

15-081-21006

10-27s-34w

WELL NAME: Kuhn #4-10
OPERATOR: Helmerich & Payne Inc
LOCATION: Sec 10 Rge 27S Twp 34W
Haskell County Kansas
DATE: 03/19/96

TRILOBITE TESTING L.L.C.

OPERATOR : Helmerich & Payne, Inc.
 WELL NAME: Kuhn #4-10
 LOCATION : 10-27S-34W Haskell Cty KS
 INTERVAL : 4656.00 To 4699.00 ft

DATE 3-17-96
 KB 2970.00 ft
 GR 2958.00 ft
 TD 4699.00 ft
 TICKET NO: 8849
 FORMATION: Pawnee
 TEST TYPE: CONVENTIONAL
 DST #1

RECORDER DATA

Mins		Field	1	2	3	4	TIME DATA-----
PF 15	Rec.	13339	13339	2346			PF Fr. 1759 to 1814 hr
SI 60	Range(Psi)	4025.0	4025.0	4995.0	0.0	0.0	IS Fr. 1814 to 1914 hr
SF 60	Clock(hrs)	AK-1	AK-1	Alpin			SF Fr. 1914 to 2014 hr
FS 120	Depth(ft)	4694.0	4694.0	4660.0	0.0	0.0	FS Fr. 2014 to 2214 hr

	Field	1	2	3	4	
A. Init Hydro	2273.0	2260.0	2238.0	0.0	0.0	T STARTED 1645 hr
B. First Flow	41.0	58.0	21.0	0.0	0.0	T ON BOTM 1757 hr
B1. Final Flow	41.0	58.0	37.0	0.0	0.0	T OPEN 1759 hr
C. In Shut-in	1301.0	1307.0	1319.0	0.0	0.0	T PULLED 2214 hr
D. Init Flow	41.0	75.0	44.0	0.0	0.0	T OUT 0100 hr
E. Final Flow	72.0	83.0	73.0	0.0	0.0	
F. Fl Shut-in	1281.0	1287.0	1297.0	0.0	0.0	TOOL DATA-----
G. Final Hydro	2243.0	2256.0	2219.0	0.0	0.0	Tool Wt. 1800.00 lbs
Inside/Outside	0	0	I			Wt Set On Packer 30000.00 lbs
						Wt Pulled Loose 120000.00 lbs
						Initial Str Wt 90000.00 lbs
						Unseated Str Wt 90000.00 lbs
						Bot Choke 0.75 in
						Hole Size 7.88 in
						D Col. ID 2.25 in
						D. Pipe ID 3.80 in
						D.C. Length 673.00 ft
						D.P. Length 3959.00 ft

RECOVERY

Tot Fluid 70.00 ft of 70.00 ft in DC and 0.00 ft in DP
 70.00 ft of Watery mud w/ trace oil - 30% water, 70% mud

SALINITY 19000.00 P.P.M. A.P.I. Gravity 0.00

BLOW DESCRIPTION

Initial Flow -
 .5" blow steady throughout

Initial Shutin -
 No blow

Final Flow -
 No return blow

Final Shutin -
 No blow

SAMPLES:
 SENT TO:

MUD DATA-----

Mud Type	Chemical
Weight	9.20 lb/c
Vis.	45.00 S/L
W.L.	8.80 in ³
F.C.	0.00 in
Mud Drop N	

Amt. of fill	0.00 ft
Btm. H. Temp.	118.00 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	Rod Steinbrink
Co. Rep.	K. Jehlick
Contr.	Cheyenne Drlg.
Rig #	1
Unit #	
Pump T.	

Test Successful: Y

TEST HISTORY

8849 DST #1 Kuhn #4-10 Helmrich & Payne

Flag Points

t (Min.)	P (PSig)
A: 0.00	2237.68
B: 0.00	20.81
C: 16.00	36.84
D: 64.00	1319.42
E: 0.00	43.97
F: 55.00	72.59
G: 124.00	1296.68
Q: 0.00	2218.79

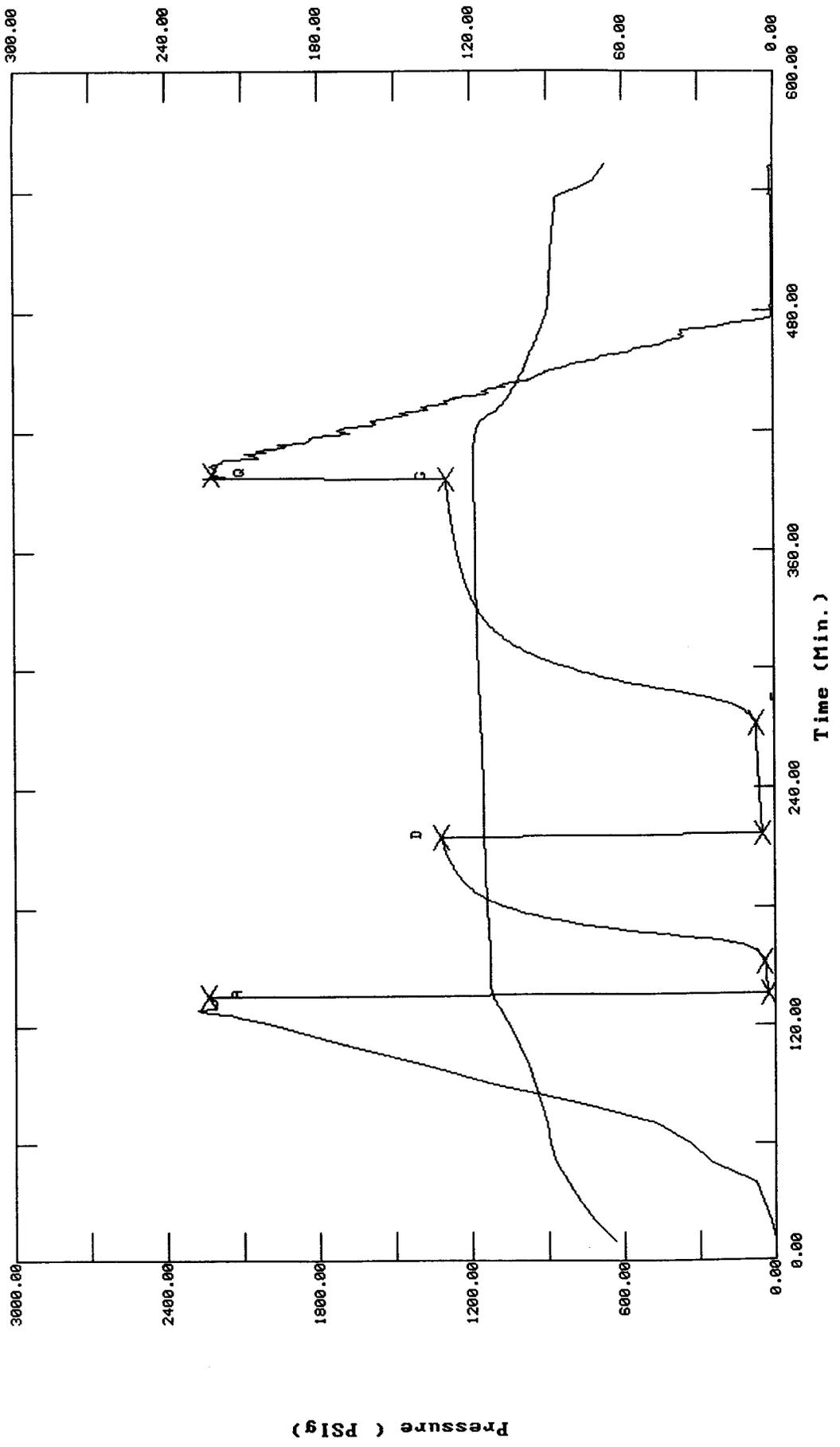
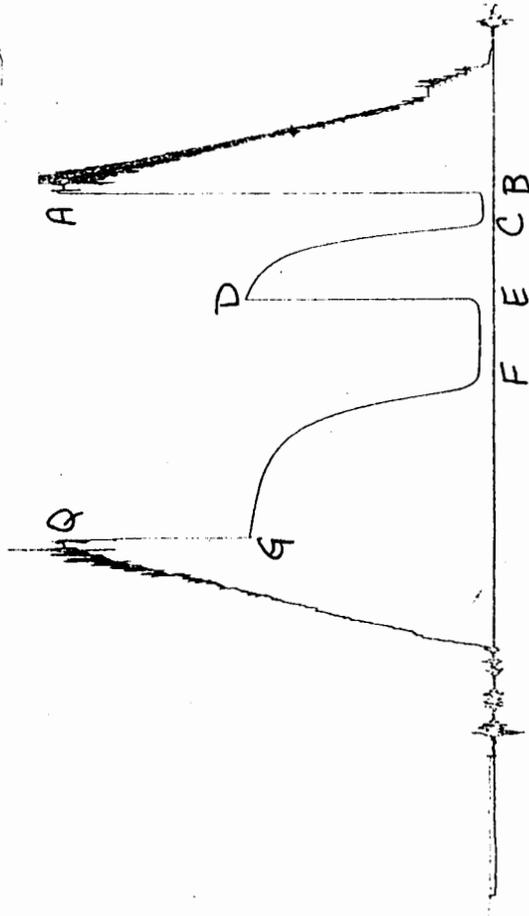


CHART PAGE

DST#1
13339



This is a photocopy of the actual AK-1 recorder chart

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8849 DST #1 Kuhn #4-10 Helmrich & Payne

DATE: 03/17/96 TIME: 15:55:23

	Time	Pressure PSIg	delta P PSIg	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
***** Initial Hydro.	135.00	2237.7	0.0	111.62		
***** Start Flow 1	0.00	20.8	0.0	111.94		
	1.00	24.1	3.3	112.21		
	2.00	25.8	5.0	112.40		
	3.00	27.6	6.8	112.63		
	4.00	29.0	8.2	112.63		
	5.00	30.2	9.4	112.63		
	6.00	31.2	10.4	112.63		
	7.00	32.0	11.2	112.65		
	8.00	32.1	11.2	112.66		
	9.00	32.6	11.8	112.69		
	10.00	33.0	12.2	112.71		
	11.00	33.6	12.8	112.72		
	12.00	34.3	13.5	112.72		
	13.00	34.9	14.1	112.74		
	14.00	35.7	14.9	112.73		
	15.00	36.2	15.4	112.76		
***** End Flow 1	16.00	36.8	16.0	112.77		
***** Start Shutin 1	0.00	36.8	0.0	112.77	0.0000	0.001
	1.00	40.6	3.8	112.77	17.0000	0.002
	2.00	46.4	9.6	112.77	9.0000	0.002
	3.00	52.9	16.0	112.79	6.3333	0.003
	4.00	60.3	23.4	112.85	5.0000	0.004
	5.00	69.1	32.2	112.88	4.2000	0.005
	6.00	79.7	42.9	112.89	3.6667	0.006
	7.00	93.6	56.7	112.93	3.2857	0.009
	8.00	112.0	75.1	112.93	3.0000	0.013
	9.00	136.7	99.9	112.97	2.7778	0.019
	10.00	171.5	134.7	113.00	2.6000	0.029
	11.00	218.6	181.8	113.01	2.4545	0.048
	12.00	280.9	244.1	113.05	2.3333	0.079
	13.00	355.4	318.6	113.09	2.2308	0.126
	14.00	434.0	397.1	113.15	2.1429	0.188
	15.00	508.4	471.6	113.19	2.0667	0.258
	16.00	575.7	538.9	113.24	2.0000	0.331
	17.00	636.1	599.2	113.28	1.9412	0.405
	18.00	690.9	654.0	113.34	1.8889	0.477
	19.00	741.2	704.4	113.38	1.8421	0.549
	20.00	786.5	749.6	113.44	1.8000	0.619
	21.00	830.5	793.7	113.50	1.7619	0.690
	22.00	871.3	834.5	113.55	1.7273	0.759
	23.00	910.1	873.3	113.60	1.6957	0.828
	24.00	945.5	908.7	113.66	1.6667	0.894
	25.00	977.7	940.8	113.68	1.6400	0.956
	26.00	1007.0	970.2	113.73	1.6154	1.014
	27.00	1033.8	997.0	113.79	1.5926	1.069
	28.00	1057.8	1021.0	113.83	1.5714	1.119
	29.00	1079.8	1043.0	113.88	1.5517	1.166
	30.00	1099.4	1062.6	113.92	1.5333	1.209
	31.00	1117.4	1080.6	113.96	1.5161	1.249
	32.00	1133.6	1096.8	113.99	1.5000	1.285

 ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

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Time	Pressure PSI _g	delta P PSI _g	P	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
33.00	1148.5	1111.6		114.03	1.4848	1.319
34.00	1161.6	1124.8		114.07	1.4706	1.349
35.00	1173.9	1137.1		114.10	1.4571	1.378
36.00	1185.0	1148.1		114.14	1.4444	1.404
37.00	1195.3	1158.5		114.17	1.4324	1.429
38.00	1204.9	1168.0		114.21	1.4211	1.452
39.00	1213.6	1176.8		114.25	1.4103	1.473
40.00	1221.8	1185.0		114.29	1.4000	1.493
41.00	1229.3	1192.4		114.33	1.3902	1.511
42.00	1236.2	1199.4		114.34	1.3810	1.528
43.00	1242.7	1205.9		114.36	1.3721	1.544
44.00	1248.8	1212.0		114.39	1.3636	1.560
45.00	1254.5	1217.7		114.43	1.3556	1.574
46.00	1259.8	1223.0		114.46	1.3478	1.587
47.00	1264.9	1228.0		114.48	1.3404	1.600
48.00	1269.7	1232.8		114.51	1.3333	1.612
49.00	1274.0	1237.2		114.54	1.3265	1.623
50.00	1278.4	1241.5		114.57	1.3200	1.634
51.00	1282.5	1245.7		114.60	1.3137	1.645
52.00	1286.3	1249.4		114.63	1.3077	1.654
53.00	1289.9	1253.0		114.63	1.3019	1.664
54.00	1293.3	1256.5		114.68	1.2963	1.673
55.00	1296.5	1259.7		114.72	1.2909	1.681
56.00	1299.4	1262.6		114.74	1.2857	1.689
57.00	1302.3	1265.5		114.78	1.2807	1.696
58.00	1305.2	1268.3		114.81	1.2759	1.703
59.00	1307.8	1270.9		114.83	1.2712	1.710
60.00	1310.3	1273.4		114.88	1.2667	1.717
61.00	1312.6	1275.8		114.89	1.2623	1.723
62.00	1315.0	1278.1		114.93	1.2581	1.729
63.00	1317.2	1280.4		114.98	1.2540	1.735
64.00	1319.4	1282.6		114.99	1.2500	1.741
***** End Shut-in 1						
***** Start Flow 2	0.00	44.0	0.0	115.00		
	1.00	45.8	1.8	115.00		
	2.00	47.2	3.2	115.00		
	3.00	48.0	4.0	114.98		
	4.00	48.6	4.6	114.96		
	5.00	49.3	5.4	114.93		
	6.00	49.9	6.0	114.93		
	7.00	50.3	6.4	114.93		
	8.00	51.1	7.1	114.95		
	9.00	51.5	7.6	114.95		
	10.00	52.2	8.2	114.97		
	11.00	52.6	8.6	114.98		
	12.00	53.0	9.1	114.99		
	13.00	53.5	9.6	114.99		
	14.00	54.0	10.1	115.00		
	15.00	54.5	10.5	115.00		
	16.00	55.0	11.0	115.00		
	17.00	55.6	11.7	115.00		
	18.00	56.1	12.1	115.00		

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Time	Pressure PSIg	delta P PSIg	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
19.00	56.4	12.4	115.00		
20.00	56.8	12.8	115.00		
21.00	57.1	13.1	115.01		
22.00	57.6	13.7	115.02		
23.00	58.2	14.2	115.06		
24.00	58.5	14.5	115.09		
25.00	59.2	15.2	115.15		
26.00	59.6	15.6	115.18		
27.00	60.0	16.0	115.23		
28.00	60.4	16.4	115.26		
29.00	60.8	16.8	115.29		
30.00	61.3	17.3	115.33		
31.00	61.5	17.5	115.36		
32.00	61.8	17.8	115.39		
33.00	62.3	18.4	115.42		
34.00	62.9	19.0	115.46		
35.00	63.4	19.4	115.50		
36.00	63.9	19.9	115.53		
37.00	64.4	20.4	115.56		
38.00	64.8	20.8	115.60		
39.00	65.3	21.3	115.65		
40.00	65.8	21.8	115.66		
41.00	66.3	22.3	115.69		
42.00	66.7	22.7	115.73		
43.00	67.3	23.3	115.77		
44.00	67.8	23.8	115.80		
45.00	68.4	24.4	115.83		
46.00	68.7	24.8	115.85		
47.00	69.1	25.2	115.89		
48.00	69.7	25.7	115.92		
49.00	70.0	26.0	115.96		
50.00	70.5	26.5	115.98		
51.00	70.9	26.9	116.01		
52.00	71.3	27.4	116.04		
53.00	71.7	27.8	116.07		
54.00	72.2	28.2	116.10		
55.00	72.6	28.6	116.14		

<***** End Flow 2

<***** Start Shutin 2

0.00	72.6	0.0	116.14	0.0000	0.005
1.00	74.8	2.2	116.16	72.0000	0.006
2.00	81.0	8.4	116.20	36.5000	0.007
3.00	87.5	14.9	116.23	24.6667	0.008
4.00	95.0	22.4	116.26	18.7500	0.009
5.00	103.6	31.1	116.31	15.2000	0.011
6.00	113.6	41.0	116.33	12.8333	0.013
7.00	125.1	52.5	116.34	11.1429	0.016
8.00	138.6	66.1	116.39	9.8750	0.019
9.00	154.5	81.9	116.42	8.8889	0.024
10.00	173.2	100.6	116.43	8.1000	0.030
11.00	195.5	122.9	116.47	7.4545	0.038
12.00	221.9	149.3	116.51	6.9167	0.049
13.00	253.0	180.4	116.53	6.4615	0.064

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Time	Pressure PSIg	delta P PSIg	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
14.00	288.5	215.9	116.57	6.0714	0.083
15.00	328.2	255.6	116.61	5.7333	0.108
16.00	370.5	297.9	116.65	5.4375	0.137
17.00	415.1	342.5	116.68	5.1765	0.172
18.00	460.1	387.5	116.72	4.9444	0.212
19.00	503.9	431.3	116.76	4.7368	0.254
20.00	545.7	473.1	116.80	4.5500	0.298
21.00	585.4	512.8	116.83	4.3810	0.343
22.00	622.5	549.9	116.88	4.2273	0.387
23.00	657.2	584.6	116.91	4.0870	0.432
24.00	689.9	617.3	116.93	3.9583	0.476
25.00	720.7	648.1	116.98	3.8400	0.519
26.00	749.7	677.1	117.00	3.7308	0.562
27.00	777.2	704.7	117.03	3.6296	0.604
28.00	803.5	730.9	117.08	3.5357	0.646
29.00	828.4	755.9	117.11	3.4483	0.686
30.00	852.0	779.4	117.14	3.3667	0.726
31.00	874.6	802.0	117.17	3.2903	0.765
32.00	895.9	823.3	117.21	3.2188	0.803
33.00	916.2	843.6	117.23	3.1515	0.839
34.00	935.4	862.8	117.25	3.0882	0.875
35.00	953.5	880.9	117.29	3.0286	0.909
36.00	970.5	897.9	117.31	2.9722	0.942
37.00	986.6	914.0	117.34	2.9189	0.973
38.00	1001.6	929.0	117.36	2.8684	1.003
39.00	1015.7	943.1	117.38	2.8205	1.032
40.00	1029.0	956.4	117.41	2.7750	1.059
41.00	1041.5	968.9	117.42	2.7317	1.085
42.00	1053.3	980.7	117.46	2.6905	1.109
43.00	1064.2	991.6	117.46	2.6512	1.133
44.00	1074.7	1002.1	117.48	2.6136	1.155
45.00	1084.4	1011.8	117.52	2.5778	1.176
46.00	1093.7	1021.1	117.54	2.5435	1.196
47.00	1102.2	1029.6	117.55	2.5106	1.215
48.00	1110.4	1037.8	117.57	2.4792	1.233
49.00	1118.2	1045.6	117.59	2.4490	1.250
50.00	1125.5	1053.0	117.61	2.4200	1.267
51.00	1132.3	1059.8	117.63	2.3922	1.282
52.00	1138.9	1066.3	117.65	2.3654	1.297
53.00	1145.1	1072.5	117.66	2.3396	1.311
54.00	1150.9	1078.3	117.67	2.3148	1.325
55.00	1156.5	1083.9	117.67	2.2909	1.338
56.00	1161.9	1089.3	117.69	2.2679	1.350
57.00	1166.9	1094.3	117.71	2.2456	1.362
58.00	1171.8	1099.2	117.74	2.2241	1.373
59.00	1176.2	1103.7	117.75	2.2034	1.384
60.00	1180.7	1108.1	117.76	2.1833	1.394
61.00	1184.9	1112.3	117.77	2.1639	1.404
62.00	1188.8	1116.2	117.78	2.1452	1.413
63.00	1192.8	1120.2	117.80	2.1270	1.423
64.00	1196.6	1124.0	117.82	2.1094	1.432

