Houston, TX
(281) 784-5500
Bakersfield, CA
(661) 328-1595
New Iberia, LA
(337) 364-2322
Anchorage, AK
(907) 561-2465

MUDLOG MD

COMPANY	ExxonMobil Production
WELL	PCU 297-11C3
FIELD	Piceance Creek
REGION	Rocky Mountain
COORDINATES	39.896025 N
	108.254523 W
ELEVATION	GL: 6882.8'
	RKB: 6913.0'
COUNTY, STATE	Rio Blanco, Colorado
API INDEX	05-103-11473-00
SPUD DATE	01/26/2010
CONTRACTOR	HP Drilling
CO. REP.	M. Sadler/ M. Wood
RIG/TYPE	#326/ HP Flex-4
LOGGING UNIT	MLU #36
GEOLOGISTS	J. Kokes/J. Keevan
	J. Sell/D. Thibodeaux
ADD. PERSONS	P. Strickland/D. Bedard
	H. Strickland
CO. GEOLOGIST	Chris Alba

LOG INTERVAL

DEPTHS:	3900'	**TO**	12830'
DATES:	04/10/2010	**TO**	05/25/2010
SCALE:	5" = 100'		

MUD TYPES

Water Based Spud Mud	**TO**	3900'
LSND	**TO**	12830'
	TO	
	TO	

CASING DATA

16"	**AT**	150'
10 3/4"	**AT**	3887'
7"	**AT**	8712'
4 1/2"	**AT**	

HOLE SIZE

14 1/4"	**TO**	3900'
9 7/8"	**TO**	8733'
6 1/8"	**TO**	12830'
	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
ANDESITE
ANHYDRITE
BASALT
BENTONITE
BIOTITIZATION
BRECCIA
CALCARENITE
CALCAREOUS TUFF
CALCILUTITE
CARBONATES
CARBONACEOUS MAT
CARBONACEOUS SH
CEMENT CONTAM.
CHALK
CRYSTALLINE TUFF
CHERT - ARGILL
CHERT - GLASSY
CHERT - PORCEL
CHERT - TIGER STRIPE
CHERT - UNDIFF
CLAY
CLAY-MUDSTONE
CLYST-TUFFACEOUS
CHLORITIZATION
COAL
CONGLOMERATE
CONGL. SAND
CONGL. SANDSTONE
COQUINA
DACITE
DIATOMITE
DIORITE
DOLOSTONE
FELSIC SILIC DIKE
FOSSIL
GABBRO
GLASSY TUFF
GRANITE
GRANITE WASH
GRANODIORITE
GYPSUM
HALITE
HORNBL-QTZ-DIO
IGNEOUS (ACIDIC)
IGNEOUS (BASIC)
INTRUSIVES
KAOLINITIC
LIMESTONE
LITHIC TUFF
MARL - DOLO
MARL - CALC
METAMORPHICS
MUDSTONE
OBSIDIAN
PALEOSOL
PHOSPHATE
PORCELANITE
PORCELANEOUS CLYST
PYRITE
PYROCLASTICS
QUARTZ DIORITE
QUARTZ LATITE
QUARTZ MONZONITE
RECRYSTALLIZED CALCITE
RHYOLITE
SALT
SAND
SANDSTONE
SANDSTONE-TUFFACEOUS
SERICITIZATION
SERPENTINE
SHALE
SHALE TUFFACEOUS
SHELL FRAGMENTS
SIDERITE
SILICIFICATION
SILTSTONE
SILTST-TUFFACEOUS
TUFF
VOLCANICLASTICS SEDS
VOLCANICS

<300 ROP 0> ft/hr
<50 Avg WOB 0> klbs
<1 Depth of Cut 0> in/rev

Depth

Lithology

MGS

<0 Ttl Gas 1K> units
<330 CO2 10K> ppm
<0 Flare Ht. 100> ft

<10 Meth C-1 100K> ppm
<10 Ethn C-2 100K>
<10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>

Interp. Lith

3600

Remarks
Survey Data, Mud Reports, Other Info.

ALL DEPTHS ARE REFERENCED TO RKB.

ALL ROCK COLORS ARE REFERENCED TO THE GSA ROCK COLOR CHART. ROCK CONSTITUENTS ARE DESCRIBED WET AND LISTED IN ORDER OF MOST ABUNDANT TO LEAST ABUNDANT.

ALL CONNECTION GASES, TRIP GASES, AND DOWNTIME GASES ARE NOTED ON THE LOG.

LARGE CONNE3CTION GASES WHICH APPEAR ON THE MUD LOG USUALLY REFLECT UP HOLE 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

3700

3800

3900

ISOBUTANE = 1010 PPM

BUTANE = 1000 PPM

ISOPENTANE = 1000 PPM

PENTANE = 1000 PPM

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

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 OF METHANE

SET 10.75" SURFACE CASING AT 3881'.

NB #2, 9.875" IN @ 3900'

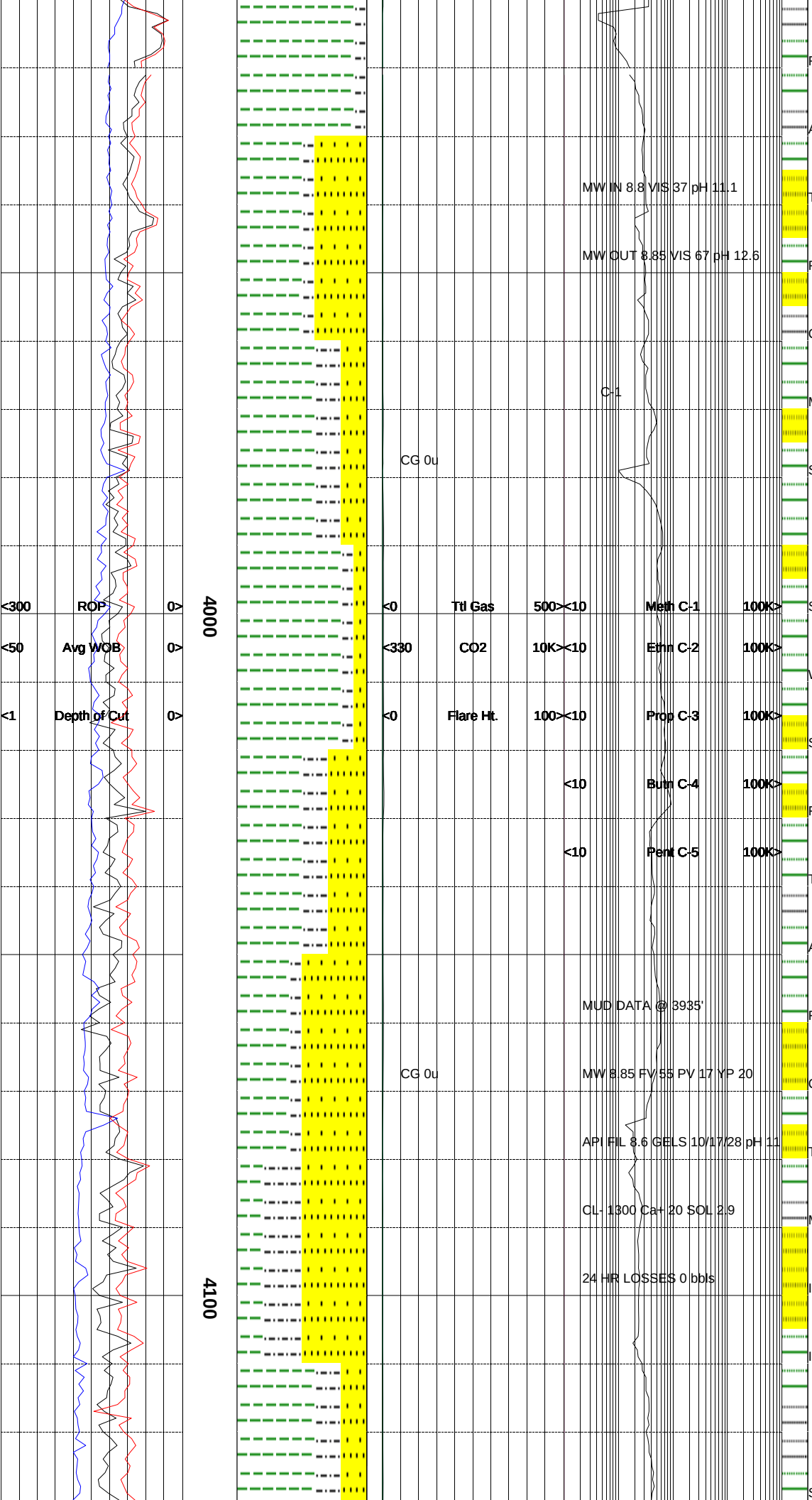
HUGHES 504ZX / POWERDRIVE

S/N: 7019010 JETS:2X12, 4x13

HRS:XX.X FTG: 1504'

CANRING COMMENCED LOGGING ON PCU297-11C3 ON 04-09-2010 AT 16:23 HRS.

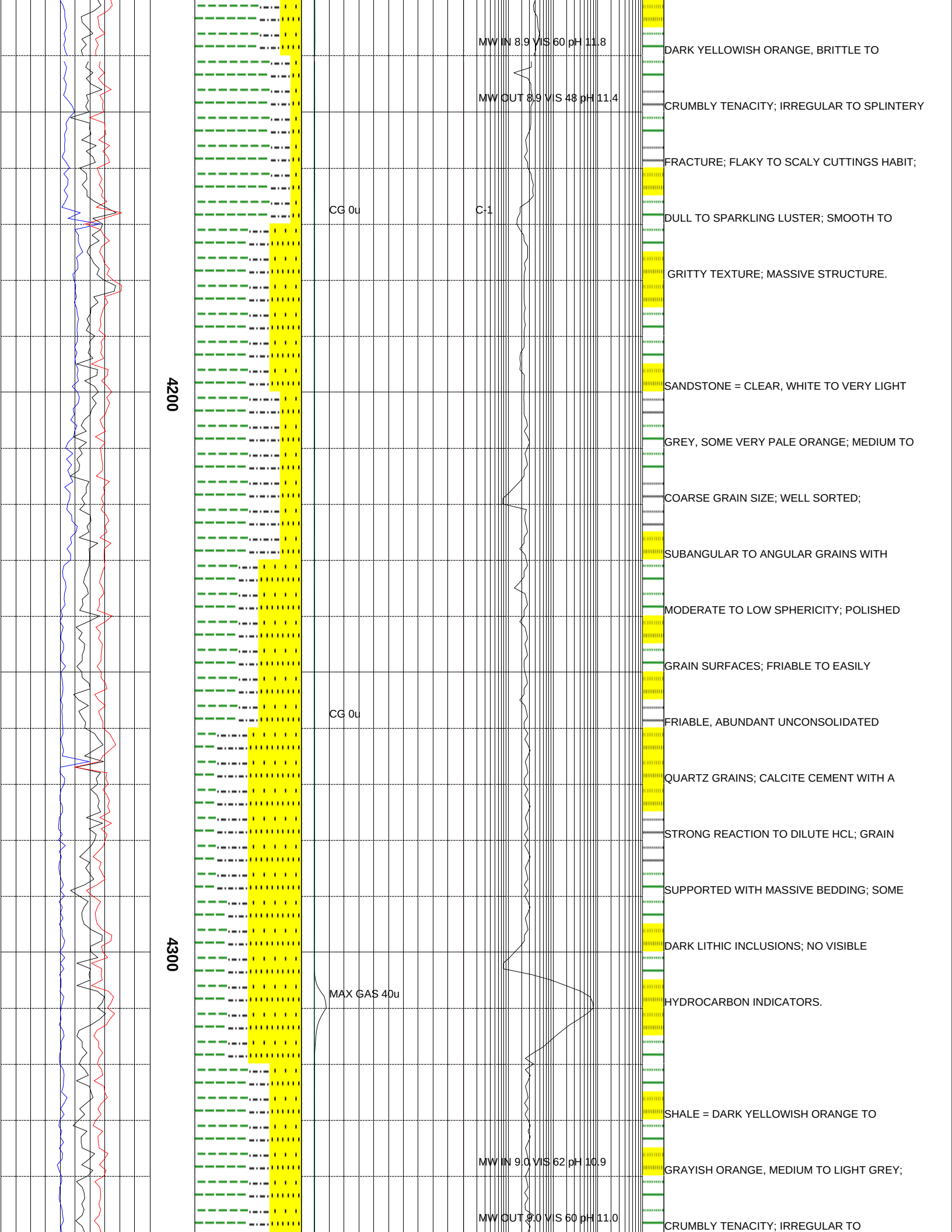
SHALE = PALE YELLOWISH ORANGE, MODERATE

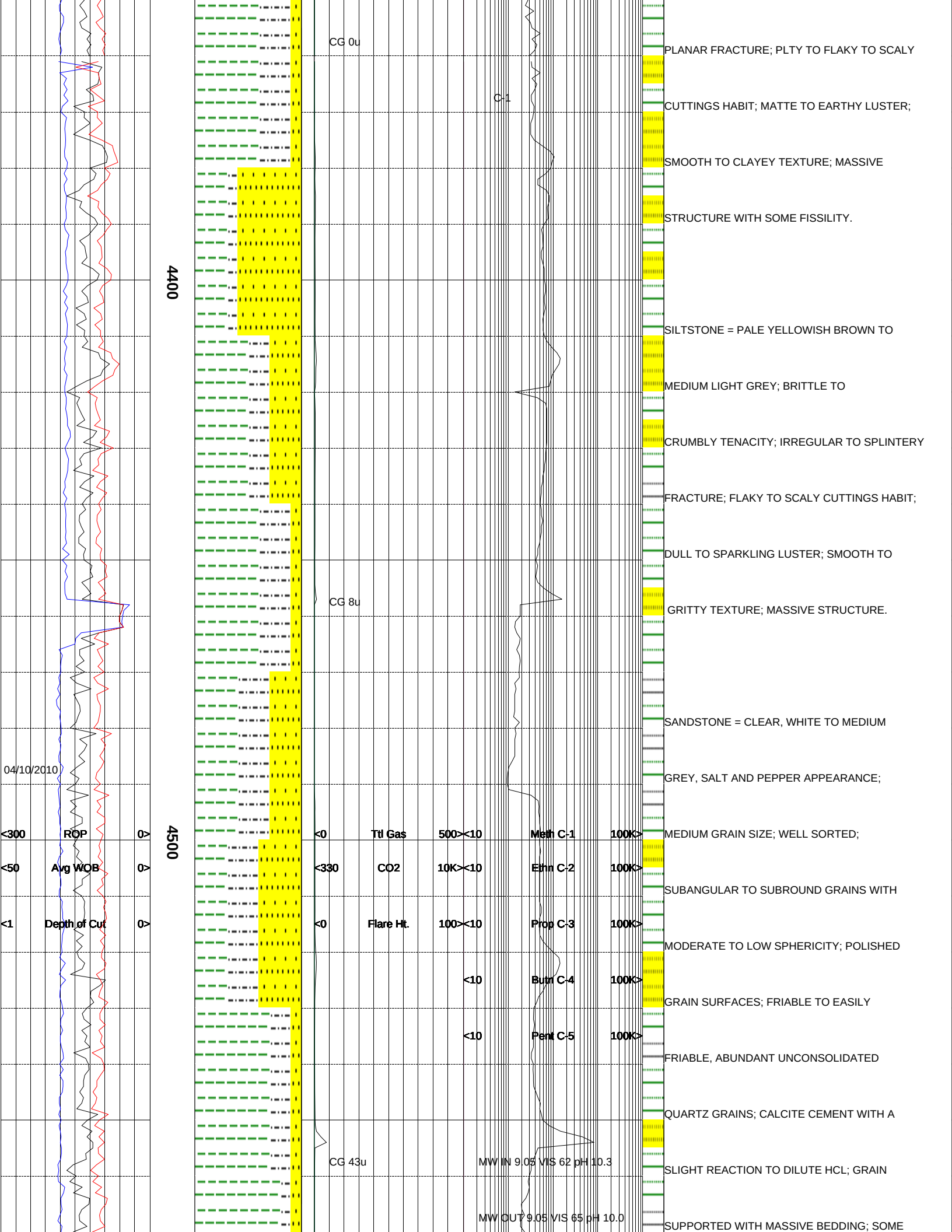


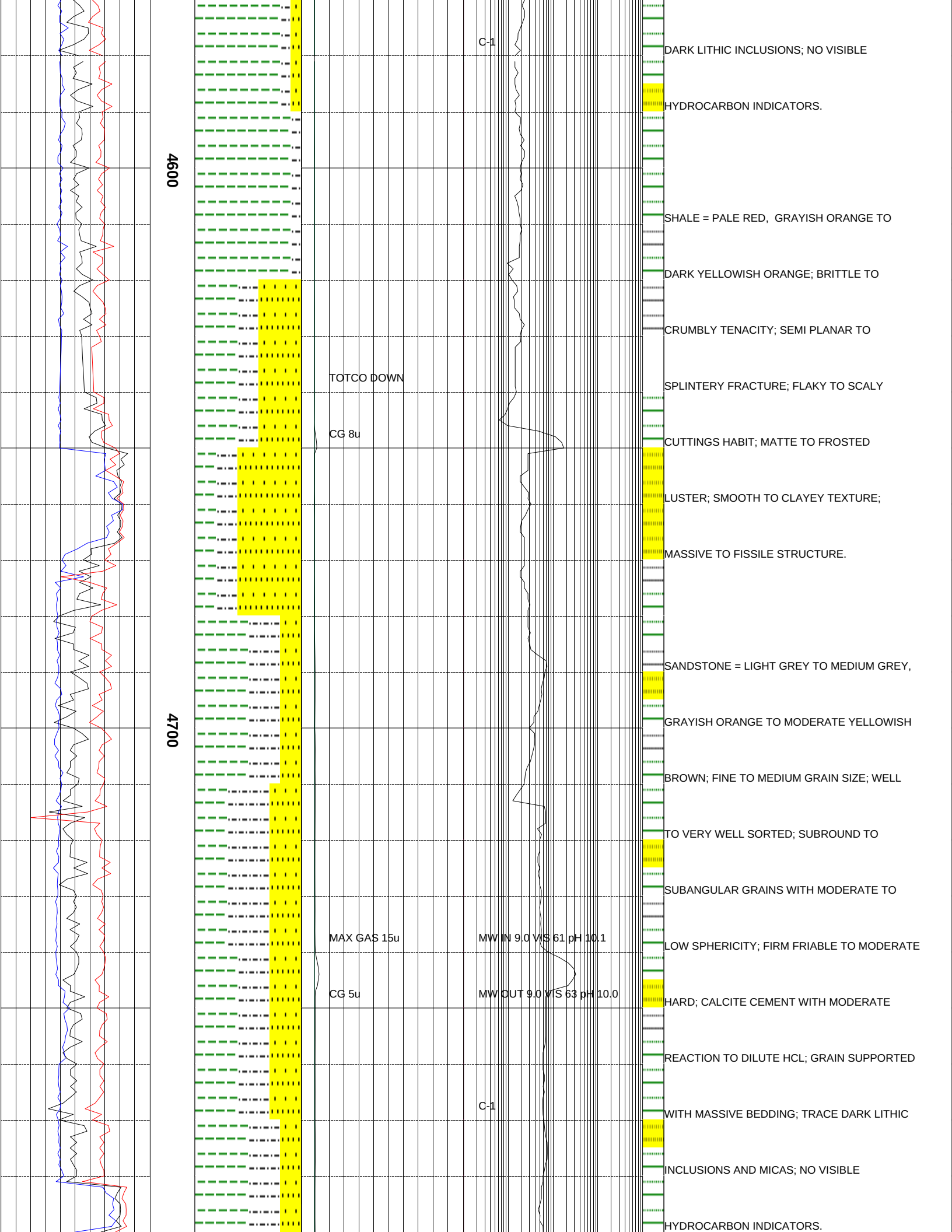
RED, MEDIUM BLUISH GREY, PALE PURPLE IN A MOTTLED PATTERN; BRITTLE TO CRUMBLY TENACITY; PLANAR TO SPLINTERY FRACTURE; PLATY TO FLAKY CUTTINGS HABIT; SMOOTH TO CLAYEY TEXTURE; DULL TO EARTHY TO MATTE LUSTER; FISSILE TO MASSIVE STRUCTURE.

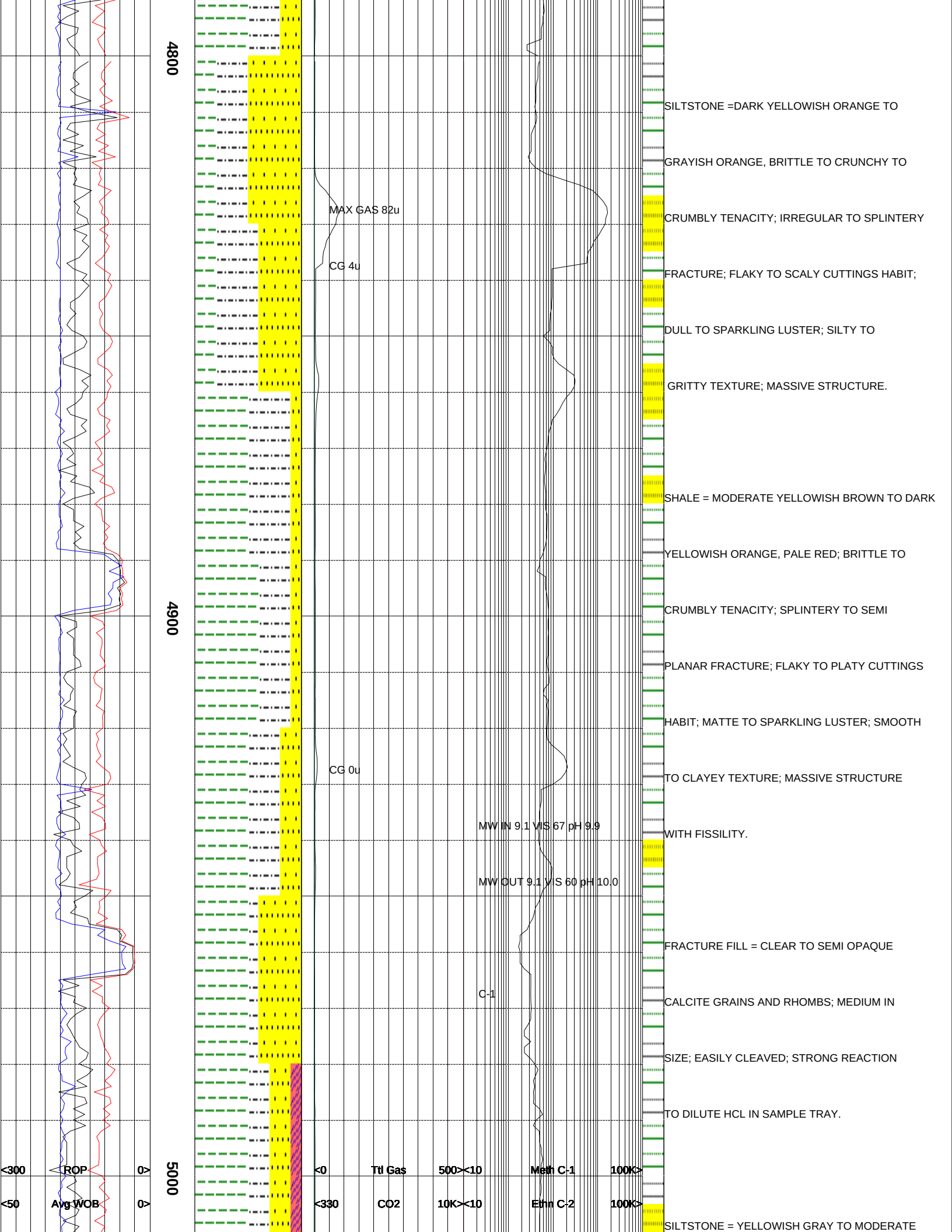
SANDSTONE - WHITE TO LIGHT GREY, CLEAR WITH SOME BLACK SPECKLES CREATING A SALT AND PEPPERED APPEARANCE; MEDIUM TO FINE GRAIN SIZE; WELL SORTED; MODERATE TO LOW SPHERICITY WITH SUBANGULAR TO ANGULAR GRAINS; POLISHED GRAIN SURFACES; FRIABLE TO FIRM FRIABLE CUTTINGS; CALCITE CEMENT WITH A MODERATE REACTION TO DILUTE HCL; GRAIN SUPPORTED WITH MASSIVE BEDDING; ABUNDANT DARK LITHIC INCLUSIONS; NO VISIBLE HYDROCARBON INDICATORS.

