



COMPANY Calpine Corporation
WELL NAME Wildhorse State 34 ST 1
FIELD The Geysers
COUNTY Sonoma
STATE California
WELL HEAD COORDINATES
 N: 423,497.6, E: 1,758,754.6
ELEVATION 2753.7'
RIG - DAY RATE START DATE 7/20/2010
TD DATE 9/10/2010
TOTAL DEPTH 11753'
TRUE VERTICAL DEPTH 11148'
TD LOCATION 751' S, 2674' W from the Wellhead
DRILLING CONTRACTOR Thermasource/NCPA Rig#1
COMPANY REPRESENTATIVES Power, Silva

LOG INTERVAL
DATE LOGGED 7/14/10 TO 9/12/10
DEPTH LOGGED 4180 TO 11753
MUD DRILLING 4180 TO 6015
AIR DRILLING 6015 TO 11753
LOG SCALE 1:600
UNIT NO. C23
LOGGING GEOLOGISTS
 Nate Bogie (nb), Joe Whearty (jw), Andrew Schepflin (as), Dick Dunlap (rd), Kelly Richardson (kr), Charley Wahl (cw), Patrick Broderick (pb)

HOLE		
26"	TO	610'
17.5"	TO	4156'
12.25"	TO	6015'
8.5"	TO	11753'
	TO	

ABBREVIATIONS			
NB	New Bit	BHT	Bottom Hole Temp
RRB	Re-run Bit	c	Carbide Test
CB	Core Bit	NR	No Returns
WOB	Weight on Bit	LAT	Logged After Trip
SPM	Strokes per Minute	CFM	Cubic Feet per Min
PP	Pump Pressure	BUT	Bottoms Up Temp
RPM	Revolutions per Min		

LITHOLOGY			
	Argillite		Siliceous Graywacke
	Chert		Metamorphic Ultramafic
	Siltstone		Weak Foliation
	Greenstone		Strong Foliation
	Serpentine		Marginal Alteration
	Blueschist		Pervasive Alteration
	Felsite		Weakly Hornfelsic
	Clay		Strongly Hornfelsic
	Lithic Graywacke		
	Argillaceous Graywacke		

CASING				
20"	FROM	0'	TO	601'
13.375"	FROM	0'	TO	4356'
LINER				
9.625"	FROM	3931'	TO	6008'
7"	FROM	0'	TO	5902'
7"	FROM	5888'	TO	11753'

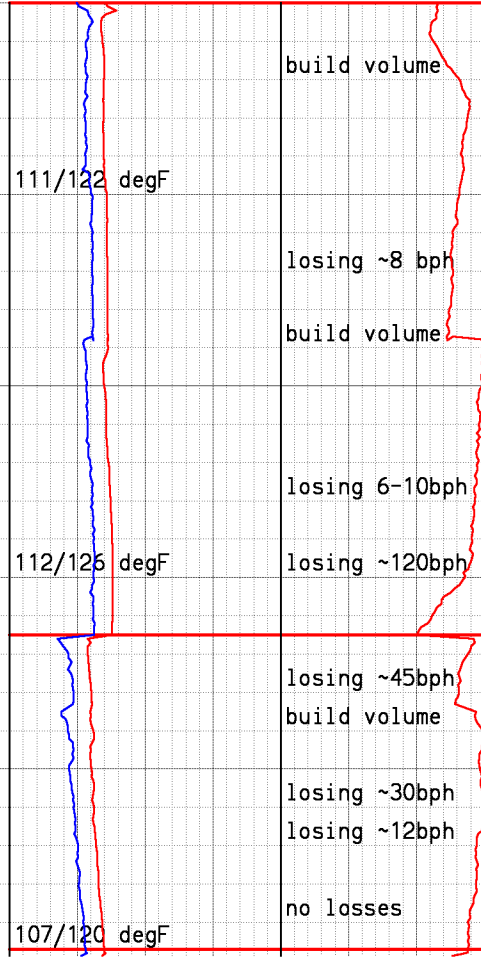
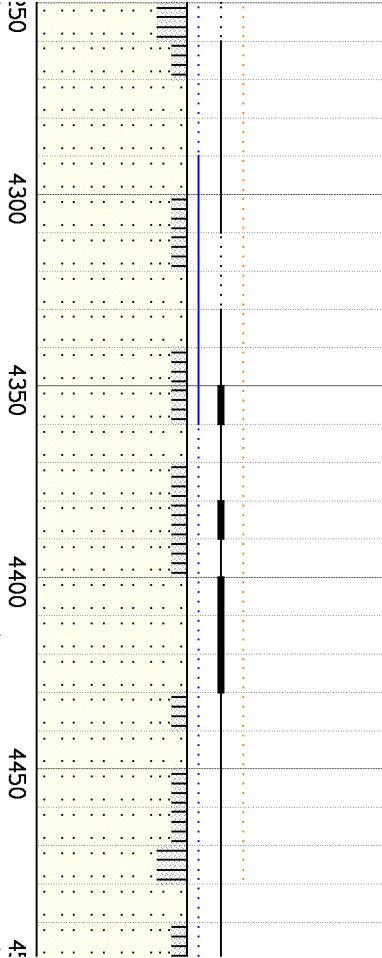
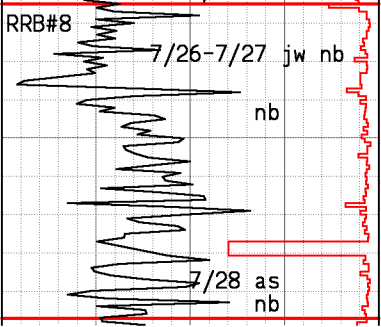
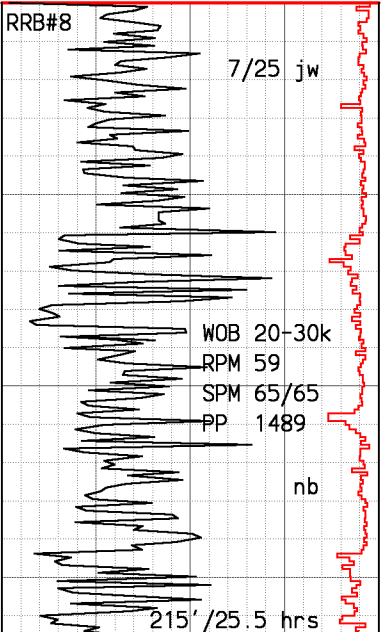
SYMBOLS			
	Wireline Log		Casing Shoe
	Steam/Water Entry		Flow Test
	Deviation Survey		Cored Interval No Recovery

REMARKS
 All depths from kelly bushing KB=30'

	STEAM ENTRIES		WATER ENTRIES
	Init	Sust	
8040'	0#	0#	8615'- 4 bph
8929'	3#	3#	8795'- 3 bph
8980'	0#	0#	9882'- 4 bph
9120'	2#	2#	
9882'	10#	1#	
10125'	4#	4#	
10208'	6#	1#	
10655'	14#	0#	
10876'	5#	5#	

SECONDARY MINERALS			
Q = Quartz		Rare	<< 1%
C = Calcite		Trace	< 1%
P = Pyrite		Minor	1% to 4%
E = Epidote		Common	4% to 7%
R = Pyrrhotite		Abundant	7% to 10%
Ch = Chlorite			> 10%
X = Axinite			
A = Actinolite			
T = Tourmaline			

Drilling Data			Lithology	Minerals	Temperatures		Circulation		Surveys	Descriptions	
ROP					Temperature In	Pit Total		MWD Temps			
200	ft/hr	0					50	deg F	250		200
Weight on Bit			Depth	Tourmaline Actinolite Axinite Chlorite Pyrrhotite Epidote Pyrite Calcite Quartz							
0	k lbs	80									
Start Data Acquisition RRB#1 HTC T1276 G44 7/24 jw 20' / 6.5hrs rotate nb 50' / 6.5hrs			4150		mud cooler on 108/113 degF		no losses			Begin WHS 34 ST top of window 4156', bottom of window 4180'. Drill ahead w/12.25" bit NB#8 Smith GF135B0DVCPS	
			4200								
			4300								



4337'
18.1 deg
N53W
MRT Temp
not taken

4410'
17.7 deg
N51W
MRT Temp
not taken

Pump LCM sweep every hour.

Siliceous Graywacke: med gry, loc dk grnsh gry, overall med gry in sample, fm-hd, loc fri, brit, dom fn gr, well srted, fresh app, dom salt and pepper tex, wk rexln, well def gr bndrs, loc r wk chlorite wash, r-tr mlky wht qtz vng, r clr subhed qtz xl, r-absnt pyr.

4395' ROP incr to 13-20ft/hr, begin losing ~120bph. POH t/shd spot LCM pill to 4415'. CIRC, no returns.

Set plug #1 at 4415'. Tag thick mud at 4350', c/o LCM but no cement to bottom losing 60-80bph mud. Pumped and displaced 30bbl pill.

Pump LCM sweep every 1/2 hr.

Drill break f/4478-4482'. ROP incr 80'/hr.

Circulate hole clean, spot a Hydraplug/Dual Squeeze plug on bottom, POOH.

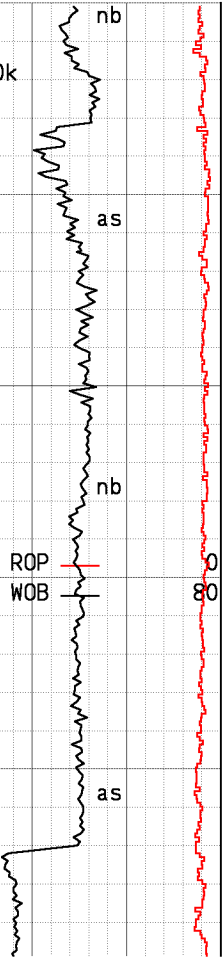
RRB#8

WOB 40-50k
RPM 64
SPM 71/71
PP 1959

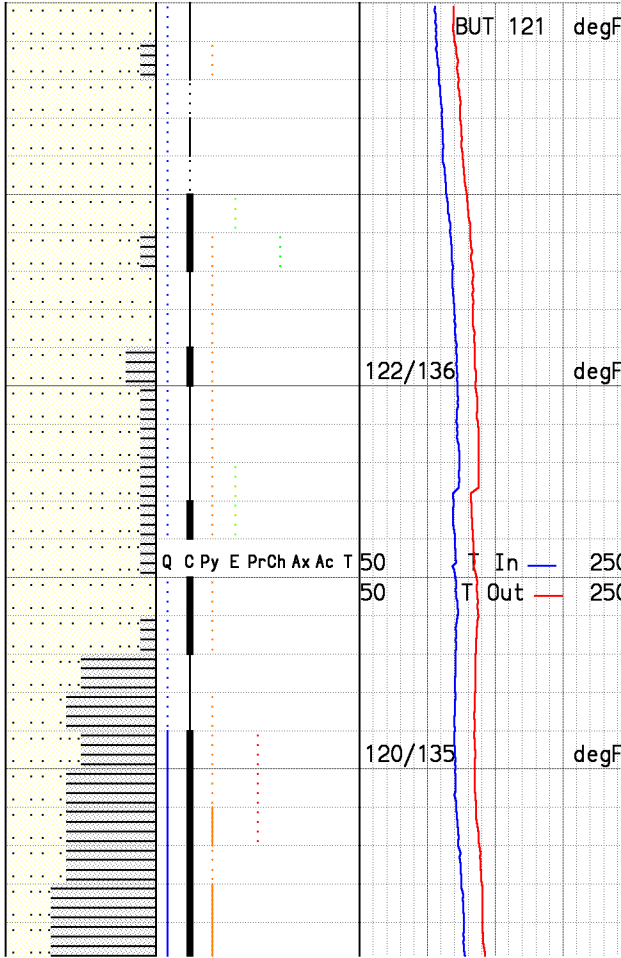
7/29

200
0

RQP
WOB



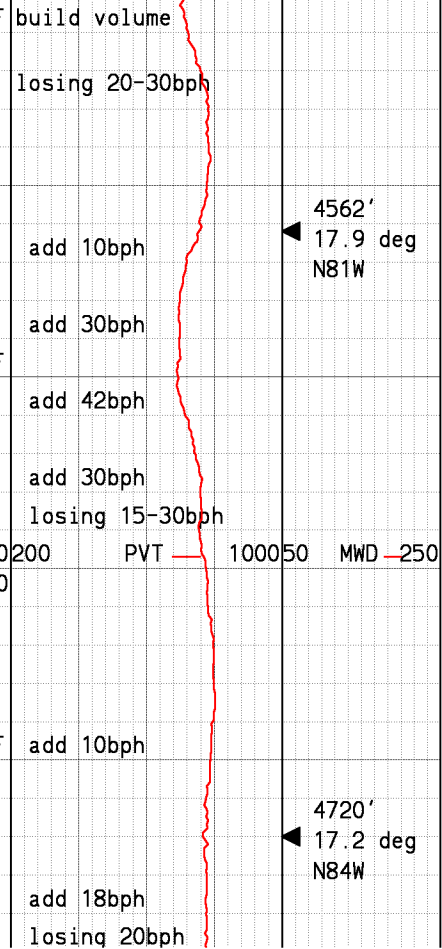
100
4550
4600
4650
4700
4



BUT 121 degF

122/136 degF

120/135 degF



build volume

losing 20-30bph

add 10bph

add 30bph

add 42bph

add 30bph

losing 15-30bph

add 10bph

add 18bph

losing 20bph

4562'
17.9 deg
N81W

4720'
17.2 deg
N84W

Ream tight spots f/4495-4497'

Pump LCM sweep every hour.

Siliceous Graywacke:lt-dk gry, loc grnsh gry,overall med gry in sample,hd-vhd,dom fn grn, mod wl-wl srted,dom salt and pepper tex,frsh-mod rexln,well def gr bndrs,loc rare weak chlor wash,r qtz vng,r-mnr calcite vng, occ subhed calcite xl,r-absnt diss pyr, r-abs yellow&green epi.Occ intbrdd w/Argillite:dk gry, mod hd-hd,v fn grn,wk-str phyll shn,occ calc vng,r-abs diss pyr.

Pump LCM sweep every hour.