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65.00	1200.2	1127.7	117.83	2.0923	1.441
66.00	1203.6	1131.0	117.85	2.0758	1.449
67.00	1206.9	1134.3	117.87	2.0597	1.457
68.00	1210.1	1137.5	117.88	2.0441	1.464
69.00	1213.1	1140.5	117.90	2.0290	1.472
70.00	1216.0	1143.4	117.91	2.0143	1.479
71.00	1218.8	1146.2	117.94	2.0000	1.485
72.00	1221.6	1149.0	117.94	1.9861	1.492
73.00	1224.1	1151.5	117.96	1.9726	1.498
74.00	1226.8	1154.2	117.98	1.9595	1.505
75.00	1229.2	1156.6	117.99	1.9467	1.511
76.00	1231.5	1159.0	118.01	1.9342	1.517
77.00	1233.8	1161.2	118.02	1.9221	1.522
78.00	1236.0	1163.4	118.04	1.9103	1.528
79.00	1238.2	1165.6	118.04	1.8987	1.533
80.00	1240.2	1167.6	118.05	1.8875	1.538
81.00	1242.2	1169.6	118.05	1.8765	1.543
82.00	1244.2	1171.6	118.05	1.8659	1.548
83.00	1246.2	1173.6	118.05	1.8554	1.553
84.00	1248.1	1175.5	118.08	1.8452	1.558
85.00	1249.8	1177.3	118.09	1.8353	1.562
86.00	1251.7	1179.1	118.11	1.8256	1.567
87.00	1253.5	1180.9	118.10	1.8161	1.571
88.00	1255.1	1182.5	118.12	1.8068	1.575
89.00	1256.7	1184.1	118.13	1.7978	1.579
90.00	1258.3	1185.7	118.15	1.7889	1.583
91.00	1260.0	1187.4	118.15	1.7802	1.588
92.00	1261.5	1188.9	118.17	1.7717	1.591
93.00	1263.1	1190.5	118.18	1.7634	1.595
94.00	1264.7	1192.1	118.20	1.7553	1.599
95.00	1266.0	1193.5	118.22	1.7474	1.603
96.00	1267.5	1194.9	118.24	1.7396	1.606
97.00	1268.7	1196.1	118.23	1.7320	1.610
98.00	1269.9	1197.3	118.25	1.7245	1.613
99.00	1271.2	1198.7	118.27	1.7172	1.616
100.00	1272.5	1199.9	118.27	1.7100	1.619
101.00	1273.7	1201.1	118.29	1.7030	1.622
102.00	1274.9	1202.3	118.30	1.6961	1.625
103.00	1276.1	1203.5	118.33	1.6893	1.628
104.00	1277.3	1204.7	118.34	1.6827	1.631
105.00	1278.5	1205.9	118.32	1.6762	1.634
106.00	1279.6	1207.0	118.33	1.6698	1.637
107.00	1280.6	1208.1	118.33	1.6636	1.640
108.00	1281.7	1209.1	118.35	1.6574	1.643
109.00	1282.9	1210.3	118.36	1.6514	1.646
110.00	1284.0	1211.4	118.38	1.6455	1.649
111.00	1285.0	1212.4	118.40	1.6396	1.651
112.00	1286.0	1213.4	118.41	1.6339	1.654
113.00	1287.0	1214.4	118.42	1.6283	1.656
114.00	1287.9	1215.3	118.44	1.6228	1.659
115.00	1288.7	1216.1	118.45	1.6174	1.661

 ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8849 DST #1 Kuhn #4-10 Helmrich & Payne

DATE: 03/17/96 TIME: 15:55:23

	Time	Pressure PSIg	delta P PSIg	P	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
	116.00	1289.6	1217.0		118.47	1.6121	1.663
	117.00	1290.5	1218.0		118.47	1.6068	1.666
	118.00	1291.6	1219.0		118.48	1.6017	1.668
	119.00	1292.4	1219.8		118.49	1.5966	1.670
	120.00	1293.4	1220.8		118.50	1.5917	1.673
	121.00	1294.2	1221.6		118.51	1.5868	1.675
	122.00	1295.0	1222.4		118.52	1.5820	1.677
	123.00	1295.8	1223.2		118.53	1.5772	1.679
***** End Shut-in 2	124.00	1296.7	1224.1		118.54	1.5726	1.681
***** Final Hydro.	399.00	2218.8	0.0		118.61		

*** TOOL DIAGRAM *** CONVENTIONAL

WELL NAME: Kuhn #4-10

LOCATION : 10-27S-34W Haskell Cty KS

TICKET No. 8849 D.S.T. No. 1 DATE 3-17-96

TOTAL TOOL TO BOTTOM OF TOP PACKERS 30

INTERVAL TOOL

TOTAL PACKERS AND ANCHOR 43

TOTAL TOOL 73

DRILL COLLAR ANCHOR IN INTERVAL

C. ANCHOR STANDS Single Total

P. ANCHOR STANDS Single Total

TOTAL ASSEMBLY 73

C. ABOVE TOOLS STANDS 11 Single Total 673

P. ABOVE TOOLS STANDS 63 Single 1 Total 3959

TOTAL DRILL COLLARS DRILL PIPE & TOOLS .. 4705

TOTAL DEPTH 4699

TOTAL DRILL PIPE ABOVE K.B. 6

REMARKS:

FLUID SAMPLER DATA

SAMPLER RECOVERY -

Oil trace, Mud 3000 ml, Water 1000 ml,
Pressure 100 PSI, Total 4000 ml

SAMPLER ANALYSIS -

Resist .30 ohms @ 80 F; Chlorides 19000 ppm

PIT MUD ANALYSIS -

Chlorides 2200 ppm, Resist 2.8 ohms @ 70 F;
Vis 45, Mud Wt 9.2, Filt 8.8, LCM 1#/bbl

PIPE RECOVERY - Bottom -

Resist .38 ohms @ 70 F; Chlorides 17000 ppm

P.O. SUB 1' 60' above DC.	4466
C.O. SUB 1'	4526
S.I. TOOL 5'	4532
Sampler 3'	4535
HMV 5'	4540
JARS 5'	4545
SAFETY JOINT 2'	4647
PACKER 5'	4651
PACKER 5'	4656
DEPTH 4656	
STUBB 1'	4657
ANCHOR	
Alpine Recorder	4660
T.C. DEPTH	
37' perf	4694
AK-1 recorder	4694
BULLNOSE 5'	
T.D.	4699

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 8849

Well Name & No. Kuhn #4-10 Test No. 1 Date 3-17-96
 Company Helmrich & Payne Inc. Zone Tested Pawnee
 Address P.O. Box 558 Garden City, KS. 67846 Elevation 2970 KB 2958 GL
 Co. Rep / Geo. Ken Jehlick / K. LeBlanc Cont. Cheyenne #1 Est. Ft. of Pay 6' Por. %
 Location: Sec. 10 Twp. 27^S Rge. 34^W Co. Haskell State KS.
 No. of Copies Distribution Sheet (Y, N) Turnkey (Y, N) N Evaluation (Y, N)

Interval Tested 4656 - 4699 Initial Str Wt./Lbs. 95,000 Unseated Str Wt./Lbs. 95,000
 Anchor Length 43' Wt. Set Lbs. 30,000 Wt. Pulled Loose/Lbs. 120,000
 Top Packer Depth 4651 Hole Size — 7 7/8" Rubber Size — 6 3/4"
 Bottom Packer Depth 4656 Wt. Pipe I.D. — 2.7 Ft. Run
 Total Depth 4699 Drill Collar — 2.25 Ft. Run 4 1/2" XH 673'
 Mud Wt. 9.2 LCM 1* Vis. 45 WL 8.8 Drill Pipe Size 4 1/2" XH Ft. Run 3959'
 Blow Description IF: 1/2" blow steady throughout
ISF: No blow.
FF: No return blow.
FSI: No blow.

Recovery — Total Feet	Ft. in DC	Ft. in WP	Ft. in DP	%gas	%oil	%water	%mud
70'	70'	—	—	—	—	—	—
70'	WM	—	30	trc.	—	70	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

BHT 118° °F Gravity °API D@ °F Corrected Gravity °API
 RW .30 @ 80° °F Chlorides 19,000 ppm Recovery Chlorides 2,200 ppm System

(A) Initial Hydrostatic Mud	<u>2237</u> <u>2273</u> PSI	Recorder No. <u>2346</u>	T-Started <u>1645</u>
(B) First Initial Flow Pressure	<u>20</u> <u>41</u> PSI	@ (depth) <u>4660</u>	T-Open <u>1759</u>
(C) First Final Flow Pressure	<u>36</u> <u>41</u> PSI	Recorder No. <u>13339</u>	T-Pulled <u>2214</u>
(D) Initial Shut-in Pressure	<u>1319</u> <u>1301</u> PSI	@ (depth) <u>4694</u>	T-Out <u>0100</u>
(E) Second Initial Flow Pressure	<u>43</u> <u>41</u> PSI	Recorder No. <u> </u>	—
(F) Second Final Flow Pressure	<u>72</u> <u>72</u> PSI	@ (depth) <u> </u>	—
(G) Final Shut-in Pressure	<u>1296</u> <u>1281</u> PSI	Initial Opening <u>15</u>	Test <u>600</u>
(H) Final Hydrostatic Mud	<u>2218</u> <u>2243</u> PSI	Initial Shut-in <u>60</u>	Jars <u>X</u> <u>200</u>
Elec. Alp. Mech AK-1		Final Flow <u>60</u>	Safety Joint <u>X</u> <u>50</u>
		Final Shut-in <u>120</u>	Straddle <u> </u>

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
 Our Representative Rod Steinbrink

Circ. Sub X N/C
 Sampler X 200
 Extra Packer
 Elect. Rec. X 150
 Other
 TOTAL PRICE \$ 1200

5

TRILOBITE TESTING L.L.C.

P.O. Box 362 - Hays, Kansas 67601

FLUID SAMPLER DATA

Ticket No. 8849 Date 3-17-96
Company Name Helmrich & Payne Cont. Cheyenne #1
Lease Kuhn #4-10 Test No. 1 Pawnee
County Haskell KS. Sec. 10 Twp. 27^s Rng. 34^w

SAMPLER RECOVERY

Gas — ML
Oil Trc. ML
Mud 3,000 ML
Water 1,000 ML
Other _____ ML
Pressure 100* PSI
Total 4,000 ML

PIT MUD ANALYSIS

Chlorides 2,200 ppm.
Resistivity 2.8 ohms @ 70° F
Viscosity 45
Mud Weight 9.2
Filtrate 8.8
Other LCM 1#/bbl.

SAMPLER ANALYSIS

Resistivity .30 ohms @ 80° F
Chlorides 19,000 ppm.
Gravity _____ corrected @ 60 F

PIPE RECOVERY

TOP
Resistivity _____ ohms @ _____ F
Chlorides _____ ppm.
MIDDLE
Resistivity _____ ohms @ _____ F
Chlorides _____ ppm.
BOTTOM
Resistivity .38 ohms @ 70° F
Chlorides 17,000 ppm.

TRILOBITE TESTING L.L.C.