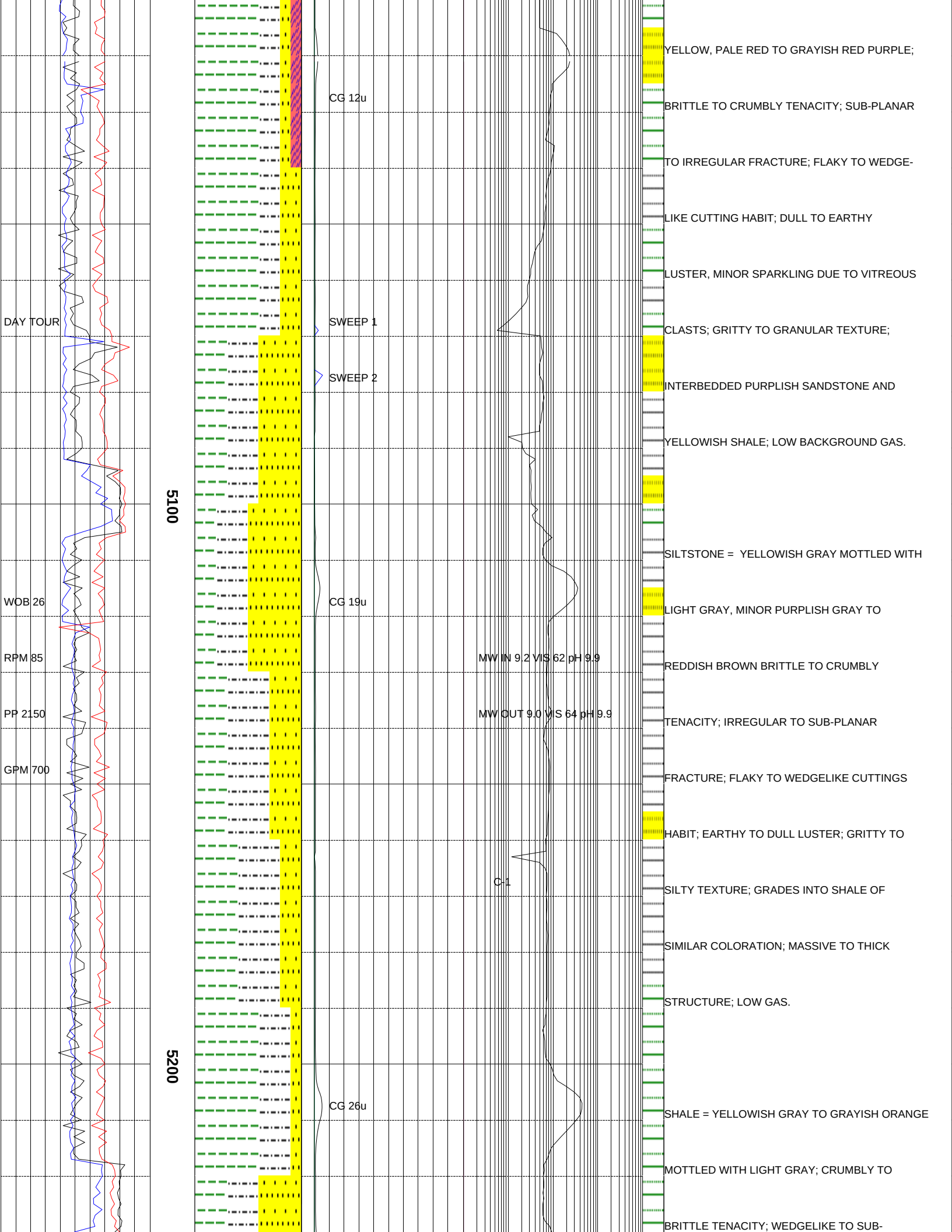
SILTSTONE = PALE YELLOWISH BROWN TO

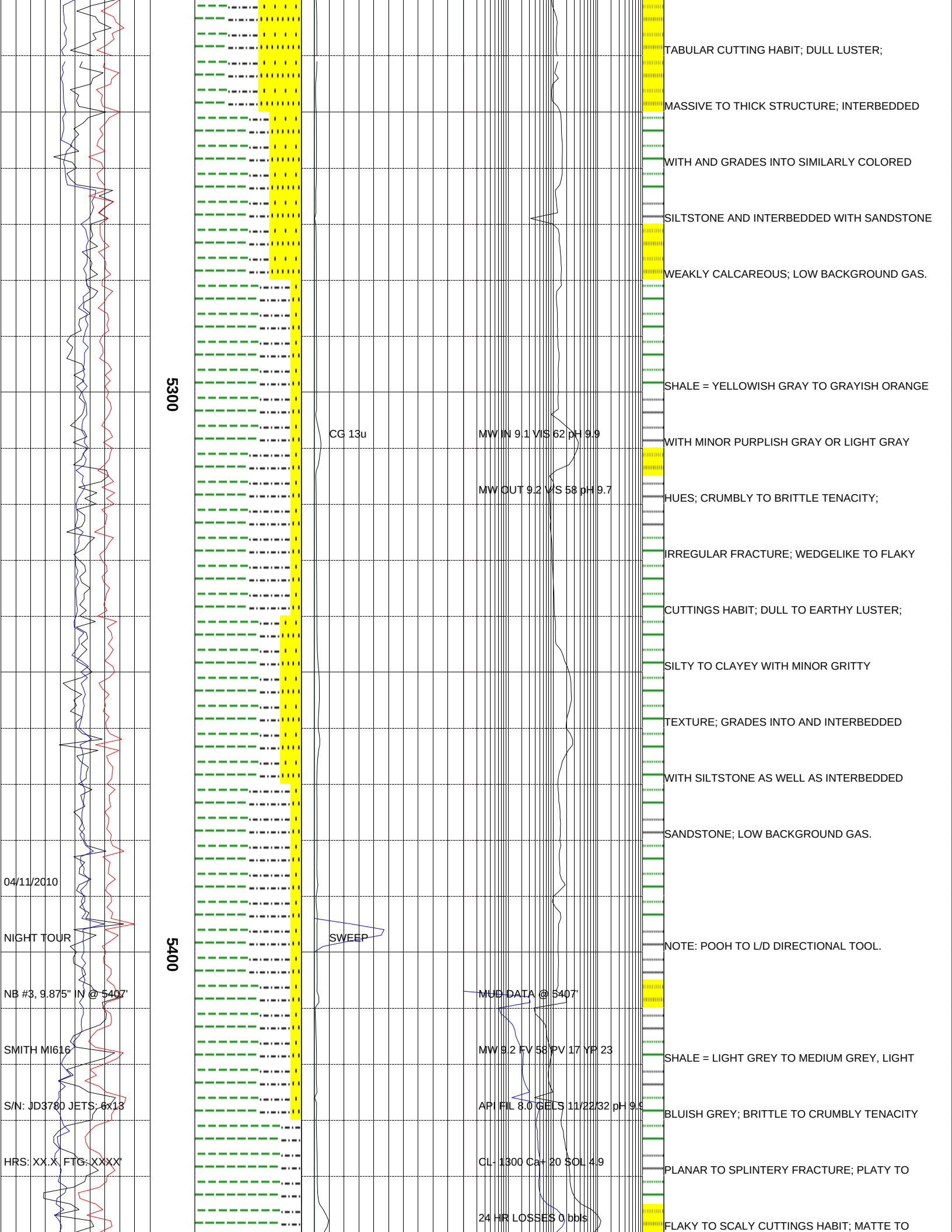

MW IN 8.9 VIS 60 pH 11.8
MW OUT 8.9 VIS 48 pH 11.4
CG 0u
C-1
4200
CG 0u
4300
MAX GAS 40u
MW IN 9.0 VIS 62 pH 10.9
MW OUT 9.0 VIS 60 pH 11.0
DARK YELLOWISH ORANGE, BRITTLE TO
CRUMBLY TENACITY; IRREGULAR TO SPLINTERY
FRACTURE; FLAKY TO SCALY CUTTINGS HABIT;
DULL TO SPARKLING LUSTER; SMOOTH TO
GRITTY TEXTURE; MASSIVE STRUCTURE.
SANDSTONE = CLEAR, WHITE TO VERY LIGHT
GREY, SOME VERY PALE ORANGE; MEDIUM TO
COARSE GRAIN SIZE; WELL SORTED;
SUBANGULAR TO ANGULAR GRAINS WITH
MODERATE TO LOW SPHERICITY; POLISHED
GRAIN SURFACES; FRIABLE TO EASILY
FRIABLE, ABUNDANT UNCONSOLIDATED
QUARTZ GRAINS; CALCITE CEMENT WITH A
STRONG REACTION TO DILUTE HCL; GRAIN
SUPPORTED WITH MASSIVE BEDDING; SOME
DARK LITHIC INCLUSIONS; NO VISIBLE
HYDROCARBON INDICATORS.
SHALE = DARK YELLOWISH ORANGE TO
GRAYISH ORANGE, MEDIUM TO LIGHT GREY;
CRUMBLY TENACITY; IRREGULAR TO

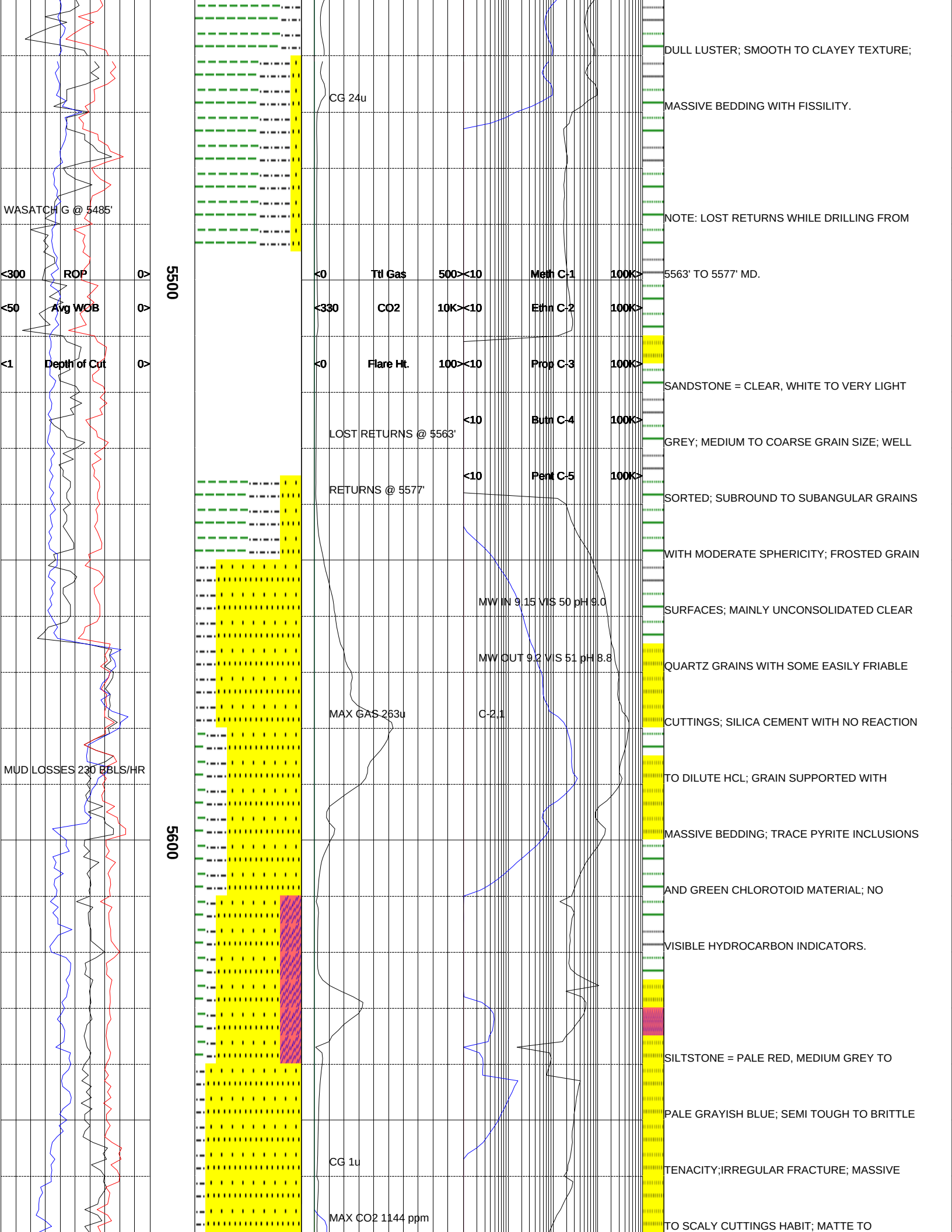

CG 0u
C-1
4400
CG 8u
04/10/2010
<300 ROP 0>
<50 Avg WOB 0>
<1 Depth of Cut 0>
4500
<0 Ttl Gas 500><10 Meth C-1 100K>
<330 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
CG 43u
MW IN 9.05 VIS 62 pH 10.3
MW OUT 9.05 VIS 65 pH 10.0
PLANAR FRACTURE; PLTY TO FLAKY TO SCALY
CUTTINGS HABIT; MATTE TO EARTHY LUSTER;
SMOOTH TO CLAYEY TEXTURE; MASSIVE
STRUCTURE WITH SOME FISSILITY.
SILTSTONE = PALE YELLOWISH BROWN TO
MEDIUM LIGHT GREY; BRITTLE TO
CRUMBLY TENACITY; IRREGULAR TO SPLINTERY
FRACTURE; FLAKY TO SCALY CUTTINGS HABIT;
DULL TO SPARKLING LUSTER; SMOOTH TO
GRITTY TEXTURE; MASSIVE STRUCTURE.
SANDSTONE = CLEAR, WHITE TO MEDIUM
GREY, SALT AND PEPPER APPEARANCE;
MEDIUM GRAIN SIZE; WELL SORTED;
SUBANGULAR TO SUBROUND GRAINS WITH
MODERATE TO LOW SPHERICITY; POLISHED
GRAIN SURFACES; FRIABLE TO EASILY
FRIABLE, ABUNDANT UNCONSOLIDATED
QUARTZ GRAINS; CALCITE CEMENT WITH A
SLIGHT REACTION TO DILUTE HCL; GRAIN
SUPPORTED WITH MASSIVE BEDDING; SOME

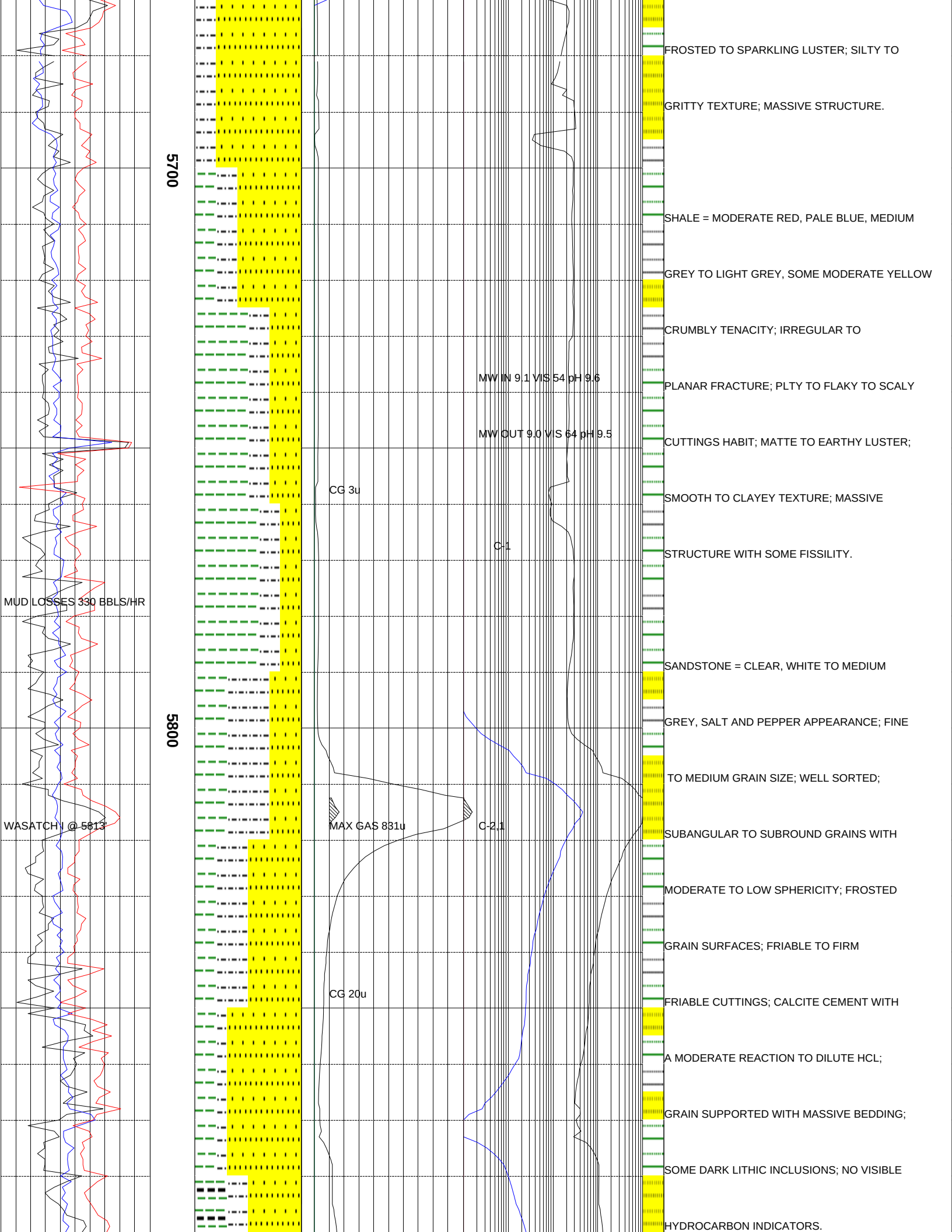

4600
4700
TOTCO DOWN
CG 8u
MAX GAS 15u
CG 5u
C-1
MW IN 9.0 VIS 61 pH 10.1
MW OUT 9.0 VIS 63 pH 10.0
C-1
DARK LITHIC INCLUSIONS; NO VISIBLE
HYDROCARBON INDICATORS.
SHALE = PALE RED, GRAYISH ORANGE TO
DARK YELLOWISH ORANGE; BRITTLE TO
CRUMBLY TENACITY; SEMI PLANAR TO
SPLINTERY FRACTURE; FLAKY TO SCALY
CUTTINGS HABIT; MATTE TO FROSTED
LUSTER; SMOOTH TO CLAYEY TEXTURE;
MASSIVE TO FISSILE STRUCTURE.
SANDSTONE = LIGHT GREY TO MEDIUM GREY,
GRAYISH ORANGE TO MODERATE YELLOWISH
BROWN; FINE TO MEDIUM GRAIN SIZE; WELL
TO VERY WELL SORTED; SUBROUND TO
SUBANGULAR GRAINS WITH MODERATE TO
LOW SPHERICITY; FIRM FRIABLE TO MODERATE
HARD; CALCITE CEMENT WITH MODERATE
REACTION TO DILUTE HCL; GRAIN SUPPORTED
WITH MASSIVE BEDDING; TRACE DARK LITHIC
INCLUSIONS AND MICAS; NO VISIBLE
HYDROCARBON INDICATORS.

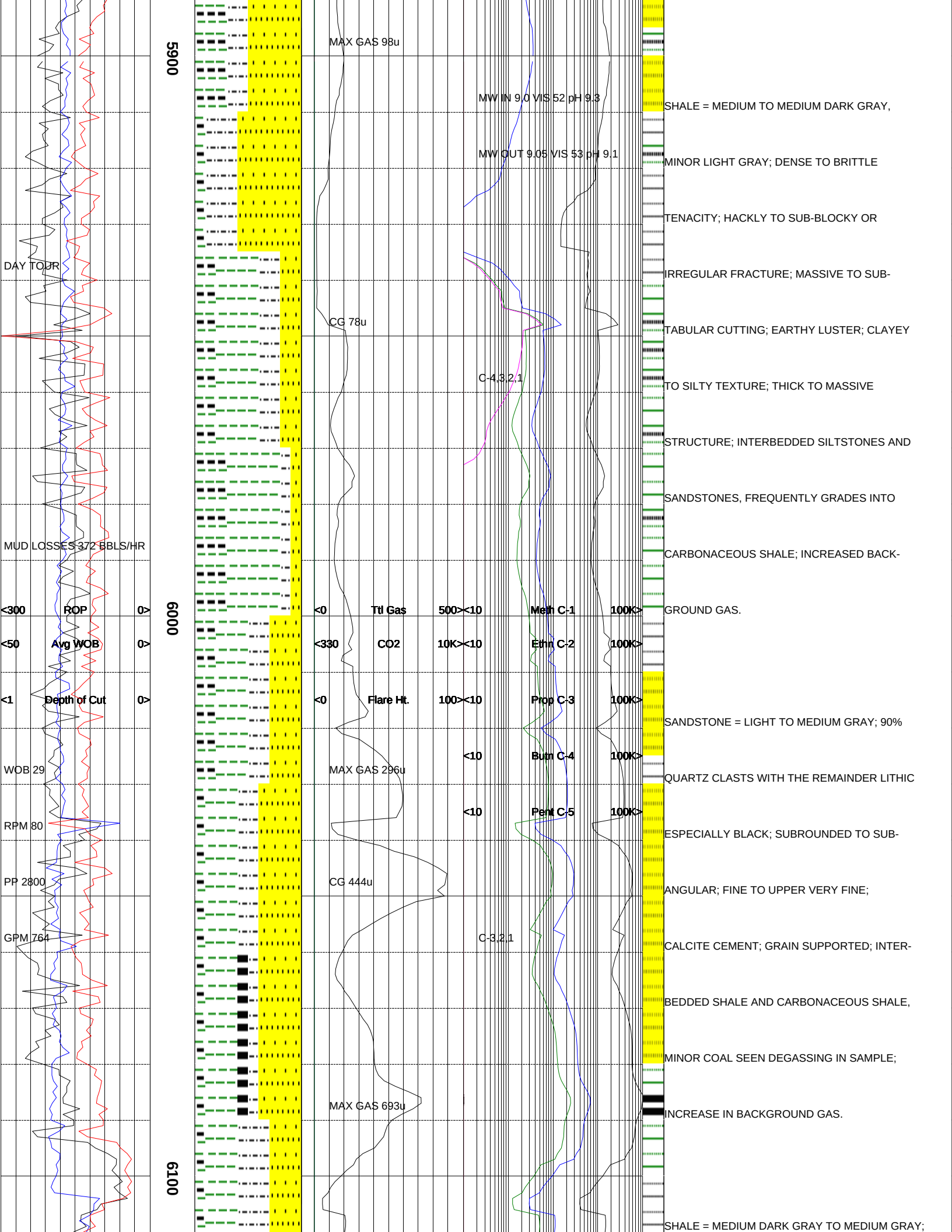

4800
4900
5000
MAX GAS 82u
CG 4u
CG 0u
MW IN 9.1 VIS 67 pH 9.9
MW OUT 9.1 VIS 60 pH 10.0
C-1
SILTSTONE =DARK YELLOWISH ORANGE TO
GRAYISH ORANGE, BRITTLE TO CRUNCHY TO
CRUMBLY TENACITY; IRREGULAR TO SPLINTERY
FRACTURE; FLAKY TO SCALY CUTTINGS HABIT;
DULL TO SPARKLING LUSTER; SILTY TO
GRITTY TEXTURE; MASSIVE STRUCTURE.
SHALE = MODERATE YELLOWISH BROWN TO DARK
YELLOWISH ORANGE, PALE RED; BRITTLE TO
CRUMBLY TENACITY; SPLINTERY TO SEMI
PLANAR FRACTURE; FLAKY TO PLATY CUTTINGS
HABIT; MATTE TO SPARKLING LUSTER; SMOOTH
TO CLAYEY TEXTURE; MASSIVE STRUCTURE
WITH FISSILITY.
FRACTURE FILL = CLEAR TO SEMI OPAQUE
CALCITE GRAINS AND RHOMBS; MEDIUM IN
SIZE; EASILY CLEAVED; STRONG REACTION
TO DILUTE HCL IN SAMPLE TRAY.
SILTSTONE = YELLOWISH GRAY TO MODERATE
<300 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 500><10 Meth C-1 100K>
<330 CO2 10K><10 Ethn C-2 100K>

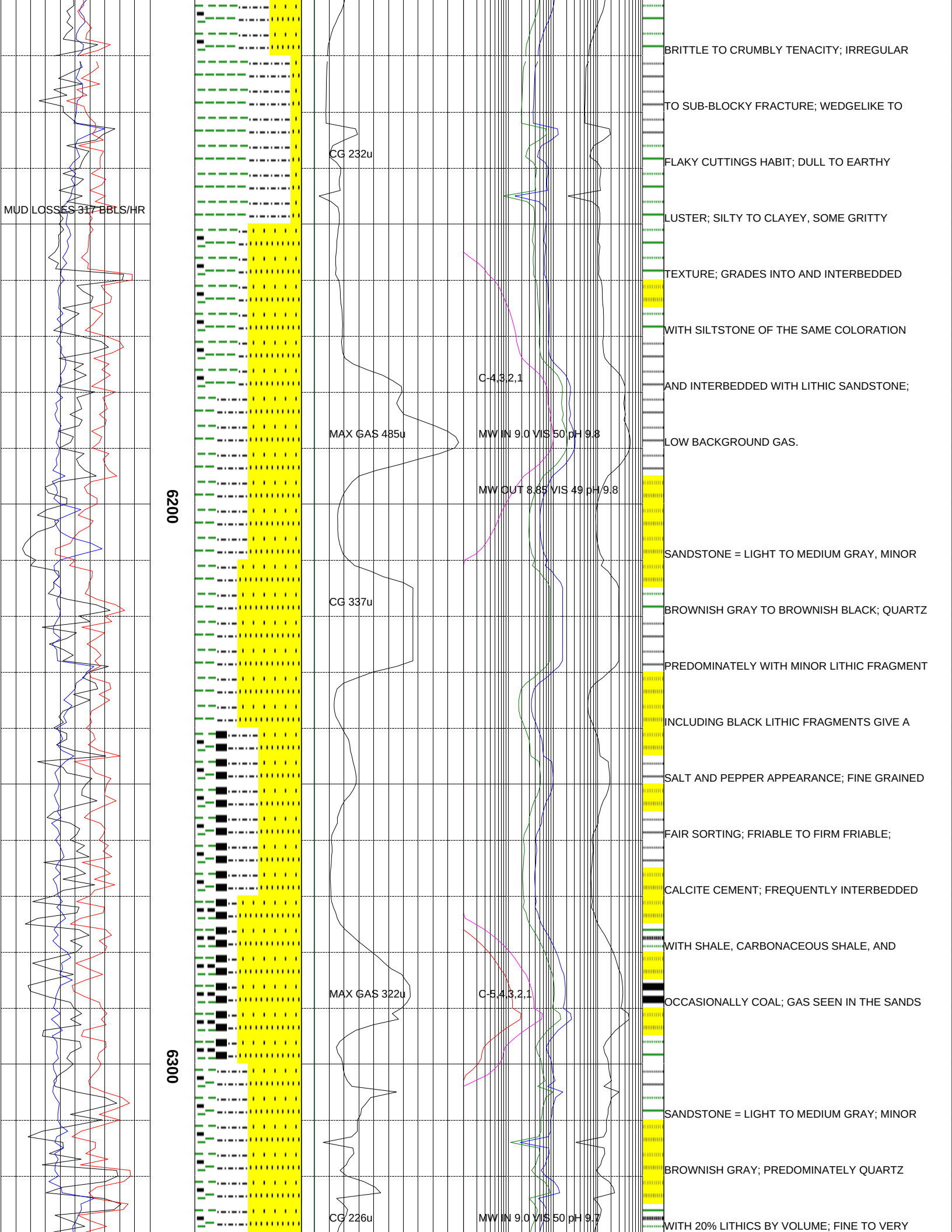

DAY TOUR
WOB 26
RPM 85
PP 2150
GPM 700
5100
5200
CG 12u
SWEEP 1
SWEEP 2
CG 19u
MW IN 9.2 VIS 62 pH 9.9
MW OUT 9.0 VIS 64 pH 9.9
C-1
CG 26u
YELLOW, PALE RED TO GRAYISH RED PURPLE;
BRITTLE TO CRUMBLY TENACITY; SUB-PLANAR
TO IRREGULAR FRACTURE; FLAKY TO WEDGE-
LIKE CUTTING HABIT; DULL TO EARTHY
LUSTER, MINOR SPARKLING DUE TO VITREOUS
CLASTS; GRITTY TO GRANULAR TEXTURE;
INTERBEDDED PURPLISH SANDSTONE AND
YELLOWISH SHALE; LOW BACKGROUND GAS.
SILTSTONE = YELLOWISH GRAY MOTTLED WITH
LIGHT GRAY, MINOR PURPLISH GRAY TO
REDDISH BROWN BRITTLE TO CRUMBLY
TENACITY; IRREGULAR TO SUB-PLANAR
FRACTURE; FLAKY TO WEDGELIKE CUTTINGS
HABIT; EARTHY TO DULL LUSTER; GRITTY TO
SILTY TEXTURE; GRADES INTO SHALE OF
SIMILAR COLORATION; MASSIVE TO THICK
STRUCTURE; LOW GAS.
SHALE = YELLOWISH GRAY TO GRAYISH ORANGE
MOTTLED WITH LIGHT GRAY; CRUMBLY TO
BRITTLE TENACITY; WEDGELIKE TO SUB-

