

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 3/7/81	
Company Tenneco Oil Company				Connection None	
Pool Kemnitz				Formation Atoka-Morrow	
Completion Date 3/5/81		Total Depth 13210'		Plug Back TD 13166'	
				Elevation 4151' KB-20	
Form of Lease State LF 30					
Casing Size 5 1/2"	WT. 17#	d 4.892	Set At 13210	Perforations: From 12686' To 12706'	
Well No. 1					
Tub. Size 2 7/8"	WT. 6.50	d 2.441	Set At 12684	Perforations: Open, Ended	
Unit H 30 16s 34e					
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single				Packer Set At 12634'	
Producing Thru Tubing				County Lea	
Reservoir Temp. °F 177 @ 12686'		Mean Annual Temp. °F 60		State New Mexico	
L 12686	H -	G _g 0.6176	% CO ₂ 0.395	% N ₂ 1.555	% H ₂ S 0.000
Prover		Meter Run 4"		Temp. F	
FLOW DATA					
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w
TUBING DATA					
Casing DATA					
Direction of Flow					
SI					
1.	3	9.5/64"	2.500	420	4
2.	3	18/64	2.500	435	13
3.	3	21/64	2.500	450	22
4.	3	25/64	2.500	490	40
5.					
RATE OF FLOW CALCULATIONS					
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g
Super Compress. Factor, F _{pv}					
Rate of Flow Q, MCFD					
1	32.64	41.63	433.2	0.9585	1.273
2	32.64	76.33	448.2	0.9943	1.273
3	32.64	100.95	463.2	1.0050	1.273
4	32.64	141.87	505.2	1.0170	1.273
5					
NO.	P _t	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio
Dry Gas					
1	0.64	566	1.59	0.949	A.P.L. Gravity of Liquid Hydrocarbons
2	0.67	526	1.48	0.929	Specific Gravity Separator Gas
3	0.69	515	1.45	0.922	Specific Gravity Flowing Fluid
4	0.75	503	1.42	0.909	Critical Pressure
5					Critical Temperature
6058.2 P _c ² 36701.8					
NO.	P _w *	P _w ²	P _c ² - P _w ²	(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 2.796$	
1	5821.2	33886.4	2815.4	(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.384$	
2	5540.2	30693.8	6008.0		
3	5334.2	28453.7	8248.1		
4	4855.2	23573.0	13128.8	AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 14993$	
5					
Absolute Open Flow 14993				Mcf @ 15.025	
Angle of Slope θ 49° 48'				Slope, n 0.845	
Remarks: * BOTTOM HOLE PRESSURE @ (-8535) 12686', TOP OF CASING PERFORATIONS, USED FOR PRESSURE CALCUCATIONS					
Approved By Division		Conducted By:		Calculated By:	
Jarrel Services, Inc.		Joe A. Coleman		Joe A. Coleman	

WELL:

State LF 3 No. 1

LOCATION:

