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Drilling Dynamics MD

COMPANY ExxonMobil Production

WELL PCU 197-34B7

FIELD PICEANCE CREEK

REGION ROCKY MOUNTAINS

COORDINATES 39.915669000
108.261250000

ELEVATION 6647.9'

COUNTY, STATE RIO BLANCO, CO

API INDEX 05-103-11086-00

SPUD DATE 9/16/2009

CONTRACTOR H_P

CO. REP. S. GUYOTE, W. GARNER

RIG/TYPE # 320/FLEX 4S+

LOGGING UNIT MLU 032

GEOLOGISTS J. KEEVAN, C. RECORD
C. PIERCE

ADD. PERSONS M. PIPER, B. HICKS
T. WALKER

CO. GEOLOGIST CHRIS ALBA

LOG INTERVAL

CASING DATA

DEPTHS: 4022' TO 12990'

DATES: 9/16/2009 TO 12/13/2009

SCALE: 1"=100'

16" AT 130'

10.75" AT 3990'

7" AT 9220'

AT

MUD TYPES

HOLE SIZE

LSND TO 4022'

LIGCO TO 12990'

TO

TO

14.75" TO 4022'

9.875" TO 9100'

6.125" TO 12990'

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	

Lithology	<0	Ttl Gas	1.5K
	<325	CO2	10K
	<0	Flare Ht.	100
		units	
		ppm	
		ft	

<150	Avg RPM	0	<200	ROP	0	<400	MSE	0
<30K	Avg Torque	0	<50	Avg WOB	0			
	FTLBS			klbs				
				ft/hr			psi	

Remarks
Survey Data, Mud Reports, Other Info.

<0	Ttl Gas	100Y
<325	CO2	5K
<0	Flare Hit	100Y

<150	Avg RPM	0	<200	ROP	0	<400	MSE	0
<30K	Avg Torque	0	<50	Avg WOB	0			

EPOCH WELL SERVICES COMMENCED MUDLOGGING ON THE EXXONMOBIL PCU 197-34B7 WELL ON 09/16/2009 AT 4022' MD. ALL COLORS ARE REFERENCED TO THE GSA ROCK COLOR CHART. ALL TRIP AND CONNECTION GASSES ARE REFERENCED ABOVE BACKGROUND; ALL OTHER ARE ABSOLUTE.

MAX CO2 7084 ppm

9/7/09 19:38
 DAY TOUR
 WOB 30
 RPM 85
 PP 2200
 GPM 530

1% METH. EQUIV. = 50 UNITS = 10000 = PPM
 10 3/4" CASING @ 3990' PIT 12.0 PPG [E]

MAX CO2 7084 ppm

9/17/09
 NIGHT TOUR

SANDSTONE = GRAYISH PINK TO WHITE IN COLOR; QUARTZ FRAMEWORK; MEDIUM TO FINE GRAIN SIZE; SAMPLE IS FAIR TO WELL SORTED; GRAINS ARE SUBANGULAR TO SUBROUNDED WITH MODERATE SPHERICITY; HARDNESS RANGES FROM EASILY TO FIRMLY FRIBALE; CALCITE CEMENT; NO DISCERNIBLE ACCESSORIES; NO VISIBLE PORE SPACES; NO GAS SHOWS FROM THIS SAND.

MAX CO2 7084 ppm

9/17/09

LIMESTONE = VERY PALE BLUE TO BLUISH WHITE IN COLOR; SAMPLE IS PARTICLE DOMINATED WITH NON SKELETAL PARTICLES; LIME MUD MATRIX WITH POINT CONTACT FABRIC; INTRAPARTICULAR POROSITY.

MAX CO2 7084 ppm

9/17/09

SILTSTONE = GRAYISH RED TO DARK YELLOWISH ORANGE IN COLOR; BRITTLE TO PULVERANT TENACITY; BLOCKY TO MOTTLED FRACTURE; CUTTINGS ARE NODULAR TO EQUANT IN APPEARANCE; DULL TO EARTHY LUSTER EXHIBITED; SILTY TO GRITTY, ALMOST GRANULAR TEXTURE; THIN TO THICK STRUCTURE APPARENT.

MAX CO2 7084 ppm

9/17/09

SHALE = MEDIUM TO DARK GRAY IN COLORING; BRITTLE IN TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO ELONGATED CUTTINGS HABIT; WAXY TO GREASY LUSTER WITH A SMOOTH TEXTURE AND THIN TO LAMINAE STRUCTURE.

MAX CO2 7084 ppm

9/17/09

SANDSTONE = VERY LIGHT TO MEDIUM GRAY IN COLORING; QUARTZ FRAMEWORK WITH ABOUT 1% LITHIC SHOWS; FAIR TO MODERATE SORTING OR COARSE GRAIN SIZING WITH MODERATE SPHERICITY AND SUBROUNDED TO SUBANGULARITY; FRIABLE TO FIRMLY FRIABLE GRAIN SUPPORTED MATERIAL WITH CALCITIC CEMENTATION; NO OIL SHOWS AND VERY LOW GAS SHOWS ASSOCIATED WITH THIS SAMPLE.

MAX CO2 7084 ppm

9/17/09

SILTSTONE = OLIVE GRAY TO MEDIUM GRAY IN COLOR; DENSE TO CRUMBLY TENACITY; IRREGULAR TO CONCHOIDAL FRACTURE; CUTTINGS ARE WEDGELIKE TO NODULAR IN APPEARANCE; DULL TO EARTHY LUSTER EXHIBITED; SILTY TO GRITTY TEXTURE; THICK TO NEARLY MASSIVE STRUCTURE APPARENT.

MAX CO2 7084 ppm

9/17/09

SHALE = LIGHT BLUISH GRAY TO LIGHT GRAY IN COLOR; BRITTLE TO CRUNCHY TENACITY; SAMPLE SHOWS BLOCKY TO CONCHOIDAL FRACTURE; CUTTINGS ARE PLATY TO SCALY IN HABIT; GREASY TO DULL LUSTER EXHIBITED SMOOTH TO CLAYEY TEXTURE; THIN STRUCTURE APPARENT.

MAX CO2 7084 ppm

9/17/09

SANDSTONE = LIGHT GRAY TO WHITE IN COLOR QUARTZ FRAMEWORK WITH SOME CALCITE AND FELSPAR GRAINS; VERY FINE TO MEDIUM GRAIN SIZE; ROUNDED TO SUBANGULAR WITH MODERATE SPHERICITY; FRIABLE TO MODERATELY HARD; CALCITE CEMENT; NO VISIBLE PORE SPACES; NO GAS SHOWS; CHLORITE GRAINS VISIBLE IN MATRIX.

MAX CO2 7084 ppm

9/17/09

SILTSTONE = LIGHT TO MEDIUM GRAY WITH REDDISH BROWN AND YELLOWISH GRAY IN COLORING; DENSE IN TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO ELONGATED CUTTINGS HABIT; EARTHY TO FROSTED LUSTER WITH A SILTY TEXTURE AND A THIN STRUCTURE.

MAX CO2 7084 ppm

9/17/09

SHALE = LIGHT TO MEDIUM GRAY WITH GRAYISH BLUE GREEN COLORATION; BRITTLE IN TENACITY WITH BLOCKY TO SPLINTERY FRACTURING IN A TABULAR TO ELONGATED CUTTINGS HABIT; WAXY TO GREASY LUSTER WITH A SMOOTH TEXTURE AND A THIN TO LAMINAE STRUCTURE.

