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## MUDLOG TVD

|                      |   |
|----------------------|---|
| <b>COMPANY</b>       | ExxonMobil Oil Corporation                            |
| <b>WELL</b>          | PCU 297-12A1-ST1                                      |
| <b>FIELD</b>         | Piceance Creek  |
| <b>REGION</b>        | Rocky Mountains                                       |
| <b>COORDINATES</b>   | Lat: 39.8890710<br>Long: 108.2372410                  |
| <b>ELEVATION</b>     | GL: 7183.6'<br>RKB: 7213'                             |
| <b>COUNTY, STATE</b> | Rio Blanco, Colorado                                  |
| <b>API INDEX</b>     | 051031115701  |
| <b>SPUD DATE</b>     | 09/22/2009  |
| <b>CONTRACTOR</b>    | HE DRILLING   |
| <b>CO. REP.</b>      | M. SADLER / J. WOODS                                  |
| <b>RIG/TYPE</b>      | 326 FLEX FOUR   |
| <b>LOGGING UNIT</b>  | CANRIG UNIT ML036                                     |
| <b>GEOLOGISTS</b>    | Don Thibodeaux<br>Brandon Laiche                      |
| <b>ADD. PERSONS</b>  | Huel _Patti Strickland<br>Linda Davison/Darryl Ebbert |
| <b>CO. GEOLOGIST</b> | CHRIS ALBA  |

### LOG INTERVAL

**DEPTHS:** 4111' **TO** 13338'

**DATES:** 6/16/2009 **TO** 9/24/2009

**SCALE:** 1" = 100'

### CASING DATA

16.000" **AT** 150'

10.750" **AT** 4111'

7.00" **AT** 9131'

4.50" **AT** 13338'

### MUD TYPES

WATER BASE **TO** 5730'

DSF **TO** 6200'

LSND **TO** 13338'

**TO**

### HOLE SIZE

14.250" **TO** 4111'

9.875" **TO** 9131'

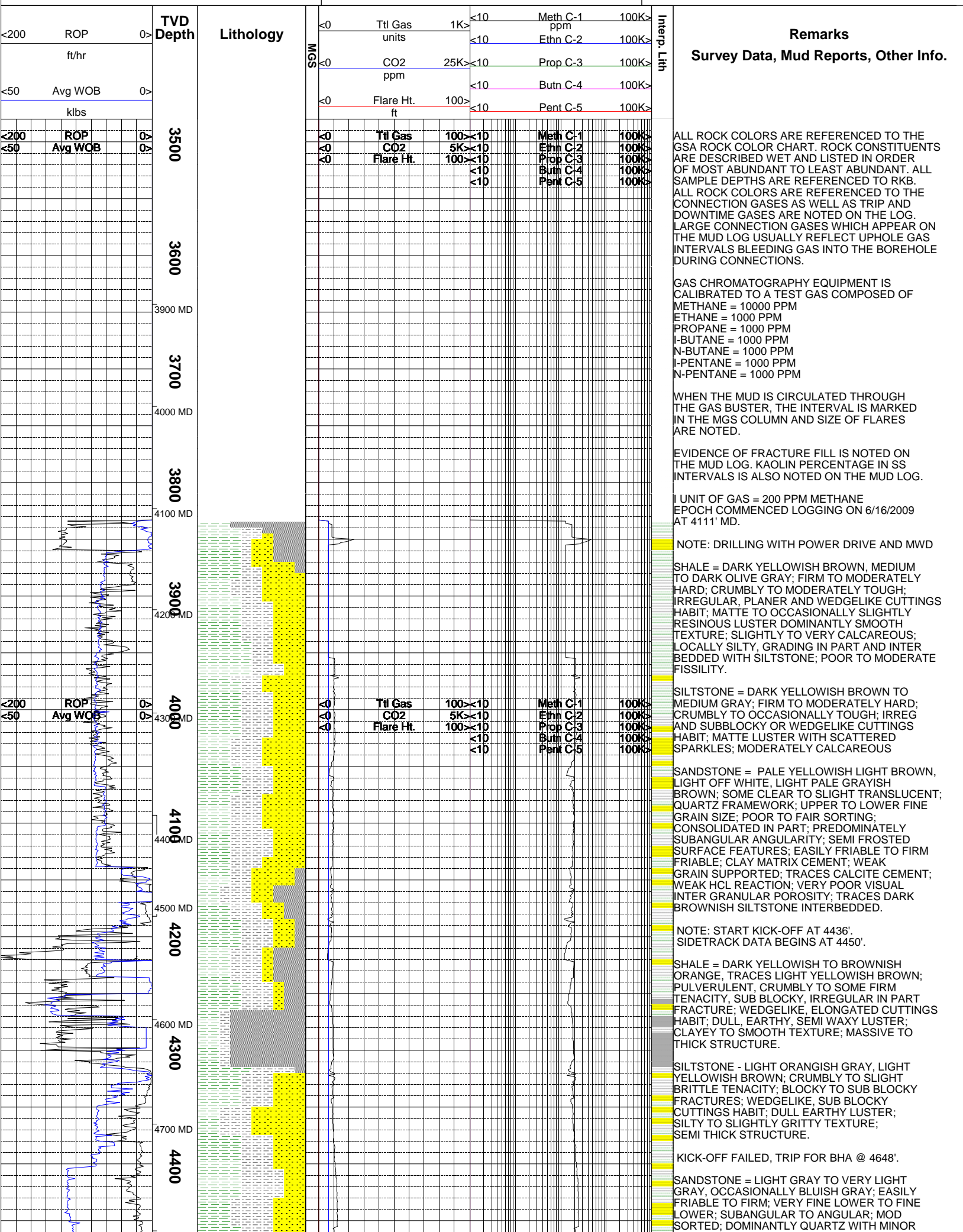
6.125" **TO** 13338'

