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MUDLOG MD

COMPANY	ExxonMobil Oil Corporation
WELL	PCU 297-12A1
FIELD	Piceance Creek
REGION	Rocky Mountains
COORDINATES	Lat: 39.8890710 Long: 108.2372410
ELEVATION	GL: 7183.6' RKB: 7197'
COUNTY, STATE	Rio Blanco, Colorado
API INDEX	051031115700
SPUD DATE	09/22/2009
CONTRACTOR	HE DRILLING
CO. REP.	M. SADLER / J. WOODS
RIG/TYPE	326 FLEX FOUR
LOGGING UNIT	CANRIG UNIT ML036
GEOLOGISTS	John Morris Bill Johanning
ADD. PERSONS	
CO. GEOLOGIST	CHRIS ALBA

LOG INTERVAL

DEPTHS: 4111' **TO** 6282'

DATES: 6/16/2009 **TO** 6/18/2009

SCALE: 1" = 100'

CASING DATA

16.000" **AT** 150'

10.750" **AT** 4111'

AT

AT

MUD TYPES

WATER BASE **TO** 5730'

DSF **TO** 6200'

LSND **TO** 6282'

TO

HOLE SIZE

14.250" **TO** 4111'

9.875" **TO** 6282'

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	

ROP			Depth	Lithology	MGS			Interp. Lith			Remarks
<200	ROP	0>			<0	Ttl Gas	200>	<10	Meth C-1	100K>	
ft/hr					units		<10	Ethn C-2	100K>		
<50	Avg WOB	0>			CO2	25K>	<10	Prop C-3	100K>		
klbs					ppm		<10	Butn C-4	100K>		
					Flare Ht.	100>	<10	Pent C-5	100K>		
					ft						
			3800								
			3900								
			4000								
			4100								
			4200								
			4300								
			4400								
			4500								
			4600								
			47								

06/16/09
NB #3 9 7/8" IN AT 4111'
HTC
JETS
SN

WOB 15
RPM 60
PP 2315
SPM 160

06/17/2009
WOB 17
RPM 19
PP 815
SPM 80

ALL ROCK COLORS ARE REFERENCED TO THE CONNECTION GASES AS WELL AS TRIP AND DOWNTIME GASES ARE NOTED ON THE LOG. LARGE CONNECTION GASES WHICH APPEAR ON THE MUD LOG USUALLY REFLECT UPHOLE GAS INTERVALS BLEEDING GAS INTO THE BOREHOLE DURING CONNECTIONS.

GAS CHROMATOGRAPHY EQUIPMENT IS CALIBRATED TO A TEST GAS COMPOSED OF METHANE = 10040 PPM
ETHANE = 990 PPM
PROPANE = 1000 PPM
I-BUTANE = 1010 PPM
N-BUTANE = 1000 PPM
I-PENTANE = 1000 PPM
N-PENTANE = 1000 PPM

WHEN THE MUD IS CIRCULATED THROUGH THE GAS BUSTER, THE INTERVAL IS MARKED IN THE MGS COLUMN AND SIZE OF FLARES ARE NOTED.

EVIDENCE OF FRACTURE FILL IS NOTED ON THE MUD LOG. KAOLIN PERCENTAGE IN SS INTERVALS IS ALSO NOTED ON THE MUD LOG.

I UNIT OF GAS = 200 PPM METHANE

SET 10 3/4" SURFACE CASING AT 4111'

EPOCH COMMENCED LOGGING ON 6/16/2009 AT 4111' MD.

NOTE: DRILLING WITH POWER DRIVE AND MWD

SHALE = DARK YELLOWISH BROWN, MEDIUM TO DARK OLIVE GRAY; FIRM TO MODERATELY HARD; CRUMBLY TO MODERATELY TOUGH; IRREGULAR, PLANER AND WEDGELIKE CUTTINGS HABIT; MATTE TO OCCASIONALLY SLIGHTLY RESINOUS LUSTER DOMINANTLY SMOOTH TEXTURE; SLIGHTLY TO VERY CALCAREOUS; LOCALLY SILTY, GRADING IN PART AND INTER BEDDED WITH SILTSTONE; POOR TO MODERATE FISSILITY.

SILTSTONE = DARK YELLOWISH BROWN TO MEDIUM GRAY; FIRM TO MODERATELY HARD; CRUMBLY TO OCCASIONALLY TOUGH; IRREG AND SUBBLOCKY OR WEDGELIKE CUTTINGS HABIT; MATTE LUSTER WITH SCATTERED SPARKLES; MODERATELY CALCAREOUS

