

NEW-TEX LAB
P.O. BOX 1161
HOBBS NM 88241-1161
505-393-3561

ANALYSIS NUMBER: 7057
DATE OF RUN: 4/01/82
DATE SECURED: 3/31/82

ANALYSIS CERTIFICATE

SAMPLE IDENT: CITIES SERVICES - STATE DB #1
CLIENT: JARREL WELL TESTING
ADDRESS: BOX 1457
CITY, STATE: HOBBS NM 88240

SAMPLING PRESS: 600 PSIG
REMARKS: UPPER MORROW
SAMPLING TEMP:

***** GAS ANALYSIS *****

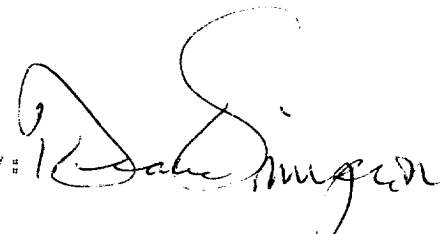
	MOLE PERCENT	GAL/ MCF
NITROGEN	1.693	
CARBON DIOXIDE	2.053	
METHANE	86.909	
ETHANE	5.440	1.451
PROPANE	2.304	0.632
ISO-BUTANE	0.345	0.113
NORMAL BUTANE	0.514	0.162
ISO-PENTANE	0.192	0.070
NORMAL PENTANE	0.143	0.052
HEXANES	0.103	0.042
HEPTANES PLUS	0.304	0.140
TOTAL	100.000	2.662

PROPANE GPM:	0.63	BUTANES GPM:	0.27
ETHANE GPM:	1.45	PENTANES PLUS GPM:	0.30

SPECIFIC GRAV (CALC): 0.6587
MOLE WEIGHT: 19.11

HHV-BTU/CU FT	PRESSURE (PSIA)	WET	DRY
14.696		1076	1095
14.650		1073	1092
14.730		1079	1098
14.735		1079	1098

ANALYZED BY: DEANE SIMPSON

APPROVED BY: 

