



Home Office: Great Bend, Kansas
P. O. Box 793 Swift 3-7903

Bates Unit 4-1

Company Beardmore Drilling Company Lease & Well No. Haines #1
Elevation 1312 Kelly Bushings Formation Mississippi Ticker Number 6192
Date June 22, 1966 Sec. 36 Twp. 30s Range 2w County Sumner State Kansas
Test Approved by Frederick W. Stump Western Representative Jack Toolkes

Formation Test No. 1 O.K. Misrun Interval Tested From 3735' to 3752' Total Depth 3752'

Size Main Hole 7 7/8 Rat Hole Conv. B.T. Damaged Yes No Conv. B.T. Damaged Yes No

Packer Depth 3730 Ft. Size 6 3/4 Packer Depth 3735 Ft. Size 6 3/4

Straddle Yes No Conv. B.T. Damaged Yes No

Packer Depth _____ Ft. Size _____

Tool Size 4 1/2 OD Tool Jt. Size 3 1/2 FH Anchor Length 17 Ft. Size 4 1/2 OD

RECORDERS Depth 3739 Ft. Clock No. 6897 Depth 3742 Ft. Clock No. 135

Top Make Amerada Cap. 3200 No. 1565 Inside Outside Bottom Make Western Cap. 3400 No. 42 Inside Outside

Flow Straddle: Depth _____ Clock No. _____ Inside Outside Depth _____ Ft. Clock No. _____ Inside Outside

Top Make _____ Cap. _____ No. _____ Inside Outside Bottom Make _____ Cap. _____ No. _____ Inside Outside

Time Set Packer 3:43 P M

Tool Open I.F.P. From 3:45 M to 3:55 M Hr. 10 Min. From (B) 50 P.S.I. To (C) 56 P.S.I.

Tool Closed I.C.I.P. From 3:55 M to 4:25 M Hr. 30 Min. (D) 1300 P.S.I.

Tool Open F.F.P. From 4:25 M to 5:25 M 1 Hr. Min. From (E) 69 P.S.I. To (F) 147 P.S.I.

Tool Closed F.C.I.P. From 5:25 M to 5:55 M Hr. 30 Min. (G) 1230 P.S.I.

Initial Hydrostatic Pressure (A) 1836 P.S.I. Final Hydrostatic Pressure (H) 1820 P.S.I.

WELL SURFACE Size Choke 3/4 In. Max. Press. P.S.I. _____ Time _____ Description of Flow _____

WELL INFORMATION _____ M. _____

_____ M. _____

_____ M. _____

FLOW STRONG Bottom Choke Size 3/4 In.

Estimated Well Flow Yes No Recovery Total Ft. Gas to surface 20 minutes, too small to measure; 300' muddy

gassy oil Mud _____

Reversed Out Yes No Mud Type chem Viscosity 45 Weight 9.7 Maximum Temp. 113 °F

EXTRA EQUIPMENT: Dual Packers Safety Joint _____ Jars: Size _____ Make _____ Ser. No. _____