MAX CO2 7084 ppm

9/17/09

SANDSTONE = VERY LIGHT TO MEDIUM GRAY IN COLORING; QUARTZ FRAMEWORK WITH ABOUT

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MAX CO2 7084 ppm

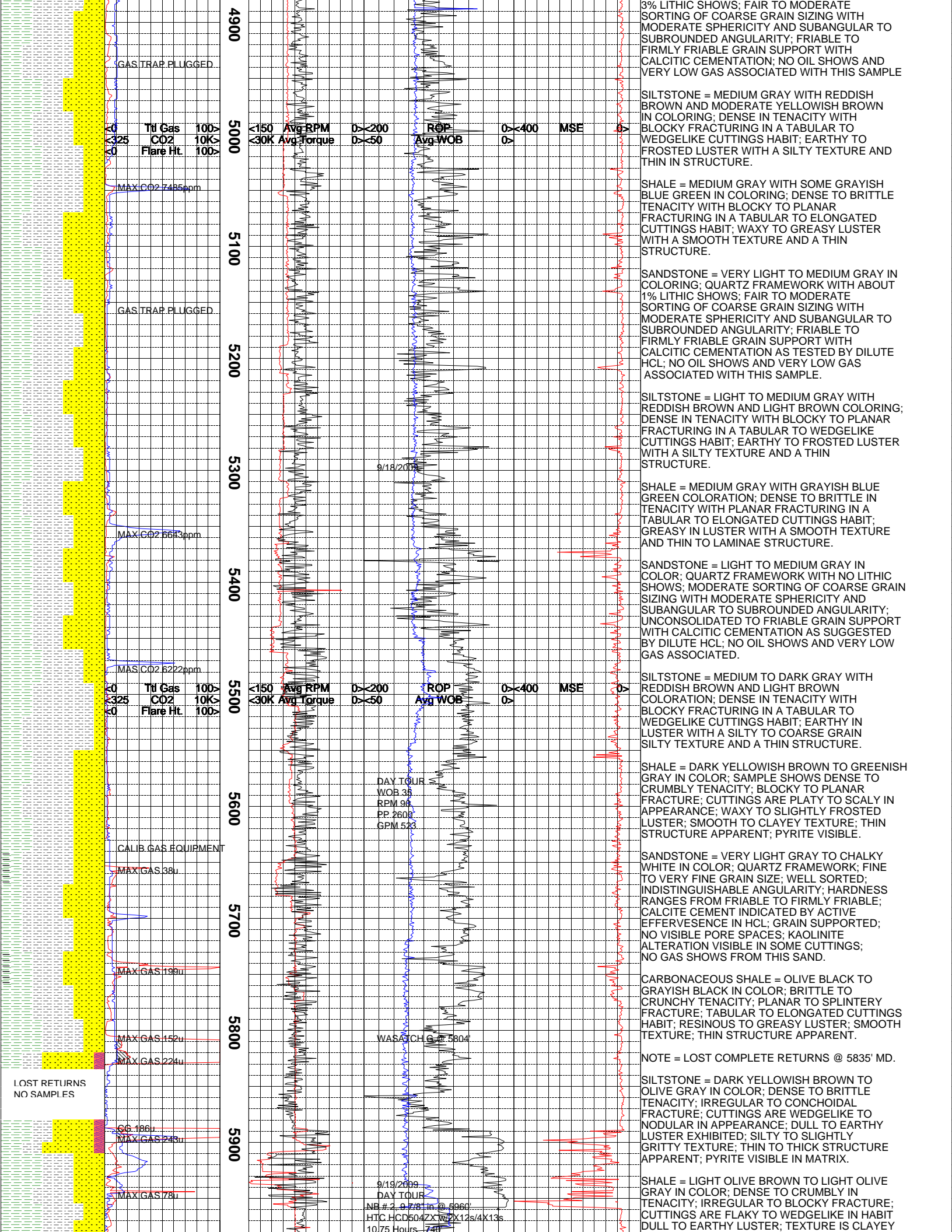
9/17/09

SANDSTONE = VERY LIGHT TO MEDIUM GRAY IN COLORING; QUARTZ FRAMEWORK WITH ABOUT

MAX CO2 7084 ppm

9/17/09

SANDSTONE = VERY LIGHT TO MEDIUM GRAY IN COLORING; QUARTZ FRAMEWORK WITH ABOUT



GAS TRAP PLUGGED

AC Ttl Gas 100Y
 <325 CO2 10K
 <0 Flare Hit 100Y

MAX CO2 7485ppm

GAS TRAP PLUGGED

MAX CO2 6643ppm

MAX CO2 6222ppm

AC Ttl Gas 100Y
 <325 CO2 10K
 <0 Flare Hit 100Y

CALIB GAS EQUIPMENT

MAX GAS 38u

MAX GAS 199u

MAX GAS 152u

MAX GAS 224u

GC 186u

MAX GAS 243u

MAX GAS 78u

LOST RETURNS
 NO SAMPLES

<150 Avg RPM >><200 ROP >><400 MSE >>
 <30K Avg Torque >><50 Avg WOB >>

9/18/2009

DAY TOUR
 WOB 35
 RPM 96
 PP 2600
 GPM 523

WASATCH 12 5804

9/19/2009
 DAY TOUR
 NB # 2 97781m @ 5966
 HTC HCD504ZX12s/4X13s
 1075 Hours - 74

3% LITHIC SHOWS; FAIR TO MODERATE SORTING OF COARSE GRAIN SIZING WITH MODERATE SPHERICITY AND SUBANGULAR TO SUBROUNDED ANGULARITY; FRIABLE TO FIRMLY FRIABLE GRAIN SUPPORT WITH CALCITIC CEMENTATION; NO OIL SHOWS AND VERY LOW GAS ASSOCIATED WITH THIS SAMPLE

SILTSTONE = MEDIUM GRAY WITH REDDISH BROWN AND MODERATE YELLOWISH BROWN IN COLORING; DENSE IN TENACITY WITH BLOCKY FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; EARTHY TO FROSTED LUSTER WITH A SILTY TEXTURE AND THIN IN STRUCTURE.

SHALE = MEDIUM GRAY WITH SOME GRAYISH BLUE GREEN IN COLORING; DENSE TO BRITTLE TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO ELONGATED CUTTINGS HABIT; WAXY TO GREASY LUSTER WITH A SMOOTH TEXTURE AND A THIN STRUCTURE.

SANDSTONE = VERY LIGHT TO MEDIUM GRAY IN COLORING; QUARTZ FRAMEWORK WITH ABOUT 1% LITHIC SHOWS; FAIR TO MODERATE SORTING OF COARSE GRAIN SIZING WITH MODERATE SPHERICITY AND SUBANGULAR TO SUBROUNDED ANGULARITY; FRIABLE TO FIRMLY FRIABLE GRAIN SUPPORT WITH CALCITIC CEMENTATION AS TESTED BY DILUTE HCL; NO OIL SHOWS AND VERY LOW GAS ASSOCIATED WITH THIS SAMPLE.

SILTSTONE = LIGHT TO MEDIUM GRAY WITH REDDISH BROWN AND LIGHT BROWN COLORING; DENSE IN TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; EARTHY TO FROSTED LUSTER WITH A SILTY TEXTURE AND A THIN STRUCTURE.

SHALE = MEDIUM GRAY WITH GRAYISH BLUE GREEN COLORING; DENSE TO BRITTLE IN TENACITY WITH PLANAR FRACTURING IN A TABULAR TO ELONGATED CUTTINGS HABIT; GREASY IN LUSTER WITH A SMOOTH TEXTURE AND THIN TO LAMINAE STRUCTURE.

SANDSTONE = LIGHT TO MEDIUM GRAY IN COLOR; QUARTZ FRAMEWORK WITH NO LITHIC SHOWS; MODERATE SORTING OF COARSE GRAIN SIZING WITH MODERATE SPHERICITY AND SUBANGULAR TO SUBROUNDED ANGULARITY; UNCONSOLIDATED TO FRIABLE GRAIN SUPPORT WITH CALCITIC CEMENTATION AS SUGGESTED BY DILUTE HCL; NO OIL SHOWS AND VERY LOW GAS ASSOCIATED.

SILTSTONE = MEDIUM TO DARK GRAY WITH REDDISH BROWN AND LIGHT BROWN COLORATION; DENSE IN TENACITY WITH BLOCKY FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; EARTHY IN LUSTER WITH A SILTY TO COARSE GRAIN SILTY TEXTURE AND A THIN STRUCTURE.

SHALE = DARK YELLOWISH BROWN TO GREENISH GRAY IN COLOR; SAMPLE SHOWS DENSE TO CRUMBLY TENACITY; BLOCKY TO PLANAR FRACTURE; CUTTINGS ARE PLATY TO SCALY IN APPEARANCE; WAXY TO SLIGHTLY FROSTED LUSTER; SMOOTH TO CLAYEY TEXTURE; THIN STRUCTURE APPARENT; PYRITE VISIBLE.

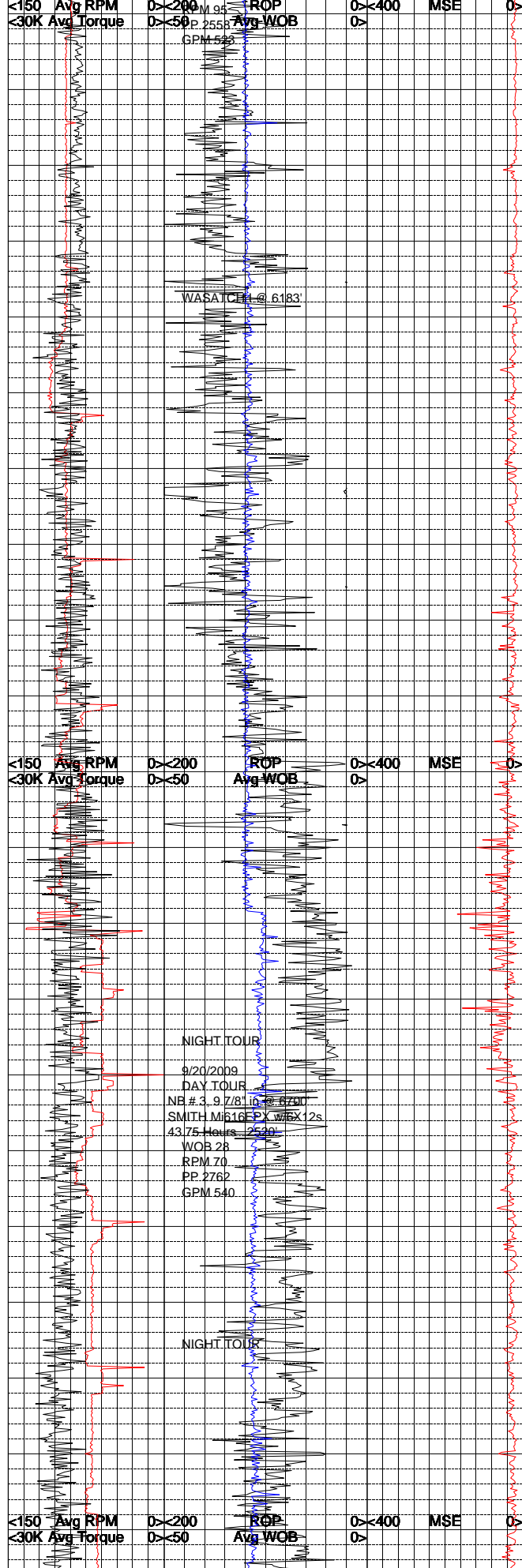
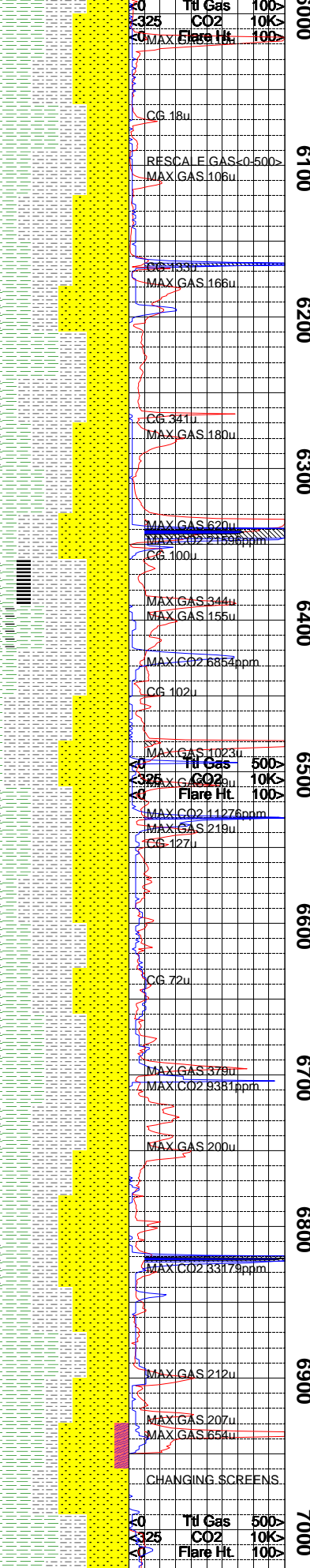
SANDSTONE = VERY LIGHT GRAY TO CHALKY WHITE IN COLOR; QUARTZ FRAMEWORK; FINE TO VERY FINE GRAIN SIZE; WELL SORTED; INDISTINGUISHABLE ANGULARITY; HARDNESS RANGES FROM FRIABLE TO FIRMLY FRIABLE; CALCITE CEMENT INDICATED BY ACTIVE EFFERVESECE IN HCL; GRAIN SUPPORTED; NO VISIBLE PORE SPACES; KAOLINITE ALTERATION VISIBLE IN SOME CUTTINGS; NO GAS SHOWS FROM THIS SAND.

