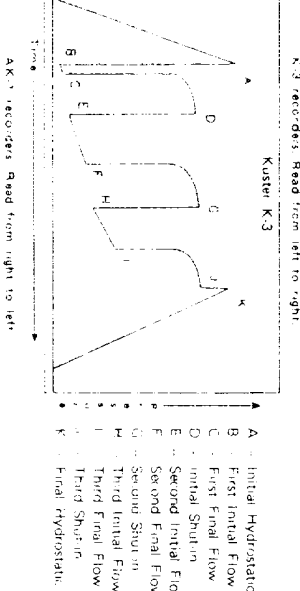


IDENTIFICATION OF PSI CHARTS

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or willful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.

CODE USED ON CHART ENVELOPES



Symbol	Definition	DST Unit
k	permeability	millidarcys (md)
h	pay thickness	feet (ft.)
u	viscosity	centipoise
T	reservoir temperature	°Rankin (°R)
Z	gas compressibility factor at average condition	---
q _{sc}	gas production rate	MCF/d
M	Horner slope for liquid analysis	PSI/Cycle
M _g	Horner slope for (p _z) _g gas analysis	PSI/Cycle
P _i	initial static reservoir pressure	PSI
P _{wf}	flowing bottom hole pressure	PSI
φ	porosity (fraction)	---
r _w	well bore radius	ft.
S	skin factor	---
ΔOF	absolute open flow damage ratio	MCF/d
D R	external drainage radius	ft.
ISIP	initial shut-in pressure	PSI
FSIP	final shut-in pressure	PSI
b	approx. radius of investigation	ft.
t	flowing time	hrs.
B	formation volume factor	---
q	liquid production rate	bbls/day
c	gas compressibility	1/PSI
c	liquid compressibility	1/PSI

Build-Up Analysis Equations

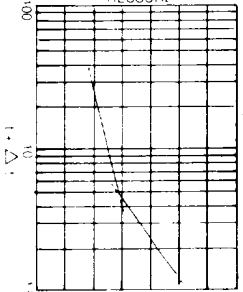
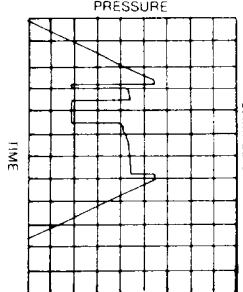
Pressure Analysis
 $k h = 162.6 \frac{Q \mu \theta}{\Delta P}$
 $S = 1.151 \left[\frac{P_{wf} - P_{e}}{Q \mu \theta} - \log \left(\frac{k}{\phi \mu c_g \Delta V} \right) + 3.23 \right]$
 $\Delta P = \frac{141.2 Q \mu \theta}{k h} S$
 $L = \sqrt{\frac{0.000148 k \Delta V}{\phi \mu c_g}}$
 $L = \sqrt{\frac{0.000148 k \Delta V}{\phi \mu c_g}}$
 $\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{skin}}{P - P_{e}}$
 $\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{skin}}{P - P_{e}}$
 $S = \frac{1}{2} \ln \left[\frac{C_D e^{2S}}{2.637 \times 10^{-4} k \Delta V \phi \mu c_g^2 \psi_p / q_g} \right]$
 $\Delta P = \frac{141.2 Q \mu \theta}{k h} S$
 $\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{skin}}{P - P_{e}}$
 $S = \frac{1}{2} \ln \left[\frac{C_D e^{2S}}{2.637 \times 10^{-4} k \Delta V \phi \mu c_g^2 \psi_p / q_g} \right]$
 $\Delta P = \frac{141.2 Q \mu \theta}{k h} S$
 $\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{skin}}{P - P_{e}}$

Fall-Off Analysis Equations

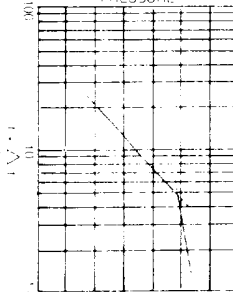
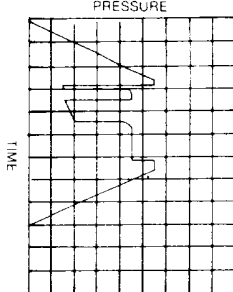
Semi-Log Analysis
 $k h = 162.6 \frac{Q \mu \theta}{\Delta P}$
 $S = 1.151 \left[\frac{P_{wf} - P_{e}}{Q \mu \theta} - \log \left(\frac{k}{\phi \mu c_g \Delta V} \right) + 3.23 \right]$
 $S = \frac{1}{2} \ln \left[\frac{C_D e^{2S}}{2.637 \times 10^{-4} k \Delta V \phi \mu c_g^2 \psi_p / q_g} \right]$
 $\Delta P = \frac{141.2 Q \mu \theta}{k h} S$
 $\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{skin}}{P - P_{e}}$
 $\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{skin}}{P - P_{e}}$
 $S = \frac{1}{2} \ln \left[\frac{C_D e^{2S}}{2.637 \times 10^{-4} k \Delta V \phi \mu c_g^2 \psi_p / q_g} \right]$
 $\Delta P = \frac{141.2 Q \mu \theta}{k h} S$
 $\text{Efficiency} = \frac{P - P_{wf} - \Delta P_{skin}}{P - P_{e}}$

RECEIVED
DEC 16 1962
OFFICE
CUB HOB

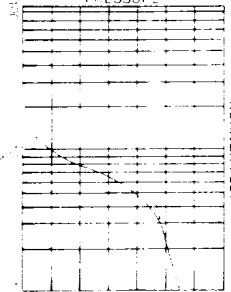
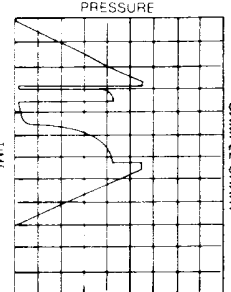
BAKER OIL TOOLS
Technical Services
Box 1762



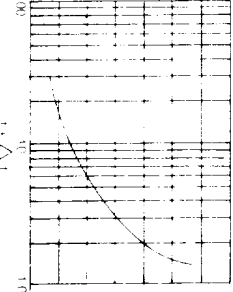
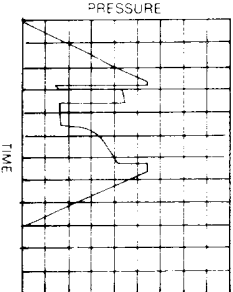
Horner Plot Slope Breaks Upward
Possible Causes
(1) decrease in pay thickness away from the wellbore
(2) decrease in permeability away from the wellbore
(3) increase in viscosity of reservoir fluid (fluid contact)
(4) barrier within the radius of investigation



