



AND ASSOCIATES, LTD.

GEOLOGICAL CONSULTING / SURFACE LOGGING SERVICES

CORPUS CHRISTI TEXAS P.O. BOX 61150 MIDLAND TEXAS 79711 ROCK SPRINGS WYOMING

OFFICE (432) 563-0084 --- 24 HOURS (800) 578-1006

COMPANY: DELAWARE ENERGY LLC DRILLING CO: PATRIOT
WELL: GOMEZ SWD #1 RIG #: 2
FIELD: DEVONIAN; SWD API: 30-015-44262
LOCATION: 700' FSL & 1550' FEL, SEC 9, T-24-S, R-28-E GL (FT): 3024'
COUNTY: EDDY STATE: NM LAT: 32.227288 DF (FT): 3044'
INTERVAL: 1250' TO: 14900' LONG: -104.089043 KB (FT):
DATE: 9/4/2017 TO: 10/17/2017 JOB #: 9871 UNIT #: 69
LOGGER(S): P MEISENHEIMER A BRAUN J JANCZAK R PEMBERTON J STEINMANN R IMANDI PHONE #: 432/894-3685

5 INCH IMAGE HYDROCARBON WELL LOG [5" = 100']

CUTTINGS

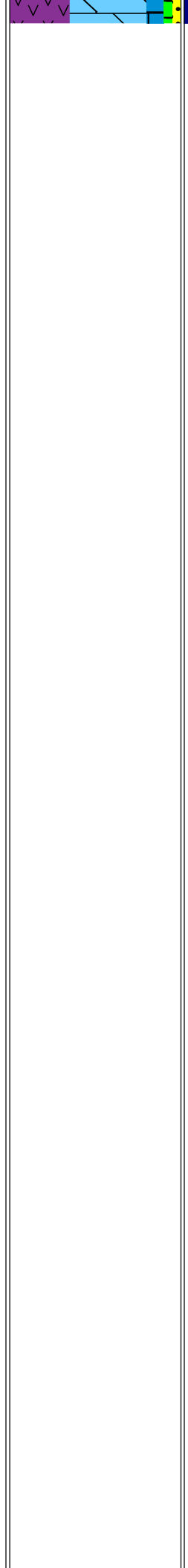
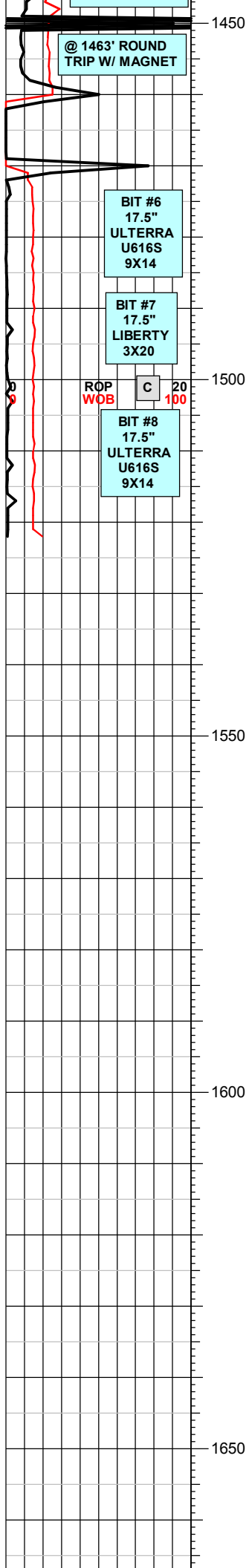


POROSITY - % FLUORESCENCE - TYPE CUT



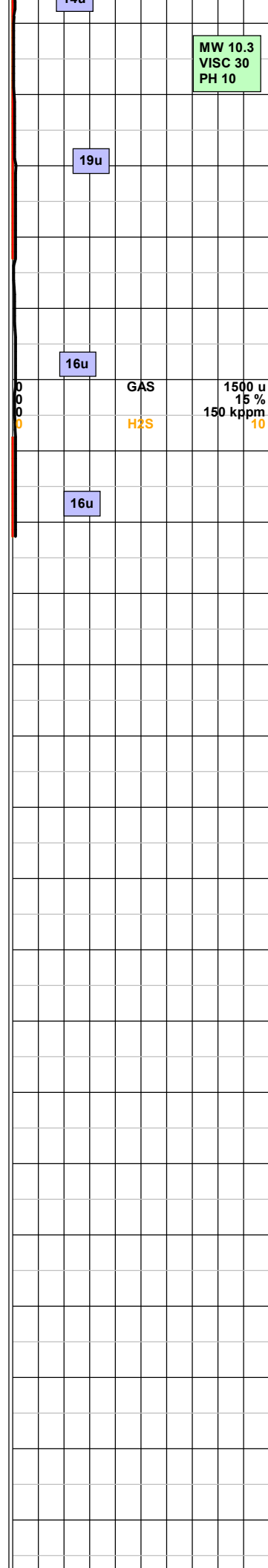
SYMBOLS

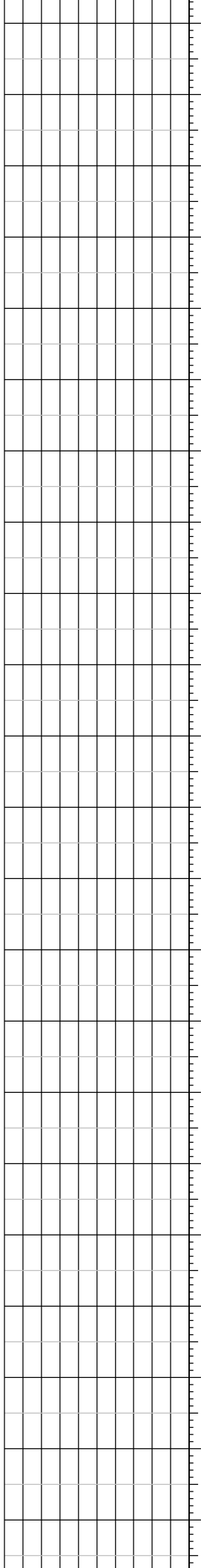
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	ALGAE		OOLITE		CARB		PYR
	AMPH		OSTRA		CHTDK		SALT
	BELM		PELEC		CHTLT		SANDY
	BIOCLST		PELLET		DOL		SIL
	BRACH		PISOLITE		FELDSPAR		SILT
	BRYOZOA		PLANT		FERR		SULPHUR
	CEPHAL		STROM		FERRPEL		TUFF
	CORAL	MINERAL			GLAU	TEXTURE	
	CRIN		ANHY		GYP		BOUNDST
	ECHIN		ARG		HVYMIN		CHALKY
	FISH		ARGGRN		KAOL		CRXLN
	FORAM		BENT		MARL		EARTHY
	FOSSIL		BIT		MINXL		FINEXLN
			BRECFRAG		NODULE		GRAINST