CARBONACEOUS SHALE = OLIVE BLACK TO GRAYISH BLACK IN COLOR; BRITTLE TO CRUNCHY TENACITY; PLANAR TO SPLINTERY FRACTURE; TABULAR TO ELONGATED CUTTINGS HABIT; RESINOUS TO GREASY LUSTER; SMOOTH TEXTURE; THIN STRUCTURE APPARENT.

NOTE = LOST COMPLETE RETURNS @ 5835' MD.

SILTSTONE = DARK YELLOWISH BROWN TO OLIVE GRAY IN COLOR; DENSE TO BRITTLE TENACITY; IRREGULAR TO CONCHOIDAL FRACTURE; CUTTINGS ARE WEDGELIKE TO NODULAR IN APPEARANCE; DULL TO EARTHY LUSTER EXHIBITED; SILTY TO SLIGHTLY GRITTY TEXTURE; THIN TO THICK STRUCTURE APPARENT; PYRITE VISIBLE IN MATRIX.

SHALE = LIGHT OLIVE BROWN TO LIGHT OLIVE GRAY IN COLOR; DENSE TO CRUMBLY IN TENACITY; IRREGULAR TO BLOCKY FRACTURE; CUTTINGS ARE FLAKY TO WEDGELIKE IN HABIT DULL TO EARTHY LUSTER; TEXTURE IS CLAYEY



TO SILTY; THIN TO LAMINAE STRUCTURE APPARENT; SLIGHTLY CALCAREOUS.

SANDSTONE = WHITE TO NEARLY TRANSLUCENT IN COLOR; QUARTZ FRAMEWORK WITH ABOUT 3-5% BLACK LITHIC CLASTS; COARSE TO FINE GRAIN SIZE; POOR TO FAIR SORTED; GRAINS ARE ANGULAR TO SUBROUNDED WITH LOW TO MODERATE SPHERICITY; FRIABLE TO MODERATELY HARD; CALCITE CEMENT; NO VISIBLE PORE SPACING; LOW TO MODERATE GAS SHOWS IN THIS SAND.

SILTSTONE = MODERATE REDDISH BROWN TO MODERATE BROWN IN COLOR; DENSE TO CRUNCHY TENACITY; SAMPLE HAS IRREGULAR TO CONCHOIDAL FRACTURE; WEDGELIKE TO NODULAR CUTTINGS HABIT; DULL TO EARTHY LUSTER; SILTY TO GRANULAR TEXTURE WITH OCCASIONAL SPECIMEN SEEN GRADING INTO FINE SANDSTONE; THIN STRUCTURE APPARENT.

CARBONACEOUS SHALE = GRAYISH BLACK TO BLACK IN COLOR; BRITTLE TO NEARLY PULVERANT IN TENACITY; SPLINTERY TO BLOCKY FRACTURE; CUTTINGS ARE ELONGATED TO EQUANT IN APPEARANCE; RESINOUS TO GREASY LUSTER EXHIBITED; SMOOTH TO SILTY TEXTURE; THIN TO LAMINAE STRUCTURE APPARENT.

SHALE = MEDIUM LIGHT GRAY TO DARK GRAY IN COLOR; DENSE TO CRUMBLY IN TENACITY; FRACTURE RANGES FROM BLOCKY TO PLANAR; CUTTINGS ARE FLAKY TO TABULAR IN HABIT; WAXY TO DULL LUSTER EXHIBITED; SMOOTH TO CLAYEY TEXTURE; THIN STRUCTURE APPARENT.

COAL = DARK GRAY TO GRAYISH BLACK IN COLOR; DENSE TO BRITTLE IN TENACITY; BLOCKY TO PLANAR FRACTURE; CUTTINGS ARE TABULAR TO WEDGELIKE IN APPEARANCE; METALIC TO RESINOUS LUSTER; TEXTURE RANGES FROM SMOOTH TO SLIGHTLY SILTY; THIN STRUCTURE APPARENT; FAIR AMOUNT OF PYRITE BANDING VISIBLE IN SAMPLE.

SANDSTONE = WHITE TO YELLOWISH GRAY IN COLOR; QUARTZ FRAMEWORK; MEDIUM TO VERY FINE GRAIN SIZE; FAIR TO WELL SORTED; GRAINS ARE ROUNDED TO SUBANGULAR WITH MODERATE TO HIGH SPHERICITY; SAMPLE IS EASILY TO FIRMLY FRIABLE; CALCITE CEMENT SAMPLE IS GRAIN SUPPORTED WITH POINT CONTACT FABRIC; SOME INTERBEDDING WITH SILTSTONES VISIBLE; MODERATE TO HIGH GAS SHOWS IN THIS SANDSTONE.

SILTSTONE = YELLOWISH GRAY TO LIGHT BROWNISH GRAY IN COLOR; BRITTLE TO TOUGH IN TENACITY; BLOCKY TO CONCHOIDAL FRACTURE; WEDGELIKE TO TABULAR CUTTINGS HABIT; EARTHY TO DULL LUSTER EXHIBITED; SILTY TO GRITTY TEXTURE; THIN STRUCTURE APPARENT.

CARBONACEOUS SHALE = BLACKISH IN COLOR; FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; RESINOUS IN LUSTER WITH A SMOOTH TEXTURE AND A THIN STRUCTURE.

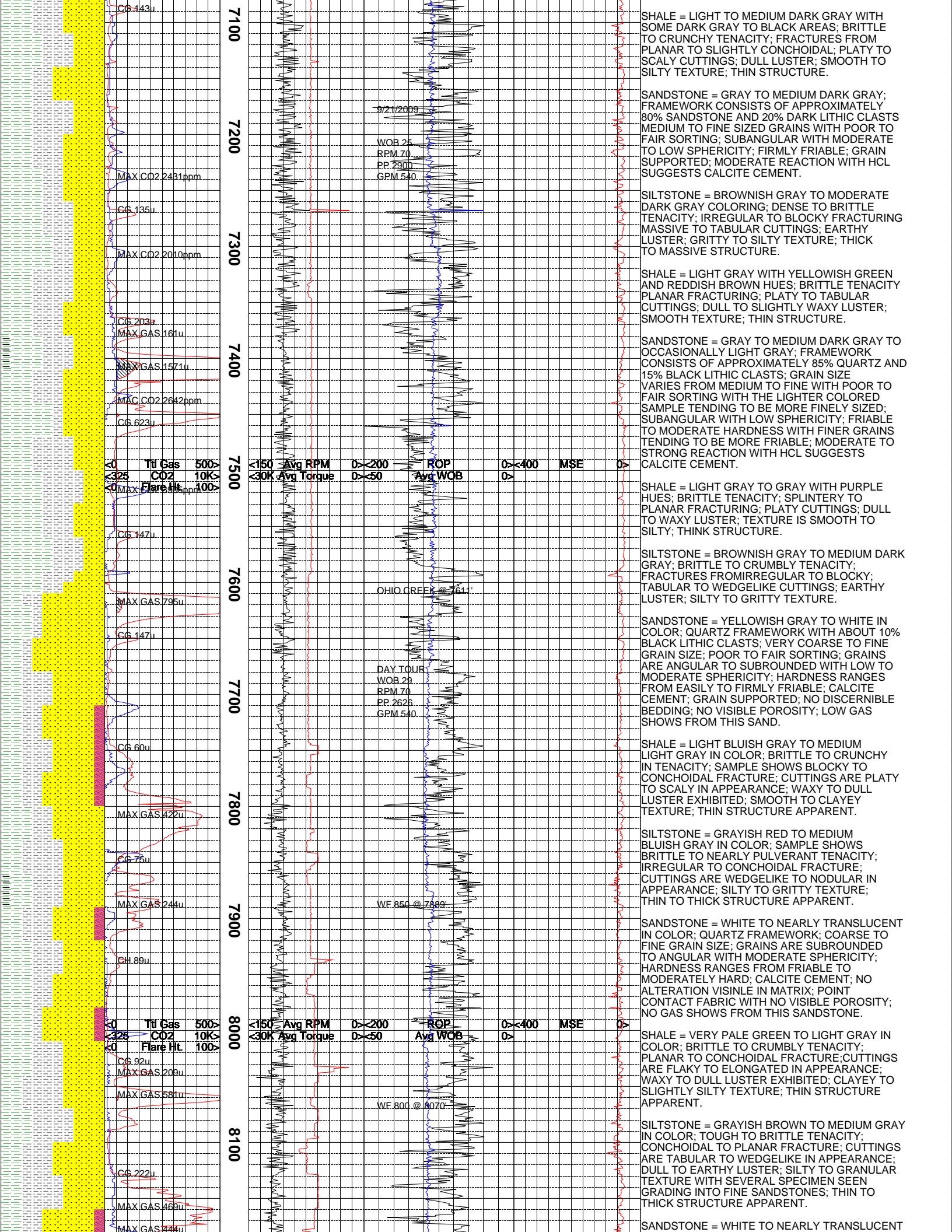
SHALE = LIGHT BLuish GRAY TO MEDIUM BLuish GRAY IN COLOR; BRITTLE TO CRUNCHY TENACITY; PLANAR TO CONCHOIDAL FRACTURE; CUTTINGS ARE PLATY TO SCALY IN HABIT; WAXY TO EARTHY LUSTER EXHIBITED; SMOOTH TO SLIGHTLY SILTY TEXTURE; THIN STRUCTURE