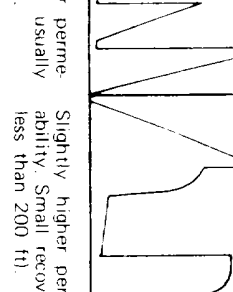
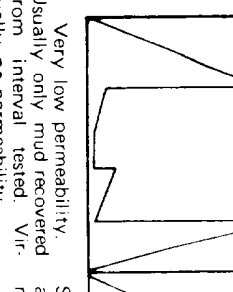
Horner Plot Slope Breaks Downward
Possible Causes
(1) increase in pay thickness away from the wellbore
(2) increase in permeability away from the wellbore
(3) decrease in viscosity away from the wellbore



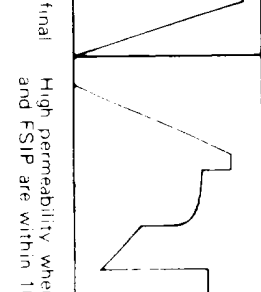
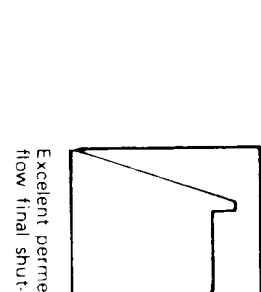
Early Time Deviation of Horner Plot
Possible Causes
(1) wellbore damage due to filtrate invasion, drilling solids, etc.
(2) partial penetration of pay zone
(3) plugging or choking of perforations (casing test only)
(4) wellbore storage effects (low permeability gas wells)



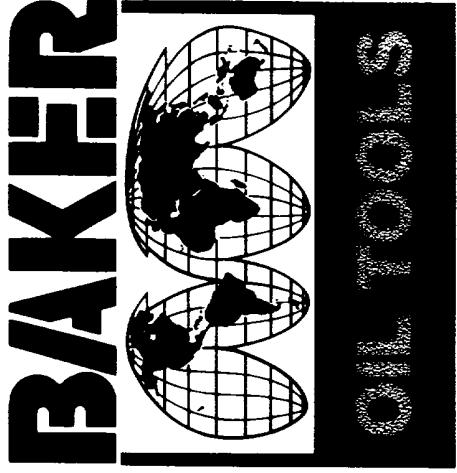
Horner Plot Slope Continually Increasing
Possible Causes
(1) well between two parallel boundaries (channel sand)
(2) induced hydraulic fractures



Very low permeability.
Usually only mud recovered from interval tested. V/r. mud recovered.

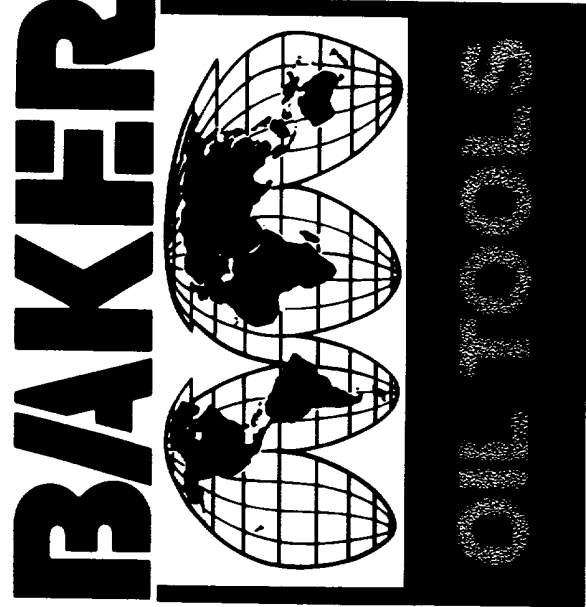


Excellent permeability where final flow final shut-in pressure.
High permeability where ISIP and FSIP are within 10 psi.
Drip well bore invasion or damage. Final shut-in higher than the initial shut-in.



A Baker Hughes company

56 Inverness Drive East
Englewood, CO 80112
1-303-790-2705



A Baker Hughes company

30-025-32684

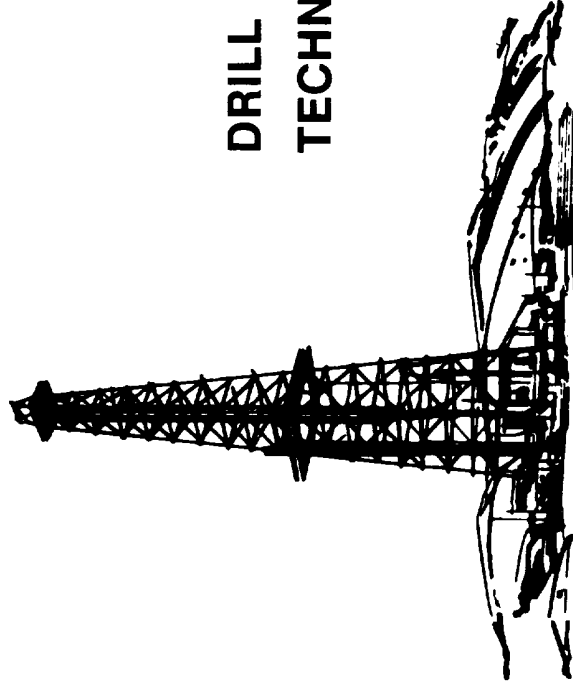
1987/19 1980/8 30-17-37

RECEIVED

DEC 16 1994

OCD HOBBS

DEC 16 1994



DRILL STEM TEST
TECHNICAL SERVICE REPORT



Contractor **Ziadril**
 Rig No. **2**
 Spot **1980' FNL & 1980' FEL**
 Sec **20**
 Twp. **17 S**
 Rng. **37 E**
 Field **Wildcat**
 County **Lea**
 State **New Mexico**
 Elevation **3785.65' KB**
 Formation **Strawn**

Surface Choke **1"**
 Bottom Choke **3/4"**
 Hole Size **7 7/8"**
 Core Hole Size **None**
 DP Size & Wt. **4 1/2" 16.60**
 Wt. Pipe **4 1/2" 20.00**
 I.D. of DC **2 1/4"**
 Length of DC **798.95'**
 Total Depth **10932'**
 Type Test **Conventional**
 Interval **10892' - 10932'**

