PASON SYSTEMS USA CORP.
16080 Table Mountain Parkway
Suite 500
Golden, CO 80403 U.S.A.
(720) 880-2000

LOG created using LPLOT for Win32 Beta 1.47, Mar 17, 2000, Copyright (C) 1999-2000 Pason Systems USA Corp

OPERATOR: **NWNATURAL**
WELL: **IW24BH-23-65**
LOCATION: **SW SEC 23, T6N, R5W**
COUNTY: **COLUMBIA COUNTY**
STATE: **OREGON**
SPOT: **SW CORNER, 976.5'N, 1256.3'E**
ELEVATION: **GL 905', KB 923'**
FIELD: **REICHHOLD POOL DEVELOPMENT**

SPUD DATE: **JUNE 8, 2000**
TD DATE: **JUNE 19, 2000**
DATES LOGGED: **JUNE 8, 2000 - JUNE 19, 2000**
DEPTHS LOGGED: **20' - 2770'**
LOGGERS: **ED PERRY, SCOTT WAGGONER**
DRILLING FLUID: **SPUD MUD, LSND**
DRILLING RIG: **TAYLOR RIG #4**

LOG TYPE: MUD LOG

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

REMARKS:

LITHOLOGIES

SANDSTONE	SILTSTONE	SHALE	■ COAL	BENTONITE
LIMESTONE	DOLOMITE	ANHYDRITE	CHERT	SALT
CONGLOMERATE	TUFF	ALLUVIUM	METAMORPHIC	GLACIAL TILL
DARK CHERT	WELDED TUFF	ARGILLACEOUS LIMESTONE	LIME MUDSTONE	CRYSTALLINE LIMESTONE
LIME BOUNDSTONE	LIME GRAINSTONE	LIME PACKSTONE	LIME WACKESTONE	DOLOMITIC LIMESTONE
CALCAREOUS DOLOMITE	ARGILLACEOUS DOLOMITE	DOLOMITIC MUDSTONE	CRYSTALLINE DOLOMITE	DOLOMITIC BOUNDSTONE

G	DOLOMITIC GRAINSTONE	P	DOLOMITIC PACKSTONE	W	DOLOMITIC WACKESTONE	▨	SHALY SANDSTONE	▨	CLAYSTONE
▨	GRAY CLAYSTONE	▨	COLORED CLAYSTONE		VOLCANICS	■	BRIGHT COAL	▤	INTERMEDIATE COAL
▨	DULL COAL	▨	COALY SHALE	▨	NON COAL		GRANITE	▨	BRECCIA
▨	MARL	▨	DOLOMITIC MARL	▨	CARBONACEOUS SHALE	▤	CHALK		GYPSUM
▨	UNABLE TO INTERPRET	☒	NO SAMPLE	▨	BLACK SHALE	▨	COLORED SHALE	▨	GRAY SHALE
▨	SILTY SHALE		SHALY SILTSTONE	☐	NOTHING				

MODIFIERS

ɯ	AHYDRITE STRINGERS	⌓	ALGAE LAMINATED	⌓	ALGAE NON-DESCRIPT	⌓	ALGAE OOTOID	⌓	ALGAE SKELETAL	⧗	AMPHIPORA
//	ANHYDRITIC	-	ARGILLACEOUS	/	ARGILLITE GRAIN	⊳	BELEMNITE	B	BENTONITE	⌒	BIOCLAST/ FRAGMENTAL
◇	BRACHIOPOD	♉	BRECCIA	⌒	BRYOZOA	⊥	CALCAREOUS	■	CARBONACEOUS FLAKES	◣	CEMENTING BITUMENOUS
ɵ	CEPHALOPOD	▲	CHERT, DARK	△	CHERT, LIGHT	⊠	CHERT, TRIPOLITIC	▬	COAL	ꝗ	CORAL
⊙	CRINOID	✱	CRYSTALS	Ⅱ	DOLOMITE STRINGERS	⊥	DOLOMITIC	♡	ECHINOID	+	FELDSPAR
⊥	FERRUGINOUS	●	FERRUGINOUS GRAINS	π	FERRUGINOUS STRINGERS	⊳	FISH REMAINS	⚘	FORAMINIFERA	F	FOSSILS
⌘	FRACTURES	△	GASTROPOD	∿	GLAUCONITE	\\	GYPSIFEROUS	Ⅲ	GYPSUM STRINGERS	◖	HEAVY/DARK MINERALS
∀	INTRACLASTS	K	KAOLIN	Ⅱ	LIMESTONE STRINGERS	L	LIMONITE	π	MARLSTONE, CALCAREOUS	π	MARLSTONE, DOLOMITIC
◡	MICACEOUS	⊕	NODULES	○	OOLITES	◔	OSTRACOD	⚭	PEBBLES	▽	PELECYPOD
○	PELLETS	●	PHOSPHATE PELLETS	◇	PISOLITE	♢	PLANT REMAINS	P	PYRITE	⊞	SALT CAST/INFILL
○	SAND GRAINS	⊡	SANDSTONE STRINGERS	⠂	SANDY	θ	SCAPHOPOD	—	SHALE LAMINAE	^	SILICEOUS
⊡	SILTSTONE STRINGERS	▪▪	SILTY	π	SLICKENSLIDE	S	SPORES	Ⅲ	STROMATOPOROID	⊓	STYLOLITE
V	TUFFACEOUS										

POROSITY/SORTING/ROUNDNESS SYMBOLS

X	INTERCRYSTALLINE INTERGRANULAR	V	VUGGY	F	FRACTURE	⁐	INTEROOLITIC	P	PINPOINT	ʆ	ORGANIC
O	MOLDIC	e	EARTHY	☐	FENESTRAL						
A	ANGULAR	a	SUBANGULAR	R	ROUNDED	r	SUBROUNDED				
W	WELL	M	MEDIUM	P	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	D	DEAD OIL	○	QUESTIONABLE	•	OIL SHOW	☼	GAS SHOW	✸	OIL AND GAS SHOW

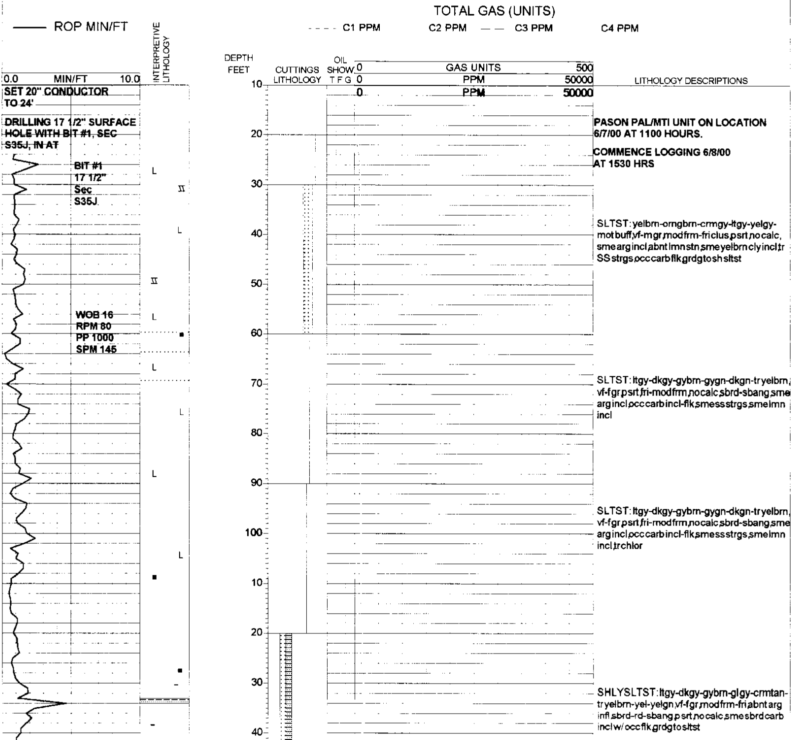
CONNECTION GAS
TRIP GAS
MIDNIGHT DEPTH
MIDNIGHT DEPTH
CONNECTION
OFF BOTTOM
NORMAL FAULT
REVERSE FAULT
OVERTURNED STRATA

BAR SYMBOLS

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



SET 20" CONDUCTOR TO 24'

DRILLING 17 1/2" SURFACE HOLE WITH BIT #1, SEC S35J, IN AT

PASON PAL/MTI UNIT ON LOCATION 6/7/00 AT 1100 HOURS.

