GL07315_4

DRAWDOWN DATA OF LONG DURATION TEST (9/20 to 10/12) [Corrected HP Gage Data]

ΔP, Line 1 = 1.75 Psi = 4.38 ft

ΔP, Line 2 = 3.58 Psi = 8.95 ft

t_o, Line 1 = 20 hrs = 1200 min.

$$k_H = \frac{1.151 \times 400 \times 0.18}{8.299 \times 10^{-5} \times 4.38} = 2.28 \times 10^5 \text{ md feet}$$

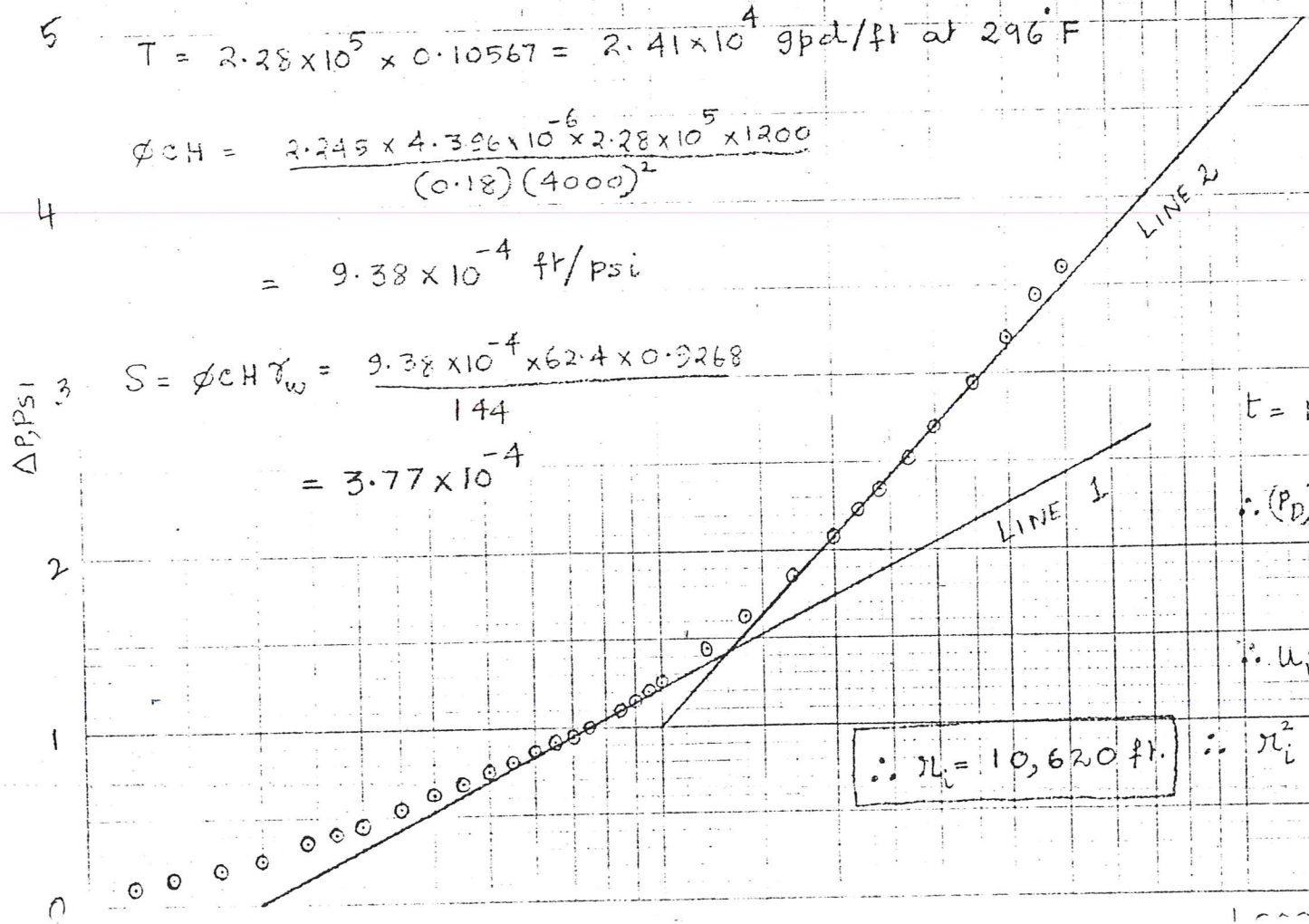
$$T = 2.28 \times 10^5 \times 0.10567 = 2.41 \times 10^4 \text{ gpd/ft at } 296^\circ F$$

$$\phi c_H = \frac{2.245 \times 4.396 \times 10^{-6} \times 2.28 \times 10^5 \times 1200}{(0.18)(4000)^2}$$

$$= 9.38 \times 10^{-4} \text{ ft/psi}$$

$$S = \phi c_H \gamma_w = \frac{9.38 \times 10^{-4} \times 62.4 \times 0.9268}{144}$$

$$= 3.77 \times 10^{-4}$$



CALCULATION OF r_i

t = 1000 hrs $\Delta P_i = 4.58 - 1.03$

$= 1.55$ Psi $= 3.88$ feet

$$\therefore (P_D)_i = \frac{8.299 \times 10^{-5} \times 2.28 \times 10^5 \times 3.88}{400 \times 0.18}$$