SANDSTONE: LTBN V/FN GRN ANG TO SUBRND
W SRTD MOD CONS-LSEY CONS

RELEASED ON
STANDBY
9/10/2017



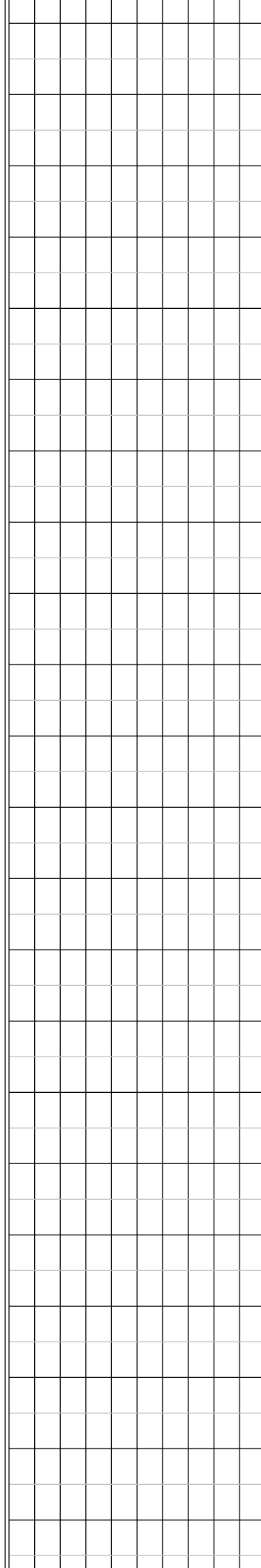


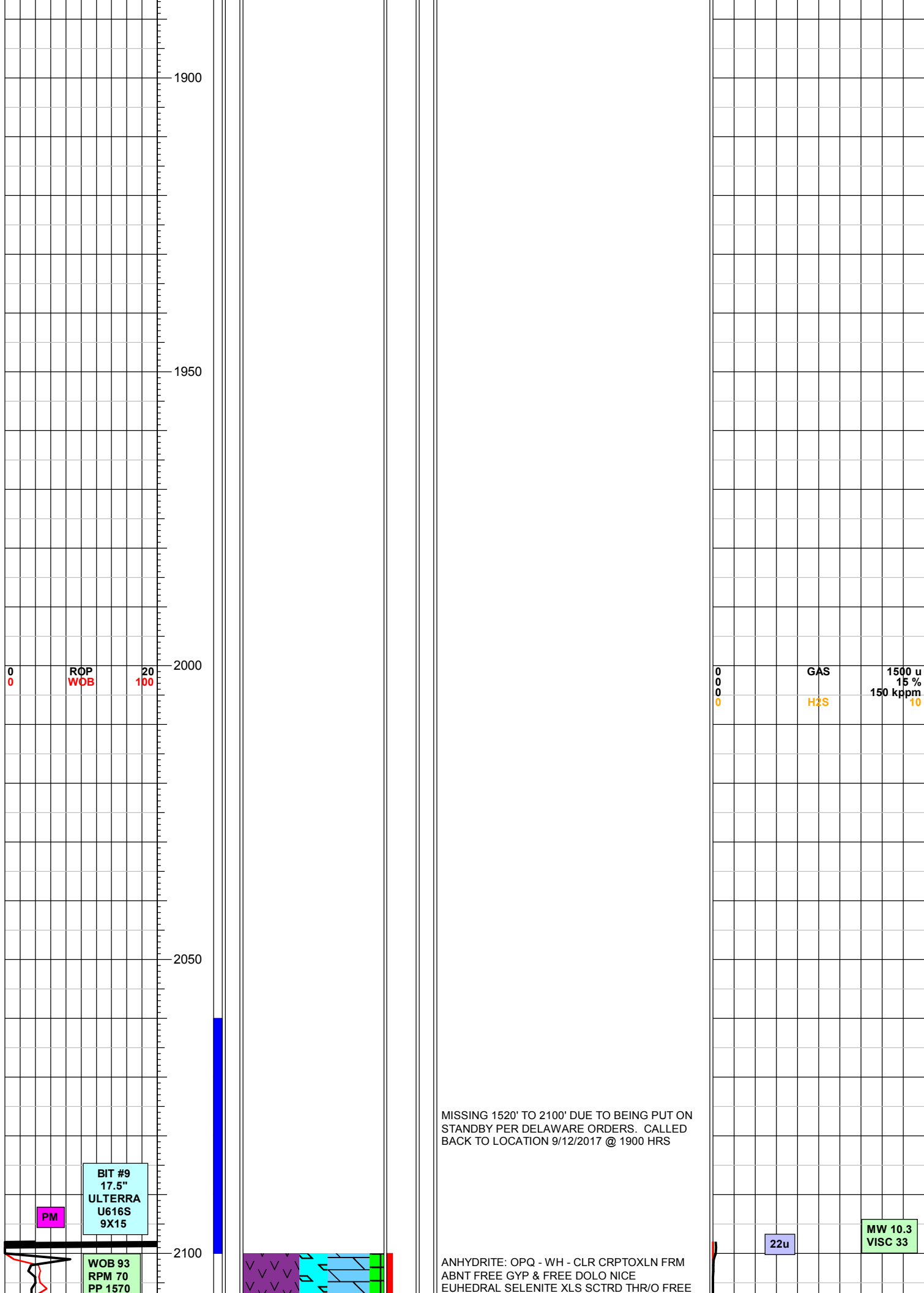
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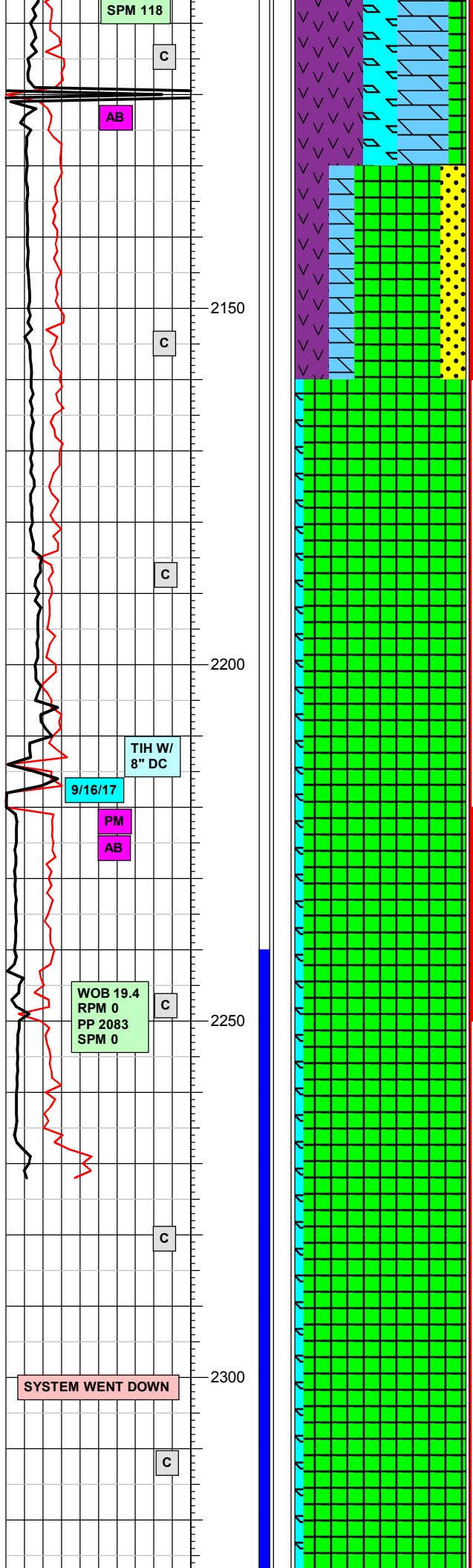
1750

1800

1850







SALT THR/O SAMPLE BOTH SUCROSIC & XLS
DOLOMITE: OFF WH - V/LT GRY - TR TN
MICROXLN TO TR SUCR FREE CALC
GYPSUM/CALCITE: CLR-ORNG-PALE RED
CRYPTOXLIN-SUCR

SALT: WH - CLR SUBRND FRM TO HD
DOLOMITE: MED GRY MICROXLN
ANHYDRITE: WH - OFF WH MICROXLN FRM
SANDSTONE: MED LT GRY V/FN GRNY SUBRND
MOD SRTD LSEY CONS
TR GYP

SALT: WH - CLR SUBANG TO SUBRND FRM TR
FREE DOL TR FREE CAL

MD:2185 INC:2.6
AZ:98.7 TVD:2128

SALT: WH - CLR SUBANG TO SUBRND FRM
FREE DOL FREE CAL

SALT: WH - CLR SUBANG TO SUBRND FRM
FREE DOL & FREE GYP FREE CAL

SALT: WH - CLR SUBANG TO SUBRND FRM
FREE DOL & FREE GYP FREE CAL

MD:2279 INC:4.4
AZ:105.6 TVD:2222

SALT: WH - CLR SUBANG TO SUBRND FRM
FREE DOL & FREE GYP FREE CAL

SALT: WH - CLR SUBANG TO SUBRND FRM
FREE DOL & FREE GYP FREE CAL

MD:2319 INC:4.7
AZ:108.6 TVD:2316

22u

22u

MW 10.2+
VISC 29
PH 10

28u

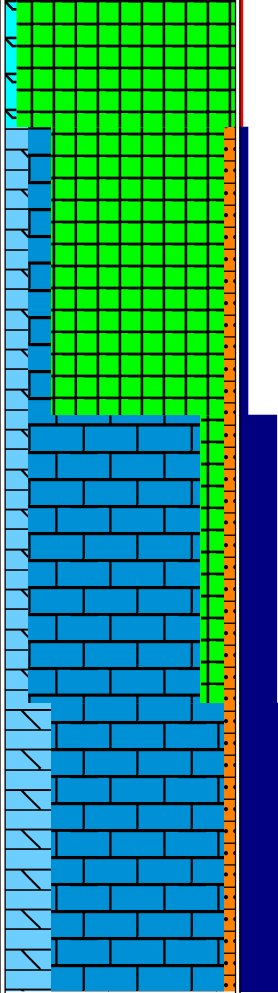
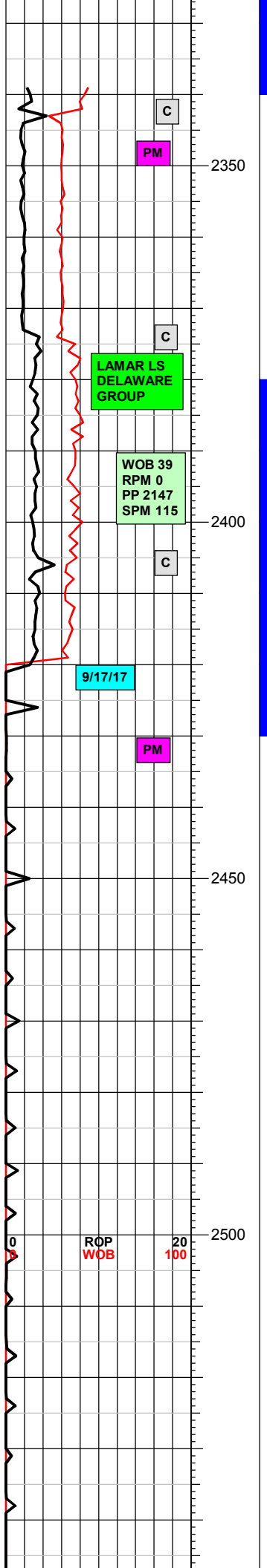
MW 10.2+
VISC 29
PH 4.5

27u

19u

36u

SYSTEM WENT DOWN



SALT: WH - CLR SUBANG TO SUBRND FRM
FREE DOL & FREE GYP FREE CAL

SALT: WHT-LT GRY SUBANG-SUBRND FIRM
LOOSLY CNSLDTD GRAINS AND XLS NOT
CMNTD CRYPTXLIN-SUCRSC
LIMESTONE: TN-TR GRY FIRM MICROXLIN-VFG
DOLOSTONE: LT GRY-LT TN FIRM-FRI
MICROXLIN-FG CALCRS CMNT
SILTSTONE: FG FIRM SILACEOUS MICACEOUS

