

## DRILL-STEM TEST DATA

**Well Name:** BEDFORD B-1  
**Company :** HELMERICH & PAYNE INC  
**Location - Sec:** 9                      **Twp:** 26S                      **Rge:** 34W  
**County:** FINNEY                      **State:** KS  
**Date:** 07/26/95

TRILOBITE TESTING L.L.C.

OPERATOR : Helmerich & Payne Inc.

DATE 7-25-95

WELL NAME: Bedford B-1

KB 2961.00 ft TICKET NO: 8173 DST #1

LOCATION : 9-26S-34W, Finney Cty KS

GR 0.00 ft FORMATION: Morrow Sand

INTERVAL : 4828.00 To 4865.00 ft

TD 4865.00 ft TEST TYPE: CONVENTIONAL

RECORDER DATA

Mins	Field	1	2	3	4	TIME DATA-----
PF 15 Rec.	AK-1	AK-1	Alpine			PF Fr. 15 to hr
SI 60 Range(Psi )	3975.0	3975.0	4995.0	0.0	0.0	IS Fr. to 1 hr
SF 60 Clock(hrs)	30418	30418				SF Fr. to 1 hr
FS 120 Depth(ft )	4862.0	4862.0	4832.0	0.0	0.0	FS Fr. to 2 hr

	Field	1	2	3	4	
A. Init Hydro	2328.0	2328.0	2262.0	0.0	0.0	T STARTED 9:30 hr
B. First Flow	98.0	88.0	39.0	0.0	0.0	T ON BOTM 12:1 hr
B1. Final Flow	118.0	111.0	94.0	0.0	0.0	T OPEN 12:1 hr
C. In Shut-in	1709.0	1702.0	1757.0	0.0	0.0	T PULLED 4:34 hr
D. Init Flow	207.0	200.0	128.0	0.0	0.0	T OUT 8:30 hr
E. Final Flow	247.0	242.0	235.0	0.0	0.0	
F. Fl Shut-in	1679.0	1670.0	1726.0	0.0	0.0	
G. Final Hydro	2288.0	2313.0	2242.0	0.0	0.0	
Inside/Outside	0	0	I			

TOOL DATA-----

Tool Wt.	18000.00 lbs
Wt Set On Packer	20000.00 lbs
Wt Pulled Loose	100000.00 lbs
Initial Str Wt	97000.00 lbs
Unseated Str Wt	70000.00 lbs
Bot Choke	7.50 in
Hole Size	7.88 in
D Col. ID	2.25 in
D. Pipe ID	3.80 in
D.C. Length	718.00 ft
D.P. Length	4147.00 ft
H.W. I.D	2.70 in

RECOVERY

Tot Fluid 870.00 ft of 718.00 ft in DC and 152.00 ft in DP  
 4685.00 ft of Gas in Pipe  
 420.00 ft of Clean Oil - 100% oil  
 330.00 ft of Oil Cut Gas - 80% gas, 20% oil  
 120.00 ft of Mud Cut Oil & Gas - 40% gas, 40% oil, 20% mud  
 0.00 ft of  
 0.00 ft of  
 0.00 ft of

Est Ft of Pay 10'

SALINITY 0.00 P.P.M. A.P.I. Gravity 27.50

MUD DATA-----

Mud Type	Chemical
Weight	9.00 lb/c
Vis.	42.00 S/L
W.L.	8.80 in3
F.C.	0.00 in
Mud Drop Y	30.0 ft
Amt. of fill	0.00 ft
Btm. H. Temp.	122.00 F
Hole Condition	Good
% Porosity	0.00
Packer Size	6.75 in
No. of Packers	2
Cushion Amt.	0.00
Cushion Type	
Reversed Out N	
Tool Chased N	
Tester	Mike Colantonio
Co. Rep.	Ken LeBlane
Contr.	Cheyenne Drlg.
Rig #	5
Unit #	
Pump T.	

BLOW DESCRIPTION

Initial Blow -  
 Strong blow, bottom of bucket in 2 min

Initial Shutin -  
 Bled off 2", surface blow back built to bottom of bucket in 48 min

Final Blow -  
 Strong blow, bottom of bucket in 2 min

Final Shutin -  
 Bled off 2", surface blow back built to bottom of bucket in 49 min

SAMPLES:

SENT TO:

Test Successful: Y

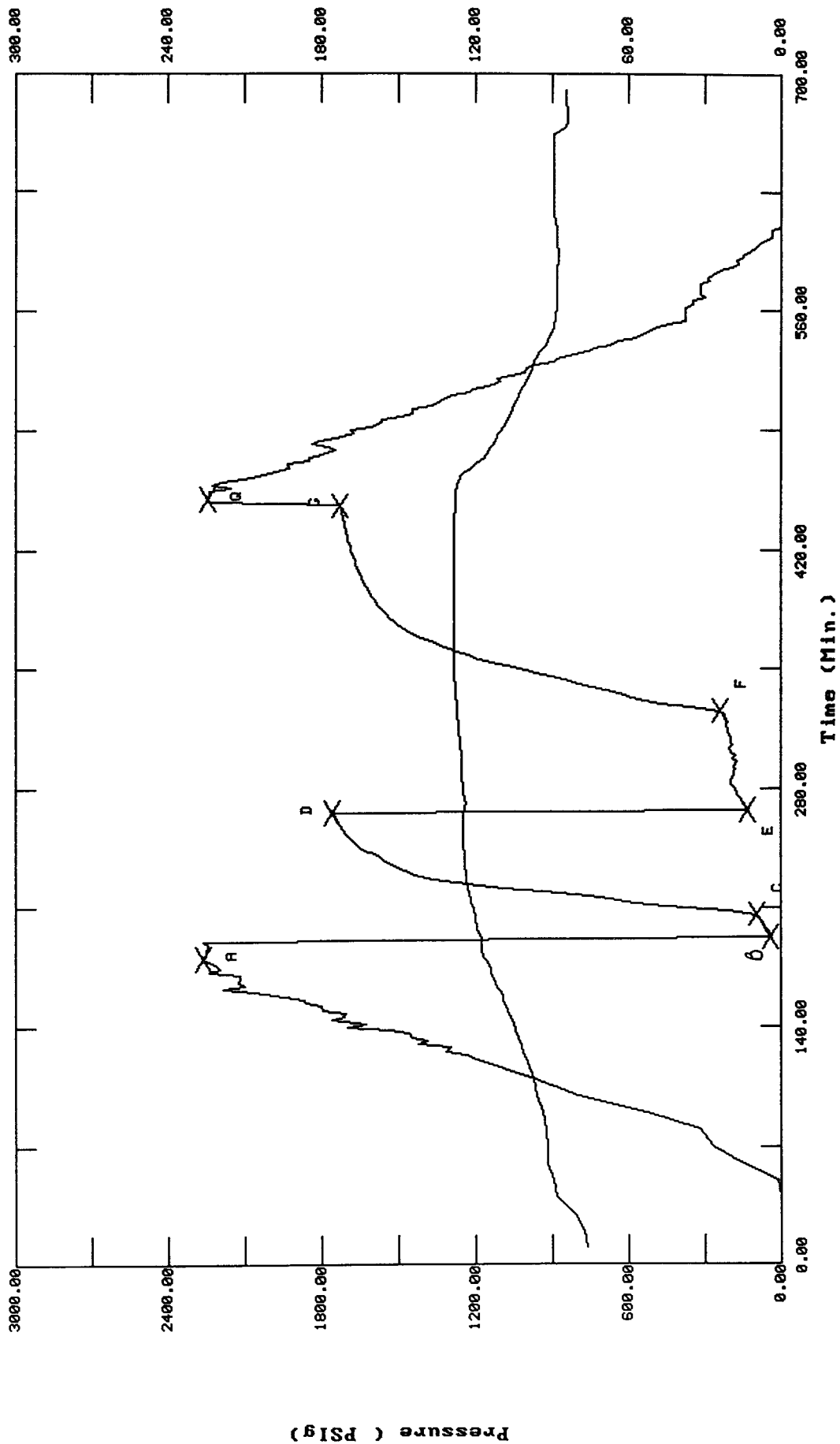
# TEST HISTORY

#8173 DST #1 Bedford B-1 Helmerich & Payne Inc.

Flag Points

t (Min.) P (PSig)

A:	0.00	2261.76
B:	0.00	39.02
C:	14.00	93.74
D:	60.00	1756.85
E:	0.00	128.48
F:	58.00	234.99
G:	120.00	1726.05
Q:	0.00	2241.79





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 ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: #8173 DST #1 Bedford B-1 Helmerich & Payne Inc.

DATE: 07/25/95 TIME: 08:07:10  
 -----

	Time	Pressure PSig	delta P PSig	Temp. DEG F	(T+dT)/dT	P^2/10^6
***** Initial Hydro.	180.00	2261.8	0.0	116.24		
***** Start Flow 1	0.00	39.0	0.0	117.68		
	2.00	39.9	0.8	118.04		
	4.00	48.6	9.6	118.58		
	6.00	57.4	18.4	119.12		
	8.00	67.2	28.2	119.48		
	10.00	76.9	37.9	119.66		
	12.00	85.4	46.4	119.84		
***** End Flow 1	14.00	93.7	54.7	120.02		
***** Start Shutin 1	0.00	93.7	0.0	120.02	0.0000	0.009
	2.00	207.1	113.4	120.38	8.0000	0.043
	4.00	372.7	279.0	120.56	4.5000	0.139
	6.00	520.3	426.5	121.10	3.3333	0.271
	8.00	611.8	518.1	121.46	2.7500	0.374
	10.00	704.8	611.1	121.82	2.4000	0.497
	12.00	810.0	716.2	122.18	2.1667	0.656
	14.00	937.0	843.2	122.54	2.0000	0.878
	16.00	1090.6	996.9	122.72	1.8750	1.189
	18.00	1229.9	1136.1	123.08	1.7778	1.513
	20.00	1327.0	1233.2	123.26	1.7000	1.761
	22.00	1393.0	1299.3	123.44	1.6364	1.941
	24.00	1440.9	1347.2	123.62	1.5833	2.076
	26.00	1477.5	1383.8	123.80	1.5385	2.183
	28.00	1506.9	1413.2	123.98	1.5000	2.271
	30.00	1530.6	1436.8	124.16	1.4667	2.343
	32.00	1553.3	1459.6	124.16	1.4375	2.413
	34.00	1573.1	1479.3	124.34	1.4118	2.474
	36.00	1591.9	1498.1	124.34	1.3889	2.534
	38.00	1630.6	1536.9	124.34	1.3684	2.659
	40.00	1652.0	1558.3	124.52	1.3500	2.729
	42.00	1667.9	1574.2	124.52	1.3333	2.782
	44.00	1681.2	1587.5	124.52	1.3182	2.827
	46.00	1693.1	1599.3	124.52	1.3043	2.866
	48.00	1703.2	1609.5	124.52	1.2917	2.901
	50.00	1713.0	1619.3	124.52	1.2800	2.935
	52.00	1723.5	1629.8	124.70	1.2692	2.971
	54.00	1732.7	1638.9	124.70	1.2593	3.002
	56.00	1740.6	1646.8	124.70	1.2500	3.030
	58.00	1748.9	1655.1	124.70	1.2414	3.059
***** End Shut-in 1	60.00	1756.9	1663.1	124.70	1.2333	3.087
***** Start Flow 2	0.00	128.5	0.0	124.34		
	2.00	133.7	5.2	123.98		
	4.00	147.4	18.9	123.80		
	6.00	153.8	25.3	123.98		
	8.00	163.7	35.2	124.16		
	10.00	171.2	42.7	124.52		
	12.00	180.1	51.6	124.70		
	14.00	187.4	58.9	124.88		
	16.00	193.6	65.1	124.88		
	18.00	196.6	68.1	125.06		
	20.00	186.3	57.8	125.06		

