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Geothermal Formation Log

COMPANY	Coso Operating Co.
WELL	BLM North 33A-7 RD
FIELD	Coso Geothermal
REGION	Coso Mountains
COORDINATES	258551.47' N 2351542.02' E
ELEVATION	4183.20'
COUNTY, STATE	Inyo, California
API INDEX	NA
SPUD DATE	12/20/2009
CONTRACTOR	Kenai Drilling, U.S.A
CO. REP.	
RIG/TYPE	Kenai #6/Rotary Triple
LOGGING UNIT	ML039
GEOLOGISTS	Josiah Failing Matt Uddenburg
ADD. PERSONS	Scot Clark Marquel Mosebay
CO. GEOLOGIST	Mike Krahmer

LOG INTERVAL

DEPTHS: 100' TO 10,190'
DATES: 12/20/2009 TO 3/25/2010
SCALE: 2" = 100'

CASING DATA

20" AT 807'
13 3/8" AT 4041'
9 5/8" AT 7024'
7" Liner AT 10190'

MUD TYPES

SPUD/GEL TO 817'
GEL/Bentonite TO 10190'
TO
TO

HOLE SIZE

26" TO 817'
17 1/2" TO 4061'
12 1/4" TO 7030'
8 1/2" TO 10190'

ABBREVIATIONS

NB NEWBIT	PP PUMP PRESSURE	CO CIRCULATE OUT
RRB RERUN BIT	SPM STROKES/MIN	NR NO RETURNS
CB CORE BIT	PR POOR RETURNS	TG TRIP GAS
WOB WEIGHT ON BIT	LAT LOGGED AFTER TRIP	WG WIPER GAS
RPM ROTARY REV/MIN	LC LOST CIRCULATION	CG CONNECTION GAS

ALTERED ZONE	DIORITE	PYRITE
ANDESITE	DOLOSTONE	PYROCLASTICS
ANHYDRITE	FELSIC SILIC DIKE	QUARTZ DIORITE
BASALT	GABBRO	QUARTZ LATITE
BRECCIA	GLASSY TUFF	QUARTZ MONZONITE
CALCAREOUS TUFF	GRANITE	RECRYSTALLIZED CALCITE
CALCILUTITE	GRANITE WASH	RHYOLITE
CARBONATES	GRANODIORITE	SAND
CARBONACEOUS MAT	GYPSUM	SANDSTONE
CARBONACEOUS SH	HALITE	SANDSTONE-TUFFACEOUS
CEMENT CONTAM.	HORNBL-QTZ-DIO	SERPENTINE
CRYSTALLINE TUFF	INTRUSIVES	SHALE
CHERT - UNDIFF	LIMESTONE	SHALE TUFFACEOUS
CLAY	LITHIC TUFF	SHELL FRAGMENTS
CLAY-MUDSTONE	MARL - CALC	SILTSTONE
CLYST-TUFFACEOUS	METAMORPHICS	SILTST-TUFFACEOUS
COAL	OBSIDIAN	TUFF
CONGLOMERATE	PORCELANITE	VOLCANICLASTICS SEDS
DACITE	PORCELANEOUS CLYST	VOLCANICS

