TIERRA
ENVIRONMENTAL CORPORATION

CORPORATE OFFICE
12205 E. Skelley Drive
Tulsa, OK 74128
918-437-6200

OPERATIONS OFFICE
909 W. Apache
Farmington, NM 87401
505-325-0924

May 13, 1994

Mr. David Catanach
New Mexico Oil Conservation Division
P. O. Box 2088
Land Office Building
Santa Fe, New Mexico 87504-2088

RE: BLOOMFIELD REFINING COMPANY, WATER DISPOSAL WELL, STEP RATE INJECTIVITY TEST

Dear Mr. Catanach:

Attached please find an analysis of the step rate injectivity tests on the water disposal well drilled for the Bloomfield Refining Company. My evaluation of the data indicates that water can be injected into the well at a rate of 5.2 BPM and a corresponding surface pressure of approximately 1000 psig with no adverse affects on the formation and no danger of pumping water outside the intended zone.

Initial discussions with the Aztec NMOCD office indicated that the injection pressure would be limited 0.2 psi/ft. or about 690 psi, the rule of thumb for estimating reservoir parting pressure. This limitation was substantiated by data from the initial completion of the well. This completion was deemed unsatisfactory, and the well was recompleted in an additional zone.

Based on data from Tefteller (downhole pressure measurements company) and the Western Company, the first completion of the well provided test results which are not relevant to the current conditions. The compensated neutron/litho density logs indicated that some of the most attractive formation areas for water disposal were ignored in the first completion, and that in fact, the Upper Menefee was not perforated at all. Therefore, the test results from that time, which indicate a lower allowable surface pressure consider a much smaller perforated interval, resulting in a smaller reservoir area for disposal.

The test results obtained after the additional perforation and treating are much more favorable, and reflect the current downhole conditions. These results indicate that water can be pumped at a significantly higher rate and pressure than the results of the initial testing. The attached graph shows the bottom hole pressure (data from Tefteller downhole pressure monitor) as a function of the injection rate (data from Western Company flow meters). All points are plotted at the end of the pumping intervals to try and obtain a steady state flow rate. The steep slope of the initial data indicates wellbore storage as the pumping begins. The next interval, with a shallower slope, illustrates the continued increase of pressure with respect to pumping rate, indicating that the reservoir continues to absorb the water.

The change in slope at the rate of 5.2 BPM indicates that the formation could be beginning to fracture, allowing more water to flow through it, thus the pressure increase is not as rapid with increased flow as illustrated in the previous interval.

The data indicates that water can safely be injected at a rate of 5.2 BPM and a bottom hole pressure of approximately 2030 psig. The corresponding surface pressure would be approximately 1000 psig. This result agrees closely with the analysis of the data by your Aztec office after the initial completion of the well. In the graph provided to us, Frank Chavez indicates a pressure break at a bottom hole pressure of approximately 2055 psi. That bottom hole pressure of approximately 2055 psi. That bottom hole pressure, of course, corresponds to a lower surface pressure because of the lower injection rate (less friction losses in the tubing). The results of the second test show a higher surface pressure because of the increased injection rate (greater friction losses in the tubing). This higher surface pressure would not however, effect the reservoir because the bottom hole pressures are similar.

We are therefore requesting that the allowable surface injection pressure be 1005 psig and the maximum injection rate be 5.2 BPM. Careful monitoring would quickly indicate if the formation had been fractured, and injection pressure would be immediately lowered if fracturing is indicated.

Bloomfield Refining Company is requesting that you take this matter under consideration as quickly as possible. They are in immediate need of a water disposal site, and must begin injection as quickly as possible.

If you have any questions regarding this analysis, please feel free to call me or Mr. Phil Nobis at Tierra Environmental (505) 325-0924, or Chris Hawley, Environmental Engineer, Bloomfield Refining Company at (505) 632-8013.

Sincerely,

TIERRA ENVIRONMENTAL CORPORATION, INC.

Connie Dinning, P.E.
Senior Engineer

CD/lp

Enclosures

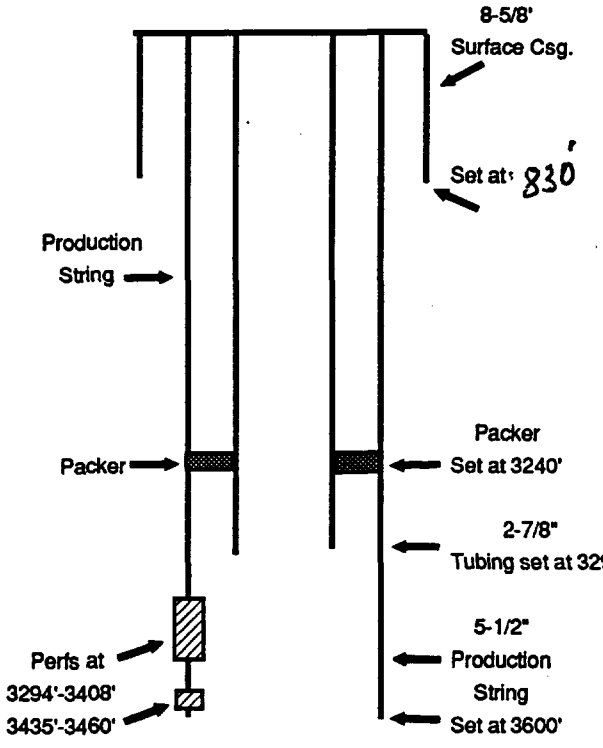
xc: Chris Hawley, Bloomfield Refining Company
Roger Anderson, NMOCD
File

III. WELL DATA

IIIA. The following well data must be submitted for each injection well covered by this application. The data must be in tabular and schematic form and shall include:

(1) **Lease Name:** Bloomfield Refining WD-1 **Well No.** 1
Location: NW, SW, Section 26, T29N, R11W; San Juan County; FWL and FSL

(2) WELL SCHEMATICS DATA



(2) Surface Casing:

Size: 8-5/8", 48# Csg., cemented with 200 sx.
TOC: Surface, feet determined by circulation.
Hole Size: 11.0"
Set at: 830 feet

(2) Production String:

Size: 5.5", 15.5# Csg., cemented with 550 sx.
TOC: Surface, feet determined by circulation.
Hole Size: 7-7/8"
Set at: 3600 feet
Perforated interval: 3294'-3408' & 3435'-3460' at 4 JSPF, .5 EHD

(3) Tubing:

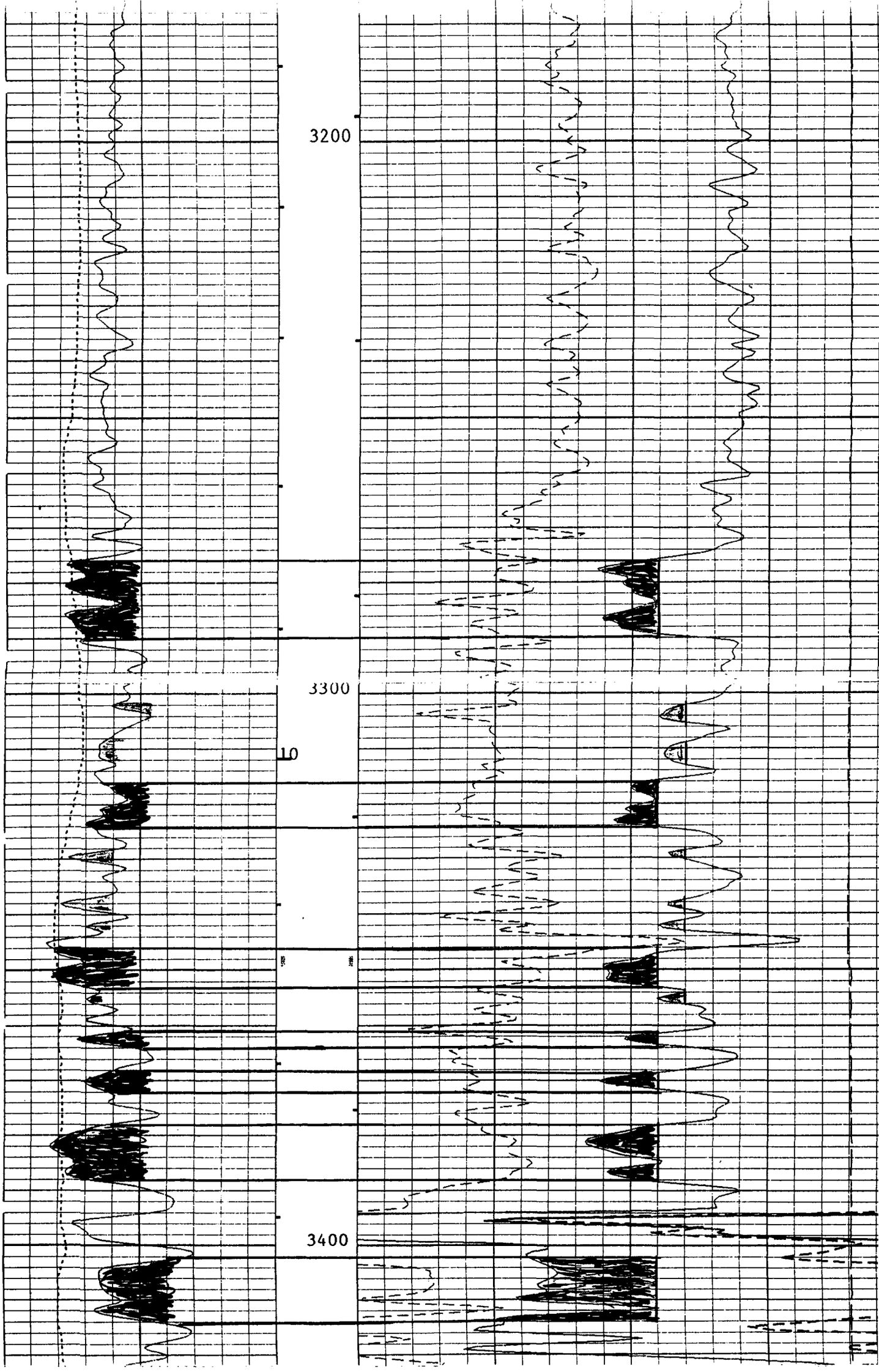
Size: 2-7/8", 4#, plastic lined
Set at: 3250'

(4) Packer:

Model: Guiberson, Uni-6: set at 50 feet above perforations or similar model.

