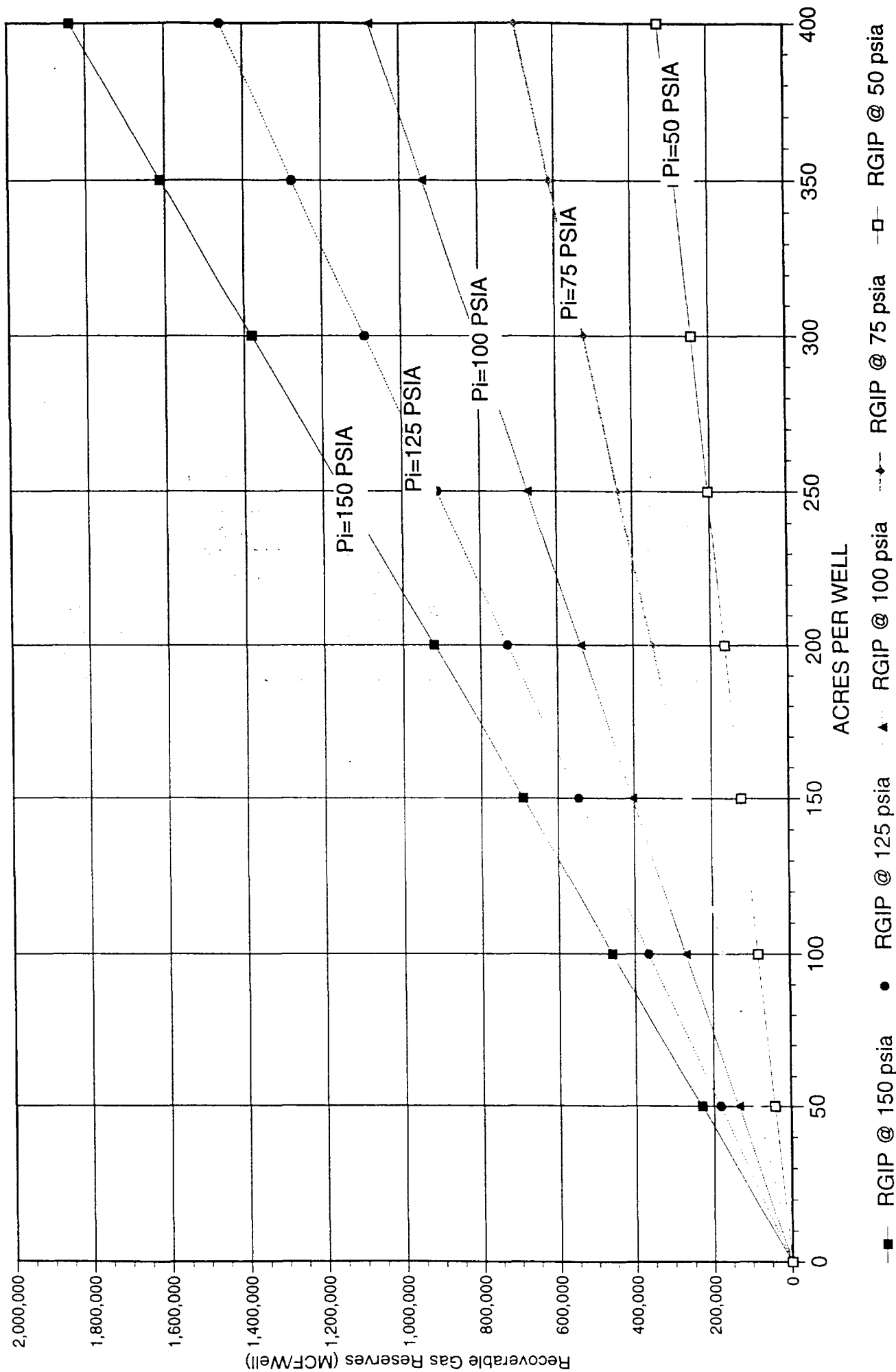


RECOVERABLE GAS RESERVES FOR $R_w = 0.03$, $P_a = 28$ psia (15 psig)
AND A TYPICAL RHODES (YATES-U7R) PAY SECTION
T-26-S, R-37-E
LEA COUNTY, NM



