

0338 7.1 DSTS

REPORT NO.  
001  
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FLOPETROL JOHNSTON  
Schlumberger

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WELL TEST INTERPRETATION REPORT  
- FOR -  
TENNECO OIL COMPANY

Field	:WILDCAT	DATE:
Zone	:WES SAK	From :12-11-86
Well	:PHOENIX NO.1	To :12-13-86

REPORT #:DST #2

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Received  
OCS District Office

MAD 12 1987

Minerals Management Service  
Anchorage, Alaska

MAIN RESULTS

SEQUENCE OF EVENTS

INTERPRETATION PROCEDURE

- ☒ 1. LOG-LOG ANALYSIS
- ☒ 2. EARLY TIME ANALYSIS
- ☐ 3. INFINITE ACTING ANALYSIS
- ☐ 4. LATE TIME ANALYSIS
- ☐ 5. SPECIAL ANALYSIS

CHECKING PROCEDURES

- ☒ 1. TABLE OF RESULTS
- ☐ 2. DIMENSIONLESS SUPERPOSITION PLOT
- ☐ 3. SIMULATION

NODAL ANALYSIS

- ☐ 1. NODAL SIMULATION
- ☐ 2. SYSTEM SENSITIVITY ANALYSIS

APPENDICES

- ☒ 1. RESERVOIR AND FLUID DATA
- ☒ 2. PRESSURE AND RATE DATA
- ☐ 3. NOMENCLATURE

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## MAIN RESULTS

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SINCE THE INITIAL FLOW PERIOD WAS LIMITED TO 4.5 MINUTES, NO ANALYSIS OF THE INITIAL BUILDUP IS MADE OTHER THAN TO ROUGHLY ESTIMATE THE INITIAL RESERVOIR PRESSURE,  $P^*$ , VIA THE HORNER STRAIGHT LINE.  $P^*$  CANNOT BE DERIVED FROM THE FINAL BUILDUP DATA, WHICH DOES NOT REACH INFINITE ACTING RADIAL FLOW. A LOG LOG MATCH FOR A HOMOGENEOUS RESERVOIR WITH WELLBORE STORAGE AND SKIN YIELDS A ROUGH ESTIMATE OF THE RESERVOIR PARAMETERS, ALTHOUGH SWABBING THE WELL IN THE FINAL FLOW PERIOD INFLUENCED THE PRESSURE TRANSIENT RESPONSE OF THE SYSTEM. CONSEQUENTLY, SIMULATION OF THE MODEL AND VERIFICATION OF THE ANALYSIS CANNOT BE DONE WITHOUT BEING VULNERABLE TO LARGE ERROR.

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PARAMETER	NUMERICAL VALUE	UNIT
kh	12871	md.ft
S	-3.2	
pi or $p^*$	2051	psi
C	6.8E-2	Bbl/psi
xf	N/A	ft
kfw	N/A	md.ft
A	N/A	ft <sup>2</sup>
PHI(ct)h	N/A	ft/psi
$P^-$	N/A	psi
OMEGA	1	
LAMBDA	N/A	

