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May 20, 1988

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Subject: Drill Stem Test Analysis
McComb No. 1 Well
Devonian Wildcat
Chaves County, NM

DST No. 1 on the subject well was taken by straddle packers from 8470-8560' in the upper Devonian. Reference is made to the Baker Service Tool report covering the test.

My approach was to assume the gas reservoir was limited to 8476-94' and using the Horner plot to make the gas calculations. The build-up constant for gas, Mg, was determined by squaring each of the breakdown pressures and plotting against log $T + \theta/\theta$, where T is flow time and θ is shut-in time. This plot is attached. Mg is graphically derived by the difference in squares at the cycle intercepts. In this case, it is 1,580,000 psi2/log cycle. Other factors from the DST data used in the calculations are: Tf = 625°R, μ = .025 cp, Z = .81, cg = .000224 MCF/MCF/psi, Bg = 1280, Qg = 125 MCFPD, T = 198 min., rw = 7 7/8", Po = 3190 psi, Pf = 167 psi.

The following are the results of the calculations:

Transmissibility ($kh/\mu Z$) 65.5 md-ft/cp

Capacity (kh) 1.64 md-ft

Effective permeability to gas (kg) .091 md

Estimated well bore damage (EDR) 1.298 (indicating well bore damage)

Apparent skin factor (S) 6.4 (a relative term, nevertheless indicating some damage)

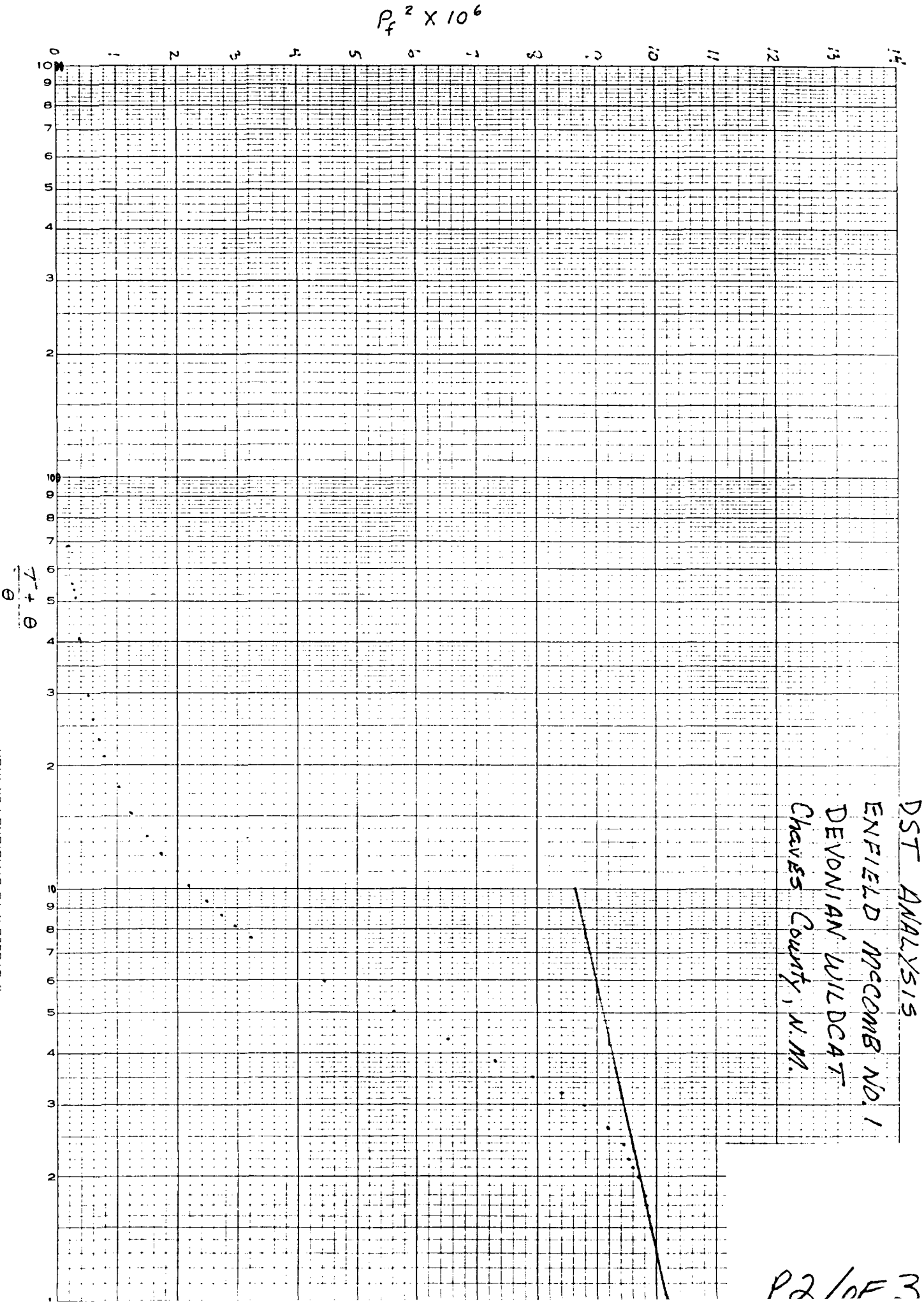
Radius of investigation (ri) 139'.

It should be noted that many of these determinations use empirical data and equations and are limited to measurements of a very small portion of the reservoir. Consequently, the conclusions should be used with caution, particularly when used in comparison to other sets of data on this or other wells. Please let me know if you have any questions about this work.

G. Thane Akins, P.E.

Examiner Stogner
Case No. 9390
EXHIBIT NO. 10

P1 OF 3


$P_f^2 \times 10^6$
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
$\frac{\theta}{\theta + 1}$
DST ANALYSIS
ENFIELD MCCOMB NO. 1
DEVONIAN WILDCAT
Chaves County, N.M.
P2 1 OF 3
DIETZGEN CORPORATION
MADE IN U.S.A.
NO. 340R-1010 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
3 CYCLES X 10 DIVISIONS PER INCH

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GAS TEMPERATURE =  165  DEG.F
GAS PRESSURE =  3264.7  PSIA
GAS GRAVITY =  .808  (AIR=1.0)
NITROGEN CONTENT =  .0453
CARBON DIOXIDE CONTENT =  .0366
HYDROGEN SULFIDE CONTENT =  0
**********************************************
WICHERT-AZIZ CORRECTION =  5.51024  DEG.F
CRITICAL PRESSURE = 664.6376  PSIA
CRITICAL PRESSURE W/CORRECTION =  655.9681  PSIA
CRITICAL TEMPERATURE =  422.4392  DEG. RANKINE
CRITICAL TEMPERATURE W/CORRECTION =  416.929  DEG. RANKINE
REDUCED PRESSURE =  4.976919
REDUCED TEMPERATURE =  1.499056
Z-FACTOR =  .8096152
ISOTHERMAL COMPRESSIBILITY (CG) =  2.242059E-04  1/PSI
VISCOSITY =  .0249225  CP
********** GAS FORMATION VOLUME FACTOR *********
BG =  4.384786E-03  CU FT/SCF
   =  7.811707E-04  BBL/SCF
   =  228.0731  SCF/CU FT
   =  1280.048  SCF/BBL
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BEFORE EXAMINER STOGNER
OIL CONSERVATION DIVISION
Enfield EXHIBIT NO. 10
CASE NO. 9390