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(281) 784-5500
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New Iberia, LA
(337) 364-2322
Anchorage, AK
(907) 561-2465

MUDLOG MD

COMPANY ExxonMobil Production
WELL PCU296-5A05
FIELD PICEANCE CREEK
REGION ROCKYS
COORDINATES 39.911890000 Deg N
108.198602000 Deg W
ELEVATION 7295.9'
COUNTY, STATE RIO BLANCO, CO
API INDEX 051031124400
SPUD DATE 11/14/2009
CONTRACTOR HE
CO. REP. CANDICE CURTIS
RIG/TYPE 321, FLEX 4
LOGGING UNIT 31
GEOLOGISTS C. RECORD / B. SMELSER
M. FRANCO
ADD. PERSONS M. PIPER
R. McCANE
CO. GEOLOGIST CHRIS ALBA

LOG INTERVAL

CASING DATA

DEPTHS: 4400' TO 13721'
DATES: 11/11/2010 TO 11/28/2010
SCALE: 5"=100'

16.00" AT 150'
10.75" AT 4662'
7.00" AT 9954'
4.5" AT 13700'

MUD TYPES

HOLE SIZE

WATER BASED TO 13721'
TO
TO
TO

14.75" TO 4677'
9.875" TO 9967'
6.125" TO 13721'
TO

ABBREVIATIONS

<i>NB</i> NEWBIT	<i>PV</i> PLASTIC VISCOSITY	<i>LC</i> LOST CIRCULATION
<i>RRB</i> RERUN BIT	<i>YP</i> YIELD POINT	<i>CO</i> CIRCULATE OUT
<i>CB</i> CORE BIT	<i>FL</i> FLUID LOSS	<i>NR</i> NO RETURNS
<i>WOB</i> WEIGHT ON BIT	<i>CL</i> PPM CLORIDE ION	<i>TG</i> TRIP GAS
<i>RPM</i> ROTARY REV/MIN	<i>Rm</i> MUD RESISTIVITY	<i>SG</i> SURVEY GAS
<i>PP</i> PUMP PRESSURE	<i>Rmf</i> FILTRATE RESISTIVITY	<i>WG</i> WIPER GAS
<i>SPM</i> STROKES/MIN	<i>PR</i> POOR RETURNS	<i>CG</i> CONNECTION GAS
<i>MW</i> MUD WEIGHT	<i>LAT</i> LOGGED AFTER TRIP	
<i>VIS</i> FUNNEL VISCOSITY	<i>LAS</i> LOGGED AFTER SURVEY	

ALTERED ZONE	CHERT - GLASSY	FELSIC SILIC DIKE	MARL - CALC	SANDSTONE
ANDESITE	CHERT - PORCEL	FOSSIL	METAMORPHICS	SANDSTONE-TUFFACEOUS
ANHYDRITE	CHERT - TIGER STRIPE	GABBRO	MUDSTONE	SERICITIZATION
BASALT	CHERT - UNDIFF	GLASSY TUFF	OBSIDIAN	SERPENTINE
BENTONITE	CLAY	GRANITE	PALEOSOL	SHALE
BIOTITIZATION	CLAY-MUDSTONE	GRANITE WASH	PHOSPHATE	SHALE TUFFACEOUS
BRECCIA	CLYST-TUFFACEOUS	GRANODIORITE	PORCELANITE	SHELL FRAGMENTS
CALCARENITE	CHLORITIZATION	GYPSUM	PORCELANEOUS CLYST	SIDERITE
CALCAREOUS TUFF	COAL	HALITE	PYRITE	SILICIFICATION
CALCILUTITE	CONGLOMERATE	HORNBL-QTZ-DIO	PYROCLASTICS	SILTSTONE
CARBONATES	CONGL. SAND	IGNEOUS (ACIDIC)	QUARTZ DIORITE	SILTST-TUFFACEOUS
CARBONACEOUS MAT	CONGL. SANDSTONE	IGNEOUS (BASIC)	QUARTZ LATITE	TUFF
CARBONACEOUS SH	COQUINA	INTRUSIVES	QUARTZ MONZONITE	VOLCANICLASTICS SEDS
CEMENT CONTAM.	DACITE	KAOLINITIC	RECRYSTALLIZED CALCITE	VOLCANICS
CHALK	DIATOMITE	LIMESTONE	RHYOLITE	
CRYSTALLINE TUFF	DIORITE	LITHIC TUFF	SALT	
CHERT - ARGILL	DOLOSTONE	MARL - DOLO	SAND	

<200	ROP	0>
ft/hr		
<50	Avg WOB	0>
klbs		

Depth

4500

Lithology

MGS	<0	Ttl Gas units	2K>	<100	Meth C-1 ppm	1000K>
	<0	CO2 ppm	20K>	<10	Ethn C-2	100K>
	<0	Flare Ht. ft	100>	<10	Butn C-4	100K>
	<0			<10	Pent C-5	100K>

Interp. Lith

Remarks
Survey Data, Mud Reports, Other Info.

ALL SAMPLE COLOR DESCRIPTIONS REFERENCED TO THE G.S.A. ROCK COLOR CHART.

ROCK CHARACTERISTICS AND CONSTITUENTS ARE LISTED FROM MOST ABUNDANT TO LEAST ABUNDANT PERCENTAGE OF SAMPLE.

GAS CALIBRATED TO S.P.L.W.A.

STANDARDS (2% ME = 100 UNITS).

GAS CHROMATOGRAPHY EQUIPMENT CALIBRATED TO A TEST GAS COMPOSED OF THE FOLLOWING:

METHANE = 10,000 PPM

ETHANE = 1,000 PPM

PROPANE = 1,000 PPM

I-BUTANE = 1,000 PPM

N-BUTANE = 1,000 PPM

I-PENTANE = 1,000 PPM

<200	ROP	0>
<50	Avg WOB	0>

<0	Ttl Gas	100>	<100	Meth C-1	1000K>
<0	CO2	100>	<10	Ethn C-2	100K>
<0	Flare Ht.	100>	<10	Prop C-3	100K>
			<10	Butn C-4	100K>
			<10	Pent C-5	100K>

4600

N-PENTANE = 1,000 PPM

EPOCH WELL SERVICES COMMENCED LOGGING

THE PCU 296-5A05 WELL ON 11/11/2010

@ 4677' MD.

NB #2 9.875" BHI

HDC504ZX 2X12, 4X14

SILTSTONE = MODERATE BROWN TO MODERATE

IN @ 4677' DRLD 1455'

YELLOWISH BROWN TO MODERATE REDDISH

21:15:42 HRS

BROWN; SLIGHTLY DENSE TO BRITTLE TO

11/11/2010

4700

SLIGHTLY CRUMBLY TENACITY; IRREGULAR TO

DAY TOUR

BLOCKY FRACTURING; MASSIVE TO TABULAR

WOB 19K

CUTTINGS; EARTHY TO DULL LUSTER; SILTY

RPM 50

TO GRITTY TEXTURE; THICK TO MASSIVE

PP 2200

MW IN 9.1 VIS 57 PH 11.0

STRUCTURE.

GPM 678

MW OUT 9.1 VIS 42 PH 10.5

SHALE = MEDIUM GRAY TO MEDIUM BLUISH

MAX GAS 10TL

GRAY TO LIGHT OLIVE GRAY WITH OCCASIONAL

MAX GAS 82u

GRAYISH BLUE HUE; BRITTLE TENACITY;

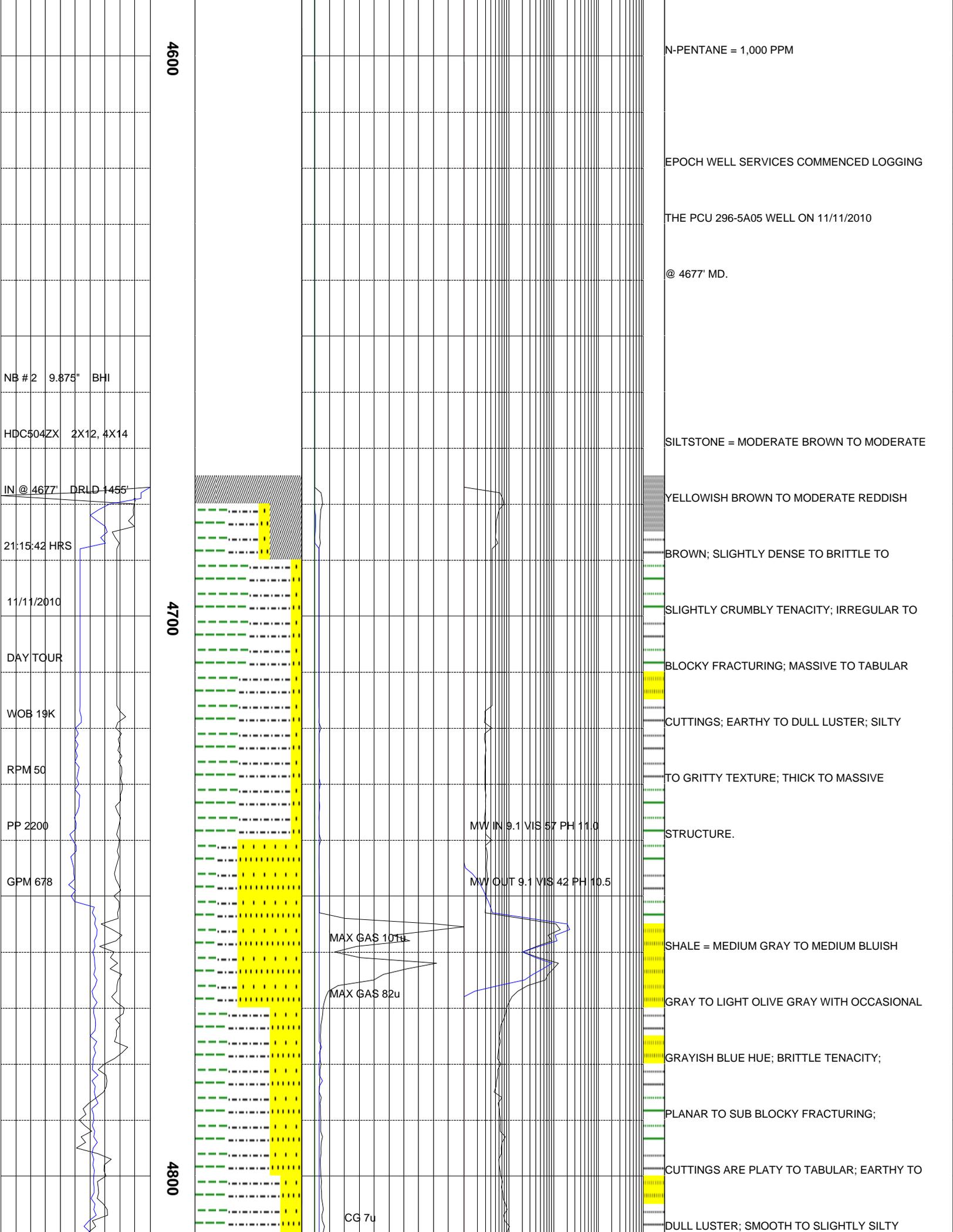
PLANAR TO SUB BLOCKY FRACTURING;

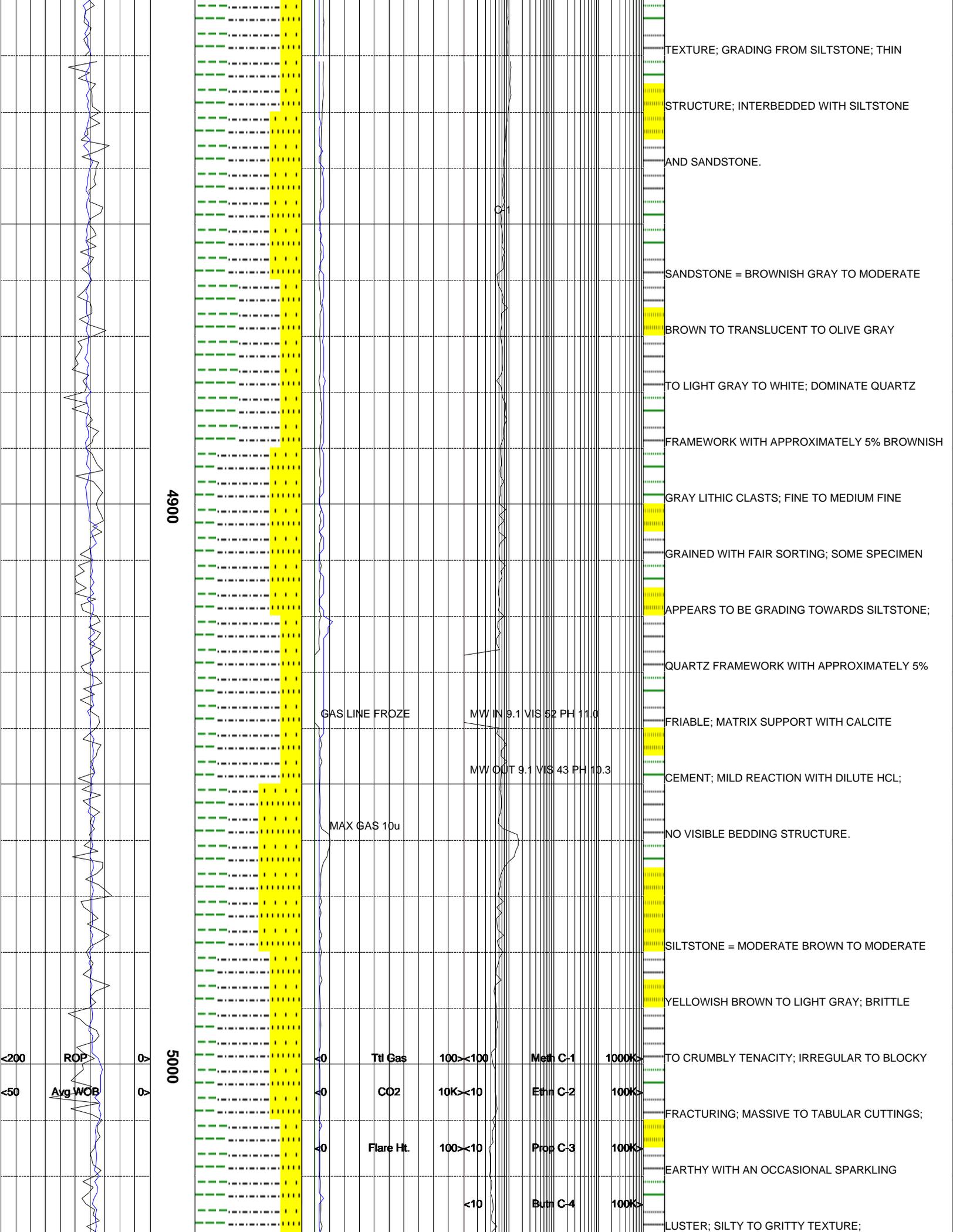
4800

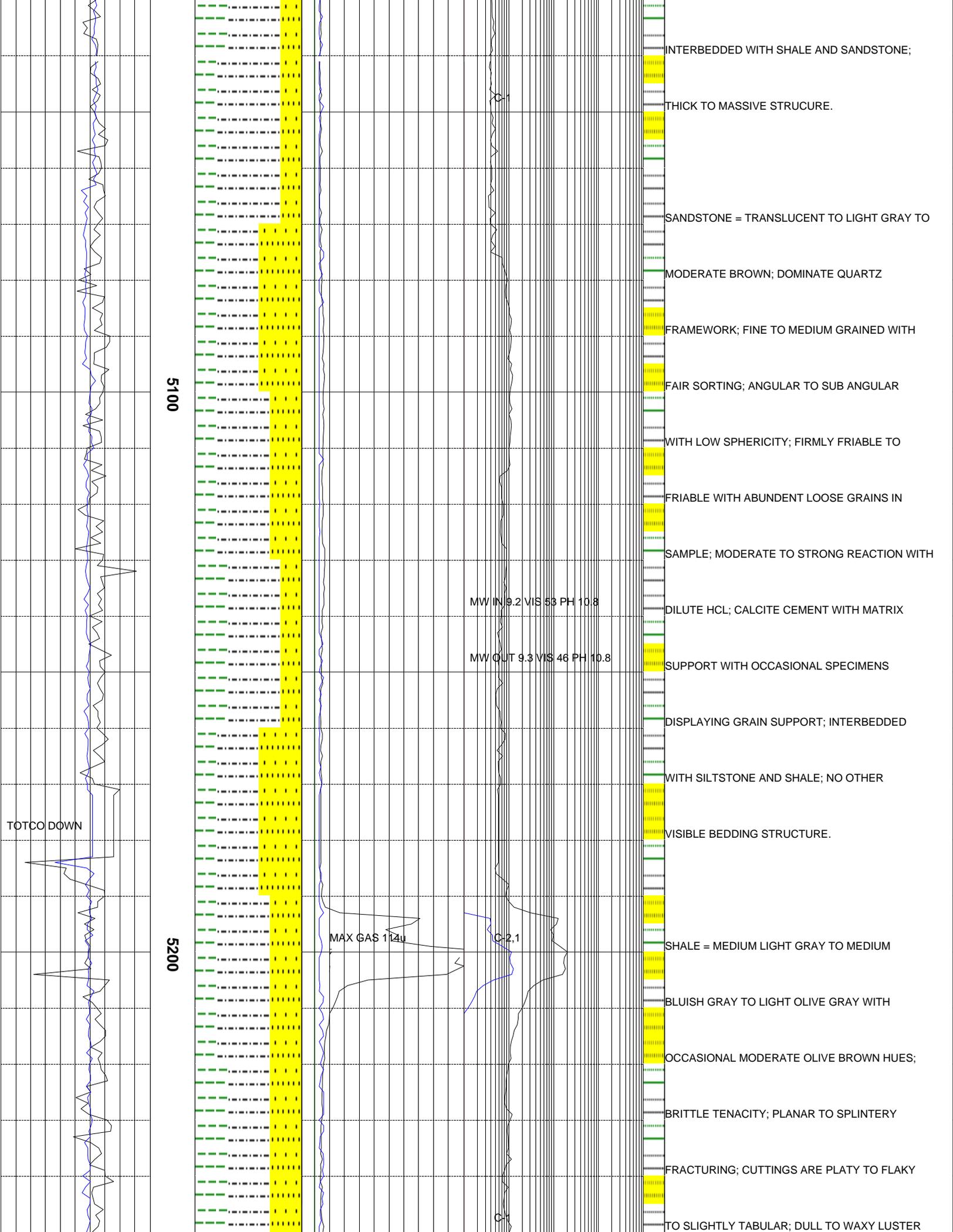
CUTTINGS ARE PLATY TO TABULAR; EARTHY TO

CG 7u

DULL LUSTER; SMOOTH TO SLIGHTLY SILTY







INTERBEDDED WITH SHALE AND SANDSTONE;
 THICK TO MASSIVE STRUCTURE.
 SANDSTONE = TRANSLUCENT TO LIGHT GRAY TO
 MODERATE BROWN; DOMINATE QUARTZ
 FRAMEWORK; FINE TO MEDIUM GRAINED WITH
 FAIR SORTING; ANGULAR TO SUB ANGULAR
 WITH LOW SPHERICITY; FIRMLY FRIABLE TO
 FRIABLE WITH ABUNDENT LOOSE GRAINS IN
 SAMPLE; MODERATE TO STRONG REACTION WITH
 DILUTE HCL; CALCITE CEMENT WITH MATRIX
 SUPPORT WITH OCCASIONAL SPECIMENS
 DISPLAYING GRAIN SUPPORT; INTERBEDDED
 WITH SILTSTONE AND SHALE; NO OTHER
 VISIBLE BEDDING STRUCTURE.
 SHALE = MEDIUM LIGHT GRAY TO MEDIUM
 BLUISH GRAY TO LIGHT OLIVE GRAY WITH
 OCCASIONAL MODERATE OLIVE BROWN HUES;
 BRITTLE TENACITY; PLANAR TO SPLINTERY
 FRACTURING; CUTTINGS ARE PLATY TO FLAKY
 TO SLIGHTLY TABULAR; DULL TO WAXY LUSTER

