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	FRU197-33B2
FIELD	FREEDOM RANCH
REGION	ROCKIES
COORDINATES	39.921413000
	-108.282489000
ELEVATION	G.L: 6459.9'
	RKB: 30.2'
COUNTY, STATE	RIO BLANCO, CO
API INDEX	051031142700
SPUD DATE	3/19/2010
CONTRACTOR	HP
CO. REP.	W.GARNER
RIG/TYPE	HP321
LOGGING UNIT	MLU#31
GEOLOGISTS	B.DELANEY
	C.RECORD
ADD. PERSONS	M.FRANCO
CO. GEOLOGIST	C.ALBA

LOG INTERVAL

DEPTHS:	4521'	**TO**	12754'
DATES:	06/06/2010	**TO**	06/17/2010
SCALE:	5"=100'		

MUD TYPES

WATER-BASED	**TO**	4521'
LSND	**TO**	12754'
	TO	
	TO	

CASING DATA

16"	**AT**	150'
10.75"	**AT**	4512'
4.5"	**AT**	12744'
	AT	

HOLE SIZE

14.75"	**TO**	4521'
8.9"	**TO**	11870'
7.875"	**TO**	12754'
	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

<150 ROP 0> ft/hr
<50 Avg WOB 0> klbs

Depth

Lithology

MGS

<0 Ttl Gas 1K> units
<0 CO2 10K> 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

4300

4400

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

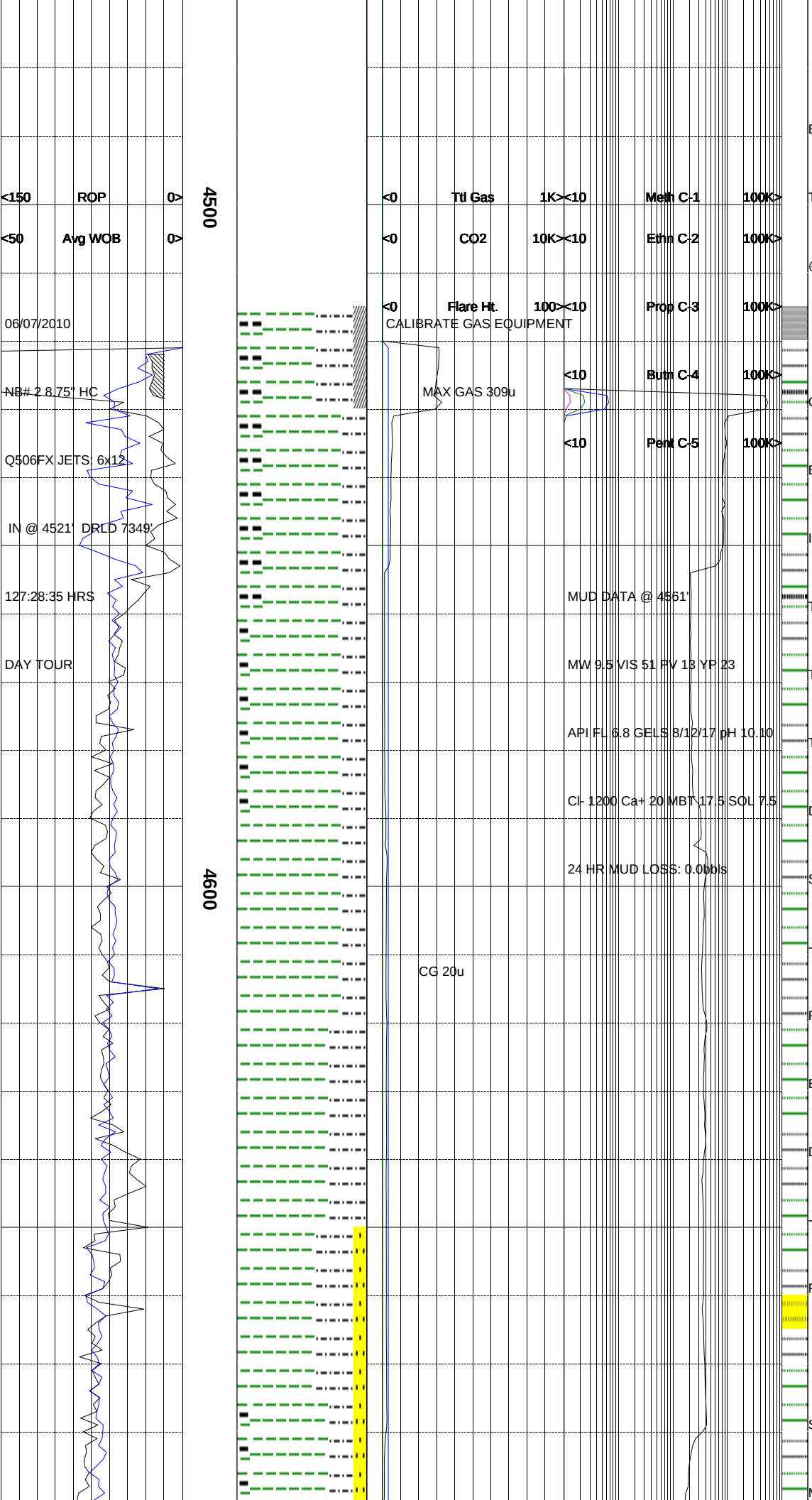
PROPANE = 980 PPM

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 197-33B2 WELL ON 6/6/2010

@ 4522' MD.

CARBONACEOUS SHALE =BLACK TO BROWNISH

BLACK TO OLIVE BLACK TO VERY DARK BROWN-

ISH GRAY; SLIGHTLY DENSE TO MODERATELY

TOUGH TENACITY; IRREGULAR TO SUB-BLOCKY

TO SUB-PLANAR TO EARTHY FRACTURE; SUB-

TABULAR TO SUB-NODULAR CUTTINGS HABIT;

DULL TO EARTHY DULL TO OCCASIONAL VERY

SLIGHTLY SPARKLING LUSTER; SLIGHTLY CLAY

-EY TO VERY SLIGHTLY GRITTY TEXTURE;

POOR GRADE CARBONACEOUS SHALE VISIBLE

BEDDING WITH POOR GRADE SHALE, NO OTHER

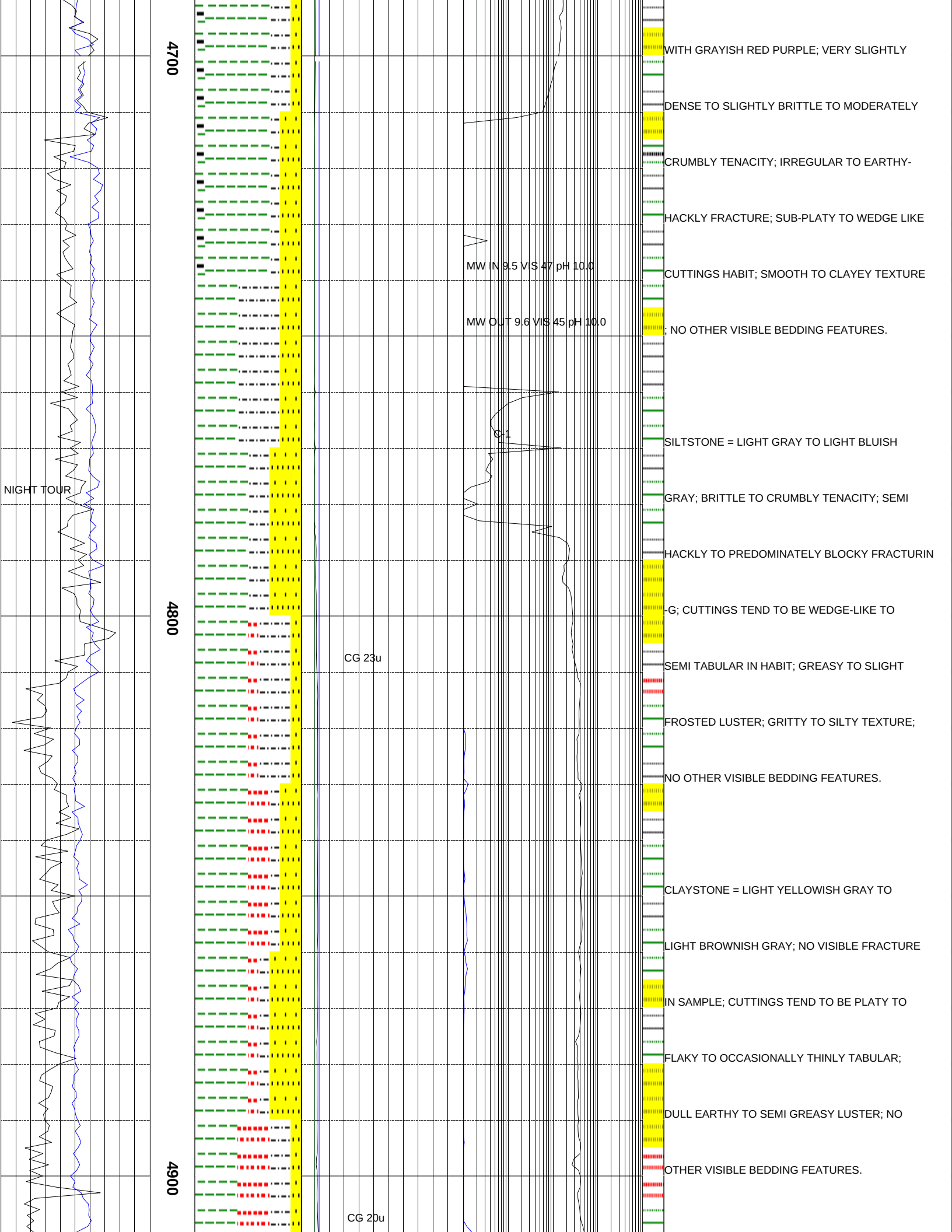
DISTINGUISHABLE STRUCTURAL FEATURES PRES

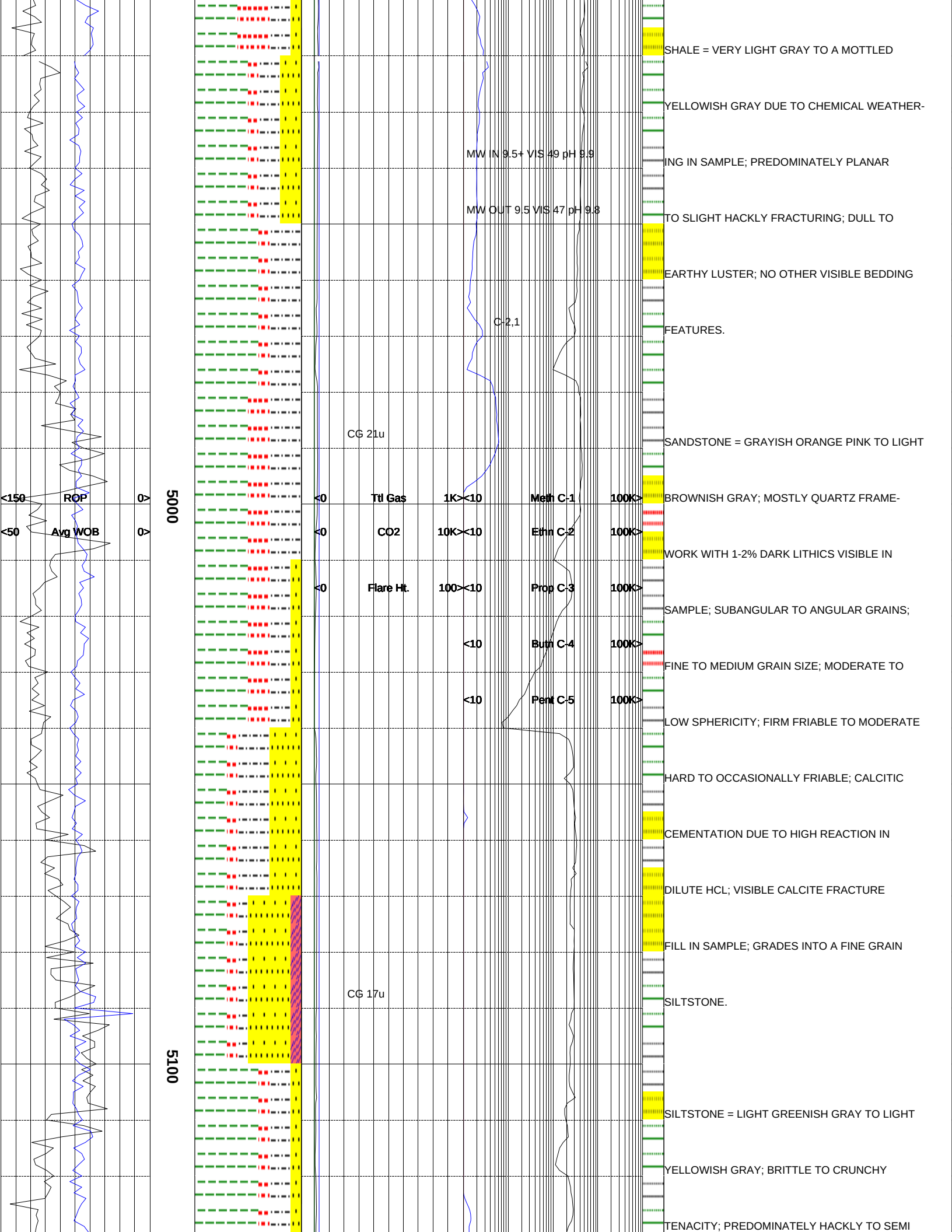
-ENT IN SAMPLE; NO ACCESSORY MINERALS

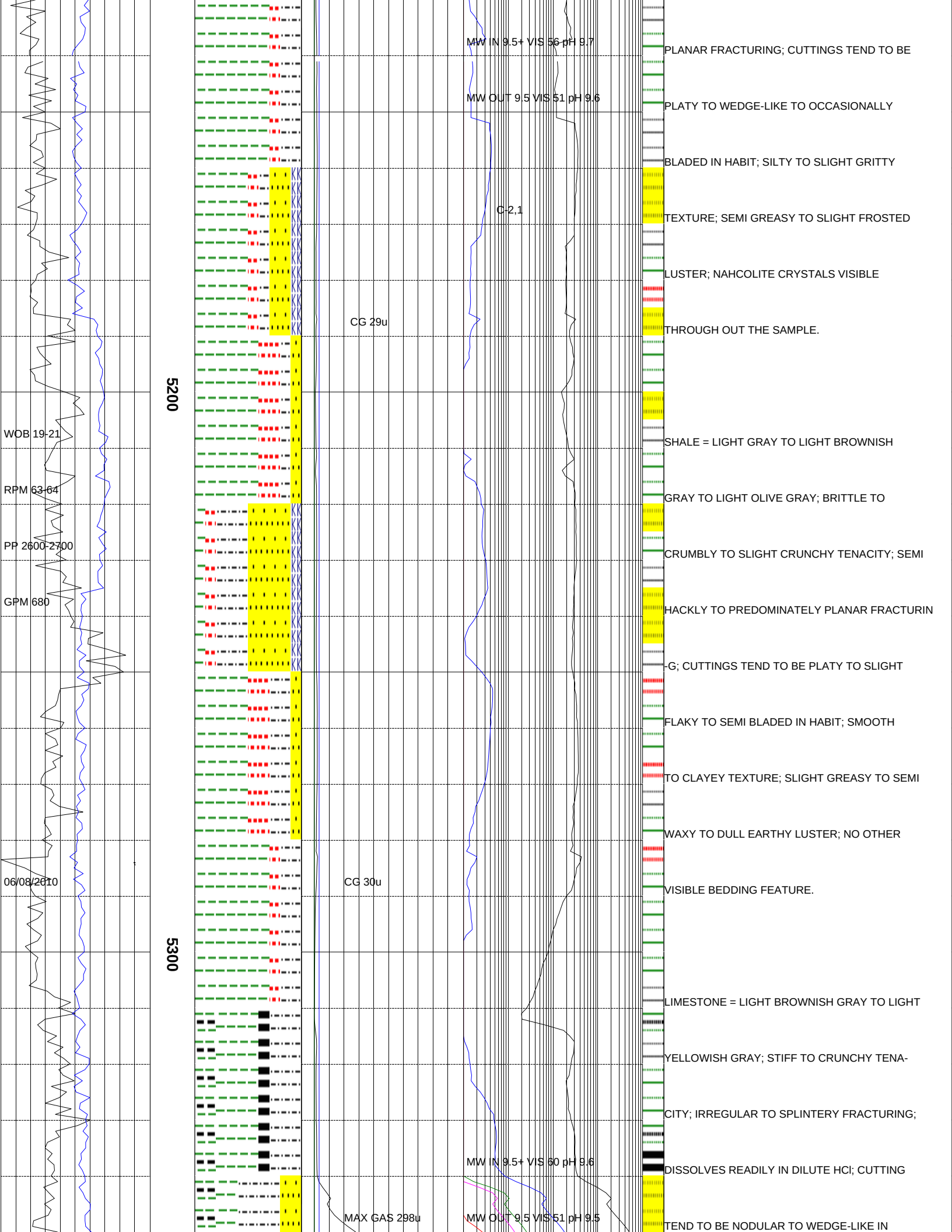
PRESENT IN SAMPLE.

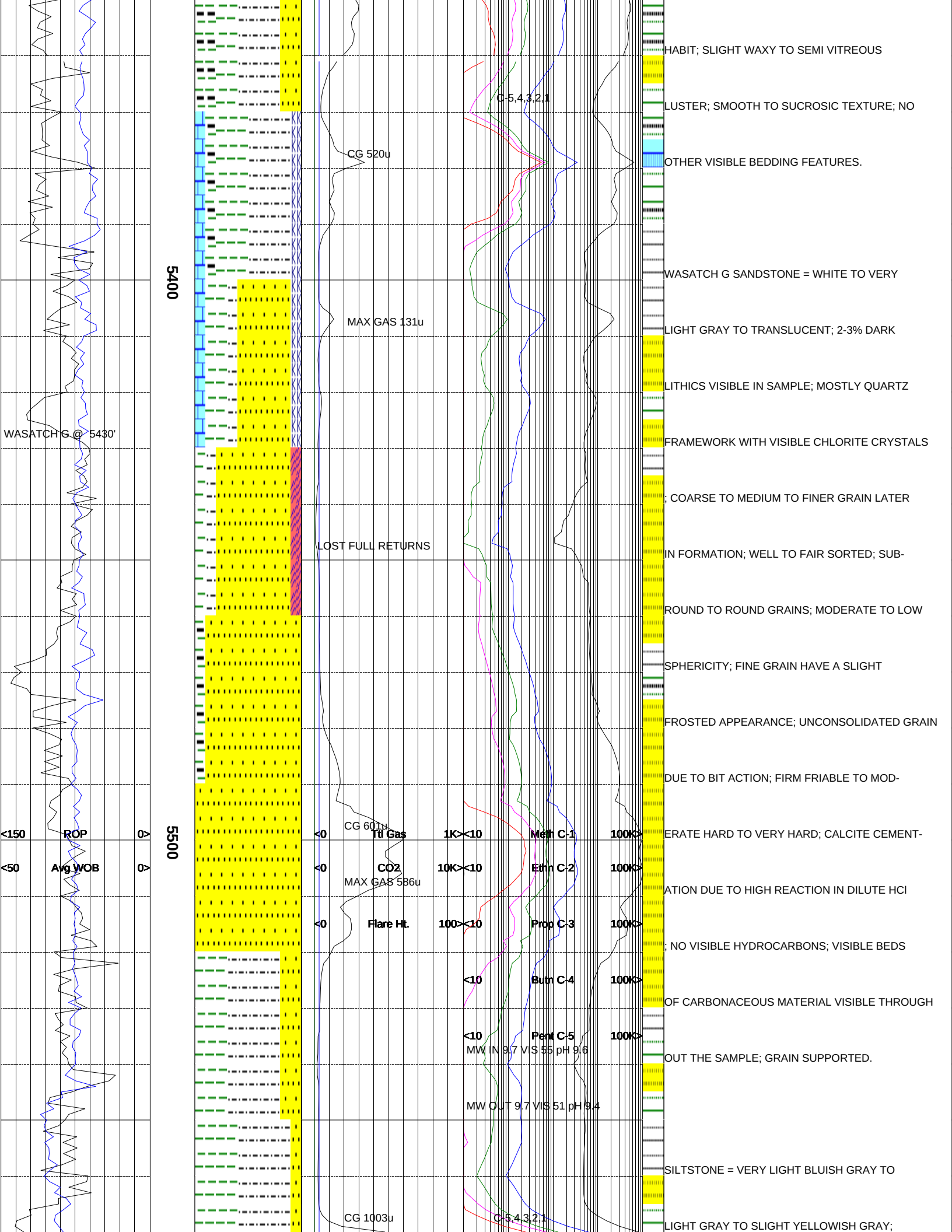
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO

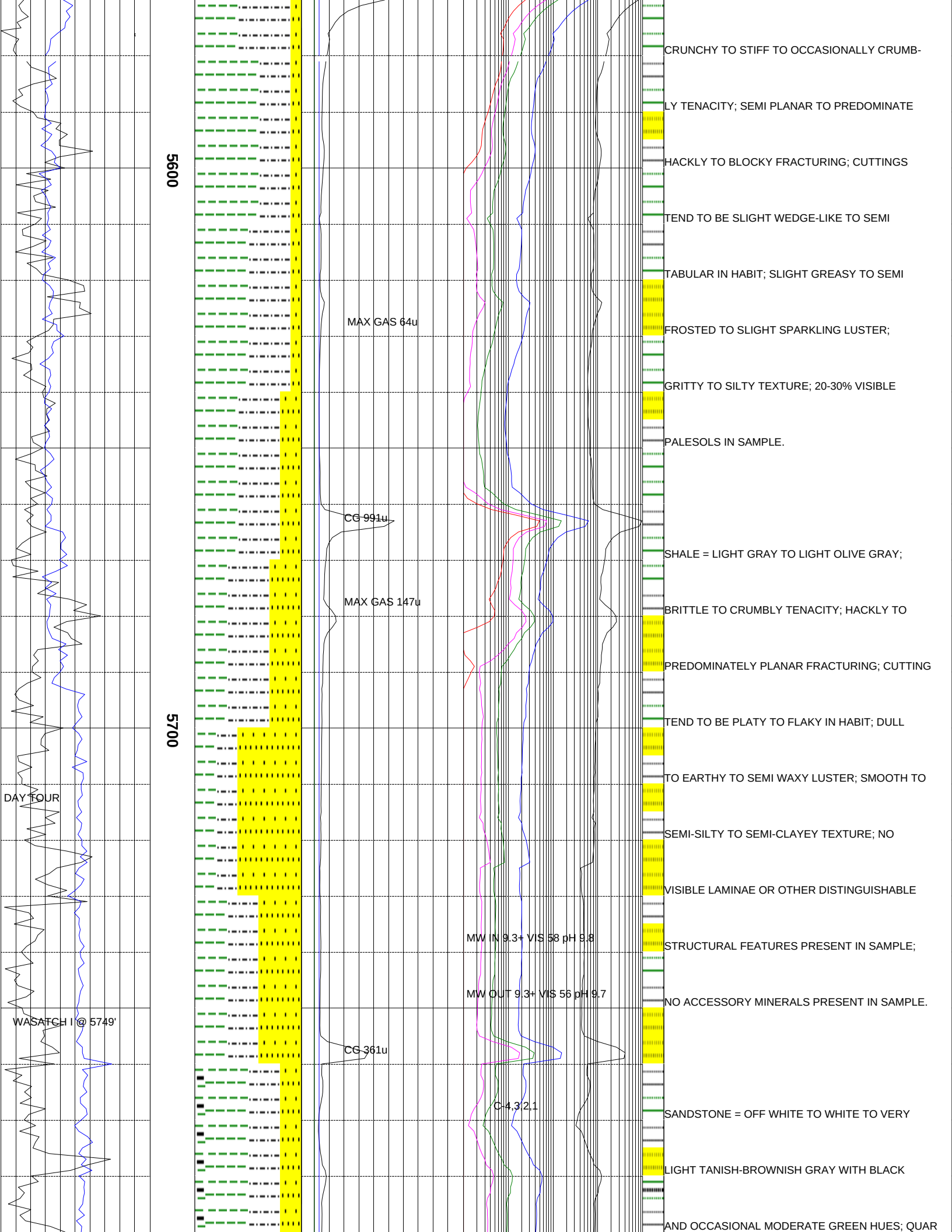
MEDIUM LIGHT GRAY TO OCCASIONAL MOTTLING

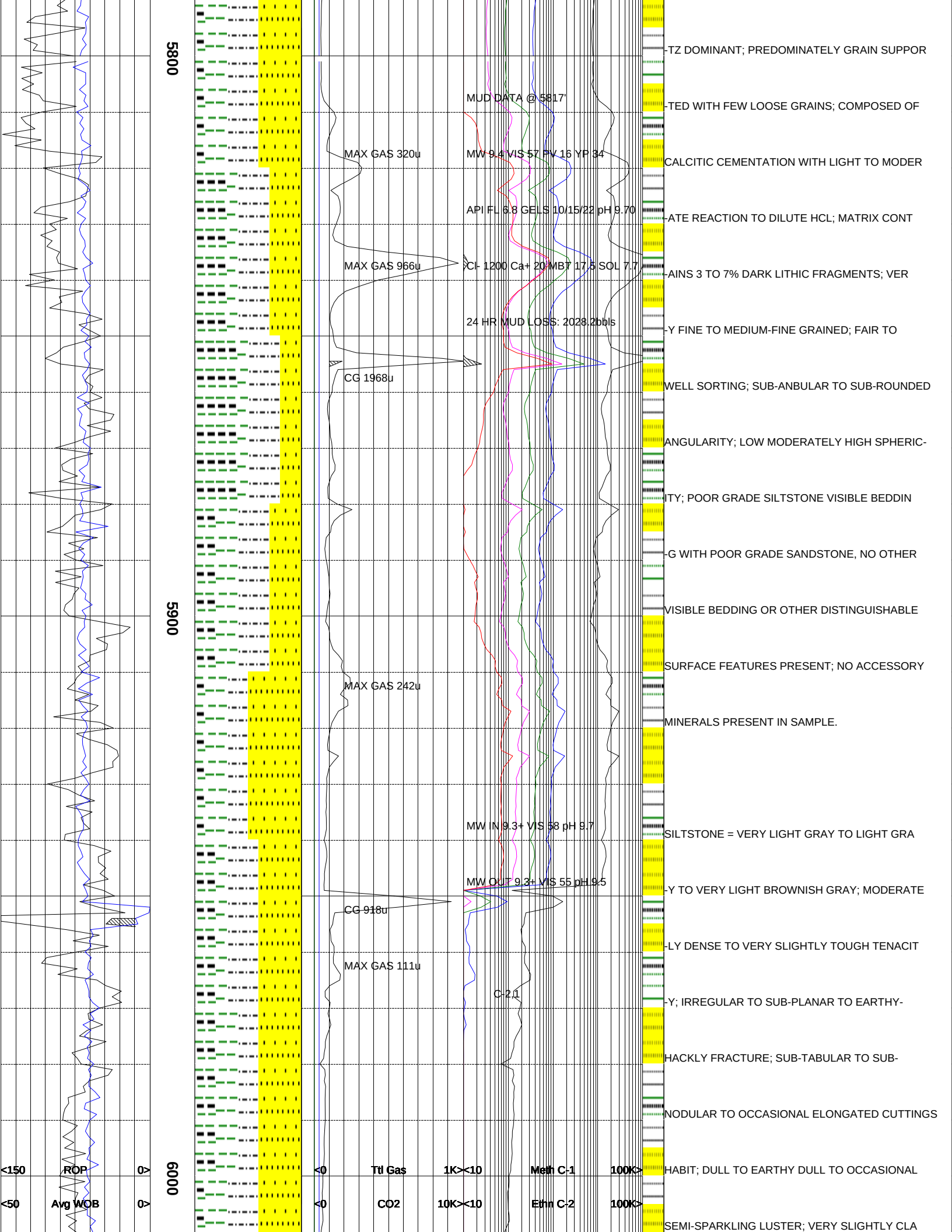

4700
4800
4900
NIGHT TOUR
MW IN 9.5 VIS 47 pH 10.0
MW OUT 9.6 VIS 45 pH 10.0
C-1
CG 23u
CG 20u
WITH GRAYISH RED PURPLE; VERY SLIGHTLY
DENSE TO SLIGHTLY BRITTLE TO MODERATELY
CRUMBLY TENACITY; IRREGULAR TO EARTHY-
HACKLY FRACTURE; SUB-PLATY TO WEDGE LIKE
CUTTINGS HABIT; SMOOTH TO CLAYEY TEXTURE
; NO OTHER VISIBLE BEDDING FEATURES.
SILTSTONE = LIGHT GRAY TO LIGHT BLUISH
GRAY; BRITTLE TO CRUMBLY TENACITY; SEMI
HACKLY TO PREDOMINATELY BLOCKY FRACTURIN
-G; CUTTINGS TEND TO BE WEDGE-LIKE TO
SEMI TABULAR IN HABIT; GREASY TO SLIGHT
FROSTED LUSTER; GRITTY TO SILTY TEXTURE;
NO OTHER VISIBLE BEDDING FEATURES.
CLAYSTONE = LIGHT YELLOWISH GRAY TO
LIGHT BROWNISH GRAY; NO VISIBLE FRACTURE
IN SAMPLE; CUTTINGS TEND TO BE PLATY TO
FLAKY TO OCCASIONALLY THINLY TABULAR;
DULL EARTHY TO SEMI GREASY LUSTER; NO
OTHER VISIBLE BEDDING FEATURES.

