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	FRU197-33B10
FIELD	Piceance Creek
REGION	Rocky Mountain
COORDINATES	39.921283000
	108.282576000
ELEVATION	6460'
COUNTY, STATE	Rio Blanco, CO
API INDEX	051031142300
SPUD DATE	4/13/2010
CONTRACTOR	HP
CO. REP.	C.Curtis
RIG/TYPE	321 / Flex 4
LOGGING UNIT	31
GEOLOGISTS	C. Record
	M. Franco
ADD. PERSONS	M.Piper
	R.McCane
CO. GEOLOGIST	Nova Roosmawati

LOG INTERVAL

DEPTHS:	4124'	**TO**	12667'
DATES:	8/05/2010	**TO**	8/15/2010
SCALE:		5"=100'	

MUD TYPES

WATERBASED	**TO**	12667'
	TO	
	TO	
	TO	

CASING DATA

16.0"	**AT**	150'
10.75"	**AT**	4114'
4.5"	**AT**	12657'
	AT	

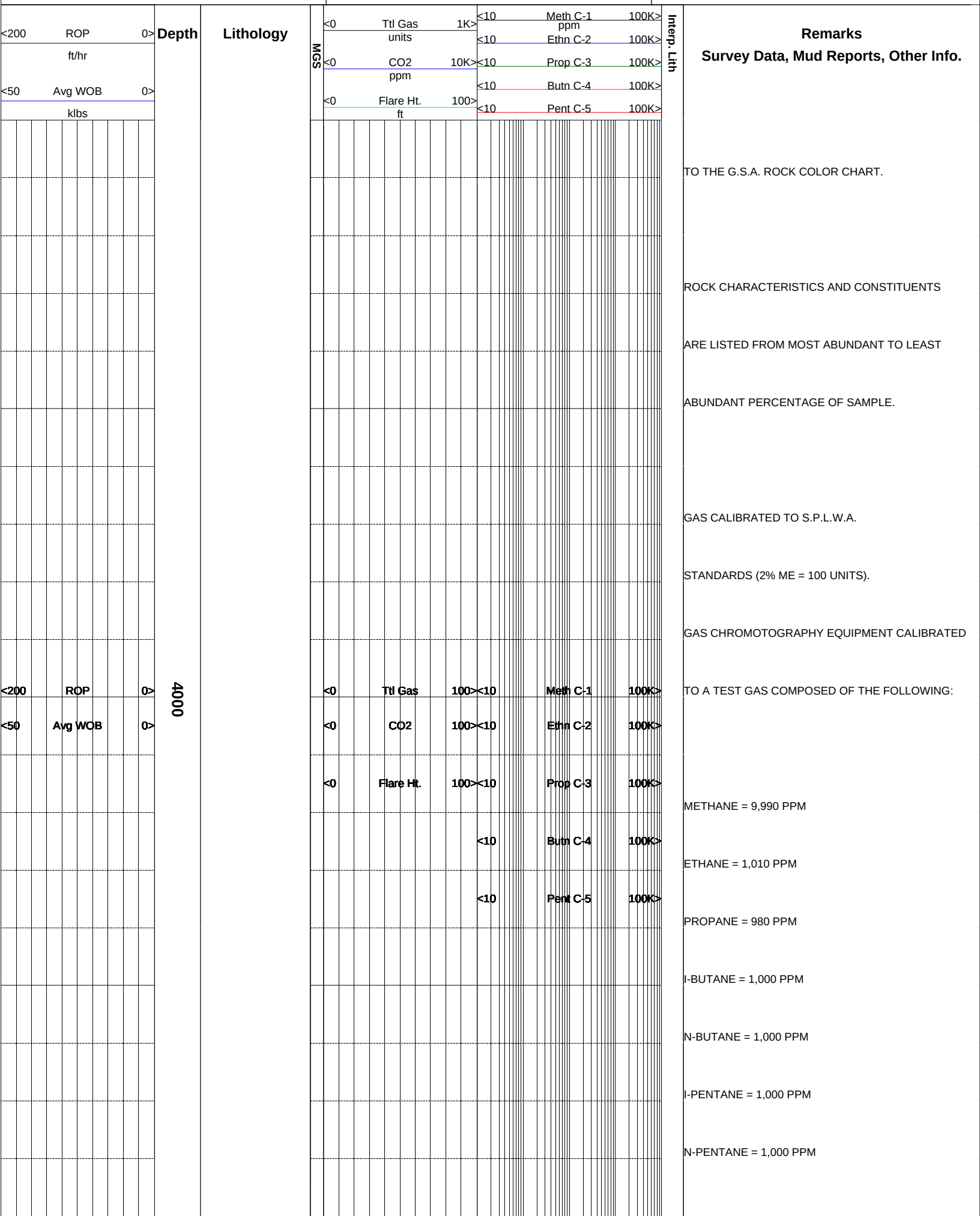
HOLE SIZE

14.75"	**TO**	4124'
8.75"	**TO**	12667'
	TO	
	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



Remarks
Survey Data, Mud Reports, Other Info.

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

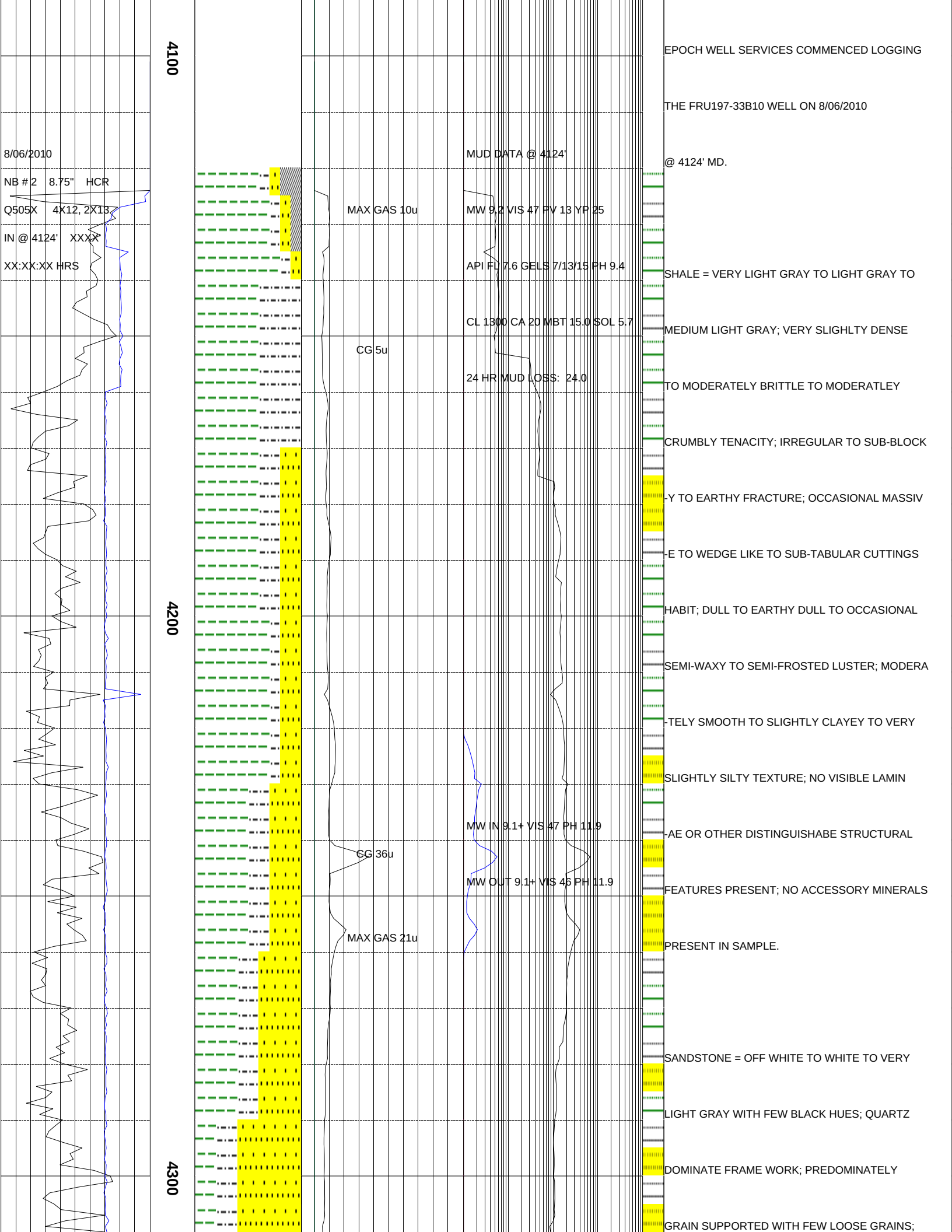
PROPANE = 980 PPM

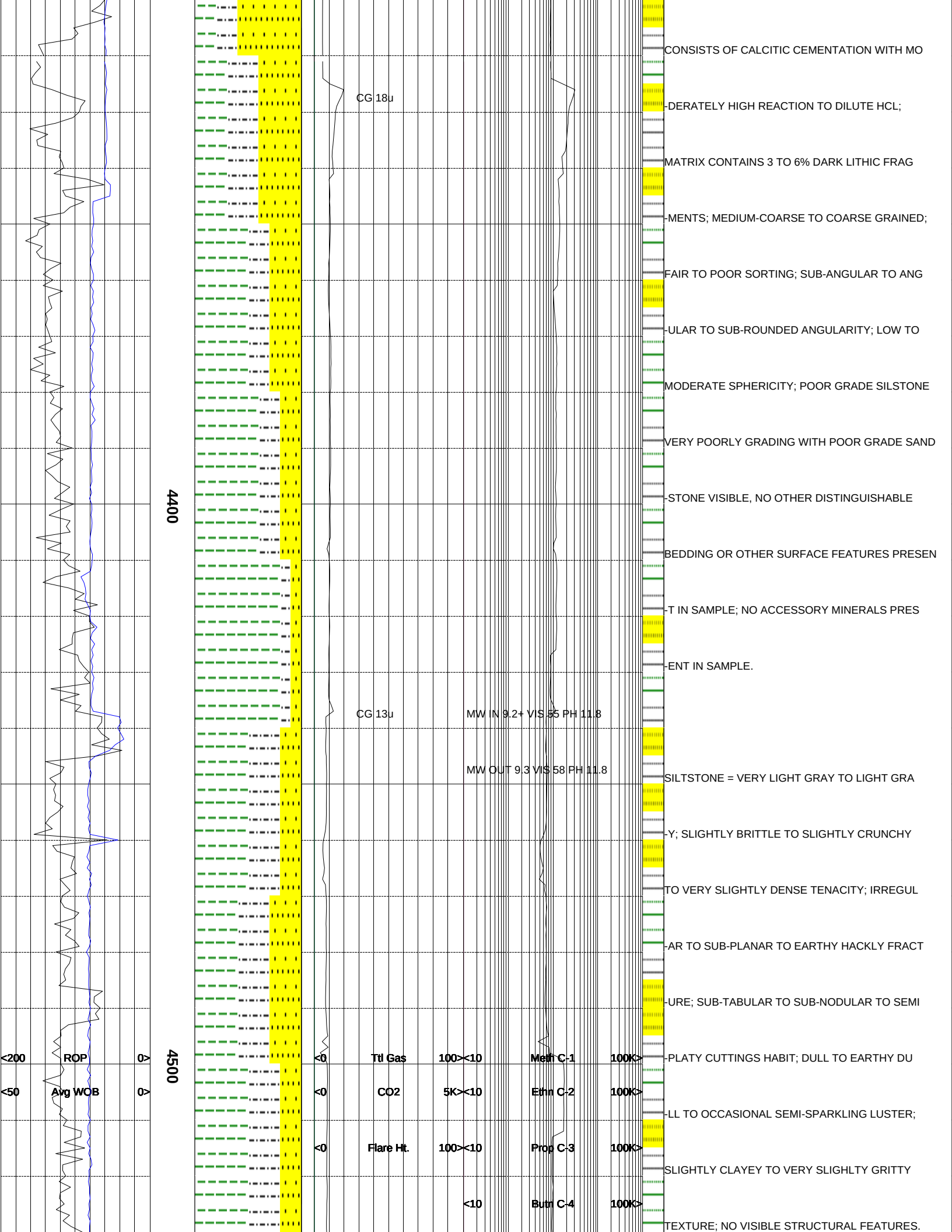
I-BUTANE = 1,000 PPM

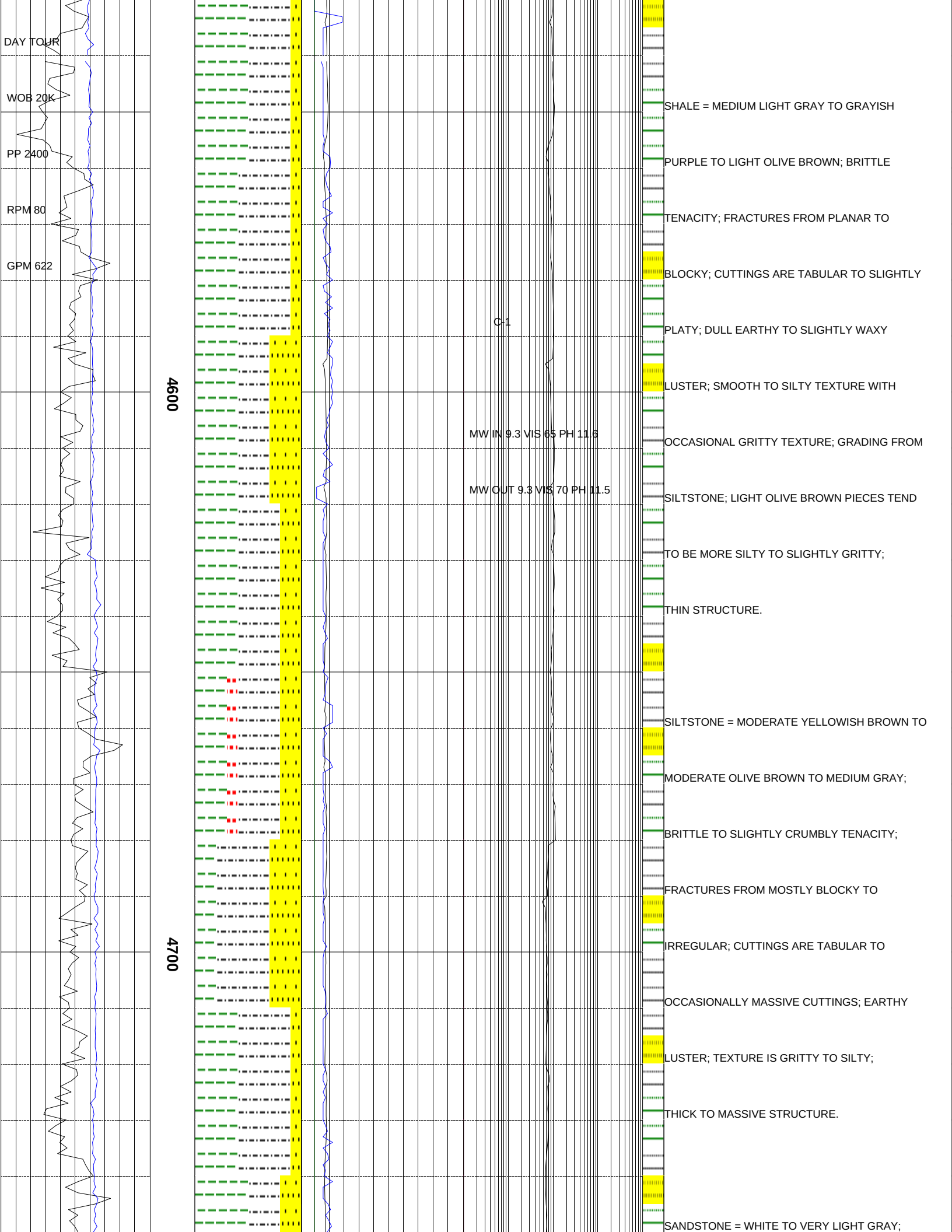
N-BUTANE = 1,000 PPM

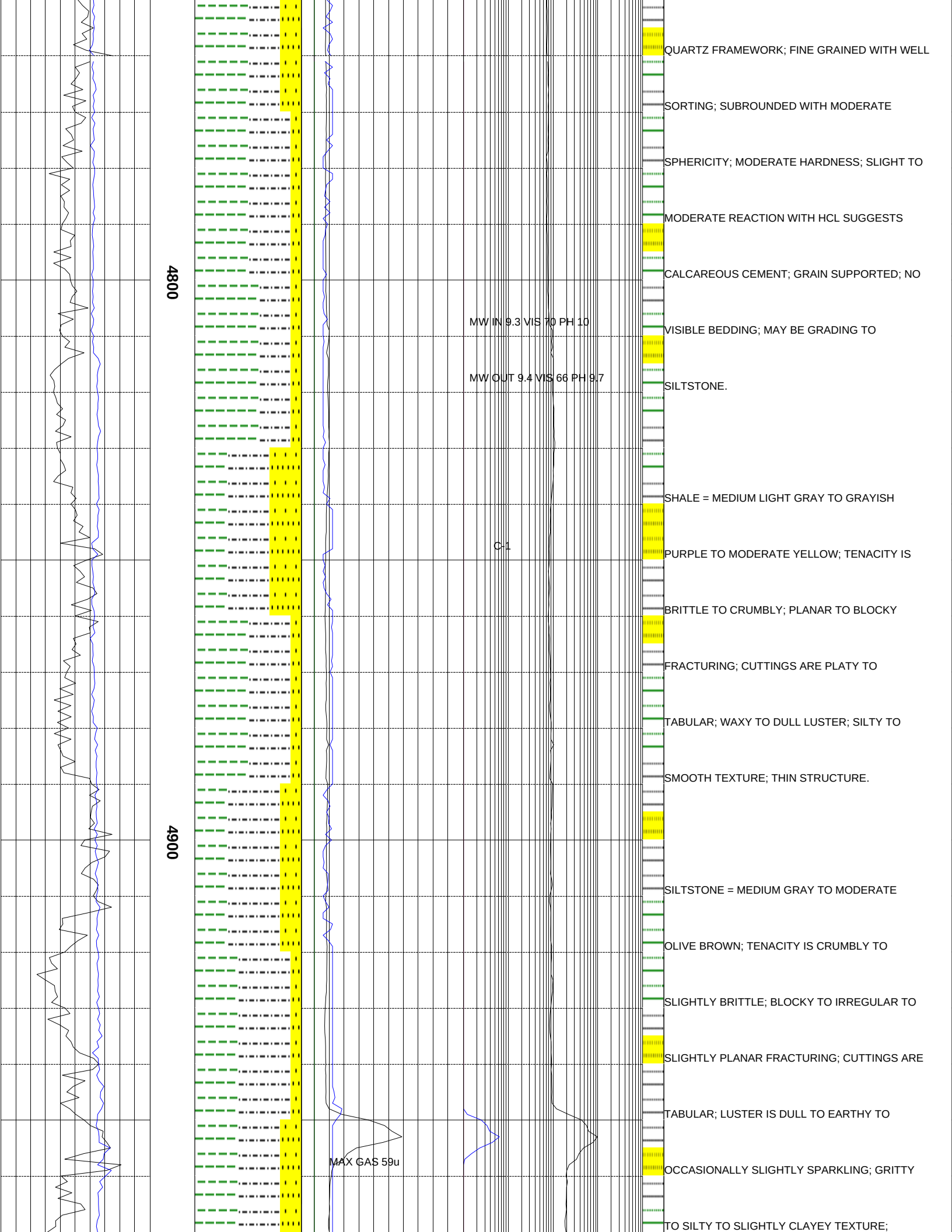
I-PENTANE = 1,000 PPM

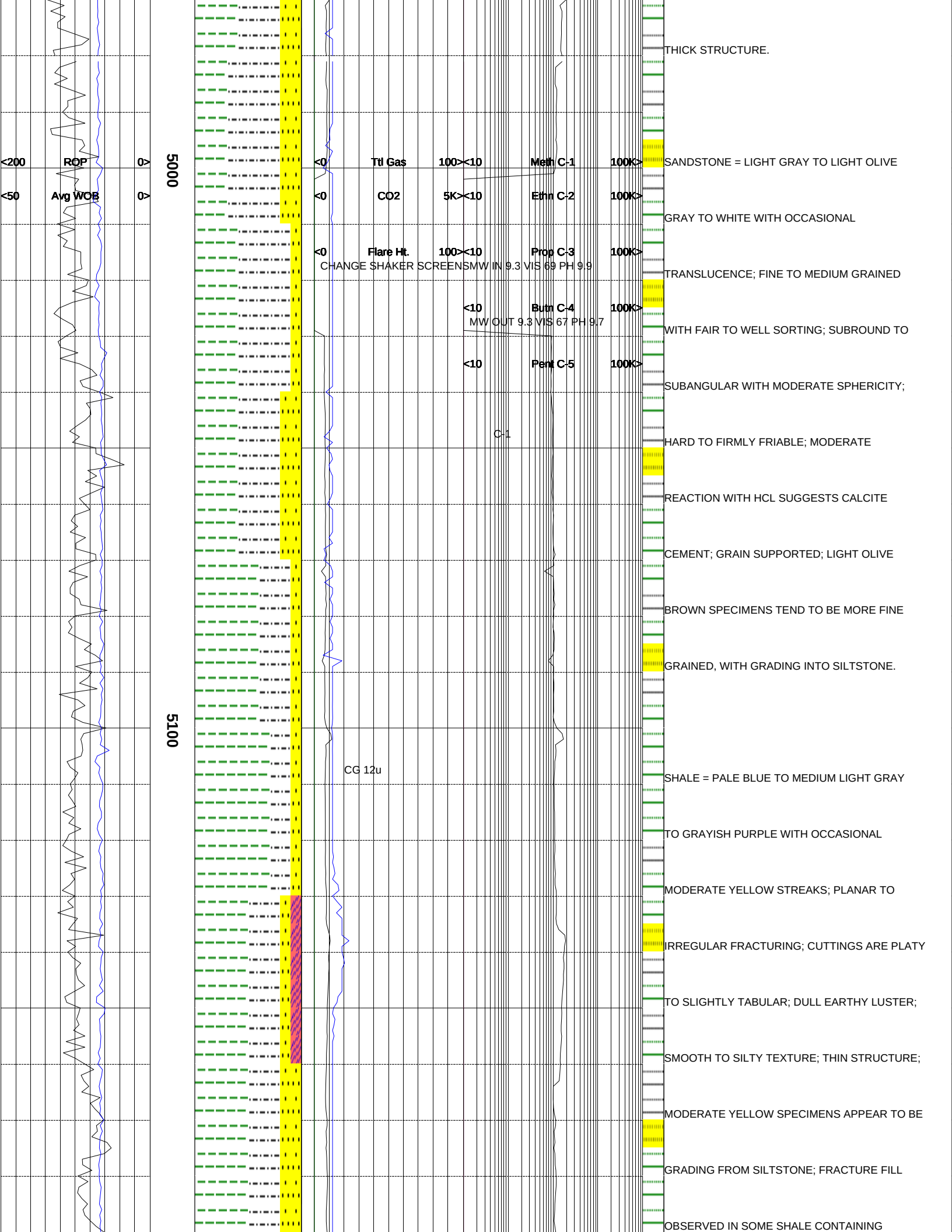
N-PENTANE = 1,000 PPM

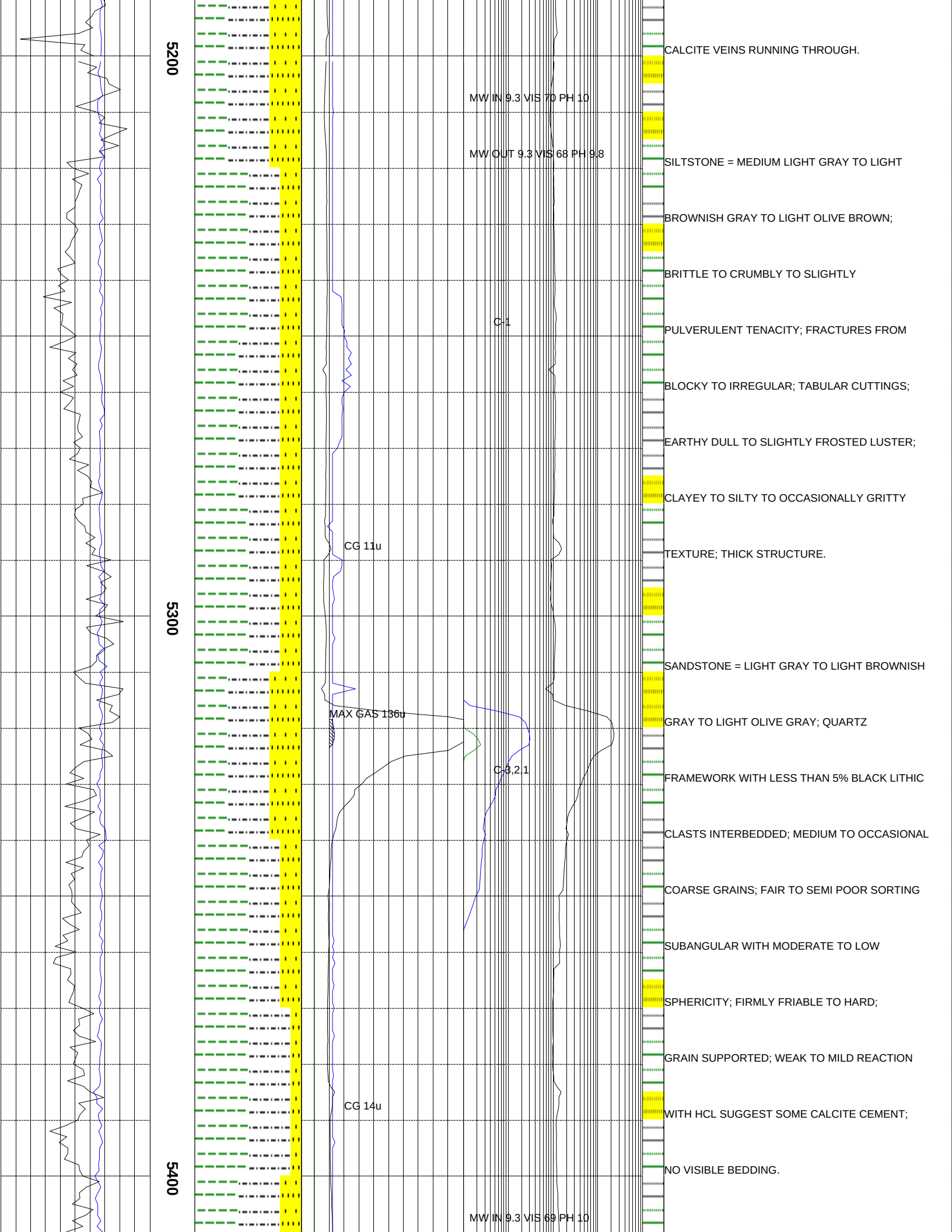

4100
4200
4300
8/06/2010
NB # 2 8.75" HCR
Q505X 4X12, 2X13
IN @ 4124' XXXX'
XX:XX:XX HRS
MAX GAS 10u
CG 5u
CG 36u
MAX GAS 21u
MUD DATA @ 4124'
MW 9.2 VIS 47 PV 13 YP 25
API FL 7.6 GELS 7/13/15 PH 9.4
CL 1300 CA 20 MBT 15.0 SOL 5.7
24 HR MUD LOSS: 24.0
MW IN 9.1+ VIS 47 PH 11.9
MW OUT 9.1+ VIS 46 PH 11.9
EPOCH WELL SERVICES COMMENCED LOGGING
THE FRU197-33B10 WELL ON 8/06/2010
@ 4124' MD.
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO
MEDIUM LIGHT GRAY; VERY SLIGHLTY DENSE
TO MODERATELY BRITTLE TO MODERATLEY
CRUMBLY TENACITY; IRREGULAR TO SUB-BLOCK
-Y TO EARTHY FRACTURE; OCCASIONAL MASSIV
-E TO WEDGE LIKE TO SUB-TABULAR CUTTINGS
HABIT; DULL TO EARTHY DULL TO OCCASIONAL
SEMI-WAXY TO SEMI-FROSTED LUSTER; MODERA
-TELY SMOOTH TO SLIGHTLY CLAYEY TO VERY
SLIGHTLY SILTY TEXTURE; NO VISIBLE LAMIN
-AE OR OTHER DISTINGUISHABE STRUCTURAL
FEATURES PRESENT; NO ACCESSORY MINERALS
PRESENT IN SAMPLE.
SANDSTONE = OFF WHITE TO WHITE TO VERY
LIGHT GRAY WITH FEW BLACK HUES; QUARTZ
DOMINATE FRAME WORK; PREDOMINATELY
GRAIN SUPPORTED WITH FEW LOOSE GRAINS;