5100

5200

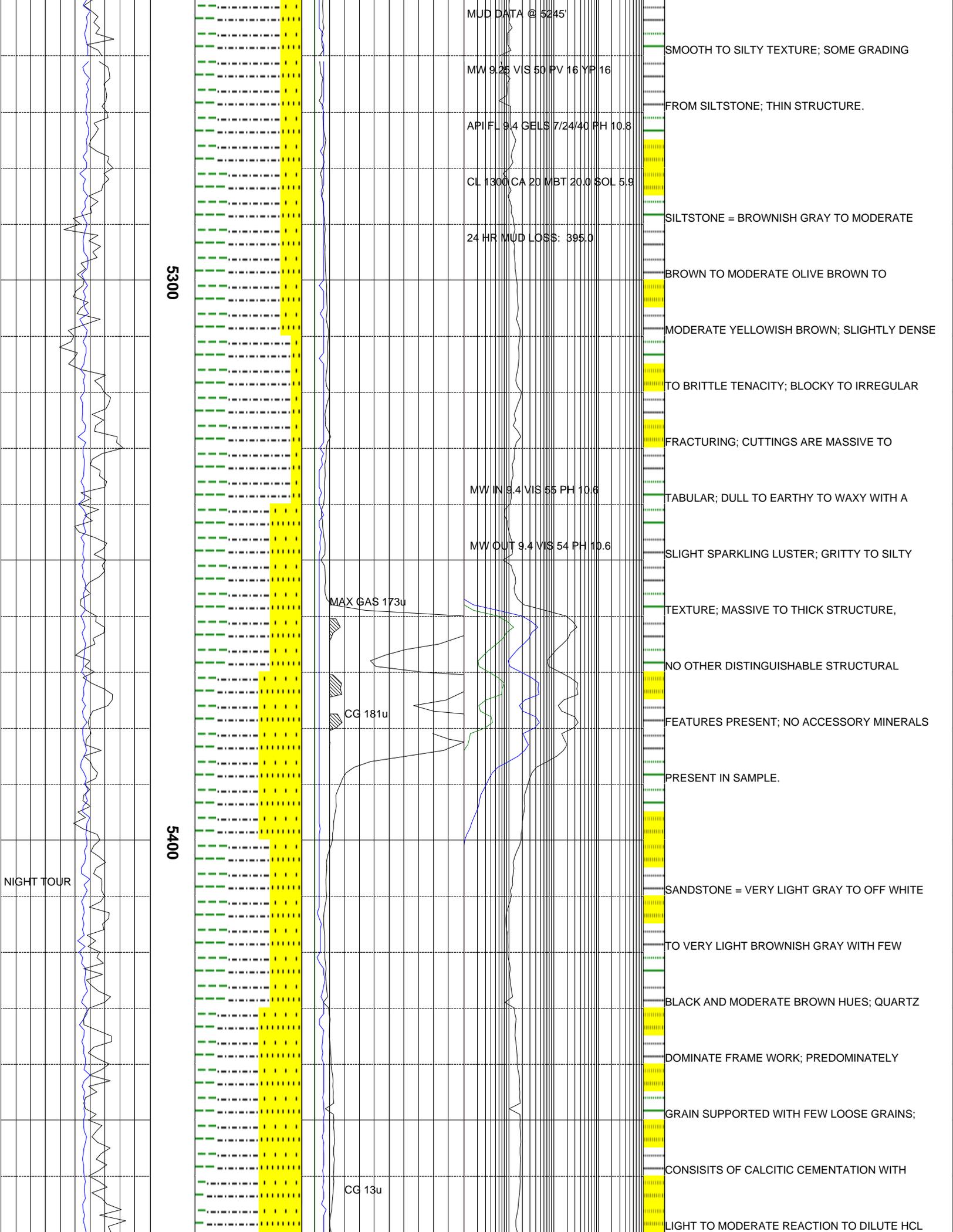
MW IN 9.2 VIS 53 PH 10.8

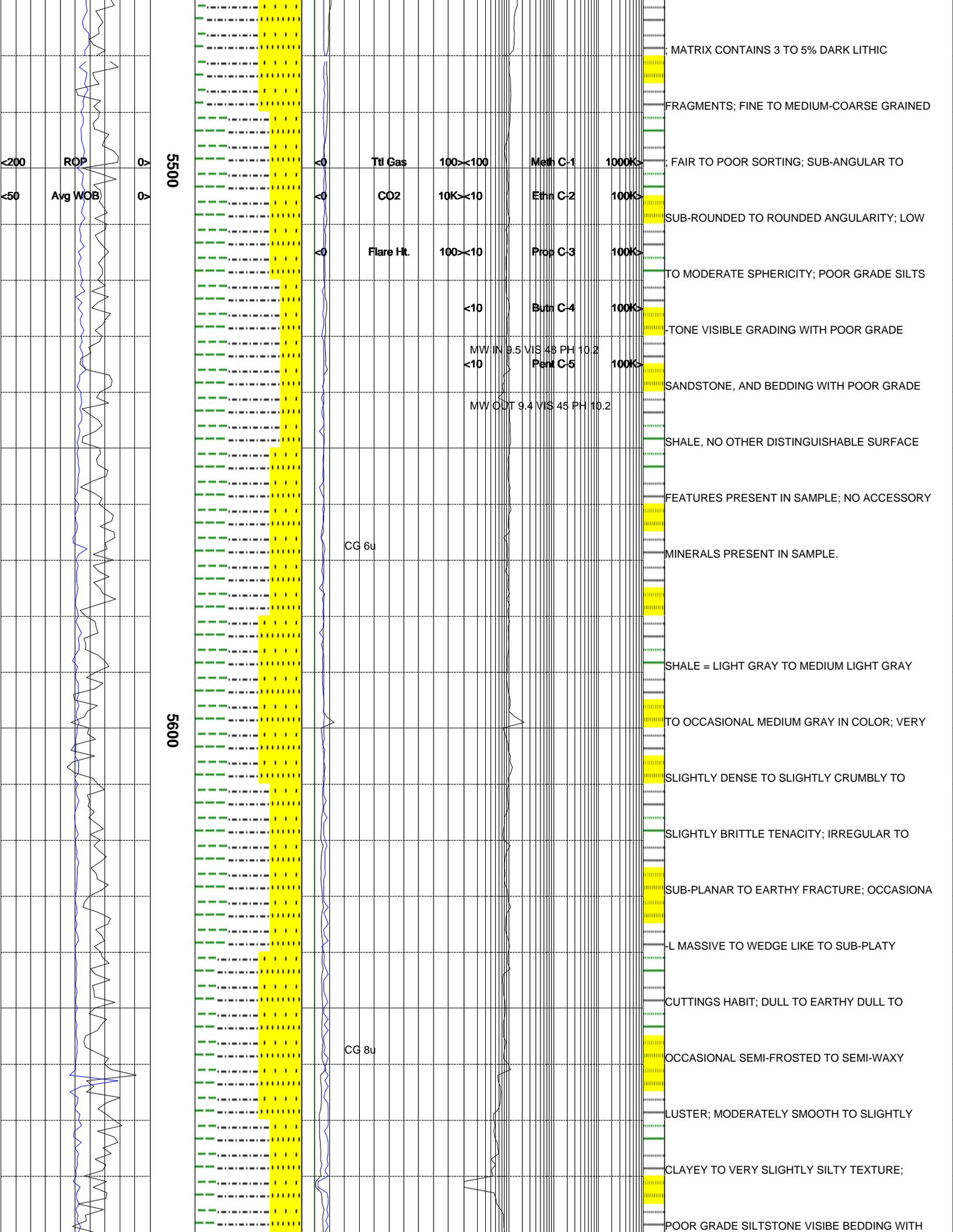
MW OUT 9.3 VIS 46 PH 10.8

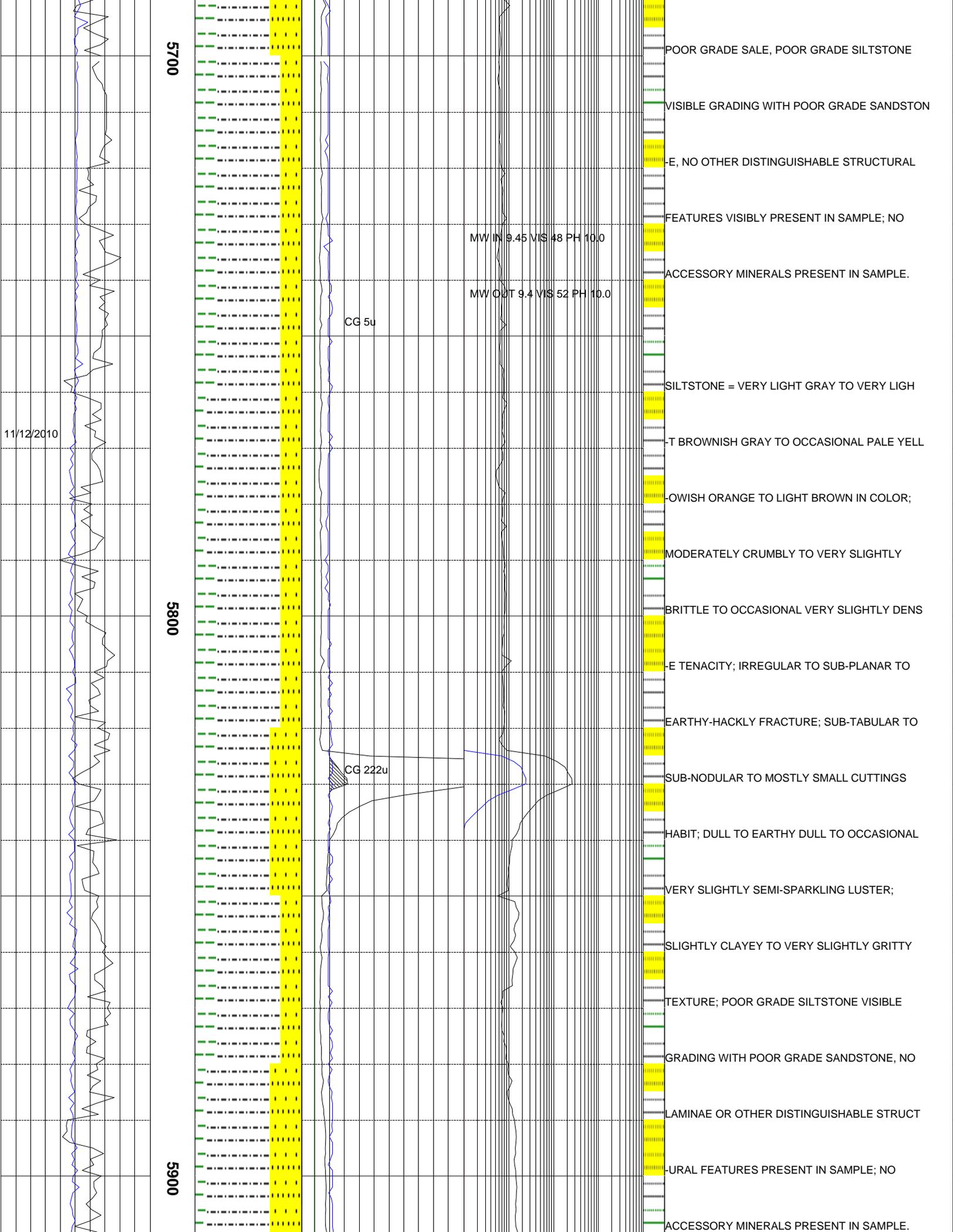
MAX GAS 114u

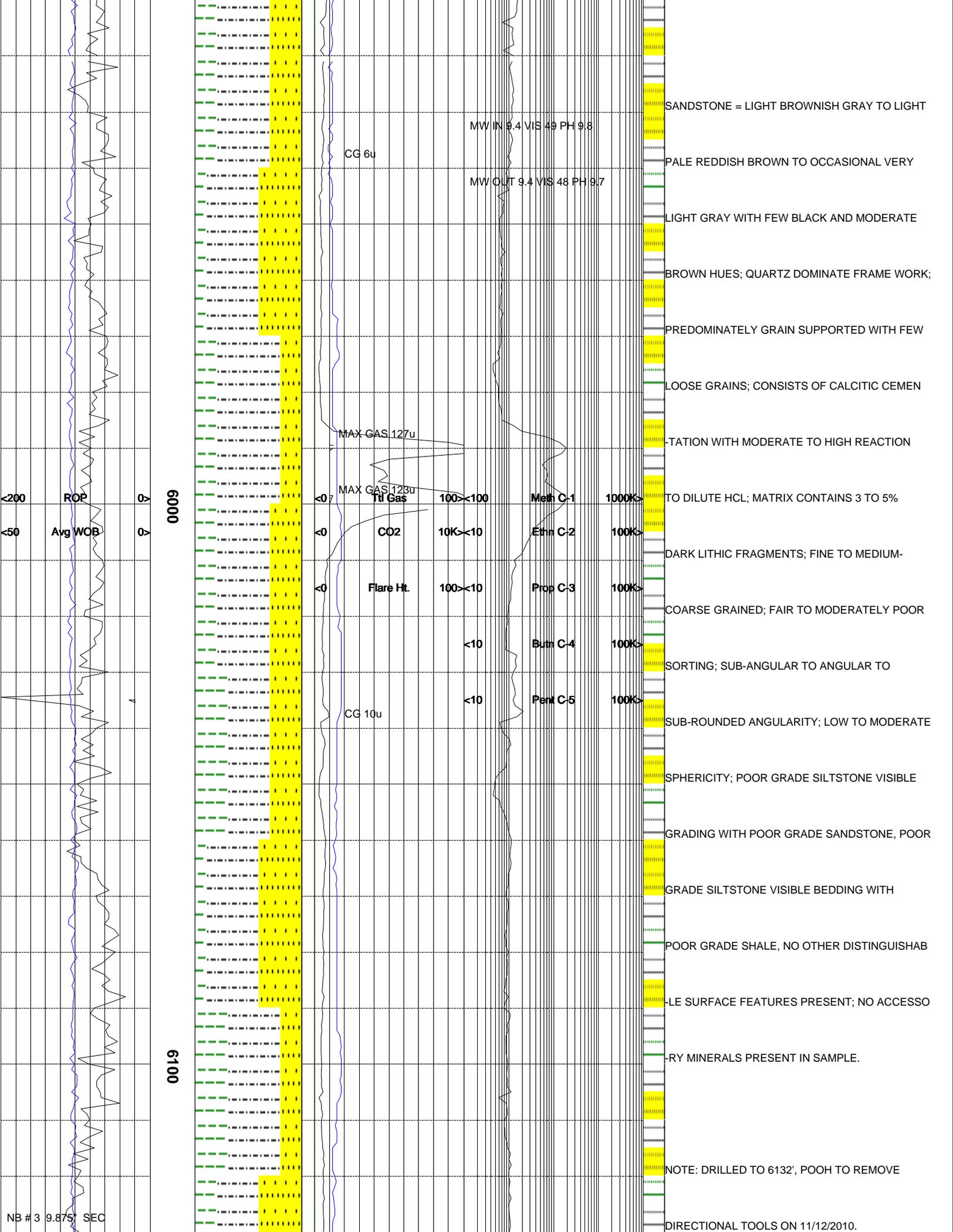
C-2.1

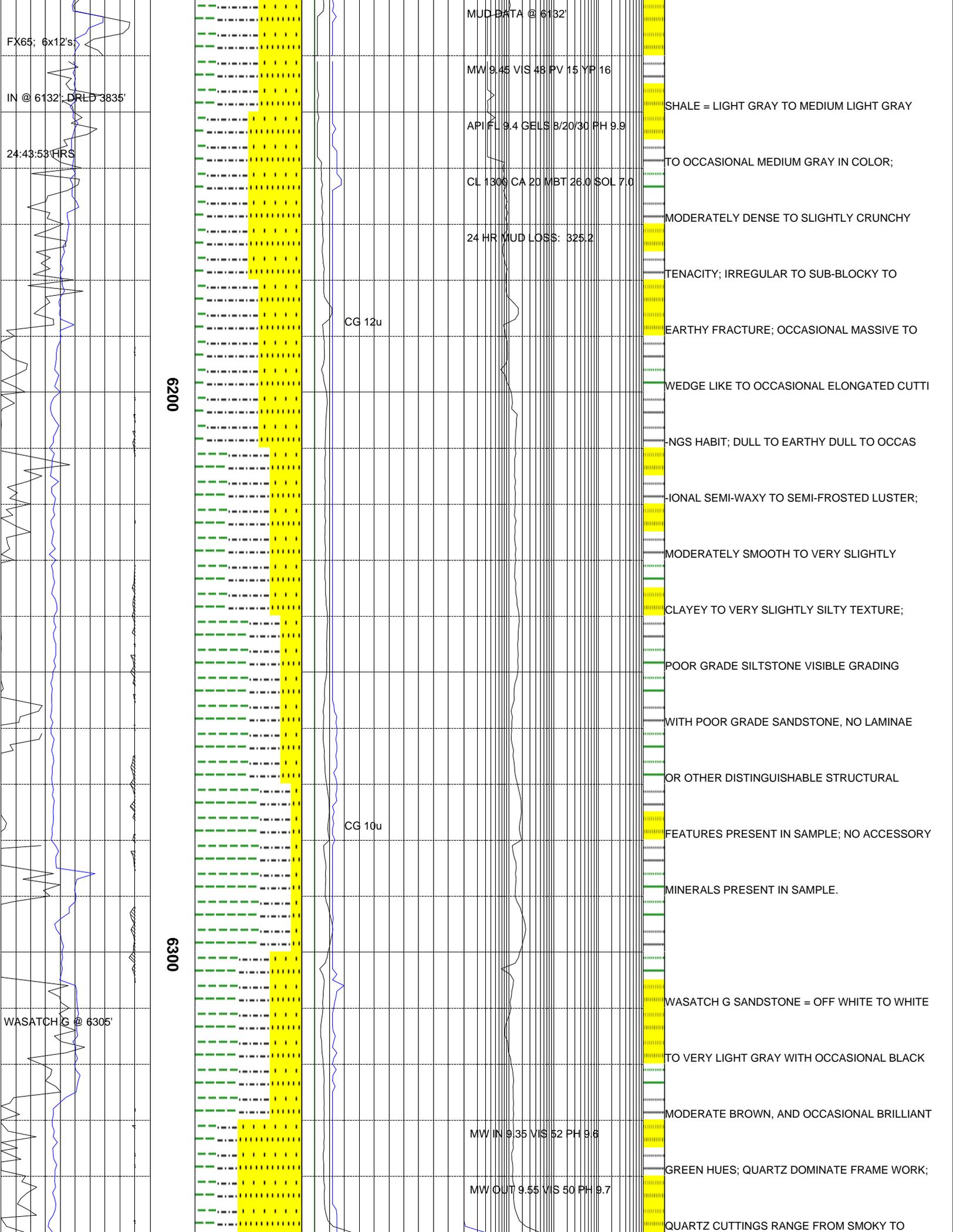
TOTCO DOWN

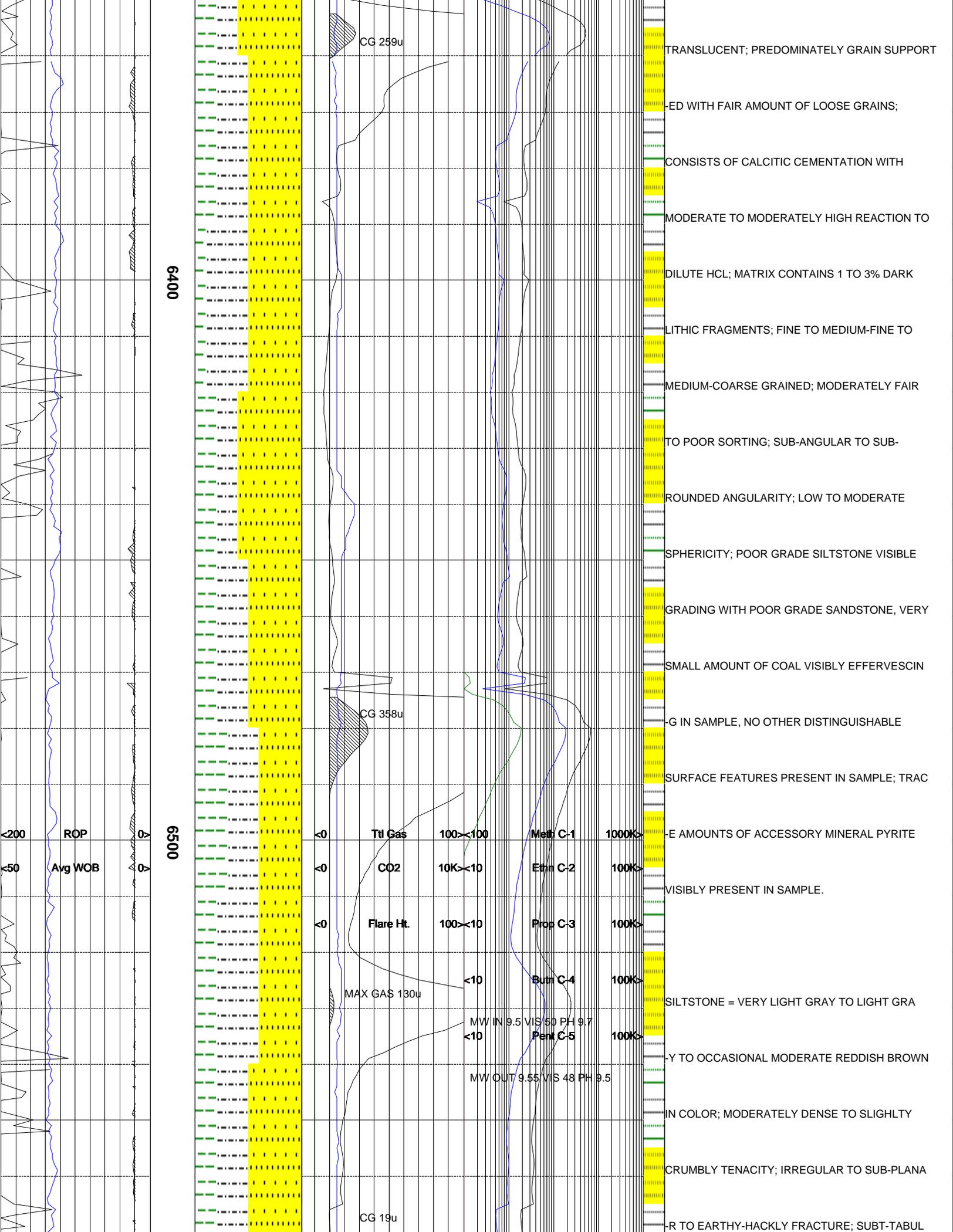


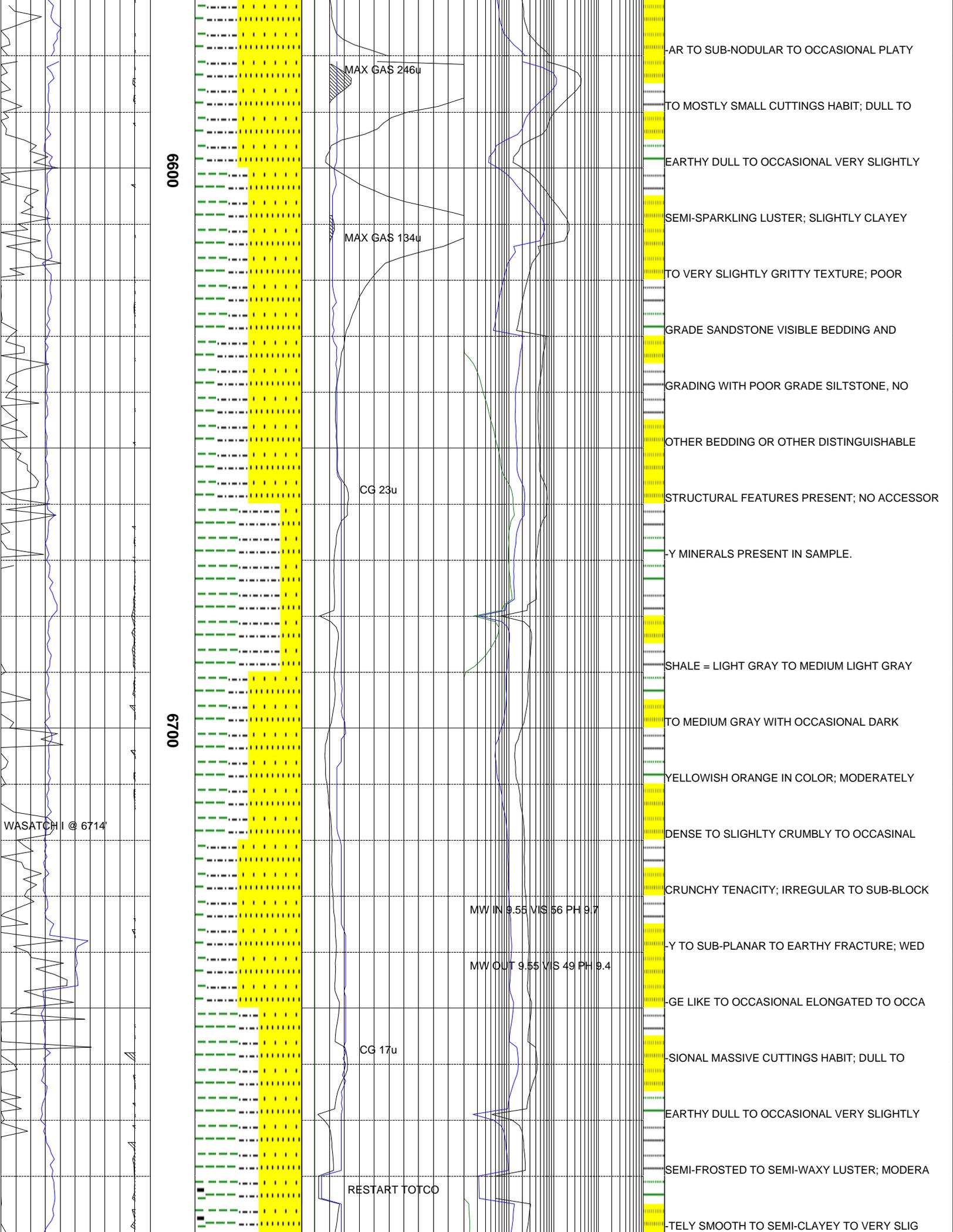












0069

6700

MAX GAS 246u

MAX GAS 134u

CG 23u

CG 17u

RESTART TOTCO

MW IN 9.55 VIS 56 PH 9.7

MW OUT 9.55 VIS 49 PH 9.4

WASATCH I @ 6714

AR TO SUB-NODULAR TO OCCASIONAL PLATY

TO MOSTLY SMALL CUTTINGS HABIT; DULL TO

EARTHY DULL TO OCCASIONAL VERY SLIGHTLY

SEMI-SPARKLING LUSTER; SLIGHTLY CLAYEY

TO VERY SLIGHTLY GRITTY TEXTURE; POOR

GRADE SANDSTONE VISIBLE BEDDING AND

GRADING WITH POOR GRADE SILTSTONE, NO

OTHER BEDDING OR OTHER DISTINGUISHABLE

STRUCTURAL FEATURES PRESENT; NO ACCESSOR

Y MINERALS PRESENT IN SAMPLE.