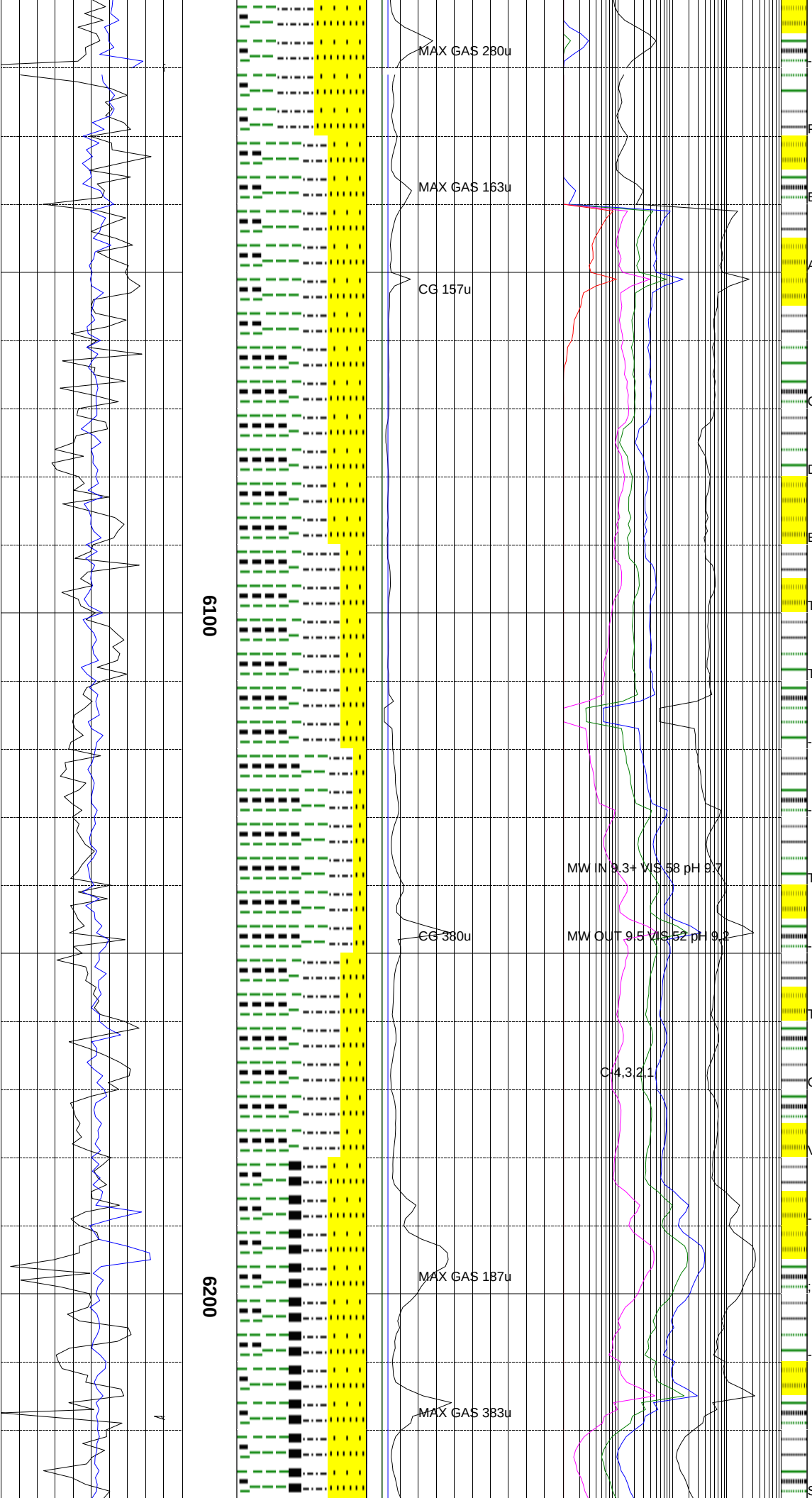

SHALE = VERY LIGHT GRAY TO A MOTTLED
YELLOWISH GRAY DUE TO CHEMICAL WEATHER-
ING IN SAMPLE; PREDOMINATELY PLANAR
TO SLIGHT HACKLY FRACTURING; DULL TO
EARTHY LUSTER; NO OTHER VISIBLE BEDDING
FEATURES.
SANDSTONE = GRAYISH ORANGE PINK TO LIGHT
BROWNISH GRAY; MOSTLY QUARTZ FRAME-
WORK WITH 1-2% DARK LITHICS VISIBLE IN
SAMPLE; SUBANGULAR TO ANGULAR GRAINS;
FINE TO MEDIUM GRAIN SIZE; MODERATE TO
LOW SPHERICITY; FIRM FRIABLE TO MODERATE
HARD TO OCCASIONALLY FRIABLE; CALCITIC
CEMENTATION DUE TO HIGH REACTION IN
DILUTE HCL; VISIBLE CALCITE FRACTURE
FILL IN SAMPLE; GRADES INTO A FINE GRAIN
SILTSTONE.
SILTSTONE = LIGHT GREENISH GRAY TO LIGHT
YELLOWISH GRAY; BRITTLE TO CRUNCHY
TENACITY; PREDOMINATELY HACKLY TO SEMI
MW IN 9.5+ VIS 49 pH 9.9
MW OUT 9.5 VIS 47 pH 9.8
C-2,1
CG 21u
CG 17u
5000
5100
<150 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
<0 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
<10 Pent C-5 100K>


MW IN 9.5+ VIS 56 pH 9.7
MW OUT 9.5 VIS 51 pH 9.6
C-2,1
CG 29u
5200
WOB 19-21
RPM 63-64
PP 2600-2700
GPM 680
06/08/2010
CG 30u
5300
MW IN 9.5+ VIS 60 pH 9.6
MAX GAS 298u
MW OUT 9.5 VIS 51 pH 9.5
PLANAR FRACTURING; CUTTINGS TEND TO BE
PLATY TO WEDGE-LIKE TO OCCASIONALLY
BLADED IN HABIT; SILTY TO SLIGHT GRITTY
TEXTURE; SEMI GREASY TO SLIGHT FROSTED
LUSTER; NAHCOLITE CRYSTALS VISIBLE
THROUGH OUT THE SAMPLE.
SHALE = LIGHT GRAY TO LIGHT BROWNISH
GRAY TO LIGHT OLIVE GRAY; BRITTLE TO
CRUMBLY TO SLIGHT CRUNCHY TENACITY; SEMI
HACKLY TO PREDOMINATELY PLANAR FRACTURIN
-G; CUTTINGS TEND TO BE PLATY TO SLIGHT
FLAKY TO SEMI BLADED IN HABIT; SMOOTH
TO CLAYEY TEXTURE; SLIGHT GREASY TO SEMI
WAXY TO DULL EARTHY LUSTER; NO OTHER
VISIBLE BEDDING FEATURE.
LIMESTONE = LIGHT BROWNISH GRAY TO LIGHT
YELLOWISH GRAY; STIFF TO CRUNCHY TENA-
CITY; IRREGULAR TO SPLINTERY FRACTURING;
DISSOLVES READILY IN DILUTE HCl; CUTTING
TEND TO BE NODULAR TO WEDGE-LIKE IN


5400
5500
WASATCH G @ 5430'
CG 520u
C-5,4,3,2,1
MAX GAS 131u
LOST FULL RETURNS
CG 601u
MAX GAS 586u
CG 1003u
C-5,4,3,2,1
<150 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
<0 CO2 10K><10 Eth C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
MW IN 9.7 VIS 55 pH 9.6
MW OUT 9.7 VIS 51 pH 9.4
HABIT; SLIGHT WAXY TO SEMI VITREOUS
LUSTER; SMOOTH TO SUCROSIC TEXTURE; NO
OTHER VISIBLE BEDDING FEATURES.
WASATCH G SANDSTONE = WHITE TO VERY
LIGHT GRAY TO TRANSLUCENT; 2-3% DARK
LITHICS VISIBLE IN SAMPLE; MOSTLY QUARTZ
FRAMEWORK WITH VISIBLE CHLORITE CRYSTALS
; COARSE TO MEDIUM TO FINER GRAIN LATER
IN FORMATION; WELL TO FAIR SORTED; SUB-
ROUND TO ROUND GRAINS; MODERATE TO LOW
SPHERICITY; FINE GRAIN HAVE A SLIGHT
FROSTED APPEARANCE; UNCONSOLIDATED GRAIN
DUE TO BIT ACTION; FIRM FRIABLE TO MOD-
ERATE HARD TO VERY HARD; CALCITE CEMENT-
ATION DUE TO HIGH REACTION IN DILUTE HCI
; NO VISIBLE HYDROCARBONS; VISIBLE BEDS
OF CARBONACEOUS MATERIAL VISIBLE THROUGH
OUT THE SAMPLE; GRAIN SUPPORTED.
SILTSTONE = VERY LIGHT BLUISH GRAY TO
LIGHT GRAY TO SLIGHT YELLOWISH GRAY;


5600
5700
MAX GAS 64u
CG 991u
MAX GAS 147u
MW IN 9.3+ VIS 58 pH 9.8
MW OUT 9.3+ VIS 56 pH 9.7
CG 361u
C-4,3,2,1
DAY TOUR
WASATCH I @ 5749'
CRUNCHY TO STIFF TO OCCASIONALLY CRUMB-
LY TENACITY; SEMI PLANAR TO PREDOMINATE
HACKLY TO BLOCKY FRACTURING; CUTTINGS
TEND TO BE SLIGHT WEDGE-LIKE TO SEMI
TABULAR IN HABIT; SLIGHT GREASY TO SEMI
FROSTED TO SLIGHT SPARKLING LUSTER;
GRITTY TO SILTY TEXTURE; 20-30% VISIBLE
PALESOLS IN SAMPLE.
SHALE = LIGHT GRAY TO LIGHT OLIVE GRAY;
BRITTLE TO CRUMBLY TENACITY; HACKLY TO
PREDOMINATELY PLANAR FRACTURING; CUTTING
TEND TO BE PLATY TO FLAKY IN HABIT; DULL
TO EARTHY TO SEMI WAXY LUSTER; SMOOTH TO
SEMI-SILTY TO SEMI-CLAYEY TEXTURE; NO
VISIBLE LAMINAE OR OTHER DISTINGUISHABLE
STRUCTURAL FEATURES PRESENT IN SAMPLE;
NO ACCESSORY MINERALS PRESENT IN SAMPLE.
SANDSTONE = OFF WHITE TO WHITE TO VERY
LIGHT TANISH-BROWNISH GRAY WITH BLACK
AND OCCASIONAL MODERATE GREEN HUES; QUAR


5800
5900
6000
MUD DATA @ 5817'
MAX GAS 320u
MW 9.4 VIS 57 PV 16 YP 34
API FL 6.8 GELS 10/15/22 pH 9.70
MAX GAS 966u
Cl- 1200 Ca+ 20 MBT 17.5 SOL 7.7
24 HR MUD LOSS: 2028.2bbls
CG 1968u
MAX GAS 242u
MW IN 9.3+ VIS 58 pH 9.7
MW OUT 9.3+ VIS 55 pH 9.5
CG 918u
MAX GAS 111u
C-2.1
-TZ DOMINANT; PREDOMINATELY GRAIN SUPPOR
-TED WITH FEW LOOSE GRAINS; COMPOSED OF
CALCITIC CEMENTATION WITH LIGHT TO MODER
-ATE REACTION TO DILUTE HCL; MATRIX CONT
-AINS 3 TO 7% DARK LITHIC FRAGMENTS; VER
-Y FINE TO MEDIUM-FINE GRAINED; FAIR TO
WELL SORTING; SUB-ANBULAR TO SUB-ROUNDED
ANGULARITY; LOW MODERATELY HIGH SPHERIC-
ITY; POOR GRADE SILTSTONE VISIBLE BEDDIN
-G WITH POOR GRADE SANDSTONE, NO OTHER
VISIBLE BEDDING OR OTHER DISTINGUISHABLE
SURFACE FEATURES PRESENT; NO ACCESSORY
MINERALS PRESENT IN SAMPLE.
SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
-Y TO VERY LIGHT BROWNISH GRAY; MODERATE
-LY DENSE TO VERY SLIGHTLY TOUGH TENACIT
-Y; IRREGULAR TO SUB-PLANAR TO EARTHY-
HACKLY FRACTURE; SUB-TABULAR TO SUB-
NODULAR TO OCCASIONAL ELONGATED CUTTINGS
HABIT; DULL TO EARTHY DULL TO OCCASIONAL
SEMI-SPARKLING LUSTER; VERY SLIGHTLY CLA
<150
ROP
0>
<50
Avg WOB
0>
<0
Ttl Gas
1K><10
Meth C-1
100K>
<0
CO2
10K><10
Ethn C-2
100K>



-YEY TO VERY SLIGHTLY GRITTY TEXTURE;

-POOR GRADE SILTSTONE VISIBLE GRADING AND

-BEDDING WITH POOR GRADE SANDSTONE; NO

-ACCESSORY MINERALS PRESENT IN SAMPLE.

-CARBONACEOUS SHALE = BROWNISH GRAY TO

-DARK BROWNISH GRAY TO OCCASIONAL OLIVE

-BLACK; MODERATELY DENSE TO SLIGHTLY

-TOUGH TENACITY; IRREGULAR TO SUB-BLOCKY

-TO SUB-PLANAR TO EARTHY FRACTURE; OCCASI

--ONAL MASSIVE TO SUB-TABULAR TO SUB-NODU

--LAR CUTTINGS HABIT; DULL TO EARTHY DULL

-TO OCCASIONAL SEMI-SPARKLING LUSTER; SLI

--GHTLY CLAYEY TO VERY SLIGHTLY GRITTY

-TEXTURE; CARBONACEOUS SHALE AND POOR

-GRADE SANDSTONE VISIBLE BEDDING WITH

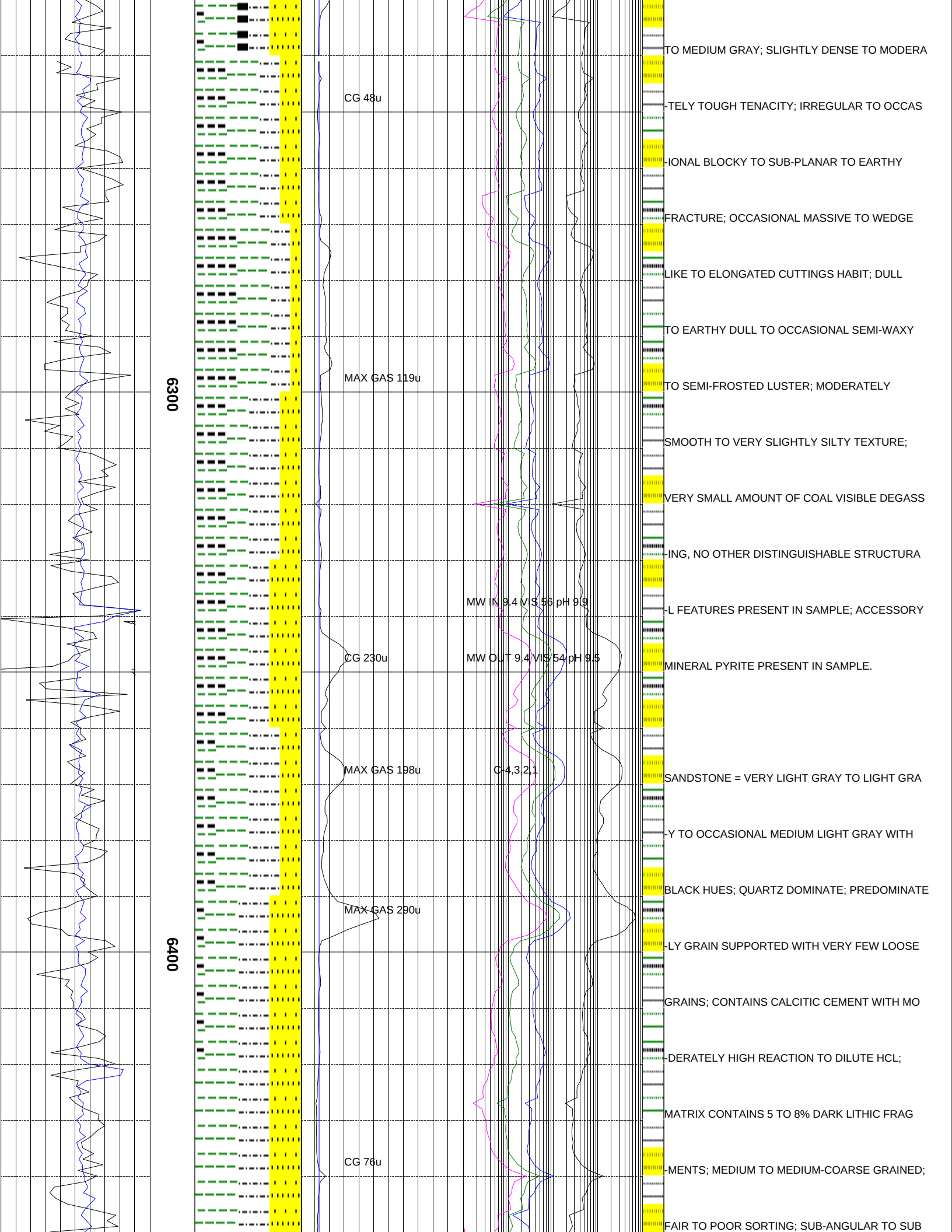
-VERY SMALL AMOUNT OF COAL, NO OTHER DIST

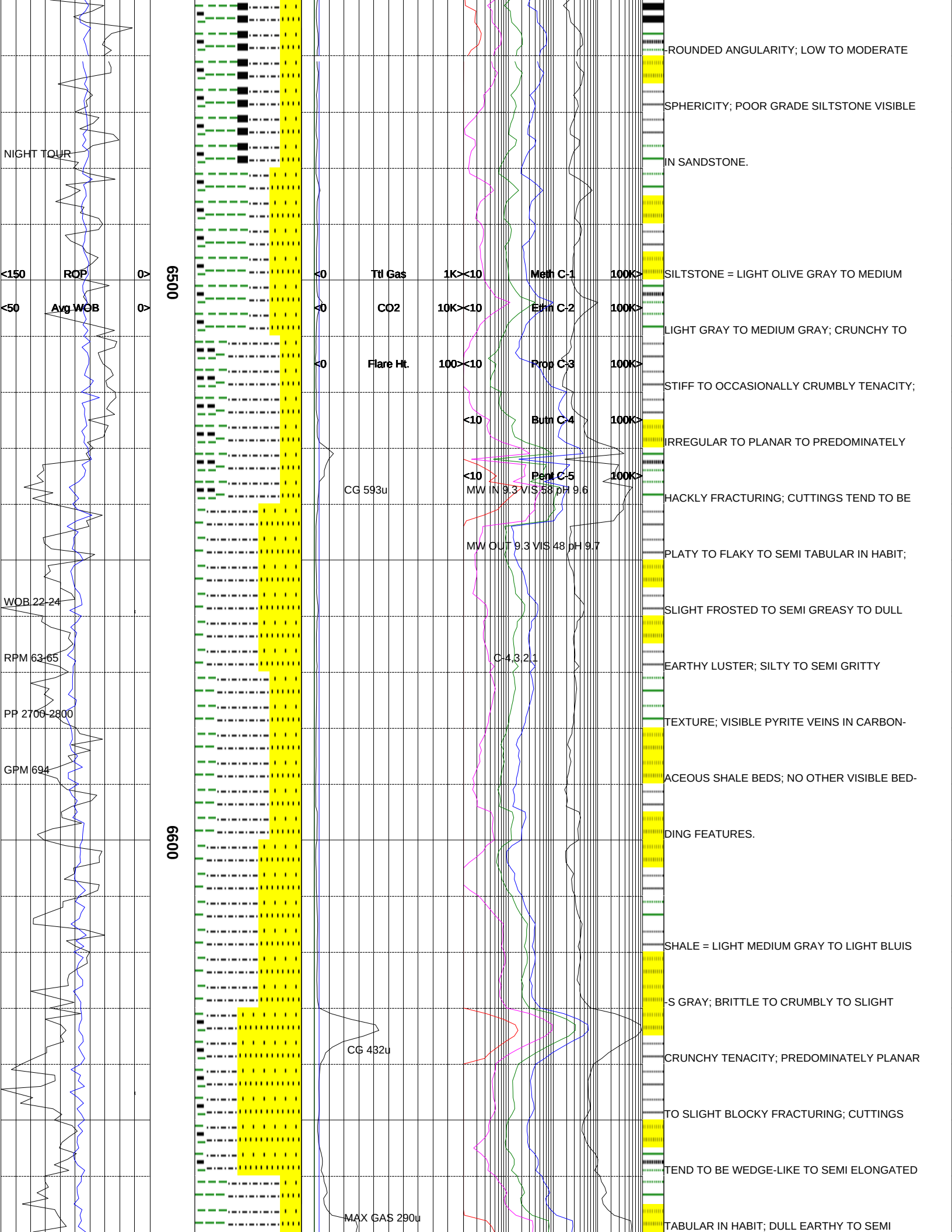
--INGUISHABLE STRUCTURAL FEATURES PRESENT

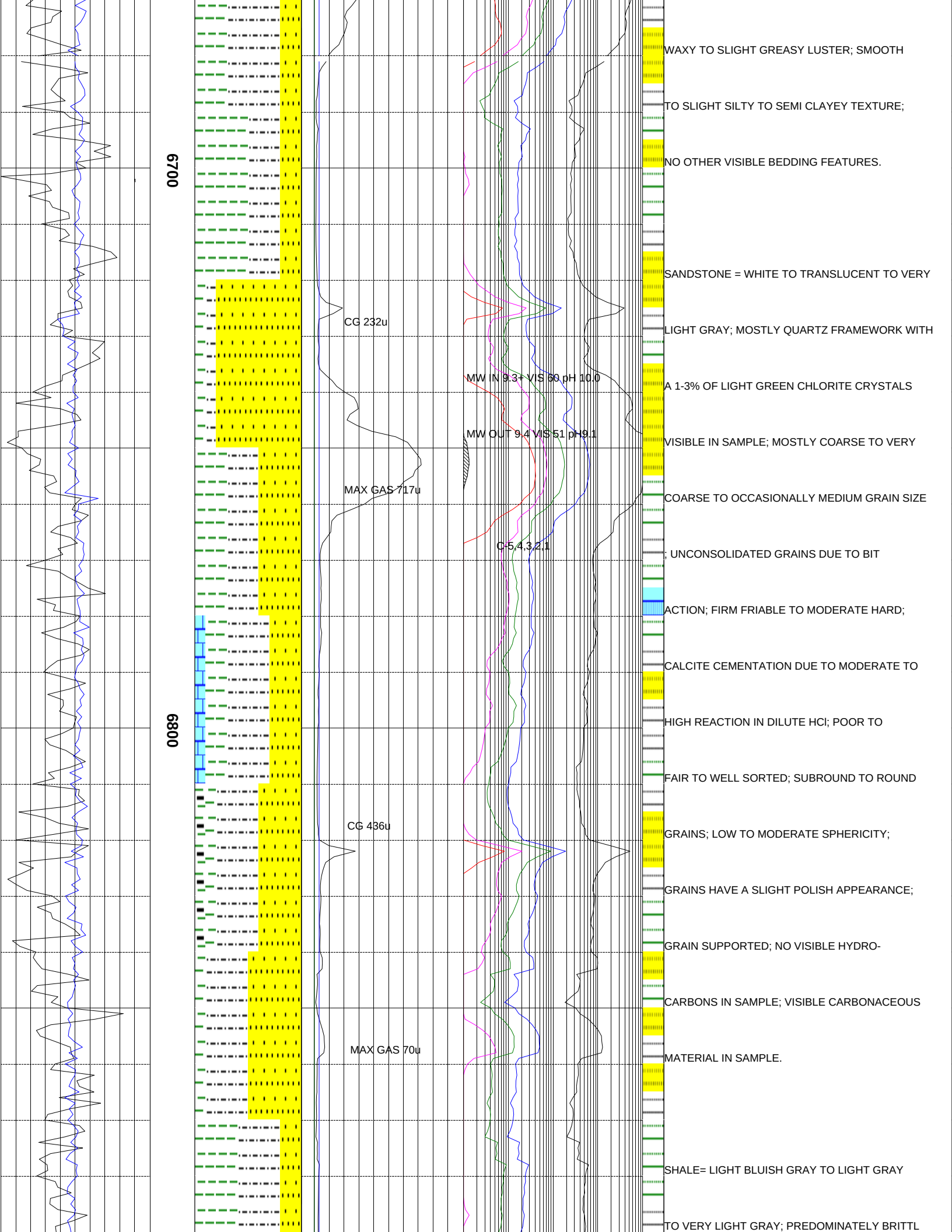
--; ACCESSORY MINERAL PYRITE PRESENT IN SA