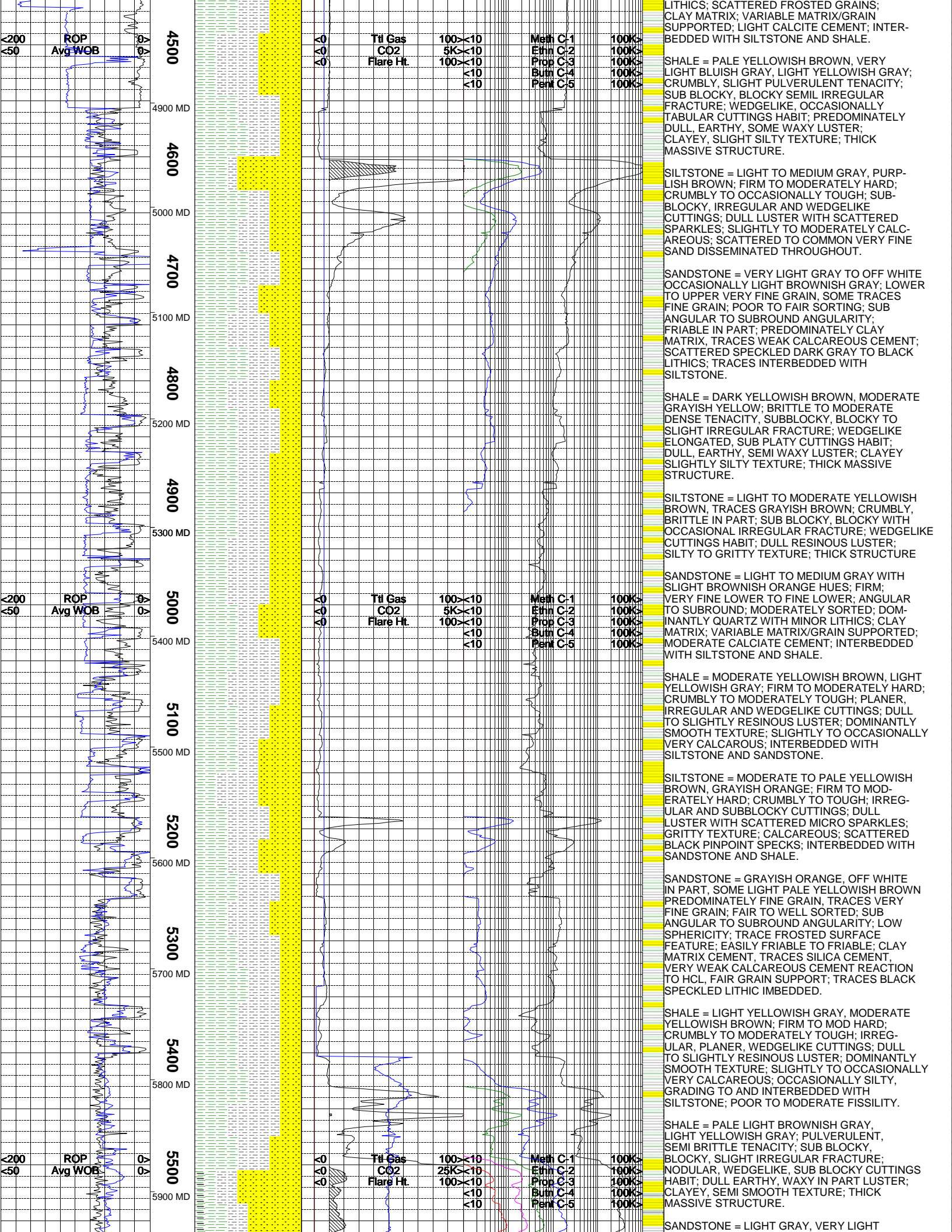
**TO**

### ABBREVIATIONS

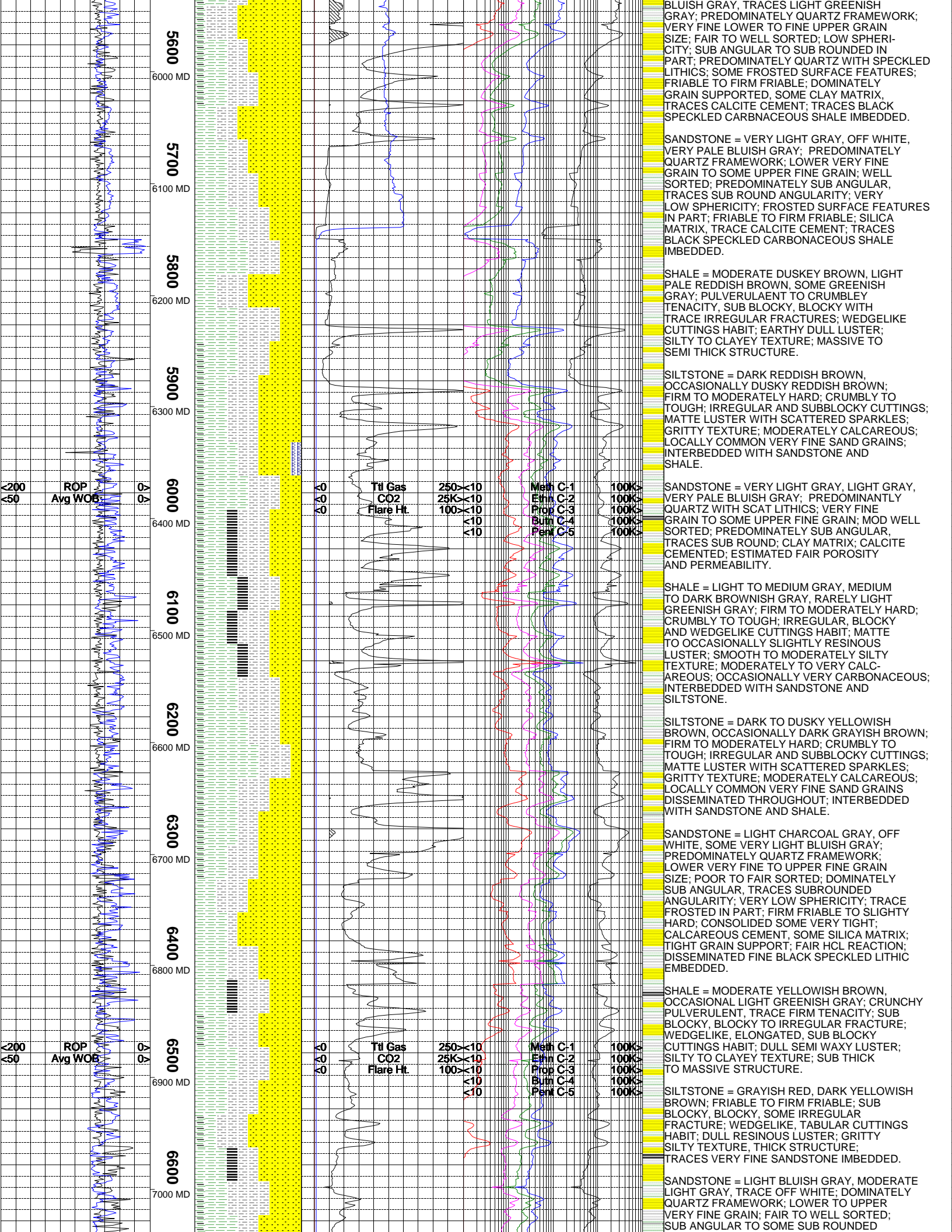
|                             |                                 |                            |
|-----------------------------|---------------------------------|----------------------------|
| <i>NB</i> NEWBIT            | <i>PV</i> PLASTIC VISCOSITY     | <i>LC</i> LOST CIRCULATION |
| <i>RRB</i> RERUN 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  |                            |