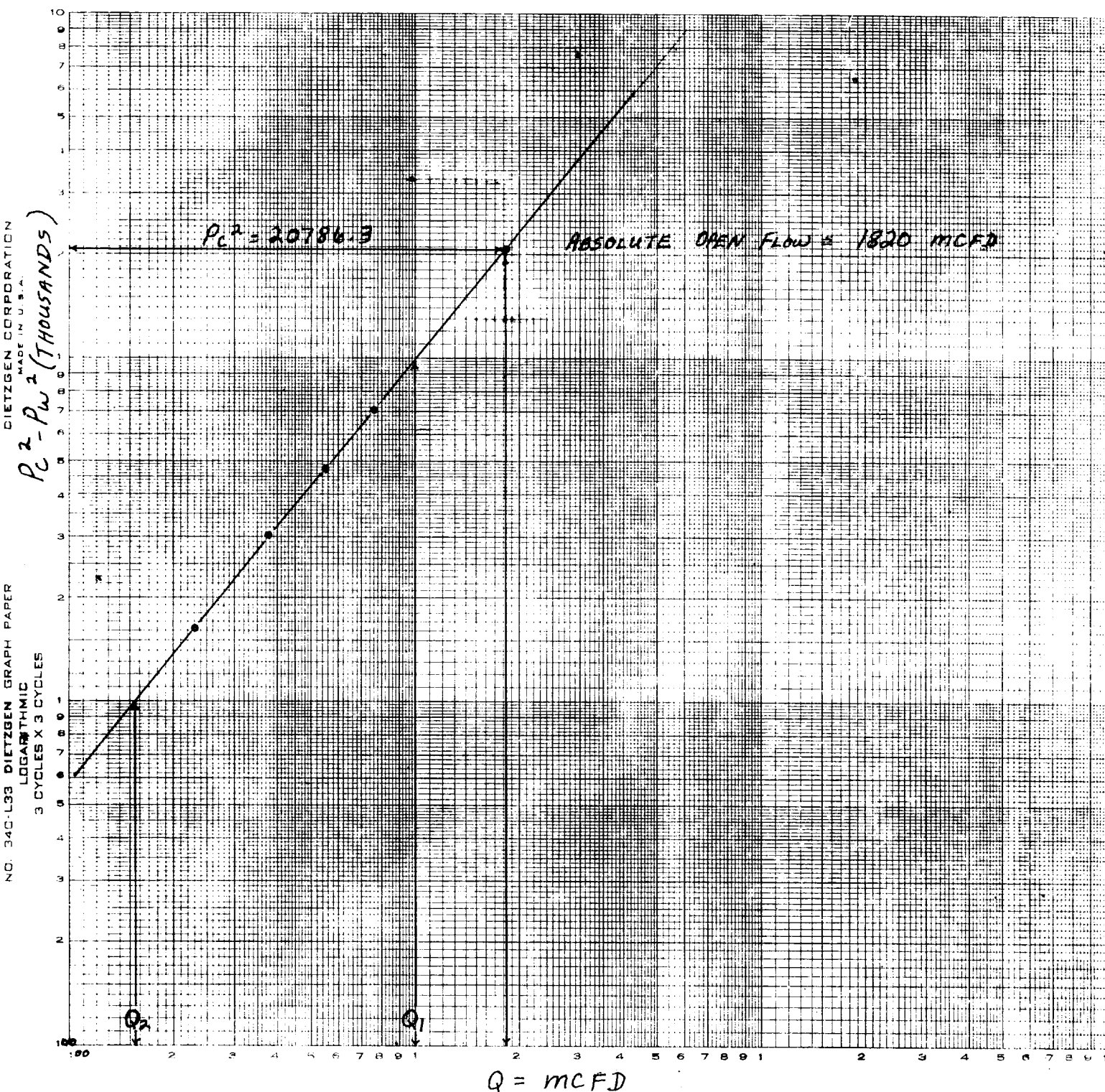
OIL CONSERVATION DIVISION

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENTP. O. BOX 2088
SANTA FE, NEW MEXICO 87501Form C-122
Revised 10-1-7845F
File

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 4-5-82		RECEIVED	
Company CITIES SERVICE COMPANY ✓		Connection None		MAY - 3 1982	
Foot Morrow Turkey Track <i>Morrow</i>		Formation Morrow		Unit	
Completion Date 4-8-82		Total Length 11505		Plug Back TD 11250-11242	
Elevation 3422' GL		Farm or Lease Name State DB <i>com</i> ARTESIA		O.C.D. OFFICE	
Cas. Size 5 1/2	WI. 20# 17#	d 4.778 4.892	Set At 11503	Perforations: From 11132 To 11214	
Trg. Size 2 7/8	WI. 6.5	d 2.441	Set At 11029	Perforations: From Open To Ended	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single		Packer Set At 11025		County Eddy	
Producing Thru Tubing		Reservoir Temp. °F 176 @ 10971		Mean Annual Temp. °F 60	
Baro. Press. - P _a 13.2		State New Mexico			
L 11173	H -	G _g 0.659	% CO ₂ 2.053	% N ₂ 1.693	% H ₂ S -
Prover -		Meter Run 2.900 x .7500		Taps FLG	
FLOW DATA			TUBING DATA		CASING DATA
NO	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w
SI					
1	2.900 4/64	.750	570	8	82
2	2.900 5/64	.750	610	20	84
3	2.900 6/64	.750	645	40	83
4	2.900 7.25/64	.750	660	74	82
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
1	2.675	68.31	583.2	0.9795	1.232
