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

Drilling Dynamics 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: 1" = 100'

CASING DATA

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

MUD TYPES

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

HOLE SIZE

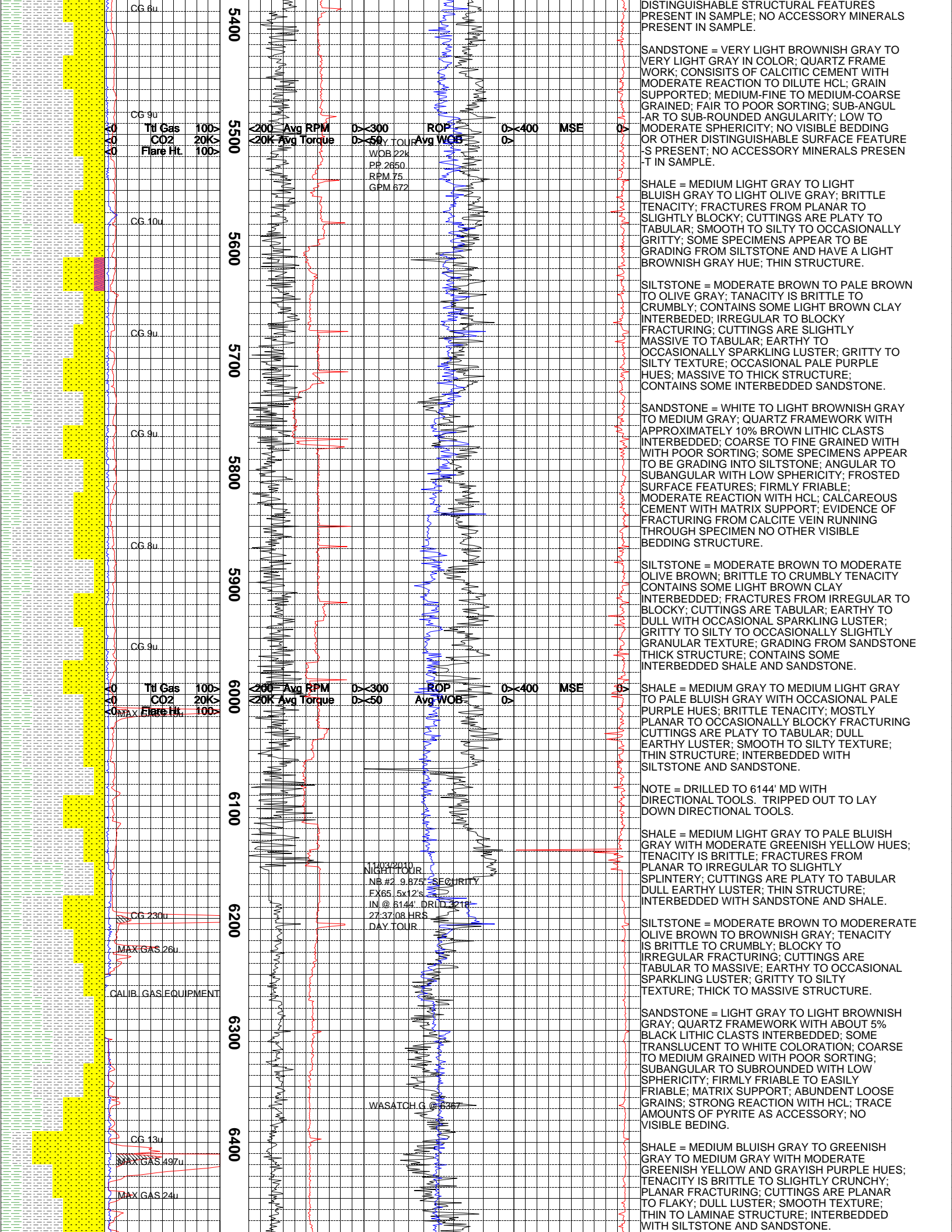
14.75" **TO** 4704'
9.875" **TO** 10004'
6.125" **TO** 13757'
TO

