PIONEER OIL & GAS

ROCKY MOUNTAIN GEO–ENGINEERING CORP.
2450 Industrial Boulevard
Grand Junction, CO 81505 U.S.A.
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RECEIVED
NOV 2 7 1996
Div. of Minerals

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OPERATOR: PIONEER OIL AND GAS
WELL: MSU FEDERAL #27–44
LOCATION: SEC 27, T23N, R58E
COUNTY: WHITE PINE
STATE: NEVADA
SPOT: 330' FSL, 660' FEL
ELEVATION: 6177' GL, 6193' KB
FIELD: MAVERICK SPRINGS UNIT

SPUD DATE: 8/24/96
TD DATE: 9/25/96
DATES LOGGED: 8/24/96 to 9/25/96
DEPTHS LOGGED: 76' to 5063'
MUDLOGGERS: RECKS – CAREY – PHARES
DRILLING FLUID: GEL/POLYMER – WATER
DRILLING RIG: CARDINAL #40

LOG TYPE: **MUD LOG**

SCALE: 1:240 (5.0 INCH/100 FT)

REMARKS:
SIDETRACK #1 ON DIFFERENT LOG

LITHOLOGIES

■ COAL	▨ SANDSTONE	▨ SHALY SANDSTONE	▨ SHALE	▨ CARBONACEOUS SHALE
▨ GRAY SHALE	▨ SILTY SHALE	▨ SILTSTONE	▨ SHALY SILTSTONE	☒ NO SAMPLE
▨ UNABLE TO INTERPRET	▨ DULL COAL	▨ INTERMEDIATE COAL	▨ NON COAL	▨ CONGLOMERATE
▨ DOLOMITE	▨ ARGILLACEOUS DOLOMITE	▨ CALCAREOUS DOLOMITE	▨ CRYSTALLINE DOLOMITE	▨ DOLOMITIC BOUNDSTONE
▨ DOLOMITIC GRAINSTONE	▨ DOLOMITIC MUDSTONE	▨ DOLOMITIC PACKSTONE	▨ DOLOMITIC WACKESTONE	▨ GLACIAL TILL
▨ GRANITE	▨ GYPSUM	▨ LIME BOUNDSTONE	▨ LIME GRAINSTONE	▨ LIME MUDSTONE
▨ LIME PACKSTONE	▨ LIME WACKESTONE	▨ LIMESTONE	▨ ARGILLACEOUS LIMESTONE	▨ CRYSTALLINE LIMESTONE
▨ DOLOMITIC LIMESTONE	▨ MARL	▨ DOLOMITIC MARL	▨ METAMORPHIC	▨ SALT
▨ ANHYDRITE	▨ BENTONITE	▨ BRECCIA	▨ BLACK SHALE	▨ CHALK

COALY SHALE	COLORED SHALE	CHERT	DARK CHERT	CLAYSTONE
COLORED CLAYSTONE	TUFF	WELDED TUFF	VOLCANICS	BRIGHT COAL
GRAY CLAYSTONE	ALLUVIUM			

MODIFIERS

ANHYDRITE STRINGERS	ALGAE, LAMINATED	ALGAE, NON-DESCRIPT	ALGAE, OOTOID	ALGAE, SKELETAL	AMPHIPORA
ANHYDRITIC	ARGILLACEOUS	ARGILLITE GRAIN	BELEMNITE	BENTONITE	BIOCLAST/FRAGMENTAL
BRACHIOPOD	BRECCIA	BRYOZOA	CALCAREOUS	CARBONACEOUS FLAKES	CEMENTING BITUMENOUS
CEPHALOPOD	CHERT, DARK	CHERT, LIGHT	CHERT TRIPOLITIC	COAL	CORAL
CRINOID	CRYSTALS	DOLOMITE STRINGERS	DOLOMITIC	ECHINOID	FELDSPAR
FERRUGINOUS	FERRUGINOUS GRAINS	FERRUGINOUS STRINGERS	FISH REMAINS	FORAMINIFERA	FOSSILS
FRACTURES	GASTROPOD	GLAUCONITE	GYPSIFEROUS	GYPSUM STRINGERS	HEAVY/DARK MINERALS
INTRACLASTS	KAOLIN	LIMESTONE STRINGERS	LIMONITE	MARLSTONE CALCAREOUS	MARLSTONE, DOLOMITIC
MICACEOUS	NODULES	OOLITES	OSTRACOD	PEBBLES	PELECYPOD
PELLETS	PHOSPHATE PELLETS	PISOLITE	PLANT REMAINS	PYRITE	SALT CAST/MOLD
SAND GRAINS	SANDSTONE STRINGERS	SANDY	SCAPHOPOD	SHALE LAMINAE	SILICEOUS
SILTSTONE STRINGERS	SILTY	SLICKENSLIDE	SPORES	STROMATOPOROID	STYLOLITE
TUFFACEOUS					

POROSITY/SORTING/ROUNDNESS SYMBOLS

INTERCRYSTALLINE INTERGRANULAR	VUGGY	FRACTURE	INTEROOLITIC	PINPOINT	ORGANIC
MOLDIC	EARTHY	FENESTRAL			
ANGULAR	SUBANGULAR	ROUNDED	SUBROUNDED		
WELL	MEDIUM	POOR			

ENGINEERING SYMBOLS

BIT CHANGE	LOST CIRCULATION	CASING	CASING	SIDEWALL CORE	SIDEWALL CORE
WIRELINE TEST	WIRELINE TEST	GAS TO SURFACE	OIL TO SURFACE	WATER TO SURFACE	EVEN STAINING
SPOTTED STAINING	DEAD OIL	QUESTIONABLE	OIL SHOW	GAS SHOW	OIL AND GAS SHOW
CONNECTION GAS	TRIP GAS	MIDNIGHT DEPTH	MIDNIGHT DEPTH	CONNECTION	OFF BOTTOM
NORMAL FAULT	REVERSE FAULT	OVERTURNED STRATA			

CORE RECOVERED	CORE LOST	DST INTERVAL	ROTATING	SLIDING	CANISTER

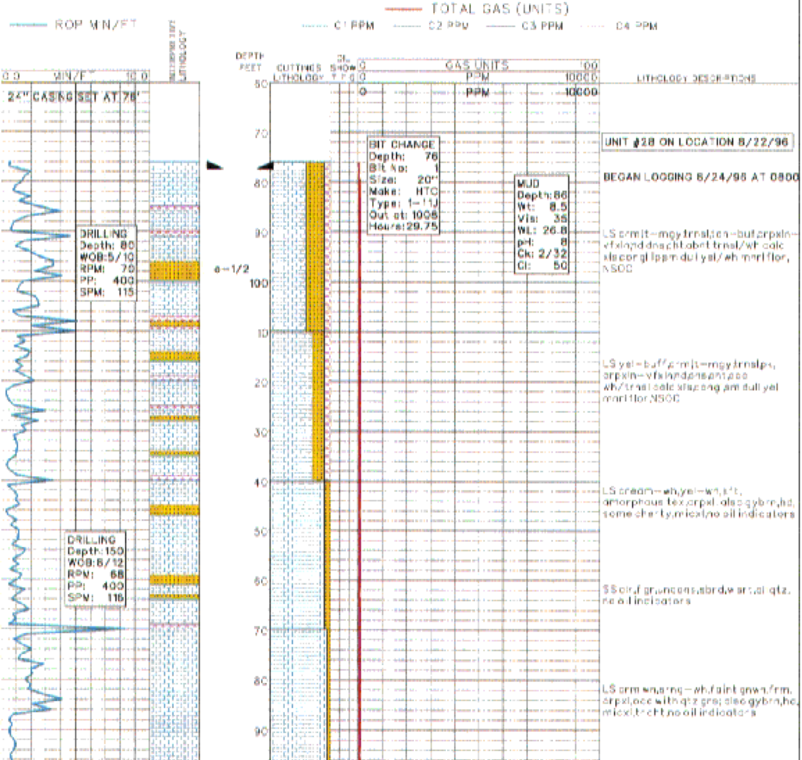
ABBREVIATIONS

CB – CORE BIT
CG – CONNECTION GAS
CO – CIRCULATE OUT
SPM – STROKES/MIN

DST – DRILL STEM TEST
DTG – DOWNTIME GAS
LAT – LOGGED AFTER TRIP
TG – TRIP GAS

NR – NO RETURNS
NS – NO SAMPLE
PP – PUMP PRESSURE
WOB – WEIGHT ON BIT

RPM – REVOLUTIONS/MIN
RR – RE-RUN
SLM – STEEL LINE MEASURE



24" CASING SET AT 78'

BIT CHANGE
Depth: 76
Bit No: 1
Size: 20"
Make: HTC
Type: 1-11J
Out at: 1006
Hours: 29.75

MUD
Depth: 86
Wt: 8.5
Vis: 35
WL: 26.8
pH: 8
Ck: 2/32
Cl: 50

DRILLING
Depth: 86
WOB: 5/10
RPM: 70
PP: 400
SPM: 115

DRILLING
Depth: 150
WOB: 6/12
RPM: 68
PP: 400
SPM: 116

UNIT #28 ON LOCATION 8/22/96

BEGAN LOGGING 8/24/96 AT 0800

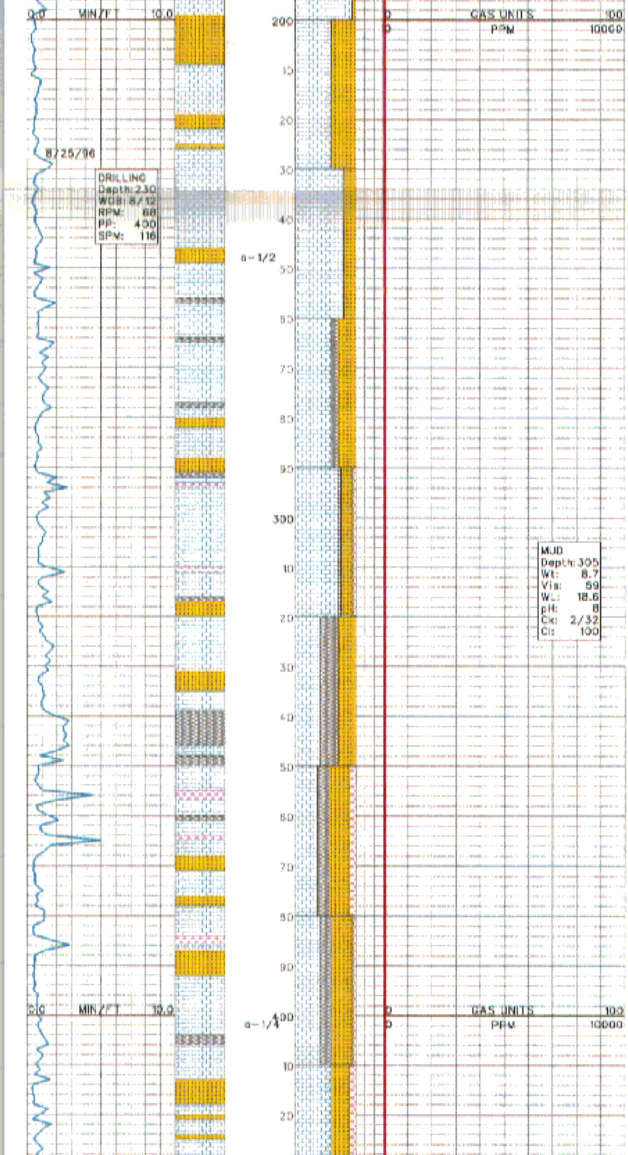
LS crm lt-mgy,trnsl,tan-buf,crpxln-vfxln,nd dns,cht,abnt trnsl/wh calc xls,cor gl lppm dul yel/wh mnrl flor, NSOC

LS yel-buff,crm lt-mgy,trnsl,pt, crpxln-vfxln,nd,dns,abnt,occ wh/trnsl calc xls,cong,am dull yel mnrl flor,NSOC

LS cream-wh,yel-wh,sft, amorphous tex,crpxl. also gybrn,hd, some cherty,micxl,no oil indicators

SS clr,f gr,uncons,sbrd,w srt,cl qtz, no oil indicators

LS crm wh,orng-wh,faint gnwn,frm, crpxl,occ with qtz grs; also gybrn,hd, micxl,tr cht,no oil indicators



DRILLING
Depth: 230
WOB: 8/12
RPM: 68
PP: 400
SPM: 116

MUD
Depth: 305
Wt: 8.7
Vis: 59
WL: 18.6
pH: 8
Ck: 2/32
Cl: 100

SS clr,yel-orng,red,vf-f gr,uncons &occ cons in soft lmy cmt,sbrd-sbang,fair sorting,grains are qtz,no oil indicators

LS m-lt gy,crm,tan-buff,wh,crpxln-micxln,hd dns,occ sil,occ cht,occ clr calc xl frac,sm yel/dull yel mnrl flor, NSOC

