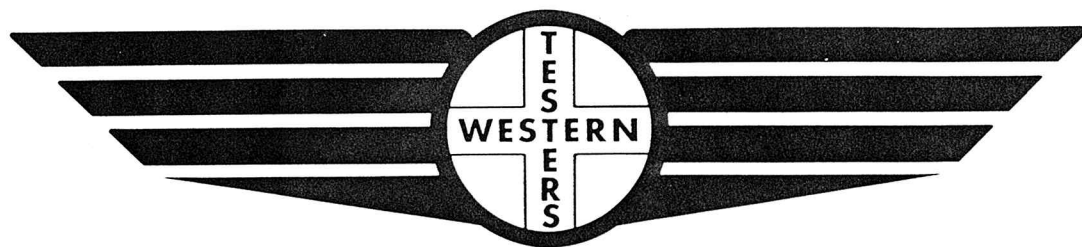


FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone (316) 262-5861

SUBSURFACE PRESSURE SURVEY

DATE	: 6-5-86	TICKET	: 11073
CUSTOMER	: NORTHERN PUMP COMPANY	LEASE	: MOSQUITO CREEK
WELL	: #20-1 TEST: 1	GEOLOGIST	: REED WACKER
ELEVATION	: 1240	FORMATION	: VIOLA
SECTION	: 20	TOWNSHIP	: 5S
RANGE	: 14E	COUNTY	: NEMAHA
Gauge SN#	: 10270	STATE	: KANSAS
		CLOCK	: 12

INTERVAL FROM	: 3595	TO	: 3690	TOTAL DEPTH	: 3935
DEPTH OF SELECTIVE ZONE	:				
PACKER DEPTH	: 3590	SIZE	: 6.63		
PACKER DEPTH	: 3595	SIZE	: 6.63		
PACKER DEPTH	: 3600	SIZE	: 6.63		
PACKER DEPTH	: 3695	SIZE	: 6.63		

DRILLING CON.	: ALLEN DRLG. RIG #5		
MUD TYPE	: CHEMICAL	VISCOSITY	: 42
WEIGHT	: 9.1	WATER LOSS (CC)	: 9.6
CHLORIDES (PPM)	: 1100		
JARS-MAKE	: WTC	SERIAL NUMBER	: 421
DID WELL FLOW ?	: NO	REVERSED OUT ?	: NO

DRILL COLLAR LENGTH	: 220	FT	I.D. inch	: 2.20
WEIGHT PIPE LENGTH	: 0	FT	I.D. inch	: 0.00
DRILL PIPE LENGTH	: 3331	FT	I.D. inch	: 3.80
TEST TOOL LENGTH	: 44	FT	TOOL SIZE	: 5.50
ANCHOR LENGTH	: 95	FT	ANCHOR SIZE	: 5.50
SURFACE CHOKE SIZE	: .75	IN	BOTTOM CHOKE SIZE	: .75
MAIN HOLE SIZE	: 7.875	IN	TOOL JOINT SIZE	: 4.5 XH

BLOW COMMENT #1 : WEAK 1" BLOW BUILDING TO A FAIR
 BLOW COMMENT #2 : 4" BLOW ON THE INITIAL FLOW.
 BLOW COMMENT #3 : WEAK 1" BLOW THROUGHOUT THE FINAL
 BLOW COMMENT #4 : FLOW.

RECOVERED	: 220	FT	OF: MUDDY WATER	1.03 Barrels
RECOVERED	: 0	FT	OF: WITH SHOW OF OIL	0.00 Barrels
RECOVERED	: 0	FT	OF:	0.00 Barrels
RECOVERED	: 0	FT	OF:	0.00 Barrels
RECOVERED	: 0	FT	OF:	0.00 Barrels
RECOVERED	: 0	FT	OF:	0.00 Barrels
RECOVERED	: 0	FT	OF:	0.00 Barrels
RECOVERED	: 0	FT	OF:	0.00 Barrels
RECOVERED	: 0	FT	OF:	0.00 Barrels
Total Barrels =	1.0		Total Production =	19.9 Bpd

REMARK 1 : CHLORIDES: 13000 PPM
 REMARK 2 :
 REMARK 3 :
 REMARK 4 :

SET PACKER(S)	: 5:10 AM	TIME STARTED OFF BOTTOM	: 9:25 AM
WELL TEMPERATURE	: 108		
INITIAL HYDROSTATIC PRESSURE		(A)	1827
INITIAL FLOW PERIOD	MIN: 15	(B)	96 PSI TO (C) : 99
INITIAL CLOSED IN PERIOD	MIN: 63	(D)	1365
FINAL FLOW PERIOD	MIN: 60	(E)	129 PSI TO (F) : 162
FINAL CLOSED IN PERIOD	MIN: 123	(G)	1337
FINAL HYDROSTATIC PRESSURE		(H)	1784

Pressure Transient Report

DATA FILE.....

COMPANY.....NORTHERN PUMP COMPANY

DATE OF TEST.....6-5-86

FIELD NAME.....MOSQUITO CREEK

WELL NAME.....#20-1

LOCATION.....NEMAHA-KANSAS

JOB NUMBER.....11073

GAUGE NUMBER.....10270

GAUGE DEPTH.....3935

COMMENTS

CHLORIDES: 13000 PPM

START UP TIME	(mo/da/yr)	(hr:min:sec)
	6./5/86.	5.: 10.: 0.

COMPANY : NORTHERN PUMP COMPANY
WELL : #20-1 JOB # : 11073
GAUGE # : 10270 DEPTH : 3935
MON/DAY : 6/ 5

FIELD : MOSQUITO CREEK

PAGE 1

REC#	REAL TIME HR:MIN:SEC	ELAPSE TIME MINS HOURS	PRESSURE PSIG	TEMP DEG F	DELTA P (Po-Pi)	DP/DT Psi/hr
1	5:10: 0	0 0.000	96.00	108.0	0.00	0.00
2	5:15: 0	5 0.083	96.00	108.0	0.00	0.00
3	5:20: 0	10 0.167	96.00	108.0	0.00	0.00
4	5:25: 0	15 0.250	99.00	108.0	3.00	35.93
5	5:28: 0	18 0.300	730.00	108.0	634.00	12669.49
6	5:31: 0	21 0.350	1000.00	108.0	904.00	5394.73
7	5:34: 0	24 0.400	1126.00	108.0	1030.00	2517.54
8	5:37: 0	27 0.450	1192.00	108.0	1096.00	1318.71
9	5:40: 0	30 0.500	1234.00	108.0	1138.00	839.18
10	5:43: 0	33 0.550	1259.00	108.0	1163.00	501.96
11	5:46: 0	36 0.600	1281.00	108.0	1185.00	439.57
12	5:49: 0	39 0.650	1295.00	108.0	1199.00	279.73
13	5:52: 0	42 0.700	1311.00	108.0	1215.00	319.69
14	5:55: 0	45 0.750	1318.00	108.0	1222.00	139.86
15	5:58: 0	48 0.800	1325.00	108.0	1229.00	140.55
16	6: 1: 0	51 0.850	1333.00	108.0	1237.00	159.84
17	6: 4: 0	54 0.900	1338.00	108.0	1242.00	99.90
18	6: 7: 0	57 0.950	1342.00	108.0	1246.00	79.92
19	6:10: 0	60 1.000	1346.00	108.0	1250.00	79.92
20	6:13: 0	63 1.050	1350.00	108.0	1254.00	80.31
21	6:16: 0	66 1.100	1354.00	108.0	1258.00	79.92
22	6:19: 0	69 1.150	1357.00	108.0	1261.00	59.94
23	6:22: 0	72 1.200	1360.00	108.0	1264.00	59.94
24	6:25: 0	75 1.250	1363.00	108.0	1267.00	59.94
25	6:28: 0	78 1.300	1365.00	108.0	1269.00	40.16
26	6:29: 0	79 1.317	129.00	108.0	33.00	-73371.83
27	6:33: 0	83 1.383	129.00	108.0	33.00	0.00
28	6:38: 0	88 1.467	129.00	108.0	33.00	0.00
29	6:43: 0	93 1.550	131.00	108.0	35.00	24.02
30	6:48: 0	98 1.633	133.00	108.0	37.00	23.95
31	6:53: 0	103 1.717	136.00	108.0	40.00	36.04
32	6:58: 0	108 1.800	139.00	108.0	43.00	36.04
33	7: 3: 0	113 1.883	145.00	108.0	49.00	71.86
34	7: 8: 0	118 1.967	151.00	108.0	55.00	72.07
35	7:13: 0	123 2.050	156.00	108.0	60.00	60.06
36	7:18: 0	128 2.133	159.00	108.0	63.00	35.93
37	7:23: 0	133 2.217	161.00	108.0	65.00	24.02
38	7:28: 0	138 2.300	162.00	108.0	66.00	12.01
39	7:31: 0	141 2.350	614.00	108.0	518.00	9031.18
40	7:34: 0	144 2.400	873.00	108.0	777.00	5174.95
41	7:37: 0	147 2.450	995.00	108.0	899.00	2437.62
42	7:40: 0	150 2.500	1062.00	108.0	966.00	1338.69
43	7:43: 0	153 2.550	1112.00	108.0	1016.00	1003.92
44	7:46: 0	156 2.600	1147.00	108.0	1051.00	699.32
45	7:49: 0	159 2.650	1167.00	108.0	1071.00	399.61
46	7:52: 0	162 2.700	1187.00	108.0	1091.00	399.61
47	7:55: 0	165 2.750	1205.00	108.0	1109.00	359.65
48	7:58: 0	168 2.800	1221.00	108.0	1125.00	321.25
49	8: 1: 0	171 2.850	1234.00	108.0	1138.00	259.75

