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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
WELL PCU 296-6B2 ST1
FIELD PICEANCE CREEK UNIT
REGION ROCKY MOUNTAIN
COORDINATES LAT 39.905269000
LON 108.205030000
ELEVATION GL = 7363.8'
KB = 7390.8'
COUNTY, STATE RIO BLANCO, CO
API INDEX 051031154501
SPUD DATE 04/25/2011
CONTRACTOR HELMRICH AND PAYNE
CO. REP. SCOTT ARENBURG
RIG/TYPE 215/FLEX 3
LOGGING UNIT ML051
GEOLOGISTS B.MARSH, B.JOHANNING
G.BAKER, D.CLAAR
ADD. PERSONS K.WALLANDER
I. FAROOQUI
CO. GEOLOGIST CHRIS ALBA, WILL HOFFMA

LOG INTERVAL

CASING DATA

DEPTHS: 4,622' TO 10,280'
DATES: 04/25/2011 TO 05/12/2011
SCALE: 1" = 100'

16" AT 145'
10.75" AT 4,622'
7.00" AT 8,665'
AT

MUD TYPES

HOLE SIZE

LSND TO 10,280'
TO
TO
TO
TO

20.0" TO 145'
14.75" TO 4,622'
9.875" TO 10,280'
TO

ABBREVIATIONS

- NB NEWBIT, RRB RERUN BIT, CB CORE BIT, WOB WEIGHT ON BIT, RPM ROTARY REV/MIN, PP PUMP PRESSURE, SPM STROKES/MIN, MW MUD WEIGHT, VIS FUNNEL VISCOSITY
PV PLASTIC VISCOSITY, YP YIELD POINT, FL FLUID LOSS, CL PPM CLORIDE ION, Rm MUD RESISTIVITY, Rmf FILTRATE RESISTIVITY, PR POOR RETURNS, LAT LOGGED AFTER TRIP, LAS LOGGED AFTER SURVEY
LC LOST CIRCULATION, CO CIRCULATE OUT, NR NO RETURNS, TG TRIP GAS, SG SURVEY GAS, WG WIPER GAS, CG CONNECTION GAS

- 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, SAND, SAND, SANDSTONE, SANDSTONE-TUFFACEOUS, SERICITIZATION, SERPENTINE, SHALE, SHALE TUFFACEOUS, SHELL FRAGMENTS, SIDERITE, SILICIFICATION, SILTSTONE, SILTST-TUFFACEOUS, TUFF, VOLCANICLASTICS SEDS, VOLCANICS

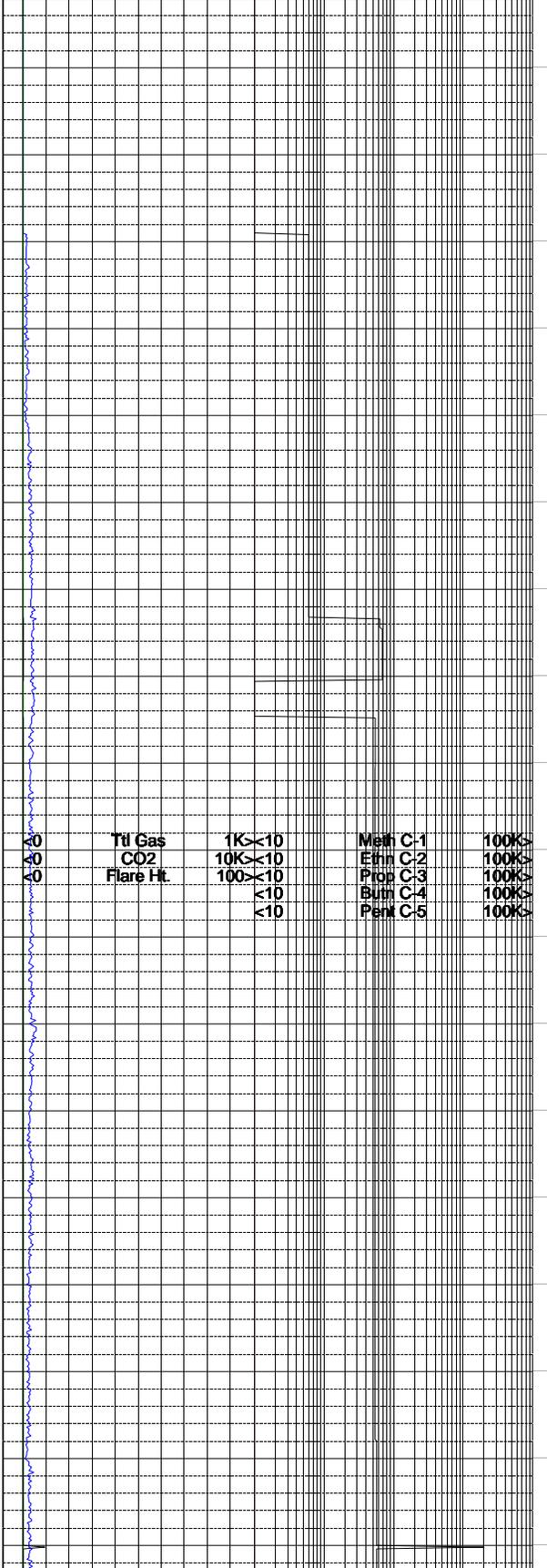
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 ft/hr
 <50 Avg WOB 0>
 klbs

Depth
 100
 200
 300
 400
 500
 600
 700
 800
 900

Lithology

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

Interp. Lith

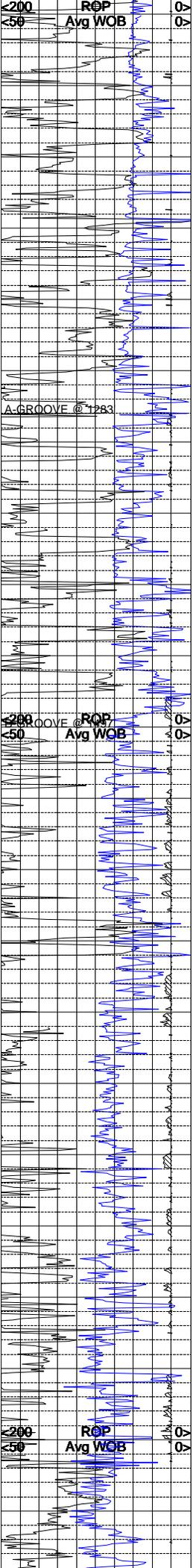


Remarks
 Survey Data, Mud Reports, Other Info.

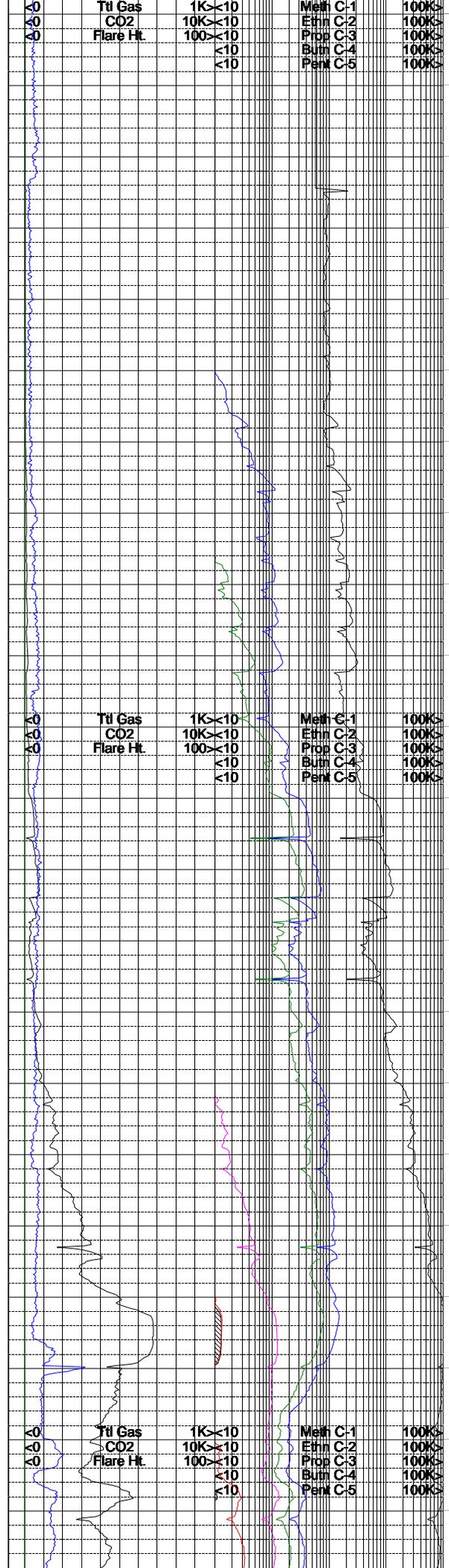
CANRIG WELL SERVICE COMMENCED LOGGING
 OPERATION ON 1/26/2011 @ 2:49 HRS AT A
 DEPTH OF 145'.

