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MUDLOG TVD

COMPANY ExxonMobil Production
WELL PCU296-6A8
FIELD PICEANCE
REGION ROCKIES
COORDINATES 39.900102
108.212136
ELEVATION 7363.9
COUNTY, STATE RIO BLANCO, CO
API INDEX 05-103-11479-00
SPUD DATE 04/05/2010
CONTRACTOR HE
CO. REP. KEVIN GARDNER
RIG/TYPE 239 / FLEX 3
LOGGING UNIT 33
GEOLOGISTS NICK BAUER
JASON REISENBICHLER
ADD. PERSONS LAYNE GOOD
JASON REYNOLDS
CO. GEOLOGIST MELISSA SAURBORN

LOG INTERVAL

CASING DATA

DEPTHS: 148' TO 9717'
DATES: 04/05/2010 TO 04/19/2010
SCALE: 5"=100'

16" AT 147'
10.75" AT 4438'
AT
AT

MUD TYPES

HOLE SIZE

SPUD MUD TO 4454'
LSND TO 9717'
TO
TO

14.75" TO 4454'
9.875" TO 9717'
TO
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	KAOLINIC	RECRYSTALLIZED CALCITE	VOLCANICS
CHALK	DIATOMITE	LIMESTONE	RHYOLITE	
CRYSTALLINE TUFF	DIORITE	LITHIC TUFF	SALT	
CHERT - ARGILL	DOLOSTONE	MARL - DOLO	SAND	

<200 ROP 0>
ft/hr

<50 Avg WOB 0>
kibs

<0 Gamma 100>
API Units

TVD Depth

Lithology

MGS

<0 Ttl Gas 1K>
units

<0 CO2 10K>
ppm

<0 Flare Ht. 100>
ft

<10 Meth C-1 100K>
ppm

<10 Ethn C-2 100K>

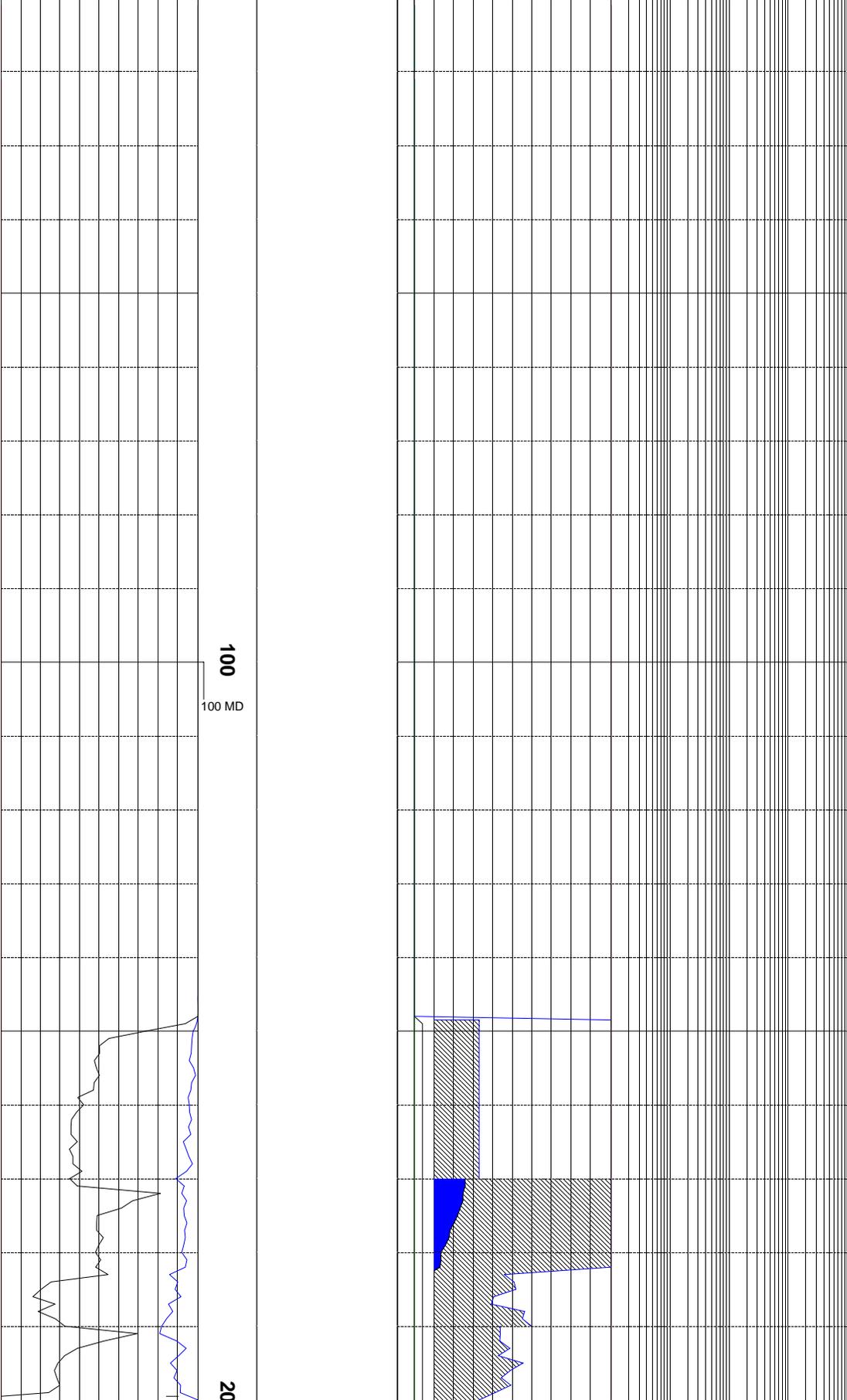
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<10 Butn C-4 100K>

<10 Pent C-5 100K>

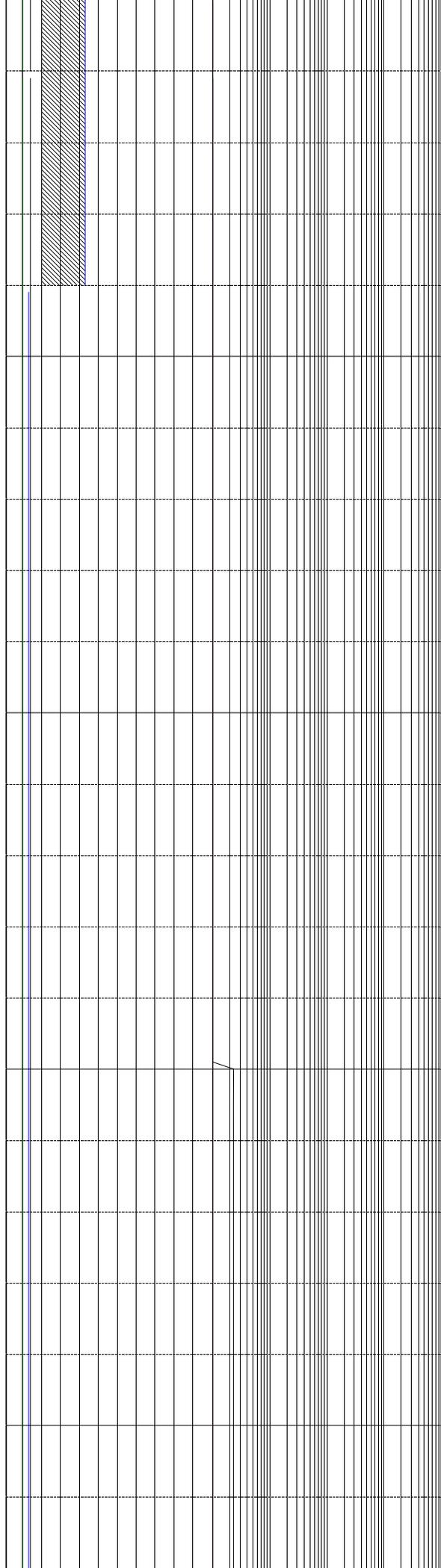
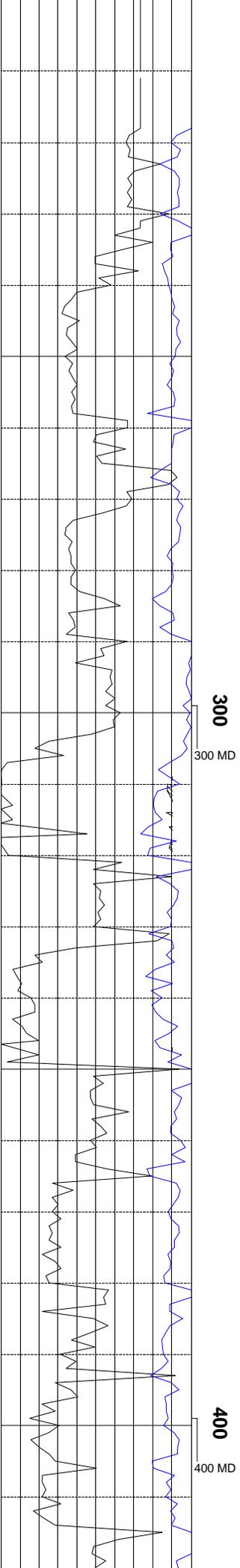
Interp. Lith

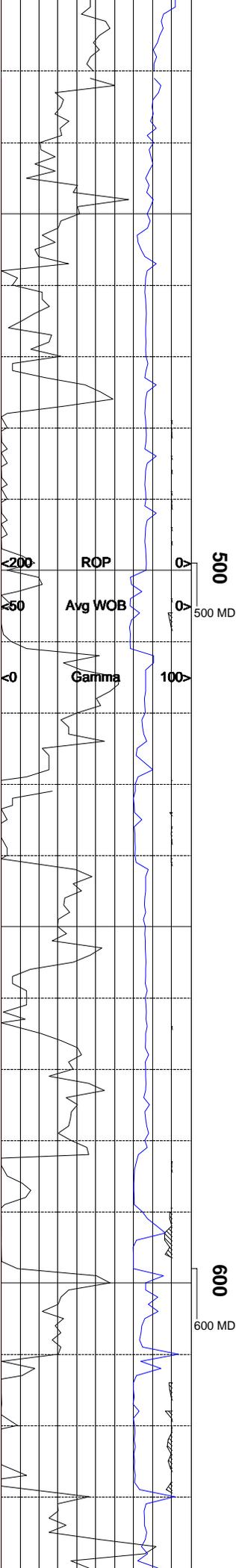
Remarks
Survey Data, Mud Reports, Other Info.



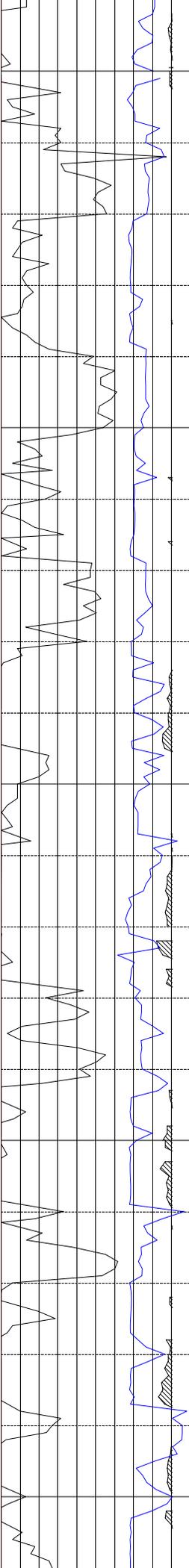
100
100 MD

20



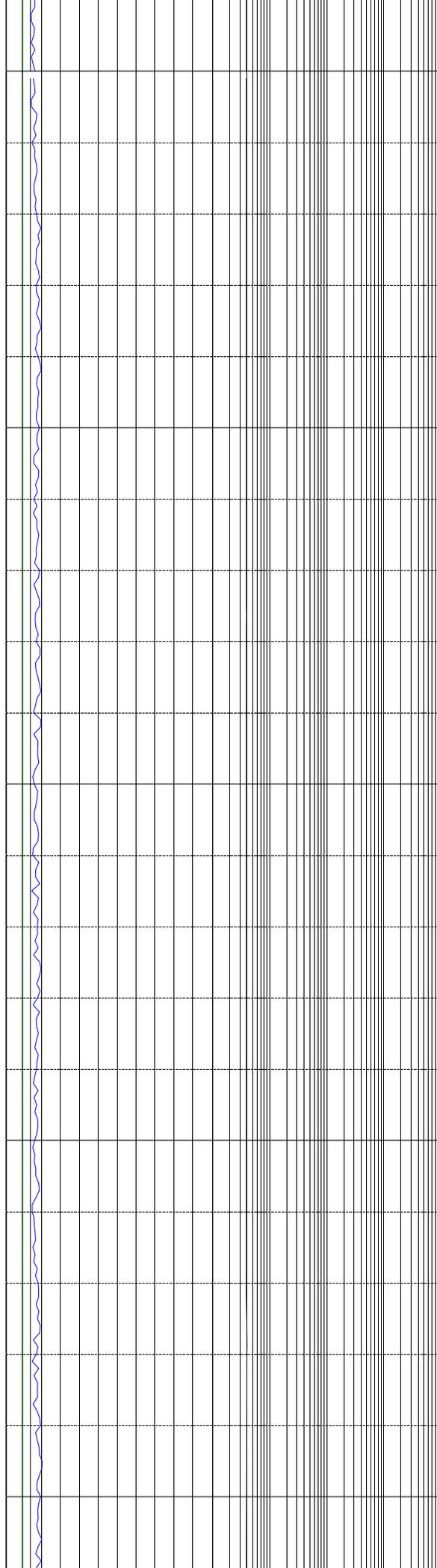


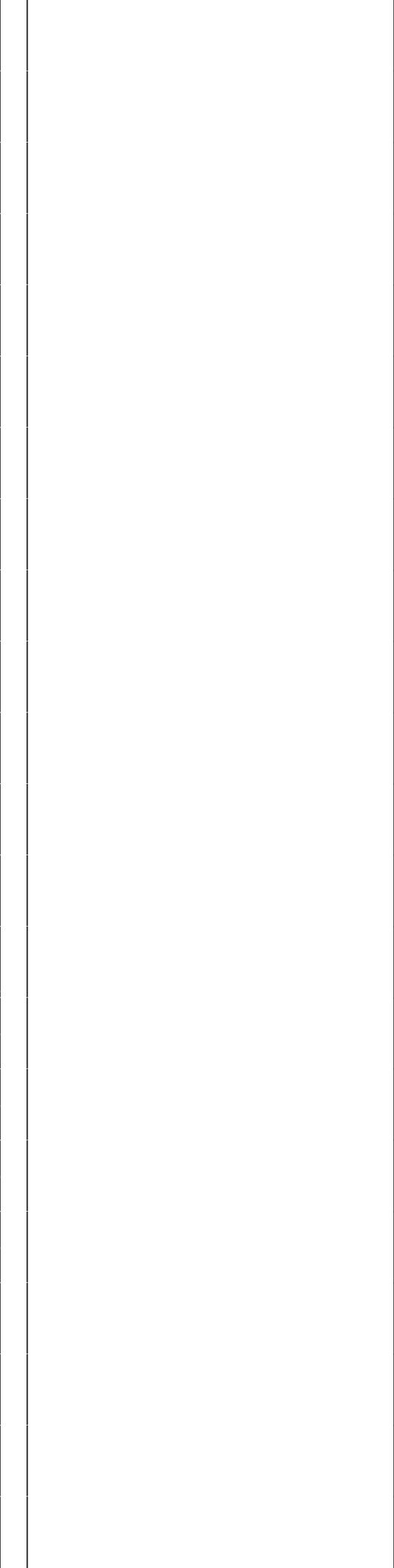
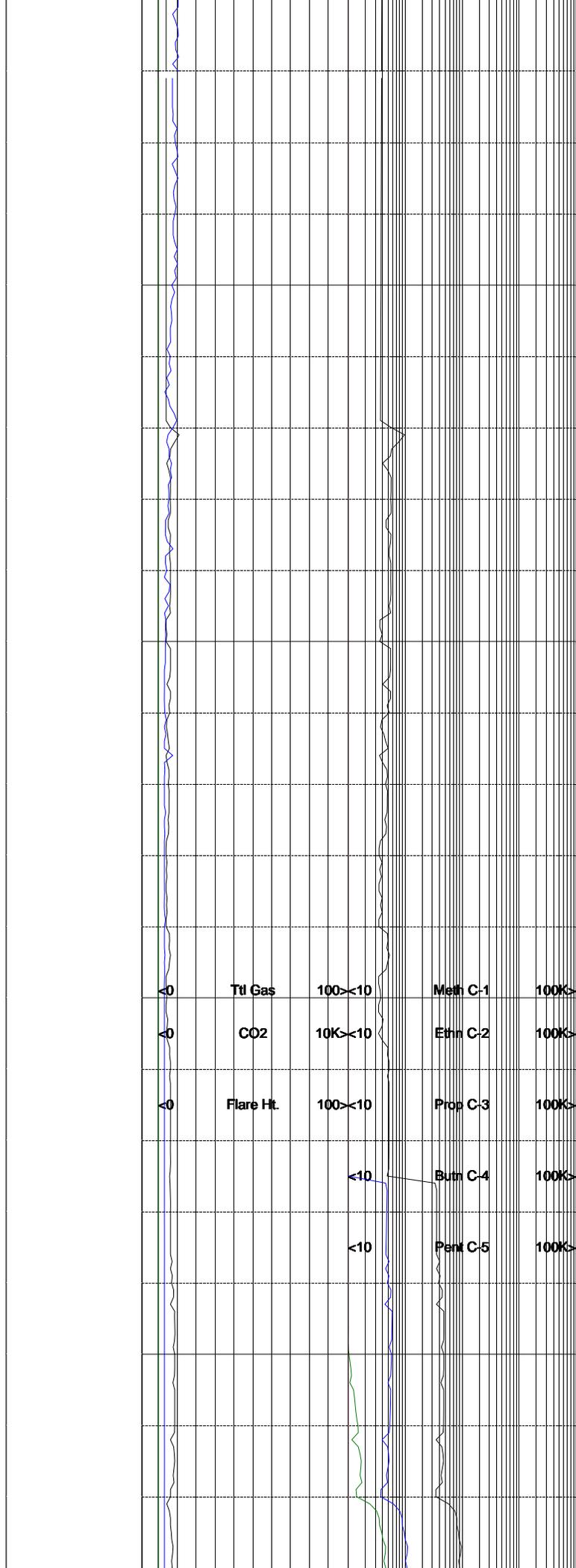
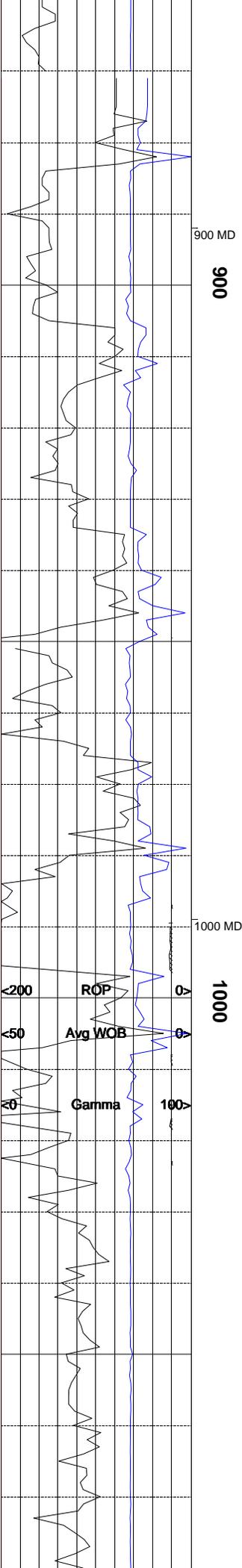
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<0	CO2	10K><10	Ethn C-2	100K>
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		<10	Butn C-4	100K>
		<10	Pent C-5	100K>