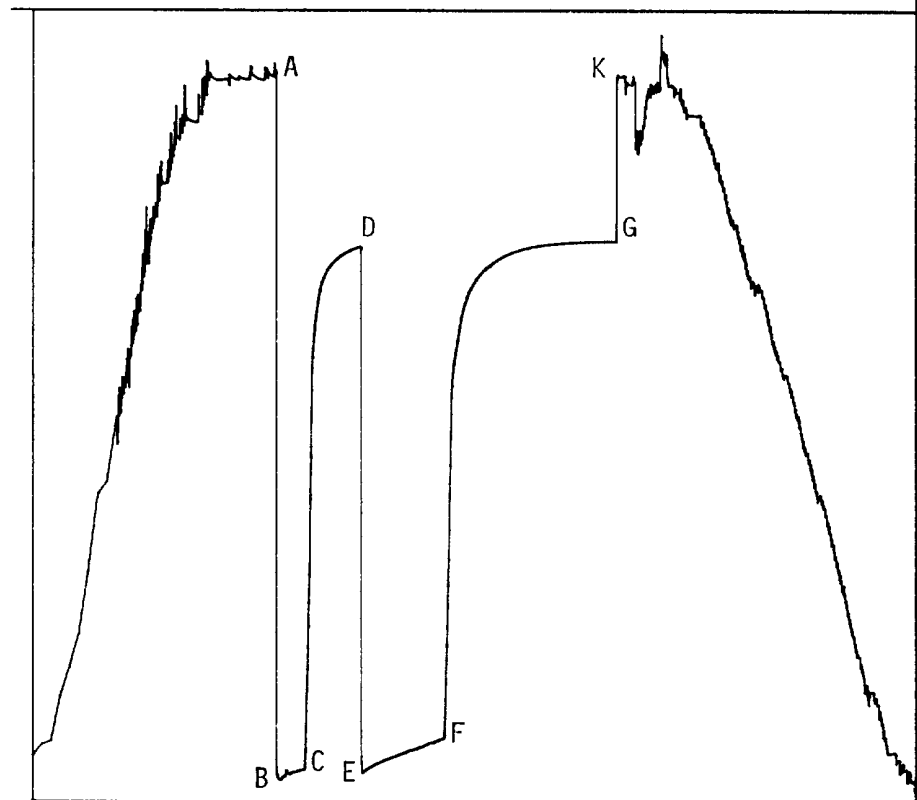
Mud Type **--**
 Weight **8.9**
 Viscosity **35**
 Water Loss **--**
 Filter Cake **--**
 Resistivity **4.0 @ 60 °F**
 1,000 Ppm. NaCl
 B.H.T. **158.1 °F**
 Co. Rep. **Gene Stedham**
 Tester **Steve Lewis**
 Baker Dist. **Odessa TX**

REPORTED CORRECTED

	REPORTED	CORRECTED	
Opened Tool @	06:30		hrs.
Flow No. 1	30	30	min.
Shut-in No. 1	60	60	min.
Flow No. 2	90	89	min.
Shut-in No. 2	180	185	min.
Flow No. 3	None	Taken	min.
Shut-in No. 3	"	"	min.

Recorder Type	Nan Gall		
No. 004	Cap.	10000	psi
Depth		10870	feet
Inside	x	Clock	
Outside		Range	hrs.

Initial Hydrostatic	A	5032
Final Hydrostatic	K	5041
Initial Flow	B	148
Final Initial Flow	C	223
Initial Shut-in	D	3845
Second Initial Flow	E	196
Second Final Flow	F	440
Second Shut-in	G	3886
Third Initial Flow	H	
Third Final Flow	I	
Third Shut-in	J	



Pipe Recovery

Reverse circulated:
 19.0 bbl total fluid, consisting of:
 14.0 bbl - oil
 5.0 bbl - highly oil & gas cut mud

Gravity:

Top: 40.2 Deg API @ 60 Deg F

Middle: 40.2 Deg API @ 60 Deg F

Resistivity:

Bottom: 4.0 @ 60 Deg F/1,000 ppm Cl. titrated.

 DALEN RESOURCES OIL & GAS CO.
 TICKET #11809

 SHIP #1-20/10867-10870
 STRAWN ~ 10892' - 10932'

 DST #1
 10-31-1994

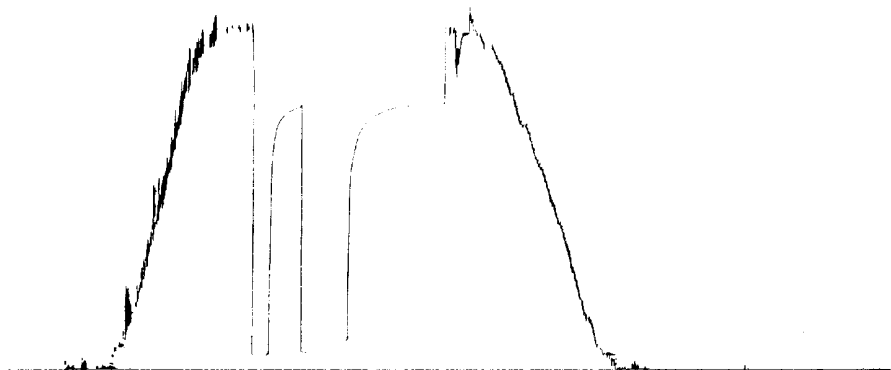
RECEIVED

DEC 16 1994

OCD HOBBES
OFFICE

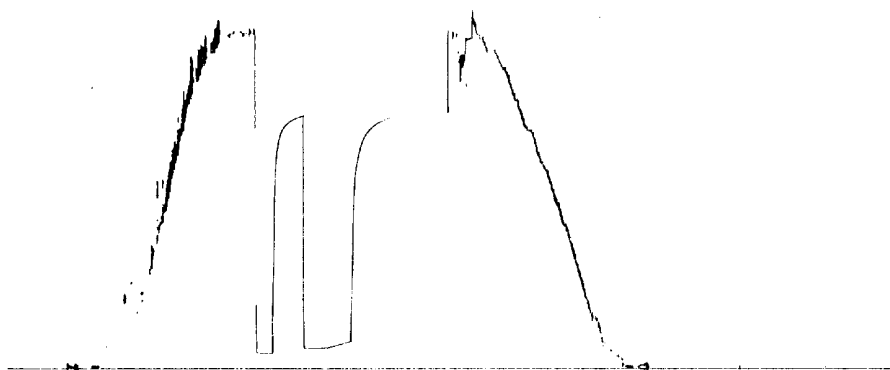
Company: Dalen Resources Oil & Gas Co.
 Well: Shipp #1-20
 DST No: 1

10-31-1994



Recorder Type	Kuster K-3		
No. 24552	Cap.	6625	psi
Depth		10867	feet
Inside x	Clock		
Outside	Range	24	hrs.