COMPANY : NORTHERN PUMP COMPANY
WELL : #20-1 JOB # : 11073
GAUGE # : 10270 DEPTH : 3935
MON/DAY : 6/ 5

FIELD : MOSQUITO CREEK

PAGE 2

REC#	REAL TIME HR:MIN:SEC	ELAPSE TIME MINS HOURS	PRESSURE PSIG	TEMP DEG F	DELTA P (Po-Pi)	DP/DT Psi/hr
50	8: 4: 0	174 2.900	1242.00	108.0	1146.00	159.84
51	8: 7: 0	177 2.950	1252.00	108.0	1156.00	199.80
52	8:10: 0	180 3.000	1260.00	108.0	1164.00	159.84
53	8:13: 0	183 3.050	1266.00	108.0	1170.00	120.47
54	8:16: 0	186 3.100	1271.00	108.0	1175.00	99.90
55	8:19: 0	189 3.150	1276.00	108.0	1180.00	99.90
56	8:22: 0	192 3.200	1281.00	108.0	1185.00	99.90
57	8:25: 0	195 3.250	1286.00	108.0	1190.00	99.90
58	8:28: 0	198 3.300	1290.00	108.0	1194.00	80.31
59	8:31: 0	201 3.350	1294.00	108.0	1198.00	79.92
60	8:34: 0	204 3.400	1298.00	108.0	1202.00	79.92
61	8:37: 0	207 3.450	1302.00	108.0	1206.00	79.92
62	8:40: 0	210 3.500	1306.00	108.0	1210.00	79.92
63	8:43: 0	213 3.550	1309.00	108.0	1213.00	60.24
64	8:46: 0	216 3.600	1312.00	108.0	1216.00	59.94
65	8:49: 0	219 3.650	1315.00	108.0	1219.00	59.94
66	8:52: 0	222 3.700	1318.00	108.0	1222.00	59.94
67	8:55: 0	225 3.750	1320.00	108.0	1224.00	39.96
68	8:58: 0	228 3.800	1322.00	108.0	1226.00	40.16
69	9: 1: 0	231 3.850	1324.00	108.0	1228.00	39.96
70	9: 4: 0	234 3.900	1326.00	108.0	1230.00	39.96
71	9: 7: 0	237 3.950	1328.00	108.0	1232.00	39.96
72	9:10: 0	240 4.000	1330.00	108.0	1234.00	39.96
73	9:13: 0	243 4.050	1331.00	108.0	1235.00	20.08
74	9:16: 0	246 4.100	1332.00	108.0	1236.00	19.98
75	9:19: 0	249 4.150	1334.00	108.0	1238.00	39.96
76	9:22: 0	252 4.200	1335.00	108.0	1239.00	19.98
77	9:25: 0	255 4.250	1336.00	108.0	1240.00	19.98
78	9:28: 0	258 4.300	1337.00	108.0	1241.00	20.08
79	9:31: 0	261 4.350	1337.00	108.0	1241.00	0.00

FLUID SAMPLE REPORT

Date : 6-5-86

Ticket No. : 11073

Company : NORTHERN PUMP COMPANY

Well Name & No. : MOSQUITO CREEK #20-1

DST No. 1

County : NEMAHA

State : KANSAS

Sampler No. : 2

Test Interval : 3595-3690

=====

Pressure in Sampler	10	PSIG	BHT	108	Deg F
---------------------	----	------	-----	-----	-------

Total Volume of Sampler :	3150	cc
---------------------------	------	----

Total Volume of Sample :	2750	cc
--------------------------	------	----

Oil:	TRACE	cc
------	-------	----

Water:	1275	cc
--------	------	----

Mud:	1475	cc
------	------	----

Gas:	NONE	cu ft
------	------	-------

Other:		cc
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=====

RESITIVITY

Water	.35	@	83	Deg F	Chloride Content	13000	ppm
-------	-----	---	----	-------	------------------	-------	-----

Mud Pit Sample	2.2	@	71	Deg F	Chloride Content	1100	ppm
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Gas/Oil Ratio		Gravity		API @	Deg F
---------------	--	---------	--	-------	-------

Where was sample drained RIG

Remarks: NITRATES OF MUD 950 PPM

NITRATES OF RECOVERY 158 PPM

WELL TEST ANALYSIS REPORT HORNER METHOD

COMPANY :NORTHERN PUMP COMPANY
DATE :6-5-86
FIELD :MOSQUITO CREEK
WELL :#20-1
AREA :NEMAHA-KANSAS
JOB NUMBER :11073
GAUGE NUMBER :10270
GAUGE DEPTH :3935
ZONE TESTED :3595-3690

=====I=N=P=U=T=====D=A=T=A=====S=U=M=M=A=R=Y=====

NETPAY	H	8.0	Feet
POROSITY	POR	0.15	Frac
VISCOSITY.	U	1.3000	Cp
FORMATION VOLUME FACTOR.	B	1.05	Rb/stb
TOTAL COMPRESSIBILITY.	Ct	25.000D-06	Psi^-1
WELLBORE RADIUS.	Rw	0.520	Feet
DRAINAGE RADIUS.	Re	1500.0	Feet
RESERVOIR TEMPERATURE.	T	108.0	Deg F
GRAVITY OF FLUID	G	30.0	
INITIAL PRESSURE	Pi	960.00E-01	Psig
PRESSURE AT SHUT-IN.	Pwf	990.00E-01	Psig
FINAL BUILDUP PRESSURE	Ps	133.70E+01	Psig
FLOW RATE at SHUT-IN	Q	19.9	Bbl/day
TOTAL FLOW TIME.	T	1.3	Hours

=====R=E=G=R=E=S=S=I=O=N=====R=E=S=U=L=T=S=====

LEAST SQUARE RESULTS OVER THE INTERVAL :
FROM .591 TO .649

SLOPE OF THE LINE.	347.36E+00	psi/cycle
FALSE PRESSURE, PSTAR.	139.92E+01	psi
PRESSURE AT 1 HOUR	129.46E+01	psi

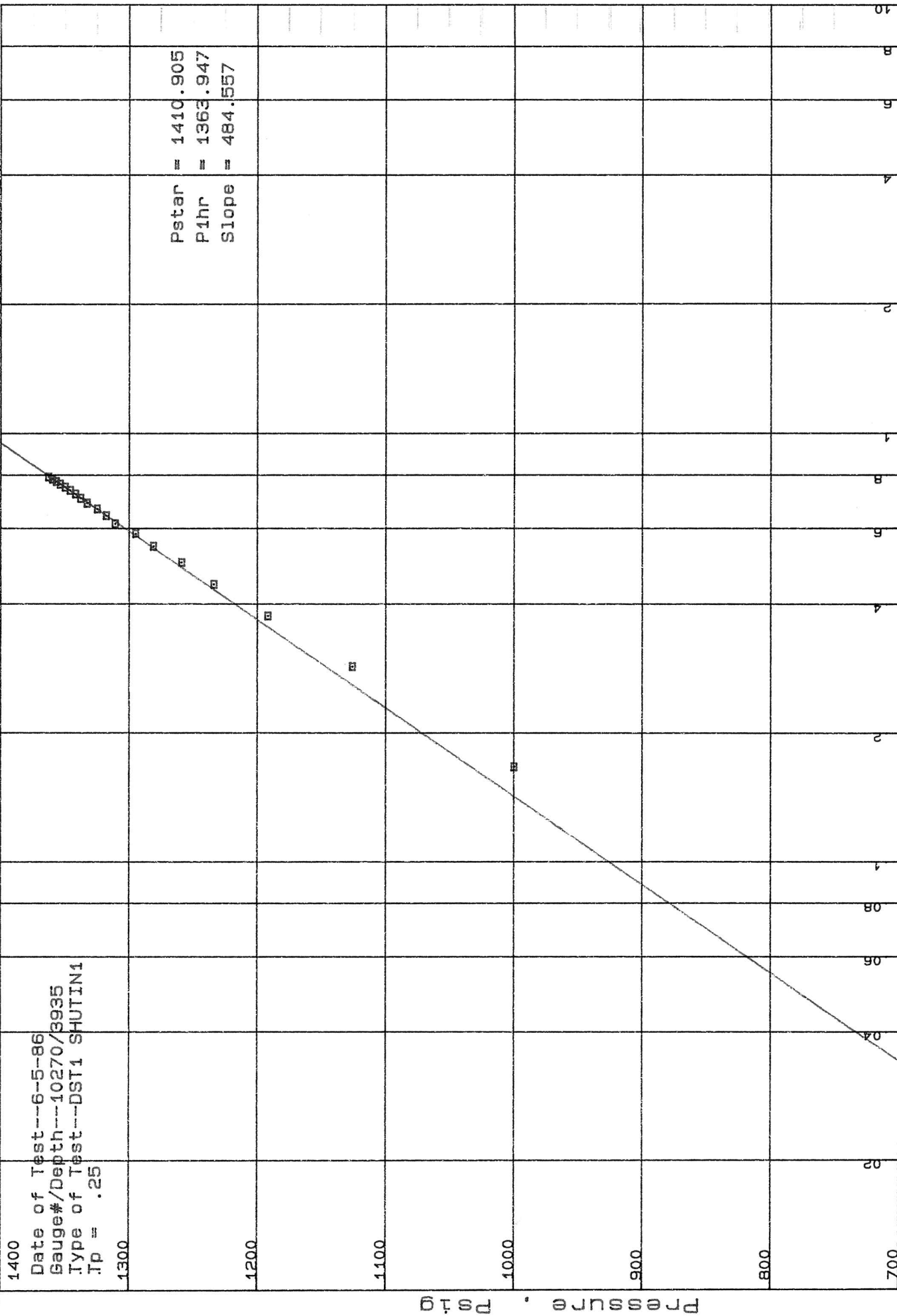
=====A=N=A=L=Y=S=I=S=====R=E=S=U=L=T=S=====