SHALE = LIGHT GRAY TO MEDIUM LIGHT GRAY

TO MEDIUM GRAY WITH OCCASIONAL DARK

YELLOWISH ORANGE IN COLOR; MODERATELY

DENSE TO SLIGHTLY CRUMBLY TO OCCASIONAL

CRUNCHY TENACITY; IRREGULAR TO SUB-BLOCK

Y TO SUB-PLANAR TO EARTHY FRACTURE; WED

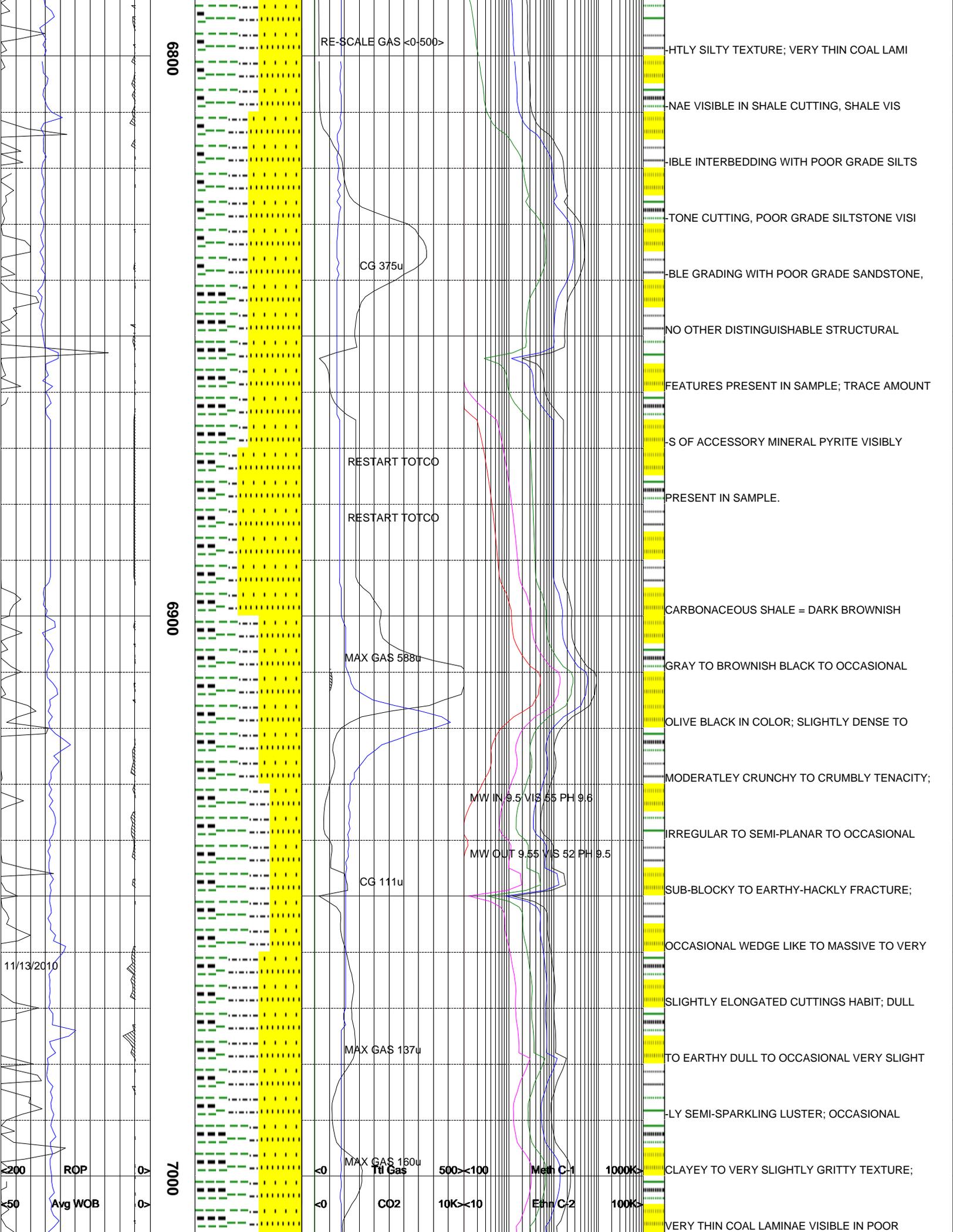
GE LIKE TO OCCASIONAL ELONGATED TO OCCA

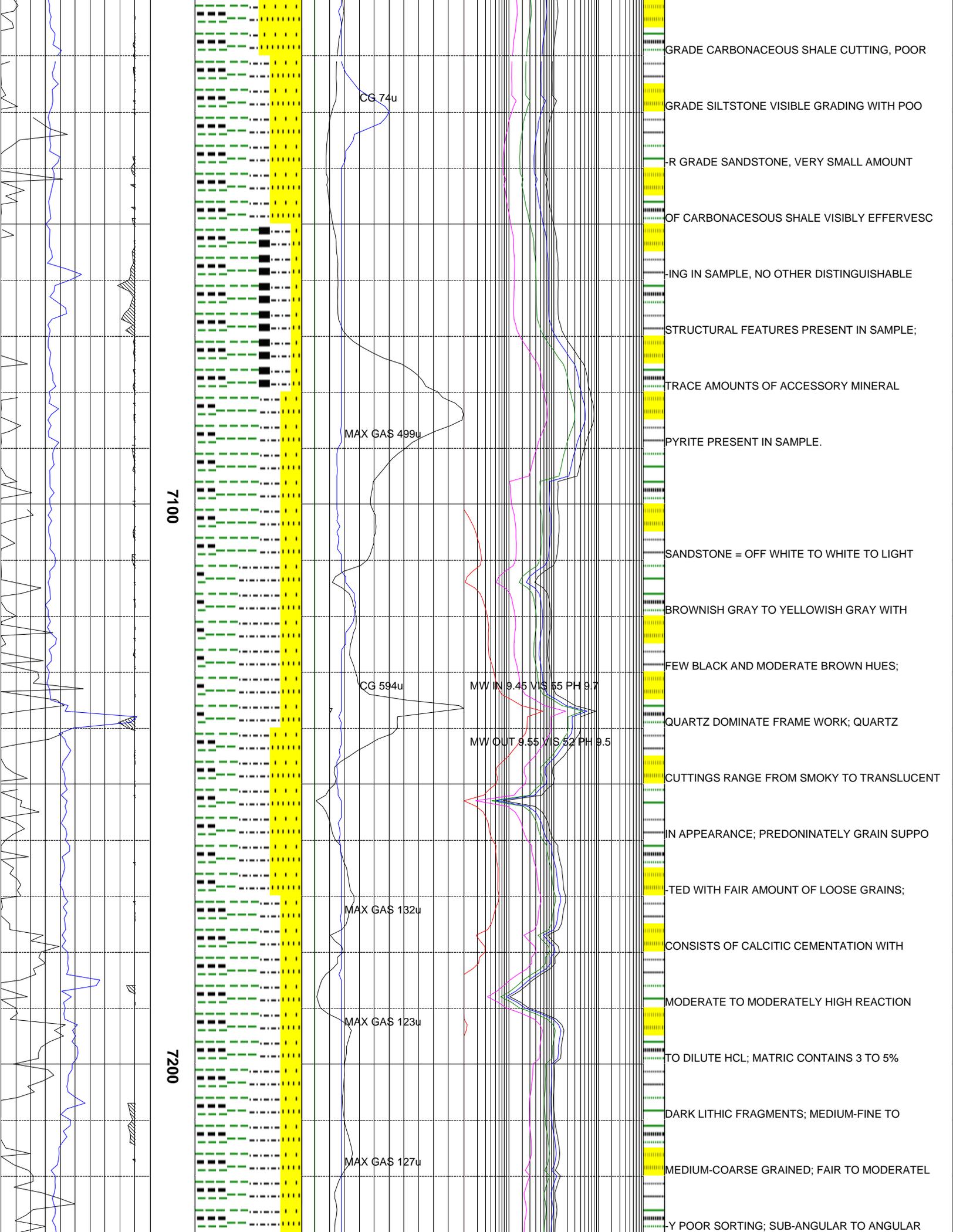
SIONAL MASSIVE CUTTINGS HABIT; DULL TO

EARTHY DULL TO OCCASIONAL VERY SLIGHTLY

SEMI-FROSTED TO SEMI-WAXY LUSTER; MODERA

TELY SMOOTH TO SEMI-CLAYEY TO VERY SLIG





7100

7200

CG 74u

MAX GAS 499u

CG 594u

MW IN 9.45 VIS 55 PH 9.7

MW OUT 9.55 VIS 52 PH 9.5

MAX GAS 132u

MAX GAS 123u

MAX GAS 127u

GRADE CARBONACEOUS SHALE CUTTING, POOR

GRADE SILTSTONE VISIBLE GRADING WITH POO

R GRADE SANDSTONE, VERY SMALL AMOUNT

OF CARBONACEOUS SHALE VISIBLY EFFERVESC

ING IN SAMPLE, NO OTHER DISTINGUISHABLE

STRUCTURAL FEATURES PRESENT IN SAMPLE;

TRACE AMOUNTS OF ACCESSORY MINERAL

PYRITE PRESENT IN SAMPLE.

SANDSTONE = OFF WHITE TO WHITE TO LIGHT

BROWNISH GRAY TO YELLOWISH GRAY WITH

FEW BLACK AND MODERATE BROWN HUES;

QUARTZ DOMINATE FRAME WORK; QUARTZ

CUTTINGS RANGE FROM SMOKY TO TRANSLUCENT

IN APPEARANCE; PREDONINATELY GRAIN SUPPO

TED WITH FAIR AMOUNT OF LOOSE GRAINS;

CONSISTS OF CALCITIC CEMENTATION WITH

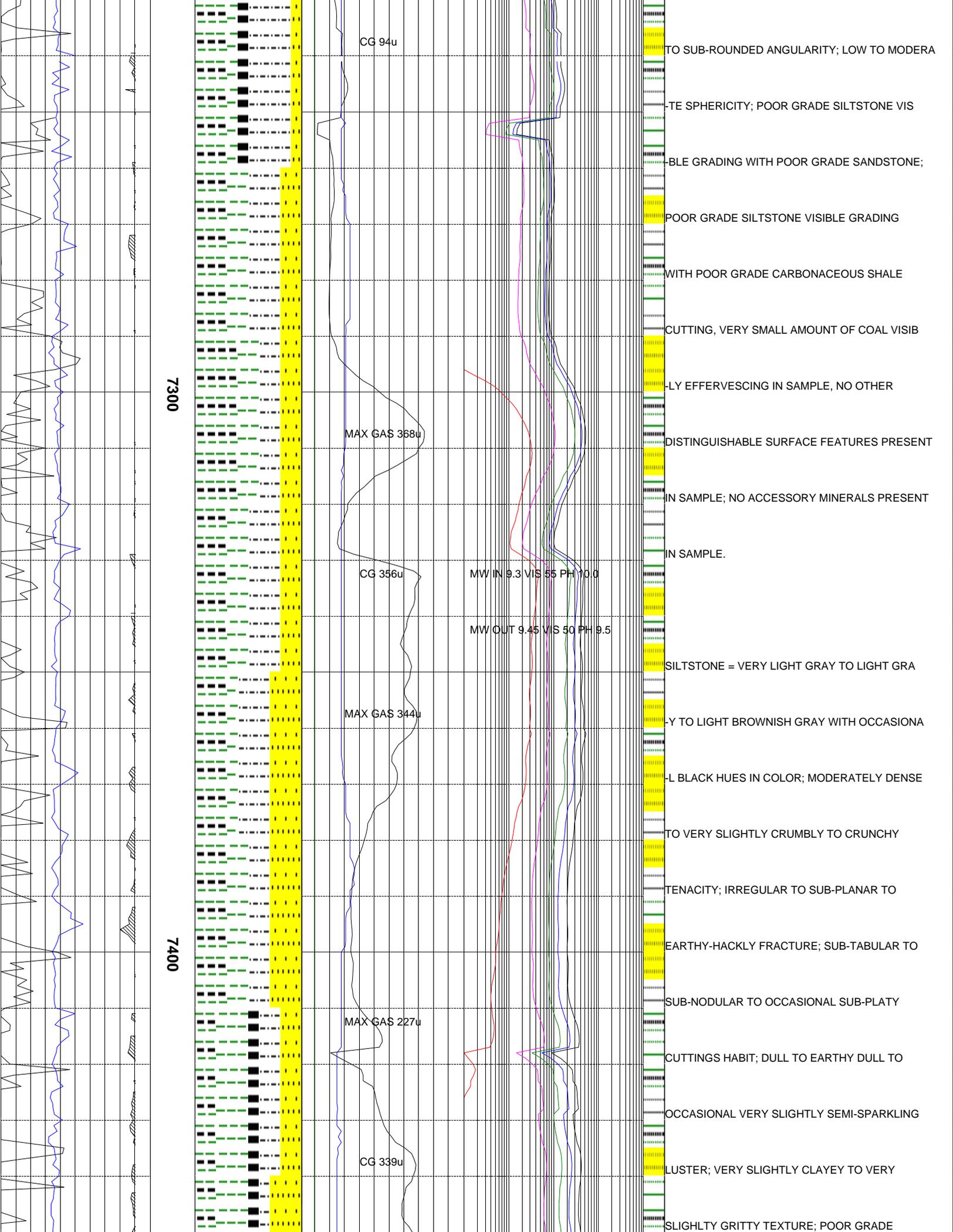
MODERATE TO MODERATELY HIGH REACTION

TO DILUTE HCL; MATRIC CONTAINS 3 TO 5%

DARK LITHIC FRAGMENTS; MEDIUM-FINE TO

MEDIUM-COARSE GRAINED; FAIR TO MODERATEL

Y POOR SORTING; SUB-ANGULAR TO ANGULAR



CG 94u

TO SUB-ROUNDED ANGULARITY; LOW TO MODERA

TE SPHERICITY; POOR GRADE SILTSTONE VIS

BLE GRADING WITH POOR GRADE SANDSTONE;

POOR GRADE SILTSTONE VISIBLE GRADING

WITH POOR GRADE CARBONACEOUS SHALE

CUTTING, VERY SMALL AMOUNT OF COAL VISIB

7300

LY EFFERVESCING IN SAMPLE, NO OTHER

MAX GAS 368u

DISTINGUISHABLE SURFACE FEATURES PRESENT

IN SAMPLE; NO ACCESSORY MINERALS PRESENT

IN SAMPLE.