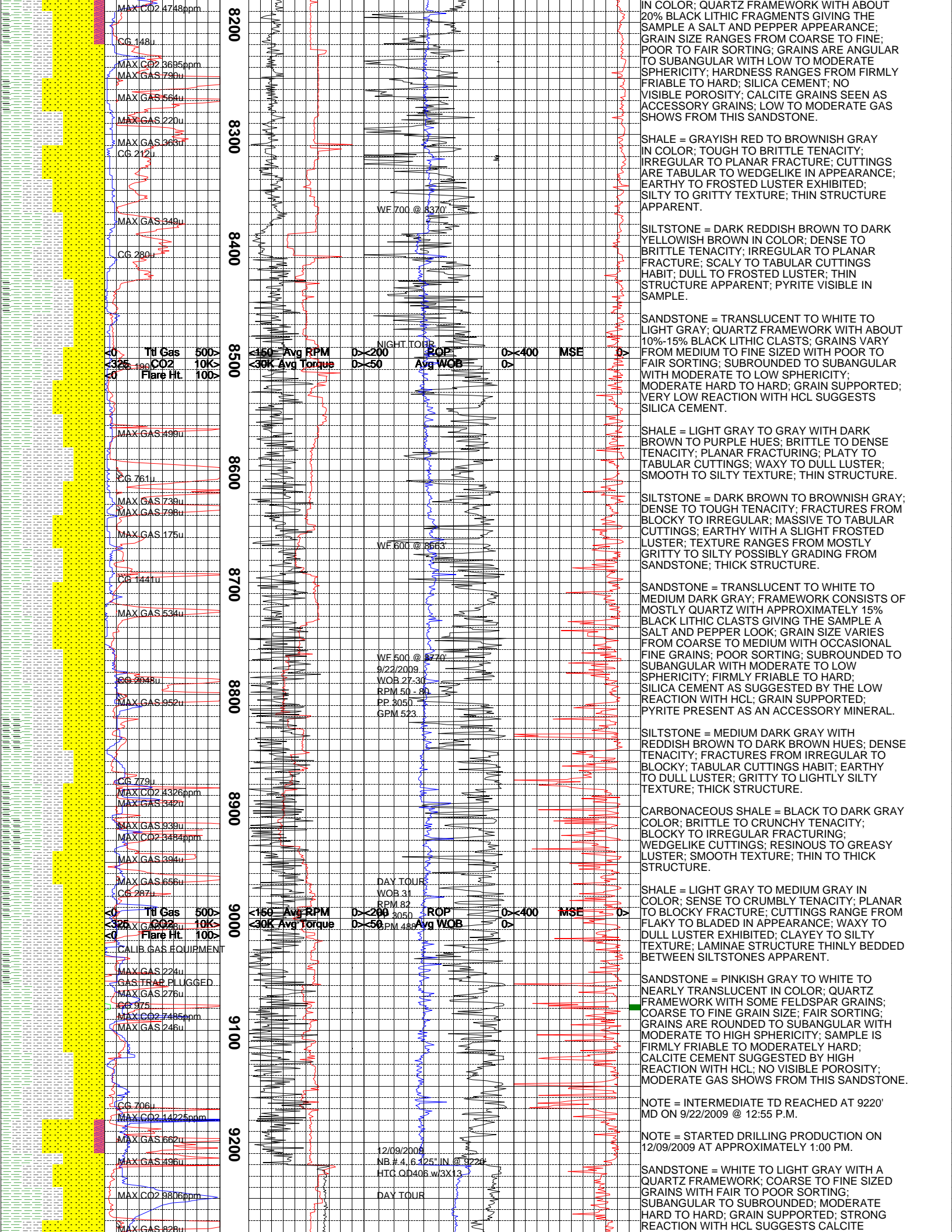
SANDSTONE = GRAYISH YELLOW GREEN TO YELLOWISH GRAY IN COLOR; QUARTZ FRAMEWORK MEDIUM TO FINE GRAIN SIZE; SAMPLE IS FAIR TO WELL SORTED; GRAINS ARE ROUNDED TO SUBANGULAR WITH MODERATE TO HIGH SPHERICITY; HARDNESS RANGES FROM FRIABLE TO MODERATELY HARD; CALCITE CEMENT; NO DISCERNIBLE BEDDING; NO VISIBLE POROSITY LOW GAS SHOWS FROM THIS SANDSTONE.

SHALE = LIGHT GRAY TO YELLOWISH GREENISH GRAY WITH A SLIGHT BLUE HUE; BRITTLE TENACITY; FRACTURES FROM PLANAR TO SLIGHTLY SPLINTERY; SCALY TO PLATY CUTTINGS; DULL LUSTER; SMOOTH TO SILTY TEXTURE; THIN STRUCTURE.

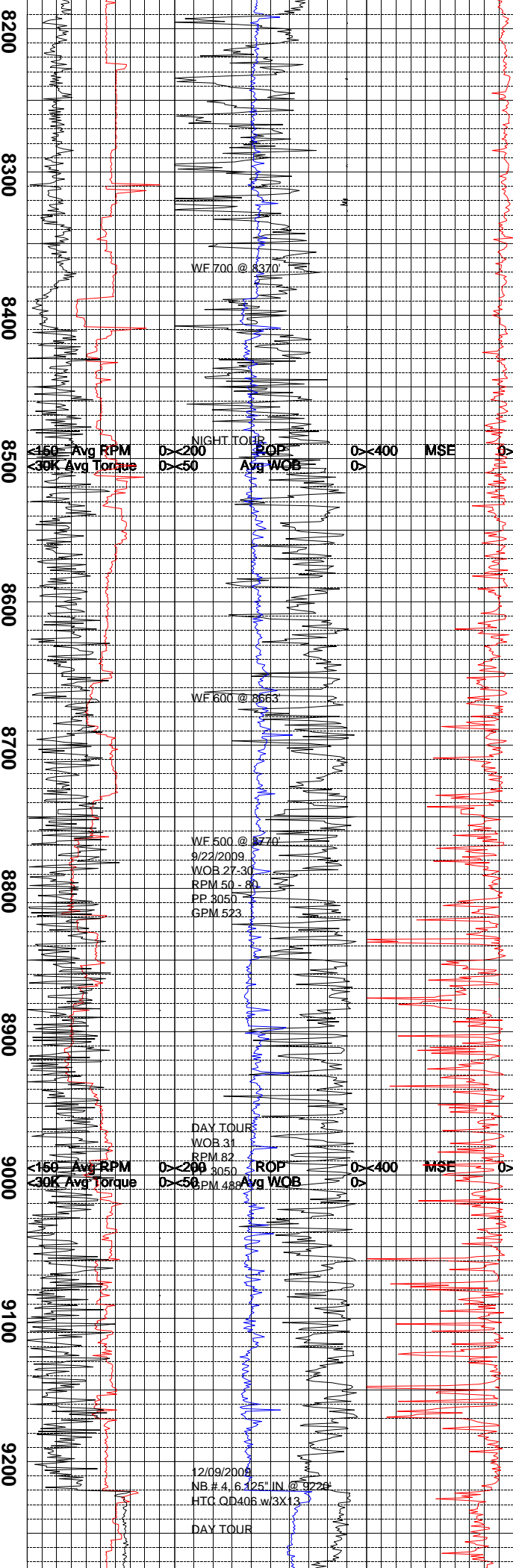
SANDSTONE = WHITE TO LIGHT GRAY TO GRAY COLORING; FRAMEWORK CONSISTS OF APPROXIMATELY 75% QUARTZ AND 25% BLACK LITHIC CLASTS; COARSE TO MEDIUM SIZED GRAINS WITH POOR SORTING; SUBANGULAR WITH LOW SPHERICITY; EASILY FRIABLE TO MODERATE HARDNESS; STRONG REACTION WITH HCL SUGGESTS CALCITE CEMENT; MATRIX SUPPORTED.

SILTSTONE = MEDIUM DARK GRAY TO BROWNISH GRAY; BRITTLE TO CRUNCHY TENACITY; FRACTURES FROM IRREGULAR TO BLOCKY; TABULAR CUTTINGS; EARTHY TO DULL LUSTER; SILTY TO GRITTY TEXTURE; THIN STRUCTURE.





MAX CO2 4748ppm
CG 148u
MAX GAS 23695ppm
MAX GAS 799u
MAX GAS 564u
MAX GAS 220u
MAX GAS 365u
CG 212u
MAX GAS 349u
CG 280u
MAX GAS 499u
CG 761u
MAX GAS 739u
MAX GAS 798u
MAX GAS 175u
CG 1441u
MAX GAS 534u
CG 2048u
MAX GAS 952u
CG 779u
MAX CO2 4326ppm
MAX GAS 342u
MAX GAS 939u
MAX CO2 3484ppm
MAX GAS 394u
MAX GAS 666u
CG 287u
CALIB GAS EQUIPMENT
MAX GAS 224u
GAS TRAP PLUGGED
MAX GAS 276u
CG 975
MAX CO2 7485ppm
MAX GAS 246u
CG 706u
MAX CO2 14225ppm
MAX GAS 662u
MAX GAS 496u
MAX CO2 9806ppm
MAX GAS 828u



IN COLOR; QUARTZ FRAMEWORK WITH ABOUT 20% BLACK LITHIC FRAGMENTS GIVING THE SAMPLE A SALT AND PEPPER APPEARANCE; GRAIN SIZE RANGES FROM COARSE TO FINE; POOR TO FAIR SORTING; GRAINS ARE ANGULAR TO SUBANGULAR WITH LOW TO MODERATE SPHERICITY; HARDNESS RANGES FROM FIRMLY FRIABLE TO HARD; SILICA CEMENT; NO VISIBLE POROSITY; CALCITE GRAINS SEEN AS ACCESSORY GRAINS; LOW TO MODERATE GAS SHOWS FROM THIS SANDSTONE.

