Ute Indians A 27
SE/4 Section 2 T31N R14W

Volumetrics - SE/4 Section 2

First Dakota Sand GIP	405	MMCF
Second Dakota Sand GIP	355	MMCF
Third Dakota Sand GIP	189	MMCF
Total GIP	949	MMCF

Ute Indians A 20

Cumulative Production (5/98)	133	MMCF
Decline Curve EUR	133	MMCF
Recovery of GIP	0.14	

Remaining Reserves

SE/4 Sec 2 GIP @ 85% RF	807	MMCF
Less Ute Indians A 20 EUR	133	MMCF
Remaining Reserves	674	MMCF

9

UTE DOME DAKOTA
SE/4 SECTION 2-T31N-R14W
1ST SAND

Fluid Properties

Gas Gravity	=	0.616	Gas Analysis
T_c	=	355 °R	Standing's correlation
P_c	=	671 psi	Standing's correlation
T_r	=	110 °F	Log Measurement
P_{ri}	=	843 psi	Calculated (0.32 psi/ft.)
P_{ra}	=	135 psi	Estimate
B_{gi}	=	0.01734 ft³/SCF	Standing & Katz's correlation
B_{ga}	=	0.11747 ft³/SCF	Standing & Katz's correlation

Calculate Theoretical Recovery Factor

$$RF_t = 1 - \frac{B_{gi}}{B_{ga}}$$

$$RF_t = 1 - \frac{0.01734}{0.11747}$$

$RF_t = 0.8524$ (fraction)

Rock Properties

Acre - Feet	=	1,833	Planimetered from net pay thickness maps
Average Porosity	=	0.16	(fraction)$\varnothing_{nd}$ Avg. (Ute Indians A20 Log)
Water Saturation	=	0.45	(fraction) Avg.

Calculate GIP, Theoretical and Actual EUR

$$GIP = \frac{.04356Ah\square(1-S_w)}{B_{gi}}\ MMCF$$

$$GIP = \frac{.04356(1{,}833)(0.16)(1-0.45)}{0.01734}\ MMCF$$

$GIP = 405\ MMCF$

$EUR_t = RF_t \times GIP$

$EUR_t = (0.8524)(405)$

$EUR_t = 345\ MMCF$

CROSS TIMBERS OIL COMPANY
Barry Voigt
12/15/98

UTE DOME DAKOTA
SE/4 SECTION 2-T31N-R14W
2nd SAND

Fluid Properties

Gas Gravity	=	0.616	Gas Analysis
T_c	=	355 °R	Standing's correlation
P_c	=	671 psi	Standing's correlation
T_r	=	110 °F	Log Measurement
P_{ri}	=	843 psi	Calculated (0.32 psi/ft.)
P_{ra}	=	135 psi	Estimate
B_{gi}	=	0.01734 ft³/SCF	Standing & Katz's correlation
B_{ga}	=	0.11747 ft³/SCF	Standing & Katz's correlation

Calculate Theoretical Recovery Factor

$$RF_t = 1 - \frac{B_{gi}}{B_{ga}}$$

$$RF_t = 1 - \frac{0.01734}{0.11747}$$

$$RF_t = 0.8524 \text{ (fraction)}$$

Rock Properties

Acre - Feet	=	1,730	Planimetered from net pay thickness maps
Average Porosity	=	0.16	(fraction)$\varnothing_{nd}$ Avg. (Ute Indians A20 Log)
Water Saturation	=	0.49	(fraction) Avg.

Ute Dome Dakota
2nd Sand
Page 2

Calculate GIP, Theoretical and Actual EUR

$$GIP = \frac{.04356Ah\phi(1-S_w)}{B_{gi}}\ MMCF$$

$$GIP = \frac{.04356(1,730)(0.16)(1-0.49)}{0.01734}\ MMCF$$

GIP = 355 MMCF

EUR_t = RF_t x GIP

EUR_t = (0.8524)(355)

EUR_t = 302 MMCF

CROSS TIMBERS OIL COMPANY
Barry Voigt
12/15/98

UTE DOME DAKOTA
SE/4 SECTION 2-T31N-R14W
3rd Sand

Fluid Properties

Gas Gravity	=	0.616	Gas Analysis
T_c	=	355 °R	Standing's correlation
P_c	=	671 psi	Standing's correlation
T_r	=	110 °F	Log Measurement
P_{ri}	=	843 psi	Calculated (0.32 psi/ft.)
P_{ra}	=	135 psi	Estimate
B_{gi}	=	0.01734 ft^3/SCF	Standing & Katz's correlation
B_{ga}	=	0.11747 ft^3/SCF	Standing & Katz's correlation

Calculate Theoretical Recovery Factor

$$RF_t = 1 - \frac{B_{gi}}{B_{ga}}$$

$$RF_t = 1 - \frac{0.01734}{0.11747}$$

RF_t = 0.8524 (fraction)

Rock Properties

Acre - Feet	=	770	Planimetered from net pay thickness maps
Average Porosity	=	0.15	(fraction)$\varnothing_{nd}$ Avg. (Ute Indians A20 Log)
Water Saturation	=	0.35	(fraction) Avg.

