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Drrilling Dynamics MD

COMPANY	ExxonMobil Production
WELL	PCU 297-11C7
FIELD	Piceance Creek
REGION	Rocky Mountain
COORDINATES	39.896041 N 108.254563 W
ELEVATION	GL: 6966.2' RKB: 6996.4'
COUNTY, STATE	Rio Blanco, CO
API INDEX	051031146900
SPUD DATE	02/19/2010
CONTRACTOR	HP Drilling
CO. REP.	M. Sadler / J. Wood
RIG/TYPE	#326/ Flex-Rig 4
LOGGING UNIT	MLU # 036
GEOLOGISTS	J. Kokes/ D. Thibodeaux C. Record
ADD. PERSONS	H. Strickland/ J. Yeagar P. Strickland/ D. Lockhart
CO. GEOLOGIST	C. Alba

LOG INTERVAL

DEPTHS: 3882' TO 12785'
DATES: 03/25/2010 TO 07/01/2010
SCALE: 1" = 100'

CASING DATA

16" AT 150'
10 3/4" AT 3866'
7" AT 8707'

AT

HOLE SIZE

14 3/4" TO 3882'
9 7/8" TO 8722'
6 1/8" TO 12785'
TO

MUD TYPES

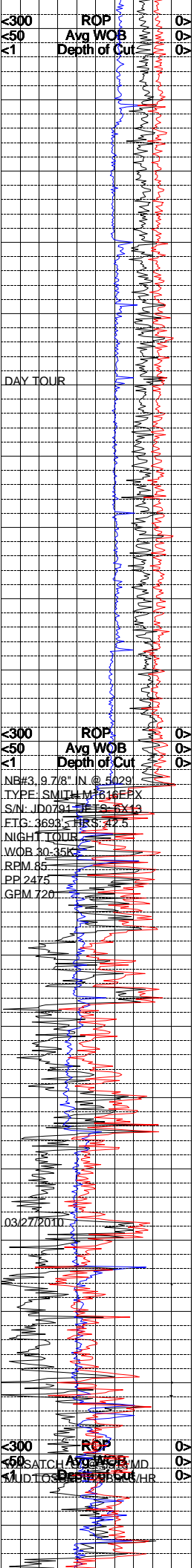
Water Based Spud Mud TO 3882'
LSND TO 12785'
TO
TO

ABBREVIATIONS

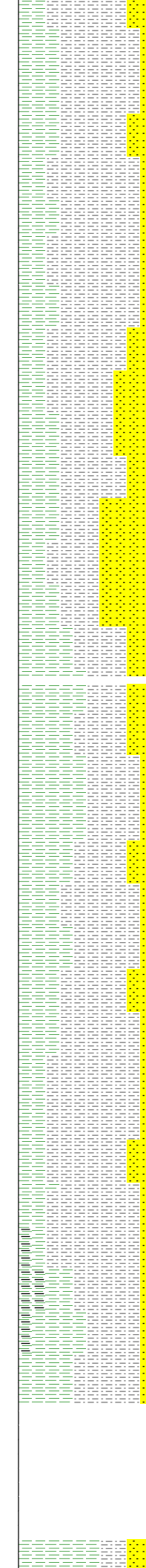
NB	NEWBIT	PV	PLASTIC VISCOSITY	LC	LOST CIRCULATION
RRB	RERUN BIT	YP	YIELD POINT	CO	CIRCULATE OUT
CB	CORE BIT	FL	FLUID LOSS	NR	NO RETURNS
WOB	WEIGHT ON BIT	CL	PPM CLORIDE ION	TG	TRIP GAS
RPM	ROTARY REV/MIN	Rm	MUD RESISTIVITY	SG	SURVEY GAS
PP	PUMP PRESSURE	Rmf	FILTRATE RESISTIVITY	WG	WIPER GAS
SPM	STROKES/MIN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