MINERAL PERCENTAGE

< 1% 1-3% 4-6% 7-9% > 10%



ALTERATION TYPES

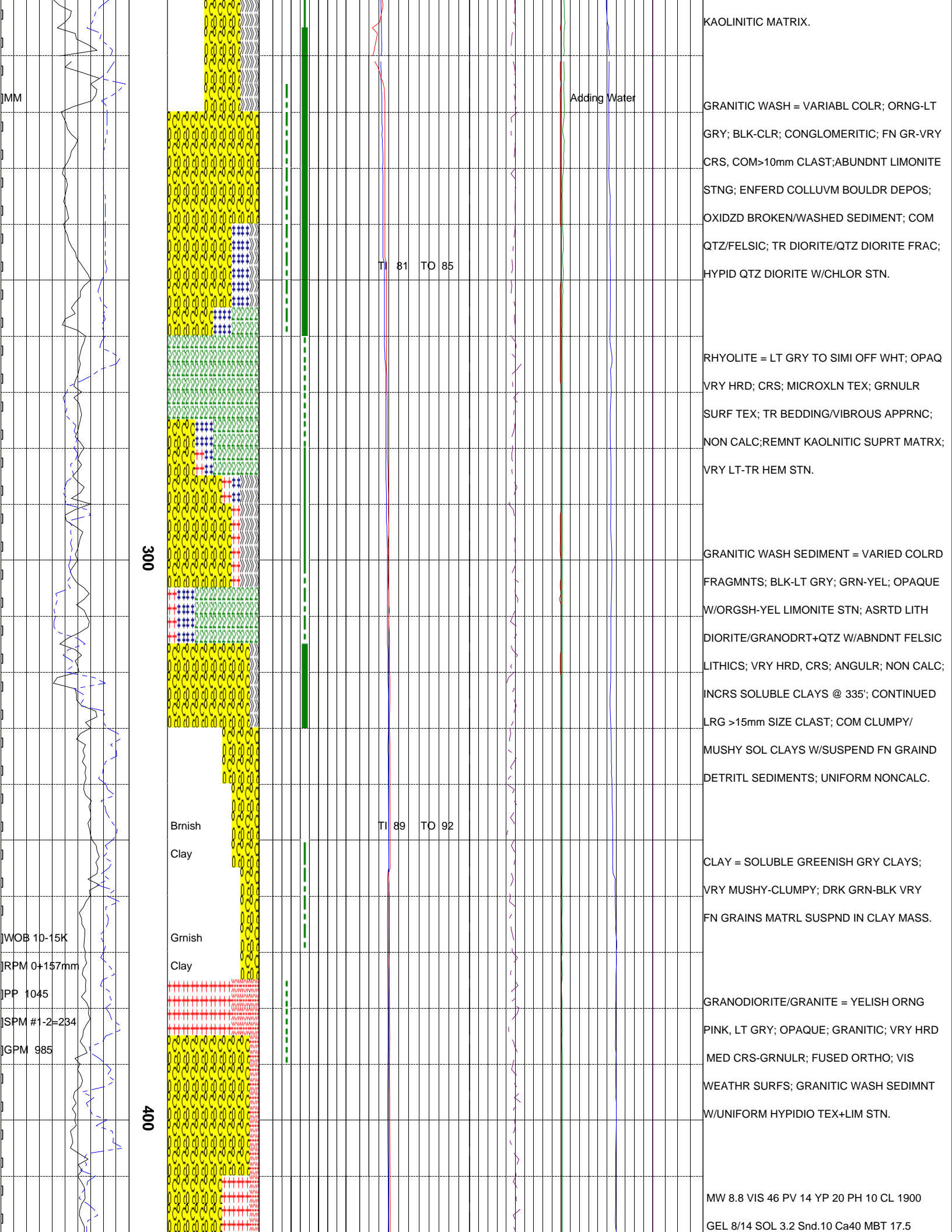
SERICITIZATION	BIOTITIC
SILICIFICATION	CHLORITIC
	KAOLINITIC

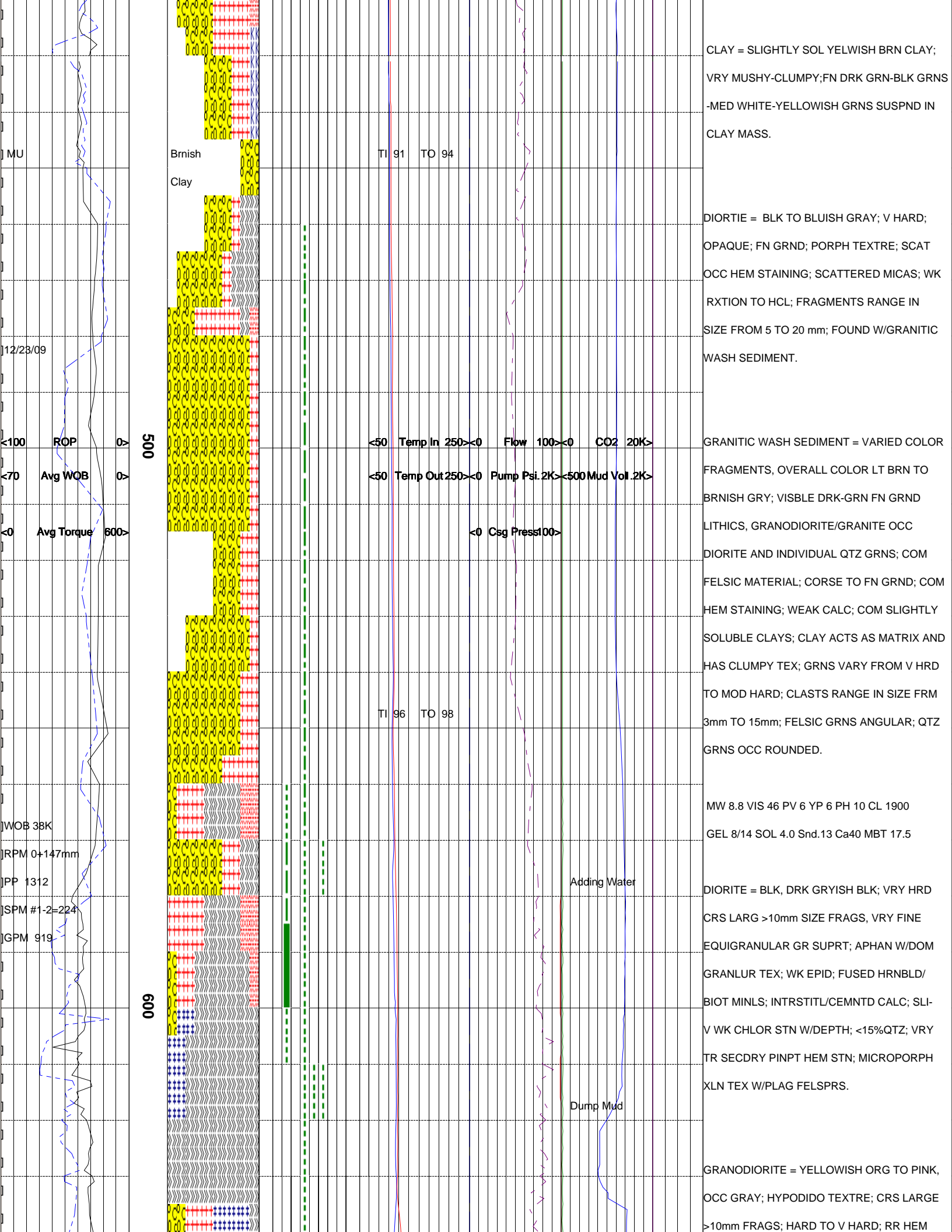
ALTERATION INTENSITY

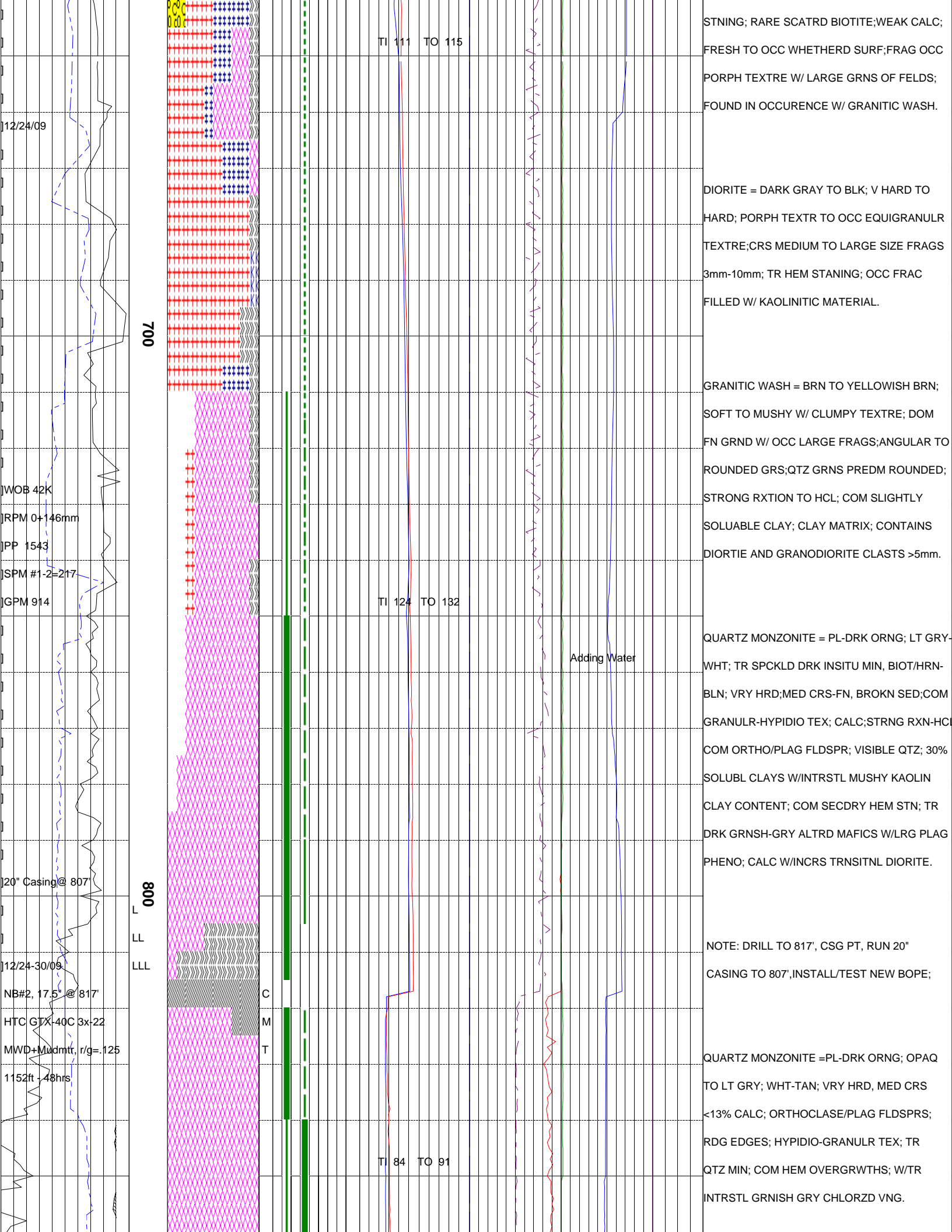
WEAK MODERATE STRONG

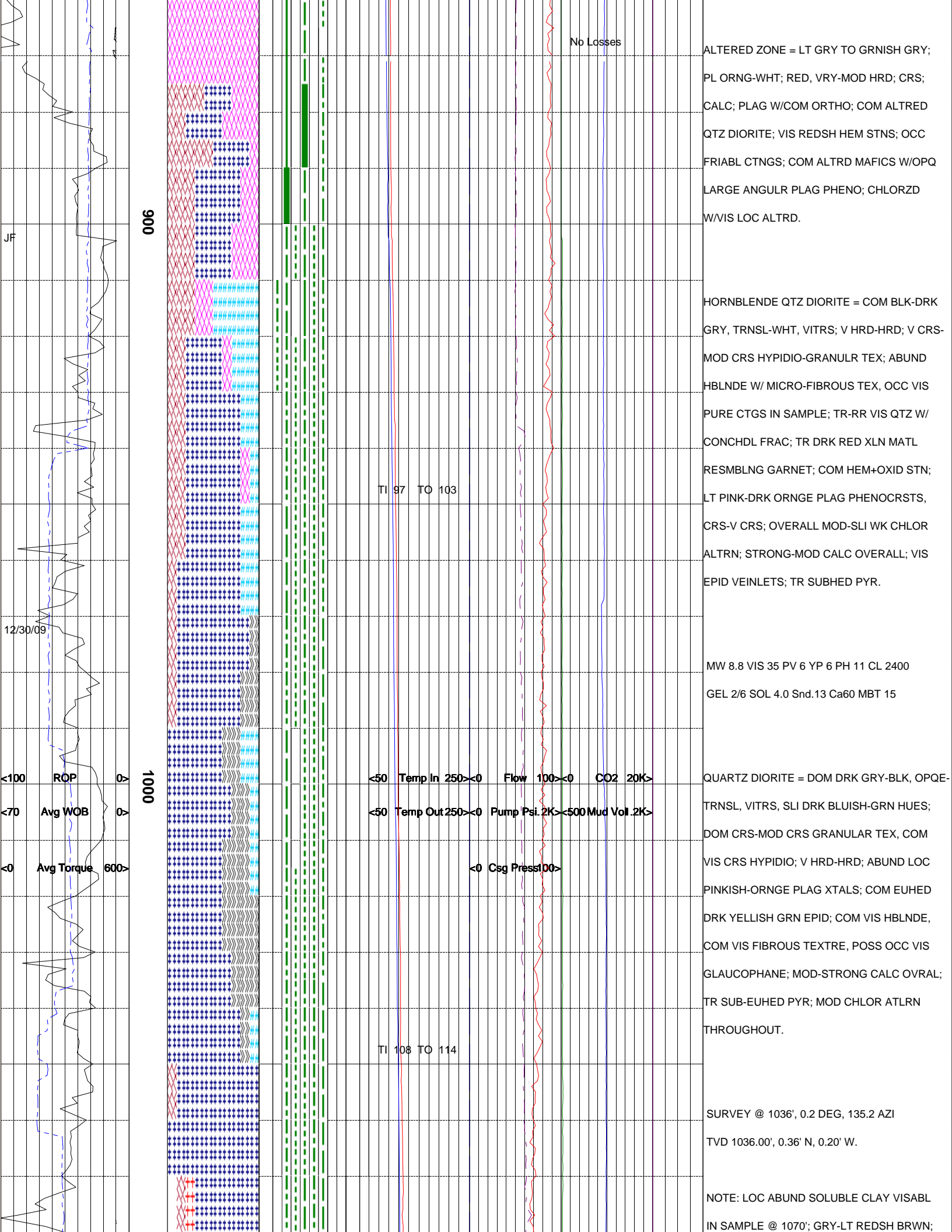


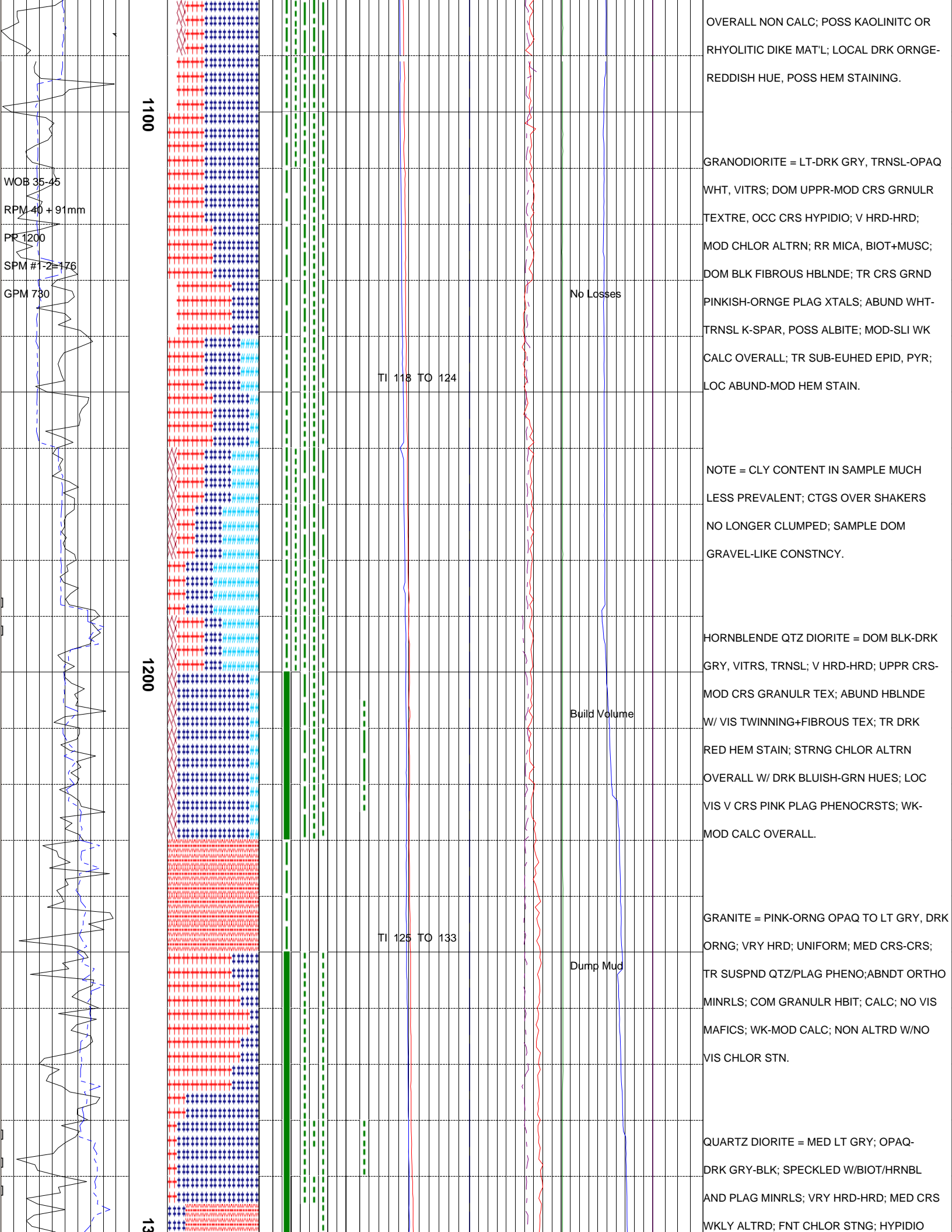
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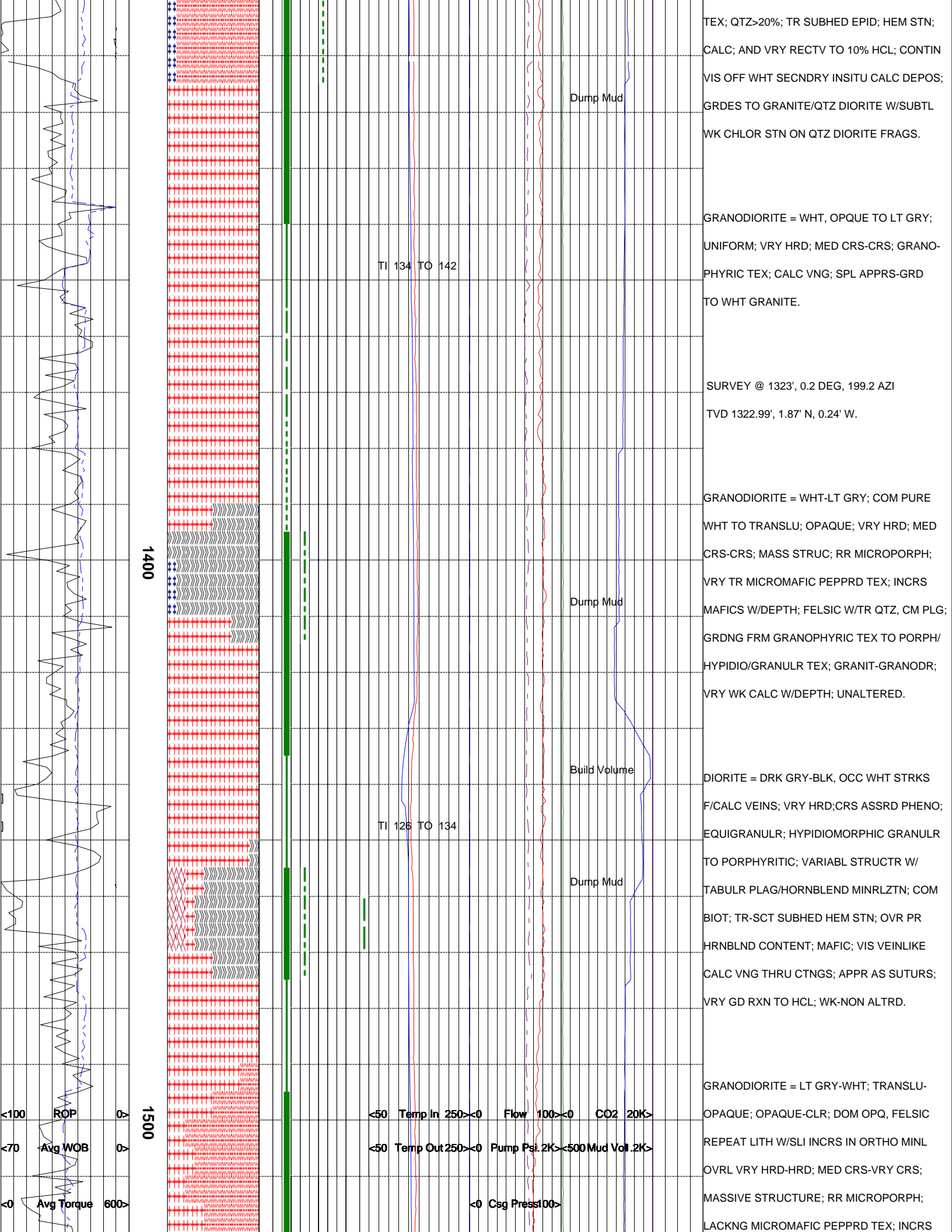