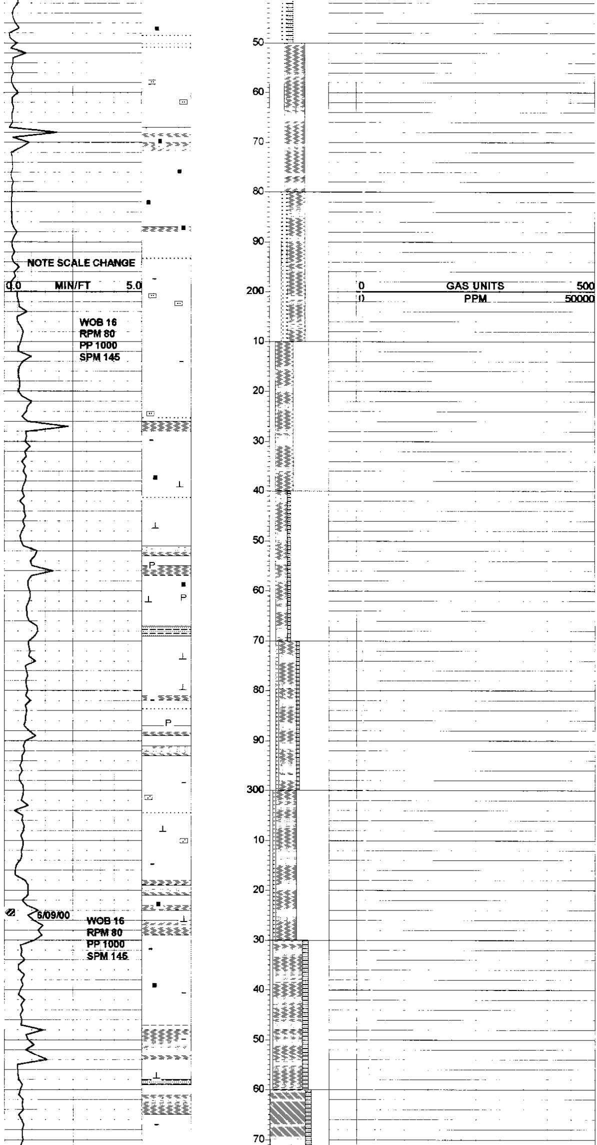
COMMENCE LOGGING 6/8/00 AT 1530 HRS

SLTST: yelbrn-orngbrn-crmgy-ltgy-yelgy-mot buff,vf-mgr,modfrm-fri clus,psrt,no calc, sme arg incl,abnt lmn stn,sme yelbrn cly incl,tr SS strgs,occ carb flk,grdg to sh sltst

SLTST: ltgy-dkgy-gybrn-gygn-dkgn-tr yelbrn, vf-fgr,psrt,fri-modfrm,no calc,sbrd-sbang,sme arg incl,occ carb incl-flk,sme ss strgs,sme lmn incl

SLTST: ltgy-dkgy-gybrn-gygn-dkgn-tr yelbrn, vf-fgr,psrt,fri-modfrm,no calc,sbrd-sbang,sme arg incl,occ carb incl-flk,sme ss strgs,sme lmn incl,tr chlor

SHLYSLTST: ltgy-dkgy-gybrn-glgy-crmtan-tr yelbrn-yel-yelgn,vf-fgr,modfrm-fri,abnt arg infl,sbrd-rd-sbang,psrt,no calc,sme sbrd carb incl w/ occ flk,grdg to sltst



SHLYSLTST: ltgy-dkgy-gybrn-gygn-dkgn-tr yelbrn,vf-fgr,psrt,fri-modfrm,nocalc,sbrd-sbang,smearg incl,occ carb incl-flk w/ abnt lse carb mat

SHLYSLTST: ltgy-dkgy-gybrn-gygn-dkgn-tr yelbrn,vf-fgr,psrt,fri-modfrm,nocalc,sbrd-sbang,smearg incl,occ carb incl-flk w/ abnt lse carb mat

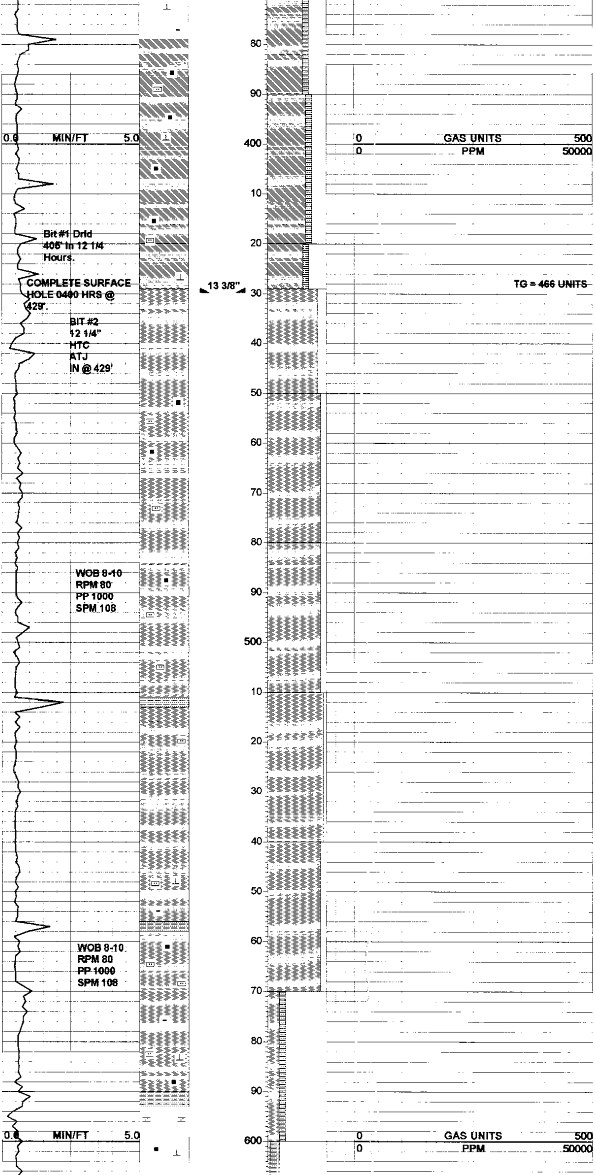
SHSLTST: gybrn-dkbrn-ltbrn-dkgy-mot buff-crmtan,vf-fgr,sft-slfrm,sbrd-sbang,mod calc cmt,psrt,abnt arg infl,sme carb strgs w/ occ lse mat & flk,tr gn sil incl

SHSLTST: gybrn-dkbrn-ltbrn-dkgy-mot buff-crmtan,vf-fgr,sft-slfrm,sbrd-sbang,mod calc cmt,psrt,abnt arg infl,sme carb strgs w/ occ lse mat & flk,tr gn sil incl,tr lse dism pyr clus

SHSLTST: ltgy-dkgy-gybrn-brn-dkbrn-tr dkgn,vf-fgr,modfrm-sft,sbrd-rd-sbang,psrt, mod calc cmt,abnt arg infl,sme carb strgs w/ occ lse mat,tr dism pyr clus

SHSLTST: ltgy-dkgy-gybrn-brn-dkbrn-tr dkgn,vf-fgr,modfrm-sft,sbrd-rd-sbang,psrt, mod calc cmt,abnt arg infl,sme carb strgs w/ occ lse mat

CLYST: ltgy-offwh-gywh-ltbrn-dkgy,vsft-uncons,tr calc cmt,sme lse qtz gr,occ sltst strgs no struc,vgrty ip



Bit #1 Drld 405' In 12 1/4 Hours.

COMPLETE SURFACE HOLE 0400 HRS @ 429'.