ROP			Depth	Lithology	MGS			Interp. Lith			Remarks
<300	ROP	0>			<0	Ttl Gas	1.5K>	<10	Meth C-1	100K>	
<50	Avg WOB	0>			<330	CO2	5K>	<10	Ethn C-2	100K>	Survey Data, Mud Reports, Other Info.
<1	Depth of Cut	0>			<0	Flare Ht.	100>	<10	Butn C-4	100K>	
	ft/hr					ppm			Pent C-5	100K>	
	klbs					ft					
	in/rev										
NB#2, 9 7/8" IN @ 3866 TYPE: HUGHES HCD5047X S/N: 7019025 JETS: 4X13.2X12 FTG: 1163' HRS: 21 03/25/2010 DAY TOUR											
03/25/2010 DAY TOUR											
WOB 18-20K RPM 85 PP 2225 GPM 693											
NIGHT TOUR											
03/26/2010											



4500
4600
4700
4800
4900
5000
5100
5200
5300
5400
5500



<0	Ttl Gas	1K<10	Meth C-1	100K<
<330	CO2	5K<10	Ethin C-2	100K<
<0	Flare Ht	100<10	Prop C-3	100K<
		<10	Butn C-4	100K<
		<10	Perm C-5	100K<
CG Bu				
MAX GAS 12u				
MW IN 8.95 VIS 63 PH 11.0 MW OUT 8.95 VIS 78 PH 10.8				
POSSUMBELLY FULL NO GAS				
MAX GAS 12u				
DAY TOUR				
MW IN 9.1 VIS 65 PH 10.7 MW OUT 9.1 VIS 74 PH 10.7				
C-1				
MAX GAS 38u				
<0	Ttl Gas	1K<10	Meth C-1	100K<
<330	CO2	5K<10	Ethin C-2	100K<
<0	Flare Ht	100<10	Prop C-3	100K<
		<10	Butn C-4	100K<
		<10	Perm C-5	100K<
TG 59u				
MUD REPORT @ 5029 MW IN 9.1 VIS 62 PH 17 YR 25 API FL 8.0 GEL 5.12/44/55 PH 10.8 CL 1300 CA 60 MBT 22.5 SOL 5.6 24 HR MUD LOSSES 56.8 BBLs				
CG 6u				
CG 203u				
C-1				
POSSUMBELLY FULL NO GAS READINGS				
MW IN 9.3 VIS 44 PH 10.4 MW OUT 9.3 VIS 56 PH 10.2				
LOST RETURNS FROM 5464 TO 5511				
<0	Ttl Gas	1K<10	Meth C-1	100K<
<330	CO2	5K<10	Ethin C-2	100K<
<0	Flare Ht	100<10	Prop C-3	100K<
		<10	Butn C-4	100K<
		<10	Perm C-5	100K<
RETURNS BACK AT 5561'				
MAX GAS 202u				
MW IN 9.0 VIS 40 PH 9.7 MW OUT 9.3 VIS 73 PH 9.9				

CUTTINGS HABIT; DULL EARTHY LUSTER; SLI SMOOTH GRITTY TEXTURE OCC SANDY; WITH REDDISH BROWN YELLOW BROWN LIGHT GRAY SHALES INTERBEDDED, LOW GAS READINGS

SHALE=LIGHT MEDIUM GRAY; MOD HARD FIRM PLATY IRREGULAR FRACTURE; MASSIVE WEDGELIKE CUTTINGS HABIT; SMOOTH CLAYEY SILTY TEXTURE; DULL EARTHY OCC WAXY LUSTER; GRADING TO BROWNISH BLOCKY SILTSTONE WITH OCC SANDSTONES INTERBEDDED VERY LOW GAS; NO TRACE HYDROCARBONS

