

ABBREVIATIONS

CO — Circulate Out
CG — Connection Gas
CB — Core Bit
DC — Depth Correction
DS — Directional Survey
DST — Drill Stem Test
DTG — Down Time Gas
FC — Filter Cake
LAT — Logged After Trip
NB — New Bit
NDR — No Data Recorded
NR — No Returns
PP — Pump Pressure
RPM — Rotary Speed
SPM — Pump Strokes
TG — Trip Gas
TGR — Trip Gas Recycle
Vis — Viscosity
WL — Water Loss
WOB — Weight on Bit
WT — Density Of Drill Fluid

LITHOLOGY MODIFIERS

/// — Anhydritic
B — Bentonitic
⊥ — Calcareous
■ — Carbonaceous, Coaly
⊥ — Dolomitic
F — Fossiliferous
~ — Glauconitic
◇ — Oolitic
P — Pyritic
Λ — Siliceous

BENCH MARK GEOLOGICAL SERVICES

HYDROCARBON
WELL LOG

RECEIVED

JUN 25 1990

OIL CON. DIV.
DIST. 3

OPERATOR BLACKWOOD AND NICHOLS

WELL NE Blanco Unit 463

FIELD Basin Fruitland Coal

LOCATION sec 18

CO/STATE San Juan Co., New Mexico

ELEVATION KB 6284 ft. GL 6270' (ungrd)

SPUD DATE

INTERVAL LOGGED 2916 - 3179 ft.

DATE LOGGED 6/8/90

LOGGING GEOLOGISTS Randy Laney, Mike Mixter

INSTRUMENTATION FID Chromatograph and Total Gas Detector, Infrared CO₂ Detector

WELL LOCATION

NEBU 12
NEBU 463
NEBU 34 A

18

LEGEND — GAS CURVES

TOTAL GAS	T
METHANE	1
ETHANE	2
PROPANE	3
ISO & N-BUTANE	4
OIL INDICATOR $\frac{C_3 + C_4}{C_1}$	0

HYDROCARBON ANALYSIS

TOTAL GAS			Reported in Units	
10	100	1000	10	100
GAS CHROMATOGRAPHY			Reported in PPM	
100	1000	10000	100	1000
OIL INDICATOR			Dimension Less	
0.01	0.1	1.0	0.01	0.1

7" casing set at 2916 ft.

5 ft. sample interval
Drilling with fresh water

Depth of Coal Intervals
(# of canistered samples)

100 units Total Gas = 1% methane

10 100 1000 units
100 1000 10,000 ppm

heavies 100 1000 ppm
CO₂ 1000 10,000 ppm

total — C₁

C₂ C₃ C₄

total 425 units
C₁ 32,100 ppm
C₂ 1,310 ppm
C₃ 450 ppm

total 508 units
C₁ 38,670 ppm
C₂ 1,120 ppm

total 344 units
C₁ 25,250 ppm
C₂ 360 ppm

total 234 units
C₁ 19,090 ppm

total 445 units
C₁ 17,210 ppm

ONSET OF
FLARED GAS

3003-07
(1 can)

3036-53
(2 cans)

3082-90
(1 can)

3096-97

3124-29
(1 can)

3142-44

3162-71
(1 can)

carbon dioxide

CO₂

CG

CG

CG

CG

Visual
Show
G F P T

Lithology
Interp

Lithology
Descriptions
and Remarks

Sh m brn, sub plty-sub
blk, firm, earthy-sub
res luster, mod silty
w/ coaly, paper-thin
lam

Ss med brn, vf gr, sub
ang, pr srt, fros, v calc
intbd w/ brn blk sub
vit Coal

Coal black & brn blk,
platy, pred sub vit w/
very little vit mat-
erial, very carb, some
sec calc in cleats,
intbd w/ brn carb Sh

Ss med gy wh to brn
gy, some S&P, pred vf
gr, mod srt, sub ang,
disagg, fros qtz grs,
abnt carb grs, occ qtz
overgrowths, very calc
cement, NF, NC

Coal pred brn blk, sub
blk-platy, very little
vit-pred sub vit to
res, very carb & argill
poor coal w/ org opa-
que resin

Ss gy brn, vf-f gr, sub
ang-sub rd, fr srt, fros
qtz grs, disagg, occ
carb grs, mod calc, NS

Coal blk & brn blk, sub
plty-sub blk-rare
blk, v little vit at
top-20% to base, mod to
very carb, no calc, drill-
led up extremely f gr
poor-fair quality coal

Sltst lt-med brn, sub
blocky-blocky, firm,
earthy luster, sli calc
w/ some paper-thin
coaly lam, sandy ip

Coal pred blk-some
brn blk, sub blk-blky
w/ rare conch frac, 20-
25% vit, mod carb, tr
sec calc, some amber
resin, fair-good qual
coal, intbd w/ lt tan-
org brn, sub blk, hard
microxln, v argill Dol

Sltst m gy, sub blk,
trim, earthy, sli calc,
intbd w/ dk carb Sh

Coal blk, blocky w/
fair conch frac, 40-50%
vit-massive & banded,
much less carb than
above coals, tr calc,
good-v good qual coal

Sh v dk brn to tan &
org, sub plty, sub waxy
-sub vit, org part is
dolomitic-grading to
argill. Dol

Coal black, good blk
text w/ conch frac &
good cleat development
75-80% vit-massive, v
little carb, excellent
coal-best of well

T/ Main P.C. 3177'

TD sample- Ss med brn
gy S&P, f gr, sub rd-sub
ang, fr srt, fros-clr,
sli calc, glauc & carb
grs, some brn dd res-
idue, taint yel floor, NC

RATE OF PENETRATION

Min. Ft.

STC FDT 6 1/4"
3-20's

2.5 5 7.5 10

WOB 10
RPM 100

TD 3179 ft.