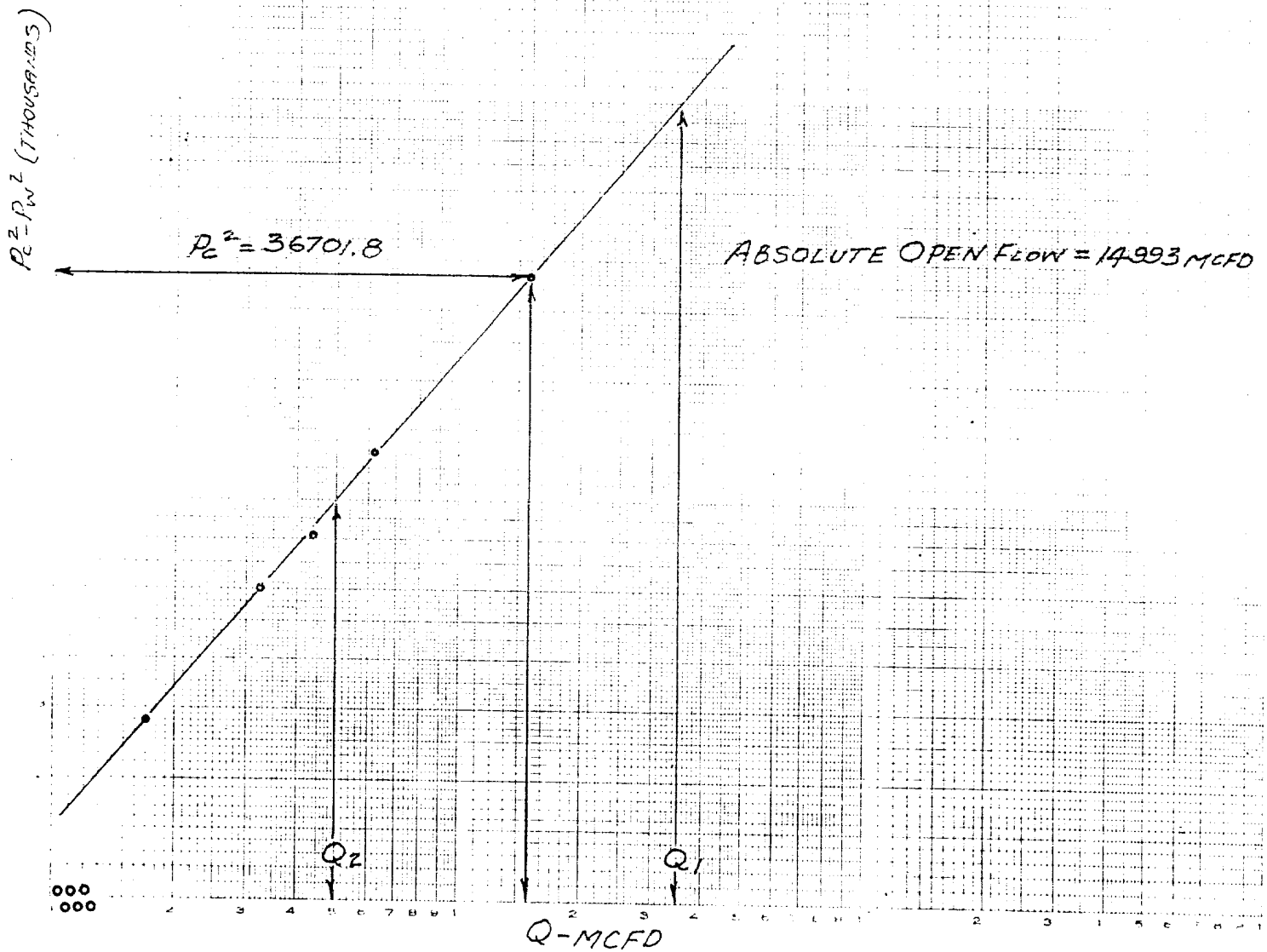
H Sec 30 16s 34e

COUNTY:

Lea

DATE:

March 7, 1981



$$Q_1 = 35000 \text{ MCFD}; \text{LOG } Q_1 = 4.54407$$

$$Q_2 = 5000 \text{ MCFD}; \text{LOG } Q_2 = 3.69897$$

$$n = 0.84510 = 0.845$$

NEW-TEX

L.L.C.

P. O. BOX 1161
HOBBS, N.M. 88240No. 4606
Run No.
Date of Run 3-10-81
Date Secured 3-7-81

CERTIFICATE OF ANALYSIS

A Sample of Tenneco Kemnitz "LF" #1 ³⁰
 Secured from Jarrel Well Testing
 At Box 1654 Secured by _____
Hobbs, N.M. 88240 Date _____
 Sample conditions: _____

FRACTIONAL ANALYSIS

Percentage Composition

	MOL %	LIQ. %	G.P.M.
Carbon Dioxide	.395		
Air			
Nitrogen	1.555		
Oxygen			
Hydrogen sulfide			
Hydrogen			
Methane	90.622		
Ethane	5.251	1.400	
Propane	1.251	.343	
Butanes			
Iso-Butane	.208	.068	
N-Butane	.406	.128	
Pentanes			
Iso-Pentane	.103	.038	
N-Pentane	.068	.025	
Hexanes	.038	.016	
Heptanes	Plus .102	.047	
Octanes			
TOTAL	100.000	2.065	

Calc. Sp. Gr. — 0.6176
 Calc. A.P.I. —
 Calc. Vapor Press — PSIA
 Sp. Gr. —
 Mol. Wt. 17.89

LIQUID CONTENT (GAL. MCF)

Propane Calc. G.P.M. .343
 Butanes Calc. G.P.M. .196
 Pentanes Plus G.P.M. .126
 Ethane Calc. G.P.M. 1.400
 RVP Gasoline G.P.M. —
 B.T.U./Cu. Ft. @ 14.696 P.S.I.A.
 Dry Basis 1074
 Wet Basis 1055
 Sulfur Analysis by Titration
 Gr./100 Cu. Ft.
 Hydrogen Sulfide
 Mercaptans
 Sulfides
 Residual Sulfur
 Total Sulfur