7/30

WOB 51k
RPM 60
SPM 70/70
PP 2128

nb

as

7/31

478' / 56hrs
NB#9 GX35

nb

50

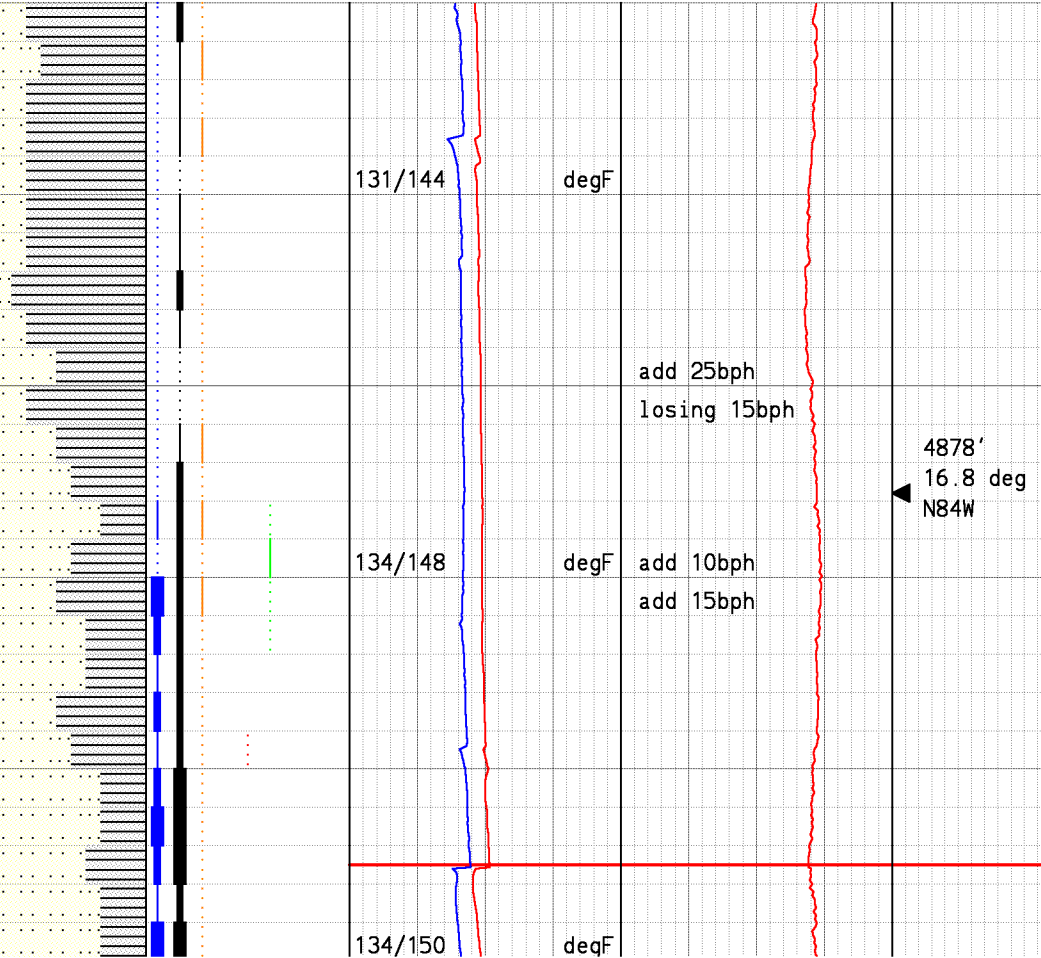
4800

4850

4900

4950

50



hours.

work pipe for survey

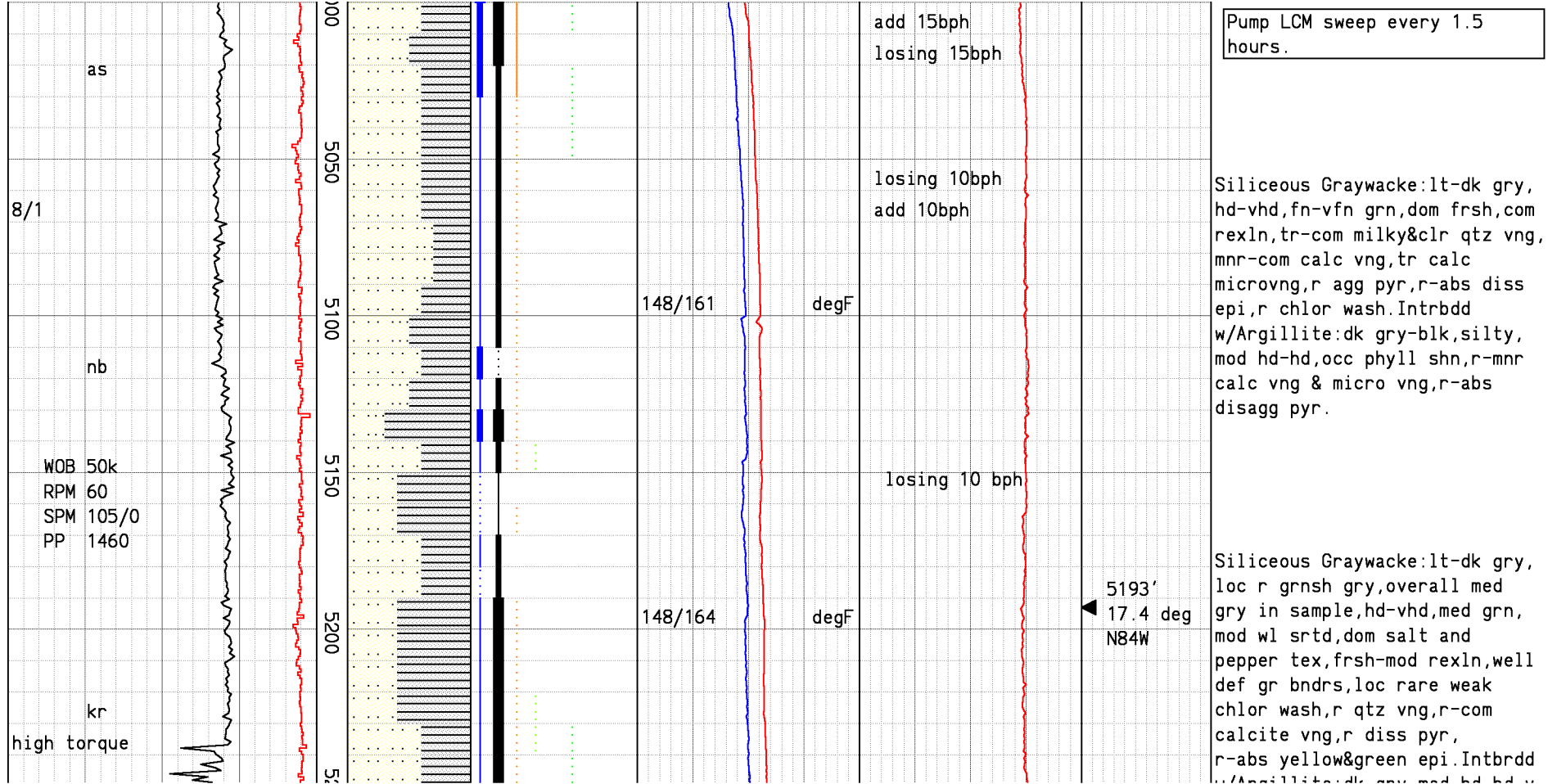
Argillite: dk gry-blk, silty,
mod hd-hd, occ phyll shn, r-mnr
calc vng & micro vng, r-tr
disagg & agg pyr.

4878'
16.8 deg
N84W

Siliceous Graywacke: lt-dk gry,
hd-vhd, fn-vfn grn, dom rexln, com
fresh, tr-com milky qtz vng, mnr-
com calc vng, tr calc microvng,
r agg pyr, r chlor wash.

work pipe for survey

Ream f / 4935-4975'.



8/2

high torque

CW

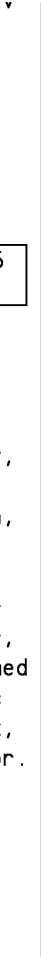
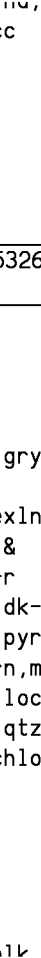
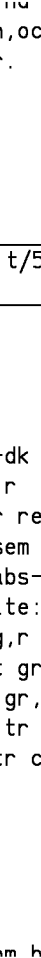
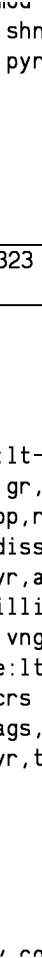
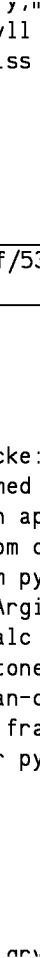
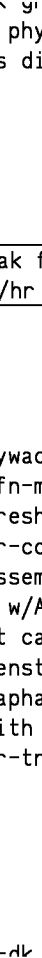
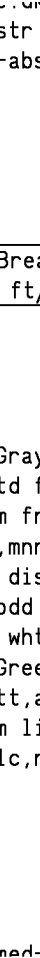
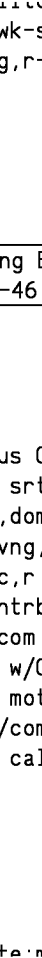
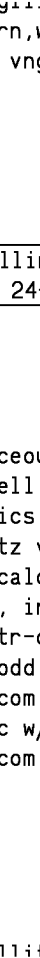
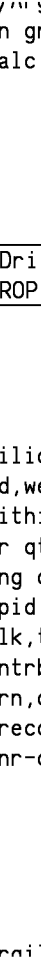
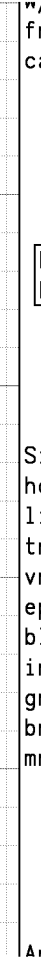
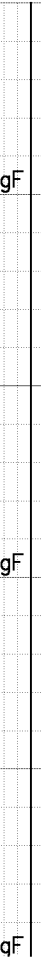
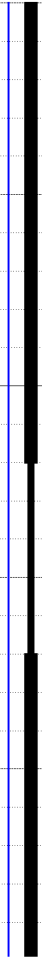
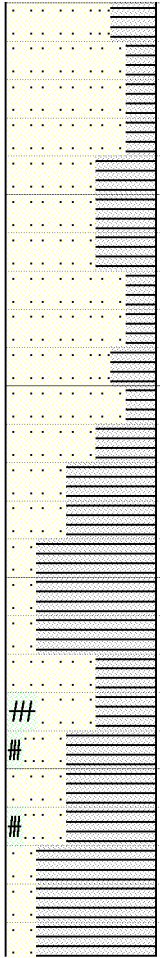
high torque

KR

8/3

CW

5300
5350
5400
5450
5500



154/170

degF

156/172

degF

158/173

degF

losing 10 bph

add 15bph

losing 10 bph

losing 8 bph

losing 10 bph

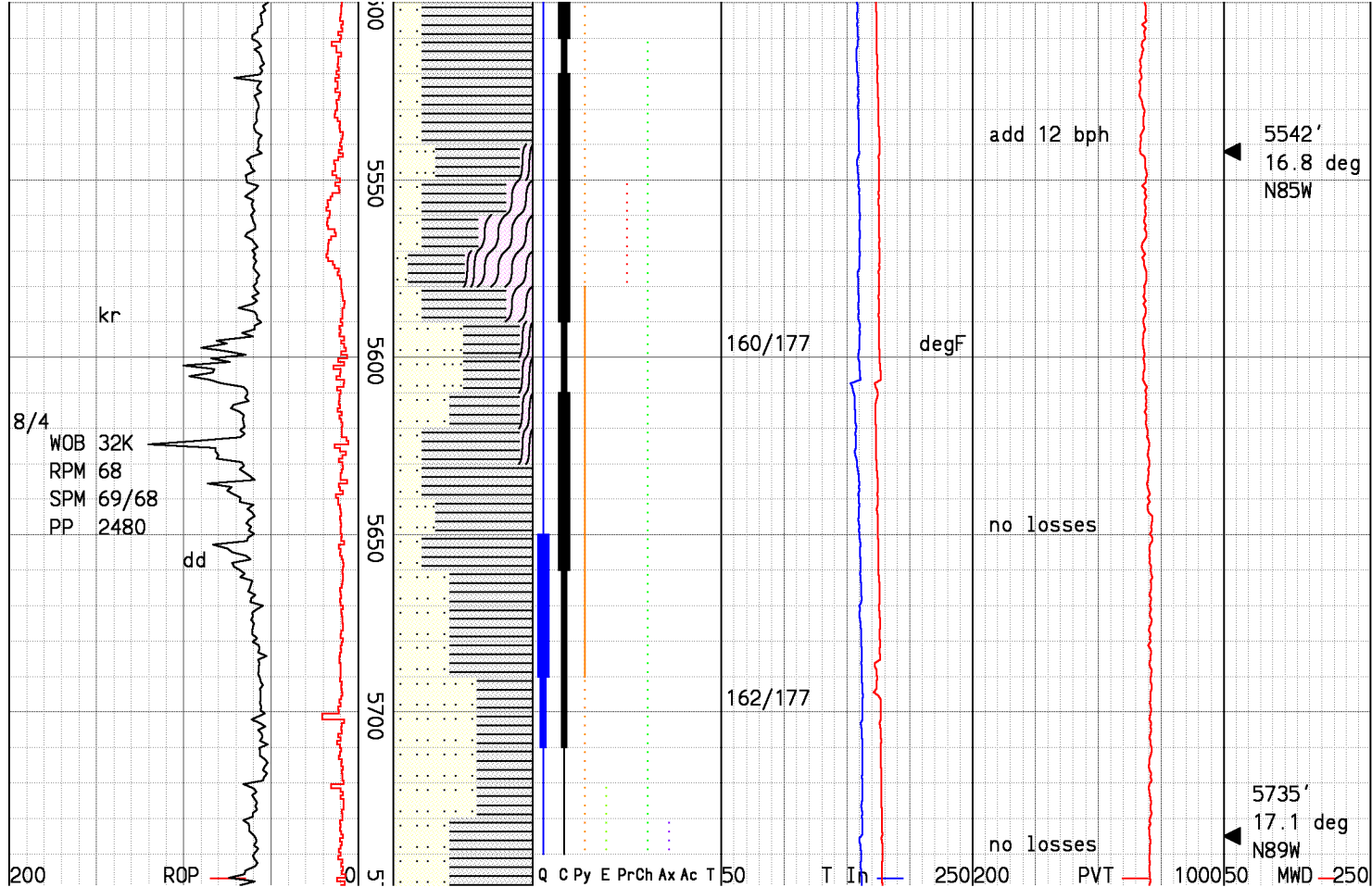
5352'
17.0 deg
N87W

Drilling Break f/5323 t/5326
ROP 24-46 ft/hr

Siliceous Graywacke:lt-dk gry,
hd,well srted fn-med gr,r
lithics,dom fresh app,r rexln,
tr qtz vng,mnr-com dissem &
vng calc,r dissem pyr,abs-r
epid, intrbdd w/Argillite:dk-
blk,tr-com wht calc vng,r pyr,
intrbdd w/Greenstone:lt grn,med
grn,com mott,aphan-crs gr,loc
brecc w/com lith frags,tr qtz,
mnr-com calc,r-tr pyr,tr chlor.

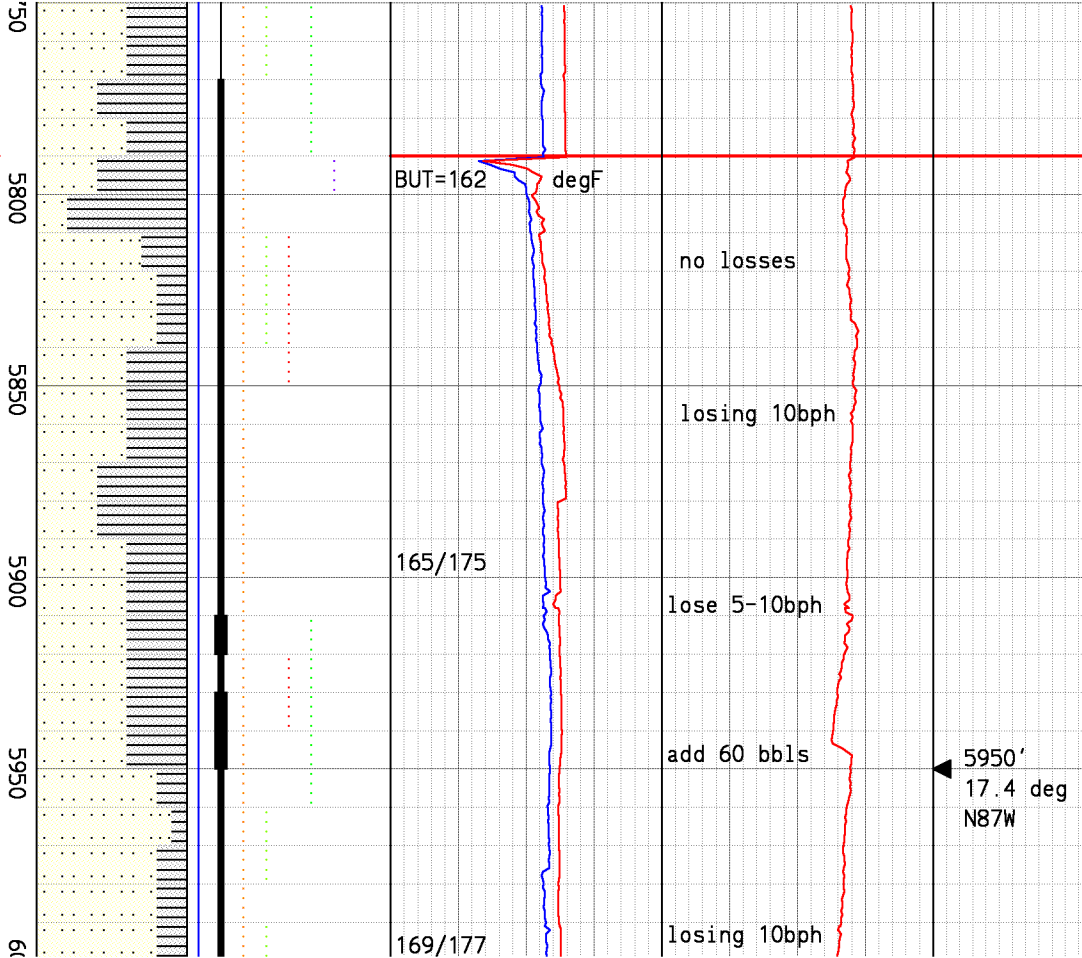
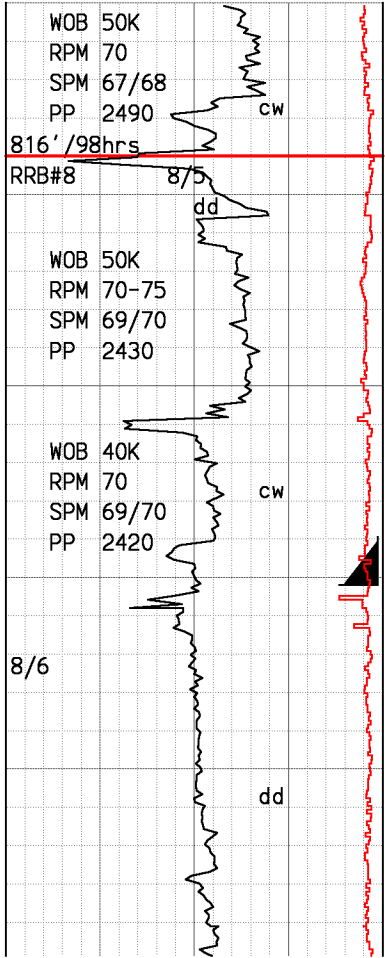
Argillite:med-dk gry,com blk

w/m argillite:dk gry,med rd rd,v
fn grn,wk-str phyll shn,occ
calc vng,r-abs diss pyr.



