

file
C-22 file

NEW MEXICO CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-69

RECEIVED

Type Test ☒ Initial ☐ Annual ☐ Special	Test Date 4-26-79	MAY 14 1979	
Company CITIES SERVICE OIL COMPANY	EPNG Co.	O. C. C. ARTESIA, OFFICE	
Pool Wildcat Atoka	ATOKA	Tracy "E" Com.	
Completion Date 3-12-79	Total Depth 11,550'	Perforations 10,870'	Elevation 3119.5
Casing 7 5/8" 26.40# 6.969" 8,850'	Perforations 5" LINER 18.00# 4.276" 8489-11548	From 10,548'	To 10,594'
Tub. Size 2 7/8"	WT. 6.4#	Set At 2.441"	10,461'
Type Well - Single - Bradenhead - G.G. or G.O. Machine	Packer Set At 10,461'	County EDDY	State NEW MEXICO
Producing Thru TUBING	Reservoir Temp. °F 180 * 10,589'	Mean Annual Temp. °F 60	Baro. Press. - P _g 13.2
L 10,589'	H 10,589	G _g .593	% CO ₂ .486
% N ₂ 1.729	% H ₂ S	Prover 4"	Meter Run FLANGE
FLOW DATA			
NO.	Prover Line Size	X	Orifice Size
SI			
1.	4"	X	.750
2.	4"	X	.750
3.	4"	X	.750
4.	4"	X	.750
5.			
TUBING DATA			
NO.	Press. p.s.i.g.	Dist. ft.	Temp. °F
1.	3039	71	
2.	2857	72	
3.	2759	73	
4.	2481	75	
5.	2062	79	
CASING DATA			
NO.	Press. p.s.i.g.	CHOKE	Duration of Flow
1.		3/64	1 HR.
2.		6/64	1 HR.
3.		8/64	1 HR.
4.		10/64	1 HR.
5.			
RATE OF FLOW CALCULATIONS			
NO.	Coefficient (24 Hour)	$\sqrt{h_w \cdot Q}$	Pressure P _{sk}
1.	2.661	23.24	540.2
2.	2.661	34.86	540.2
3.	2.661	74.86	547.2
4.	2.661	116.96	547.2
5.			
NO.	P _r	Temp. °R	T _r
1.	.80	534	1.53
2.	.80	536	1.53
3.	.81	540	1.54
4.	.81	539	1.52
5.			
Gas Liquid Hydrocarbon Ratio DRY Mcf/bbl.			
A.P.L. Gravity of Liquid Hydrocarbons Deg.			
Specific Gravity Separator Gas .593 X X X X X X X X			
Specific Gravity Flowing Fluid X X X X X			
Critical Pressure 672 P.S.I.A. P.S.I.A.			
Critical Temperature 354 R R			
* P _c 3616.3 P _c ² 13,077.6			
NO.	P _r ²	P _w	P _w ²
1.		3446.3	11877.0
2.		3362.8	11308.4
3.		3110.1	9672.7
4.		2720.3	7400.0
5.			
$\frac{P_c^2}{P_r^2 - P_w^2} = 2.303$			
$\left[\frac{P_c^2}{P_r^2 - P_w^2} \right]^n = 2.303$			
$\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = .951$			
Absolute Open Flow 951 Mcf @ 15.025 Angle of Slope 45 Slope, n 1.00			
Remarks: NO FLUID MADE DURING TEST. *CALCULATED FROM KNOWN BOTTOM HOLE PRESSURES. BOTTOM HOLE PRESSURES MEASURED WITH AMERADA GAUGE.			
Approved By Commission:		Conducted By: M.C.T.	Checked By: J.W.W.