Run by Deane Simpson Checked by _____ Approved by Deane Simpson

Additional Data and Remarks

JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONE 505 393-5396

HOBBS, NEW MEXICO 88240

COMPANY: Tenneco Oil Company

WELL: State 'LF' 30, No. 1

FIELD: Kemnitz Atoka Morrow

CHRONOLOGICAL PRESSURE DATA

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-8535) 12686'PSIG
			HRS.	MIN.	TBG	CSG	
1981							
3/7	Shut in 24.0 hrs. Run						
	Static Gradient w/Tandem						
	Bombs C Set Bombs off						
	@ 12686'	9:30 AM	-	-	4600 DWT	PKR	6045
	Started 1st Rate	11:00	1	30	4600 DWT	MCF/D	6045
	Finished 1st Rate	11:30	0	30	4357 DWT	1702.73	5808
	C Started 2nd Rate						
	Finished 2nd Rate	12:00 N	0	30	4075 DWT	3273.32	5527
	C Started 3rd Rate						
	Finished 3rd Rate	12:30 PM	0	30	3967 DWT	4388.35	5321
	C Started 4th Rate						
	Finished 4th Rate	1:00	0	30	3402 DWT	6288.77	4842
	C Shut in for Buildup						
	Shut in	1:02	0	02	-	-	4995
	"	1:04	0	04	-	-	5237
	"	1:06	0	06	-	-	5460
	"	1:08	0	08	-	-	5540
	"	1:10	0	10	-	-	5746
	"	1:12	0	12	-	-	5857
	"	1:14	0	14	-	-	5958
	"	1:16	0	16	-	-	5987
	"	1:18	0	18	-	-	6000
	"	1:20	0	20	-	-	6009
	"	1:22	0	22	-	-	6014
	"	1:24	0	24	-	-	6018
	"	1:26	0	26	-	-	6023
	"	1:28	0	28	-	-	6023
	"	1:30	0	30	-	-	6027
	"	1:45	0	45	-	-	6036
	"	2:00	1	00	-	-	6041
	"	3:00	2	00	-	-	6045
	"	4:00	3	00	-	-	6050
	"	5:00	4	00	-	-	6050
	"	6:00	5	00	-	-	6050
	"	7:00	6	00	-	-	6050
	"	8:00	7	00	-	-	6054
	"	9:00	8	00	-	-	6054
	"	10:00	9	00	-	-	6059
	"	11:00	10	00	-	-	6059
	"	12:00 MN	11	00	-	-	6059
3/8	"	1:00 AM	12	00	-	-	6059
	"	2:00	13	00	-	-	6059
	"	3:00	14	00	-	-	6059
	"	4:00	15	00	-	-	6059
	"	5:00	16	00	-	-	6059

