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 Corporation
WELL	PCU 296-5A04
FIELD	Piceance Creek
REGION	Rockies
COORDINATES	39.911931000
	108.198593000
ELEVATION	7295.8'
COUNTY, STATE	Rio Blanco, CO
API INDEX	051031124500
SPUD DATE	11/09/2009
CONTRACTOR	Helmerich and Payne
CO. REP.	Candice Curtis/Mark Hudon
RIG/TYPE	Flex 4/Rig 321
LOGGING UNIT	031
GEOLOGISTS	Chad Record, Mike Franco,
	Bart Smelser, Mark Gross
ADD. PERSONS	Mickey Piper,
	Robert McCane
CO. GEOLOGIST	Chris Alba

LOG INTERVAL

DEPTHS:	4705'	**TO**	13757'
DATES:	10/31/2010	**TO**	12/08/2010
SCALE:	5" = 100'		

MUD TYPES

Water Based	**TO**	13757'
	TO	
	TO	
	TO	

CASING DATA

16"	**AT**	150'
10.75"	**AT**	4616'
7.00"	**AT**	9992'
4.50"	**AT**	13735'

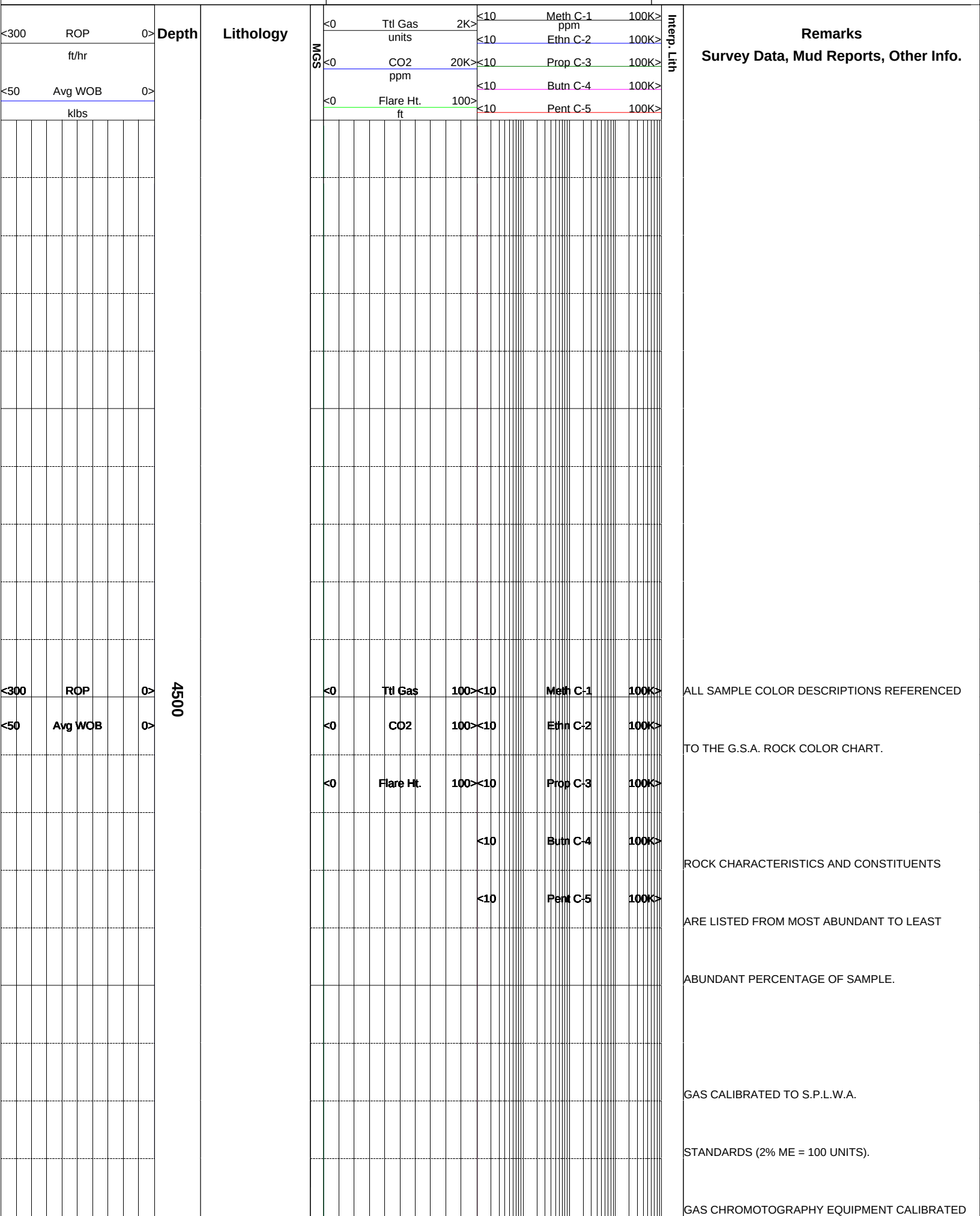
HOLE SIZE

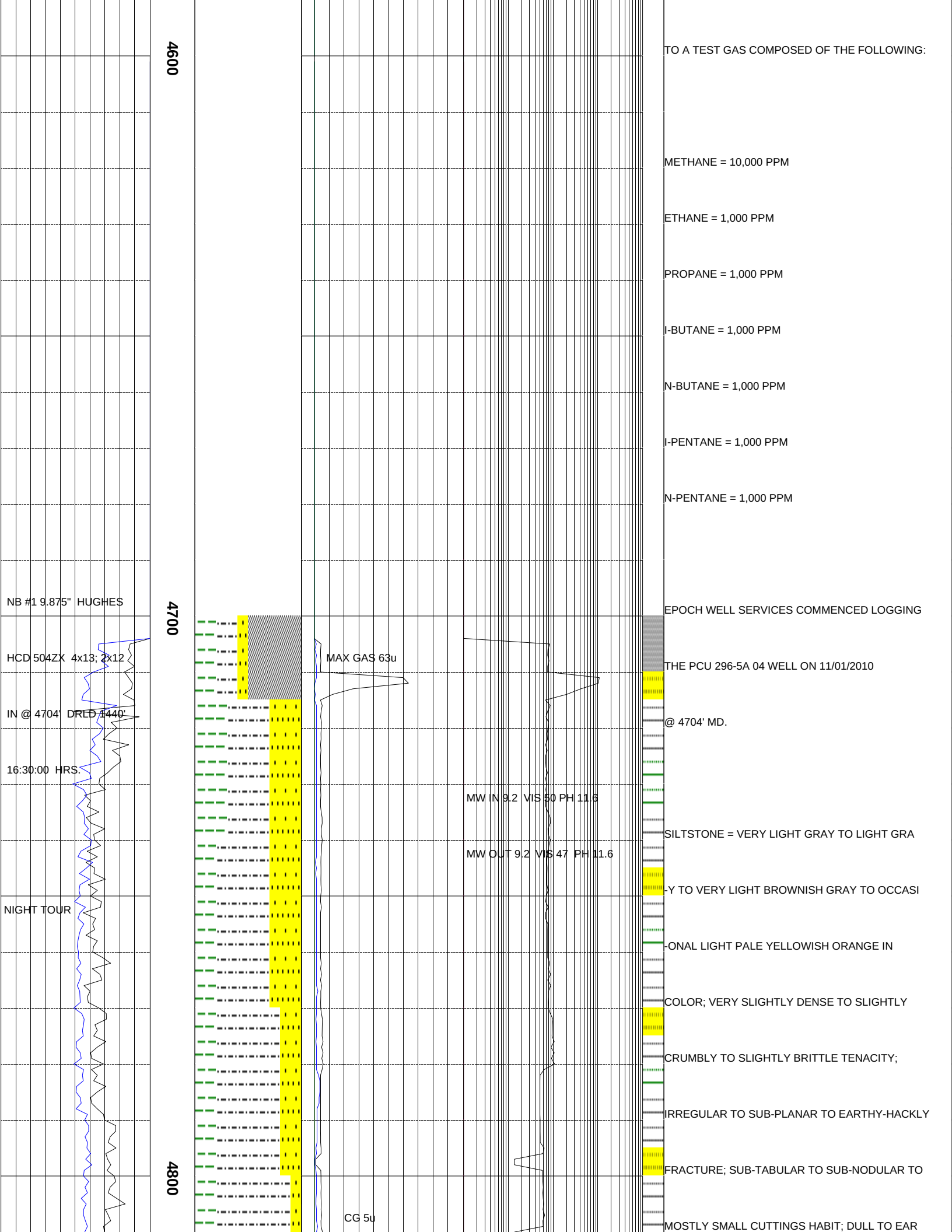
14.75"	**TO**	4704'
9.875"	**TO**	10004'
6.125"	**TO**	13757'
	TO	

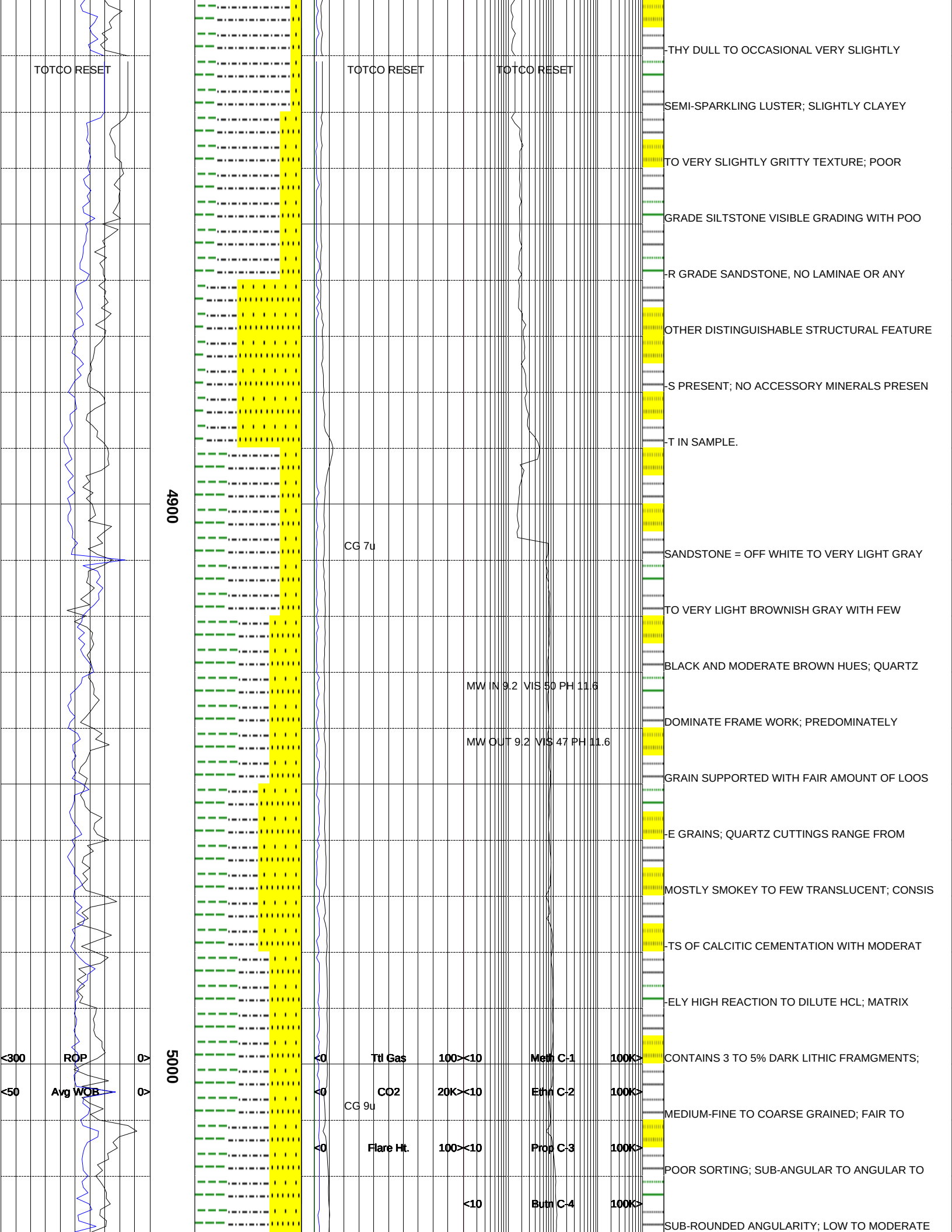
ABBREVIATIONS

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


<300 ROP 0>
ft/hr
<50 Avg WOB 0>
klbs
Depth
Lithology
MGS
<0 Ttl Gas 2K>
units
<0 CO2 20K>
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
4500
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


4600
4700
4800
NB #1 9.875" HUGHES
HCD 504ZX 4x13; 2x12
IN @ 4704' DRLD 1440'
16:30:00 HRS.
NIGHT TOUR
MAX GAS 63u
CG 5u
MW IN 9.2 VIS 50 PH 11.6
MW OUT 9.2 VIS 47 PH 11.6
TO A TEST GAS COMPOSED OF THE FOLLOWING:
METHANE = 10,000 PPM
ETHANE = 1,000 PPM
PROPANE = 1,000 PPM
I-BUTANE = 1,000 PPM
N-BUTANE = 1,000 PPM
I-PENTANE = 1,000 PPM
N-PENTANE = 1,000 PPM
EPOCH WELL SERVICES COMMENCED LOGGING
THE PCU 296-5A 04 WELL ON 11/01/2010
@ 4704' MD.
SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
-Y TO VERY LIGHT BROWNISH GRAY TO OCCASI
-ONAL LIGHT PALE YELLOWISH ORANGE IN
COLOR; VERY SLIGHTLY DENSE TO SLIGHTLY
CRUMBLY TO SLIGHTLY BRITTLE TENACITY;
IRREGULAR TO SUB-PLANAR TO EARTHY-HACKLY
FRACTURE; SUB-TABULAR TO SUB-NODULAR TO
MOSTLY SMALL CUTTINGS HABIT; DULL TO EAR



-THY DULL TO OCCASIONAL VERY SLIGHTLY

SEMI-SPARKLING LUSTER; SLIGHTLY CLAYEY

TO VERY SLIGHTLY GRITTY TEXTURE; POOR

GRADE SILTSTONE VISIBLE GRADING WITH POO

-R GRADE SANDSTONE, NO LAMINAE OR ANY

OTHER DISTINGUISHABLE STRUCTURAL FEATURE

-S PRESENT; NO ACCESSORY MINERALS PRESEN

-T IN SAMPLE.

SANDSTONE = OFF WHITE TO VERY LIGHT GRAY

TO VERY LIGHT BROWNISH GRAY WITH FEW

BLACK AND MODERATE BROWN HUES; QUARTZ

DOMINATE FRAME WORK; PREDOMINATELY

GRAIN SUPPORTED WITH FAIR AMOUNT OF LOOS

-E GRAINS; QUARTZ CUTTINGS RANGE FROM

MOSTLY SMOKEY TO FEW TRANSLUCENT; CONSIS

-TS OF CALCITIC CEMENTATION WITH MODERAT

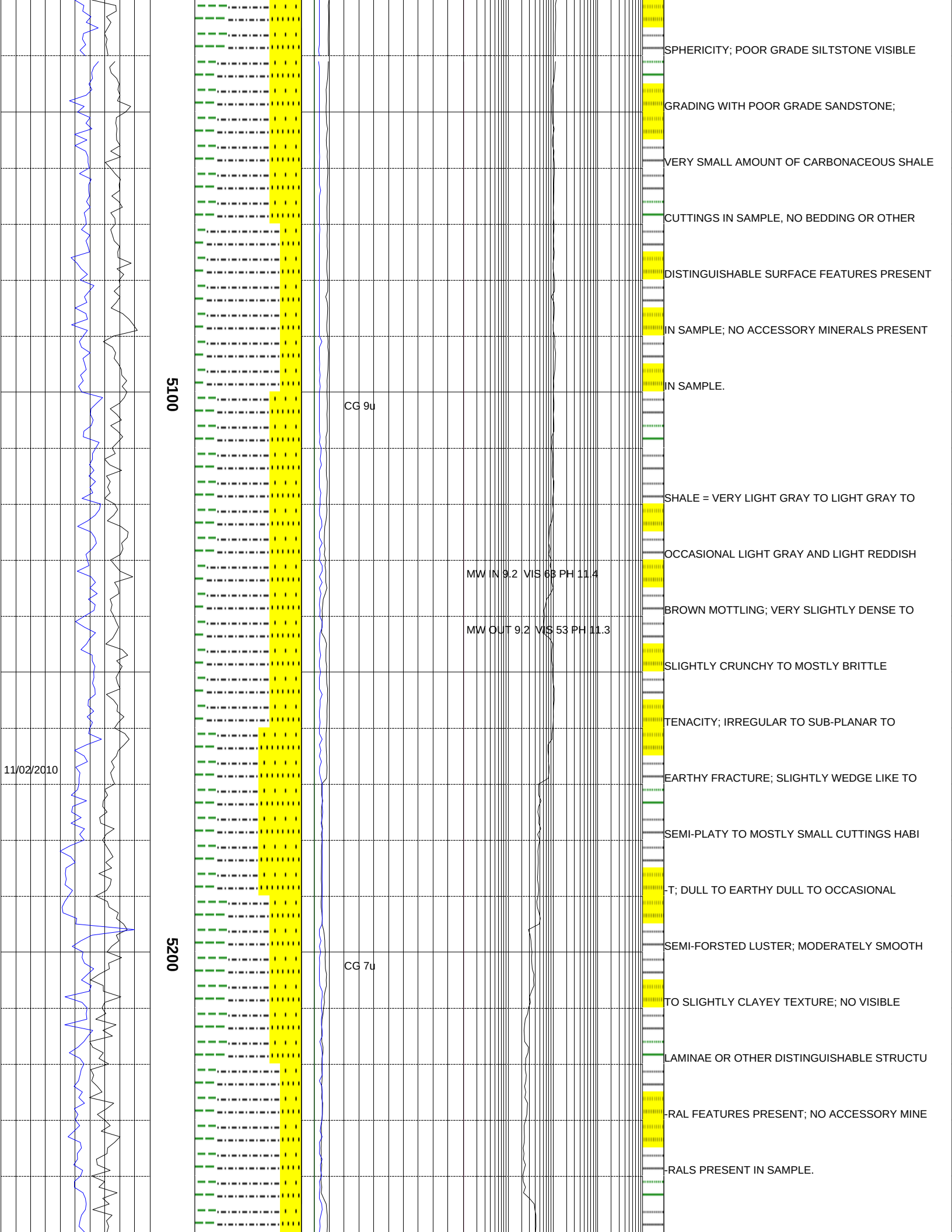
-ELY HIGH REACTION TO DILUTE HCL; MATRIX

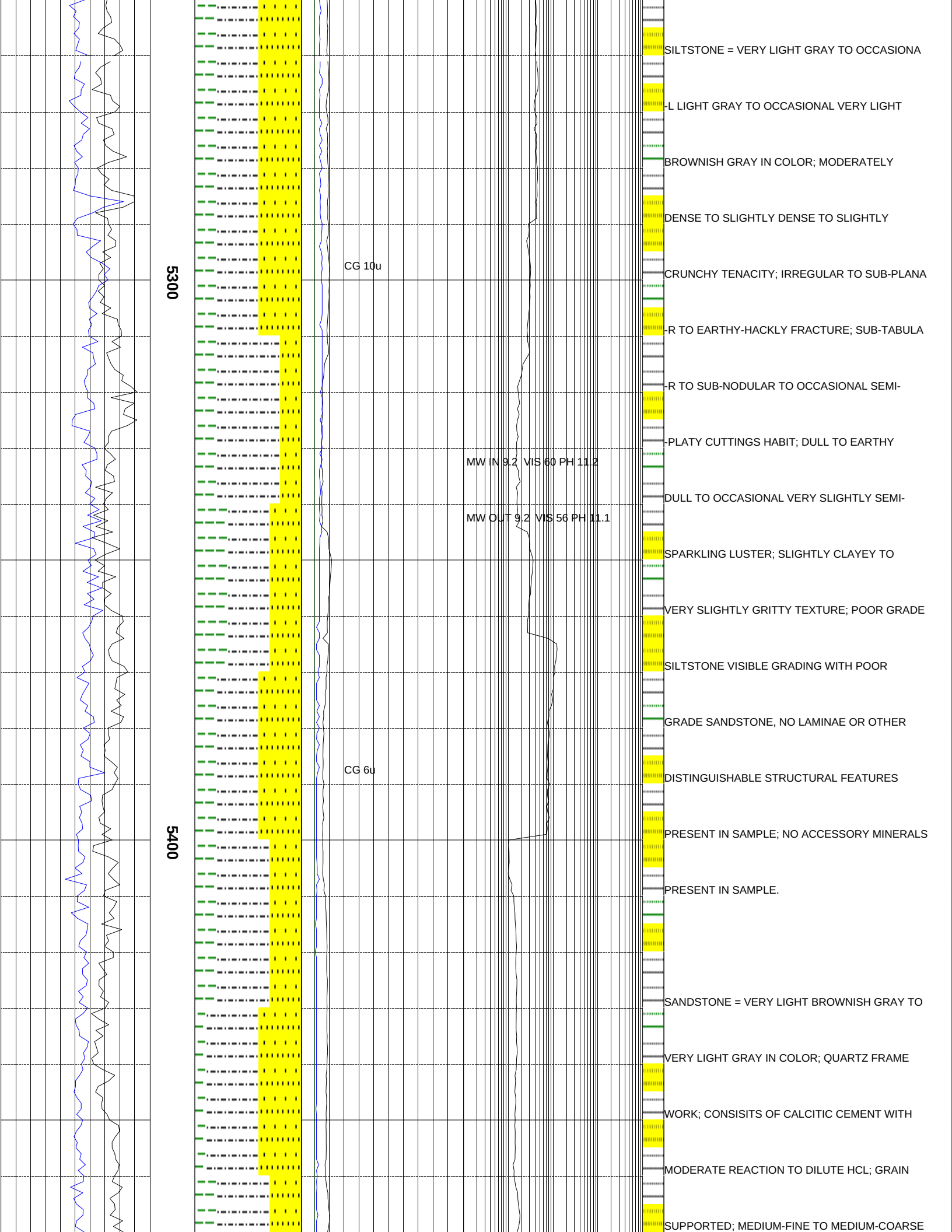
CONTAINS 3 TO 5% DARK LITHIC FRAMGMENTS;