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--GASVOL--	
RECOVERABLE GAS RESERVES PROGRAM	
WELL NAME: C. T. Bates # 3 (Rw = 0.03)	
FIELD NAME: Rhodes (Yates-Up 7 Rvr) Interval	
GAS GRAVITY 0.68	21-Jul-98
% N2 1.55 %	Tc = 374.36
% CO2 1.32 %	Pc = 669.49
% H2S 0.00 %	Tc' = 372.04
CONDENSATE (YES=1) 1	Pc' = 665.33
RES. TEMPERATURE 86 °F	Tr = 1.470
INITIAL PRESSURE 150 psia	Pri = 0.225
ABANDONMENT PRES 28 psia	Pra = 0.042
NET PAY 91.5 feet	Zi = 0.9760
ACRES 160 acres	Za = 0.9955
WATER SAT 34.40 %	
POROSITY 21.61 %	
GAS IN PLACE 901,394 MCF	
RECOVERABLE GAS 736,426 MCF	
RECOVERY 81.70%	

MCF/AC-FT

INSTRUCTIONS:

- 1) Input values in underlined cells
- 2) Press [Command] [=] to calculate

GAS Ghc =	0.66	A =	0.0642
Tchc =	374.36	B =	0.1747
Pchc =	666.85	C =	-0.8509
CWA =	2.32	D =	1.4703
Z =	0.976	E =	0.3153
pro =	0.0424	F =	0.6845
l(pr) =	0.0000	Gi =	0.0609
l(pr)' =	1.4007	Ga =	0.0114
pro' =	0.0424		
		Z =	0.996
		pro =	0.0078
		l(pr) =	0.0000
		l(pr)' =	1.4572
		pro' =	0.0078

Z BGI G

901394

164968

150

28

0.9760

0.9955

0.1003

0.5479

50.30

--GASVOL--

RECOVERABLE GAS RESERVES PROGRAM

WELL NAME: C. T. Bates # 3 (Rw = 0.03)

FIELD NAME: Rhodes (Yates-Upr 7 Rvr) Interval

GAS GRAVITY 0.68

% N2 1.55 %

% CO2 1.32 %

% H2S 0.00 %

CONDENSATE (YES=1) 1

RES. TEMPERATURE 86 'F

INITIAL PRESSURE 125 psia

ABANDONMENT PRES 28 psia

NET PAY 91.5 feet

ACRES 160 acres

WATER SAT 34.40 %

POROSITY 21.61 %

GAS IN PLACE 748,105 MCF

RECOVERABLE GAS 583,137 MCF

RECOVERY 77.95%

21-Jul-98

Tc = 374.36

Pc = 669.49

Tc' = 372.04

Pc' = 665.33

Tr = 1.470

Pri = 0.188

Pra = 0.042

Zi = 0.9800

Za = 0.9955

GAS Gnc = 0.66

Tchc = 374.36

Pchc = 666.85

CWA = 2.32

Z = 0.980

pro = 0.0352

l(pr) = 0.0000

l(pr)' = 1.4122

pro' = 0.0352

Z BGI

125 0.9800 0.1208 748105

28 0.9955 0.5479 164968

A = 0.0642

B = 0.1747

C = -0.8509

D = 1.4703

E = 0.3153

F = 0.6845

Gi = 0.0507

Ga = 0.0114

Z = 0.996

pro = 0.0078

l(pr) = 0.0000

l(pr)' = 1.4572

pro' = 0.0078

G

INSTRUCTIONS:

- 1) Input values in underlined cells
- 2) Press [Command] [=] to calculate

--GASVOL--

RECOVERABLE GAS RESERVES PROGRAM

WELL NAME: C. T. Bates # 3 (Rw = 0.03)

