BENCH MARK
GEOLOGICAL SERVICES

HYDROCARBON WELL LOG

OPERATOR Blackwood and Nichols

WELL NE Blanco Unit 430 FIELD

LOCATION sec 5 T30N R6W CO./STATE San Juan Co., New Mexico

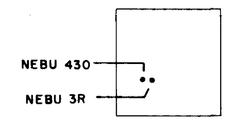
ELEVATION KB 6188 ft. GL 6174 ft. SPUD DATE

INTERVAL LOGGED 2762 - 3085 ft. DATE LOGGED 9/20/89

LOGGING GEOLOGISTS Randy Laney, Danny Wyckoff

INSTRUMENTATION FID chromatograph and total gas detector

WELL LOCATION



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
WI — 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

Cgl, Ss, Sltst, Sh, Coal, Cht, Salt, Anhy, Dol, Ls, Igneous, Meta, Tuff, No Sample, NS

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

RATE OF PENETRATION Min./Ft. 2.5 5 7.5 10

Porosity % G F P

DEPTH CORE DST

LITHOLOGY OBSERVED

7" casing set at 2762 ft.

5 foot sample interval.

Drilling with fresh water.

100 units total gas = 1% methane.

10 100 1000 units

100 1000 10,000 ppm

100 1000 ppm

Depth of Coal Intervals

2760 cement

2800

2900

3000

depth corr. +3'

rig geolograph down

geolograph down

TD 3085 ft.

total gas - C_1

C_3 - C_2

C_3 - C_2

IC_4 -

NC_4 -

NC_4 -

2906-44

C_3 -

max total gas 1680 units

C_1 -

C_2 -

2981-91

664 units

2993-95

C_1 -

1094 units

C_2 - 3021-28

no sample

total C_1 1602 units 105,460 ppm

3072-84.5

C_2 -

Visual Show G F P T

Lithology Interp

Lithology Descriptions and Remarks

Sh med gy-lt gy brn, firm,sb platy,non calc gen non carb w/ occ coaly lenses,sb res-occ sli sb waxy,tr pyr

Coal generally brown-black,sb vitreous,sb blocky,grainy texture, very carbonaceous-sli argillaceous

Sh very dark brown, sb platy-platy,sb resinous,firm,very carb. w/ occ coaly laminae, sli argillaceous in part,tr pyrite

Sltst med brown-grey, sb blocky,firm,sli calc,mod carbonac. w/ occ coaly lenses

Ss grey white,vf-f gr,sb angular,fair-good sorting,mod fri, extensively cemented w/ calcite,abundant whitish very calcar. claystone,tight,NS

Sltst med grey-brown, sb platy-sb blocky, firm,sli carbonaceous, mod calc.,occ vf sandy

Ss lt grey brown,vf gr,sb angular,poor sorting,firm,tight,sli-mod calc.,carb grs, abnt white calc clay-stone,NS

Coal pred black,some brownish black,vitreous luster fraction ranging from 20% at top to 40% at base, very platy at top to sb blocky at base,mod carb-sli arg at top becoming cleaner to base,best Coal in bottom 16'

Ss gy white,orange-brown,vf-f gr,sb ang, poor-fair sorting,sli-non calc,orng-brn part w/ resinous intgran cement,NS

Ss gy white sli S&P, sb ang,mod w sorted, sli calc,NS

Coal pred black,more vitreous than above coal,fair to good blky development,generally clean coal

Sltst gy,dark gy,sb blocky,hard,carbonac., tr pyrite,occ vf gr sandy in part

Coal black-brown blk, less vitreous than above,sb blky-sb platy grainy texture,more argill. & carbonac. than above

Ss gy white,brown gy, some S&P,pred vf gr-occ f gr,sb ang,gen poor sorting,very arg-very silty in part, carbonac. grs,sli calc NS

Coal pred black,good blocky development, 60% vit luster-remainder sb vit,gen clean coal,massive w/ little lamination

TD sample- Coal as above,drilled up one foot of silty and shaley transition lith