Type Circ. Sub. plug Did Tool Plug? No Where? _____ Did Packer Hold? Yes

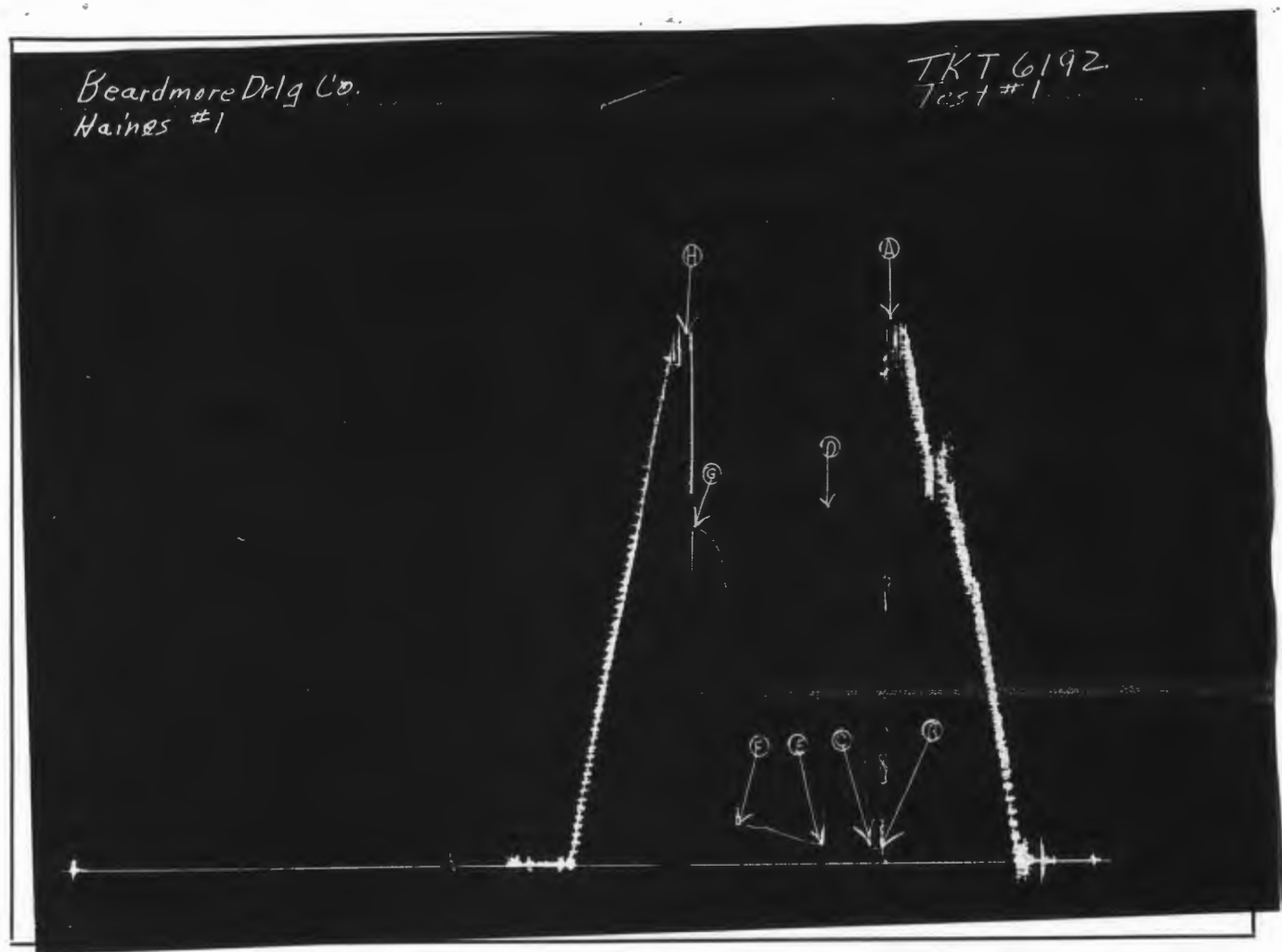
Length Drill Pipe 3174 I.D. Drill Pipe 3.8 in Length Weight Pipe 540 ft. I.D. Weight Pipe 2.7 in. Length Drill Collars _____ ft.

D. Drill Collars _____ in. Length D.S.T. Tool 38 ft.

Remarks _____

Beardmore Drlg Co.
Haines #1

TKT 6192
Test #1



This is an actual photograph of recorder chart.

POINT	PRESSURE
(A) Initial Hydrostatic Mud	1836 PSI
(B) First Initial Flow Pressure	50 PSI
(C) First Final Flow Pressure	56 PSI
(D) Initial Closed-in Pressure	1309 PSI
(E) Second Initial Flow Pressure	69 PSI
(F) Second Final Flow Pressure	147 PSI
(G) Final Closed-in Pressure	1239 PSI
(H) Final Hydrostatic Mud	1820 PSI

Phillips 4-1 Bates Unit
Sec. 36-303-2W

3735-52
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.)		cp
Net Pay (h)	<u>15</u>	ft.
Temperature	<u>109°</u>	° F.
Drill Pipe Capacity		bbls./ft.
Drill Collar Capacity		bbls./ft.
Hole or Casing Size		in.

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

Pressure Static (Ps) - Pressure 1 cycle (P₁₀) = M PSI/cycle
1340 - 1030 / 1115 = 310 / 225 PSI/cycle

Production Rate - (Ref. Instr. #3)

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

(P₂ - P₁) ÷ psi/ft. x bbls./ft. x min. da. ÷ time = Q bbls./da.
(-) ÷ x x 1440 ÷ = 49.4 bbls./da.

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

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

(over)

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

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

$$\underline{162.6} \quad \times \quad \underline{49.4} \quad \div \quad \underline{310/225} \quad = \quad \underline{25.91/35.70} \quad \text{Md. ft.}$$

Indicated Flow Capacity = (Kh) (Ref. Instr. #6)

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

$$\underline{25.91/35.70} \quad \times \quad \underline{2.3} \quad = \quad \underline{59.59/82.11} \quad \text{Md. ft.}$$

Average Effective Permeability = K (Ref. Instr. #7)

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

$$\underline{59.59/82.11} \quad \div \quad \underline{15} \quad = \quad \underline{3.97/5.47} \quad \text{Md}$$

Damage Ratio = DR (Ref. Instr. #8)

$$0.183 \quad \times \quad (P_s - P_f) \div M \quad = \quad \frac{DR}{\text{No damage}}$$

$$\underline{0.183} \quad \times \quad \left(\underline{1340} - \underline{147} \right) \div \underline{310/225} \quad = \quad \underline{0.7 / 0.97} \quad \text{No damage}$$

Theoretical Potential with Damage Removed (Ref. Instr. #9)

$$Q \quad \times \quad DR \quad = \quad \frac{Q_1}{\text{bb ls. / da.}}$$

$$\underline{49.4} \quad \times \quad \underline{\hspace{2cm}} \quad = \quad \underline{\hspace{2cm}} \quad \text{bb ls. / da.}$$

TICKET NO.