FIELD NAME: Rhodes (Yates-Upr 7 Rvr) Interval

GAS GRAVITY 0.68

% N2 1.55 %

% CO2 1.32 %

% H2S 0.00 %

CONDENSATE (YES=1) 1

RES. TEMPERATURE 86 'F

INITIAL PRESSURE 100 psia

ABANDONMENT PRES 28 psia

NET PAY 91.5 feet

ACRES 160 acres

WATER SAT 34.40 %

POROSITY 21.61 %

GAS IN PLACE 596,057 MCF

RECOVERABLE GAS 431,089 MCF

RECOVERY 72.32%

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21-Jul-98

Tc = 374.36

Pc = 669.49

Tc' = 372.04

Pc' = 665.33

Tr = 1.470

Pri = 0.150

Pra = 0.042

Zi = 0.9840

Za = 0.9955

GAS Ghc = 0.66

Tchc = 374.36

Pchc = 666.85

CWA = 2.32

Z = 0.984

pro = 0.0280

f(pr) = 0.0000

f(pr)' = 1.4237

pro' = 0.0280

Z BGI G

100 0.9840 0.1516 596057

28 0.9955 0.5479 164968

A = 0.0642

B = 0.1747

C = -0.8509

D = 1.4703

E = 0.3153

F = 0.6845

Gi = 0.0406

Ga = 0.0114

Z = 0.996

pro = 0.0078

f(pr) = 0.0000

f(pr)' = 1.4572

pro' = 0.0078

INSTRUCTIONS:

1) Input values in underlined cells

2) Press [Command] [=] to calculate

--GASVOL--

RECOVERABLE GAS RESERVES PROGRAM

WELL NAME: C. T. Bates # 3 (Rw = 0.03)

FIELD NAME: Rhodes (Yates-Upr 7 Rvr) Interval

GAS GRAVITY 0.68

% N2 1.55 %

% CO2 1.32 %

% H2S 0.00 %

CONDENSATE (YES=1)