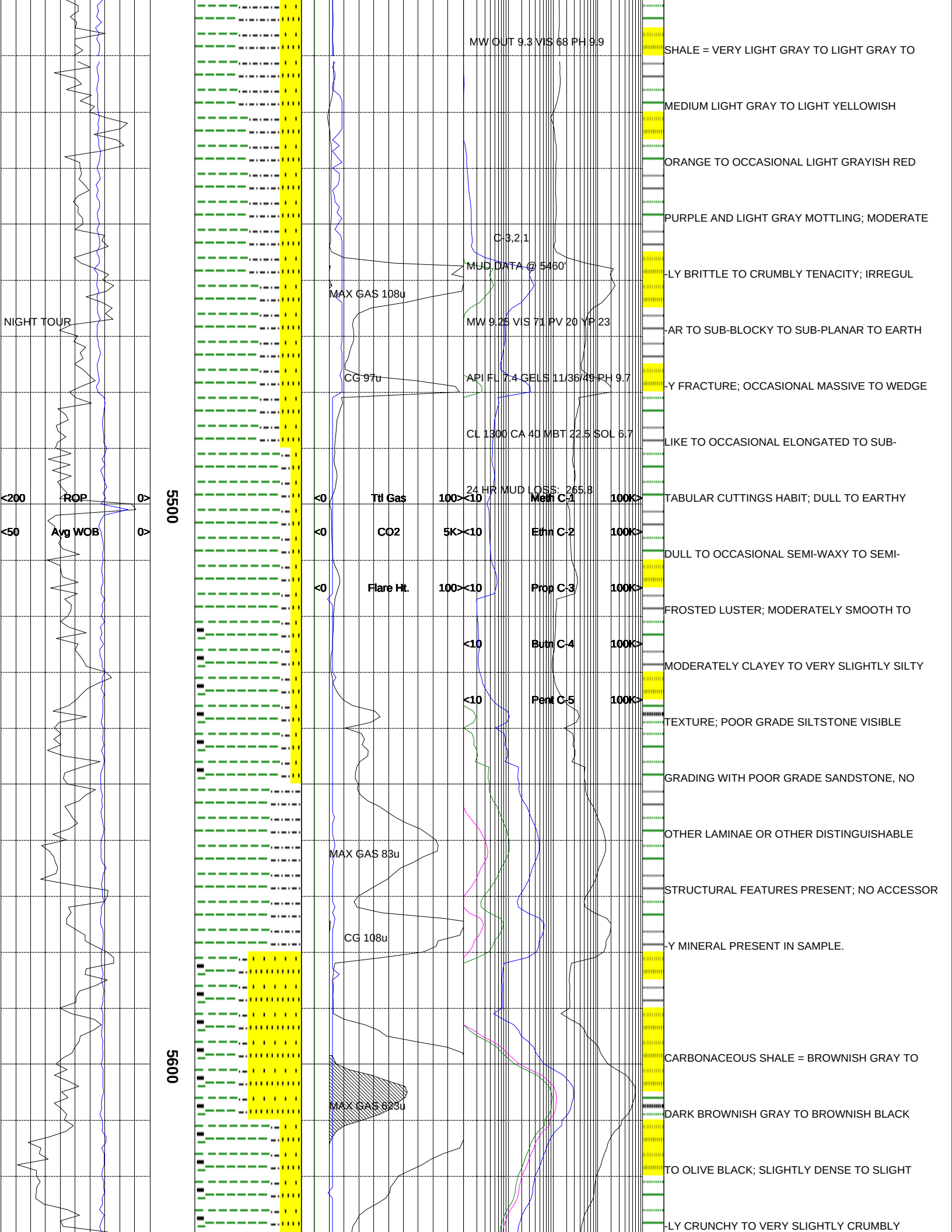

4400
4500
CG 18u
CG 13u
MW IN 9.2+ VIS 55 PH 11.8
MW OUT 9.3 VIS 58 PH 11.8
<200 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 100><10 Meth C-1 100K>
<0 CO2 5K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Butn C-4 100K>
CONSISTS OF CALCITIC CEMENTATION WITH MO
-DERATELY HIGH REACTION TO DILUTE HCL;
MATRIX CONTAINS 3 TO 6% DARK LITHIC FRAG
-MENTS; MEDIUM-COARSE TO COARSE GRAINED;
FAIR TO POOR SORTING; SUB-ANGULAR TO ANG
-ULAR TO SUB-ROUNDED ANGULARITY; LOW TO
MODERATE SPHERICITY; POOR GRADE SILSTONE
VERY POORLY GRADING WITH POOR GRADE SAND
-STONE VISIBLE, NO OTHER DISTINGUISHABLE
BEDDING OR OTHER SURFACE FEATURES PRESEN
-T IN SAMPLE; NO ACCESSORY MINERALS PRES
-ENT IN SAMPLE.
SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
-Y; SLIGHTLY BRITTLE TO SLIGHTLY CRUNCHY
TO VERY SLIGHTLY DENSE TENACITY; IRREGUL
-AR TO SUB-PLANAR TO EARTHY HACKLY FRACT
-URE; SUB-TABULAR TO SUB-NODULAR TO SEMI
-PLATY CUTTINGS HABIT; DULL TO EARTHY DU
-LL TO OCCASIONAL SEMI-SPARKLING LUSTER;
SLIGHTLY CLAYEY TO VERY SLIGHLTY GRITTY
TEXTURE; NO VISIBLE STRUCTURAL FEATURES.

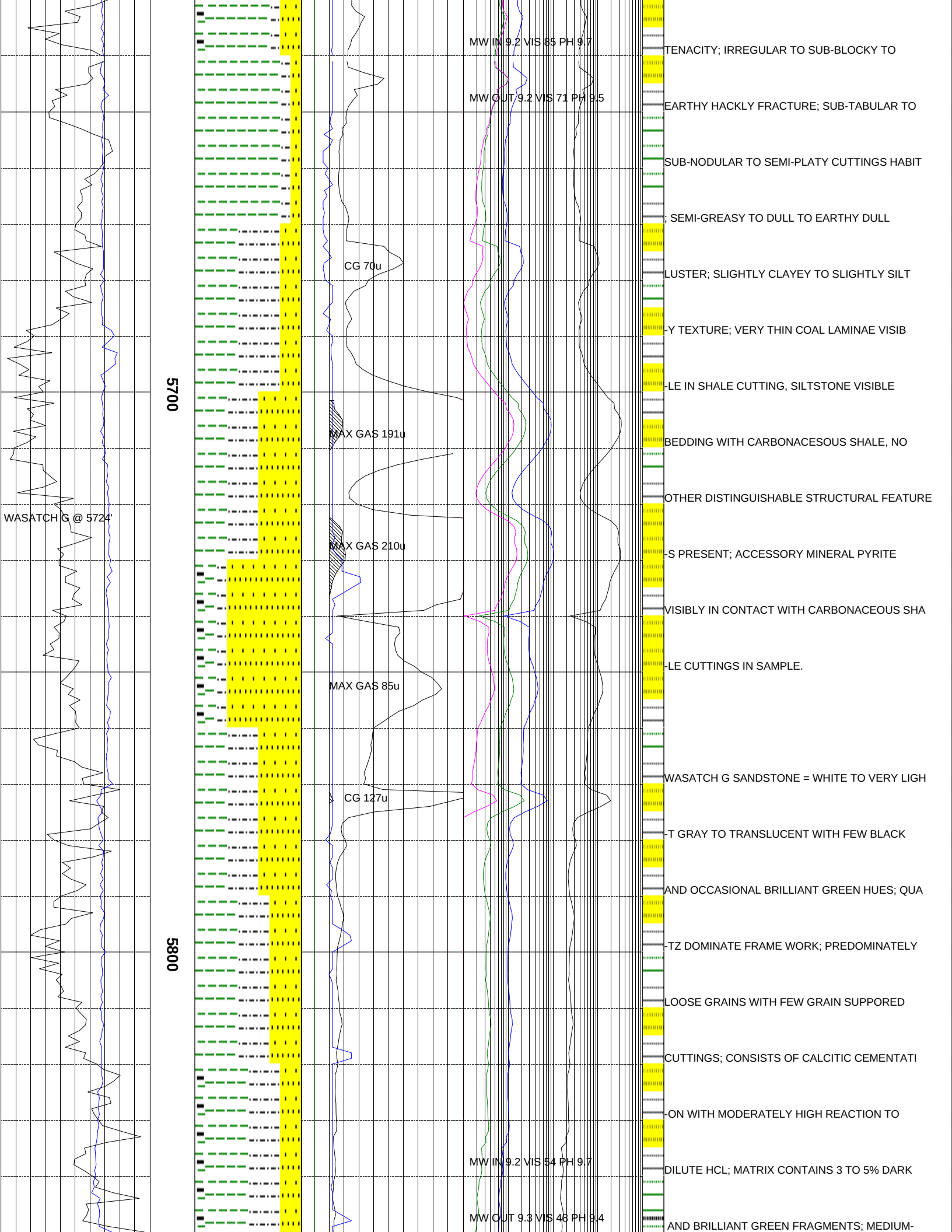

DAY TOUR
WOB 20K
PP 2400
RPM 80
GPM 622
4600
4700
C-1
MW IN 9.3 VIS 65 PH 11.6
MW OUT 9.3 VIS 70 PH 11.5
SHALE = MEDIUM LIGHT GRAY TO GRAYISH
PURPLE TO LIGHT OLIVE BROWN; BRITTLE
TENACITY; FRACTURES FROM PLANAR TO
BLOCKY; CUTTINGS ARE TABULAR TO SLIGHTLY
PLATY; DULL EARTHY TO SLIGHTLY WAXY
LUSTER; SMOOTH TO SILTY TEXTURE WITH
OCCASIONAL GRITTY TEXTURE; GRADING FROM
SILTSTONE; LIGHT OLIVE BROWN PIECES TEND
TO BE MORE SILTY TO SLIGHTLY GRITTY;
THIN STRUCTURE.
SILTSTONE = MODERATE YELLOWISH BROWN TO
MODERATE OLIVE BROWN TO MEDIUM GRAY;
BRITTLE TO SLIGHTLY CRUMBLY TENACITY;
FRACTURES FROM MOSTLY BLOCKY TO
IRREGULAR; CUTTINGS ARE TABULAR TO
OCCASIONALLY MASSIVE CUTTINGS; EARTHY
LUSTER; TEXTURE IS GRITTY TO SILTY;
THICK TO MASSIVE STRUCTURE.
SANDSTONE = WHITE TO VERY LIGHT GRAY;

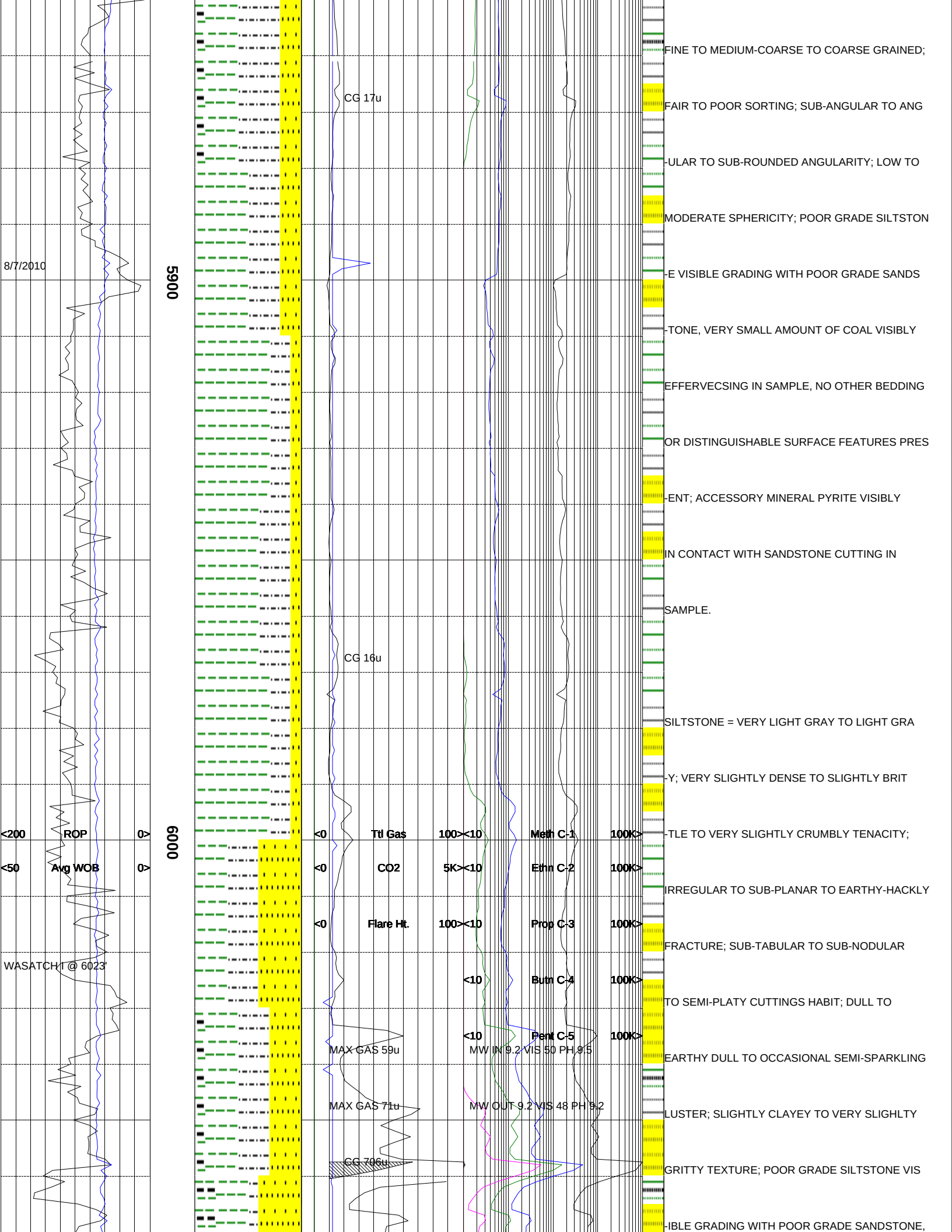

4800
4900
MW IN 9.3 VIS 70 PH 10
MW OUT 9.4 VIS 66 PH 9.7
C-1
MAX GAS 59u
QUARTZ FRAMEWORK; FINE GRAINED WITH WELL
SORTING; SUBROUNDED WITH MODERATE
SPHERICITY; MODERATE HARDNESS; SLIGHT TO
MODERATE REACTION WITH HCL SUGGESTS
CALCAREOUS CEMENT; GRAIN SUPPORTED; NO
VISIBLE BEDDING; MAY BE GRADING TO
SILTSTONE.
SHALE = MEDIUM LIGHT GRAY TO GRAYISH
PURPLE TO MODERATE YELLOW; TENACITY IS
BRITTLE TO CRUMBLY; PLANAR TO BLOCKY
FRACTURING; CUTTINGS ARE PLATY TO
TABULAR; WAXY TO DULL LUSTER; SILTY TO
SMOOTH TEXTURE; THIN STRUCTURE.
SILTSTONE = MEDIUM GRAY TO MODERATE
OLIVE BROWN; TENACITY IS CRUMBLY TO
SLIGHTLY BRITTLE; BLOCKY TO IRREGULAR TO
SLIGHTLY PLANAR FRACTURING; CUTTINGS ARE
TABULAR; LUSTER IS DULL TO EARTHY TO
OCCASIONALLY SLIGHTLY SPARKLING; GRITTY
TO SILTY TO SLIGHTLY CLAYEY TEXTURE;

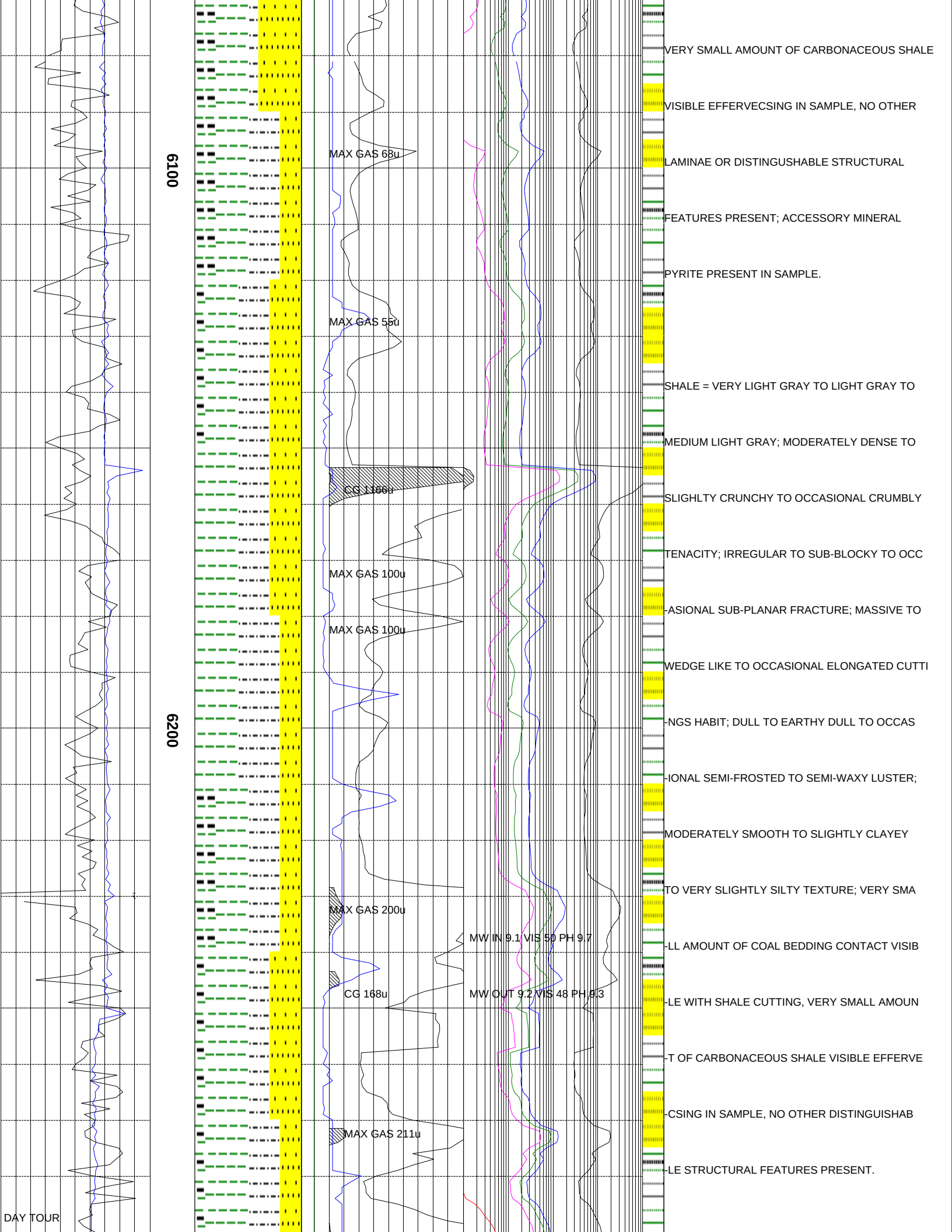

<200 ROP 0>
<50 Avg WOB 0>
5000
5100
<0 Ttl Gas 100><10 Meth C-1 100K>
<0 CO2 5K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
CHANGE SHAKER SCREENSMW IN 9.3 VIS 69 PH 9.9
<10 Butn C-4 100K>
MW OUT 9.3 VIS 67 PH 9.7
<10 Pent C-5 100K>
C-1
CG 12u
THICK STRUCTURE.
SANDSTONE = LIGHT GRAY TO LIGHT OLIVE
GRAY TO WHITE WITH OCCASIONAL
TRANSLUCENCE; FINE TO MEDIUM GRAINED
WITH FAIR TO WELL SORTING; SUBROUND TO
SUBANGULAR WITH MODERATE SPHERICITY;
HARD TO FIRMLY FRIABLE; MODERATE
REACTION WITH HCL SUGGESTS CALCITE
CEMENT; GRAIN SUPPORTED; LIGHT OLIVE
BROWN SPECIMENS TEND TO BE MORE FINE
GRAINED, WITH GRADING INTO SILTSTONE.
SHALE = PALE BLUE TO MEDIUM LIGHT GRAY
TO GRAYISH PURPLE WITH OCCASIONAL
MODERATE YELLOW STREAKS; PLANAR TO
IRREGULAR FRACTURING; CUTTINGS ARE PLATY
TO SLIGHTLY TABULAR; DULL EARTHY LUSTER;
SMOOTH TO SILTY TEXTURE; THIN STRUCTURE;
MODERATE YELLOW SPECIMENS APPEAR TO BE
GRADING FROM SILTSTONE; FRACTURE FILL
OBSERVED IN SOME SHALE CONTAINING

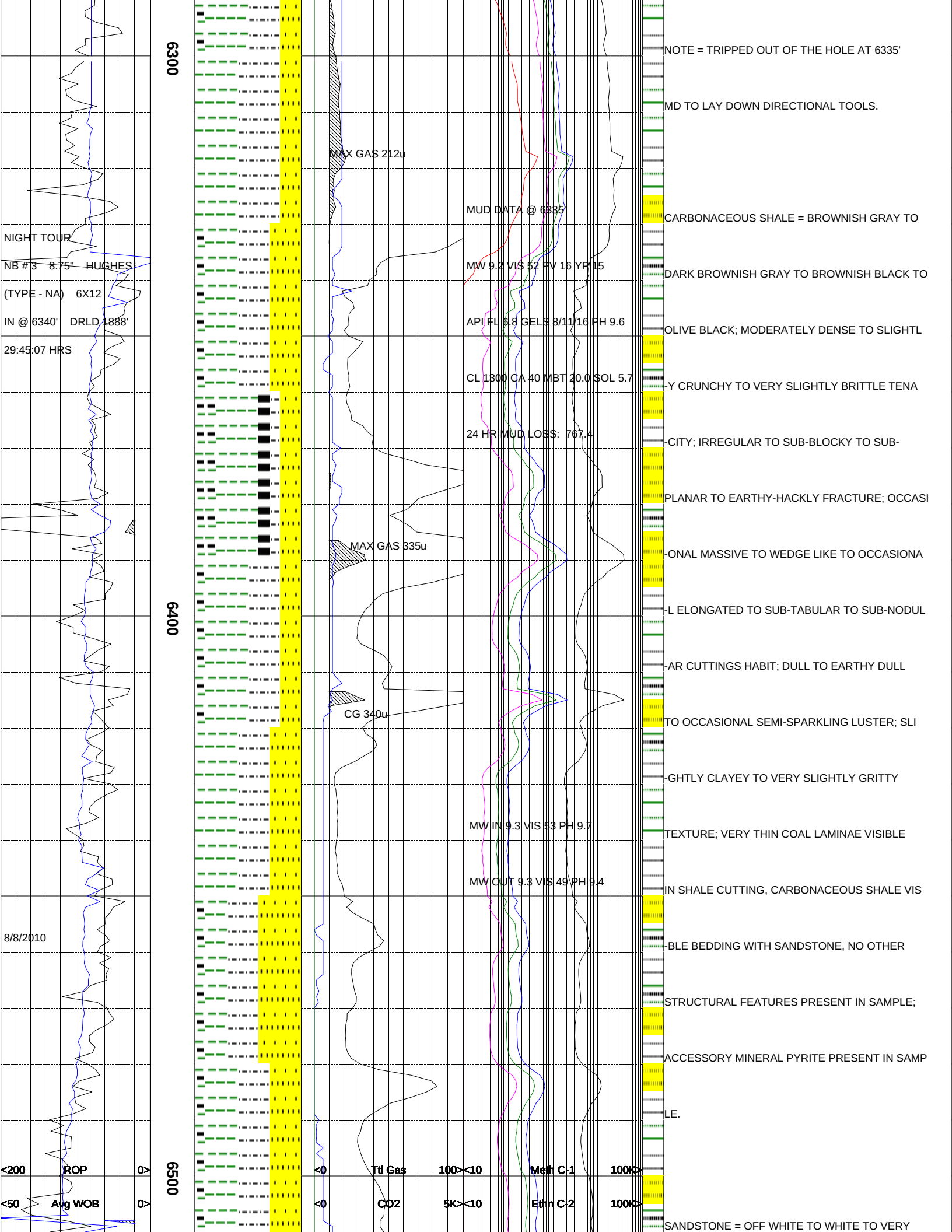

5200
5300
5400
CALCITE VEINS RUNNING THROUGH.
MW IN 9.3 VIS 70 PH 10
MW OUT 9.3 VIS 68 PH 9.8
SILTSTONE = MEDIUM LIGHT GRAY TO LIGHT
BROWNISH GRAY TO LIGHT OLIVE BROWN;
BRITTLE TO CRUMBLY TO SLIGHTLY
C-1
PULVERULENT TENACITY; FRACTURES FROM
BLOCKY TO IRREGULAR; TABULAR CUTTINGS;
EARTHY DULL TO SLIGHTLY FROSTED LUSTER;
CLAYEY TO SILTY TO OCCASIONALLY GRITTY
CG 11u
TEXTURE; THICK STRUCTURE.
SANDSTONE = LIGHT GRAY TO LIGHT BROWNISH
MAX GAS 136u
GRAY TO LIGHT OLIVE GRAY; QUARTZ
C-3,2,1
FRAMEWORK WITH LESS THAN 5% BLACK LITHIC
CLASTS INTERBEDDED; MEDIUM TO OCCASIONAL
COARSE GRAINS; FAIR TO SEMI POOR SORTING
SUBANGULAR WITH MODERATE TO LOW
SPHERICITY; FIRMLY FRIABLE TO HARD;
GRAIN SUPPORTED; WEAK TO MILD REACTION
CG 14u
WITH HCL SUGGEST SOME CALCITE CEMENT;
NO VISIBLE BEDDING.
MW IN 9.3 VIS 69 PH 10