J. AREL SERVICES, INC.

POST OFFICE BOX 1654

PHONES 505 393 5395 — 393-8274

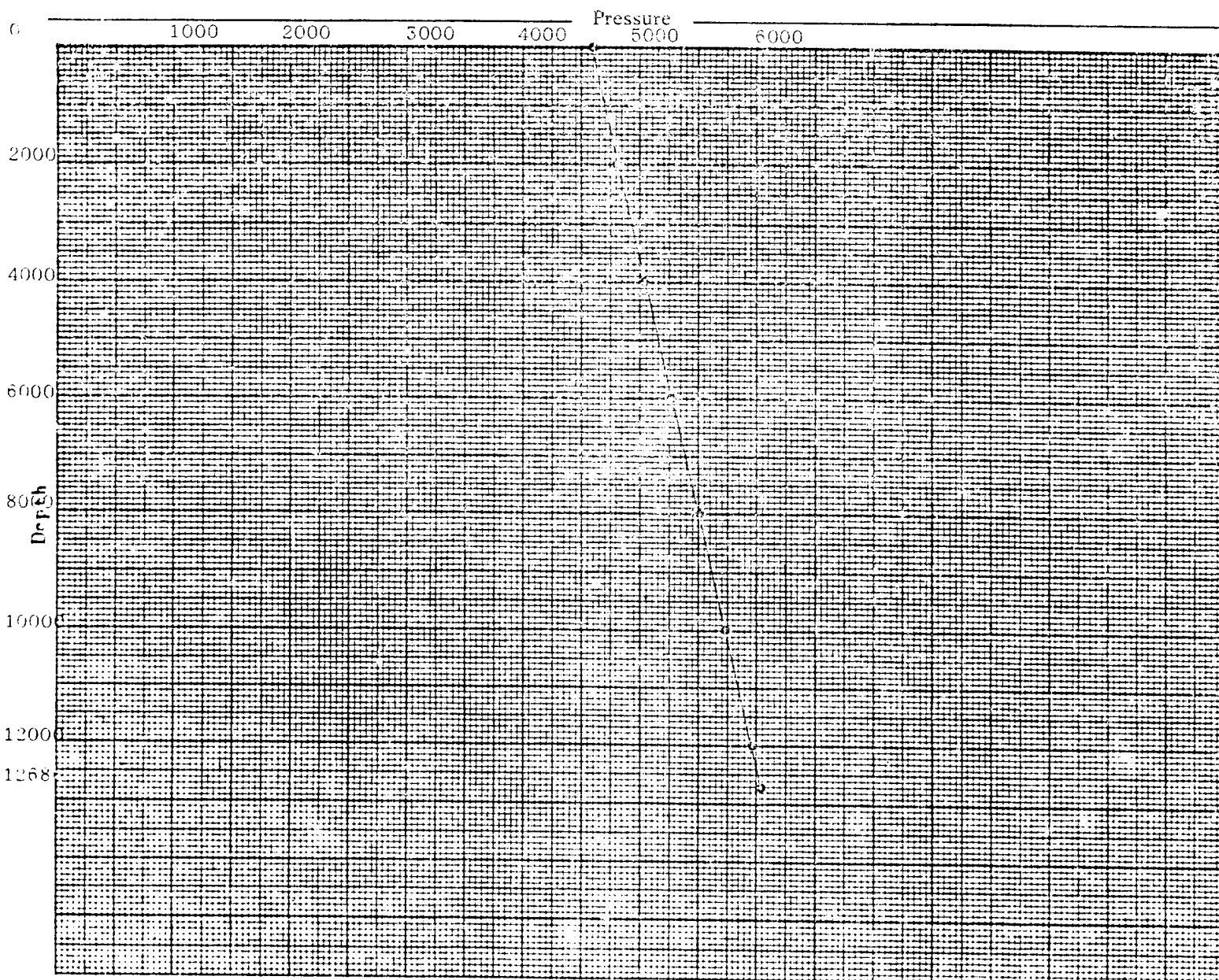
HOBBS, NEW MEXICO 88240

OPERATOR Tennessee Oil Company
 FIELD Remnitz
 FORMATION Atoka-Morrow
 LEASE State LP 30 WELL #1
 COUNTY Lea STATE New Mexico
 DATE 5-7-81 TIME 9:50 AM
 Status Shut in
 Test Depth 12686'
 Time S. I. 24.0 hrs. Last test date -
 Tub Pres. 4600 DWT BHP last test -
 Cas. Pres. PPH BHP change -
 Elev. 4151' KB-20 Fluid top None
 Datum (-8535)* Water top None
 Temp. @ 177° F Run by JSI #20
 Cal. No. A14418N Chart No. 1

BOTTOM HOLE PRESSURE RECORD

Depth	Pressure	Gradient
0	4600	-
2000	4815	.107
4000	5041	.111
6000	5271	.115
8000	5501	.115
10000	5733	.116
12000	5965	.116
12686 (-8535)	6045 *	.117