TRANSMISSIBILITY.	Kh/u	9.78	md-ft/cp
FLOW CAPACITY.	Kh	12.72	md-ft
PERMEABILITY to PHASE.	K	1.59	md
DAMAGE RATIO	Dr	1.3	
RADIUS OF INVESTIGATION.	Rinv	20.7	ft
SKIN FACTOR.	S	1.0	
AVERAGE PRESSURE	Pbar	139.92E+01	psig
DIMENSIONLESS TIME	Tda	0.000	
MATTHEWS-BRONS-HAZEBROEK	PDmbh	0.000	

DATE: 6-5-86
Gauge# / Depth: 10270 / 3935
Type of Test: DST1 SHUTIN1
IP = .25

WELL # 720 1
LOCATION: NEMAH-KANSAS

ENGINEER: WESTERN



Pstar = 1410.905
P1hr = 1363.947
Slope = 484.557

COMPANY :NORTHERN PUMP COMPANY
WELL :#20-1
FIELD :MOSQUITO CREEK
LOCATION :NEMAHA-KANSAS
DATE OF TEST :6-5-86
GAUGE-DEPTH :10270/3935
JOB NUMBER :11073

REGRESSION BASED ON HORNER PRESSURE ANALYSIS

REGRESSION RUN THRU THE FOLLOWING POINTS

STARTING AT: .642 TO: .782

STANDARD DEVIATION OF ESTIMATE : .5767
COEFFICIENT OF DETERMINATION : .9983
ERROR SUM OF SQUARES IS EQUAL TO : 2.3287

PSTAR = 1410.905
P@ 1HOUR = 1363.947
SLOPE = 484.557

COMPANY : NORTHERN PUMP COMPANY

FIELD : MOSQUITO CREEK

WELL : #20-1

JOB # : 11073

GAUGE # : 10270

DEPTH : 3935

MON/DAY : 6/ 5

PAGE 1

TEST REPORTED : SHUTIN 1
PRODUCTION Tp : 15 Minutes

REC#	REAL TIME HR:MIN:SEC	ELAPSE TIME MINS HOURS	PRESSURE PSIG	TEMP DEG F	HORNER dt/(T+dt)	DELTA P PSIG
5	5:28: 0	18 0.000	730.00	108.0	0.00000000	0.00
6	5:31: 0	21 0.050	1000.00	108.0	0.16680227	270.00
7	5:34: 0	24 0.100	1126.00	108.0	0.28591353	396.00
8	5:37: 0	27 0.150	1192.00	108.0	0.37522879	462.00
9	5:40: 0	30 0.200	1234.00	108.0	0.44468546	504.00
10	5:43: 0	33 0.250	1259.00	108.0	0.50000000	529.00
11	5:46: 0	36 0.300	1281.00	108.0	0.54549491	551.00
12	5:49: 0	39 0.350	1295.00	108.0	0.58340114	565.00
13	5:52: 0	42 0.400	1311.00	108.0	0.61547124	581.00
14	5:55: 0	45 0.450	1318.00	108.0	0.64295679	588.00
15	5:58: 0	48 0.500	1325.00	108.0	0.66666669	595.00
16	6: 1: 0	51 0.550	1333.00	108.0	0.68751907	603.00
17	6: 4: 0	54 0.600	1338.00	108.0	0.70591617	608.00
18	6: 7: 0	57 0.650	1342.00	108.0	0.72226745	612.00
19	6:10: 0	60 0.700	1346.00	108.0	0.73689622	616.00
20	6:13: 0	63 0.750	1350.00	108.0	0.75000000	620.00
21	6:16: 0	66 0.800	1354.00	108.0	0.76191586	624.00
22	6:19: 0	69 0.850	1357.00	108.0	0.77274746	627.00
23	6:22: 0	72 0.900	1360.00	108.0	0.78263640	630.00
24	6:25: 0	75 0.950	1363.00	108.0	0.79170054	633.00
25	6:28: 0	78 1.000	1365.00	108.0	0.80000001	635.00

DATE ACQ. 10/11/86 10:00 AM
 FIELD: MOSQUITO CREEK

WELL NO. 720 1
 LOCATION: NEMAH-KANSAS

ENGINEER: WESTERN

Date of Test--6-5-86
 Gauge#/Depth--10270/3935
 Type of Test--DST1 SHUTIN2
 Ip = 1

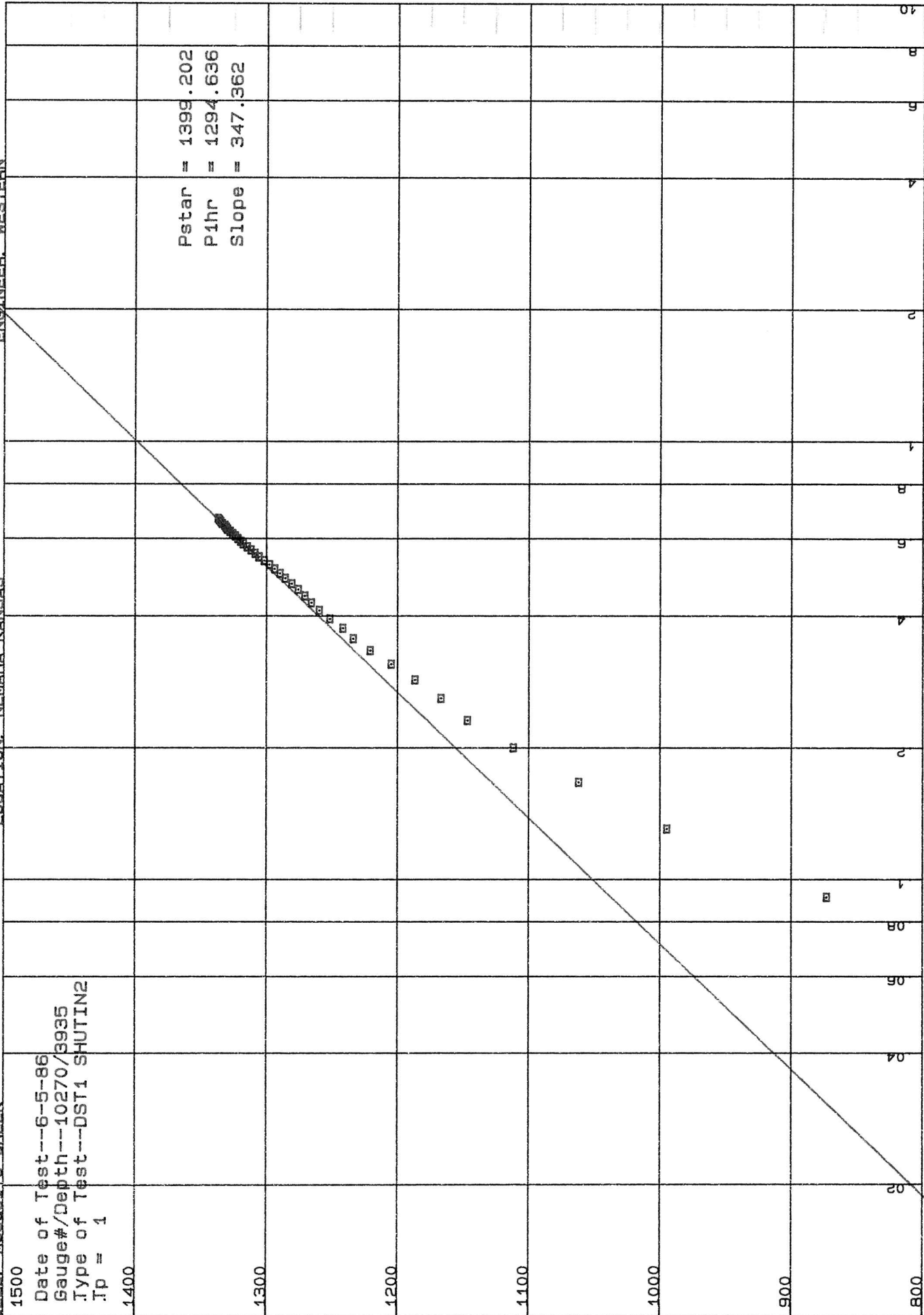
Pstar = 1399.202
 P1hr = 1294.636
 Slope = 347.362