OPERATOR : Helmrich & Payne DATE 3-19-96
 WELL NAME: Kuhn #4-10 KB 2970.00 ft TICKET NO: 8850 DST #2
 LOCATION : 10-27S-34W Haskell Cty KS GR 2958.00 ft FORMATION: Morrow
 INTERVAL : 4964.00 To 5035.00 ft TD 5035.00 ft TEST TYPE: CONVENTIONAL

RECORDER DATA

Mins	Field	1	2	3	4	TIME DATA-----
PF 15 Rec.	13339	13339	2342			PF Fr. 0700 to 0715 hr
SI 60 Range (Psi)	4025.0	4025.0	4995.0	0.0	0.0	IS Fr. 0715 to 0815 hr
SF 60 Clock(hrs)	AK-1	AK-1	Alpin			SF Fr. 0815 to 0915 hr
FS 120 Depth(ft)	5030.0	5030.0	4970.0	0.0	0.0	FS Fr. 0915 to 1115 hr

	Field	1	2	3	4	
A. Init Hydro	2423.0	2426.0	2433.0	0.0	0.0	T STARTED 0430 hr
B. First Flow	363.0	370.0	320.0	0.0	0.0	T ON BOTM 0658 hr
B1. Final Flow	488.0	509.0	530.0	0.0	0.0	T OPEN 0700 hr
C. In Shut-in	1992.0	1999.0	2007.0	0.0	0.0	T PULLED 1115 hr
D. Init Flow	659.0	673.0	636.0	0.0	0.0	T OUT 1500 hr
E. Final Flow	1130.0	1155.0	1171.0	0.0	0.0	
F. Fl Shut-in	1932.0	1939.0	1946.0	0.0	0.0	
G. Final Hydro	2403.0	2400.0	2234.0	0.0	0.0	TOOL DATA-----
Inside/Outside	0	0	I			Tool Wt. 1800.00 lbs

RECOVERY

Tot Fluid 3920.00 ft of 673.00 ft in DC and 3247.00 ft in DP
 3920.00 ft of Clean gassy oil - 25% gas, 75% oil

Initial Str Wt 95000.00 lbs
 Unseated Str Wt 108000.00 lbs
 Bot Choke 0.75 in
 Hole Size 7.88 in
 D Col. ID 2.25 in
 D. Pipe ID 3.80 in
 D.C. Length 673.00 ft
 D.P. Length 4267.00 ft

SALINITY 0.00 P.P.M. A.P.I. Gravity 33.60

BLOW DESCRIPTION

Initial Flow -
 Fair to strong blow off bottom of
 bucket in 1 min
 Initial Shutin -
 Bled off blow - fair return off
 bottom in 3 mins; Gas to surface while
 bleeding off blow

Final Flow -
 Fair to strong return off bottom in
 2 min; gas gauged at 13.4 MCF @ final
 Final Shutin -
 Bled off blow, weak return off bottom
 in 10 min

SAMPLES: Gas Sample
 SENT TO: Caraway Inc. Liberal

MUD DATA-----
 Mud Type Chemical
 Weight 9.00 lb/c
 Vis. 62.00 S/L
 W.L. 7.20 in3
 F.C. 0.00 in
 Mud Drop N
 Amt. of fill 0.00 ft
 Btm. H. Temp. 135.00 F
 Hole Condition Good
 % Porosity 0.00
 Packer Size 6.75 in
 No. of Packers 2
 Cushion Amt. 0.00
 Cushion Type
 Reversed Out Y
 Tool Chased N
 Tester Rod Steinbrink
 Co. Rep. Ken Jehlik
 Contr. Cheyenne Drlg.
 Rig # 1
 Unit #
 Pump T.

Test Successful: Y

CALCULATED RECOVERY ANALYSIS

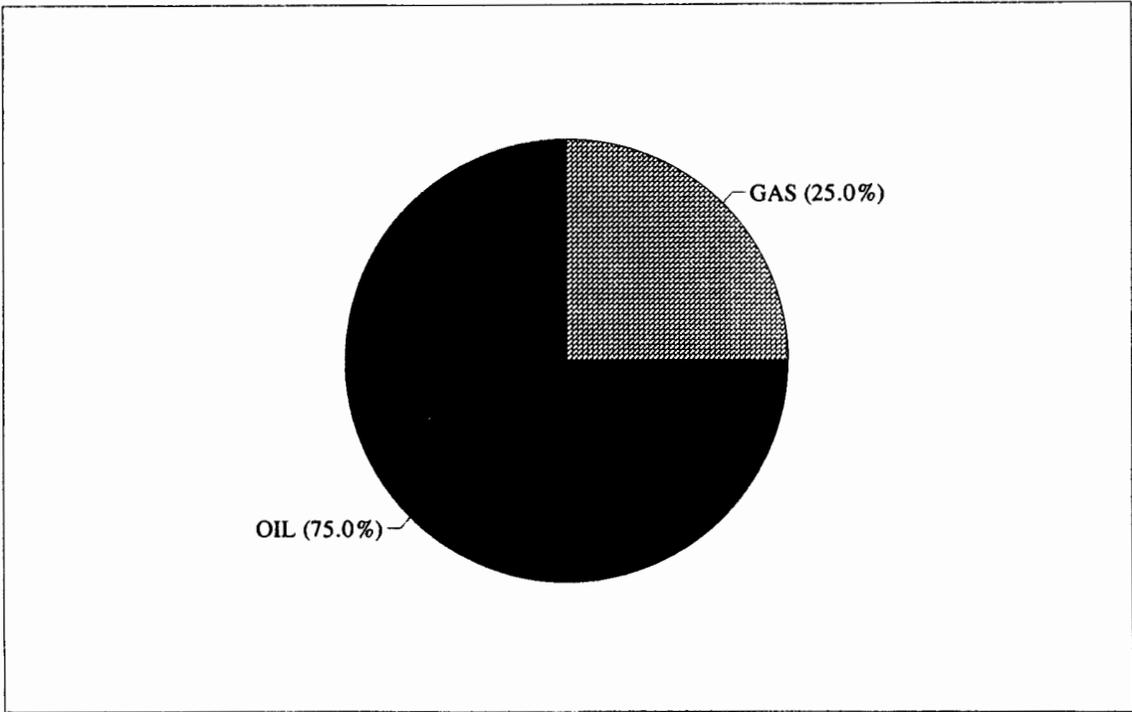
DST # 2

TICKET 8850

SAMPLE #	TOTAL FEET	GAS		OIL		WATER		MUD	
		%	FEET	%	FEET	%	FEET	%	FEET
DRL PIPE 1	3247	25	811.75	75	2435.25		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
WGT PIPE 1			0		0		0		0
2			0		0		0		0
3			0		0		0		0
4			0		0		0		0
COLLARS 1	673	25	168.25	75	504.75		0		0
2			0		0		0		0
3			0		0		0		0
4			0		0		0		0
5			0		0		0		0
TOTAL	3920		980		2940		0		0

HRS OPE BBL/DAY

BBL OIL= 37.09748 * 1.25 712.272
 BBL WATER= 0 * 0
 BBL MUD= 0
 BBL GAS = 12.36583



TEST HISTORY

8850 DST #2 Kuhn #4-10 Helmrich & Payne

Flag Points

t (Min.) P (PSig)

A:	0.00	2433.23
B:	0.00	320.01
C:	15.00	529.91
D:	60.00	2007.21
E:	0.00	635.58
F:	53.00	1171.04
G:	123.00	1946.36
Q:	0.00	2233.73

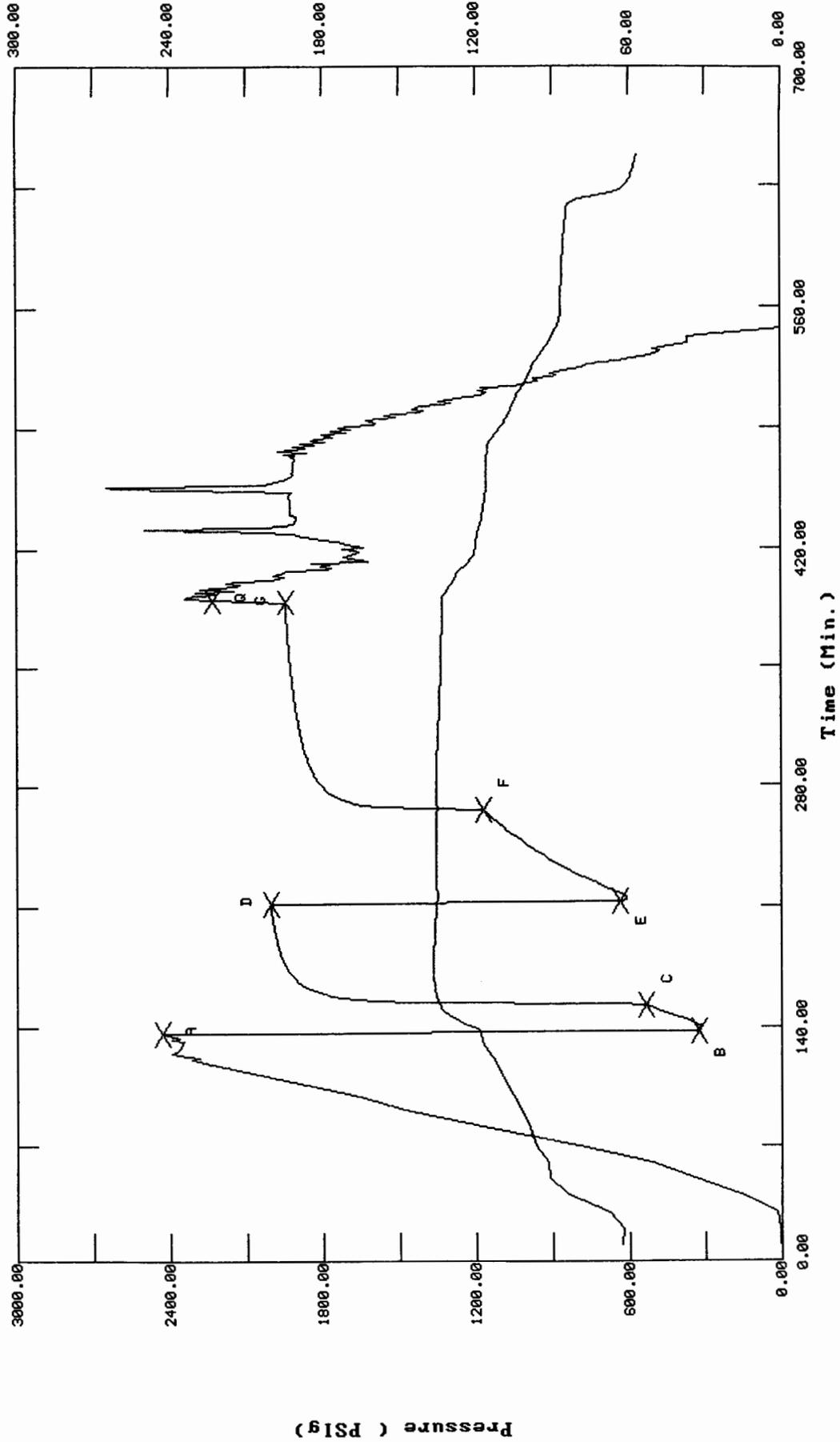
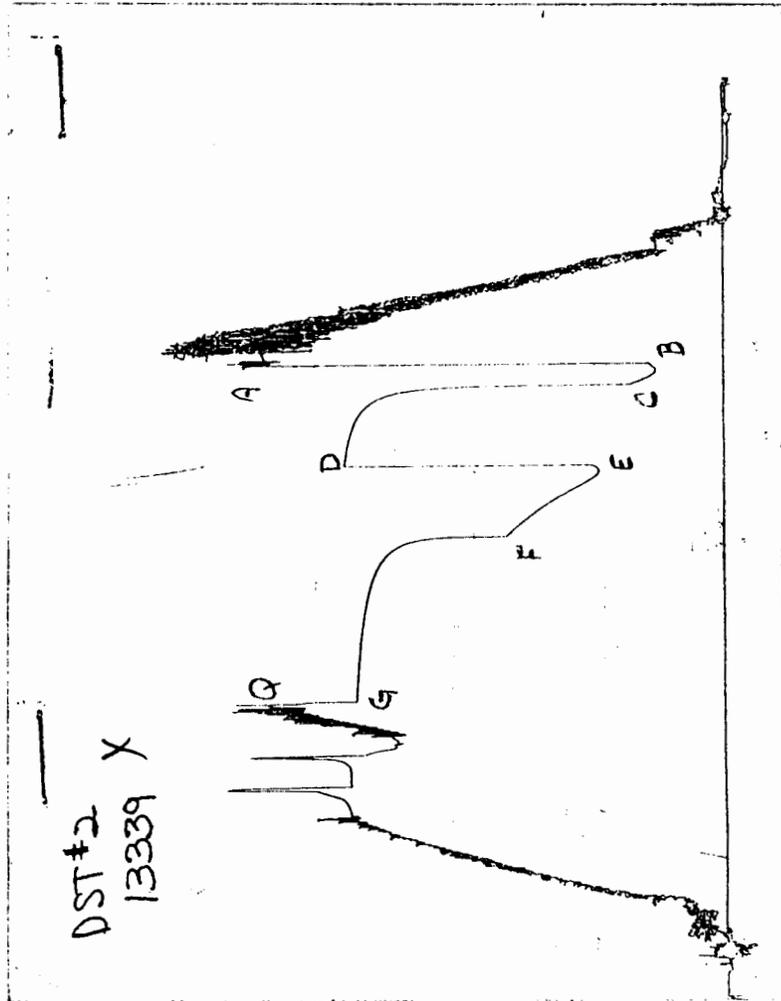


