Houston, TX
(281) 784-5500
Bakersfield, CA
(661) 328-1595
New Iberia, LA
(337) 364-2322
Anchorage, AK
(907) 561-2465

MUDLOG MD

COMPANY	ExxonMobil Production
WELL	FRU 197-33B6
FIELD	Piceance Creek
REGION	Rockies
COORDINATES	39.921441
	108.282516
ELEVATION	6459'
COUNTY, STATE	Rio Blanco, CO
API INDEX	051031142400
SPUD DATE	03/30/2010
CONTRACTOR	HP
CO. REP.	W.GARNER/ C.CURTIS
RIG/TYPE	HP321
LOGGING UNIT	MLU#31
GEOLOGISTS	M.FRANCO/C.RECORD
	B.DELANEY
ADD. PERSONS	M.PIPER/ R.MCCANE
CO. GEOLOGIST	CHRIS ALBA

LOG INTERVAL

DEPTHS:	4045'	**TO**	12776'
DATES:	07/05/2010	**TO**	07/17/2010
SCALE:	5" = 100'		

MUD TYPES

WATER-BASED	**TO**	4055'
LSND	**TO**	12776'
	TO	
	TO	

CASING DATA

16"	**AT**	149'
10.75"	**AT**	4045'
4"	**AT**	12776'
	AT	

HOLE SIZE

14.00"	**TO**	4055'
10.00"	**TO**	10343'
8.15"	**TO**	12776'
	TO	

ABBREVIATIONS

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

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

<200 ROP 0> ft/hr
<50 Avg WOB 0> klbs
<0 Gamma 100> API Units

Depth

Lithology

MGS

<0 Ttl Gas 2K> units
<0 CO2 40K> ppm
<0 Flare Ht. 100> ft

<10 Meth C-1 100K> ppm
<10 Ethn C-2 100K>
<10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>

Interp. Lith

3800

3900

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 CHROMOTOGRAPHY EQUIPMENT CALIBRATED

TO A TEST GAS COMPOSED OF THE FOLLOWING:

METHANE = 9,990 PPM

ETHANE = 1,010 PPM

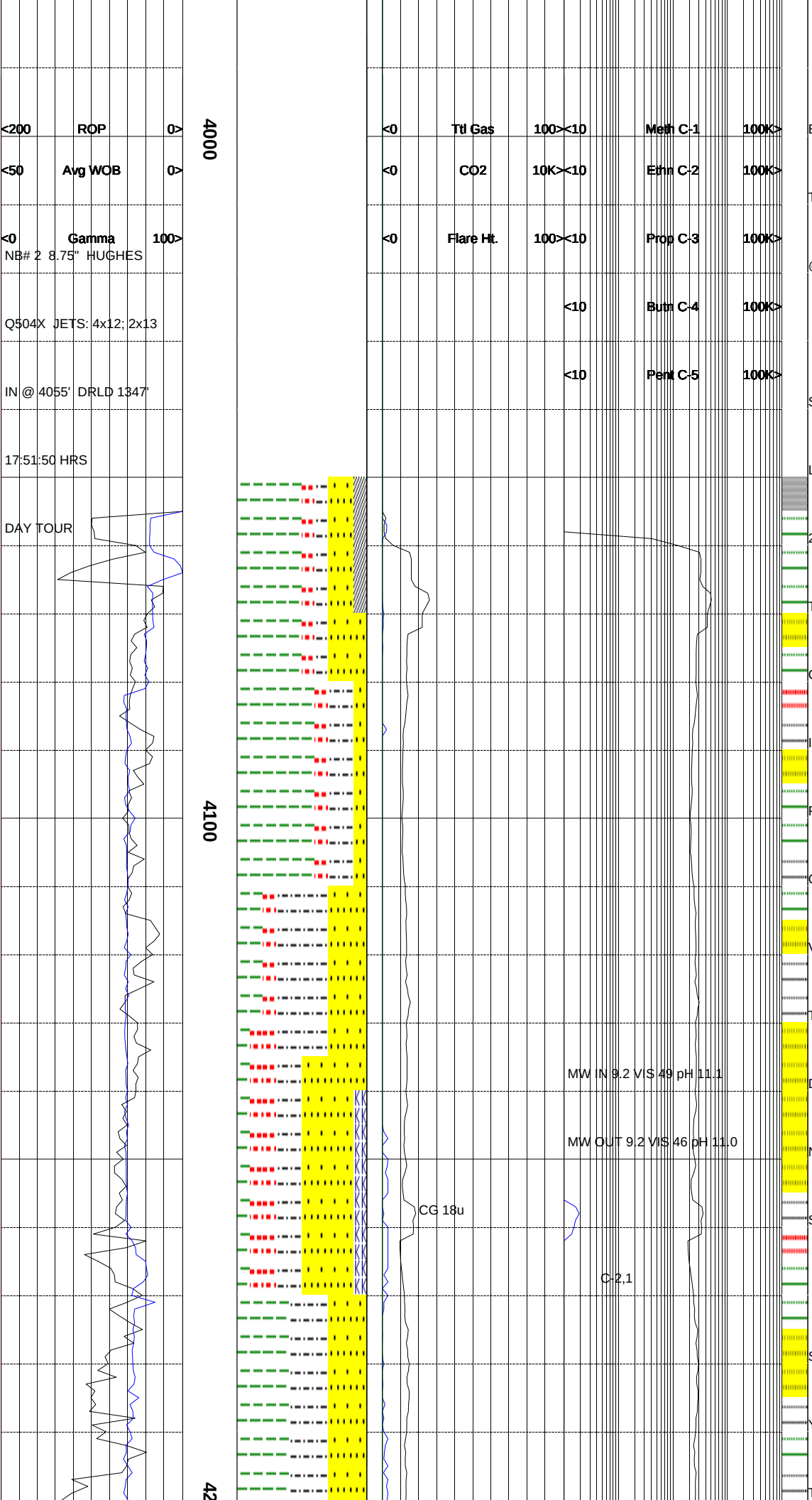
PROPANE = 980 PPM

I-BUTANE = 1,000 PPM

N-BUTANE = 1,000 PPM

I-PENTANE = 1,000 PPM

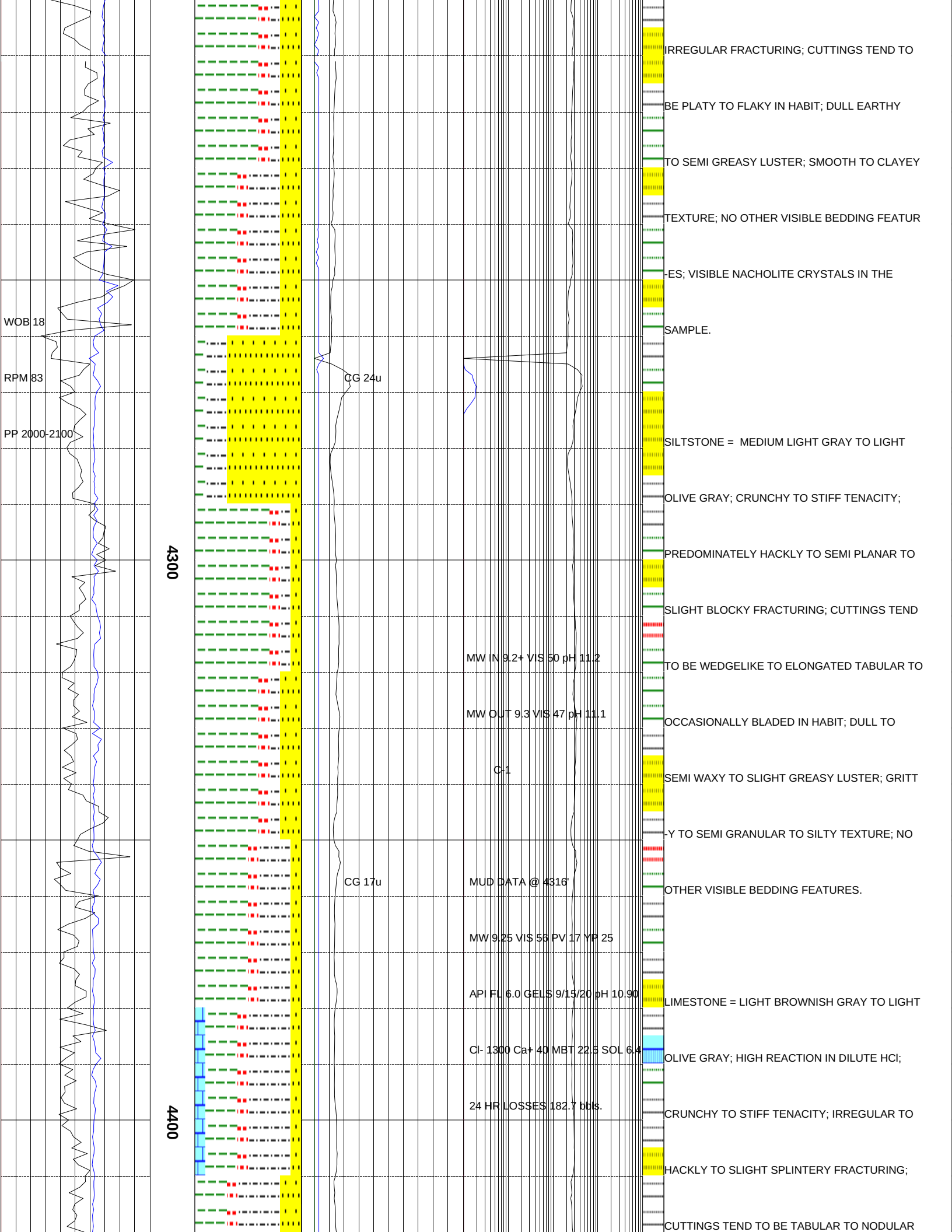
N-PENTANE = 1,000 PPM

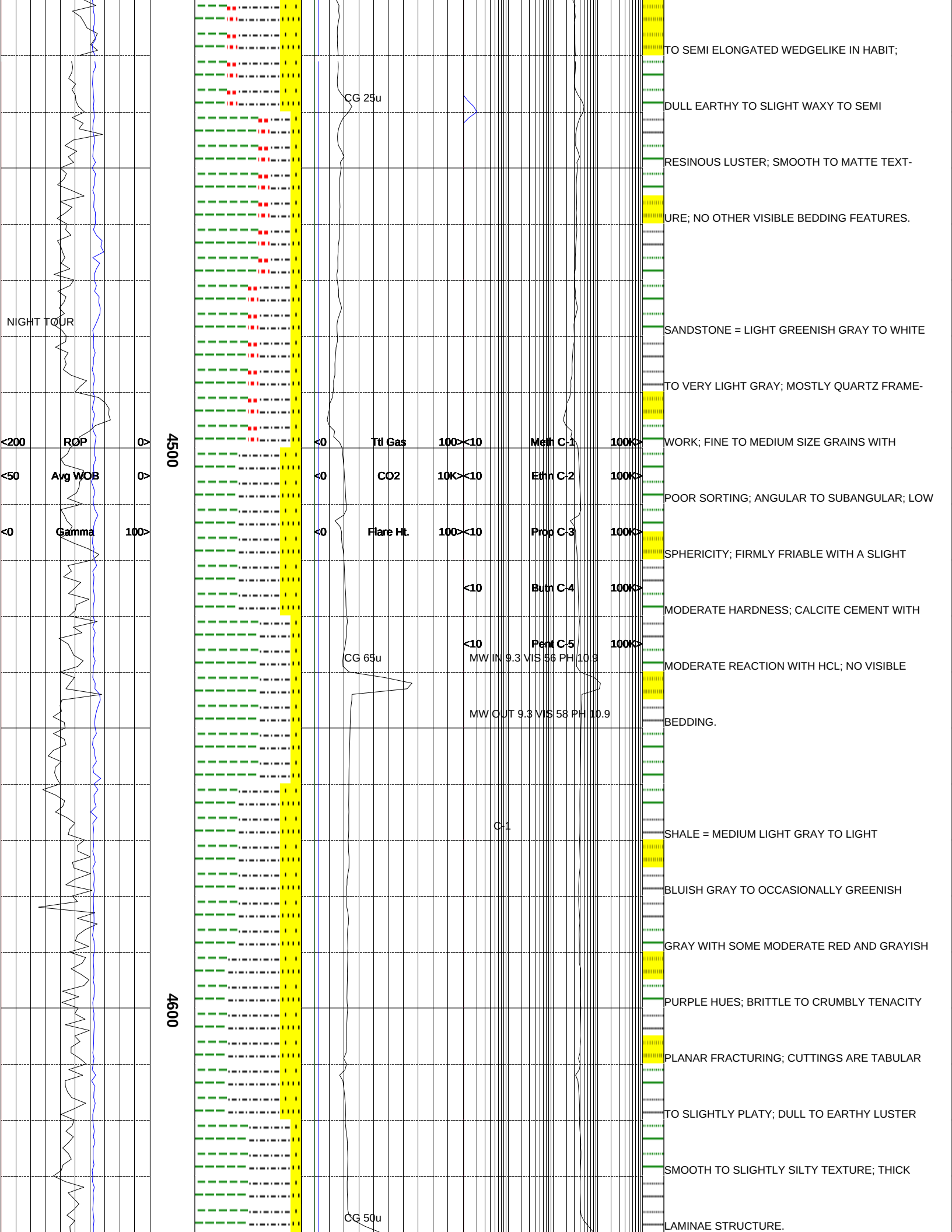


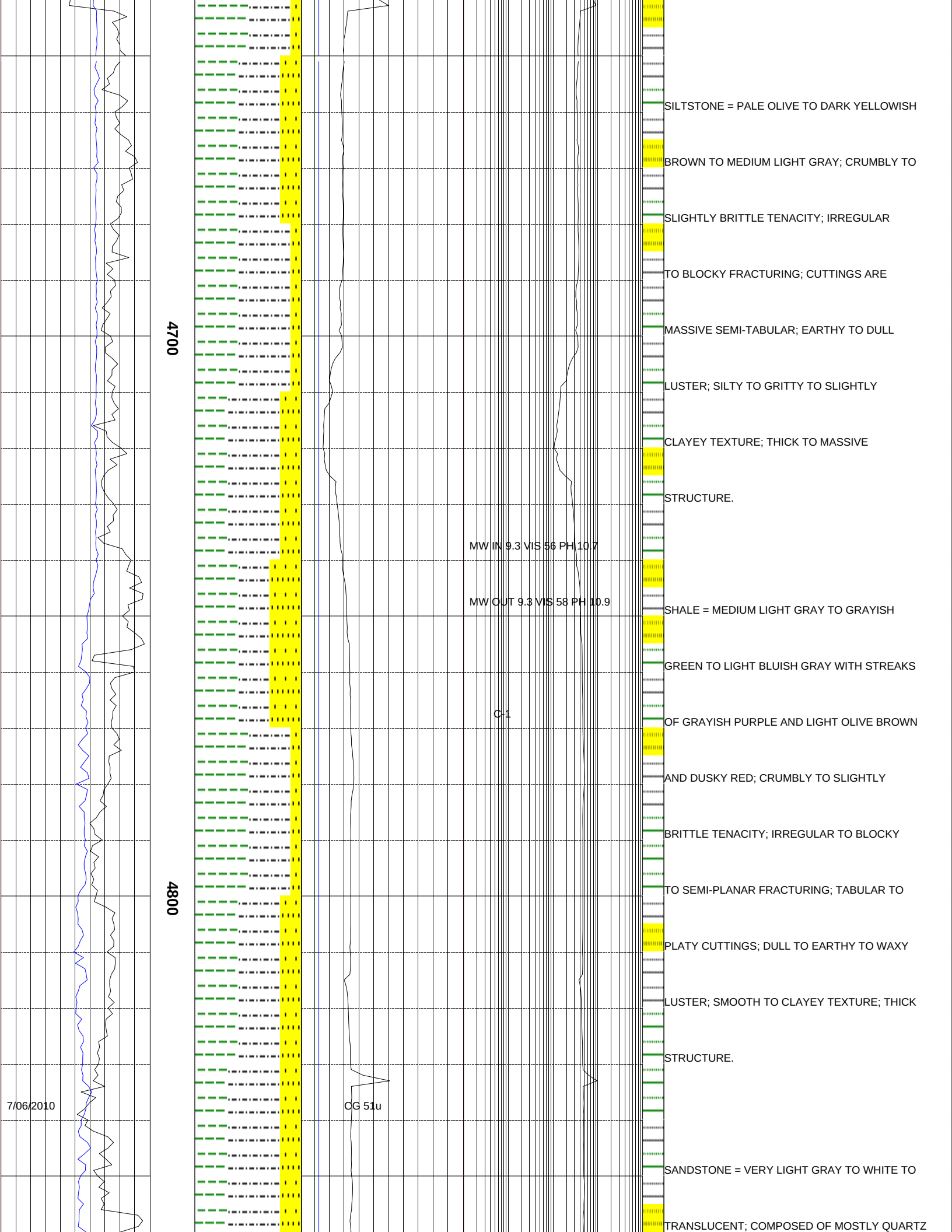
EPOCH WELL SERVICES COMMENCED LOGGING THE FRU 197-33B6 WELL ON 7/5/2010 @ 4056' MD.

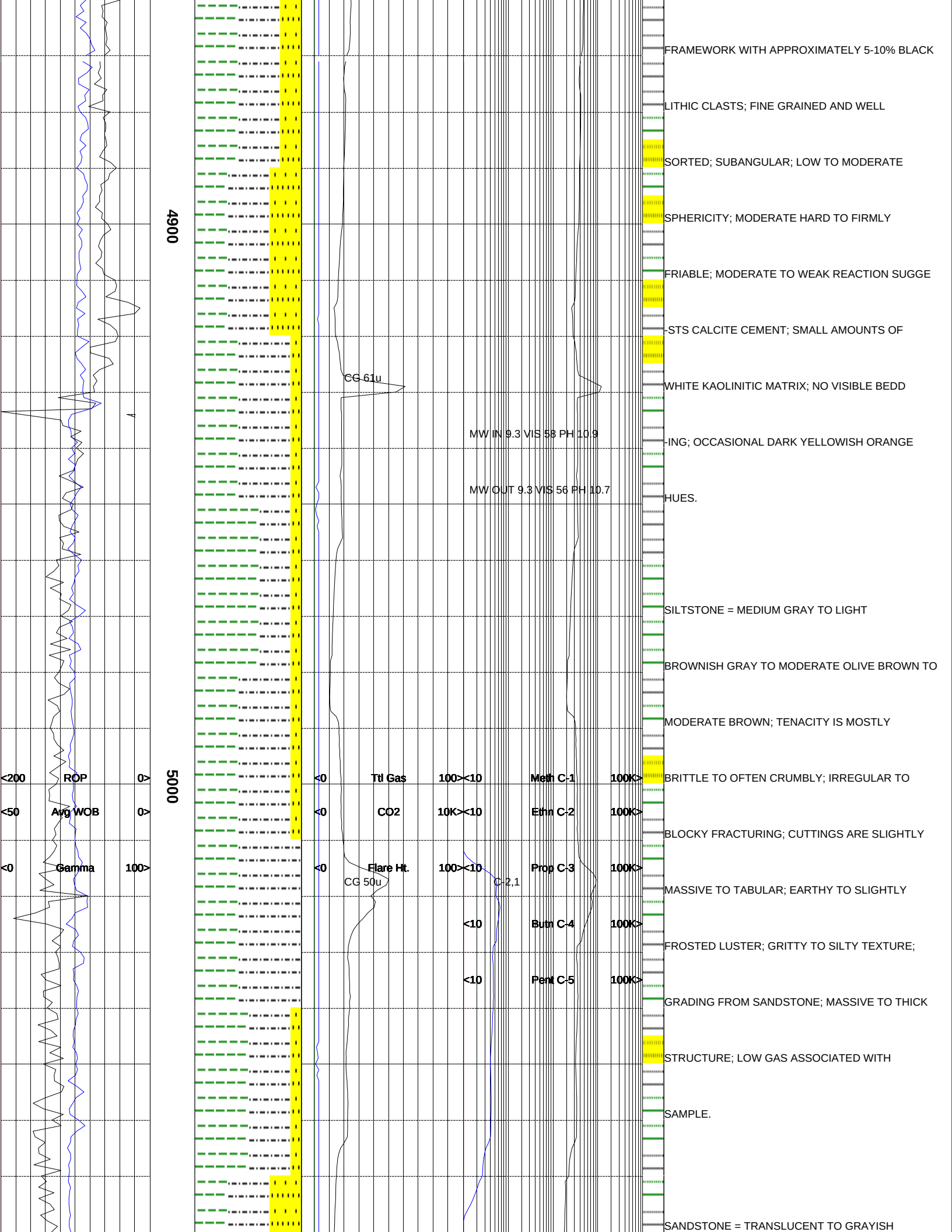
SANDSTONE = WHITE TO TRANSLUCENT TO VERY LIGHT GRAY; MOSTLY QUARTZ FRAMEWORK WITH 2-3% DARK LITHICS VISIBLE IN SAMPLE; 15% TO 20% PALESOLS VISIBLE IN SAMPLE; VERY COARSE TO MEDIUM TO FINE GRAIN; GRADES INTO A FINE GRAIN SILTSTONE; FAIR TO POORLY SORTED; SUBROUND TO SUBANGULAR GRAINS; MODERATE TO LOW SPHERICITY; NO VISIBLE SURFACE FEATURES; MODERATE HARD TO FIRM FRIABLE; CALCITIC CEMENTATION DUE TO MODERATE REACTION IN DILUTE HCl; NO VISIBLE HYDROCARBONS IN SAMPLE; GRAIN SUPPORTED.

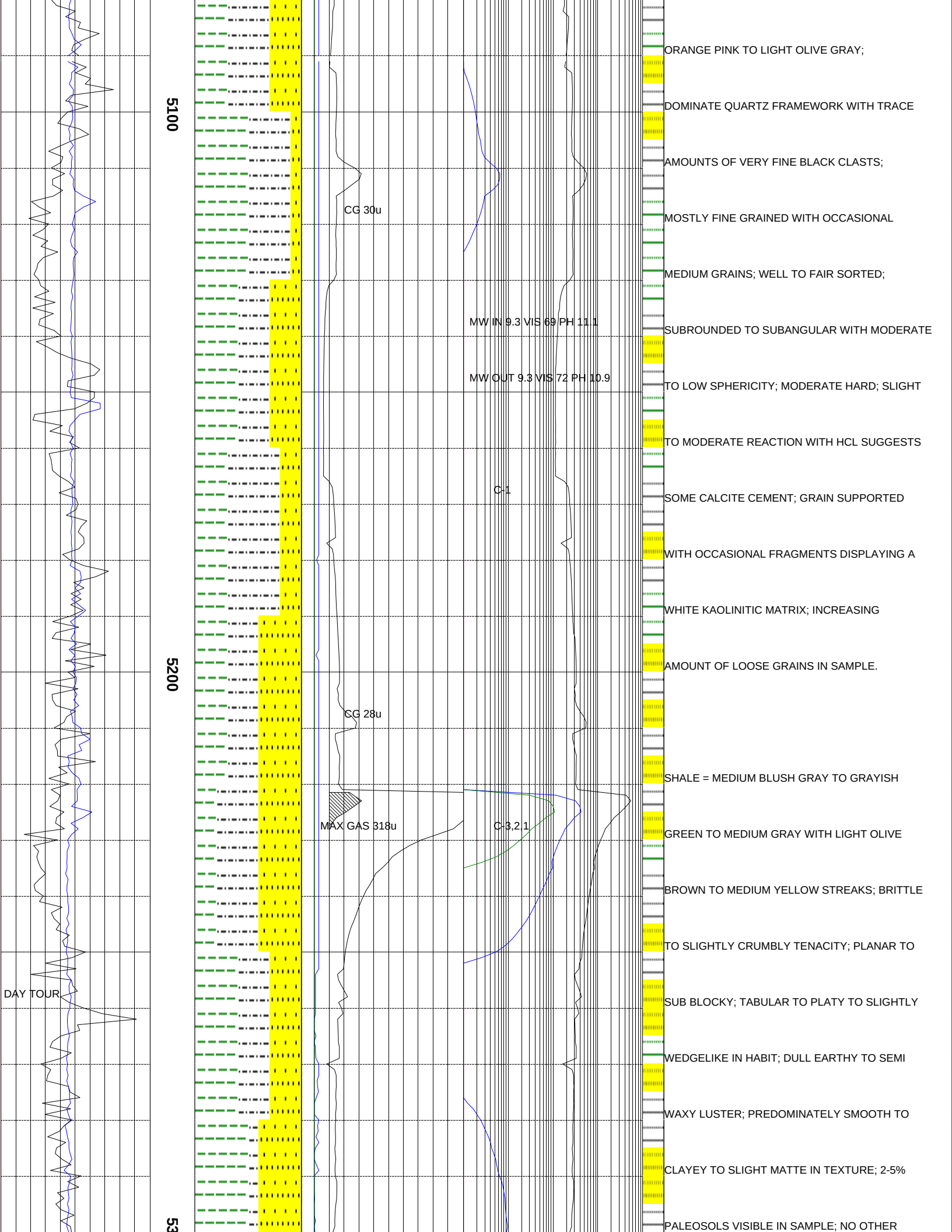
SHALE = VERY LIGHT GRAY TO SLIGHT MOTTLE YELLOWISH BROWN; BRITTLE TO CRUMBLY TENACITY; PLANAR TO SLIGHT SPLINTERY TO