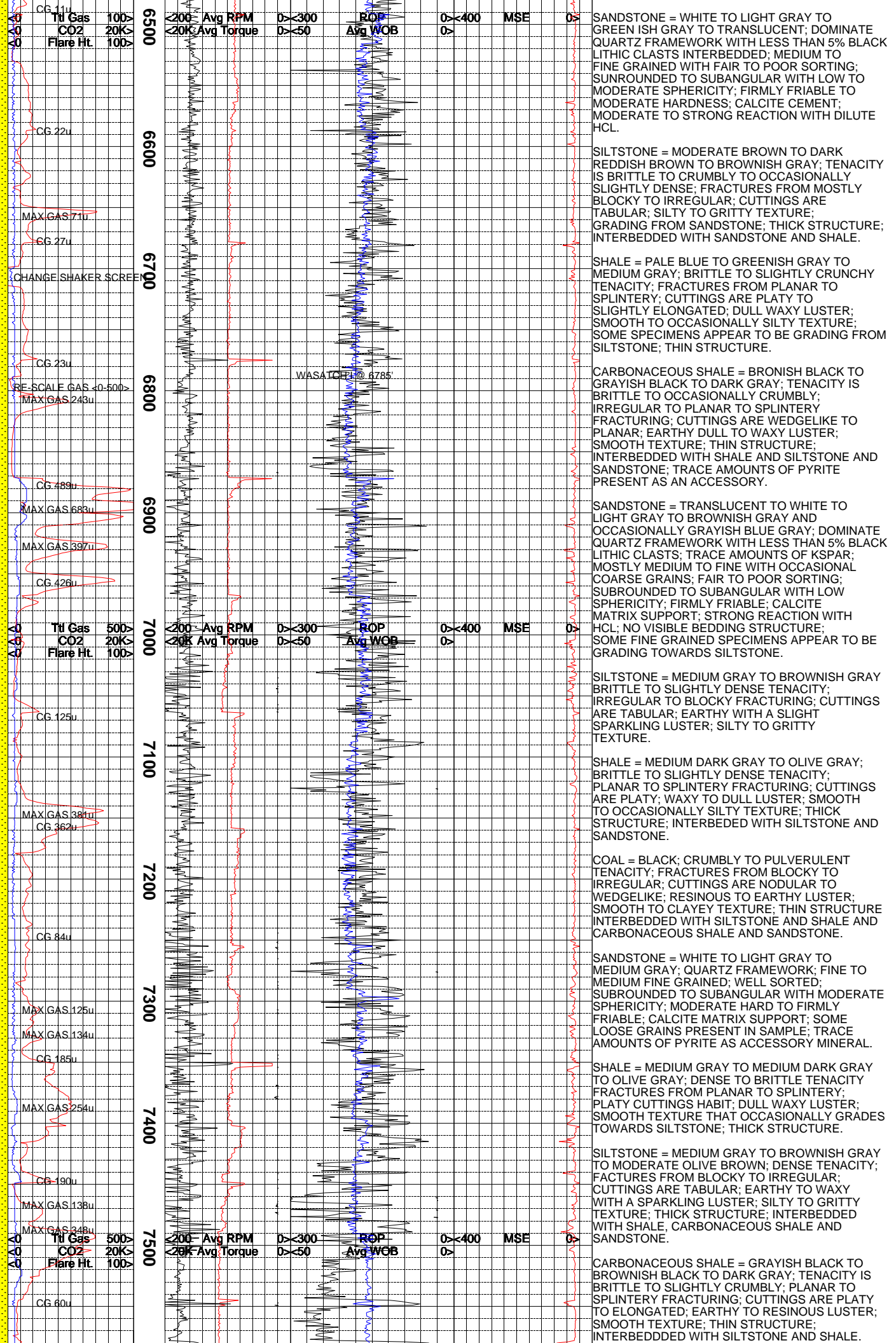
ABBREVIATIONS

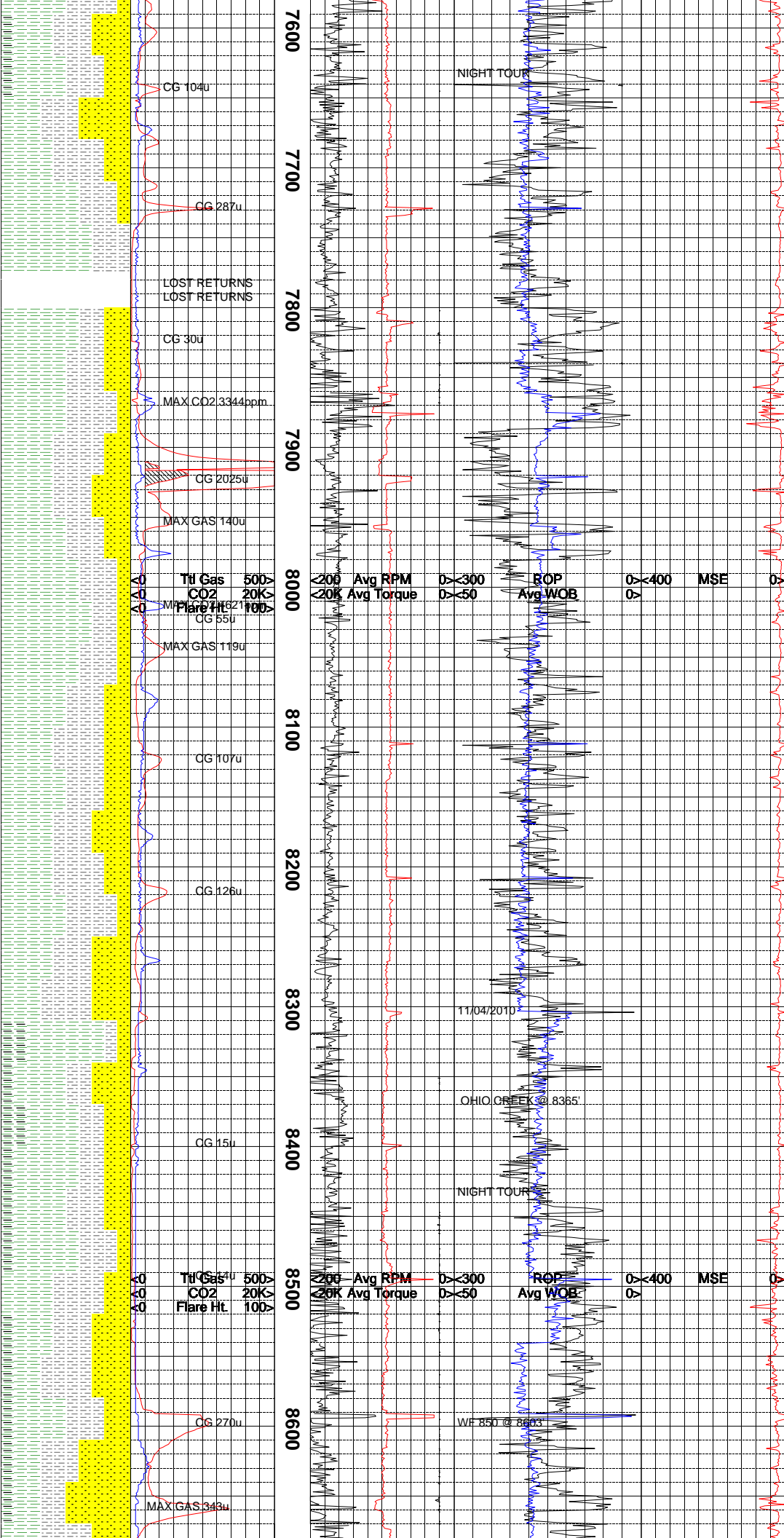
<i>NB</i> NEWBIT	<i>PV</i> PLASTIC VISCOSITY	<i>LC</i> LOST CIRCULATION
<i>RRB</i> RERUN BIT	<i>YP</i> YIELD POINT	<i>CO</i> CIRCULATE OUT
<i>CB</i> CORE BIT	<i>FL</i> FLUID LOSS	<i>NR</i> NO RETURNS
<i>WOB</i> WEIGHT ON BIT	<i>CL</i> PPM CLORIDE ION	<i>TG</i> TRIP GAS
<i>RPM</i> ROTARY REV/MIN	<i>Rm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

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

[illegible]







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
SUPPORTED WITH FEW LOOSE GRAINS; CONSISTS
OF CALCITIC CEMENTATION WITH LIGHT TO
MODERATE REACTION TO DILUTE HCL; MATRIX
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
TO EARTHY DULL TO OCCASIONAL SEMI-WAXY
TO SEMI-FROSTED LUSTER; MODERATELY
SMOOTH TO VERY SLIGHTLY 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
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.