<200 ROP 0>
 <50 Avg WOB 0>

Ttl Gas 1K <10
 CO2 10K <10
 Flare Ht. 100 <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 <10



1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000



Ttl Gas 1K < 10
CO2 10K < 10
Flare Ht. 100 < 10
< 10
< 10

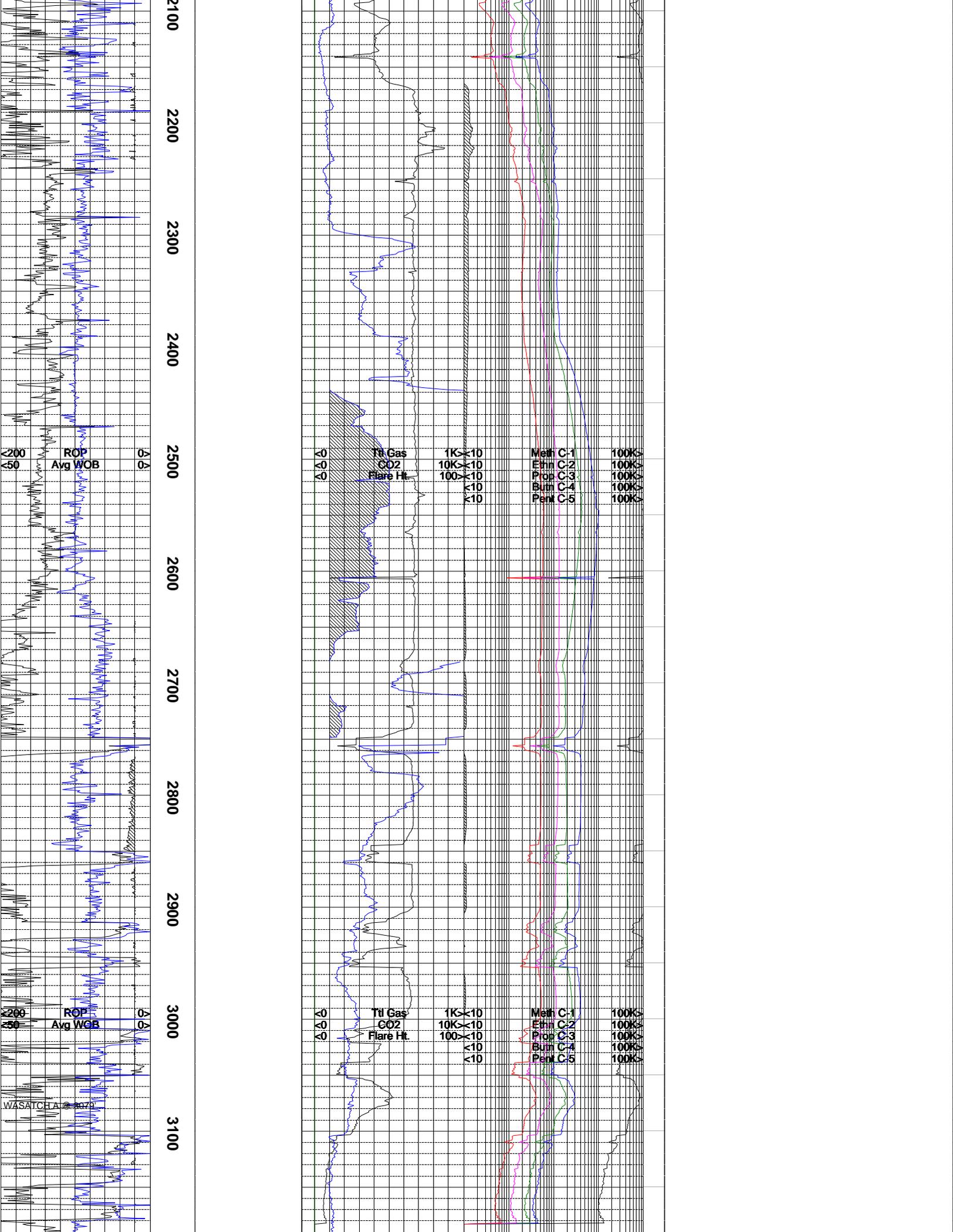
Meth C-1 100K
Ethn C-2 100K
Prop C-3 100K
Butn C-4 100K
Penl C-5 100K

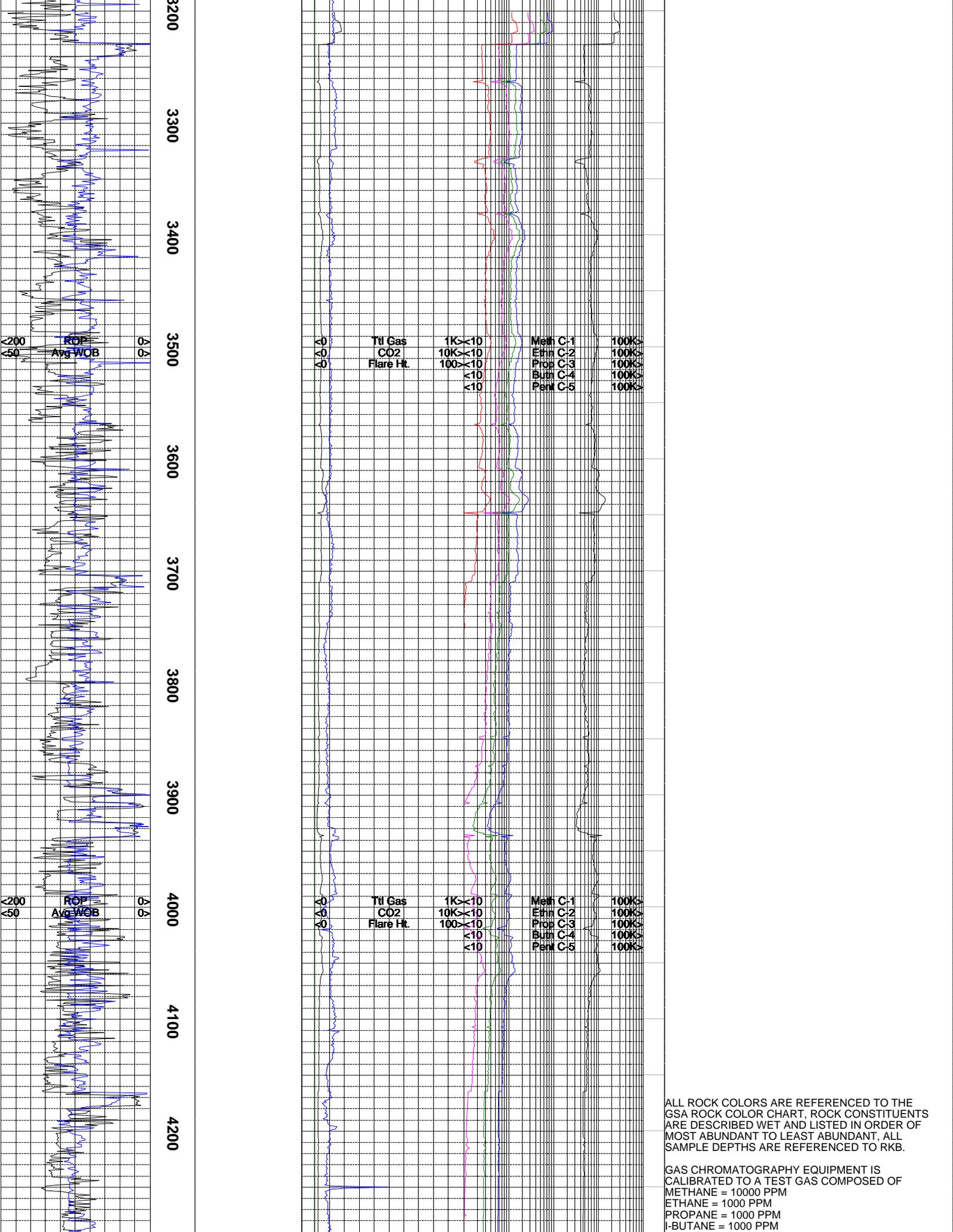
Ttl Gas 1K < 10
CO2 10K < 10
Flare Ht. 100 < 10
< 10
< 10

Meth C-1 100K
Ethn C-2 100K
Prop C-3 100K
Butn C-4 100K
Penl C-5 100K

Ttl Gas 1K < 10
CO2 10K < 10
Flare Ht. 100 < 10
< 10
< 10

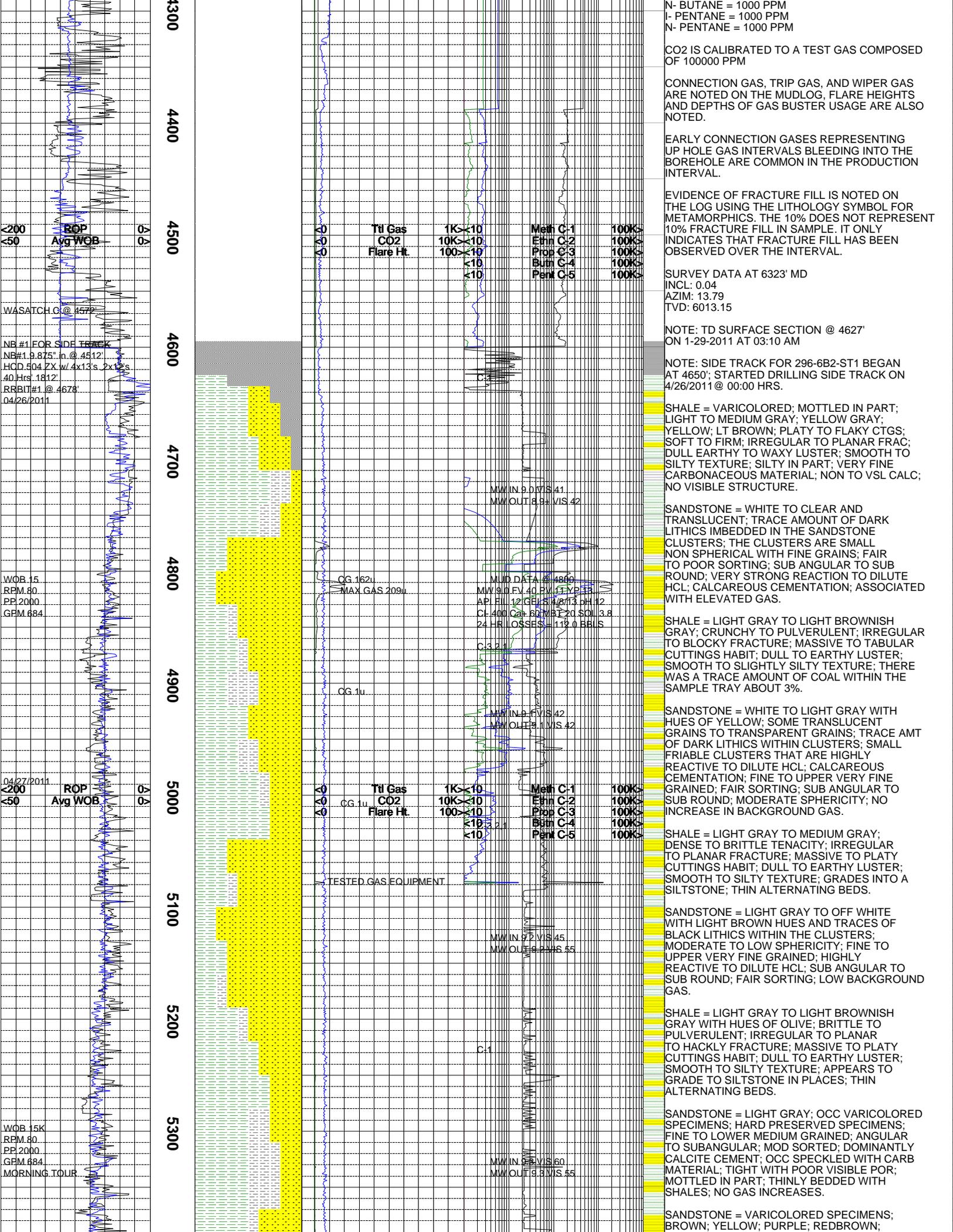
Meth C-1 100K
Ethn C-2 100K
Prop C-3 100K
Butn C-4 100K
Penl C-5 100K





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 SAMPLE DEPTHS ARE REFERENCED TO RKB.