mod hd, fri, loc phyll shn, com
 dull appr, r agg pyr, com wht
 calc vng, intrbdd w/Siliceous
 Graywacke: a/a, incr with depth
 qtz vng tan in color could be
 loc Chert fingers, intrbdd w/
 Serpentine 5560'-5590': predom
 apple grn, loc transl-clear, sft
 to frm, loc waxy tex, loc shot
 thru pyr, r pyr druse vn & xls,
 r disag pyr rho, r fbr Chrysot.

Siliceous Graywacke: med-dk gry,
 fm-hd, fn-med gr, prly srted, loc
 brecc, loc shrd app, loc r silty
 clay, dom fresh app w/overall
 wk chlor wash, r rexln, r relic
 tex, tr-com qtz vn, tr-mnr dissem
 and vn calc, r agg pyr, commonly
 intrbdd w/Argillite: dkgry-blk,
 tr-mnr wht calc vng, r pyr, loc
 tec polishing, loc shrd app, com
 phyll shn.



Siliceous Graywacke: med-dk gry, fm-hd, fn-med gr, prly srted, dom fresh app w/loc wk chlor wash, rexln i.p., com relic bddg, tr mlky wht qtz vng, tr-mnr disse and vn calc, r agg pyr, r vein pyr, r pyrrho, r pink axinite, com intrbdd w/Argillite to 80%: dk gry-blk, sft-frm, tr-mnr wht calc vng, tr wht qtz vng, r disse & vn pyr, loc tec polishing, loc shrd app, com fiss tex, com phyll shn.

Siliceous Graywacke: med-dk gry, hd, fn-med gr, prly srted, dom fresh app, rexln i.p., com relic tex, tr mlky wht qtz vng, tr-com disse and vein calc, r agg and vn pyr, r pyrrho, r canary yel epidote, com intrbdd w/Argillite: dk gry, blk, sft-frm, hdr and more silic w/depth, r fis/polish tex, tr-mnr wht calc vng, tr wht qtz vng, r disse & vn pyr, r phyll shn.

no losses

losing 10bph

lose 5-10bph

add 60 bbls

losing 10bph

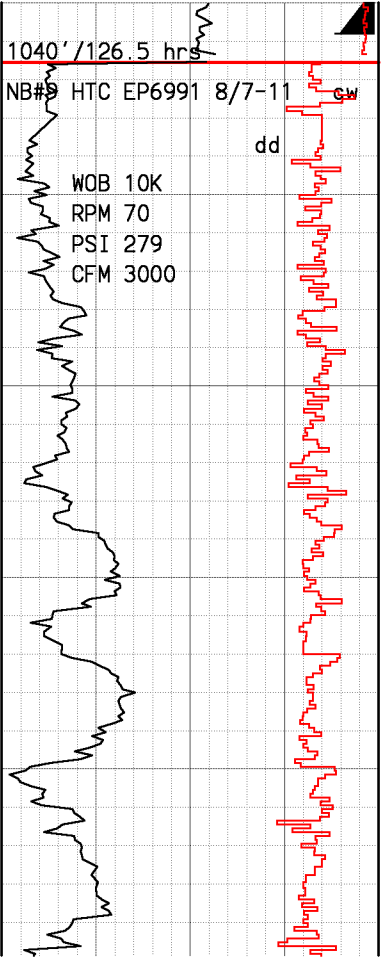
1040' / 126.5 hrs

NB#5 HTC EP6991 8/7-11

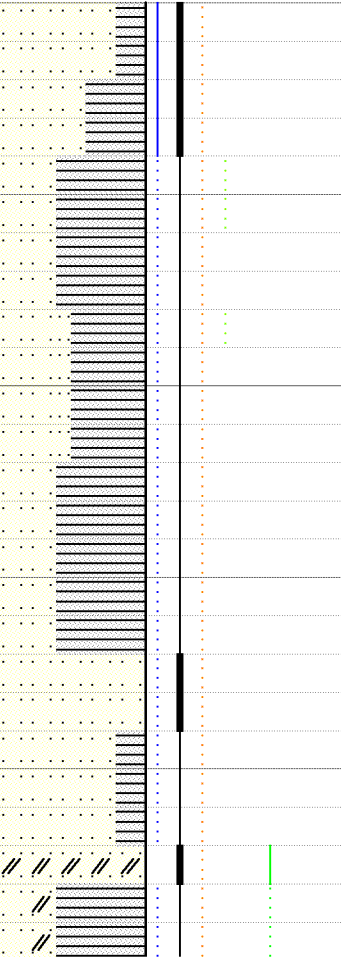
WOB 10K
RPM 70
PSI 279
CFM 3000

dd

cw



1000
6050
6100
6150
6200
6250



cnx

cnx

77 degF

cnx

cnx

cnx

86 degF cnx

cnx

Begin Air Drilling
3 Compressors

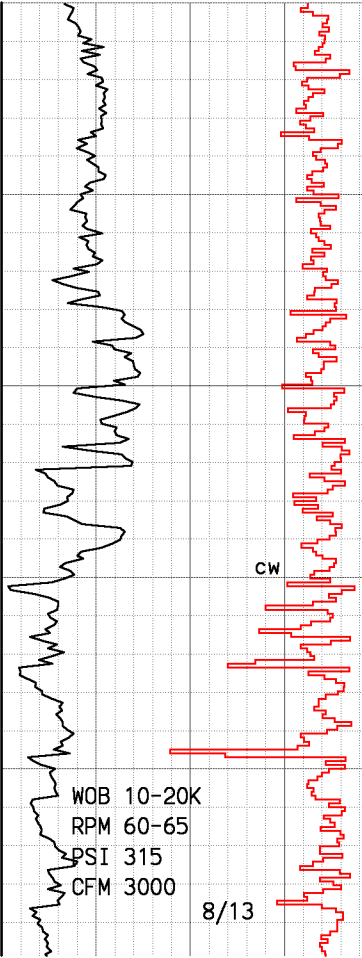
279/0 psi

303/0 psi

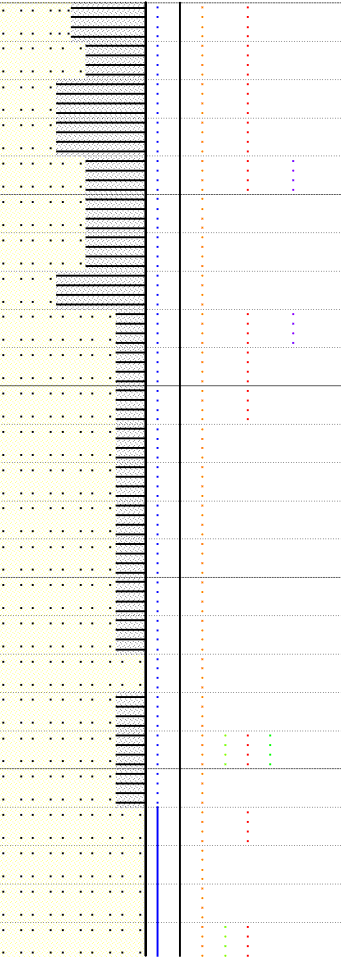
Drill 12 1/4" hole with mud to 6015'. Run and cement 9.626" casing to 6008'. TOL @ 3931'. Begin drilling 8.5" hole with air.

Argillite: dk gry, blk, frm-hd, aphan-v f gr, mass, blocky, mod silic incr w/depth, v r fiss tex, tr-mnr wht calc vng, r mlky wht qtz vng, r dissem & vn pyr, r r pyrrho, r magn, phyll shn.

Siliceous Graywacke: med gry, hd, med-crs gr, prly srted, dom fresh app, (perv altd 6220'-6230': blchd and pale grnsh wht sft-frm, feld rich altd to wht clay), loc rexln com relic tex, r-tr mlky wht qtz vng, tr-mnr dissem and vein calc, r agg and vn pyr, r pyrrho, r-tr

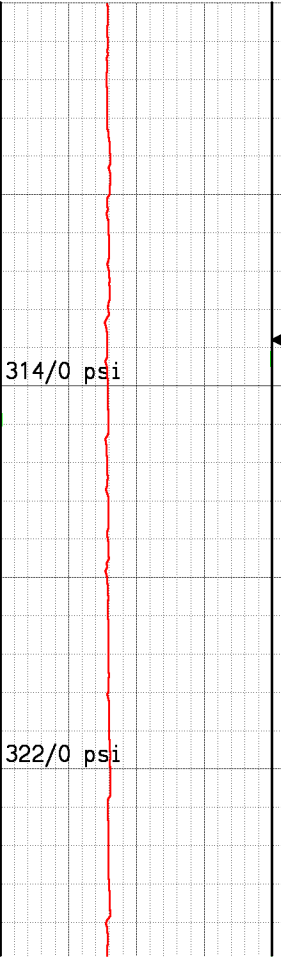
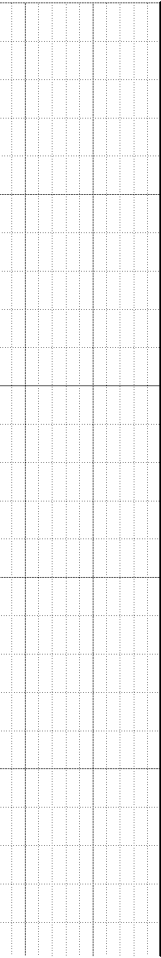


6700
6650
6600
6550
6500



cnx
cnx
cnx
cnx
cnx
cnx
cnx

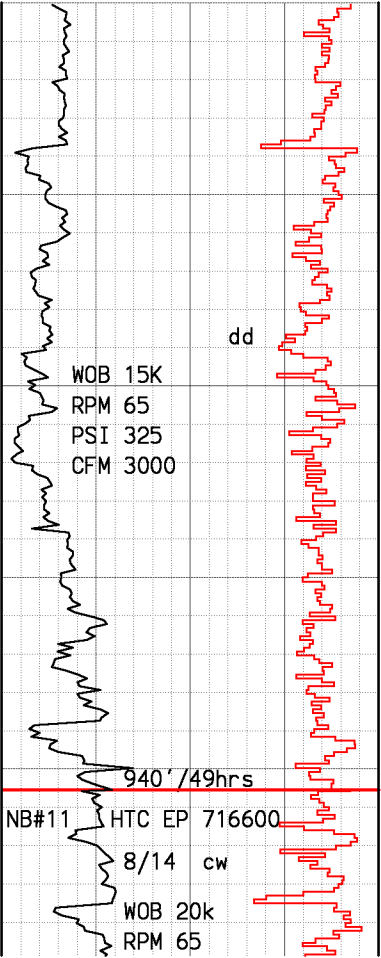
93 degF
78 degF



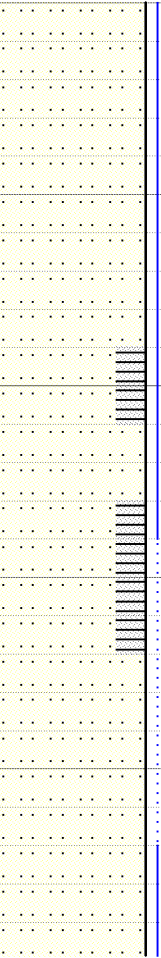
milky wht Qtz vng, tr mm wht
clr disse & vng calc, r bright
ylw pyr, abs-r pyrrho comes and
goes w/depth, r ylw epid stng,
commonly intrbdd w/Argillite:dk
earthy gry-blk, v fn gr, sft-hd,
loc strly indur, r wht Qtz vng,
r-tr wht vng calc, r bright ylw
pyr vng, r pyrrho.

Siliceous Graywacke:lt gry,dk-
steel gry, fresh app,hd-v hd,
well indur, predom fn gr, well
srtd, silty thin laminae, mod def
gr bndrs, loc wk rexln, r-tr wht
Qtz micro vng, tr disse & vng
calc, r ylw agg and vng pyr, r
epid stng incr w/depth, occ
irdsnt agg & vng pyrrho.