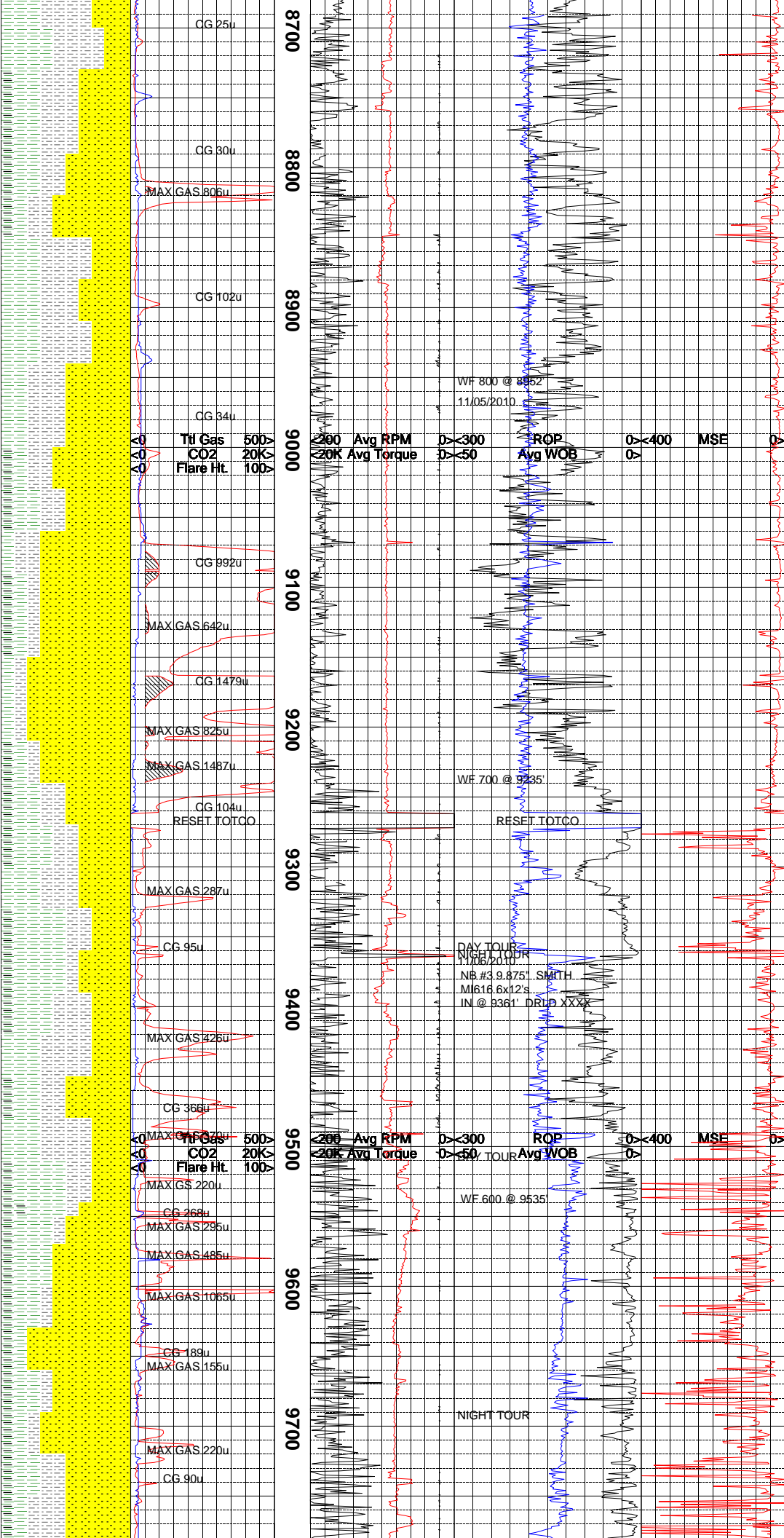
NOTE = CONDUCT SHORT WIPER TRIP FROM
8304' TO WASATCH G TO CLEAN HOLE BEFORE
DRILLING INTO OHIO CREEK FORMATION.

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
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;
IRREGULAR TO SUB-PLANAR TO EARTHY
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
DISTINGUISHABLE 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 MOTTLE
-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-
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
-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.

