12 hours. Install and pressure test casinghead and BOP equipment.

4. Drill out surface casing. Drill and survey to kick off point at 750' with a 7 7/8" bit using a fresh water-polymer mud.

5. Run a multi-shot survey to determine bottom hole location at kick off point. Using a downhole motor and build assembly, orient tools and drill ahead building angle at approximately 2°/100' until an angle of 24 degrees is achieved. Using a hold assembly, drill and survey to the proposed target making any inclination or course corrections that may be necessary. Run a multi-shot survey to determine bottom hole location at T.D.

6. Log well.

7. If productive, run 4 1/2" casing to T.D. Cement in 3 stages with stage tools at 4400' and 1620'.

8. If non-productive, plug and abandon as per regulatory agency specifications.

30-045-26735

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LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-101
Revised 1-1-65

5A. Indicate Type of Lease: STATE ☐ FEE ☒

5. State Oil & Gas Lease No.:

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

Type of Work

Type of Well: DRILL ☒ DEEPEN ☐ PLUG BACK ☐

OIL WELL ☐ GAS WELL ☒ OTHER SINGLE ZONE ☒ MULTIPLE ZONE ☐

7. Unit Agreement Name:

8. Farm or Lease Name: City of Farmington

Name of Operator: TENNECO OIL ~~E & P~~ Company

9. Well No.: 2

Address of Operator: P. O. BOX 3249, ENGLEWOOD, CO. 80155

10. Field and Pool, or Wildcat: Basin Dakota

Location of Well: UNIT LETTER J LOCATED 2159 FEET FROM THE South LINE

AND 1712 FEET FROM THE East LINE OF SEC. 10 TWP. 29N RGE. 13W NMPM

12. County: San Juan

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
6411" MD	Dakota	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
5345' GL	General	4 Corners Drilling	4 Qtr 1986

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
12 1/4"	9 5/8"	36# K-55	± 500' KB	275 SX, 314 CF	Surface
7 7/8"	4 1/2"	10.50# K-55	± 6411' MD	930 SX, 1546 CF	Surface-3 Stages

See Attached Drilling Procedure.

APPROVAL EXPIRES 11-24-86
UNLESS DRILLING IS COMMENCED.
SPUD NOTICE MUST BE SUBMITTED
WITHIN 10 DAYS.

Application has been made to the City of Farmington for a special use permit to drill.

RECEIVED
MAY 21 1986
OIL CON. DIV.
DIST. 3

Note: Bottom hole location to be 1650' FSL, 1650' FWL, Sec 10 T29N R13W

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

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

Signed Scott McKinney Title Sr. Regulatory Analyst Date 5-19-86

(This space for State Use)

APPROVED BY Ernie Busch TITLE GEOLOGIST DISTRICT #3 DATE 5-23-86

RECEIVED
MAY 23 1986

CONDITIONS OF APPROVAL, IF ANY:
Hold C-104 for Directional Drilling Order
[illegible] consolidation

RECEIVED
JUN 02 1986

TENNECO OIL CO.
WRMD Accounting

65

OIL CONSERVATION DIVISION

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-102
Revised 10-1-78

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

Operator	Lease	Well No.
TENNECO OIL COMPANY	City of Farmington	2

Unit Letter	Section	Township	Range	County
J	10	29 North	13 West	San Juan

Actual Footage Location of Well:
2159 feet from the South line and 1712 feet from the East line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
5345.3	Dakota	Basin Dakota	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

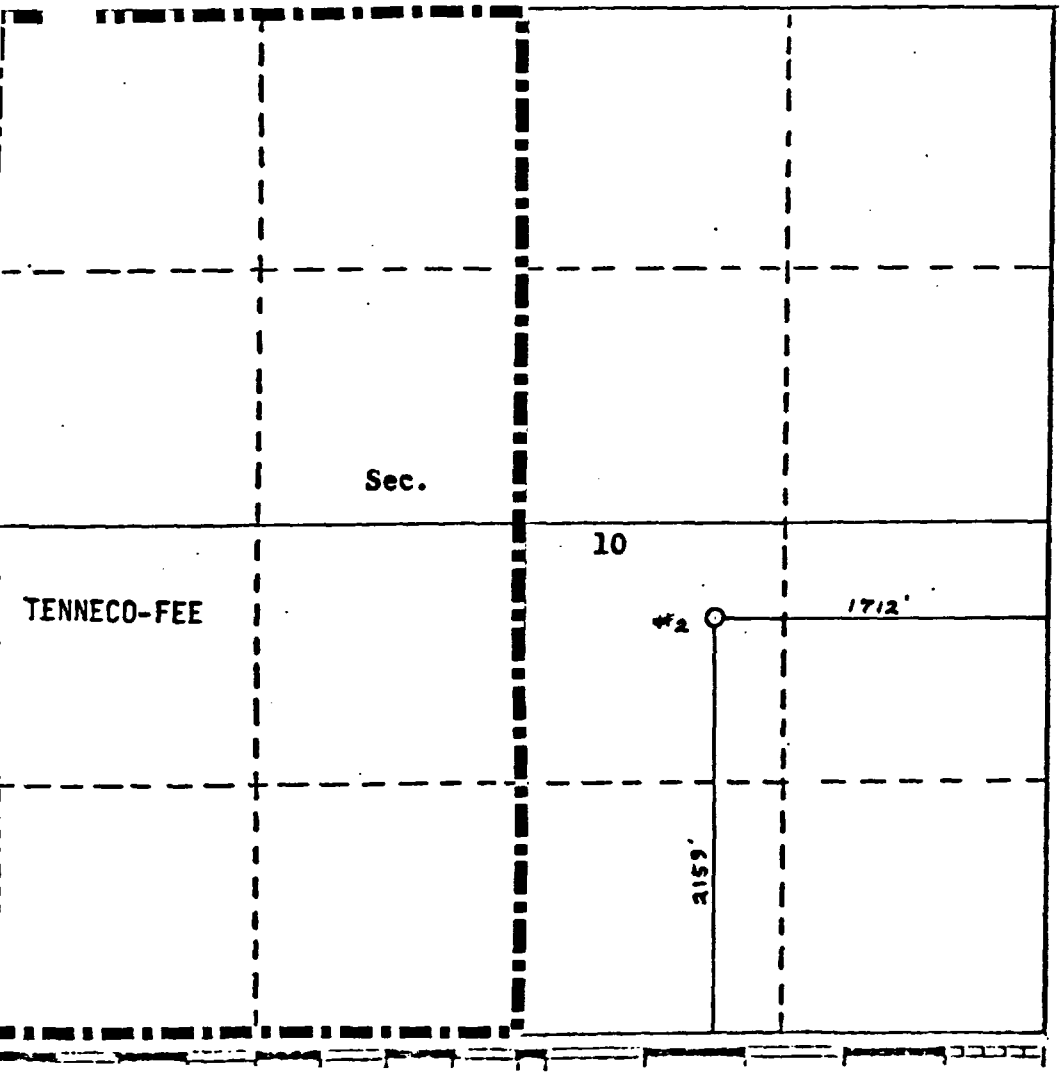
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

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 Pending Force-Pooling.

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 Division.



CERTIFICATION

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

Scott McKinney

Name: Scott McKinney

Position: Sr. Regulatory Analyst

Company: Tenneco Oil Co.

Date: May 16, 1986

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.

ROY A. RUSH
NEW MEXICO
8894
REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR

Date Surveyed: May 9, 1986

Registered Professional Engineer and/or Land Surveyor

Certificate No.

66

DRILLING PROCEDURE

TENNECO OIL COMPANY
ROCKY MOUNTAIN DIVISION
6162 SOUTH WILLOW DRIVE
ENGLEWOOD, COLORADO 80155

DATE:	May 12, 1986		
LEASE:	City of Farmington	WELL NO:	2
LOCATION:	Surface: 2159' FSL, 1712' FEL Section 10, T29N, R13W San Juan County, New Mexico Bottom Hole Location: 1650' FSL, 1650' FWL Sec. 10, T29N, R13W San Juan County, NM	FIELD:	Basin Dakota
ELEVATION	5344' G.L., 5356' K.B.		
TOTAL DEPTH:	6024' T.V.D., 6411' M.D.		
PROJECTED HORIZON:	Dakota		

SUBMITTED BY: W. C. McAdams DATE: 5-14-86

APPROVED BY: [signature] DATE: 5-14-86

CC: Administration
DSB Well File
Field File

67

ESTIMATED FORMATION TOPS

	T.V.D.	(Subsea)	Fm Pressure	
Ojo	Surface	(+5344)		
Fruitland	1057'	(+4305')	Normal	
Pictured Cliffs	1225'	(+4130')	Normal	
Lewis	1465'	(+3891')		
Cliff House	2795'	(+2561')		
Menefee	2903'	(+2453')		
Point Lookout	3667'	(+1689')	Normal	
Mancos	4026'	(+1330')	Normal	
Gallup	4952'	(+404')	Under Pressured	Potential Lost Circulation
Greenhorn	5703'	(-347')		
Graneros	5756'	(-400')		
Dakota	5813'	(-457')	2075 psi	Gas
TD	6024'	6411' M.D.		

DRILLING, CASING AND CEMENT PROGRAM

1. Move in, rig up rotary tools and rental solids control equipment. Floor valves and safety valves for each type of string connection must be cleaned and on the rig floor – available for use at all times.

2. Drill a 12-1/4" hole to ± 500' with a gel-water system. Reserve pit to consist of a buried steel tank. Vacuum truck to remove waste material as needed and haul to an approved disposal site.

3. Rig up and run 9-5/8", 36#, K-55, ST&C casing to bottom. Cement with 275 sx (313.5 ft^3) Class B + 2% $CaCl_2$ in sufficient quantity to circulate cement to surface. If conditions warrant the use of loss circulation agents, 1/4 #/sx celloflakes may be added. Centralize as necessary. If necessary, do 1" top cement job..

4. While waiting on cement, screw on a 9-5/8" X 11"-3M casinghead. NU BOPE. Rig up BOPE testers and test all BOP related equipment to rated working pressure. Pressure test 9-5/8" casing to 1500 psi. Record all tests on the IADC report sheet.

5. Drill out of 9 5/8" casing with 7 7/8" bit and a clear water New-Drill System. Solids control equipment to be working at all times. (Closed system).

   NOTE: 1. Operate BOP pipe rams daily and blind rams on trips.
   2. Establish a reduced rate kill speed and circulating pressure EACH TOUR.