2	2.675	111.64	623.2	0.9777	1.232
3	2.675	162.26	658.2	0.9786	1.232
4	2.675	223.20	673.2	0.9795	1.232
5					
Super Compress. Factor, F _{pv}					
1	1.047				
2	1.050				
3	1.053				
4	1.054				
5					
Rate of Flow Q, Mscf/d					
1	230.87				
2	377.70				
3	551.04				
4	759.41				
5					
DRY GAS					
NO.	R ₁	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio Mscf/bbl.
1	0.86	542	1.49	0.913	A.P.I. Gravity of Liquid Hydrocarbons -
2	0.92	544	1.49	0.097	Specific Gravity Separator Gas 0.659
3	0.97	543	1.49	0.902	Specific Gravity Flowing Fluid X X X X X
4	0.99	542	1.49	0.900	Critical Pressure 679 P.S.I.A.
5					Critical Temperature 364 °R
$P_c = 4559.2$ $P_c^2 = 20786.3$					
NO.	P ₁ ²	P _w	P ₂ ²	P ₂ ² - P _w ²	$(1) \frac{P_c^2}{P_c^2 - P_w^2} = 2.942$ $(2) \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.397$
1	4378.2	19168.6	1617.7		
2	4211.2	17734.2	3052.1		
3	4008.2	16065.7	4720.6		
4	3704.2	13721.1	7065.2		
5					
$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1820$					
Absolute Open Flow 1820		Mscf @ 15.025		Angle of Slope @ 51° 0'	
Slope, n 0.810					
Remarks: * Bottom Hole Pressures @ (-7751) 11173' used for pressure calculations, well produced no fluid during test.					
Approved By Division		Conducted By: JARREL WELL TESTING, INC.		Calculated By: D. DICKERSON	
				Checked By: Joe Coleman PE #2208	