<u>Calculate GIP, Theoretical and Actual EUR</u>

$$GIP = \frac{.04356 A h \phi (1 - S_w)}{B_{gi}} \; MMCF$$

$$GIP = \frac{.04356(770)(0.15)(1 - 0.35)}{0.01734} \; MMCF$$

GIP	=	189 MMCF
EUR_t	=	RF_t x GIP
EUR_t	=	(0.8524)(189)
EUR_t	=	161 MMCF

CROSS TIMBERS OIL COMPANY
Barry Voigt
12/15/98

Cross Timbers Oil Company

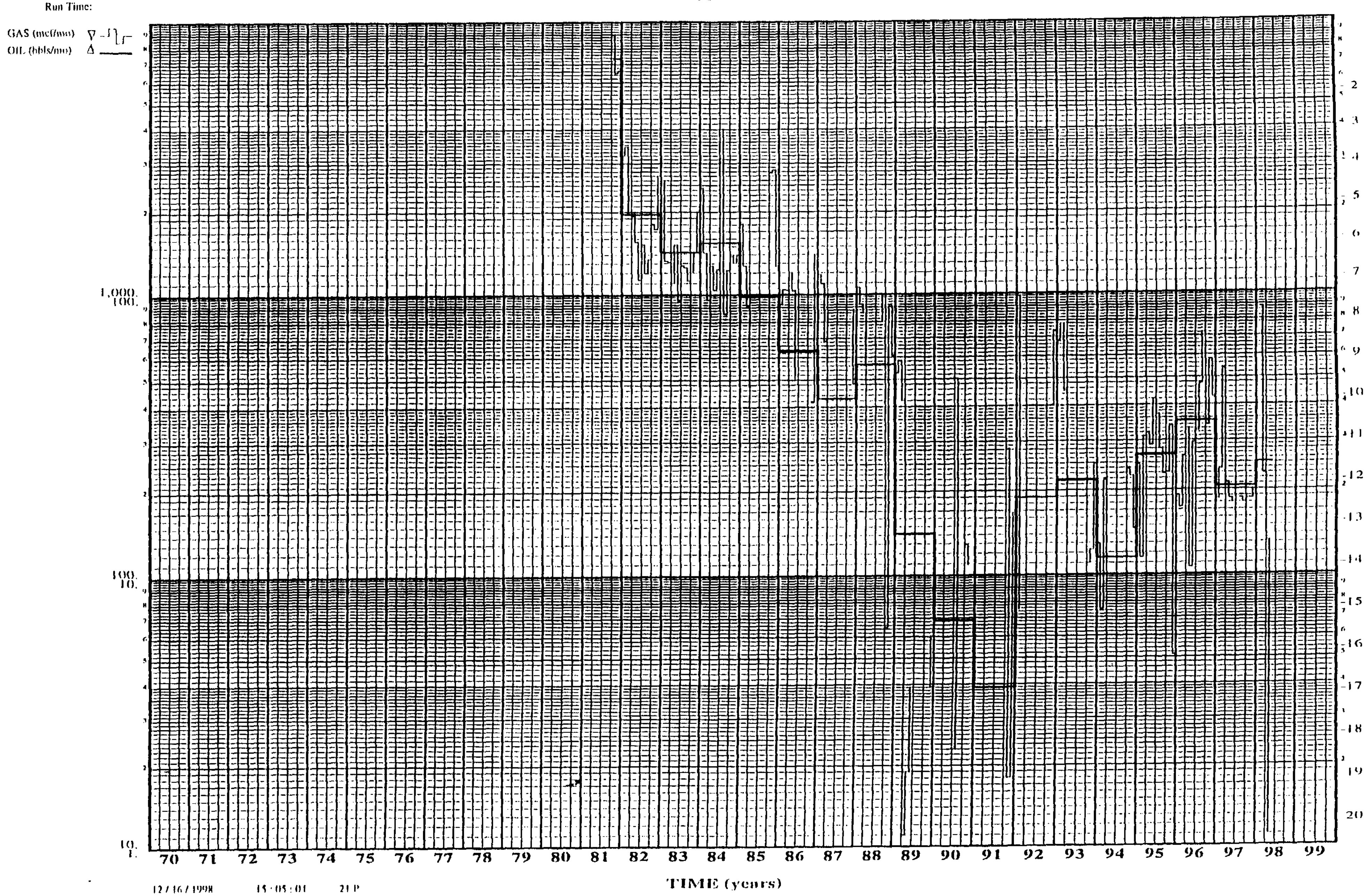
	Oil (bbls/mo)	Gas (mcf/mo)		Oil (bbls)	Gas (mcf)		
Qi	0	0	Gross Cum @**/**	0	132,902	Res_Cat. Life	0.000
Qel	0	0	Gross Remaining	0	0	As-of-Date	
Decline	0.0 %	0.0 %	Gross Ultimate	0	132,902	Setup file	
			Net Remaining	0	0	Q_Prod	
						Q_Owner	
						Q_Other	

	Oil Price ($/bbl)	Gas Price ($/mcf)	OPC ($/bbl)	Flat Life (years)	Last Production	Net Cash Flow	P.W. @ 0.0 %
WI - 0.00000 % NRI - 0.00000 %	0.00	0.00	0.00	0.0	05/98	$ 0	$ 0

Run Date :
Run Time:

UTE INDIANS A 20
CROSS TIMBERS OPERATING COMPANY
UTE DOME (DAKOTA)
SAN JUAN, NEW MEXICO
2 31 N14 W
J
30045246050000

CTOC -



12/16/1998 15:05:01 21P