CHART PAGE



This is a photocopy of the actual AK-1 recorder chart

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8850 DST #2 Kuhn #4-10 Helmrich & Payne

DATE: 03/19/96

TIME: 04:40:54

	Time	Pressure PSIg	delta P PSIg	P	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
***** Initial Hydro.	136.00	2433.2	0.0		118.06		
***** Start Flow 1	0.00	320.0	0.0		118.20		
	1.00	326.6	6.5		118.70		
	2.00	327.0	7.0		119.76		
	3.00	310.1	-9.9		121.29		
	4.00	323.0	3.0		123.01		
	5.00	340.2	20.2		124.70		
	6.00	358.4	38.4		126.31		
	7.00	377.9	57.9		127.73		
	8.00	397.3	77.3		128.99		
	9.00	415.9	95.8		130.08		
	10.00	436.2	116.2		131.02		
	11.00	455.7	135.7		131.81		
	12.00	475.0	155.0		132.47		
	13.00	493.2	173.1		133.02		
	14.00	511.4	191.4		133.49		
***** End Flow 1	15.00	529.9	209.9		133.88		
***** Start Shutin 1	0.00	529.9	0.0	133.88		0.0000	0.281
	1.00	649.3	119.4	134.20		16.0000	0.422
	2.00	1455.0	925.1	134.53		8.5000	2.117
	3.00	1589.0	1059.1	134.80		6.0000	2.525
	4.00	1668.6	1138.7	135.09		4.7500	2.784
	5.00	1722.4	1192.5	135.34		4.0000	2.967
	6.00	1761.6	1231.6	135.56		3.5000	3.103
	7.00	1791.6	1261.7	135.74		3.1429	3.210
	8.00	1815.0	1285.1	135.90		2.8750	3.294
	9.00	1834.2	1304.3	136.04		2.6667	3.364
	10.00	1850.2	1320.3	136.15		2.5000	3.423
	11.00	1863.8	1333.9	136.25		2.3636	3.474
	12.00	1875.5	1345.6	136.32		2.2500	3.518
	13.00	1885.6	1355.7	136.39		2.1538	3.555
	14.00	1894.5	1364.6	136.44		2.0714	3.589
	15.00	1902.5	1372.6	136.47		2.0000	3.619
	16.00	1909.5	1379.6	136.54		1.9375	3.646
	17.00	1916.0	1386.1	136.55		1.8824	3.671
	18.00	1921.7	1391.8	136.57		1.8333	3.693
	19.00	1927.1	1397.1	136.59		1.7895	3.714
	20.00	1931.9	1402.0	136.60		1.7500	3.732
	21.00	1936.4	1406.5	136.61		1.7143	3.750
	22.00	1940.6	1410.7	136.61		1.6818	3.766
	23.00	1944.4	1414.5	136.62		1.6522	3.781
	24.00	1948.0	1418.1	136.62		1.6250	3.795
	25.00	1951.4	1421.5	136.61		1.6000	3.808
	26.00	1954.5	1424.6	136.60		1.5769	3.820
	27.00	1957.4	1427.4	136.60		1.5556	3.831
	28.00	1960.3	1430.4	136.59		1.5357	3.843
	29.00	1962.9	1433.0	136.58		1.5172	3.853
	30.00	1965.4	1435.5	136.56		1.5000	3.863
	31.00	1967.8	1437.9	136.55		1.4839	3.872
	32.00	1970.1	1440.2	136.53		1.4688	3.881
	33.00	1972.3	1442.4	136.50		1.4545	3.890

 ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8850 DST #2 Kuhn #4-10 Helmrich & Payne

DATE: 03/19/96 TIME: 04:40:54

	Time	Pressure PSig	delta P PSig	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
	34.00	1974.3	1444.4	136.48	1.4412	3.898
	35.00	1976.3	1446.4	136.45	1.4286	3.906
	36.00	1978.1	1448.2	136.42	1.4167	3.913
	37.00	1979.9	1450.0	136.39	1.4054	3.920
	38.00	1981.5	1451.6	136.36	1.3947	3.926
	39.00	1983.2	1453.3	136.33	1.3846	3.933
	40.00	1984.9	1455.0	136.30	1.3750	3.940
	41.00	1986.3	1456.4	136.28	1.3659	3.945
	42.00	1987.8	1457.9	136.17	1.3571	3.951
	43.00	1989.2	1459.3	136.17	1.3488	3.957
	44.00	1990.6	1460.7	136.14	1.3409	3.962
	45.00	1991.9	1462.0	136.10	1.3333	3.968
	46.00	1993.3	1463.4	136.06	1.3261	3.973
	47.00	1994.5	1464.6	136.01	1.3191	3.978
	48.00	1995.7	1465.8	135.98	1.3125	3.983
	49.00	1996.9	1467.0	135.92	1.3061	3.988
	50.00	1997.8	1467.9	135.87	1.3000	3.991
	51.00	1999.0	1469.1	135.85	1.2941	3.996
	52.00	2000.0	1470.1	135.79	1.2885	4.000
	53.00	2001.0	1471.1	135.76	1.2830	4.004
	54.00	2001.9	1472.0	135.71	1.2778	4.008
	55.00	2002.9	1473.0	135.66	1.2727	4.012
	56.00	2003.9	1473.9	135.62	1.2679	4.015
	57.00	2004.7	1474.8	135.57	1.2632	4.019
	58.00	2005.5	1475.6	135.54	1.2586	4.022
	59.00	2006.4	1476.5	135.48	1.2542	4.026
***** End Shut-in 1	60.00	2007.2	1477.3	135.45	1.2500	4.029
***** Start Flow 2	0.00	635.6	0.0	135.36		
	1.00	608.5	-27.1	135.20		
	2.00	611.3	-24.3	134.98		
	3.00	618.5	-17.1	134.89		
	4.00	632.6	-2.9	134.93		
	5.00	647.8	12.3	135.03		
	6.00	663.4	27.9	135.16		
	7.00	679.4	43.8	135.29		
	8.00	694.2	58.7	135.40		
	9.00	709.2	73.6	135.50		
	10.00	724.5	89.0	135.58		
	11.00	739.6	104.0	135.65		
	12.00	753.1	117.5	135.69		
	13.00	767.6	132.0	135.74		
	14.00	781.5	146.0	135.76		
	15.00	795.5	159.9	135.78		
	16.00	808.5	172.9	135.79		
	17.00	821.4	185.8	135.80		
	18.00	834.7	199.1	135.80		
	19.00	847.9	212.3	135.80		
	20.00	860.7	225.1	135.79		
	21.00	873.2	237.6	135.78		
	22.00	885.3	249.7	135.77		
	23.00	896.9	261.4	135.74		

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8850 DST #2 Kuhn #4-10 Helmrich & Payne

DATE: 03/19/96

TIME: 04:40:54

	Time	Pressure PSIg	delta P PSIg	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
	24.00	908.1	272.5	135.74		
	25.00	919.4	283.8	135.71		
	26.00	930.5	294.9	135.70		
	27.00	941.6	306.0	135.67		
	28.00	952.2	316.6	135.66		
	29.00	962.1	326.6	135.64		
	30.00	971.6	336.0	135.62		
	31.00	981.9	346.3	135.61		
	32.00	992.1	356.5	135.59		
	33.00	1001.9	366.3	135.57		
	34.00	1011.6	376.0	135.55		
	35.00	1021.1	385.5	135.54		
	36.00	1030.6	395.0	135.52		
	37.00	1039.9	404.4	135.50		
	38.00	1049.4	413.8	135.49		
	39.00	1058.7	423.1	135.46		
	40.00	1067.6	432.1	135.44		
	41.00	1076.4	440.9	135.43		
	42.00	1085.0	449.4	135.41		
	43.00	1094.0	458.4	135.40		
	44.00	1102.0	466.4	135.38		
	45.00	1109.7	474.1	135.36		
	46.00	1117.5	481.9	135.35		
	47.00	1125.1	489.6	135.33		
	48.00	1133.1	497.5	135.31		
	49.00	1140.8	505.2	135.30		
	50.00	1148.5	512.9	135.28		
	51.00	1155.9	520.4	135.26		
	52.00	1163.5	527.9	135.25		
*****	End Flow 2	53.00	1171.0	535.5	135.24	
*****	Start Shutin 2	0.00	1171.0	0.0	135.24	0.0000 1.371
		1.00	1393.7	222.7	135.22	69.0000 1.942
		2.00	1583.3	412.3	135.23	35.0000 2.507
		3.00	1641.3	470.2	135.26	23.6667 2.694
		4.00	1678.1	507.1	135.29	18.0000 2.816
		5.00	1704.2	533.2	135.33	14.6000 2.904
		6.00	1724.0	552.9	135.38	12.3333 2.972
		7.00	1739.7	568.7	135.44	10.7143 3.027
		8.00	1752.8	581.8	135.47	9.5000 3.072
		9.00	1763.8	592.8	135.50	8.5556 3.111
		10.00	1773.4	602.4	135.55	7.8000 3.145
		11.00	1781.8	610.7	135.58	7.1818 3.175
		12.00	1789.2	618.2	135.59	6.6667 3.201
		13.00	1796.0	624.9	135.63	6.2308 3.225
		14.00	1802.1	631.1	135.65	5.8571 3.248
		15.00	1807.7	636.7	135.67	5.5333 3.268
		16.00	1812.8	641.8	135.67	5.2500 3.286
		17.00	1817.6	646.6	135.68	5.0000 3.304
		18.00	1822.1	651.1	135.67	4.7778 3.320
		19.00	1826.3	655.3	135.67	4.5789 3.336
		20.00	1830.2	659.2	135.66	4.4000 3.350