Siliceous Graywacke:lt gry,dk-
steel gry, fresh app,hd-v hd,



750
6800
6850
6900
6950
7000



cnx
77 degF
cnx
cnx
cnx
80 degF
cnx
cnx
72 degF

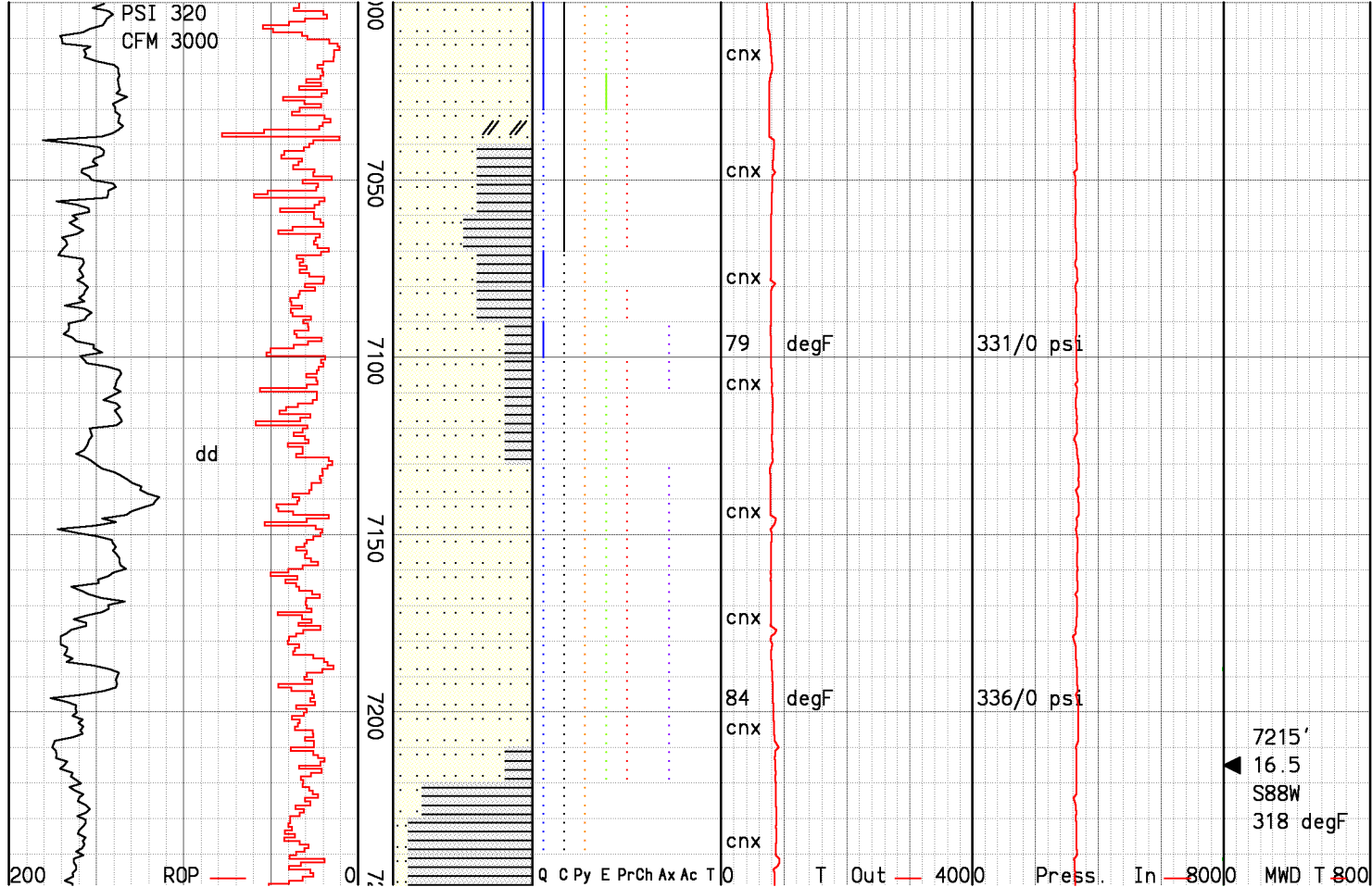
322/0 psi
315/0 psi
324/0 psi

3 Compressors
no mist

6906'
16.36 deg
N85W
308 degF

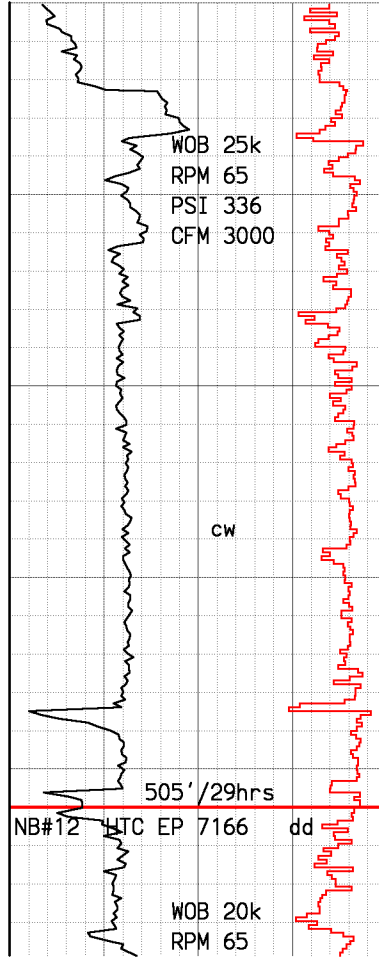
well indur, predom fn gr, well
srted, silty thin laminae, mod def
gr bndrs, loc wk rexln, r-tr wht
qtz micro vng, tr dissem & vng
calc, r ylw agg and vng pyr, r
canary yel & pistach grn epid
stng incr @ 6810', occ rare
yel/irdsnt agg & vng pyrrho,
intcltd w/ thin Argillite bed.

Siliceous Graywacke: med gry, dk-
gry, ,hd-v hd, fresh app, fn-med
gr, mod srted, thin silty lams,
mod def gr bndrs, loc wk rexln,
r mlky wht cross vng, tr dissem
and vng calc, r agg and vng pyr,
r canary yel & pistach grn epid
stng, occ rare yel/irdsnt agg &
vng pyrrho, r magnetite, intcltd
w/ thin silic Argillite beds.

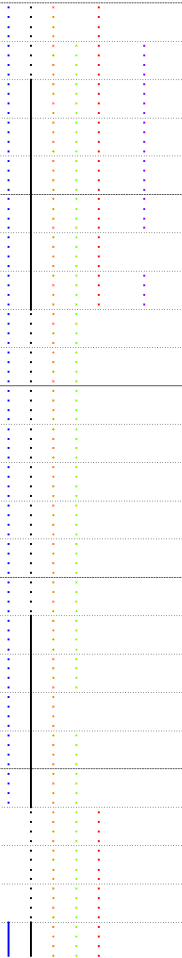
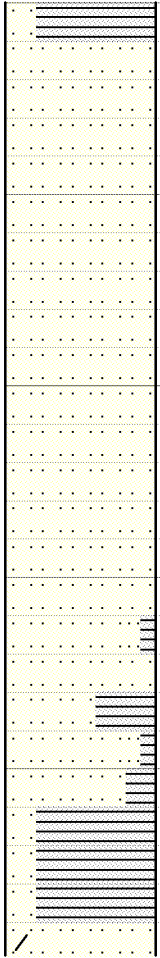


Siliceous Graywacke: med-lt gry, wht, salt & pepper, med-crs gr, prly def gr bndrs, loc wk rexln, altrd felds w/tr amt clay @7040', r-tr qtz vng, tr wht calc vng, r agg pyr, r yel/grn epid, loc epid vng 7030', r irdsnt pyrrho, intrbdd w/Argillite: dk erthy gry, mod sft, v fn gr, r qtz & calc vng, r disseminated vng pyr.

Siliceous Graywacke: lt gry, loc med gry, lt gry in sample, mod hd-hd, fn-med gr, pred salt & pepper app, prly srted, well def gr bndrs, r relic bdg, loc wk rexln, predom fresh, loc wk altn felds to wht clay, r mlky wht qtz vng, r wht agg and vn calc, r agg pyr, r agg gold/irdsnt pyrrho, r axinite, r canary yel epid xls and stng, r dk gry-blk Argillite flks.



750
7300
7350
7400
7450
7500



cnx
cnx
cnx
cnx
cnx
cnx
cnx

cnx
79 degF cnx 332/0 psi
cnx
cnx
76 degF cnx 339/0 psi
cnx
cnx

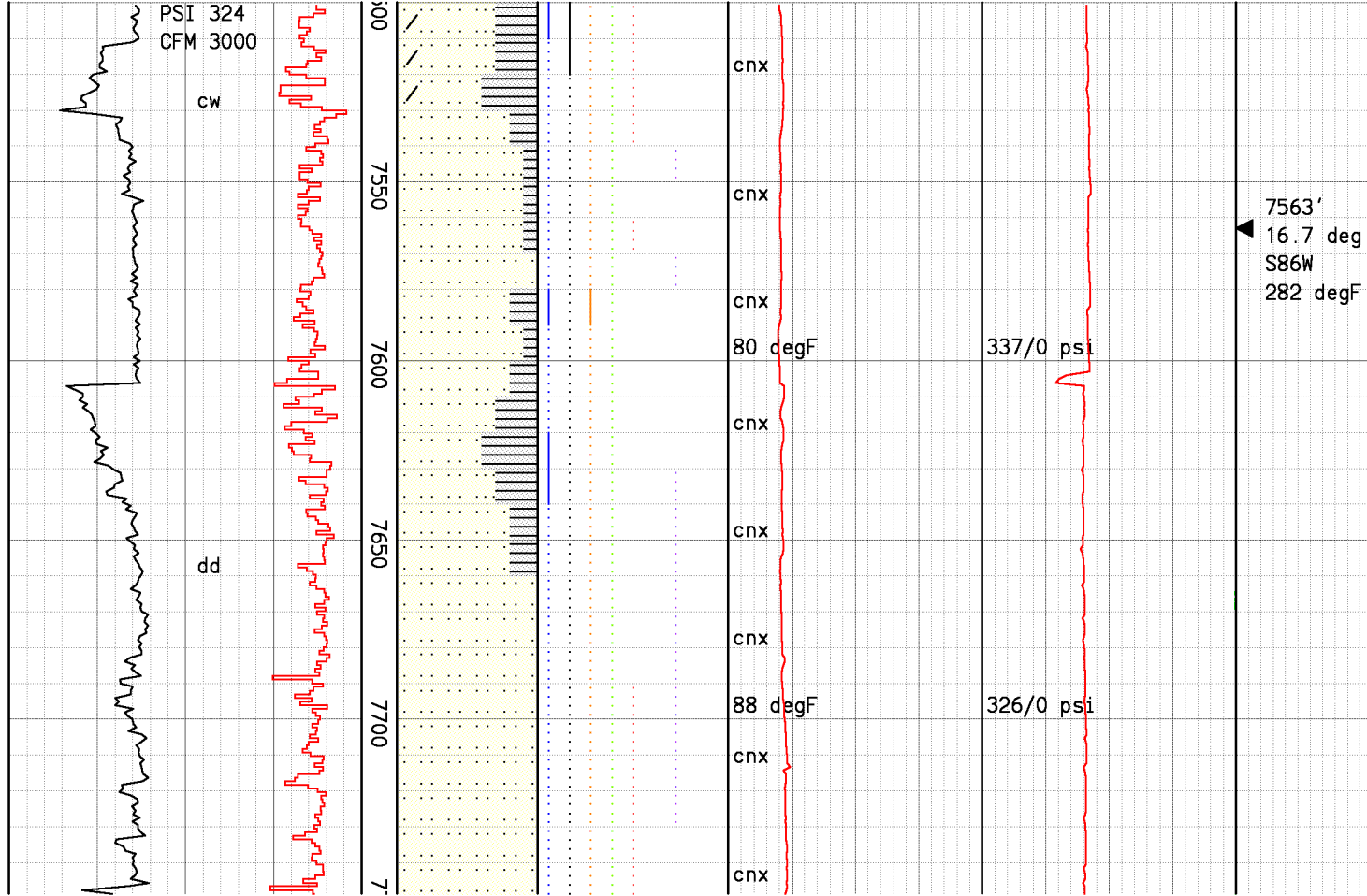
3 Compressors
no mist

7405'
◀ 16.8 deg
S86W
310 degF

Argillite: dk gry, steel gry, blk, frm-hd, aphan-v f gr, loc slty, pred mass, blocky, mod silic, loc shrd app, local fissile tex, loc micaceous lustr, r wht calc vng, r mlky wht qtz vn, r dissemin & vn pyr, r-absnt dissem pyrrho.

Siliceous Graywacke: lt gry, gry, mod hd-hd, fn-med gr, mod def gr bndrs, loc wk rexln, wk clay alter of felds, r wht qtz vng, r-tr vng calc, r agg pyr, r canary yel to limey grn epid, r yel/irsdnt pyrrho intrbdd w/Argillite: dk gry, mod hd, v fn gr, tr wht clac vng, r agg and vng yel pyr.

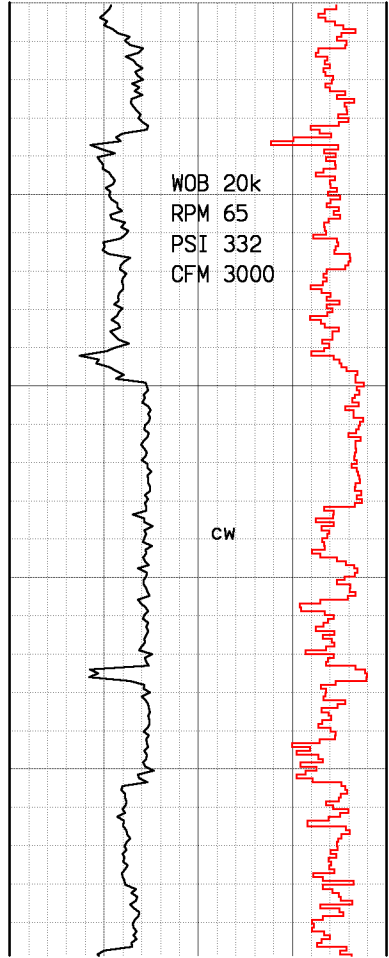
Siliceous Graywacke: v lt gry-lt gry, occ dk gry frags, loc fresh



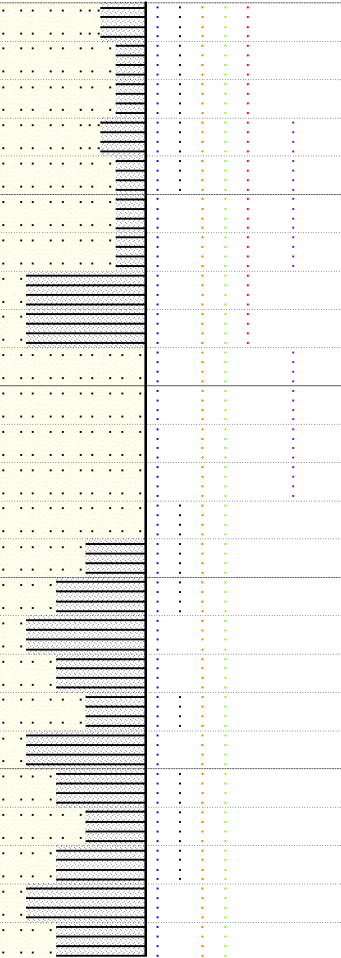
app,hd-v hd,loc brit,fn-med gr,
pr-well def gr bndrs,slght-mod
altrn of felds grading to less
altrd w/depth,r milky wht qtz
vng,r wht calc,r-tr dissemin ylw
pyr,r ylw/grn epid stng & vng,r
pyrrho,abs-r axin stng,intrbdd
w/Argillite:dk earthy gry,hd
silicic,blocky and massive 7470'
to 7490',occ mod hd,r wht qtz
vng,r dissemin pyr,r gold pryrho.

One compressor went down,took
survey,POOH t/6400,back-up
compressor online,RIH t/7606,
drill ahead.