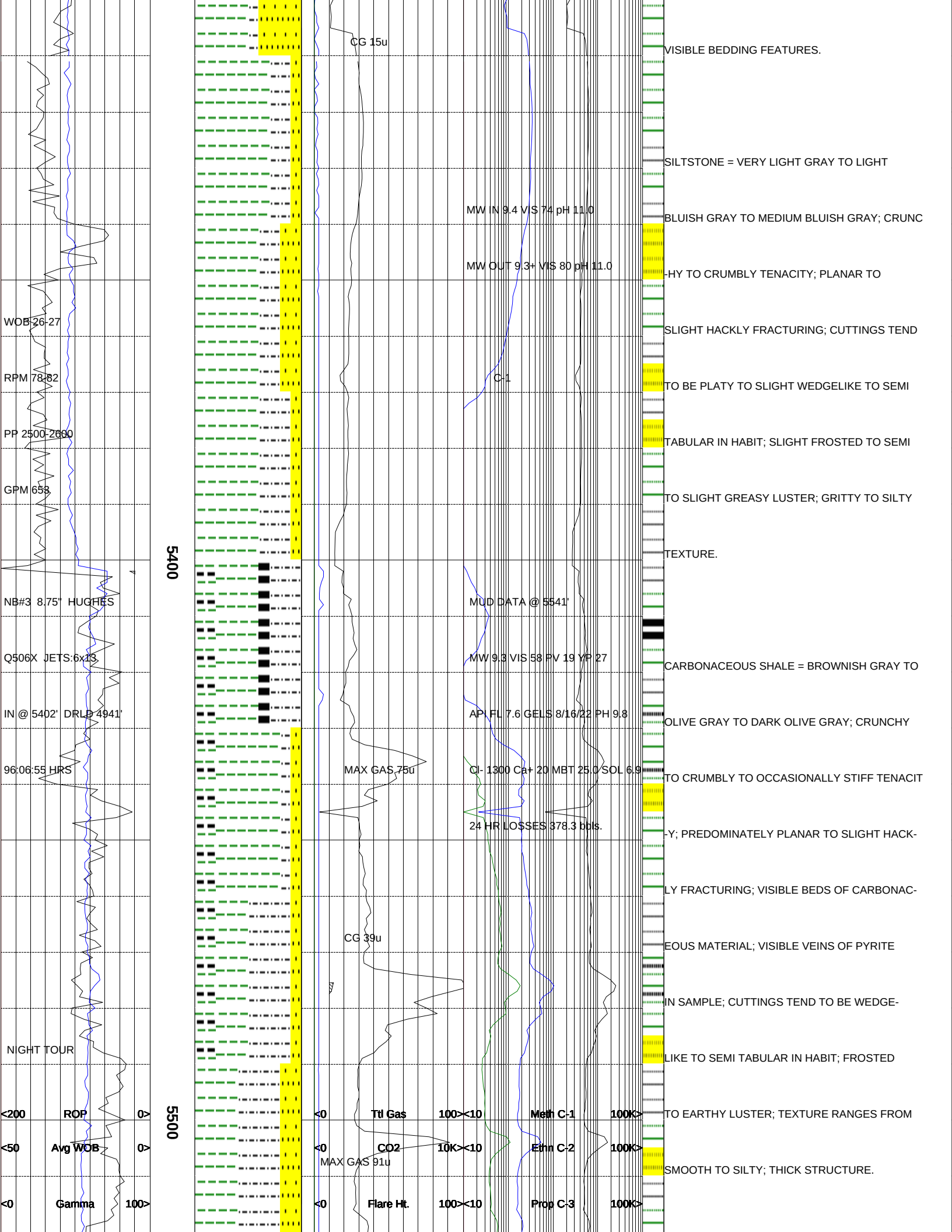

WOB 18
RPM 83
PP 2000-2100
4300
CG 24u
MW IN 9.2+ VIS 50 pH 11.2
MW OUT 9.3 VIS 47 pH 11.1
C-1
CG 17u
MUD DATA @ 4316'
MW 9.25 VIS 56 PV 17 YP 25
API FL 6.0 GELS 9/15/20 pH 10.90
Cl- 1300 Ca+ 40 MBT 22.5 SOL 6.4
24 HR LOSSES 182.7 bbls.
4400
IRREGULAR FRACTURING; CUTTINGS TEND TO
BE PLATY TO FLAKY IN HABIT; DULL EARTHY
TO SEMI GREASY LUSTER; SMOOTH TO CLAYEY
TEXTURE; NO OTHER VISIBLE BEDDING FEATUR
-ES; VISIBLE NACHOLITE CRYSTALS IN THE
SAMPLE.
SILTSTONE = MEDIUM LIGHT GRAY TO LIGHT
OLIVE GRAY; CRUNCHY TO STIFF TENACITY;
PREDOMINATELY HACKLY TO SEMI PLANAR TO
SLIGHT BLOCKY FRACTURING; CUTTINGS TEND
TO BE WEDGELIKE TO ELONGATED TABULAR TO
OCCASIONALLY BLADED IN HABIT; DULL TO
SEMI WAXY TO SLIGHT GREASY LUSTER; GRITT
-Y TO SEMI GRANULAR TO SILTY TEXTURE; NO
OTHER VISIBLE BEDDING FEATURES.
LIMESTONE = LIGHT BROWNISH GRAY TO LIGHT
OLIVE GRAY; HIGH REACTION IN DILUTE HCl;
CRUNCHY TO STIFF TENACITY; IRREGULAR TO
HACKLY TO SLIGHT SPLINTERY FRACTURING;
CUTTINGS TEND TO BE TABULAR TO NODULAR

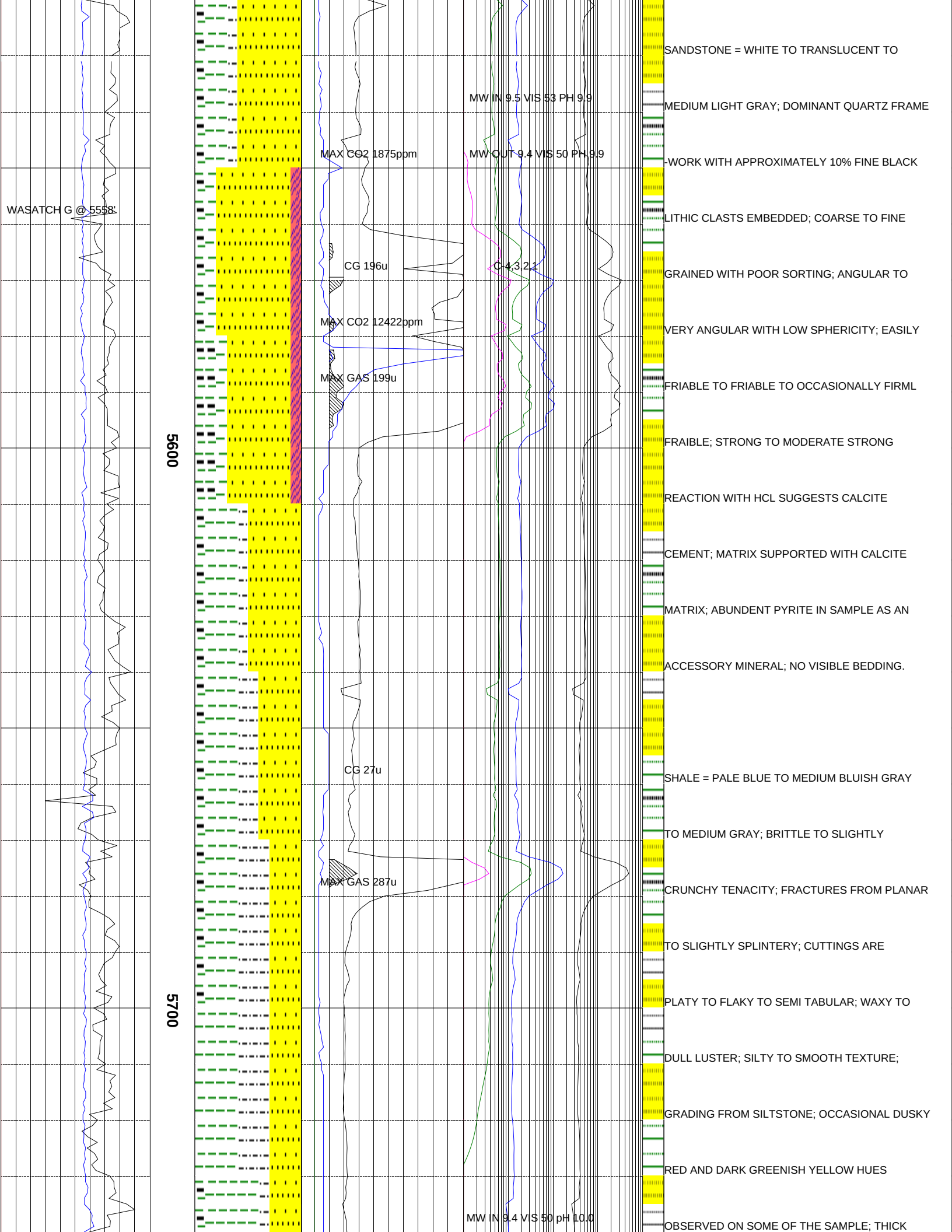

NIGHT TOUR
<200 ROP 0>
<50 Avg WOB 0>
<0 Gamma 100>
4500
4600
<0 Ttl Gas 100><10 Meth C-1 100K>
<0 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
CG 25u
CG 65u
CG 50u
MW IN 9.3 VIS 56 PH 10.9
MW OUT 9.3 VIS 58 PH 10.9
C-1
TO SEMI ELONGATED WEDGELIKE IN HABIT;
DULL EARTHY TO SLIGHT WAXY TO SEMI
RESINOUS LUSTER; SMOOTH TO MATTE TEXT-
URE; NO OTHER VISIBLE BEDDING FEATURES.
SANDSTONE = LIGHT GREENISH GRAY TO WHITE
TO VERY LIGHT GRAY; MOSTLY QUARTZ FRAME-
WORK; FINE TO MEDIUM SIZE GRAINS WITH
POOR SORTING; ANGULAR TO SUBANGULAR; LOW
SPHERICITY; FIRMLY FRIABLE WITH A SLIGHT
MODERATE HARDNESS; CALCITE CEMENT WITH
MODERATE REACTION WITH HCL; NO VISIBLE
BEDDING.
SHALE = MEDIUM LIGHT GRAY TO LIGHT
BLUISH GRAY TO OCCASIONALLY GREENISH
GRAY WITH SOME MODERATE RED AND GRAYISH
PURPLE HUES; BRITTLE TO CRUMBLY TENACITY
PLANAR FRACTURING; CUTTINGS ARE TABULAR
TO SLIGHTLY PLATY; DULL TO EARTHY LUSTER
SMOOTH TO SLIGHTLY SILTY TEXTURE; THICK
LAMINAE STRUCTURE.

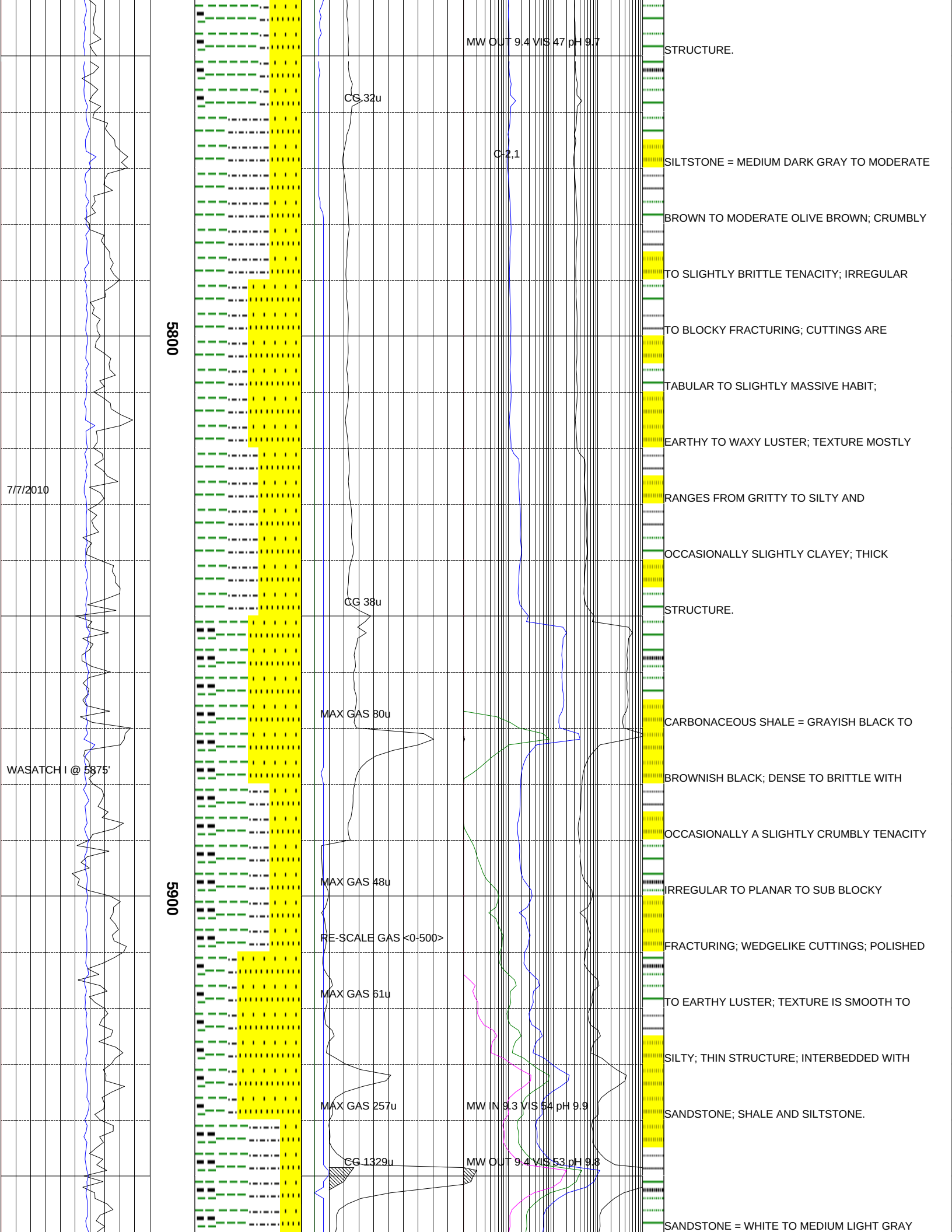

4700
4800
MW IN 9.3 VIS 56 PH 10.7
MW OUT 9.3 VIS 58 PH 10.9
C-1
7/06/2010
CG 51u
SILTSTONE = PALE OLIVE TO DARK YELLOWISH
BROWN TO MEDIUM LIGHT GRAY; CRUMBLY TO
SLIGHTLY BRITTLE TENACITY; IRREGULAR
TO BLOCKY FRACTURING; CUTTINGS ARE
MASSIVE SEMI-TABULAR; EARTHY TO DULL
LUSTER; SILTY TO GRITTY TO SLIGHTLY
CLAYEY TEXTURE; THICK TO MASSIVE
STRUCTURE.
SHALE = MEDIUM LIGHT GRAY TO GRAYISH
GREEN TO LIGHT BLUISH GRAY WITH STREAKS
OF GRAYISH PURPLE AND LIGHT OLIVE BROWN
AND DUSKY RED; CRUMBLY TO SLIGHTLY
BRITTLE TENACITY; IRREGULAR TO BLOCKY
TO SEMI-PLANAR FRACTURING; TABULAR TO
PLATY CUTTINGS; DULL TO EARTHY TO WAXY
LUSTER; SMOOTH TO CLAYEY TEXTURE; THICK
STRUCTURE.
SANDSTONE = VERY LIGHT GRAY TO WHITE TO
TRANSLUCENT; COMPOSED OF MOSTLY QUARTZ

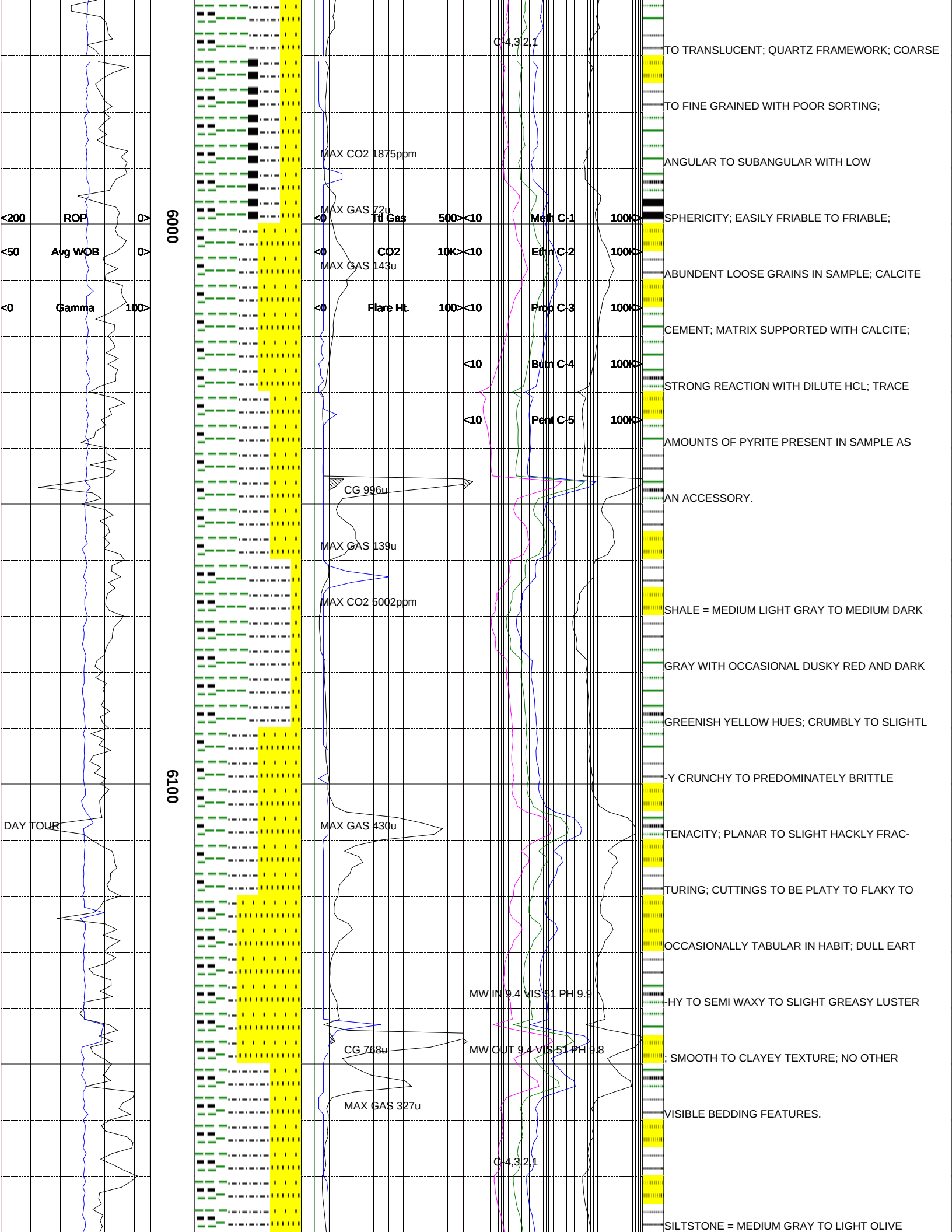

4900
5000
<200 ROP 0>
<50 Avg WOB 0>
<0 Gamma 100>
<0 Ttl Gas 100><10 Meth C-1 100K>
<0 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buta C-4 100K>
<10 Pent C-5 100K>
CG 61u
CG 50u
C-2,1
MW IN 9.3 VIS 58 PH 10.9
MW OUT 9.3 VIS 56 PH 10.7
FRAMEWORK WITH APPROXIMATELY 5-10% BLACK
LITHIC CLASTS; FINE GRAINED AND WELL
SORTED; SUBANGULAR; LOW TO MODERATE
SPHERICITY; MODERATE HARD TO FIRMLY
FRIABLE; MODERATE TO WEAK REACTION SUGGE
-STS CALCITE CEMENT; SMALL AMOUNTS OF
WHITE KAOLINITIC MATRIX; NO VISIBLE BEDD
-ING; OCCASIONAL DARK YELLOWISH ORANGE
HUES.
SILTSTONE = MEDIUM GRAY TO LIGHT
BROWNISH GRAY TO MODERATE OLIVE BROWN TO
MODERATE BROWN; TENACITY IS MOSTLY
BRITTLE TO OFTEN CRUMBLY; IRREGULAR TO
BLOCKY FRACTURING; CUTTINGS ARE SLIGHTLY
MASSIVE TO TABULAR; EARTHY TO SLIGHTLY
FROSTED LUSTER; GRITTY TO SILTY TEXTURE;
GRADING FROM SANDSTONE; MASSIVE TO THICK
STRUCTURE; LOW GAS ASSOCIATED WITH
SAMPLE.
SANDSTONE = TRANSLUCENT TO GRAYISH

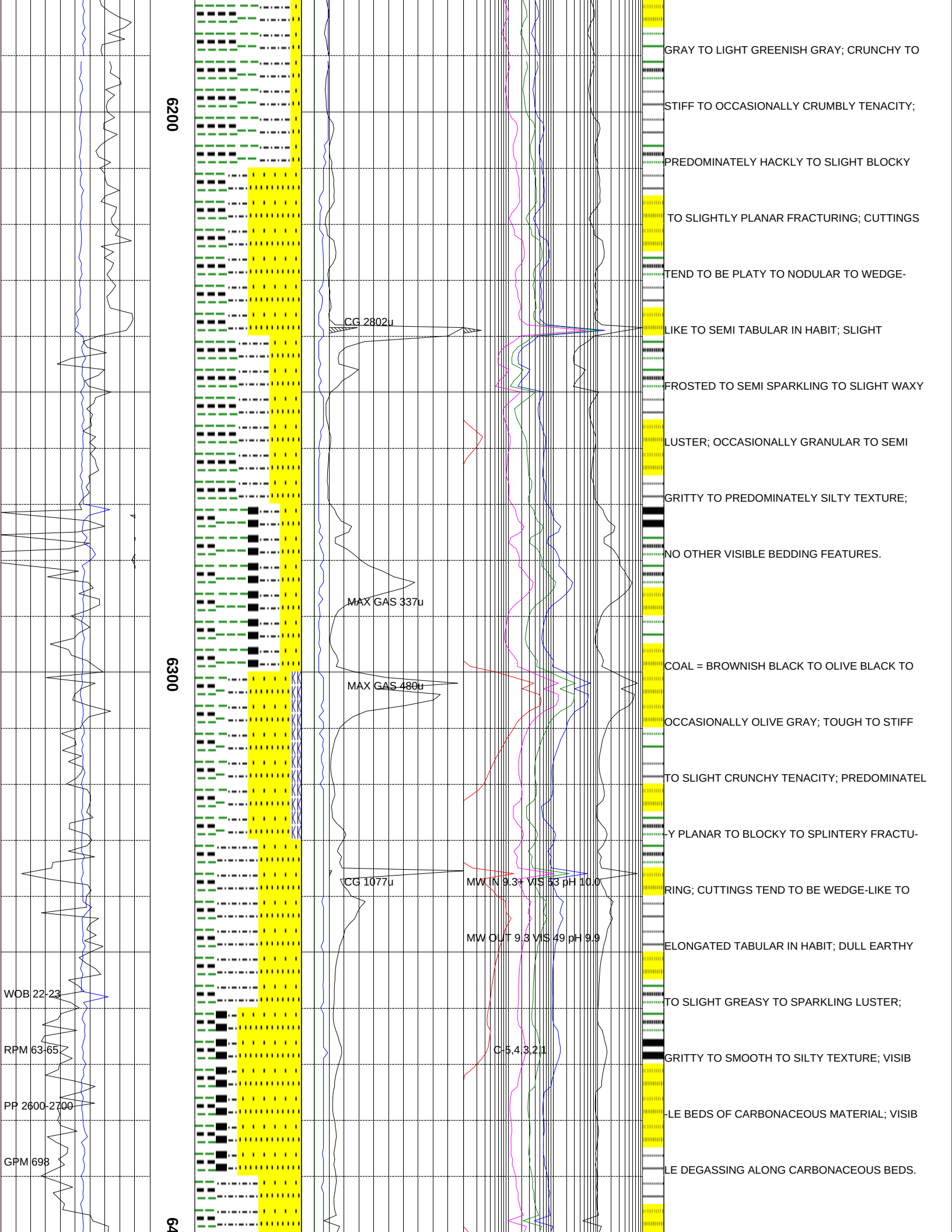

5100
5200
DAY TOUR
CG 30u
MW IN 9.3 VIS 69 PH 11.1
MW OUT 9.3 VIS 72 PH 10.9
C-1
CG 28u
MAX GAS 318u
C-3,2,1
ORANGE PINK TO LIGHT OLIVE GRAY;
DOMINATE QUARTZ FRAMEWORK WITH TRACE
AMOUNTS OF VERY FINE BLACK CLASTS;
MOSTLY FINE GRAINED WITH OCCASIONAL
MEDIUM GRAINS; WELL TO FAIR SORTED;
SUBROUNDED TO SUBANGULAR WITH MODERATE
TO LOW SPHERICITY; MODERATE HARD; SLIGHT
TO MODERATE REACTION WITH HCL SUGGESTS
SOME CALCITE CEMENT; GRAIN SUPPORTED
WITH OCCASIONAL FRAGMENTS DISPLAYING A
WHITE KAOLINITIC MATRIX; INCREASING
AMOUNT OF LOOSE GRAINS IN SAMPLE.
SHALE = MEDIUM BLUSH GRAY TO GRAYISH
GREEN TO MEDIUM GRAY WITH LIGHT OLIVE
BROWN TO MEDIUM YELLOW STREAKS; BRITTLE
TO SLIGHTLY CRUMBLY TENACITY; PLANAR TO
SUB BLOCKY; TABULAR TO PLATY TO SLIGHTLY
WEDGELIKE IN HABIT; DULL EARTHY TO SEMI
WAXY LUSTER; PREDOMINATELY SMOOTH TO
CLAYEY TO SLIGHT MATTE IN TEXTURE; 2-5%
PALEOSOLS VISIBLE IN SAMPLE; NO OTHER

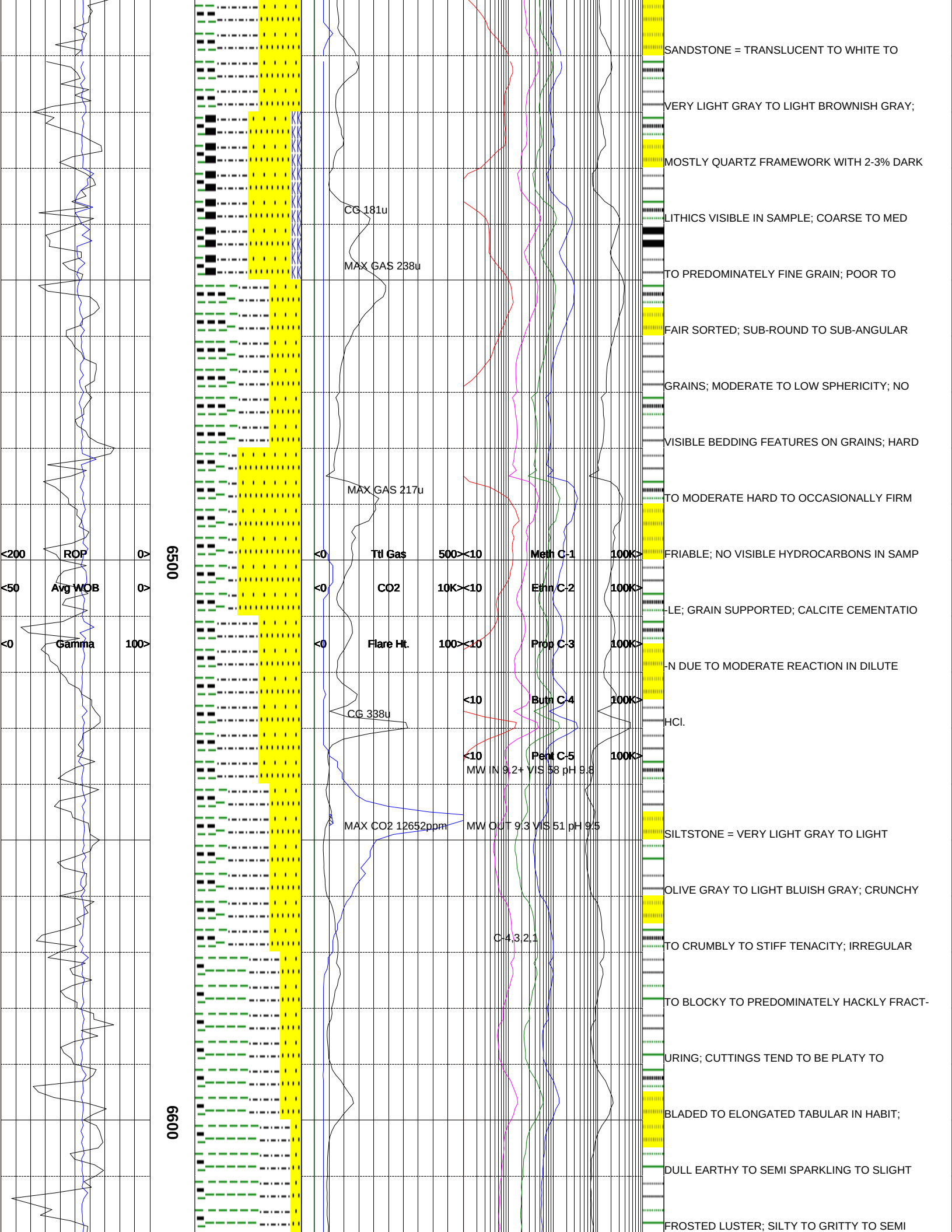

CG 15u
MW IN 9.4 VIS 74 pH 11.0
MW OUT 9.3+ VIS 80 pH 11.0
WOB 26-27
RPM 78-82
C-1
PP 2500-2600
GPM 653
5400
NB#3 8.75" HUGHES
MUD DATA @ 5541'
Q506X JETS:6x13
MW 9.3 VIS 58 PV 19 YP 27
IN @ 5402' DRLD 4941'
API FL 7.6 GELS 8/16/22 PH 9.8
96:06:55 HRS
MAX GAS 75u
Cl- 1300 Ca+ 20 MBT 25.0 SOL 6.9
24 HR LOSSES 378.3 bbls.
CG 39u
NIGHT TOUR
5500
<200 ROP 0>
<0 Ttl Gas 100><10 Meth C-1 100K>
<50 Avg WOB 0>
<0 CO2 10K><10 Ethn C-2 100K>
MAX GAS 91u
<0 Gamma 100>
<0 Flare Ht. 100><10 Prop C-3 100K>
VISIBLE BEDDING FEATURES.
SILTSTONE = VERY LIGHT GRAY TO LIGHT
BLUISH GRAY TO MEDIUM BLUISH GRAY; CRUNC
-HY TO CRUMBLY TENACITY; PLANAR TO
SLIGHT HACKLY FRACTURING; CUTTINGS TEND
TO BE PLATY TO SLIGHT WEDGELIKE TO SEMI
TABULAR IN HABIT; SLIGHT FROSTED TO SEMI
TO SLIGHT GREASY LUSTER; GRITTY TO SILTY
TEXTURE.
CARBONACEOUS SHALE = BROWNISH GRAY TO
OLIVE GRAY TO DARK OLIVE GRAY; CRUNCHY
TO CRUMBLY TO OCCASIONALLY STIFF TENACIT
-Y; PREDOMINATELY PLANAR TO SLIGHT HACK-
LY FRACTURING; VISIBLE BEDS OF CARBONAC-
EOUS MATERIAL; VISIBLE VEINS OF PYRITE
IN SAMPLE; CUTTINGS TEND TO BE WEDGE-
LIKE TO SEMI TABULAR IN HABIT; FROSTED
TO EARTHY LUSTER; TEXTURE RANGES FROM
SMOOTH TO SILTY; THICK STRUCTURE.

