



GEOSEARCH LOGGING INC.

Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: 15057208710100 MARKS_2924_1-19H_SandRidge Energy, Inc.
Location: SEC: # 19, T-29S / R-24W-----FORD CO., KANSAS
License Number: AFE # DC 12647 Region: Bones
Spud Date: 01/24/2013 Drilling Completed: 02/12/2013
Surface Coordinates: SURFACE: 200' FNL & 920' FWL, of SEC: 19, T29S-R-24W, SPOT LOCATION: NW NE
NW NW, FORD COUNTY, KANSAS
Bottom Hole Coordinates: PBHL: 330' FSL & 920' FWL of SEC: 19, T-29S-R-24W, FORD COUNTY, KANSAS
Ground Elevation (ft): 2,612' K.B. Elevation (ft): 2,632' (+20' Est)
Logged Interval (ft): 1,164' To: 9,720' Total Depth (ft): 9,720' T.D.
Formation: MISSISSIPPIAN (HORIZONTAL WELL)
Type of Drilling Fluid: DRILLING ON WATER-BASE MUD FROM 1,164 ft.

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: SANDRIDGE ENERGY, INC.
Address: 123 ROBERT S KERR AVE
OKLAHOMA CITY, OK 73102-6406

GEOLOGIST

Name: Maggie Roden, Client Geologist
Company: SandRidge Energy, Inc. Oklahoma City, OK 73102
Address: 123 Robert S. Kerr Ave. Oklahoma City, OK 73102
Maggie Roden, Office Phone: (405) 429-6676
Cell Phone: (405) 316-0351 mroden@sandridgeenergy.com;

WELL SITE GEOLOGIST

Wayne Nix Cell----- (870)-826-6197
Betty Nix Cell----- (870)-826-6196
wnix@empirica-logging.com;
bnix@empirica-logging.com
Empirica Logging, Inc.
P.O. Box 6005
Edmond, OK 73083-6005
PHONE: (405) 340-5545
FAX: (405) 348-8303

COMPANY MAN

COMPANY MEN: Louey Solis & Quincey Loven
TOOL PUSHER: Art & Lenard

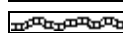
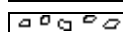
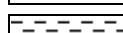
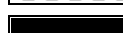
DRILLING CONTRACTOR

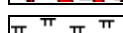
Lariat Inc.
Operator License # 34192
LARIAT RIG # 41
API: # 15-057-20867-01-00
AFE: # DC12646
Drilled on Water Base Mud,
HORIZONTAL WELL

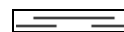
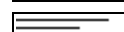
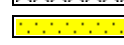
Comments

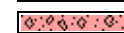
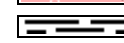
2 Manned Logging Services,
Start Logging Date: 01/25/2013 @ 1,164'
(Called in per CoMan)
SET 9.625 SURFACE CASING TO 1,164'
ON THE 01/25/2013 K.O.P. = 4,473'
SET 7" INTERMEDIATE CASING @ 5,708' 02/03/2013
T.D. Depth @ 9,720 ft. M.D. --- T.D. on the 02/12/2013
RAN E-LOGS ON THE 02/13/2013 (FINAL LOG PDF)
Released Logging Date: 02/13/2013 Thank You!

ROCK TYPES

 Anhy
 Bent
 Brec
 Cht
 Clyst
 Coal
 Congl

 Dol
 Gyp
 Igne
 Lmst
 Meta
 Mrlst
 Salt

 Shale
 Shcol
 Shgy
 Sltst
 Ss
 Till
 Sandstn

 Siltstn
 Granwash
 Dolowash
 Cement
 Granite
 Hotshale

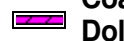
ACCESSORIES

FOSSIL
 Algae
 Amph
 Belm
 Bioclst
 Brach
 Bryozoa
 Cephal
 Coral
 Crin
 Echin
 Fish
 Foram
 Fossil
 Gastro
 Oolite
 Ostra
 Pelec
 Pellet
 Pisolite

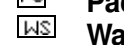
 Plant
 Strom

MINERAL
 Anhy
 Arggrn
 Arg
 Bent
 Bit
 Brecfrag
 Calc
 Carb
 Chtdk
 Chtlt
 Dol
 Feldspar
 Ferrpel
 Ferr
 Glau
 Gyp

 Hvymn
 Kaol
 Marl
 Minxl
 Nodule
 Phos
 Pyr
 Salt
 Sandy
 Silt
 Sil
 Sulphur
 Tuff

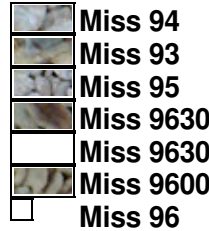
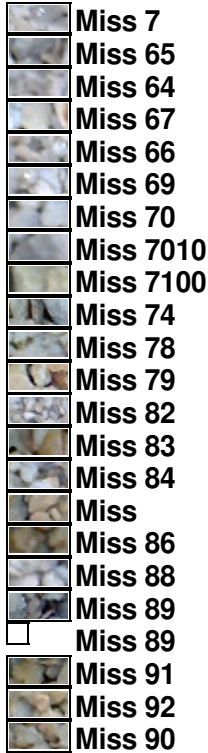
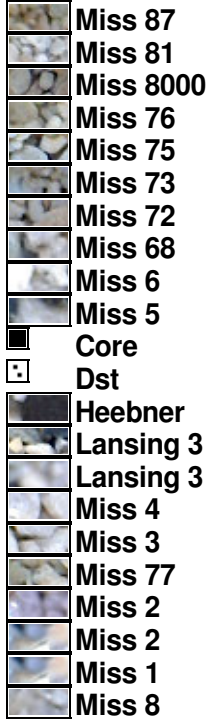
STRINGER
 Anhy
 Arg
 Bent
 Coal
 Dol

 Gyp
 Ls
 Mrst
 Sltstrg
 Ssstrg

TEXTURE
 Boundst
 Chalky
 Cryxln
 Earthy
 Finexln
 Grainst
 Lithogr
 Microxln
 Mudst
 Packst
 Wackest

OTHER SYMBOLS

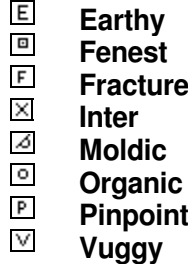
IMAGES 2



EVENTS



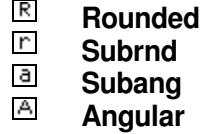
POROSITY TYPE



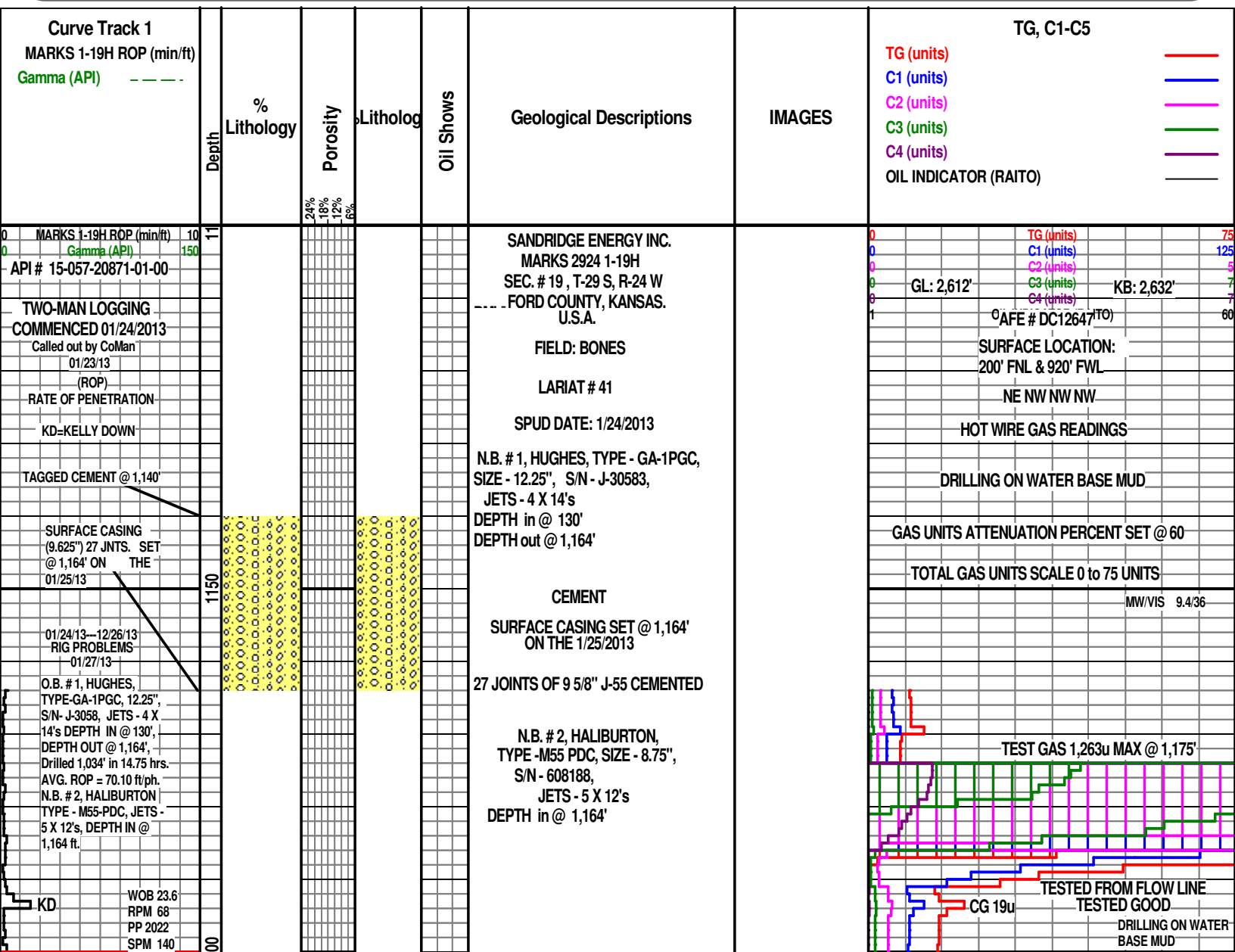
SORTING

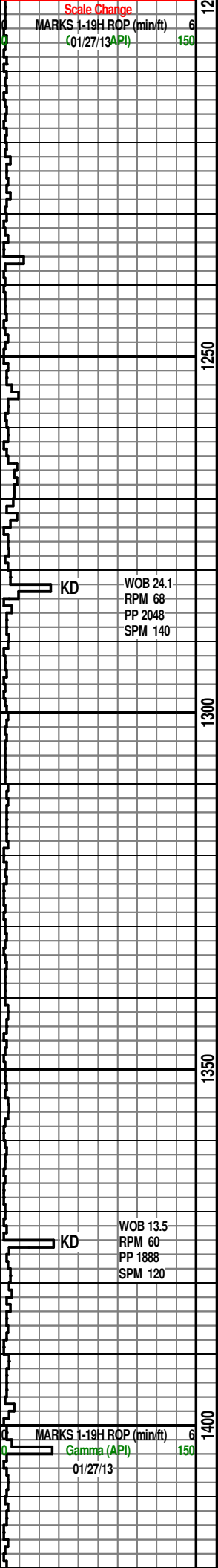


ROUNDING



OIL SHOWS

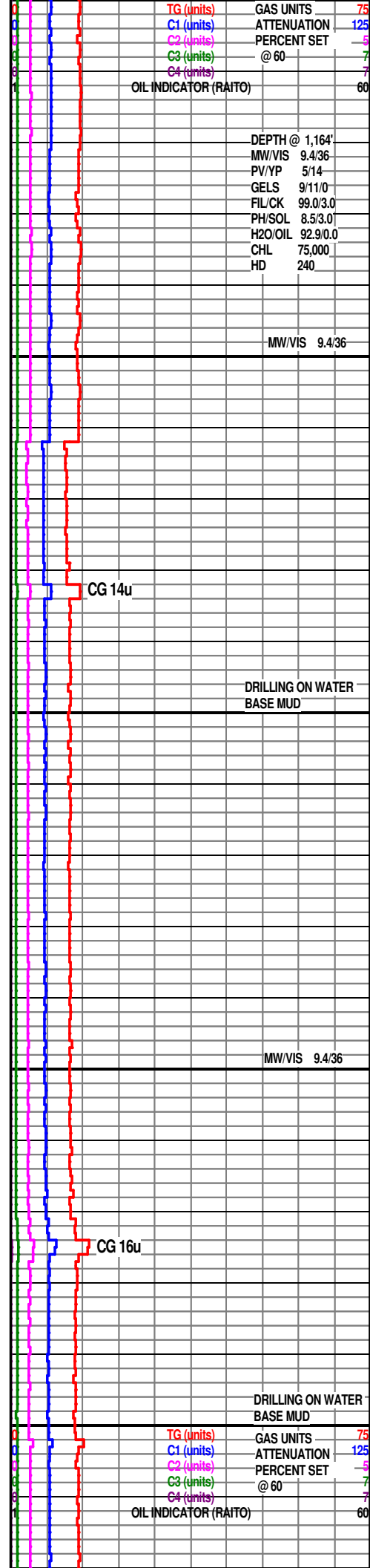


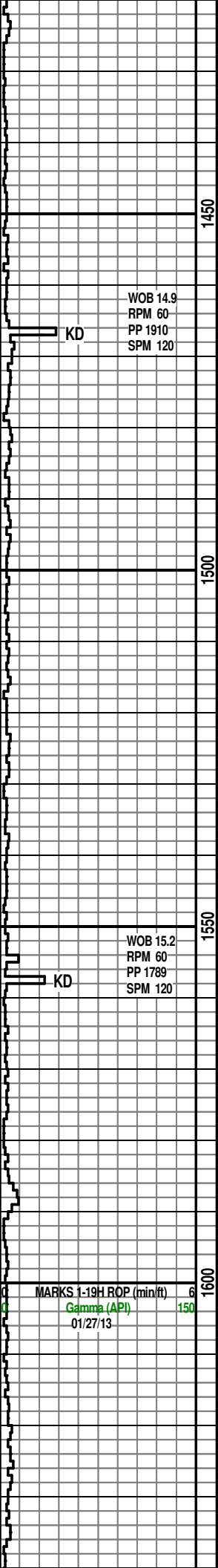


(NO SAMPLES TILL 4,400')
BASE HEEBNER SHALE

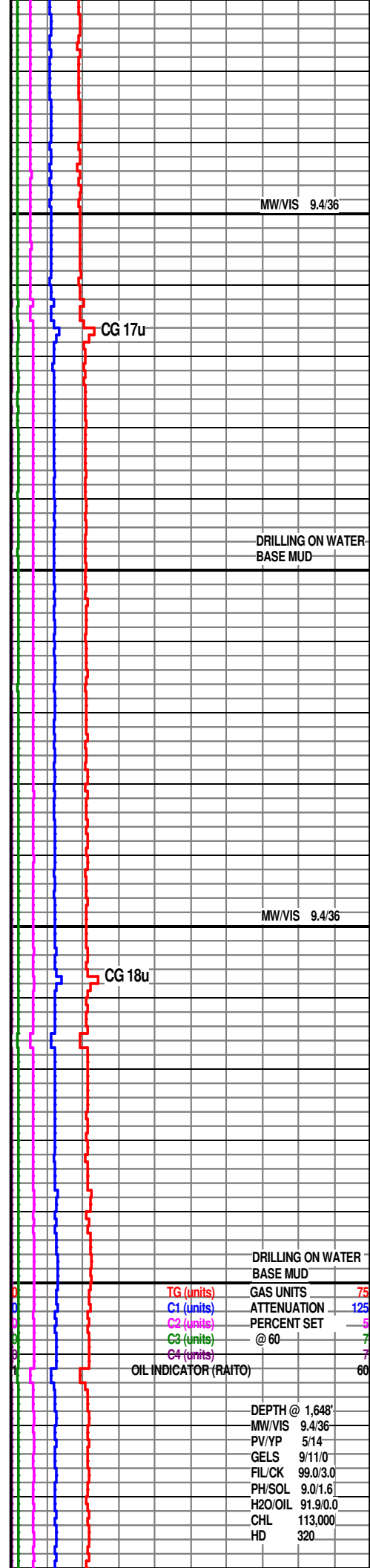
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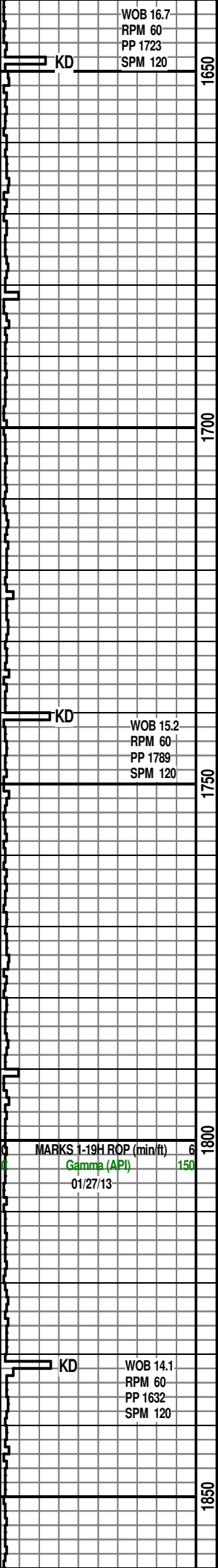
SURVEY: 1,411' MD 1,411' TVD
INC. 0.30 / AZ. 142.4



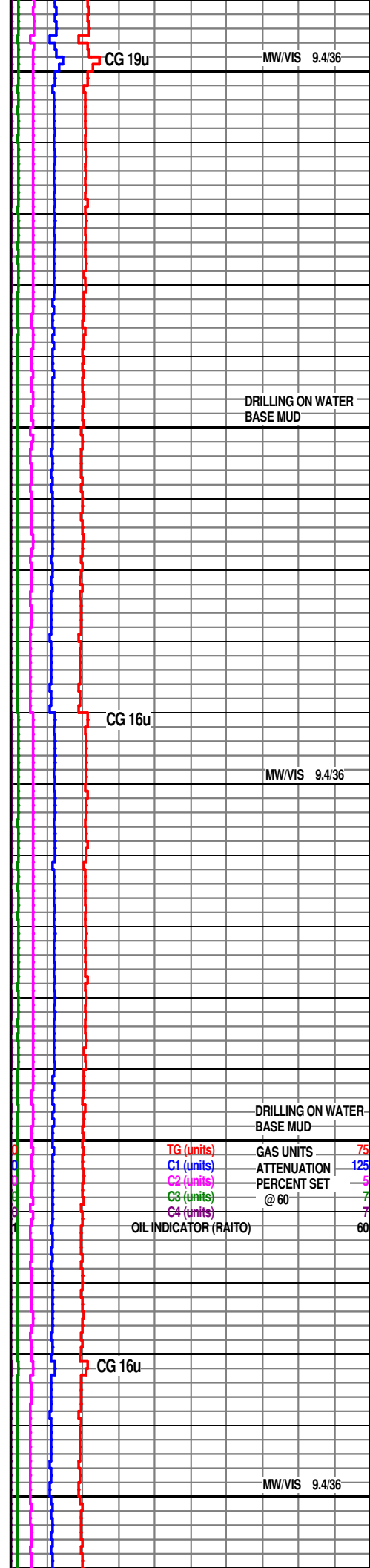


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BASE HEEBNER SHALE

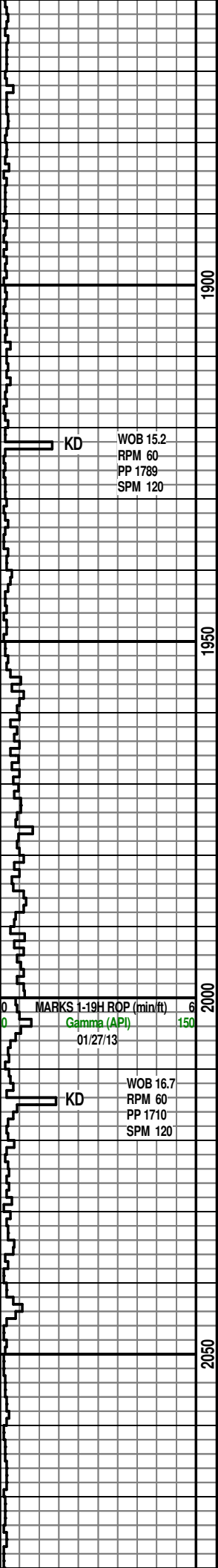




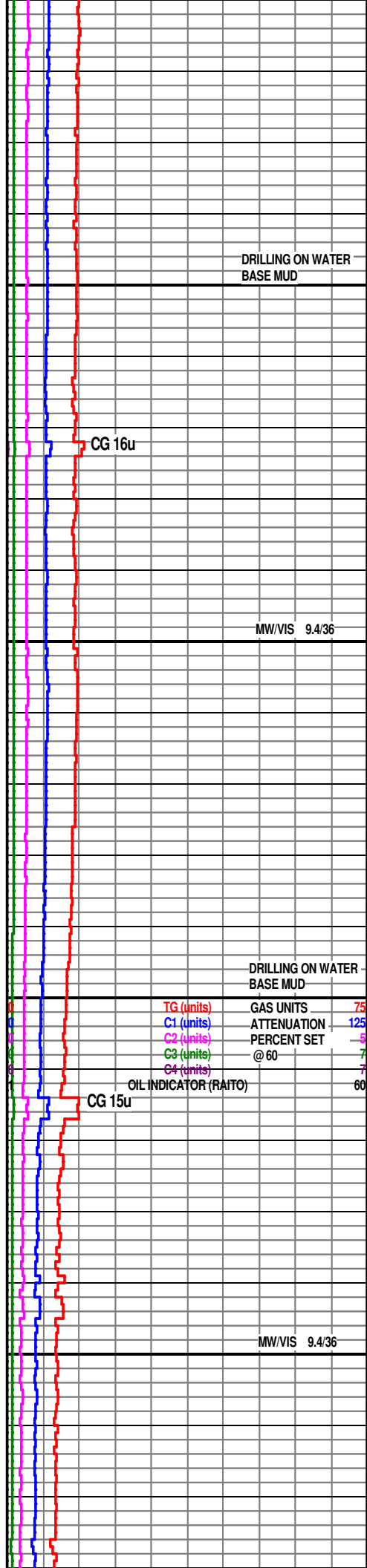
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BASE HEEBNER SHALE