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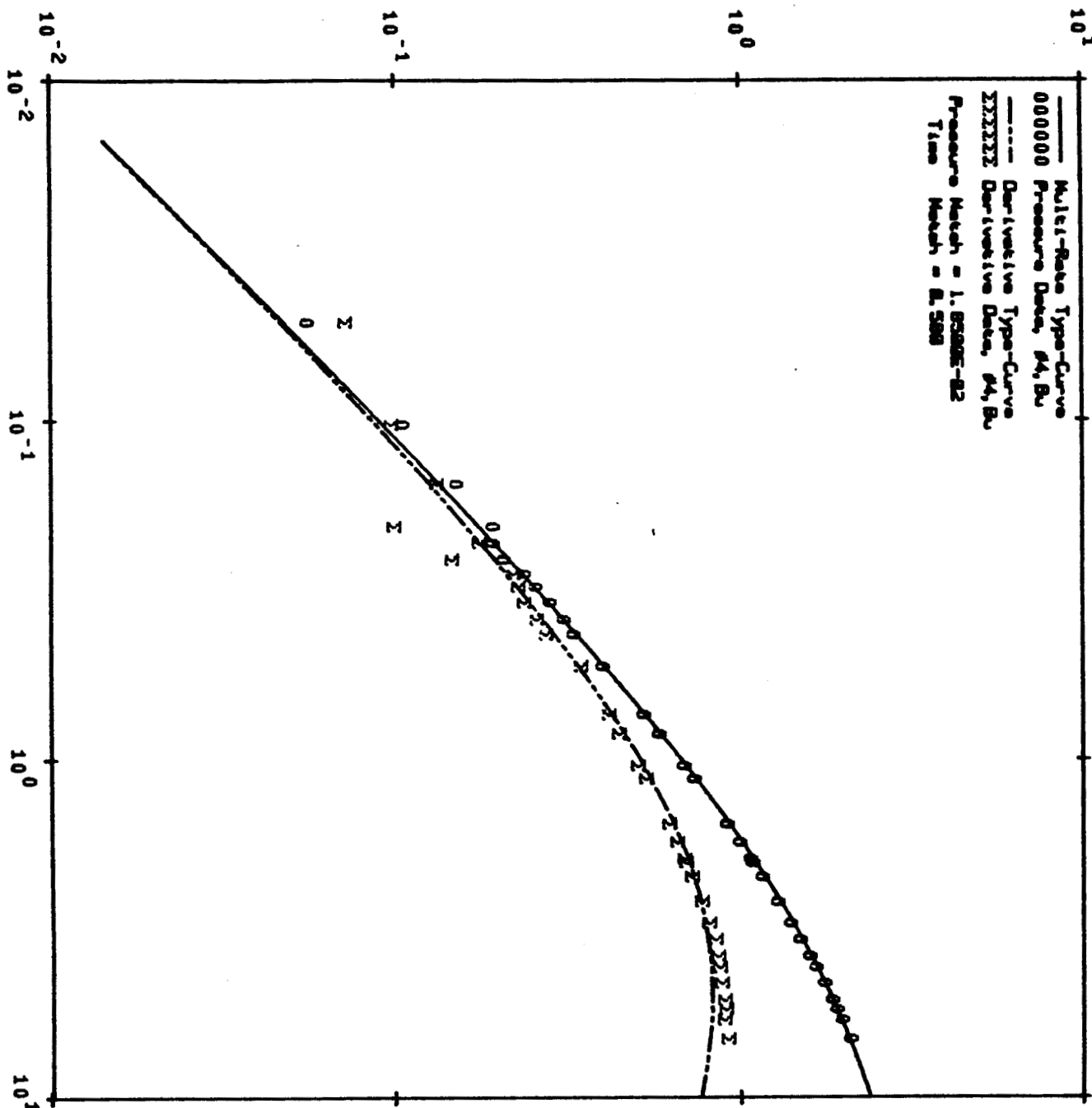
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**DIMENSIONLESS MULTI-RATE  
PLOT : LOG-LOG MATCH FOR  
#4, B<sub>u</sub>**

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DIMENSIONLESS PRESSURE GROUPS



TYPE-CURVE : WELLBORE STORAGE & SKIN (HOMOGENEOUS)