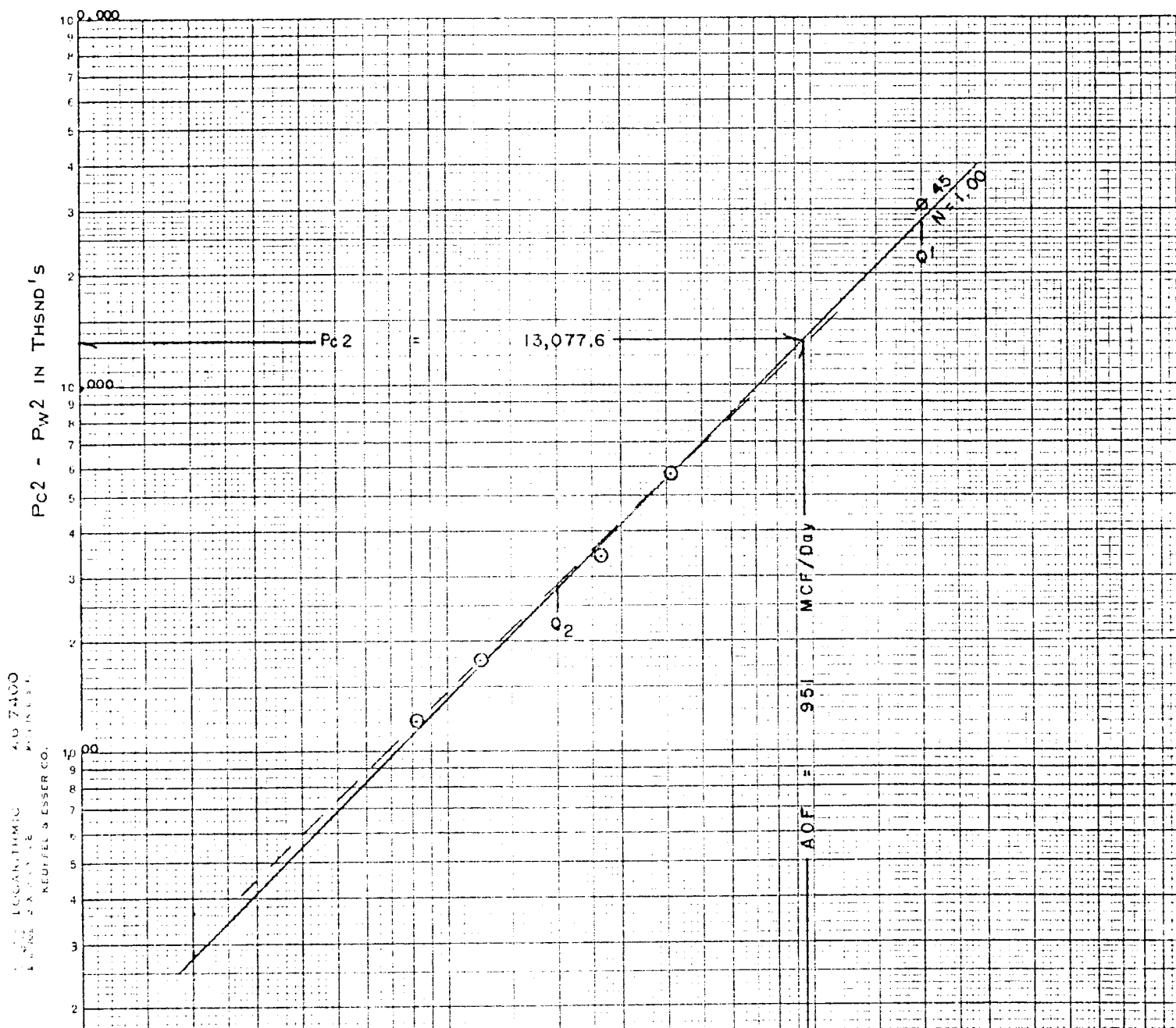
CITIES SERVICE OIL COMPANY

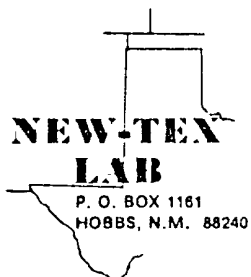
TRACY "E" No. 1

APRIL 26, 1979

$$\begin{aligned} \text{ABS. SLOPE (N)} &= Q_1 = 2000 = 3.301029 \\ Q_2 &= 200 = \frac{2.301029}{N = 1.000000} \end{aligned}$$

$$\text{CAOF} = 413 \left(\frac{13,077.6}{5677.6} \right)^{1.00} = 951 \text{ MCF/DAY}$$





No. 1193
Run No. _____
Date of Run 4-27-79
Date Secured 4-26-79

CERTIFICATE OF ANALYSIS

A Sample of Tracy "E" #1 La Huerta (Atoka)
Secured from Cities Service Oil Co.
At Box 1719 Secured by _____
Midland, Texas 79701 Time _____ Date _____
Sampling conditions _____ Press _____
Temp. _____