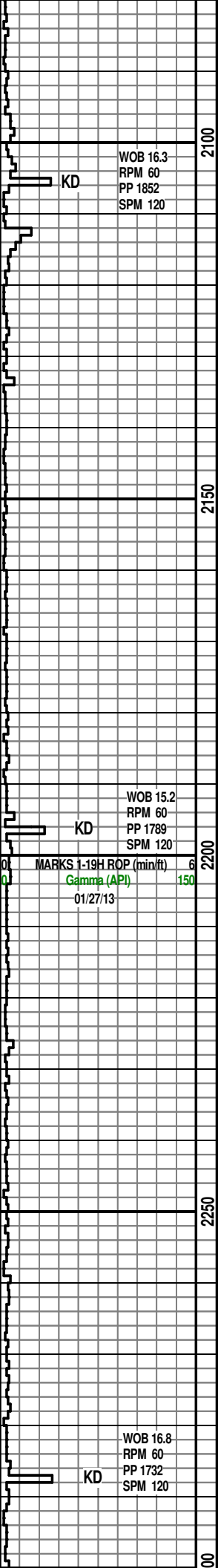


SURVEY: 1,867' MD 1,867' TVD
INC. 0.10 / AZ. 199.6

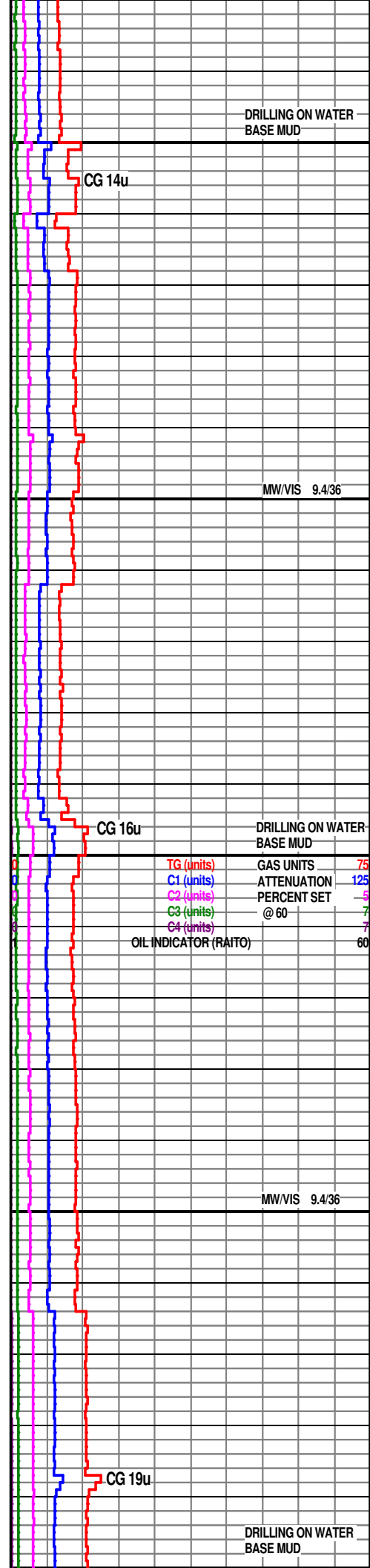


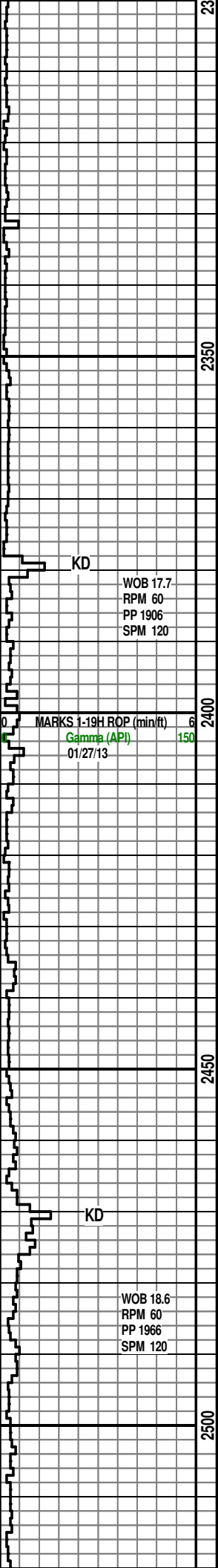
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BASE HEEBNER SHALE





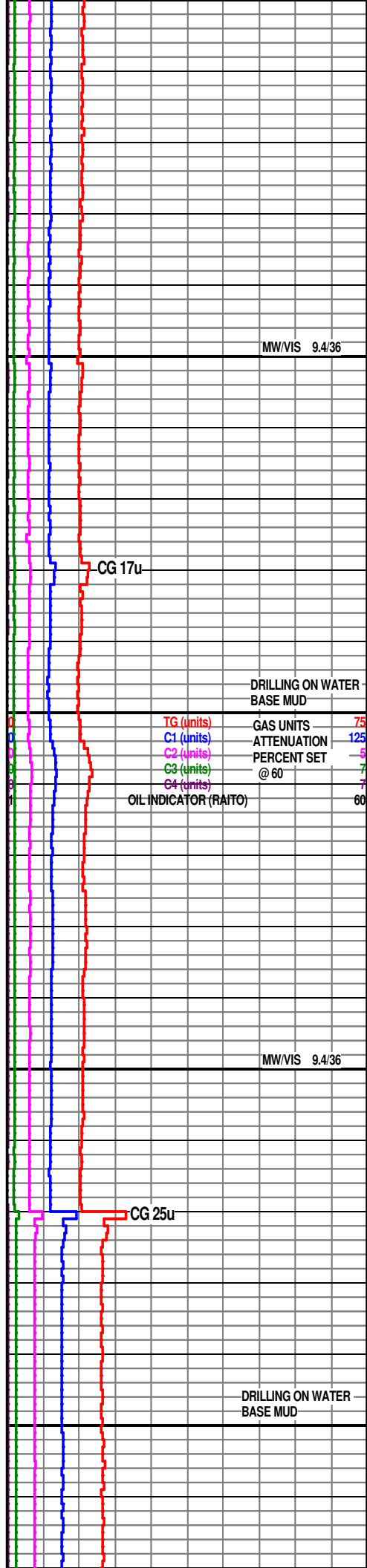
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BASE HEEBNER SHALE

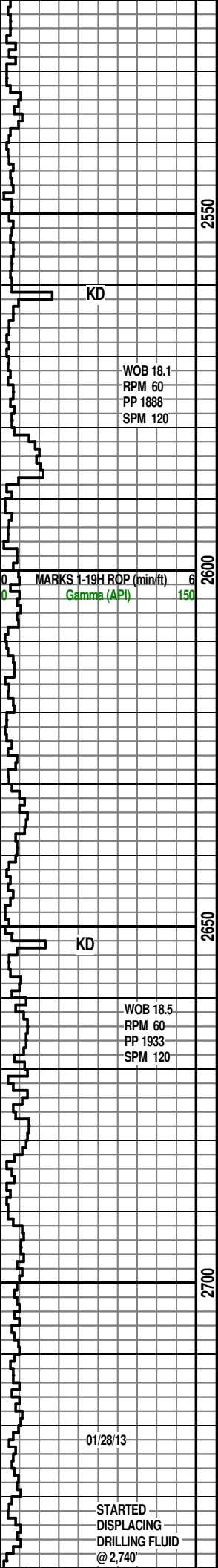




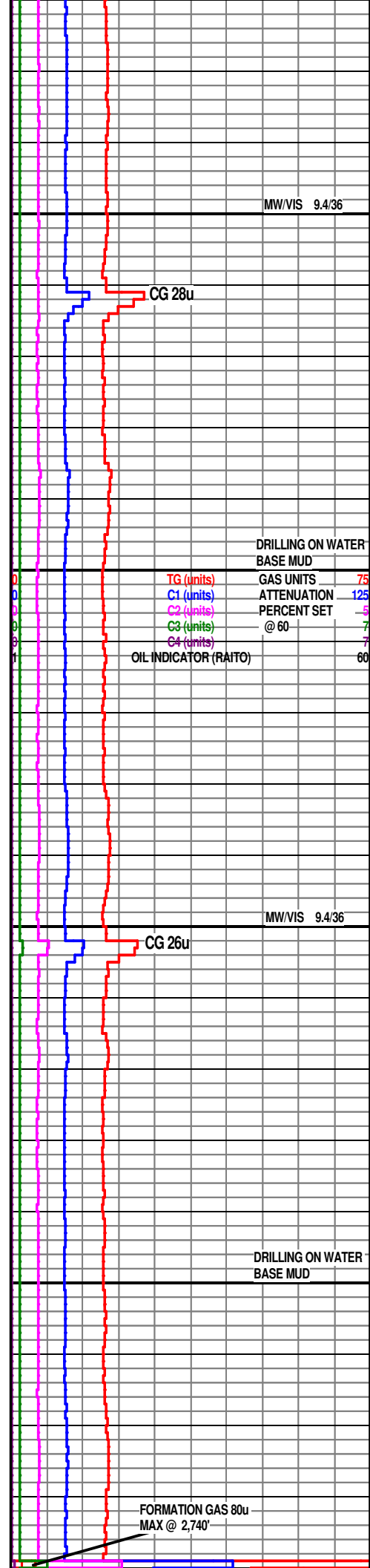
SURVEY: 2,324' MD 2,324' TVD
INC. 0.80 / AZ. 289.4

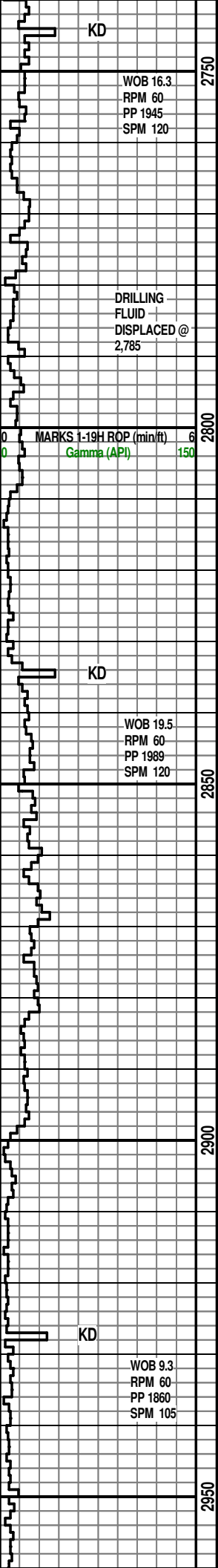
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BASE HEEBNER SHALE





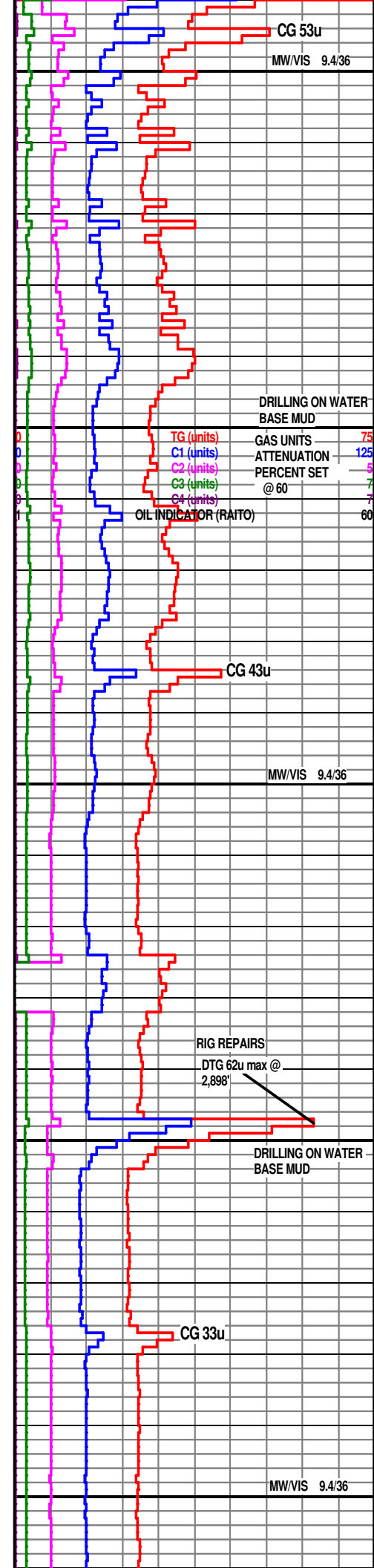
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BASE HEEBNER SHALE

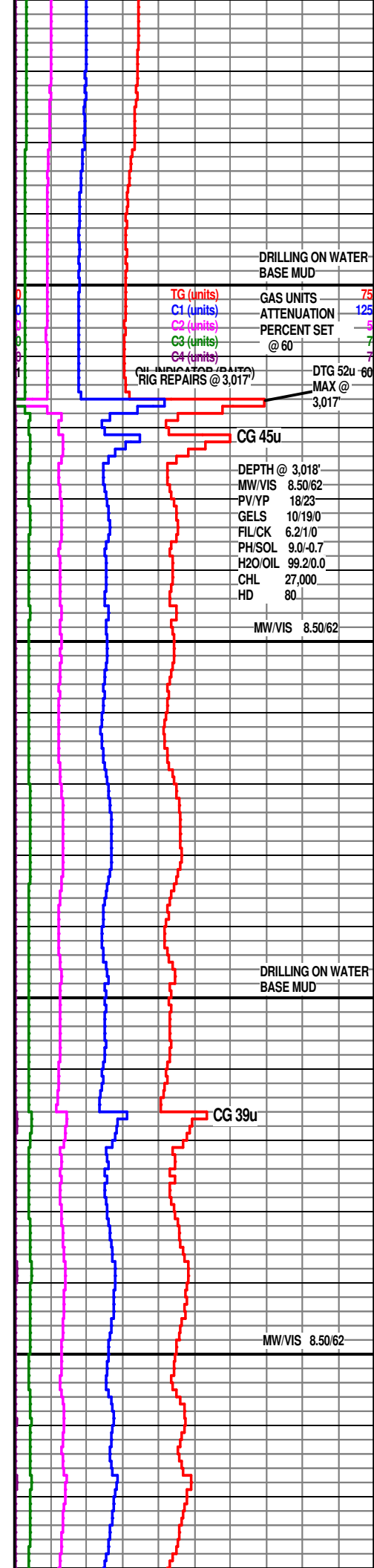
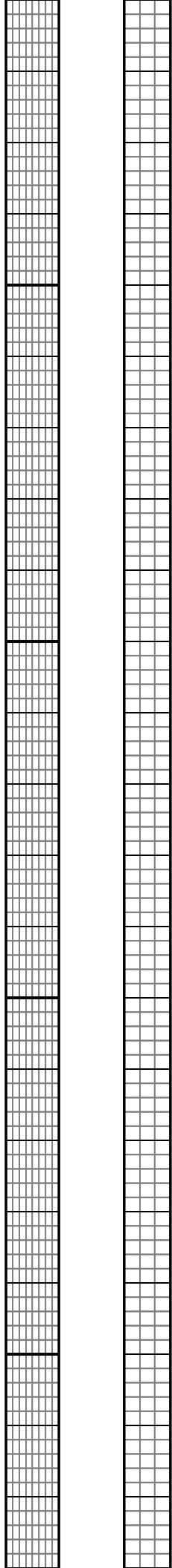


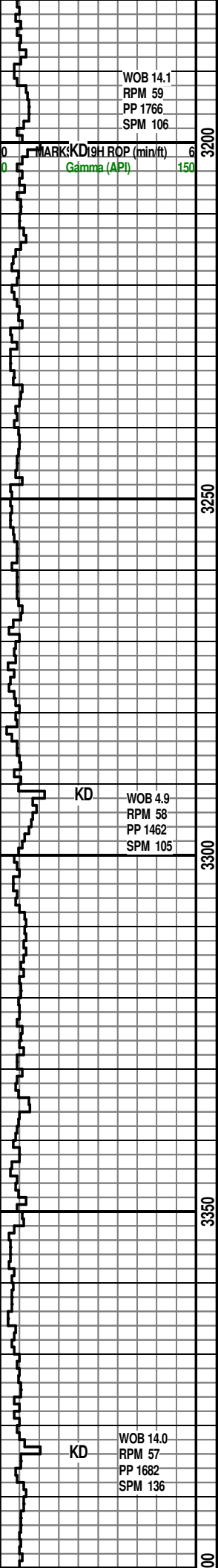


SURVEY: 2,780' MD 2,780' TVD
INC. 0.90 / AZ. 293.5

(NO SAMPLES TILL 4,400')
BASE HEEBNER SHALE

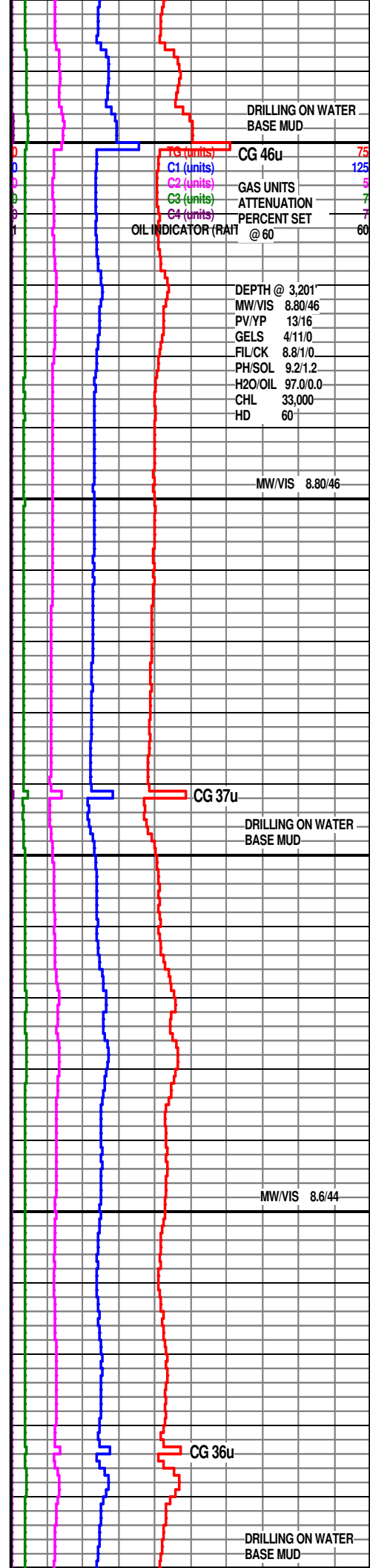


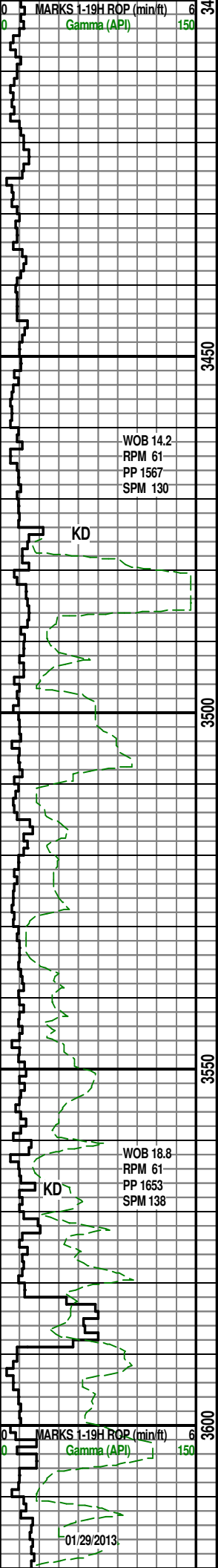




(NO SAMPLES TILL 4,400')
BASE HEEBNER SHALE

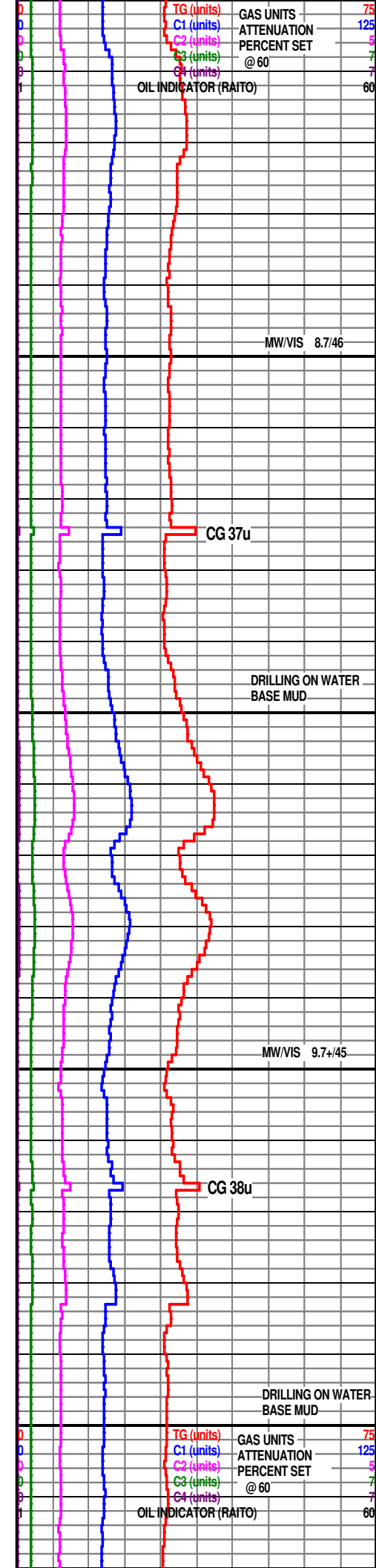
SURVEY: 3,236' MD 3,236' TVD
INC. 1.6 / AZ 321.7

