JS-166

JOHNSTON
Schlumberger

COMPUTERIZED DATA ANALYSIS

February 19, 1982

GENTLEMEN:

THE ENCLOSED TEST APPEARS TO BE A GOOD MECHANICAL DRILL STEM TEST DURING WHICH THE TOOLS DID FUNCTION PROPERLY. THE FORMATION DID PRODUCE ENOUGH RESERVOIR FLUID FOR PROPER IDENTIFICATION. RESERVOIR PRESSURE DRAWDOWN WAS SUFFICIENT AND ADEQUATE SHUT-IN BUILD-UPS DID OCCUR FOR RELIABLE QUANTITATIVE ANALYSIS. AFTERFLOW WAS STILL IN EFFECT OF THE INITIAL SHUT-IN BUILD-UP TO THE EXTENT THAT THE PLOT IS CONSIDERED UNRELIABLE FOR ANALYSIS. RESERVOIR PARAMETERS WERE CALCULATED BY THE HORNER METHOD.

1. FLOW RATE: A FLOW RATE OF 59 MCF/DAY OF GAS AND AN OIL FLOW RATE OF 14 BBLS/DAY WAS NOTED DURING THIS TEST.

2. RESERVOIR PRESSURE: DUE TO THE EFFECT ON AN ANOMALY, MAXIMUM RESERVOIR PRESSURE HAD TO BE ESTIMATED AT 2300 P.S.I.A.

3. PERMEABILITY: THE CALCULATED TRANSMISSIBILITY FACTOR OF 26.99 MD.-FT./CP. INDICATES AN AVERAGE EFFECTIVE PERMEABILITY TO GAS OF .00144 MD. FOR THE REPORTED 219 FOOT TEST INTERVAL. THE CALCULATIONS WERE BASED ON A SLOPE OF 749 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 .0149 CP., (C) AND GAS DEVIATION FACTOR .854. THESE FIGURES WERE OBTAINED FROM THE AVAILABLE TECHNICAL LITERATURE.

4. WELLBORE DAMAGE: THE CALCULATED DAMAGE RATIO OF 2.03 INDICATES THAT SLIGHT WELLBORE DAMAGE IS PRESENT AT THE TIME AND CONDITIONS OF THIS TEST. THE PRESSURE DROP DUE TO DAMAGE IS ESTIMATED TO BE 1094 P.S.I.

5. RADIUS OF INVESTIGATION: THE CALCULATED RADIUS OF INVESTIGATION OF THIS TEST IS 2 FEET BASED ON AN ASSUMED POROSITY OF 10%, COMPRESSIBLITY OF 8.474×10^{-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 PRESENCE OF WELLBORE DAMAGE. THE FINAL SHUT-IN ALSO INDICATES THE PRESENCE OF AN ANOMALY. WE ARE UNABLE TO IDENTIFY THE TYPE ANOMAL, BUT SUSPECT A REDUCED PERMEABILITY AWAY FROM THE WELLBORE.

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BASS ENTERPRISES
BASS STATE 13 #1
TEST #1
LEA COUNTY, NEW MEXICO

FIELD REPORT NO. 38267E