

RECEIVED
FEB 23 1990

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
 - ◇ — Oolitic
 - P — Pyritic
 - △ — Siliceous

OPERATOR BLACKWOOD AND NICHOLS

WELL NE Blanco Unit 446 FIELD Basin Fruitland Coal

LOCATION sec 33 T31N R7W CO. STATE San Juan Co., New Mexico

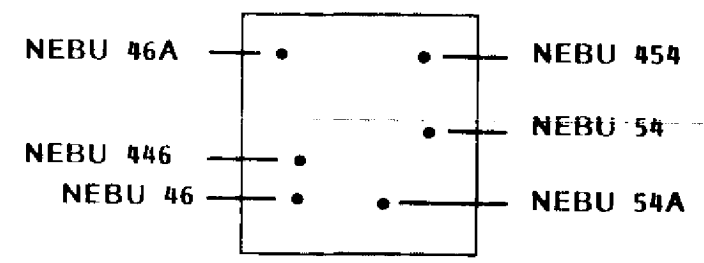
ELEVATION KB 6316 ft. GL 6302 ft. SPUD DATE _____

INTERVAL LOGGED 2877 3202 ft. DATE LOGGED 2/17/90

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 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.

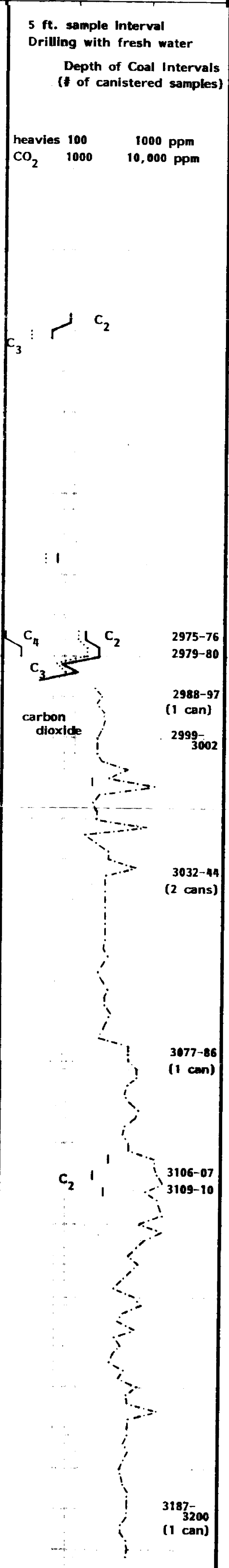
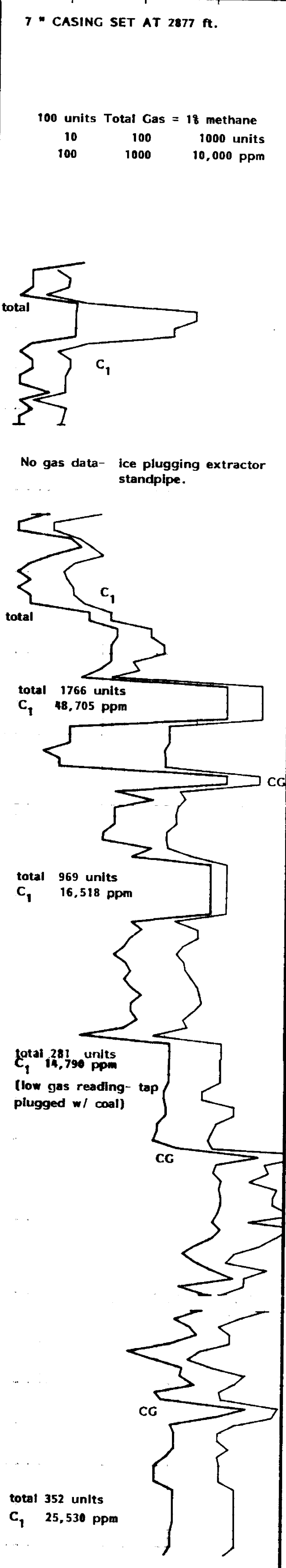
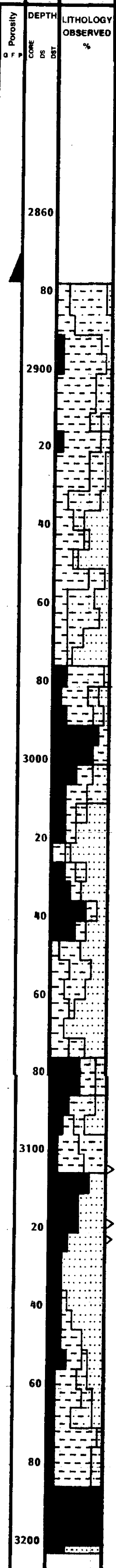
STC FDT 6 1/4"

2.5 5 7.5 10

WOB 10
RPM 100
PP 900

DC +2

TD 3202 ft.



Lithology Descriptions and Remarks

Coal & Sh v dk brn blk, Sh is sb plty, res-silky, luater, v carb-interlam w/ blk, blk, vit coal, some conch frac, good coal but v thinly bedded

Sltst m brn-dk gy, sb plty-sb blk, firm, mod carb, sli calc, sandy in part

Ss lt brn gy, gy crm, sb rd-sb ang, p-fr srt, smpl disagg, mod-v calc cnt, NS

Ss m gy, gen fine gr, sb ang-ang, fair srt, smpl disagg, v calc cement, some carb grs, NS

Sh v dk brn blk, sb plty, mod sft, v carb w/ occ coaly lam

2975-76
2979-80
Coal blk & some brn-blk, gen good blocky text w/ conch frac, some sb blk, 40-60% vit-massive w/ some vit microlam, scattered carb material, some amber resin, good quality coal

2988-97
(1 can)
2999-3002
Ss m gy, brn gy, gen f gr, sb ang, p-fr srt, disagg, v calc cnt w/ some wh calc clyst, NS

3032-44
(2 cans)
Coal blk, some dk gy-blk, blocky-sb blocky, 20-40% vit, microlam in part, sli-mod carb & argill, no resin, fair quality coal

Ss m gywh, vf-f gr, sb ang, p srt, mod firm, v sli calc, mod silty-arg in part, NS

3077-86
(1 can)
Coal blk, blocky w/ sbnt conch frac, good cleat development, 60-70% vit w/ microlam, v little carb material gen v good quality

Sltst m gy brn, blk, mod firm, sli calc, carb w/ occ coaly lam sandy in part

3106-07
3109-10
T/ P.C. Tongue 3111

Ss m gy brn S&P, f gr, sb ang-sb rd, pr-fr srt, mod fri, sli calc, glauc & carb grs, w/ brn dd intgran residue NF, NC

Ss gen aa, gy wh S&P, sb ang, fr srt, sli more calc, glauc & carb grs, no intgran residue, NS

Sh v dk brn, blk brn, sb blk-sb plty, resinous luster, firm, mod-v carb, mod silty in part, grdg to coaly Sh

Coal black, v good blocky text w/ conch frac, massive-non lam, v little carb material excellent quality coal best of well

3187-3200
(1 can)
T/ Main P.C. 3200'

TD Sample- Ss gy wh S&P, sb ang-sb rd, good srt, sli calc, glauc & carb grs, tr intgran residue, NF, NC