DOLOMITIC LIMESTONE: PALE TN-WHT-LT GRY
FIRM-FRI SUBLKY-SUBANG MICROXLIN-
SUCRSC TR FREE PYR GRAINS
SALT: OFF WHT-LT GRY FIRM CRYPTO-
MICROXLIN-SUCRSC SUBLKY-SUBANG
SILTSTONE: LT ORNG-TN FIRM-HARD-FRI SLTY-
VFG MICACEOUS

DOLOMITIC LIMESTONE: PALE TN-WHT-LT GRY
FIRM-FRI SUBLKY-SUBANG MICROXLIN-
SUCRSC TR FREE PYR GRAINS
SILTSTONE: LT ORNG-TANNISH ORNG FIRM-
HARD-FRI SLTY-VFG MICACEOUS SILACEOUS

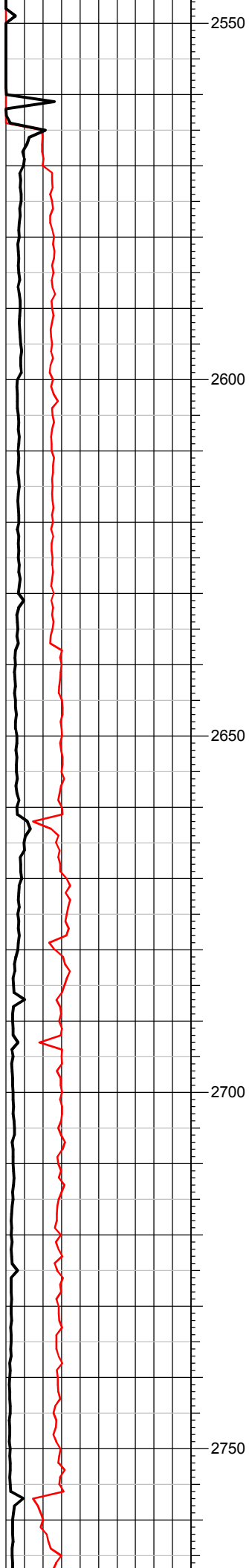
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LOCATION 9/17/2017.

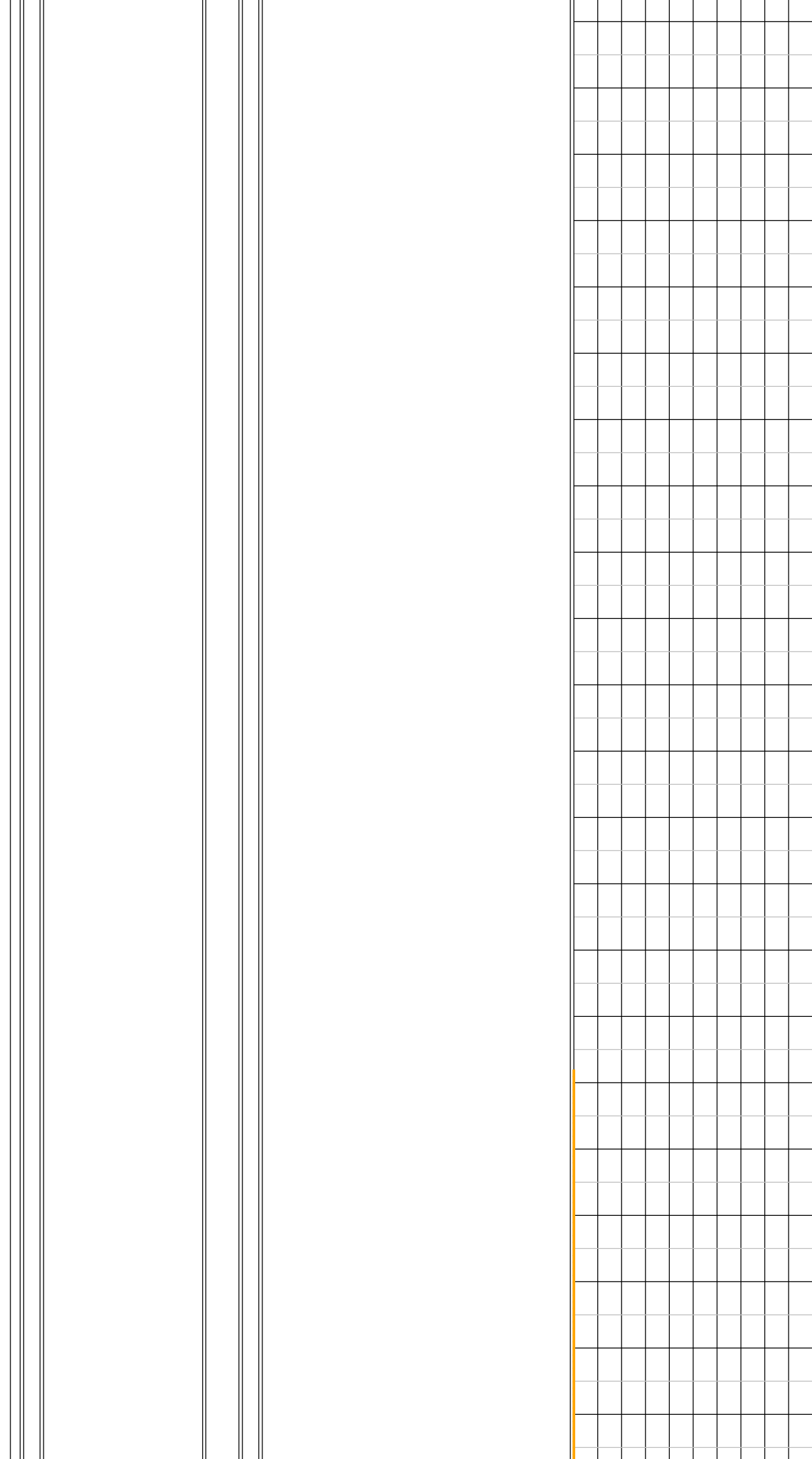
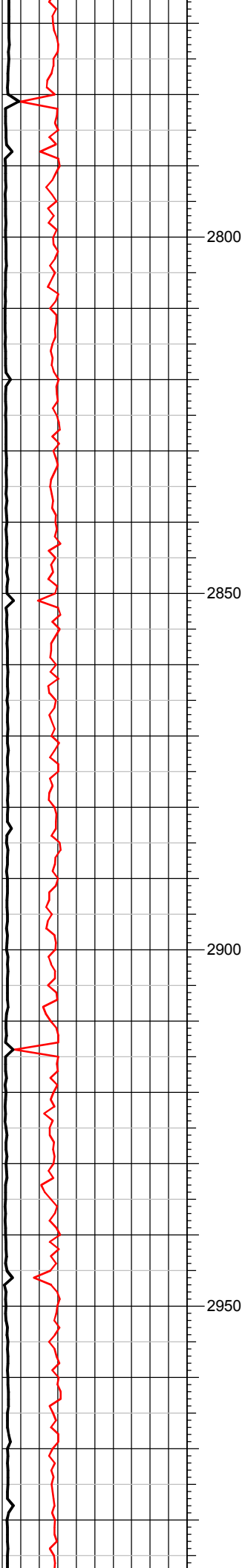
MW 10.4
VISC 33

