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MUDLOG TVD

COMPANY ExxonMobil Corporation

WELL PCU 296-5A08

FIELD Piceance Creek

REGION Rockies

COORDINATES Lat: 39.911963000

Long: -108.198677000

ELEVATION G.L.:7294.1'

COUNTY, STATE Rio Blanco, CO

API INDEX 051031124200

SPUD DATE 11/29/2009

CONTRACTOR Helmerich _Payne

CO. REP. C. Curtis / M. Hudon

RIG/TYPE 321 / Flex 4

LOGGING UNIT MLU 31

GEOLOGISTS C. Record, M. Gross

B. Smelser

ADD. PERSONS M. Piper

CO. GEOLOGIST C. Alba

LOG INTERVAL

DEPTHS: 4875' **TO** 13885'

DATES: 2/03/2011 **TO** 5/7/2011

SCALE: 1" = 100'

CASING DATA

16.00" **AT** 115'

10.75" **AT** 4876'

7" **AT** 10004'

4.50" **AT** 13880'

HOLE SIZE

14.75" **TO** 4891'

9.875" **TO** 10007'

6.125" **TO** 13885'

TO

MUD TYPES

Spud Mud **TO** 4874'

LSND **TO** 13885'

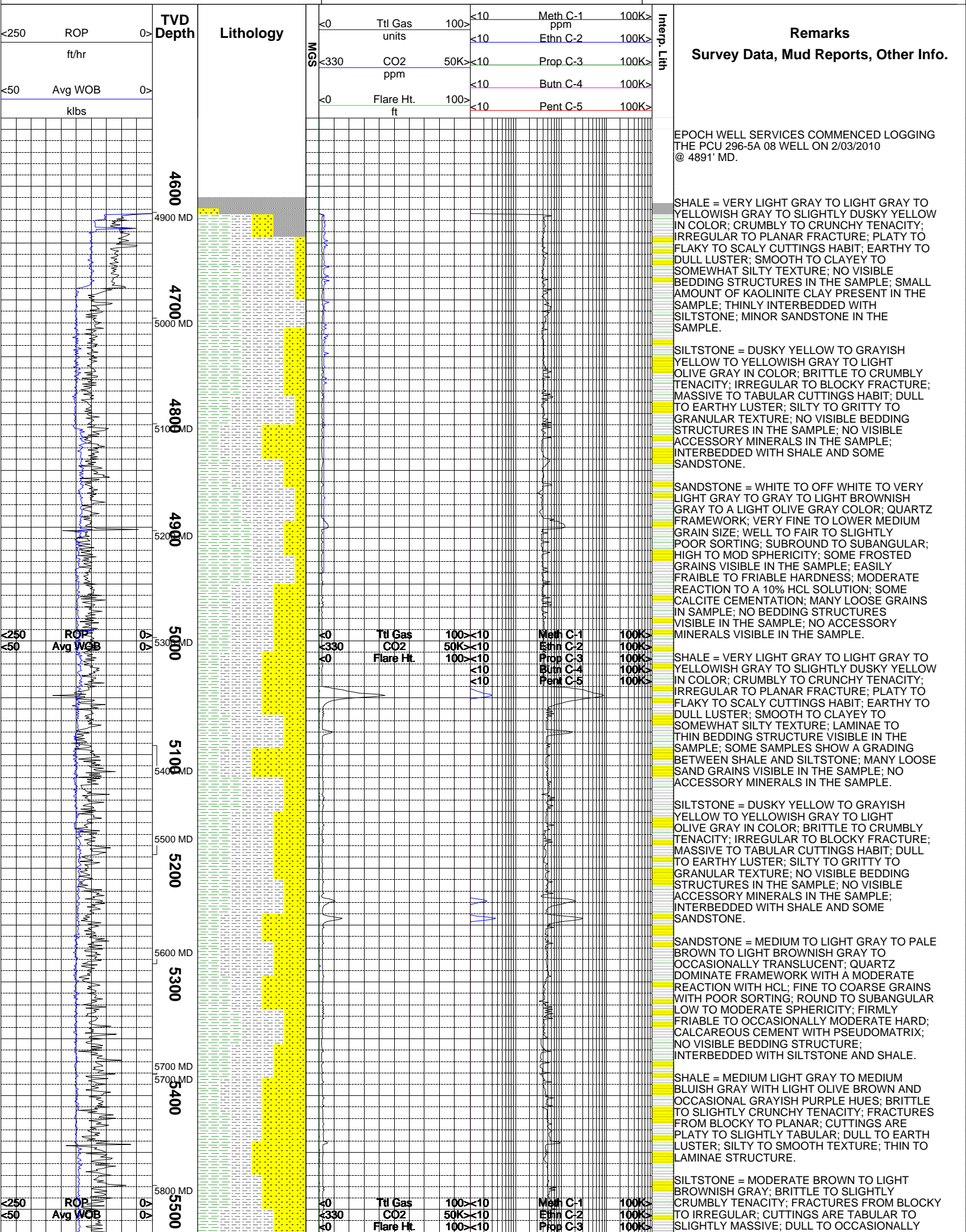
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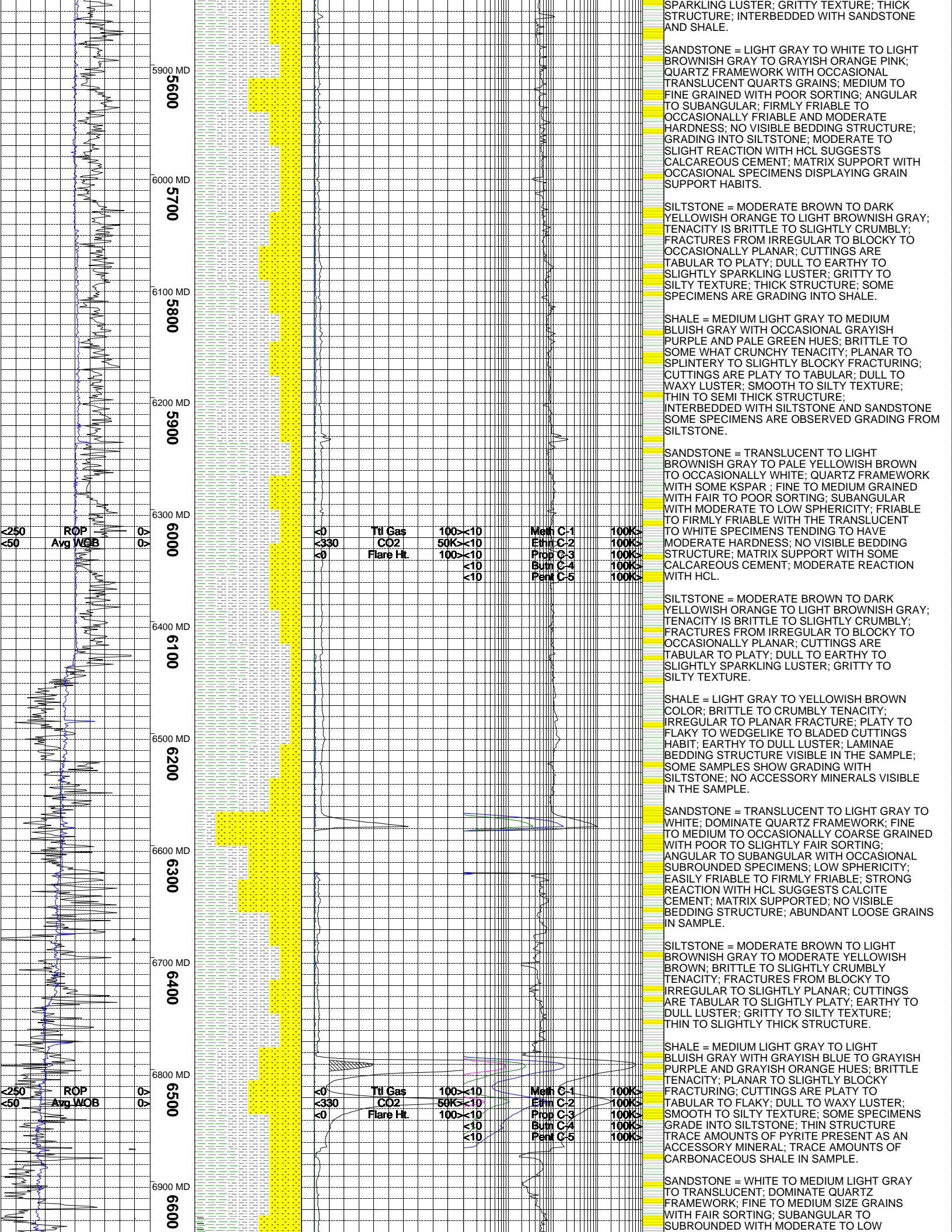
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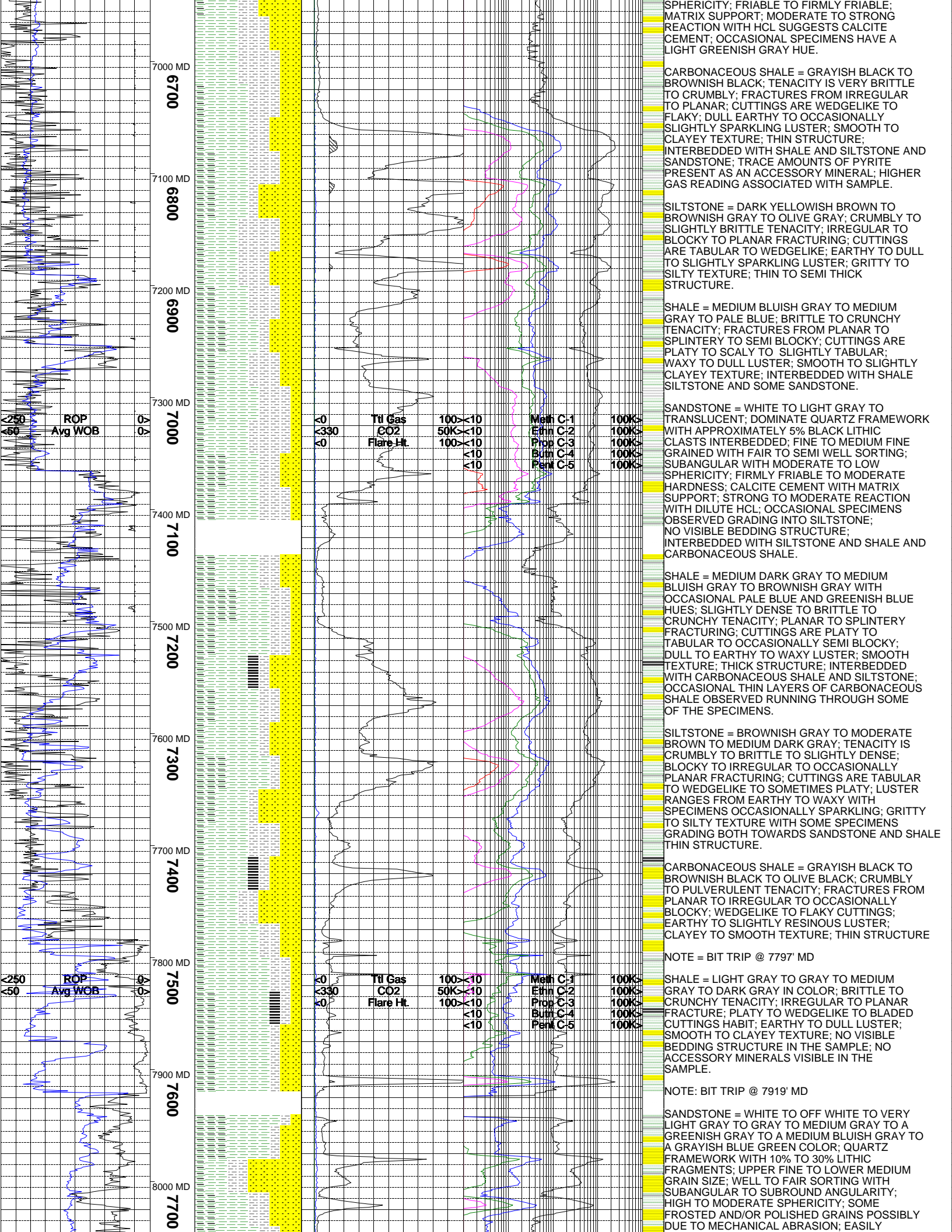
ABBREVIATIONS