BIT #2
12 1/4"
HTC
ATJ
IN @ 429'

WOB 8-10
RPM 80
PP 1000
SPM 108

WOB 8-10
RPM 80
PP 1000
SPM 108

CLYST: gy ltbrn & tan dkbrn ip, vsft & clayey-gummy, sticky, silty mtx thru, calc, scat-abnt dk carb flks & grs, abnt tuffaceous mat/debris, thnly dism pyr clstrs

SHYSLTST: crm tan ltgy abnt s&p, vfgr qtz ip abnt tuff mat abnt carb/org mat, pred finely dism mat in gummy clyst mtx, calc, pyr

GYCLYST: gybrn dkbrn ltbrn dkgy buff crm ip, vf-fgr, sft-slfrm, m calc cmt, abnt arg mtx, sme carb strgs w/ occ lse mat & flk, tr gn sil incl, tr pyr

CLYST: gybrn dkbrn ltbrn dkgy buff crm ip, vf-f gr, sft-slfrm, m calc cmt, abnt arg mtx, sme carb strgs w/ occ lse mat & flk, tr gn sil incl, tr pyr

CLYST: gybrn dkbrn ltbrn dkgy buff crm ip, vf-f gr, sft-slfrm, m calc cmt, abnt arg mtx, sme carb strgs w/ occ lse mat & flk, tr gn sil incl, tr pyr

Wt. 8.8 Vis 36 pH 9.0 Wl 7.2 Cl 1800
Ca 40 Sol 3.5% Ck 2/32

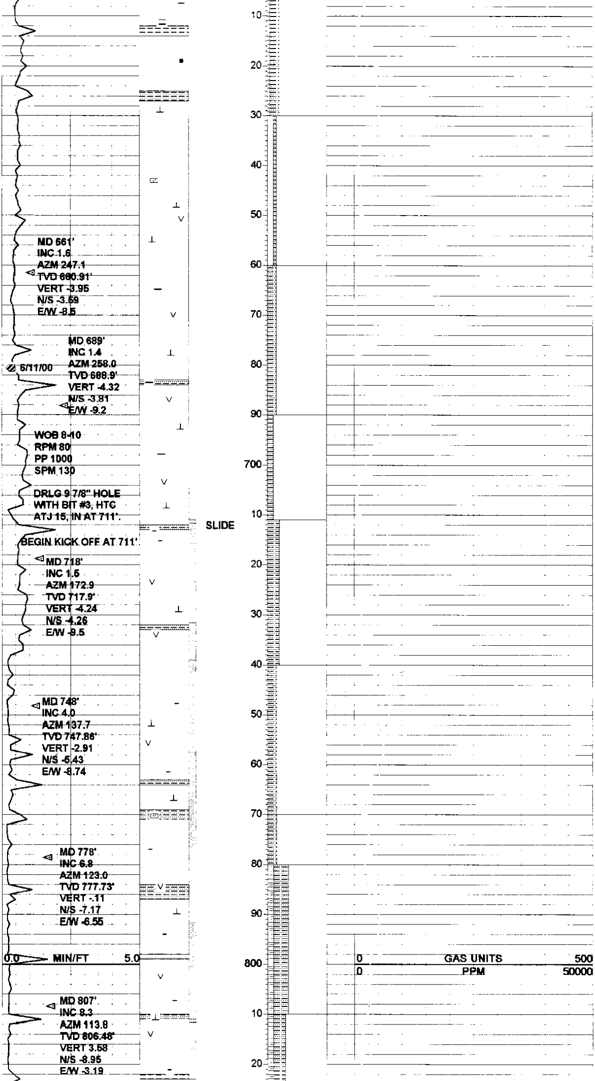
CLYST: ltgy-dkgy-gybrn-mot buff-crmbrn, vf-f gr, vsft-slfrm, slty-grty ip, sme calc cmt, abnt arg infl, occ carb flk w/ tr strgs, tr sltst strgs-incl

CLYST: ltgy-dkgy-gybrn-mot buff-crmbrn, vf-f gr, vsft-slfrm, slty-grty ip, sme calc cmt, abnt arg infl, occ carb flk w/ tr strgs, tr sltst strgs-incl

NOTE LITH CHANGE

LOG TOP KEASEY @ 592'

SHSLTST: ltgy-dkgy-brn-brngy-mot buff-ltcrm-mot dkbrn, vf-fgr, sbrd-rd-sbang, p srt, tr-mod calc cmt, abnt arg infl, abnt carb incl w/ occ strgs & tr lse mat, sme ss strgs



MD 661'
INC 1.6
AZM 247.1
TVD 660.91'
VERT -3.95
N/S -3.59
E/W -8.5

MD 689'
INC 1.4
AZM 258.0
TVD 688.9'
VERT -4.32
N/S -3.81
E/W -9.2

6/11/00

WOB 8-10
RPM 80
PP 1000
SPM 130

DRLG 9 7/8" HOLE
WITH BIT #3, HTC
ATJ 15, IN AT 711'.

BEGIN KICK OFF AT 711'.

MD 718'
INC 1.5
AZM 172.9
TVD 717.9'
VERT -4.24
N/S -4.26
E/W -9.5

MD 748'
INC 4.0
AZM 137.7
TVD 747.86'
VERT -2.91
N/S -5.43
E/W -8.74

MD 778'
INC 6.8
AZM 123.0
TVD 777.73'
VERT -.11
N/S -7.17
E/W -6.55

MD 807'
INC 8.3
AZM 113.8
TVD 806.48'
VERT 3.68
N/S -8.95
E/W -3.19

SHSLTST: ltgy-dkgy-brn-brngy-mot buff-ltcrm-mot dkbrn,vf-fgr,sbrd-rd-sbang,psrt,tr-mod calccmt,abnt arginfl,abnt carb inclw/occ strgs & trlse mat,smessstrgs

SHSLTST: brn-brngy-ltgy-dkgy-gl gy-mot buff-ltcrm-mot dkbrn,vf-fgr,sbrd-rd-sbang,psrt,modcalccmt,abntarginfl,abntcarbinclw/occstrgs&trlsemat,smessstrgs

SHSLTST: evenmbrngythru,vsft-sft,bcm prednonclayey,vfinegrantextsmeqtz,slcalc mtxw/occltcalcitenods,scatdkspecs&thndk carblam/flks,abntvftuffmat

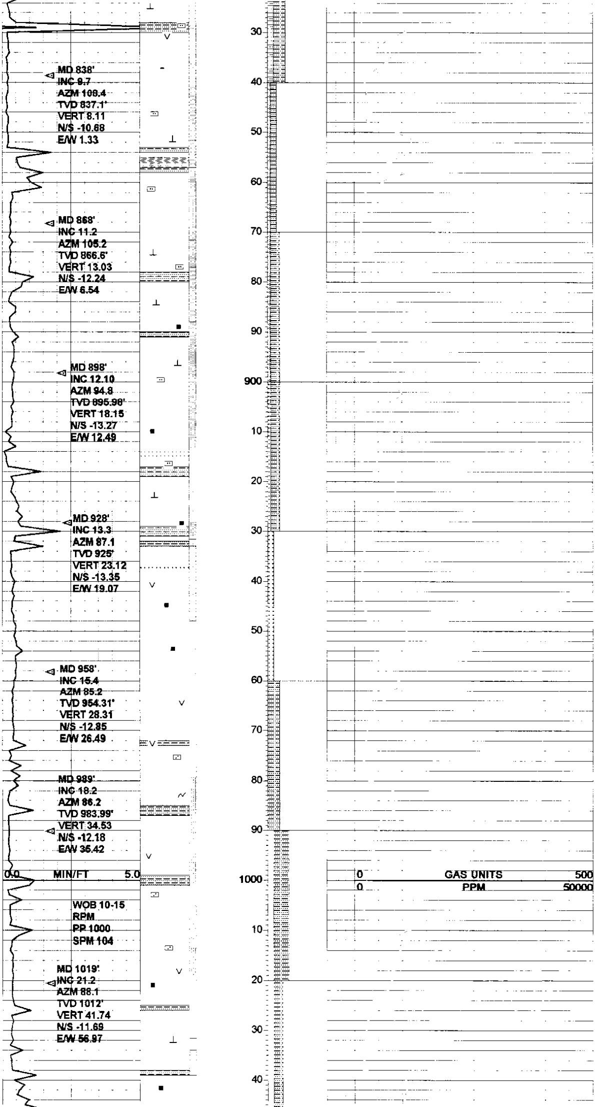
SHSLTST: lttanipabntmbrngy,vsft-sft,bcm prednonclayey,vfinegrantextsmeqtz,slcalc mtxw/calcitereplip,scatdkspecs&thndk carblam/flks,tuffmatinmtx,thnltslty/sdylam& vfri

SHSLTST/SH: tanvltbrnabntmgygybrn,m-v sft,sbblky-blky,dnsslclayeyip,grantext&pred nonqtzabntarginfil,calcnods&thnstrksip, abntvftuffdebris/mat,occthnvfsdystrgsip,dk carborgspecs&smeflks