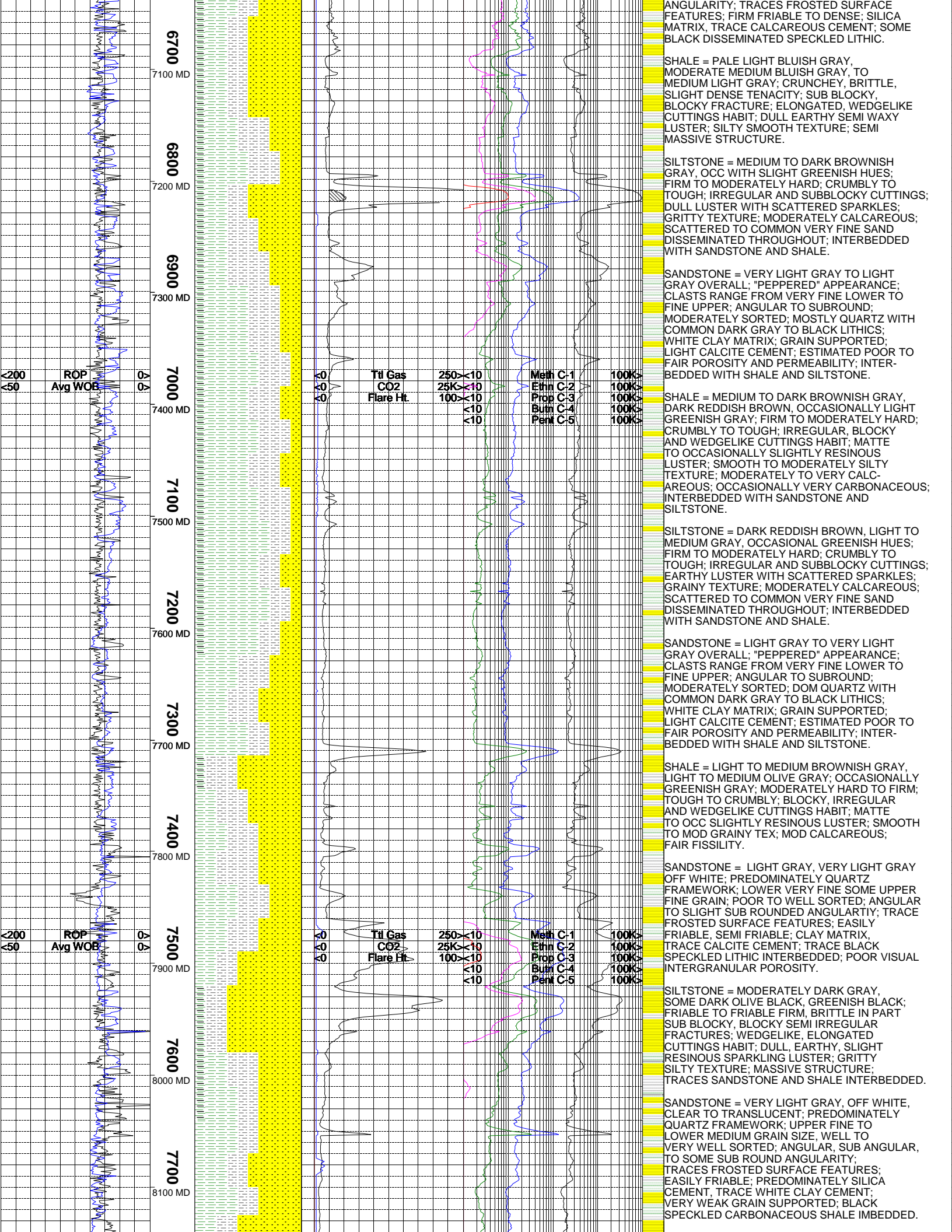
|                  |                      |                   |                        |                      |
|------------------|----------------------|-------------------|------------------------|----------------------|
| ALTERED ZONE     | CHERT - GLASSY       | FELSIC SILIC DIKE | MARL - CALC            | 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                   |                      |