CG 356u

MW IN 9.3 VIS 55 PH 10.0

MW OUT 9.45 VIS 50 PH 9.5

SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA

Y TO LIGHT BROWNISH GRAY WITH OCCASIONA

L BLACK HUES IN COLOR; MODERATELY DENSE

TO VERY SLIGHTLY CRUMBLY TO CRUNCHY

TENACITY; IRREGULAR TO SUB-PLANAR TO

7400

EARTHY-HACKLY FRACTURE; SUB-TABULAR TO

SUB-NODULAR TO OCCASIONAL SUB-PLATY

MAX GAS 227u

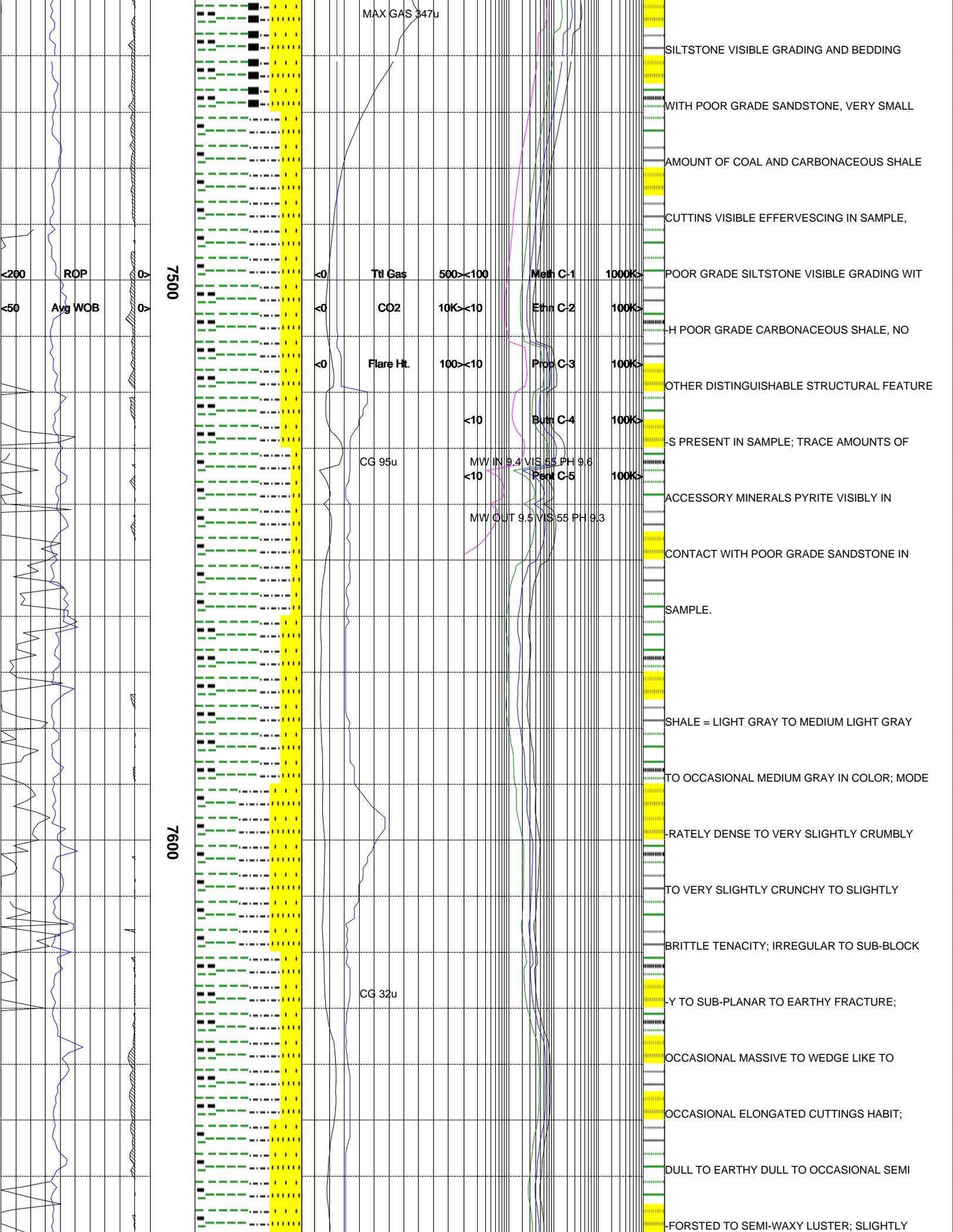
CUTTINGS HABIT; DULL TO EARTHY DULL TO

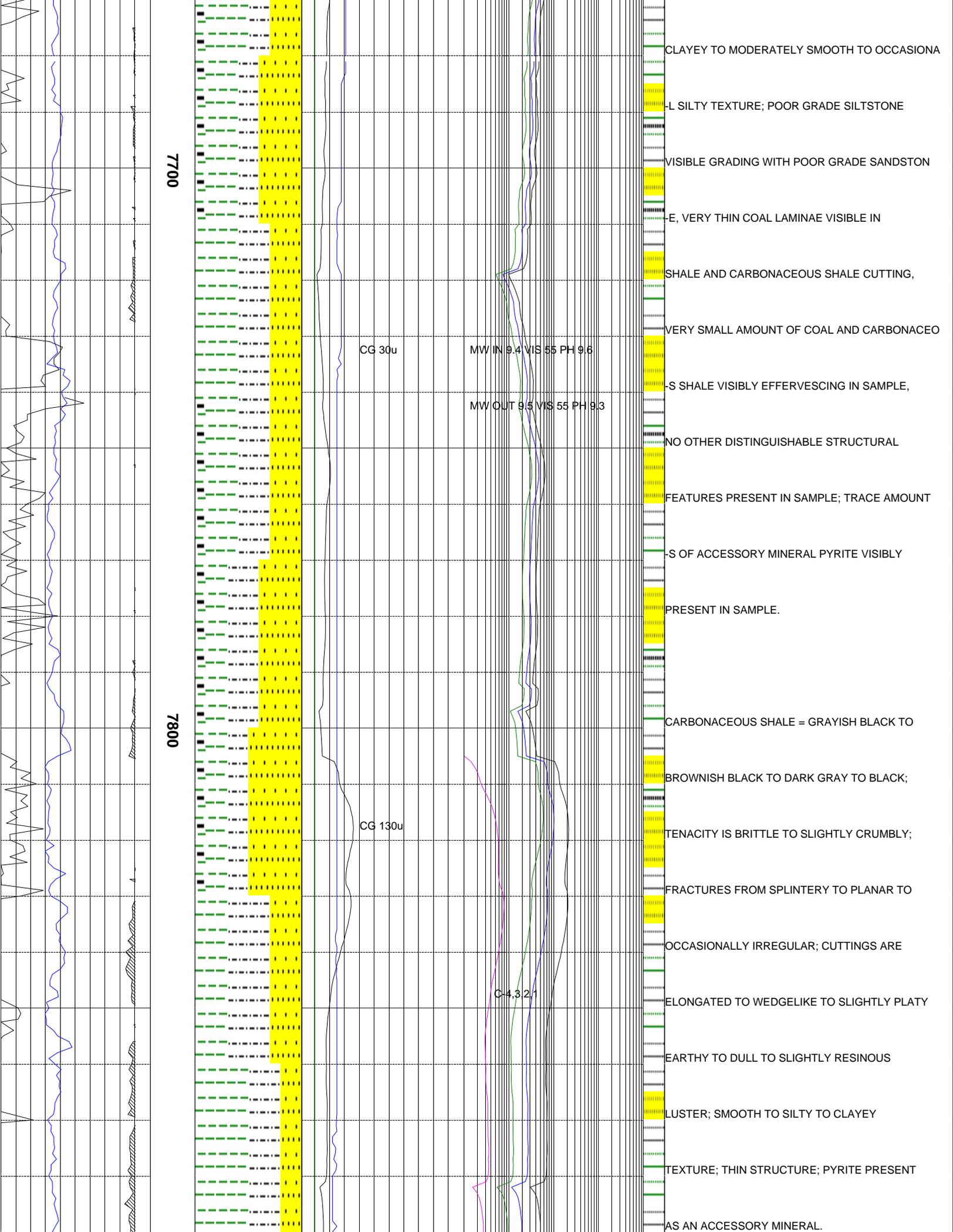
OCCASIONAL VERY SLIGHTLY SEMI-SPARKLING

CG 339u

LUSTER; VERY SLIGHTLY CLAYEY TO VERY

SLIGHTLY GRITTY TEXTURE; POOR GRADE





7700

7800

CG 30u

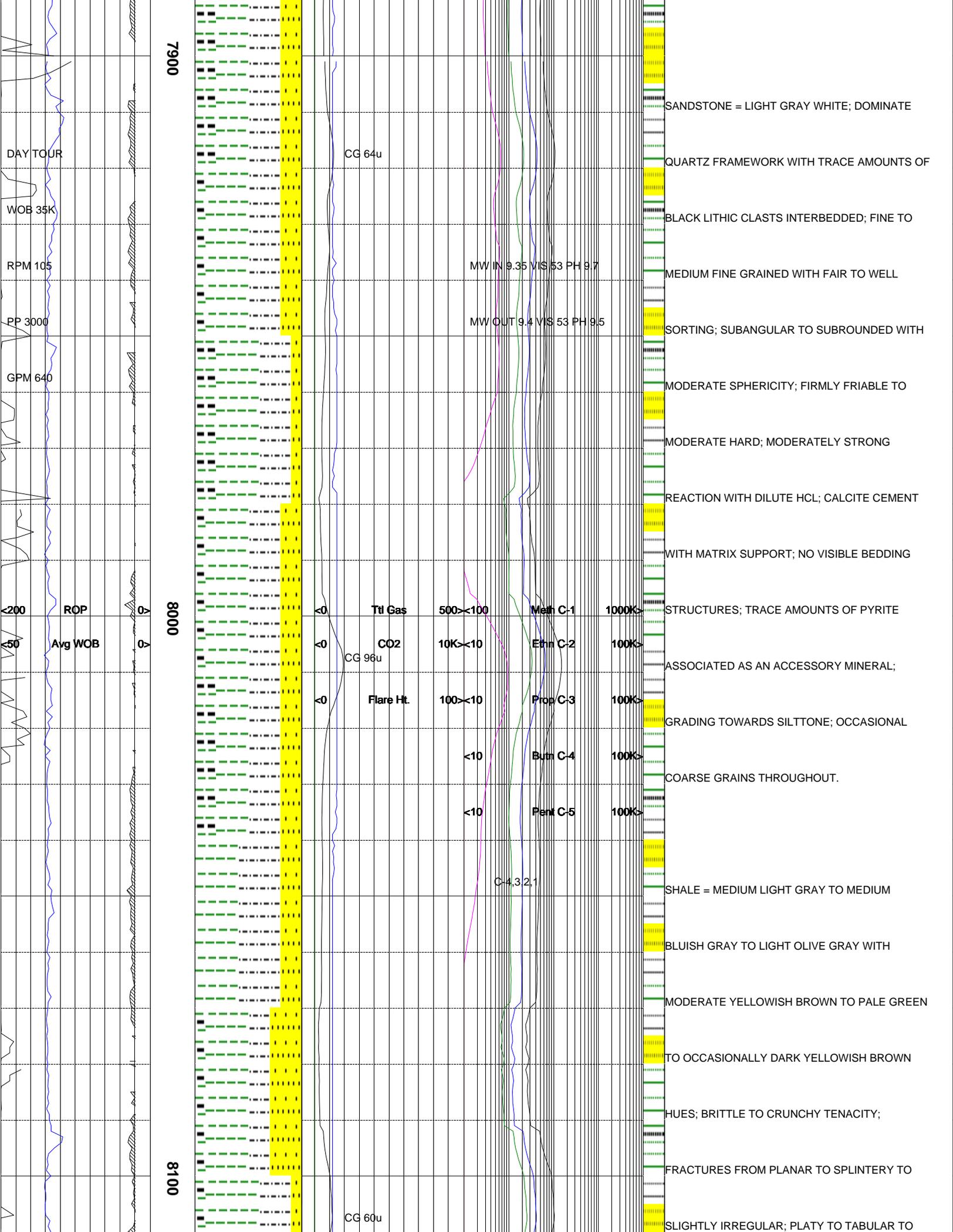
MW IN 9.4 VIS 55 PH 9.6

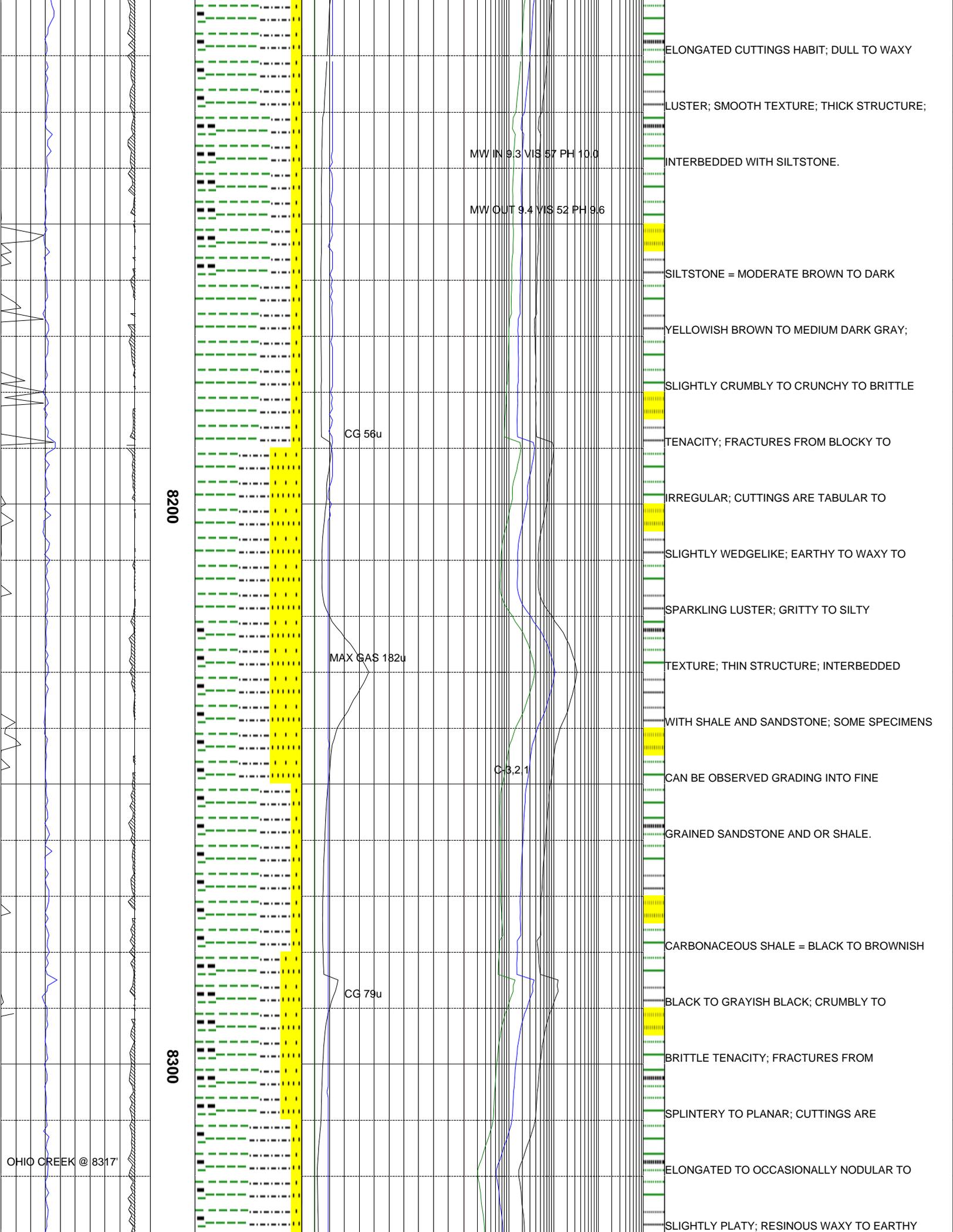
MW OUT 9.5 VIS 55 PH 9.3

CG 130u

C-4.321

CLAYEY TO MODERATELY SMOOTH TO OCCASIONA
 L SILTY TEXTURE; POOR GRADE SILTSTONE
 VISIBLE GRADING WITH POOR GRADE SANDSTON
 E, VERY THIN COAL LAMINAE VISIBLE IN
 SHALE AND CARBONACEOUS SHALE CUTTING,
 VERY SMALL AMOUNT OF COAL AND CARBONACEO
 S SHALE VISIBLY EFFERVESCING IN SAMPLE,
 NO OTHER DISTINGUISHABLE STRUCTURAL
 FEATURES PRESENT IN SAMPLE; TRACE AMOUNT
 S OF ACCESSORY MINERAL PYRITE VISIBLY
 PRESENT IN SAMPLE.
 CARBONACEOUS SHALE = GRAYISH BLACK TO
 BROWNISH BLACK TO DARK GRAY TO BLACK;
 TENACITY IS BRITTLE TO SLIGHTLY CRUMBLY;
 FRACTURES FROM SPLINTERY TO PLANAR TO
 OCCASIONALLY IRREGULAR; CUTTINGS ARE
 ELONGATED TO WEDGELIKE TO SLIGHTLY PLATY
 EARTHY TO DULL TO SLIGHTLY RESINOUS
 LUSTER; SMOOTH TO SILTY TO CLAYEY
 TEXTURE; THIN STRUCTURE; PYRITE PRESENT
 AS AN ACCESSORY MINERAL.





8200

8300

MW IN 9.3 VIS 57 PH 10.0

MW OUT 9.4 VIS 52 PH 9.6

CG 56u

MAX GAS 182u

C-3.21

CG 79u

ELONGATED CUTTINGS HABIT; DULL TO WAXY

LUSTER; SMOOTH TEXTURE; THICK STRUCTURE;

INTERBEDDED WITH SILTSTONE.

SILTSTONE = MODERATE BROWN TO DARK

YELLOWISH BROWN TO MEDIUM DARK GRAY;

SLIGHTLY CRUMBLY TO CRUNCHY TO BRITTLE

TENACITY; FRACTURES FROM BLOCKY TO

IRREGULAR; CUTTINGS ARE TABULAR TO

SLIGHTLY WEDGELIKE; EARTHY TO WAXY TO

SPARKLING LUSTER; GRITTY TO SILTY

TEXTURE; THIN STRUCTURE; INTERBEDDED

WITH SHALE AND SANDSTONE; SOME SPECIMENS

CAN BE OBSERVED GRADING INTO FINE

GRAINED SANDSTONE AND OR SHALE.