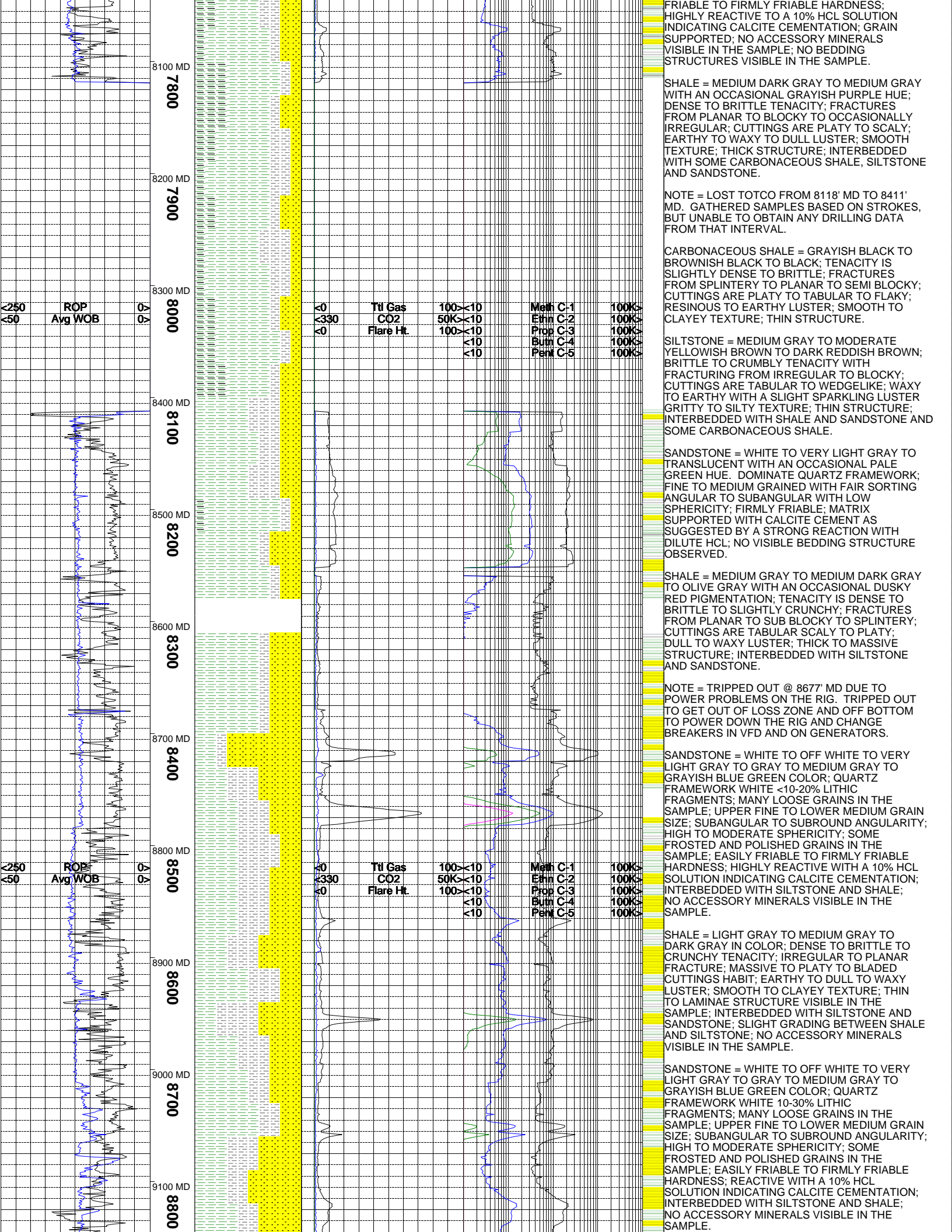
<i>NB</i> NEWBIT	<i>PV</i> PLASTIC VISCOSITY	<i>LC</i> LOST CIRCULATION
<i>RRB</i> RERUN BIT	<i>YP</i> YIELD POINT	<i>CO</i> CIRCULATE OUT
<i>CB</i> CORE BIT	<i>FL</i> FLUID LOSS	<i>NR</i> NO RETURNS
<i>WOB</i> WEIGHT ON BIT	<i>CL</i> PPM CLORIDE ION	<i>TG</i> TRIP GAS
<i>RPM</i> ROTARY REV/MIN	<i>Rm</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	