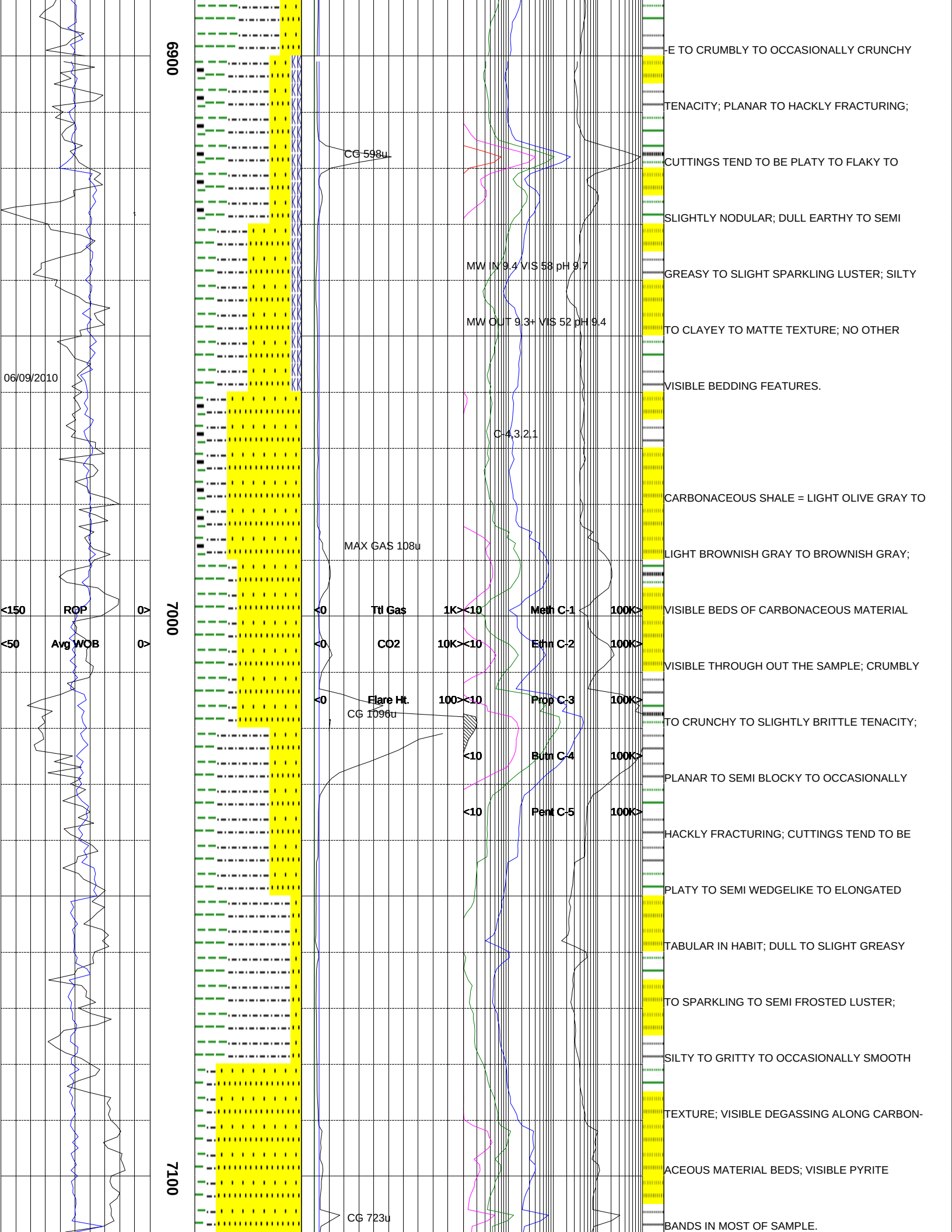
--MPLE.

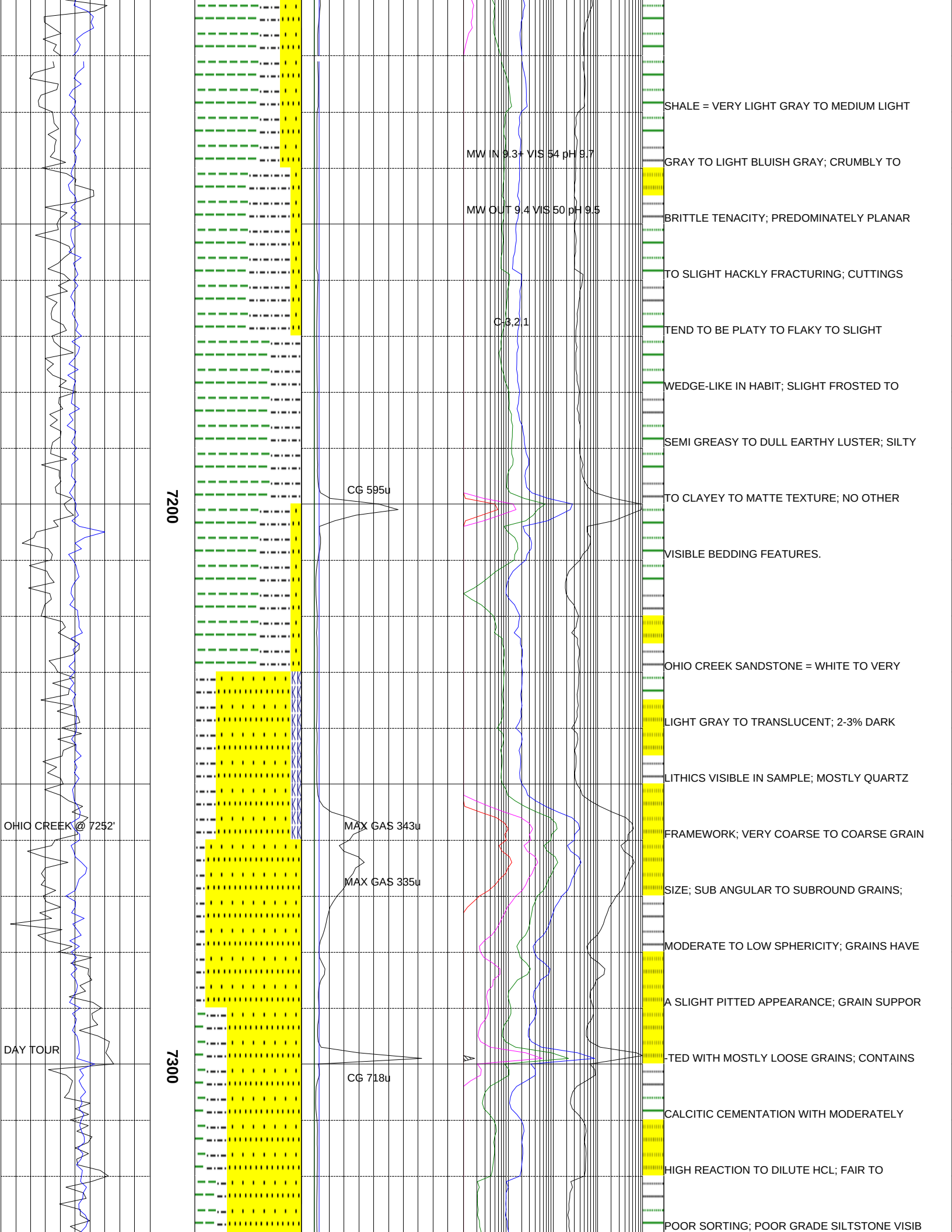
-SHALE = LIGHT GRAY TO MEDIUM LIGHT GRAY

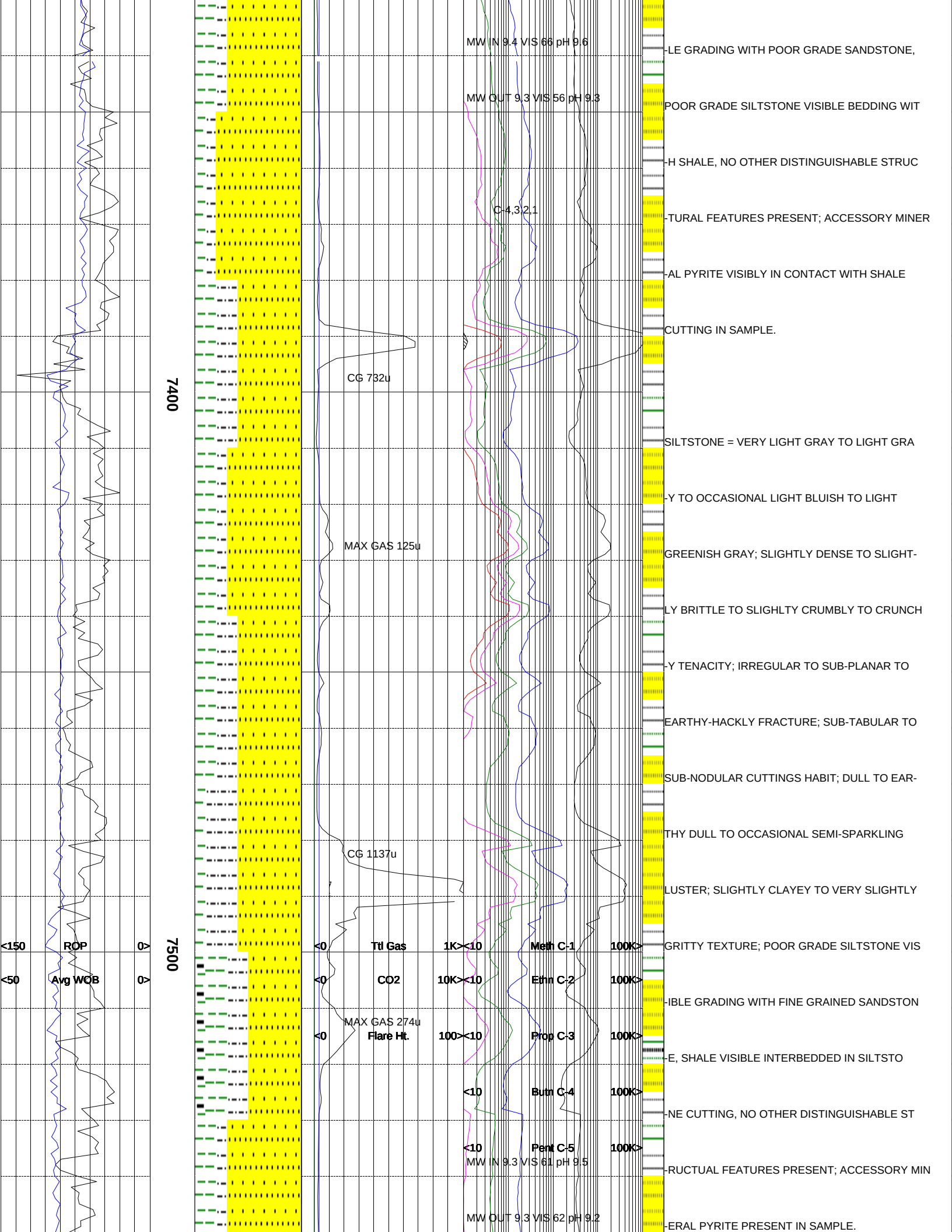

6300
6400
CG 48u
MAX GAS 119u
MW IN 9.4 VIS 56 pH 9.9
CG 230u
MW OUT 9.4 VIS 54 pH 9.5
MAX GAS 198u
C-4,3,2,1
MAX GAS 290u
CG 76u
TO MEDIUM GRAY; SLIGHTLY DENSE TO MODERA
-TELY TOUGH TENACITY; IRREGULAR TO OCCAS
-IONAL BLOCKY TO SUB-PLANAR TO EARTHY
FRACTURE; OCCASIONAL MASSIVE TO WEDGE
-LIKE TO ELONGATED CUTTINGS HABIT; DULL
TO EARTHY DULL TO OCCASIONAL SEMI-WAXY
TO SEMI-FROSTED LUSTER; MODERATELY
SMOOTH TO VERY SLIGHTLY SILTY TEXTURE;
VERY SMALL AMOUNT OF COAL VISIBLE DEGASS
-ING, NO OTHER DISTINGUISHABLE STRUCTURA
-L FEATURES PRESENT IN SAMPLE; ACCESSORY
MINERAL PYRITE PRESENT IN SAMPLE.
SANDSTONE = VERY LIGHT GRAY TO LIGHT GRA
-Y TO OCCASIONAL MEDIUM LIGHT GRAY WITH
BLACK HUES; QUARTZ DOMINATE; PREDOMINATE
-LY GRAIN SUPPORTED WITH VERY FEW LOOSE
GRAINS; CONTAINS CALCITIC CEMENT WITH MO
-DERATELY HIGH REACTION TO DILUTE HCL;
MATRIX CONTAINS 5 TO 8% DARK LITHIC FRAG
-MENTS; MEDIUM TO MEDIUM-COARSE GRAINED;
FAIR TO POOR SORTING; SUB-ANGULAR TO SUB


NIGHT TOUR
<150 ROP 0>
<50 Avg WOB 0>
6500
<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 Butn C-4 100K>
<10 Pent C-5 100K>
CG 593u
MW IN 9.3 VIS 58 pH 9.6
MW OUT 9.3 VIS 48 pH 9.7
WOB 22-24
RPM 63-65
C-4,3,2,1
PP 2700-2800
GPM 694
6600
CG 432u
MAX GAS 290u
-ROUNDED ANGULARITY; LOW TO MODERATE
-SPHERICITY; POOR GRADE SILTSTONE VISIBLE
IN SANDSTONE.
SILTSTONE = LIGHT OLIVE GRAY TO MEDIUM
LIGHT GRAY TO MEDIUM GRAY; CRUNCHY TO
STIFF TO OCCASIONALLY CRUMBLY TENACITY;
IRREGULAR TO PLANAR TO PREDOMINATELY
HACKLY FRACTURING; CUTTINGS TEND TO BE
PLATY TO FLAKY TO SEMI TABULAR IN HABIT;
SLIGHT FROSTED TO SEMI GREASY TO DULL
EARTHY LUSTER; SILTY TO SEMI GRITTY
TEXTURE; VISIBLE PYRITE VEINS IN CARBON-
ACEOUS SHALE BEDS; NO OTHER VISIBLE BED-
DING FEATURES.
SHALE = LIGHT MEDIUM GRAY TO LIGHT BLUIS
-S GRAY; BRITTLE TO CRUMBLY TO SLIGHT
CRUNCHY TENACITY; PREDOMINATELY PLANAR
TO SLIGHT BLOCKY FRACTURING; CUTTINGS
TEND TO BE WEDGE-LIKE TO SEMI ELONGATED
TABULAR IN HABIT; DULL EARTHY TO SEMI


6700
6800
CG 232u
MW IN 9.3+ VIS 60 pH 10.0
MW OUT 9.4 VIS 51 pH 9.1
MAX GAS 717u
C-5,4,3,2,1
CG 436u
MAX GAS 70u
WAXY TO SLIGHT GREASY LUSTER; SMOOTH
TO SLIGHT SILTY TO SEMI CLAYEY TEXTURE;
NO OTHER VISIBLE BEDDING FEATURES.
SANDSTONE = WHITE TO TRANSLUCENT TO VERY
LIGHT GRAY; MOSTLY QUARTZ FRAMEWORK WITH
A 1-3% OF LIGHT GREEN CHLORITE CRYSTALS
VISIBLE IN SAMPLE; MOSTLY COARSE TO VERY
COARSE TO OCCASIONALLY MEDIUM GRAIN SIZE
; UNCONSOLIDATED GRAINS DUE TO BIT
ACTION; FIRM FRIABLE TO MODERATE HARD;
CALCITE CEMENTATION DUE TO MODERATE TO
HIGH REACTION IN DILUTE HCl; POOR TO
FAIR TO WELL SORTED; SUBROUND TO ROUND
GRAINS; LOW TO MODERATE SPHERICITY;
GRAINS HAVE A SLIGHT POLISH APPEARANCE;
GRAIN SUPPORTED; NO VISIBLE HYDRO-
CARBONS IN SAMPLE; VISIBLE CARBONACEOUS
MATERIAL IN SAMPLE.
SHALE= LIGHT BLUISH GRAY TO LIGHT GRAY
TO VERY LIGHT GRAY; PREDOMINATELY BRITTL


6900
7000
7100
06/09/2010
CG 598u
MW IN 9.4 VIS 58 pH 9.7
MW OUT 9.3+ VIS 52 pH 9.4
C-4,3,2,1
MAX GAS 108u
CG 1096u
CG 723u
<150 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 1K><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>
-E TO CRUMBLY TO OCCASIONALLY CRUNCHY
TENACITY; PLANAR TO HACKLY FRACTURING;
CUTTINGS TEND TO BE PLATY TO FLAKY TO
SLIGHTLY NODULAR; DULL EARTHY TO SEMI
GREASY TO SLIGHT SPARKLING LUSTER; SILTY
TO CLAYEY TO MATTE TEXTURE; NO OTHER
VISIBLE BEDDING FEATURES.
CARBONACEOUS SHALE = LIGHT OLIVE GRAY TO
LIGHT BROWNISH GRAY TO BROWNISH GRAY;
VISIBLE BEDS OF CARBONACEOUS MATERIAL
VISIBLE THROUGH OUT THE SAMPLE; CRUMBLY
TO CRUNCHY TO SLIGHTLY BRITTLE TENACITY;
PLANAR TO SEMI BLOCKY TO OCCASIONALLY
HACKLY FRACTURING; CUTTINGS TEND TO BE
PLATY TO SEMI WEDGELIKE TO ELONGATED
TABULAR IN HABIT; DULL TO SLIGHT GREASY
TO SPARKLING TO SEMI FROSTED LUSTER;
SILTY TO GRITTY TO OCCASIONALLY SMOOTH
TEXTURE; VISIBLE DEGASSING ALONG CARBON-
ACEOUS MATERIAL BEDS; VISIBLE PYRITE
BANDS IN MOST OF SAMPLE.


SHALE = VERY LIGHT GRAY TO MEDIUM LIGHT
MW IN 9.3+ VIS 54 pH 9.7
GRAY TO LIGHT BLUISH GRAY; CRUMBLY TO
MW OUT 9.4 VIS 50 pH 9.5
BRITTLE TENACITY; PREDOMINATELY PLANAR
TO SLIGHT HACKLY FRACTURING; CUTTINGS
C-3,2,1
TEND TO BE PLATY TO FLAKY TO SLIGHT
WEDGE-LIKE IN HABIT; SLIGHT FROSTED TO
SEMI GREASY TO DULL EARTHY LUSTER; SILTY
7200
CG 595u
TO CLAYEY TO MATTE TEXTURE; NO OTHER
VISIBLE BEDDING FEATURES.
OHIO CREEK SANDSTONE = WHITE TO VERY
LIGHT GRAY TO TRANSLUCENT; 2-3% DARK
LITHICS VISIBLE IN SAMPLE; MOSTLY QUARTZ
OHIO CREEK @ 7252'
MAX GAS 343u
FRAMEWORK; VERY COARSE TO COARSE GRAIN
MAX GAS 335u
SIZE; SUB ANGULAR TO SUBROUND GRAINS;
MODERATE TO LOW SPHERICITY; GRAINS HAVE
A SLIGHT PITTED APPEARANCE; GRAIN SUPPOR
DAY TOUR
7300
-TED WITH MOSTLY LOOSE GRAINS; CONTAINS
CG 718u
CALCITIC CEMENTATION WITH MODERATELY
HIGH REACTION TO DILUTE HCL; FAIR TO
POOR SORTING; POOR GRADE SILTSTONE VISIB



-LE GRADING WITH POOR GRADE SANDSTONE,

POOR GRADE SILTSTONE VISIBLE BEDDING WIT

-H SHALE, NO OTHER DISTINGUISHABLE STRUC

-TURAL FEATURES PRESENT; ACCESSORY MINER

-AL PYRITE VISIBLY IN CONTACT WITH SHALE

CUTTING IN SAMPLE.

SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA

-Y TO OCCASIONAL LIGHT BLUISH TO LIGHT

GREENISH GRAY; SLIGHTLY DENSE TO SLIGHT-

LY BRITTLE TO SLIGHLTY CRUMBLY TO CRUNCH

-Y TENACITY; IRREGULAR TO SUB-PLANAR TO

EARTHY-HACKLY FRACTURE; SUB-TABULAR TO

SUB-NODULAR CUTTINGS HABIT; DULL TO EAR-

THY DULL TO OCCASIONAL SEMI-SPARKLING

LUSTER; SLIGHTLY CLAYEY TO VERY SLIGHTLY

GRITTY TEXTURE; POOR GRADE SILTSTONE VIS

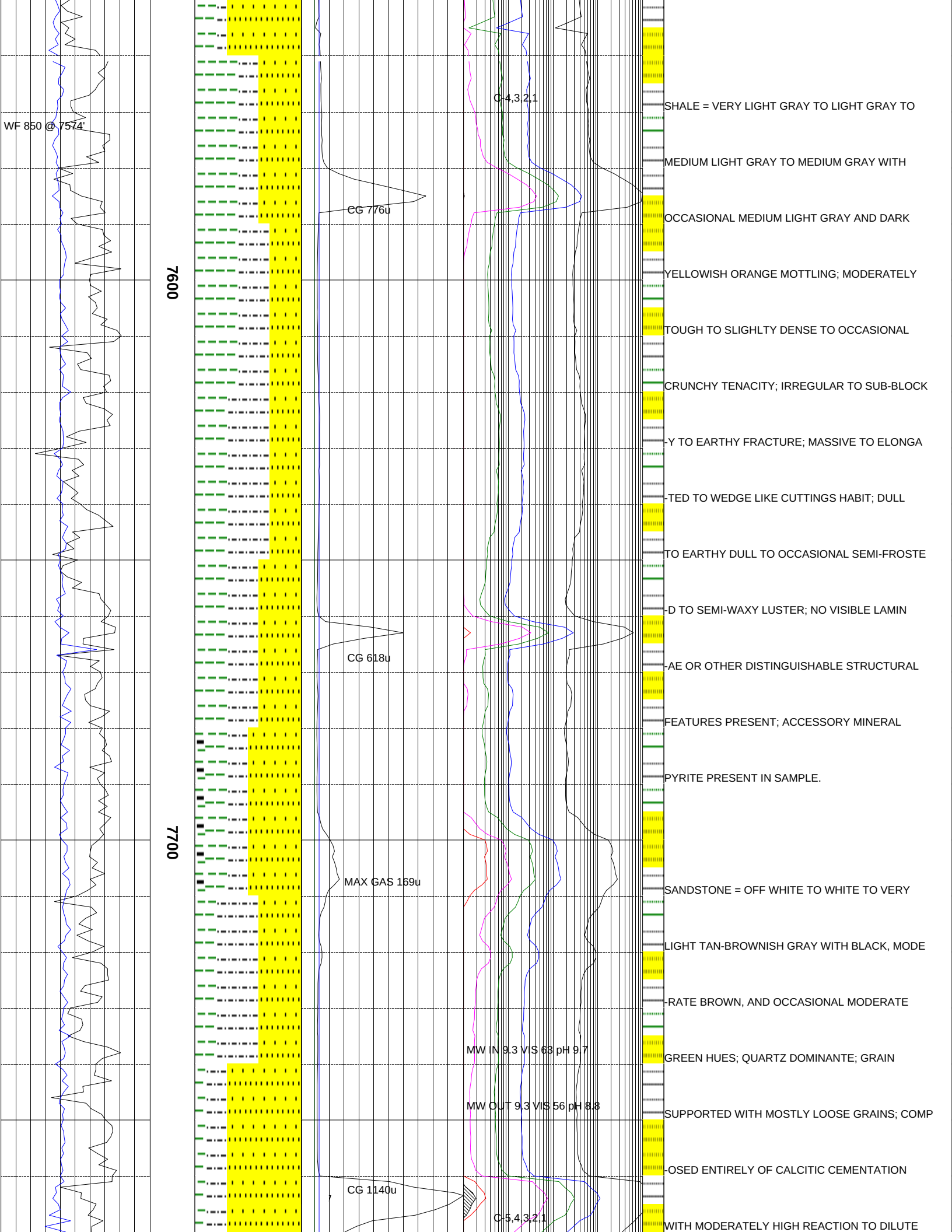
-IBLE GRADING WITH FINE GRAINED SANDSTON

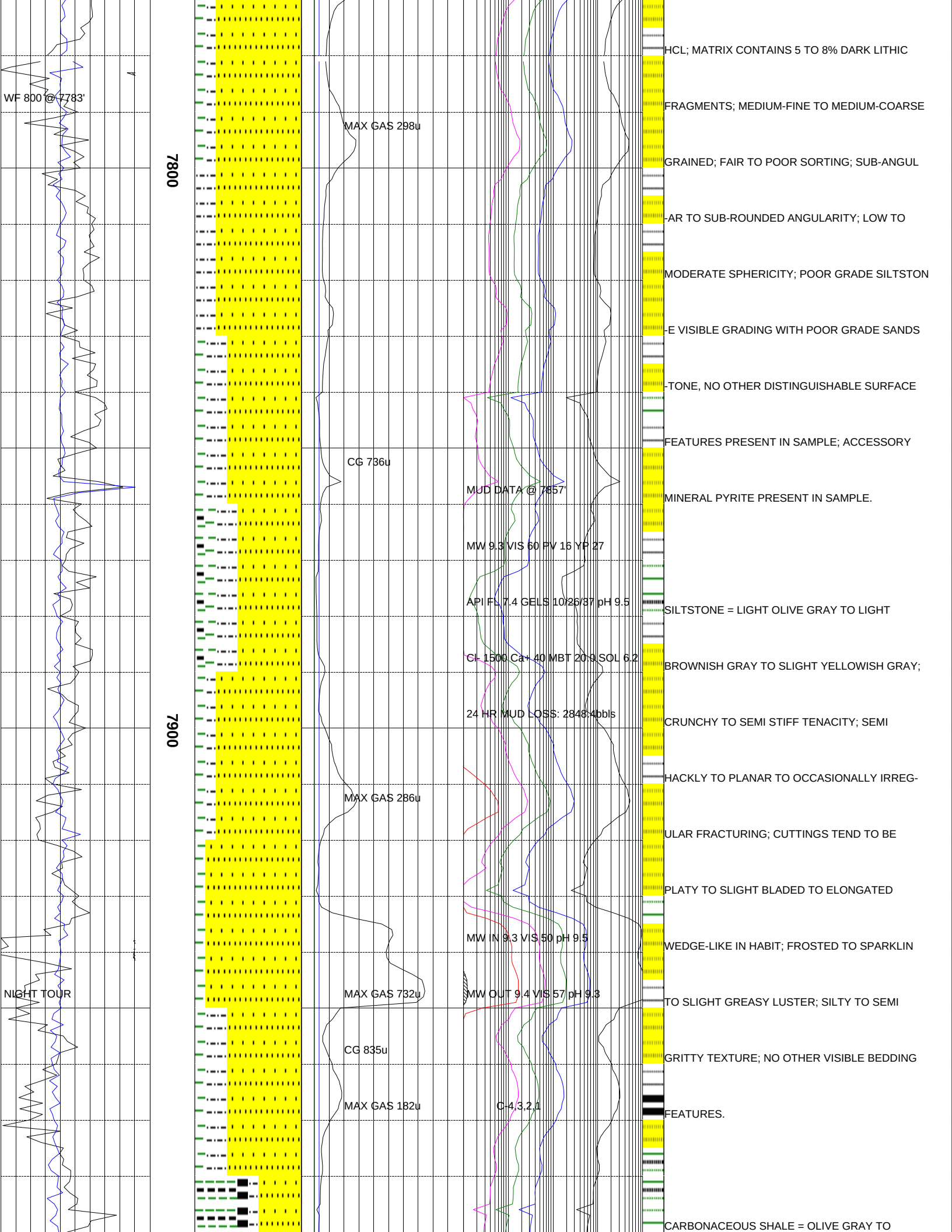
-E, SHALE VISIBLE INTERBEDDED IN SILTSTO

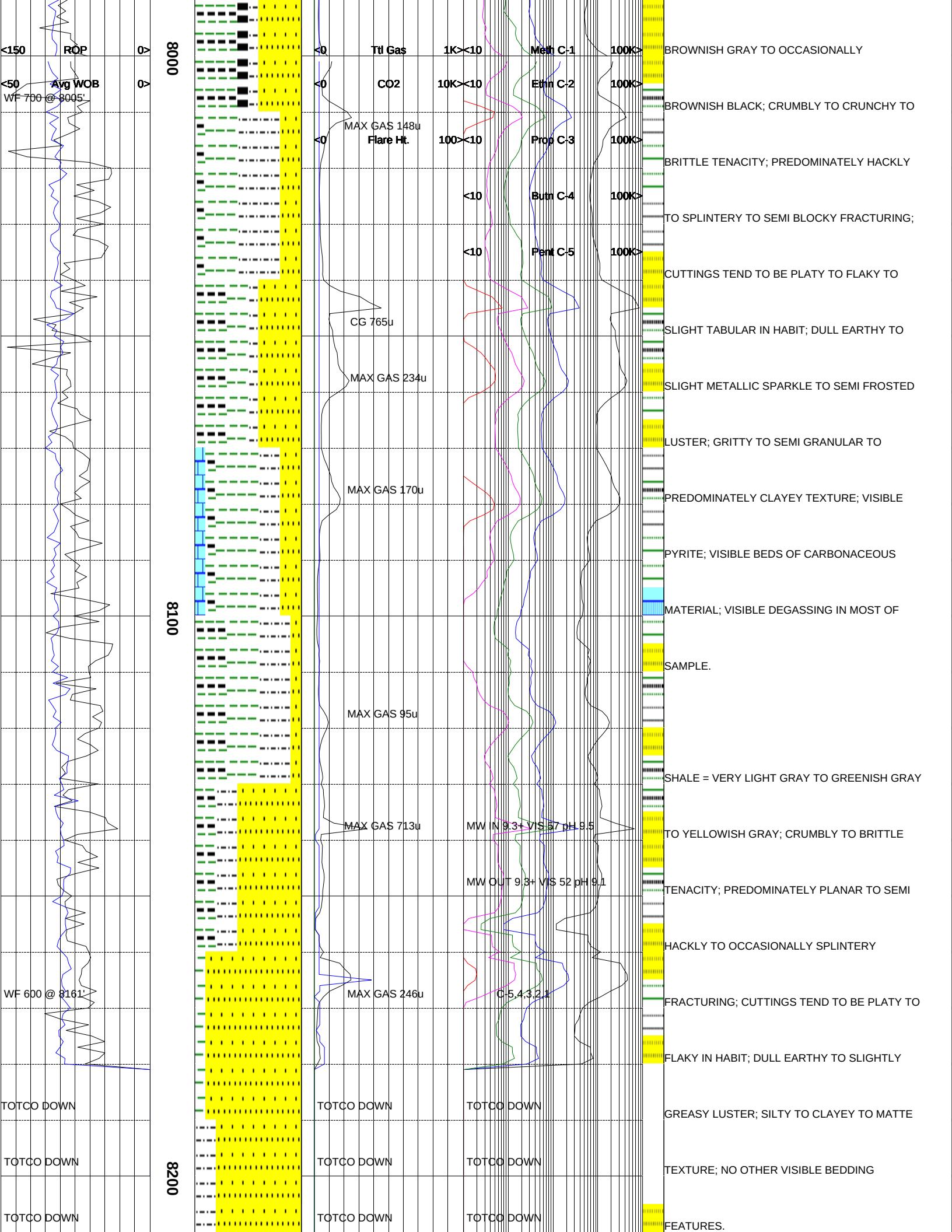
-NE CUTTING, NO OTHER DISTINGUISHABLE ST

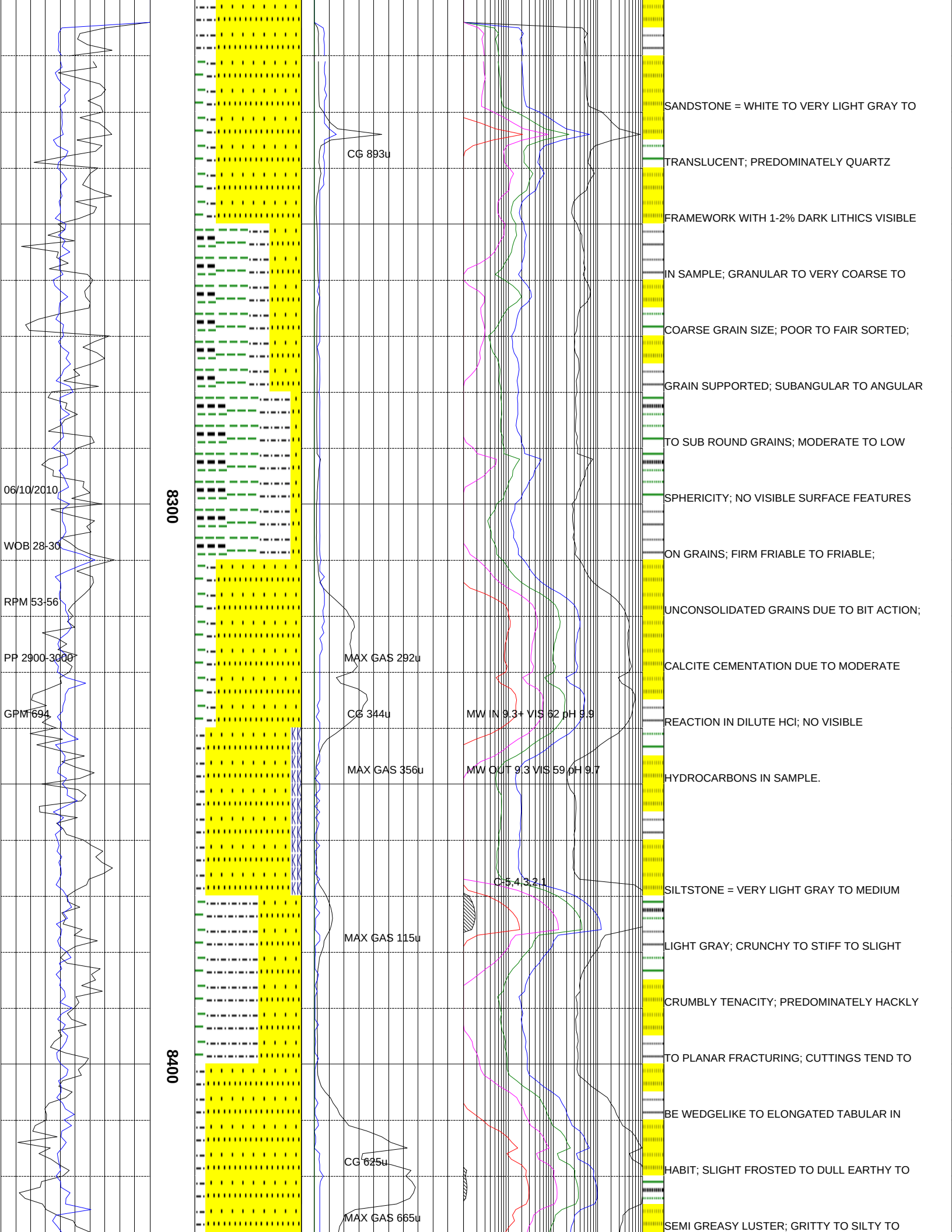
-RUCTUAL FEATURES PRESENT; ACCESSORY MIN

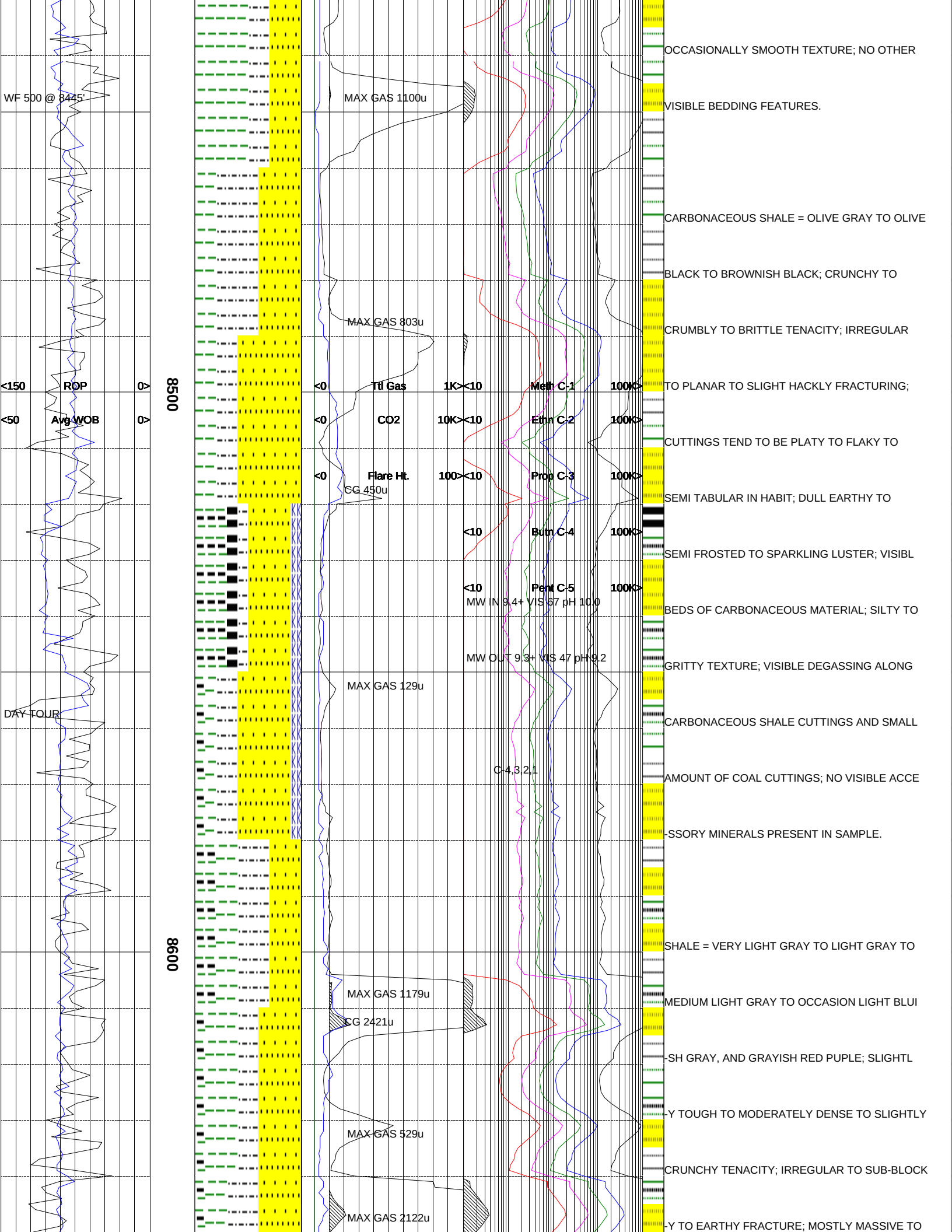
-ERAL PYRITE PRESENT IN SAMPLE.


WF 850 @ 7574'
7600
7700
C-4,3,2,1
CG 776u
CG 618u
MAX GAS 169u
MW IN 9.3 VIS 63 pH 9.7
MW OUT 9.3 VIS 56 pH 8.8
CG 1140u
C-5,4,3,2,1
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO
MEDIUM LIGHT GRAY TO MEDIUM GRAY WITH
OCCASIONAL MEDIUM LIGHT GRAY AND DARK
YELLOWISH ORANGE MOTTLING; MODERATELY
TOUGH TO SLIGHLTY DENSE TO OCCASIONAL
CRUNCHY TENACITY; IRREGULAR TO SUB-BLOCK
-Y TO EARTHY FRACTURE; MASSIVE TO ELONGA
-TED TO WEDGE LIKE CUTTINGS HABIT; DULL
TO EARTHY DULL TO OCCASIONAL SEMI-FROSTE
-D TO SEMI-WAXY LUSTER; NO VISIBLE LAMIN
-AE OR OTHER DISTINGUISHABLE STRUCTURAL
FEATURES PRESENT; ACCESSORY MINERAL
PYRITE PRESENT IN SAMPLE.
SANDSTONE = OFF WHITE TO WHITE TO VERY
LIGHT TAN-BROWNISH GRAY WITH BLACK, MODE
-RATE BROWN, AND OCCASIONAL MODERATE
GREEN HUES; QUARTZ DOMINANTE; GRAIN
SUPPORTED WITH MOSTLY LOOSE GRAINS; COMP
-OSED ENTIRELY OF CALCITIC CEMENTATION
WITH MODERATELY HIGH REACTION TO DILUTE


WF 800 @ 7783'
7800
MAX GAS 298u
CG 736u
MUD DATA @ 7857'
MW 9.3 VIS 60 PV 16 YP 27
API FL 7.4 GELS 10/26/37 pH 9.5
Cl- 1500 Ca+ 40 MBT 20.0 SOL 6.2
24 HR MUD LOSS: 2848.4bbls
7900
MAX GAS 286u
MW IN 9.3 VIS 50 pH 9.5
NIGHT TOUR
MAX GAS 732u
MW OUT 9.4 VIS 57 pH 9.3
CG 835u
MAX GAS 182u
C-4,3,2,1
HCL; MATRIX CONTAINS 5 TO 8% DARK LITHIC
FRAGMENTS; MEDIUM-FINE TO MEDIUM-COARSE
GRAINED; FAIR TO POOR SORTING; SUB-ANGUL
-AR TO SUB-ROUNDED ANGULARITY; LOW TO
MODERATE SPHERICITY; POOR GRADE SILTSTON
-E VISIBLE GRADING WITH POOR GRADE SANDS
-TONE, NO OTHER DISTINGUISHABLE SURFACE
FEATURES PRESENT IN SAMPLE; ACCESSORY
MINERAL PYRITE PRESENT IN SAMPLE.
SILTSTONE = LIGHT OLIVE GRAY TO LIGHT
BROWNISH GRAY TO SLIGHT YELLOWISH GRAY;
CRUNCHY TO SEMI STIFF TENACITY; SEMI
HACKLY TO PLANAR TO OCCASIONALLY IRREG-
ULAR FRACTURING; CUTTINGS TEND TO BE
PLATY TO SLIGHT BLADED TO ELONGATED
WEDGE-LIKE IN HABIT; FROSTED TO SPARKLIN
TO SLIGHT GREASY LUSTER; SILTY TO SEMI
GRITTY TEXTURE; NO OTHER VISIBLE BEDDING
FEATURES.
CARBONACEOUS SHALE = OLIVE GRAY TO


<150 ROP 0>
<50 Avg WOB 0>
WF 700 @ 8005'
8000
<0 Ttl Gas 1K>
<0 CO2 10K>
MAX GAS 148u
<0 Flare Ht. 100>
CG 765u
MAX GAS 234u
MAX GAS 170u
8100
MAX GAS 95u
MAX GAS 713u
MAX GAS 246u
WF 600 @ 8161'
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
8200
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
<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 9.3+ VIS 57 pH 9.5
MW OUT 9.3+ VIS 52 pH 9.1
C-5,4,3,2,1
BROWNISH GRAY TO OCCASIONALLY
BROWNISH BLACK; CRUMBLY TO CRUNCHY TO
BRITTLE TENACITY; PREDOMINATELY HACKLY
TO SPLINTERY TO SEMI BLOCKY FRACTURING;
CUTTINGS TEND TO BE PLATY TO FLAKY TO
SLIGHT TABULAR IN HABIT; DULL EARTHY TO
SLIGHT METALLIC SPARKLE TO SEMI FROSTED
LUSTER; GRITTY TO SEMI GRANULAR TO
PREDOMINATELY CLAYEY TEXTURE; VISIBLE
PYRITE; VISIBLE BEDS OF CARBONACEOUS
MATERIAL; VISIBLE DEGASSING IN MOST OF
SAMPLE.
SHALE = VERY LIGHT GRAY TO GREENISH GRAY
TO YELLOWISH GRAY; CRUMBLY TO BRITTLE
TENACITY; PREDOMINATELY PLANAR TO SEMI
HACKLY TO OCCASIONALLY SPLINTERY
FRACTURING; CUTTINGS TEND TO BE PLATY TO
FLAKY IN HABIT; DULL EARTHY TO SLIGHTLY
GREASY LUSTER; SILTY TO CLAYEY TO MATTE
TEXTURE; NO OTHER VISIBLE BEDDING
FEATURES.

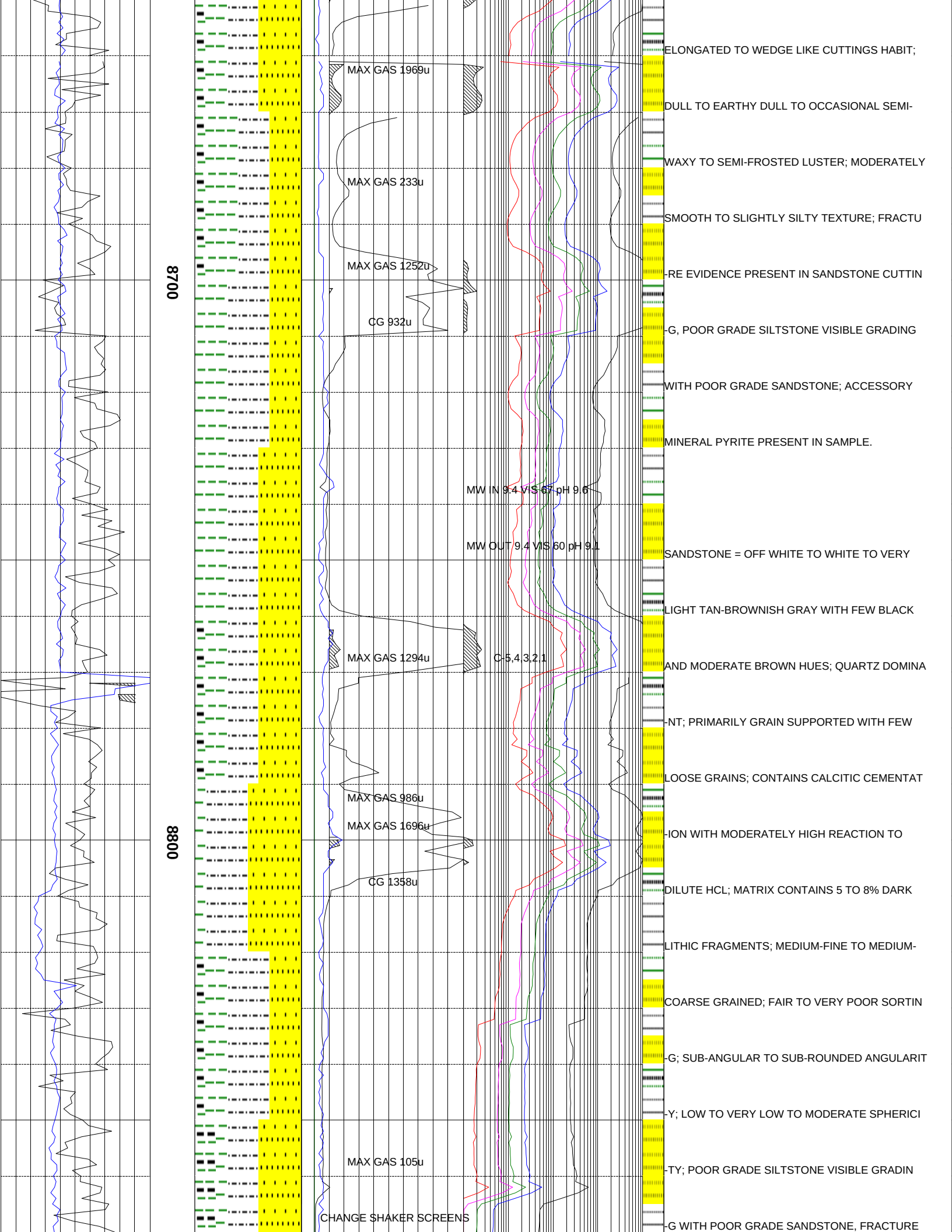

06/10/2010
WOB 28-30
RPM 53-56
PP 2900-3000
GPM 694
8300
8400
CG 893u
MAX GAS 292u
CG 344u
MAX GAS 356u
MW IN 9.3+ VIS 62 pH 9.9
MW OUT 9.3 VIS 59 pH 9.7
C-5,4,3,2,1
MAX GAS 115u
CG 625u
MAX GAS 665u
SANDSTONE = WHITE TO VERY LIGHT GRAY TO
TRANSLUCENT; PREDOMINATELY QUARTZ
FRAMEWORK WITH 1-2% DARK LITHICS VISIBLE
IN SAMPLE; GRANULAR TO VERY COARSE TO
COARSE GRAIN SIZE; POOR TO FAIR SORTED;
GRAIN SUPPORTED; SUBANGULAR TO ANGULAR
TO SUB ROUND GRAINS; MODERATE TO LOW
SPHERICITY; NO VISIBLE SURFACE FEATURES
ON GRAINS; FIRM FRIABLE TO FRIABLE;
UNCONSOLIDATED GRAINS DUE TO BIT ACTION;
CALCITE CEMENTATION DUE TO MODERATE
REACTION IN DILUTE HCl; NO VISIBLE
HYDROCARBONS IN SAMPLE.
SILTSTONE = VERY LIGHT GRAY TO MEDIUM
LIGHT GRAY; CRUNCHY TO STIFF TO SLIGHT
CRUMBLY TENACITY; PREDOMINATELY HACKLY
TO PLANAR FRACTURING; CUTTINGS TEND TO
BE WEDGELIKE TO ELONGATED TABULAR IN
HABIT; SLIGHT FROSTED TO DULL EARTHY TO
SEMI GREASY LUSTER; GRITTY TO SILTY TO

