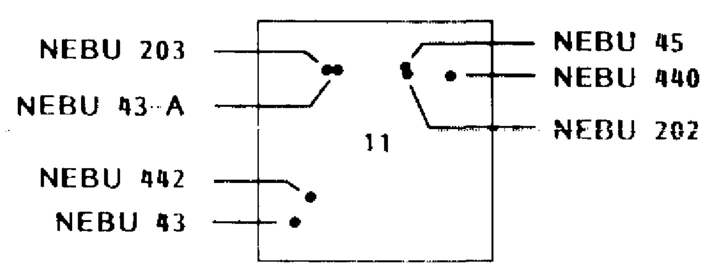
BENCH MARK
GEOLOGICAL SERVICES

HYDROCARBON WELL LOG

RECEIVED
MAR1 4 1991
OIL CON. DIV.
DIST. 3

OPERATOR	BLACKWOOD AND NICHOLS		
WELL	NE Blanco Unit 442	FIELD	Basin Fruitland Coal
LOCATION	sec 11 T31N R7W	CO. STATE	San Juan Co., New Mexico
ELEVATION	KB 6479 ft. GL 6465' (ungrd)	SPUD DATE	
INTERVAL LOGGED	3056 - 3367 ft.	DATE LOGGED	10/5 thru 10/6/90
LOGGING GEOLOGISTS	Randy Laney, Mike Mixter		
INSTRUMENTATION	FID Chromatograph and Total Gas Detector, Infrared CO_2 Detector		

WELL LOCATION

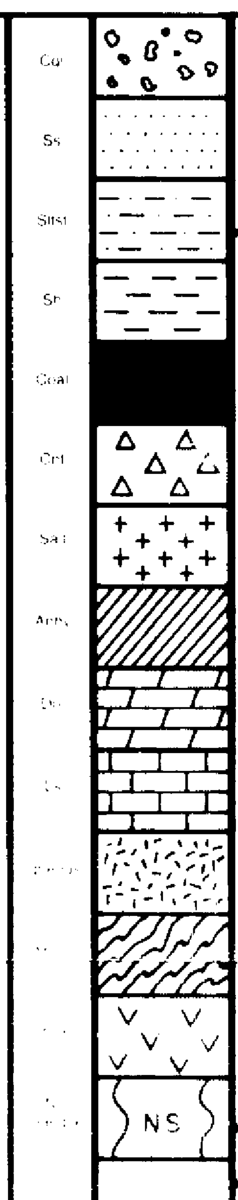


ABBREVIATIONS

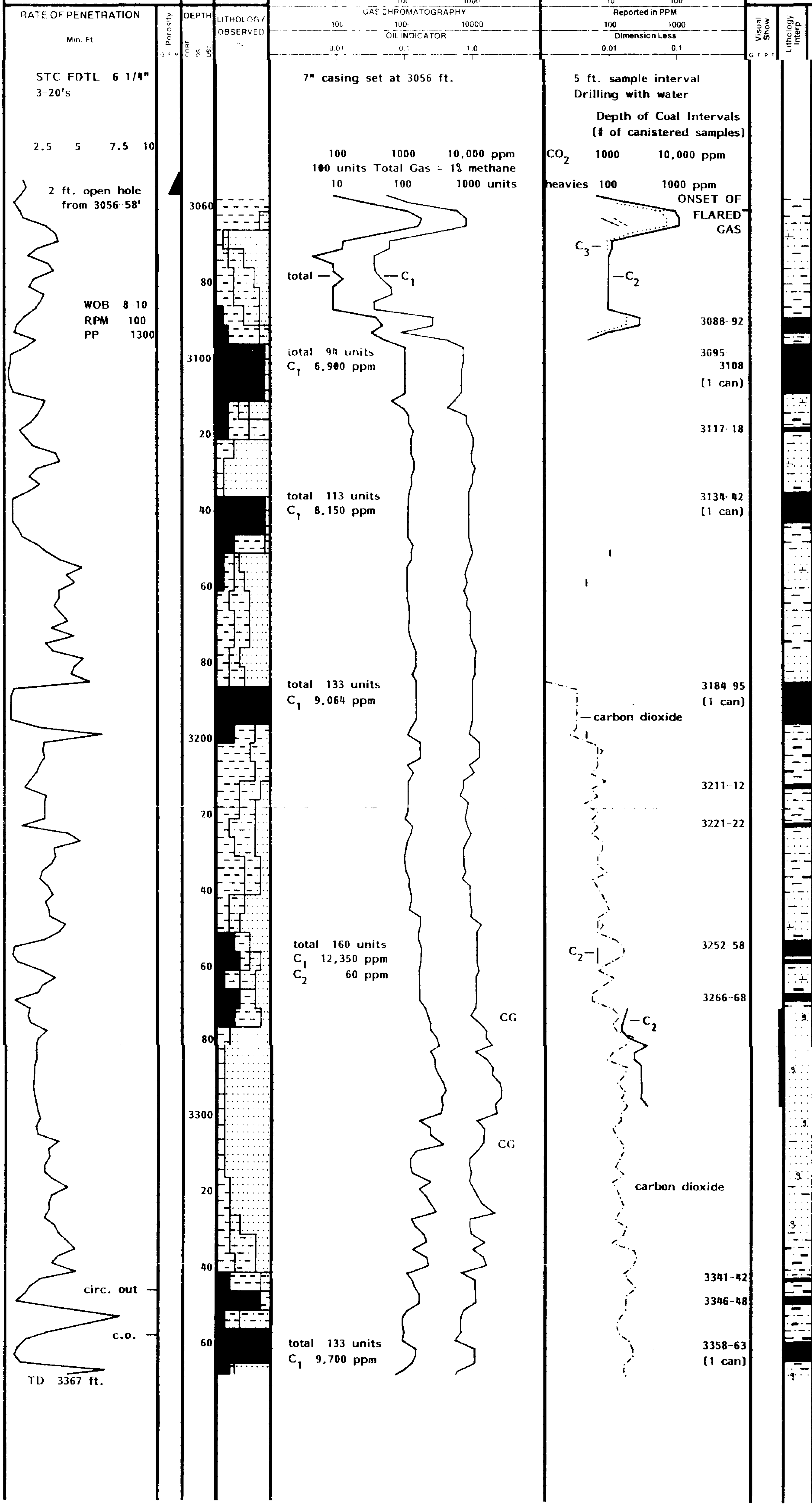
CO	Circulate Out
CG	Connection Gas
CB	Core Bit
DC	Depth Correction
DS	Directional Survey
DST	Drill Stem Test
DTG	Down Time Gas
FC	Filter Cake
LAT	Logged After Trip
NB	New Bit
NDR	No Data Recorded
NR	No Returns
PP	Pump Pressure
RPM	Rotary Speed
SPM	Pump Strokes
TG	Trip Gas
TGR	Trip Gas Recycle
Vis	Viscosity
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