Pressure, Psig

Job No. 11073
 RES-SOFT INC

Horner Ratio, dt/(T+dt)

RES-TRAN (tm)



COMPANY :NORTHERN PUMP COMPANY
WELL :#20-1
FIELD :MOSQUITO CREEK
LOCATION :NEMAHA-KANSAS
DATE OF TEST :6-5-86
GAUGE-DEPTH :10270/3935
JOB NUMBER :11073

REGRESSION BASED ON HORNER PRESSURE ANALYSIS

REGRESSION RUN THRU THE FOLLOWING POINTS

STARTING AT: .591 TO: .649

STANDARD DEVIATION OF ESTIMATE : .3504
COEFFICIENT OF DETERMINATION : .9944
ERROR SUM OF SQUARES IS EQUAL TO : .7367

PSTAR = 1399.202
P@ 1HOUR = 1294.636
SLOPE = 347.3625

COMPANY : NORTHERN PUMP COMPANY

FIELD : MOSQUITO CREEK

WELL : #20-1

JOB # : 11073

GAUGE # : 10270

DEPTH : 3935

MON/DAY : 6/ 5

PAGE 1

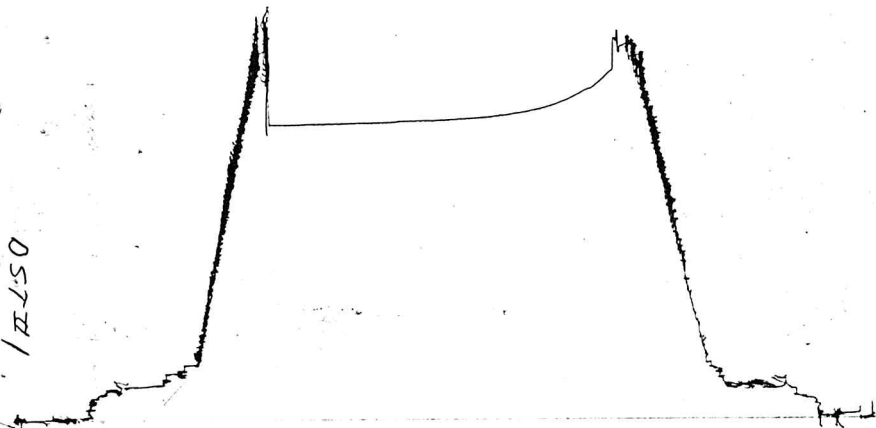
TEST REPORTED : SHUTIN 2

PRODUCTION Tp : 1 Hours

REC#	REAL TIME HR:MIN:SEC	ELAPSE TIME MINS HOURS	PRESSURE PSIG	TEMP DEG F	HORNER dt/(T+dt)	DELTA P PSIG
38	7:28: 0	138 0.000	162.00	108.0	0.00000000	0.00
39	7:31: 0	141 0.050	614.00	108.0	0.04766334	452.00
40	7:34: 0	144 0.100	873.00	108.0	0.09098979	711.00
41	7:37: 0	147 0.150	995.00	108.0	0.13054553	833.00
42	7:40: 0	150 0.200	1062.00	108.0	0.16680227	900.00
43	7:43: 0	153 0.250	1112.00	108.0	0.20000000	950.00
44	7:46: 0	156 0.300	1147.00	108.0	0.23079813	985.00
45	7:49: 0	159 0.350	1167.00	108.0	0.25931284	1005.00
46	7:52: 0	162 0.400	1187.00	108.0	0.28578901	1025.00
47	7:55: 0	165 0.450	1205.00	108.0	0.31043771	1043.00
48	7:58: 0	168 0.500	1221.00	108.0	0.33333334	1059.00
49	8: 1: 0	171 0.550	1234.00	108.0	0.35485902	1072.00
50	8: 4: 0	174 0.600	1242.00	108.0	0.37503815	1080.00
51	8: 7: 0	177 0.650	1252.00	108.0	0.39399320	1090.00
52	8:10: 0	180 0.700	1260.00	108.0	0.41183227	1098.00
53	8:13: 0	183 0.750	1266.00	108.0	0.42857143	1104.00
54	8:16: 0	186 0.800	1271.00	108.0	0.44445953	1109.00
55	8:19: 0	189 0.850	1276.00	108.0	0.45948800	1114.00
56	8:22: 0	192 0.900	1281.00	108.0	0.47372478	1119.00
57	8:25: 0	195 0.950	1286.00	108.0	0.48723084	1124.00
58	8:28: 0	198 1.000	1290.00	108.0	0.50000000	1128.00
59	8:31: 0	201 1.050	1294.00	108.0	0.51220673	1132.00
60	8:34: 0	204 1.100	1298.00	108.0	0.52383167	1136.00
61	8:37: 0	207 1.150	1302.00	108.0	0.53491539	1140.00
62	8:40: 0	210 1.200	1306.00	108.0	0.54549491	1144.00
63	8:43: 0	213 1.250	1309.00	108.0	0.55555558	1147.00
64	8:46: 0	216 1.300	1312.00	108.0	0.56522661	1150.00
65	8:49: 0	219 1.350	1315.00	108.0	0.57448578	1153.00
66	8:52: 0	222 1.400	1318.00	108.0	0.58335876	1156.00
67	8:55: 0	225 1.450	1320.00	108.0	0.59186929	1158.00
68	8:58: 0	228 1.500	1322.00	108.0	0.60000002	1160.00
69	9: 1: 0	231 1.550	1324.00	108.0	0.60785067	1162.00
70	9: 4: 0	234 1.600	1326.00	108.0	0.61539906	1164.00
71	9: 7: 0	237 1.650	1328.00	108.0	0.62266237	1166.00
72	9:10: 0	240 1.700	1330.00	108.0	0.62965643	1168.00
73	9:13: 0	243 1.750	1331.00	108.0	0.63636363	1169.00
74	9:16: 0	246 1.800	1332.00	108.0	0.64286339	1170.00
75	9:19: 0	249 1.850	1334.00	108.0	0.64913481	1172.00
76	9:22: 0	252 1.900	1335.00	108.0	0.65518981	1173.00
77	9:25: 0	255 1.950	1336.00	108.0	0.66103941	1174.00
78	9:28: 0	258 2.000	1337.00	108.0	0.66666669	1175.00
79	9:31: 0	261 2.050	1337.00	108.0	0.67213643	1175.00

St #11073

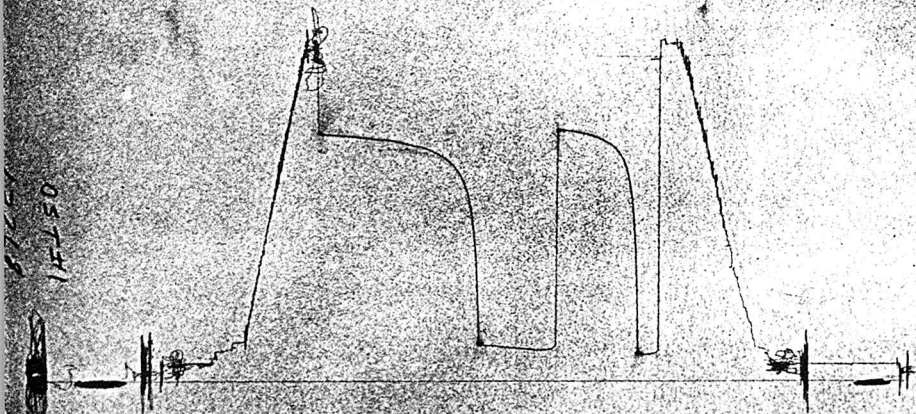
Below Straddle



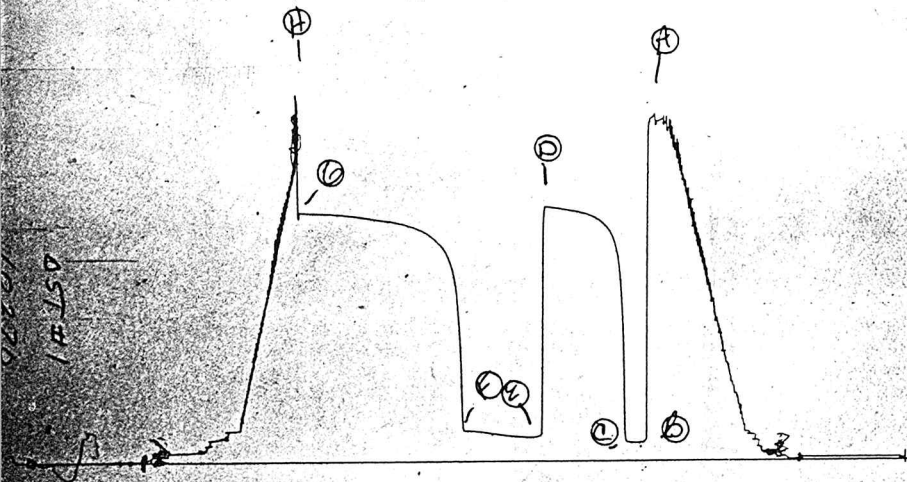
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Ref # 11073

