JOHNSTON
Schlumberger



# COMPUTERIZED DATA ANALYSIS

AUGUST 28, 1974

GENTLEMEN:

THE ENCLOSED TEST APPEARS TO BE A GOOD MECHANICAL DRILL STEM TEST DURING WHICH THE TOOLS DID FUNCTION PROPERLY. THE FORMATION PRODUCED ENOUGH RESERVOIR FLUID FOR PROPER IDENTIFICATION. RESERVOIR PRESSURE DRAWDOWN WAS SUFFICIENT BUT ADEQUATE SHUT-IN BUILD-UPS DID NOT OCCUR FOR RELIABLE QUANTITATIVE ANALYSIS USING THE HORNER PLOTS. AFTERFLOW WAS STILL IN EFFECT ON THE INITIAL AND FINAL SHUT-IN BUILD-UPS TO THE EXTENT THAT THE PLOTS ARE CONSIDERED UNRELIABLE FOR ANALYSIS. THE MC KINLEY AFTERFLOW METHOD WAS USED TO DETERMINE THE RESERVOIR PARAMETERS REPORTED HEREIN.

1. FLOW RATE: A MAXIMUM FLOW RATE OF 122 MCF/DAY OF GAS WAS NOTED DURING THIS TEST.

2. RESERVOIR PRESSURE: EXTRAPOLATION TO RELIABLE RESERVOIR PRESSURE WAS NOT POSSIBLE FROM THE HORNER PLOTS. FOR THE PURPOSE OF THIS ANALYSIS, AN ESTIMATED RESERVOIR PRESSURE OF 3651 P.S.I. WAS USED. THIS IS AN AVERAGE PRESSURE BETWEEN THE EXTRAPOLATION FROM THE HORNER PLOT AND THE LAST READ PRESSURE ON THE BUILD-UP.

3. PERMEABILITY: THE CALCULATED TRANSMISSIBILITY FACTOR OF 23.6 MD.-FT./CP. INDICATES AN AVERAGE EFFECTIVE PERMEABILITY TO GAS OF 0.015 MD. FOR THE REPORTED 35 FOOT POROUS INTERVAL. THE CALCULATIONS WERE BASED ON THE INDICATED TRANSMISSIBILITY FROM THE MC KINLEY PLOT. IT WAS ASSUMED FOR THESE CALCULATIONS: (A) GAS GRAVITY 0.70 (B) VISCOSITY 0.022 CP. (C) AND GAS DEVIATION FACTOR 0.86. THESE FIGURES WERE OBTAINED FROM THE AVAILABLE TECHNICAL LITERATURE.

4. WELL BORE DAMAGE: THE CALCULATED ESTIMATED DAMAGE RATIO OF 0.63 INDICATES THAT NO WELL BORE DAMAGE IS PRESENT AT THE TIME AND CONDITIONS OF THIS TEST.

5. RADIUS OF INVESTIGATION: THE CALCULATED RADIUS OF INVESTIGATION OF THIS TEST IS 8.5 FEET BASED ON AN ASSUMED POROSITY OF 10%, COMPRESSIBILITY OF $2.09 \times 10^{-4}$, AND OTHER ASSUMPTIONS MADE IN NUMBER 3 ABOVE.

6. GENERAL COMMENTS: THE FORMATION EXHIBITS THE CHARACTERISTICS OF RELATIVELY LOW PERMEABILITY EFFECTIVE TO THE RESERVOIR FLUID AND INDICATES THE ABSENCE OF WELL BORE DAMAGE.

IT APPEARS THAT HEAVY STIMULATION WOULD BE NECESSARY TO OBTAIN ANY INCREASE IN FLOW CAPACITY IN THIS ZONE. LOCAL EXPERIENCE SHOULD DICTATE THE FEASIBILITY OF STIMULATION.

D. A. Warren, Jr.

D. A. WARREN, JR.
INTERPRETATION AND
EVALUATION DEPARTMENT

READING AND BATES OIL AND GAS COMPANY
TORRINGTON #1; EDDY COUNTY, NEW MEXICO
TEST #1; 8638' TO 8779'
SEC.8-T18S-R26E

FIELD REPORT #05583 C