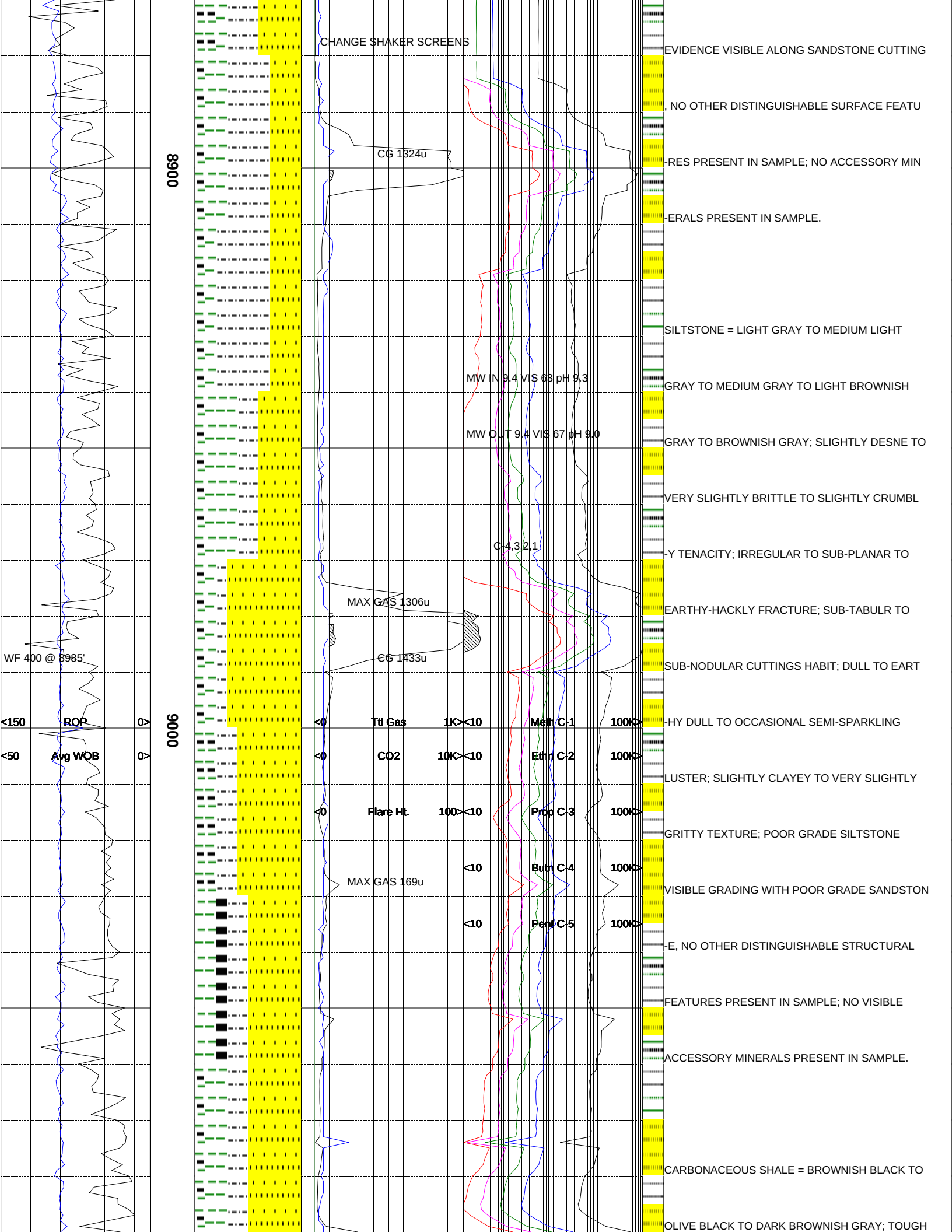


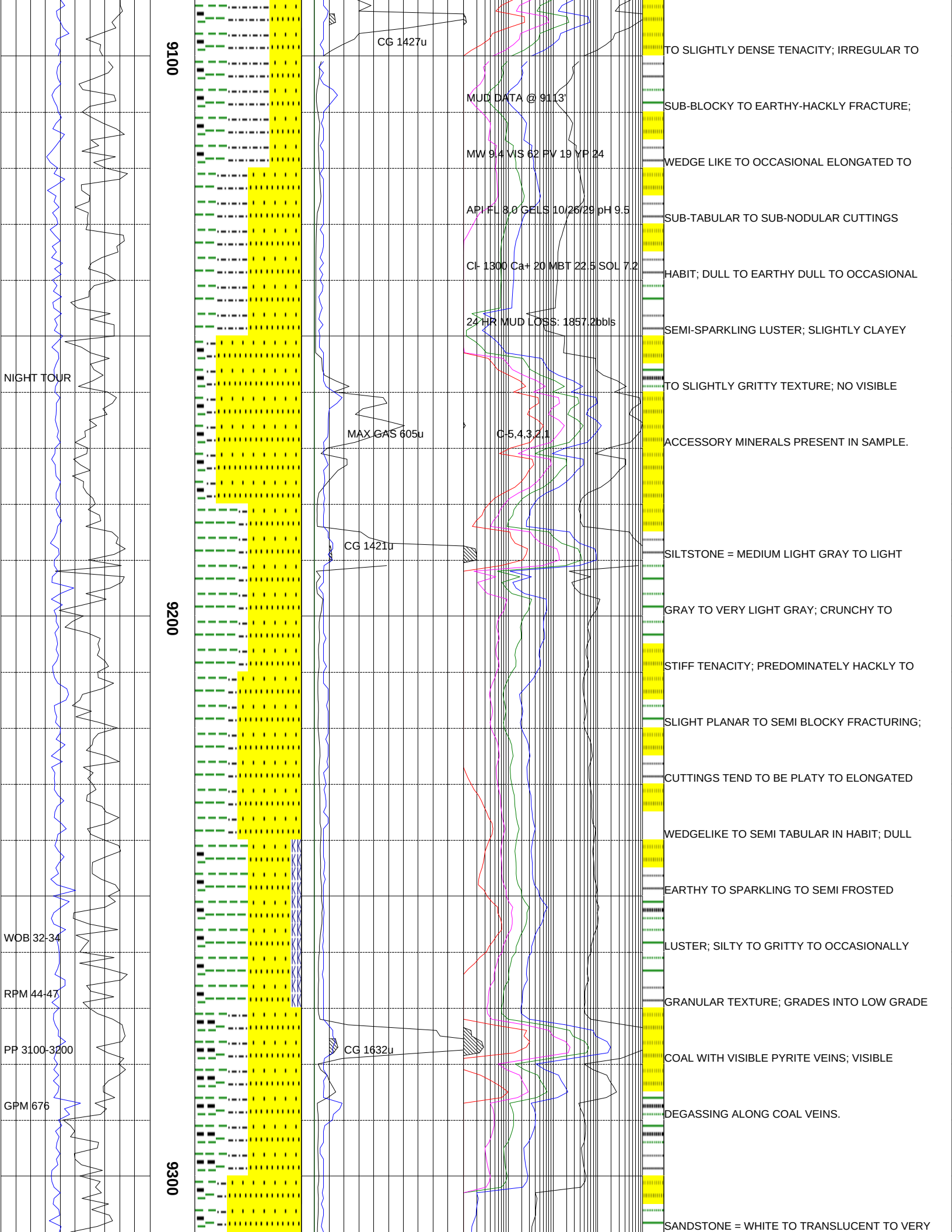
OCCASIONALLY SMOOTH TEXTURE; NO OTHER VISIBLE BEDDING FEATURES.

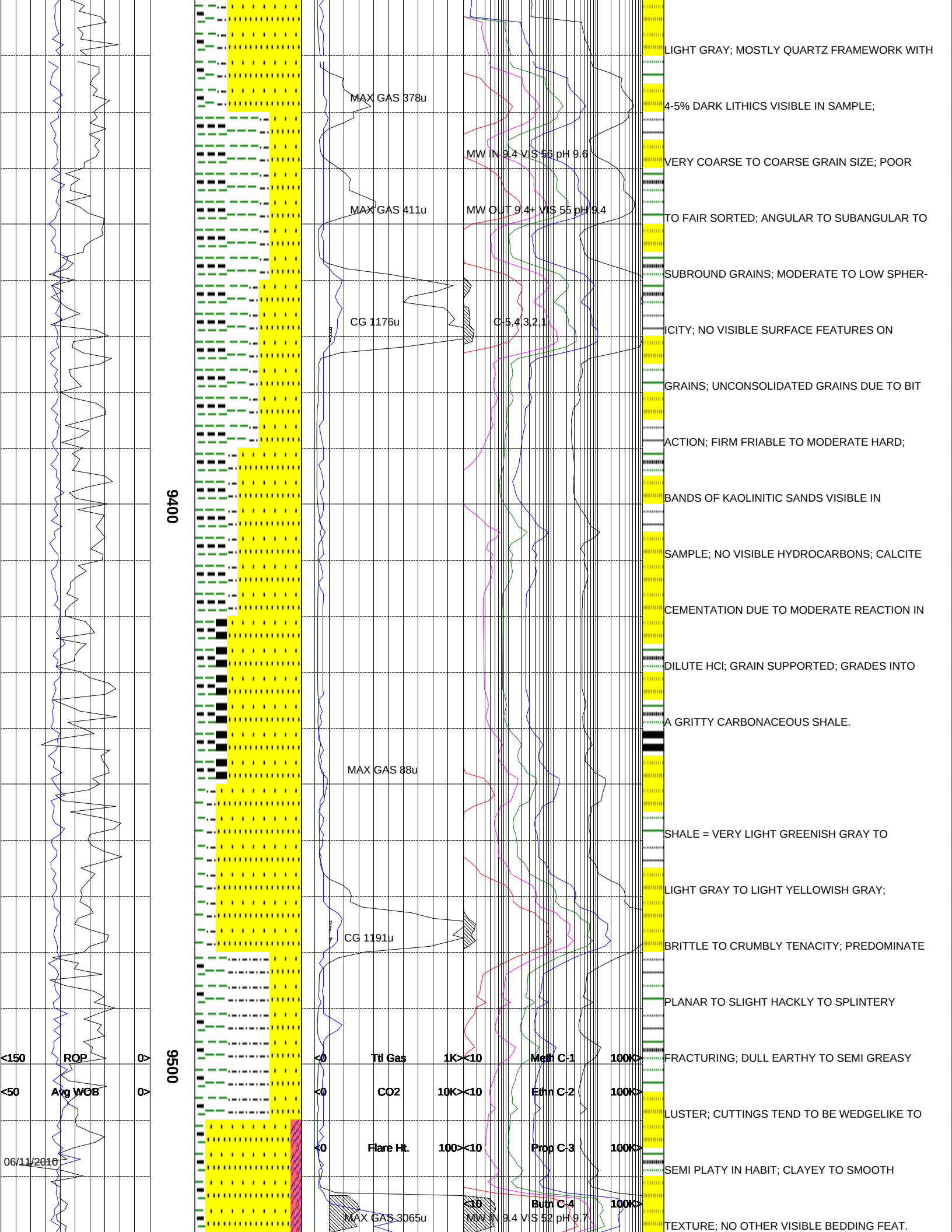
CARBONACEOUS SHALE = OLIVE GRAY TO OLIVE BLACK TO BROWNISH BLACK; CRUNCHY TO CRUMBLY TO BRITTLE TENACITY; IRREGULAR TO PLANAR TO SLIGHT HACKLY FRACTURING; CUTTINGS TEND TO BE PLATY TO FLAKY TO SEMI TABULAR IN HABIT; DULL EARTHY TO SEMI FROSTED TO SPARKLING LUSTER; VISIBL BEDS OF CARBONACEOUS MATERIAL; SILTY TO GRITTY TEXTURE; VISIBLE DEGASSING ALONG CARBONACEOUS SHALE CUTTINGS AND SMALL AMOUNT OF COAL CUTTINGS; NO VISIBLE ACCE -SSORY MINERALS PRESENT IN SAMPLE.

SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO MEDIUM LIGHT GRAY TO OCCASION LIGHT BLUI -SH GRAY, AND GRAYISH RED PUPLE; SLIGHTL -Y TOUGH TO MODERATELY DENSE TO SLIGHTLY CRUNCHY TENACITY; IRREGULAR TO SUB-BLOCK -Y TO EARTHY FRACTURE; MOSTLY MASSIVE TO


8700
8800
MAX GAS 1969u
MAX GAS 233u
MAX GAS 1252u
CG 932u
MW IN 9.4 VIS 67 pH 9.6
MW OUT 9.4 VIS 60 pH 9.1
MAX GAS 1294u
C-5,4,3,2,1
MAX GAS 986u
MAX GAS 1696u
CG 1358u
MAX GAS 105u
CHANGE SHAKER SCREENS
ELONGATED TO WEDGE LIKE CUTTINGS HABIT;
DULL TO EARTHY DULL TO OCCASIONAL SEMI-
WAXY TO SEMI-FROSTED LUSTER; MODERATELY
SMOOTH TO SLIGHTLY SILTY TEXTURE; FRACTU
-RE EVIDENCE PRESENT IN SANDSTONE CUTTIN
-G, POOR GRADE SILTSTONE VISIBLE GRADING
WITH POOR GRADE SANDSTONE; ACCESSORY
MINERAL PYRITE PRESENT IN SAMPLE.
SANDSTONE = OFF WHITE TO WHITE TO VERY
LIGHT TAN-BROWNISH GRAY WITH FEW BLACK
AND MODERATE BROWN HUES; QUARTZ DOMINA
-NT; PRIMARILY GRAIN SUPPORTED WITH FEW
LOOSE GRAINS; CONTAINS CALCITIC CEMENTAT
-ION WITH MODERATELY HIGH REACTION TO
DILUTE HCL; MATRIX CONTAINS 5 TO 8% DARK
LITHIC FRAGMENTS; MEDIUM-FINE TO MEDIUM-
COARSE GRAINED; FAIR TO VERY POOR SORTIN
-G; SUB-ANGULAR TO SUB-ROUNDED ANGULARIT
-Y; LOW TO VERY LOW TO MODERATE SPHERICI
-TY; POOR GRADE SILTSTONE VISIBLE GRADIN
-G WITH POOR GRADE SANDSTONE, FRACTURE

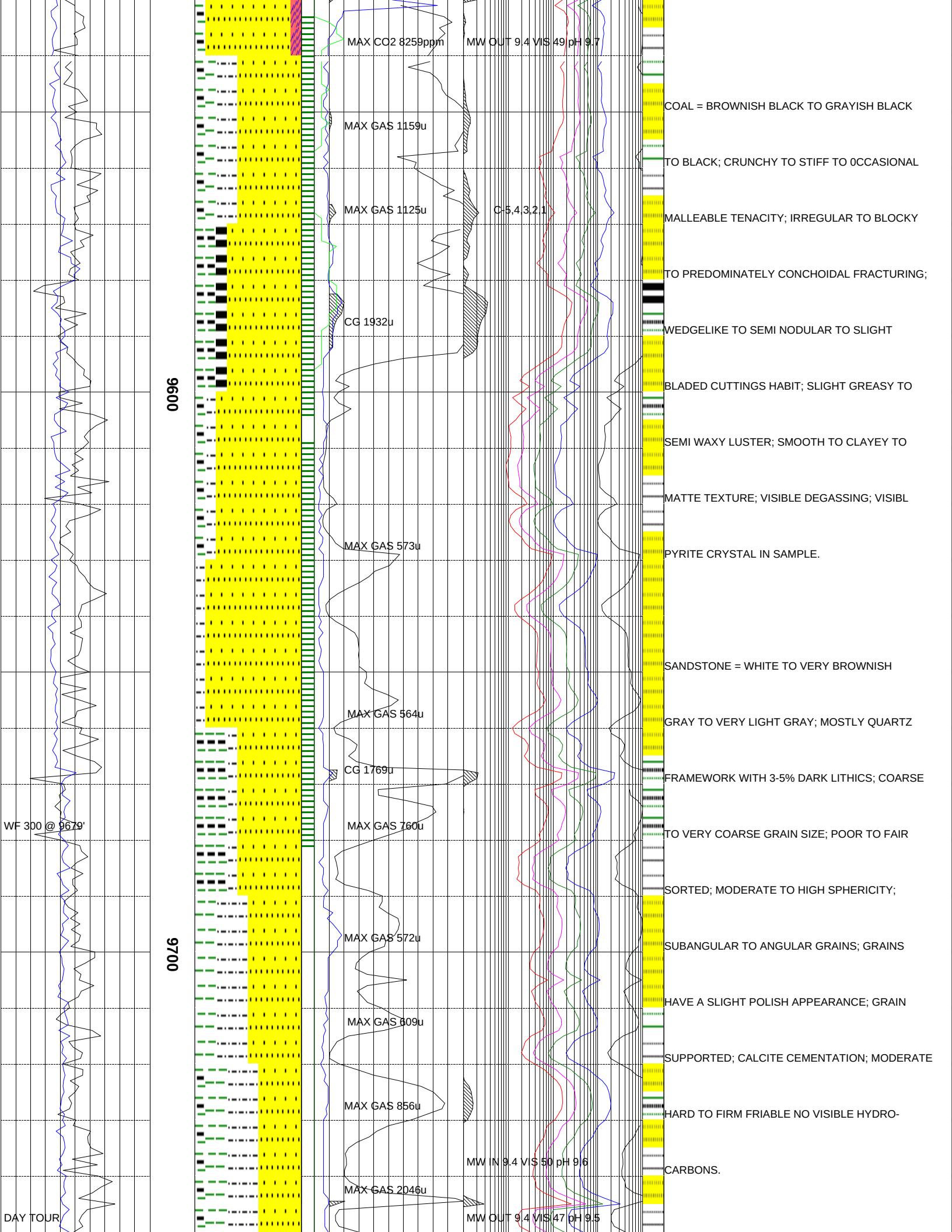

CHANGE SHAKER SCREENS
CG 1324u
MW IN 9.4 VIS 63 pH 9.3
MW OUT 9.4 VIS 67 pH 9.0
C-4,3,2,1
MAX GAS 1306u
CG 1433u
MAX GAS 169u
WF 400 @ 8985'
8968
8984
9000
<150 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
<0 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
<10 Pent C-5 100K>
-EVIDENCE VISIBLE ALONG SANDSTONE CUTTING
, NO OTHER DISTINGUISHABLE SURFACE FEATU
-RES PRESENT IN SAMPLE; NO ACCESSORY MIN
-ERALS PRESENT IN SAMPLE.
SILTSTONE = LIGHT GRAY TO MEDIUM LIGHT
-GRAY TO MEDIUM GRAY TO LIGHT BROWNISH
-GRAY TO BROWNISH GRAY; SLIGHTLY DESNE TO
VERY SLIGHTLY BRITTLE TO SLIGHTLY CRUMBL
-Y TENACITY; IRREGULAR TO SUB-PLANAR TO
EARTHY-HACKLY FRACTURE; SUB-TABULR TO
SUB-NODULAR CUTTINGS HABIT; DULL TO EART
-HY DULL TO OCCASIONAL SEMI-SPARKLING
LUSTER; SLIGHTLY CLAYEY TO VERY SLIGHTLY
GRITTY TEXTURE; POOR GRADE SILTSTONE
VISIBLE GRADING WITH POOR GRADE SANDSTON
-E, NO OTHER DISTINGUISHABLE STRUCTURAL
FEATURES PRESENT IN SAMPLE; NO VISIBLE
ACCESSORY MINERALS PRESENT IN SAMPLE.
CARBONACEOUS SHALE = BROWNISH BLACK TO
OLIVE BLACK TO DARK BROWNISH GRAY; TOUGH

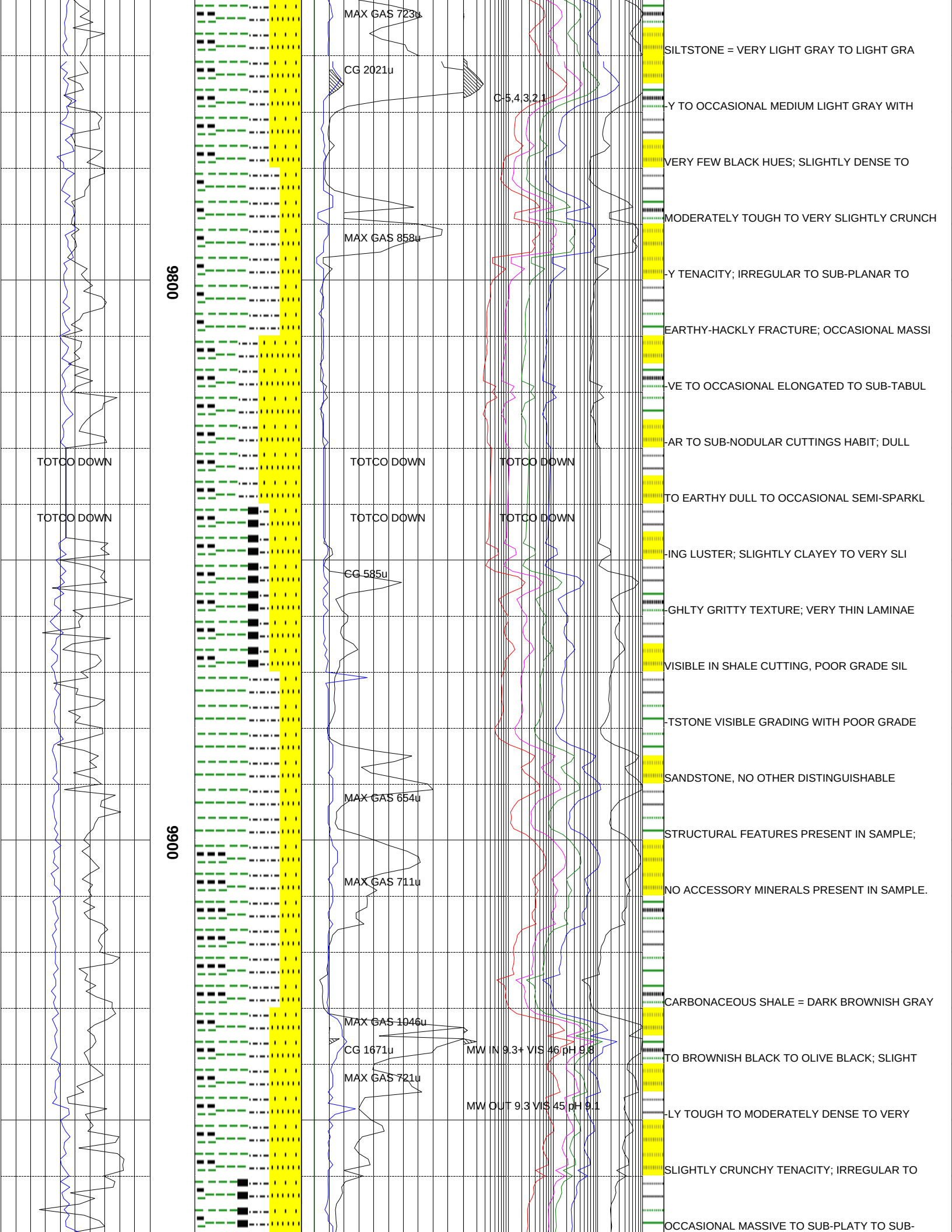

9100
CG 1427u
MUD DATA @ 9113'
MW 9.4 VIS 62 PV 19 YP 24
API FL 8.0 GELS 10/26/29 pH 9.5
Cl- 1300 Ca+ 20 MBT 22.5 SOL 7.2
24 HR MUD LOSS: 1857.2bbls
NIGHT TOUR
MAX GAS 605u
C-5,4,3,2,1
CG 1421u
9200
WOB 32-34
RPM 44-47
PP 3100-3200
GPM 676
CG 1632u
9300
TO SLIGHTLY DENSE TENACITY; IRREGULAR TO
SUB-BLOCKY TO EARTHY-HACKLY FRACTURE;
WEDGE LIKE TO OCCASIONAL ELONGATED TO
SUB-TABULAR TO SUB-NODULAR CUTTINGS
HABIT; DULL TO EARTHY DULL TO OCCASIONAL
SEMI-SPARKLING LUSTER; SLIGHTLY CLAYEY
TO SLIGHTLY GRITTY TEXTURE; NO VISIBLE
ACCESSORY MINERALS PRESENT IN SAMPLE.
SILTSTONE = MEDIUM LIGHT GRAY TO LIGHT
GRAY TO VERY LIGHT GRAY; CRUNCHY TO
STIFF TENACITY; PREDOMINATELY HACKLY TO
SLIGHT PLANAR TO SEMI BLOCKY FRACTURING;
CUTTINGS TEND TO BE PLATY TO ELONGATED
WEDGELIKE TO SEMI TABULAR IN HABIT; DULL
EARTHY TO SPARKLING TO SEMI FROSTED
LUSTER; SILTY TO GRITTY TO OCCASIONALLY
GRANULAR TEXTURE; GRADES INTO LOW GRADE
COAL WITH VISIBLE PYRITE VEINS; VISIBLE
DEGASSING ALONG COAL VEINS.
SANDSTONE = WHITE TO TRANSLUCENT TO VERY