COMPANY: Cities Service Company
 WELL: State DB, No. 1
 LOCATION: C 3 20s 28e
 COUNTY: Eddy
 DATE: April 5, 1982



$$Q_1 = 1000 \text{ MCFD}; \text{Log } Q_1 = 3.00000$$

$$Q_2 = 155 \text{ MCFD}; \text{Log } Q_2 = 2.19033$$

$$n = 0.80967 = 0.810$$

JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONES 505 393-5396 — 393-8274

HOBBS, NEW MEXICO 88240

COMPANY: Cities Service Company

WELL: State DB, No. 1

FIELD: Turkey Track-Morrow

CHRONOLOGICAL PRESSURE DATA

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-7751)
			HRS.	MIN.	TBG	CSG	11173'
1982							PSIG
4/2	Flowing. Run Flowing Gradient W/Tandem Bombs & Set Bombs Off @ 10971'	1:00 PM	0	00	595	PKR	1586
	Shut In	2:00	1	00	-	-	1586
	"	2:05	0	05	-	-	1642
	"	2:10	0	10	-	-	1737
	"	2:15	0	15	-	-	1830
	"	2:20	0	20	-	-	1916
	"	2:25	0	25	-	-	2002
	"	2:30	0	30	-	-	2085
	"	2:35	0	35	-	-	2158
	"	2:40	0	40	-	-	2241
	"	2:45	0	45	-	-	2321
	"	2:50	0	50	-	-	2395
	"	2:55	0	55	-	-	2471
	"	3:00	1	00	-	-	2535
	"	3:15	1	15	-	-	2730
	"	3:30	1	30	-	-	2899
	"	3:45	1	45	-	-	3072
	"	4:00	2	00	-	-	3243
	"	5:00	3	00	-	-	3702
	"	6:00	4	00	-	-	4008
	"	7:00	5	00	-	-	4133
	"	8:00	6	00	-	-	4210
	"	9:00	7	00	-	-	4261
	"	10:00	8	00	-	-	4303
	"	11:00	9	00	-	-	4345
	"	12:00 MN	10	00	-	-	4367
4/3	"	1:00 AM	11	00	-	-	4386
	"	2:00	12	00	-	-	4399
	"	3:00	13	00	-	-	4409
	"	4:00	14	00	-	-	4418
	"	5:00	15	00	-	-	4428
	"	6:00	16	00	-	-	4434
	"	7:00	17	00	-	-	4444
	"	8:00	18	00	-	-	4450
	"	9:00	19	00	-	-	4457
	"	10:00	20	00	-	-	4460
	"	11:00	21	00	-	-	4463
	"	12:00 N	22	00	-	-	4466
	"	1:00 PM	23	00	-	-	4466

WELL: State DB, No.