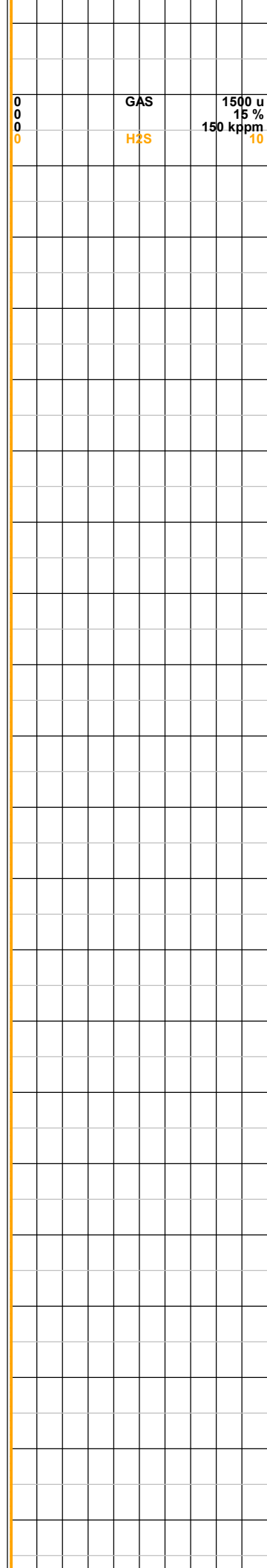
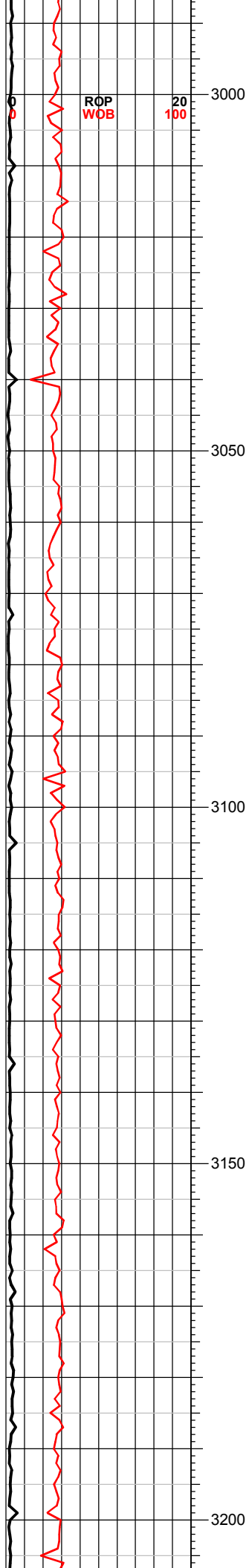
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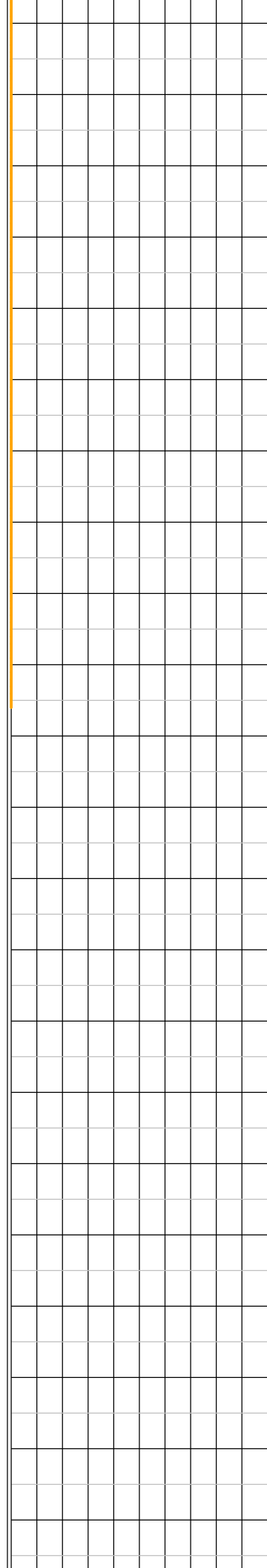
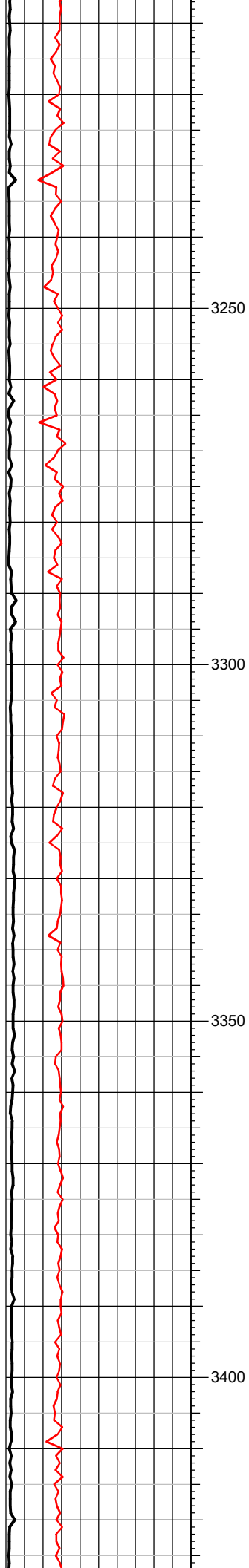
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VISC 32

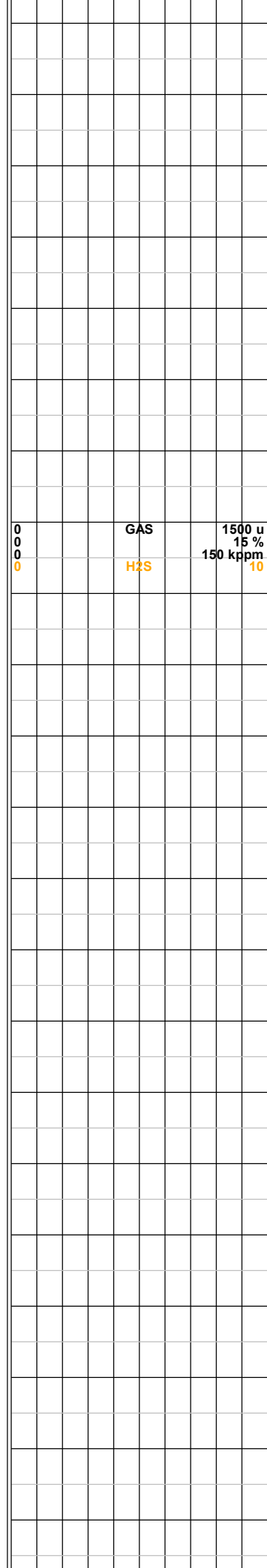
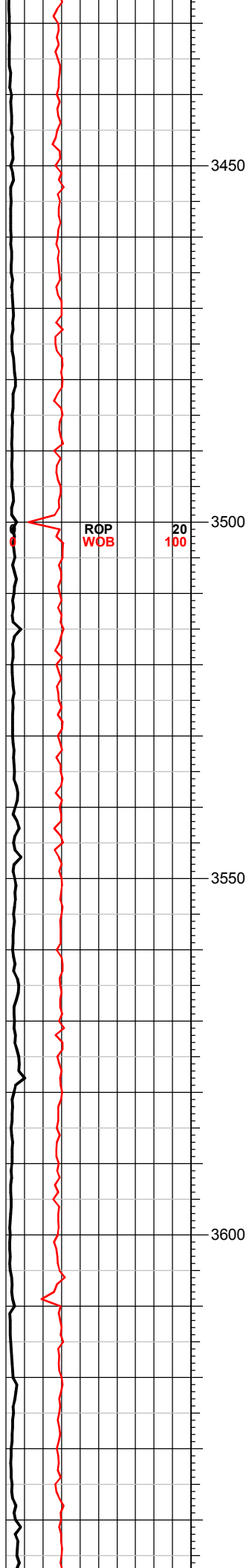
0	GAS	1500 u
0		15 %
0		150 kppm
0	H2S	10

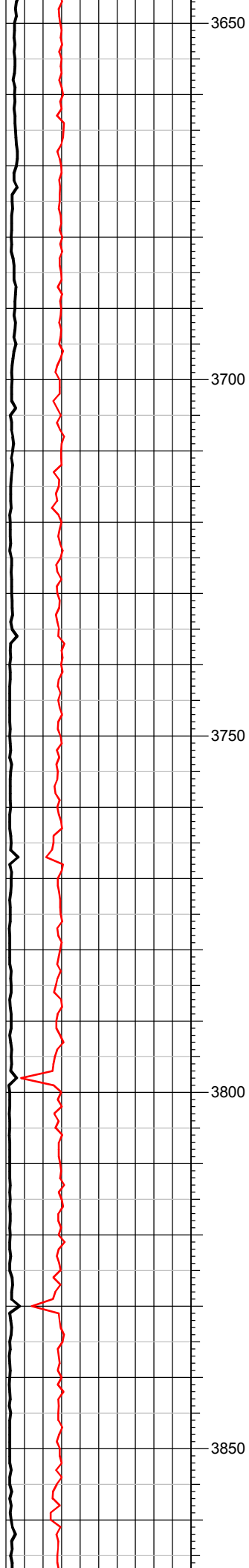


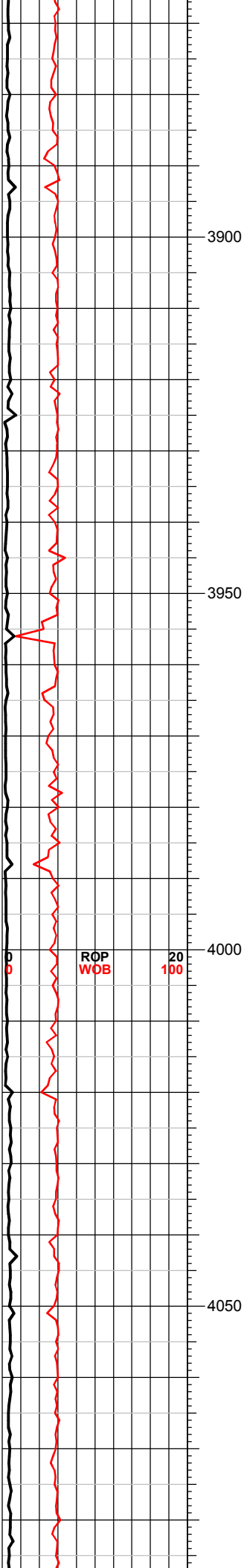












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ROP
WOB

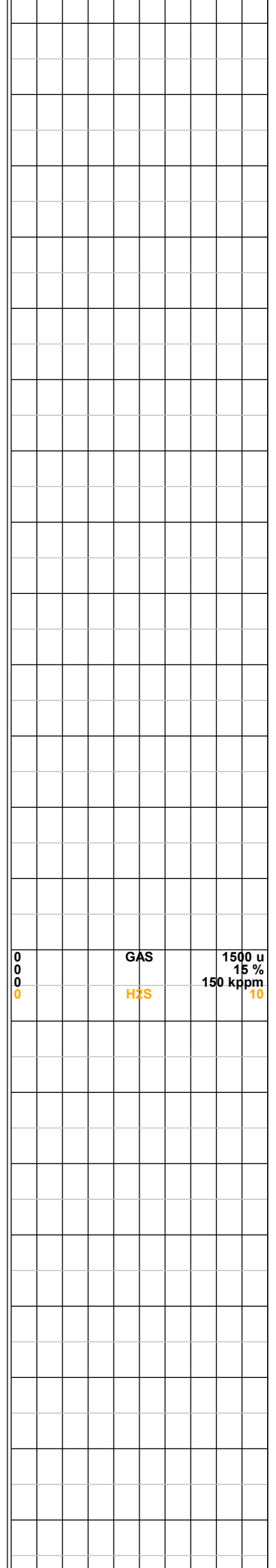
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100

