

# TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

## Drill-Stem Test Data

Well Name SELZER 16-12 Test No. 1 Date 4/28/93  
Company CODY RESOURCES INC Zone VIOLA  
Address 731 WADLEY AVE #0-114 MIDLAND TX Elevation 1762  
Co. Rep./Geo. JOHN Cont. BRANDT Est. Ft. of Pay \_\_\_\_\_  
Location: Sec. 16 Twp. 34S Rge. 20W Co. COMANCHE State KS

Interval Tested	<u>5860-5964</u>	Drill Pipe Size	<u>4.5" XH</u>
Anchor Length	<u>104</u>	Wt. Pipe I.D. - 2.7 Ft. Run	_____
Top Packer Depth	<u>5855</u>	Drill Collar - 2.25 Ft. Run	<u>530</u>
Bottom Packer Depth	<u>5860</u>	Mud Wt.	<u>9.1</u> lb/Gal.
Total Depth	<u>5964</u>	Viscosity	<u>50</u>
		Filtrate	<u>9.8</u>

Tool Open @ \_\_\_\_\_ Initial Blow MISRUN (HOLE IN PIPE)

Final Blow \_\_\_\_\_

Recovery - Total Feet \_\_\_\_\_ Flush Tool? \_\_\_\_\_

Rec. \_\_\_\_\_ Feet of \_\_\_\_\_  
Rec. \_\_\_\_\_ Feet of \_\_\_\_\_  
Rec. \_\_\_\_\_ Feet of \_\_\_\_\_  
Rec. \_\_\_\_\_ Feet of \_\_\_\_\_  
Rec. \_\_\_\_\_ Feet of \_\_\_\_\_

BHT \_\_\_\_\_ °F Gravity \_\_\_\_\_ °API @ \_\_\_\_\_ °F Corrected Gravity \_\_\_\_\_ °API  
RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm Recovery Chlorides 10000 ppm System

(A) Initial Hydrostatic Mud \_\_\_\_\_ PSI AK1 Recorder No. 13308 Range 4700

(B) First Initial Flow Pressure \_\_\_\_\_ PSI @ (depth) 5864 w / Clock No. 21061

(C) First Final Flow Pressure \_\_\_\_\_ PSI AK1 Recorder No. 11057 Range 4500

(D) Initial Shut-in Pressure \_\_\_\_\_ PSI @ (depth) 5900 w / Clock No. 17652

(E) Second Initial Flow Pressure \_\_\_\_\_ PSI AK1 Recorder No. \_\_\_\_\_ Range \_\_\_\_\_

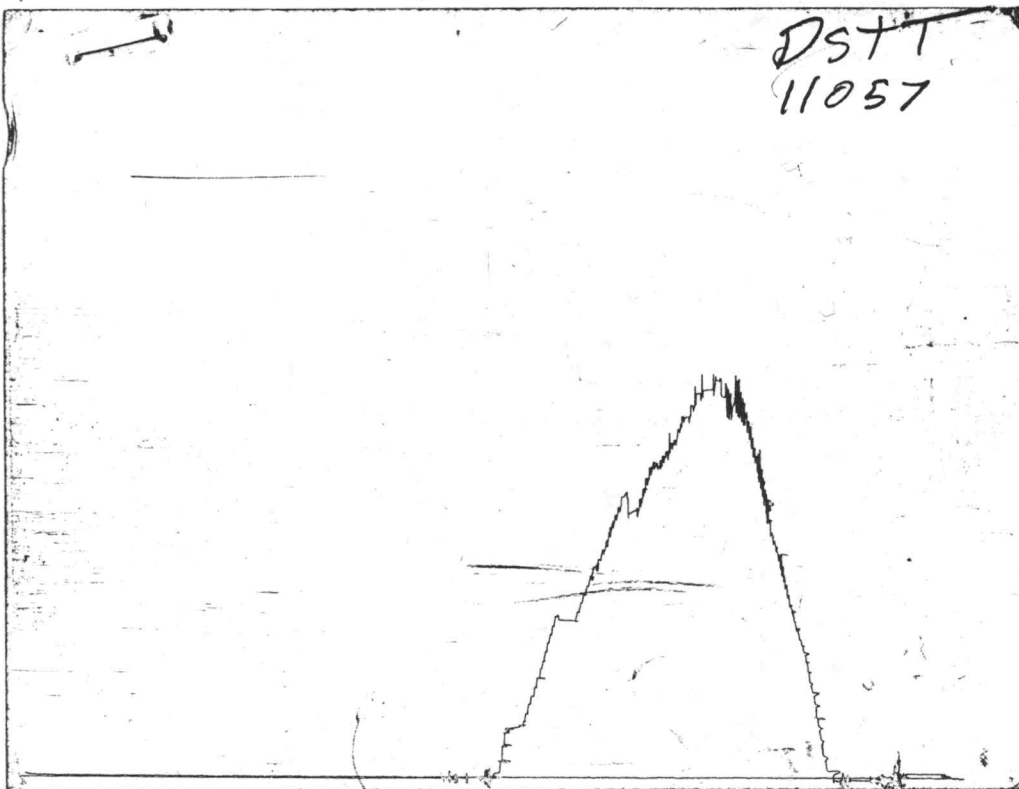
(F) Second Final Flow Pressure \_\_\_\_\_ PSI @ (depth) \_\_\_\_\_ w / Clock No. \_\_\_\_\_

(G) Final Shut-in Pressure \_\_\_\_\_ PSI Initial Opening \_\_\_\_\_ Final Flow \_\_\_\_\_

(H) Final Hydrostatic Mud \_\_\_\_\_ PSI Initial Shut-in \_\_\_\_\_ Final Shut-in \_\_\_\_\_

Our Representative MARK HERSKOWITZ

CHART PAGE



This is an actual photograph of recorder chart

FIELD  
READING

OFFICE  
READING

- (A) INITIAL HYDROSTATIC MUD
- (B) FIRST INITIAL FLOW PRESSURE
- (C) FIRST FINAL FLOW PRESSURE
- (D) INITIAL CLOSED-IN PRESSURE
- (E) SECOND INITIAL FLOW PRESSURE
- (F) SECOND FINAL FLOW PRESSURE
- (G) FINAL CLOSED-IN PRESSURE
- (H) FINAL HYDROSTATIC MUD

FLUID SAMPLER DATA

Ticket No.: 5788 Date: 4/28/93
Company: CODY RESOURCES INC
Lease: SELZER 16-12 Test No.: 1
County: COMANCHE Sec.: 16 Twp.: 34S Rng.: 20W

SAMPLER RECOVERY

Gas
Oil
Mud
Water
Other
Pressure

PIT MUD ANALYSIS

Chlorides 10000
Resistivity ohms@ F
Viscosity 50
Mud Wt. 9.1
Filtrate 9.8
Other P.H. 11.8

TOTAL

SAMPLER ANALYSIS

Resistivity ohms@ F
Chlorides ppm.
Gravity corrected @60F

PIPE RECOVERY

TOP

Resistivity ohms@ F
Chlorides ppm

MIDDLE

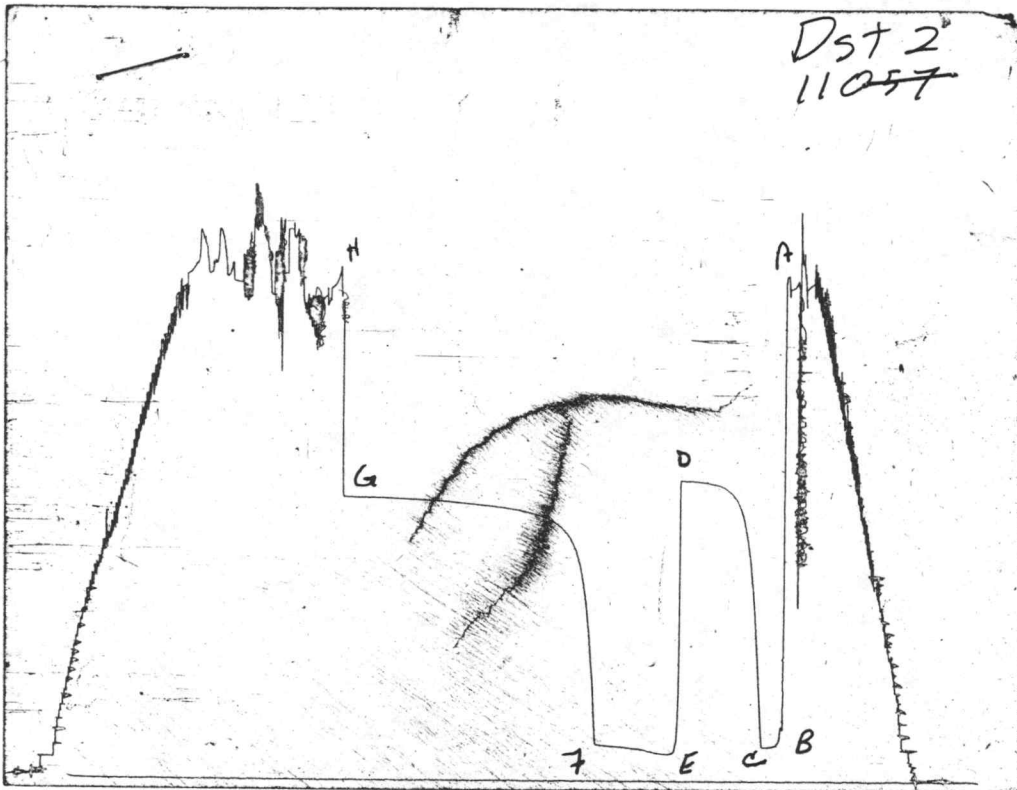
Resistivity ohms@ F
Chlorides ppm

BOTTOM

Resistivity ohms@ F
Chlorides ppm



CHART PAGE



This is an actual photograph of recorder chart

	FIELD READING	OFFICE READING
(A) INITIAL HYDROSTATIC MUD	2956	2975.6
(B) FIRST INITIAL FLOW PRESSURE	216	217.4
(C) FIRST FINAL FLOW PRESSURE	204	202.9
(D) INITIAL CLOSED-IN PRESSURE	1748	1761.2
(E) SECOND INITIAL FLOW PRESSURE	181	168.1
(F) SECOND FINAL FLOW PRESSURE	216	205.1
(G) FINAL CLOSED-IN PRESSURE	1641	1672.6
(H) FINAL HYDROSTATIC MUD	2885	2897.6

COMPUTER EVALUATION BY TRILOBITE TESTING, L.L.C.  
 CODY RESOURCES INC

SELZER 16-12 DST 2  
 16 34S 20W COMANCHE KS

\*\*\*\*\*

ELEVATION:	1762 KB	EST. PAY:	10 FT.
DATUM:	-4139	ZONE TESTED:	VIOLA 'A-B'
TEST INTERVAL:	5860-5964	TIME INTERVALS:	15-60-60-180
RECORDER DEPTH:	5900	VISCOSITY:	0.01401 CP
BOTTOM HOLE TEMP:	128	HOLE SIZE:	7.875 IN
COMPRESSIBILITY:	0.9965	GAS GRAVITY:	0.7716

\*\*\*\*\*

TEMPERATURE RANKINE:	588.00	&
TRANSMISSIBILITY:	20425.96	Kh/%
THEORITICAL FLOW CAPICITY:	286.25	Kh
AVERAGE EFFECTIVE PERMEABILITY:	28.62	K(md.)
RADIUS OF INVESTIGATION:	43.13	FT.
DAMAGE RATIO:	1.75	
ABSOLUTE OPEN FLOW(MAX)	4395.85	MCFD
ABSOLUTE OPEN FLOW(MIN)	4092.99	MCFD
THEORITICAL OPEN FLOW(MAX)	7702.85	MCFD
THEORITICAL OPEN FLOW(MIN)	7172.15	MCFD
POTENTIOMETRIC SURFACE	0.00	(FT.)

\*\*\*\*\*

INITIAL SHUT-IN VALUES:

SLOPE	54874.93
THEORETICAL STATIC PRESSURE	1777

FINAL SHUT-IN VALUES:

SLOPE	178961.57
THEORETICAL STATIC PRESSURE	1725

DRAWDOWN FACTOR: 2.93 (%)



ANALYTICAL LABORATORY, INC.  
 424 Greenwood • Wichita, Kansas 87211 • (316) 269-4200

\*\*\*\*\*  
 \*EXTENDED NATURAL GAS ANALYSIS\*  
 \*\*\*\*\*

COMPANY NAME: CODY RESOURCES INC      LAB# 9315774  
 SAMPLE ID: SELZER 16-12 / DST 2 / VIOLA A & B  
 SETT #: N/A  
 COUNTY: COMANCHE      LEGAL LOCATION: 16-34-20  
 DATE SAMPLED: N/A      SAMPLER: TRILOBITE  
 SAMPLE PRESSURE: N/A      TEMPERATURE (F): N/A  
 DATE ANALYZED: MAY 5 1993  
 QUALITY CONTROL DATE: MAY 5 1993

\*\*\*\*\*ANALYSIS\*\*\*\*\*CALCULATED AT 14.65 PSIA, AT 60 F\*\*NORMALIZED\*\*\*\*\*

HYDROCARBONS	MOLAL%	LIQUID VOLUME%	BTU AMOUNT	GPM
METHANE	75.72	69.08	762.38	0
ETHANE	6.45	9.29	113.78	0
PROPANE	3.59	5.32	90.05	.98
ISO-BUTANE	.54	.95	17.51	.18
NORMAL-BUTANE	1.43	2.43	46.5	.45
ISO-PENTANE	.48	.95	19.14	.17
NORMAL-PENTANE	.72	1.41	28.77	.26
3-METHYLPENTANE	*			
2,3-DIMETHYLBUTANE	*			
2-METHYLPENTANE	*			
CYCLOPENTANE	*			
NORMAL HEXANE	*			
HEXANES+	2.35	5.24	118.67	1.01
NITROGEN	7.73	4.58	0	0
OXYGEN	.18	.09	0	0
CARBON DIOXIDE	.62	.56	0	0
HELIUM	.19	.1	0	0
HYDROGEN	TRACE (<.01)			
<b>TOTALS*****</b>	<b>100</b>	<b>100</b>	<b>1196.8</b>	<b>3.05</b>

BTU/FT<sup>3</sup> DRY (IDEAL GROSS): 1196.8  
 BTU/FT<sup>3</sup> SATURATED (IDEAL GROSS): 1176.74  
 IDEAL SPECIFIC GRAVITY: .7716  
 COMPRESSIBILITY: .9965  
 GPM: 3.05  
 \*=COMBINED WITH HEXANES+

RESPECTFULLY SUBMITTED

*Blair O. Fournelle*

PRIORITY ANALYTICAL LAB

SELZER 16-12  
INITIAL

DST #2  
SHUTIN

GAS

15 TOTAL FLOW TIME

Slope 54874.93 psi/cycle  
P \* 1777 psi

TIME(MIN)	Pws (psi)	Log Horn T	<> PRESSURE	Horn T
3	737.7	0.778	737.7	6
6	1124.4	0.544	1124.4	4
9	1386.7	0.426	262.3	3
12	1528.1	0.352	141.4	2
15	1617.7	0.301	89.6	2
18	1656.9	0.263	39.2	2
21	1688.3	0.234	31.4	2
24	1711.8	0.211	23.5	2
27	1724.2	0.192	12.4	2
30	1737.6	0.176	13.4	2
33	1745.5	0.163	7.9	1
X 36	1752.5	0.151	7.0	1
39	1753.3	0.141	0.8	1
42	1758.9	0.133	5.6	1
45	1760.1	0.125	1.2	1
48	1760.1	0.118	0.0	1
51	1761.2	0.112	1.1	1
54	1761.2	0.106	0.0	1
57	1761.2	0.101	0.0	1
X 60	1761.2	0.097	0.0	1

SELZER 16-12  
FINAL

DST #2  
SHUTIN  
75 TOTAL FLOW TIME

-----  
Slope 178961.57 psi/cycle  
P \* 1725 psi  
-----

	Pws (psi)	Log Horn T	<> PRESSURE	Horn T	
	6	861.6	1.130	861.6	14
	12	1279.1	0.860	417.5	7
	18	1408.1	0.713	129.0	5
	24	1475.3	0.615	67.2	4
	30	1521.2	0.544	45.9	4
	36	1549.3	0.489	28.1	3
	42	1563.8	0.445	14.5	3
	48	1578.4	0.409	14.6	3
	54	1585.1	0.378	6.7	2
	60	1590.8	0.352	5.7	2
	66	1597.1	0.330	6.3	2
	72	1608.7	0.310	11.6	2
	78	1610.9	0.293	2.2	2
	84	1613.2	0.277	2.3	2
	90	1622.1	0.263	8.9	2
	96	1625.5	0.251	3.4	2
	102	1628.9	0.239	3.4	2
	108	1636.7	0.229	7.8	2
	114	1641.2	0.220	4.5	2
	120	1642.3	0.211	1.1	2
X	126	1643.4	0.203	1.1	2
	132	1644.6	0.195	1.2	2
	138	1653.5	0.189	8.9	2
	144	1656.9	0.182	3.4	2
	150	1656.9	0.176	0.0	2
	156	1656.9	0.170	0.0	1
	162	1660.3	0.165	3.4	1
	168	1660.3	0.160	0.0	1
	174	1661.4	0.156	1.1	1
	180	1662.5	0.151	1.1	1
	186	1667.1	0.147	4.6	1
	192	1671.5	0.143	4.4	1
	198	1672.6	0.139	1.1	1
X	214	1672.6	0.130	0.0	1

## COMPUTER EVALUATION BY TRILOBITE TESTING, L.L.C.

CODY RESOURCES INC      SELZER 16-12      DST 2  
 16      34S      20W      COMANCHE KS

\*\*\*\*\*  
 ELEVATION:                    1762 KB                    EST. PAY                    10 FT  
 DATUM:                        -4139                      ZONE TESTED:                VIOLA 'A-B'  
 TEST INTERVAL:                5860-5964                    TIME INTERVALS:             15-60-60-180  
 RECORDER DEPTH:                5900                        VISCOSITY:                    0.795 CP  
 BOTTOM HOLE TEMP:              128                         HOLE SIZE:                    7.875 IN

\*\*\*\*\*  
 CUBIC FEET OF GAS IN PIPE:                    5990  
 TOTAL FEET OF RECOVERY:                    577.00      CORRECTED PIPE FILLUP:                    577.746  
 TOTAL BARRELS OF RECOVERY:                    2.82      CORR. BARRELS OF RECOVERY:                2.822 BBL  
 BARRELS IN DRILL PIPE:                    0.00      API GRAVITY:                    41  
 BARRELS IN WEIGHT PIPE:                    0.00      FLUID GRADIENT:                    0.355  
 BARRELS IN DRILL COLLARS:                    2.82  
 GAS OIL RATIO:                    2122.81      CU.FT/BBL  
 BUBBLE POINT PRESSURE:                    1725  
 UNCORRECTED INITIAL PRODUCTION:                    54.17 BBL  
 INITIAL PRODUCTION CORRECTED TO FINAL FLOW PRESSURE:                    54.17 BBL/DAY  
 INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:                    19.725

\*\*\*\*\*  
 INITIAL SLOPE                    165.57 PSI/CYCL      FINAL SLOPE                    403.64 PSI/CYCLE  
 INITIAL P\*                        1777 PSI                    FINAL P\*                        1725 PSI

\*\*\*\*\*  
 TRANSMISSIBILITY                    21.82 (MD.-FT./CP.)  
 PERMEABILITY                        1.73 (MD.)  
 INDICATED FLOW CAPACITY                    17.34 (MD.FT)  
 PRODUCTIVITY INDEX                    0.02 (BARREL/DAY/PSI)  
 DAMAGE RATIO                        0.69  
 RADIUS OF INVESTIGATION                    11.41 (FT,)  
 POTENTIOMETRIC SURFACE                    -137.10 (FT.)  
 DRAWDOWN FACTOR                    2.925 (%)

## INITIAL FLOW

RECORDER # 11057

DST # 2

TIME(MIN)

&lt;&gt; PRESSURE

TIME(MIN)		<> PRESSURE
3	217.4	217.4
6	204.1	-13.3
9	202.9	-1.2
12	202.9	0
15	202.9	0

## FINAL FLOW

RECORDER # 11057

DST # 2

TIME(MIN)

&lt;&gt; PRESSURE

TIME(MIN)		<> PRESSURE
3	168.1	168.1
6	168.1	0
9	168.1	0
12	168.1	0
15	168.1	0
18	168.1	0
21	168.1	0
24	171.5	3.4
27	174.8	3.3
30	182.7	7.9
33	187.2	4.5
36	190.5	3.3
39	192.8	2.3
42	196.1	3.3
45	199.5	3.4
48	202.9	3.4
51	205.1	2.2
54	205.1	0
57	205.1	0
60	205.1	0

# DELTA T DELTA P

FINAL FLOW / DST #2



---SELZER 16-12

INITIAL PRODUCTION CORRECTED TO PSEUDO STEADY FLOW STATE:

19.725

SELZER 16-12  
INITIAL

DST #2  
SHUTIN  
15 INITIAL FLOW TIME

OIL

-----  
Slope            165.57 psi/cycle  
P \*                1777 psi  
-----

TIME(MIN)	Pws (psi)	Log Horn T	<> PRESSURE	Horn T
3	737.7	0.778	737.7	6
6	1124.4	0.544	386.7	4
9	1386.7	0.426	262.3	3
12	1528.1	0.352	141.4	2
15	1617.7	0.301	89.6	2
18	1656.9	0.263	39.2	2
21	1688.3	0.234	31.4	2
24	1711.8	0.211	23.5	2
27	1724.2	0.192	12.4	2
30	1737.6	0.176	13.4	2
33	1745.5	0.163	7.9	1
X 36	1752.2	0.151	6.7	1
39	1753.3	0.141	1.1	1
42	1758.9	0.133	5.6	1
45	1760.1	0.125	1.2	1
48	1760.1	0.118	0.0	1
51	1761.2	0.112	1.1	1
54	1761.2	0.106	0.0	1
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SELZER 16-12  
FINAL

DST #2  
SHUTIN

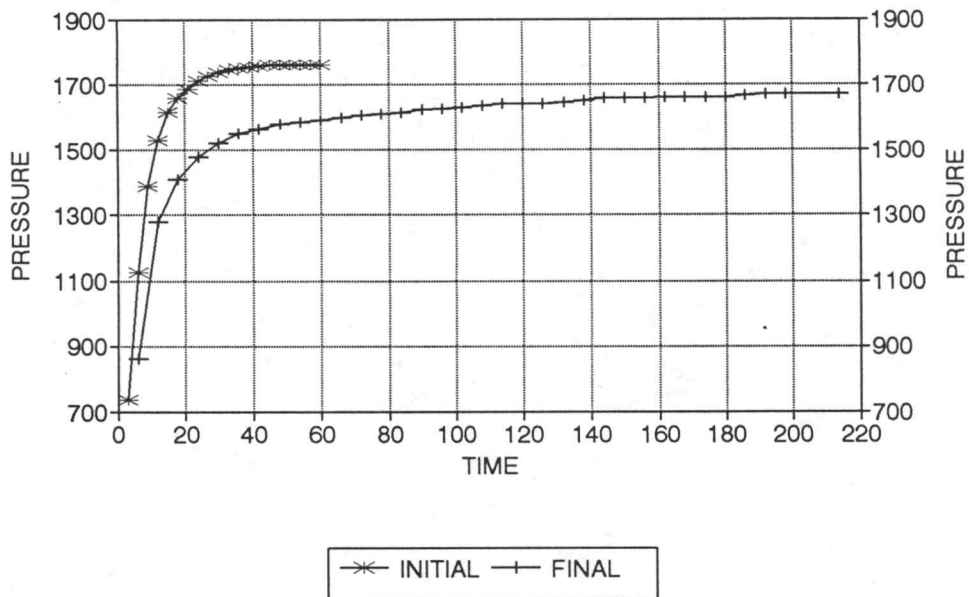
OIL

75 TOTAL FLOW TIME

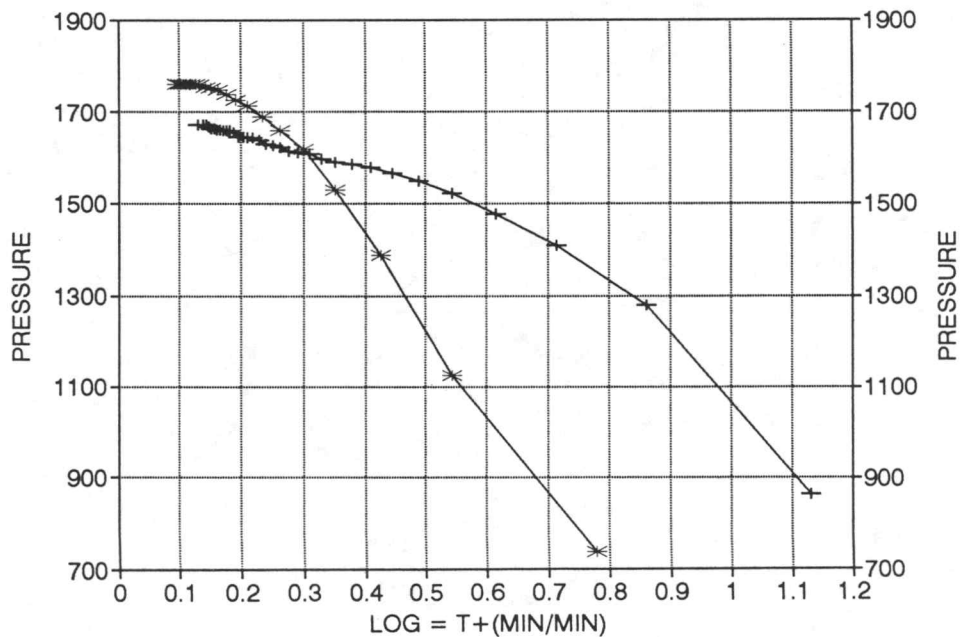
-----  
Slope 403.64 psi/cycle  
P \* 1725 psi  
-----

	Pws (psi)	Log Horn T	<> PRESSURE	Horn T	
	-----	-----	-----	-----	
	6	861.6	1.130	861.6	14
	12	1279.1	0.860	417.5	7
	18	1408.1	0.713	129.0	5
	24	1475.3	0.615	67.2	4
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	168	1660.3	0.160	0.0	1
	174	1661.4	0.156	1.1	1
	180	1662.5	0.151	1.1	1
	186	1667.1	0.147	4.6	1
	192	1671.5	0.143	4.4	1
	198	1672.6	0.139	1.1	1
X	214	1672.6	0.130	0.0	1

# SELZER 16-12/ DST #2 DELTA T DELTA P



# HORNER PLOT



# FLUID SAMPLER DATA

Ticket No.: 5789 Date: 4/29/93  
Company: CODY RESOURCES INC  
Lease: SELZER 16-12 Test No.: 2  
County: COMANCHE Sec.: 16 Twp.: 34S Rng.: 20W

## SAMPLER RECOVERY

Gas 2.77 CF  
Oil 300  
Mud 1400  
Water  
Other  
Pressure 900  
TOTAL 4000

## PIT MUD ANALYSIS

Chlorides 10000  
Resistivity ohms@ F  
Viscosity 50  
Mud Wt. 9.1  
Filtrate 9.8  
Other P.H. 1

## SAMPLER ANALYSIS

Resistivity ohms@ F  
Chlorides ppm.  
Gravity corrected @60F

## PIPE RECOVERY

### TOP

Resistivity ohms@ F  
Chlorides ppm

### MIDDLE

Resistivity ohms@ F  
Chlorides ppm

### BOTTOM

Resistivity ohms@ F  
Chlorides ppm

# TRILOBITE TESTING COMPANY

P.O. Box 362 - Hays, Kansas 67601

## FLUID SAMPLER DATA

Ticket No. 5789 Date 4-29-93  
Company Name Cody RES INC  
Lease Selzer 14-12 Test No. 2  
County COMANCHE Sec. 16 Twp. 34 Rng. 12

### SAMPLER RECOVERY

Gas 2.77 G.F.  
Oil 300 ML  
Mud 1400 ML  
Water — ML  
Other — ML  
Pressure 900 PSI  
Total 4000 ML

### PIT MUD ANALYSIS

Chlorides 10000 ppm.  
Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Viscosity 30  
Mud Weight 9.1  
Filtrate 8.9 2cm  
Other PH 11.8

### SAMPLER ANALYSIS

Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Chlorides \_\_\_\_\_ ppm.  
Gravity \_\_\_\_\_ corrected @ 60 F

### PIPE RECOVERY

TOP  
Resistivity GAS OIL C MUD ohms @ \_\_\_\_\_ F  
Chlorides 2% OIL 5% GAS ppm.  
93% MUD  
MIDDLE  
Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Chlorides \_\_\_\_\_ ppm.  
BOTTOM  
Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Chlorides \_\_\_\_\_ ppm.

# GAS VOLUME REPORT

CODY RESOURCES INC

SELZER 16-12

DST # 2

MIN	WATER	ORIFICE	MCF/D	MIN	PSIG	ORIFICE	MCF/D
0		1	0	2	3.5	1	263
5	18	1	110	5	3	1	242
10	20	1	115	10	3	1	242
15	20	1	115	15	2.5	1	220
				20	2	1	195
					WATER		
				25	20	1	115
				30	20	1	115
				35	20	1	115
				40	20	1	115
				45	20	1	115
				50	20	1	115
				55	20	1	115
				60	20	1	115

Remarks: GAS TO SURFACE ON FIRST SHUTIN