SHSLTST: gymbrngytanip,vsft-sft,prednon clayey,vfinegrantextsmeqtz,slcalcmtxw/ occltcalcitenods,scatdkspecs&thndkcarb lam/flks,abntvftuffdebris

LS: bf&lt-mgymot,frm-brit,mic-crpxl,dns,xl textpredclnw/minorargresd,thnbddinSltysh

SHSLTST: lttanipmbrngy,vsft-sft,bcmpred nonclayey,finegrantextsmeqtz,slcalcmtxw/ calciteip,dkspecs&thndkcarblam/flks,tuff mat&debris,thnltslty/sdylam&vfri



MD 838'
INC 9.7
AZM 108.4
TVD 837.1'
VERT 8.11
N/S -10.68
E/W 1.33

MD 868'
INC 11.2
AZM 105.2
TVD 866.6'
VERT 13.03
N/S -12.24
E/W 6.54

MD 898'
INC 12.10
AZM 94.8
TVD 895.98'
VERT 18.15
N/S -13.27
E/W 12.49

MD 928'
INC 13.3
AZM 87.1
TVD 925'
VERT 23.12
N/S -13.35
E/W 19.07

MD 958'
INC 15.4
AZM 85.2
TVD 954.31'
VERT 28.31
N/S -12.85
E/W 26.49

MD 989'
INC 18.2
AZM 86.2
TVD 983.99'
VERT 34.53
N/S -12.18
E/W 35.42

WOB 10-15
RPM
PP 1000
SPM 104

MD 1019'
INC 21.2
AZM 88.1
TVD 1012'
VERT 41.74
N/S -11.69
E/W 56.97

SLTYSH/SLTST: lt-mgy m brngy thru, vsft-sft bcm pred non clayey, vfine gran text sme qtz, sl calc mtx w/ occ lt calcite nods, scat dk specs & thn dk carb flks, abnt vf tuff mat/debris

SLTYSH/SLTST: lt-mgy m brngy thru, vsft-sft bcm pred non clayey, vfine gran text sme qtz, sl calc mtx w/ occ lt calcite nods, scat dk specs & thn dk carb flks, abnt vf tuff mat/debris

SLTYSH/SLTST: lt-mgy m brngy thru, vsft-sft bcm pred non clayey, vfine gran text sme qtz, sl calc mtx w/ occ lt calcite nods, scat dk specs & thn dk carb flks, abnt vf tuff mat/debris

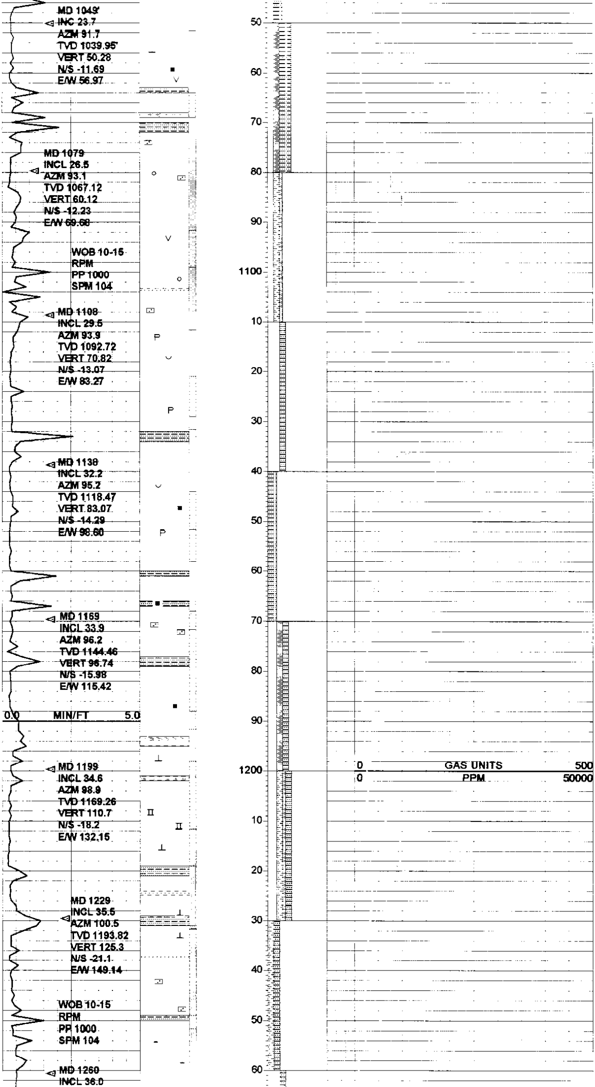
SHSLTST: ltgy-dkgy-mgybrn-dkbrn-tr glau gn, sft-mod frm, vf-f gr w/ occ m gr qtz, tr-mod calc cmt, abnt arg infl, abnt carb incl-flk w/ tr lse mat thru, sme vf tuff mat, tr glua, occ ss strgs

SHSLTST: ltgy-dkgy-mgybrn-dkbrn-tr glau gn, sft-mod frm, vf-f gr w/ occ m gr qtz, tr-mod calc cmt, abnt arg infl, abnt carb incl-flk w/ tr lse mat thru, sme vf tuff mat, tr glua, occ ss strgs

SHSLTST: ltgy-dkgy-mgybrn-dkbrn-tr glau gn, sft-mod frm, vf-f gr w/ occ m gr qtz, tr-mod calc cmt, abnt arg infl, abnt carb incl-flk w/ tr lse mat thru, sme vf tuff mat, tr glua, occ ss strgs

SHSLTST: ltgy-dkgy-mgybrn-dkbrn-tr glau gn, sft-mod frm, vf-f gr w/ occ m gr qtz, tr-mod calc cmt, abnt arg infl, abnt carb incl-flk w/ tr lse mat thru, sme vf tuff mat, tr glua, occ ss strgs

SHSLTST: ltgy-dkgy-mgybrn-dkbrn-tr glau gn, sft-mod frm, vf-f gr w/ occ m gr qtz, tr-mod calc cmt, abnt arg infl, abnt carb incl-flk w/ tr lse mat thru, sme vf tuff mat, occ ss-sltst strgs



SHSLTST: ltgy-dkgy-mgybrn-dkbrn-trglau gn,sft-modfrm,vf-fgrw/occmgrqtz,tr-mod calccmt,abntarginfl,abntcarbincl-flkw/trlse matthru,smevftuffmat,occss-sltststrgs,occ clyststrgs

Wt. 8.9 Vis 40 pH 9.0 Wl 7.0 Cl 1700
Ca 40 Sol 4% Ck 2/32

SHSLTST: ltgy-dkgy-mgybrn-dkbrn-trglau gn,sft-modfrm,vf-fgrw/occmgrqtz,tr-mod calccmt,abntarginfl,abntcarbincl-flkw/trlse matthru,smevftuffmat,occss-sltststrgs,occ clyststrgs

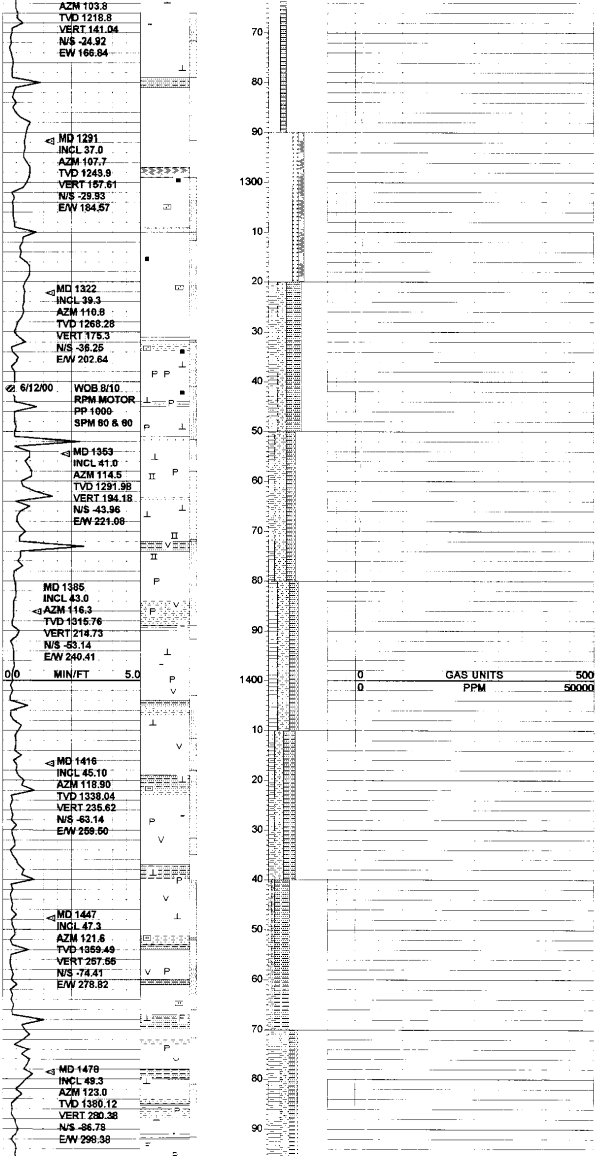
SHSLTST: ltgy-dkgy-resbrn-dkbrn-m chocbrn-tangy,vf-fgr,sbrd-rdw/occsbang,p-modsrt,tr-modcalccmt,abntarginfl,abntlge carbinclw/smelsemat,trdismpyr,trmicmica