IIIB. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well.

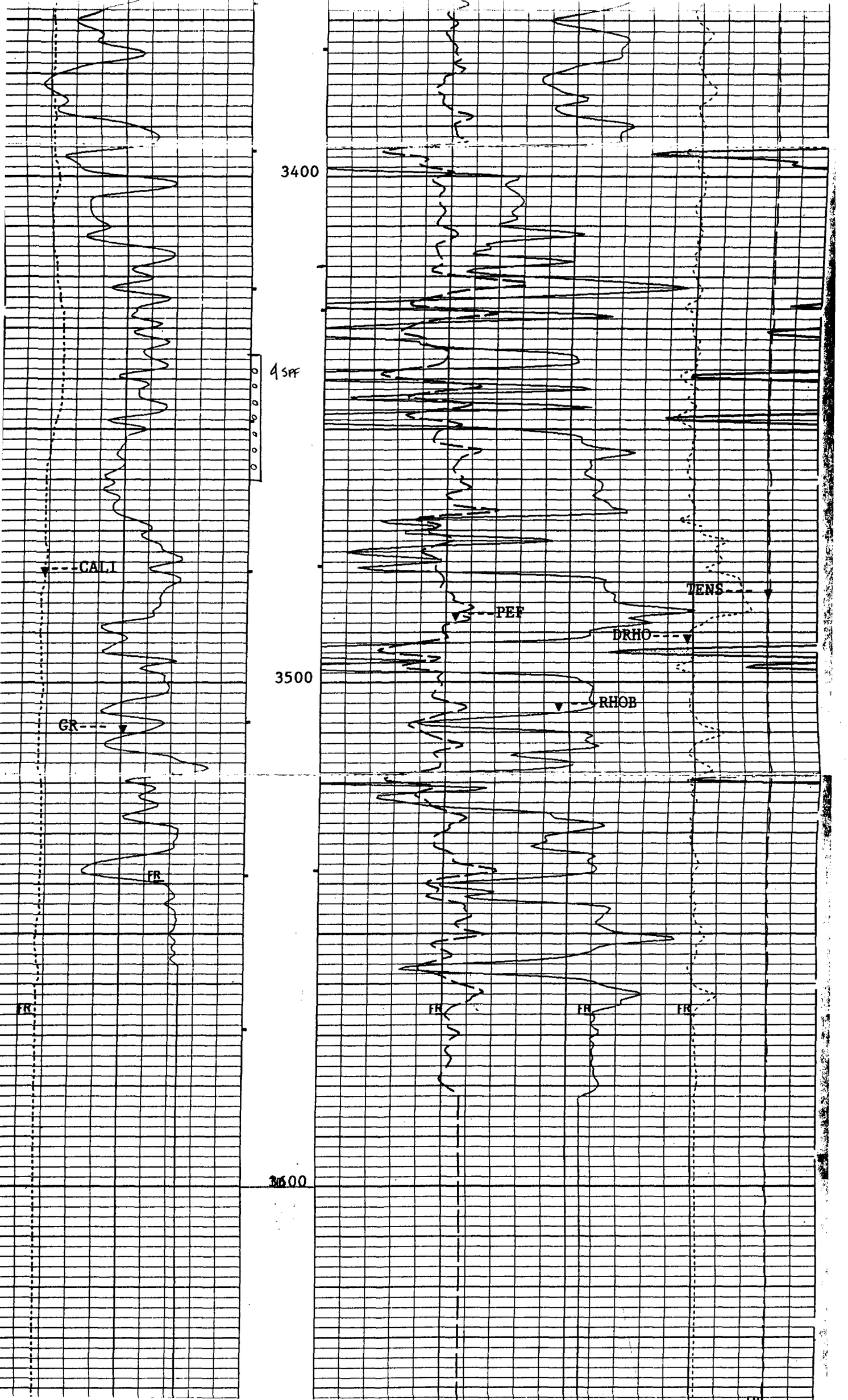
(1) **Name of Injection formation:** Cliff House Formation and Menefee Formation.
(2) **Name of field or Pool (if applicable):** N/A
(3) **Is this a new well drilled for injection?** Yes,
(4) **Has the well ever been perforated in any zone(s)?** No.
(5) **Give depth to and name of any overlying or overlying oil or gas zones (pools) in this area.**



Perforation location

COMPENSATED NEUTRON - LITHO DENSITY

1ST SET OF PERFS


3400
4 SPF
CALI
GR
PEF
DRHO
TENS
RHOB
3500
FR
FR
FR
FR
FR
3600

OPERATIONAL DATA		
STATE: NM	OPERATOR: Tierra Environmental Co.	SPUD: 12-17-93
	WELL: WD-1	COMP: 12-23-93
COUNTY: San Juan	FIELD: Blanco Mesa Verde	ELEV: KB 5545'
	DRILLING CONTR:	D.F. 5544'
	STATUS: Bloomfield Refining Disposal Well	G.L. 5530'
T 29N R 11W		T.D. 3601'
27	REMARKS: 1250.4' FEL 2442.3' FSL	SERVICES:
	GEOLOGIST: Jim Gurney	

DEPTH / DEVIATION / TRIPS / BITS / CSG — DRILLING RATE ft/min (0 1 2 3 4) — SHOWS (G F P) — POROSITY (G F P) — LITHOLOGY — COLOR — MICRO XF (Silt) VF F M CRS — SORTING — ROUNDING — REMARKS

Feet X .3048 = Meters 1 Meter = 3.28 Ft.

KB — Surface is at KB

12¼" bit

"No Samples"
"No Geolograph"

100'

Survey 3/4

200'

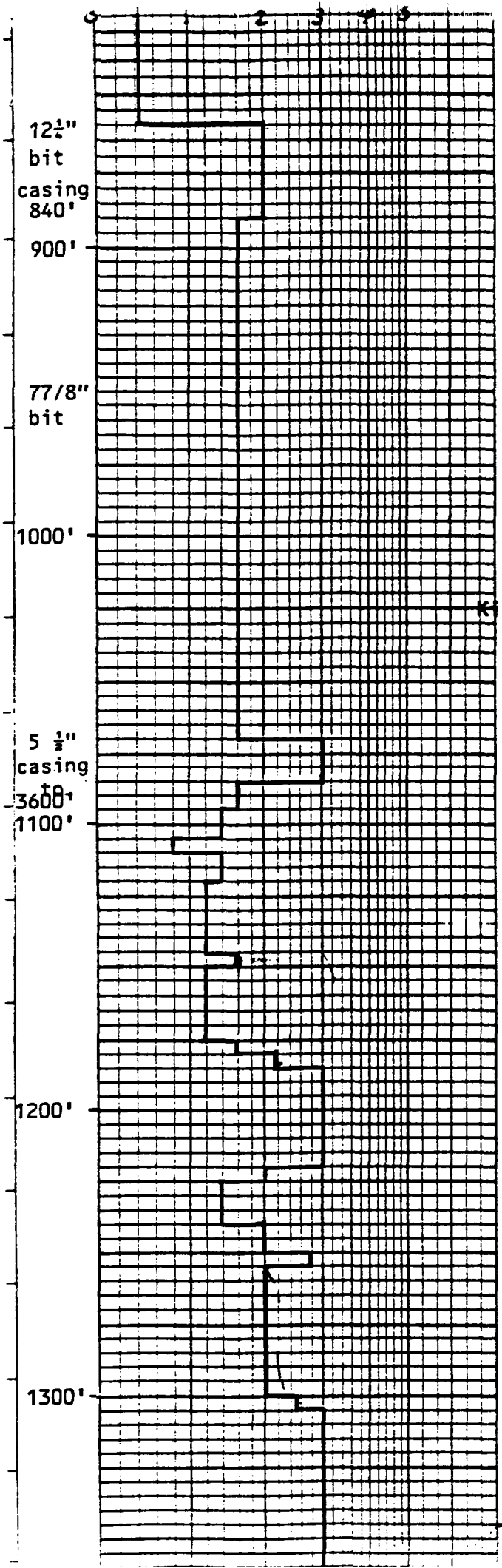
300'

Survey 3/4

"No Shows"

Nacimiento FM.

Depth	Sorting	Rounding	Remarks
Surface	P		Surface sand and gravels, some boulders from 35' to 92', 0-150 not sampled.
~160'		SR	Sand/clay: gy, 50:50, sand is very coarse grained with some cobbles.
~180'		SR	Sand: Lt. gy, coarse gr., some gravel, some shale Less than 10% med gy.
~230'	P	SA	Shale/claystone: med gy, vy sandy
~240'	F	SA	Sand: vy fine to med gr., lt gy, sub ang.
~250'			60% clay 40% sand
~290'		SA	Sand: vy fine to coarse, sub ang., lt to med grey, less than 20% clay med gy.
~320'			" 40% clay med gy.



Sand/shale: 20% med gy shale, sand is lit gy, fine gr., SA, PS,

Shale/sand: 10% sand vy fine, silty

silty

Kirtland FM.

