

Phillips 4-2 Bates Unit
Sec 31-303-1W

3727-43'
Mississippi

HALLIBURTON SERVICES

LIQUID RESERVOIR DATA WORK SHEET

Required Data:

Oil - API Gravity @ 60° F.	<u>42'</u> °
Gradient @ 60° F.	_____ PSI/ft.
Water - Specific Gravity ° 60° F.	_____ -
Gradient ° 60° F.	_____ PSI/ft.
Oil or Water Est. Viscosity (Res.)	<u>2.7</u> cp
Net Pay (h)	<u>12</u> ft.
Temperature	_____ ° F.
Drill Pipe Capacity	_____ bbls./ft.
Drill Collar Capacity	_____ bbls./ft.
Hole or Casing Size	_____ in.

Slope of Build-up Plot = M (Ref. Instr. #2)

Pressure Static (Ps) - Pressure 1 cycle (P_{10}) = _____ M PSI/cycle
1299 - 128 1230/1285 = 69/14 PSI/cycle

Production Rate - (Ref. Instr. #3)

Production Rate - by Fill-up Pressure Change (Not Flowing)

(P_2 - P_1) ÷ psi/ft. x bbls./ft. x min. da. ÷ time = _____ Q bbls./da.
(_____ - _____) ÷ _____ x _____ x 1440 ÷ _____ = 39.5 bbls./da.

Production Rate - (Flowing) (Ref. Instr. #4)

bbls./rec. x min. da. ÷ flow time = _____ bbls./da.
_____ x _____ ÷ _____ = _____ bbls./da.

(over)

$$\text{Transmissibility} = \left(\frac{K_h}{\mu} \right) \quad (\text{Ref. Instr. \#5})$$

$$162.6 \quad \times \text{Production (Q)} \div M = \frac{\left(\frac{K_h}{\mu} \right)}{\text{cp}} \quad \text{Md. ft.}$$

$$\frac{162.6}{\text{cp}} \times \frac{39.5}{\text{Md. ft.}} \div \frac{69}{14} = \frac{93.08}{458.8} \quad \text{Md. ft.}$$

$$\text{Indicated Flow Capacity} = (K_h) \quad (\text{Ref. Instr. \#6})$$

$$\left(\frac{K_h}{\mu} \right) \times \mu = (K_h) \quad \text{Md. ft.}$$

$$\frac{93.08}{458.8} \times 2.3 = \frac{214.08}{1055.2} \quad \text{Md. ft.}$$

$$\text{Average Effective Permeability} = K \quad (\text{Ref. Instr. \#7})$$

$$\frac{K_h}{h} \div \frac{h}{K} = \frac{K}{h} \quad \text{Md}$$

$$\frac{214.08}{1055.24} \div \frac{12}{17.84} = \frac{17.84}{87.94} \quad \text{Md}$$

$$\text{Damage Ratio} = DR \quad (\text{Ref. Instr. \#8})$$

$$0.183 \times (P_s - P_f) \div M = \frac{DR}{\text{cp}}$$

$$\frac{0.183}{\text{cp}} \times (1299 - 91) \div \frac{69}{14} = \frac{3.2}{15.8} \quad \text{Significant Damage}$$

$$\text{Theoretical Potential with Damage Removed} \quad (\text{Ref. Instr. \#9})$$

$$Q \times DR = \frac{Q_1}{\text{bbls./da.}}$$

$$\frac{39.5}{\text{bbls./da.}} \times \text{DR} = \text{bbls./da.}$$

TICKET NO.

Bates 4-2 Unit

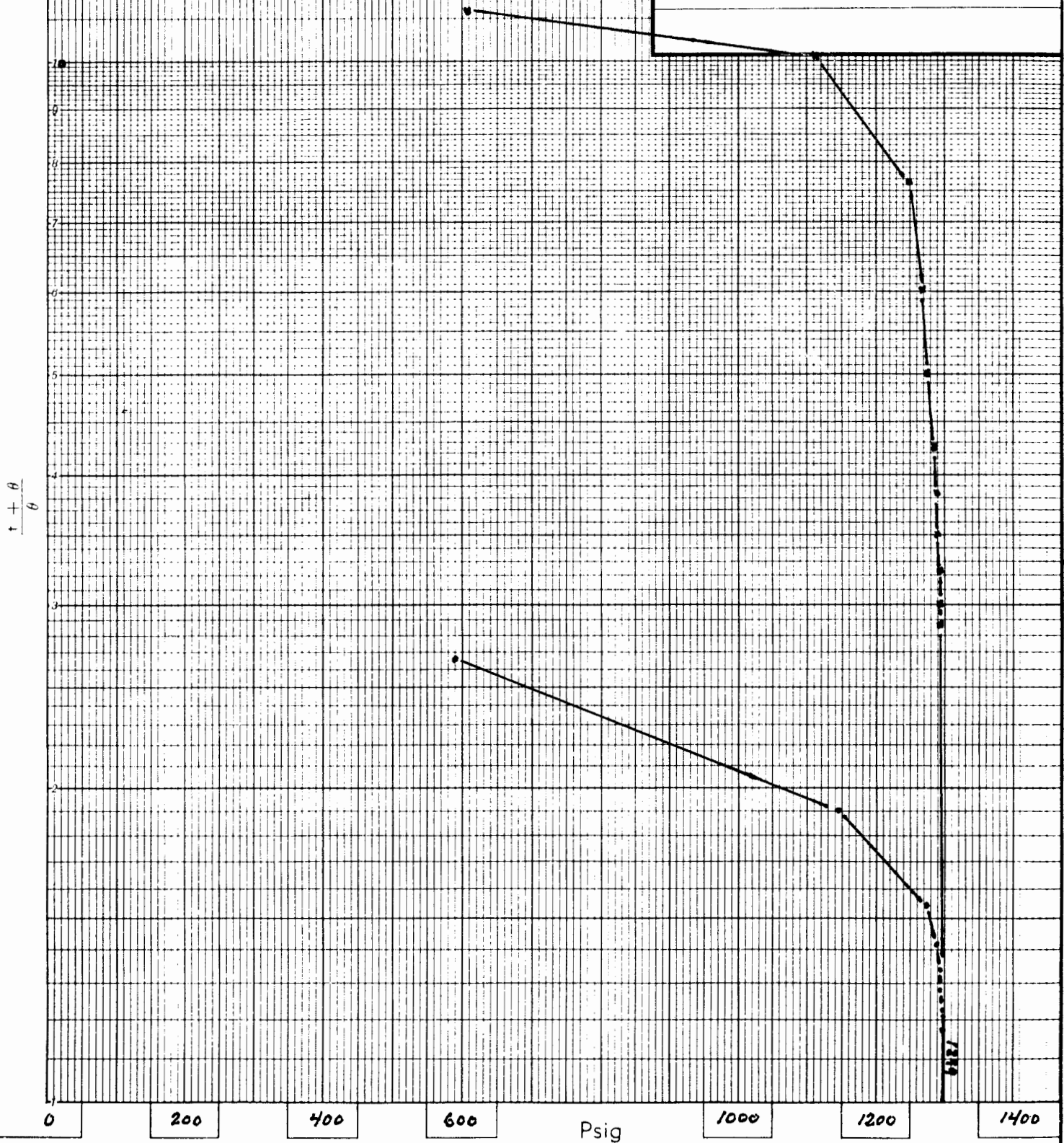
BT GAUGE NO.

31-305-1M

INITIAL

FINAL

3727-43



EXTRAPOLATED PRESSURE GRAPH