Bates 4-1 Unit

BT GAUGE NO.

36-309-2N

INITIAL

FINAL

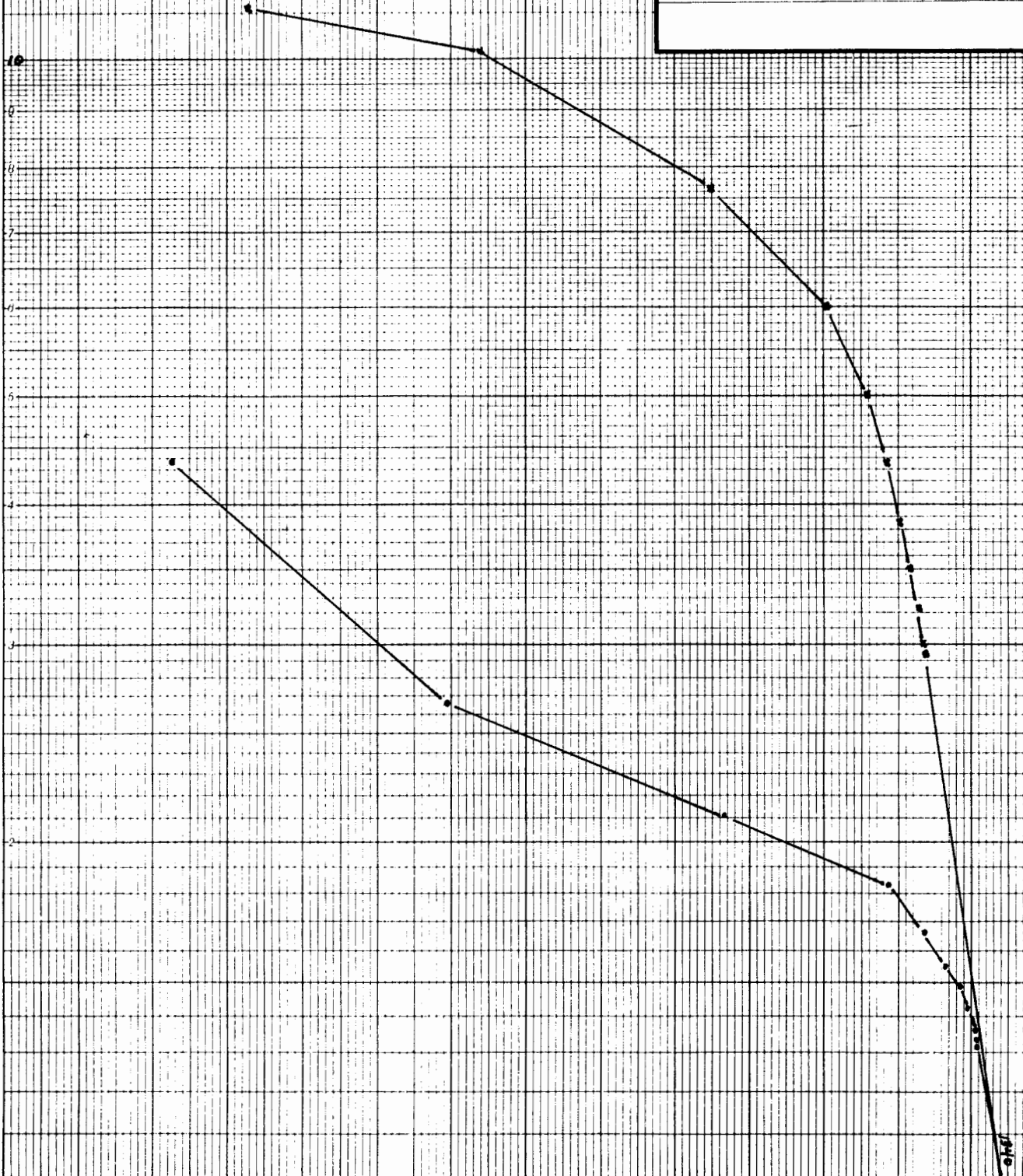
3735-52



$\frac{1 + \theta}{\theta}$

10
9
8
7
6
5
4
3
2
1
0

0 200 400 600 1000 1200 1400
Psig



EXTRAPOLATED PRESSURE GRAPH