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(907) 561-2465

MUDLOG TVD

COMPANY EXXONMOBIL
WELL PCU-297-11B1
FIELD PICEANCE CREEK
REGION ROCKY MT
COORDINATES LAT.39.879628000
LON.108.240365000
ELEVATION GL = 7126'
KB = 7143'
COUNTY, STATE RIO BLANCO CO. CO
API INDEX 051031137800
SPUD DATE 04/10/2009
CONTRACTOR HELMERICH PAYNE
CO. REP. RICKY T. OWENS
RIG/TYPE FLEX 3
LOGGING UNIT MLU038
GEOLOGISTS GEORGE BAKER
BRENDA MARSH
ADD. PERSONS BILL JOHANNING
DEVIN CLAAR
CO. GEOLOGIST MICHAEL HOWELL

LOG INTERVAL

CASING DATA

DEPTHS: 3960' TO 8976'
DATES: 09/21/2009 TO 09/26/2009
SCALE: 1" = 100'

16" AT 130'
10.75" AT 3953'
AT
AT

MUD TYPES

HOLE SIZE

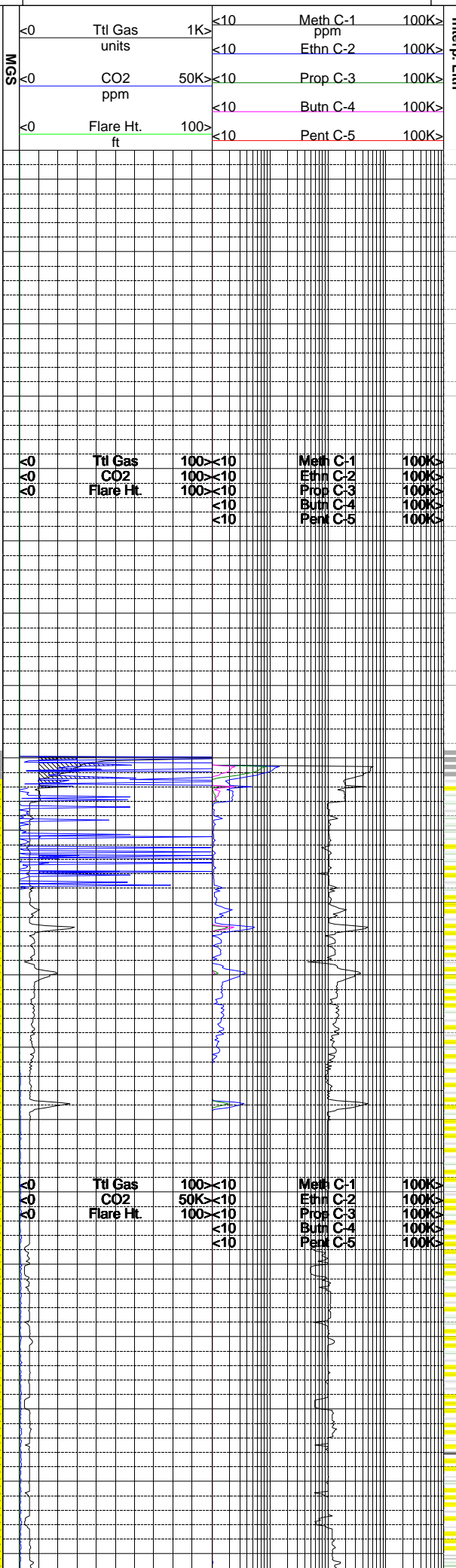
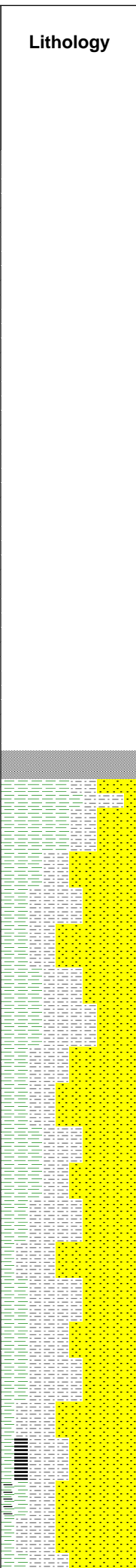
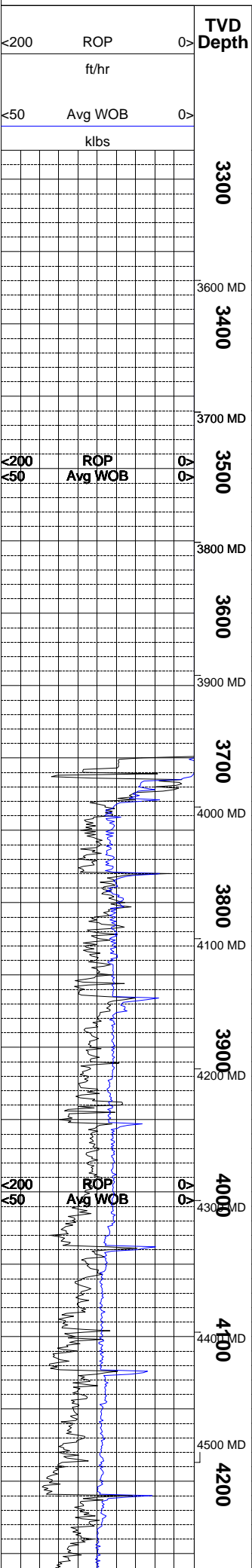
LSND TO 8976'
TO
TO
TO

9.875" TO 8976'
TO
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	KAOLINITIC	RECRYSTALLIZED CALCITE	VOLCANICS
CHALK	DIATOMITE	LIMESTONE	RHYOLITE	
CRYSTALLINE TUFF	DIORITE	LITHIC TUFF	SALT	
CHERT - ARGILL	DOLOSTONE	MARL - DOLO	SAND	



Remarks
Survey Data, Mud Reports, Other Info.

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. ALL SAMPLE DEPTHS ARE REFERENCED TO RKB.

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

CO2 IS CALIBRATED TO A TEST GAS COMPOSED OF 100000 PPM.