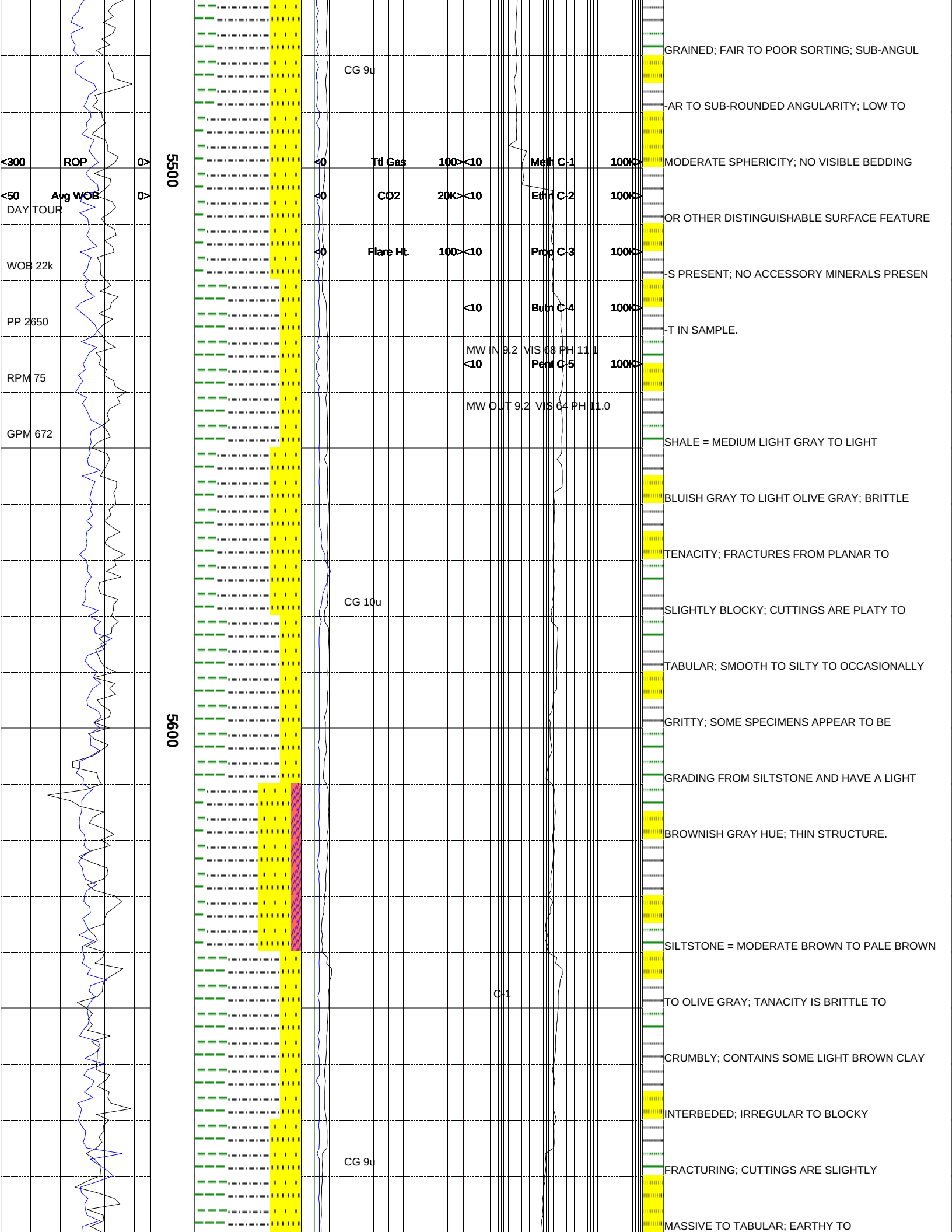
MEDIUM-FINE TO COARSE GRAINED; FAIR TO

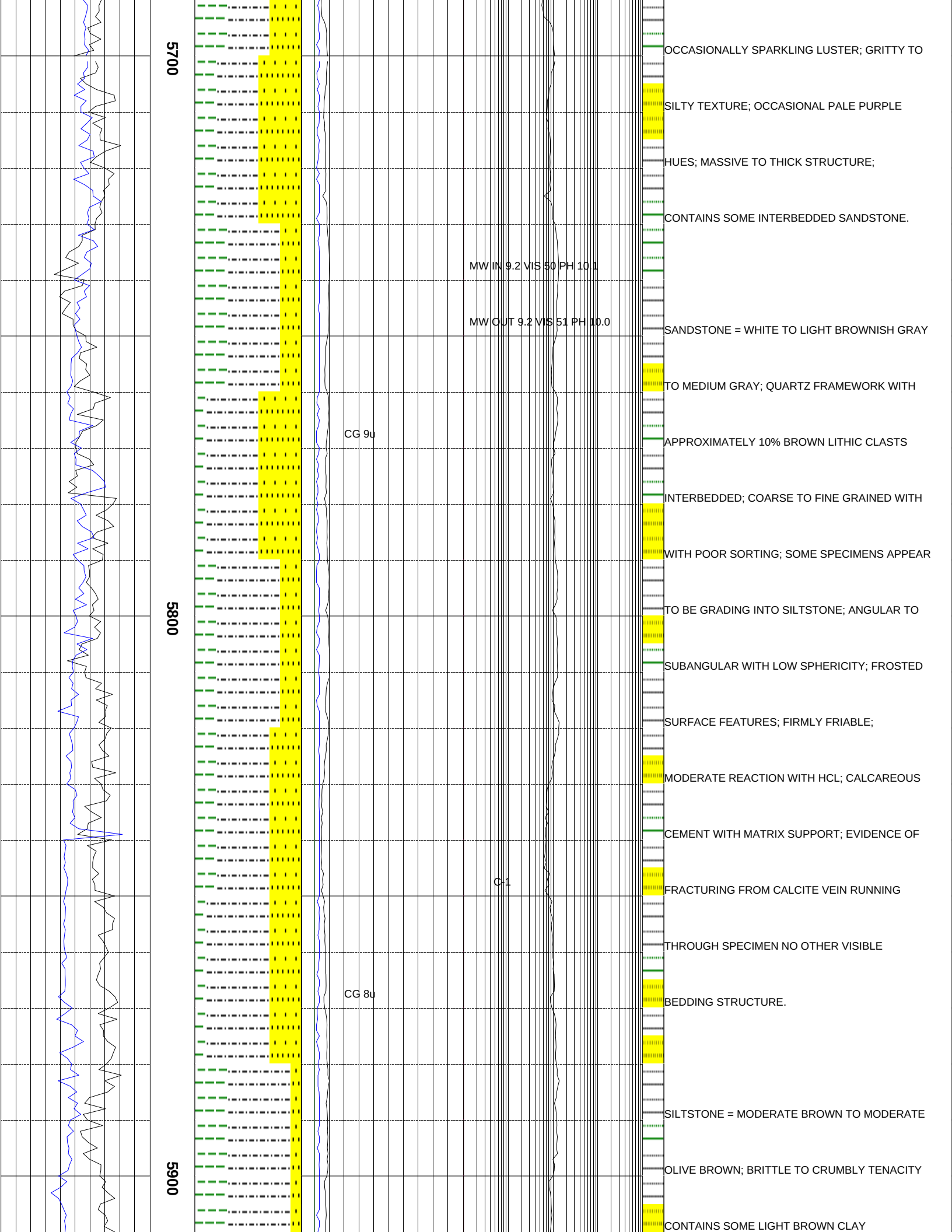
POOR SORTING; SUB-ANGULAR TO ANGULAR TO

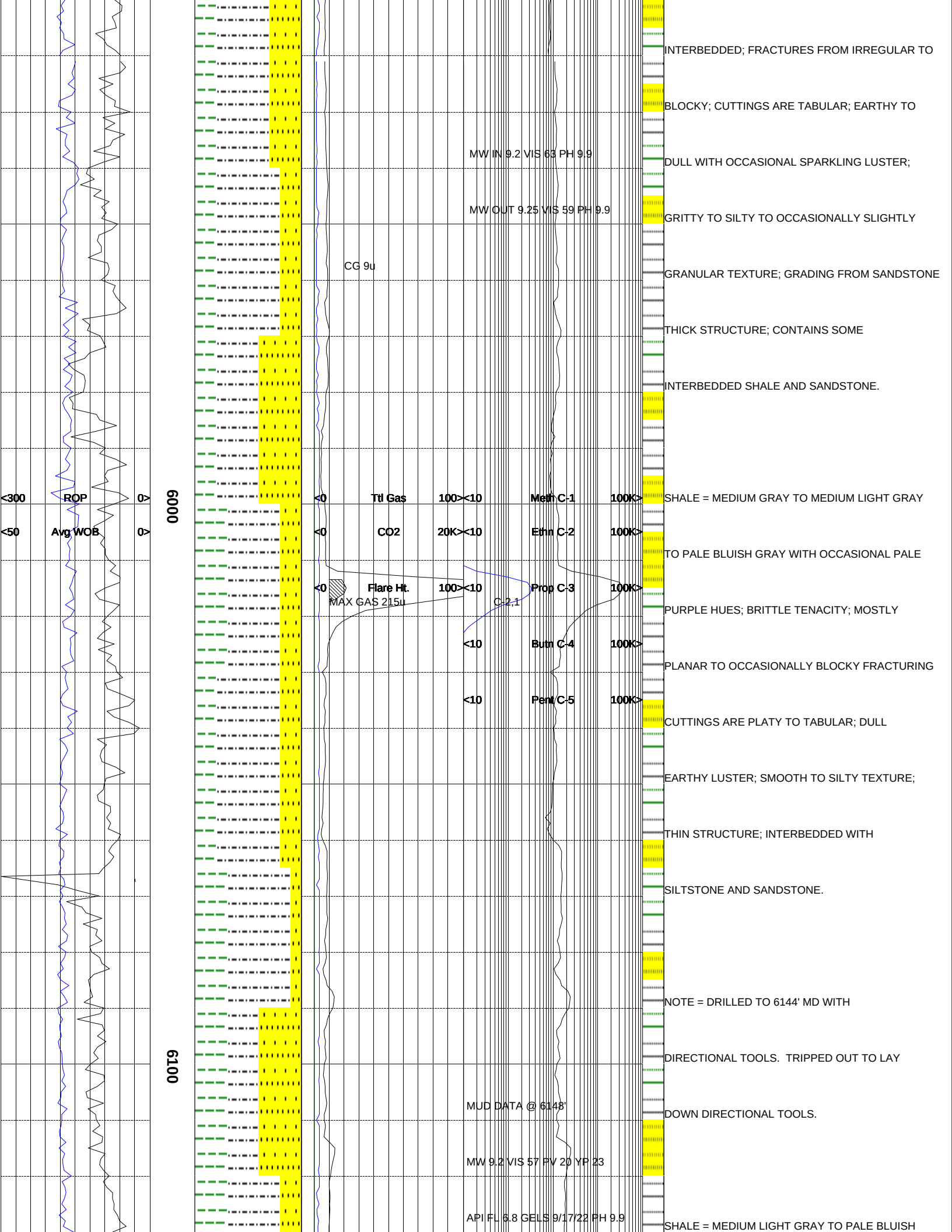
SUB-ROUNDED ANGULARITY; LOW TO MODERATE

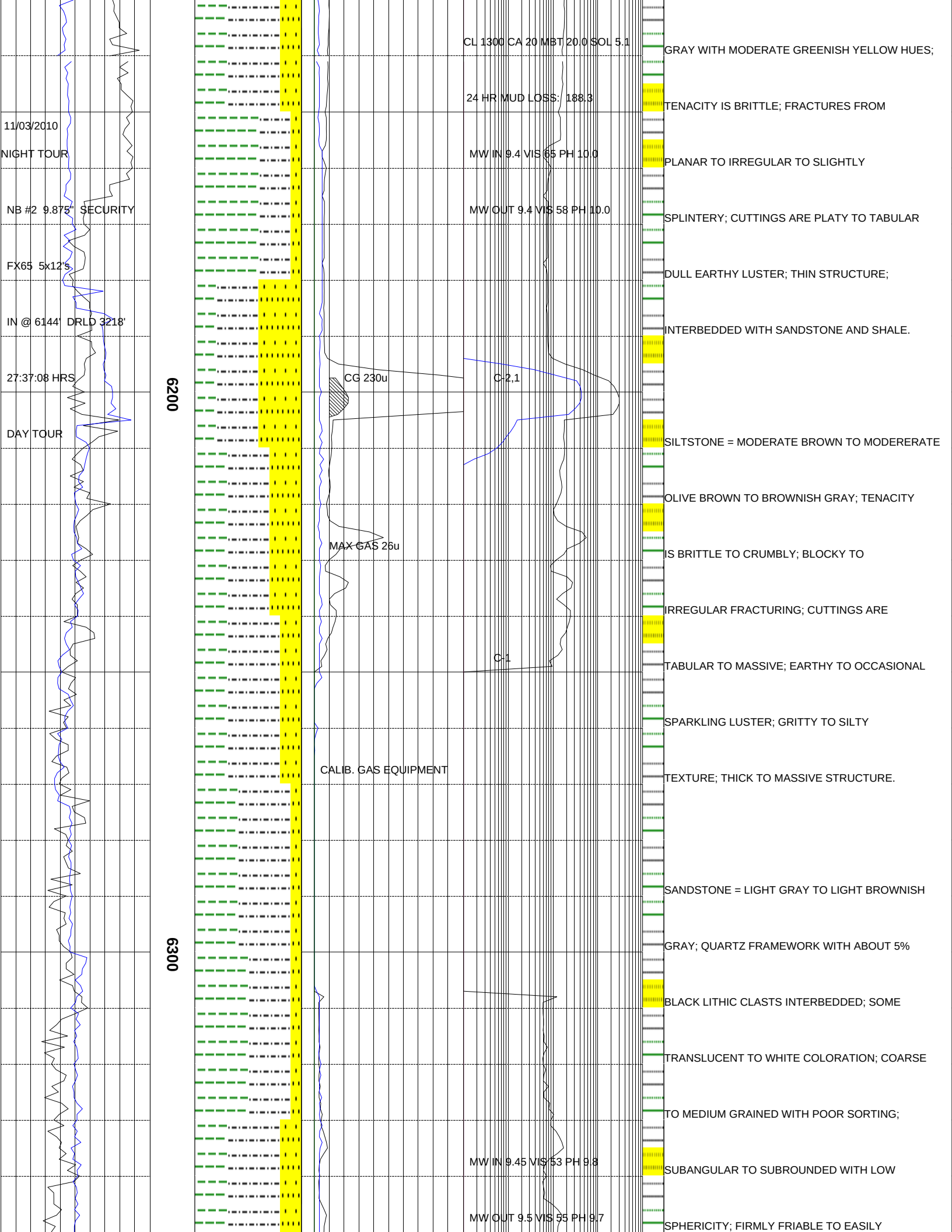

SPHERICITY; POOR GRADE SILTSTONE VISIBLE
GRADING WITH POOR GRADE SANDSTONE;
VERY SMALL AMOUNT OF CARBONACEOUS SHALE
CUTTINGS IN SAMPLE, NO BEDDING OR OTHER
DISTINGUISHABLE SURFACE FEATURES PRESENT
IN SAMPLE; NO ACCESSORY MINERALS PRESENT
IN SAMPLE.
5100
CG 9u
SHALE = VERY LIGHT GRAY TO LIGHT GRAY TO
OCCASIONAL LIGHT GRAY AND LIGHT REDDISH
MW IN 9.2 VIS 63 PH 11.4
BROWN MOTTLING; VERY SLIGHTLY DENSE TO
MW OUT 9.2 VIS 53 PH 11.3
SLIGHTLY CRUNCHY TO MOSTLY BRITTLE
TENACITY; IRREGULAR TO SUB-PLANAR TO
11/02/2010
EARTHY FRACTURE; SLIGHTLY WEDGE LIKE TO
SEMI-PLATY TO MOSTLY SMALL CUTTINGS HABI
-T; DULL TO EARTHY DULL TO OCCASIONAL
SEMI-FORSTED LUSTER; MODERATELY SMOOTH
5200
CG 7u
TO SLIGHTLY CLAYEY TEXTURE; NO VISIBLE
LAMINAE OR OTHER DISTINGUISHABLE STRUCTU
-RAL FEATURES PRESENT; NO ACCESSORY MINE
-RALS PRESENT IN SAMPLE.

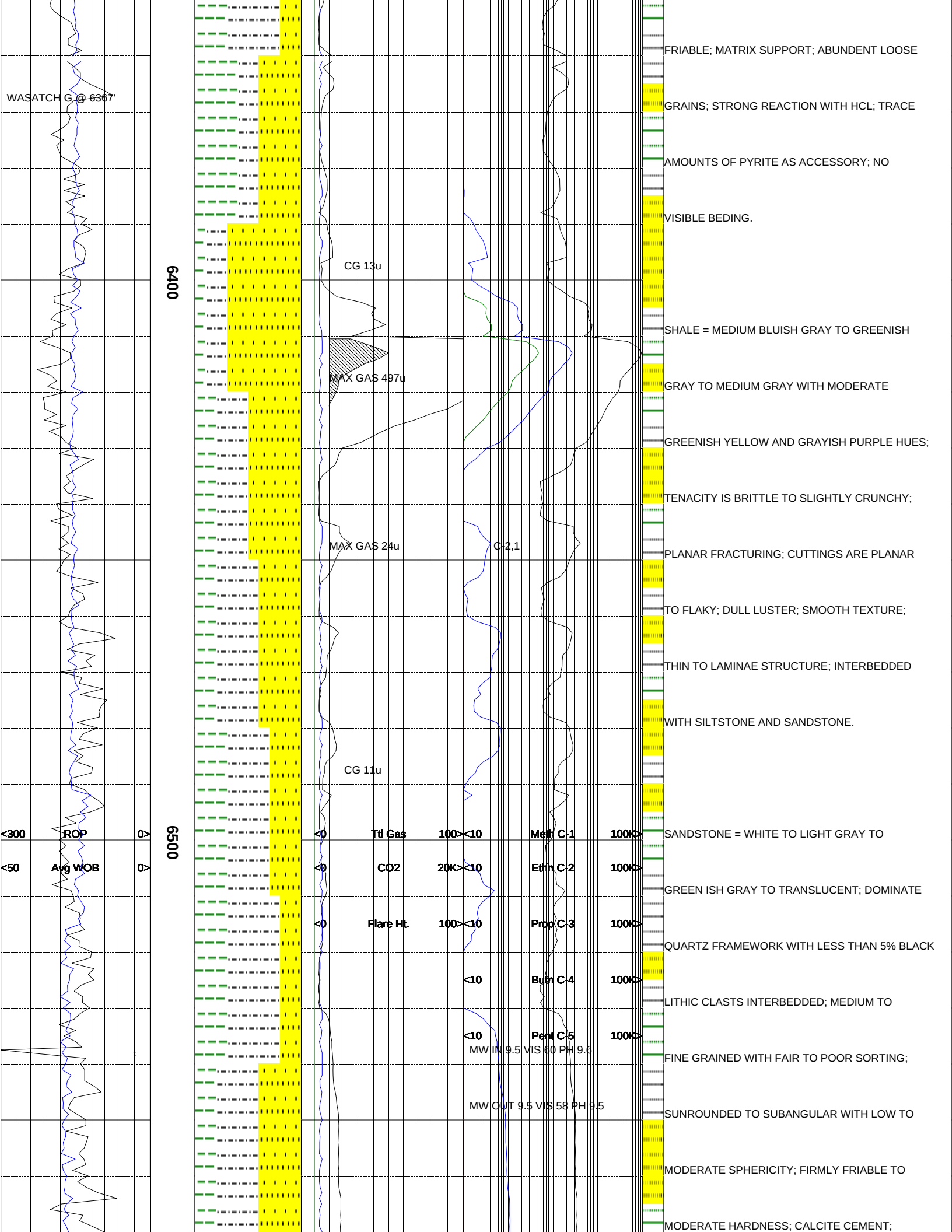

5300
5400
CG 10u
CG 6u
MW IN 9.2 VIS 60 PH 11.2
MW OUT 9.2 VIS 56 PH 11.1
SILTSTONE = VERY LIGHT GRAY TO OCCASIONA
-L LIGHT GRAY TO OCCASIONAL VERY LIGHT
BROWNISH GRAY IN COLOR; MODERATELY
DENSE TO SLIGHTLY DENSE TO SLIGHTLY
CRUNCHY TENACITY; IRREGULAR TO SUB-PLANA
-R TO EARTHY-HACKLY FRACTURE; SUB-TABULA
-R TO SUB-NODULAR TO OCCASIONAL SEMI-
-PLATY CUTTINGS HABIT; DULL TO EARTHY
DULL TO OCCASIONAL VERY SLIGHTLY SEMI-
SPARKLING LUSTER; SLIGHTLY CLAYEY TO
VERY SLIGHTLY GRITTY TEXTURE; POOR GRADE
SILTSTONE VISIBLE GRADING WITH POOR
GRADE SANDSTONE, NO LAMINAE OR OTHER
DISTINGUISHABLE STRUCTURAL FEATURES
PRESENT IN SAMPLE; NO ACCESSORY MINERALS
PRESENT IN SAMPLE.
SANDSTONE = VERY LIGHT BROWNISH GRAY TO
VERY LIGHT GRAY IN COLOR; QUARTZ FRAME
WORK; CONSISITS OF CALCITIC CEMENT WITH
MODERATE REACTION TO DILUTE HCL; GRAIN
SUPPORTED; MEDIUM-FINE TO MEDIUM-COARSE

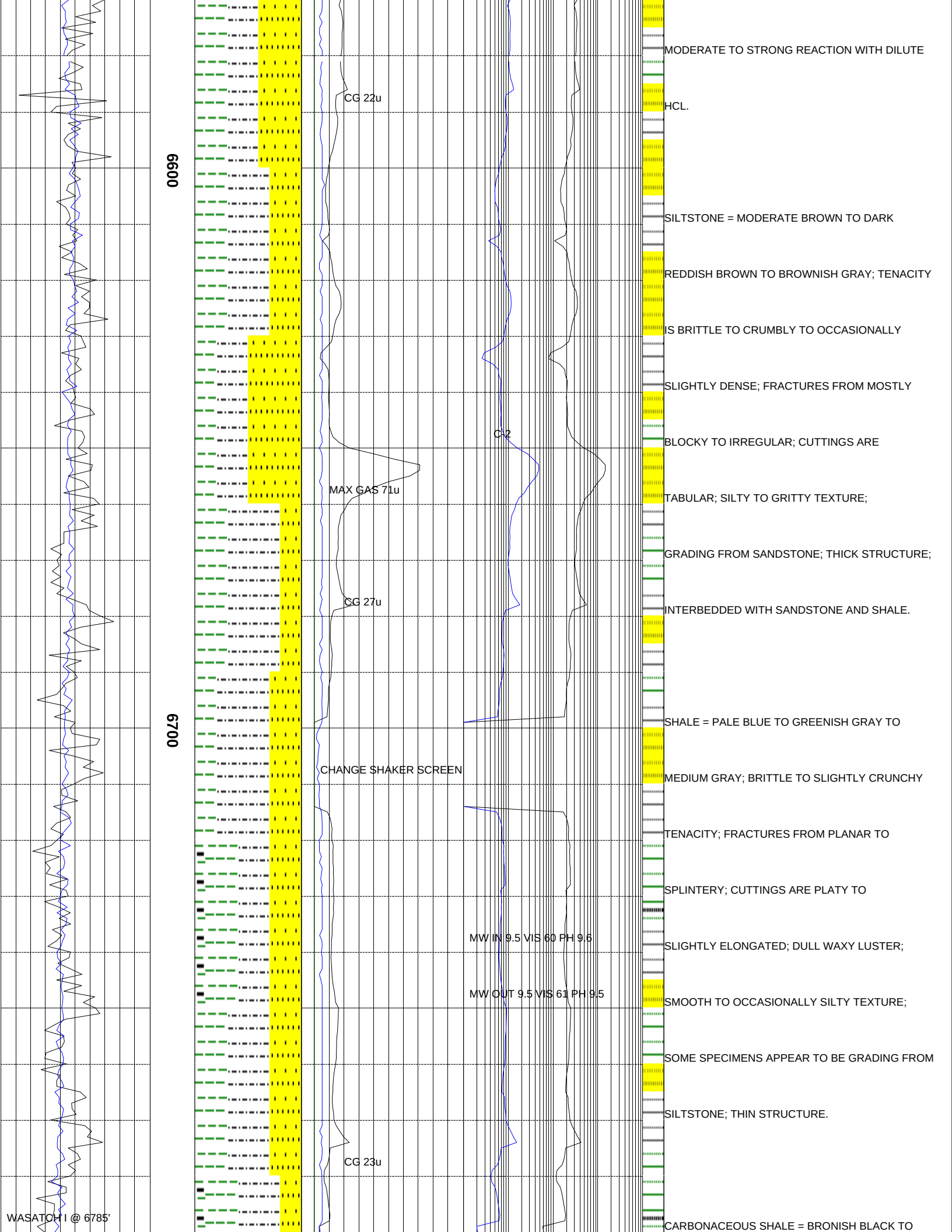

<300 ROP 0>
<50 Avg WOB 0>
DAY TOUR
WOB 22k
PP 2650
RPM 75
GPM 672
5500
5600
<0 Ttl Gas 100><10 Meth C-1 100K>
<0 CO2 20K><10 Eth C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buta C-4 100K>
MW IN 9.2 VIS 68 PH 11.1
<10 Pent C-5 100K>
MW OUT 9.2 VIS 64 PH 11.0
CG 9u
CG 10u
C-1
CG 9u
GRAINED; FAIR TO POOR SORTING; SUB-ANGUL
-AR TO SUB-ROUNDED ANGULARITY; LOW TO
MODERATE SPHERICITY; NO VISIBLE BEDDING
OR OTHER DISTINGUISHABLE SURFACE FEATURE
-S PRESENT; NO ACCESSORY MINERALS PRESEN
-T IN SAMPLE.
SHALE = MEDIUM LIGHT GRAY TO LIGHT
BLUISH GRAY TO LIGHT OLIVE GRAY; BRITTLE
TENACITY; FRACTURES FROM PLANAR TO
SLIGHTLY BLOCKY; CUTTINGS ARE PLATY TO
TABULAR; SMOOTH TO SILTY TO OCCASIONALLY
GRITTY; SOME SPECIMENS APPEAR TO BE
GRADING FROM SILTSTONE AND HAVE A LIGHT
BROWNISH GRAY HUE; THIN STRUCTURE.
SILTSTONE = MODERATE BROWN TO PALE BROWN
TO OLIVE GRAY; TANACITY IS BRITTLE TO
CRUMBLY; CONTAINS SOME LIGHT BROWN CLAY
INTERBEDED; IRREGULAR TO BLOCKY
FRACTURING; CUTTINGS ARE SLIGHTLY
MASSIVE TO TABULAR; EARTHY TO

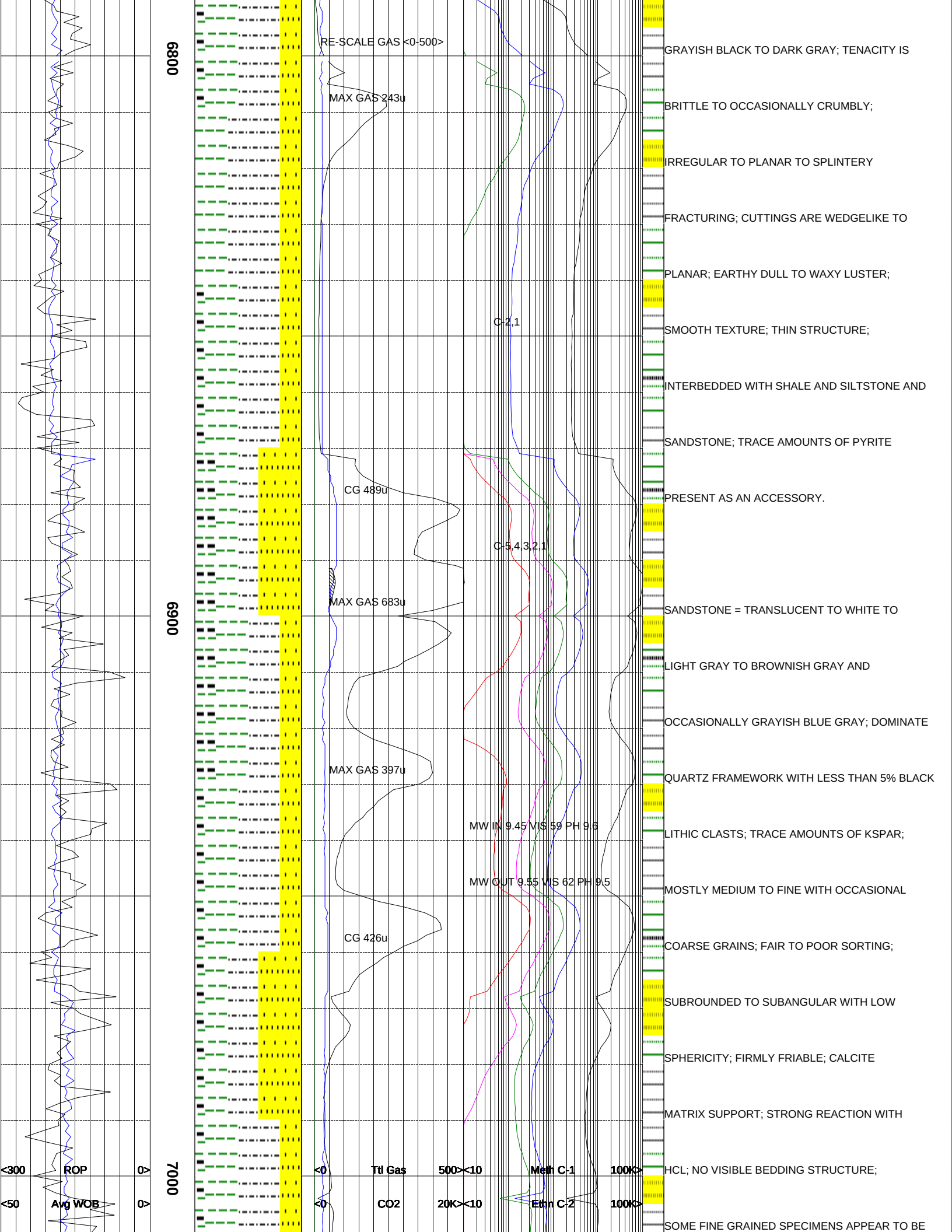

5700
5800
5900
MW IN 9.2 VIS 50 PH 10.1
MW OUT 9.2 VIS 51 PH 10.0
CG 9u
C-1
CG 8u
OCCASIONALLY SPARKLING LUSTER; GRITTY TO
SILTY TEXTURE; OCCASIONAL PALE PURPLE
HUES; MASSIVE TO THICK STRUCTURE;
CONTAINS SOME INTERBEDDED SANDSTONE.
SANDSTONE = WHITE TO LIGHT BROWNISH GRAY
TO MEDIUM GRAY; QUARTZ FRAMEWORK WITH
APPROXIMATELY 10% BROWN LITHIC CLASTS
INTERBEDDED; COARSE TO FINE GRAINED WITH
WITH POOR SORTING; SOME SPECIMENS APPEAR
TO BE GRADING INTO SILTSTONE; ANGULAR TO
SUBANGULAR WITH LOW SPHERICITY; FROSTED
SURFACE FEATURES; FIRMLY FRIABLE;
MODERATE REACTION WITH HCL; CALCAREOUS
CEMENT WITH MATRIX SUPPORT; EVIDENCE OF
FRACTURING FROM CALCITE VEIN RUNNING
THROUGH SPECIMEN NO OTHER VISIBLE
BEDDING STRUCTURE.
SILTSTONE = MODERATE BROWN TO MODERATE
OLIVE BROWN; BRITTLE TO CRUMBLY TENACITY
CONTAINS SOME LIGHT BROWN CLAY

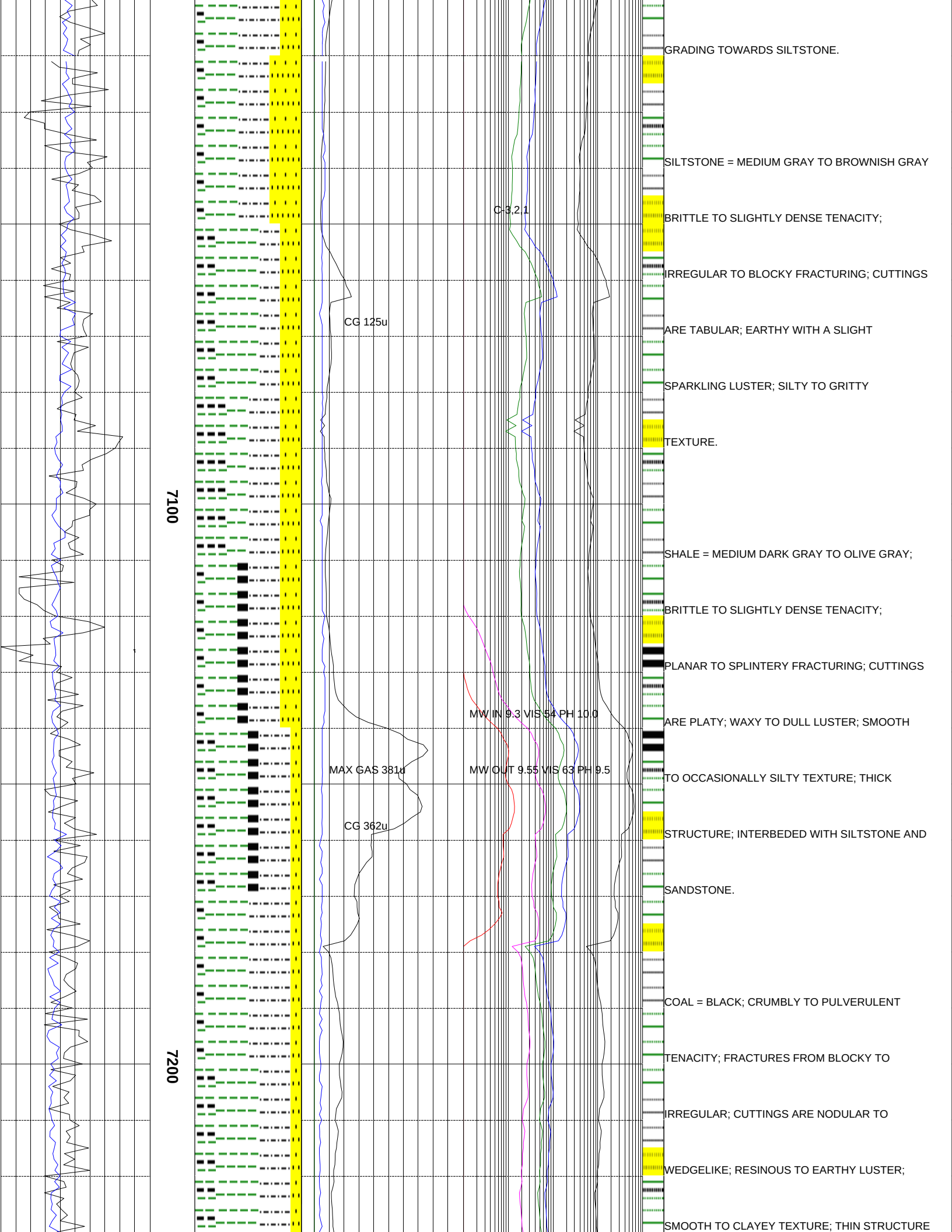

INTERBEDDED; FRACTURES FROM IRREGULAR TO
BLOCKY; CUTTINGS ARE TABULAR; EARTHY TO
MW IN 9.2 VIS 63 PH 9.9
DULL WITH OCCASIONAL SPARKLING LUSTER;
MW OUT 9.25 VIS 59 PH 9.9
GRITTY TO SILTY TO OCCASIONALLY SLIGHTLY
CG 9u
GRANULAR TEXTURE; GRADING FROM SANDSTONE
THICK STRUCTURE; CONTAINS SOME
INTERBEDDED SHALE AND SANDSTONE.
<300 ROP 0>
<0 Ttl Gas 100>
<10 Meth C-1 100K>
6000
SHALE = MEDIUM GRAY TO MEDIUM LIGHT GRAY
<50 Avg WOB 0>
<0 CO2 20K>
<10 Ethn C-2 100K>
TO PALE BLUISH GRAY WITH OCCASIONAL PALE
<0 Flare Ht. 100>
<10 Prop C-3 100K>
MAX GAS 215u
C-2,1
PURPLE HUES; BRITTLE TENACITY; MOSTLY
<10 Butn C-4 100K>
PLANAR TO OCCASIONALLY BLOCKY FRACTURING
<10 Pent C-5 100K>
CUTTINGS ARE PLATY TO TABULAR; DULL
EARTHY LUSTER; SMOOTH TO SILTY TEXTURE;
THIN STRUCTURE; INTERBEDDED WITH
SILTSTONE AND SANDSTONE.
NOTE = DRILLED TO 6144' MD WITH
6100
DIRECTIONAL TOOLS. TRIPPED OUT TO LAY
MUD DATA @ 6148'
DOWN DIRECTIONAL TOOLS.
MW 9.2 VIS 57 PV 20 YP 23
API FL 6.8 GELS 9/17/22 PH 9.9
SHALE = MEDIUM LIGHT GRAY TO PALE BLUISH