RES. TEMPERATURE 86 °F

INITIAL PRESSURE 50.0 psia

ABANDONMENT PRES 28 psia

NET PAY 91.5 feet

ACRES 160 acres

WATER SAT 34.40 %

POROSITY 21.61 %

GAS IN PLACE 295,630 MCF

RECOVERABLE GAS 130,662 MCF

RECOVERY 44.20%

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21-Jul-98

Tc =

Pc =

Tc' =

Pc' =

Tr =

Pri =

Pra =

Zi =

Za =

GAS Ghc =

Tchc =

Pchc =

CWA =

Z =

pro =

l(pr) =

l(pr)' =

pro' =

Z BGI

50 0.9920

28 0.9955

0.3058

0.5479

A =

B =

C =

D =

E =

F =

Gi =

Ga =

Z =

pro =

l(pr) =

l(pr)' =

pro' =

G

295630

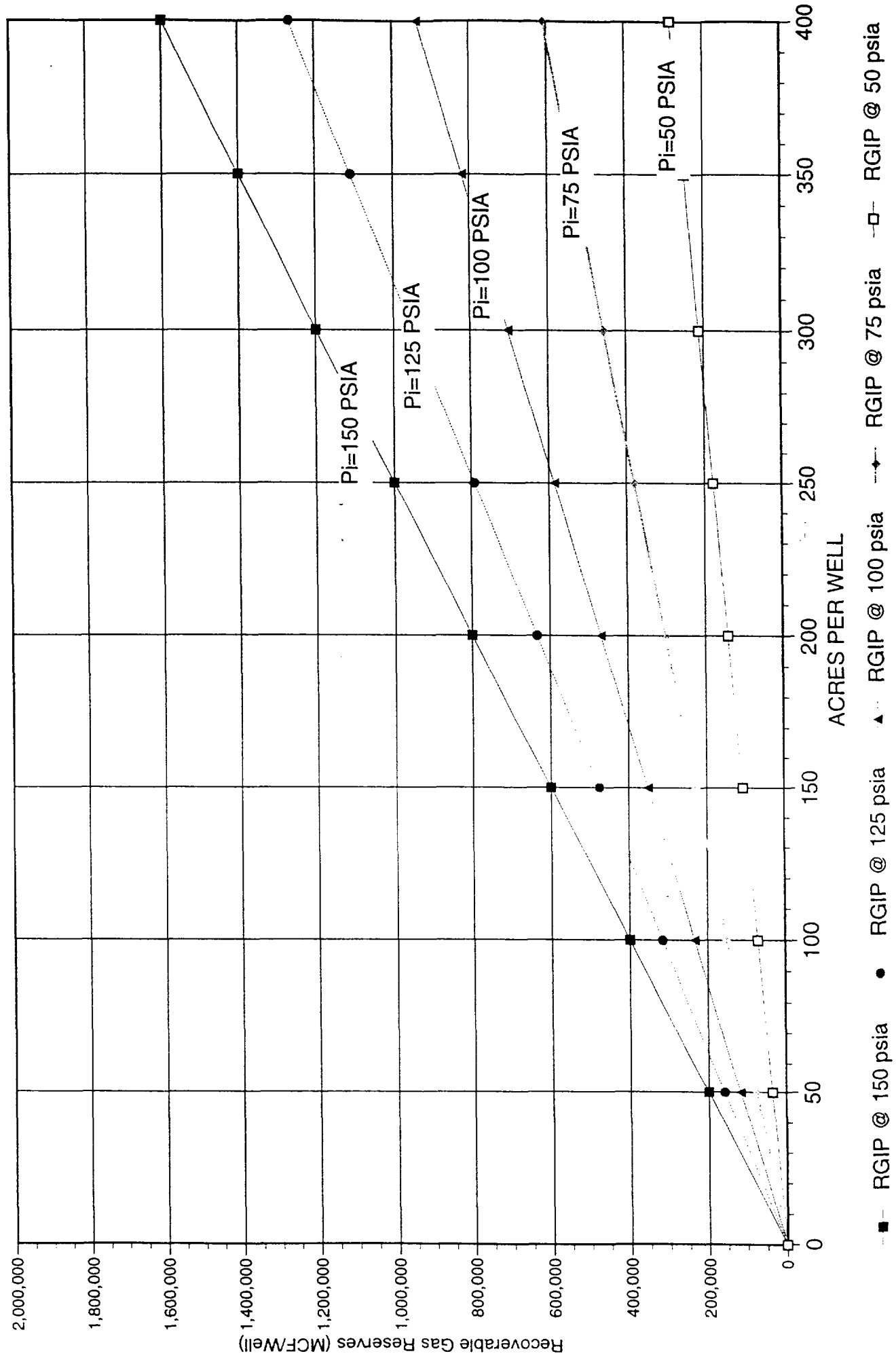
164968

INSTRUCTIONS:

1) Input values in underlined cells

2) Press [Command] [=] to calculate

RECOVERABLE GAS RESERVES FOR $R_w = 0.05$, $P_a = 28$ psia (15 psig)
 AND A TYPICAL RHODES (YATES-U7R) PAY SECTION
 T-26-S, R-37-E
 LEA COUNTY, NM



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--GASVOL--
RECOVERABLE GAS RESERVES PROGRAM
WELL NAME: C. T. Bates # 3 (Rw = 0.05)
FIELD NAME: Rhodes (Yates-Upr 7 Rvr) Interval

GAS GRAVITY 0.68
% N2 1.55 %
% CO2 1.32 %
% H2S 0.00 %
CONDENSATE (YES=1) 1
RES. TEMPERATURE 86 °F
INITIAL PRESSURE 150 psia
ABANDONMENT PRES 28 psia (15 psig)
NET PAY 91.5 feet
ACRES 160 acres
WATER SAT 43.00 %
POROSITY 21.61 %

GAS IN PLACE 783,224 MCF
RECOVERABLE GAS 639,882 MCF
RECOVERY 81.70%

MCF/AC-FT

43.71

21-Jul-98
Tc = 374.36
Pc = 669.49
Tc' = 372.04
Pc' = 665.33
Tr = 1.470
Pr = 0.225
Pra = 0.042
Zi = 0.9760
Za = 0.9955

GAS Ghc = 0.66
Tchc = 374.36
Pchc = 666.85
CWA = 2.32
Z = 0.976
pro = 0.0424
I(pr) = 0.0000
I(pr)' = 1.4007
pro' = 0.0424

Z

BGI

G

150 0.9760 0.1003 783224
28 0.9955 0.5479 143341

A = 0.0642
B = 0.1747
C = -0.8509
D = 1.4703
E = 0.3153
F = 0.6845
G = 0.0609
Ga = 0.0114

Z = 0.996
pro = 0.0078
I(pr) = 0.0000
I(pr)' = 1.4572
pro' = 0.0078

INSTRUCTIONS:

- 1) Input values in underlined cells
- 2) Press [Command] [=] to calculate

--GASVOL--

RECOVERABLE GAS RESERVES PROGRAM

WELL NAME: C. I. Bates # 3 (Rw = 0.05)