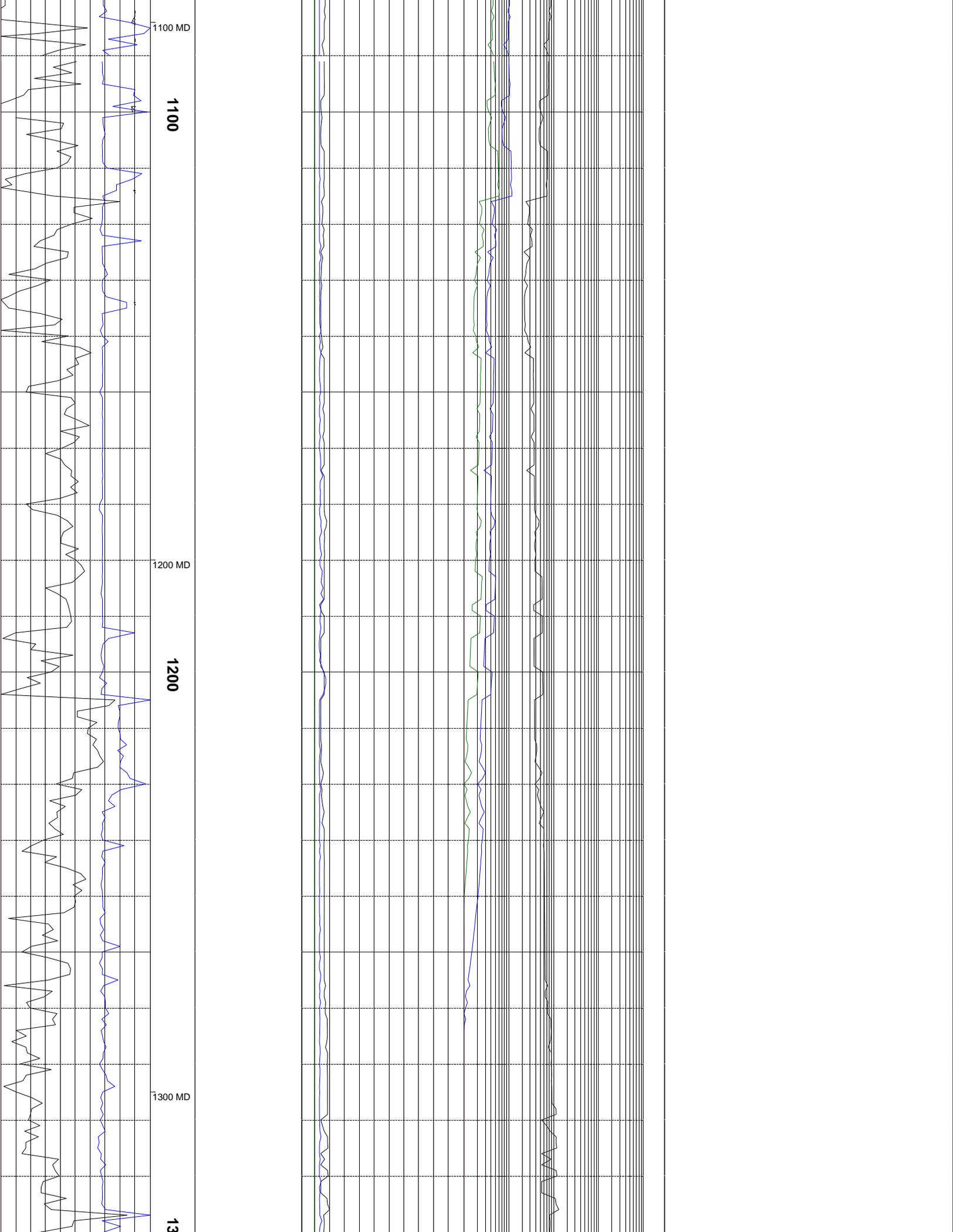


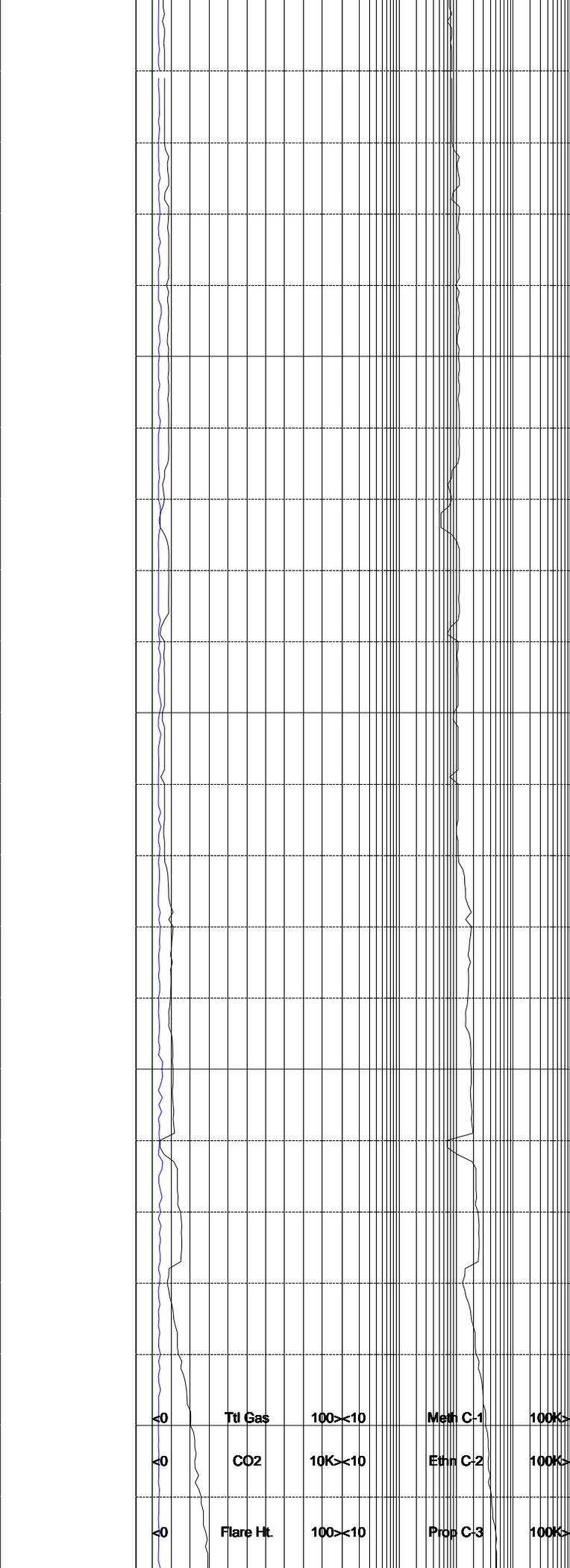
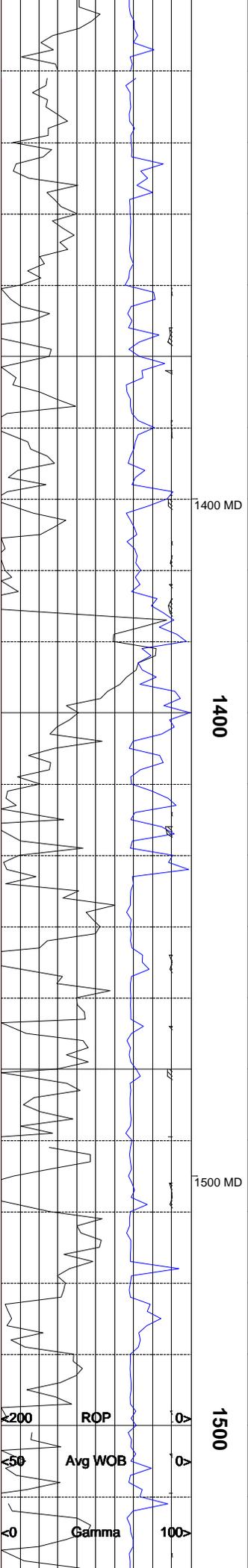
700
000

800 MD
008

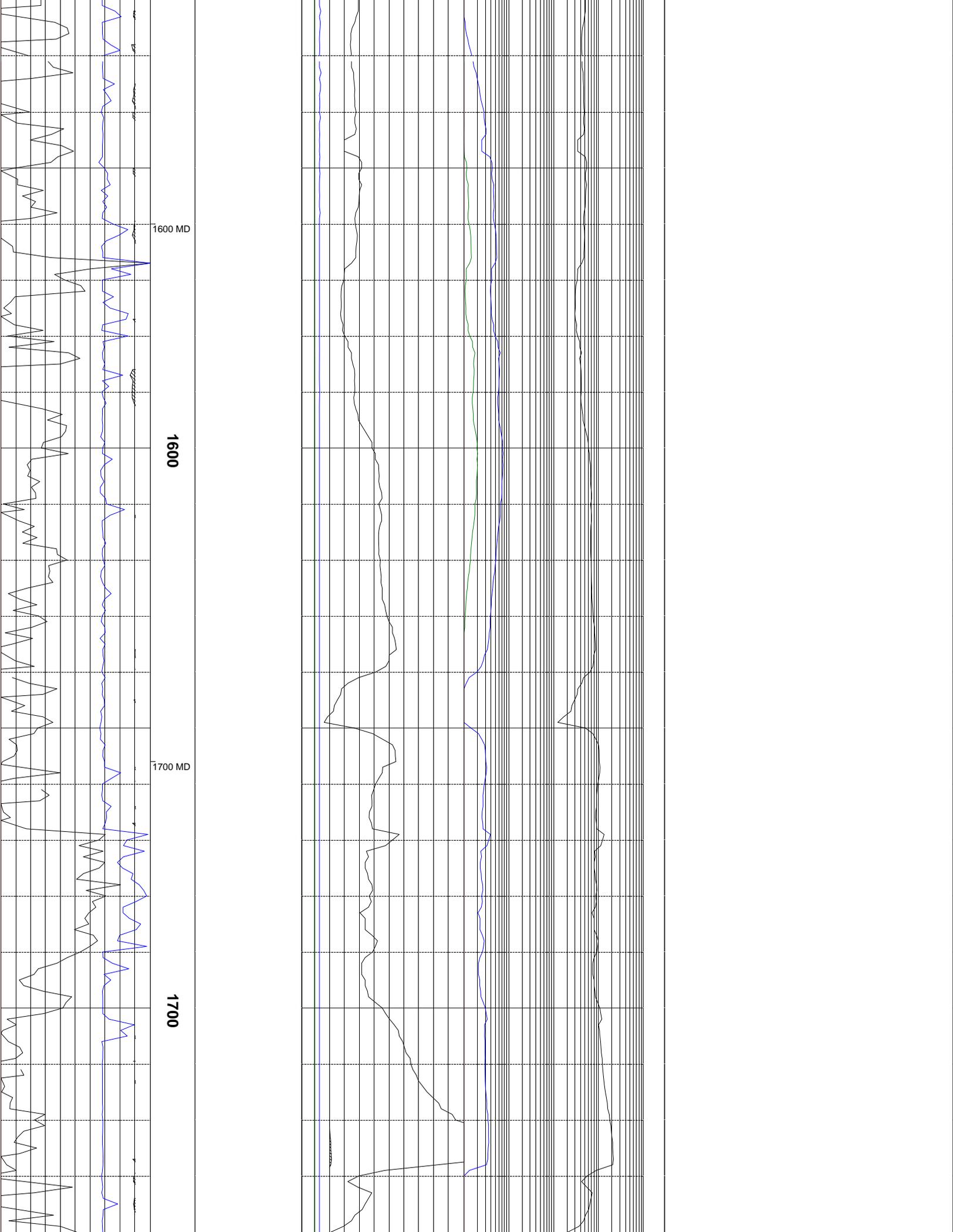


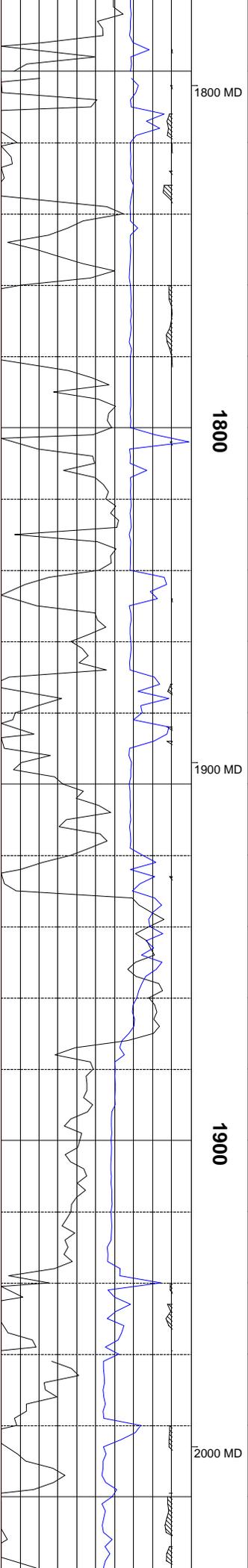


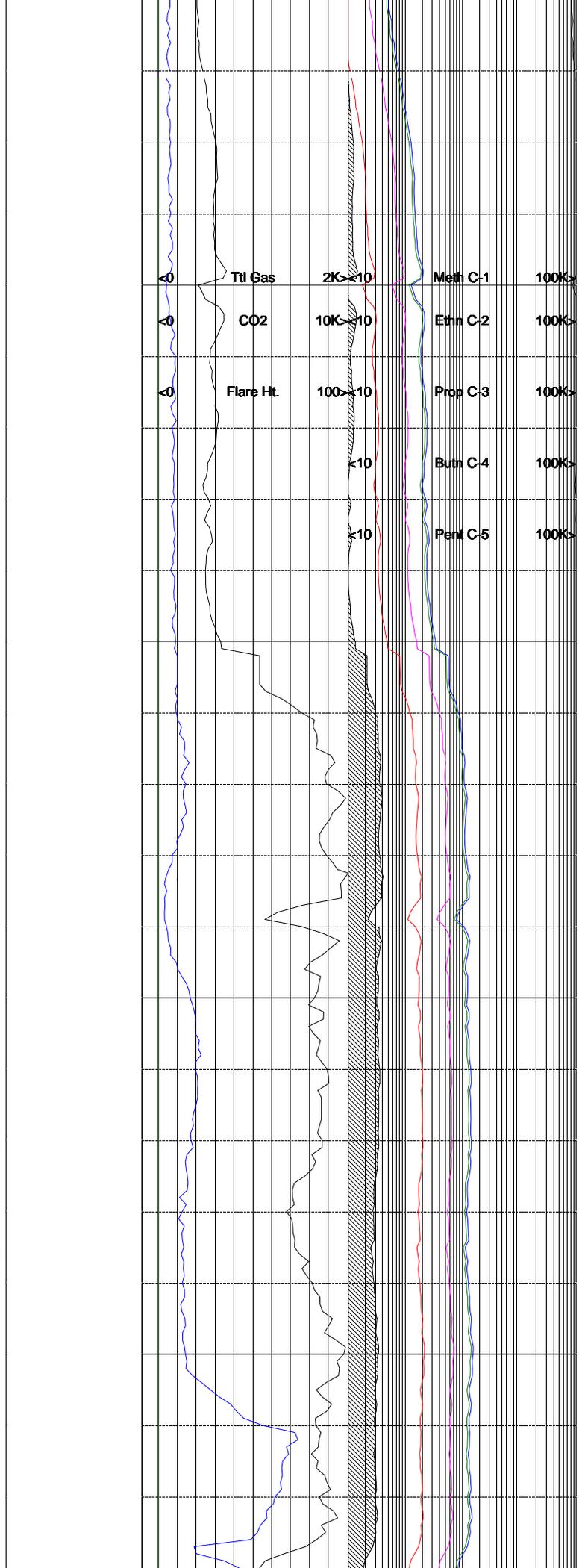
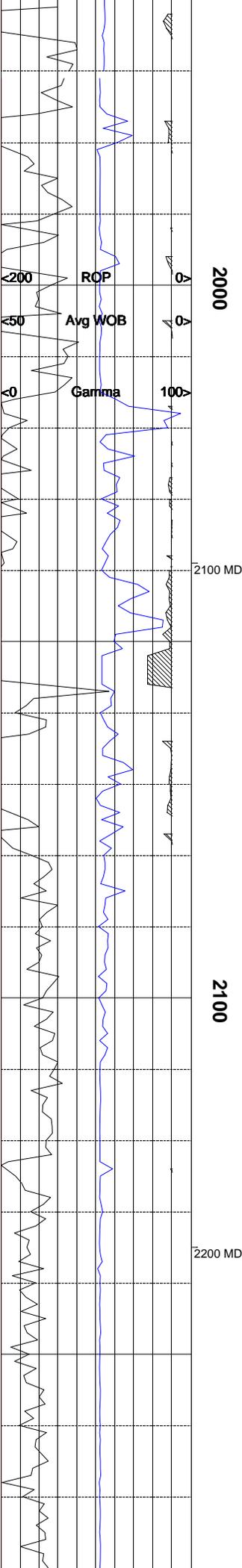