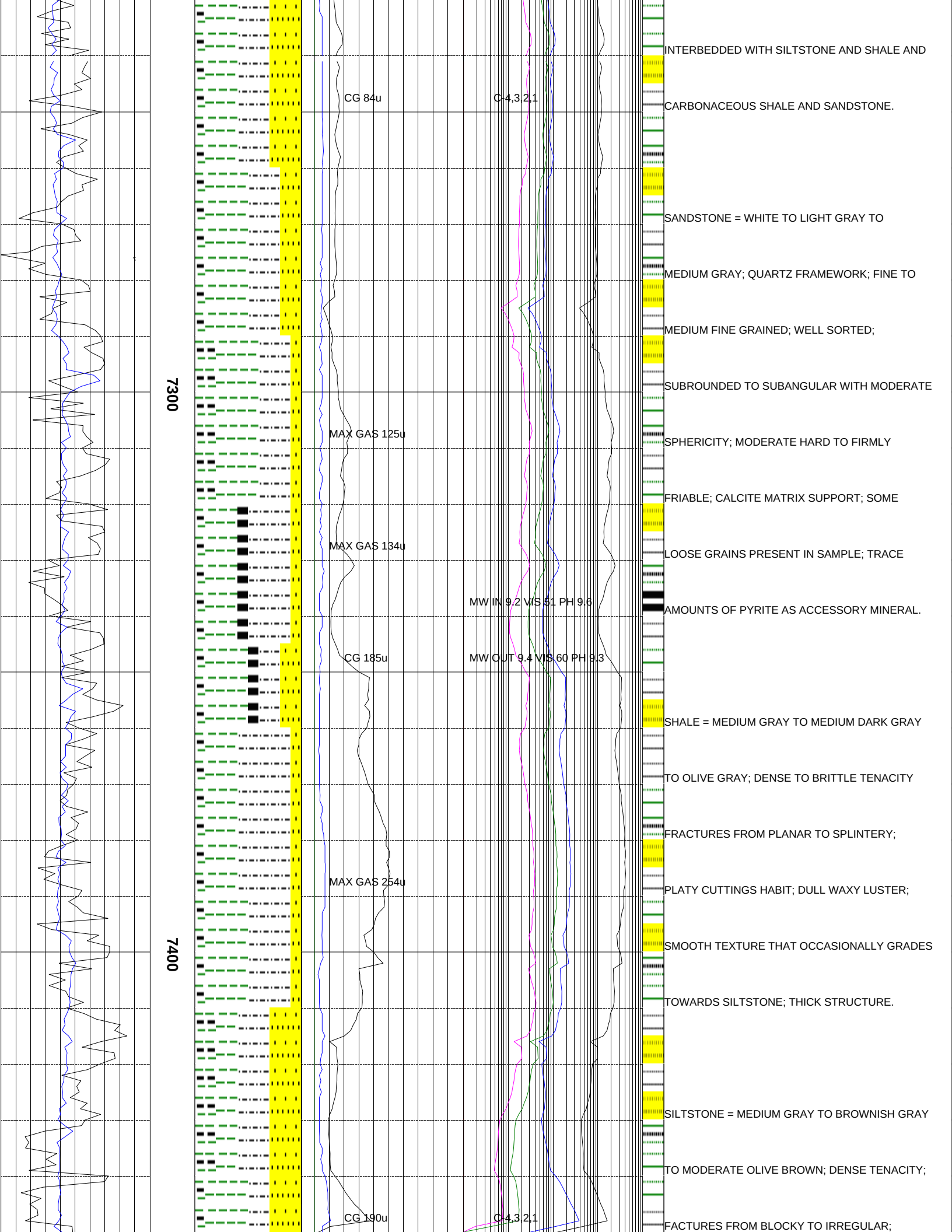

CL 1300 CA 20 MBT 20.0 SOL 5.1
24 HR MUD LOSS: 188.3
11/03/2010
NIGHT TOUR
MW IN 9.4 VIS 65 PH 10.0
NB #2 9.875" SECURITY
MW OUT 9.4 VIS 58 PH 10.0
FX65 5x12's
IN @ 6144' DRLD 3218'
27:37:08 HRS
CG 230u
C-2,1
6200
DAY TOUR
MAX GAS 26u
C-1
CALIB. GAS EQUIPMENT
6300
MW IN 9.45 VIS 53 PH 9.8
MW OUT 9.5 VIS 55 PH 9.7
GRAY WITH MODERATE GREENISH YELLOW HUES;
TENACITY IS BRITTLE; FRACTURES FROM
PLANAR TO IRREGULAR TO SLIGHTLY
SPLINTERY; CUTTINGS ARE PLATY TO TABULAR
DULL EARTHY LUSTER; THIN STRUCTURE;
INTERBEDDED WITH SANDSTONE AND SHALE.
SILTSTONE = MODERATE BROWN TO MODERERATE
OLIVE BROWN TO BROWNISH GRAY; TENACITY
IS BRITTLE TO CRUMBLY; BLOCKY TO
IRREGULAR FRACTURING; CUTTINGS ARE
TABULAR TO MASSIVE; EARTHY TO OCCASIONAL
SPARKLING LUSTER; GRITTY TO SILTY
TEXTURE; THICK TO MASSIVE STRUCTURE.
SANDSTONE = LIGHT GRAY TO LIGHT BROWNISH
GRAY; QUARTZ FRAMEWORK WITH ABOUT 5%
BLACK LITHIC CLASTS INTERBEDDED; SOME
TRANSLUCENT TO WHITE COLORATION; COARSE
TO MEDIUM GRAINED WITH POOR SORTING;
SUBANGULAR TO SUBROUNDED WITH LOW
SPHERICITY; FIRMLY FRIABLE TO EASILY

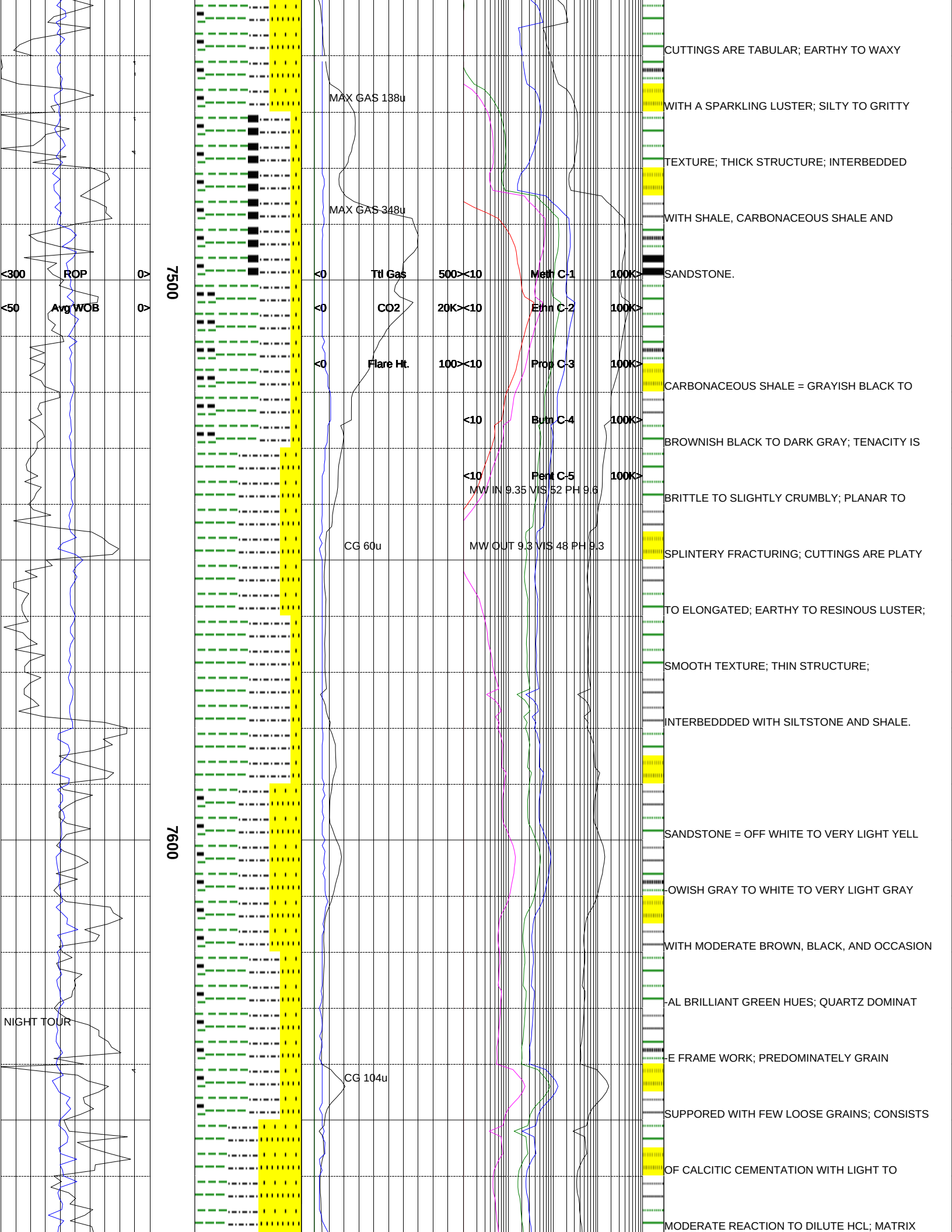

WASATCH G @ 6367'
6400
6500
CG 13u
MAX GAS 497u
MAX GAS 24u
C-2,1
CG 11u
<300 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 100><10 Meth C-1 100K>
<0 CO2 20K><10 Eth C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
<10 Pent C-5 100K>
MW IN 9.5 VIS 60 PH 9.6
MW OUT 9.5 VIS 58 PH 9.5
FRIABLE; MATRIX SUPPORT; ABUNDENT LOOSE
GRAINS; STRONG REACTION WITH HCL; TRACE
AMOUNTS OF PYRITE AS ACCESSORY; NO
VISIBLE BEDING.
SHALE = MEDIUM BLUISH GRAY TO GREENISH
GRAY TO MEDIUM GRAY WITH MODERATE
GREENISH YELLOW AND GRAYISH PURPLE HUES;
TENACITY IS BRITTLE TO SLIGHTLY CRUNCHY;
PLANAR FRACTURING; CUTTINGS ARE PLANAR
TO FLAKY; DULL LUSTER; SMOOTH TEXTURE;
THIN TO LAMINAE STRUCTURE; INTERBEDDED
WITH SILTSTONE AND SANDSTONE.
SANDSTONE = WHITE TO LIGHT GRAY TO
GREEN ISH GRAY TO TRANSLUCENT; DOMINATE
QUARTZ FRAMEWORK WITH LESS THAN 5% BLACK
LITHIC CLASTS INTERBEDDED; MEDIUM TO
FINE GRAINED WITH FAIR TO POOR SORTING;
SUNROUNDED TO SUBANGULAR WITH LOW TO
MODERATE SPHERICITY; FIRMLY FRIABLE TO
MODERATE HARDNESS; CALCITE CEMENT;


6600
6700
CG 22u
MAX GAS 71u
CG 27u
CHANGE SHAKER SCREEN
MW IN 9.5 VIS 60 PH 9.6
MW OUT 9.5 VIS 61 PH 9.5
CG 23u
C-2
WASATCH I @ 6785'
MODERATE TO STRONG REACTION WITH DILUTE
HCL.
SILTSTONE = MODERATE BROWN TO DARK
REDDISH BROWN TO BROWNISH GRAY; TENACITY
IS BRITTLE TO CRUMBLY TO OCCASIONALLY
SLIGHTLY DENSE; FRACTURES FROM MOSTLY
BLOCKY TO IRREGULAR; CUTTINGS ARE
TABULAR; SILTY TO GRITTY TEXTURE;
GRADING FROM SANDSTONE; THICK STRUCTURE;
INTERBEDDED WITH SANDSTONE AND SHALE.
SHALE = PALE BLUE TO GREENISH GRAY TO
MEDIUM GRAY; BRITTLE TO SLIGHTLY CRUNCHY
TENACITY; FRACTURES FROM PLANAR TO
SPLINTERY; CUTTINGS ARE PLATY TO
SLIGHTLY ELONGATED; DULL WAXY LUSTER;
SMOOTH TO OCCASIONALLY SILTY TEXTURE;
SOME SPECIMENS APPEAR TO BE GRADING FROM
SILTSTONE; THIN STRUCTURE.
CARBONACEOUS SHALE = BRONISH BLACK TO


RE-SCALE GAS <0-500>
MAX GAS 243u
C-2,1
CG 489u
C-5,4,3,2,1
MAX GAS 683u
MAX GAS 397u
MW IN 9.45 VIS 59 PH 9.6
MW OUT 9.55 VIS 62 PH 9.5
CG 426u
6800
6900
7000
<300 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 500><10 Meth C-1 100K>
<0 CO2 20K><10 Etnn C-2 100K>
GRAYISH BLACK TO DARK GRAY; TENACITY IS
BRITTLE TO OCCASIONALLY CRUMBLY;
IRREGULAR TO PLANAR TO SPLINTERY
FRACTURING; CUTTINGS ARE WEDGELIKE TO
PLANAR; EARTHY DULL TO WAXY LUSTER;
SMOOTH TEXTURE; THIN STRUCTURE;
INTERBEDDED WITH SHALE AND SILTSTONE AND
SANDSTONE; TRACE AMOUNTS OF PYRITE
PRESENT AS AN ACCESSORY.
SANDSTONE = TRANSLUCENT TO WHITE TO
LIGHT GRAY TO BROWNISH GRAY AND
OCCASIONALLY GRAYISH BLUE GRAY; DOMINATE
QUARTZ FRAMEWORK WITH LESS THAN 5% BLACK
LITHIC CLASTS; TRACE AMOUNTS OF KSPAR;
MOSTLY MEDIUM TO FINE WITH OCCASIONAL
COARSE GRAINS; FAIR TO POOR SORTING;
SUBROUNDED TO SUBANGULAR WITH LOW
SPHERICITY; FIRMLY FRIABLE; CALCITE
MATRIX SUPPORT; STRONG REACTION WITH
HCL; NO VISIBLE BEDDING STRUCTURE;
SOME FINE GRAINED SPECIMENS APPEAR TO BE


7100
7200
C-3,2,1
CG 125u
MW IN 9.3 VIS 54 PH 10.0
MAX GAS 381u
MW OUT 9.55 VIS 63 PH 9.5
CG 362u
GRADING TOWARDS SILTSTONE.
SILTSTONE = MEDIUM GRAY TO BROWNISH GRAY
BRITTLE TO SLIGHTLY DENSE TENACITY;
IRREGULAR TO BLOCKY FRACTURING; CUTTINGS
ARE TABULAR; EARTHY WITH A SLIGHT
SPARKLING LUSTER; SILTY TO GRITTY
TEXTURE.
SHALE = MEDIUM DARK GRAY TO OLIVE GRAY;
BRITTLE TO SLIGHTLY DENSE TENACITY;
PLANAR TO SPLINTERY FRACTURING; CUTTINGS
ARE PLATY; WAXY TO DULL LUSTER; SMOOTH
TO OCCASIONALLY SILTY TEXTURE; THICK
STRUCTURE; INTERBEDED WITH SILTSTONE AND
SANDSTONE.
COAL = BLACK; CRUMBLY TO PULVERULENT
TENACITY; FRACTURES FROM BLOCKY TO
IRREGULAR; CUTTINGS ARE NODULAR TO
WEDGELIKE; RESINOUS TO EARTHY LUSTER;
SMOOTH TO CLAYEY TEXTURE; THIN STRUCTURE


7300
7400
CG 84u
C-4,3,2,1
MAX GAS 125u
MAX GAS 134u
MW IN 9.2 VIS 51 PH 9.6
CG 185u
MW OUT 9.4 VIS 60 PH 9.3
MAX GAS 254u
CG 190u
C-4,3,2,1
INTERBEDDED WITH SILTSTONE AND SHALE AND
CARBONACEOUS SHALE AND SANDSTONE.
SANDSTONE = WHITE TO LIGHT GRAY TO
MEDIUM GRAY; QUARTZ FRAMEWORK; FINE TO
MEDIUM FINE GRAINED; WELL SORTED;
SUBROUNDED TO SUBANGULAR WITH MODERATE
SPHERICITY; MODERATE HARD TO FIRMLY
FRIABLE; CALCITE MATRIX SUPPORT; SOME
LOOSE GRAINS PRESENT IN SAMPLE; TRACE
AMOUNTS OF PYRITE AS ACCESSORY MINERAL.
SHALE = MEDIUM GRAY TO MEDIUM DARK GRAY
TO OLIVE GRAY; DENSE TO BRITTLE TENACITY
FRACTURES FROM PLANAR TO SPLINTERY;
PLATY CUTTINGS HABIT; DULL WAXY LUSTER;
SMOOTH TEXTURE THAT OCCASIONALLY GRADES
TOWARDS SILTSTONE; THICK STRUCTURE.
SILTSTONE = MEDIUM GRAY TO BROWNISH GRAY
TO MODERATE OLIVE BROWN; DENSE TENACITY;
FACTURES FROM BLOCKY TO IRREGULAR;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7500
7600
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MAX GAS 348u
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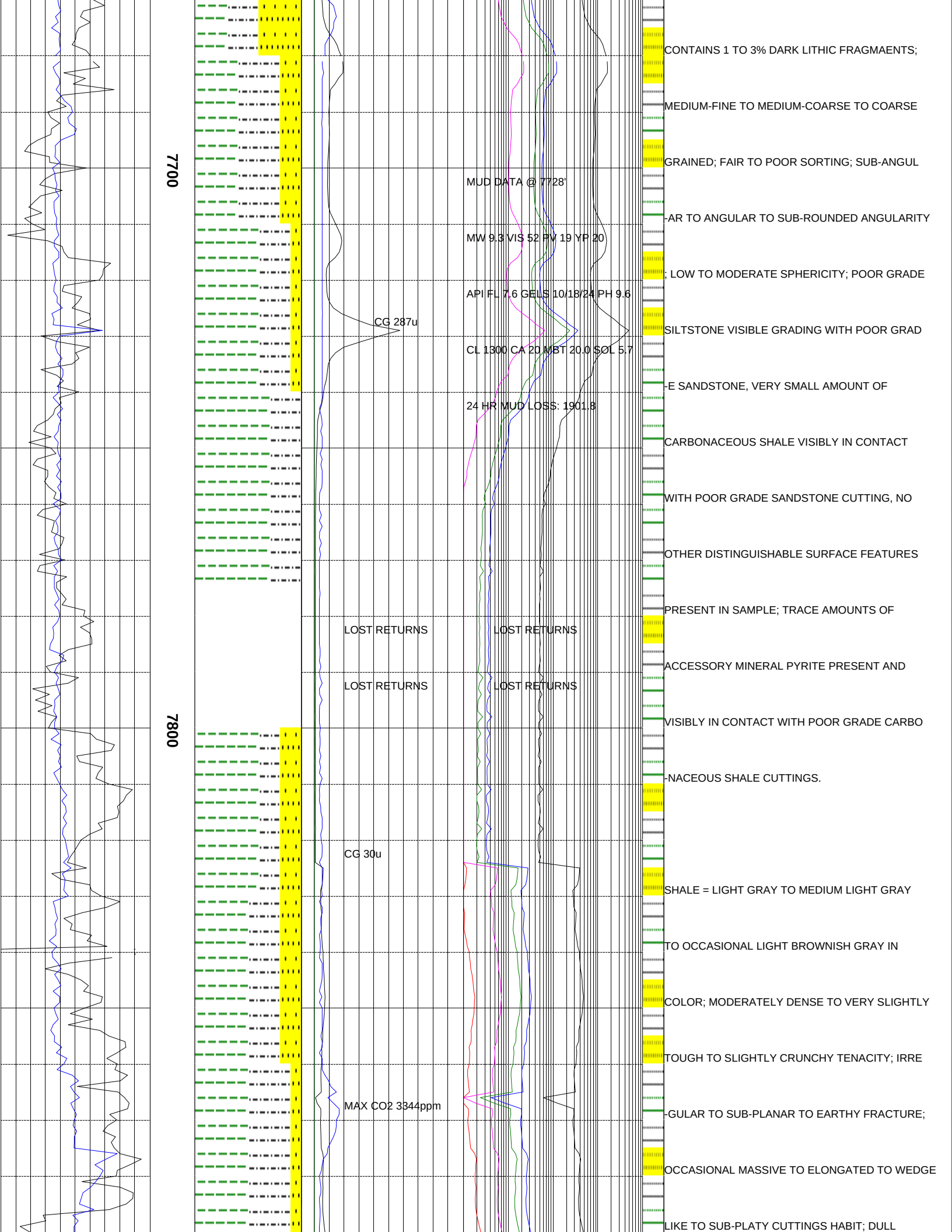
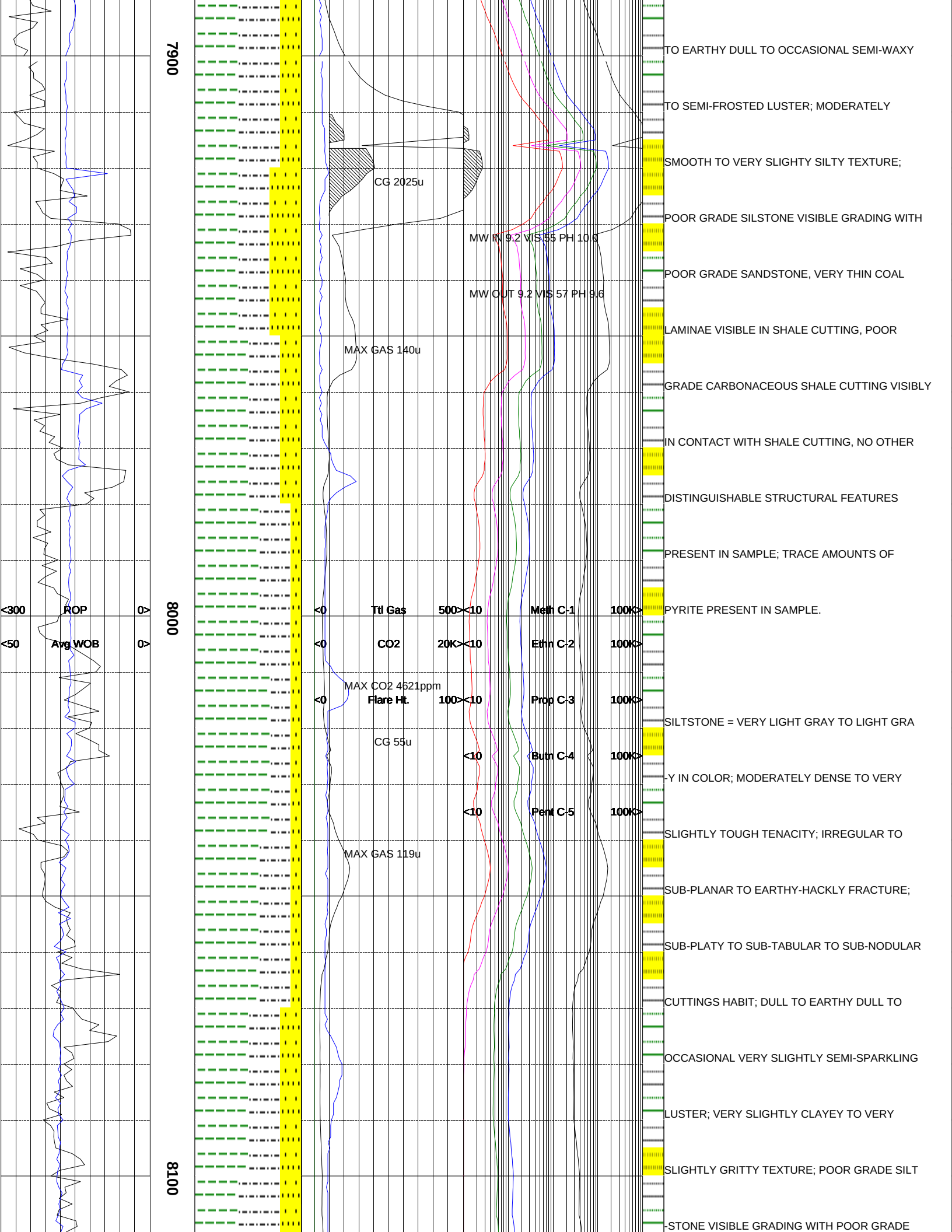
<10 Buth C-4 100K>
<10 Pent C-5 100K>
MW IN 9.35 VIS 52 PH 9.6
MW OUT 9.3 VIS 48 PH 9.3
CG 60u
CG 104u
NIGHT TOUR
CUTTINGS ARE TABULAR; EARTHY TO WAXY
WITH A SPARKLING LUSTER; SILTY TO GRITTY
TEXTURE; THICK STRUCTURE; INTERBEDDED
WITH SHALE, CARBONACEOUS SHALE AND
SANDSTONE.
CARBONACEOUS SHALE = GRAYISH BLACK TO
BROWNISH BLACK TO DARK GRAY; TENACITY IS
BRITTLE TO SLIGHTLY CRUMBLY; PLANAR TO
SPLINTERY FRACTURING; CUTTINGS ARE PLATY
TO ELONGATED; EARTHY TO RESINOUS LUSTER;
SMOOTH TEXTURE; THIN STRUCTURE;
INTERBEDDDED WITH SILTSTONE AND SHALE.
SANDSTONE = OFF WHITE TO VERY LIGHT YELL
-OWISH GRAY TO WHITE TO VERY LIGHT GRAY
WITH MODERATE BROWN, BLACK, AND OCCASION
-AL BRILLIANT GREEN HUES; QUARTZ DOMINAT
-E FRAME WORK; PREDOMINATELY GRAIN
SUPPORED WITH FEW LOOSE GRAINS; CONSISTS
OF CALCITIC CEMENTATION WITH LIGHT TO
MODERATE REACTION TO DILUTE HCL; MATRIX