PAGE: 2

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-7751) 11173' PSI
			HRS.	MIN.	TBG	CSG	
	"	2:00	24	00	-	-	4466
	"	3:00	25	00	-	-	4469
	"	4:00	26	00	-	-	4476
	"	5:00	27	00	-	-	4479
	"	6:00	28	00	-	-	4482
	"	7:00	29	00	-	-	4482
	"	8:00	30	00	-	-	4486
	"	9:00	31	00	-	-	4486
	"	10:00	32	00	-	-	4489
	"	11:00	33	00	-	-	4492
	"	12:00 MN	34	00	-	-	4495
4/4	"	1:00 AM	35	00	-	-	4498
	"	2:00	36	00	-	-	4498
	"	3:00	37	00	-	-	4502
	"	4:00	38	00	-	-	4502
	"	5:00	39	00	-	-	4505
	"	6:00	40	00	-	-	4505
	"	7:00	41	00	-	-	4508
	"	8:00	42	00	-	-	4508
	"	9:00	43	00	-	-	4511
	"	10:00	44	00	-	-	4511
	"	11:00	45	00	-	-	4514
	"	12:00 N	46	00	-	-	4518
	"	1:00 PM	47	00	-	-	4518
	"	2:00	48	00	-	-	4521
	"	3:00	49	00	-	-	4521
	"	4:00	50	00	-	-	4524
	"	5:00	51	00	-	-	4524
	"	6:00	52	00	-	-	4527
	"	7:00	53	00	-	-	4527
	"	8:00	54	00	-	-	4530
	"	9:00	55	00	-	-	4530
	"	10:00	56	00	-	-	4534
	"	11:00	57	00	-	-	4534
	"	12:00 MN	58	00	-	-	4534
4/5	"	1:00 AM	59	00	-	-	4537
	"	2:00	60	00	-	-	4537
	"	3:00	61	00	-	-	4537
	"	4:00	62	00	-	-	4540
	"	5:00	63	00	-	-	4540
	"	6:00	64	00	-	-	4540
	"	7:00	65	00	-	-	4543
	"	8:00	66	00	-	-	4543
	"	9:00	67	00	-	-	4543
	"	10:00	68	00	-	-	4546
	Fished Bombs	11:00	69	00	-	-	4546
	Rechart Bombs &						
	Run Static Gradient &						
	Set Bombs Off @ 10,971	12:30 PM	70	30	3242 DWT	PKR	4546
	Started 1st Rate Flowing	1:00	71	00	3242	-	4546
	Finished 1st Rate &					MCF/D	
	Started 2nd Rate	2:00	1	00	3130	- 230.87	4365
	Finished 2nd Rate &						
	Started 3rd Rate	3:00	1	00	3001	- 377.70	4198

WELL: State DB, No.1

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DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-7751) 11173' PSIG
			HRS.	MIN.	TBG	CSG	
	Finished 3rd Rate & Started 4th Rate	4:00	1	00	2859	- 551.04	3995
	Finished 4th Rate & Shut In For Buildup	5:00	1	00	2603	- 759.41	3691
	Shut In						
	"	5:05	0	05	-	-	3798
	"	5:10	0	10	-	-	3882
	"	5:15	0	15	-	-	3940
	"	5:20	0	20	-	-	4001
	"	5:25	0	25	-	-	4043
	"	5:30	0	30	-	-	4088
	"	5:35	0	35	-	-	4127
	"	5:40	0	40	-	-	4162
	"	5:45	0	45	-	-	4194
	"	5:50	0	50	-	-	4220
	"	5:55	0	55	-	-	4245
	"	6:00	1	00	-	-	4264
	"	6:15	1	15	-	-	4284
	"	6:30	1	30	-	-	4351
	"	6:45	1	45	-	-	4377
	"	7:00	2	00	-	-	4399
	"	8:00	3	00	-	-	4450
	"	9:00	4	00	-	-	4479
	"	10:00	5	00	-	-	4498
	"	11:00	6	00	-	-	4511
	"	12:00 MN	7	00	-	-	4521
4/6	"	1:00 AM	8	00	-	-	4527
	"	2:00	9	00	-	-	4534
	"	3:00	10	00	-	-	4540
	"	4:00	11	00	-	-	4543
	"	5:00	12	00	-	-	4546
	"	6:00	13	00	-	-	4553
	"	7:00	14	00	-	-	4556
	"	8:00	15	00	-	-	4559
	"	9:00	16	00	-	-	4559
	Fished Bombs & Ran Static Gradient	10:00	17	00	3265	-	4559