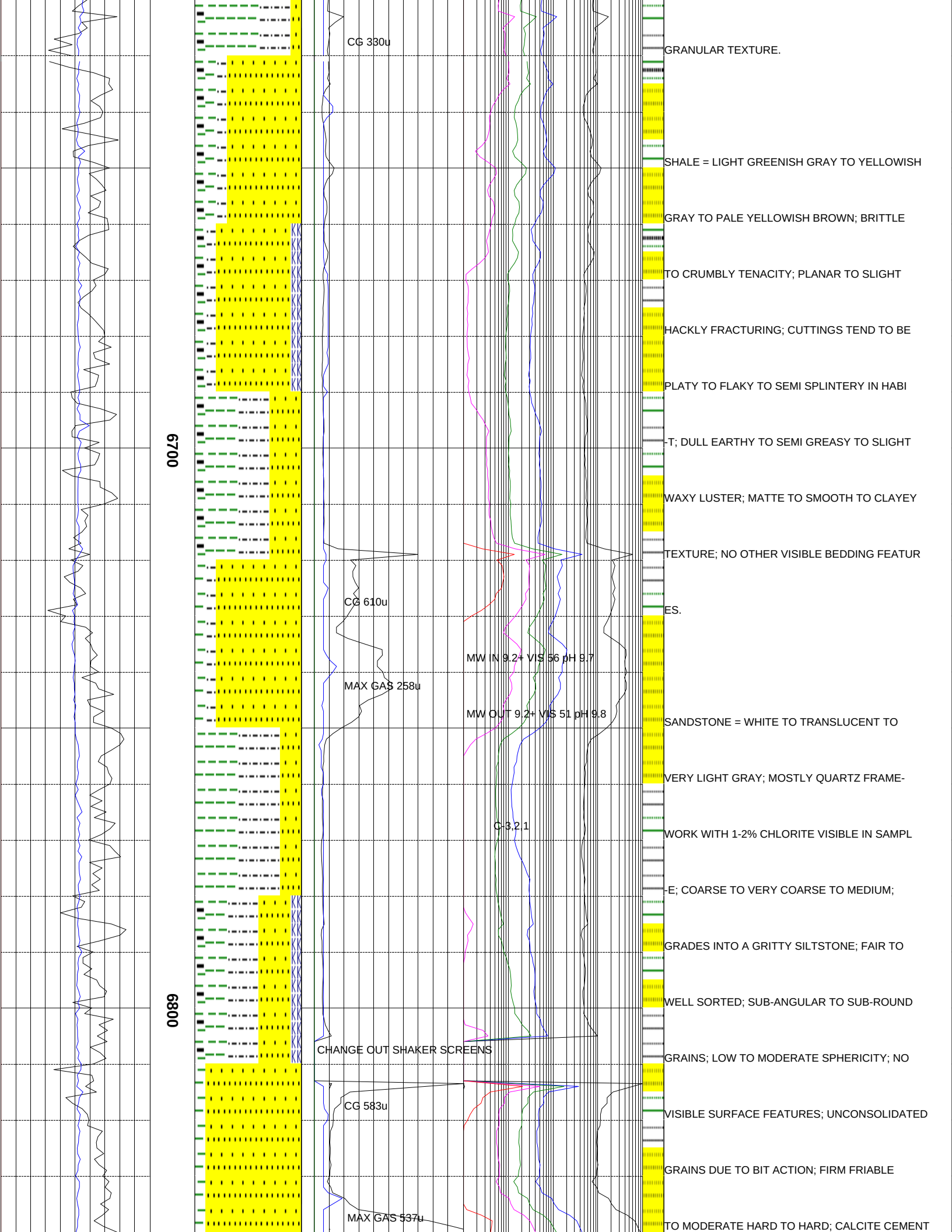

MW IN 9.5 VIS 53 PH 9.9
MAX CO2 1875ppm
MW OUT 9.4 VIS 50 PH 9.9
WASATCH G @ 5558'
CG 196u
C-4 3 2 1
MAX CO2 12422ppm
MAX GAS 199u
5600
CG 27u
MAX GAS 287u
5700
MW IN 9.4 VIS 50 pH 10.0
SANDSTONE = WHITE TO TRANSLUCENT TO
MEDIUM LIGHT GRAY; DOMINANT QUARTZ FRAME
-WORK WITH APPROXIMATELY 10% FINE BLACK
LITHIC CLASTS EMBEDDED; COARSE TO FINE
GRAINED WITH POOR SORTING; ANGULAR TO
VERY ANGULAR WITH LOW SPHERICITY; EASILY
FRIABLE TO FRIABLE TO OCCASIONALLY FIRML
FRAIBLE; STRONG TO MODERATE STRONG
REACTION WITH HCL SUGGESTS CALCITE
CEMENT; MATRIX SUPPORTED WITH CALCITE
MATRIX; ABUNDENT PYRITE IN SAMPLE AS AN
ACCESSORY MINERAL; NO VISIBLE BEDDING.
SHALE = PALE BLUE TO MEDIUM BLUISH GRAY
TO MEDIUM GRAY; BRITTLE TO SLIGHTLY
CRUNCHY TENACITY; FRACTURES FROM PLANAR
TO SLIGHTLY SPLINTERY; CUTTINGS ARE
PLATY TO FLAKY TO SEMI TABULAR; WAXY TO
DULL LUSTER; SILTY TO SMOOTH TEXTURE;
GRADING FROM SILTSTONE; OCCASIONAL DUSKY
RED AND DARK GREENISH YELLOW HUES
OBSERVED ON SOME OF THE SAMPLE; THICK

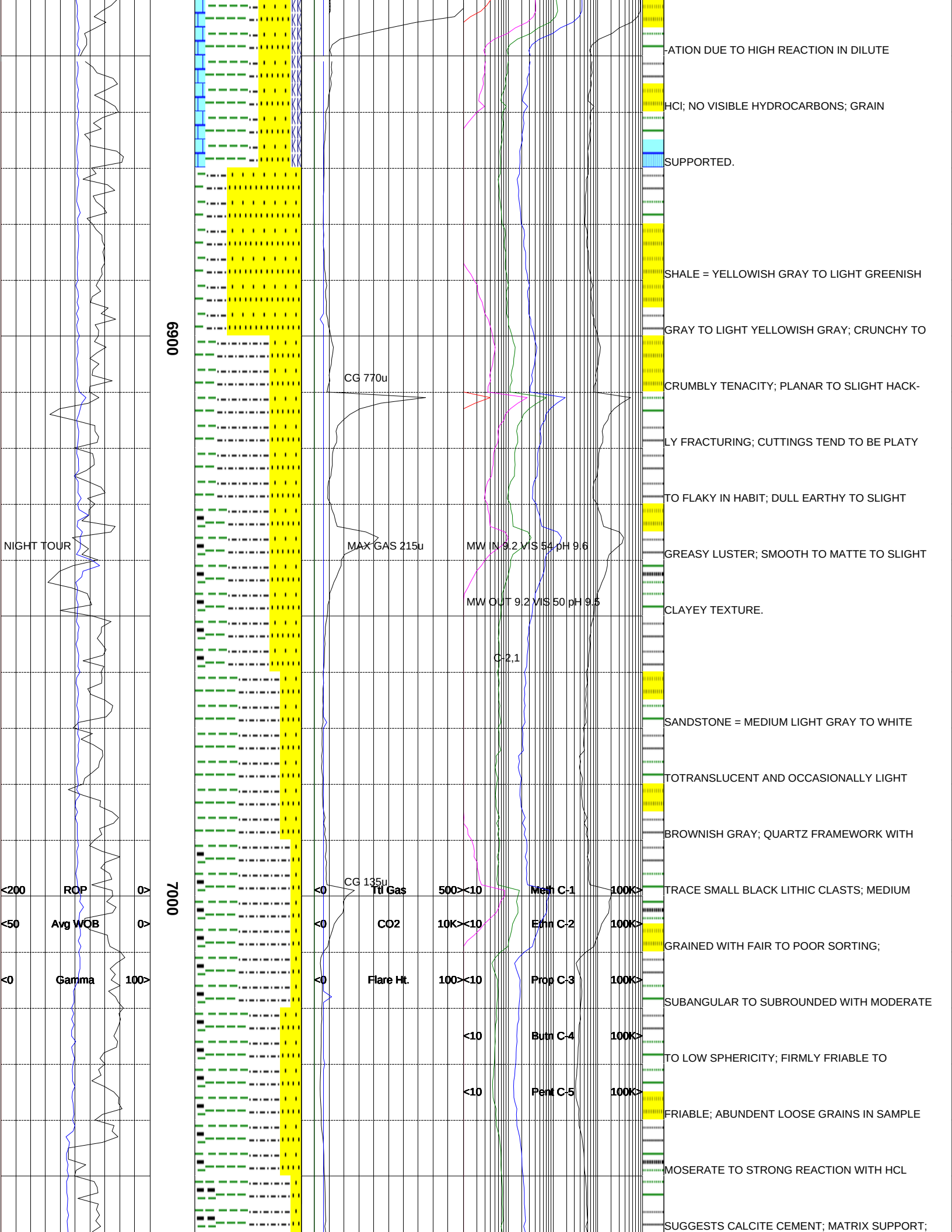

MW OUT 9.4 VIS 47 pH 9.7
STRUCTURE.
CG 32u
C-2,1
SILTSTONE = MEDIUM DARK GRAY TO MODERATE
BROWN TO MODERATE OLIVE BROWN; CRUMBLY
TO SLIGHTLY BRITTLE TENACITY; IRREGULAR
5800
TO BLOCKY FRACTURING; CUTTINGS ARE
TABULAR TO SLIGHTLY MASSIVE HABIT;
EARTHY TO WAXY LUSTER; TEXTURE MOSTLY
7/7/2010
RANGES FROM GRITTY TO SILTY AND
OCCASIONALLY SLIGHTLY CLAYEY; THICK
CG 38u
STRUCTURE.
MAX GAS 80u
CARBONACEOUS SHALE = GRAYISH BLACK TO
WASATCH I @ 5875'
BROWNISH BLACK; DENSE TO BRITTLE WITH
OCCASIONALLY A SLIGHTLY CRUMBLY TENACITY
MAX GAS 48u
5900
IRREGULAR TO PLANAR TO SUB BLOCKY
RE-SCALE GAS <0-500>
FRACTURING; WEDGELIKE CUTTINGS; POLISHED
MAX GAS 61u
TO EARTHY LUSTER; TEXTURE IS SMOOTH TO
SILTY; THIN STRUCTURE; INTERBEDDED WITH
MAX GAS 257u
MW IN 9.3 VIS 54 pH 9.9
SANDSTONE; SHALE AND SILTSTONE.
CG 1329u
MW OUT 9.4 VIS 53 pH 9.8
SANDSTONE = WHITE TO MEDIUM LIGHT GRAY


C-4,3,2,1
TO TRANSLUCENT; QUARTZ FRAMEWORK; COARSE
TO FINE GRAINED WITH POOR SORTING;
MAX CO2 1875ppm
ANGULAR TO SUBANGULAR WITH LOW
<200 ROP 0>
MAX GAS 72u
<0 Ttl Gas 500><10 Meth C-1 100K>
SPHERICITY; EASILY FRIABLE TO FRIABLE;
6000
<50 Avg WOB 0>
<0 CO2 10K><10 Eth C-2 100K>
MAX GAS 143u
ABUNDENT LOOSE GRAINS IN SAMPLE; CALCITE
<0 Gamma 100>
<0 Flare Ht. 100><10 Prop C-3 100K>
CEMENT; MATRIX SUPPORTED WITH CALCITE;
<10 Buth C-4 100K>
STRONG REACTION WITH DILUTE HCL; TRACE
<10 Pent C-5 100K>
AMOUNTS OF PYRITE PRESENT IN SAMPLE AS
CG 996u
AN ACCESSORY.
MAX GAS 139u
MAX CO2 5002ppm
SHALE = MEDIUM LIGHT GRAY TO MEDIUM DARK
GRAY WITH OCCASIONAL DUSKY RED AND DARK
GREENISH YELLOW HUES; CRUMBLY TO SLIGHTL
6100
-Y CRUNCHY TO PREDOMINATELY BRITTLE
DAY TOUR
MAX GAS 430u
TENACITY; PLANAR TO SLIGHT HACKLY FRAC-
TURING; CUTTINGS TO BE PLATY TO FLAKY TO
OCCASIONALLY TABULAR IN HABIT; DULL EART
MW IN 9.4 VIS 51 PH 9.9
-HY TO SEMI WAXY TO SLIGHT GREASY LUSTER
CG 768u
MW OUT 9.4 VIS 51 PH 9.8
; SMOOTH TO CLAYEY TEXTURE; NO OTHER
MAX GAS 327u
VISIBLE BEDDING FEATURES.
C-4,3,2,1
SILTSTONE = MEDIUM GRAY TO LIGHT OLIVE


6200
6300
CG 2802u
MAX GAS 337u
MAX GAS 480u
CG 1077u
MW IN 9.3+ VIS 53 pH 10.0
MW OUT 9.3 VIS 49 pH 9.9
C-5,4,3,2,1
WOB 22-23
RPM 63-65
PP 2600-2700
GPM 698
GRAY TO LIGHT GREENISH GRAY; CRUNCHY TO
STIFF TO OCCASIONALLY CRUMBLY TENACITY;
PREDOMINATELY HACKLY TO SLIGHT BLOCKY
TO SLIGHTLY PLANAR FRACTURING; CUTTINGS
TEND TO BE PLATY TO NODULAR TO WEDGE-
LIKE TO SEMI TABULAR IN HABIT; SLIGHT
FROSTED TO SEMI SPARKLING TO SLIGHT WAXY
LUSTER; OCCASIONALLY GRANULAR TO SEMI
GRITTY TO PREDOMINATELY SILTY TEXTURE;
NO OTHER VISIBLE BEDDING FEATURES.
COAL = BROWNISH BLACK TO OLIVE BLACK TO
OCCASIONALLY OLIVE GRAY; TOUGH TO STIFF
TO SLIGHT CRUNCHY TENACITY; PREDOMINATEL
-Y PLANAR TO BLOCKY TO SPLINTERY FRACTU-
-RING; CUTTINGS TEND TO BE WEDGE-LIKE TO
ELONGATED TABULAR IN HABIT; DULL EARTHY
TO SLIGHT GREASY TO SPARKLING LUSTER;
GRITTY TO SMOOTH TO SILTY TEXTURE; VISIB
-LE BEDS OF CARBONACEOUS MATERIAL; VISIB
LE DEGASSING ALONG CARBONACEOUS BEDS.


<200 ROP 0>
<50 Avg WOB 0>
<0 Gamma 100>
6500
6600
<0 Ttl Gas 500><10 Meth C-1 100K>
<0 CO2 10K><10 Etnn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Bum C-4 100K>
<10 Pent C-5 100K>
CG 181u
MAX GAS 238u
MAX GAS 217u
CG 338u
MAX CO2 12652ppm
MW IN 9.2+ VIS 58 pH 9.8
MW OUT 9.3 VIS 51 pH 9.5
C-4,3,2,1
SANDSTONE = TRANSLUCENT TO WHITE TO
VERY LIGHT GRAY TO LIGHT BROWNISH GRAY;
MOSTLY QUARTZ FRAMEWORK WITH 2-3% DARK
LITHICS VISIBLE IN SAMPLE; COARSE TO MED
TO PREDOMINATELY FINE GRAIN; POOR TO
FAIR SORTED; SUB-ROUND TO SUB-ANGULAR
GRAINS; MODERATE TO LOW SPHERICITY; NO
VISIBLE BEDDING FEATURES ON GRAINS; HARD
TO MODERATE HARD TO OCCASIONALLY FIRM
FRIABLE; NO VISIBLE HYDROCARBONS IN SAMP
-LE; GRAIN SUPPORTED; CALCITE CEMENTATIO
-N DUE TO MODERATE REACTION IN DILUTE
HCl.
SILTSTONE = VERY LIGHT GRAY TO LIGHT
OLIVE GRAY TO LIGHT BLUISH GRAY; CRUNCHY
TO CRUMBLY TO STIFF TENACITY; IRREGULAR
TO BLOCKY TO PREDOMINATELY HACKLY FRACT-
URING; CUTTINGS TEND TO BE PLATY TO
BLADED TO ELONGATED TABULAR IN HABIT;
DULL EARTHY TO SEMI SPARKLING TO SLIGHT
FROSTED LUSTER; SILTY TO GRITTY TO SEMI


6700
6800
CG 330u
CG 610u
MW IN 9.2+ VIS 56 pH 9.7
MAX GAS 258u
MW OUT 9.2+ VIS 51 pH 9.8
C-3,2,1
CHANGE OUT SHAKER SCREENS
CG 583u
MAX GAS 537u
GRANULAR TEXTURE.
SHALE = LIGHT GREENISH GRAY TO YELLOWISH
GRAY TO PALE YELLOWISH BROWN; BRITTLE
TO CRUMBLY TENACITY; PLANAR TO SLIGHT
HACKLY FRACTURING; CUTTINGS TEND TO BE
PLATY TO FLAKY TO SEMI SPLINTERY IN HABI
-T; DULL EARTHY TO SEMI GREASY TO SLIGHT
WAXY LUSTER; MATTE TO SMOOTH TO CLAYEY
TEXTURE; NO OTHER VISIBLE BEDDING FEATUR
ES.
SANDSTONE = WHITE TO TRANSLUCENT TO
VERY LIGHT GRAY; MOSTLY QUARTZ FRAME-
WORK WITH 1-2% CHLORITE VISIBLE IN SAMPL
-E; COARSE TO VERY COARSE TO MEDIUM;
GRADES INTO A GRITTY SILTSTONE; FAIR TO
WELL SORTED; SUB-ANGULAR TO SUB-ROUND
GRAINS; LOW TO MODERATE SPHERICITY; NO
VISIBLE SURFACE FEATURES; UNCONSOLIDATED
GRAINS DUE TO BIT ACTION; FIRM FRIABLE
TO MODERATE HARD TO HARD; CALCITE CEMENT



-ATION DUE TO HIGH REACTION IN DILUTE

HCl; NO VISIBLE HYDROCARBONS; GRAIN

SUPPORTED.

SHALE = YELLOWISH GRAY TO LIGHT GREENISH

GRAY TO LIGHT YELLOWISH GRAY; CRUNCHY TO

CRUMBLY TENACITY; PLANAR TO SLIGHT HACK-

LY FRACTURING; CUTTINGS TEND TO BE PLATY

TO FLAKY IN HABIT; DULL EARTHY TO SLIGHT

GREASY LUSTER; SMOOTH TO MATTE TO SLIGHT

CLAYEY TEXTURE.

SANDSTONE = MEDIUM LIGHT GRAY TO WHITE

TOTRANSLUCENT AND OCCASIONALLY LIGHT

BROWNISH GRAY; QUARTZ FRAMEWORK WITH

TRACE SMALL BLACK LITHIC CLASTS; MEDIUM

GRAINED WITH FAIR TO POOR SORTING;