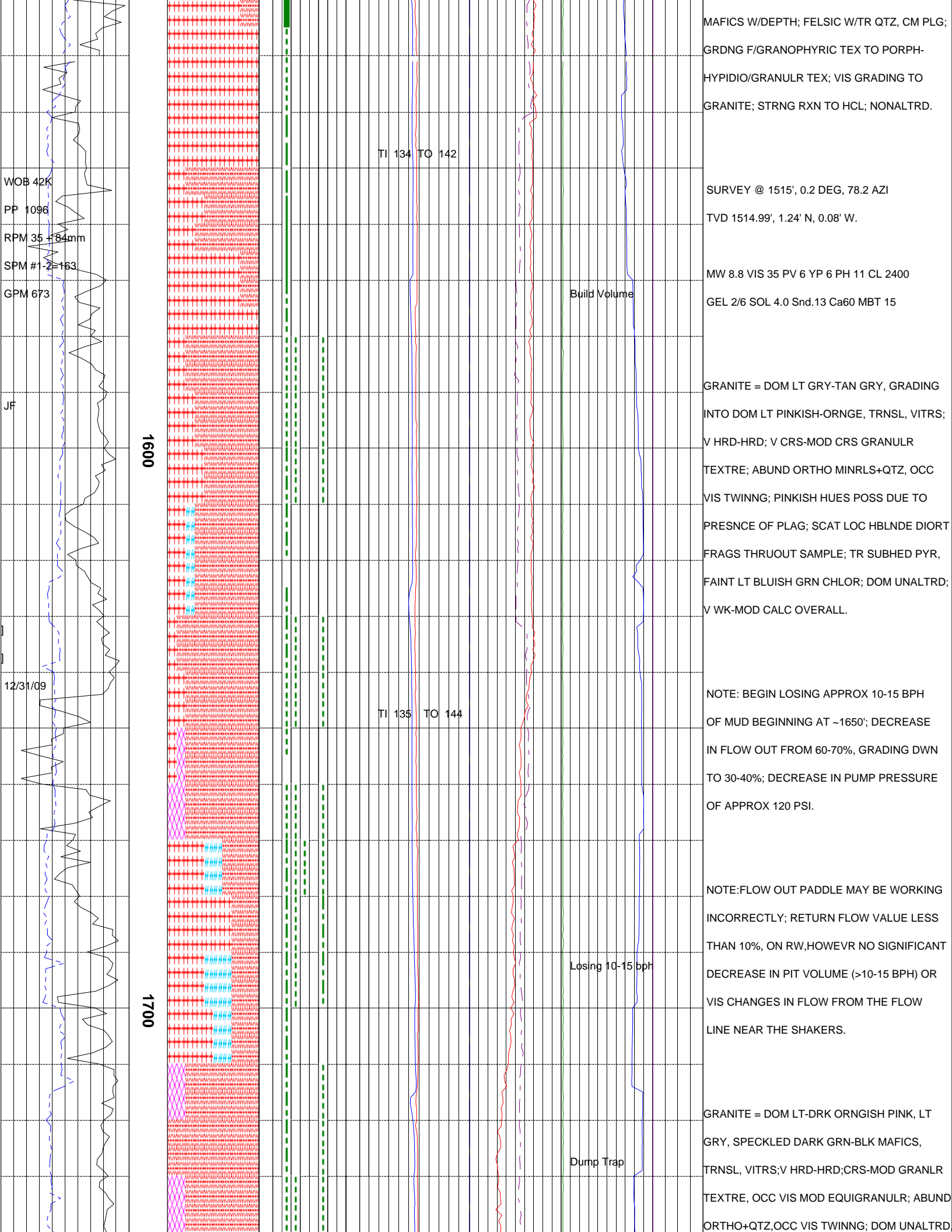


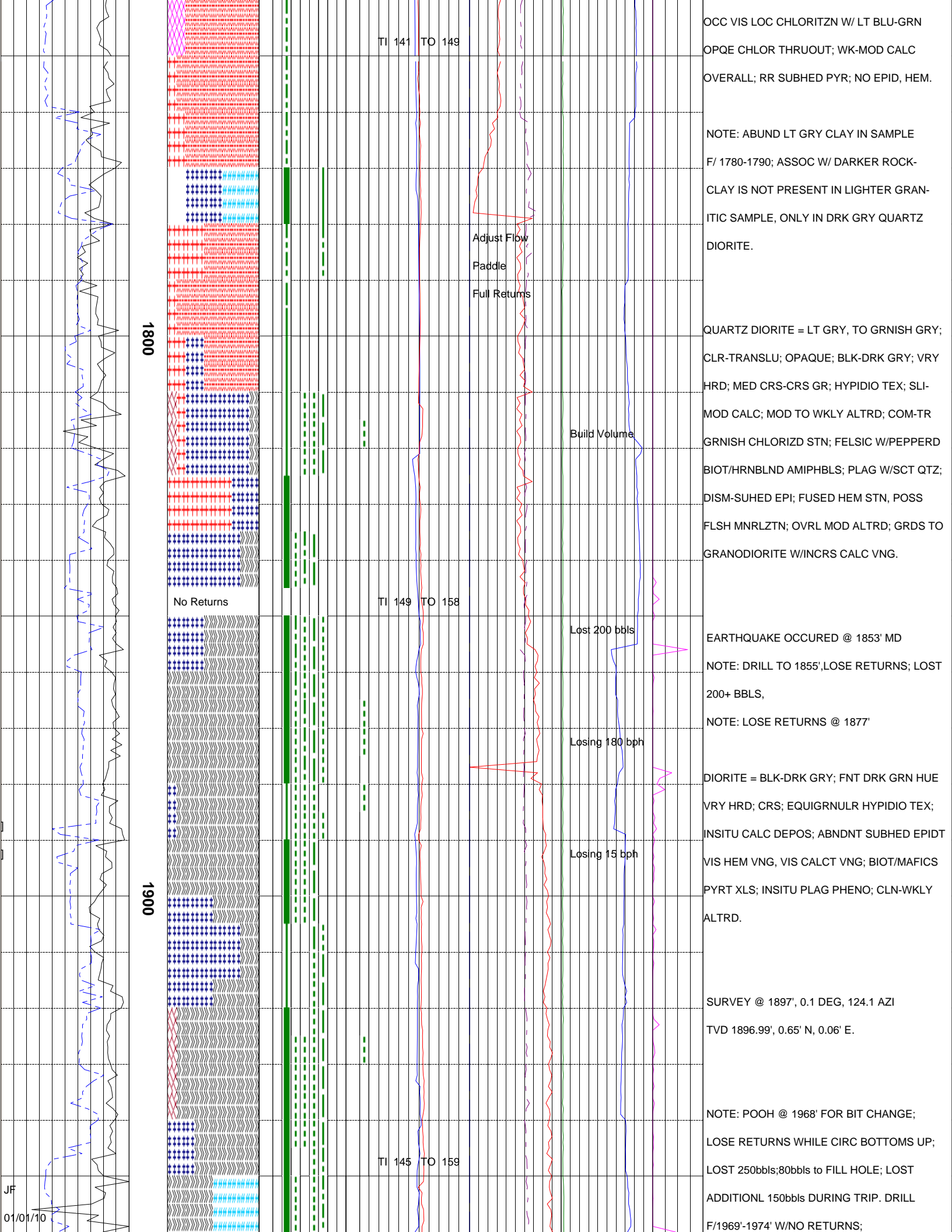










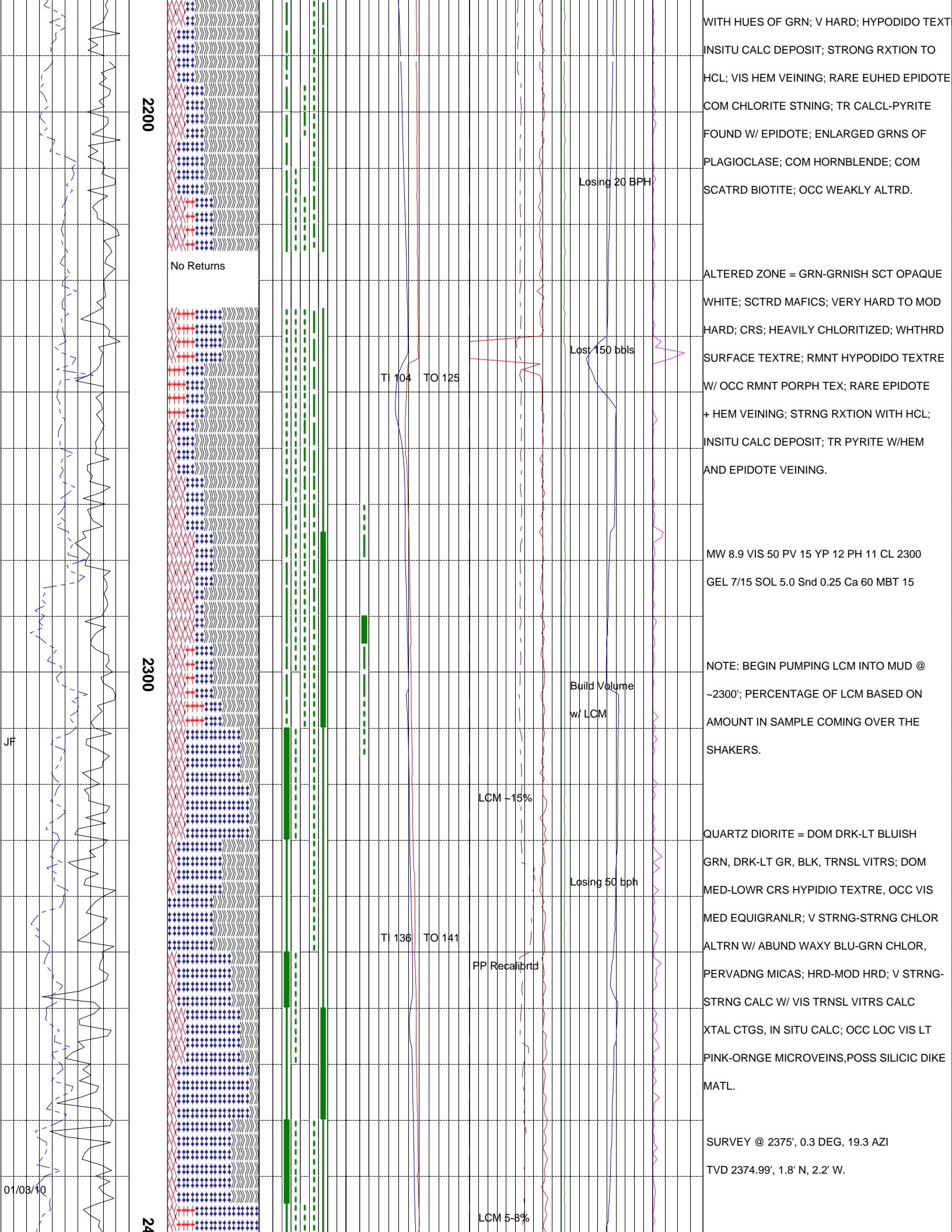


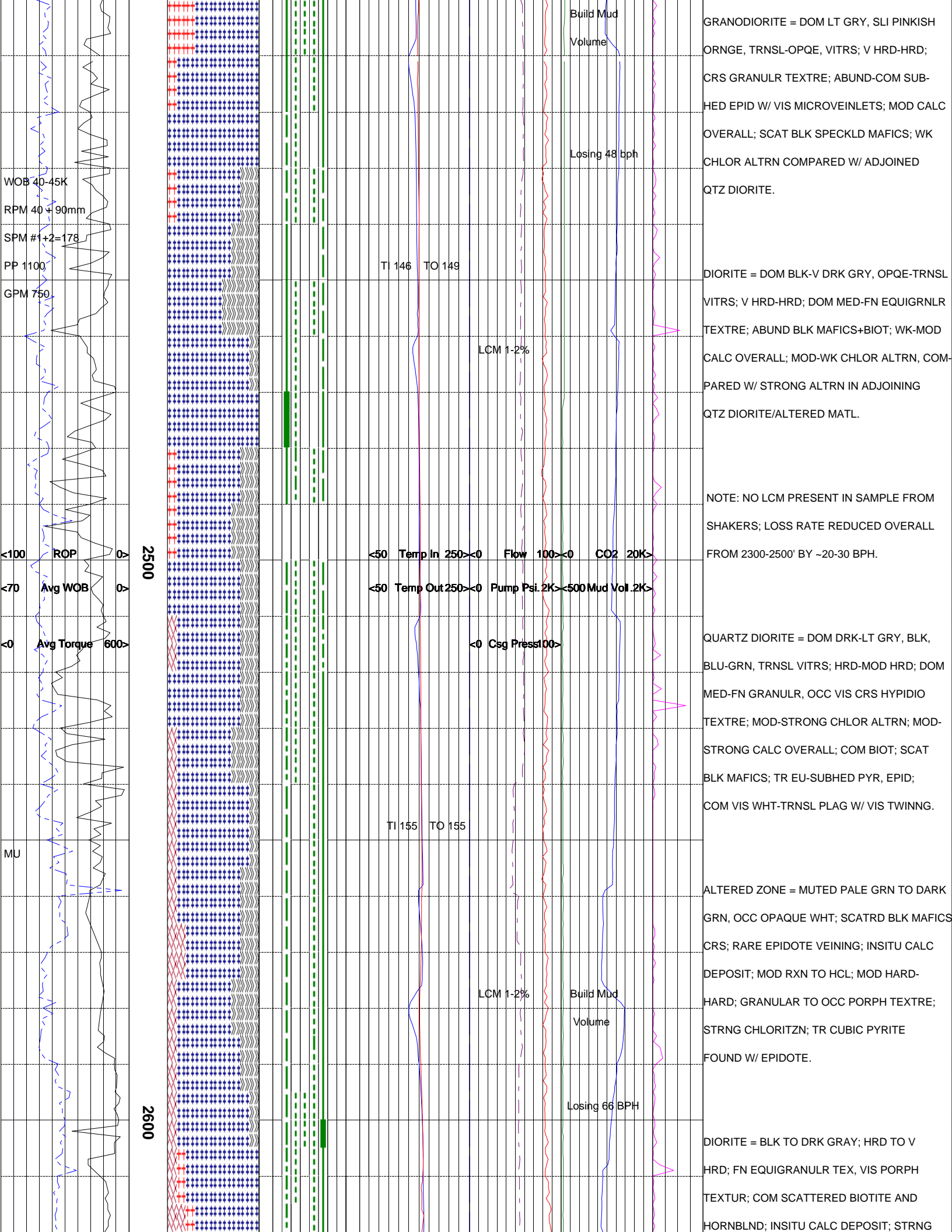
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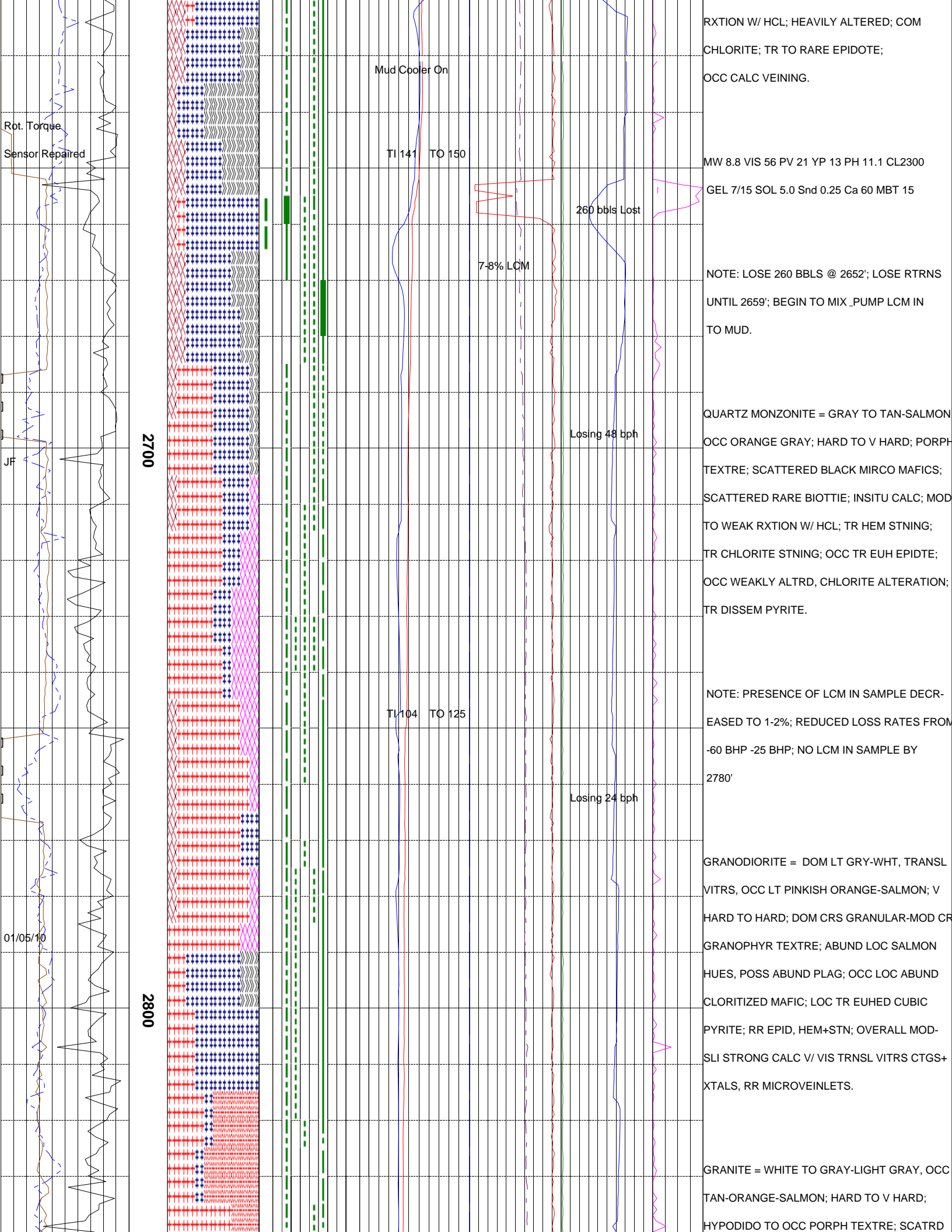
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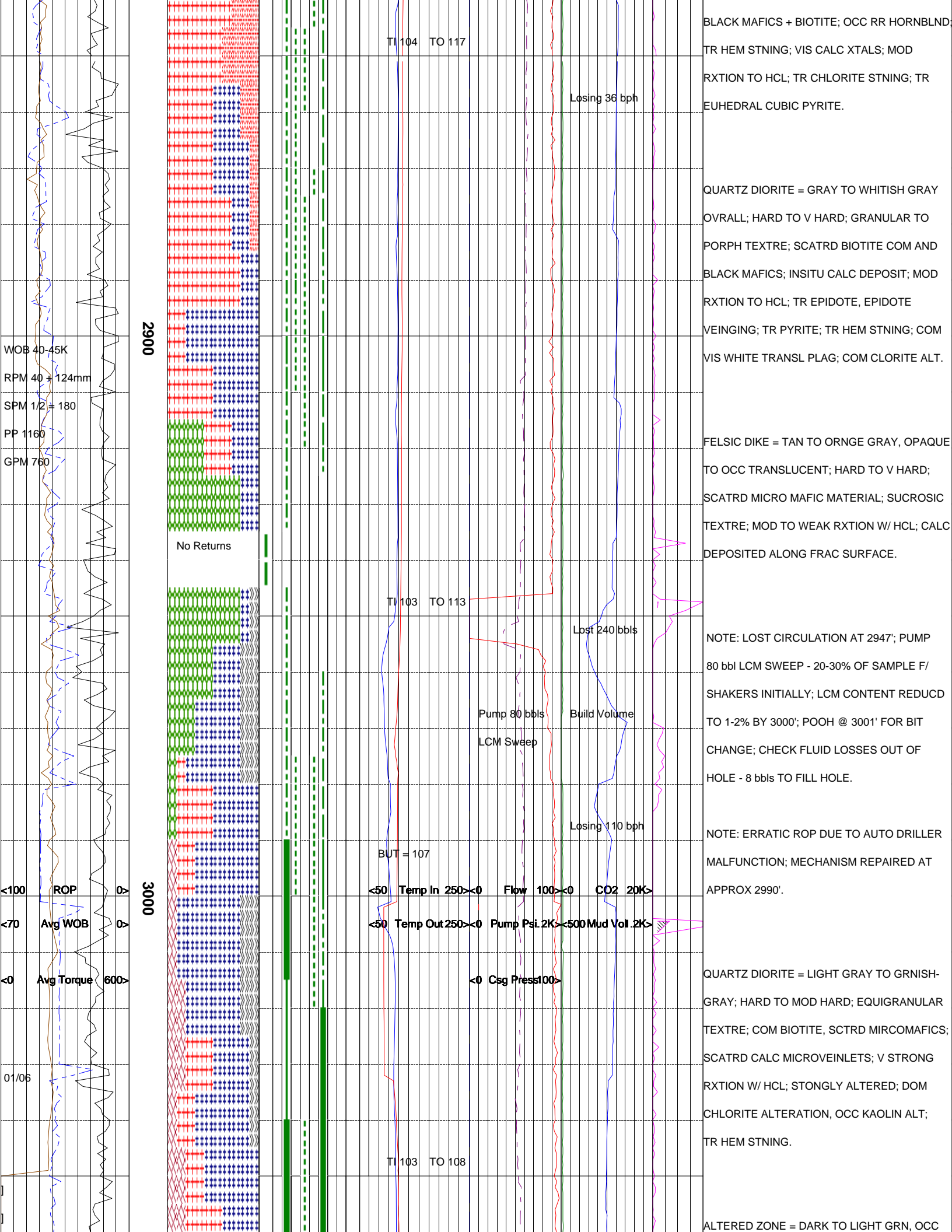
Losing 35 bps