GAS CHROMATOGRAPHY EQUIPMENT IS CALIBRATED TO A TEST GAS COMPOSED OF
 METHANE = 10000 PPM
 ETHANE = 1000 PPM
 PROPANE = 1000 PPM
 I-BUTANE = 1000 PPM



N- BUTANE = 1000 PPM
 I- PENTANE = 1000 PPM
 N- PENTANE = 1000 PPM

CO2 IS CALIBRATED TO A TEST GAS COMPOSED OF 100000 PPM

CONNECTION GAS, TRIP GAS, AND WIPER GAS ARE NOTED ON THE MUDLOG, FLARE HEIGHTS AND DEPTHS OF GAS BUSTER USAGE ARE ALSO NOTED.

EARLY CONNECTION GASES REPRESENTING UP HOLE GAS INTERVALS BLEEDING INTO THE BOREHOLE ARE COMMON IN THE PRODUCTION INTERVAL.

EVIDENCE OF FRACTURE FILL IS NOTED ON THE LOG USING THE LITHOLOGY SYMBOL FOR METAMORPHICS. THE 10% DOES NOT REPRESENT 10% FRACTURE FILL IN SAMPLE. IT ONLY INDICATES THAT FRACTURE FILL HAS BEEN OBSERVED OVER THE INTERVAL.

SURVEY DATA AT 6323' MD
 INCL: 0.04
 AZIM: 13.79
 TVD: 6013.15

NOTE: TD SURFACE SECTION @ 4627' ON 1-29-2011 AT 03:10 AM

NOTE: SIDE TRACK FOR 296-6B2-ST1 BEGAN AT 4650'; STARTED DRILLING SIDE TRACK ON 4/26/2011 @ 00:00 HRS.

SHALE = VARICOLORED; MOTTLED IN PART; LIGHT TO MEDIUM GRAY; YELLOW GRAY; YELLOW; LT BROWN; PLATY TO FLAKY CTGS; SOFT TO FIRM; IRREGULAR TO PLANAR FRAC; DULL EARTHY TO WAXY LUSTER; SMOOTH TO SILTY TEXTURE; SILTY IN PART; VERY FINE CARBONACEOUS MATERIAL; NON TO VSL CALC; NO VISIBLE STRUCTURE.

SANDSTONE = WHITE TO CLEAR AND TRANSLUCENT; TRACE AMOUNT OF DARK LITHICS IMBEDDED IN THE SANDSTONE CLUSTERS; THE CLUSTERS ARE SMALL NON SPHERICAL WITH FINE GRAINS; FAIR TO POOR SORTING; SUB ANGULAR TO SUB ROUND; VERY STRONG REACTION TO DILUTE HCL; CALCAREOUS CEMENTATION; ASSOCIATED WITH ELEVATED GAS.

SHALE = LIGHT GRAY TO LIGHT BROWNISH GRAY; CRUNCHY TO PULVERULENT; IRREGULAR TO BLOCKY FRACTURE; MASSIVE TO TABULAR CUTTINGS HABIT; DULL TO EARTHY LUSTER; SMOOTH TO SLIGHTLY SILTY TEXTURE; THERE WAS A TRACE AMOUNT OF COAL WITHIN THE SAMPLE TRAY ABOUT 3%.

SANDSTONE = WHITE TO LIGHT GRAY WITH HUES OF YELLOW; SOME TRANSLUCENT GRAINS TO TRANSPARENT GRAINS; TRACE AMT OF DARK LITHICS WITHIN CLUSTERS; SMALL FRIABLE CLUSTERS THAT ARE HIGHLY REACTIVE TO DILUTE HCL; CALCAREOUS CEMENTATION; FINE TO UPPER VERY FINE GRAINED; FAIR SORTING; SUB ANGULAR TO SUB ROUND; MODERATE SPHERICITY; NO INCREASE IN BACKGROUND GAS.

SHALE = LIGHT GRAY TO MEDIUM GRAY; DENSE TO BRITTLE TENACITY; IRREGULAR TO PLANAR FRACTURE; MASSIVE TO PLATY CUTTINGS HABIT; DULL TO EARTHY LUSTER; SMOOTH TO SILTY TEXTURE; GRADES INTO A SILTSTONE; THIN ALTERNATING BEDS.

SANDSTONE = LIGHT GRAY TO OFF WHITE WITH LIGHT BROWN HUES AND TRACES OF BLACK LITHICS WITHIN THE CLUSTERS; MODERATE TO LOW SPHERICITY; FINE TO UPPER VERY FINE GRAINED; HIGHLY REACTIVE TO DILUTE HCL; SUB ANGULAR TO SUB ROUND; FAIR SORTING; LOW BACKGROUND GAS.

SHALE = LIGHT GRAY TO LIGHT BROWNISH GRAY WITH HUES OF OLIVE; BRITTLE TO PULVERULENT; IRREGULAR TO PLANAR TO HACKLY FRACTURE; MASSIVE TO PLATY CUTTINGS HABIT; DULL TO EARTHY LUSTER; SMOOTH TO SILTY TEXTURE; APPEARS TO GRADE TO SILTSTONE IN PLACES; THIN ALTERNATING BEDS.

SANDSTONE = LIGHT GRAY; OCC VARICOLORED SPECIMENS; HARD PRESERVED SPECIMENS; FINE TO LOWER MEDIUM GRAINED; ANGULAR TO SUBANGULAR; MOD SORTED; DOMINANTLY CALCITE CEMENT; OCC SPECKLED WITH CARB MATERIAL; TIGHT WITH POOR VISIBLE POR; MOTTLED IN PART; THINLY BEDDED WITH SHALES; NO GAS INCREASES.

SANDSTONE = VARICOLORED SPECIMENS; BROWN; YELLOW; PURPLE; REDBROWN;

<200 BOP
 <50 Avg WOB

WASATCH.C @ 4572'

NB #1 FOR SIDE TRACK
 NB#1.9.875'. in @ 4512'
 HCD.504 ZX w/ 4x13's 2x12's
 40 Hrs'.1812'
 RRBIT#1 @ 4678'
 04/26/2011

WOB 15
 RPM 80
 PPI 2000
 GPM 684

04/27/2011
 <200 ROP
 <50 Avg WOB

WOB 15K
 RPM 80
 PPI 2000
 GPM 684
 MORNING TOUR

Ttl Gas 1K < 10
 CO2 10K < 10
 Flare Ht 100 < 10
 Meth C-1 100K < 10
 Ethn C-2 100K < 10
 Prop C-3 100K < 10
 Butn C-4 100K < 10
 Perm C-5 100K < 10

MUD DATA @ 4860'
 MW 9.0 FV 40 PV 13.5 VD 33
 API FL 12 GELS 4.8/13 PH 12
 CL 400 Cat 60 MBT 20 SOL 3.8
 24 HR LOSSES 112.0 BELLS

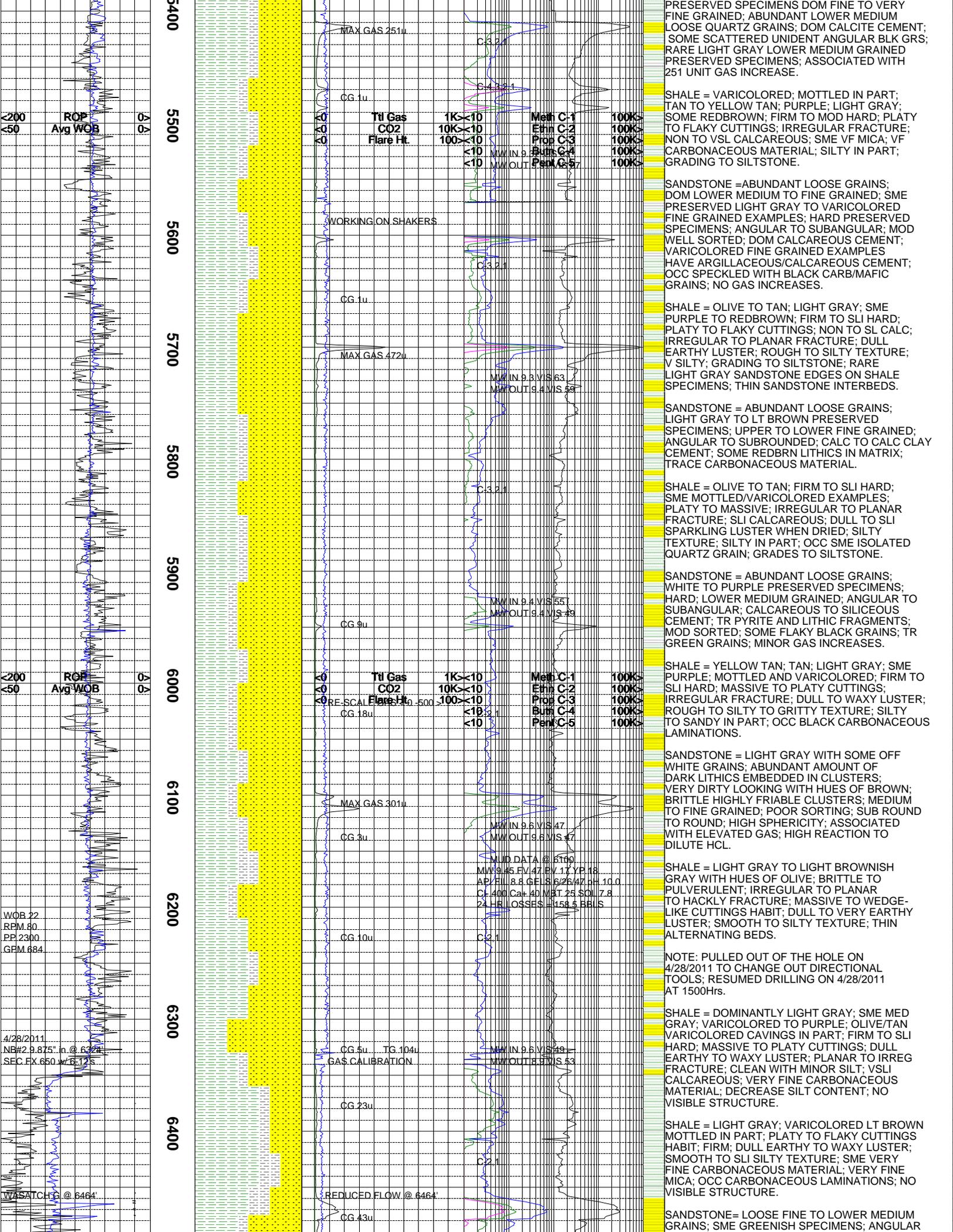
Ttl Gas 1K < 10
 CO2 10K < 10
 Flare Ht 100 < 10
 Meth C-1 100K < 10
 Ethn C-2 100K < 10
 Prop C-3 100K < 10
 Butn C-4 100K < 10
 Perm C-5 100K < 10

