

LOG-ARITHMIC 47 7523 NEUFEL & ESBERG

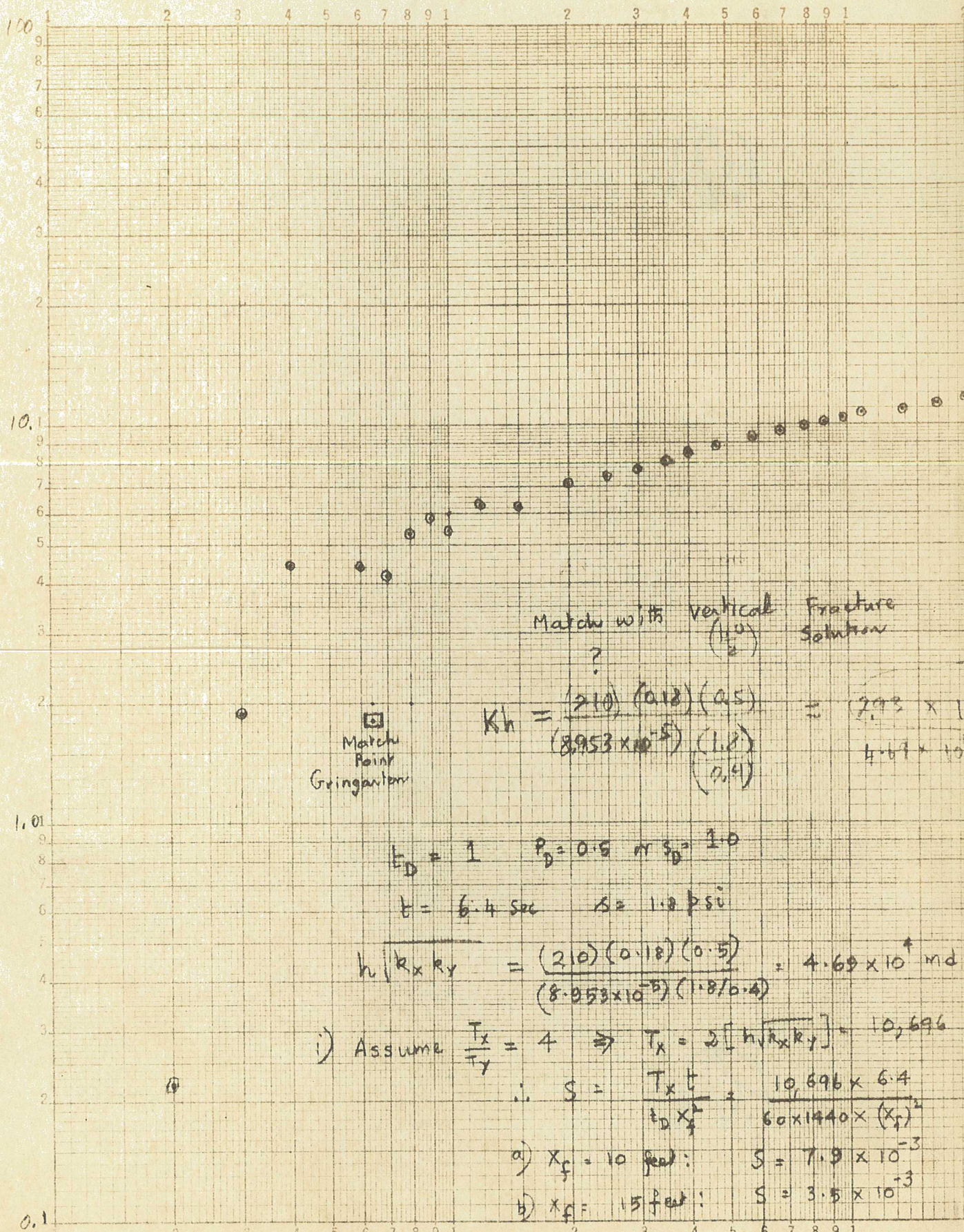
RRGE-2 Correspondence, Memos, and Reports

Test #1

9/12 to 9/13/75

GL07330-2

ΔP psi



Match with Vertical Fracture Solution

$$Kh = \frac{(210)(0.18)(0.5)}{(8.953 \times 10^{-5})(1.8)} = \frac{19.845}{0.161154} = 1.23 \times 10^5$$

Match Point Gringarten

$$E_D = 1 \quad P_D = 0.5 \quad \text{or } S_D = 1.0$$

$$t = 6.4 \text{ sec} \quad S = 1.8 \text{ psi}$$

$$h/k_x r_y = \frac{(210)(0.18)(0.5)}{(8.953 \times 10^{-5})(1.8/6.4)} = 4.69 \times 10^4 \text{ md ft} = 5348 \text{ gpd/ft}$$

i) Assume  $\frac{T_x}{T_y} = 4 \Rightarrow T_x = 2[h/k_x r_y] = 10,696 \text{ gpd/ft}$

$$S = \frac{T_x t}{t_D X_f^2} = \frac{10,696 \times 6.4}{60 \times 1440 \times (X_f)^2}$$