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

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	Time	Pressure PSig	delta P PSig	Temp. DEG F	(T+dT)/dT	P^2/10^6
	22.00	180.9	52.4	125.06		
	24.00	175.3	46.8	125.06		
	26.00	181.1	52.6	125.24		
	28.00	174.6	46.2	125.24		
	30.00	189.1	60.6	125.24		
	32.00	180.1	51.6	125.42		
	34.00	192.9	64.5	125.60		
	36.00	200.5	72.0	125.78		
	38.00	191.3	62.9	125.96		
	40.00	194.1	65.6	126.14		
	42.00	198.0	69.5	126.14		
	44.00	201.6	73.1	126.32		
	46.00	205.7	77.2	126.50		
	48.00	208.1	79.6	126.50		
	50.00	212.4	83.9	126.68		
	52.00	215.6	87.1	126.68		
	54.00	219.2	90.7	126.86		
	56.00	221.1	92.7	126.86		
***** End Flow 2	58.00	235.0	106.5	127.04		
***** Start Shutin 2	0.00	235.0	0.0	127.04	0.0000	0.055
	2.00	359.7	124.7	127.22	37.0000	0.129
	4.00	470.7	235.7	127.22	19.0000	0.222
	6.00	533.8	298.8	127.40	13.0000	0.285
	8.00	584.5	349.5	127.58	10.0000	0.342
	10.00	635.1	400.1	127.58	8.2000	0.403
	12.00	688.0	453.0	127.76	7.0000	0.473
	14.00	741.5	506.5	127.94	6.1429	0.550
	16.00	795.5	560.6	127.94	5.5000	0.633
	18.00	850.7	615.7	128.12	5.0000	0.724
	20.00	906.6	671.6	128.12	4.6000	0.822
	22.00	964.1	729.1	128.12	4.2727	0.929
	24.00	1023.4	788.4	128.30	4.0000	1.047
	26.00	1081.4	846.4	128.30	3.7692	1.169
	28.00	1136.1	901.1	128.30	3.5714	1.291
	30.00	1185.5	950.5	128.48	3.4000	1.405
	32.00	1228.9	994.0	128.48	3.2500	1.510
	34.00	1269.0	1034.0	128.48	3.1176	1.610
	36.00	1304.3	1069.3	128.48	3.0000	1.701
	38.00	1335.7	1100.7	128.48	2.8947	1.784
	40.00	1374.1	1139.1	128.48	2.8000	1.888
	42.00	1408.5	1173.5	128.48	2.7143	1.984
	44.00	1438.7	1203.7	128.48	2.6364	2.070
	46.00	1463.5	1228.5	128.48	2.5652	2.142
	48.00	1484.8	1249.9	128.48	2.5000	2.205
	50.00	1503.3	1268.3	128.48	2.4400	2.260
	52.00	1519.5	1284.5	128.48	2.3846	2.309
	54.00	1534.1	1299.1	128.48	2.3333	2.353
	56.00	1547.5	1312.5	128.48	2.2857	2.395
	58.00	1559.9	1324.9	128.48	2.2414	2.433
	60.00	1571.7	1336.7	128.48	2.2000	2.470
	62.00	1582.1	1347.1	128.48	2.1613	2.503

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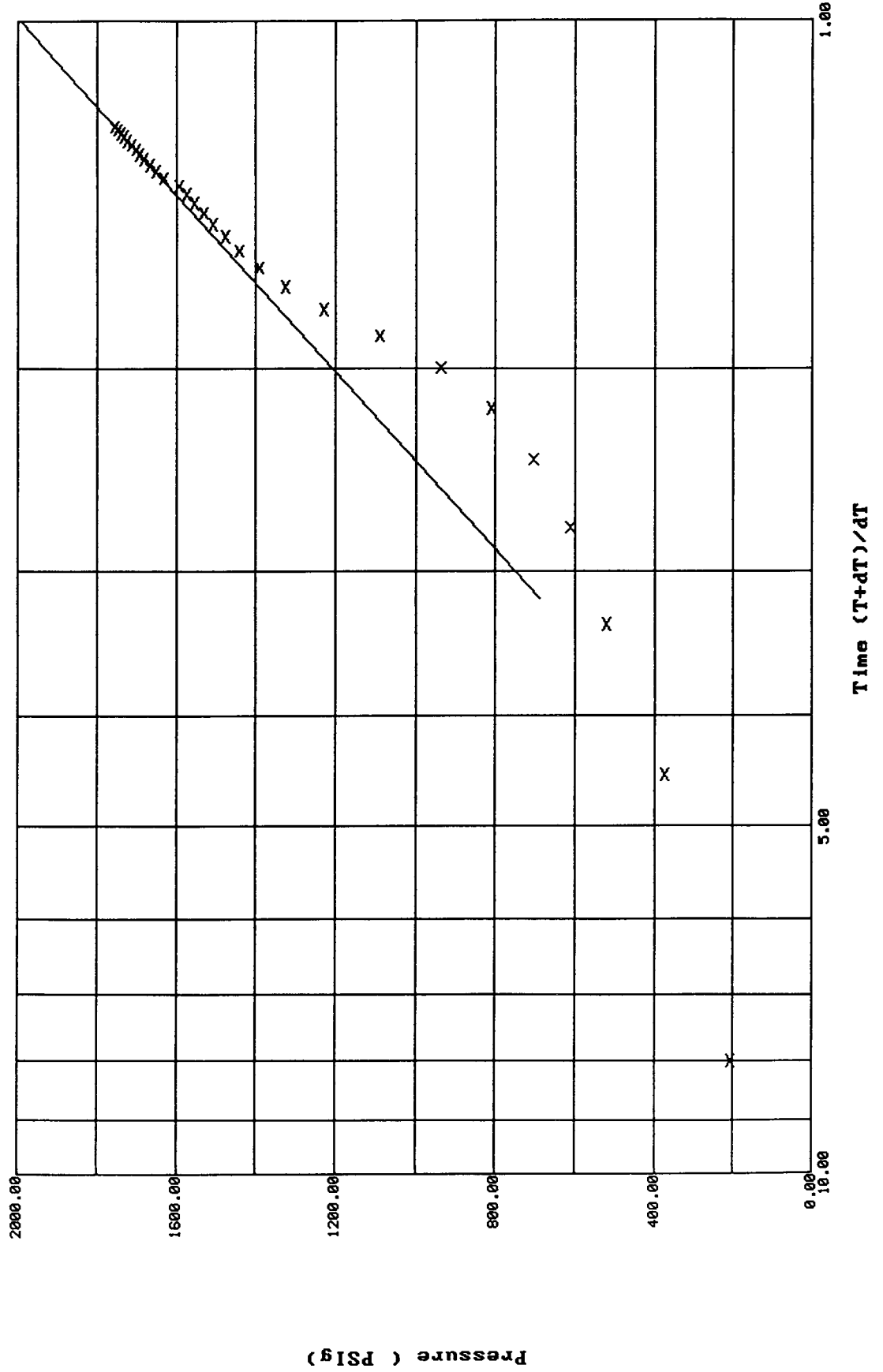
	Time	Pressure PSig	delta P PSig	Temp. DEG F	(T+dT)/dT	P <sup>2</sup> /10 <sup>6</sup>
	64.00	1591.9	1356.9	128.48	2.1250	2.534
	66.00	1600.7	1365.8	128.48	2.0909	2.562
	68.00	1609.0	1374.0	128.48	2.0588	2.589
	70.00	1616.6	1381.6	128.48	2.0286	2.613
	72.00	1624.0	1389.0	128.48	2.0000	2.637
	74.00	1631.0	1396.0	128.48	1.9730	2.660
	76.00	1637.5	1402.5	128.48	1.9474	2.681
	78.00	1643.7	1408.7	128.48	1.9231	2.702
	80.00	1649.5	1414.5	128.48	1.9000	2.721
	82.00	1655.0	1420.0	128.30	1.8780	2.739
	84.00	1660.3	1425.3	128.30	1.8571	2.757
	86.00	1665.5	1430.5	128.30	1.8372	2.774
	88.00	1670.2	1435.2	128.30	1.8182	2.789
	90.00	1674.9	1439.9	128.30	1.8000	2.805
	92.00	1679.3	1444.3	128.30	1.7826	2.820
	94.00	1683.5	1448.5	128.30	1.7660	2.834
	96.00	1687.7	1452.7	128.30	1.7500	2.848
	98.00	1691.6	1456.6	128.12	1.7347	2.861
	100.00	1695.4	1460.4	128.12	1.7200	2.874
	102.00	1698.9	1464.0	128.12	1.7059	2.886
	104.00	1702.6	1467.6	128.12	1.6923	2.899
	106.00	1705.9	1470.9	128.12	1.6792	2.910
	108.00	1709.3	1474.3	128.12	1.6667	2.922
	110.00	1712.3	1477.3	128.12	1.6545	2.932
	112.00	1715.3	1480.3	128.12	1.6429	2.942
	114.00	1717.9	1482.9	128.12	1.6316	2.951
	116.00	1720.9	1485.9	127.94	1.6207	2.962
	118.00	1723.4	1488.4	127.94	1.6102	2.970
***** End Shut-in 2	120.00	1726.1	1491.1	127.94	1.6000	2.979
***** Final Hydro.	450.00	2241.8	0.0	127.76		

# Horner Plot: shut-in #1

#8173 DST #1 Bedford B-1 Helmerich & Payne Inc.