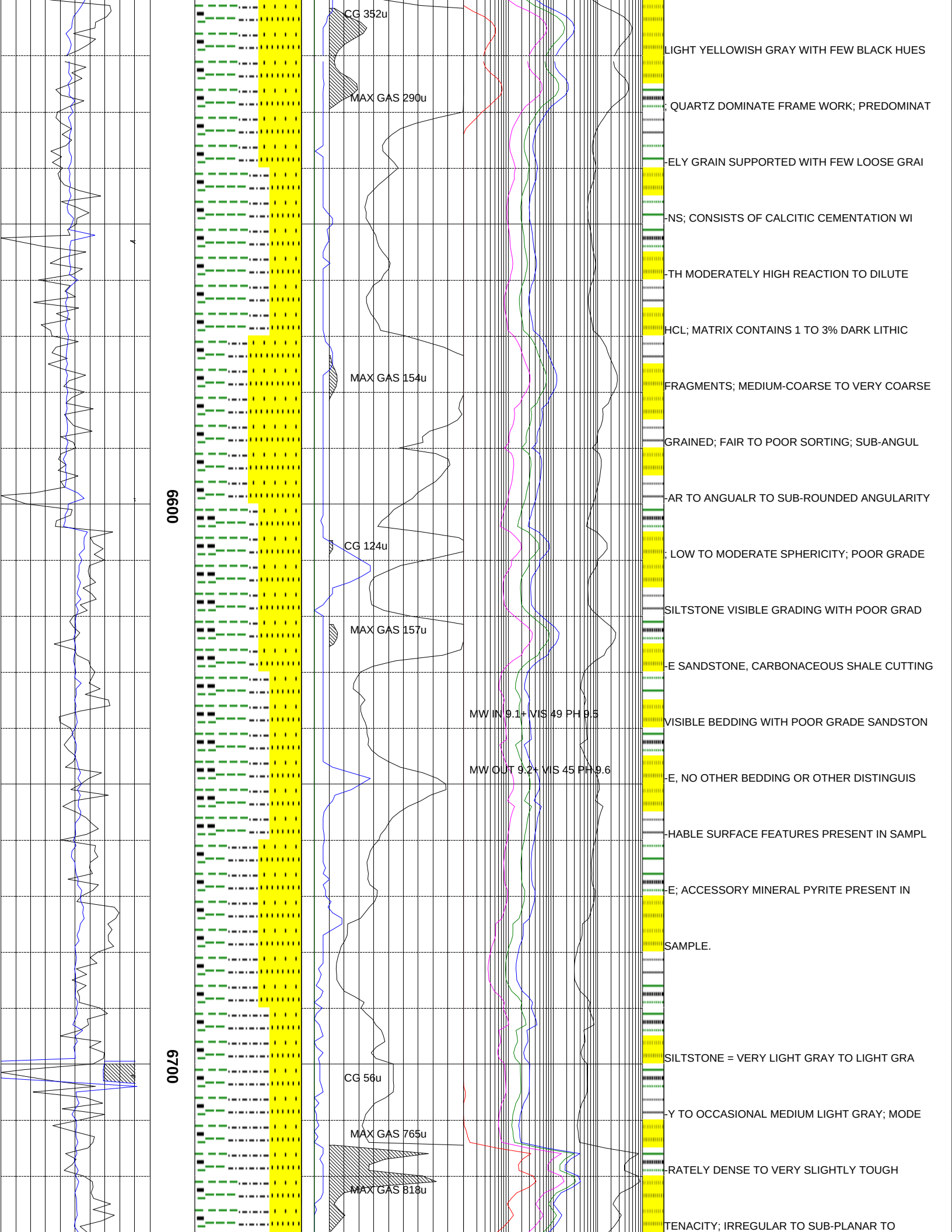

MW OUT 9.3 VIS 68 PH 9.9
C-3,2.1
MUD DATA @ 5460'
MAX GAS 108u
NIGHT TOUR
MW 9.25 VIS 71 PV 20 YP 23
CG 97u
API FL 7.4 GELS 11/36/49 PH 9.7
CL 1300 CA 40 MBT 22.5 SOL 6.7
24 HR MUD LOSS: 265.8
<200 ROP 0>
<0 Ttl Gas 100>
<10 Meth C-1 100K>
5500
<50 Avg WOB 0>
<0 CO2 5K>
<10 Ethn C-2 100K>
<0 Flare Ht. 100>
<10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
MAX GAS 83u
CG 108u
5600
MAX GAS 623u
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO
MEDIUM LIGHT GRAY TO LIGHT YELLOWISH
ORANGE TO OCCASIONAL LIGHT GRAYISH RED
PURPLE AND LIGHT GRAY MOTTLING; MODERATE
-LY BRITTLE TO CRUMBLY TENACITY; IRREGUL
-AR TO SUB-BLOCKY TO SUB-PLANAR TO EARTH
-Y FRACTURE; OCCASIONAL MASSIVE TO WEDGE
-LIKE TO OCCASIONAL ELONGATED TO SUB-
TABULAR CUTTINGS HABIT; DULL TO EARTHY
DULL TO OCCASIONAL SEMI-WAXY TO SEMI-
FROSTED LUSTER; MODERATELY SMOOTH TO
MODERATELY CLAYEY TO VERY SLIGHTLY SILTY
TEXTURE; POOR GRADE SILTSTONE VISIBLE
GRADING WITH POOR GRADE SANDSTONE, NO
OTHER LAMINAE OR OTHER DISTINGUISHABLE
STRUCTURAL FEATURES PRESENT; NO ACCESSOR
-Y MINERAL PRESENT IN SAMPLE.
CARBONACEOUS SHALE = BROWNISH GRAY TO
DARK BROWNISH GRAY TO BROWNISH BLACK
TO OLIVE BLACK; SLIGHTLY DENSE TO SLIGHT
-LY CRUNCHY TO VERY SLIGHTLY CRUMBLY

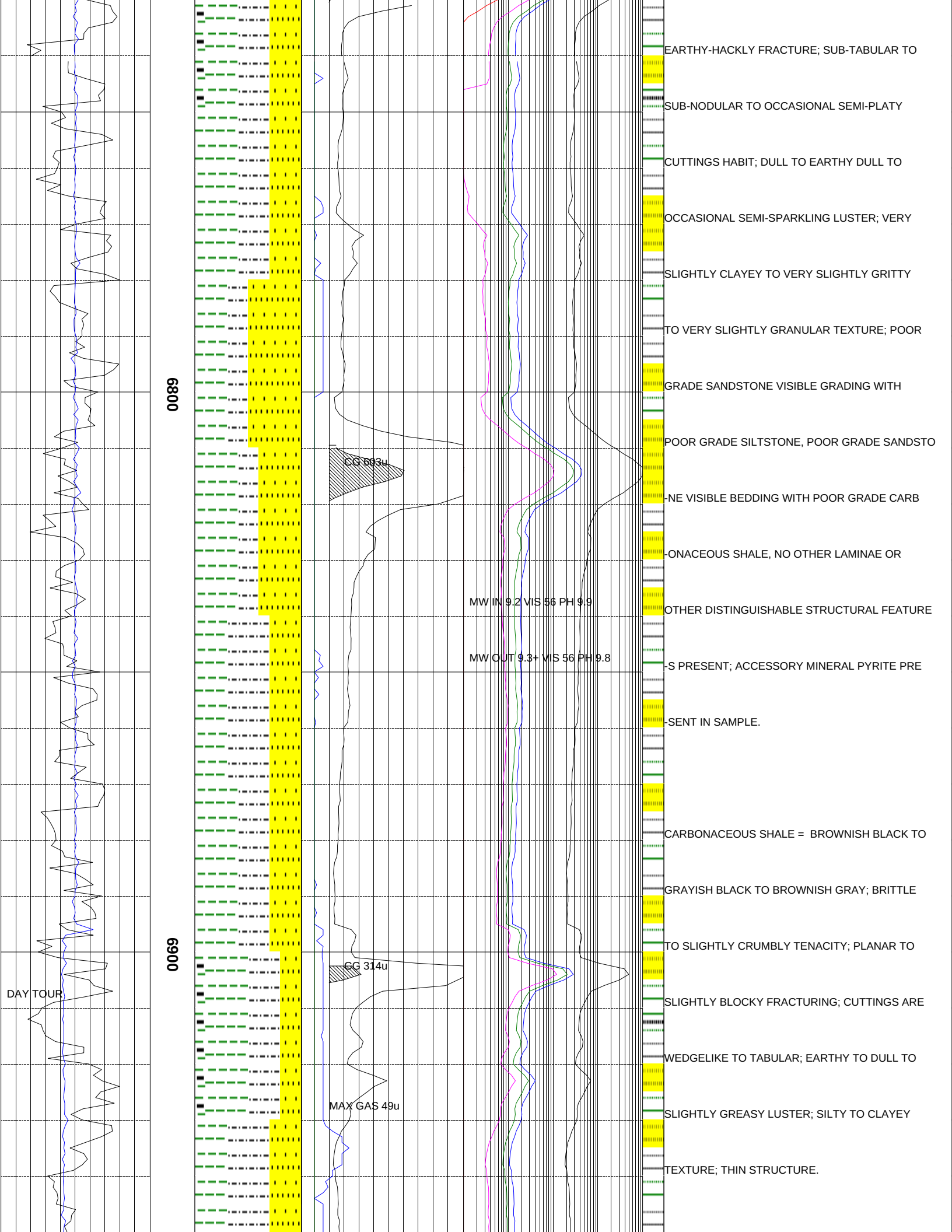

MW IN 9.2 VIS 85 PH 9.7
MW OUT 9.2 VIS 71 PH 9.5
CG 70u
5700
MAX GAS 191u
WASATCH G @ 5724'
MAX GAS 210u
MAX GAS 85u
CG 127u
5800
MW IN 9.2 VIS 54 PH 9.7
MW OUT 9.3 VIS 48 PH 9.4
TENACITY; IRREGULAR TO SUB-BLOCKY TO
EARTHY HACKLY FRACTURE; SUB-TABULAR TO
SUB-NODULAR TO SEMI-PLATY CUTTINGS HABIT
; SEMI-GREASY TO DULL TO EARTHY DULL
LUSTER; SLIGHTLY CLAYEY TO SLIGHTLY SILT
-Y TEXTURE; VERY THIN COAL LAMINAE VISIB
-LE IN SHALE CUTTING, SILTSTONE VISIBLE
BEDDING WITH CARBONACESOUS SHALE, NO
OTHER DISTINGUISHABLE STRUCTURAL FEATURE
-S PRESENT; ACCESSORY MINERAL PYRITE
VISIBLY IN CONTACT WITH CARBONACEOUS SHA
-LE CUTTINGS IN SAMPLE.
WASATCH G SANDSTONE = WHITE TO VERY LIGH
-T GRAY TO TRANSLUCENT WITH FEW BLACK
AND OCCASIONAL BRILLIANT GREEN HUES; QUA
-TZ DOMINATE FRAME WORK; PREDOMINATELY
LOOSE GRAINS WITH FEW GRAIN SUPPORED
CUTTINGS; CONSISTS OF CALCITIC CEMENTATI
-ON WITH MODERATELY HIGH REACTION TO
DILUTE HCL; MATRIX CONTAINS 3 TO 5% DARK
AND BRILLIANT GREEN FRAGMENTS; MEDIUM-

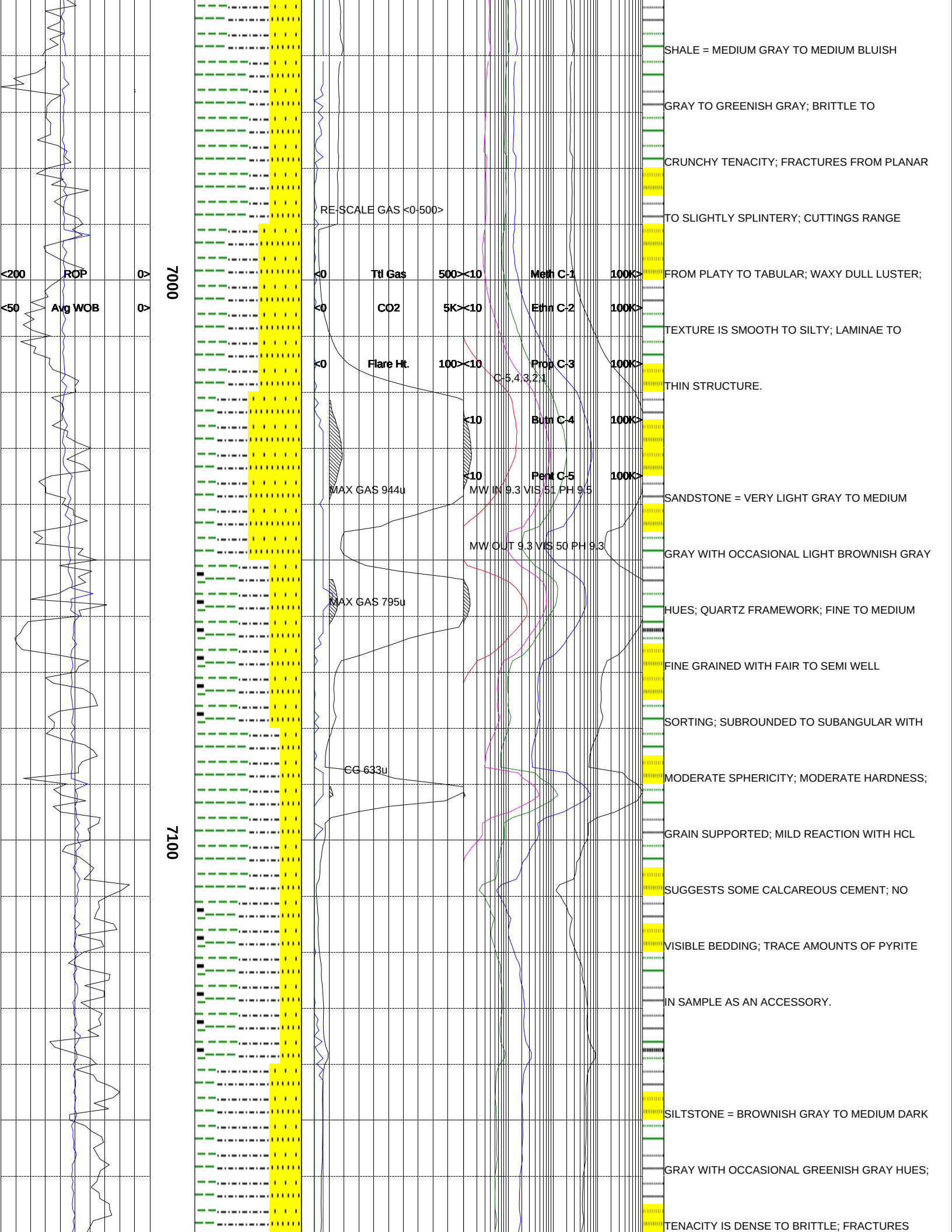

8/7/2010
5900
6000
<200 ROP 0>
<50 Avg WOB 0>
WASATCH T @ 6023'
CG 17u
CG 16u
CG 706u
<0 Ttl Gas 100><10 Meth C-1 100K>
<0 CO2 5K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
MAX GAS 59u
MW IN 9.2 VIS 50 PH 9.5
MAX GAS 71u
MW OUT 9.2 VIS 48 PH 9.2
FINE TO MEDIUM-COARSE TO COARSE GRAINED;
FAIR TO POOR SORTING; SUB-ANGULAR TO ANG
-ULAR TO SUB-ROUNDED ANGULARITY; LOW TO
MODERATE SPHERICITY; POOR GRADE SILTSTON
-E VISIBLE GRADING WITH POOR GRADE SANDS
-TONE, VERY SMALL AMOUNT OF COAL VISIBLY
EFFERVECSING IN SAMPLE, NO OTHER BEDDING
OR DISTINGUISHABLE SURFACE FEATURES PRES
-ENT; ACCESSORY MINERAL PYRITE VISIBLY
IN CONTACT WITH SANDSTONE CUTTING IN
SAMPLE.
SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
-Y; VERY SLIGHTLY DENSE TO SLIGHTLY BRIT
-TLE TO VERY SLIGHTLY CRUMBLY TENACITY;
IRREGULAR TO SUB-PLANAR TO EARTHY-HACKLY
FRACTURE; SUB-TABULAR TO SUB-NODULAR
TO SEMI-PLATY CUTTINGS HABIT; DULL TO
EARTHY DULL TO OCCASIONAL SEMI-SPARKLING
LUSTER; SLIGHTLY CLAYEY TO VERY SLIGHLTY
GRITTY TEXTURE; POOR GRADE SILTSTONE VIS
-IBLE GRADING WITH POOR GRADE SANDSTONE,

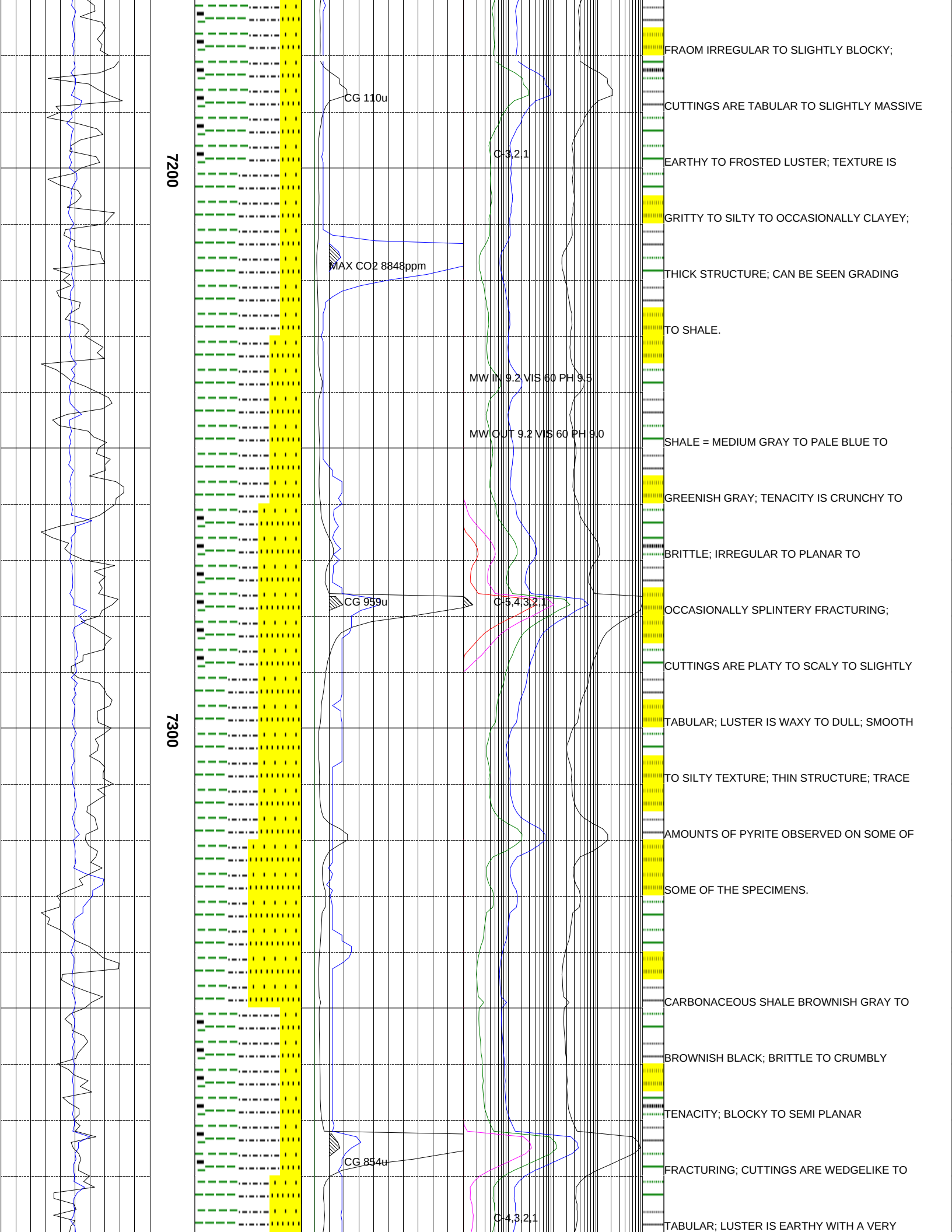

6100
6200
MAX GAS 68u
MAX GAS 55u
CG 1166u
MAX GAS 100u
MAX GAS 100u
MAX GAS 200u
MW IN 9.1 VIS 50 PH 9.7
CG 168u
MW OUT 9.2 VIS 48 PH 9.3
MAX GAS 211u
DAY TOUR
VERY SMALL AMOUNT OF CARBONACEOUS SHALE
VISIBLE EFFERVECSING IN SAMPLE, NO OTHER
LAMINAE OR DISTINGUSHABLE STRUCTURAL
FEATURES PRESENT; ACCESSORY MINERAL
PYRITE PRESENT IN SAMPLE.
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO
MEDIUM LIGHT GRAY; MODERATELY DENSE TO
SLIGHLTY CRUNCHY TO OCCASIONAL CRUMBLY
TENACITY; IRREGULAR TO SUB-BLOCKY TO OCC
-ASIONAL SUB-PLANAR FRACTURE; MASSIVE TO
WEDGE LIKE TO OCCASIONAL ELONGATED CUTTI
-NGS HABIT; DULL TO EARTHY DULL TO OCCAS
-IONAL SEMI-FROSTED TO SEMI-WAXY LUSTER;
MODERATELY SMOOTH TO SLIGHTLY CLAYEY
TO VERY SLIGHTLY SILTY TEXTURE; VERY SMA
-LL AMOUNT OF COAL BEDDING CONTACT VISIB
-LE WITH SHALE CUTTING, VERY SMALL AMOUN
-T OF CARBONACEOUS SHALE VISIBLE EFFERVE
-CSING IN SAMPLE, NO OTHER DISTINGUISHAB
-LE STRUCTURAL FEATURES PRESENT.

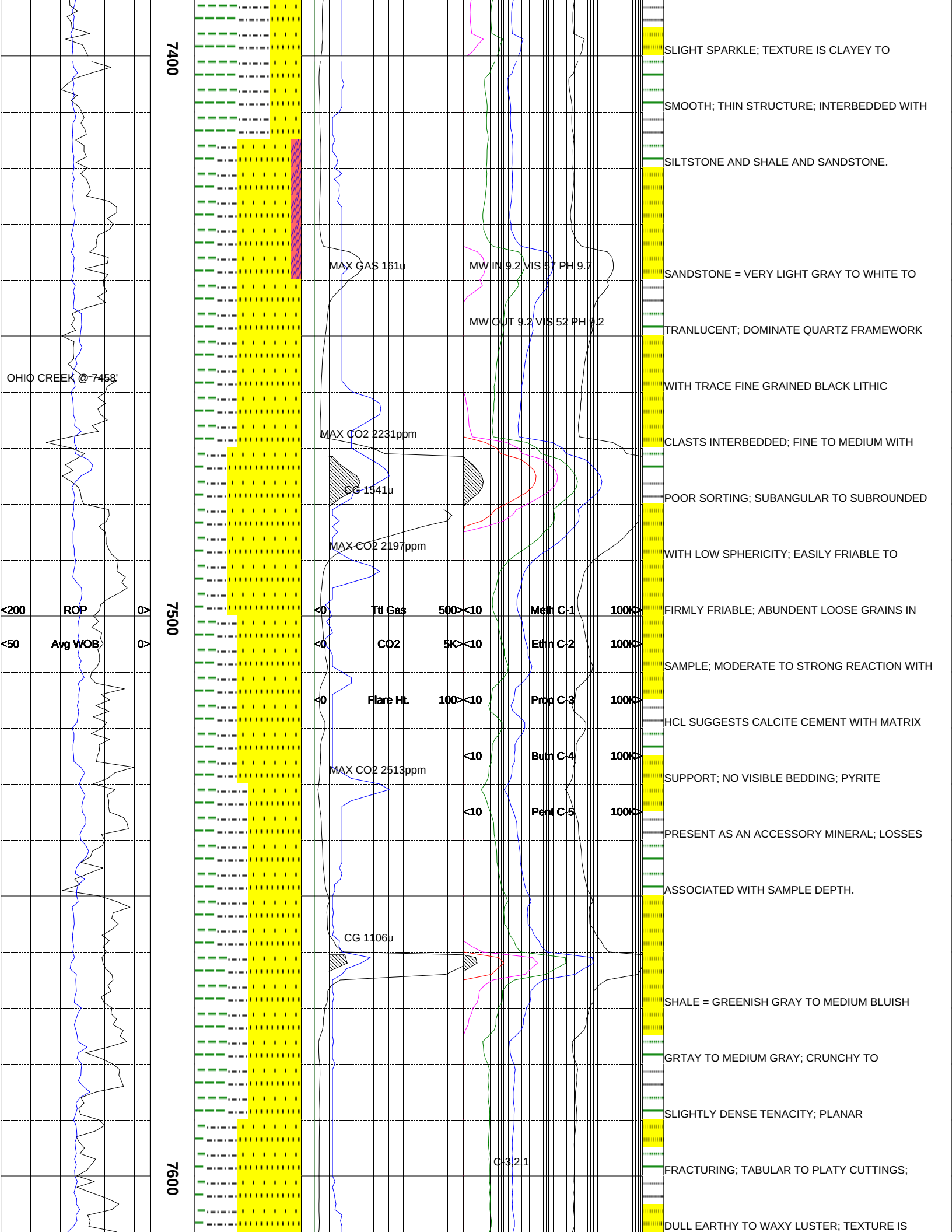

6300
6400
6500
NIGHT TOUR
NB # 3 8.75" HUGHES
(TYPE - NA) 6X12
IN @ 6340' DRLD 1888'
29.45:07 HRS
8/8/2010
MAX GAS 212u
MAX GAS 335u
CG 340u
MUD DATA @ 6335'
MW 9.2 VIS 52 PV 16 YP 15
API FL 5.8 GELS 8/11/16 PH 9.6
CL 1300 CA 40 MBT 20.0 SOL 5.7
24 HR MUD LOSS: 767.4
MW IN 9.3 VIS 53 PH 9.7
MW OUT 9.3 VIS 49 PH 9.4
NOTE = TRIPPED OUT OF THE HOLE AT 6335'
MD TO LAY DOWN DIRECTIONAL TOOLS.
CARBONACEOUS SHALE = BROWNISH GRAY TO
DARK BROWNISH GRAY TO BROWNISH BLACK TO
OLIVE BLACK; MODERATELY DENSE TO SLIGHTL
-Y CRUNCHY TO VERY SLIGHTLY BRITTLE TENA
-CITY; IRREGULAR TO SUB-BLOCKY TO SUB-
PLANAR TO EARTHY-HACKLY FRACTURE; OCCASI
-ONAL MASSIVE TO WEDGE LIKE TO OCCASIONA
-L ELONGATED TO SUB-TABULAR TO SUB-NODUL
-AR CUTTINGS HABIT; DULL TO EARTHY DULL
TO OCCASIONAL SEMI-SPARKLING LUSTER; SLI
-GHTLY CLAYEY TO VERY SLIGHTLY GRITTY
TEXTURE; VERY THIN COAL LAMINAE VISIBLE
IN SHALE CUTTING, CARBONACEOUS SHALE VIS
-BLE BEDDING WITH SANDSTONE, NO OTHER
STRUCTURAL FEATURES PRESENT IN SAMPLE;
ACCESSORY MINERAL PYRITE PRESENT IN SAMP
LE.
SANDSTONE = OFF WHITE TO WHITE TO VERY
<200 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 100><10
<0 CO2 5K><10
Meth C-1 100K>
Ethn C-2 100K>