6. On the trip out prior to drilling into the Dakota, check operation of all BOPE. Drill 5' – 10' into the Dakota (look for drilling breaks). Check for flow. If no flow, continue drilling. If well is flowing, procede with weight up of mud system.

7. Log open hole as directed by the G.E. Department.

8. If productive, run the 4 1/2" longstring as designed. Equip casing with guide shoe, float collar one joint up, a lower stage tool into the Gallup @ ± 4400' M.D., and an upper stage tool into the Lewis @ ± 1620' M.D. Centralize and use baskets as necessary.

9. Cement production casing as follows:

PRODUCTION CEMENTING PROGRAM

FIRST STAGE	LEAD MIX	TAIL MIX
Type	65/35 Pozmix Cement + 6% gel, 1/4# D-29 celloflake	Class "B" + 1/4#/sx D-29 Celloflake + .5% D-60 Flac
Sacks	160 (294.4 ft^3)	(150 177 ft^3)
	Actual volumes will be calculated from Caliper Log	
	No excess	
Slurry yield	1.84	1.18
Mix weight	12.2	15.6
Water req's.	10.2 gal/sx	5.2

SECOND STAGE	LEAD MIX	TAIL MIX
Multiple stage cementer at 4400'		
Type	65/35 Pozmix + 6% Gel +1/4#/sx D-29 Celloflake + 2% CaCl	Class "B" + 2% CaCl 1/4#/sx D-29 Celloflake
Sacks	310 (570.4 ft^3)	50 (59 ft^3)
Actual volumes will be calculated from Caliper Log - no excess		
Slurry yield	1.84	1.18
Mix weight	12.2	15.2
Water req's.	10.2 gal/sx	5.2 gal/sx

THIRD STAGE	LEAD MIX	TAIL MIX
Multiple stage cementer at 1620'		
Type	65/35/6 + 2% CaCl + 1/4#/sx D-29 Celloflake	Class "B" + 2% CaCl + 1/4#/sx D-29 Celloflake
Sacks	210 (384.4 ft^3)	50 (59 ft^3)
Actual volumes will be calculated from Caliper Log plus 20% excess.		
Slurry yield	1.84	1.18
Mix weight	12.2	15.2
Water req's.	10.2 gal/sx	5.2 gal/sx

Precede the three stages with 1000 gal. chemical wash and 500 gal. Super Flush. If cement is not circulated to the surface on the third stage, run a temperature survey after 8 hours to determine top of cement. Circulate 4 hours between stages.

10. Set slips with casing in full tension and cut off.

11. Move off rotary tools. Install tree and clean up location. Clean out buried "reserve pit" tank.

12. If non-productive, P & A as required by State of New Mexico, Oil Conservation Division.

CASING PROGRAM

INTERVAL	LENGTH	SIZE	WEIGHT	GRADE	OPTIMUM MAKE-UP TORQUE
0-500	500	9-5/8	36. #	K-55	STC 4230
0-6411	6411	4-1/2	10.5#	K-55	STC 1460

MUD PROGRAM

0-500' Spud mud. Gel, water with lime for hole cleaning capabilities. Mud wt. 8.6, vis 40 - 50, W.L. N/C.

500'-3500' Prior to drilling out cement, mud up with a New Drill System for a low solids, high shear thinning drilling fluid. Mix .4 - .5#/bbl. New Drill. (A liquid co-polymer that is a primary shale encapsulator & viscosifier). Minimize excessive solids accumulation by monitoring solids control equipment (closed system). Mud wt. 8.6 - 8.8, vis 30, W.L. 15 - 25.

3500'-T D Utilizing the New Drill System, raise viscosity to 34 - 36 with the addition of 5 - 8#/bbl. gel by 5000' or as hole dictates. At 5500' bring mud weight up to 9.0 - 9.4 ppg range. Keep at least 600 sacks Barite on location at all times. At T.D. raise viscosity to 40 and a fluid loss of 6 - 8 cc. Minimize excessive solids accumulation by monitoring solids control equipment. (Closed system).

If a drilling break is experienced in this interval, drill no more than 5', pull up off bottoom, shut down pump and check for flow. If well is flowing, shut it in. Notify company representative, tool pusher and mud engineer in that order.

EVALUATION

Cores and DST's:

NONE.

Deviation Program

1. Survey surface hole at 100' intervals. Maximum allowable deviation at 500' is 1-1/2°

2. Prior to drilling out below the 9 5/8" surface casing run a single shot survey to determine inclination and direction. Run single shot survey every 500' and record survey on IADC report sheet. Maximum allowable deviation of the production hole at 750 ± is 1 1/2°. Maximum rate of change is 1° per 100'. From 750'± the production hole will be directionally drilled to a bottom hole location of 1750' FSL, 1775' FEL, Sec. 10, T-29N, R-13W with a target radius of 100'. The direction will be south 75.14° west with a displacement of 1984.39, and the angle of the hole will be 22.92 ±. Maximum rate of change will be 2° per 100'.

Samples: N/R

Logs: Run # 1: GR:SP:DIL/GR:CDL:CNL:Cal - T.D. to surface
Run # 2: DIL:GR:SP:FDC-CNL-GR-CAL - T.D. minimum 2000'

BLOWOUT EQUIPMENT

11" - 3000 BOP with rotating head to comply with TOC requirements as shown in BOE arrangement, Figure C. Preventer must be checked for operation every 24 hours with each check recorded on the IADC Drilling Report Sheet.

REPORTS

Drilling Reports for the past 24 hours will include depth, footage, time distribution, activity breakdown, mud properties, bit record, bottom hole assembly, types of logs and depths ran, daily and cumulative mud cost, deviation surveys, and other pertinent information to be called into Division Office by 7:30 AM Monday thru Friday.

TENNECO OIL COMPANY
P.O. Box 3249
ENGLEWOOD, COLORADO 80155
PHONE: 303-740-4800

OFFICE DIRECTORY

John Owen	740-4819
Ted McAdam	740-2588
Mark Kangas	740-4804

In case of emergency or after hours call the following in the preferred order.

(1)	D. S. Barnes	740-4814	Office
	Division Drilling Superintendent	936-0704	Home
(2)	Ted McAdam	740-2588	Office
	Drilling Engineering Supervisor	978-0724	Home
(3)	Harry Hufft	741-3189	Home
	Division Production Manager	740-4892	Office

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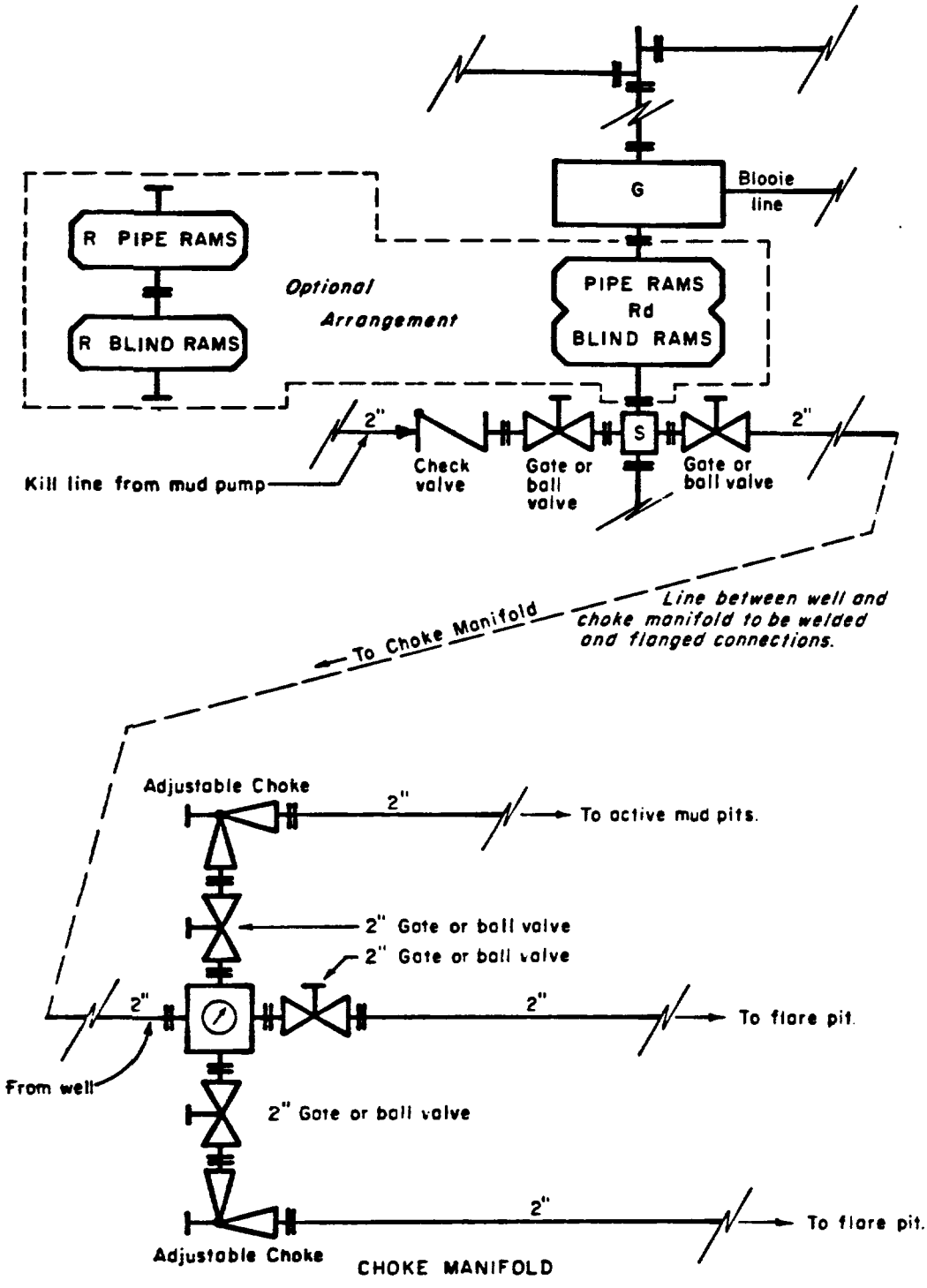


CHOKE MANIFOLD

All equipment to be 3,000 psi working pressure except as noted.

Rd Double ram type preventer with two sets of rams.

R Single ram type preventer with one set of rams.

S Drilling spool with side outlet connections for choke and kill lines.