Slope: 2610.2209 PSig/cycle

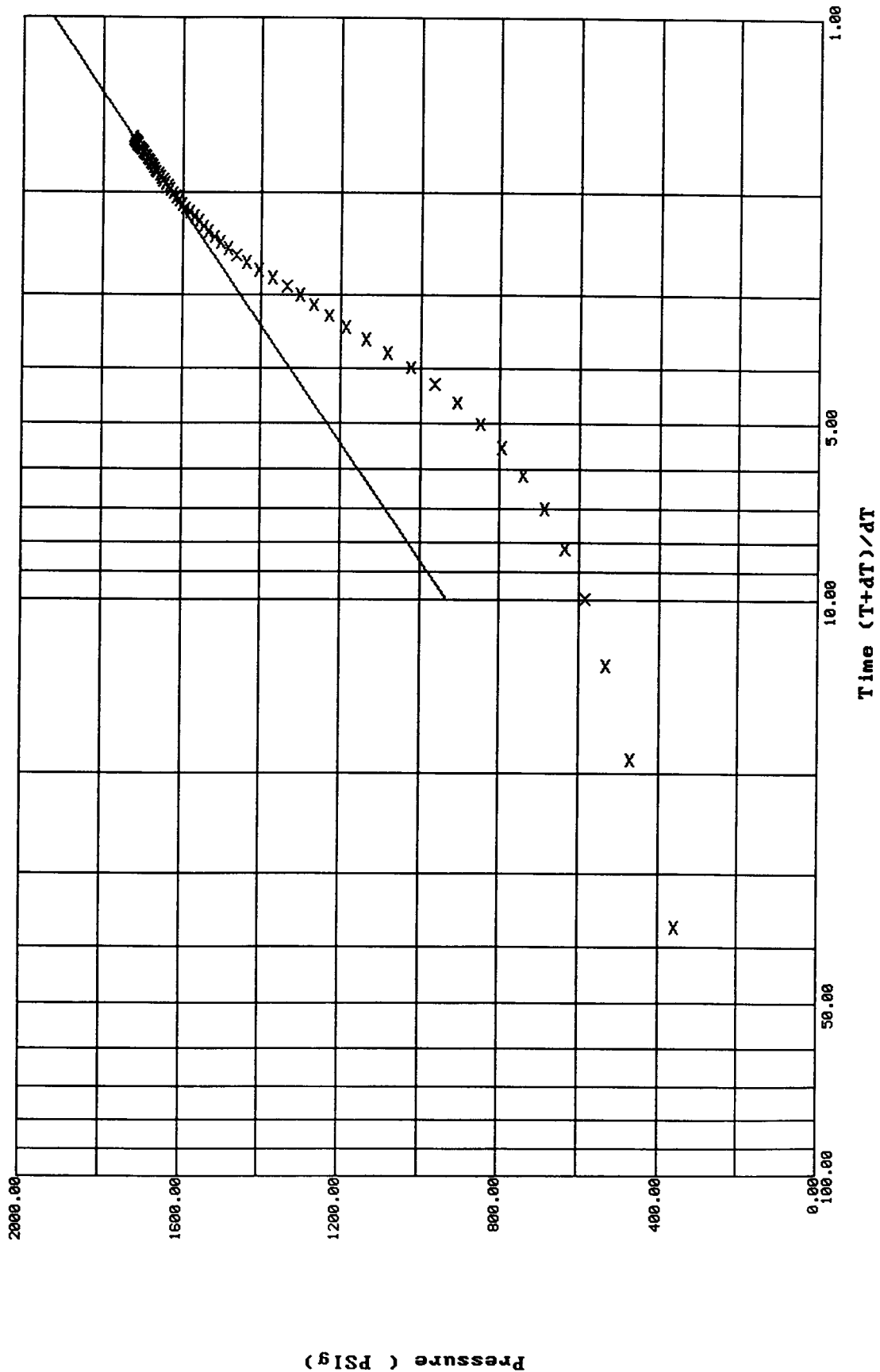
Ext. Pressure: 1993.8818 PSig



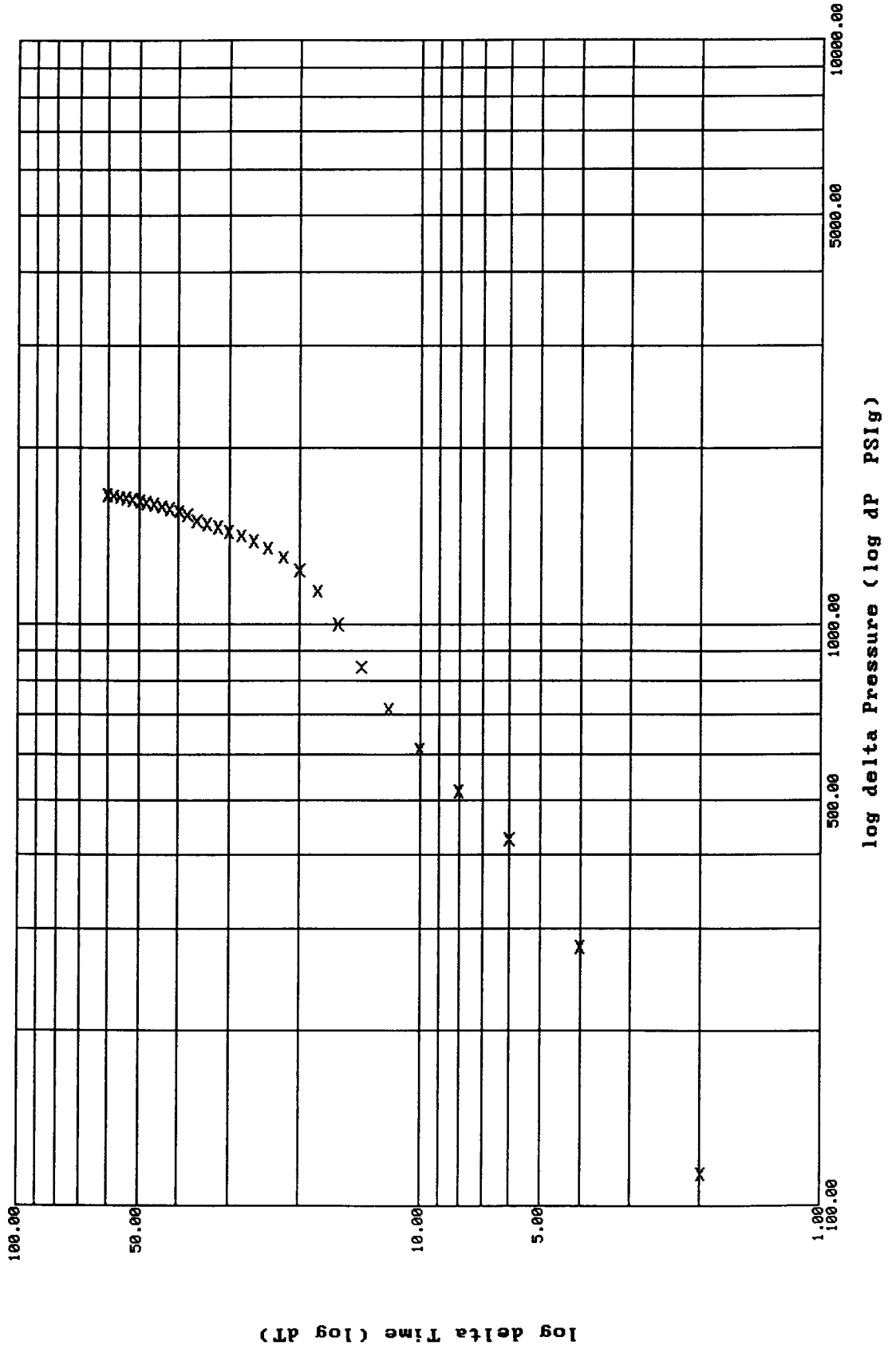
# Horner Plot: shut-in #2

#8173 DST #1 Bedford B-1 Helmerich & Payne Inc.

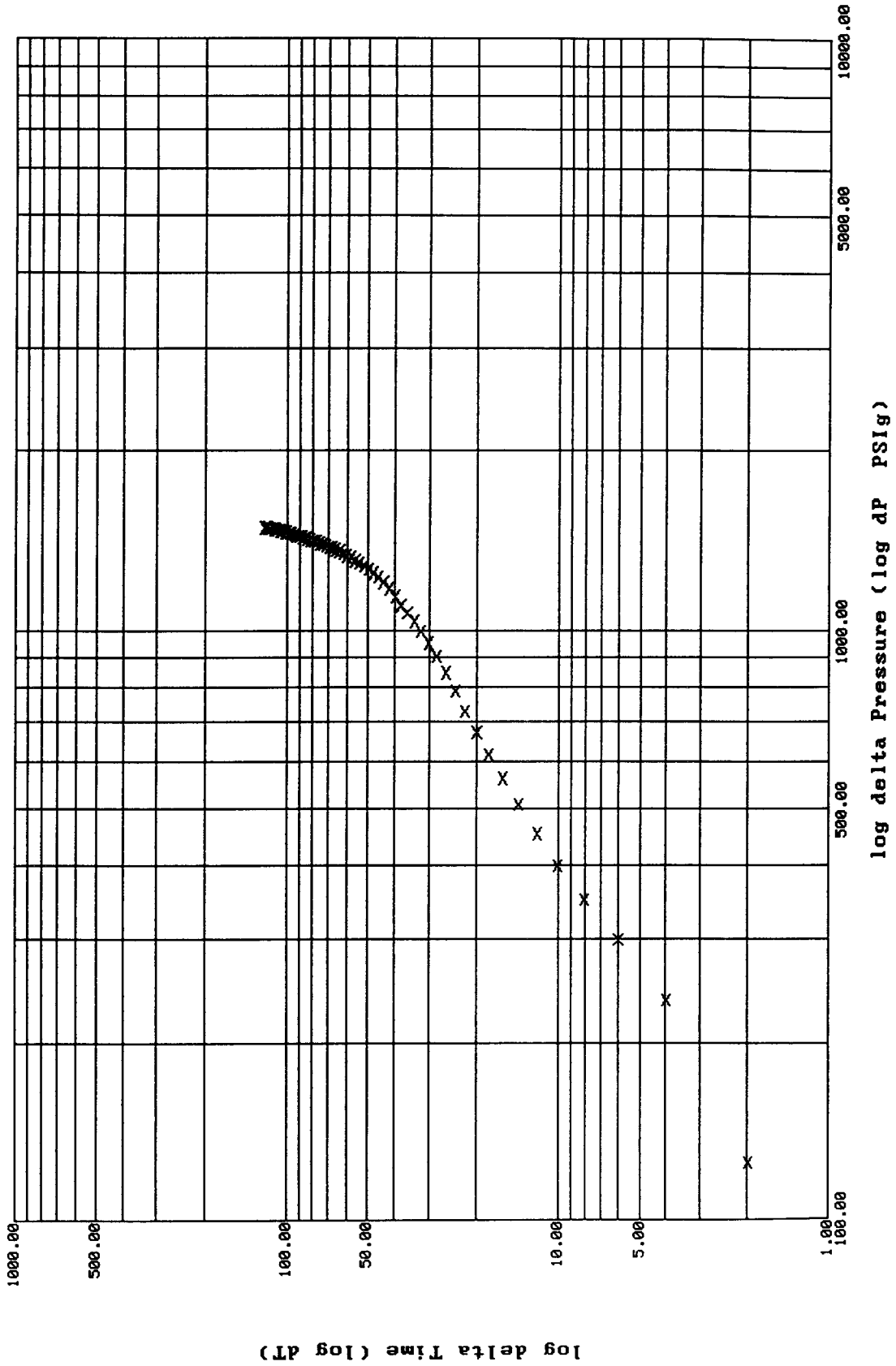
Slope: 996.4247 PSig/cycle  
Ext. Pressure: 1929.9189 PSig



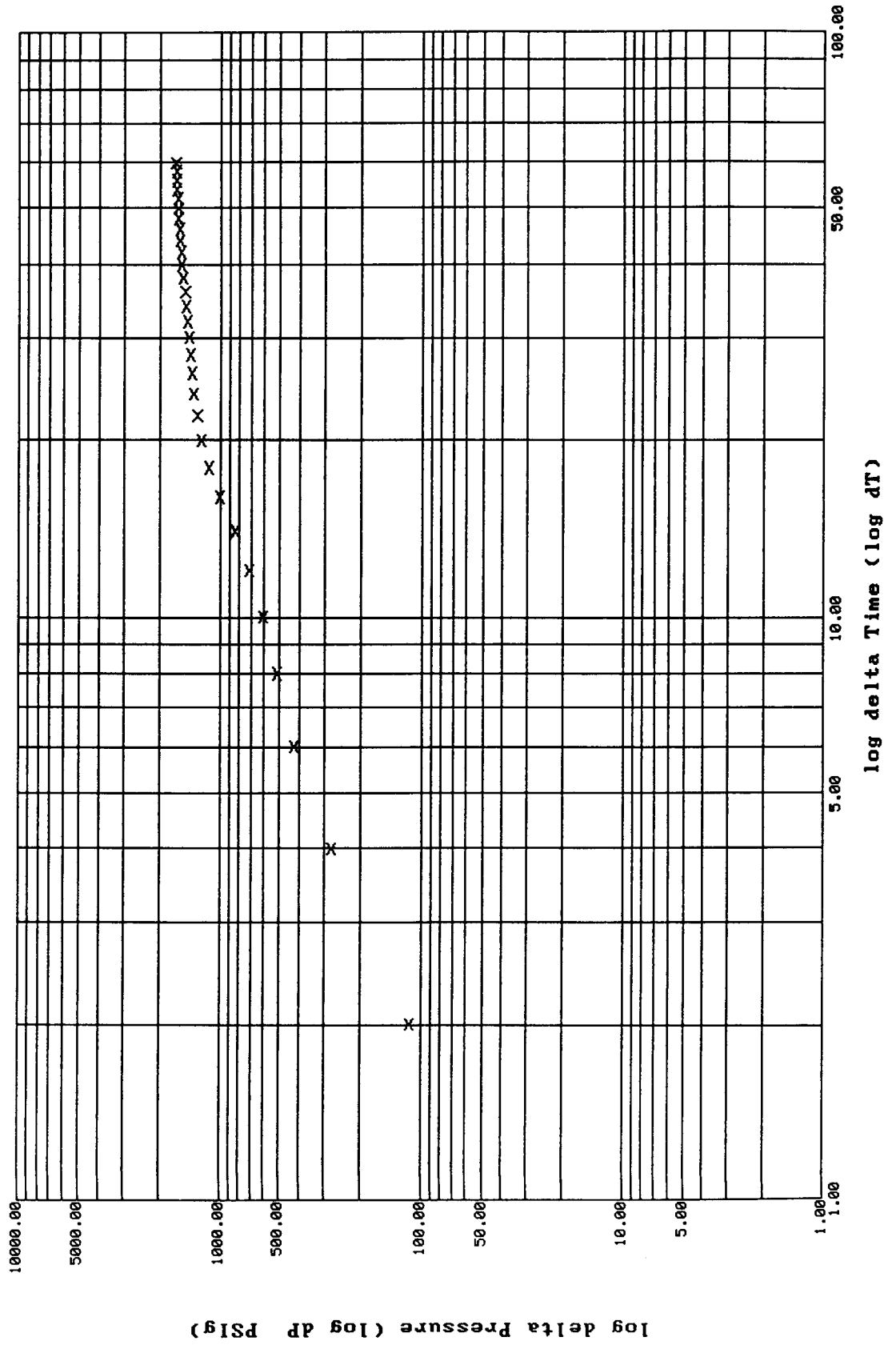
**McKinley Plot: shut-in #1**  
#8173 DST #1 Bedford B-1 Helmerich & Payne Inc.



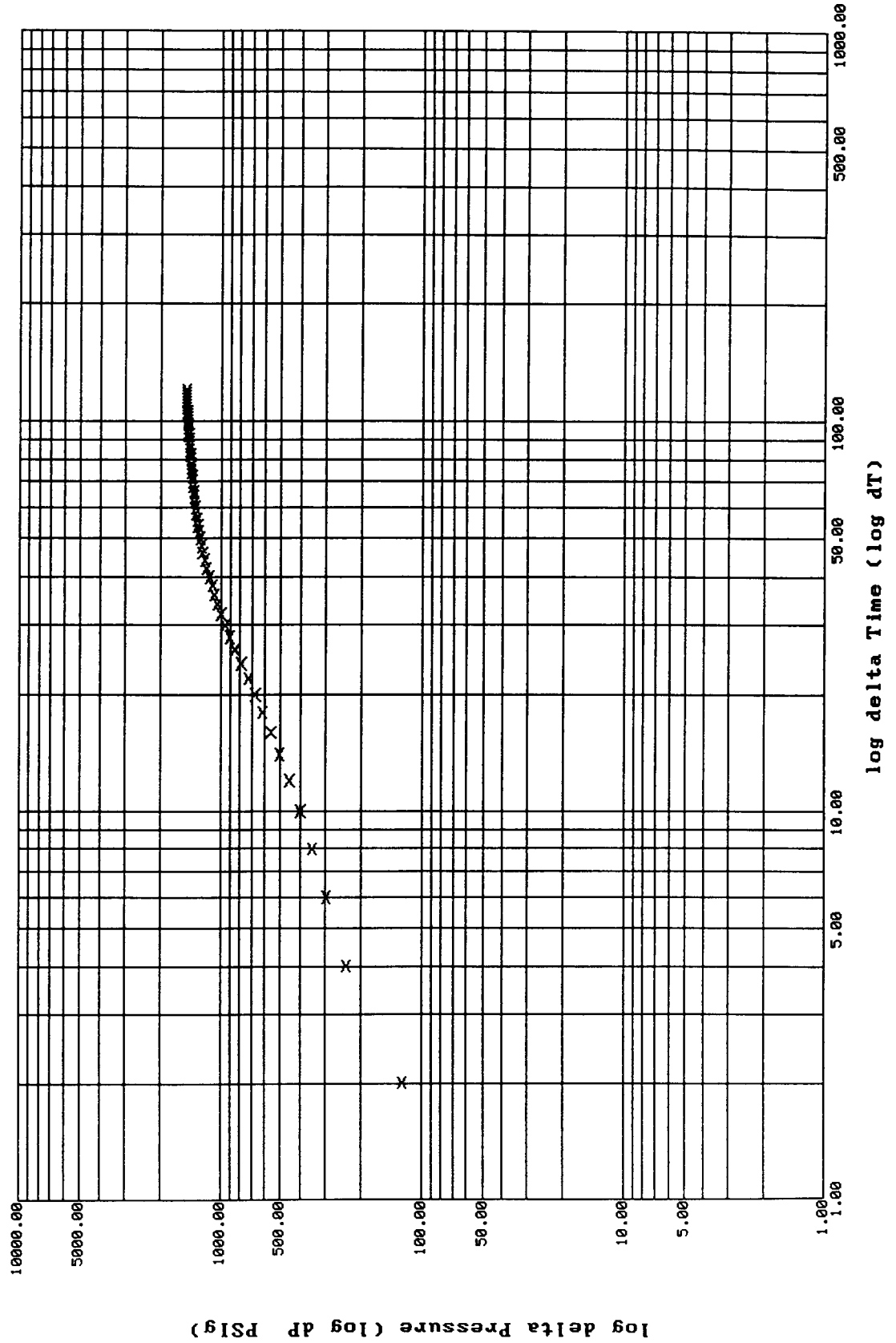
**McKinley Plot: shut-in #2**  
 #8173 DST #1 Bedford B-1 Helmerich & Payne Inc.