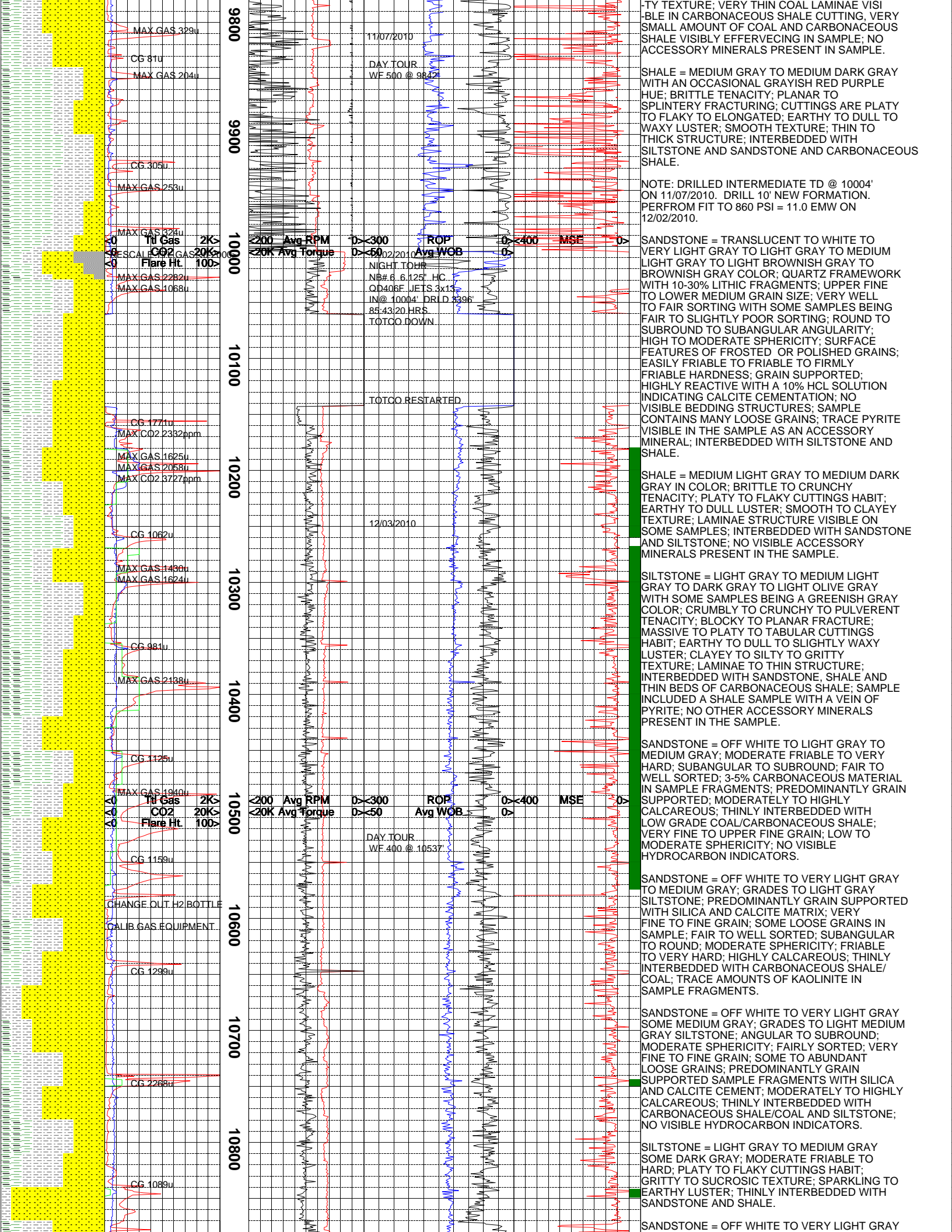
SANDSTONE = OFF WHITE TO WHITE TO VERY
LIGHT GRAY TO TRANSLUCENT WITH FEW BLACK
AND MODERATE BROWN HUES; QUARTZ DOMINATE
FRAME WORK; PREDOMINATELY UNCONSOLIDATED
LOOSE GRAINS WITH FEW GRAIN SUPPORTED
CUTTINGS; CONSISTS OF CALCITIC CEMENTATI
-ON WITH MODERATE TO MODERATELY HIGH
REACTION TO DILUTE HCL; 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
-E VISIBLE GRADING WITH POOR GRADE SANDS
-TONE, SMALL AMOUNT OF CARBONACEOUS SHAL
-E IN VISIBLE CONTACT WITH POOR GRADE
SANDSTONE, NO OTHER DISTINGUISHABLE
STRUCTURAL FEATURES PRESENT; TRACE
AMOUNTS OF ACCESSORY MINERAL PYRITE
PRESENT IN SAMPLE.