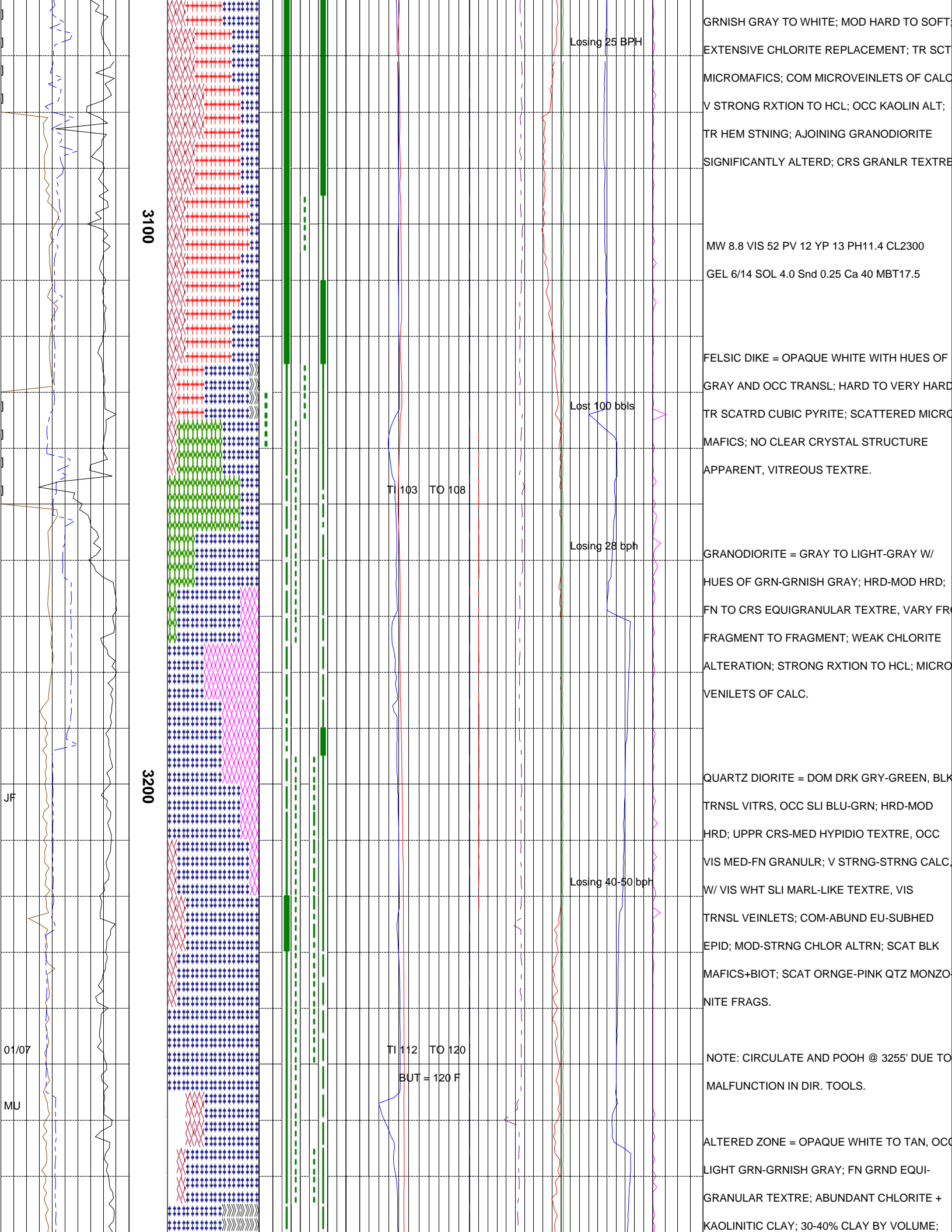
QUARTZ DIORITE = WHITISH GRAY TO GRAY

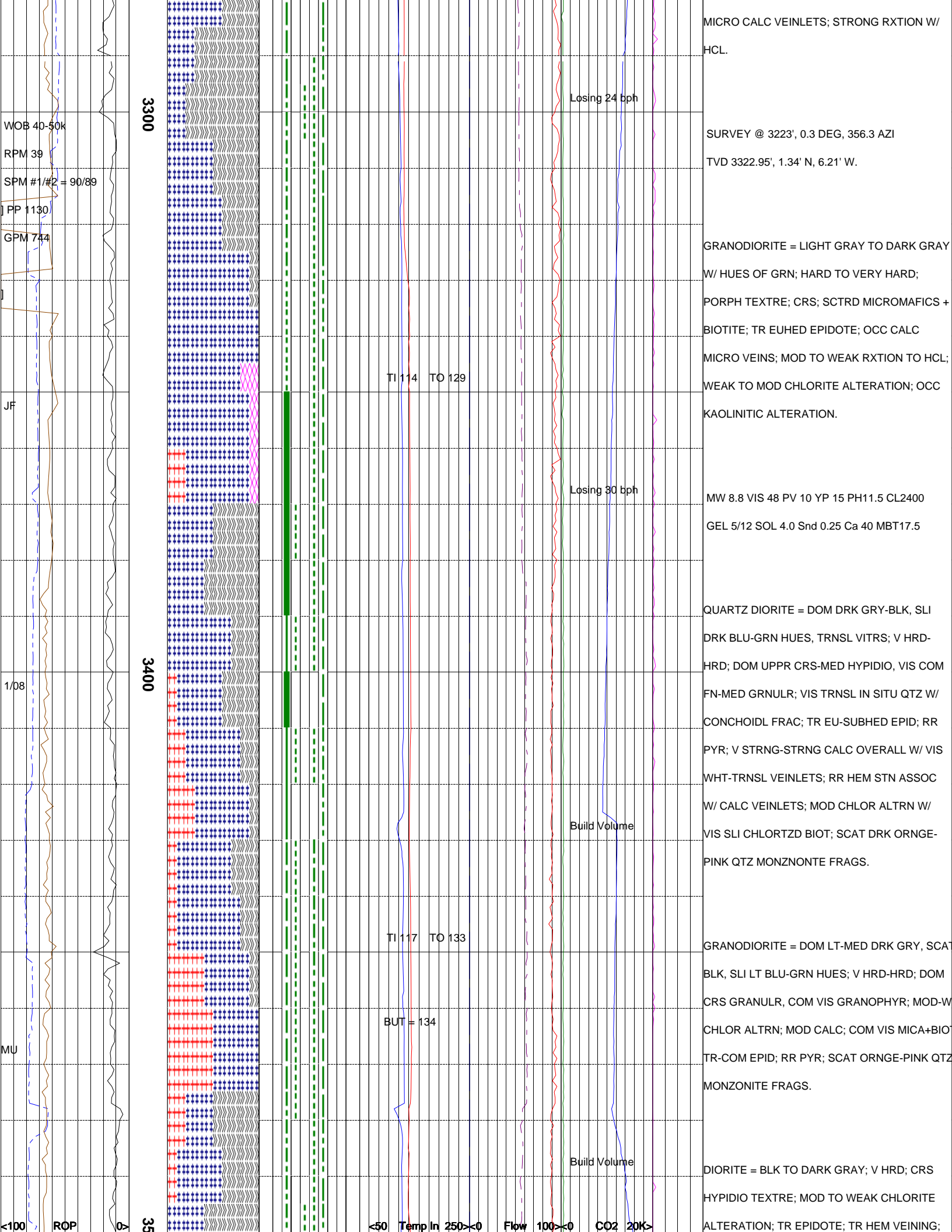


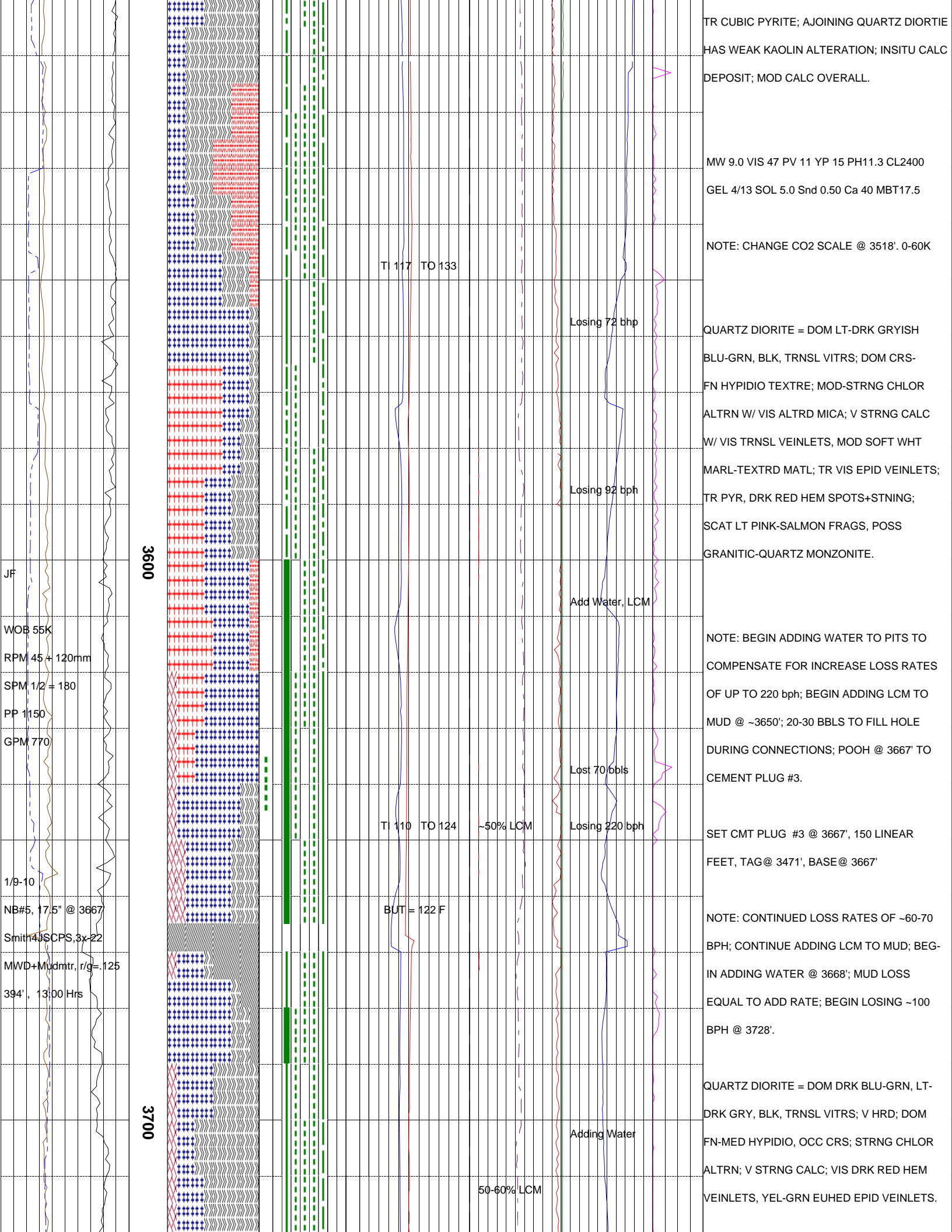












TR CUBIC PYRITE; AJOINING QUARTZ DIORTIE
HAS WEAK KAOLIN ALTERATION; INSITU CALC
DEPOSIT; MOD CALC OVERALL.

MW 9.0 VIS 47 PV 11 YP 15 PH11.3 CL2400
GEL 4/13 SOL 5.0 Snd 0.50 Ca 40 MBT17.5

NOTE: CHANGE CO2 SCALE @ 3518'. 0-60K

T 117 TO 133

Losing 72 bhp

QUARTZ DIORITE = DOM LT-DRK GRYISH
BLU-GRN, BLK, TRNSL VITRS; DOM CRS-
FN HYPIDIO TEXTRE; MOD-STRNG CHLOR
ALTRN W/ VIS ALTRD MICA; V STRNG CALC
W/ VIS TRNSL VEINLETS, MOD SOFT WHT
MARL-TEXTRD MATL; TR VIS EPID VEINLETS;
TR PYR, DRK RED HEM SPOTS+STNING;
SCAT LT PINK-SALMON FRAGS, POSS
GRANITIC-QUARTZ MONZONITE.

Losing 92 bhp

Add Water, LCM

NOTE: BEGIN ADDING WATER TO PITS TO
COMPENSATE FOR INCREASE LOSS RATES
OF UP TO 220 bph; BEGIN ADDING LCM TO
MUD @ ~3650'; 20-30 BBLs TO FILL HOLE
DURING CONNECTIONS; POOH @ 3667' TO
CEMENT PLUG #3.

Lost 70 bbls

T 110 TO 124

~50% LCM

Losing 220 bhp

SET CMT PLUG #3 @ 3667', 150 LINEAR
FEET, TAG@ 3471', BASE@ 3667'

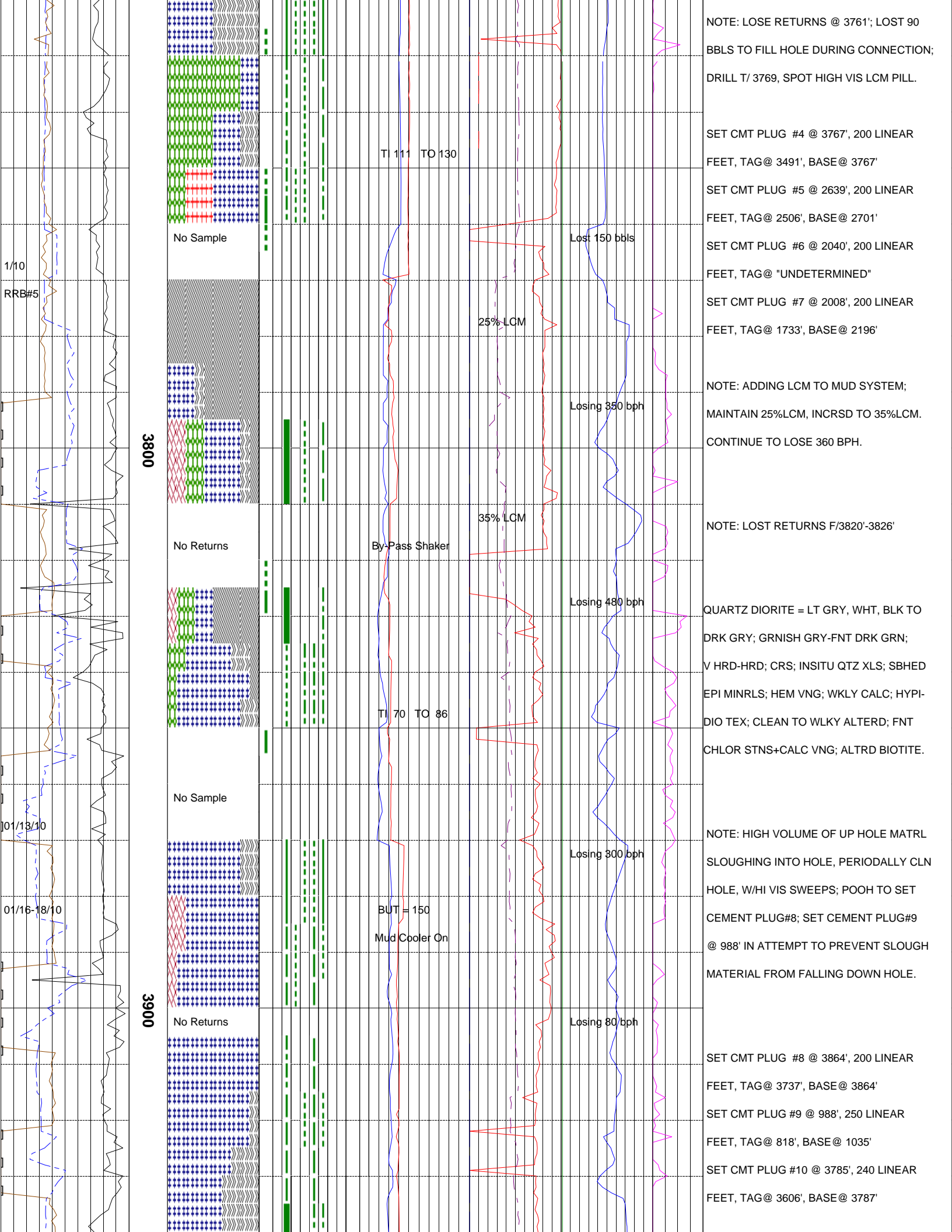
BUT = 122 F

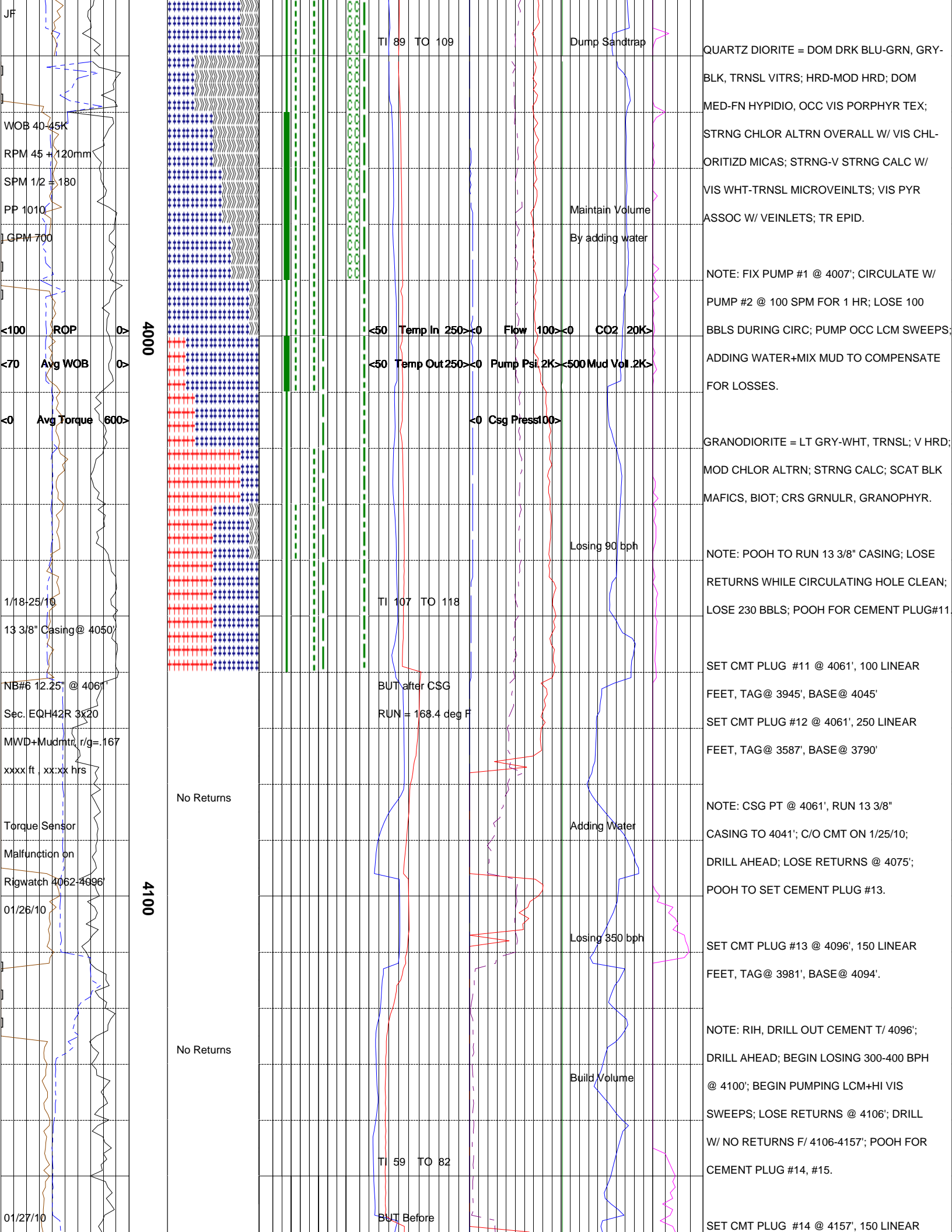
NOTE: CONTINUED LOSS RATES OF ~60-70
BPH; CONTINUE ADDING LCM TO MUD; BEG-
IN ADDING WATER @ 3668'; MUD LOSS
EQUAL TO ADD RATE; BEGIN LOSING ~100
BPH @ 3728'.