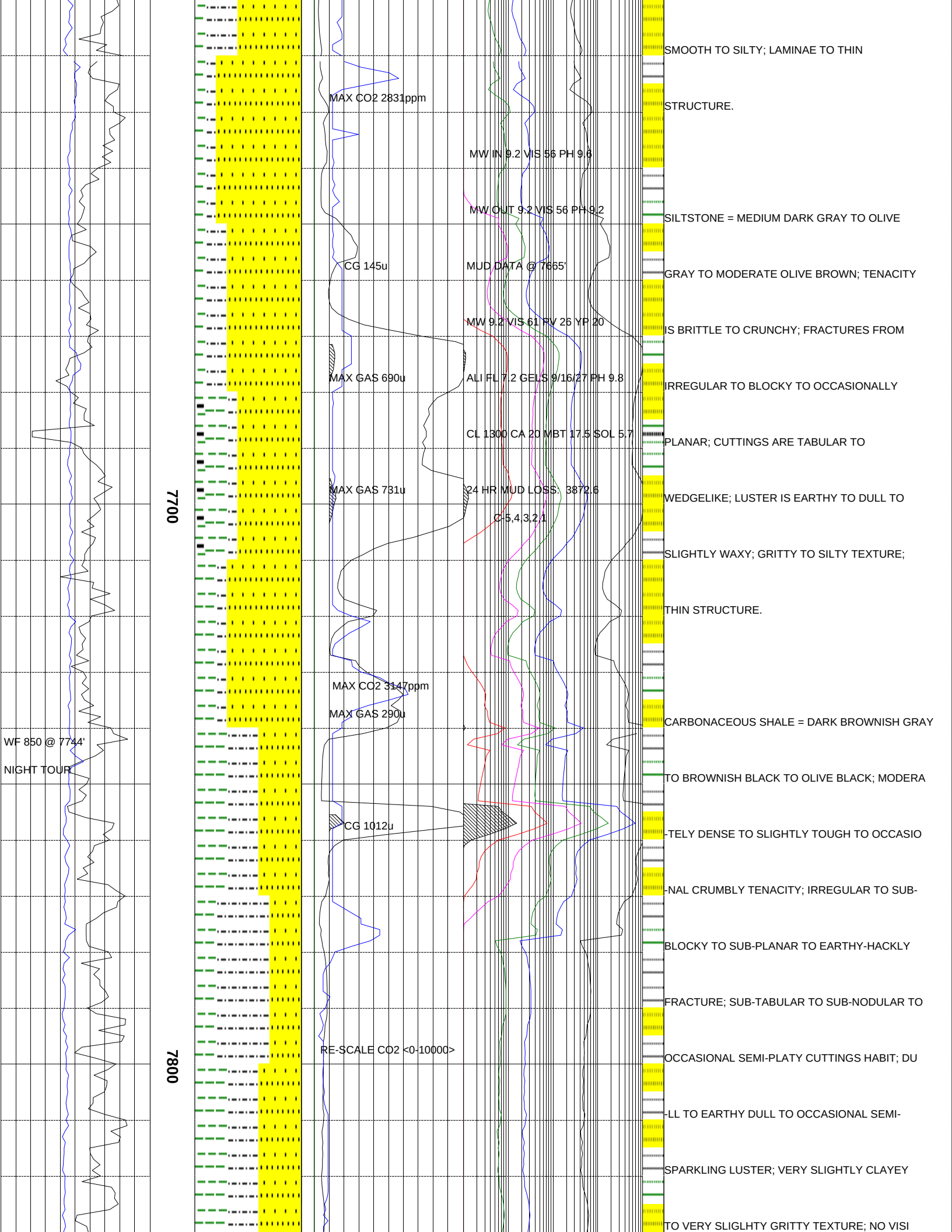

CG 352u
MAX GAS 290u
MAX GAS 154u
6600
CG 124u
MAX GAS 157u
MW IN 9.1+ VIS 49 PH 9.5
MW OUT 9.2+ VIS 45 PH 9.6
6700
CG 56u
MAX GAS 765u
MAX GAS 818u
LIGHT YELLOWISH GRAY WITH FEW BLACK HUES
; QUARTZ DOMINATE FRAME WORK; PREDOMINAT
-ELY GRAIN SUPPORTED WITH FEW LOOSE GRAI
-NS; CONSISTS OF CALCITIC CEMENTATION WI
-TH MODERATELY HIGH REACTION TO DILUTE
HCL; MATRIX CONTAINS 1 TO 3% DARK LITHIC
FRAGMENTS; MEDIUM-COARSE TO VERY COARSE
-GRAINED; FAIR TO POOR SORTING; SUB-ANGUL
-AR TO ANGUALR TO SUB-ROUNDED ANGULARITY
; LOW TO MODERATE SPHERICITY; POOR GRADE
SILTSTONE VISIBLE GRADING WITH POOR GRAD
-E SANDSTONE, CARBONACEOUS SHALE CUTTING
VISIBLE BEDDING WITH POOR GRADE SANDSTON
-E, NO OTHER BEDDING OR OTHER DISTINGUIS
-HABLE SURFACE FEATURES PRESENT IN SAMPL
-E; ACCESSORY MINERAL PYRITE PRESENT IN
SAMPLE.
SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
-Y TO OCCASIONAL MEDIUM LIGHT GRAY; MODE
-RATELY DENSE TO VERY SLIGHTLY TOUGH
TENACITY; IRREGULAR TO SUB-PLANAR TO

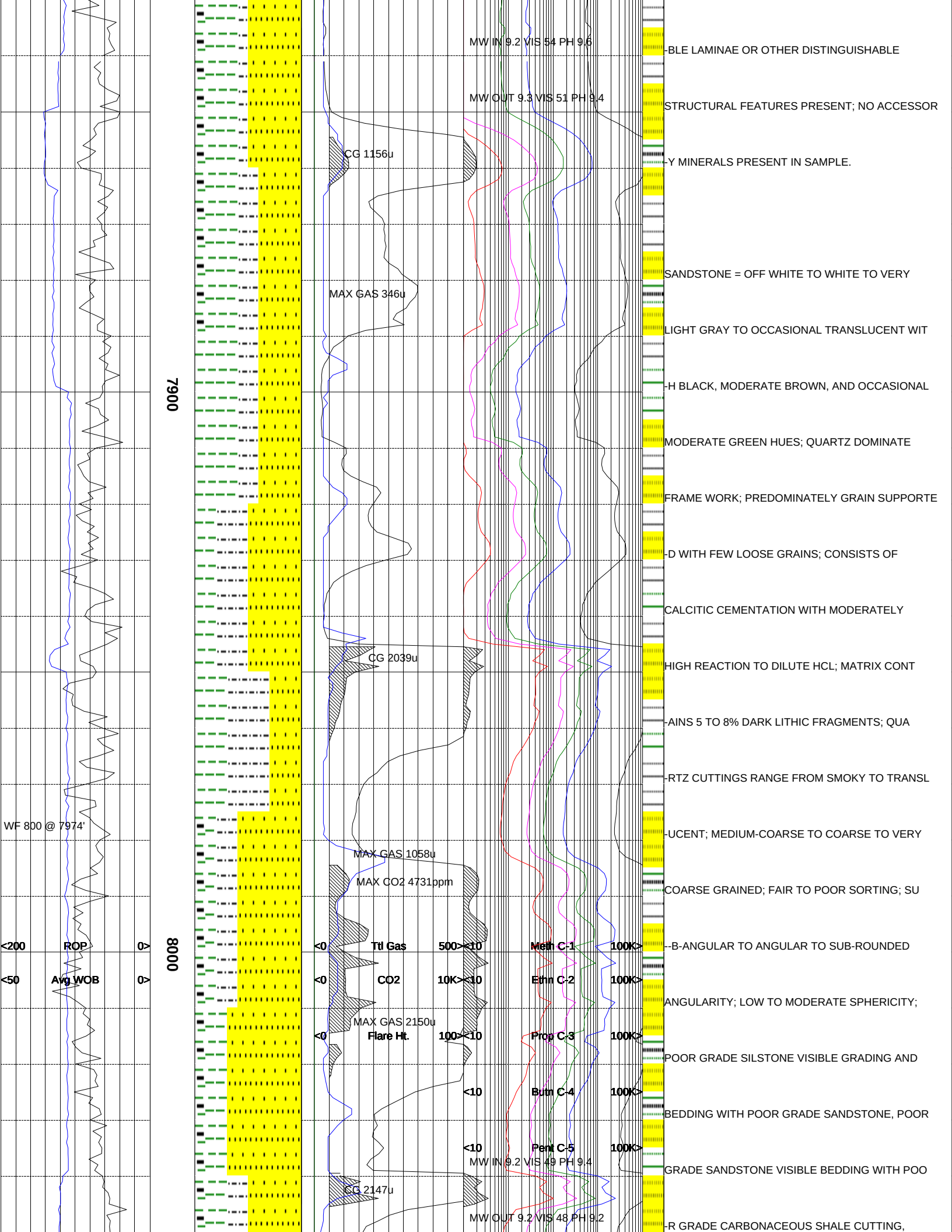

6890
6900
CG 603u
CG 314u
MAX GAS 49u
MW IN 9.2 VIS 56 PH 9.9
MW OUT 9.3+ VIS 56 PH 9.8
DAY TOUR
EARTHY-HACKLY FRACTURE; SUB-TABULAR TO
SUB-NODULAR TO OCCASIONAL SEMI-PLATY
CUTTINGS HABIT; DULL TO EARTHY DULL TO
OCCASIONAL SEMI-SPARKLING LUSTER; VERY
SLIGHTLY CLAYEY TO VERY SLIGHTLY GRITTY
TO VERY SLIGHTLY GRANULAR TEXTURE; POOR
GRADE SANDSTONE VISIBLE GRADING WITH
POOR GRADE SILTSTONE, POOR GRADE SANDSTO
-NE VISIBLE BEDDING WITH POOR GRADE CARB
-ONACEOUS SHALE, NO OTHER LAMINAE OR
OTHER DISTINGUISHABLE STRUCTURAL FEATURE
-S PRESENT; ACCESSORY MINERAL PYRITE PRE
-SENT IN SAMPLE.
CARBONACEOUS SHALE = BROWNISH BLACK TO
GRAYISH BLACK TO BROWNISH GRAY; BRITTLE
TO SLIGHTLY CRUMBLY TENACITY; PLANAR TO
SLIGHTLY BLOCKY FRACTURING; CUTTINGS ARE
WEDGELIKE TO TABULAR; EARTHY TO DULL TO
SLIGHTLY GREASY LUSTER; SILTY TO CLAYEY
TEXTURE; THIN STRUCTURE.

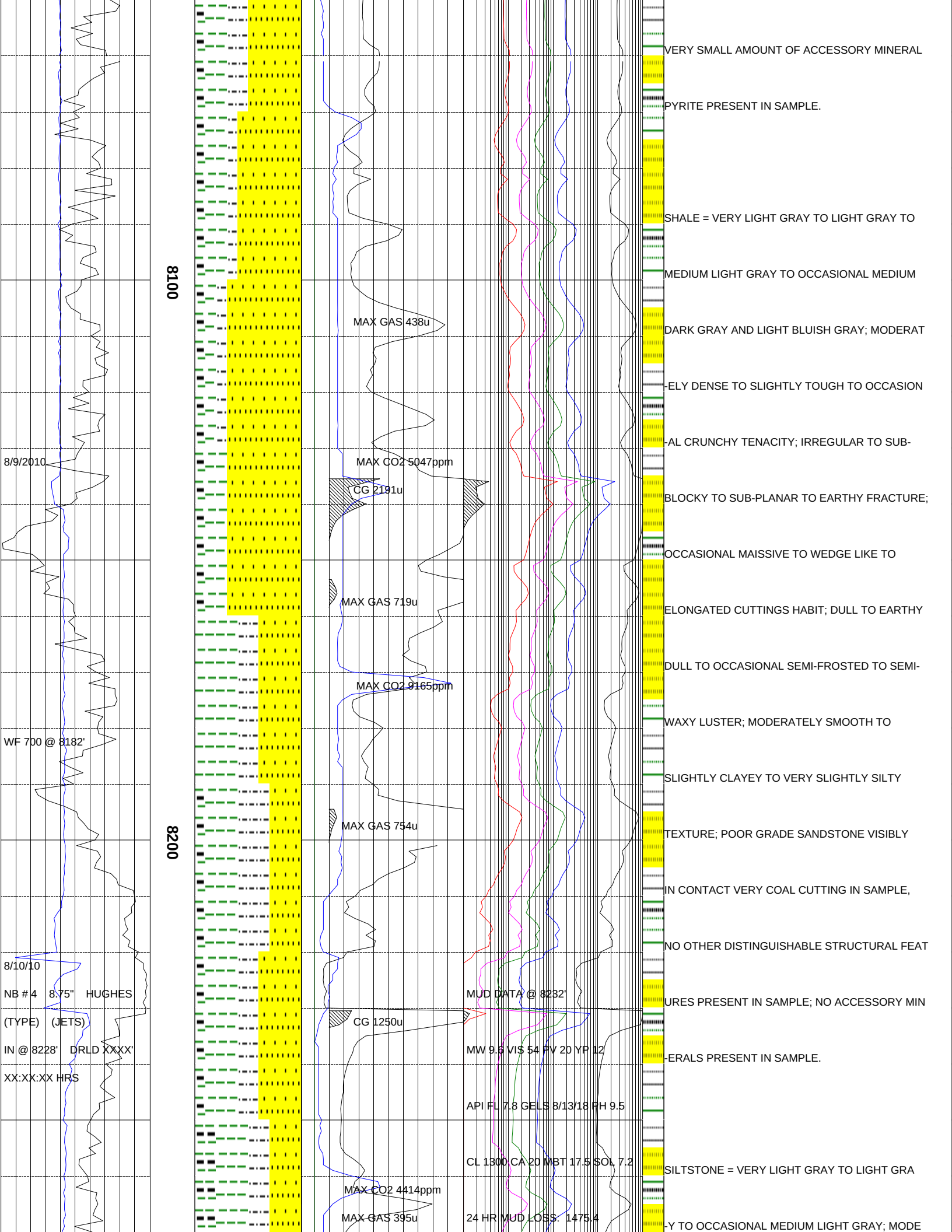

<200 ROP 0>
<50 Avg WOB 0>
7000
7100
RE-SCALE GAS <0-500>
<0 Ttl Gas 500><10 Meth C-1 100K>
<0 CO2 5K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
C-5,4,3,2,1
<10 Butn C-4 100K>
<10 Pent C-5 100K>
MAX GAS 944u
MW IN 9.3 VIS 51 PH 9.5
MW OUT 9.3 VIS 50 PH 9.3
MAX GAS 795u
CG 633u
SHALE = MEDIUM GRAY TO MEDIUM BLUISH
GRAY TO GREENISH GRAY; BRITTLE TO
CRUNCHY TENACITY; FRACTURES FROM PLANAR
TO SLIGHTLY SPLINTERY; CUTTINGS RANGE
FROM PLATY TO TABULAR; WAXY DULL LUSTER;
TEXTURE IS SMOOTH TO SILTY; LAMINAE TO
THIN STRUCTURE.
SANDSTONE = VERY LIGHT GRAY TO MEDIUM
GRAY WITH OCCASIONAL LIGHT BROWNISH GRAY
HUES; QUARTZ FRAMEWORK; FINE TO MEDIUM
FINE GRAINED WITH FAIR TO SEMI WELL
SORTING; SUBROUNDED TO SUBANGULAR WITH
MODERATE SPHERICITY; MODERATE HARDNESS;
GRAIN SUPPORTED; MILD REACTION WITH HCL
SUGGESTS SOME CALCAREOUS CEMENT; NO
VISIBLE BEDDING; TRACE AMOUNTS OF PYRITE
IN SAMPLE AS AN ACCESSORY.
SILTSTONE = BROWNISH GRAY TO MEDIUM DARK
GRAY WITH OCCASIONAL GREENISH GRAY HUES;
TENACITY IS DENSE TO BRITTLE; FRACTURES

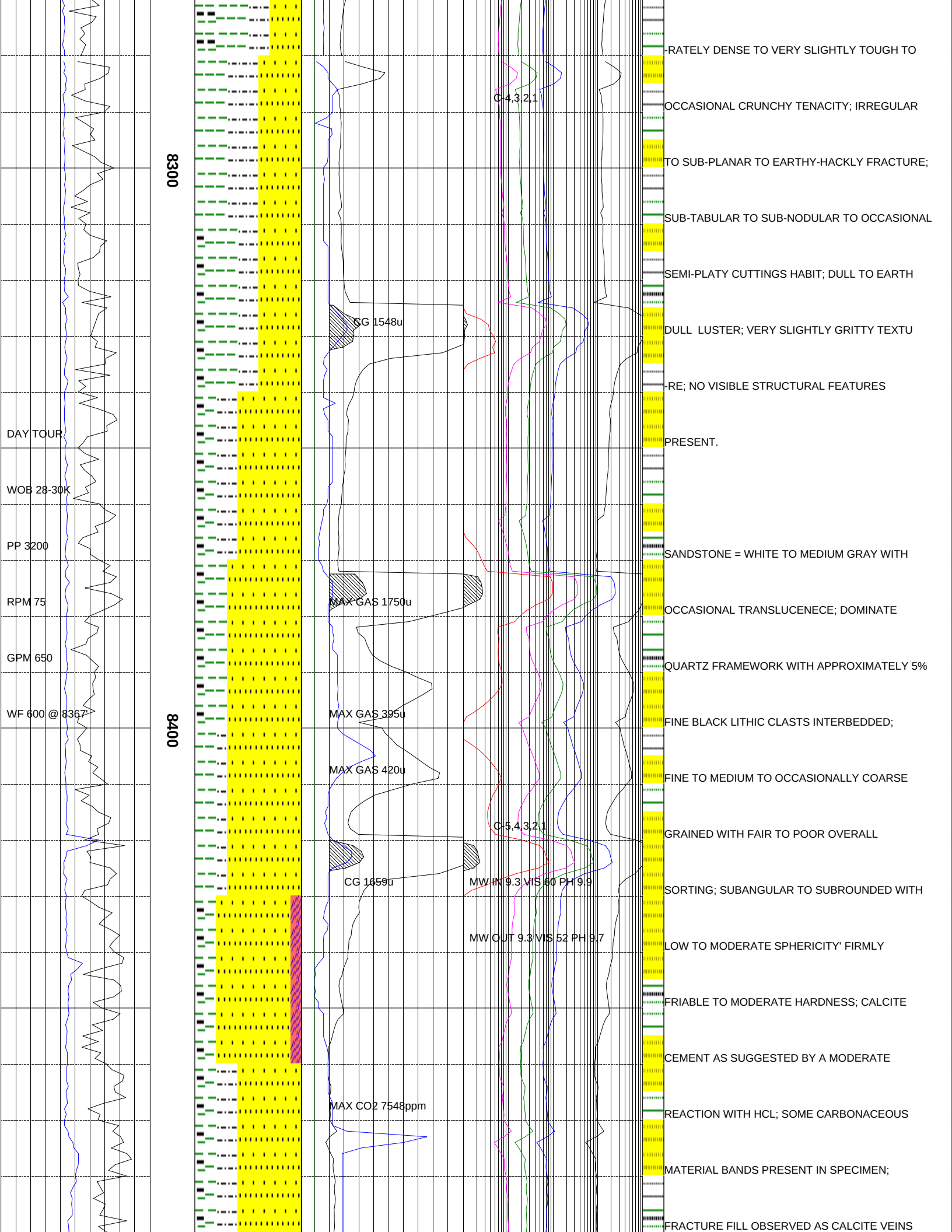

7200
7300
CG 110u
C-3,2,1
MAX CO2 8848ppm
MW IN 9.2 VIS 60 PH 9.5
MW OUT 9.2 VIS 60 PH 9.0
CG 959u
C-5,4,3,2,1
CG 854u
C-4,3,2,1
FRAOM IRREGULAR TO SLIGHTLY BLOCKY;
CUTTINGS ARE TABULAR TO SLIGHTLY MASSIVE
EARTHY TO FROSTED LUSTER; TEXTURE IS
GRITTY TO SILTY TO OCCASIONALLY CLAYEY;
THICK STRUCTURE; CAN BE SEEN GRADING
TO SHALE.
SHALE = MEDIUM GRAY TO PALE BLUE TO
GREENISH GRAY; TENACITY IS CRUNCHY TO
BRITTLE; IRREGULAR TO PLANAR TO
OCCASIONALLY SPLINTERY FRACTURING;
CUTTINGS ARE PLATY TO SCALY TO SLIGHTLY
TABULAR; LUSTER IS WAXY TO DULL; SMOOTH
TO SILTY TEXTURE; THIN STRUCTURE; TRACE
AMOUNTS OF PYRITE OBSERVED ON SOME OF
SOME OF THE SPECIMENS.
CARBONACEOUS SHALE BROWNISH GRAY TO
BROWNISH BLACK; BRITTLE TO CRUMBLY
TENACITY; BLOCKY TO SEMI PLANAR
FRACTURING; CUTTINGS ARE WEDGELIKE TO
TABULAR; LUSTER IS EARTHY WITH A VERY

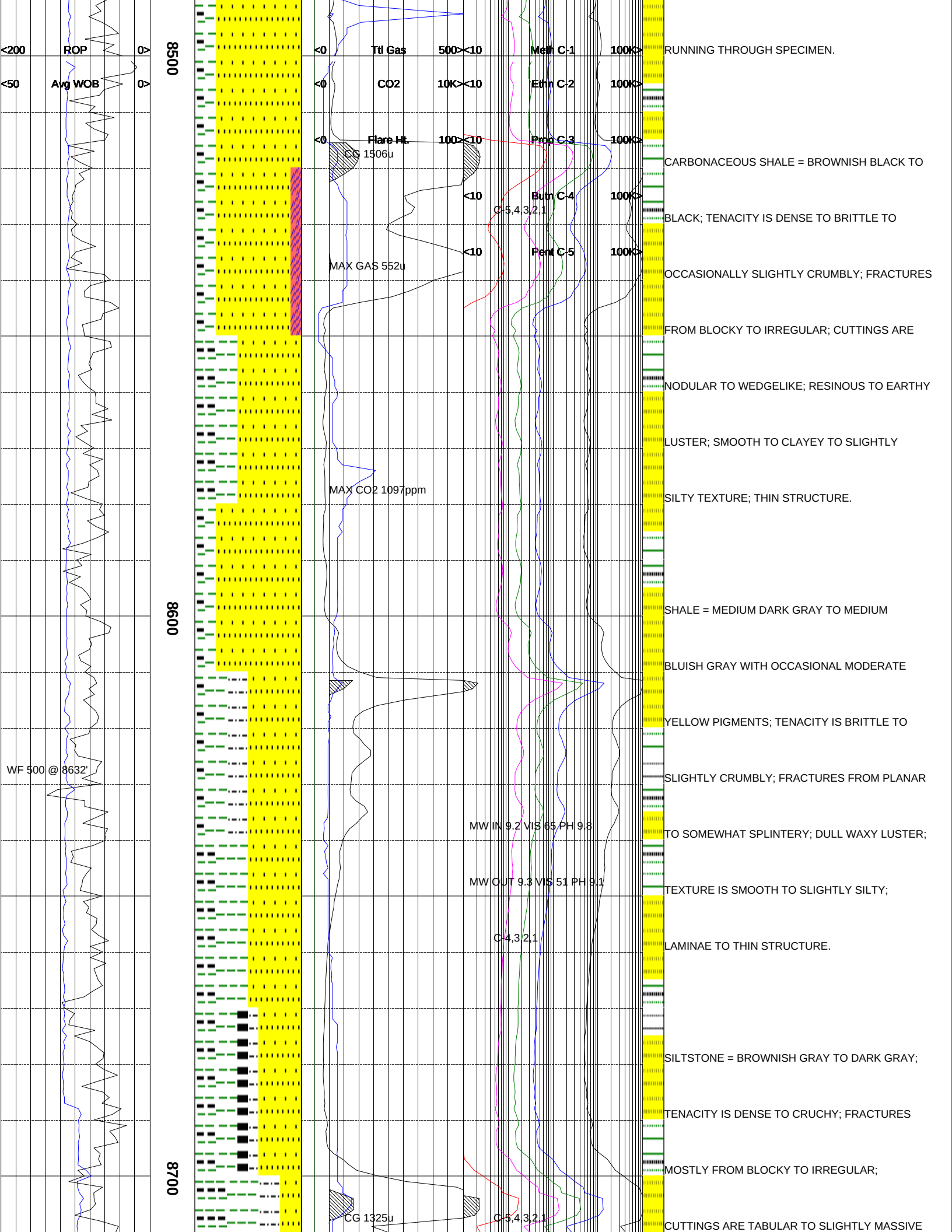

7400
7500
7600
OHIO CREEK @ 7458'
MAX GAS 161u
MW IN 9.2 VIS 57 PH 9.7
MW OUT 9.2 VIS 52 PH 9.2
MAX CO2 2231ppm
CG 1541u
MAX CO2 2197ppm
MAX CO2 2513ppm
CG 1106u
C-3.2.1
<200 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 500><10 Meth C-1 100K>
<0 CO2 5K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
SLIGHT SPARKLE; TEXTURE IS CLAYEY TO
SMOOTH; THIN STRUCTURE; INTERBEDDED WITH
SILTSTONE AND SHALE AND SANDSTONE.
SANDSTONE = VERY LIGHT GRAY TO WHITE TO
TRANLUCENT; DOMINATE QUARTZ FRAMEWORK
WITH TRACE FINE GRAINED BLACK LITHIC
CLASTS INTERBEDDED; FINE TO MEDIUM WITH
POOR SORTING; SUBANGULAR TO SUBROUNDED
WITH LOW SPHERICITY; EASILY FRIABLE TO
FIRMLY FRIABLE; ABUNDENT LOOSE GRAINS IN
SAMPLE; MODERATE TO STRONG REACTION WITH
HCL SUGGESTS CALCITE CEMENT WITH MATRIX
SUPPORT; NO VISIBLE BEDDING; PYRITE
PRESENT AS AN ACCESSORY MINERAL; LOSSES
ASSOCIATED WITH SAMPLE DEPTH.
SHALE = GREENISH GRAY TO MEDIUM BLUISH
GRTAY TO MEDIUM GRAY; CRUNCHY TO
SLIGHTLY DENSE TENACITY; PLANAR
FRACTURING; TABULAR TO PLATY CUTTINGS;
DULL EARTHY TO WAXY LUSTER; TEXTURE IS