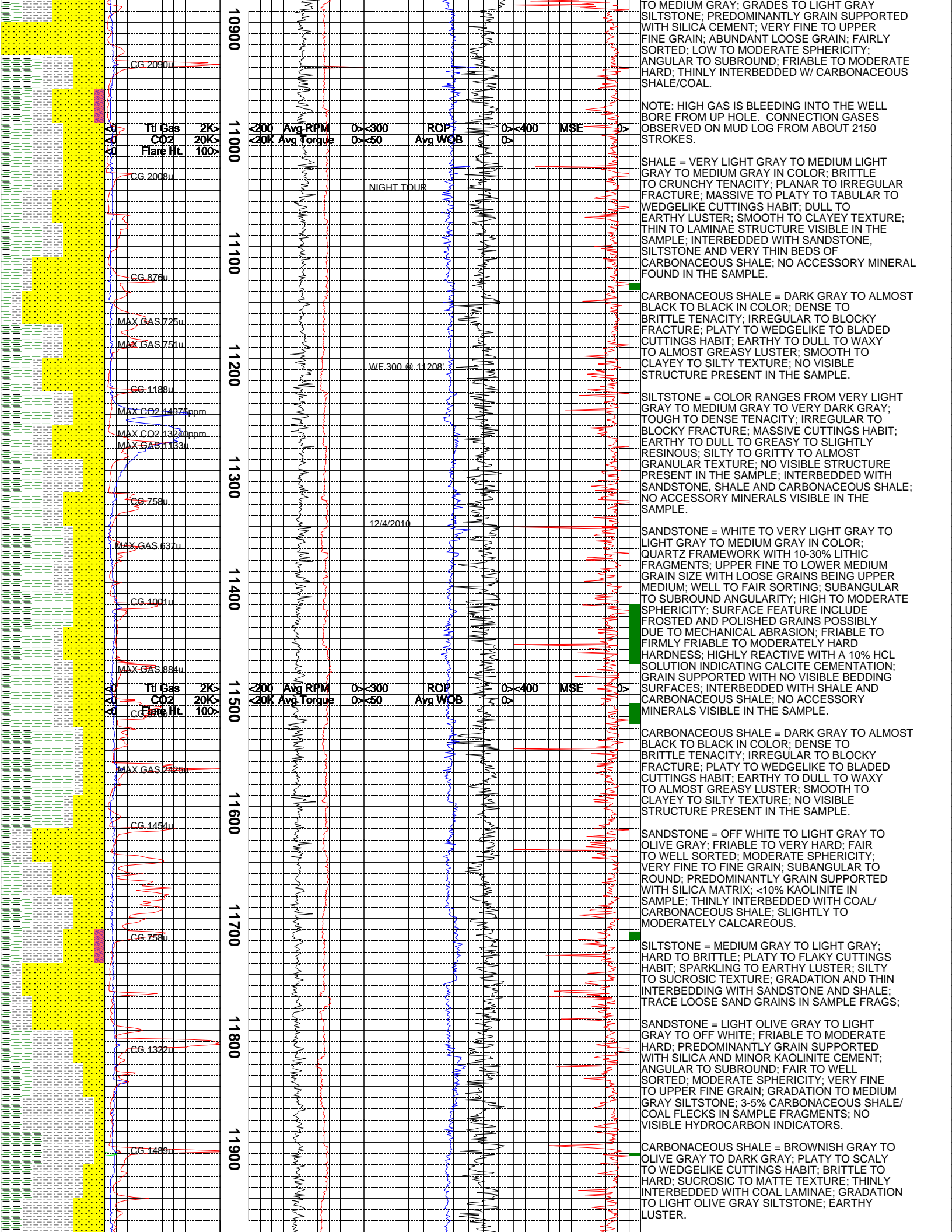
SHALE = MEDIUM DARK GRAY TO MEDIUM GRAY
TO OLIVE GRAY TO MEDIUM BLuish GRAY WITH
OCCASIONAL GRAYISH RED PURPLE HUES;
SLIGHTLY DENSE TO BRITTLE TO CRUNCHY
TENACITY; PLANAR FRACTURING; CUTTINGS
ARE PLATY TO TABULAR TO ELONGATED;
DULL TO EARTHY DULL TO OCCASIONAL SEMI-
WAXY TO SEMI-FROSTED LUSTER; MODERATELY
SMOOTH TO VERY SLIGHTLY SLIGHTLY TO
SLIGHTLY CLAYEY TEXTURE; POOR GRADE SILT
-STONE VISIBLE GRADING WITH POOR GRADE
SANDSTONE, VERY THIN COAL LAMINAE VISIBL
-E IN SHALE CUTTING, NO OTHER DISTINGUIS
-HALBLE STRUCTURAL FEATURES PRESENT;
NO ACCESSORY MINERALS VISIBLY PRESENT
IN SAMPLE.