* TOP OF CASING PERFORATIONS



J. ABEL SERVICES, INC.

POST OFFICE BOX 1654

PHONES 505 393-5396 — 393-8274

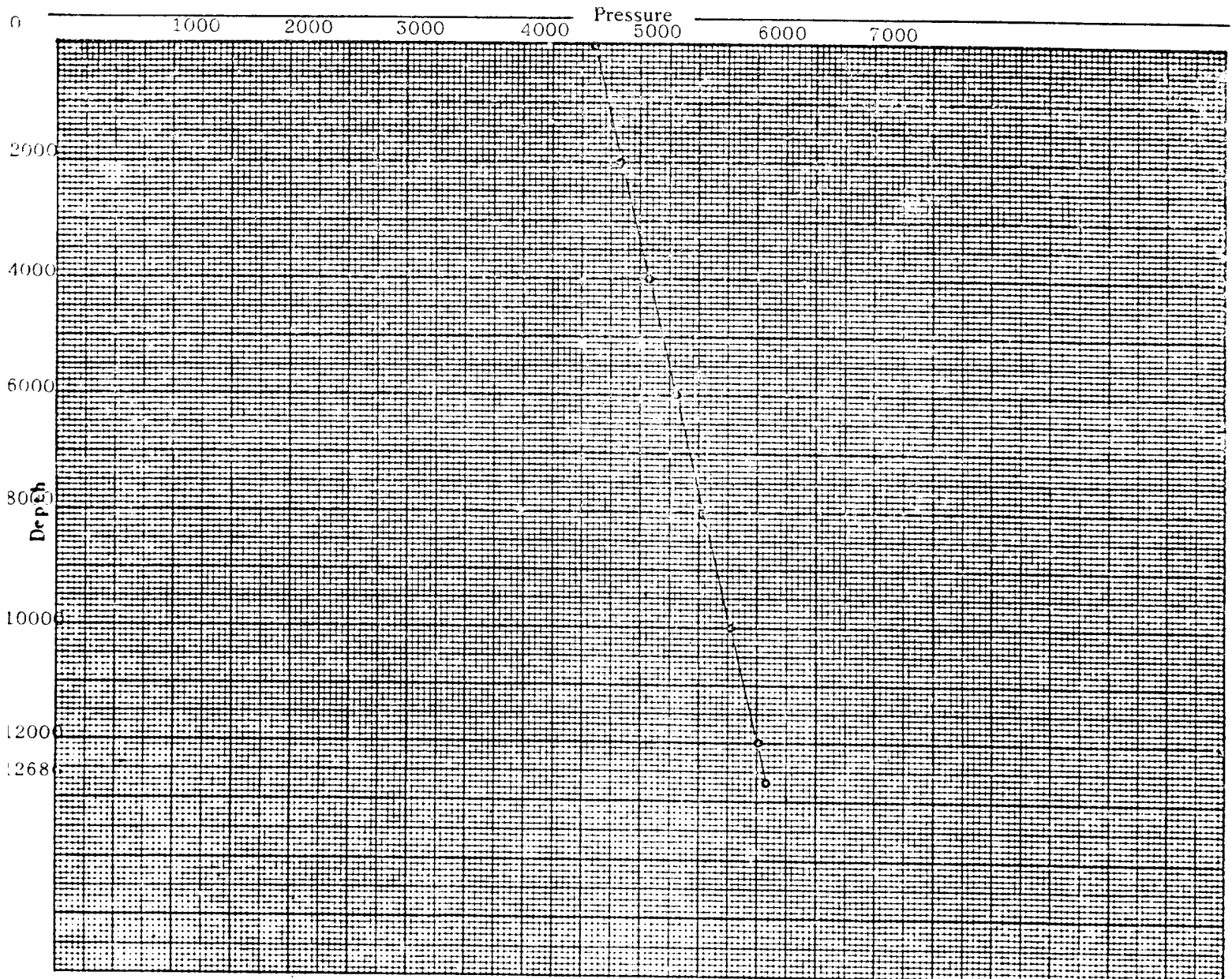
HOBBS, NEW MEXICO 80240

OPERATOR Tenneco Oil Company
 FIELD Kemnitz
 FORMATION Atoka-Morrow
 LEASE State LF 30 WELL #1
 COUNTY Lea STATE New Mexico
 DATE 3/10/81 TIME 12:00 N
 Status Shut in
 Test Depth 12686'
 Time S. I. 71.0 hr Last test date 3/7/81
 Tub Pres. 4617 BHP last test 6045
 Cas. Pres. PER BHP change 36# Gain
 Elev. 4151' KB-20 Fluid top None
 Datum -8555' * Water top None
 Temp. @ 177° F Run by JSI #16
 Cal. No. A14418N Chart No. 2

BOTTOM HOLE PRESSURE RECORD

Depth	Pressure	Gradient
0	4617	-
2000	4841	.112
4000	5071	.115
6000	5303	.116
8000	5535	.116
10000	5767	.116
12000	6001	.117
12686 (-8535)	6081 *	.117