1 UNIT OF GAS = 200 PPM C-1 ME

CONNECTION GAS, TRIP GAS AND WIPER GAS ARE NOTED ON THE MUD LOG. FLARE HEIGHTS AND DEPTHS OF GAS BUSTER USEAGE ARE ALSO NOTED.

EARLY CONNECTION GASES REPRESENTING UP HOLE GAS INTERVALS BLEEDING INTO THE BOREHOLE ARE COMMON IN THE PRODUCTION INTERVAL.

EVIDENCE OF FRACTURE FILL IS NOTED ON THE LOG USING THE LITHOLOGY SYMBOL FOR METAMORPHICS. THE 10% DOES NOT REPRESENT 10% FRACTURE FILL IN SAMPLE. IT ONLY INDICATES THAT FRACTURE FILL HAS BEEN OBSERVED OVER THE INTERVAL.

SURVEY DATA @ 3968'
 INC. 25.05
 AZIMUTH: 187.66
 TVD: 3704.15

EPOCH WELL SERVICES COMMENCED LOGGING OPERATIONS 09/21/2009 AT 14:00 @ 3960'.

DRILL TO 3986' AND PERFORM F.I.T.

SHALE = YELLOW; LIGHT GRAY; MOTTLED IN PART; FIRM; PLATY TO SLI FLAKY CUTTINGS; IRREGULAR FRACTURE; DULL EARTHY LUSTER; SMOOTH TO SILTY TEXTURE; MOD CALCAREOUS IN SILTY EXAMPLES; VARIABLE AMOUNTS OF SILT; NO VISIBLE STRUCTURE.

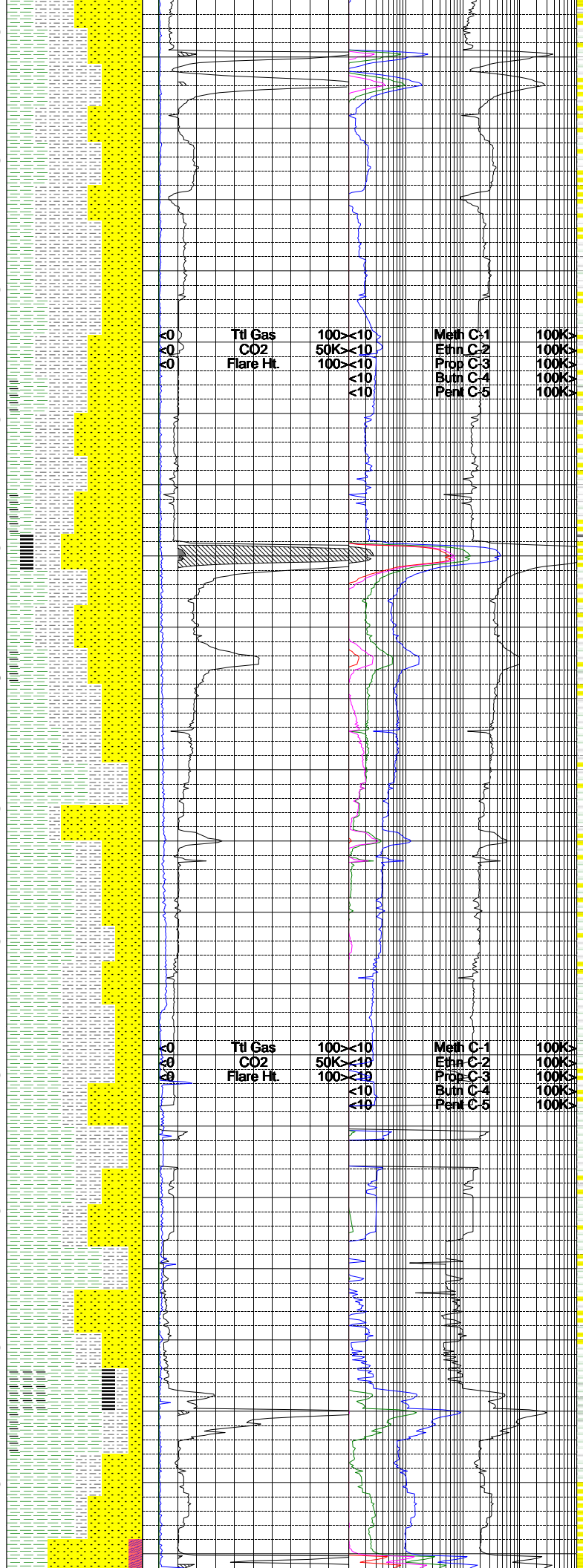
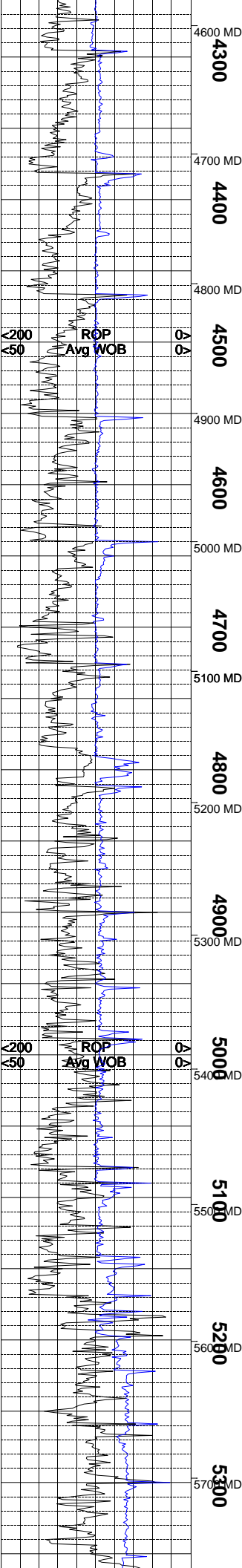
SANDSTONE = LIGHT YELLOWISH BROWN, LIGHT BLUISH GRAY, TRACES TRANSLUCENT QUARTZ GRAINS; UPPER VERY FINE TO UPPER FINE GRAIN; POOR TO FAIR SORTING; PREDOMINATELY SUB ANGULAR TO SUB ROUND ANGULARITY; LOW SHERICITY; TRACE FROSTED SURFACE FEATURES; EASILY FRIABLE TO SLIGHT FIRM; SILICIA MATRIX CEMENT, TRACE CLAY CEMENT; WEAK GRAIN SUPPORT; POOR VISUAL INTER GRANULAR POROSITY; SOME DARK LITHIC AND CARBONACEOUS SHALE IMBEDDED.