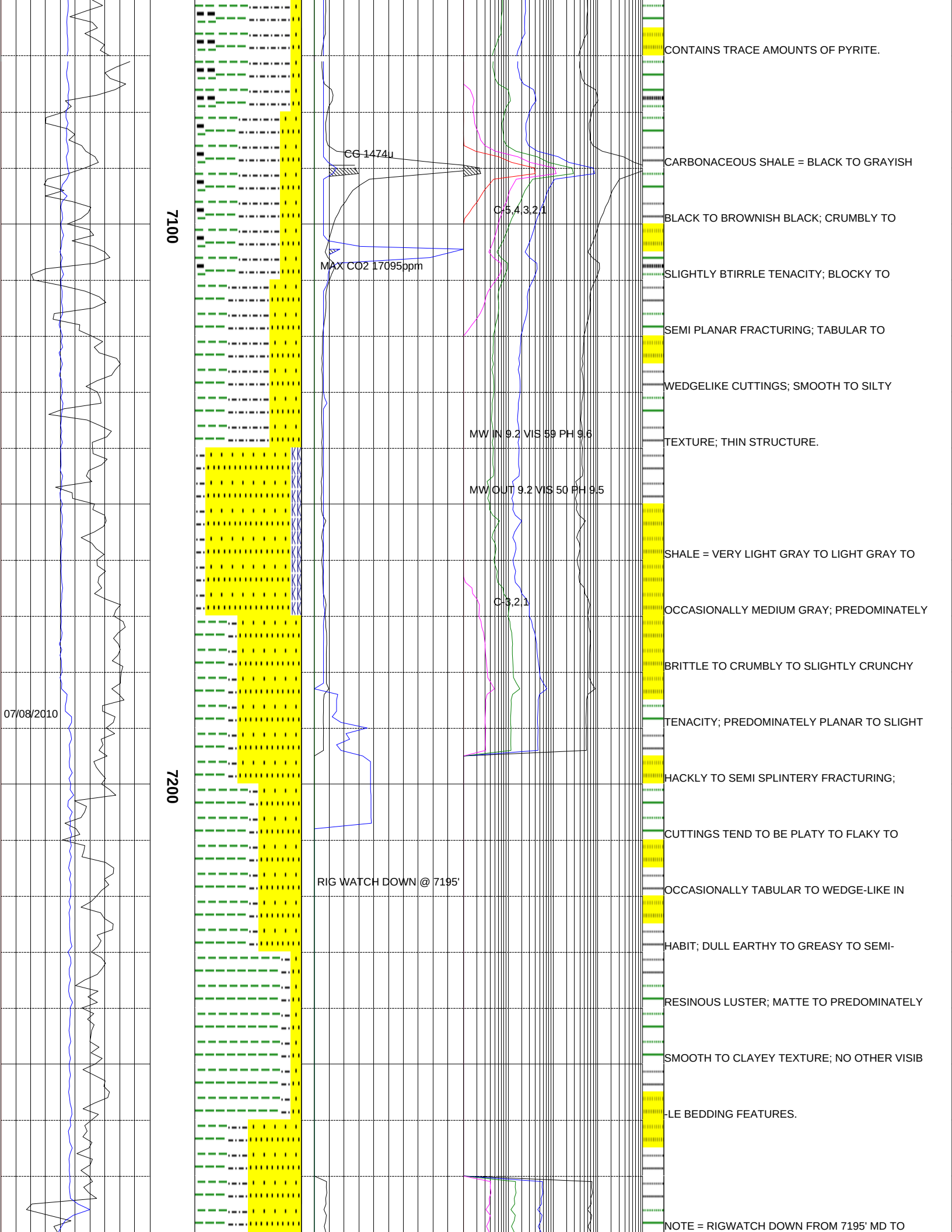
SUBANGULAR TO SUBROUNDED WITH MODERATE

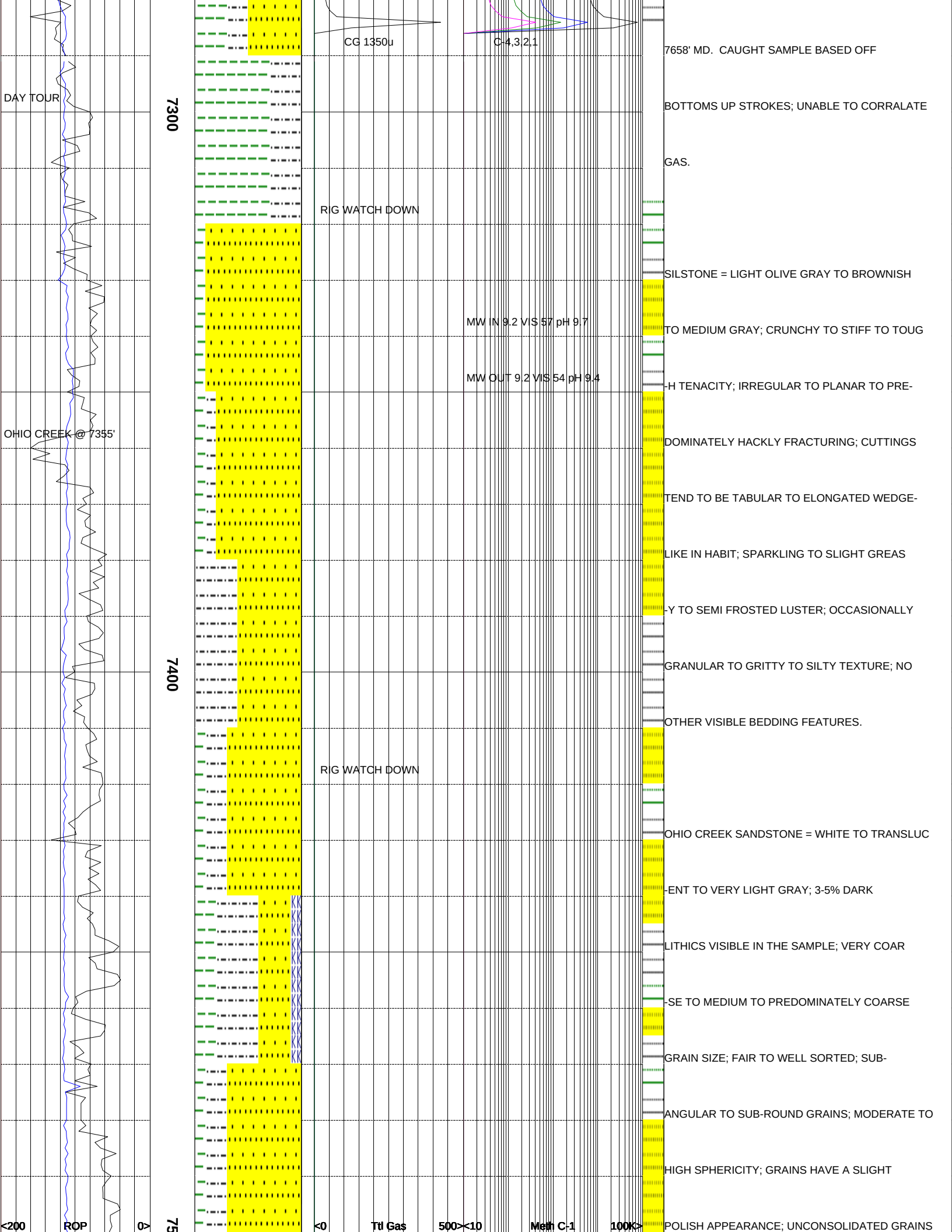
TO LOW SPHERICITY; FIRMLY FRIABLE TO

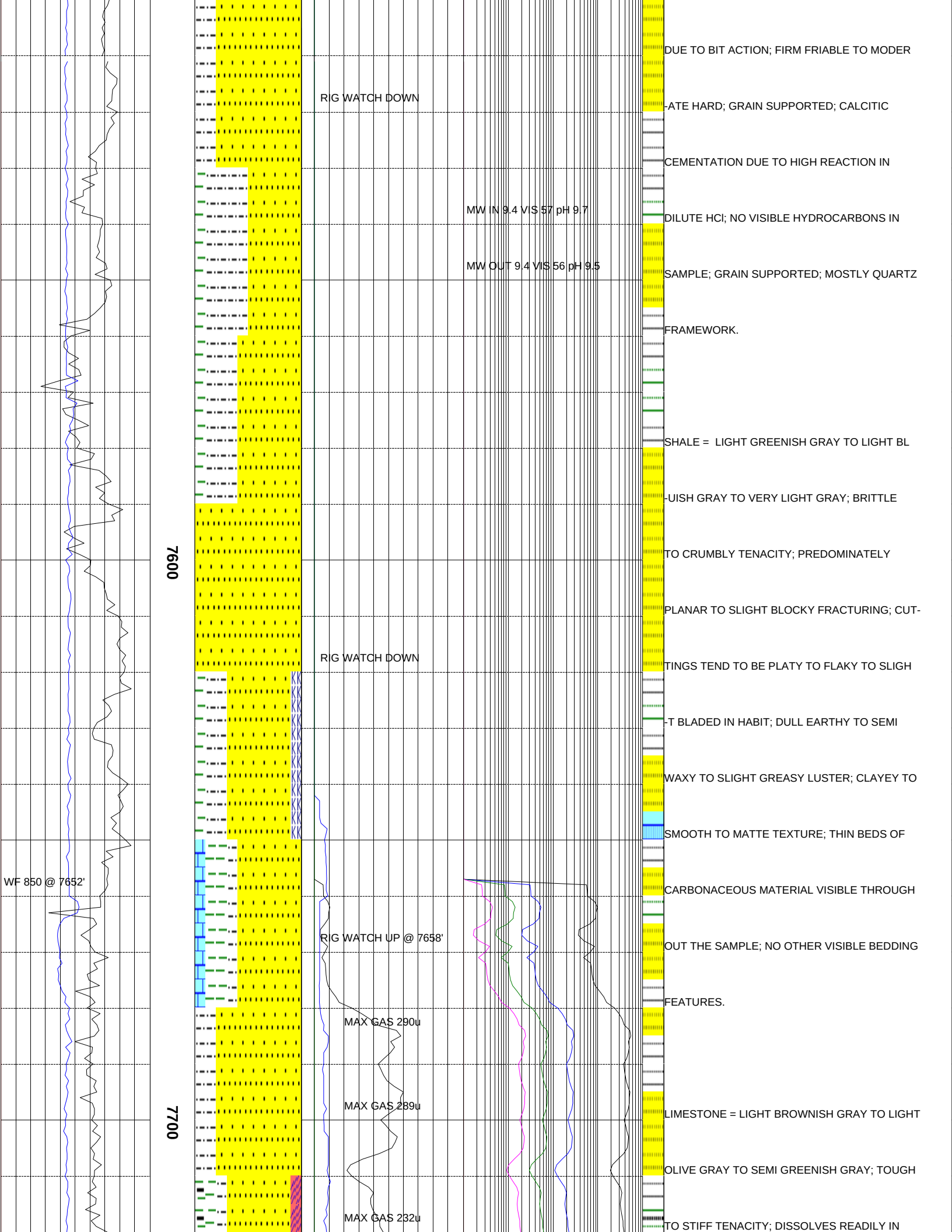
FRIABLE; ABUNDENT LOOSE GRAINS IN SAMPLE

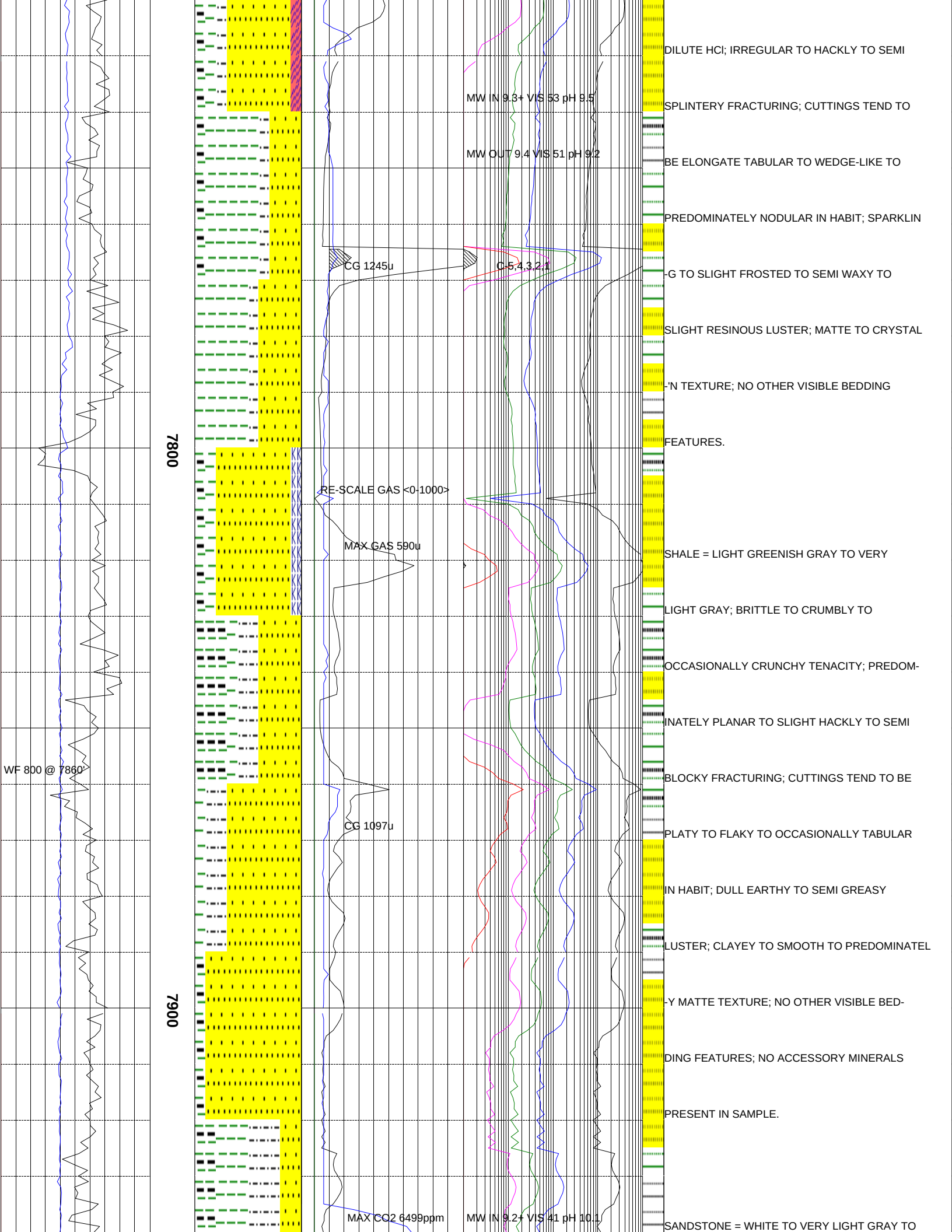
MOSERATE TO STRONG REACTION WITH HCL

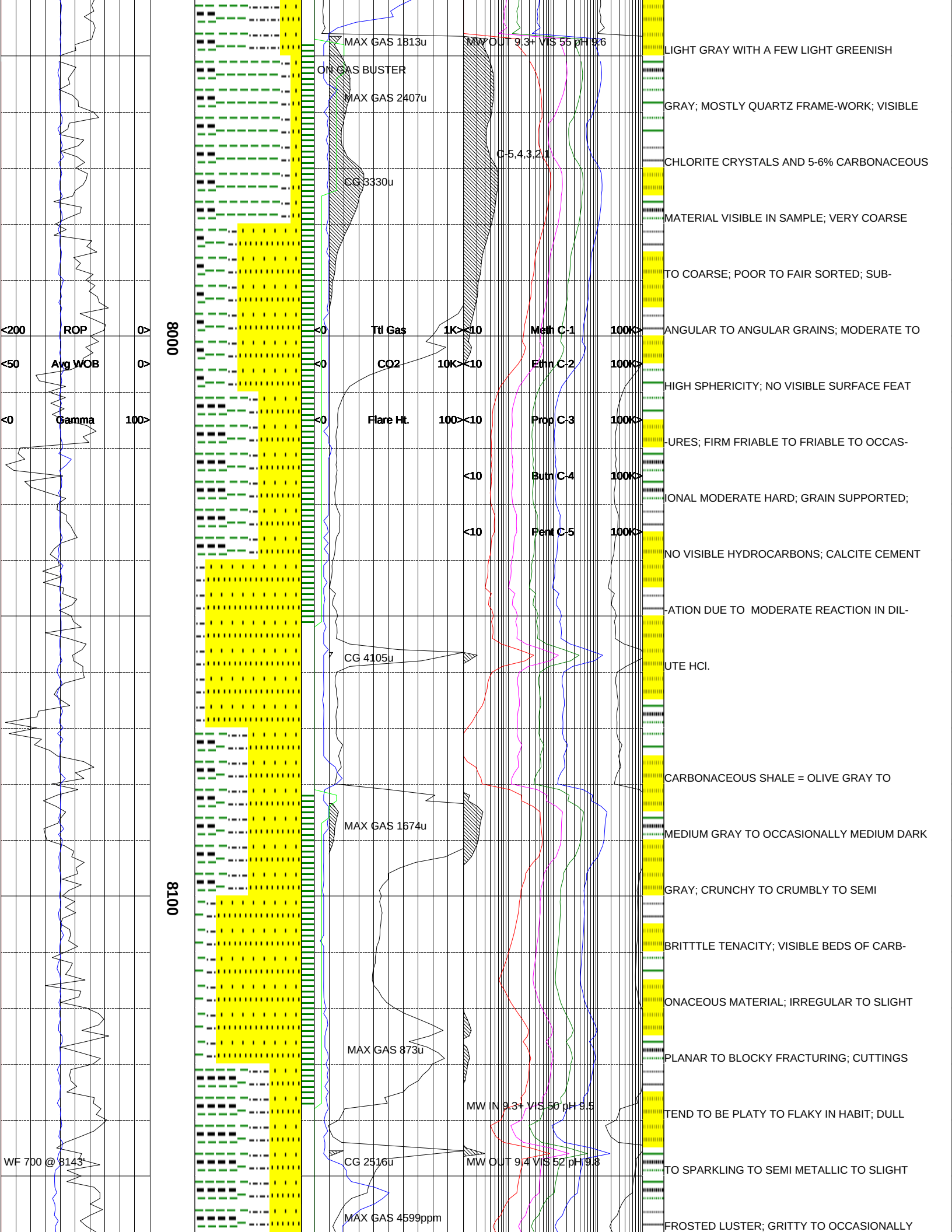
SUGGESTS CALCITE CEMENT; MATRIX SUPPORT;


7100
7200
CG 1474u
C-5,4,3,2,1
MAX CO2 17095ppm
MW IN 9.2 VIS 59 PH 9.6
MW OUT 9.2 VIS 50 PH 9.5
C-3,2,1
RIG WATCH DOWN @ 7195'
07/08/2010
CONTAINS TRACE AMOUNTS OF PYRITE.
CARBONACEOUS SHALE = BLACK TO GRAYISH
BLACK TO BROWNISH BLACK; CRUMBLY TO
SLIGHTLY BTIRRLE TENACITY; BLOCKY TO
SEMI PLANAR FRACTURING; TABULAR TO
WEDGELIKE CUTTINGS; SMOOTH TO SILTY
TEXTURE; THIN STRUCTURE.
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO
OCCASIONALLY MEDIUM GRAY; PREDOMINATELY
BRITTLE TO CRUMBLY TO SLIGHTLY CRUNCHY
TENACITY; PREDOMINATELY PLANAR TO SLIGHT
HACKLY TO SEMI SPLINTERY FRACTURING;
CUTTINGS TEND TO BE PLATY TO FLAKY TO
OCCASIONALLY TABULAR TO WEDGE-LIKE IN
HABIT; DULL EARTHY TO GREASY TO SEMI-
RESINOUS LUSTER; MATTE TO PREDOMINATELY
SMOOTH TO CLAYEY TEXTURE; NO OTHER VISIB
-LE BEDDING FEATURES.
NOTE = RIGWATCH DOWN FROM 7195' MD TO


CG 1350u
C-4,3,2,1
7658' MD. CAUGHT SAMPLE BASED OFF
DAY TOUR
BOTTOMS UP STROKES; UNABLE TO CORRALATE
GAS.
7300
RIG WATCH DOWN
SILSTONE = LIGHT OLIVE GRAY TO BROWNISH
MW IN 9.2 VIS 57 pH 9.7
TO MEDIUM GRAY; CRUNCHY TO STIFF TO TOUG
MW OUT 9.2 VIS 54 pH 9.4
-H TENACITY; IRREGULAR TO PLANAR TO PRE-
OHIO CREEK @ 7355'
DOMINATELY HACKLY FRACTURING; CUTTINGS
TEND TO BE TABULAR TO ELONGATED WEDGE-
LIKE IN HABIT; SPARKLING TO SLIGHT GREAS
-Y TO SEMI FROSTED LUSTER; OCCASIONALLY
7400
GRANULAR TO GRITTY TO SILTY TEXTURE; NO
OTHER VISIBLE BEDDING FEATURES.
RIG WATCH DOWN
OHIO CREEK SANDSTONE = WHITE TO TRANSLUC
-ENT TO VERY LIGHT GRAY; 3-5% DARK
LITHICS VISIBLE IN THE SAMPLE; VERY COAR
-SE TO MEDIUM TO PREDOMINATELY COARSE
GRAIN SIZE; FAIR TO WELL SORTED; SUB-
ANGULAR TO SUB-ROUND GRAINS; MODERATE TO
HIGH SPHERICITY; GRAINS HAVE A SLIGHT
POLISH APPEARANCE; UNCONSOLIDATED GRAINS
<200 ROP 0>
<0 Ttl Gas 500><10 Meth C-1 100K>


DUE TO BIT ACTION; FIRM FRIABLE TO MODER
RIG WATCH DOWN
-ATE HARD; GRAIN SUPPORTED; CALCITIC
CEMENTATION DUE TO HIGH REACTION IN
MW IN 9.4 VIS 57 pH 9.7
DILUTE HCl; NO VISIBLE HYDROCARBONS IN
MW OUT 9.4 VIS 56 pH 9.5
SAMPLE; GRAIN SUPPORTED; MOSTLY QUARTZ
FRAMEWORK.
SHALE = LIGHT GREENISH GRAY TO LIGHT BL
-UISH GRAY TO VERY LIGHT GRAY; BRITTLE
7600
TO CRUMBLY TENACITY; PREDOMINATELY
PLANAR TO SLIGHT BLOCKY FRACTURING; CUT-
RIG WATCH DOWN
TINGS TEND TO BE PLATY TO FLAKY TO SLIGH
-T BLADED IN HABIT; DULL EARTHY TO SEMI
WAXY TO SLIGHT GREASY LUSTER; CLAYEY TO
SMOOTH TO MATTE TEXTURE; THIN BEDS OF
WF 850 @ 7652'
CARBONACEOUS MATERIAL VISIBLE THROUGH
RIG WATCH UP @ 7658'
OUT THE SAMPLE; NO OTHER VISIBLE BEDDING
FEATURES.
MAX GAS 290u
MAX GAS 289u
7700
LIMESTONE = LIGHT BROWNISH GRAY TO LIGHT
OLIVE GRAY TO SEMI GREENISH GRAY; TOUGH
MAX GAS 232u
TO STIFF TENACITY; DISSOLVES READILY IN


DILUTE HCl; IRREGULAR TO HACKLY TO SEMI
MW IN 9.3+ VIS 53 pH 9.5
SPLINTERY FRACTURING; CUTTINGS TEND TO
MW OUT 9.4 VIS 51 pH 9.2
BE ELONGATE TABULAR TO WEDGE-LIKE TO
PREDOMINATELY NODULAR IN HABIT; SPARKLIN
CG 1245u
C-5,4,3,2,1
-G TO SLIGHT FROSTED TO SEMI WAXY TO
SLIGHT RESINOUS LUSTER; MATTE TO CRYSTAL
-'N TEXTURE; NO OTHER VISIBLE BEDDING
FEATURES.
7800
RE-SCALE GAS <0-1000>
MAX GAS 590u
SHALE = LIGHT GREENISH GRAY TO VERY
LIGHT GRAY; BRITTLE TO CRUMBLY TO
OCCASIONALLY CRUNCHY TENACITY; PREDOM-
INATELY PLANAR TO SLIGHT HACKLY TO SEMI
WF 800 @ 7860'
BLOCKY FRACTURING; CUTTINGS TEND TO BE
CG 1097u
PLATY TO FLAKY TO OCCASIONALLY TABULAR
IN HABIT; DULL EARTHY TO SEMI GREASY
LUSTER; CLAYEY TO SMOOTH TO PREDOMINATEL
7900
-Y MATTE TEXTURE; NO OTHER VISIBLE BED-
DING FEATURES; NO ACCESSORY MINERALS
PRESENT IN SAMPLE.
MAX CO2 6499ppm
MW IN 9.2+ VIS 41 pH 10.1
SANDSTONE = WHITE TO VERY LIGHT GRAY TO



LIGHT GRAY WITH A FEW LIGHT GREENISH

GRAY; MOSTLY QUARTZ FRAME-WORK; VISIBLE

CHLORITE CRYSTALS AND 5-6% CARBONACEOUS

MATERIAL VISIBLE IN SAMPLE; VERY COARSE

TO COARSE; POOR TO FAIR SORTED; SUB-

ANGULAR TO ANGULAR GRAINS; MODERATE TO

HIGH SPHERICITY; NO VISIBLE SURFACE FEAT

-URES; FIRM FRIABLE TO FRIABLE TO OCCAS-

IONAL MODERATE HARD; GRAIN SUPPORTED;

NO VISIBLE HYDROCARBONS; CALCITE CEMENT

-ATION DUE TO MODERATE REACTION IN DIL-

UTE HCl.

CARBONACEOUS SHALE = OLIVE GRAY TO

MEDIUM GRAY TO OCCASIONALLY MEDIUM DARK

GRAY; CRUNCHY TO CRUMBLY TO SEMI

BRITTTLE TENACITY; VISIBLE BEDS OF CARB-

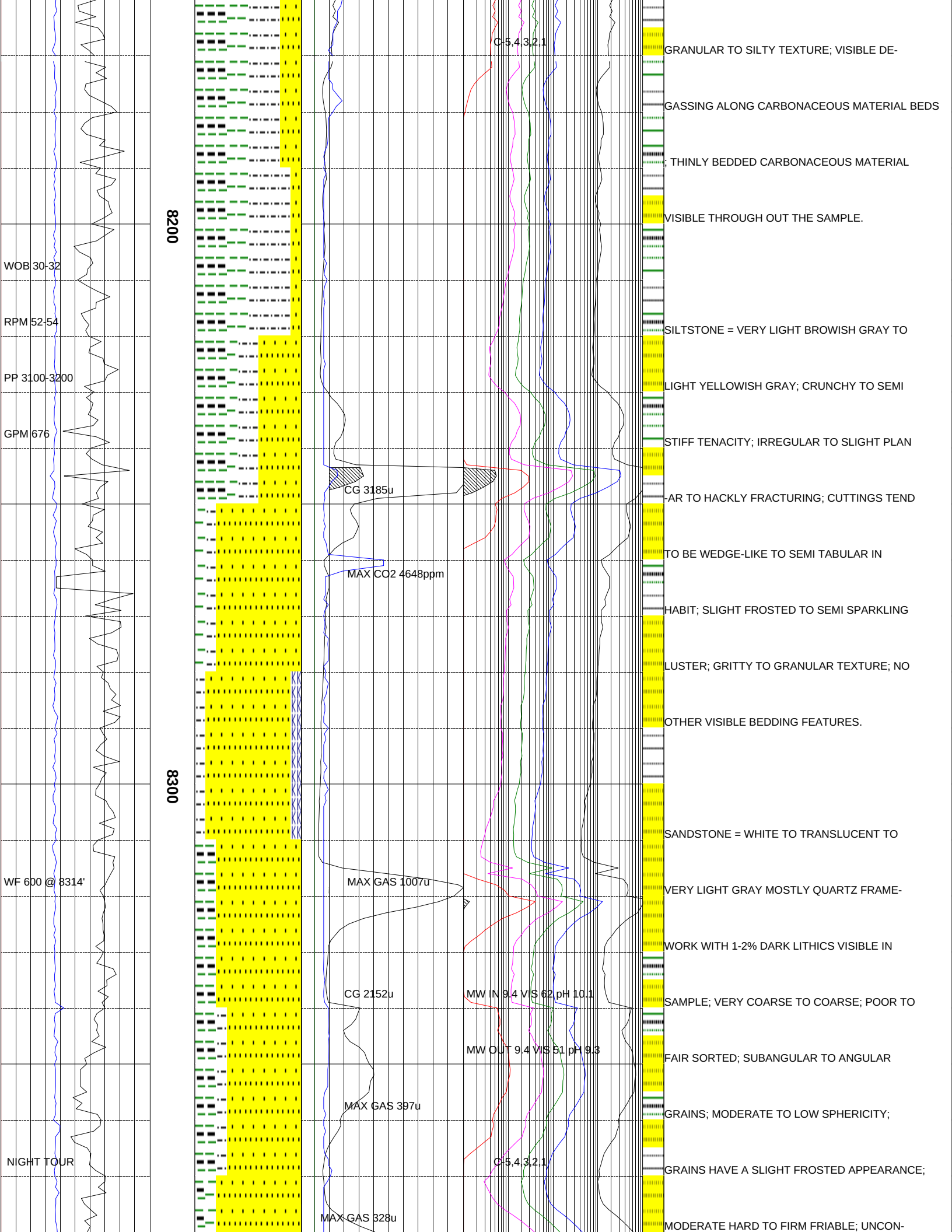
ONACEOUS MATERIAL; IRREGULAR TO SLIGHT

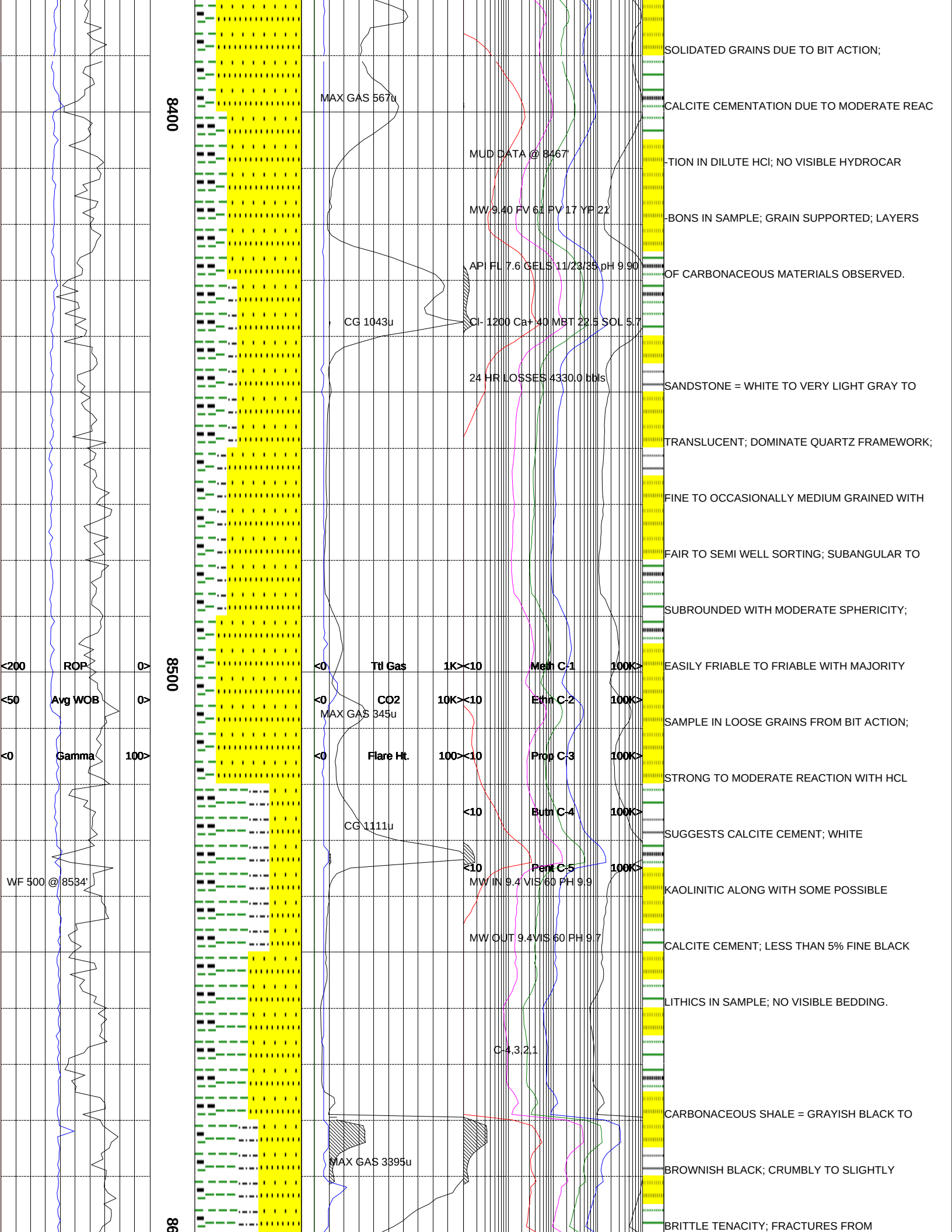
PLANAR TO BLOCKY FRACTURING; CUTTINGS

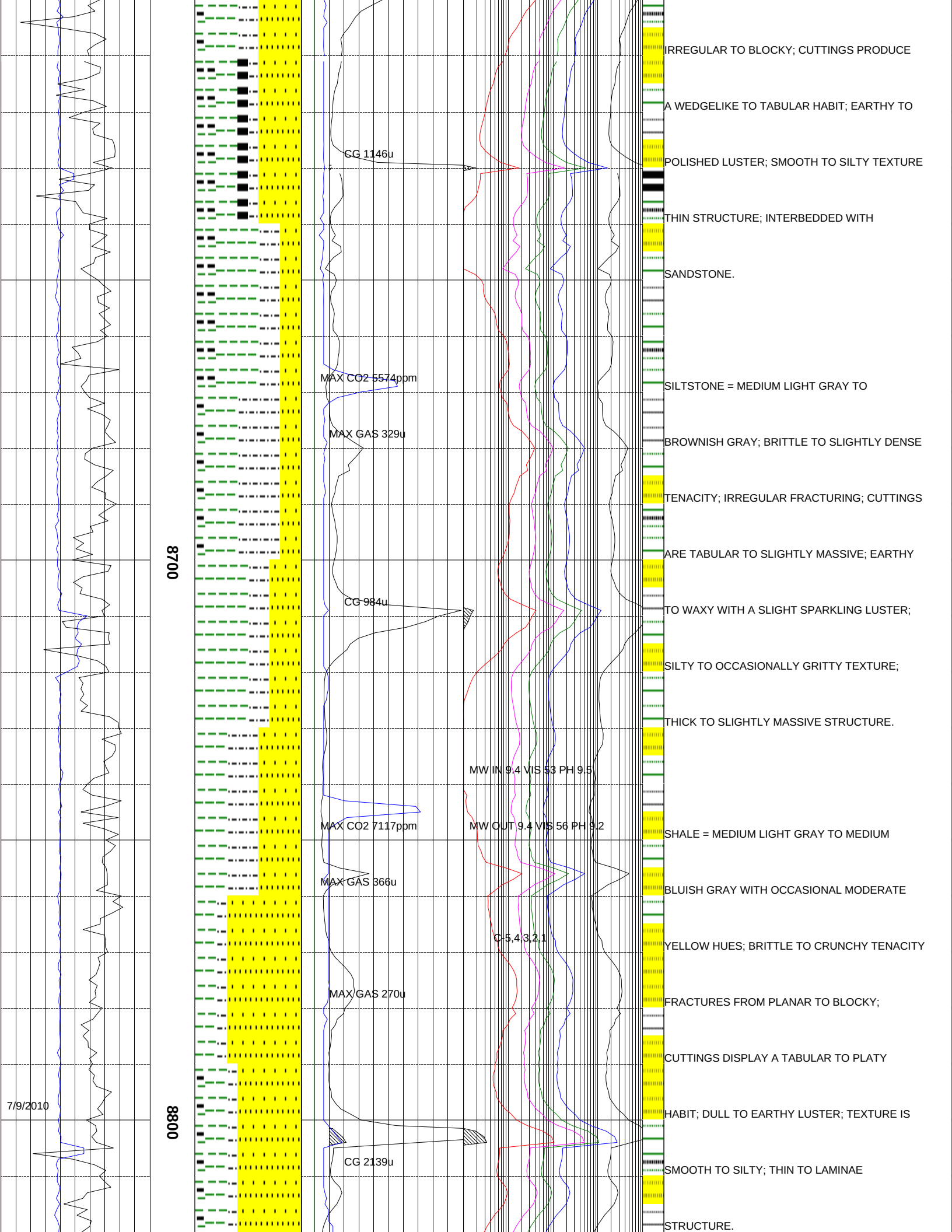
TEND TO BE PLATY TO FLAKY IN HABIT; DULL

