

RECEIVED

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BENCH MARK
GEOLOGICAL SERVICES

OIL CON. DIV.
DIST. 3

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
L — Calcareous
■ — Carbonaceous, Coaly
L — Dolomitic
F — Fossiliferous
~ — Glauconitic
◇ — Oolitic
P — Pyritic
^ — Siliceous

OPERATOR **BLACKWOOD AND NICHOLS**

WELL **NE Blanco Unit 453**

FIELD **Basin Fruitland Coal**

LOCATION **sec 6 T30N R7W**

CO-STATE **San Juan Co., New Mexico**

ELEVATION KB **6190 ft.** GL **6176 ft.**

SPUD DATE

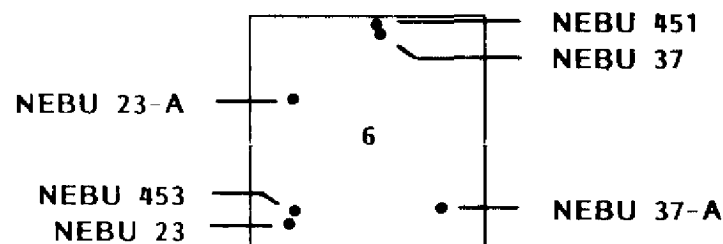
INTERVAL LOGGED **2890 - 3097 ft.**

DATE LOGGED **3/31/90**

LOGGING GEOLOGISTS **Randy Laney, Mike Mixter**

INSTRUMENTATION **FID Chromatograph and Total Gas Detector, Infrared CO₂ 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			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.

STC FDT 6 1/4"
no jets

2.5 5 7.5 10

WOB 8-9
RPM 110
PP 1000

TD 3097 ft

DEPTH

Core
DS
DST

LITHOLOGY OBSERVED

Core
DS
DST

7" casing set at 2890 ft.

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

total 234 units
C₁ 14,900 ppm
C₂ 850 ppm
C₃ 320 ppm

total 359 units
C₁ 21,690 ppm
C₂ 920 ppm
C₃ 440 ppm

total — C₁
CG

total 172 units
C₁ 11,330 ppm

total 172 units
C₁ 13,470 ppm

total 102 units
C₁ 3,670 ppm

total 117 units
C₁ 8,460 ppm

5 ft. sample interval
Drilling with fresh water

Depth of Coal Intervals
(# of canistered samples)

heavies 100 1000 ppm
CO₂ 1000 10,000 ppm

C₂

C₃

I — C₂

carbon dioxide

ONSET OF FLARED GAS —

2962-70
(1 can)
2972-74
2976-77

2998-3007
(1 can)
3009-10

3035-41
(1 can)
3043-45

3082-92
(1 can)

Visual Show

Visual Show

Lithology Interp

Lithology Interp

Lithology Descriptions and Remarks

NOTE: All samples have been ground to an extremely fine size.

Coal black, some brn-blk, sub blocky-sub platy, 25% vit luster, sli-mod carb, some amber resin, fair coal

Coal black & brn blk, sub blocky, less vit than above (10%), more carb & argill, abnt amber trns resin, gen poor quality coal

Ss med-lt gy occ flecked w/ carb grs, f-vf gr, sub ang, fros, mod w srt, smpl disagg, very calc cement, NS
Sh med-dk brn, some blk brn, sub platy, very carb, mod silty

Coal black-gy blk, sub blocky-sub platy, very little vit-pred sub vit w/ grainy texture, mod carb, amber & tan opaque resin-clyst, gy trns sec calc in cleats, poor-fair coal
Ss lt-med gy, f gr, sub ang, fair srt, fros, very calc cmt, NS

Coal black-gy blk, gen aa, sub blocky, pred sub vit w/ grainy text, sme carb mat, large amount amber resin, poor-fair quality coal

Sltst med-dk gy brn, sub blk-sub platy, frm mod carb, sandy in part gen non calc
Coal black & some brn-blk, sub blocky-blocky w/ occ conch (trac, 30-50% vit, less amber resin, good quality coal, best of well

Ss med gy wh, pred f gr, sub ang, fros, smpl disagg, mod calc cmt, occ carb grs, silty in part, NS

Coal black, sub blocky-occ blocky, 20-25% vit rest sub vit w/ grainy texture, sli-mod carb, some finely striated, very abundant trns amber-opaque tan resin fair-good quality coal
T/ Main P.C. 3096'

TD sample- Ss lt gy wh, some S&P, smpl pred disagg, f gr, sub ang-sub rd, mod w srt, clear qtz, v sli calc, glauc & carb grs, NS