G Rotating head 150 psi working pressure minimum

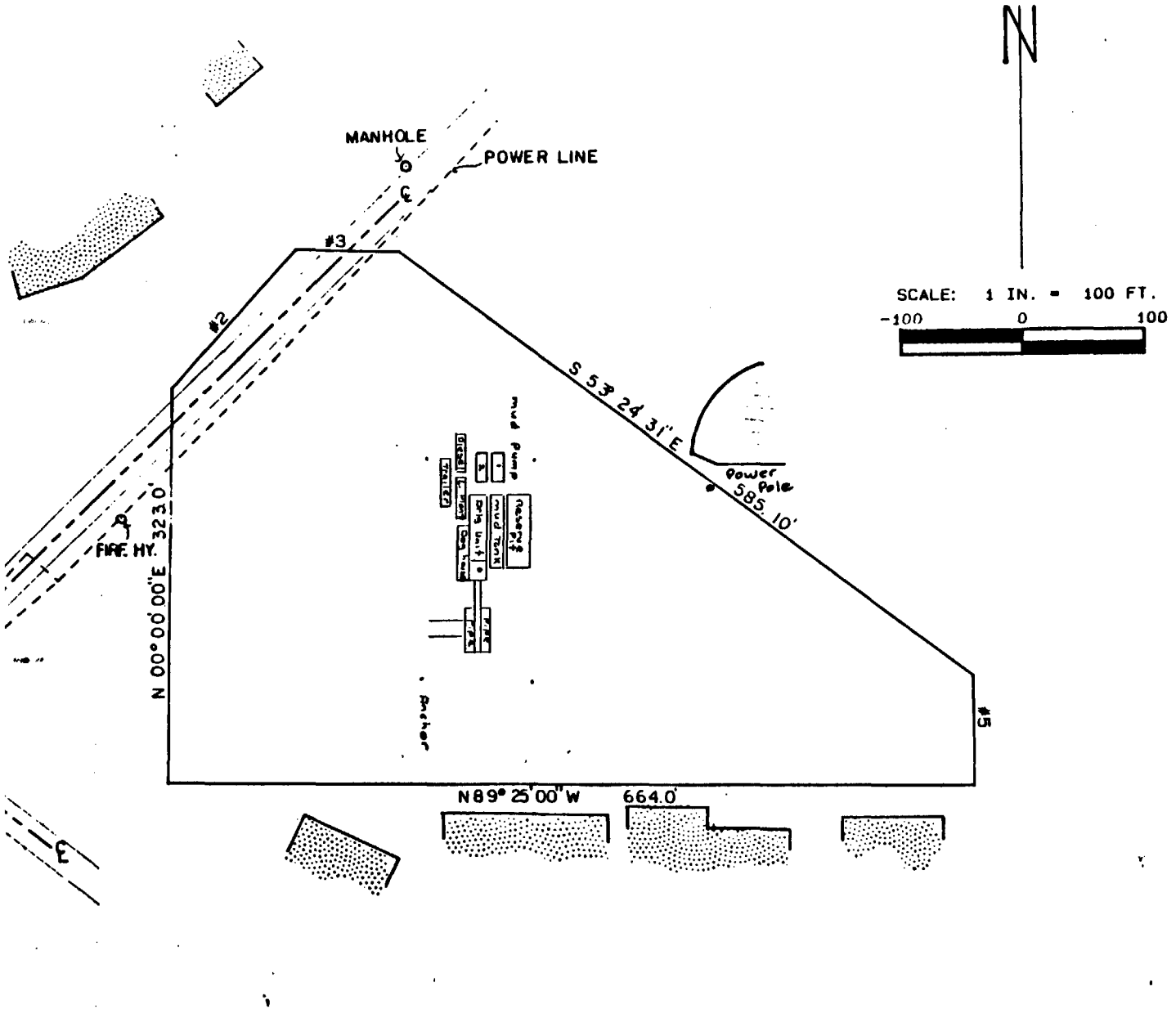
ARRANGEMENT C

TENNECO OIL COMPANY
ROCKY MOUNTAIN DIVISION

REQUIRED MINIMUM
BLOWOUT PREVENTER AND
CHOKE MANIFOLD

J. MAGILL 10-26-79 EVI

74



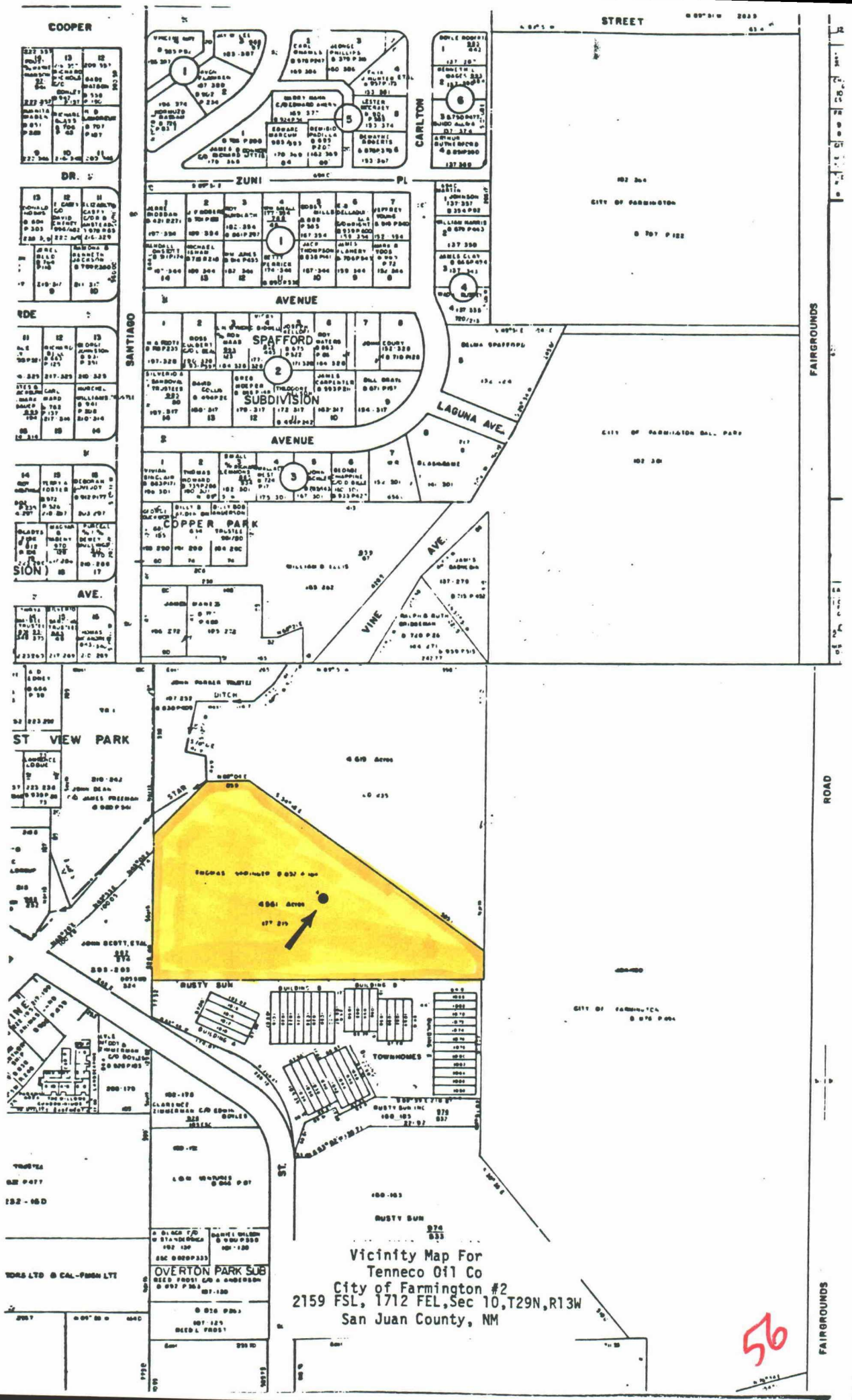
Drilling Pad Layout
Tenneco Oil Co
City of Farmington #2
2159 FSL, 1712 FEL, Sec 10, T29N, R13W
San Juan County, NM

UNORTHODOX SURFACE LOCATION
AND DIRECTIONAL DRILLING APPLICATION

WELL NAME:	CITY OF FARMINGTON #2E
SURFACE LOCATION:	1712' FEL and 2246' FSL
BOTTOM-HOLE LOCATION:	1650' FNL and 1650' FWL
SPACING:	W/2 of Section 10, Township 29 North, Range 13 West, N.M.P.M. San Juan County, New Mexico

Tenneco Oil Company plans to drill the captioned Dakota formation well in the fourth quarter of 1987. The well is located in the city of Farmington, New Mexico. Due to topographical restrictions, the proposed surface location is unorthodox, and the proposed bottom-hole location is standard pursuant to the Basin Dakota Pool Rules. Tenneco seeks approval by the New Mexico Oil Conservation Division allowing for an unorthodox surface location and to directionally drill the captioned well.

The enclosed documentation demonstrates that all of the requirements as stipulated by the New Mexico Oil Conservation Division have been met.



Vicinity Map For
Tenneco Oil Co
City of Farmington #2
2159 FSL, 1712 FEL, Sec 10, T29N, R13W
San Juan County, NM