Siliceous Graywacke:lt gry,loc
med gry,lt gry in sample,mod hd-
hd,fn gr,pred salt & pepper app,
prly srted,well def gr bndrs,r
relic structs,wk rexln,predom
fresh,loc wk argillic altrn felds
to wht clay,r milky wht qtz vng,
r wht agg and vn calc,r agg pyr,
r aqq gold/irdsnt pyrrho blebs,r

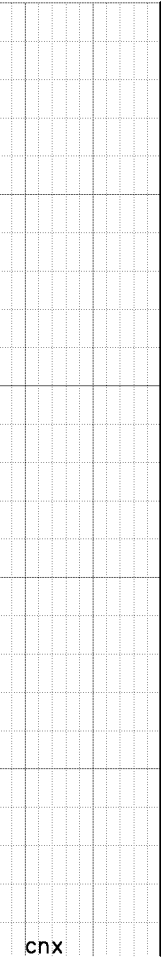


50
7800
7850
7900
7950
8000

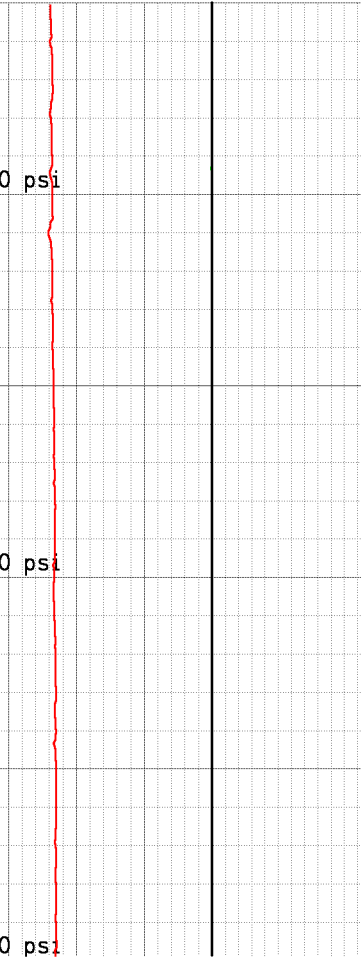


cnx
cnx
cnx
cnx
cnx
cnx
cnx

86 degF
75 degF
77 degF



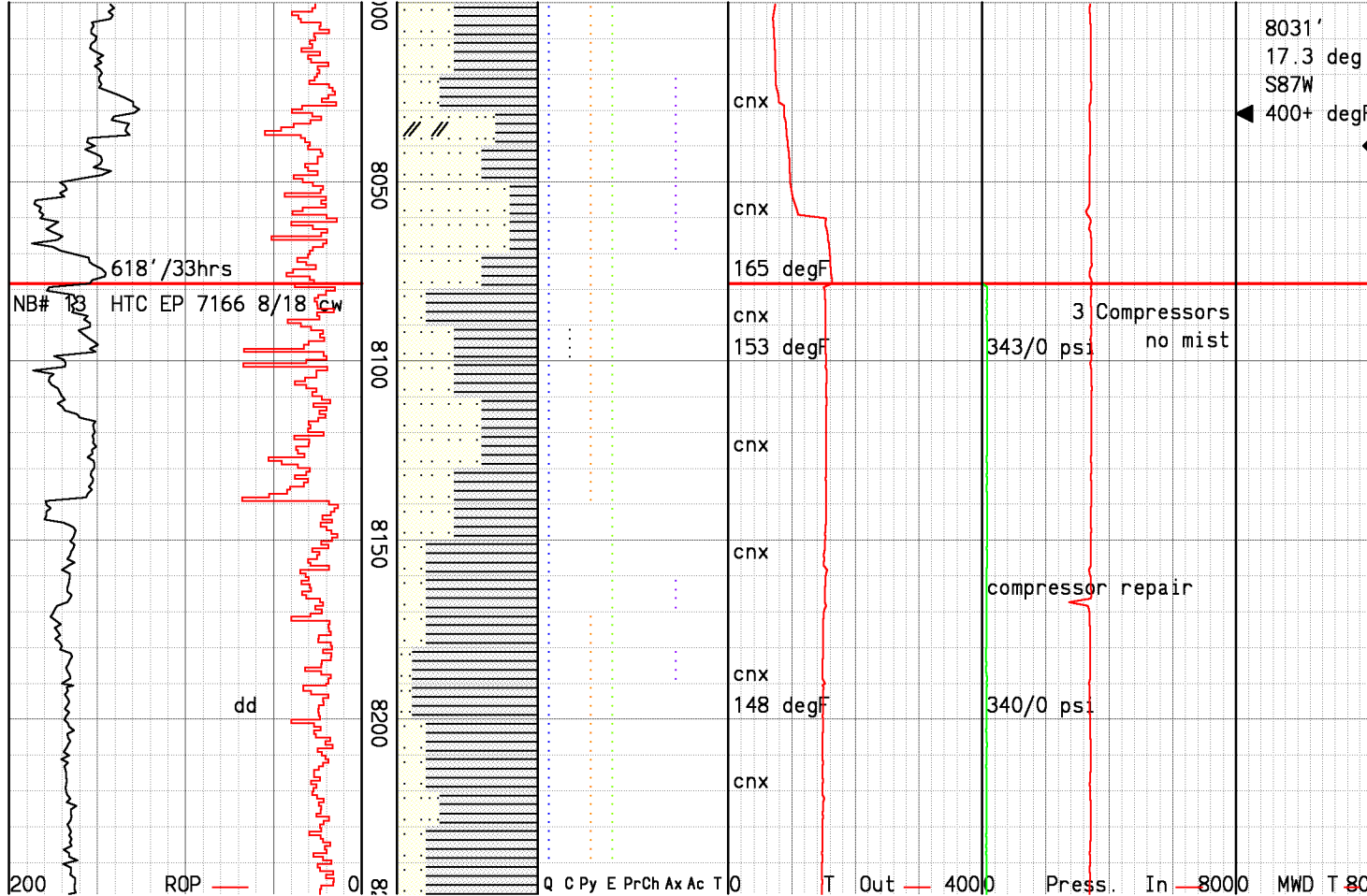
328/0 psi
335/0 psi
338/0 psi



pink axinite,r grnsh yel clear
epidote xls and stng,r magn,mnr
blk Argillite flks.

Argillite:dk earthy gry,blk,
frm-hd,aphan-v f gr,dom slty,
mass,blocky,mod silic,loc shrd
app,occ fiss tex,loc micaceous
lstr,r wht calc vng,r mlky wht
qtz vn,r disem & vn pyr,r-absnt
pyrrho vnlets and blebs.

Siliceous Graywacke:lt gry,loc
dk gry,fn-med gr,mod-hd,salt &
pepper app,mod def gr bndrs,occ
wk rexln,loc altrd blchd @8040'
mod hd w/incr mins,r wht-clr
qtz vng,r ylw agg & vng pyr,r
clr ylw/grn epid,r clr pink
axin & loc lt pink wash,intrbdd
w/Argillite:dk gry,sft-mod hd,v
fr gr well cont massive n cle



8031'
 17.3 deg
 S87W
 400+ degF

Steam Entry @ 8040':drilling break,90 degF sustained incr after cnx, no pressure change, little vapor exiting muffler.

Siliceous Graywacke:lt gry-gry, hd,fn-med gr,silty,r crs gr,wk rexln,r milky wht qtz vng,r yel disseminated pyr,r yel/grn epid,abs-r clr-creamy pink axin,intrbddd w/ Argillite:gry,dk gry,earthy dk brn,mod hd-hd,v fn gr,well srted, wk rexln,r yel pyr.

Argillite:dk gry,slvry gry,blk.

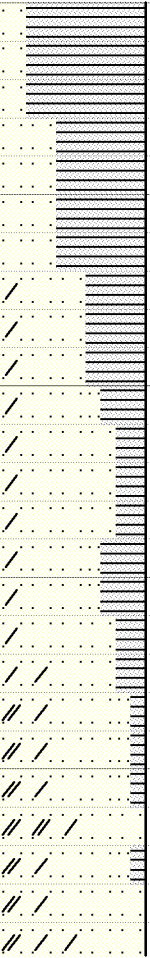
618' / 33hrs
 NB# 18 HTC EP 7166 8/18 CW

cnx
 165 degF
 3 Compressors
 343/0 psi no mist
 compressor repair
 340/0 psi
 cnx
 153 degF
 148 degF

WOB 15-20k
 RPM 70
 PSI 337
 CFM 3000

8/19 cw

8350
8300
8450
8400
8500



cnx
cnx
146 degF
cnx
cnx
142 degF
cnx
cnx
cnx
141 degF

336/0 psi

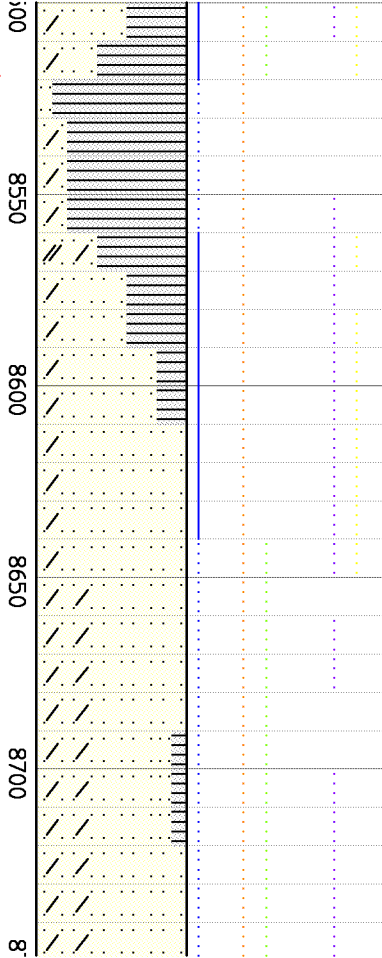
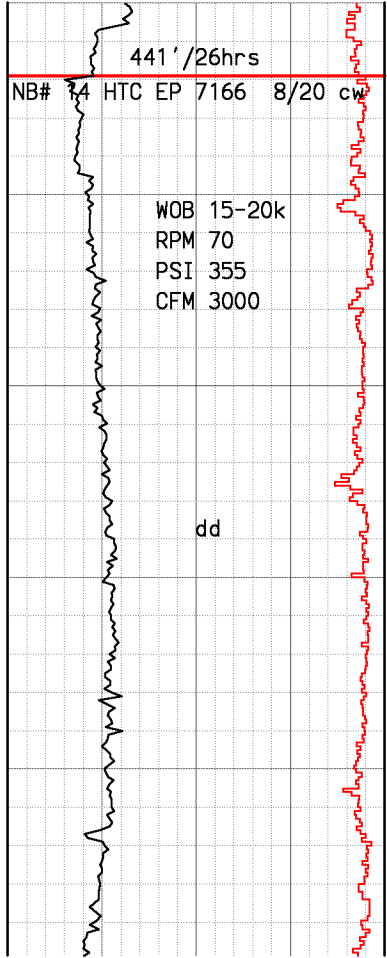
348/0 psi

348/0 psi

8452'
 19.9 deg
 S81W
 550 degF

frm-hd,apan-v r gr,dom sity,
 mass,blocky,mod silic.com shrd
 app,r fiss tex,loc micaceous
 lstr,r wht calc vng,r mlky wht
 qtz vn,r disem & vn pyr,r-absnt
 pyrrho vnlets and aggs.

Siliceous Graywacke:lt gry,loc
 dk gry,overall med gr in samp,
 fn-med gr,mod-hd,fair def gr
 bndrs,r relic structs,wk rexln,
 wkly altrd/blchd felds and wk
 chlor wash f/8330',r wht-clr
 qtz vng,r agg & vn pyr,r clr
 yel/grn epid vng,occ clr pink
 axin & loc pink wash,intrbdd
 w/Argillite:dk gry,sft-mod hd,v
 fn gr,mass i.p.,r clr-wht qtz
 vng w/r dissem pyr.



cnx

cnx

cnx

138 degF
cnx

cnx

cnx

137 degF cnx

cnx

3 Compressors
no mist

356/0 psi

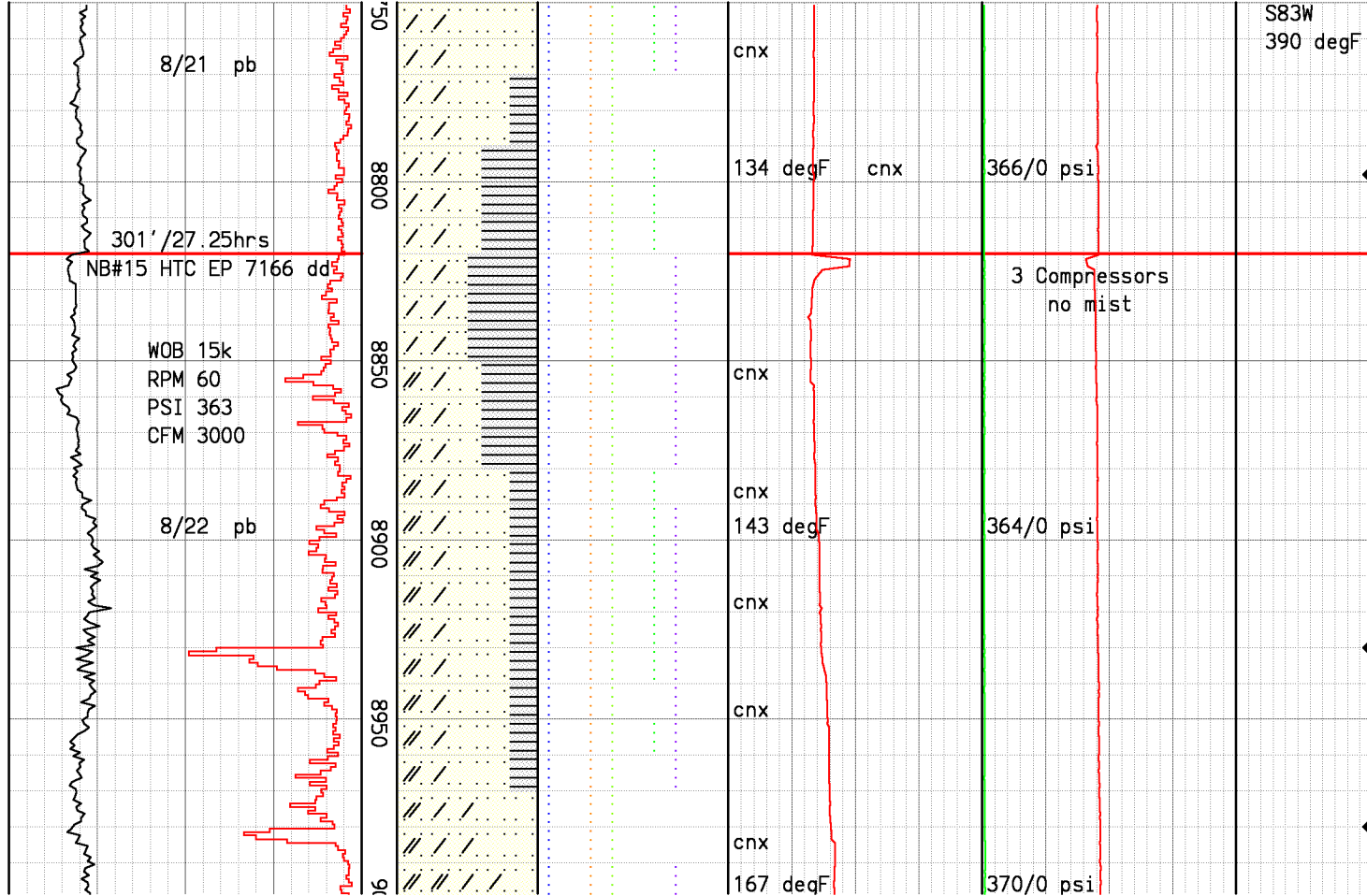
354/0 psi

8740'
19.3 deg

Siliceous Graywacke:lt gry-wht, fn-med gr,hd-v hd,blchd felds, wk-str rexln,tr milky wht qtz vng,abs-r agg pyr,r yel epid,r-tr clr pink axin,r pink orng axin druse,r-tr lt-dk grn bladed actin vng,intrbdd w/ Argillite:dk-erthy gry,silicic, mod hd-hd,v fn-fn gr,silty,r-tr wht qtz vng,r gold agg pyr,r forest grn actin vns.

Water entry,initial gain 6bph sustained 4bph.

Siliceous Graywacke:lt gry,loc med gry,overall lt gr in samp, fn-med gr,hd-v hd,poor def gr bndrs,r relic bddg,mod rexln, mod altrd/blchd felds and occ chlor wash f/8650',r wht-clr qtz vng,r agg & vn pyr,r clr yel/grn epid vng,occ clr pink axin,intrbdd w/thin Argillite lams:dk gry,mod hd,v fn gr, mass i.p.,r clr-wht qtz vng w/r dissem pyr.