SHALE = GRAYISH RED TO BROWNISH GRAY IN COLOR; TOUGH TO BRITTLE TENACITY; IRREGULAR TO PLANAR FRACTURE; CUTTINGS ARE TABULAR TO WEDGELIKE IN APPEARANCE; EARTHY TO FROSTED LUSTER EXHIBITED; SILTY TO GRITTY TEXTURE; THIN STRUCTURE APPARENT.

SILTSTONE = DARK REDDISH BROWN TO DARK YELLOWISH BROWN IN COLOR; DENSE TO BRITTLE TENACITY; IRREGULAR TO PLANAR FRACTURE; SCALY TO TABULAR CUTTINGS HABIT; DULL TO FROSTED LUSTER; THIN STRUCTURE APPARENT; PYRITE VISIBLE IN SAMPLE.

SANDSTONE = TRANSLUCENT TO WHITE TO LIGHT GRAY; QUARTZ FRAMEWORK WITH ABOUT 10%-15% BLACK LITHIC CLASTS; GRAINS VARY FROM MEDIUM TO FINE SIZED WITH POOR TO FAIR SORTING; SUBROUNDED TO SUBANGULAR WITH MODERATE TO LOW SPHERICITY; MODERATE HARD TO HARD; GRAIN SUPPORTED; VERY LOW REACTION WITH HCL SUGGESTS SILICA CEMENT.

SHALE = LIGHT GRAY TO GRAY WITH DARK BROWN TO PURPLE HUES; BRITTLE TO DENSE TENACITY; PLANAR FRACTURING; PLATY TO TABULAR CUTTINGS; WAXY TO DULL LUSTER; SMOOTH TO SILTY TEXTURE; THIN STRUCTURE.

SILTSTONE = DARK BROWN TO BROWNISH GRAY; DENSE TO TOUGH TENACITY; FRACTURES FROM BLOCKY TO IRREGULAR; MASSIVE TO TABULAR CUTTINGS; EARTHY WITH A SLIGHT FROSTED LUSTER; TEXTURE RANGES FROM MOSTLY GRITTY TO SILTY POSSIBLY GRADING FROM SANDSTONE; THICK STRUCTURE.

SANDSTONE = TRANSLUCENT TO WHITE TO MEDIUM DARK GRAY; FRAMEWORK CONSISTS OF MOSTLY QUARTZ WITH APPROXIMATELY 15% BLACK LITHIC CLASTS GIVING THE SAMPLE A SALT AND PEPPER LOOK; GRAIN SIZE VARIES FROM COARSE TO MEDIUM WITH OCCASIONAL FINE GRAINS; POOR SORTING; SUBROUNDED TO SUBANGULAR WITH MODERATE TO LOW SPHERICITY; FIRMLY FRIABLE TO HARD; SILICA CEMENT AS SUGGESTED BY THE LOW REACTION WITH HCL; GRAIN SUPPORTED; PYRITE PRESENT AS AN ACCESSORY MINERAL.

SILTSTONE = MEDIUM DARK GRAY WITH REDDISH BROWN TO DARK BROWN HUES; DENSE TENACITY; FRACTURES FROM IRREGULAR TO BLOCKY; TABULAR CUTTINGS HABIT; EARTHY TO DULL LUSTER; GRITTY TO LIGHTLY SILTY TEXTURE; THICK STRUCTURE.

CARBONACEOUS SHALE = BLACK TO DARK GRAY COLOR; BRITTLE TO CRUNCHY TENACITY; BLOCKY TO IRREGULAR FRACTURING; WEDGELIKE CUTTINGS; RESINOUS TO GREASY LUSTER; SMOOTH TEXTURE; THIN TO THICK STRUCTURE.

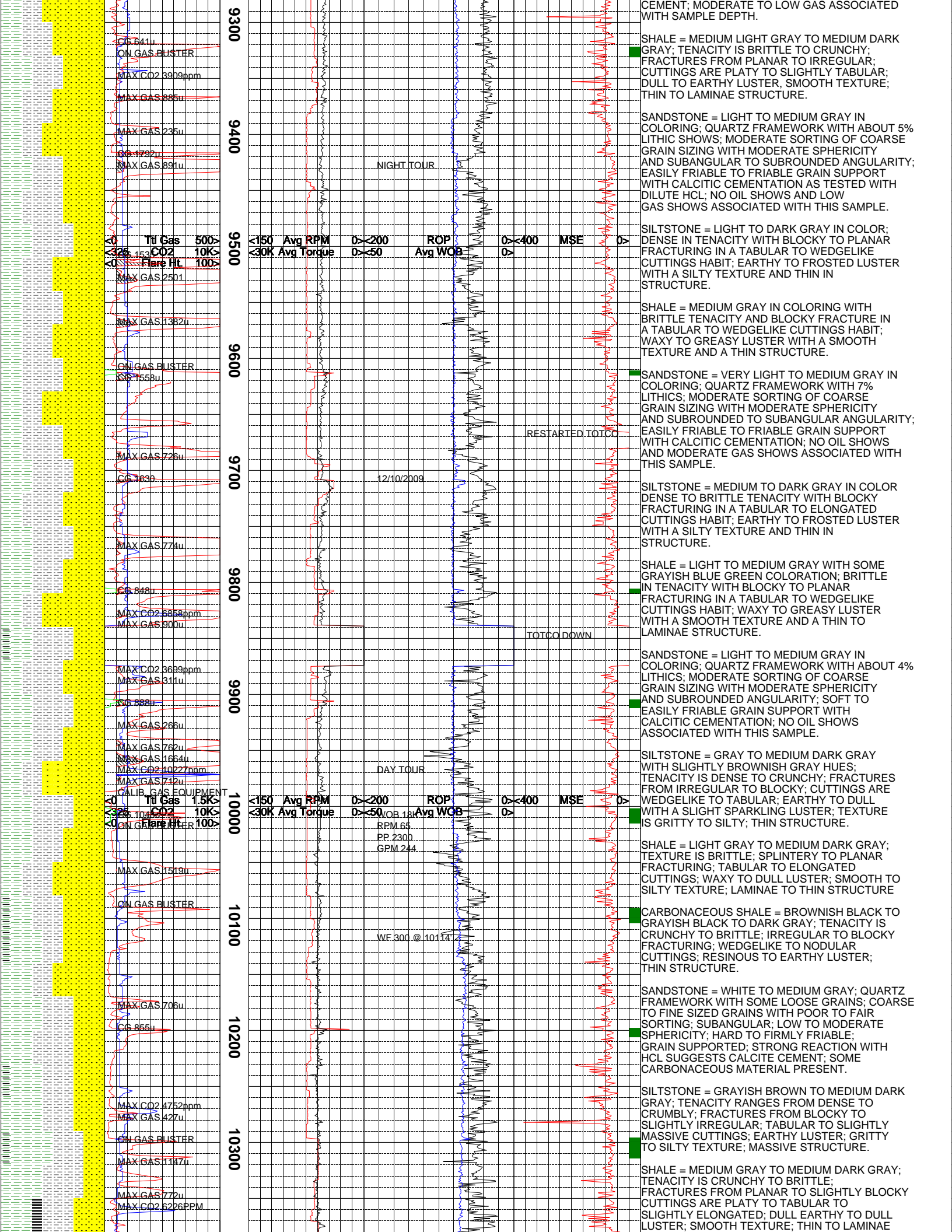
SHALE = LIGHT GRAY TO MEDIUM GRAY IN COLOR; SENSE TO CRUMBLY TENACITY; PLANAR TO BLOCKY FRACTURE; CUTTINGS RANGE FROM FLAKY TO BLADED IN APPEARANCE; WAXY TO DULL LUSTER EXHIBITED; CLAYEY TO SILTY TEXTURE; LAMINAE STRUCTURE THINLY BEDDED BETWEEN SILTSTONES APPARENT.

SANDSTONE = PINKISH GRAY TO WHITE TO NEARLY TRANSLUCENT IN COLOR; QUARTZ FRAMEWORK WITH SOME FELDSPAR GRAINS; COARSE TO FINE GRAIN SIZE; FAIR SORTING; GRAINS ARE ROUNDED TO SUBANGULAR WITH MODERATE TO HIGH SPHERICITY; SAMPLE IS FIRMLY FRIABLE TO MODERATELY HARD; CALCITE CEMENT SUGGESTED BY HIGH REACTION WITH HCL; NO VISIBLE POROSITY; MODERATE GAS SHOWS FROM THIS SANDSTONE.

NOTE = INTERMEDIATE TD REACHED AT 9220' MD ON 9/22/2009 @ 12:55 P.M.

NOTE = STARTED DRILLING PRODUCTION ON 12/09/2009 AT APPROXIMATELY 1:00 PM.