Sh red,yel,tan,blky-sbblky,frm,slty ip,occ sdy,slcalc

SS clr,trnsl,yel,vf-f gr,ang-sbrd,pert, uncons,occ wcmt,occ cht,congl ip, NFSOC

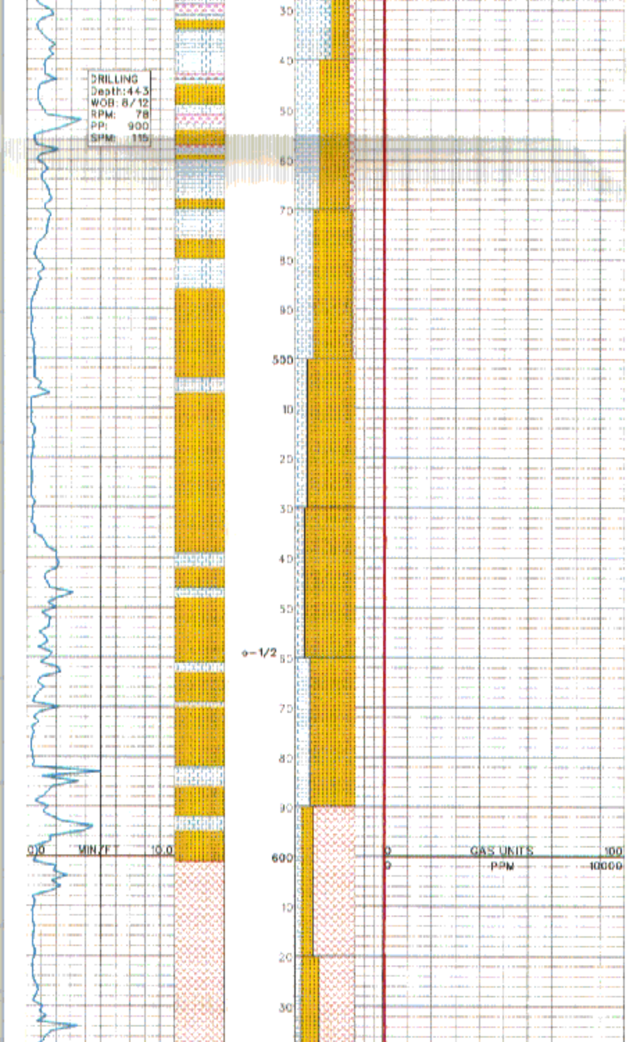
CHT trnsl,orng,pk,ang,hd

Sh yel,tan,red,sbblky-blky,frm-sft, slty ip,sdy ip,vslcalc,ip vcalc grdg to arg LS

LS crm,lt gy,tan,buff,crpxln-micxln, hd-frm,dns,arg ip,sm cht,sm wh/clr calc xls,congl ip,sm yel/dull yel mnrl flor,NSOC

SS trnsl,yel,buff,f-m gr,sbrd-ang, mart,uncons,cmt congl ip,NFSOC

SS buff,lt yel,trnsl,f-c gr,ang-sbrd, srt,cmt-uncons,lmy ip,grdg to sdy LS,cht,congl ip,NFSOC



LS buff/wh,cr,mmgy,crpxln-vfxln,hd-frm,cht,sdy ip,grdg to lmy SS, occ wh calc xls,sm yel/wh mnrl flor, NSOC

CHT ltyel,orng,trnsl,pk,ang,hd

SS ltyel,trns,clr,c-fgr,sbrd-ang,srt,uncons,occ mont,volc,cht,volc ip,congl ip,NFSOC

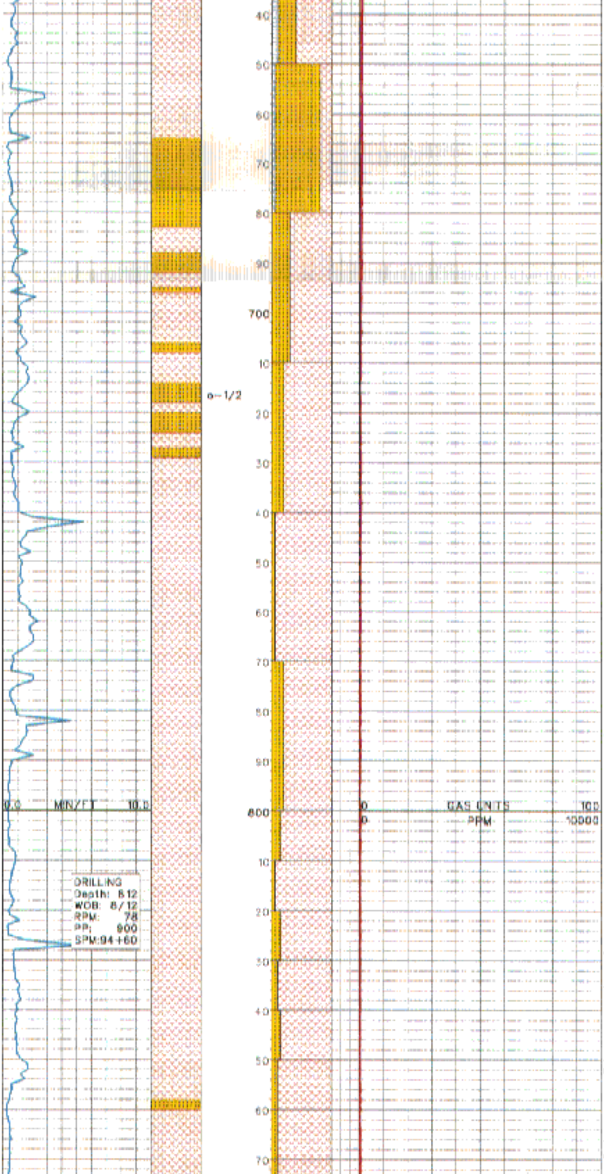
LS ltgy,tan,ltyel,crpxln-vfxln,hd-frm,dns ip,occ cht,occ sdy,tr yel mnrl flor,NSOC

SS buff,ltyel,tan,orng,trnsl,clr,tr lov gn, c-fgr,sbrd-ang,srt,uncons,occ cht, occ qtz xls,volc ip,congl ip,NFSOC

LS ltgy,yel,wh,crpxln-micxln,hd-frm, occ sft/chky,dns,occ cht,occ sdy, occ yel mnrl flor,NSOC

TUFF wh-off wh,vltyel,ltgy,weld,sft ip,aphan,abnt biot,clr qtz xls,occ calc xls

TUFF wh-off wh,ltgy,buff,weld,sft ip,aphan, nor biot,clr qtz xls,occ calc xls



DRILLING
Depth: 812
WOB: 8/12
RPM: 78
PP: 900
SPM:94+60

SS clr,trnsl,c–f gr,sbang–rd,p srt, uncons,am biot,volc ip,NFSOC

TUFF wh,speckled with bk biotite, some xl tex,some amorphous tex,tr calc

SS clr,f gr,uncons,sbrd,w srt,no oil indicators

TUFF wh,speckled with bk biotite, some xl tex,some amorphous tex,tr calc

TUFF wh,speckled with bk biotite, some xl tex,some amorphous tex,tr calc

SS wh,clr,vf–f gr,some uncons, most is p cons in sft tuff cmt,slimy, sbrd,w srt,grains are all qtz,this sand is assoc with tuff and is volc in origin,no oil indicators

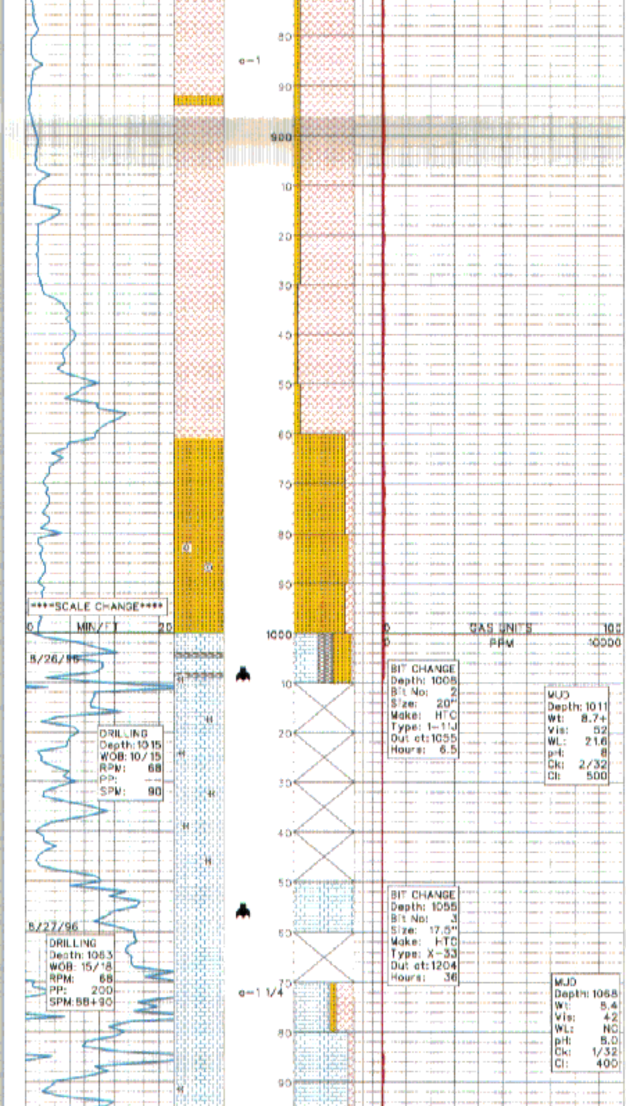
BEGIN 10' SAMPLES AT 800'

TUFF wh,sft,some xln tex,some amorphous tex,tr mica & biotite,tr lime,occ qtz grains

SS wh,clr,vf–f gr,some uncons, most is p cons in sft tuff cmt,slimy, sbrd,w srt,grains are all qtz,this sand is assoc with tuff and is volc in origin,no oil indicators

TUFF wh,sft,some xln tex,some amorphous tex,tr mica & biotite,tr lime,occ qtz grains

SS wh,clr,vf–f gr,some uncons, most is p cons in sft tuff cmt,slimy, sbrd,w srt,grains are all qtz,this



sand is assoc w tr tuff and is volc in origin, no oil indicators

TUFF wh,sft,some xln tex,some amorphous tex,tr mica & biotite,tr lime,occ qtz grains

TUFF wh,sft,some xln tex some amorphous tex,tr mica & biotite,tr lime,occ qtz grains

TUFF wh,v faint gn cast,spckld with black biot,frm,gen amorphous tex, no welding,common qtz grains,tr calc

ABUNDANT GUMMY CLAY

SS pink-red,vf-f gr,fair well cons in volc-clay cmt,sbrd,w srt,no oil indicators

tr CHERT gybrn,vhd,sharp-ang qtgs

SS light red,vf-f gr,w cons in volc-clay cmt,sbrd,w srt,grains comp of 100% qtz,no oil indicators

LS tan,buff,crm,micxln-crpxln,frm-hd,tr chky,occ suc,slor pocc olt,occ clr calc xls,tr yel mnrl flor,NSOC

BIT CHANGE
Depth: 1008
Bit No: 2
Size: 20"
Make: HTC
Type: 1-11J
Out at: 1055
Hours: 6.5

MUD
Depth: 1011
Wt: 8.7+
Vis: 52
WL: 21.6
pH: 8
Ck: 2/32
Cl: 500

LOST CIRCULATION AT 1011'

DRILLING WITHOUT RETURNS

DRILLING
Depth: 1015
WOB: 10/15
RPM: 68
PP: --
SPM: 90

SAMPLE TAKEN FROM BIT

LS tan,buff,crpxln-fxln,hd,dns,arg ip, clr calc xls thru,NFSOC

BIT CHANGE
Depth: 1055
Bit No: 3
Size: 17.5"
Make: HTC
Type: X-33
Out at: 1204
Hours: 36

DRILLING WITHOUT RETURNS

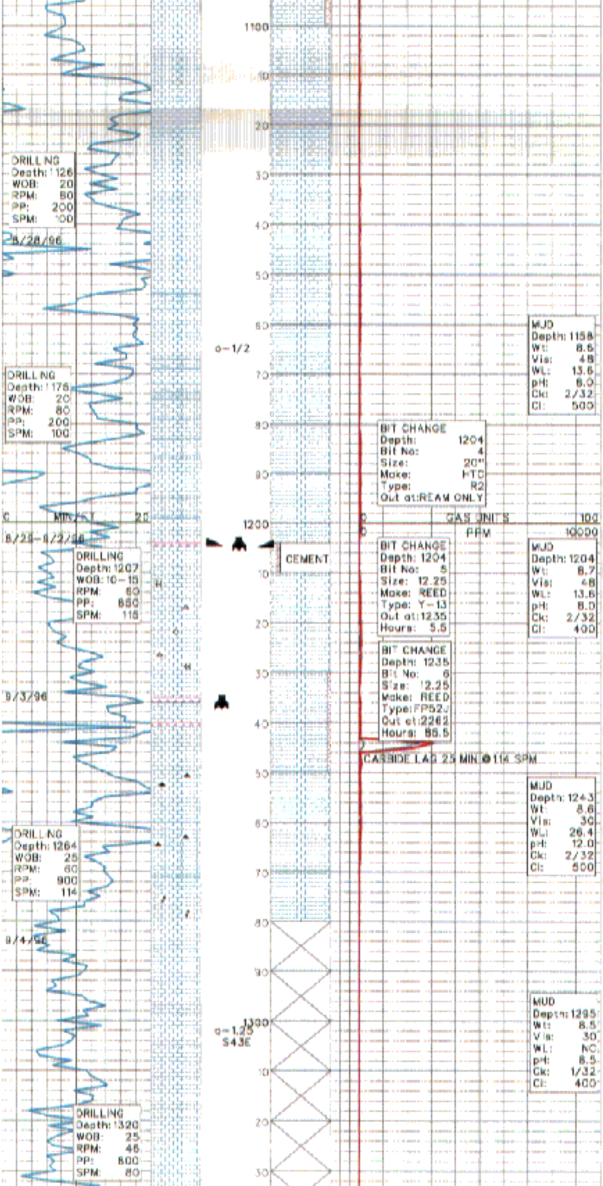
DRILLING
Depth: 1063
WOB: 15/18
RPM: 68
PP: 200
SPM: 88+90