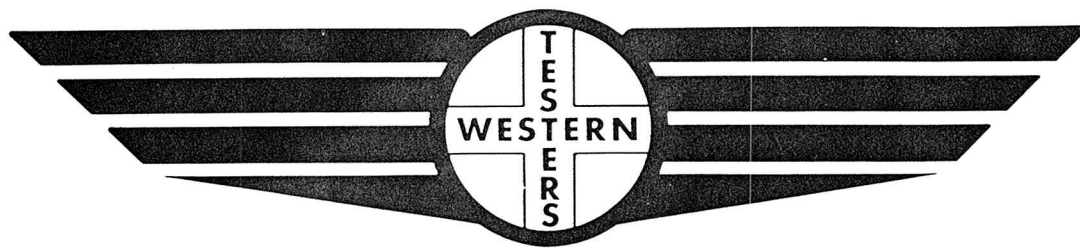
0



St # 11073
I



FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone (316) 262-5861

SUBSURFACE PRESSURE SURVEY

DATE : 6-5-86 TICKET : 11074
 CUSTOMER : NORTHERN PUMP COMPANY LEASE : MOSQUITO CREEK
 WELL : #20-1 TEST: 2 GEOLOGIST : R. WACKER
 ELEVATION : 1240 FORMATION : SIMPSON
 SECTION : 20 TOWNSHIP : 5S
 RANGE : 14E COUNTY : NEMAHA STATE : KANSAS
 GAUGE SN# : 10270 RANGE : 4150 CLOCK : 12

INTERVAL FROM : 3758 TO : 3809 TOTAL DEPTH : 3935
 DEPTH OF SELECTIVE ZONE :
 PACKER DEPTH : 3753 SIZE : 6.63
 PACKER DEPTH : 3758 SIZE : 6.63
 PACKER DEPTH : 3809 SIZE : 6.63
 PACKER DEPTH : 3814 SIZE : 6.63

DRILLING CON. : ALLEN DRLG. RIG #5
 MUD TYPE : CHEMICAL VISCOSITY : 45
 WEIGHT : 9.1 WATER LOSS (CC) : 9.8
 CHLORIDES (PPM) : 1500
 JARS-MAKE : WTC SERIAL NUMBER : 421
 DID WELL FLOW ? : NO REVERSED OUT ? : NO

DRILL COLLAR LENGTH : 370 FT I.D. inch : 2.20
 WEIGHT PIPE LENGTH : 0 FT I.D. inch : 0.00
 DRILL PIPE LENGTH : 3344 FT I.D. inch : 3.80
 TEST TOOL LENGTH : 44 FT TOOL SIZE : 5.50
 ANCHOR LENGTH : 51 FT ANCHOR SIZE : 5.50
 SURFACE CHOKE SIZE : .75 IN BOTTOM CHOKE SIZE : .75
 MAIN HOLE SIZE : 7.875 IN TOOL JOINT SIZE : 4.5 XH

BLOW COMMENT #1 : INITIAL FLOW: WEAK 1" BLOW.
 BLOW COMMENT #2 : FINAL FLOW: WEAK 1" BLOW.
 BLOW COMMENT #3 :
 BLOW COMMENT #4 :

RECOVERED : 90 FT OF: SLT OIL & GAS CUT MUD 0.42 Barrels
 RECOVERED : 0 FT OF: (3%OIL;2%GAS;95%MUD) 0.00 Barrels
 RECOVERED : 120 FT OF: SLT OIL CUT MUD 0.56 Barrels
 RECOVERED : 0 FT OF: (1%OIL;99%MUD) 0.00 Barrels
 RECOVERED : 0 FT OF: 0.00 Barrels
 RECOVERED : 0 FT OF: 0.00 Barrels
 RECOVERED : 0 FT OF: 0.00 Barrels
 RECOVERED : 0 FT OF: 0.00 Barrels
 RECOVERED : 0 FT OF: 0.00 Barrels
 Total Barrels = 1.0 Total Production = 19.0 Bpd

REMARK 1 : CHLORIDES: 7000 PPM
 REMARK 2 :
 REMARK 3 :
 REMARK 4 :

SET PACKER(S) : 1:55 PM TIME STARTED OFF BOTTOM : 6:10 PM
 WELL TEMPERATURE : 109
 INITIAL HYDROSTATIC PRESSURE (A) 1867
 INITIAL FLOW PERIOD MIN: 15 (B) 62 PSI TO (C) : 68
 INITIAL CLOSED IN PERIOD MIN: 60 (D) 1420
 FINAL FLOW PERIOD MIN: 60 (E) 97 PSI TO (F) : 150
 FINAL CLOSED IN PERIOD MIN: 123 (G) 1406
 FINAL HYDROSTATIC PRESSURE (H) 1850

Pressure Transient Report

DATA FILE.....
COMPANY.....NORTHERN PUMP COMPANY
DATE OF TEST.....6-5-86
FIELD NAME.....MOSQUITO CREEK
WELL NAME.....#20-1
LOCATION.....NEMAHA-KANSAS
JOB NUMBER.....11074
GAUGE NUMBER.....10270
GAUGE DEPTH.....3935

COMMENTS
CHLORIDES: 7000 PPM

START UP TIME	(mo/da/yr)	(hr:min:sec)
	6./5/86.	1.: 55.: 0.

COMPANY : NORTHERN PUMP COMPANY
WELL .: #20-1 JOB # : 11074
GAUGE. # : 10270 -DEPTH : 3935
MON/DAY : 6/ 5

FIELD : MOSQUITO CREEK

PAGE 1

REC#	REAL TIME HR:MIN:SEC	ELAPSE TIME MINS HOURS	PRESSURE PSIG	TEMP DEG F	DELTA P (Po-Pi)	DP/DT Psi/hr
1	1:55: 0	0 0.000	62.00	109.0	0.00	0.00
2	2: 0: 0	5 0.083	62.00	109.0	0.00	0.00
3	2: 5: 0	10 0.167	64.00	109.0	2.00	24.02
4	2:10: 0	15 0.250	68.00	109.0	6.00	47.91
5	2:13: 0	18 0.300	975.00	109.0	913.00	18211.14
6	2:16: 0	21 0.350	1140.00	109.0	1078.00	3296.78
7	2:19: 0	24 0.400	1224.00	109.0	1162.00	1678.36
8	2:22: 0	27 0.450	1269.00	109.0	1207.00	899.12
9	2:25: 0	30 0.500	1307.00	109.0	1245.00	759.26
10	2:28: 0	33 0.550	1331.00	109.0	1269.00	481.88
11	2:31: 0	36 0.600	1348.00	109.0	1286.00	339.67
12	2:34: 0	39 0.650	1365.00	109.0	1303.00	339.67
13	2:37: 0	42 0.700	1374.00	109.0	1312.00	179.82
14	2:40: 0	45 0.750	1382.00	109.0	1320.00	159.84
15	2:43: 0	48 0.800	1390.00	109.0	1328.00	160.63
16	2:46: 0	51 0.850	1396.00	109.0	1334.00	119.88
17	2:49: 0	54 0.900	1400.00	109.0	1338.00	79.92
18	2:52: 0	57 0.950	1404.00	109.0	1342.00	79.92
19	2:55: 0	60 1.000	1408.00	109.0	1346.00	79.92
20	2:58: 0	63 1.050	1411.00	109.0	1349.00	60.24
21	3: 1: 0	66 1.100	1414.00	109.0	1352.00	59.94
22	3: 4: 0	69 1.150	1416.00	109.0	1354.00	39.96
23	3: 7: 0	72 1.200	1418.00	109.0	1356.00	39.96
24	3:10: 0	75 1.250	1420.00	109.0	1358.00	39.96
25	3:11: 0	76 1.267	97.00	109.0	35.00	-79691.30
26	3:15: 0	80 1.333	97.00	109.0	35.00	0.00
27	3:20: 0	85 1.417	97.00	109.0	35.00	0.00
28	3:25: 0	90 1.500	103.00	109.0	41.00	71.86
29	3:30: 0	95 1.583	108.00	109.0	46.00	60.06
30	3:35: 0	100 1.667	112.00	109.0	50.00	48.05
31	3:40: 0	105 1.750	116.00	109.0	54.00	47.91
32	3:45: 0	110 1.833	121.00	109.0	59.00	60.06
33	3:50: 0	115 1.917	126.00	109.0	64.00	60.06
34	3:55: 0	120 2.000	132.00	109.0	70.00	71.86
35	4: 0: 0	125 2.083	138.00	109.0	76.00	72.07
36	4: 5: 0	130 2.167	144.00	109.0	82.00	72.07
37	4:10: 0	135 2.250	150.00	109.0	88.00	71.86
38	4:13: 0	138 2.300	956.00	109.0	894.00	16183.22
39	4:16: 0	141 2.350	1085.00	109.0	1023.00	2577.48
40	4:19: 0	144 2.400	1149.00	109.0	1087.00	1278.75
41	4:22: 0	147 2.450	1192.00	109.0	1130.00	859.16
42	4:25: 0	150 2.500	1222.00	109.0	1160.00	599.41
43	4:28: 0	153 2.550	1242.00	109.0	1180.00	401.57
44	4:31: 0	156 2.600	1261.00	109.0	1199.00	379.63
45	4:34: 0	159 2.650	1275.00	109.0	1213.00	279.73
46	4:37: 0	162 2.700	1287.00	109.0	1225.00	239.77
47	4:40: 0	165 2.750	1300.00	109.0	1238.00	259.75
48	4:43: 0	168 2.800	1312.00	109.0	1250.00	240.94
49	4:46: 0	171 2.850	1322.00	109.0	1260.00	199.80