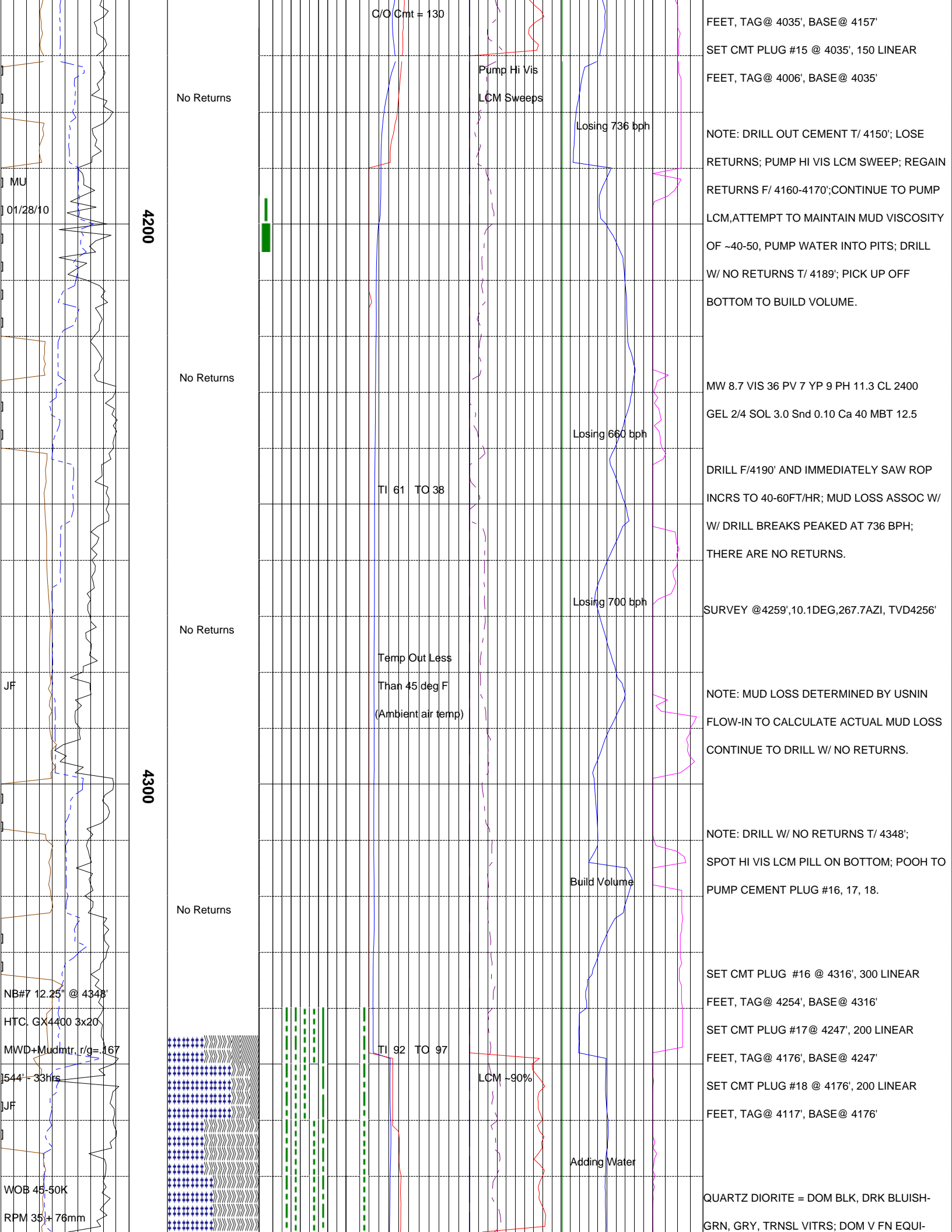
Adding Water

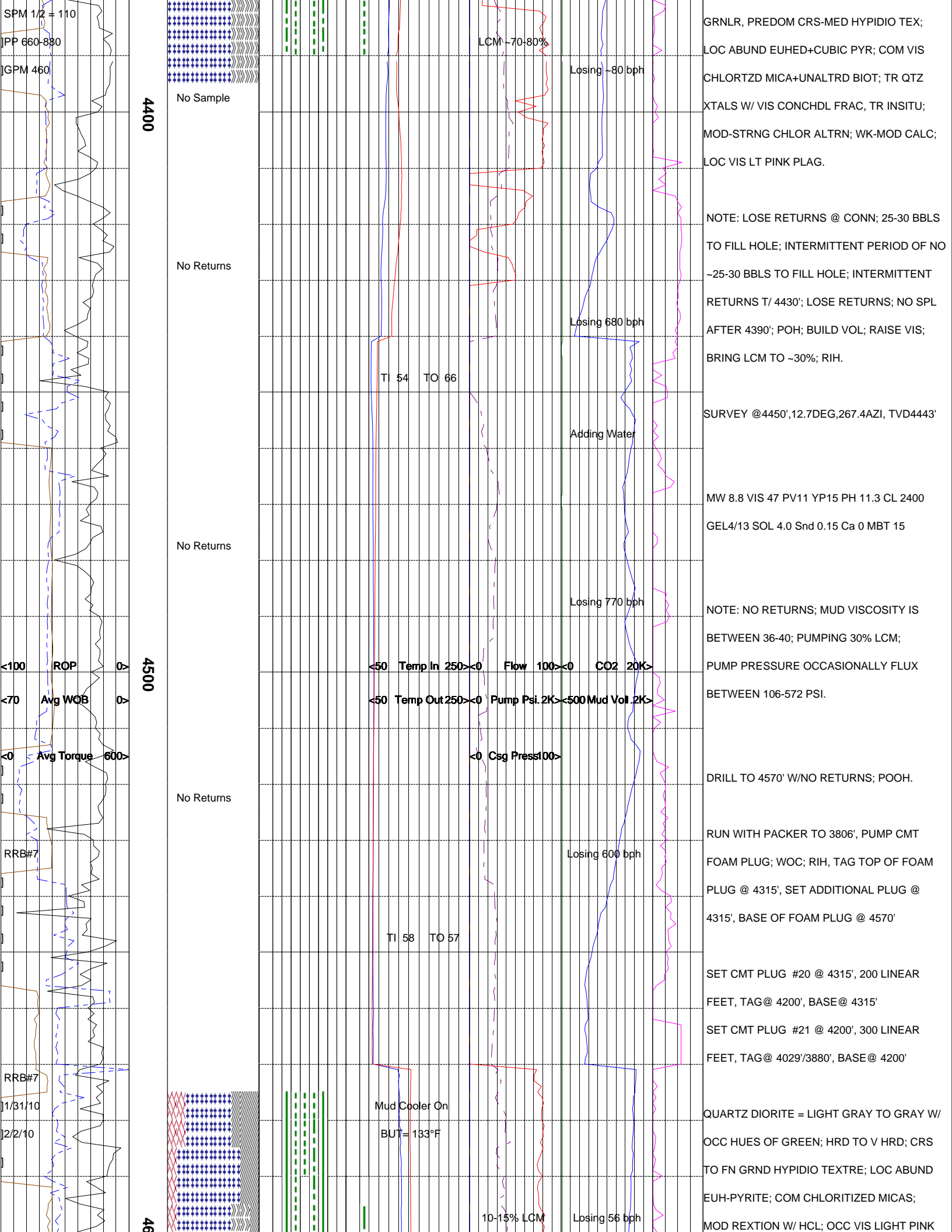
50-60% LCM

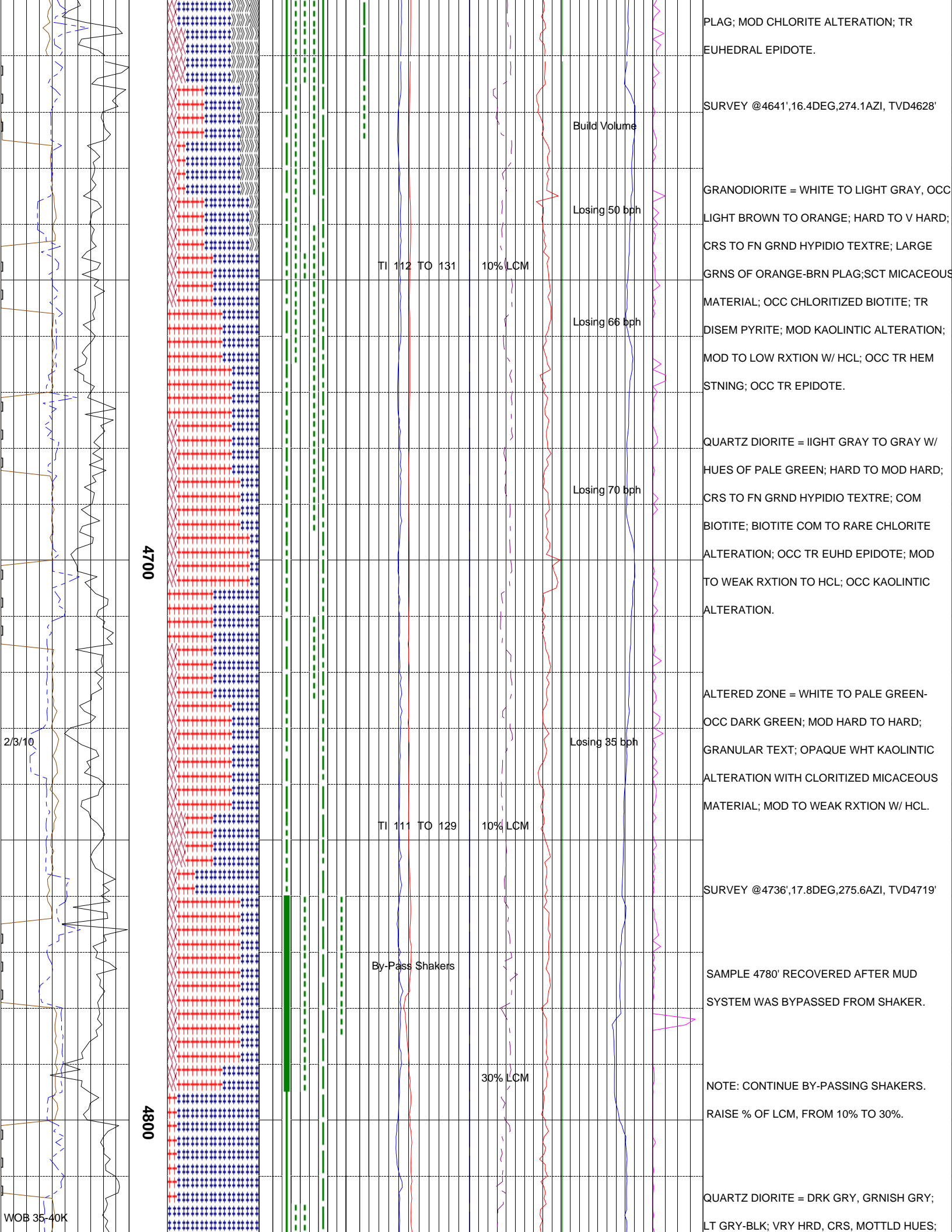
QUARTZ DIORITE = DOM DRK BLU-GRN, LT-
DRK GRY, BLK, TRNSL VITRS; V HRD; DOM
FN-MED HYPIDIO, OCC CRS; STRNG CHLOR
ALTRN; V STRNG CALC; VIS DRK RED HEM
VEINLETS, YEL-GRN EUHED EPID VEINLETS.

