JOHNSTON

Schlumberger

COMPUTERIZED DATA ANALYSIS

APRIL 5, 1977

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 AND ADEQUATE SHUT-IN BUILD-UPS DID OCCUR FOR RELIABLE QUANTITATIVE ANALYSIS. RESERVOIR PARAMETERS WERE CALCULATED BY THE MCKINLEY METHOD.

1. FLOW RATE: A FLOW RATE OF 220 MCF/DAY OF GAS WAS NOTED DURING THIS TEST.

2. RESERVOIR PRESSURE: EXTRAPOLATION OF THE INITIAL SHUT-IN PRESSURE BUILD-UP INDICATES A MAXIMUM RESERVOIR PRESSURE OF 4280 P.S.I.G. AT RECORDER DEPTH. EXTRAPOLATION OF THE FINAL SHUT-IN PRESSURE BUILD-UP INDICATES A MAXIMUM RESERVOIR PRESSURE OF 3600 P.S.I.G. AT RECORDER DEPTH. THE DIFFERENCE BETWEEN THE INITIAL AND FINAL SHUT-IN PRESSURE OF 680 P.S.I.G. IS INDICATIVE OF DEPLETION. A LIMITED RESERVOIR IS PRESENT IF DEPLETION IS ACTUALLY TAKING PLACE.

3. PERMEABILITY: THE CALCULATED TRANSMISSIBILITY FACTOR OF 9.50 MD.-FT./CP. INDICATES AN AVERAGE EFFECTIVE PERMEABILITY TO GAS OF 0.04 MD. FOR THE REPORTED 6 FOOT NET INTERVAL. THE CALCULATIONS WERE BASED ON A MCKINLEY SLOPE OF 4082 P.S.I./LOG CYCLE OBTAINED FROM THE FINAL SHUT-IN BUILD-UP PLOT. IT WAS ASSUMED FOR THESE CALCULATIONS: (A) GAS GRAVITY 0.70 (B) VISCOSITY .025 CP. (C) AND GAS DEVIATION FACTOR 0.82. THESE FIGURES WERE OBTAINED FROM THE AVAILABLE TECHNICAL LITERATURE.

4. WELL BORE DAMAGE: THE CALCULATED DAMAGE RATIO OF 0.42 INDICATES THAT A STIMULATED WELL BORE IS PRESENT AT THE TIME AND CONDITIONS OF THIS TEST.

5. RADIUS OF INVESTIGATION: THE CALCULATED RADIUS OF INVESTIGATION OF THIS TEST IS 7 FEET BASED ON AN ASSUMED POROSITY OF 10%, COMPRESSIBILITY OF 4.2×10^{-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. BOTH THE MCKINLEY AND HORNER PLOTS SHOW A DECREASE IN TRANSMISSIBILITY AWAY FROM THE WELL BORE WHICH INDICATES A STIMULATED WELL BORE. IF THIS CONDITION IS PRESENT, THE FLOW RATE WOULD DECREASE TO 73 MCF/DAY.

Kent Arceneaux

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RESERVOIR EVALUATION
DEPARTMENT

LARIO OIL & GAS COMPANY
STATE "F" #1; EDDY COUNTY, NEW MEXICO
TEST #2; 9533' TO 9585'

FIELD REPORT #15163 C