Initial Hydrostatic	A	5116
Final Hydrostatic	K	5122
Initial Flow	B	222
Final Initial Flow	C	216
Initial Shut-In	D	3914
Second Initial Flow	E	261
Second Final Flow	F	437
Second Shut-In	G	3961
Third Initial Flow	H	
Third Final Flow	I	
Third Shut-In	J	



Recorder Type	Kuster K-3		
No. 24523	Cap.	6650	psi
Depth		10932	feet
Inside	Clock		
Outside x	Range	24	hrs.

Initial Hydrostatic	A	5123
Final Hydrostatic	K	5139
Initial Flow	B	208
Final Initial Flow	C	208
Initial Shut-In	D	3839
Second Initial Flow	E	277
Second Final Flow	F	392
Second Shut-In	G	3893
Third Initial Flow	H	
Third Final Flow	I	
Third Shut-In	J	

RECEIVED

DEC 16 1994

OCD HOBBY
OFFICE

Company: Dalen Resources Oil & Gas Co.
 Well: Shipp #1-20
 DST No: 1

10-31-1994

Real	TIME	dt	CHOKE SIZE	SURFACE PRESSURE	FLOW RATE MCF/D	REMARKS
06:30 Hrs	0 Min		1/4"	Good Blow		Opened for initial flow:
	1			12"		
	5		1"	8.0 psi		
	10			16.5		
	15			22.0	836.0	Gas to surface:
	20			12.0		
	25			11.0		
07:00	30			10.0		Closed for initial shut-in:
08:00	0					Opened for final flow:
	5			5.0		
	10			8.0		
	15			9.0		
	20			9.5		
	25			9.5	550.0	
	30			9.5		
	35			9.0		
	40			8.5		
	45			8.0		
	50			7.5		
	55			7.0		
	60			7.0		
	70			7.0		
	80			6.0		
09:30	90			6.0		Closed for final shut-in:
12:30						Pulled tool:

RECEIVED

DEC 16 1994

**QUINN HUBBS
OFFICE**

Company: Dalen Resources Oil & Gas Co.
Well: Shipp #1-20
DST No: 1

10-31-1994

SAMPLER REPORT

Pressure in Sampler:	300	psig
Total Volume of Sampler:	2300	cc.
Total Volume of Sample:	700	cc.
Oil:	700	cc.
Water:	None	cc.
Mud:	None	cc.
Gas:	1.477	cu. ft.
Other:	None	

Resistivity

Make up Water	@	°F of Chloride Content	ppm.
Mud Pit Sample	4.0 @ 60	°F of Chloride Content	1,000 ppm.
Gas / Oil Ratio	337.6 cu.ft./bbl. Gravity	40.2	°API @ 60 °F
Where was sample drained	On Location.		

Remarks:

RECEIVED

DEC 16 1994

DOUG HOBBS
OFFICE

Company: Dalen Resources Oil & Gas Co.

Well: Shipp #1-20, DST #1

Field: Wildcat

10-31-1994

Gauge Depth 10870.0 feet

[INPUT PARAMETERS]
(Build-Up Analysis)

Well Type - OIL

Reservoir Pressure	psia	P	3926
Reservoir Temperature	Deg F	T	158
Final Shut-in Pressure	psia	Psi	3886
Final Flowing Pressure	psia	Pwf	440
Gas Flow Rate	mcf	Qg	550
Oil Flow Rate	STB/D	Qo	132
Sand Thickness	feet	hnet	10
Wellbore Radius	feet	rw	0.3280
Formation Porosity	%	POR	10
Extrapolated Pressure	psia	P*	3926
Extrapolated Press @ 1hr	psia	Plhr	3839
Semi-Log Slope	psi/cycle	M	-183.132
Production Time	hrs	tp	2.00
Shut-in Time	hrs	tsi	3.10

Uo (cp) 9.2341E-01

Bo (RB/STB) 1.2230E+00

Co (1/psi) 7.2548E-06

Ct (1/psi) 1.0846E-05

[TYPE CURVE MATCH POINTS]

dP 3183.153

Pd 19.055

dt 0.394

Cde2S 1E +16

tD/Cd 46.416

[CALCULATED RESULTS]

(Semi-Log) Analysis

Pressure Method

Transmissibility	md-ft/cp	kh/u	143.332
Flow Capacity	md-ft	kh	132.354
Permeability	md	k	13.235
Skin Damage	total	S	+15.77
Pressure Drop due to Skin	psia	dP	+2507.73
Flow Efficiency	%	FE	+28.06
Drainage Radius	feet	rd	186

Type Curve (Log-Log) Analysis

Transmissibility	md-ft/cp	kh/u	136.450
Flow Capacity	md-ft	kh	125.999
Permeability	md	k	12.600
Skin Damage	total	S	+15.64
Pressure Drop due to Skin	psia	dP	+2612.17
Flow Efficiency	%	FE	+25.06

RECEIVED

DEC 16 1994

U C D HOUSE
OFFICE

Company: Dalen Resources Oil & Gas Co.
Well: Shipp #1-20
DST No: 1

10-31-1994

This analysis has been made on the basis of the liquid recovery and equations applicable to liquid recovery tests, the Horner extrapolation method and comparative log/log analysis.

The pressure extrapolation plot indicates a maximum initial reservoir pressure of 4008 psi and a maximum final reservoir pressure of 3926 psi which is equivalent to a subsurface pressure gradient of 0.361 psi/ft at gauge depth. The character of the final shut-in build-up curve is anomalous and indicates the presence of double porosity within the tested interval. There is also an indication of significantly increased permeability away from the well-bore but within the radius of investigation which is indicated to be approximately 186 feet.

The Average Production Rate which was used in this analysis has been calculated from analysis of the flow pressure curves using a liquid gradient for the recovered oil of 0.357 psi/ft.