7700
7800
MUD DATA @ 7728'
MW 9.3 VIS 52 PV 19 YP 20
API FL 7.6 GELS 10/18/24 PH 9.6
CL 1300 CA 20 MBT 20.0 SOL 5.7
24 HR MUD LOSS: 1901.8
CG 287u
LOST RETURNS
LOST RETURNS
LOST RETURNS
LOST RETURNS
CG 30u
MAX CO2 3344ppm
CONTAINS 1 TO 3% DARK LITHIC FRAGMAENTS;
-MEDIUM-FINE TO MEDIUM-COARSE TO COARSE
GRAINED; FAIR TO POOR SORTING; SUB-ANGUL
-AR TO ANGULAR TO SUB-ROUNDED ANGULARITY
; LOW TO MODERATE SPHERICITY; POOR GRADE
SILTSTONE VISIBLE GRADING WITH POOR GRAD
-E SANDSTONE, VERY SMALL AMOUNT OF
CARBONACEOUS SHALE VISIBLY IN CONTACT
WITH POOR GRADE SANDSTONE CUTTING, NO
-OTHER DISTINGUISHABLE SURFACE FEATURES
PRESENT IN SAMPLE; TRACE AMOUNTS OF
-ACCESSORY MINERAL PYRITE PRESENT AND
VISIBLY IN CONTACT WITH POOR GRADE CARBO
-NACEOUS SHALE CUTTINGS.
SHALE = LIGHT GRAY TO MEDIUM LIGHT GRAY
TO OCCASIONAL LIGHT BROWNISH GRAY IN
COLOR; MODERATELY DENSE TO VERY SLIGHTLY
TOUGH TO SLIGHTLY CRUNCHY TENACITY; IRRE
-GULAR TO SUB-PLANAR TO EARTHY FRACTURE;
OCCASIONAL MASSIVE TO ELONGATED TO WEDGE
LIKE TO SUB-PLATY CUTTINGS HABIT; DULL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8000
8100
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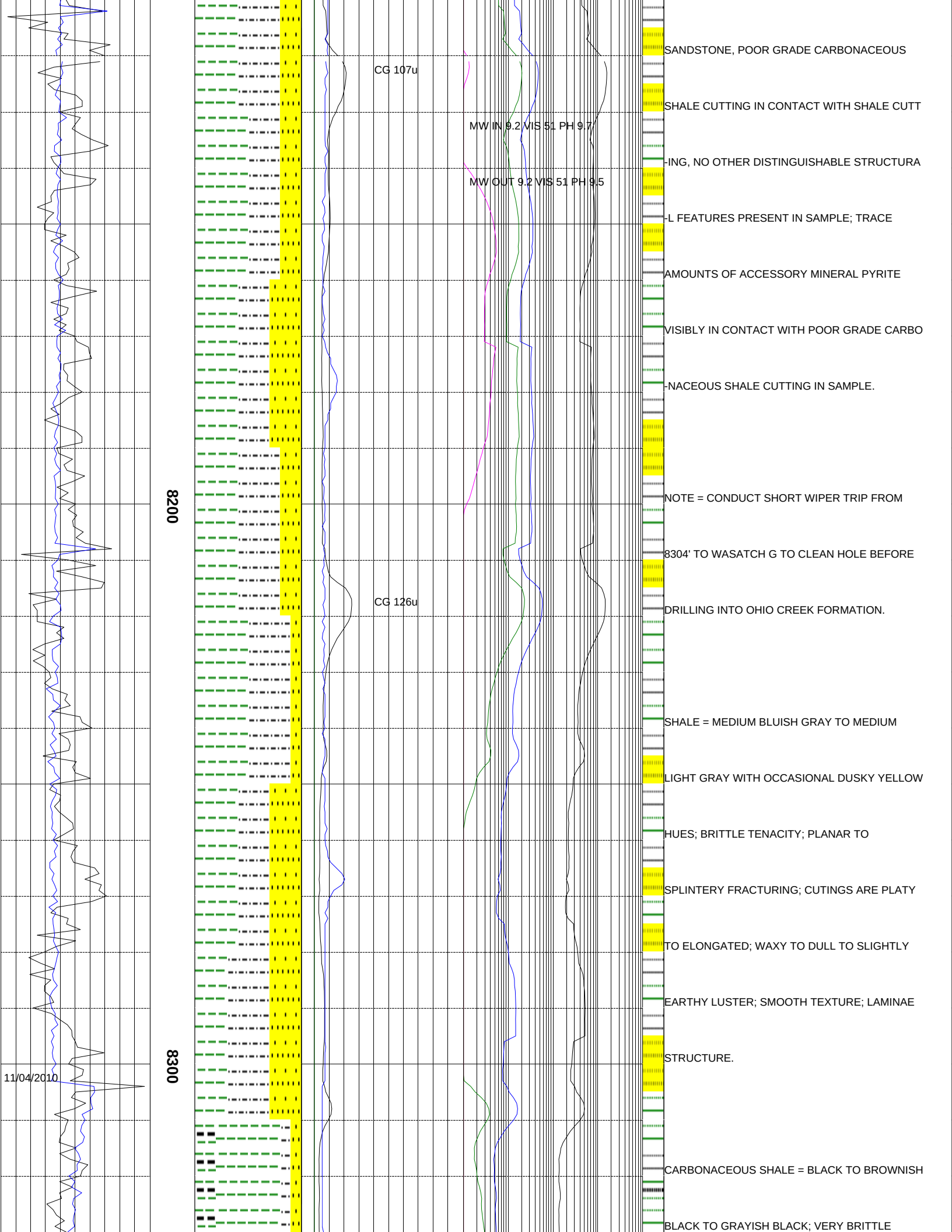
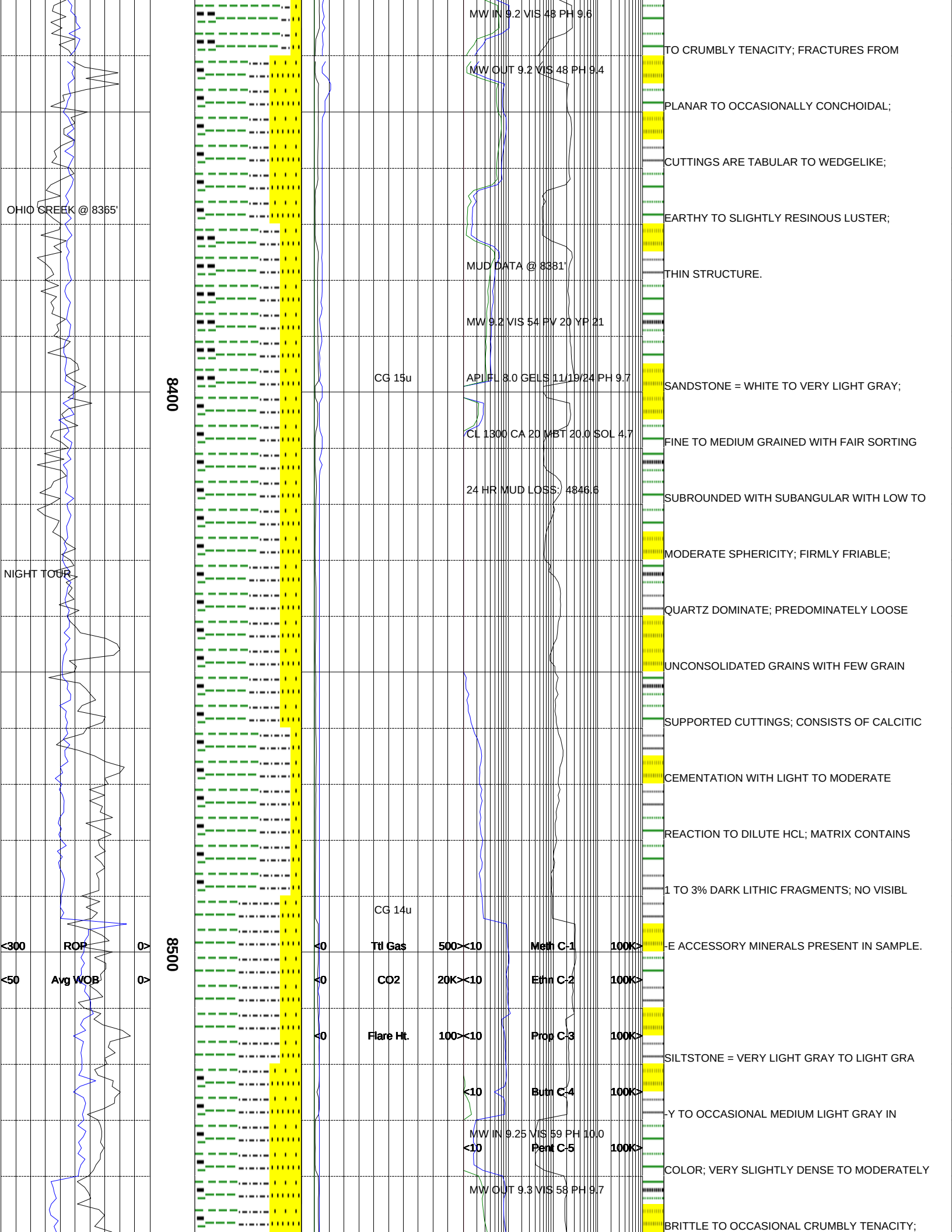
<10 Pent C-5 100K>
CG 2025u
MW IN 9.2 VIS 55 PH 10.0
MW OUT 9.2 VIS 57 PH 9.6
MAX GAS 140u
MAX CO2 4621ppm
CG 55u
MAX GAS 119u
TO EARTHY DULL TO OCCASIONAL SEMI-WAXY
TO SEMI-FROSTED LUSTER; MODERATELY
SMOOTH TO VERY SLIGHTY SILTY TEXTURE;
POOR GRADE SILSTONE VISIBLE GRADING WITH
POOR GRADE SANDSTONE, VERY THIN COAL
LAMINAE VISIBLE IN SHALE CUTTING, POOR
GRADE CARBONACEOUS SHALE CUTTING VISIBLY
IN CONTACT WITH SHALE CUTTING, NO OTHER
DISTINGUISHABLE STRUCTURAL FEATURES
PRESENT IN SAMPLE; TRACE AMOUNTS OF
PYRITE PRESENT IN SAMPLE.
SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
-Y IN COLOR; MODERATELY DENSE TO VERY
SLIGHTLY TOUGH TENACITY; IRREGULAR TO
SUB-PLANAR TO EARTHY-HACKLY FRACTURE;
SUB-PLATY TO SUB-TABULAR TO SUB-NODULAR
CUTTINGS HABIT; DULL TO EARTHY DULL TO
OCCASIONAL VERY SLIGHTLY SEMI-SPARKLING
LUSTER; VERY SLIGHTLY CLAYEY TO VERY
SLIGHTLY GRITTY TEXTURE; POOR GRADE SILT
-STONE VISIBLE GRADING WITH POOR GRADE


8200
8300
11/04/2010
CG 107u
CG 126u
MW IN 9.2 VIS 51 PH 9.7
MW OUT 9.2 VIS 51 PH 9.5
SANDSTONE, POOR GRADE CARBONACEOUS
SHALE CUTTING IN CONTACT WITH SHALE CUTT
-ING, NO OTHER DISTINGUISHABLE STRUCTURA
-L FEATURES PRESENT IN SAMPLE; TRACE
AMOUNTS OF ACCESSORY MINERAL PYRITE
VISIBLY IN CONTACT WITH POOR GRADE CARBO
-NACEOUS SHALE CUTTING IN SAMPLE.
NOTE = CONDUCT SHORT WIPER TRIP FROM
8304' TO WASATCH G TO CLEAN HOLE BEFORE
DRILLING INTO OHIO CREEK FORMATION.
SHALE = MEDIUM BLUISH GRAY TO MEDIUM
LIGHT GRAY WITH OCCASIONAL DUSKY YELLOW
HUES; BRITTLE TENACITY; PLANAR TO
SPLINTERY FRACTURING; CUTINGS ARE PLATY
TO ELONGATED; WAXY TO DULL TO SLIGHTLY
EARTHY LUSTER; SMOOTH TEXTURE; LAMINAE
STRUCTURE.
CARBONACEOUS SHALE = BLACK TO BROWNISH
BLACK TO GRAYISH BLACK; VERY BRITTLE


OHIO CREEK @ 8365'
NIGHT TOUR
8400
8500
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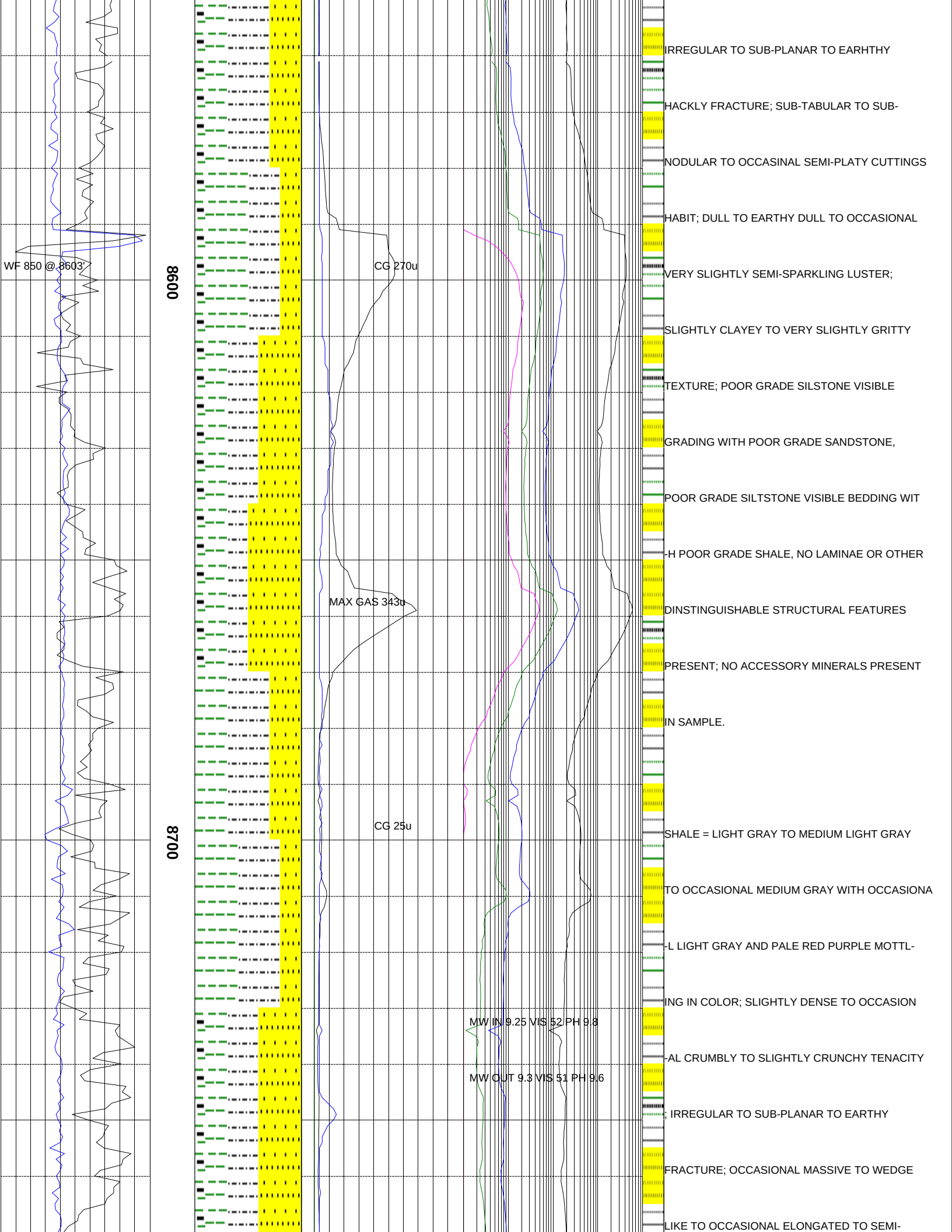
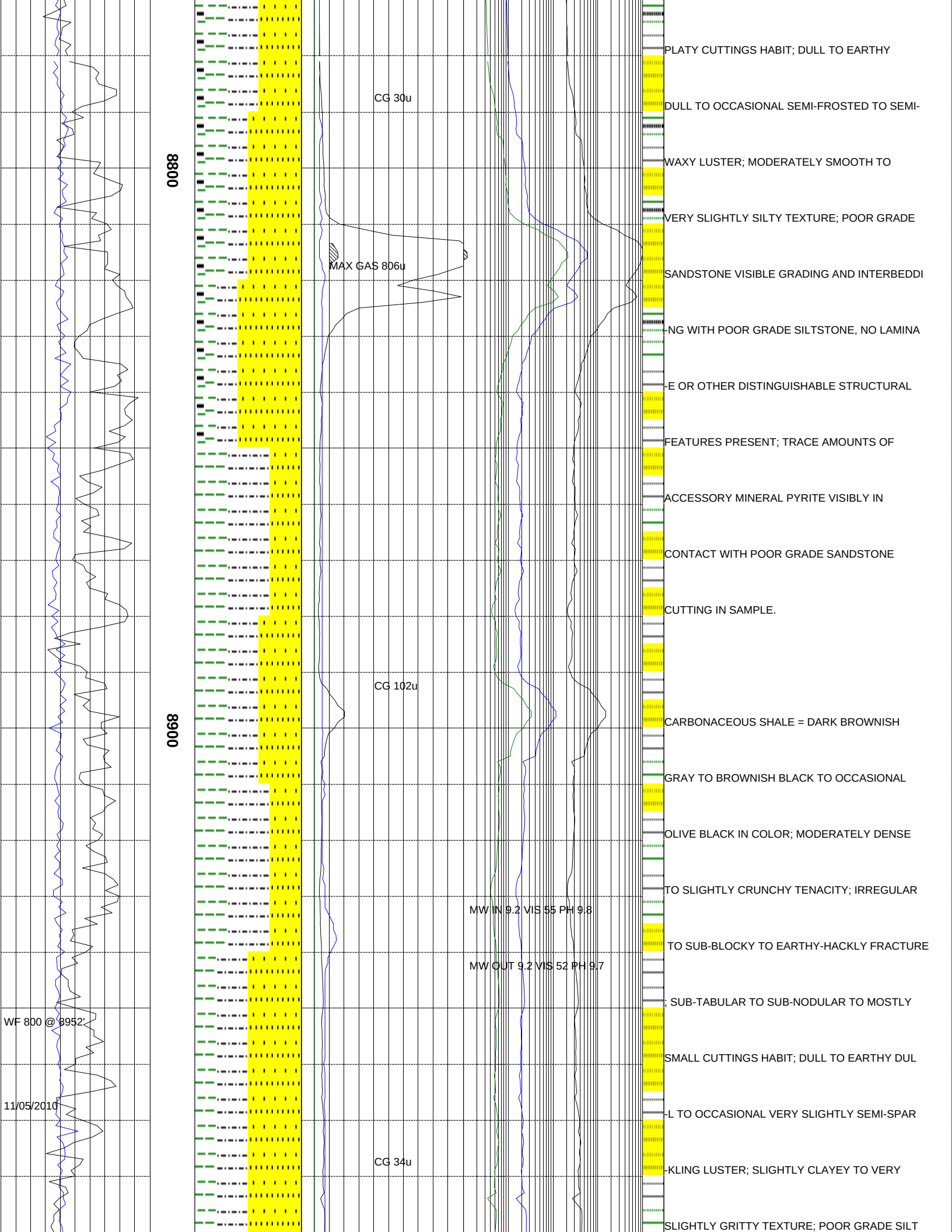
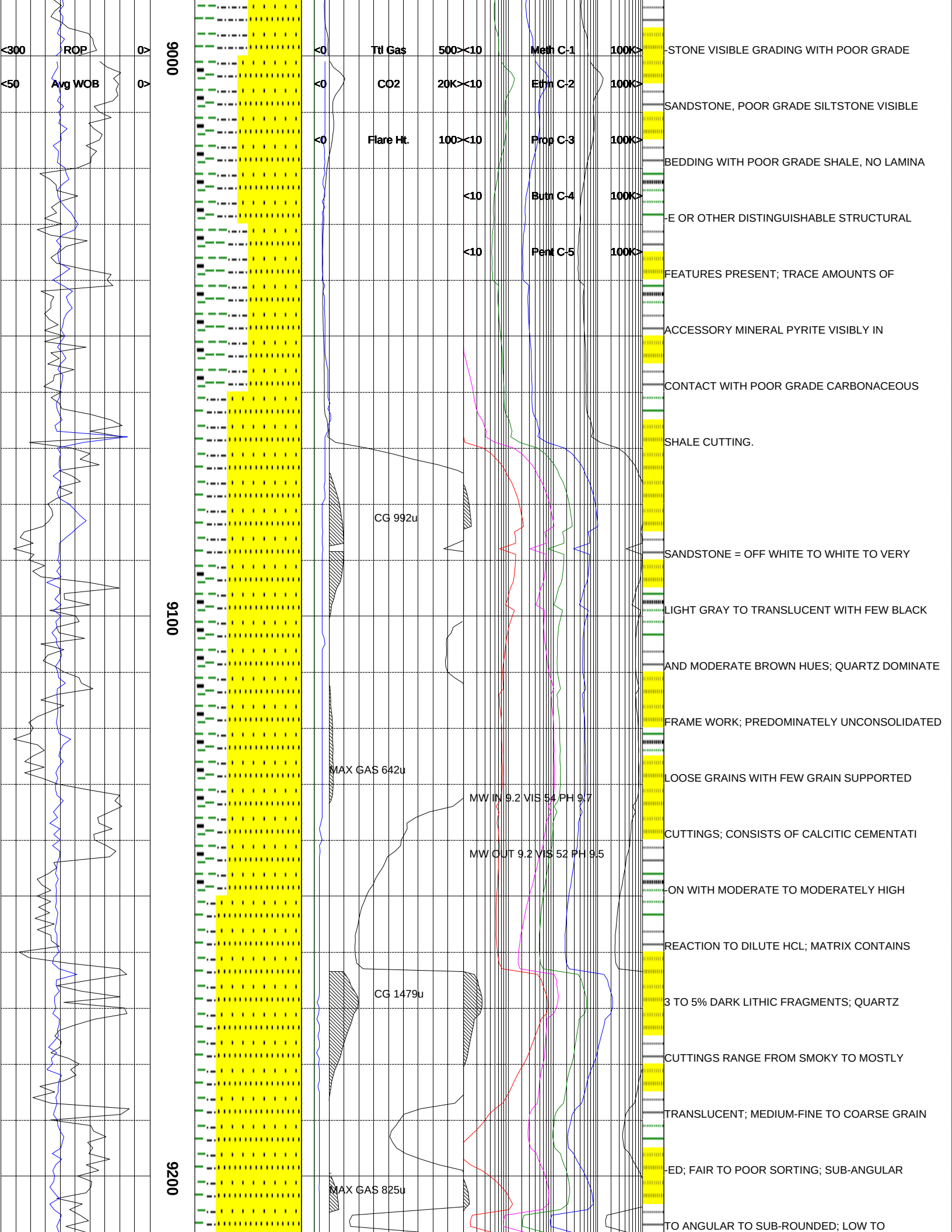
<0 CO2 20K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
<10 Pent C-5 100K>
CG 14u
CG 15u
MW IN 9.2 VIS 48 PH 9.6
MW OUT 9.2 VIS 48 PH 9.4
MUD DATA @ 8381'
MW 9.2 VIS 54 PV 20 YP 21
API FL 8.0 GELS 11/19/24 PH 9.7
CL 1300 CA 20 MBT 20.0 SOL 4.7
24 HR MUD LOSS: 4846.6
MW IN 9.25 VIS 59 PH 10.0
MW OUT 9.3 VIS 58 PH 9.7
TO CRUMBLY TENACITY; FRACTURES FROM
PLANAR TO OCCASIONALLY CONCHOIDAL;
CUTTINGS ARE TABULAR TO WEDGELIKE;
EARTHY TO SLIGHTLY RESINOUS LUSTER;
THIN STRUCTURE.
SANDSTONE = WHITE TO VERY LIGHT GRAY;
FINE TO MEDIUM GRAINED WITH FAIR SORTING
SUBROUNDED WITH SUBANGULAR WITH LOW TO
MODERATE SPHERICITY; FIRMLY FRIABLE;
QUARTZ DOMINATE; PREDOMINATELY LOOSE
UNCONSOLIDATED GRAINS WITH FEW GRAIN
SUPPORTED CUTTINGS; CONSISTS OF CALCITIC
CEMENTATION WITH LIGHT TO MODERATE
REACTION TO DILUTE HCL; MATRIX CONTAINS
1 TO 3% DARK LITHIC FRAGMENTS; NO VISIBL
-E ACCESSORY MINERALS PRESENT IN SAMPLE.
SILTSTONE = VERY LIGHT GRAY TO LIGHT GRA
-Y TO OCCASIONAL MEDIUM LIGHT GRAY IN
COLOR; VERY SLIGHTLY DENSE TO MODERATELY
BRITTLE TO OCCASIONAL CRUMBLY TENACITY;


WF 850 @ 8603'
8600
CG 270u
MAX GAS 343u
8700
CG 25u
MW IN 9.25 VIS 52 PH 9.8
MW OUT 9.3 VIS 51 PH 9.6
IRREGULAR TO SUB-PLANAR TO EARHTHY
HACKLY FRACTURE; SUB-TABULAR TO SUB-
NODULAR TO OCCASINAL SEMI-PLATY CUTTINGS
HABIT; DULL TO EARTHY DULL TO OCCASIONAL
VERY SLIGHTLY SEMI-SPARKLING LUSTER;
SLIGHTLY CLAYEY TO VERY SLIGHTLY GRITTY
TEXTURE; POOR GRADE SILSTONE VISIBLE
GRADING WITH POOR GRADE SANDSTONE,
POOR GRADE SILTSTONE VISIBLE BEDDING WIT
-H POOR GRADE SHALE, NO LAMINAE OR OTHER
DINSTINGUISHABLE STRUCTURAL FEATURES
PRESENT; NO ACCESSORY MINERALS PRESENT
IN SAMPLE.
SHALE = LIGHT GRAY TO MEDIUM LIGHT GRAY
TO OCCASIONAL MEDIUM GRAY WITH OCCASIONA
-L LIGHT GRAY AND PALE RED PURPLE MOTTL-
ING IN COLOR; SLIGHTLY DENSE TO OCCASION
-AL CRUMBLY TO SLIGHTLY CRUNCHY TENACITY
; IRREGULAR TO SUB-PLANAR TO EARTHY
FRACTURE; OCCASIONAL MASSIVE TO WEDGE
LIKE TO OCCASIONAL ELONGATED TO SEMI-