SILTSTONE=BROWNISH RED; MOD HARD FIRM; CRUMBLY DENSE TENACITY; IRREGULAR BLOCKY PLANAR CUTTINGS HABIT; DULL EARTHY OCC SPARKLING LUSTER; SMOOTH GRITTY TEXTURE; NON CALCAREOUS; MASSIVE STRUCTURE; WITH LIGHT GRAY OCC BROWN SHALES INTERBEDDED AND OCC WHITE FINE GRAIN HARD FRIABLE SANDSTONES; LOW GAS; NO TRACE HYDROCARBONS

SANDSTONE = MODERATE YELLOWISH BROWN TO MEDIUM LIGHT GRAY; QUARTZ FRAMEWORK WITH 15% LITHICS; FINE TO VERY FINE GRAINED; GRADES INTO SILTSTONE; SUBROUNDED; MODERATE SPHERICITY; FRIABLE TO FIRMLY FRIABLE; CALCITE CEMENT; SLIGHT LIGHT BROWN TO WHITE CLAY MATRIX.

SHALE = MEDIUM LIGHT GRAY TO OCC GRAYISH PURPLE AND PALE GREEN; BRITTLE TENACITY; IRREGULAR TO PLANAR FRACTURING; TABULAR CUTTINGS; WAXY TO EARTHY LUSTER; SMOOTH TO SILTY TEXTURE; THIN STRUCTURE; INTERBEDDED WITH SILTSTONE AND SANDSTONE GRADES FROM SILTSTONE.

SILTSTONE = LIGHT OLIVE BROWN TO DARK YELLOWISH ORANGE; BRITTLE TO CRUMBLY TENACITY; IRREGULAR FRACTURING; MASSIVE TO TABULAR CUTTINGS; EARTHY TO WAXY LUSTER; GRITTY TO SILTY TO OCC CLAYEY TEXTURE; THICK STRUCTURE; INTERBEDDED WITH SANDSTONE AND SHALE.

SHALE = MEDIUM LIGHT GRAY TO MODERATE GREENISH YELLOW AND OCC GRAYISH PURPLE HUE; BRITTLE TENACITY; IRREGULAR TO PLANAR TO OCC SPLINTER FRACTURING; TABULAR TO PLATY CUTTINGS; DULL TO WAXY; SILTY TO SMOOTH TEXTURE.

DRILLED TO 5039' POOH PICKED UP PACKED HOLE DRILLING ASSEMBLY AND NEW BIT LAID OUT DIRECTIONAL TOOLS

SHALE=LIGHT MEDIUM GRAY YELLOW BROWN; MOD HARD FIRM; CRUMBLY DENSE TENACITY; IRREGULAR BLOCKY FRACTURE; PLATY OCC TABULAR MASSIVE CUTTINGS HABIT; SMOOTH SILTY CLAYEY TEXTURE; MASSIVE STRUCTURE INTERBEDDED WITH REDDISH BROWN SILTSTONE LOW GAS READINGS