TESTED GAS EQUIPMENT

MW IN 9.2 VIS 45
 MW OUT 8.2 VIS 55

MW IN 9.3 VIS 60
 MW OUT 8.3 VIS 55

1300
 4400
 4500
 4600
 4700
 4800
 4900
 5000
 5100
 5200
 5300



5400
5500
5600
5700
5800
5900
6000
6100
6200
6300
6400

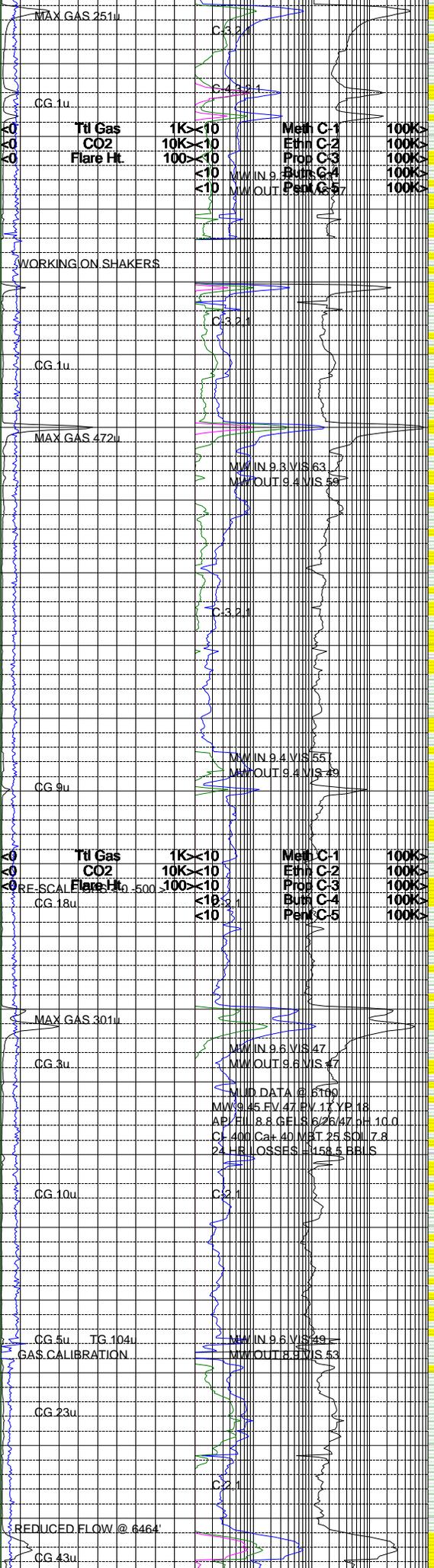
<200 ROP
<50 Avg WOB

<200 ROP
<50 Avg WOB

WOB 22
RPM 80
PP 2300
GPM 684

4/28/2011
NB# 2.9.875' in @ 6324'
SEC. FX 650 w/ 6-12"

WASATCH @ 6464'



PRESERVED SPECIMENS DOM FINE TO VERY FINE GRAINED; ABUNDANT LOWER MEDIUM LOOSE QUARTZ GRAINS; DOM CALCITE CEMENT; SOME SCATTERED UNIDENT ANGULAR BLK GRs; RARE LIGHT GRAY LOWER MEDIUM GRAINED PRESERVED SPECIMENS; ASSOCIATED WITH 251 UNIT GAS INCREASE.

SHALE = VARICOLORED; MOTTLED IN PART; TAN TO YELLOW TAN; PURPLE; LIGHT GRAY; SOME REDBROWN; FIRM TO MOD HARD; PLATY TO FLAKY CUTTINGS; IRREGULAR FRACTURE; NON TO VSL CALCAREOUS; SME VF MICA; VF CARBONACEOUS MATERIAL; SILTY IN PART; GRADING TO SILTSTONE.

SANDSTONE = ABUNDANT LOOSE GRAINS; DOM LOWER MEDIUM TO FINE GRAINED; SME PRESERVED LIGHT GRAY TO VARICOLORED FINE GRAINED EXAMPLES; HARD PRESERVED SPECIMENS; ANGULAR TO SUBANGULAR; MOD WELL SORTED; DOM CALCAREOUS CEMENT; VARICOLORED FINE GRAINED EXAMPLES HAVE ARGILLACEOUS/CALCAREOUS CEMENT; OCC SPECKLED WITH BLACK CARB/MAFIC GRAINS; NO GAS INCREASES.

SHALE = OLIVE TO TAN; LIGHT GRAY; SME PURPLE TO REDBROWN; FIRM TO SLI HARD; PLATY TO FLAKY CUTTINGS; NON TO SL CALC; IRREGULAR TO PLANAR FRACTURE; DULL EARTHY LUSTER; ROUGH TO SILTY TEXTURE; V SILTY; GRADING TO SILTSTONE; RARE LIGHT GRAY SANDSTONE EDGES ON SHALE SPECIMENS; THIN SANDSTONE INTERBEDS.

SANDSTONE = ABUNDANT LOOSE GRAINS; LIGHT GRAY TO LT BROWN PRESERVED SPECIMENS; UPPER TO LOWER FINE GRAINED; ANGULAR TO SUBROUNDED; CALC TO CALC CLAY CEMENT; SOME REDBRN LITHICS IN MATRIX; TRACE CARBONACEOUS MATERIAL.

SHALE = OLIVE TO TAN; FIRM TO SLI HARD; SME MOTTLED/VARICOLORED EXAMPLES; PLATY TO MASSIVE; IRREGULAR TO PLANAR FRACTURE; SLI CALCAREOUS; DULL TO SLI SPARKLING LUSTER WHEN DRIED; SILTY TEXTURE; SILTY IN PART; OCC SME ISOLATED QUARTZ GRAIN; GRADES TO SILTSTONE.

SANDSTONE = ABUNDANT LOOSE GRAINS; WHITE TO PURPLE PRESERVED SPECIMENS; HARD; LOWER MEDIUM GRAINED; ANGULAR TO SUBANGULAR; CALCAREOUS TO SILICEOUS CEMENT; TR PYRITE AND LITHIC FRAGMENTS; MOD SORTED; SOME FLAKY BLACK GRAINS; TR GREEN GRAINS; MINOR GAS INCREASES.

SHALE = YELLOW TAN; TAN; LIGHT GRAY; SME PURPLE; MOTTLED AND VARICOLORED; FIRM TO SLI HARD; MASSIVE TO PLATY CUTTINGS; IRREGULAR FRACTURE; DULL TO WAXY LUSTER; ROUGH TO SILTY TO GRITTY TEXTURE; SILTY TO SANDY IN PART; OCC BLACK CARBONACEOUS LAMINATIONS.

SANDSTONE = LIGHT GRAY WITH SOME OFF WHITE GRAINS; ABUNDANT AMOUNT OF DARK LITHICS EMBEDDED IN CLUSTERS; VERY DIRTY LOOKING WITH HUES OF BROWN; BRITTLE HIGHLY FRIABLE CLUSTERS; MEDIUM TO FINE GRAINED; POOR SORTING; SUB ROUND TO ROUND; HIGH SPHERICITY; ASSOCIATED WITH ELEVATED GAS; HIGH REACTION TO DILUTE HCL.

