

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
 + — Carbonaceous
 ■ — Carbonaceous Coaly
 — Dolomitic
 F — Fossiliferous
 ~ — Glauconitic
 ◇ — Oolitic
 P — Pyritic
 ^ — Siliceous

BENCH MARK

GEOLOGICAL SERVICES

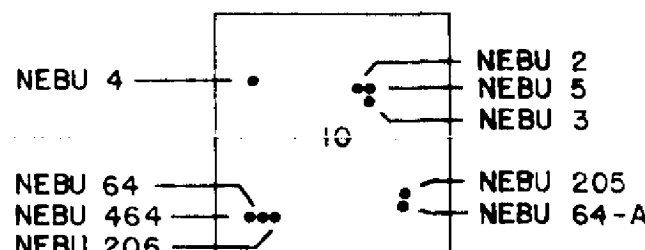
HYDROCARBONS

WILL LOG RECEIVE

JAN 12 1990

OIL CON. DIV
DIST. 3OPERATOR Blackwood and NicholsWELL NE Blanco Unit 464FIELD San Juan Co., New MexicoLOCATION sec 10 T31N R7WELEVATION KB 6629' GL 6615'SPUD DATE 1/1/90 - 1/2/90INTERVAL LOGGED 3171' - 3513'DATE LOGGED 1/1/90 - 1/2/90LOGGING GEOLOGISTS Randy Laney, Mike MixerINSTRUMENTATION FID chromatograph and total gas detector, Infrared CO₂ detector

WELL LOCATION



LEGEND -- GAS CURVES

TOTAL GAS	1
METHANE	1
ETHANE	2
PROPANE	3
ISO & N-BUTANE	4
OIL INDICATOR $\frac{C_2 + C_3}{C_1}$	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

Visual Show
G F P T

Lithology Interp

Lithology Descriptions and Remarks

RATE OF PENETRATION

Min. Ft.

6 1/4" STC FDT
2-20's, 1 open

2.5 5 7.5 10

WOB 12K
RPM 102
PP 1000DEPTH
CORE
DS
ST
SBLITHOLOGY
OBSERVED
%

7" casing set at 3171'

5 ft sample interval
Drilling with fresh water

No desorption samples taken

Depth of Coal Intervals

100 units Total Gas = 1% methane
10 100 1000 units
100 1000 10,000 ppmheavies 100 1000 ppm
CO₂ 1000 10,000 ppm

3160

cement

80

3200

20

40

60

80

3300

20

40

60

80

3400

20

40

60

80

3500

20

total — C₁total 121 units
C₁ 5,475 ppmtotal 125 units
C₁ 6160 ppmtotal 336 units
C₁ 13,760 ppm
C₂ 85 ppmtotal 156 units
C₁ 3,420 ppmtotal — C₁G₃ — C₂

Sh dk gy brn, m dk brn

ply-fissile in part,

res-sb earthy, non calc

sli-mod carb w/ blk

vit coal as paper thin

laminae & thin lenses

silty in part

Coal blk & brn black,

sb ply-sb blocky, 10-

30% vit luster-rest sb

vit-resinous, black vit

coal occurs as lamin.

& striations at top-

more massive to base,

top part mod carb,

lower coal has resin-

amber grains, best coal

at base

Coal pred black, sb

blk, more vit than

above, less resin, better

quality coal than

above

Ss crn-wh gy, pred f

gr, sb ang-sb rd, fros,

mod srt, mod fri, sli

calc cmt, some wh calc

cyst, tt, NS

Ss lt brn gy, sli S&P,

f gr, sb ang, mod w srt,

less fros-less calc

than above, some brn dd

bit, intgran residue,

NS, resembles P.C. Ss

Coal blk, fair blocky

text w/ some conch

frac, 50% vit w/ some

f striated vit coal,

v little carb material

v little resin, best

coal in well

Sh dk gy brn-bk brn,

sb blk, earthy-sb res,

v carb w/ coaly lamin.

& lenses, abnt brn-

amber trnsit resin,

v silty and coaly

Ss lt gy wh, vf gr, sb

ang, mod srt, v calc

cmt, fri, occ carb grs,

some wh calc cyst,

tight, NS

Coal blk, sb blk-bk

40-50% vit luster-rest

sb vit, microbanded,

some grainy text, sli-

mod carb, some opaque

resin, fair quality

coal

T/P.C. Tongue 3376'

Ss lt brn gy S&P, pred

f-occ vf gr, sb ang, mod

w srt, fros-clr, v sli

calc, smpl disagg, glauc

& carb-coaly grs, lt

brn dd bitum, intgran

residue, NF, NC

Ss gy wh S&P, f gr, sb

ang, mod w srt, more

fros than above, be-

coming more calc, glauc

& carb grs, smpl disagg

NF, NC

Sltst m brn, sb blocky

sli-mod calc, v carb

w/ occ coaly grs, v

sandy-grading to silty

Ss

Ss gy wh, lt brn gy,

pred f-vf gr, sb ang,

gen p srt, calc, fros w/

some clr, NS, some re-

worked P.C. Ss

Sltst m dk brn, sb

blk, firm, sli calc, v

carb w/ coaly grs, mod

argill, contains re-

worked P.C., grading to

silty-carb Sh

Sh v dk brn-brn blk,

sb ply, sft-frn, earthy

-occ sb vit, silty-sdy

mod amt resin, abnt

coaly lenses, grading

to argillac. coal, ip

T/ Main P.C. 3510'

TD sample- Ss lt-m

gy wh S&P, f gr, mod w

srt, sli calc, glauc. &

carb-coaly grs, tr brn

dd bitum residue, NS