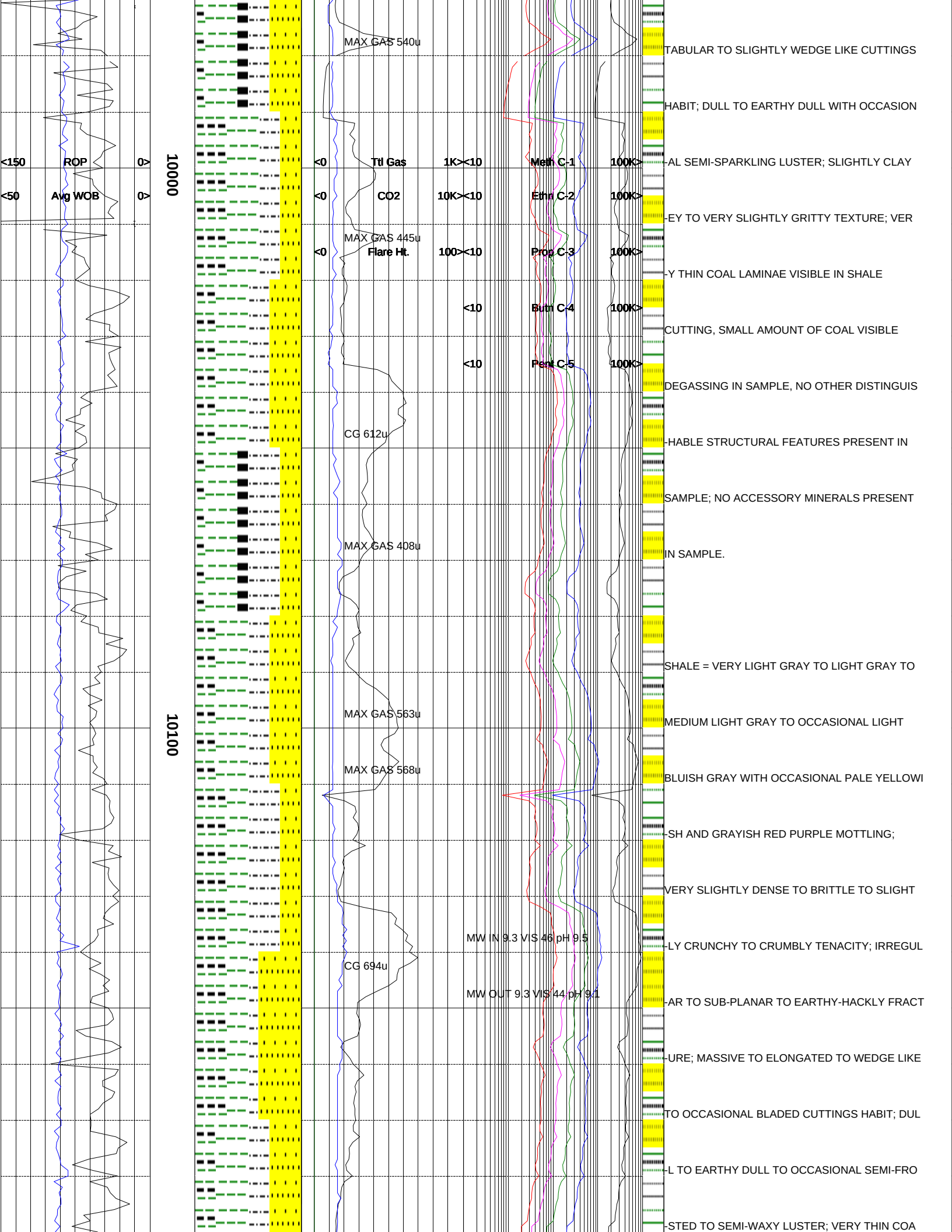


LIGHT GRAY; MOSTLY QUARTZ FRAMEWORK WITH 4-5% DARK LITHICS VISIBLE IN SAMPLE; VERY COARSE TO COARSE GRAIN SIZE; POOR TO FAIR SORTED; ANGULAR TO SUBANGULAR TO SUBROUND GRAINS; MODERATE TO LOW SPHER-ICITY; NO VISIBLE SURFACE FEATURES ON GRAINS; UNCONSOLIDATED GRAINS DUE TO BIT ACTION; FIRM FRIABLE TO MODERATE HARD; BANDS OF KAOLINITIC SANDS VISIBLE IN SAMPLE; NO VISIBLE HYDROCARBONS; CALCITE CEMENTATION DUE TO MODERATE REACTION IN DILUTE HCl; GRAIN SUPPORTED; GRADES INTO A GRITTY CARBONACEOUS SHALE.

SHALE = VERY LIGHT GREENISH GRAY TO LIGHT GRAY TO LIGHT YELLOWISH GRAY; BRITTLE TO CRUMBLY TENACITY; PREDOMINATE PLANAR TO SLIGHT HACKLY TO SPLINTERY FRACTURING; DULL EARTHY TO SEMI GREASY LUSTER; CUTTINGS TEND TO BE WEDGELIKE TO SEMI PLATY IN HABIT; CLAYEY TO SMOOTH TEXTURE; NO OTHER VISIBLE BEDDING FEAT.


MAX CO2 8259ppm
MW OUT 9.4 VIS 49 pH 9.7
MAX GAS 1159u
MAX GAS 1125u
C-5,4,3,2,1
CG 1932u
9600
MAX GAS 573u
MAX GAS 564u
CG 1769u
WF 300 @ 9679'
MAX GAS 760u
MAX GAS 572u
9700
MAX GAS 609u
MAX GAS 856u
MW IN 9.4 VIS 50 pH 9.6
MAX GAS 2046u
DAY TOUR
MW OUT 9.4 VIS 47 pH 9.5
COAL = BROWNISH BLACK TO GRAYISH BLACK
TO BLACK; CRUNCHY TO STIFF TO 0CCASIONAL
MALLEABLE TENACITY; IRREGULAR TO BLOCKY
TO PREDOMINATELY CONCHOIDAL FRACTURING;
WEDGELIKE TO SEMI NODULAR TO SLIGHT
BLADED CUTTINGS HABIT; SLIGHT GREASY TO
SEMI WAXY LUSTER; SMOOTH TO CLAYEY TO
MATTE TEXTURE; VISIBLE DEGASSING; VISIBL
PYRITE CRYSTAL IN SAMPLE.
SANDSTONE = WHITE TO VERY BROWNISH
GRAY TO VERY LIGHT GRAY; MOSTLY QUARTZ
FRAMEWORK WITH 3-5% DARK LITHICS; COARSE
TO VERY COARSE GRAIN SIZE; POOR TO FAIR
SORTED; MODERATE TO HIGH SPHERICITY;
SUBANGULAR TO ANGULAR GRAINS; GRAINS
HAVE A SLIGHT POLISH APPEARANCE; GRAIN
SUPPORTED; CALCITE CEMENTATION; MODERATE
HARD TO FIRM FRIABLE NO VISIBLE HYDRO-
CARBONS.


MAX GAS 723u
SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
CG 2021u
C-5,4,3,2,1
-Y TO OCCASIONAL MEDIUM LIGHT GRAY WITH
VERY FEW BLACK HUES; SLIGHTLY DENSE TO
MODERATELY TOUGH TO VERY SLIGHTLY CRUNCH
MAX GAS 858u
9860
-Y TENACITY; IRREGULAR TO SUB-PLANAR TO
EARTHY-HACKLY FRACTURE; OCCASIONAL MASSI
-VE TO OCCASIONAL ELONGATED TO SUB-TABUL
-AR TO SUB-NODULAR CUTTINGS HABIT; DULL
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
TO EARTHY DULL TO OCCASIONAL SEMI-SPARKL
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
-ING LUSTER; SLIGHTLY CLAYEY TO VERY SLI
CG 585u
-GHLTY GRITTY TEXTURE; VERY THIN LAMINAE
VISIBLE IN SHALE CUTTING, POOR GRADE SIL
-TSTONE VISIBLE GRADING WITH POOR GRADE
SANDSTONE, NO OTHER DISTINGUISHABLE
MAX GAS 654u
9900
STRUCTURAL FEATURES PRESENT IN SAMPLE;
MAX GAS 711u
NO ACCESSORY MINERALS PRESENT IN SAMPLE.
CARBONACEOUS SHALE = DARK BROWNISH GRAY
MAX GAS 1046u
CG 1671u
MW IN 9.3+ VIS 46 pH 9.8
TO BROWNISH BLACK TO OLIVE BLACK; SLIGHT
MAX GAS 721u
MW OUT 9.3 VIS 45 pH 9.1
-LY TOUGH TO MODERATELY DENSE TO VERY
SLIGHTLY CRUNCHY TENACITY; IRREGULAR TO
OCCASIONAL MASSIVE TO SUB-PLATY TO SUB-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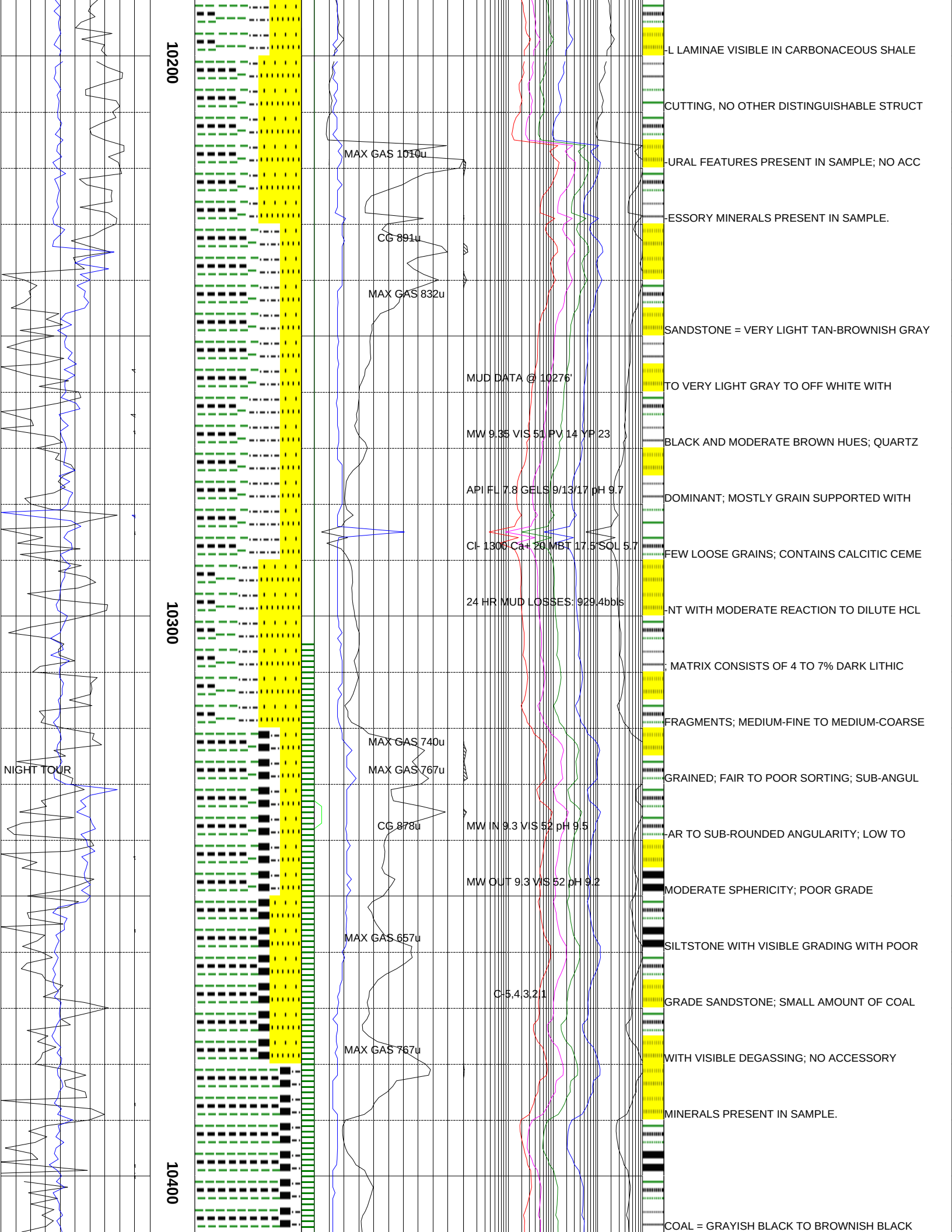
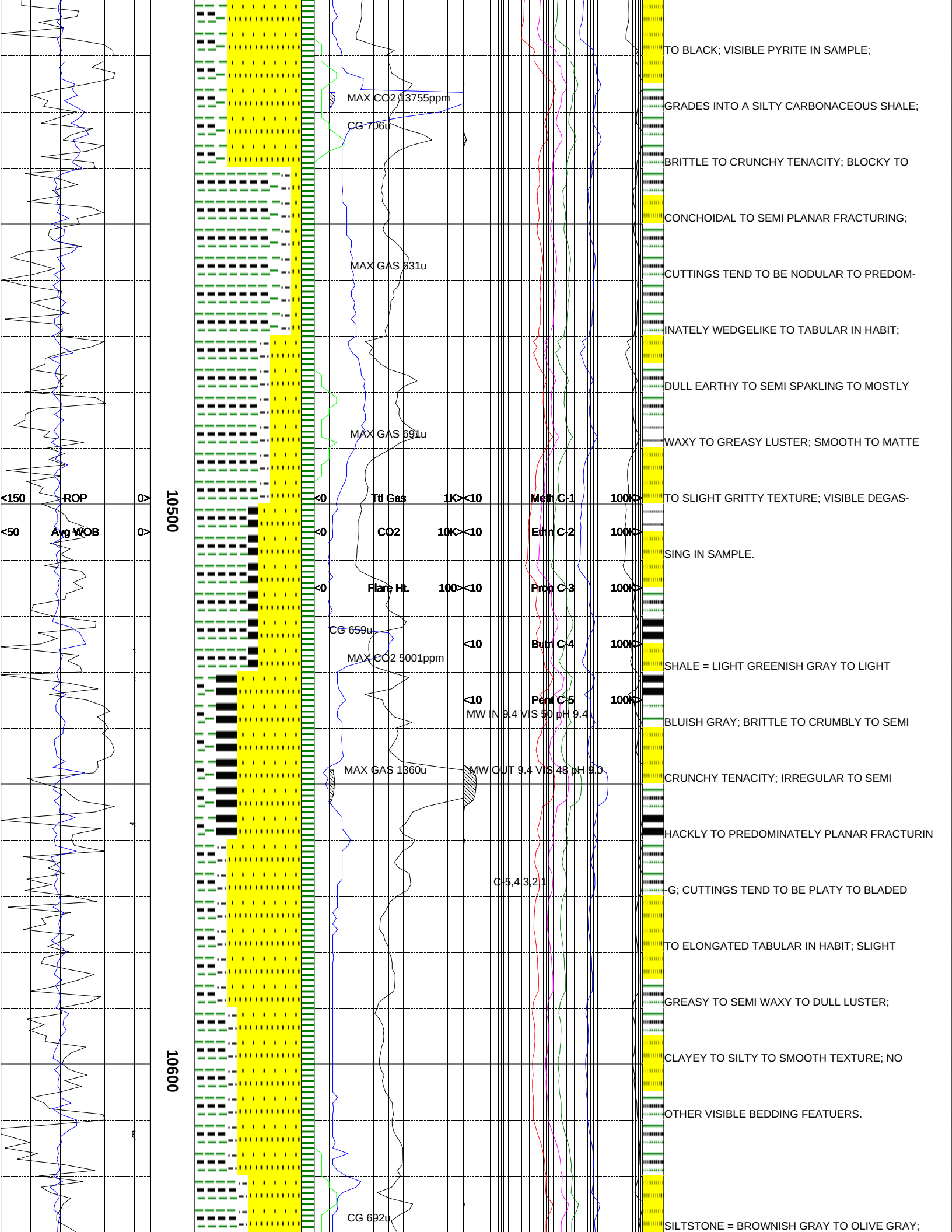
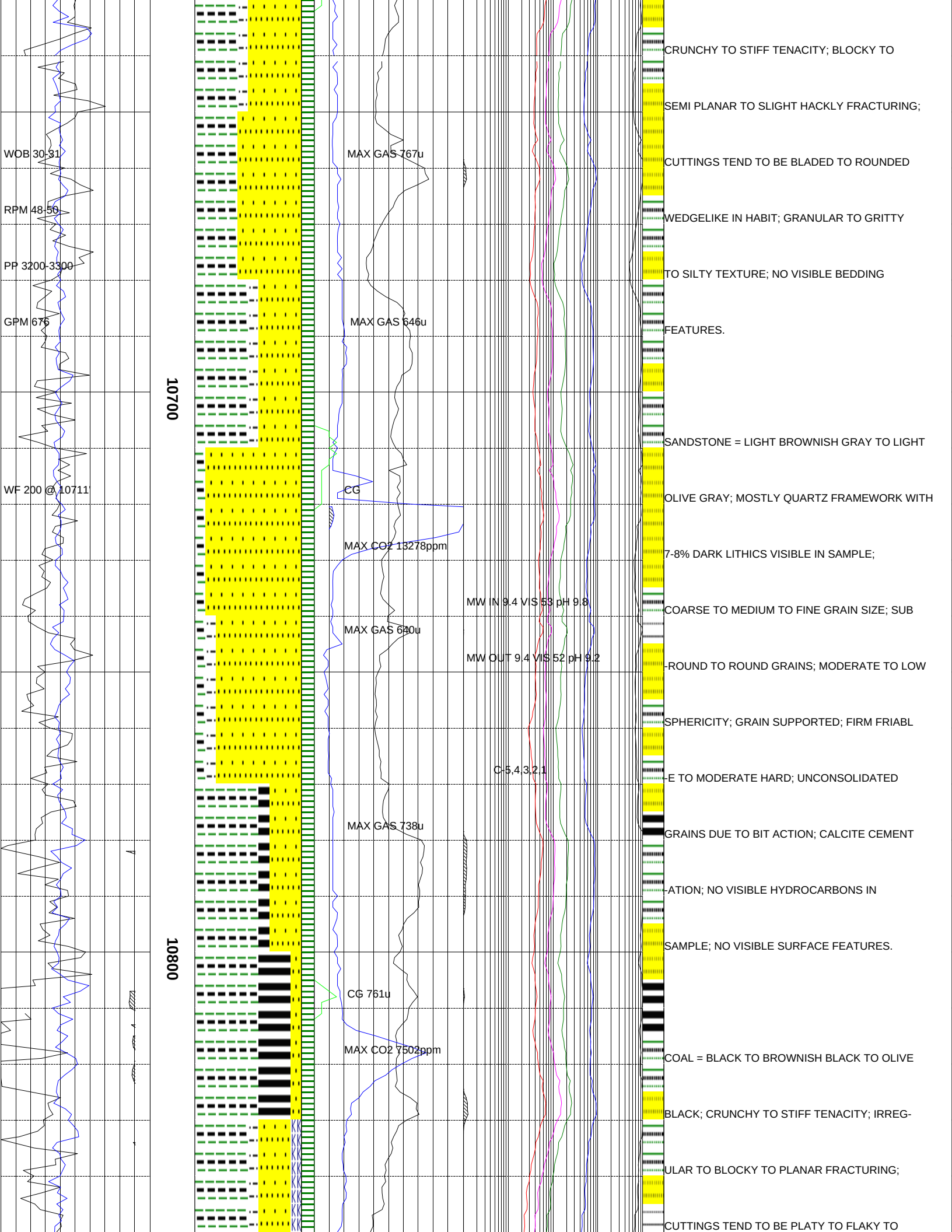
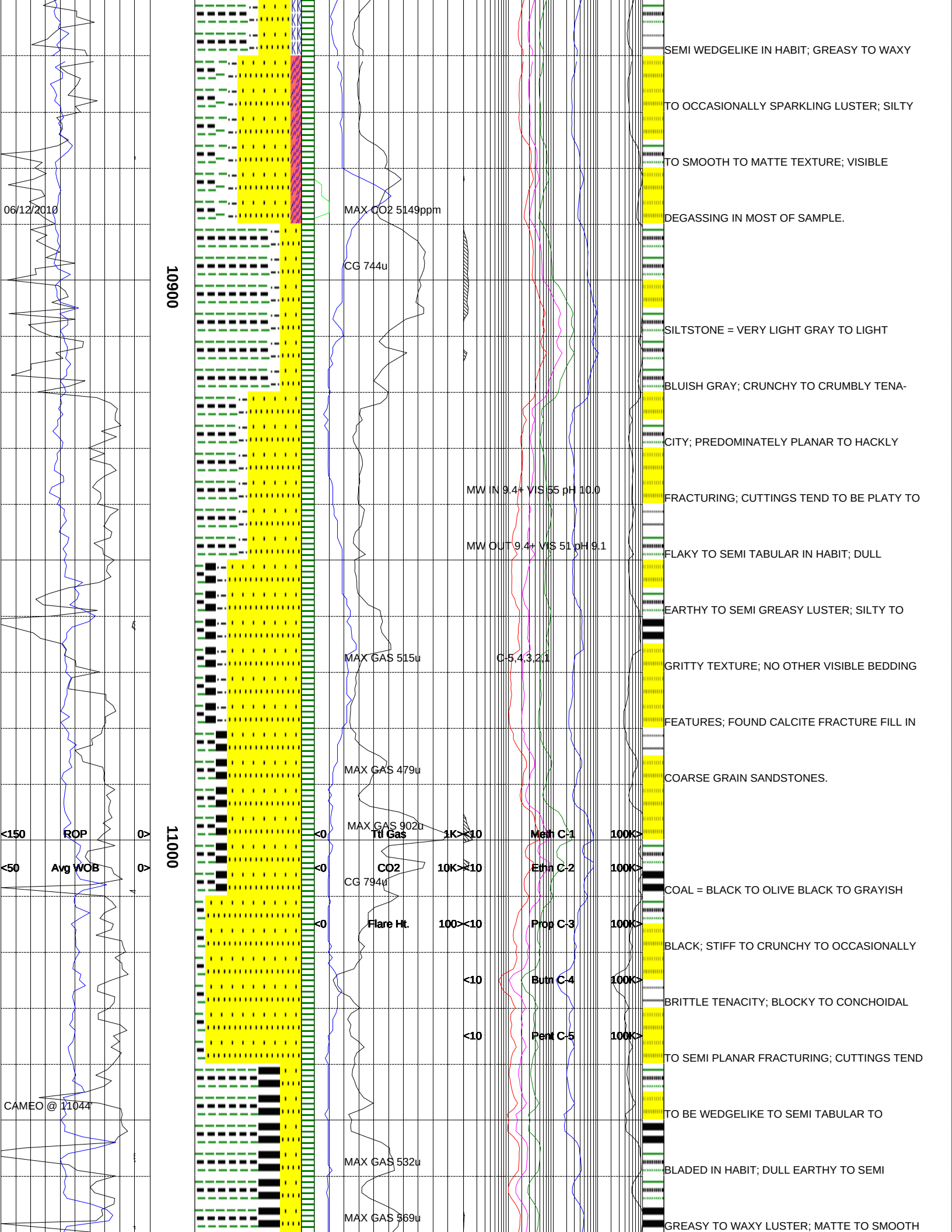
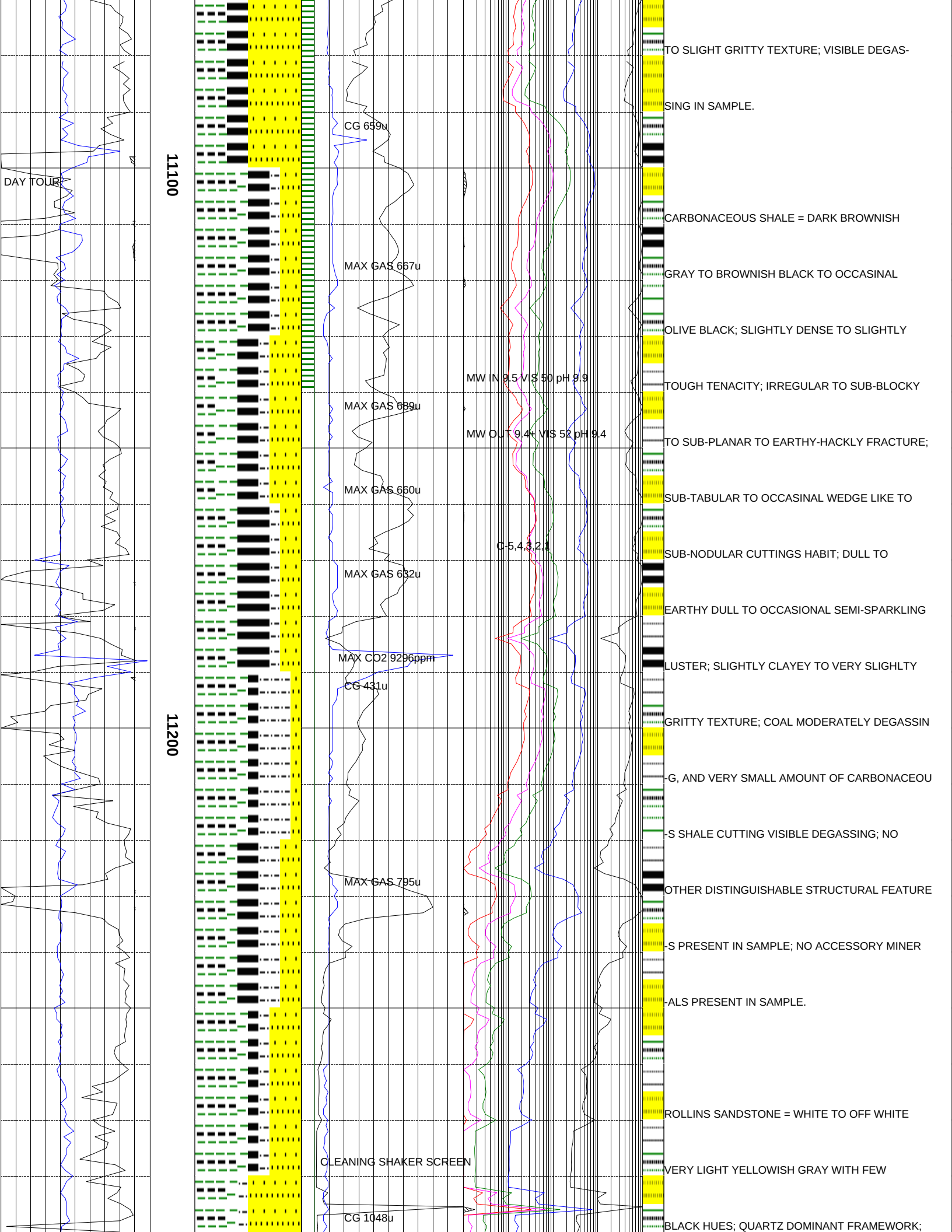
10000
10100
<0 Ttl Gas 1K><10 Meth C-1 100K>
<0 CO2 10K><10 Etha C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buta C-4 100K>
<10 Pent C-5 100K>
MAX GAS 540u
MAX GAS 445u
CG 612u
MAX GAS 408u
MAX GAS 563u
MAX GAS 568u
CG 694u
MW IN 9.3 VIS 46 pH 9.5
MW OUT 9.3 VIS 44 pH 9.1
TABULAR TO SLIGHTLY WEDGE LIKE CUTTINGS
HABIT; DULL TO EARTHY DULL WITH OCCASION
-AL SEMI-SPARKLING LUSTER; SLIGHTLY CLAY
-EY TO VERY SLIGHTLY GRITTY TEXTURE; VER
-Y THIN COAL LAMINAE VISIBLE IN SHALE
CUTTING, SMALL AMOUNT OF COAL VISIBLE
DEGASSING IN SAMPLE, NO OTHER DISTINGUIS
-HABLE STRUCTURAL FEATURES PRESENT IN
SAMPLE; NO ACCESSORY MINERALS PRESENT
IN SAMPLE.
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO
MEDIUM LIGHT GRAY TO OCCASIONAL LIGHT
BLUISH GRAY WITH OCCASIONAL PALE YELLOWI
-SH AND GRAYISH RED PURPLE MOTTLING;
VERY SLIGHTLY DENSE TO BRITTLE TO SLIGHT
-LY CRUNCHY TO CRUMBLY TENACITY; IRREGUL
-AR TO SUB-PLANAR TO EARTHY-HACKLY FRACT
-URE; MASSIVE TO ELONGATED TO WEDGE LIKE
TO OCCASIONAL BLADED CUTTINGS HABIT; DUL
-L TO EARTHY DULL TO OCCASIONAL SEMI-FRO
-STED TO SEMI-WAXY LUSTER; VERY THIN COA