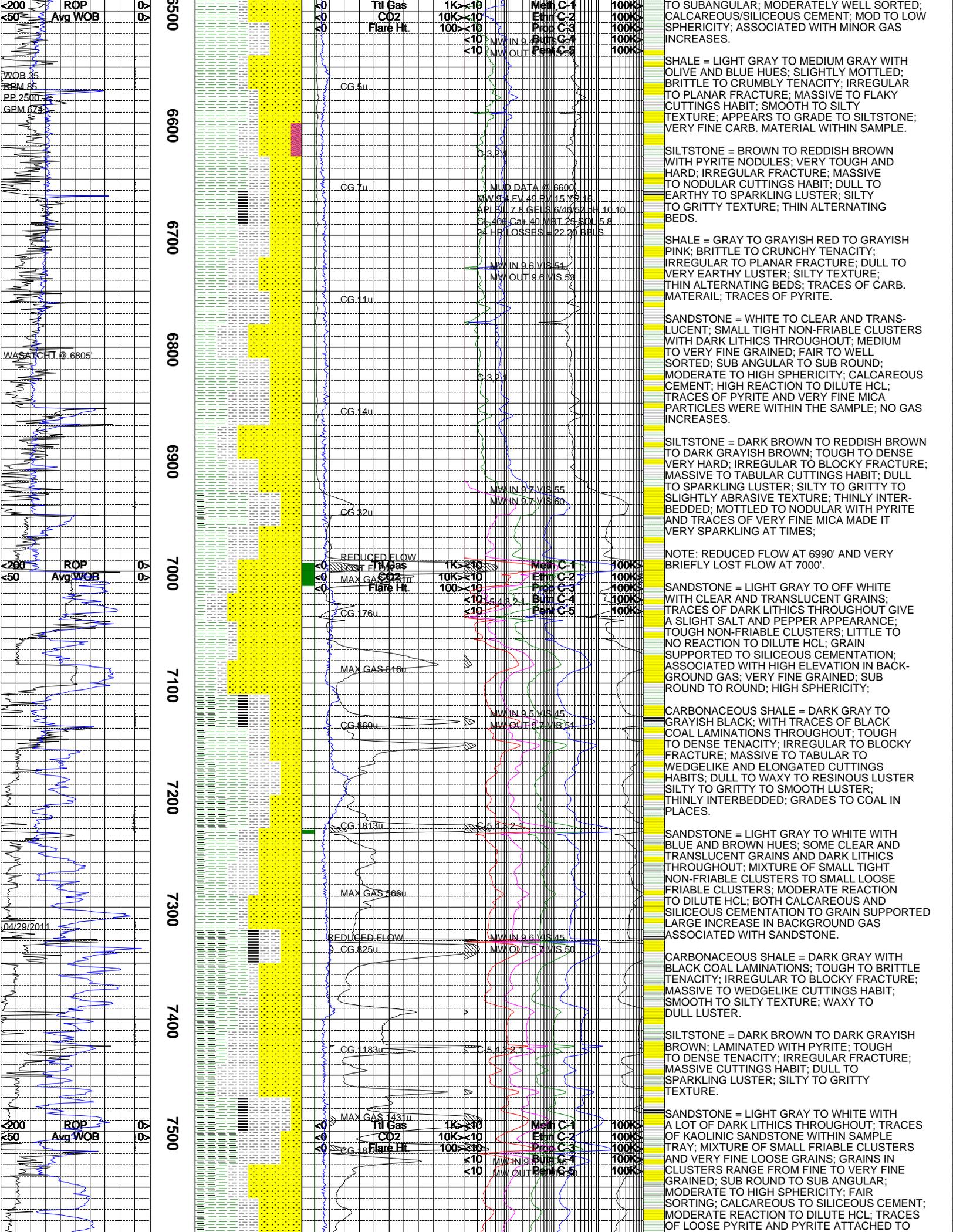
SHALE = LIGHT GRAY TO LIGHT BROWNISH GRAY WITH HUES OF OLIVE; BRITTLE TO PULVERULENT; IRREGULAR TO PLANAR TO HACKLY FRACTURE; MASSIVE TO WEDGE-LIKE CUTTINGS HABIT; DULL TO VERY EARTHY LUSTER; SMOOTH TO SILTY TEXTURE; THIN ALTERNATING BEDS.

NOTE: PULLED OUT OF THE HOLE ON 4/28/2011 TO CHANGE OUT DIRECTIONAL TOOLS; RESUMED DRILLING ON 4/28/2011 AT 1500Hrs.

SHALE = DOMINANTLY LIGHT GRAY; SME MED GRAY; VARICOLORED TO PURPLE; OLIVE/TAN VARICOLORED CAVINGS IN PART; FIRM TO SLI HARD; MASSIVE TO PLATY CUTTINGS; DULL EARTHY TO WAXY LUSTER; PLANAR TO IRREG FRACTURE; CLEAN WITH MINOR SILT; VSLI CALCAREOUS; VERY FINE CARBONACEOUS MATERIAL; DECREASE SILT CONTENT; NO VISIBLE STRUCTURE.

SHALE = LIGHT GRAY; VARICOLORED LT BROWN MOTTLED IN PART; PLATY TO FLAKY CUTTINGS HABIT; FIRM; DULL EARTHY TO WAXY LUSTER; SMOOTH TO SLI SILTY TEXTURE; SME VERY FINE CARBONACEOUS MATERIAL; VERY FINE MICA; OCC CARBONACEOUS LAMINATIONS; NO VISIBLE STRUCTURE.

SANDSTONE = LOOSE FINE TO LOWER MEDIUM GRAINS; SME GREENISH SPECIMENS; ANGULAR



ROP
Avg WOB

WOB 35
RPM 85
PP 2500
GPM 674

WASATCH @ 6805

ROP
Avg WOB

04/29/2011

ROP
Avg WOB

Ttl Gas 1K < 10
CO2 10K < 10
Flare Ht 100 < 10

CG 5u

CG 7u

CG 11u

CG 14u

CG 32u

REDUCED FLOW
Ttl Gas 1K < 10
CO2 10K < 10
Flare Ht 100 < 10

CG 176u

MAX GAS 816u

CG 860u

CG 1813u

MAX GAS 566u

REDUCED FLOW
CG 825u

CG 1183u

MAX GAS 1431u
Ttl Gas 1K < 10
CO2 10K < 10
Flare Ht 100 < 10

CG 1818u

TO SUBANGULAR; MODERATELY WELL SORTED;
CALCAREOUS/SILICEOUS CEMENT; MOD TO LOW
SPHERICITY; ASSOCIATED WITH MINOR GAS
INCREASES.

SHALE = LIGHT GRAY TO MEDIUM GRAY WITH
OLIVE AND BLUE HUES; SLIGHTLY MOTTLED;
BRITTLE TO CRUMBLY TENACITY; IRREGULAR
TO PLANAR FRACTURE; MASSIVE TO FLAKY
CUTTINGS HABIT; SMOOTH TO SILTY
TEXTURE; APPEARS TO GRADE TO SILTSTONE;
VERY FINE CARB. MATERIAL WITHIN SAMPLE.

SILTSTONE = BROWN TO REDDISH BROWN
WITH PYRITE NODULES; VERY TOUGH AND
HARD; IRREGULAR FRACTURE; MASSIVE
TO NODULAR CUTTINGS HABIT; DULL TO
EARTHY TO SPARKLING LUSTER; SILTY
TO GRITTY TEXTURE; THIN ALTERNATING
BEDS.

SHALE = GRAY TO GRAYISH RED TO GRAYISH
PINK; BRITTLE TO CRUNCHY TENACITY;
IRREGULAR TO PLANAR FRACTURE; DULL TO
VERY EARTHY LUSTER; SILTY TEXTURE;
THIN ALTERNATING BEDS; TRACES OF CARB.
MATERIAL; TRACES OF PYRITE.

SANDSTONE = WHITE TO CLEAR AND TRANS-
LUCENT; SMALL TIGHT NON-FRIABLE CLUSTERS
WITH DARK LITHICS THROUGHOUT; MEDIUM
TO VERY FINE GRAINED; FAIR TO WELL
SORTED; SUB ANGULAR TO SUB ROUND;
MODERATE TO HIGH SPHERICITY; CALCAREOUS
CEMENT; HIGH REACTION TO DILUTE HCL;
TRACES OF PYRITE AND VERY FINE MICA
PARTICLES WERE WITHIN THE SAMPLE; NO GAS
INCREASES.

SILTSTONE = DARK BROWN TO REDDISH BROWN
TO DARK GRAYISH BROWN; TOUGH TO DENSE
VERY HARD; IRREGULAR TO BLOCKY FRACTURE;
MASSIVE TO TABULAR CUTTINGS HABIT; DULL TO
SLIGHTLY ABRASIVE TEXTURE; THINLY INTER-
BEDDED; MOTTLED TO NODULAR WITH PYRITE
AND TRACES OF VERY FINE MICA MADE IT
VERY SPARKLING AT TIMES;

NOTE: REDUCED FLOW AT 6990' AND VERY
BRIEFLY LOST FLOW AT 7000'.

SANDSTONE = LIGHT GRAY TO OFF WHITE
WITH CLEAR AND TRANSLUCENT GRAINS;
TRACES OF DARK LITHICS THROUGHOUT GIVE
A SLIGHT SALT AND PEPPER APPEARANCE;
TOUGH NON-FRIABLE CLUSTERS; LITTLE TO
NO REACTION TO DILUTE HCL; GRAIN
SUPPORTED TO SILICEOUS CEMENTATION;
ASSOCIATED WITH HIGH ELEVATION IN BACK-
GROUND GAS; VERY FINE GRAINED; SUB
ROUND TO ROUND; HIGH SPHERICITY;

CARBONACEOUS SHALE = DARK GRAY TO
GRAYISH BLACK; WITH TRACES OF BLACK
COAL LAMINATIONS THROUGHOUT; TOUGH
TO DENSE TENACITY; IRREGULAR TO BLOCKY
FRACTURE; MASSIVE TO TABULAR TO
WEDGELIKE AND ELONGATED CUTTINGS
HABITS; DULL TO WAXY TO RESINOUS LUSTER
SILTY TO GRITTY TO SMOOTH LUSTER;
THINLY INTERBEDDED; GRADES TO COAL IN
PLACES.

SANDSTONE = LIGHT GRAY TO WHITE WITH
BLUE AND BROWN HUES; SOME CLEAR AND
TRANSLUCENT GRAINS AND DARK LITHICS
THROUGHOUT; MIXTURE OF SMALL TIGHT
NON-FRIABLE CLUSTERS TO SMALL LOOSE
FRIABLE CLUSTERS; MODERATE REACTION
TO DILUTE HCL; BOTH CALCAREOUS AND
SILICEOUS CEMENTATION TO GRAIN SUPPORTED
LARGE INCREASE IN BACKGROUND GAS
ASSOCIATED WITH SANDSTONE.

CARBONACEOUS SHALE = DARK GRAY WITH
BLACK COAL LAMINATIONS; TOUGH TO BRITTLE
TENACITY; IRREGULAR TO BLOCKY FRACTURE;
MASSIVE TO WEDGELIKE CUTTINGS HABIT;
SMOOTH TO SILTY TEXTURE; WAXY TO
DULL LUSTER.