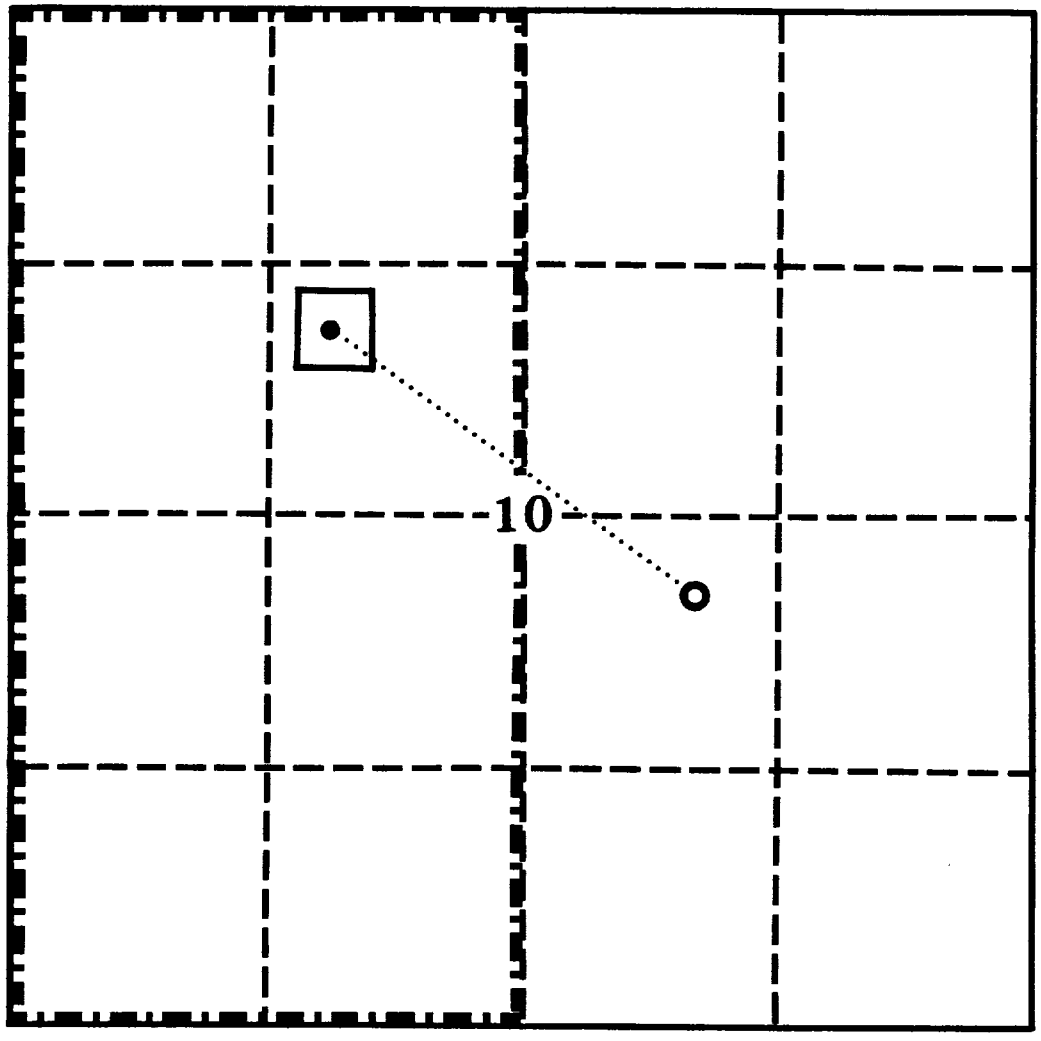
56

SURFACE ○

2246 FSL, 1712 FEL
SEC. 10, T29N, R13W
SAN JUAN COUNTY, NEW MEXICO

BOTTOM HOLE ●

1650 FNL, 1650 FWL
SEC. 10, T29N, R13W
SAN JUAN COUNTY, NEW MEXICO



□ DRILLING WINDOW

▬·▬·▬ DEDICATED ACREAGE

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

TENNECO

CITY OF FARMINGTON #2E
SAN JUAN COUNTY, NEW MEXICO

SURFACE AND BOTTOM HOLE LOCATION PLAT

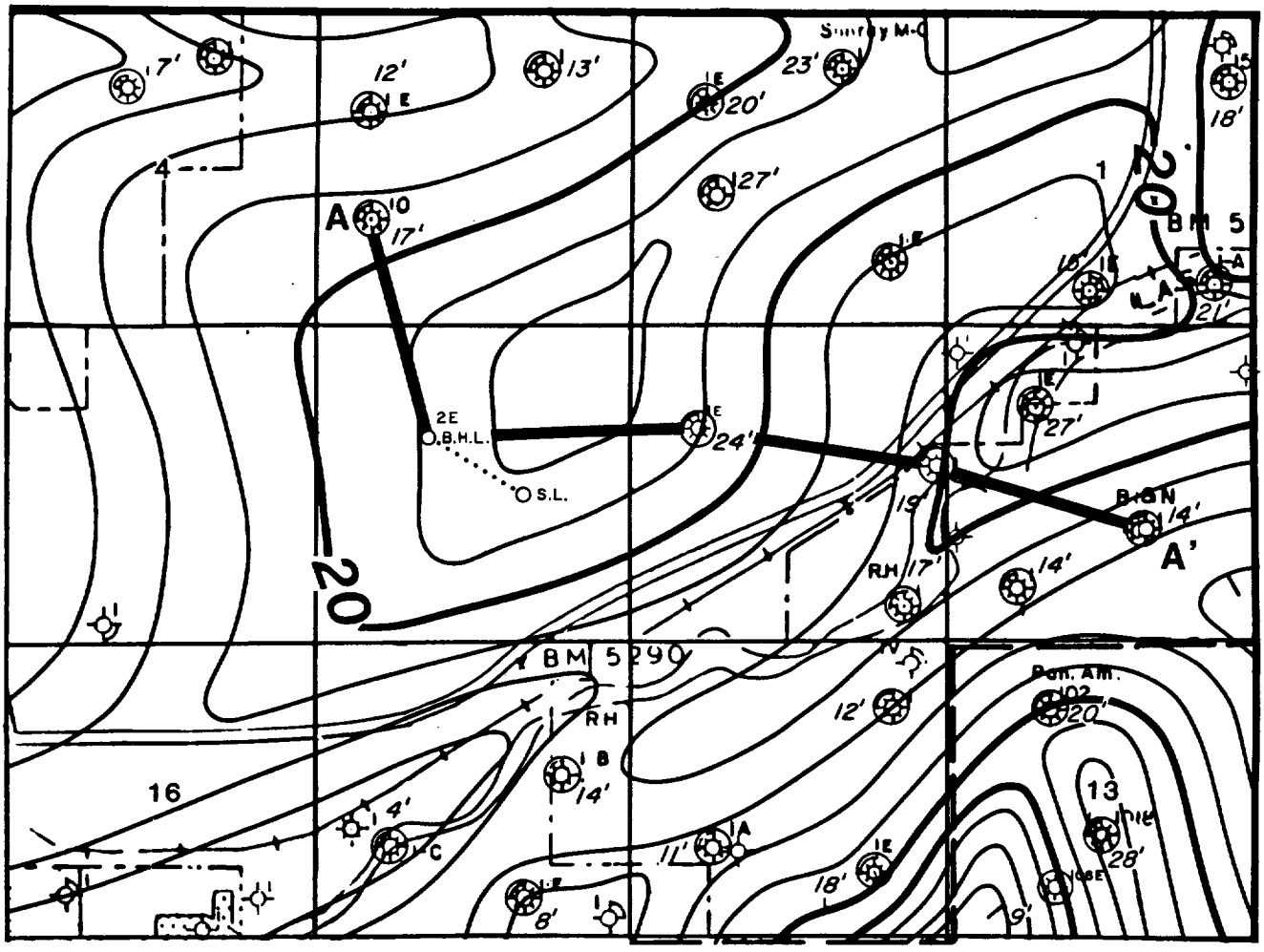
0 1000 2000 FEET

DRAFTED BY:

CHECKED BY:

78

R 13 W



T 29 N

- DRY HOLE
- PICTURED CLIFFS GAS WELL
- MESAVERDE GAS WELL
- DAKOTA GAS WELL
- DATA POINT WELL

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

SOUTH FARMINGTON-GALLEGOS AREA
SAN JUAN COUNTY, NEW MEXICO

DAKOTA "B1" SAND NET PAY ISOPACH

C.I. 4'

1 MILE

DRAFTED BY

79

A

A'

NW

SE

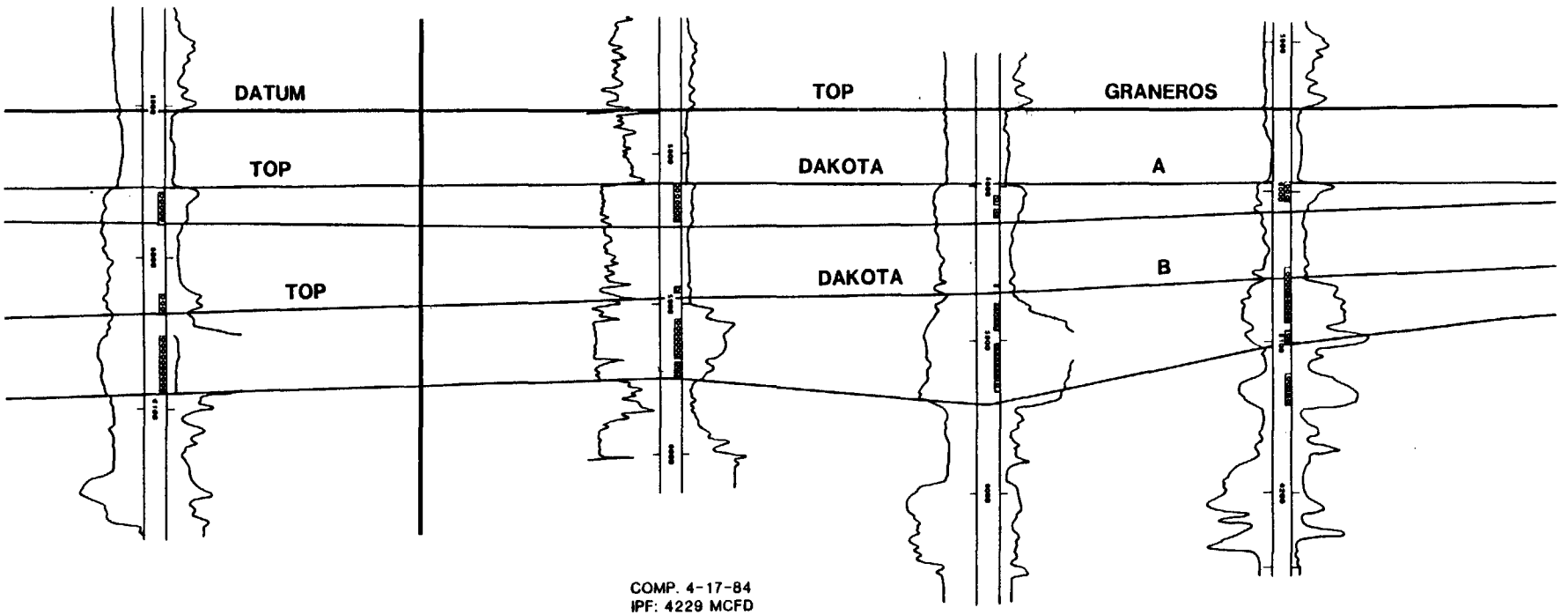
F.L.FUNDINGSLAND
S.D.SUNICAL No. 10
NWSW Sec. 3, T29N-R13W