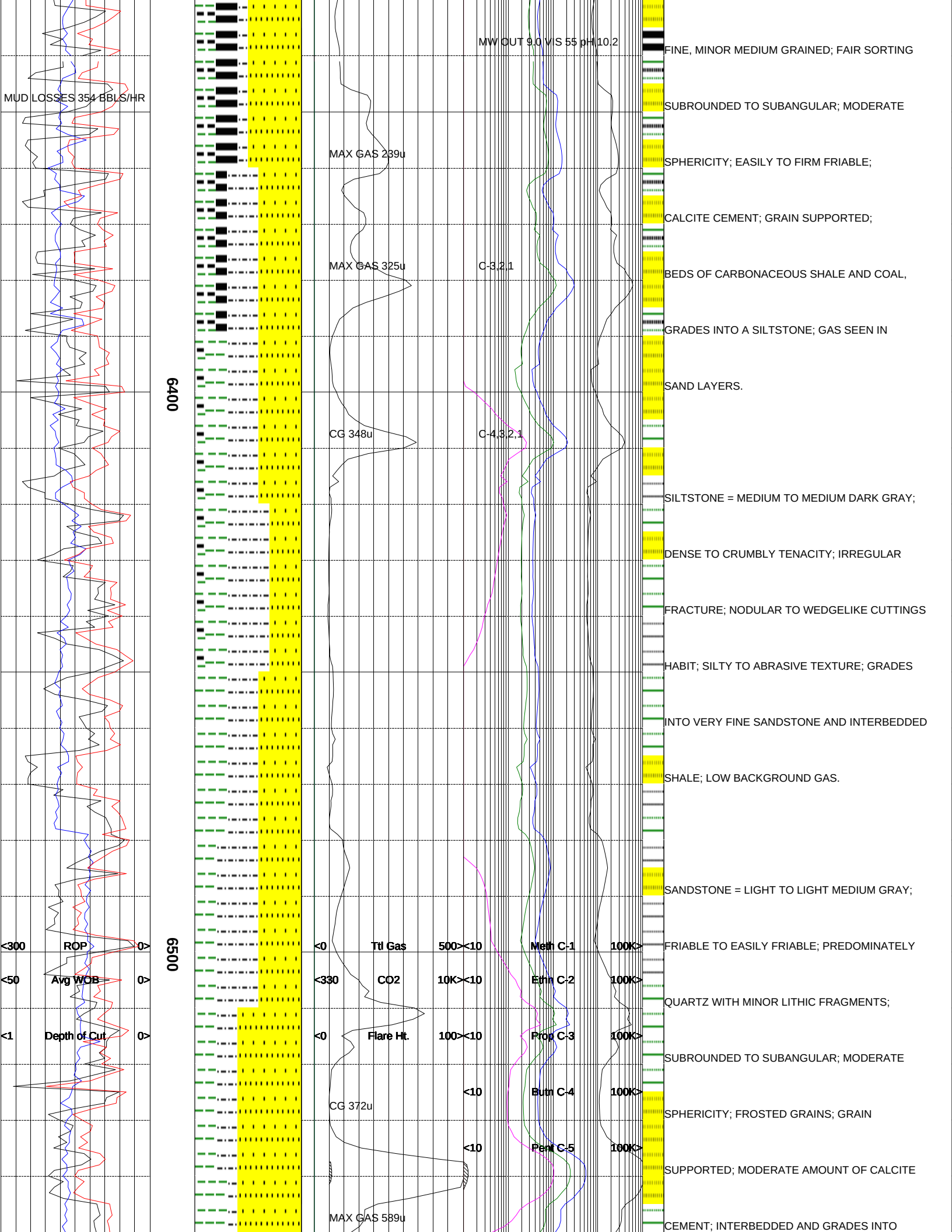

TABULAR CUTTING HABIT; DULL LUSTER;
MASSIVE TO THICK STRUCTURE; INTERBEDDED
WITH AND GRADES INTO SIMILARLY COLORED
SILTSTONE AND INTERBEDDED WITH SANDSTONE
WEAKLY CALCAREOUS; LOW BACKGROUND GAS.
5300
SHALE = YELLOWISH GRAY TO GRAYISH ORANGE
CG 13u
MW IN 9.1 VIS 62 pH 9.9
WITH MINOR PURPLISH GRAY OR LIGHT GRAY
MW OUT 9.2 VIS 58 pH 9.7
HUES; CRUMBLY TO BRITTLE TENACITY;
IRREGULAR FRACTURE; WEDGELIKE TO FLAKY
CUTTINGS HABIT; DULL TO EARTHY LUSTER;
SILTY TO CLAYEY WITH MINOR GRITTY
TEXTURE; GRADES INTO AND INTERBEDDED
WITH SILTSTONE AS WELL AS INTERBEDDED
SANDSTONE; LOW BACKGROUND GAS.
04/11/2010
NIGHT TOUR
SWEEP
NOTE: POOH TO L/D DIRECTIONAL TOOL.
5400
NB #3, 9.875" IN @ 5407'
MUD DATA @ 5407'
SMITH MI616
MW 9.2 FV 58 PV 17 YP 23
SHALE = LIGHT GREY TO MEDIUM GREY, LIGHT
S/N: JD3780 JETS: 6x13
API FIL 8.0 GELS 11/22/32 pH 9.9
BLUISH GREY; BRITTLE TO CRUMBLY TENACITY
HRS: XX.X FTG: XXXX'
CL- 1300 Ca+ 20 SOL 4.9
PLANAR TO SPLINTERY FRACTURE; PLATY TO
24 HR LOSSES 0 bbls
FLAKY TO SCALY CUTTINGS HABIT; MATTE TO

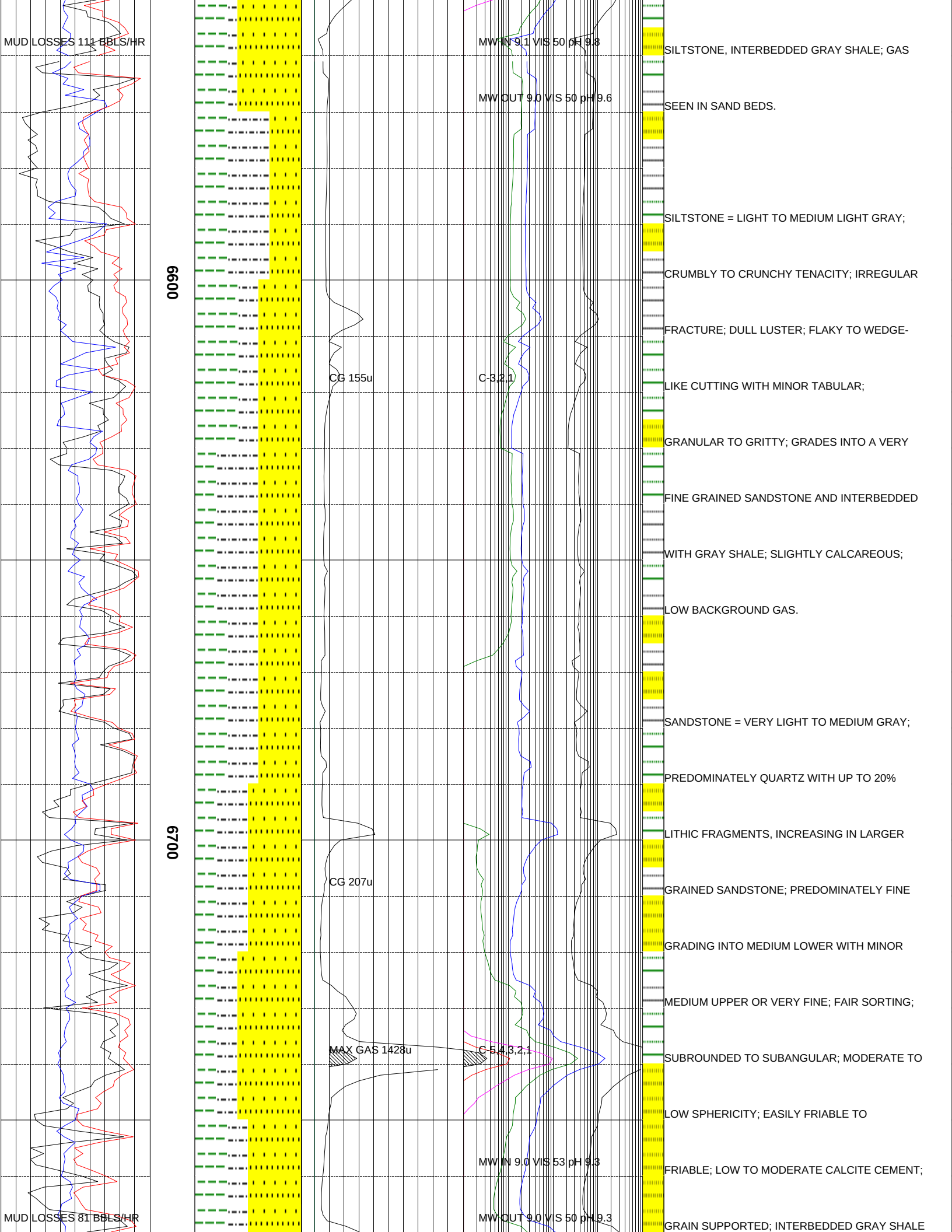

WASATCH G @ 5485'
<300 ROP 0>
<50 Avg WOB 0>
<1 Depth of Cut 0>
5500
5600
CG 24u
<0 Ttl Gas 500>
<330 CO2 10K>
<0 Flare Hit. 100>
LOST RETURNS @ 5563'
RETURNS @ 5577'
MUD LOSSES 230 BBLS/HR
MAX GAS 263u
CG 1u
MAX CO2 1144 ppm
<10 Meth C-1 100K>
<10 Ethn C-2 100K>
<10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
MW IN 9.15 VIS 50 pH 9.0
MW OUT 9.2 VIS 51 pH 8.8
C-2,1
DULL LUSTER; SMOOTH TO CLAYEY TEXTURE;
MASSIVE BEDDING WITH FISSILITY.
NOTE: LOST RETURNS WHILE DRILLING FROM
5563' TO 5577' MD.
SANDSTONE = CLEAR, WHITE TO VERY LIGHT
GREY; MEDIUM TO COARSE GRAIN SIZE; WELL
SORTED; SUBROUND TO SUBANGULAR GRAINS
WITH MODERATE SPHERICITY; FROSTED GRAIN
SURFACES; MAINLY UNCONSOLIDATED CLEAR
QUARTZ GRAINS WITH SOME EASILY FRIABLE
CUTTINGS; SILICA CEMENT WITH NO REACTION
TO DILUTE HCL; GRAIN SUPPORTED WITH
MASSIVE BEDDING; TRACE PYRITE INCLUSIONS
AND GREEN CHLOROTOID MATERIAL; NO
VISIBLE HYDROCARBON INDICATORS.
SILTSTONE = PALE RED, MEDIUM GREY TO
PALE GRAYISH BLUE; SEMI TOUGH TO BRITTLE
TENACITY;IRREGULAR FRACTURE; MASSIVE
TO SCALY CUTTINGS HABIT; MATTE TO

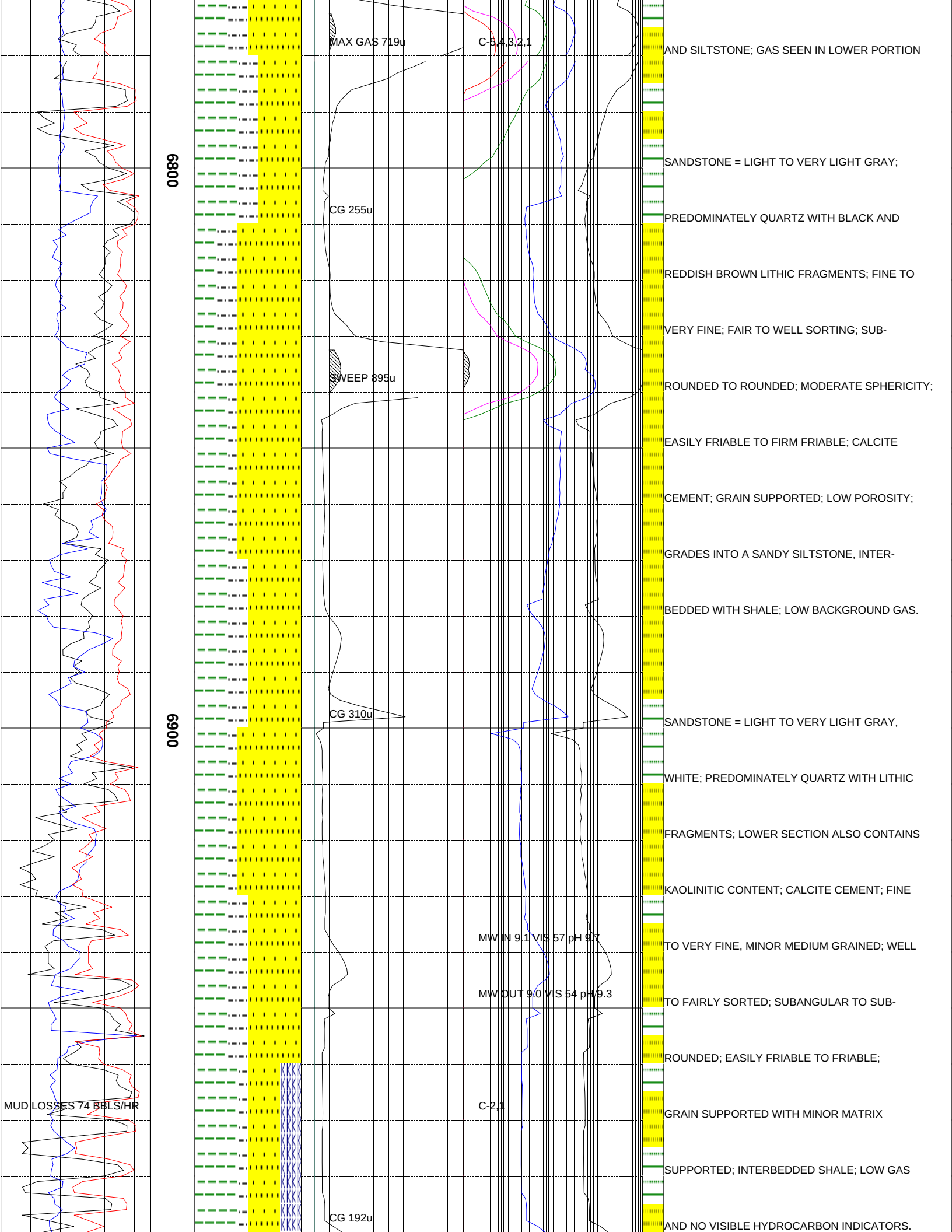

5700
5800
MUD LOSSES 330 BBLS/HR
WASATCH I @ 5813'
MW IN 9.1 VIS 54 pH 9.6
MW OUT 9.0 VIS 64 pH 9.5
CG 3u
C-1
MAX GAS 831u
C-2.1
CG 20u
FROSTED TO SPARKLING LUSTER; SILTY TO
GRITTY TEXTURE; MASSIVE STRUCTURE.
SHALE = MODERATE RED, PALE BLUE, MEDIUM
GREY TO LIGHT GREY, SOME MODERATE YELLOW
CRUMBLY TENACITY; IRREGULAR TO
PLANAR FRACTURE; PLTY TO FLAKY TO SCALY
CUTTINGS HABIT; MATTE TO EARTHY LUSTER;
SMOOTH TO CLAYEY TEXTURE; MASSIVE
STRUCTURE WITH SOME FISSILITY.
SANDSTONE = CLEAR, WHITE TO MEDIUM
GREY, SALT AND PEPPER APPEARANCE; FINE
TO MEDIUM GRAIN SIZE; WELL SORTED;
SUBANGULAR TO SUBROUND GRAINS WITH
MODERATE TO LOW SPHERICITY; FROSTED
GRAIN SURFACES; FRIABLE TO FIRM
FRIABLE CUTTINGS; CALCITE CEMENT WITH
A MODERATE REACTION TO DILUTE HCL;
GRAIN SUPPORTED WITH MASSIVE BEDDING;
SOME DARK LITHIC INCLUSIONS; NO VISIBLE
HYDROCARBON INDICATORS.

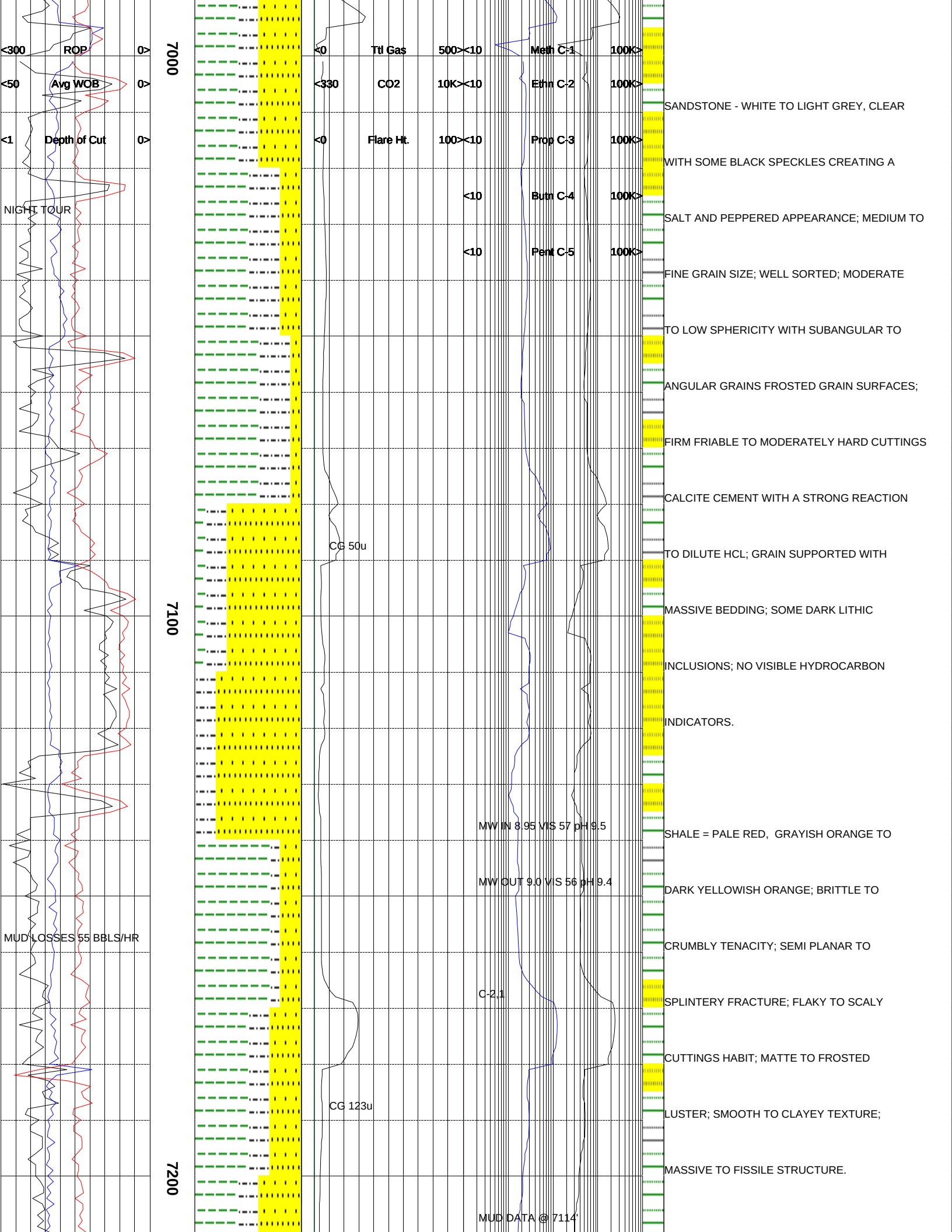

5900
6000
6100
MAX GAS 98u
MW IN 9.0 VIS 52 pH 9.3
MW OUT 9.05 VIS 53 pH 9.1
CG 78u
C-4,3,2,1
MAX GAS 296u
CG 444u
C-3,2,1
MAX GAS 693u
DAY TOUR
MUD LOSSES 372 BBLS/HR
<300 ROP 0>
<50 Avg WOB 0>
<1 Depth of Cut 0>
WOB 29
RPM 80
PP 2800
GPM 764
<0 Ttl Gas 500><10 Meth C-1 100K>
<330 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
<10 Pent C-5 100K>
SHALE = MEDIUM TO MEDIUM DARK GRAY,
MINOR LIGHT GRAY; DENSE TO BRITTLE
TENACITY; HACKLY TO SUB-BLOCKY OR
IRREGULAR FRACTURE; MASSIVE TO SUB-
TABULAR CUTTING; EARTHY LUSTER; CLAYEY
TO SILTY TEXTURE; THICK TO MASSIVE
STRUCTURE; INTERBEDDED SILTSTONES AND
SANDSTONES, FREQUENTLY GRADES INTO
CARBONACEOUS SHALE; INCREASED BACK-
GROUND GAS.
SANDSTONE = LIGHT TO MEDIUM GRAY; 90%
QUARTZ CLASTS WITH THE REMAINDER LITHIC
ESPECIALLY BLACK; SUBROUNDED TO SUB-
ANGULAR; FINE TO UPPER VERY FINE;
CALCITE CEMENT; GRAIN SUPPORTED; INTER-
BEDDED SHALE AND CARBONACEOUS SHALE,
MINOR COAL SEEN DEGASSING IN SAMPLE;
INCREASE IN BACKGROUND GAS.
SHALE = MEDIUM DARK GRAY TO MEDIUM GRAY;

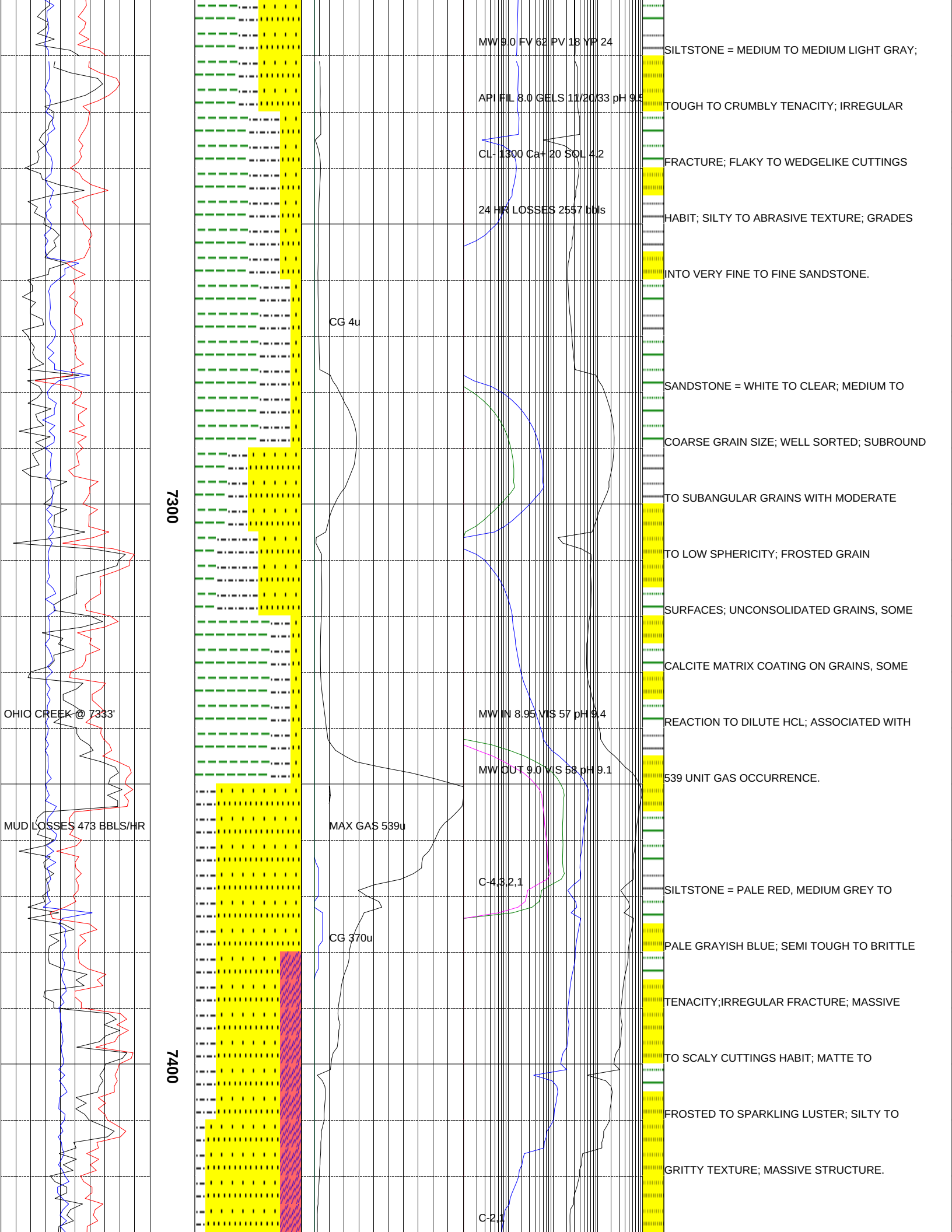

BRITTLE TO CRUMBLY TENACITY; IRREGULAR
TO SUB-BLOCKY FRACTURE; WEDGELIKE TO
FLAKY CUTTINGS HABIT; DULL TO EARTHY
LUSTER; SILTY TO CLAYEY, SOME GRITTY
TEXTURE; GRADES INTO AND INTERBEDDED
WITH SILTSTONE OF THE SAME COLORATION
AND INTERBEDDED WITH LITHIC SANDSTONE;
LOW BACKGROUND GAS.
SANDSTONE = LIGHT TO MEDIUM GRAY, MINOR
BROWNISH GRAY TO BROWNISH BLACK; QUARTZ
PREDOMINATELY WITH MINOR LITHIC FRAGMENT
INCLUDING BLACK LITHIC FRAGMENTS GIVE A
SALT AND PEPPER APPEARANCE; FINE GRAINED
FAIR SORTING; FRIABLE TO FIRM FRIABLE;
CALCITE CEMENT; FREQUENTLY INTERBEDDED
WITH SHALE, CARBONACEOUS SHALE, AND
OCCASIONALLY COAL; GAS SEEN IN THE SANDS
SANDSTONE = LIGHT TO MEDIUM GRAY; MINOR
BROWNISH GRAY; PREDOMINATELY QUARTZ
WITH 20% LITHICS BY VOLUME; FINE TO VERY
MUD LOSSES 317 BBLS/HR
CG 232u
C-4,3,2,1
MAX GAS 485u
MW IN 9.0 VIS 50 pH 9.8
MW OUT 8.85 VIS 49 pH 9.8
6200
CG 337u
MAX GAS 322u
C-5,4,3,2,1
6300
CG 226u
MW IN 9.0 VIS 50 pH 9.7