SHSLTST: ltgy-dkgy-resbrn-dkbrn-m chocbrn-tangy,vf-fgr,sbrd-rdw/occsbang,p-modsrt,tr-modcalccmt,abntarginfl,abntlge carbinclw/smelsemat,trdismpyr,trmicmica

SHSLTST: ltgy-resbrn-mchocbrn-dkgy-brngy,vf-fgr,modfrm-slsft,sbrd-sbang-ang,p-modsrt,modcalccmt,abntarginfl,smesilcmt, abntlgecarbincl-flk,trchlor,smegnsilgr,trsh lam,grdgtosltstw/occshyssstrgs-intlam

SHSLTST: ltgy-resbrn-mchocbrn-dkgy-brngy,vf-fgr,modfrm-slsft,sbrd-sbang-ang,p-modsrt,modcalccmt,abntarginfl,smesilcmt, abntlgecarbincl-flk,trchlor,smegnsilgr,trsh lam,grdgtosltstw/occshyssstrgs-intlam

SHSLTST: resbrn-dkbrn-brngy-ltgy-dkgy-tr crmbrn,vf-fgr,modfrm-slsft,trunconsshyss thru,sbrd-rd-sbang,psrt,modcalccmtw/tr calcnod,abntarginflw/smesilcmt,abntm carbinclw/trlsematthru,grdgtosltstw/occ shyssstrgs



SHSLTST: resbrn-dkbrn-brngy-ltgy-dkgy-tr crmbrn,vf-fgr,modfrm-slsft,tr uncons shyss thru,sbrd-rd-sbang,psrt,mod calc cmt w/tr calc nod,abnt arg infl w/sme silcmt,abnt m carb incl w/tr lse mat thru,grdg to sltst w/occ shyss strgs

LOG TOP COWLITZ @ 1280'

SHSLTST/SLTST: ltgy-dkgy-op-gybrn-resbrn-mchocbrn-tr crmtan,vf-fgr,modfrm-sl sft,mod-psrt,sbrd-rd,thy-sltyip,sme calccmt, occ arg infl,sme carb incl w/occ lse mat,tr-mod mic mica,sme lse qtz gr,tr shyss strgs-lse gr

ARG LS: pred ltoffwh bf sme mottled,pt vfxl sft chky v drty w/abnt arg resd,pt microxl dnsxl sme arg mtx,abnt pyr clstrs,thn bdd in Shsltst sme calcite nods-repl

SS: drty gy sme bf-op,vfgr & grdg sltst thru,pt sbang qtz pt aren slty mtx,friv calc,wh cly infil ip, no vis pot & tt,carb/org grs/flks,scat chlor/glauc grs

SHSLTS: ltgy dkgy op gybrn tr crmtan Ls,vf-fgr modfrm-slsft,mod-psrt,sbrd-rd,thy-sltyip, abnt calccmt,abnt arg infl,sme carb incl w/occ lse mat,tr-mod mic mica,sme qtz grs,tr ss strgs, pyr clstrs,dk carb flks/grs

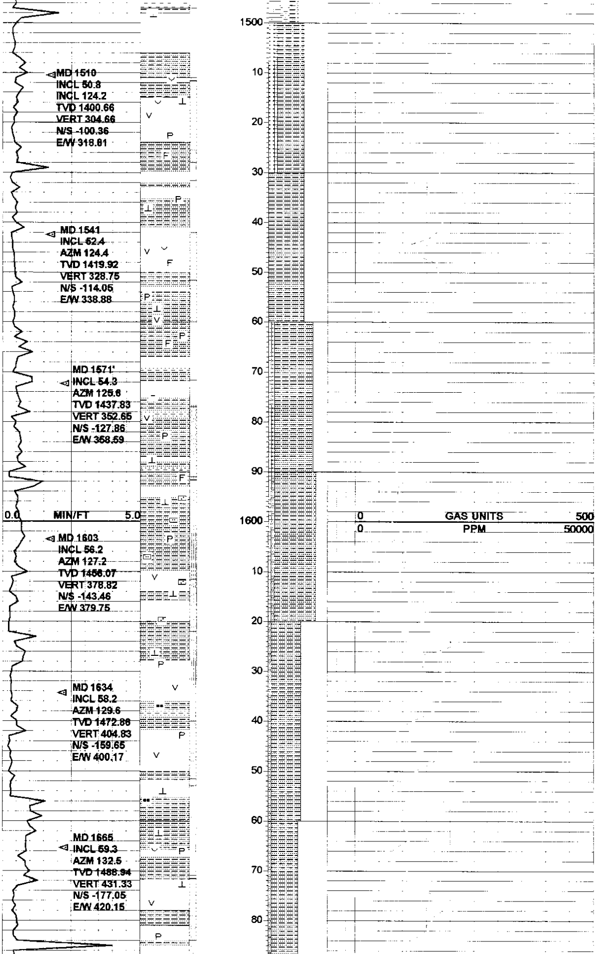
SHYSS: trnsl ltgy op ip tan ip,vfgr thru,drty & pred grdg to shysltst,abnt wh cly & arg infil,friv calc,tuff debris,pyr clstrs,tt

LS: pred ltoffwh bf sme mottled,pt vfxl sft chky v drty w/abnt arg resd,microxl dnsxl text,sl-mod arg mtx,abnt pyr clstrs,thn bdd in Shsltst sme as nodules in Sh,pyr incl

SH/SLTYSH: brngy brnlt-mgy,sft incr stky-gummy,mod-v calc,sme slty text/aren,pred non qtz,tuff debris,thn lt slty/sdy lam ip,tr pyr clstrs,grdg mrlstn ip

SHSLTS: ltgy dkgy op gybrn,vf-fgr,blky,mod frm-sl sft,mod-psrt,sbrd-rd,thy,abnt calccmt & nodules,abnt arg mtx,sme carb incl w/occ lse f-m ss grs,tr-mod mic mica,sme qtz grs,tr ss strgs,abnt pyr clstrs,dk carb flks ip,mnrl calc ip, scat mica flks & chlor

SHYSS: trnsl ltgy op ip tan ip,vfgr thru,drty & pred grdg to shysltst,abnt wh cly & arg infil,friv calc,tuff debris,incr-abnt pyr clstrs,incr mica flks,scat chlor grs,mnrl calc & scat Fos frags



SH/SLTYSH: med gy & gybrn,sft occ vsft & cly, sbblky-blky,rthy dns decr sltytext,scat mtx pyr, vf tuff debris ip,mod-vcalc w/ mnrl calc ip,Fos shell frags,scat chlor grs,sme thn slty lam