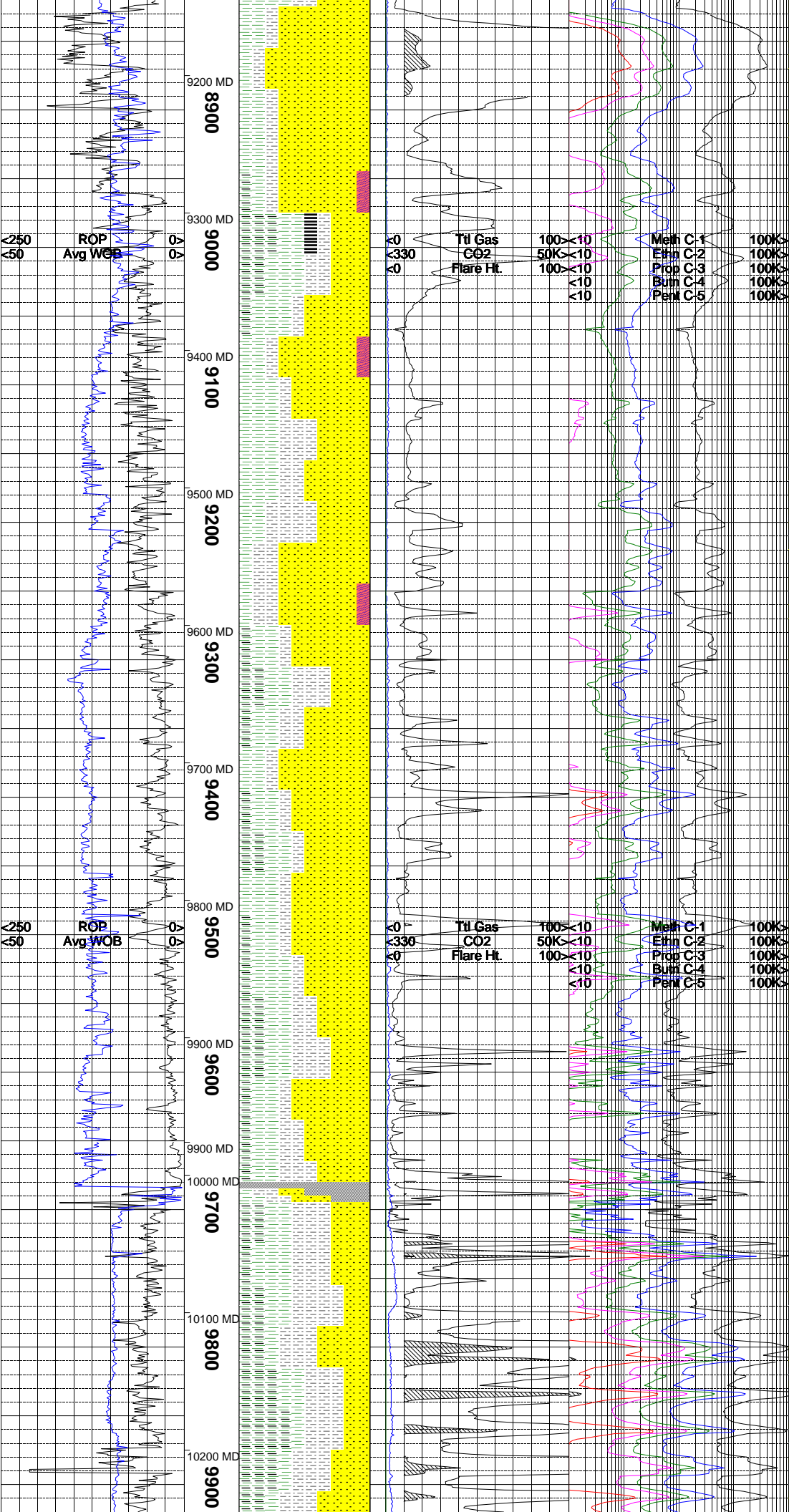
ALTERED ZONE	CHERT - GLASSY	FELSIC SILIC DIKE	MARL - CALC	SANDSTONE
ANDESITE	CHERT - PORCEL	FOSSIL	METAMORPHICS	SANDSTONE-TUFFACEOUS
ANHYDRITE	CHERT - TIGER STRIPE	GABBRO	MUDSTONE	SERICITIZATION
BASALT	CHERT - UNDIFF	GLASSY TUFF	OBSIDIAN	SERPENTINE
BENTONITE	CLAY	GRANITE	PALEOSOL	SHALE
BIOTITIZATION	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	