SILTSTONE = DARK BROWN TO DARK GRAYISH
BROWN; LAMINATED WITH PYRITE; TOUGH
TO DENSE TENACITY; IRREGULAR FRACTURE;
MASSIVE CUTTINGS HABIT; DULL TO
SPARKLING LUSTER; SILTY TO GRITTY
TEXTURE.

SANDSTONE = LIGHT GRAY TO WHITE WITH
A LOT OF DARK LITHICS THROUGHOUT; TRACES
OF KAOLINIC SANDSTONE WITHIN SAMPLE
TRAY; MIXTURE OF SMALL FRIABLE CLUSTERS
AND VERY FINE LOOSE GRAINS; GRAINS IN
CLUSTERS RANGE FROM FINE TO VERY FINE
GRAINED; SUB ROUND TO SUB ANGULAR;
MODERATE TO HIGH SPHERICITY; FAIR
SORTING; CALCAREOUS TO SILICEOUS CEMENT;
MODERATE REACTION TO DILUTE HCL; TRACES
OF LOOSE PYRITE AND PYRITE ATTACHED TO

MWD DATA @ 6600
MW IN 9.4 VIS 49
MW OUT 9.2 VIS 15
API FLU 7.8 GELS 6/48/52 RH 10.10
CL 408 Cat 40 MBT 25 SOL 5.8
24 HR LOSSES = 22.20 BBL/S

MW IN 9.6 VIS 51
MW OUT 9.6 VIS 59

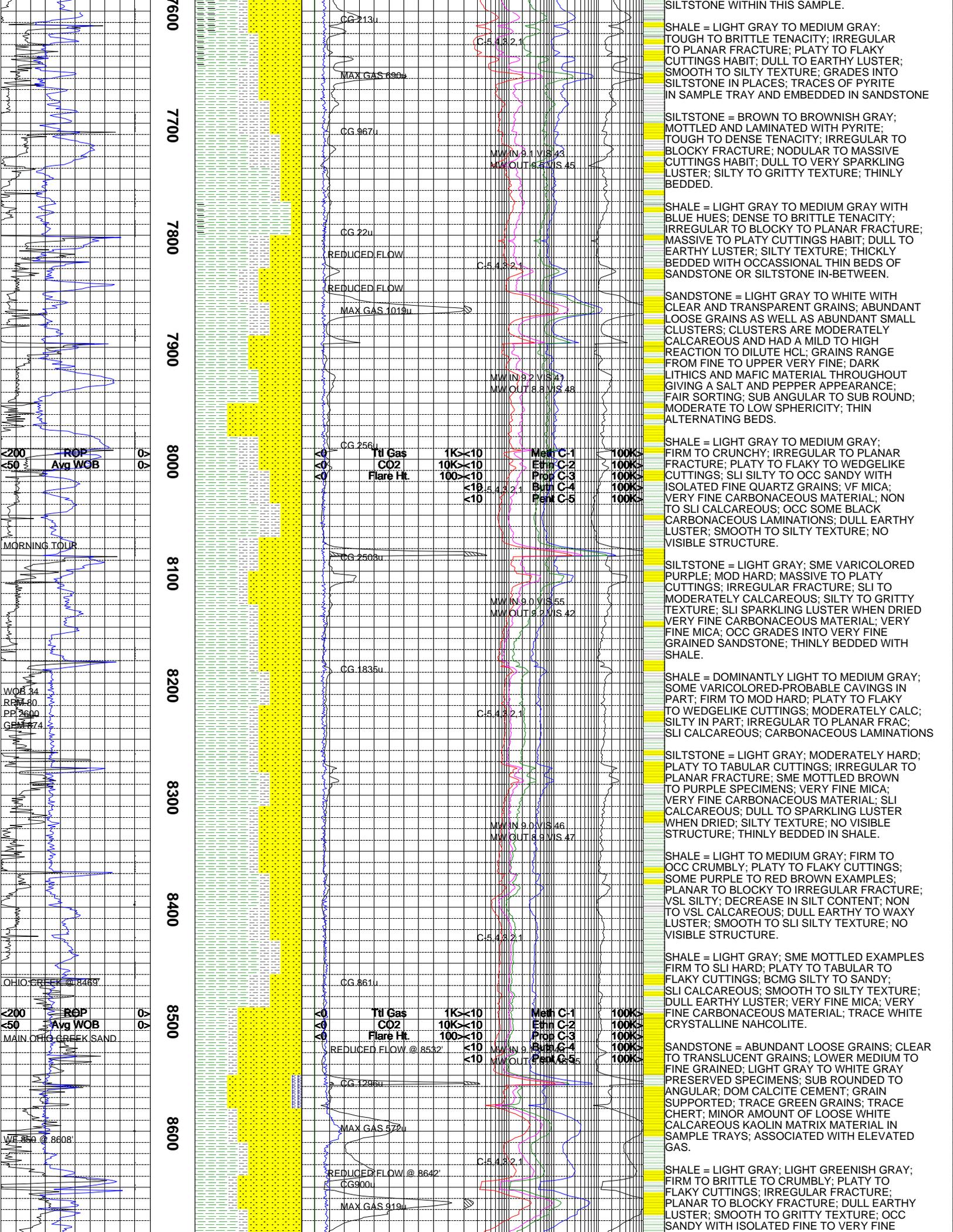
MW IN 9.7 VIS 55
MW OUT 9.7 VIS 60

MW IN 9.5 VIS 45
MW OUT 9.7 VIS 51

MW IN 9.6 VIS 45
MW OUT 9.7 VIS 50

C5 4.82-4

Meth C-1 100K
Ethr C-2 100K
Prop C-3 100K
Bum C-4 100K
Perm C-5 100K



SHALE = LIGHT GRAY TO MEDIUM GRAY; TOUGH TO BRITTLE TENACITY; IRREGULAR TO PLANAR FRACTURE; PLATY TO FLAKY CUTTINGS HABIT; DULL TO EARTHY LUSTER; SMOOTH TO SILTY TEXTURE; GRADES INTO SILTSTONE IN PLACES; TRACES OF PYRITE IN SAMPLE TRAY AND EMBEDDED IN SANDSTONE

SILTSTONE = BROWN TO BROWNISH GRAY; MOTTLED AND LAMINATED WITH PYRITE; TOUGH TO DENSE TENACITY; IRREGULAR TO BLOCKY FRACTURE; NODULAR TO MASSIVE CUTTINGS HABIT; DULL TO VERY SPARKLING LUSTER; SILTY TO GRITTY TEXTURE; THINLY BEDDED.

SHALE = LIGHT GRAY TO MEDIUM GRAY WITH BLUE HUES; DENSE TO BRITTLE TENACITY; IRREGULAR TO BLOCKY TO PLANAR FRACTURE; MASSIVE TO PLATY CUTTINGS HABIT; DULL TO EARTHY LUSTER; SILTY TEXTURE; THICKLY BEDDED WITH OCCASSIONAL THIN BEDS OF SANDSTONE OR SILTSTONE IN-BETWEEN.

SANDSTONE = LIGHT GRAY TO WHITE WITH CLEAR AND TRANSPARENT GRAINS; ABUNDANT LOOSE GRAINS AS WELL AS ABUNDANT SMALL CLUSTERS; CLUSTERS ARE MODERATELY CALCAREOUS AND HAD A MILD TO HIGH REACTION TO DILUTE HCL; GRAINS RANGE FROM FINE TO UPPER VERY FINE; DARK LITHICS AND MAFIC MATERIAL THROUGHOUT GIVING A SALT AND PEPPER APPEARANCE; FAIR SORTING; SUB ANGULAR TO SUB ROUND; MODERATE TO LOW SPHERICITY; THIN ALTERNATING BEDS.

SHALE = LIGHT GRAY TO MEDIUM GRAY; FIRM TO CRUNCHY; IRREGULAR TO PLANAR FRACTURE; PLATY TO FLAKY TO WEDGELIKE CUTTINGS; SLI SILTY TO OCC SANDY WITH ISOLATED FINE QUARTZ GRAINS; VF MICA; VERY FINE CARBONACEOUS MATERIAL; NON TO SLI CALCAREOUS; OCC SOME BLACK CARBONACEOUS LAMINATIONS; DULL EARTHY LUSTER; SMOOTH TO SILTY TEXTURE; NO VISIBLE STRUCTURE.

SILTSTONE = LIGHT GRAY; SME VARICOLORED PURPLE; MOD HARD; MASSIVE TO PLATY CUTTINGS; IRREGULAR FRACTURE; SLI TO MODERATELY CALCAREOUS; SILTY TO GRITTY TEXTURE; SLI SPARKLING LUSTER WHEN DRIED VERY FINE CARBONACEOUS MATERIAL; VERY FINE MICA; OCC GRADES INTO VERY FINE GRAINED SANDSTONE; THINLY BEDDED WITH SHALE.