8800
8900
CG 30u
MAX GAS 806u
CG 102u
CG 34u
MW IN 9.2 VIS 55 PH 9.8
MW OUT 9.2 VIS 52 PH 9.7
WF 800 @ 8952'
11/05/2010
PLATY CUTTINGS HABIT; DULL TO EARTHY
DULL TO OCCASIONAL SEMI-FROSTED TO SEMI-
WAXY LUSTER; MODERATELY SMOOTH TO
VERY SLIGHTLY SILTY TEXTURE; POOR GRADE
SANDSTONE VISIBLE GRADING AND INTERBEDDI
-NG WITH POOR GRADE SILTSTONE, NO LAMINA
-E OR OTHER DISTINGUISHABLE STRUCTURAL
FEATURES PRESENT; TRACE AMOUNTS OF
ACCESSORY MINERAL PYRITE VISIBLY IN
CONTACT WITH POOR GRADE SANDSTONE
CUTTING IN SAMPLE.
CARBONACEOUS SHALE = DARK BROWNISH
GRAY TO BROWNISH BLACK TO OCCASIONAL
OLIVE BLACK IN COLOR; MODERATELY DENSE
TO SLIGHTLY CRUNCHY TENACITY; IRREGULAR
TO SUB-BLOCKY TO EARTHY-HACKLY FRACTURE
; SUB-TABULAR TO SUB-NODULAR TO MOSTLY
SMALL CUTTINGS HABIT; DULL TO EARTHY DUL
-L TO OCCASIONAL VERY SLIGHTLY SEMI-SPAR
-KLING LUSTER; SLIGHTLY CLAYEY TO VERY
SLIGHTLY GRITTY TEXTURE; POOR GRADE SILT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9000
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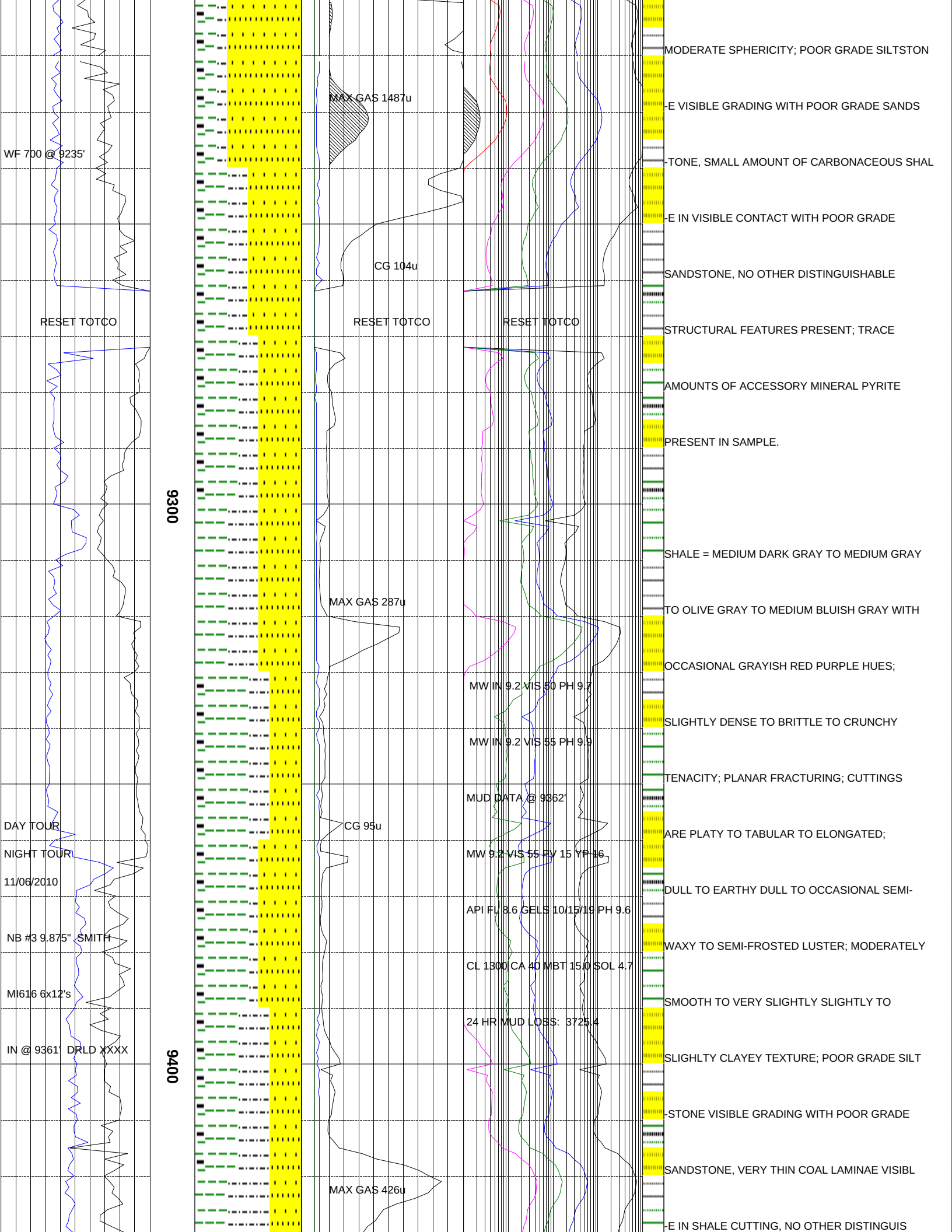
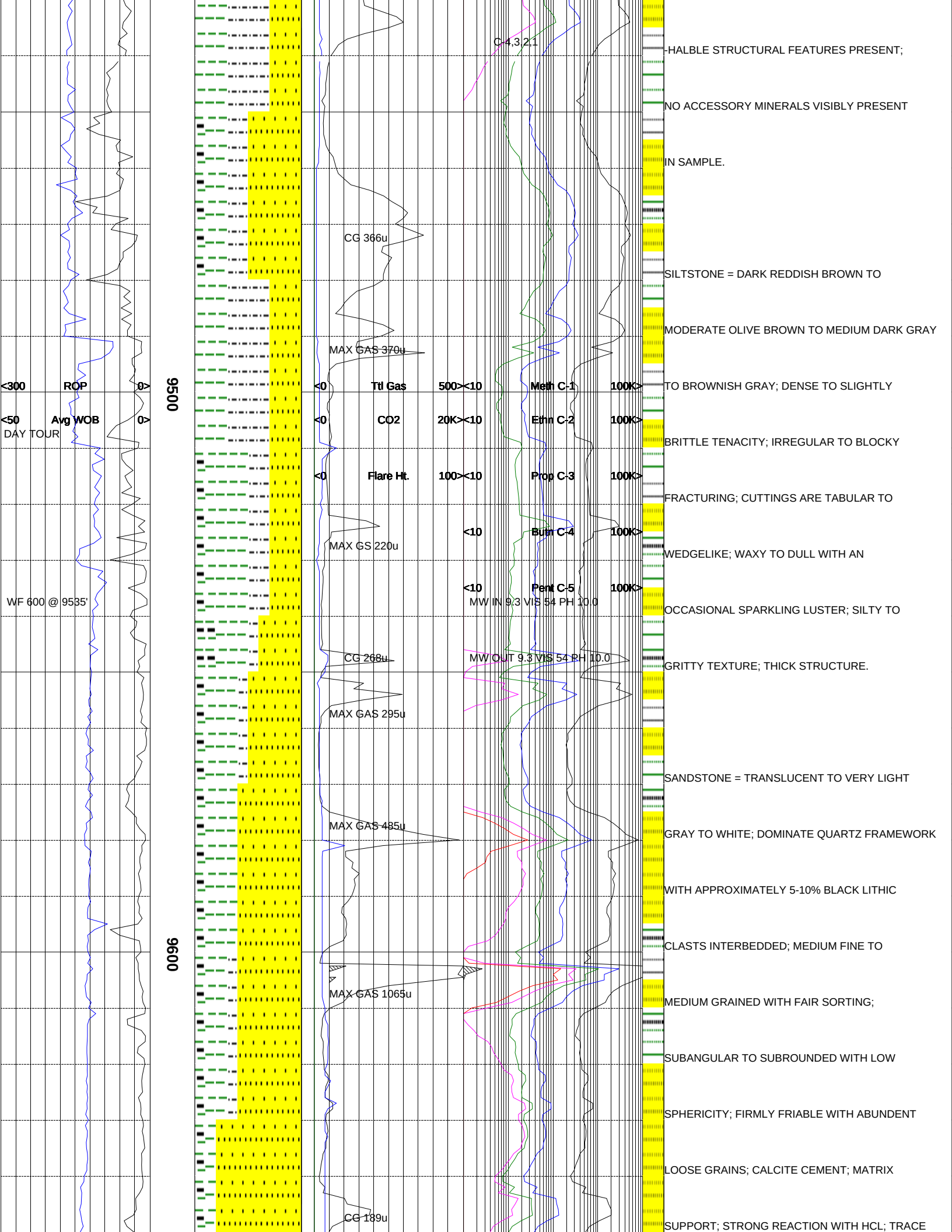
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
<10 Pent C-5 100K>
CG 992u
9100
MAX GAS 642u
MW IN 9.2 VIS 54 PH 9.7
MW OUT 9.2 VIS 52 PH 9.5
CG 1479u
9200
MAX GAS 825u
-STONE VISIBLE GRADING WITH POOR GRADE
SANDSTONE, POOR GRADE SILTSTONE VISIBLE
BEDDING WITH POOR GRADE SHALE, NO LAMINA
-E OR OTHER DISTINGUISHABLE STRUCTURAL
FEATURES PRESENT; TRACE AMOUNTS OF
ACCESSORY MINERAL PYRITE VISIBLY IN
CONTACT WITH POOR GRADE CARBONACEOUS
SHALE CUTTING.
SANDSTONE = OFF WHITE TO WHITE TO VERY
LIGHT GRAY TO TRANSLUCENT WITH FEW BLACK
AND MODERATE BROWN HUES; QUARTZ DOMINATE
FRAME WORK; PREDOMINATELY UNCONSOLIDATED
LOOSE GRAINS WITH FEW GRAIN SUPPORTED
CUTTINGS; CONSISTS OF CALCITIC CEMENTATI
-ON WITH MODERATE TO MODERATELY HIGH
REACTION TO DILUTE HCL; MATRIX CONTAINS
3 TO 5% DARK LITHIC FRAGMENTS; QUARTZ
CUTTINGS RANGE FROM SMOKY TO MOSTLY
TRANSLUCENT; MEDIUM-FINE TO COARSE GRAIN
-ED; FAIR TO POOR SORTING; SUB-ANGULAR
TO ANGULAR TO SUB-ROUNDED; LOW TO


MODERATE SPHERICITY; POOR GRADE SILTSTON
MAX GAS 1487u
-E VISIBLE GRADING WITH POOR GRADE SANDS
WF 700 @ 9235'
-TONE, SMALL AMOUNT OF CARBONACEOUS SHAL
-E IN VISIBLE CONTACT WITH POOR GRADE
CG 104u
SANDSTONE, NO OTHER DISTINGUISHABLE
RESET TOTCO
RESET TOTCO
RESET TOTCO
STRUCTURAL FEATURES PRESENT; TRACE
AMOUNTS OF ACCESSORY MINERAL PYRITE
PRESENT IN SAMPLE.
9300
SHALE = MEDIUM DARK GRAY TO MEDIUM GRAY
MAX GAS 287u
TO OLIVE GRAY TO MEDIUM BLUISH GRAY WITH
OCCASIONAL GRAYISH RED PURPLE HUES;
MW IN 9.2 VIS 50 PH 9.7
SLIGHTLY DENSE TO BRITTLE TO CRUNCHY
MW IN 9.2 VIS 55 PH 9.9
TENACITY; PLANAR FRACTURING; CUTTINGS
MUD DATA @ 9362'
DAY TOUR
CG 95u
ARE PLATY TO TABULAR TO ELONGATED;
NIGHT TOUR
MW 9.2 VIS 55 PV 15 YP 16
11/06/2010
DULL TO EARTHY DULL TO OCCASIONAL SEMI-
API FL 8.6 GELS 10/15/19 PH 9.6
NB #3 9.875" SMITH
WAXY TO SEMI-FROSTED LUSTER; MODERATELY
CL 1300 CA 40 MBT 15.0 SOL 4.7
MI616 6x12's
SMOOTH TO VERY SLIGHTLY SLIGHTLY TO
24 HR MUD LOSS: 3725.4
IN @ 9361' DRLD XXXX
SLIGHLTY CLAYEY TEXTURE; POOR GRADE SILT
9400
-STONE VISIBLE GRADING WITH POOR GRADE
SANDSTONE, VERY THIN COAL LAMINAE VISIBL
MAX GAS 426u
-E IN SHALE CUTTING, NO OTHER DISTINGUIS


<300 ROP 0>
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DAY TOUR
WF 600 @ 9535'
9500
9600
C-4,3,2,1
CG 366u
MAX GAS 370u
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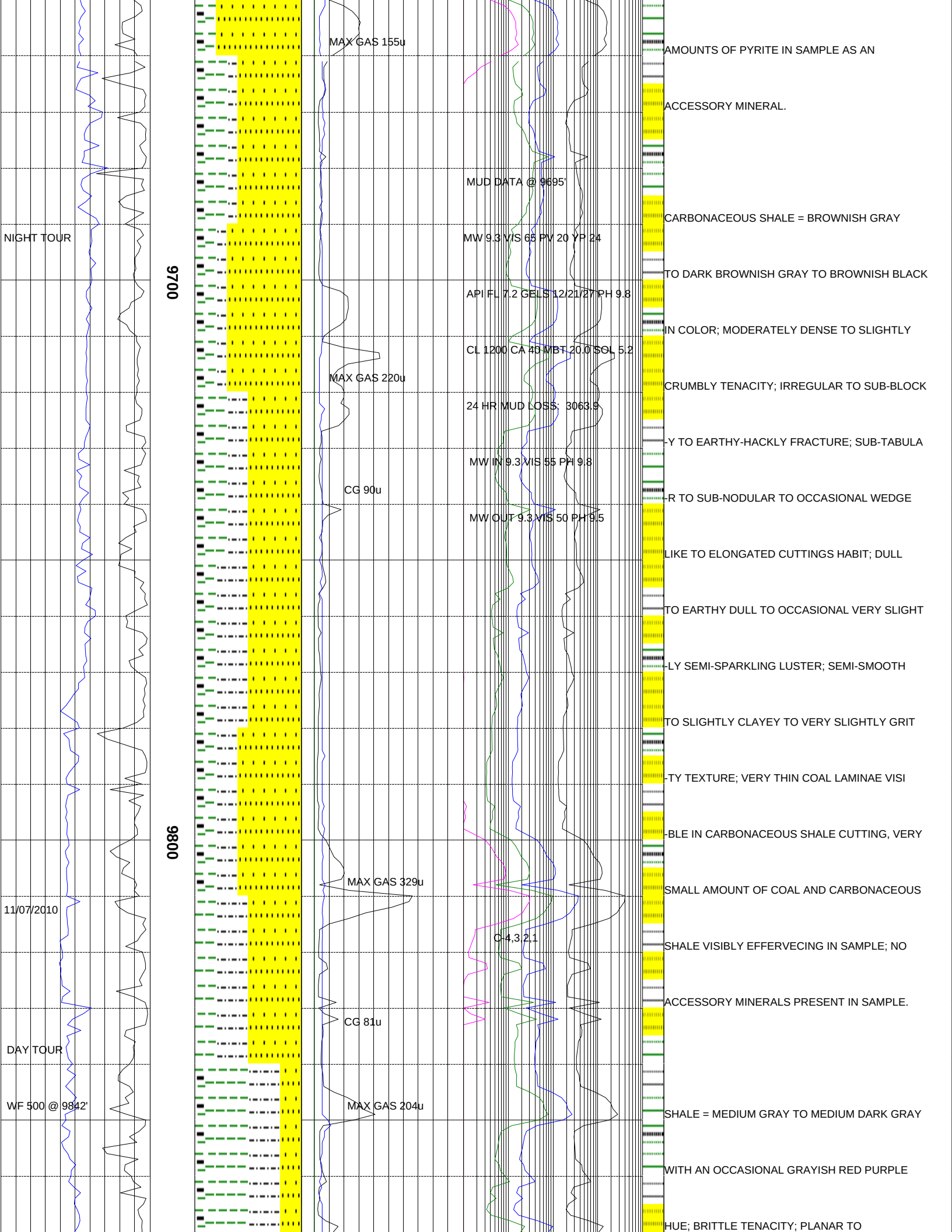
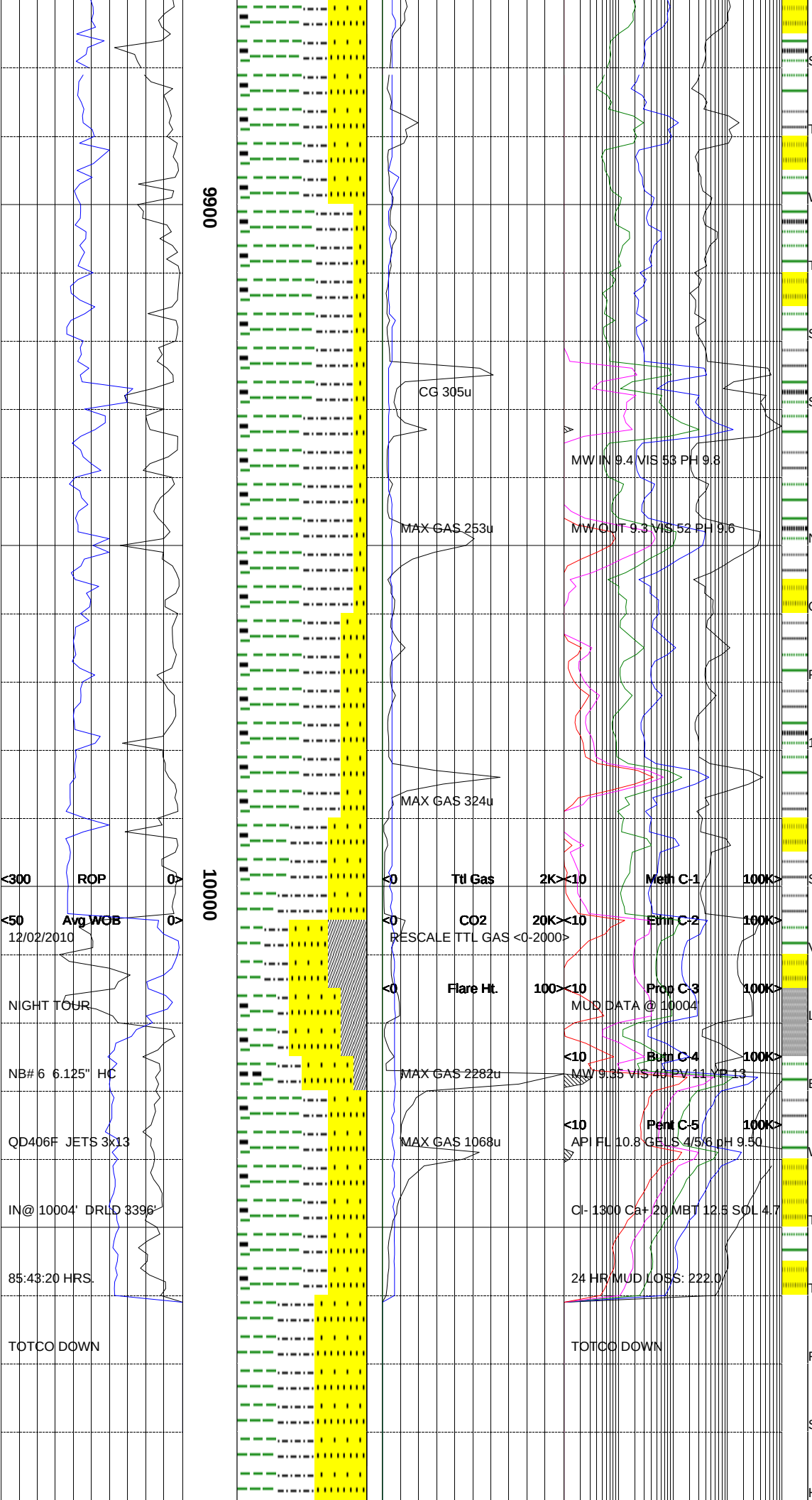
<0 CO2 20K><10 Eth C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
MAX GS 220u
<10 Pent C-5 100K>
MW IN 9.3 VIS 54 PH 10.0
MW OUT 9.3 VIS 54 PH 10.0
CG 268u
MAX GAS 295u
MAX GAS 435u
MAX GAS 1065u
CG 189u
-HALBLE STRUCTURAL FEATURES PRESENT;
NO ACCESSORY MINERALS VISIBLY PRESENT
IN SAMPLE.
SILTSTONE = DARK REDDISH BROWN TO
MODERATE OLIVE BROWN TO MEDIUM DARK GRAY
TO BROWNISH GRAY; DENSE TO SLIGHTLY
BRITTLE TENACITY; IRREGULAR TO BLOCKY
FRACTURING; CUTTINGS ARE TABULAR TO
WEDGELIKE; WAXY TO DULL WITH AN
OCCASIONAL SPARKLING LUSTER; SILTY TO
GRITTY TEXTURE; THICK STRUCTURE.
SANDSTONE = TRANSLUCENT TO VERY LIGHT
GRAY TO WHITE; DOMINATE QUARTZ FRAMEWORK
WITH APPROXIMATELY 5-10% BLACK LITHIC
CLASTS INTERBEDDED; MEDIUM FINE TO
MEDIUM GRAINED WITH FAIR SORTING;
SUBANGULAR TO SUBROUNDED WITH LOW
SPHERICITY; FIRMLY FRIABLE WITH ABUNDENT
LOOSE GRAINS; CALCITE CEMENT; MATRIX
SUPPORT; STRONG REACTION WITH HCL; TRACE


MAX GAS 155u
MUD DATA @ 9695'
NIGHT TOUR
MW 9.3 VIS 65 PV 20 YP 24
9700
API FL 7.2 GELS 12/21/27 PH 9.8
CL 1200 CA 40 MBT 20.0 SOL 5.2
MAX GAS 220u
24 HR MUD LOSS: 3063.8
MW IN 9.3 VIS 55 PH 9.8
CG 90u
MW OUT 9.3 VIS 50 PH 9.5
9800
MAX GAS 329u
11/07/2010
C-4,3,2,1
CG 81u
DAY TOUR
WF 500 @ 9842'
MAX GAS 204u
AMOUNTS OF PYRITE IN SAMPLE AS AN
ACCESSORY MINERAL.
CARBONACEOUS SHALE = BROWNISH GRAY
TO DARK BROWNISH GRAY TO BROWNISH BLACK
IN COLOR; MODERATELY DENSE TO SLIGHTLY
CRUMBLY TENACITY; IRREGULAR TO SUB-BLOCK
-Y TO EARTHY-HACKLY FRACTURE; SUB-TABULA
-R TO SUB-NODULAR TO OCCASIONAL WEDGE
LIKE TO ELONGATED CUTTINGS HABIT; DULL
TO EARTHY DULL TO OCCASIONAL VERY SLIGHT
-LY SEMI-SPARKLING LUSTER; SEMI-SMOOTH
TO SLIGHTLY CLAYEY TO VERY SLIGHTLY GRIT
-TY TEXTURE; VERY THIN COAL LAMINAE VISI
-BLE IN CARBONACEOUS SHALE CUTTING, VERY
SMALL AMOUNT OF COAL AND CARBONACEOUS
SHALE VISIBLY EFFERVECING IN SAMPLE; NO
ACCESSORY MINERALS PRESENT IN SAMPLE.
SHALE = MEDIUM GRAY TO MEDIUM DARK GRAY
WITH AN OCCASIONAL GRAYISH RED PURPLE
HUE; BRITTLE TENACITY; PLANAR TO



SPLINTERY FRACTURING; CUTTINGS ARE PLATY

TO FLAKY TO ELONGATED; EARTHY TO DULL TO

WAXY LUSTER; SMOOTH TEXTURE; THIN TO

THICK STRUCTURE; INTERBEDDED WITH

SILTSTONE AND SANDSTONE AND CARBONACEOUS

SHALE.

NOTE: DRILLED INTERMEDIATE TD @ 10004'

ON 11/07/2010. DRILL 10' NEW FORMATION.

PERFROM FIT TO 860 PSI = 11.0 EMW ON

12/02/2010.