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8850 DST #2 Kuhn #4-10 Helmrich & Payne

DATE: 03/19/96

TIME: 04:40:54

Time	Pressure PSig	delta P PSig	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
21.00	1834.0	662.9	135.65	4.2381	3.363
22.00	1837.4	666.4	135.64	4.0909	3.376
23.00	1840.9	669.8	135.63	3.9565	3.389
24.00	1844.1	673.1	135.53	3.8333	3.401
25.00	1847.1	676.0	135.57	3.7200	3.412
26.00	1849.8	678.8	135.56	3.6154	3.422
27.00	1852.7	681.7	135.53	3.5185	3.432
28.00	1855.4	684.3	135.51	3.4286	3.442
29.00	1858.0	686.9	135.48	3.3448	3.452
30.00	1860.3	689.3	135.43	3.2667	3.461
31.00	1862.6	691.6	135.41	3.1935	3.469
32.00	1865.0	693.9	135.39	3.1250	3.478
33.00	1867.1	696.1	135.34	3.0606	3.486
34.00	1869.3	698.3	135.31	3.0000	3.494
35.00	1871.3	700.3	135.28	2.9429	3.502
36.00	1873.3	702.2	135.24	2.8889	3.509
37.00	1875.2	704.2	135.20	2.8378	3.516
38.00	1877.0	705.9	135.17	2.7895	3.523
39.00	1878.8	707.8	135.13	2.7436	3.530
40.00	1880.6	709.5	135.10	2.7000	3.537
41.00	1882.2	711.1	135.07	2.6585	3.543
42.00	1883.8	712.8	135.02	2.6190	3.549
43.00	1885.3	714.3	134.97	2.5814	3.555
44.00	1886.9	715.9	134.95	2.5455	3.561
45.00	1888.5	717.4	134.91	2.5111	3.566
46.00	1890.0	718.9	134.88	2.4783	3.572
47.00	1891.4	720.4	134.84	2.4468	3.577
48.00	1892.7	721.7	134.81	2.4167	3.582
49.00	1894.2	723.1	134.77	2.3878	3.588
50.00	1895.4	724.4	134.74	2.3600	3.593
51.00	1896.8	725.7	134.69	2.3333	3.598
52.00	1897.9	726.8	134.68	2.3077	3.602
53.00	1899.0	728.0	134.63	2.2830	3.606
54.00	1900.2	729.2	134.60	2.2593	3.611
55.00	1901.4	730.3	134.59	2.2364	3.615
56.00	1902.5	731.4	134.54	2.2143	3.619
57.00	1903.6	732.6	134.52	2.1930	3.624
58.00	1904.7	733.7	134.49	2.1724	3.628
59.00	1905.8	734.8	134.45	2.1525	3.632
60.00	1906.8	735.8	134.42	2.1333	3.636
61.00	1907.9	736.9	134.39	2.1148	3.640
62.00	1908.8	737.8	134.36	2.0968	3.644
63.00	1909.9	738.8	134.34	2.0794	3.648
64.00	1910.9	739.8	134.31	2.0625	3.651
65.00	1911.8	740.7	134.28	2.0462	3.655
66.00	1912.6	741.6	134.25	2.0303	3.658
67.00	1913.6	742.6	134.22	2.0149	3.662
68.00	1914.6	743.5	134.19	2.0000	3.666
69.00	1915.4	744.4	134.17	1.9855	3.669
70.00	1916.4	745.4	134.13	1.9714	3.673
71.00	1917.1	746.0	134.11	1.9577	3.675

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8850 DST #2 Kuhn #4-10 Helmrich & Payne

DATE: 03/19/96

TIME: 04:40:54

Time	Pressure PSI _g	delta P PSI _g	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
72.00	1918.0	747.0	134.07	1.9444	3.679
73.00	1918.7	747.7	134.06	1.9315	3.682
74.00	1919.6	748.6	134.03	1.9189	3.685
75.00	1920.3	749.3	134.02	1.9067	3.688
76.00	1921.1	750.1	133.97	1.8947	3.691
77.00	1921.8	750.7	133.96	1.8831	3.693
78.00	1922.4	751.4	133.94	1.8718	3.696
79.00	1923.1	752.1	133.91	1.8608	3.698
80.00	1923.9	752.8	133.89	1.8500	3.701
81.00	1924.5	753.5	133.87	1.8395	3.704
82.00	1925.2	754.2	133.85	1.8293	3.706
83.00	1925.9	754.8	133.84	1.8193	3.709
84.00	1926.6	755.5	133.80	1.8095	3.712
85.00	1927.2	756.2	133.79	1.8000	3.714
86.00	1927.9	756.9	133.77	1.7907	3.717
87.00	1928.6	757.5	133.75	1.7816	3.719
88.00	1929.2	758.2	133.74	1.7727	3.722
89.00	1929.7	758.7	133.71	1.7640	3.724
90.00	1930.3	759.3	133.70	1.7556	3.726
91.00	1931.1	760.1	133.67	1.7473	3.729
92.00	1931.6	760.6	133.65	1.7391	3.731
93.00	1932.2	761.1	133.64	1.7312	3.733
94.00	1932.8	761.7	133.61	1.7234	3.736
95.00	1933.3	762.2	133.59	1.7158	3.738
96.00	1933.8	762.7	133.58	1.7083	3.739
97.00	1934.4	763.3	133.56	1.7010	3.742
98.00	1934.9	763.8	133.53	1.6939	3.744
99.00	1935.5	764.4	133.52	1.6869	3.746
100.00	1936.0	764.9	133.50	1.6800	3.748
101.00	1936.5	765.4	133.49	1.6733	3.750
102.00	1937.0	765.9	133.47	1.6667	3.752
103.00	1937.4	766.3	133.44	1.6602	3.753
104.00	1938.0	766.9	133.43	1.6538	3.756
105.00	1938.6	767.5	133.41	1.6476	3.758
106.00	1939.0	767.9	133.40	1.6415	3.760
107.00	1939.5	768.4	133.38	1.6355	3.762
108.00	1940.0	768.9	133.36	1.6296	3.764
109.00	1940.4	769.4	133.33	1.6239	3.765
110.00	1940.9	769.9	133.33	1.6182	3.767
111.00	1941.3	770.3	133.31	1.6126	3.769
112.00	1941.7	770.7	133.29	1.6071	3.770
113.00	1942.2	771.2	133.28	1.6018	3.772
114.00	1942.7	771.6	133.26	1.5965	3.774
115.00	1943.1	772.1	133.24	1.5913	3.776
116.00	1943.6	772.6	133.23	1.5862	3.778
117.00	1943.9	772.9	133.22	1.5812	3.779
118.00	1944.4	773.4	133.20	1.5763	3.781
119.00	1944.9	773.8	133.19	1.5714	3.782
120.00	1945.3	774.2	133.16	1.5667	3.784
121.00	1945.6	774.6	133.15	1.5620	3.785
122.00	1945.9	774.9	133.13	1.5574	3.787

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8850 DST #2 Kuhn #4-10 Helmrich & Payne

DATE: 03/19/96 TIME: 04:40:54

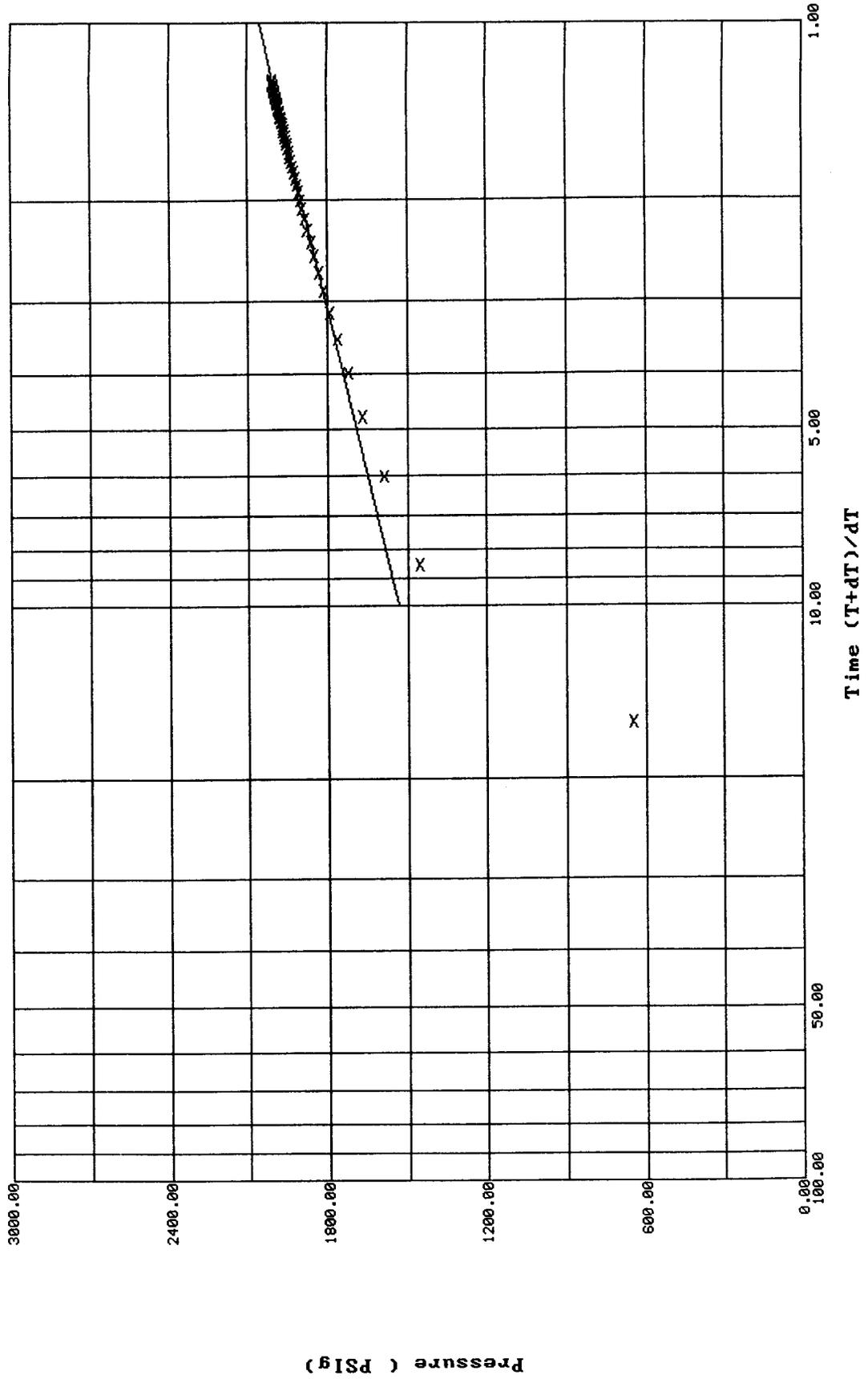
	Time	Pressure PSig	delta P PSig	Temp. DEG F	(T+dT)/dT	P ² /10 ⁶
***** End Shut-in 2	123.00	1946.4	775.3	133.12	1.5528	3.788
***** Final Hydro.	390.00	2233.7	0.0	133.12		