3900

3950

4000

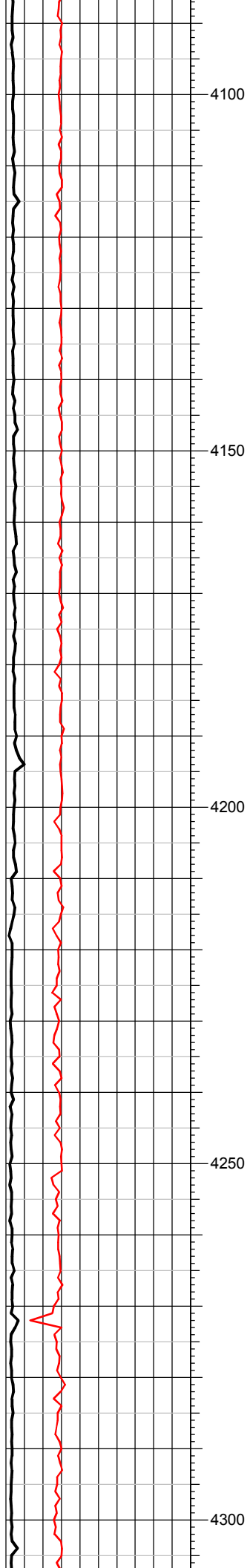
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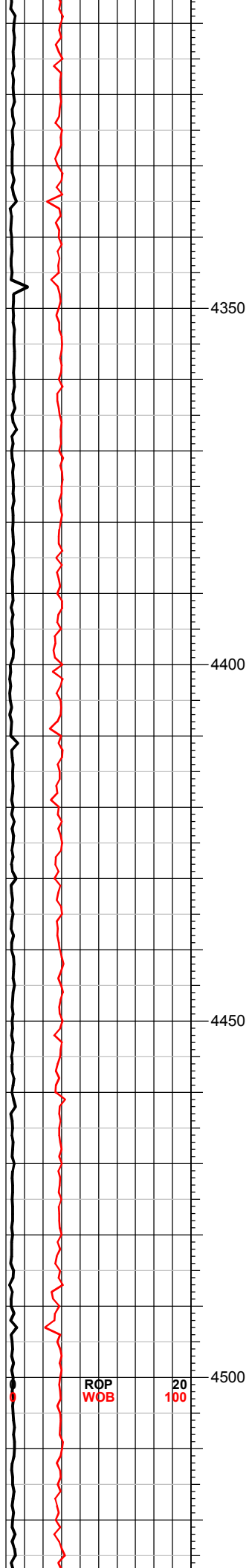


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GAS
H₂S

1500 u
15 %
150 kppm
10

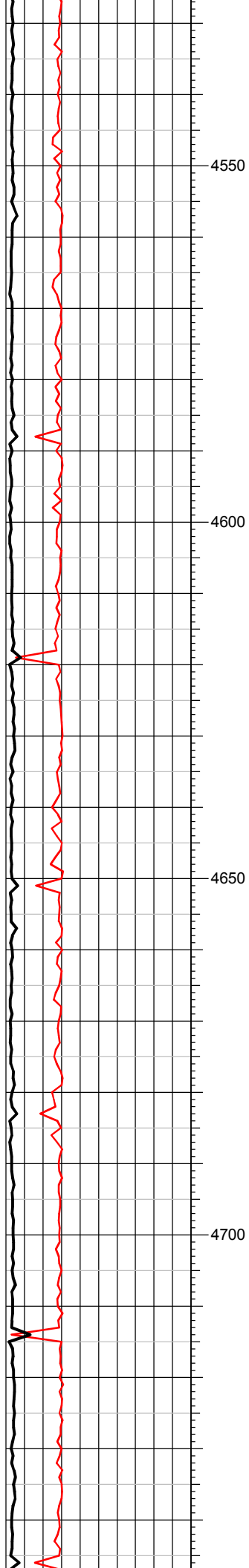


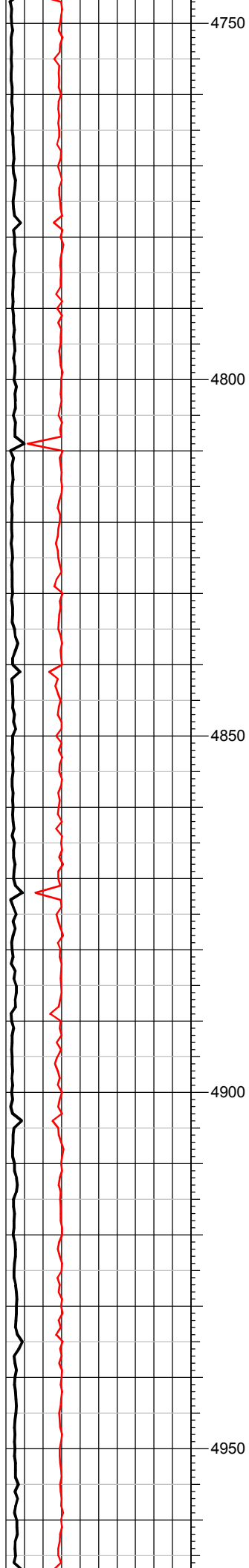


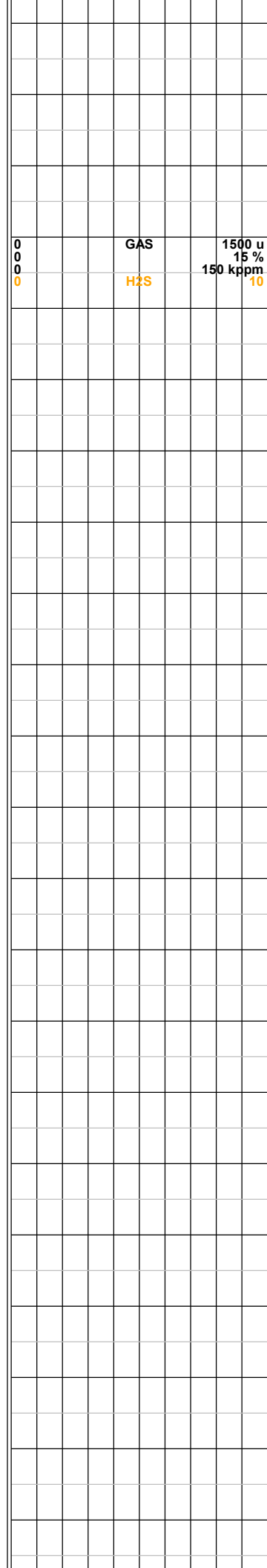
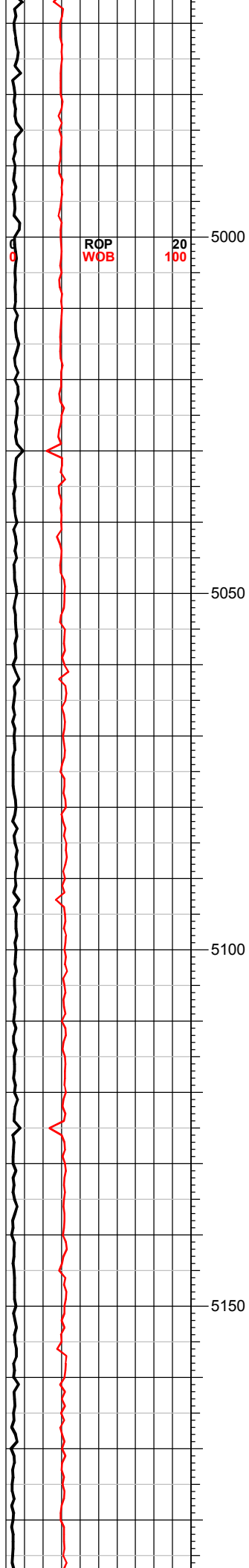
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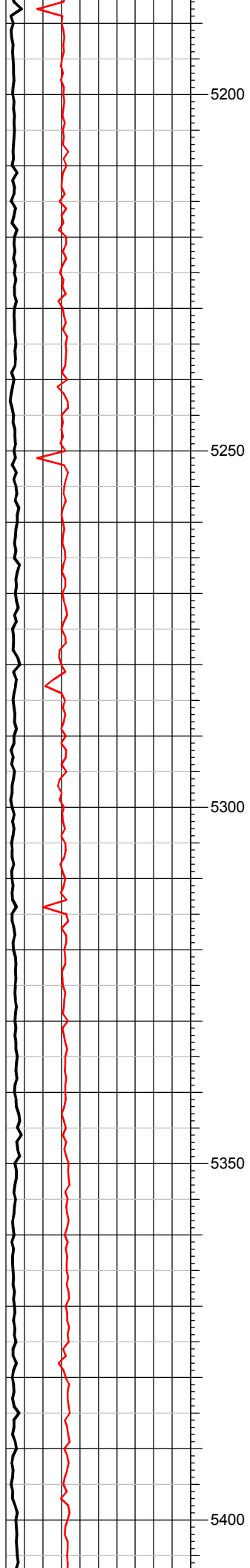
GAS
H ₂ S