SANDSTONE = TRANSLUCENT TO WHITE TO

VERY LIGHT GRAY TO LIGHT GRAY TO MEDIUM

LIGHT GRAY TO LIGHT BROWNISH GRAY TO

BROWNISH GRAY COLOR; QUARTZ FRAMEWORK

WITH 10-30% LITHIC FRAGMENTS; UPPER FINE

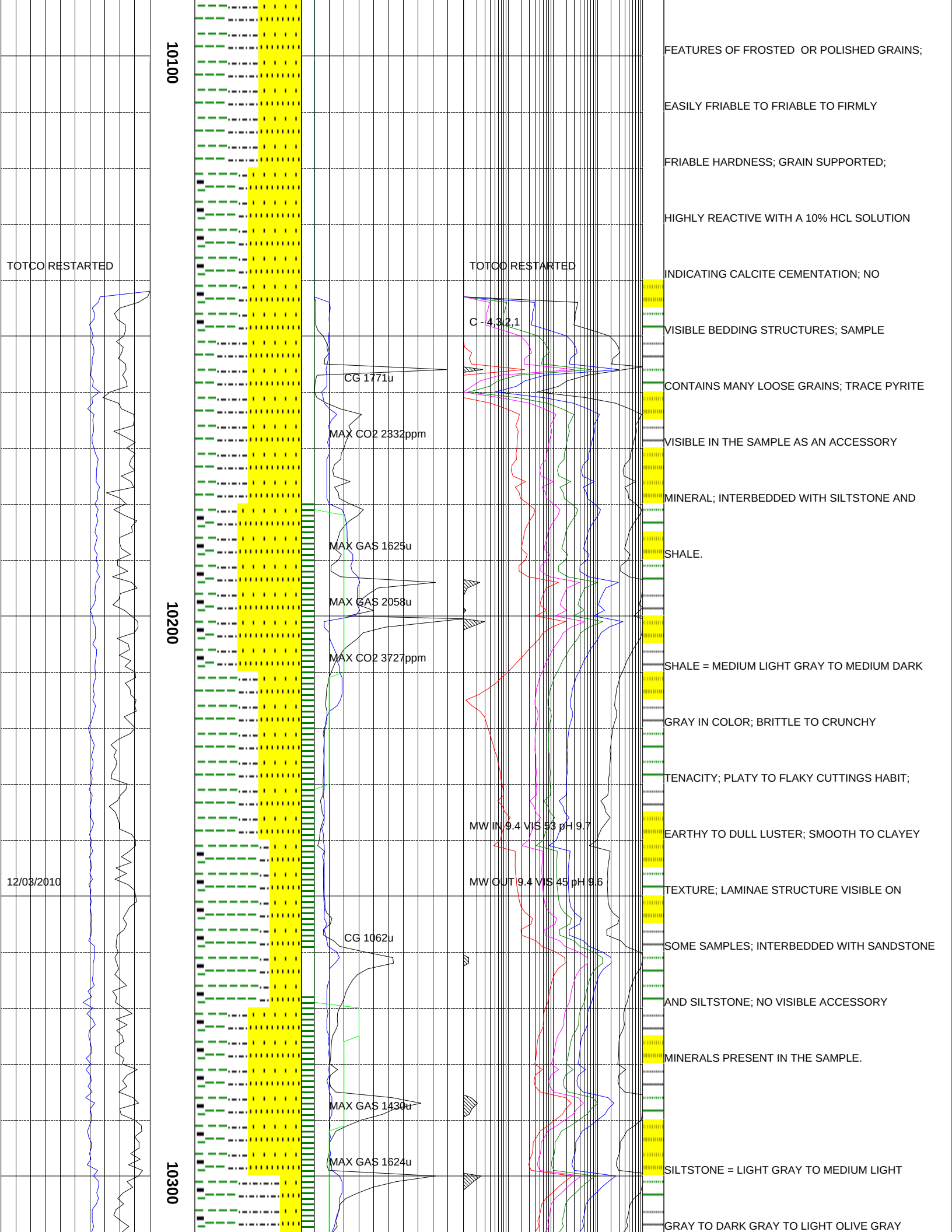
TO LOWER MEDIUM GRAIN SIZE; VERY WELL

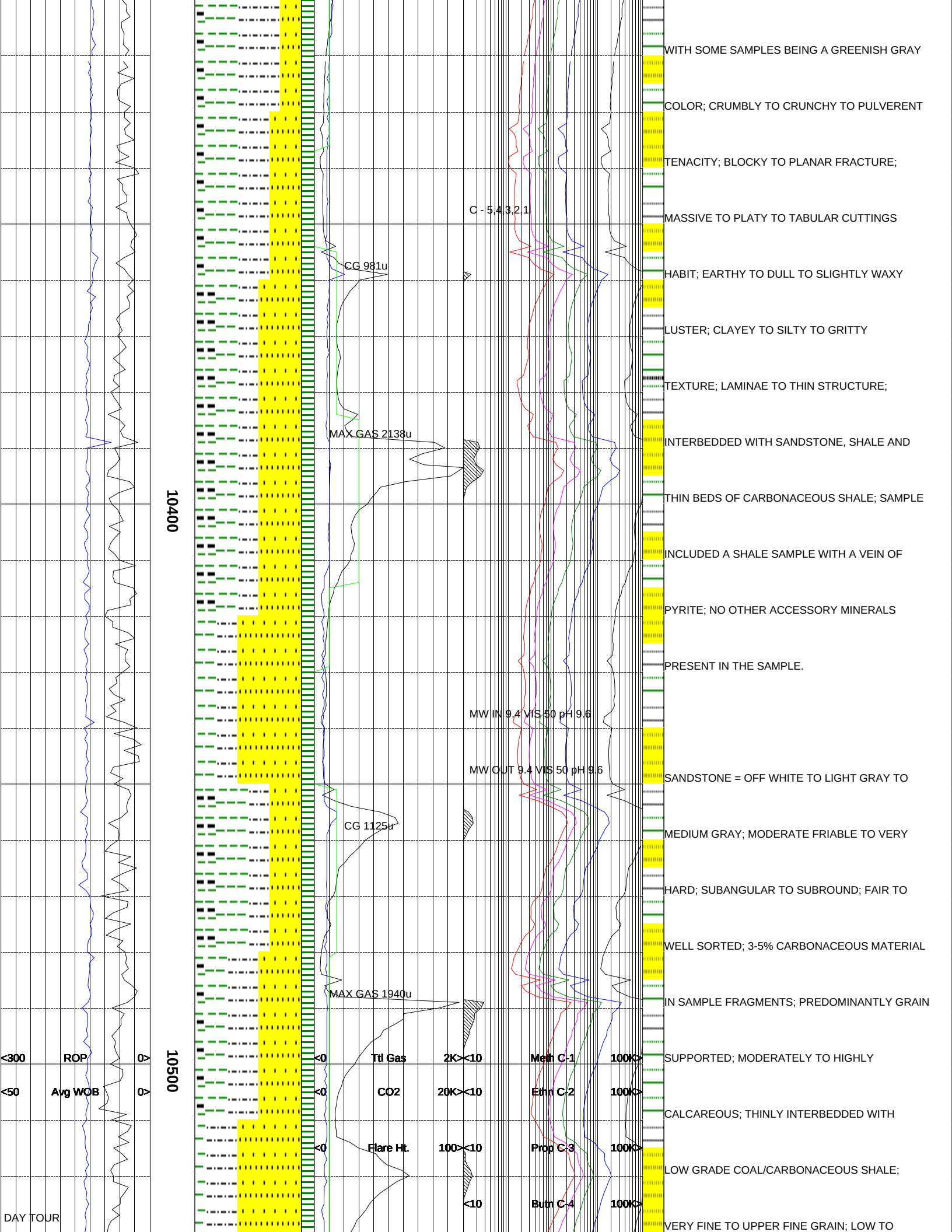
TO FAIR SORTING WITH SOME SAMPLES BEING

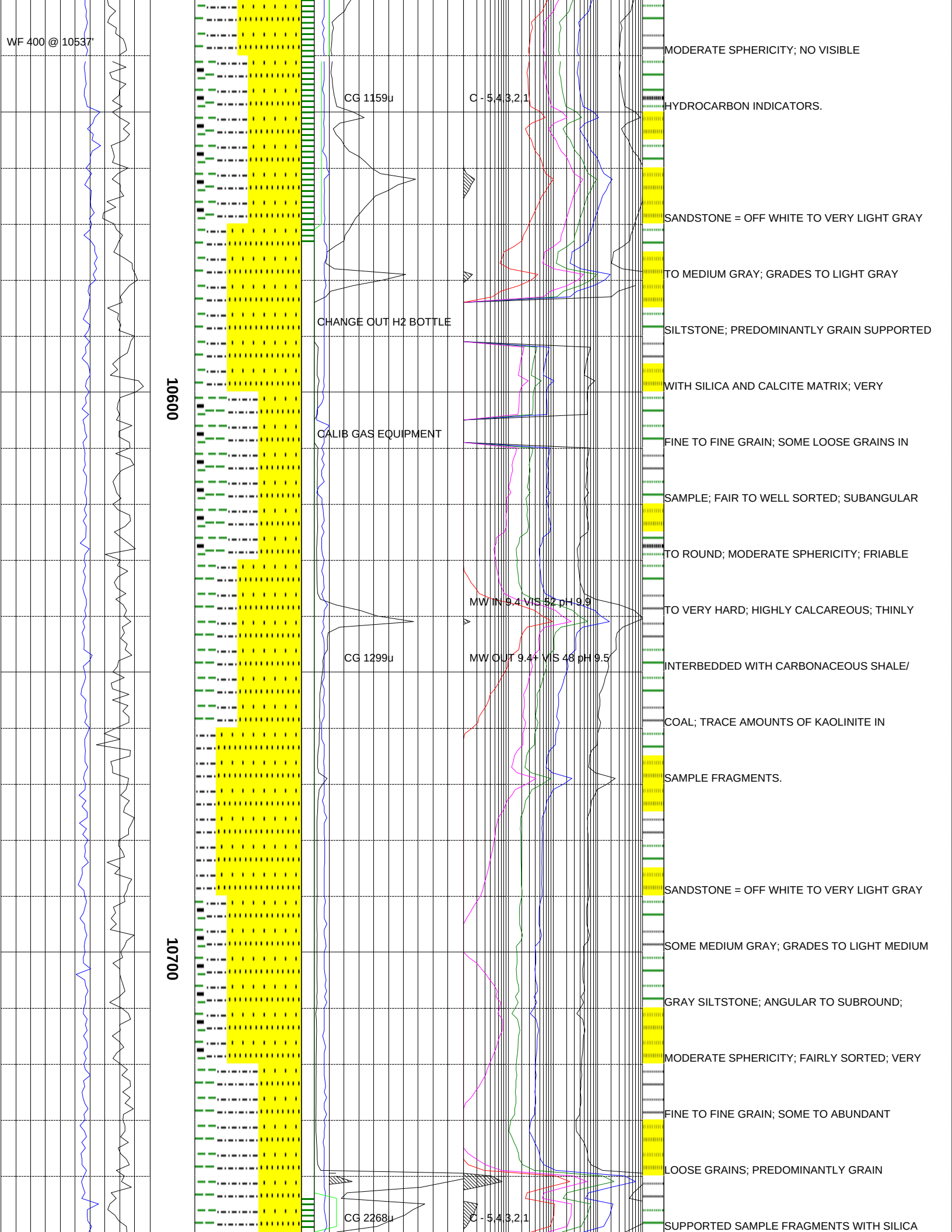
FAIR TO SLIGHTLY POOR SORTING; ROUND TO

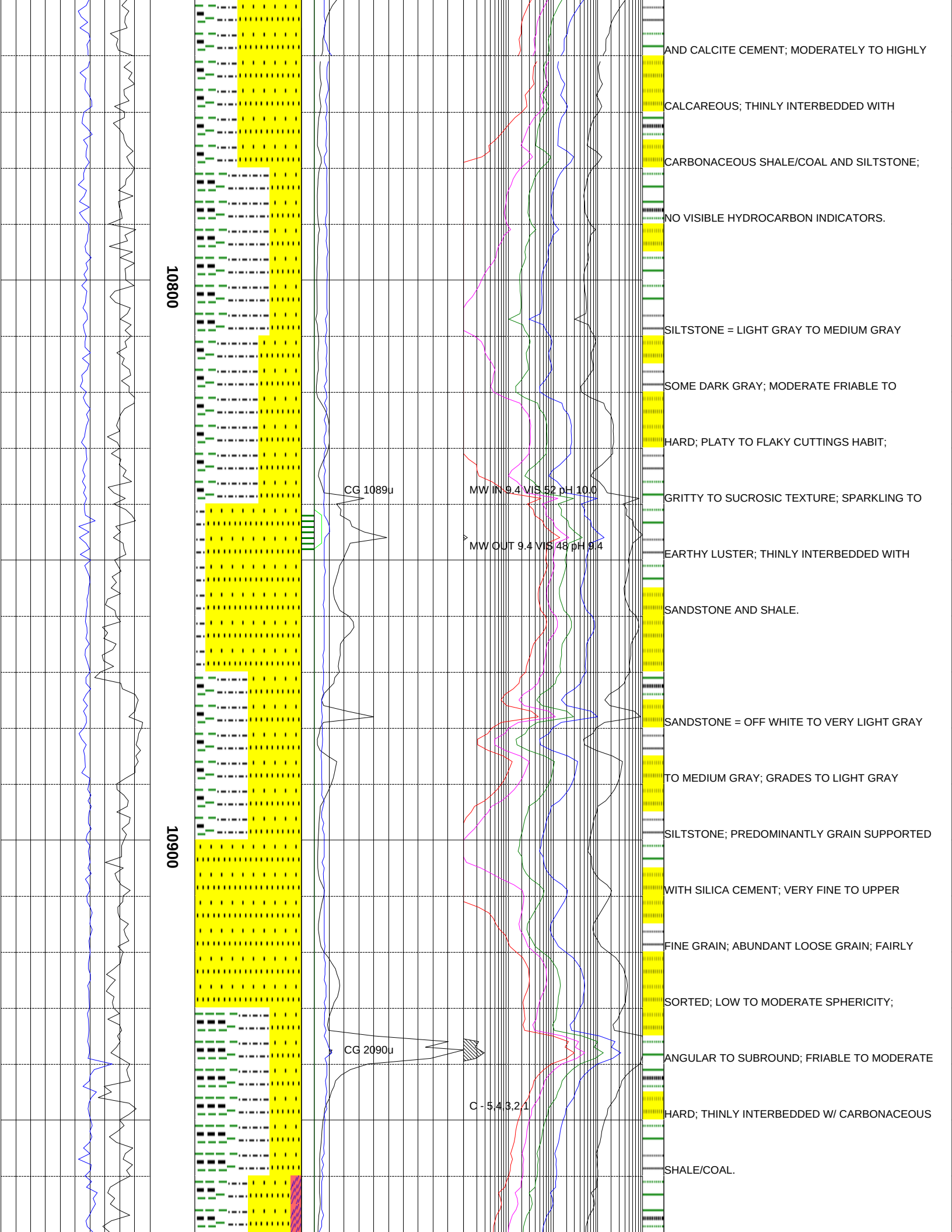
SUBROUND TO SUBANGULAR ANGULARITY;

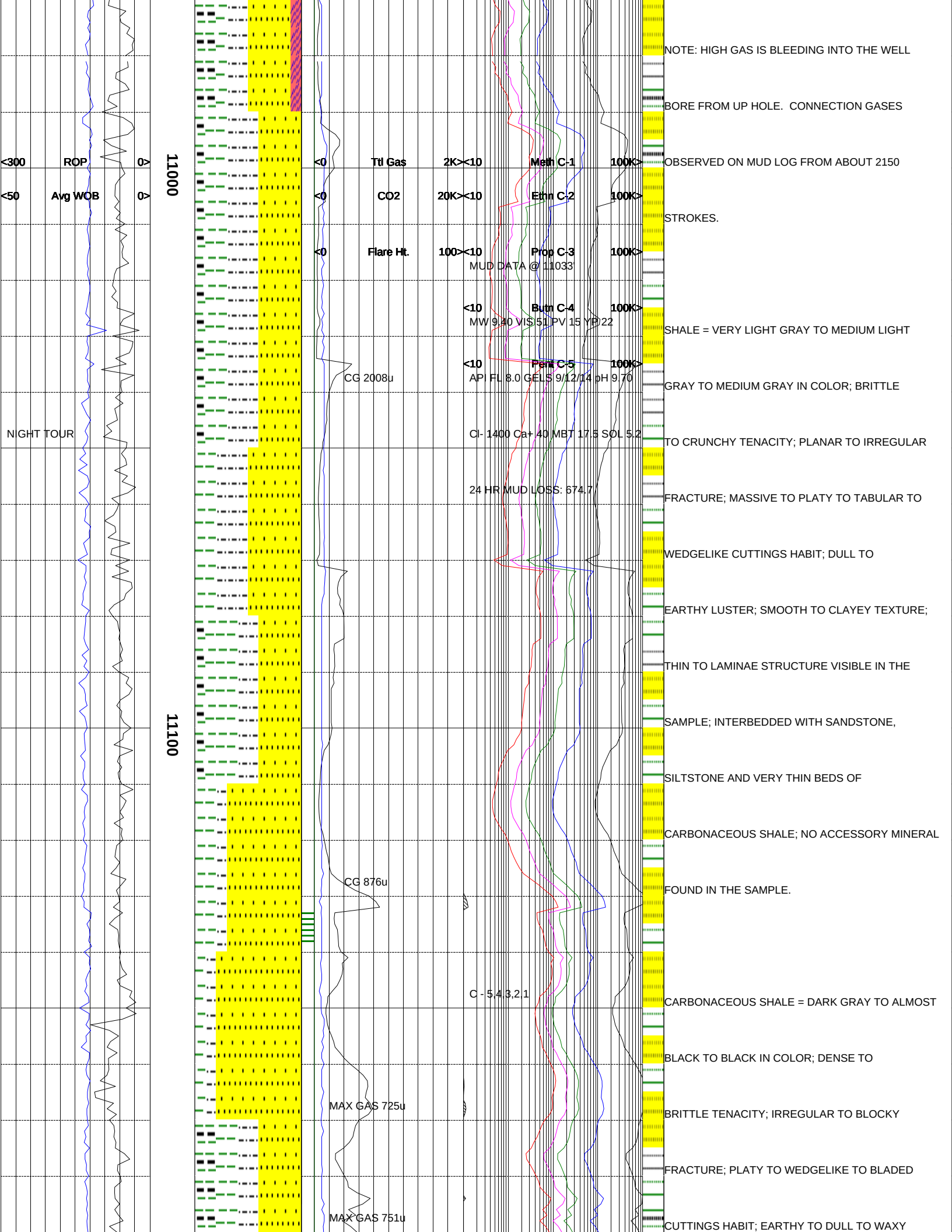
HIGH TO MODERATE SPHERICITY; SURFACE

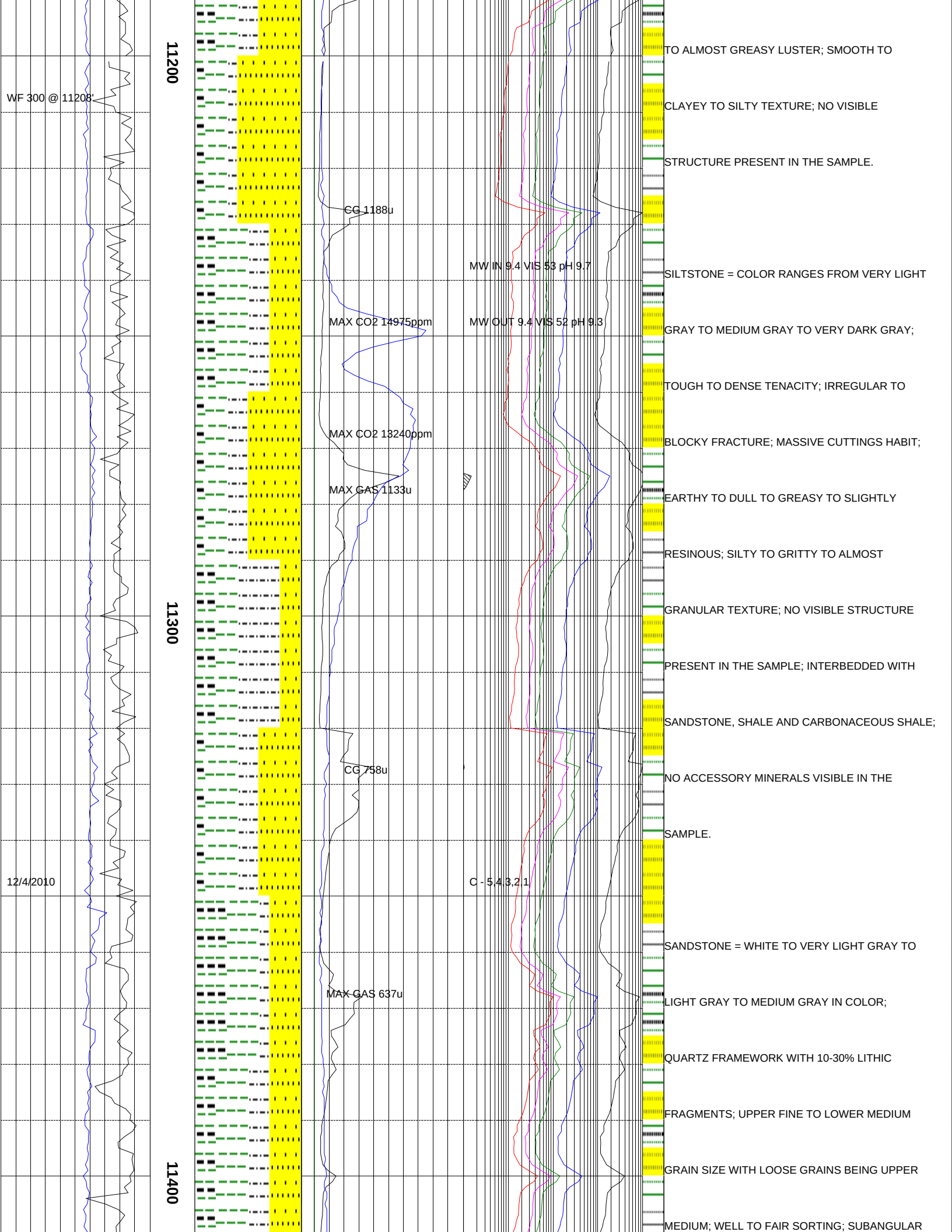

10100
10200
10300
TOTCO RESTARTED
TOTCO RESTARTED
C - 4,3,2,1
CG 1771u
MAX CO2 2332ppm
MAX GAS 1625u
MAX GAS 2058u
MAX CO2 3727ppm
MW IN 9.4 VIS 53 pH 9.7
MW OUT 9.4 VIS 45 pH 9.6
12/03/2010
CG 1062u
MAX GAS 1430u
MAX GAS 1624u
FEATURES OF FROSTED OR POLISHED GRAINS;
EASILY FRIABLE TO FRIABLE TO FIRMLY
FRIABLE HARDNESS; GRAIN SUPPORTED;
HIGHLY REACTIVE WITH A 10% HCL SOLUTION
INDICATING CALCITE CEMENTATION; NO
VISIBLE BEDDING STRUCTURES; SAMPLE
CONTAINS MANY LOOSE GRAINS; TRACE PYRITE
VISIBLE IN THE SAMPLE AS AN ACCESSORY
MINERAL; INTERBEDDED WITH SILTSTONE AND
SHALE.
SHALE = MEDIUM LIGHT GRAY TO MEDIUM DARK
GRAY IN COLOR; BRITTLE TO CRUNCHY
TENACITY; PLATY TO FLAKY CUTTINGS HABIT;
EARTHY TO DULL LUSTER; SMOOTH TO CLAYEY
TEXTURE; LAMINAE STRUCTURE VISIBLE ON
SOME SAMPLES; INTERBEDDED WITH SANDSTONE
AND SILTSTONE; NO VISIBLE ACCESSORY
MINERALS PRESENT IN THE SAMPLE.
SILTSTONE = LIGHT GRAY TO MEDIUM LIGHT
GRAY TO DARK GRAY TO LIGHT OLIVE GRAY

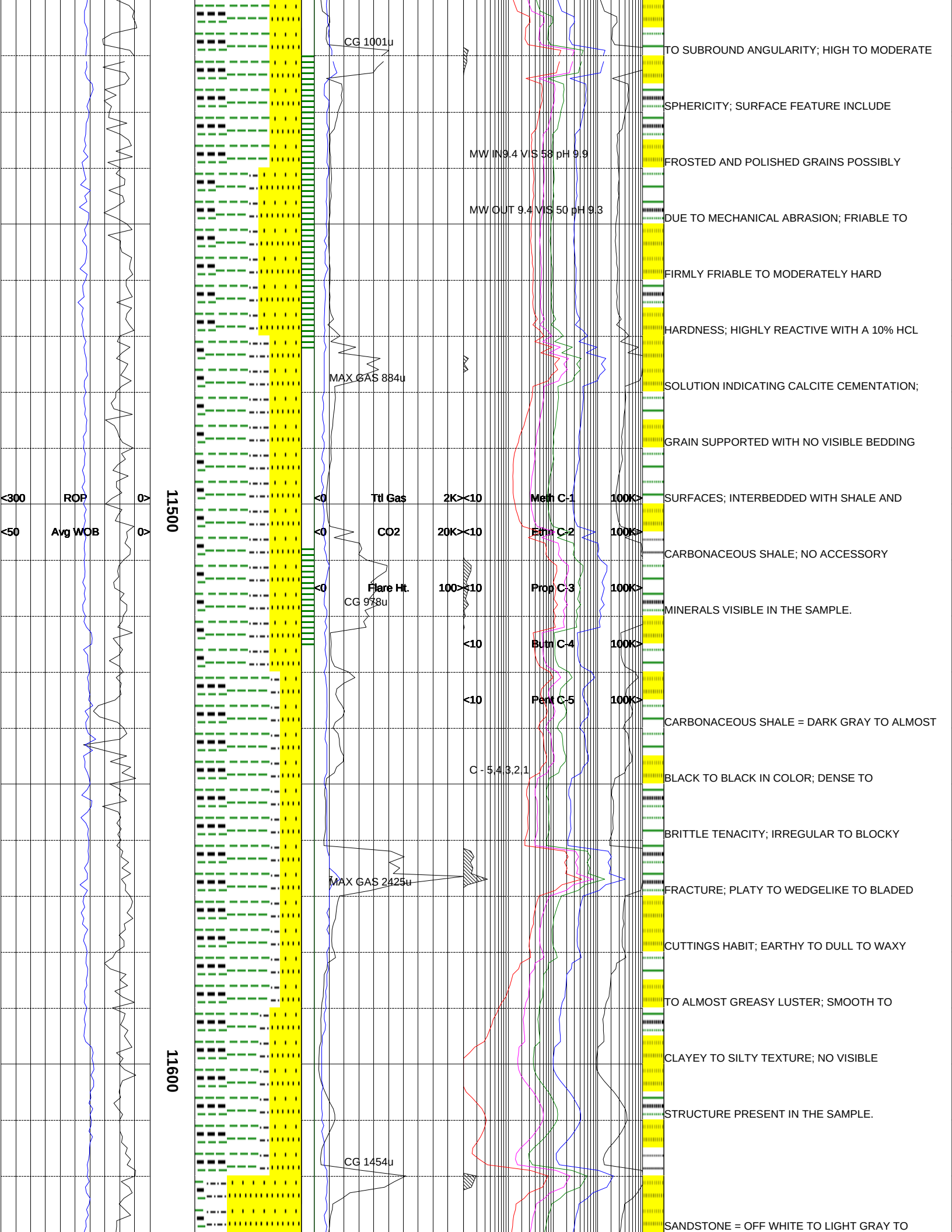

10400
10500
C - 5,4,3,2,1
CG 981u
MAX GAS 2138u
MW IN 9.4 VIS 50 pH 9.6
MW OUT 9.4 VIS 50 pH 9.6
CG 1125u
MAX GAS 1940u
<300 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 2K><10 Meth C-1 100K>
<0 CO2 20K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
DAY TOUR
WITH SOME SAMPLES BEING A GREENISH GRAY
COLOR; CRUMBLY TO CRUNCHY TO PULVERENT
TENACITY; BLOCKY TO PLANAR FRACTURE;
MASSIVE TO PLATY TO TABULAR CUTTINGS
HABIT; EARTHY TO DULL TO SLIGHTLY WAXY
LUSTER; CLAYEY TO SILTY TO GRITTY
TEXTURE; LAMINAE TO THIN STRUCTURE;
INTERBEDDED WITH SANDSTONE, SHALE AND
THIN BEDS OF CARBONACEOUS SHALE; SAMPLE
INCLUDED A SHALE SAMPLE WITH A VEIN OF
PYRITE; NO OTHER ACCESSORY MINERALS
PRESENT IN THE SAMPLE.
SANDSTONE = OFF WHITE TO LIGHT GRAY TO
MEDIUM GRAY; MODERATE FRIABLE TO VERY
HARD; SUBANGULAR TO SUBROUND; FAIR TO
WELL SORTED; 3-5% CARBONACEOUS MATERIAL
IN SAMPLE FRAGMENTS; PREDOMINANTLY GRAIN
SUPPORTED; MODERATELY TO HIGHLY
CALCAREOUS; THINLY INTERBEDDED WITH
LOW GRADE COAL/CARBONACEOUS SHALE;
VERY FINE TO UPPER FINE GRAIN; LOW TO

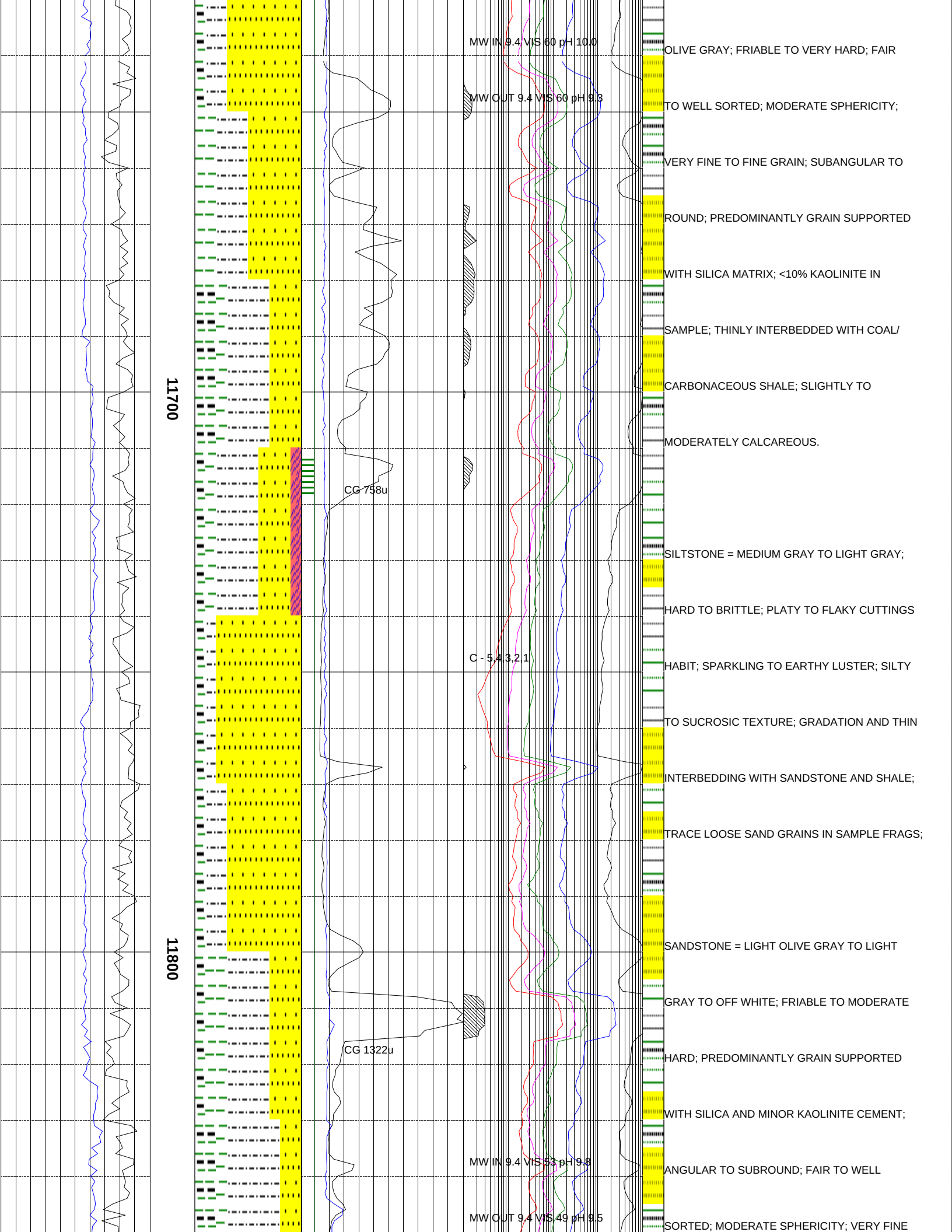

WF 400 @ 10537'
CG 1159u
C - 5,4,3,2,1
MODERATE SPHERICITY; NO VISIBLE
HYDROCARBON INDICATORS.
SANDSTONE = OFF WHITE TO VERY LIGHT GRAY
TO MEDIUM GRAY; GRADES TO LIGHT GRAY
CHANGE OUT H2 BOTTLE
SILTSTONE; PREDOMINANTLY GRAIN SUPPORTED
WITH SILICA AND CALCITE MATRIX; VERY
10600
CALIB GAS EQUIPMENT
FINE TO FINE GRAIN; SOME LOOSE GRAINS IN
SAMPLE; FAIR TO WELL SORTED; SUBANGULAR
TO ROUND; MODERATE SPHERICITY; FRIABLE
MW IN 9.4 VIS 52 pH 9.9
TO VERY HARD; HIGHLY CALCAREOUS; THINLY
CG 1299u
MW OUT 9.4+ VIS 48 pH 9.5
INTERBEDDED WITH CARBONACEOUS SHALE/
COAL; TRACE AMOUNTS OF KAOLINITE IN
SAMPLE FRAGMENTS.
SANDSTONE = OFF WHITE TO VERY LIGHT GRAY
10700
SOME MEDIUM GRAY; GRADES TO LIGHT MEDIUM
GRAY SILTSTONE; ANGULAR TO SUBROUND;
MODERATE SPHERICITY; FAIRLY SORTED; VERY
FINE TO FINE GRAIN; SOME TO ABUNDANT
LOOSE GRAINS; PREDOMINANTLY GRAIN
CG 2268u
C - 5,4,3,2,1
SUPPORTED SAMPLE FRAGMENTS WITH SILICA