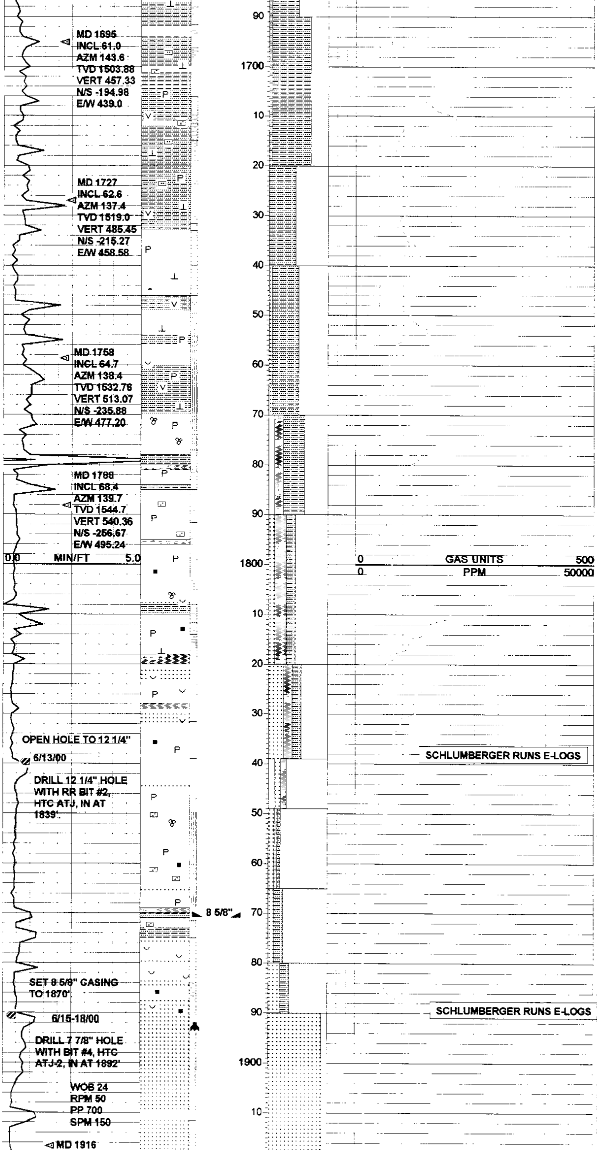
SH/SLTYSH: brngy brn lt-mgy,sft incr stky-gummy,mod-vcalc,sme sltytext/aren,pred non qtz,tuff debris,thn lt slty/sdy lam ip,tr pyr clstrs,sme mrly,mica flks ip,chlor ip

SH: ltgy dkgy op gybrn tr crm tan Ls,vf-fgr,mod frm-sl sft,mod-psrt,sbrd-rd,rthy-sltyip,abnt calc cmt,abnt arg infl,sme carb incl w/ occ lse mat,tr-mod mic mica,sme qtz grs,tr ss strgs,pyr clstrs,dk carb flks ip,tr mica,sme chlor

SH/SLTYSH: brngy brn lt-mgy,sft occ gummy mod-vcalc,sme sltytext/aren,pred non qtz,tuff debris,thn lt slty/sdy lam ip,tr pyr clstrs,mrly ip, mica ip,sme rd chlor grs

sl sft,sbrd-rd,rthy,abnt calc cmt & nodules,abnt arg mtx,tr carb incl,occ vf lse f-m ss grs,tr-mod mic mica,sme qtz grs,tr ss strgs,abnt pyr clstrs, dk carb flks ip,mnrl calc ip,scat mica flks,rd-sbrd chlor grs

SDYSLTST: ltgy op ip tan ip,vfgr thru,drty & pred grdg to shy sltst,wh cly & arg infil,friv calc, tuff debris,incr-abnt pyr clstrs,incr mica flks, scat rd-sbrd chlor grs,mnrl calc & scat Fos frags



SH&SLTYSH: even meg gy occ gybrn,m sft prednonclayey,dns rthy sme hkly & sbwxy,sl sltytextip,m calcip,p dism pyrincl,tr chlorgrs,vf tuffmat,rr-decr dkcarb/orgmat,abnt mnrl calc, occ lse vf-fssgrs

SLTYSH: mgy occ gybrn,msft prednon clayey,dns rthy sme hkly & sbwxy,sl sltytextip, m calcip,sme pyrincl,tr chlorgrs,vftuffmat,scat dkcarb/orgmat,abnt mnrl calc,occ lse ssgrs

SLTST: ltgy op iptan ip,vfgr thru,drty & pred grdg to shy,wh cly & arg infil,fri v calc,tuff debris, abnt pyr clstrs,incr mica flks,scat rd-sbrd chlor grs,mnrl calc & scat Fos frags

SHSLTST: ltgy-dkgy-glgy-brngy-resbrn op ip, vf-f gr,grty ip,pred grdg to sltst w/ sme ss strgs,fri slfrm,sbrd-rd-sbang,sme arg infl,occ calc cmt w/ tr nod,abnt lse carb mat w/ occ incl,tr mic mica,tr foram,abnt dism pyr clust

SHSLTST: ltgy-dkgy-glgy-brngy-resbrn op ip, vf-f gr,grty ip,pred grdg to sltst w/ sme ss strgs,fri slfrm,sbrd-rd-sbang,sme arg infl,occ calc cmt w/ tr nod,abnt lse carb mat w/ occ incl,tr mic mica,tr foram,abnt dism pyr

Wt. 8.8 Vis 42 pH 8.5 WI 6.4 Cl 1900
Ca 40 Sol 3% Ck 2/32

SHSLTST: ltgy-dkgy-glgy-brngy-resbrn op ip, vf-f gr,grty ip,pred grdg to sltst w/ sme ss strgs,fri slfrm,sbrd-rd-sbang,sme arg infl,occ calc cmt w/ tr nod,abnt lse carb mat w/ occ incl,tr mic mica,sme lse qtz gr w/ occ friss clust,abnt dism pyr clust

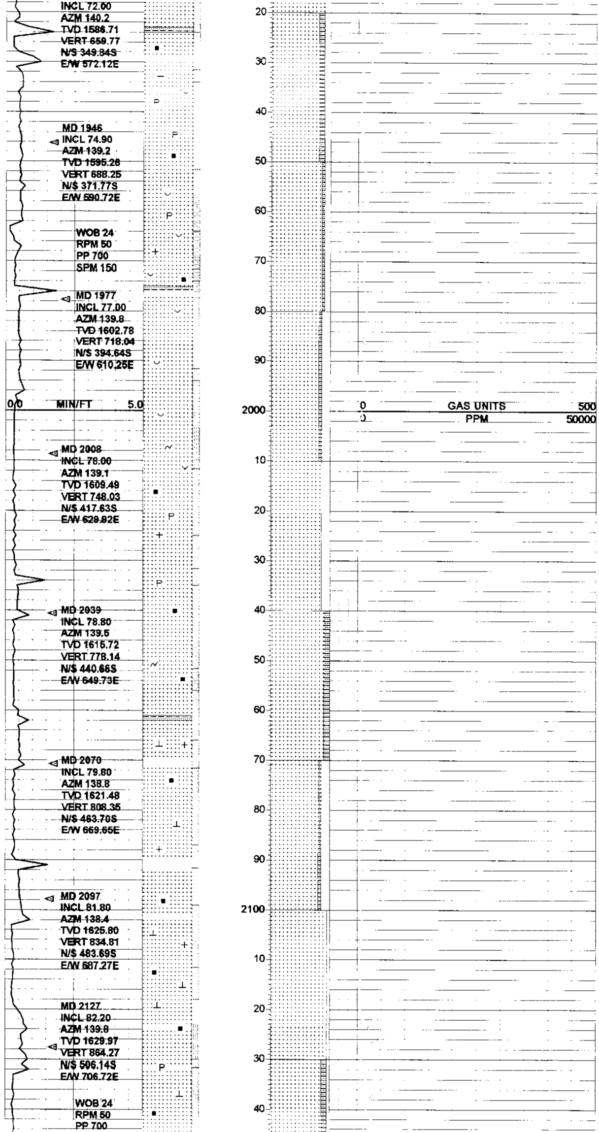
SHSLTST: ltgy-dkgy-glgy-brngy-resbrn op ip, vf-f gr,grty ip,pred grdg to sltst w/ sme ss strgs,fri slfrm,sbrd-rd-sbang,sme arg infl,occ calc cmt w/ tr nod,abnt lse carb mat w/ occ incl,tr mic mica,sme lse qtz gr w/ occ friss clust,abnt dism pyr clust

LOG TOP C&W SANDSTONE @ 1866'

SHSLTST: ltgy-dkgy-gybrn,vf-f gr,sbrd-rd, mod frm-sl sft,mod calc cmt,p-mod srt,abnt arg infl,abnt lse carb mat w/ sme lge incl,sme lse sbrd-rd ss gr,occ ss clust

SS: op-clr-fros-offwh,vf-f gr,rd-sbrd,fri thru w/ abnt lse uncons gr,sme calc cmt,abnt lge mica gr,sme chlor,occ carb incl w/ lse mat