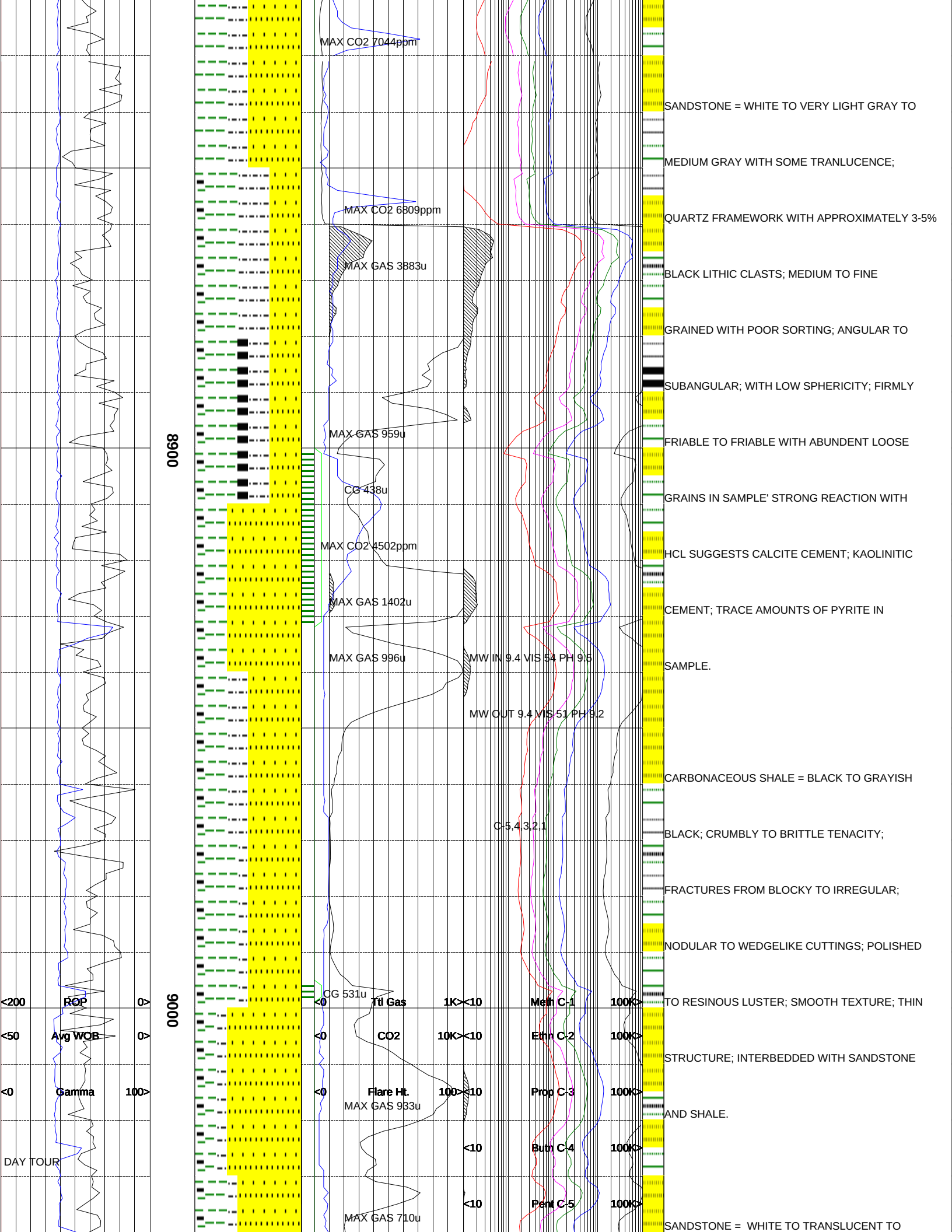
TO SPARKLING TO SEMI METALLIC TO SLIGHT

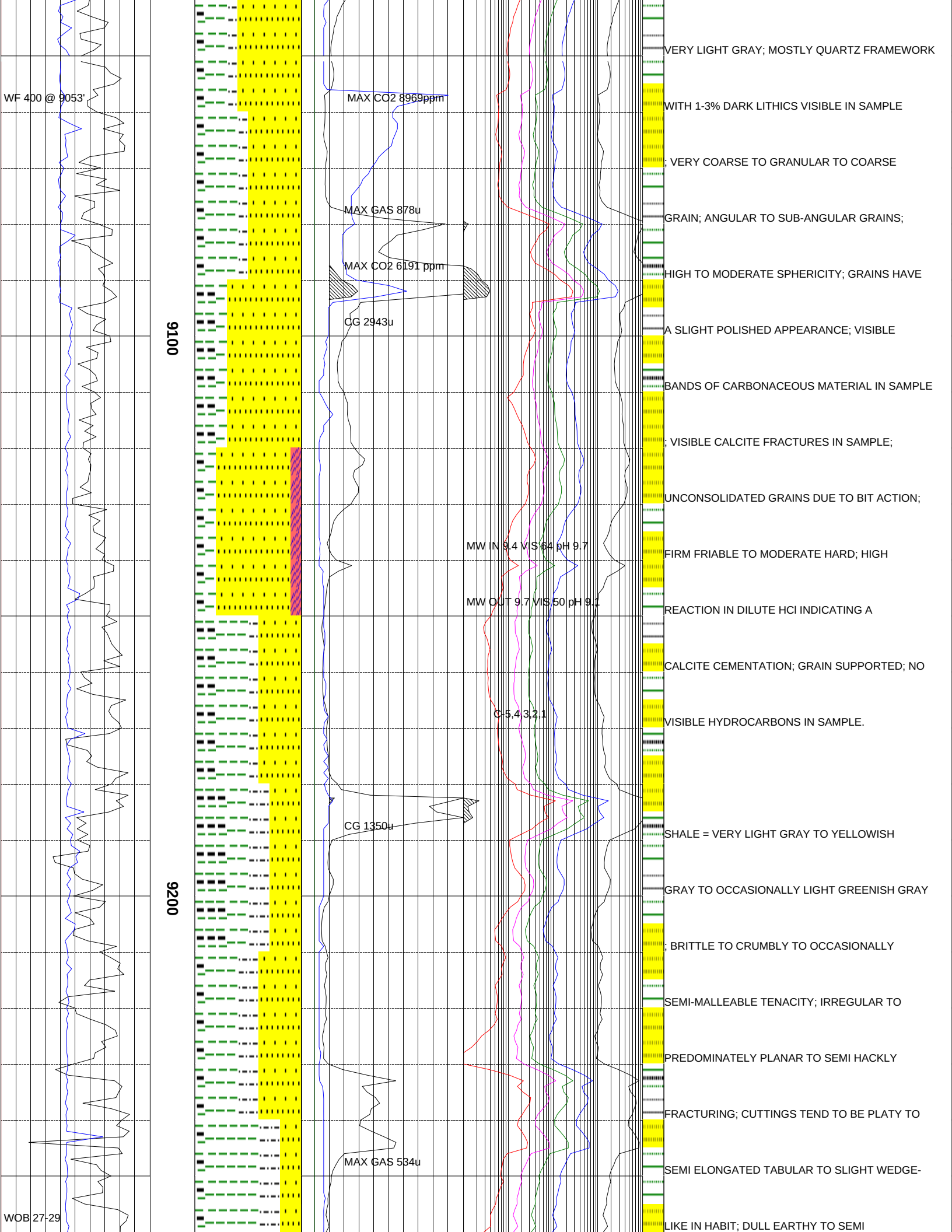
FROSTED LUSTER; GRITTY TO OCCASIONALLY

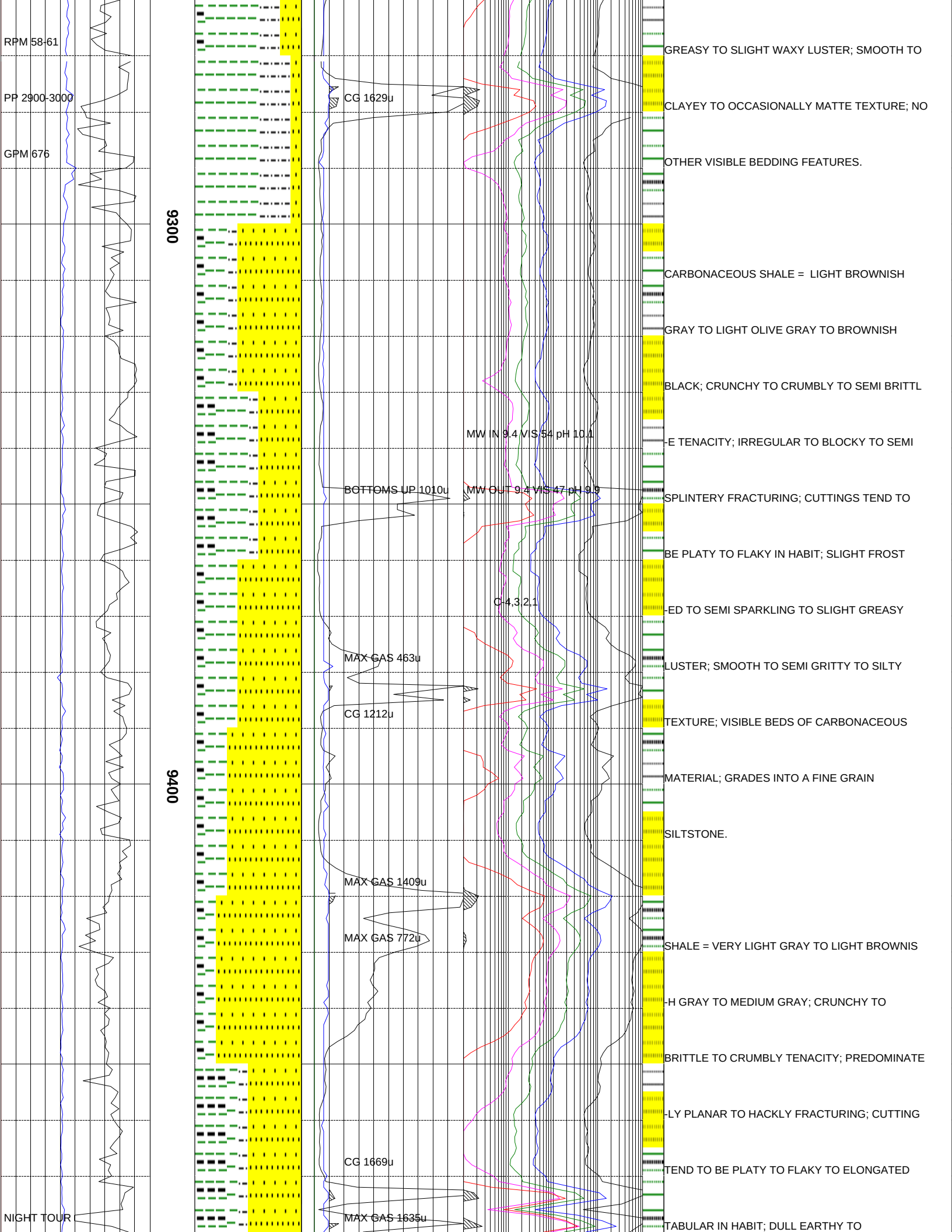

8200
WOB 30-32
RPM 52-54
PP 3100-3200
GPM 676
CG 3185u
MAX CO2 4648ppm
8300
WF 600 @ 8314'
MAX GAS 1007u
CG 2152u
MW IN 9.4 VIS 62 pH 10.1
MW OUT 9.4 VIS 51 pH 9.3
MAX GAS 397u
NIGHT TOUR
C-5,4,3,2,1
MAX GAS 328u
C-5,4,3,2,1
GRANULAR TO SILTY TEXTURE; VISIBLE DE-
GASSING ALONG CARBONACEOUS MATERIAL BEDS
; THINLY BEDDED CARBONACEOUS MATERIAL
VISIBLE THROUGH OUT THE SAMPLE.
SILTSTONE = VERY LIGHT BROWISH GRAY TO
LIGHT YELLOWISH GRAY; CRUNCHY TO SEMI
STIFF TENACITY; IRREGULAR TO SLIGHT PLAN
-AR TO HACKLY FRACTURING; CUTTINGS TEND
TO BE WEDGE-LIKE TO SEMI TABULAR IN
HABIT; SLIGHT FROSTED TO SEMI SPARKLING
LUSTER; GRITTY TO GRANULAR TEXTURE; NO
OTHER VISIBLE BEDDING FEATURES.
SANDSTONE = WHITE TO TRANSLUCENT TO
VERY LIGHT GRAY MOSTLY QUARTZ FRAME-
WORK WITH 1-2% DARK LITHICS VISIBLE IN
SAMPLE; VERY COARSE TO COARSE; POOR TO
FAIR SORTED; SUBANGULAR TO ANGULAR
GRAINS; MODERATE TO LOW SPHERICITY;
GRAINS HAVE A SLIGHT FROSTED APPEARANCE;
MODERATE HARD TO FIRM FRIABLE; UNCON-

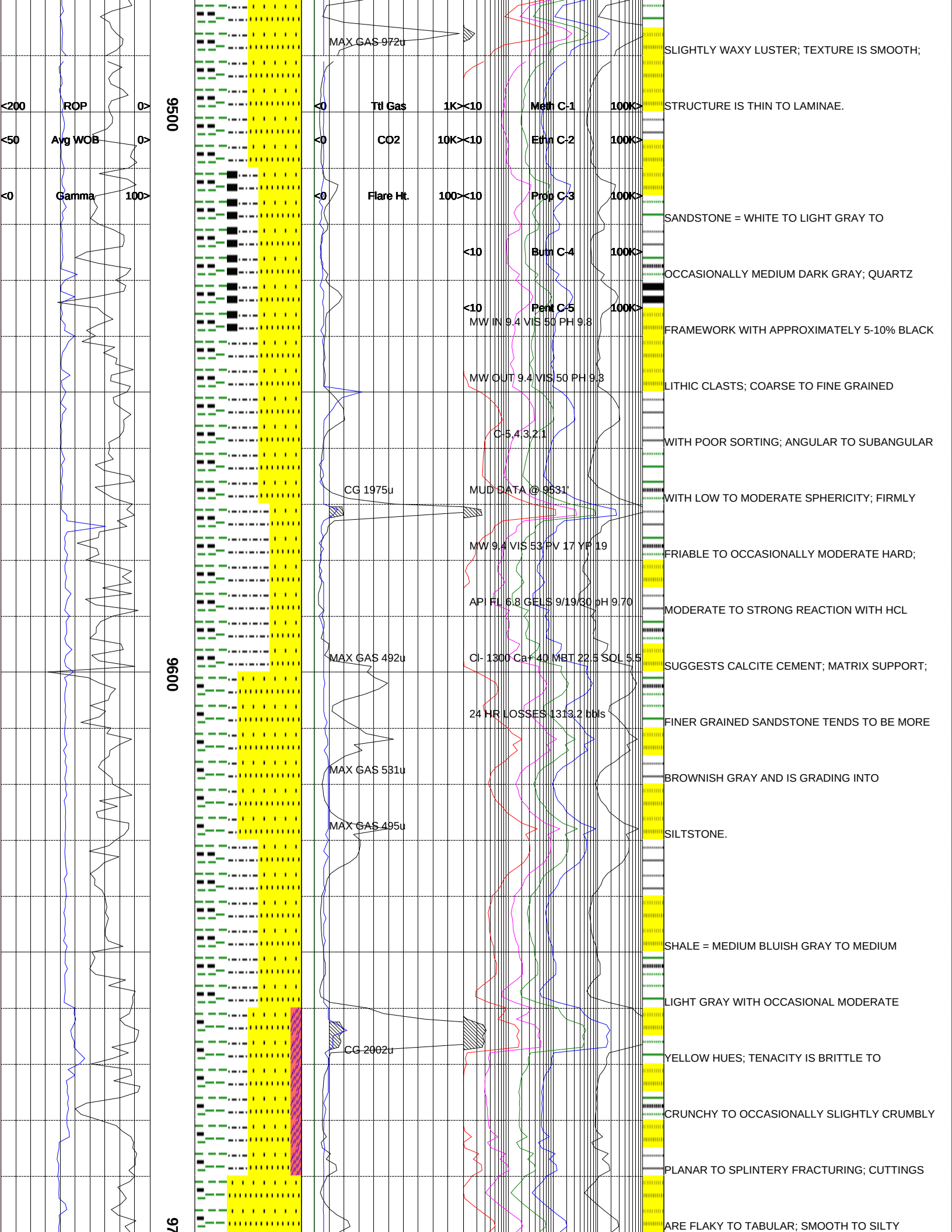

8400
8500
MAX GAS 567u
MUD DATA @ 8467'
MW 9.40 FV 61 PV 17 YP 21
API FL 7.6 GELS 11/23/35 pH 9.90
CG 1043u
Cl- 1200 Ca+ 40 MBT 22.5 SOL 5.7
24 HR LOSSES 4330.0 bbls
<200 ROP 0>
<50 Avg WOB 0>
<0 Gamma 100>
<0 Ttl Gas 1K>
<0 CO2 10K>
MAX GAS 345u
<0 Flare Hit. 100>
<10 Meth C-1 100K>
<10 Ethn C-2 100K>
<10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
CG 1111u
WF 500 @ 8534'
MW IN 9.4 VIS 60 PH 9.9
MW OUT 9.4VIS 60 PH 9.7
C-4,3,2,1
MAX GAS 3395u
SOLIDATED GRAINS DUE TO BIT ACTION;
CALCITE CEMENTATION DUE TO MODERATE REAC
-TION IN DILUTE HCl; NO VISIBLE HYDROCAR
-BONS IN SAMPLE; GRAIN SUPPORTED; LAYERS
OF CARBONACEOUS MATERIALS OBSERVED.
SANDSTONE = WHITE TO VERY LIGHT GRAY TO
TRANSLUCENT; DOMINATE QUARTZ FRAMEWORK;
FINE TO OCCASIONALLY MEDIUM GRAINED WITH
FAIR TO SEMI WELL SORTING; SUBANGULAR TO
SUBROUNDED WITH MODERATE SPHERICITY;
EASILY FRIABLE TO FRIABLE WITH MAJORITY
SAMPLE IN LOOSE GRAINS FROM BIT ACTION;
STRONG TO MODERATE REACTION WITH HCL
SUGGESTS CALCITE CEMENT; WHITE
KAOLINITIC ALONG WITH SOME POSSIBLE
CALCITE CEMENT; LESS THAN 5% FINE BLACK
LITHICS IN SAMPLE; NO VISIBLE BEDDING.
CARBONACEOUS SHALE = GRAYISH BLACK TO
BROWNISH BLACK; CRUMBLY TO SLIGHTLY
BRITTLE TENACITY; FRACTURES FROM


IRREGULAR TO BLOCKY; CUTTINGS PRODUCE
A WEDGELIKE TO TABULAR HABIT; EARTHY TO
CG 1146u
POLISHED LUSTER; SMOOTH TO SILTY TEXTURE
THIN STRUCTURE; INTERBEDDED WITH
SANDSTONE.
MAX CO2 5574ppm
SILTSTONE = MEDIUM LIGHT GRAY TO
MAX GAS 329u
BROWNISH GRAY; BRITTLE TO SLIGHTLY DENSE
TENACITY; IRREGULAR FRACTURING; CUTTINGS
8700
ARE TABULAR TO SLIGHTLY MASSIVE; EARTHY
CG 984u
TO WAXY WITH A SLIGHT SPARKLING LUSTER;
SILTY TO OCCASIONALLY GRITTY TEXTURE;
THICK TO SLIGHTLY MASSIVE STRUCTURE.
MW IN 9.4 VIS 53 PH 9.5
MAX CO2 7117ppm
MW OUT 9.4 VIS 56 PH 9.2
SHALE = MEDIUM LIGHT GRAY TO MEDIUM
MAX GAS 366u
BLUISH GRAY WITH OCCASIONAL MODERATE
C-5,4,3,2,1
YELLOW HUES; BRITTLE TO CRUNCHY TENACITY
MAX GAS 270u
FRACTURES FROM PLANAR TO BLOCKY;
CUTTINGS DISPLAY A TABULAR TO PLATY
7/9/2010
8800
HABIT; DULL TO EARTHY LUSTER; TEXTURE IS
CG 2139u
SMOOTH TO SILTY; THIN TO LAMINAE
STRUCTURE.