FRACTIONAL ANALYSIS

Percentage Composition

	MOL %	LIQ. %	G.P.M.
Carbon Dioxide	.486		
Air			
Nitrogen	1.729		
Oxygen			
Hydrogen sulfide			
Hydrogen			
Methane	93.713		
Ethane	3.123		.333
Propane	.618		.170
Butanes			
Iso-Butane	.076		.021
N-Butane	.129		.042
Pentanes			
Iso-Pentane	.032		.012
N-Pentane	.022		.008
Hexanes	.067		.027
Heptanes			
Octanes			
TOTAL	100.000		1.116

Calc. Sp. Gr. — 0.5925
Calc. A.P.I. — _____
Calc. Vapor Press. — _____ PSIA
Sp. Gr. 17.18
Mol. Wt. _____

LIQUID CONTENT (GAL/MCF)

Propane Calc. G.P.M. .170
Butanes Calc. G.P.M. .066
Pentanes Plus. G.P.M. .047
Ethane Calc. G.P.M. .833
RVP Gasoline G.P.M. _____

B.T.U., Cu. Ft. @ 14.696 P.S.I.A.
Dry Basis 1030
Wet Basis 1012

Sulfur Analysis by Titration
Gr./100 Cu. Ft. _____
Hydrogen Sulfide _____
Mercaptans _____
Sulf des _____
Residual Sulfur _____
Total Sulfur _____

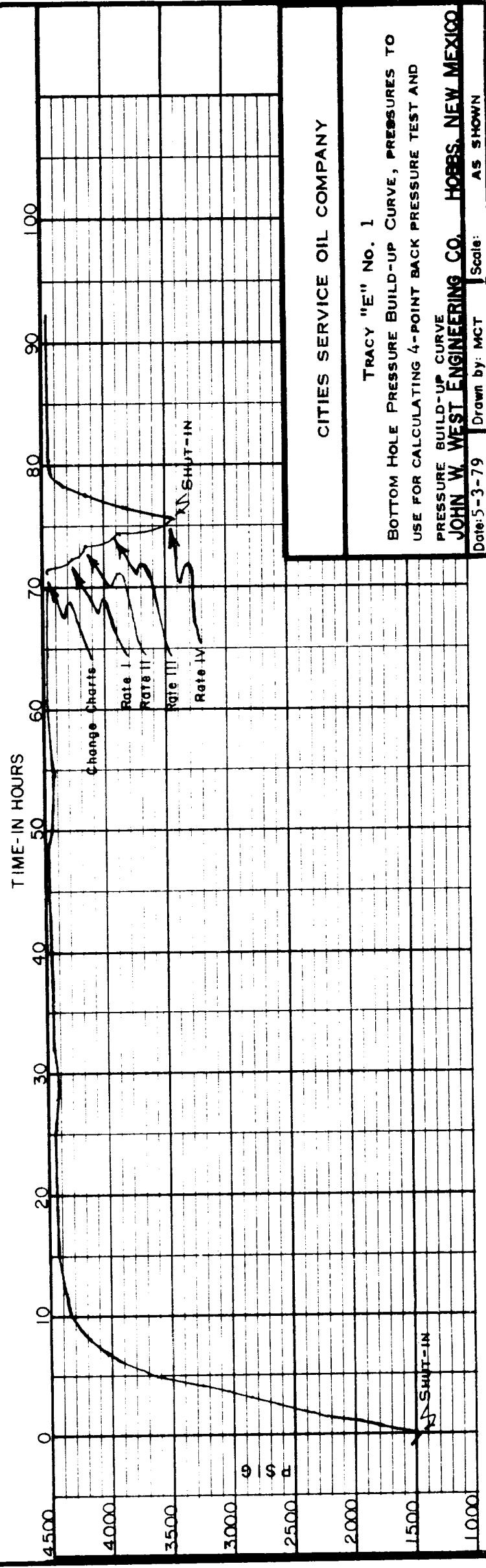
Run by Jim Tucker Checked by Deane Simpson Approved by [Signature]

Additional Data and Remarks

TEST DATE: APRIL 23 TO 27, 1979
TEST DEPTH: 10,589 FEET

ELEMENT No.: 34911
RANGE: 0-6000 PSI
CLOCK No.: E-6532
RANGE: 0-72 HOUR
CLOCK No.: C-4020
RANGE: 0-24 HOUR

NOTE: SEE TABULATION OF PRESSURE AND TIME ON ATTACHED SHEET.