For purposes of this analysis a Pay Thickness of 10 feet and an Average Porosity of 10% have been estimated.

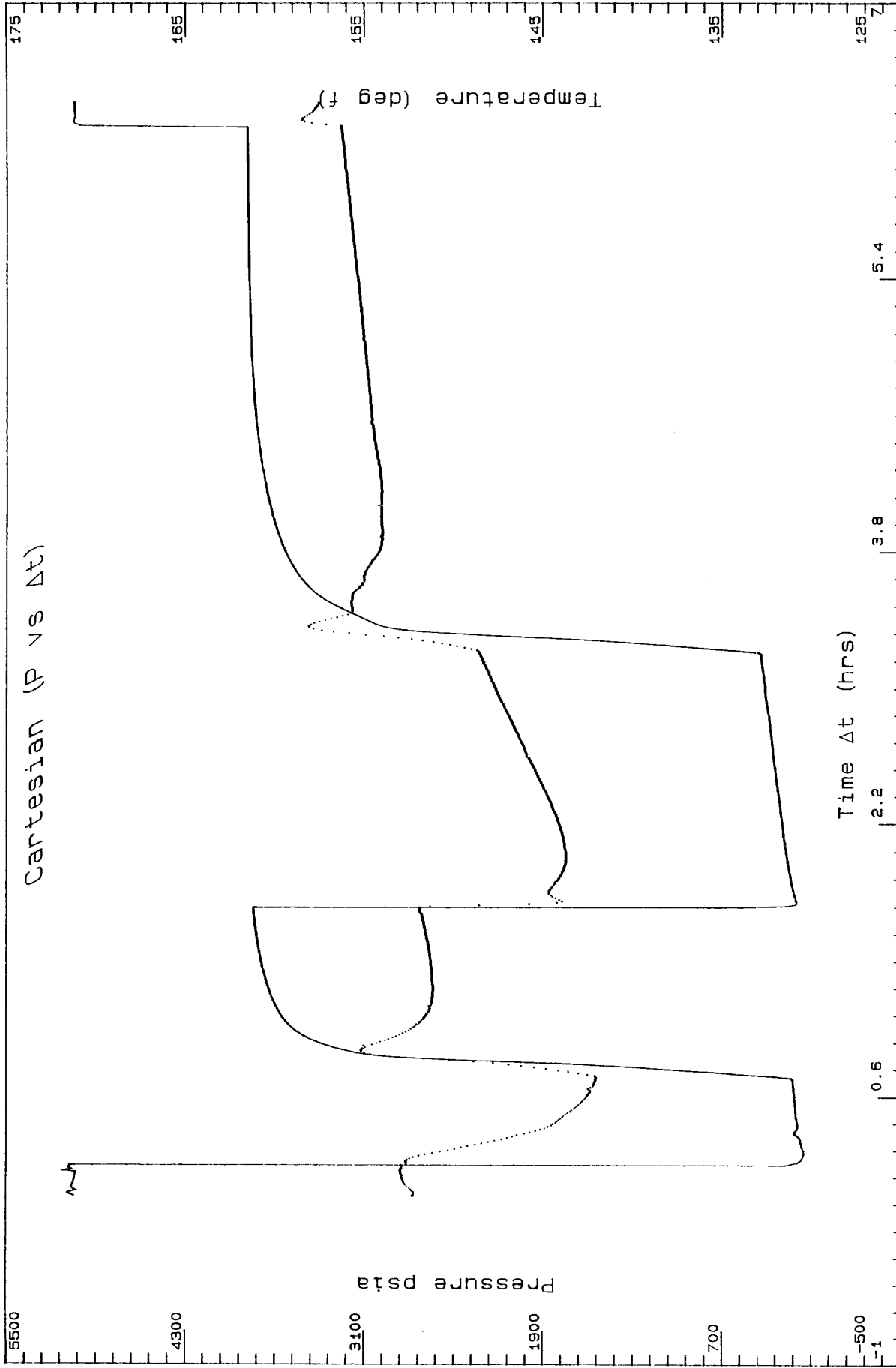
The calculated Skin Factors indicate significant well-bore damage was present at the time of this formation test.

The evaluation criteria used in the drillstem test analysis system indicate this is a good mechanical test and the results obtained in this analysis should be reliable within reasonable limits relative to the assumptions which have been made.