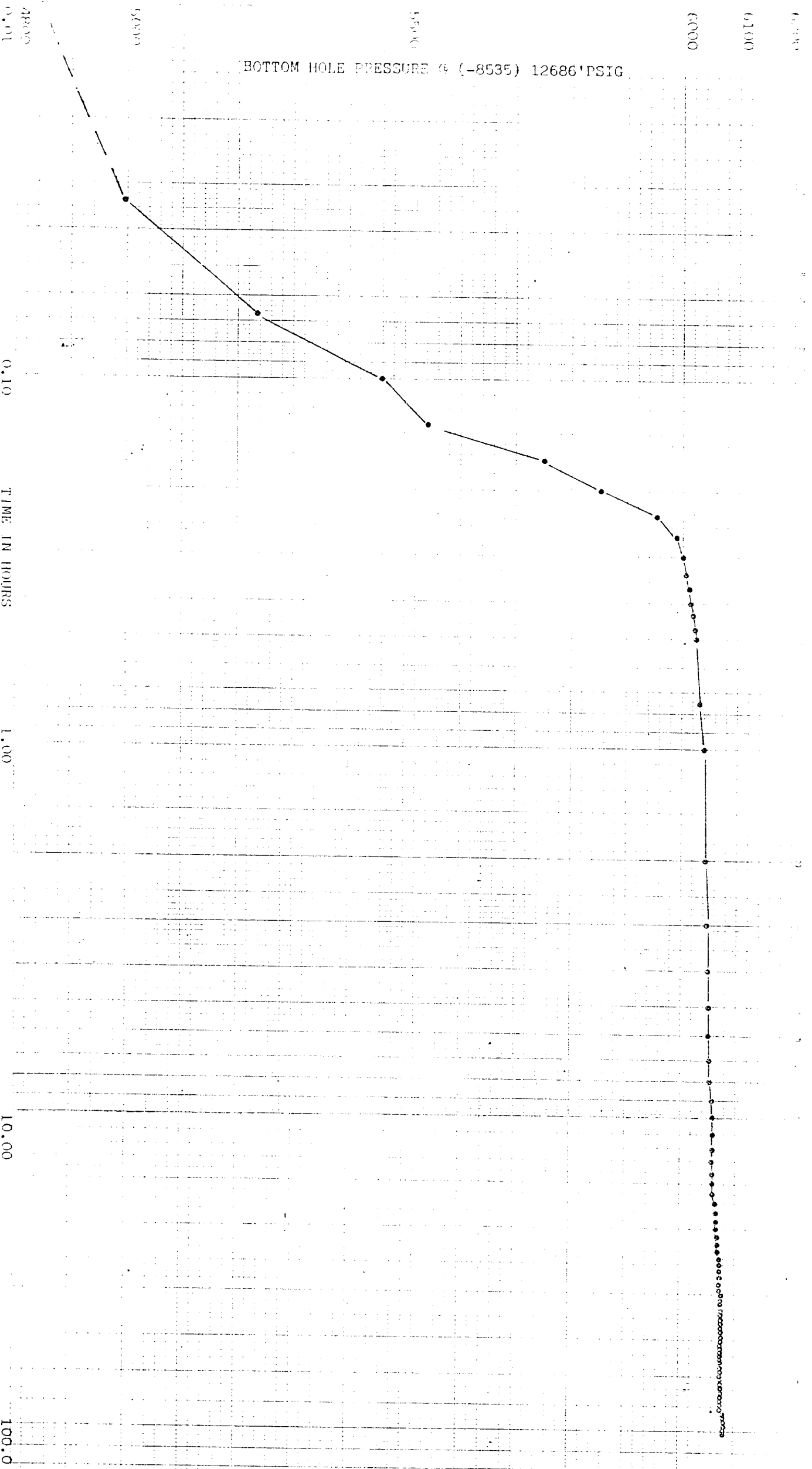
* TOP OF CASING PERFORATIONS



WELL: State 'LF' No. 1

PAGE: 2

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-3535) 12868' P.S.I.G
			HRS.	MIN.	TBG	CSG	
	Shut in	6:00	17	00	-	-	6064
	"	7:00	18	00	-	-	6064
	"	8:00	19	00	-	-	6064
	"	9:00	20	00	-	-	6064
	"	10:00	21	00	-	-	6068
	"	11:00	22	00	-	-	6068
	"	12:00 N	23	00	-	-	6068
	"	1:00 PM	24	00	-	-	6072
	"	2:00	25	00	-	-	6072
	"	3:00	26	00	-	-	6072
	"	4:00	27	00	-	-	6072
	"	5:00	28	00	-	-	6072
	"	6:00	29	00	-	-	6072
	"	7:00	30	00	-	-	6077
	"	8:00	31	00	-	-	6077
	"	9:00	32	00	-	-	6077
	"	10:00	33	00	-	-	6077
	"	11:00	34	00	-	-	6077
	"	12:00 MN	35	00	-	-	6077
3/9	"	1:00 AM	36	00	-	-	6077
	"	2:00	37	00	-	-	6077
	"	3:00	38	00	-	-	6077
	"	4:00	39	00	-	-	6077
	"	5:00	40	00	-	-	6077
	"	6:00	41	00	-	-	6077
	"	7:00	42	00	-	-	6077
	"	8:00	43	00	-	-	6077
	"	9:00	44	00	-	-	6077
	"	10:00	45	00	-	-	6077
	"	11:00	46	00	-	-	6077
	"	12:00 N	47	00	-	-	6077
	"	1:00 PM	48	00	-	-	6077
	"	2:00	49	00	-	-	6077
	"	3:00	50	00	-	-	6077
	"	4:00	51	00	-	-	6077
	"	5:00	52	00	-	-	6077
	"	6:00	53	00	-	-	6077
	"	7:00	54	00	-	-	6077
	"	8:00	55	00	-	-	6077
	"	9:00	56	00	-	-	6077
	"	10:00	57	00	-	-	6077
	"	11:00	58	00	-	-	6077
	"	12:00 MN	59	00	-	-	6077
3/10	"	1:00 AM	60	00	-	-	6077
	"	2:00	61	00	-	-	6077
	"	3:00	62	00	-	-	6077
	"	4:00	63	00	-	-	6081
	"	5:00	64	00	-	-	6081
	"	6:00	65	00	-	-	6081
	"	7:00	66	00	-	-	6081
	"	8:00	67	00	-	-	6081
	"	9:00	68	00	-	-	6081
	"	10:00	69	00	-	-	6081
	Fished Bombs	11:00	70	00	-	-	6081
	Run Static Gradient	12:00 N	71	00	4617	-	6081



DISTRIBUTION		
SANTA FE		
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U.S.G.S.		
LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-100
Supersedes Old
C-102 and C-103
Effective 1-1-65