MUD
Depth: 1068
Wt: 8.4
Vis: 42
WL: NC
pH: 8.0
Ck: 1/32
Cl: 400

GETTING FRESH WATER RETURNS WITH TRACE OF SAMPLE

GOOD QUANTITY

LS tan,yel,buff,wh,micxln-fxln,hd-frm,dns,occ slarg,occ sdy,occ cht,arr clr calc fill,occ,arn dull yel mnrl flor, NSOC



DRILLING
Depth: 1126
WOB: 20
RPM: 80
PP: 200
SPM: 100

DRILLING
Depth: 1176
WOB: 20
RPM: 80
PP: 200
SPM: 100

DRILLING
Depth: 1207
WOB: 10–15
RPM: 60
PP: 650
SPM: 115

DRILLING
Depth: 1264
WOB: 25
RPM: 60
PP: 900
SPM: 114

DRILLING
Depth: 1320
WOB: 25
RPM: 45
PP: 800
SPM: 80

BIT CHANGE
Depth: 1204
Bit No: 4
Size: 20"
Make: HTC
Type: R2
Out at: REAM ONLY

BIT CHANGE
Depth: 1204
Bit No: 5
Size: 12.25
Make: REED
Type: Y–13
Out at: 1235
Hours: 5.5

BIT CHANGE
Depth: 1235
Bit No: 6
Size: 12.25
Make: REED
Type: FP52J
Out at: 2262
Hours: 85.5

MUD
Depth: 1158
Wt: 8.6
Vis: 48
WL: 13.6
pH: 8.0
Ck: 2/32
Cl: 500

MUD
Depth: 1204
Wt: 8.7
Vis: 48
WL: 13.6
pH: 8.0
Ck: 2/32
Cl: 400

MUD
Depth: 1243
Wt: 8.6
Vis: 30
WL: 26.4
pH: 12.0
Ck: 2/32
Cl: 500

MUD
Depth: 1295
Wt: 8.5
Vis: 30
WL: NC
pH: 8.5
Ck: 1/32
Cl: 400

LS pink–wh,spotchy red–wh,frm,f–mxl,occ qtz xls,blocky–hackly ctgs, scat lt orng–yel cht frags; also some tan–dull yel,hd,micxl,prob this is cvg

LS yelbrn,frm–hd,some flaky–friable,micxl; also minor red wh,f–cxl,fri–flaky ctgs,scat qtz,no oil indicators

LS lt brn,gybrn,yelbrn,frm,flaky–hackly ctgs,micxl,some crpxl,no oil indicators

LS m–lt tan,buff,lt gy yel–lt gy,tr, lt gry,pk,orng,micxln–fxln,frm,occ hd,slty,slty,arg,grdg to lmy SH/cht,occ wh calc fl frac,NFSOC

LS lt yelbrn–lt yelwh,occ lt gy,lt gryel, pk,orng,fxln–m cxln,frm–sft,occ slty,arg,grdg to lmy SH,occ wh calc fl frac,NFSOC

LS buff,wh,occ lt yel,lt gy yel,orng, micxln–fxln,frm,occ sft,slty,arg, grdg to lmy SH,occ cht,tr wh calc xls, tr dul mnrl flor,NSOC

SET 13 3/8" CASING AT 1204'

PARASITE STRING SET AT 1019'

LS lt brn,tan,wh,hd,micxl,blky,tr chert,occ wh calc frac fil,no oil indicators

LS lt m gy,hd,crpxl–micxl,occ chert, com brachiopod frags,no oil indicators

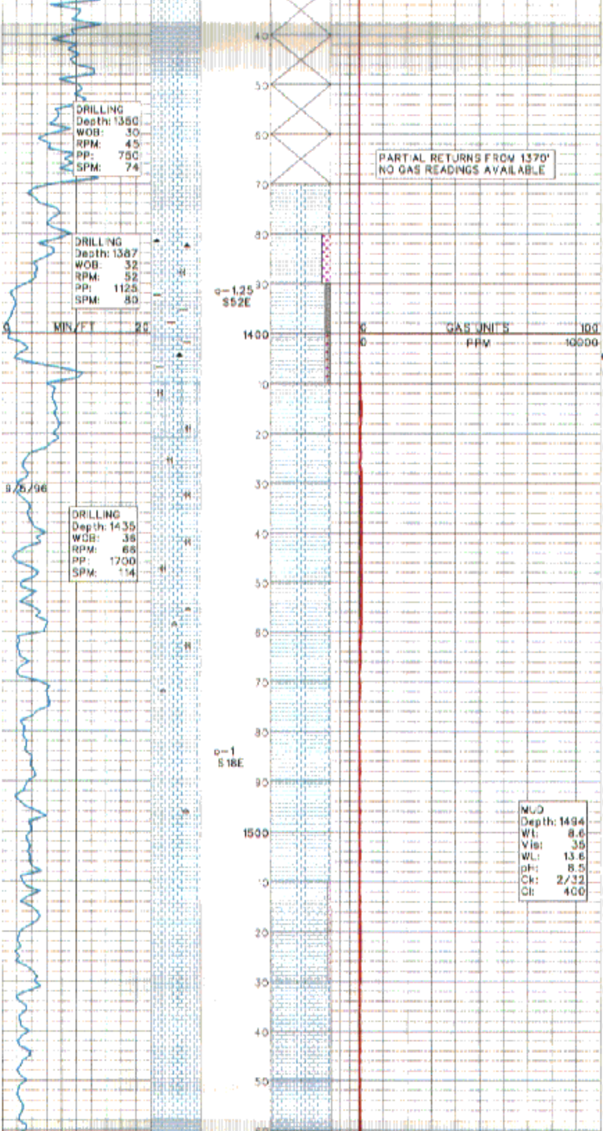
LS tan,yel,lt orng,wh,lt gy,micxln–vxln, frm–hd,occ slty,arg,cht,occ sl,occ arg calc xls,tr yel mnrl flor,NSOC

LS gy,slmottled dk & lt gy,v hd,micxl, siliceous,arg,no oil indicators

LS lt brn,frm,micxl–fxl,silty–sandy, no evidence of frac fill,none,no oil indicators

LOST CIRCULATION AT 1284'

DRILLING WITH NO RETURNS



PARTIAL RETURNS FROM 1370'
NO GAS READINGS AVAILABLE

DRILLING
Depth: 1360
WOB: 30
RPM: 45
PP: 750
SPM: 74

DRILLING
Depth: 1387
WOB: 32
RPM: 52
PP: 1125
SPM: 80

DRILLING
Depth: 1435
WOB: 36
RPM: 66
PP: 1700
SPM: 114

MUD
Depth: 1494
Wt: 8.6
Vis: 35
WL: 13.6
pH: 8.5
Ck: 2/32
Cl: 400

LS lt brn,frm,micxl−fxl,silty−sandy, no evidence of frac fill in smp,no oil indicators

CHERT med−dk brn,hd,vit tex, sharp−ang ctgs

LS med gy,frm,micxl,arg,assoc with chalky−wh calc frac fill; also lt brn, frm,suc tex,fxl,no oil indicators

SH dk, sft, blky, silty, sl calc

LS lt brn,sft,blocky,micxl−fxl,occ chalky−wh calcite,no oil indicators

CIRCULATED OUT SAMPLES AT 140

GAS READINGS START AT 1401'

LS dull gy,hd−brit micxl−fxl blocky, some fracs,siliceous,arg,no oil indicators

LS lt brn,brown,frm,fxl,sucrosic tex, abnt calcite frac fill,blocky,no oil indicators

LS lt brn,vit gywh,frm−hd,micxl−fxl, blocky,cont calcite frac fill,no oil indicators

LS lt brn,brown,frm,fxl,cont calcite frac fill,com shards of lt brn chert, no oil indicators

LS lt−m orn,buff,wh,occ m−dk gy,yel, fx n−m cxln,hd−frm,tr sft/chky, slarg ip,occ cht,occ calc xls,tr fos, sm dull yel mnrl flor,NSOC

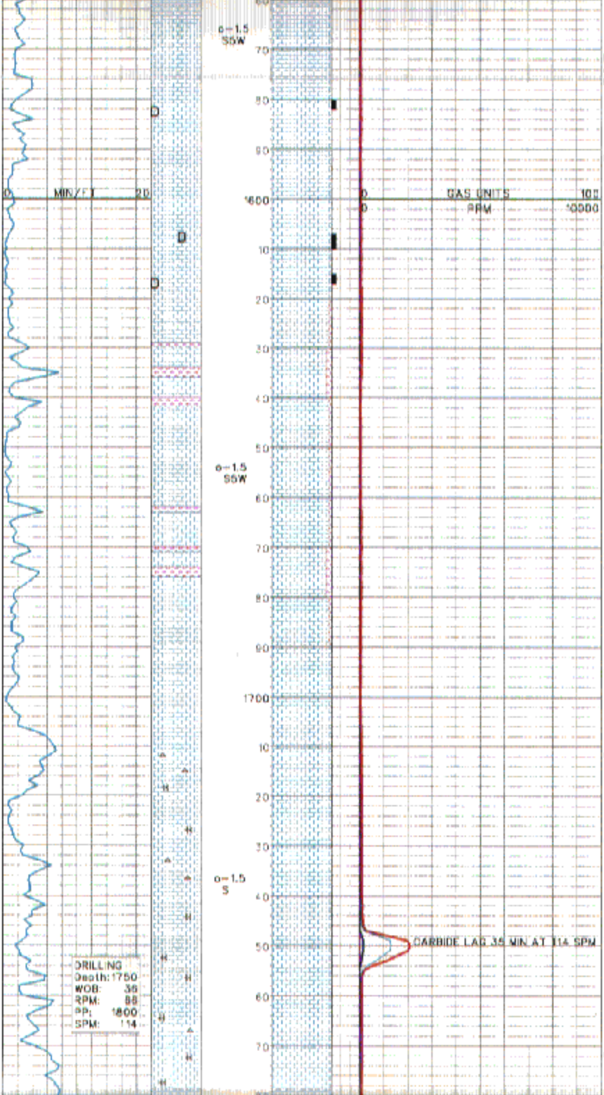
LS lt orn,buff/wh,tr yel/xlr−micxln, hd−frm,occ sft/chky,slarg ip,occ xlr cht,occ calc xls,NFSOC

LS lt−m orn,wh,tr yel,fx n−m cxln, hd−frm,occ sft/chky,occ slarg,cht, occ sil,occ calc xls,NFSOC

CHT crm,trnsl smky,ang,hd

LS yel,tan,lt−m gy,brn,wh,tr ok,orng, vfxln−m cxln,hd−frm,slarg ip,sl silty ip,occ cht,sil ip,tr calc xls,sm dull yel mnrl flor,NSOC

LS yel,tan,occ lt gy,wh,f−vfxln,hd,dns, v sil ip,cht,occ calc xls,sm dull yel mnrl flor,NSOC



LS yel,tan,occ wh,pk,f–vfxl,xhd,sil lip, cht,occ calc xls,TR BLK DD O STN, NFOC

LS yel,tan,tr wh,pk,vf–fxln,hd,slarg, occ slty,sil lip,cht,occ calc xls,NFSOC

LS yel,tan,buff,tr wh,pk,f–vfxln,hd, slarg,sil,cht,tr BLK DD O STN,FNT MLKY PODL CUT,FNT,YEL RES RING CUT,NO FLOR

LS crm,lt gy,brn,tan,wh,yel,micxln–fxln,hd,slarg,occ slslty,sil lip,cht,tr calc xls,tr foss,sm dull yel mnrl flor, NSOC

CHT crm,smky,yel,trnsl,cng,hd

LS crm,buff,yel,wh,tr pk,orng,micxln, fxln,hd–frm,tr sft/chky,slarg,slsil lip, cht,sm calc xls,sm dul yel mnrl flor, NSOC

LS crm,lt gy,brn,wh,tan,vfxln–crpxln, hd,sl sil lip,cht,occ calc xls,tr foss,sm dull yel mnrl flor,NSOC

