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MUDLOG TVD

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

CASING DATA

DEPTHS: 4111' TO 6282'
DATES: 6/16/2009 TO 6/18/2009
SCALE: 1" = 100'

16.000" AT 150'
10.750" AT 4111'
AT
AT

MUD TYPES

HOLE SIZE

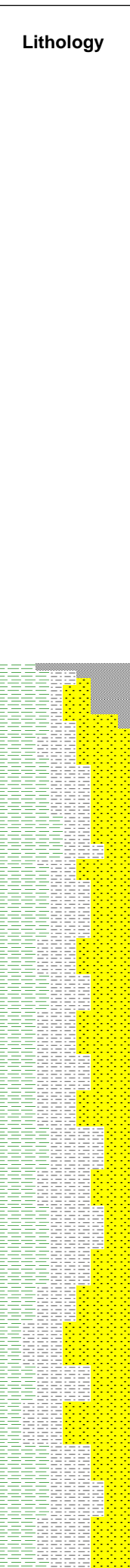
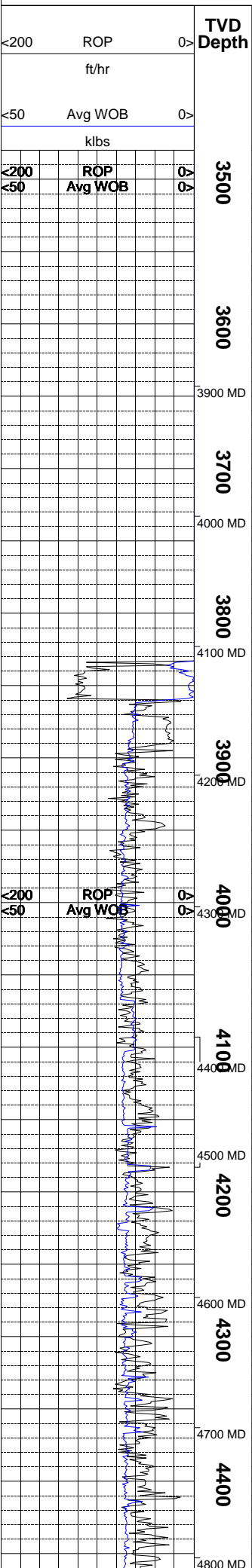
WATER BASE TO 5730'
DSF TO 6200'
LSND TO 6282'
TO

14.250" TO 4111'
9.875" TO 6282'
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	KAOLINIC	RECRYSTALLIZED CALCITE	VOLCANICS
CHALK	DIATOMITE	LIMESTONE	RHYOLITE	
CRYSTALLINE TUFF	DIORITE	LITHIC TUFF	SALT	
CHERT - ARGILL	DOLOSTONE	MARL - DOLO	SAND	



MGS	Ttl Gas units	CO2 ppm	Flare Ht. ft	Meth C-1 ppm	Ethn C-2 ppm	Prop C-3 ppm	Butn C-4 ppm	Pent C-5 ppm
<0	200	<10	<10	<10	<10	<10	<10	<10
>200	200	<10	<10	<10	<10	<10	<10	<10
>50	5K	<10	<10	<10	<10	<10	<10	<10
>100	100	<10	<10	<10	<10	<10	<10	<10

Remarks
Survey Data, Mud Reports, Other Info.

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.