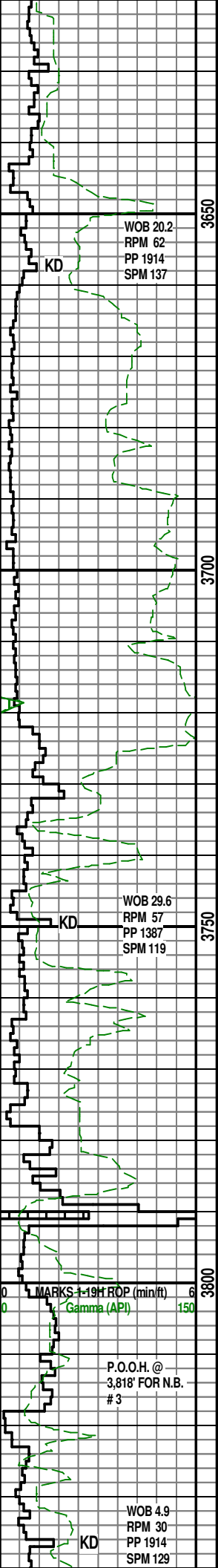




(NO SAMPLES TILL 4,400')
BASE HEEBNER SHALE

(NO SAMPLES TILL 4,400')
BASE HEEBNER SHALE

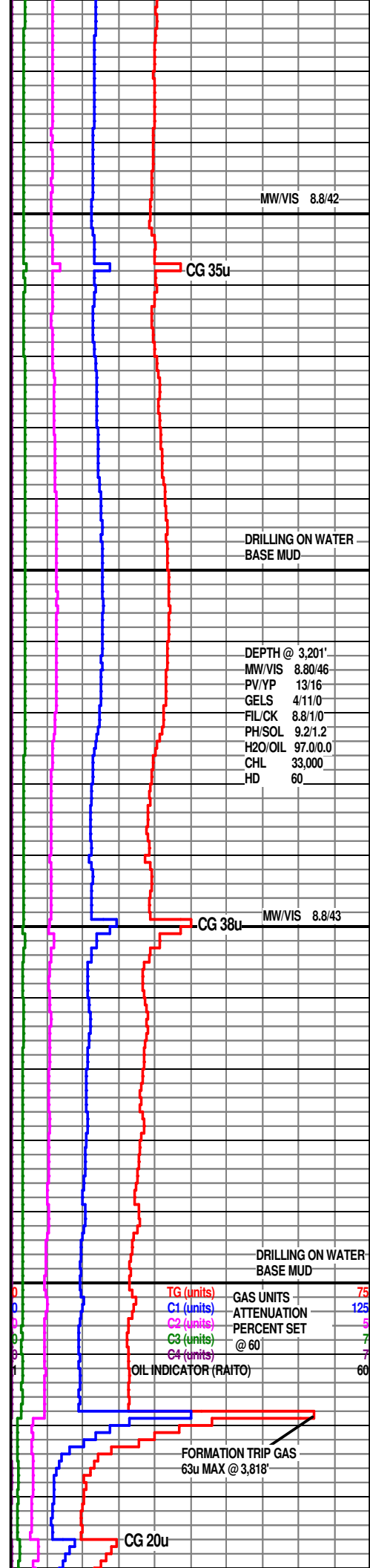


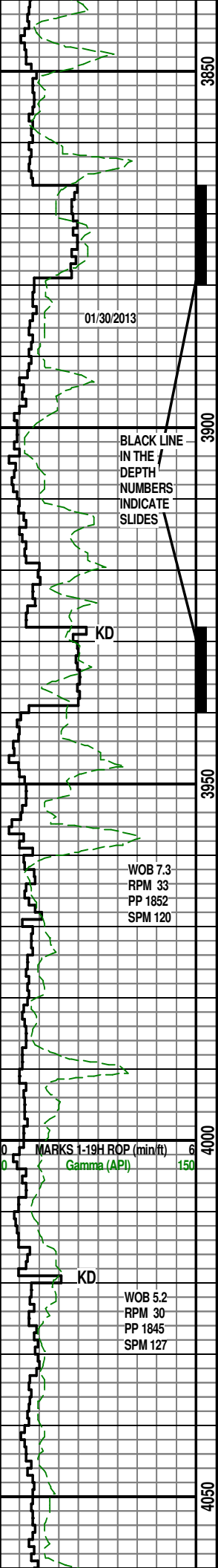


SURVEY: 3,694' MD 3,694' TVD
INC. 1.80 / AZ. 329.1

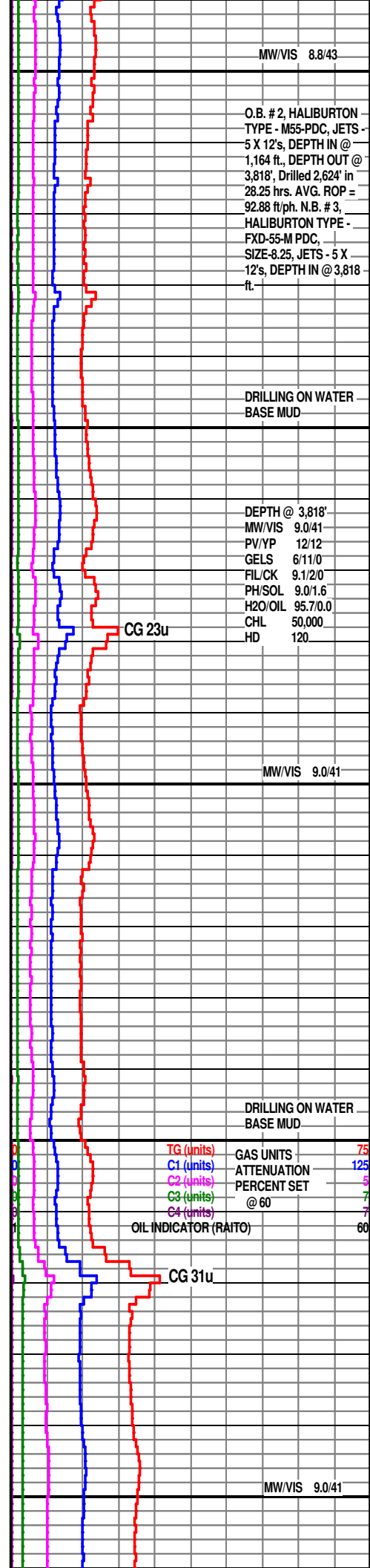
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BASE HEEBNER SHALE

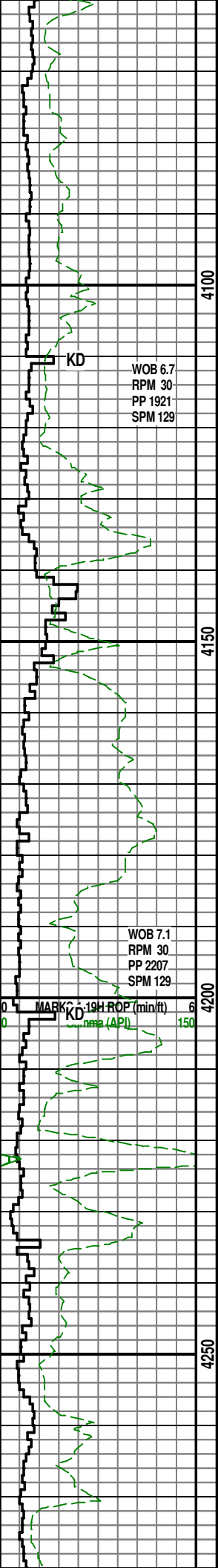
N.B. # 3, HALIBURTON,
TYPE -FXD55M PDC, SIZE - 8.75",
S/N - 11913930,
JETS - 5 X 12's
DEPTH in @ 3,818'





(NO SAMPLES TILL 4,400')
BASE HEEBNER SHALE





4100

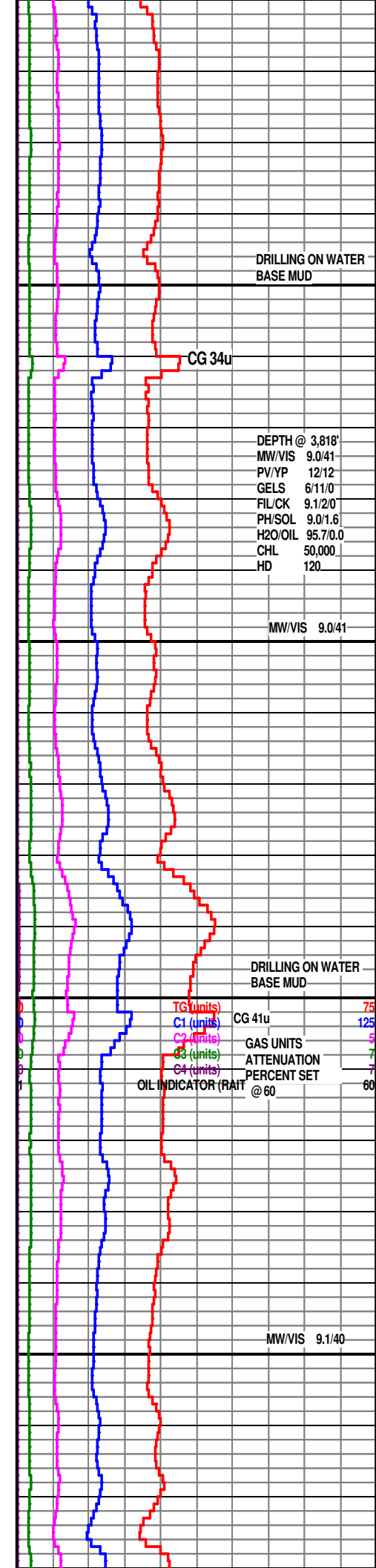
4150

4200

4250

(NO SAMPLES TILL 4,350')

SURVEY: 4,151' MD 4,151' TVD
INC. 1.50 / AZ. 142.2



DRILLING ON WATER
BASE MUD

CG 34u

DEPTH @ 3,818'
MW/VIS 9.0/41
PV/YP 12/12
GELS 6/11/0
FIL/CK 9.1/2/0
PH/SOL 9.0/1.6
H2O/OIL 95.7/0.0
CHL 50,000
HD 120

MW/VIS 9.0/41

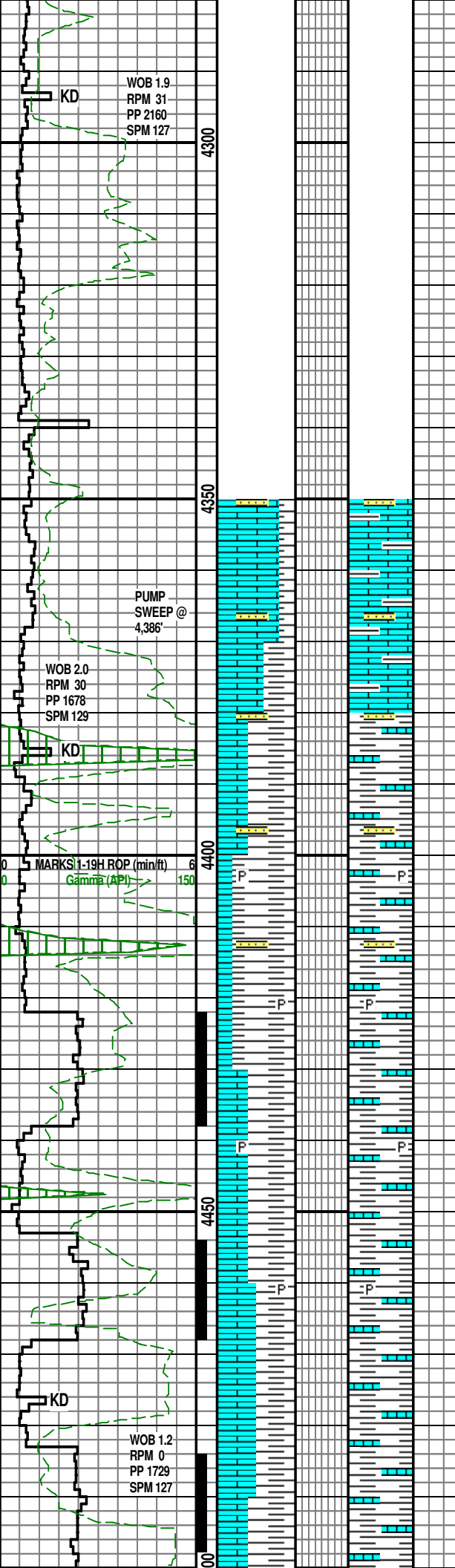
DRILLING ON WATER
BASE MUD

CG 41u

GAS UNITS
ATTENUATION
PERCENT SET
@ 60

OIL INDICATOR (RAIT)

MW/VIS 9.1/40



SH: DK GRY, BLK GRY, SCAT LT GRY, ORG RCH, CALC, SPLTY, INCRS BLK CARB, SMTH- SUB WXY LSTR, MOD FRM-FRM, SS: SL/TRS OF OFF WHT TO WHT, VF GRN, W/CONSOL, SUBRND, MOD HD, CALC CMT, LS: PRED LT TAN-MED TAN, OCC DRK TAN-CRM, SME MTTLD TAN FNMED XLN, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

BASE HEEBNER SHALE 4,378' MD/TVD 4,377'

LS: MSTLY MED TAN- LT TAN, SME OFF WHT, PRED BLKY, TR SPLNTY, MOD FN- FN XLN, MOD FRM- FRM, SME SFT-CHLKY, OCC BRIT, PR- FR HL FRAC POR, SL OOL, TRS PYR, SH: SME GRY, MSTLY DRK GY & BLK MSTLY CHNKY, SME SPLIN, MOD FRM- FRM, SME SMTH TXT, PROD RGH TXT, MICA, TRS SS: WHT W/CONSOL, HD, NO FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,425' MD 4,424' TVD
INC. 2.30 / AZ. 154.1

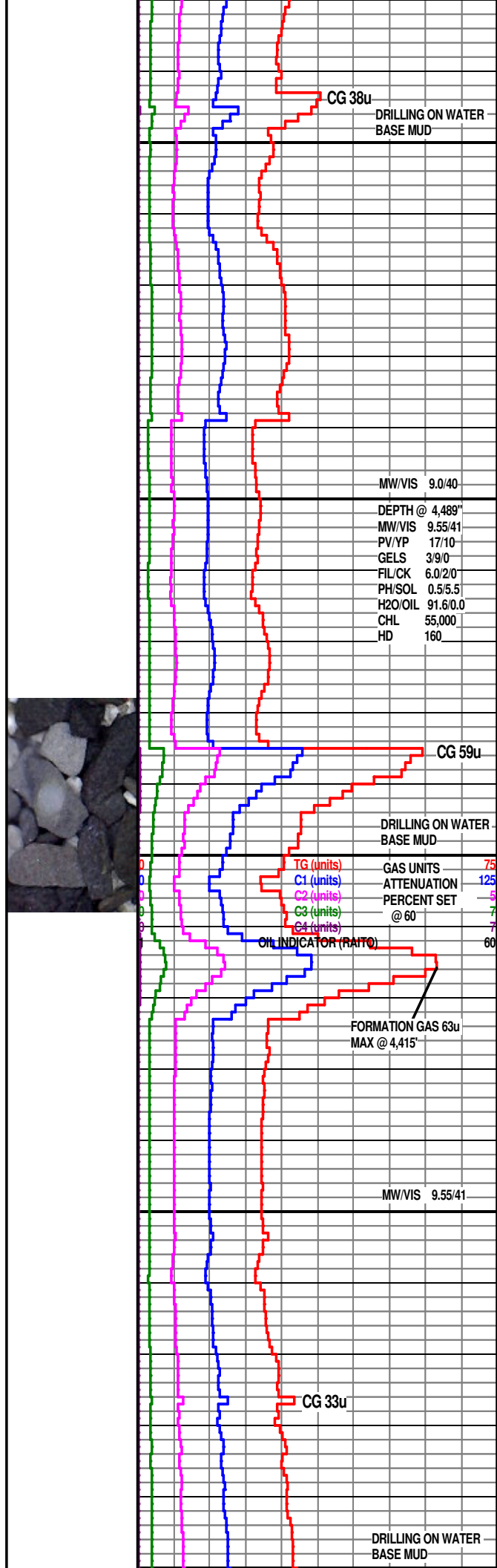
SH: DK GRY, SCAT LT GRY, SME RED, SME BLK, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, DNS, MICROXLN, OOL, MOD FRM-FRM, SL/TRS DK RED CHRT, NO VIS FLOR, NO VIS CUT, NO RESD RING

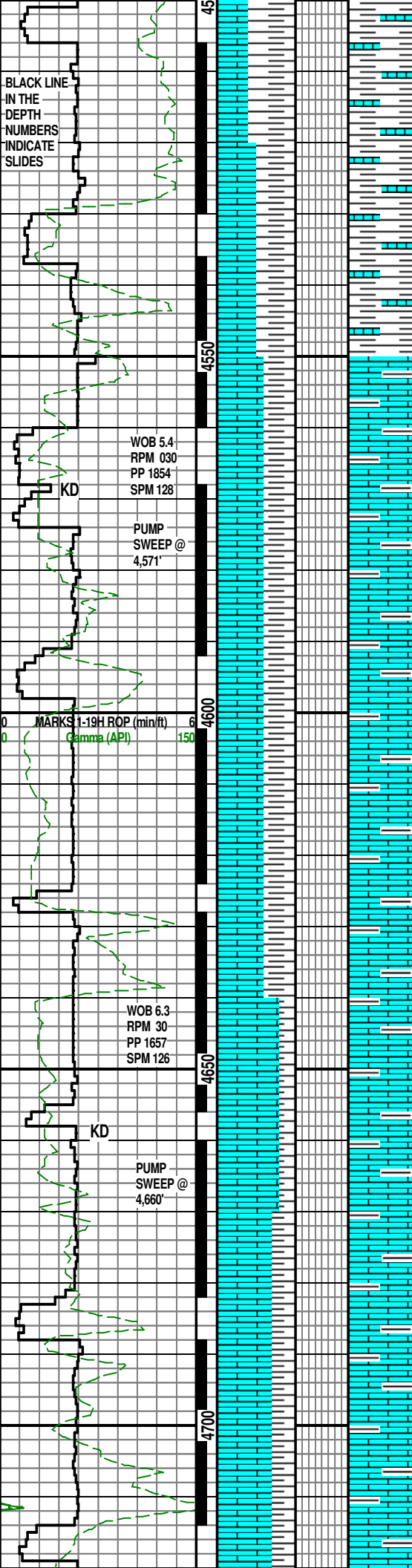
SURVEY: 4,456' MD 4,455' TVD
INC. 3.40 / AZ. 159.6

SH: DK GRY, SCAT LT GRY, SME RED, SME BLK, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, DNS, MICROXLN, OOL, MOD FRM-FRM, SL/TRS DK RED CHRT, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,486' MD 4,485' TVD
INC. 4.80 / AZ. 166.7

SH: DK GRY, SCAT LT GRY, SME RED, SME BLK, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED





MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, DNS, MICROXLN, OOL, MOD FRM-FRM, SL/TRS DK RED CHRT, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,517' MD 4,516' TVD
INC. 6.20 / AZ. 169.6

LANSING LIMESTONE
4,530' MD/TVD 4,529'

SURVEY: 4,547' MD 4,545' TVD
INC. 7.80 / AZ. 171.9

SH: DK GRY, SCAT LT GRY, SME RED, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,577' MD 4,575' TVD
INC. 9.50 / AZ. 173.9

SH: DK GRY, SCAT LT GRY, SME RED, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,607' MD 4,605' TVD
INC. 11.80 / AZ. 176.9

SH: DK GRY, SCAT LT GRY, SME RED, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,638' MD 4,635' TVD
INC. 13.90 / AZ. 179.2

SH: DK GRY, SCAT LT GRY, SME RED, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,668' MD 4,664' TVD
INC. 16.20 / AZ. 181.7

SH: DK GRY, SCAT LT GRY, SME RED, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,699' MD 4,694' TVD
INC. 18.40 / AZ. 181.9

SH: DK GRY, SCAT LT GRY, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM,



DEPTH @ 4,489"
MW/VIS 9.55/41
PV/YP 17/10
GELS 3/9/0
FIL/CK 6.0/2/0
PH/SOL 0.5/5.5
H2O/OIL 91.6/0.0
CHL 55,000
HD 160

MW/VIS 9.55/41

FORMATION GAS 40
u MAX @ 4,557'

CG 42u

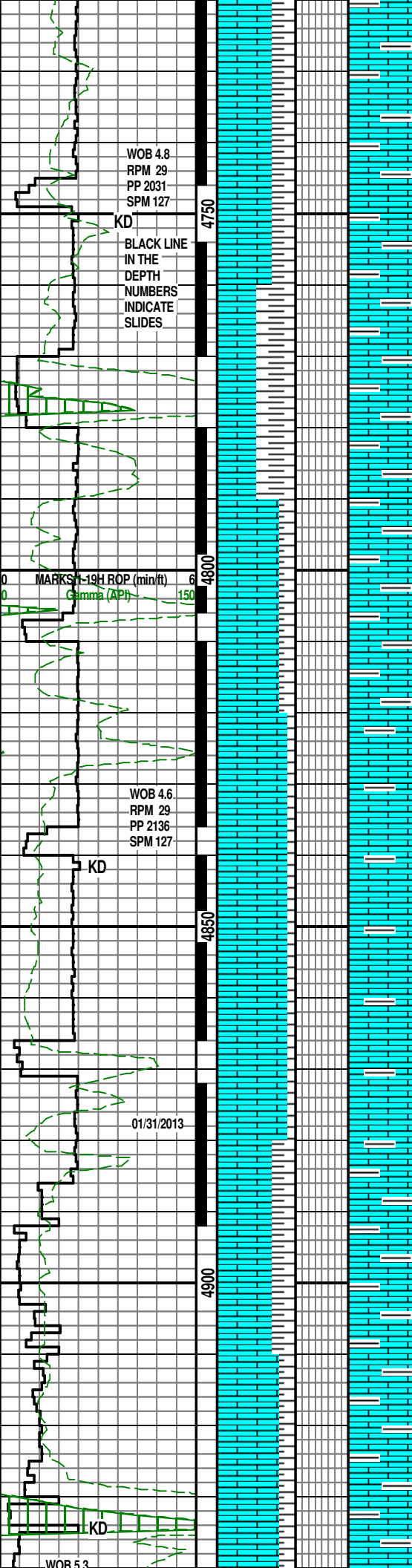
DRILLING ON WATER
BASE MUD

TG (units) 75
C1 (units) 125
C2 (units) 5
C3 (units) 7
C4 (units) 60
GAS UNITS
ATTENUATION
PERCENT SET
@ 60
OIL INDICATOR (RAITO)

MW/VIS 9.55/41

CG 44u

DRILLING ON WATER
BASE MUD



NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,729' MD 4,722' TVD
INC. 20.50 / AZ. 181.8

SH: DK GRY, SCAT LT GRY, SME BLK, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,760' MD 4,751' TVD
INC. 22.70 / AZ. 180.4

SH: DK GRY, SCAT LT GRY, SME BLK, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,790' MD 4,778' TVD
INC. 24.40 / AZ. 180.9

SH: DK GRY, SCAT LT GRY, SME BLK, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,820' MD 4,806' TVD
INC. 26.60 / AZ. 180.3

SH: DK GRY, SCAT LT GRY, SME BLK, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,850' MD 4,832' TVD
INC. 28.40 / AZ. 179.1

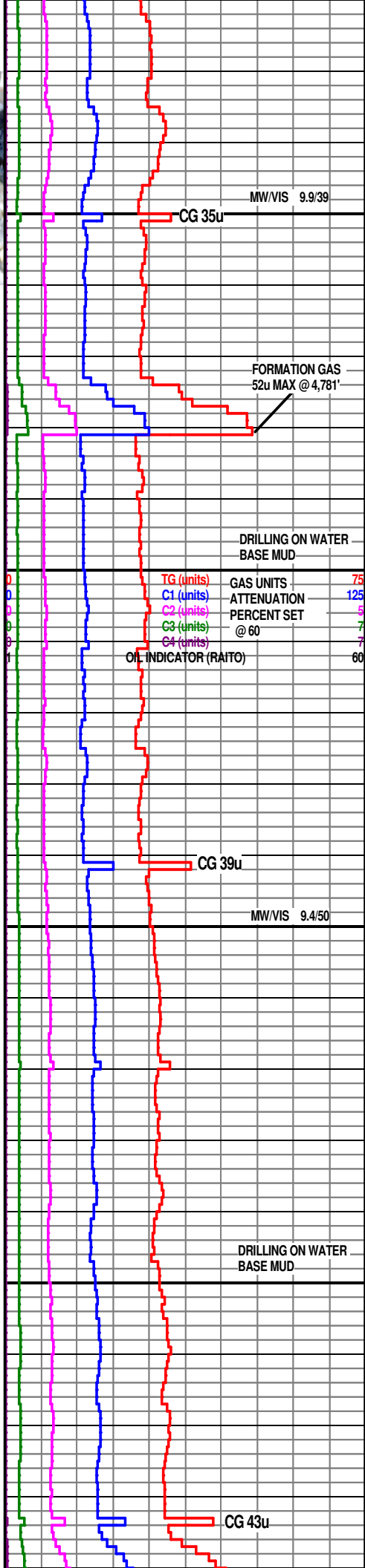
SH: DK GRY, SCAT LT GRY, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