PROPOSED LOCATION
Sec. 10, T29N-R13W

TENNECO
IRVIN COM No. 1E
SENW Sec. 11, T29N-R13W

TENNECO
IRVIN COM #1
SENE Sec. 11, T29N-R13W

REDFERN & HERD
SMITH No. 1
NWSE Sec. 12, T29N-R13W



COMP. 11-13-64
IPF: 4267 MCFD
CUM: 637 MMCF
as of 1/1/86

COMP. 4-17-84
IPF: 4229 MCFD
CUM: 196 MMCF
as of 1/1/86

COMP. 1-12-70
IPF: 7295 MCFD
CUM: 1069 MMCF
as of 1/1/86

COMP. 3-3-60
IPF: 3163 MCFD
CUM: 1200 MMCF
as of 1/1/86

HORIZONTAL SCALE: 735'

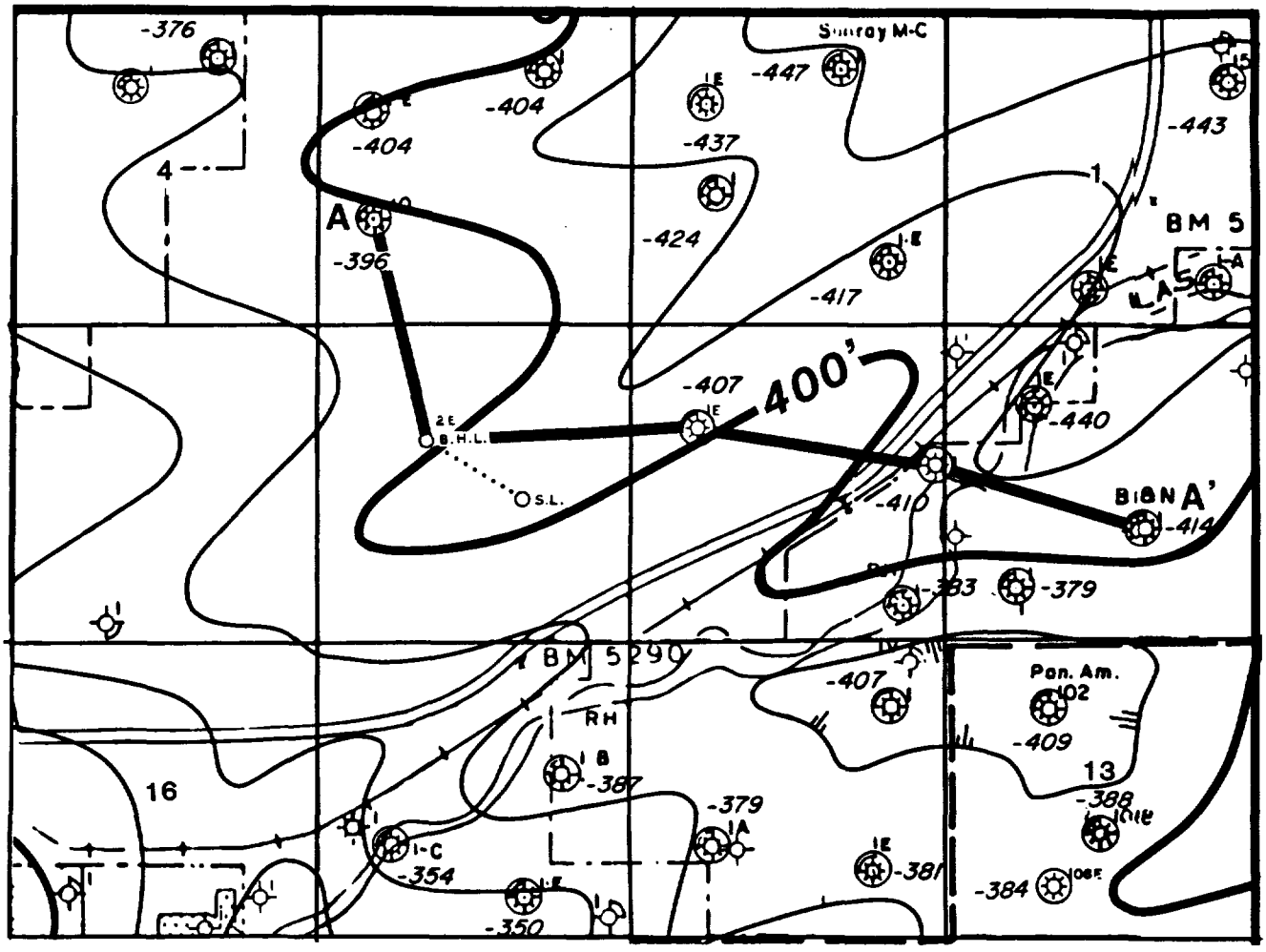
VERTICAL SCALE: 40'

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

CITY OF FARMINGTON AREA
SAN JUAN COUNTY, NEW MEXICO

DAKOTA STRATIGRAPHIC
CROSS SECTION

R 13 W



- DRY HOLE
- PICTURED CLIFFS GAS WELL
- MESAVERDE GAS WELL
- DAKOTA GAS WELL
- DATA POINT WELL

Tenneco Oil
Exploration and Production
ROCKY MOUNTAIN DIVISION

TENNECO

SOUTH FARMINGTON-GALLEGOS AREA
SAN JUAN COUNTY, NEW MEXICO

STRUCTURE CONTOUR MAP

DATUM: BASE OF GREENHORN LIMESTONE

C.I. 25'

1 MILE

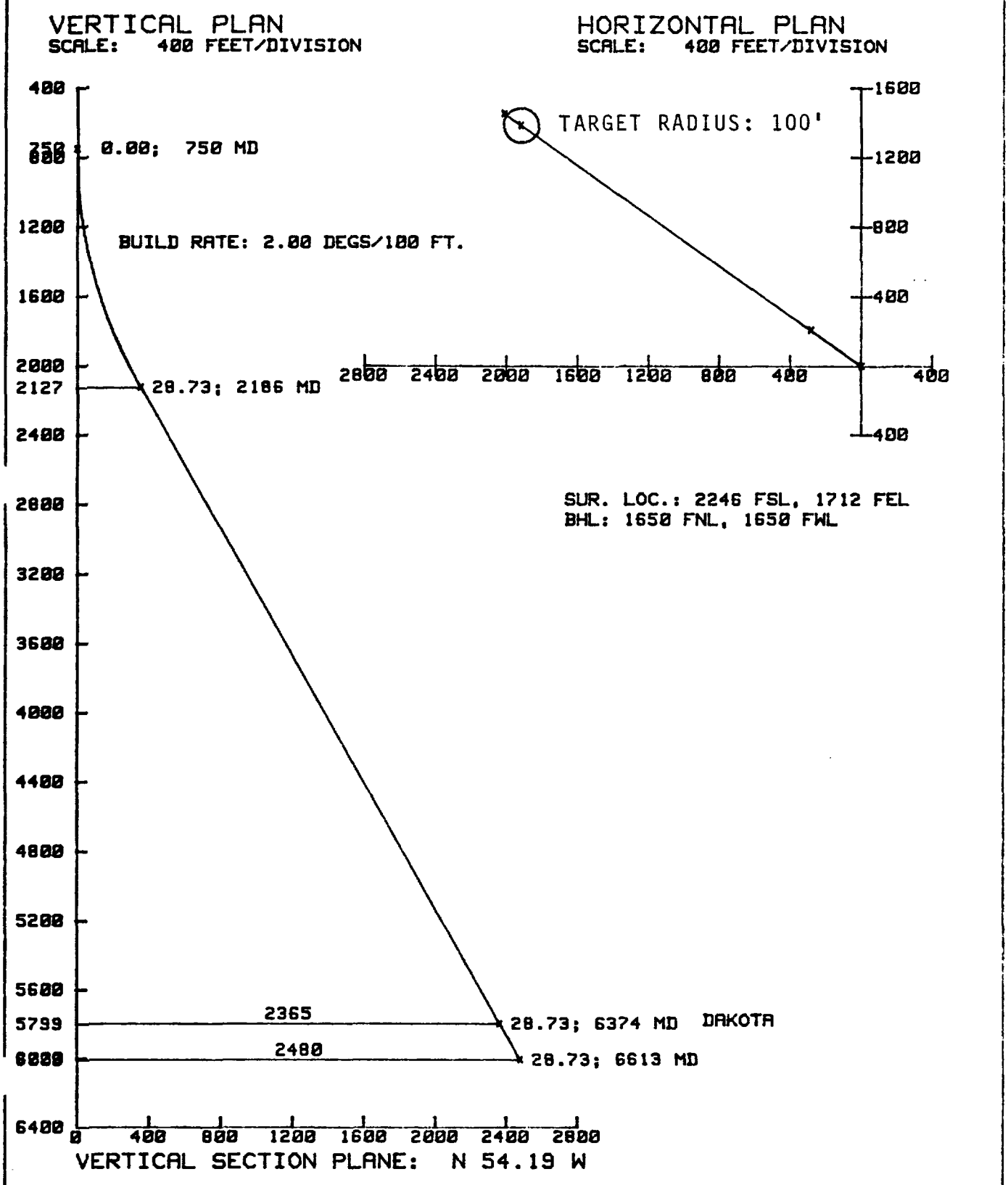
DRAFTED BY:

81

3 JUN 1986 @ 9:06

TENNECO OIL COMPANY
CITY OF FARMINGTON #2E
SEC 10-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO

DATADRIL
Division of Smith International, Inc.



82

Sii DATADRIL
Division of Smith International, Inc.