SANDSTONE = WHITE TO LIGHT GRAY WITH A QUARTZ FRAMEWORK; COARSE TO FINE SIZED GRAINS WITH FAIR TO POOR SORTING; SUBANGULAR TO SUBROUNDED; MODERATE HARD TO HARD; GRAIN SUPPORTED; STRONG REACTION WITH HCL SUGGESTS CALCITE

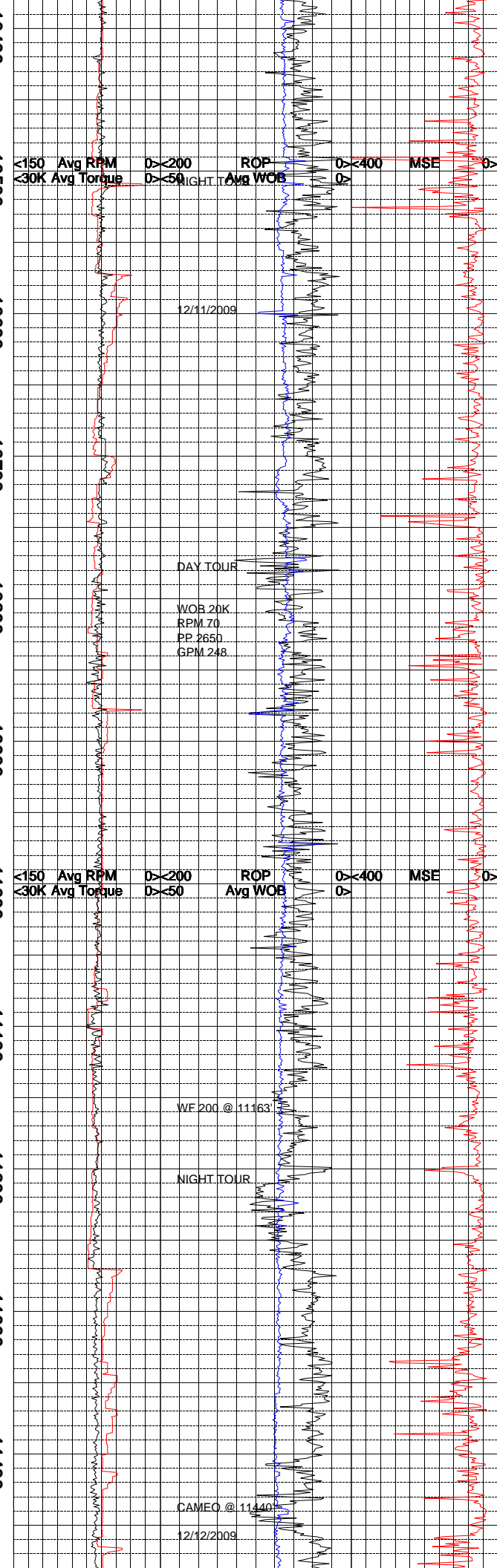
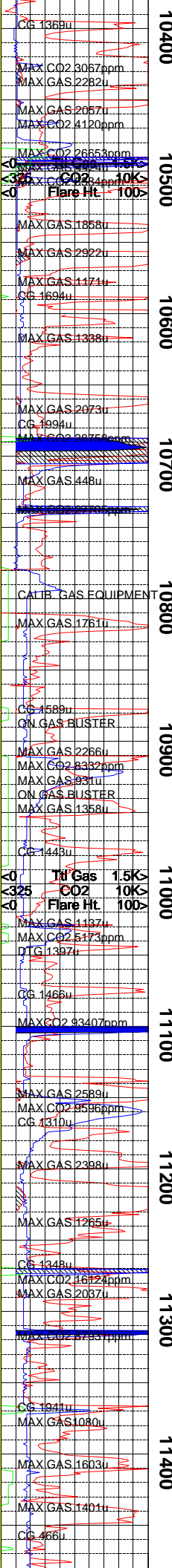


CC 841u
 ON GAS BUSTER
 MAX CO2 3909ppm
 MAX GAS 885u
 MAX GAS 235u
 CC 1792u
 MAX GAS 891u
 MAX GAS 2501
 MAX GAS 1382u
 ON GAS BUSTER
 CC 1558u
 MAX GAS 726u
 CC 1830
 MAX GAS 774u
 CC 848u
 MAX CO2 6858ppm
 MAX GAS 900u
 MAX CO2 3699ppm
 MAX GAS 311u
 CC 888u
 MAX GAS 266u
 MAX GAS 762u
 MAX GAS 1664u
 MAX CO2 10227ppm
 MAX GAS 742u
 CALIB. GAS EQUIPMENT
 MAX GAS 1519u
 ON GAS BUSTER
 MAX GAS 706u
 CC 865u
 MAX CO2 4752ppm
 MAX GAS 427u
 ON GAS BUSTER
 MAX GAS 1147u
 MAX GAS 772u
 MAX CO2 6226PPM

<150 Avg RPM
 <30K Avg Torque
 >200
 >50
 ROP
 Avg WOB
 >400
 MSE
 >

NIGHT TOUR
 RESTARTED TO TOCC
 12/10/2009
 TOTCO DOWN
 DAY TOUR
 R/OB 18K
 RPM 65
 PP 2300
 GPM 244
 WF 300 @ 10114'

CEMENT; MODERATE TO LOW GAS ASSOCIATED WITH SAMPLE DEPTH.
 SHALE = MEDIUM LIGHT GRAY TO MEDIUM DARK GRAY; TENACITY IS BRITTLE TO CRUNCHY; FRACTURES FROM PLANAR TO IRREGULAR; CUTTINGS ARE PLATY TO SLIGHTLY TABULAR; DULL TO EARTHY LUSTER, SMOOTH TEXTURE; THIN TO LAMINAE STRUCTURE.
 SANDSTONE = LIGHT TO MEDIUM GRAY IN COLORING; QUARTZ FRAMEWORK WITH ABOUT 5% LITHIC SHOWS; MODERATE SORTING OF COARSE GRAIN SIZING WITH MODERATE SPHERICITY AND SUBANGULAR TO SUBROUNDED ANGULARITY; EASILY FRIABLE TO FRIABLE GRAIN SUPPORT WITH CALCITIC CEMENTATION AS TESTED WITH DILUTE HCL; NO OIL SHOWS AND LOW GAS SHOWS ASSOCIATED WITH THIS SAMPLE.
 SILTSTONE = LIGHT TO DARK GRAY IN COLOR; DENSE IN TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO WEDGE LIKE CUTTINGS HABIT; EARTHY TO FROSTED LUSTER WITH A SILTY TEXTURE AND THIN IN STRUCTURE.
 SHALE = MEDIUM GRAY IN COLORING WITH BRITTLE TENACITY AND BLOCKY FRACTURE IN A TABULAR TO WEDGE LIKE CUTTINGS HABIT; WAXY TO GREASY LUSTER WITH A SMOOTH TEXTURE AND A THIN STRUCTURE.
 SANDSTONE = VERY LIGHT TO MEDIUM GRAY IN COLORING; QUARTZ FRAMEWORK WITH 7% LITHICS; MODERATE SORTING OF COARSE GRAIN SIZING WITH MODERATE SPHERICITY AND SUBROUNDED TO SUBANGULAR ANGULARITY; EASILY FRIABLE TO FRIABLE GRAIN SUPPORT WITH CALCITIC CEMENTATION; NO OIL SHOWS AND MODERATE GAS SHOWS ASSOCIATED WITH THIS SAMPLE.
 SILTSTONE = MEDIUM TO DARK GRAY IN COLOR DENSE TO BRITTLE TENACITY WITH BLOCKY FRACTURING IN A TABULAR TO ELONGATED CUTTINGS HABIT; EARTHY TO FROSTED LUSTER WITH A SILTY TEXTURE AND THIN IN STRUCTURE.
 SHALE = LIGHT TO MEDIUM GRAY WITH SOME GRAYISH BLUE GREEN COLORATION; BRITTLE IN TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO WEDGE LIKE CUTTINGS HABIT; WAXY TO GREASY LUSTER WITH A SMOOTH TEXTURE AND A THIN TO LAMINAE STRUCTURE.
 SANDSTONE = LIGHT TO MEDIUM GRAY IN COLORING; QUARTZ FRAMEWORK WITH ABOUT 4% LITHICS; MODERATE SORTING OF COARSE GRAIN SIZING WITH MODERATE SPHERICITY AND SUBROUNDED ANGULARITY; SOFT TO EASILY FRIABLE GRAIN SUPPORT WITH CALCITIC CEMENTATION; NO OIL SHOWS ASSOCIATED WITH THIS SAMPLE.
 SILTSTONE = GRAY TO MEDIUM DARK GRAY WITH SLIGHTLY BROWNISH GRAY HUES; TENACITY IS DENSE TO CRUNCHY; FRACTURES FROM IRREGULAR TO BLOCKY; CUTTINGS ARE WEDGE LIKE TO TABULAR; EARTHY TO DULL WITH A SLIGHT SPARKLING LUSTER; TEXTURE IS GRITTY TO SILTY; THIN STRUCTURE.
 SHALE = LIGHT GRAY TO MEDIUM DARK GRAY; TEXTURE IS BRITTLE; SPLINTERY TO PLANAR FRACTURING; TABULAR TO ELONGATED CUTTINGS; WAXY TO DULL LUSTER; SMOOTH TO SILTY TEXTURE; LAMINAE TO THIN STRUCTURE
 CARBONACEOUS SHALE = BROWNISH BLACK TO GRAYISH BLACK TO DARK GRAY; TENACITY IS CRUNCHY TO BRITTLE; IRREGULAR TO BLOCKY FRACTURING; WEDGE LIKE TO NODULAR CUTTINGS; RESINOUS TO EARTHY LUSTER; THIN STRUCTURE.
 SANDSTONE = WHITE TO MEDIUM GRAY; QUARTZ FRAMEWORK WITH SOME LOOSE GRAINS; COARSE TO FINE SIZED GRAINS WITH POOR TO FAIR SORTING; SUBANGULAR; LOW TO MODERATE SPHERICITY; HARD TO FIRMLY FRIABLE; GRAIN SUPPORTED; STRONG REACTION WITH HCL SUGGESTS CALCITE CEMENT; SOME CARBONACEOUS MATERIAL PRESENT.
 SILTSTONE = GRAYISH BROWN TO MEDIUM DARK GRAY; TENACITY RANGES FROM DENSE TO CRUMBLY; FRACTURES FROM BLOCKY TO SLIGHTLY IRREGULAR; TABULAR TO SLIGHTLY MASSIVE CUTTINGS; EARTHY LUSTER; GRITTY TO SILTY TEXTURE; MASSIVE STRUCTURE.
 SHALE = MEDIUM GRAY TO MEDIUM DARK GRAY; TENACITY IS CRUNCHY TO BRITTLE; FRACTURES FROM PLANAR TO SLIGHTLY BLOCKY CUTTINGS ARE PLATY TO TABULAR TO SLIGHTLY ELONGATED; DULL EARTHY TO DULL LUSTER; SMOOTH TEXTURE; THIN TO LAMINAE



STRUCTURE.

