CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 78875

Company Morris R. Antweil — Date Sampled November 21, 1978
Well Landlady No. 1 — County Lea
Field Wildcat — State New Mexico

FORMATION CHARACTERISTICS

Formation Name	Morrow
Date First Well Completed	, 19
Original Reservoir Pressure	4171 PSIG @ 11146 Ft.
Original Produced Gas-Liquid Ratio	SCF/Bbl
Production Rate	Bbls/Day
Separator Pressure and Temperature	PSIG ° F.
Liquid Gravity at 60° F.	° API
Datum	Ft. Subsea

WELL CHARACTERISTICS

Elevation	Ft.
Total Depth	Ft.
Producing Interval	11120-11171 Ft.
Tubing Size and Depth	In. to Ft.
Open Flow Potential	MMSCF/Day
Last Reservoir Pressure	4025 PSIG @ 11146 Ft.
Date	December 11, 1978
Reservoir Temperature	181 ° F. @ 11146 Ft.
Status of Well	Buildup - 233 hours
Pressure Gauge	Amerada

SAMPLING CONDITIONS

Flowing Tubing Pressure (7/64" choke)	1559 (SI=2320) PSIG
Flowing Bottom Hole Pressure	3479 PSIG
Primary Separator Pressure	395 PSIG
Primary Separator Temperature	96 ° F.
Secondary Separator Pressure	PSIG
Secondary Separator Temperature	° F.
Field Stock Tank Liquid Gravity	° API @ 60° F.
Primary Separator Gas Production Rate	2648.8* MSCF
Pressure Base	14.65 PSIA
Temperature Base	60 ° F.
Compressibility Factor (F_{pv})	
Gas Gravity (Field)	0.717
Gas Gravity Factor (F_g)	
Stock Tank Liquid Production Rate @ 60 ° F.	583.05* Bbls/Day
Primary Separator Gas/Stock Tank Liquid Ratio	4543 SCF/Bbl
or	Bbls/MMSCF
Sampled by	Tefteller, Inc.

REMARKS:

*Gross gas and liquid production for 220 hours during flowing test from November 20, 1978 to December 1, 1978.

Hydrocarbon Analyses of Separator Products and Calculated Well Stream

Component	Separator Liquid Mol Percent	Separator Gas Mol Percent	Separator Gas GPM	Well Stream * Mol Percent	Well Stream * GPM
Hydrogen Sulfide	Nil	Nil		Nil	
Carbon Dioxide	0.03	0.53		0.46	
Nitrogen	0.03	1.22		1.06	
Methane	1.70	80.08		69.85	
Ethane	0.97	10.24		9.03	
Propane	2.71	5.18	1.417	4.86	1.330
iso-Butane	1.35	0.70	0.228	0.78	0.254
n-Butane	4.27	1.25	0.392	1.64	0.514
iso-Pentane	2.70	0.25	0.091	0.57	0.207
n-Pentane	3.25	0.20	0.072	0.60	0.216
Hexanes	4.31	0.13	0.053	0.68	0.276
Heptanes plus	78.68	0.22	0.099	10.47	7.577
	100.00	100.00	2.352	100.00	10.374

Properties of Heptanes plus

API gravity @ 60° F.	41.5		
Specific gravity @ 60/60° F.	0.8178		0.817
Molecular weight	184	103 (assumed)	183

Calculated separator gas gravity (air = 1.000) = 0.710

Calculated gross heating value for separator gas = 1217 BTU per cubic foot of dry gas @ 14.65 psia and 60° F.

Primary separator gas collected @ 395 psig and 96 °F.

Primary separator liquid collected @ 395 psig and 96 °F.

Primary separator gas/separator liquid ratio	4463 SCF/Bbl @ 60 ° F.
Primary separator liquid/stock tank liquid ratio	1.018 Bbls @ ° F./Bbl
Primary separator gas/well stream ratio	869.34 MSCF/MMSCF
Stock tank liquid/well stream ratio	191.3 Bbls/MMSCF

*Fluid exists in two-phase at reservoir conditions of 4171 psig & 181°F.

Pressure-Volume Relations of Reservoir Fluid at 181 °F.
(Constant Composition Expansion)

Pressure PSIG		Relative Volume	Liquid Volume, Percent of Total Volume
6000		0.8705	33.5
5500		0.8947	39.0
5000		0.9254	40.7
4500		0.9659	40.7
4300		0.9865	40.4
4171	Reservoir Pressure	1.0000	40.1
4000		1.0205	39.5
3805		1.0505	39.0
3500		1.1049	38.2