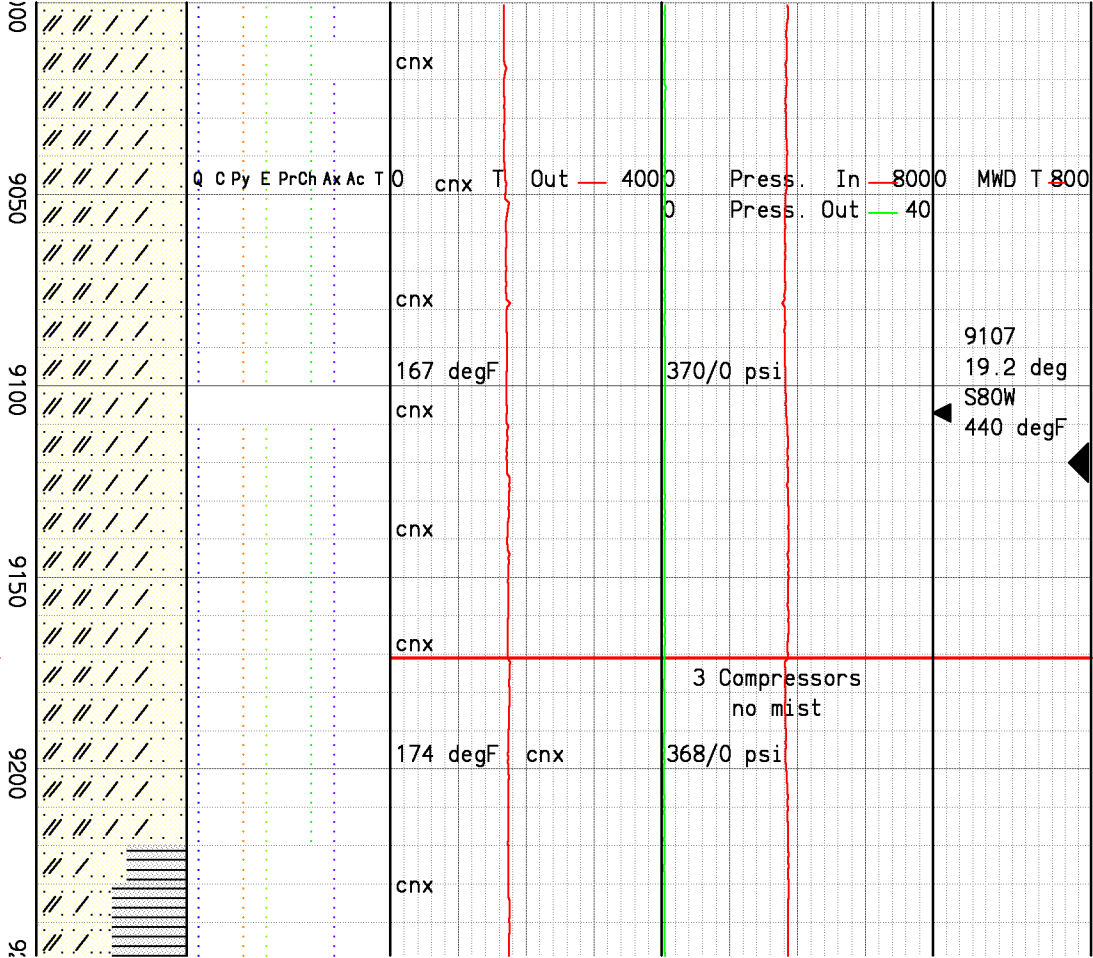
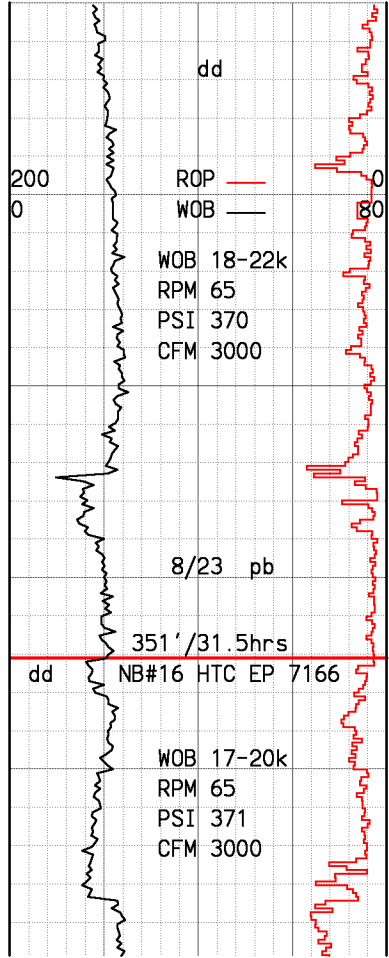


Note: Very fine cuttings size.
Water entry, initial gain 7bph sustained 4 bph.

Argillite: dk gry, dk steel gry, blk, hd, aphan-v f gr, dom slty, mass, blocky, mod silic, loc shrd app, r fiss tex, loc micaceous lstr, r mlky wht qtz vnlets, r disem & vn pyr, r-absnt pyrrho, intrcltd w/altd Siliceous Graywacke as described w/pink clear axinte incr w/depth.

Probable steam entry: Drill break f/8929 t/8936. ROP t/98 ft/hr. 11 deg sustained temp incr. 3# sustained press incr.

Probable steam entry: Drill break f/8980 t/8985. ROP t/67 ft/hr. 6 deg sustained temp incr. No press increase.

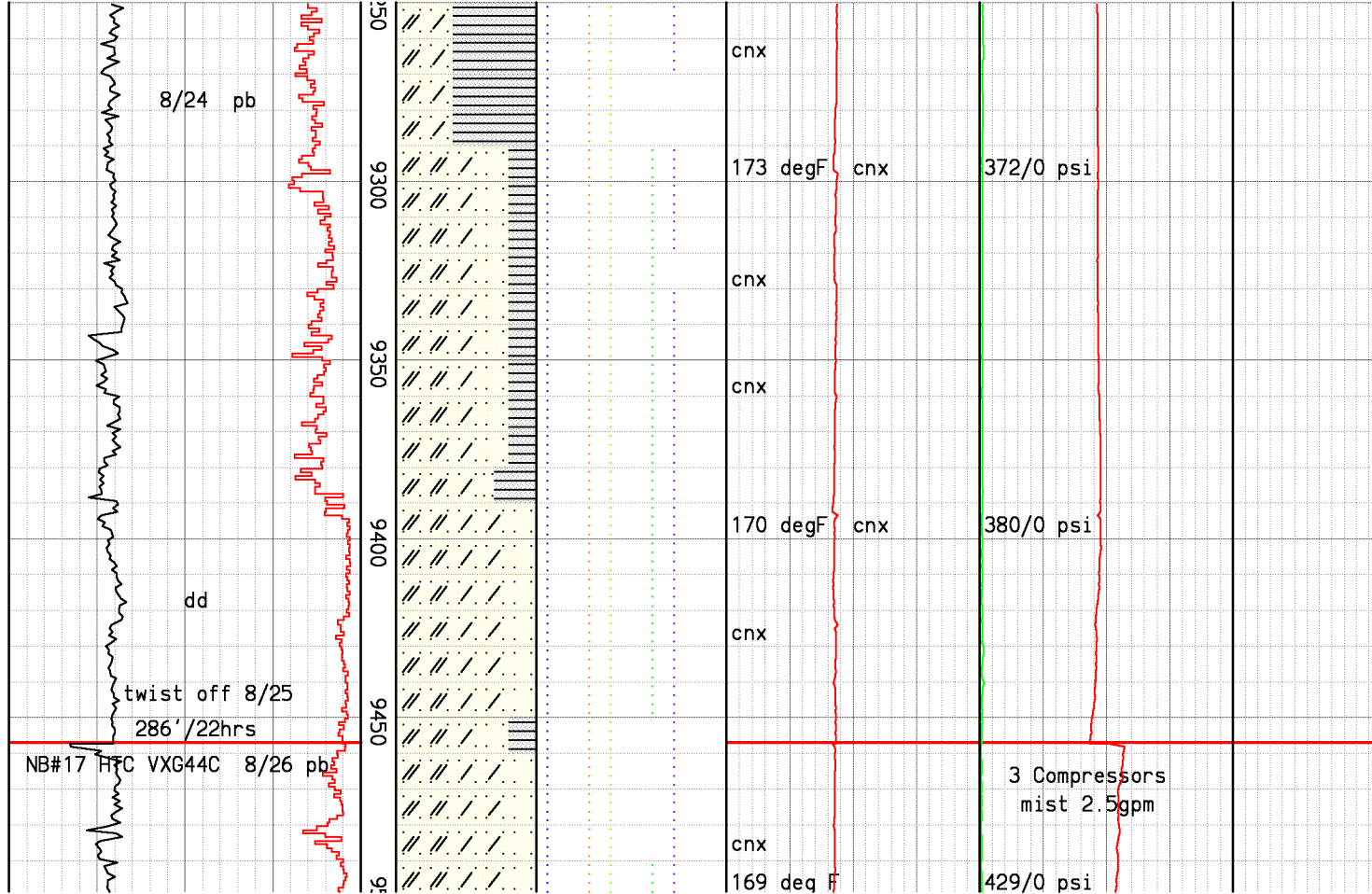


Note: Very fine cuttings.

Siliceous Graywacke:lt gry-wht, pale gry in sample,fn-med gr, prly def gr bndrs,hd-v hd,mod-str altd:com blchd devit felds, wk-str rexln,tr milky wht qtz vng,r agg pyr,r canary yellow epid,r-tr transl-clr pink axin, v r hornfelsic tex,r Argillite frags,r irdsnt sulfides.

Probable steam entry @ 9120': Drlg break, torque increase, 5 degF incr, 2 psi increase. Increases unsustained.

Siliceous Graywacke:lt gry,loc med gry,overall lt gry in samp, fn-med gr,hd-v hd,mod def gr bndrs,r relic tex,mod rexln, com altd/blchd felds and occ chlor wash,r wht-clr qtz vng,r agg & vn pyr,r clr canary yel epid vng,occ clr pink axin, intrbddd f/9225'w/Argillite:



dk gry,blk,mod hd,aphan-v fn
gr,mass i.p.,blk,y,r micaceous
shnr,clr-wht qtz vng,r dissem
pyr,r irdsnt sulfides.

Siliceous Graywacke:lt gry,loc
med gry,hvly blchd app,overall
lt gry in samp,fn gr,hd-v hd,
prly def gr bndrs,r relic tex,
mod rexln,com altrd/blchd felds
and occ chlor wash,r wht-clr
qtz vng,r agg & vn pyr,r clr
canary yel epid vng,occ clear
pink axinite.

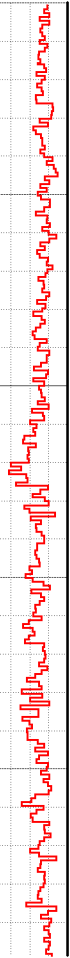
Twist off @ 9457' while on
bottom. Top of fish: 7266'.
RIH w/overshot, POH w/fish.
Drill ahead.

WOB 20-24k
RPM 60
PSI 380
CFM 3000

WOB 15-20k
RPM 60
PSI 504
CFM 4200

8/27 pb

nb
293'/31hrs



1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0



cnx
cnx
cnx
159 degF
cnx
cnx
cnx
159 degF
cnx

mist off

4 Compressors
no mist

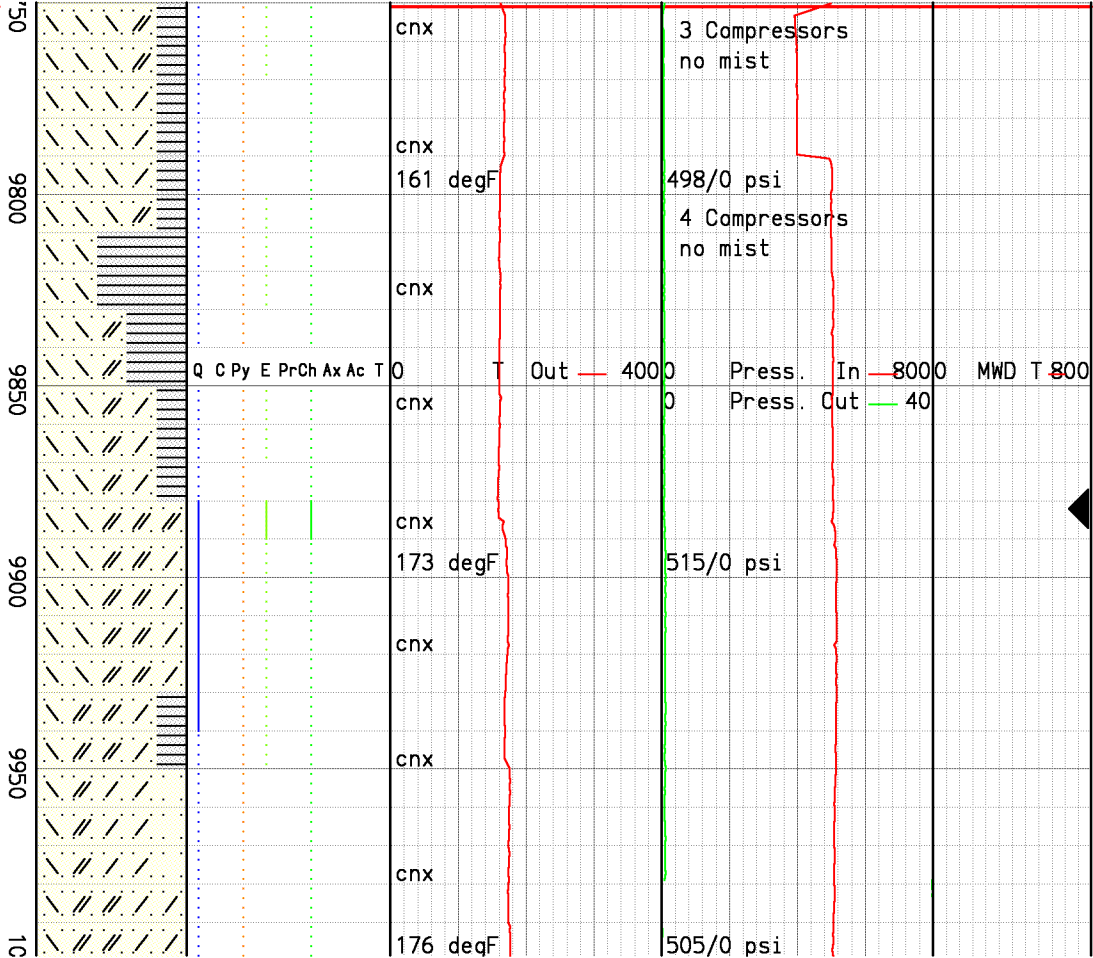
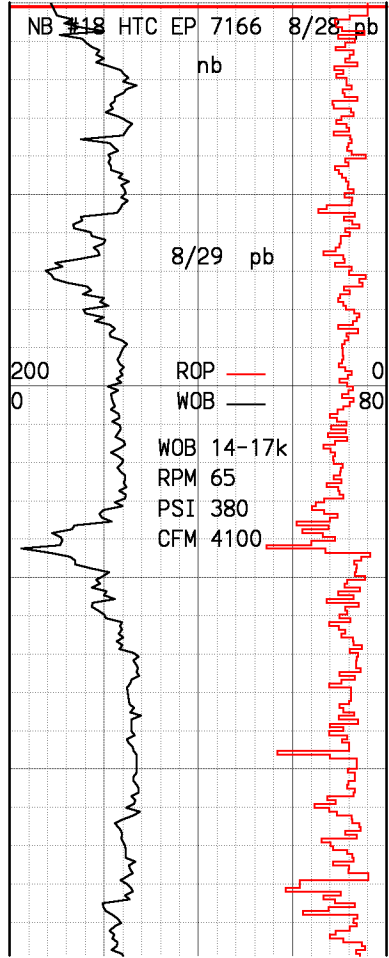
504/0 psi

503/0 psi

9682
22.6 deg
S68W
520 degF

Siliceous Graywacke:lt gry-wht, pale olive grnsh gry in sample, hd-v hd,fn-med gr,mod-prly def gr bndrs,mod-str altd,com blchd app,dom dull lstr,wk-str rexln, tr milky wht qtz vng,r agg pyr, r canary yellow epid, r-tr transl-clr pink axin,r sericite altrn,loc wk horn-felsic tex: incr w/depth,r chlor stn, intrbdd w/Argillite f/9550',dk gry,blk,hd,v fn gr,mass,blky,r micaceous shnr,r clr-wht qtz vng,r dissep pyr.