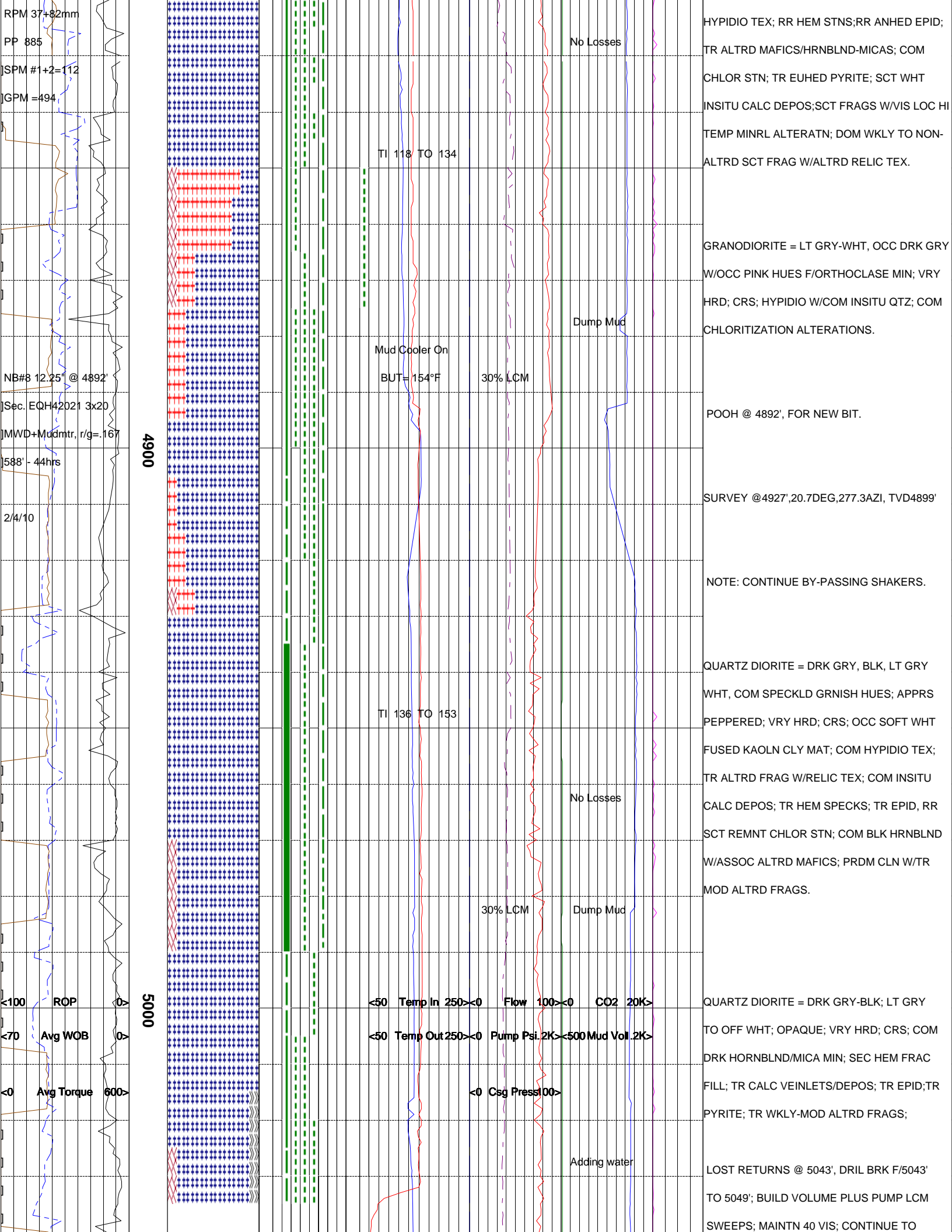


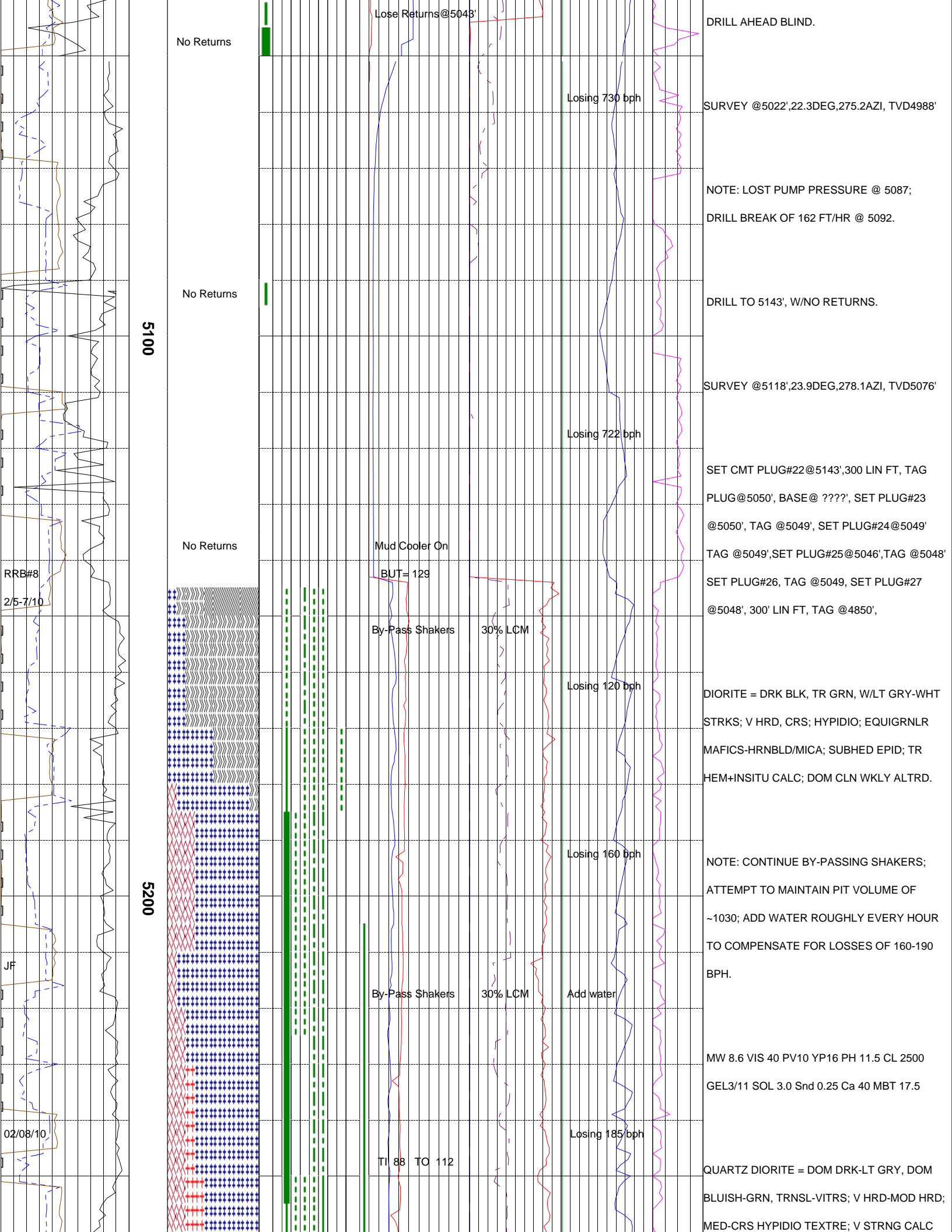


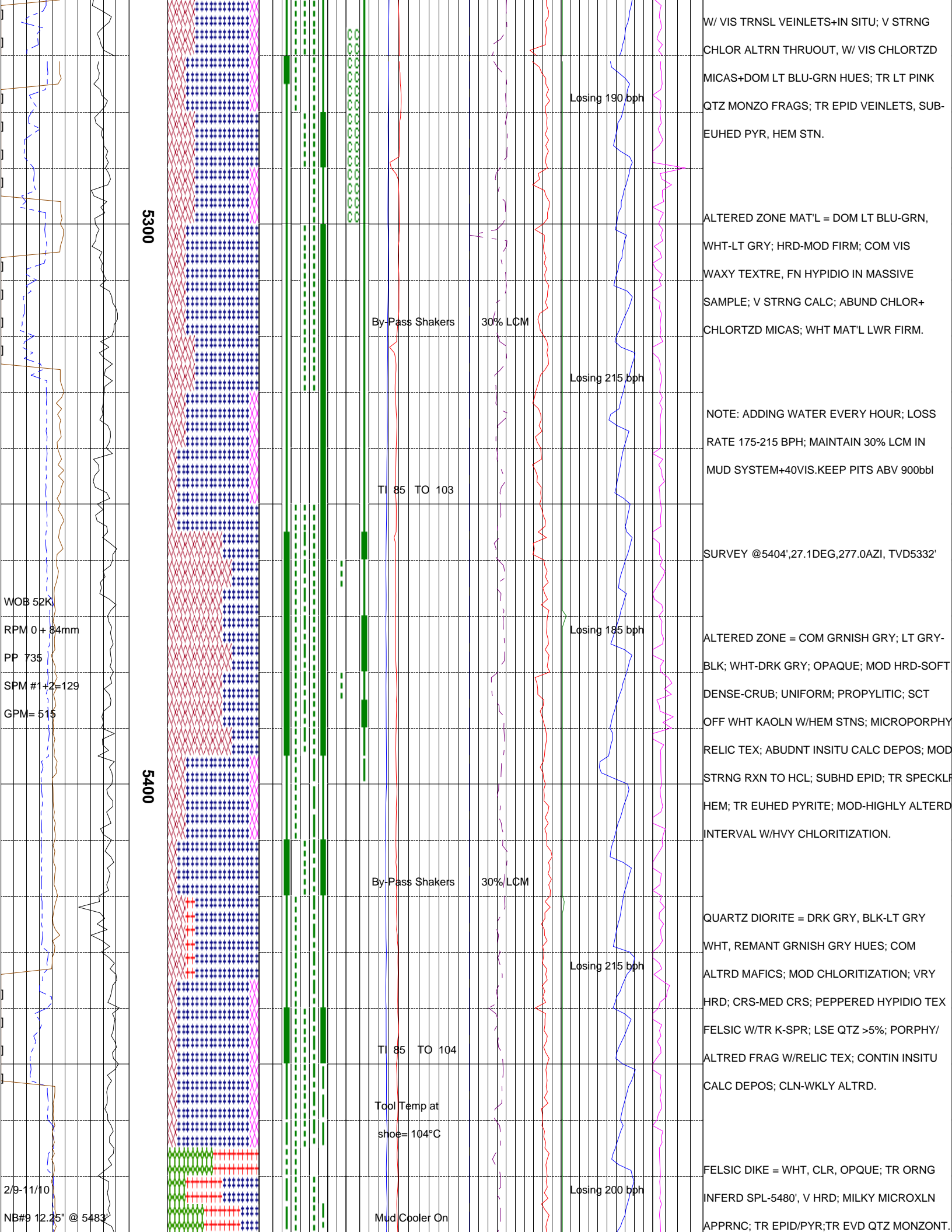


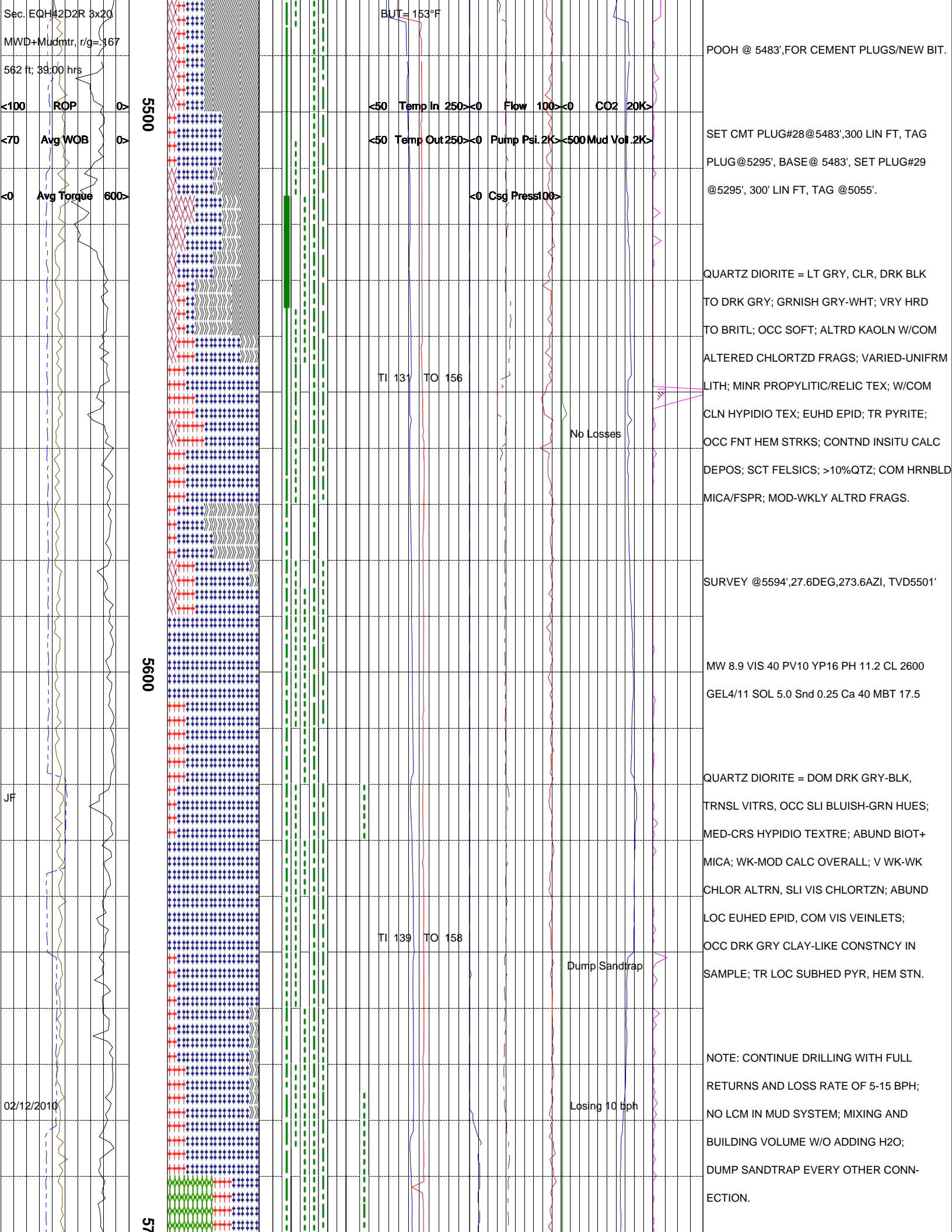


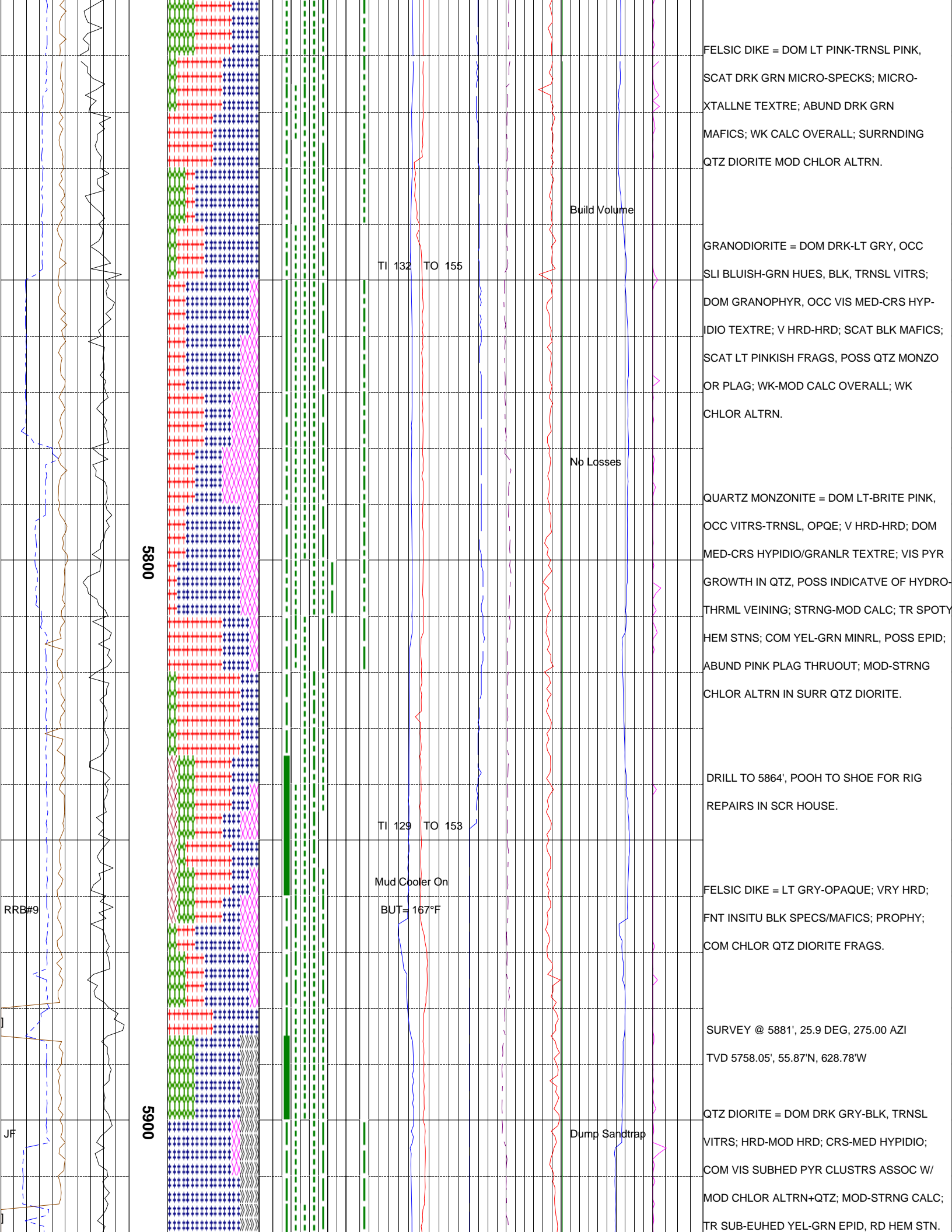


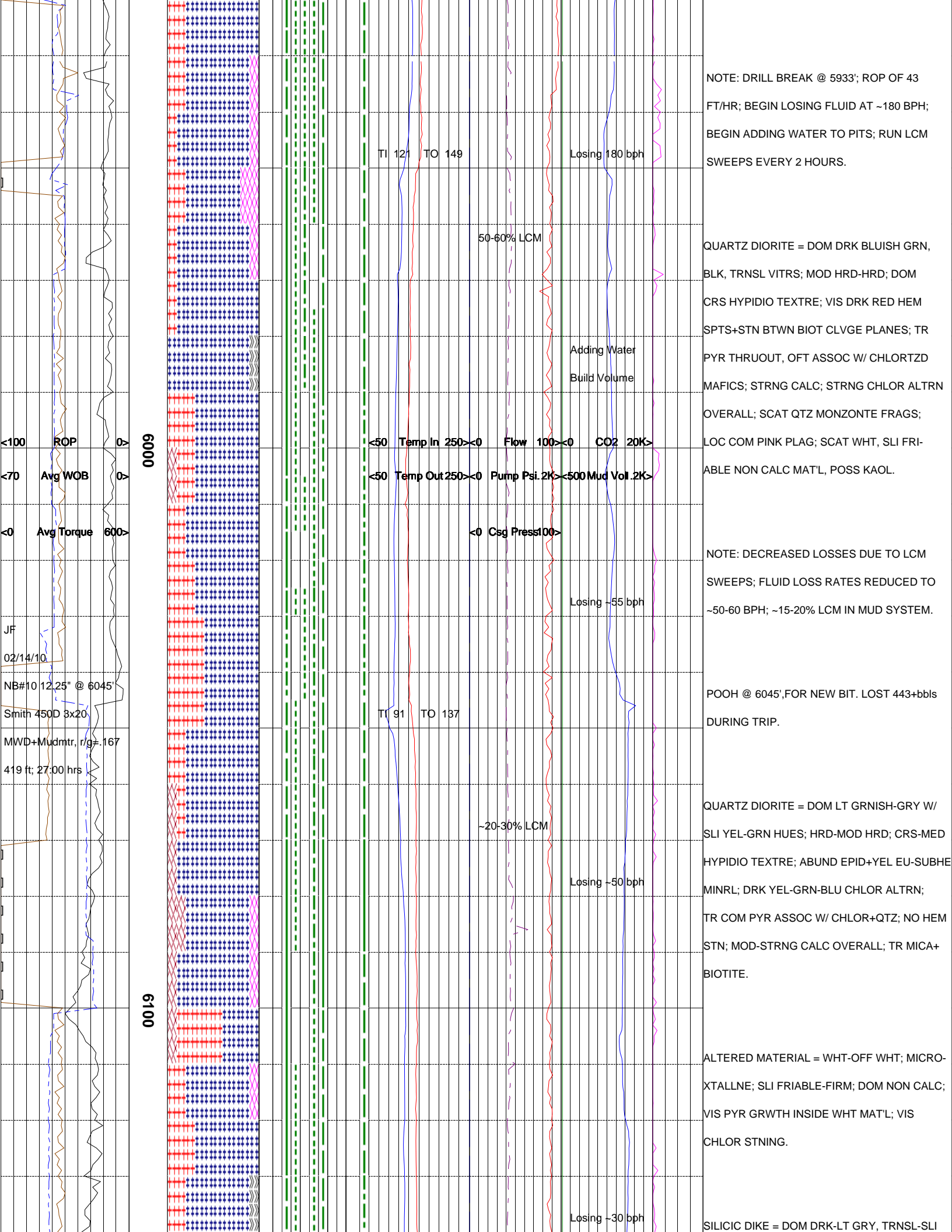


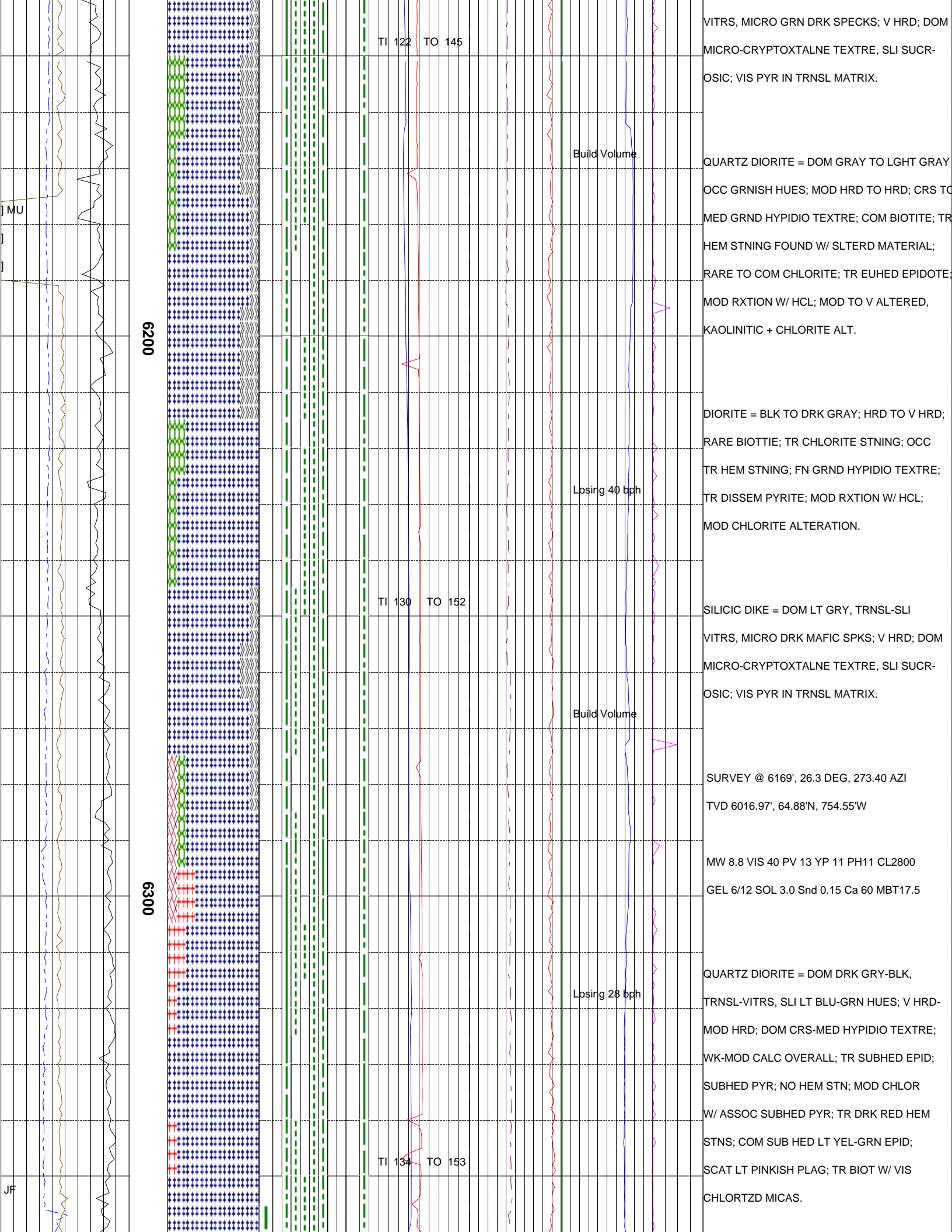


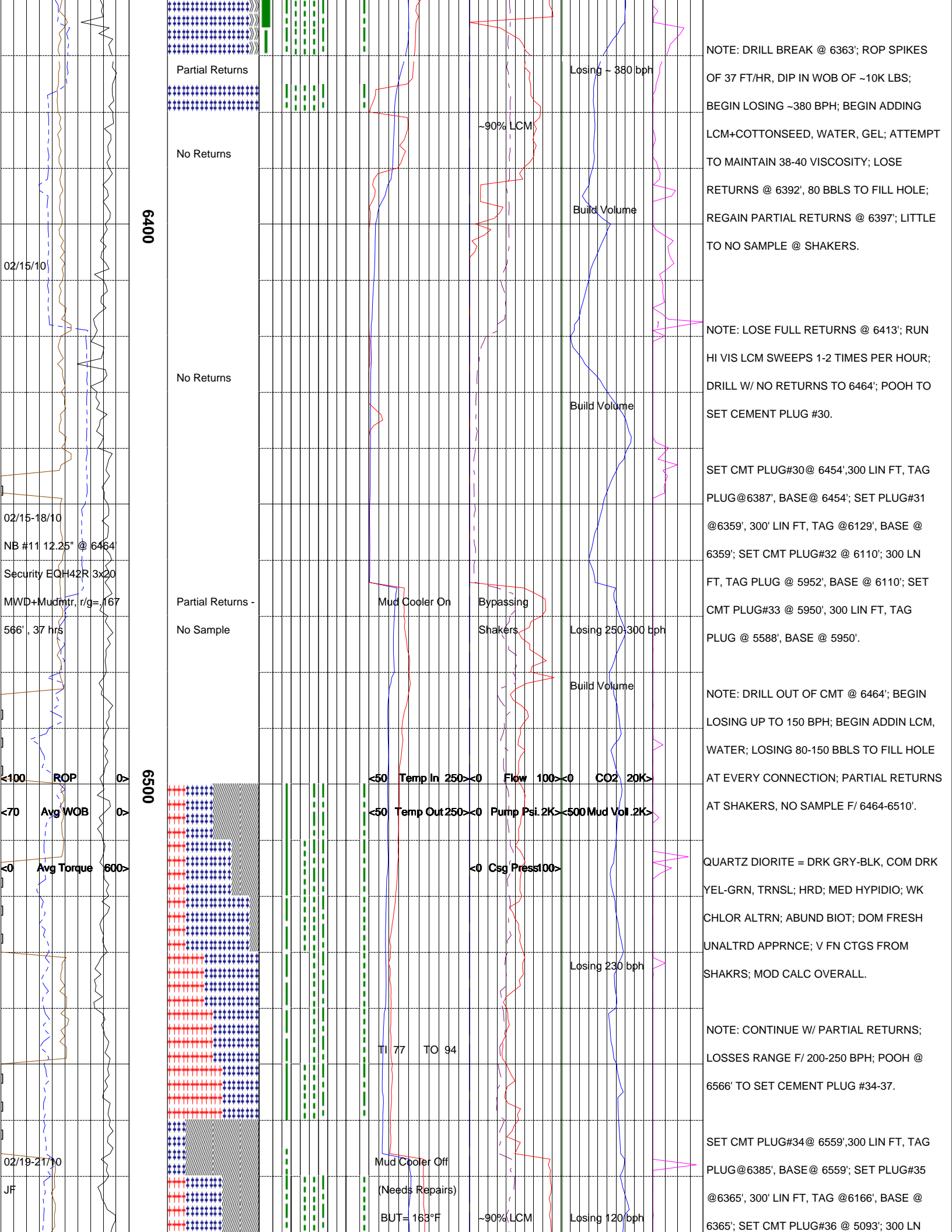


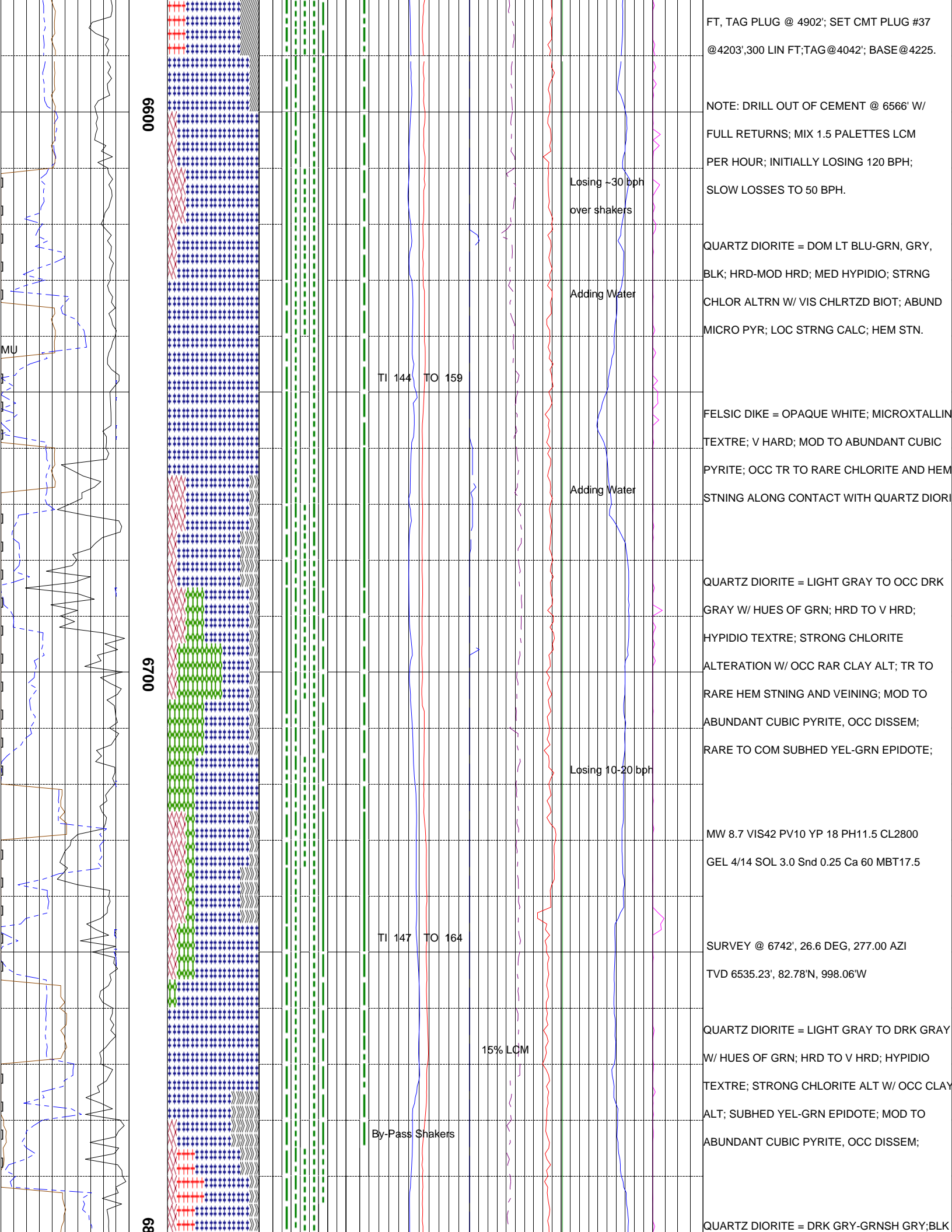


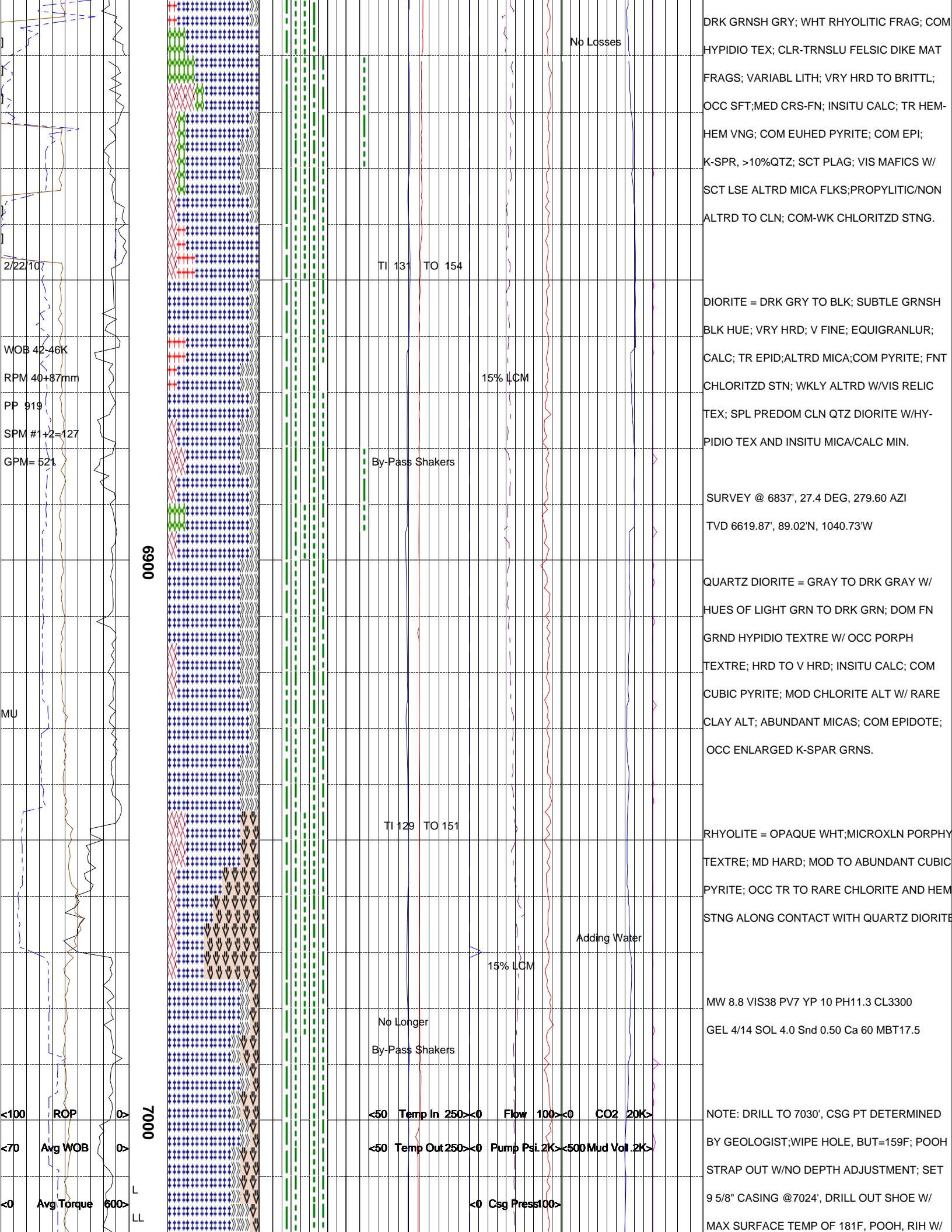


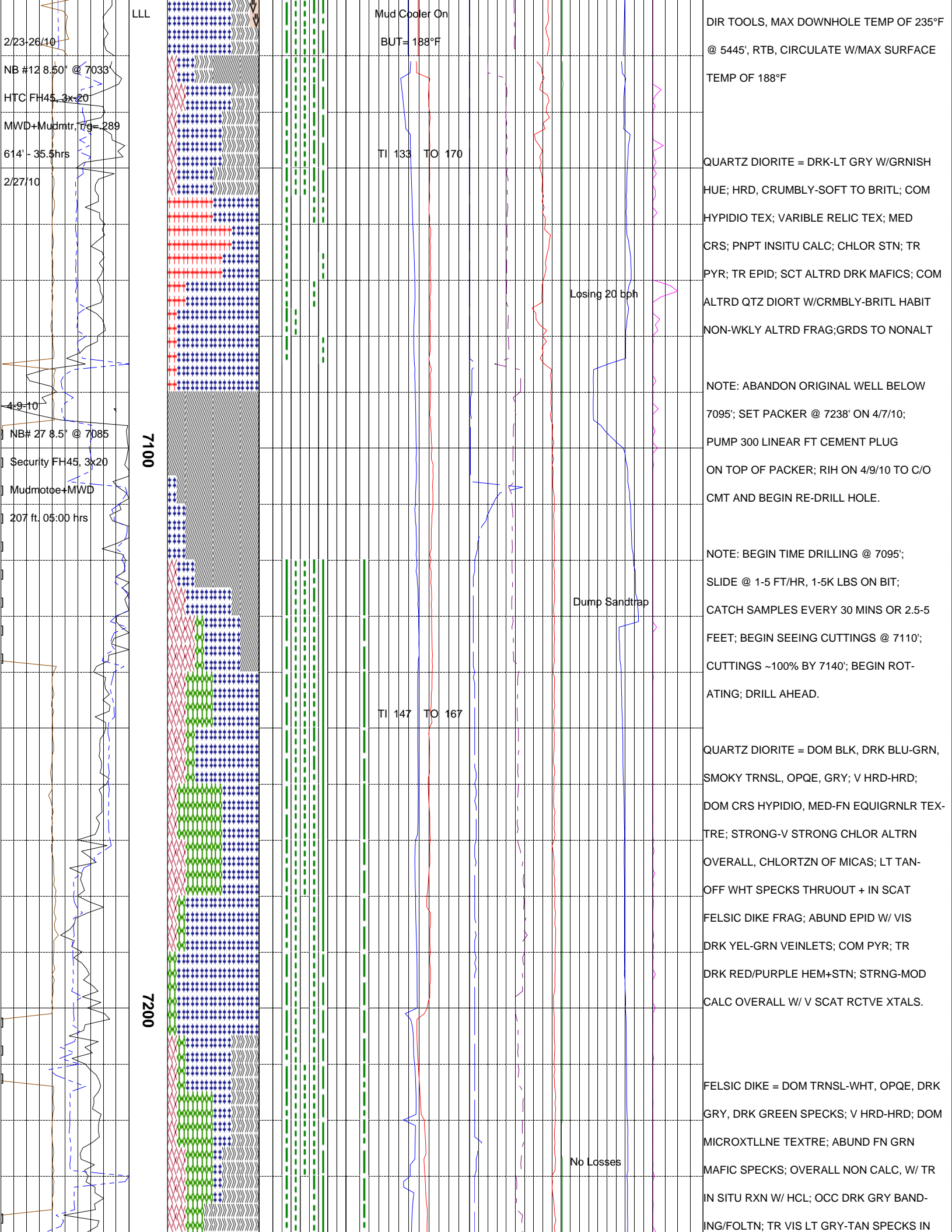


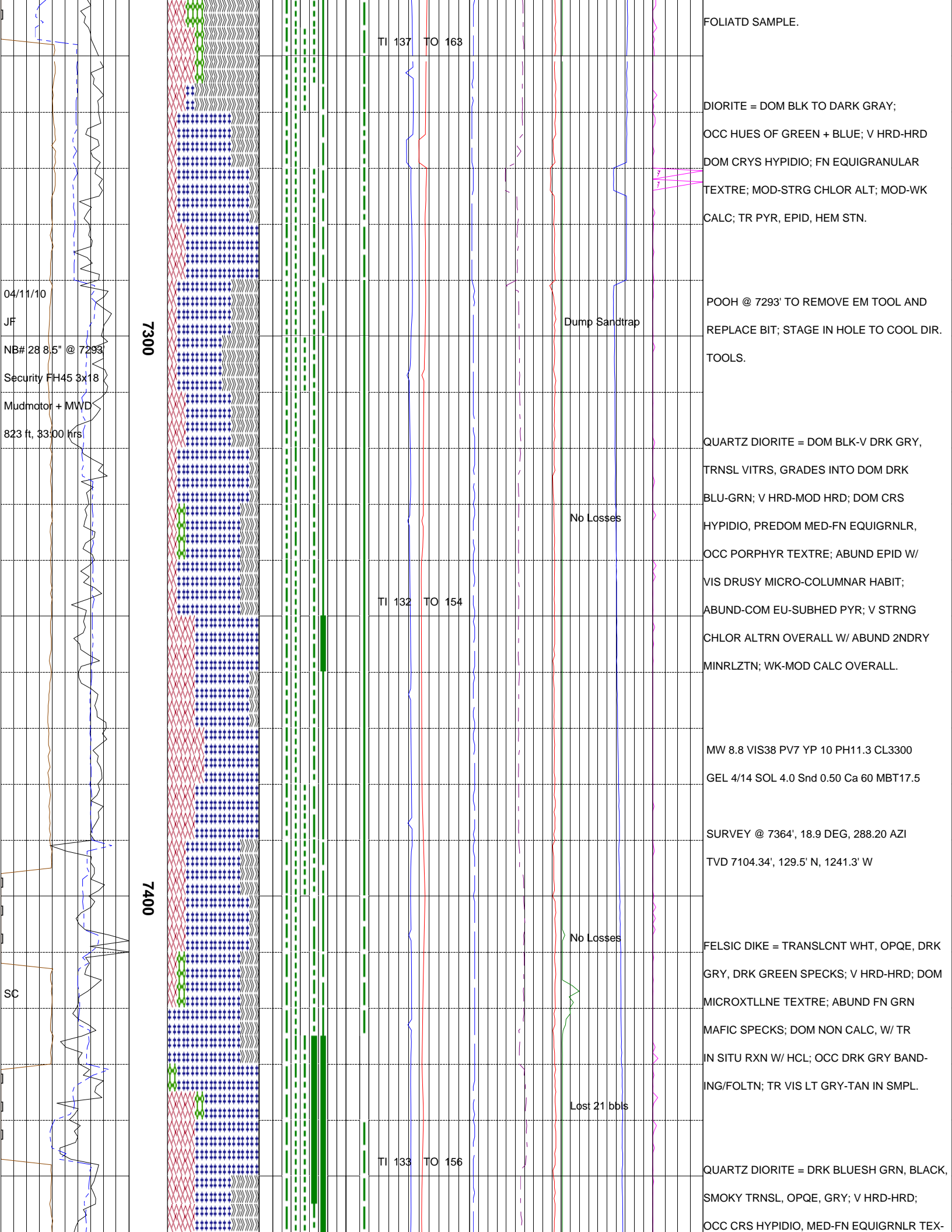


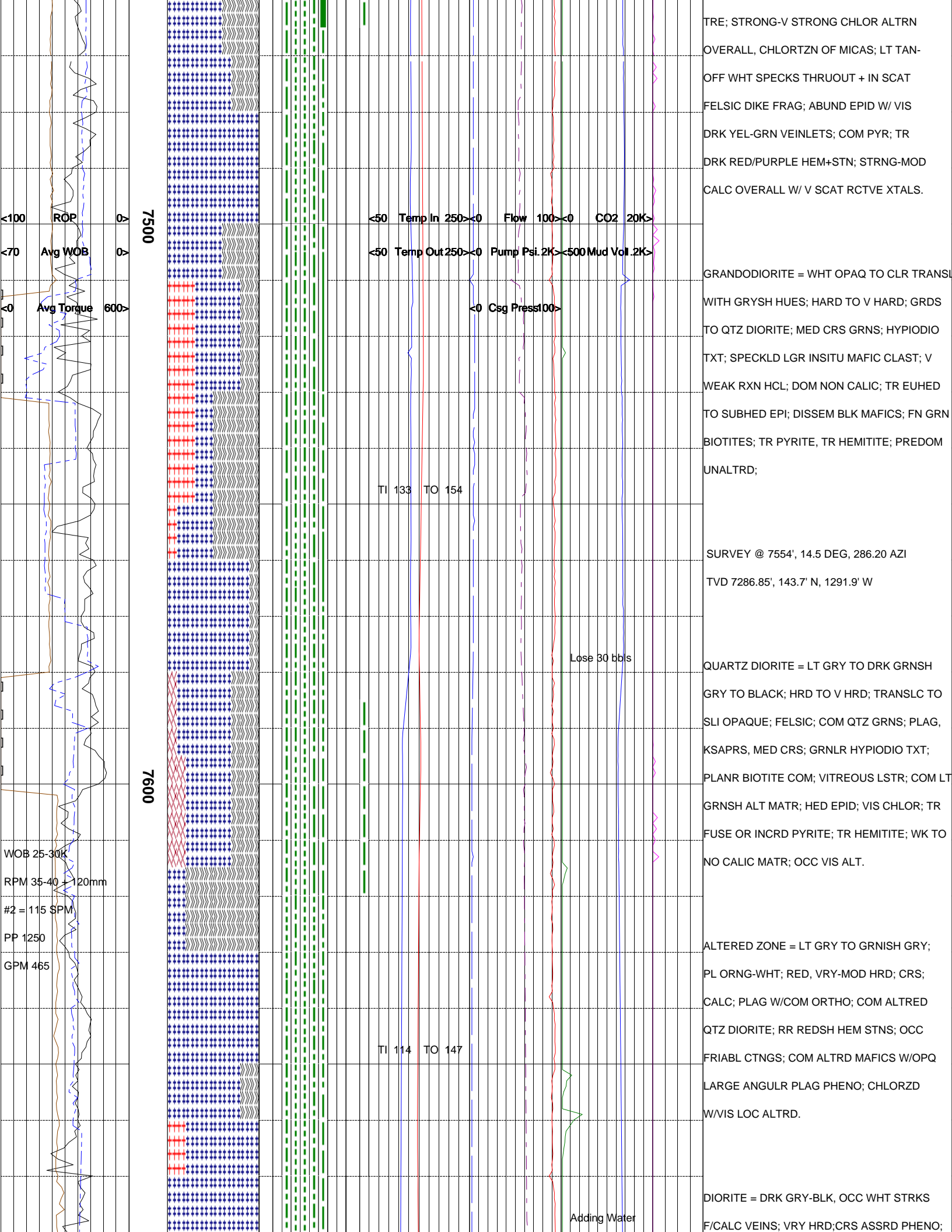


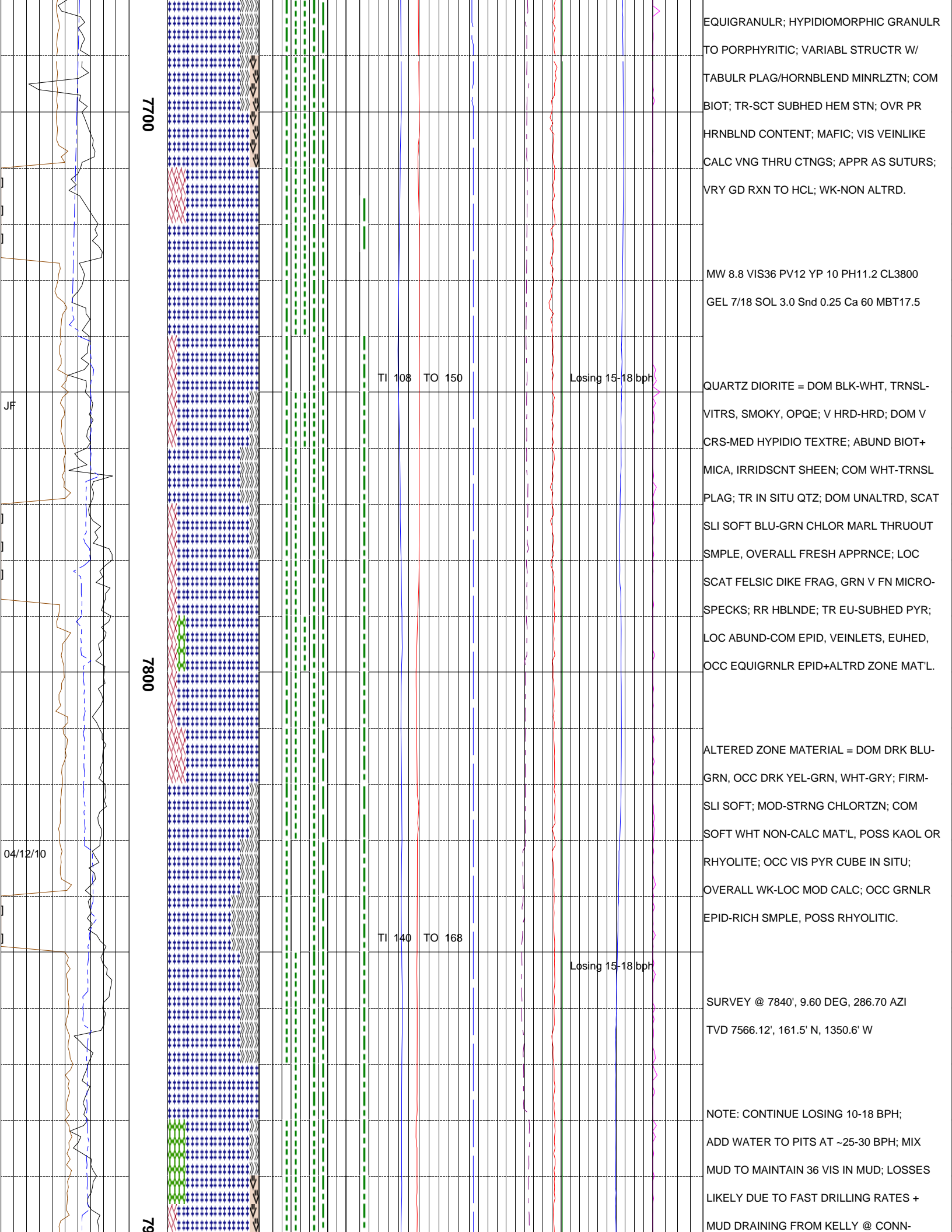












7700

7800

7900

EQUIGRANULAR; HYPIDIOMORPHIC GRANULAR TO PORPHYRITIC; VARIABLE STRUCTURE WITH TABULAR PLAGIOCLASE/HORNBLAND MINERALIZATION; COMBINATION OF BIOTITE; TR-SCT SUBHED HEM STAIN; OVERALL HORNBLAND CONTENT; MAFIC; VISIBLY VEIN-LIKE CALC VEIN THROUGH CONTACTS; APPROXIMATELY AS SUTURES; VERY GOOD REACTION TO HCL; WORK-NON ALTERED.

MW 8.8 VIS36 PV12 YP 10 PH11.2 CL3800
GEL 7/18 SOL 3.0 Snd 0.25 Ca 60 MBT17.5

TI 108 TO 150

Losing 15-18 bph