COMPANY : NORTHERN PUMP COMPANY
WELL : #20-1 JOB # : 11074
GAUGE # : 10270 .DEPTH : 3935
MON/DAY : 6/ 5

FIELD : MOSQUITO CREEK

PAGE 2

REC#	REAL TIME HR:MIN:SEC	ELAPSE TIME MINS HOURS	PRESSURE PSIG	TEMP DEG F	DELTA P (Po-Pi)	DP/DT Psi/hr
50	4:49: 0	174 2.900	1329.00	109.0	1267.00	139.86
51	4:52: 0	177 2.950	1339.00	109.0	1277.00	199.80
52	4:55: 0	180 3.000	1345.00	109.0	1283.00	119.88
53	4:58: 0	183 3.050	1350.00	109.0	1288.00	100.39
54	5: 1: 0	186 3.100	1355.00	109.0	1293.00	99.90
55	5: 4: 0	189 3.150	1359.00	109.0	1297.00	79.92
56	5: 7: 0	192 3.200	1363.00	109.0	1301.00	79.92
57	5:10: 0	195 3.250	1367.00	109.0	1305.00	79.92
58	5:13: 0	198 3.300	1370.00	109.0	1308.00	60.24
59	5:16: 0	201 3.350	1372.00	109.0	1310.00	39.96
60	5:19: 0	204 3.400	1374.00	109.0	1312.00	39.96
61	5:22: 0	207 3.450	1376.00	109.0	1314.00	39.96
62	5:25: 0	210 3.500	1378.00	109.0	1316.00	39.96
63	5:28: 0	213 3.550	1380.00	109.0	1318.00	40.16
64	5:31: 0	216 3.600	1383.00	109.0	1321.00	59.94
65	5:34: 0	219 3.650	1387.00	109.0	1325.00	79.92
66	5:37: 0	222 3.700	1391.00	109.0	1329.00	79.92
67	5:40: 0	225 3.750	1394.00	109.0	1332.00	59.94
68	5:43: 0	228 3.800	1396.00	109.0	1334.00	40.16
69	5:46: 0	231 3.850	1398.00	109.0	1336.00	39.96
70	5:49: 0	234 3.900	1400.00	109.0	1338.00	39.96
71	5:52: 0	237 3.950	1402.00	109.0	1340.00	39.96
72	5:55: 0	240 4.000	1403.00	109.0	1341.00	19.98
73	5:58: 0	243 4.050	1404.00	109.0	1342.00	20.08
74	6: 1: 0	246 4.100	1405.00	109.0	1343.00	19.98
75	6: 4: 0	249 4.150	1406.00	109.0	1344.00	19.98
76	6: 7: 0	252 4.200	1406.00	109.0	1344.00	0.00
77	6:10: 0	255 4.250	1406.00	109.0	1344.00	0.00
78	6:13: 0	258 4.300	1406.00	109.0	1344.00	0.00

FLUID SAMPLE REPORT

Date : 6-5-86

Ticket No. : 11074

Company : NORTHERN PUMP COMPANY

Well Name & No. : MOSQUITO CREEK #20-1

DST No. 2

County : NEMAHA

State : KANSAS

Sampler No. : 2

Test Interval : 3758-3809

=====

Pressure in Sampler 23 PSIG BHT 109 Deg F

Total Volume of Sampler : 3150 cc

Total Volume of Sample : 3050 cc

Oil: 70 cc

Water: 450 cc

Mud: 2530 cc

Gas: NONE cu ft

Other: cc

=====

RESITIVITY

Water .45 @ 67 Deg F Chloride Content 7000 ppm

Mud Pit Sample 1.2 @ 78 Deg F Chloride Content 1500 ppm

Gas/Oil Ratio Gravity API @ Deg F

Where was sample drained RIG

Remarks: DID NOT HAVE ENOUGH OIL SAMPLE TO CHECK GRAVITY

WELL TEST ANALYSIS REPORT HORNER METHOD

COMPANY :NORTHERN PUMP COMPANY
DATE :6-5-86
FIELD :MOSQUITO CREEK
WELL :#20-1
AREA :NEMAHA-KANSAS
JOB NUMBER :11074
GAUGE NUMBER :10270
GAUGE DEPTH :3935
ZONE TESTED :3758-3809

=====I=N=P=U=T====D=A=T=A====S=U=M=M=A=R=Y=====

NETPAY	H	5.0	Feet
POROSITY	POR	0.15	Frac
VISCOSITY.	U	1.4000	Cp
FORMATION VOLUME FACTOR.	B	1.05	Rb/stb
TOTAL COMPRESSIBILITY.	Ct	25.000D-06	Psi^-1
WELLBORE RADIUS.	Rw	0.520	Feet
DRAINAGE RADIUS.	Re	1500.0	Feet
RESERVOIR TEMPERATURE.	T	109.0	Deg F
GRAVITY OF FLUID	G	30.0	
INITIAL PRESSURE	Pi	620.00E-01	Psig
PRESSURE AT SHUT-IN.	Pwf	680.00E-01	Psig
FINAL BUILDUP PRESSURE	Ps	140.60E+01	Psig
FLOW RATE at SHUT-IN	Q	19.0	Bbl/day
TOTAL FLOW TIME.	T	1.3	Hours

=====R=E=G=R=E=S=S=I=O=N====R=E=S=U=L=T=S=====

LEAST SQUARE RESULTS OVER THE INTERVAL :
FROM .565 TO .649

SLOPE OF THE LINE.	440.25E+00	psi/cycle
FALSE PRESSURE, PSTAR.	149.02E+01	psi
PRESSURE AT 1 HOUR	135.77E+01	psi