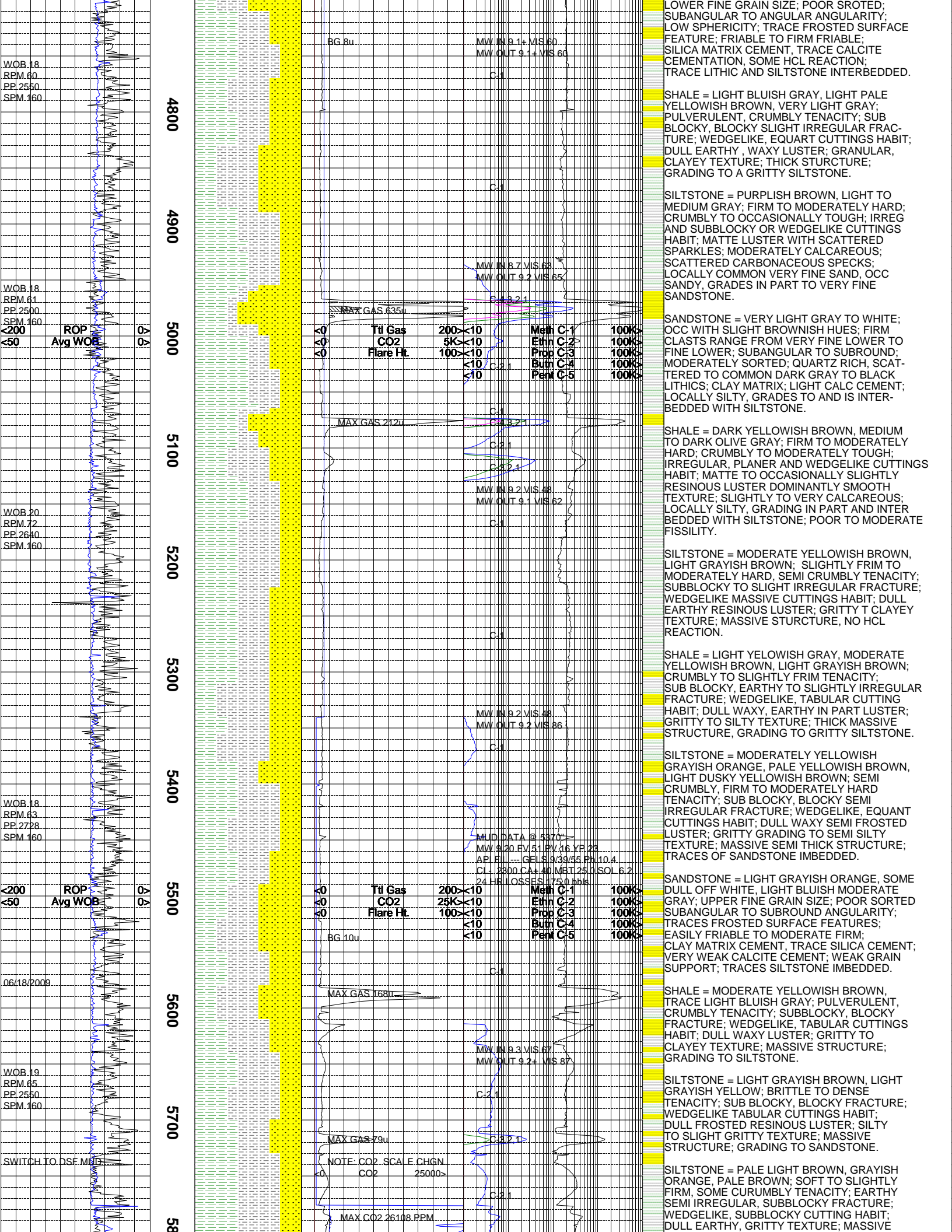
SANDSTONE = PALE YELLOWISH LIGHT BROWN, LIGHT OFF WHITE, LIGHT PALE GRAYISH BROWN; SOME CLEAR TO SLIGHT TRANSLUCENT; QUARTZ FRAMEWORK; UPPER TO LOWER FINE GRAIN SIZE; POOR TO FAIR SORTING; CONSOLIDATED IN PART; PREDOMINATELY SUBANGULAR ANGULARITY; SEMI FROSTED SURFACE FEATURES; EASILY FRIABLE TO FIRM FRIABLE; CLAY MATRIX CEMENT; WEAK GRAIN SUPPORTED; TRACES CALCITE CEMENT; WEAK HCL REACTION; VERY POOR VISUAL INTER GRANULAR POROSITY; TRACES DARK BROWNISH SILTSTONE INTERBEDDED.

SHALE = DARK YELLOWISH ORANGE, LIGHT MODERATE YELLOWISH BROWN, TRACES DARK YELLOWISH BROWN; PULVERULENT, CRUNCHY TENACITY; EARTHY TO SUB BLOCKY SLIGHT IRREGULAR FRACTURE; WEDGELIKE TABULAR CUTTINGS HABIT; DULL EARTHY SLIGHT WAXY LUSTER, GRITTY TO CLAYEY TEXTURE; MASSIVE STRUCTURE.

SHALE = LIGHT BLUISH GRAY, LIGHT PURPLE GRAY, MODERATE GRAYISH ORANGE; CRUMBLY DENSE TENACITY; EARTHY, SUBBLOCKY TO BLOCKY SLIGHT IRREGULAR FRACTURE; WEDGELIKE, TABULAR, SUBBLOCKY CUTTINGS HABIT; DULL EARTHY LUSTER; GRITTY TO SMOOTH TEXTURE; THICK MASSIVE STURCTURE; TRACE SILTSTONE INTERBEDDED.

SILTSTONE = LIGHT GRAYISH ORANGE HUES; CRUMBLY, CRUNCHY TENACITY; SUB BLOCKY, IRREGULAR FRACTURES; WEDGELIKE, TABULAR CUTTINGS HABIT; DULL EARTHY, FROSTED LUSTER, GRANULAR TO CLAYEY TEXTURE; THICK MASSIVE STRUCTURE.

SANDSTONE = VERY LIGHT GRAYISH WHITE, SLIGHT OFF WHITE, LIGHT BLUSH GRAY; PREDOMINATELY QUARTZ FRAMEWORK;



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