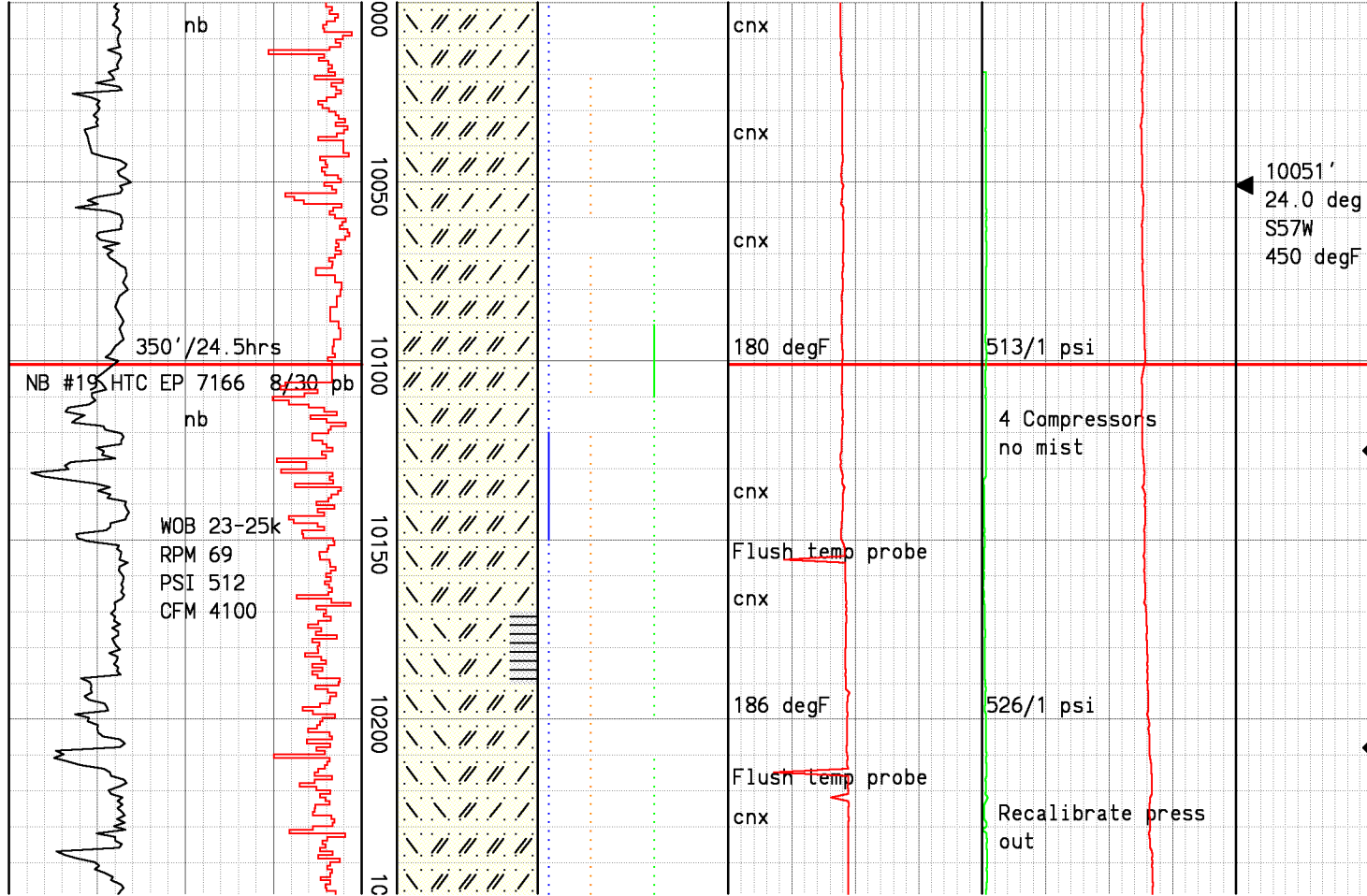
Argillite:dk gry,blk,hd,v fn gr, mass,blky,com micaceous shn,r clr-wht qtz vng,r dissep pyr intbdd w/Siliceous Graywacke:lt gry-wht,brnsh gry,med gry, overall brnsh gry in samp,hd-v hd,fn-med grn,prly def grn bndrs,mod-strngly altrd,com blchd app,r chlor wash,r canary yellow epid,tr sericite altrn, wkly hornfelsic,incrngly hornfelsic w/depth.



Siliceous Graywacke:lt gry-wht, brnsh gry, med gry, overall brnsh gry in samp, hd-v hd, fn-med grn, prly-mod def grn bntrs, mod-strngly altrd, com blchd app, r chlor wash, r canary yellow epid, tr serictitc altrn.

Steam entry f/9882 t/9894.
ROP t/64 ft/hr. 13 deg sust.
temp incr. 10# initial press
incr., 1# sustained.

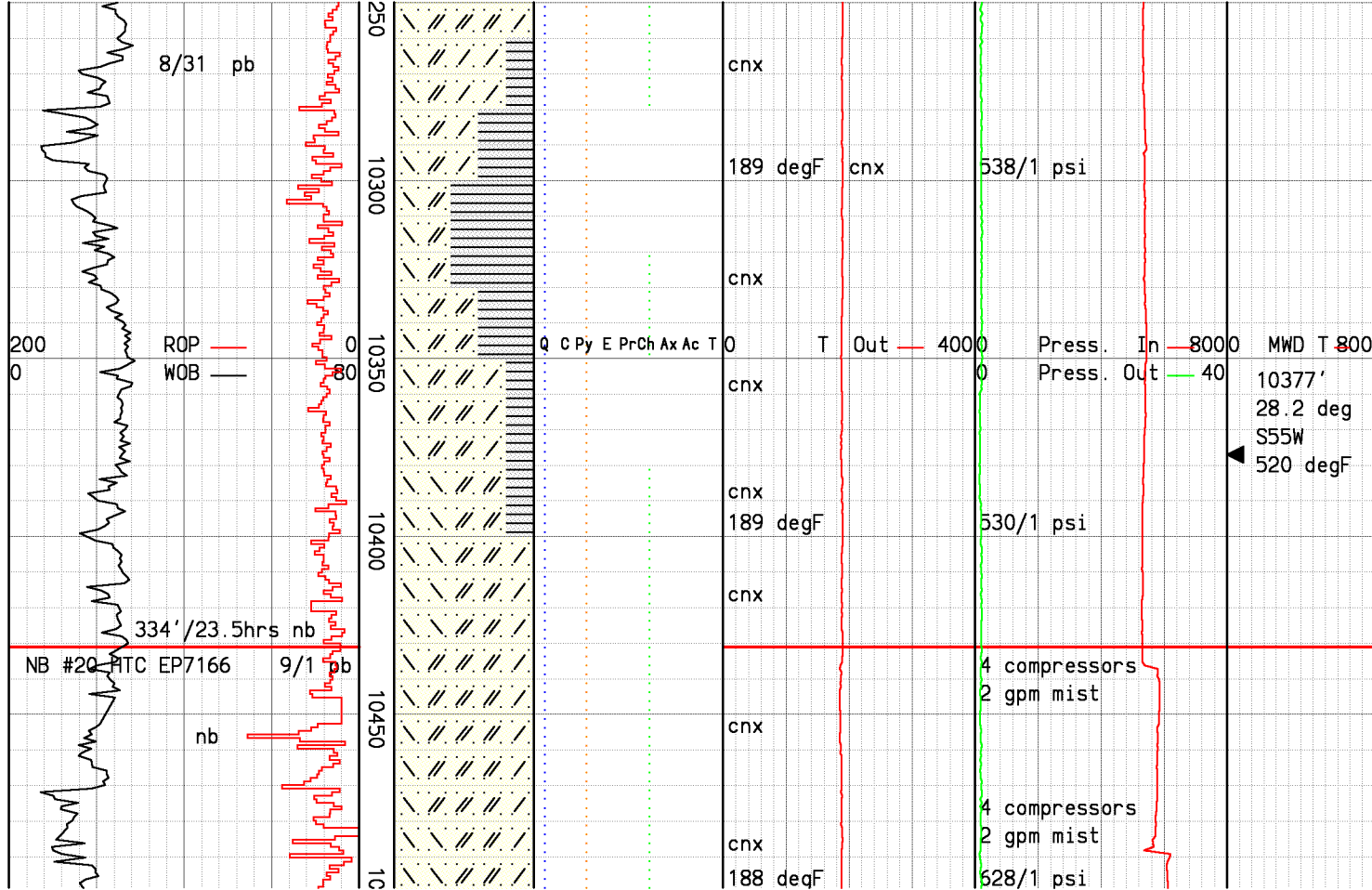
Siliceous Graywacke:lt gry-wht, loc med gry, overall brnsh gry in samp, hd-v hd, fn-med grn, prly def grn bntrs, loc fresh app f/9960 t/9990, mod-strngly altrd, com blchd app, r chlor wash, abs-r canary yellow epid, tr serictitc altrn, decr in app of hornfels.



Probable steam entry f/10125 t/10132. ROP t/48 ft/hr. 4deg initial/sustained temp incr. 4# sustained press incr. No visible incr. in steam from muffler.

Siliceous Graywacke:lt gry-wht, loc med gry, overll lt brnsh gry in samp, hd-v hd, fn-med grn, prly def grn bndrs, strngly-mod altrd, com blchd app, r diss pyr r-tr chlor wash, r serictitc altrn.

Probable steam entry f/10208 t/10211 ROP incr t/49 ft/hr. 1 deg sustained temp incr. 6# init pressure incr. 1# sustained. No visible incr. in steam from muffler.



Siliceous Graywacke:lt gry-wht, lt brn,loc med gry,overll lt brnsh gry in samp,hd-v hd,fn-med grn,prly def grn bndrs, strngly-mod altrd,loc blchd app,incrngly hornfelsic,r diss pyr r-tr chlor wash,r serictitc altrn intbdd w/Argillite:dk gry,hd,v fn gr,mass,blky,com micaceous shn,r clr-wht qtz vng.

Restricted steam flow rate: 17,300.Unrestricted steam flow rate:24,000#/hr.Air off H2S:397ppm;Ammonia:160ppm.

One compressor went down. Serviced compressor and put it back online.

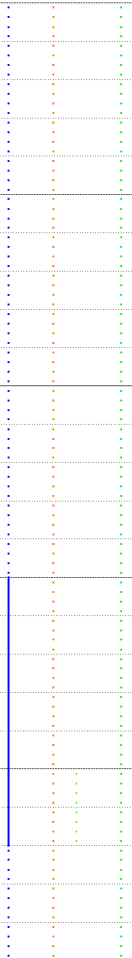
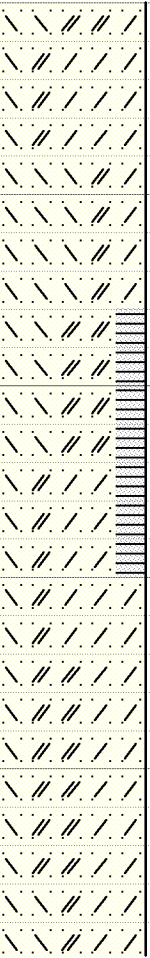
10377'
28.2 deg
S55W
520 degF

WOB 13-22k
 RPM 69
 PSI 615
 CFM 4100

9/2 pb

nb

500
10550
10600
10650
10700
10



cnx
cnx
cnx
188 degF
cnx
cnx
188 degF
cnx
cnx

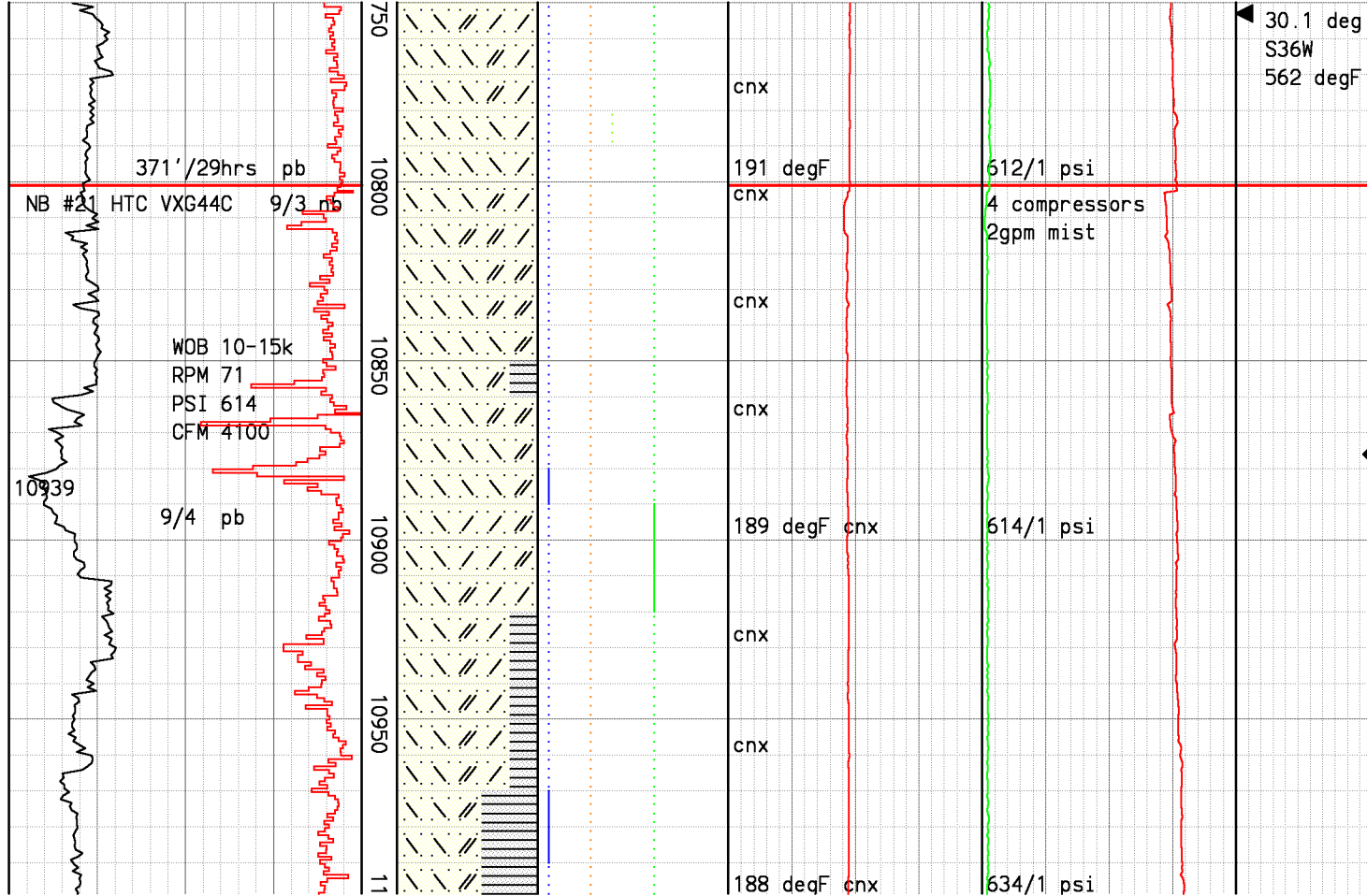
628/1 psi

638/1 psi

10753'

Probable steam entry f/10566
 t/10573.ROP t/54 ft/hr.0 deg
 initial/sustained temp incr.
 17# initial pressure incr.7#
 sustained.Slight vis. incr
 in steam flow from muffler.

Siliceous Graywacke:lt gry-wht,
 lt brn,loc med gry,overll lt
 brnsh gry in samp,hd-v hd,fn-
 med grn,prly def grn bndrs,
 strngly-mod altrd,loc blchd
 app,incrngly hornfelsic with
 depth,r-tr clear qtz vng,r
 diss pyr r chlor wash,r blchd
 epi f/10700 t/10720,loc
 hematitic&feldspathic altrn,
 intbdd w/Argillite f/10590
 t/10650:dk gry,hd,v fn gr,mas,
 blk.