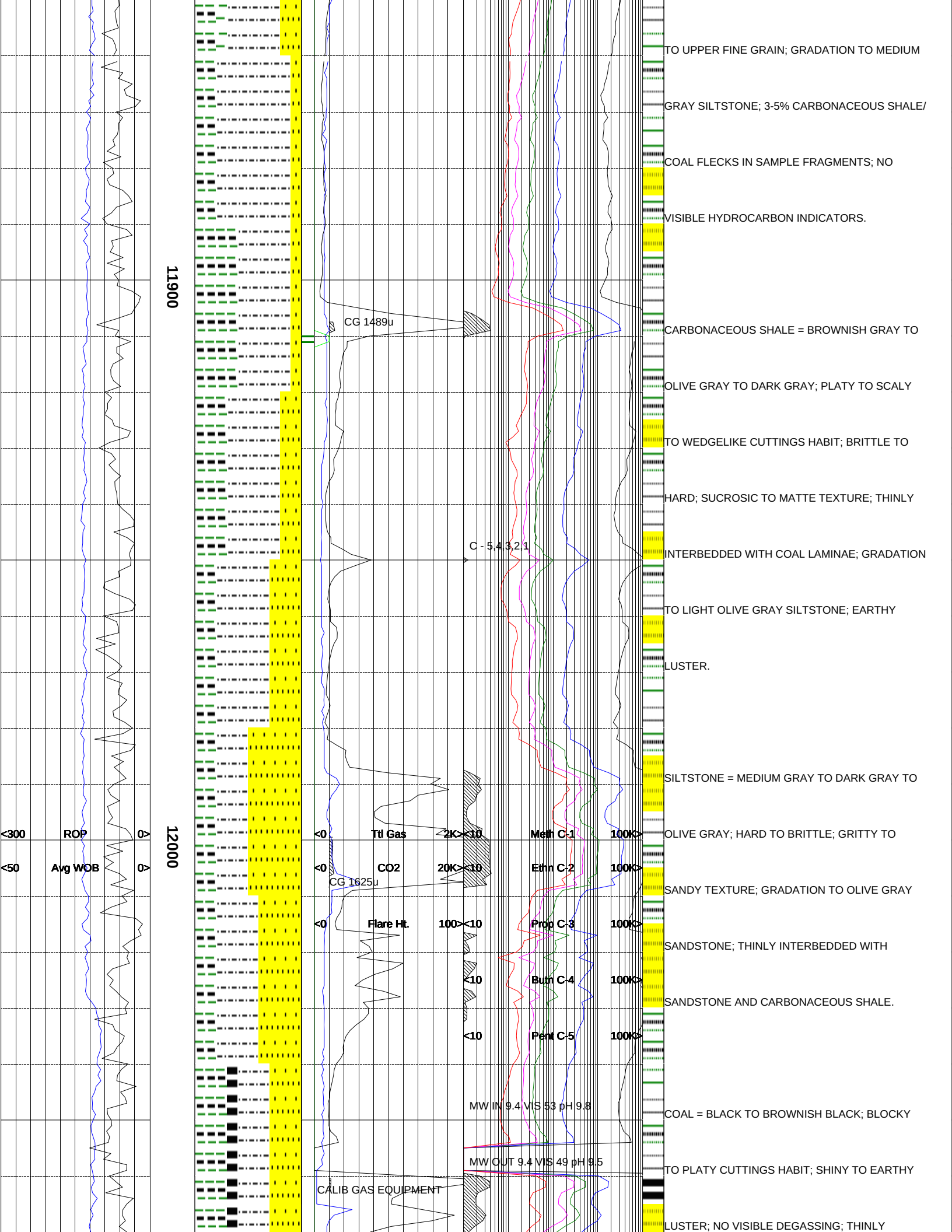

AND CALCITE CEMENT; MODERATELY TO HIGHLY
CALCAREOUS; THINLY INTERBEDDED WITH
CARBONACEOUS SHALE/COAL AND SILTSTONE;
NO VISIBLE HYDROCARBON INDICATORS.
10800
SILTSTONE = LIGHT GRAY TO MEDIUM GRAY
SOME DARK GRAY; MODERATE FRIABLE TO
HARD; PLATY TO FLAKY CUTTINGS HABIT;
CG 1089u
MW IN 9.4 VIS 52 pH 10.0
GRITTY TO SUCROSIC TEXTURE; SPARKLING TO
MW OUT 9.4 VIS 48 pH 9.4
EARTHY LUSTER; THINLY INTERBEDDED WITH
SANDSTONE AND SHALE.
SANDSTONE = OFF WHITE TO VERY LIGHT GRAY
TO MEDIUM GRAY; GRADES TO LIGHT GRAY
10900
SILTSTONE; PREDOMINANTLY GRAIN SUPPORTED
WITH SILICA CEMENT; VERY FINE TO UPPER
FINE GRAIN; ABUNDANT LOOSE GRAIN; FAIRLY
SORTED; LOW TO MODERATE SPHERICITY;
CG 2090u
ANGULAR TO SUBROUND; FRIABLE TO MODERATE
C - 5,4,3,2,1
HARD; THINLY INTERBEDDED W/ CARBONACEOUS
SHALE/COAL.

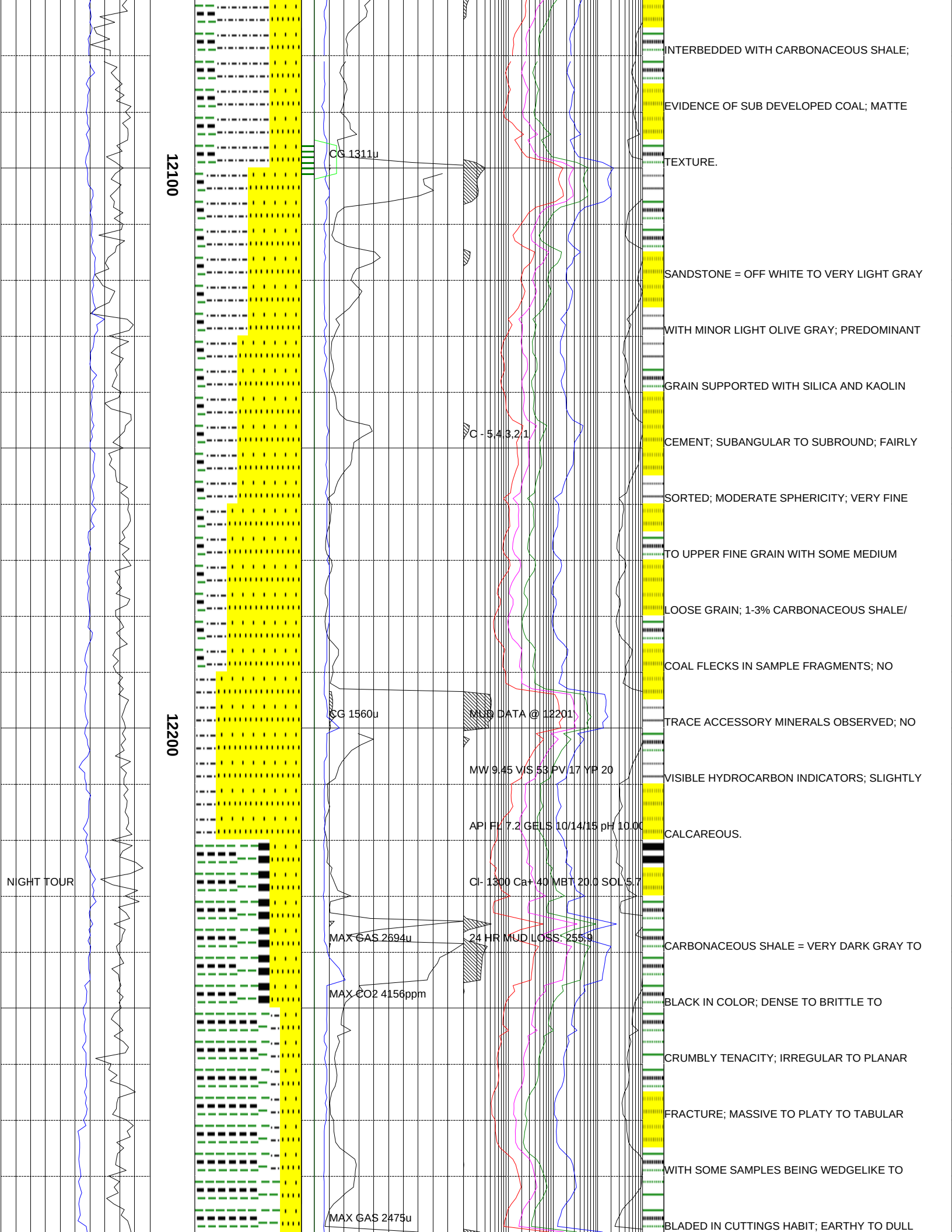

<300 ROP 0>
<50 Avg WOB 0>
11000
11100
<0 Ttl Gas 2K>
<0 CO2 20K>
<0 Flare Ht. 100>
<10 Meth C-1 100K>
<10 Eth C-2 100K>
<10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
MUD DATA @ 11033'
MW 9.40 VIS 51 PV 15 YP 22
API FL 8.0 GELS 9/12/14 pH 9.70
Cl- 1400 Ca+ 40 MBT 17.5 SOL 5.2
24 HR MUD LOSS: 674.7
CG 2008u
CG 876u
C - 5,4,3,2,1
MAX GAS 725u
MAX GAS 751u
NIGHT TOUR
NOTE: HIGH GAS IS BLEEDING INTO THE WELL
BORE FROM UP HOLE. CONNECTION GASES
OBSERVED ON MUD LOG FROM ABOUT 2150
STROKES.
SHALE = VERY LIGHT GRAY TO MEDIUM LIGHT
GRAY TO MEDIUM GRAY IN COLOR; BRITTLE
TO CRUNCHY TENACITY; PLANAR TO IRREGULAR
FRACTURE; MASSIVE TO PLATY TO TABULAR TO
WEDGELIKE CUTTINGS HABIT; DULL TO
EARTHY LUSTER; SMOOTH TO CLAYEY TEXTURE;
THIN TO LAMINAE STRUCTURE VISIBLE IN THE
SAMPLE; INTERBEDDED WITH SANDSTONE,
SILTSTONE AND VERY THIN BEDS OF
CARBONACEOUS SHALE; NO ACCESSORY MINERAL
FOUND IN THE SAMPLE.
CARBONACEOUS SHALE = DARK GRAY TO ALMOST
BLACK TO BLACK IN COLOR; DENSE TO
BRITTLE TENACITY; IRREGULAR TO BLOCKY
FRACTURE; PLATY TO WEDGELIKE TO BLADED
CUTTINGS HABIT; EARTHY TO DULL TO WAXY

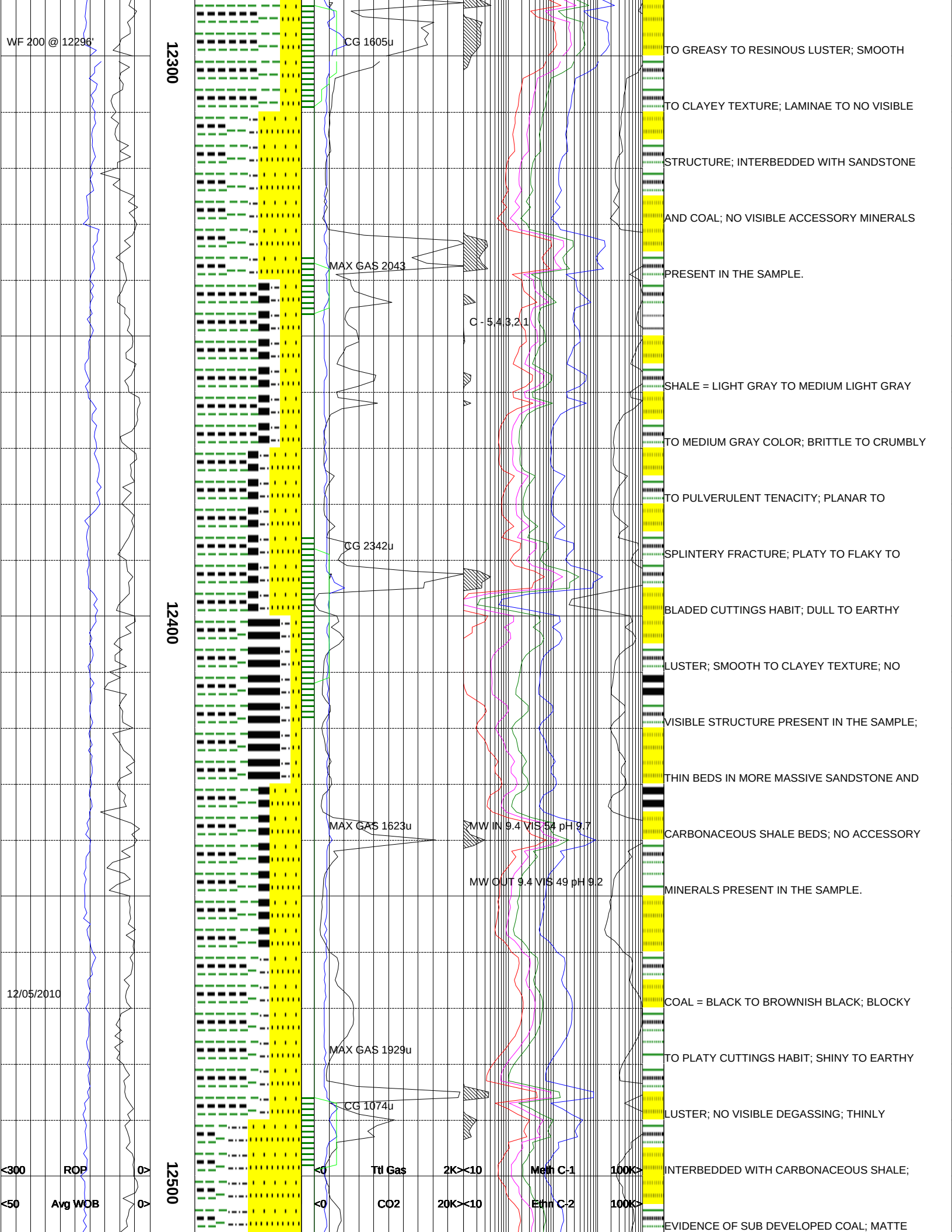

11200
11300
11400
WF 300 @ 11208'
12/4/2010
CG 1188u
MW IN 9.4 VIS 53 pH 9.7
MAX CO2 14975ppm
MW OUT 9.4 VIS 52 pH 9.3
MAX CO2 13240ppm
MAX GAS 1133u
CG 758u
C - 5,4,3,2,1
MAX GAS 637u
TO ALMOST GREASY LUSTER; SMOOTH TO
CLAYEY TO SILTY TEXTURE; NO VISIBLE
STRUCTURE PRESENT IN THE SAMPLE.
SILTSTONE = COLOR RANGES FROM VERY LIGHT
GRAY TO MEDIUM GRAY TO VERY DARK GRAY;
TOUGH TO DENSE TENACITY; IRREGULAR TO
BLOCKY FRACTURE; MASSIVE CUTTINGS HABIT;
EARTHY TO DULL TO GREASY TO SLIGHTLY
RESINOUS; SILTY TO GRITTY TO ALMOST
GRANULAR TEXTURE; NO VISIBLE STRUCTURE
PRESENT IN THE SAMPLE; INTERBEDDED WITH
SANDSTONE, SHALE AND CARBONACEOUS SHALE;
NO ACCESSORY MINERALS VISIBLE IN THE
SAMPLE.
SANDSTONE = WHITE TO VERY LIGHT GRAY TO
LIGHT GRAY TO MEDIUM GRAY IN COLOR;
QUARTZ FRAMEWORK WITH 10-30% LITHIC
FRAGMENTS; UPPER FINE TO LOWER MEDIUM
GRAIN SIZE WITH LOOSE GRAINS BEING UPPER
MEDIUM; WELL TO FAIR SORTING; SUBANGULAR

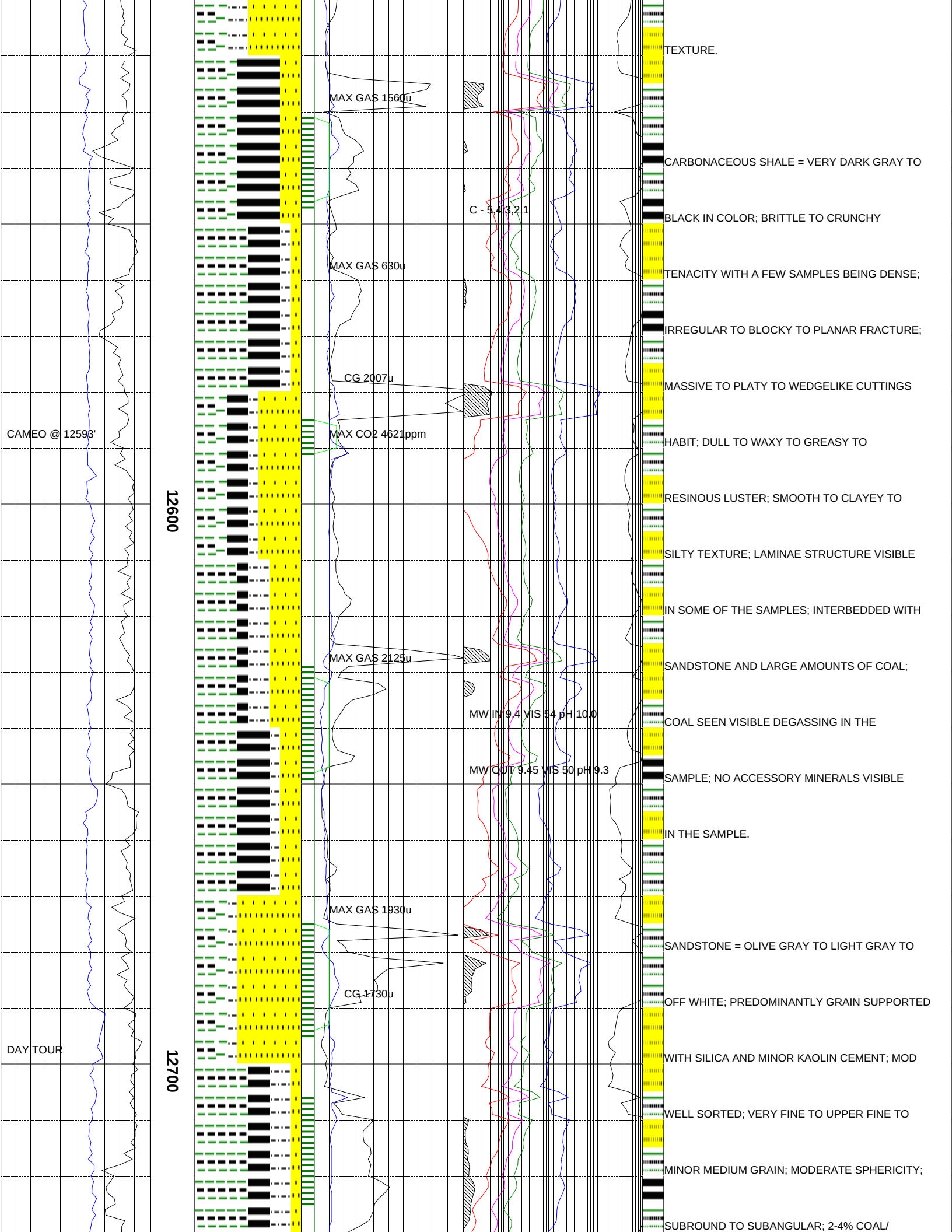

CG 1001u
MW IN 9.4 VIS 58 pH 9.9
MW OUT 9.4 VIS 50 pH 9.3
MAX GAS 884u
<300 ROP 0>
<50 Avg WOB 0>
11500
<0 Ttl Gas 2K>
<0 CO2 20K>
<0 Flare Ht. 100>
CG 978u
<10 Meth C-1 100K>
<10 Eth C-2 100K>
<10 Prop C-3 100K>
<10 Buth C-4 100K>
<10 Pent C-5 100K>
C - 5,4,3,2,1
MAX GAS 2425u
11600
CG 1454u
TO SUBROUND ANGULARITY; HIGH TO MODERATE
SPHERICITY; SURFACE FEATURE INCLUDE
FROSTED AND POLISHED GRAINS POSSIBLY
DUE TO MECHANICAL ABRASION; FRIABLE TO
FIRMLY FRIABLE TO MODERATELY HARD
HARDNESS; HIGHLY REACTIVE WITH A 10% HCL
SOLUTION INDICATING CALCITE CEMENTATION;
GRAIN SUPPORTED WITH NO VISIBLE BEDDING
SURFACES; INTERBEDDED WITH SHALE AND
CARBONACEOUS SHALE; NO ACCESSORY
MINERALS VISIBLE IN THE SAMPLE.
CARBONACEOUS SHALE = DARK GRAY TO ALMOST
BLACK TO BLACK IN COLOR; DENSE TO
BRITTLE TENACITY; IRREGULAR TO BLOCKY
FRACTURE; PLATY TO WEDGELIKE TO BLADED
CUTTINGS HABIT; EARTHY TO DULL TO WAXY
TO ALMOST GREASY LUSTER; SMOOTH TO
CLAYEY TO SILTY TEXTURE; NO VISIBLE
STRUCTURE PRESENT IN THE SAMPLE.
SANDSTONE = OFF WHITE TO LIGHT GRAY TO

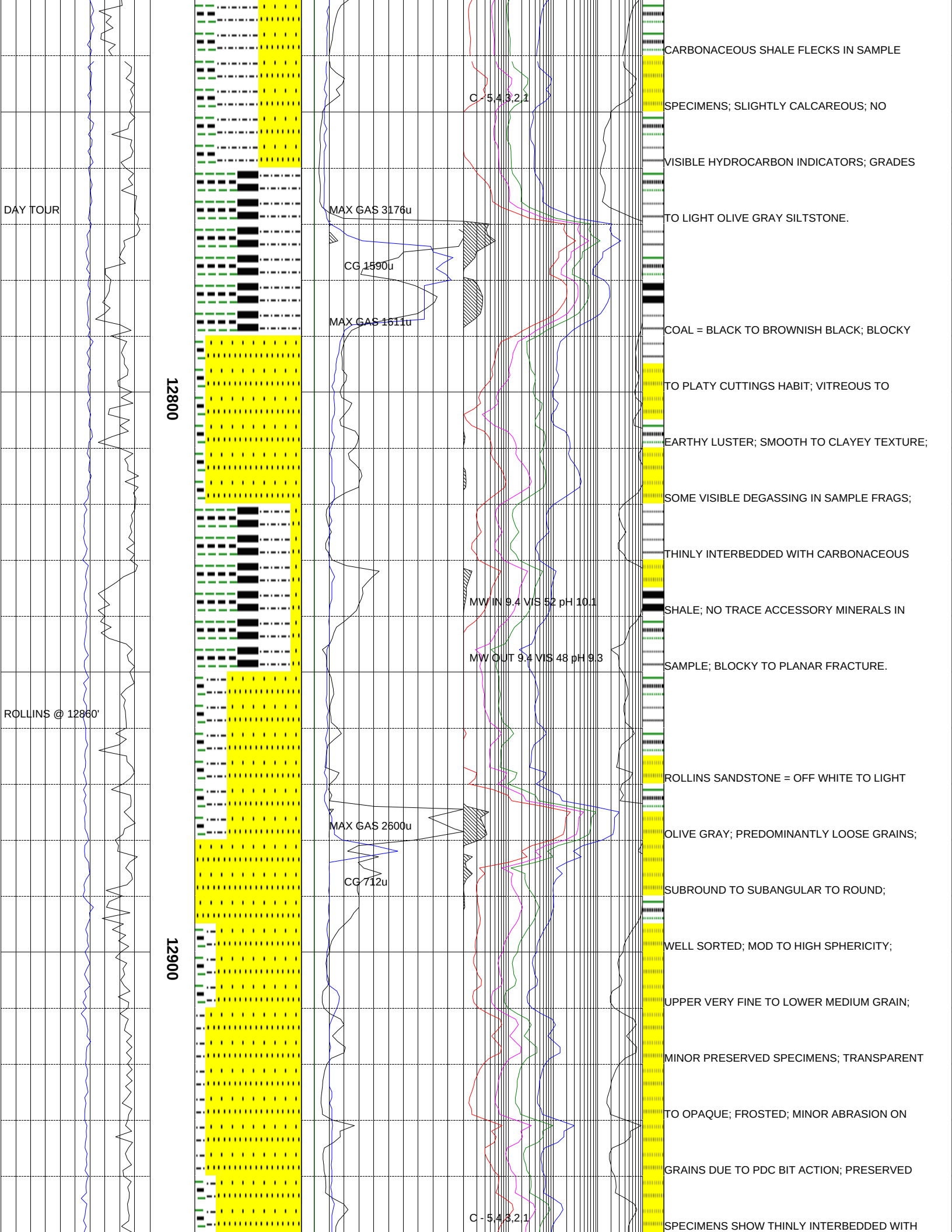

MW IN 9.4 VIS 60 pH 10.0
MW OUT 9.4 VIS 60 pH 9.3
11700
CG 758u
C - 5,4,3,2,1
11800
CG 1322u
MW IN 9.4 VIS 53 pH 9.8
MW OUT 9.4 VIS 49 pH 9.5
OLIVE GRAY; FRIABLE TO VERY HARD; FAIR
TO WELL SORTED; MODERATE SPHERICITY;
VERY FINE TO FINE GRAIN; SUBANGULAR TO
ROUND; PREDOMINANTLY GRAIN SUPPORTED
WITH SILICA MATRIX; <10% KAOLINITE IN
SAMPLE; THINLY INTERBEDDED WITH COAL/
CARBONACEOUS SHALE; SLIGHTLY TO
MODERATELY CALCAREOUS.
SILTSTONE = MEDIUM GRAY TO LIGHT GRAY;
HARD TO BRITTLE; PLATY TO FLAKY CUTTINGS
HABIT; SPARKLING TO EARTHY LUSTER; SILTY
TO SUCROSIC TEXTURE; GRADATION AND THIN
INTERBEDDING WITH SANDSTONE AND SHALE;
TRACE LOOSE SAND GRAINS IN SAMPLE FRAGS;
SANDSTONE = LIGHT OLIVE GRAY TO LIGHT
GRAY TO OFF WHITE; FRIABLE TO MODERATE
HARD; PREDOMINANTLY GRAIN SUPPORTED
WITH SILICA AND MINOR KAOLINITE CEMENT;
ANGULAR TO SUBROUND; FAIR TO WELL
SORTED; MODERATE SPHERICITY; VERY FINE