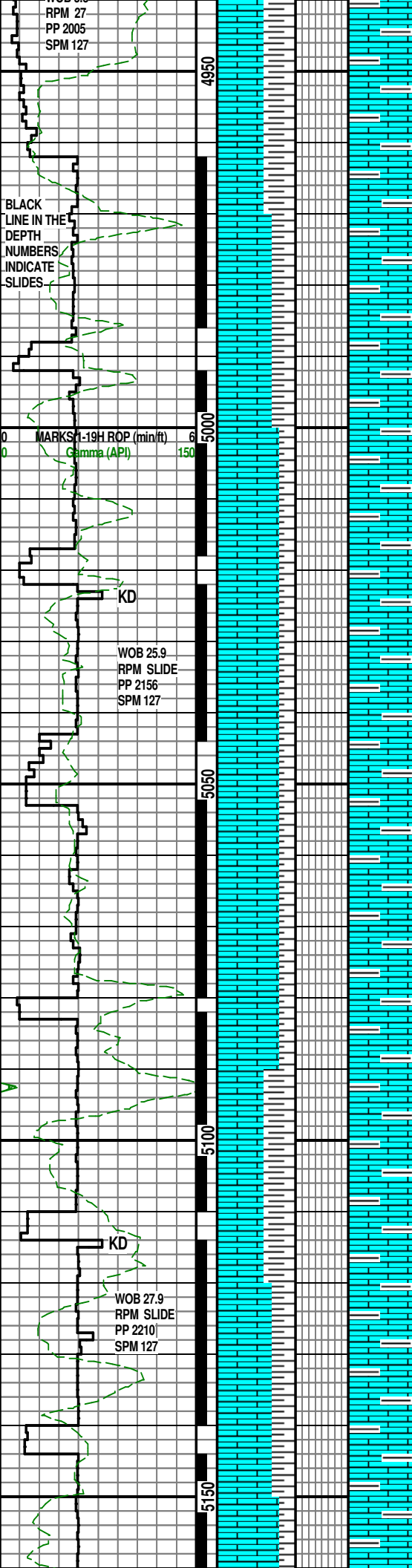
SURVEY: 4,881' MD 4,859' TVD
INC. 29.9 / AZ. 178.4

SH: DK GRY, SCAT LT GRY, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 4,911' MD 4,885' TVD
INC. 31.3 / AZ. 179.0

SH: DK GRY, SCAT LT GRY, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING





SURVEY: 4,942' MD 4,911' TVD
INC. 31.8 / AZ. 178.4

SH: DK GRY, SCAT LT GRY, CALC,
SPLTY, SMTH- SUB WXY LSTR, MOD
FRM-FRM, LS: PRED LT TAN- MED TAN,
OFF WHT-CRM, MXLN, DNS, SME MTTLD
TAN FNMED XLN, OOL, MOD FRM-FRM,
NO VIS FLOR, NO VIS CUT, NO RESD
RING

SURVEY: 4,972' MD 4,937' TVD
INC. 33.1 / AZ. 178.0

SH: DK GRY, SCAT LT GRY, CALC,
SPLTY, SMTH- SUB WXY LSTR, MOD
FRM-FRM, LS: PRED LT TAN- MED TAN,
OFF WHT-CRM, MXLN, DNS, SME MTTLD
TAN FNMED XLN, OOL, MOD FRM-FRM,
NO VIS FLOR, NO VIS CUT, NO RESD
RING

SURVEY: 5,002' MD 4,962' TVD
INC. 35.1 / AZ. 177.6

SH: DK GRY, SCAT LT GRY, CALC,
SPLTY, SMTH- SUB WXY LSTR, MOD
FRM-FRM, LS: PRED LT TAN- MED TAN,
OFF WHT-CRM, MXLN, DNS, SME MTTLD
TAN FNMED XLN, OOL, MOD FRM-FRM,
NO VIS FLOR, NO VIS CUT, NO RESD
RING

SURVEY: 5,033' MD 4,986' TVD
INC. 31.8 / AZ. 178.0

SH: DK GRY, SCAT LT GRY, CALC,
SPLTY, SMTH- SUB WXY LSTR, MOD
FRM-FRM, LS: PRED LT TAN- MED TAN,
OFF WHT-CRM, MXLN, DNS, SME MTTLD
TAN FNMED XLN, OOL, MOD FRM-FRM,
NO VIS FLOR, NO VIS CUT, NO RESD
RING

SURVEY: 5,063' MD 5,010' TVD
INC. 39.8 / AZ. 178.4

SH: DK GRY, SCAT LT GRY, CALC,
SPLTY, SMTH- SUB WXY LSTR, MOD
FRM-FRM, LS: PRED LT TAN- MED TAN,
OFF WHT-CRM, MXLN, DNS, SME MTTLD
TAN FNMED XLN, OOL, MOD FRM-FRM,
NO VIS FLOR, NO VIS CUT, NO RESD
RING

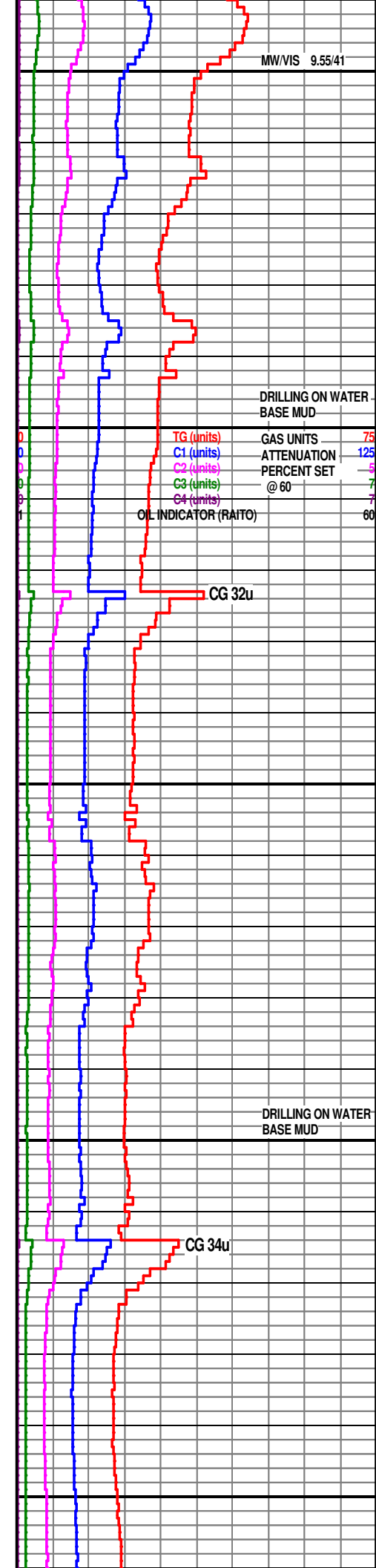
SURVEY: 5,094' MD 5,034' TVD
INC. 41.5 / AZ. 177.9

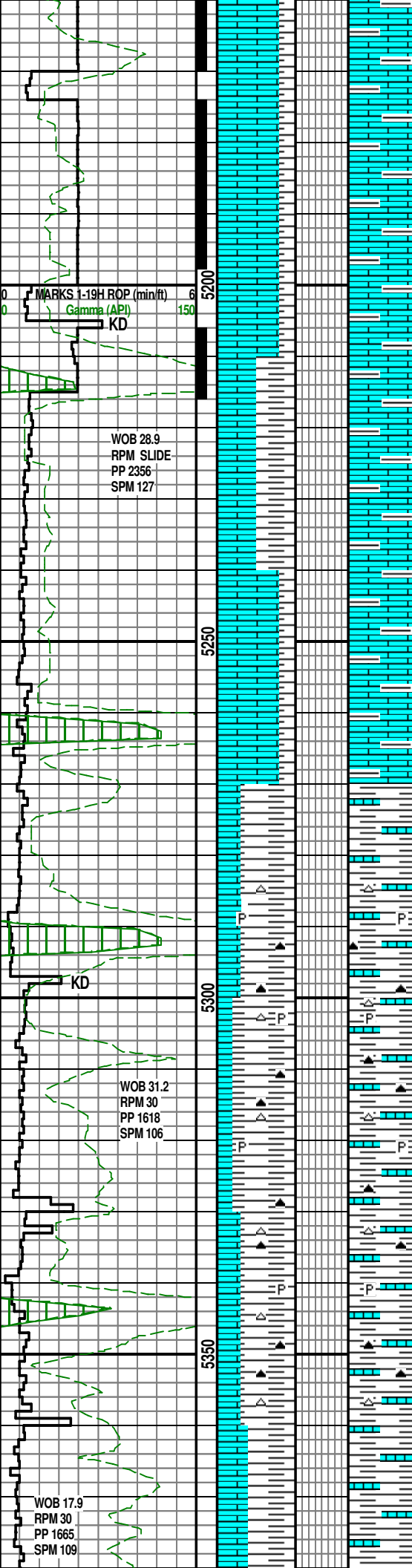
SH: DK GRY, SCAT LT GRY, CALC,
SPLTY, SMTH- SUB WXY LSTR, MOD
FRM-FRM, LS: PRED LT TAN- MED TAN,
OFF WHT-CRM, MXLN, DNS, SME MTTLD
TAN FNMED XLN, OOL, MOD FRM-FRM,
NO VIS FLOR, NO VIS CUT, NO RESD
RING

SURVEY: 5,124' MD 5,056' TVD
INC. 43.6 / AZ. 178.7

SH: DK GRY, SCAT LT GRY, CALC,
SPLTY, SMTH- SUB WXY LSTR, MOD
FRM-FRM, LS: PRED LT TAN- MED TAN,
OFF WHT-CRM, MXLN, DNS, SME MTTLD
TAN FNMED XLN, OOL, MOD FRM-FRM,
NO VIS FLOR, NO VIS CUT, NO RESD
RING

SURVEY: 5,154' MD 5,077' TVD
INC. 45.6 / AZ. 180.0





SH: DK GRY, SCAT LT GRY, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 5,185' MD 5,098' TVD
INC. 47.9 / AZ. 181.2

SH: DK GRY, SCAT LT GRY, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 5,215' MD 5,118' TVD
INC. 49.7 / AZ. 182.3

SH: DK GRY, SCAT LT GRY, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 5,246' MD 5,138' TVD
INC. 49.8 / AZ. 182.2

SH: DK GRY, SCAT LT GRY, CALC, SPLTY, SMTH- SUB WXY LSTR, MOD FRM-FRM, LS: PRED LT TAN- MED TAN, OFF WHT-CRM, MXLN, DNS, SME MTTLD TAN FNMED XLN, OOL, MOD FRM-FRM, NO VIS FLOR, NO VIS CUT, NO RESD RING

SURVEY: 5,276' MD 5,157' TVD
INC. 49.3 / AZ. 182.2

CHEROKEE GROUP 5,286' MD/TVD 5,164'

SURVEY: 5,307' MD 5,178' TVD
INC. 48.9 / AZ. 182.4

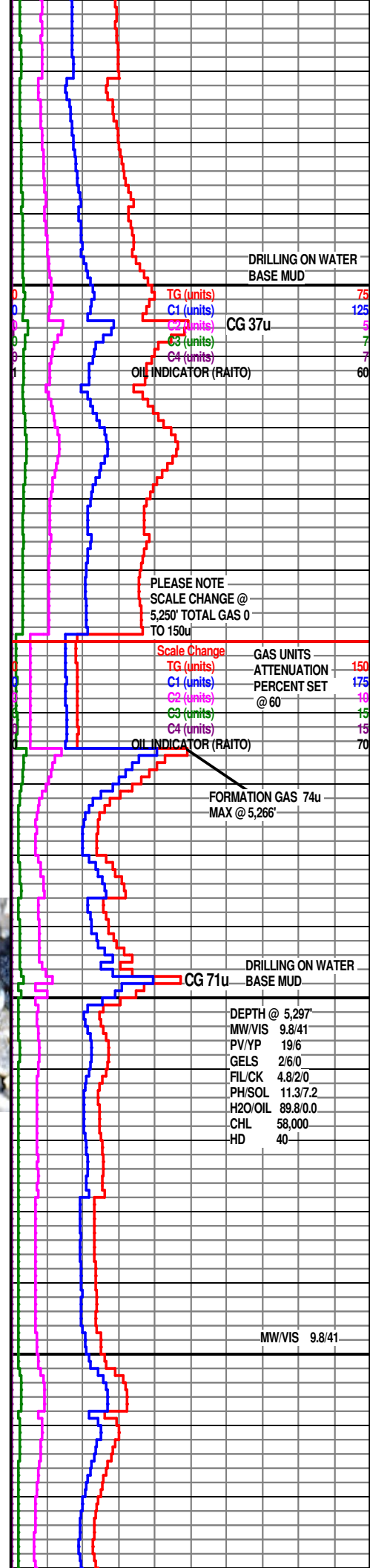
LS: MSTLY CRM TO WHT, BLKY, MOD FN- FN XLN, SL FRM- FRM, OCC BRIT, NO FLUOR CUT OR RING, SH: SME RED, MED-DK GRY, BLK GRY, INCRS BLK CARB, PRED BLKY, SME SPLN, MICA, MOD FRM, RGH TXT, SL TRS PYR, TRS CHRT LT & DRK

SURVEY: 5,337' MD 5,198' TVD
INC. 48.7 / AZ. 181.6

LS: MSTLY CRM TO WHT, BLKY, MOD FN- FN XLN, SL FRM- FRM, OCC BRIT, NO FLUOR CUT OR RING, SH: SME RED, MED-DK GRY, BLK GRY, INCRS BLK CARB, PRED BLKY, SME SPLN, MICA, MOD FRM, RGH TXT, SL TRS PYR, TRS CHRT LT & DRK

SURVEY: 5,367' MD 5,217' TVD
INC. 48.1 / AZ. 180.7

LS: MSTLY CRM TO WHT, BLKY, MOD FN- FN XLN, SL FRM- FRM, OCC BRIT, NO



DRILLING ON WATER
BASE MUD

TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
CG 37u
OIL INDICATOR (RAITO)

PLEASE NOTE
SCALE CHANGE @
5,250' TOTAL GAS 0
TO 150u

Scale Change
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
GAS UNITS
ATTENUATION
PERCENT SET
@ 60

OIL INDICATOR (RAITO)

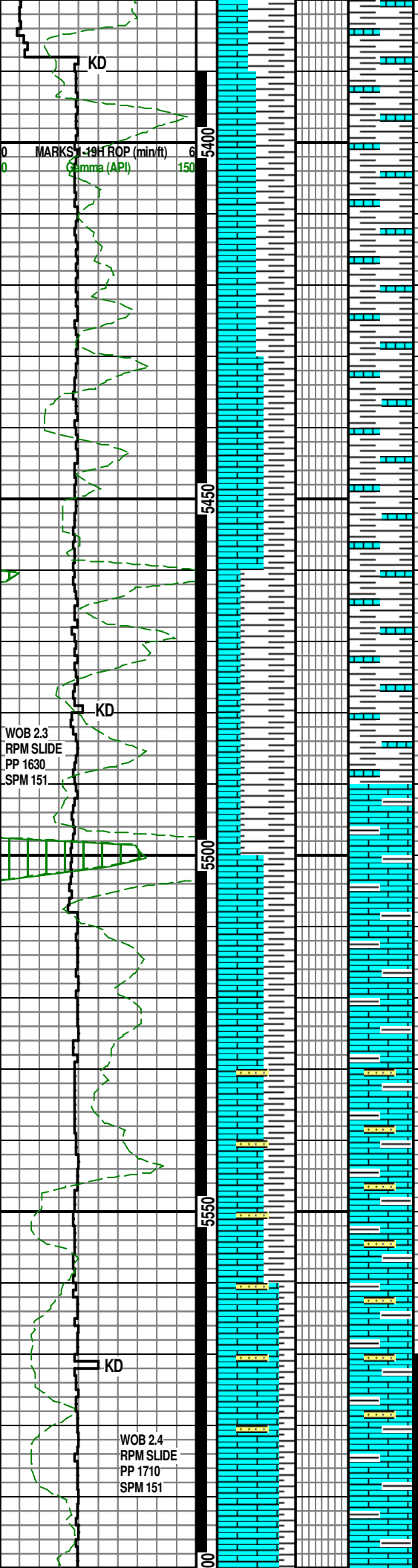
FORMATION GAS 74u
MAX @ 5,266'

DRILLING ON WATER
BASE MUD

CG 71u

DEPTH @ 5,297'
MW/VIS 9.8/41
PV/YP 19/6
GELS 2/6/0
FIL/CK 4.8/2/0
PH/SOL 11.3/7.2
H2O/OIL 89.8/0.0
CHL 58,000
HD 40

MW/VIS 9.8/41



FLUOR CUT OR RING, SH: SME RED,
MED-DK GRY, BLK GRY, INCRS BLK
CARB, PRED BLKY, SME SPLN, MICA,
MOD FRM, RGH TXT, SL TRS PYR, TRS
CHRT LT & DRK

SURVEY: 5,398' MD 5,238' TVD
INC. 48.8 / AZ. 180.9

LS: MSTLY CRM TO WHT, BLKY, MOD
FN- FN XLN, SL FRM- FRM, OCC BRIT, NO
FLUOR CUT OR RING, SH: SME RED,
MED-DK GRY, BLK GRY, PRED BLKY,
SME SPLN. MICA. MOD FRM. BGH TXT

SURVEY: 5,428' MD 5,257' TVD
INC. 51.3 / AZ. 181.8

LS: MSTLY CRM TO WHT, BLKY, MOD
FN- FN XLN, SL FRM- FRM, OCC BRIT, NO
FLUOR CUT OR RING, SH: SME RED,
MED-DK GRY, BLK GRY, PRED BLKY,
SME SPLN. MICA. MOD FRM. RGH TXT

SURVEY: 5,459' MD 5,276' TVD
INC. 54.4 / AZ. 182.40

LS: MSTLY CRM TO WHT, BLKY, MOD
FN- FN XLN, SL FRM- FRM, OCC BRIT, NO
FLUOR CUT OR RING, SH: SME RED,
MED-DK GRY, BLK GRY, PRED BLKY,
SME SPLN. MICA. MOD FRM. BGH TXT

SURVEY: 5,489' MD 5,293' TVD
INC. 57.3 / AZ. 183.1

LS: MSTLY CRM TO WHT, BLKY, MOD
FN- FN XLN, SL FRM- FRM, OCC BRIT, NO
FLUOR CUT OR RING, SH: SME RED,
MED-DK GRY, BLK GRY, PRED BLKY,
SME SPLN. MICA. MOD FRM. BGH TXT

SURVEY: 5,520' MD 5,309' TVD
INC. 60.4 / AZ. 183.9

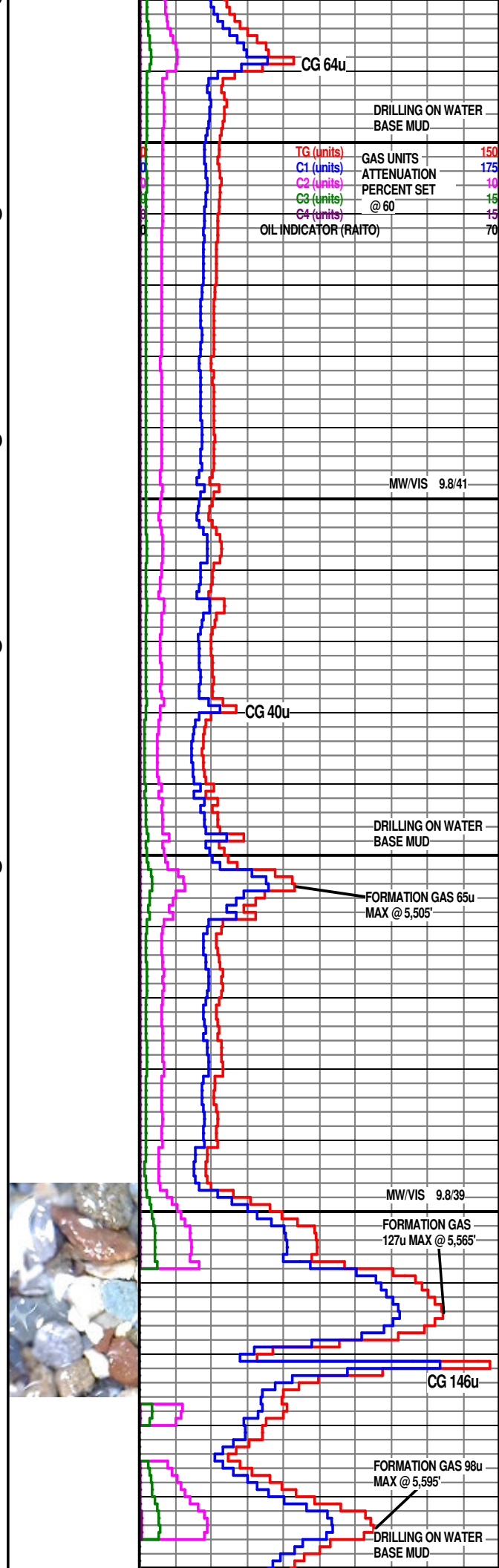
LS: OFF WHT/WHT, SNDY, BLKY,
MICROXLN, SL FRM- HD, OCC BRIT, TRS
OOL, TRS SS, NO FLUOR CUT OR RING,
SH: MED-DK GRY, BLK GRY, SME BLK,
PRED BLKY, SPLN, SL/MICA, SL/
FRM-FRM. RGH TXT

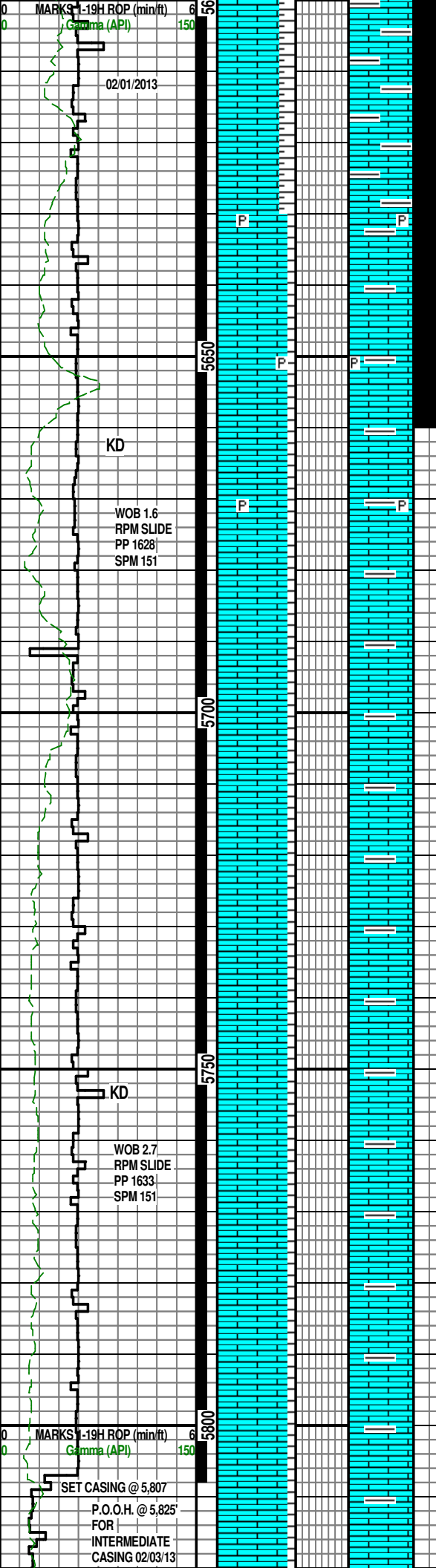
MISSISSIPPI LIME
5,546' MD/TVD 5,321'

LS: OFF/WHT TAN, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, TRS
OOL, TRS SS, NO FLUOR, BLU/WHT
RESD RING, WEAK CUT, SH: MED-DK
GRY, RED BROWN, PRED BLKY, SPLN,
SL/MICA, SL/FRM-FRM, RGH TXT,
BLU/WHT RESD RING. WK CUT