SHALE = DOMINANTLY LIGHT TO MEDIUM GRAY; SOME VARICOLORED-PROBABLE CAVINGS IN PART; FIRM TO MOD HARD; PLATY TO FLAKY TO WEDGELIKE CUTTINGS; MODERATELY CALC; SILTY IN PART; IRREGULAR TO PLANAR FRAC; SLI CALCAREOUS; CARBONACEOUS LAMINATIONS

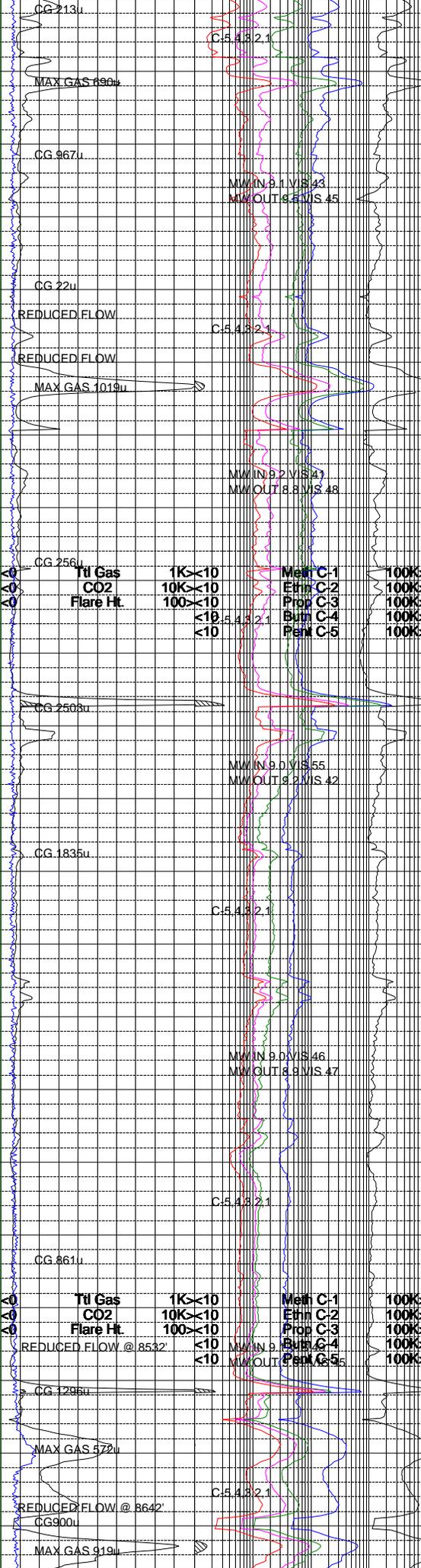
SILTSTONE = LIGHT GRAY; MODERATELY HARD; PLATY TO TABULAR CUTTINGS; IRREGULAR TO PLANAR FRACTURE; SME MOTTLED BROWN TO PURPLE SPECIMENS; VERY FINE MICA; VERY FINE CARBONACEOUS MATERIAL; SLI CALCAREOUS; DULL TO SPARKLING LUSTER WHEN DRIED; SILTY TEXTURE; NO VISIBLE STRUCTURE; THINLY BEDDED IN SHALE.

SHALE = LIGHT TO MEDIUM GRAY; FIRM TO OCC CRUMBLY; PLATY TO FLAKY CUTTINGS; SOME PURPLE TO RED BROWN EXAMPLES; PLANAR TO BLOCKY TO IRREGULAR FRACTURE; VSL SILTY; DECREASE IN SILT CONTENT; NON TO VSL CALCAREOUS; DULL EARTHY TO WAXY LUSTER; SMOOTH TO SLI SILTY TEXTURE; NO VISIBLE STRUCTURE.

SHALE = LIGHT GRAY; SME MOTTLED EXAMPLES FIRM TO SLI HARD; PLATY TO TABULAR TO FLAKY CUTTINGS; BCMG SILTY TO SANDY; SLI CALCAREOUS; SMOOTH TO SILTY TEXTURE; DULL EARTHY LUSTER; VERY FINE MICA; VERY FINE CARBONACEOUS MATERIAL; TRACE WHITE CRYSTALLINE NAHCOLITE.

SANDSTONE = ABUNDANT LOOSE GRAINS; CLEAR TO TRANSLUCENT GRAINS; LOWER MEDIUM TO FINE GRAINED; LIGHT GRAY TO WHITE GRAY PRESERVED SPECIMENS; SUB ROUNDED TO ANGULAR; DOM CALCITE CEMENT; GRAIN SUPPORTED; TRACE GREEN GRAINS; TRACE CHERT; MINOR AMOUNT OF LOOSE WHITE CALCAREOUS KAOLIN MATRIX MATERIAL IN SAMPLE TRAYS; ASSOCIATED WITH ELEVATED GAS.

SHALE = LIGHT GRAY; LIGHT GREENISH GRAY; FIRM TO BRITTLE TO CRUMBLY; PLATY TO FLAKY CUTTINGS; IRREGULAR FRACTURE; PLANAR TO BLOCKY FRACTURE; DULL EARTHY LUSTER; SMOOTH TO GRITTY TEXTURE; OCC SANDY WITH ISOLATED FINE TO VERY FINE

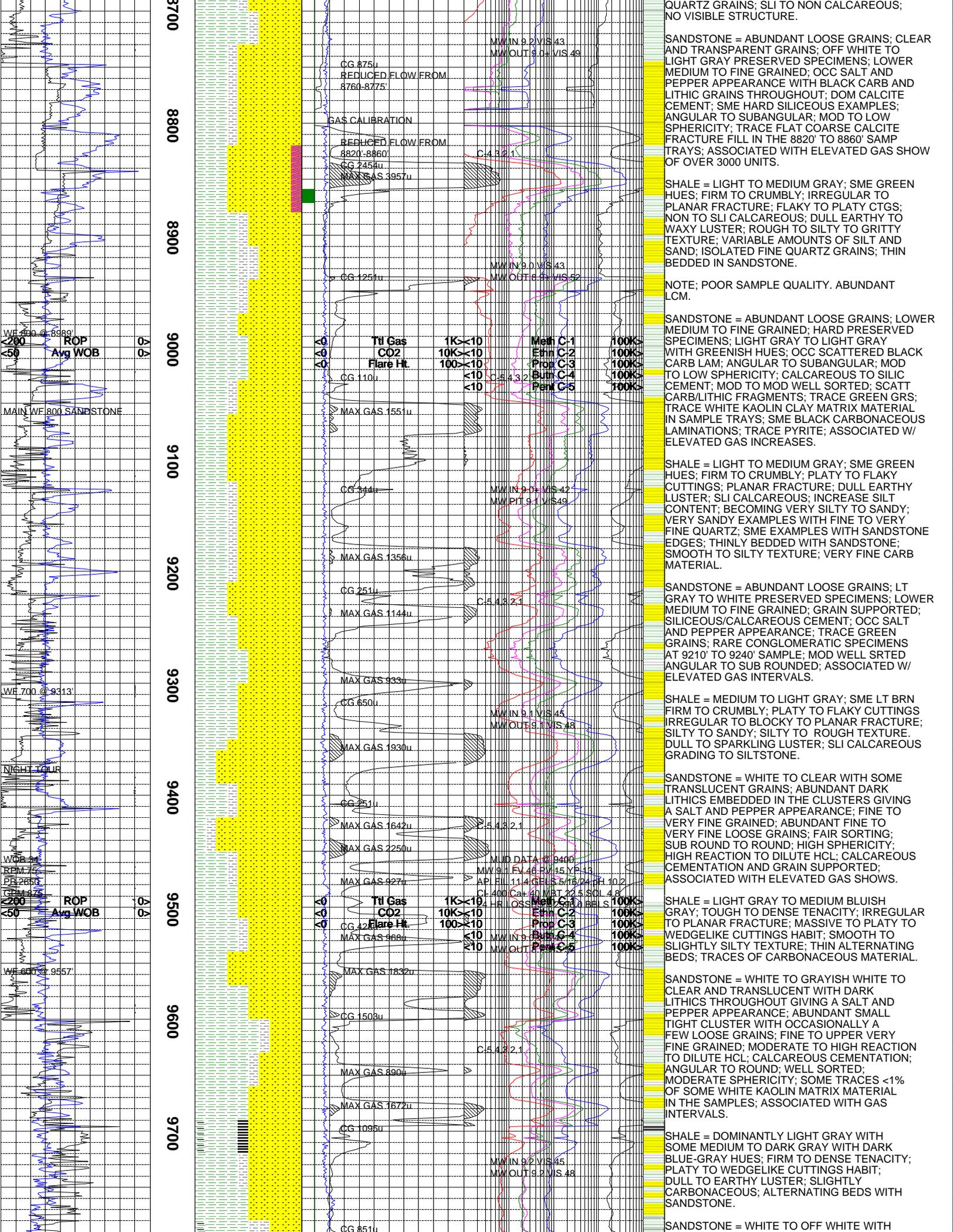


<200 ROP
<50 Avg WOB

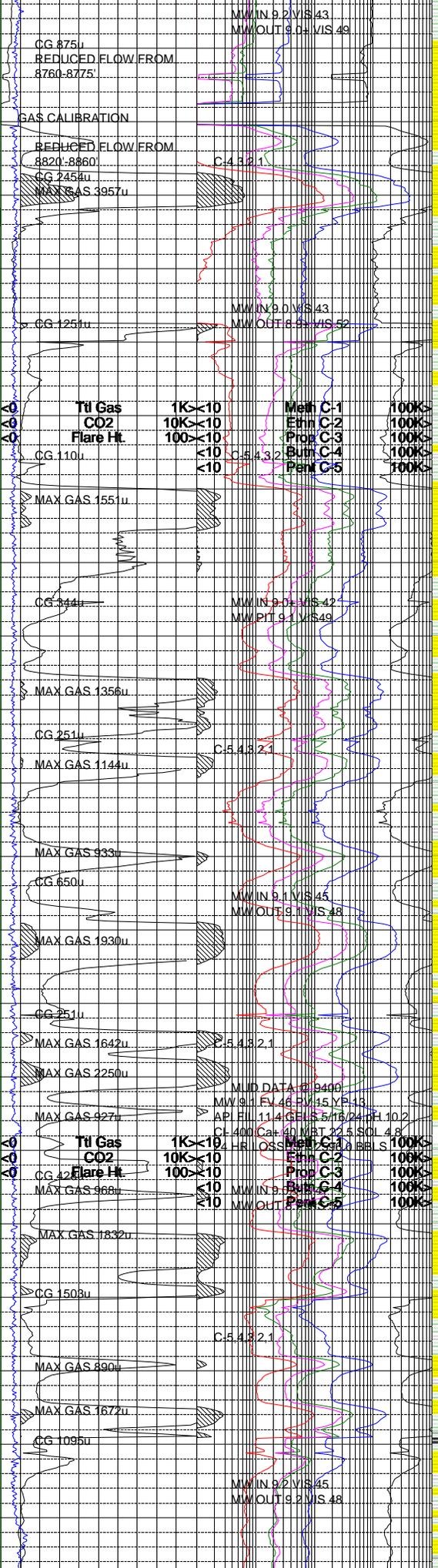
WOB 34
RPM 80
PP 2600
GEM 774

<200 ROP
<50 Avg WOB

WF 850 @ 8608'



8700
8800
8900
9000
9100
9200
9300
9400
9500
9600
9700



SANDSTONE = ABUNDANT LOOSE GRAINS; CLEAR AND TRANSPARENT GRAINS; OFF WHITE TO LIGHT GRAY PRESERVED SPECIMENS; LOWER MEDIUM TO FINE GRAINED; OCC SALT AND PEPPER APPEARANCE WITH BLACK CARB AND LITHIC GRAINS THROUGHOUT; DOM CALCITE CEMENT; SME HARD SILICEOUS EXAMPLES; ANGULAR TO SUBANGULAR; MOD TO LOW SPHERICITY; TRACE FLAT COARSE CALCITE FRACTURE FILL IN THE 8820' TO 8860' SAMP TRAYS; ASSOCIATED WITH ELEVATED GAS SHOW OF OVER 3000 UNITS.