Horner Plot: shut-in #1

8850 DST #2 Kuhn #4-10 Helmrich & Payne

Slope: 521.1791 PSig/cycle

Ext. Pressure: 2057.2622 PSig

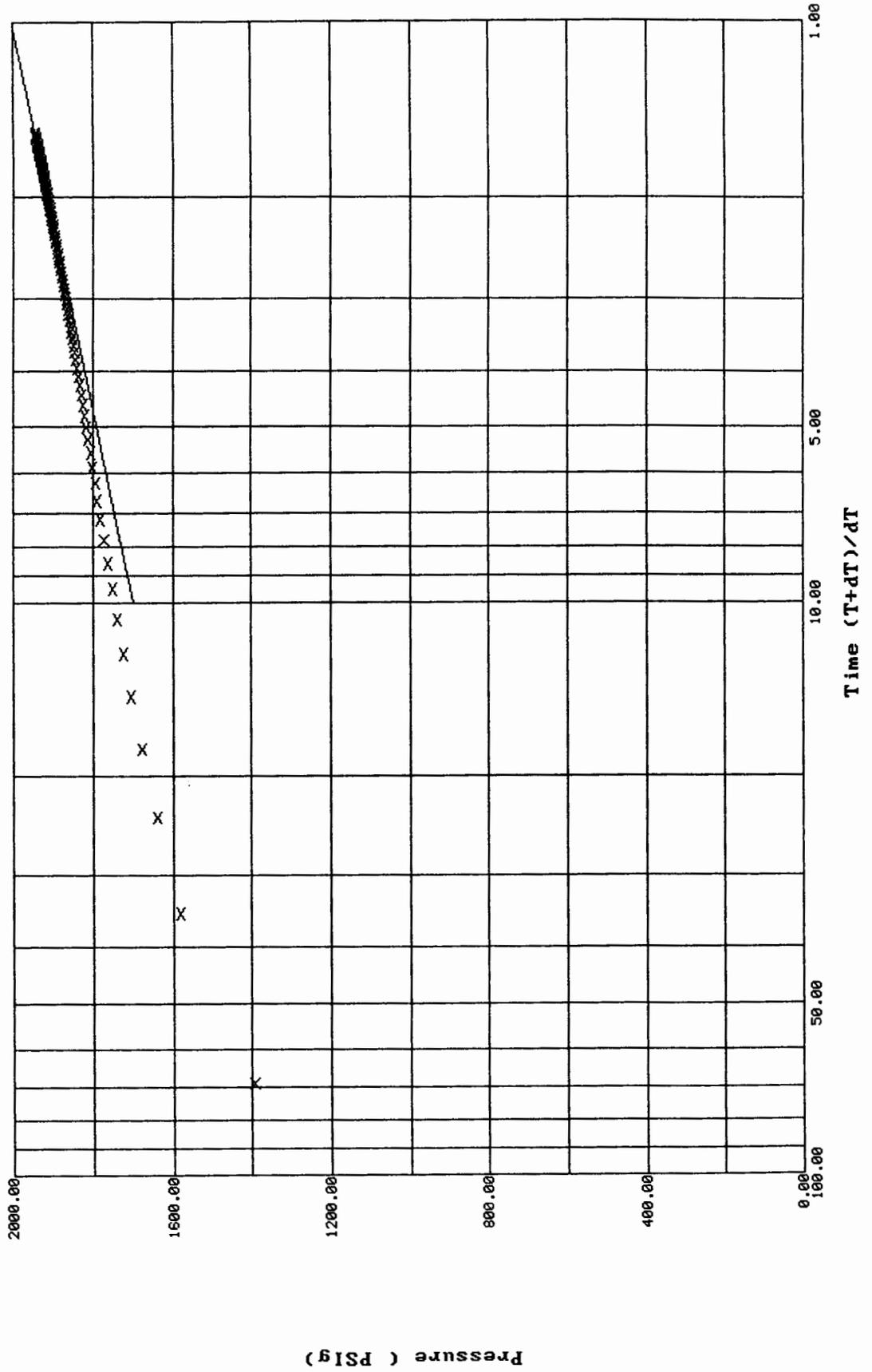


Horner Plot: shut-in #2

8850 DST #2 Kuhn #4-10 Helmrich & Payne

Slope: 307.1865 PSig/cycle

Ext. Pressure: 2005.0983 PSig

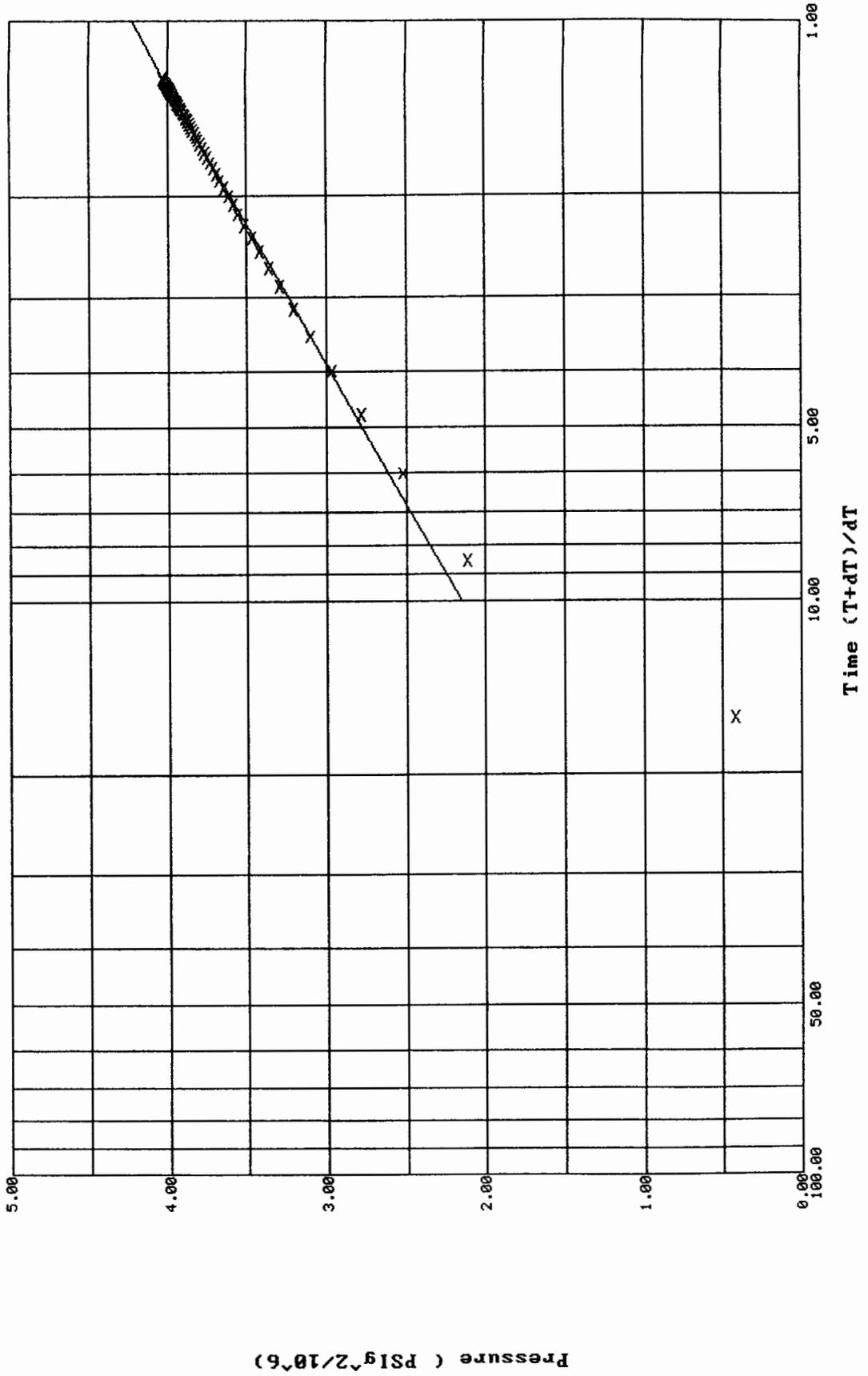


P² Horner Plot: shut-in #1

8850 DST #2 Kuhn #4-10 Helmrich & Payne

Slope: 2.0776 $\text{PSig}^2/10^6/\text{cycle}$

Ext. Pressure: 2056.2996 PSig

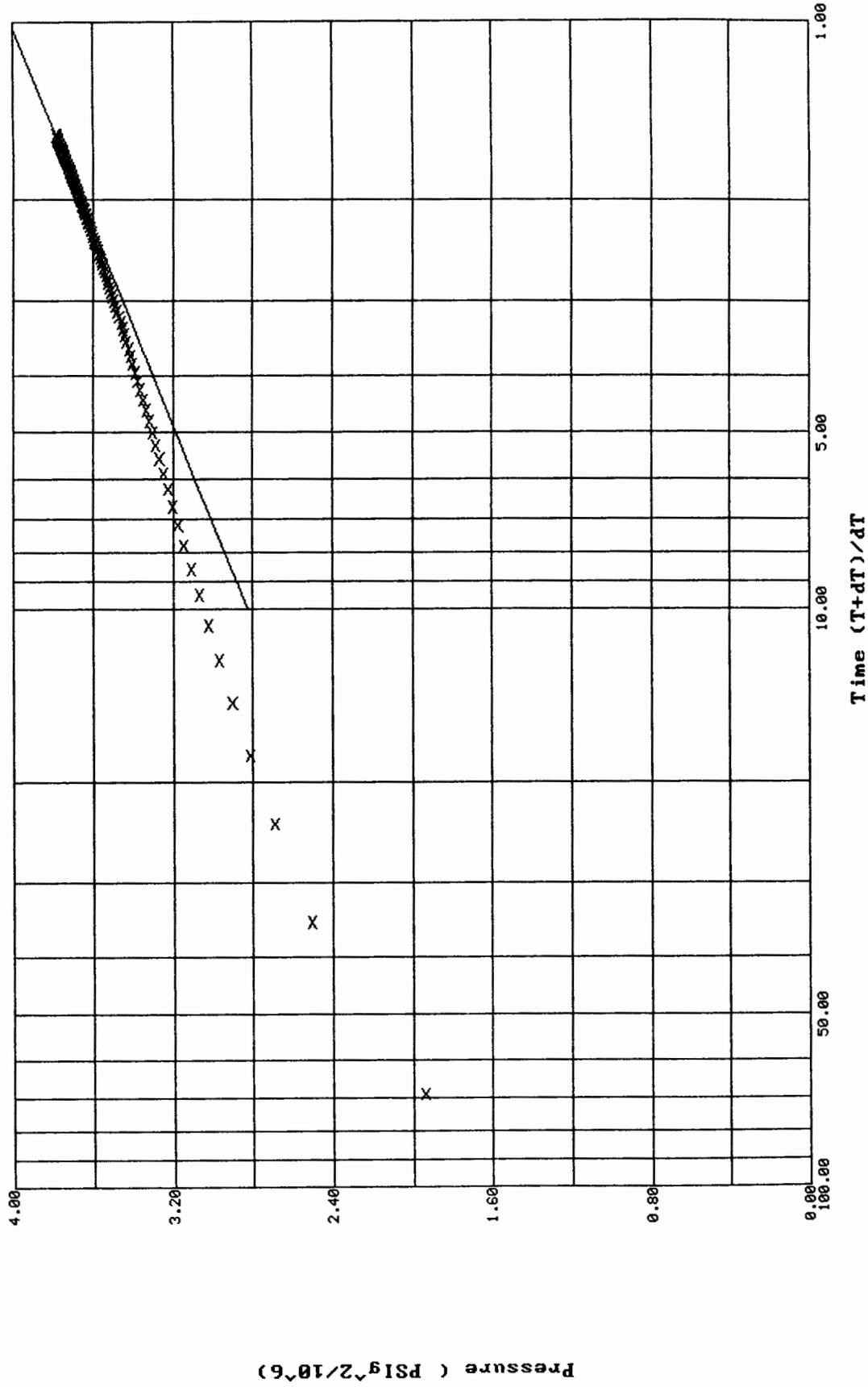


P² Horner Plot: shut-in #2

8850 DST #2 Kuhn #4-10 Helmrich & Payne

Slope: 1.1917 $\text{PSig}^2/10^6/\text{cycle}$

Ext. Pressure: 2004.0328 PSig



*** TOOL DIAGRAM *** CONVENTIONAL

WELL NAME: Kuhn #4-10
 LOCATION : 10-27S-34W Haskell Cty KS
 TICKET No. 8850 D.S.T. No. 2 DATE 3-19-96
 TOTAL TOOL TO BOTTOM OF TOP PACKERS 30
 INTERVAL TOOL
 BOTTOM PACKERS AND ANCHOR 40
 TOTAL TOOL 70
 DRILL COLLAR ANCHOR IN INTERVAL
 D.C. ANCHOR STND.Stands Single Total
 D.P. ANCHOR STND.Stands Single 1 Total 31
 TOTAL ASSEMBLY 101
 D.C. ABOVE TOOLS.Stands11 Single Total 673
 D.P. ABOVE TOOLS.Stands68 Single 1 Total 4267
 TOTAL DRILL COLLARS DRILL PIPE & TOOLS .. 5041
 TOTAL DEPTH 5035
 TOTAL DRILL PIPE ABOVE K.B. 6
 REMARKS:
 FLUID SAMPLER DATA
 SAMPLER RECOVERY -
 Gas 1000 ml, Oil 3000 ml, Pressure 650 PSI,
 Total 4000 ml
 SAMPLER ANALYSIS -
 Gravity 33.6 corrected @ 60 F
 PIT MUD ANALYSIS -
 Chlorides 1500 ppm, Viscosity 62,
 Mud wt 9.0, Filtrate 7.2, LCM 2#/bbl

P.O. SUB 1' 120' above DC.	4814
C.O. SUB 1'	4934
S.I. TOOL 5'	4940
3' Sampler	4943
HMV 5'	4948
JARS 5'	4953
SAFETY JOINT 2'	4955
PACKER 5'	4959
PACKER 5'	4964
DEPTH 4964	
STUBB 1'	4965
ANCHOR	
Alp. Rec. @	4970
32' perf	4997
1' CO	4997
T.C. DEPTH	
31' drill pipe	5029
1' CO.	5030
AK-1 recorder	5030
BULLNOSE 5'	
T.D.	5035

TRILOBITE TESTING L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Test Ticket

No 8850

Well Name & No. <u>Kuhn #4-10</u>	Test No. <u>2</u>	Date <u>3-19-96</u>
Company <u>Helmrich & Payne, Inc.</u>	Zone Tested <u>Morrow</u>	
Address <u>P.O. Box 558 Garden City, KS 67846</u>	Elevation <u>2970</u>	KB <u>2958</u> GL
Co. Rep / Geo. <u>Ken Jehlik / Ken LeBlanc</u> Cont. <u>Cheyenne #1</u>	Est. Ft. of Pay <u> </u>	Por. <u> </u> %
Location: Sec. <u>10</u> Twp. <u>27^S</u> Rge. <u>34^W</u> Co. <u>Haskell</u> State <u>KS</u>		
No. of Copies <u> </u> Distribution Sheet (Y, N) <u>Y</u>	Turnkey (Y, N) <u>N</u>	Evaluation (Y, N) <u> </u>

Interval Tested <u>4964 - 5035</u>	Initial Str Wt./Lbs. <u>95,000</u>	Unseated Str Wt./Lbs. <u>109,000</u>
Anchor Length <u>71</u>	Wt. Set Lbs. <u>30,000</u>	Wt. Pulled Loose/Lbs. <u>120,000</u>
Top Packer Depth <u>4959</u>	Hole Size — 7 7/8" <u> </u>	Rubber Size — 6 3/4" <u> </u>
Bottom Packer Depth <u>4964</u>	Wt. Pipe I.D. — 2.7 Ft. Run <u> </u>	
Total Depth <u>5035</u>	Drill Collar — 2.25 Ft. Run <u>4 1/2' x H 673'</u>	
Mud Wt. <u>9.0</u> LCM <u>2#</u> Vis. <u>62</u> WL <u>7.2</u>	Drill Pipe Size <u>4 1/2' x H</u>	Ft. Run <u>4267'</u>
Blow Description <u>IF: Fair to strong blow off bttm/bckt in 1 min.</u>		
<u>ISI: Bled off blow - Fair return blow off bttm in 3 mins (GTS)</u>		
<u>FF: Fair to strong return off bttm in 2 mins gauged mcf/day</u>		

Recovery — Total Feet <u>3920'</u>	Ft. in DC <u>673'</u>	Ft. in WP <u> </u>	Ft. in DP <u>3247</u>
Rec. <u> </u> Feet Of <u> </u>	%gas <u> </u>	%oil <u> </u>	%water <u> </u> %mud <u> </u>