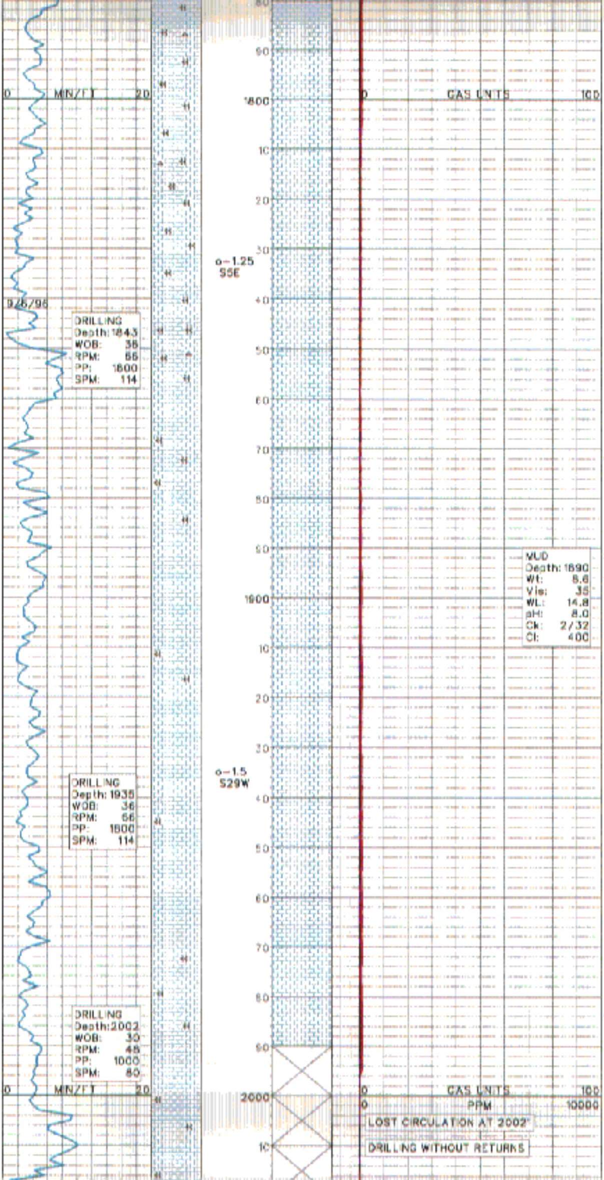
LS buff,wh,crm,yel,tr orng,pk,fxln–micxln,hd–frm,sl arg,sil,sl cht, tr calc xls,sm yel mnrl flor,NSOC

LS lt brn,wh,sft–frm,micxl–fxl, some with suc tex,abnt calcite frac fill,no oil indicators

LS lt brn,wh,frm,blocky,micxl–fxl, occ assoc with lt brn chert,abnt calcite frac fill,no oil indicators

LS lt brn,wh,sft–frm,micxl–fxl, some with suc tex,abnt calcite frac fill,no oil indicators

LS lt brn,wh,sft–frm,micxl–fxl, some with suc tex,abnt calcite frac fill,no oil indicators



LS lt brn,wh,sft–frm,micxl–fxl, some with suc tex,abnt calcite frac fill,no oil indicators

LS lt brn,brnwh,occ stained orng, frm,wh is chalky–soft,micxl–fxl, abnt calcite frac fill,no oil indicators

LS lt brn,brnwh,occ stained orng, frm,wh is chalky–soft,micxl–fxl, abnt calcite frac fill,no oil indicators

LS lt brn,lt orng,wh,frm,wh is soft, micxl–fxl,abnt calcite fracture fill, no oil indicators

LS gybrn,gywh,wh,frm,micx,abnt wh calcite frac fill,no oil indicators

LS ltcrm,ltgybrn,trlt yel/orng,micxln–fxln,frm–hd,slarg ip calc xls,sm dull yel mnrl flor,NSOC

LS ltcrm,ltgybrn,wh,micxln–fxln, frm,occ sft/chky,slarg ip,calc xls, NFSOC

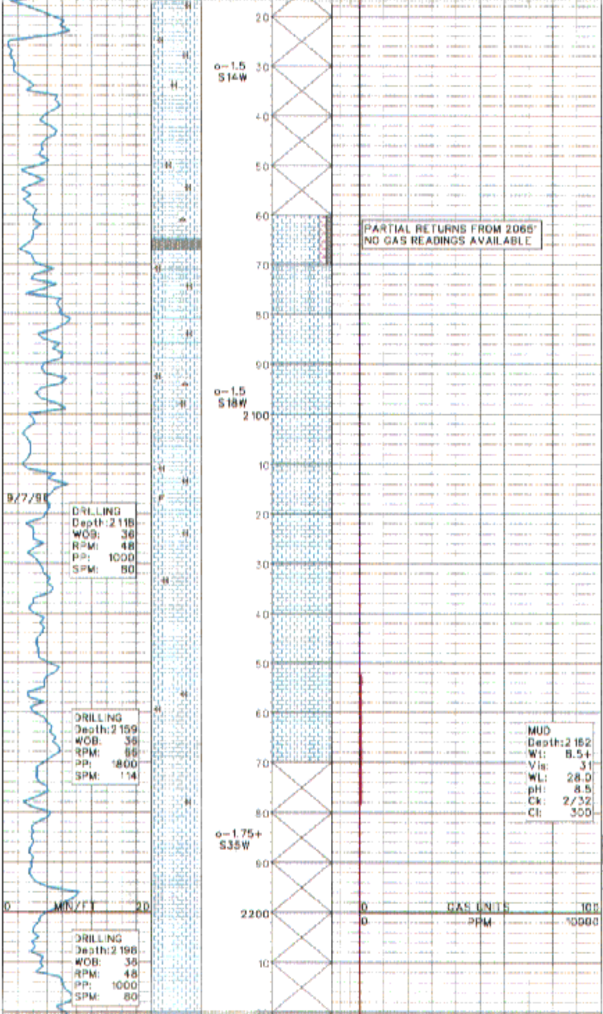
LS ltcrm,ltgy–wh,micxln–vfxln,hd–frm,tr sft/chky,slarg ip,occ clr calc xls,NFSOC

LS ltcrm–wh,micxln–crpxln,hd–frm, occ sft/chky,slarg ip,occ calc xls, NFSOC

LS ltcrm–wh,micxln–fxln,hd–frm, occ sft/chky,slarg ip,occ clr calc xls, sm dull yel mnrl flor,NSOC

LS lt–mcrm,wh,tr pk,orng,micxln–fxln,hd–frm,tr sft/chky,slarg ip,occ cht,occ clr calc xls,sm dull yel mnrl flor,NSOC

LS dkgybrn,lt–mgy,m–ltcrm,wh,tr yel,pk,micxln–fxln,hd–frm,slarg ip, occ cht,occ clr calc xls,sm dull yel mnrl flor,NSOC



PARTIAL RETURNS FROM 2066'
NO GAS READINGS AVAILABLE

DRILLING
Depth:2 118
WOB: 36
RPM: 48
PP: 1000
SPM: 80

DRILLING
Depth:2 159
WOB: 36
RPM: 55
PP: 1800
SPM: 114

MUD
Depth:2 162
Wt: 8.5+
Vis: 31
WL: 28.0
pH: 8.5
Ck: 2/32
Cl: 300

DRILLING
Depth:2 198
WOB: 36
RPM: 48
PP: 1000
SPM: 80

Sh gy,frm-hd,blcky,slty,sl-mod calc

CHERT lt-med brn,vhd,sharp-ang ctgs with trnsl edges

LS med-dk gy,vhd,micxl,arg, siliceous ip,tr chert; also lt brn, micxl,frm,abnt calc frac fill,these liths are intbd,no oil indicators

LS gywh,sft-frm,micxl-fxl,tr arg; also dk gy,hd,micxl,siliceous with some assoc lt-med brn chert,no oil indicators

LS lt gy,lt brn,grnyel,wh,frm,micxl, abnt soft wh calc frac fill,tr clr calcite xls,no oil indicators

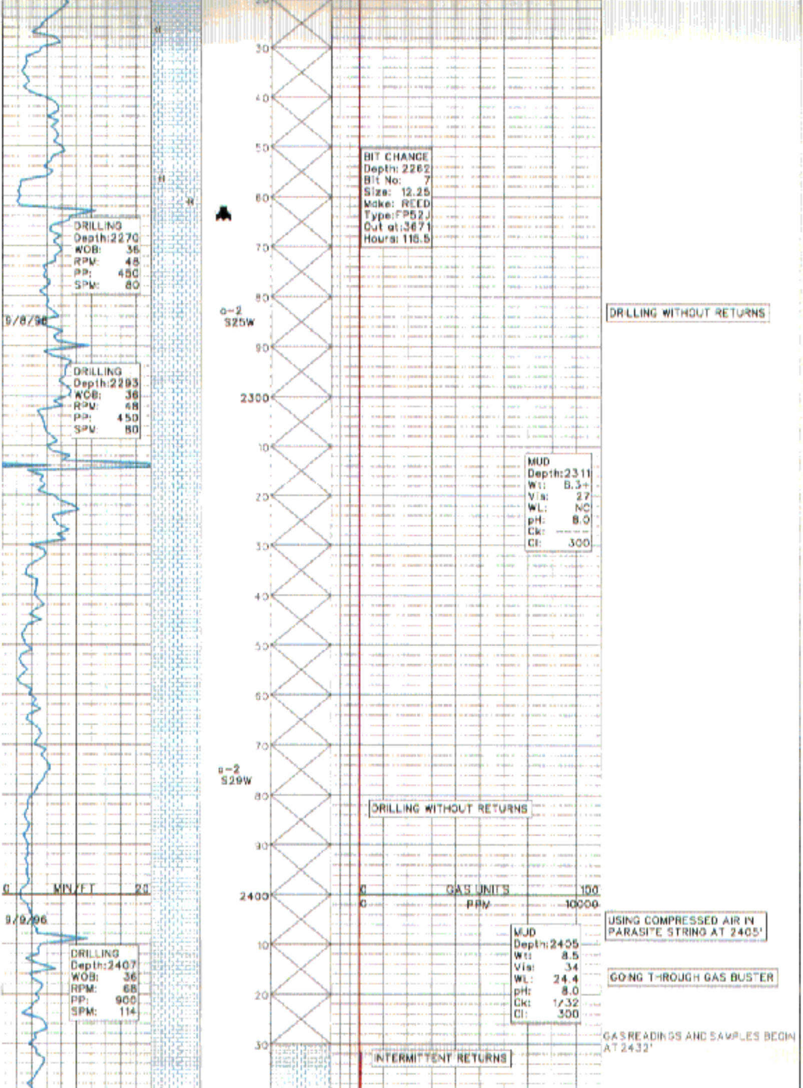
LS med-dk gy,vhd,micxl,arg, siliceous ip,tr chert; also lt brn, micxl,frm,abnt calc frac fill,these liths are intbd,no oil indicators

LS buff,wh,micxln-vfxln,frm-hd, sl arg,clr calc xls,pully,sl marl tion, NSOC

STOPPED BYPASSING SHAKER-ABLE TO GET GAS READINGS

LOST CIRCULATION AT 2188'-DURING CONNECTION

DRILLING WITHOUT RETURNS



BIT CHANGE
Depth: 2262
Bit No: 7
Size: 12.25
Make: REED
Type:FP52J
Out at:3671
Hours: 116.5

DRILLING
Depth:2270
WOB: 36
RPM: 48
PP: 450
SPM: 80

DRILLING WITHOUT RETURNS

DRILLING
Depth:2293
WOB: 36
RPM: 48
PP: 450
SPM: 80

MUD
Depth:2311
Wt: 8.3+
Vis: 27
WL: NC
pH: 8.0
Ck: -----
Cl: 300

DRILLING WITHOUT RETURNS

USING COMPRESSED AIR IN PARASITE STRING AT 2405'

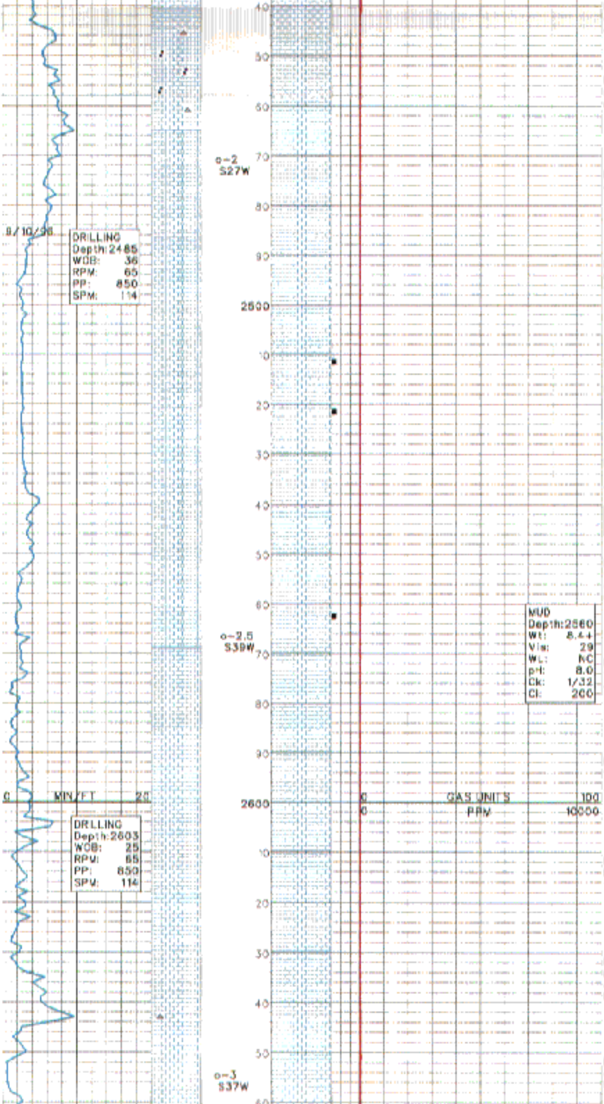
MUD
Depth:2405
Wt: 8.5
Vis: 34
WL: 24.4
pH: 8.0
Ck: 1/32
Cl: 300

