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## Drilling Dynamics MD

COMPANY	ExxonMobil Production
WELL	FRU 197-33A7
FIELD	PICEANCE CREEK
REGION	ROCKIES
COORDINATES	39.915575000 108.28575000
ELEVATION	GL 6386 KB 6359
COUNTY, STATE	RIO BLANCO, CO
API INDEX	05-103-1139-900
SPUD DATE	02/16/2010
CONTRACTOR	HE
CO. REP.	R.T. OWENS
RIG/TYPE	215/FLEX 3
LOGGING UNIT	MLU051
GEOLOGISTS	G.BAKER B.MARSH
ADD. PERSONS	D.CLAAR B.JOHANNING
CO. GEOLOGIST	MELANIE BIGGS

### LOG INTERVAL

DEPTHS: 3,790' TO 12,375'  
DATES: 02/16/2010 TO 02/26/2010  
SCALE: 1"=100'

### CASING DATA

10.75" AT 3,808'  
7.00" AT 8,609'  
AT  
AT

### MUD TYPES

LSND TO 12,375"  
TO  
TO  
TO

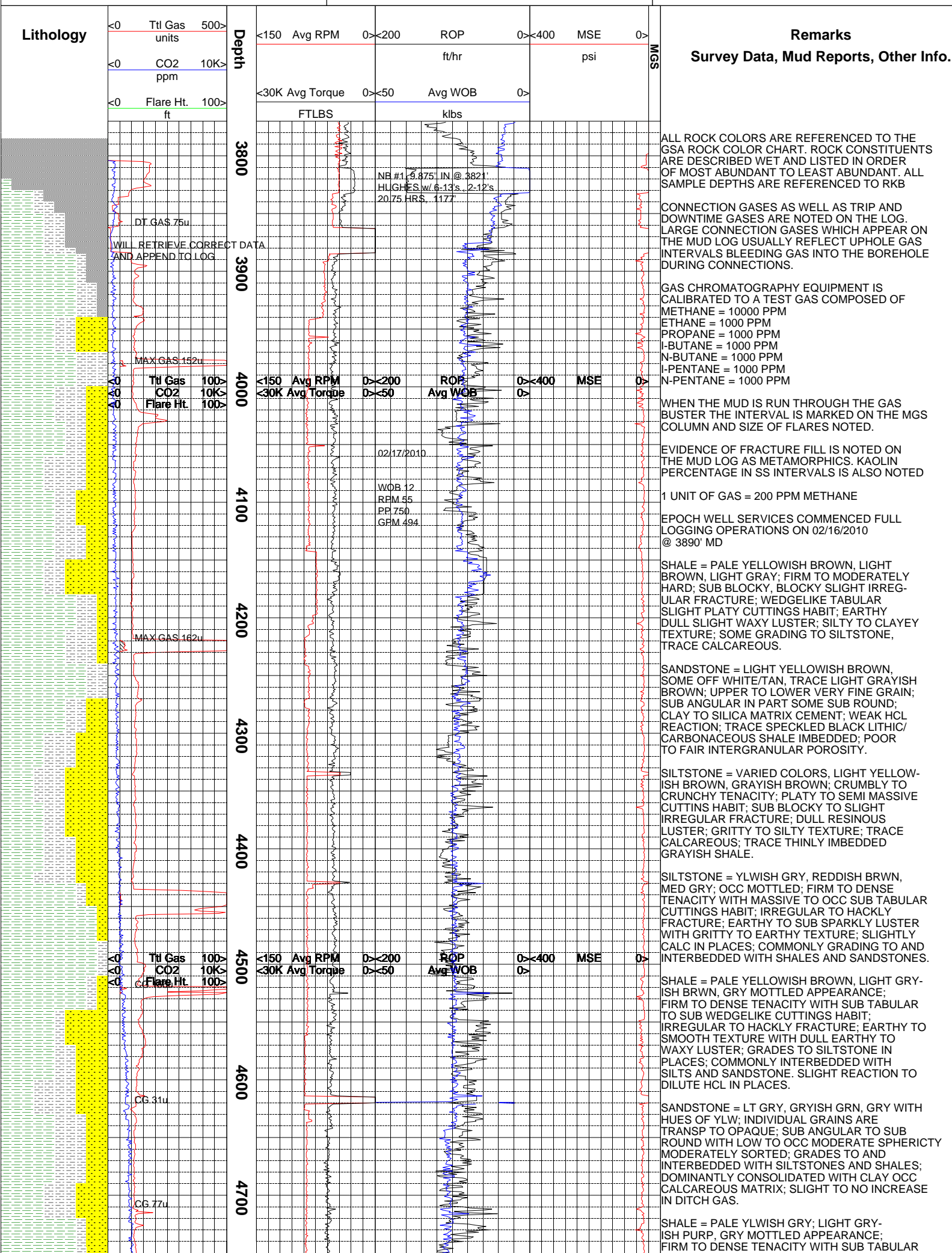
### HOLE SIZE

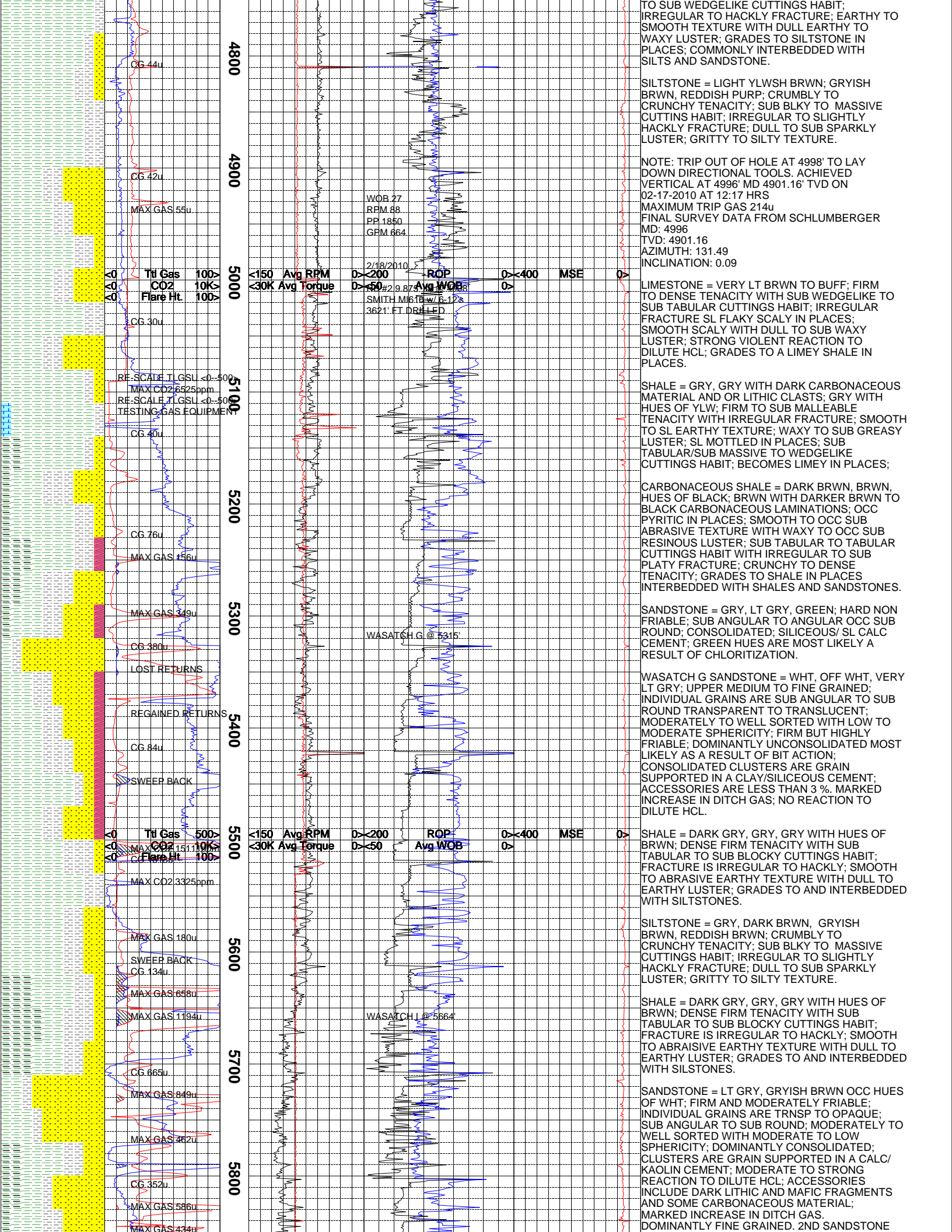
9.875" TO 8,619'  
6.125" TO 12,375'  
TO  
TO