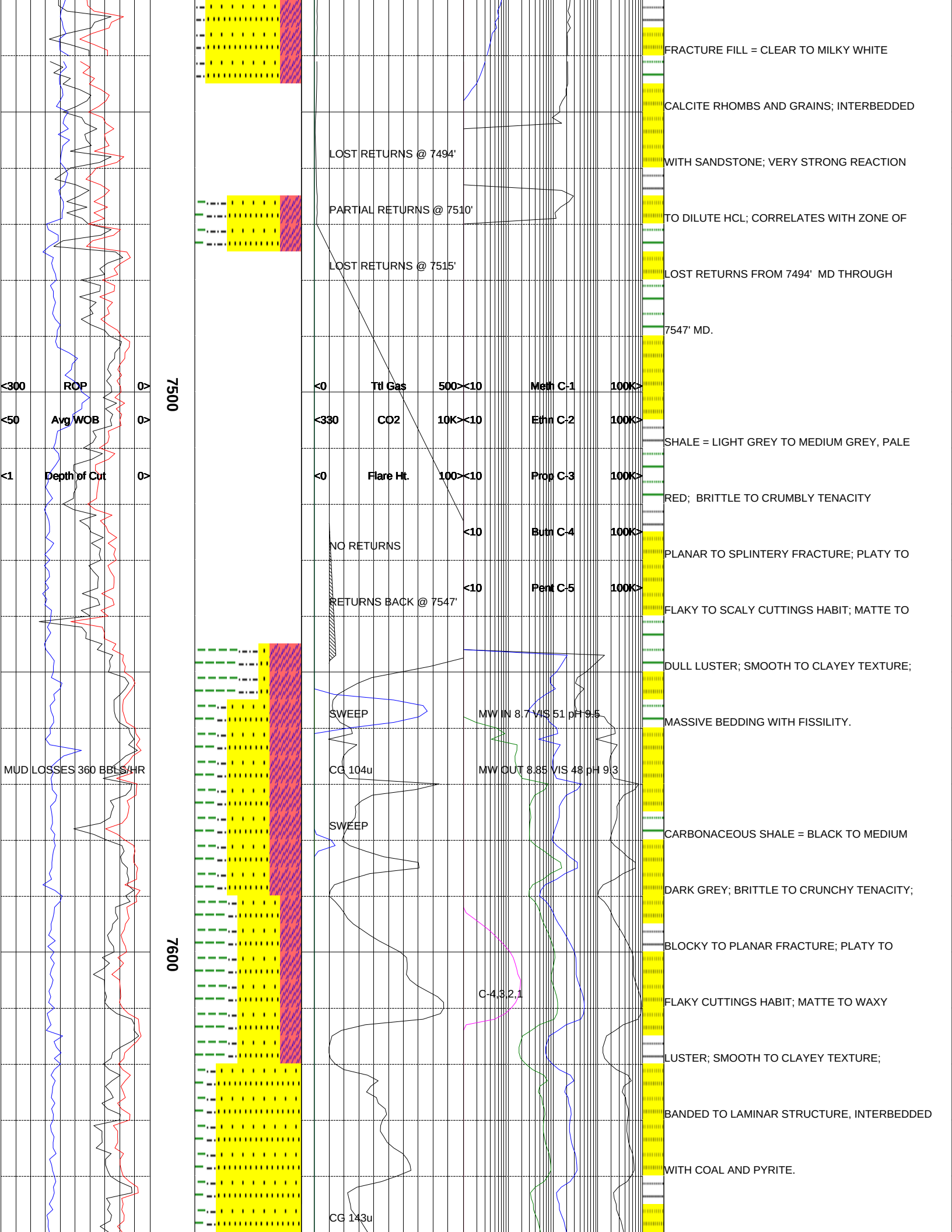

MUD LOSSES 354 BBLS/HR
MW OUT 9.0 VIS 55 pH 10.2
MAX GAS 239u
MAX GAS 325u
C-3,2,1
CG 348u
C-4,3,2,1
6400
6500
<300 ROP 0>
<50 Avg WOB 0>
<1 Depth of Cut 0>
<0 Ttl Gas 500><10 Meth C-1 100K>
<330 CO2 10K><10 Etha C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buta C-4 100K>
<10 Pent C-5 100K>
CG 372u
MAX GAS 589u
FINE, MINOR MEDIUM GRAINED; FAIR SORTING
SUBROUNDED TO SUBANGULAR; MODERATE
SPHERICITY; EASILY TO FIRM FRIABLE;
CALCITE CEMENT; GRAIN SUPPORTED;
BEDS OF CARBONACEOUS SHALE AND COAL,
GRADES INTO A SILTSTONE; GAS SEEN IN
SAND LAYERS.
SILTSTONE = MEDIUM TO MEDIUM DARK GRAY;
DENSE TO CRUMBLY TENACITY; IRREGULAR
FRACTURE; NODULAR TO WEDGELIKE CUTTINGS
HABIT; SILTY TO ABRASIVE TEXTURE; GRADES
INTO VERY FINE SANDSTONE AND INTERBEDDED
SHALE; LOW BACKGROUND GAS.
SANDSTONE = LIGHT TO LIGHT MEDIUM GRAY;
FRIABLE TO EASILY FRIABLE; PREDOMINATELY
QUARTZ WITH MINOR LITHIC FRAGMENTS;
SUBROUNDED TO SUBANGULAR; MODERATE
SPHERICITY; FROSTED GRAINS; GRAIN
SUPPORTED; MODERATE AMOUNT OF CALCITE
CEMENT; INTERBEDDED AND GRADES INTO

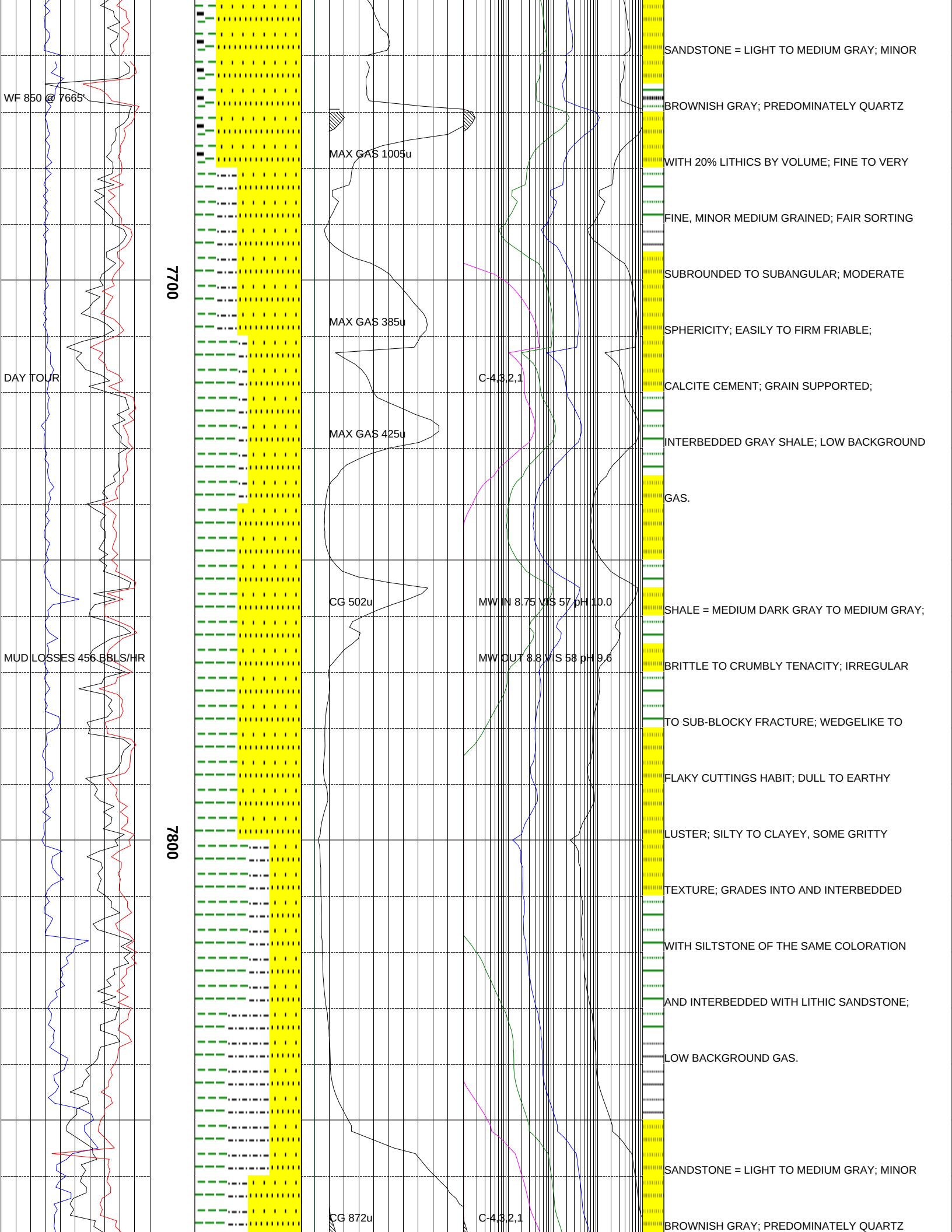

MUD LOSSES 111 BBLS/HR
MW IN 9.1 VIS 50 pH 9.8
MW OUT 9.0 VIS 50 pH 9.6
6600
CG 155u
C-3,2,1
6700
CG 207u
MAX GAS 1428u
C-5,4,3,2,1
MW IN 9.0 VIS 53 pH 9.3
MUD LOSSES 81 BBLS/HR
MW OUT 9.0 VIS 50 pH 9.3
SILTSTONE, INTERBEDDED GRAY SHALE; GAS
SEEN IN SAND BEDS.
SILTSTONE = LIGHT TO MEDIUM LIGHT GRAY;
CRUMBLY TO CRUNCHY TENACITY; IRREGULAR
FRACTURE; DULL LUSTER; FLAKY TO WEDGE-
LIKE CUTTING WITH MINOR TABULAR;
GRANULAR TO GRITTY; GRADES INTO A VERY
FINE GRAINED SANDSTONE AND INTERBEDDED
WITH GRAY SHALE; SLIGHTLY CALCAREOUS;
LOW BACKGROUND GAS.
SANDSTONE = VERY LIGHT TO MEDIUM GRAY;
PREDOMINATELY QUARTZ WITH UP TO 20%
LITHIC FRAGMENTS, INCREASING IN LARGER
GRAINED SANDSTONE; PREDOMINATELY FINE
GRADING INTO MEDIUM LOWER WITH MINOR
MEDIUM UPPER OR VERY FINE; FAIR SORTING;
SUBROUNDED TO SUBANGULAR; MODERATE TO
LOW SPHERICITY; EASILY FRIABLE TO
FRIABLE; LOW TO MODERATE CALCITE CEMENT;
GRAIN SUPPORTED; INTERBEDDED GRAY SHALE

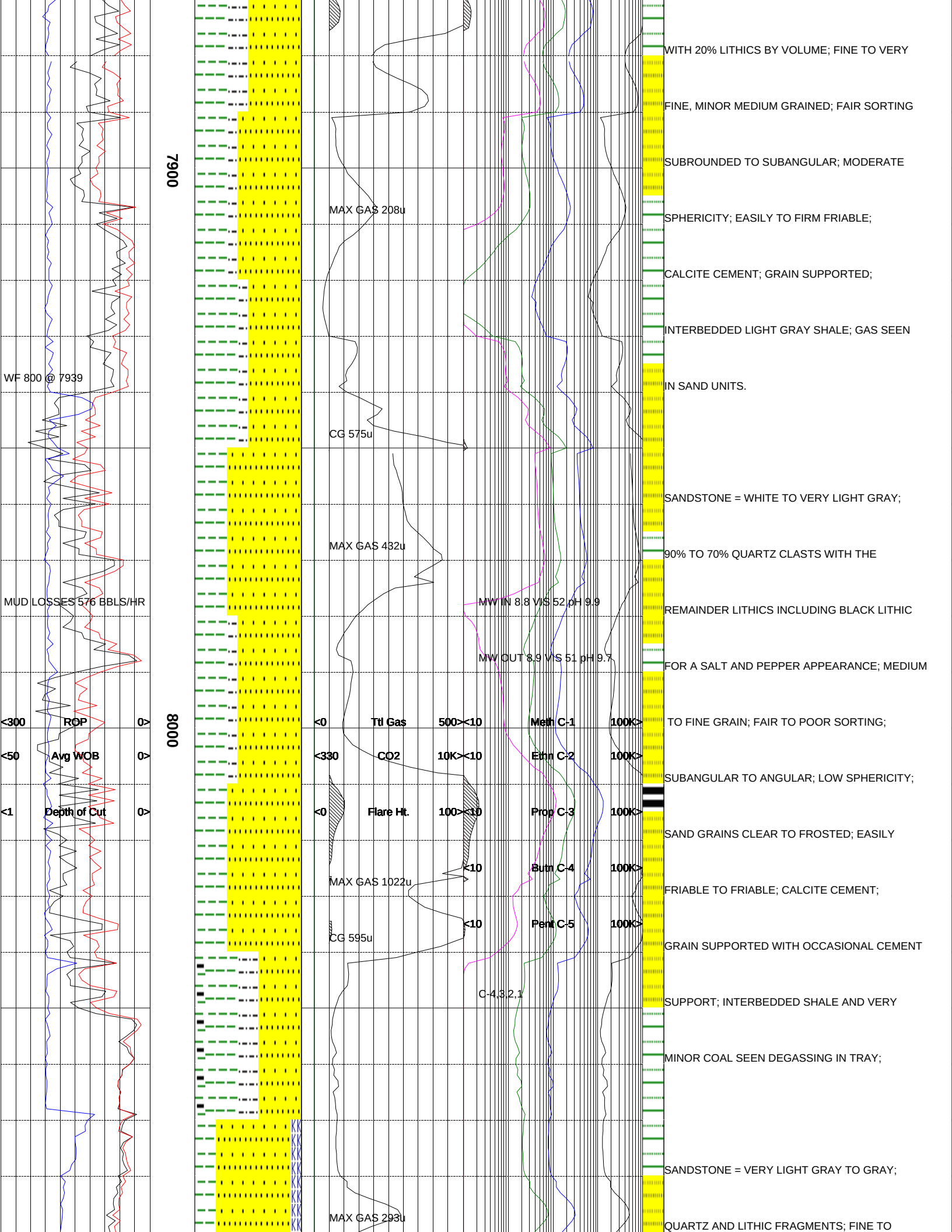

MAX GAS 719u
C-5,4,3,2,1
AND SILTSTONE; GAS SEEN IN LOWER PORTION
6800
SANDSTONE = LIGHT TO VERY LIGHT GRAY;
CG 255u
PREDOMINATELY QUARTZ WITH BLACK AND
REDDISH BROWN LITHIC FRAGMENTS; FINE TO
VERY FINE; FAIR TO WELL SORTING; SUB-
SWEEP 895u
ROUNDED TO ROUNDED; MODERATE SPHERICITY;
EASILY FRIABLE TO FIRM FRIABLE; CALCITE
CEMENT; GRAIN SUPPORTED; LOW POROSITY;
GRADES INTO A SANDY SILTSTONE, INTER-
BEDDED WITH SHALE; LOW BACKGROUND GAS.
CG 310u
6900
SANDSTONE = LIGHT TO VERY LIGHT GRAY,
WHITE; PREDOMINATELY QUARTZ WITH LITHIC
FRAGMENTS; LOWER SECTION ALSO CONTAINS
KAOLINITIC CONTENT; CALCITE CEMENT; FINE
MW IN 9.1 VIS 57 pH 9.7
TO VERY FINE, MINOR MEDIUM GRAINED; WELL
MW OUT 9.0 VIS 54 pH 9.3
TO FAIRLY SORTED; SUBANGULAR TO SUB-
ROUNDED; EASILY FRIABLE TO FRIABLE;
MUD LOSSES 74 BBLS/HR
C-2,1
GRAIN SUPPORTED WITH MINOR MATRIX
SUPPORTED; INTERBEDDED SHALE; LOW GAS
CG 192u
AND NO VISIBLE HYDROCARBON INDICATORS.

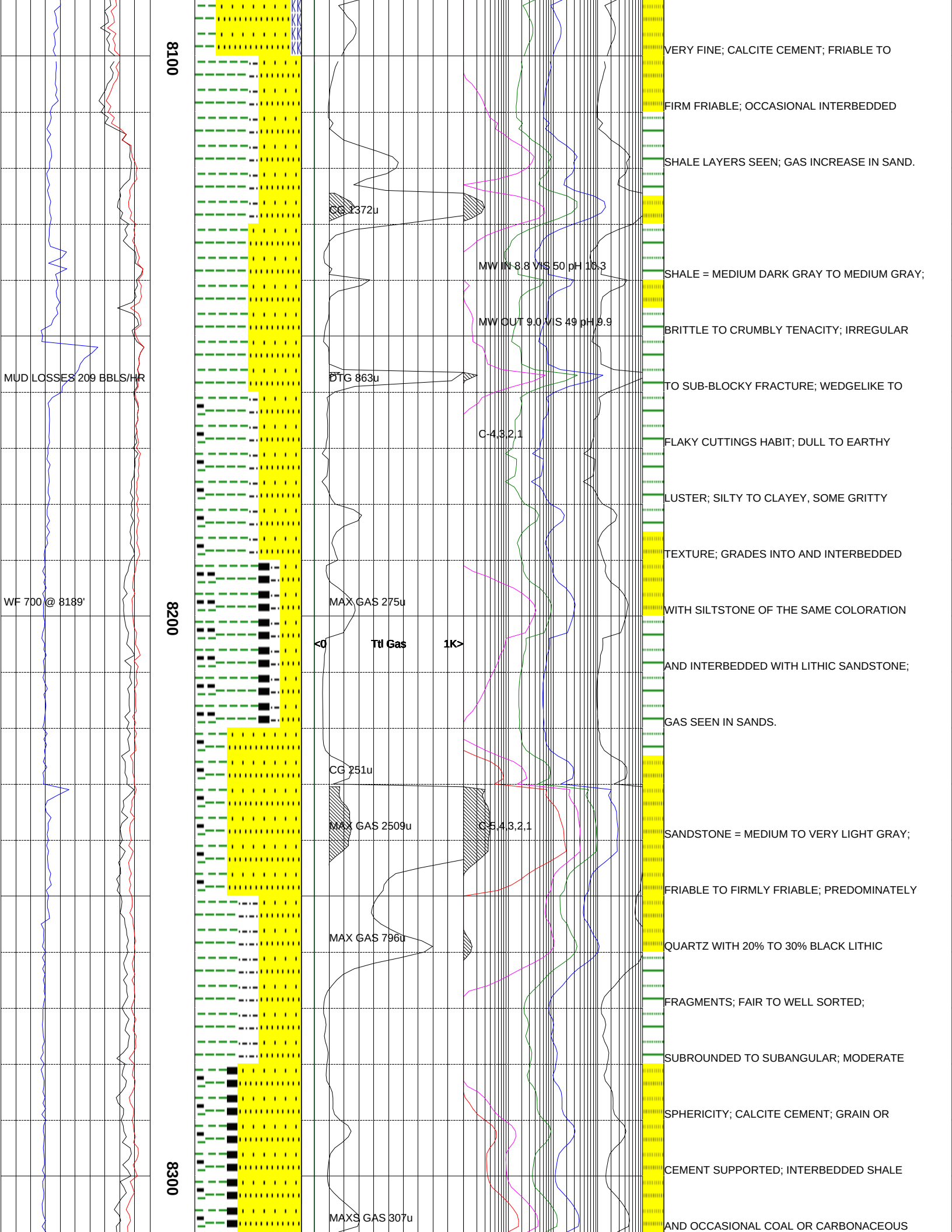

<300 ROP 0>
<50 Avg WOB 0>
<1 Depth of Cut 0>
NIGHT TOUR
7000
7100
7200
<0 Ttl Gas 500>
<330 CO2 10K>
<0 Flare Ht. 100>
CG 50u
CG 123u
<10 Meth C-1 100K>
<10 Ethn C-2 100K>
<10 Prop C-3 100K>
<10 Butn C-4 100K>
<10 Pent C-5 100K>
MW IN 8.95 VIS 57 pH 9.5
MW OUT 9.0 VIS 56 pH 9.4
C-2.1
MUD LOSSES 55 BBLS/HR
MUD DATA @ 7114'
SANDSTONE - WHITE TO LIGHT GREY, CLEAR
WITH SOME BLACK SPECKLES CREATING A
SALT AND PEPPERED APPEARANCE; MEDIUM TO
FINE GRAIN SIZE; WELL SORTED; MODERATE
TO LOW SPHERICITY WITH SUBANGULAR TO
ANGULAR GRAINS FROSTED GRAIN SURFACES;
FIRM FRIABLE TO MODERATELY HARD CUTTINGS
CALCITE CEMENT WITH A STRONG REACTION
TO DILUTE HCL; GRAIN SUPPORTED WITH
MASSIVE BEDDING; SOME DARK LITHIC
INCLUSIONS; NO VISIBLE HYDROCARBON
INDICATORS.
SHALE = PALE RED, GRAYISH ORANGE TO
DARK YELLOWISH ORANGE; BRITTLE TO
CRUMBLY TENACITY; SEMI PLANAR TO
SPLINTERY FRACTURE; FLAKY TO SCALY
CUTTINGS HABIT; MATTE TO FROSTED
LUSTER; SMOOTH TO CLAYEY TEXTURE;
MASSIVE TO FISSILE STRUCTURE.

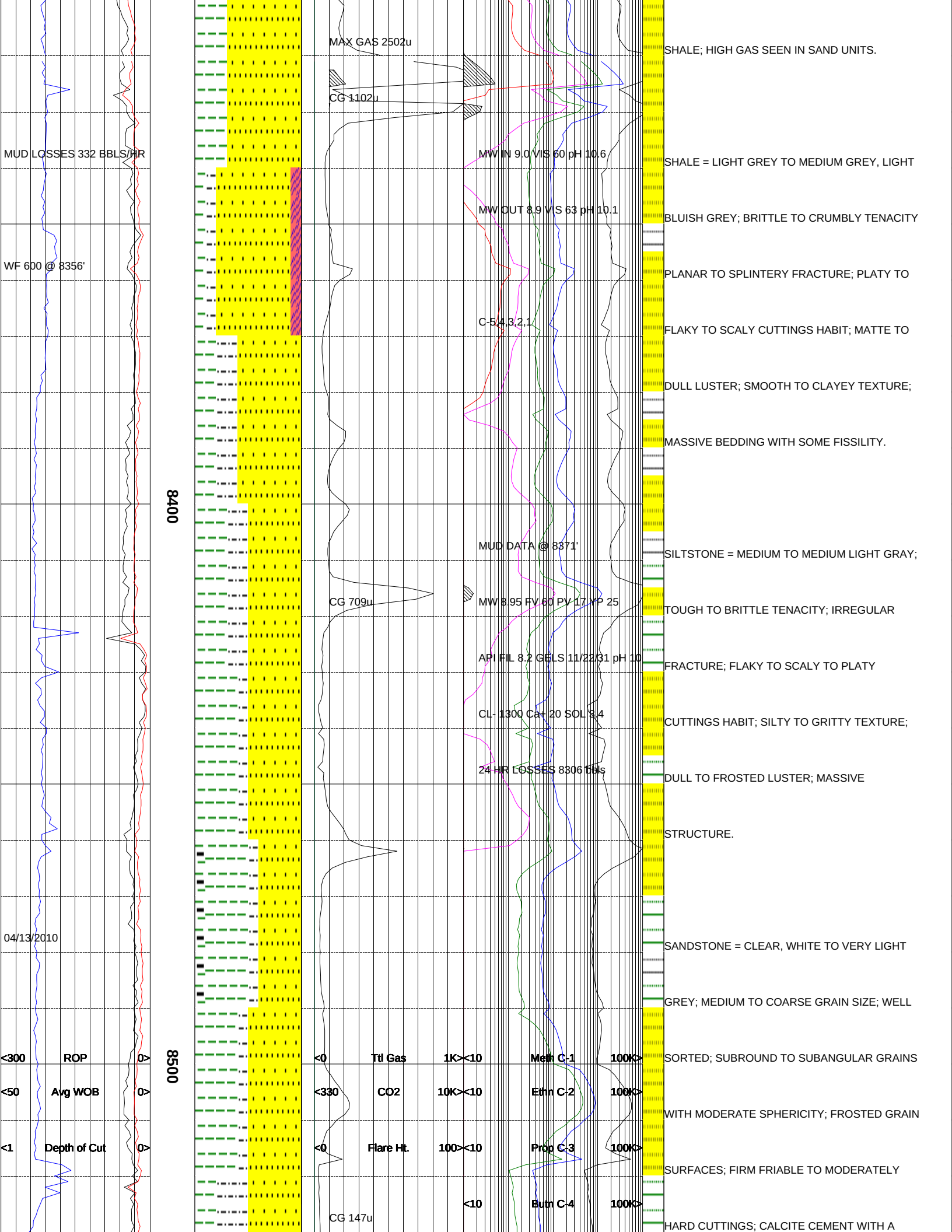

MW 9.0 FV 62 PV 18 YP 24
API FIL 8.0 GELS 11/20/33 pH 9.5
CL- 1300 Ca+ 20 SOL 4.2
24 HR LOSSES 2557 bbls
CG 4u
7300
OHIO CREEK @ 7333'
MW IN 8.95 VIS 57 pH 9.4
MW OUT 9.0 VIS 58 pH 9.1
MUD LOSSES 473 BBLS/HR
MAX GAS 539u
C-4,3,2,1
CG 370u
7400
C-2,1
SILTSTONE = MEDIUM TO MEDIUM LIGHT GRAY;
TOUGH TO CRUMBLY TENACITY; IRREGULAR
FRACTURE; FLAKY TO WEDGELIKE CUTTINGS
HABIT; SILTY TO ABRASIVE TEXTURE; GRADES
INTO VERY FINE TO FINE SANDSTONE.
SANDSTONE = WHITE TO CLEAR; MEDIUM TO
COARSE GRAIN SIZE; WELL SORTED; SUBROUND
TO SUBANGULAR GRAINS WITH MODERATE
TO LOW SPHERICITY; FROSTED GRAIN
SURFACES; UNCONSOLIDATED GRAINS, SOME
CALCITE MATRIX COATING ON GRAINS, SOME
REACTION TO DILUTE HCL; ASSOCIATED WITH
539 UNIT GAS OCCURRENCE.
SILTSTONE = PALE RED, MEDIUM GREY TO
PALE GRAYISH BLUE; SEMI TOUGH TO BRITTLE
TENACITY;IRREGULAR FRACTURE; MASSIVE
TO SCALY CUTTINGS HABIT; MATTE TO
FROSTED TO SPARKLING LUSTER; SILTY TO
GRITTY TEXTURE; MASSIVE STRUCTURE.