1 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

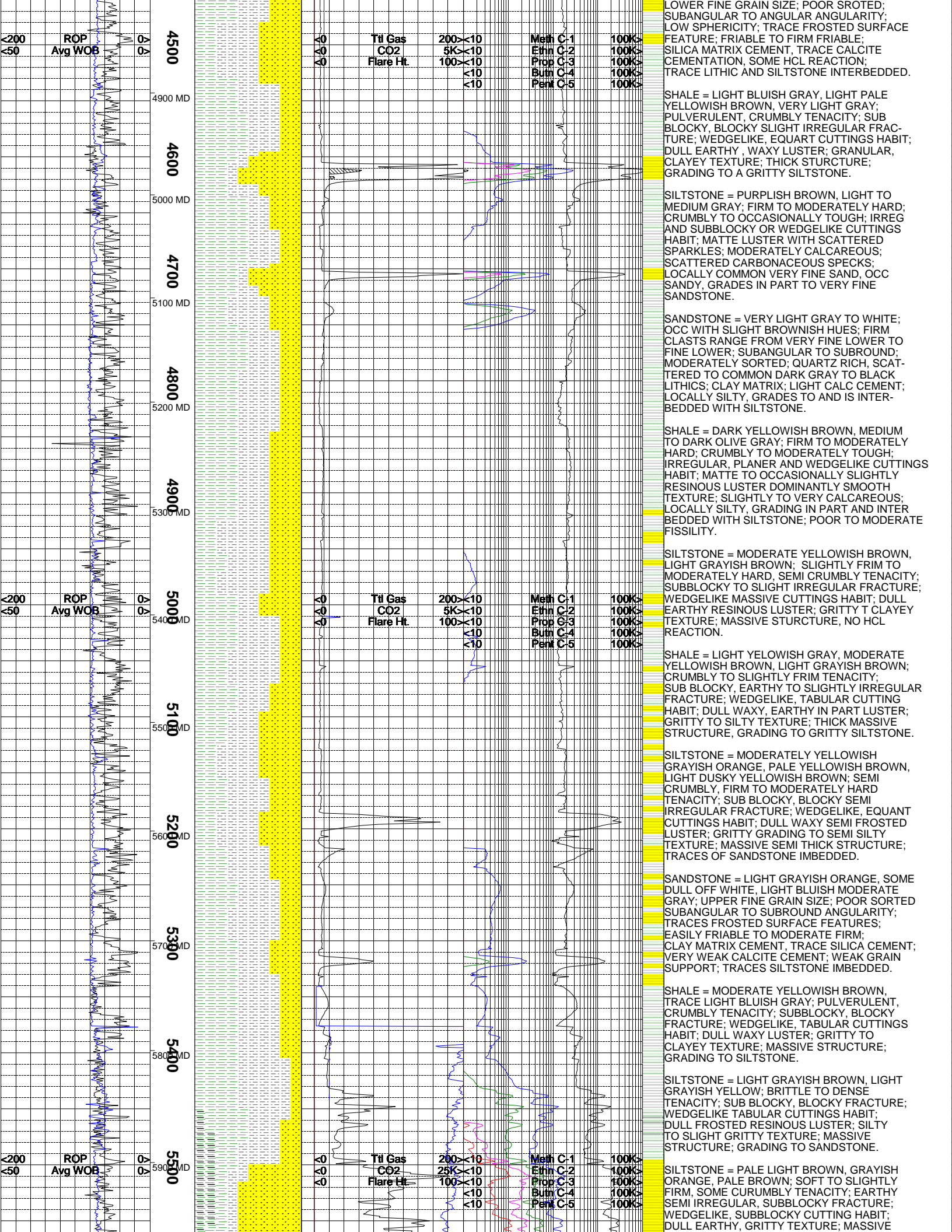
SANDSTONE = PALE YELLOWISH LIGHT BROWN, LIGHT OFF WHITE, LIGHT PALE GRAYISH BROWN; SOME CLEAR TO SLIGHT TRANSLUCENT; QUARTZ FRAMEWORK; UPPER TO LOWER FINE GRAIN SIZE; POOR TO FAIR SORTING; CONSOLIDATED IN PART; PREDOMINATELY SUBANGULAR ANGULARITY; SEMI FROSTED SURFACE FEATURES; EASILY FRIABLE TO FIRM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