SS: clr-fros-ltgy-glgy-offwh-trnsl,S&P,vf-m gr, sbrd-rd w/ occ sbang,fri-mod frm,mod srt,gr supt w/ sil cmt,sme calc cmt-infl,abnt carb flk-strgs w/ abnt lse mat,sme lse dism pyr clust, abnt lge mica gr w/ occ chlor gr,sme sltst strgs



SS: clr-fros-ltgy-glgy-offwh-trnsl S&P,vf-mgr, sbrd-rd w/ occ sbang,fri-mod frm,mod srt,gr supt w/ sil cmt,sme calc cmt-infl,abnt carb flk-strgs w/ abnt lse mat,sme lse dism pyr clust, abnt lge mica gr w/ occ chlor gr,sme sltst strgs

SS: clr-fros-ltgy-glgy-offwh-trnsl S&P,vf-mgr, sbrd-rd w/ occ sbang,fri-mod frm,mod srt,gr supt w/ sil cmt,sme calc cmt-infl,abnt carb flk-strgs w/ abnt lse mat,sme lse dism pyr clust, abnt lge mica gr w/ occ chlor gr,sme sltst strgs

SS: trnsl-clr-fros-ltgy-glgy-op-offwh-crm, S&P,vf-mgr,sbrd-rd-sbang,fri clus w/ lse uncons gr thru,mod srt,gr supt w/ sil cmt,mod-abnt calc cmt-infl w/ tr calc nod,abnt lge lse carb mat w/ sme incl-flk,abnt lge mica w/ tr chlor,sme dism pyr clus

SS: trnsl-clr-fros-ltgy-glgy-op-offwh-crm, S&P,vf-mgr,sbrd-rd-sbang,fri clus w/ lse uncons gr thru,mod srt,gr supt w/ sil cmt,mod-abnt calc cmt-infl w/ tr calc nod,abnt lge lse carb mat w/ sme incl-flk,abnt lge mica w/ tr chlor,sme dism pyr clus

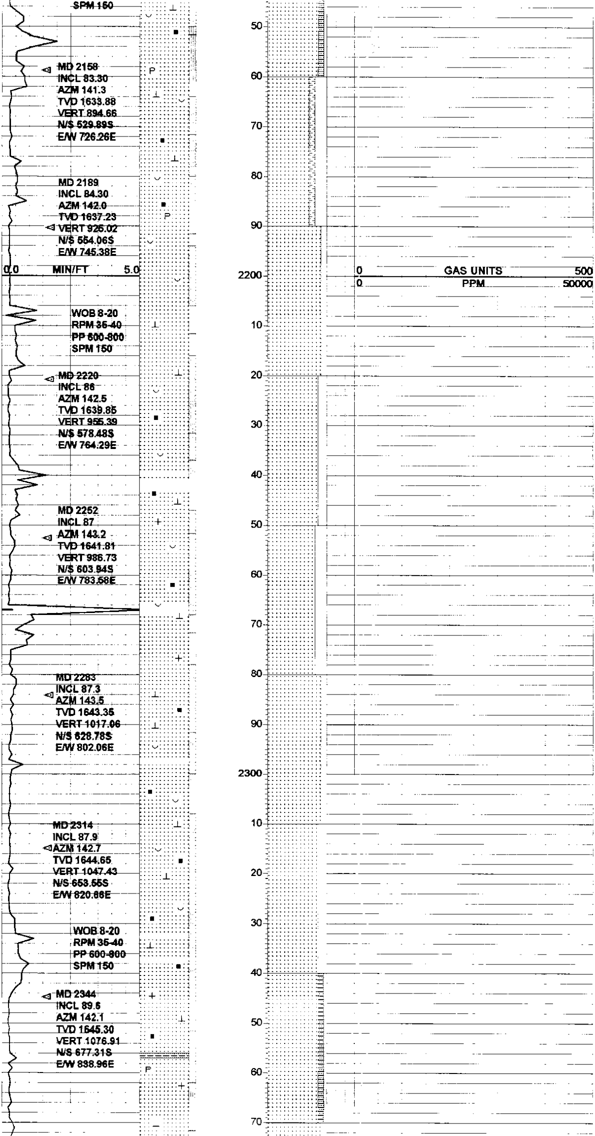
SS: trnsl-clr-fros-ltgy-glgy-op-offwh-crm, S&P,vf-mgr,sbrd-rd-sbang,fri clus w/ lse uncons gr thru,mod srt,gr supt w/ sil cmt,mod-abnt calc cmt-infl w/ tr calc nod,abnt lge lse carb mat w/ sme incl-flk,abnt lge mica w/ tr chlor,sme dism pyr clus

SS: trnsl-clr-fros-ltgy-glgy-op-offwh-crm, S&P,vf-mgr,sbrd-rd-sbang,fri clus w/ lse uncons gr thru,mod srt,gr supt w/ sil cmt,mod-abnt calc cmt-infl w/ tr calc nod,abnt lge lse carb mat w/ sme incl-flk,abnt lge mica w/ tr chlor,sme dism pyr clus

Wt. 8.6 Vis 40 pH 8.0 Wl 8.6 Cl 17K
Ca 80 Sol 1% Ck FILM

SS: trnsl-clr-fros-ltgy-glgy-op-offwh-crm, S&P,vf-mgr,sbrd-rd-sbang,fri clus w/ lse uncons gr thru,mod srt,gr supt w/ sil cmt,mod-abnt calc cmt-infl w/ tr calc nod,abnt lge lse carb mat w/ sme incl-flk,abnt lge mica w/ tr chlor,sme dism pyr clus

SS: trnsl-clr-fros-ltgy-glgy-op-offwh-crm, S&P,vf-mgr,sbrd-rd-sbang,fri clus w/ lse



uncons grthru,mod srt grsuptw/ silcmt,mod-abnt calccmt-inflw/ tr calcnod,abntlge lse carb matw/ smeincl-flk,abntlgemicaw/ tr chlor,smedismpyrclus

SS: trnsl-clr-fros-ltgy-glgy-op-offwh-crm, S&P,vf-mgr,sbrd-rd-sbang,friclusw/ lse uncons grthru,mod srt grsuptw/ silcmt,mod-abnt calccmt-inflw/ tr calcnod,abntlge lse carb matw/ smeincl-flk,abntlgemica,smesh sltst strgs

SS: trnsl-clr-fros-ltgy-glgy-op-offwh-crm, S&P,vf-mgr,sbrd-rd-sbang,friclusw/ lse uncons grthru,mod srt grsuptw/ silcmt,mod-abnt calccmt-inflw/ tr calcnod,abntlge lse carb matw/ smeincl-flk,abntlgemica,smesh sltst strgs

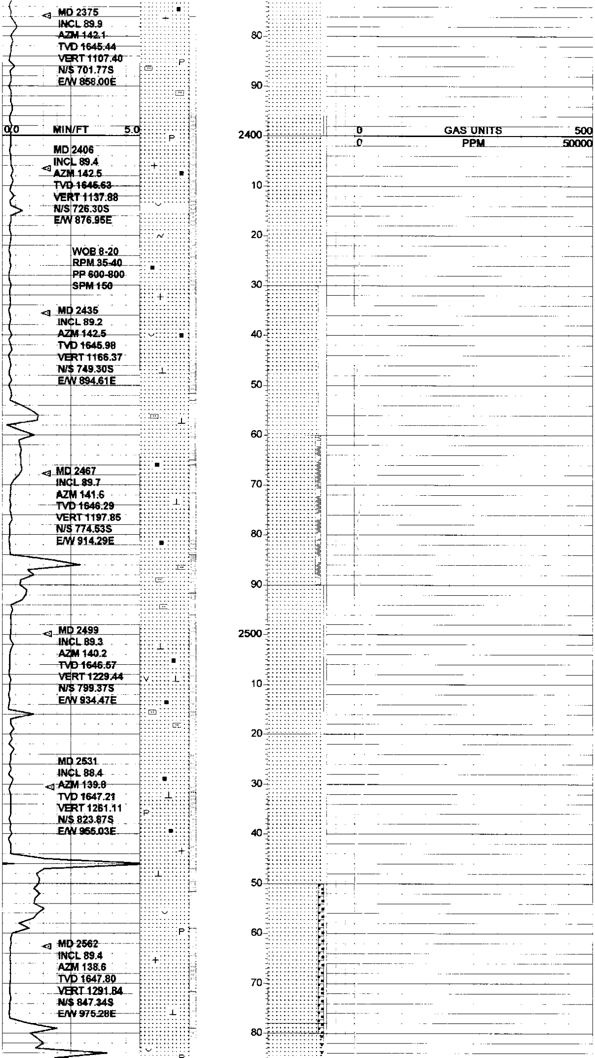
SS: trnsl-clr-fros-ltgy-glgy-op-offwh-crm, S&P,vf-mgr,sbrd-rd-sbang,friclusw/ lse uncons grthru,mod srt grsuptw/ silcmt,mod-abnt calccmt-inflw/ tr calcnod,abntlge lse carb matw/ smeincl-flk,abntlgemica,smesh sltst strgs