MAX CO2 7044ppm
MAX CO2 6809ppm
MAX GAS 3883u
MAX GAS 959u
CG 438u
MAX CO2 4502ppm
MAX GAS 1402u
MAX GAS 996u
MW IN 9.4 VIS 54 PH 9.5
MW OUT 9.4 VIS 51 PH 9.2
C-5,4,3,2,1
CG 531u
MAX GAS 933u
MAX GAS 710u
8900
9000
<200 ROP 0>
<50 Avg WOB 0>
<0 Gamma 100>
DAY TOUR
<0 Ttl Gas 1K><10 Meth C-1 100K>
<0 CO2 10K><10 Etha C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buta C-4 100K>
<10 Pent C-5 100K>
SANDSTONE = WHITE TO VERY LIGHT GRAY TO
MEDIUM GRAY WITH SOME TRANLUCENCE;
QUARTZ FRAMEWORK WITH APPROXIMATELY 3-5%
BLACK LITHIC CLASTS; MEDIUM TO FINE
GRAINED WITH POOR SORTING; ANGULAR TO
SUBANGULAR; WITH LOW SPHERICITY; FIRMLY
FRIABLE TO FRIABLE WITH ABUNDENT LOOSE
GRAINS IN SAMPLE' STRONG REACTION WITH
HCL SUGGESTS CALCITE CEMENT; KAOLINITIC
CEMENT; TRACE AMOUNTS OF PYRITE IN
SAMPLE.
CARBONACEOUS SHALE = BLACK TO GRAYISH
BLACK; CRUMBLY TO BRITTLE TENACITY;
FRACTURES FROM BLOCKY TO IRREGULAR;
NODULAR TO WEDGELIKE CUTTINGS; POLISHED
TO RESINOUS LUSTER; SMOOTH TEXTURE; THIN
STRUCTURE; INTERBEDDED WITH SANDSTONE
AND SHALE.
SANDSTONE = WHITE TO TRANSLUCENT TO


WF 400 @ 9053'
MAX CO2 8969ppm
MAX GAS 878u
MAX CO2 6191 ppm
CG 2943u
9100
MW IN 9.4 VIS 64 pH 9.7
MW OUT 9.7 VIS 50 pH 9.1
C-5,4,3,2,1
CG 1350u
9200
MAX GAS 534u
WOB 27-29
VERY LIGHT GRAY; MOSTLY QUARTZ FRAMEWORK
WITH 1-3% DARK LITHICS VISIBLE IN SAMPLE
; VERY COARSE TO GRANULAR TO COARSE
GRAIN; ANGULAR TO SUB-ANGULAR GRAINS;
HIGH TO MODERATE SPHERICITY; GRAINS HAVE
A SLIGHT POLISHED APPEARANCE; VISIBLE
BANDS OF CARBONACEOUS MATERIAL IN SAMPLE
; VISIBLE CALCITE FRACTURES IN SAMPLE;
UNCONSOLIDATED GRAINS DUE TO BIT ACTION;
FIRM FRIABLE TO MODERATE HARD; HIGH
REACTION IN DILUTE HCl INDICATING A
CALCITE CEMENTATION; GRAIN SUPPORTED; NO
VISIBLE HYDROCARBONS IN SAMPLE.
SHALE = VERY LIGHT GRAY TO YELLOWISH
GRAY TO OCCASIONALLY LIGHT GREENISH GRAY
; BRITTLE TO CRUMBLY TO OCCASIONALLY
SEMI-MALLEABLE TENACITY; IRREGULAR TO
PREDOMINATELY PLANAR TO SEMI HACKLY
FRACTURING; CUTTINGS TEND TO BE PLATY TO
SEMI ELONGATED TABULAR TO SLIGHT WEDGE-
LIKE IN HABIT; DULL EARTHY TO SEMI


RPM 58-61
PP 2900-3000
GPM 676
9300
9400
NIGHT TOUR
CG 1629u
MW IN 9.4 VIS 54 pH 10.1
BOTTOMS UP 1010u
MW OUT 9.4 VIS 47 pH 9.9
C-4,3,2,1
MAX GAS 463u
CG 1212u
MAX GAS 1409u
MAX GAS 772u
CG 1669u
MAX GAS 1635u
GREASY TO SLIGHT WAXY LUSTER; SMOOTH TO
CLAYEY TO OCCASIONALLY MATTE TEXTURE; NO
OTHER VISIBLE BEDDING FEATURES.
CARBONACEOUS SHALE = LIGHT BROWNISH
GRAY TO LIGHT OLIVE GRAY TO BROWNISH
BLACK; CRUNCHY TO CRUMBLY TO SEMI BRITTL
-E TENACITY; IRREGULAR TO BLOCKY TO SEMI
SPLINTERY FRACTURING; CUTTINGS TEND TO
BE PLATY TO FLAKY IN HABIT; SLIGHT FROST
-ED TO SEMI SPARKLING TO SLIGHT GREASY
LUSTER; SMOOTH TO SEMI GRITTY TO SILTY
TEXTURE; VISIBLE BEDS OF CARBONACEOUS
MATERIAL; GRADES INTO A FINE GRAIN
SILTSTONE.
SHALE = VERY LIGHT GRAY TO LIGHT BROWNIS
-H GRAY TO MEDIUM GRAY; CRUNCHY TO
BRITTLE TO CRUMBLY TENACITY; PREDOMINATE
-LY PLANAR TO HACKLY FRACTURING; CUTTING
TEND TO BE PLATY TO FLAKY TO ELONGATED
TABULAR IN HABIT; DULL EARTHY TO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<50 Avg WOB 0>
<0 Gamma 100>
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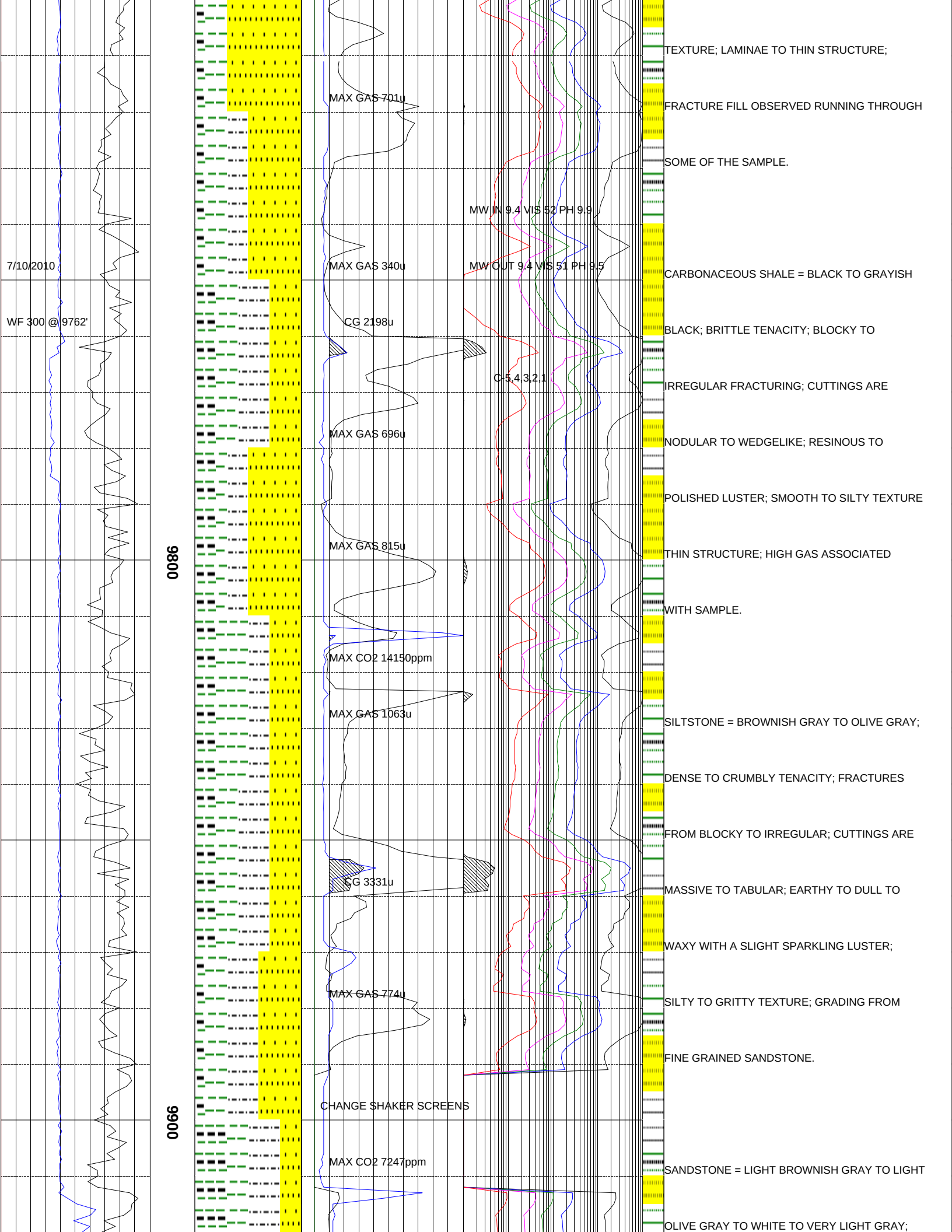
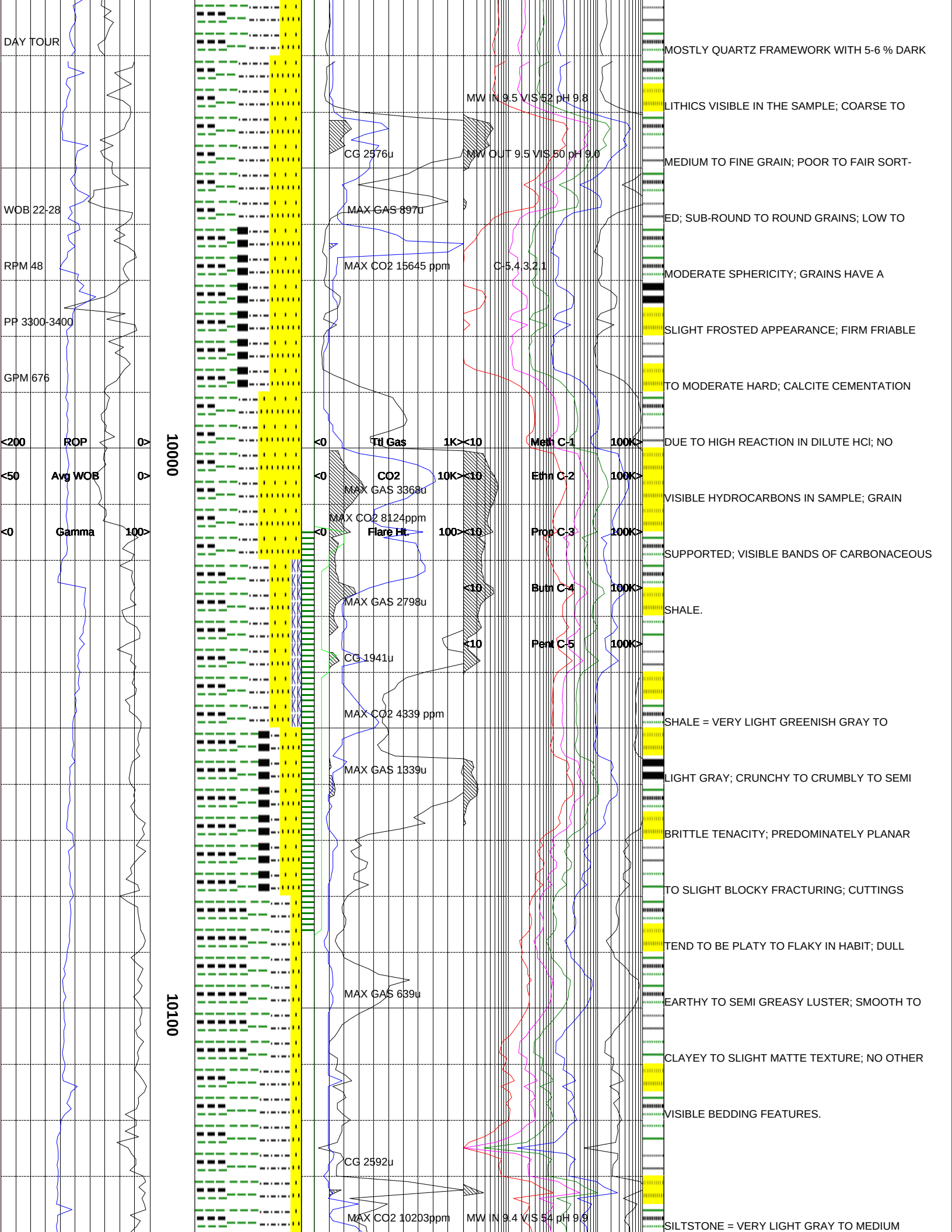
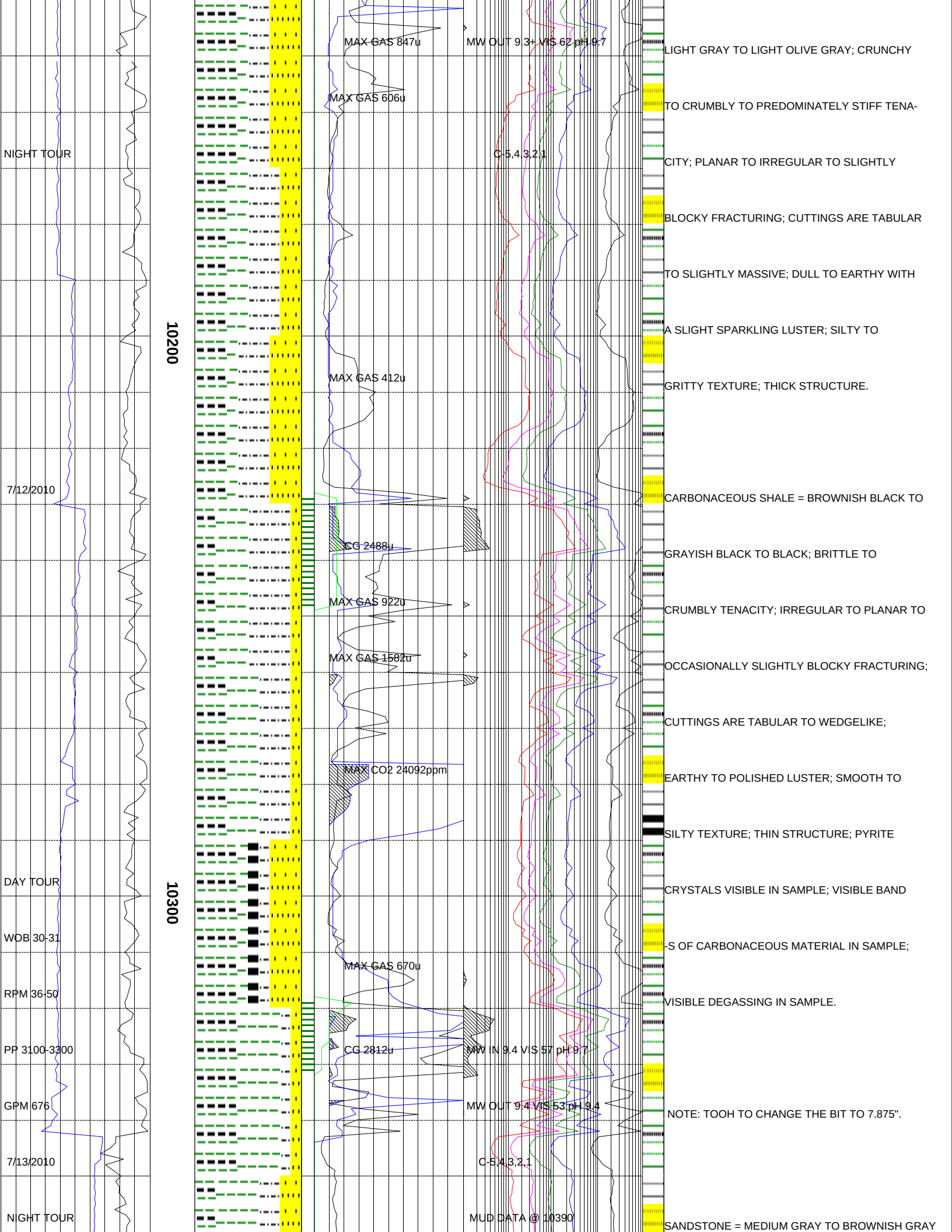
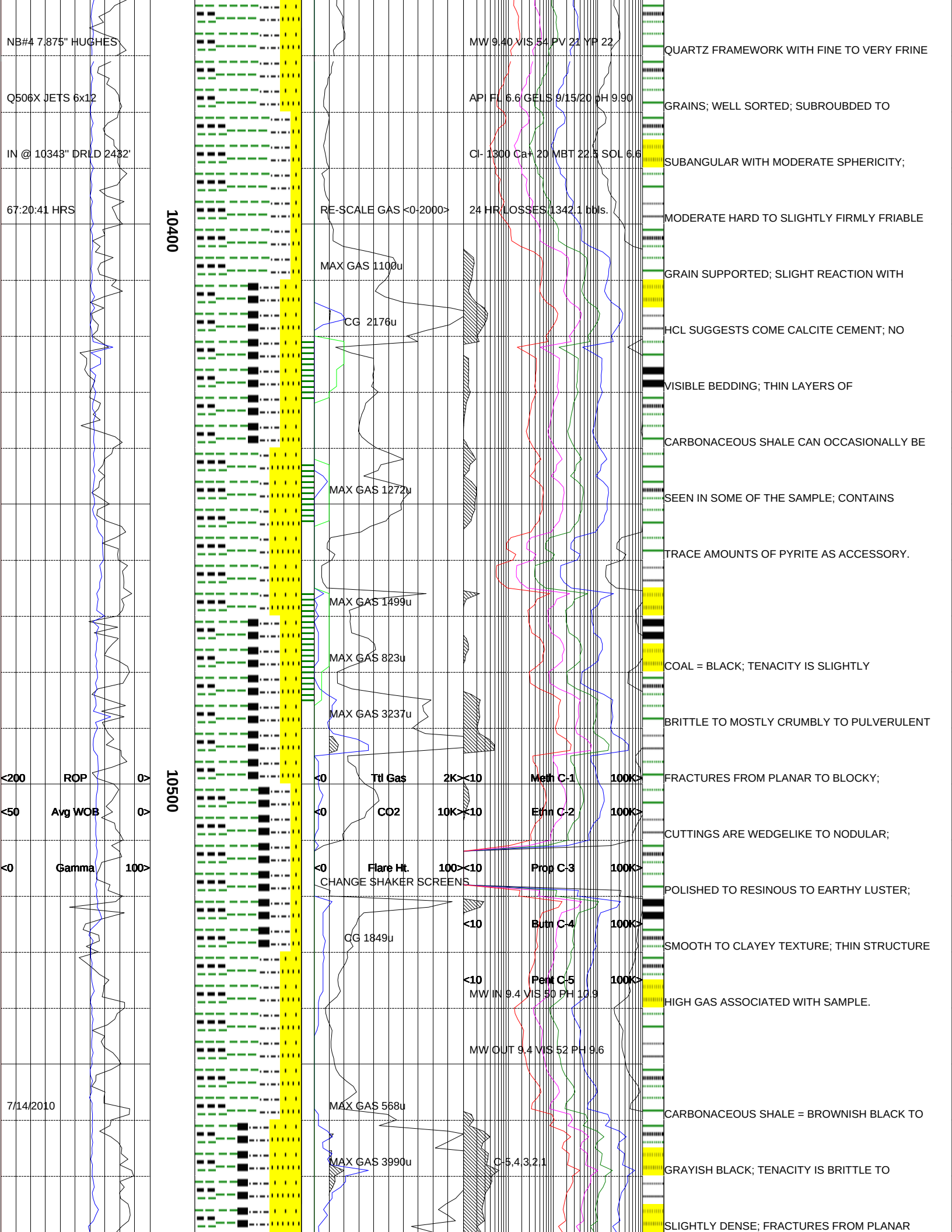
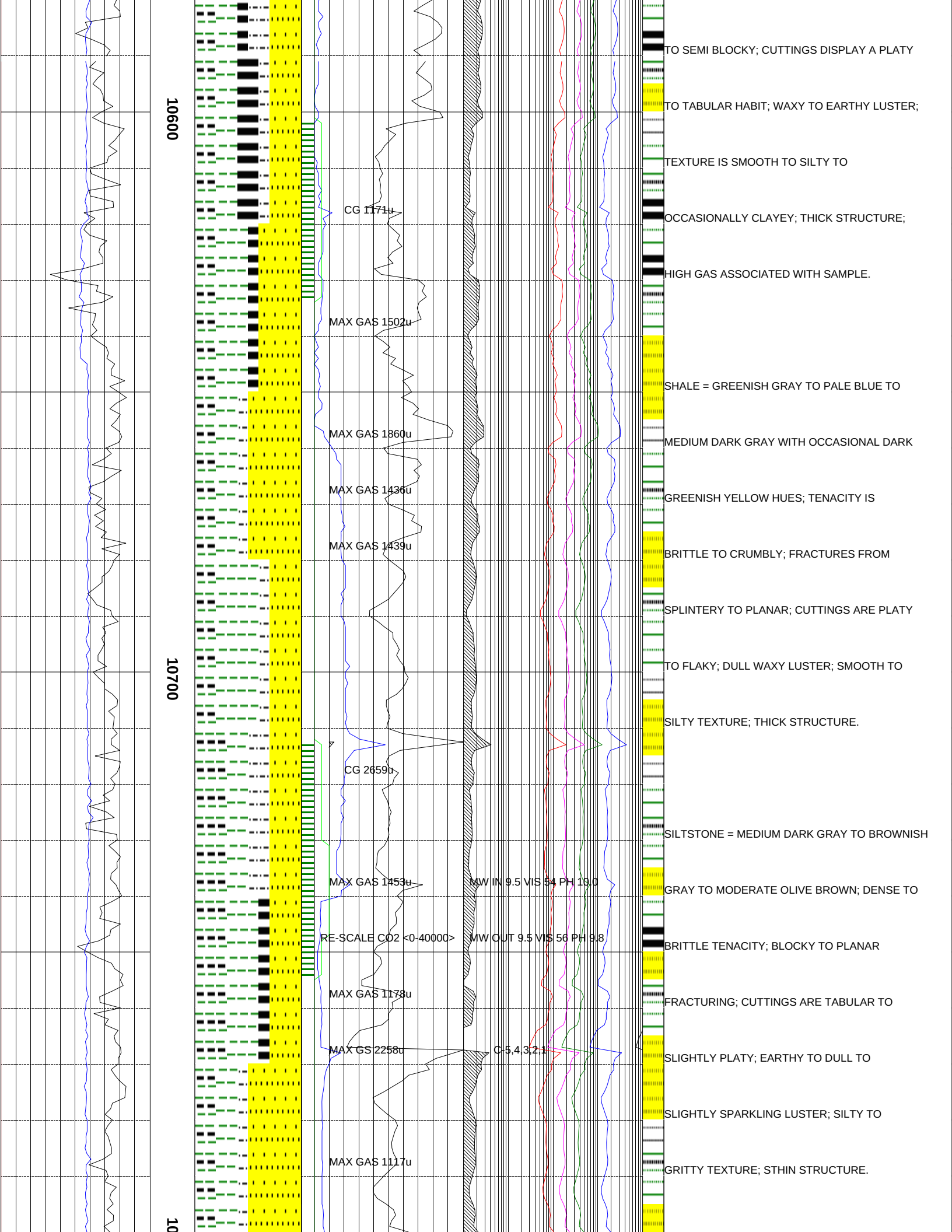
<0 CO2 10K>
<0 Flare Ht. 100>
<10 Meth C-1 100K>
<10 Eth C-2 100K>
<10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
9500
9600
9700
MAX GAS 972u
CG 1975u
MAX GAS 492u
MAX GAS 531u
MAX GAS 495u
CG 2002u
MW IN 9.4 VIS 50 PH 9.8
MW OUT 9.4 VIS 50 PH 9.3
C-5,4,3,2,1
MUD DATA @ 9531'
MW 9.4 VIS 53 PV 17 YP 19
API FL 6.8 GELS 9/19/30 pH 9.70
Cl- 1300 Ca+ 40 MBT 22.5 SOL 5.5
24 HR LOSSES 1313.2 bbls
SLIGHTLY WAXY LUSTER; TEXTURE IS SMOOTH;
STRUCTURE IS THIN TO LAMINAE.
SANDSTONE = WHITE TO LIGHT GRAY TO
OCCASIONALLY MEDIUM DARK GRAY; QUARTZ
FRAMEWORK WITH APPROXIMATELY 5-10% BLACK
LITHIC CLASTS; COARSE TO FINE GRAINED
WITH POOR SORTING; ANGULAR TO SUBANGULAR
WITH LOW TO MODERATE SPHERICITY; FIRMLY
FRIABLE TO OCCASIONALLY MODERATE HARD;
MODERATE TO STRONG REACTION WITH HCL
SUGGESTS CALCITE CEMENT; MATRIX SUPPORT;
FINER GRAINED SANDSTONE TENDS TO BE MORE
BROWNISH GRAY AND IS GRADING INTO
SILTSTONE.
SHALE = MEDIUM BLUISH GRAY TO MEDIUM
LIGHT GRAY WITH OCCASIONAL MODERATE
YELLOW HUES; TENACITY IS BRITTLE TO
CRUNCHY TO OCCASIONALLY SLIGHTLY CRUMBLY
PLANAR TO SPLINTERY FRACTURING; CUTTINGS
ARE FLAKY TO TABULAR; SMOOTH TO SILTY

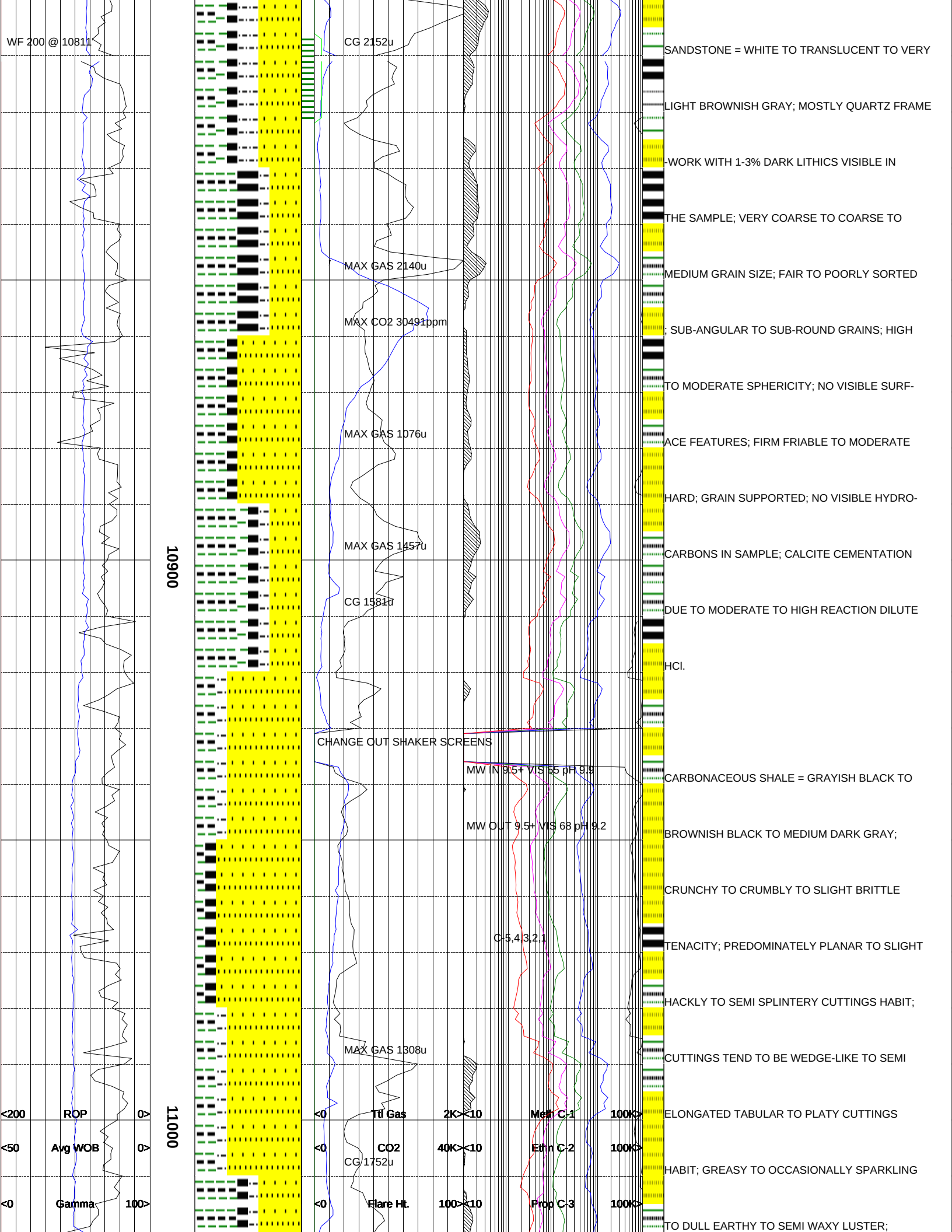

TEXTURE; LAMINAE TO THIN STRUCTURE;
MAX GAS 701u
FRACTURE FILL OBSERVED RUNNING THROUGH
SOME OF THE SAMPLE.
MW IN 9.4 VIS 52 PH 9.9
7/10/2010
MAX GAS 340u
MW OUT 9.4 VIS 51 PH 9.5
CARBONACEOUS SHALE = BLACK TO GRAYISH
WF 300 @ 9762'
CG 2198u
BLACK; BRITTLE TENACITY; BLOCKY TO
C-5,4,3,2,1
IRREGULAR FRACTURING; CUTTINGS ARE
MAX GAS 696u
NODULAR TO WEDGELIKE; RESINOUS TO
POLISHED LUSTER; SMOOTH TO SILTY TEXTURE
9800
MAX GAS 815u
THIN STRUCTURE; HIGH GAS ASSOCIATED
WITH SAMPLE.
MAX CO2 14150ppm
MAX GAS 1063u
SILTSTONE = BROWNISH GRAY TO OLIVE GRAY;
DENSE TO CRUMBLY TENACITY; FRACTURES
FROM BLOCKY TO IRREGULAR; CUTTINGS ARE
CG 3331u
MASSIVE TO TABULAR; EARTHY TO DULL TO
WAXY WITH A SLIGHT SPARKLING LUSTER;
MAX GAS 774u
SILTY TO GRITTY TEXTURE; GRADING FROM
FINE GRAINED SANDSTONE.
CHANGE SHAKER SCREENS
9900
MAX CO2 7247ppm
SANDSTONE = LIGHT BROWNISH GRAY TO LIGHT
OLIVE GRAY TO WHITE TO VERY LIGHT GRAY;