a)  $X_f = 10 \text{ feet} : S = 7.9 \times 10^{-3}$

b)  $X_f = 15 \text{ feet} : S = 3.5 \times 10^{-3}$

c)  $X_f = 31.6 \text{ feet} : S = 7.9 \times 10^{-4} \approx 10^{-2}$

Time - Seconds

5) well T

Match Point with Theis Solution

$$E_D = 7.15 \quad S_D = 1 \quad \text{or } P_D = 0.5$$

$$t = 6.4 \text{ sec} \quad S = 1.8 \text{ psi} = 4.5 \text{ feet}$$

$$Kh = \frac{(210)(1.18)(.5)}{8.953 \times 10^{-5} \times (1.8/.4)} = 4.69 \times 10^4 \text{ md ft}$$

$$= \frac{114.6 \times 210 \times 1}{4.5} = 5348 \text{ gpd/ft}$$

$$t_D = \frac{Tt}{r_w^2 S} \Rightarrow S = \frac{Tt}{r_w^2 P_D}$$

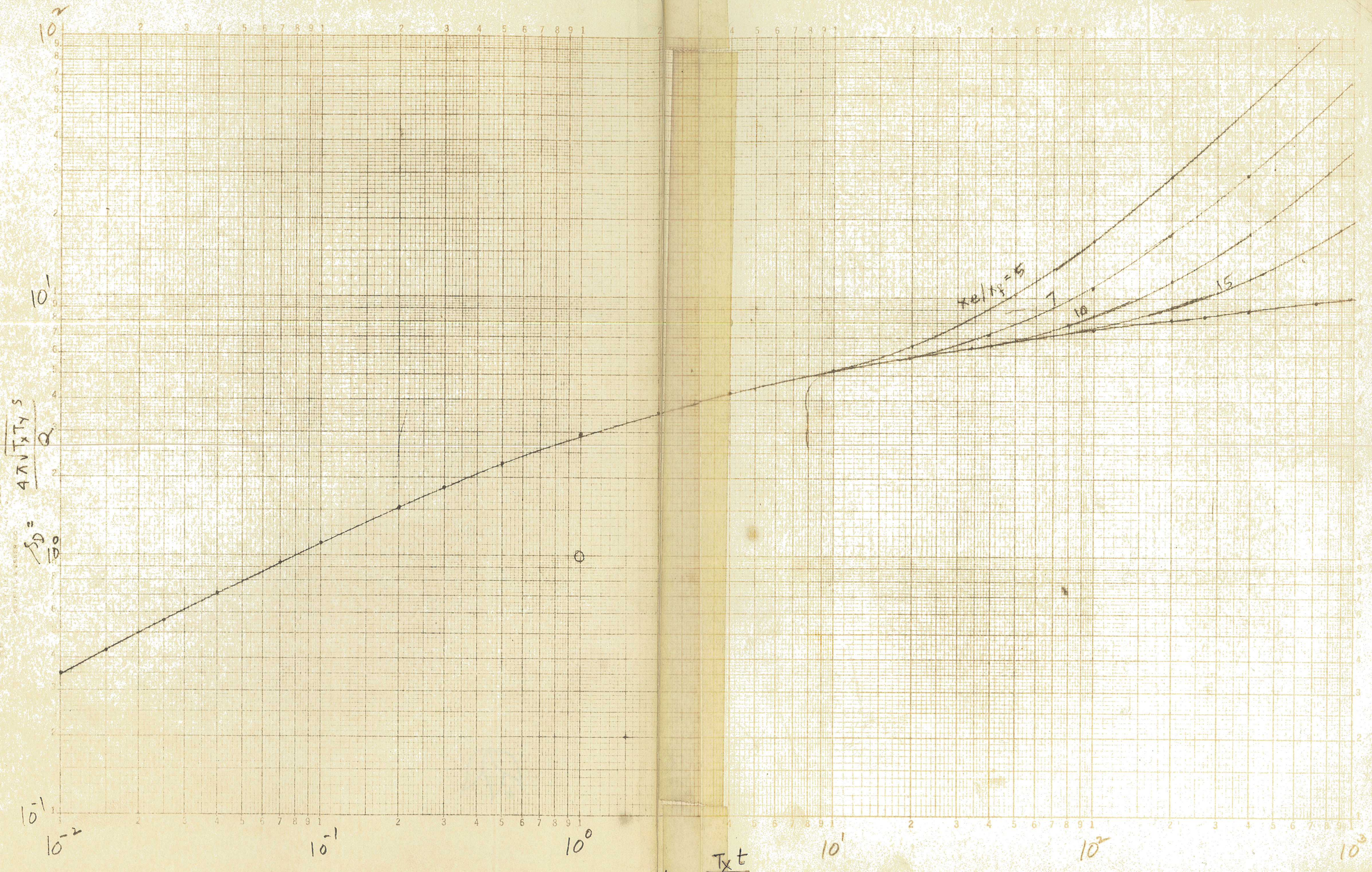
i)  $r_w = 1 \text{ foot}$   
 $S = \frac{5348 \times 6.4}{60 \times 1440 \times 1^2 \times 7.15} = 5.5 \times 10^{-2}$

ii)  $r_w = 5 \text{ feet}$   
 $S = \frac{5348 \times 6.4}{60 \times 1440 \times 25 \times 7.15} = 2.2 \times 10^{-3}$

iii)  $r_w = 10 \text{ feet}$   
 $S = \frac{5348 \times 6.4}{60 \times 1440 \times 100 \times 7.15} = 5.5 \times 10^{-4} \approx 10^{-5}$

# Vertical Fracture solution at well bore

G107330-3



$$\frac{S_D}{100} = \frac{4\pi T_x t}{Q}$$

$$t_D = \frac{T_x t}{S X_e^2}$$