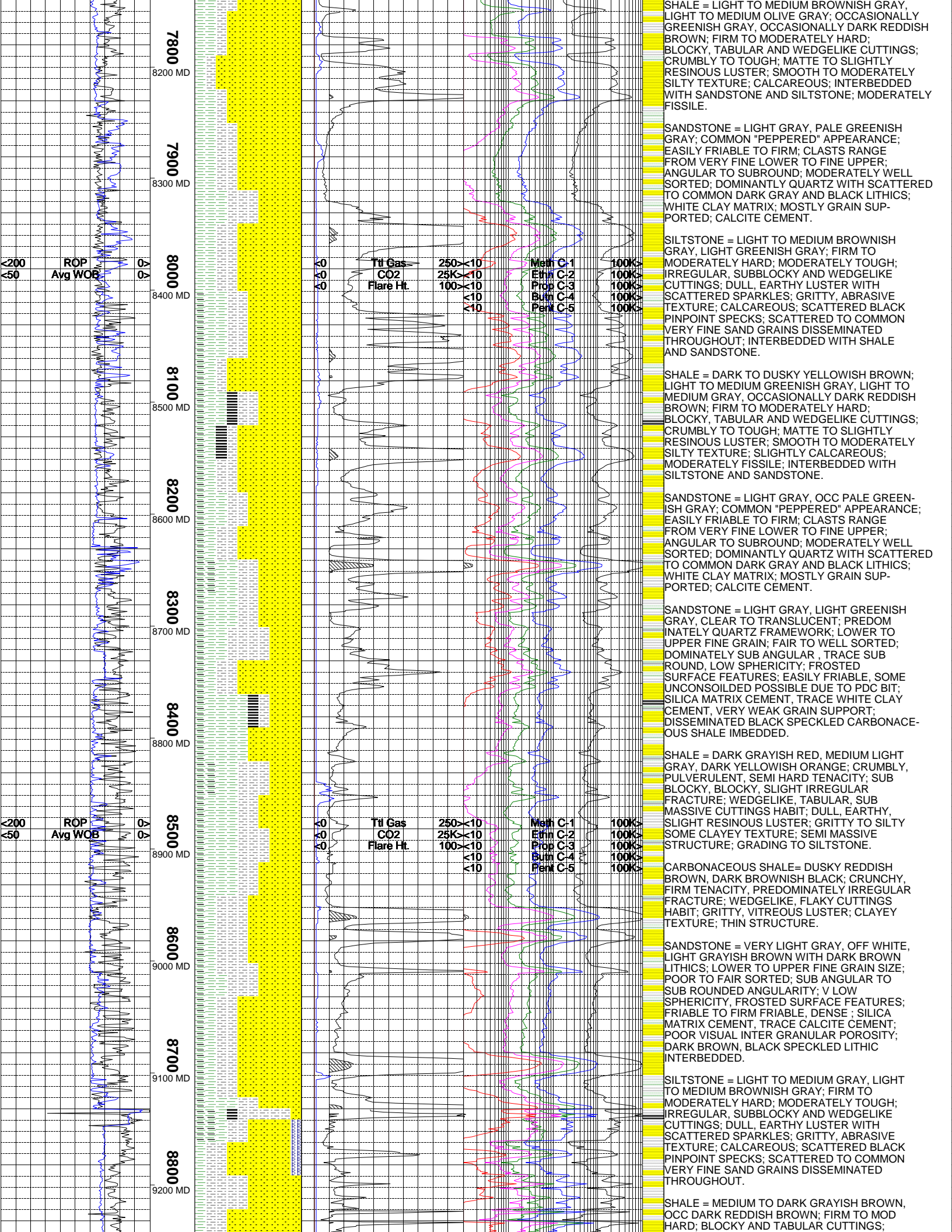




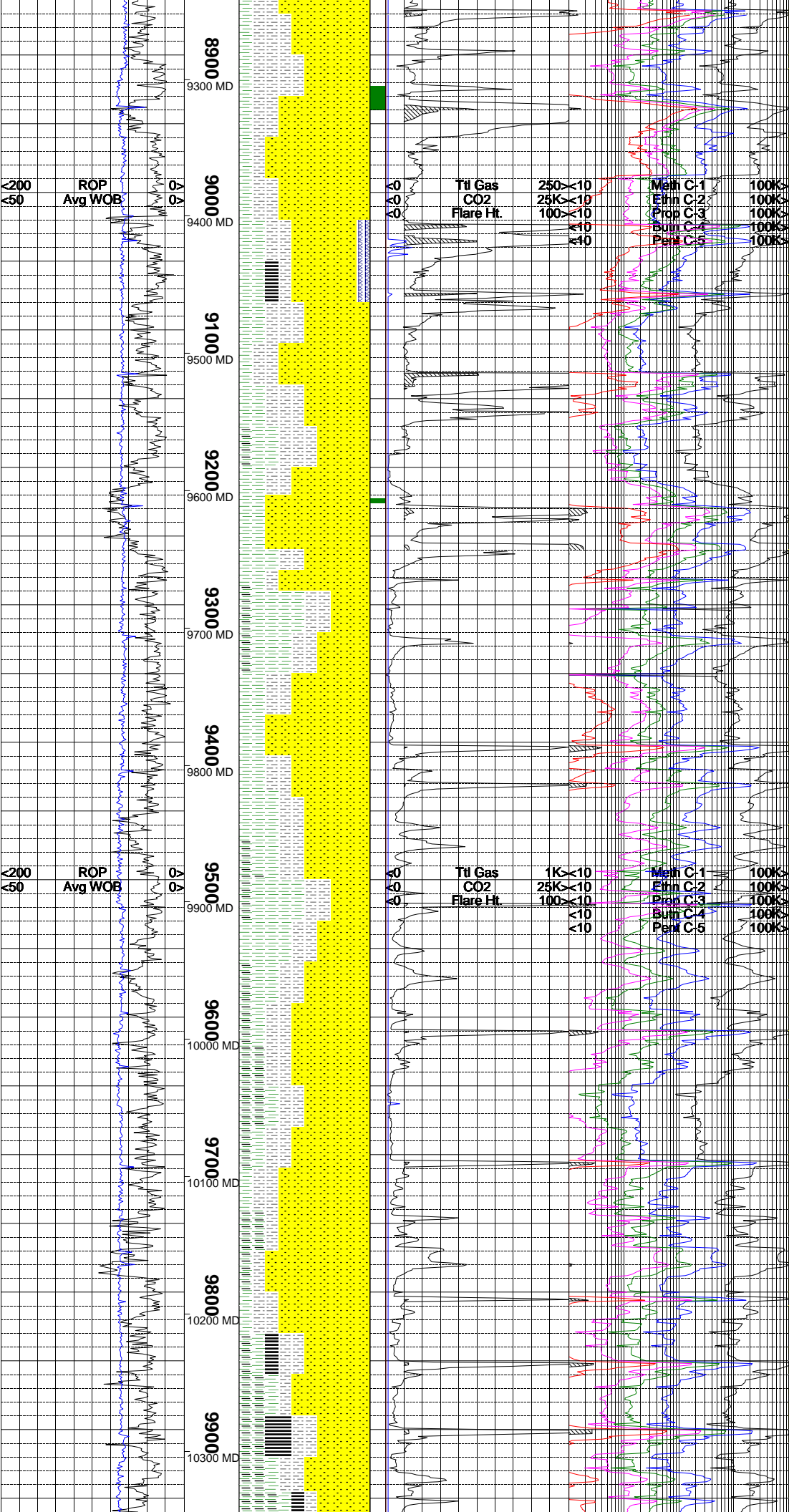












DULL LUSTER; SMOOTH TEXTURE; SLIGHTLY CALCAREOUS; MODERATELY FISSILE.

INTERMEDIATE CASING POINT = 9131'.

SANDSTONE = WHITE; LIGHT GRAY TO LIGHT BROWNISH GRAY; FEW MEDIUM TO FINER GRAINS; FAIR TO WELL SORTING; SUBANGULAR TO SUBROUNDED; MODERATE SPHERICITY; ABUNDANT UNCONSOLIDATED TO VERY FRIABLE SANDSTONE; CALCITE CEMENT WITH MINOR SILICA GRAINS; GLAUCONITIC STAINING ON SANDS; TRACES OF COAL; INTERBEDDED SILTSTONE LAYERS; MODERATE TO HIGH GAS VALUES IN SANDS.

SILTSTONE = DARK GRAY TO GRAYISH BLACK; BRITTLE TO CRUMBLY; IRREGULAR FRACTURES NODULAR TO WEDGE LIKE CUTTINGS; SLIGHT RESINOUS TO EARTHY DULL LUSTER; SILTY TO CLAYEY TEXTURE; APPEARS GRADING TO SHALES; 5-8% KAOLINITIC SANDS PRESENT; MODERATE TO LOWER GAS IN SILTSTONES.