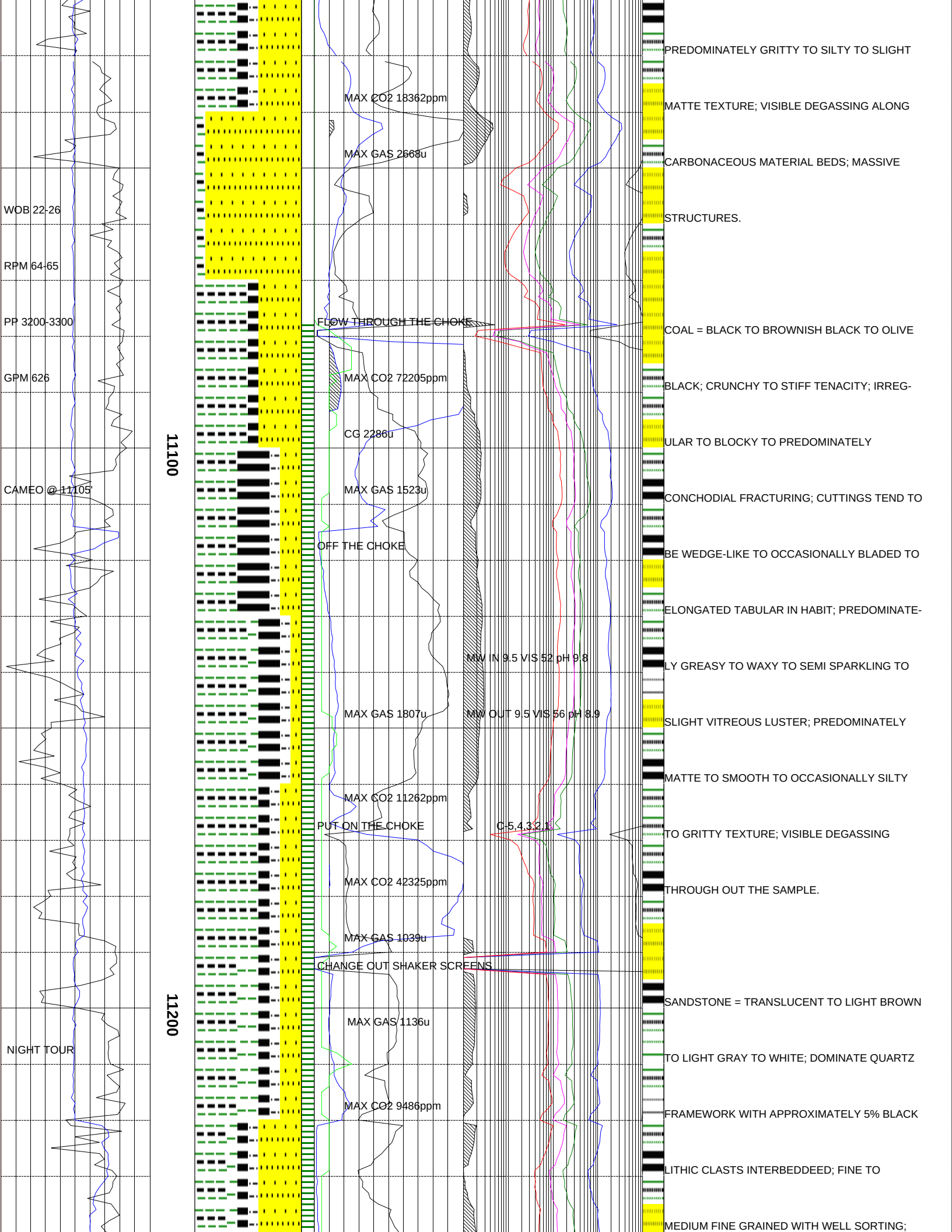

DAY TOUR
WOB 22-28
RPM 48
PP 3300-3400
GPM 676
<200 ROP 0>
<50 Avg WOB 0>
<0 Gamma 100>
10000
10100
MW IN 9.5 VIS 52 pH 9.8
MW OUT 9.5 VIS 50 pH 9.0
CG 2576u
MAX GAS 897u
MAX CO2 15645 ppm
C-5,4,3,2,1
<0 Ttl Gas 1K>
<0 CO2 10K>
MAX GAS 3368u
MAX CO2 8124ppm
<0 Flare Ht. 100>
MAX GAS 2798u
CG 1941u
MAX CO2 4339 ppm
MAX GAS 1339u
MAX GAS 639u
CG 2592u
MAX CO2 10203ppm
MW IN 9.4 VIS 54 pH 9.9
<10 Meth C-1 100K>
<10 Ethn C-2 100K>
<10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
MOSTLY QUARTZ FRAMEWORK WITH 5-6 % DARK
LITHICS VISIBLE IN THE SAMPLE; COARSE TO
MEDIUM TO FINE GRAIN; POOR TO FAIR SORT-
ED; SUB-ROUND TO ROUND GRAINS; LOW TO
MODERATE SPHERICITY; GRAINS HAVE A
SLIGHT FROSTED APPEARANCE; FIRM FRIABLE
TO MODERATE HARD; CALCITE CEMENTATION
DUE TO HIGH REACTION IN DILUTE HCl; NO
VISIBLE HYDROCARBONS IN SAMPLE; GRAIN
SUPPORTED; VISIBLE BANDS OF CARBONACEOUS
SHALE.
SHALE = VERY LIGHT GREENISH GRAY TO
LIGHT GRAY; CRUNCHY TO CRUMBLY TO SEMI
BRITTLE TENACITY; PREDOMINATELY PLANAR
TO SLIGHT BLOCKY FRACTURING; CUTTINGS
TEND TO BE PLATY TO FLAKY IN HABIT; DULL
EARTHY TO SEMI GREASY LUSTER; SMOOTH TO
CLAYEY TO SLIGHT MATTE TEXTURE; NO OTHER
VISIBLE BEDDING FEATURES.
SILTSTONE = VERY LIGHT GRAY TO MEDIUM

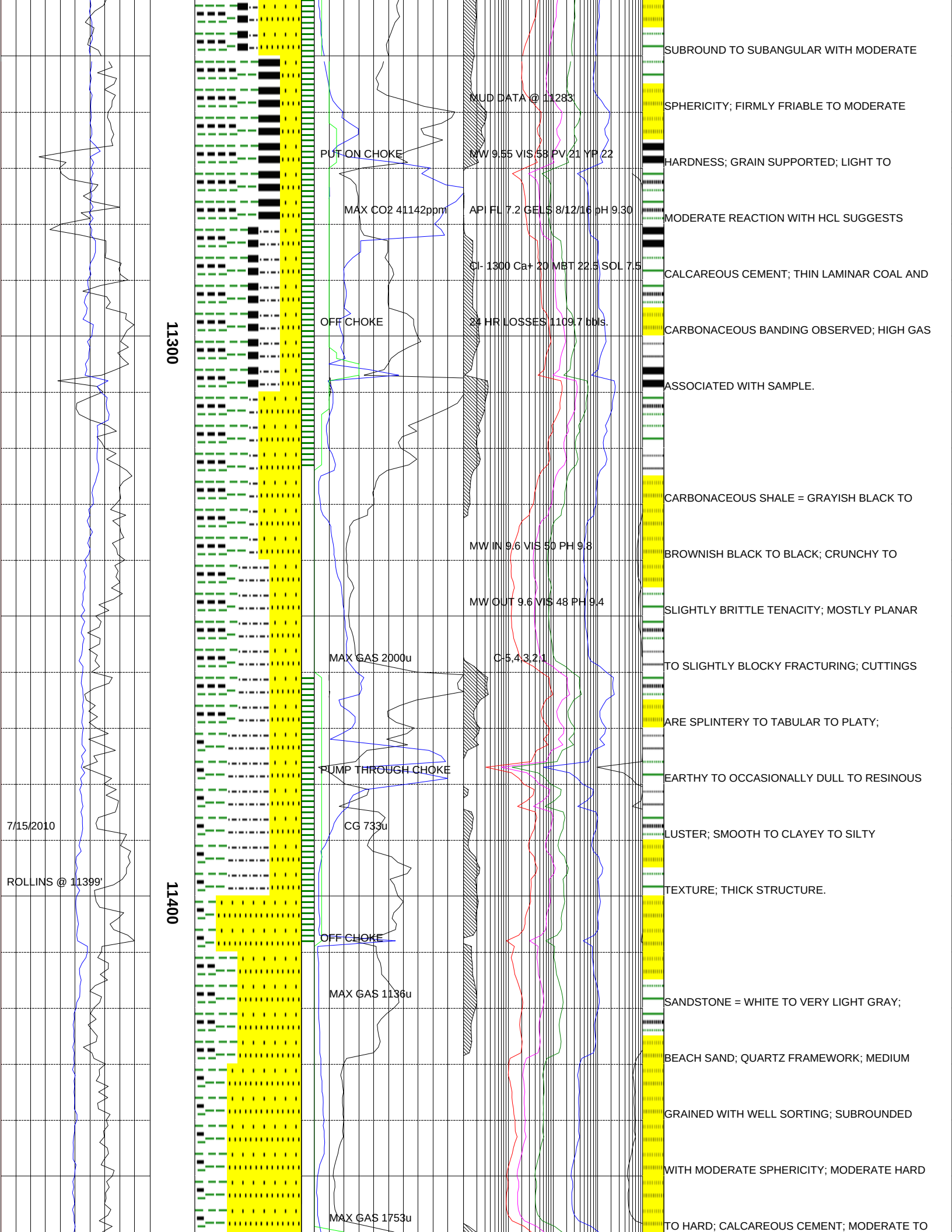

MAX GAS 847u
MW OUT 9.3+ VIS 62 pH 9.7
LIGHT GRAY TO LIGHT OLIVE GRAY; CRUNCHY
MAX GAS 606u
TO CRUMBLY TO PREDOMINATELY STIFF TENA-
NIGHT TOUR
C-5,4,3,2,1
CITY; PLANAR TO IRREGULAR TO SLIGHTLY
BLOCKY FRACTURING; CUTTINGS ARE TABULAR
TO SLIGHTLY MASSIVE; DULL TO EARTHY WITH
10200
A SLIGHT SPARKLING LUSTER; SILTY TO
MAX GAS 412u
GRITTY TEXTURE; THICK STRUCTURE.
7/12/2010
CARBONACEOUS SHALE = BROWNISH BLACK TO
CG 2488u
GRAYISH BLACK TO BLACK; BRITTLE TO
MAX GAS 922u
CRUMBLY TENACITY; IRREGULAR TO PLANAR TO
MAX GAS 1582u
OCCASIONALLY SLIGHTLY BLOCKY FRACTURING;
CUTTINGS ARE TABULAR TO WEDGELIKE;
MAX CO2 24092ppm
EARTHY TO POLISHED LUSTER; SMOOTH TO
SILTY TEXTURE; THIN STRUCTURE; PYRITE
DAY TOUR
CRYSTALS VISIBLE IN SAMPLE; VISIBLE BAND
10300
WOB 30-31
-S OF CARBONACEOUS MATERIAL IN SAMPLE;
MAX GAS 670u
RPM 36-50
VISIBLE DEGASSING IN SAMPLE.
PP 3100-3300
CG 2812u
MW IN 9.4 VIS 57 pH 9.7
GPM 676
MW OUT 9.4 VIS 53 pH 9.4
NOTE: TOOH TO CHANGE THE BIT TO 7.875".
7/13/2010
C-5,4,3,2,1
NIGHT TOUR
MUD DATA @ 10390
SANDSTONE = MEDIUM GRAY TO BROWNISH GRAY

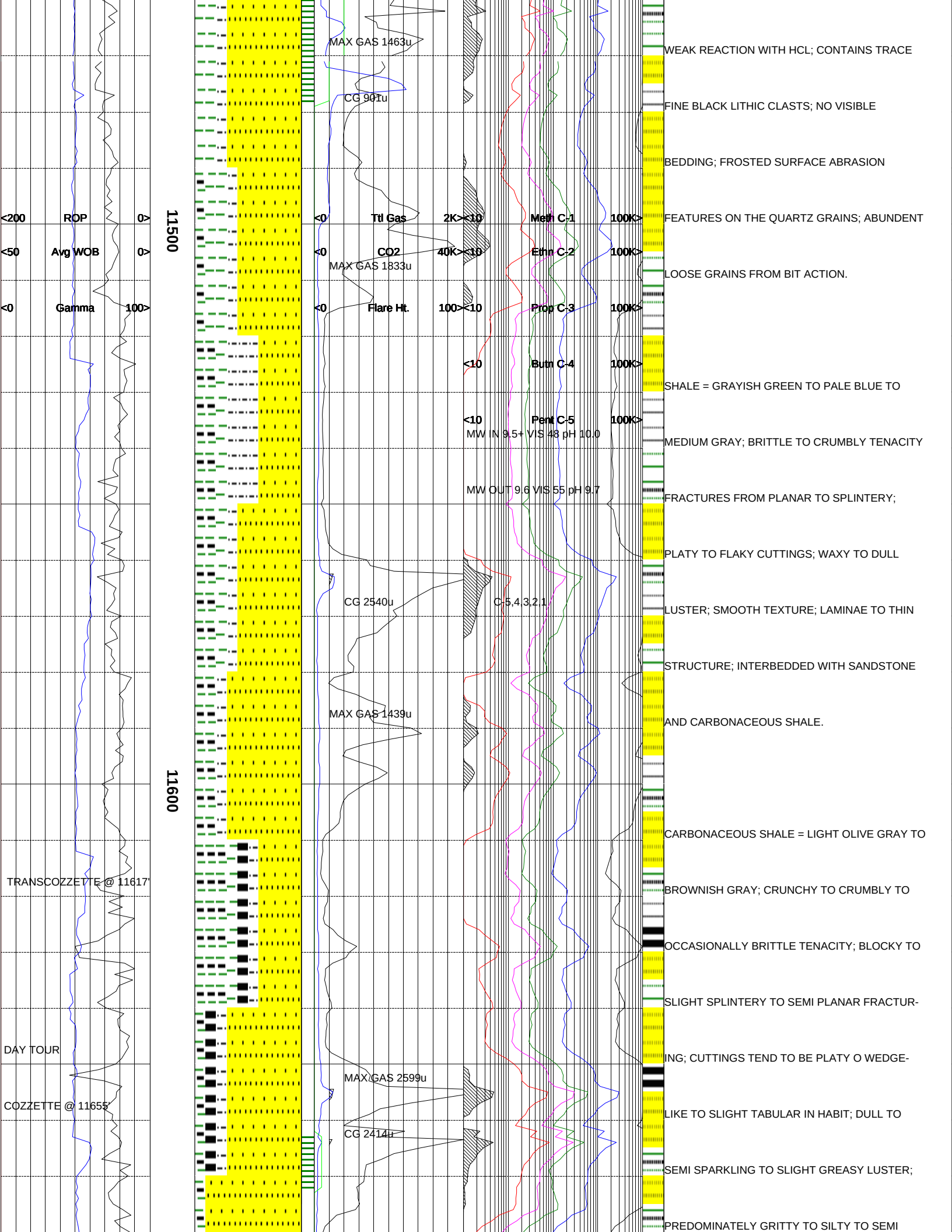

NB#4 7.875" HUGHES
Q506X JETS 6x12
IN @ 10343" DRLD 2432'
67:20:41 HRS
MW 9.40 VIS 54 PV 21 YP 22
API FL 6.6 GELS 9/15/20 pH 9.90
Cl- 1300 Ca+ 20 MBT 22.5 SOL 6.6
24 HR LOSSES 1342.1 bbls.
RE-SCALE GAS <0-2000>
10400
MAX GAS 1100u
CG 2176u
MAX GAS 1272u
MAX GAS 1499u
MAX GAS 823u
MAX GAS 3237u
<200 ROP 0>
<0 Ttl Gas 2K>
<10 Meth C-1 100K>
10500
<50 Avg WOB 0>
<0 CO2 10K>
<10 Etnn C-2 100K>
<0 Gamma 100>
<0 Flare Ht. 100>
<10 Prop C-3 100K>
CHANGE SHAKER SCREENS
<10 Butn C-4 100K>
CG 1849u
<10 Pent C-5 100K>
MW IN 9.4 VIS 50 PH 10.9
MW OUT 9.4 VIS 52 PH 9.6
7/14/2010
MAX GAS 568u
MAX GAS 3990u
C-5,4,3,2,1
QUARTZ FRAMEWORK WITH FINE TO VERY FRINE
GRAINS; WELL SORTED; SUBROUBDED TO
SUBANGULAR WITH MODERATE SPHERICITY;
MODERATE HARD TO SLIGHTLY FIRMLY FRIABLE
GRAIN SUPPORTED; SLIGHT REACTION WITH
HCL SUGGESTS COME CALCITE CEMENT; NO
VISIBLE BEDDING; THIN LAYERS OF
CARBONACEOUS SHALE CAN OCCASIONALLY BE
SEEN IN SOME OF THE SAMPLE; CONTAINS
TRACE AMOUNTS OF PYRITE AS ACCESSORY.
COAL = BLACK; TENACITY IS SLIGHTLY
BRITTLE TO MOSTLY CRUMBLY TO PULVERULENT
FRACTURES FROM PLANAR TO BLOCKY;
CUTTINGS ARE WEDGELIKE TO NODULAR;
POLISHED TO RESINOUS TO EARTHY LUSTER;
SMOOTH TO CLAYEY TEXTURE; THIN STRUCTURE
HIGH GAS ASSOCIATED WITH SAMPLE.
CARBONACEOUS SHALE = BROWNISH BLACK TO
GRAYISH BLACK; TENACITY IS BRITTLE TO
SLIGHTLY DENSE; FRACTURES FROM PLANAR

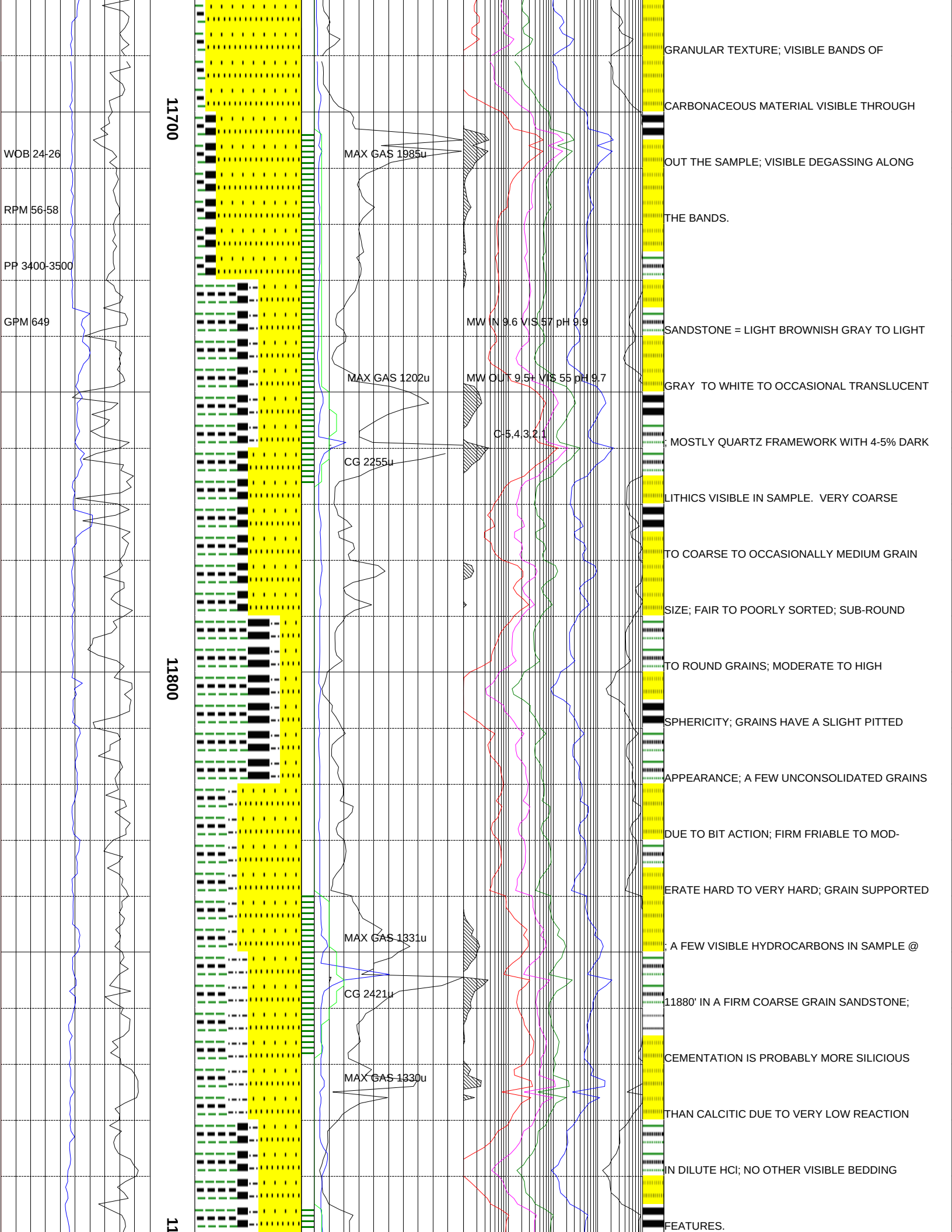

10600
10700
CG 1171u
MAX GAS 1502u
MAX GAS 1860u
MAX GAS 1436u
MAX GAS 1439u
CG 2659u
MAX GAS 1453u
MW IN 9.5 VIS 54 PH 13.0
RE-SCALE CO2 <0-40000>
MW OUT 9.5 VIS 56 PH 9.8
MAX GAS 1178u
MAX GS 2258u
C-5,4,3,2,1
MAX GAS 1117u
TO SEMI BLOCKY; CUTTINGS DISPLAY A PLATY
TO TABULAR HABIT; WAXY TO EARTHY LUSTER;
TEXTURE IS SMOOTH TO SILTY TO
OCCASIONALLY CLAYEY; THICK STRUCTURE;
HIGH GAS ASSOCIATED WITH SAMPLE.
SHALE = GREENISH GRAY TO PALE BLUE TO
MEDIUM DARK GRAY WITH OCCASIONAL DARK
GREENISH YELLOW HUES; TENACITY IS
BRITTLE TO CRUMBLY; FRACTURES FROM
SPLINTERY TO PLANAR; CUTTINGS ARE PLATY
TO FLAKY; DULL WAXY LUSTER; SMOOTH TO
SILTY TEXTURE; THICK STRUCTURE.
SILTSTONE = MEDIUM DARK GRAY TO BROWNISH
GRAY TO MODERATE OLIVE BROWN; DENSE TO
BRITTLE TENACITY; BLOCKY TO PLANAR
FRACTURING; CUTTINGS ARE TABULAR TO
SLIGHTLY PLATY; EARTHY TO DULL TO
SLIGHTLY SPARKLING LUSTER; SILTY TO
GRITTY TEXTURE; STHIN STRUCTURE.

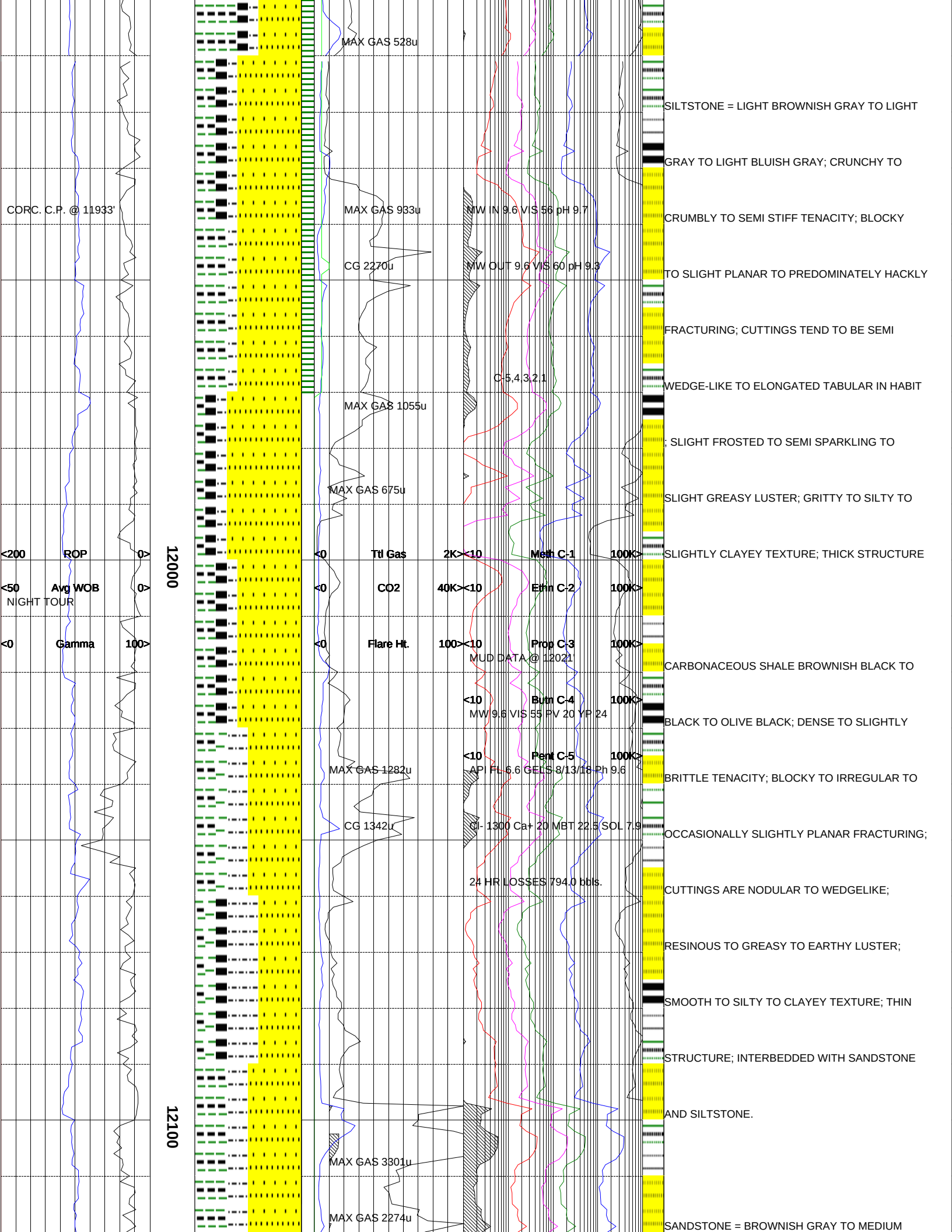

WF 200 @ 10811
CG 2152u
MAX GAS 2140u
MAX CO2 30491ppm
MAX GAS 1076u
MAX GAS 1457u
CG 1581u
CHANGE OUT SHAKER SCREENS
MW IN 9.5+ VIS 55 pH 9.9
MW OUT 9.5+ VIS 68 pH 9.2
C-5,4,3,2,1
MAX GAS 1308u
CG 1752u
10900
11000
<200 ROP 0>
<50 Avg WOB 0>
<0 Gamma 100>
<0 Ttl Gas 2K><10 Meth C-1 100K>
<0 CO2 40K><10 Etha C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
SANDSTONE = WHITE TO TRANSLUCENT TO VERY
LIGHT BROWNISH GRAY; MOSTLY QUARTZ FRAME
-WORK WITH 1-3% DARK LITHICS VISIBLE IN
THE SAMPLE; VERY COARSE TO COARSE TO
MEDIUM GRAIN SIZE; FAIR TO POORLY SORTED
; SUB-ANGULAR TO SUB-ROUND GRAINS; HIGH
TO MODERATE SPHERICITY; NO VISIBLE SURF-
ACE FEATURES; FIRM FRIABLE TO MODERATE
HARD; GRAIN SUPPORTED; NO VISIBLE HYDRO-
CARBONS IN SAMPLE; CALCITE CEMENTATION
DUE TO MODERATE TO HIGH REACTION DILUTE
HCl.
CARBONACEOUS SHALE = GRAYISH BLACK TO
BROWNISH BLACK TO MEDIUM DARK GRAY;
CRUNCHY TO CRUMBLY TO SLIGHT BRITTLE
TENACITY; PREDOMINATELY PLANAR TO SLIGHT
HACKLY TO SEMI SPLINTERY CUTTINGS HABIT;
CUTTINGS TEND TO BE WEDGE-LIKE TO SEMI
ELONGATED TABULAR TO PLATY CUTTINGS
HABIT; GREASY TO OCCASIONALLY SPARKLING
TO DULL EARTHY TO SEMI WAXY LUSTER;