SILTSTONE = DARK GRAY TO VERY DARK GRAY TO A GRAYISH BROWN TO MODERATE BROWN COLOR; TOUGH TO BRITTLE TENACITY; BLOCKY TO IRREGULAR FRACTURE; MASSIVE TO PLATY TO TABULAR CUTTINGS HABIT; EARTHY TO DULL LUSTER; SILTY TO GRITTY TO SLIGHTLY GRANULAR TEXTURE; NO VISIBLE BEDDING STRUCTURES IN THE SAMPLE; NO ACCESSORY MINERALS VISIBLE IN THE SAMPLE.

CARBONACEOUS SHALE = BLACK TO GRAYISH BLACK TO BROWNISH BLACK; BRITTLE TO CRUMBLY TENACITY; FRACTURES FROM PLANAR TO SPINTERY; CUTTINGS ARE NODULAR TO FLAKY; RESINOUS TO EARTHY LUSTER; SMOOTH TO SILTY TO CLAYEY TEXTURE; THIN STRUCTURE; INTERBEDDED WITH SHALE, SILTSTONE AND SANDSTONE.

COAL = BLACK; CRUMBLY TO PULVERULENT TENACITY; FRACTURES FROM BLOCKY TO IRREGULAR; NODULAR TO WEDGE LIKE TO FLAKY CUTTINGS; RESINOUS TO POLISHED TO SLIGHTLY EARTHY LUSTER; SMOOTH TEXTURE; THIN STRUCTURE; INTERBEDDED WITH CARBONACEOUS SHALE AND SHALE AND SANDSTONE.

SANDSTONE = WHITE TO LIGHT GRAY TO TRANSLUCENT; DOMINATE QUARTZ FRAMEWORK WITH TRACE AMOUNTS OF BLACK LITHIC CLASTS INTERBEDDED; FINE TO MEDIUM COARSE GRAINED WITH POOR SORTING; ANGULAR TO SUBANGULAR WITH LOW SPHERICITY; EASILY FRIABLE TO FRIABLE; STRONG REACTION WITH HCL SUGGESTS CALCITE CEMENT; MATRIX SUPPORT; NO VISIBLE BEDDING STRUCTURE; TRACE AMOUNTS OF PYRITE PRESENT AS AN ACCESSORY MINERAL; TRACE AMOUNTS OF CARBONACEOUS MATERIAL INTERBEDDED.

SHALE = MEDIUM GRAY TO MEDIUM DARK GRAY; TENACITY IS BRITTLE TO SLIGHTLY DENSE; FRACTURES FROM PLANAR TO SPINTERY TO IRREGULAR; CUTTINGS ARE SCALY TO TABULAR TO PLATY; DULL WAXY LUSTER; SMOOTH TO SILTY TEXTURE; WITH OCCASIONAL SPECIMENS GRADING TOWARDS SILTSTONE; THIN TO SEMI THICK STRUCTURE.

SILTSTONE = MEDIUM DARK GRAY TO BROWNISH GRAY TO OLIVE GRAY; BRITTLE TENACITY; IRREGULAR TO PLANAR FRACTURING; CUTTINGS ARE TABULAR TO WEDGE LIKE; EARTHY TO SLIGHTLY SPARKLING LUSTER; GRITTY TO SILTY TEXTURE; SOME SPECIMENS OBSERVED GRADING TOWARDS SANDSTONE; NO VISIBLE ACCESSORY MINERALS IN THE SAMPLE.

SANDSTONE = WHITE TO OFF WHITE TO VERY LIGHT GRAY TO GRAY TO DARK GRAY TO LIGHT BLUISH GRAY TO A GRAYISH BLUE GREEN COLOR; QUARTZ FRAMEWORK; UPPER FINE TO LOWER MEDIUM GRAIN SIZE; WELL TO FAIR SORTING; SUBROUND TO SUBANGULAR; HIGH TO MODERATE SPHERICITY; SOME BEDDING CONTACTS VISIBLE IN THE SAMPLE; HIGHLY REACTIVE WITH A 10% HCL SOLUTION; FRIABLE TO MODERATELY HARD HARDNESS; GRAIN SUPPORTED WITH <10% TO 30% LITHIC FRAGMENTS INCLUDED; NO ACCESSORY MINERALS VISIBLE IN THE SAMPLE; SAMPLE INTERBEDDED WITH SILTSTONE, SHALE AND SOME CARBONACEOUS SHALE; CALCITE CEMENTATION DUE TO HIGH REACTION WITH THE DILUTE HCL SOLUTION.