TENNECO OIL COMPANY
CITY OF FARMINGTON #2E
SEC 10-T29N-R13W
SAN JUAN COUNTY, NEW MEXICO

SUR. LOC.: 2246 FSL, 1712 FEL
BHL: 1650 FNL, 1650 FWL

FILE NAME: TENNCOF2E

***** RECORD OF PROPOSAL *****

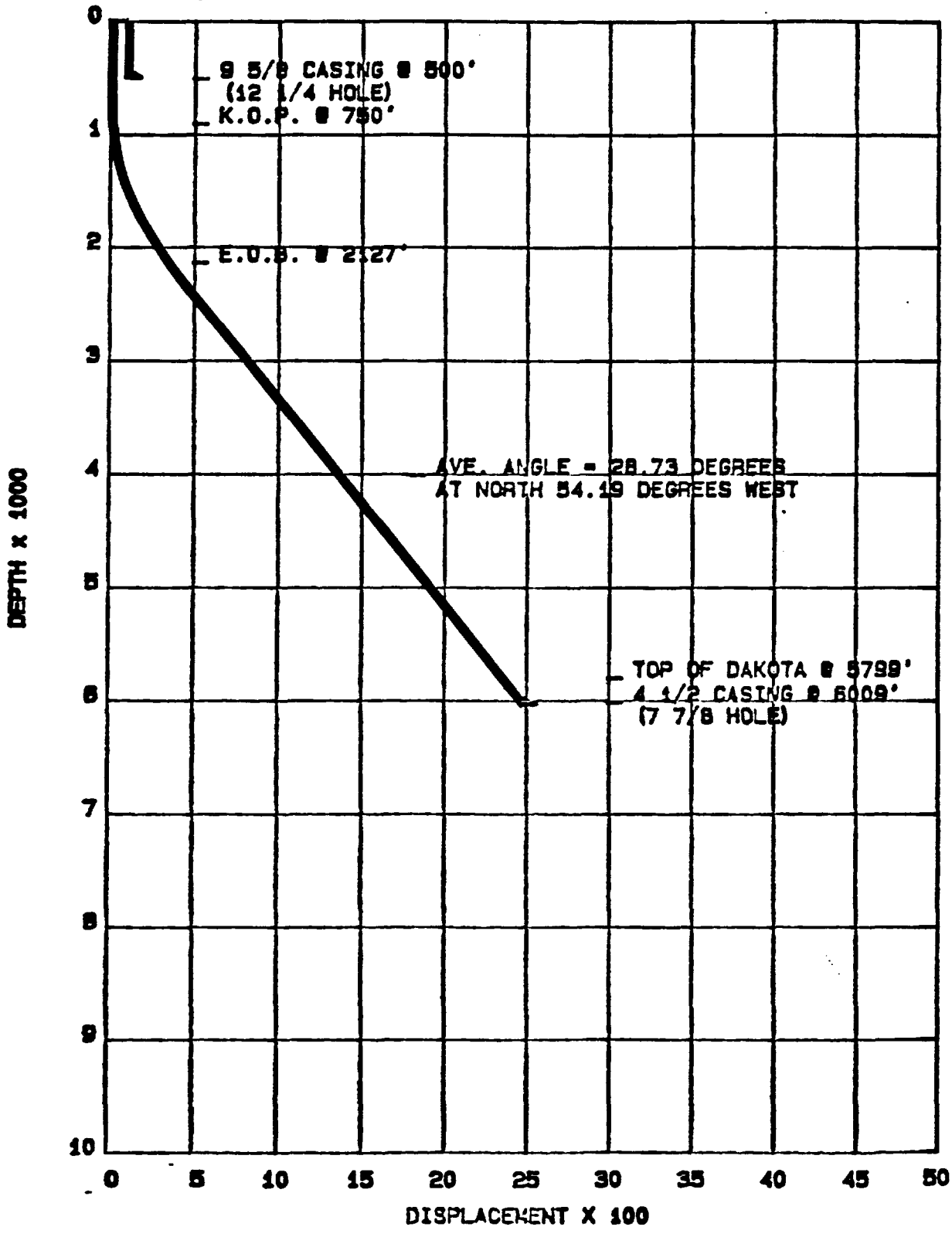
RADIUS OF CURVATURE METHOD
PROPOSAL COMPUTED BY THE DATADRIL C.A.D.D.S. SYSTEM
VERTICAL SECTION PLANE: N 54.19 W

MEASURED DEPTH (FT)	COURSE LENGTH (FT)	INCL. ANGLE (DEG)	D R I F T DIRECTION (DEG)	TRUE VERTICAL DEPTH	T O T A L RECT COORDINATES (FT)	(FT)	VERTICAL SECTION (FT)	DOGLEG SEVERITY (DEG/100')
0.00	0.00	0.00	N 54.19 W	0.00	0.00 N	0.00 E	0.00	0.00
START OF BUILD #1								
750.00	750.00	0.00	N 54.19 W	750.00	0.00 N	0.00 E	0.00	0.00
850.00	100.00	2.00	N 54.19 W	849.98	1.02 N	1.42 W	1.75	2.00
950.00	100.00	4.00	N 54.19 W	949.84	4.08 N	5.66 W	6.98	2.00
1050.00	100.00	6.00	N 54.19 W	1049.45	9.18 N	12.73 W	15.69	2.00
1150.00	100.00	8.00	N 54.19 W	1148.70	16.31 N	22.61 W	27.88	2.00
1250.00	100.00	10.00	N 54.19 W	1247.47	25.47 N	35.29 W	43.52	2.00
1350.00	100.00	12.00	N 54.19 W	1345.62	36.63 N	50.77 W	62.60	2.00
1450.00	100.00	14.00	N 54.19 W	1443.06	49.79 N	69.01 W	85.10	2.00
1550.00	100.00	16.00	N 54.19 W	1539.64	64.94 N	89.99 W	110.98	2.00
1650.00	100.00	18.00	N 54.19 W	1635.27	82.05 N	113.70 W	140.21	2.00
1750.00	100.00	20.00	N 54.19 W	1729.82	101.10 N	140.10 W	172.77	2.00
1850.00	100.00	22.00	N 54.19 W	1823.17	122.06 N	169.16 W	208.60	2.00
1950.00	100.00	24.00	N 54.19 W	1915.21	144.93 N	200.84 W	247.67	2.00
2050.00	100.00	26.00	N 54.19 W	2005.84	169.65 N	235.11 W	289.93	2.00
2150.00	100.00	28.00	N 54.19 W	2094.94	196.22 N	271.93 W	335.33	2.00
END OF BUILD #1...START OF HOLD SECTION								
2186.32	36.32	28.73	N 54.19 W	2126.90	206.32 N	285.92 W	352.58	2.00
TARGET LOCATION: 5799 TVD								
6373.80	4187.48	28.73	N 54.19 W	5799.00	1384.00 N	1918.00 W	2365.20	0.00
BOTTOM HOLE LOCATION (TD): 6009 TVD								
6613.27	239.47	28.73	N 54.19 W	6009.00	1451.35 N	2011.34 W	2480.30	0.00

83

WELLBORE SCHEMATIC

CITY OF FARMINGTON # 2-E



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TENNECO OIL COMPANY
CITY OF FARMINGTON #2-E
SECTION 10, TOWNSHIP 29N, RANGE 13W
SAN JUAN COUNTY, NEW MEXICO

DRILLING PROCEDURE:

1. Move in and rig up rotary tools.

2. Drill and survey to 500'± with a 12 1/4" bit using a gel-water mud.

3. Run 9 5/8" surface casing to 500'± and cement with sufficient quantity to circulate cement to the surface. Wait on cement 12 hours. Install and pressure test casinghead and BOP equipment.

4. Drill out surface casing. Drill and survey to kick off point at 750' with a 7 7/8" bit using a fresh water-polymer mud.

5. Run a multi-shot survey to determine bottom hole location at kick off point. Using a downhole motor and build assembly, orient tools and drill ahead building angle at approximately 2°/100' until an angle of 28 degrees is achieved. Using a hold assembly, drill and survey to the proposed target making any inclination or course corrections that may be necessary. Run a multi-shot survey to determine bottom hole location at T.D.

6. Log well.

7. If productive, run 4 1/2" casing to T.D. Cement in 3 stages with stage tools at 4400' and 1620'.

8. If non-productive, plug and abandon as per regulatory agency specifications.

30-045-26436

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LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-101
Revised 1-1-65

5A. Indicate Type of Lease: STATE [ ] FEE [X]

5. State Oil & Gas Lease No.

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work: DRILL [X] DEEPEN [ ] PLUG BACK [ ]

7. Unit Agreement Name

1b. Type of Well: OIL WELL [ ] GAS WELL [X] OTHER SINGLE ZONE [X] MULTIPLE ZONE [ ]

8. Farm or Lease Name: City of Farmington

2. Name of Operator: TENNECO OIL ~~E&P~~ Company

9. Well No.: 2E

3. Address of Operator: P. O. BOX 3249, ENGLEWOOD, CO. 80155

10. Field and Pool, or Wildcat: Basin Dakota

4. Location of Well: UNIT LETTER J LOCATED 2246 FEET FROM THE South LINE AND 1712 FEET FROM THE East LINE OF SEC. 10 TWP. 29N RGE. 13W NMPM

12. County: San Juan

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
± 6559 MD	Dakota	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
5346' GL	General	4 Corners Drilling	4 Qrt 1986

23.

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
12 1/4"	9 5/8" CSG	36.0# K-55	± 500' KB	275 SX, 314 CF	Surface
7 7/8"	4 1/2" CSG	10.50# K-55	± 6559' MD	930 SX, 1546CF	Surface 3 Stgs.

See attached drilling procedure.

Application has been made to the City of Farmington for a special use permit to drill.

APPROVAL EXPIRES 11-24-86
UNLESS DRILLING IS COMMENCED.
SPUD NOTICE MUST BE SUBMITTED
WITHIN 10 DAYS.

RECEIVED
MAY 21 1986
OIL CON. DIV.
DIST. 3

Note: Bottom-hole location to be 1650' F NL & 1650' F WL, Sec. 10 T29W R13W

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

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

Signed Scott McKinney Title Sr. Regulatory Analyst Date 5-19-86

(This space for State Use)

APPROVED BY Ernie Busch TITLE GEOLOGIST DISTRICT #3 DATE 5-23-86 MAY 23 1986

RECEIVED
JUN 02 1986
TENNECO OIL CO.
WRMD Accounting

CONDITIONS OF APPROVAL, IF ANY:
Hold C-104 for Directional Drilling order and acreage consolidation

86

OIL CONSERVATION DIVISION

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-102
Revised 10-1-78

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

Operator	Lease	Well No.
TENNECO OIL COMPANY	City of Farmington	2 E

Unit Letter	Section	Township	Range	County
J	10	29 North	13 West	San Juan

Actual Footage Location of Well:
2246 feet from the South line and 1712 feet from the East line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
5346.2	Dakota	Basin Dakota	320 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