RECEIVED

DEC 16 1994

OCD HOBBY
OFFICE

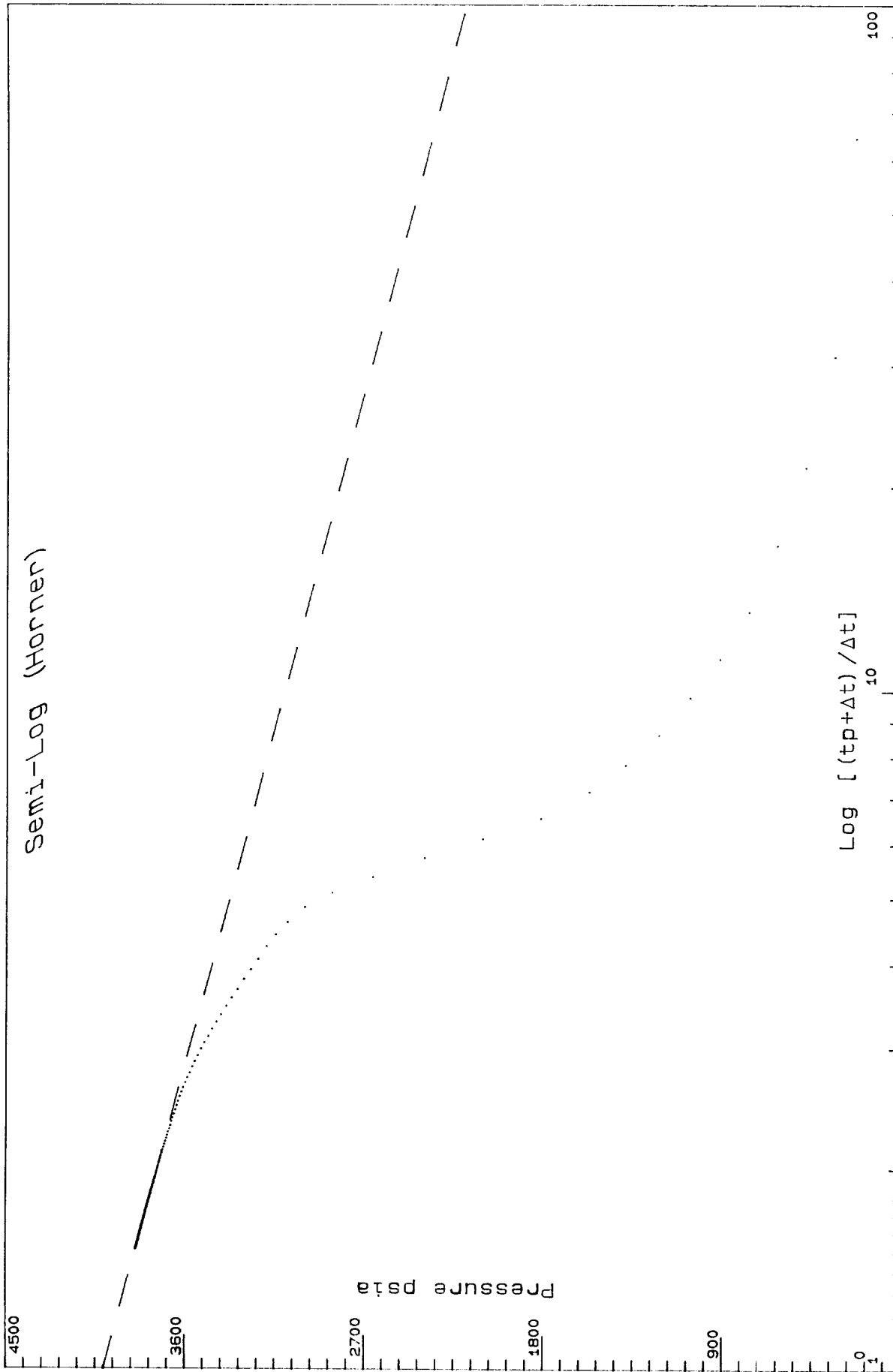


Company: Dalen Resources Oil & Gas Co.

Well: Shipp #1-20, DST #1

Field: Wildcat

Date: 10-31-1994



Company: Dalen Resources Oil & Gas Co.
Well: Shipp #1-20, DST #1
Field: Wildcat

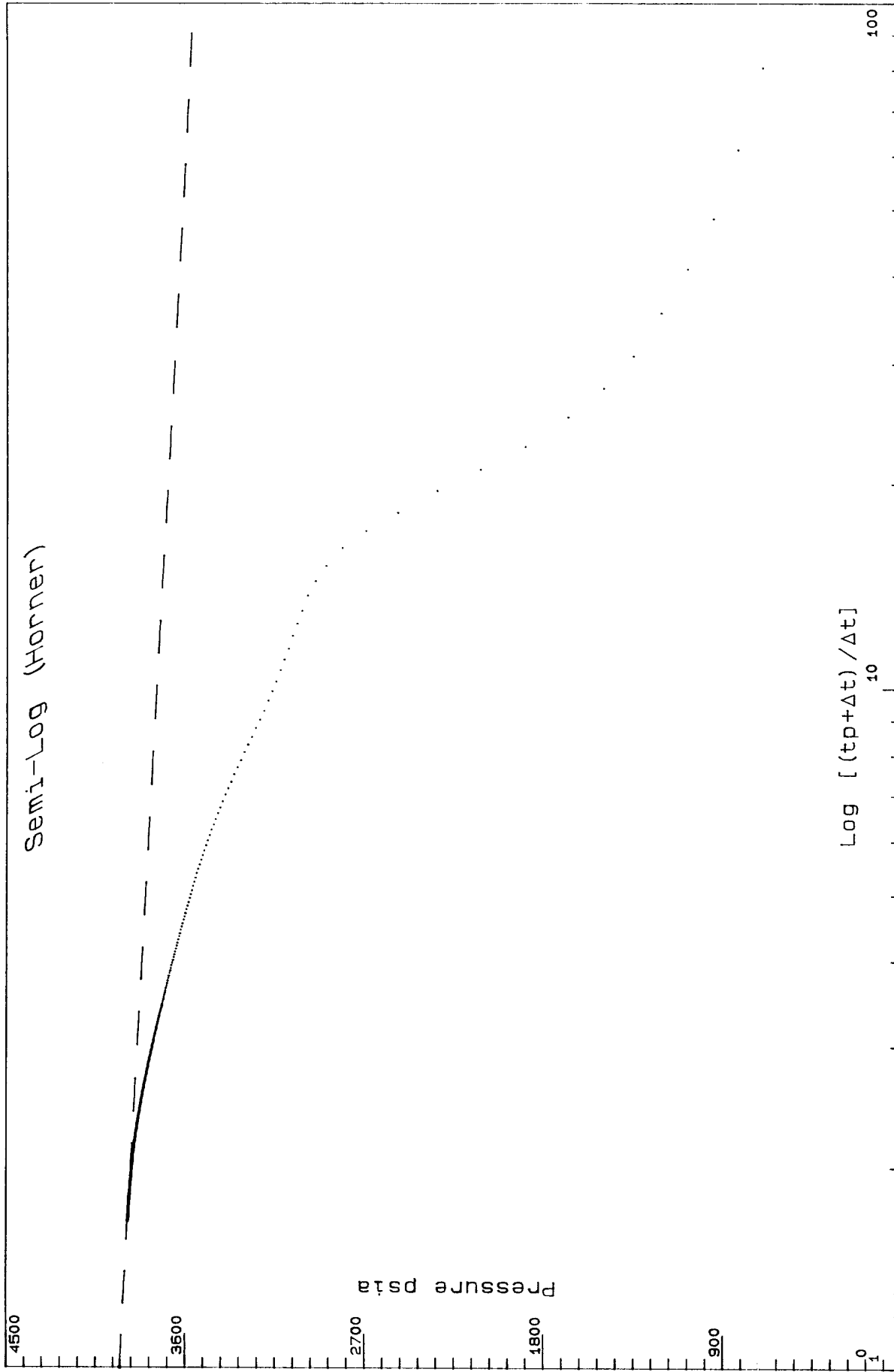
Date: 10-31-1994

Shut-in #1:
P* = 4008 psi
M = -908.127 psi/cycle

RECEIVED

DEC 16 1994

OCD HOBBS
OFFICE



Company: Dalen Resources Oil & Gas Co.