**Ramey Plot: shut-in #1**  
#8173 DST #1 Bedford B-1 Helmerich & Payne Inc.



**Ramey Plot: shut-in #2**  
#8173 DST #1 Bedford B-1 Helmerich & Payne Inc.

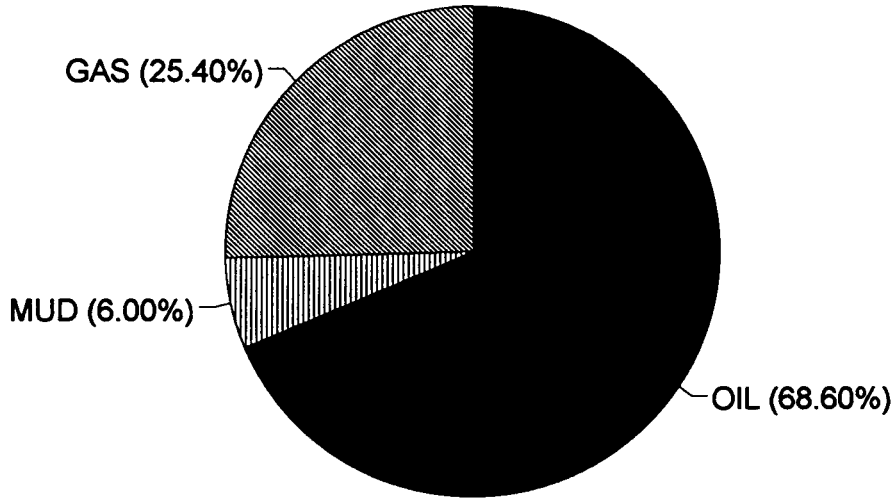


# CALCULATED RECOVERY ANALYSIS

DST # 1

TICKET # 8173

SAMPLE #	TOTAL FEET	GAS		OIL		WATER		MUD	
		%	FEET	%	FEET	%	FEET	%	FEET
DRILL PIPE	152		0	100	152		0		0
	2		0		0		0		0
	3		0		0		0		0
	4		0		0		0		0
	5		0		0		0		0
	6		0		0		0		0
WEIGHT PIPE	1		0		0		0		0
	2		0		0		0		0
	3		0		0		0		0
	4		0		0		0		0
DRL COLLAR	1	268	0	100	268		0		0
	2	330	80	264	20	66		0	0
	3	120	40	48	40	48		20	24
	4			0		0			0
	5			0		0			0
<b>TOTAL</b>	<b>870</b>	<b>35.86207</b>	<b>312</b>	<b>61.37931</b>	<b>534</b>	<b>0</b>	<b>0</b>	<b>2.758621</b>	<b>24</b>
HRS OPE BBL/DAY									
BBL OIL=	4.02942	*		1.25	77.36486				
BBL WATER=	0	*			0				
BBL MUD=	0.11736								
BBL GAS =	1.52568								



\*\*\* TOOL DIAGRAM \*\*\* CONVENTIONAL

WELL NAME: Bedford B-1

LOCATION : 9-26S-34W, Finney Cty KS

TICKET No. 8173 D.S.T. No. 1 DATE 7-25-95

TOTAL TOOL TO BOTTOM OF TOP PACKERS ..... 41ft.

INTERVAL TOOL ..... 68ft.

TOTAL TOOL TO BOTTOM OF TOP PACKERS AND ANCHOR ..... 37ft.

TOTAL TOOL ..... 68ft.

DRILL COLLAR ANCHOR IN INTERVAL .....

C. ANCHOR STANDS Single Total

P. ANCHOR STANDS Single Total

TOTAL ASSEMBLY .....

C. ABOVE TOOLS STANDS 12 Single Total 718ft.

P. ABOVE TOOLS STANDS 66 Single Total 4147ft.

TOTAL DRILL COLLARS DRILL PIPE & TOOLS .. 4865ft.

TOTAL DEPTH ..... 4865ft.

TOTAL DRILL PIPE ABOVE K.B. .... 27ft.

REMARKS:

FLUID SAMPLER DATA

SAMPLER RECOVERY -  
Gas 2 ML, Oil 3998 ML, Pressure 850 PSI,  
Total 4000 ML

WIT MUD ANALYSIS -  
Chlorides 2000 ppm; Resist 3 ohms @ 70 F;  
Viscosity 42, Mud Wt 9, Filtrate 8.8

P.O. SUB	
C.O. SUB	
1ft. double pin	4796
S.I. TOOL 5ft.	4797
3ft. sampler	4802
HMV 5ft. Hyd. tool	4805
JARS 7ft.	4810
SAFETY JOINT 2ft.	4817
PACKER 5ft.	4823
PACKER 4-1ft.	4828
DEPTH 4828	
STUBB	
ANCHOR	
2ft. perf	4829
6ft. pick up sub	4831
Electronic Rec.	4832
5ft. perf	4837
5ft. perf	4842
5ft. perf	4847
T.C.	
DEPTH	
5ft. perf	4852
5ft. perf	4857
BULLNOSE AK1. Recorder.	4862
T.D. 3ft. bullplug	4862

# TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

## Test Ticket

No 8173

Well Name & No.	<u>Bedford B-1</u>	Test No.	<u>1</u>	Date	<u>7-25-95</u>
Company	<u>Helmerich &amp; Payne Inc.</u>	Zone Tested	<u>Morrow</u>		
Address	<u>P.O. Box 558 Garden City KS. 67846</u>	Elevation	<u>2961 (KB)</u>		
Co. Rep./Geo.	<u>Ken LeBlanc</u>	Cont.	<u>Cheyenne Delg. Rig #5</u>	Est. Ft. of Pay	<u>10</u>
Location: Sec.	<u>9</u>	Twp.	<u>26</u>	Rge.	<u>34</u>
		Co.	<u>Finney</u>	State	<u>Kansas</u>
No. of Copies	<u>4</u>	Distribution Sheet	<u>X</u>	Yes	No
		Turnkey		Yes	No
		Evaluation			

Interval Tested	<u>4828-4865</u>	Drill Pipe Size	<u>4 1/2 Full Hole</u>		
Anchor Length	<u>37'</u>	Top Choke — 1"	<u>—</u>	Bottom Choke — 3/4"	<u>—</u>
Top Packer Depth	<u>4823'</u>	Hole Size — 7 7/8"	<u>—</u>	Rubber Size — 6 3/4"	<u>—</u>
Bottom Packer Depth	<u>4828'</u>	Wt. Pipe I.D. — 2.7 Ft. Run	<u>—</u>		
Total Depth	<u>4865'</u>	Drill Collar — 2.25 Ft. Run	<u>718'</u>		
Mud Wt.	<u>9.0</u>	lb/gal.	Viscosity	<u>42</u>	Filtrate
				<u>8.8</u>	
Tool Open @	<u>12:19 pm.</u>	Initial Blow	<u>Strong blow B.B in 2 min.</u>		
			<u>I.S.I. Bled off 2 in Surface blow back built to B.B in 48 min.</u>		
Final Blow	<u>Strong blow B.B in 2 min.</u>				
	<u>E.S.I. Bled off 2 in Surface blow back Built to B.B in 49 min.</u>				

Recovery — Total Feet	<u>870</u>	Feet of Gas in Pipe	<u>4685</u>	Flush Tool?	<u>NO</u>
Rec.	<u>420</u>	Feet Of	<u>C.O.G.</u>	% gas	<u>100%</u> oil
				% water	<u>—</u> % mud
Rec.	<u>330</u>	Feet Of	<u>O.C. Gas</u>	<u>80%</u> gas	<u>20%</u> oil
				% water	<u>—</u> % mud
Rec.	<u>120</u>	Feet Of	<u>M.C. O.C. Gas</u>	<u>40%</u> gas	<u>40%</u> oil
				% water	<u>20%</u> % mud
Rec.		Feet Of		% gas	% oil
				% water	% mud
Rec.		Feet Of		% gas	% oil
				% water	% mud
BHT	<u>122</u>	°F Gravity	<u>29</u>	°API @	<u>86</u>
				°F Corrected Gravity	<u>27.5</u>
RW		@		°F Chlorides	<u>2000</u>
				ppm Recovery	ppm System

(A) Initial Hydrostatic Mud	<u>2281</u>	AK1	<u>2328</u>	PSI	AK1 Recorder No.	<u>Alpine</u>	Range	<u>6,300</u>
(B) First Initial Flow Pressure	<u>39</u>		<u>98</u>	PSI	@ (depth)	<u>4832</u>	w/Clock No.	<u>Elektron</u>
(C) First Final Flow Pressure	<u>93</u>		<u>118</u>	PSI	AK1 Recorder No.	<u>13337</u>	Range	<u>3975</u>
(D) Initial Shut-In Pressure	<u>1756</u>		<u>1709</u>	PSI	@ (depth)	<u>4862</u>	w/Clock No.	<u>30418</u>
(E) Second Initial Flow Pressure	<u>128</u>		<u>207</u>	PSI	AK1 Recorder No.		Range	
(F) Second Final Flow Pressure	<u>234</u>		<u>247</u>	PSI	@ (depth)		w/Clock No.	
(G) Final Shut-In Pressure	<u>1726</u>		<u>1679</u>	PSI	Initial Opening	<u>15 min.</u>	Test	<input checked="" type="checkbox"/>
(H) Final Hydrostatic Mud	<u>2241</u>		<u>2288</u>	PSI	Initial Shut-In	<u>60 min.</u>	Jars	<input checked="" type="checkbox"/>

TRILOBITE TESTING L.L.C. SHALL NOT BE LIABLE FOR DAMAGE OF ANY KIND OF THE PROPERTY OR PERSONNEL OF THE ONE FOR WHOM A TEST IS MADE, OR FOR ANY LOSS SUFFERED OR SUSTAINED, DIRECTLY OR INDIRECTLY, THROUGH THE USE OF ITS EQUIPMENT, OR ITS STATEMENTS OR OPINION CONCERNING THE RESULTS OF ANY TEST. TOOLS LOST OR DAMAGED IN THE HOLE SHALL BE PAID FOR AT COST BY THE PARTY FOR WHOM THE TEST IS MADE.

Final Flow	<u>60 min.</u>	Safety Joint	<input checked="" type="checkbox"/>
Final Shut-In	<u>180 min.</u>	Straddle	
		Circ. Sub	<input checked="" type="checkbox"/>
		Sampler	<input checked="" type="checkbox"/>

Approved By Ken LeBlanc  
 Our Representative Mike Colantonio  
 Printcraft Printers - Hays, KS Colantonio

Extra Packer \_\_\_\_\_  
 Other Elek. Recorder 150  
 TOTAL PRICE \$ 1200

# TRILOBITE TESTING L.L.C.

P.O. Box 362 - Hays, Kansas 67601

## FLUID SAMPLER DATA

Ticket No. 8173 Date 7-25-95  
Company Name Helmerich & Payne Inc.  
Lease Bedford B-1 Test No. 1  
County Finney Sec. 9 Twp. 26 Rng. 34

### SAMPLER RECOVERY

Gas 2 quarts ML  
Oil ~~3998~~ 3998 ML  
Mud \_\_\_\_\_ ML  
Water \_\_\_\_\_ ML  
Other \_\_\_\_\_ ML  
Pressure 850 PSI  
Total 4,000 ML

### SAMPLER ANALYSIS

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

### PIT MUD ANALYSIS

Chlorides 2,000 ppm.  
Resistivity 3 ohms @ 70 F  
Viscosity 42  
Mud Weight 9.0  
Filtrate 8.8  
Other \_\_\_\_\_

### PIPE RECOVERY

TOP  
Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Chlorides \_\_\_\_\_ ppm.