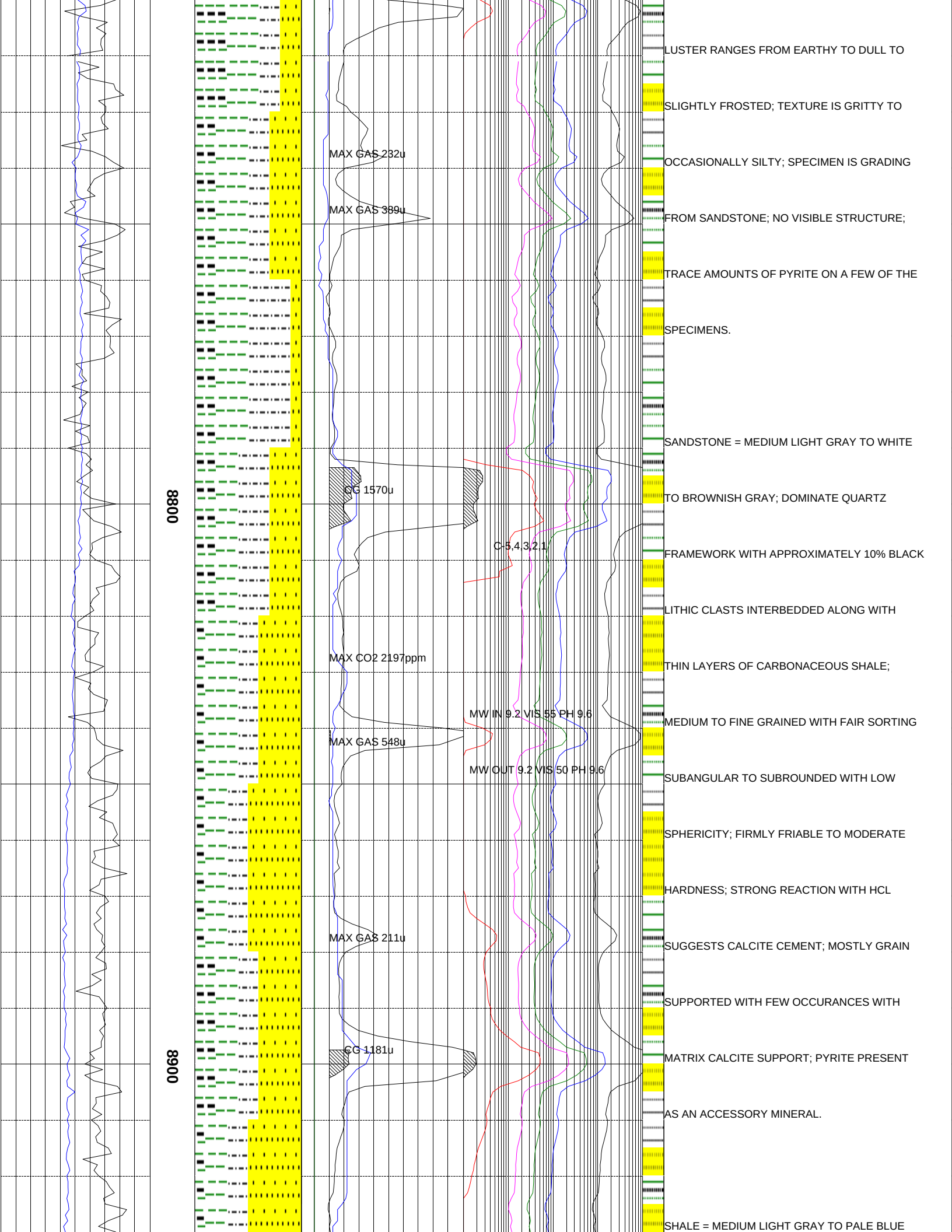

7700
7800
MAX CO2 2831ppm
MW IN 9.2 VIS 56 PH 9.6
MW OUT 9.2 VIS 56 PH 9.2
CG 145u
MUD DATA @ 7665'
MW 9.2 VIS 61 PV 26 YP 20
MAX GAS 690u
ALI FL 7.2 GELS 9/16/27 PH 9.8
CL 1300 CA 20 MBT 17.5 SOL 5.7
MAX GAS 731u
24 HR MUD LOSS: 3872.6
C-5,4,3,2,1
MAX CO2 3147ppm
MAX GAS 290u
WF 850 @ 7744'
NIGHT TOUR
CG 1012u
RE-SCALE CO2 <0-10000>
SMOOTH TO SILTY; LAMINAE TO THIN
STRUCTURE.
SILTSTONE = MEDIUM DARK GRAY TO OLIVE
GRAY TO MODERATE OLIVE BROWN; TENACITY
IS BRITTLE TO CRUNCHY; FRACTURES FROM
IRREGULAR TO BLOCKY TO OCCASIONALLY
PLANAR; CUTTINGS ARE TABULAR TO
WEDGELIKE; LUSTER IS EARTHY TO DULL TO
SLIGHTLY WAXY; GRITTY TO SILTY TEXTURE;
THIN STRUCTURE.
CARBONACEOUS SHALE = DARK BROWNISH GRAY
TO BROWNISH BLACK TO OLIVE BLACK; MODERA
-TELY DENSE TO SLIGHTLY TOUGH TO OCCASIO
-NAL CRUMBLY TENACITY; IRREGULAR TO SUB-
BLOCKY TO SUB-PLANAR TO EARTHY-HACKLY
FRACTURE; SUB-TABULAR TO SUB-NODULAR TO
OCCASIONAL SEMI-PLATY CUTTINGS HABIT; DU
-LL TO EARTHY DULL TO OCCASIONAL SEMI-
SPARKLING LUSTER; VERY SLIGHTLY CLAYEY
TO VERY SLIGLHTY GRITTY TEXTURE; NO VISI


MW IN 9.2 VIS 54 PH 9.6
MW OUT 9.3 VIS 51 PH 9.4
CG 1156u
MAX GAS 346u
7900
CG 2039u
WF 800 @ 7974'
MAX GAS 1058u
MAX CO2 4731ppm
8000
<200 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 500>
<0 CO2 10K>
MAX GAS 2150u
<0 Flare Ht. 100>
<10 Meth C-1 100K>
<10 Eth C-2 100K>
<10 Prop C-3 100K>
<10 Bum C-4 100K>
<10 Pent C-5 100K>
MW IN 9.2 VIS 49 PH 9.4
CG 2147u
MW OUT 9.2 VIS 48 PH 9.2
-BLE LAMINAE OR OTHER DISTINGUISHABLE
STRUCTURAL FEATURES PRESENT; NO ACCESSOR
-Y MINERALS PRESENT IN SAMPLE.
SANDSTONE = OFF WHITE TO WHITE TO VERY
LIGHT GRAY TO OCCASIONAL TRANSLUCENT WIT
-H BLACK, MODERATE BROWN, AND OCCASIONAL
MODERATE GREEN HUES; QUARTZ DOMINATE
FRAME WORK; PREDOMINATELY GRAIN SUPPORTE
-D WITH FEW LOOSE GRAINS; CONSISTS OF
CALCITIC CEMENTATION WITH MODERATELY
HIGH REACTION TO DILUTE HCL; MATRIX CONT
-AINS 5 TO 8% DARK LITHIC FRAGMENTS; QUA
-RTZ CUTTINGS RANGE FROM SMOKY TO TRANSL
-UCENT; MEDIUM-COARSE TO COARSE TO VERY
COARSE GRAINED; FAIR TO POOR SORTING; SU
--B-ANGULAR TO ANGULAR TO SUB-ROUNDED
ANGULARITY; LOW TO MODERATE SPHERICITY;
POOR GRADE SILSTONE VISIBLE GRADING AND
BEDDING WITH POOR GRADE SANDSTONE, POOR
GRADE SANDSTONE VISIBLE BEDDING WITH POO
-R GRADE CARBONACEOUS SHALE CUTTING,


8100
MAX GAS 438u
8/9/2010
MAX CO2 5047ppm
CG 2191u
MAX GAS 719u
MAX CO2 9165ppm
WF 700 @ 8182'
8200
MAX GAS 754u
8/10/10
NB # 4 8.75" HUGHES
(TYPE) (JETS)
IN @ 8228' DRLD XXXX'
XX:XX:XX HRS
MUD DATA @ 8232'
CG 1250u
MW 9.6 VIS 54 PV 20 YP 12
API FL 7.8 GELS 8/13/18 PH 9.5
CL 1300 CA 20 MBT 17.5 SOL 7.2
MAX CO2 4414ppm
MAX GAS 395u
24 HR MUD LOSS: 1475.4
VERY SMALL AMOUNT OF ACCESSORY MINERAL
PYRITE PRESENT IN SAMPLE.
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO
MEDIUM LIGHT GRAY TO OCCASIONAL MEDIUM
DARK GRAY AND LIGHT BLUISH GRAY; MODERAT
-ELY DENSE TO SLIGHTLY TOUGH TO OCCASION
-AL CRUNCHY TENACITY; IRREGULAR TO SUB-
BLOCKY TO SUB-PLANAR TO EARTHY FRACTURE;
OCCASIONAL MAISSIVE TO WEDGE LIKE TO
ELONGATED CUTTINGS HABIT; DULL TO EARTHY
DULL TO OCCASIONAL SEMI-FROSTED TO SEMI-
WAXY LUSTER; MODERATELY SMOOTH TO
SLIGHTLY CLAYEY TO VERY SLIGHTLY SILTY
TEXTURE; POOR GRADE SANDSTONE VISIBLY
IN CONTACT VERY COAL CUTTING IN SAMPLE,
NO OTHER DISTINGUISHABLE STRUCTURAL FEAT
URES PRESENT IN SAMPLE; NO ACCESSORY MIN
-ERALS PRESENT IN SAMPLE.
SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
-Y TO OCCASIONAL MEDIUM LIGHT GRAY; MODE


8300
8400
DAY TOUR
WOB 28-30K
PP 3200
RPM 75
GPM 650
WF 600 @ 8367'
C-4,3,2,1
CG 1548u
MAX GAS 1750u
MAX GAS 395u
MAX GAS 420u
C-5,4,3,2,1
CG 1659u
MW IN 9.3 VIS 60 PH 9.9
MW OUT 9.3 VIS 52 PH 9.7
MAX CO2 7548ppm
-RATELY DENSE TO VERY SLIGHTLY TOUGH TO
OCCASIONAL CRUNCHY TENACITY; IRREGULAR
TO SUB-PLANAR TO EARTHY-HACKLY FRACTURE;
SUB-TABULAR TO SUB-NODULAR TO OCCASIONAL
SEMI-PLATY CUTTINGS HABIT; DULL TO EARTH
DULL LUSTER; VERY SLIGHTLY GRITTY TEXTU
-RE; NO VISIBLE STRUCTURAL FEATURES
PRESENT.
SANDSTONE = WHITE TO MEDIUM GRAY WITH
OCCASIONAL TRANSLUCENECE; DOMINATE
QUARTZ FRAMEWORK WITH APPROXIMATELY 5%
FINE BLACK LITHIC CLASTS INTERBEDDED;
FINE TO MEDIUM TO OCCASIONALLY COARSE
GRAINED WITH FAIR TO POOR OVERALL
SORTING; SUBANGULAR TO SUBROUNDED WITH
LOW TO MODERATE SPHERICITY' FIRMLY
FRIABLE TO MODERATE HARDNESS; CALCITE
CEMENT AS SUGGESTED BY A MODERATE
REACTION WITH HCL; SOME CARBONACEOUS
MATERIAL BANDS PRESENT IN SPECIMEN;
FRACTURE FILL OBSERVED AS CALCITE VEINS


<200 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 500>
<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>
8500
8600
8700
CG 1506u
MAX GAS 552u
C-5,4,3,2,1
MAX CO2 1097ppm
WF 500 @ 8632'
MW IN 9.2 VIS 65 PH 9.8
MW OUT 9.3 VIS 51 PH 9.1
C-4,3,2,1
CG 1325u
C-5,4,3,2,1
RUNNING THROUGH SPECIMEN.
CARBONACEOUS SHALE = BROWNISH BLACK TO
BLACK; TENACITY IS DENSE TO BRITTLE TO
OCCASIONALLY SLIGHTLY CRUMBLY; FRACTURES
FROM BLOCKY TO IRREGULAR; CUTTINGS ARE
NODULAR TO WEDGELIKE; RESINOUS TO EARTHY
LUSTER; SMOOTH TO CLAYEY TO SLIGHTLY
SILTY TEXTURE; THIN STRUCTURE.
SHALE = MEDIUM DARK GRAY TO MEDIUM
BLUISH GRAY WITH OCCASIONAL MODERATE
YELLOW PIGMENTS; TENACITY IS BRITTLE TO
SLIGHTLY CRUMBLY; FRACTURES FROM PLANAR
TO SOMEWHAT SPLINTERY; DULL WAXY LUSTER;
TEXTURE IS SMOOTH TO SLIGHTLY SILTY;
LAMINAE TO THIN STRUCTURE.
SILTSTONE = BROWNISH GRAY TO DARK GRAY;
TENACITY IS DENSE TO CRUCHY; FRACTURES
MOSTLY FROM BLOCKY TO IRREGULAR;
CUTTINGS ARE TABULAR TO SLIGHTLY MASSIVE



LUSTER RANGES FROM EARTHY TO DULL TO

SLIGHTLY FROSTED; TEXTURE IS GRITTY TO

OCCASIONALLY SILTY; SPECIMEN IS GRADING

FROM SANDSTONE; NO VISIBLE STRUCTURE;

TRACE AMOUNTS OF PYRITE ON A FEW OF THE

SPECIMENS.

SANDSTONE = MEDIUM LIGHT GRAY TO WHITE

TO BROWNISH GRAY; DOMINATE QUARTZ

FRAMEWORK WITH APPROXIMATELY 10% BLACK

LITHIC CLASTS INTERBEDDED ALONG WITH

THIN LAYERS OF CARBONACEOUS SHALE;

MEDIUM TO FINE GRAINED WITH FAIR SORTING

SUBANGULAR TO SUBROUNDED WITH LOW

SPHERICITY; FIRMLY FRIABLE TO MODERATE

HARDNESS; STRONG REACTION WITH HCL

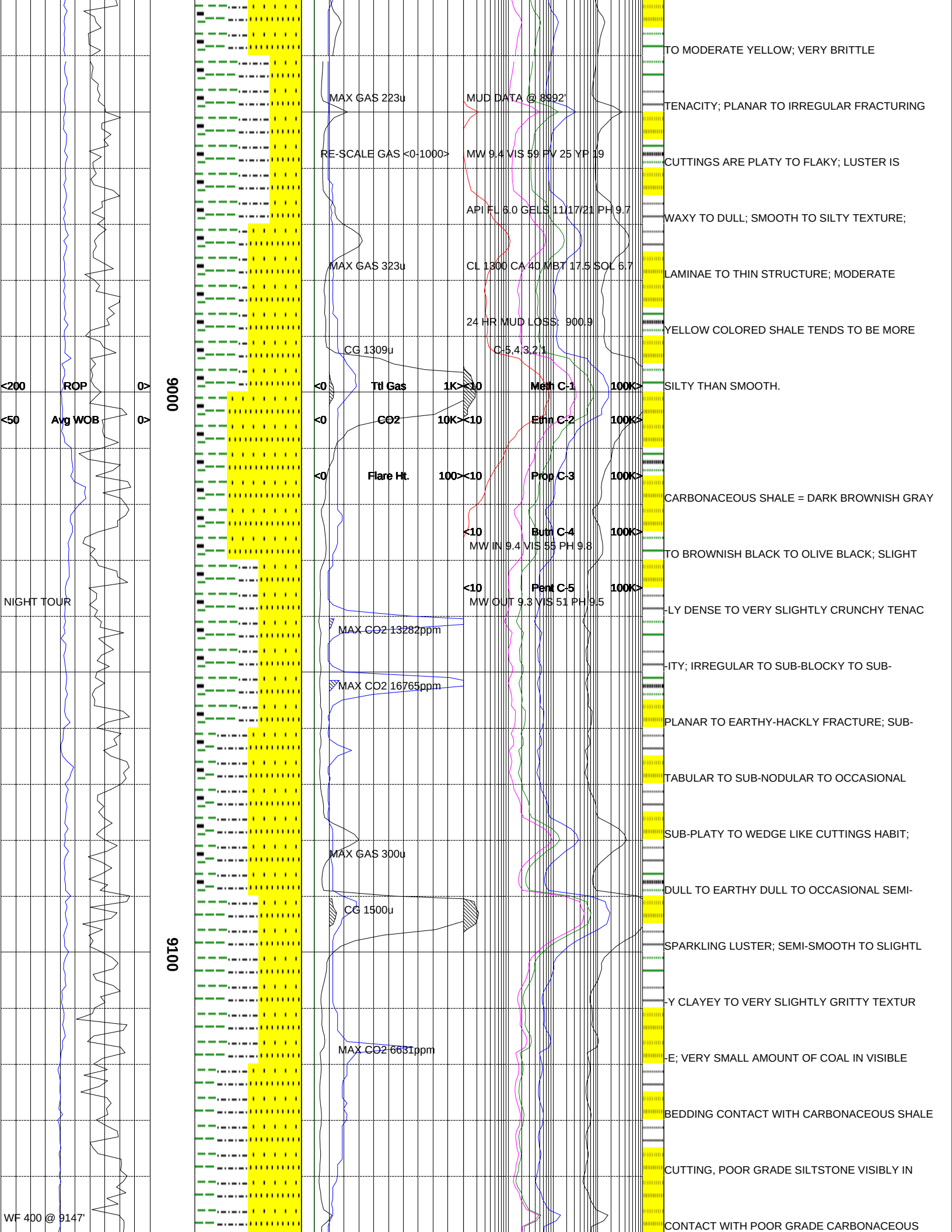
SUGGESTS CALCITE CEMENT; MOSTLY GRAIN

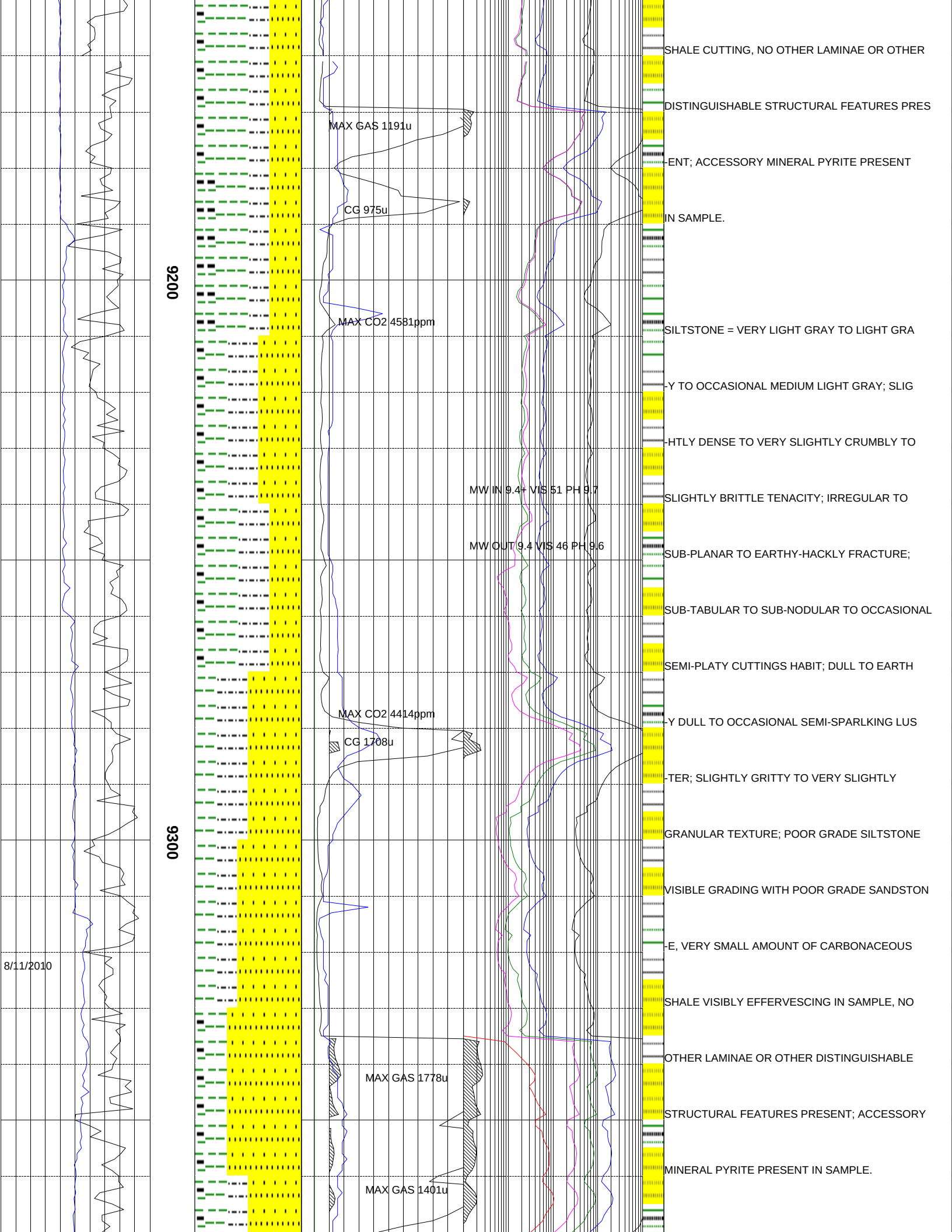
SUPPORTED WITH FEW OCCURANCES WITH

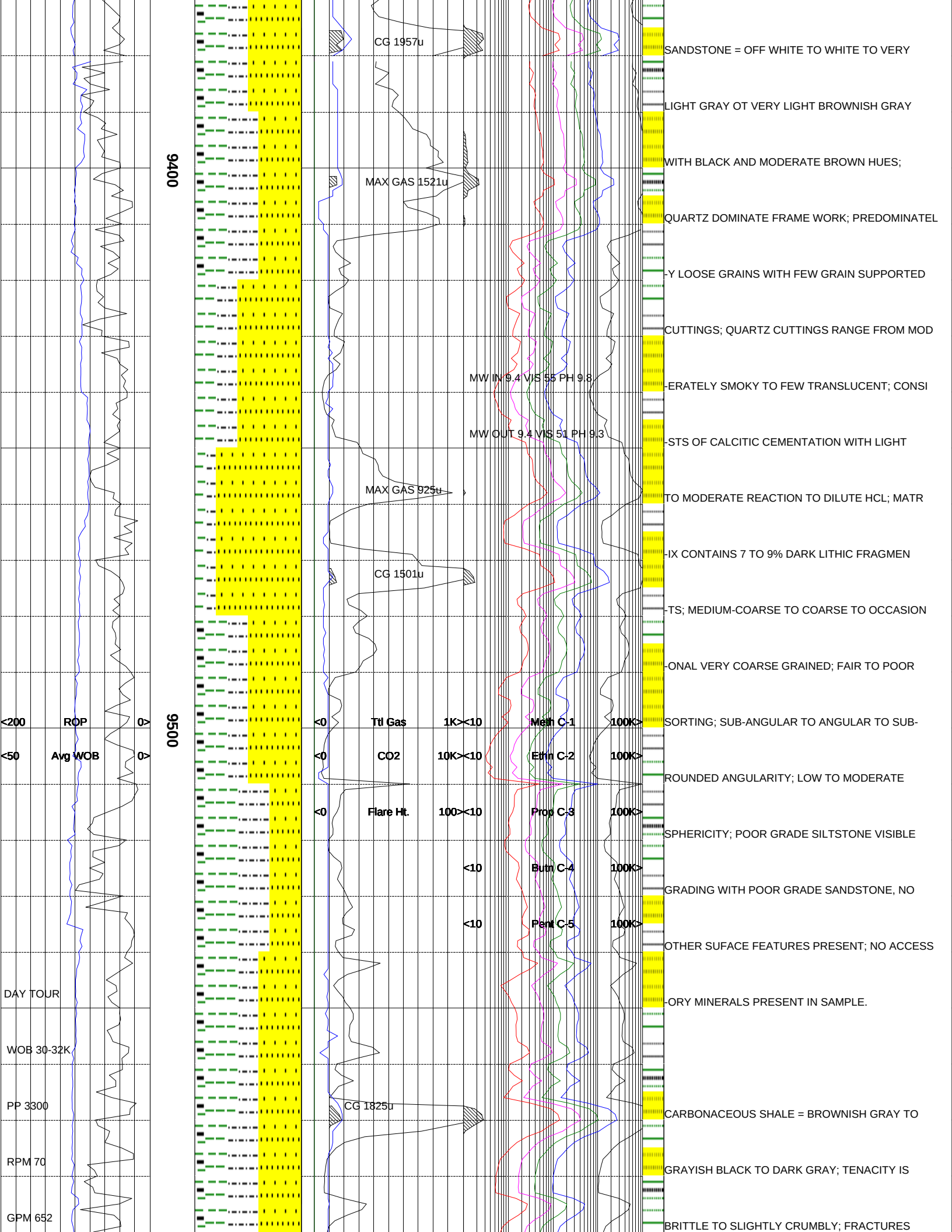
MATRIX CALCITE SUPPORT; PYRITE PRESENT

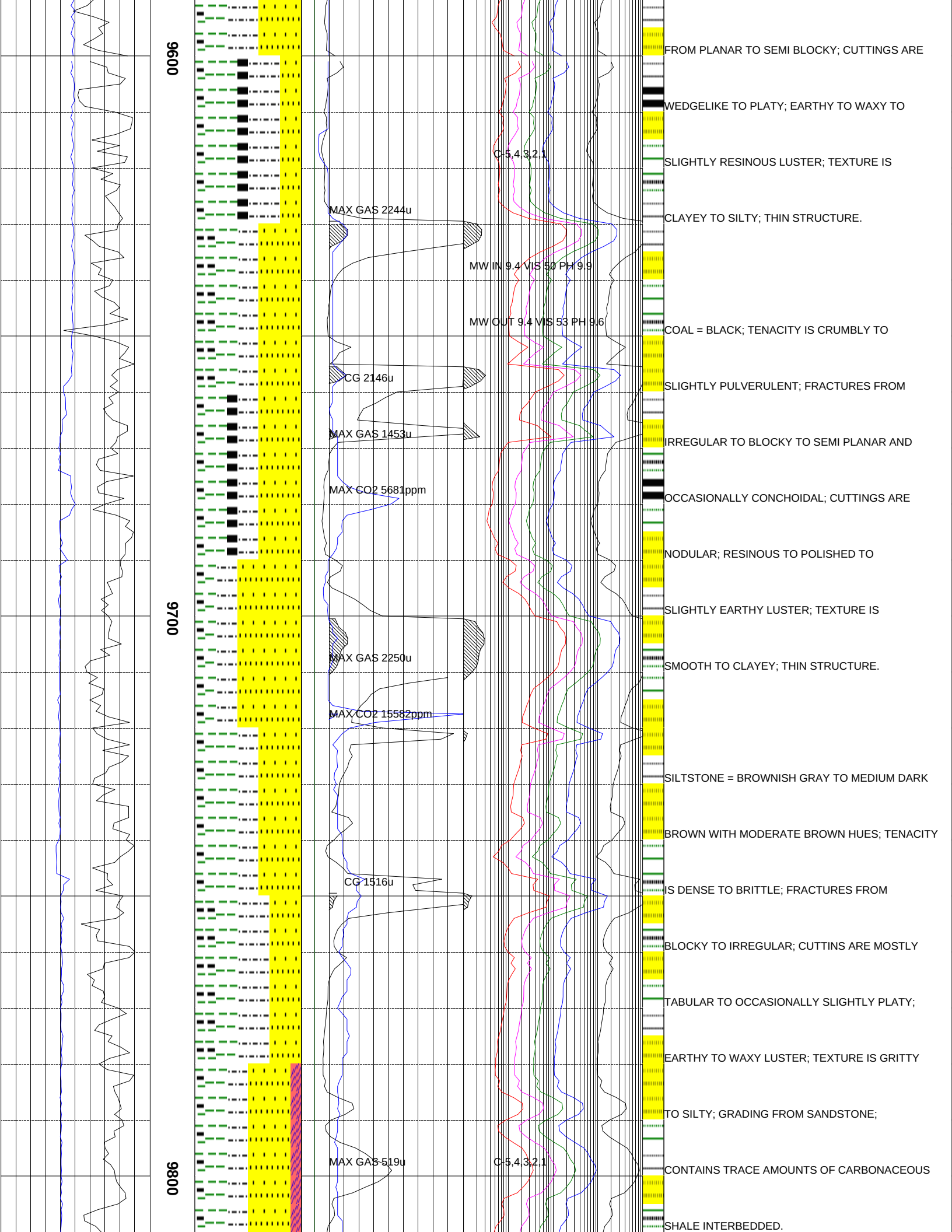
AS AN ACCESSORY MINERAL.