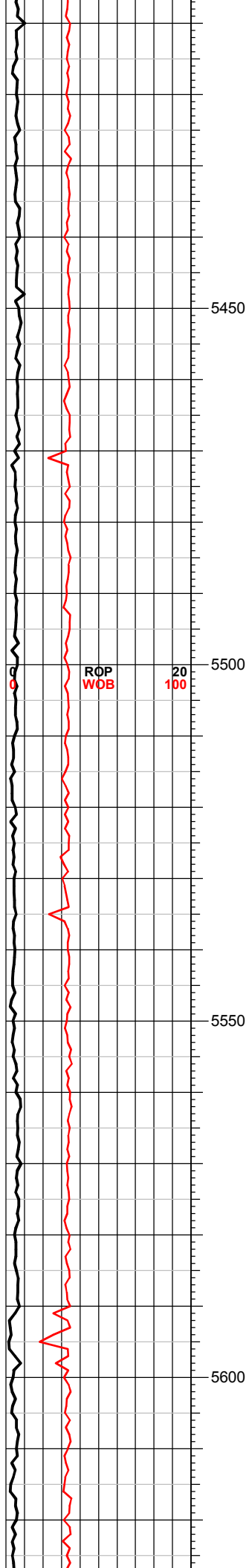
	1500 u	
	15 %	
150 kppm		10







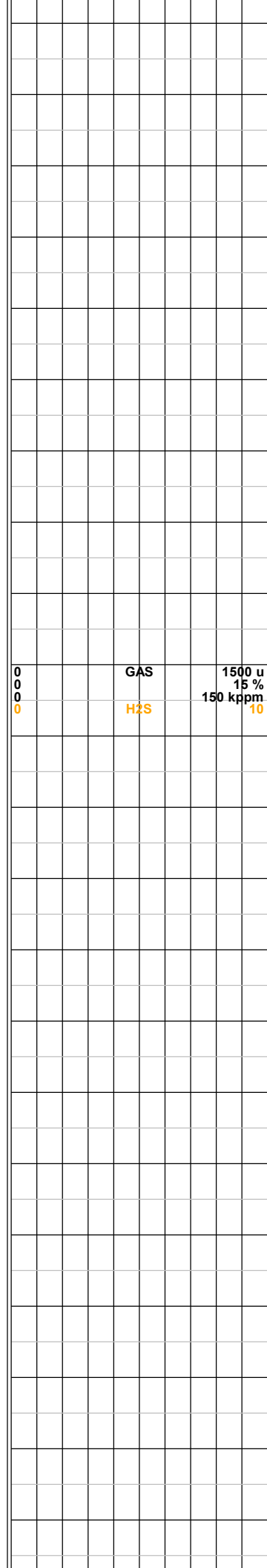




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ROP
WOB

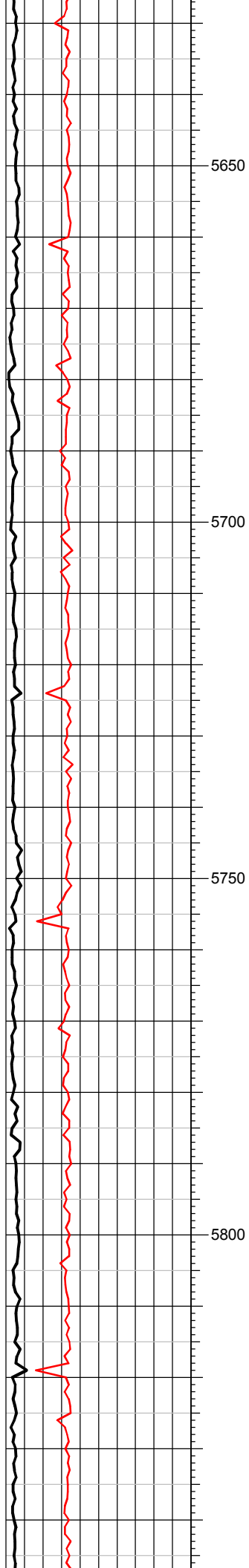
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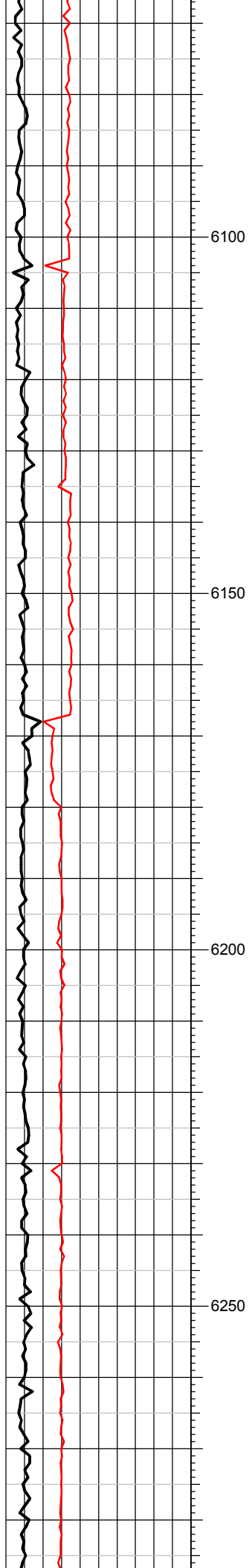


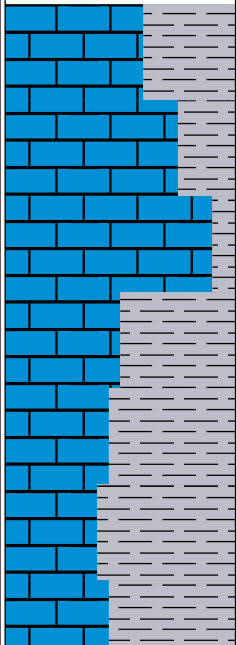
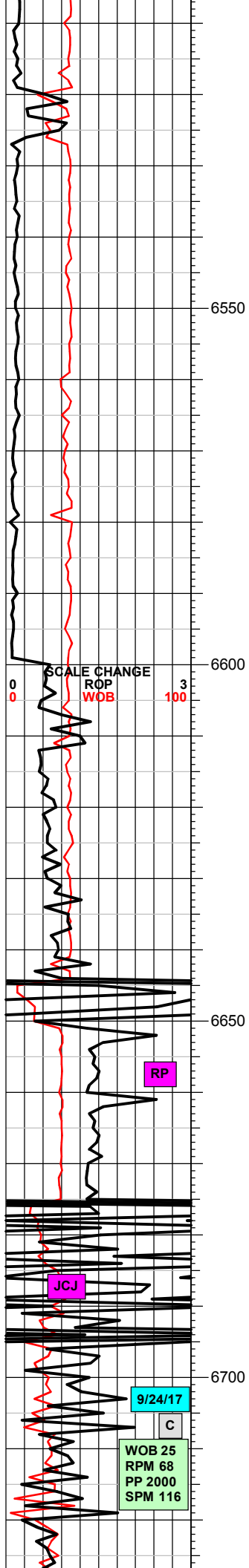
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0
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GAS
H2S