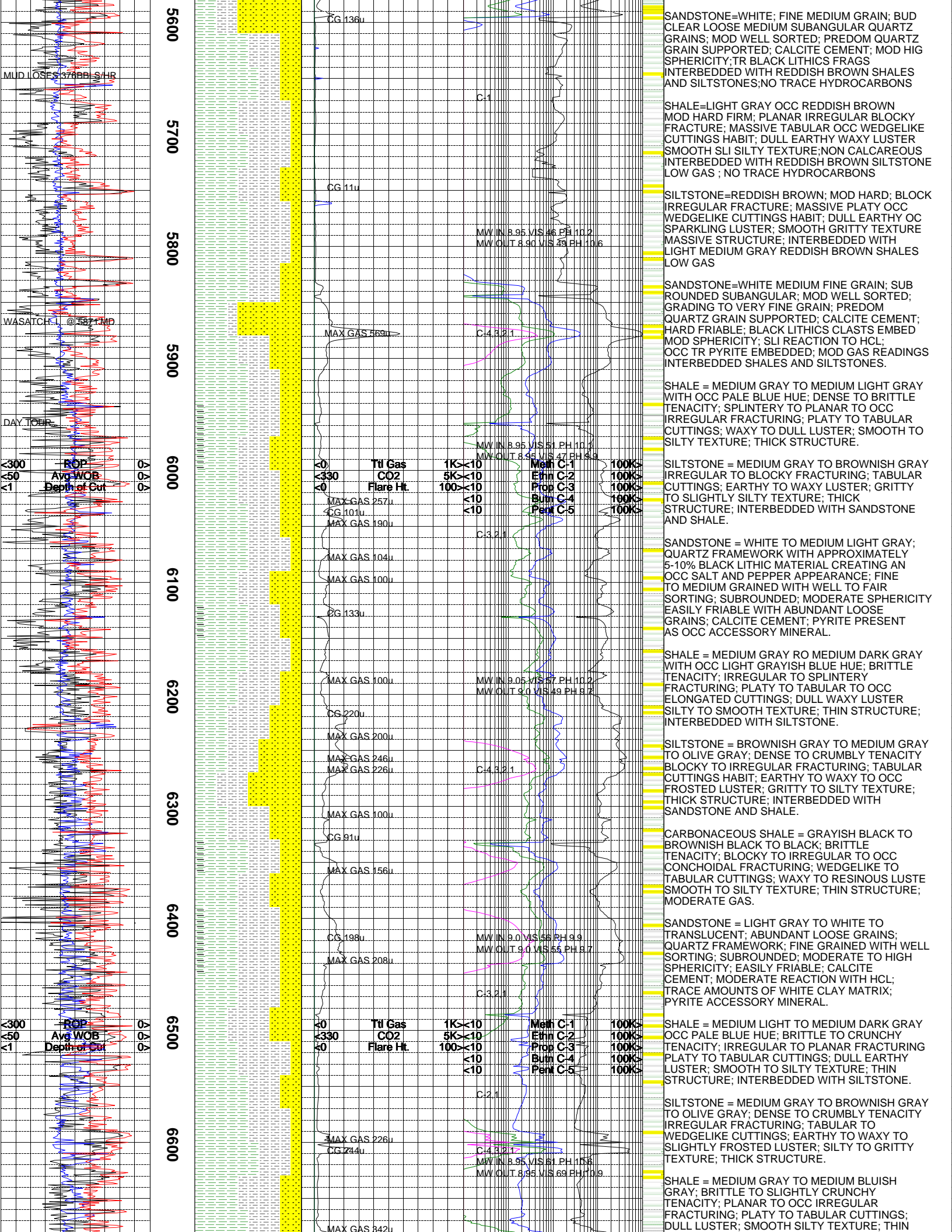
SILTSTONE=REDDISH BROWN; MOD FIRM; BLOCK IRREGULAR FRACTURE; MASSIVE WEDGELIKE CUTTINGS HABIT; DULL EARTHY LUSTER; SMOOTH GRITTY TEXTURE; INTERBEDDED WITH MULTICOLOR SHALES TR WHITE SANDSTONES VERY LOW GAS READINGS; NO TRACE VISIBLE HYDROCARBONS