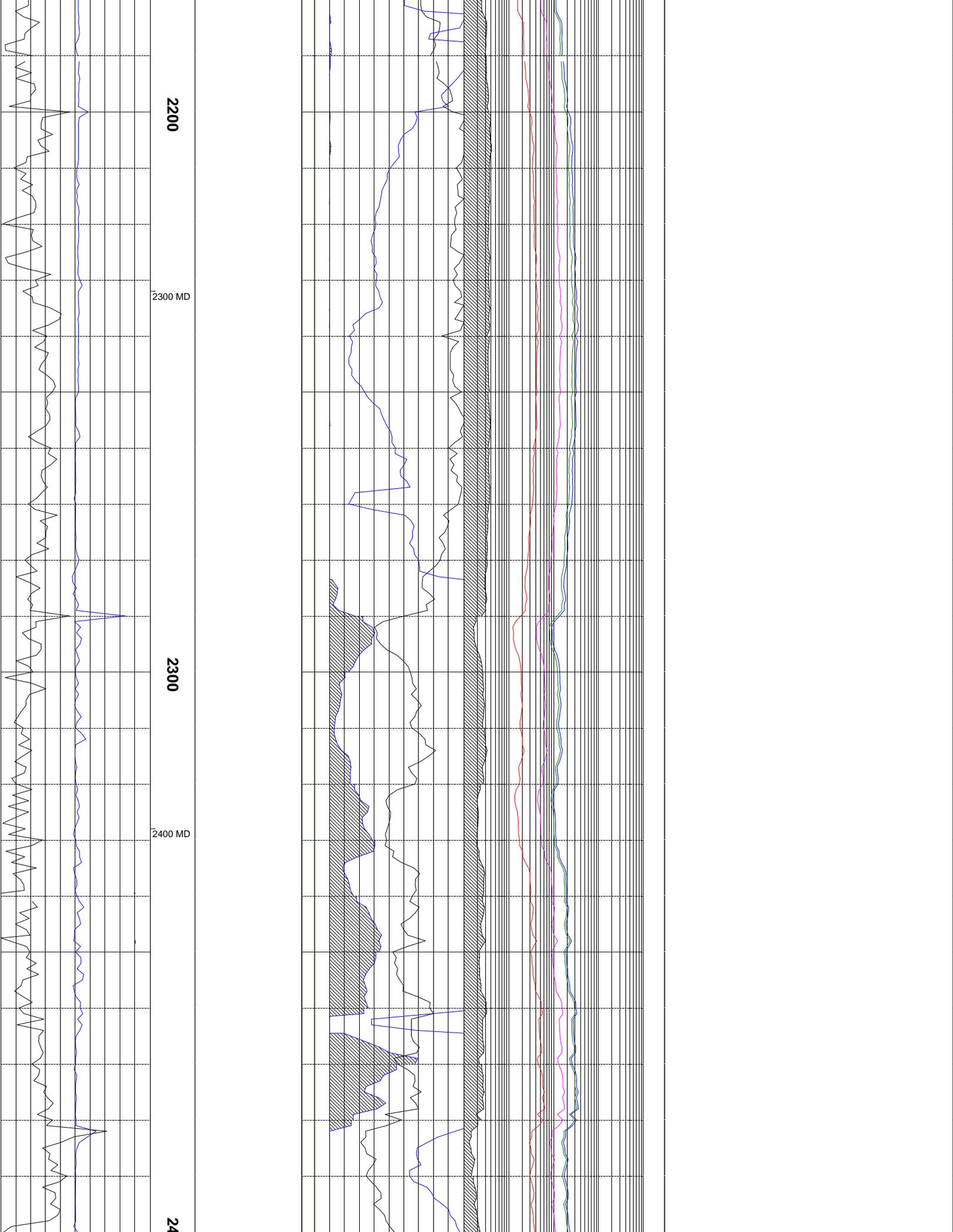


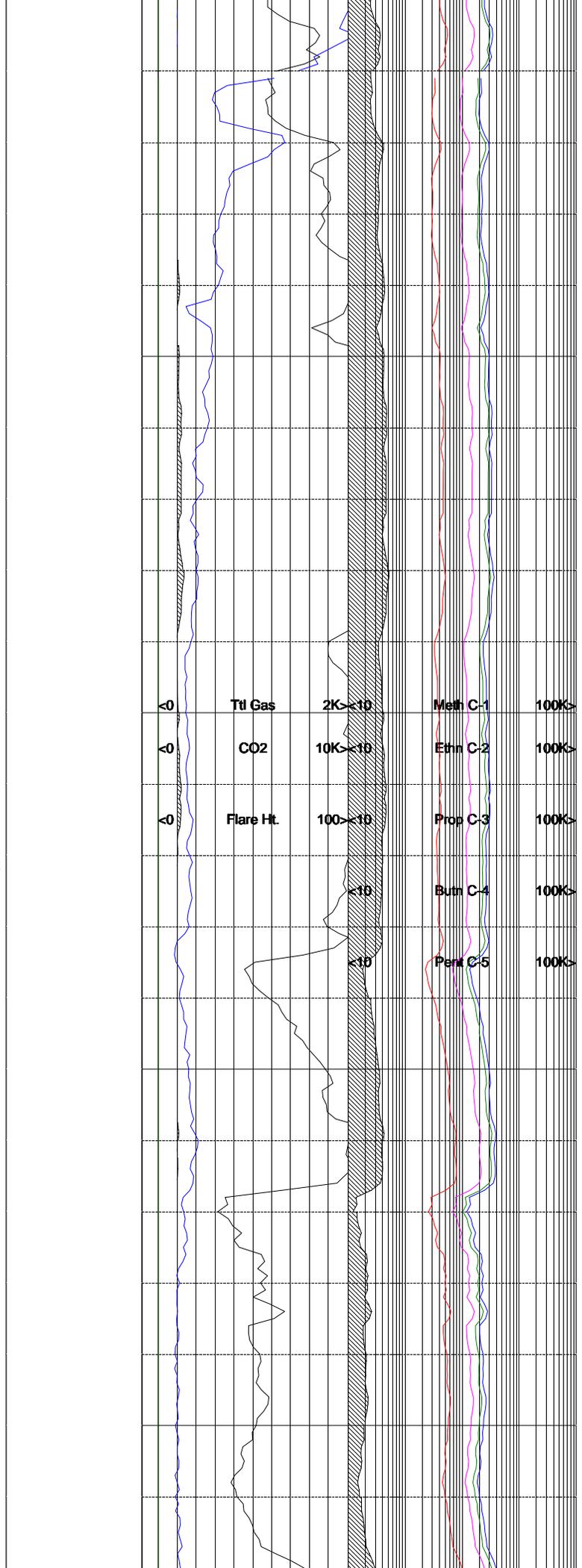
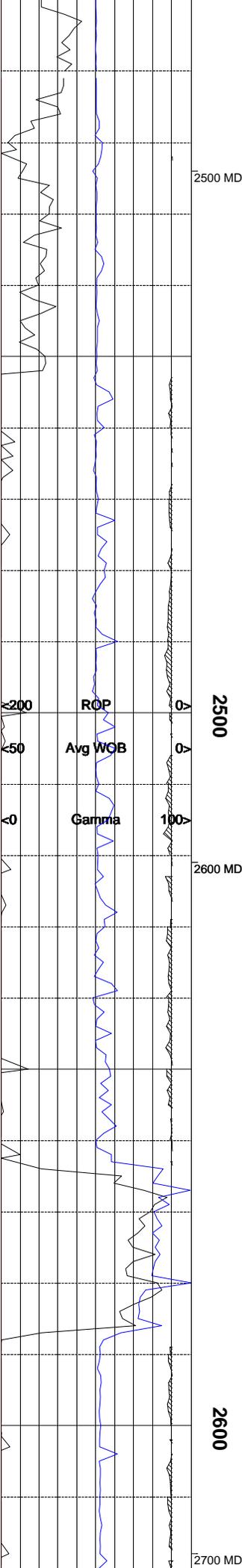
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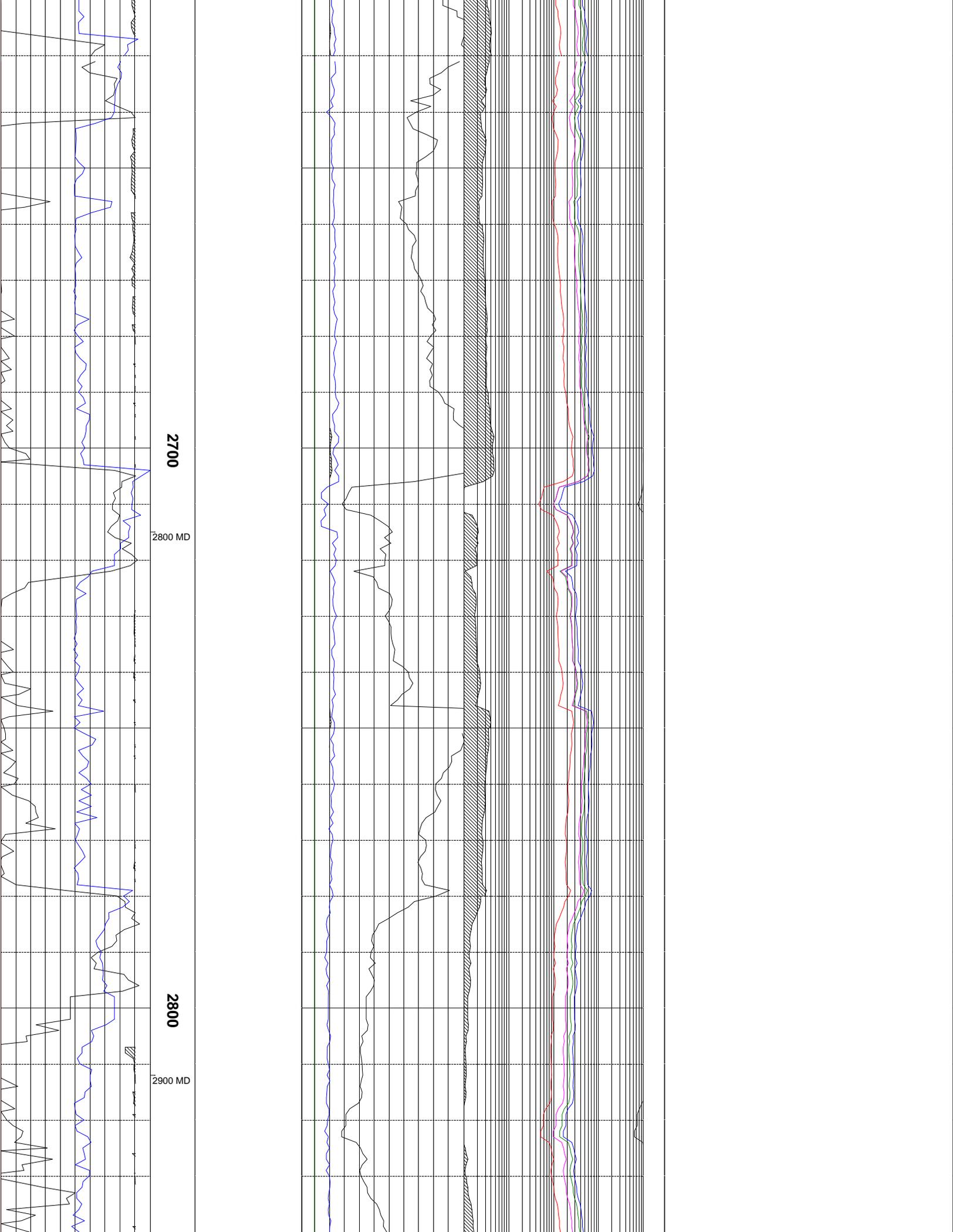


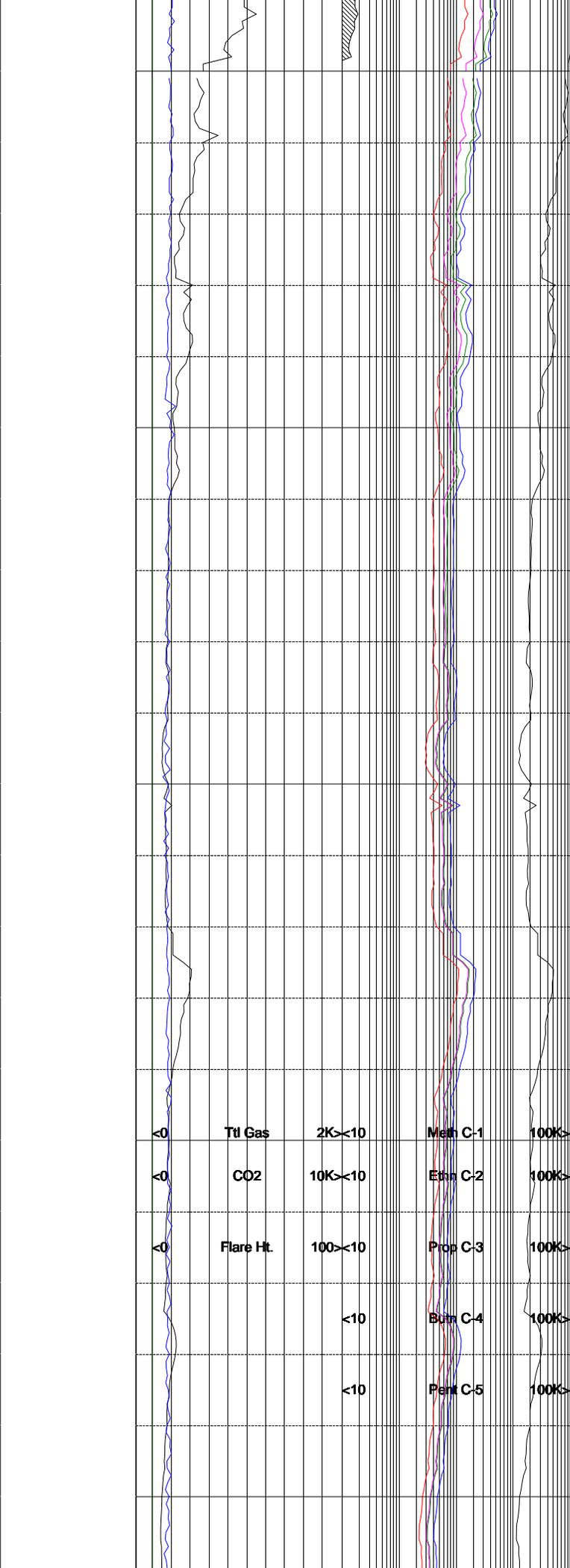
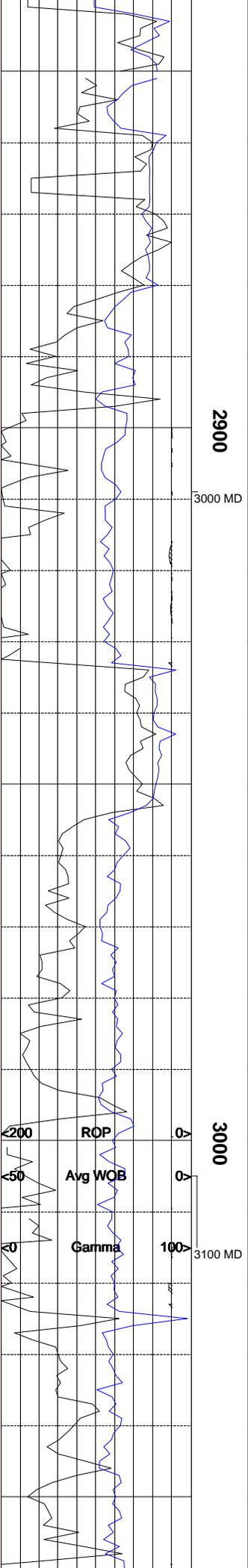