SHALE = LIGHT TO MEDIUM GRAY; CRUNCHY TO CRUMBLY; ELONGATED TO TRACES OF PLATY CUTTINGS; IRREGULAR TO SPLINTERY FRACTURES; EARTHY DULL TO SLIGHT WAXY LUSTER; SLIGHTLY SILTY TO SMOOTH; APPEARS GRADING TO SILTSTONE; 5% COAL OBSERVED; 5-8% KAOLINITIC SANDS; HIGHER GAS IN COALS AND SANDSTONES.

NOTE = MAX GAS 1245u AND CO2 FROM LCM PILL RETURN AT 9418'.

SANDSTONE = WHITE; LIGHT GRAY TO LIGHT BROWNISH GRAY; FINE GRAINS; WELL SORTING; SUBANGULAR TO ROUNDED; HIGH SPHERICITY; ABUNDANT UNCONSOLIDATED TO VERY FRIABLE GRAINS; CALCITE CEMENT WITH 50% SILICA MATRIX; KAOLINITIC SAND AND TRACES OF COAL OBSERVED; HIGHER GAS VALUES OBSERVED IN KAOLINITIC SANDS AND COAL SEAMS.

SHALE=LIGHT MEDIUM GRAY OCC TRACE YELLOW BROWN; MOD HARD FIRM; BLOCKY IRREGULAR FRACTURE; MASSIVE CUTTINGS HABIT;DULL EARTHY OCC WAXY LUSTER; SMOOTH TO CLAYEY TEXTURE.

SANDSTONE=CLEAR WHITE; PREDOM MEDIUM UNCONSOLIDATED QUARTZ ; SUBANGULAR SUBROUNDED; MOD WELL SORTED;EASILY FRIABLE; CALCITE CEMENT WITH TRACE KAOLINTE; MOD HIGH SPHERICITY; SHALES INTERBEDDED; HIGH GAS IN SANDS.

SHALE=LIGHT MEDIUM GRAY OCC DARK GRAY TO SLI PALE YELLOW; MOD HARD FIRM; DULL EARTHY OCC WAXY LUSTER; SMOOTH SILTY GRITTY TEXTURE; NON CALCAREOUS; GRADING TO GRAYISH BROWN SILTSTONE.

SANDSTONE=CLEAR WHITE; FINE TO VERY FINE PREDOM ABUD CLEAR LOOSE MEDIUM QUARTZ GRAINS; SUBANGULAR SUBROUNDED; MOD WELL SORTED; PREDOM GRAIN SUPPORTED; CALCITE CEMENT; HIGH SPHERICITY; OCC TRACE BLACK LITHICS CLAST FRAGMENTS; SLI TRACE KAOLINITE; HIGH GAS READINGS IN SANDS.

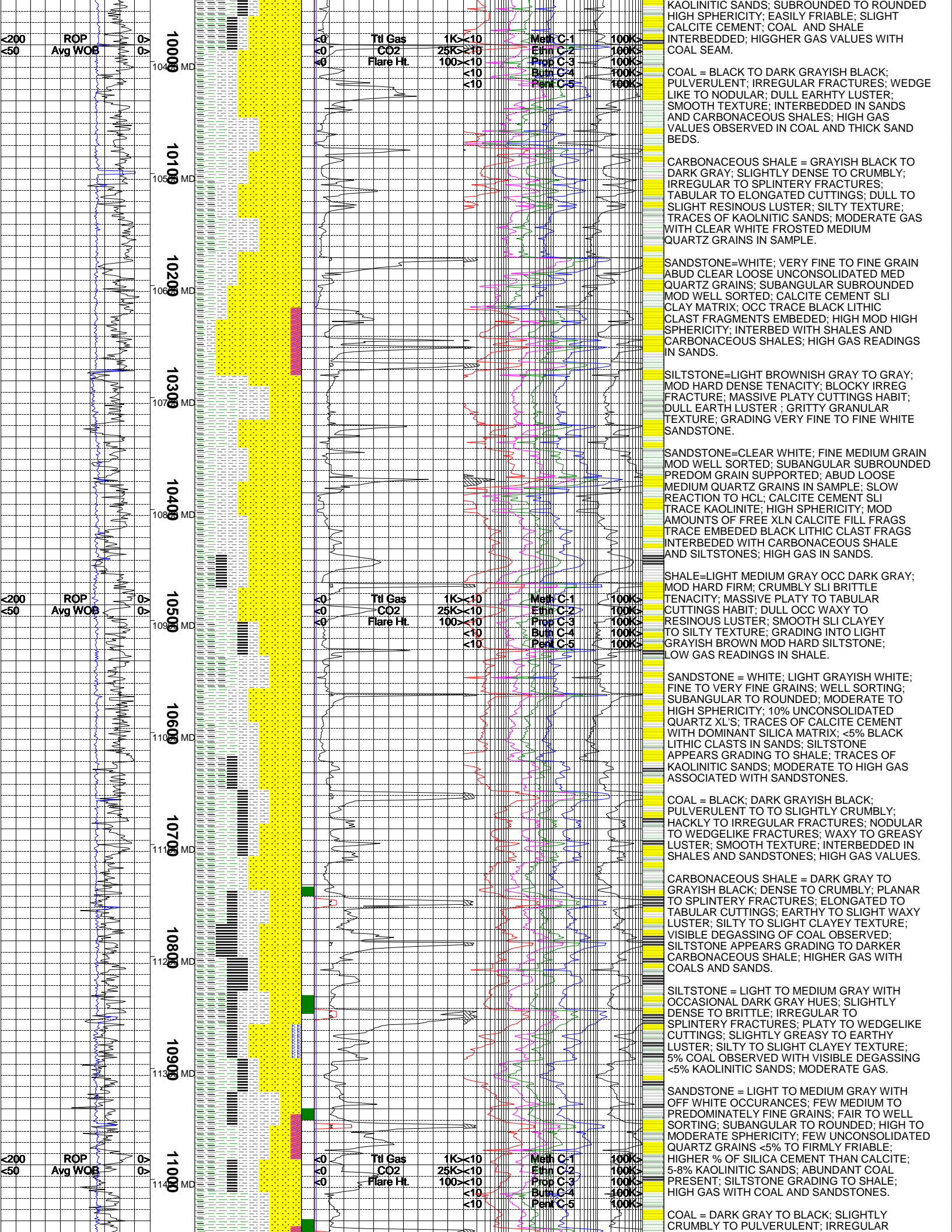
SHALE=LIGHT GRAY OCC DARK GRAY; MOD HARD PLANULAR IRREGULAR FRACTURE; MASSIVE PLATY CUTTINGS HABIT; DULL EARTHY OCC WAXY LUSTER; SILTY OCC GRITTY TEXTURE; INTERBEDDED SANDS YIELDING HIGH GAS.