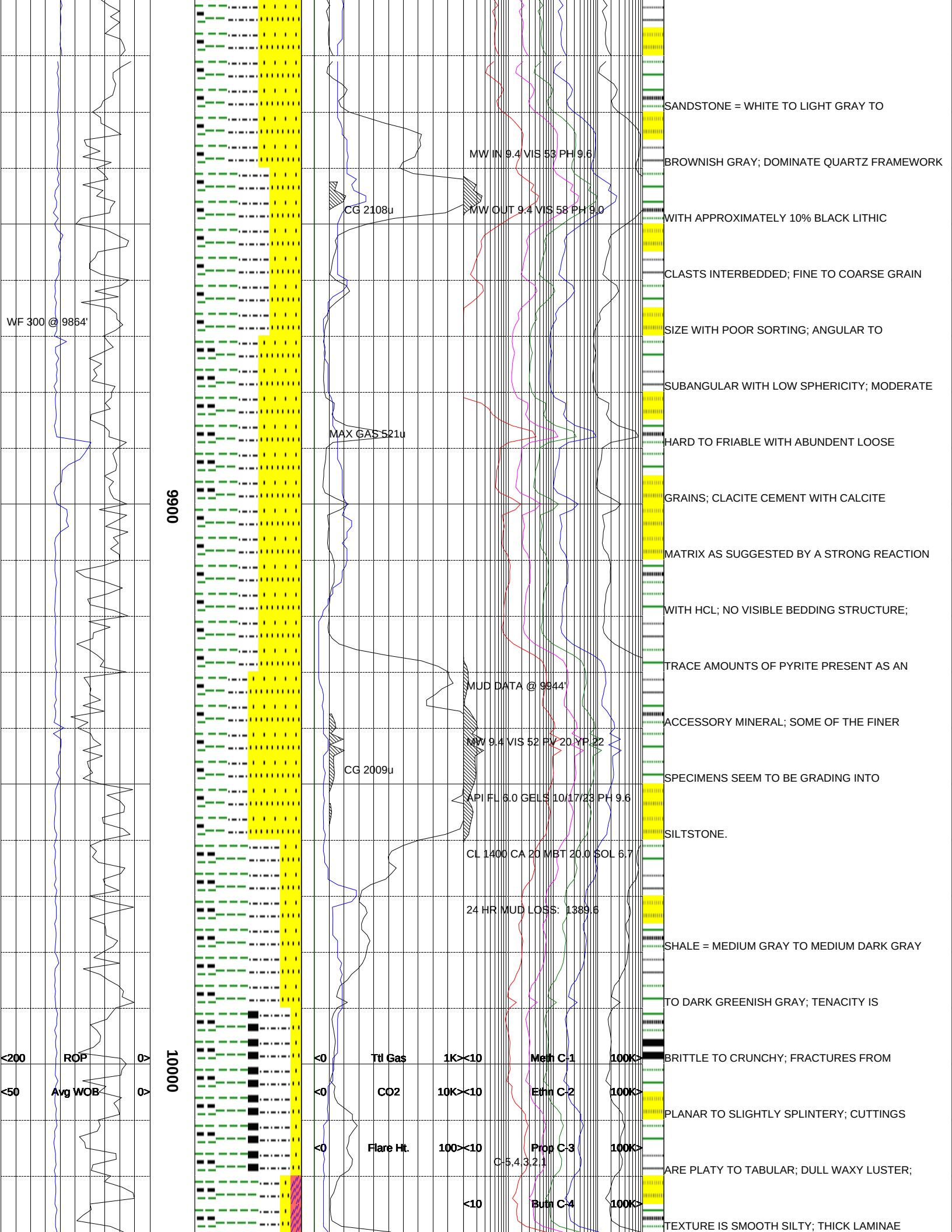
SHALE = MEDIUM LIGHT GRAY TO PALE BLUE

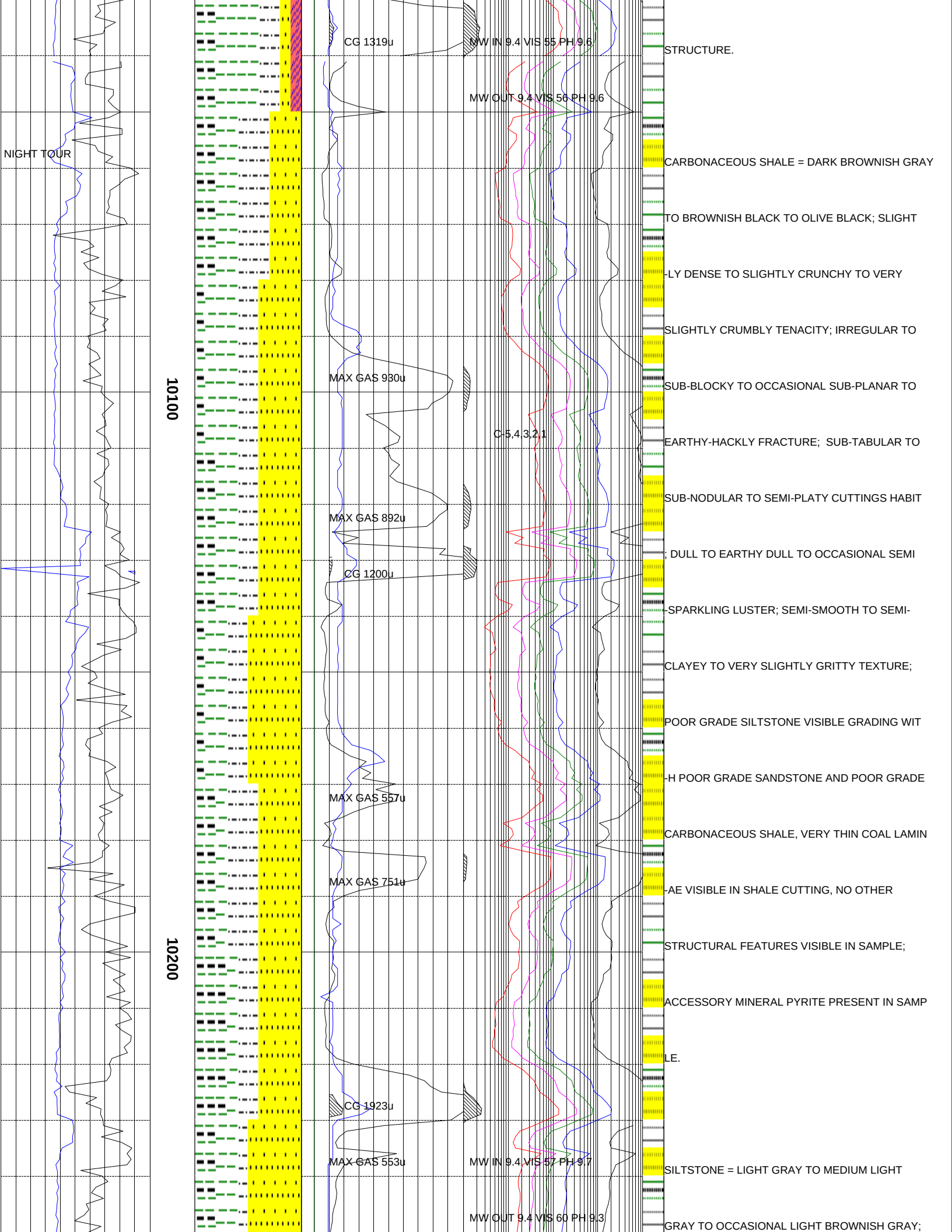

<200 ROP 0>
<50 Avg WOB 0>
9000
9100
MAX GAS 223u
RE-SCALE GAS <0-1000>
MAX GAS 323u
CG 1309u
<0 Ttl Gas 1K>
<0 CO2 10K>
<0 Flare Ht. 100>
MAX CO2 13282ppm
MAX CO2 16765ppm
MAX GAS 300u
CG 1500u
MAX CO2 6631ppm
<10 Meth C-1 100K>
<10 Etnn C-2 100K>
<10 Prop C-3 100K>
<10 Buth C-4 100K>
<10 Pent C-5 100K>
MUD DATA @ 8992'
MW 9.4 VIS 59 PV 25 YP 19
API FL 6.0 GELS 11/17/21 PH 9.7
CL 1300 CA 40 MBT 17.5 SOL 6.7
24 HR MUD LOSS: 900.9
C-5,4,3,2,1
MW IN 9.4 VIS 55 PH 9.3
MW OUT 9.3 VIS 51 PH 9.5
NIGHT TOUR
WF 400 @ 9147'
TO MODERATE YELLOW; VERY BRITTLE
TENACITY; PLANAR TO IRREGULAR FRACTURING
CUTTINGS ARE PLATY TO FLAKY; LUSTER IS
WAXY TO DULL; SMOOTH TO SILTY TEXTURE;
LAMINAE TO THIN STRUCTURE; MODERATE
YELLOW COLORED SHALE TENDS TO BE MORE
SILTY THAN SMOOTH.
CARBONACEOUS SHALE = DARK BROWNISH GRAY
TO BROWNISH BLACK TO OLIVE BLACK; SLIGHT
-LY DENSE TO VERY SLIGHTLY CRUNCHY TENAC
-ITY; IRREGULAR TO SUB-BLOCKY TO SUB-
PLANAR TO EARTHY-HACKLY FRACTURE; SUB-
TABULAR TO SUB-NODULAR TO OCCASIONAL
SUB-PLATY TO WEDGE LIKE CUTTINGS HABIT;
DULL TO EARTHY DULL TO OCCASIONAL SEMI-
SPARKLING LUSTER; SEMI-SMOOTH TO SLIGHTL
-Y CLAYEY TO VERY SLIGHTLY GRITTY TEXTUR
-E; VERY SMALL AMOUNT OF COAL IN VISIBLE
BEDDING CONTACT WITH CARBONACEOUS SHALE
CUTTING, POOR GRADE SILTSTONE VISIBLY IN
CONTACT WITH POOR GRADE CARBONACEOUS

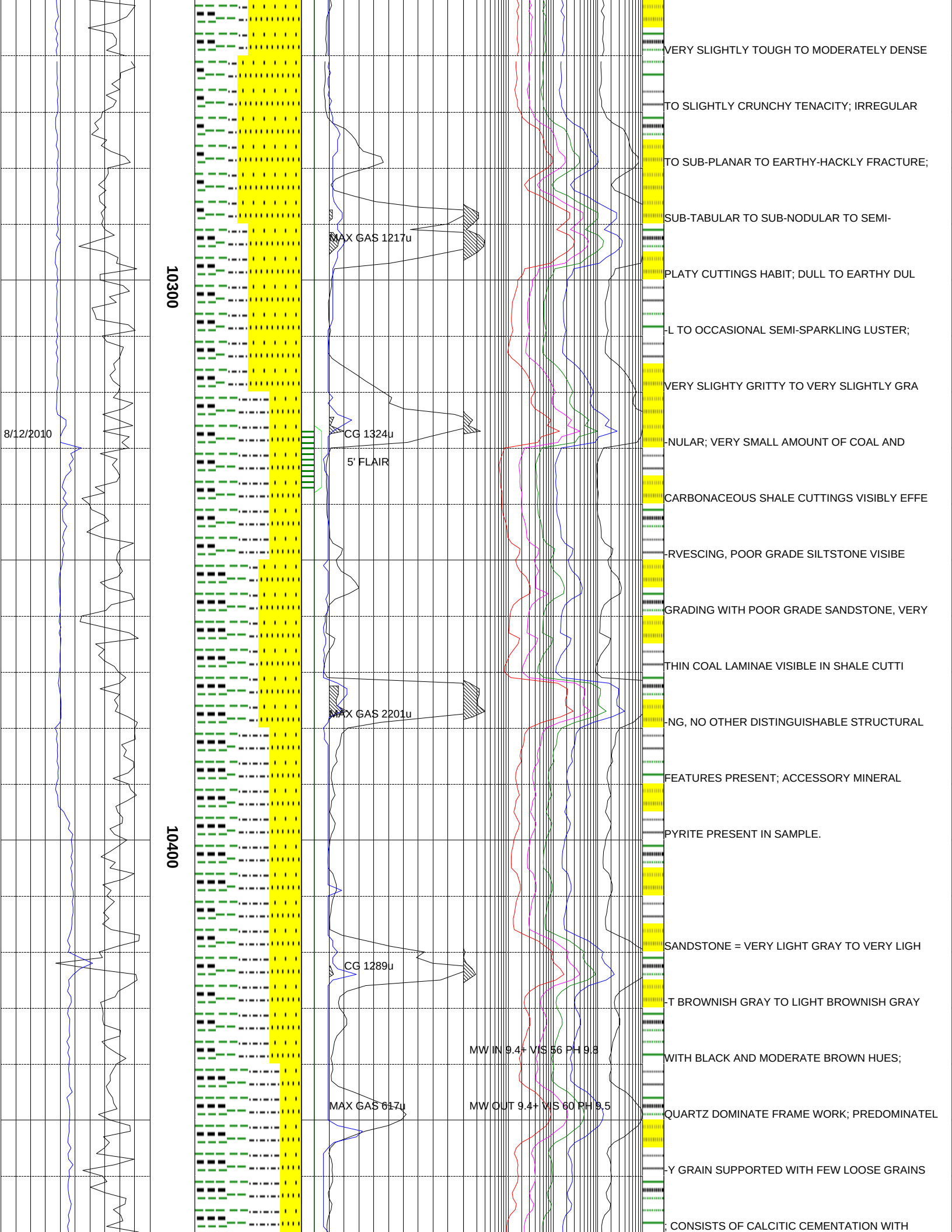

9200
9300
8/11/2010
MAX GAS 1191u
CG 975u
MAX CO2 4581ppm
MW IN 9.4+ VIS 51 PH 9.7
MW OUT 9.4 VIS 46 PH 9.6
MAX CO2 4414ppm
CG 1708u
MAX GAS 1778u
MAX GAS 1401u
SHALE CUTTING, NO OTHER LAMINAE OR OTHER
DISTINGUISHABLE STRUCTURAL FEATURES PRES
-ENT; ACCESSORY MINERAL PYRITE PRESENT
IN SAMPLE.
SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
-Y TO OCCASIONAL MEDIUM LIGHT GRAY; SLIG
-HTLY DENSE TO VERY SLIGHTLY CRUMBLY TO
SLIGHTLY BRITTLE TENACITY; IRREGULAR TO
SUB-PLANAR TO EARTHY-HACKLY FRACTURE;
SUB-TABULAR TO SUB-NODULAR TO OCCASIONAL
SEMI-PLATY CUTTINGS HABIT; DULL TO EARTH
-Y DULL TO OCCASIONAL SEMI-SPARLKING LUS
-TER; SLIGHTLY GRITTY TO VERY SLIGHTLY
GRANULAR TEXTURE; POOR GRADE SILTSTONE
VISIBLE GRADING WITH POOR GRADE SANDSTON
-E, VERY SMALL AMOUNT OF CARBONACEOUS
SHALE VISIBLY EFFERVESCING IN SAMPLE, NO
OTHER LAMINAE OR OTHER DISTINGUISHABLE
STRUCTURAL FEATURES PRESENT; ACCESSORY
MINERAL PYRITE PRESENT IN SAMPLE.

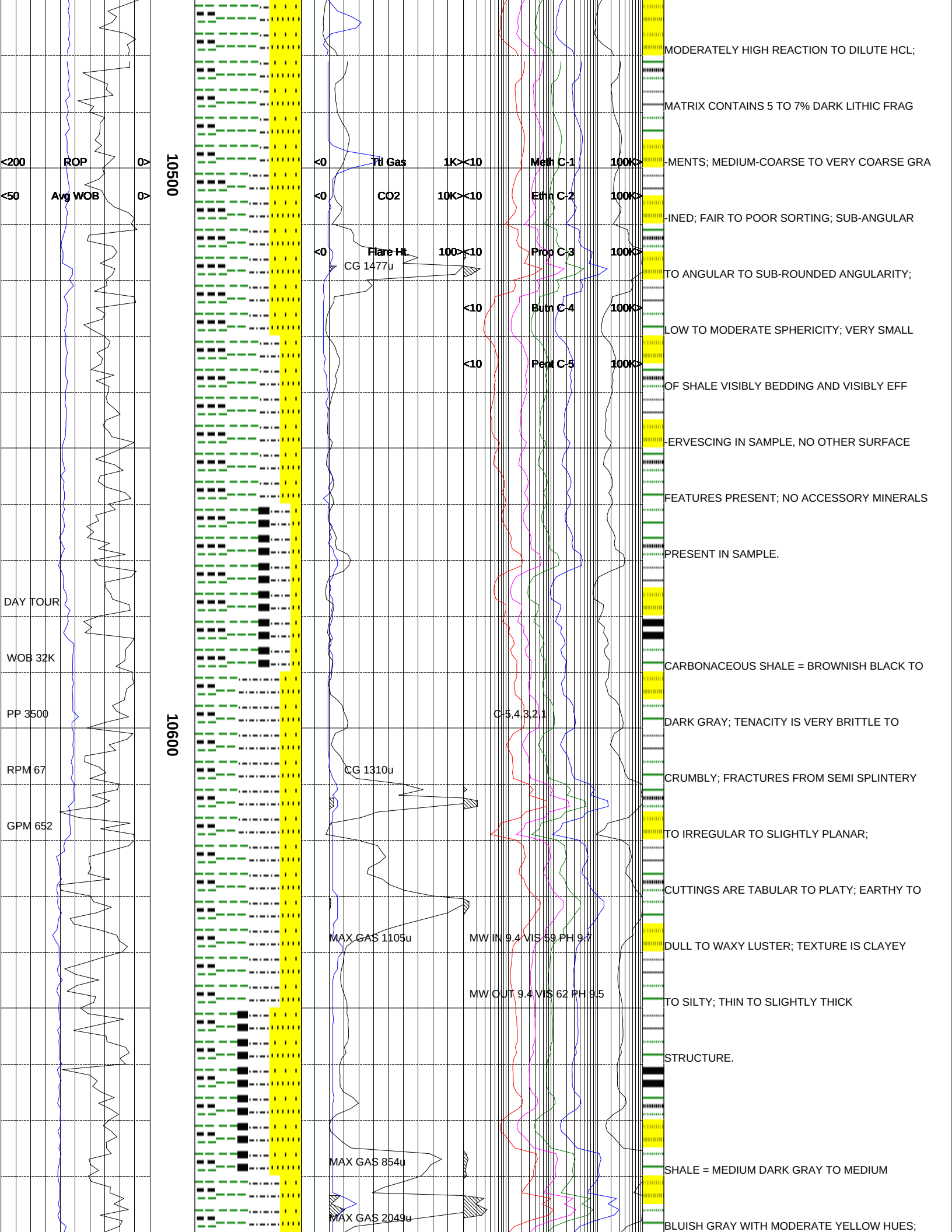

9400
9500
CG 1957u
MAX GAS 1521u
MW IN 9.4 VIS 55 PH 9.8
MW OUT 9.4 VIS 51 PH 9.3
MAX GAS 925u
CG 1501u
CG 1825u
<200 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
<0 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
DAY TOUR
WOB 30-32K
PP 3300
RPM 70
GPM 652
SANDSTONE = OFF WHITE TO WHITE TO VERY
LIGHT GRAY OT VERY LIGHT BROWNISH GRAY
WITH BLACK AND MODERATE BROWN HUES;
QUARTZ DOMINATE FRAME WORK; PREDOMINATEL
-Y LOOSE GRAINS WITH FEW GRAIN SUPPORTED
CUTTINGS; QUARTZ CUTTINGS RANGE FROM MOD
-ERATELY SMOKY TO FEW TRANSLUCENT; CONSI
-STS OF CALCITIC CEMENTATION WITH LIGHT
TO MODERATE REACTION TO DILUTE HCL; MATR
-IX CONTAINS 7 TO 9% DARK LITHIC FRAGMEN
-TS; MEDIUM-COARSE TO COARSE TO OCCASION
-ONAL VERY COARSE GRAINED; FAIR TO POOR
SORTING; SUB-ANGULAR TO ANGULAR TO SUB-
ROUNDED ANGULARITY; LOW TO MODERATE
SPHERICITY; POOR GRADE SILTSTONE VISIBLE
GRADING WITH POOR GRADE SANDSTONE, NO
OTHER SUFACE FEATURES PRESENT; NO ACCESS
-ORY MINERALS PRESENT IN SAMPLE.
CARBONACEOUS SHALE = BROWNISH GRAY TO
GRAYISH BLACK TO DARK GRAY; TENACITY IS
BRITTLE TO SLIGHTLY CRUMBLY; FRACTURES

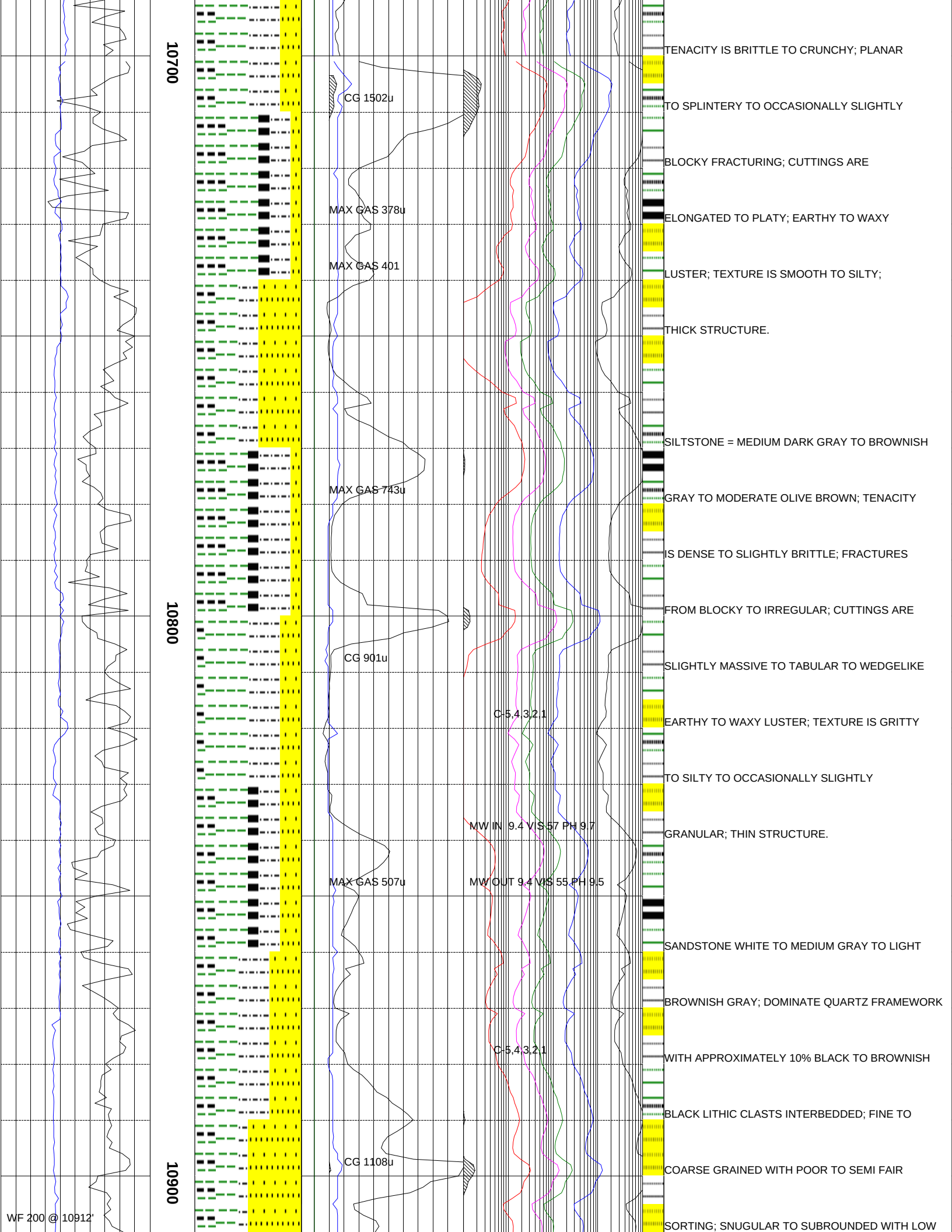

9600
9700
9800
C-5,4,3,2,1
MAX GAS 2244u
MW IN 9.4 VIS 50 PH 9.9
MW OUT 9.4 VIS 53 PH 9.6
CG 2146u
MAX GAS 1453u
MAX CO2 5681ppm
MAX GAS 2250u
MAX CO2 15582ppm
CG 1516u
MAX GAS 519u
C-5,4,3,2,1
FROM PLANAR TO SEMI BLOCKY; CUTTINGS ARE
WEDGELIKE TO PLATY; EARTHY TO WAXY TO
SLIGHTLY RESINOUS LUSTER; TEXTURE IS
CLAYEY TO SILTY; THIN STRUCTURE.
COAL = BLACK; TENACITY IS CRUMBLY TO
SLIGHTLY PULVERULENT; FRACTURES FROM
IRREGULAR TO BLOCKY TO SEMI PLANAR AND
OCCASIONALLY CONCHOIDAL; CUTTINGS ARE
NODULAR; RESINOUS TO POLISHED TO
SLIGHTLY EARTHY LUSTER; TEXTURE IS
SMOOTH TO CLAYEY; THIN STRUCTURE.
SILTSTONE = BROWNISH GRAY TO MEDIUM DARK
BROWN WITH MODERATE BROWN HUES; TENACITY
IS DENSE TO BRITTLE; FRACTURES FROM
BLOCKY TO IRREGULAR; CUTTINS ARE MOSTLY
TABULAR TO OCCASIONALLY SLIGHTLY PLATY;
EARTHY TO WAXY LUSTER; TEXTURE IS GRITTY
TO SILTY; GRADING FROM SANDSTONE;
CONTAINS TRACE AMOUNTS OF CARBONACEOUS
SHALE INTERBEDDED.