CARBONACEOUS SHALE = BLACK TO BROWNISH

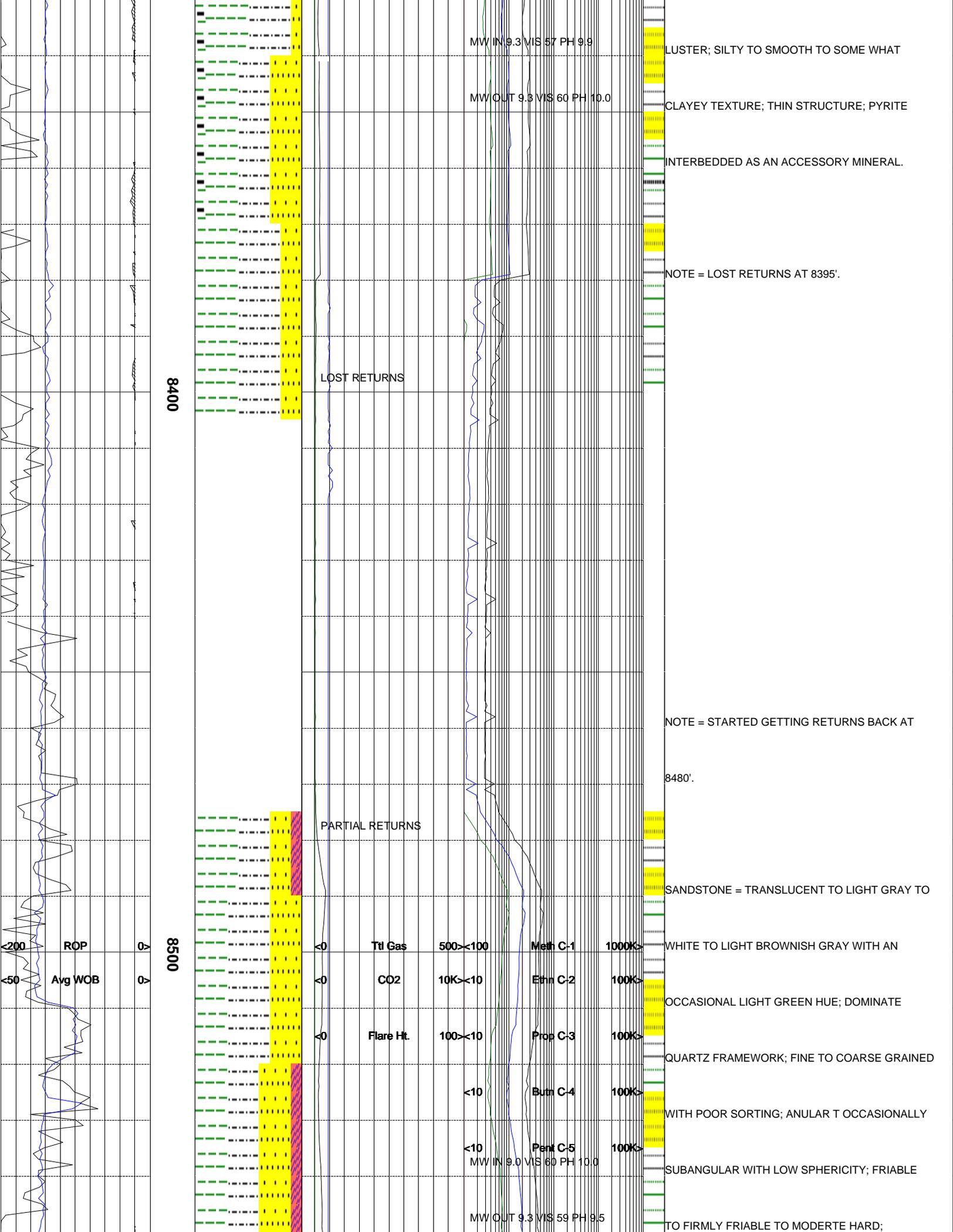
BLACK TO GRAYISH BLACK; CRUMBLY TO

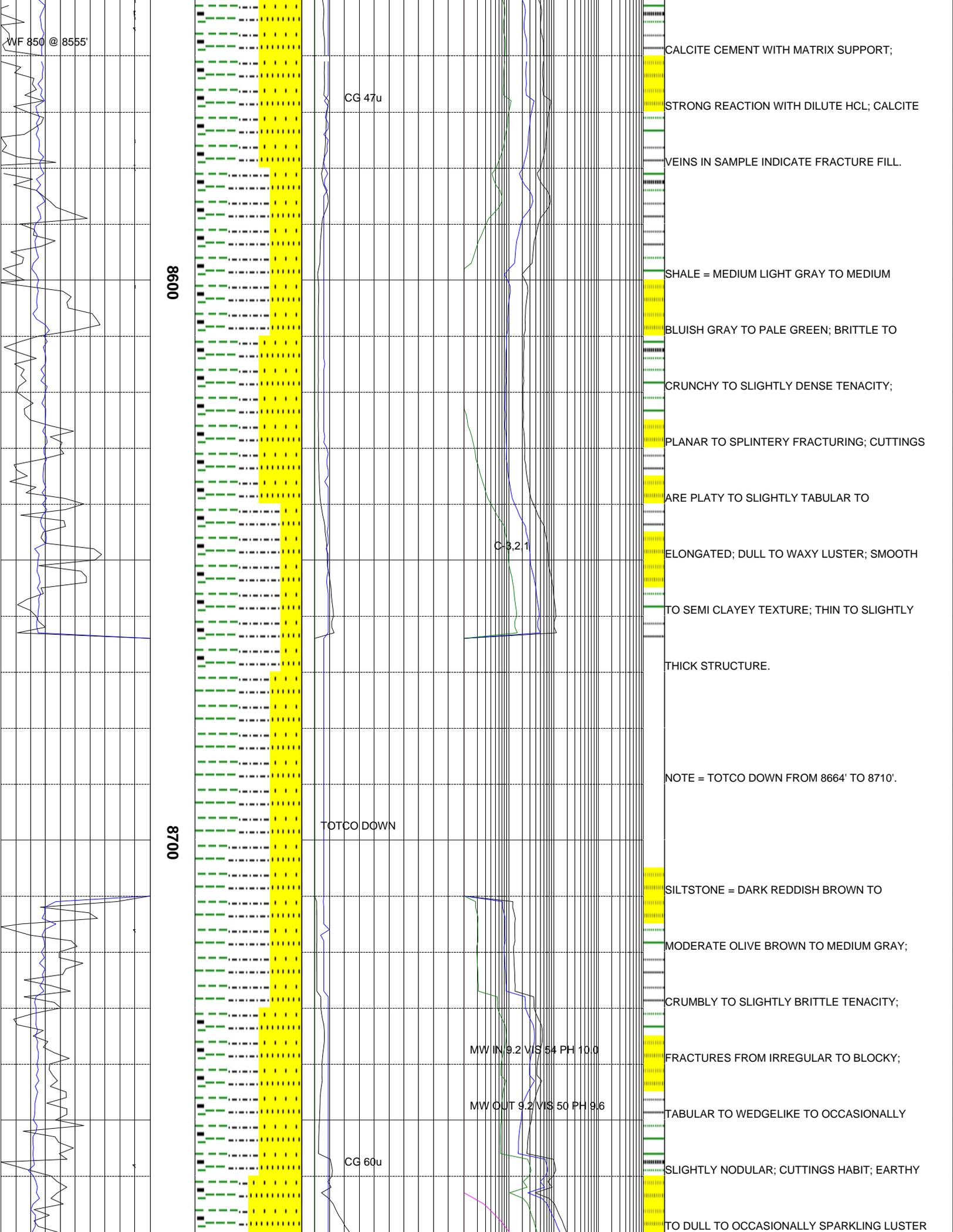
BRITTLE TENACITY; FRACTURES FROM

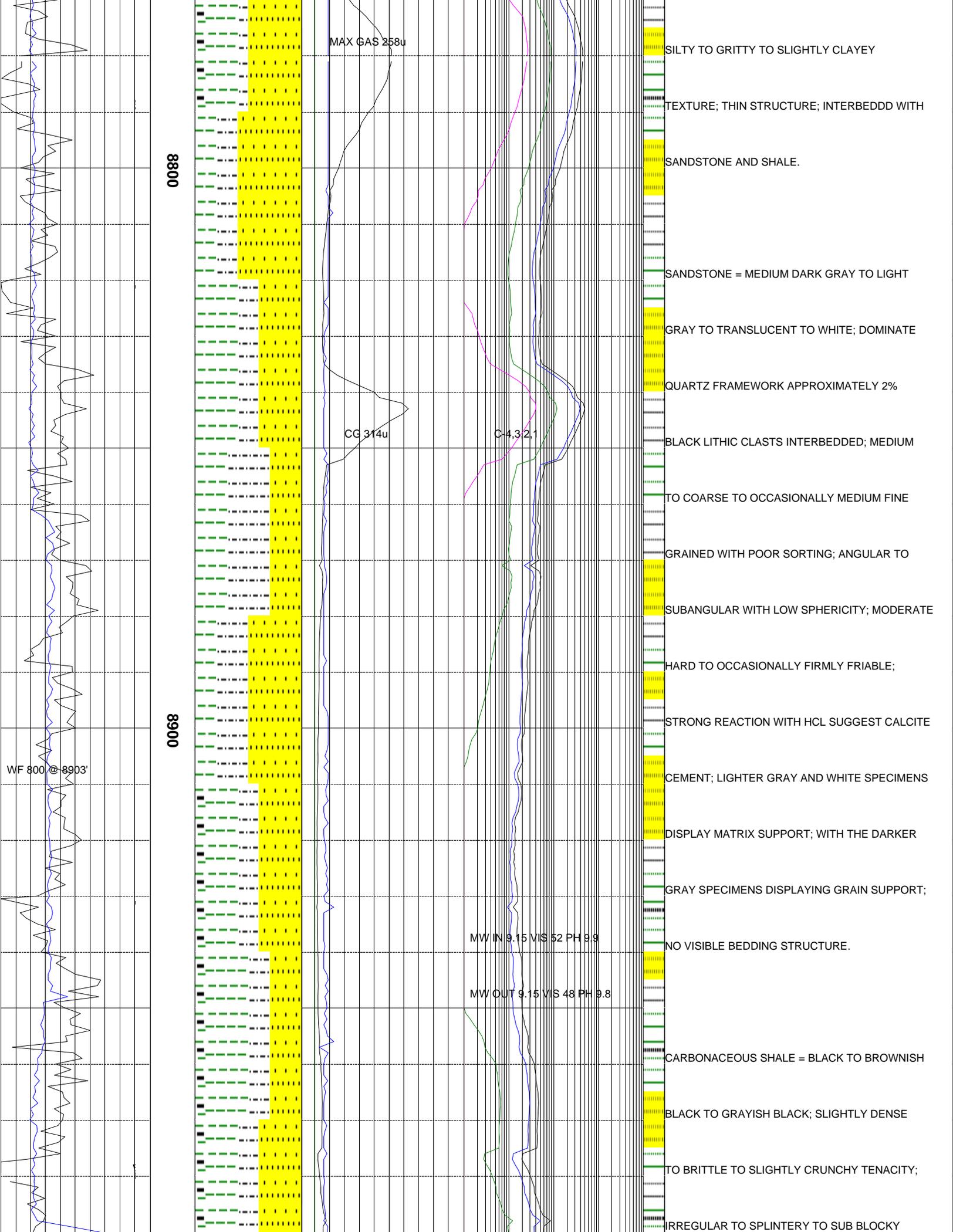
SPLINTERY TO PLANAR; CUTTINGS ARE

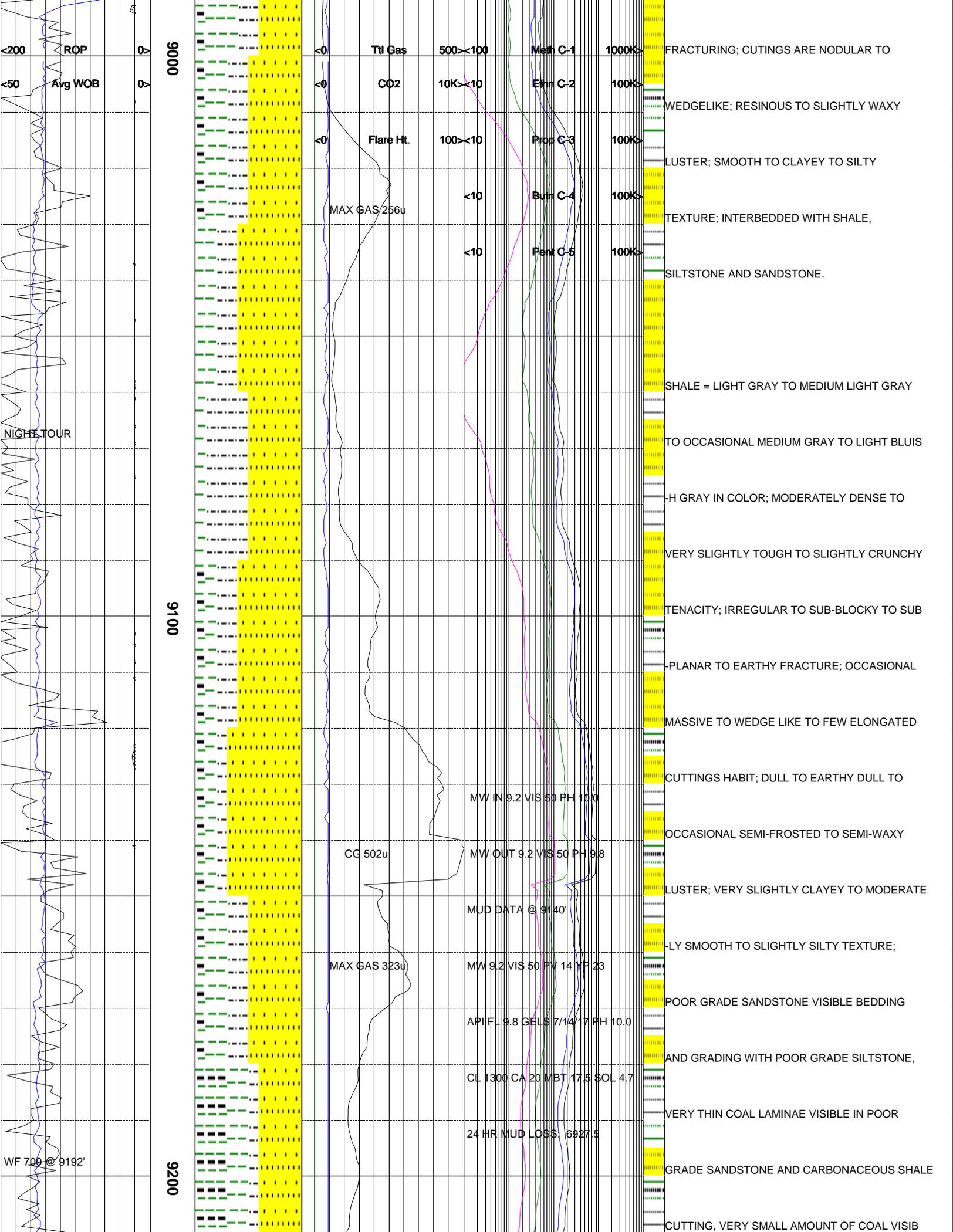
ELONGATED TO OCCASIONALLY NODULAR TO

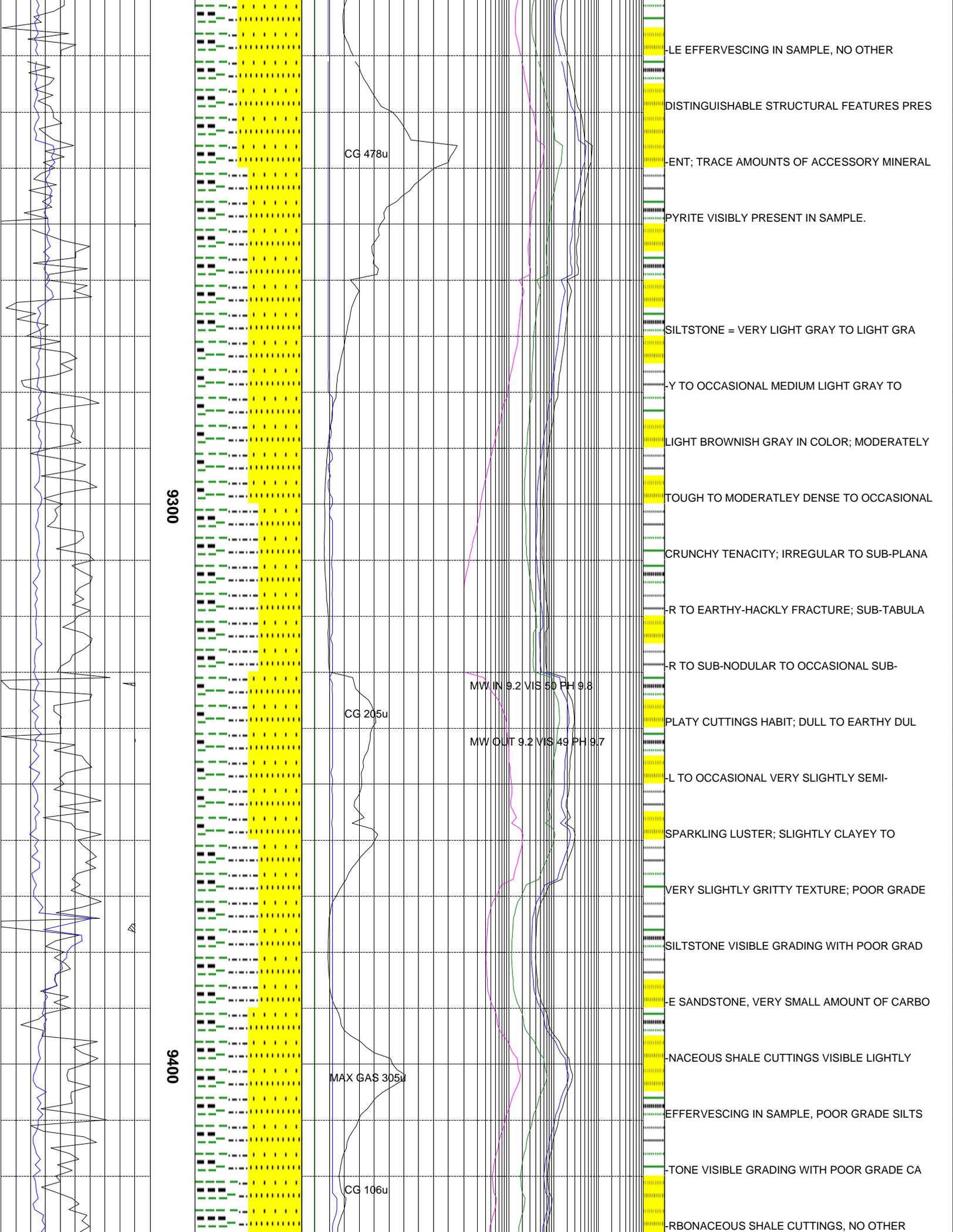
SLIGHTLY PLATY; RESINOUS WAXY TO EARTHY











9300

9400

CG 478u

CG 205u

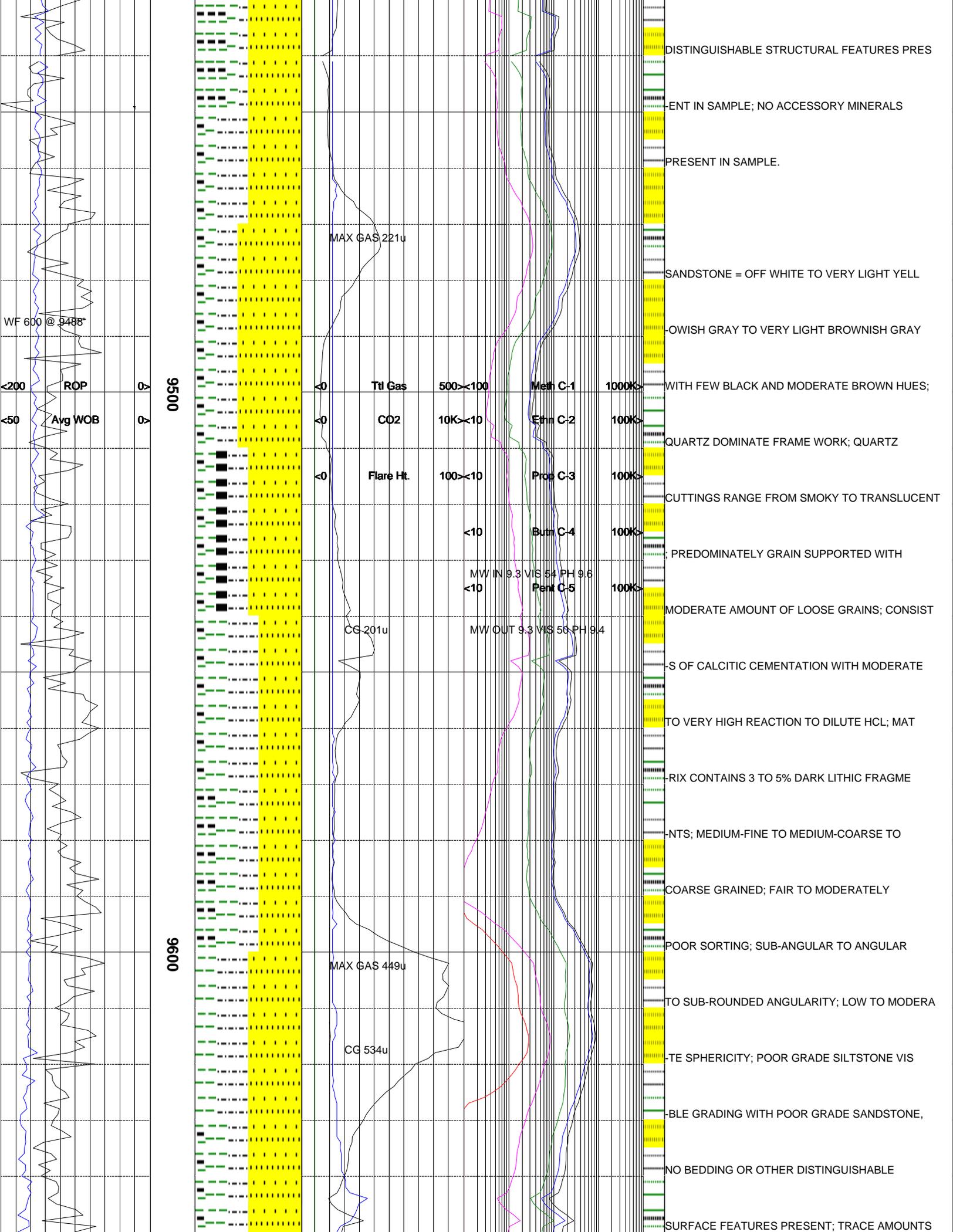
MAX GAS 305u

CG 106u

MW IN 9.2 VIS 50 PH 9.8

MW OUT 9.2 VIS 49 PH 9.7

LE EFFERVESCING IN SAMPLE, NO OTHER
 DISTINGUISHABLE STRUCTURAL FEATURES PRES
 ENT; TRACE AMOUNTS OF ACCESSORY MINERAL
 PYRITE VISIBLY PRESENT IN SAMPLE.
 SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
 Y TO OCCASIONAL MEDIUM LIGHT GRAY TO
 LIGHT BROWNISH GRAY IN COLOR; MODERATELY
 TOUGH TO MODERATLEY DENSE TO OCCASIONAL
 CRUNCHY TENACITY; IRREGULAR TO SUB-PLANA
 R TO EARTHY-HACKLY FRACTURE; SUB-TABULA
 R TO SUB-NODULAR TO OCCASIONAL SUB-
 PLATY CUTTINGS HABIT; DULL TO EARTHY DUL
 L TO OCCASIONAL VERY SLIGHTLY SEMI-
 SPARKLING LUSTER; SLIGHTLY CLAYEY TO
 VERY SLIGHTLY GRITTY TEXTURE; POOR GRADE
 SILTSTONE VISIBLE GRADING WITH POOR GRAD
 E SANDSTONE, VERY SMALL AMOUNT OF CARBO
 NACEOUS SHALE CUTTINGS VISIBLE LIGHTLY
 EFFERVESCING IN SAMPLE, POOR GRADE SILTS
 TONE VISIBLE GRADING WITH POOR GRADE CA
 RBONACEOUS SHALE CUTTINGS, NO OTHER



9500

9600

WF 600 @ 9488

≤ 200 ROP

≤ 50 Avg WOB

MAX GAS 221u

≤ 0 Ttl Gas 500 \times ≤ 100 Meth C-1 1000K \times ≤ 1000

≤ 0 CO2 10K \times ≤ 10 Ethn C-2 100K \times ≤ 100

≤ 0 Flare Ht. 100 \times ≤ 10 Prop C-3 100K \times ≤ 100

≤ 10 Butn C-4 100K \times ≤ 100

MW IN 9.3 VIS 54 PH 9.6

≤ 10 Pent C-5 100K \times ≤ 100

CG-201u

MW OUT 9.3 VIS 56 PH 9.4

MAX GAS 449u

CG 534u

DISTINGUISHABLE STRUCTURAL FEATURES PRES

ENT IN SAMPLE; NO ACCESSORY MINERALS

PRESENT IN SAMPLE.

SANDSTONE = OFF WHITE TO VERY LIGHT YELL

LOWISH GRAY TO VERY LIGHT BROWNISH GRAY

WITH FEW BLACK AND MODERATE BROWN HUES;

QUARTZ DOMINATE FRAME WORK; QUARTZ

CUTTINGS RANGE FROM SMOKY TO TRANSLUCENT

; PREDOMINATELY GRAIN SUPPORTED WITH

MODERATE AMOUNT OF LOOSE GRAINS; CONSIST

S OF CALCITIC CEMENTATION WITH MODERATE

TO VERY HIGH REACTION TO DILUTE HCL; MAT

RIX CONTAINS 3 TO 5% DARK LITHIC FRAGME

NTS; MEDIUM-FINE TO MEDIUM-COARSE TO

COARSE GRAINED; FAIR TO MODERATELY

POOR SORTING; SUB-ANGULAR TO ANGULAR

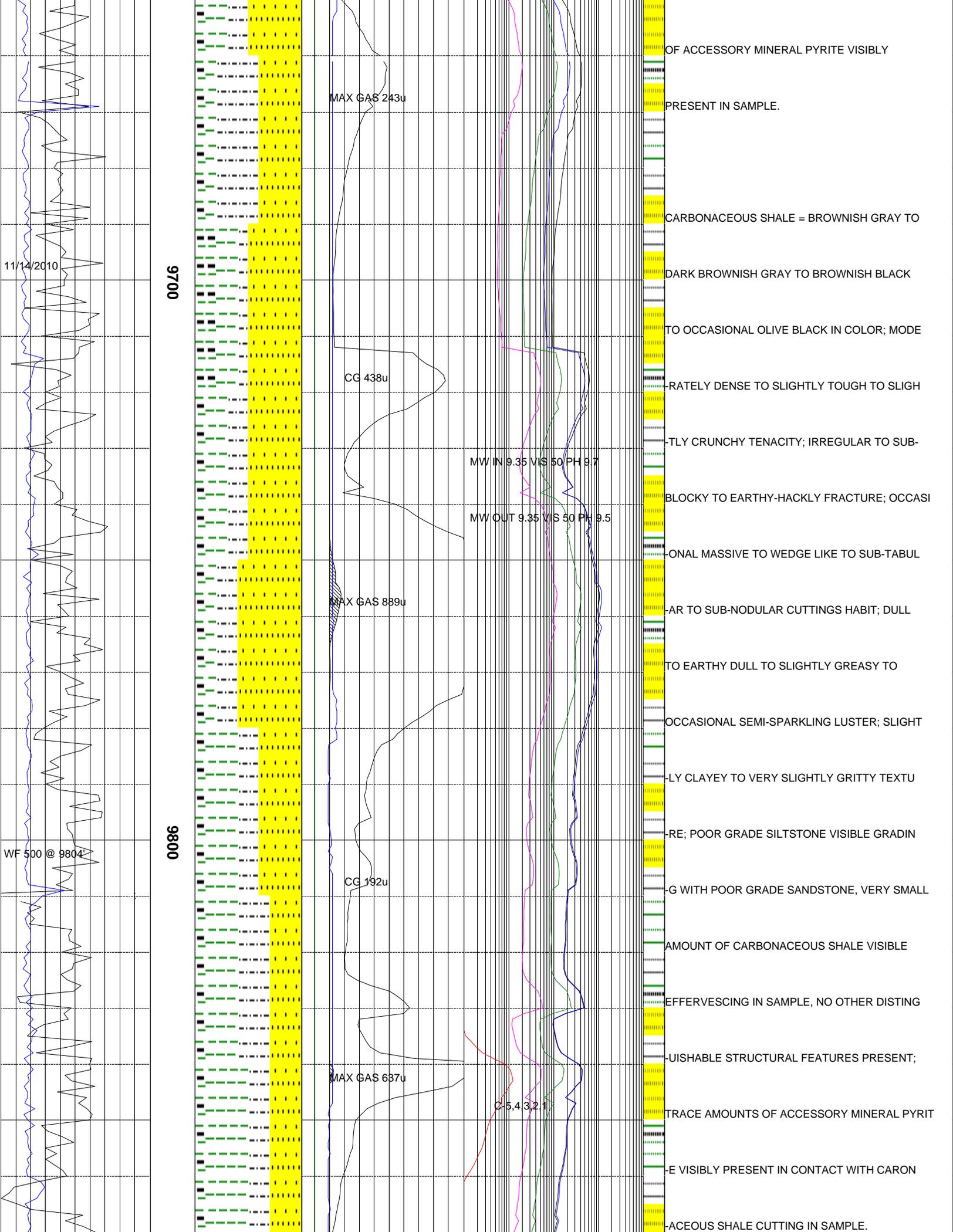
TO SUB-ROUNDED ANGULARITY; LOW TO MODERA

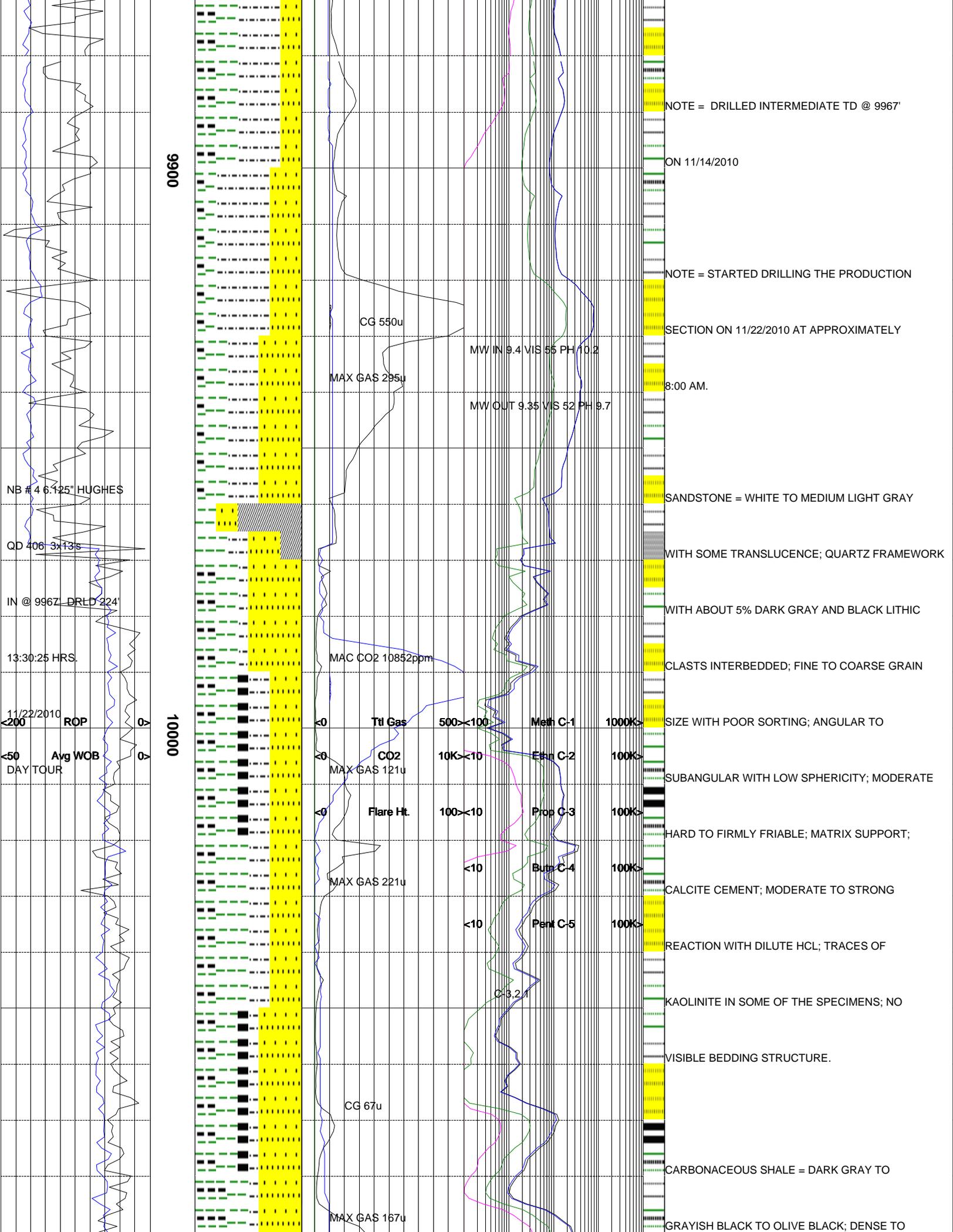
TE SPHERICITY; POOR GRADE SILTSTONE VIS

BLE GRADING WITH POOR GRADE SANDSTONE,

NO BEDDING OR OTHER DISTINGUISHABLE

SURFACE FEATURES PRESENT; TRACE AMOUNTS





9900

10000

NOTE = DRILLED INTERMEDIATE TD @ 9967'

ON 11/14/2010

NOTE = STARTED DRILLING THE PRODUCTION

SECTION ON 11/22/2010 AT APPROXIMATELY

8:00 AM.

SANDSTONE = WHITE TO MEDIUM LIGHT GRAY

WITH SOME TRANSLUCENCE; QUARTZ FRAMEWORK

WITH ABOUT 5% DARK GRAY AND BLACK LITHIC

CLASTS INTERBEDDED; FINE TO COARSE GRAIN

SIZE WITH POOR SORTING; ANGULAR TO

SUBANGULAR WITH LOW SPHERICITY; MODERATE

HARD TO FIRMLY FRIABLE; MATRIX SUPPORT;

CALCITE CEMENT; MODERATE TO STRONG

REACTION WITH DILUTE HCL; TRACES OF

KAOLINITE IN SOME OF THE SPECIMENS; NO

VISIBLE BEDDING STRUCTURE.

CARBONACEOUS SHALE = DARK GRAY TO

GRAYISH BLACK TO OLIVE BLACK; DENSE TO

CG 550u

MW IN 9.4 VIS 55 PH 10.2

MAX GAS 295u

MW OUT 9.35 VIS 52 PH 9.7

NB # 4 6.125" HUGHES

QD 406 3x13s

IN @ 9967' DRILL 224'

13:30:25 HRS.

11/22/2010

<200 ROP

<50 Avg WOB

DAY TOUR

MAC CO2 10852ppm

Ttl Gas

500 < 100

Meth C-1

1000K >

CO2

10K < 10

Eth C-2

100K >

MAX GAS 121u

Flare Ht.