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



STC FDTL 6 1/4"
3-20's

2 ft. open hole from 3056-58'

WOB 8-10
RPM 100
PP 1300

circ. out
c.o.
TD 3367 ft.

7" casing set at 3056 ft.

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

total 94 units
C_1 6,980 ppm

total 113 units
C_1 8,150 ppm

total 133 units
C_1 9,064 ppm

total 160 units
C_1 12,350 ppm
C_2 60 ppm

total 133 units
C_1 9,700 ppm

5 ft. sample interval
Drilling with water

Depth of Coal Intervals
(# of canistered samples)

CO_2 1000 10,000 ppm
heavies 100 1000 ppm

ONSET OF FLARED GAS

3088-92
3095-3108
(1 can)
3117-18
3134-42
(1 can)

carbon dioxide

3184-95
(1 can)
3211-12
3221-22
3252 58
3266-68

carbon dioxide

3341-42
3346-48
3358-63
(1 can)

Ss lt-m gy,pred vf gr sub ang-ang,pr-fr srt, fros,disagg,v calc cmt brn intbd Sltst,NS

Sh lt-med gy,lt-med brn,sub platy-platy, soft,sub waxy-earthy, little carb material

Coal blk to brn blk, sub blocky-sub platy, bronze sub vit luster, 10-20% vit as fine striations,mod carb, some lt gy sec calc in cleats,tr pyr,no resin mod fair quality coal

Ss lt-m gy-gy wh,vf gr,better sorted,sub ang-sub rd,clr-fros, disagg,some gn chlor-mica flakes,NS

Coal blk,some brn blk sub blky-occ platy,sub vit-sli more vit than above-as finely banded mod carb,fine-med gr size,less sec calc than above,tr resin & cuticles,fair quality

Ss med gy,vf-occ f gr ang-sub ang,p srt,fros disagg,NS,intbd w/ med brn-gy Sltst,sub platy -sub blky,firm,w/ carb grs,some coaly laminae

Coal blk,sub blky-occ blky-no conch frac,gen sub vit as above,very little vit material, mod-v carb,some sec calc,sli more resin, mod fair quality

Sh gy blk,gy brn,plty -some sub blky,slt,sub res luster,sli-mod carb,abnt tan-brn trnsl to opaque calc,intbd w/ blk Coal,sub vit

Sltst m-dk gy,sub blky,mod calc,some dissem carb,intbd w/ gy, f gr Ss,ang-sub ang, fair-poor srt,fros,mod calc,NS

Coal blk,blky w/ rare conch frac,25-40% vit as med coarse banding, some carb,some resin, tr calc,fair-mod good quality coal

T/ P.C. Tongue 3270'

Ss lt gy wh S&P,f gr, sub ang-sub rd,clr-sli fros qtz,mod w srt,disagg,sli-mod calc,glauc & carc grs,tr condensate odor-increasing thru upper 20 ft.,v faint yel flor,tr residual ring cut

Ss lt-med gy wh S&P, gen as above,f gr,sub ang,well srt,more fros less calc,becoming sli more carb,tr yel flor,NC

Sltst dk brn-blk brn sub blky,firm,v carb w/ coaly grs,grdg to silty carb & coaly Sh

Coal blk,blocky-sub platy w/ fair amount conch frac,drilled up vf gr,40-60% vit as coarse bands,some carb no calc,good quality-best of well

T/ Main P.C. 3365 ft

TD sample- Ss med gy wh S&P,f gr,sub rd-sub ang,sli fros,well srt,disagg,sil & sli calc cmt,glauc & carb grs,NF,NC