FIELD NAME: Rhodes (Yates-Upr 7 Rvr) Interval

GAS GRAVITY 0.68

% N2 1.55 %

% CO2 1.32 %

% H2S 0.00 %

CONDENSATE (YES=1) 1

RES. TEMPERATURE 86 °F

INITIAL PRESSURE 125 psia

ABANDONMENT PRES 28 psia

NET PAY 91.5 feet

ACRES 160 acres

WATER SAT 43.00 %

POROSITY 21.61 %

GAS IN PLACE 650,030 MCF

RECOVERABLE GAS 506,689 MCF

RECOVERY 77.95%

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21-Jul-98

Tc = 374.36

Pc = 669.49

Tc' = 372.04

Pc' = 665.33

Tr = 1.470

Pr = 0.188

Prs = 0.042

Zi = 0.9800

Za = 0.9955

GAS Ghc = 0.66

Tchc = 374.36

Pchc = 666.85

CWA = 2.32

Z = 0.980

pro = 0.0352

f(pr) = 0.0000

f(pr)' = 1.4122

pro' = 0.0352

Z BGI

125 0.9800 0.1208 650030

28 0.9955 0.5479 143341

A = 0.0642

B = 0.1747

C = -0.8509

D = 1.4703

E = 0.3153

F = 0.6845

Gi = 0.0507

Ga = 0.0114

Z = 0.996

pro = 0.0078

f(pr) = 0.0000

f(pr)' = 1.4572

pro' = 0.0078

G

INSTRUCTIONS:

1) Input values in underlined cells

2) Press [Command] [=] to calculate

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--GASVOL--
RECOVERABLE GAS RESERVES PROGRAM
WELL NAME: C. T. Bates # 3 (Rw = 0.05)

FIELD NAME: Rhodes (Yates-Upr 7 Rvr) Interval

GAS GRAVITY 0.68
% N2 1.55 %
% CO2 1.32 %
% H2S 0.00 %
CONDENSATE (YES=1) 1
RES. TEMPERATURE 86 'F
INITIAL PRESSURE 100 psia

ABANDONMENT PRES 28 psia (15 psig)
NET PAY 91.5 feet
ACRES 160 acres
WATER SAT 43.00 %
POROSITY 21.61 %

GAS IN PLACE 517,916 MCF
RECOVERABLE GAS 374,574 MCF
RECOVERY 72.32%

21-Jul-98
Tc = 374.36
Pc = 669.49
Tc' = 372.04
Pc' = 665.33
Tr = 1.470
Pr = 0.150
Pria = 0.042
Zi = 0.9840
Za = 0.9955

GAS Ghc = 0.66
Tchc = 374.36
Pchc = 666.85
CWA = 2.32
Z = 0.984
pro = 0.0280
f(pr) = 0.0000
f(pr)' = 1.4237
pro' = 0.0280

Z BG G
100 0.9840 0.1516 517916
28 0.9955 0.5479 143341

A = 0.0642
B = 0.1747
C = -0.8509
D = 1.4703
E = 0.3153
F = 0.6845
G = 0.0406
Ga = 0.0114

Z = 0.996
pro = 0.0078
f(pr) = 0.0000
f(pr)' = 1.4572
pro' = 0.0078

INSTRUCTIONS:

- 1) Input values in underlined cells
- 2) Press [Command] [=] to calculate

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--GASVOL--	
RECOVERABLE GAS RESERVES PROGRAM	
WELL NAME:	C. T. Bates # 3 (Rw = 0.05)
FIELD NAME:	Rhodes (Yates-Upr 7 Rvr) Interval
GAS GRAVITY	0.68
% N2	1.55 %
% CO2	1.32 %
% H2S	0.00 %
CONDENSATE (YES=1)	1
RES. TEMPERATURE	86 °F
INITIAL PRESSURE	75 psia
ABANDONMENT PRES	28 psia
NET PAY	91.5 feet
ACRES	160 acres
WATER SAT	43.00 %
POROSITY	21.61 %
GAS IN PLACE	386,867 MCF
RECOVERABLE GAS	243,526 MCF
RECOVERY	62.95%