### ABBREVIATIONS

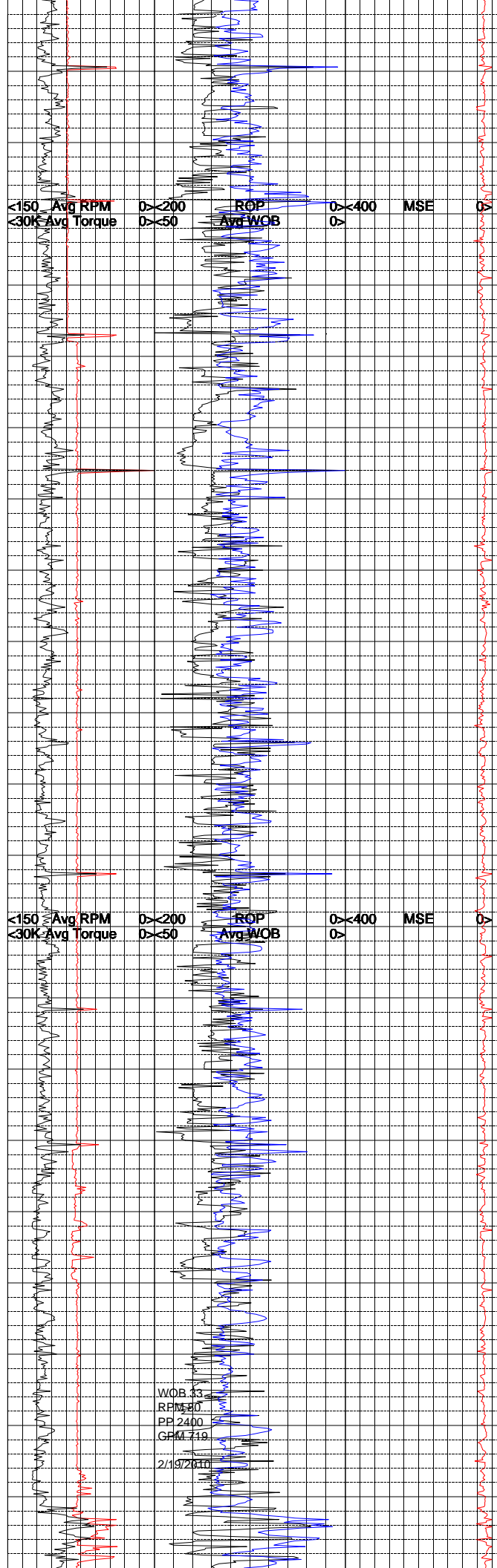
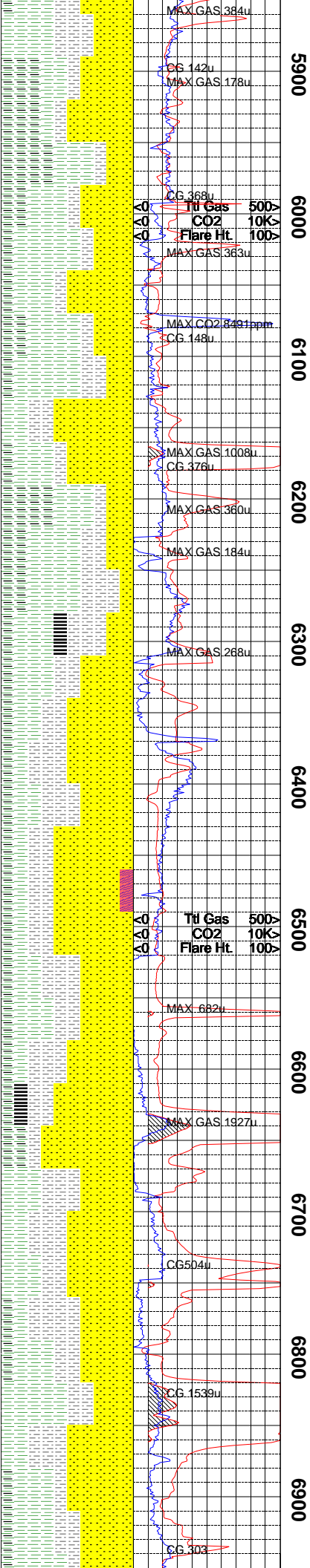
NB	NEWBIT	PV	PLASTIC VISCOSITY	LC	LOST CIRCULATION
RRB	RERUN BIT	YP	YIELD POINT	CO	CIRCULATE OUT
CB	CORE BIT	FL	FLUID LOSS	NR	NO RETURNS
WOB	WEIGHT ON BIT	CL	PPM CLORIDE ION	TG	TRIP GAS
RPM	ROTARY REV/MIN	Rm	MUD RESISTIVITY	SG	SURVEY GAS
PP	PUMP PRESSURE	Rmf	FILTRATE RESISTIVITY	WG	WIPER GAS
SPM	STROKES/MIN	PR	POOR RETURNS	CG	CONNECTION GAS
MW	MUD WEIGHT	LAT	LOGGED AFTER TRIP		
VIS	FUNNEL VISCOSITY	LAS	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		DIORITE		LIMESTONE		RHYOLITE		
	CRYSTALLINE TUFF		DOLOSTONE		LITHIC TUFF		SALT		
	CHERT - ARGILL				MARL - DOLO		SAND		









IS DARKER IN COLOR AND UPPER FINE TO VERY FINE GRAINED.

CARBONACEOUS SHALE = BRWN, DARK BRWN, HUES OF BLACK; DENSE TO CRUNCHY TENACITY WITH SUB WEDGELIKE TO SUB TABULAR CUTTINGS HABIT; IRREGULAR TO SUB PLATY OCC PLATY FRACTURE; SL PYRITIC IN PLACES VISIBLE DEGASSING IN SAMPLE TRAY; SMOOTH WAXY TO SL ABRASIVE TEXTURE WITH DULL EARTHY TO WAXY OCC SUB VITREOUS LUSTER; GRADES TO AND INTERBEDDED WITH SILTS AND SHALES.