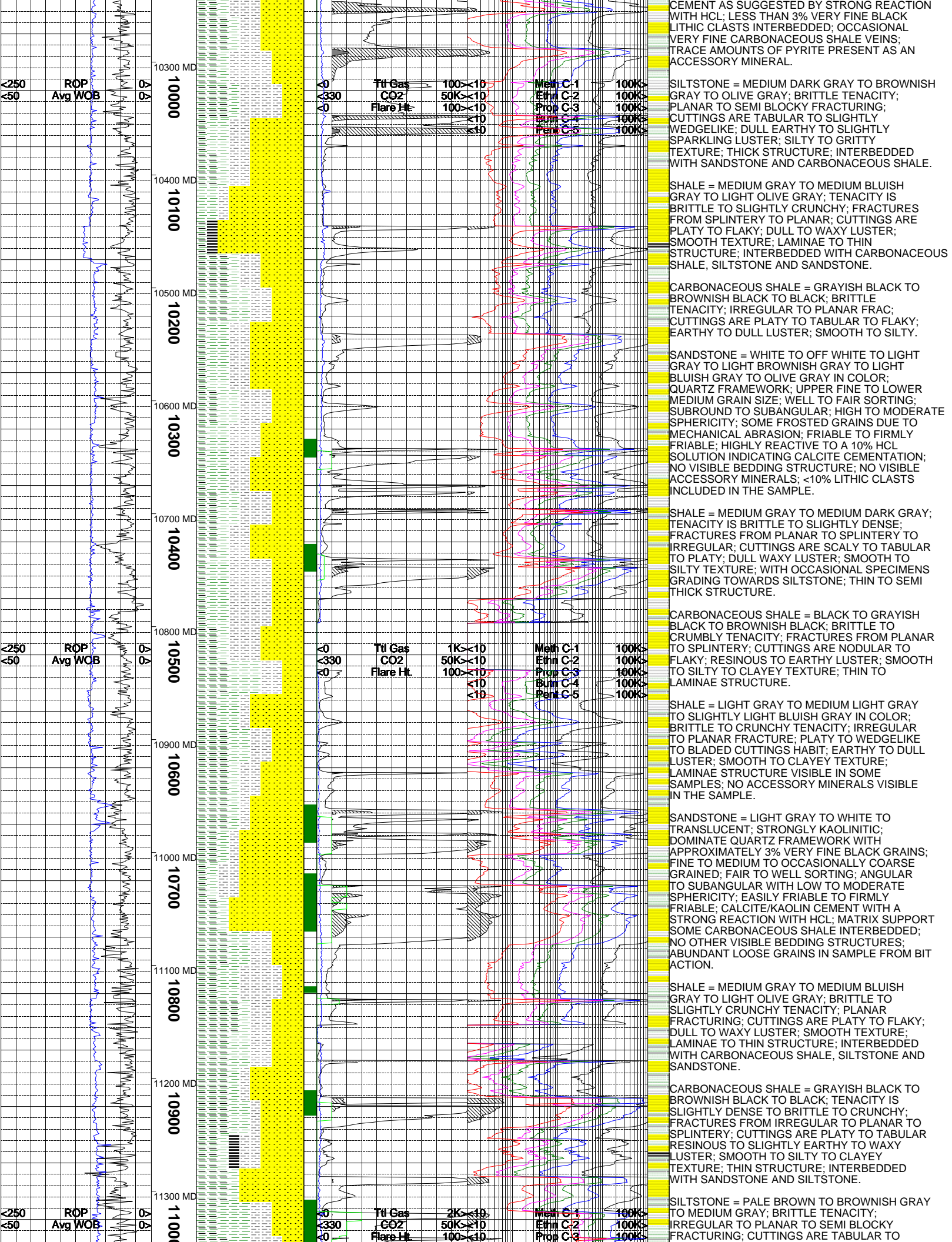
NOTE = DRILLED TO INTERMEDIATE TOTAL DEPTH OF 10007' MD (9682' TVD) ON 02/01/2011 @ APPROXIMATELY 10:00:00.