21-Jul-98	
Tc =	374.36
Pc =	669.49
Tc' =	372.04
Pc' =	665.33
Tr =	1.470
Pri =	0.113
Pra =	0.042
Zi =	0.9880
Za =	0.9955
GAS Ghc = 0.66	
Tchc = 374.36	
Pchc = 666.85	
CWA = 2.32	
Z =	0.988
pro =	0.0210
l(pr) =	0.0000
l(pr)' =	1.4353
pro' =	0.0210
Z	BGI
75	0.9880
28	0.9955
MCF/AC-FT	
16.63	
Z =	
pro =	
l(pr) =	
l(pr)' =	
pro' =	
G	
386867	
143341	

A =	0.0642
B =	0.1747
C =	-0.8509
D =	1.4703
E =	0.3153
F =	0.6845
Gi =	0.0304
Ga =	0.0114

Z =	0.996
pro =	0.0078
l(pr) =	0.0000
l(pr)' =	1.4572
pro' =	0.0078

INSTRUCTIONS:

- 1) Input values in underlined cells
- 2) Press [Command] [=] to calculate

--GASVOL--

RECOVERABLE GAS RESERVES PROGRAM

WELL NAME: C. T. Bates # 3 (Rw = 0.05)
FIELD NAME: Rhodes (Yates-Upr 7 Rvt) Interval

GAS GRAVITY 0.68
% N2 1.55 %
% CO2 1.32 %
% H2S 0.00 %
CONDENSATE (YES=1) 1
RES. TEMPERATURE 86 °F
INITIAL PRESSURE 50 psia

(15psig)

ABANDONMENT PRES 28 psia
NET PAY 91.5 feet
ACRES 160 acres
WATER SAT 43.00 %
POROSITY 21.61 %

GAS IN PLACE 256,873 MCF
RECOVERABLE GAS 113,532 MCF
RECOVERY 44.20%

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21-Jul-98
Tc = 374.36
Pc = 669.49
Tc' = 372.04
Pc' = 665.33
Tr = 1.470
Pri = 0.075
Pra = 0.042
Zi = 0.9920
Za = 0.9955

GAS Ghc = 0.66
Tchc = 374.36
Pchc = 666.85
CWA = 2.32
Z = 0.992
pro = 0.0139
I(pr) = 0.0000
I(pr)' = 1.4469
pro' = 0.0139

Z BG G

50 0.9920 0.3058 256873
28 0.9955 0.5479 143341

A = 0.0642
B = 0.1747
C = -0.8509
D = 1.4703
E = 0.3153
F = 0.6845
G = 0.0203
Ga = 0.0114

Z = 0.996
pro = 0.0078
I(pr) = 0.0000
I(pr)' = 1.4572
pro' = 0.0078

INSTRUCTIONS:

- 1) Input values in underlined cells
- 2) Press [Command] [=] to calculate

Laboratory Services

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 307-3713

FOR: Pro Well Testing & Wireline SAMPLE Gas Separator
Attention: Mr. Leonard Abney IDENTIFICATION: C.C. Cagle #4
P. O. Box 791 COMPANY: Meridian Oil Co.
Hobbs, New Mexico 88240 LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 9-30-91 3:15 PM GAS (XX) LIQUID ()
ANALYSIS DATE: 10-01-91 SAMPLED BY: Abney-Pro Well
PRESSURE - PSIG 60.00 ANALYSIS BY: Vickie Walker
SAMPLE TEMP. °F
ATMOS. TEMP. °F 70.00

REMARKS:

COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM
Oxygen	(O2)		
Hydrogen Sulfide	(H2S)		
Nitrogen	(N2)	1.55	
Carbon Dioxide	(CO2)	1.32	
Methane	(C1)	84.91	
Ethane	(C2)	6.41	1.711
Propane	(C3)	3.28	0.902
i-Butane	(IC4)	0.56	0.184
n-Butane	(NC4)	1.03	0.323
i-Pentane	(IC5)	0.44	0.162
n-Pentane	(NC5)	0.19	0.069
Hexane	(C6)	0.31	0.127
Heptanes Plus	(C7+)	0.00	0.000
		100.00	3.478

BTU/CU.FT. - DRY	1145	MOLECULAR WT	19.6585
AT 14.650 DRY	1142		
AT 14.650 WET	1122	26# GASOLINE -	0.466
AT 15.025 DRY	1171		
AT 15.025 WET	1151		

SPECIFIC GRAVITY -

CALCULATED	0.679
MEASURED	0.000

LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE

LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE

LARGE FORMAT
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AND IS LOCATED
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