MIDDLE  
Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Chlorides \_\_\_\_\_ ppm.

BOTTOM  
Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Chlorides \_\_\_\_\_ ppm.

TRILOBITE TESTING L.L.C.

OPERATOR : Helmerich & Payne Inc. DATE 7-26-95  
 WELL NAME: Bedford B-1 KB 2961.00 ft TICKET NO: 8174 DST #2  
 LOCATION : 9-26S-34W, Finney Cty KS GR 0.00 ft FORMATION: Lower Morrow  
 INTERVAL : 4874.00 To 4915.00 ft TD 4915.00 ft TEST TYPE: CONVENTIONAL

RECORDER DATA

Mins	Field	1	2	3	4	TIME DATA-----
PF 15 Rec.	AK-1	AK-1	Alpine			PF Fr. 15 to hr
SI 60 Range(Psi )	3975.0	3975.0	4995.0	0.0	0.0	IS Fr. to 1 hr
SF 60 Clock(hrs)	30418	30418				SF Fr. to 1 hr
FS 120 Depth(ft )	4912.0	4912.0	4879.0	0.0	0.0	FS Fr. to 2 hr

	Field	1	2	3	4	
A. Init Hydro	2367.0	2392.0	2516.0	0.0	0.0	T STARTED 7:15 hr
B. First Flow	69.0	89.0	8.0	0.0	0.0	T ON BOTM 10:2 hr
Bl. Final Flow	88.0	109.0	71.0	0.0	0.0	T OPEN 10:2 hr
C. In Shut-in	2328.0	1272.0	1291.0	0.0	0.0	T PULLED 2:41 hr
D. Init Flow	168.0	184.0	96.0	0.0	0.0	T OUT 6:45 hr
E. Final Flow	207.0	238.0	214.0	0.0	0.0	
F. Fl Shut-in	1244.0	1264.0	1297.0	0.0	0.0	TOOL DATA-----
G. Final Hydro	2229.0	2237.0	2235.0	0.0	0.0	Tool Wt. 18000.00 lbs
Inside/Outside	0	0	I			Wt Set On Packer 20000.00 lbs
						Wt Pulled Loose 100000.00 lb
						Initial Str Wt 100000.00 lb
						Unseated Str Wt 80000.00 lbs
						Bot Choke 6.23 in
						Hole Size 7.88 in
						D Col. ID 6.25 in
						D. Pipe ID 0.00 in
						D.C. Length 718.00 ft
						D.P. Length 4197.00 ft

RECOVERY

Tot Fluid 545.00 ft of 545.00 ft in DC and 0.00 ft in DP  
 2845.00 ft of Gas in Pipe  
 425.00 ft of Slightly Mud Cut Oil & Gas - 45% gas, 40% oil  
 0.00 ft of 15% mud  
 120.00 ft of Mud Cut Oil & Gas - 45% gas, 30% oil, 25% mud  
 0.00 ft of  
 0.00 ft of  
 0.00 ft of

Est Ft of Pay 7'

SALINITY 0.00 P.P.M. A.P.I. Gravity 24.00

BLOW DESCRIPTION

Initial Blow -  
 Fair blow, bottom of bucket in 12 min

Initial Shutin -  
 Bled off 2", no blow back

Final Blow -  
 Strong blow, bottom of bucket in 2 min

Final Shutin -  
 Bled off 2", surface blow back built  
 to bottom of bucket in 26 min

SAMPLES:  
 SENT TO:

MUD DATA-----

Mud Type	CHEMICAL
Weight	9.10 lb/c
Vis.	56.00 S/L
W.L.	8.00 in3
F.C.	0.00 in
Mud Drop Y	35.0 ft
Amt. of fill	0.00 ft
Btm. H. Temp.	125.00 F
Hole Condition	GOOD
% Porosity	0.00
Packer Size	0.00 in
No. of Packers	2
Cushion Amt.	0.00
Cushion Type	
Reversed Out N	
Tool Chased N	
Tester	MIKE COLANTONIO
Co. Rep.	KEN LEBLANE
Contr.	CHEYENNE DRLG.
Rig #	5
Unit #	
Pump T.	

Test Successful: Y

# TEST HISTORY

#8174 DST #2 Helmerich & Payne Inc. Bedford B-1

## Flag Points

t (Min.) P (PSig)

A:	0.00	2515.98
B:	0.00	7.98
C:	14.00	70.57
D:	60.00	1298.72
E:	0.00	96.09
F:	58.00	213.76
G:	118.00	1297.43
Q:	0.00	2235.33

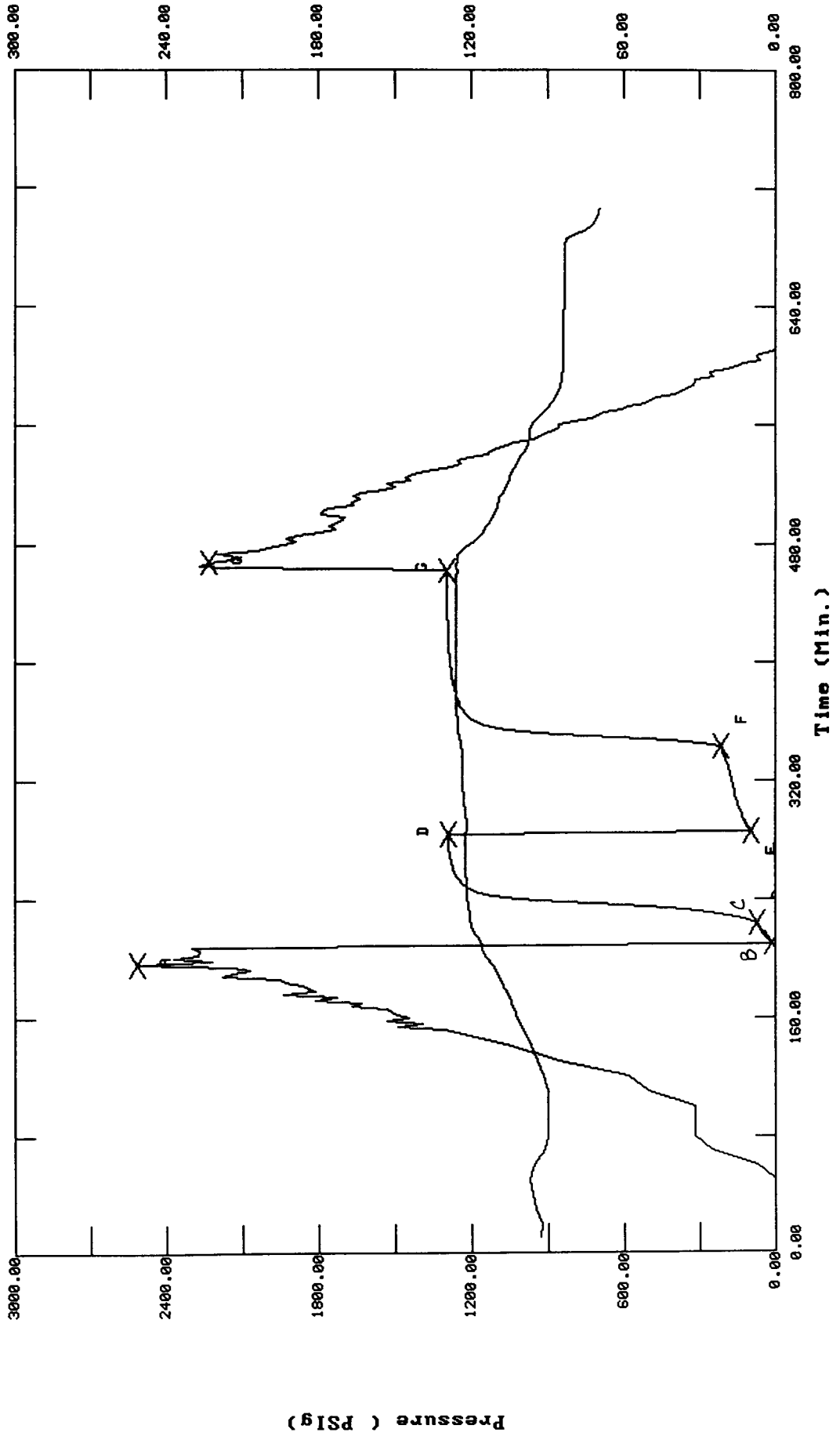
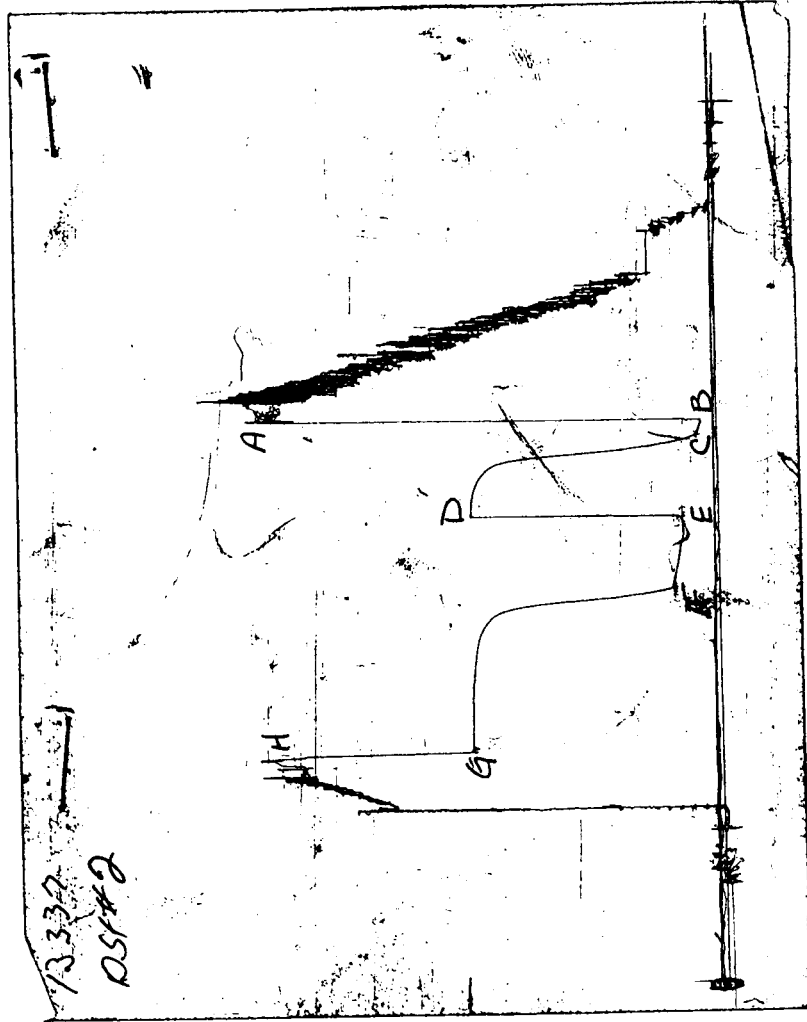


CHART PAGE



This is an actual photograph of recorder chart

-----  
 ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

EST: #8174 DST #2 Helmerich & Payne Inc. Bedford B-1

ATE: 07/26/95 TIME: 17:56:08  
 -----

	Time	Pressure PSig	delta P PSig	Temp. DEG F	(T+dT)/dT	P <sup>2</sup> /10 <sup>6</sup>
**** Initial Hydro.	196.00	2515.9	0.0	111.92		
**** Start Flow 1	0.00	7.8	0.0	115.88		
	2.00	21.8	14.0	116.24		
	4.00	34.0	26.2	117.14		
	6.00	43.8	36.0	118.04		
	8.00	51.1	43.3	118.94		
	10.00	58.4	50.6	119.48		
	12.00	64.6	56.8	119.84		
**** End Flow 1	14.00	70.6	62.8	120.02		
**** Start Shutin 1	0.00	70.6	0.0	120.02	0.0000	0.005
	2.00	107.3	36.8	120.38	8.0000	0.012
	4.00	155.9	85.4	120.56	4.5000	0.024
	6.00	217.7	147.1	120.74	3.3333	0.047
	8.00	301.5	230.9	120.74	2.7500	0.091
	10.00	422.9	352.3	120.92	2.4000	0.179
	12.00	605.1	534.5	121.10	2.1667	0.366
	14.00	838.2	767.6	121.28	2.0000	0.703
	16.00	1017.3	946.7	121.46	1.8750	1.035
	18.00	1116.3	1045.7	121.64	1.7778	1.246
	20.00	1168.8	1098.2	121.82	1.7000	1.366
	22.00	1199.0	1128.4	121.82	1.6364	1.438
	24.00	1218.7	1148.1	122.00	1.5833	1.485
	26.00	1232.6	1162.0	122.00	1.5385	1.519
	28.00	1243.5	1172.9	122.00	1.5000	1.546
	30.00	1251.5	1180.9	122.00	1.4667	1.566
	32.00	1258.2	1187.7	122.18	1.4375	1.583
	34.00	1263.4	1192.9	122.18	1.4118	1.596
	36.00	1268.3	1197.7	122.18	1.3889	1.609
	38.00	1272.1	1201.5	122.18	1.3684	1.618
	40.00	1275.5	1205.0	122.18	1.3500	1.627
	42.00	1278.0	1207.5	122.18	1.3333	1.633
	44.00	1280.5	1209.9	122.18	1.3182	1.640
	46.00	1282.7	1212.2	122.18	1.3043	1.645
	48.00	1284.4	1213.8	122.18	1.2917	1.650
	50.00	1286.5	1215.9	122.18	1.2800	1.655
	52.00	1287.8	1217.2	122.18	1.2692	1.658
	54.00	1289.2	1218.6	122.18	1.2593	1.662
	56.00	1290.1	1219.6	122.18	1.2500	1.664
	58.00	1291.1	1220.5	122.18	1.2414	1.667
**** End Shut-in 1	60.00	1290.7	1220.1	122.18	1.2333	1.666
**** Start Flow 2	0.00	96.1	0.0	122.00		
	2.00	106.0	9.9	121.82		
	4.00	112.9	16.8	121.82		
	6.00	118.2	22.2	122.00		
	8.00	123.3	27.2	122.00		
	10.00	127.4	31.3	122.18		
	12.00	132.5	36.4	122.36		
	14.00	136.8	40.7	122.54		
	16.00	140.7	44.6	122.54		
	18.00	145.3	49.2	122.72		
	20.00	149.5	53.4	122.90		