1500 u
15 %
150 kppm
10





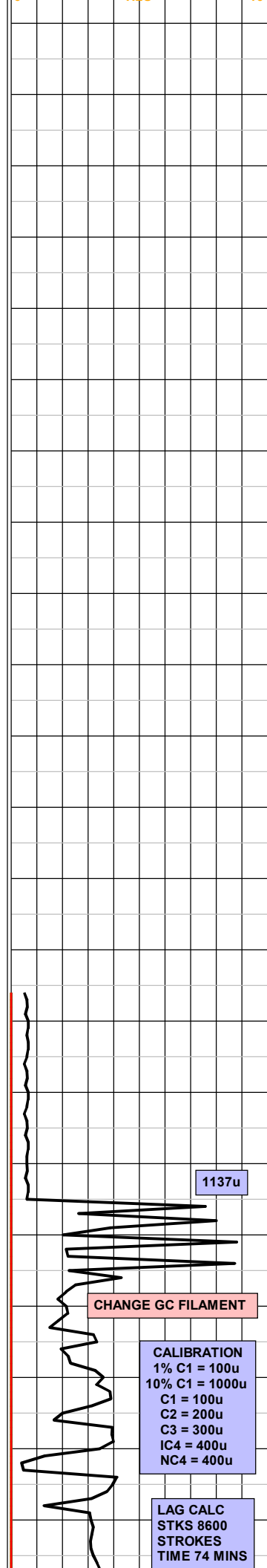


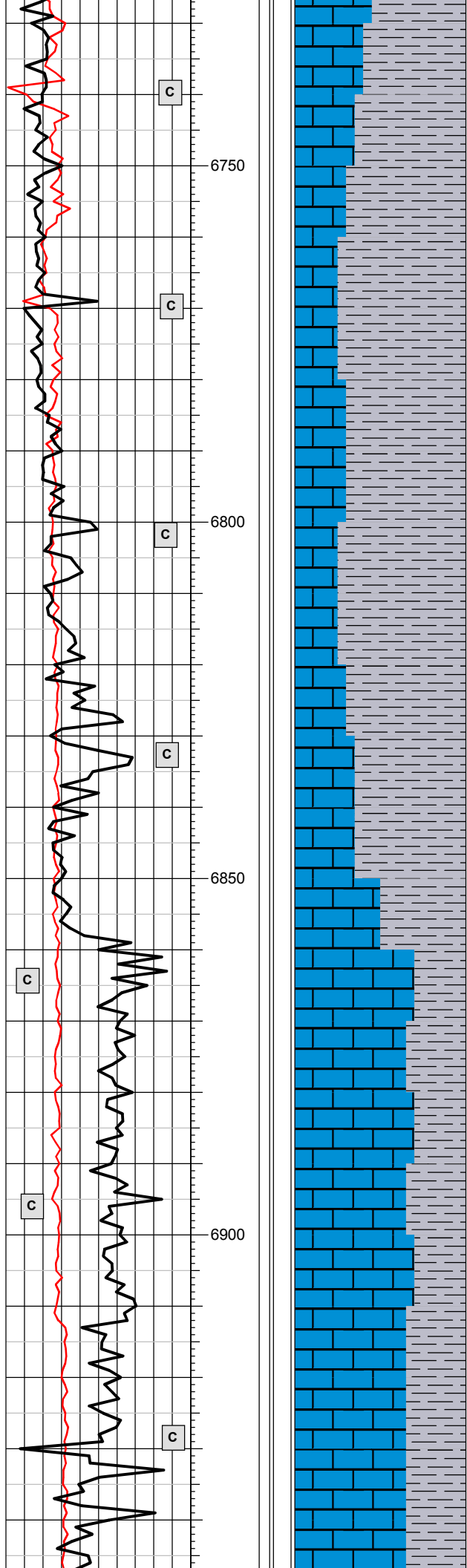
CALLED BACK TO LOCATION 9/23/2017. RIGGED UP TWO MAN LOGGING OPS @ 1200 HRS ON 9/23/2017. BEGAN LOGGING OPS @ 1500 HRS ON 9/23/2017.
9 5/8" CSG SET @ 6640'.
USING NB #11 8 1/2" ULTERRA U716M

LIMESTONE: PRED MEDDRKGY V/FXLN TO MICROXLN SFT SMOOTH BLKY CHK FRMWRK FRACD POR NO FLUOR NO CUT

SHALE; DK GRY MED HRD SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR





SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

MD:6773 INC:1.4
AZ:233.87 TVD:6769.64

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
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SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
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INCLUS IP SPLNTY

542u

MW
9.3i
9.2+o
VIS 30
PH 10

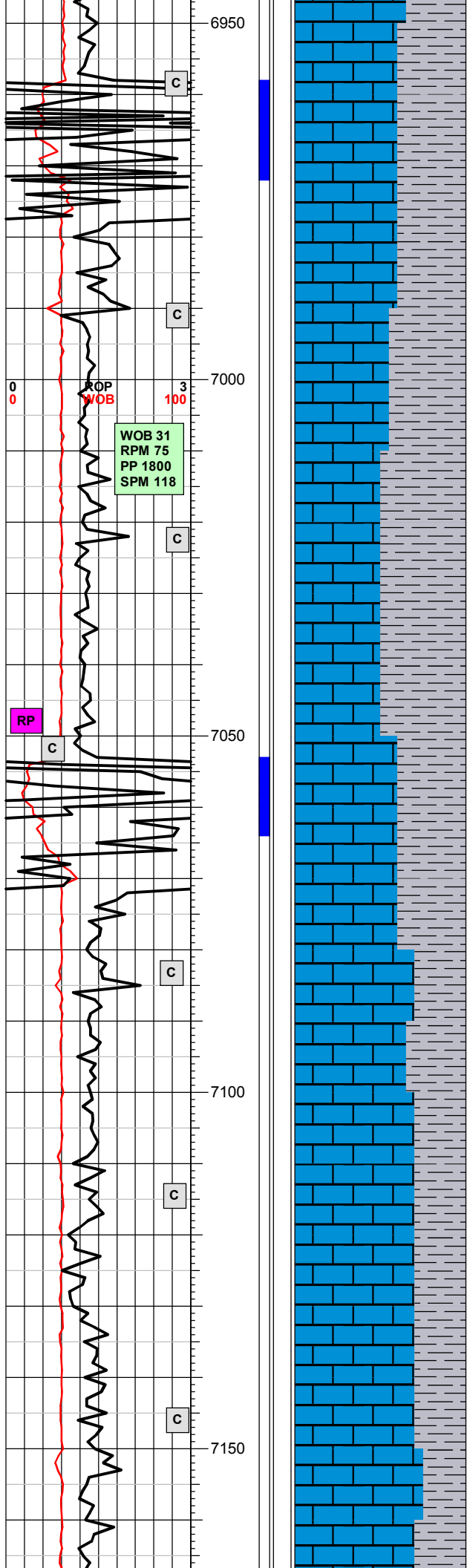
CG 131u

259u

CG 332u

CG 320u

CG 291u



LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
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EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

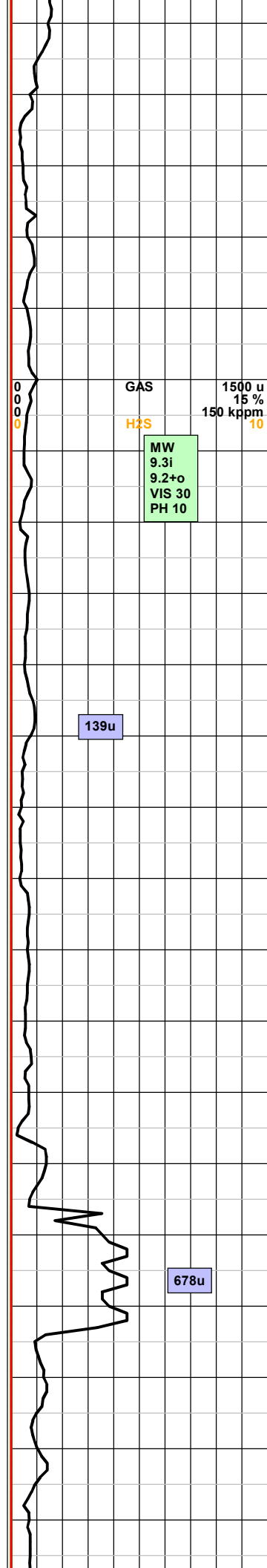
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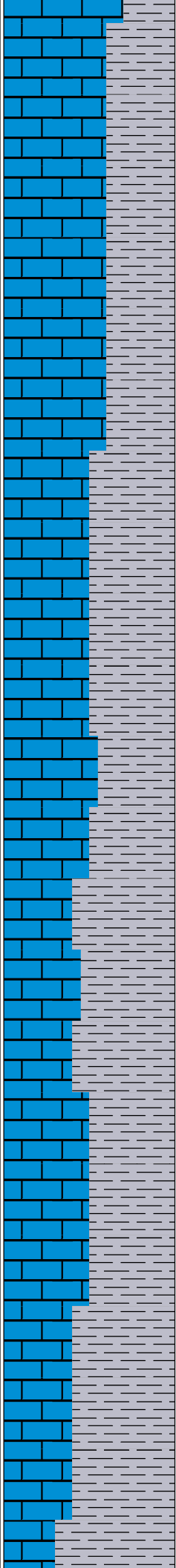
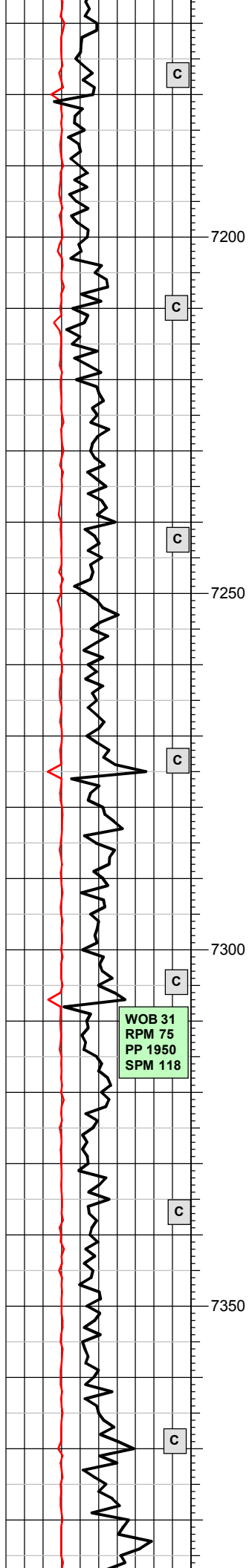
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SHALE: MED-DK GRY MED HRD FRM SLTY-
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LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY





LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
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LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
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EMBDD LIME IP FLAM

MD:7247 INC:1.43
AZ:216.84 TVD:7243.49

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

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LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
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VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