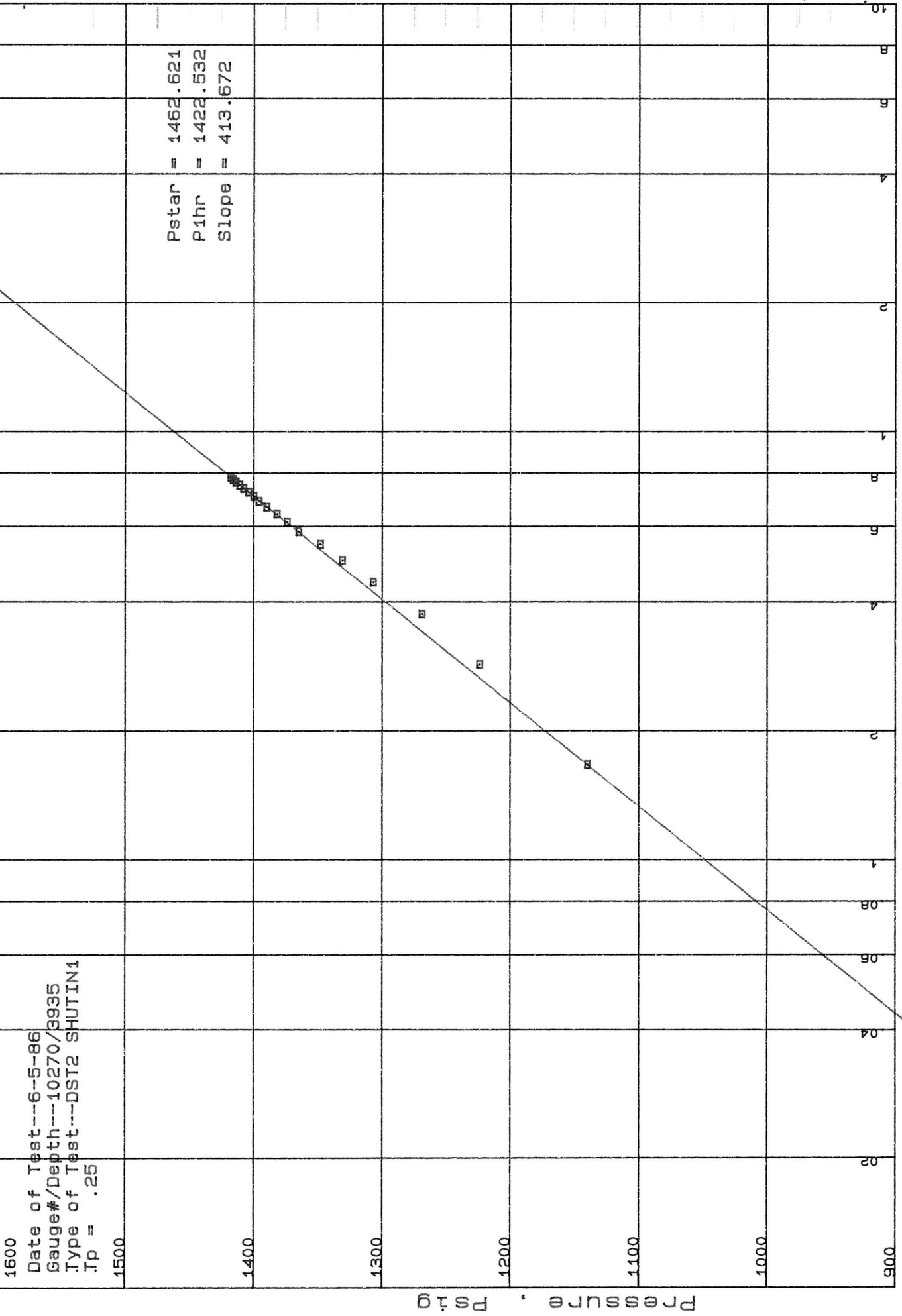
=====A=N=A=L=Y=S=I=S====R=E=S=U=L=T=S=====

TRANSMISSIBILITY.	Kh/u	7.37	md-ft/cp
FLOW CAPACITY.	Kh	10.32	md-ft
PERMEABILITY to PHASE.	K	2.06	md
DAMAGE RATIO	Dr	1.1	
RADIUS OF INVESTIGATION.	Rinv	22.8	ft
SKIN FACTOR.	S	0.3	
AVERAGE PRESSURE	Pbar	149.01E+01	psig
DIMENSIONLESS TIME	Tda	0.000	
MATTHEWS-BRONS-HAZEBROEK	PDmbh	0.000	

WELL NO. 1
 FIELD: MOSQUITO CREEK

LOCATION: NEMAH-KANSAS

ENGINEER: WESTERN



Date of Test--6-5-86
 Gauge#/Depth---10270/3935
 Type of Test---DST2 SHUTIN1
 Ip = .25

COMPANY :NORTHERN PUMP COMPANY
WELL :#20-1
FIELD :MOSQUITO CREEK
LOCATION :NEMAHA-KANSAS
DATE OF TEST :6-5-86
GAUGE-DEPTH :10270/3935
JOB NUMBER :11074

REGRESSION BASED ON HORNER PRESSURE ANALYSIS

REGRESSION RUN THRU THE FOLLOWING POINTS

STARTING AT: .705 TO: .782

STANDARD DEVIATION OF ESTIMATE : .2496
COEFFICIENT OF DETERMINATION : .9986
ERROR SUM OF SQUARES IS EQUAL TO : .2492

PSTAR = 1462.621
P@ 1HOUR = 1422.532
SLOPE = 413.6725

COMPANY. : NORTHERN PUMP COMPANY

FIELD : MOSQUITO CREEK

WELL : #20-1

JOB # : 11074

GAUGE # : 10270

DEPTH : 3935

MON/DAY : 6/ 5

PAGE 1

TEST REPORTED : SHUTIN 1

PRODUCTION Tp : 15 Minutes

REC#	REAL TIME HR:MIN:SEC	ELAPSE TIME MINS HOURS	PRESSURE PSIG	TEMP DEG F	HORNER dt/(T+dt)	DELTA P PSIG
5	2:13: 0	18 0.000	975.00	109.0	0.00000000	0.00
6	2:16: 0	21 0.050	1140.00	109.0	0.16680227	165.00
7	2:19: 0	24 0.100	1224.00	109.0	0.28591353	249.00
8	2:22: 0	27 0.150	1269.00	109.0	0.37522879	294.00
9	2:25: 0	30 0.200	1307.00	109.0	0.44468546	332.00
10	2:28: 0	33 0.250	1331.00	109.0	0.50000000	356.00
11	2:31: 0	36 0.300	1348.00	109.0	0.54549491	373.00
12	2:34: 0	39 0.350	1365.00	109.0	0.58340114	390.00
13	2:37: 0	42 0.400	1374.00	109.0	0.61547124	399.00
14	2:40: 0	45 0.450	1382.00	109.0	0.64295679	407.00
15	2:43: 0	48 0.500	1390.00	109.0	0.66666669	415.00
16	2:46: 0	51 0.550	1396.00	109.0	0.68751907	421.00
17	2:49: 0	54 0.600	1400.00	109.0	0.70591617	425.00
18	2:52: 0	57 0.650	1404.00	109.0	0.72226745	429.00
19	2:55: 0	60 0.700	1408.00	109.0	0.73689622	433.00
20	2:58: 0	63 0.750	1411.00	109.0	0.75000000	436.00
21	3: 1: 0	66 0.800	1414.00	109.0	0.76191586	439.00
22	3: 4: 0	69 0.850	1416.00	109.0	0.77274746	441.00
23	3: 7: 0	72 0.900	1418.00	109.0	0.78263640	443.00
24	3:10: 0	75 0.950	1420.00	109.0	0.79170054	445.00