-----  
 ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: #8174 DST #2 Helmerich & Payne Inc. Bedford B-1

DATE: 07/26/95 TIME: 17:56:08  
 -----

	Time	Pressure PSig	delta P PSig	Temp. DEG F	(T+dT)/dT	P <sup>2</sup> /10 <sup>6</sup>
	22.00	153.7	57.7	122.90		
	24.00	157.5	61.4	123.08		
	26.00	161.3	65.2	123.08		
	28.00	161.0	64.9	123.26		
	30.00	163.9	67.8	123.26		
	32.00	166.5	70.4	123.26		
	34.00	170.9	74.8	123.26		
	36.00	172.3	76.2	123.26		
	38.00	175.9	79.8	123.26		
	40.00	180.7	84.6	123.44		
	42.00	183.7	87.6	123.44		
	44.00	186.6	90.6	123.44		
	46.00	190.3	94.2	123.44		
	48.00	193.9	97.8	123.44		
	50.00	197.6	101.5	123.62		
	52.00	201.1	105.0	123.62		
	54.00	205.3	109.2	123.62		
	56.00	208.4	112.3	123.80		
***** End Flow 2	58.00	213.8	117.7	123.98		
***** Start Shutin 2	0.00	213.8	0.0	123.98	0.0000	0.046
	2.00	294.2	80.5	124.16	37.0000	0.087
	4.00	419.1	205.4	124.34	19.0000	0.176
	6.00	629.6	415.9	124.70	13.0000	0.396
	8.00	857.1	643.3	124.88	10.0000	0.735
	10.00	1009.7	796.0	125.06	8.2000	1.020
	12.00	1095.9	882.2	125.24	7.0000	1.201
	14.00	1145.5	931.8	125.42	6.1429	1.312
	16.00	1176.0	962.2	125.60	5.5000	1.383
	18.00	1196.2	982.5	125.60	5.0000	1.431
	20.00	1211.0	997.2	125.60	4.6000	1.466
	22.00	1222.1	1008.4	125.78	4.2727	1.494
	24.00	1231.1	1017.4	125.78	4.0000	1.516
	26.00	1238.4	1024.7	125.78	3.7692	1.534
	28.00	1244.7	1031.0	125.78	3.5714	1.549
	30.00	1249.9	1036.2	125.78	3.4000	1.562
	32.00	1254.7	1041.0	125.78	3.2500	1.574
	34.00	1258.7	1045.0	125.78	3.1176	1.584
	36.00	1262.0	1048.3	125.78	3.0000	1.593
	38.00	1265.4	1051.6	125.78	2.8947	1.601
	40.00	1268.0	1054.2	125.78	2.8000	1.608
	42.00	1270.7	1056.9	125.78	2.7143	1.615
	44.00	1272.7	1058.9	125.78	2.6364	1.620
	46.00	1274.9	1061.1	125.78	2.5652	1.625
	48.00	1276.7	1062.9	125.78	2.5000	1.630
	50.00	1278.3	1064.5	125.96	2.4400	1.634
	52.00	1279.6	1065.9	125.96	2.3846	1.637
	54.00	1281.0	1067.2	125.78	2.3333	1.641
	56.00	1282.4	1068.7	125.96	2.2857	1.645
	58.00	1283.6	1069.8	125.96	2.2414	1.648
	60.00	1284.6	1070.8	125.96	2.2000	1.650
	62.00	1285.7	1071.9	125.78	2.1613	1.653

-----  
 ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: #8174 DST #2 Helmerich & Payne Inc. Bedford B-1

DATE: 07/26/95

TIME: 17:56:08  
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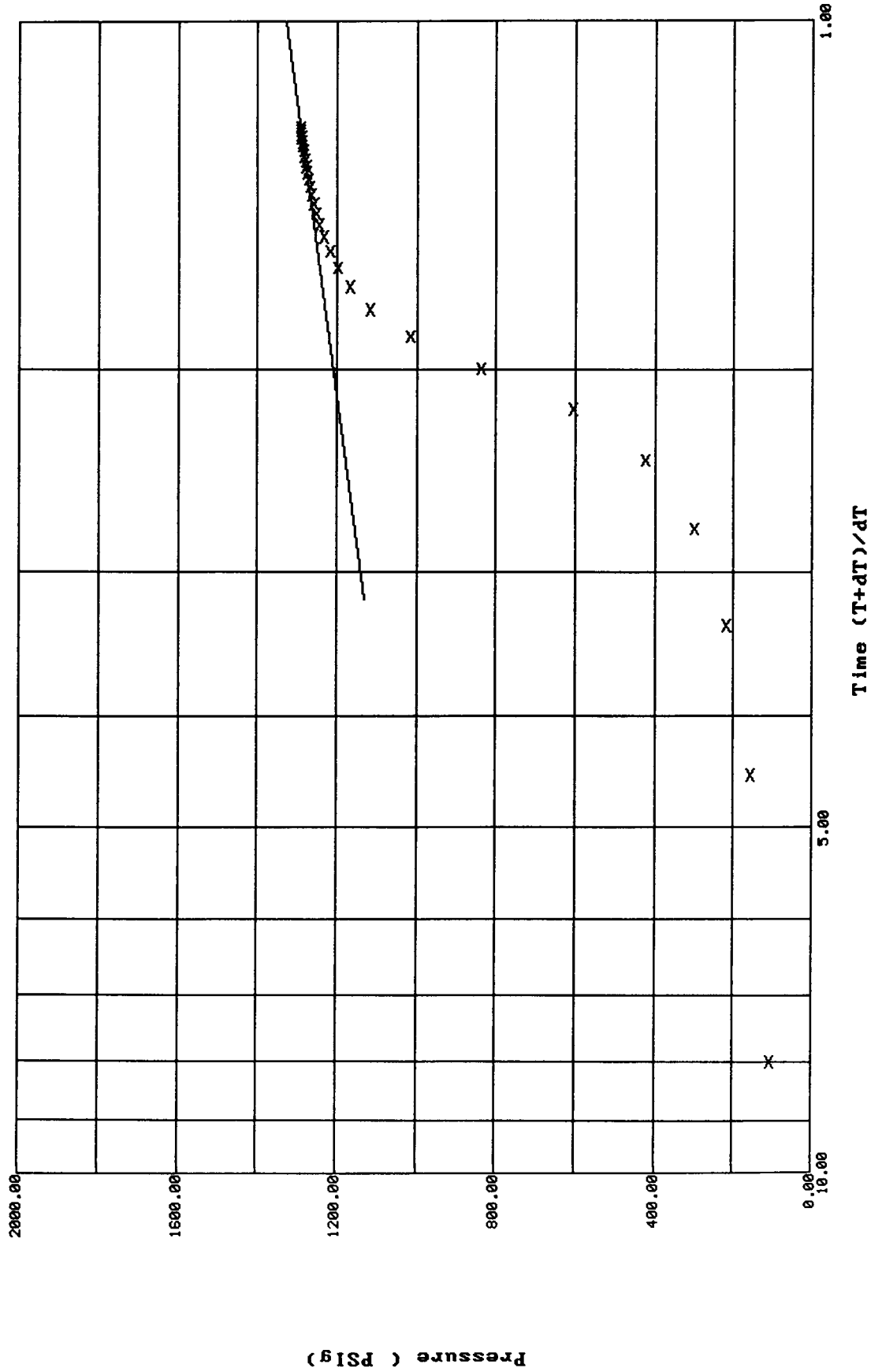
	Time	Pressure PSig	delta P PSig	Temp. DEG F	(T+dT)/dT	P^2/10^6
	64.00	1286.4	1072.7	125.78	2.1250	1.655
	66.00	1287.0	1073.3	125.78	2.0909	1.656
	68.00	1288.1	1074.4	125.78	2.0588	1.659
	70.00	1288.5	1074.8	125.78	2.0286	1.660
	72.00	1289.5	1075.7	125.78	2.0000	1.663
	74.00	1289.8	1076.0	125.78	1.9730	1.664
	76.00	1290.6	1076.9	125.78	1.9474	1.666
	78.00	1291.0	1077.2	125.78	1.9231	1.667
	80.00	1291.6	1077.9	125.78	1.9000	1.668
	82.00	1292.1	1078.3	125.78	1.8780	1.669
	84.00	1292.3	1078.6	125.78	1.8571	1.670
	86.00	1293.0	1079.2	125.78	1.8372	1.672
	88.00	1293.1	1079.3	125.78	1.8182	1.672
	90.00	1293.7	1079.9	125.78	1.8000	1.674
	92.00	1293.8	1080.1	125.78	1.7826	1.674
	94.00	1294.2	1080.5	125.78	1.7660	1.675
	96.00	1294.6	1080.8	125.78	1.7500	1.676
	98.00	1295.1	1081.3	125.78	1.7347	1.677
	100.00	1295.2	1081.4	125.78	1.7200	1.677
	102.00	1295.3	1081.6	125.78	1.7059	1.678
	104.00	1295.8	1082.1	125.78	1.6923	1.679
	106.00	1295.9	1082.2	125.78	1.6792	1.679
	108.00	1296.4	1082.7	125.78	1.6667	1.681
	110.00	1296.7	1082.9	125.78	1.6545	1.681
	112.00	1296.8	1083.0	125.78	1.6429	1.682
	114.00	1297.0	1083.3	125.78	1.6316	1.682
	116.00	1297.0	1083.3	125.60	1.6207	1.682
***** End Shut-in 2	118.00	1297.4	1083.7	125.60	1.6102	1.683
***** Final Hydro.	468.00	2235.3	0.0	125.60		