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HOBBS, NEW MEXICO 88240

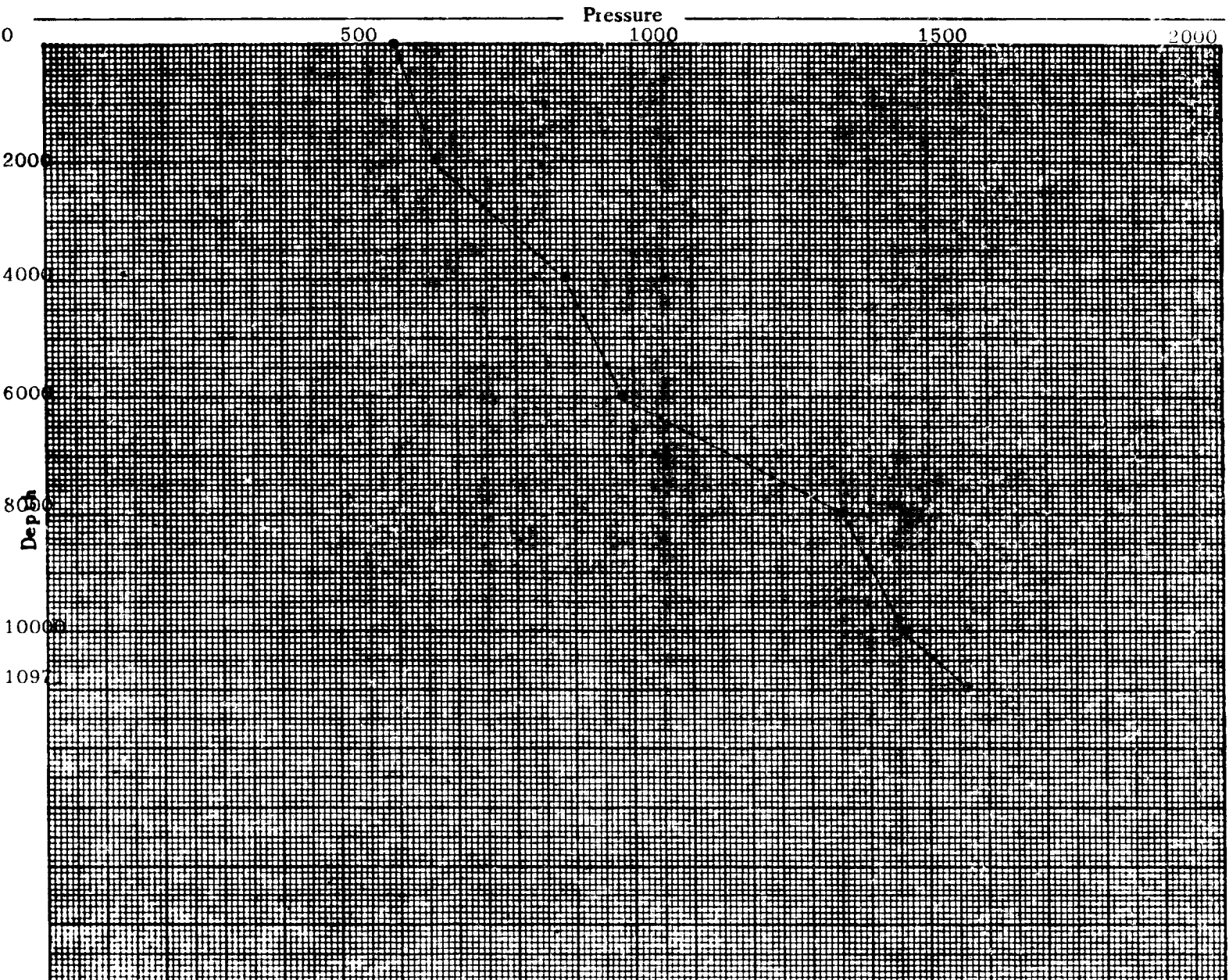
OPERATOR Cities Service Company
FIELD Turkey Track
FORMATION Morrow
LEASE State DB WELL #1
COUNTY Eddy STATE New Mexico
DATE 4/2/82 TIME 1:00 PM
Status Flowing
Test Depth 10971'
Time S. I. - Last test date -
Tub Pres. 595 BHP last test -
Cas. Pres. PKR BHP change -
Elev. 3422' GL Fluid top Flowing
Datum (-7751)** Water top -
Temp. @ 176° F Run by JSI #20
Cal. No. A21106N Chart No. 1