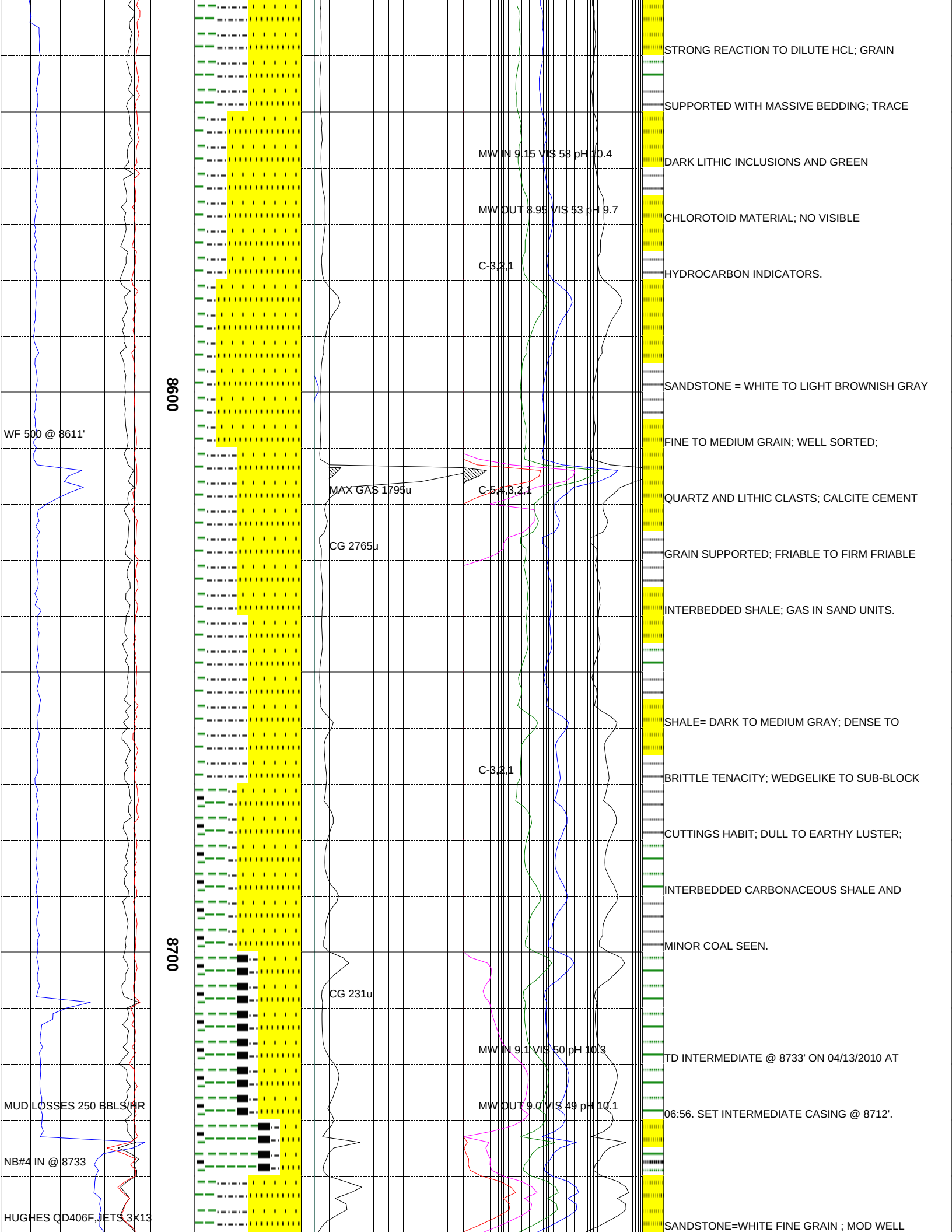

FRACTURE FILL = CLEAR TO MILKY WHITE
CALCITE RHOMBS AND GRAINS; INTERBEDDED
LOST RETURNS @ 7494'
WITH SANDSTONE; VERY STRONG REACTION
PARTIAL RETURNS @ 7510'
TO DILUTE HCL; CORRELATES WITH ZONE OF
LOST RETURNS @ 7515'
LOST RETURNS FROM 7494' MD THROUGH
7547' MD.
<300 ROP 0>
<0 Ttl Gas 500><10 Meth C-1 100K>
7500
<50 Avg WOB 0>
<330 CO2 10K><10 Eth C-2 100K>
SHALE = LIGHT GREY TO MEDIUM GREY, PALE
<1 Depth of Cut 0>
<0 Flare Ht. 100><10 Prop C-3 100K>
RED; BRITTLE TO CRUMBLY TENACITY
<10 Butn C-4 100K>
NO RETURNS
PLANAR TO SPLINTERY FRACTURE; PLATY TO
<10 Pent C-5 100K>
RETURNS BACK @ 7547'
FLAKY TO SCALY CUTTINGS HABIT; MATTE TO
DULL LUSTER; SMOOTH TO CLAYEY TEXTURE;
SWEEP
MW IN 8.7 VIS 51 pH 9.5
MASSIVE BEDDING WITH FISSILITY.
MUD LOSSES 360 BBLS/HR
CG 104u
MW OUT 8.85 VIS 48 pH 9.3
SWEEP
CARBONACEOUS SHALE = BLACK TO MEDIUM
DARK GREY; BRITTLE TO CRUNCHY TENACITY;
7600
BLOCKY TO PLANAR FRACTURE; PLATY TO
C-4,3,2,1
FLAKY CUTTINGS HABIT; MATTE TO WAXY
LUSTER; SMOOTH TO CLAYEY TEXTURE;
BANDED TO LAMINAR STRUCTURE, INTERBEDDED
WITH COAL AND PYRITE.
CG 143u

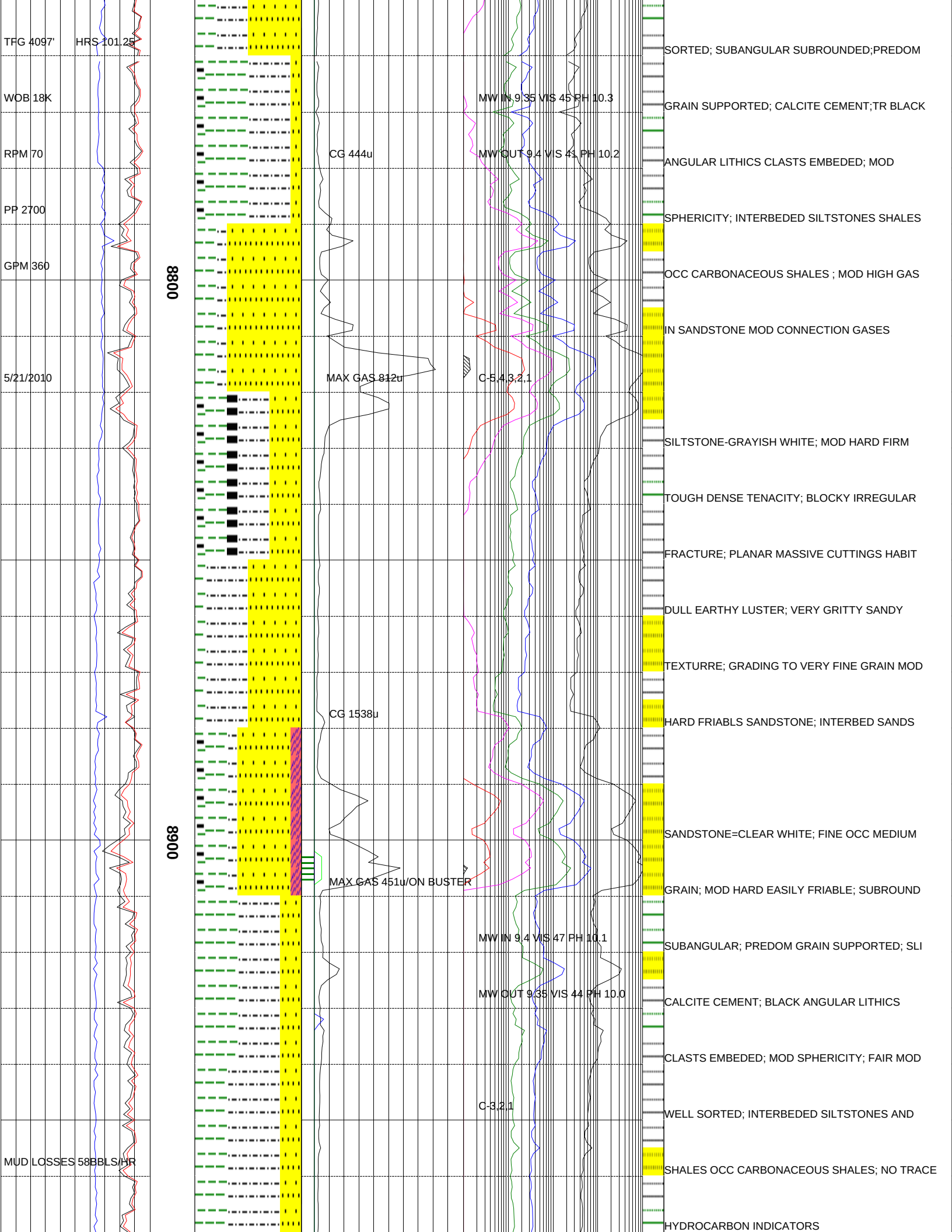

WF 850 @ 7665'
7700
MAX GAS 1005u
MAX GAS 385u
DAY TOUR
C-4,3,2,1
MAX GAS 425u
CG 502u
MW IN 8.75 VIS 57 pH 10.0
MUD LOSSES 456 BBLS/HR
MW OUT 8.8 VIS 58 pH 9.6
7800
CG 872u
C-4,3,2,1
SANDSTONE = LIGHT TO MEDIUM GRAY; MINOR
BROWNISH GRAY; PREDOMINATELY QUARTZ
WITH 20% LITHICS BY VOLUME; FINE TO VERY
FINE, MINOR MEDIUM GRAINED; FAIR SORTING
SUBROUNDED TO SUBANGULAR; MODERATE
SPHERICITY; EASILY TO FIRM FRIABLE;
CALCITE CEMENT; GRAIN SUPPORTED;
INTERBEDDED GRAY SHALE; LOW BACKGROUND
GAS.
SHALE = MEDIUM DARK GRAY TO MEDIUM GRAY;
BRITTLE TO CRUMBLY TENACITY; IRREGULAR
TO SUB-BLOCKY FRACTURE; WEDGELIKE TO
FLAKY CUTTINGS HABIT; DULL TO EARTHY
LUSTER; SILTY TO CLAYEY, SOME GRITTY
TEXTURE; GRADES INTO AND INTERBEDDED
WITH SILTSTONE OF THE SAME COLORATION
AND INTERBEDDED WITH LITHIC SANDSTONE;
LOW BACKGROUND GAS.
SANDSTONE = LIGHT TO MEDIUM GRAY; MINOR
BROWNISH GRAY; PREDOMINATELY QUARTZ

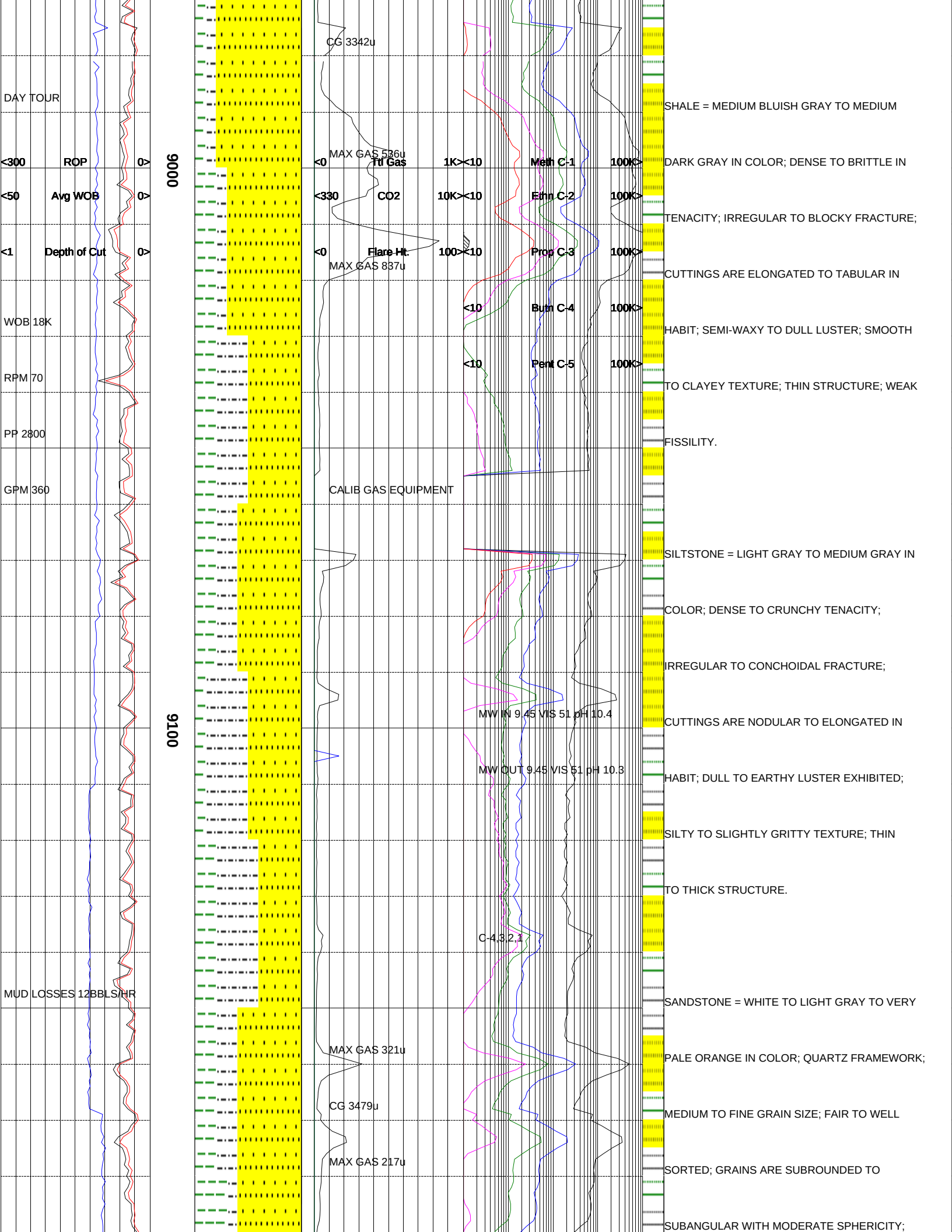

7900
8000
WF 800 @ 7939
MUD LOSSES 576 BBLS/HR
<300 ROP 0>
<50 Avg WOB 0>
<1 Depth of Cut 0>
MAX GAS 208u
CG 575u
MAX GAS 432u
MW IN 8.8 VIS 52 pH 9.9
MW OUT 8.9 VIS 51 pH 9.7
<0 Ttl Gas 500><10 Meth C-1 100K>
<330 CO2 10K><10 Etha C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buta C-4 100K>
<10 Pent C-5 100K>
C-4,3,2,1
MAX GAS 1022u
CG 595u
MAX GAS 293u
WITH 20% LITHICS BY VOLUME; FINE TO VERY
FINE, MINOR MEDIUM GRAINED; FAIR SORTING
SUBROUNDED TO SUBANGULAR; MODERATE
SPHERICITY; EASILY TO FIRM FRIABLE;
CALCITE CEMENT; GRAIN SUPPORTED;
INTERBEDDED LIGHT GRAY SHALE; GAS SEEN
IN SAND UNITS.
SANDSTONE = WHITE TO VERY LIGHT GRAY;
90% TO 70% QUARTZ CLASTS WITH THE
REMAINDER LITHICS INCLUDING BLACK LITHIC
FOR A SALT AND PEPPER APPEARANCE; MEDIUM
TO FINE GRAIN; FAIR TO POOR SORTING;
SUBANGULAR TO ANGULAR; LOW SPHERICITY;
SAND GRAINS CLEAR TO FROSTED; EASILY
FRIABLE TO FRIABLE; CALCITE CEMENT;
GRAIN SUPPORTED WITH OCCASIONAL CEMENT
SUPPORT; INTERBEDDED SHALE AND VERY
MINOR COAL SEEN DEGASSING IN TRAY;
SANDSTONE = VERY LIGHT GRAY TO GRAY;
QUARTZ AND LITHIC FRAGMENTS; FINE TO

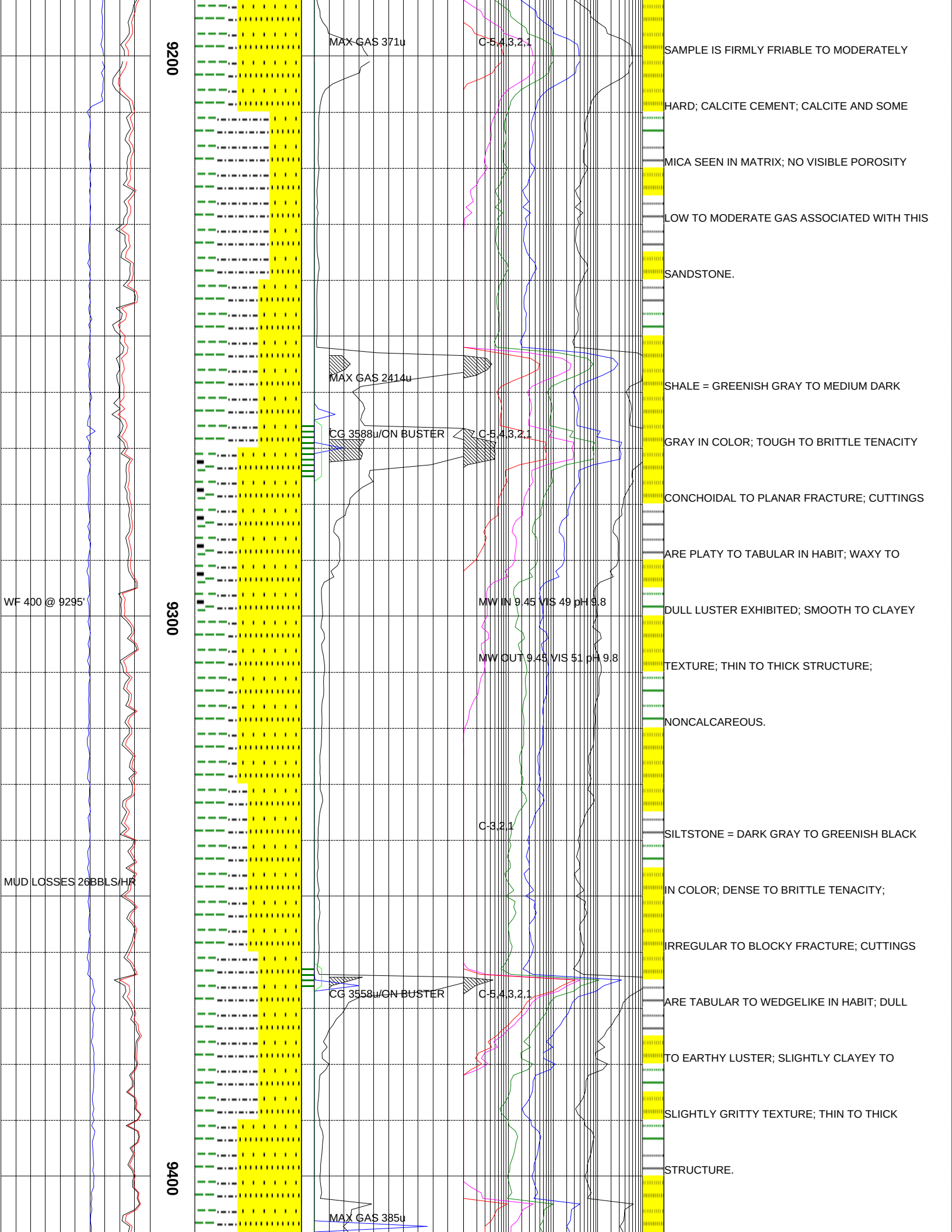

8100
8200
8300
MUD LOSSES 209 BBLS/HR
WF 700 @ 8189'
CG 1372u
DTG 863u
MAX GAS 275u
<0
Ttl Gas
1K>
CG 251u
MAX GAS 2509u
MAX GAS 796u
MAXS GAS 307u
MW IN 8.8 VIS 50 pH 10.3
MW OUT 9.0 VIS 49 pH 9.9
C-4,3,2,1
C-5,4,3,2,1
VERY FINE; CALCITE CEMENT; FRIABLE TO
FIRM FRIABLE; OCCASIONAL INTERBEDDED
SHALE LAYERS SEEN; GAS INCREASE IN SAND.
SHALE = MEDIUM DARK GRAY TO MEDIUM GRAY;
BRITTLE TO CRUMBLY TENACITY; IRREGULAR
TO SUB-BLOCKY FRACTURE; WEDGELIKE TO
FLAKY CUTTINGS HABIT; DULL TO EARTHY
LUSTER; SILTY TO CLAYEY, SOME GRITTY
TEXTURE; GRADES INTO AND INTERBEDDED
WITH SILTSTONE OF THE SAME COLORATION
AND INTERBEDDED WITH LITHIC SANDSTONE;
GAS SEEN IN SANDS.
SANDSTONE = MEDIUM TO VERY LIGHT GRAY;
FRIABLE TO FIRMLY FRIABLE; PREDOMINATELY
QUARTZ WITH 20% TO 30% BLACK LITHIC
FRAGMENTS; FAIR TO WELL SORTED;
SUBROUNDED TO SUBANGULAR; MODERATE
SPHERICITY; CALCITE CEMENT; GRAIN OR
CEMENT SUPPORTED; INTERBEDDED SHALE
AND OCCASIONAL COAL OR CARBONACEOUS

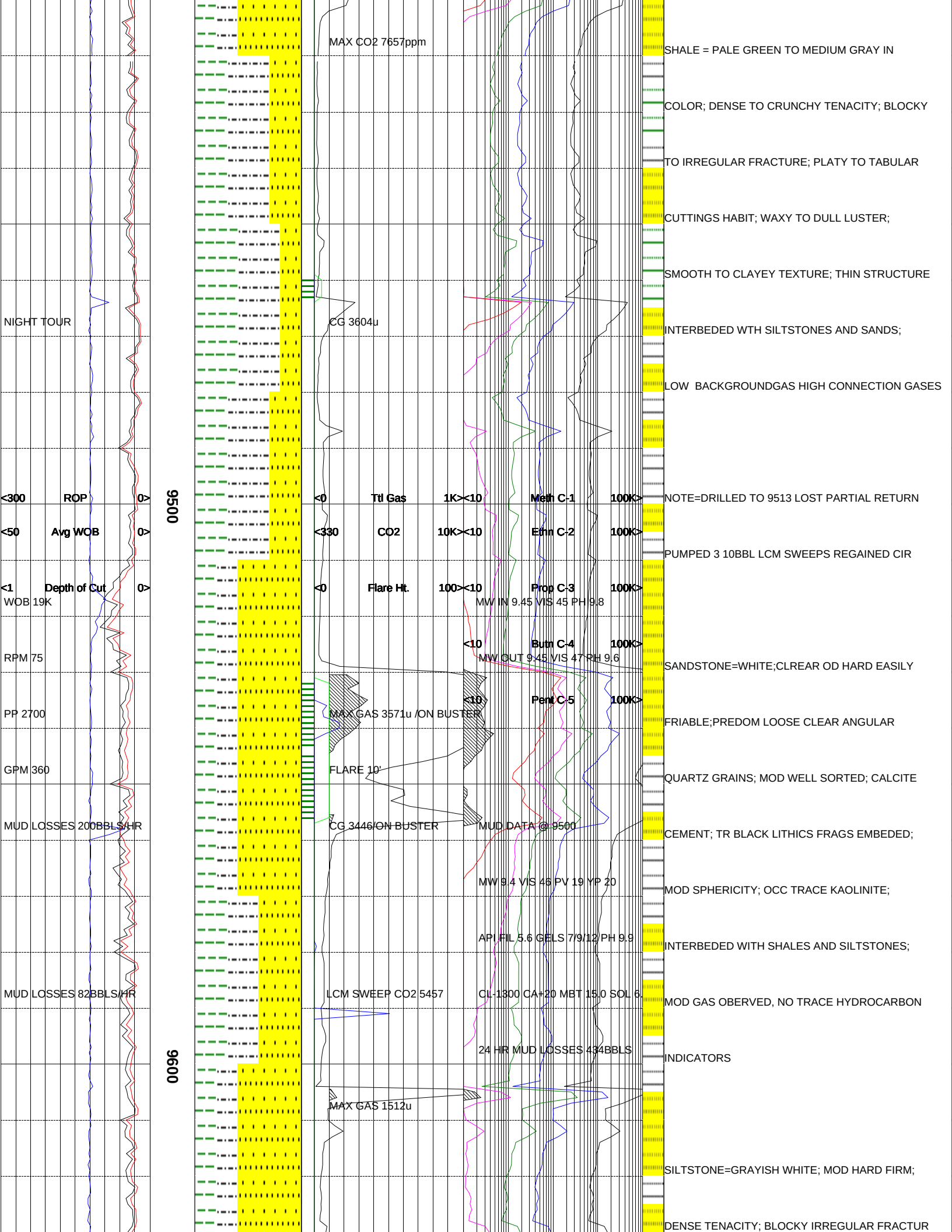

MAX GAS 2502u
CG 1102u
MUD LOSSES 332 BBLS/HR
MW IN 9.0 VIS 60 pH 10.6
MW OUT 8.9 VIS 63 pH 10.1
WF 600 @ 8356'
C-5,4,3,2,1
8400
MUD DATA @ 8371'
CG 709u
MW 8.95 FV 60 PV 17 YP 25
API FIL 8.2 GELS 11/22/31 pH 10
CL- 1300 Ca+ 20 SOL 3.4
24 HR LOSSES 8306 bbls
04/13/2010
8500
<300 ROP 0>
<50 Avg WOB 0>
<1 Depth of Cut 0>
CG 147u
<0 Ttl Gas 1K><10 Meth C-1 100K>
<330 CO2 10K><10 Ethn C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
SHALE; HIGH GAS SEEN IN SAND UNITS.
SHALE = LIGHT GREY TO MEDIUM GREY, LIGHT
BLUISH GREY; BRITTLE TO CRUMBLY TENACITY
PLANAR TO SPLINTERY FRACTURE; PLATY TO
FLAKY TO SCALY CUTTINGS HABIT; MATTE TO
DULL LUSTER; SMOOTH TO CLAYEY TEXTURE;
MASSIVE BEDDING WITH SOME FISSILITY.
SILTSTONE = MEDIUM TO MEDIUM LIGHT GRAY;
TOUGH TO BRITTLE TENACITY; IRREGULAR
FRACTURE; FLAKY TO SCALY TO PLATY
CUTTINGS HABIT; SILTY TO GRITTY TEXTURE;
DULL TO FROSTED LUSTER; MASSIVE
STRUCTURE.
SANDSTONE = CLEAR, WHITE TO VERY LIGHT
GREY; MEDIUM TO COARSE GRAIN SIZE; WELL
SORTED; SUBROUND TO SUBANGULAR GRAINS
WITH MODERATE SPHERICITY; FROSTED GRAIN
SURFACES; FIRM FRIABLE TO MODERATELY
HARD CUTTINGS; CALCITE CEMENT WITH A

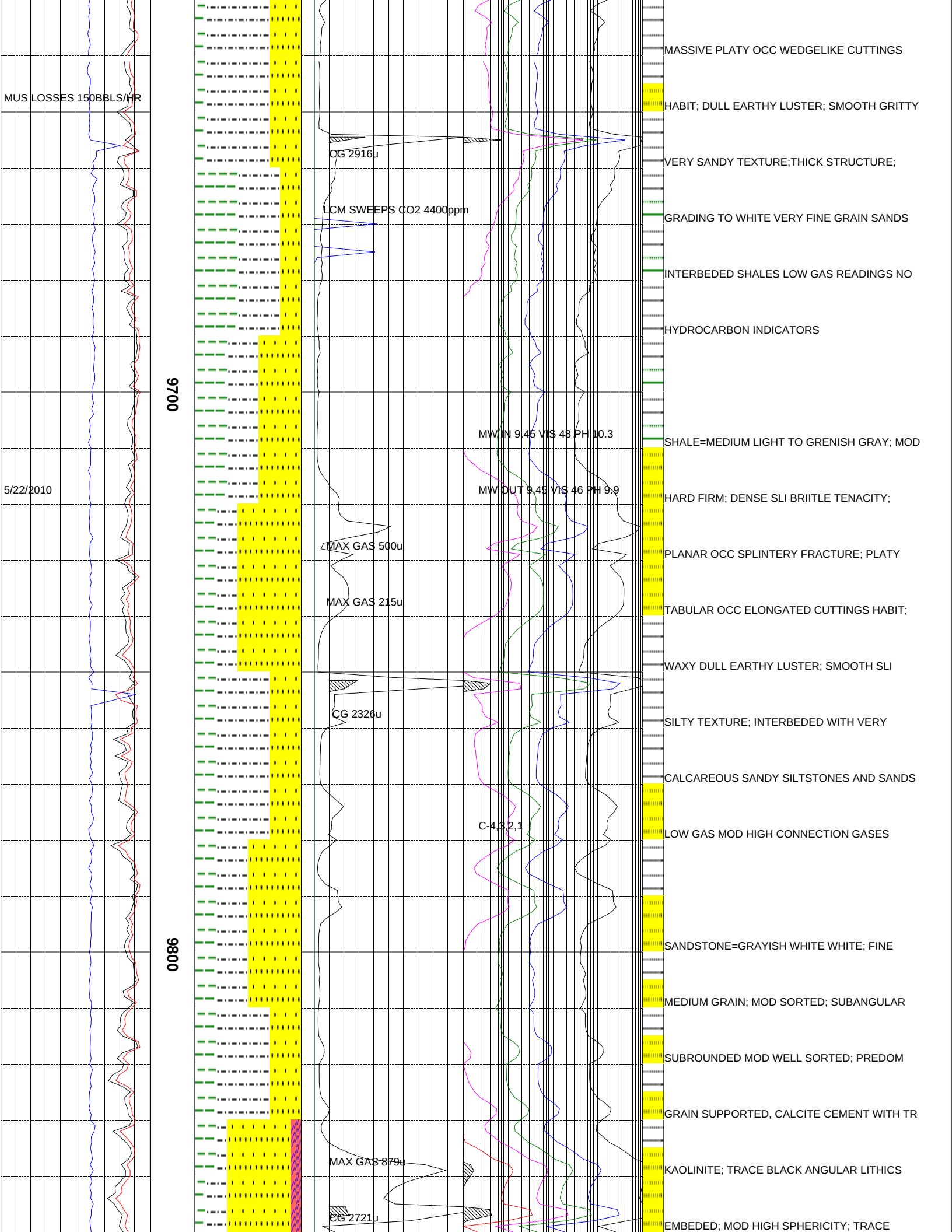

8600
8700
WF 500 @ 8611'
MUD LOSSES 250 BBLS/HR
NB#4 IN @ 8733
HUGHES QD406F,JETS 3X13
MW IN 9.15 VIS 58 pH 10.4
MW OUT 8.95 VIS 53 pH 9.7
C-3,2,1
MAX GAS 1795u
C-5,4,3,2,1
CG 2765u
C-3,2,1
CG 231u
MW IN 9.1 VIS 50 pH 10.3
MW OUT 9.0 VIS 49 pH 10.1
STRONG REACTION TO DILUTE HCL; GRAIN
SUPPORTED WITH MASSIVE BEDDING; TRACE
DARK LITHIC INCLUSIONS AND GREEN
CHLOROTOID MATERIAL; NO VISIBLE
HYDROCARBON INDICATORS.
SANDSTONE = WHITE TO LIGHT BROWNISH GRAY
FINE TO MEDIUM GRAIN; WELL SORTED;
QUARTZ AND LITHIC CLASTS; CALCITE CEMENT
GRAIN SUPPORTED; FRIABLE TO FIRM FRIABLE
INTERBEDDED SHALE; GAS IN SAND UNITS.
SHALE= DARK TO MEDIUM GRAY; DENSE TO
BRITTLE TENACITY; WEDGELIKE TO SUB-BLOCK
CUTTINGS HABIT; DULL TO EARTHY LUSTER;
INTERBEDDED CARBONACEOUS SHALE AND
MINOR COAL SEEN.
TD INTERMEDIATE @ 8733' ON 04/13/2010 AT
06:56. SET INTERMEDIATE CASING @ 8712'.
SANDSTONE=WHITE FINE GRAIN ; MOD WELL