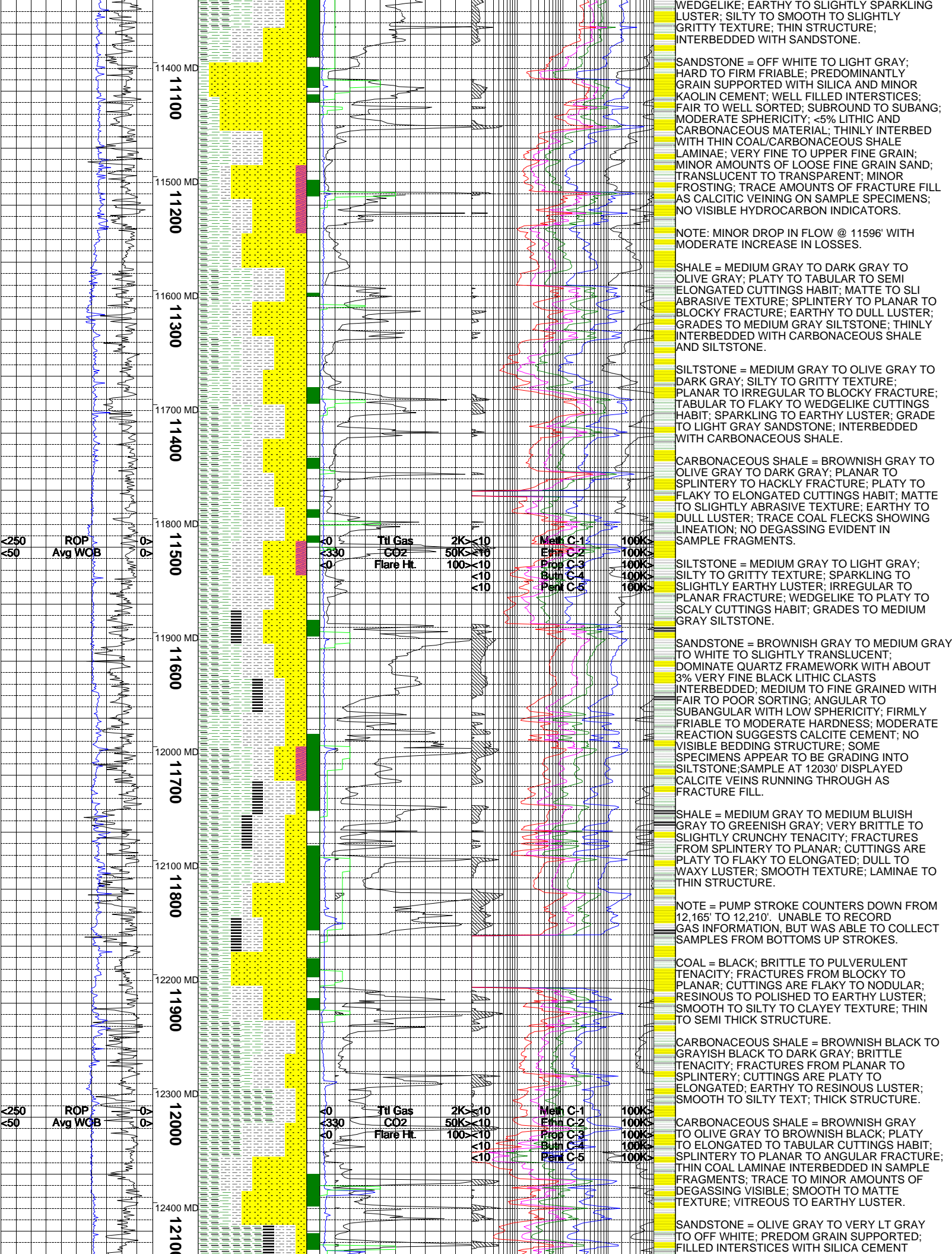
NOTE = RESUME DRILLING OF PRODUCTION SECTION ON 04/30/2011.

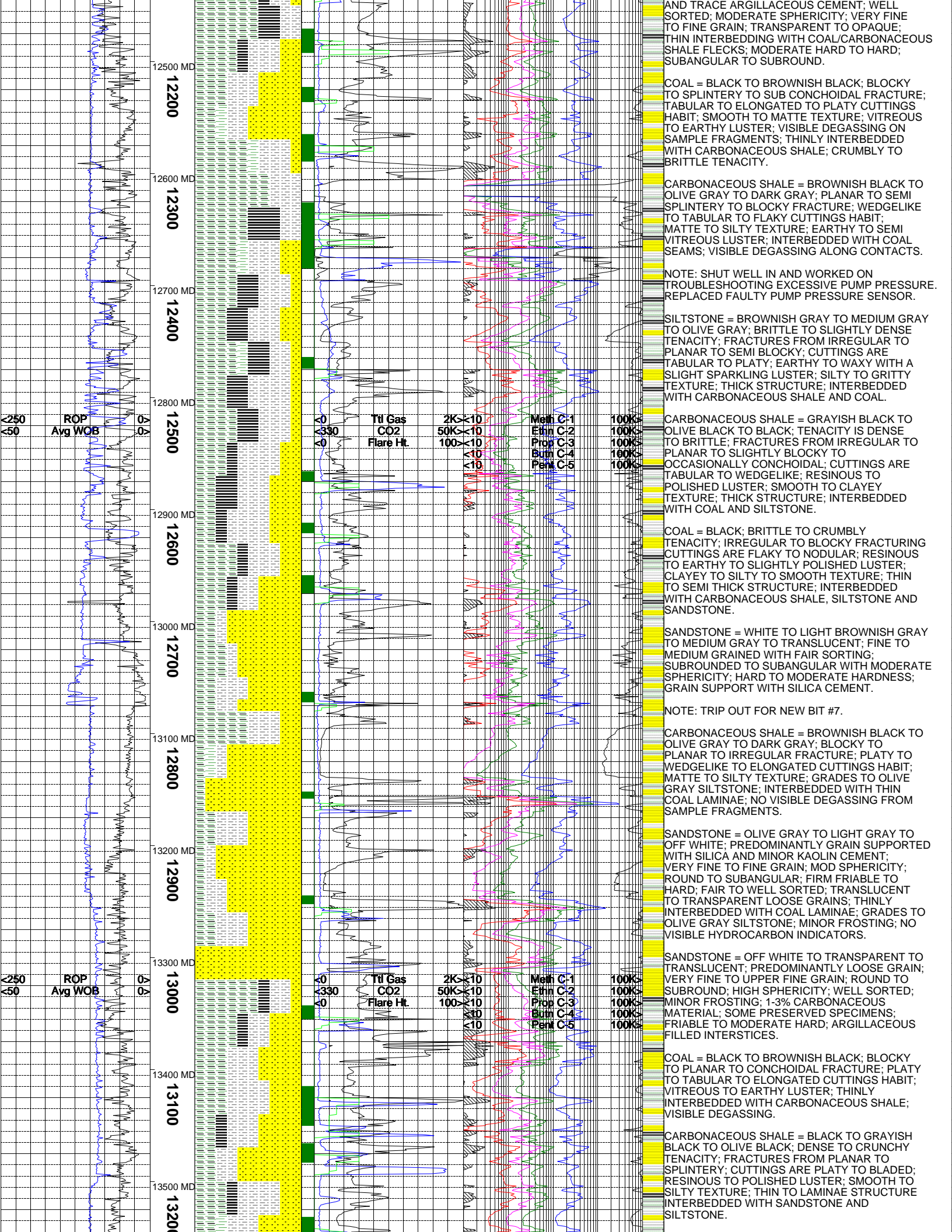
SILTSTONE = LIGHT GRAY TO MEDIUM GRAY TO LIGHT OLIVE GRAY; SLIGHTLY DENSE TO BRITTLE TENACITY; IRREGULAR TO BLOCKY FRACTURING; CUTTINGS ARE TABULAR TO MASSIVE; WAXY TO SPARKLING TO SLIGHTLY EARTHY LUSTER; SILTY TO GRITTY TEXTURE; THICK STRUCTURE; GRADING FROM FINE GRAIN SANDSTONE.