SS: trnsl-clr-fros-ltgy-glgy-op-offwh-crm, S&P,vf-mgr,sbrd-rd-sbang,friclusw/ lse uncons grthru,mod srt grsuptw/ silcmt,mod-abnt calccmt-inflw/ tr calcnod,abntlge lse carb matw/ smeincl-flk,abntlgemica,smesh sltst strgs

SS: clr-fros-op-glgy-offwh-crmwh-trnsl-ltgy, S&P,vf-mgrw/ trlgegr,sbrd-rd-sbang,friw/ lse uncons grthru grsuptw/ silcmt,smecalccmt-infl,abntlgelse carbmatw/ occflk,abntlge mica gr,trfeld gr,trchlor,occdismpyrclust,occ sltst strgs-incl

SS: clr-fros-op-glgy-offwh-crmwh-trnsl-ltgy, S&P,vf-mgrw/ trlgegr,sbrd-rd-sbang,friw/ lse uncons grthru grsuptw/ silcmt,smecalccmt-infl,abntlgelse carbmatw/ occflk,abntlge mica gr,trfeld gr,trchlor,occdismpyrclust,occ sltst strgs-incl

SS: clr-fros-op-glgy-offwh-crmwh-trnsl-ltgy, S&P,vf-mgrw/ trlgegr,sbrd-rd-sbang,friw/ lse uncons grthru grsuptw/ silcmt,smecalccmt-infl,abntlgelse carbmatw/ occflk,abntlge mica gr,trfeld gr,trchlor,occdismpyrclust,occ sltsh strgs-incl



SS: clr-fros-op-glgy-offwh-crmwh-trnsl-ltgy, S&P,vf-mgrw/trlgegr,sbrd-rd-sbang,friw/lse uncons grthru,grsuptw/silcmt,smecalccmt-infl,abntlgelse carbmatw/occflk,abntlge micagr,trfeldgr,trchlor,occdismpyrclust,occ sltststrgs-incl

SS: clr-fros-op-glgy-offwh-crmwh-trnsl-ltgy, S&P,vf-mgrw/trlgegr,sbrd-rd-sbang,friw/lse uncons grthru,grsuptw/silcmt,smecalccmt-infl,abntlgelse carbmatw/occflk,abntlge micagr,trfeldgr,trchlor,occdismpyrclust,occ sltststrgs-incl

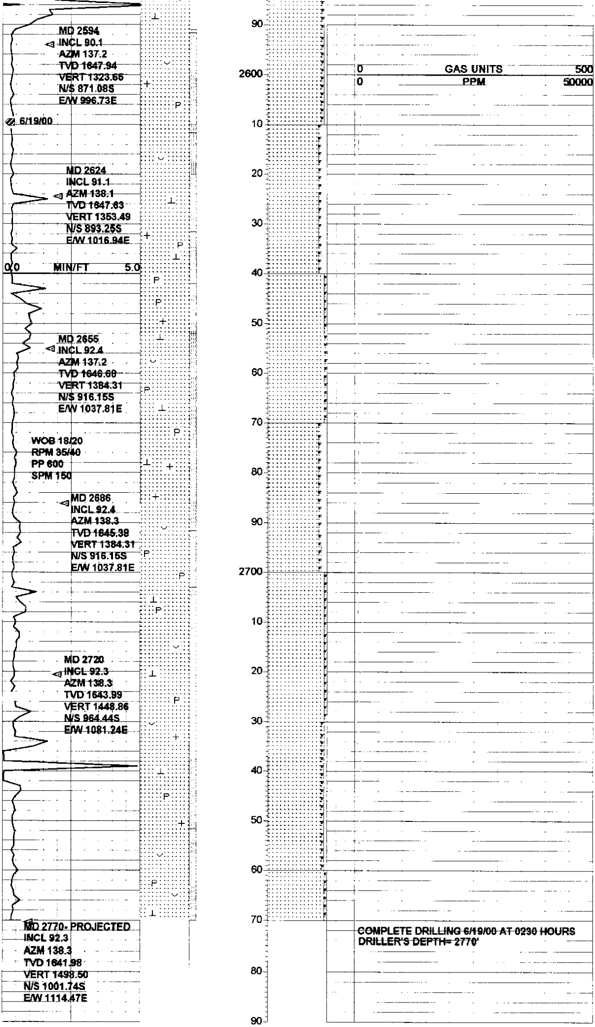
SS: op-clr-glgy-offwh-crmwh-trnsl-ltgy,S&P, vf-mgrw/trlgegr,sbrd-rd-sbang,friw/lse uncons grthru,grsuptw/silcmt,smecalccmt-infl,abntlgelse carbmatw/occflk,abntlge micagr,trfeldgr,trchlor,occdismpyrclust,occ sltststrgs-incl

SS: op-clr-glgy-offwh-crmwh-trnsl-ltgy,S&P, vf-mgrw/trlgegr,sbrd-rd-sbang,friw/lse uncons grthru,grsuptw/silcmt,smecalccmt-infl,abntlgelse carbmatw/occflk,abntlge micagr,trfeldgr,trchlor,occdismpyrclust,occ sltststrgs-incl,trclyst

SS: op-clr-glgy-offwh-crmwh-trnsl-ltgy,S&P, vf-mgrw/trlgegr,sbrd-rd-sbang,friw/lse uncons grthru,grsuptw/silcmt,smecalccmt-infl,abntlgelse carbmatw/occflk,abntlge micagr,trfeldgr,trchlor,occdismpyrclust,occ sltststrgs-incl

SS: op-clr-glgy-offwh-crmwh-trnsl-ltgy,S&P, vf-mgrw/trlgegr,sbrd-rd-sbang,friw/lse uncons grthru,grsuptw/silcmt,smecalccmt-infl,abntlgelse carbmatw/occflk,abntlge micagr,trfeldgr,trchlor,occdismpyrclust,occ sltststrgs-incl

SS: opltgytrnsls&pip,f-mgrcgrip,m-wsrt, predsbangangip,abntlsegrssmlfriclstrs-wk calccmt&minorclyinfil,dkbrn-blkcarb/org incl,micaflks,abntpyrclstrs,abntfeldgrs,occ chlor,visporip



SS: ltgytrnsopoccclrrrglasy,mgrw/smef-c grs,msrt,sbang-ang,clnfriclstrsw/vpgrnsppt ippredm-vcalc,tr-minorwhclyinfil,abntpyr thru,feldgrs,micaflks&rrbks,trchlor,smevgvis por

SS: opltgytrnslipf-mgrcgrip,m-wsrt,pred sbangangip,abntlsegrssmlfriclstrs-wkcalc cmt&minorclyinfil,dkbrn-blkcarb/orgincl, micaflks,abntpyrclstrs,abntfeldgrs,occchlor, minorvfinetuffdebris,visporipsmettclstrs

SS: predop&ltgytrnsloccclr,f-m-cgr&mod srt,sbang-ang,predvfriclstrsw/wkcalccmt,pt clnw/gvispor,ptw/whclyinfil&mfri,abntpyr clstrs&mtxpyr,micaflks,feldgrsthru,incrchlor stn

SS: opltgyoffwhclr-glasyipf-m-cgr,msrt, sbang-ang,incrcln,vfrismlclstrsw/wk calccmt&grnsppt,smew/gpor&cln,sme minorwhclt&vftuffinfil,abntpyrthru,micaflks, evendismfeldgrs,chlorincl,metalinsamp

SS: opltgytrnslipf-mgrcgrip,m-wsrt,pred sbangangip,abntlsegrssmlfriclstrs-wkcalc cmt&minorclyinfil,dkbrn-blkcarb/orgincl, micaflks,abntpyrclstrs,abntfeldgrs,occchlor, minorvfinetuffdebris,visporipsmettclstrs, scatmetalflksinsamp