100 < 10

Prop C-3

100K >

MAX GAS 221u

< 10

But C-4

100K >

< 10

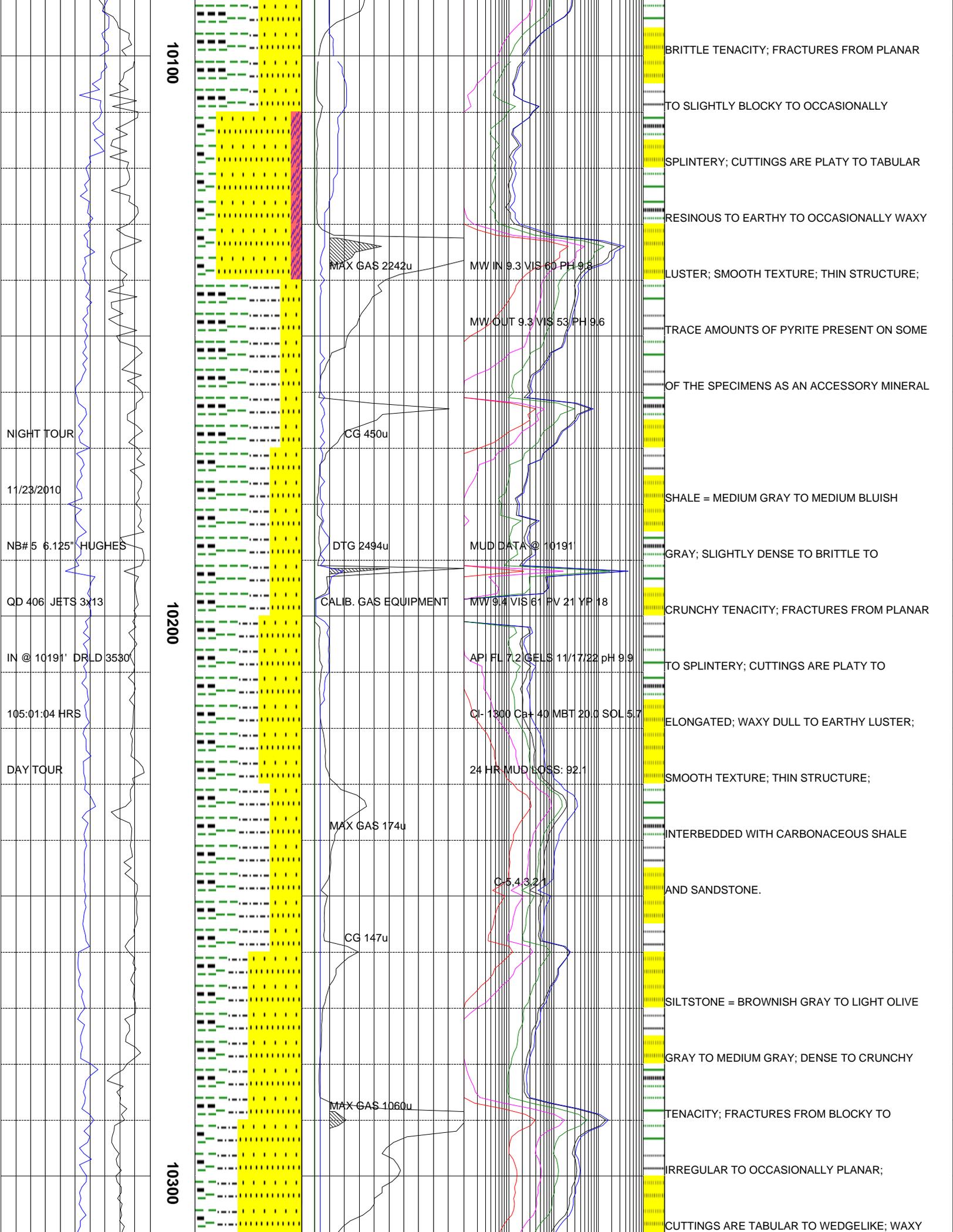
Pen C-5

100K >

C-3.21

CG 67u

MAX GAS 167u



10100

10200

10300

BRITTLE TENACITY; FRACTURES FROM PLANAR
 TO SLIGHTLY BLOCKY TO OCCASIONALLY
 SPLINTERY; CUTTINGS ARE PLATY TO TABULAR
 RESINOUS TO EARTHY TO OCCASIONALLY WAXY
 LUSTER; SMOOTH TEXTURE; THIN STRUCTURE;
 TRACE AMOUNTS OF PYRITE PRESENT ON SOME
 OF THE SPECIMENS AS AN ACCESSORY MINERAL
 SHALE = MEDIUM GRAY TO MEDIUM BLUISH
 GRAY; SLIGHTLY DENSE TO BRITTLE TO
 CRUNCHY TENACITY; FRACTURES FROM PLANAR
 TO SPLINTERY; CUTTINGS ARE PLATY TO
 ELONGATED; WAXY DULL TO EARTHY LUSTER;
 SMOOTH TEXTURE; THIN STRUCTURE;
 INTERBEDDED WITH CARBONACEOUS SHALE
 AND SANDSTONE.
 SILTSTONE = BROWNISH GRAY TO LIGHT OLIVE
 GRAY TO MEDIUM GRAY; DENSE TO CRUNCHY
 TENACITY; FRACTURES FROM BLOCKY TO
 IRREGULAR TO OCCASIONALLY PLANAR;
 CUTTINGS ARE TABULAR TO WEDGELIKE; WAXY

MAX GAS 2242u

MW IN 9.3 VIS 60 PH 9.8

MW OUT 9.3 VIS 53 PH 9.6

CG 450u

DTG 2494u

MUD DATA @ 10191

CALIB. GAS EQUIPMENT

MW 9.4 VIS 61 PV 21 YP 18

NIGHT TOUR

11/23/2010

NB# 5 6.125" HUGHES

QD 406 JETS 3x13

IN @ 10191' DRLD 3530'