SURVEY: 5,581' MD 5,336' TVD
INC. 67.0 / AZ. 184.9

LS: OFF WHT, TAN BLKY, SL/SNDY,
MICROXLN, SL FRM- HD, TRS OOL, TRS
SS, NO FLUOR, BLU/WHT RESD RING,
WEAK CUT, SH: MED-DK GRY, RED
BROWN, PTER DIAL-CTN 21-1701





BROWN, TAN BLKY, SPLN, SL/MICA,
FRM, RGH TXT, BLU/WHT RESD RING, W
CUT

SURVEY: 5,611' MD 5,347' TVD
INC. 70.2 / AZ. 184.7

LS: OFF WHT, TAN BLKY, SL/SNDY,
MICROXLN, SL FRM- HD, TRS OOL, TRS
SS, NO FLUOR, BLU/WHT RESD RING,
WEAK CUT, SH: MED-DK GRY PRED
BLKY, SPLN, SL/MICA, FRM, RGH TXT,
BLU/WHT RESD RING, W CUT

SURVEY: 5,642' MD 5,356' TVD
INC. 73.6 / AZ. 185.1

LS: OFF WHT, TAN BLKY, SL/SNDY,
MICROXLN, SL FRM- HD, TRS OOL, TRS
SS, NO FLUOR, BLU/WHT RESD RING,
WEAK CUT, SH: MED-DK GRY PRED
BLKY, SPLN, SL/MICA, FRM, RGH TXT,
BLU/WHT RESD RING, W CUT

SURVEY: 5,672' MD 5,364' TVD
INC. 76.7 / AZ. 185.0

LS: OFF WHT, SME TAN, SNDY, BLKY,
MICROXLN, SL FRM- HD, OCC BRIT, OOL,
TRS SH: MED-DK GRY, PRED BLKY,
SPLN, SL/MICA, FRM, RGH TXT, NO
FLUOR, NO RING, NO CUT

SURVEY: 5,702' MD 5,370' TVD
INC. 80.1 / AZ. 185.2

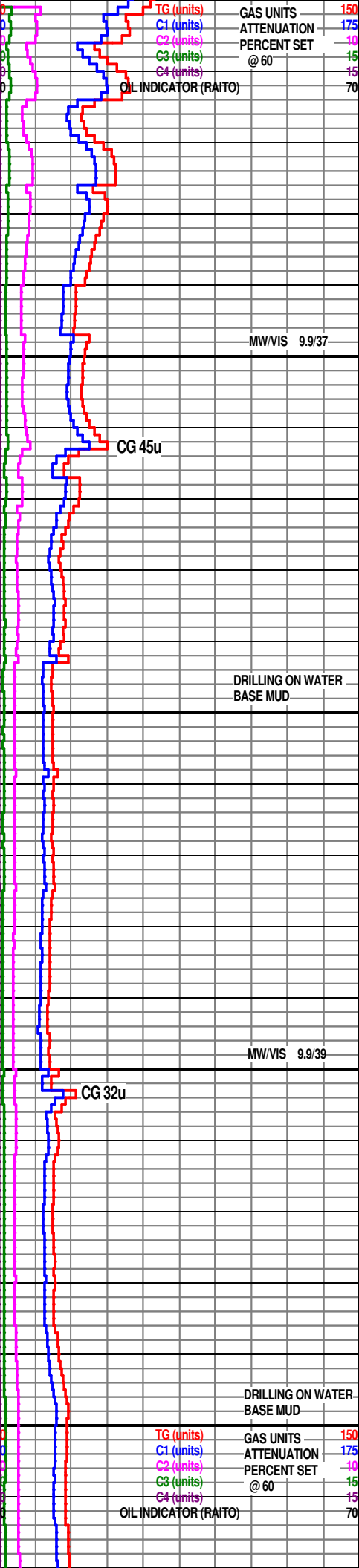
LS: OFF WHT, SME TAN, SNDY, BLKY,
MICROXLN, SL FRM- HD, OCC BRIT, OOL,
TRS SH: MED-DK GRY, PRED BLKY,
SPLN, SL/MICA, FRM, RGH TXT, NO
FLUOR, NO RING, NO CUT

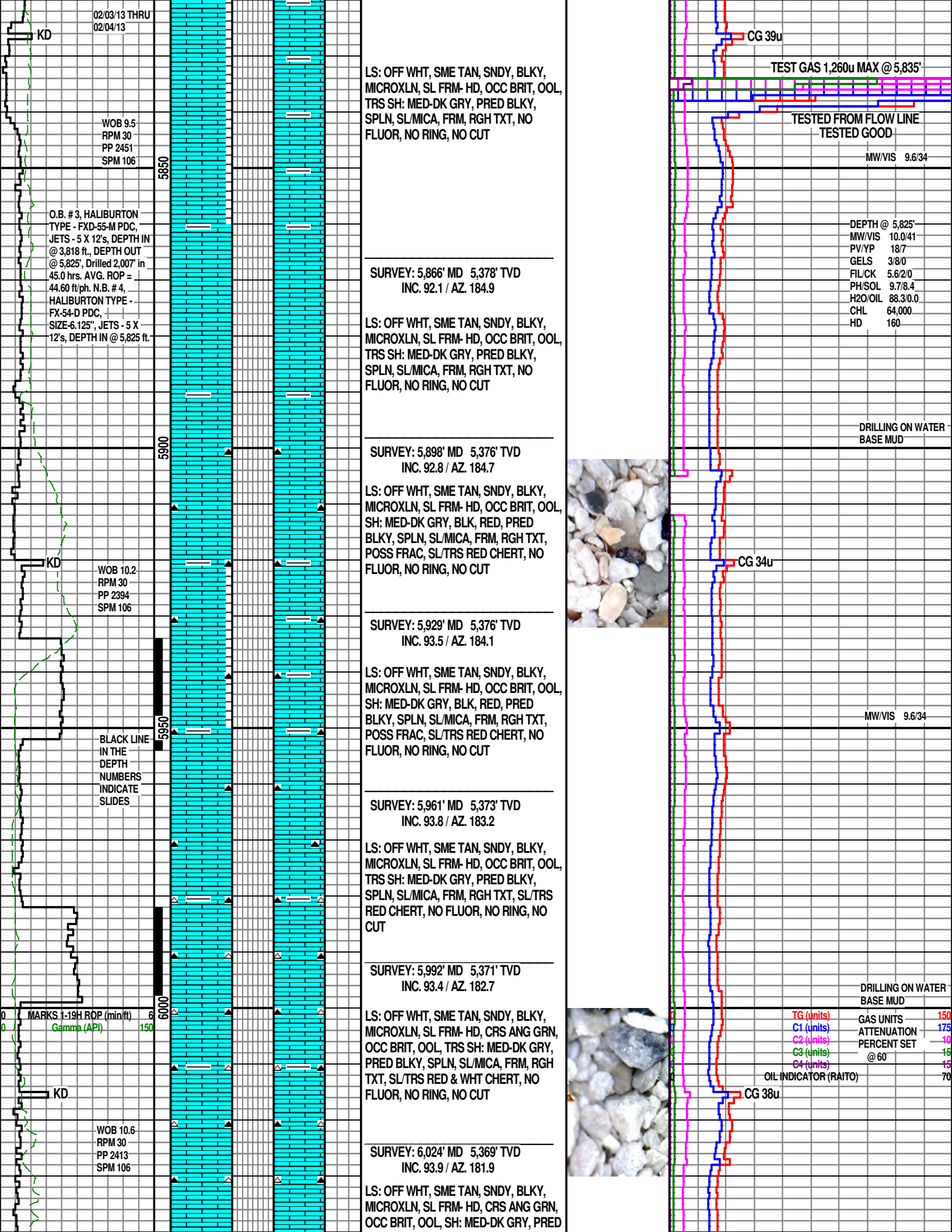
SURVEY: 5,733' MD 5,375' TVD
INC. 83.0 / AZ. 185.2

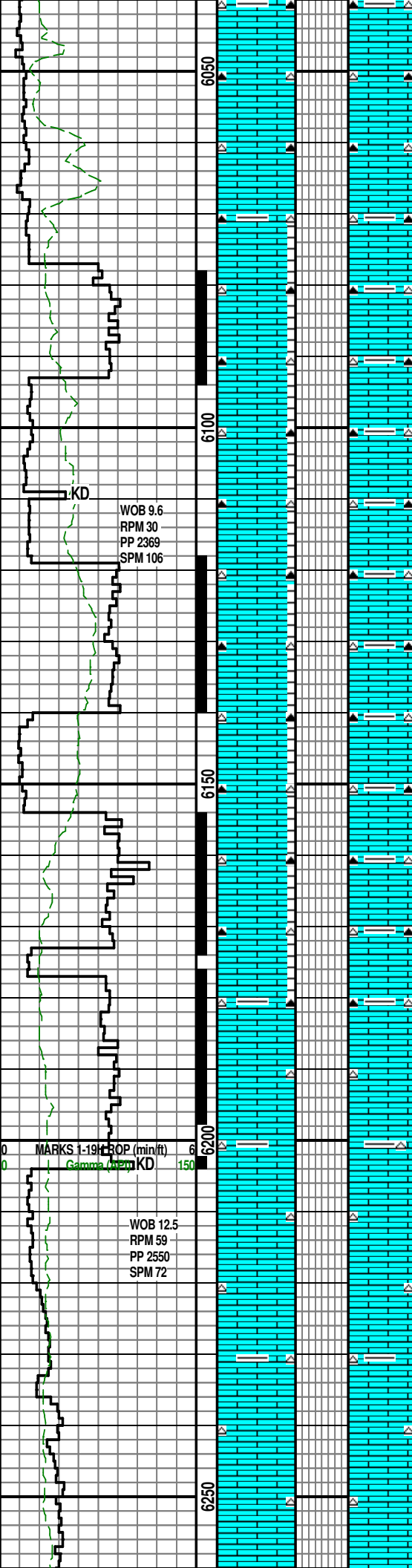
LS: OFF WHT, SME TAN, SNDY, BLKY,
MICROXLN, SL FRM- HD, OCC BRIT, OOL,
TRS SH: MED-DK GRY, PRED BLKY,
SPLN, SL/MICA, FRM, RGH TXT, NO
FLUOR, NO RING, NO CUT

LS: OFF WHT, SME TAN, SNDY, BLKY,
MICROXLN, SL FRM- HD, OCC BRIT, OOL,
TRS SH: MED-DK GRY, PRED BLKY,
SPLN, SL/MICA, FRM, RGH TXT, NO
FLUOR, NO RING, NO CUT

LS: OFF WHT, SME TAN, SNDY, BLKY,
MICROXLN, SL FRM- HD, OCC BRIT, OOL,
TRS SH: MED-DK GRY, PRED BLKY,
SPLN, SL/MICA, FRM, RGH TXT, NO
FLUOR, NO RING, NO CUT







BLKY, SPLN, SL/MICA, FRM, RGH TXT,
POSS FRAC, SL/TRS RED & WHT CHERT,
NO FLUOR, NO RING, NO CUT

SURVEY: 6,055' MD 5,366' TVD
INC. 94.5 / AZ. 182.0

LS: OFF WHT, SME TAN, SNDY, BLKY,
MICROXLN, SL FRM- HD, CRS ANG GRN,
OCC BRIT, OOL, SH: MED-DK GRY, PRED
BLKY, SPLN, SL/MICA, FRM, RGH TXT,
POSS FRAC, SL/TRS RED & WHT CHERT,
NO FLUOR, NO RING, NO CUT

SURVEY: 6,087' MD 5,364' TVD
INC. 93.9 / AZ. 181.2

LS: OFF WHT, SME TAN, SNDY, BLKY,
MICROXLN, SL FRM- HD, CRS ANG GRN,
OCC BRIT, OOL, SH: MED-DK GRY, PRED
BLKY, SPLN, SL/MICA, FRM, RGH TXT,
POSS FRAC, SL/TRS RED & WHT CHERT,
NO FLUOR, NO RING, NO CUT

SURVEY: 6,118' MD 5,362' TVD
INC. 93.6 / AZ. 181.0

LS: OFF WHT, SME TAN, SNDY, BLKY,
MICROXLN, SL FRM- HD, CRS ANG GRN,
OCC BRIT, OOL, SH: MED-DK GRY, PRED
BLKY, SPLN, SL/MICA, FRM, RGH TXT,
POSS FRAC, SL/TRS RED & WHT CHERT,
NO FLUOR, NO RING, NO CUT

SURVEY: 6,150' MD 5,360' TVD
INC. 92.0 / AZ. 180.7

LS: OFF WHT, SME TAN, SNDY, BLKY,
MICROXLN, SL FRM- HD, CRS ANG GRN,
OCC BRIT, OOL, SH: MED-DK GRY, PRED
BLKY, SPLN, SL/MICA, FRM, RGH TXT,
POSS FRAC, SL/TRS RED & WHT CHERT,
NO FLUOR, NO RING, NO CUT

SURVEY: 6,181' MD 5,360' TVD
INC. 90.2 / AZ. 180.2

LS: PRED OFF WHT, SME TAN, SNDY,
BLKY, MICROXLN, SL FRM- HD, CRS
ANG GRN, OCC BRIT, OOL, SME STN,
TRS SH: MED-DK GRY, PRED BLKY,
SPLN, SL/MICA, FRM, RGH TXT, SL/TRS
OFF WHT, CLR/TRANS CHERT, SL/OOL,
MICR-XLN, HD, NO FLUOR, NO RING, NO
CUT

SURVEY: 6,213' MD 5,360' TVD
INC. 89.7 / AZ. 179.6

LS: PRED OFF WHT, SME TAN, SNDY,
BLKY, MICROXLN, SL FRM- HD, OCC
BRIT, OOL, SME STN, SL/TRS SH:
MED-DK GRY, PRED BLKY, SPLN,
SL/MICA, FRM, RGH TXT, SL/TRS OFF
WHT, CLR/TRANS CHERT, SL/OOL,
MICR-XLN, HD, NO FLUOR, NO RING, NO
CUT

SURVEY: 6,244' MD 5,360' TVD
INC. 89.9 / AZ. 179.5

LS: PRED OFF WHT, SME TAN, SNDY,
BLKY, MICROXLN, SL FRM- HD, OCC
BRIT, OOL, SME STN, SL/TRS SH:
MED-DK GRY, PRED BLKY, SPLN,
SL/MICA, FRM, RGH TXT, SL/TRS OFF
WHT, CLR/TRANS CHERT, SL/OOL,
MICR-XLN, HD, NO FLUOR, NO RING, NO
CUT

MW/VIS 9.6/34

DRILLING ON WATER
BASE MUD



CG 28u

MW/VIS 9.40/33

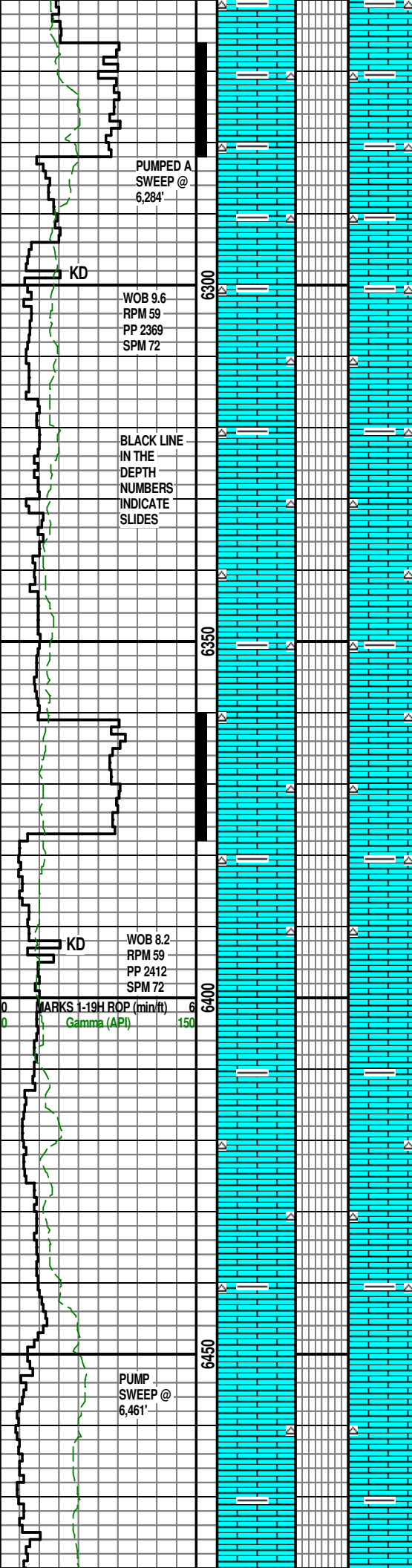
DRILLING ON WATER
BASE MUD



CG 27u

TG (units)	150
C1 (units)	175
C2 (units)	10
C3 (units)	15
C4 (units)	70
OIL INDICATOR (RAITO)	

MW/VIS 9.40/33



MED-DK GRY, SPLN, SL/MICA, FRM, RGH TXT, SL/TRS OFF WHT, CLR/TRANS CHERT, SL/OOL, MICR-XLN, HD, NO FLUOR, NO RING, NO CUT

SURVEY: 6,276' MD 5,360' TVD
INC. 89.0 / AZ. 179.4
LS: PRED OFF WHT, SME TAN, SNDY, BLKY, MICROXLN, SL FRM- HD, OCC BRIT, OOL, SME STN, TRS SH: MED-DK GRY, PRED BLKY, SPLN, SL/MICA, FRM, RGH TXT, SL/TRS OFF WHT, CLR/TRANS CHERT, SL/OOL, MICR-XLN, HD, NO FLUOR, NO RING, NO CUT

SURVEY: 6,307' MD 5,361' TVD
INC. 89.2 / AZ. 179.3
LS: PRED OFF WHT, SME TAN, SNDY, BLKY, MICROXLN, SL FRM- HD, OCC BRIT, OOL, SME STN, V-SL/TRS SH: MED-DK GRY, PRED BLKY, SPLN, SL/MICA, FRM, RGH TXT, SL/TRS OFF WHT, CLR/TRANS CHERT, SL/OOL, MICR-XLN, HD, NO FLUOR, NO RING, NO CUT

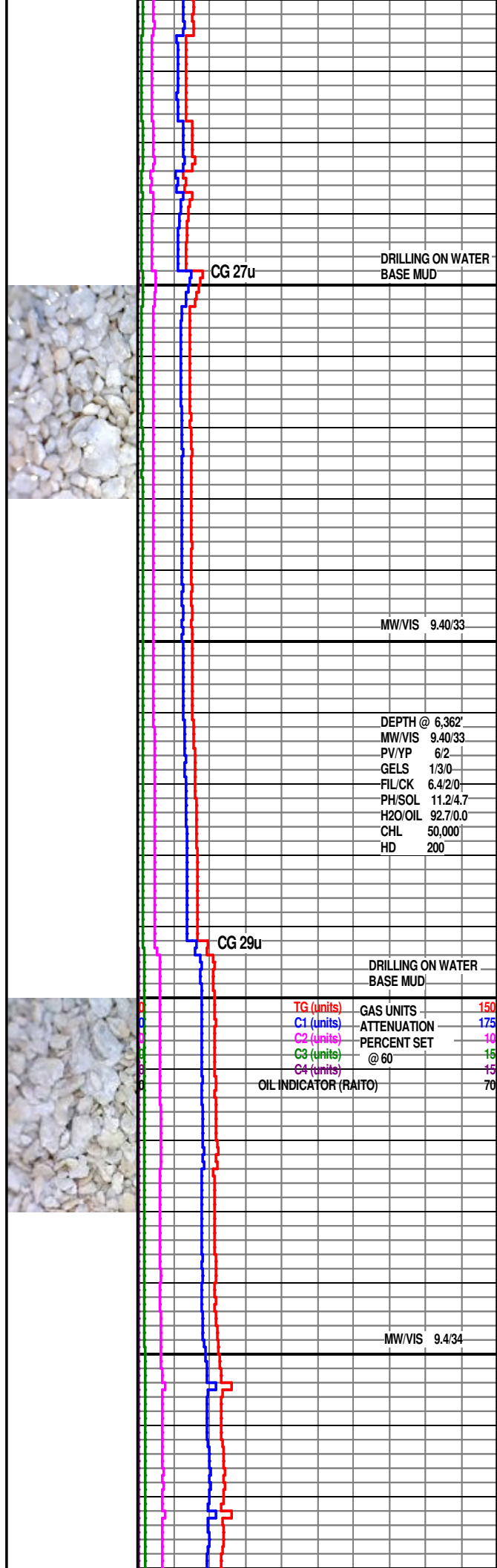
SURVEY: 6,338' MD 5,361' TVD
INC. 89.5 / AZ. 178.8
LS: PRED OFF WHT, SME TAN, SNDY, BLKY, MICROXLN, SL FRM- HD, OCC BRIT, OOL, SME STN, V-SL/TRS SH: MED-DK GRY, PRED BLKY, SPLN, SL/MICA, FRM, RGH TXT, SL/TRS OFF WHT, CLR/TRANS CHERT, SL/OOL, MICR-XLN, HD, NO FLUOR, NO RING, NO CUT

SURVEY: 6,370' MD 5,362' TVD
INC. 88.9 / AZ. 177.9
LS: PRED OFF WHT, SME TAN, SNDY, BLKY, MICROXLN, SL FRM- HD, OCC BRIT, OOL, SME STN, V-SL/TRS SH: MED-DK GRY, PRED BLKY, SPLN, SL/MICA, FRM, RGH TXT, SL/TRS OFF WHT, CLR/TRANS CHERT, SL/OOL, MICR-XLN, HD, NO FLUOR, NO RING, NO CUT

SURVEY: 6,401' MD 5,362' TVD
INC. 88.7 / AZ. 178.0
LS: PRED OFF WHT, SME TAN, SNDY, BLKY, MICROXLN, SL FRM- HD, OCC BRIT, OOL, SME STN, V-SL/TRS SH: MED-DK GRY, PRED BLKY, SPLN, SL/MICA, FRM, RGH TXT, SL/TRS OFF WHT, CLR/TRANS CHERT, SL/OOL, MICR-XLN, HD, NO FLUOR, NO RING, NO CUT

SURVEY: 6,433' MD 5,363' TVD
INC. 88.7 / AZ. 177.4
LS: PRED OFF WHT, SME TAN, SNDY, BLKY, MICROXLN, SL FRM- HD, OCC BRIT, OOL, SME STN, V-SL/TRS SH: MED-DK GRY, PRED BLKY, SPLN, SL/MICA, FRM, RGH TXT, SL/TRS OFF WHT, CLR/TRANS CHERT, SL/OOL, MICR-XLN, HD, NO FLUOR, NO RING, NO CUT

SURVEY: 6,464' MD 5,364' TVD
INC. 88.5 / AZ. 177.4
LS: PRED OFF WHT, SME TAN, SNDY, BLKY, MICROXLN, SL FRM- HD, OCC BRIT, OOL, SME STN, V-SL/TRS SH:



DRILLING ON WATER BASE MUD

MW/VIS 9.40/33

DEPTH @ 6,362'
MW/VIS 9.40/33
PV/YP 6/2
GELS 1/3/0
FIL/CK 6.4/2.0
PH/SOL 11.2/4.7
H2O/OIL 92.7/0.0
CHL 50,000
HD 200

DRILLING ON WATER BASE MUD

TG (units) 150
C1 (units) 175
C2 (units) 10
C3 (units) 15
C4 (units) 15
OIL INDICATOR (RAIT) 70