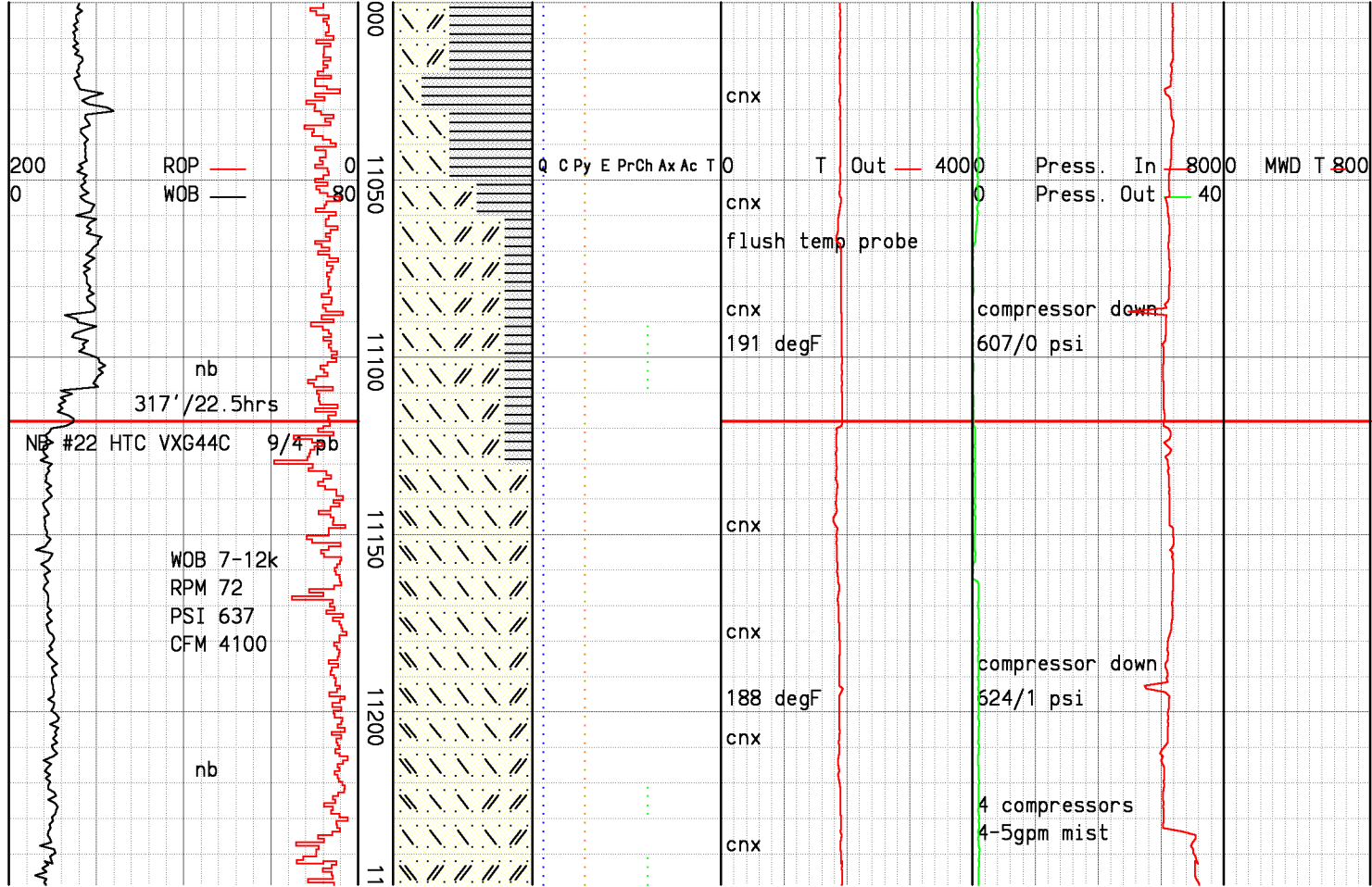


10748' One compressor went down. Serviced compressor, replaced one compressor.

Restricted steam flow rate: 27,300. Unrestricted steam flow rate: 37,900#/hr. Air off H2S: 397ppm; Ammonia: 100ppm.

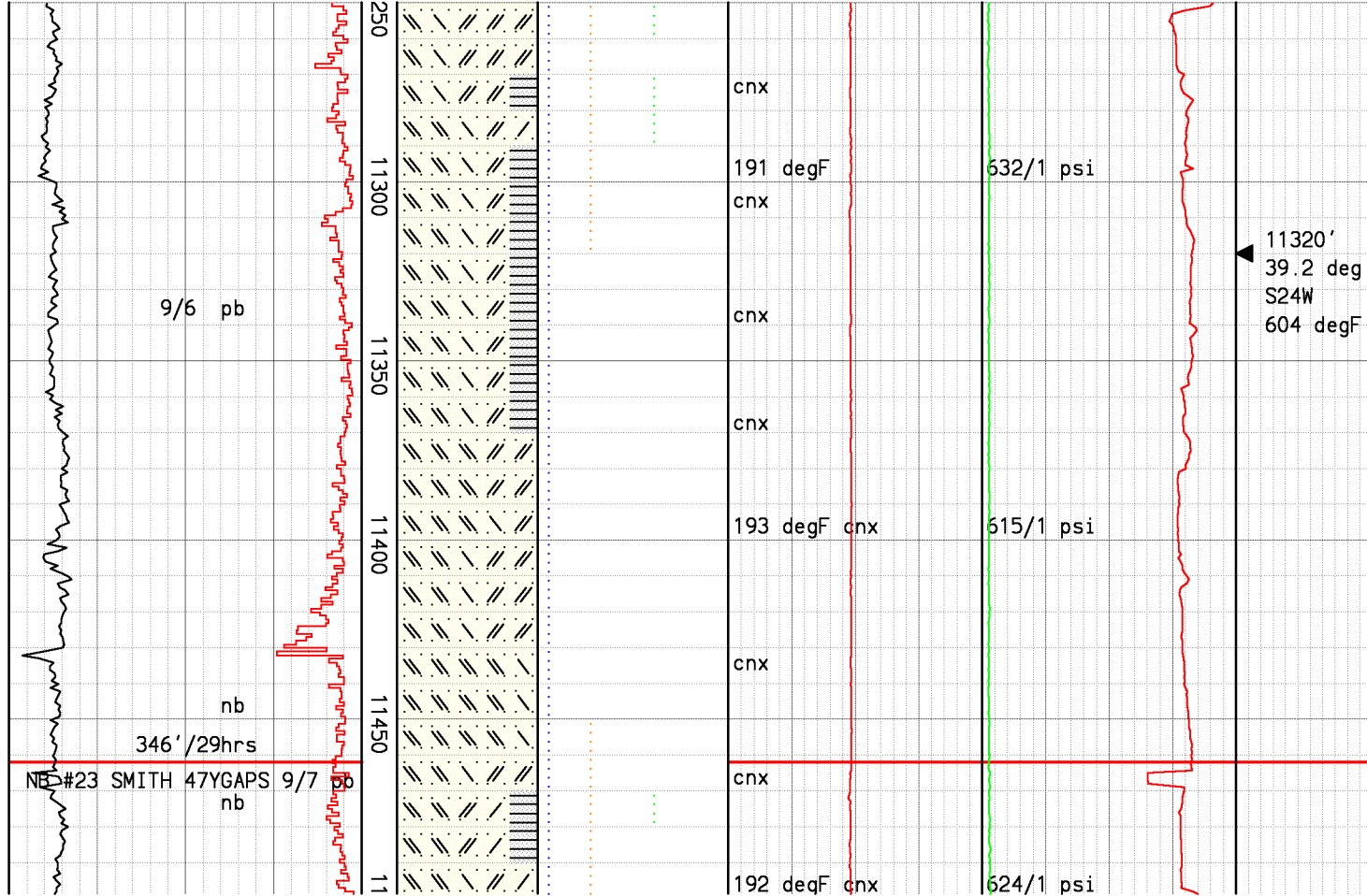
Probable steam entry f/10876 t/10885. ROP t/84 ft/hr. 1 deg initial/sustained temp incr. 5# initial/sustained press incr. No visible incr.

Argillite: dk gry, hd-v hd, mass, microxln, blk, loc micaceous shn, r clr-wht qtz vng, loc sercitic altrn, intbdd w/ Siliceous Graywacke: lt brn, med-dk gry, overl1-brwnish gry in samp, v hd, fn grn, prly def grn bndrs, strngly-mod altrd, wkly hornfelsic, r-tr clr transluc qtz, r pyr vng, abs-r chlor.



Restricted steam flow rate:
 25,000. Unrestricted steam
 flow rate: 34,700#/hr. Air off
 H2S: 442ppm; Ammonia: 100ppm.

Siliceous Graywacke: lt brn, med-
 dk gry, overl1-brwnish gry in
 samp, sucr app. v hd, fn grn, prly
 def grn bndrs, strngly-mod
 altrd, wkly hornfelsic, r-tr clr
 transluc qtz, r pyr vng.

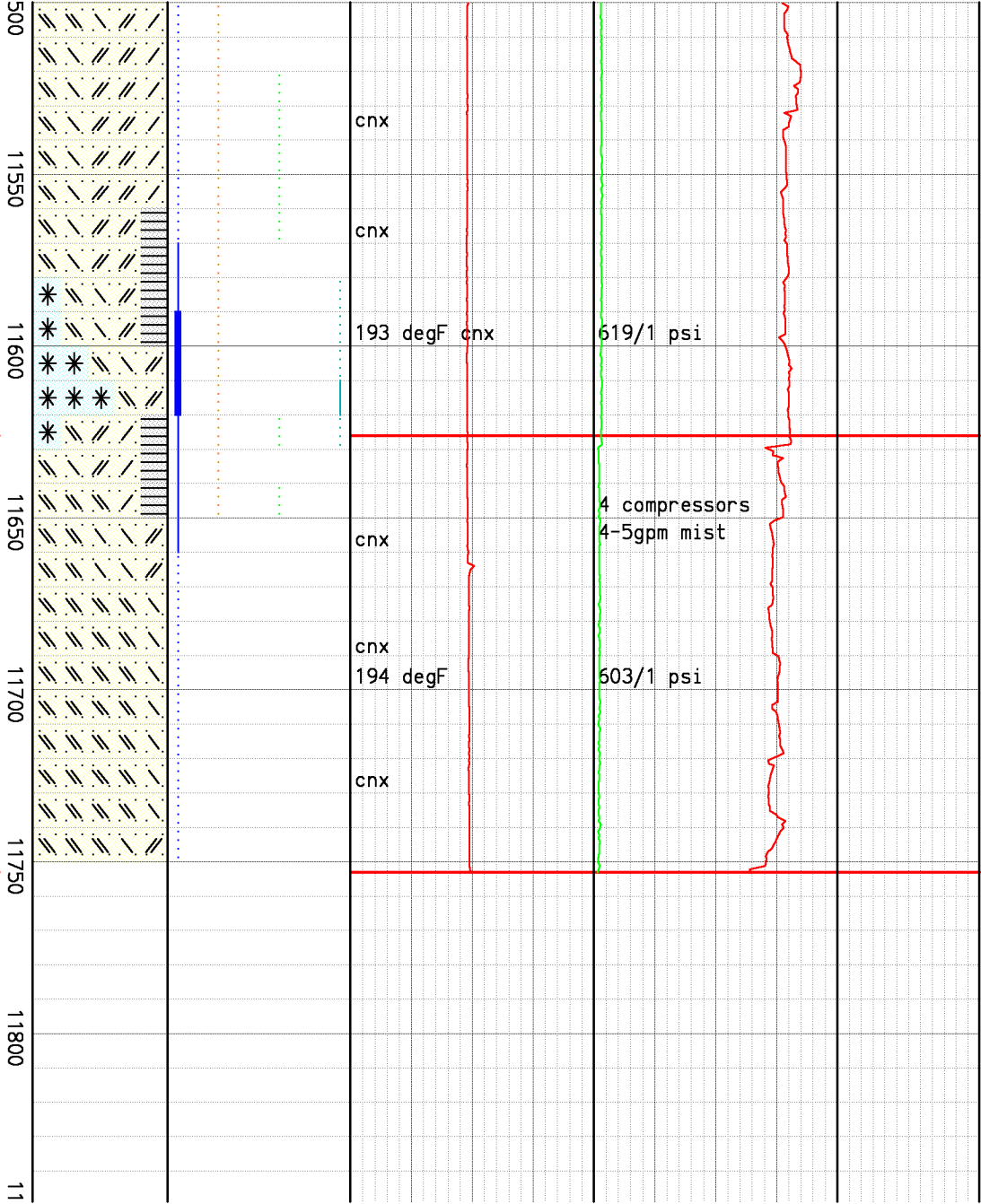
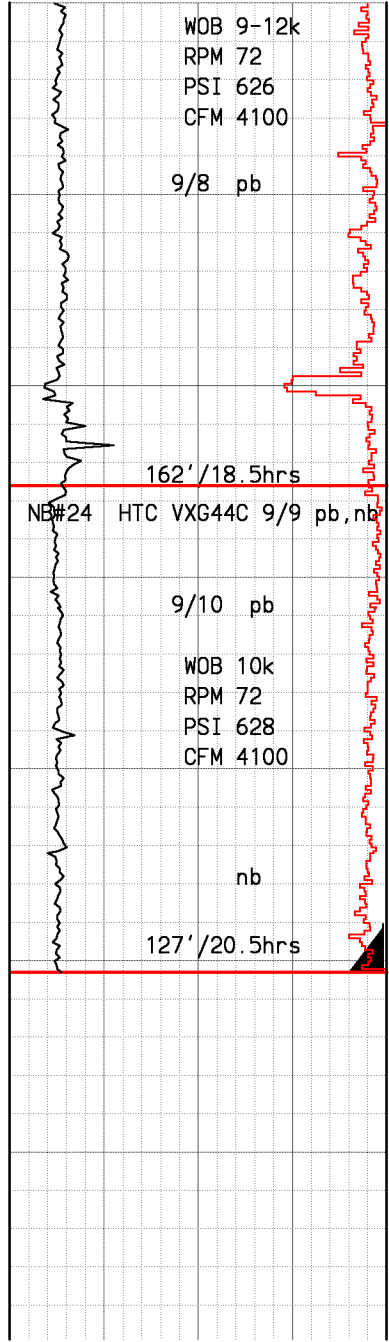


Siliceous Graywacke:lt brn,med-
 dk gry,overll-brwnish gry in
 samp,sucr app,v hd,fn grn,prly
 def grn bndrs,strngly-mod
 altrd,wkly hornfelsic,r-tr clr
 transluc qtz,r pyr vng intbdd
 w/Argillite:dk gry,hd-v hd,
 mass,microxln,sucr app,blky,
 loc micaceous shn,r clr-wht
 qtz vng.

11320'
 39.2 deg
 S24W
 604 degF

Restricted steam flow rate:
 23,400#/hr.Unrestricted steam
 flow rate:32,500#/hr.Air off
 H2S:442ppm;Ammonia:100ppm.

Siliceous Graywacke:lt brn med-



dk gry, overll-brwnish gry in samp, sucrr app, v hd, fn grn, prly def grn bndrs, strngly-mod altrd, strngly-wkly hornfelsic, r qtz vngµvng, r diss pyr, occ chlor wash intbdd w/Argillite: dk gry, hd-v hd, mass, microxln, sucrr app, blkly, loc micaceous shn, r clr-wht qtz vng & microvng.

Felsic Dike f/11590 t/11650: wht, v hd, microxln-aphan tex, no visible grn bndrs, strngly altd, r-tr tourm xtals, w/com hematite altd magnetite in 11590' samp.

9/9/10, 11626': Orifice test. Steam flow: 27,937#/hr w/2.5" orogice plate Air off H2S: 457 ppm; Ammonia: 120 ppm.

Siliceous Graywacke: lt-med brn, med-dk gry, overll-brwnish gry in samp, sucrr app, v hd, fn grn, prly def grn bndrs, strngly altd, strngly hornfelsic, loc wkly hornfelsic, r-mnr qtz vng, abs-r diss pyr.

TD 11753. Run 49 jts of L-80 slotted liner f/9617' t/11753'. Run 97 jts of L-80 blank liner f/5888' t/9617'. Kill well with 305gpm of water, then run 153 joints of L-80 liner f/surface to 5902'. Restricted steam flow rate: 22,100. Unrestricted steam flow rate: 30,700#/hr. Air off H2S: 359ppm; Ammonia: 120ppm.