105:01:04 HRS

DAY TOUR

MAX GAS 174u

C 5.43221

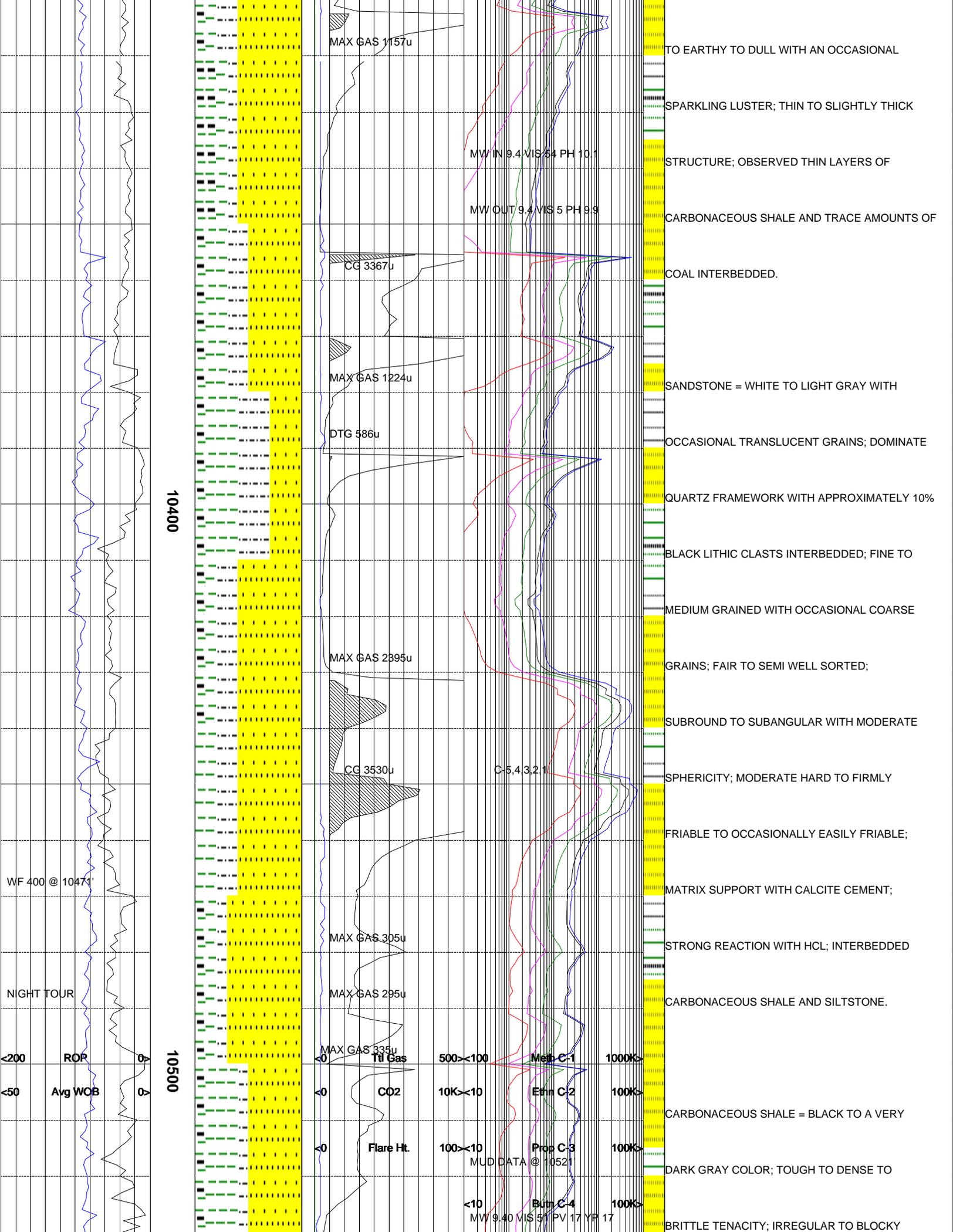
CG 147u

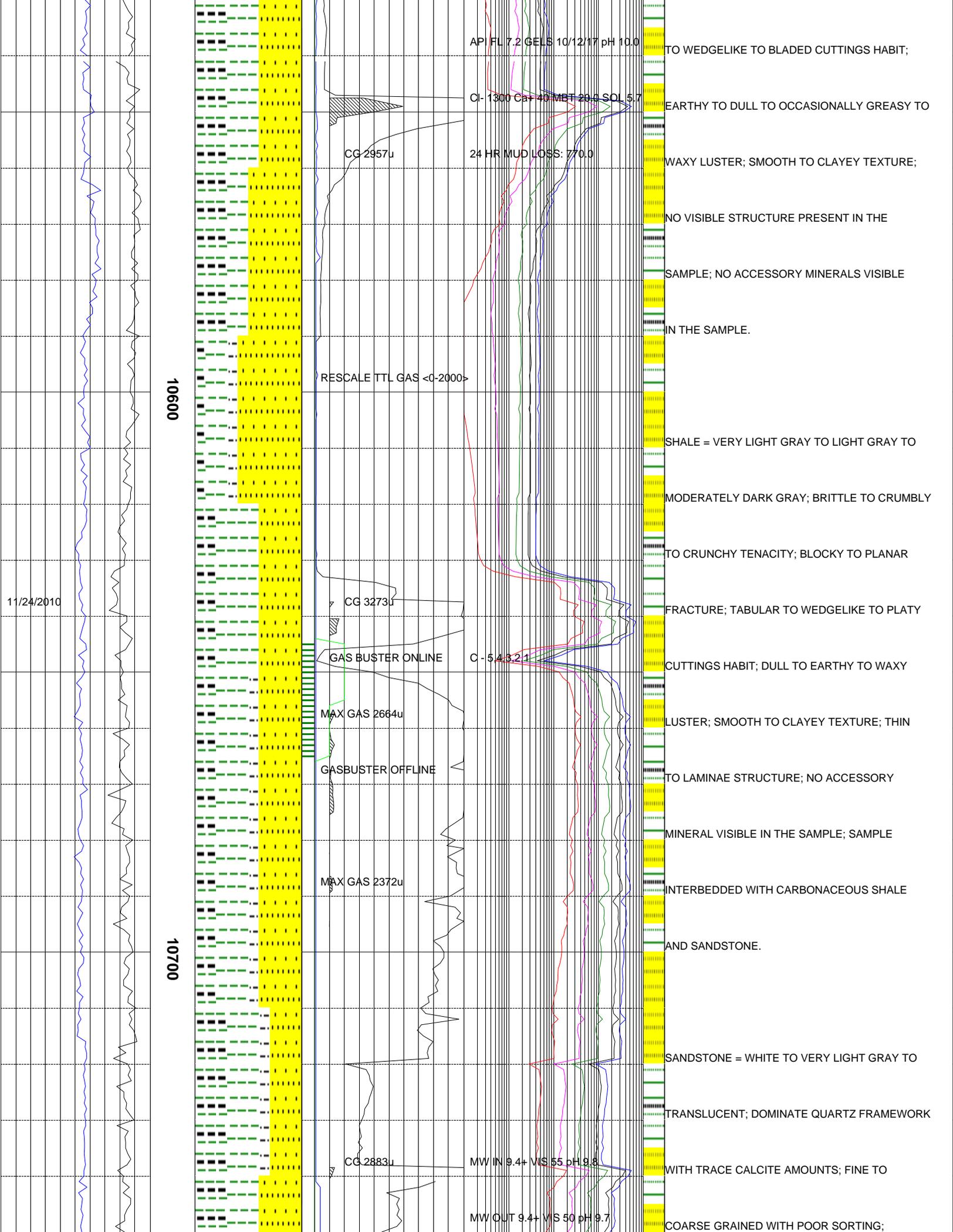
MAX GAS 1060u

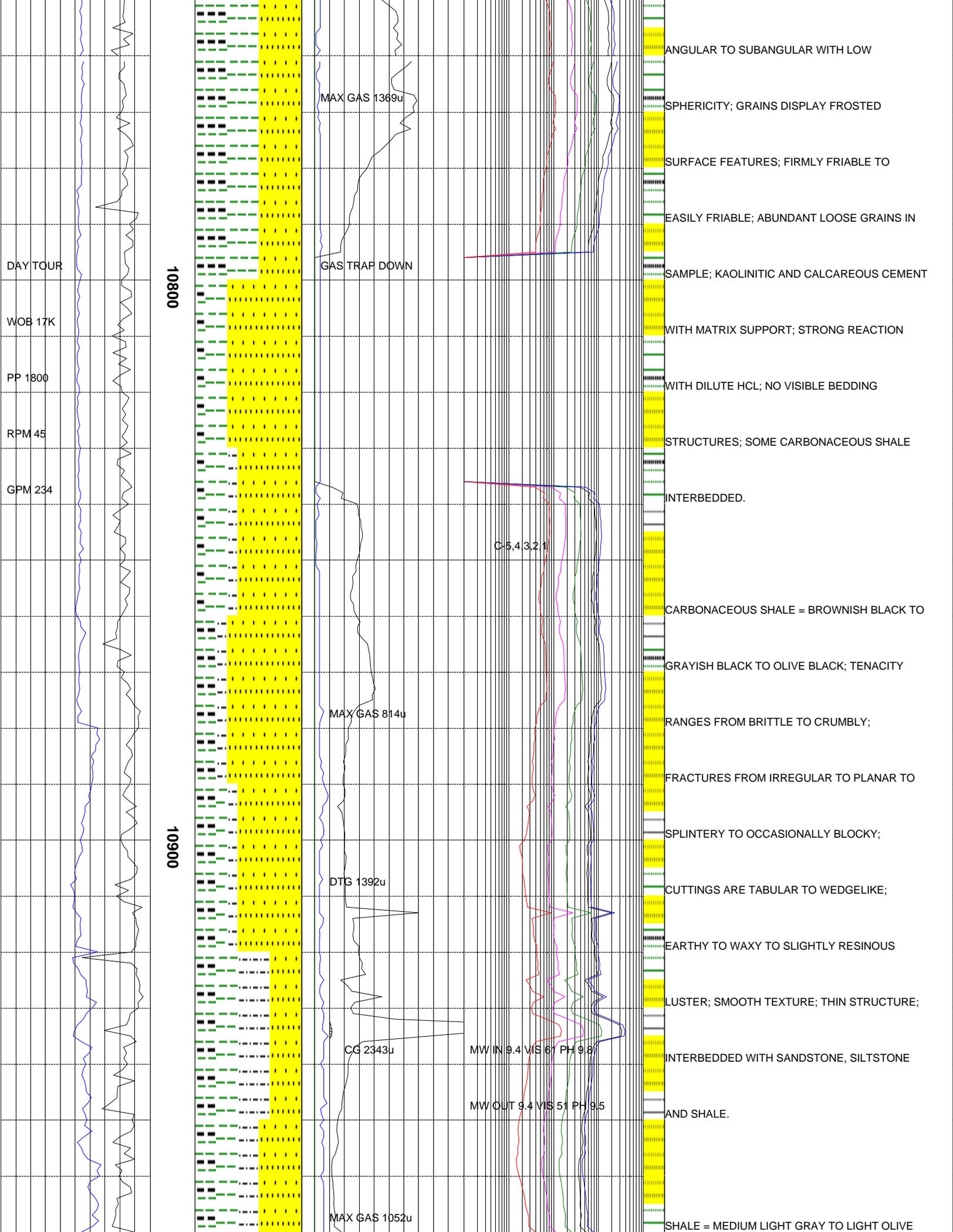
API FL 7.2 GELS 11/17/22 pH 9.9

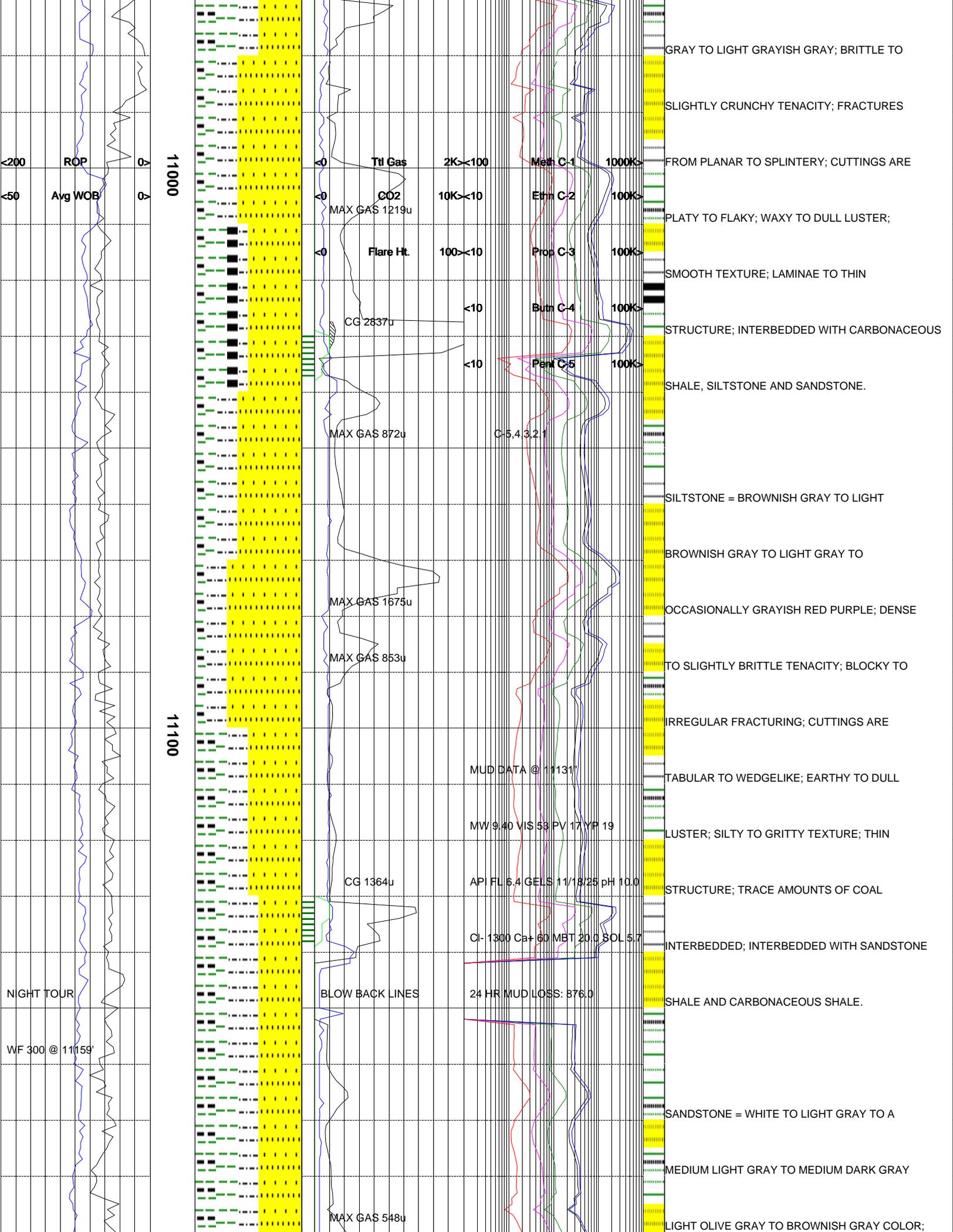
CI- 1300 Ca+ 40 MBT 20.0 SOL 5.7

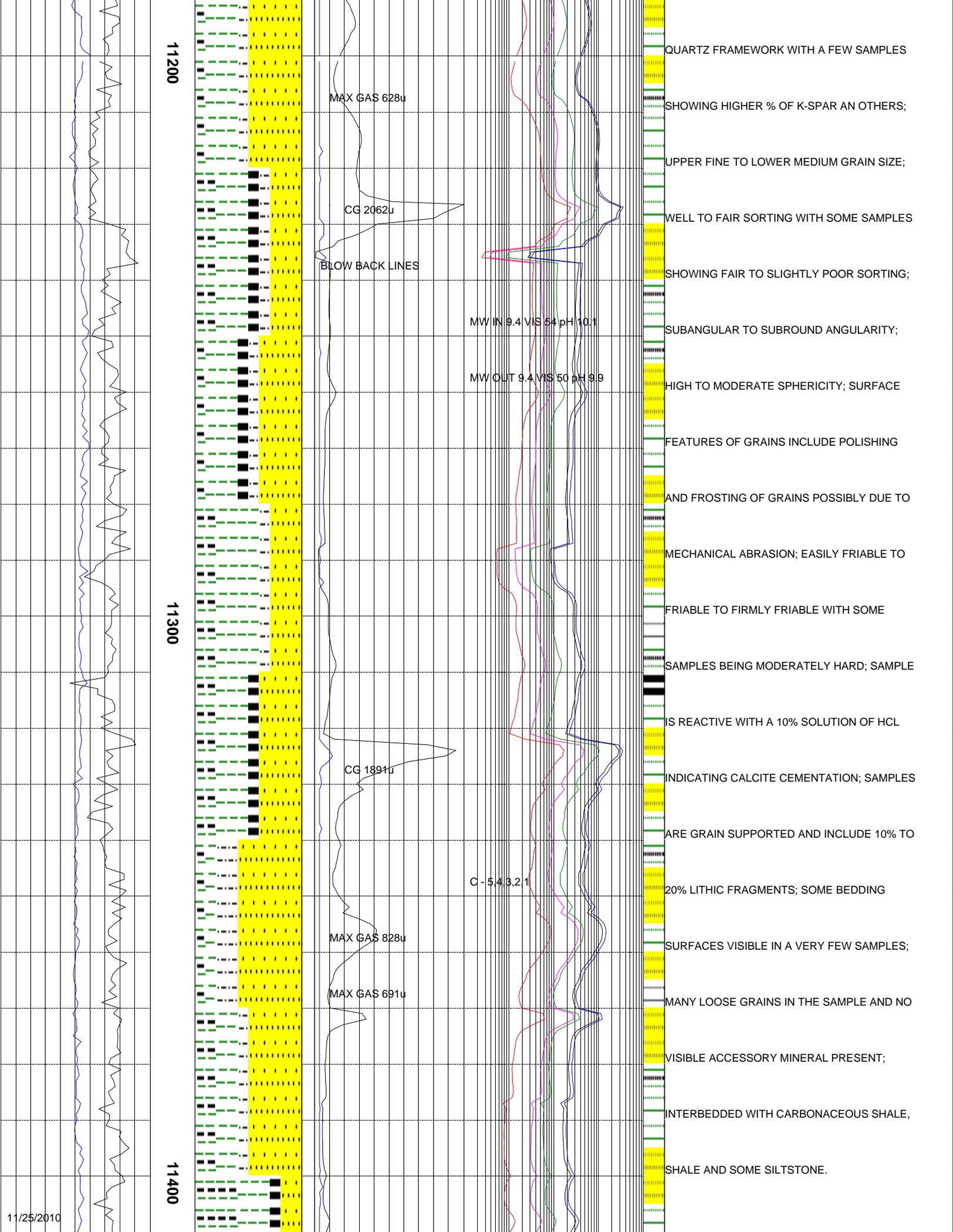
24 HR MUD LOSS: 92.1

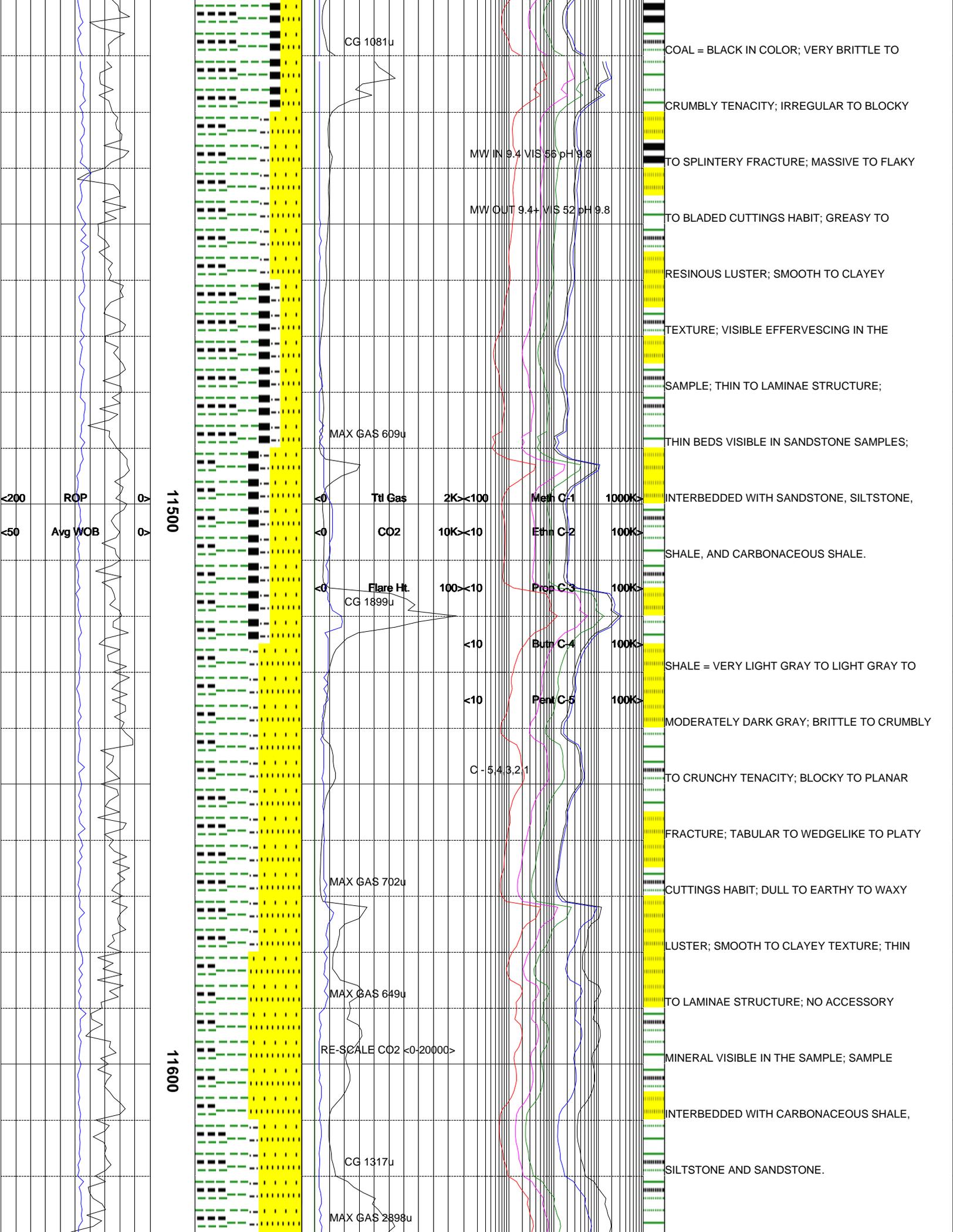


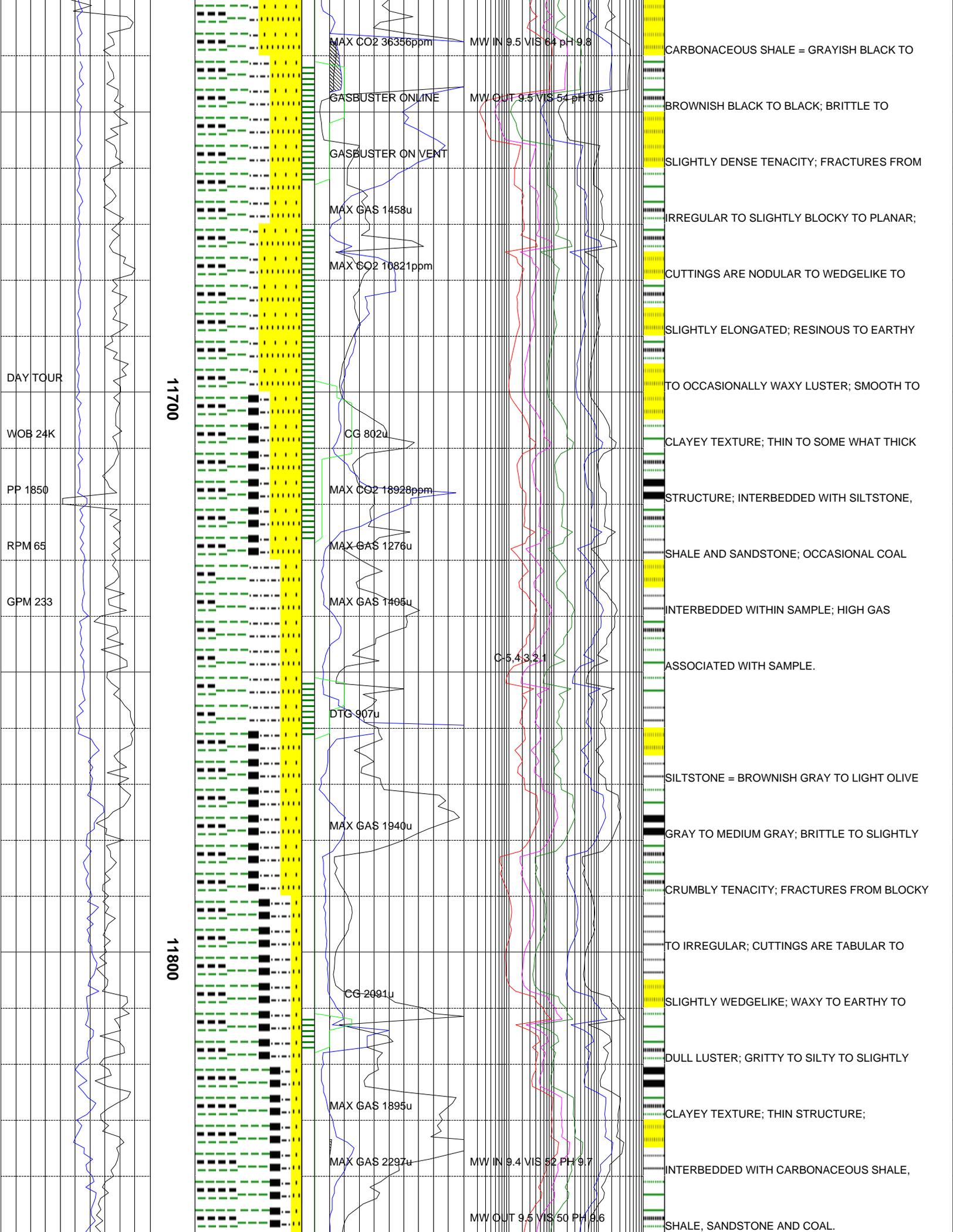


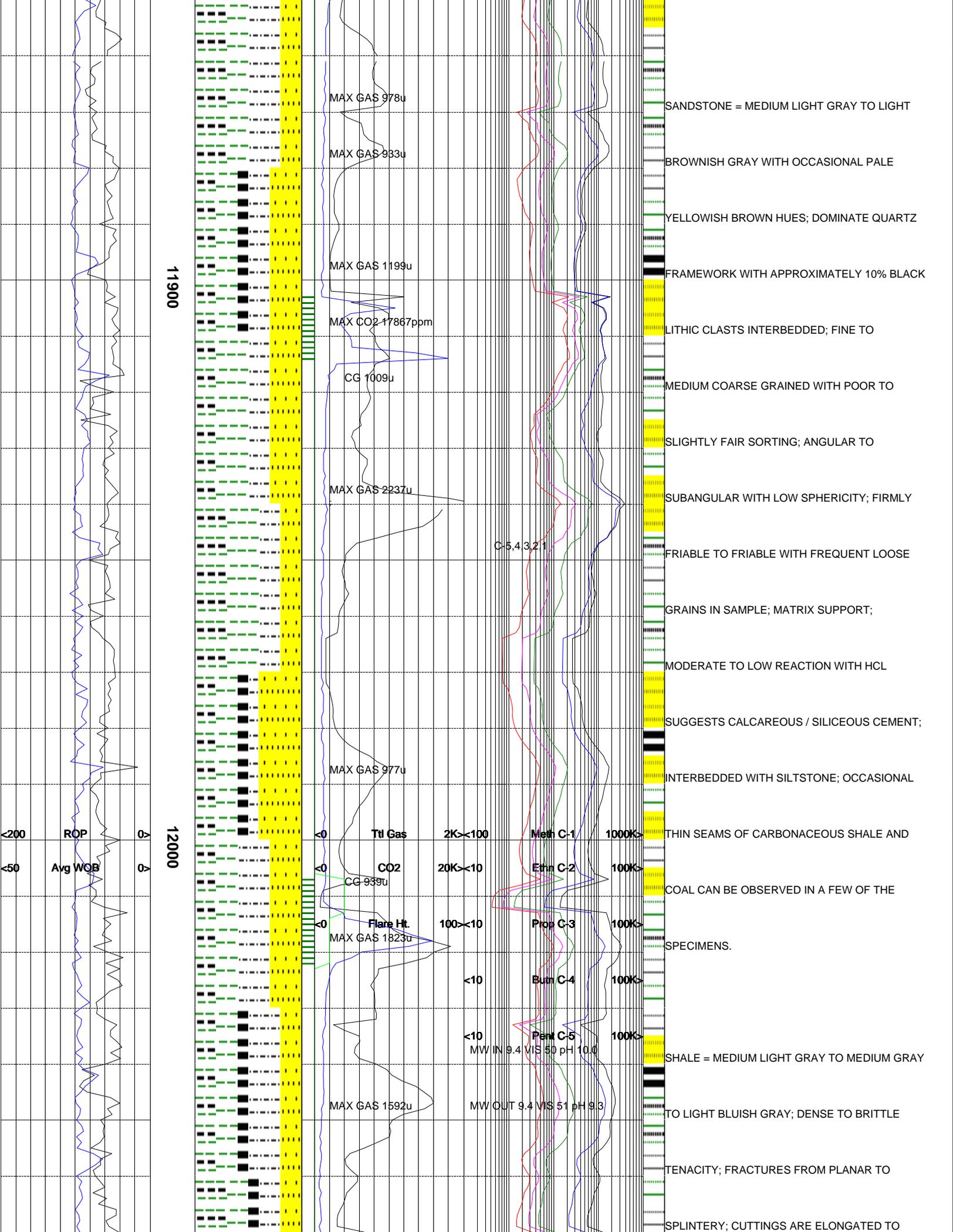


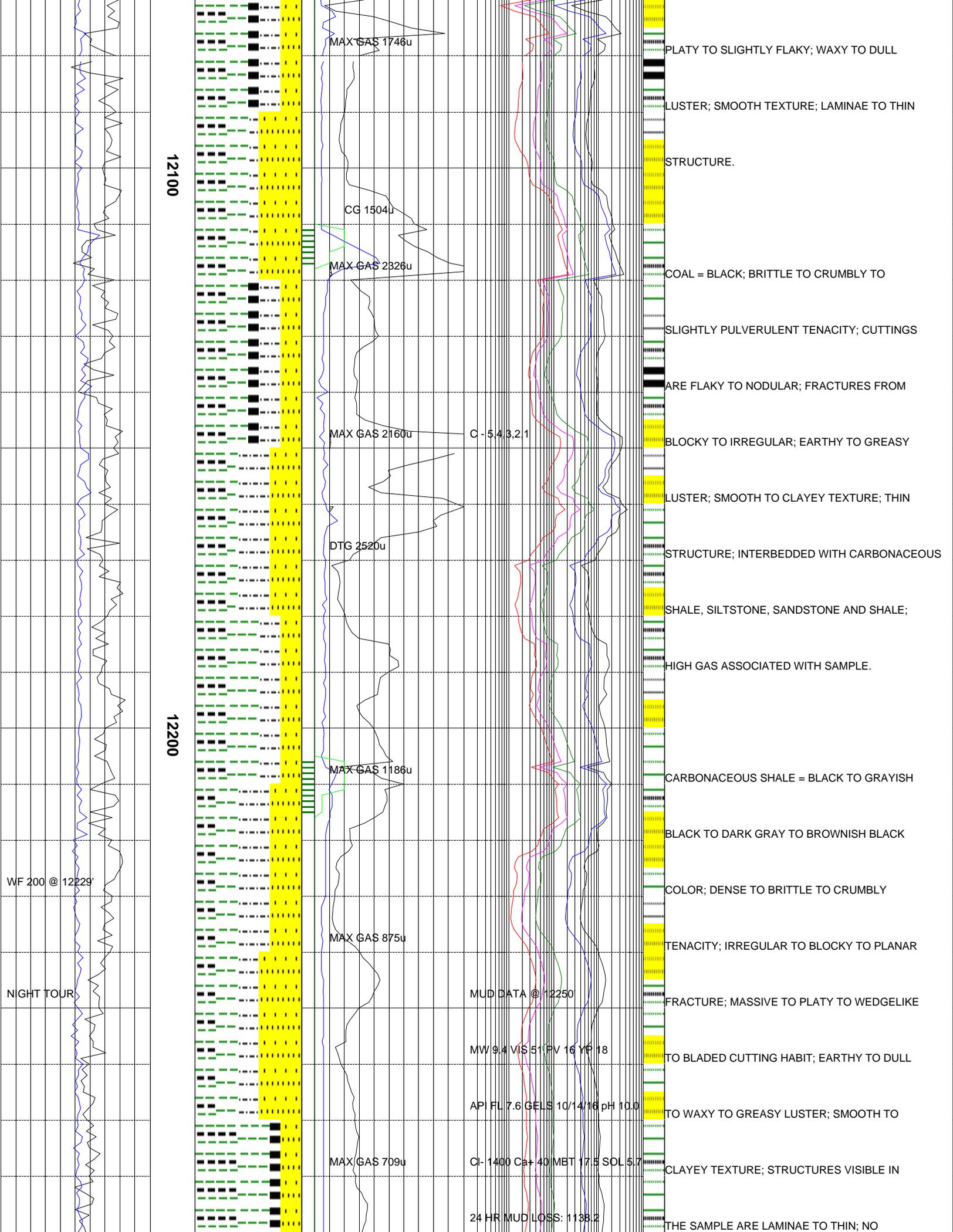












12100

12200

MAX GAS 1746u

CG 1504u

MAX GAS 2326u

MAX GAS 2160u

C - 5.4, 3.2, 1

DTG 2520u

MAX GAS 1186u

MAX GAS 875u

MAX GAS 709u

PLATY TO SLIGHTLY FLAKY; WAXY TO DULL

LUSTER; SMOOTH TEXTURE; LAMINAE TO THIN

STRUCTURE.

COAL = BLACK; BRITTLE TO CRUMBLY TO

SLIGHTLY PULVERULENT TENACITY; CUTTINGS

ARE FLAKY TO NODULAR; FRACTURES FROM

BLOCKY TO IRREGULAR; EARTHY TO GREASY

LUSTER; SMOOTH TO CLAYEY TEXTURE; THIN

STRUCTURE; INTERBEDDED WITH CARBONACEOUS

SHALE, SILTSTONE, SANDSTONE AND SHALE;

HIGH GAS ASSOCIATED WITH SAMPLE.