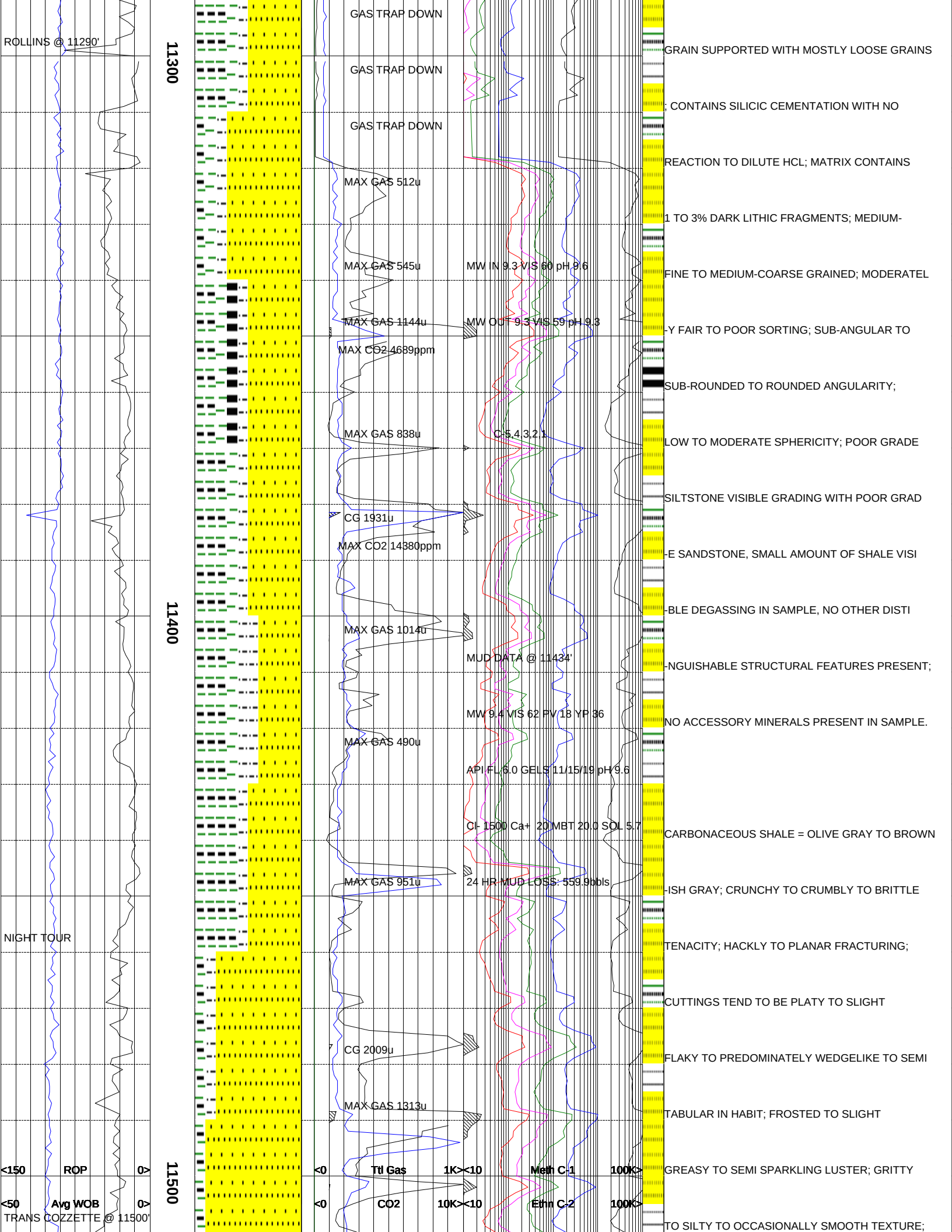

10200
10300
10400
MAX GAS 1010u
CG 891u
MAX GAS 832u
MUD DATA @ 10276'
MW 9.35 VIS 51 PV 14 YP 23
API FL 7.8 GELS 9/13/17 pH 9.7
Cl- 1300 Ca+ 20 MBT 17.5 SOL 5.7
24 HR MUD LOSSES: 929.4bbls
MAX GAS 740u
MAX GAS 767u
NIGHT TOUR
CG 878u
MW IN 9.3 VIS 52 pH 9.5
MW OUT 9.3 VIS 52 pH 9.2
MAX GAS 657u
C-5,4,3,2,1
MAX GAS 767u
-L LAMINAE VISIBLE IN CARBONACEOUS SHALE
CUTTING, NO OTHER DISTINGUISHABLE STRUCT
-URAL FEATURES PRESENT IN SAMPLE; NO ACC
-ESSORY MINERALS PRESENT IN SAMPLE.
SANDSTONE = VERY LIGHT TAN-BROWNISH GRAY
TO VERY LIGHT GRAY TO OFF WHITE WITH
BLACK AND MODERATE BROWN HUES; QUARTZ
DOMINANT; MOSTLY GRAIN SUPPORTED WITH
FEW LOOSE GRAINS; CONTAINS CALCITIC CEME
-NT WITH MODERATE REACTION TO DILUTE HCL
; MATRIX CONSISTS OF 4 TO 7% DARK LITHIC
FRAGMENTS; MEDIUM-FINE TO MEDIUM-COARSE
GRAINED; FAIR TO POOR SORTING; SUB-ANGUL
-AR TO SUB-ROUNDED ANGULARITY; LOW TO
MODERATE SPHERICITY; POOR GRADE
SILTSTONE WITH VISIBLE GRADING WITH POOR
GRADE SANDSTONE; SMALL AMOUNT OF COAL
WITH VISIBLE DEGASSING; NO ACCESSORY
MINERALS PRESENT IN SAMPLE.
COAL = GRAYISH BLACK TO BROWNISH BLACK

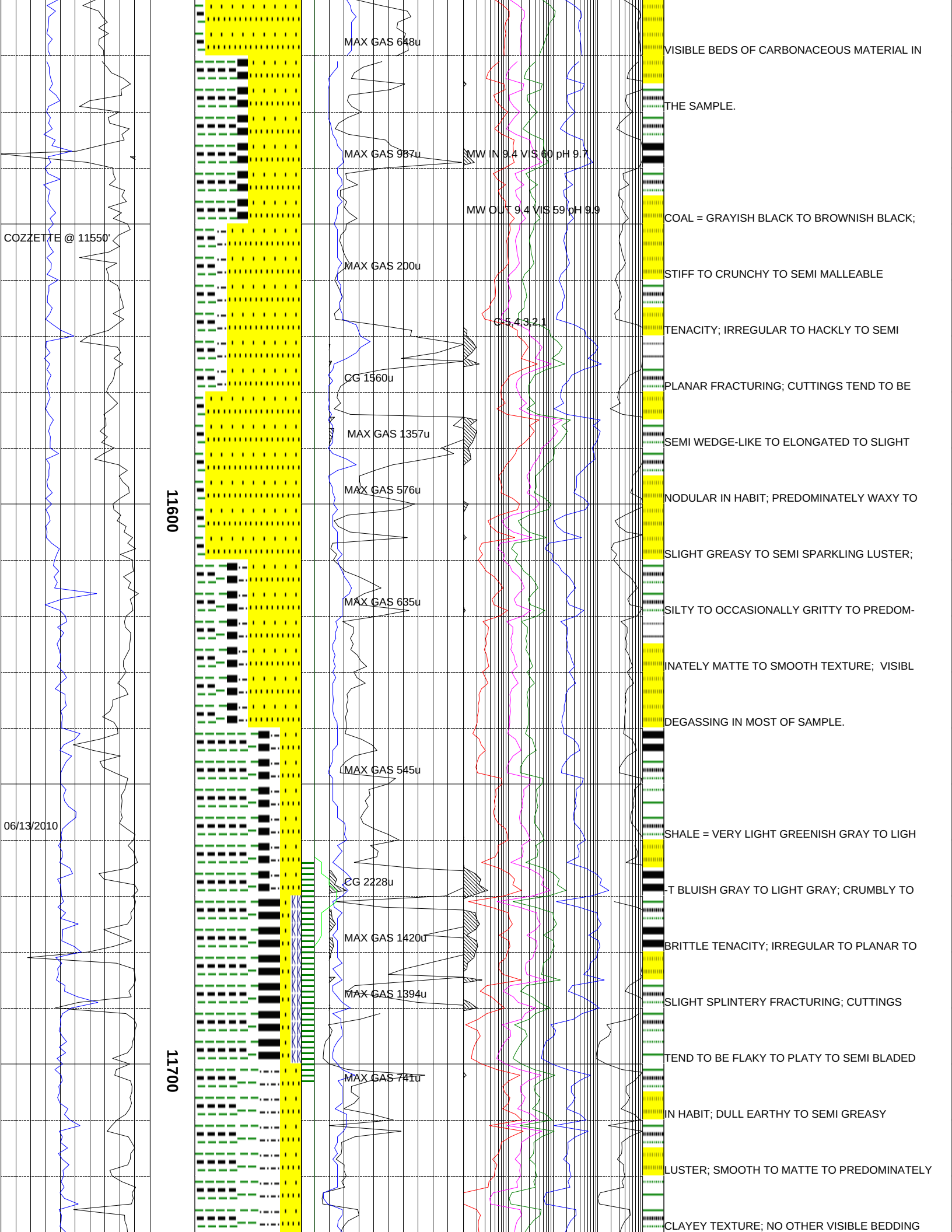

<150 ROP 0>
<50 Avg WOB 0>
10500
10600
MAX CO2 13755ppm
CG 706u
MAX GAS 631u
MAX GAS 691u
<0 Ttl Gas 1K><10 Meth C-1 100K>
<0 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
CG 659u
<10 Butn C-4 100K>
MAX CO2 5001ppm
<10 Pent C-5 100K>
MW IN 9.4 VIS 50 pH 9.4
MAX GAS 1360u
MW OUT 9.4 VIS 48 pH 9.0
C-5,4,3,2,1
CG 692u
TO BLACK; VISIBLE PYRITE IN SAMPLE;
GRADES INTO A SILTY CARBONACEOUS SHALE;
BRITTLE TO CRUNCHY TENACITY; BLOCKY TO
CONCHOIDAL TO SEMI PLANAR FRACTURING;
CUTTINGS TEND TO BE NODULAR TO PREDOM-
INATELY WEDGELIKE TO TABULAR IN HABIT;
DULL EARTHY TO SEMI SPAKLING TO MOSTLY
WAXY TO GREASY LUSTER; SMOOTH TO MATTE
TO SLIGHT GRITTY TEXTURE; VISIBLE DEGAS-
SING IN SAMPLE.
SHALE = LIGHT GREENISH GRAY TO LIGHT
BLUISH GRAY; BRITTLE TO CRUMBLY TO SEMI
CRUNCHY TENACITY; IRREGULAR TO SEMI
HACKLY TO PREDOMINATELY PLANAR FRACTURIN
-G; CUTTINGS TEND TO BE PLATY TO BLADED
TO ELONGATED TABULAR IN HABIT; SLIGHT
GREASY TO SEMI WAXY TO DULL LUSTER;
CLAYEY TO SILTY TO SMOOTH TEXTURE; NO
OTHER VISIBLE BEDDING FEATUERS.
SILTSTONE = BROWNISH GRAY TO OLIVE GRAY;

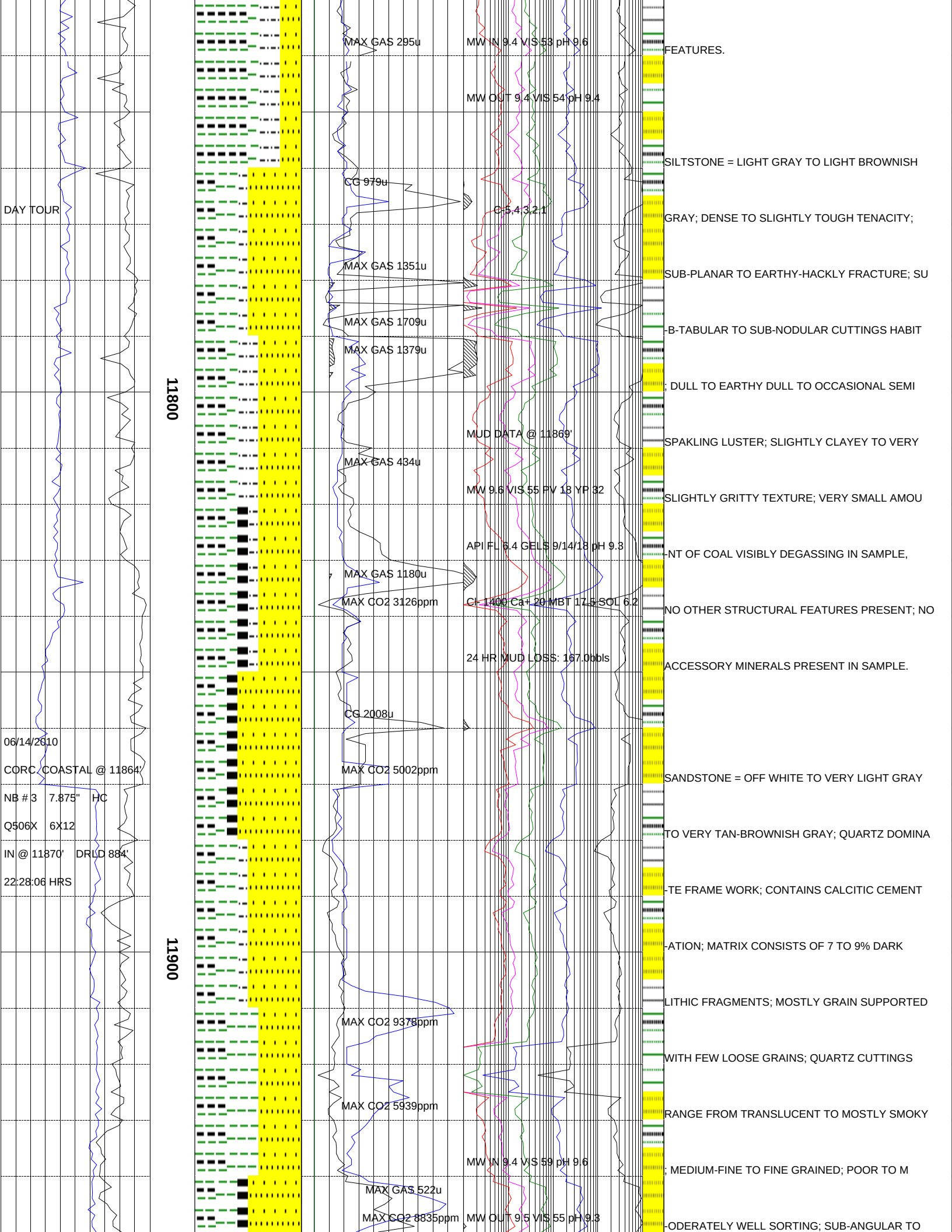

WOB 30-31
RPM 48-50
PP 3200-3300
GPM 676
WF 200 @ 10711'
10700
10800
MAX GAS 767u
MAX GAS 646u
CG
MAX CO2 13278ppm
MW IN 9.4 VIS 53 pH 9.8
MAX GAS 640u
MW OUT 9.4 VIS 52 pH 9.2
C-5,4,3,2,1
MAX GAS 738u
CG 761u
MAX CO2 7502ppm
CRUNCHY TO STIFF TENACITY; BLOCKY TO
SEMI PLANAR TO SLIGHT HACKLY FRACTURING;
CUTTINGS TEND TO BE BLADED TO ROUNDED
WEDGELIKE IN HABIT; GRANULAR TO GRITTY
TO SILTY TEXTURE; NO VISIBLE BEDDING
FEATURES.
SANDSTONE = LIGHT BROWNISH GRAY TO LIGHT
OLIVE GRAY; MOSTLY QUARTZ FRAMEWORK WITH
7-8% DARK LITHICS VISIBLE IN SAMPLE;
COARSE TO MEDIUM TO FINE GRAIN SIZE; SUB
-ROUND TO ROUND GRAINS; MODERATE TO LOW
SPHERICITY; GRAIN SUPPORTED; FIRM FRIABL
-E TO MODERATE HARD; UNCONSOLIDATED
GRAINS DUE TO BIT ACTION; CALCITE CEMENT
-ATION; NO VISIBLE HYDROCARBONS IN
SAMPLE; NO VISIBLE SURFACE FEATURES.
COAL = BLACK TO BROWNISH BLACK TO OLIVE
BLACK; CRUNCHY TO STIFF TENACITY; IRREG-
ULAR TO BLOCKY TO PLANAR FRACTURING;
CUTTINGS TEND TO BE PLATY TO FLAKY TO

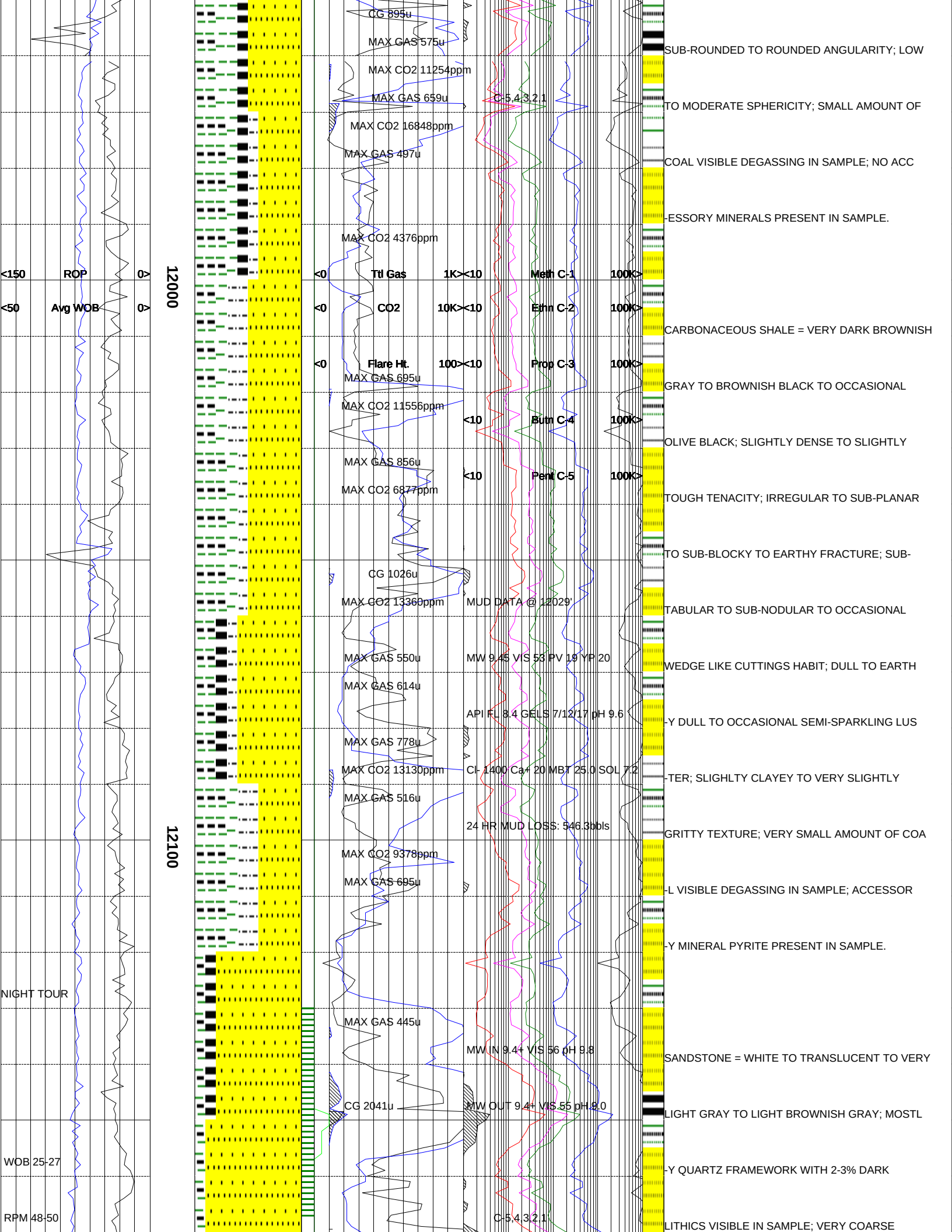

SEMI WEDGELIKE IN HABIT; GREASY TO WAXY
TO OCCASIONALLY SPARKLING LUSTER; SILTY
TO SMOOTH TO MATTE TEXTURE; VISIBLE
06/12/2010
MAX CO2 5149ppm
DEGASSING IN MOST OF SAMPLE.
CG 744u
10900
SILTSTONE = VERY LIGHT GRAY TO LIGHT
BLUISH GRAY; CRUNCHY TO CRUMBLY TENA-
CITY; PREDOMINATELY PLANAR TO HACKLY
MW IN 9.4+ VIS 55 pH 10.0
FRACTURING; CUTTINGS TEND TO BE PLATY TO
MW OUT 9.4+ VIS 51 pH 9.1
FLAKY TO SEMI TABULAR IN HABIT; DULL
EARTHY TO SEMI GREASY LUSTER; SILTY TO
MAX GAS 515u
C-5,4,3,2,1
GRITTY TEXTURE; NO OTHER VISIBLE BEDDING
FEATURES; FOUND CALCITE FRACTURE FILL IN
MAX GAS 479u
COARSE GRAIN SANDSTONES.
<150 ROP 0>
MAX GAS 902u
<0 Ttl Gas 1K> <10 Meth C-1 100K>
11000
<50 Avg WOB 0>
<0 CO2 10K> <10 Ethn C-2 100K>
CG 794u
COAL = BLACK TO OLIVE BLACK TO GRAYISH
<0 Flare Ht. 100> <10 Prop C-3 100K>
BLACK; STIFF TO CRUNCHY TO OCCASIONALLY
<10 Buth C-4 100K>
BRITTLE TENACITY; BLOCKY TO CONCHOIDAL
<10 Pent C-5 100K>
TO SEMI PLANAR FRACTURING; CUTTINGS TEND
CAMEO @ 11044'
TO BE WEDGELIKE TO SEMI TABULAR TO
MAX GAS 532u
BLADED IN HABIT; DULL EARTHY TO SEMI
MAX GAS 569u
GREASY TO WAXY LUSTER; MATTE TO SMOOTH

