

BENCH MARK GEOLOGICAL SERVICES

HYDROCARBON WELL LOG

MAR 1 4 1991

OIL CON. DIV.
DIST. 3

OPERATOR BLACKWOOD AND NICHOLS

WELL NE Blanco Unit 400R

FIELD Basin Fruitland Coal

LOCATION sec 7 T31N R6W

CO./STATE San Juan Co., New Mexico

ELEVATION KB 6647 ft. GL 6633' (ungrd)

SPUD DATE

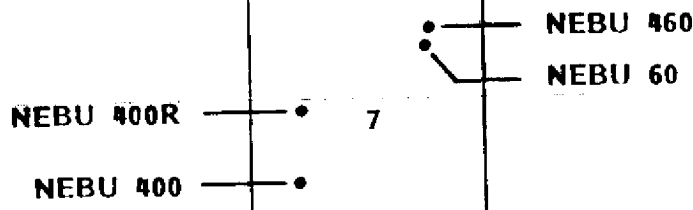
INTERVAL LOGGED 3191 - 3564 ft.

DATE LOGGED 11/12 thru 11/13/90

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 $\frac{C_2 + C_3}{C_1}$	0

HYDROCARBON ANALYSIS

TOTAL GAS		Reported in Units	
10	100	10	100
GAS CHROMATOGRAPHY		Reported in PPM	
100	1000	100	1000
OIL INDICATOR		Dimension Less	
0.01	0.1	0.01	0.1

7" casing set at 3191 ft.

5 ft. sample interval
Drilling with water

Depth of Coal Intervals
(# of canistered samples)

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

heavies 100 1000 ppm
CO₂ 1000 10,000 ppm

total -C₁

carbon dioxide
IC₄ 3207-10

total -C₂

NC₄ 3223-24

total -C₃

NC₄ 3252-54

total -C₄

NC₄ 3275-76

total -C₅

NC₄ 3312-14

total -C₆

NC₄ 3318-32 (1 can)

total -C₇

NC₄ 3334-44

total -C₈

NC₄ 3375-83

total -C₉

NC₄ 3395-96

total -C₁₀

NC₄ 3443-48

total -C₁₁

NC₄ 3561-63

total -C₁₂

NC₄ 3561-63

total -C₁₃

NC₄ 3561-63

total -C₁₄

NC₄ 3561-63

total -C₁₅

NC₄ 3561-63

total -C₁₆

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total -C₃₂

NC₄ 3561-63

total -C₃₃

NC₄ 3561-63

total -C₃₄

NC₄ 3561-63

total -C₃₅

NC₄ 3561-63

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
C - Carbonaceous, Coaly
D - Dolomitic
F - Fossiliferous
G - Glaucous
O - Oolitic
P - Pyritic
S - Siliceous

RATE OF PENETRATION

Min. Ft.

STC FDTL 6 1/4"

3-22's

2.5 5 7.5 10

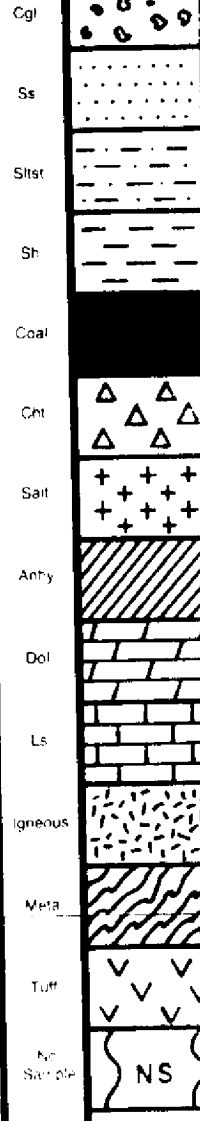
WOB 10

RPM 70

PP 400

DC +2

TD 3564 ft.



DEPTH

3180

3200

20

40

60

80

3300

20

40

60

80

3400

20

40

60

80

3500

20

40

60

80

3564

ONSET OF FLARED GAS

total 870 units

C₁ 13,550 ppm

C₂ 1,380 ppm

C₃ 875 ppm

IC₄ 175 ppm

NC₄ 245 ppm

total 625 units

C₁ 37,700 ppm

C₂ 280 ppm

total 641 units

C₁ 43,000 ppm

C₂ 453 ppm

Ss lt-med brn, vf gr, sub ang, fair srt, dis-agg, fros, mod calc, NS

Sh & Coal Sh is med-dk brn, sub platy, soft, earthy-sub res, mod carb, intbd w/ blk, sub platy, sub vit Coal w/ grainy texture

Sltst med brn, sub blk, firm, earthy, sli calc, mod sandy in part

Ss lt-med brn gy, vf gr, sub ang-sub rd, fair srt, disagg, fros, mod calc cmt, some carb grs

Coal gen as above, sub platy, pred sub vit, mod carb, intbd w/ very carb, blk brn Sh

Ss crm, lt brn gy, vf-f gr, sub ang, mod well srt, fros, v calc cmt, some gn mica flakes, NS intbd w/ coal and sh as above

Sh med-dk brn, some blk brn, platy-sub platy, res-earthy, mod-v carb, some paper thin coaly laminae

Coal black w/ some brn blk, sub blocky-sub platy-more sub blk to base, sub vit to resinous-very little vit (10-20%), drilled up vf gr, mod carb, mod abnt amber resin, tr calc, tr pyrite, tan-brn sub waxy clyst interbeds, fair quality coal-sli better at base

Ss med gy wh, vf-f gr, sub rd-sub ang, mod w srt, fros, diaagg, mod-v calc w/ wh calc clyst, NS

Sh med-dk brn, platy, soft, res-occ sb vit, v carb

Coal blk, sub platy-sub blk w/ some blk grs, pred sub vit w/ 20-25% vit as finely striated to banded, drilled up vf gr, mod carb, fr abnt resin, fair qual. coal

Ss gy wh S&P, pred vf gr-some f gr, sub rd-sub ang, fair srt, pred clr qtz grs, calc & some cly cmt, glauc & tr orng cht grs, some intbd siltst, pale yel flr, weak pale yel milky cuts, sli condensate odor, represents additional P.C. trans-regressive cycle

Coal blk, sub blk-sub platy, 30-40% vit, some carb, fair qual. coal T/ P.C. Tongue 3450'

Ss lt-v lt gy wh S&P, sli coarser gr than above, sub ang-sub rd, pred clear qtz grs, dis-agg, less calc & sli better srt than above, glauc & carb grs, tr orng cht, fair conden. odor, pale-med yel flr, milky yel-yel residual ring cuts

Ss lt gy wh to med gy S&P, pred f gr, sub ang-sub rd, mod well srt, disagg, becoming more fros than above, sli more calc cement-some sil to argill., glauc & carb grs, tr pale yel flr, v sli tr odor, no cut

Sh very dk blk brn, sub platy-sub blocky, soft, very carb, sub res-sub vit luster, grdg to shaley Coal in part

Coal blk, blk to sub blk w/ some conch frac, 40-50% vit as med banded, some carb, fair-good qual-best of well T/ Main P.C. 3563 ft

TD sample- Ss med gy S&P, f gr, sub ang, fair-poor srt, fros & clr gr glauc & carb-coaly grs NF, NC