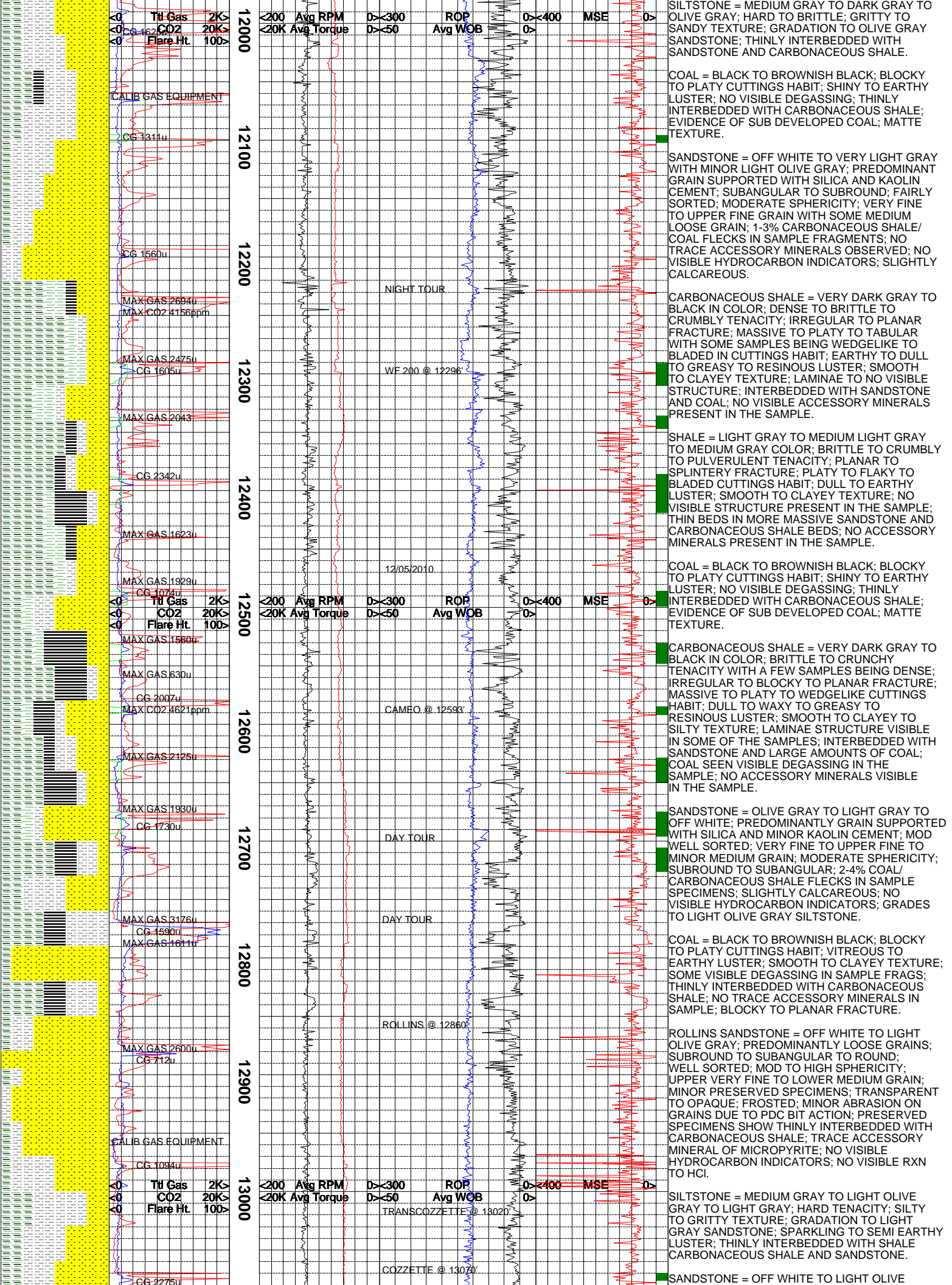
SILTSTONE = DARK REDDISH BROWN TO
MODERATE OLIVE BROWN TO MEDIUM DARK GRAY
TO BROWNISH GRAY; DENSE TO SLIGHTLY
BRITTLE TENACITY; IRREGULAR TO BLOCKY
FRACTURING; CUTTINGS ARE TABULAR TO
WEDGE LIKE; WAXY TO DULL WITH AN
OCCASIONAL SPARKLING LUSTER; SILTY TO
GRITTY TEXTURE; THICK STRUCTURE.