DRILLING
Depth:2407
WOB: 36
RPM: 68
PP: 900
SPM: 114

GOING THROUGH GAS BUSTER

GAS READINGS AND SAMPLES BEGIN AT 2432'

INTERMITTENT RETURNS



DRILLING
Depth: 2485
WOB: 36
RPM: 65
PP: 850
SPM: 114

MUD
Depth: 2560
Wt: 8.4+
Vis: 29
WL: NC
pH: 8.0
Ck: 1/32
Cl: 200

DRILLING
Depth: 2603
WOB: 25
RPM: 65
PP: 850
SPM: 114

LS ltbrn,frm/micxl,blocky,slarg ip, occ calcite,some is siliceous,occ chert frags,no oil indicators

LS ltbrn,wh,frm/micxl-fxl,abnt sand grains,cleaner - much less arg mat,occ shards of chert,no oil indicators

LS gy,hd/micxl-fxl,varg,tr silt,sand & chert,occ wh calcite,no oil indicators

LS lt-med gy,wh (lt brn cvg) frm, micxl,v arg,grdg to shale in part,com chert shards,tr pyr,no oil indicators

LS lt-dk gy,tan,buff,wh,micxln-vfxln, frm-sft,v arg,grdg to SH,tr cht,occ pyr,occ calc xls FNT MLKY POOL CUT, VFNT RES RING CUT,sm dull yel mnrl flor

LS lt-dk gy,tan,crm,wh,micxln-fxln, frm-sft,v arg,tr cht,calc xls,tr pyr,sm dull yel mnrl flor,NSOC

INTERMITTENT GAS AND SAMPLE RETURNS CONTINUE

LS lt-dk gy,tan,crm,wh,micxln-fxln, frm-sft,v arg,occ cht,calc xls,tr pyr, sm dull yel mnrl flor FNT MLKY POOL CUT

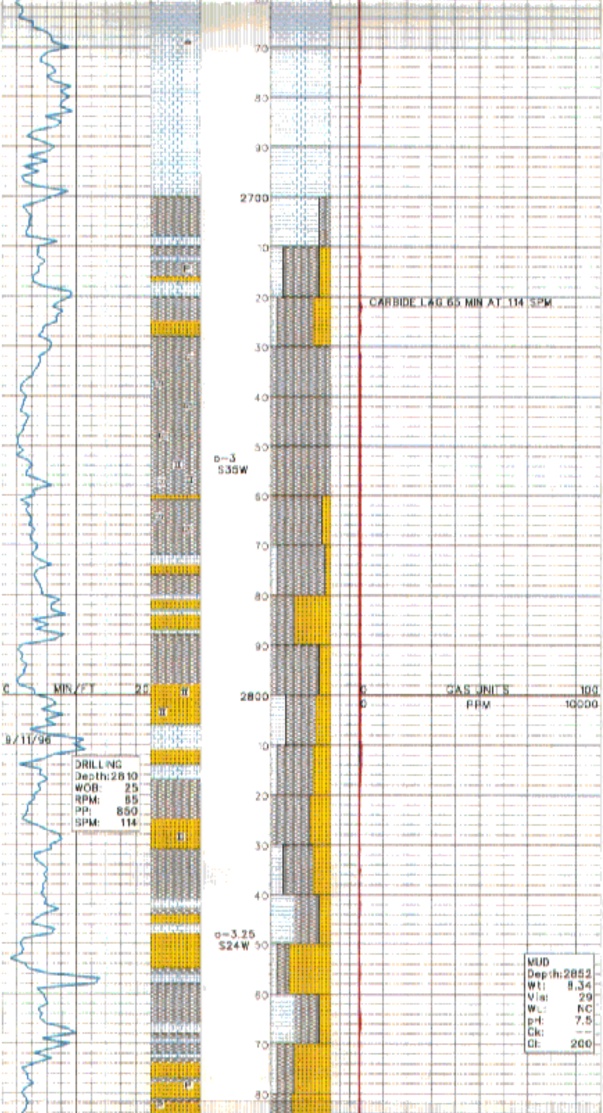
LS off wh,buff,lt-m gy,wh,micxln-fxln,frm,v arg ip,abnt calc xls,tr pyr,tr carb/organic lam,NFSOC

LS tan,buff,m-lt gy,micxln-fxln,frm, v arg ip,tr cht,calc xls,tr pyr,sm dull yel mnrl flor,NFSOC

LS lt gy,crm,wh,tan,micxln-fxln,frm-hd,v arg ip,occ cht,calc xls,tr carb? frag,tr pyr,NFSOC

LS lt-m gy,lt gy brn,tan-off wh-wh, micxln-fxln-frm-hd,v arg ip,tr cht, calc xls,tr pyr,sm dull yel mnrl flor, NSOC

LS lt gy brn,off wh-wh,lt gy,vfxln-fxln, arg ip,occ silty,tr sdy,tr cht,calc xls, NFSOC



DRILLING
Depth: 2810
WOB: 25
RPM: 65
PP: 850
SPM: 114

MUD
Depth: 2852
Wt: 8.34
Vis: 29
WL: NC
pH: 7.5
Ck: --
Cl: 200

LS offwh,ltgybrn,lt-mgywh,micxln-fxln,frm-hd,arg-pslty,cream/ltbrn cht,calc xls,grr dull yel mnrl flor,NSOC

LS lt-dk gy,ltbrn,brnwh,frm,micxl-fxl,com coarse calcite xls,some lsv arg,no oil indicators

SH gy,flaky,platy,brittle,mod calc, silty,com pyr,v finely disem mica

SS clr,f gr,fair cons,grain-supported and weakly cmt with calcite/d-sbrd,wsrt,grains comp 100% of qtz,no oil indicators

SH grey,sft-frm,platy,sl-mod calc, silty,some v slty,v finely disem mica

SS less than 5% of sample volume,lt gy,vf gr,poor cons in lmy cmt,sbrd,w srt

LS less than 5% of sample volume,lt gy,sft,micxl,slarg

SH grey,sft-frm,platy,sl-mod calc, silty,some v slty,v finely disem mica

SS lt gy,gybrn,vf-f gr,poor cons in calc cmt,sbrd,w srt,no oil indicators

LS less than 5% of sample volume,lt gy,sft,micxl,slarg

SH grey,sft-frm,platy,sl-mod calc, silty,some v slty,v finely disem mica

LS lt gy,frm,micx,arg-grdg to shale, gen flaky,brittle,ctgs,hi disem mica

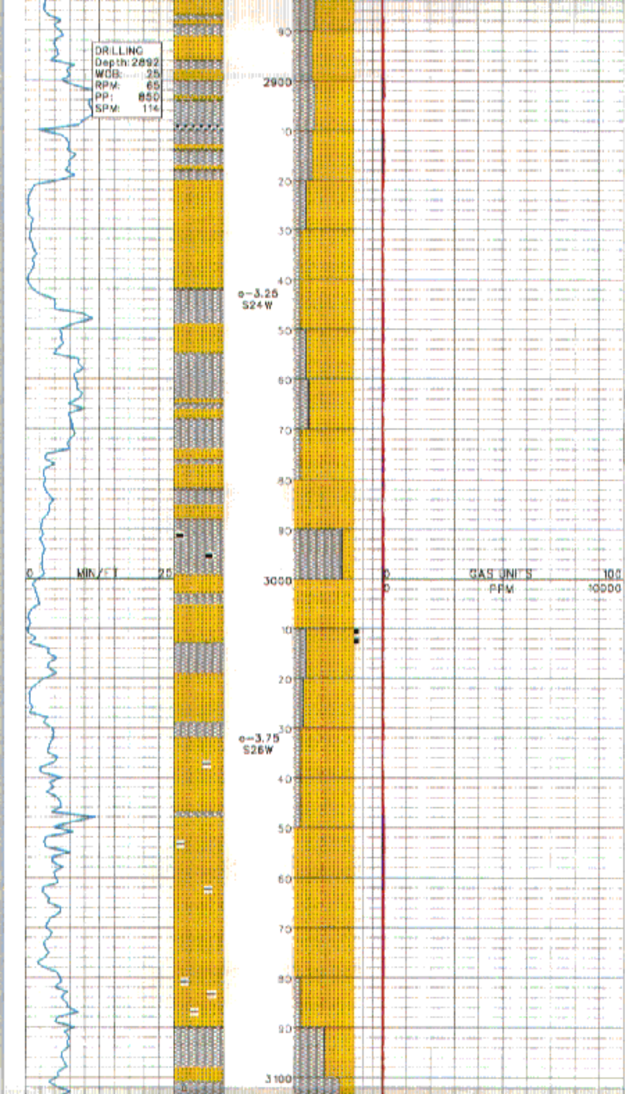
SH grey,sft-frm,platy,sl-mod calc, silty,some v slty,v finely disem mica

SS lt gy,gybrn,vf-f gr,poor cons in calc cmt,sbrd,w srt,no oil indicators

LS m-ltbrn,gybrn,vfxln-fxln,frm, brit,p arg,slty,tr sdy,tr cht,tr pyr,tr dul yel mnrl flor,NSOC

SS trnsl,clr,offwh,f-vf gr,sbang-ang, occ sbrd,wsrt,m-p cmt,calc,occ slarg,tr glau,NFSOC

SS lt-mgy,trnsl,clr,vf-mgr,sbang-sbrd,occ ang,mat mod cmt,calc,arg,sl, occ silty,occ SH frag,pyr,tr glau, NFSOC



SHlt–mgy,occ blk plty,occ sbblky, frm–sft,occ slty,occ carb/coaly frag,tr pyr,slcalc

SS trnsl,off wh–whlt gy,clr,vf–mgr, ang–sbang,wsrt,m–pcmt,calc,tan cly mtx ip,occ slty,occ pyr,tr glau, NFSOC

SS clr,trnsl,off wh–wh,m–vfgr,ang–sbrd,msrt,pcmt,slcalc,tr tan cly mtx, tr carb frag,tr pyr,tr glau,NFSOC

SS clr,trns,occ off wh–wh,f–mgr, ang–sbrd,wsrt,m–pcmt,slcalc,tr cly mtx ip,tr SH frag,tr cht,tr pyr NFSOC

INTERMITTENT RETURNS CONTINUE

HOLE UNLOADS WITH AIR FROM
PARASITE STRING BRIEFLY
EVERY FIFTEEN MINUTES

SS lt gybrn,clr,vf–fgr,p cons in calc cmt,sbrd,minor sbang,wsrt,no oil indicators

SH grey,frm,flaky,platy,v slty,sl–mod calc

tr COAL black,soft,lightweight,sub–bituminous,lignitic

SS lt gybrn,lt gy,clr,vf–fgr,poorly cons in calc cmt,sbrd–sbang,wsrt, grains comp pred of qtz with occ chert,v slight ribbon cut flor,no samp flor,tr ring cut flor

SH grey,frm,platy,v silty,flaky,sl–mod calc

SAND clear,vf–f uncons qtz grs, sbrd–sbang,wsrt,no oil indicators

SH grey,frm,platy,v silty,flaky,sl–mod calc

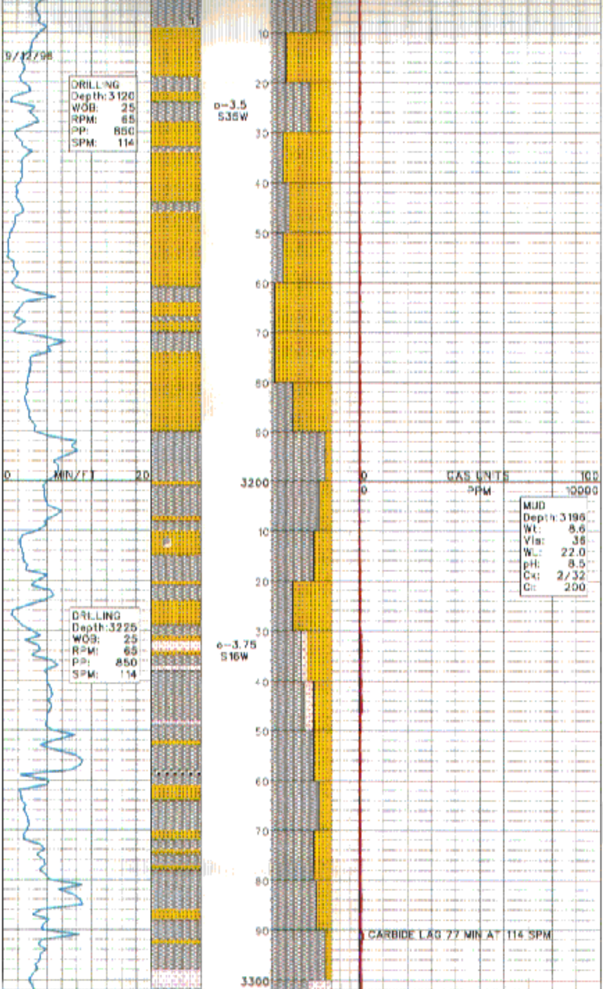
SAND clear,vf–f uncons qtz grs, sbrd–sbang,wsrt,no oil indicators

SS lt brn gy,clr,vf–f gr,fair cons in lime cmt,also some uncons,sbrd–sbang,wsrt,no oil indicators