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 - A" (FORM C-101) FOR SUCH PROPOSALS.)

1. OIL WELL ☐ GAS WELL ☒ OTHER ☐		7. Unit Agreement Name
2. Name of Operator TENNECO OIL COMPANY		8. Form or Lease Name State LF-30
3. Address of Operator 6800 Park Ten Blvd., Suite 200 N., San Antonio, Texas 78213		9. Well No. /
4. Location of Well UNIT LETTER <u>H</u> <u>1980</u> FEET FROM THE <u>North</u> LINE AND <u>660</u> FEET FROM THE <u>East</u> LINE, SECTION <u>30</u> TOWNSHIP <u>16S</u> RANGE <u>34E</u> N.M.P.M.		10. Field and Pool, or Wildcat Und. So. Kemnitz-Atoka Morrow
15. Elevation (Show whether DF, RT, GR, etc.) 4131.5'		12. County Lea

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 ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	OTHER ☐	CASING TEST AND CEMENT JOB ☒	OTHER ☐

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.

2-13-81

Ran 316 jts of 17# S-95 & N-80 8rd LT&C 5 1/2" casing. Set @ 13210'. Cemented w/1250 sx class H + 4% Halad 22 +.5% CFR-2 + 5#/sx KCL + 1/4#/sx floccile 15.7 ppg 5.2 gals/sx 1.21 ft 3/sx. Circulated w/full returns. Calculated top of cement @ 7000'. Pumped plug down w/10# brine plug down at 1:00 a.m. w/2200 psi on 2-12-81.

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

SIGNED Mary Hall TITLE Production Analyst DATE 2/13/81

APPROVED BY Jerry Sexton TITLE Dist. 1. Eng. DATE FEB 17 1981

CONDITIONS OF APPROVAL, IF ANY:

DISTRICT		
SANTA FE		
FILE		
U.S.G.S.		
LAND OFFICE		
OPERATOR		

NEW MEXICO OIL CONSERVATION COMMISSION

Supersedes Old
C-102 and C-103
Effective 1-1-65

5a. Indicate Type of Lease
State ☒ Fee ☐
5. State Oil & Gas Lease No.

SUNDRY NOTICES AND REPORTS ON WELLS

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USE "APPLICATION FOR PERMIT -" (FORM C-101) FOR SUCH PROPOSALS.