# Horner Plot: shut-in #1

#8174 DST #2 Helmerich & Payne Inc. Bedford B-1

Slope: 395.2158 PSig/cycle

Ext. Pressure: 1328.1693 PSig

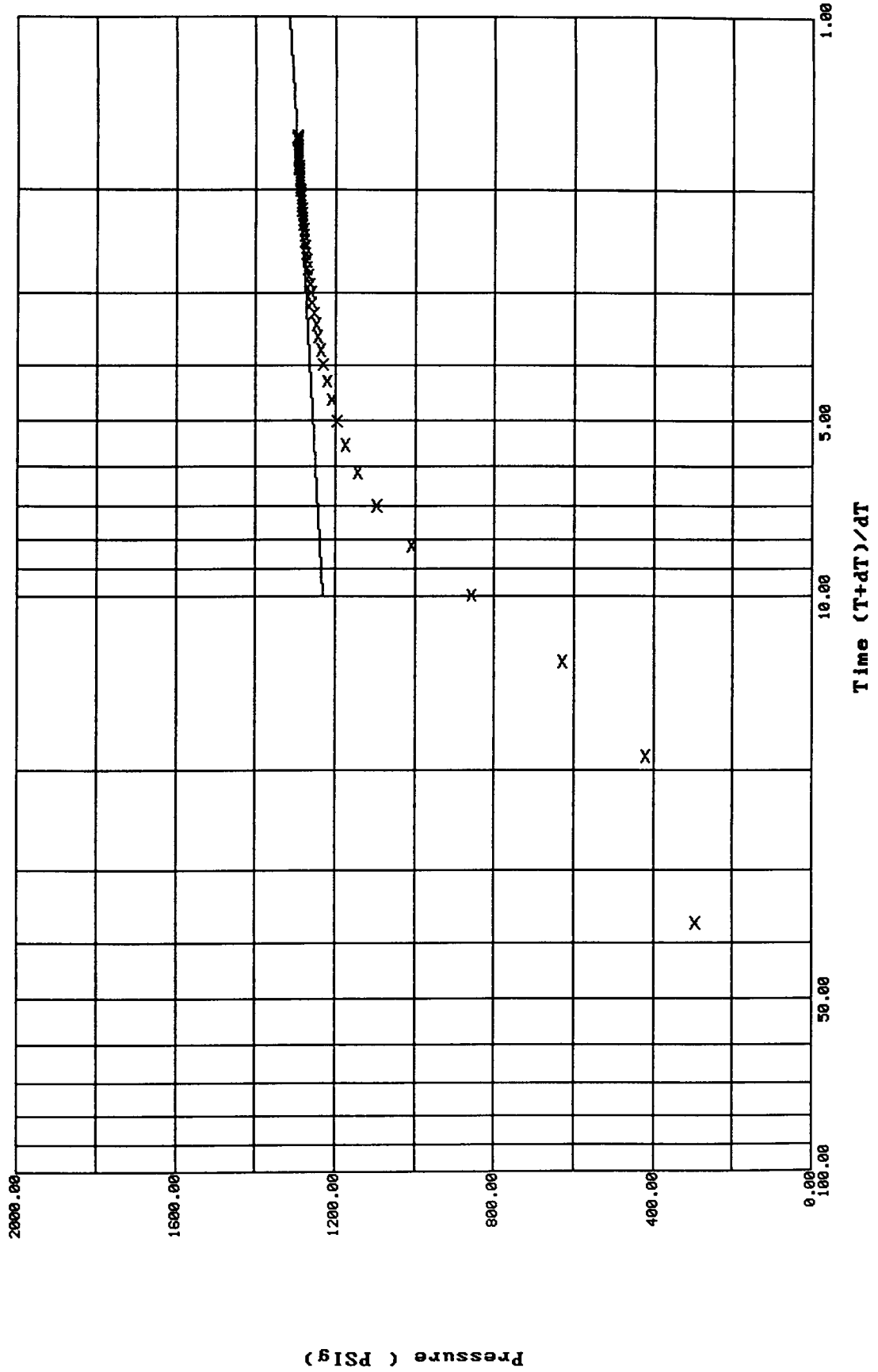


# Horner Plot: shut-in #2

#8174 DST #2 Helmerich & Payne Inc. Bedford B-1

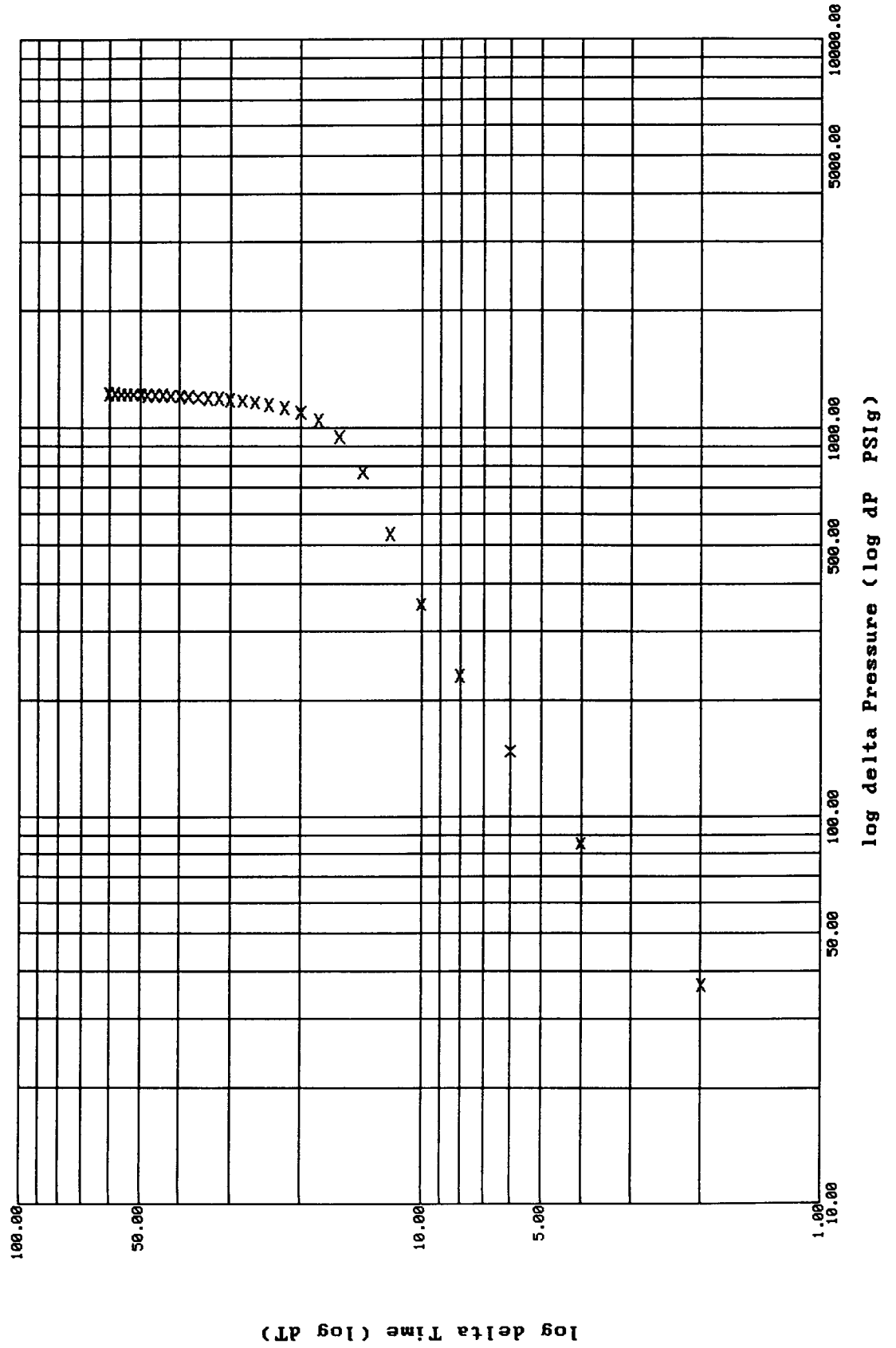
Slope: 85.6785 PSig/cycle

Ext. Pressure: 1315.3232 PSig



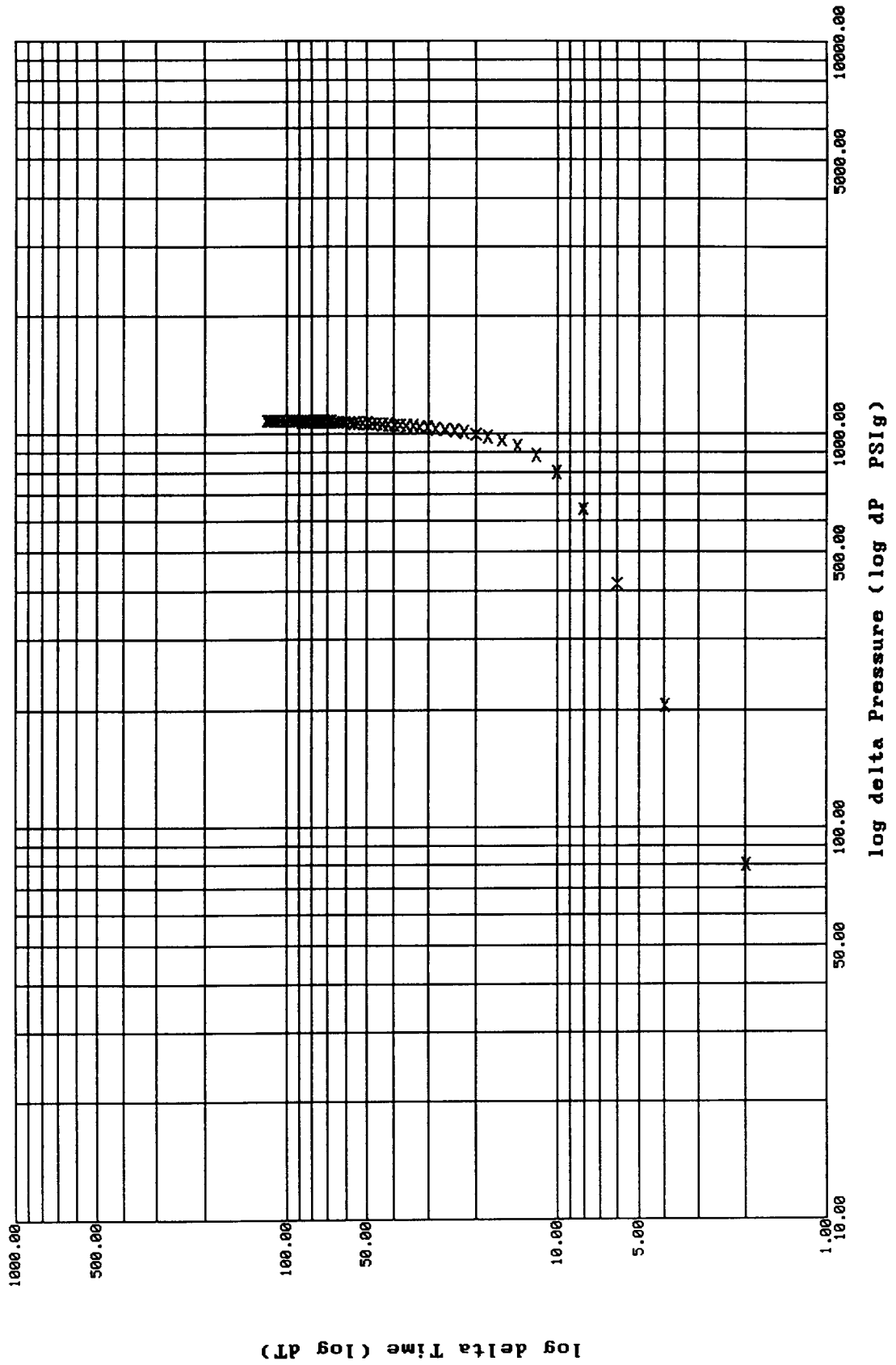
# McKinley Plot: shut-in #1

#8174 DST #2 Helmerich & Payne Inc. Bedford B-1

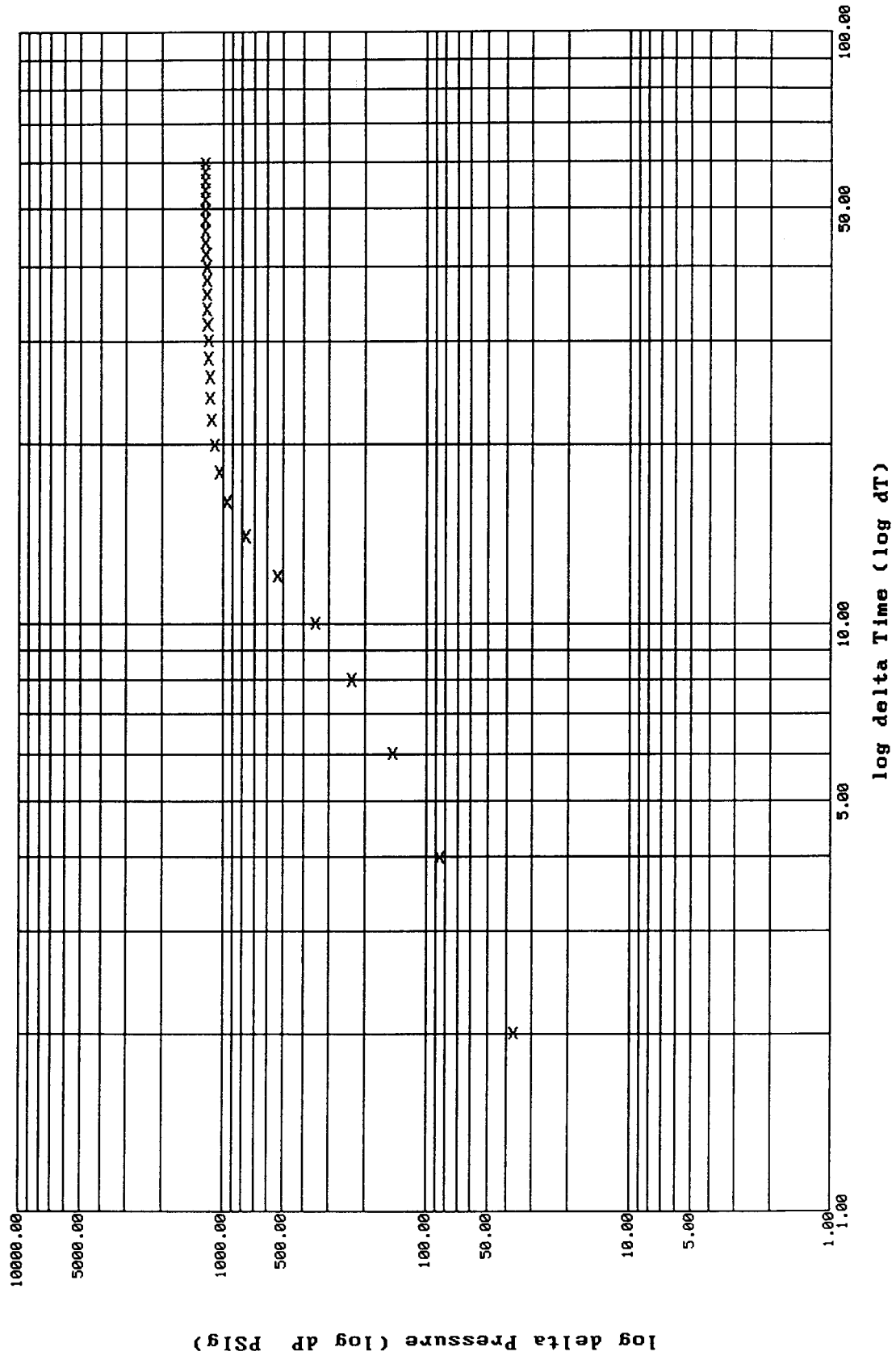


# McKinley Plot: shut-in #2

#8174 DST #2 Helmerich & Payne Inc. Bedford B-1



**Ramey Plot: shut-in #1**  
 #8174 DST #2 Helmerich & Payne Inc. Bedford B-1





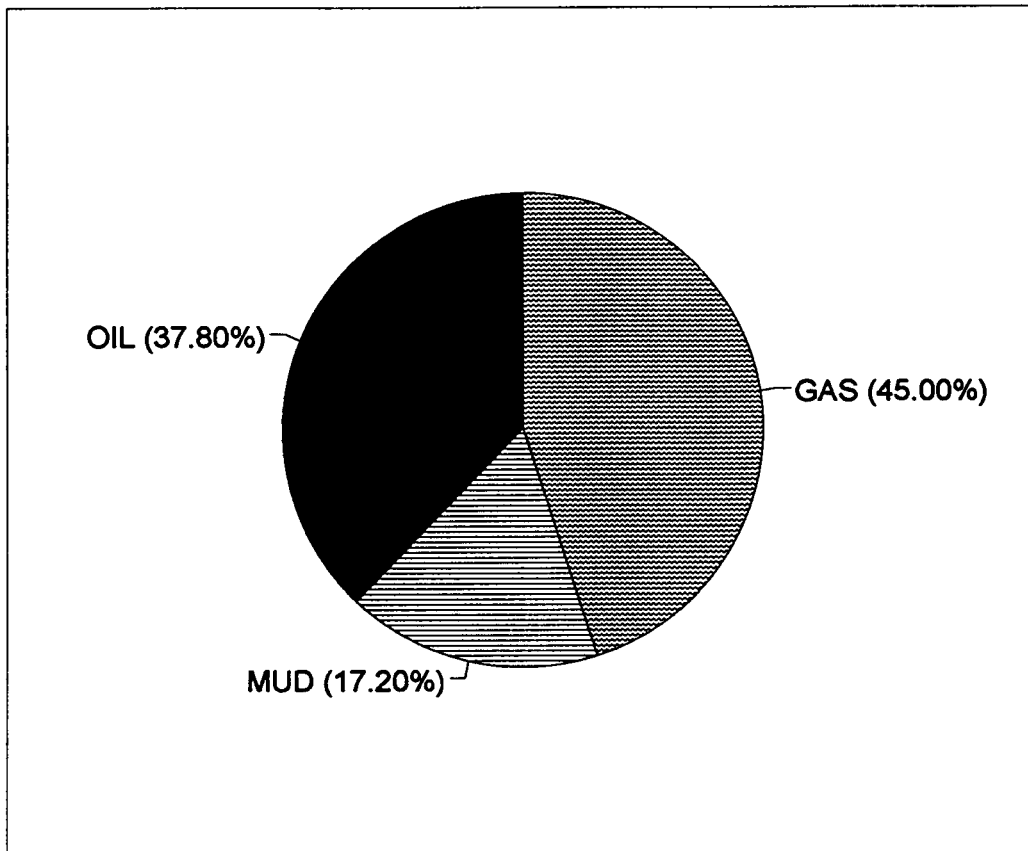
# CALCULATED RECOVERY ANALYSIS - DRILL COLLARS

DST # 2

TICKET # 8174

SAMPLE #	TOTAL FEET	GAS		OIL		WATER		MUD	
		%	FEET	%	FEET	%	FEET	%	FEET
1	425	45	191.25	40	170		0	15	63.75
2	120	45	54	30	36		0	25	30
3			0		0		0		0
4			0		0		0		0
5			0		0		0		0
<b>TOTAL</b>	<b>545</b>	<b>45.00</b>	<b>245.25</b>	<b>37.80</b>	<b>206</b>	<b>0.00</b>	<b>0</b>	<b>17.20183</b>	<b>93.75</b>

BBL OIL= 1.00734 \*      HRS OPE BBL/DAY  
 BBL WAT 0 \*              1.25 19.34093  
 BBL MUD 0.458438  
 BBL GAS 1.199273



\*\*\* TOOL DIAGRAM \*\*\* CONVENTIONAL

WELL NAME: Bedford B-1

LOCATION : 9-26S-34W, Finney Cty KS

TICKET No. 8174 D.S.T. No. 2 DATE 7-26-95

TOTAL TOOL TO BOTTOM OF TOP PACKERS ..... 40FT.

INTERVAL TOOL ..... 77FT.

BOTTOM PACKERS AND ANCHOR ..... 17FT.

TOTAL TOOL ..... 77FT.

DRILL COLLAR ANCHOR IN INTERVAL .....

D.C. ANCHOR STND.Stands Single Total

D.P. ANCHOR STND.Stands Single Total

TOTAL ASSEMBLY .....

D.C. ABOVE TOOLS.Stands12 Single Total 718FT.

D.P. ABOVE TOOLS.Stands66 Single 1 Total 4120FT.

TOTAL DRILL COLLARS DRILL PIPE & TOOLS .. 4932FT.

TOTAL DEPTH ..... 4915FT.

TOTAL DRILL PIPE ABOVE K.B. .... 17FT.

REMARKS:

FLUID SAMPLER DATA

SAMPLER RECOVERY -

Gas 1.3 ML, Oil 3998.7 ML, Pressure 900 PSI  
Total 4000 ML

SAMPLER ANALYSIS -

Gravity 24 corrected @ 60 F

PIT MUD ANALYSIS -

Chlorides 1000 ppm, Resist 5.3 ohms @ 70 F;  
Viscosity 56, Mud Wt 9.1, Filtrate 8

P.O. SUB	
C.O. SUB	
1FT. DOUBLE PIN	4137
S.I. TOOL 5FT. SHUT IN	4838
3FT. SAMPLER	4843
HMV 5FT. HYD.	4846
JARS 7FT.	4851
SAFETY JOINT 2FT.	4858
PACKER 8FT. SHALE PACKER	4860
PACKER 8FT. SHALE PACKER	4868
DEPTH 4870	
STUBB	
ANCHOR	
1FT. PERF	4874
1FT. DOUBLE PIN	4875
2FT. PERF	4876
6FT. PICK UP SUB	4878
ELET. RECORDER.	4879
5FT. PERF	4884
T.C.	
DEPTH 4884	
5FT. PERF	4889
5FT. PERF	4894
5FT. PERF	4899
5FT. PERF	4904
3FT. PERF	4909
BULLNOSE AK1. RECORDER	4912
T.D. BULL PLUG	4912

# TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

## Test Ticket

No 8174

Well Name & No. Bedford B-1 Test No. 2 Date 7-26-95  
 Company Helmreich & Payne Inc. Zone Tested Lorow Morrow  
 Address P.O. Box 558 Garden City KS. 67846 Elevation 2961 (K&I)  
 Co. Rep./Geo. Ken LeBlanc Cont. Cheyenne Drilling #5 Est. Ft. of Pay 7  
 Location: Sec. 9 Twp. 26 Rge. 34 Co. Finney State KS.  
 No. of Copies 4 Distribution Sheet X Yes      No      Turnkey X Yes      No      Evaluation     

Interval Tested 4874-4915 Drill Pipe Size 4 1/2 F-H  
 Anchor Length 41' Top Choke — 1" — Bottom Choke — 3/4" —  
 Top Packer Depth 4866 Hole Size — 7 7/8" — Rubber Size — 6 3/4" —  
 Bottom Packer Depth 4874 Wt. Pipe I.D. — 2.7 Ft. Run —  