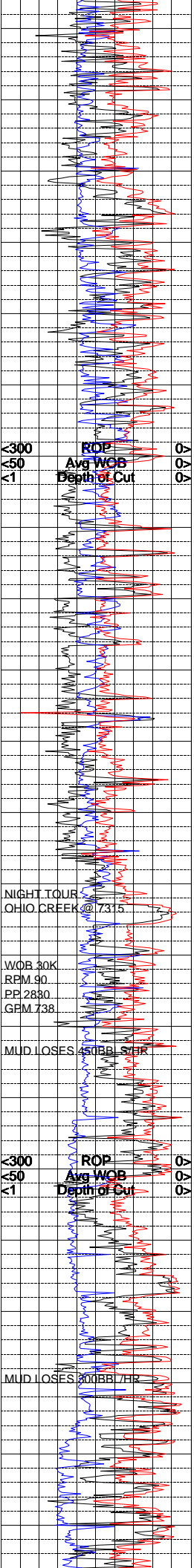
SHALE=REDDISH BROWN OCC LIGHT MEDIUM GRAY; MOD HARD FIRM; CRUMBLY DENSE TENACITY; IRREGULAR BLOCKY FRACTURE; MASSIVE PLATY OCC WEDGELIKE CUTTINGS HABIT; DULL EARTHY OCC WAXY LUSTER; SMOOTH SLI SILTY TO CLAYEY TEXTURE; OCC SANDY TO GRITTY; NON CALCAREOUS; MASSIVE STRUCTURE; GRADES INTO SANDY BROWNISH RED SILTSTONE; INTERBEDDED SANDS; LOW GAS READINGS; NO TRACE HYDROCARBONS PRESENT

CARBONACEOUS SHALE=BROWNISH BLACK; BRITTLE DENSE TENACITY; PLANAR FRACTURE SCALY MASSIVE PLATY CUTTINGS HABIT; DULL EARTHY OCC VITREOUS LUSTER; SMOOTH TEXTURE; INTERBEDDED WITH GRAY BROWNISH RED SHALES AND SILTSTONES TRACES PYRITE AND CHALCOPYRITE EMBEDDED IN SHALES

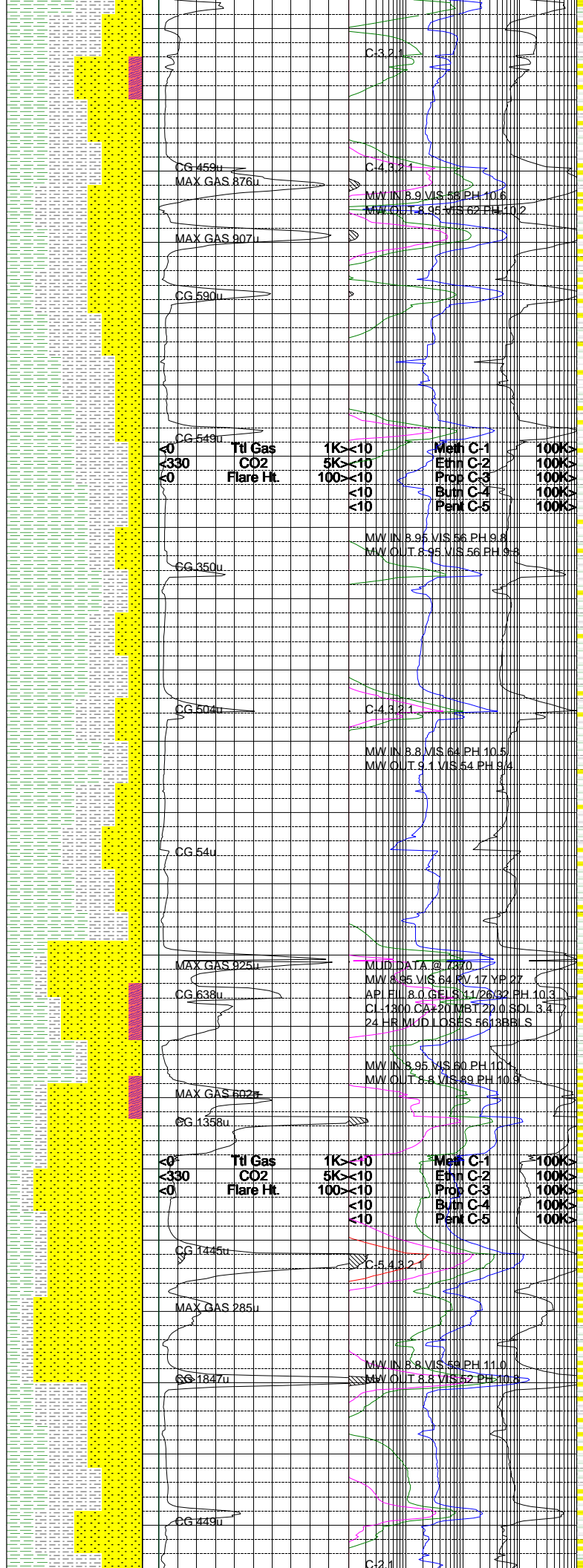
NOTE; DRILLED TO 5513 TOP WASATCH G AT 5513' MD/5399TVD LOST FULL RETURNS PUMPED 2 30BBLs LCM PILLS NO RETURNS FROM 5464 TO 5560 CONTINUE TO STACK 30BBLs LCM PILLS DOWN HOLE REDUCED PUMPS GAINED BACK PARTIAL RETURNS AT SAMPLE 5560 WAS OUT OF HOLE NO SAMPLES OR GAS READINGS FROM 5464 TO 5560'