Gas kick at 1076'

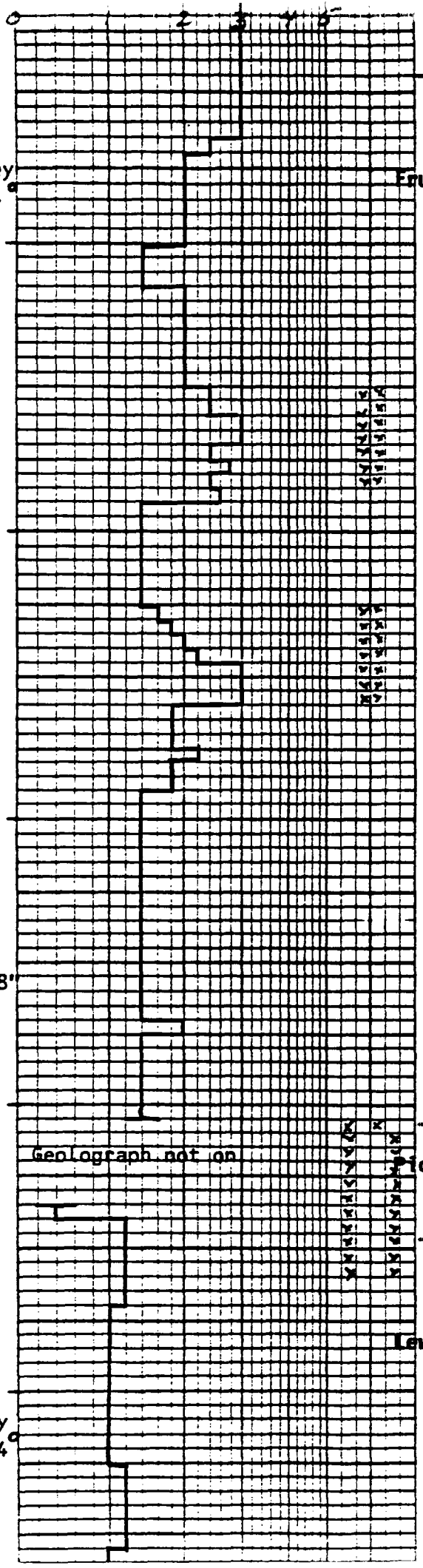
Sand: fine-med gr., med gy, FS, SA

A Farmington SD.

Shale: med-dk gy, carbonaceous

Sand: vy fine, SA PS med gy silty

Shale: med gy, carbonaceous



Fruitland FM.

Shale: med-dk gy, carbonaceous

FS SR Sand?shale: 70% sand med gy, SA, PS carbonaceous trash, coal at base?

Shale: med-dk gy, carbonaceous

SR FS Sand: lit gy med gy, vy fine,silty med gr at base, some coal at base o sand.

Shale: dk gy vy carbonaceous, silty

Shale: dk gy,carbonaceous

– Sandy vy fine –

Coal: Coal frag., bk,brittle,

Pictured Cliffs FM.

FS SR Sand: Top of Kpc, vyfine to med gr. FS, SA=SR, (Gas show) fine gr to to silty at base

Shale: dk grey,

Lewis shale FM.

1900'

Lewis Shale FM.

2000'

7 7/8" bit

2100'

2200'

Casing 5½"

2300'

Survey 1 3/4"

~~Shale: dk gy-bk, carbonaceous~~

"

(Gas shows are based on mud being pussed from hole during connections, gas smells, etc.)

NOTES: (Gas is coming from Farmington ~~sand, from Fruitland and~~ possibly from Pictured Cliffs good volume of gas at shaker ~~table.~~)

"

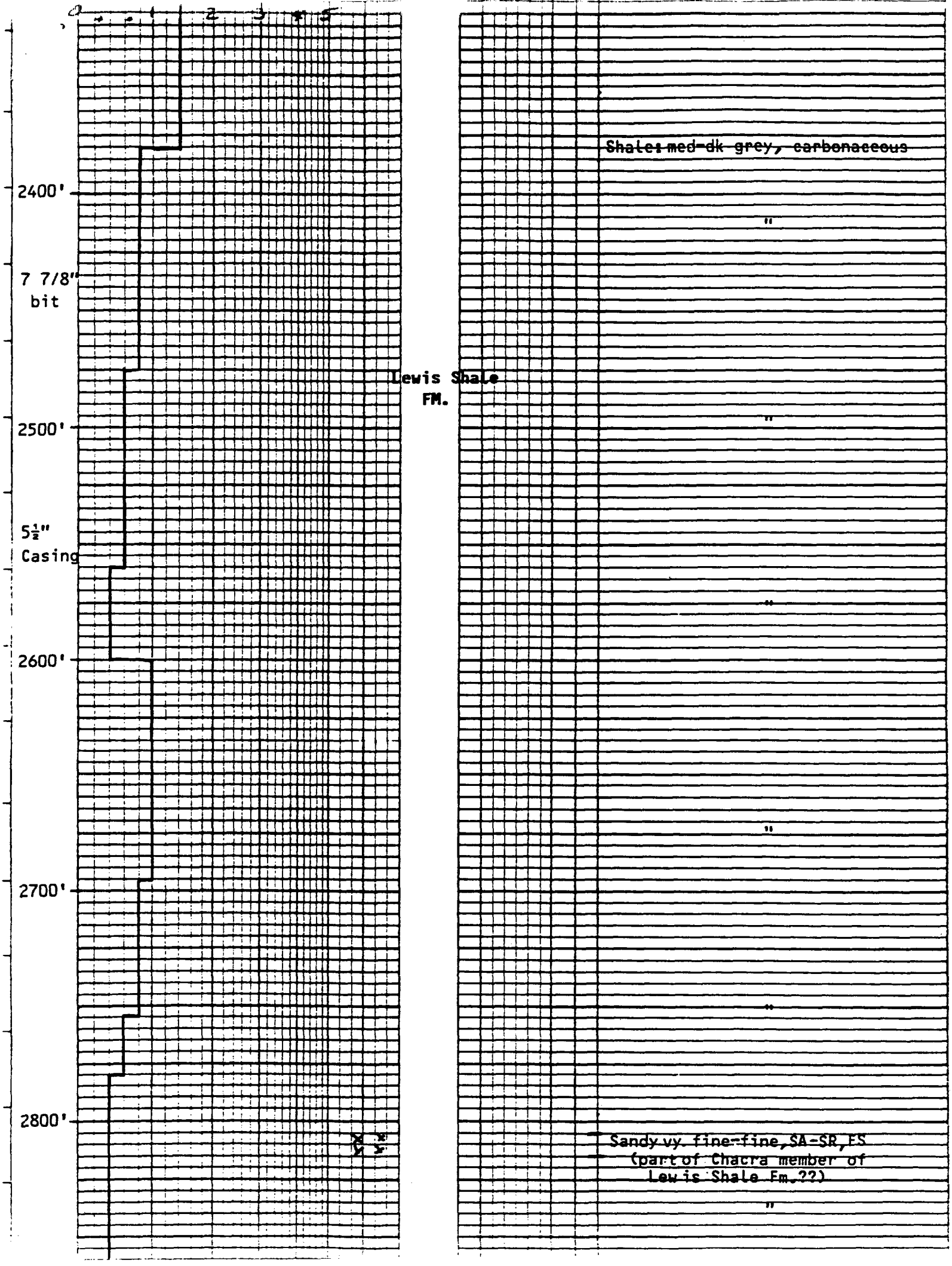
(During trip for new bit gas was flowing freely from well/ ~~no mud, just gas farm??.~~)

"

"

"

"


0
1
2
3
4
5
2400'
7 7/8" bit
2500'
5½" Casing
2600'
2700'
2800'
Lewis Shale FM.
Shale: med-dk grey, carbonaceous
"
"
"
"
"
Sandy vy fine-fine, SA-SR, FS (part of Chacra member of Lewis Shale Fm.??)
"

2900'

3000'

7 7/8" bit

3100'

5½" casing

3200'

3300'

Lewis shale FM.

Cliff House FM.

Sandy: 10-20% vy fine, SA

(part of Chara Member of Lewis may have gas show??)

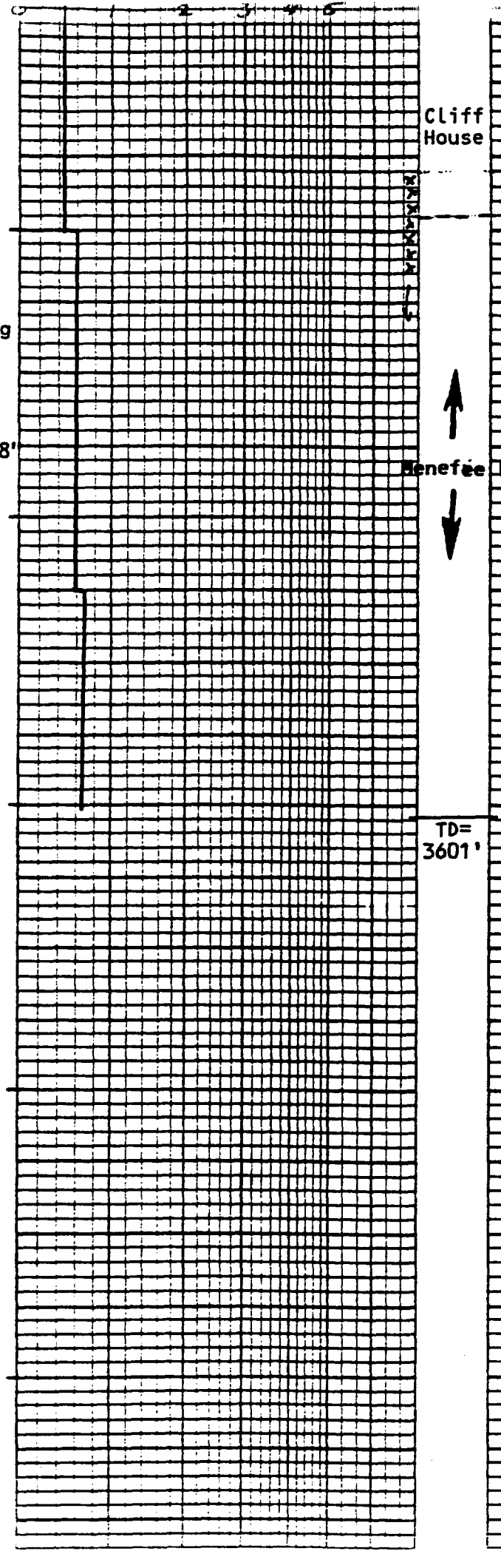
Shale: dk gy

Sand: lt gy vy fine silty, GS SR

Sand: Med gy f-M gr. SA-AR, PS silty, shale inter beds at base

Sand/shale interbedded

Sands are vy. fine to med, PS SA.