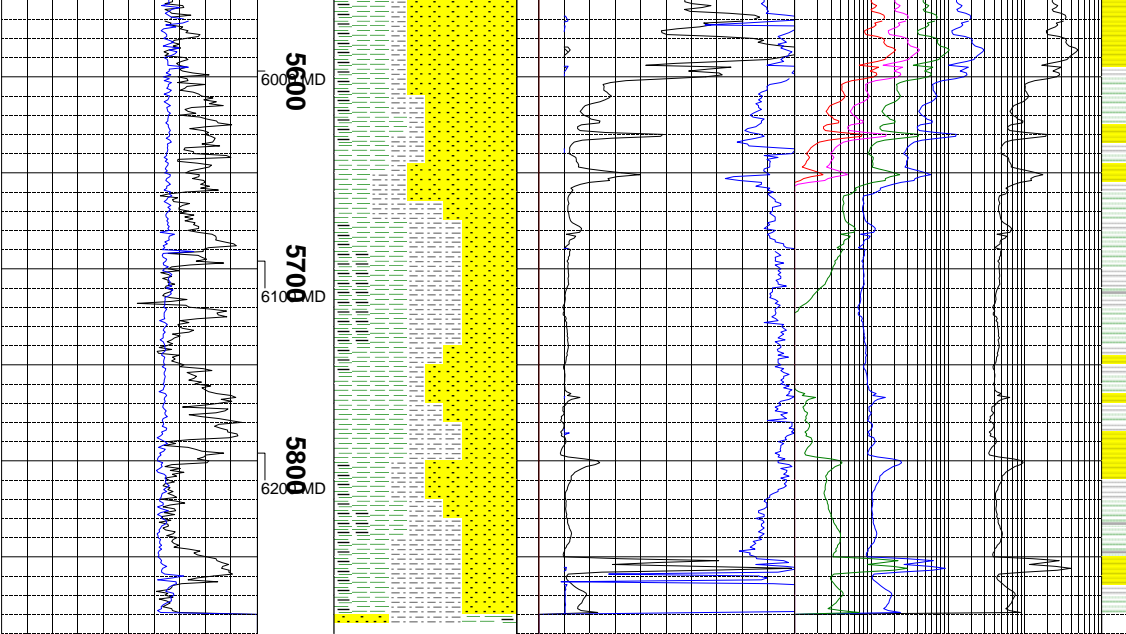
SHALE = DARK YELLOWISH ORANGE, LIGHT MODEDRATE YELLOWISH BROWN, TRACES DARK YELLOWISH BROWN; PULVERULENT, CRUNCHY TENACITY; EARTHY TO SUB BLOCKY SLIGHT IRREGULAR FRACTURE; WEDGELIKE TABULAR CUTTINGS HABIT; DULL EARTHY SLIGHT WAXY LUSTER, GRITTY TO CLAYEY TEXTURE; MASSIVE STRUCTURE.

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 BLUISH GRAY; PREDOMINATELY QUARTZ FRAMEWORK;





STRUCTURE.

SANDSTONE = VERY LIGHT GRAY, LIGHT BLUISH GRAY; PREDOMINATELY QUARTZ FRAMEWORK; LOWER TO SLIGHTLY UPPER VERY FINE GRAIN; WELL SORTED; SUBANGULAR TO SOME SUBROUND ANGULARITY; LOW SPHERICITY; FROSTED IN PART; FRIABLE TO FIRM FRIABLE; PREDOMINATELY GRAIN SUPPORTED, TRACES OF CALCITE CEMENT; TRACES BLACK LITHICS SPECKLED IMBEDDED; VERY TIGHT, NO VISUAL POROSITY.

SHALE = DARK TO DUSKY YELLOWISH BROWN, LIGHT TO MEDIUM GRAY, OCCASIONAL LIGHT GREENISH GRAY; FIRM TO HARD; CRUMBLY TO TOUGH; TABULAR, BLOCKY AND PLATY CUTTINGS; MATTE TO SLIGHTLY SHINY LUSTER SMOOTH TO SILTY TEXTURE; NON TO SLIGHTLY CALCAREOUS; RARELY WITH HIGH CARBONACEOUS CONTENT.

SILTSTONE = DARK REDDISH BROWN, TRACES VERY DUSKY RED, LIGHT YELLOWISH BROWN; PULVERULENT, CRUNCHY TENACITY; SUBBLOCKY TO BLOCKY SLIGHT IRREGULAR FRACTURE; WEDGELIKE, EQUANT CUTTINGS HABIT; DULL EARTHY LUSTER.

NOTE: C.O. AT 6282'. PIPE STUCK WHILE POOH. SIDETRACK WELL.

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