QUARTZ DIORITE = DOM BLK-WHT, TRANSLUCENT, SMOKY, OPAQUE; V. HARD-HARD; DOM V. CRISP-MED HYPIDIO TEXTURE; ABUNDANT BIOTITE + MICA, IRRIDISCENT SHEEN; COMBINATION WHT-TRANSLUCENT PLAGIOCLASE; TR IN SITU QTZ; DOM UNALTERED, SCATTERED SLI SOFT BLU-GRN CHLOR MARL THROUGHOUT SAMPLE, OVERALL FRESH APPEARANCE; LOCATION SCATTERED FELSIC DIKE FRAG, GRN V. FN MICRO-SPECKS; RR HBLNDE; TR EU-SUBHED PYR; LOCATION ABUNDANT-COM EPID, VEINLETS, EUHED, OCCASIONALLY EQUIGRANULAR EPID+ALTERED ZONE MATERIAL.

ALTERED ZONE MATERIAL = DOM DRK BLU-GRN, OCCASIONALLY DRK YEL-GRN, WHT-GRY; FIRM-SLI SOFT; MOD-STRONG CHLORTZN; COMBINATION SOFT WHT NON-CALC MATERIAL, POSSIBLE KAOLIN OR RHYOLITE; OCCASIONALLY VIS PYR CUBE IN SITU; OVERALL WK-LOC MOD CALC; OCCASIONALLY GRANULAR EPID-RICH SAMPLE, POSSIBLE RHYOLITIC.

TI 140 TO 168

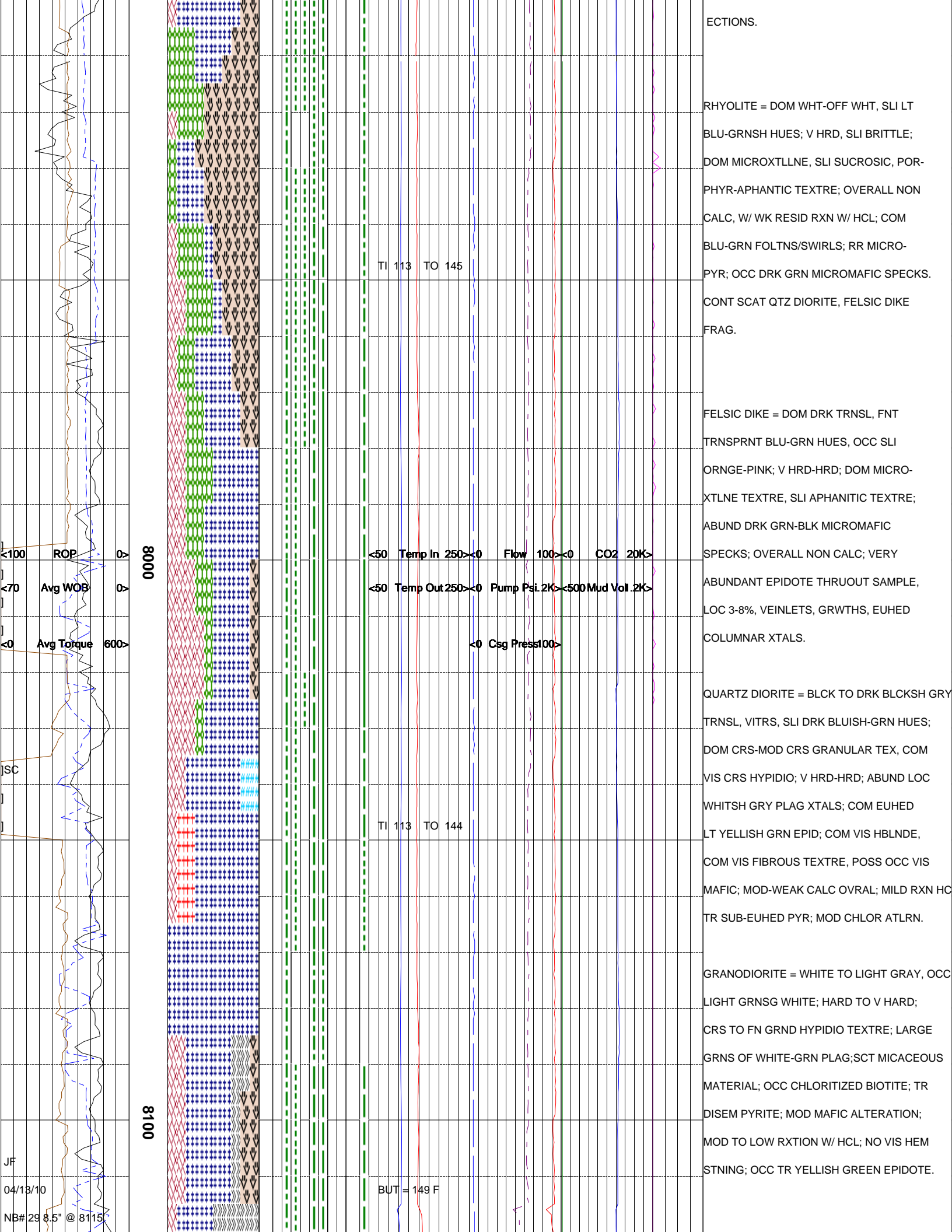
Losing 15-18 bph

SURVEY @ 7840', 9.60 DEG, 286.70 AZI
TVD 7566.12', 161.5' N, 1350.6' W

NOTE: CONTINUE LOSING 10-18 BPH;
ADD WATER TO PITS AT ~25-30 BPH; MIX MUD TO MAINTAIN 36 VIS IN MUD; LOSSES LIKELY DUE TO FAST DRILLING RATES + MUD DRAINING FROM KELLY @ CONN-

JF

04/12/10



ECTIONS.

RHYOLITE = DOM WHT-OFF WHT, SLI LT
BLU-GRNSH HUES; V HRD, SLI BRITTLE;
DOM MICROXTLLNE, SLI SUCROSIC, POR-
PHYR-APHANTIC TEXTRE; OVERALL NON
CALC, W/ WK RESID RXN W/ HCL; COM
BLU-GRN FOLTNS/SWIRLS; RR MICRO-
PYR; OCC DRK GRN MICROMAFIC SPECKS.