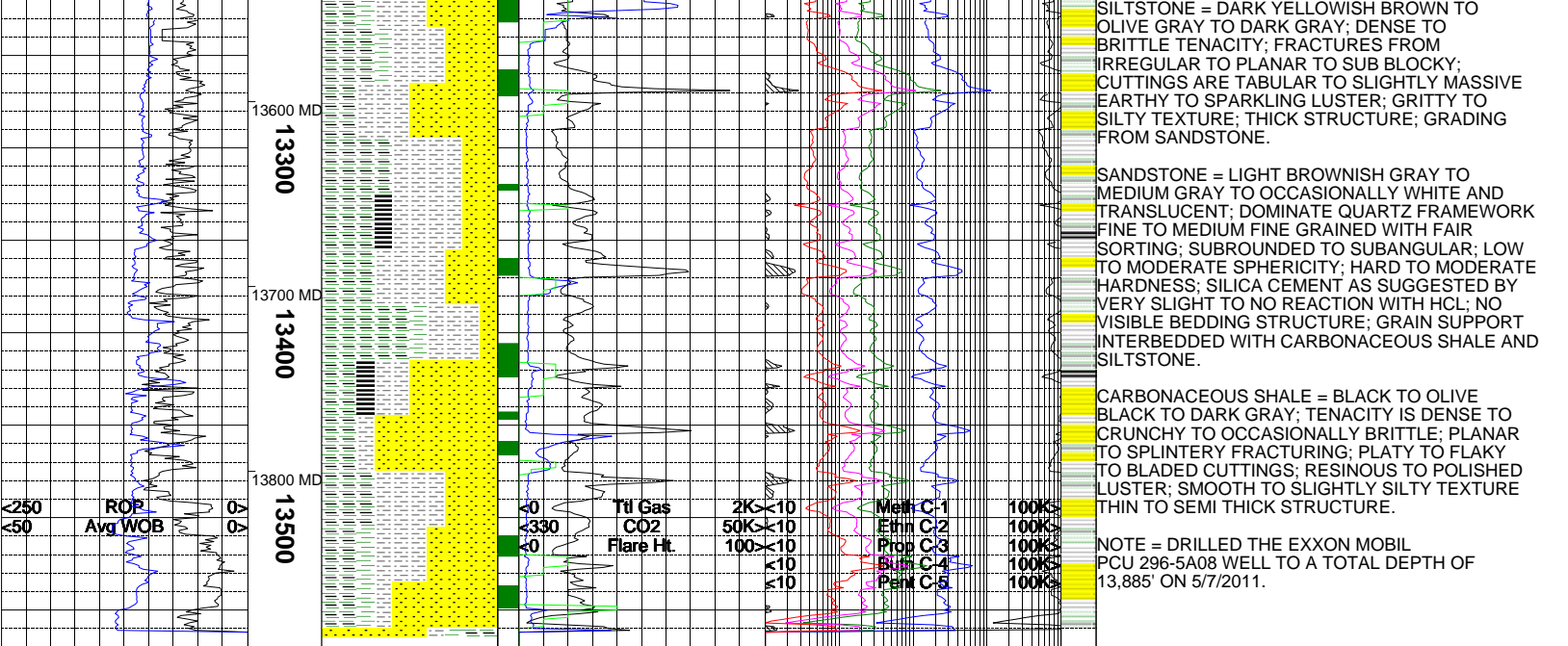
CARBONACEOUS SHALE = BROWNISH BLACK TO OLIVE BLACK TO DARK GRAY TO BLACK; VERY BRITTLE TO SLIGHTLY PULVERULENT TENACITY FRACTURES FROM PLANAR TO SPINTERY; CUTTINGS ARE PLATY TO ELONGATED TO BLADED; EARTHY TO DULL TO WAXY LUSTER; SMOOTH TO SLIGHTLY SILTY TEXTURE; THIN TO LAMINAE STRUCTURE.

SANDSTONE = WHITE TO LIGHT GRAY TO TRANSLUCENT; FINE TO MEDIUM FINE GRAINED WITH WELL SORTING; SUBROUNDED TO SUBANGULAR WITH LOW SPHERICITY; FIRMLY FRIABLE TO FRIABLE; CALCITE AND KAOLIN









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