SHlt–med gy,frm,silty,platy,mic–mica

SS lt gybrn,vf–f gr,fair cons in calc cmt,sbrd,occ sbang,wsrt,grains pred qtz,some smoky qtz & chert,tr org mat,tr pyr,no oil indicators

SHlt–med gy,frm,silty,platy,mic–



DRILLING
Depth: 3120
WOB: 25
RPM: 65
PP: 850
SPM: 114

DRILLING
Depth: 3225
WOB: 25
RPM: 65
PP: 850
SPM: 114

MUD
Depth: 3196
Wt: 8.6
Vis: 38
WL: 22.0
pH: 8.5
Ck: 2/32
Cl: 200

mica

SS lt brn,gybrn,vf-f gr,fair cons in lime cmt sbrd,wsrt,no oil indicators

SH med gy,frm,platy,flaky-brittle, silty,grading to siltstone,mod calc

SS lt brn,gybrn,vf-f gr,fair cons in lime cmt sbrd,wsrt,no oil indicators

SS wh-off wh,trnsl,clr,occ lt gy,f-vfgr,sbang,wsrt,m-wcmt,sil,occ slargacc,occ silty,occ carb/coaly frag, tr pyr,NFSOC

SS clr,trnslt,tan,f-vfgr,sbang,wsrt, p-mcmt,sil,occ tan cly mtx,tr carb/coaly frag,NFSOC

SH tgn-ltgngy,m-ltgy,silty-sbblky,sft-frm,occ slty,tr mica,tr carb frag,occ pyr,ncalc

SS clr,trnsl,tgy,f-mgr,occ vfgr/slty, sbang,m-wcmt,sil,tr SH frag,pyr, NFSOC

SH mgy-mgybrn,occ vltgn,slty-sbblky,sft-frm,occ silty,occ carb/coaly frag,occ pyr,sl-ncalc

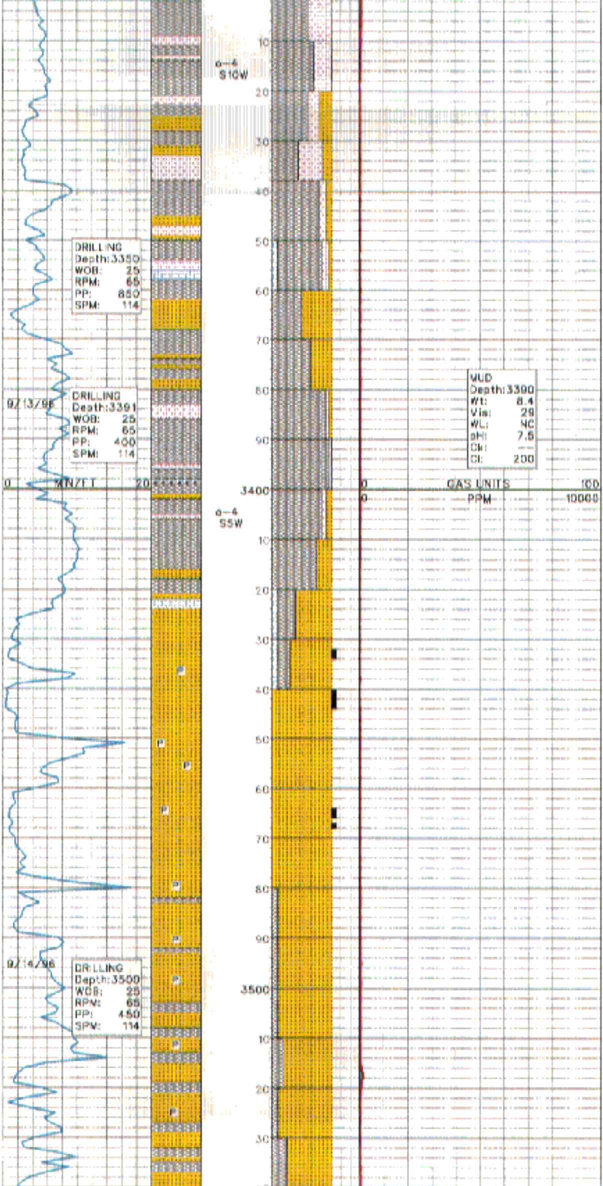
SS wh,trns,clr,ltgy,vf-mgr,sbang, wsrt,m-pcmt,sil,occ wh cly mtx,occ slty,occ carb/coaly frag,occ pyr, NFSOC

INTERMITTENT RETURNS CONTINUE

HOLE UNLOADS WITH AIR FROM
PARASITE STRING BRIEFLY
EVERY FIFTEEN MINUTES

SH gy,frm,platy,v slty,grades to siltstone,sl calc

SS lt brn,vf-f gr,p cons in calc cmt, sbang,wsrt,grains comp of qtz with tr arg mat,some wh clay and gy shale frags,no oil indicators



DRILLING
Depth: 3350
WOB: 25
RPM: 65
PP: 850
SPM: 114

DRILLING
Depth: 3391
WOB: 25
RPM: 65
PP: 400
SPM: 114

MUD
Depth: 3390
Wt: 8.4
Vis: 29
WL: NC
pH: 7.5
Ck: ––
Cl: 200

DRILLING
Depth: 3500
WOB: 25
RPM: 65
PP: 450
SPM: 114

SLTST lt gy,sft–frm,friable,sl calc, abnt org mat – grdg to shale, common – abnt finely disem carb mat

SS lt brn,vf–f gr,p cons in calc cmt, sbang,w srt,grains comp of qtz with tr org mat,some wh clay and gy shale frags,no oil indicators

SH gy,frm,platy,v slty,grades to siltstone,sl calc

SLTST lt–med grey,frm,friable,sl calc,v finely disem carb mat

LS lt brn wh,sft,prob calcite frac fill in shale,gen veinan

SS lt brn,vf–f gr,p cons in calc cmt, sbang,w srt,grains comp of qtz with tr org mat,some wh clay and gy shale frags,no oil indicators

MADE SHORT TRIPS AT 3388' & 3391', RAN JET SUB TO BOOST CIRCULATION

SH m–lt gy,m gy brn–m brn,slty–sdy,sft–frm,occ sdy,occ carb/coaly,tr pyr,n–v sl calc

RETURNS OVER SHAKERS TO ABOUT 80%

SS med gy,gy brn,vf–f gr,w cons in v hd siliceous,sl calc cmt,sbrd,w srt, com pyr,grains are qtz with arg and poss cht frags,cmt is over half of rock mtrx,no oil indicators

SS med gy,mottled gy blk,f gr,v well cons with fused qtz mtrx & tr calc cmt,sbang,w srt,grains are qtz,cht, org frags,scat aggregate pyr,no oil indicators

SS gy wh,f gr,fair cons in calc cmt, sbang,w srt,pred qtz grs,scat dull & bri yel smp flor,slow ribbon cut flor, tr resid ring

SS med gy,mottled gy blk,f gr,v well cons with fused qtz mtrx & tr calc cmt,sbang,w srt,grains are qtz,cht, org frags,scat aggregate pyr,no oil indicators

SS lt gy brn,f gr,suc tx,fair cons in calc cmt,sbrd,w srt,tr smp flor,v sl cut flor,tr resid ring

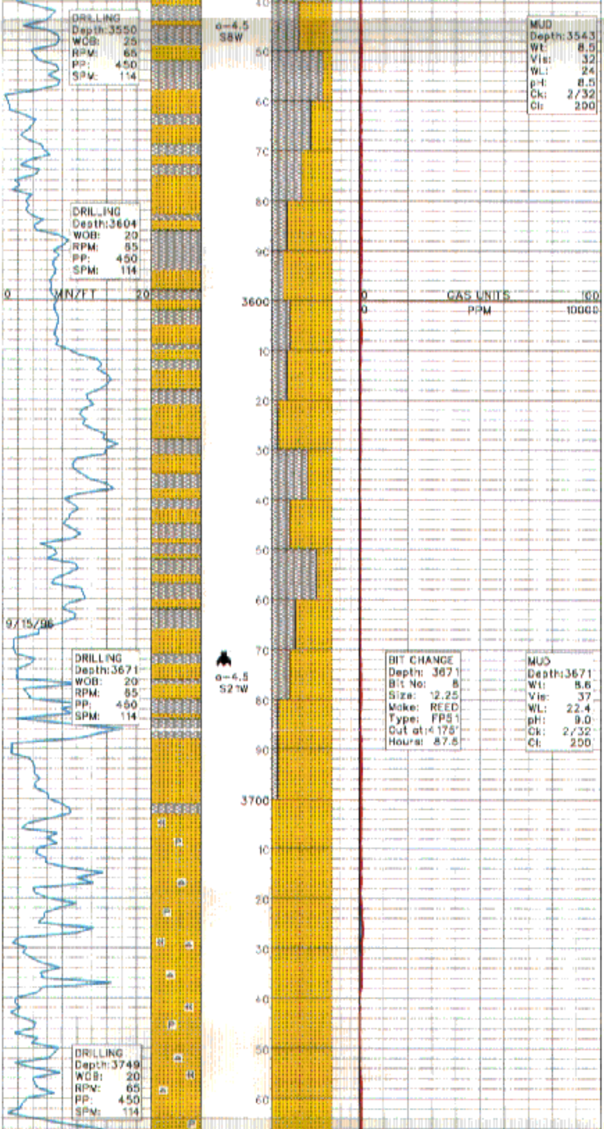
SS mottled gy brn,f gr,well cons in v hd siliceous,sl calc cmt,sbrd,w srt, fused qtz mtrx,tr chlorite,cht & pyr, no oil indicators

SH lt–med gy,frm,platy,sl calc,silty, tr carb mat and vf disem mica

SS mottled gy brn,f gr,well cons in v hd siliceous,sl calc cmt,sbrd,w srt, fused qtz mtrx,tr chlorite,cht & pyr, no oil indicators

SH lt–med gy,frm,platy,sl calc,silty, tr carb mat and vf disem mica

SS lt gy transl,clr,vf–f gr,occ m gr, sbang–sbrd,w srt,m–w cmt,sil&arg, occ slty,occ SH frags,occ carb mat, pyr,NFSOC



DRILLING
Depth:3550
WOB: 25
RPM: 65
PP: 450
SPM: 114

MUD
Depth:3543
Wt: 8.5
Vis: 32
WL: 24
pH: 8.5
Ck: 2/32
Cl: 200

DRILLING
Depth:3604
WOB: 20
RPM: 65
PP: 450
SPM: 114

DRILLING
Depth:3671
WOB: 20
RPM: 65
PP: 450
SPM: 114

BIT CHANGE
Depth: 3671
Bit No: 8
Size: 12.25
Make: REED
Type: FP51
Out at:4175'
Hours: 87.5

MUD
Depth:3671
Wt: 8.6
Vis: 37
WL: 22.4
pH: 9.0
Ck: 2/32
Cl: 200

DRILLING
Depth:3749
WOB: 20
RPM: 65
PP: 450
SPM: 114

SHlt–dkgy/mgybrn,plty–blky,frm, occ slty,occ carb/coaly,tr pyr,n–vslcalc

SS ltgy/ltgybrn,trnsl,vf–fgr,sbang–ang,wsrt,m–wcmt,sil,slarg,occ slty, occ carb frag,occ pyr,NFSOC

SS ltbrn,ltgy,trns,f–vfgr,sbang,wsrt, m–wcmt,sl,occ slcalc,occ carb frag, tr pyr,tr chl,NFSOC

SS ltgy,trnsl/ltbrn,vf–fgr,sbang,wsrt, m–wcmt,sl,occ vslcalc,arg,occ slty, occ SH & carb frag,occ pyr,tr chl, NFSOC

SS mottled gyblk,f gr,w cons in vhd siliceous–s calc cmt,sbang,wsrt, grains comp of qtz,cht,arg frags,no oil indicators

SHlt–med gy,sft–frm,platy,occ blocky,rounded,smooth edgs,v slty – grades to siltstone,com carb inclusions

SS gyblk,f gr,fair cons in calc–siliceous cmt,mod fri,sbrd–sbang, w sorted,grains comp of qtz,carb & arg mat,no oil indicators

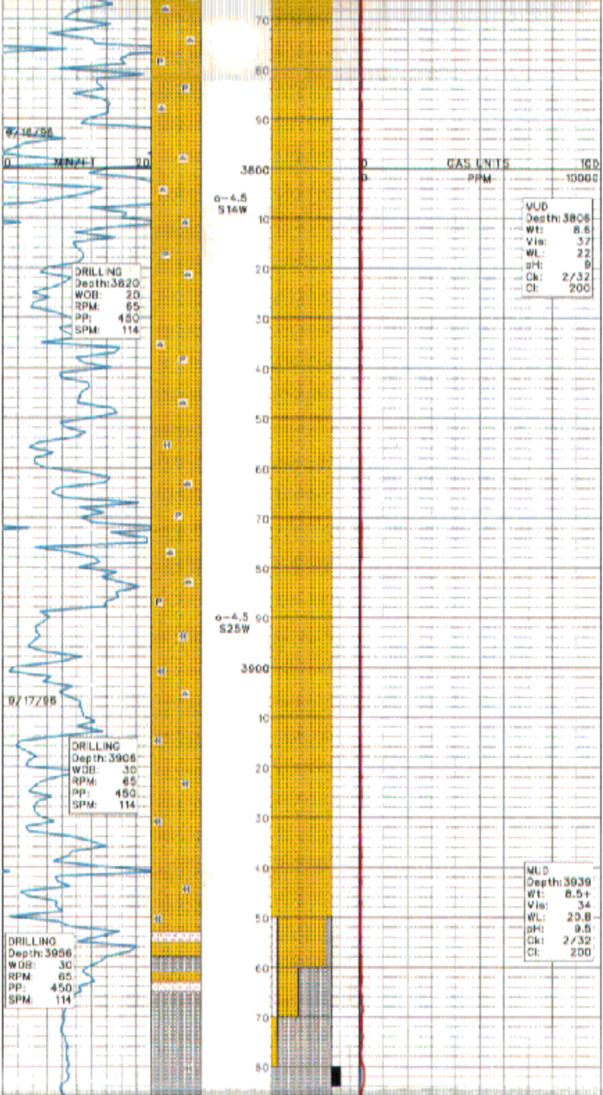
SS lt–mgy,ltbrn,trnsl,f–vfgr,occ mgr,msrt,m–wcmt,sil,occ slcalc,arg, slty,carb frag,tr pyr,NFSOC