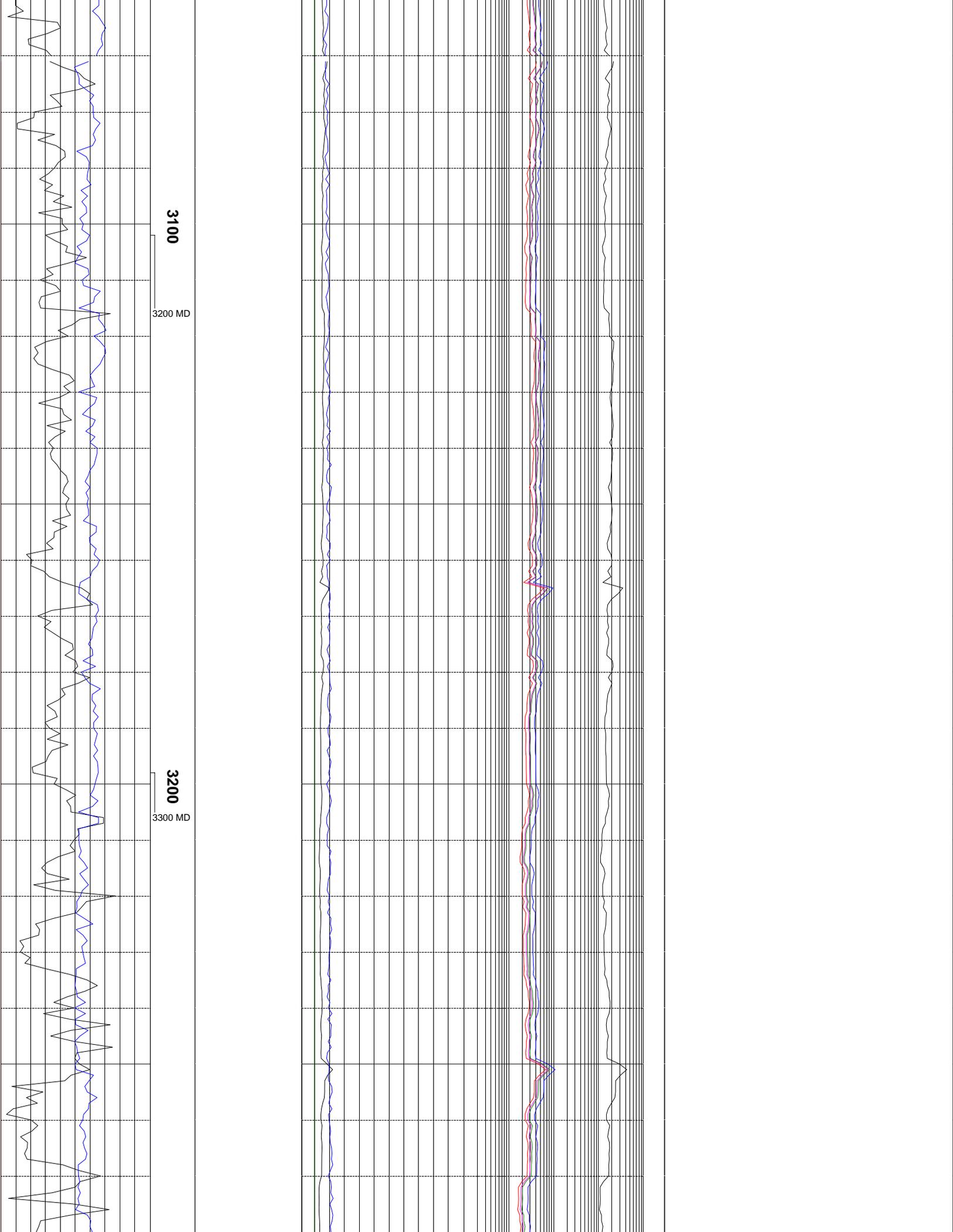






200 ROP
 50 Avg WOB
 0 Gamma 100

<0 Ttl Gas 2K<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>

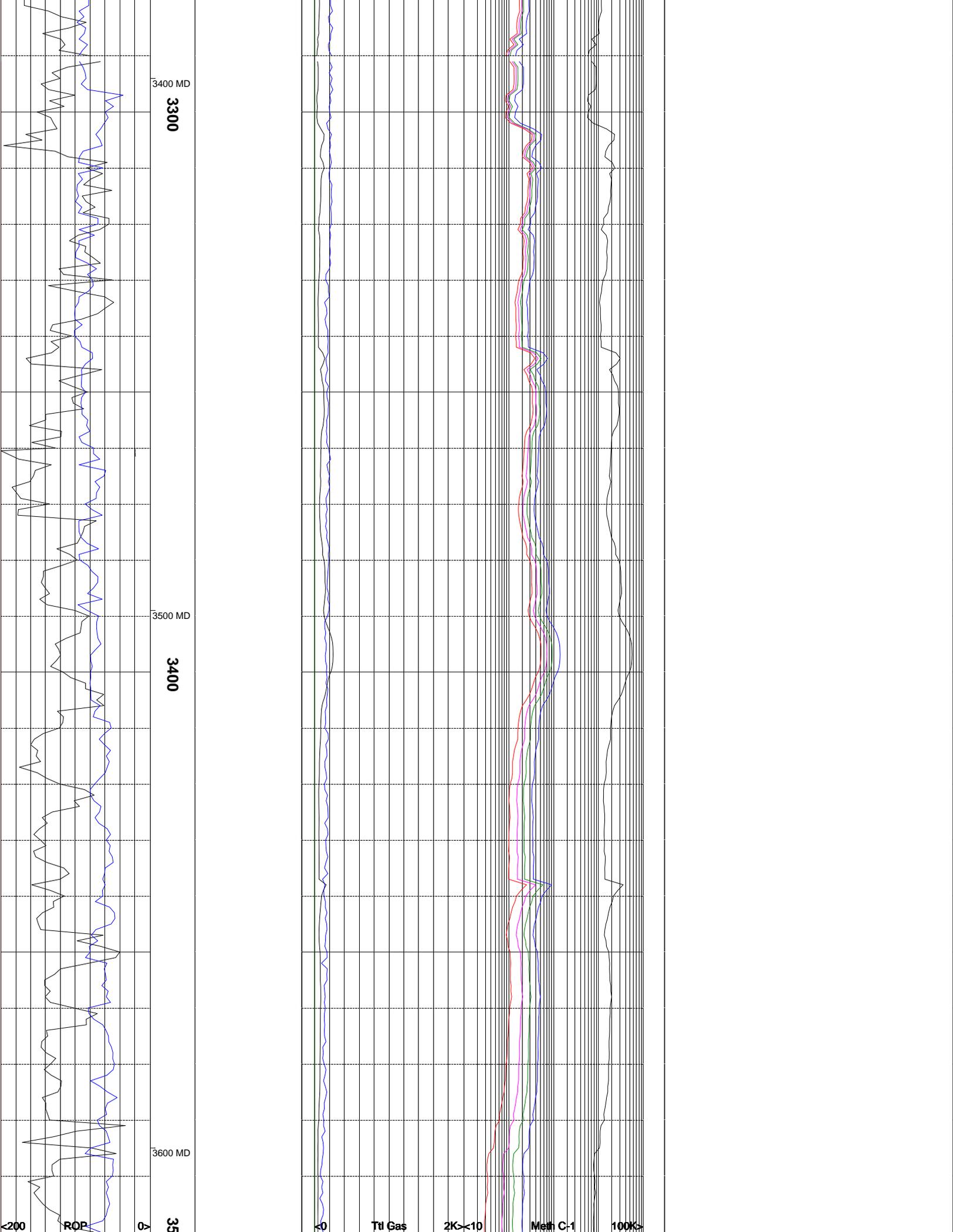


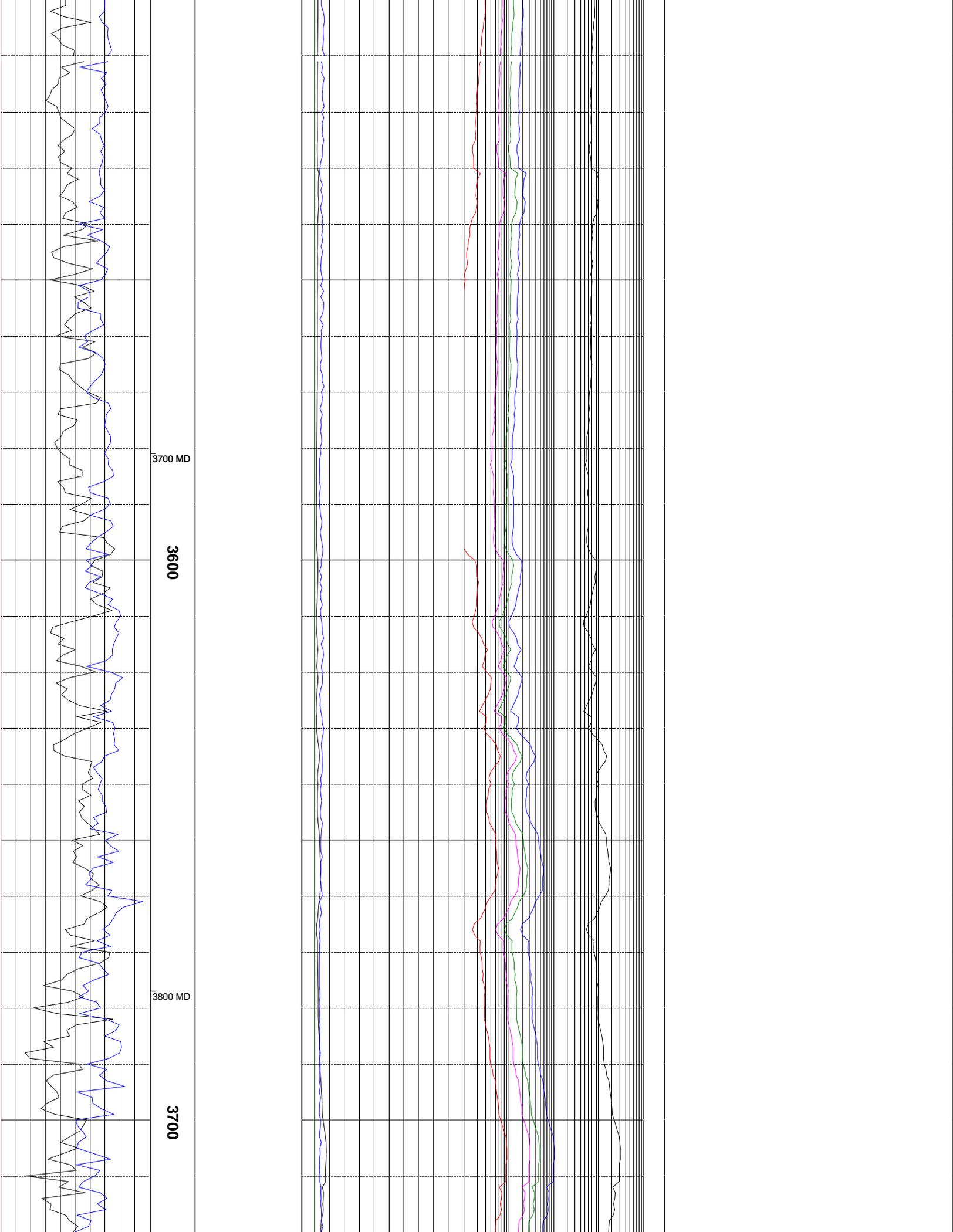
3100

3200 MD

3200

3300 MD



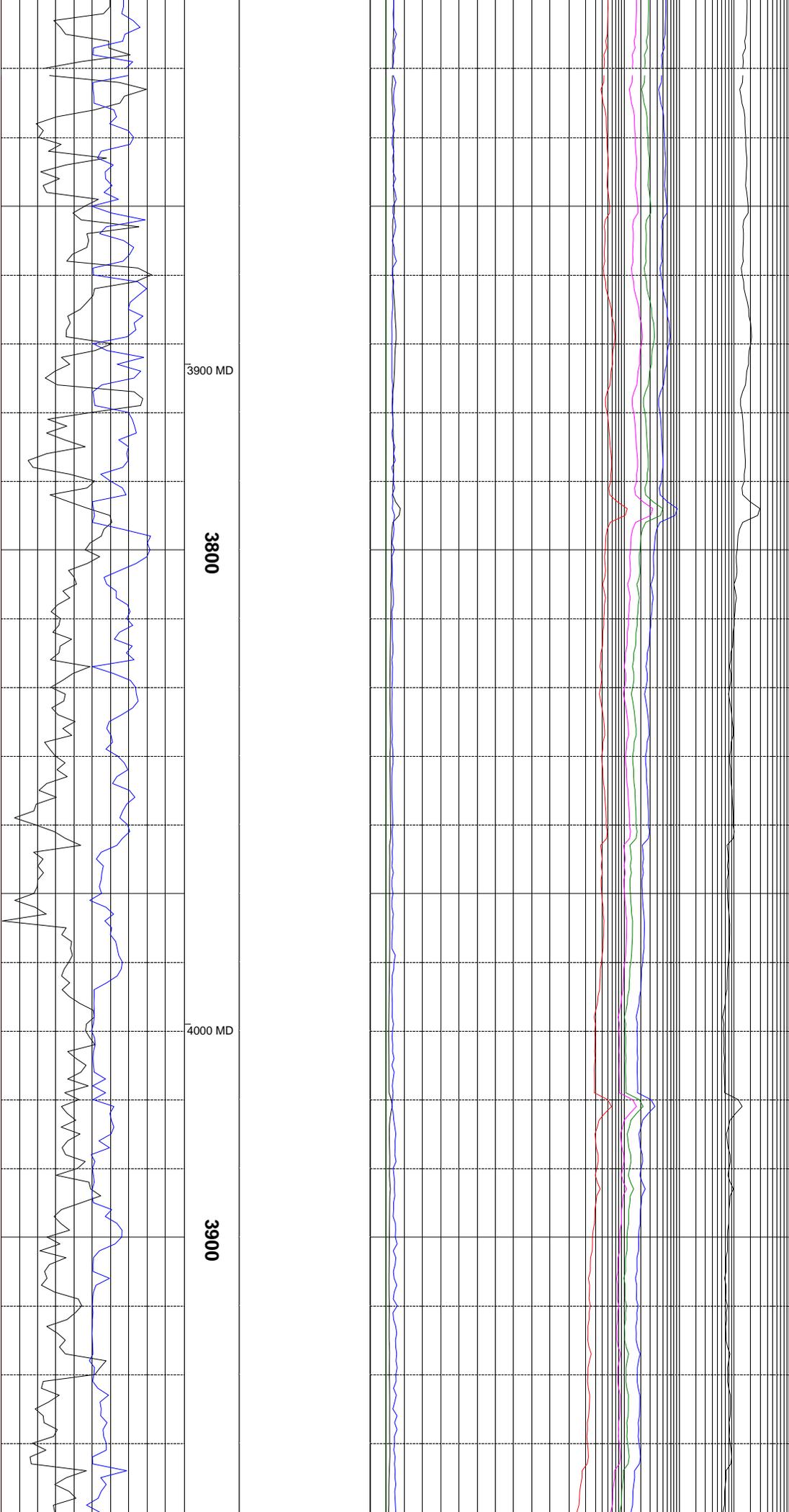


3700 MD

3600

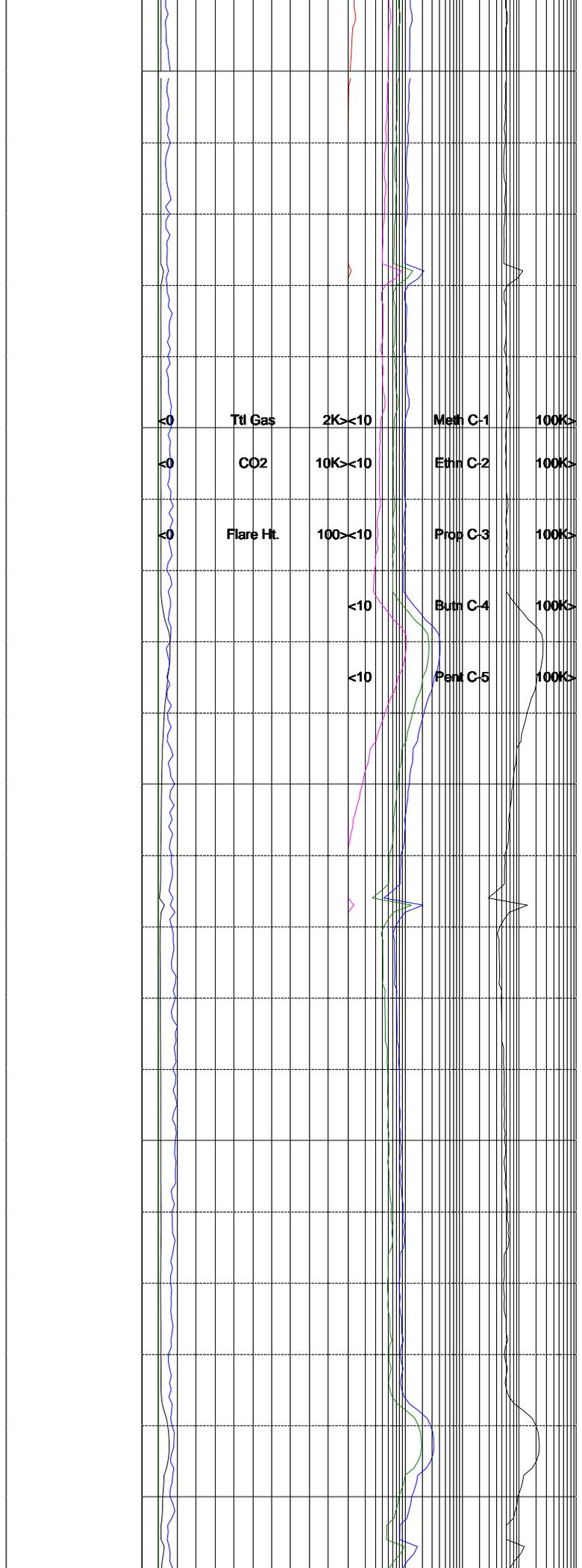
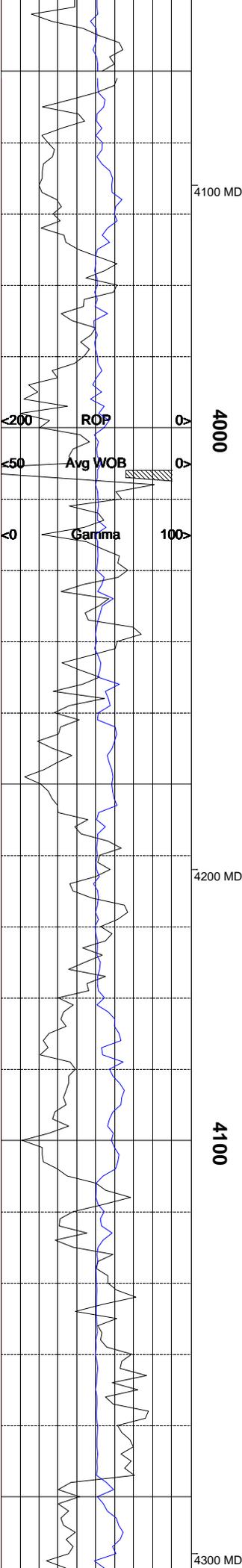
3800 MD

3700



ALL ROCK COLORS ARE REFERENCED TO THE
GSA ROCK COLOR CHART. ROCK CONSTITUENTS
ARE DESCRIBED WET AND LISTED IN ORDER
OF MOST ABUNDANT TO LEAST ABUNDANT WITH
RESPECT TO PERCENTAGE IN SAMPLE. DEPTH
IS REFERENCED TO RKB.

CONNECTION GASES AS WELL AS TRIP GASES
AND DOWNTIME GASES ARE NOTED ON THE LOG

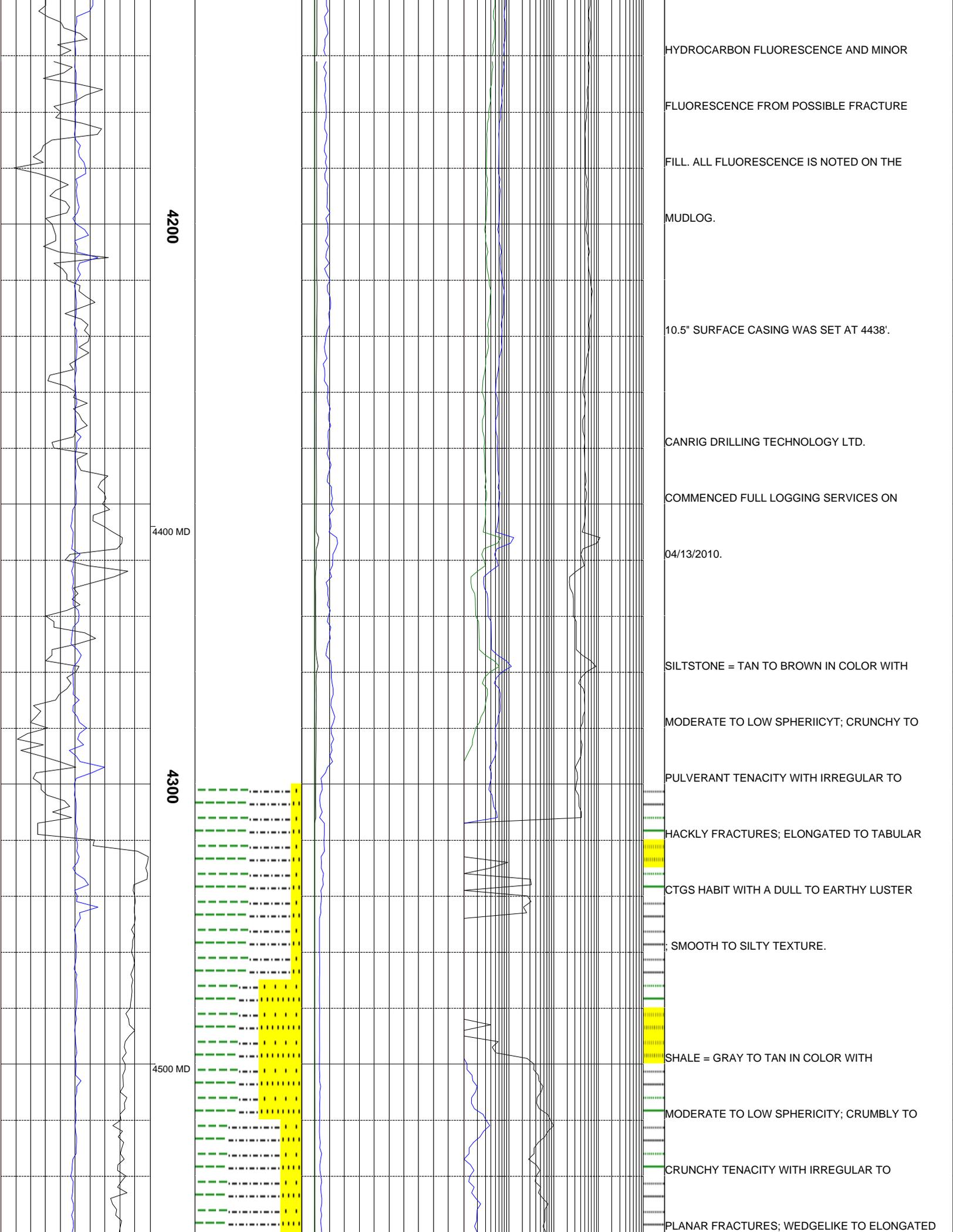


LARGE CONNECTION GASES WHICH APPEAR ON THE MUDLOG USUALLY REFLECT UPHOLE GAS INTERVALS BLEEDING INTO THE BORE HOLE DURING CONNECTIONS.

GAS CHROMATOGRAPHY EQUIPMENT IS CALIBRATED TO A TEST GAS COMPOSED OF:
 METHANE = 10000 PPM
 ETHANE = 1000 PPM
 PROPANE = 1000 PPM
 I-BUTANE = 1000 PPM
 N-BUTANE = 1000 PPM
 I-PENTANE = 1000 PPM
 N-PENTANE = 1000 PPM

WHEN THE MUD IS RUN THROUGH THE MGS (MUD GAS SEPERATOR) THE INTERVAL IS MARKED ON THE LOG IN THE SLIDE COLUMN AND NOTED ON THE LOG.

ALL SANDSTONE INTERVALS ARE EXAMINED FOR SAMPLE FLUORESCENCE IN THE UV SCOPE FOR



4200

4400 MD

4300

4500 MD

HYDROCARBON FLUORESCENCE AND MINOR
 FLUORESCENCE FROM POSSIBLE FRACTURE
 FILL. ALL FLUORESCENCE IS NOTED ON THE
 MUDLOG.

10.5" SURFACE CASING WAS SET AT 4438'.

CANRIG DRILLING TECHNOLOGY LTD.

COMMENCED FULL LOGGING SERVICES ON

04/13/2010.

SILTSTONE = TAN TO BROWN IN COLOR WITH
 MODERATE TO LOW SPHERICITY; CRUNCHY TO
 PULVERANT TENACITY WITH IRREGULAR TO

HACKLY FRACTURES; ELONGATED TO TABULAR

CTGS HABIT WITH A DULL TO EARTHY LUSTER

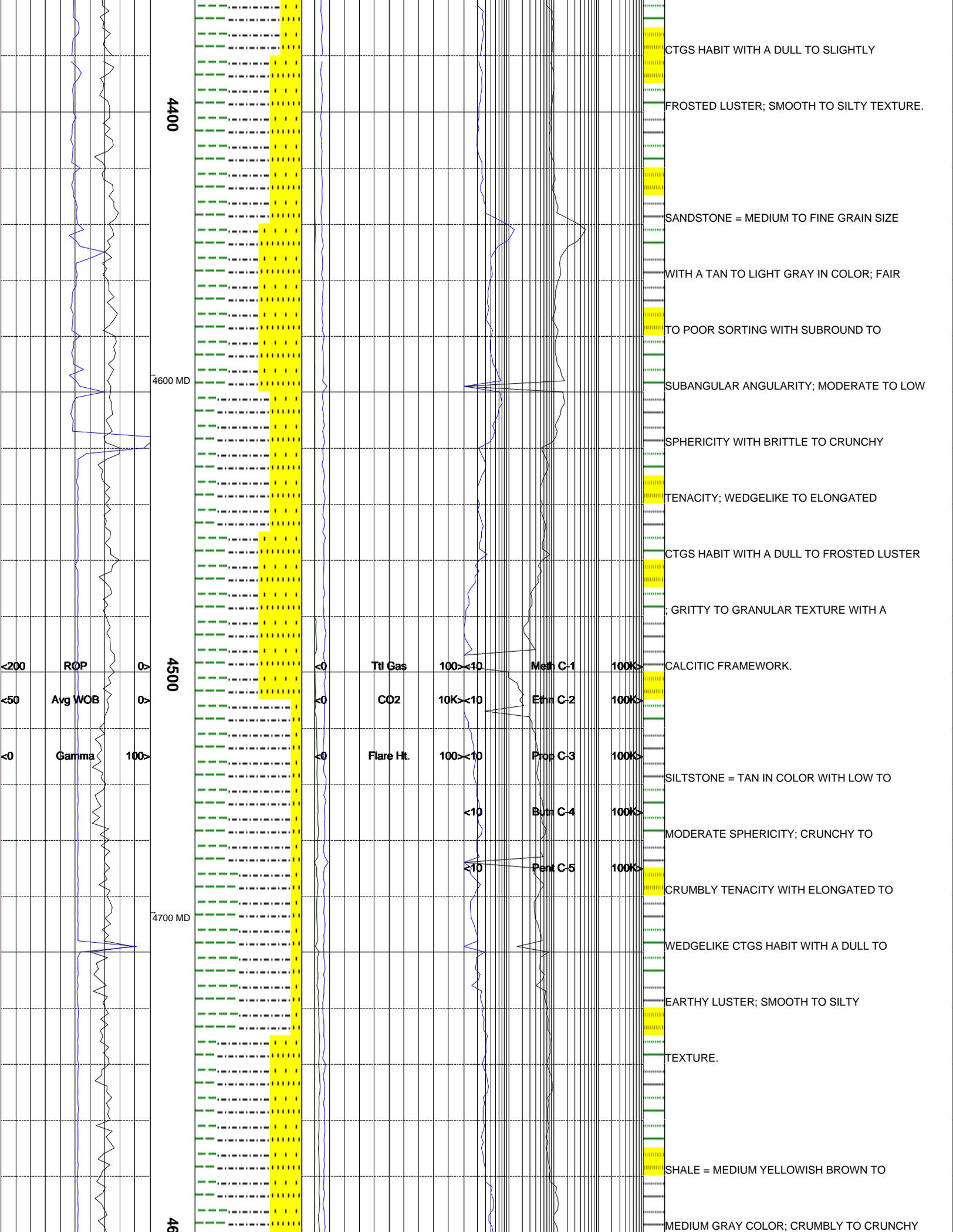
; SMOOTH TO SILTY TEXTURE.

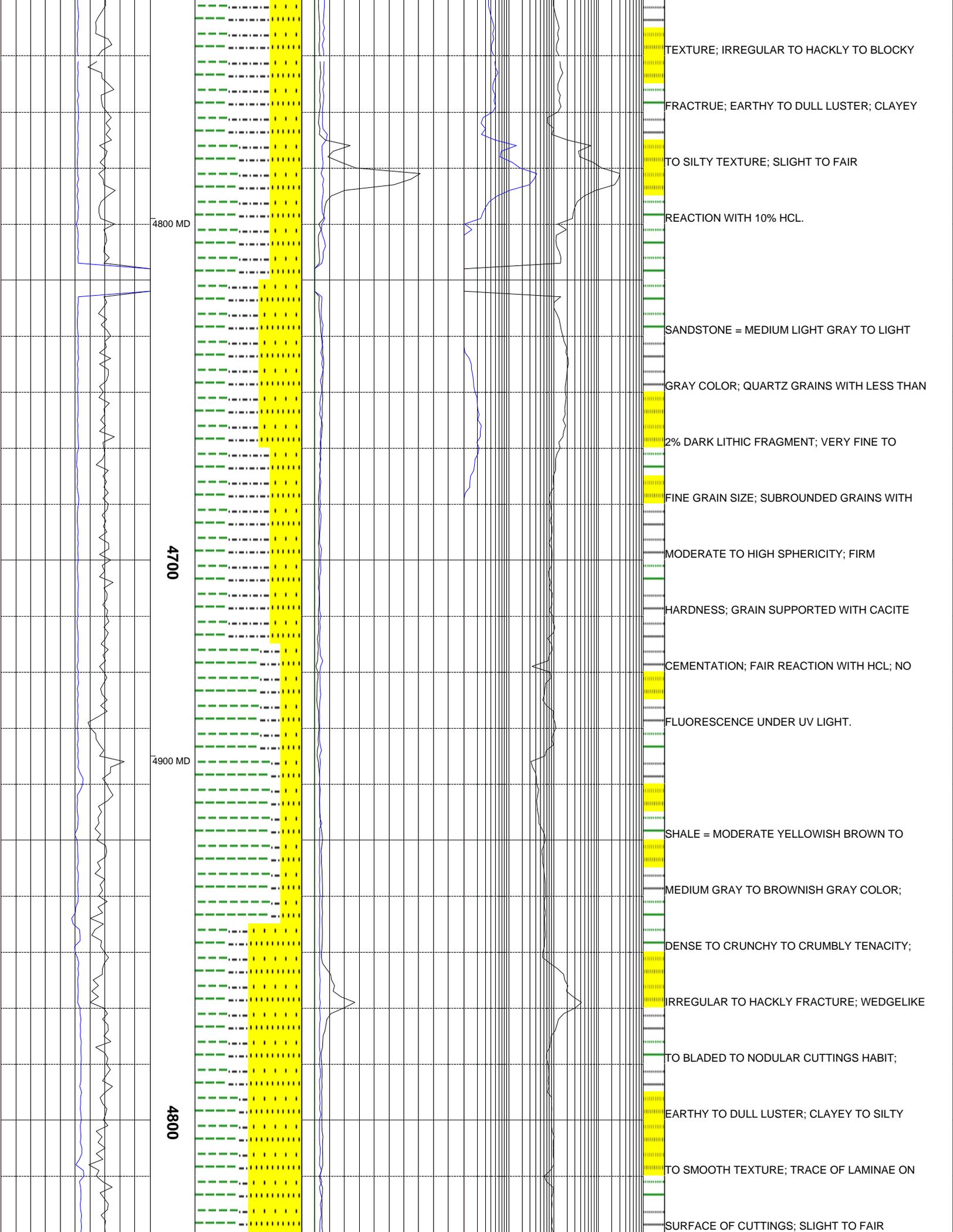
SHALE = GRAY TO TAN IN COLOR WITH

MODERATE TO LOW SPHERICITY; CRUMBLY TO

CRUNCHY TENACITY WITH IRREGULAR TO

PLANAR FRACTURES; WEDGELIKE TO ELONGATED





4800 MD

4700

4900 MD

4800

TEXTURE; IRREGULAR TO HACKLY TO BLOCKY

FRACTURE; EARTHY TO DULL LUSTER; CLAYEY

TO SILTY TEXTURE; SLIGHT TO FAIR

REACTION WITH 10% HCL.

SANDSTONE = MEDIUM LIGHT GRAY TO LIGHT

GRAY COLOR; QUARTZ GRAINS WITH LESS THAN

2% DARK LITHIC FRAGMENT; VERY FINE TO

FINE GRAIN SIZE; SUBROUNDED GRAINS WITH

MODERATE TO HIGH SPHERICITY; FIRM

HARDNESS; GRAIN SUPPORTED WITH CALCITE

CEMENTATION; FAIR REACTION WITH HCL; NO

FLUORESCENCE UNDER UV LIGHT.