CARBONACEOUS SHALE = BLACK TO GRAYISH

BLACK TO DARK GRAY TO BROWNISH BLACK

COLOR; DENSE TO BRITTLE TO CRUMBLY

TENACITY; IRREGULAR TO BLOCKY TO PLANAR

FRACTURE; MASSIVE TO PLATY TO WEDGELIKE

TO BLADED CUTTING HABIT; EARTHY TO DULL

TO WAXY TO GREASY LUSTER; SMOOTH TO

CLAYEY TEXTURE; STRUCTURES VISIBLE IN

THE SAMPLE ARE LAMINAE TO THIN; NO

WF 200 @ 12229

NIGHT TOUR

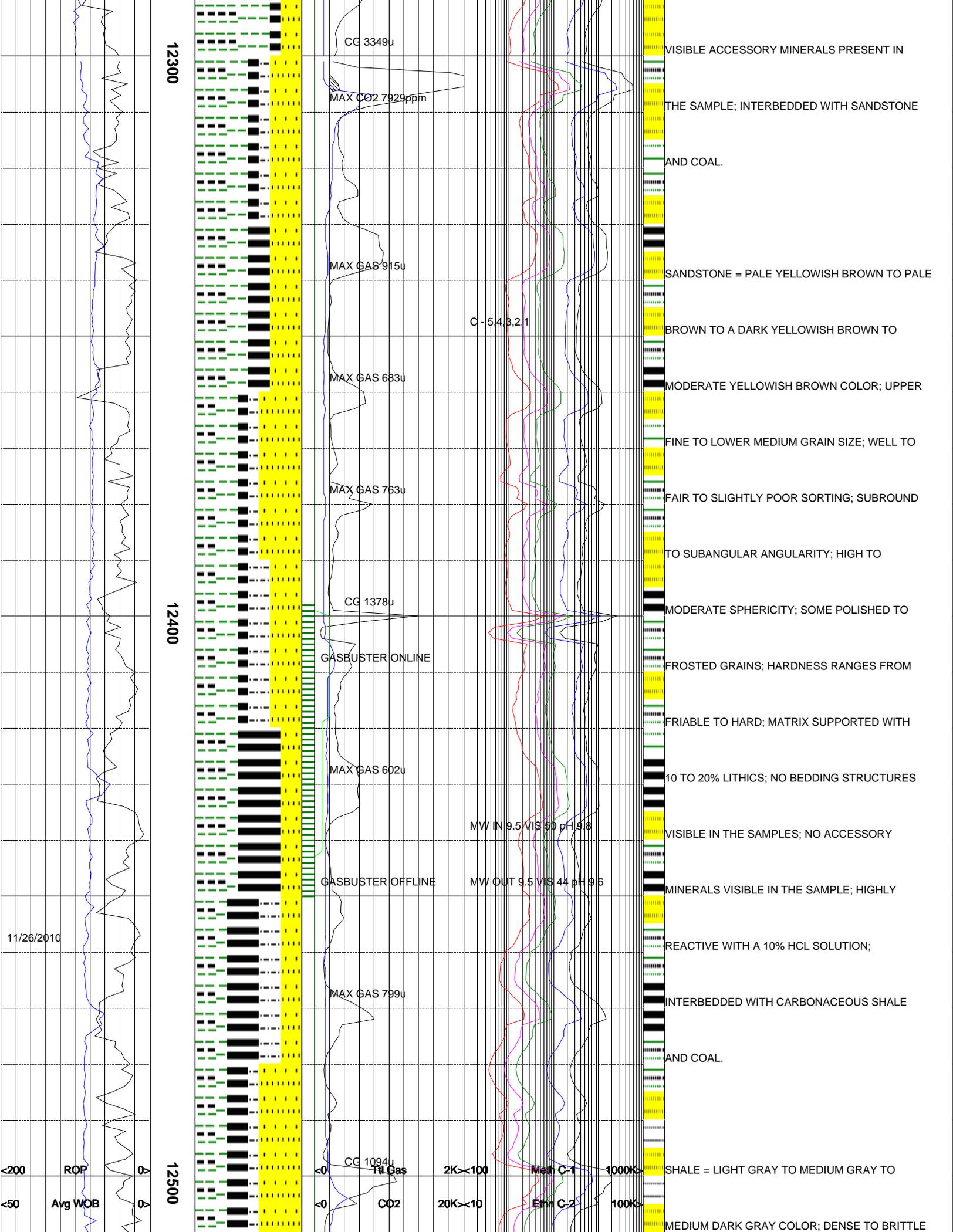
MUD DATA @ 12250

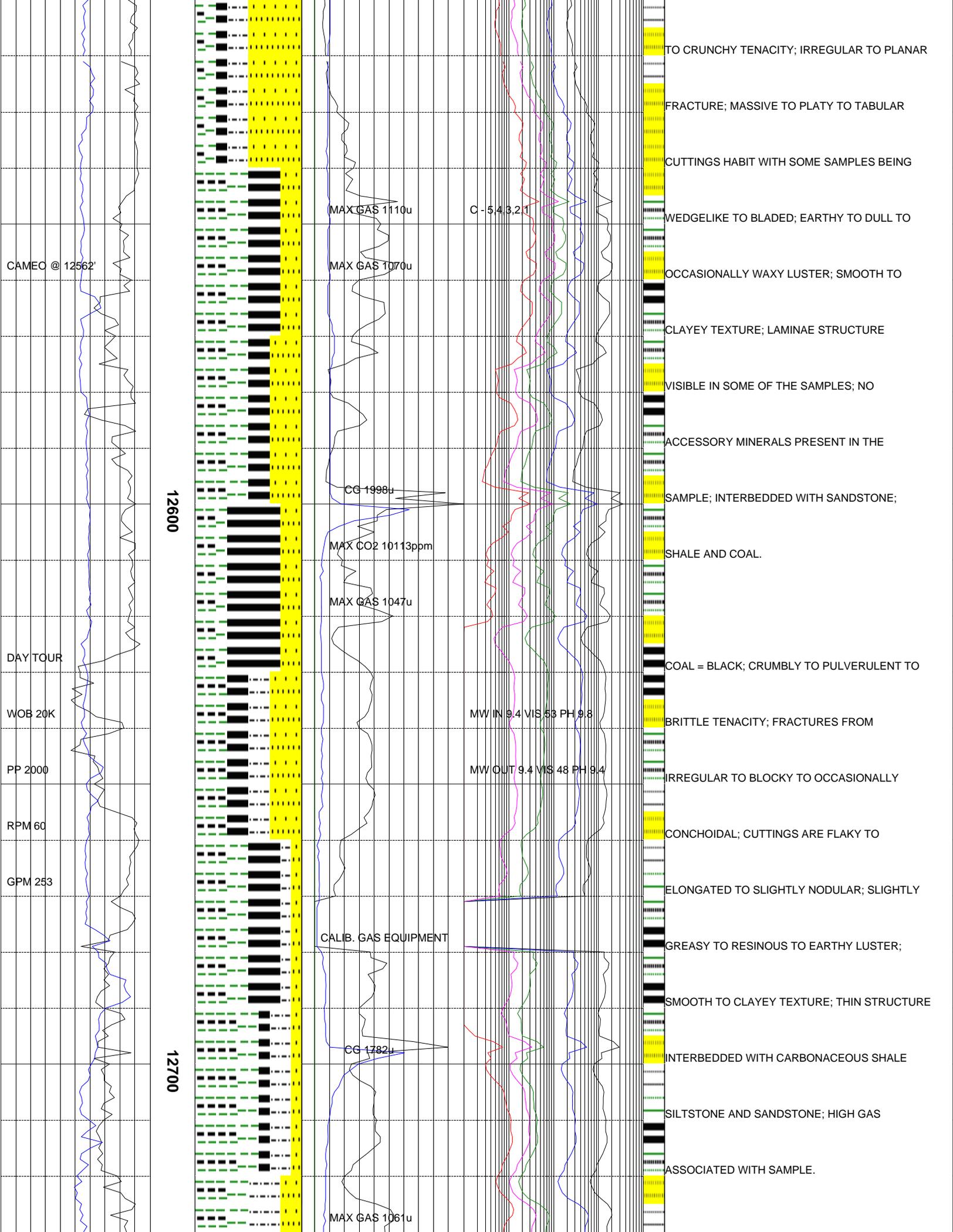
MW 9.4 VIS 51 PV 16 YR 18

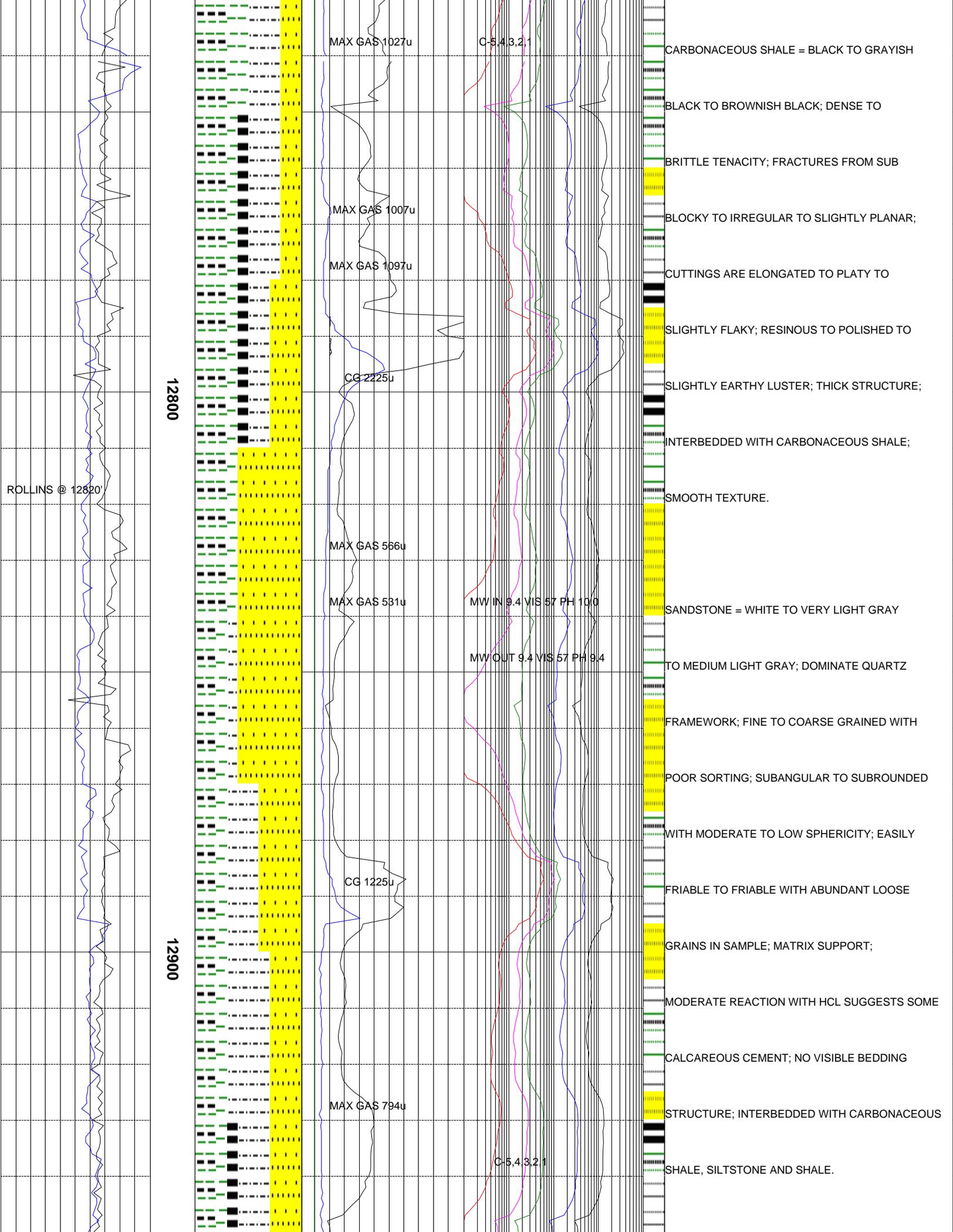
API FL 7.6 GELS 10/14/16 pH 10.0

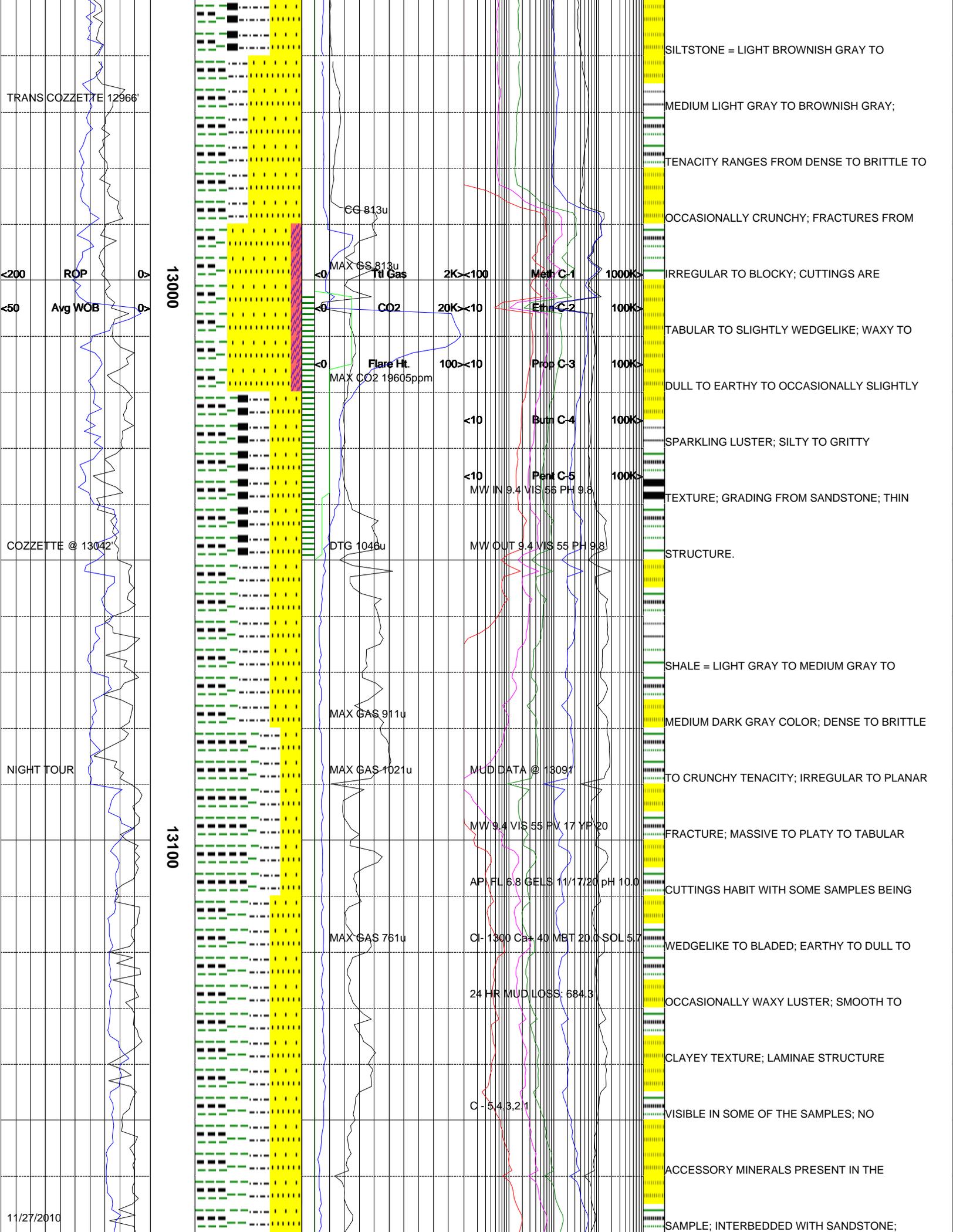
Cl- 1400 Ca+ 40 MBT 17.5 SOL 5.7

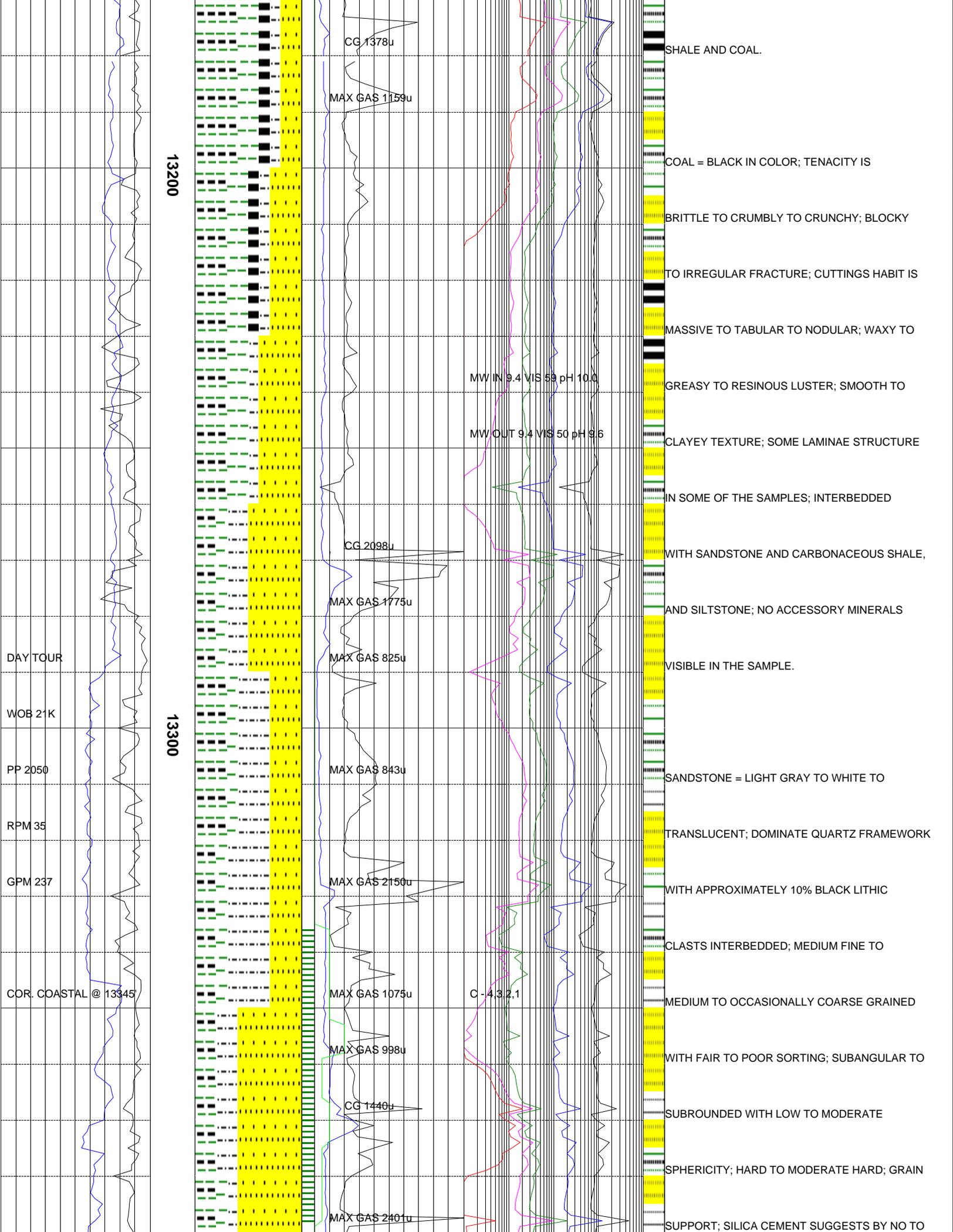
24 HR MUD LOSS: 1138.2











SHALE AND COAL.
 COAL = BLACK IN COLOR; TENACITY IS
 BRITTLE TO CRUMBLY TO CRUNCHY; BLOCKY
 TO IRREGULAR FRACTURE; CUTTINGS HABIT IS
 MASSIVE TO TABULAR TO NODULAR; WAXY TO
 GREASY TO RESINOUS LUSTER; SMOOTH TO
 CLAYEY TEXTURE; SOME LAMINAE STRUCTURE
 IN SOME OF THE SAMPLES; INTERBEDDED
 WITH SANDSTONE AND CARBONACEOUS SHALE,
 AND SILTSTONE; NO ACCESSORY MINERALS
 VISIBLE IN THE SAMPLE.
 SANDSTONE = LIGHT GRAY TO WHITE TO
 TRANSLUCENT; DOMINATE QUARTZ FRAMEWORK
 WITH APPROXIMATELY 10% BLACK LITHIC
 CLASTS INTERBEDDED; MEDIUM FINE TO
 MEDIUM TO OCCASIONALLY COARSE GRAINED
 WITH FAIR TO POOR SORTING; SUBANGULAR TO
 SUBROUNDED WITH LOW TO MODERATE
 SPHERICITY; HARD TO MODERATE HARD; GRAIN
 SUPPORT; SILICA CEMENT SUGGESTS BY NO TO

13200

13300

CG 1378u

MAX GAS 1159u

CG 2098u

MAX GAS 1775u

MAX GAS 825u

MAX GAS 843u

MAX GAS 2150u

MAX GAS 1075u

MAX GAS 998u

CG 1440u

MAX GAS 2401u

MW IN 9.4 VIS 59 pH 10.0

MW OUT 9.4 VIS 50 pH 9.6

C-4.3.2.1

DAY TOUR

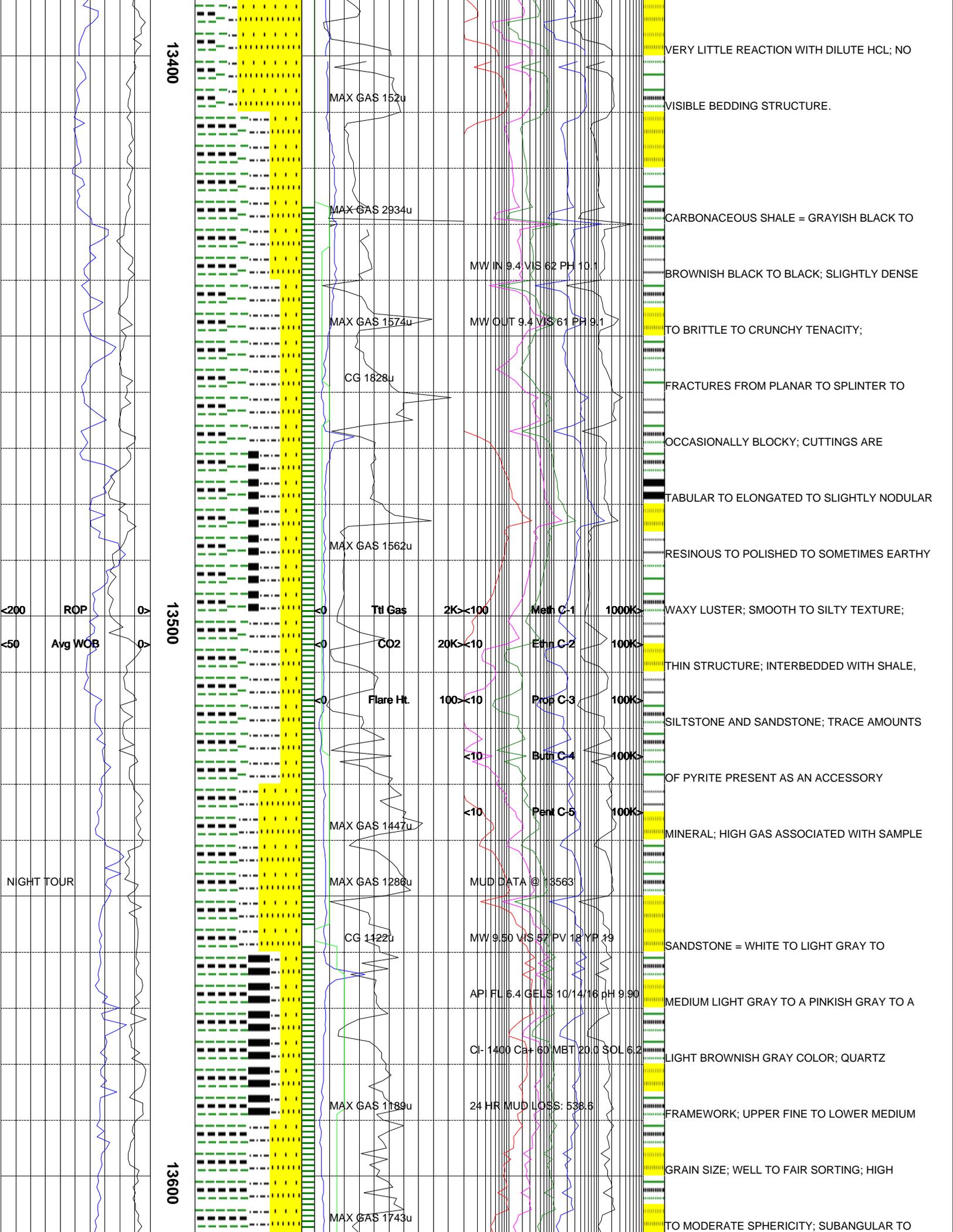
WOB 21K

PP 2050

RPM 35

GPM 237

COR. COASTAL @ 13345



13400

13500

13600

<200 ROP
<50 Avg WOB

NIGHT TOUR

MAX GAS 152u

MAX GAS 2934u

MAX GAS 1574u

CG 1828u

MAX GAS 1562u

Ttl Gas 2K<100

CO2 20K<10

Flare Ht. 100<10

MAX GAS 1447u

MAX GAS 1280u

CG 1122u

MAX GAS 1189u

MAX GAS 1743u

MW IN 9.4 VIS 62 PH 10.1

MW OUT 9.4 VIS 61 PH 9.1

Meth C-1 1000K<

Ethn C-2 100K<

Prop C-3 100K<

Butn C-4 100K<

Pent C-5 100K<

MUD DATA @ 13563

MW 9.50 VIS 57 PV 18 YF 19

API FL 6.4 GELS 10/14/16 pH 9.90

Cl- 1400 Ca+ 60 MBT 20.0 SOL 6.2

24 HR MUD LOSS: 538.6

VERY LITTLE REACTION WITH DILUTE HCL; NO

VISIBLE BEDDING STRUCTURE.

CARBONACEOUS SHALE = GRAYISH BLACK TO

BROWNISH BLACK TO BLACK; SLIGHTLY DENSE

TO BRITTLE TO CRUNCHY TENACITY;

FRACTURES FROM PLANAR TO SPLINTER TO

OCCASIONALLY BLOCKY; CUTTINGS ARE

TABULAR TO ELONGATED TO SLIGHTLY NODULAR

RESINOUS TO POLISHED TO SOMETIMES EARTHY

WAXY LUSTER; SMOOTH TO SILTY TEXTURE;

THIN STRUCTURE; INTERBEDDED WITH SHALE,

SILTSTONE AND SANDSTONE; TRACE AMOUNTS

OF PYRITE PRESENT AS AN ACCESSORY

MINERAL; HIGH GAS ASSOCIATED WITH SAMPLE

SANDSTONE = WHITE TO LIGHT GRAY TO

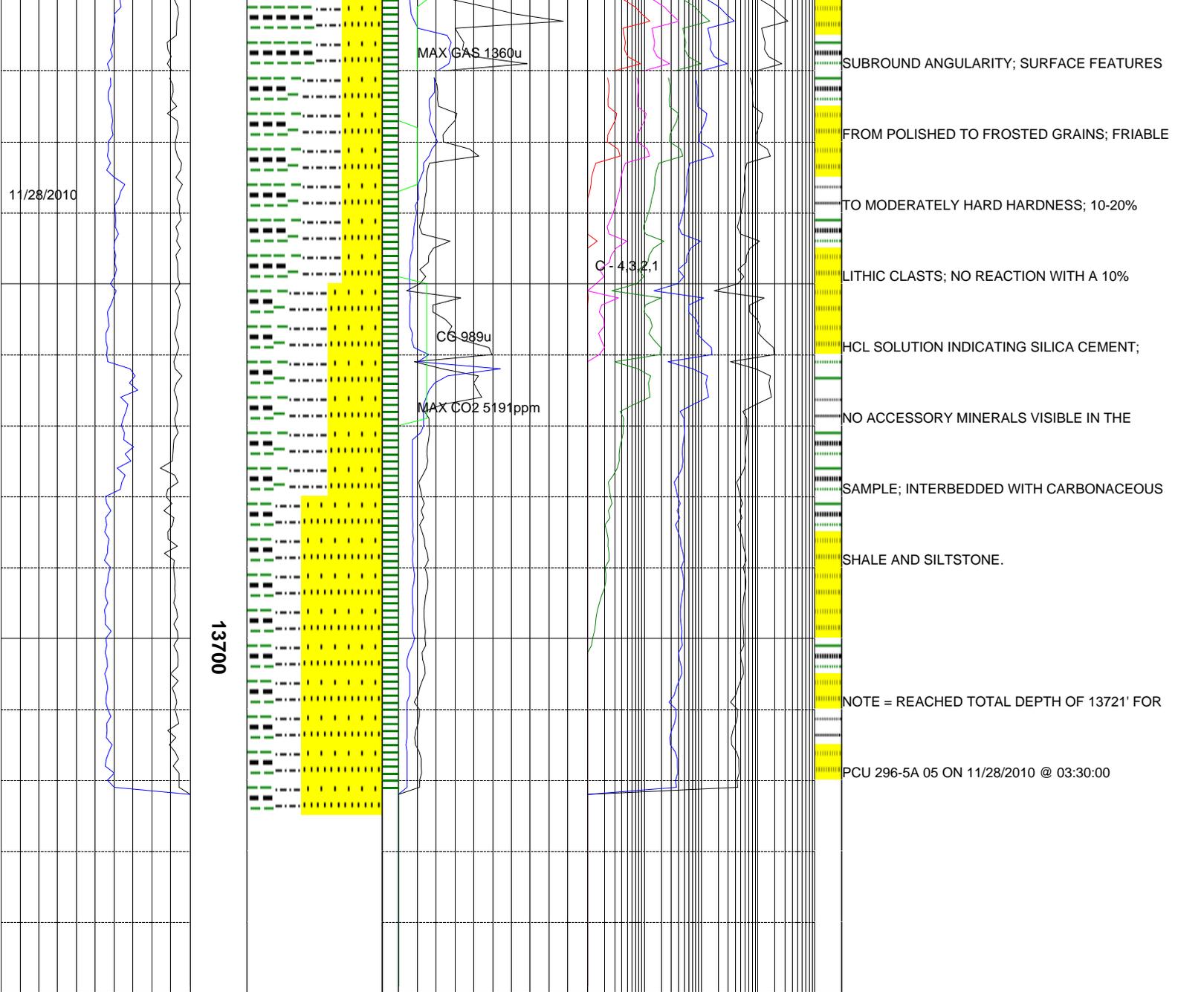
MEDIUM LIGHT GRAY TO A PINKISH GRAY TO A

LIGHT BROWNISH GRAY COLOR; QUARTZ

FRAMEWORK; UPPER FINE TO LOWER MEDIUM

GRAIN SIZE; WELL TO FAIR SORTING; HIGH

TO MODERATE SPHERICITY; SUBANGULAR TO



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