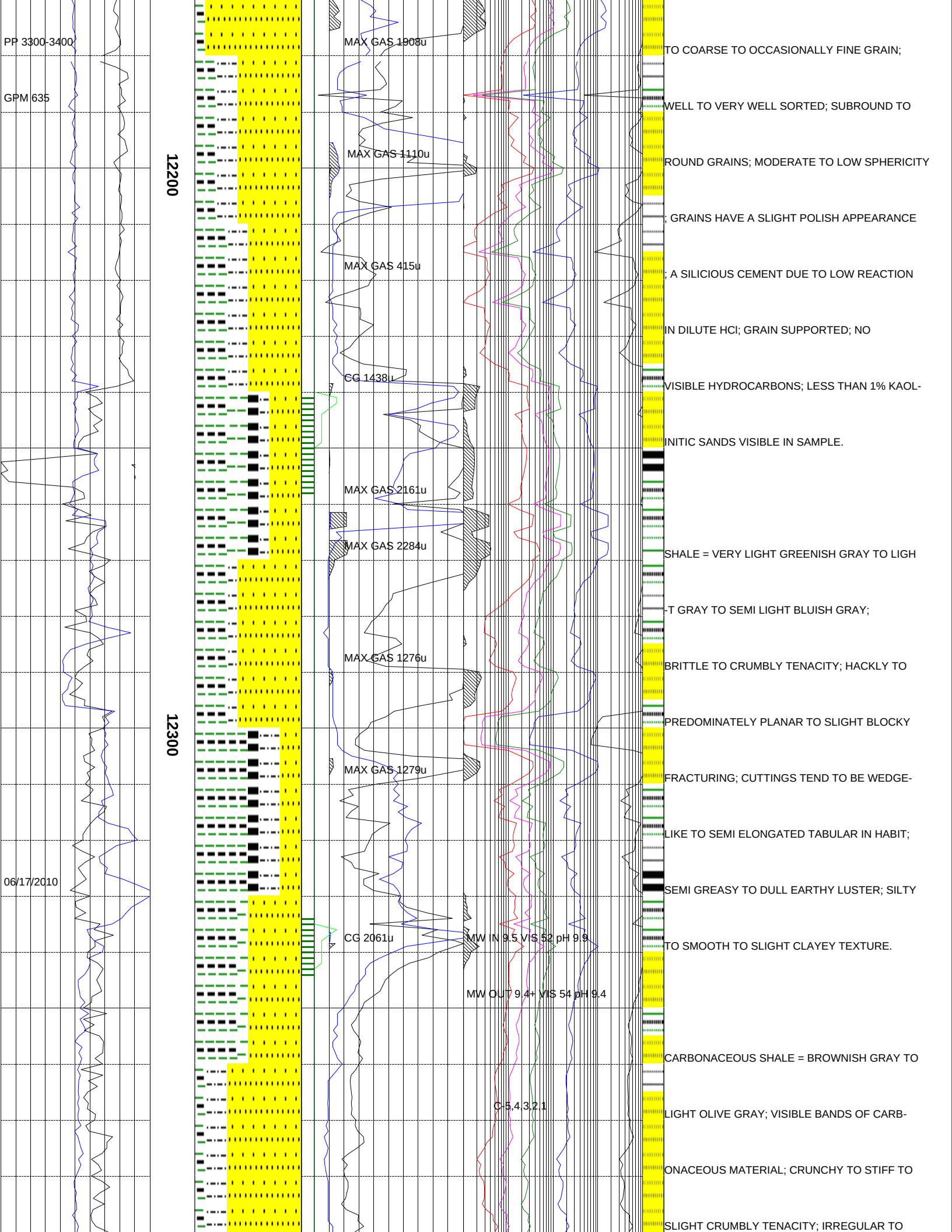

11100
11200
DAY TOUR
CG 659u
MAX GAS 667u
MW IN 9.5 VIS 50 pH 9.9
MAX GAS 689u
MW OUT 9.4+ VIS 52 pH 9.4
MAX GAS 660u
C-5,4,3,2,1
MAX GAS 632u
MAX CO2 9296ppm
CG 431u
MAX GAS 795u
CLEANING SHAKER SCREEN
CG 1048u
TO SLIGHT GRITTY TEXTURE; VISIBLE DEGAS-
SING IN SAMPLE.
CARBONACEOUS SHALE = DARK BROWNISH
GRAY TO BROWNISH BLACK TO OCCASINAL
OLIVE BLACK; SLIGHTLY DENSE TO SLIGHTLY
TOUGH TENACITY; IRREGULAR TO SUB-BLOCKY
TO SUB-PLANAR TO EARTHY-HACKLY FRACTURE;
SUB-TABULAR TO OCCASINAL WEDGE LIKE TO
SUB-NODULAR CUTTINGS HABIT; DULL TO
EARTHY DULL TO OCCASIONAL SEMI-SPARKLING
LUSTER; SLIGHTLY CLAYEY TO VERY SLIGHLTY
GRITTY TEXTURE; COAL MODERATELY DEGASSIN
-G, AND VERY SMALL AMOUNT OF CARBONACEOU
-S SHALE CUTTING VISIBLE DEGASSING; NO
OTHER DISTINGUISHABLE STRUCTURAL FEATURE
-S PRESENT IN SAMPLE; NO ACCESSORY MINER
-ALS PRESENT IN SAMPLE.
ROLLINS SANDSTONE = WHITE TO OFF WHITE
VERY LIGHT YELLOWISH GRAY WITH FEW
BLACK HUES; QUARTZ DOMINANT FRAMEWORK;

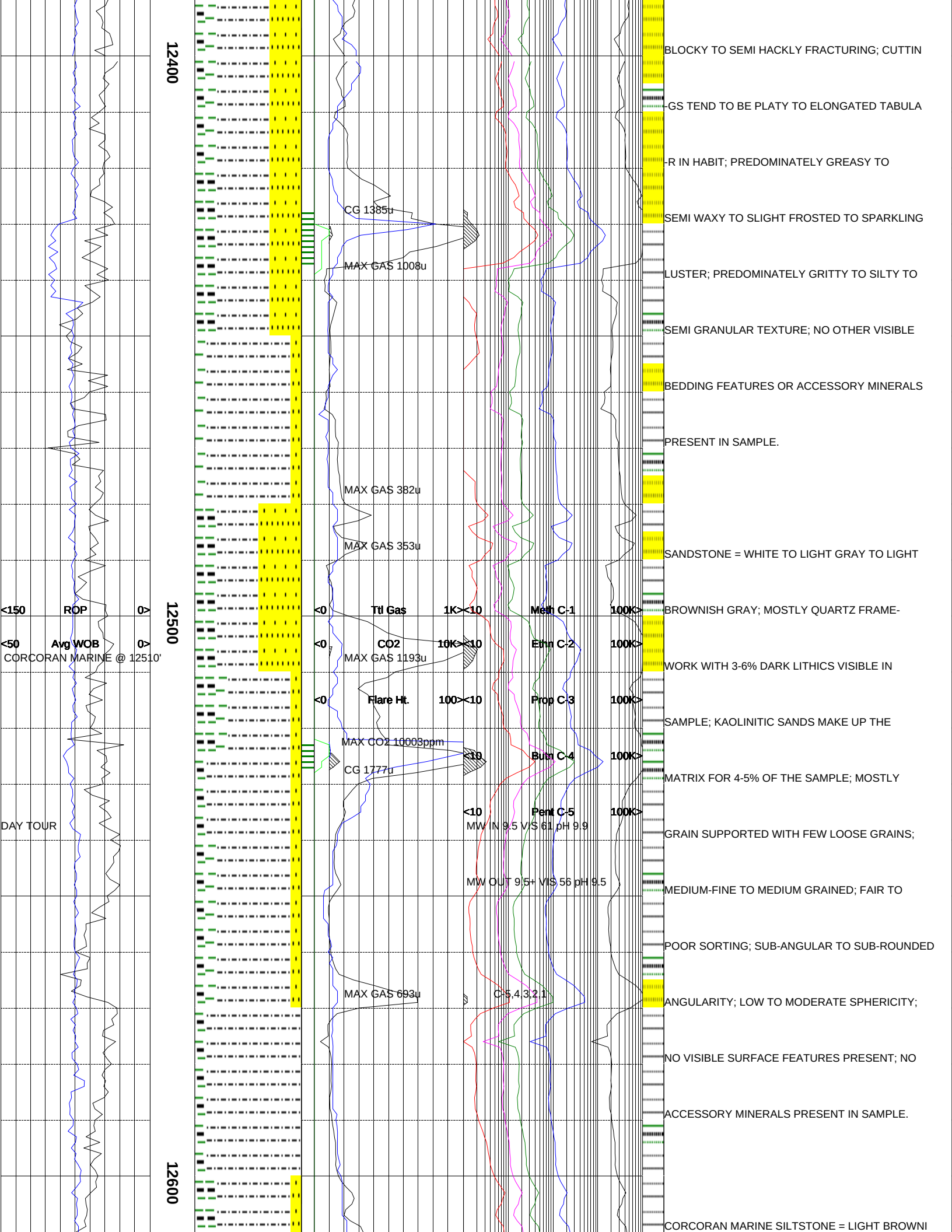

ROLLINS @ 11290'
11300
GAS TRAP DOWN
GAS TRAP DOWN
GAS TRAP DOWN
MAX GAS 512u
MAX GAS 545u
MW IN 9.3 VIS 60 pH 9.6
MAX GAS 1144u
MW OUT 9.3 VIS 59 pH 9.3
MAX CO2 4689ppm
MAX GAS 838u
C-5,4,3,2,1
CG 1931u
MAX CO2 14380ppm
11400
MAX GAS 1014u
MUD DATA @ 11434'
MW 9.4 VIS 62 PV 18 YP 36
MAX GAS 490u
API FL 6.0 GELS 11/15/19 pH 9.6
Cl- 1500 Ca+ 20 MBT 20.0 SOL 5.7
MAX GAS 951u
24 HR MUD LOSS: 559.9bbls
NIGHT TOUR
CG 2009u
MAX GAS 1313u
11500
GRAIN SUPPORTED WITH MOSTLY LOOSE GRAINS
; CONTAINS SILICIC CEMENTATION WITH NO
REACTION TO DILUTE HCL; MATRIX CONTAINS
1 TO 3% DARK LITHIC FRAGMENTS; MEDIUM-
FINE TO MEDIUM-COARSE GRAINED; MODERATEL
-Y FAIR TO POOR SORTING; SUB-ANGULAR TO
SUB-ROUNDED TO ROUNDED ANGULARITY;
LOW TO MODERATE SPHERICITY; POOR GRADE
SILTSTONE VISIBLE GRADING WITH POOR GRAD
-E SANDSTONE, SMALL AMOUNT OF SHALE VISI
-BLE DEGASSING IN SAMPLE, NO OTHER DISTI
-NGUISHABLE STRUCTURAL FEATURES PRESENT;
NO ACCESSORY MINERALS PRESENT IN SAMPLE.
CARBONACEOUS SHALE = OLIVE GRAY TO BROWN
-ISH GRAY; CRUNCHY TO CRUMBLY TO BRITTLE
TENACITY; HACKLY TO PLANAR FRACTURING;
CUTTINGS TEND TO BE PLATY TO SLIGHT
FLAKY TO PREDOMINATELY WEDGELIKE TO SEMI
TABULAR IN HABIT; FROSTED TO SLIGHT
GREASY TO SEMI SPARKLING LUSTER; GRITTY
TO SILTY TO OCCASIONALLY SMOOTH TEXTURE;
<150 ROP 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
<50 Avg WOB 0>
<0 CO2 10K><10 Ethn C-2 100K>
TRANS COZZETTE @ 11500'

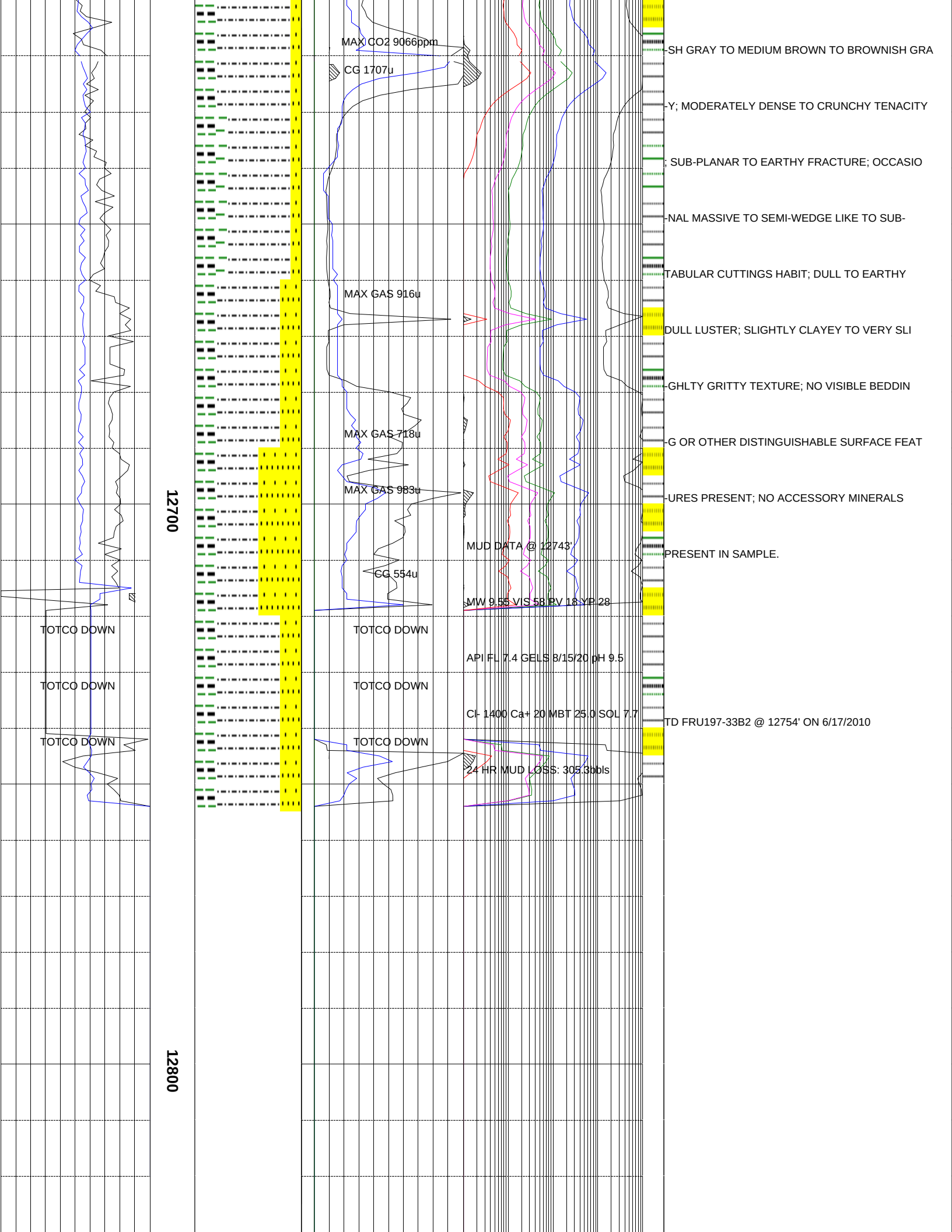

MAX GAS 648u
MAX GAS 987u
MW IN 9.4 VIS 60 pH 9.7
MW OUT 9.4 VIS 59 pH 9.9
COZZETTE @ 11550'
MAX GAS 200u
C-5,4,3,2,1
CG 1560u
MAX GAS 1357u
MAX GAS 576u
11600
MAX GAS 635u
MAX GAS 545u
06/13/2010
CG 2228u
MAX GAS 1420u
MAX GAS 1394u
11700
MAX GAS 741u
VISIBLE BEDS OF CARBONACEOUS MATERIAL IN
THE SAMPLE.
COAL = GRAYISH BLACK TO BROWNISH BLACK;
STIFF TO CRUNCHY TO SEMI MALLEABLE
TENACITY; IRREGULAR TO HACKLY TO SEMI
PLANAR FRACTURING; CUTTINGS TEND TO BE
SEMI WEDGE-LIKE TO ELONGATED TO SLIGHT
NODULAR IN HABIT; PREDOMINATELY WAXY TO
SLIGHT GREASY TO SEMI SPARKLING LUSTER;
SILTY TO OCCASIONALLY GRITTY TO PREDOM-
INATELY MATTE TO SMOOTH TEXTURE; VISIBL
DEGASSING IN MOST OF SAMPLE.
SHALE = VERY LIGHT GREENISH GRAY TO LIGH
-T BLUISH GRAY TO LIGHT GRAY; CRUMBLY TO
BRITTLE TENACITY; IRREGULAR TO PLANAR TO
SLIGHT SPLINTERY FRACTURING; CUTTINGS
TEND TO BE FLAKY TO PLATY TO SEMI BLADED
IN HABIT; DULL EARTHY TO SEMI GREASY
LUSTER; SMOOTH TO MATTE TO PREDOMINATELY
CLAYEY TEXTURE; NO OTHER VISIBLE BEDDING


MAX GAS 295u
MW IN 9.4 VIS 53 pH 9.6
FEATURES.
MW OUT 9.4 VIS 54 pH 9.4
SILTSTONE = LIGHT GRAY TO LIGHT BROWNISH
CG 979u
DAY TOUR
C-5,4,3,2,1
GRAY; DENSE TO SLIGHTLY TOUGH TENACITY;
MAX GAS 1351u
SUB-PLANAR TO EARTHY-HACKLY FRACTURE; SU
MAX GAS 1709u
-B-TABULAR TO SUB-NODULAR CUTTINGS HABIT
MAX GAS 1379u
; DULL TO EARTHY DULL TO OCCASIONAL SEMI
11800
MUD DATA @ 11869'
SPAKLING LUSTER; SLIGHTLY CLAYEY TO VERY
MAX GAS 434u
MW 9.6 VIS 55 PV 18 YP 32
SLIGHTLY GRITTY TEXTURE; VERY SMALL AMOU
API FL 6.4 GELS 9/14/18 pH 9.3
-NT OF COAL VISIBLY DEGASSING IN SAMPLE,
MAX GAS 1180u
MAX CO2 3126ppm
Cl- 1400 Ca+ 20 MBT 17.5 SOL 6.2
NO OTHER STRUCTURAL FEATURES PRESENT; NO
24 HR MUD LOSS: 167.0bbls
ACCESSORY MINERALS PRESENT IN SAMPLE.
CG 2008u
06/14/2010
CORC COASTAL @ 11864'
MAX CO2 5002ppm
SANDSTONE = OFF WHITE TO VERY LIGHT GRAY
NB # 3 7.875" HC
Q506X 6X12
TO VERY TAN-BROWNISH GRAY; QUARTZ DOMINA
IN @ 11870' DRLD 884'
22:28:06 HRS
-TE FRAME WORK; CONTAINS CALCITIC CEMENT
-ATION; MATRIX CONSISTS OF 7 TO 9% DARK
11900
LITHIC FRAGMENTS; MOSTLY GRAIN SUPPORTED
MAX CO2 9378ppm
WITH FEW LOOSE GRAINS; QUARTZ CUTTINGS
MAX CO2 5939ppm
RANGE FROM TRANSLUCENT TO MOSTLY SMOKY
MW IN 9.4 VIS 59 pH 9.6
; MEDIUM-FINE TO FINE GRAINED; POOR TO M
MAX GAS 522u
MAX CO2 8835ppm
MW OUT 9.5 VIS 55 pH 9.3
-ODERATELY WELL SORTING; SUB-ANGULAR TO


CG 895u
MAX GAS 575u
MAX CO2 11254ppm
MAX GAS 659u
C-5,4,3,2,1
MAX CO2 16848ppm
MAX GAS 497u
MAX CO2 4376ppm
<150 ROP 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
12000
<50 Avg WOB 0>
<0 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
MAX GAS 695u
MAX CO2 11556ppm
<10 Butn C-4 100K>
MAX GAS 856u
<10 Pent C-5 100K>
MAX CO2 6877ppm
CG 1026u
MAX CO2 13360ppm
MUD DATA @ 12029'
MAX GAS 550u
MW 9.45 VIS 53 PV 19 YP 20
MAX GAS 614u
API FL 8.4 GELS 7/12/17 pH 9.6
MAX GAS 778u
MAX CO2 13130ppm
Cl- 1400 Ca+ 20 MBT 25.0 SOL 7.2
MAX GAS 516u
24 HR MUD LOSS: 546.3bbls
12100
MAX CO2 9378ppm
MAX GAS 695u
NIGHT TOUR
MAX GAS 445u
MW IN 9.4+ VIS 56 pH 9.8
CG 2041u
MW OUT 9.4+ VIS 55 pH 9.0
WOB 25-27
RPM 48-50
C-5,4,3,2,1
SUB-ROUNDED TO ROUNDED ANGULARITY; LOW
-TO MODERATE SPHERICITY; SMALL AMOUNT OF
-COAL VISIBLE DEGASSING IN SAMPLE; NO ACC
-ESSORY MINERALS PRESENT IN SAMPLE.
CARBONACEOUS SHALE = VERY DARK BROWNISH
GRAY TO BROWNISH BLACK TO OCCASIONAL
OLIVE BLACK; SLIGHTLY DENSE TO SLIGHTLY
TOUGH TENACITY; IRREGULAR TO SUB-PLANAR
-TO SUB-BLOCKY TO EARTHY FRACTURE; SUB-
TABULAR TO SUB-NODULAR TO OCCASIONAL
WEDGE LIKE CUTTINGS HABIT; DULL TO EARTH
-Y DULL TO OCCASIONAL SEMI-SPARKLING LUS
-TER; SLIGHLTY CLAYEY TO VERY SLIGHTLY
GRITTY TEXTURE; VERY SMALL AMOUNT OF COA
-L VISIBLE DEGASSING IN SAMPLE; ACCESSOR
-Y MINERAL PYRITE PRESENT IN SAMPLE.
SANDSTONE = WHITE TO TRANSLUCENT TO VERY
LIGHT GRAY TO LIGHT BROWNISH GRAY; MOSTL
-Y QUARTZ FRAMEWORK WITH 2-3% DARK
LITHICS VISIBLE IN SAMPLE; VERY COARSE


PP 3300-3400
GPM 635
12200
12300
06/17/2010
MAX GAS 1908u
MAX GAS 1110u
MAX GAS 415u
CG 1438u
MAX GAS 2161u
MAX GAS 2284u
MAX GAS 1276u
MAX GAS 1279u
CG 2061u
MW IN 9.5 VIS 52 pH 9.9
MW OUT 9.4+ VIS 54 pH 9.4
C-5,4,3,2,1
TO COARSE TO OCCASIONALLY FINE GRAIN;
WELL TO VERY WELL SORTED; SUBROUND TO
ROUND GRAINS; MODERATE TO LOW SPHERICITY
; GRAINS HAVE A SLIGHT POLISH APPEARANCE
; A SILICIOUS CEMENT DUE TO LOW REACTION
IN DILUTE HCl; GRAIN SUPPORTED; NO
VISIBLE HYDROCARBONS; LESS THAN 1% KAOL-
INITIC SANDS VISIBLE IN SAMPLE.
SHALE = VERY LIGHT GREENISH GRAY TO LIGH
-T GRAY TO SEMI LIGHT BLUISH GRAY;
BRITTLE TO CRUMBLY TENACITY; HACKLY TO
PREDOMINATELY PLANAR TO SLIGHT BLOCKY
FRACTURING; CUTTINGS TEND TO BE WEDGE-
LIKE TO SEMI ELONGATED TABULAR IN HABIT;
SEMI GREASY TO DULL EARTHY LUSTER; SILTY
-TO SMOOTH TO SLIGHT CLAYEY TEXTURE.
CARBONACEOUS SHALE = BROWNISH GRAY TO
LIGHT OLIVE GRAY; VISIBLE BANDS OF CARB-
ONACEOUS MATERIAL; CRUNCHY TO STIFF TO
SLIGHT CRUMBLY TENACITY; IRREGULAR TO


12400
12500
12600
<150
ROP
0>
<50
Avg WOB
0>
CORCORAN MARINE @ 12510'
DAY TOUR
<0
Ttl Gas
1K>
<0
CO2
10K>
<0
Flare Ht.
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 1385u
MAX GAS 1008u
MAX GAS 382u
MAX GAS 353u
MAX GAS 1193u
MAX CO2 10003ppm
CG 1777u
MAX GAS 693u
MW IN 9.5 VIS 61 pH 9.9
MW OUT 9.5+ VIS 56 pH 9.5
C-5,4,3,2,1
BLOCKY TO SEMI HACKLY FRACTURING; CUTTIN
-GS TEND TO BE PLATY TO ELONGATED TABULA
-R IN HABIT; PREDOMINATELY GREASY TO
SEMI WAXY TO SLIGHT FROSTED TO SPARKLING
LUSTER; PREDOMINATELY GRITTY TO SILTY TO
SEMI GRANULAR TEXTURE; NO OTHER VISIBLE
BEDDING FEATURES OR ACCESSORY MINERALS
PRESENT IN SAMPLE.
SANDSTONE = WHITE TO LIGHT GRAY TO LIGHT
BROWNISH GRAY; MOSTLY QUARTZ FRAME-
WORK WITH 3-6% DARK LITHICS VISIBLE IN
SAMPLE; KAOLINITIC SANDS MAKE UP THE
MATRIX FOR 4-5% OF THE SAMPLE; MOSTLY
GRAIN SUPPORTED WITH FEW LOOSE GRAINS;
MEDIUM-FINE TO MEDIUM GRAINED; FAIR TO
POOR SORTING; SUB-ANGULAR TO SUB-ROUNDED
ANGULARITY; LOW TO MODERATE SPHERICITY;
NO VISIBLE SURFACE FEATURES PRESENT; NO
ACCESSORY MINERALS PRESENT IN SAMPLE.
CORCORAN MARINE SILTSTONE = LIGHT BROWNI


MAX CO2 9066ppm
CG 1707u
MAX GAS 916u
MAX GAS 718u
MAX GAS 983u
CG 554u
12700
12800
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
TOTCO DOWN
MUD DATA @ 12743'
MW 9.55 VIS 58 PV 18 YP 28
API FL 7.4 GELS 8/15/20 pH 9.5
Cl- 1400 Ca+ 20 MBT 25.0 SOL 7.7
24 HR MUD LOSS: 305.3bbls
-SH GRAY TO MEDIUM BROWN TO BROWNISH GRA
-Y; MODERATELY DENSE TO CRUNCHY TENACITY
; SUB-PLANAR TO EARTHY FRACTURE; OCCASIO
-NAL MASSIVE TO SEMI-WEDGE LIKE TO SUB-
TABULAR CUTTINGS HABIT; DULL TO EARTHY
DULL LUSTER; SLIGHTLY CLAYEY TO VERY SLI
-GHLTY GRITTY TEXTURE; NO VISIBLE BEDDIN
-G OR OTHER DISTINGUISHABLE SURFACE FEAT
-URES PRESENT; NO ACCESSORY MINERALS
PRESENT IN SAMPLE.
TD FRU197-33B2 @ 12754' ON 6/17/2010