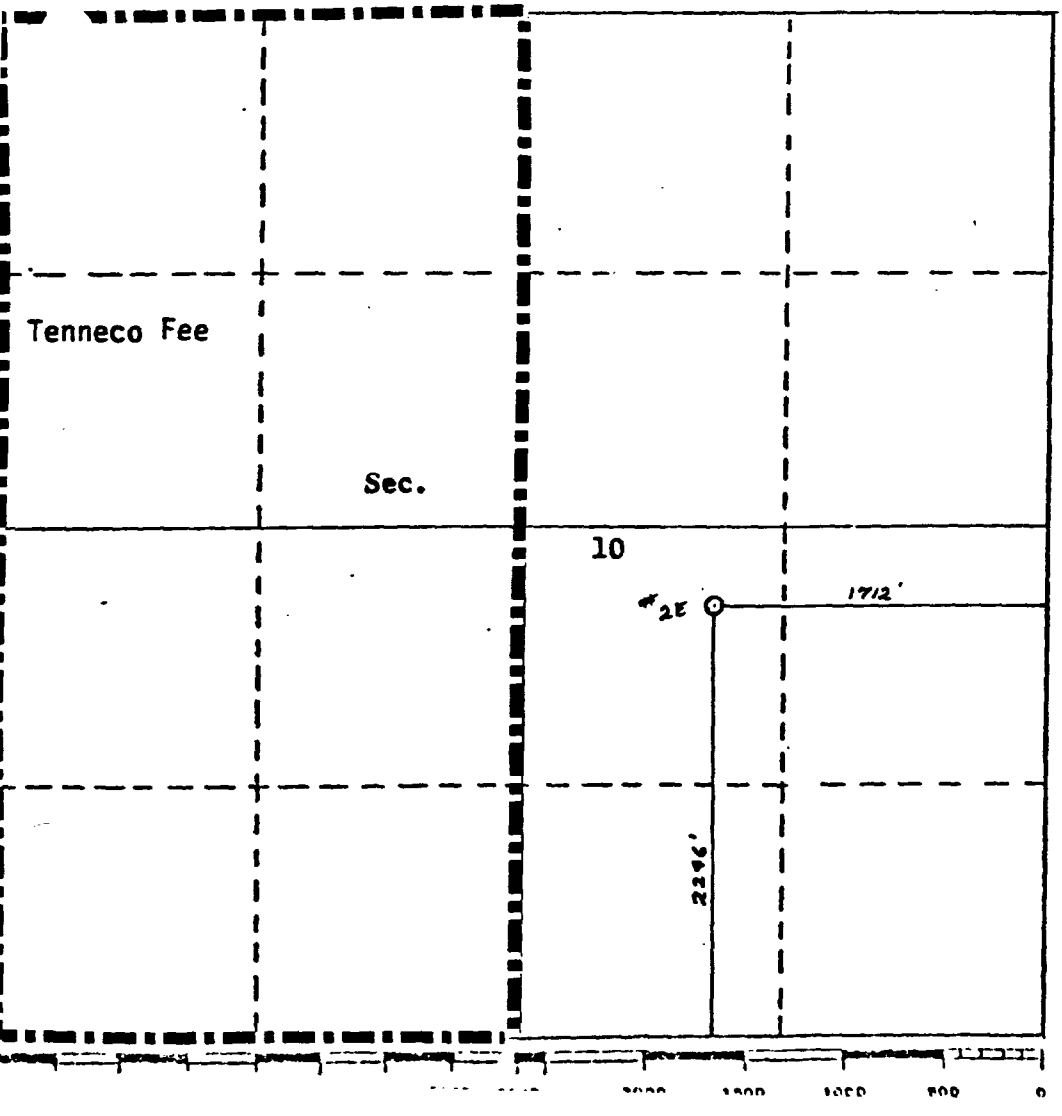
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

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 Pending Force-Pool

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 Division.



CERTIFICATION

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

Scott McKinney

Name: Scott McKinney

Position: Sr. Regulatory Analyst

Company: Tenneco Oil Co.

Date: May 16, 1986

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.

ROY A. RUSH
NEW MEXICO
8894
REGISTERED PROFESSIONAL LAND SURVEYOR

Date Surveyed: May 9, 1986

Registered Professional Engineer and/or Land Surveyor

Certificate No.

87

DRILLING PROCEDURE

TENNECO OIL COMPANY
ROCKY MOUNTAIN DIVISION
6162 SOUTH WILLOW DRIVE
ENGLEWOOD, COLORADO 80155

DATE: May 12, 1986

LEASE: City of Farmington WELL NO: 2 - E

LOCATION: Surface:
2246' FSL, 1712' FEL
Section 10, T29N, R13W
San Juan County, New Mexico

FIELD: Basin Dakota

Bottom Hole Location:
1650' FNL, 1650' FWL
Sec. 10, T29N, R13W
San Juan County, NM

ELEVATION 5345' G.L., 5357' K.B.

TOTAL DEPTH: 6009' T.V.D., 6559' M.D.

PROJECTED HORIZON: Dakota

SUBMITTED BY: W. C. Gray & Colleen DATE: 5-14-86

APPROVED BY: [signature] DATE: 5-14-86

CC: Administration
DSB Well File
Field File

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ESTIMATED FORMATION TOPS

	T.V.D.	(Subsea)	Fm Pressure	
Ojo	Surface	(+5345)		
Fruitland	1037'	(+4320')	Normal	
Pictured Cliffs	1212'	(+4145')	Normal	
Lewis	1451'	(+3906')		
Cliff House	2781'	(+2576')		
Menefee	2889'	(+2468')		
Point Lookout	3653'	(+1704')	Normal	
Mancos	4012'	(+1345')	Normal	
Gallup	4938'	(+419')	Under Pressured	Potential Lost Circulation
Greenhorn	5689'	(-332')		
Graneros	5742'	(-385')		
Dakota	5799'	(-442')	2075 psi	Gas
TD	6009'	6559' M.D.		

DRILLING, CASING AND CEMENT PROGRAM

1. Move in, rig up rotary tools and rental solids control equipment. Floor valves and safety valves for each type of string connection must be cleaned and on the rig floor - available for use at all times.

2. Drill a 12-1/4" hole to ± 500' with a gel-water system. Reserve pit to consist of a buried steel tank. Vacuum truck to remove waste material as needed and haul to an approved disposal site.

3. Rig up and run 9-5/8", 36#, K-55, ST&C casing to bottom. Cement with 275 sx (313.5 ft^3) Class B + 2% $CaCl_2$ in sufficient quantity to circulate cement to surface. If conditions warrant the use of loss circulation agents, 1/4 #/sx celloflakes may be added. Centralize as necessary. If necessary, do 1" top cement job..

4. While waiting on cement, screw on a 9-5/8" X 11"-3M casinghead. NU BOPE. Rig up BOPE testers and test all BOP related equipment to rated working pressure. Pressure test 9-5/8" casing to 1500 psi. Record all tests on the IADC report sheet.

5. Drill out of 9 5/8" casing with 7 7/8" bit and a clear water New-Drill System. Solids control equipment to be working at all times. (Closed system).

   NOTE: 1. Operate BOP pipe rams daily and blind rams on trips.
   2. Establish a reduced rate kill speed and circulating pressure EACH TOUR.

6. On the trip out prior to drilling into the Dakota, check operation of all BOPE. Drill 5' - 10' into the Dakota (look for drilling breaks). Check for flow. If no flow, continue drilling. If well is flowing, procede with weight up of mud system.

7. Log open hole as directed by the G.E. Department.

8. If productive, run the 4 1/2" longstring as designed. Equip casing with guide shoe, float collar one joint up, a lower stage tool into the Gallup @ ± 4400' M.D., and an upper stage tool into the Lewis @ ± 1620' M.D. Centralize and use baskets as necessary.

9. Cement production casing as follows:

PRODUCTION CEMENTING PROGRAM

FIRST STAGE	LEAD MIX	TAIL MIX
Type	65/35 Pozmix Cement + 6% gel, 1/4# D-29 celloflake	Class "B" + 1/4#/sx D-29 Celloflake + .5% D-60 Flac
Sacks	160 (294.4 ft^3)	(150 177 ft^3)
	Actual volumes will be calculated from Caliper Log	
	No excess	
Slurry yield	1.84	1.18
Mix weight	12.2	15.6
Water req's.	10.2 gal/sx	5.2

SECOND STAGE	LEAD MIX	TAIL MIX
Multiple stage cementer at 4400'		
Type	65/35 Pozmix+ 6% Gel +1/4#/sx D-29 Celloflake + 2% CaCl	Class "B" + 2% CaCl 1/4#/sx D-29 Celloflake
Sacks	310 (570.4 ft^3)	50 (59 ft^3)
Actual volumes will be calculated from Caliper Log - no excess		
Slurry yield	1.84	1.18
Mix weight	12.2	15.2
Water req's.	10.2 gal/sx	5.2 gal/sx

THIRD STAGE	LEAD MIX	TAIL MIX
Multiple stage cementer at 1620'		
Type	65/35/6 + 2% CaCl + + 1/4#/sx D-29 Celloflake	Class "B" + 2% CaCl + 1/4#/sx D-29 Celloflake
Sacks	210 (384.4 ft^3)	50 (59 ft^3)
Actual volumes will be calculated from Caliper Log plus 20% excess.		
Slurry yield	1.84	1.18
Mix weight	12.2	15.2
Water req's.	10.2 gal/sx	5.2 gal/sx

Precede the three stages with 1000 gal. chemical wash and 500 gal. Super Flush. If cement is not circulated to the surface on the third stage, run a temperature survey after 8 hours to determine top of cement. Circulate 4 hours between stages.

10. Set slips with casing in full tension and cut off.

11. Move off rotary tools. Install tree and clean up location. Clean out buried "reserve pit" tank.

12. If non-productive, P & A as required by State of New Mexico, Oil Conservation Division.

CASING PROGRAM

INTERVAL	LENGTH	SIZE	WEIGHT	GRADE	OPTIMUM MAKE-UP TORQUE
0-500	500	9-5/8	36. #	K-55	STC 4230
0-6559	6599	4-1/2	10.5#	K-55	STC 1460

MUD PROGRAM

0-500' Spud mud. Gel, water with lime for hole cleaning capabilities. Mud wt. 8.6, vis 40 - 50, W.L. N/C.

500'-3500' Prior to drilling out cement, mud up with a New Drill System for a low solids, high shear thinning drilling fluid. Mix .4 - .5#/bbl. New Drill. (A liquid co-polymer that is a primary shale encapsulator & viscosifier). Minimize excessive solids accumulation by monitoring solids control equipment (closed system). Mud wt. 8.6 - 8.8, vis 30, W.L. 15 - 25.

3500'-T D Utilizing the New Drill System, raise viscosity to 34 - 36 with the addition of 5 - 8#/bbl. gel by 5000' or as hole dictates. At 5500' bring mud weight up to 9.0 - 9.4 ppg range. Keep at least 600 sacks Barite on location at all times. At T.D. raise viscosity to 40 and a fluid loss of 6 - 8 cc. Minimize excessive solids accumulation by monitoring solids control equipment. (Closed system).

If a drilling break is experienced in this interval, drill no more than 5', pull up off bottoom, shut down pump and check for flow. If well is flowing, shut it in. Notify company representative, tool pusher and mud engineer in that order.

EVALUATION

Cores and DST's:

NONE.