Well: Shipp #1-20, DST #1

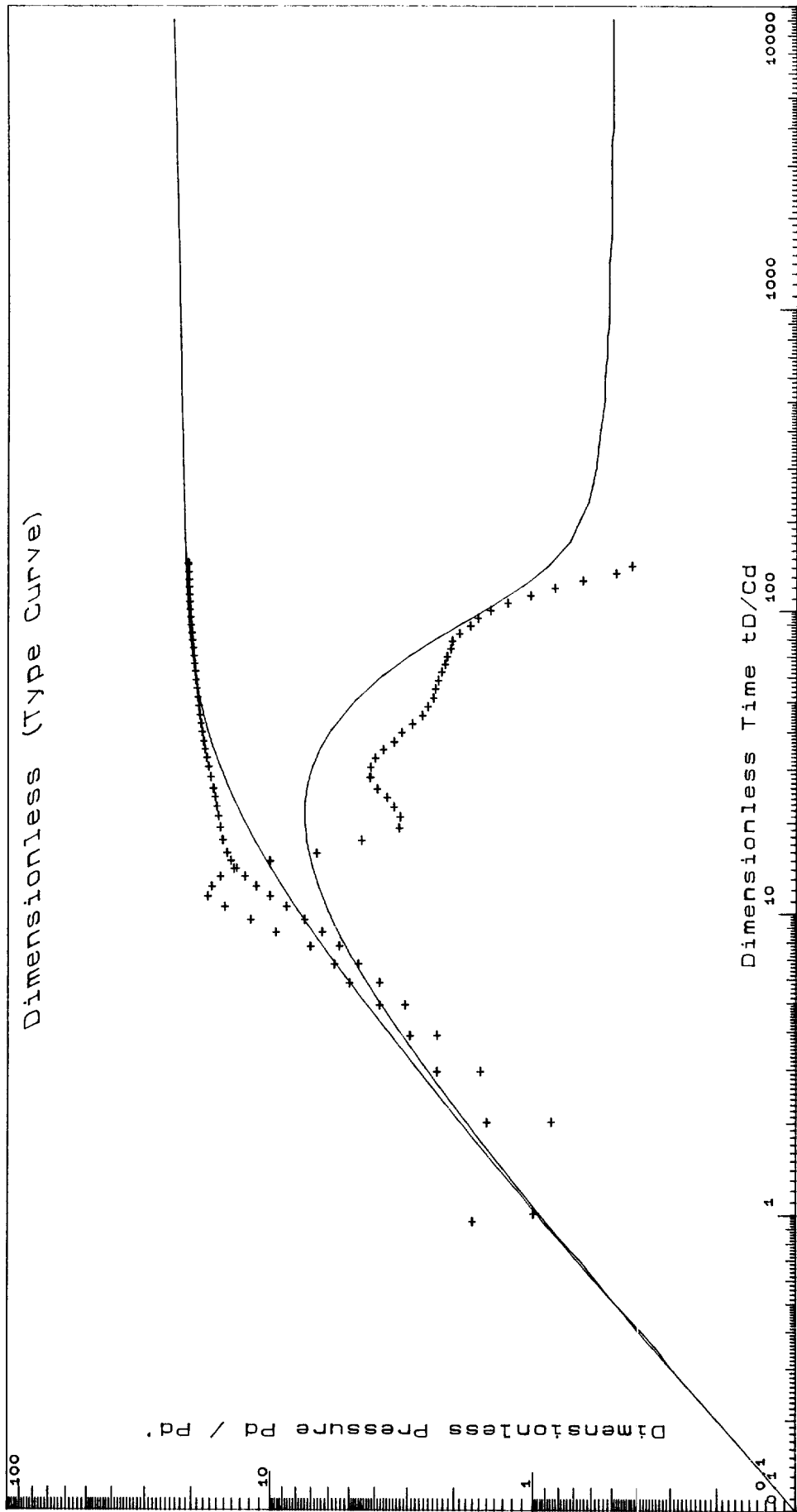
Field: Wildcat

Date: 10-31-1994

Shut-in #2:

$P^* = 3926$ psi

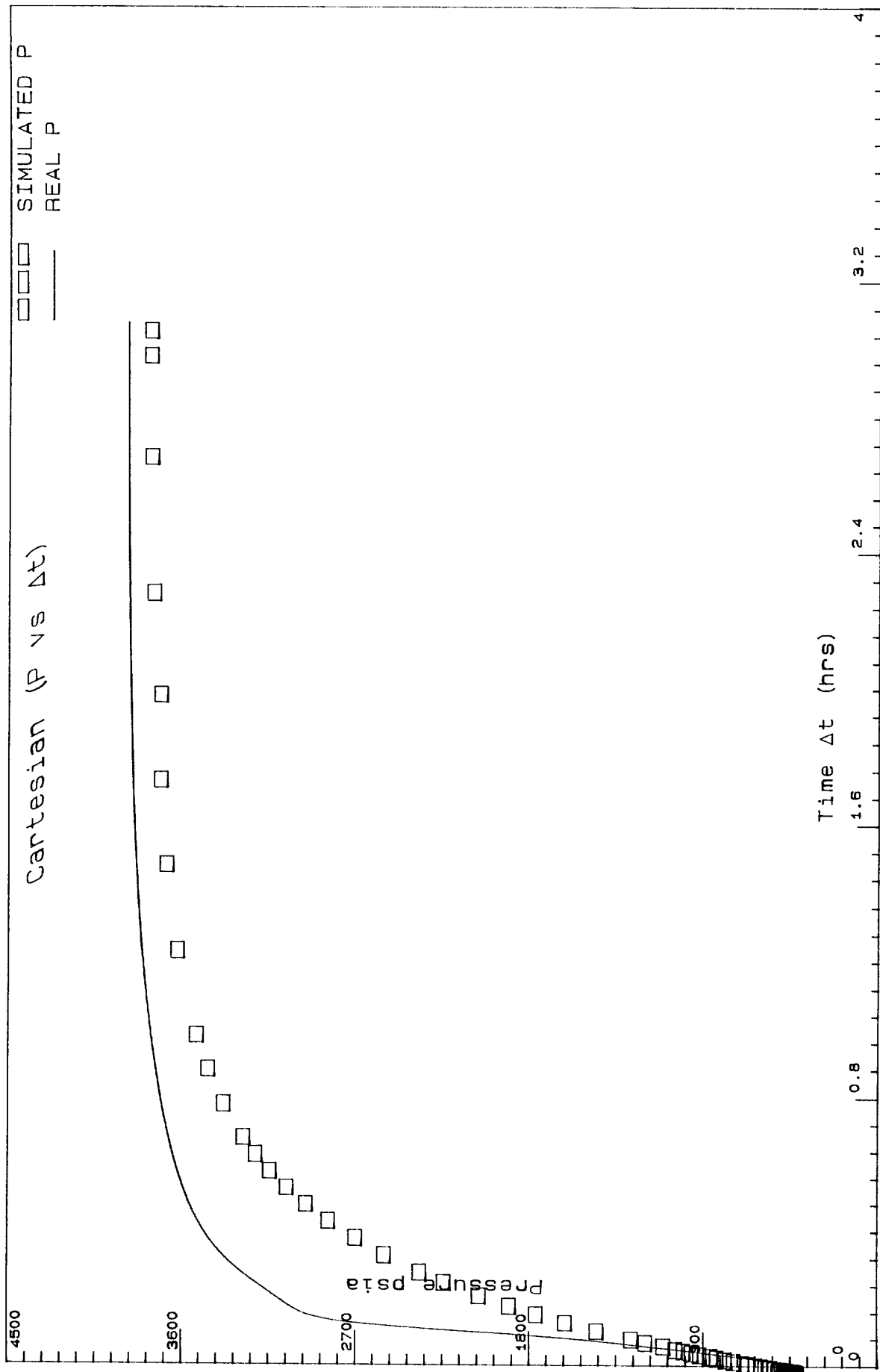
$M = -183.132$ psi/cycle



RECEIVED

DEC 16 1994

OCD HOBBS
OFFICE



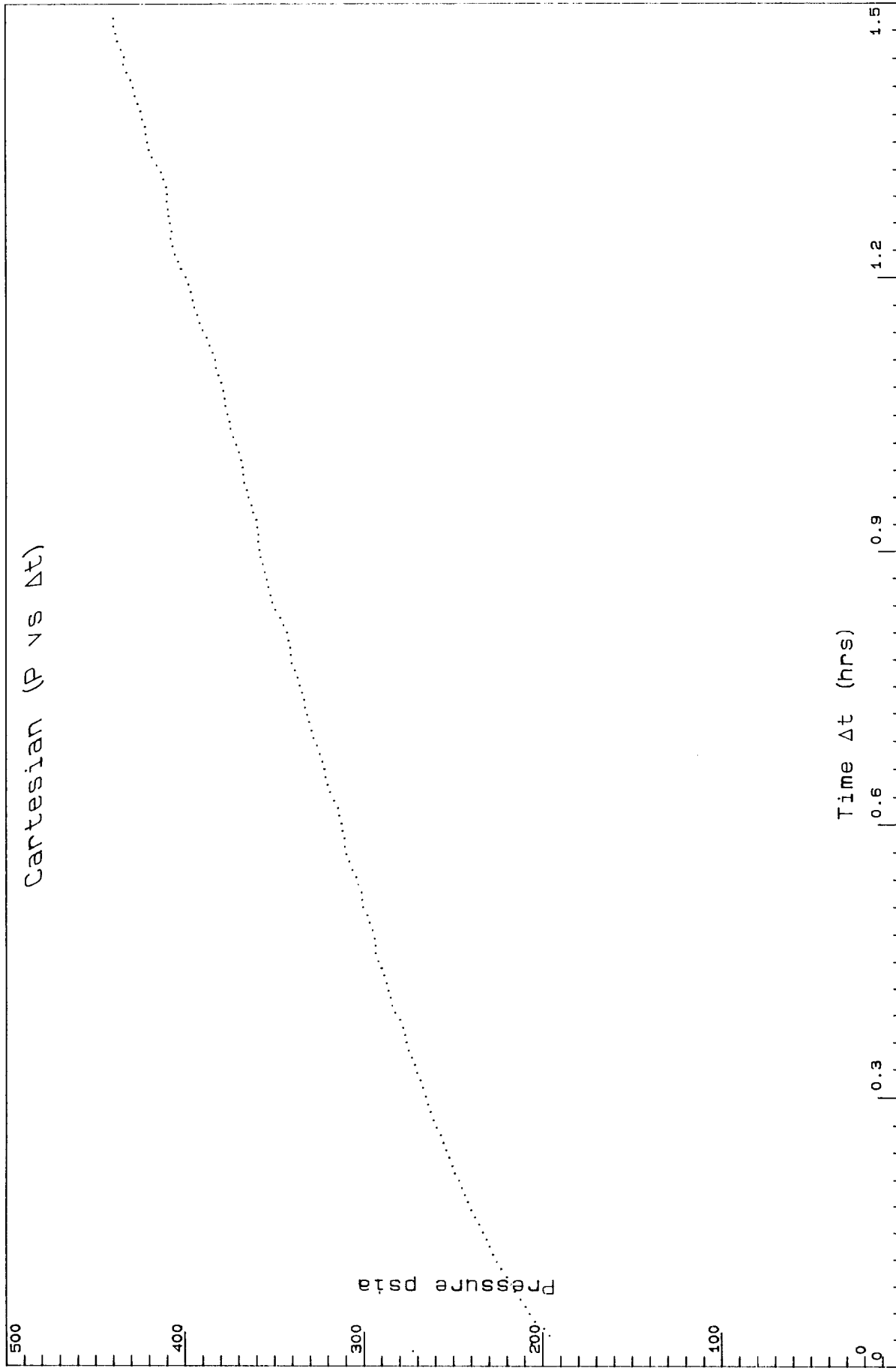
Company: Dalen Resources Oil & Gas Co.

Well: Shipp #1-20, DST #1

Field: Wildcat

Date: 10-31-1994

Shut-in #2:



Company: Dalen Resources Oil & Gas Co.
Well: Shipp #4-20, DST #1
Field: Wildcat

Flow #2:

M = 138.408 psi/cycle

Date: 10-31-1994

RECEIVED

SEP 16 1934

**J. C. HOBBS
OFFICE**

Company: Dalen Resources Oil & Gas Co.
Well: Shipp #1-20

DISTRIBUTION OF FINAL REPORTS

Dalen Resources Oil & Gas Co. [7]
6688 N. Central Expressway, Ste 1000
Dallas TX 75206

RECEIVED

DEC 16 1994

O C D HOBBS
OFFICE

DEC 16 1994