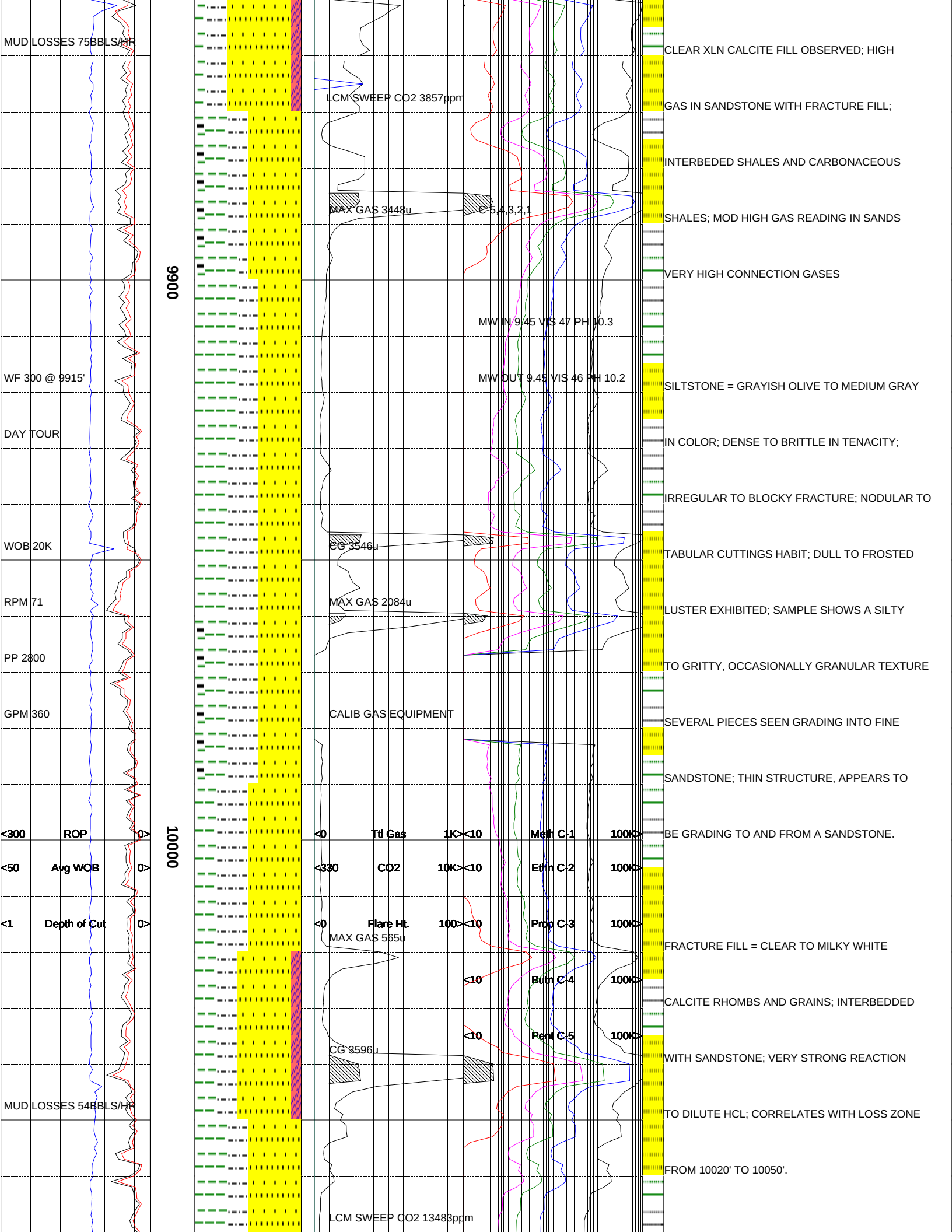

TFG 4097'
HRS 101.25
WOB 18K
RPM 70
PP 2700
GPM 360
5/21/2010
MUD LOSSES 58BBLS/HR
8800
8900
CG 444u
MAX GAS 812u
CG 1538u
MAX GAS 451u/ON BUSTER
MW IN 9.35 VIS 45 PH 10.3
MW OUT 9.4 VIS 41 PH 10.2
C-5,4,3,2,1
MW IN 9.4 VIS 47 PH 10.1
MW OUT 9.35 VIS 44 PH 10.0
C-3,2,1
SORTED; SUBANGULAR SUBROUNDED;PREDOM
GRAIN SUPPORTED; CALCITE CEMENT;TR BLACK
ANGULAR LITHICS CLASTS EMBEDED; MOD
SPHERICITY; INTERBEDED SILTSTONES SHALES
OCC CARBONACEOUS SHALES ; MOD HIGH GAS
IN SANDSTONE MOD CONNECTION GASES
SILTSTONE-GRAYISH WHITE; MOD HARD FIRM
TOUGH DENSE TENACITY; BLOCKY IRREGULAR
FRACTURE; PLANAR MASSIVE CUTTINGS HABIT
DULL EARTHY LUSTER; VERY GRITTY SANDY
TEXTURRE; GRADING TO VERY FINE GRAIN MOD
HARD FRIABLS SANDSTONE; INTERBED SANDS
SANDSTONE=CLEAR WHITE; FINE OCC MEDIUM
GRAIN; MOD HARD EASILY FRIABLE; SUBROUND
SUBANGULAR; PREDOM GRAIN SUPPORTED; SLI
CALCITE CEMENT; BLACK ANGULAR LITHICS
CLASTS EMBEDED; MOD SPHERICITY; FAIR MOD
WELL SORTED; INTERBEDED SILTSTONES AND
SHALES OCC CARBONACEOUS SHALES; NO TRACE
HYDROCARBON INDICATORS

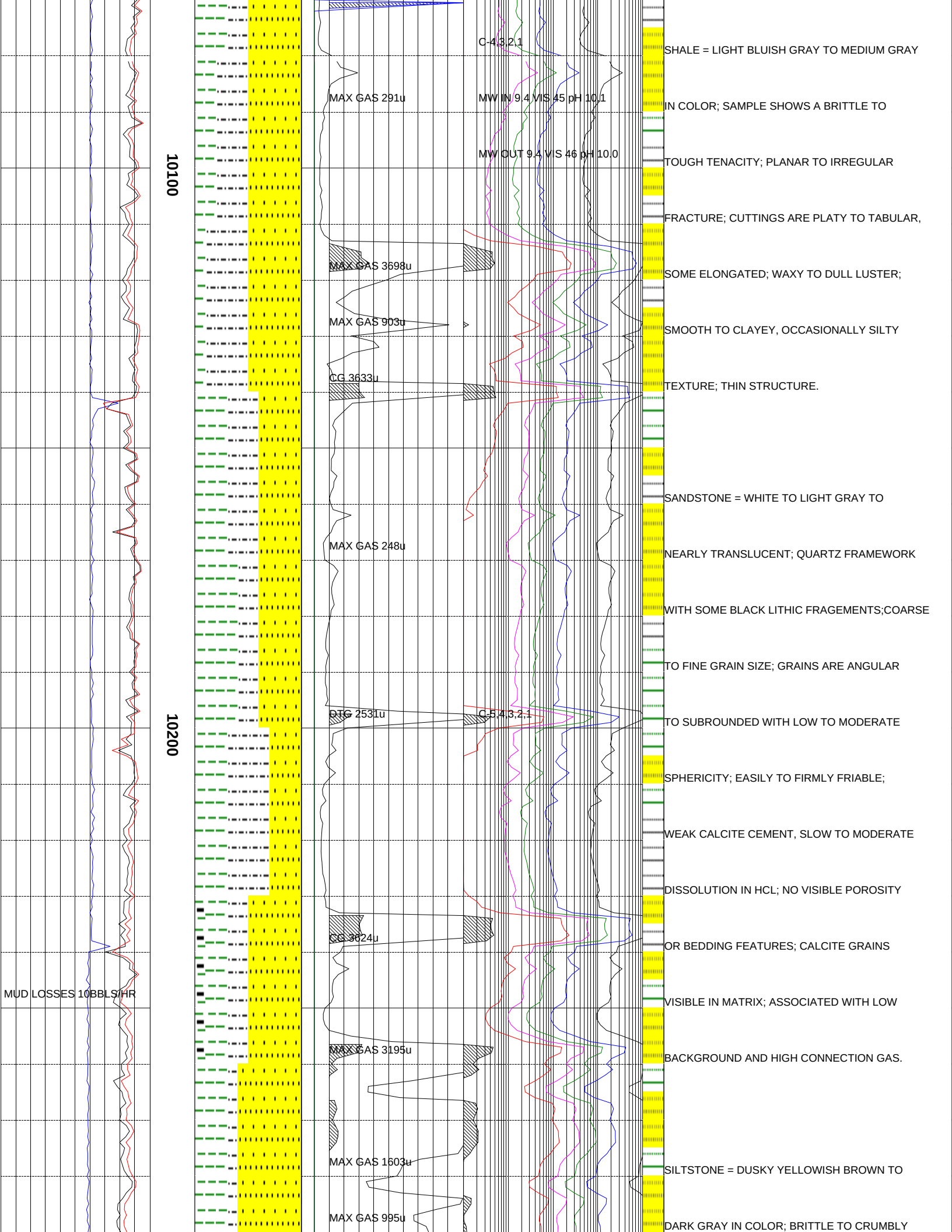

DAY TOUR
<300 ROP 0>
<50 Avg WOB 0>
<1 Depth of Cut 0>
WOB 18K
RPM 70
PP 2800
GPM 360
MUD LOSSES 12BBLS/HR
9000
9100
CG 3342u
MAX GAS 526u
<0 Ttl Gas 1K><10 Meth C-1 100K>
<330 CO2 10K><10 Eth C-2 100K>
<0 Flare Ht. 100><10 Prop C-3 100K>
MAX GAS 837u
<10 Butn C-4 100K>
<10 Pent C-5 100K>
CALIB GAS EQUIPMENT
MW IN 9.45 VIS 51 pH 10.4
MW OUT 9.45 VIS 51 pH 10.3
C-4,3,2,1
MAX GAS 321u
CG 3479u
MAX GAS 217u
SHALE = MEDIUM BLUISH GRAY TO MEDIUM
DARK GRAY IN COLOR; DENSE TO BRITTLE IN
TENACITY; IRREGULAR TO BLOCKY FRACTURE;
CUTTINGS ARE ELONGATED TO TABULAR IN
HABIT; SEMI-WAXY TO DULL LUSTER; SMOOTH
TO CLAYEY TEXTURE; THIN STRUCTURE; WEAK
FISSILITY.
SILTSTONE = LIGHT GRAY TO MEDIUM GRAY IN
COLOR; DENSE TO CRUNCHY TENACITY;
IRREGULAR TO CONCHOIDAL FRACTURE;
CUTTINGS ARE NODULAR TO ELONGATED IN
HABIT; DULL TO EARTHY LUSTER EXHIBITED;
SILTY TO SLIGHTLY GRITTY TEXTURE; THIN
TO THICK STRUCTURE.
SANDSTONE = WHITE TO LIGHT GRAY TO VERY
PALE ORANGE IN COLOR; QUARTZ FRAMEWORK;
MEDIUM TO FINE GRAIN SIZE; FAIR TO WELL
SORTED; GRAINS ARE SUBROUNDED TO
SUBANGULAR WITH MODERATE SPHERICITY;

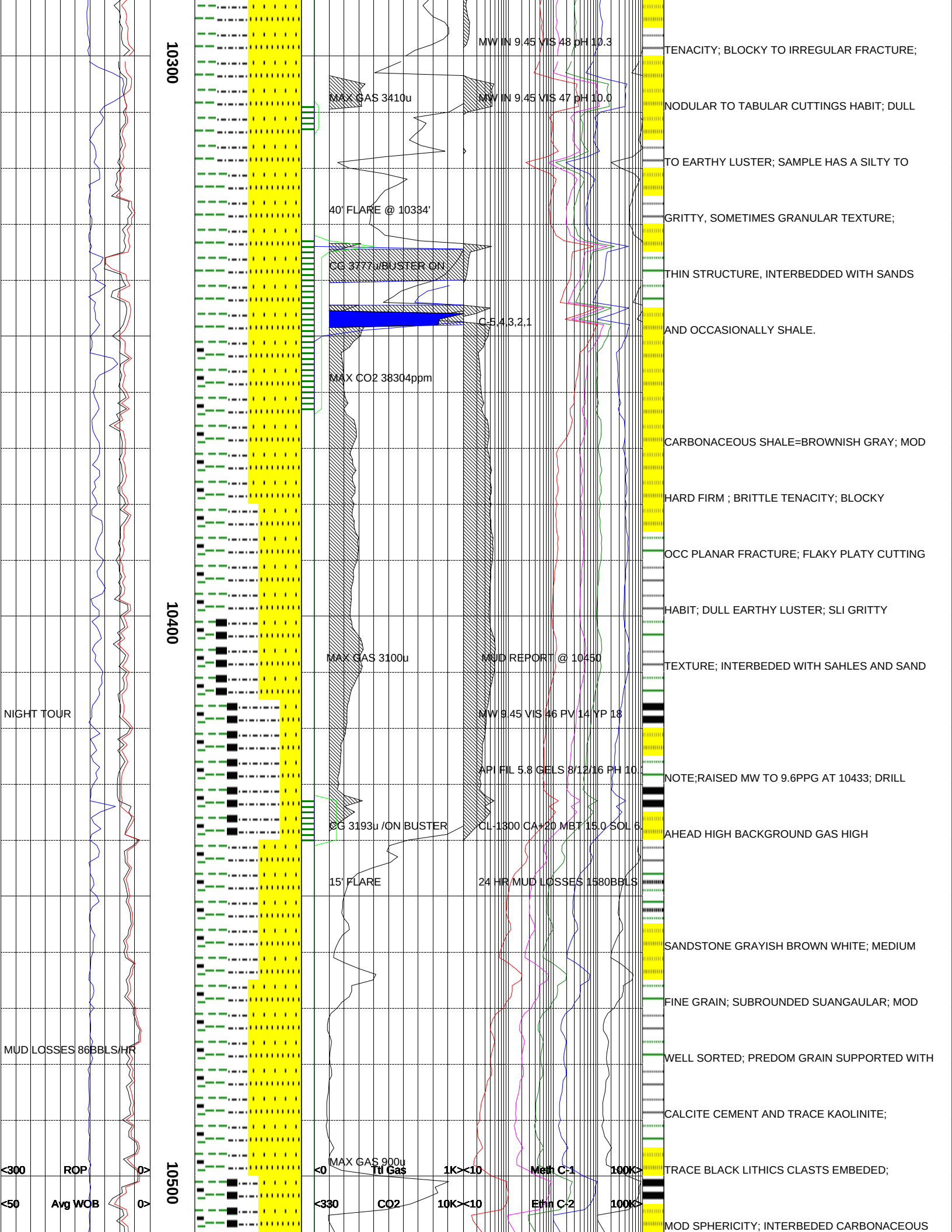

9200
MAX GAS 371u
C-5,4,3,2,1
SAMPLE IS FIRMLY FRIABLE TO MODERATELY
HARD; CALCITE CEMENT; CALCITE AND SOME
MICA SEEN IN MATRIX; NO VISIBLE POROSITY
LOW TO MODERATE GAS ASSOCIATED WITH THIS
SANDSTONE.
MAX GAS 2414u
SHALE = GREENISH GRAY TO MEDIUM DARK
CG 3588u/ON BUSTER
C-5,4,3,2,1
GRAY IN COLOR; TOUGH TO BRITTLE TENACITY
CONCHOIDAL TO PLANAR FRACTURE; CUTTINGS
ARE PLATY TO TABULAR IN HABIT; WAXY TO
WF 400 @ 9295'
MW IN 9.45 VIS 49 pH 9.8
9300
DULL LUSTER EXHIBITED; SMOOTH TO CLAYEY
MW OUT 9.45 VIS 51 pH 9.8
TEXTURE; THIN TO THICK STRUCTURE;
NONCALCAREOUS.
C-3,2,1
SILTSTONE = DARK GRAY TO GREENISH BLACK
MUD LOSSES 26BBLS/HR
IN COLOR; DENSE TO BRITTLE TENACITY;
IRREGULAR TO BLOCKY FRACTURE; CUTTINGS
CG 3558u/ON BUSTER
C-5,4,3,2,1
ARE TABULAR TO WEDGELIKE IN HABIT; DULL
TO EARTHY LUSTER; SLIGHTLY CLAYEY TO
SLIGHTLY GRITTY TEXTURE; THIN TO THICK
9400
STRUCTURE.
MAX GAS 385u

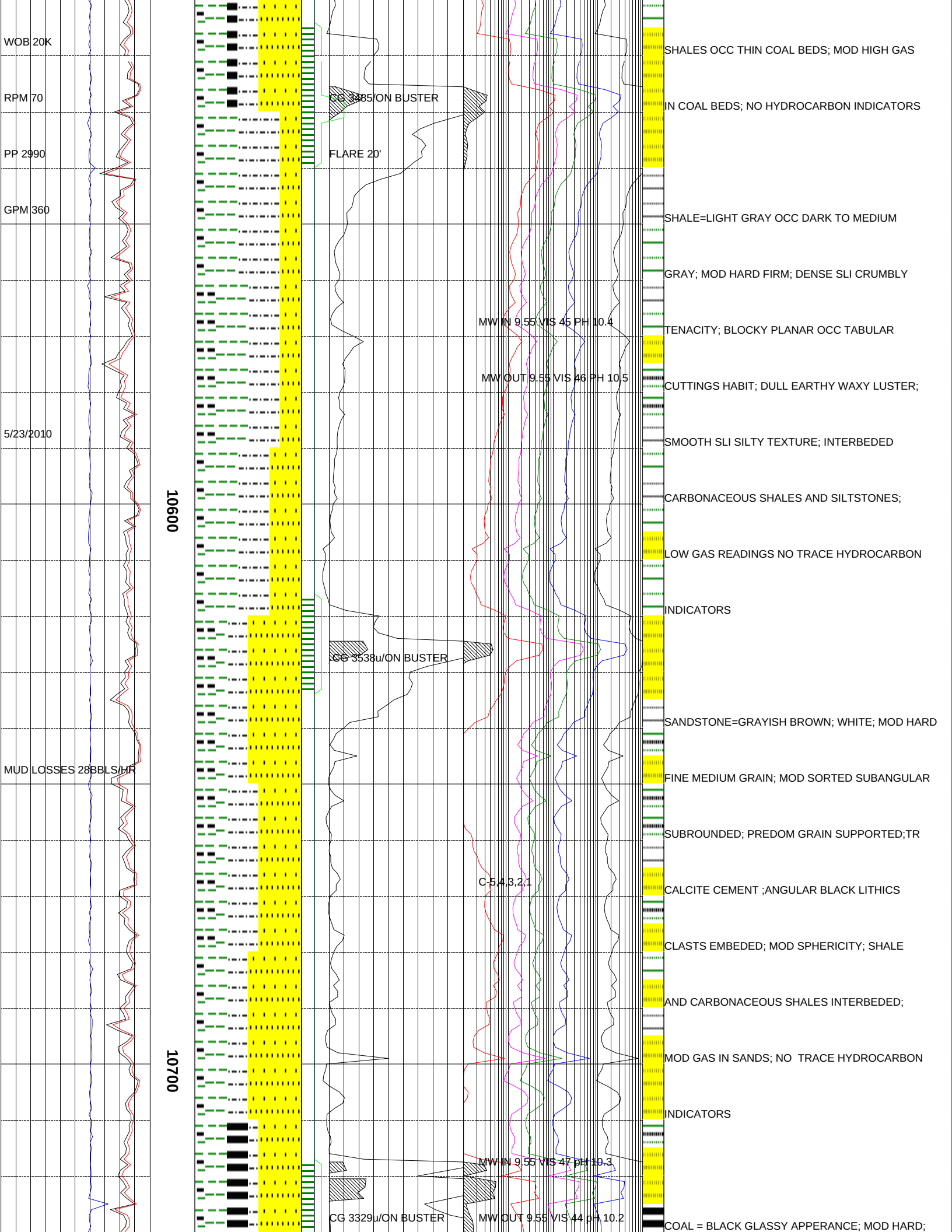

MAX CO2 7657ppm
SHALE = PALE GREEN TO MEDIUM GRAY IN
COLOR; DENSE TO CRUNCHY TENACITY; BLOCKY
TO IRREGULAR FRACTURE; PLATY TO TABULAR
CUTTINGS HABIT; WAXY TO DULL LUSTER;
SMOOTH TO CLAYEY TEXTURE; THIN STRUCTURE
NIGHT TOUR
CG 3604u
INTERBEDED WTH SILTSTONES AND SANDS;
LOW BACKGROUNDGAS HIGH CONNECTION GASES
<300 ROP 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
NOTE=DRILLED TO 9513 LOST PARTIAL RETURN
9500
<50 Avg WOB 0>
<330 CO2 10K><10 Etnn C-2 100K>
PUMPED 3 10BBL LCM SWEEPS REGAINED CIR
<1 Depth of Cut 0>
<0 Flare Ht. 100><10 Prop C-3 100K>
WOB 19K
MW IN 9.45 VIS 45 PH 9.8
<10 Butn C-4 100K>
RPM 75
MW OUT 9.45 VIS 47 PH 9.6
SANDSTONE=WHITE;CLREAR OD HARD EASILY
<10 Pent C-5 100K>
PP 2700
MAX GAS 3571u /ON BUSTER
FRIABLE;PREDOM LOOSE CLEAR ANGULAR
GPM 360
FLARE 10'
QUARTZ GRAINS; MOD WELL SORTED; CALCITE
MUD LOSSES 200BBLS/HR
CG 3446/ON BUSTER
MUD DATA @ 9500
CEMENT; TR BLACK LITHICS FRAGS EMBEDED;
MW 9.4 VIS 46 PV 19 YP 20
MOD SPHERICITY; OCC TRACE KAOLINITE;
API FIL 5.6 GELS 7/9/12 PH 9.9
INTERBEDED WITH SHALES AND SILTSTONES;
MUD LOSSES 82BBLS/HR
LCM SWEEP CO2 5457
CL-1300 CA+20 MBT 15.0 SOL 6.
MOD GAS OBERVED, NO TRACE HYDROCARBON
24 HR MUD LOSSES 434BBLS
INDICATORS
9600
MAX GAS 1512u
SILTSTONE=GRAYISH WHITE; MOD HARD FIRM;
DENSE TENACITY; BLOCKY IRREGULAR FRACTUR

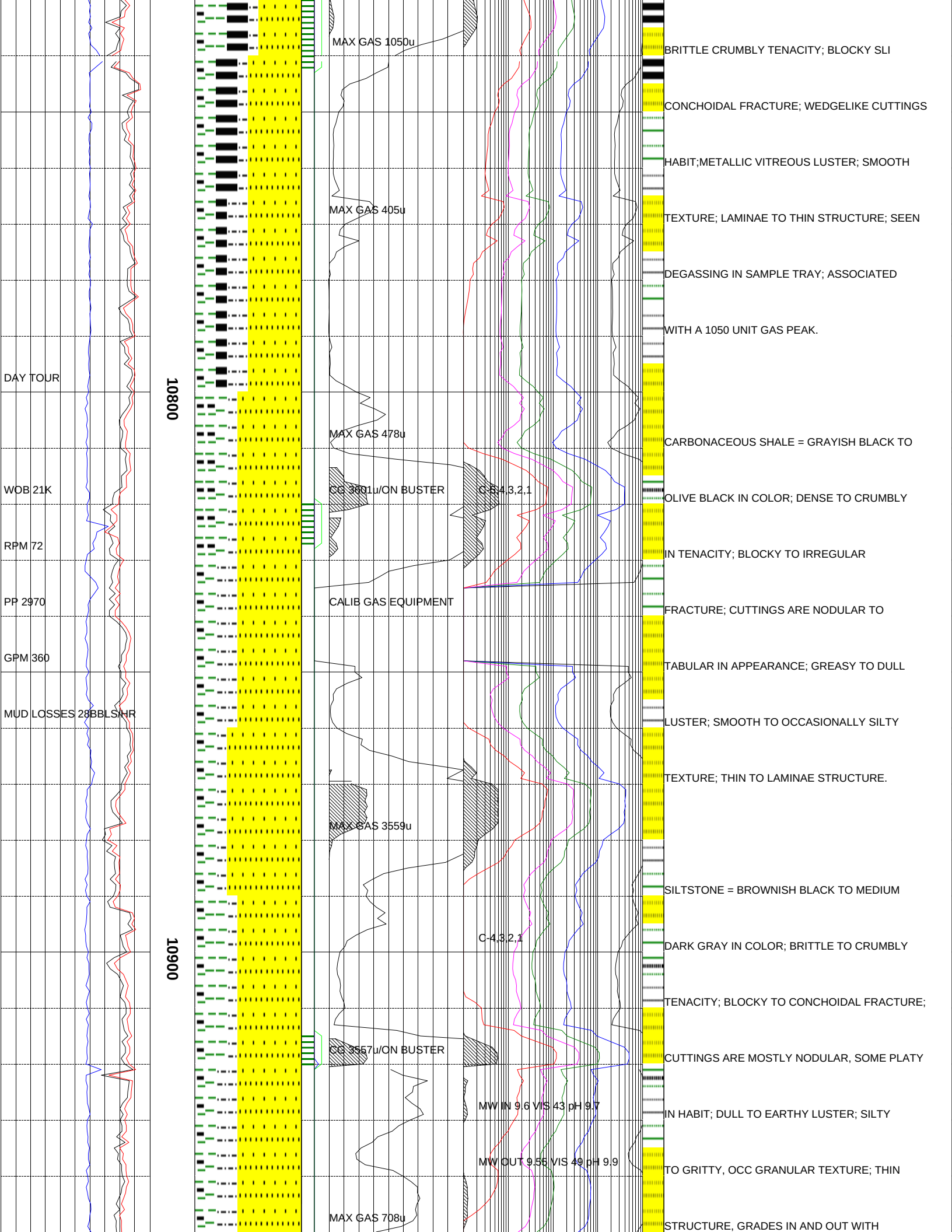

MUS LOSSES 150BBLS/HR
9700
5/22/2010
9800
CG 2916u
LCM SWEEPS CO2 4400ppm
MW IN 9.45 VIS 48 PH 10.3
MW OUT 9.45 VIS 46 PH 9.9
MAX GAS 500u
MAX GAS 215u
CG 2326u
C-4,3,2,1
MAX GAS 879u
CG 2721u
MASSIVE PLATY OCC WEDGELIKE CUTTINGS
HABIT; DULL EARTHY LUSTER; SMOOTH GRITTY
VERY SANDY TEXTURE;THICK STRUCTURE;
GRADING TO WHITE VERY FINE GRAIN SANDS
INTERBEDED SHALES LOW GAS READINGS NO
HYDROCARBON INDICATORS
SHALE=MEDIUM LIGHT TO GRENISH GRAY; MOD
HARD FIRM; DENSE SLI BRIITLE TENACITY;
PLANAR OCC SPLINTERY FRACTURE; PLATY
TABULAR OCC ELONGATED CUTTINGS HABIT;
WAXY DULL EARTHY LUSTER; SMOOTH SLI
SILTY TEXTURE; INTERBEDED WITH VERY
CALCAREOUS SANDY SILTSTONES AND SANDS
LOW GAS MOD HIGH CONNECTION GASES
SANDSTONE=GRAYISH WHITE WHITE; FINE
MEDIUM GRAIN; MOD SORTED; SUBANGULAR
SUBROUNDED MOD WELL SORTED; PREDOM
GRAIN SUPPORTED, CALCITE CEMENT WITH TR
KAOLINITE; TRACE BLACK ANGULAR LITHICS
EMBEDED; MOD HIGH SPHERICITY; TRACE