BOTTOM HOLE PRESSURE RECORD

Depth	Pressure	Gradient
0	595	-
2000	667	.036
4000	885	.109
6000	983	.049
8000	1353	.185
10000	1458	.053
10971	1554	.109
11173 (-7751)	1586 * **	(.109)

* EXTRAPOLATED PRESSURE

** MIDPOINT OF CASING PERFORATIONS



JARREL SERVICES, INC.

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HOBBS, NEW MEXICO 88240

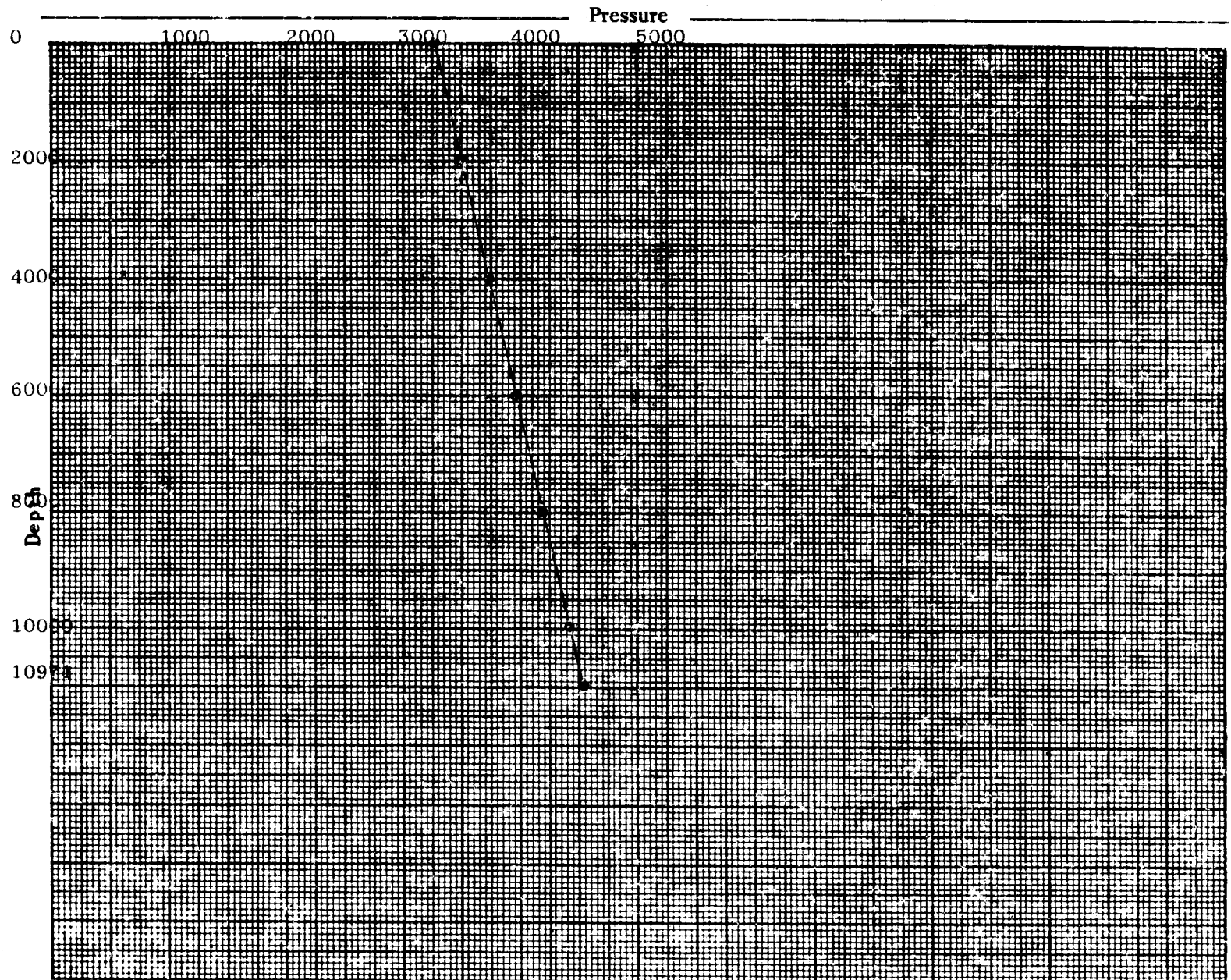
OPERATOR Cities Service Company
FIELD Turkey Track
FORMATION Morrow
LEASE State DB **WELL #1**
COUNTY Eddy **STATE** New Mexico
DATE 4/6/82 **TIME** 10:00 AM
Status Shut in
Test Depth 10971'
Time S. I. 17.0 hrs **Last test date** 4/5/82
Tub Pres. 3265 **BHP last test** 4546
Cas. Pres. PKR **BHP change** 13# Gain
Elev. 3422' GL **Fluid top** None
Datum (-7751)** **Water top** None
Temp. @ 176° F **Run by** JSI #20
Cal. No. A21106N **Chart No.** 3

BOTTOM HOLE PRESSURE RECORD

Depth	Pressure	Gradient
0	3265	-
2000	3492	.114
4000	3722	.115
6000	3954	.116
8000	4186	.116
10000	4420	.117
10971	4535	.118
11173 (-7751)	4559 * **	(.118)

* EXTRAPOLATED PRESSURE

** MIDPOINT OF CASING PERFORATIONS



JARREL SERVICES, INC.