SHALE=LIGHT MEDIUM GRAY; MOD HARD FIRM CRUMBLY DENSE TENACITY; IRREGULAR BLOCKY FRACTURE; MASSIVE PLATY OCC SLI WEDGELIKE CUTTINGS HABIT; DULL EARTHY OC WAXY LUSTER; SMOOTH SLI SILTY TEXTURE





6700
6800
6900
7000
7100
7200
7300
7400
7500
7600
7700



SANDSTONE = WHITE TO LIGHT GRAY; QUARTZ FRAMEWORK WITH 5% BLACK LITHIC CLASTS; FINE TO MEDIUM SIZED WITH FAIR SORTING; SUBANGULAR TO SUBROUNDED WITH MODERATE SPHERICITY; FRIABLE TO FIRMLY FRIABLE; CALCITE CEMENT; STRONG REACTION WITH HCL LOW GAS ASSOCIATED.

SILTSTONE = BROWNISH GRAY TO MEDIUM DARK GRAY; BRITTLE TO CRUMBLY TENACITY; IRREGULAR FRACTURING; TABULAR CUTTINGS; FROSTED TO WAXY TO EARTHY LUSTER; GRITTY TO SILTY TEXTURE; THICK STRUCTURE; INTERBEDDED WITH SANDSTONE AND SHALE; GRADES FROM SANDSTONE.

SHALE = MEDIUM GRAY TO MEDIUM BLUISH GRAY WITH A SLIGHT LIGHT OLIVE GRAY HUE; BRITTLE TENACITY; IRREGULAR TO PLANAR FRACTURING; TABULAR TO PLATY TO OCC SCALY; WAXY DULL SLIGHT EARTHY LUSTER; SMOOTH TO CLAYEY TEXTURE; THIN STRUCTURE INTERBEDDED WITH SILTSTONE AND SANDSTONE

SILTSTONE = BROWNISH GRAY TO GRAYISH RED WITH OCC MEDIUM GRAY; IRREGULAR TO BLOCKY FRACTURING; TABULAR CUTTINGS; DENSE TO CRUMBLY TENACITY; EARTHY LUSTER GRITTY TO CLAYEY TEXTURE; THICK STRUCTURE.

SANDSTONE = WHITE TO LIGHT GRAY TO TRANSLUCENT; ABUNDANT LOOSE QUARTZ GRAINS; QUARTZ FRAMEWORK WITH 5% BLACK LITHIC CLASTS; FINE TO MEDIUM GRAINED; FAIR TO WELL SORTING; SUBROUNDED TO SUBANGULAR; FIRMLY FRIABLE; CALCITE CEMENT WITH GRAIN SUPPORT.

SHALE = LIGHT TO MEDIUM GRAY; BRITTLE TO SLIGHTLY CRUNCHY TENACITY; IRREGULAR TO PLANAR TO SPLINTERY FRACTURING; PLATY TABULAR CUTTINGS; DULL TO WAXY LUSTER; SMOOTH TO CLAYEY TEXTURE; THIN TO THICK STRUCTURE.