CONT SCAT QTZ DIORITE, FELSIC DIKE
FRAG.

FELSIC DIKE = DOM DRK TRNSL, FNT
TRNSPRNT BLU-GRN HUES, OCC SLI
ORNGE-PINK; V HRD-HRD; DOM MICRO-
XTLNE TEXTRE, SLI APHANTIC TEXTRE;
ABUND DRK GRN-BLK MICROMAFIC
SPECKS; OVERALL NON CALC; VERY
ABUNDANT EPIDOTE THRUOUT SAMPLE,
LOC 3-8%, VEINLETS, GRWTHS, EUHED
COLUMNAR XTALS.

QUARTZ DIORITE = BLCK TO DRK BLCKSH GRN
TRNSL, VITRS, SLI DRK BLUISH-GRN HUES;
DOM CRS-MOD CRS GRANULAR TEX, COM
VIS CRS HYPIDIO; V HRD-HRD; ABUND LOC
WHITSH GRN PLAG XTALS; COM EUHED
LT YELLISH GRN EPID; COM VIS HBLNDE,
COM VIS FIBROUS TEXTRE, POSS OCC VIS
MAFIC; MOD-WEAK CALC OVRAL; MILD RXN HO
TR SUB-EUHED PYR; MOD CHLOR ATLNR.

GRANODIORITE = WHITE TO LIGHT GRAY, OCC
LIGHT GRNSG WHITE; HARD TO V HARD;
CRS TO FN GRND HYPIDIO TEXTRE; LARGE
GRNS OF WHITE-GRN PLAG; SCT MICACEOUS
MATERIAL; OCC CHLORITIZED BIOTITE; TR
DISEM PYRITE; MOD MAFIC ALTERATION;
MOD TO LOW RXTION W/ HCL; NO VIS HEM
STNING; OCC TR YELLISH GREEN EPIDOTE.

TI 113 TO 145

<50 Temp In 250><0 Flow 100><0 CQ2 20K>

<50 Temp Out 250><0 Pump Psi 2K><500 Mud Vol 2K>

<0 Csg Press 100>

TI 113 TO 144

BUT = 149 F

<100 ROP 0>

<70 Avg WOB 0>

<0 Avg Torque 600>

ISC

JF

04/13/10

NB# 29 8.5" @ 8115

8000

8100