SILTSTONE = GRY, DARK BRWN, GRYISH BRWN, DARK GRY; CRUMBLY TO HARD CRUNCHY TENACITY; SUB BLKY TO MASSIVE CUTTINGS HABIT; IRREGULAR TO SLIGHTLY HACKLY FRACTURE; DULL TO SUB SPARKLY LUSTER; GRITTY TO SILTY TEXTURE.

SHALE = DARK GRY, GRY, GRY WITH HUES OF BRWN; DENSE FIRM TENACITY WITH SUB TABULAR TO SUB BLOCKY CUTTINGS HABIT; FRACTURE IS IRREGULAR TO HACKLY; SMOOTH TO ABRASIVE EARTHY TEXTURE WITH DULL TO EARTHY LUSTER; GRADES TO AND INTERBEDDED WITH SILTSTONES.

CARBONACEOUS SHALE = BRWN, DARK BRWN, HUES OF BLACK; DENSE TO CRUNCHY TENACITY WITH SUB WEDGELIKE TO SUB TABULAR CUTTINGS HABIT; IRREGULAR TO SUB PLATY FRACTURE; OCC PYRITIC IN PLACES; SMOOTH WAXY TO SL GRITTY TEXTURE WITH EARTHY TO SUB VITREOUS LUSTER. VISIBLE DEGASSING IN SAMPLE TRAY. NO REACTION TO DILUTE HCL.

SILTSTONE = MODERATE GRAY, LIGHT GRAY, SOME BROWNISH GRAY; CRUMBLY TO SLIGHT BRITTLE TENACITY; SUB BLOCKY, BLOCKY FRACTURE; TABULAR TO PLATY CUTTINGS HABIT; RESINOUS LUSTER; SILTY TO GRITTY TEXTURE GRADING TO VERY FINE SANDSTONE; TRACE BLACK CARBONACEOUS SHALE IMBEDDED.

SANDSTONE = LIGHT GRAY, MODERATE GRAY, SOME BROWNISH OFF WHITE; UPPER TO LOWER FINE GRAIN; PREDOMINATELY SUB ANGULAR, SOME SUB ROUND; POOR SORTED; LOW SPHERICITY; FIRM TO SLIGHT HARD; SILICA/ CALCAREOUS CEMENT; SMALL CONSOLIDATED CLUSTERS; POOR INTERGRANULAR POROSITY; SOME MODERATE GRAY TO BLACK SPECKLED LITHIC/CARBONACEOUS SHALE IMBEDDED.

CARBONACEOUS SHALE = DARK BROWNISH BLACK, DUSKY BROWN; CRUNCHY, SEMI CRUMBLY TENACITY; SUB BLOCKY, IRREGULAR FRACTURE; SUB WEDGELIKE TO TABULAR CUTTINGS HABIT; DULL WAXY SLIGHT RESINOUS LUSTER; GRITTY TO CLAYEY TEXTURE; TRACE PYRETIC ATTACH/IMBEDDED.