CARBONACEOUS SHALE = BLACK TO GRAYISH BLACK; TENACITY IS PULVERULENT TO CRUNCHY; BLOCKY TO IRREGULAR FRACTURING; NODULAR TO WEDGELIKE CUTTINGS; LUSTER IS RESINOUS TO POLISHED; SMOOTH TO CLAYEY TEXTURE; THIN STRUCTURE.

SANDSTONE = LIGHT TO MEDIUM GRAY WITH SOME PALE REDDISH BROWN COLORATION; QUARTZ FRAMEWORK WITH ABOUT 5% - 10% LITHICS; FAIR TO MODERATE SORTING OF COARSE GRAIN SIZING WITH MODERATE SPHERICITY AND SUBANGULAR TO SUBROUNDED ANGULARITY; FRIABLE TO FIRMLY FRIABLE GRAIN SUPPORT WITH CALCITIC CEMENTATION; MODERATE TO HIGH GAS SHOWS AND NO OIL SHOWS ASSOCIATED WITH THIS SAMPLE.

SILTSTONE = MEDIUM TO DARK GRAY IN COLOR DENSE IN TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO ELONGATED CUTTINGS HABIT; EARTHY TO FROSTED LUSTER WITH A SILTY TEXTURE AND THIN IN STRUCTURE.

SHALE = LIGHT TO DARK GRAY IN COLORING; BRITTLE TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; WAXY TO GREASY LUSTER WITH A SMOOTH TEXTURE AND A THIN TO LAMINAE STRUCTURE.

SANDSTONE = WHITE TO TRANSLUCENT TO MEDIUM LIGHT GRAY; FRAMEWORK CONSISTS OF APPROXIMATELY 80% QUARTZ AND 20% DARK LITHIC CLASTS GIVING THE SPECIMEN A SALT AND PEPPER LOOK; COARSE TO MEDIUM GRAIN SIZE WITH FAIR TO POOR SORTING; ANGULAR TO SUBANGULAR; LOW SPHERICITY; MODERATE HARDNESS; STRONG REACTION WITH HCL SUGGESTS CALCITE CEMENT; GRAIN SUPPORTED

CARBONACEOUS SHALE = BROWNISH GRAY TO BLACK; TENACITY RANGES FROM DENSE TO CRUNCHY; IRREGULAR TO SPLINTERY FRACTURING; SCALY TO TABULAR CUTTINGS; EARTHY TO DULL LUSTER; SMOOTH TO SILTY TEXTURE; THIN TO THICK STRUCTURE.

SHALE = MEDIUM DARK GRAY TO MEDIUM GRAY; TENACITY IS BRITTLE TO CRUNCHY; PLANAR TO SPLINTERY FRACTURING; PLATY TO SCALY CUTTINGS; WAXY TO DULL LUSTER; SMOOTH TEXTURE; THIN TO LAMINAE STRUCTURE.

SILTSTONE = BROWNISH GRAY TO MEDIUM DARK GRAY; TENACITY IS DENSE TO CRUMBLY; IRREGULAR TO BLOCKY FRACTURING; MASSIVE TO WEDGELIKE CUTTINGS; EARTHY WITH A SLIGHT FROSTED LUSTER; TEXTURE IS MOSTLY GRITTY TO SLIGHTLY SILTY; THICK STRUCTURE.

SANDSTONE = WHITE TO TRANSLUCENT TO MEDIUM DARK GRAY; FRAMEWORK CONSISTS OF APPROXIMATELY 85% QUARTZ AND 15% BLACK LITHIC CLASTS GIVING THE SPECIMEN A STRONG SALT AND PEPPER LOOK TO SOME OF THE SAMPLE; COARSE TO FINE GRAINED WITH WELL TO FAIR SORTING; ANGULAR TO SUBROUNDED; MODERATE TO LOW SPHERICITY; MODERATE HARD TO HARD; SILICA CEMENT; NO REACTION WITH HCL; HIGH GAS ASSOCIATED WITH SAMPLE DEPTH.

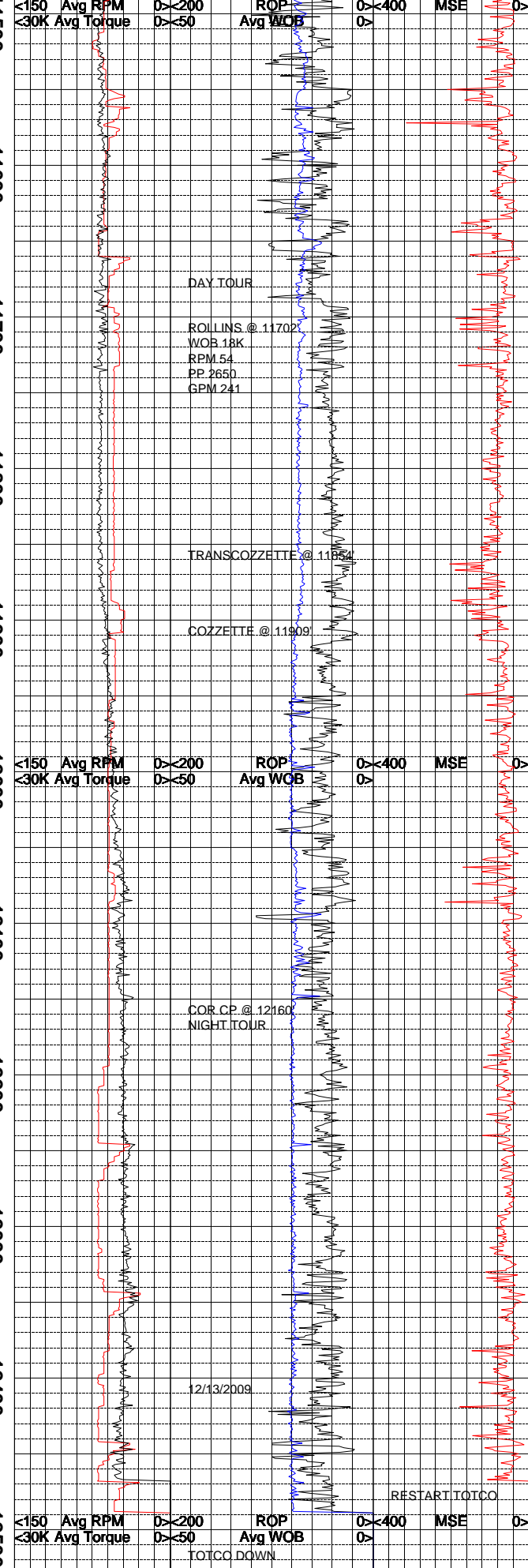
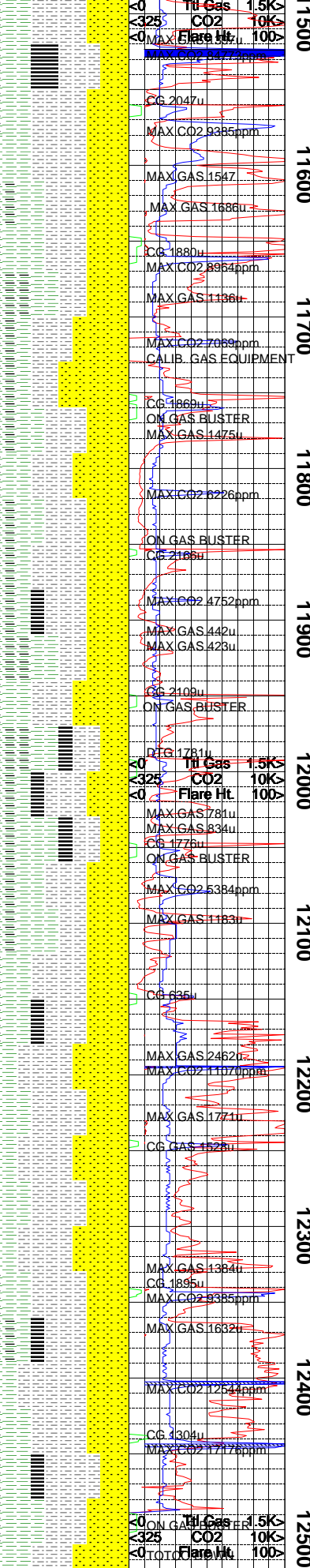
SILTSTONE = MEDIUM TO DARK GRAY WITH TENACITY WITH BLOCKY TO SPLINTERY FRACTURING IN A TABULAR TO ELONGATED CUTTINGS HABIT; DULL TO EARTHY LUSTER WITH A SILTY TEXTURE AND THIN IN STRUCTURE.

SHALE = MEDIUM TO DARK GRAY IN COLOR; BRITTLE IN TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; WAXY TO GREASY LUSTER WITH A SMOOTH TEXTURE AND A THIN TO LAMINAE STRUCTURE.

COAL = DARK GRAY TO BLACKISH IN COLORING CRUNCHY TO PULVERULENT IN TENACITY WITH SPLINTERY TO BLOCKY FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; RESINOUS LUSTER ON A SMOOTH TEXTURE WITH A THIN STRUCTURE.

SHALE = MEDIUM TO DARK GRAY IN COLORING; BRITTLE TO CRUNCHY TENACITY WITH BLOCKY FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; WAXY TO GREASY LUSTER ON A SMOOTH TEXTURE AND A THIN STRUCTURE.

SANDSTONE = LIGHT TO MEDIUM GRAY WITH PALE REDDISH BROWN COLORATION; QUARTZ FRAMEWORK WITH ABOUT 5% - 10% LITHIC SHOWS; FAIR TO MODERATE SORTING OF COARSE GRAIN SIZING WITH MODERATE SPHERICITY AND SUBROUNDED TO SUB ANGULAR



ANGULARITY; EASILY FRIABLE GRAIN SUPPORT WITH CALCITIC CEMENTATION; NO OIL SHOWS AND MODERATE GAS SHOWS ASSOCIATED WITH THIS SAMPLE.

SILTSTONE = MEDIUM TO DARK GRAY IN COLOR DENSE IN TENACITY WITH BLOCKY FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT SILTY TO COARSE GRAIN SILTY TEXTURE WITH AN EARTHY TO FROSTED LUSTER AND THIN TO THICK STRUCTURE.