POST OFFICE BOX 1654

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HOBBS, NEW MEXICO 88240

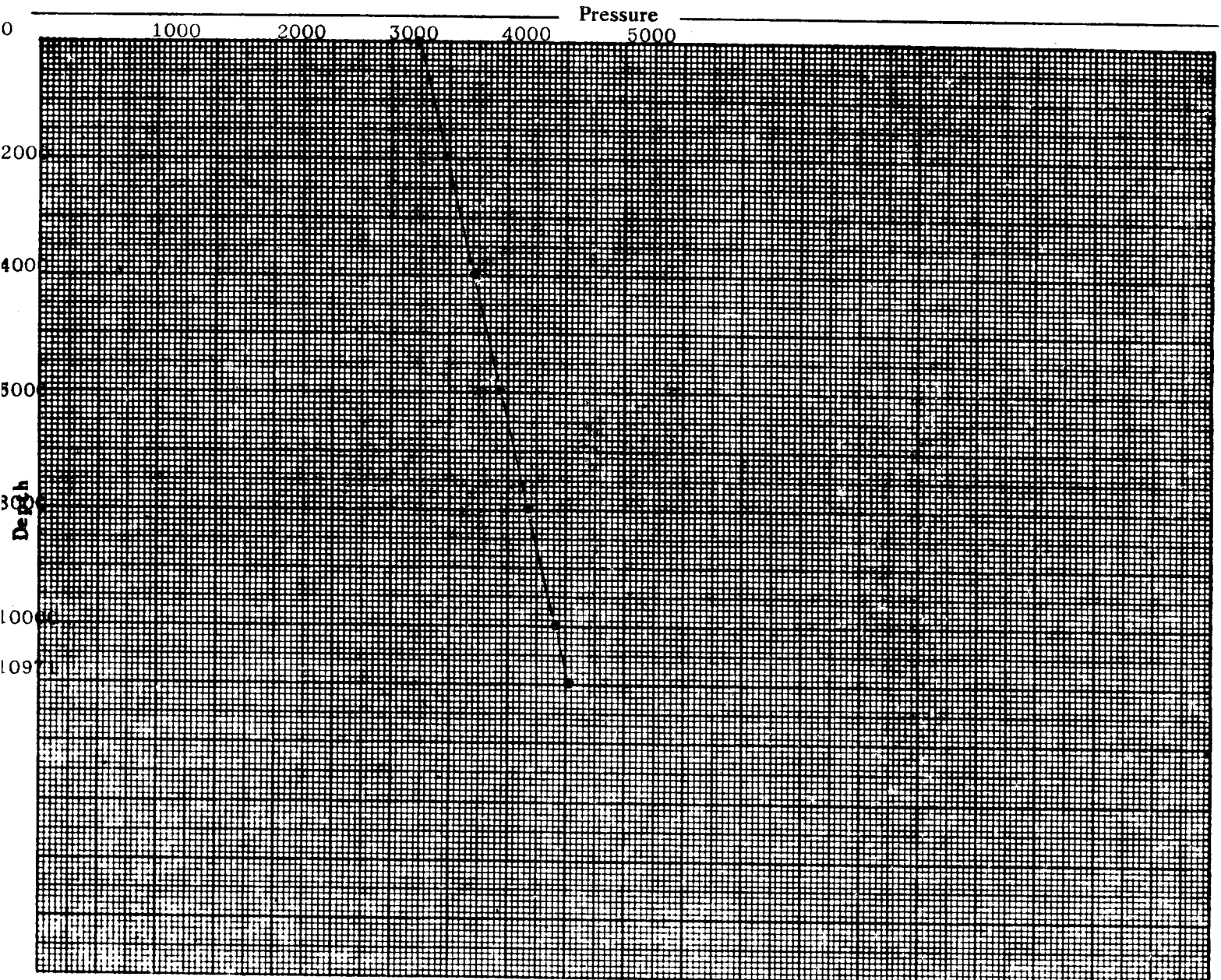
OPERATOR Cities Service Company
 FIELD Turkey Track
 FORMATION Morrow
 LEASE State DB WELL #1
 COUNTY Eddy STATE New Mexico
 DATE 4/5/82 TIME 12:30 PM
 Status Shut in
 Test Depth 10971'
 Time S. I. 70.5 hr Last test date -
 Tub Pres. 3242 DWT BHP last test -
 Cas. Pres. PKR BHP change -
 Elev. 3422' GL Fluid top None
 Datum (-7751)** Water top None
 Temp. @ 176 F Run by JSI #20
 Cal. No. A21106N Chart No. 2

BOTTOM HOLE PRESSURE RECORD

Depth	Pressure	Gradient
0	3242 DWT	-
2000	3473	.116
4000	3705	.116
6000	3937	.116
8000	4171	.117
10000	4407	.118
10971	4522	.118
11173 (-7751)	4546 * **	(.118)

* EXTRAPOLATED PRESSURE

** MIDPOINT OF CASING PERFORATIONS



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MADE IN U.S.A.

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SEMI-LOGARITHMIC
5 CYCLES X 10 DIVISIONS PER INCH

JARREL SERVICES, INC.