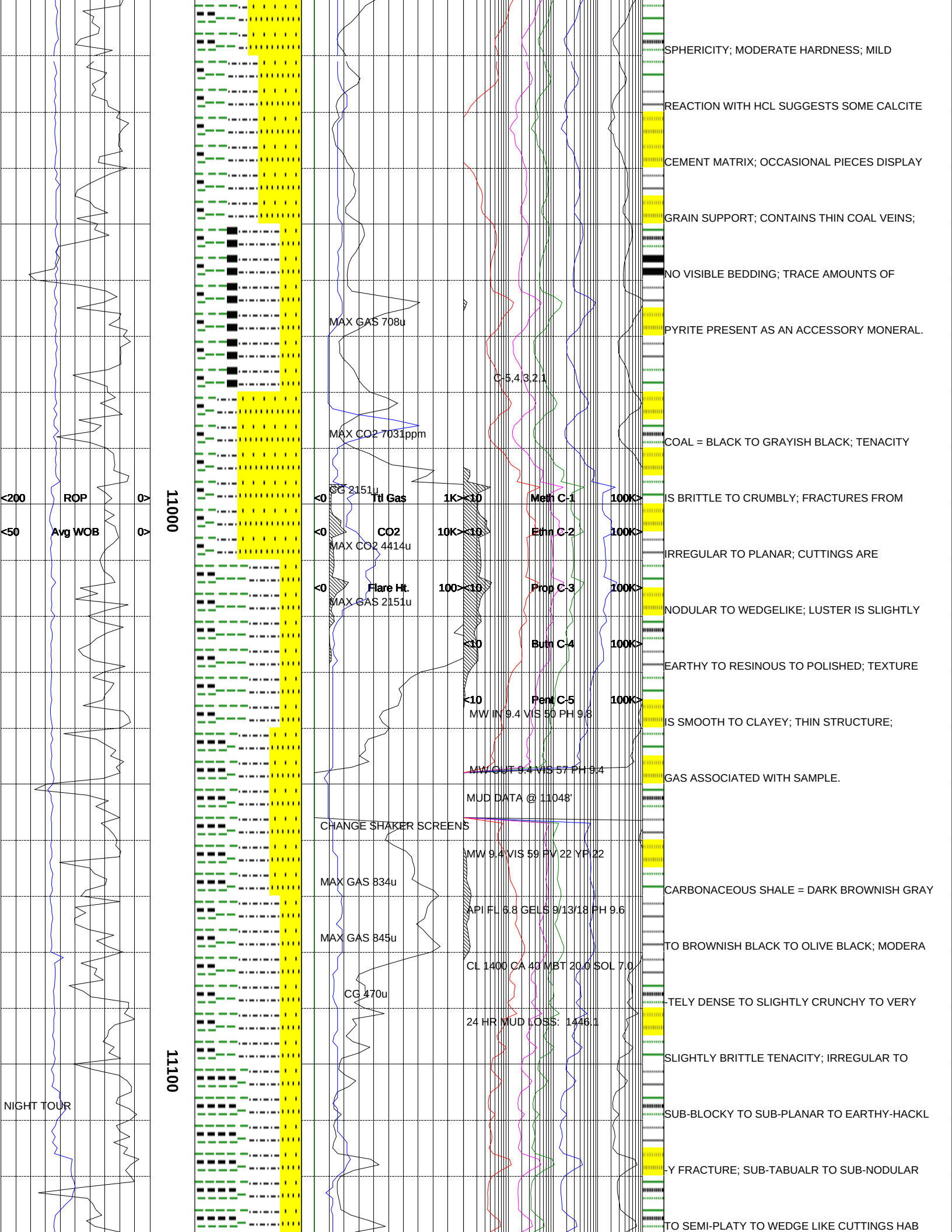

WF 300 @ 9864'
9900
10000
MW IN 9.4 VIS 53 PH 9.6
CG 2108u
MW OUT 9.4 VIS 58 PH 9.0
MAX GAS 521u
MUD DATA @ 9944'
MW 9.4 VIS 52 PV 20 YP 22
CG 2009u
API FL 6.0 GELS 10/17/23 PH 9.6
CL 1400 CA 20 MBT 20.0 SOL 6.7
24 HR MUD LOSS: 1389.6
SANDSTONE = WHITE TO LIGHT GRAY TO
BROWNISH GRAY; DOMINATE QUARTZ FRAMEWORK
WITH APPROXIMATELY 10% BLACK LITHIC
CLASTS INTERBEDDED; FINE TO COARSE GRAIN
SIZE WITH POOR SORTING; ANGULAR TO
SUBANGULAR WITH LOW SPHERICITY; MODERATE
HARD TO FRIABLE WITH ABUNDENT LOOSE
GRAINS; CLACITE CEMENT WITH CALCITE
MATRIX AS SUGGESTED BY A STRONG REACTION
WITH HCL; NO VISIBLE BEDDING STRUCTURE;
TRACE AMOUNTS OF PYRITE PRESENT AS AN
ACCESSORY MINERAL; SOME OF THE FINER
SPECIMENS SEEM TO BE GRADING INTO
SILTSTONE.
SHALE = MEDIUM GRAY TO MEDIUM DARK GRAY
TO DARK GREENISH GRAY; TENACITY IS
BRITTLE TO CRUNCHY; FRACTURES FROM
PLANAR TO SLIGHTLY SPLINTERY; CUTTINGS
ARE PLATY TO TABULAR; DULL WAXY LUSTER;
TEXTURE IS SMOOTH SILTY; THICK LAMINAE
<200 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>
C-5,4,3,2,1
<10 Butn C-4 100K>

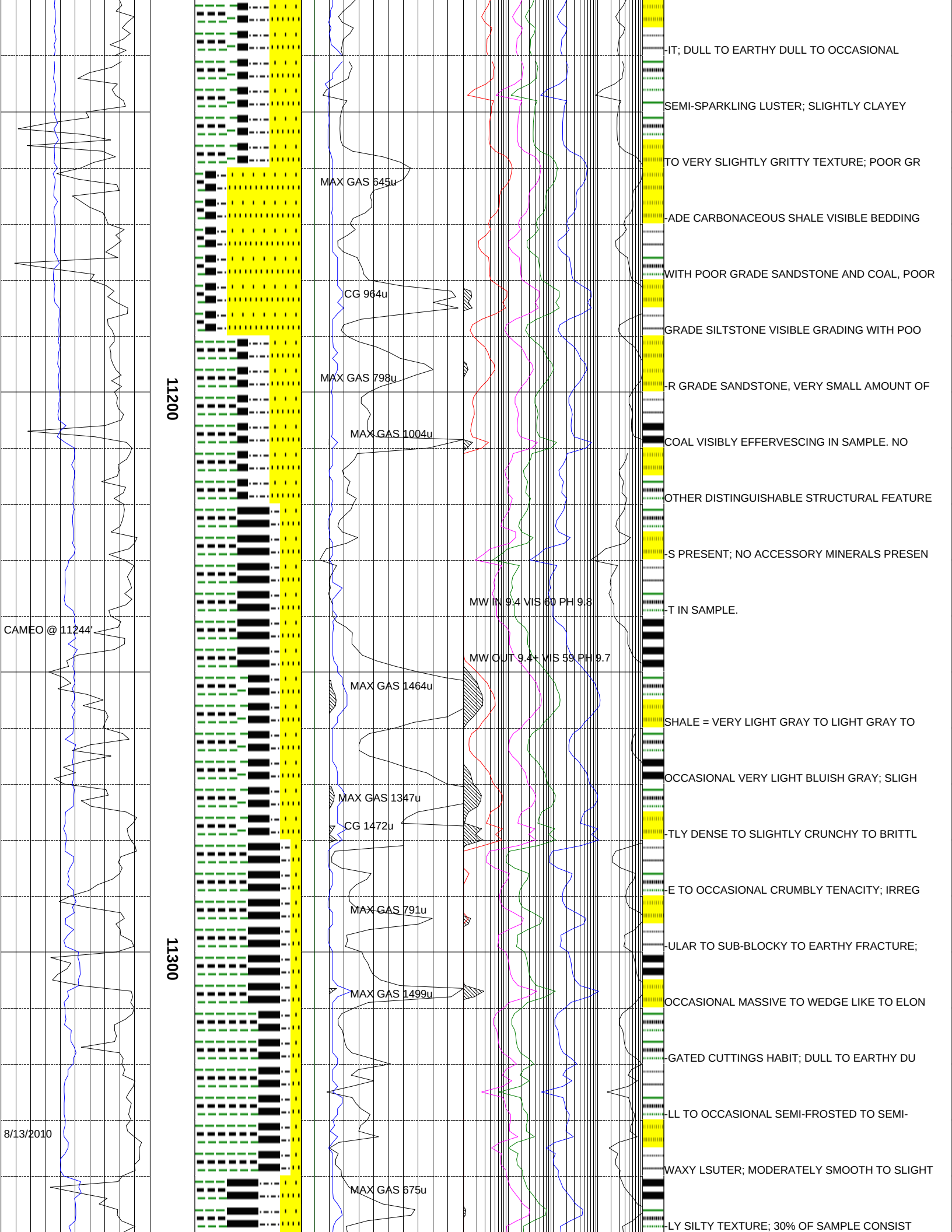

CG 1319u
MW IN 9.4 VIS 55 PH 9.6
MW OUT 9.4 VIS 56 PH 9.6
NIGHT TOUR
10100
MAX GAS 930u
C-5,4,3,2,1
MAX GAS 892u
CG 1200u
MAX GAS 557u
MAX GAS 751u
10200
CG 1923u
MAX GAS 553u
MW IN 9.4 VIS 57 PH 9.7
MW OUT 9.4 VIS 60 PH 9.3
STRUCTURE.
CARBONACEOUS SHALE = DARK BROWNISH GRAY
TO BROWNISH BLACK TO OLIVE BLACK; SLIGHT
-LY DENSE TO SLIGHTLY CRUNCHY TO VERY
SLIGHTLY CRUMBLY TENACITY; IRREGULAR TO
SUB-BLOCKY TO OCCASIONAL SUB-PLANAR TO
EARTHY-HACKLY FRACTURE; SUB-TABULAR TO
SUB-NODULAR TO SEMI-PLATY CUTTINGS HABIT
; DULL TO EARTHY DULL TO OCCASIONAL SEMI
-SPARKLING LUSTER; SEMI-SMOOTH TO SEMI-
CLAYEY TO VERY SLIGHTLY GRITTY TEXTURE;
POOR GRADE SILTSTONE VISIBLE GRADING WIT
-H POOR GRADE SANDSTONE AND POOR GRADE
CARBONACEOUS SHALE, VERY THIN COAL LAMIN
-AE VISIBLE IN SHALE CUTTING, NO OTHER
STRUCTURAL FEATURES VISIBLE IN SAMPLE;
ACCESSORY MINERAL PYRITE PRESENT IN SAMP
LE.
SILTSTONE = LIGHT GRAY TO MEDIUM LIGHT
GRAY TO OCCASIONAL LIGHT BROWNISH GRAY;

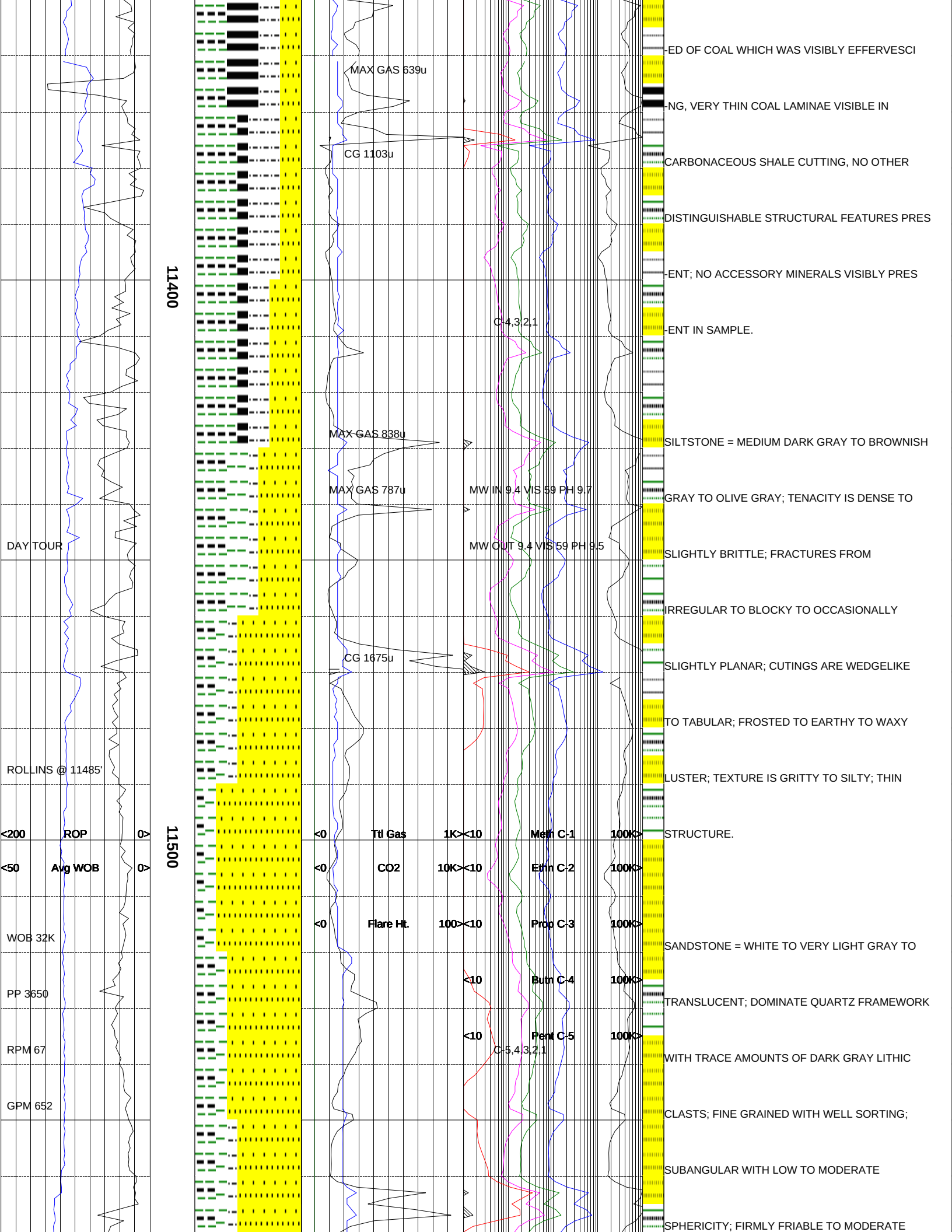

10300
10400
8/12/2010
MAX GAS 1217u
CG 1324u
5' FLAIR
MAX GAS 2201u
CG 1289u
MW IN 9.4+ VIS 56 PH 9.8
MAX GAS 617u
MW OUT 9.4+ VIS 60 PH 9.5
VERY SLIGHTLY TOUGH TO MODERATELY DENSE
TO SLIGHTLY CRUNCHY TENACITY; IRREGULAR
TO SUB-PLANAR TO EARTHY-HACKLY FRACTURE;
SUB-TABULAR TO SUB-NODULAR TO SEMI-
PLATY CUTTINGS HABIT; DULL TO EARTHY DUL
-L TO OCCASIONAL SEMI-SPARKLING LUSTER;
VERY SLIGHTY GRITTY TO VERY SLIGHTLY GRA
-NULAR; VERY SMALL AMOUNT OF COAL AND
CARBONACEOUS SHALE CUTTINGS VISIBLY EFFE
-RVESCING, POOR GRADE SILTSTONE VISIBE
GRADING WITH POOR GRADE SANDSTONE, VERY
THIN COAL LAMINAE VISIBLE IN SHALE CUTTI
-NG, NO OTHER DISTINGUISHABLE STRUCTURAL
FEATURES PRESENT; ACCESSORY MINERAL
PYRITE PRESENT IN SAMPLE.
SANDSTONE = VERY LIGHT GRAY TO VERY LIGH
-T BROWNISH GRAY TO LIGHT BROWNISH GRAY
WITH BLACK AND MODERATE BROWN HUES;
QUARTZ DOMINATE FRAME WORK; PREDOMINATEL
-Y GRAIN SUPPORTED WITH FEW LOOSE GRAINS
; CONSISTS OF CALCITIC CEMENTATION WITH

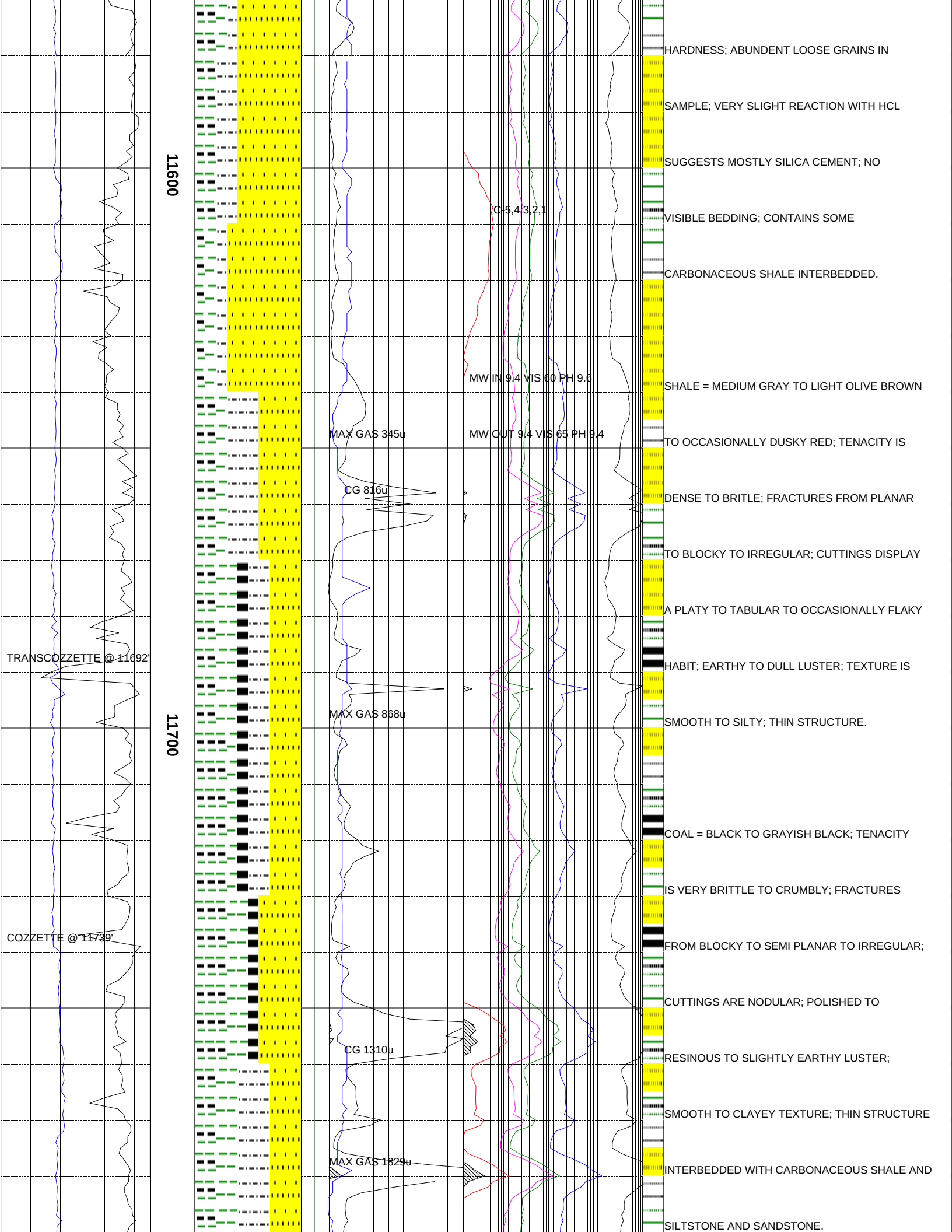

<200 ROP 0>
<50 Avg WOB 0>
10500
10600
DAY TOUR
WOB 32K
PP 3500
RPM 67
GPM 652
<0 Tll Gas 1K><10 Meth C-1 100K>
<0 CO2 10K><10 Etha C-2 100K>
<0 Flare Ht 100><10 Prop C-3 100K>
<10 Buta C-4 100K>
<10 Pent C-5 100K>
CG 1477u
CG 1310u
C-5,4,3,2,1
MAX GAS 1105u
MW IN 9.4 VIS 59 PH 9.7
MW OUT 9.4 VIS 62 PH 9.5
MAX GAS 854u
MAX GAS 2049u
MODERATELY HIGH REACTION TO DILUTE HCL;
MATRIX CONTAINS 5 TO 7% DARK LITHIC FRAG
-MENTS; MEDIUM-COARSE TO VERY COARSE GRA
-INED; FAIR TO POOR SORTING; SUB-ANGULAR
TO ANGULAR TO SUB-ROUNDED ANGULARITY;
LOW TO MODERATE SPHERICITY; VERY SMALL
OF SHALE VISIBLY BEDDING AND VISIBLY EFF
-ERVESCING IN SAMPLE, NO OTHER SURFACE
FEATURES PRESENT; NO ACCESSORY MINERALS
PRESENT IN SAMPLE.
CARBONACEOUS SHALE = BROWNISH BLACK TO
DARK GRAY; TENACITY IS VERY BRITTLE TO
CRUMBLY; FRACTURES FROM SEMI SPLINTERY
TO IRREGULAR TO SLIGHTLY PLANAR;
CUTTINGS ARE TABULAR TO PLATY; EARTHY TO
DULL TO WAXY LUSTER; TEXTURE IS CLAYEY
TO SILTY; THIN TO SLIGHTLY THICK
STRUCTURE.
SHALE = MEDIUM DARK GRAY TO MEDIUM
BLUISH GRAY WITH MODERATE YELLOW HUES;

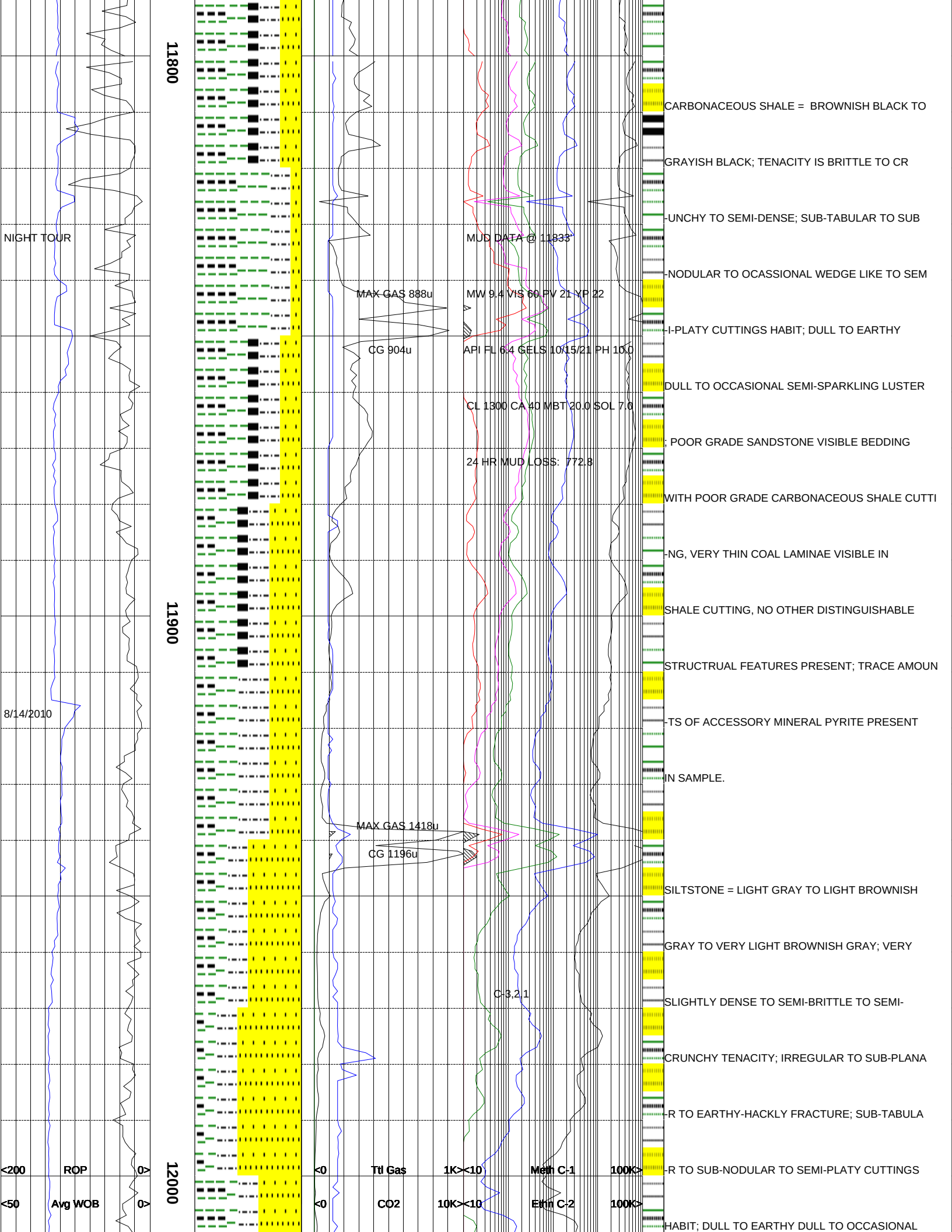

10700
10800
10900
CG 1502u
MAX GAS 378u
MAX GAS 401
MAX GAS 743u
CG 901u
C-5,4,3,2,1
MW IN 9.4 VIS 57 PH 9.7
MAX GAS 507u
MW OUT 9.4 VIS 55 PH 9.5
C-5,4,3,2,1
CG 1108u
TENACITY IS BRITTLE TO CRUNCHY; PLANAR
TO SPLINTERY TO OCCASIONALLY SLIGHTLY
BLOCKY FRACTURING; CUTTINGS ARE
ELONGATED TO PLATY; EARTHY TO WAXY
LUSTER; TEXTURE IS SMOOTH TO SILTY;
THICK STRUCTURE.
SILTSTONE = MEDIUM DARK GRAY TO BROWNISH
GRAY TO MODERATE OLIVE BROWN; TENACITY
IS DENSE TO SLIGHTLY BRITTLE; FRACTURES
FROM BLOCKY TO IRREGULAR; CUTTINGS ARE
SLIGHTLY MASSIVE TO TABULAR TO WEDGELIKE
EARTHY TO WAXY LUSTER; TEXTURE IS GRITTY
TO SILTY TO OCCASIONALLY SLIGHTLY
GRANULAR; THIN STRUCTURE.
SANDSTONE WHITE TO MEDIUM GRAY TO LIGHT
BROWNISH GRAY; DOMINATE QUARTZ FRAMEWORK
WITH APPROXIMATELY 10% BLACK TO BROWNISH
BLACK LITHIC CLASTS INTERBEDDED; FINE TO
COARSE GRAINED WITH POOR TO SEMI FAIR
SORTING; SNUGULAR TO SUBROUNDED WITH LOW
WF 200 @ 10912'