CARBONACEOUS SHALE = DARK GRAY TO BLACK IN COLOR; BRITTLE TO CRUNCHY TENACITY WITH BLOCKY FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; SMOOTH IN TEXTURE WITH A RESINOUS LUSTER AND A THIN TO THICK STRUCTURE.

SHALE = LIGHT GRAY TO MEDIUM DARK GRAY COLORING; TENACITY IS DENSE TO BRITTLE TO SLIGHTLY CRUNCHY; PLANAR FRACTURING; PLATY TO SCALY CUTTINGS; DULL TO SLIGHTLY WAXY LUSTER; SMOOTH TEXTURE; THIN TO LAMINAE STRUCTURE.

SANDSTONE = BROWNISH GRAY TO MEDIUM DARK GRAY TO TRANSLUCENT; FRAMEWORK CONSISTS OF QUARTZ WITH ABOUT 10% BLACK LITHIC CLASTS; FINE TO MEDIUM SIZED GRAINS WITH FAIR SORTING; SUBROUNDED TO SUBANGULAR; LOW TO MODERATE SPHERICITY; MODERATE HARDNESS; GRAIN SUPPORTED; VERY SLIGHT REACTION WITH HCL SUGGESTS SILICA CEMENT

SILTSTONE = BROWNISH GRAY TO BROWNISH BLACK; TENACITY IS TOUGH TO DENSE; FRACTURES FROM IRREGULAR TO BLOCKY; CUTTINGS ARE TABULAR; EARTHY LUSTER; TEXTURE IS MOSTLY GRITTY TO SLIGHTLY SILTY; THICK STRUCTURE.

COAL = BLACK; TENACITY IS CRUMBLY TO PULVERULENT; IRREGULAR TO BLOCKY TO CONCHOIDAL FRACTURING; NODULAR TO WEDGELIKE; LUSTER RANGES FROM RESINOUS TO POLISHED TO EARTHY; TEXTURE IS SMOOTH TO CLAYEY; THIN STRUCTURE.

CARBONACEOUS SHALE = GRAYISH BLACK TO DARK GRAY; TOUGH TO DENSE TENACITY; FRACTURES FROM IRREGULAR TO BLOCKY TO SLIGHTLY PLANAR; CUTTINGS ARE PLATY TO TABULAR; LUSTER IS POLISHED TO EARTHY; TEXTURE IS SMOOTH TO SILTY; STRUCTURE IS THIN TO THICK.

SHALE = LIGHT GRAY TO MEDIUM DARK GRAY; TENACITY IS CRUNCHY TO DENSE; FRACTURES FROM PLANAR TO SPLINTERY; CUTTINGS ARE PLATY TO SCALY; LUSTER IS WAXY TO DULL; TEXTURE IS SMOOTH TO SILTY; THIN TO THICK STRUCTURE.

COAL = BLACK IN COLORING; BRITTLE TO CRUNCHY TENACITY WITH BLOCKY TO CONCHOIDAL FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; RESINOUS TO GEMLIKE LUSTER AND A SMOOTH TEXTURE WITH A THIN TO THICK STRUCTURE.

SANDSTONE = LIGHT TO MEDIUM GRAY WITH SOME PALE REDDISH BROWN COLORATION; QUARTZ FRAMEWORK SHOWING ABOUT 7% - 10% LITHICS; FAIR TO MODERATE SORTING OF COARSE GRAIN SIZING WITH SUBANGULAR TO SUBROUNDED ANGULARITY AND MODERATE GRAIN SUPPORT WITH CALCITIC CEMENTATION; NO OIL SHOWS AND MODERATE GASES ASSOCIATED WITH THIS SAMPLE.

SILTSTONE = MEDIUM TO DARK GRAY IN COLOR DENSE IN TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO ELONGATED CUTTINGS HABIT; SILTY TEXTURE WITH A DULL TO EARTHY LUSTER AND A THIN STRUCTURE.

CARBONACEOUS SHALE = DARK GRAY TO BLACKISH IN COLORING; BRITTLE TO CRUNCHY IN TENACITY WITH BLOCKY TO SPLINTERY FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; RESINOUS IN LUSTER WITH A SMOOTH TEXTURE AND THIN IN STRUCTURE.

SHALE = LIGHT TO MEDIUM GRAY IN COLORING BRITTLE IN TENACITY WITH BLOCKY TO PLANAR FRACTURING IN A TABULAR TO WEDGELIKE CUTTINGS HABIT; WAXY TO GREASY LUSTER WITH A SMOOTH TEXTURE AND THIN TO LAMINAE STRUCTURE.

SANDSTONE = WHITE TO TRANSLUCENT TO MEDIUM LIGHT GRAY; FRAMEWORK CONSISTS OF MOSTLY QUARTZ WITH ABOUT 10% BLACK LITHIC CLASTS; FINE TO MEDIUM SIZED GRAINS WITH FAIR TO POOR SORTING; SUBROUNDED TO SUBANGULAR; FIRMLY FRIABLE SILICA GRAIN SUPPORTED WITH SILICA CEMENT AS SUGGESTED BY NO REACTION WITH

DAY TOUR
 ROLL LINS @ 11702
 WOB 18K
 RPM 54
 PP 2650
 GPM 241

TRANSCOZZETTE @ 11855

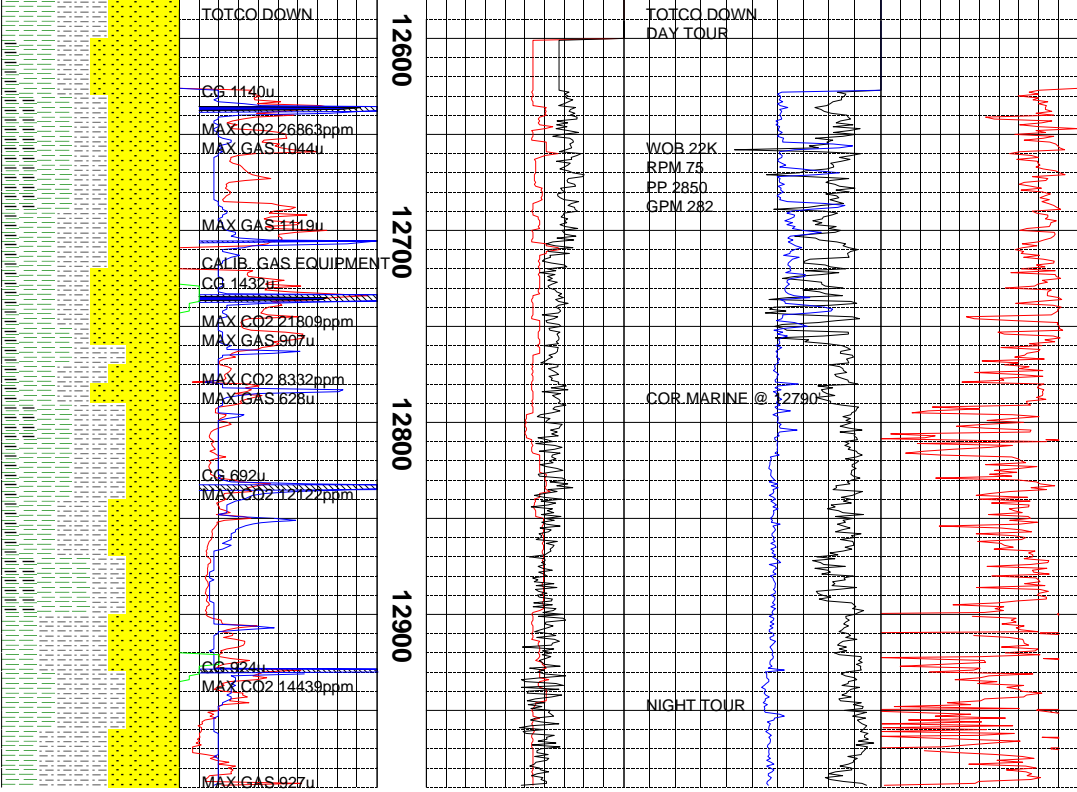
COZZETTE @ 11909

COR CP @ 12160
 NIGHT TOUR

12/13/2009

RESTART TOTCO

TOTCC DOWN



HCL.

SILTSTONE = BROWNISH GRAY TO DARK GRAY; TENACITY IS TOUGH TO DENSE; FRACTURES FROM BLOCKY TO OCCASIONALLY IRREGULAR; CUTTINGS ARE MASSIVE TO TABULAR; LUSTER RANGES FROM EARTHY TO WAXY; TEXTURE IS MOSTLY GRITTY TO SLIGHTLY SILTY; THICK STRUCTURE.

SHALE = MEDIUM LIGHT GRAY TO MEDIUM DARK GRAY; TENACITY IS DENSE TO BRITTLE; PLANAR FRACTURING; CUTTINGS ARE PLATY TO TABULAR; LUSTER IS DULL TO EARTHY; TEXTURE IS SMOOTH TO SILTY; THIN TO LAMINAE STRUCTURE.

CARBONACEOUS SHALE = DARK GRAY TO BLACK; TENACITY IS TOUGH TO DENSE; FRACTURES FROM IRREGULAR TO BLOCKY TO SLIGHTLY PLANAR; CUTTINGS ARE TABULAR; LUSTER IS EARTHY TO DULL; SMOOTH TEXTURE; THIN STRUCTURE.

SANDSTONE = TRANSLUCENT TO WHITE TO LIGHT GRAY; MANY LOOSE QUARTZ GRAINS; QUARTZ FRAMEWORK WITH SHALES AND CARBONACEOUS SHALE INTERBEDDED; FINE TO MEDIUM SIZED GRAINS WITH FAIR TO WELL SORTING; SUBROUNDED WITH MODERATE SPHERICITY; FRIABLE TO FIRMLY FRIABLE; SILICA CEMENT AS SUGGESTED BY VERY SLIGHT REACTION WITH HCL.

T.D. WELL @ 12990' IN THE CORCORAN MARINE ON 12/13/2009.

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