DIMENSIONLESS TIME, TD/CD

CDME(C) = 1.00E+01

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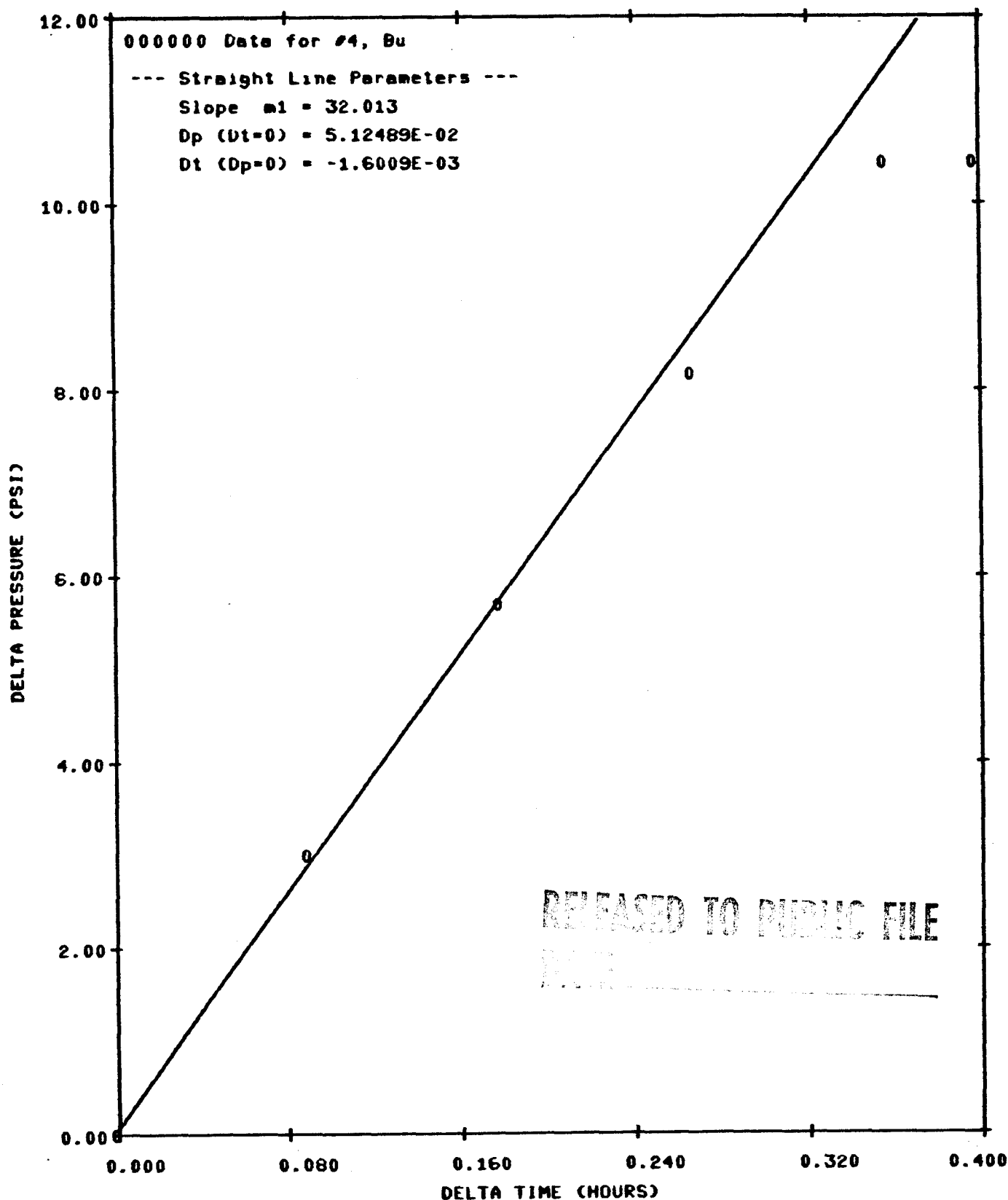
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EARLY TIME ANALYSIS  
Dp vs. Dt PLOT  
FOR #4, Bu

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OIL WELL  
LOG-LOG ANALYSIS

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'log((p-p(Dt=0))) versus log(Dt)' PLOT

WELLBORE STORAGE AND SKIN  
after Gringarten A.C. et al. SPE 8205  
Las Vegas, Nev., Sept 23-26, 1979

DATA IDENTIFICATION

Flow period# 4

☐ Drawdown ☒ Build-up

☒ p(Dt=0) = 1726 psi

☒ Duration of previous flow period: tp = 24.5 hr

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FLOW REGIME IDENTIFICATION

☒ WELLBORE STORAGE:  
Unit-slope straight line

ENDS at Dt = 0.6

☐ INFINITE ACTING RADIAL FLOW:  
Semi-log straight line

STARTS at Dt = N/A hr

ENDS at Dt = N/A hr

☐ BOUNDARY EFFECTS:  
No-flow; pseudo steady-state  
Constant pressure

STARTS at Dt = N/A hr

STARTS at Dt =

TYPE-CURVE MATCH

<input checked="" type="checkbox"/> Match-point: pD = .185	Dp = 10
tD/CD = .58	Dt = 1

☒ Match curve: CDe(2S) = 10

CALCULATIONS

☒ kh (from pressure match)

= 12871 md.ft

☒ C (from unit slope straight line)

= 1.98E-1 Bbl/psi

☐ kh (from time match)

=

☒ C (from time match)