LOUISIANA, MOSQUITO CREEK
FIELD: MOSQUITO CREEK

WELL NO. 720 1
LOCATION: NEMAH-KANSAS

INVESTIGATED: 5 12 86
ENGINEER: WESTERN

1600

Date of Test--6-5-86
Gauge#/Depth--10270/3935
Type of Test--DST2 SHUTIN2
IP = 1

1500

Pstar = 1490.188
P1hr = 1357.661
Slope = 440.247

1400

1300

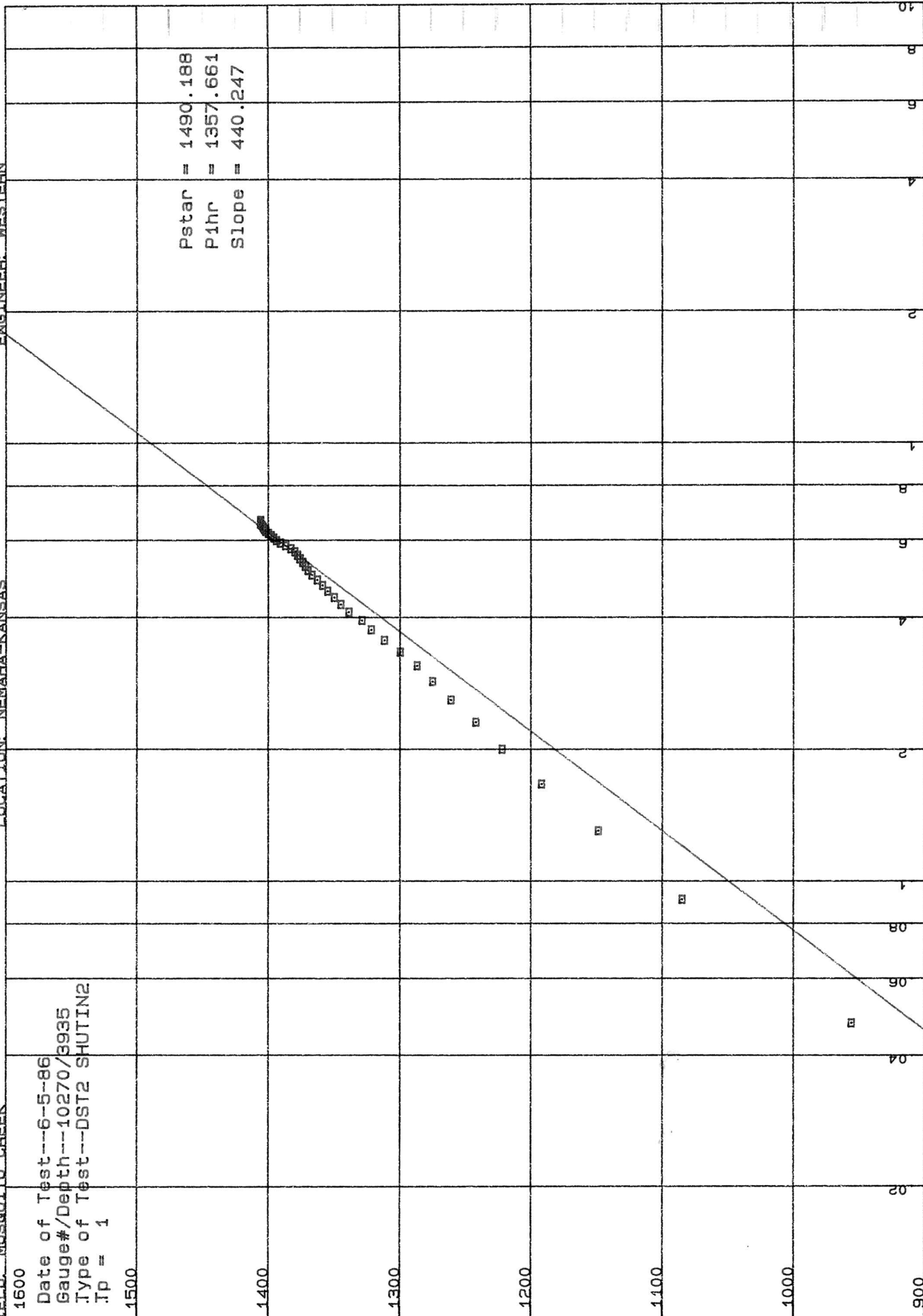
1200

1100

1000

900

Pressure, Psig



Job No. 11074

Horner Ratio, dt/(T+dt)

RES-TRAN (tm)

COMPANY :NORTHERN PUMP COMPANY
WELL :#20-1
FIELD :MOSQUITO CREEK
LOCATION :NEMAHA-KANSAS
DATE OF TEST :6-5-86
GAUGE-DEPTH :10270/3935
JOB NUMBER :11074

REGRESSION BASED ON HORNER PRESSURE ANALYSIS

REGRESSION RUN THRU THE FOLLOWING POINTS

STARTING AT: .565 TO: .649

STANDARD DEVIATION OF ESTIMATE : 1.1149
COEFFICIENT OF DETERMINATION : .9834
ERROR SUM OF SQUARES IS EQUAL TO : 11.1889

PSTAR = 1490.188
P@ 1HOUR = 1357.661
SLOPE = 440.2474

COMPANY : NORTHERN PUMP COMPANY

FIELD : MOSQUITO CREEK

WELL : #20-1

JOB # : 11074

GAUGE # : 10270

DEPTH : 3935

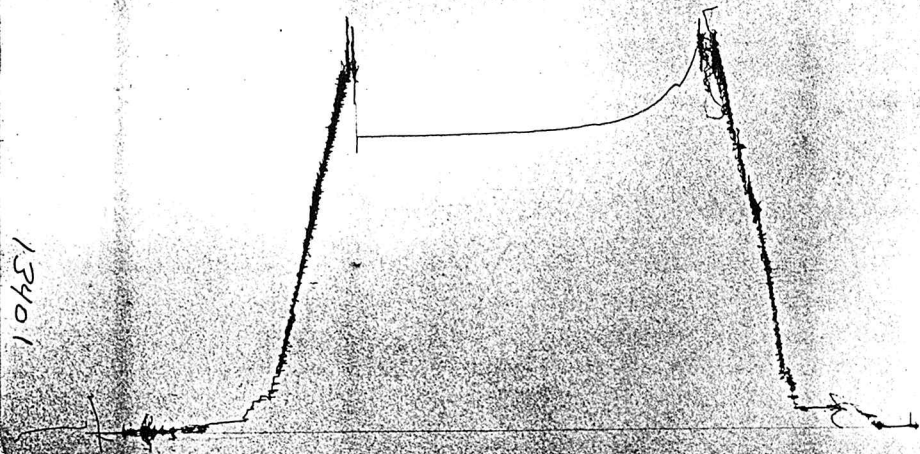
MON/DAY : 6/ 5

PAGE 1

TEST REPORTED : SHUTIN 2
PRODUCTION Tp : 60 Minutes

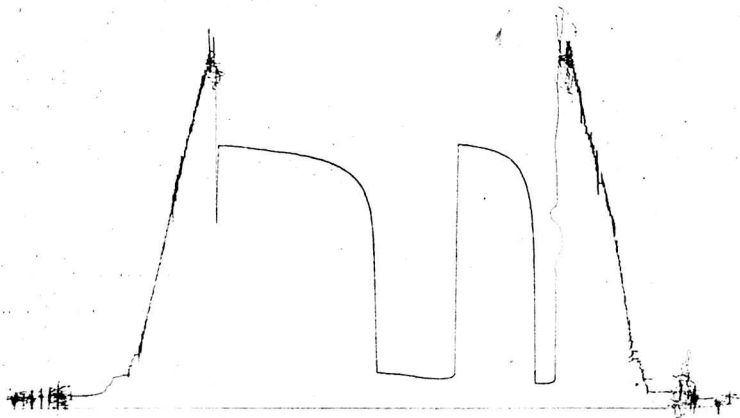
REC#	REAL TIME HR:MIN:SEC	ELAPSE TIME MINS HOURS	PRESSURE PSIG	TEMP DEG F	HORNER dt/(T+dt)	DELTA P PSIG
37	4:10: 0	135 0.000	150.00	109.0	0.00000000	0.00
38	4:13: 0	138 0.050	956.00	109.0	0.04744186	806.00
39	4:16: 0	141 0.100	1085.00	109.0	0.09078801	935.00
40	4:19: 0	144 0.150	1149.00	109.0	0.13036093	999.00
41	4:22: 0	147 0.200	1192.00	109.0	0.16663276	1042.00
42	4:25: 0	150 0.250	1222.00	109.0	0.20000000	1072.00
43	4:28: 0	153 0.300	1242.00	109.0	0.23065364	1092.00
44	4:31: 0	156 0.350	1261.00	109.0	0.25917888	1111.00
45	4:34: 0	159 0.400	1275.00	109.0	0.28566447	1125.00
46	4:37: 0	162 0.450	1287.00	109.0	0.31032160	1137.00
47	4:40: 0	165 0.500	1300.00	109.0	0.33333334	1150.00
48	4:43: 0	168 0.550	1312.00	109.0	0.35475740	1162.00
49	4:46: 0	171 0.600	1322.00	109.0	0.37494278	1172.00
50	4:49: 0	174 0.650	1329.00	109.0	0.39390352	1179.00
51	4:52: 0	177 0.700	1339.00	109.0	0.41174781	1189.00
52	4:55: 0	180 0.750	1345.00	109.0	0.42857143	1195.00
53	4:58: 0	183 0.800	1350.00	109.0	0.44438416	1200.00
54	5: 1: 0	186 0.850	1355.00	109.0	0.45941666	1205.00
55	5: 4: 0	189 0.900	1359.00	109.0	0.47365716	1209.00
56	5: 7: 0	192 0.950	1363.00	109.0	0.48716664	1213.00
57	5:10: 0	195 1.000	1367.00	109.0	0.50000000	1217.00
58	5:13: 0	198 1.050	1370.00	109.0	0.51214862	1220.00
59	5:16: 0	201 1.100	1372.00	109.0	0.52377629	1222.00
60	5:19: 0	204 1.150	1374.00	109.0	0.53486258	1224.00
61	5:22: 0	207 1.200	1376.00	109.0	0.54544443	1226.00
62	5:25: 0	210 1.250	1378.00	109.0	0.55555558	1228.00
63	5:28: 0	213 1.300	1380.00	109.0	0.56518048	1230.00
64	5:31: 0	216 1.350	1383.00	109.0	0.57444155	1233.00
65	5:34: 0	219 1.400	1387.00	109.0	0.58331639	1237.00
66	5:37: 0	222 1.450	1391.00	109.0	0.59182858	1241.00
67	5:40: 0	225 1.500	1394.00	109.0	0.60000002	1244.00
68	5:43: 0	228 1.550	1396.00	109.0	0.60781312	1246.00
69	5:46: 0	231 1.600	1398.00	109.0	0.61536294	1248.00
70	5:49: 0	234 1.650	1400.00	109.0	0.62262762	1250.00
71	5:52: 0	237 1.700	1402.00	109.0	0.62962294	1252.00
72	5:55: 0	240 1.750	1403.00	109.0	0.63636363	1253.00
73	5:58: 0	243 1.800	1404.00	109.0	0.64283222	1254.00
74	6: 1: 0	246 1.850	1405.00	109.0	0.64910477	1255.00
75	6: 4: 0	249 1.900	1406.00	109.0	0.65516078	1256.00
76	6: 7: 0	252 1.950	1406.00	109.0	0.66101134	1256.00
77	6:10: 0	255 2.000	1406.00	109.0	0.66666669	1256.00
78	6:13: 0	258 2.050	1406.00	109.0	0.67211014	1256.00

Nt # 11074
Below Straddle



13401

Alt # 11074
D



Kit # 11074I