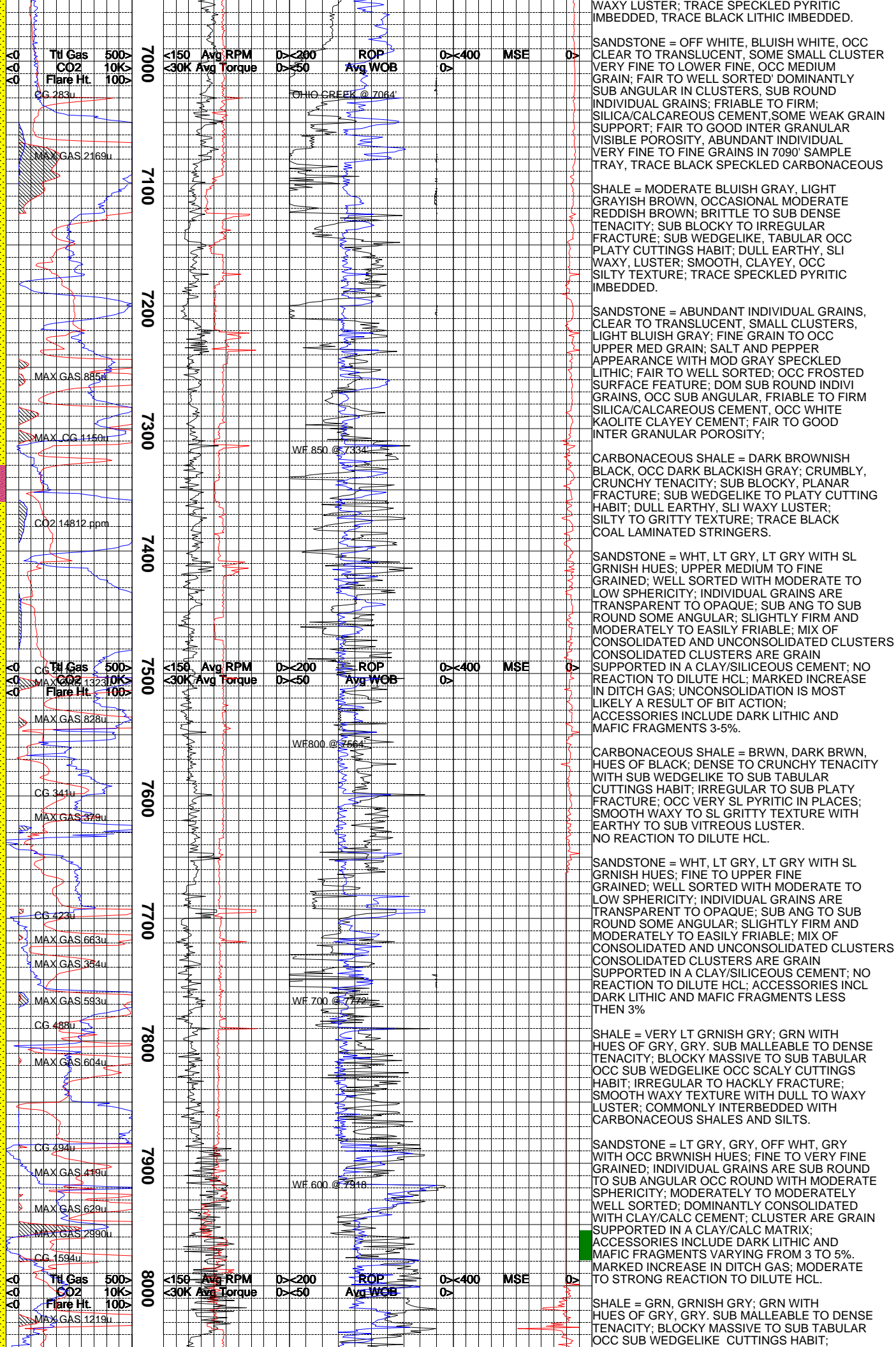
SILTSTONE = DARK TO MODERATE GRAY, SOME LIGHT GRAY; CRUNCHY TO SLIGHT CRUMBLY TENACITY; SUB BLOCKY, BLOCKY SLIGHT IRREGULAR FRACTURE; GRITTY TO SILTY TEXTURE; SUB PLATY CUTTINGS HABIT; DULL SLIGHT WAXY LUSTER; TRACES VERY FINE SANDSTONE IMBEDDED.

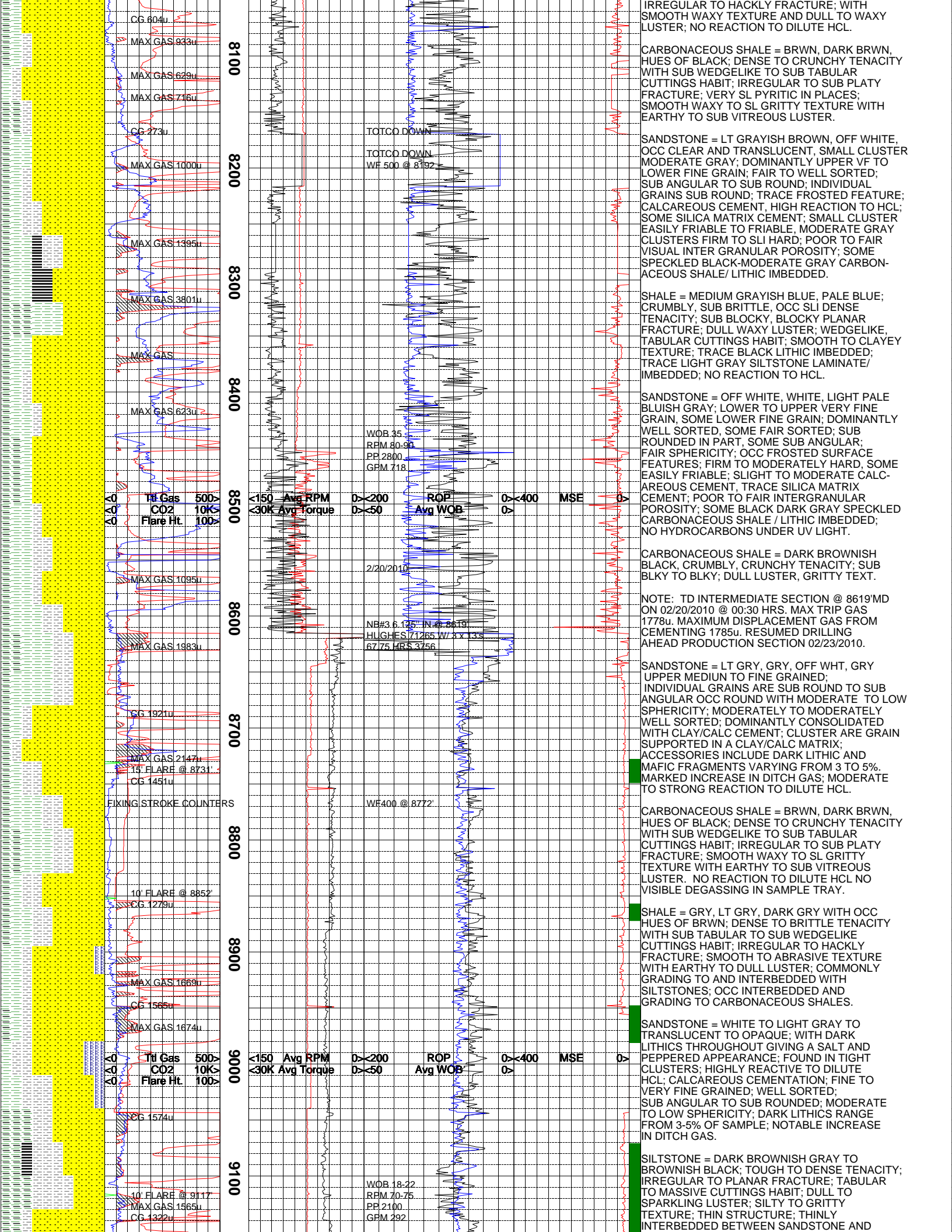
SANDSTONE = GRAY, LIGHT GRAY, MODERATE GRAY, SOME TRANSLUCENT WITH BROWNISH GRAY STAIN; LOWER TO UPPER FINE GRAIN; POOR TO FAIR SORTED; SUB ANGULAR IN PART TO SUB ROUND; LOW SPHERICITY; SOME FROSTED SURFACE FEATURES; FIRM TO SLI HARD; PREDOMINATELY CALCAREOUS CEMENT; SOME SILICA MATRIX CEMENT, FIRM GRAIN SUPPORT; FAIR VISUAL INTERGRANULAR POROSITY; TRACE BLACK TO GRAYISH SPECKLE CARBONACEOUS SHALE / LITHIC IMBEDDED.