Rec. <u> </u> Feet Of <u> </u>	%gas <u> </u>	%oil <u> </u>	%water <u> </u> %mud <u> </u>
Rec. <u>3920'</u> Feet Of <u>CGO</u>	<u>25</u> %gas <u>75</u> %oil	%water <u> </u>	%mud <u> </u>
Rec. <u> </u> Feet Of <u> </u>	%gas <u> </u>	%oil <u> </u>	%water <u> </u> %mud <u> </u>
Rec. <u> </u> Feet Of <u> </u>	%gas <u> </u>	%oil <u> </u>	%water <u> </u> %mud <u> </u>

BHT 135° °F Gravity 33 °API D@ 54° °F Corrected Gravity 33.6 °API

RW @ °F Chlorides ppm Recovery Chlorides 1,500 ppm System

(A) Initial Hydrostatic Mud <u>2433</u> <u>2423</u> PSI	Recorder No. <u>13339</u>	T-Started <u>0658 0430</u>
(B) First Initial Flow Pressure <u>320</u> <u>363</u> PSI	@ (depth) <u>5030</u>	T-Open <u>0700</u>
(C) First Final Flow Pressure <u>529</u> <u>488</u> PSI	Recorder No. <u>2342</u>	T-Pulled <u>1115</u>
(D) Initial Shut-in Pressure <u>2007</u> <u>1992</u> PSI	@ (depth) <u>4970</u>	T-Out <u>1500</u>
(E) Second Initial Flow Pressure <u>635</u> <u>659</u> PSI	Recorder No. <u> </u>	
(F) Second Final Flow Pressure <u>1171</u> <u>1130</u> PSI	@ (depth) <u> </u>	
(G) Final Shut-in Pressure <u>1946</u> <u>1932</u> PSI	Initial Opening <u>15</u>	Test <u>7 00</u>
(H) Final Hydrostatic Mud <u>2233</u> <u>2403</u> PSI	Initial Shut-in <u>60</u>	Jars <u>X</u> <u>200</u>
<u>Elec. Alp.</u> <u>AK-1 Mech.</u>	Final Flow <u>60</u>	Safety Joint <u>X</u> <u>50</u>

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 Shut-in 120 Straddle

Reversed into Circ. Sub X 35.00

Swab Tank Sampler X 200

Approved By *Ken Jehlik*

Our Representative Rod Steinbrink

Extra Packer

Elect. Rec. X 150

Other

TOTAL PRICE \$ 1335

5

TRILOBITE TESTING L.L.C.

P.O. Box 362 - Hays, Kansas 67601

FLUID SAMPLER DATA

Ticket No. 8850 Date 3-19-96
Company Name Helmrich & Payne Cont Cheyenne #1
Lease Kuhn #4-10 Test No. #2 Morrow
County Haskell KS Sec. 10 Twp. 27^S Rng. 34^W

SAMPLER RECOVERY

Gas 1,000 ML
Oil 3,000 ML
Mud — ML
Water — ML
Other — ML
Pressure 650* PSI
Total 4,000 ML

PIT MUD ANALYSIS

Chlorides 1,500 ppm.
Resistivity _____ ohms @ _____ F
Viscosity 62
Mud Weight 9.0
Filtrate 7.2
Other LCM 2#/bbl

SAMPLER ANALYSIS

Resistivity _____ ohms @ _____ F
Chlorides _____ ppm.
Gravity 33.6 corrected @ 60 F

PIPE RECOVERY

TOP
Resistivity _____ ohms @ _____ F
Chlorides _____ ppm.
MIDDLE
Resistivity _____ ohms @ _____ F
Chlorides _____ ppm.
BOTTOM
Resistivity _____ ohms @ _____ F
Chlorides _____ ppm.

E

NATURAL GAS ANALYSIS REPORT

Sampled by:
Trilobite Testing, L.L.C.
Hays, Kansas
Scott City, Kansas
Phone: 800-728-5369
Fax: 913-625-5620

Analyzed by:
Caraway Analytical, L.L.C.
728 North Roosevelt
Liberal, Kansas 67901
Phone: 316-624-5389
Fax: 316-626-7108

Lab Number:	960164	Analyzed:	03/22/96
Sample From:	Kuhn 4-20 DST 2	Pressure:	
Producer:	Helmerich & Payne	Temperature:	
Date:		Location:	10-27-34
Time:		County:	Haskell
Sampler:		State:	Kansas
Source:		Formation:	Morrow

	Mole %	GPM
Helium	He: 0.353	0.000
Oxygen	O2: 0.000	0.000
Nitrogen	N2: 18.236	0.000
Carbon Dioxide	CO2: 0.266	0.000
Methane	C1: 52.885	0.000
Ethane	C2: 8.455	2.261
Propane	C3: 9.855	2.716
Iso Butane	iC4: 2.253	0.737
Normal Butane	nC4: 3.970	1.252
Iso Pentane	iC5: 1.117	0.409
Normal Pentane	nC5: 1.198	0.434
Hexanes Plus	C6+: 1.412	0.616
TOTAL:		100.000 8.424
Z Fact:		0.9954
SP.GR.:		0.9440
BTU (SAT):		1285.9 @ 14.73 psia
BTU (DRY):		1308.6 @ 14.73 psia
OCTANE RATING:		94.7

COMMENTS:

0.000