1. ☐ OIL WELL ☒ GAS WELL OTHER	7. Unit Agreement Name
2. Name of Operator TENNECO OIL COMPANY	8. Farm or Lease Name State LF-30
3. Address of Operator 6800 Park Ten Blvd., Suite 200 N., San Antonio, Texas 78213	9. Well No. /
4. Location of Well UNIT LETTER <u>H</u> <u>1980</u> FEET FROM THE <u>North</u> LINE AND <u>660</u> FEET FROM THE <u>East</u> LINE, SECTION <u>30</u> TOWNSHIP <u>16S</u> RANGE <u>34E</u> N.M.P.M.	10. Field and Pool, or Wildcat Und. So. Kemnitz-Atoka Morro
11. Elevation (Show whether DF, RT, GR, etc.) 4131.5'	12. County Lea

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 ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	OTHER ☐	CEMENT TEST AND CEMENT JOB ☒	OTHER ☐

7. 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.

2-13-81

Ran 316 jts of 17# S-95 & N-80 8rd LT&C 5 1/2" casing. Set @ 13210'. Cemented w/1250 sx class H + 4% Halad 22 + .5% CFR-2 + 5#/sx KCL + 1/4#/sx flocile 15.7 ppg 5.2 gals/sx 1.21 ft 3/sx. Circulated w/full returns. Calculated top of cement @ 7000'. Pumped plug down w/10# brine plug down at 1:00 a.m. w/2200 psi on 2-12-81.

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

SIGNED Mary Hall TITLE Production Analyst DATE 2/13/81

APPROVED BY Jerry Sexton TITLE Not in Charge DATE FEB 17 1981

CONDITIONS OF APPROVAL, IF ANY:

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LAND OFFICE	
OPERATOR	

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old
C-102 and C-103
Effective 1-1-65

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-1011 FOR SUCH PROPOSALS.)

1. OIL WELL ☐ GAS WELL ☒ OTHER- ☐		7. Unit Agreement Name
2. Name of Operator Tenneco Oil Company		8. Farm or Lease Name State LF-30
3. Address of Operator 6800 Park Ten Blvd., Suite 200 North, San Antonio, Texas 78213		9. Well No. 1
4. Location of Well UNIT LETTER H 1980 FEET FROM THE North LINE AND 660 FEET FROM East 30 TOWNSHIP 16S RANGE 34E NMPM.		10. Field and Pool, or Wildcat Und. So. Kemnitz-Atoka Morrow
15. Elevation (Show whether DF, RT, GR, etc.) 4131.5'		12. County Lea

16.

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

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐
TEMPORARILY ABANDON ☐
PULL OR ALTER CASING ☐

PLUG AND ABANDON ☐
CHANGE PLANS ☐

OTHER ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐
COMMENCE DRILLING OPNS. ☐
CASING TEST AND CEMENT JOB ☒

ALTERING CASING ☐
PLUG AND ABANDONMENT ☐

OTHER ☐

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.

Ran 109 joints of #32 K-55 STC 8-5/8" casing. Set at 4358'. Cemented with 1650 sx Halliburton lite and 300 sx Class "C" w/15# NACL & 1/4# FloFill 2% CaCl₂. Circulated 45 sx cement. Plugged down at 7:20 PM w/2100 psi on 19 December, 1980. WOC - 16.5 hrs. Tested head to 1800 psi. Tested BOP. Held OK.

new woc 18 hrs.

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

SIGNED *J. D. McJury* TITLE Division Production Engineer DATE 12/23/80

Orig. Signed by
Les Clements

APPROVED BY *Les Clements* TITLE DATE *DEC 30 1980*

CONDITIONS OF APPROVAL, IF ANY:

NO. OF COPIES RECEIVED	
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SANTA FE	
FILE	
U.S.G.S.	
LAND OFFICE	
OPERATOR	

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-103
Supersedes Old
C-102 and C-103
Effective 1-1-65

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.)

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15. Elevation (Show whether DF, RT, GR, etc.) 4131.5'		12. County Lea

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 ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☒	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	OTHER ☐	CASING TEST AND CEMENT JOBS ☒	OTHER ☐

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.

Spudded well @ 5PM 12-5-80.

Ran 9 jts. of 54.5# K-55 STC 13-3/8" casing set @ 372.01'. Cemented with 375 sx Class "C" + 2% CaCl₂. Circulated cement to surface. Pumped plug down @ 900psi plug down @ 6:00 A.M. 12-6-80. WOC - 21 hours. Tested head to 575# psi held OK.

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

SIGNED M. Hall TITLE Production Analyst DATE 12-8-80

APPROVED BY Jerry Sexton TITLE Dist. L. Supv. DATE DEC 12 1980

CONDITIONS OF APPROVAL ANY: