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OIL CON. DIV.
DIST. 3

BENCH MARK GEOLOGICAL SERVICES

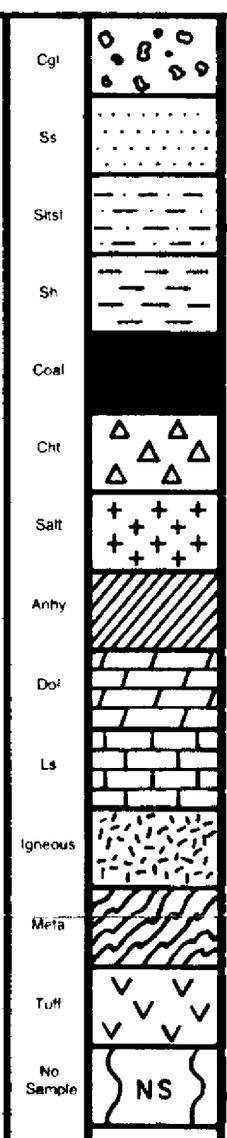
HYDROCARBON WELL LOG

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
∿ — Glauconitic
ϕ — Oolitic
P — Pyritic
Λ — Siliceous



OPERATOR Blackwood and Nichols

WELL NE Blanco Unit 479 FIELD

LOCATION sec 20 T30N R7W CO./STATE Rio Arriba Co., New Mexico

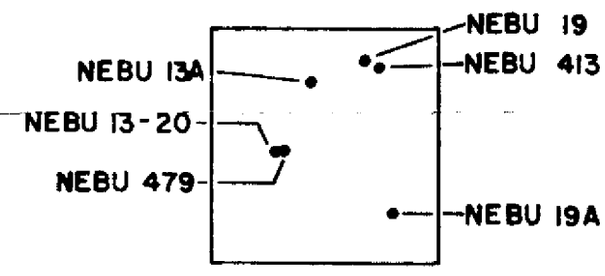
ELEVATION KB 6421' GL 6406' (est) SPUD DATE

INTERVAL LOGGED 3147'-3310' DATE LOGGED 8/16/89

LOGGING GEOLOGISTS Randy Laney, Danny Wyckoff

INSTRUMENTATION FID chromatograph and total gas detector

WELL LOCATION



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

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

RATE OF PENETRATION Min./Ft.

Drilling with Bit no. 2

min/ft 2.5 5 7.5 10

WOB 8-10

TD 3310' 6:30am

Porosity G F P

DEPTH CORE DST

LITHOLOGY OBSERVED %

Casing set at 3147' 7" diameter 23 lb/ft

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

Depth of Coal Intervals

3190-3200
3201-03
3224-34
3235-37
3250-58
3262-66
3267-68
3295-3302

Total Gas — C_1
max total gas 1050 units
C_1 - 53770 ppm
570u
700u
800u
T — C_1

8' samples caught 3148 - TD

Drilling with fresh water

100 1000 ppm

C_2
C_3
Note persistent presence of heavies throughout drilled interval.
C_2
NC_4
C_3
IC_4
IC_4
C_3 — C_2

Visual Show G F P T

Lithology Interp

Lithology Descriptions and Remarks

Note: all samples have been ground finer than usual; using heavy weight drill pipe.

Sh very dark grey-blk platy, soft, pearly-resinous luster, very carbonac. w/ thin coal partings, coal is sub vitreous, very carbonac

Ss grey white, very f grain, disaggregated, sub ang, f srt, NS

Coal black-brown blk, sub blocky-platy, pred. sub vitreous-rare vit. pieces, coal has grainy texture, up to 25% organic-carbonac. matter

Sh brown-brown black, sub platy, sub resin. very carbonac., coaly

Coal pred. brown black extremely platy grains uniformly 0.1-0.3mm thick, sub vit. grainy luster, extensively finely laminated w/ carbon. Sh partings

Coal brown black-blk, similar to above coal, pred. platy-no blocky grains present, sub vitreous, abundant fine carbonac. Sh partings probably causing platy appearance

Ss med grey white, vf-fine grain, sub angular fair sorting, slightly calcareous, NS

Coal predom. black, incr. % of blocky coal more w/ vit. luster & less carbonac. matter than above coals, gen. best looking coal seen in well