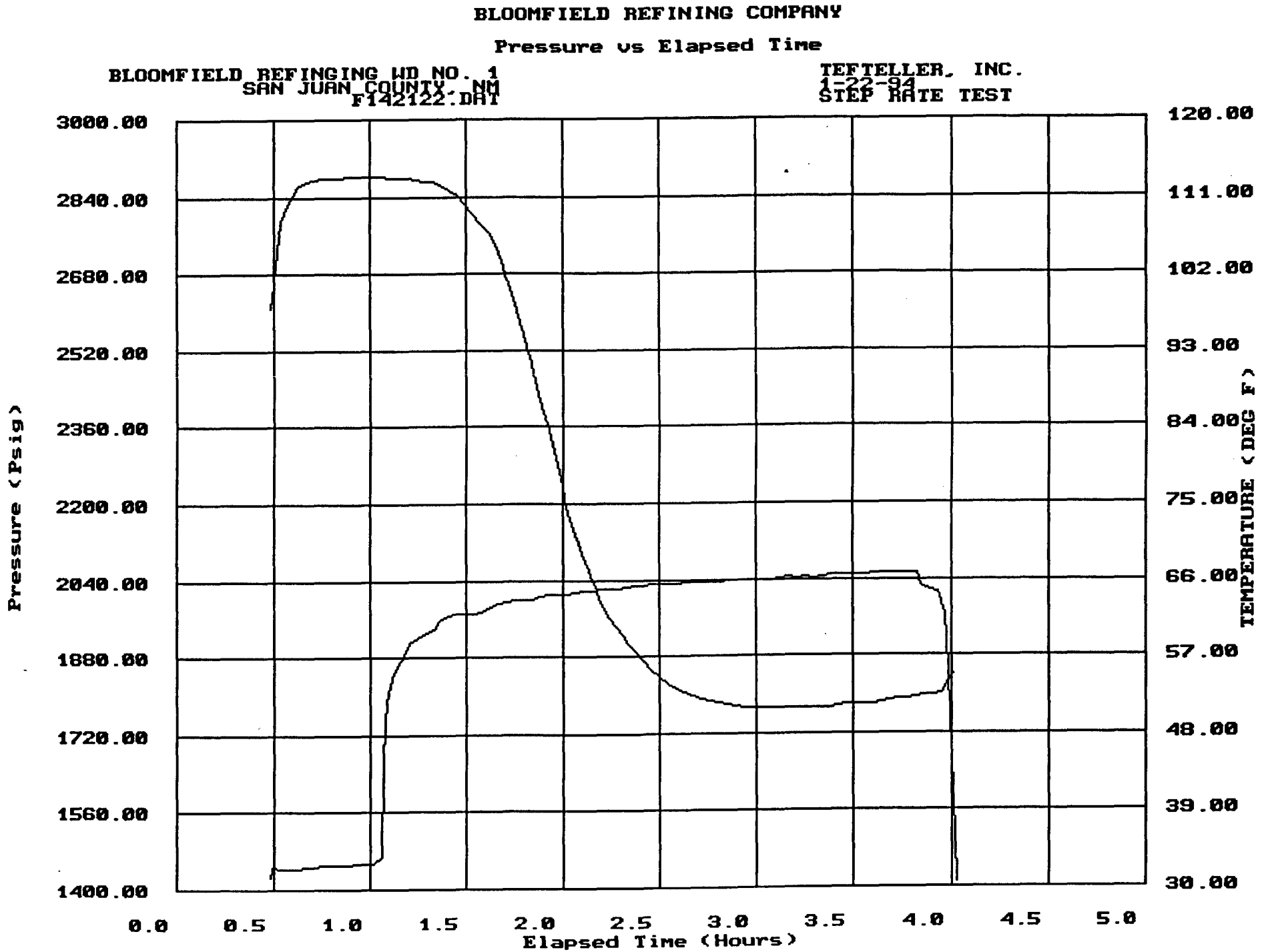
Sd: vy f, GS,SR, med gy,

Coal: at base of Cliff House, top of Menefee.

Sand/shale: fine gr, med gy, FS SA 20% shale bk-dkgy.

Shale: dk gy, sandy interbeds, f gr

well samples are not logged
Samples taken at 20'±40' intervals.

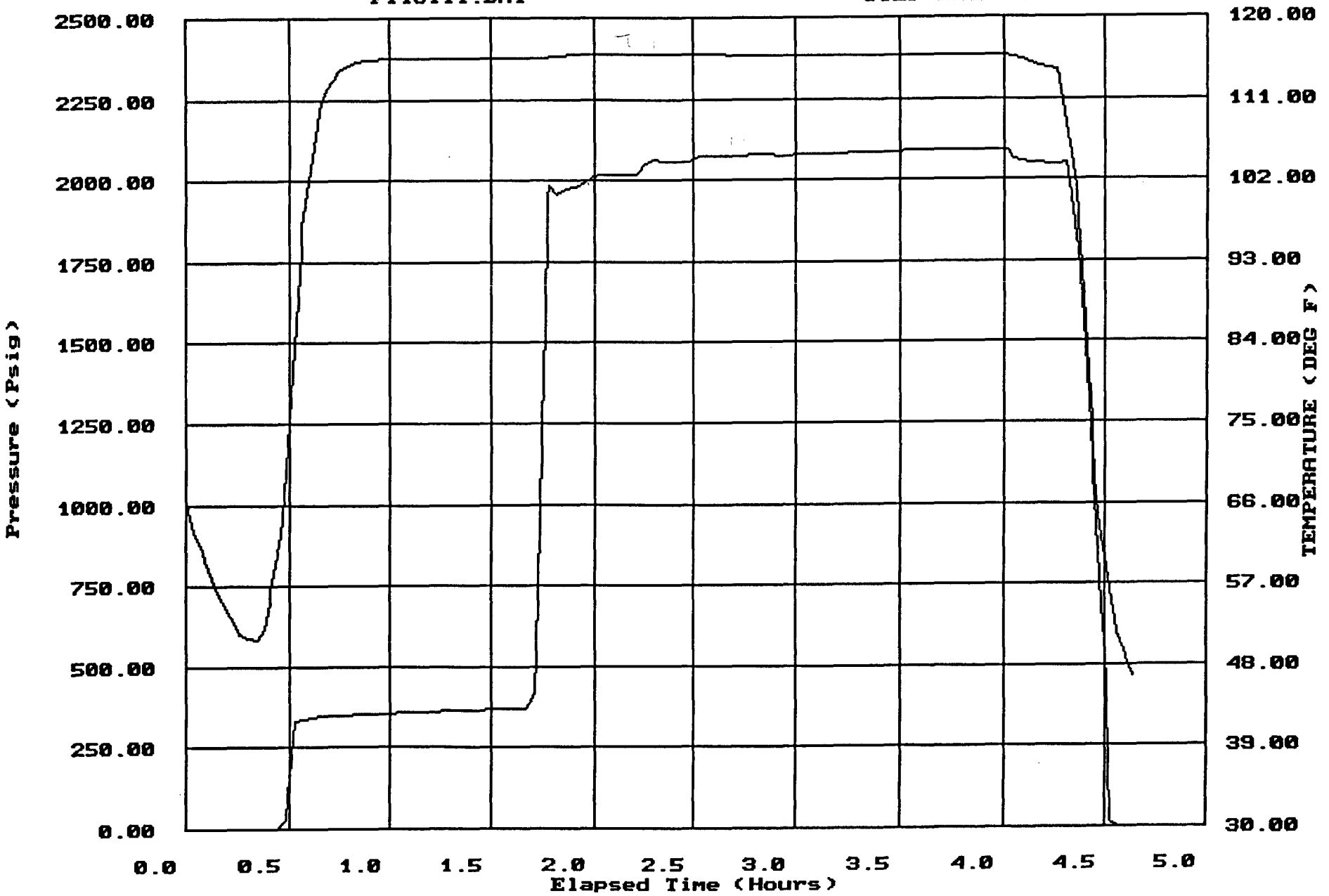

BLOOMFIELD REFINING COMPANY
Pressure vs Elapsed Time
BLOOMFIELD REFINGING WD NO. 1
SAN JUAN COUNTY, NM
F142122.DAT
TEFTELLER, INC.
1-22-94
STEP RATE TEST
Pressure (Psig)
3000.00
2840.00
2680.00
2520.00
2360.00
2200.00
2040.00
1880.00
1720.00
1560.00
1400.00
TEMPERATURE (DEG F)
120.00
111.00
102.00
93.00
84.00
75.00
66.00
57.00
48.00
39.00
30.00
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Elapsed Time (Hours)

BLOOMFIELD REFINING COMPANY

Pressure vs Elapsed Time

BLOOMFIELD REFINING WD NO. 1
SAN JUAN COUNTY, NM
F113111.DAT

TEFTELLER, INC.
1-10-94
STEP RATE TEST



(1)

EVENT SUMMARY

COMPANY : BLOOMFIELD REFINING COMPANY

PAGE : 8

WELL NAME : BLOOMFIELD REFINING WD NO. 1

DATE : 01/11/94

WELL LOCATION : SAN JUAN COUNTY, NM

FILE REF: F113111.DAT

Date MM/DD	Time hh:mm:ss	Test Time hhhh.hhhh	Key Event	Pressure Psig	Temp Deg F
01/10	11:27:00	.5333	INSTRUMENT @ 3346'	336.71	86.30
01/10	12:38:00	1.7167	START PUMP RATE #1 - SURFACE 500 PSI	415.70	115.61
01/10	12:53:00	1.9667	RATE #1/.3 BPM - SURFACE 500 PSI	1985.61	116.00
01/10	13:08:00	2.2167	RATE #2/.9 BPM - SURFACE 590 PSI	2018.37	115.96
01/10	13:23:00	2.4667	RATE #3/2.0 BPM - SURFACE 700 PSI	2058.49	115.91
01/10	13:38:00	2.7167	RATE #4/2.9 BPM - SURFACE 790 PSI	2072.51	115.86
01/10	13:53:00	2.9667	RATE #5/3.6 BPM - SURFACE 880 PSI	2076.02	115.82
01/10	14:08:00	3.2167	RATE #6/4.3 BPM - SURFACE 990 PSI	2080.83	115.77
01/10	14:23:00	3.4667	RATE #7/5.0 BPM - SURFACE 1100 PSI	2085.20	115.74
01/10	14:38:00	3.7167	RATE #8/5.4 BPM - SURFACE 1200 PSI	2088.79	115.72
01/10	14:53:00	3.9667	RATE #9/6.0 BPM - SURFACE 1300 PSI	2092.20	115.72

EVENT SUMMARY

COMPANY : BLOOMFIELD REFINING COMPANY

PAGE : 8

WELL NAME : BLOOMFIELD REFINGING WD NO. 1

DATE : 01/22/94

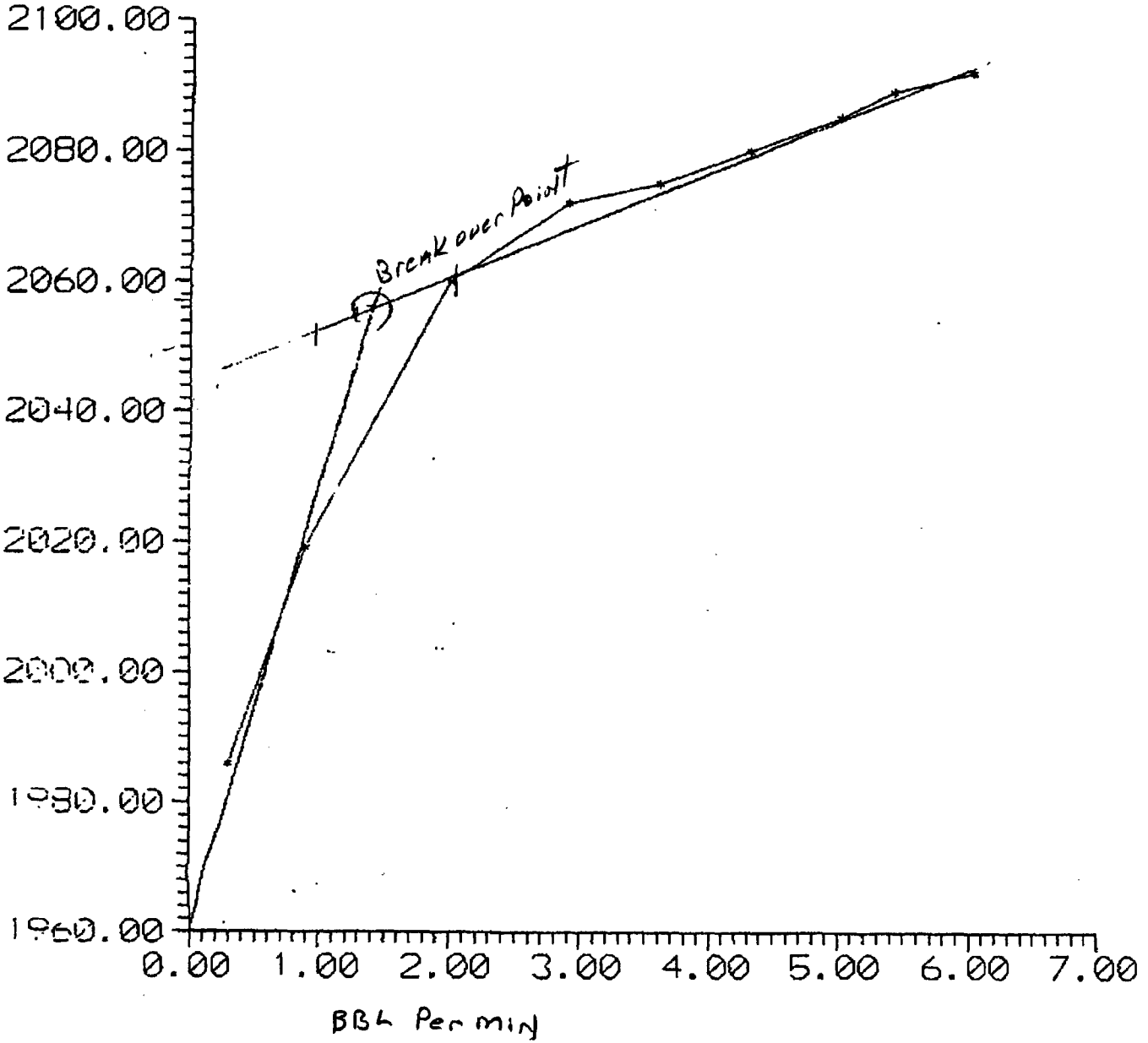
WELL LOCATION : SAN JUAN COUNTY, NM

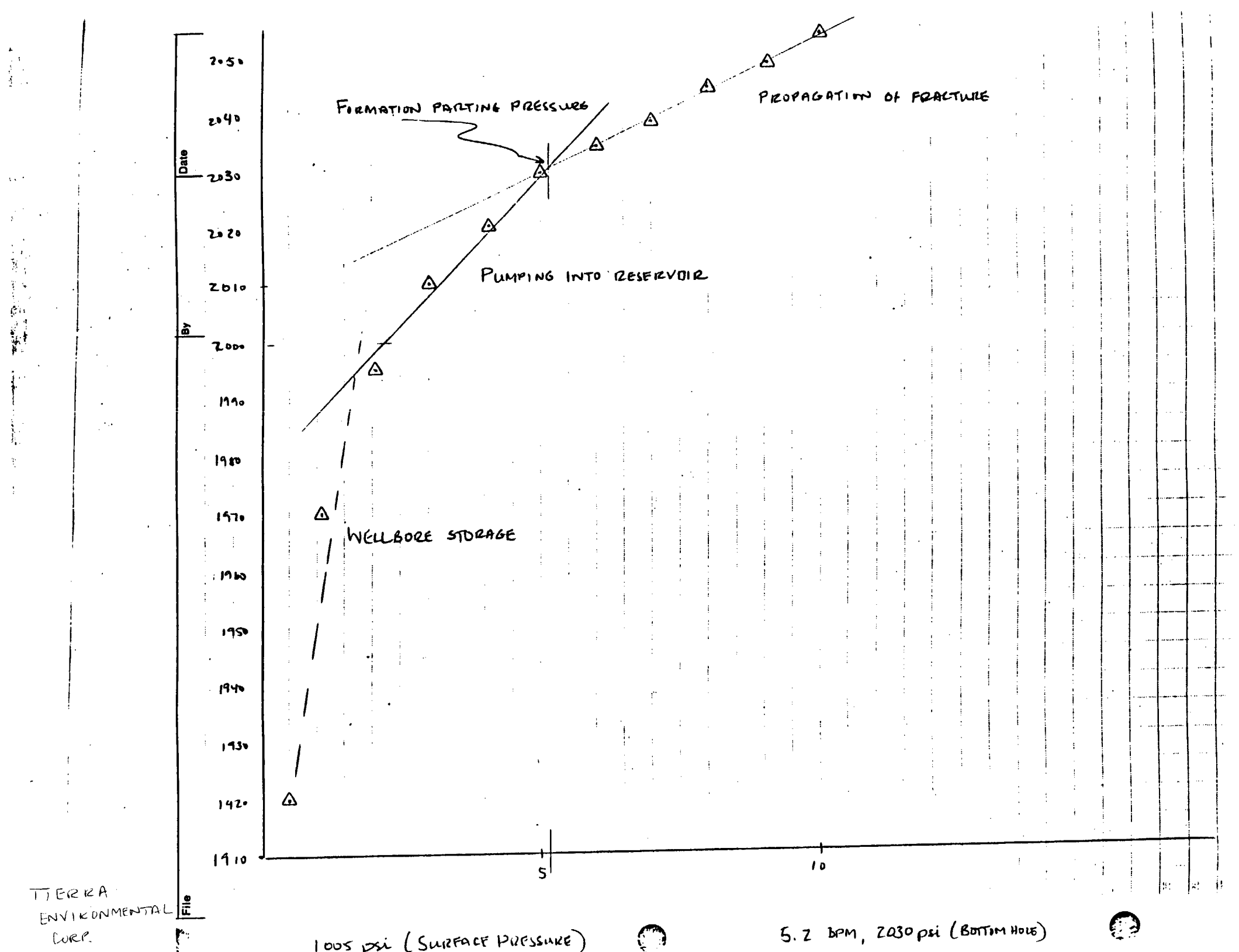
FILE REF: F142122.DAT

Date MM/DD	Time hh:mm:ss	Test Time hhhh.hhhh	Key Event	Pressure Psig	Temp Deg F
01/22	12:20:00	.5000	INSTRUMENT @ 3250'	1445.76	100.76
01/22	12:50:00	1.0000	START RATE #1	1454.03	113.26
01/22	13:05:00	1.2500	RATE #1/.5 BPM - SURFACE 515 PSI	1920.09	112.93
01/22	13:20:00	1.5000	RATE #2/1.1 BPM - SURFACE 580 PSI	1970.65	110.05
01/22	13:35:00	1.7500	RATE #3/2.1 BPM - SURFACE 645 PSI	1995.34	99.02
01/22	13:50:00	2.0000	RATE #4/3.0 BPM - SURFACE 733 PSI	2009.50	76.98
01/22	14:05:00	2.2500	RATE #5/4.1 BPM - SURFACE 860 PSI	2020.32	61.11
01/22	14:20:00	2.5000	RATE #6/5.0 BPM - SURFACE 1005 PSI	2029.79	54.52
01/22	14:35:00	2.7500	RATE #7/6.0 BPM - SURFACE 1170 PSI	2034.17	51.77
01/22	14:50:00	3.0000	RATE #8/7.0 BPM - SURFACE 1372 PSI	2038.64	50.93
01/22	15:05:00	3.2500	RATE #9/8.0 BPM - SURFACE 1612 PSI	2044.07	50.99
01/22	15:20:00	3.5000	RATE #10/9.1 BPM - SURFACE 1910 PSI	2048.46	51.38
01/22	15:35:00	3.7500	RATE #11/10.0 BPM	2053.33	52.03

Pressure break at Rate #7.

OCD


2100.00
2080.00
2060.00
2040.00
2020.00
2000.00
1980.00
1960.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
Break over Point
BBL Per min


2050
2040
Date
2030
2020
2010
By
2000
1990
1980
1970
1960
1950
1940
1930
1920
1910
File
FORMATION PARTING PRESSURE
PROPAGATION OF FRACTURE
PUMPING INTO RESERVOIR
WELLBORE STORAGE
5
10
TIERRA ENVIRONMENTAL CORP.
1005 psi (SURFACE PRESSURE)
5.2 BPM, 2030 psi (BOTTOM HOLE)

The Western Company—Treatment Report

e 01-10-94 District FARMINGTON F. Receipt L256193 Operator BLOOMFIELD REFINERY
ise WD Well No. #1 Field BASIN Location SEC 26 T29N R11W
County SAN JUAN State NM Stage Number 1 This Zone ☐ This Well ☐

WELL DATA OG☐ NG☐ NO☐ OO☐ WD☐ IW☐ Misc.☐ Depth TD/PB 3589 Formation MESA VERDE
Tubing Size 2 7/8 WT. 6.4 Set at: 3000 Type Packer FB Set At 3010
Casing Size 5½ WT. 15½ Set From SURFACE To TD Liner Size _____ Wt. _____
Liner Set From _____ To _____ Open Hole: Size _____ From _____ To _____ Casing Perforations: Size _____
Holes Per Foot 2 Intervals 3276 - 3410 58 HOLES
Previous Treatment _____ Prior Production _____

TREATMENT DATA Pad Used: Yes☐ No☒ Pad Type _____
Treating Fluid Type: Foam☐ Water☒ Acid☐ Oil☐ Treat. Fluid Vol. 20538 Gal.
Base Fluid Type 2% KCL Base Fluid Vol. 20538 Gal.
Foam Qual.: _____% Mitchell☐ Slurry☐ Surface☐ Downhole☐ Total Prop Qty. _____ Lbs.
Prop Type: Sand☐ WP-1☐ WP-3☐ Baux.☐ Other _____
Prop Mesh Sizes, Types and Quantities _____
Hole Loaded With DRY Treat Via: Tubing☒ Casing☐ Anul.☐ Tubing & Anul.☐
Ball Sealers: _____ In _____ Stages of _____
Types and Number of Pumps Used 1 ACID FRAC - 700
Auxiliary Materials _____

PROCEDURE SUMMARY TEST ANNULUS, LOAD HOLE, START STEP RATE, SET 8 POINTS

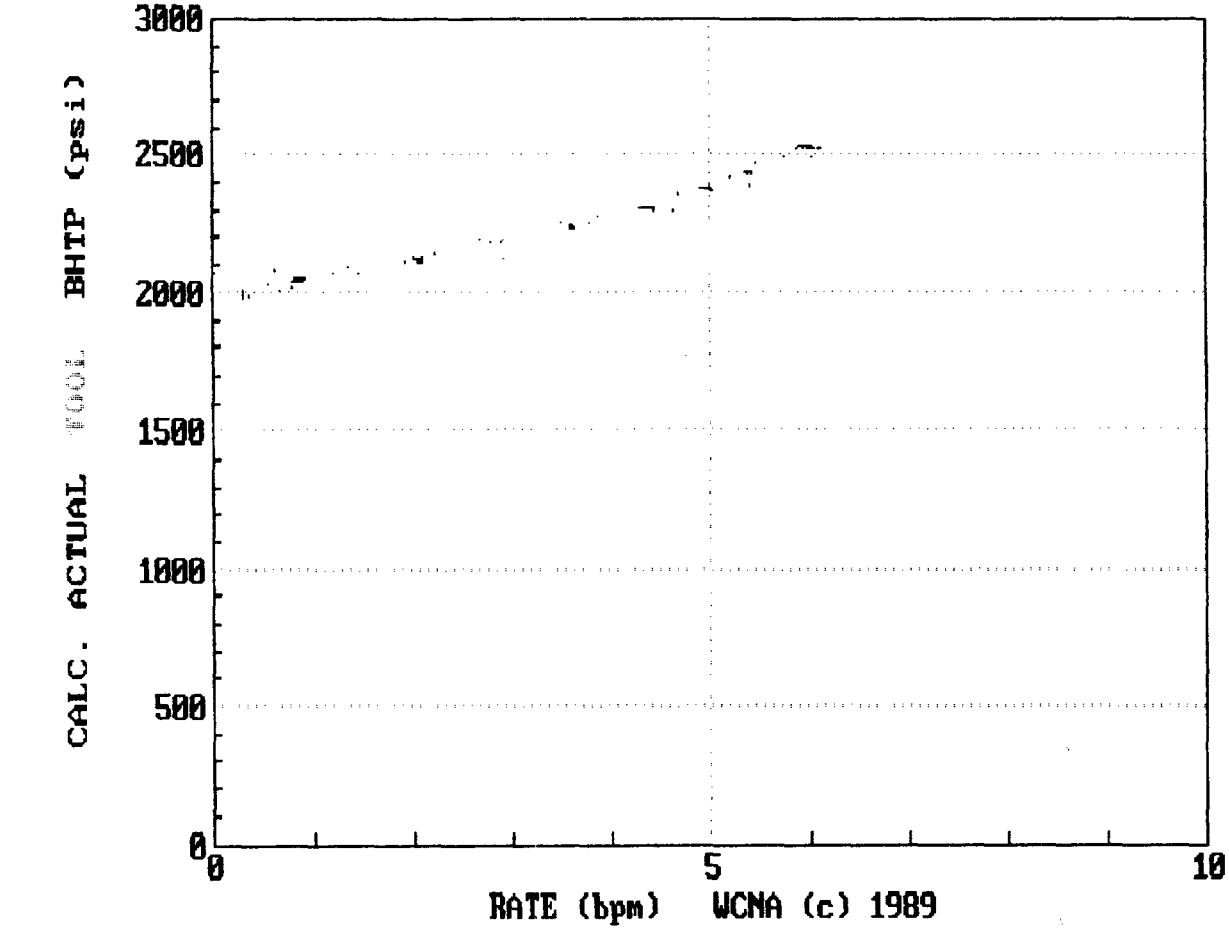
LIQUID/GAS PUMPED AND CAPACITIES IN BBLS.

Tubing Cap.	17.8
Casing Cap.	6.3
Annular Cap.	59.1
Open Hole Cap.	
Fluid to Load	
Pad Volume	
Treating Fluid	489
Flush	
Overflush	
Fluid to Recover	489
Total N^2	
Total CO_2	

Time AM/PM	Treating Pressure-Psi		Surface Slurry BBLS. Pumped		Slurry Rate BPM	Surface CO_2 BBLS. Pumped		CO_2 Rate BPM	Surface N^2 MSCF Pumped		N^2 Rate SCFM	Comments
	STP	Annulus	Stage	Total		Stage	Total		Stage	Total		
12:20	0			0	1							TEST BACK SIDE
12:21	1000	1000		2	1							SHUTDOWN
12:34	0	900		2	3.7							LOAD TUBING
12:38	0	800		17	3.7							SHUTDOWN
12:39	500	800		17	3							START ½ BPM @ 500 PSI
12:52	590	730		22	.9							START 1 BPM @ 590
1:08	700	550		35	2							START 2 BPM @ 690
1:23	790	330		65	2.9							START 2.9 BPM @ 790
1:38	880	240		110	3.6							START 3.6 @ 890
1:53	990	220		164	4.3							START 4.5 BPM @ 990
2:08	1100	210		228	5							START 5 BPM @ 1100
2:23	1190	210		300	5.4							START 5.4 BPM @ 1190
2:38	1320	210		385	6							START 5.9 BPM @ 1310
2:55	1330	210		489	6							SHUTDOWN

Treating Pressure: Min. 500 Max. 1330 Avg. 1000 Customer Representative BOB IVY
Rate on Treating Fluid ½ - 6 Rate on Flush _____ Western Representative HARRY MITCHELL
Avg. Inj. Rate _____ I.S.D.P. 600 Flush Dens. lb./gal. _____ Distribution _____
Final Shut-in Pressure 600 in 15 Minutes _____
Operator's Maximum Pressure 2500 PSI

Job Number Recommendation ID # _____


3000
2500
2000
1500
1000
500
0
CALC. ACTUAL BHTP (psi)
0
5
10
RATE (bpm)
WCNA (c) 1989

The Western Company—Treatment Report

Date 01-22-94 District FARMINGTON F. Receipt L272508 Operator BLOOMFIELD REFINERY
e MD Well No. #1 Field BASIN Location SEC 26 T29N R1W
County SAN JUAN State NM Stage Number 2 This Zone ☐ This Well ☐

WELL DATA CG☐ NG☐ NO☐ OO☐ WD☐ IW☐ Misc.☒ Depth TD/PB 3589 Formation MESA VERDE
Tubing Size 2 7/8 WT. 6.4 Set at: 3215 Type Packer FB Set At 3215
Casing Size 5.5 WT. 15.5 Set From SURFACE To TD Liner Size _____ Wt. _____
Liner Set From _____ To _____ Open Hole: Size _____ From _____ To _____ Casing Perforations: Size .50
Holes Per Foot _____ Intervals 3276 - 3514 320 HOLES
Previous Treatment _____ Prior Production _____

TREATMENT DATA Pad Used: Yes☐ No☒ Pad Type _____
Treating Fluid Type: Foam☐ Water☒ Acid☐ Oil☐ Treat. Fluid Vol. 35154 Gal.
Base Fluid Type 2% H2O Base Fluid Vol. 35154 Gal.
Foam Qual.: _____% Mitchell☐ Slurry☐ Surface☐ Downhole☐ Total Prop Qty. _____ Lbs.
Prop Type: Sand☐ WP-1☐ WP-3☐ Baux.☐ Other _____
Prop Mesh Sizes, Types and Quantities _____
Hole Loaded With H2O Treat Via: Tubing☒ Casing☐ Anul.☐ Tubing & Anul.☐
Ball Sealers: _____ In _____ Stages of _____
Types and Number of Pumps Used 1 ACID FRAC 700, 1 ACID MASTER
Auxiliary Materials H2O TEMP 42 DEGREES

PROCEDURE SUMMARY _____

LIQUID/GAS PUMPED AND CAPACITIES IN BBLS.

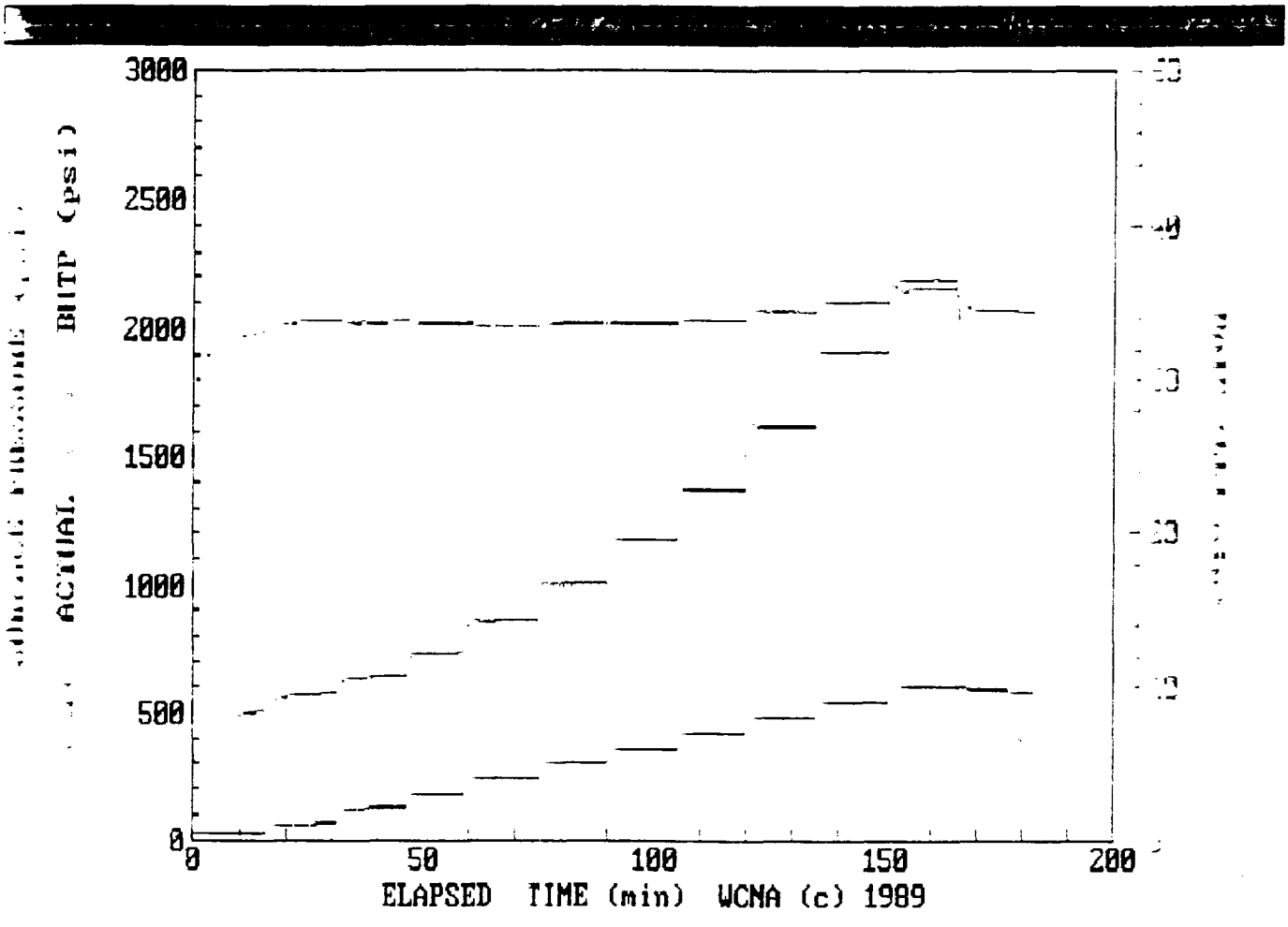
Tubing Cap. .00592 - 19.0
Casing Cap. .0238 - 1.4
Annular Cap. .0158
Open Hole Cap. _____
Fluid to Load 1.5
Pad Volume _____
Treating Fluid 35154
Flush _____
Overflush _____
Fluid to Recover 839
Total N^2 _____
Total CO_2 _____

AM/PM	Treating Pressure-Psi		Surface Slurry BBLS. Pumped		Slurry Rate BPM	Surface CO_2 BBLS. Pumped		CO_2 Rate BPM	Surface N^2 MSCF Pumped		N^2 Rate SCFM	Comments
	STP	Annulus	Stage	Total		Stage	Total		Stage	Total		
10:46	0				1.5							PUMP DOWN ANNULUS
10:49	30		7	7	2							LOAD ANNULUS
10:51	110		10	10								CAME AROUND SHUTDOWN
11:59	0				.3							PRESSURE UP BACKSIDE
	200		1.5	1.5								SHUTDOWN
12:00					.2							PRESSURE UP BACKSIDE
12:01	400		.3	.3								SHUTDOWN
12:50	0		0	9	.5							START PUMPING .5 BPM
1:08	550		16	25	1							START 1 BPM
1:23	630		32	57	2							START 2 BPM
1:38	720		35	92	3							START 3 BPM
1:52	840		68	161	4							START 4 BPM
2:07	1000		73	234	5							START 5 BPM
2:22	1150		91	325	6							START 6 BPM
2:37	1370		101	426	6							START 7 BPM
2:52	1630		121	547	7							START 8 BPM
3:07	1910		140	687	8							START 9 BPM
3:22	2180		150	837	9							START 10 BPM
3:37	600			837	10							SHUTDOWN

Treating Pressure: Min. 550 Max. 2180 Avg. 1000 Customer Representative MR SCHOFF
Rate on Treating Fluid .5 - 10 BPM Rate on Flush _____ Western Representative AARON HEPWORTH
Inj. Rate .5 - 10 BPM I.S.D.P. 600 Flush Dens. lb./gal. _____ Distribution _____
Final Shut-in Pressure _____ In _____ Minutes 5 MIN - 590 PSI
Operator's Maximum Pressure 3000 PSI 10 MIN - 590
15 MIN - 580

Job Number Recommendation ID # _____

WESTERN Co


3000
2500
2000
1500
1000
500
0
BHTP (psi)
ACTUAL
0
50
100
150
200
ELAPSED TIME (min) WCNA (c) 1989

«««««««««« THE WESTERN COMPANY OF NORTH AMERICA -- STEP RATE ANALYSIS »»»»»»»»»»
ELAPSED TIME = 182.00 min. AVE. STP. = 1213 psi. AVE. RATE = 5.9 bpm.

POINT #	RATE bpm.	PRESSURE psi.
1	1.0	2023
2	3.0	2016
3	6.0	2016
4	7.0	2027
5	10.0	2147
6	9.1	2102

ESTIMATED BOTTOMHOLE CLOSURE PRESSURE = 1746 psi.
BOTTOMHOLE FRACTURE EXTENSION PRESSURE = 2014 psi.
FRACTURE EXTENSION RATE = 6.6 bpm.

Discharge Plan GW-130, Class 1 Well
Bloomfield Refining Company
San Juan County, New Mexico

1. Discharge Plan Requirement: Prior to operation of the injection well BRC will have an approved discharge plan (GW-130) pursuant to Part 5 of the Water Quality Control Commission (WQCC) regulations. The discharge plan will include specific operational, monitoring and reporting requirements and authorization for fluids permitted for injection.

2. Area of Review: There are two wells within the area of review in which the calculated TOC is below or very near the top of the proposed injection zone which is at 3294 feet. The calculated TOC for the 4-1/2 inch longstring in the Meridian Oil Calvin Well No. 1 is at 4,662 feet. The calculated TOC for the 4-1/2 inch longstring in the Amoco Davis Gas Com Unit-F well No. 1 is at 3192 feet. Prior to injection these wells must either be cemented over the proposed injection zone or plugged in accordance with OCD rules and regulations.

3. Construction Requirements: All strings of casing will be cemented to surface with the top of cement determined by circulation.

4. Plugging Bond: A plugging bond approvable by the Division is required prior to commencing construction. The bond will be for the estimated amount required to plug the well according to the proposed closure plan and adjusted for inflation for the estimated life of the well.

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

DRUG FREE

BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

June 28, 1994

Tierra Environmental Corporation
909 W. Apache
Farmington, NM 87401

Attention: Connie Dinning

RE: Injection Pressure Increase
Bloomfield Refining SWD Well No. 1,
San Juan County, New Mexico

Dear Ms. Dinning:

Reference is made to your request dated May 13, 1994 to increase the surface injection pressure on the Bloomfield Refining SWD Well No. 1. This request is based on a step rate test conducted on this well on January 22, 1994. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on this well is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following well:

Well and Location	Maximum Injection Surface Pressure
Bloomfield Refining SWD No. 1 Unit I, Section 27, Township 29 North, Range 11 West, San Juan County, New Mexico.	955 PSIG

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,

William J. LeMay
Director

WJL/DRC/amg

cc: Oil Conservation Division - Aztec
File: SWD-528
D. Catanach

BLOOMFIELD REFINING DISPOSAL #1 1-22-94

Test #2

	Time	Rate	RSI
START	12,50 PM	.5 BPM	515
1	1.05	1 BPM	580
2	1.20	2.1 BPM	645
3	1.35	3 BPM	733
4	1.50	4.1 BPM	860
5	2.05	5 BPM	1005
6	220	6 BPM	1170
7	235	7 BPM	1372
8	250	8.5 BPM	1612
9	3.05	9.1 BPM	1910
10	2.20	10 BPM	2185

ISIP 600 15 min 590

BLOOMFIELD REF. DISPOSAL #1 1-10-94

TEST #1

PERFS. 3276-3616

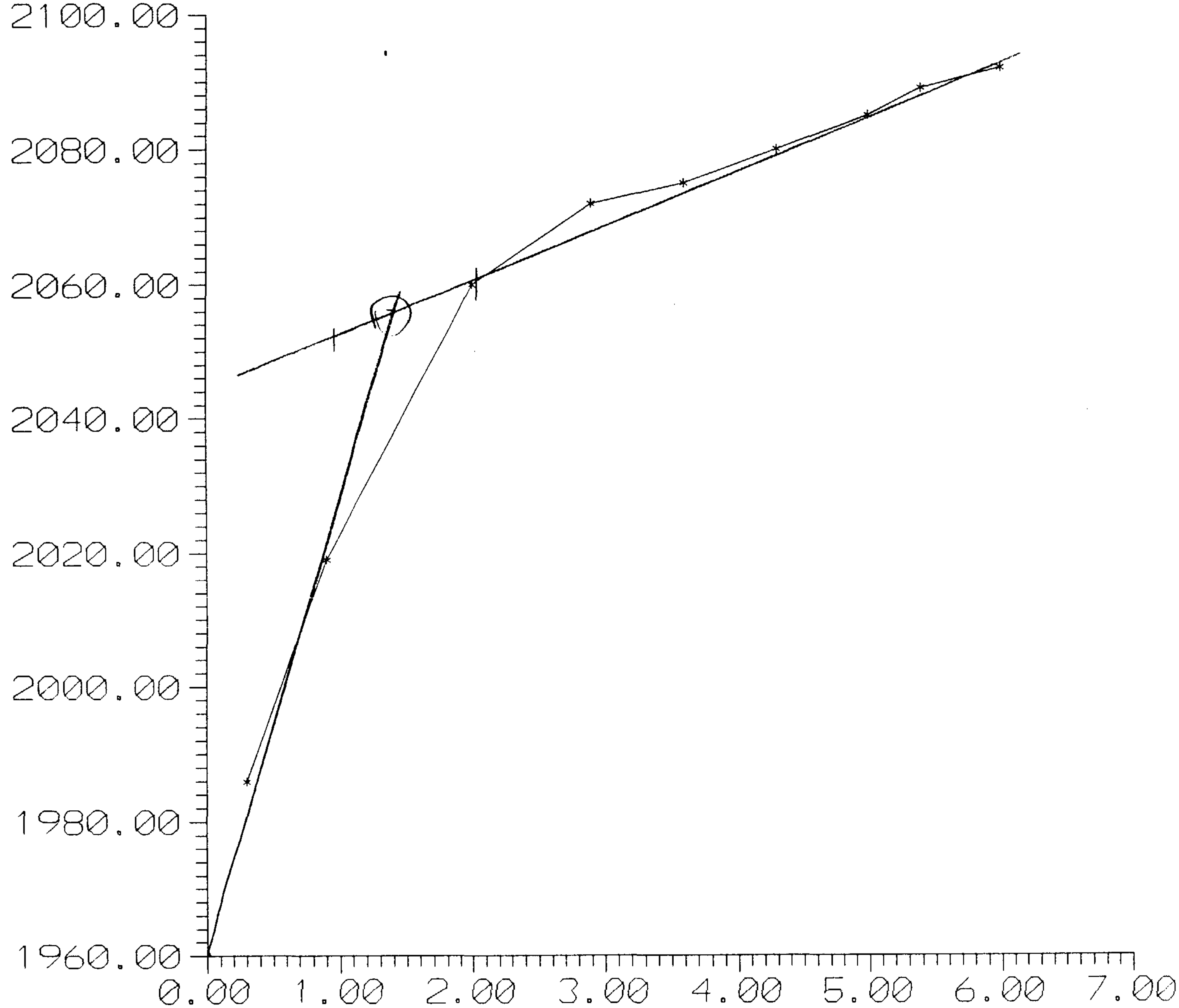
START	12.39 PM	.3 BPM	@ 500 PSI
1	12.52	.6 BPM	@ 595 PSI
2	1.08	2 BPM	@ 700 PSI
3	1.23	2.9 BPM	@ 750 PSI
4	1.38	3.6 BPM	@ 880 PSI
5	1.53	4.3 BPM	@ 990 PSI
6	2.08	5 BPM	@ 1100 PSI
7	2.23	5.4 BPM	@ 1150 PSI
8	2.38	6 BPM	@ 1320 PSI
	2.54	INSTANT SHUT IN 600 PSI AFTER	
	15 MIN. 600 PSI.		

BOTTOM PER 3514

TD 3589

70827

Bottom Hole



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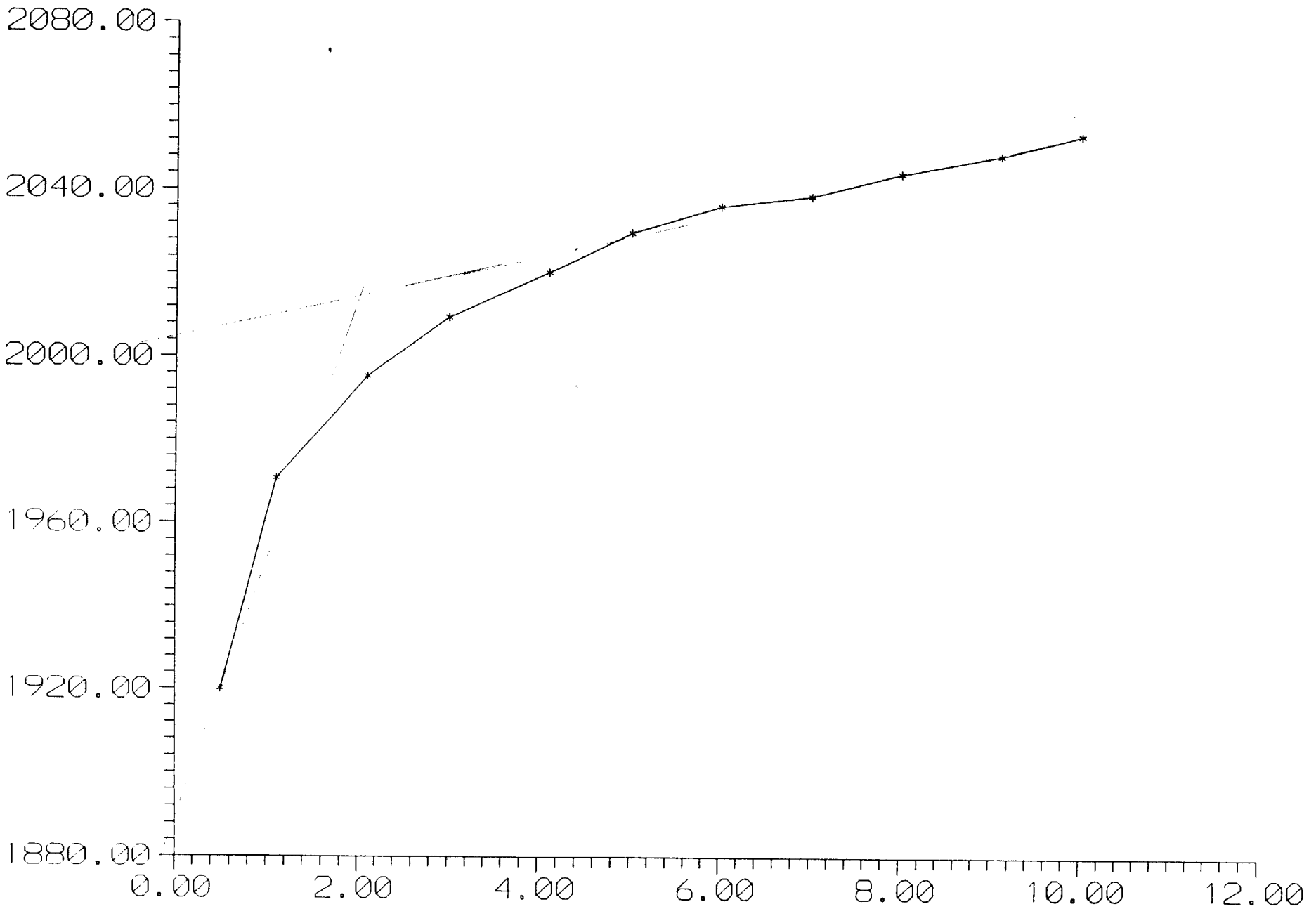
Test #2 1-22-14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