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OIL CON.

BENCH MARK GEOLOGICAL SERVICES

HYDROCARBON WELL LOG

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
N — Glauconitic
◇ — Oolitic
p — Pyritic
△ — Siliceous

OPERATOR Blackwood and Nichols

WELL NE Blanco Unit 455

FIELD

LOCATION sec 31 T31N R7W

CO. STATE San Juan Co., New Mexico

ELEVATION KB 6430 ft. GL 6415 ft.

SPUD DATE

INTERVAL LOGGED 3000 - 3312 ft.

DATE LOGGED 9/23 - 9/24/89

LOGGING GEOLOGISTS Randy Laney, Danny Wyckoff

INSTRUMENTATION FID chromatograph and total gas detector

WELL LOCATION

NEBU 455

NEBU 38-31

NEBU 457
(proposed)

LEGEND—GAS CURVES

TOTAL GAS	T
METHANE	1
ETHANE	2
PROPANE	3
ISO & N-BUTANE	4
OIL INDICATOR	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

RATE OF PENETRATION

Min./Ft.

DEPTH

Feet

LITHOLOGY OBSERVED

%

Visual Show

Feet

Lithology

Feet

Lithology Descriptions and Remarks

7" casing set at 3000 ft.

5 ft. sample interval.
Drilling with fresh water.

100 units total gas ± 1% methane
10 100 1000 units
100 1000 10000 ppm

Depth of Coal Intervals
100 1000 ppm

total gas - C₁

C₃ - C₂
IC₄ - NC₄

max total gas
719 units

NC₄ - IC₄ - C₂

total - C₁

C₃ - C₂

2175 units
79,490 ppm
2070 units
93,990 ppm

3181-3203

977 units

3211-22

total - C₁

3225-28

391 units

3262-66

CG

938 units
41,360 ppm

3298-3311

2.5 5 7.5 10

trip for new bit

dc + 4'

DC + 2

TD 3312 ft.

3000

20

40

60

80

3100

20

40

60

80

3200

20

40

60

80

3300

20

Sh med gy-dark gy brn
sb platy-sb blocky, firm
sb res-sb waxy, silty
in part, non calc, occ
coaly laminae, pyritic
in part

Coal black-brn black,
pred sb platy, 10% vit
luster, v carb & argill

Ss cream-lt gy, vf gr,
w sorted, sb rd, calcar.
cement, faint yel minrl
flor, NC, coaly in part

Sh gy-dark gy brn,
blocky-platy, sli waxy,
sli calc, sli siliceous
carb-coaly laminae

Ss cream-white, vf gr,
sb rd, fair-well srt,
v calcar., sli sil., tt,
abnt cnaky claystone,
carb material, NS

Coal pred brown black
platy-sb platy, mod.
carbonaceous, 15% vit

Siltst med-dark brown,
sb platy, sb resinous,
firm, non calcar., sli
sandy in part, v carb.
w/ occ coaly laminae,
tr pyrite

Ss gy white v sli S&P
f-vf gr, sb ang, mod fri-
sample disagg, tight,
v calcareous, mod abund-
ant calcareous white
claystone, pale yellow
mineral flor, NC, some
carbonaceous grains,
tr chlorite

Coal pred black, good
blocky development w/
some conchoidal frac-
tures, 25% vit luster-
remainder sb vit, some
microlamination, very
little argill. & carb.
material-pred clean
coal, some plant re-
mains visible, mod abnt
free brownish resin &
resin-impregnated Ss
between coals, tr pyr

Coal black-brn black,
majority is blocky,
microlam in part, sli
more vit than above,
sli more carb

Ss lt-med gy, sli S&P,
pred vf gr, sb ang-sb
rd, firm, sli-mod calc,
dissem carb grs, occ
coaly lam, silty in
part, no similarity to
above calcar. Ss, NS

Ss lt gy brn S&P, pred
med gr, sb rd-sb ang,
mod w srt, calc & some
sil cnt, qtz overgrowth
lt brn intgran residue
lt gn glauc grs, NS,
Pic. Cliffs tongue

Coal black-very lit-
tle brn blk, good blk
development w/ conch
frac., massive w/
little lamination, 60-
70% vit luster, pred
clean coal, best seen
in well

TD sample- 80% coal,
drilled up one foot of
shaley-sli sandy trans
lithology