$= 1.018 \Rightarrow (S_D)_i = 2.036$

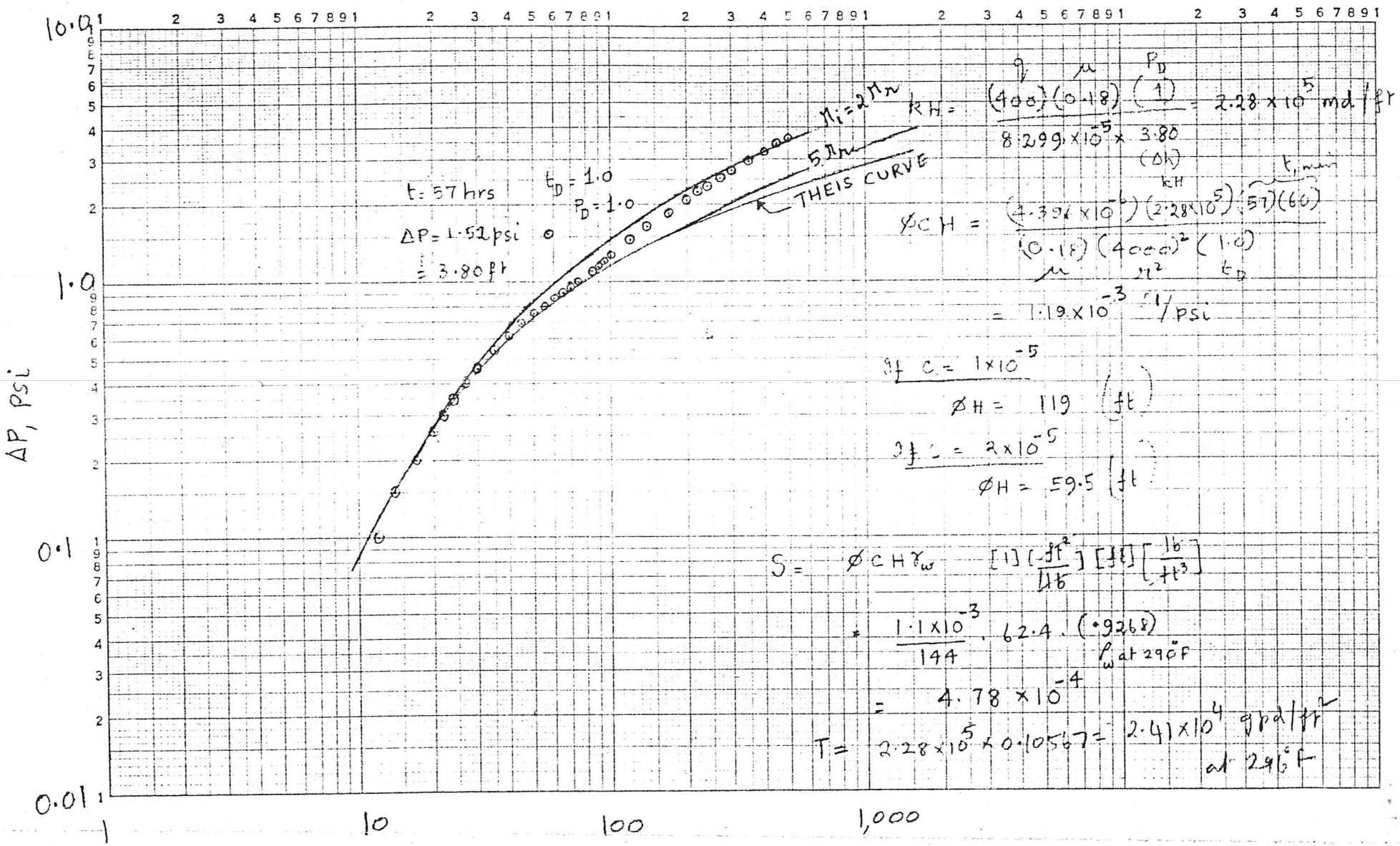
$$\therefore u_i = 7.92 \times 10^{-2} \text{ or } (t_D)_i = \frac{1}{4u_i} = 3.16$$

$$\therefore r_i^2 = \frac{4.396 \times 10^{-6} \times k_H \times t}{\phi c_H \mu t_D}$$

$$= \frac{4.396 \times 10^{-6} \times 2.28 \times 10^5 \times 60 \times 1000}{9.38 \times 10^{-4} \times 0.18 \times 3.16}$$

$$= 1.127 \times 10^8$$

$\therefore r_i = 10,620$ ft.


ΔP, psi
10.0
1.0
0.1
0.01
1
10
100
1,000
Hours since production commenced
t = 57 hrs
ΔP = 1.52 psi
≡ 3.80 ft
t_D = 1.0
P_D = 1.0
$r_i = 2\pi r$
$5\pi r$
THEIS CURVE
$kH = \frac{(400)(0.18)}{8.299\times10^{-5}} \frac{\mu}{q} \times \frac{P_D}{3.80} \frac{(1)}{(\Delta h)} = 2.28\times10^5$ md/ft
$\phi CH = \frac{(4.39\times10^{-6})(2.28\times10^5)(57)(60)}{(0.18)(4000)^2(1.0)} \frac{kH}{\mu} \frac{t, min}{r^2} \frac{}{t_D}$
$= 1.19\times10^{-3}$ 1/psi
$\phi_f C_f = 1\times10^{-5}$
$\phi H = 119$ (ft)
$\phi_f C_f = 2\times10^{-5}$
$\phi H = 59.5$ (ft)
$S = \phi C H \gamma_w \; [1]\left[\frac{ft^2}{lb}\right]\left[\frac{ft}{ft}\right]\left[\frac{lb}{ft^3}\right]$
$= \frac{1.1\times10^{-3}}{144} \cdot 62.4 \cdot (.9268)$ ρ_w at 290°F
$= 4.78\times10^{-4}$
$T = 2.28\times10^5 \times 0.10567 = 2.41\times10^4$ gpd/ft at 296°F