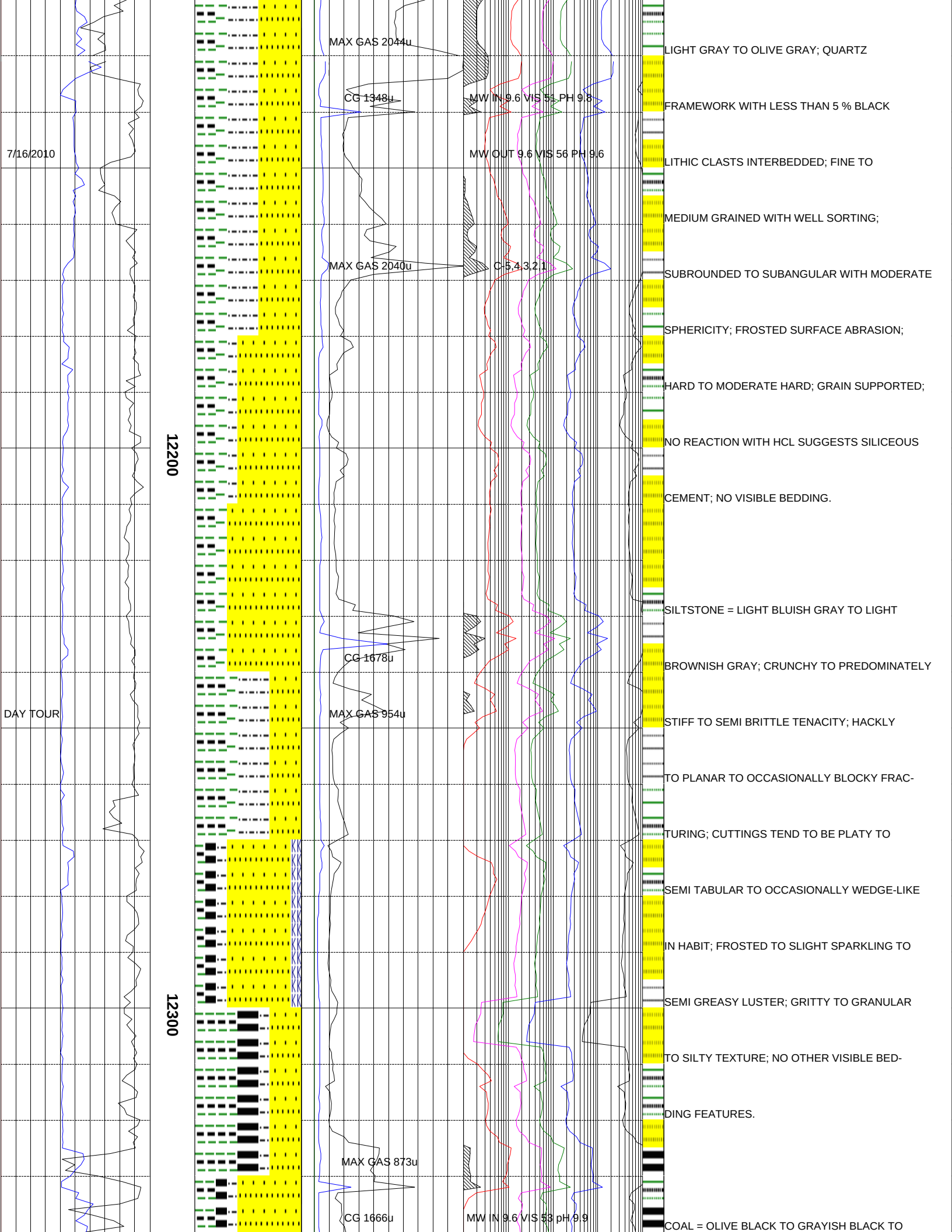

WOB 22-26
RPM 64-65
PP 3200-3300
GPM 626
CAMEO @ 11105'
NIGHT TOUR
11100
11200
MAX CO2 18362ppm
MAX GAS 2668u
FLOW THROUGH THE CHOKE
MAX CO2 72205ppm
CG 2286u
MAX GAS 1523u
OFF THE CHOKE
MW IN 9.5 VIS 52 pH 9.8
MAX GAS 1807u
MW OUT 9.5 VIS 56 pH 8.9
MAX CO2 11262ppm
PUT ON THE CHOKE
C-5,4,3,2,1
MAX CO2 42325ppm
MAX GAS 1039u
CHANGE OUT SHAKER SCREENS
MAX GAS 1136u
MAX CO2 9486ppm
PREDOMINATELY GRITTY TO SILTY TO SLIGHT
MATTE TEXTURE; VISIBLE DEGASSING ALONG
CARBONACEOUS MATERIAL BEDS; MASSIVE
STRUCTURES.
COAL = BLACK TO BROWNISH BLACK TO OLIVE
BLACK; CRUNCHY TO STIFF TENACITY; IRREG-
ULAR TO BLOCKY TO PREDOMINATELY
CONCHODIAL FRACTURING; CUTTINGS TEND TO
BE WEDGE-LIKE TO OCCASIONALLY BLADED TO
ELONGATED TABULAR IN HABIT; PREDOMINATE-
LY GREASY TO WAXY TO SEMI SPARKLING TO
SLIGHT VITREOUS LUSTER; PREDOMINATELY
MATTE TO SMOOTH TO OCCASIONALLY SILTY
TO GRITTY TEXTURE; VISIBLE DEGASSING
THROUGH OUT THE SAMPLE.
SANDSTONE = TRANSLUCENT TO LIGHT BROWN
TO LIGHT GRAY TO WHITE; DOMINATE QUARTZ
FRAMEWORK WITH APPROXIMATELY 5% BLACK
LITHIC CLASTS INTERBEDDEED; FINE TO
MEDIUM FINE GRAINED WITH WELL SORTING;

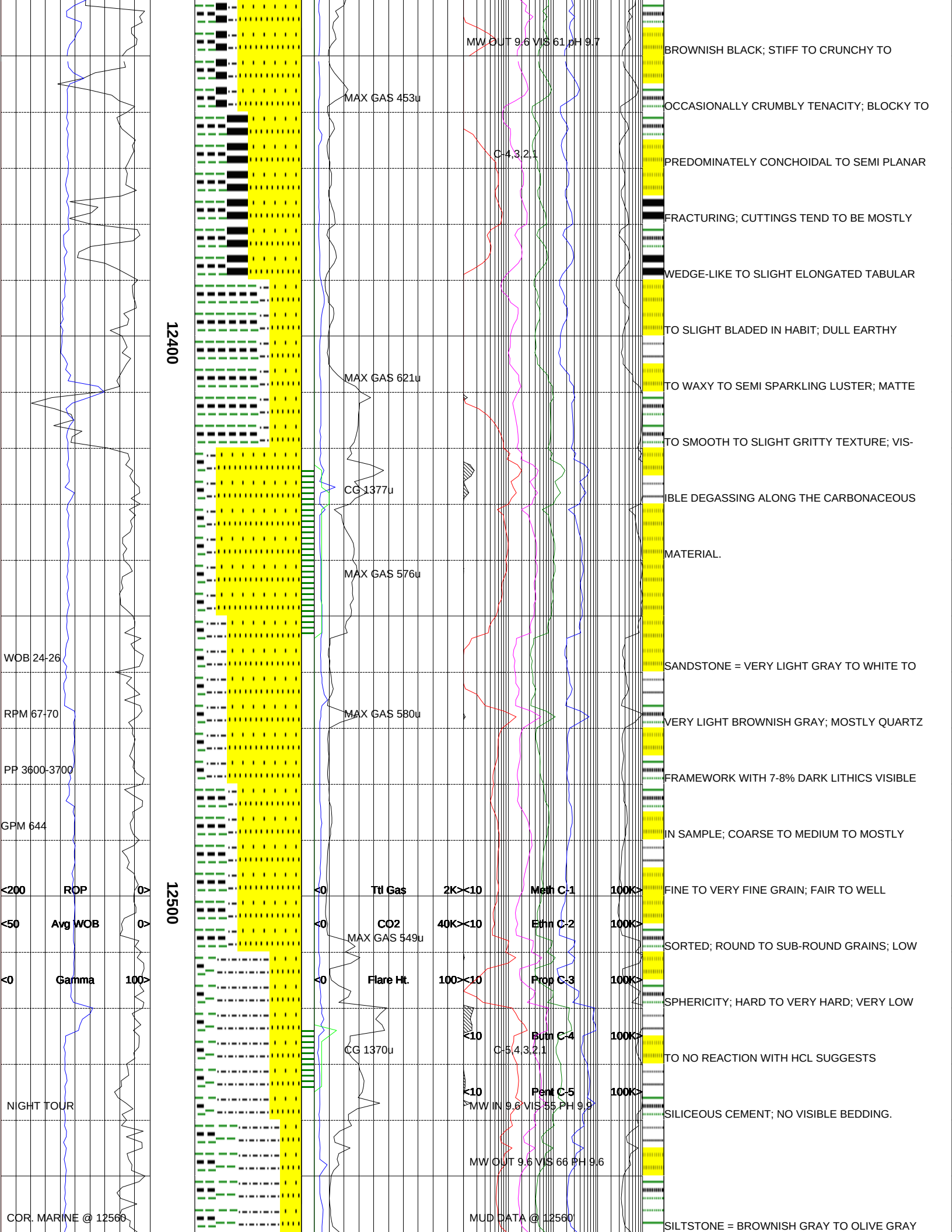

11300
11400
7/15/2010
ROLLINS @ 11399'
PUT ON CHOKE
MAX CO2 41142ppm
OFF CHOKE
MAX GAS 2000u
PUMP THROUGH CHOKE
CG 733u
OFF CHOKE
MAX GAS 1136u
MAX GAS 1753u
MUD DATA @ 11283'
MW 9.55 VIS 53 PV 21 YP 22
API FL 7.2 GELS 8/12/16 pH 9.30
Cl- 1300 Ca+ 20 MBT 22.5 SOL 7.5
24 HR LOSSES 1109.7 bbls.
MW IN 9.6 VIS 50 PH 9.3
MW OUT 9.6 VIS 48 PH 9.4
C-5,4,3,2,1
SUBROUND TO SUBANGULAR WITH MODERATE
SPHERICITY; FIRMLY FRIABLE TO MODERATE
HARDNESS; GRAIN SUPPORTED; LIGHT TO
MODERATE REACTION WITH HCL SUGGESTS
CALCAREOUS CEMENT; THIN LAMINAR COAL AND
CARBONACEOUS BANDING OBSERVED; HIGH GAS
ASSOCIATED WITH SAMPLE.
CARBONACEOUS SHALE = GRAYISH BLACK TO
BROWNISH BLACK TO BLACK; CRUNCHY TO
SLIGHTLY BRITTLE TENACITY; MOSTLY PLANAR
TO SLIGHTLY BLOCKY FRACTURING; CUTTINGS
ARE SPLINTERY TO TABULAR TO PLATY;
EARTHY TO OCCASIONALLY DULL TO RESINOUS
LUSTER; SMOOTH TO CLAYEY TO SILTY
TEXTURE; THICK STRUCTURE.
SANDSTONE = WHITE TO VERY LIGHT GRAY;
BEACH SAND; QUARTZ FRAMEWORK; MEDIUM
GRAINED WITH WELL SORTING; SUBROUNDED
WITH MODERATE SPHERICITY; MODERATE HARD
TO HARD; CALCAREOUS CEMENT; MODERATE TO

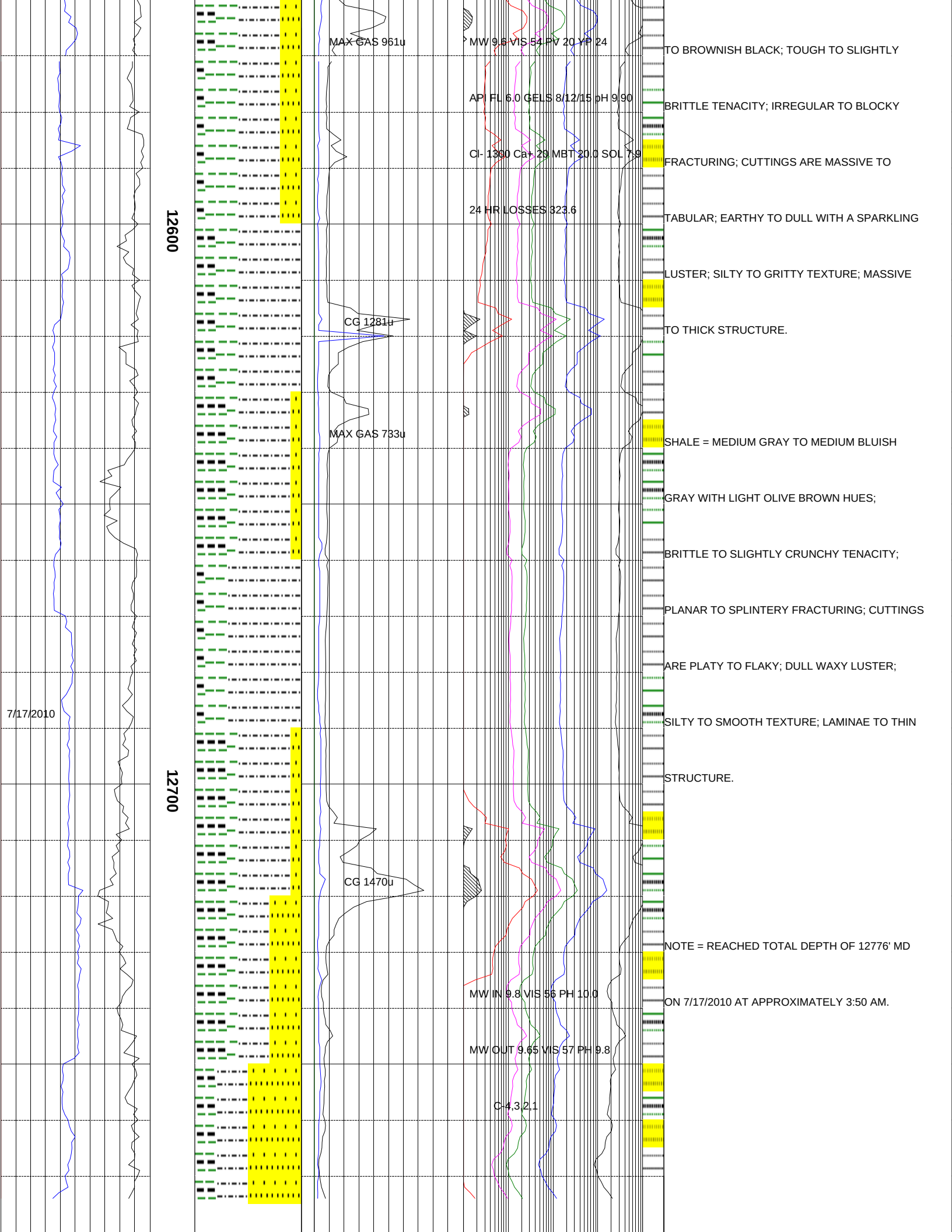

<200 ROP 0>
<50 Avg WOB 0>
<0 Gamma 100>
11500
11600
TRANSCOZZETTE @ 11617'
DAY TOUR
COZZETTE @ 11655'
MAX GAS 1463u
CG 901u
<0 Ttl Gas 2K>
<0 CO2 40K>
MAX GAS 1833u
<0 Flare Ht. 100>
CG 2540u
MAX GAS 1439u
MAX GAS 2599u
CG 2414u
<10 Meth C-1 100K>
<10 Ethn C-2 100K>
<10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
MW IN 9.5+ VIS 48 pH 10.0
MW OUT 9.6 VIS 55 pH 9.7
C-5,4,3,2,1
WEAK REACTION WITH HCL; CONTAINS TRACE
FINE BLACK LITHIC CLASTS; NO VISIBLE
BEDDING; FROSTED SURFACE ABRASION
FEATURES ON THE QUARTZ GRAINS; ABUNDENT
LOOSE GRAINS FROM BIT ACTION.
SHALE = GRAYISH GREEN TO PALE BLUE TO
MEDIUM GRAY; BRITTLE TO CRUMBLY TENACITY
FRACTURES FROM PLANAR TO SPLINTERY;
PLATY TO FLAKY CUTTINGS; WAXY TO DULL
LUSTER; SMOOTH TEXTURE; LAMINAE TO THIN
STRUCTURE; INTERBEDDED WITH SANDSTONE
AND CARBONACEOUS SHALE.
CARBONACEOUS SHALE = LIGHT OLIVE GRAY TO
BROWNISH GRAY; CRUNCHY TO CRUMBLY TO
OCCASIONALLY BRITTLE TENACITY; BLOCKY TO
SLIGHT SPLINTERY TO SEMI PLANAR FRACTUR-
ING; CUTTINGS TEND TO BE PLATY O WEDGE-
LIKE TO SLIGHT TABULAR IN HABIT; DULL TO
SEMI SPARKLING TO SLIGHT GREASY LUSTER;
PREDOMINATELY GRITTY TO SILTY TO SEMI


11700
WOB 24-26
RPM 56-58
PP 3400-3500
GPM 649
MAX GAS 1985u
MW IN 9.6 VIS 57 pH 9.9
MAX GAS 1202u
MW OUT 9.5+ VIS 55 pH 9.7
C-5,4,3,2,1
CG 2255u
11800
MAX GAS 1331u
CG 2421u
MAX GAS 1330u
GRANULAR TEXTURE; VISIBLE BANDS OF
CARBONACEOUS MATERIAL VISIBLE THROUGH
OUT THE SAMPLE; VISIBLE DEGASSING ALONG
THE BANDS.
SANDSTONE = LIGHT BROWNISH GRAY TO LIGHT
GRAY TO WHITE TO OCCASIONAL TRANSLUCENT
; MOSTLY QUARTZ FRAMEWORK WITH 4-5% DARK
LITHICS VISIBLE IN SAMPLE. VERY COARSE
TO COARSE TO OCCASIONALLY MEDIUM GRAIN
SIZE; FAIR TO POORLY SORTED; SUB-ROUND
TO ROUND GRAINS; MODERATE TO HIGH
SPHERICITY; GRAINS HAVE A SLIGHT PITTED
APPEARANCE; A FEW UNCONSOLIDATED GRAINS
DUE TO BIT ACTION; FIRM FRIABLE TO MOD-
ERATE HARD TO VERY HARD; GRAIN SUPPORTED
; A FEW VISIBLE HYDROCARBONS IN SAMPLE @
11880' IN A FIRM COARSE GRAIN SANDSTONE;
CEMENTATION IS PROBABLY MORE SILICIOUS
THAN CALCITIC DUE TO VERY LOW REACTION
IN DILUTE HCl; NO OTHER VISIBLE BEDDING
FEATURES.


MAX GAS 528u
SILTSTONE = LIGHT BROWNISH GRAY TO LIGHT
GRAY TO LIGHT BLUISH GRAY; CRUNCHY TO
CORC. C.P. @ 11933'
MAX GAS 933u
MW IN 9.6 VIS 56 pH 9.7
CRUMBLY TO SEMI STIFF TENACITY; BLOCKY
CG 2270u
MW OUT 9.6 VIS 60 pH 9.3
TO SLIGHT PLANAR TO PREDOMINATELY HACKLY
FRACTURING; CUTTINGS TEND TO BE SEMI
C-5,4,3,2,1
WEDGE-LIKE TO ELONGATED TABULAR IN HABIT
MAX GAS 1055u
; SLIGHT FROSTED TO SEMI SPARKLING TO
MAX GAS 675u
SLIGHT GREASY LUSTER; GRITTY TO SILTY TO
<200 ROP 0>
<0 Ttl Gas 2K>
<10 Meth C-1 100K>
SLIGHTLY CLAYEY TEXTURE; THICK STRUCTURE
12000
<50 Avg WOB 0>
<0 CO2 40K>
<10 Ethn C-2 100K>
NIGHT TOUR
<0 Gamma 100>
<0 Flare Ht. 100>
<10 Prop C-3 100K>
MUD DATA @ 12021'
CARBONACEOUS SHALE BROWNISH BLACK TO
<10 Butn C-4 100K>
MW 9.6 VIS 55 PV 20 YP 24
BLACK TO OLIVE BLACK; DENSE TO SLIGHTLY
<10 Pent C-5 100K>
MAX GAS 1282u
API FL 6.6 GELS 8/13/18 Ph 9.6
BRITTLE TENACITY; BLOCKY TO IRREGULAR TO
CG 1342u
Cl- 1300 Ca+ 20 MBT 22.5 SOL 7.9
OCCASIONALLY SLIGHTLY PLANAR FRACTURING;
24 HR LOSSES 794.0 bbls.
CUTTINGS ARE NODULAR TO WEDGELIKE;
RESINOUS TO GREASY TO EARTHY LUSTER;
SMOOTH TO SILTY TO CLAYEY TEXTURE; THIN
STRUCTURE; INTERBEDDED WITH SANDSTONE
AND SILTSTONE.
12100
MAX GAS 3301u
MAX GAS 2274u
SANDSTONE = BROWNISH GRAY TO MEDIUM


MAX GAS 2044u
CG 1348u
MW IN 9.6 VIS 51 PH 9.8
7/16/2010
MW OUT 9.6 VIS 56 PH 9.6
MAX GAS 2040u
C-5,4,3,2,1
12200
CG 1678u
DAY TOUR
MAX GAS 954u
12300
MAX GAS 873u
CG 1666u
MW IN 9.6 VIS 53 pH 9.9
LIGHT GRAY TO OLIVE GRAY; QUARTZ
FRAMEWORK WITH LESS THAN 5 % BLACK
LITHIC CLASTS INTERBEDDED; FINE TO
MEDIUM GRAINED WITH WELL SORTING;
SUBROUNDED TO SUBANGULAR WITH MODERATE
SPHERICITY; FROSTED SURFACE ABRASION;
HARD TO MODERATE HARD; GRAIN SUPPORTED;
NO REACTION WITH HCL SUGGESTS SILICEOUS
CEMENT; NO VISIBLE BEDDING.
SILTSTONE = LIGHT BLUISH GRAY TO LIGHT
BROWNISH GRAY; CRUNCHY TO PREDOMINATELY
STIFF TO SEMI BRITTLE TENACITY; HACKLY
TO PLANAR TO OCCASIONALLY BLOCKY FRAC-
TURING; CUTTINGS TEND TO BE PLATY TO
SEMI TABULAR TO OCCASIONALLY WEDGE-LIKE
IN HABIT; FROSTED TO SLIGHT SPARKLING TO
SEMI GREASY LUSTER; GRITTY TO GRANULAR
TO SILTY TEXTURE; NO OTHER VISIBLE BED-
DING FEATURES.
COAL = OLIVE BLACK TO GRAYISH BLACK TO


MW OUT 9.6 VIS 61 pH 9.7
MAX GAS 453u
C-4,3,2,1
MAX GAS 621u
CG 1377u
MAX GAS 576u
12400
WOB 24-26
RPM 67-70
PP 3600-3700
GPM 644
MAX GAS 580u
<200 ROP 0>
<0 Ttl Gas 2K><10 Meth C-1 100K>
<50 Avg WOB 0>
<0 CO2 40K><10 Etha C-2 100K>
MAX GAS 549u
<0 Gamma 100>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buta C-4 100K>
CG 1370u
C-5,4,3,2,1
<10 Pent C-5 100K>
12500
NIGHT TOUR
MW IN 9.6 VIS 55 PH 9.9
MW OUT 9.6 VIS 66 PH 9.6
COR. MARINE @ 12560
MUD DATA @ 12560
BROWNISH BLACK; STIFF TO CRUNCHY TO
OCCASIONALLY CRUMBLY TENACITY; BLOCKY TO
PREDOMINATELY CONCHOIDAL TO SEMI PLANAR
FRACTURING; CUTTINGS TEND TO BE MOSTLY
WEDGE-LIKE TO SLIGHT ELONGATED TABULAR
TO SLIGHT BLADED IN HABIT; DULL EARTHY
TO WAXY TO SEMI SPARKLING LUSTER; MATTE
TO SMOOTH TO SLIGHT GRITTY TEXTURE; VIS-
IBLE DEGASSING ALONG THE CARBONACEOUS
MATERIAL.
SANDSTONE = VERY LIGHT GRAY TO WHITE TO
VERY LIGHT BROWNISH GRAY; MOSTLY QUARTZ
FRAMEWORK WITH 7-8% DARK LITHICS VISIBLE
IN SAMPLE; COARSE TO MEDIUM TO MOSTLY
FINE TO VERY FINE GRAIN; FAIR TO WELL
SORTED; ROUND TO SUB-ROUND GRAINS; LOW
SPHERICITY; HARD TO VERY HARD; VERY LOW
TO NO REACTION WITH HCL SUGGESTS
SILICEOUS CEMENT; NO VISIBLE BEDDING.
SILTSTONE = BROWNISH GRAY TO OLIVE GRAY


MAX GAS 961u
MW 9.6 VIS 54 PV 20 YP 24
API FL 6.0 GELS 8/12/15 pH 9.90
Cl- 1300 Ca+ 29 MBT 20.0 SOL 7.9
24 HR LOSSES 323.6
12600
CG 1281u
MAX GAS 733u
7/17/2010
12700
CG 1470u
MW IN 9.8 VIS 56 PH 10.0
MW OUT 9.65 VIS 57 PH 9.8
C-4,3,2,1
TO BROWNISH BLACK; TOUGH TO SLIGHTLY
BRITTLE TENACITY; IRREGULAR TO BLOCKY
FRACTURING; CUTTINGS ARE MASSIVE TO
TABULAR; EARTHY TO DULL WITH A SPARKLING
LUSTER; SILTY TO GRITTY TEXTURE; MASSIVE
TO THICK STRUCTURE.
SHALE = MEDIUM GRAY TO MEDIUM BLUISH
GRAY WITH LIGHT OLIVE BROWN HUES;
BRITTLE TO SLIGHTLY CRUNCHY TENACITY;
PLANAR TO SPLINTERY FRACTURING; CUTTINGS
ARE PLATY TO FLAKY; DULL WAXY LUSTER;
SILTY TO SMOOTH TEXTURE; LAMINAE TO THIN
STRUCTURE.
NOTE = REACHED TOTAL DEPTH OF 12776' MD
ON 7/17/2010 AT APPROXIMATELY 3:50 AM.