SHALE = MODERATE YELLOWISH BROWN TO

MEDIUM GRAY TO BROWNISH GRAY COLOR;

DENSE TO CRUNCHY TO CRUMBLY TENACITY;

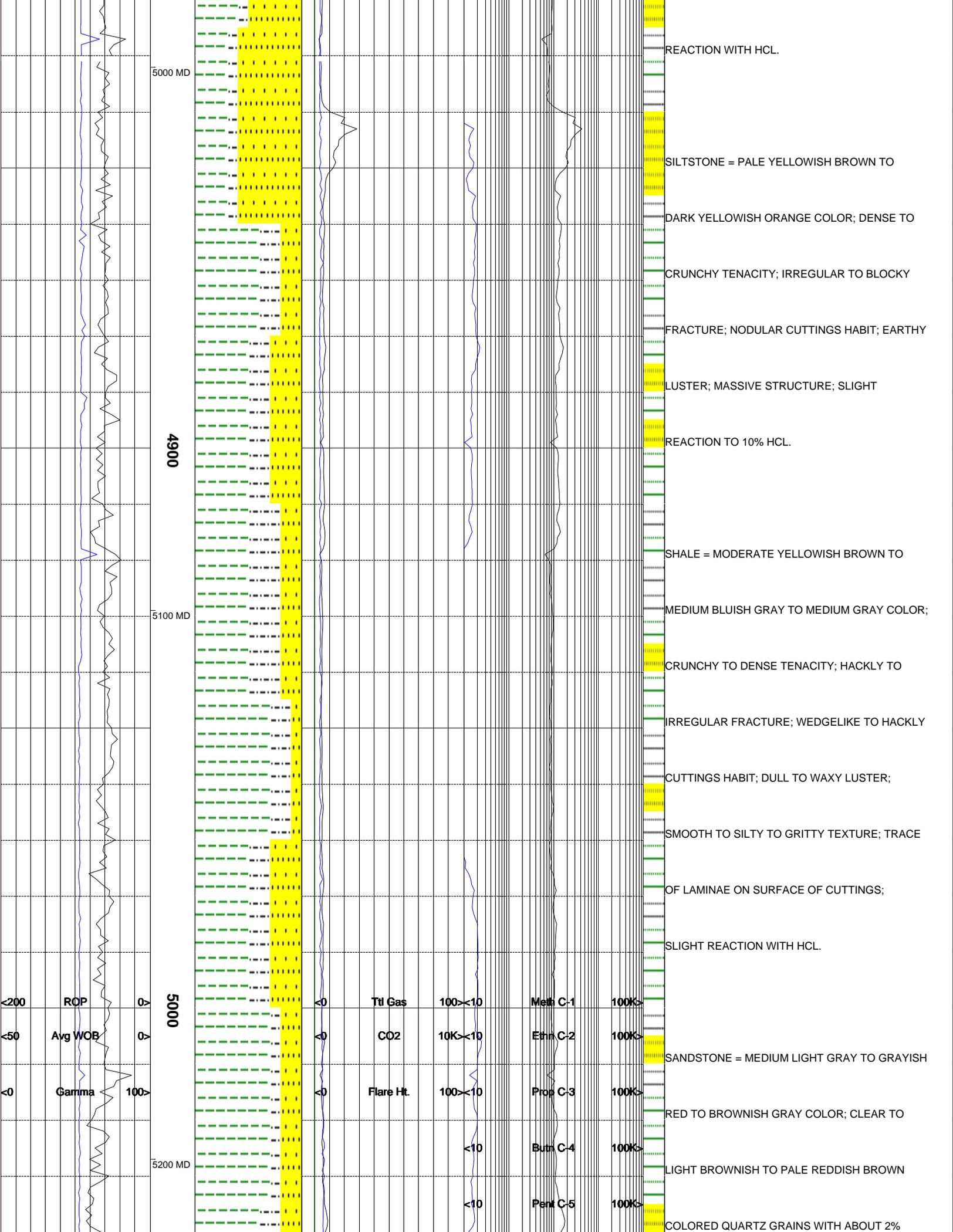
IRREGULAR TO HACKLY FRACTURE; WEDGE LIKE

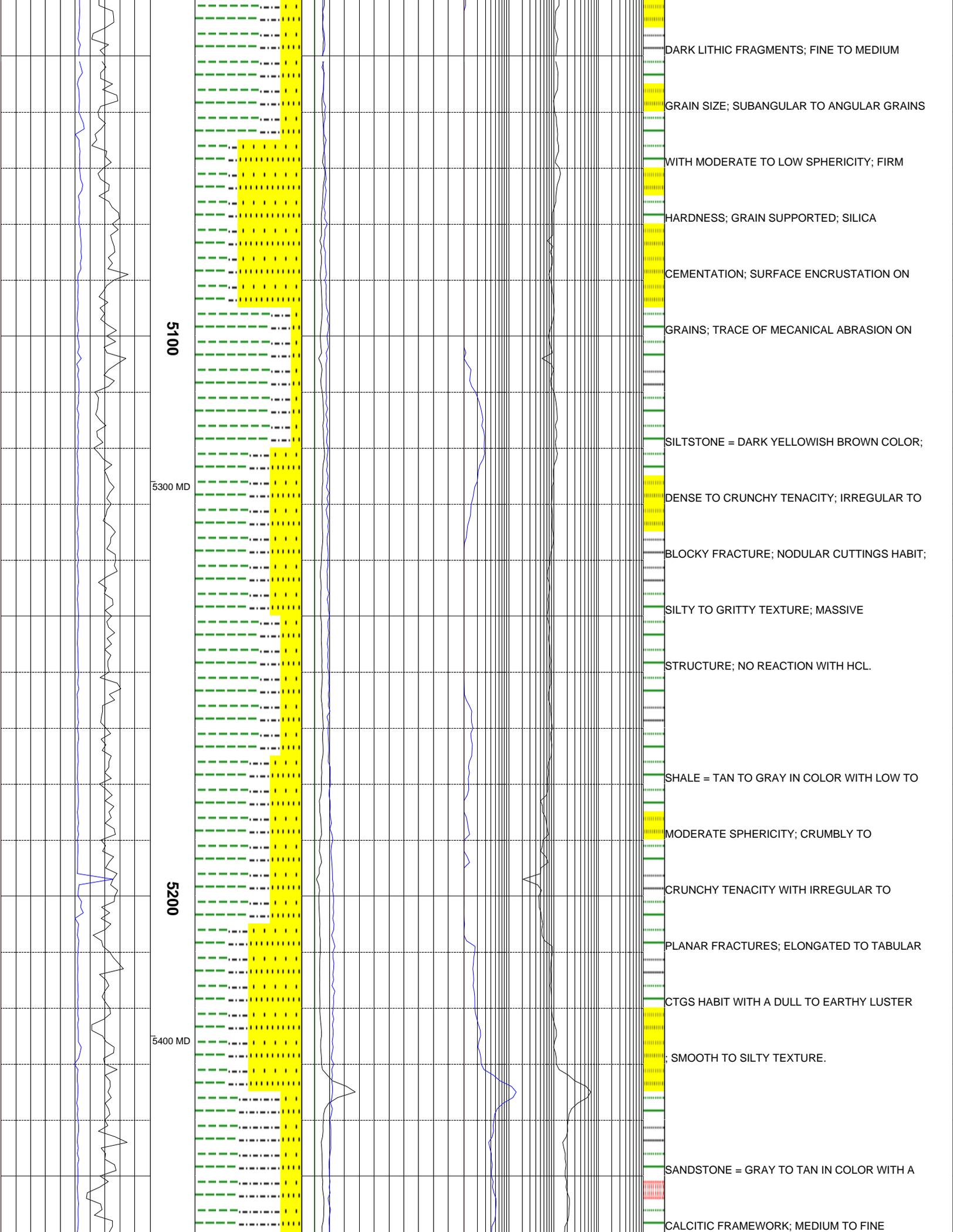
TO BLADED TO NODULAR CUTTINGS HABIT;

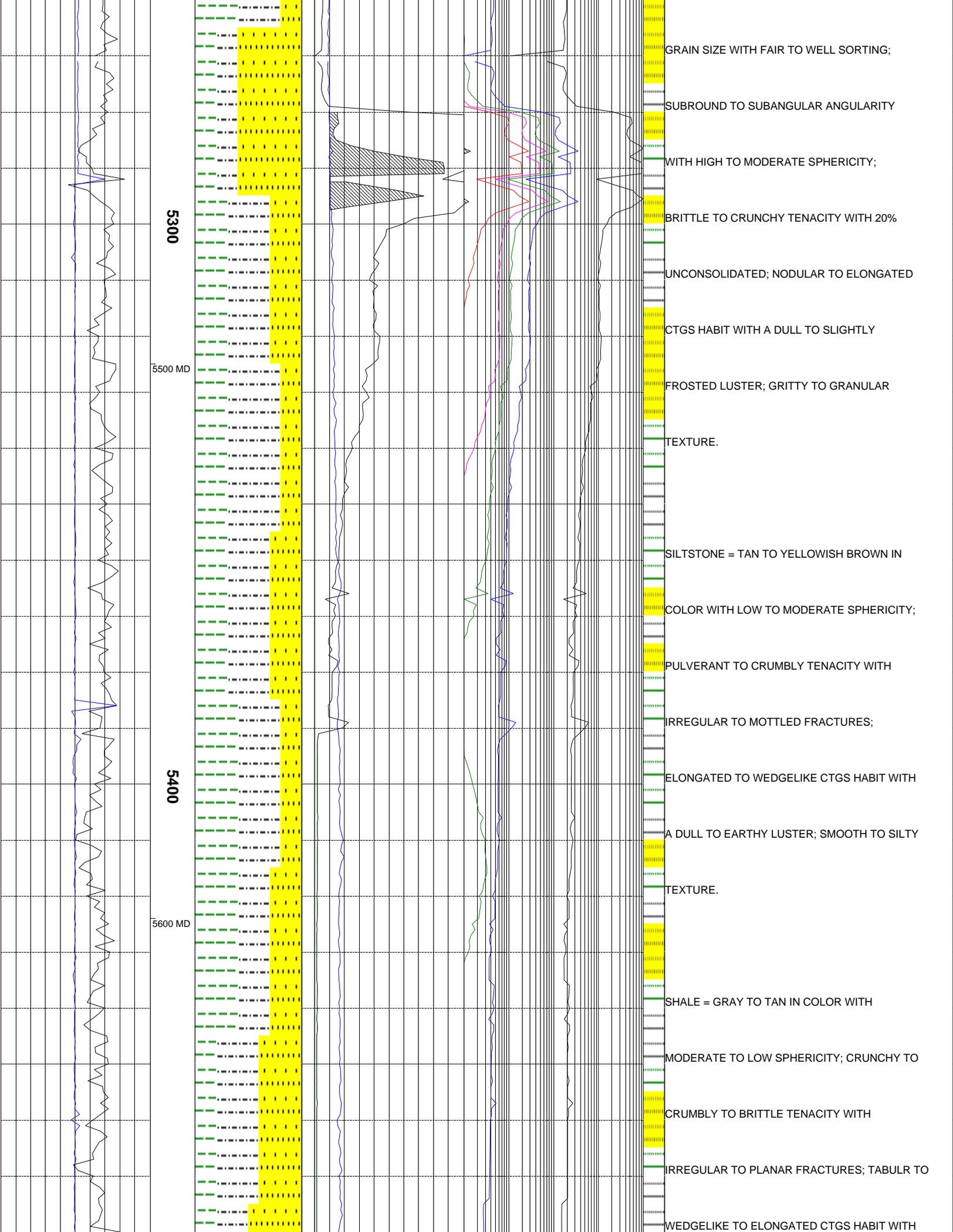
EARTHY TO DULL LUSTER; CLAYEY TO SILTY

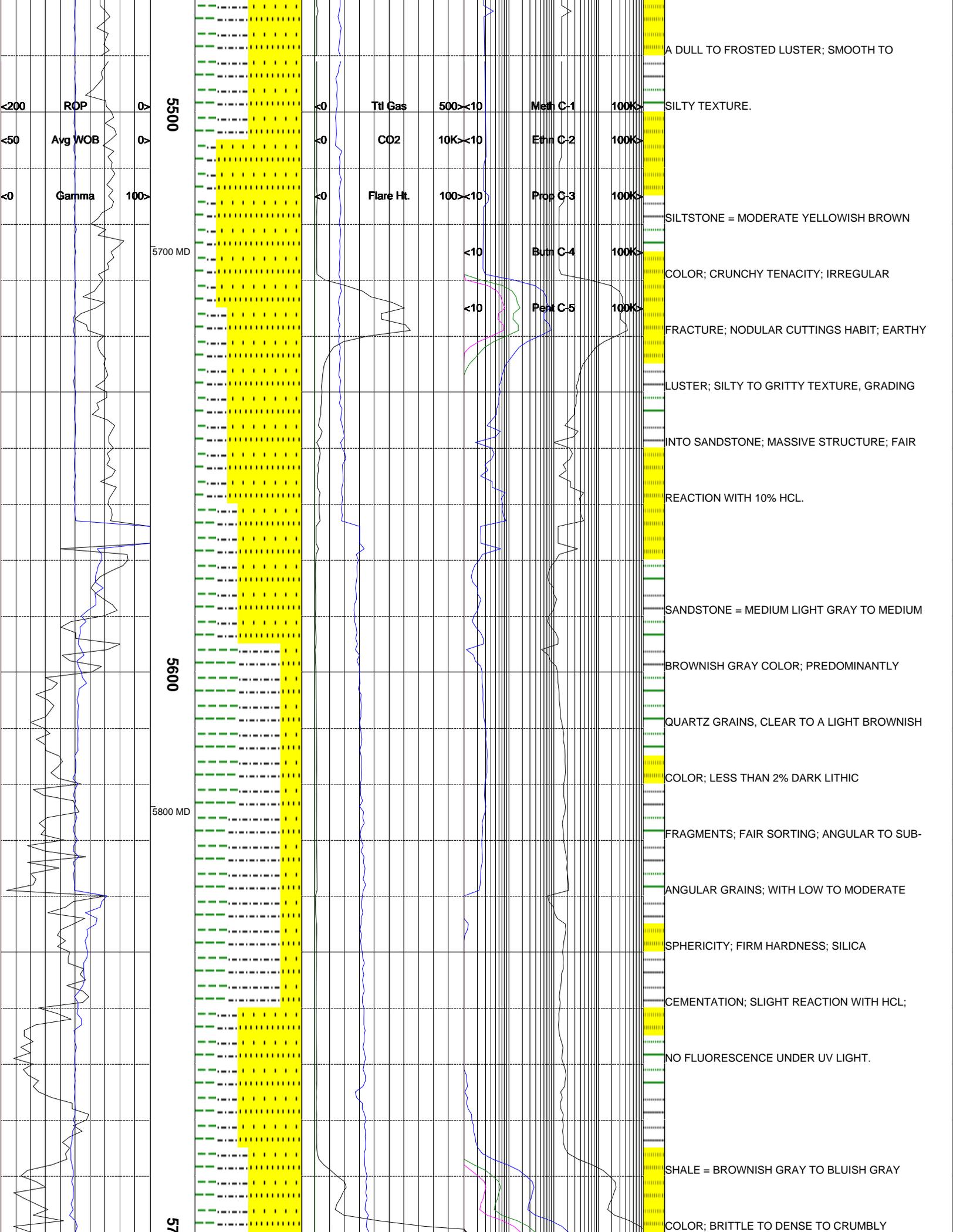
TO SMOOTH TEXTURE; TRACE OF LAMINAE ON

SURFACE OF CUTTINGS; SLIGHT TO FAIR









5500

5700 MD

5600

5800 MD

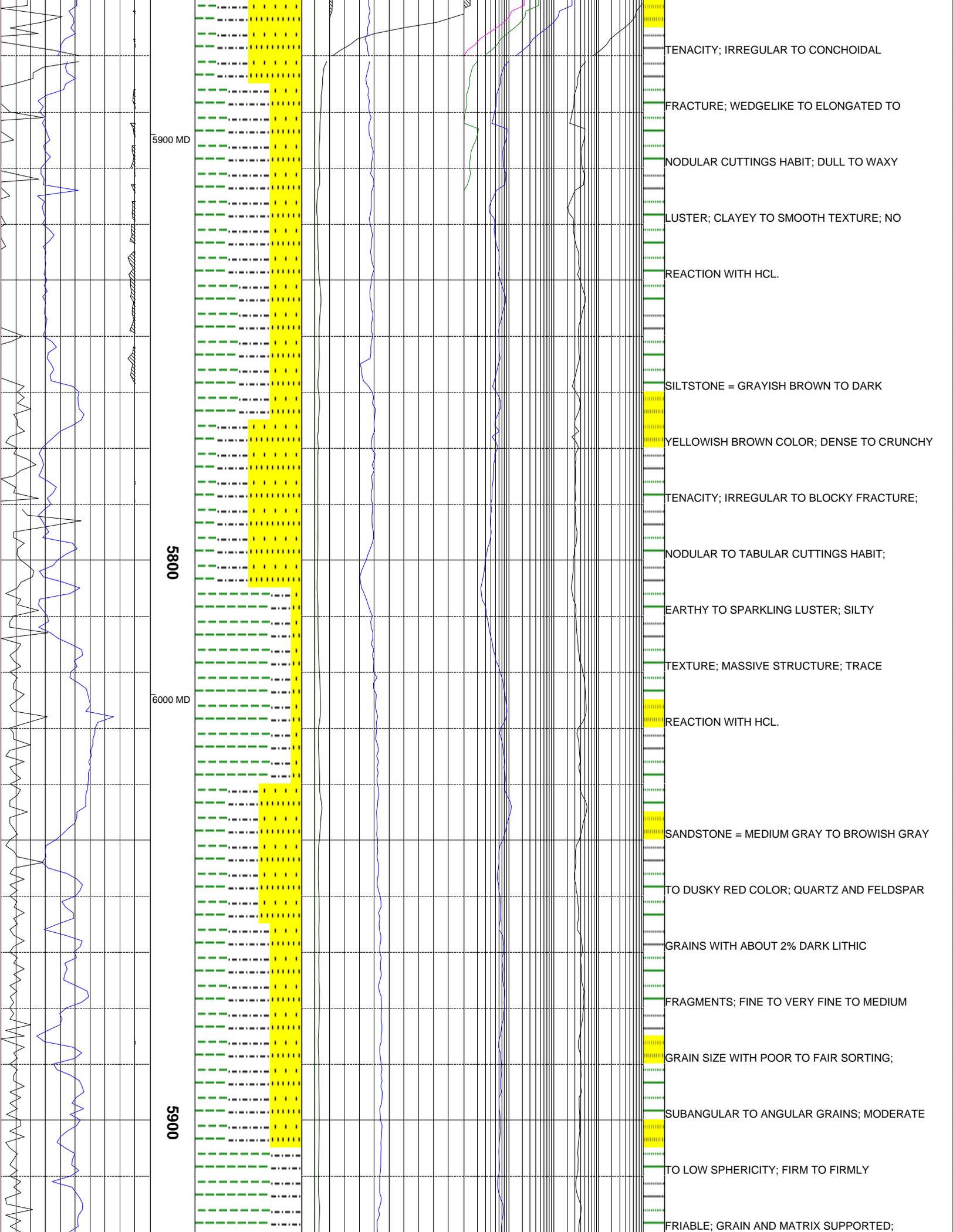
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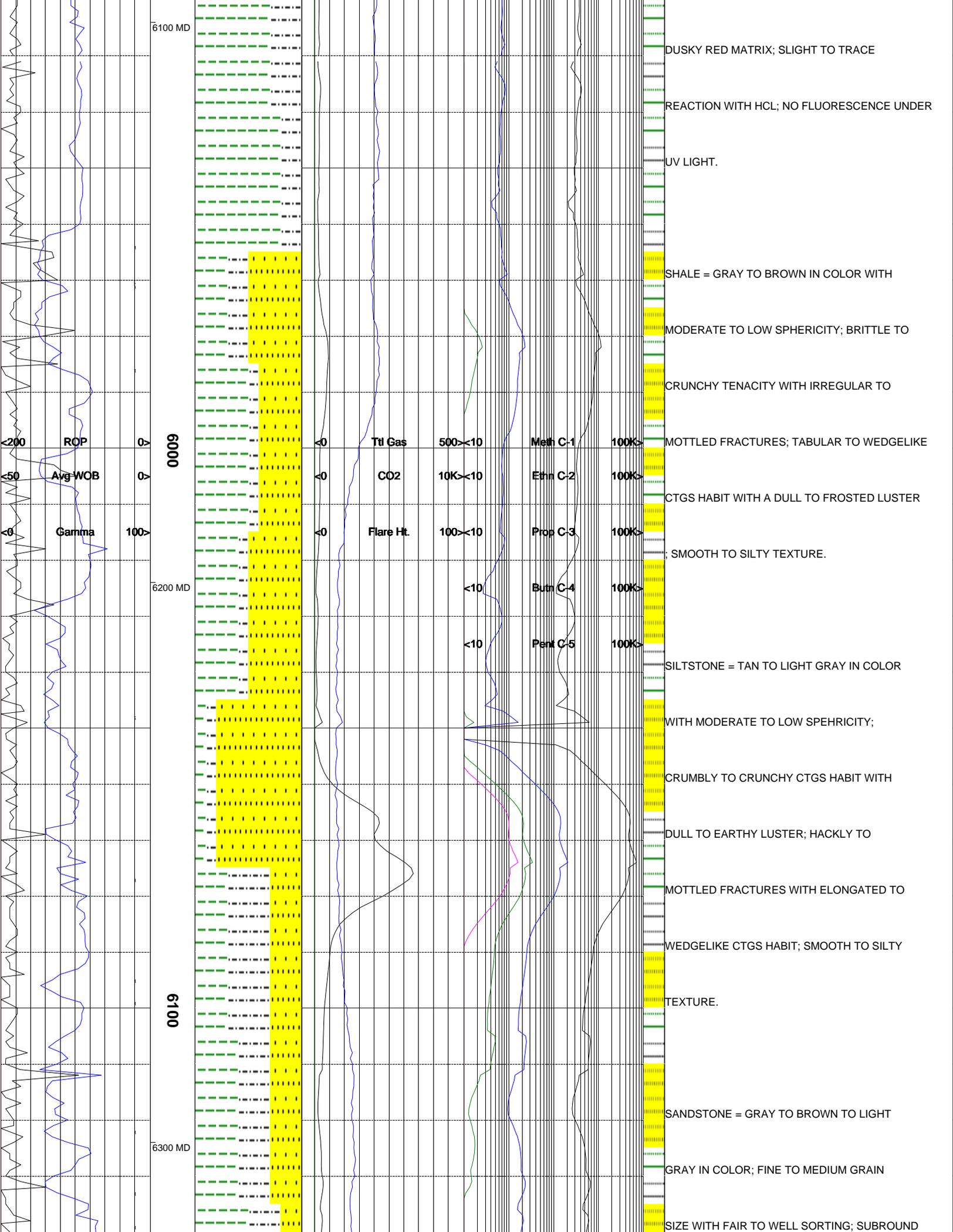
ROP
Avg WOB
Gamma