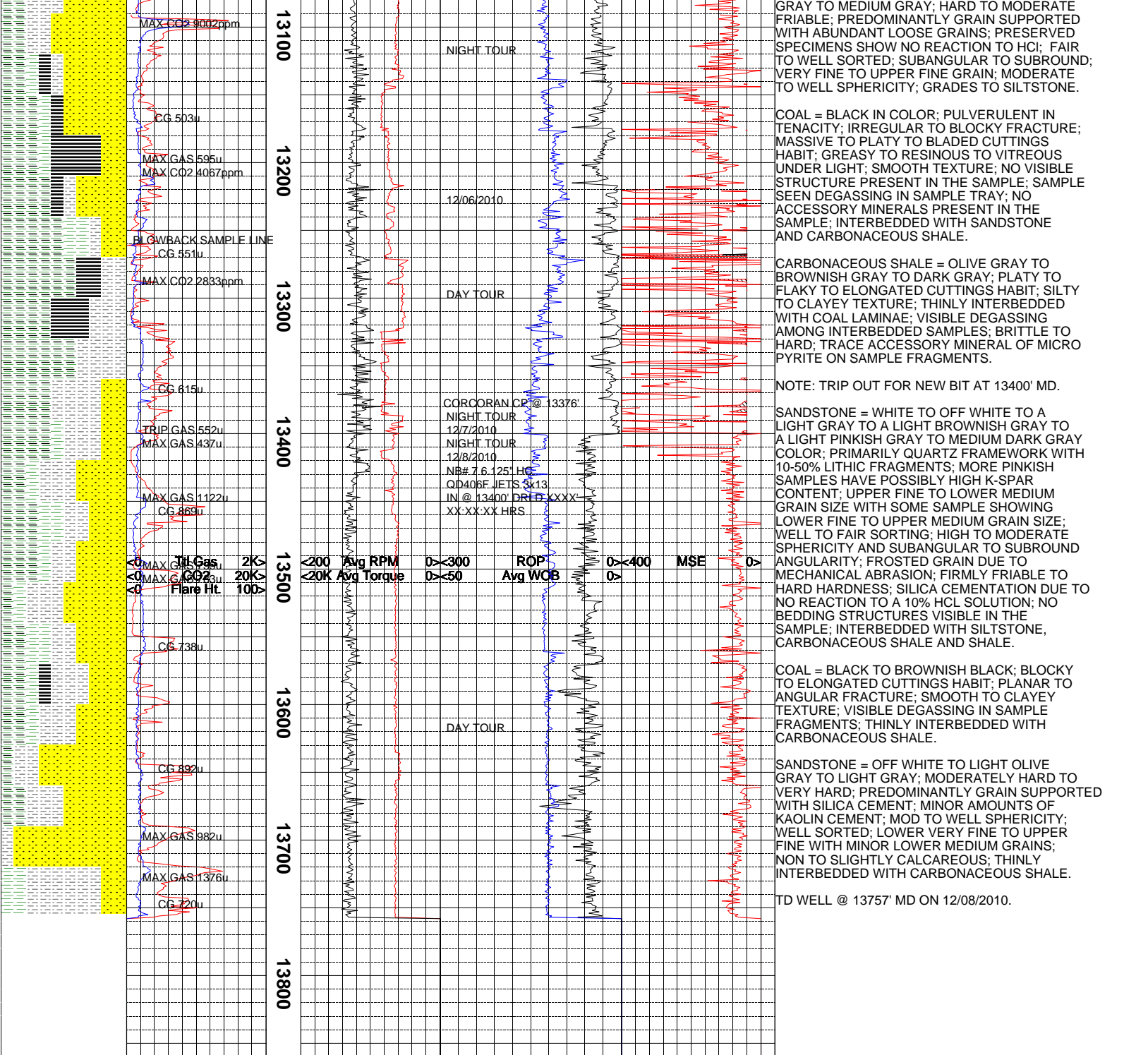
SANDSTONE = TRANSLUCENT TO VERY LIGHT
GRAY TO WHITE; DOMINATE QUARTZ FRAMEWORK
WITH APPROXIMATELY 5-10% BLACK LITHIC
CLASTS INTERBEDDED; MEDIUM FINE TO
MEDIUM GRAINED WITH FAIR SORTING;
SUBANGULAR TO SUBROUNDED WITH LOW
SPHERICITY; FIRMLY FRIABLE WITH ABUNDENT
LOOSE GRAINS; CALCITE CEMENT; MATRIX
SUPPORT; STRONG REACTION WITH HCL; TRACE
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









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