SANDSTONE = LIGHT GRAY TO OFF WHITE AND CLEAR; FINE TO MEDIUM GRAINS; SUB ANGULAR TO SUBROUNDED; MODERATELY WELL SORTED; DOMINANT GRAIN SUPPORT; ABUNDANT CLEAR UNCONSOLIDATED MEDIUM QUARTZ GRAINS; CALCITE CEMENT; TRACES OF KAOLINITIC SAND; SILTSTONE AND SHALE INTERBEDDED; MODERATE GAS.

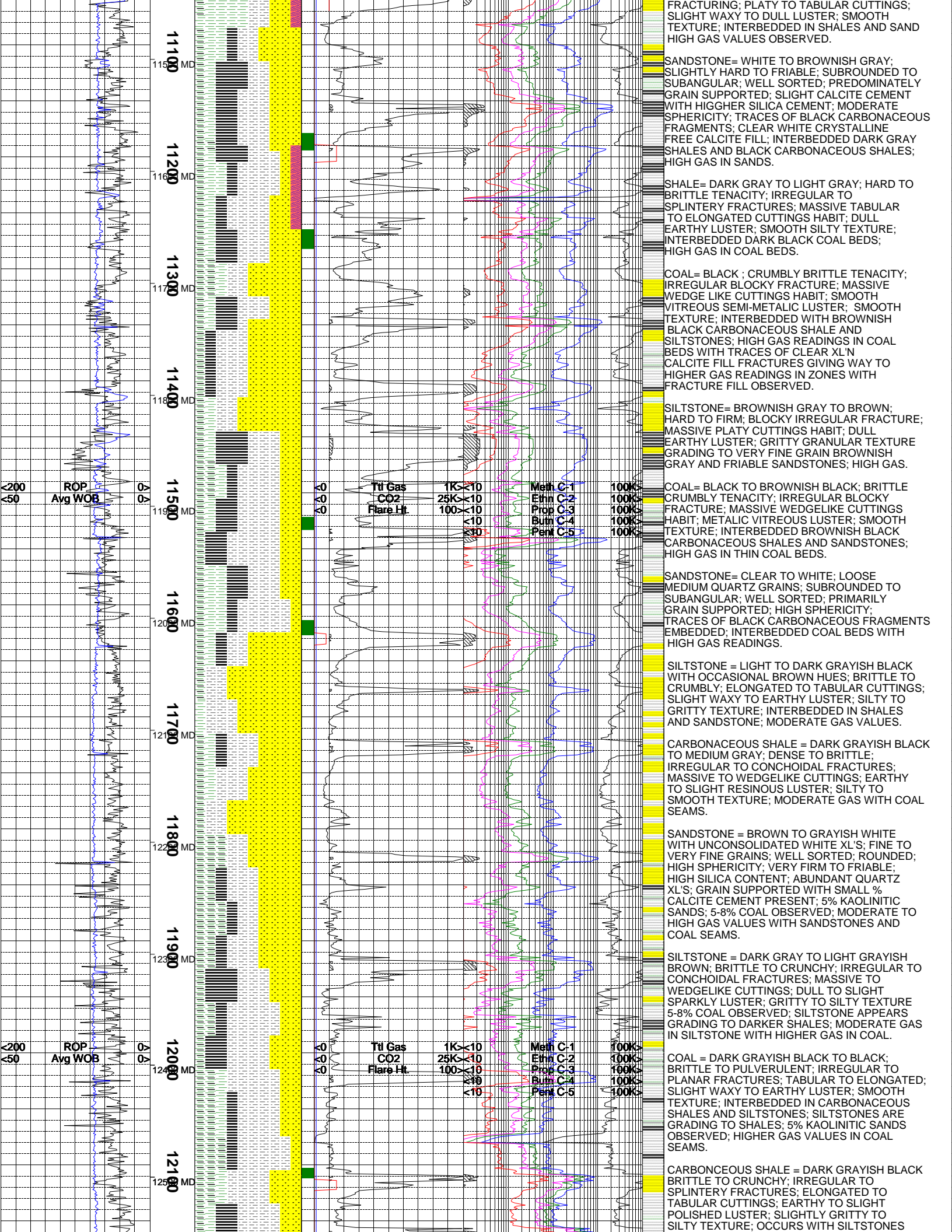
SILTSTONE = MEDIUM TO DARK GRAY; TO SLIGHTLY DENSE; SPLINTERY TO PLANAR FRACTURES; ELONGATED TO NODULAR CUTTINGS; LITTLE RESINOUS TO EARTHY LUSTER; SILTY TEXTURE; INTERBEDDED IN SANDSTONE LAYERS; APPEARS GRADING TO SHALE; <3% INDIVIDUAL QUARTZ GRAINS OBSERVED; LOWER GAS VALUES.