SILTSTONE = BROWNISH RED TO BROWNISH GRA CRUMBLY TO SLIGHTLY PULVERULENT TENACITY IRREGULAR TO BLOCKY FRACTURING; TABULAR TO WEDGELIKE CUTTINGS; EARTHY LUSTER; SILTY TO GRITTY TO OCC CLAYEY TEXTURE; THIN STRUCTURE.

SHALE = MEDIUM BLUISH GRAY TO MEDIUM GRAY; BRITTLE TO CRUNCHY TENACITY; PLANAR TO SPLINTERY FRACTURING; PLATY CUTTINGS; WAXY TO DULL LUSTER; SMOOTH TO CLAYEY TEXTURE; THICK STRUCTURE; INTERBEDDED WITH SILTSTONE.

SANDSTONE=WHITE; FINE GRAIN; MOD WELL SORTED;SUBROUNDED SUBANGULAR;PREDOM QUARTZ GRAIN SUPPORTED; CALCITE CEMENT WITH TRACES LOOSE MEDIUM GRAIN QUARTZ; MOD SPHERICITY; TR BLACK LITHICS CLASTS LOWER PORTION LARGE AMOUNTS LOOSE MEDIUM CLEAR QUARTZ GRAINS; HIGH GAS OCC TRACE OF VISIBLE CLEAR CALCITE FIL FRACTURE IN SAMPLE WHERE HIGH GAS WAS OBSERVED IN SANDSTONE

SANDSTONE=WHITE, FINE MEDIUM GRAINS; SUBROUNDED SUBANGULAR; MOD HARD EASILY FRIABLE; ABUD CLEAR MEDIUM LOOSE QUARTZ GRAINS IN SAMPLE; MOD WELL SORTED; CALCITE OCC CLAY MATRIX,TR KAOLINITE; SLOW REACTION TO HCL; INTERBED SHALES AND SILTSTONES HIGH GAS WHEN CALCITE FIL FRACTURE IS OBSERVED; OCC TRACE 1-3% BLACK LITHICS CLASTS

SHALE=LIGHT MEDIUM GRAY; MOD HARD FIRM IRREGULAR BLOCKY TO PLANAR FRACTURE; MASSIVE PLATY OCC TABULAR WEDGELIKE CUTTINGS HABIT:DULL EARTHY WAXY LUSTER; SMOOTH SILTY TEXTURE; ABUT CLEAR MEDIUM QUARTZ GRAINS IN SAMPLE WITH WHITE FINE MEDIUM GRAIN SANDS WITH TR GLAUC AND ABUD BLACK CARBONACEOUS FRAGS EMBEDDED IN SANDS; LOW GAS IN SHALES HIGH CONN GASES ASSOCIATED WITH SANDS

SILTSTONE=LIGHT GRAY OCC MEDIUM GRAY; VERY HARD FIRM; TOUGH DENSE TENACITY; IRREGULAR BLOCKY FRACTURE; MASSIVE CUTTINGS HABIT; DULL EARTHY LUSTER; SMOOTH GRITTY SANDY TEXTURE; GRADING FINE GRAIN SANDSTONES; LOW GAS; NO TRACE HYDROCARBONS

SHALE=GREENISH GRAY LIGHT MEDIUM GRAY FIRM; PLATY IRREGULAR FRACTURE; TABULAR PLANAR OCC WEDGELIKE CUTTINGS HABIT; WAX LUSTER; SMOOTH SLI SILTY TEXTURE THIN STRUCTURE; INTERBEDDED WITH GREENIS GRAY MOD HARD VERY SANDY SILTSTONES; OCC SANDSTONES; VERY LOW GAS; NO TRACE HYDROCARBONS PRESENT