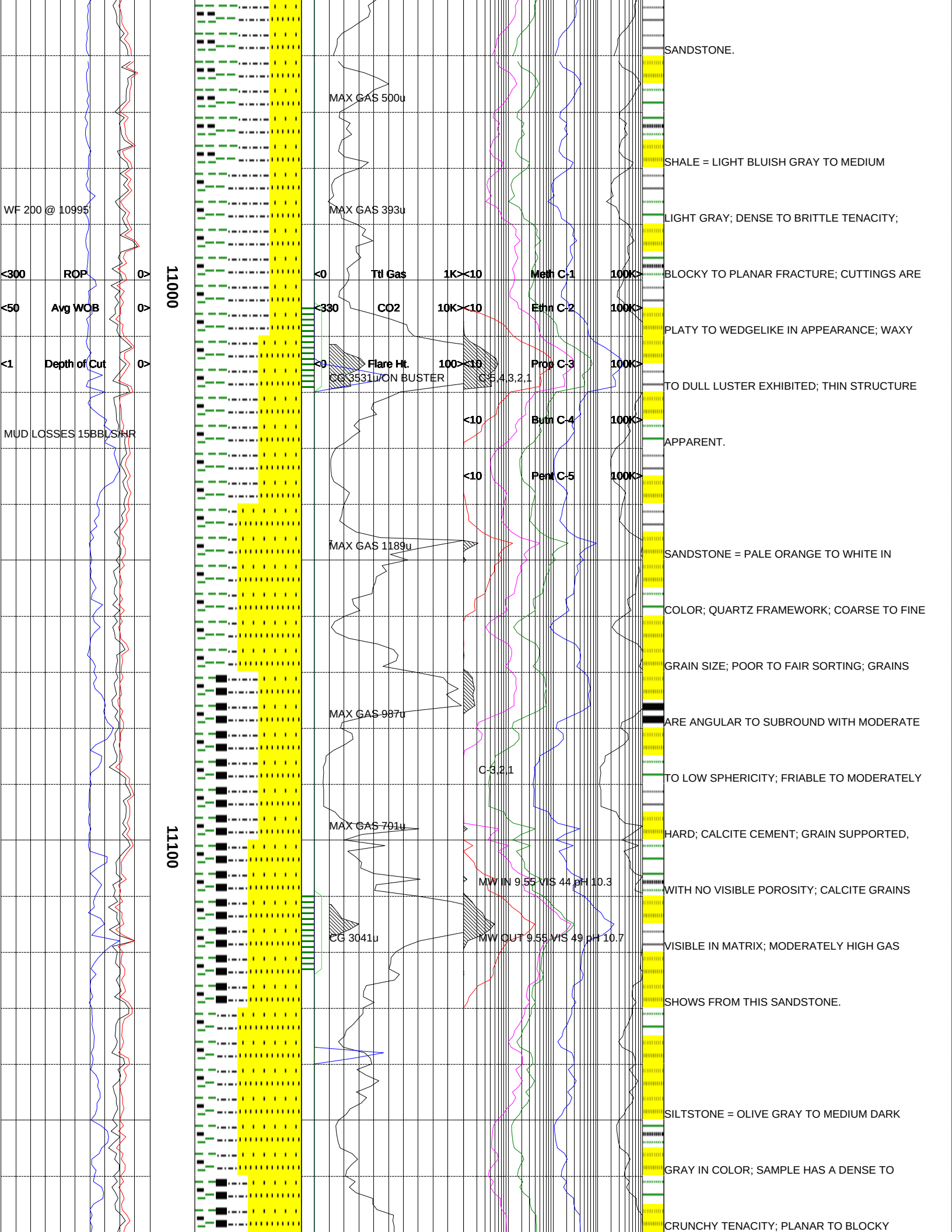

MUD LOSSES 75BBLS/HR
LCM SWEEP CO2 3857ppm
MAX GAS 3448u
C-5,4,3,2,1
9900
MW IN 9.45 VIS 47 PH 10.3
MW OUT 9.45 VIS 46 PH 10.2
WF 300 @ 9915'
DAY TOUR
WOB 20K
CG 3546u
RPM 71
MAX GAS 2084u
PP 2800
GPM 360
CALIB GAS EQUIPMENT
<300 ROP 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
<50 Avg WOB 0>
<330 CO2 10K><10 Ethn C-2 100K>
<1 Depth of Cut 0>
<0 Flare Ht. 100><10 Prop C-3 100K>
10000
MAX GAS 565u
<10 Buta C-4 100K>
<10 Pent C-5 100K>
CG 3596u
MUD LOSSES 54BBLS/HR
LCM SWEEP CO2 13483ppm
CLEAR XLN CALCITE FILL OBSERVED; HIGH
GAS IN SANDSTONE WITH FRACTURE FILL;
INTERBEDED SHALES AND CARBONACEOUS
SHALES; MOD HIGH GAS READING IN SANDS
VERY HIGH CONNECTION GASES
SILTSTONE = GRAYISH OLIVE TO MEDIUM GRAY
IN COLOR; DENSE TO BRITTLE IN TENACITY;
IRREGULAR TO BLOCKY FRACTURE; NODULAR TO
TABULAR CUTTINGS HABIT; DULL TO FROSTED
LUSTER EXHIBITED; SAMPLE SHOWS A SILTY
TO GRITTY, OCCASIONALLY GRANULAR TEXTURE
SEVERAL PIECES SEEN GRADING INTO FINE
SANDSTONE; THIN STRUCTURE, APPEARS TO
BE GRADING TO AND FROM A SANDSTONE.
FRACTURE FILL = CLEAR TO MILKY WHITE
CALCITE RHOMBS AND GRAINS; INTERBEDDED
WITH SANDSTONE; VERY STRONG REACTION
TO DILUTE HCL; CORRELATES WITH LOSS ZONE
FROM 10020' TO 10050'.

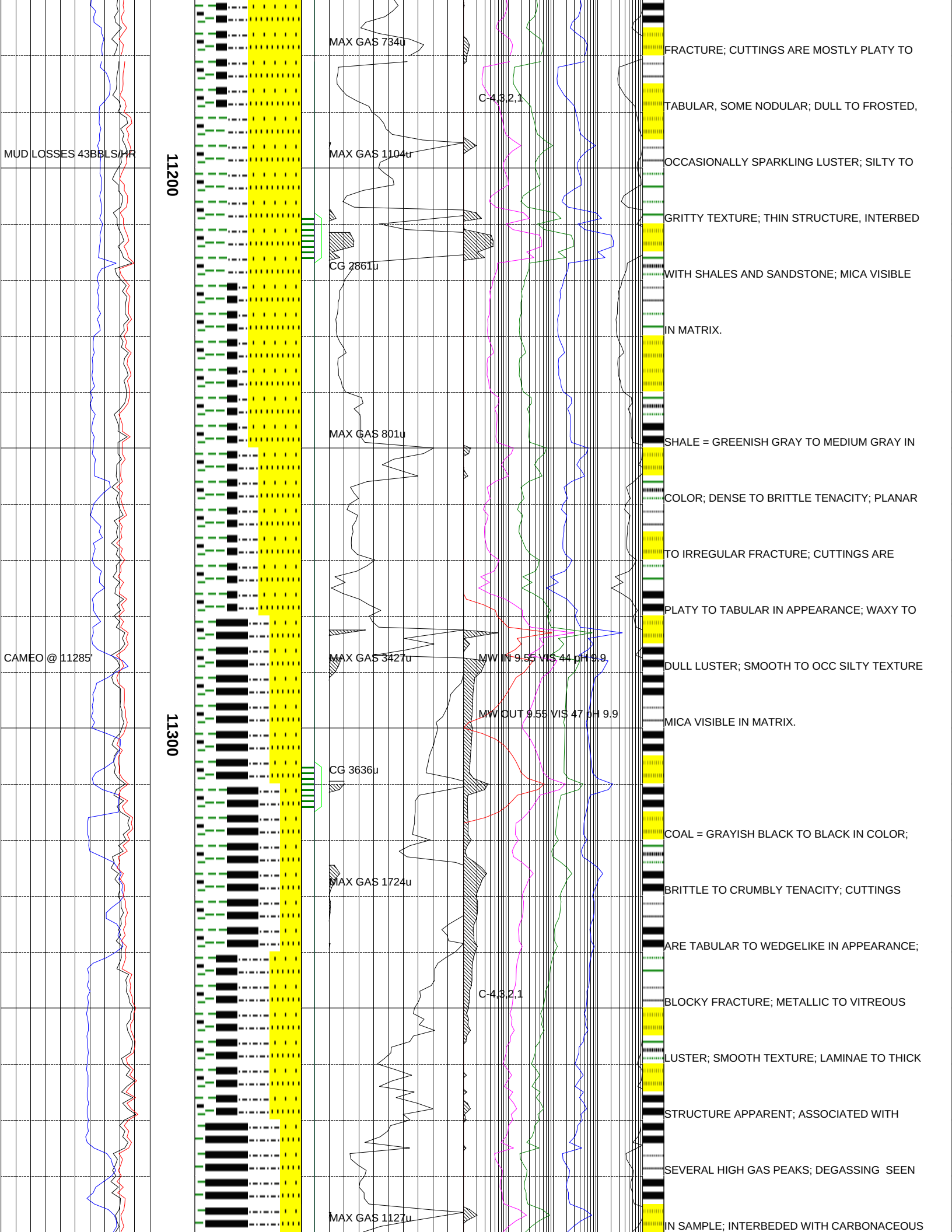

10100
10200
C-4,3,2,1
MAX GAS 291u
MW IN 9.4 VIS 45 pH 10.1
MW OUT 9.4 VIS 46 pH 10.0
MAX GAS 3698u
MAX GAS 903u
CG 3633u
MAX GAS 248u
DTG 2531u
C-5,4,3,2,1
CG 3624u
MUD LOSSES 10BBLS/HR
MAX GAS 3195u
MAX GAS 1603u
MAX GAS 995u
SHALE = LIGHT BLUISH GRAY TO MEDIUM GRAY
IN COLOR; SAMPLE SHOWS A BRITTLE TO
TOUGH TENACITY; PLANAR TO IRREGULAR
FRACTURE; CUTTINGS ARE PLATY TO TABULAR,
SOME ELONGATED; WAXY TO DULL LUSTER;
SMOOTH TO CLAYEY, OCCASIONALLY SILTY
TEXTURE; THIN STRUCTURE.
SANDSTONE = WHITE TO LIGHT GRAY TO
NEARLY TRANSLUCENT; QUARTZ FRAMEWORK
WITH SOME BLACK LITHIC FRAGEMENTS;COARSE
TO FINE GRAIN SIZE; GRAINS ARE ANGULAR
TO SUBROUNDED WITH LOW TO MODERATE
SPHERICITY; EASILY TO FIRMLY FRIABLE;
WEAK CALCITE CEMENT, SLOW TO MODERATE
DISSOLUTION IN HCL; NO VISIBLE POROSITY
OR BEDDING FEATURES; CALCITE GRAINS
VISIBLE IN MATRIX; ASSOCIATED WITH LOW
BACKGROUND AND HIGH CONNECTION GAS.
SILTSTONE = DUSKY YELLOWISH BROWN TO
DARK GRAY IN COLOR; BRITTLE TO CRUMBLY

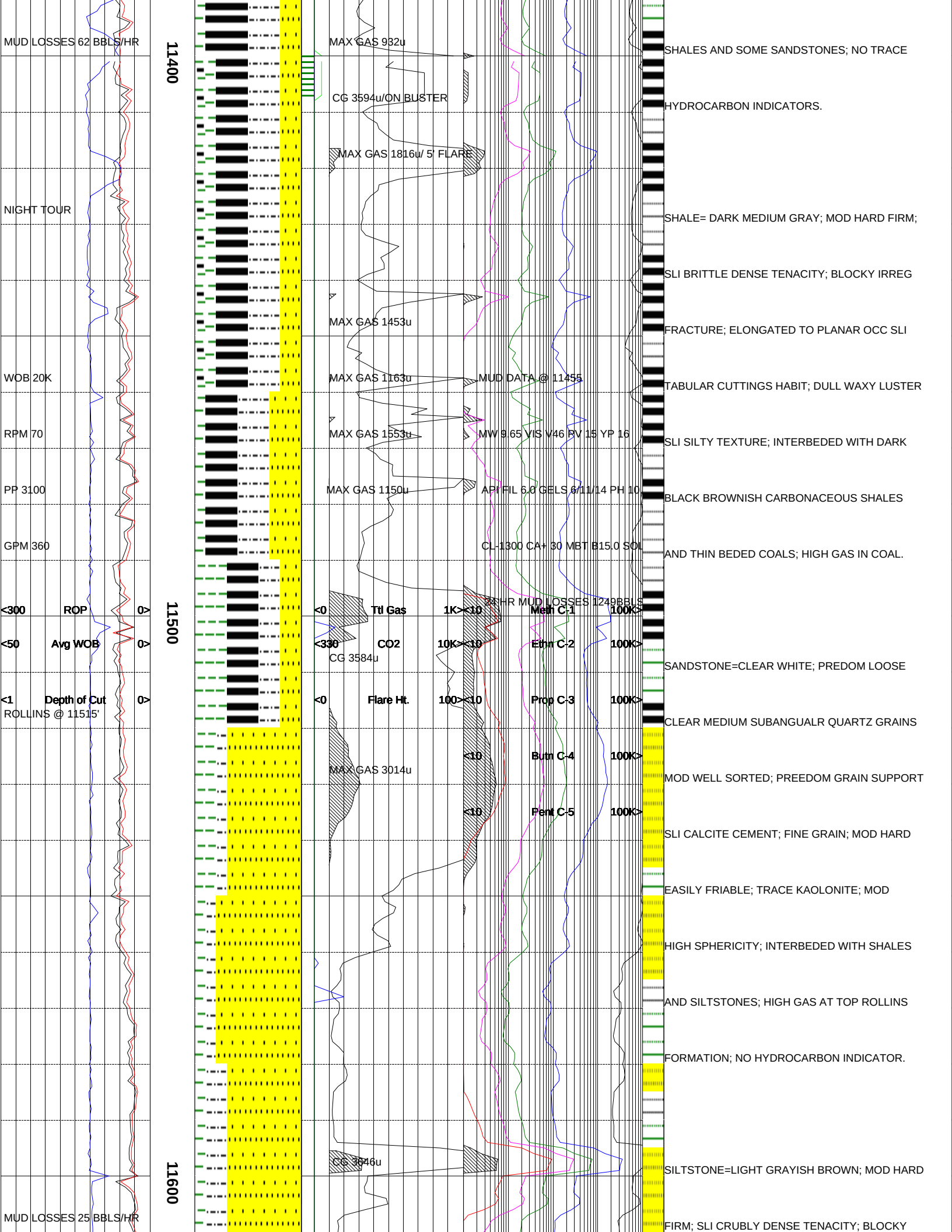

10300
10400
10500
MW IN 9.45 VIS 48 pH 10.3
MAX GAS 3410u
MW IN 9.45 VIS 47 pH 10.0
40' FLARE @ 10334'
CG 3777u/BUSTER ON
C-5,4,3,2,1
MAX CO2 38304ppm
MAX GAS 3100u
MUD REPORT @ 10450
NIGHT TOUR
MW 9.45 VIS 46 PV 14 YP 18
API FIL 5.8 GELS 8/12/16 PH 10.
CG 3193u /ON BUSTER
CL-1300 CA+20 MBT 15.0 SOL 6.
15' FLARE
24 HR MUD LOSSES 1580BBLS
MUD LOSSES 86BBLS/HR
MAX GAS 900u
TENACITY; BLOCKY TO IRREGULAR FRACTURE;
NODULAR TO TABULAR CUTTINGS HABIT; DULL
TO EARTHY LUSTER; SAMPLE HAS A SILTY TO
GRITTY, SOMETIMES GRANULAR TEXTURE;
THIN STRUCTURE, INTERBEDDED WITH SANDS
AND OCCASIONALLY SHALE.
CARBONACEOUS SHALE=BROWNISH GRAY; MOD
HARD FIRM ; BRITTLE TENACITY; BLOCKY
OCC PLANAR FRACTURE; FLAKY PLATY CUTTING
HABIT; DULL EARTHY LUSTER; SLI GRITTY
TEXTURE; INTERBEDED WITH SAHLES AND SAND
NOTE;RAISED MW TO 9.6PPG AT 10433; DRILL
AHEAD HIGH BACKGROUND GAS HIGH
SANDSTONE GRAYISH BROWN WHITE; MEDIUM
FINE GRAIN; SUBROUNDED SUANGAULAR; MOD
WELL SORTED; PREDOM GRAIN SUPPORTED WITH
CALCITE CEMENT AND TRACE KAOLINITE;
TRACE BLACK LITHICS CLASTS EMBEDED;
MOD SPHERICITY; INTERBEDED CARBONACEOUS
<300 ROP 0>
<50 Avg WOB 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
<330 CO2 10K><10 Etnn C-2 100K>

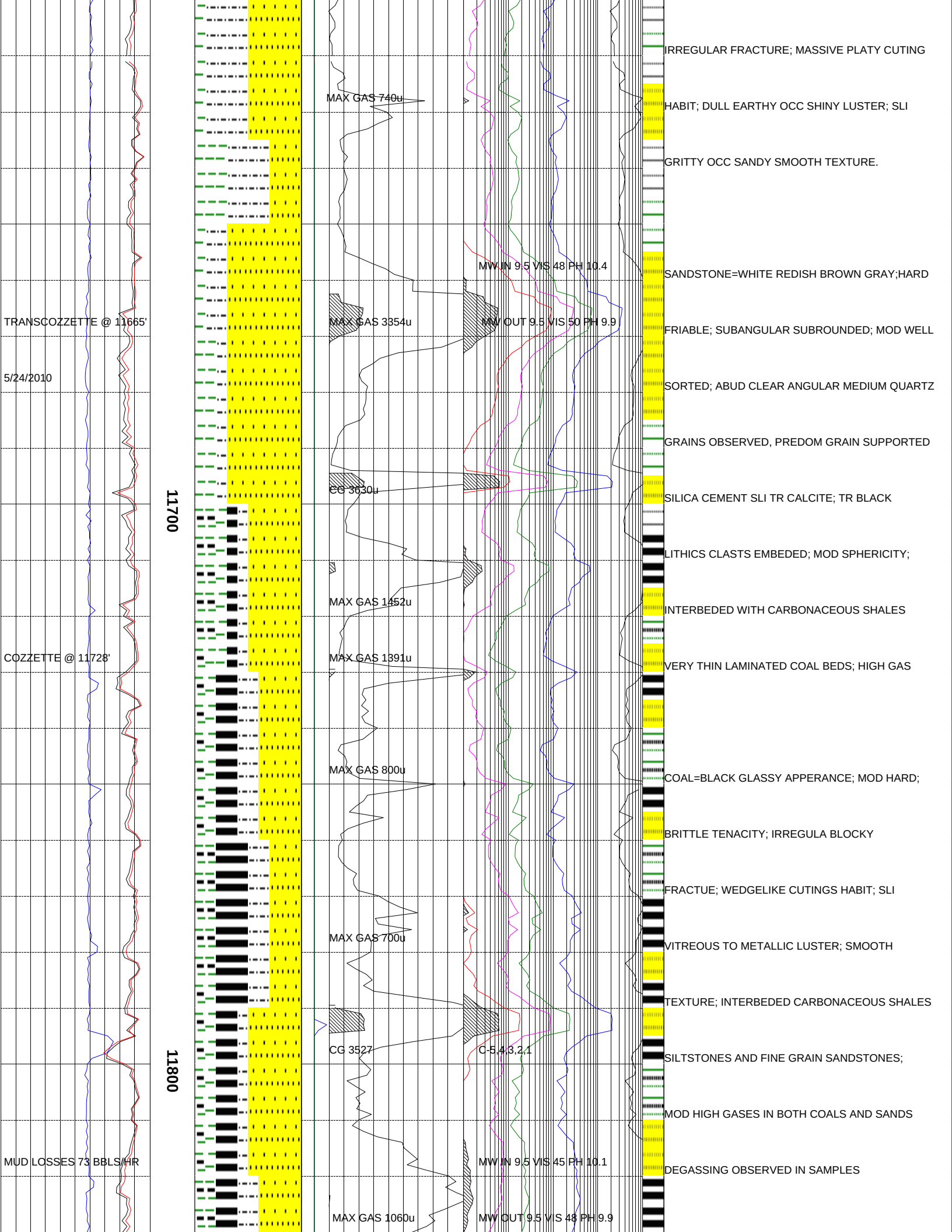

WOB 20K
RPM 70
PP 2990
GPM 360
5/23/2010
10600
MUD LOSSES 28BBLS/HR
10700
CG 3485/ON BUSTER
FLARE 20'
CG 3538u/ON BUSTER
CG 3329u/ON BUSTER
MW IN 9.55 VIS 45 PH 10.4
MW OUT 9.55 VIS 46 PH 10.5
C-5,4,3,2,1
MW IN 9.55 VIS 47 pH 10.3
MW OUT 9.55 VIS 44 pH 10.2
SHALES OCC THIN COAL BEDS; MOD HIGH GAS
IN COAL BEDS; NO HYDROCARBON INDICATORS
SHALE=LIGHT GRAY OCC DARK TO MEDIUM
GRAY; MOD HARD FIRM; DENSE SLI CRUMBLY
TENACITY; BLOCKY PLANAR OCC TABULAR
CUTTINGS HABIT; DULL EARTHY WAXY LUSTER;
SMOOTH SLI SILTY TEXTURE; INTERBEDED
CARBONACEOUS SHALES AND SILTSTONES;
LOW GAS READINGS NO TRACE HYDROCARBON
INDICATORS
SANDSTONE=GRAYISH BROWN; WHITE; MOD HARD
FINE MEDIUM GRAIN; MOD SORTED SUBANGULAR
SUBROUNDED; PREDOM GRAIN SUPPORTED;TR
CALCITE CEMENT ;ANGULAR BLACK LITHICS
CLASTS EMBEDED; MOD SPHERICITY; SHALE
AND CARBONACEOUS SHALES INTERBEDED;
MOD GAS IN SANDS; NO TRACE HYDROCARBON
INDICATORS
COAL = BLACK GLASSY APPERANCE; MOD HARD;

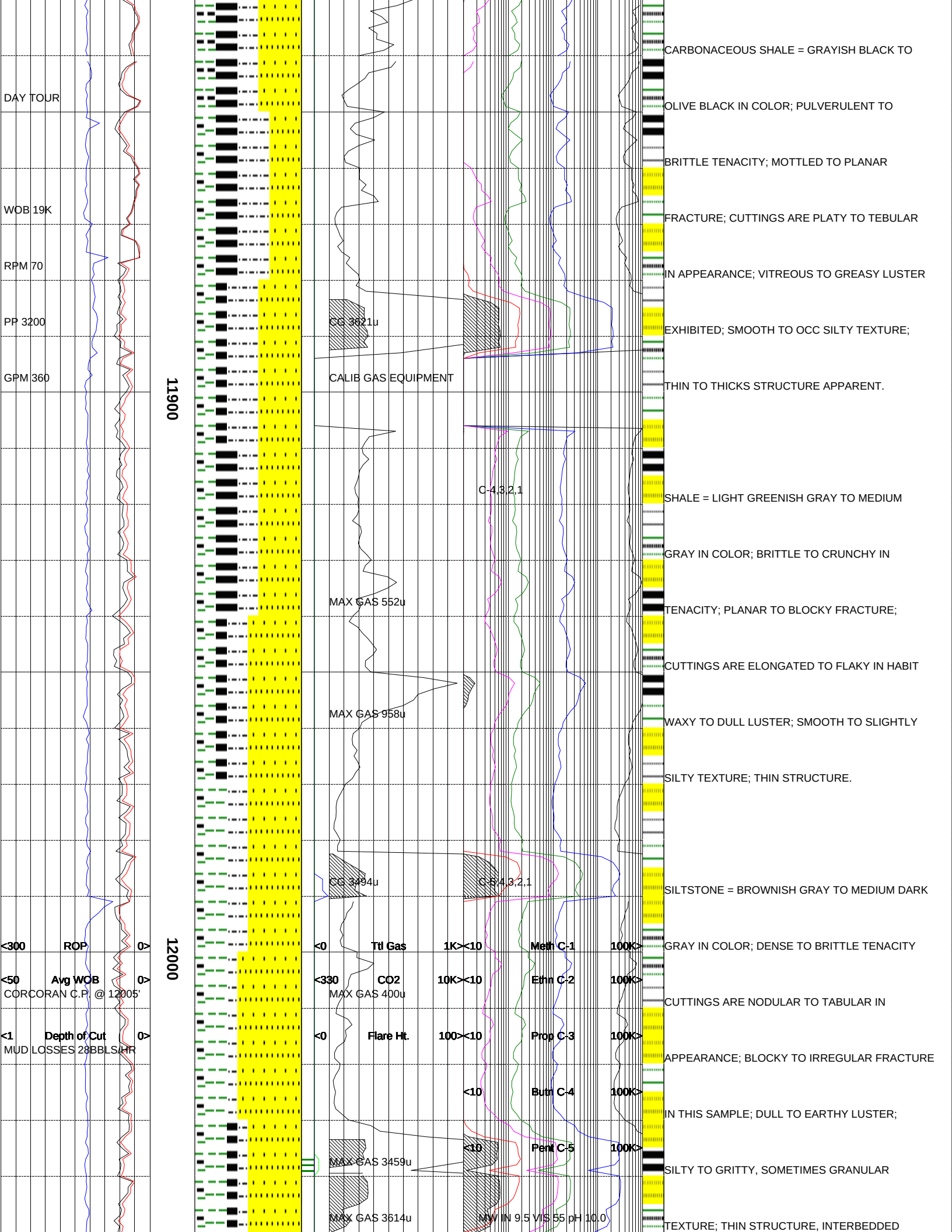

MAX GAS 1050u
BRITTLE CRUMBLY TENACITY; BLOCKY SLI
CONCHOIDAL FRACTURE; WEDGELIKE CUTTINGS
HABIT;METALLIC VITREOUS LUSTER; SMOOTH
MAX GAS 405u
TEXTURE; LAMINAE TO THIN STRUCTURE; SEEN
DEGASSING IN SAMPLE TRAY; ASSOCIATED
WITH A 1050 UNIT GAS PEAK.
DAY TOUR
10800
MAX GAS 478u
CARBONACEOUS SHALE = GRAYISH BLACK TO
WOB 21K
CG 3601u/ON BUSTER
C-5,4,3,2,1
OLIVE BLACK IN COLOR; DENSE TO CRUMBLY
RPM 72
IN TENACITY; BLOCKY TO IRREGULAR
PP 2970
CALIB GAS EQUIPMENT
FRACTURE; CUTTINGS ARE NODULAR TO
GPM 360
TABULAR IN APPEARANCE; GREASY TO DULL
MUD LOSSES 28BBLS/HR
LUSTER; SMOOTH TO OCCASIONALLY SILTY
TEXTURE; THIN TO LAMINAE STRUCTURE.
MAX GAS 3559u
SILTSTONE = BROWNISH BLACK TO MEDIUM
C-4,3,2,1
DARK GRAY IN COLOR; BRITTLE TO CRUMBLY
10900
TENACITY; BLOCKY TO CONCHOIDAL FRACTURE;
CG 3557u/ON BUSTER
CUTTINGS ARE MOSTLY NODULAR, SOME PLATY
MW IN 9.6 VIS 43 pH 9.7
IN HABIT; DULL TO EARTHY LUSTER; SILTY
MW OUT 9.56 VIS 49 pH 9.9
TO GRITTY, OCC GRANULAR TEXTURE; THIN
MAX GAS 708u
STRUCTURE, GRADES IN AND OUT WITH

