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DIST. 3

BENCH MARK
GEOLOGICAL SERVICES

HYDROCARBON WELL LOG

OPERATOR Blackwood and Nichols

WELL NE Blanco Unit 432 FIELD

LOCATION sec 7 T30N R7W CO./STATE San Juan Co., New Mexico

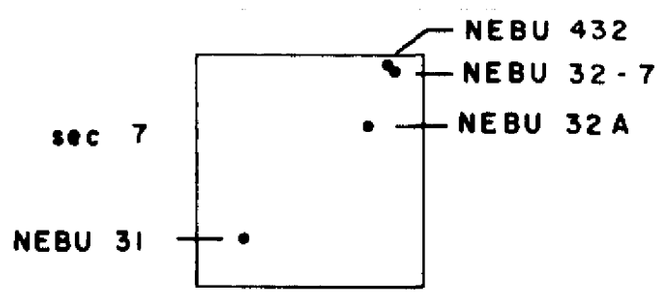
ELEVATION KB 6316 ft. GL 6301 ft. SPUD DATE

INTERVAL LOGGED 3004 - 3216 ft. DATE LOGGED 9/8/89

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
ϕ — Oolitic
P — Pyritic
^ — Siliceous

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

HYDROCARBON ANALYSIS

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

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

RATE OF PENETRATION Min./Ft. | Porosity (G F P) | DEPTH (CORE, DS, DST) | LITHOLOGY OBSERVED % | Visual Show (G F P T) | Lithology Interp | Lithology Descriptions and Remarks

7" casing set at 3004 ft.

5' sample interval

Drilling with fresh water

min/ft: 2.5 5 7.5 10

WOB 8-10

DC + 2'

100 units total gas = 1% methane
10 100 1000 units
100 1000 10,000 ppm

Depth of Coal Intervals

3000
20
3021-37
40
3044-47
60
3062-74
80
3100
20
3121-36
40
60
3166-79
80
3200
3203-14

total gas - C1

max total gas 440 units

625 units

CG

734 units

813 units
34600ppm C1

797 units

100 1000 ppm

C2 - C3

C2

I-C2

TD 3216'

Sh&Coal m-dark brown, sb blocky-platy, sli. carb-silty in part, interbedded w/ thin coal lenses, sb vit

Coal black-brn black, 10-15% w/ vit luster, remainder sb vit-res., blocky-sb platy, mod-v argillac. & carbonac.

Sltst med brown grey, sub blocky, firm, sli. calc, v f sandy in part fair amount carb & coaly grains, pyritic in part

Coal pred black, good blocky texture w/ conchodial fracture, massive w/ little lamin., gen vit, very little argill. or carb matter

Ss lt grey white, sli S&P, f gr, sb ang-sb rd good sorting fri-smpl disagg., sli calc, some pale yel flor, NC

Ss pred aa, less S&P, f-occ med grain, sb rd-sb ang, less calc, mod yel flor, NC

Coal black, some brn-black, less vit than above (20%), sb vit-grainy texture, sb blky much more argillac. & carbonac. than above

Sltst med-dark brown grey, sb platy-sb blky, earthy-resin. luster, v finely coaly & carb. sli pyritic, occ v f gr grey white Ss

Coal pred black, good blocky texture, more vit than above (40%), pred massive w/ little banding, less carbon. & argillac than above

Sltst med-dark brown, mod-v carb., non calc

Coal pred black, good blocky texture, pred massive vit w/ little banding, gen clean coal w/ little arg material

Ss & Sltst v arg, no glauc., NF, NC

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Tuff
No Sample — NS

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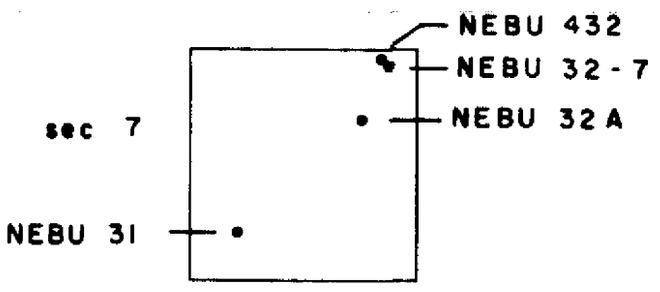

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C2 - C3
C2
1 - C2

RATE OF PENETRATION Min./Ft.

min/ft 2.5 5 7.5 10

WOB 8-10

DC + 2'

TD 3216'

Porosity G F P

DEPTH CORE DST

3000 20 40 60 80 3100 20 40 60 80 3200

LITHOLOGY OBSERVED %

Visual Show G F P T

Lithology Interp

Lithology Descriptions and Remarks

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