= 6.79E-2 / Bbl/psi

☒ CD

= 6692

☒ S (from curve match)

= -3.2

☐ xf (equivalent fracture half-length)

=

☒ k

= 322 md

COMMENTS

POSSIBLE CHANGING WELLBORE STORAGE COEFFICIENT

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WELL AND RESERVOIR DATA  
(used in the computations)

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Nature of Fluid: CRUDE

PARAMETERS

PARAMETER	NUMERICAL VALUE	UNIT
A	N/A	ft <sup>2</sup>
B	N/A	
ct	4.81E-6	psi <sup>-1</sup>
h	40	ft
rw	.3617	ft
MU	32.45	cp
PHI	0.36	
Z		
SG	0.70	
T	101	deg F
p-	N/A	psi

GEOLOGY : WES SAK SAND

GAUGE : SSDP S/N 84210, INSIDE READING, 10 SEC SAMPLE RATE

COMPLETION:

Depth of bottom hole measurements: 4601 FT Reference: RKB

Perforations : 4650 TO 4704 FT MD

Tubing Diameter: 3 1/2 OD

Shoe :

Casing Diameter: 9 5/8 47 #/FT

Shoe :

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SUMMARY OF FLOW PERIODS

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FLOW PER.	TIME OF START	TIME OF END	DURATION (hours)	CUMULATIVE PRODUCTION (Bbls)	AVERAGE PRD. RATE (B/D)	COMMENTS
#1,DD	12/11/86 11:33	12/11/86 11:38	.08333	2.01	642	
#2,BU	12/11/86 11:38	12/11/86 12:37:50	1	0	0	
#3,DD	12/11/86 12:37:50	12/12/86 13:27	24.82	124.96	146	20 SNAB RUNS MADE DURING FINAL FLOW PERIOD,OIL,GAS,WATER TO SURGE
#4,BU	12/12/86 13:27	12/13/86 1:58	12.5	0	0	

WELL TEST DATA ARE FROM WELL TESTING REPORT #DST #2

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PHOENIX NO.1 DST NO.2 TENNECO OIL COMPANY  
SSDP S/N 84210 FINAL BUILDUP J.MUSBAND,ENGR.

DELTA TIME (HOURS)

DELTA PRESSURE (PSI)

1	0.00000	0.00000
2	8.88889E-02	2.9994
3	0.17778	5.6913
4	0.26667	8.1605
5	0.35556	10.434
6	0.39722	10.434
7	0.44444	11.191
8	0.48889	12.824
9	0.53333	13.833
10	0.59444	15.209
11	0.66667	16.722
12	0.73889	17.842
13	0.91667	21.625
14	1.2722	28.347
15	1.4500	31.432
16	1.8056	37.005
17	1.9722	39.652
18	2.6833	49.154
19	3.0389	53.436
20	3.3944	57.521
21	3.4833	58.296
22	3.8389	62.104
23	4.5500	68.958
24	5.2611	75.127
25	5.8833	80.031
26	6.5944	85.332
27	7.1139	88.864
28	7.9333	94.408
29	8.8972	99.530
30	9.4861	102.56
31	10.197	106.10
32	11.619	112.56

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FINAL BUILDUP

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DELTA TIME (HOURS)

BOTTOMHOLE PRESSURE (PSIA)

1	0.00000	1723.4
2	8.88889E-02	1726.4
3	0.17778	1729.1
4	0.26667	1731.5
5	0.35556	1733.8
6	0.39722	1733.8
7	0.44444	1734.6
8	0.48889	1736.2
9	0.53333	1737.2
10	0.59444	1738.6
11	0.66667	1740.1
12	0.73889	1741.2
13	0.91667	1745.0
14	1.2722	1751.7
15	1.4500	1754.8
16	1.8056	1760.4
17	1.9722	1763.0
18	2.6833	1772.5
19	3.0389	1776.8
20	3.3944	1780.9
21	3.4833	1781.7
22	3.8389	1785.5
23	4.5500	1792.3
24	5.2611	1798.5
25	5.8833	1803.4
26	6.5944	1808.7
27	7.1139	1812.2
28	7.9333	1817.8
29	8.8972	1822.9
30	9.4861	1825.9
31	10.197	1829.5
32	11.619	1835.9

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