SILTSTONE = BROWN TO DARK BROWN, LIGHT BROWNISH GRAY; PULVERULENT TO CRUMBLY TENACITY; SUB BLOCKY TO BLOCKY FRACTURE; WEDGELIKE, SUB MASSIVE CUTTINGS HABIT; DULL EARTHY SLIGHT WAXY LUSTER; GRITTY TO SMOOTH TEXTURE; SEMI THICK STRUCTURE, GRADING TO SANDSTONE; TRACES BLACK LITHIC IMBEDDED.

SHALE = LIGHT GRAYISH RED, BROWNISH GRAY, LIGHT GRAY; CRUNCHY TO BRITTLE TENACITY; SUB BLOCKY, BLOCKY, IRREGULAR IN PART FRACTURE; TABULAR, SUB MASSIVE CUTTINGS HABIT; DULL, WAXY LUSTER; GRITTY, CLAYEY TEXTURE; SEMI MASSIVE THICK STRUCTURE; GRADING TO SILTSTONE.

SANDSTONE = TRANSLUCENT, LIGHT YELLOWISH BROWN, PALE GRAYISH ORANGE; LOWER TO UPPER FINE GRAIN; POOR TO FAIR SORTING; PREDOMINATELY SUB ROUNDED TRACE SUB ANGULAR; LOW TO MODERATE SPHERICAL; POLISH TO FROSTED SURFACE FEATURES; EASILY FRIABLE TO FRIABLE; SILICIA CEMENT; VERY WEAK GRAIN SUPPORTED; TRACES BLACK COAL IMBEDDED.

SILTSTONE = LIGHT GRAYISH BROWN, PALE YELLOWISH BROWN, LIGHT GRAYISH ORANGE;



PULVERULENT, CRUNCHY TENACITY, SUB BLOCKY, BLOCKY FRACTURE; ELONGATED, WEDGELIKE, SUB MASSIVE CUTTINGS HABIT; DULL, EARTHY, SLIGHT WAXY LUSTER; GRITTY, SILTY TEXTURE; SEMI MASSIVE, THICK STRUCTURE; GRADING TO SANDSTONE; TRACES BLACK SPECKLED LITHIC IMBEDDED.

SANDSTONE = CLEAR TO TRANSLUCENT, LIGHT GRAYISH BLUE, OFF WHITE; QUARTZ FRAMEWORK; LOWER TO UPPER FINE GRAIN; FAIR TO WELL SORTED; PREDOMINATELY SUB ROUND TO ROUND ANGULARITY; MODERATE SPHERICITY; FROSTED TO POLISH SURFACE FEATURE; VERY FRIABLE TO FRIABLE; SOME SILICA MATRIX CEMENT. VERY WEAK GRAIN SUPPORT, GOOD VISUAL INTER GRANULAR POROSITY; BLACK SPECKLED COAL IMBEDDED.

SILTSTONE = DUSKY YELLOWISH, PALE YELLOWISH BROWN; PULVERULENT, CRUMBLY, SLIGHT BRITTLE TENACITY; EARTHY, SUB BLOCKY, IRREGULAR IN PART FRACTURE; WEDGELIKE, TABULAR CUTTINGS HABIT; DULL, RESINOUS LUSTER; GRITTY TO GRANULAR TEXTURE; SEMI MASSIVE THICK STRUCTURE; TRACES BLACK LITHIC IMBEDDED.

SHALE = MEDIUM LIGHT GRAY, LIGHT BLUISH GRAY, SOME LIGHT BROWNISH GRAY; CRUNCHY, PULVERULENT IN PART TENACITY, SUB BLOCKY, BLOCKY, SLIGHT IRREGULAR FRACTURE; WEDGELIKE, TABULAR, SOME SEMI MASSIVE CUTTINGS HABIT; EARTHY, DULL, TRACE RESINOUS LUSTER; SILTY TO CLAYEY TEXTURE; SUB MASSIVE TO THICK STRUCTURE; GRADING TO SILTSTONE.

SANDSTONE = MODERATE YELLOWISH BROWN, CLEAR TO TRANSLUCENT, TRACE OFF WHITE WITH BLACK SPECKLED LITHIC IMBEDDED; PREDOMINATELY QUARTZ FRAMEWORK; UPPER VERY FINE TO LOWER FINE GRAIN; FAIR SORTING; PREDOMINATELY SUB ROUND TO SOME SUB ANGULAR ANGULARITY; MODERATE SPHERICITY; FROSTED IN PART; EASILY FRIABLE TO FRIABLE, TRACE UNCONSOLIDATED GRAIN POSSIBLE DUE TO PDC BIT ACTION AND WEAK GRAIN SUPPORT; FAIR VISUAL INTER GRANULAR POROSITY.

SHALE = PALE YELLOWISH BROWN, SOME LIGHT BROWNISH GRAY; MODERATE LIGHT GRAY; MALLEABLE TO CRUNCHY TENACITY; SUB BLOCKY TO BLOCKY, SOME IRREGULAR IN PART FRACTURE; WEDGELIKE, SEMI MASSIVE CUTTINGS HABIT; DULL, WAXY IN IN PART LUSTER; SILTY TO CLAYEY TEXTURE; SUB MASSIVE TO SLIGHTLY THICK STRUCTURE.

SILTSTONE = YELLOWISH BROWN TO LIGHT YELLOW GRAY; SME GRAY; MOTTLED IN PART; MASSIVE TO WEDGELIKE TO SLI PLATY; FIRM; BLOCKY TO IRREGULAR FRAC; DULL EARTHY LUSTER; SILTY TEXTURE; SLI TO MODERATELY CALCAREOUS; VF MICA; THINLY BEDDED.

SANDSTONE = ABUNDANT LOOSE GRAINS; PRESERVED SPECIMENS WHITE TO LIGHT GRAY; LOWER MEDIUM TO FINE GRAINED; ANGULAR TO SUBANGULAR; DOM CALCITE CEMENT; MODERATELY WELL SORTED; TRACE GREEN GRAINS; ASSOCIATED W/ GAS INCREASES; MODERATELY CALCAREOUS; THINLY BEDDED IN SHALE.

SHALE = VARICOLORED; MOTTLED IN PART; LIGHT YELLOWISH BROWN; YELLOW GRAY TO LIGHT GRAY; FIRM TO SLI HARD; SLI PLATY CUTTINGS; BLOCKY TO IRREGULAR FRACTURE; DULL EARTHY TO SLI WAXY LUSTER; SLI TO MODERATELY CALCAREOUS IN SILTY EXAMPLES; SMOOTH TO ROUGH TO SILTY TEXTURES IN SILTY EXAMPLES; NO VISIBLE STRUCTURE.

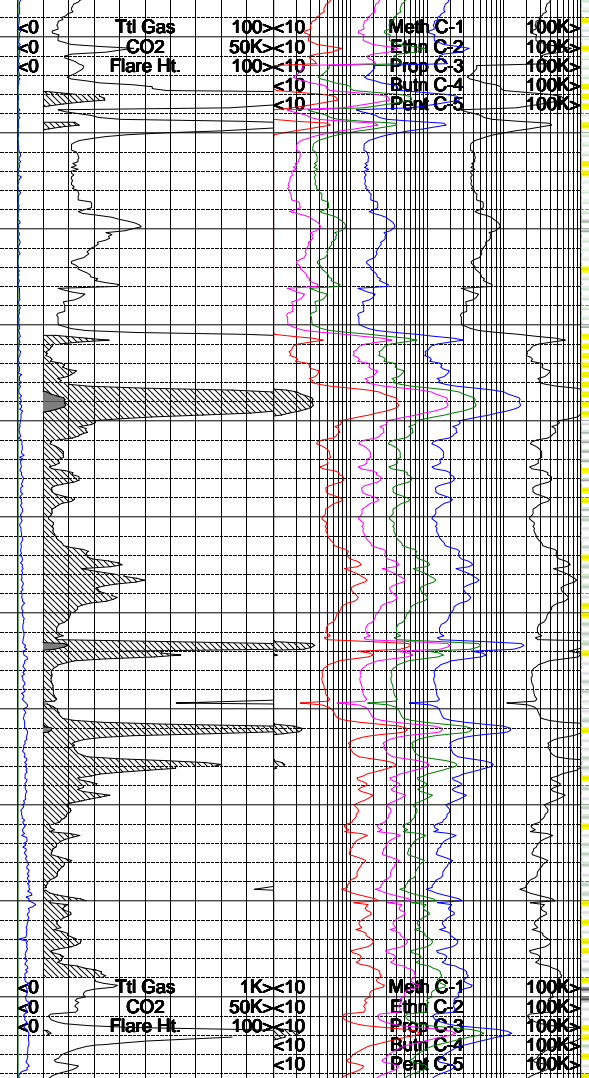
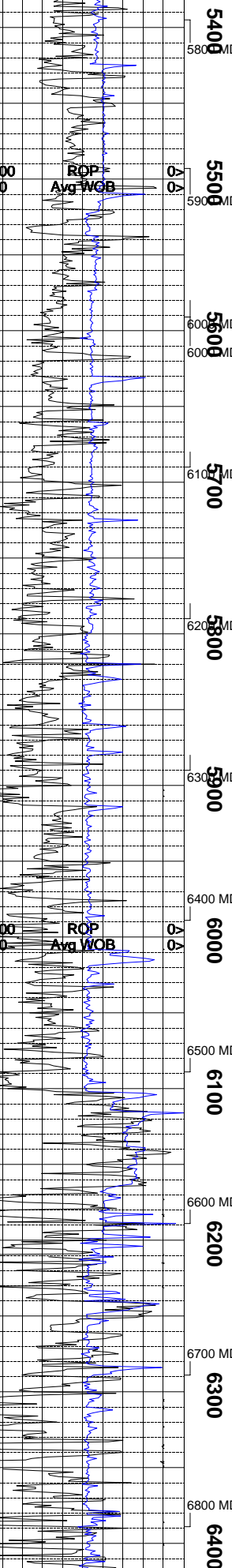
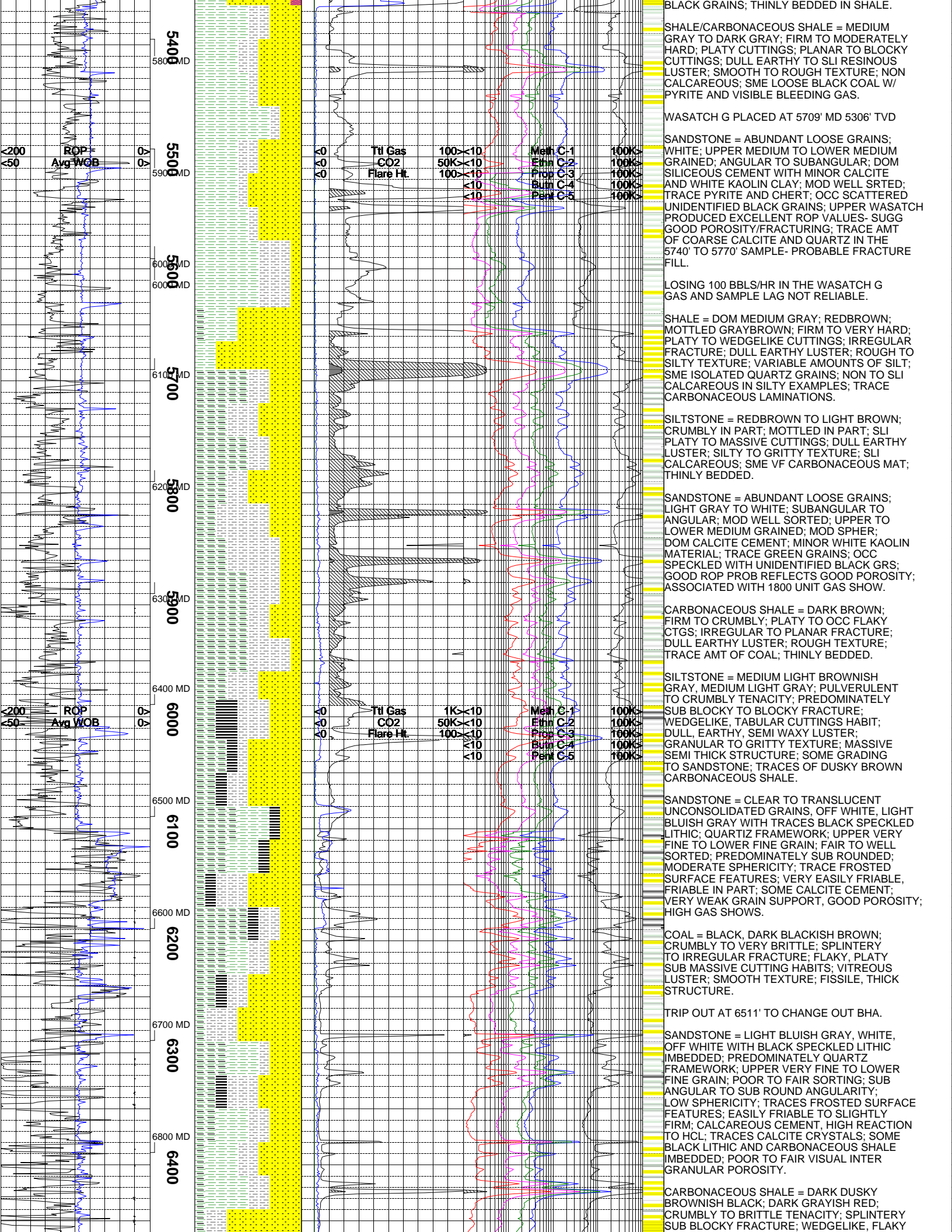
SANDSTONE = DOM LOOSE GRAINS; SME WHITE TO LIGHT GRAY PRESERVED SPECIMENS; TRACE PUUPLE MOTTLED EXAMPLES; UPPER FINE GRAINED; WELL SORTED; ANGULAR TO SUBANGULAR; MOD SPHERICITY; DOM CALCITE CEMENT; GRAIN SUPPORTED; PR VISIBLE POROSITY IN PRESERVED SPECIMENS; NO SAMPLE SHOWS.

SHALE = LIGHT BROWN; REDDISH BROWN; GRAY BROWN; MOTTLED IN PART; FIRM; SLI PLATY CUTTINGS; IRREGULAR FRACTURE; NON CALCAREOUS; ROUGH TO SMOOTH TEXTURE; OCC SILTY WITH SILTY TEXTURE; NO VISIBLE STRUCTURE.

SANDSTONE = VARICOLORED; LIGHT GRAY; WHITE; LT BROWN TO PURPLE; LOWER MEDIUM TO FINE GRAINED; ANGULAR TO SUBANGULAR; GRAIN TO MATRIX SUPPORTED; CALCITE CEMENT; SME REDBROWN LITHIC FRAGMENTS; OCC SPECKLED WITH UNIDENT

Ttl Gas	100X10	Meth	C.1	100K
CO2	50KX10	Ethn	C.2	100K
Flare Ht.	100X10	Prop	C.3	100K
	<10	Bum	C.4	100K
	<10	Pen	C.5	100K

Ttl Gas	100X10	Meth	C.1	100K
CO2	50KX10	Ethn	C.2	100K
Flare Ht.	100X10	Prop	C.3	100K
	<10	Bum	C.4	100K
	<10	Pen	C.5	100K



BLACK GRAINS; THINLY BEDDED IN SHALE.

SHALE/CARBONEOUS SHALE = MEDIUM GRAY TO DARK GRAY; FIRM TO MODERATELY HARD; PLATY CUTTINGS; PLANAR TO BLOCKY CUTTINGS; DULL EARTHY TO SLI RESINOUS LUSTER; SMOOTH TO ROUGH TEXTURE; NON CALCAREOUS; SME LOOSE BLACK COAL W/ PYRITE AND VISIBLE BLEEDING GAS.

WASATCH G PLACED AT 5709' MD 5306' TVD

SANDSTONE = ABUNDANT LOOSE GRAINS; WHITE; UPPER MEDIUM TO LOWER MEDIUM GRAINED; ANGULAR TO SUBANGULAR; DOM SILICEOUS CEMENT WITH MINOR CALCITE AND WHITE KAOLIN CLAY; MOD WELL SRTE; TRACE PYRITE AND CHERT; OCC SCATTERED UNIDENTIFIED BLACK GRAINS; UPPER WASATCH PRODUCED EXCELLENT ROP VALUES- SUGG GOOD POROSITY/FRACTURING; TRACE AMT OF COARSE CALCITE AND QUARTZ IN THE 5740' TO 5770' SAMPLE- PROBABLE FRACTURE FILL.

LOSING 100 BBLS/HR IN THE WASATCH G GAS AND SAMPLE LAG NOT RELIABLE.

SHALE = DOM MEDIUM GRAY; REDBROWN; MOTTLED GRAYBROWN; FIRM TO VERY HARD; PLATY TO WEDGELIKE CUTTINGS; IRREGULAR FRACTURE; DULL EARTHY LUSTER; ROUGH TO SILTY TEXTURE; VARIABLE AMOUNTS OF SILT; SME ISOLATED QUARTZ GRAINS; NON TO SLI CALCAREOUS IN SILTY EXAMPLES; TRACE CARBONEOUS LAMINATIONS.

SILTSTONE = REDBROWN TO LIGHT BROWN; CRUMBLY IN PART; MOTTLED IN PART; SLI PLATY TO MASSIVE CUTTINGS; DULL EARTHY LUSTER; SILTY TO GRITTY TEXTURE; SLI CALCAREOUS; SME VF CARBONEOUS MAT; THINLY BEDDED.

SANDSTONE = ABUNDANT LOOSE GRAINS; LIGHT GRAY TO WHITE; SUBANGULAR TO ANGULAR; MOD WELL SORTED; UPPER TO LOWER MEDIUM GRAINED; MOD SPHER; DOM CALCITE CEMENT; MINOR WHITE KAOLIN MATERIAL; TRACE GREEN GRAINS; OCC SPECKLED WITH UNIDENTIFIED BLACK GRs; GOOD ROP PROB REFLECTS GOOD POROSITY; ASSOCIATED WITH 1800 UNIT GAS SHOW.

CARBONEOUS SHALE = DARK BROWN; FIRM TO CRUMBLY; PLATY TO OCC FLAKY CTGS; IRREGULAR TO PLANAR FRACTURE; DULL EARTHY LUSTER; ROUGH TEXTURE; TRACE AMT OF COAL; THINLY BEDDED.

SILTSTONE = MEDIUM LIGHT BROWNISH GRAY, MEDIUM LIGHT GRAY; PULVERULENT TO CRUMBLY TENACITY; PREDOMINATELY SUB BLOCKY TO BLOCKY FRACTURE; WEDGELIKE, TABULAR CUTTINGS HABIT; DULL, EARTHY, SEMI WAXY LUSTER; GRANULAR TO GRITTY TEXTURE; MASSIVE SEMI THICK STRUCTURE; SOME GRADING TO SANDSTONE; TRACES OF DUSKY BROWN CARBONEOUS SHALE.

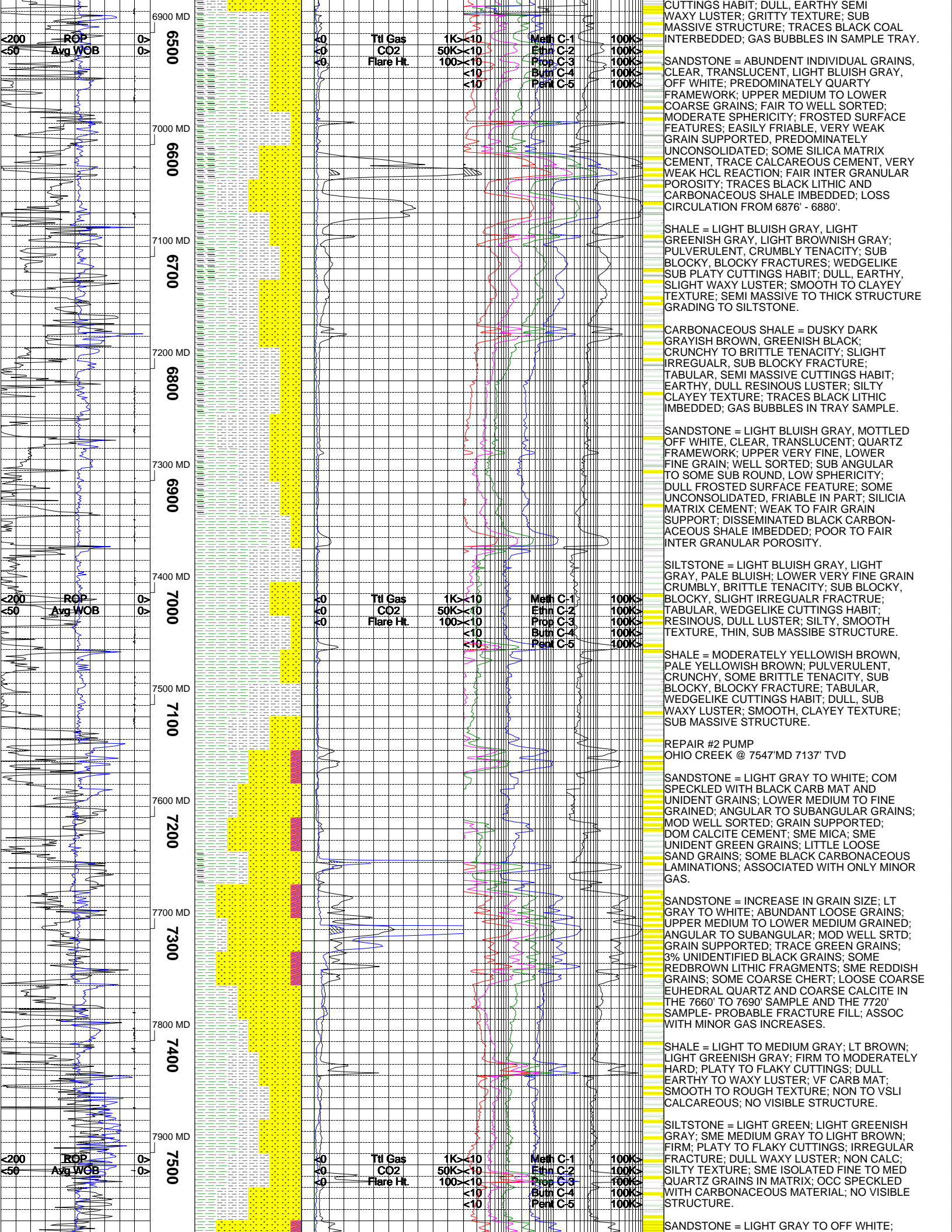
SANDSTONE = CLEAR TO TRANSLUCENT UNCONSOLIDATED GRAINS, OFF WHITE, LIGHT BLUISH GRAY WITH TRACES BLACK SPECKLED LITHIC; QUARTZ FRAMEWORK; UPPER VERY FINE TO LOWER FINE GRAIN; FAIR TO WELL SORTED; PREDOMINATELY SUB ROUNDED; MODERATE SPHERICITY; TRACE FROSTED SURFACE FEATURES; VERY EASILY FRIABLE, FRIABLE IN PART; SOME CALCITE CEMENT; VERY WEAK GRAIN SUPPORT, GOOD POROSITY; HIGH GAS SHOWS.

COAL = BLACK, DARK BLACKISH BROWN; CRUMBLY TO VERY BRITTLE; SPLINTERY TO IRREGULAR FRACTURE; FLAKY, PLATY SUB MASSIVE CUTTING HABITS; VITREOUS LUSTER; SMOOTH TEXTURE; FISSILE, THICK STRUCTURE.

TRIP OUT AT 6511' TO CHANGE OUT BHA.

SANDSTONE = LIGHT BLUISH GRAY, WHITE, OFF WHITE WITH BLACK SPECKLED LITHIC IMBEDDED; PREDOMINATELY QUARTZ FRAMEWORK; UPPER VERY FINE TO LOWER FINE GRAIN; POOR TO FAIR SORTING; SUB ANGULAR TO SUB ROUND ANGULARITY; LOW SPHERICITY; TRACES FROSTED SURFACE FEATURES; EASILY FRIABLE TO SLIGHTLY FIRM; CALCAREOUS CEMENT, HIGH REACTION TO HCL; TRACES CALCITE CRYSTALS; SOME BLACK LITHIC AND CARBONEOUS SHALE IMBEDDED; POOR TO FAIR VISUAL INTER GRANULAR POROSITY.

CARBONEOUS SHALE = DARK DUSKY BROWNISH BLACK; DARK GRAYISH RED; CRUMBLY TO BRITTLE TENACITY; SPLINTERY SUB BLOCKY FRACTURE; WEDGELIKE, FLAKY



200 ROP
50 Avg WOB

200 ROP
50 Avg WOB

Ttl Gas 1K < 10
CO2 50K < 10
Flare Ht. 100 < 10

Ttl Gas 1K < 10
CO2 50K < 10
Flare Ht. 100 < 10

Ttl Gas 1K < 10
CO2 50K < 10
Flare Ht. 100 < 10

Meth C-1 100K
Ethn C-2 100K
Prop C-3 100K
Bum C-4 100K
Pen C-5 100K

Meth C-1 100K
Ethn C-2 100K
Prop C-3 100K
Bum C-4 100K
Pen C-5 100K

Meth C-1 100K
Ethn C-2 100K
Prop C-3 100K
Bum C-4 100K
Pen C-5 100K

CUTTINGS HABIT; DULL, EARTHY SEMI WAXY LUSTER; GRITTY TEXTURE; SUB MASSIVE STRUCTURE; TRACES BLACK COAL INTERBEDDED; GAS BUBBLES IN SAMPLE TRAY.

SANDSTONE = ABUNDANT INDIVIDUAL GRAINS, CLEAR, TRANSLUCENT, LIGHT BLUISH GRAY, OFF WHITE; PREDOMINATELY QUARTZ FRAMEWORK; UPPER MEDIUM TO LOWER COARSE GRAINS; FAIR TO WELL SORTED; MODERATE SPHERICITY; FROSTED SURFACE FEATURES; EASILY FRIABLE, VERY WEAK GRAIN SUPPORTED, PREDOMINATELY UNCONSOLIDATED; SOME SILICA MATRIX CEMENT, TRACE CALCAREOUS CEMENT, VERY WEAK HCL REACTION; FAIR INTER GRANULAR POROSITY; TRACES BLACK LITHIC AND CARBONACEOUS SHALE IMBEDDED; LOSS CIRCULATION FROM 6876' - 6880'.

SHALE = LIGHT BLUISH GRAY, LIGHT GREENISH GRAY, LIGHT BROWNISH GRAY; PULVERULENT, CRUMBLY TENACITY; SUB BLOCKY, BLOCKY FRACTURES; WEDGELIKE SUB PLATY CUTTINGS HABIT; DULL, EARTHY, SLIGHT WAXY LUSTER; SMOOTH TO CLAYEY TEXTURE; SEMI MASSIVE TO THICK STRUCTURE GRADING TO SILTSTONE.

CARBONACEOUS SHALE = DUSKY DARK GRAYISH BROWN, GREENISH BLACK; CRUNCHY TO BRITTLE TENACITY; SLIGHT IRREGULAR, SUB BLOCKY FRACTURE; TABULAR, SEMI MASSIVE CUTTINGS HABIT; EARTHY, DULL RESINOUS LUSTER; SILTY CLAYEY TEXTURE; TRACES BLACK LITHIC IMBEDDED; GAS BUBBLES IN TRAY SAMPLE.

SANDSTONE = LIGHT BLUISH GRAY, MOTTLED OFF WHITE, CLEAR, TRANSLUCENT; QUARTZ FRAMEWORK; UPPER VERY FINE, LOWER FINE GRAIN; WELL SORTED; SUB ANGULAR TO SOME SUB ROUND, LOW SPHERICITY; DULL FROSTED SURFACE FEATURE; SOME UNCONSOLIDATED, FRIABLE IN PART; SILICIA MATRIX CEMENT; WEAK TO FAIR GRAIN SUPPORT; DISSEMINATED BLACK CARBONACEOUS SHALE IMBEDDED; POOR TO FAIR INTER GRANULAR POROSITY.

SILTSTONE = LIGHT BLUISH GRAY, LIGHT GRAY, PALE BLUISH; LOWER VERY FINE GRAIN CRUMBLY, BRITTLE TENACITY; SUB BLOCKY, BLOCKY, SLIGHT IRREGULAR FRACTURE; TABULAR, WEDGELIKE CUTTINGS HABIT; RESINOUS, DULL LUSTER; SILTY, SMOOTH TEXTURE, THIN, SUB MASSIVE STRUCTURE.

SHALE = MODERATELY YELLOWISH BROWN, PALE YELLOWISH BROWN; PULVERULENT, CRUNCHY, SOME BRITTLE TENACITY, SUB BLOCKY, BLOCKY FRACTURE; TABULAR, WEDGELIKE CUTTINGS HABIT; DULL, SUB WAXY LUSTER; SMOOTH, CLAYEY TEXTURE; SUB MASSIVE STRUCTURE.

REPAIR #2 PUMP
OHIO CREEK @ 7547' MD 7137' TVD

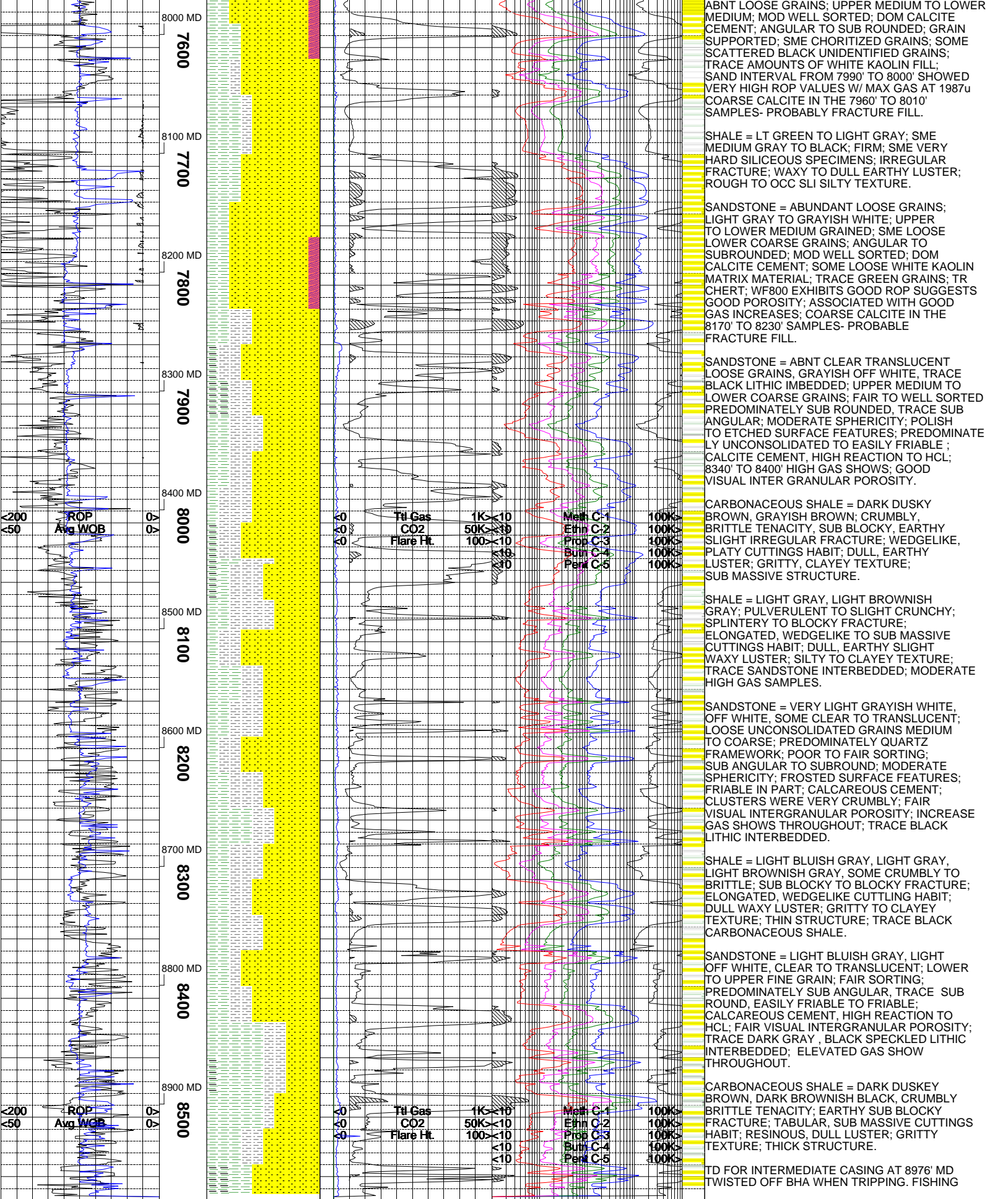
SANDSTONE = LIGHT GRAY TO WHITE; COM SPECKLED WITH BLACK CARB MAT AND UNIDENT GRAINS; LOWER MEDIUM TO FINE GRAINED; ANGULAR TO SUBANGULAR GRAINS; MOD WELL SORTED; GRAIN SUPPORTED; DOM CALCITE CEMENT; SME MICA; SME UNIDENT GREEN GRAINS; LITTLE LOOSE SAND GRAINS; SOME BLACK CARBONACEOUS LAMINATIONS; ASSOCIATED WITH ONLY MINOR GAS.

SANDSTONE = INCREASE IN GRAIN SIZE; LT GRAY TO WHITE; ABUNDANT LOOSE GRAINS; UPPER MEDIUM TO LOWER MEDIUM GRAINED; ANGULAR TO SUBANGULAR; MOD WELL SRTD; GRAIN SUPPORTED; TRACE GREEN GRAINS; 3% UNIDENTIFIED BLACK GRAINS; SOME REDBROWN LITHIC FRAGMENTS; SME REDDISH GRAINS; SOME COARSE CHERT; LOOSE COARSE EUHEDRAL QUARTZ AND COARSE CALCITE IN THE 7660' TO 7690' SAMPLE AND THE 7720' SAMPLE- PROBABLE FRACTURE FILL; ASSOC WITH MINOR GAS INCREASES.

SHALE = LIGHT TO MEDIUM GRAY; LT BROWN; LIGHT GREENISH GRAY; FIRM TO MODERATELY HARD; PLATY TO FLAKY CUTTINGS; DULL EARTHY TO WAXY LUSTER; VF CARB MAT; SMOOTH TO ROUGH TEXTURE; NON TO VSLI CALCAREOUS; NO VISIBLE STRUCTURE.

SILTSTONE = LIGHT GREEN; LIGHT GREENISH GRAY; SME MEDIUM GRAY TO LIGHT BROWN; FIRM; PLATY TO FLAKY CUTTINGS; IRREGULAR FRACTURE; DULL WAXY LUSTER; NON CALC; SILTY TEXTURE; SME ISOLATED FINE TO MED QUARTZ GRAINS IN MATRIX; OCC SPECKLED WITH CARBONACEOUS MATERIAL; NO VISIBLE STRUCTURE.

SANDSTONE = LIGHT GRAY TO OFF WHITE;



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