SS lt–mbrn,ltgy,fgr,occ vfgr/slty, sbang,wsrt,m cmt,sl arg,occ SH frag, occ carb mat,tr chl/clay,NFSOC

SS ltgy,ltbrn,trns,f–mgr,sbang,wsrt, w–mcmt,occ s calc,sl arg,occ carb mat,tr chl,tr pyr,NFSOC

SS med–dk gy,mottled gyblk,f gr, some w,some p–fr cons in sil calc cmt,sbang,wsrt,grains comp of qtz, chert,carb & arg mat,common pyr, no oil indicators

SS med–dk gy,mottled gyblk,f gr, some w,some p–fr cons in sil calc cmt,sbang,wsrt,grains comp of qtz, chert,carb & arg mat,common pyr, no oil indicators



DRILLING
Depth: 3820
WOB: 20
RPM: 65
PP: 450
SPM: 114

MUD
Depth: 3806
Wt: 8.6
Vis: 37
WL: 22
pH: 9
Ck: 2/32
Cl: 200

DRILLING
Depth: 3906
WOB: 30
RPM: 65
PP: 450
SPM: 114

MUD
Depth: 3939
Wt: 8.5+
Vis: 34
WL: 20.8
pH: 9.5
Ck: 2/32
Cl: 200

DRILLING
Depth: 3956
WOB: 30
RPM: 65
PP: 450
SPM: 114

SS mottled lt-dk gy,f gr,w cons in v hd siliceous-slcalc cmt,sbang,w srt grains comp of clr qtz,pyritized gy qtz,lt brn cht,dk gy carb shaly frags, tr pyr nodules,tr chlorite,tr hematite,no oil indicators

SS tbrnltgy,wh,trnsl,f-m gr,sbang-ang,w srt,m-w cmt,sl-mod calc,arg, occ wh clymtx,occ cht,occ SH frag,tr carb mat,tr chl,tr pyr,NFSOC

SS tbrnltgy,trnsl,f-m gr,sbang-ang, w srt,w-m cmt,sl-mod calc,arg,occ cht,occ SH frag,tr carb mat,tr pyr,tr chl,NFSOC

SS tbrnltgy,trnsl,f-m gr,sbang-ang, w srt,w-m cmt,sl-mod calc,arg,occ SH frag,tr carb mat,cht,occ pyr,tr chl, NFSOC

SS gybrn,mottled gybrn-wh,vf-f gr, fr cons in calc cmt,abnt calcite frac fill,sbang,w srt,grains comp of qtz & chert,tr pyr,also large frags of gybrn chert loose in smp,no oil indicators

SS mottled gyblk,trnsl gy,f gr,fr-w cmt in grain-support mtrx with siliceous-calc cmt,sbang,w srt, grains comp of qtz,chert,arg frgsm occ pyr nodules,no oil indicators

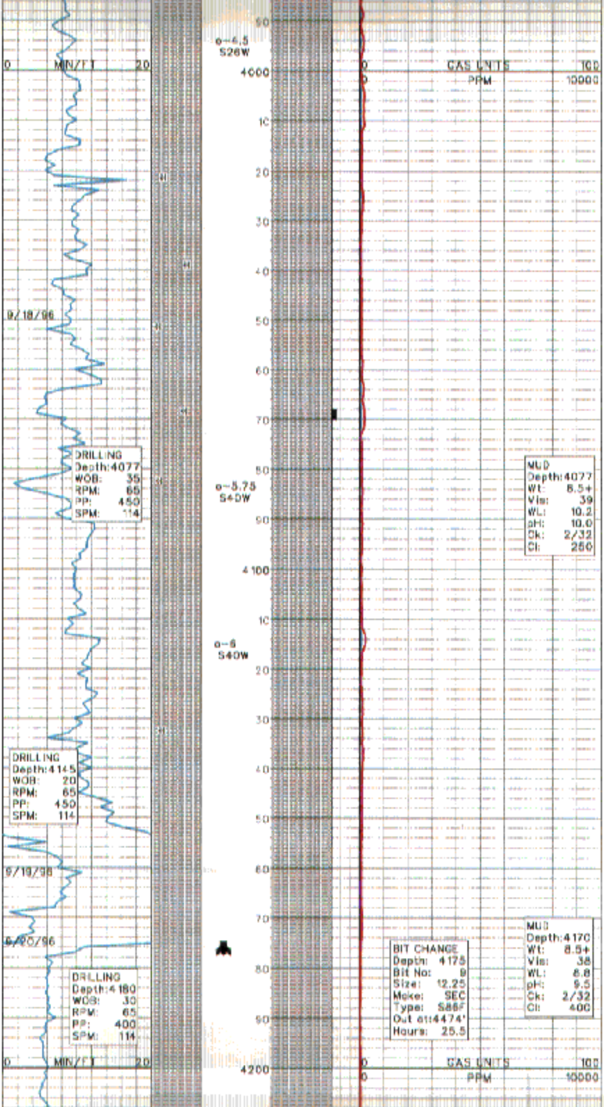
SS gy wh,f gr,fair cons in mostly calc cmt,sbang,w srt,grs comp of qtz with abnt arg & cht frags,no oil indicators

SS ltgy,tbrn,trnsl,f-vf gr,sbang,w srt, m-w cmt,sl-mod calc,arg,slty ip,occ carb mat,occ wh calc fl frac,occ pyr, tr chl,NFSOC

SS m-ltgy,trnsl clr,f-vf gr,sbang, w srt,w-m cmt,sl-mod calc,arg,occ slty, tr carb mat,occ wh/trnsl calc xls,tr chl,tr pyr,NFSOC

SH m-dk gybrn,mgy,sbplty-sblky, frm,sl-vslty ip,grdg to SLTST,carb frag,pyr,occ sl calc

SH dk gybrn-bk,sblky-sbplty,frm, m-vslty,grdg to SLTST,occ carb



DRILLING
Depth: 4077
WOB: 35
RPM: 65
PP: 450
SPM: 114

MUD
Depth: 4077
Wt: 8.5+
Vis: 39
WL: 10.2
pH: 10.0
Ck: 2/32
Cl: 250

DRILLING
Depth: 4145
WOB: 20
RPM: 65
PP: 450
SPM: 114

BIT CHANGE
Depth: 4175
Bit No: 9
Size: 12.25
Make: SEC
Type: S88F
Out at: 4474'
Hours: 25.5

MUD
Depth: 4170
Wt: 8.5+
Vis: 38
WL: 8.8
pH: 9.5
Ck: 2/32
Cl: 400

DRILLING
Depth: 4180
WOB: 30
RPM: 65
PP: 400
SPM: 114

fragalmica,occ pyrn–slcalc,TR BRI YEL FLOR ON WH CALC FL FRAGS,SLO STRMG YEL CUT,YEL RES RING CUT

SH gyblk,soft,blocky,v silty,grades to siltstone,mod calc,fine y d sem mica,organic–rich,no oil indicators

SH gyblk,soft,blocky,v silty,grdg to siltstone,organic mat,mic–mica, mod calc,no oil indicators

SH gyblk,soft,blocky,v silty,grades to siltstone,mod calc,fine y d sem mica,organic–rich,no oil indicators

SH dkgybrn–blk,occ mgy,plty–blky, frm–sft,slty,grdg to SLTST,tr carb mat,sl–calc,TR BRI YEL FLOR ON CALC FL FRAC,VFNT MLKY POOL CUT,VFNT YEL RES RING CUT

SH dkgybrn–blk,occ mgy,blky–sbplty,frm–sft,slty,grdg to SLTST,tr sdy,tr carb mat,tr pyr,n–slcalc,tr calc fl frac

SH dkgybrn–blk,occ mgy,blky–plty, frm–sft,slty,grdg to SLTST,tr sdy,tr carb mat,tr pyr,tr calc xls,sl–calc

SH dk gyblk,soft,blocky,hackly–rough arenaceous tex,sl–mod calc, v silty,grades to siltstone,organic–rich,r wh calcite frac f ,no oil indicators

SH dk gyblk,intbd with lt gy,both types v slty,sft,blky,sl–mod calc,dk color is carb–rich,no oil indicators

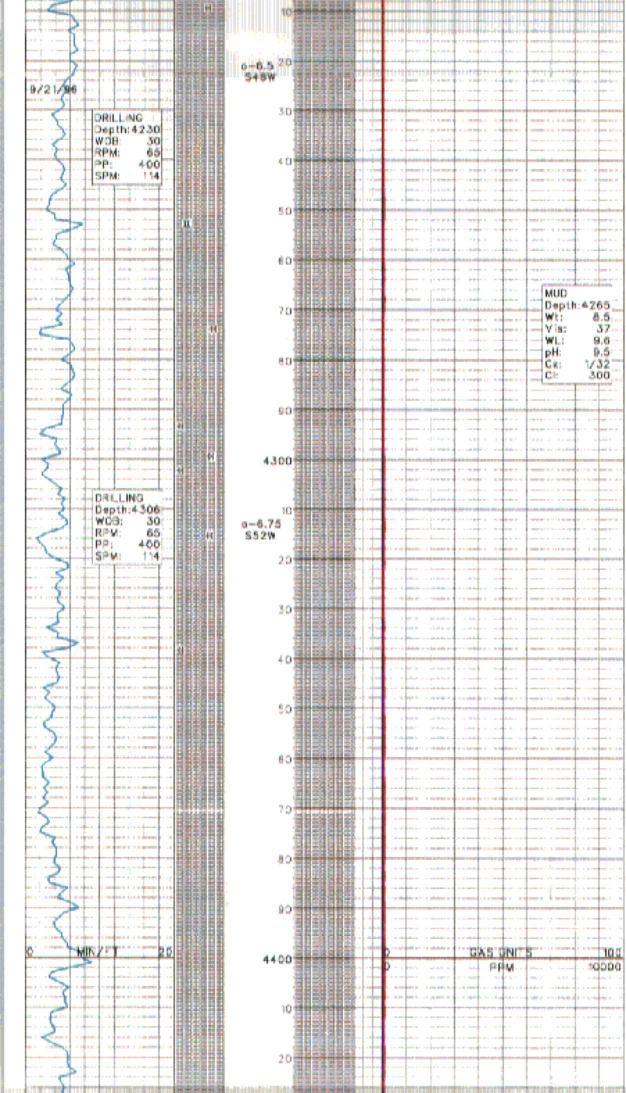
SH gyblk,occ gy,sft,blocky,v slty, grdg to siltstone,slcalc,micaceous, fine y d sem carb mat,no oil indicators

REAMED FROM 3550' TO BOTTOM

ABUNDANT CAVINGS

SH gyblk,occ gy,sft,blky,v slty,grdg to sltst,calc,pyr c

SH gyblk–gy,sft–frm,v slty,grdg to sltst,calc,pyr c



DRILLING
Depth: 4230
WOB: 30
RPM: 65
PP: 400
SPM: 114

MUD
Depth: 4265
Wt: 8.5
Vis: 37
WL: 9.6
pH: 9.5
Ck: 1/32
Cl: 300

DRILLING
Depth: 4306
WOB: 30
RPM: 65
PP: 400
SPM: 114

SH m–dkgy,gyblk,sbblky–blky,slty ip grdg to sltst,sl–vcalc,lmy ip,occ pyr,sft–frm

SH dkgybrn,dkgy,blk,occ mgy,blky–plty,frm–sft,slty,grdg to SLTST,tr carb mat,tr pyr,tr calc xls,sl calc

SH dkgybrn,dkgy,blk,tr tan,sbblky–plty,frm–sft,slty,grdg to SLTST,occ sdy,tr pyr,occ calc fl frac,sl–mcalc, tr lmy

SH dkgybrn,dkgy–blk,plty–sbblky, frm–sft,slty,grdg to SLTST,tr sdy,tr pyr,occ calc fl frac,sl–mcalc,tr lmy

SH dkgybrn,dkgy–blk,plty–sbblky, frm–sft,slty grdg to SLTST,tr sdy,tr pyr,tr calc fl fracs –vcalc,occ lmy

SH dkgybrn,dkgy–blk,sbblky–sbplty, frm–sft,slty,grdg to SLTST,occ sdy,occ calc fl frac w/tr bri yel mnrl fluor,tr pyr,sl–mcalc