SHALE = LIGHT TO MEDIUM GRAY; SME GREEN HUES; FIRM TO CRUMBLY; IRREGULAR TO PLANAR FRACTURE; FLAKY TO PLATY CTGS; NON TO SLI CALCAREOUS; DULL EARTHY TO WAXY LUSTER; ROUGH TO SILTY TO GRITTY TEXTURE; VARIABLE AMOUNTS OF SILT AND SAND; ISOLATED FINE QUARTZ GRAINS; THIN BEDDED IN SANDSTONE.

NOTE; POOR SAMPLE QUALITY. ABUNDANT LCM.

SANDSTONE = ABUNDANT LOOSE GRAINS; LOWER MEDIUM TO FINE GRAINED; HARD PRESERVED SPECIMENS; LIGHT GRAY TO LIGHT GRAY WITH GREENISH HUES; OCC SCATTERED BLACK CARB LAM; ANGULAR TO SUBANGULAR; MOD TO LOW SPHERICITY; CALCAREOUS TO SILT CEMENT; MOD TO MOD WELL SORTED; SILT CARB/LITHIC FRAGMENTS; TRACE GREEN GRs; TRACE WHITE KAOLIN CLAY MATRIX MATERIAL IN SAMPLE TRAYS; SME BLACK CARBONACEOUS LAMINATIONS; TRACE PYRITE; ASSOCIATED W/ ELEVATED GAS INCREASES.

SHALE = LIGHT TO MEDIUM GRAY; SME GREEN HUES; FIRM TO CRUMBLY; PLATY TO FLAKY CUTTINGS; PLANAR FRACTURE; DULL EARTHY LUSTER; SLI CALCAREOUS; INCREASE SILT CONTENT; BECOMING VERY SILTY TO SANDY; VERY SANDY EXAMPLES WITH FINE TO VERY FINE QUARTZ; SME EXAMPLES WITH SANDSTONE EDGES; THINLY BEDDED WITH SANDSTONE; SMOOTH TO SILTY TEXTURE; VERY FINE CARB MATERIAL.

SANDSTONE = ABUNDANT LOOSE GRAINS; LT GRAY TO WHITE PRESERVED SPECIMENS; LOWER MEDIUM TO FINE GRAINED; GRAIN SUPPORTED; SILICEOUS/CALCAREOUS CEMENT; OCC SALT AND PEPPER APPEARANCE; TRACE GREEN GRAINS; RARE CONGLOMERATIC SPECIMENS AT 9210' TO 9240' SAMPLE; MOD WELL SRTED ANGULAR TO SUB ROUNDED; ASSOCIATED W/ ELEVATED GAS INTERVALS.

SHALE = MEDIUM TO LIGHT GRAY; SME LT BRN FIRM TO CRUMBLY; PLATY TO FLAKY CUTTINGS IRREGULAR TO BLOCKY TO PLANAR FRACTURE; SILTY TO SANDY; SILTY TO ROUGH TEXTURE. DULL TO SPARKLING LUSTER; SLI CALCAREOUS GRADING TO SILTSTONE.

SANDSTONE = WHITE TO CLEAR WITH SOME TRANSLUCENT GRAINS; ABUNDANT DARK LITHICS EMBEDDED IN THE CLUSTERS GIVING A SALT AND PEPPER APPEARANCE; FINE TO VERY FINE GRAINED; ABUNDANT FINE TO VERY FINE LOOSE GRAINS; FAIR SORTING; SUB ROUND TO ROUND; HIGH SPHERICITY; HIGH REACTION TO DILUTE HCL; CALCAREOUS CEMENTATION AND GRAIN SUPPORTED; ASSOCIATED WITH ELEVATED GAS SHOWS.

SHALE = LIGHT GRAY TO MEDIUM BLuish GRAY; TOUGH TO DENSE TENACITY; IRREGULAR TO PLANAR FRACTURE; MASSIVE TO PLATY TO WEDGELIKE CUTTINGS HABIT; SMOOTH TO SLIGHTLY SILTY TEXTURE; THIN ALTERNATING BEDS; TRACES OF CARBONACEOUS MATERIAL.

SANDSTONE = WHITE TO GRAYISH WHITE TO CLEAR AND TRANSLUCENT WITH DARK LITHICS THROUGHOUT GIVING A SALT AND PEPPER APPEARANCE; ABUNDANT SMALL TIGHT CLUSTER WITH OCCASIONALLY A FEW LOOSE GRAINS; FINE TO UPPER VERY FINE GRAINED; MODERATE TO HIGH REACTION TO DILUTE HCL; CALCAREOUS CEMENTATION; ANGULAR TO ROUND; WELL SORTED; MODERATE SPHERICITY; SOME TRACES <1% OF SOME WHITE KAOLIN MATRIX MATERIAL IN THE SAMPLES; ASSOCIATED WITH GAS INTERVALS.

SHALE = DOMINANTLY LIGHT GRAY WITH SOME MEDIUM TO DARK GRAY WITH DARK BLUE-GRAY HUES; FIRM TO DENSE TENACITY; PLATY TO WEDGELIKE CUTTINGS HABIT; DULL TO EARTHY LUSTER; SLIGHTLY CARBONACEOUS; ALTERNATING BEDS WITH SANDSTONE.

SANDSTONE = WHITE TO OFF WHITE WITH

WF 800 @ 8989'
ROP
Avg WOB

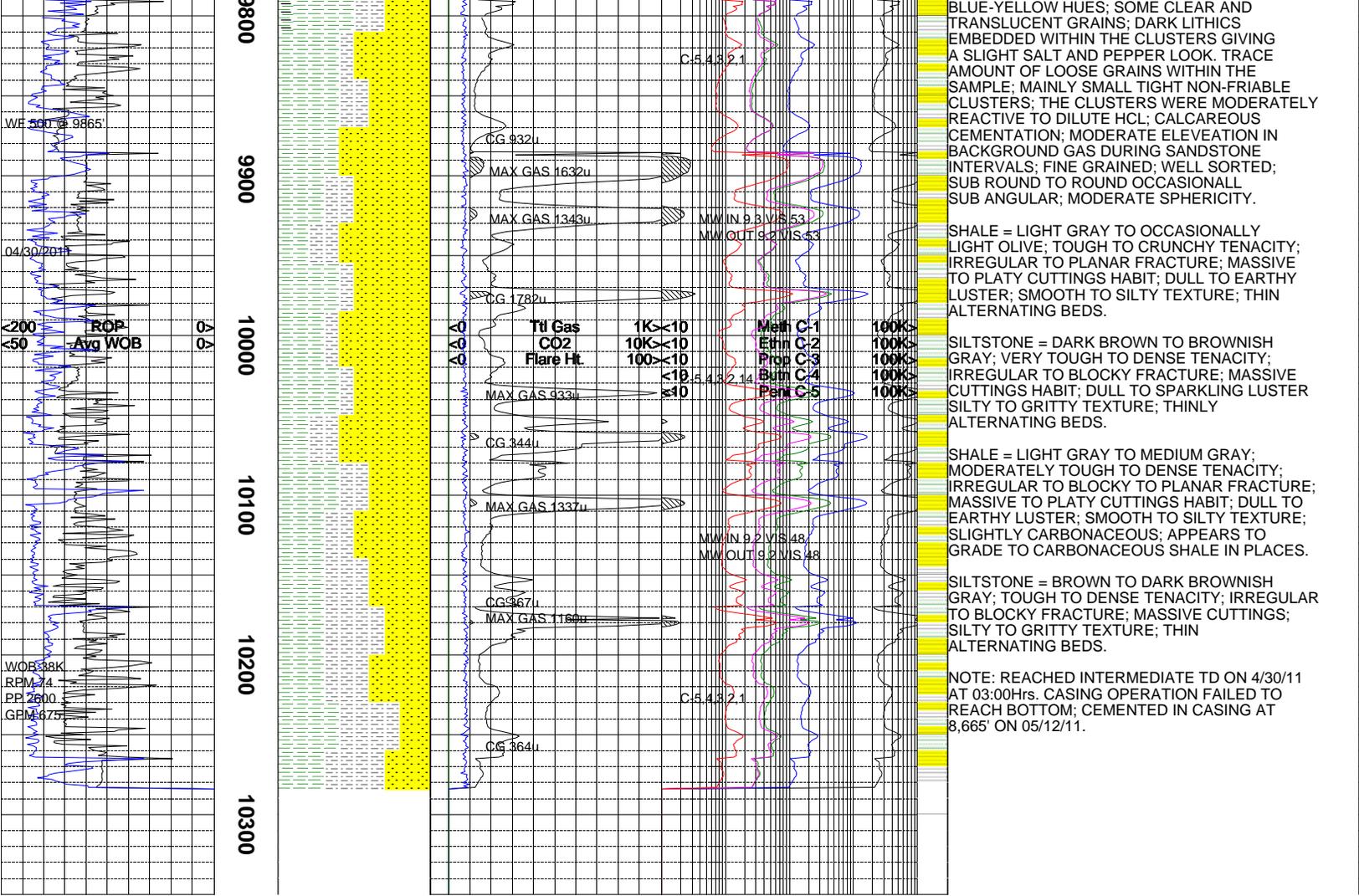
MAIN WF 800 SANDSTONE

WF 700 @ 9313'

NIGHT TOUR

WF 600 @ 9557'

ROP
Avg WOB



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