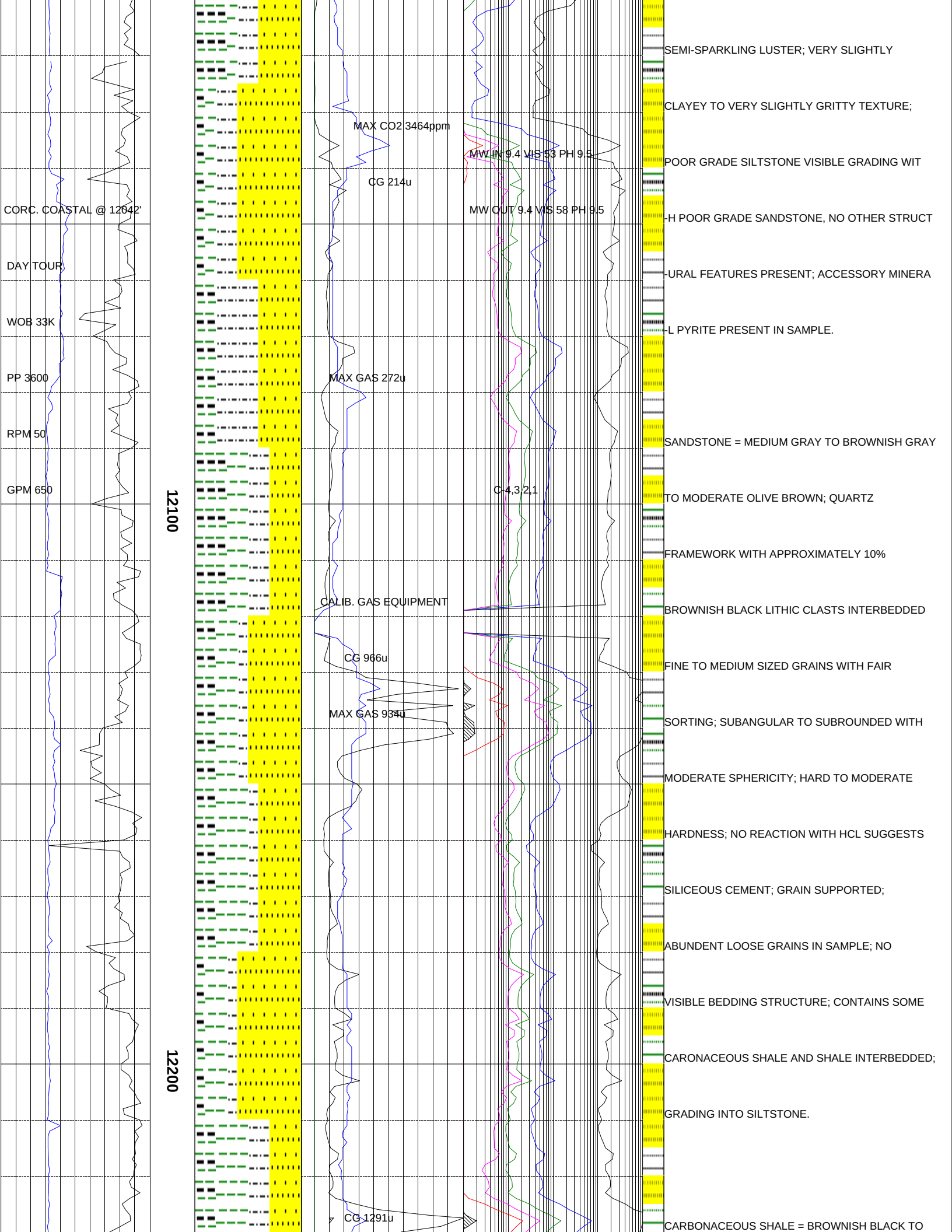

SPHERICITY; MODERATE HARDNESS; MILD
REACTION WITH HCL SUGGESTS SOME CALCITE
CEMENT MATRIX; OCCASIONAL PIECES DISPLAY
GRAIN SUPPORT; CONTAINS THIN COAL VEINS;
NO VISIBLE BEDDING; TRACE AMOUNTS OF
PYRITE PRESENT AS AN ACCESSORY MONERAL.
MAX GAS 708u
C-5,4,3,2,1
MAX CO2 7031ppm
COAL = BLACK TO GRAYISH BLACK; TENACITY
<200 ROP 0>
CG 2151u
<0 Ttl Gas 1K>
<10 Meth C-1 100K>
IS BRITTLE TO CRUMBLY; FRACTURES FROM
11000
<50 Avg WOB 0>
<0 CO2 10K>
<10 Ethn C-2 100K>
MAX CO2 4414u
IRREGULAR TO PLANAR; CUTTINGS ARE
<0 Flare Ht. 100>
<10 Prop C-3 100K>
MAX GAS 2151u
NODULAR TO WEDGELIKE; LUSTER IS SLIGHTLY
<10 Buth C-4 100K>
EARTHY TO RESINOUS TO POLISHED; TEXTURE
<10 Pent C-5 100K>
MW IN 9.4 VIS 50 PH 9.8
IS SMOOTH TO CLAYEY; THIN STRUCTURE;
MW OUT 9.4 VIS 57 PH 9.4
GAS ASSOCIATED WITH SAMPLE.
MUD DATA @ 11048'
CHANGE SHAKER SCREENS
MW 9.4 VIS 59 PV 22 YP 22
CARBONACEOUS SHALE = DARK BROWNISH GRAY
MAX GAS 834u
API FL 6.8 GELS 9/13/18 PH 9.6
MAX GAS 845u
TO BROWNISH BLACK TO OLIVE BLACK; MODERA
CL 1400 CA 40 MBT 20.0 SOL 7.0
CG 470u
-TELY DENSE TO SLIGHTLY CRUNCHY TO VERY
24 HR MUD LOSS: 1446.1
11100
SLIGHTLY BRITTLE TENACITY; IRREGULAR TO
NIGHT TOUR
SUB-BLOCKY TO SUB-PLANAR TO EARTHY-HACKL
-Y FRACTURE; SUB-TABUALR TO SUB-NODULAR
TO SEMI-PLATY TO WEDGE LIKE CUTTINGS HAB

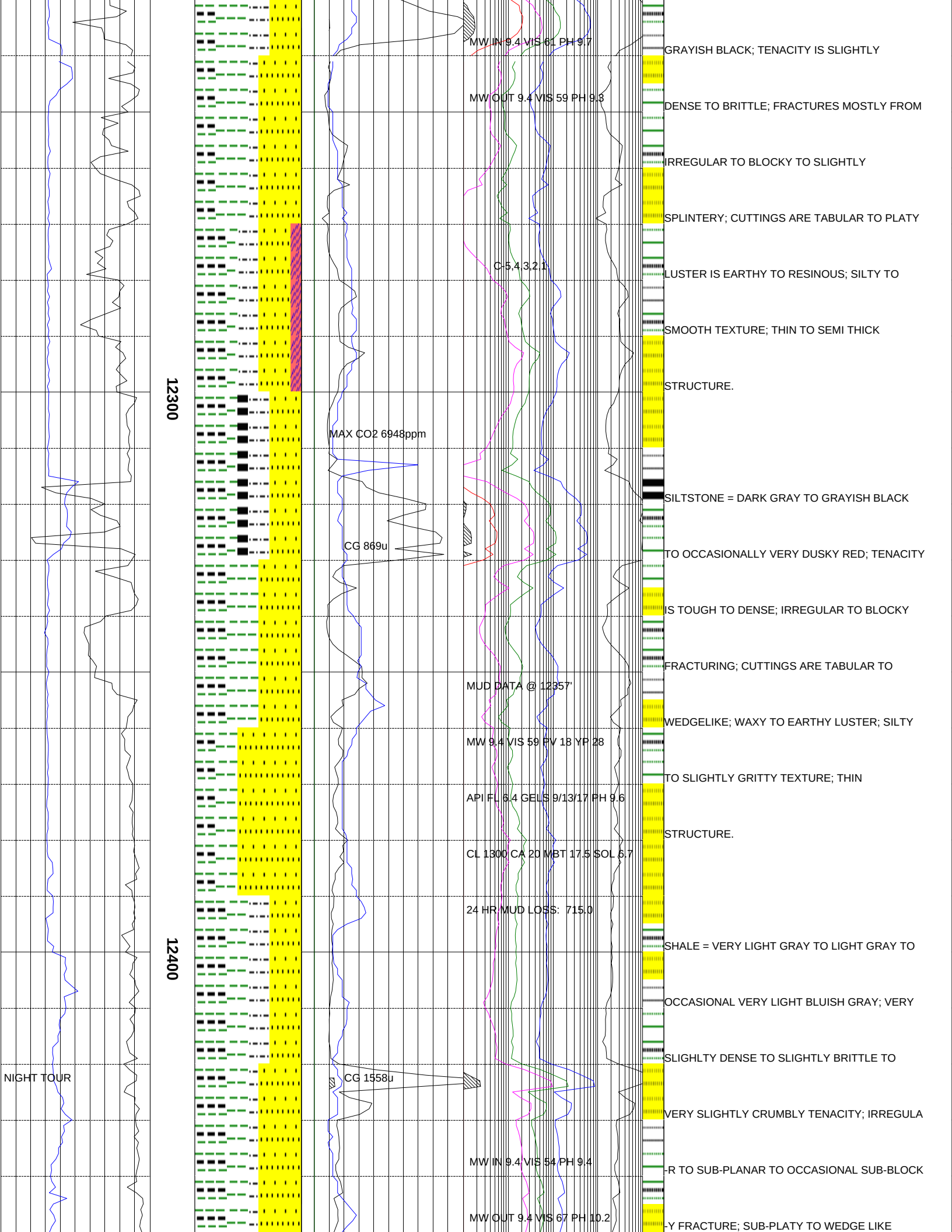

-IT; DULL TO EARTHY DULL TO OCCASIONAL
SEMI-SPARKLING LUSTER; SLIGHTLY CLAYEY
TO VERY SLIGHTLY GRITTY TEXTURE; POOR GR
MAX GAS 645u
-ADE CARBONACEOUS SHALE VISIBLE BEDDING
WITH POOR GRADE SANDSTONE AND COAL, POOR
CG 964u
GRADE SILTSTONE VISIBLE GRADING WITH POO
MAX GAS 798u
-R GRADE SANDSTONE, VERY SMALL AMOUNT OF
11200
MAX GAS 1004u
COAL VISIBLY EFFERVESCING IN SAMPLE. NO
OTHER DISTINGUISHABLE STRUCTURAL FEATURE
-S PRESENT; NO ACCESSORY MINERALS PRESEN
MW IN 9.4 VIS 60 PH 9.8
-T IN SAMPLE.
CAMEO @ 11244'
MW OUT 9.4+ VIS 59 PH 9.7
MAX GAS 1464u
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO
OCCASIONAL VERY LIGHT BLUISH GRAY; SLIGH
MAX GAS 1347u
CG 1472u
-TLY DENSE TO SLIGHTLY CRUNCHY TO BRITTL
-E TO OCCASIONAL CRUMBLY TENACITY; IRREG
MAX GAS 791u
11300
-ULAR TO SUB-BLOCKY TO EARTHY FRACTURE;
MAX GAS 1499u
OCCASIONAL MASSIVE TO WEDGE LIKE TO ELON
-GATED CUTTINGS HABIT; DULL TO EARTHY DU
-LL TO OCCASIONAL SEMI-FROSTED TO SEMI-
8/13/2010
WAXY LSUTER; MODERATELY SMOOTH TO SLIGHT
MAX GAS 675u
-LY SILTY TEXTURE; 30% OF SAMPLE CONSIST

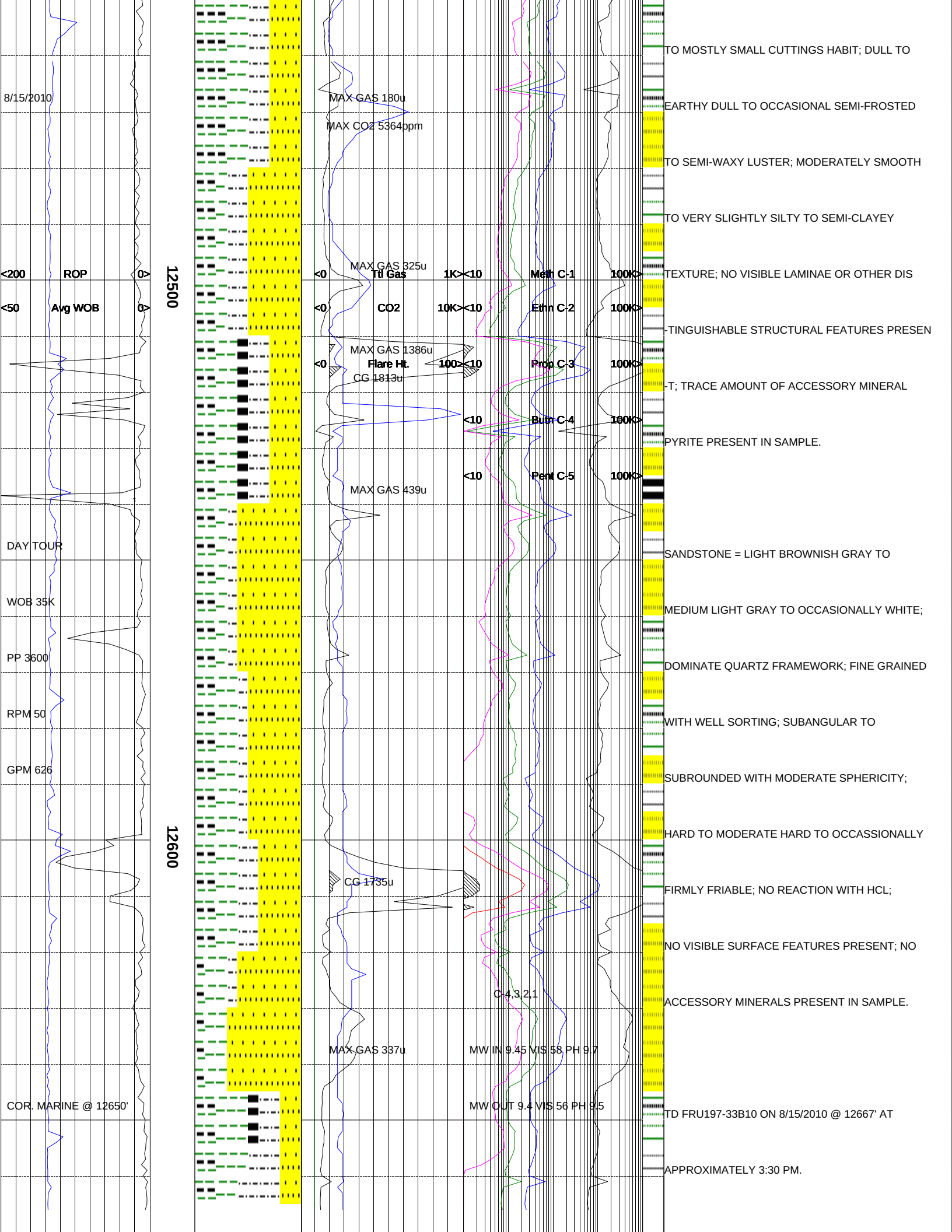

11400
11500
DAY TOUR
ROLLINS @ 11485'
<200 ROP 0>
<50 Avg WOB 0>
WOB 32K
PP 3650
RPM 67
GPM 652
MAX GAS 639u
CG 1103u
C-4,3,2,1
MAX GAS 838u
MAX GAS 787u
MW IN 9.4 VIS 59 PH 9.7
MW OUT 9.4 VIS 59 PH 9.5
CG 1675u
C-5,4,3,2,1
<0 Ttl Gas 1K><10 Meth C-1 100K>
<0 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
<10 Pent C-5 100K>
-ED OF COAL WHICH WAS VISIBLY EFFERVESCI
-NG, VERY THIN COAL LAMINAE VISIBLE IN
CARBONACEOUS SHALE CUTTING, NO OTHER
DISTINGUISHABLE STRUCTURAL FEATURES PRES
-ENT; NO ACCESSORY MINERALS VISIBLY PRES
-ENT IN SAMPLE.
SILTSTONE = MEDIUM DARK GRAY TO BROWNISH
GRAY TO OLIVE GRAY; TENACITY IS DENSE TO
SLIGHTLY BRITTLE; FRACTURES FROM
IRREGULAR TO BLOCKY TO OCCASIONALLY
SLIGHTLY PLANAR; CUTINGS ARE WEDGELIKE
TO TABULAR; FROSTED TO EARTHY TO WAXY
LUSTER; TEXTURE IS GRITTY TO SILTY; THIN
STRUCTURE.
SANDSTONE = WHITE TO VERY LIGHT GRAY TO
TRANSLUCENT; DOMINATE QUARTZ FRAMEWORK
WITH TRACE AMOUNTS OF DARK GRAY LITHIC
CLASTS; FINE GRAINED WITH WELL SORTING;
SUBANGULAR WITH LOW TO MODERATE
SPHERICITY; FIRMLY FRIABLE TO MODERATE


11600
11700
TRANSCOZZETTE @ 11692'
COZZETTE @ 11739'
C-5,4,3,2,1
MW IN 9.4 VIS 60 PH 9.6
MW OUT 9.4 VIS 65 PH 9.4
MAX GAS 345u
CG 816u
MAX GAS 868u
CG 1310u
MAX GAS 1829u
HARDNESS; ABUNDENT LOOSE GRAINS IN
SAMPLE; VERY SLIGHT REACTION WITH HCL
SUGGESTS MOSTLY SILICA CEMENT; NO
VISIBLE BEDDING; CONTAINS SOME
CARBONACEOUS SHALE INTERBEDDED.
SHALE = MEDIUM GRAY TO LIGHT OLIVE BROWN
TO OCCASIONALLY DUSKY RED; TENACITY IS
DENSE TO BRITLE; FRACTURES FROM PLANAR
TO BLOCKY TO IRREGULAR; CUTTINGS DISPLAY
A PLATY TO TABULAR TO OCCASIONALLY FLAKY
HABIT; EARTHY TO DULL LUSTER; TEXTURE IS
SMOOTH TO SILTY; THIN STRUCTURE.
COAL = BLACK TO GRAYISH BLACK; TENACITY
IS VERY BRITTLE TO CRUMBLY; FRACTURES
FROM BLOCKY TO SEMI PLANAR TO IRREGULAR;
CUTTINGS ARE NODULAR; POLISHED TO
RESINOUS TO SLIGHTLY EARTHY LUSTER;
SMOOTH TO CLAYEY TEXTURE; THIN STRUCTURE
INTERBEDDED WITH CARBONACEOUS SHALE AND
SILTSTONE AND SANDSTONE.


11800
11900
12000
NIGHT TOUR
8/14/2010
MUD DATA @ 11833'
MW 9.4 VIS 60 PV 21 YP 22
API FL 6.4 GELS 10/15/21 PH 10.0
CL 1300 CA 40 MBT 20.0 SOL 7.0
24 HR MUD LOSS: 772.8
MAX GAS 888u
CG 904u
MAX GAS 1418u
CG 1196u
C-3,2,1
<200 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
<0 CO2 10K><10 Ethn C-2 100K>
CARBONACEOUS SHALE = BROWNISH BLACK TO
GRAYISH BLACK; TENACITY IS BRITTLE TO CR
-UNCHY TO SEMI-DENSE; SUB-TABULAR TO SUB
-NODULAR TO OCASSIONAL WEDGE LIKE TO SEM
-I-PLATY CUTTINGS HABIT; DULL TO EARTHY
DULL TO OCCASIONAL SEMI-SPARKLING LUSTER
; POOR GRADE SANDSTONE VISIBLE BEDDING
WITH POOR GRADE CARBONACEOUS SHALE CUTTI
-NG, VERY THIN COAL LAMINAE VISIBLE IN
SHALE CUTTING, NO OTHER DISTINGUISHABLE
STRUCTRUAL FEATURES PRESENT; TRACE AMOUN
-TS OF ACCESSORY MINERAL PYRITE PRESENT
IN SAMPLE.
SILTSTONE = LIGHT GRAY TO LIGHT BROWNISH
-GRAY TO VERY LIGHT BROWNISH GRAY; VERY
SLIGHTLY DENSE TO SEMI-BRITTLE TO SEMI-
CRUNCHY TENACITY; IRREGULAR TO SUB-PLANA
-R TO EARTHY-HACKLY FRACTURE; SUB-TABULA
-R TO SUB-NODULAR TO SEMI-PLATY CUTTINGS
HABIT; DULL TO EARTHY DULL TO OCCASIONAL


CORC. COASTAL @ 12042'
DAY TOUR
WOB 33K
PP 3600
RPM 50
GPM 650
12100
12200
MAX CO2 3464ppm
MW IN 9.4 VIS 53 PH 9.5
CG 214u
MW OUT 9.4 VIS 58 PH 9.5
MAX GAS 272u
C-4,3,2,1
CALIB. GAS EQUIPMENT
CG 966u
MAX GAS 934u
CG 1291u
SEMI-SPARKLING LUSTER; VERY SLIGHTLY
CLAYEY TO VERY SLIGHTLY GRITTY TEXTURE;
POOR GRADE SILTSTONE VISIBLE GRADING WIT
-H POOR GRADE SANDSTONE, NO OTHER STRUCT
-URAL FEATURES PRESENT; ACCESSORY MINERA
-L PYRITE PRESENT IN SAMPLE.
SANDSTONE = MEDIUM GRAY TO BROWNISH GRAY
TO MODERATE OLIVE BROWN; QUARTZ
FRAMEWORK WITH APPROXIMATELY 10%
BROWNISH BLACK LITHIC CLASTS INTERBEDDED
FINE TO MEDIUM SIZED GRAINS WITH FAIR
SORTING; SUBANGULAR TO SUBROUNDED WITH
MODERATE SPHERICITY; HARD TO MODERATE
HARDNESS; NO REACTION WITH HCL SUGGESTS
SILICEOUS CEMENT; GRAIN SUPPORTED;
ABUNDENT LOOSE GRAINS IN SAMPLE; NO
VISIBLE BEDDING STRUCTURE; CONTAINS SOME
CARONACEOUS SHALE AND SHALE INTERBEDDED;
GRADING INTO SILTSTONE.
CARBONACEOUS SHALE = BROWNISH BLACK TO


MW IN 9.4 VIS 61 PH 9.7
MW OUT 9.4 VIS 59 PH 9.3
C-5,4 3,2 1'
12300
MAX CO2 6948ppm
CG 869u
MUD DATA @ 12357'
MW 9.4 VIS 59 PV 18 YP 28
API FL 6.4 GELS 9/13/17 PH 9.6
CL 1300 CA 20 MBT 17.5 SOL 6.7
24 HR MUD LOSS: 715.0
12400
NIGHT TOUR
CG 1558u
MW IN 9.4 VIS 54 PH 9.4
MW OUT 9.4 VIS 67 PH 10.2
GRAYISH BLACK; TENACITY IS SLIGHTLY
DENSE TO BRITTLE; FRACTURES MOSTLY FROM
IRREGULAR TO BLOCKY TO SLIGHTLY
SPLINTERY; CUTTINGS ARE TABULAR TO PLATY
LUSTER IS EARTHY TO RESINOUS; SILTY TO
SMOOTH TEXTURE; THIN TO SEMI THICK
STRUCTURE.
SILTSTONE = DARK GRAY TO GRAYISH BLACK
TO OCCASIONALLY VERY DUSKY RED; TENACITY
IS TOUGH TO DENSE; IRREGULAR TO BLOCKY
FRACTURING; CUTTINGS ARE TABULAR TO
WEDGELIKE; WAXY TO EARTHY LUSTER; SILTY
TO SLIGHTLY GRITTY TEXTURE; THIN
STRUCTURE.
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO
OCCASIONAL VERY LIGHT BLUISH GRAY; VERY
SLIGHLTY DENSE TO SLIGHTLY BRITTLE TO
VERY SLIGHTLY CRUMBLY TENACITY; IRREGULA
-R TO SUB-PLANAR TO OCCASIONAL SUB-BLOCK
-Y FRACTURE; SUB-PLATY TO WEDGE LIKE


8/15/2010
<200 ROP 0>
<50 Avg WOB 0>
12500
DAY TOUR
WOB 35K
PP 3600
RPM 50
GPM 626
12600
COR. MARINE @ 12650'
MAX GAS 180u
MAX CO2 5364ppm
MAX GAS 325u
<0 Ttl Gas 1K><10
<0 CO2 10K><10
MAX GAS 1386u
<0 Flare Ht. 100><10
CG 1813u
MAX GAS 439u
CG 1735u
MAX GAS 337u
Meth C-1 100K>
Ethn C-2 100K>
Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
C-4,3,2,1
MW IN 9.45 VIS 58 PH 9.7
MW OUT 9.4 VIS 56 PH 9.5
TO MOSTLY SMALL CUTTINGS HABIT; DULL TO
EARTHY DULL TO OCCASIONAL SEMI-FROSTED
TO SEMI-WAXY LUSTER; MODERATELY SMOOTH
TO VERY SLIGHTLY SILTY TO SEMI-CLAYEY
TEXTURE; NO VISIBLE LAMINAE OR OTHER DIS
-TINGUISHABLE STRUCTURAL FEATURES PRESEN
-T; TRACE AMOUNT OF ACCESSORY MINERAL
PYRITE PRESENT IN SAMPLE.
SANDSTONE = LIGHT BROWNISH GRAY TO
MEDIUM LIGHT GRAY TO OCCASIONALLY WHITE;
DOMINATE QUARTZ FRAMEWORK; FINE GRAINED
WITH WELL SORTING; SUBANGULAR TO
SUBROUNDED WITH MODERATE SPHERICITY;
HARD TO MODERATE HARD TO OCCASSIONALLY
FIRMLY FRIABLE; NO REACTION WITH HCL;
NO VISIBLE SURFACE FEATURES PRESENT; NO
ACCESSORY MINERALS PRESENT IN SAMPLE.
TD FRU197-33B10 ON 8/15/2010 @ 12667' AT
APPROXIMATELY 3:30 PM.