MW/VIS 9.4/34

WOB 14.5
RPM 59
PP 2520
SPM 72

KD

6500

6550

6600

MARKS 1-19 H ROP (min/ft)
Gamma (API)

0 0 6 150

02/05/13

6650

WOB 7.1
RPM 59
PP 2450
SPM 70

KD

WOB 10.3
RPM 59
PP 2657
SPM 72

KD

6700

6750

6800

6850

6900

6950

7000

7050

7100

7150

7200

7250

7300

7350

7400

7450

7500

7550

7600

7650

7700

7750

7800

7850

7900

7950

8000

8050

8100

8150

8200

8250

8300

8350

8400

8450

8500

8550

8600

8650

8700

8750

8800

8850

8900

8950

9000

9050

9100

9150

9200

9250

9300

9350

9400

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10000

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10100

10150

10200

10250

10300

10350

10400

10450

10500

10550

10600

10650

10700

10750

10800

10850

10900

10950

11000

11050

11100

11150

11200

11250

11300

11350

11400

11450

11500

11550

11600

11650

11700

11750

11800

11850

11900

11950

12000

12050

12100

12150

12200

12250

12300

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12400

12450

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12600

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13100

13150

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13650

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14150

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14600

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15100

15150

15200

15250

15300

15350

15400

15450

15500

15550

15600

15650

15700

15750

15800

15850

15900

15950

16000

16050

16100

16150

16200

16250

16300

16350

16400

16450

16500

16550

16600

16650

16700

16750

16800

16850

16900

16950

17000

17050

17100

17150

17200

17250

17300

17350

17400

17450

17500

17550

17600

17650

17700

17750

17800

17850

17900

17950

18000

18050

18100

18150

18200

18250

18300

18350

18400

18450

18500

18550

18600

18650

18700

18750

18800

18850

18900

18950

19000

19050

19100

19150

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19250

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19550

19600

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19800

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20350

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20450

20500

20550

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23150

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25100

25150

25200

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25850

25900

25950

26000

26050

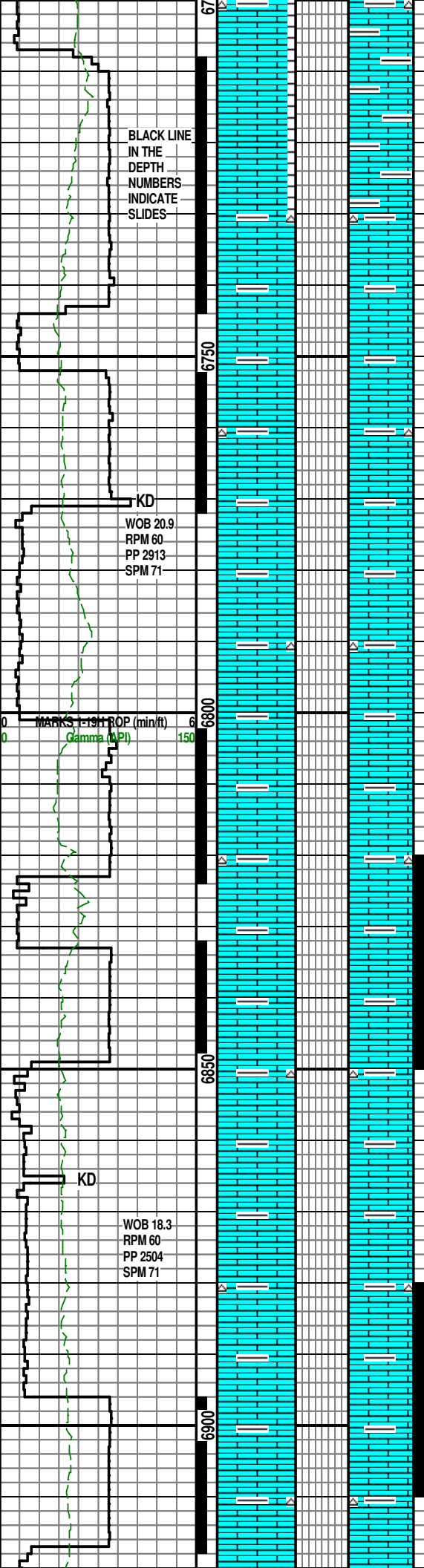
26100

26150

26200

26250

26300



BLACK LINE
IN THE
DEPTH
NUMBERS
INDICATE
SLIDES

KB
WOB 20.9
RPM 60
PP 2913
SPM 71

MARKS 1-19H BOP (min/ft)
Gamma (API)

KB
WOB 18.3
RPM 60
PP 2504
SPM 71

SME RED, PRED BLKY, SPLN, SL/MICA,
FRM, RGH TXT, SL/TRS OFF WHT,
CLR/TRANS CHERT, SL/OOL, MICR-XLN,
HD, NO FLUOR, NO RING, NO CUT

SURVEY: 6,716' MD 5,366' TVD
INC. 86.9 / AZ. 175.7
LS: PRED OFF WHT, SME TAN, SNDY,
BLKY, MICROXLN, SL FRM- HD, OCC
BRIT, OOL, SME STN, SH: MED-DK GRY,
SME RED, PRED BLKY, SPLN, SL/MICA,
FRM, RGH TXT, SL/TRS OFF WHT,
CLR/TRANS CHERT, SL/OOL, MICR-XLN,
HD, NO FLUOR, NO RING, NO CUT

SURVEY: 6,748' MD 5,367' TVD
INC. 86.5 / AZ. 176.5
LS: PRED OFF WHT, SME TAN, SNDY,
BLKY, MICROXLN, SL FRM- HD, OCC
BRIT, OOL, SME STN, TRS SH: MED-DK
GRY, SME RED, PRED BLKY, SPLN,
SL/MICA, FRM, RGH TXT, SL/TRS OFF
WHT, CLR/TRANS CHERT, SL/OOL,
MICR-XLN, HD, NO FLUOR, NO RING, NO
CUT

SURVEY: 6,779' MD 5,370' TVD
INC. 86.7 / AZ. 176.7
LS: PRED OFF WHT, SME TAN, SNDY,
BLKY, MICROXLN, SL FRM- HD, OCC
BRIT, OOL, SME STN, TRS SH: MED-DK
GRY, SME RED, PRED BLKY, SPLN,
SL/MICA, FRM, RGH TXT, SL/TRS OFF
WHT, CLR/TRANS CHERT, SL/OOL,
MICR-XLN, HD, NO FLUOR, NO RING, NO
CUT

SURVEY: 6,811' MD 5,372' TVD
INC. 85.8 / AZ. 177.3
LS: PRED OFF WHT, SME TAN, SNDY,
BLKY, MICROXLN, SL FRM- HD, OCC
BRIT, OOL, SME STN, TRS SH: MED-DK
GRY, PRED BLKY, SPLN, MICA, FRM,
TRS OFF WHT, CLR, CHERT, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU RING, FR
CUT

SURVEY: 6,842' MD 5,374' TVD
INC. 85.9 / AZ. 178.5
LS: PRED OFF WHT, SME TAN, SNDY,
BLKY, MICROXLN, SL FRM- HD, OCC
BRIT, OOL, SME STN, TRS SH: MED-DK
GRY, PRED BLKY, SPLN, MICA, FRM,
TRS OFF WHT, CLR, CHERT, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU RING, FR
CUT

SURVEY: 6,873' MD 5,376' TVD
INC. 86.2 / AZ. 178.3
LS: PRED OFF WHT, SME TAN, SNDY,
BLKY, MICROXLN, SL FRM- HD, OCC
BRIT, OOL, SME STN, TRS SH: MED-DK
GRY, PRED BLKY, SPLN, MICA, FRM,
TRS OFF WHT, CLR CHERT, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU RING,
WK CUT

SURVEY: 6,905' MD 5,378' TVD
INC. 86.6 / AZ. 178.6
LS: PRED OFF WHT, SME TAN, SNDY,
BLKY, MICROXLN, SL FRM- HD, OCC
BRIT, OOL, SME STN, TRS SH: MED-DK



DEPTH @ 6,362'	
MW/VIS	9.40/33
PV/YP	6/2
GELS	1/3/0
FIL/CK	6.4/2/0
PH/SOL	11.2/4.7
H2O/OIL	92.7/0.0
CHL	50,000
HD	200

MW/VIS 9.40/33

CG 44u

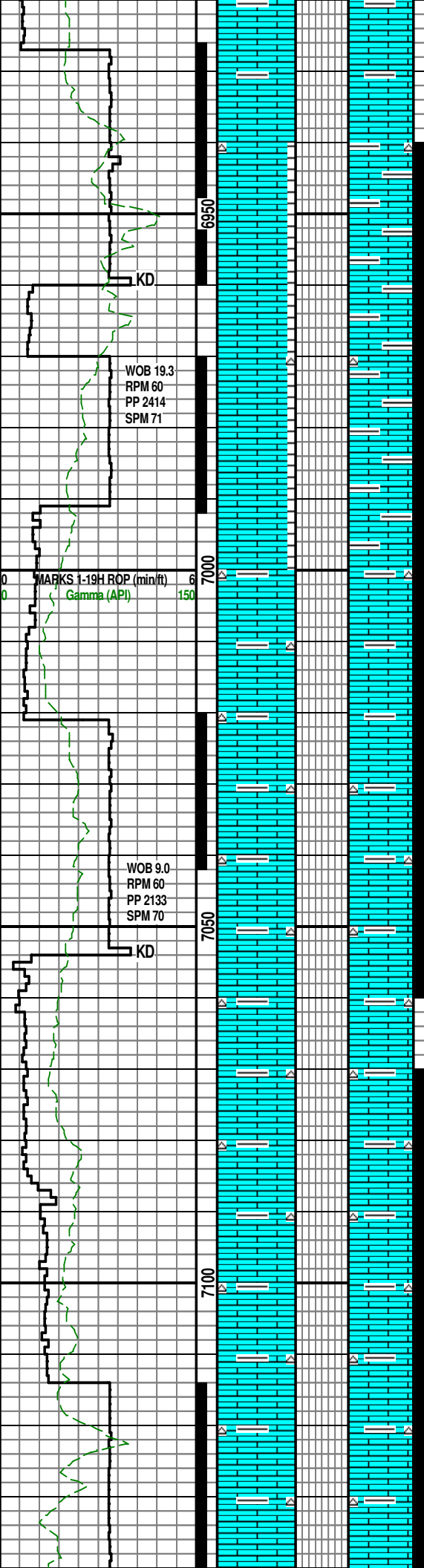
DRILLING ON WATER
BASE MUD

TG (units)	150
C1 (units)	175
C2 (units)	10
C3 (units)	15
C4 (units)	15
OIL INDICATOR (RAITO)	70

GAS UNITS	150
ATTENUATION	175
PERCENT SET	10
@ 60	15
	15
	70

CG 34u

DRILLING ON WATER
BASE MUD



SHR, OOL, SME STN, TRS SH: LT GRY, PRED BLKY, SPLN, MICA, FRM, TRS OFF WHT, CLR CHERT, SL/OOL, MICR-XLN, HD, NO FLUOR, BLU RING, WK CUT

SURVEY: 6,936' MD 5,380' TVD
INC. 87.6 / AZ. 180.0

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, TRS SH: LT GRY, PRED BLKY, SPLN, MICA, FRM, CHRT: CLR, SL/OOL, MICR-XLN, HD, NO FLUOR, BLU/WHT RING, WK CUT

SURVEY: 6,968' MD 5,381' TVD
INC. 88.5 / AZ. 180.1

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, TRS SH: LT GRY, PRED BLKY, SPLN, MICA, FRM, CHRT: CLR, SL/OOL, MICR-XLN, HD, NO FLUOR, BLU/WHT RING, WK CUT

SURVEY: 6,999' MD 5,381' TVD
INC. 89.6 / AZ. 180.7

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, TRS SH: LT GRY, PRED BLKY, SPLN, MICA, FRM, CHRT: CLR, SL/OOL, MICR-XLN, HD, NO FLUOR, BLU/WHT RING, WK CUT

SURVEY: 7,031' MD 5,381' TVD
INC. 90.5 / AZ. 181.7

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, TRS SH: LT GRY, PRED BLKY, SPLN, MICA, FRM, CHRT: CLR, SL/OOL, MICR-XLN, HD, NO FLUOR, BLU/WHT RING, WK CUT

SURVEY: 7,062' MD 5,381' TVD
INC. 90.6 / AZ. 181.7

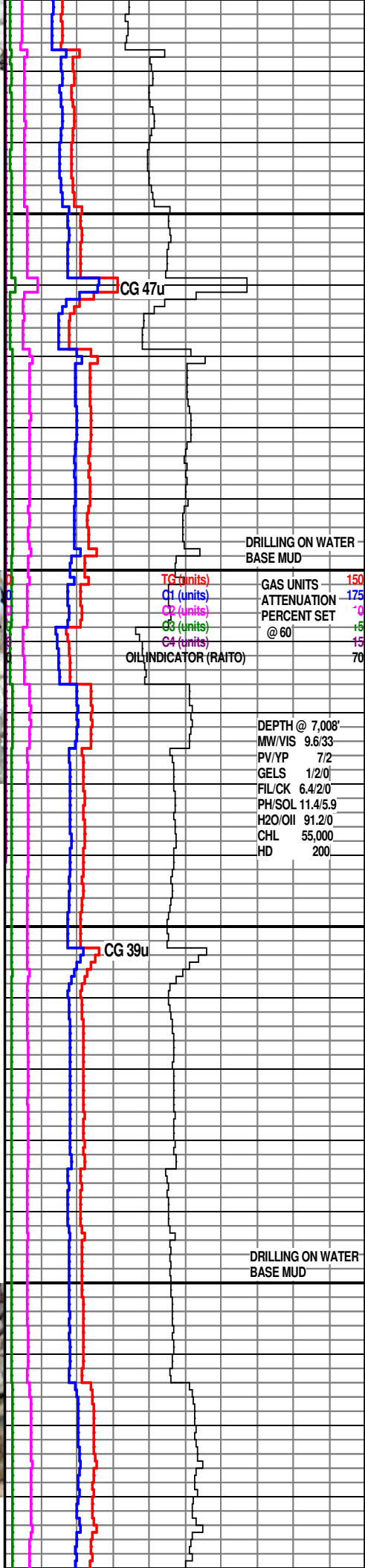
LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, TRS SH: LT GRY, PRED BLKY, SPLN, MICA, FRM, CHRT: CLR, SL/OOL, MICR-XLN, HD, NO FLUOR, BLU/WHT RING, WK CUT

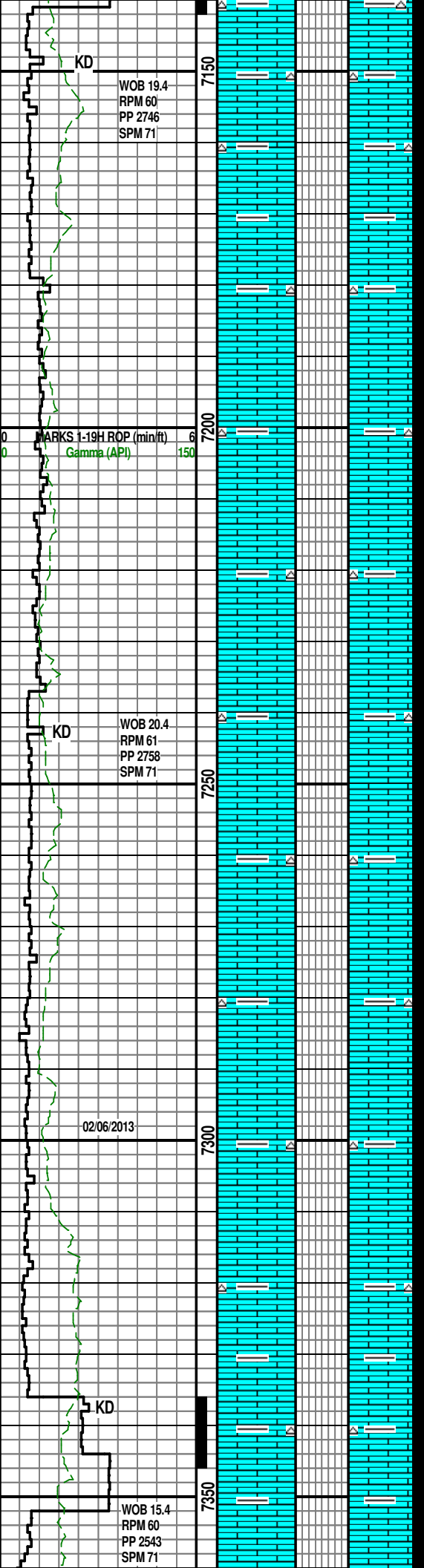
SURVEY: 7,094' MD 5,381' TVD
INC. 90.6 / AZ. 181.7

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, TRS SH: LT GRY, PRED BLKY, SPLN, MICA, FRM, CHRT: CLR, SL/OOL, MICR-XLN, HD, NO FLUOR, BLU/WHT RING, WK CUT

SURVEY: 7,125' MD 5,380' TVD
INC. 91.6 / AZ. 181.9

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, TRS SH: LT GRY, PRED BLKY,





SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD,
DULL GOLD FLUOR, BLU/WHT RING,
FAIR CUT

SURVEY: 7,157' MD 5,379' TVD
INC. 92.2 / AZ. 182.1

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD,
DULL GOLD FLUOR, BLU/WHT RING,
FAIR CUT

SURVEY: 7,188' MD 5,378' TVD
INC. 92.6 / AZ. 181.6

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, CHRT: CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU/WHT
RING, WK CUT

SURVEY: 7,220' MD 5,376' TVD
INC. 92.6 / AZ. 181.6

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, CHRT: CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU/WHT
RING, WK CUT

SURVEY: 7,251' MD 5,375' TVD
INC. 92.8 / AZ. 181.9

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, CHRT: CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU/WHT
RING, WK CUT

SURVEY: 7,283' MD 5,372' TVD
INC. 93.6 / AZ. 181.8

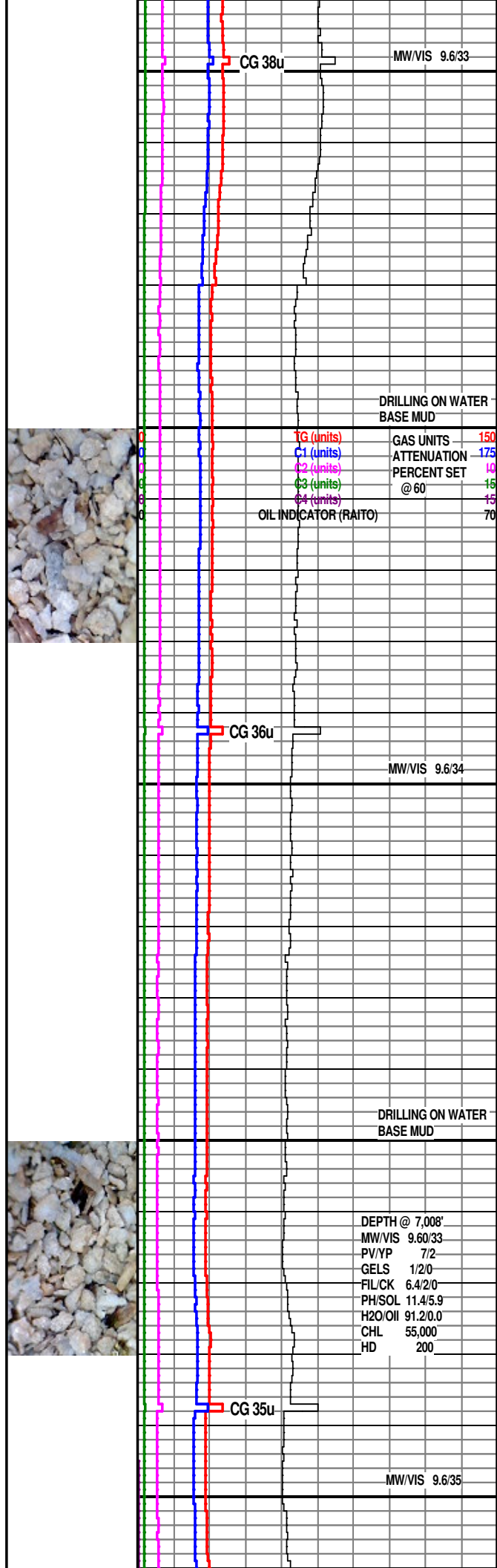
LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, CHRT: CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU/WHT
RING, WK CUT

SURVEY: 7,314' MD 5,371' TVD
INC. 94.0 / AZ. 181.8

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, CHRT: CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU/WHT
RING, WK CUT