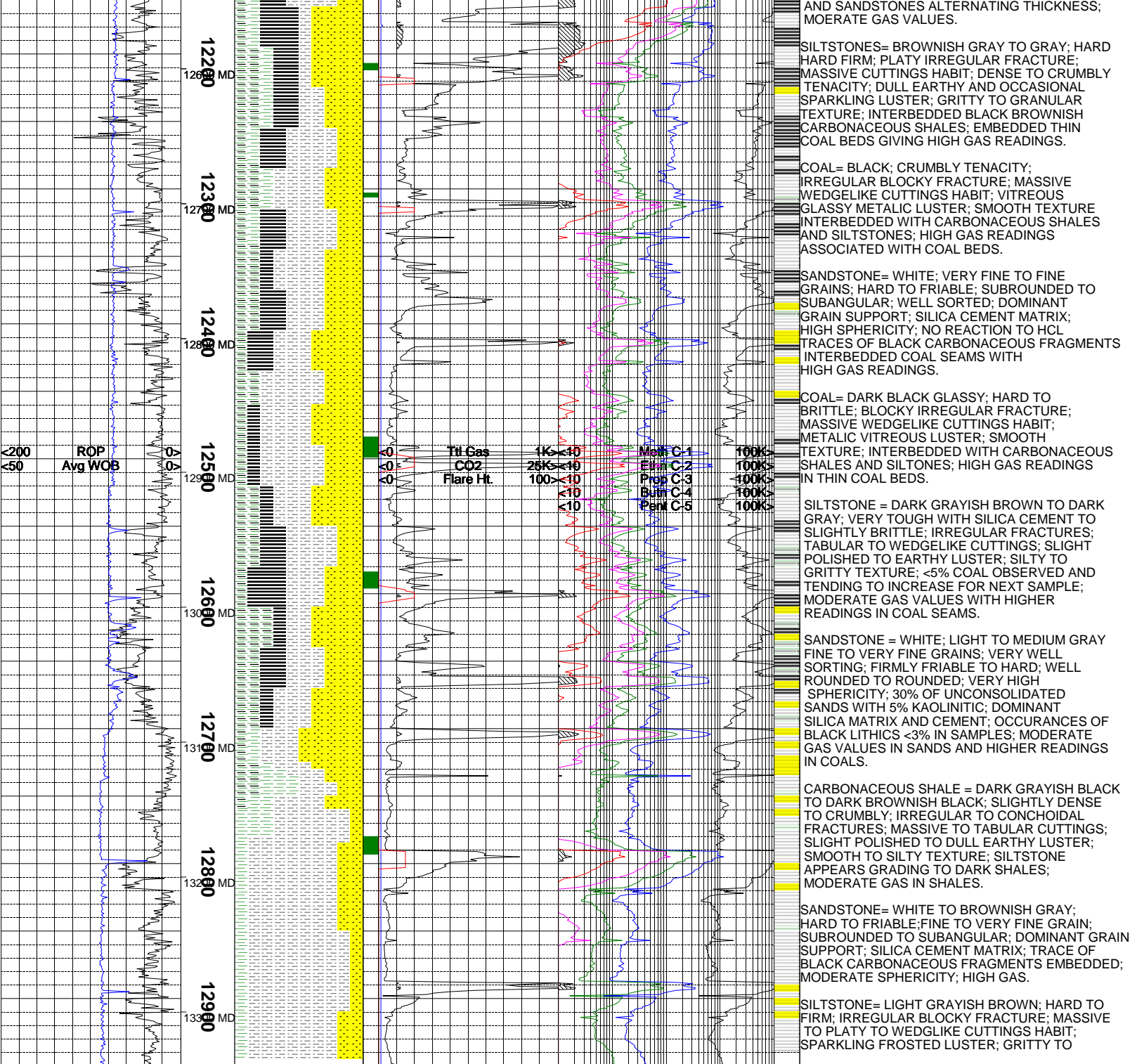
CARBONACEOUS SHALE = MEDIUM TO DARK GRAY; DENSE TO CRUMBLY; WEDGE LIKE TO NODULAR CUTTINGS; EARTHY TO SLIGHT RESINOUS LUSTER; SMOOTH TO SILTY TEXTURE; 5% KAOLINITIC SANDS OBSERVED; SILTSTONE APPEARS GRADING TO SHALE; MODERATE GAS VALUES.

SANDSTONE = WHITE; LIGHT GRAY TO GRAYISH WHITE; VERY FINE TO FINE GRAINS WELL SORTING FOR CONSOLIDATED GRAINS; 10-20% UNCONSOLIDATED GRAINES; <3%









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