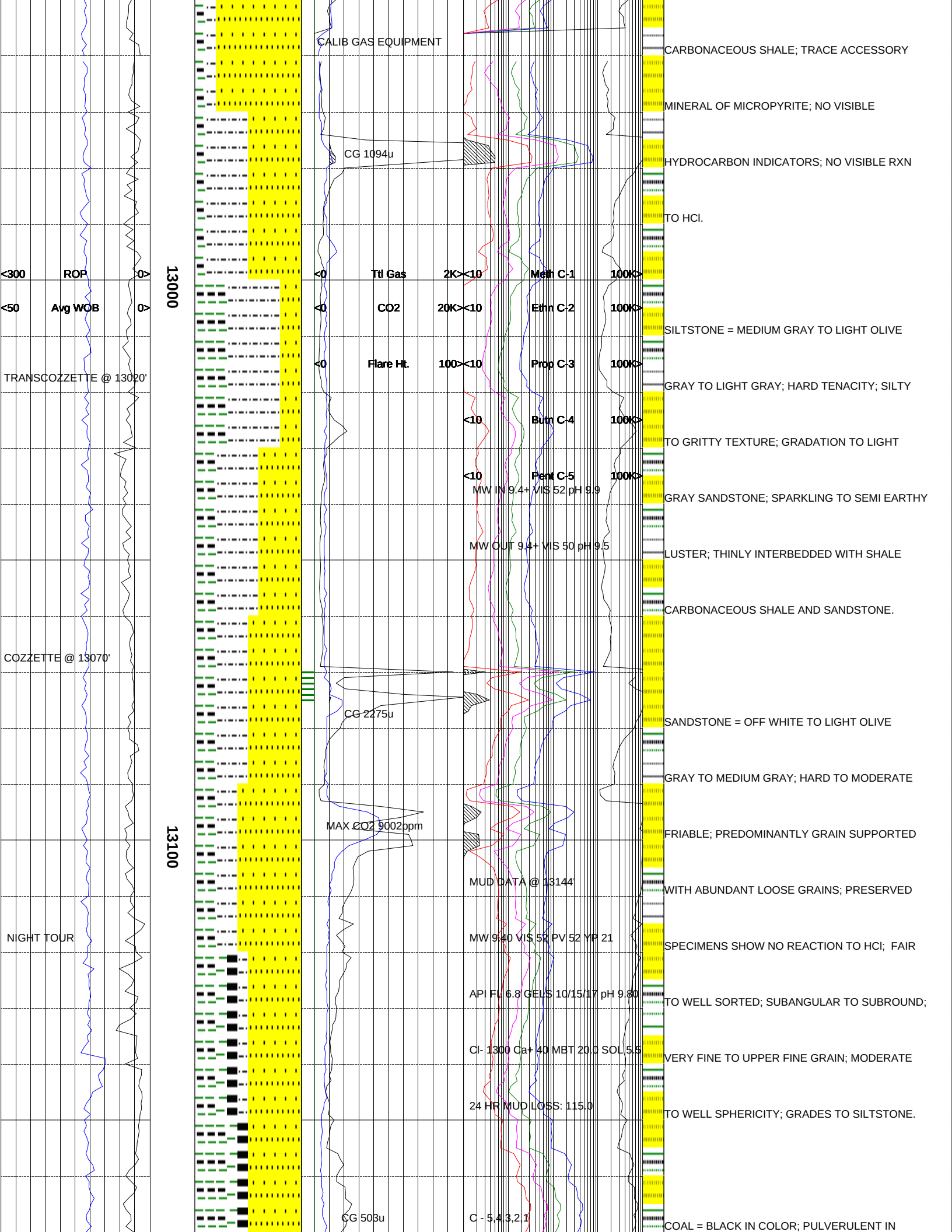

11900
12000
<300
ROP
0>
<50
Avg WOB
0>
CG 1489u
CG 1625u
C - 5,4,3,2,1
<0
Ttl Gas
2K>
<0
CO2
20K>
<0
Flare Ht.
100>
<10
Meth C-1
100K>
<10
Ethn C-2
100K>
<10
Prop C-3
100K>
<10
Butn C-4
100K>
<10
Pent C-5
100K>
MW IN 9.4 VIS 53 pH 9.8
MW OUT 9.4 VIS 49 pH 9.5
CALIB GAS EQUIPMENT
TO UPPER FINE GRAIN; GRADATION TO MEDIUM
GRAY SILTSTONE; 3-5% CARBONACEOUS SHALE/
COAL FLECKS IN SAMPLE FRAGMENTS; NO
VISIBLE HYDROCARBON INDICATORS.
CARBONACEOUS SHALE = BROWNISH GRAY TO
OLIVE GRAY TO DARK GRAY; PLATY TO SCALY
TO WEDGELIKE CUTTINGS HABIT; BRITTLE TO
HARD; SUCROSIC TO MATTE TEXTURE; THINLY
INTERBEDDED WITH COAL LAMINAE; GRADATION
TO LIGHT OLIVE GRAY SILTSTONE; EARTHY
LUSTER.
SILTSTONE = MEDIUM GRAY TO DARK GRAY TO
OLIVE GRAY; HARD TO BRITTLE; GRITTY TO
SANDY TEXTURE; GRADATION TO OLIVE GRAY
SANDSTONE; THINLY INTERBEDDED WITH
SANDSTONE AND CARBONACEOUS SHALE.
COAL = BLACK TO BROWNISH BLACK; BLOCKY
TO PLATY CUTTINGS HABIT; SHINY TO EARTHY
LUSTER; NO VISIBLE DEGASSING; THINLY

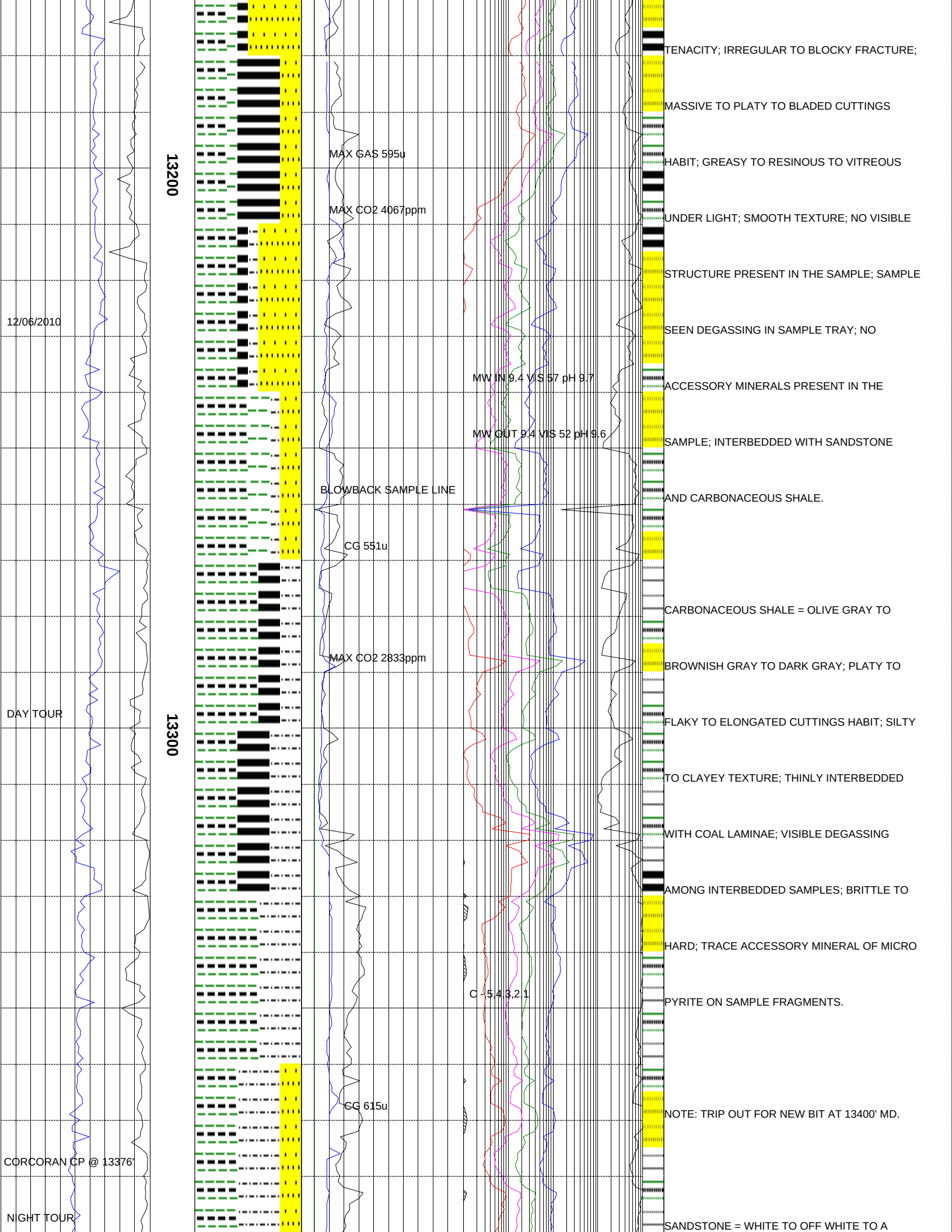

12100
12200
NIGHT TOUR
CG 1311u
CG 1560u
MAX GAS 2694u
MAX CO2 4156ppm
MAX GAS 2475u
C - 5,4,3,2,1
MUD DATA @ 12201
MW 9.45 VIS 53 PV 17 YP 20
API FL 7.2 GELS 10/14/15 pH 10.00
Cl- 1300 Ca+ 40 MBT 20.0 SOL 5.7
24 HR MUD LOSS: 255.9
INTERBEDDED WITH CARBONACEOUS SHALE;
EVIDENCE OF SUB DEVELOPED COAL; MATTE
TEXTURE.
SANDSTONE = OFF WHITE TO VERY LIGHT GRAY
WITH MINOR LIGHT OLIVE GRAY; PREDOMINANT
GRAIN SUPPORTED WITH SILICA AND KAOLIN
CEMENT; SUBANGULAR TO SUBROUND; FAIRLY
SORTED; MODERATE SPHERICITY; VERY FINE
TO UPPER FINE GRAIN WITH SOME MEDIUM
LOOSE GRAIN; 1-3% CARBONACEOUS SHALE/
COAL FLECKS IN SAMPLE FRAGMENTS; NO
TRACE ACCESSORY MINERALS OBSERVED; NO
VISIBLE HYDROCARBON INDICATORS; SLIGHTLY
CALCAREOUS.
CARBONACEOUS SHALE = VERY DARK GRAY TO
BLACK IN COLOR; DENSE TO BRITTLE TO
CRUMBLY TENACITY; IRREGULAR TO PLANAR
FRACTURE; MASSIVE TO PLATY TO TABULAR
WITH SOME SAMPLES BEING WEDGELIKE TO
BLADED IN CUTTINGS HABIT; EARTHY TO DULL

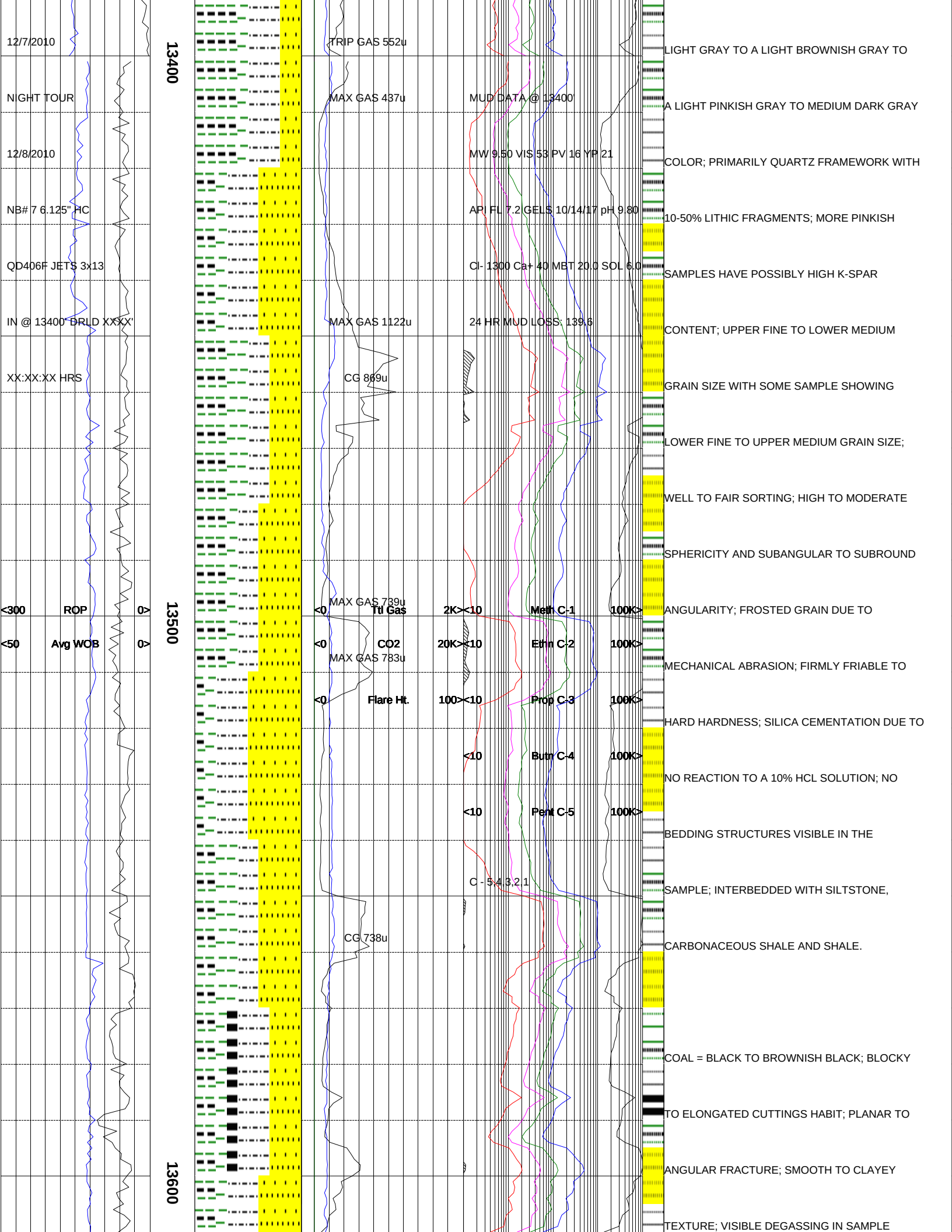

WF 200 @ 12296'
12300
CG 1605u
TO GREASY TO RESINOUS LUSTER; SMOOTH
TO CLAYEY TEXTURE; LAMINAE TO NO VISIBLE
STRUCTURE; INTERBEDDED WITH SANDSTONE
AND COAL; NO VISIBLE ACCESSORY MINERALS
MAX GAS 2043
PRESENT IN THE SAMPLE.
C - 5,4,3,2,1
SHALE = LIGHT GRAY TO MEDIUM LIGHT GRAY
TO MEDIUM GRAY COLOR; BRITTLE TO CRUMBLY
TO PULVERULENT TENACITY; PLANAR TO
CG 2342u
SPLINTERY FRACTURE; PLATY TO FLAKY TO
BLADED CUTTINGS HABIT; DULL TO EARTHY
12400
LUSTER; SMOOTH TO CLAYEY TEXTURE; NO
VISIBLE STRUCTURE PRESENT IN THE SAMPLE;
THIN BEDS IN MORE MASSIVE SANDSTONE AND
MAX GAS 1623u
MW IN 9.4 VIS 54 pH 9.7
CARBONACEOUS SHALE BEDS; NO ACCESSORY
MW OUT 9.4 VIS 49 pH 9.2
MINERALS PRESENT IN THE SAMPLE.
12/05/2010
COAL = BLACK TO BROWNISH BLACK; BLOCKY
MAX GAS 1929u
TO PLATY CUTTINGS HABIT; SHINY TO EARTHY
CG 1074u
LUSTER; NO VISIBLE DEGASSING; THINLY
<300 ROP 0>
<0 Ttl Gas 2K><10 Meth C-1 100K>
12500
INTERBEDDED WITH CARBONACEOUS SHALE;
<50 Avg WOB 0>
<0 CO2 20K><10 Ethn C-2 100K>
EVIDENCE OF SUB DEVELOPED COAL; MATTE

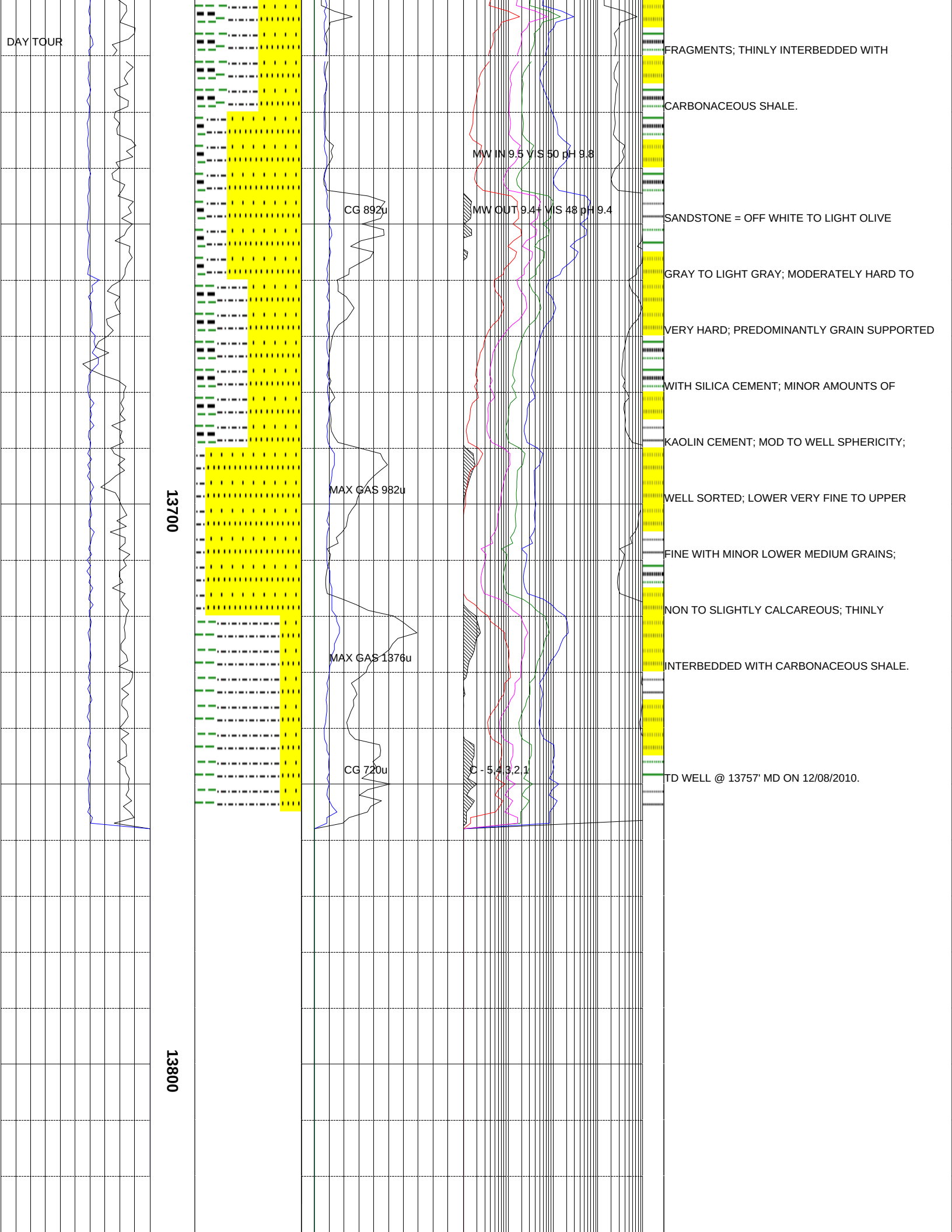

TEXTURE.
MAX GAS 1560u
CARBONACEOUS SHALE = VERY DARK GRAY TO
C - 5,4,3,2,1
BLACK IN COLOR; BRITTLE TO CRUNCHY
MAX GAS 630u
TENACITY WITH A FEW SAMPLES BEING DENSE;
IRREGULAR TO BLOCKY TO PLANAR FRACTURE;
CG 2007u
MASSIVE TO PLATY TO WEDGELIKE CUTTINGS
CAMEO @ 12593'
MAX CO2 4621ppm
HABIT; DULL TO WAXY TO GREASY TO
12600
RESINOUS LUSTER; SMOOTH TO CLAYEY TO
SILTY TEXTURE; LAMINAE STRUCTURE VISIBLE
IN SOME OF THE SAMPLES; INTERBEDDED WITH
MAX GAS 2125u
SANDSTONE AND LARGE AMOUNTS OF COAL;
MW IN 9.4 VIS 54 pH 10.0
COAL SEEN VISIBLE DEGASSING IN THE
MW OUT 9.45 VIS 50 pH 9.3
SAMPLE; NO ACCESSORY MINERALS VISIBLE
IN THE SAMPLE.
MAX GAS 1930u
SANDSTONE = OLIVE GRAY TO LIGHT GRAY TO
CG 1730u
OFF WHITE; PREDOMINANTLY GRAIN SUPPORTED
DAY TOUR
12700
WITH SILICA AND MINOR KAOLIN CEMENT; MOD
WELL SORTED; VERY FINE TO UPPER FINE TO
MINOR MEDIUM GRAIN; MODERATE SPHERICITY;
SUBROUND TO SUBANGULAR; 2-4% COAL/


CARBONACEOUS SHALE FLECKS IN SAMPLE
C - 5,4,3,2,1
SPECIMENS; SLIGHTLY CALCAREOUS; NO
VISIBLE HYDROCARBON INDICATORS; GRADES
DAY TOUR
MAX GAS 3176u
TO LIGHT OLIVE GRAY SILTSTONE.
CG 1590u
MAX GAS 1611u
COAL = BLACK TO BROWNISH BLACK; BLOCKY
12800
TO PLATY CUTTINGS HABIT; VITREOUS TO
EARTHY LUSTER; SMOOTH TO CLAYEY TEXTURE;
SOME VISIBLE DEGASSING IN SAMPLE FRAGS;
THINLY INTERBEDDED WITH CARBONACEOUS
MW IN 9.4 VIS 52 pH 10.1
SHALE; NO TRACE ACCESSORY MINERALS IN
MW OUT 9.4 VIS 48 pH 9.3
SAMPLE; BLOCKY TO PLANAR FRACTURE.
ROLLINS @ 12860'
ROLLINS SANDSTONE = OFF WHITE TO LIGHT
MAX GAS 2600u
OLIVE GRAY; PREDOMINANTLY LOOSE GRAINS;
CG 712u
SUBROUND TO SUBANGULAR TO ROUND;
12900
WELL SORTED; MOD TO HIGH SPHERICITY;
UPPER VERY FINE TO LOWER MEDIUM GRAIN;
MINOR PRESERVED SPECIMENS; TRANSPARENT
TO OPAQUE; FROSTED; MINOR ABRASION ON
GRAINS DUE TO PDC BIT ACTION; PRESERVED
C - 5,4,3,2,1
SPECIMENS SHOW THINLY INTERBEDDED WITH


CALIB GAS EQUIPMENT
CG 1094u
<300 ROP 0>
<50 Avg WOB 0>
13000
TRANSCOZZETTE @ 13020'
<0 Ttl Gas 2K><10 Meth C-1 100K>
<0 CO2 20K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buta C-4 100K>
<10 Pent C-5 100K>
MW IN 9.4+ VIS 52 pH 9.9
MW OUT 9.4+ VIS 50 pH 9.5
COZZETTE @ 13070'
CG 2275u
MAX CO2 9002ppm
13100
MUD DATA @ 13144'
NIGHT TOUR
MW 9.40 VIS 52 PV 52 YP 21
API FL 6.8 GELS 10/15/17 pH 9.80
Cl- 1300 Ca+ 40 MBT 20.0 SOL 5.5
24 HR MUD LOSS: 115.0
CG 503u
C - 5,4,3,2,1
CARBONACEOUS SHALE; TRACE ACCESSORY
MINERAL OF MICROPYRITE; NO VISIBLE
HYDROCARBON INDICATORS; NO VISIBLE RXN
TO HCl.
SILTSTONE = MEDIUM GRAY TO LIGHT OLIVE
GRAY TO LIGHT GRAY; HARD TENACITY; SILTY
TO GRITTY TEXTURE; GRADATION TO LIGHT
GRAY SANDSTONE; SPARKLING TO SEMI EARTHY
LUSTER; THINLY INTERBEDDED WITH SHALE
CARBONACEOUS SHALE AND SANDSTONE.
SANDSTONE = OFF WHITE TO LIGHT OLIVE
GRAY TO MEDIUM GRAY; HARD TO MODERATE
FRIABLE; PREDOMINANTLY GRAIN SUPPORTED
WITH ABUNDANT LOOSE GRAINS; PRESERVED
SPECIMENS SHOW NO REACTION TO HCl; FAIR
TO WELL SORTED; SUBANGULAR TO SUBROUND;
VERY FINE TO UPPER FINE GRAIN; MODERATE
TO WELL SPHERICITY; GRADES TO SILTSTONE.
COAL = BLACK IN COLOR; PULVERULENT IN


13200
13300
12/06/2010
DAY TOUR
CORCORAN CP @ 13376'
NIGHT TOUR
MAX GAS 595u
MAX CO2 4067ppm
MW IN 9.4 VIS 57 pH 9.7
MW OUT 9.4 VIS 52 pH 9.6
BLOWBACK SAMPLE LINE
CG 551u
MAX CO2 2833ppm
C - 5,4,3,2,1
CG 615u
TENACITY; IRREGULAR TO BLOCKY FRACTURE;
MASSIVE TO PLATY TO BLADED CUTTINGS
HABIT; GREASY TO RESINOUS TO VITREOUS
UNDER LIGHT; SMOOTH TEXTURE; NO VISIBLE
STRUCTURE PRESENT IN THE SAMPLE; SAMPLE
SEEN DEGASSING IN SAMPLE TRAY; NO
ACCESSORY MINERALS PRESENT IN THE
SAMPLE; INTERBEDDED WITH SANDSTONE
AND CARBONACEOUS SHALE.
CARBONACEOUS SHALE = OLIVE GRAY TO
BROWNISH GRAY TO DARK GRAY; PLATY TO
FLAKY TO ELONGATED CUTTINGS HABIT; SILTY
TO CLAYEY TEXTURE; THINLY INTERBEDDED
WITH COAL LAMINAE; VISIBLE DEGASSING
AMONG INTERBEDDED SAMPLES; BRITTLE TO
HARD; TRACE ACCESSORY MINERAL OF MICRO
PYRITE ON SAMPLE FRAGMENTS.
NOTE: TRIP OUT FOR NEW BIT AT 13400' MD.
SANDSTONE = WHITE TO OFF WHITE TO A


12/7/2010
NIGHT TOUR
12/8/2010
NB# 7 6.125" HC
QD406F JETS 3x13
IN @ 13400' DRLD XXXX'
XX:XX:XX HRS
13400
TRIP GAS 552u
MAX GAS 437u
MUD DATA @ 13400'
MW 9.50 VIS 53 PV 16 YP 21
API FL 7.2 GELS 10/14/17 pH 9.80
Cl- 1300 Ca+ 40 MBT 20.0 SOL 6.0
MAX GAS 1122u
24 HR MUD LOSS: 139.6
CG 869u
LIGHT GRAY TO A LIGHT BROWNISH GRAY TO
A LIGHT PINKISH GRAY TO MEDIUM DARK GRAY
COLOR; PRIMARILY QUARTZ FRAMEWORK WITH
10-50% LITHIC FRAGMENTS; MORE PINKISH
SAMPLES HAVE POSSIBLY HIGH K-SPAR
CONTENT; UPPER FINE TO LOWER MEDIUM
GRAIN SIZE WITH SOME SAMPLE SHOWING
LOWER FINE TO UPPER MEDIUM GRAIN SIZE;
WELL TO FAIR SORTING; HIGH TO MODERATE
SPHERICITY AND SUBANGULAR TO SUBROUND
<300 ROP 0>
13500
MAX GAS 739u
<0 Ttl Gas 2K>
<10 Meth C-1 100K>
ANGULARITY; FROSTED GRAIN DUE TO
<50 Avg WOB 0>
<0 CO2 20K>
<10 Eth n C-2 100K>
MAX GAS 783u
MECHANICAL ABRASION; FIRMLY FRIABLE TO
<0 Flare Ht. 100>
<10 Prop C-3 100K>
HARD HARDNESS; SILICA CEMENTATION DUE TO
<10 Butn C-4 100K>
NO REACTION TO A 10% HCL SOLUTION; NO
<10 Pent C-5 100K>
BEDDING STRUCTURES VISIBLE IN THE
C - 5,4,3,2,1
SAMPLE; INTERBEDDED WITH SILTSTONE,
CG 738u
CARBONACEOUS SHALE AND SHALE.
COAL = BLACK TO BROWNISH BLACK; BLOCKY
TO ELONGATED CUTTINGS HABIT; PLANAR TO
ANGULAR FRACTURE; SMOOTH TO CLAYEY
13600
TEXTURE; VISIBLE DEGASSING IN SAMPLE


DAY TOUR
MW IN 9.5 VIS 50 pH 9.8
CG 892u
MW OUT 9.4+ VIS 48 pH 9.4
MAX GAS 982u
13700
MAX GAS 1376u
CG 720u
C - 5,4,3,2,1
13800
FRAGMENTS; THINLY INTERBEDDED WITH
CARBONACEOUS SHALE.
SANDSTONE = OFF WHITE TO LIGHT OLIVE
GRAY TO LIGHT GRAY; MODERATELY HARD TO
VERY HARD; PREDOMINANTLY GRAIN SUPPORTED
WITH SILICA CEMENT; MINOR AMOUNTS OF
KAOLIN CEMENT; MOD TO WELL SPHERICITY;
WELL SORTED; LOWER VERY FINE TO UPPER
FINE WITH MINOR LOWER MEDIUM GRAINS;
NON TO SLIGHTLY CALCAREOUS; THINLY
INTERBEDDED WITH CARBONACEOUS SHALE.
TD WELL @ 13757' MD ON 12/08/2010.