 Total Depth 4915 Drill Collar — 2.25 Ft. Run 718'  
 Mud Wt. 9.1 lb/gal. Viscosity 56 Filtrate 8.0

Tool Open @ 10:26 pm. Initial Blow Fair blow B.B in 12 min.  
I.S.I Bled OFF 2 in. NO blow back  
 Final Blow Strong blow B.B in 2 min  
F.S.I Bled OFF 2 in. Surface Blow Back Built to B.B in 26 min.

Recovery — Total Feet	Feet of Gas in Pipe	Flush Tool?
<u>545</u>	<u>2845</u>	<u>NO</u>
Rec. <u>425</u> Feet Of <u>S.M.C Oil &amp; Gas</u>	<u>45 % gas 40 % oil</u>	<u>% water 15 % mud</u>
Rec. <u>120</u> Feet Of <u>M.C. Oil &amp; Gas</u>	<u>45 % gas 30 % oil</u>	<u>% water 25 % mud</u>
Rec. _____ Feet Of _____	<u>% gas % oil</u>	<u>% water % mud</u>
Rec. _____ Feet Of _____	<u>% gas % oil</u>	<u>% water % mud</u>
Rec. _____ Feet Of _____	<u>% gas % oil</u>	<u>% water % mud</u>

BHT 125 °F Gravity 24 °API @ 60 °F Corrected Gravity 24 °API

RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm Recovery Chlorides 14000 ppm System

	Alpine	AK1	PSI	AK1 Recorder No.	Range	w/Clock No.
(A) Initial Hydrostatic Mud	<u>2515</u>	<u>2367</u>		<u>Alpine</u>	<u>6300</u>	
(B) First Initial Flow Pressure	<u>7</u>	<u>69</u>		@ (depth) <u>4879</u>		<u>Electronic</u>
(C) First Final Flow Pressure	<u>70</u>	<u>88</u>		AK1 Recorder No. <u>13337</u>	<u>3975</u>	
(D) Initial Shut-In Pressure	<u>1290</u>	<u>2328</u>		@ (depth) <u>4912</u>		<u>30418</u>
(E) Second Initial Flow Pressure	<u>96</u>	<u>168</u>		AK1 Recorder No. _____	<u>Range</u>	
(F) Second Final Flow Pressure	<u>213</u>	<u>207</u>		@ (depth) _____		<u>w/Clock No.</u>
(G) Final Shut-In Pressure	<u>1297</u>	<u>1244</u>		Initial Opening <u>15 min.</u>	Test <input checked="" type="checkbox"/>	<u>600</u>
(H) Final Hydrostatic Mud	<u>2235</u>	<u>2229</u>		Initial Shut-In <u>60 min</u>	Jars <input checked="" type="checkbox"/>	<u>200</u>

Final Flow 60 min. Safety Joint  50  
 Final Shut-In 130 min. Straddle \_\_\_\_\_  
 Circ. Sub  N/C  
 Sampler 200  
 Extra Packer  200  
 Other Elect. Recorder  150  
 TOTAL PRICE \$ #1,400

TRILOBITE TESTING L.L.C. SHALL NOT BE LIABLE FOR DAMAGE OF ANY KIND OF THE PROPERTY OR PERSONNEL OF THE ONE FOR WHOM A TEST IS MADE, OR FOR ANY LOSS SUFFERED OR SUSTAINED, DIRECTLY OR INDIRECTLY, THROUGH THE USE OF ITS EQUIPMENT, OR ITS STATEMENTS OR OPINION CONCERNING THE RESULTS OF ANY TEST. TOOLS LOST OR DAMAGED IN THE HOLE SHALL BE PAID FOR AT COST BY THE PARTY FOR WHOM THE TEST IS MADE.

Approved By [Signature]  
 Our Representative [Signature]

# TRILOBITE TESTING L.L.C.

P.O. Box 362 - Hays, Kansas 67601

## FLUID SAMPLER DATA

Ticket No. 8174 Date 7-26-95  
Company Name Helmerich & Payne Inc.  
Lease Bedford B-1 Test No. 2  
County Finney Sec. 9 Twp. 26 Rng. 34

### SAMPLER RECOVERY

Gas 1.310 ML  
Oil 3998 7/10 ML  
Mud \_\_\_\_\_ ML  
Water \_\_\_\_\_ ML  
Other \_\_\_\_\_ ML  
Pressure 900 PSI

### PIT MUD ANALYSIS

Chlorides 1,000 ppm.  
Resistivity 3.3 ohms @ 70 F  
Viscosity 56  
Mud Weight 9.1  
Filtrate 8.0  
Other \_\_\_\_\_

### SAMPLER ANALYSIS

Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Chlorides \_\_\_\_\_ ppm.  
Gravity 24 corrected @ 60 F

### PIPE RECOVERY

TOP  
Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Chlorides \_\_\_\_\_ ppm.  
MIDDLE  
Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Chlorides \_\_\_\_\_ ppm.  
BOTTOM  
Resistivity \_\_\_\_\_ ohms @ \_\_\_\_\_ F  
Chlorides \_\_\_\_\_ ppm.