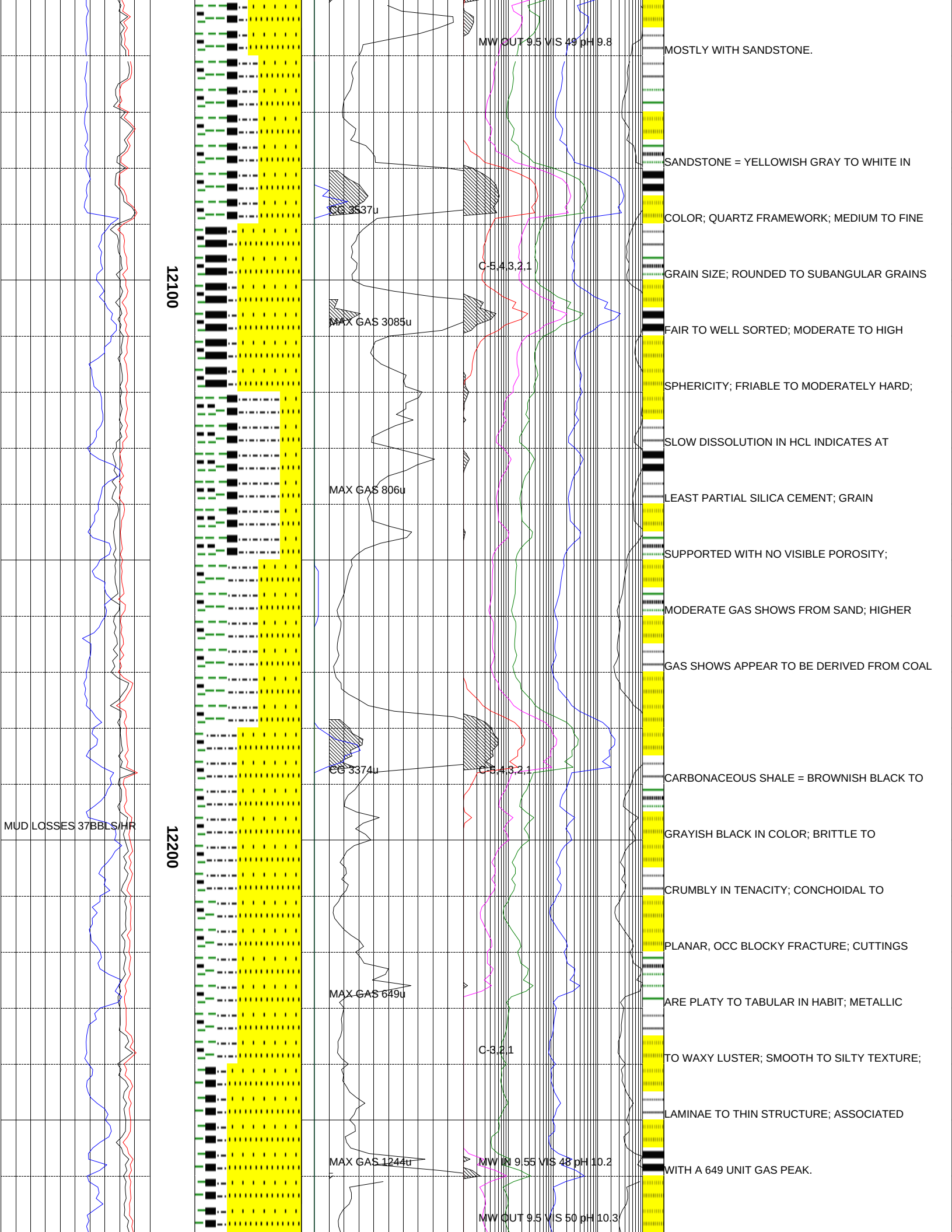

SANDSTONE.
MAX GAS 500u
SHALE = LIGHT BLUISH GRAY TO MEDIUM
WF 200 @ 10995
MAX GAS 393u
LIGHT GRAY; DENSE TO BRITTLE TENACITY;
<300 ROP 0>
<0 Ttl Gas 1K>
<10 Meth C-1 100K>
BLOCKY TO PLANAR FRACTURE; CUTTINGS ARE
11000
<50 Avg WOB 0>
<330 CO2 10K>
<10 Ethn C-2 100K>
PLATY TO WEDGELIKE IN APPEARANCE; WAXY
<1 Depth of Cut 0>
<0 Flare Ht. 100>
<10 Prop C-3 100K>
CG 3531u/ON BUSTER
C-5,4,3,2,1
TO DULL LUSTER EXHIBITED; THIN STRUCTURE
<10 Butn C-4 100K>
MUD LOSSES 15BBLS/HR
APPARENT.
<10 Pent C-5 100K>
MAX GAS 1189u
SANDSTONE = PALE ORANGE TO WHITE IN
COLOR; QUARTZ FRAMEWORK; COARSE TO FINE
GRAIN SIZE; POOR TO FAIR SORTING; GRAINS
MAX GAS 987u
ARE ANGULAR TO SUBROUND WITH MODERATE
C-3,2,1
TO LOW SPHERICITY; FRIABLE TO MODERATELY
MAX GAS 701u
HARD; CALCITE CEMENT; GRAIN SUPPORTED,
11100
MW IN 9.55 VIS 44 pH 10.3
WITH NO VISIBLE POROSITY; CALCITE GRAINS
CG 3041u
MW OUT 9.55 VIS 49 pH 10.7
VISIBLE IN MATRIX; MODERATELY HIGH GAS
SHOWS FROM THIS SANDSTONE.
SILTSTONE = OLIVE GRAY TO MEDIUM DARK
GRAY IN COLOR; SAMPLE HAS A DENSE TO
CRUNCHY TENACITY; PLANAR TO BLOCKY

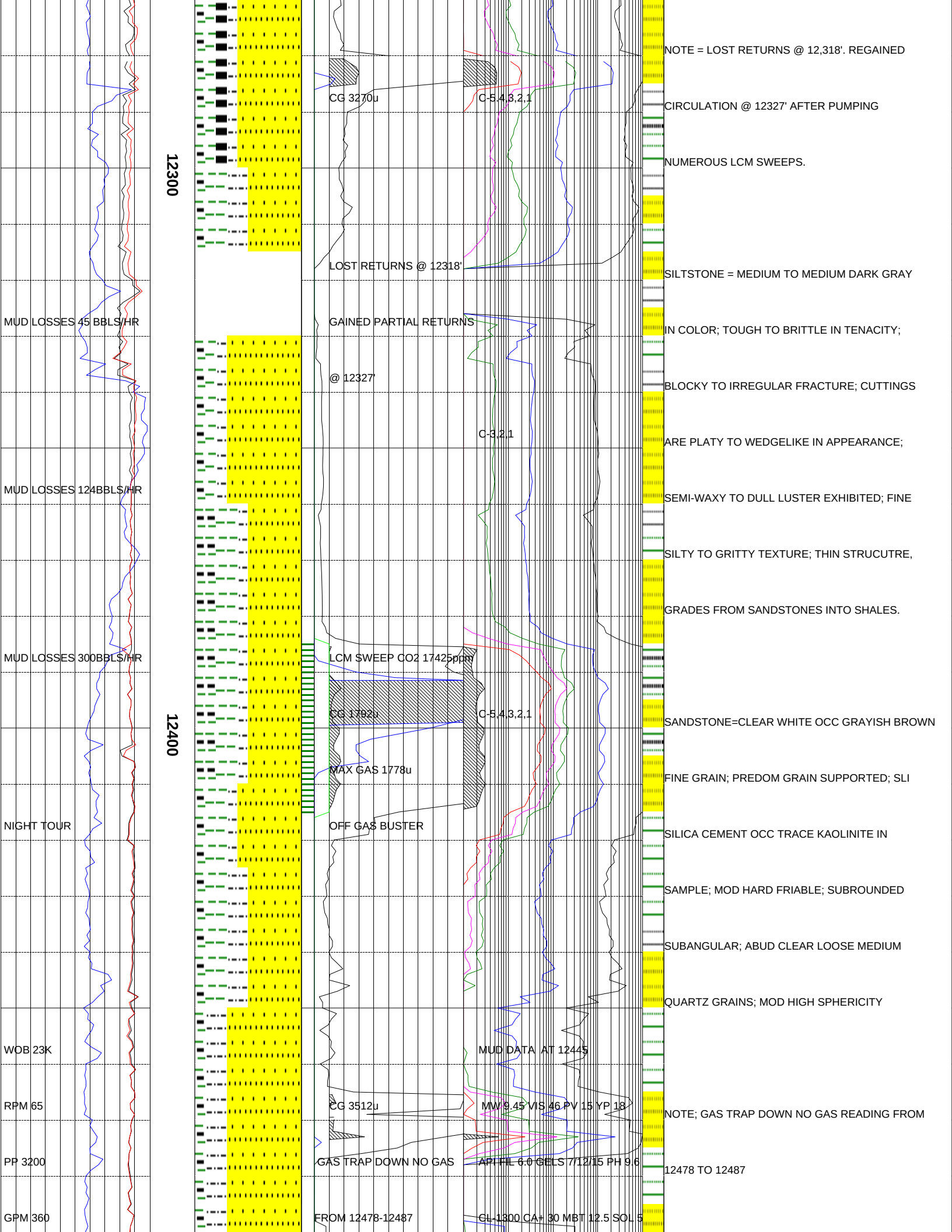

MAX GAS 734u
C-4,3,2,1
MUD LOSSES 43BBLS/HR
MAX GAS 1104u
11200
CG 2861u
MAX GAS 801u
CAMEO @ 11285'
MAX GAS 3427u
MW IN 9.55 VIS 44 pH 9.9
MW OUT 9.55 VIS 47 pH 9.9
11300
CG 3636u
MAX GAS 1724u
C-4,3,2,1
MAX GAS 1127u
FRACTURE; CUTTINGS ARE MOSTLY PLATY TO
TABULAR, SOME NODULAR; DULL TO FROSTED,
OCCASIONALLY SPARKLING LUSTER; SILTY TO
GRITTY TEXTURE; THIN STRUCTURE, INTERBED
WITH SHALES AND SANDSTONE; MICA VISIBLE
IN MATRIX.
SHALE = GREENISH GRAY TO MEDIUM GRAY IN
COLOR; DENSE TO BRITTLE TENACITY; PLANAR
TO IRREGULAR FRACTURE; CUTTINGS ARE
PLATY TO TABULAR IN APPEARANCE; WAXY TO
DULL LUSTER; SMOOTH TO OCC SILTY TEXTURE
MICA VISIBLE IN MATRIX.
COAL = GRAYISH BLACK TO BLACK IN COLOR;
BRITTLE TO CRUMBLY TENACITY; CUTTINGS
ARE TABULAR TO WEDGELIKE IN APPEARANCE;
BLOCKY FRACTURE; METALLIC TO VITREOUS
LUSTER; SMOOTH TEXTURE; LAMINAE TO THICK
STRUCTURE APPARENT; ASSOCIATED WITH
SEVERAL HIGH GAS PEAKS; DEGASSING SEEN
IN SAMPLE; INTERBEDED WITH CARBONACEOUS

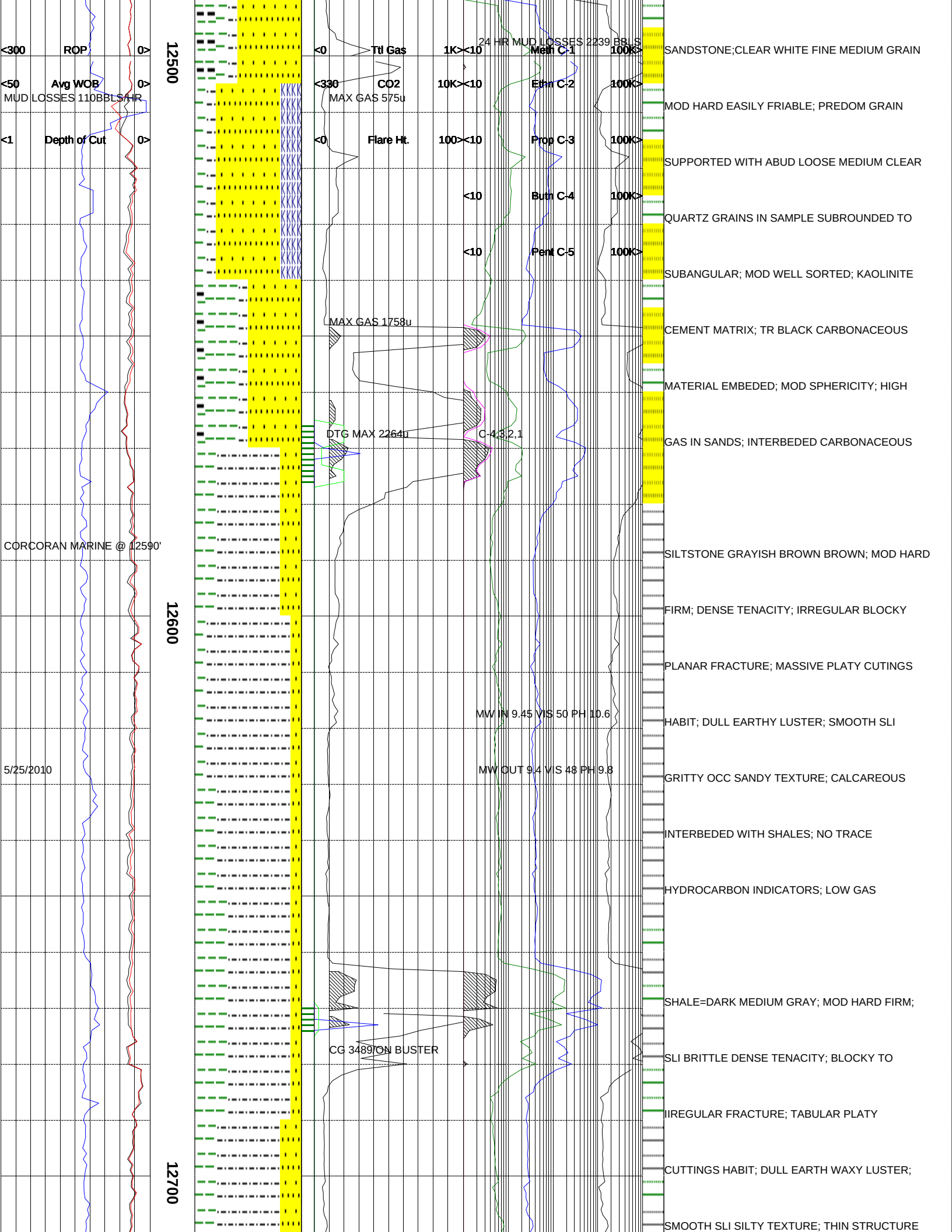

MUD LOSSES 62 BBLS/HR
11400
MAX GAS 932u
SHALES AND SOME SANDSTONES; NO TRACE
CG 3594u/ON BUSTER
HYDROCARBON INDICATORS.
MAX GAS 1816u/ 5' FLARE
NIGHT TOUR
SHALE= DARK MEDIUM GRAY; MOD HARD FIRM;
SLI BRITTLE DENSE TENACITY; BLOCKY IRREG
MAX GAS 1453u
FRACTURE; ELONGATED TO PLANAR OCC SLI
WOB 20K
MAX GAS 1163u
MUD DATA @ 11455
TABULAR CUTTINGS HABIT; DULL WAXY LUSTER
RPM 70
MAX GAS 1553u
MW 9.65 VIS V46 PV 15 YP 16
SLI SILTY TEXTURE; INTERBEDED WITH DARK
PP 3100
MAX GAS 1150u
API FIL 6.0 GELS 6/11/14 PH 10
BLACK BROWNISH CARBONACEOUS SHALES
GPM 360
CL-1300 CA+ 30 MBT B15.0 SOL
AND THIN BEDED COALS; HIGH GAS IN COAL.
<300 ROP 0>
<0 Ttl Gas 1K>
24 HR MUD LOSSES 1249BBLS
<10 Meth C-1 100K>
11500
<50 Avg WOB 0>
<330 CO2 10K>
<10 Ethn C-2 100K>
CG 3584u
SANDSTONE=CLEAR WHITE; PREDOM LOOSE
<1 Depth of Cut 0>
<0 Flare Ht. 100>
<10 Prop C-3 100K>
ROLLINS @ 11515'
CLEAR MEDIUM SUBANGUALR QUARTZ GRAINS
<10 Butn C-4 100K>
MAX GAS 3014u
MOD WELL SORTED; PREEDOM GRAIN SUPPORT
<10 Pent C-5 100K>
SLI CALCITE CEMENT; FINE GRAIN; MOD HARD
EASILY FRIABLE; TRACE KAOLONITE; MOD
HIGH SPHERICITY; INTERBEDED WITH SHALES
AND SILTSTONES; HIGH GAS AT TOP ROLLINS
FORMATION; NO HYDROCARBON INDICATOR.
CG 3646u
11600
SILTSTONE=LIGHT GRAYISH BROWN; MOD HARD
MUD LOSSES 25 BBLS/HR
FIRM; SLI CRUBLY DENSE TENACITY; BLOCKY


IRREGULAR FRACTURE; MASSIVE PLATY CUTING
MAX GAS 740u
HABIT; DULL EARTHY OCC SHINY LUSTER; SLI
GRITTY OCC SANDY SMOOTH TEXTURE.
MW IN 9.5 VIS 48 PH 10.4
SANDSTONE=WHITE REDISH BROWN GRAY;HARD
TRANSCOZZETTE @ 11665'
MAX GAS 3354u
MW OUT 9.5 VIS 50 PH 9.9
FRIABLE; SUBANGULAR SUBROUNDED; MOD WELL
5/24/2010
SORTED; ABUD CLEAR ANGULAR MEDIUM QUARTZ
GRAINS OBSERVED, PREDOM GRAIN SUPPORTED
CG 3630u
SILICA CEMENT SLI TR CALCITE; TR BLACK
11700
LITHICS CLASTS EMBEDED; MOD SPHERICITY;
MAX GAS 1452u
INTERBEDED WITH CARBONACEOUS SHALES
COZZETTE @ 11728'
MAX GAS 1391u
VERY THIN LAMINATED COAL BEDS; HIGH GAS
MAX GAS 800u
COAL=BLACK GLASSY APPERANCE; MOD HARD;
BRITTLE TENACITY; IRREGULA BLOCKY
FRACTUE; WEDGELIKE CUTINGS HABIT; SLI
MAX GAS 700u
VITREOUS TO METALLIC LUSTER; SMOOTH
TEXTURE; INTERBEDED CARBONACEOUS SHALES
CG 3527
C-5,4,3,2,1
SILTSTONES AND FINE GRAIN SANDSTONES;
11800
MOD HIGH GASES IN BOTH COALS AND SANDS
MUD LOSSES 73 BBLS/HR
MW IN 9.5 VIS 45 PH 10.1
DEGASSING OBSERVED IN SAMPLES
MAX GAS 1060u
MW OUT 9.5 VIS 48 PH 9.9


DAY TOUR
WOB 19K
RPM 70
PP 3200
GPM 360
11900
12000
CG 3621u
CALIB GAS EQUIPMENT
C-4,3,2,1
MAX GAS 552u
MAX GAS 958u
CG 3494u
C-5,4,3,2,1
<300 ROP 0>
<0 Ttl Gas 1K><10 Meth C-1 100K>
<50 Avg WOB 0>
<330 CO2 10K><10 Eth C-2 100K>
CORCORAN C.P. @ 12005'
MAX GAS 400u
<1 Depth of Cut 0>
<0 Flare Ht. 100><10 Prop C-3 100K>
MUD LOSSES 28BBLS/HR
<10 Butn C-4 100K>
<10 Pent C-5 100K>
MAX GAS 3459u
MAX GAS 3614u
MW IN 9.5 VIS 55 pH 10.0
CARBONACEOUS SHALE = GRAYISH BLACK TO
OLIVE BLACK IN COLOR; PULVERULENT TO
BRITTLE TENACITY; MOTTLED TO PLANAR
FRACTURE; CUTTINGS ARE PLATY TO TEBULAR
IN APPEARANCE; VITREOUS TO GREASY LUSTER
EXHIBITED; SMOOTH TO OCC SILTY TEXTURE;
THIN TO THICKS STRUCTURE APPARENT.
SHALE = LIGHT GREENISH GRAY TO MEDIUM
GRAY IN COLOR; BRITTLE TO CRUNCHY IN
TENACITY; PLANAR TO BLOCKY FRACTURE;
CUTTINGS ARE ELONGATED TO FLAKY IN HABIT
WAXY TO DULL LUSTER; SMOOTH TO SLIGHTLY
SILTY TEXTURE; THIN STRUCTURE.
SILTSTONE = BROWNISH GRAY TO MEDIUM DARK
GRAY IN COLOR; DENSE TO BRITTLE TENACITY
CUTTINGS ARE NODULAR TO TABULAR IN
APPEARANCE; BLOCKY TO IRREGULAR FRACTURE
IN THIS SAMPLE; DULL TO EARTHY LUSTER;
SILTY TO GRITTY, SOMETIMES GRANULAR
TEXTURE; THIN STRUCTURE, INTERBEDDED


MW OUT 9.5 VIS 49 pH 9.8
MOSTLY WITH SANDSTONE.
SANDSTONE = YELLOWISH GRAY TO WHITE IN
CG 3537u
COLOR; QUARTZ FRAMEWORK; MEDIUM TO FINE
C-5,4,3,2,1
GRAIN SIZE; ROUNDED TO SUBANGULAR GRAINS
12100
MAX GAS 3085u
FAIR TO WELL SORTED; MODERATE TO HIGH
SPHERICITY; FRIABLE TO MODERATELY HARD;
SLOW DISSOLUTION IN HCL INDICATES AT
MAX GAS 806u
LEAST PARTIAL SILICA CEMENT; GRAIN
SUPPORTED WITH NO VISIBLE POROSITY;
MODERATE GAS SHOWS FROM SAND; HIGHER
GAS SHOWS APPEAR TO BE DERIVED FROM COAL
CG 3374u
C-5,4,3,2,1
CARBONACEOUS SHALE = BROWNISH BLACK TO
MUD LOSSES 37BBLS/HR
12200
GRAYISH BLACK IN COLOR; BRITTLE TO
CRUMBLY IN TENACITY; CONCHOIDAL TO
PLANAR, OCC BLOCKY FRACTURE; CUTTINGS
MAX GAS 649u
ARE PLATY TO TABULAR IN HABIT; METALLIC
C-3,2,1
TO WAXY LUSTER; SMOOTH TO SILTY TEXTURE;
LAMINAE TO THIN STRUCTURE; ASSOCIATED
MAX GAS 1244u
MW IN 9.55 VIS 48 pH 10.2
WITH A 649 UNIT GAS PEAK.
MW OUT 9.5 VIS 50 pH 10.3


12300
12400
MUD LOSSES 45 BBLS/HR
MUD LOSSES 124BBLS/HR
MUD LOSSES 300BBLS/HR
NIGHT TOUR
WOB 23K
RPM 65
PP 3200
GPM 360
CG 3270u
C-5,4,3,2,1
LOST RETURNS @ 12318'
GAINED PARTIAL RETURNS
@ 12327'
C-3,2,1
LCM SWEEP CO2 17425ppm
CG 1792u
C-5,4,3,2,1
MAX GAS 1778u
OFF GAS BUSTER
CG 3512u
GAS TRAP DOWN NO GAS
FROM 12478-12487
MUD DATA AT 12445
MW 9.45 VIS 46 PV 15 YP 18
API FIL 6.0 GELS 7/12/15 PH 9.6
CL-1300 CA+ 30 MBT 12.5 SOL 5
NOTE = LOST RETURNS @ 12,318'. REGAINED
CIRCULATION @ 12327' AFTER PUMPING
NUMEROUS LCM SWEEPS.
SILTSTONE = MEDIUM TO MEDIUM DARK GRAY
IN COLOR; TOUGH TO BRITTLE IN TENACITY;
BLOCKY TO IRREGULAR FRACTURE; CUTTINGS
ARE PLATY TO WEDGELIKE IN APPEARANCE;
SEMI-WAXY TO DULL LUSTER EXHIBITED; FINE
SILTY TO GRITTY TEXTURE; THIN STRUCUTRE,
GRADES FROM SANDSTONES INTO SHALES.
SANDSTONE=CLEAR WHITE OCC GRAYISH BROWN
FINE GRAIN; PREDOM GRAIN SUPPORTED; SLI
SILICA CEMENT OCC TRACE KAOLINITE IN
SAMPLE; MOD HARD FRIABLE; SUBROUNDED
SUBANGULAR; ABUD CLEAR LOOSE MEDIUM
QUARTZ GRAINS; MOD HIGH SPHERICITY
NOTE; GAS TRAP DOWN NO GAS READING FROM
12478 TO 12487


<300 ROP 0>
<50 Avg WOB 0>
MUD LOSSES 110BBLS/HR
<1 Depth of Cut 0>
12500
<0 Ttl Gas 1K><10 Meth C-1 100K>
24 HR MUD LOSSES 2239 BBLS
<330 CO2 10K><10 Ethn C-2 100K>
MAX GAS 575u
<0 Flare Ht. 100><10 Prop C-3 100K>
<10 Buth C-4 100K>
<10 Pent C-5 100K>
MAX GAS 1758u
DTG MAX 2264u
C-4,3,2,1
CORCORAN MARINE @ 12590'
12600
MW IN 9.45 VIS 50 PH 10.6
5/25/2010
MW OUT 9.4 VIS 48 PH 9.8
CG 3489/ON BUSTER
12700
SANDSTONE;CLEAR WHITE FINE MEDIUM GRAIN
MOD HARD EASILY FRIABLE; PREDOM GRAIN
SUPPORTED WITH ABUD LOOSE MEDIUM CLEAR
QUARTZ GRAINS IN SAMPLE SUBROUNDED TO
SUBANGULAR; MOD WELL SORTED; KAOLINITE
CEMENT MATRIX; TR BLACK CARBONACEOUS
MATERIAL EMBEDED; MOD SPHERICITY; HIGH
GAS IN SANDS; INTERBEDED CARBONACEOUS
SILTSTONE GRAYISH BROWN BROWN; MOD HARD
FIRM; DENSE TENACITY; IRREGULAR BLOCKY
PLANAR FRACTURE; MASSIVE PLATY CUTINGS
HABIT; DULL EARTHY LUSTER; SMOOTH SLI
GRITTY OCC SANDY TEXTURE; CALCAREOUS
INTERBEDED WITH SHALES; NO TRACE
HYDROCARBON INDICATORS; LOW GAS
SHALE=DARK MEDIUM GRAY; MOD HARD FIRM;
SLI BRITTLE DENSE TENACITY; BLOCKY TO
IIREGULAR FRACTURE; TABULAR PLATY
CUTTINGS HABIT; DULL EARTH WAXY LUSTER;
SMOOTH SLI SILTY TEXTURE; THIN STRUCTURE