SH dkgybrn,dkgy–blk,blky–sbplty, frm,slty,grdg to SLTST,tr sdy,tr carb mat,tr pyr,occ calc fl frac,sl–mcalc

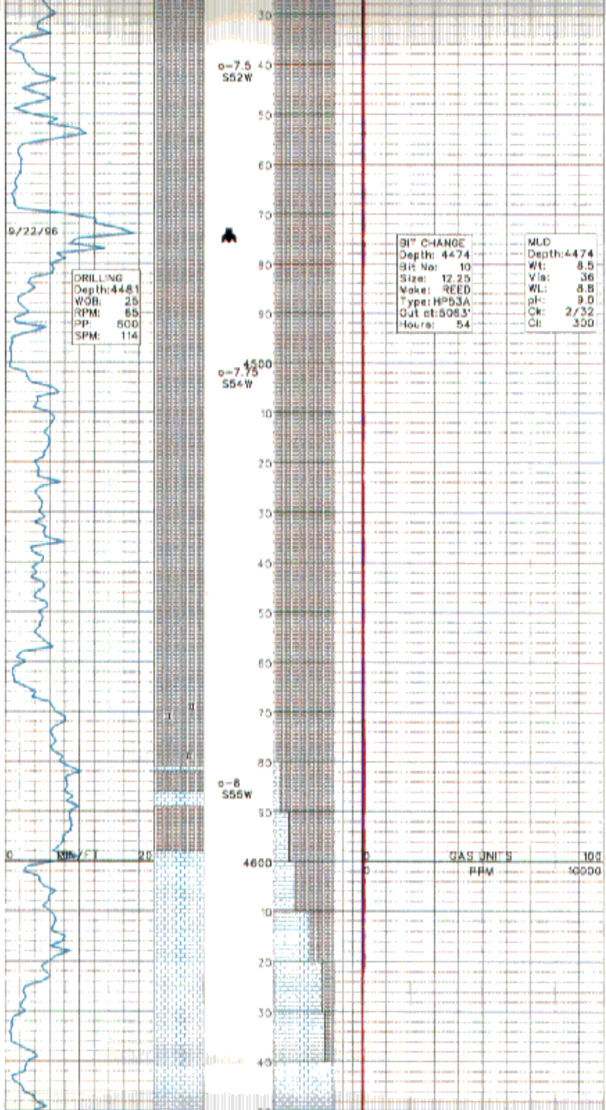
SH dkgybrn,dkgy–blk,plty–blky,frm, slty,grdg to SLTST,tr sdy,occ pyr,tr calc fl fracs –mcalc

SH dkgy–gybrn,gyblk–blk,sbblky–sbplty,sft–frm,slty ip,grdg to sltst, tr sdy,lmy,occ pyr ip,v–slcalc

SH m–dkgy,gyblk,sbblky–blky,frm–brit,occ sft,slty ip,grdg to sltst,tr lmy,occ pyr,slcalc

SH m–dkgy,sbblky–blky,frm–brit, slty ip,grdg to sltst,occ lmy,pyr ip, sl–mcalc

SH m–dkgy,sbblky–blky,gyblk ip,tr sdy,slty ip,grdg to sltst,sl–mcalc, pyr ip



DRILLING
Depth: 4481
WOB: 25
RPM: 65
PP: 500
SPM: 114

BIT CHANGE
Depth: 4474
Bit No: 10
Size: 12.25
Make: REED
Type: HP53A
Out at: 5063'
Hours: 54

MUD
Depth: 4474
Wt: 8.5
Vis: 36
WL: 8.8
pH: 9.0
Ck: 2/32
Cl: 300

SH m-dkgy,gybrn-brn,sbblky-blky, vcarb ip,sft-brit,slty ip,grdg to sltst,occ pyr,sl-ncalc

SH dkgy-blk,dkgybrn,sbblky-sbplty, frm,slty,grdg to SLTST,tr sdy,carb ip, tr pyr,sl-vslcalc

SH dkgy-blk,sbplty-sbblky,frm,slty, grdg to SLTST,occ carb,rr calc xls,tr slcalc

SH dkgy-blk,dkgybrn,blky-plty,frm, slty,tr sdy,occ carb,occ pyr,tr slcalc

SH dkgy-blk,dkgybrn,sbblky-plty, frm,slty ip,occ carb,tr calc xls,occ pyr,rr calc

SH dkgy,dkgybrn,blk,sbblky-sbplty, frm,slty ip,tr carb,rr calc filfrac,pyr, ncalc

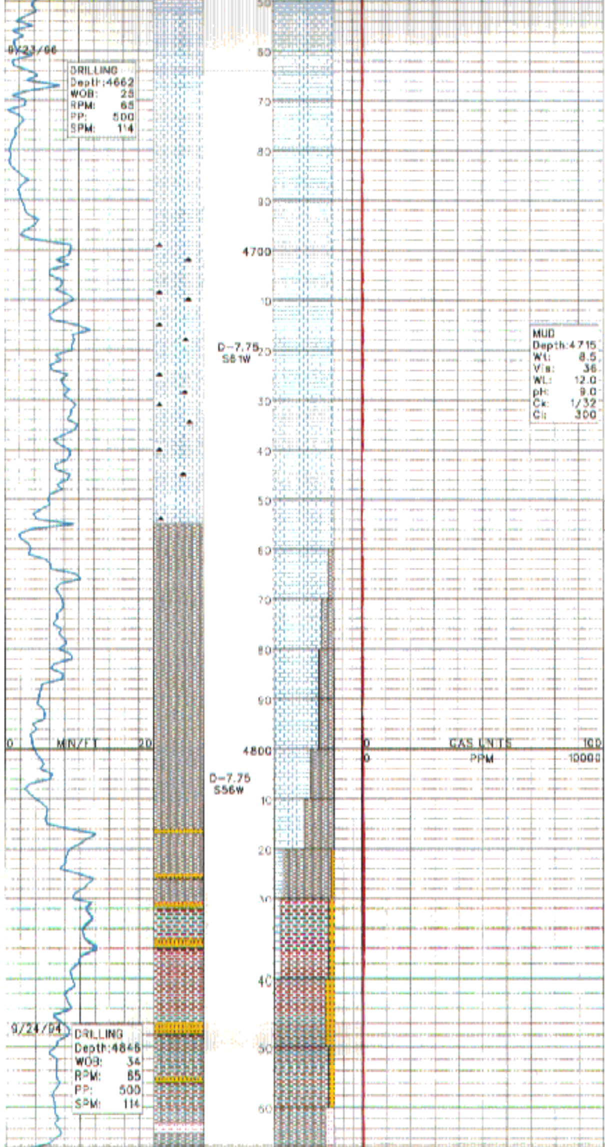
SH m-dkgy,gybrn,sbblky-sbplty, sft-frm,brit ip,slty ip,occ pyr,sl-ncalc

LS lt-mgy,gybrn,vf-micxl,blky,vf sdy, slty,m sft-brit,NSFOC

LS lt-mgy,tan-ltbrn,pred sft-msft, micxln-fxln,slty,resd,tr flor,NSOC

LS ltgy,tan,mot ip,sbblky-plty,m frm, micxl,al-abnt org resd,ly ip,occ calc banded,no vis por,NSFOC

LS ltgy-mgy,alm mot,plty-sbblky, mf frm,micxln,al-abnt org resd,ly ip,



pt cln-dns,sbwxy ip,scat thn calc veins,frcfl,tr mnrl flor,NSOC

CIRCULATED BOTTOMS UP

LS lt-mgy,tn gy-mot,splty-sbblky,m frm-frm,micxln,pt cln-dns,sml-mild frac,NSFOC

LS lt-mgy,tn-mot,f-micxln,sft-frm,arg ip,sbwxy,sm-mild frac,NSFOC

LS m-ltgy,dkgybrn-dkbrn,micxln,hd,tr sft arg,tr sdy,abnt dkbrn cht,sil ip,abnt calc xls,tr yel mnrl flor,NSOC

LS m-dkgybrn,crm,wh,m-ltgy,micxln-crpxln,hd,arg ip,abnt dkbrn cht,sil ip,occ calc xls,NFSOC

LS m-dkgy,dkgybrn,crm,w-mltgy,calc,micxln-crpxln,hd,occ arg,abnt dkbrn cht,sil ip,NSFOC

VERY POOR SAMPLE QUALITY DUE TO LOW RETURNS

SH m-dkgybrn,mgy,sbblky-sbplty,frm,slty ip,occ vslty,occ pyr,sl-ncalc

ABUNDANT MISCELLANEOUS CAVINGS

LOGGING CAVINGS

SH dk-mgybrn,mbrn,mgy,sbblky-splty,frm,occ sft,slty ip,tr pyr,sl-ncalc

ABUNDANT CAVINGS, POOR SAMPLES

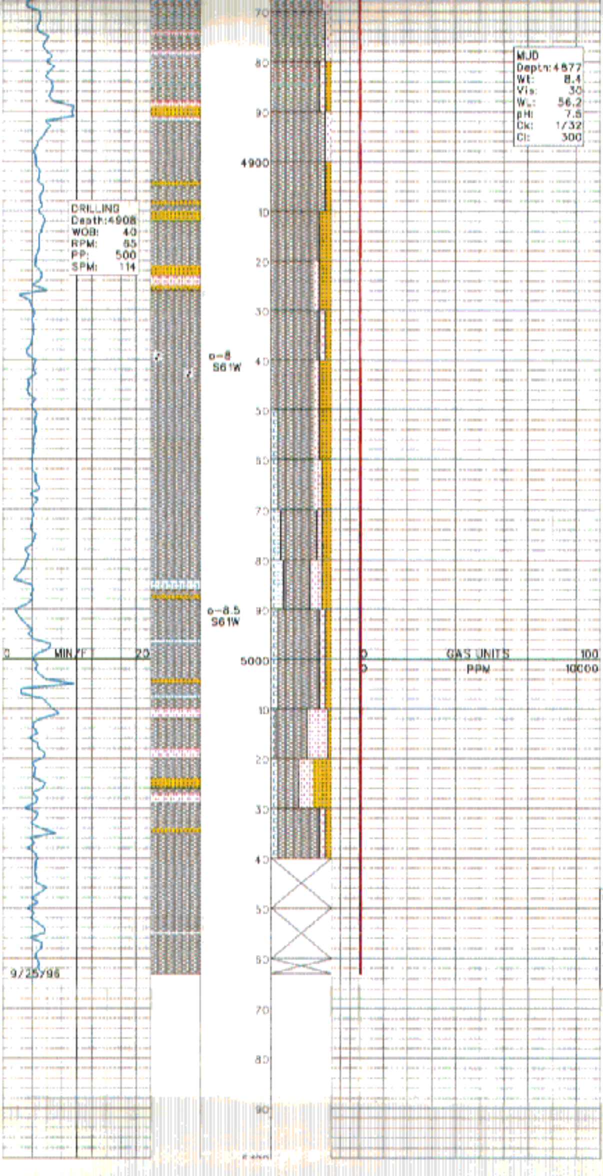
SH dk-mgybrn,dkgy,occ mgygn,sbblky-slty,frm,slty ip,occ sdy,tr pyr,sl-ncalc

SH m-dkgy,occ ltgy,sbblky,sft-frm,vslty ip,occ vscy,sl-ncalc,lmy ip

SS ltgy,ltbrn,vfgr,sbang-sbrd,wsrt,mcmt,vslcalc,arg,slty,grdg to SLTST,NFSOC

CONTINUE TO LOG CAVINGS

SH m-dkgy,dkbrn-dkgybrn,sbblky-sbplty,frm,occ sft,slslty ip,occ vslty,tr pyr,sl-slcalc



DRILLING
Depth: 4908
WOB: 40
RPM: 65
PP: 500
SPM: 114

MUD
Depth: 4877
Wt: 8.4
Vis: 30
WL: 56.2
pH: 7.5
Ck: 1/32
Cl: 300

SHm-dkgy,dkbrn,blky-plty,frm,sl-mslty ip,tr scy,tr pyr,sl-ncalc

SS ltgy,off wh,trnsl,vf gr,sbang-sbrd, wsrt,mcmt,occ vs cc c,argalty,tr occrb mat,tr chl,tr wh calc fl frac, NFSOC

SLTST lt-mgy,sbblky,frm-hd,arg, scy,tr carb mat,n-s calc

SHm-dkgy,dkgybrn-dkbrn,blky-plty,frm,sl-mslty ip,occ sdy sl-ncalc

CONTINUE TO LOG CAVINGS

LS m-ltbrn,tan,ltgy,crm,blky,frm-hd, micxln-crpxln,NSFOC

SHm-dkgy,dkgybrn,occ ltgy,sbblky-plty,frm-sft,sl-vslty ip,occ sdy,sl-ncalc

SS clr-trnsl,wh-ltgy,qtz ip,ang-sbang,f-vf gr,w cmt,m-pert,t,hd-fri,sl-vcalc mtx,NSFOC

NO RETURNS FROM 5040'-5063'

DRILLER'S TD 5063'
AFTER RUNNING LOGS ,PIPE GOT
STUCK WHILE CLEANING HOLE
FOR 8 5/8" CASING. AFTER
FREE POINT BACKOFF,BEGAN
SIDETRACK AT 2284' ON 10/5/96
STARTED LOGGING SIDETRACK
AT 4806' ON 10/28/96