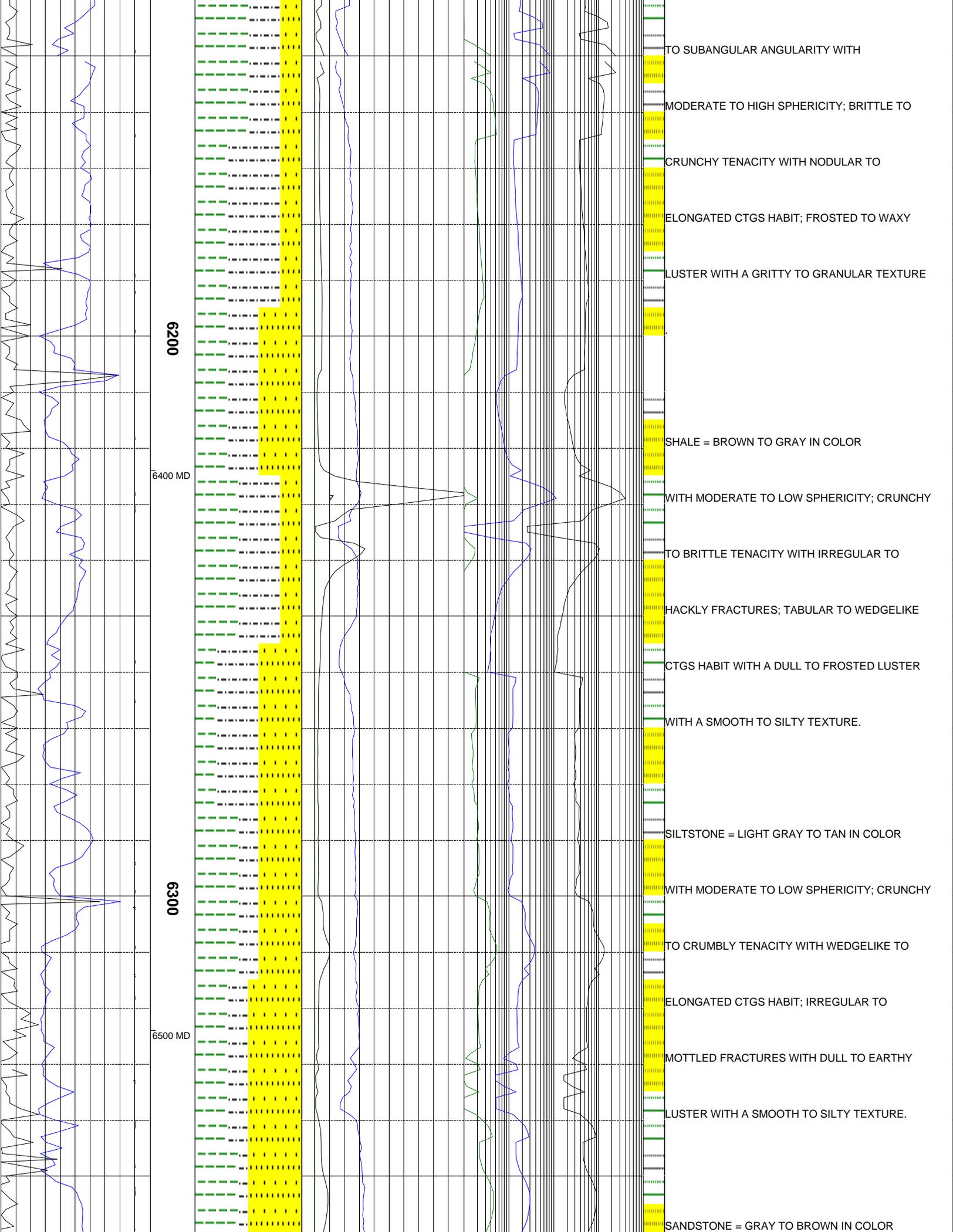
Ttl Gas 500<10
CO2 10K<10
Flare Ht. 100<10

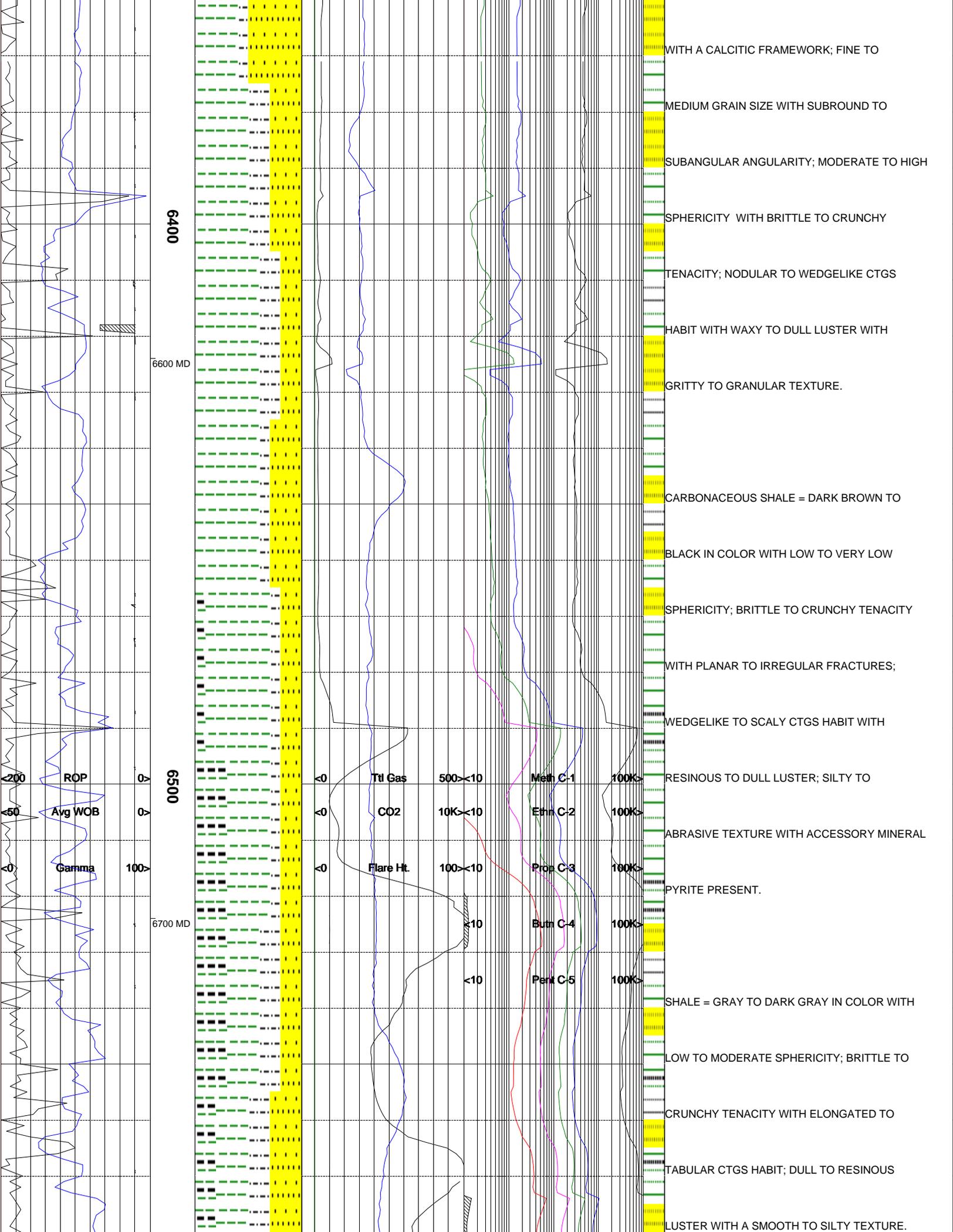
Meth C-1 100K<
Ethn C-2 100K<
Prop C-3 100K<
Butn C-4 100K<
Pent C-5 100K<

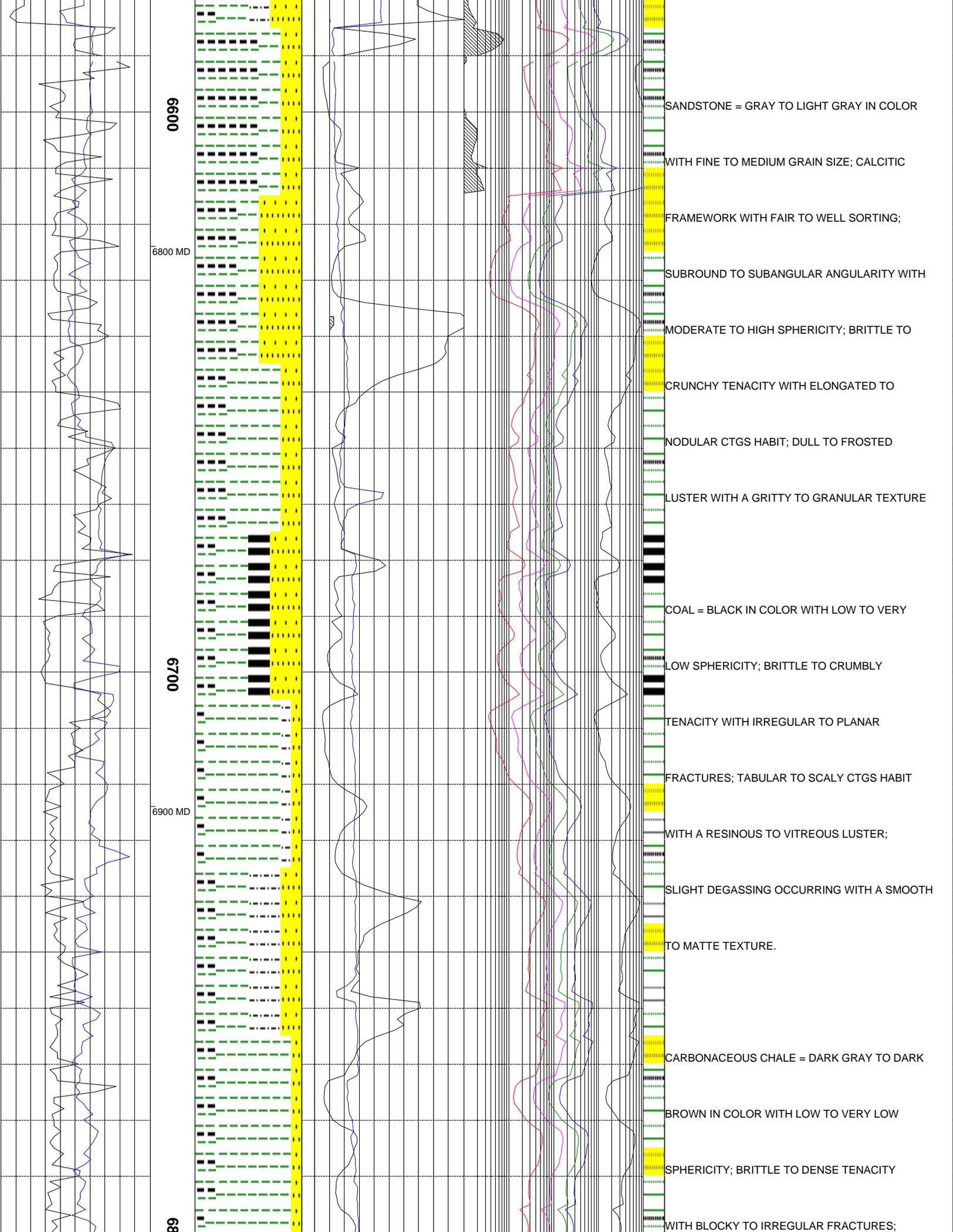
A DULL TO FROSTED LUSTER; SMOOTH TO
SILTY TEXTURE.
SILTSTONE = MODERATE YELLOWISH BROWN
COLOR; CRUNCHY TENACITY; IRREGULAR
FRACTURE; NODULAR CUTTINGS HABIT; EARTHY
LUSTER; SILTY TO GRITTY TEXTURE, GRADING
INTO SANDSTONE; MASSIVE STRUCTURE; FAIR
REACTION WITH 10% HCL.
SANDSTONE = MEDIUM LIGHT GRAY TO MEDIUM
BROWNISH GRAY COLOR; PREDOMINANTLY
QUARTZ GRAINS, CLEAR TO A LIGHT BROWNISH
COLOR; LESS THAN 2% DARK LITHIC
FRAGMENTS; FAIR SORTING; ANGULAR TO SUB-
ANGULAR GRAINS; WITH LOW TO MODERATE
SPHERICITY; FIRM HARDNESS; SILICA
CEMENTATION; SLIGHT REACTION WITH HCL;
NO FLUORESCENCE UNDER UV LIGHT.
SHALE = BROWNISH GRAY TO BLUISH GRAY
COLOR; BRITTLE TO DENSE TO CRUMBLY

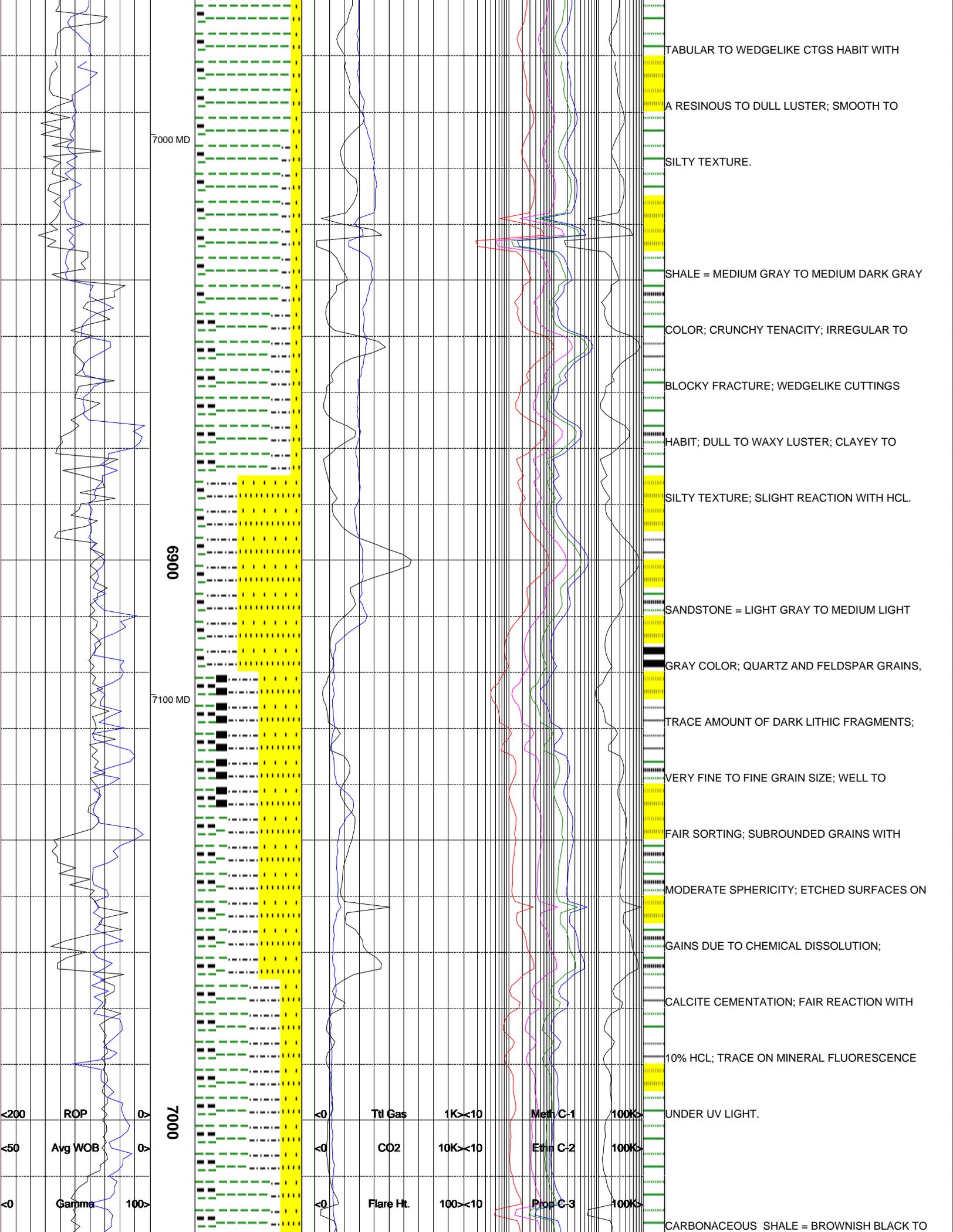


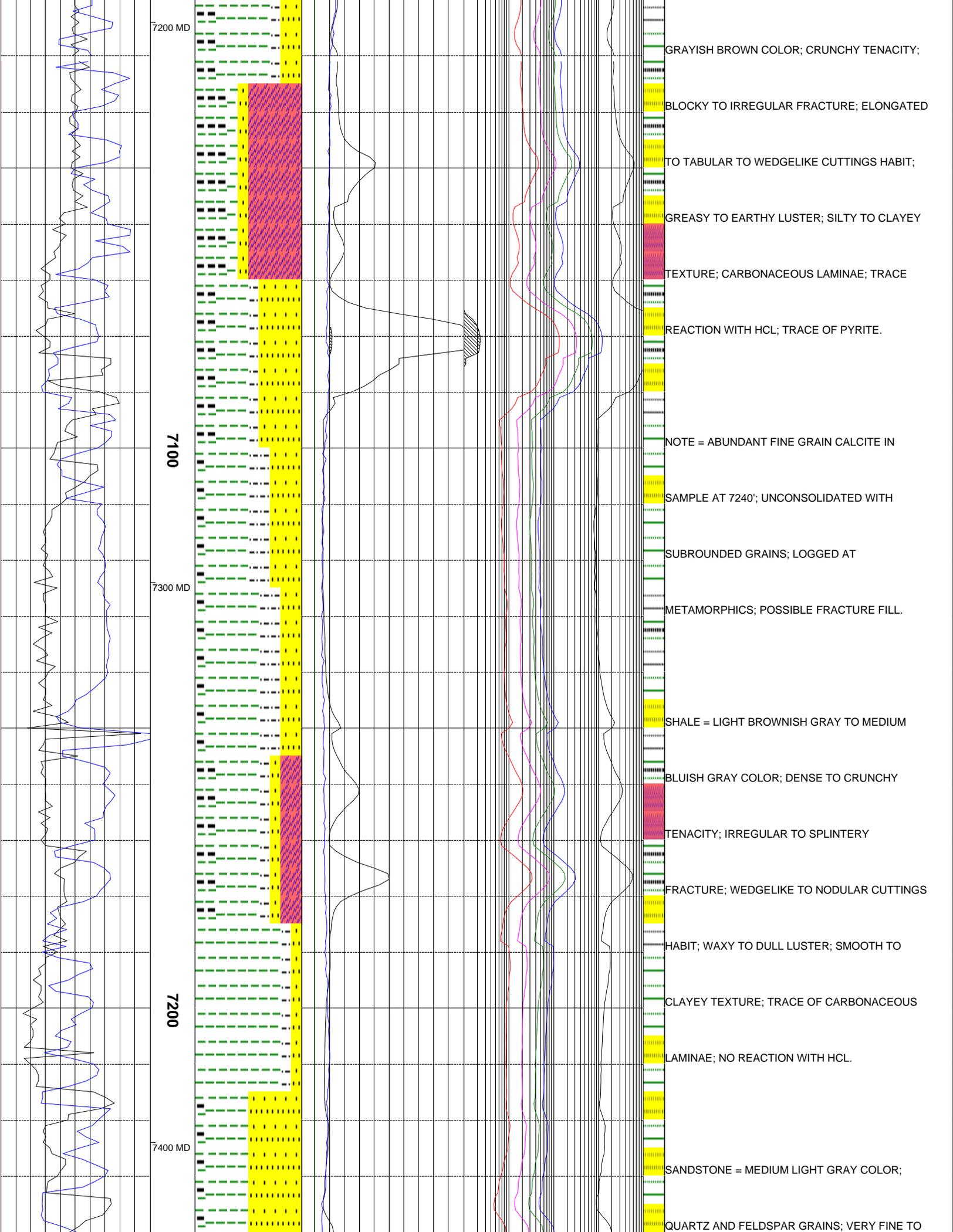












7200 MD

GRAYISH BROWN COLOR; CRUNCHY TENACITY;

BLOCKY TO IRREGULAR FRACTURE; ELONGATED

TO TABULAR TO WEDGELIKE CUTTINGS HABIT;

GREASY TO EARTHLY LUSTER; SILTY TO CLAYEY

TEXTURE; CARBONACEOUS LAMINAE; TRACE

REACTION WITH HCL; TRACE OF PYRITE.

7100

NOTE = ABUNDANT FINE GRAIN CALCITE IN

SAMPLE AT 7240'; UNCONSOLIDATED WITH

SUBROUNDED GRAINS; LOGGED AT

7300 MD

METAMORPHICS; POSSIBLE FRACTURE FILL.

SHALE = LIGHT BROWNISH GRAY TO MEDIUM

BLUISH GRAY COLOR; DENSE TO CRUNCHY

TENACITY; IRREGULAR TO SPLINTERY

FRACTURE; WEDGELIKE TO NODULAR CUTTINGS

HABIT; WAXY TO DULL LUSTER; SMOOTH TO

7200

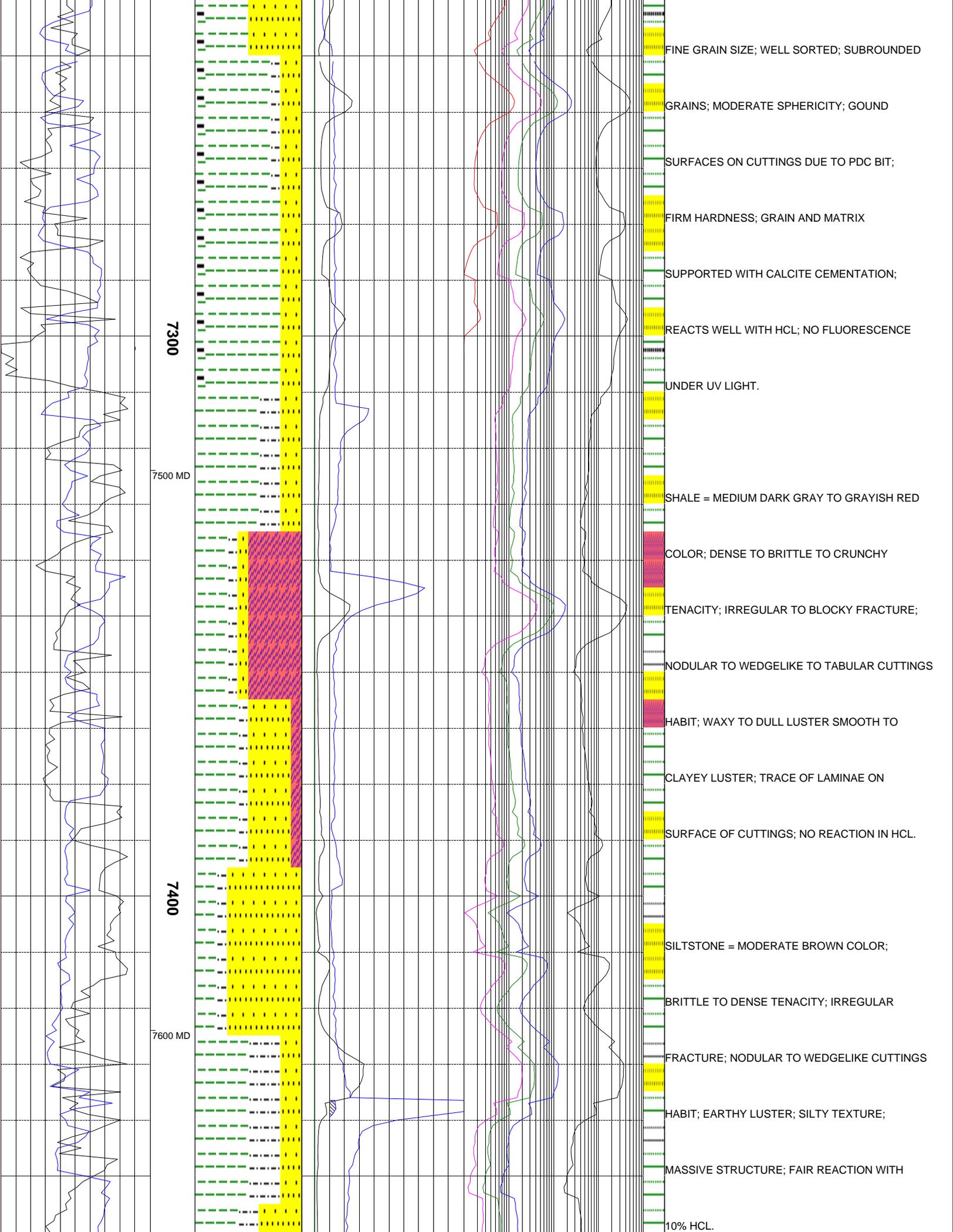
CLAYEY TEXTURE; TRACE OF CARBONACEOUS

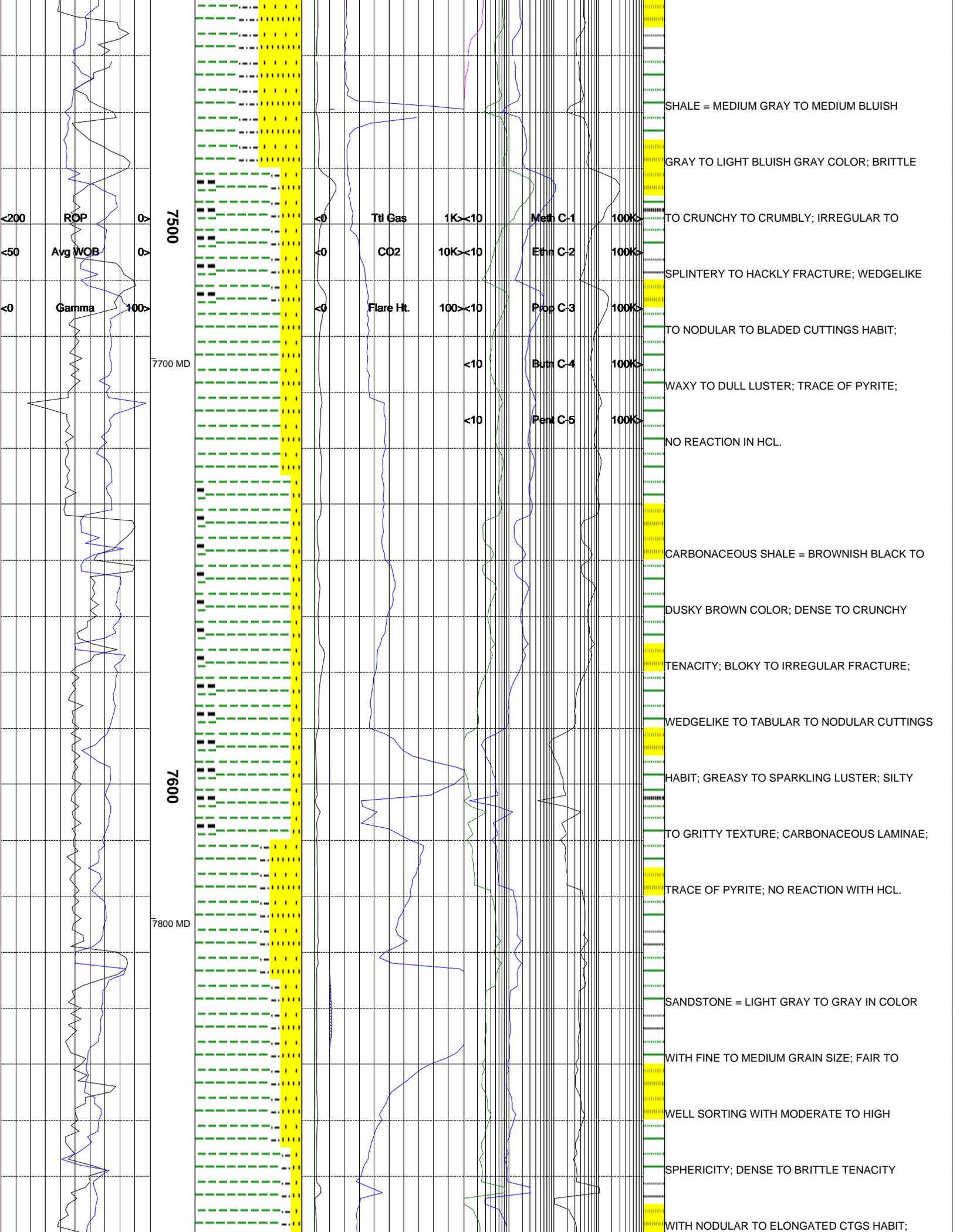
LAMINAE; NO REACTION WITH HCL.

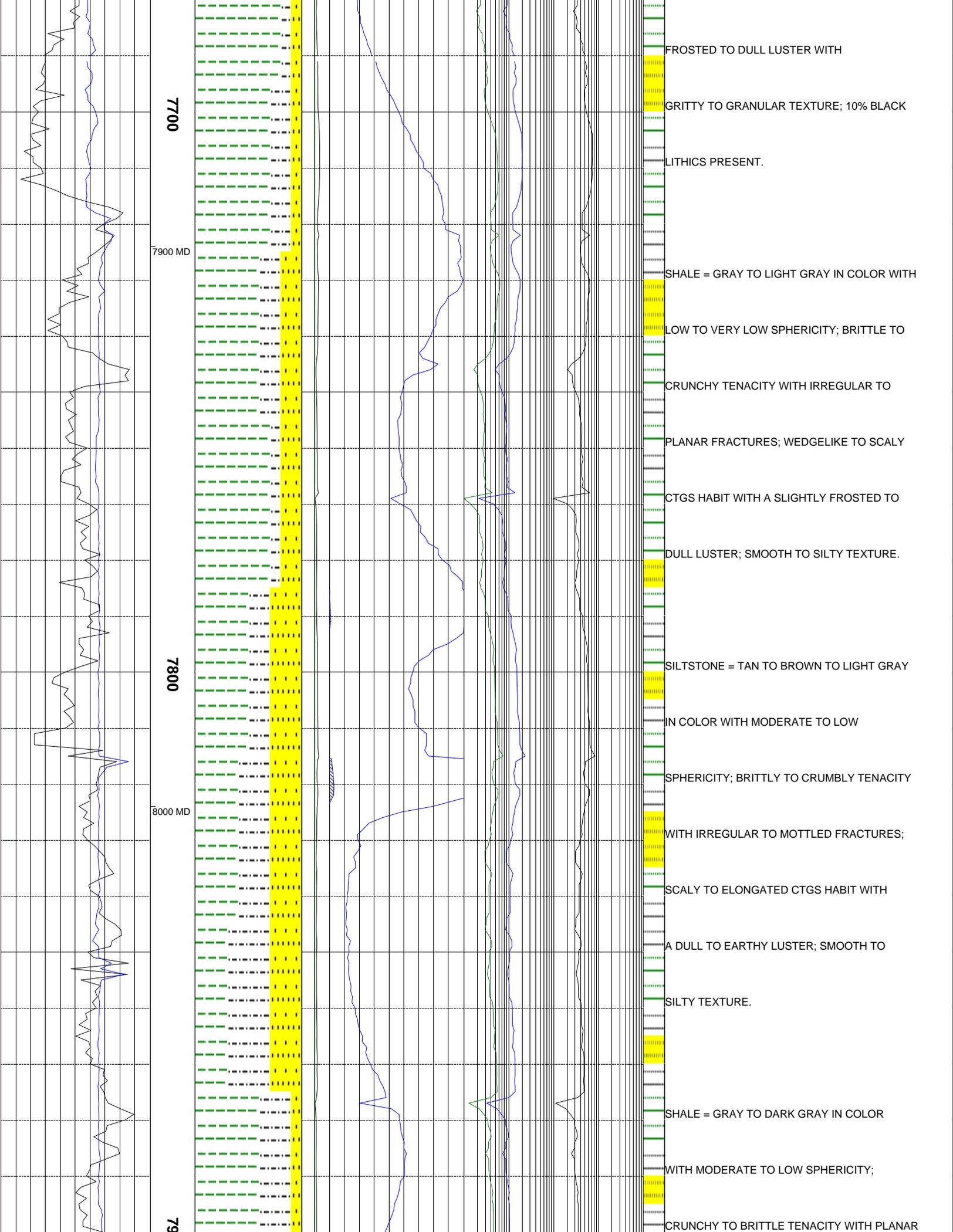
7400 MD

SANDSTONE = MEDIUM LIGHT GRAY COLOR;

QUARTZ AND FELDSPAR GRAINS; VERY FINE TO







7700

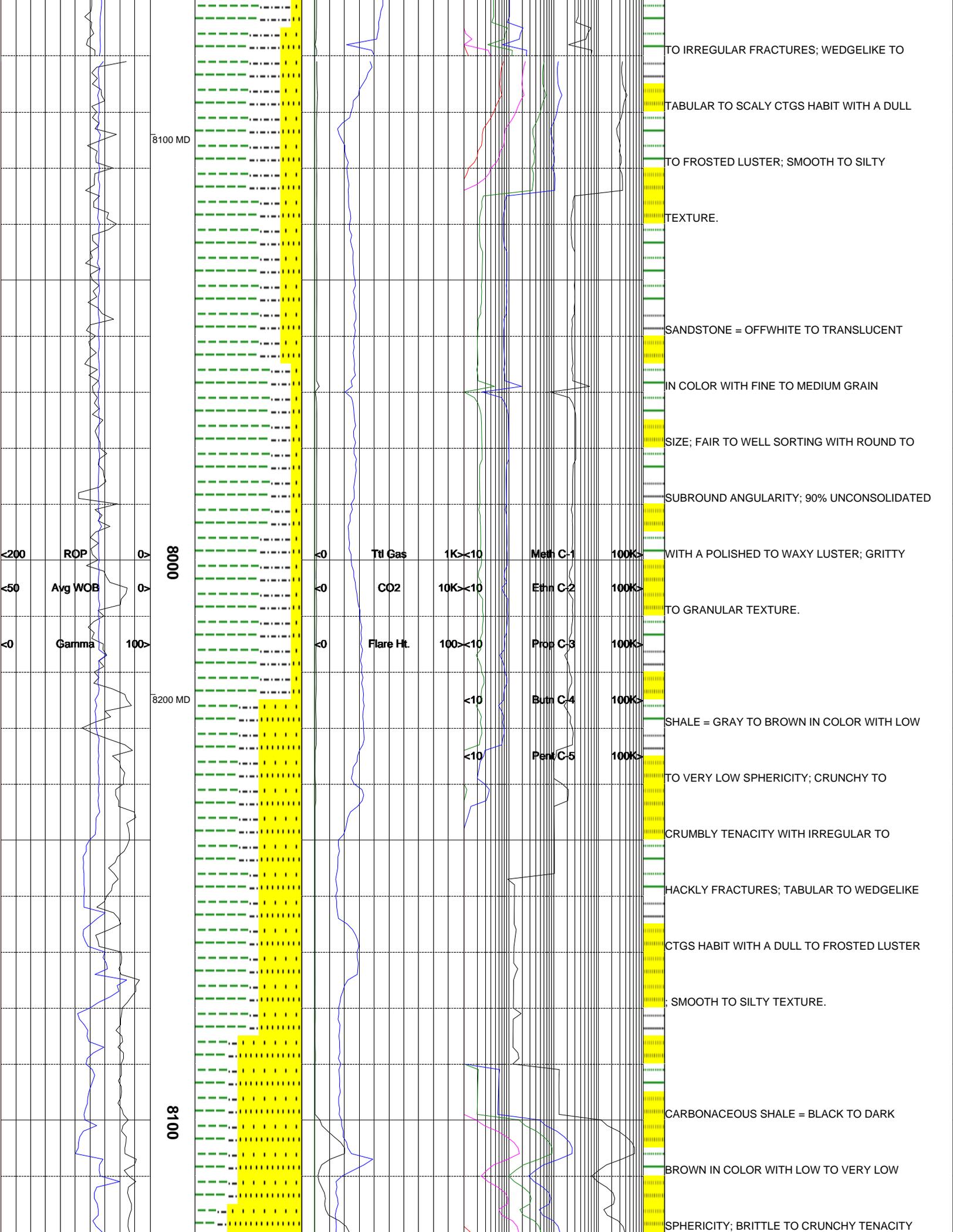
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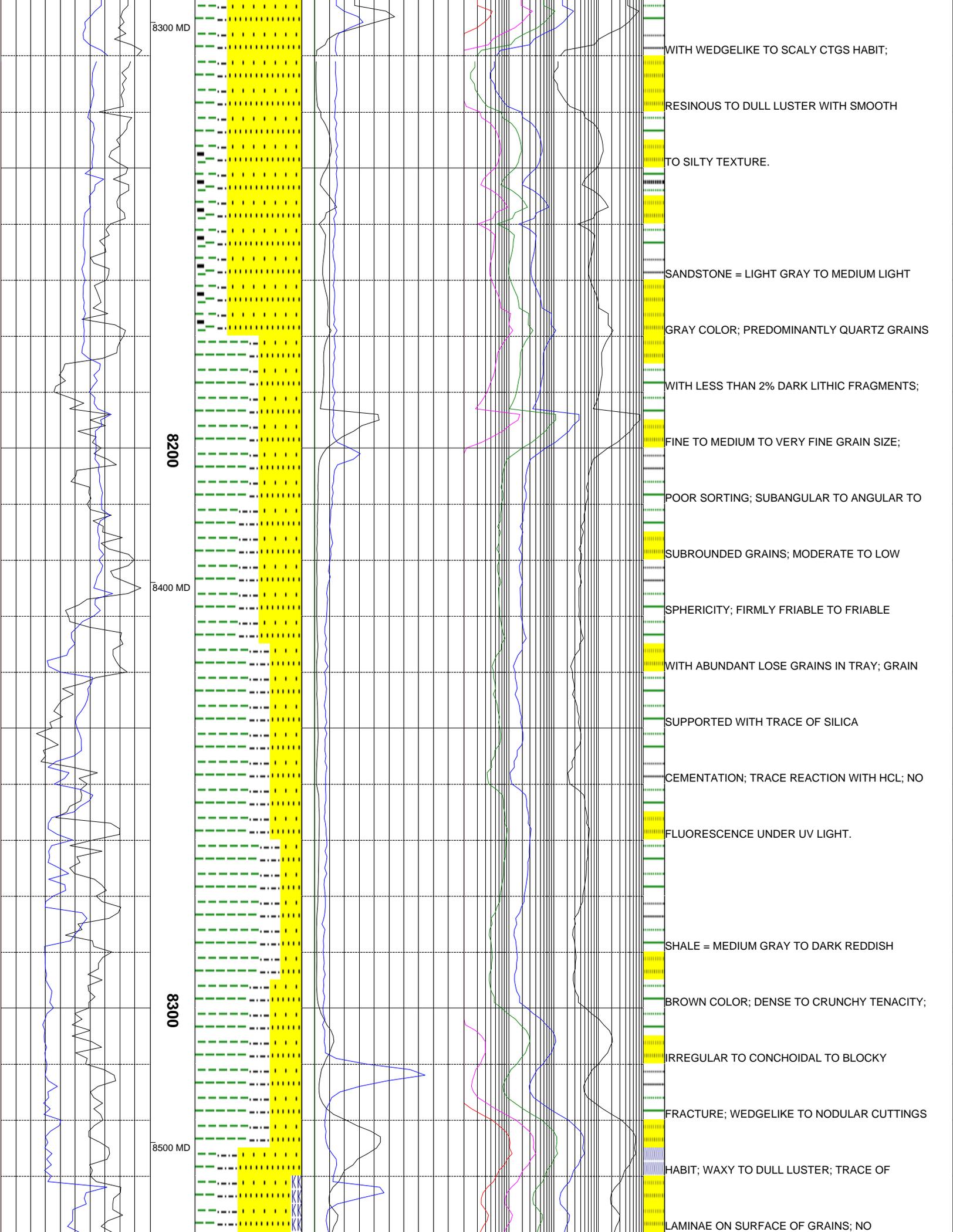
7800

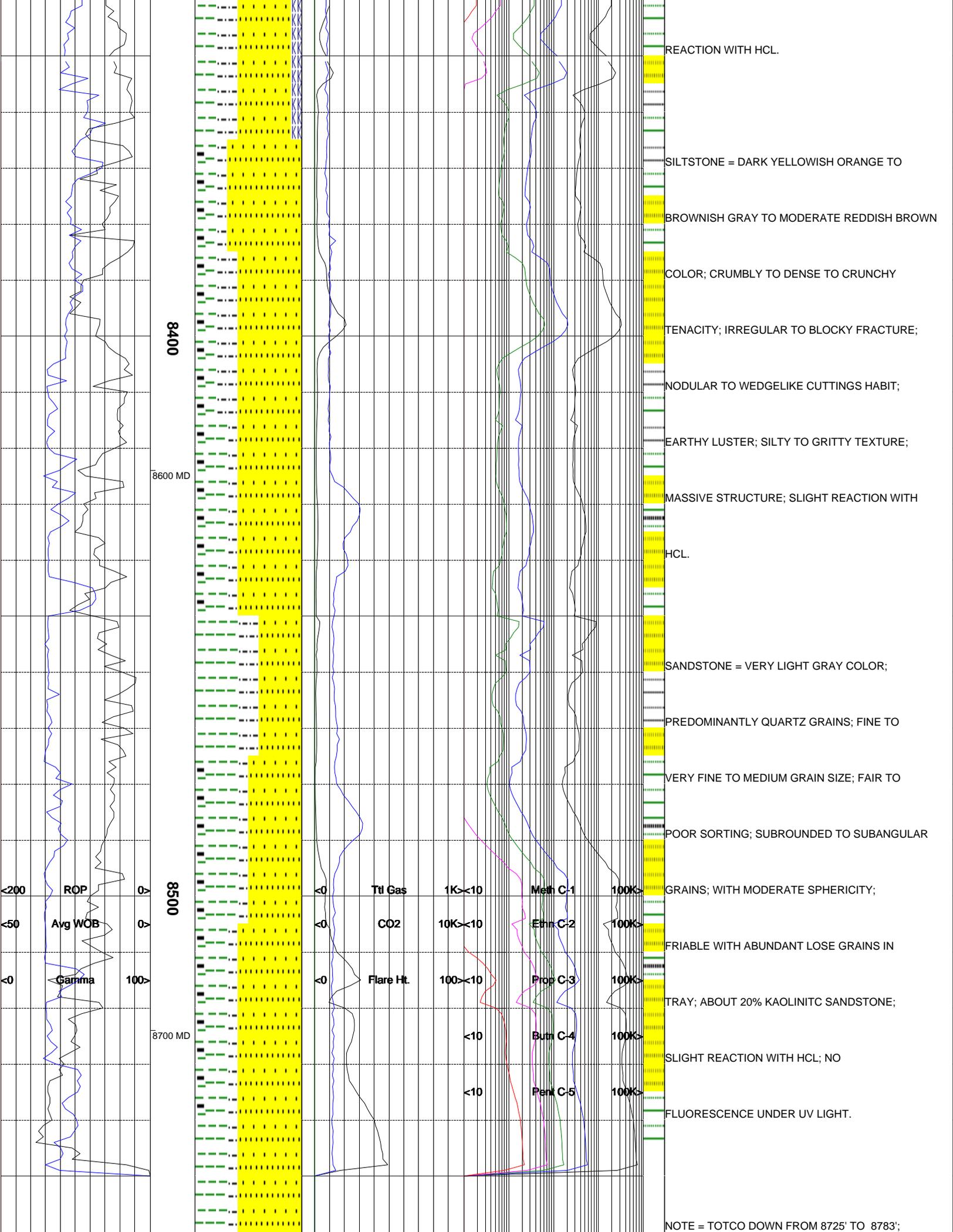
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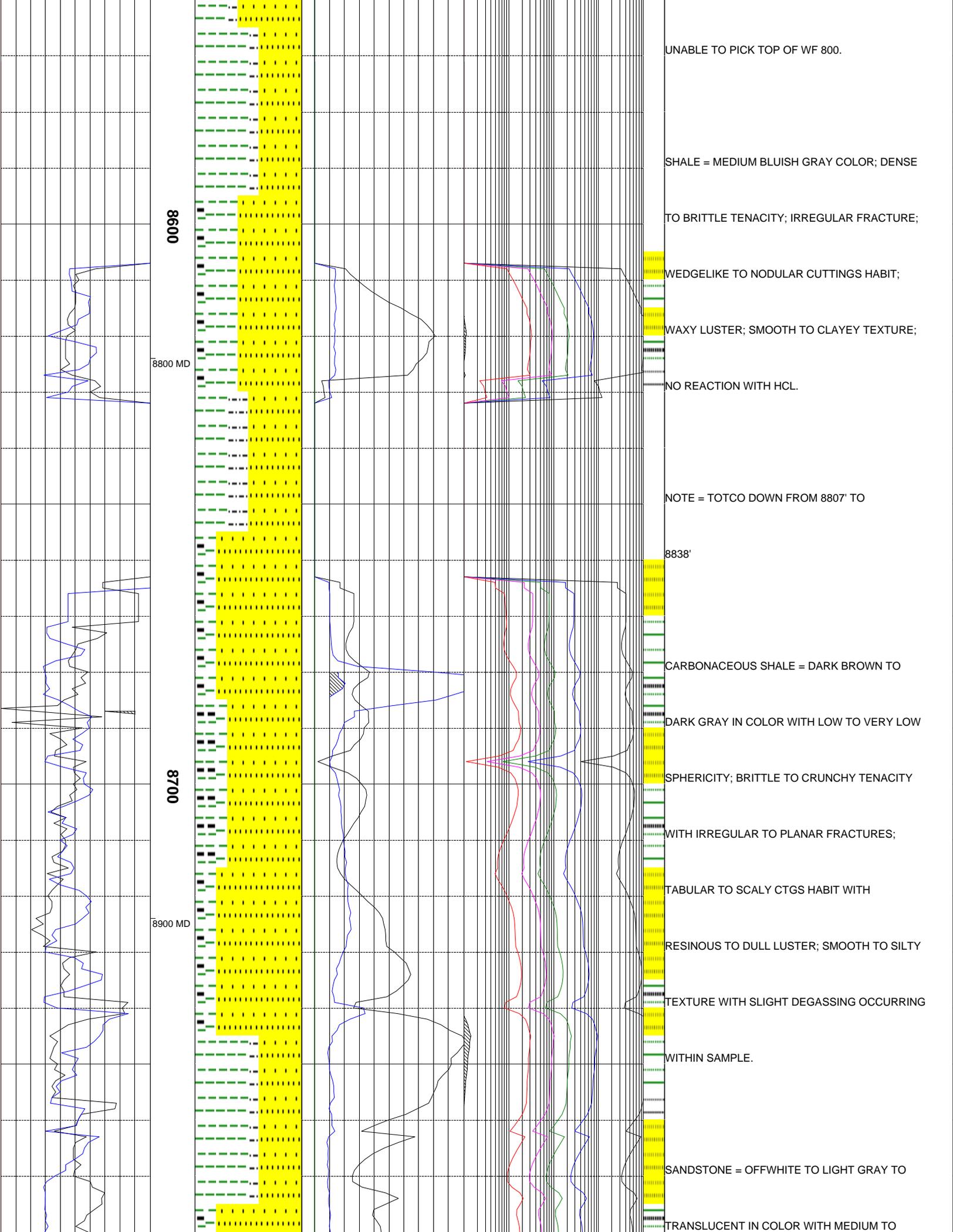
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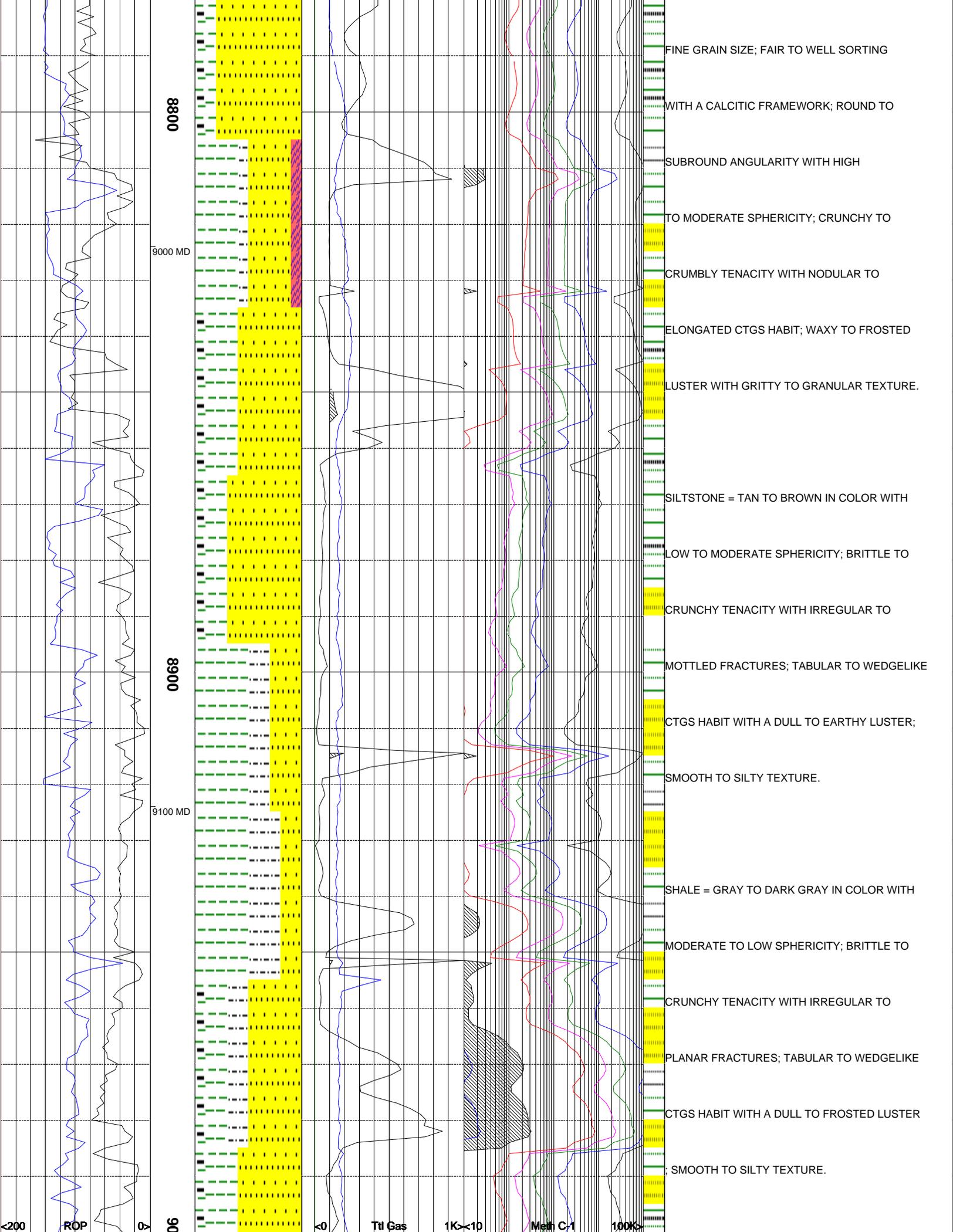
FROSTED TO DULL LUSTER WITH
GRITTY TO GRANULAR TEXTURE; 10% BLACK
LITHICS PRESENT.
SHALE = GRAY TO LIGHT GRAY IN COLOR WITH
LOW TO VERY LOW SPHERICITY; BRITTLE TO
CRUNCHY TENACITY WITH IRREGULAR TO
PLANAR FRACTURES; WEDGELIKE TO SCALY
CTGS HABIT WITH A SLIGHTLY FROSTED TO
DULL LUSTER; SMOOTH TO SILTY TEXTURE.
SILTSTONE = TAN TO BROWN TO LIGHT GRAY
IN COLOR WITH MODERATE TO LOW
SPHERICITY; BRITTLY TO CRUMBLY TENACITY
WITH IRREGULAR TO MOTTLED FRACTURES;
SCALY TO ELONGATED CTGS HABIT WITH
A DULL TO EARTHY LUSTER; SMOOTH TO
SILTY TEXTURE.
SHALE = GRAY TO DARK GRAY IN COLOR
WITH MODERATE TO LOW SPHERICITY;
CRUNCHY TO BRITTLE TENACITY WITH PLANAR

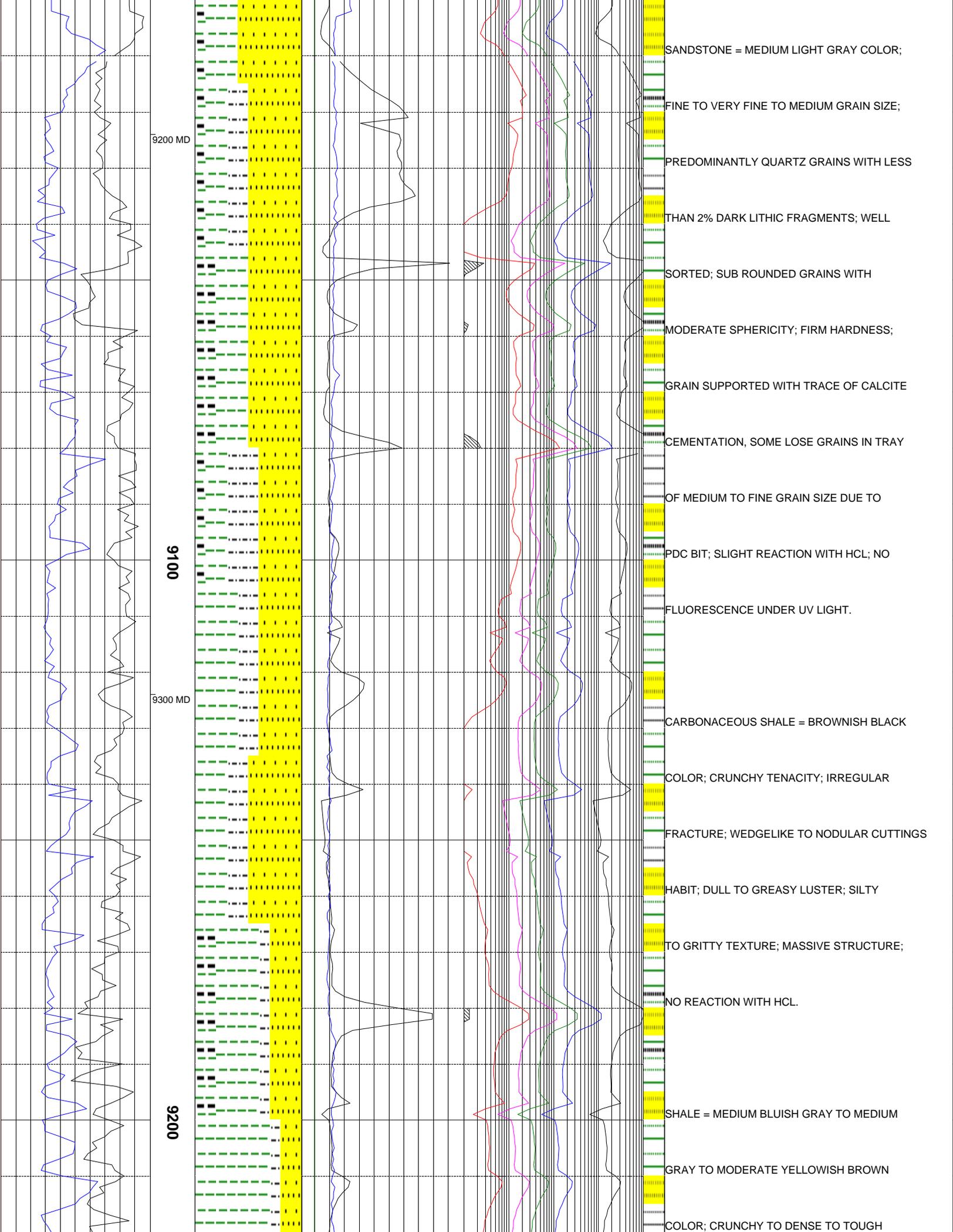


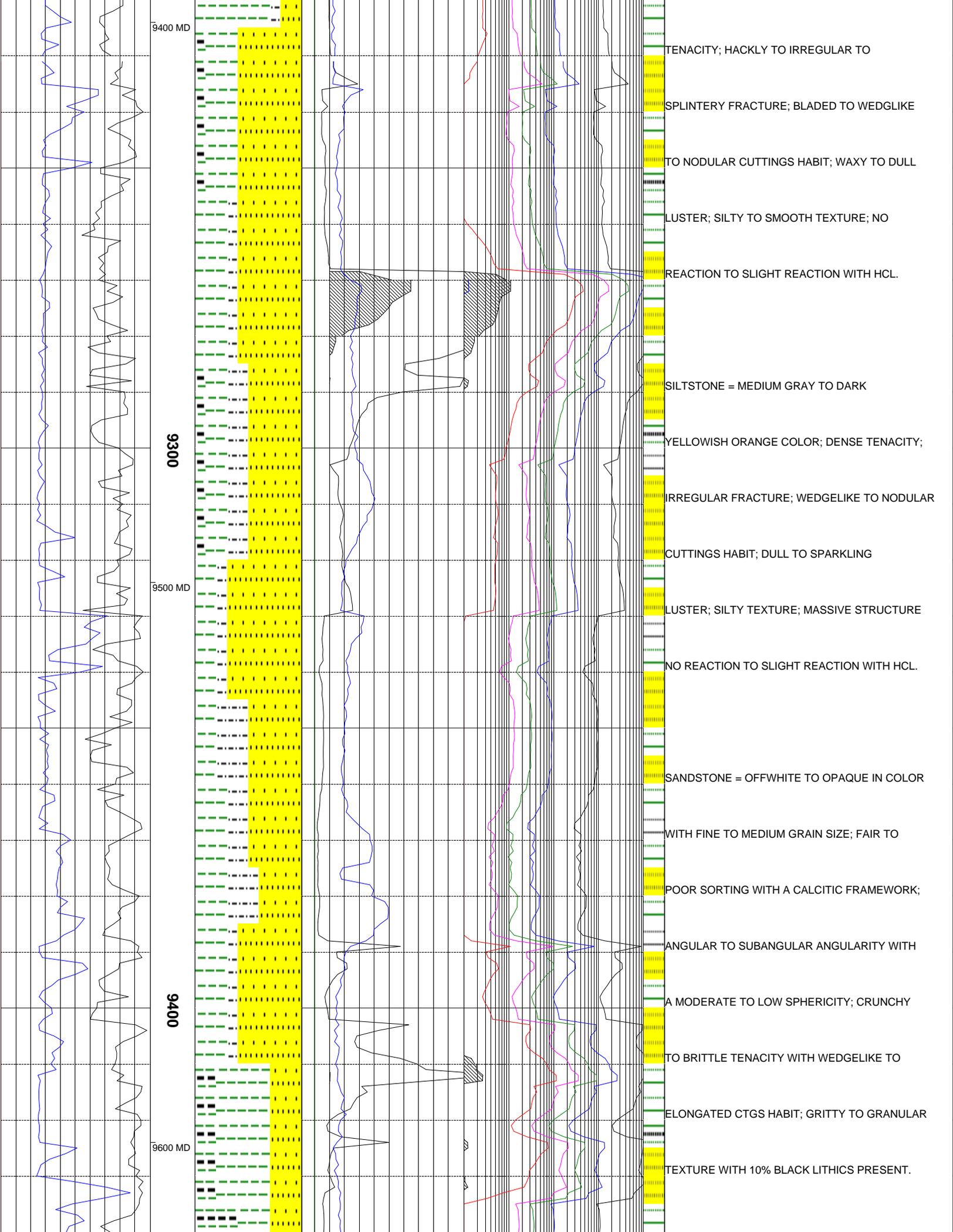


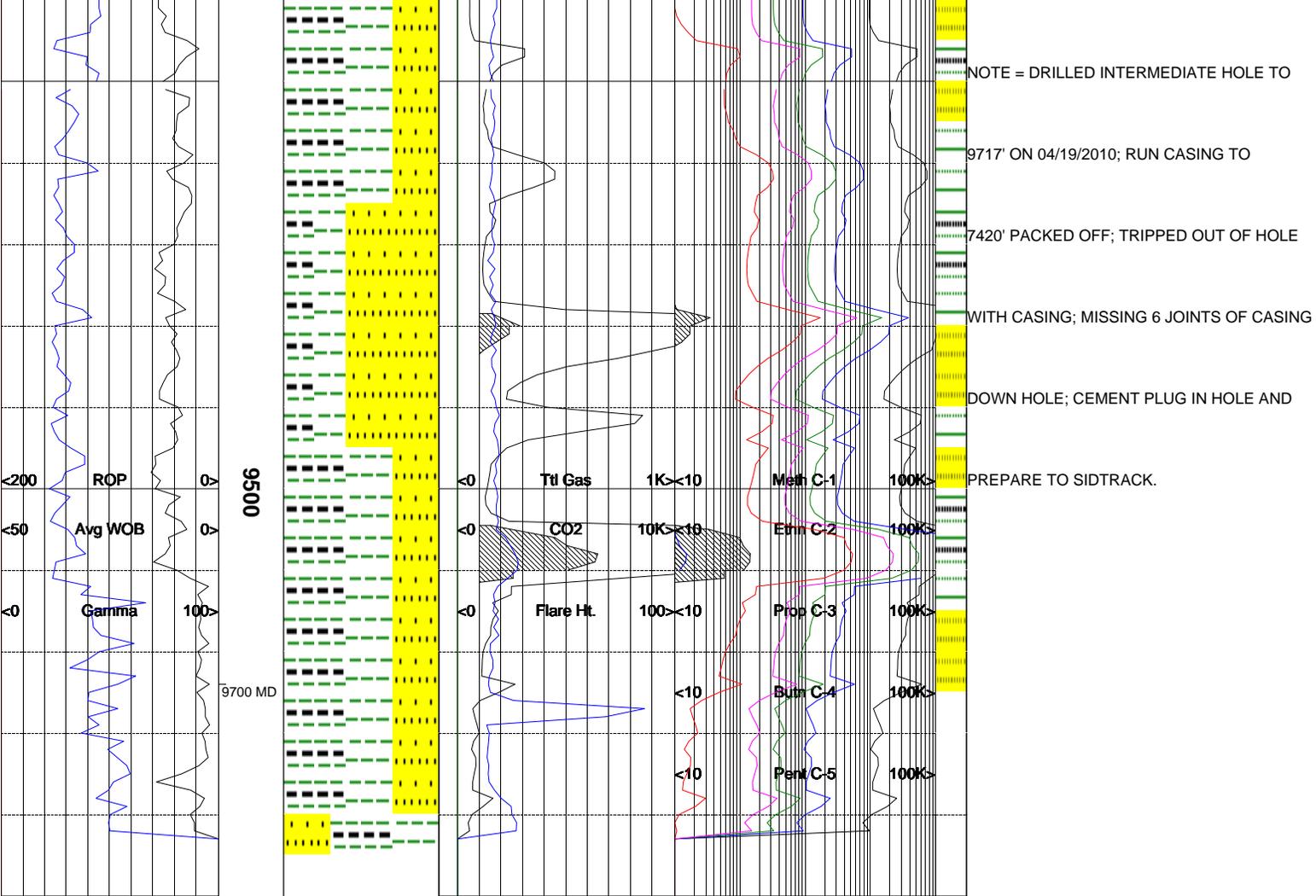












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