Deviation Program

1. Survey surface hole at 100' intervals. Maximum allowable deviation at 500' is 1-1/2°

2. Prior to drilling out below the 9 5/8" surface casing run a single shot survey to determine inclination and direction. Run single shot survey every 500' and record survey on IADC report sheet. Maximum allowable deviation of the production hole at 750 ± is 1 1/2°. Maximum rate of change is 1° per 100'. From 750'± the production hole will be directionally drilled to a bottom hole location of 1650' FNL, 1650' FEL, Sec. 10, T-29N, R-13W with a target radius of 100'. The direction will be north 54.19° west with a displacement of 2365.76, and the angle of the hole will be 27.42° ±. Maximum rate of change will be 2° per 100'.

Samples: N/R

Logs: Run # 1: GR:SP:DIL/GR:CDL:CNL:Cal - T.D. to surface
Run # 2: DIL:GR:SP:FDC-CNL-GR-CAL - T.D. minimum 2000'

BLOWOUT EQUIPMENT

11" - 3000 BOP with rotating head to comply with TOC requirements as shown in BOE arrangement, Figure C. Preventer must be checked for operation every 24 hours with each check recorded on the IADC Drilling Report Sheet.

REPORTS

Drilling Reports for the past 24 hours will include depth, footage, time distribution, activity breakdown, mud properties, bit record, bottom hole assembly, types of logs and depths ran, daily and cumulative mud cost, deviation surveys, and other pertinent information to be called into Division Office by 7:30 AM Monday thru Friday.

TENNECO OIL COMPANY
P.O. Box 3249
ENGLEWOOD, COLORADO 80155
PHONE: 303-740-4800

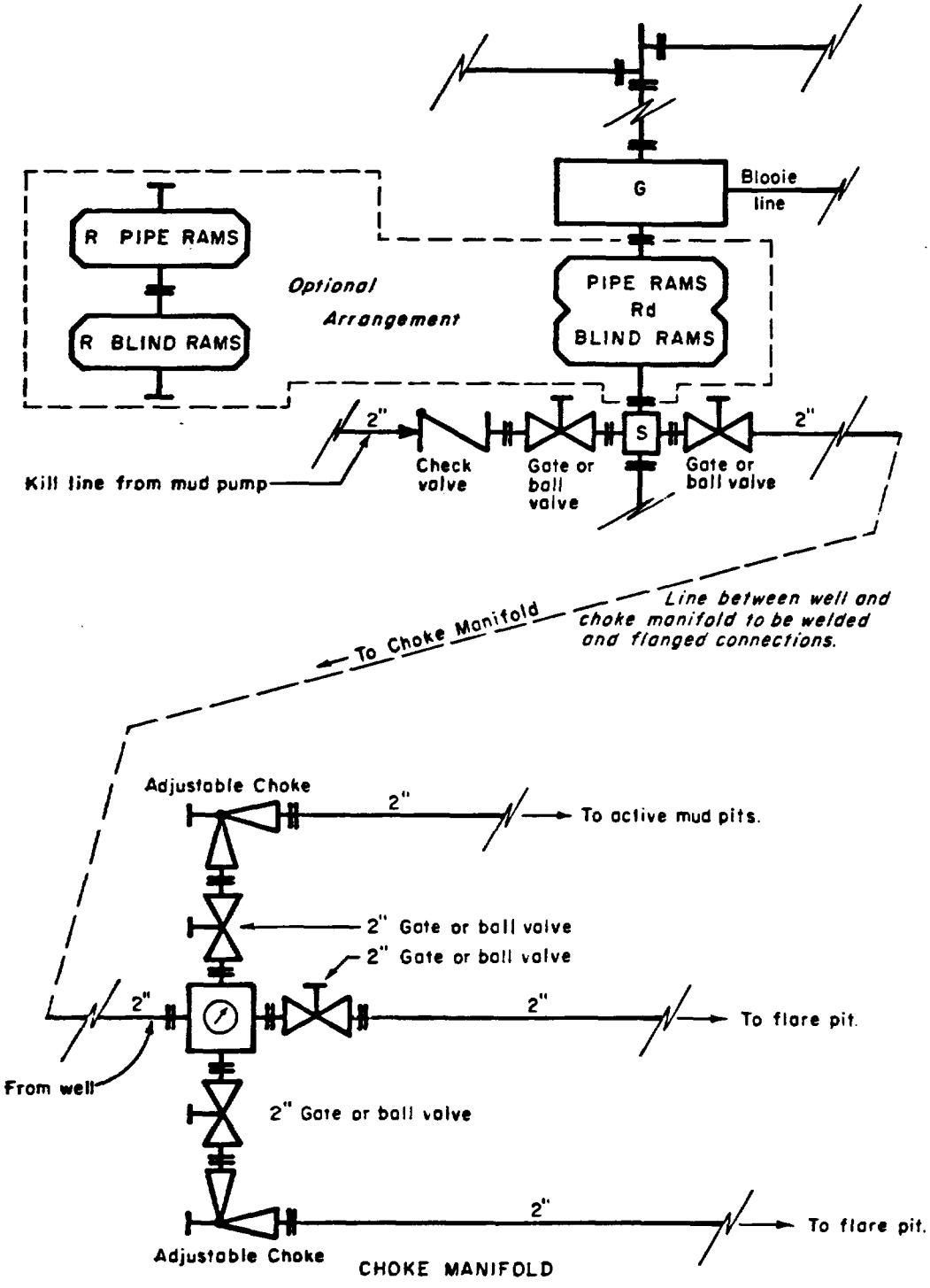
OFFICE DIRECTORY

John Owen	740-4819
Ted McAdam	740-2588
Mark Kangas	740-4804

In case of emergency or after hours call the following in the preferred order.

(1)	D. S. Barnes	740-4814	Office
	Division Drilling Superintendent	936-0704	Home
(2)	Ted McAdam	740-2588	Office
	Drilling Engineering Supervisor	978-0724	Home
(3)	Harry Hufft	741-3189	Home
	Division Production Manager	740-4892	Office

3832D



All equipment to be 3,000 psi working pressure except as noted.

Rd *Double ram type preventer with two sets of rams.*

R Single ram type preventer with one set of rams.

S Drilling spool with side outlet connections for choke and kill lines.

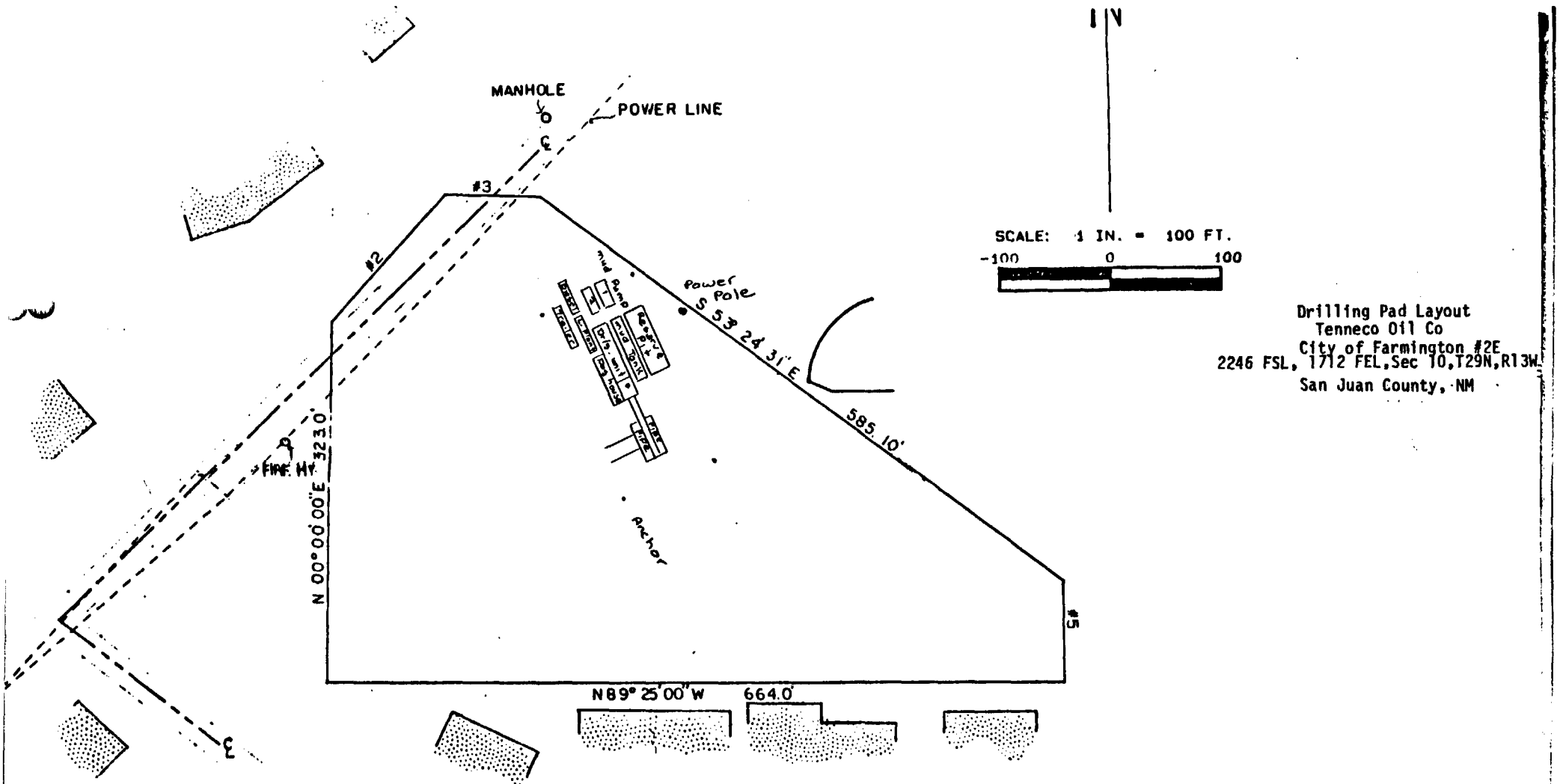
G Rotating head 150 psi working pressure minimum

ARRANGEMENT C

TENNECO OIL COMPANY
ROCKY MOUNTAIN DIVISION

REQUIRED MINIMUM
BLOWOUT PREVENTER AND
CHOKE MANIFOLD

J. MAGILL 10-26-79 EVI



Drilling Pad Layout
Tenneco Oil Co
City of Farmington #2E
2246 FSL, 1712 FEL, Sec 10, T29N, R13W
San Juan County, NM

LAWRENCE A. BREWER & ASSOCIATES, INC.