CITIES SERVICE OIL COMPANY

TRACY "E" No. 1
BOTTOM HOLE PRESSURE BUILD-UP CURVE, PRESSURES TO
USE FOR CALCULATING 4-POINT BACK PRESSURE TEST AND
PRESSURE BUILD-UP CURVE
JOHN W. WEST ENGINEERING CO. HOBBS, NEW MEXICO
Date: 5-3-79 Drawn by: MCT Scale: AS SHOWN

WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURES (P_c or P_{s2})

Form C-122F
Adopted 9-1-65

FROM KNOWN BOTTOM HOLE PRESSURE (P_f or P_{s1})

COMPANY Cities Service LEASE Tracy E WELL NO. 4-26-79
LOCATION: Unit E Section 30 Township 21S Range 27E
L 10,589 H 10,589 G 1,593 % CO₂ _____ % N₂ _____ % H₂S _____

GH 6279 P_{CT} 672 T_{CT} 354

Sheet-1

LINE		1	2	3	4	5	6	7	8
1	T_w (W.H. °R)	5341	534						
2	T_g (B.H. °R)	640	640						
3	$T = \frac{T_w + T_g}{2}$	587	587						
4	Z (Est.)	0.49	.920						
5	TZ	552.1	540.0						
6	GH/TZ	11.272	11.627						
7	e^G (Table XIV)	1.526	1.547						
8	P_f or P_{s1}	4497.2	4497.2						
9	P_f^2 or P_{s1}^2	20,224.8	20,224.8						
10	$P_c^2 = P_f^2/e^G$ or $P_w^2 = P_{s2}^2/e^G$	13,253.0	13,077.6						
11	P_c or P_{s2}	3640.5	3616.3						
12	$P = \frac{P_w + P_{s2}}{2}$ or $\frac{P_c + P_f}{2}$	4068.8	4056.7						
13	$P_r = (P/P_{CT})$	6.05	6.04						
14	$T_r = (T/T_{CT})$	1.66	1.66						
15	Z (Table XI)	.920	.920						

WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURES (P_w or P_{ws})

Form C-122F
Adopted 9-1-65

FROM KNOWN BOTTOM HOLE PRESSURE (P_b or P_{bs})

COMPANY Cities Service LEASE TRACY E WELL NO. 1 DATE 4-26-79
 LOCATION: Unit E Section 30 Township 21 S Range 27 E
10,585 H 10,585 G 1593 % CO₂ % N₂ % H₂S

GH 6279 P_{cr} 672 T_{cr} 354
 TABLE IX & X

LINE	1	2	3	4	5	6	7	8
1	T _w (W.H. °R)	534	534	534	534	534	534	534
2	T _b (B.H. °R)	640	640	640	640	640	640	640
3	T = $\frac{T_w + T_b}{2}$	587	587	587	587	587	587	587
4	Z (Est.)	.936	.908	.930	.902	.887	.882	.866
5	TZ	5494	5330	5459	5295	5207	5127	5083
6	GH/TZ	11.428	11.781	11.502	11.859	11.768	12.128	12.352
7	e ^s (Table XIV)	1.535	1.555	1.539	1.560	1.555	1.576	1.589
8	P_w or P _s	4298.2	4298.2	4200.2	4200.2	3899.2	3429.2	3429.2
9	P_w ² or P _s ²	18,474.5	18,474.5	17,641.7	17,641.7	15,203.8	11,759.4	11,759.4
10	P _w ² = P _f ² /e ^s or P _w ² = P _s ² /e ^s	12,035.2	11,877.2	11,460.5	11,308.5	9,779.2	7,462.3	7,399.8
11	P_w or P _w	3469.2	3486.3	3385.4	3362.8	3107.2	2731.7	2700.3
12	P _w = $\frac{P_w + P_s}{2}$ or $\frac{P_{cs} + P_f}{2}$	3883.7	3872.5	3792.8	3781.5	3513.2	3080.5	3074.7
13	P _f = (P/P _{cr})	5.78	5.76	5.64	5.63	5.23	4.58	4.58
14	T _f = (T/T _{cr})	1.66	1.66	1.66	1.66	1.66	1.66	1.66
15	Z (Table XI)	.908	.907	.902	.901	.887	.866	.846