SURVEY: 7,346' MD 5,367' TVD
INC. 93.5 / AZ. 181.4

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,



CG 38u MW/VIS 9.6/33

DRILLING ON WATER
BASE MUD

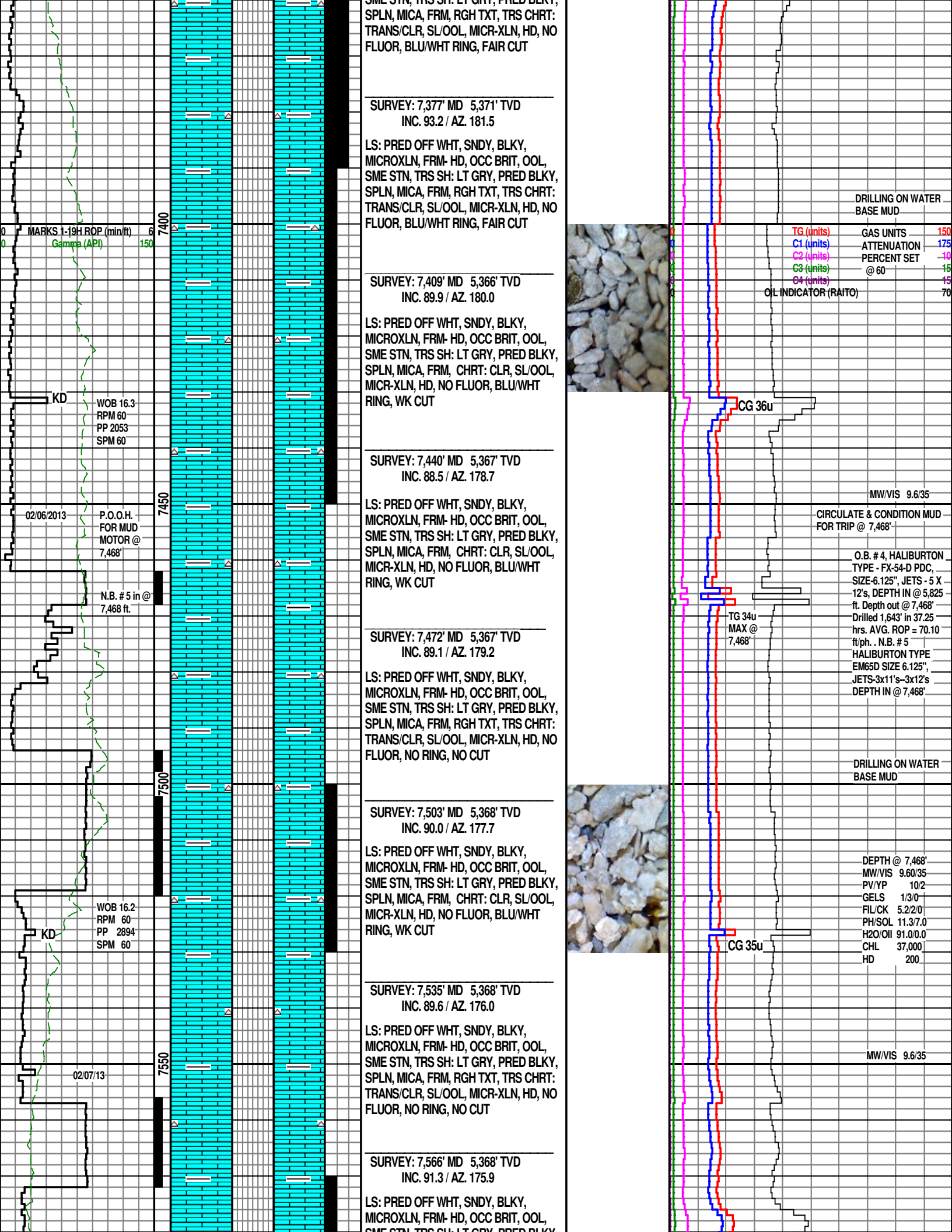
GAS UNITS 150
ATTENUATION 175
PERCENT SET 10
@ 60 15
OIL INDICATOR (RAITO) 70

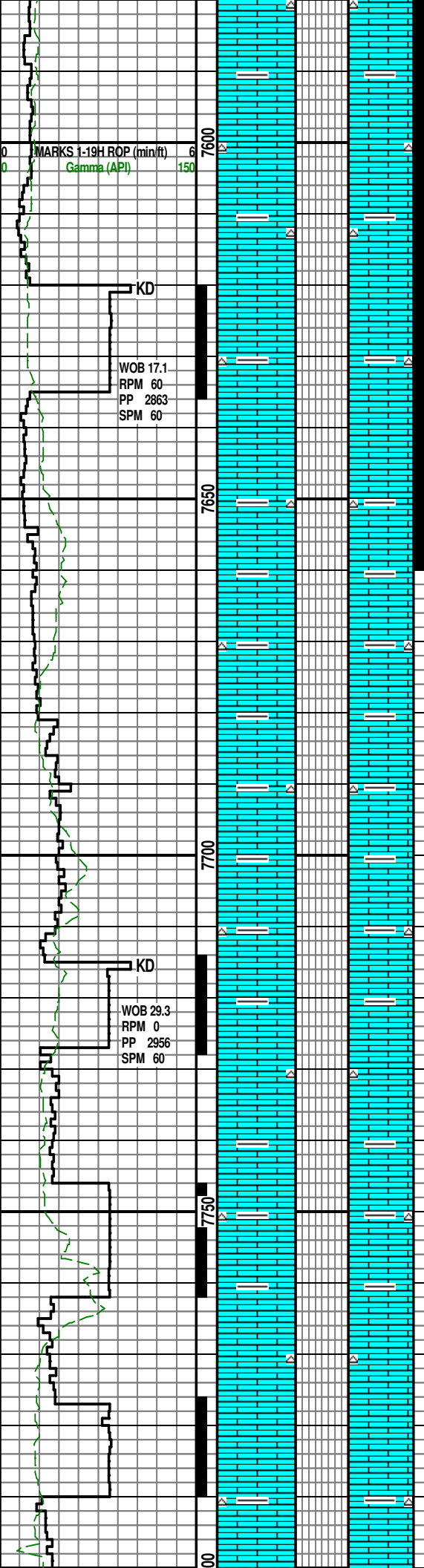
CG 36u MW/VIS 9.6/34

DRILLING ON WATER
BASE MUD

DEPTH @ 7,008'
MW/VIS 9.60/33
PV/YP 7/2
GELS 1/2/0
FIL/CK 6.4/2/0
PH/SOL 11.4/5.9
H2O/OIL 91.2/0.0
CHL 55,000
HD 200

CG 35u MW/VIS 9.6/35





SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, CHRT: CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU/WHT
RING, WK CUT

SURVEY: 7,598' MD 5,366' TVD
INC. 93.0 / AZ. 176.6

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, CHRT: CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU/WHT
RING, WK CUT

SURVEY: 7,629' MD 5,364' TVD
INC. 94.0 / AZ. 177.8

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, CHRT: CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, BLU/WHT
RING, WK CUT

SURVEY: 7,661' MD 5,362' TVD
INC. 94.6 / AZ. 177.9

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD, NO
FLUOR, NO RING, NO CUT

SURVEY: 7,692' MD 5,359' TVD
INC. 94.9 / AZ. 177.7

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD, NO
FLUOR, NO RING, NO CUT

SURVEY: 7,724' MD 5,356' TVD
INC. 94.6 / AZ. 178.1

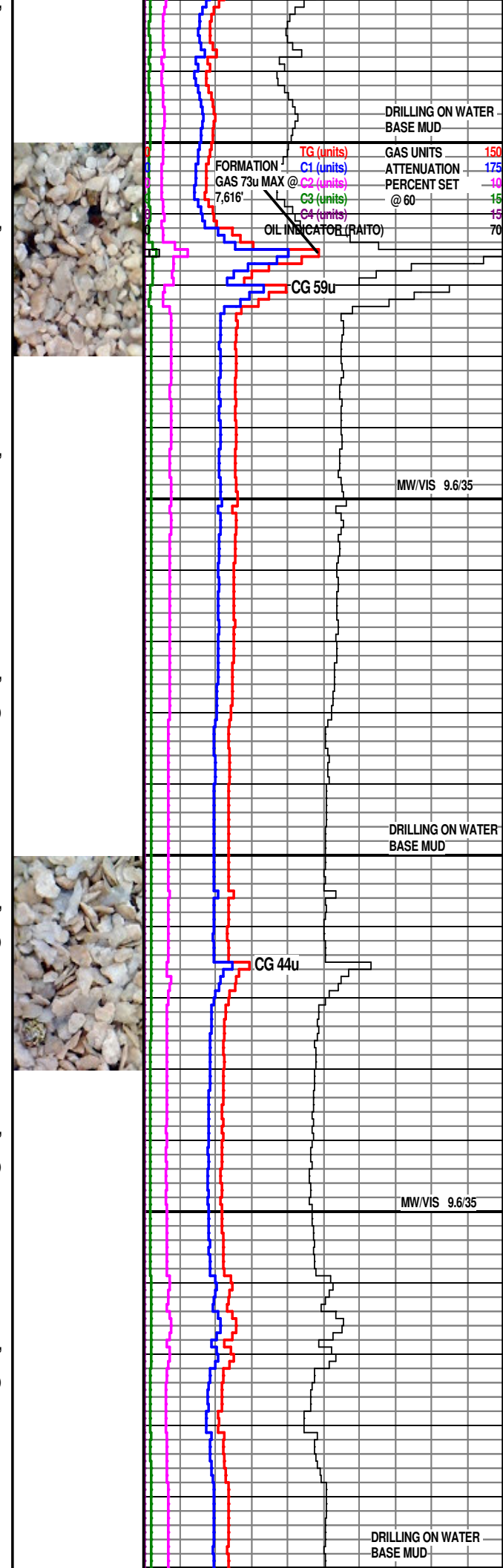
LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD, NO
FLUOR, NO RING, NO CUT

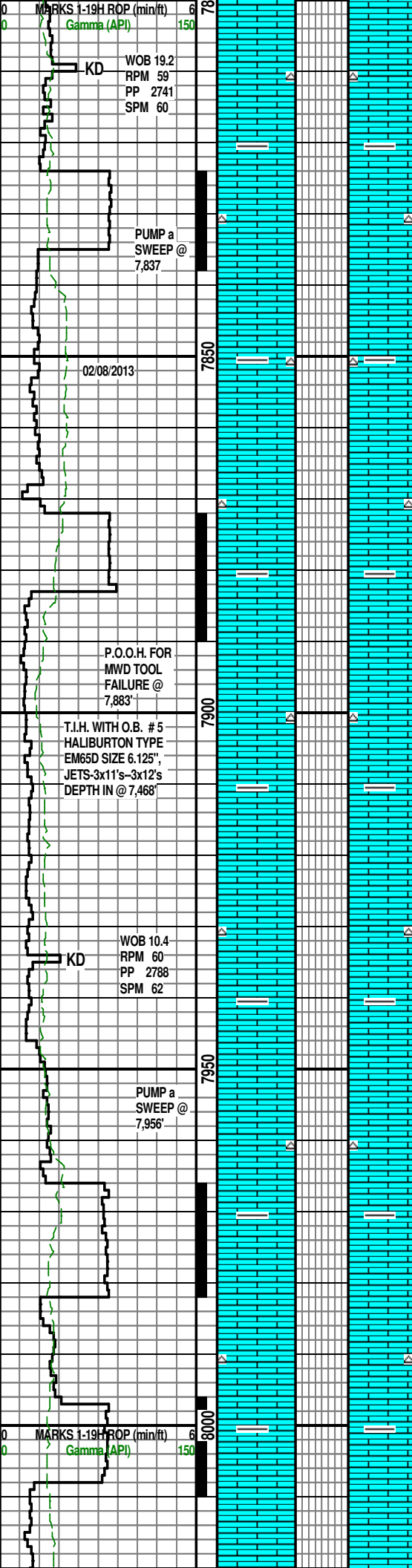
SURVEY: 7,755' MD 5,354' TVD
INC. 93.7 / AZ. 179.2

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD, NO
FLUOR, NO RING, NO CUT

SURVEY: 7,787' MD 5,353' TVD
INC. 92.7 / AZ. 180.2

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,





SME STN, LT GRY, PRED BLKY,
SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD, NO
FLUOR, NO RING, NO CUT

SURVEY: 7,818' MD 5,351' TVD
INC. 92.5 / AZ. 180.5

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD, NO
FLUOR, NO RING, NO CUT

SURVEY: 7,849' MD 5,350' TVD
INC. 91.6 / AZ. 180.8

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD, NO
FLUOR, NO RING, NO CUT

SURVEY: 7,881' MD 5,350' TVD
INC. 90.6 / AZ. 181.0

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD, NO
FLUOR, NO RING, NO CUT

SURVEY: 7,912' MD 5,349' TVD
INC. 90.2 / AZ. 181.0

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, TRS SH: LT GRY, PRED BLKY,
SPLN, MICA, FRM, RGH TXT, TRS CHRT:
TRANS/CLR, SL/OOL, MICR-XLN, HD, NO
FLUOR, NO RING, NO CUT

SURVEY: 7,944' MD 5,349' TVD
INC. 90.5 / AZ. 181.8

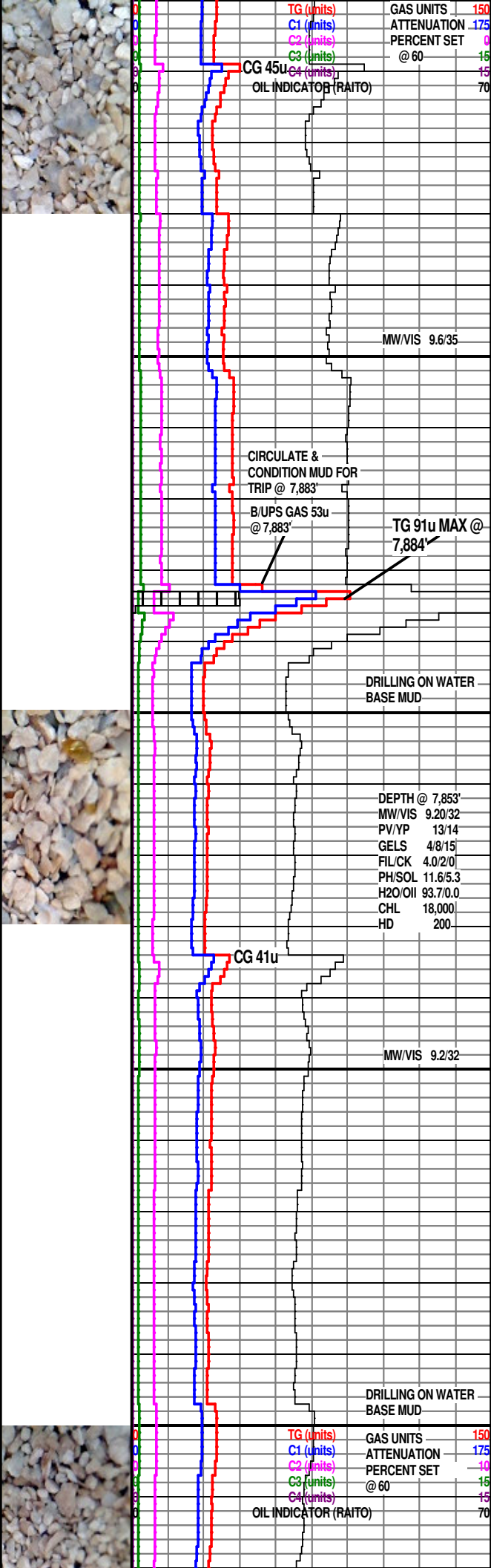
LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, SL/TRS SH: LT GRY, PRED
BLKY, SPLN, MICA, FRM, RGH TXT,
SL/TRS CHRT: TRANS/CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, NO RING, NO
CUT

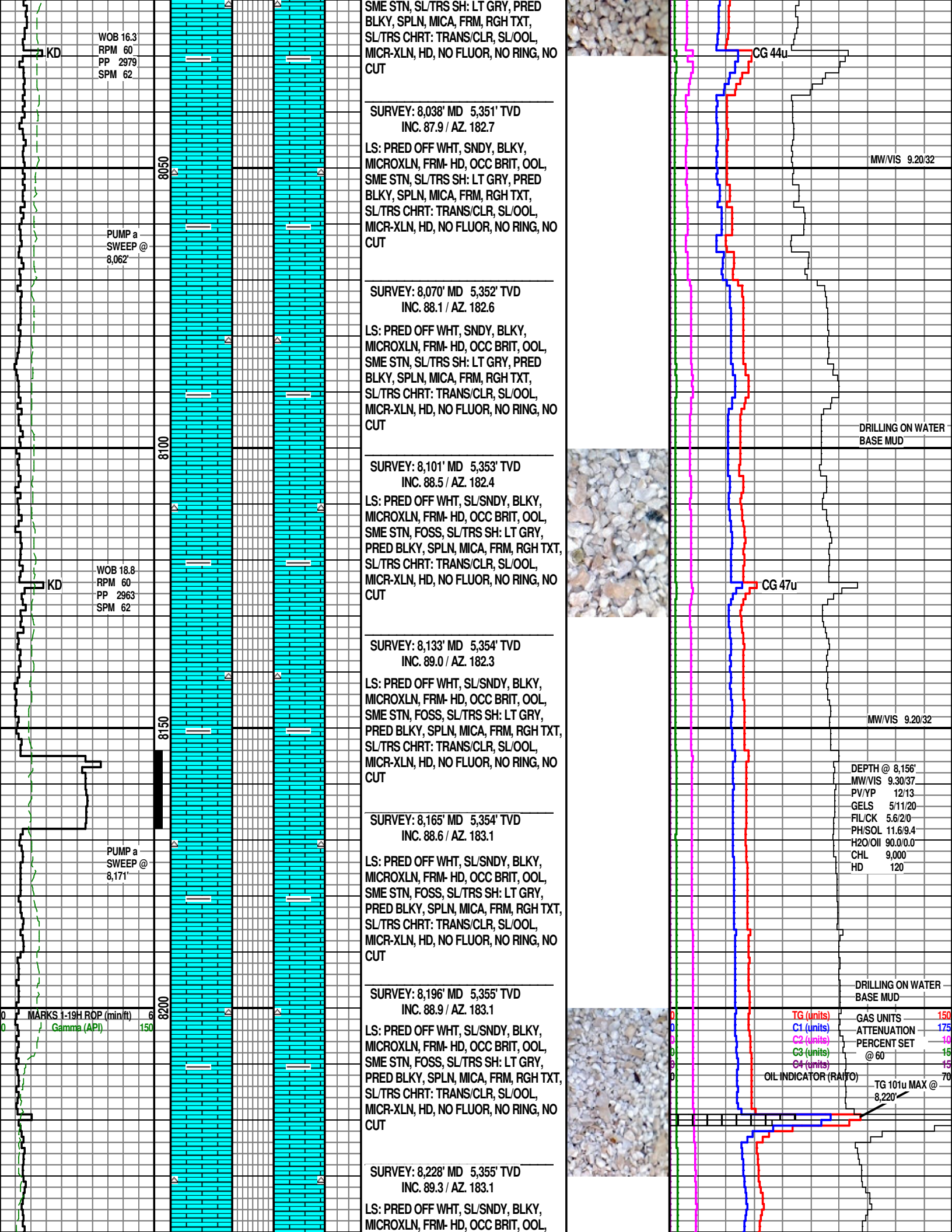
SURVEY: 7,975' MD 5,349' TVD
INC. 89.7 / AZ. 181.7

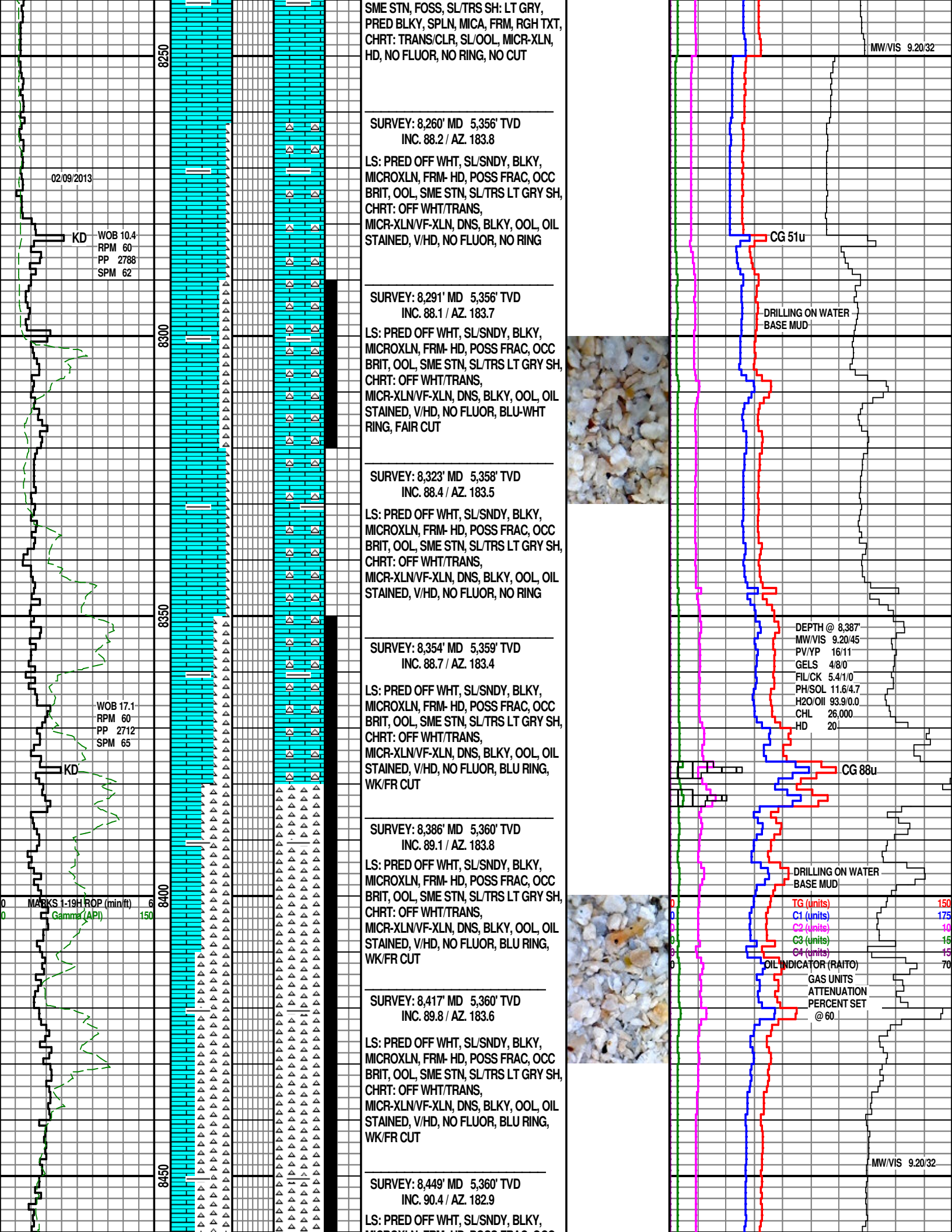
LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, SL/TRS SH: LT GRY, PRED
BLKY, SPLN, MICA, FRM, RGH TXT,
SL/TRS CHRT: TRANS/CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, NO RING, NO
CUT

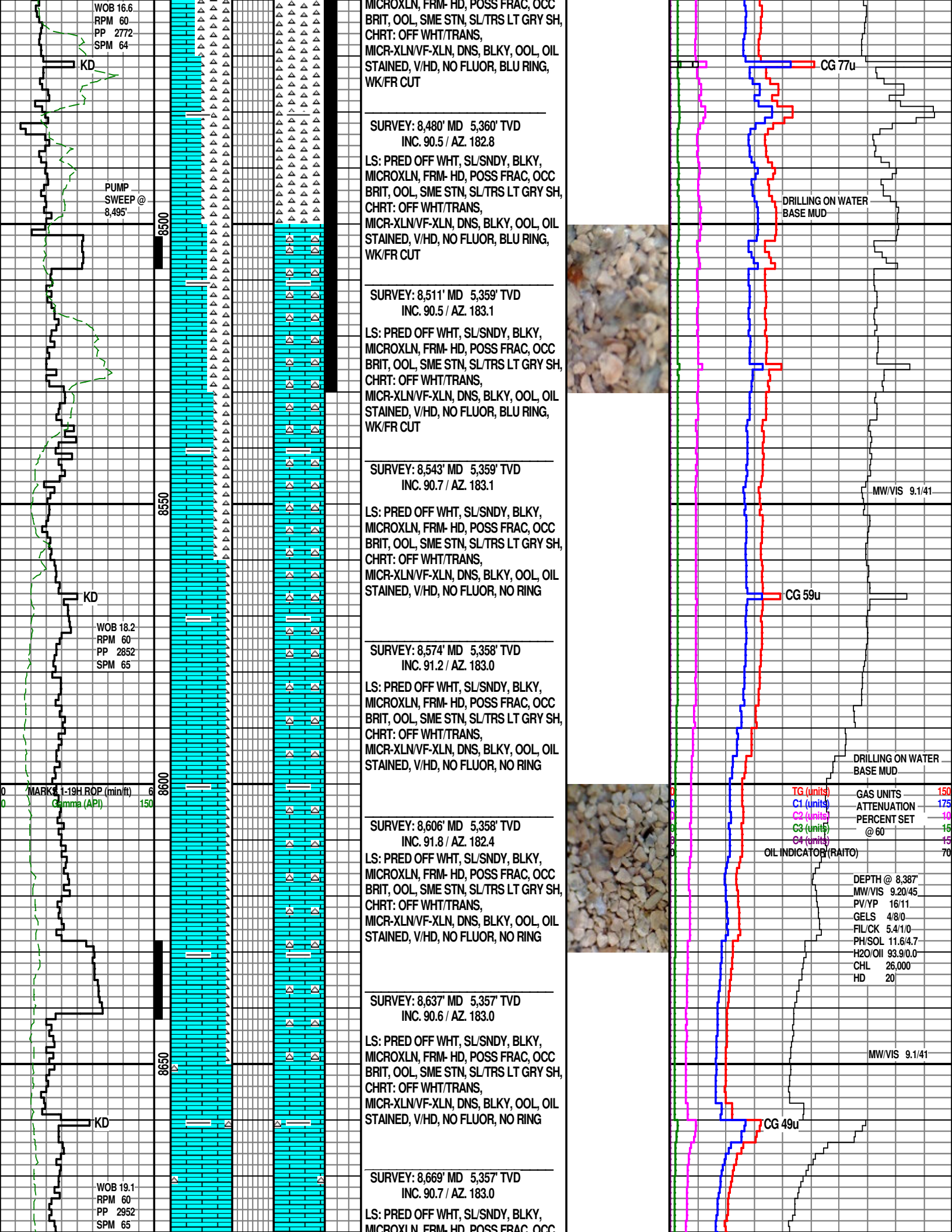
SURVEY: 8,007' MD 5,350' TVD
INC. 88.2 / AZ. 182.7