SHALE = MODERATE TO DARK BROWNISH GRAY, MOD GRNISH GRAY; PULVERULENT, SUB CRUMBLY, TENACITY; PLANAR, SUB BLOCKY FRACTURES; DULL WAXY SLIGHT GREASY LUSTER; SUB WEDGELIKE, PLATY CUTTINGS HABIT; SILTY TO CLAYEY TEXTURE; TRACE LIGHT GRAY SILTSTONE LAMINATE / IMBEDDED TRACE SPECKLED PYRITIC IMBEDDED.

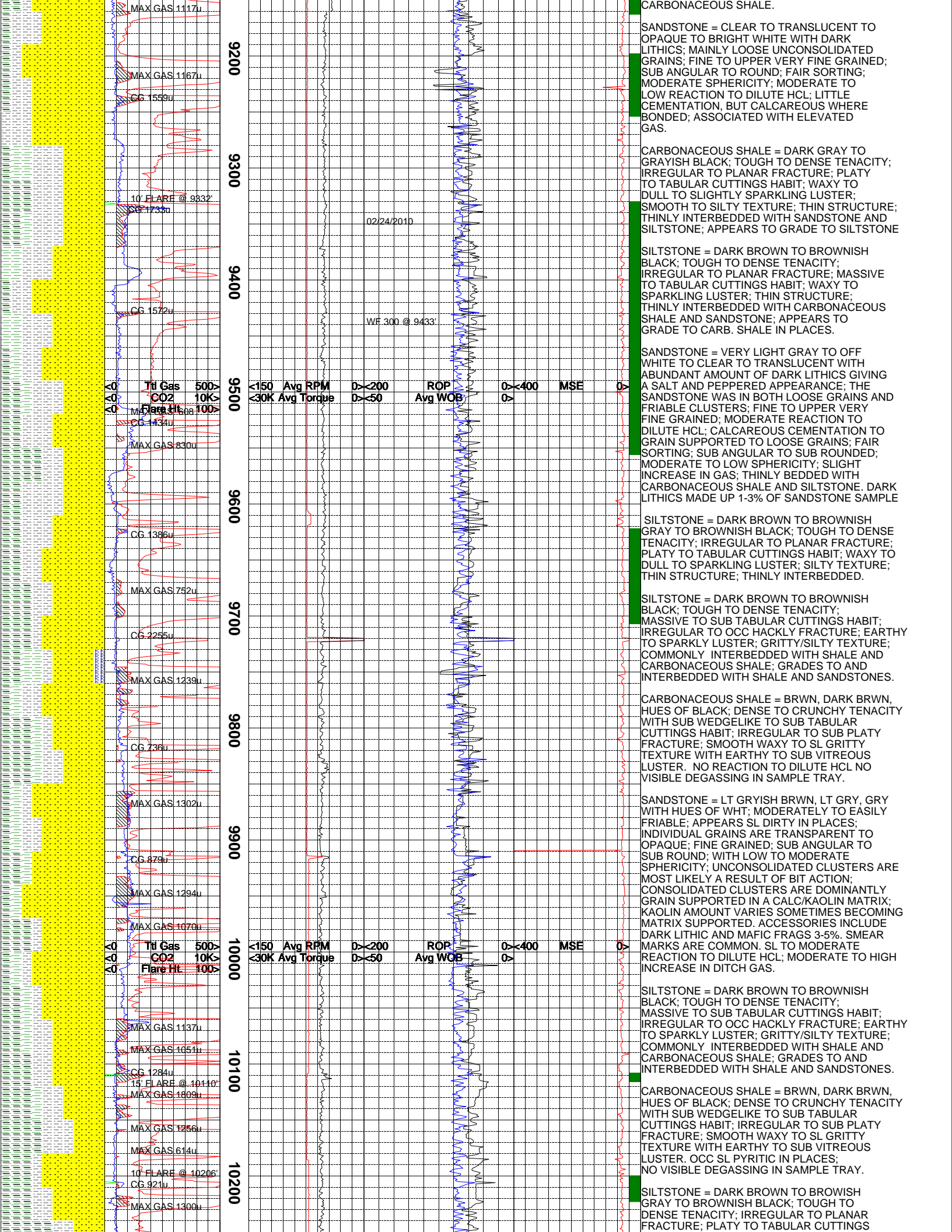
SILTSTONE = LIGHT BLUISH GRAY, MODERATE BROWNISH GRAY, OCCASIONAL DARK GRAY; BRITTLE TO VERY HARD TENACITY; SUB BLOCK TO IRREGULAR FRACTURE; FLAKY TO SUB PLATY CUTTINGS HABIT; SILTY GRADING TO GRITTY TEXTURE; DULL RESINOUS LUSTER; TRACE VERY FINE SANDSTONE LAMINATE; OCCASIONAL FRACMENTS GRADING TO SANDSTONE.

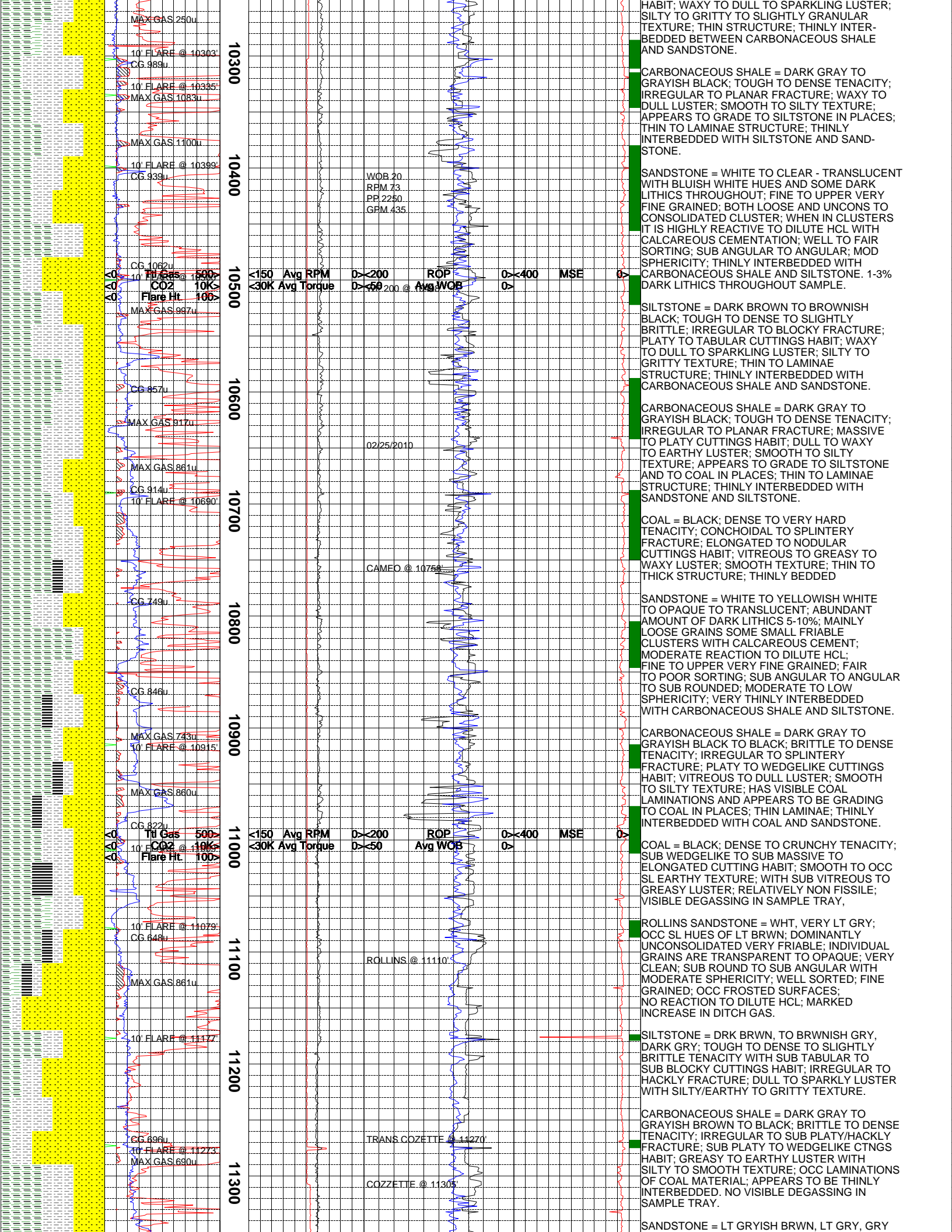
CARBONACEOUS SHALE = DARK BROWN, MOD TO DARK BLACKISH BROWN; CRUMBLY TO DENSE TENACITY, SUB BLOCKY, BLOCKY, FRACTURE; SUB WEDGELIKE TO PLANAR CUTTING HABIT; CLAYEY GRADING TO GRITTY TEXTURE; DULL EARTHY, SLIGHT



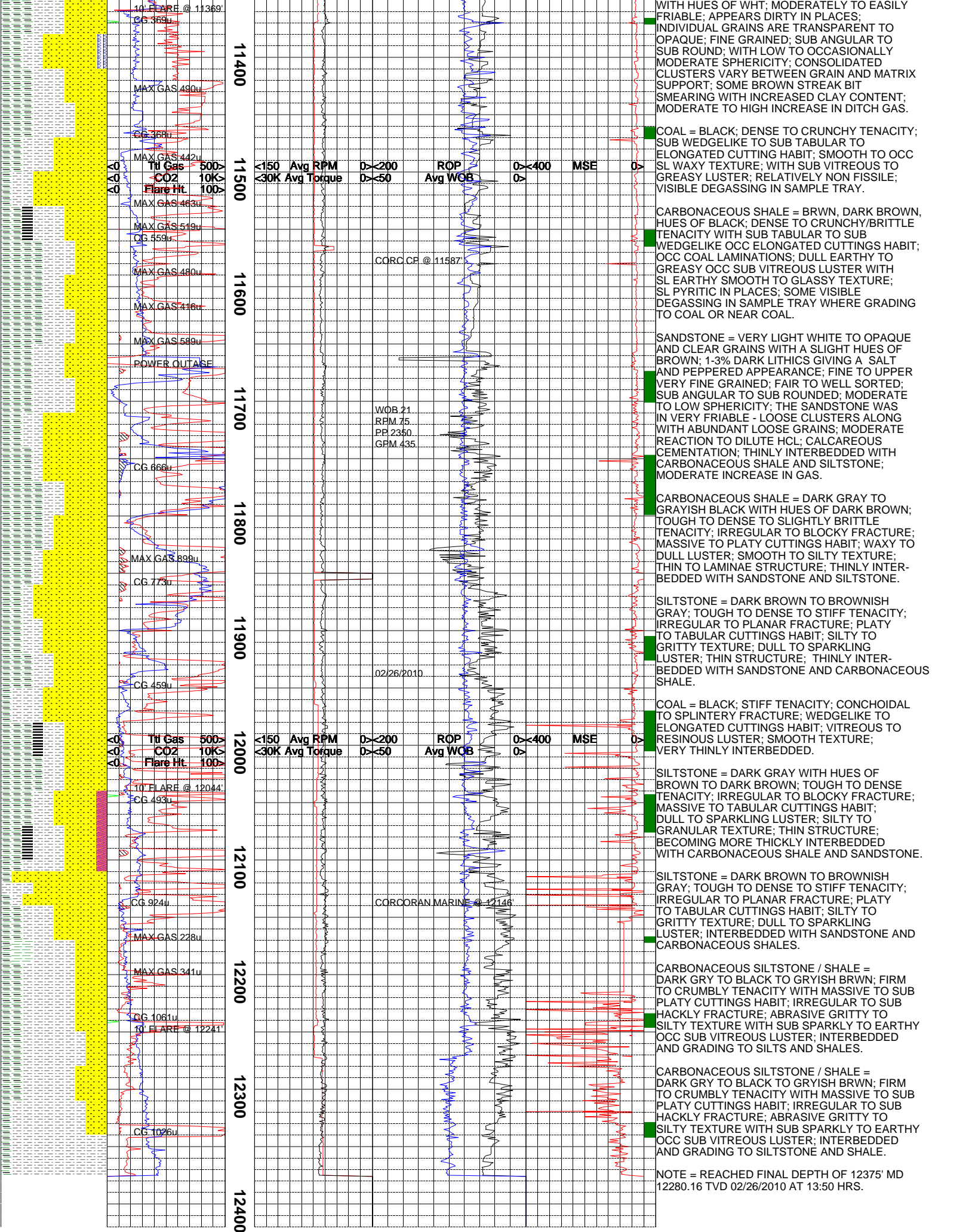












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