

BENCH MARK GEOLOGICAL SERVICES

HYDROCARBON WELL LOG RECEIVED

MAY 4 1991

OIL CON. DIV.
DIST. 3

OPERATOR BLACKWOOD AND NICHOLS

WELL NE Blanco Unit 423R

FIELD Basin Fruitland Coal

LOCATION sec 8 T30N R7W

CO/STATE Rio Arriba Co., New Mexico

ELEVATION KB 6276 ft. GL 6262' (ungrd)

SPUD DATE

INTERVAL LOGGED 2955 - 3187 ft (TVD)

DATE LOGGED 12/14 thru 12/15/90

LOGGING GEOLOGISTS Randy Laney, Mike Mixter

INSTRUMENTATION FID Chromatograph and Total Gas Detector, Infrared CO₂ Detector

WELL LOCATION

NEBU 26-A T.D. Location

NEBU 26-A Surface Location

NEBU 423R Surface Location

NEBU 425

NEBU 26

NEBU 423

NEBU 27

NEBU 423R

T.D. Location

NEBU 27-A

LEGEND - GAS CURVES

TOTAL GAS

T

METHANE

1

ETHANE

2

PROPANE

3

ISO &

N-BUTANE

4

OIL

INDICATOR

 $\frac{C_2 + C_4}{C_1}$

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 5/8" casing set at 2955 ft. (TVD)

NOTE: The 9 7/8" topset portion of this well was directionally drilled and reached T.D. at a True Vertical Depth (TVD) of 2955 ft., Measured Depth (MD)= 3473 ft., with 0° deviation. All depths on this log are given as true vertical depths; measured depths from kelly bushing are given in parenthesis.

100 units Total Gas = 18 methane
10 100 1000 units
100 1000 10,000 ppm

5 ft. sample interval
Drilling with water

Depth of Coal Intervals
(# of canistered samples)

heavies 100 1000 ppm
CO₂ 1000 10,000 ppm

total C₁

ONSET OF FLARED GAS

total 969 units
C₁ 65,200 ppm

total 4,800 units
C₁ 215,550 ppm

C₁

total 5,469 units
C₁ 373,700 ppm

total 5,470 units
C₁ 368,900 ppm
C₂ 990 ppm

C₁

total 5,547 units
C₁ 383,750 ppm

CG

IC₄
NC₄
C₃
C₂

CO₂ off scale at
+20,000 ppm

CO₂Visual
Show
G F P TLithology
Interp.Lithology
Descriptions
and Remarks

Sh lt-dk gy,gy blk,
plty-occ sub fis,firm,
earthy-res,mod carb w/
abnt coaly lam,intbnd
w/ gy,sub blk,non
carb sltst

Coal bronze-black,sub
blkly to some blkly,50%
coarse vit,mod carb,
fair quality coal,intbnd
w/ dk brn carb Sh

Coal sli brn blk to
black,pred sub blkly at
top becoming pred blkly
to base,sub vit at top
w/ 20% med-coarse vit;
becoming 60-80% mas-
sive vit to base w/ v
good cleat and conch
frac development,mod
carb at top,some amber
resin,little sec calc,
some brn hued term qtz
xls,fair coal at top-
v good qual. at base

Ss lt gy S&P,f gr,sub
ang to sub rd,fair srt
pred all fros,calc &
wh clay cmt,peppered
w/ abnt carb grs,rese-
bles P.C. Ss but lacks
glauc, faint flor,NC

Coal blk,sub blkly to
blkly w/ good cleat &
conch frac,50-60% vit
as coarse-massive,very
little carb,more sec
calc vein fill than
above,terminated qtz
xl clusters,good qual.
Slstst m gy,blocky,hd
earthy-sub res,v sli
calc,non carb,intbnd w/
gy,f gr,sub ang Ss

Coal similar to above
blk,sub blkly-blky,50-
60% massive vit,little
carb,sec calc in frac-
gen good quality coal
intbnd w/ dk brn,sub
plty,mod carb Sh

Ss med gy,pred vf gr,
sub ang,fair srt,mod
fri (non disagg),fros,
sli calc cmt,no S&P,
NF,NC

Coal black,pred all
blkly w/ good cleat &
conch frac development
80-90% massive vit,no
carb,v little calc,
abnt qtz xl clusters,
excellent quality coal
best of well

T/ Main P.C. 3185'

TD sample- Ss med gy
S&P,f gr,sub rd,fair
srt,clr & fros qtz grs
sli calc & sli cmt,tr
intgran residue,glauc
& carb grs,NF,NC

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
Δ - Dolomitic
F - Fossiliferous
~ - Glauconitic
o - Oolitic
P - Pyritic
A - Siliceous

RATE OF PENETRATION

Min. Ft.

STC FDT 6 3/4"
3-24's

2.5 5 7.5 10

WOB 10
RPM 100
PP 4-700

(3518)

(3618)

circ. out

TD 3187 ft. (TVD)