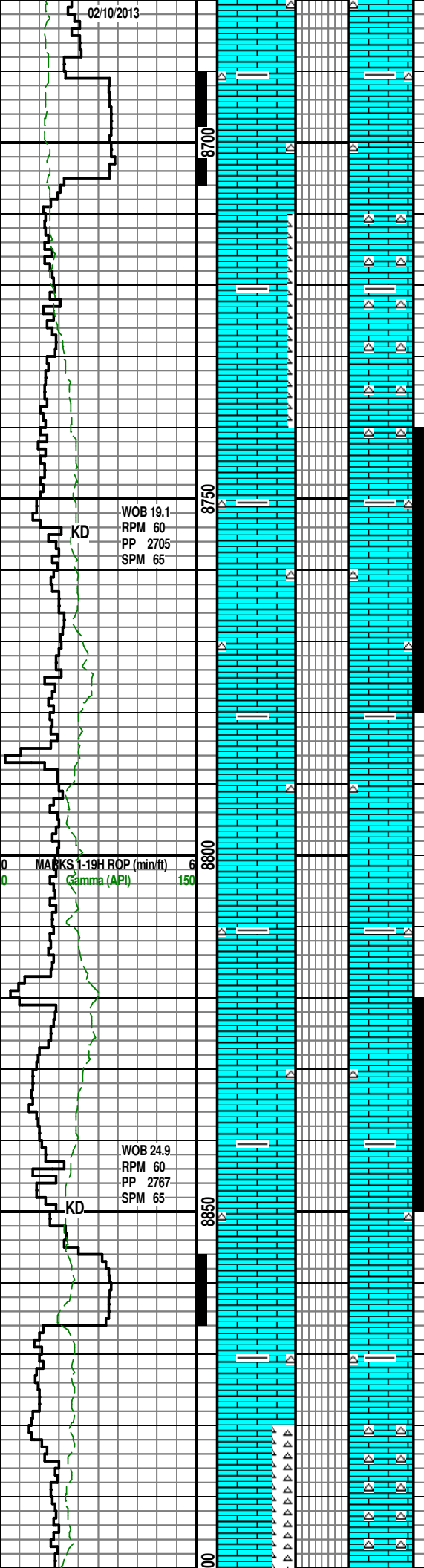
LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,











MICROXEN, FIRM HD, 1 CCB, 1 HAO, CCB
BRIT, OOL, SME STN, SL/TRS LT GRY SH,
TRS CHRT: OFF WHT/TRANS,
MICR-XLN/VF-XLN, DNS, BLKY, OOL, OIL
STAINED, V/HD, NO FLUOR, NO RING

SURVEY: 8,700' MD 5,357' TVD
INC. 89.2 / AZ. 183.2

LS: PRED OFF WHT, SL/SNDY, BLKY,
MICROXLN, FRM- HD, POSS FRAC, OCC
BRIT, OOL, SME STN, SL/TRS LT GRY SH,
CHRT: OFF WHT/TRANS,
MICR-XLN/VF-XLN, DNS, BLKY, OOL, OIL
STAINED. V/HD, NO FLUOR, NO RING

SURVEY: 8,732' MD 5,357' TVD
INC. 88.5 / AZ. 183.2

LS: PRED OFF WHT, SL/NDY, BLKY,
MICROXLN, FRM- HD, POSS FRAC, OCC
BRIT, OOL, SME STN, SL/TRS LT GRY SH,
SL/CHRT: OFF WHT/TRANS,
MICR-XLN/VF-XLN, DNS, BLKY, OOL, OIL
STAINED, V/HD, NO FLUOR, BLU RING,
WK/FR CUT

SURVEY: 8,763' MD 5,358' TVD
INC. 88.8 / AZ. 182.9

LS: PRED OFF WHT, SL/SDNY, BLKY,
MICROXLN, FRM- HD, POSS FRAC, OCC
BRIT, OOL, SME STN, SL/TRS LT GRY SH,
SL/CHRT: OFF WHT/TRANS,
MICR-XLN/VF-XLN, DNS, BLKY, OOL, OIL
STAINED, V/HD, NO FLUOR, BLU RING,
WK/FR CUT

SURVEY: 8,795' MD 5,358' TVD
INC. 89.7 / AZ. 182.8

LS: PRED OFF WHT, SL/NDY, BLKY,
MICROXLN, FRM- HD, POSS FRAC, OCC
BRIT, OOL, SME STN, SL/TRS LT GRY SH,
SL/TRS CHRT: OFF WHT/TRANS,
MICR-XLN/VF-XLN, DNS, BLKY, OOL, OIL
STAINED, V/HD, NO FLUOR, BLU RING,
V/WK-WK CUT

SURVEY: 8,826' MD 5,358' TVD
INC. 90.9 / AZ. 182.1

LS: PRED OFF WHT, SL/SDNY, BLKY,
MICROXLN, FRM- HD, POSS FRAC, OCC
BRIT, OOL, SME STN, SL/TRS LT GRY SH,
SL/TRS CHRT: OFF WHT/TRANS,
MICR-XLN/VF-XLN, DNS, BLKY, OOL, OIL
STAINED, V/HD, NO FLUOR, BLU RING,
V/WK-WK CUT

SURVEY: 8,858' MD 5,358' TVD
INC. 88.8 / AZ. 181.7

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, FRM- HD, OCC BRIT, OOL,
SME STN, FOSS, SL/TRS SH: LT GRY,
PRED BLKY, SPLN, MICA, FRM, RGH TXT,
CHRT: WHT, TRANS/CLR, SL/OOL,
MICR-XLN, HD, NO FLUOR, NO RING, NO
CUT

SURVEY: 8,889' MD 5,359' TVD
INC. 88.4 / AZ. 181.8

LS: PRED OFF WHT, SNDY, BLKY,



DRILLING ON WATER
BASE MUD

MW/VIS 9.1/41

CG 47u

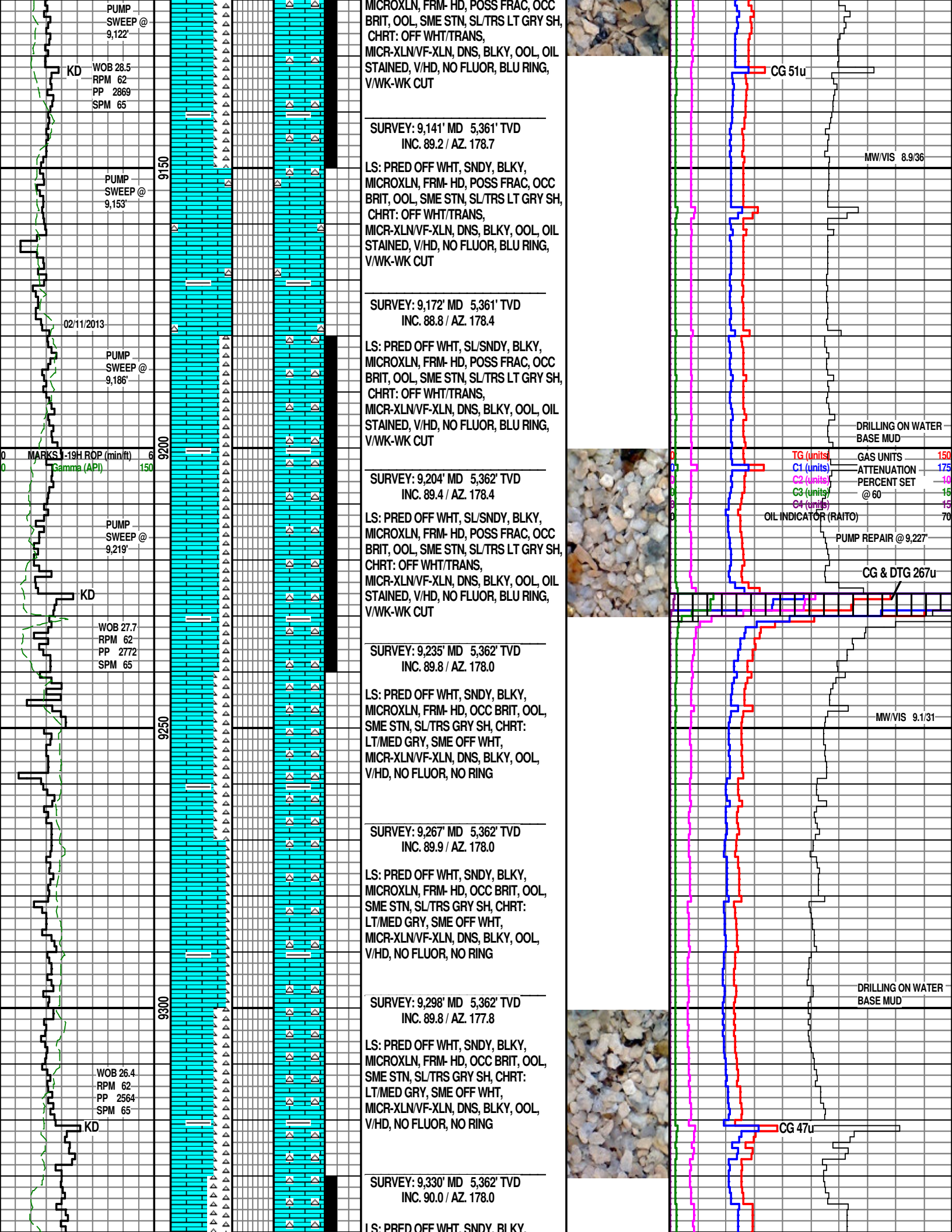
DRILLING ON WATER
BASE MUD

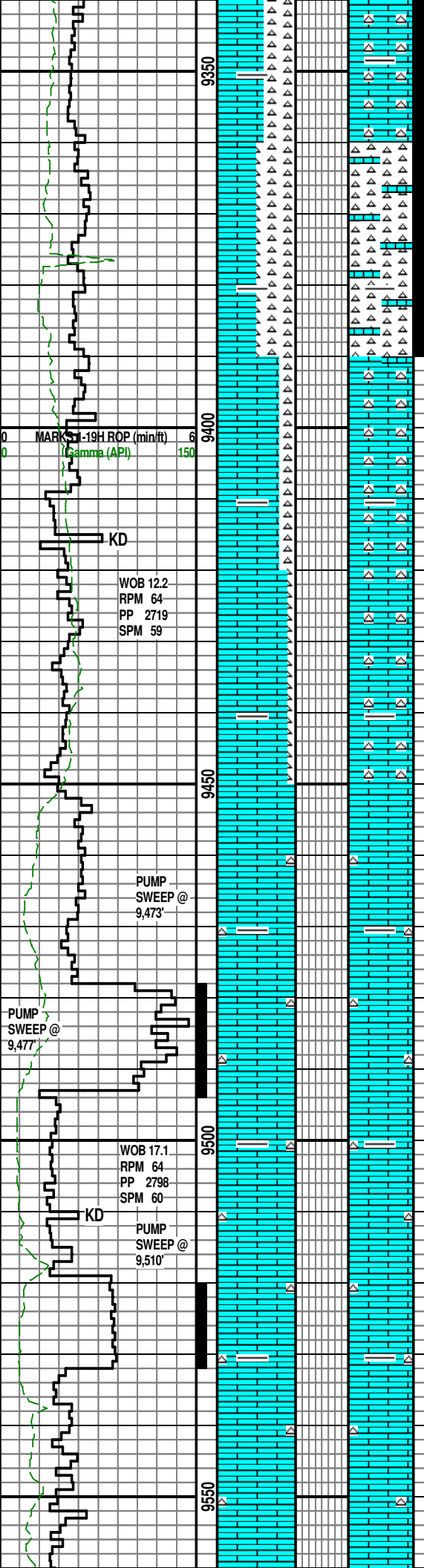
GAS UNITS	150
ATTENUATION	175
PERCENT SET	10
@ 60	15
AITO)	70

OIL INDICATOR (RAITO)

CG 34u	MW/VIS 8.5/34
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DRILLING ON WATER
BASE MUD





, , POSS FRAC, OCC BRIT, OOL, SME STN, SL/TRS LT GRY SH, CHRT: OFF WHT/TRANS, MICR-XLN/VF-XLN, DNS, BLKY, OOL, OIL STAINED, V/HD, NO FLUOR, BLU RING, V/WK-WK CUT

SURVEY: 9,361' MD 5,362' TVD
INC. 90.4 / AZ. 177.7

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, POSS FRAC, OCC BRIT, OOL, SME STN, SL/TRS LT GRY SH, CHRT: OFF WHT/TRANS, MICR-XLN/VF-XLN, DNS, BLKY, OOL, OIL STAINED, V/HD, NO FLUOR, BLU RING, V/WK-WK CUT

SURVEY: 9,393' MD 5,362' TVD
INC. 90.9 / AZ. 177.3

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, SL/TRS GRY SH, CHRT: WHT/TRANS, SME OFF WHT, MICR-XLN/VF-XLN, DNS, BLKY, OOL, V/HD, NO FLUOR, NO RING

SURVEY: 9,424' MD 5,361' TVD
INC. 92.1 / AZ. 177.3

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, SL/TRS GRY SH, CHRT: WHT/TRANS, SME OFF WHT, MICR-XLN/VF-XLN, DNS, BLKY, OOL, V/HD, NO FLUOR, NO RING

SURVEY: 9,456' MD 5,360' TVD
INC. 92.7 / AZ. 177.0

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, SL/TRS GRY SH, TRS CHRT: WHT/TRANS, SME OFF WHT, MICR-XLN/VF-XLN, DNS, BLKY, OOL, V/HD, NO FLUOR, NO RING

SURVEY: 9,487' MD 5,359' TVD
INC. 91.9 / AZ. 177.3

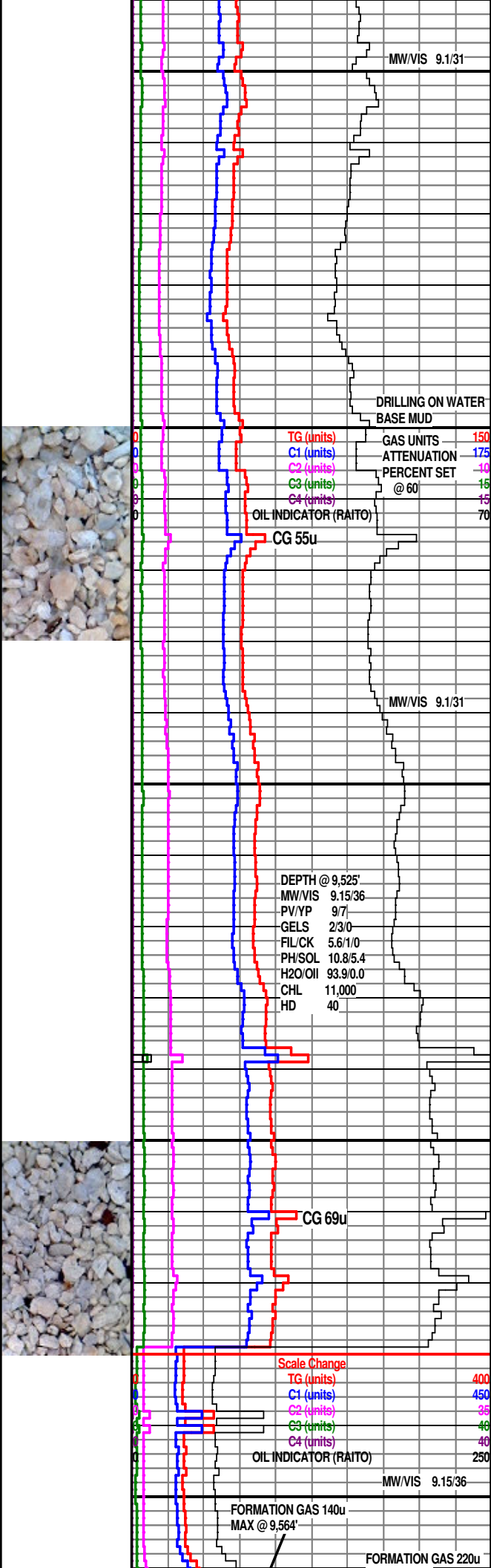
LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, FRM- HD, OCC BRIT, OOL, SME STN, SL/TRS GRY SH, TRS CHRT: WHT/TRANS, SME OFF WHT, MICR-XLN/VF-XLN, DNS, BLKY, OOL, V/HD, NO FLUOR, NO RING

SURVEY: 9,519' MD 5,358' TVD
INC. 91.6 / AZ. 178.0

LS: PRED OFF WHT, SNDY, BLKY, MICROXLN, CRS ANG GRN, FRM- HD, OCC BRIT, OOL, SME STN, SL/TRS GRY SH, PRED BLKY, TRS CHRT, WHT/TRANS, SME OFF WHT, MICR-XLN/VF-XLN, DNS, BLKY, OOL, V/HD, NO FLUOR, NO RING

SURVEY: 9,550' MD 5,357' TVD
INC. 90.7 / AZ. 178.8

LS: PRED OFF WHT, SNDY, BLKY,



MW/VIS 9.1/31

DRILLING ON WATER BASE MUD

GAS UNITS ATTENUATION
PERCENT SET @ 60

OIL INDICATOR (RAITO)

CG 55u

MW/VIS 9.1/31

DEPTH @ 9,525'
MW/VIS 9.15/36
PV/VP 9/7
GELS 2/3/0
FIL/CK 5.6/1/0
PH/SOL 10.8/5.4
H2O/OIL 93.9/0.0
CHL 11,000
HD 40

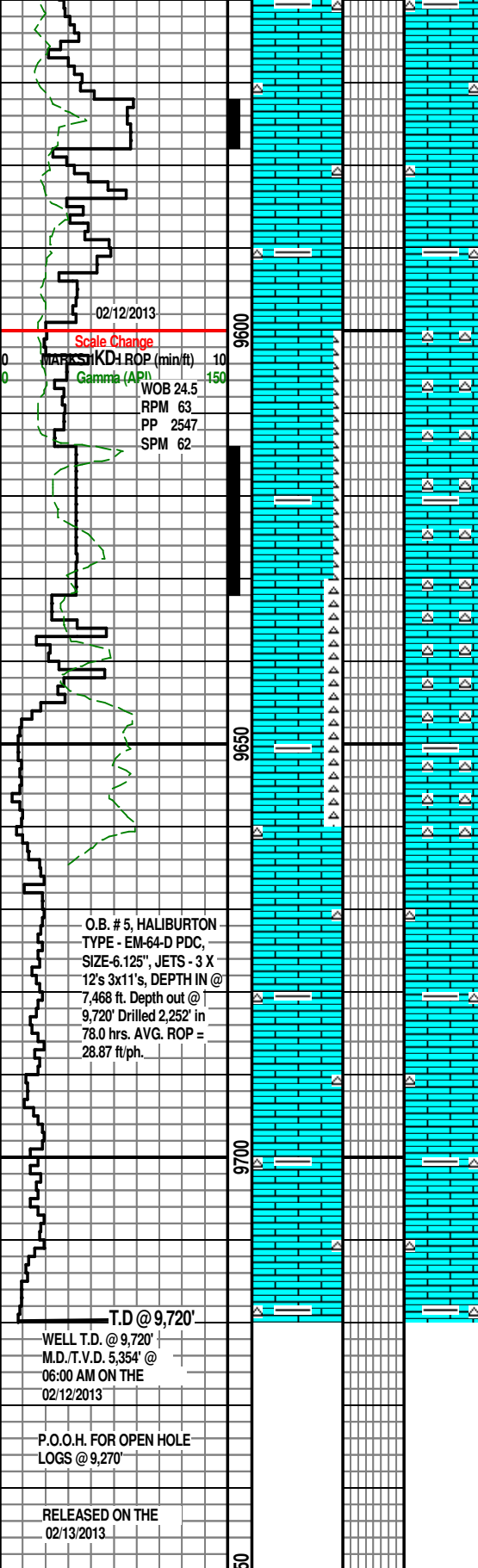
CG 69u

Scale Change
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
OIL INDICATOR (RAITO)

MW/VIS 9.15/36

FORMATION GAS 140u
MAX @ 9,564'

FORMATION GAS 220u



MICROXLN, CRS ANG GRN, FRM- HD,
OCC BRIT, OOL, SME STN, SL/TRS GRY
SH,PRED BLKY, TRS CHRT, WHT/TRANS,
SME OFF WHT, MICR-XLN/VF-XLN, DNS,
BLKY, OOL, V/HD, NO FLUOR, NO RING

SURVEY: 9,582' MD 5,356' TVD
INC. 91.0 / AZ. 179.2

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, CRS ANG GRN, FRM- HD,
OCC BRIT, OOL, SME STN, SL/TRS GRY
SH,PRED BLKY, CHRT, WHT/TRANS, SME
OFF WHT, MICR-XLN/VF-XLN, DNS, BLKY,
OOL, V/HD, NO FLUOR, NO RING

SURVEY: 9,613' MD 5,356' TVD
INC. 90.8 / AZ. 178.7

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, CRS ANG GRN, FRM- HD,
OCC BRIT, OOL, SME STN, SL/TRS GRY
SH,PRED BLKY, CHRT, WHT/TRANS, SME
OFF WHT, MICR-XLN/VF-XLN, DNS, BLKY,
OOL, V/HD, NO FLUOR, NO RING

SURVEY: 9,645' MD 5,356' TVD
INC. 90.4 / AZ. 178.9

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, CRS ANG GRN, FRM- HD,
OCC BRIT, OOL, SME STN,

SURVEY: 9,665' MD 5,355' TVD
INC. 91.1 / AZ. 179.2

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, CRS ANG GRN, FRM- HD,
OCC BRIT, OOL, SME STN, SL/TRS GRY
SH,PRED BLKY, CHRT, WHT/TRANS, SME
OFF WHT, MICR-XLN/VF-XLN, DNS, BLKY,
OOL, V/HD, NO FLUOR, NO RING

LS: PRED OFF WHT, SNDY, BLKY,
MICROXLN, CRS ANG GRN, FRM- HD,
OCC BRIT, OOL, SME STN, SL/TRS GRY
SH,PRED BLKY, CHRT, WHT/TRANS, SME
OFF WHT, MICR-XLN/VF-XLN, DNS, BLKY,
OOL, V/HD, NO FLUOR, NO RING

SURVEY: 9,720' MD 5,354' TVD
INC. 91.1 / AZ. 179.2