DATE I DATE II DATE III DATE IV

CITIES SERVICE OIL COMPANY

TEST CONDUCTED BY:

TRACY "E" No. 1

JOHN WEST ENGINEERING COMPANY

BOTTOM HOLE PRESSURE BUILD-UP TEST, PRESSURES TO USE

FOR CALCULATING 4-POINT AND PRESSURE BUILD-UP

TABULATION OF PRESSURE AND TIME

TEST DATE: APRIL 23 TO 27, 1979

TEST DEPTH: 10,589 FEET

ELEMENT NO.: 34911 (0-6000 PSI)

OPER.: B.J.T. & M.B.

DATE	TIME	CUM. HRS./MIN.		PSIG @ 10,589 FEET
4-23-79	10:00 AM			1529 GAUGE REACHED 10,589', FLOWING
4-23-79	11:00 AM	00 HRS.	00 MIN.	1456 SHUT-IN, BEGIN BUILD-UP
		00	15	1654
		00	30	1801
	11:45 AM	00	45	1856
	12:00 NOON	01	00	1985
	12:30 PM	01	30	2220
		02	00	2433
		02	30	2643
		03	00	2893
		03	30	3042
		04	00	3268
		05	00	3629
		06	00	3904
		07	00	4039
		08	00	4193
		09	00	4282
		10	00	4338
4-23-79	11:00 PM	12	00	4395
4-24-79	2:00 AM	15	00	4418
		20	00	4448
	11:45 AM	24	45	4463 PRESSURE DECREASE
	12:00 NOON	25	00	4448
		26	00	4430
		28	00	4412
		29	30	4409 PRESSURE INCREASE
		31	00	4436
		32	00	4451
4-24-79	10:00 PM	35	00	4466
4-25-79	3:00 AM	40	00	4475
	8:00 AM	45	00	4490
	11:45 AM	48	45	4490 PRESSURE DECREASE
	1:00 PM	50	00	4454
		54	30	4445 PRESSURE INCREASE
		55	00	4460
4-25-79	11:00 PM	60	00	4484
4-26-79	4:00 AM	65	00	4484
4-26-79	9:00 AM	70 HRS.	00 MIN.	4484 GAUGE OUT, CHANGE CHARTS

CITIES SERVICE OIL COMPANY
TRACY "E" NO. 1

CON'T. FROM PAGE 1

<u>DATE</u>	<u>TIME</u>	<u>CUM. HRS./MIN.</u>		<u>PSIG @ 10,589 FEET</u>
4-26-79	10:15 AM	71 HRS.	15 MIN.	4484 GAUGE BACK TO 10,589 FEET
	10:30 AM	71	30	4484 OPEN CHOKE, BEGIN TEST
		71	45	4383
		72	00	4335
		72	15	4306
	11:30 AM	72	30	4235 END RATE I
	11:45 AM	72	45	4243
	12:00 NOON	73	00	4214
	12:15 PM	73	15	4193
	12:30 PM	73	30	4187 END RATE II
		73	45	4095
		74	00	4009
		74	15	3943
	1:30 PM	74	30	3886 END RATE III
		74	45	3774
		75	00	3623
		75	15	3491
	2:30 PM	75	30	3416 END RATE IV, SHUT-IN
	2:30 PM	00	00	3416 BEGIN BUILD-UP
		00	15	3521
		00	30	3636
		00	45	3735
		01	00	3834
		01	30	4006
		02	00	4151
		02	30	4267
		03	00	4344
		03	30	4389
		04	00	4418
		05	00	4448
		06	00	4463
		07	00	4466
		08	00	4469
4-26-79	11:30 PM	09	00	4469
4-27-79	12:30 AM	10	00	4475
		12	00	4478
		15	00	4484
4-27-79	7:30 AM	17 HRS.	00 MIN.	4487 GAUGE OUT, END OF TEST

NOTE: FLOWING D.W. @ 11:00 A.M., APRIL 23, 1979, WAS 630 PSIG. SHUT-IN D.W. @ 9:00 A.M., APRIL 26, 1979, WAS 3039 PSIG. SHUT-IN D.W. @ 7:30 A.M., APRIL 27, 1979, WAS 2939 PSIG.