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SHALE: MED-DK GRY MED HRD FRM SLTY-
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LIMESTONE: WHT LT GRY SFT VF-MICXLN
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SHALE: MED-DK GRY MED HRD FRM SLTY-
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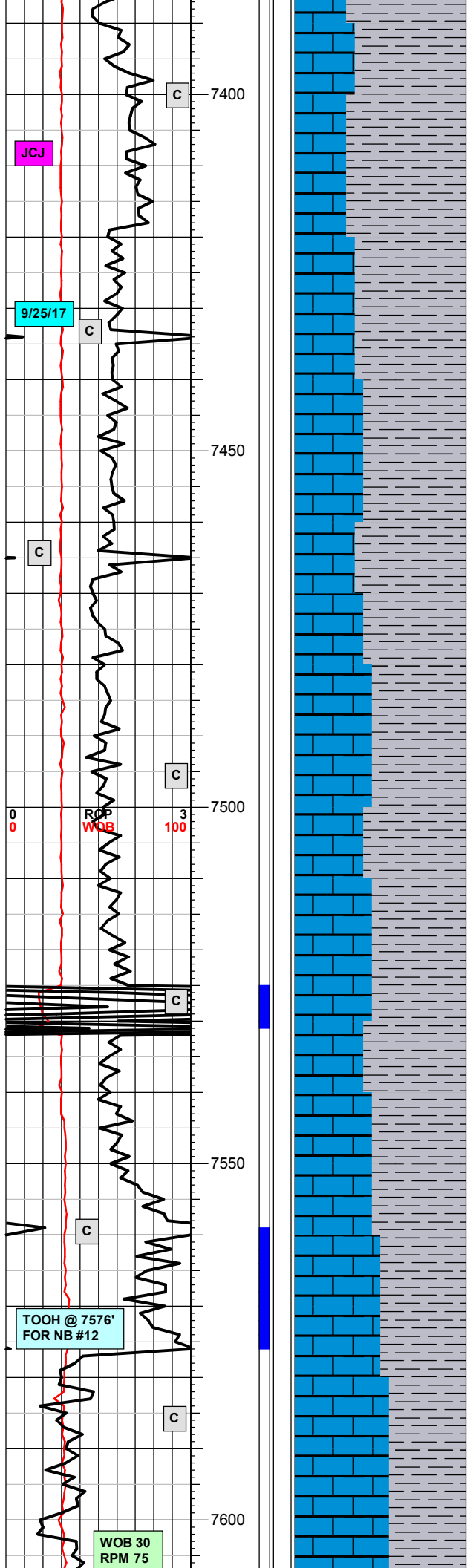
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SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR



MW
9.3i
9.2+o
VIS 29
PH 10

CG 237u

274u



SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

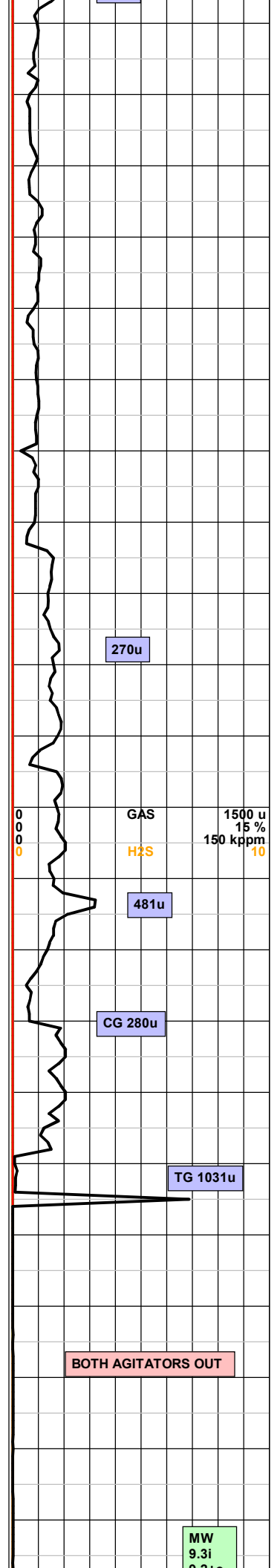
SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

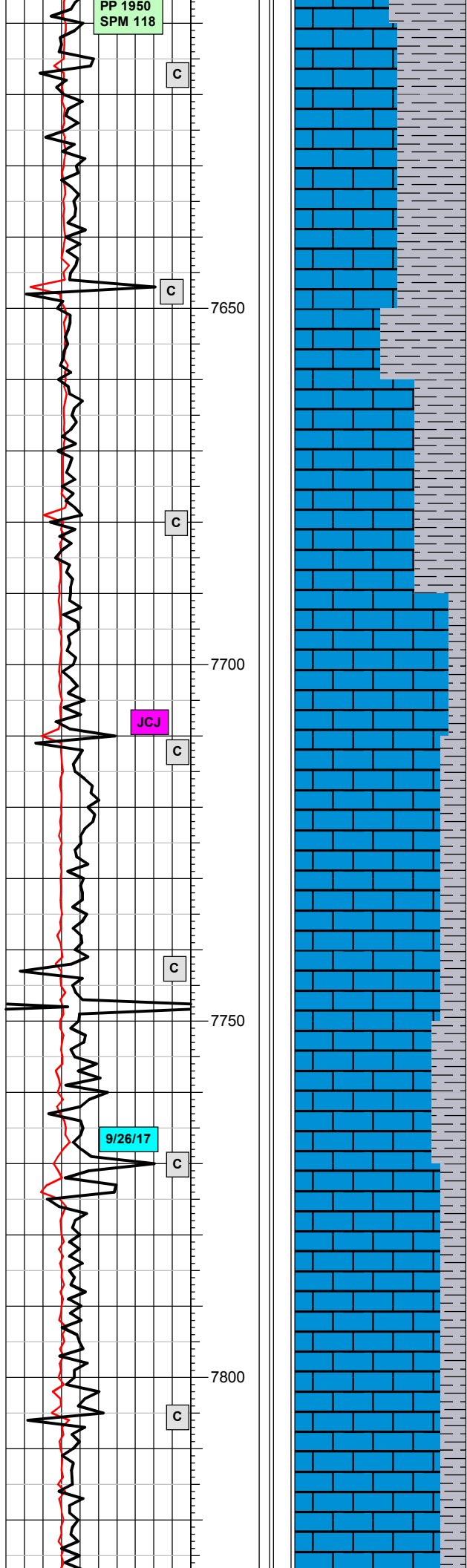
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SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM





LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

MD:7714 INC:2.2
AZ:211.8 TVD:7710.26

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

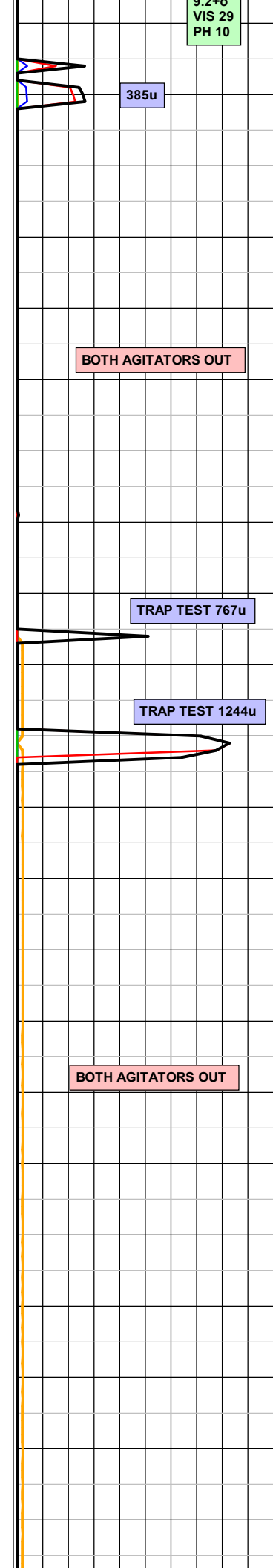
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY



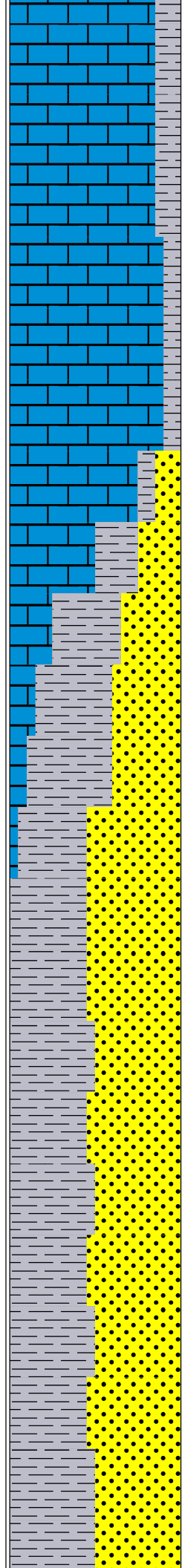
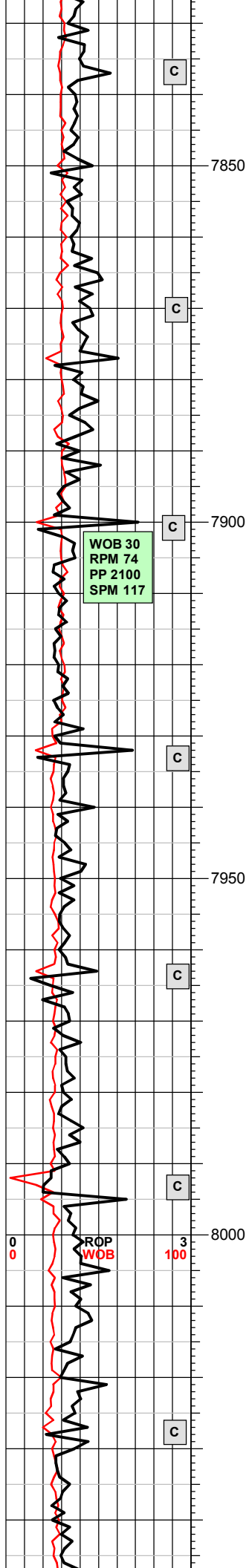
385u

BOTH AGITATORS OUT

TRAP TEST 767u

TRAP TEST 1244u

BOTH AGITATORS OUT



LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR
SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG WL SRT FRI MED CONS WL-MED
CMT NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR
SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG WL-MED SRT FRI P-MED CONS
MED CMT NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG SLI ARGIL WL SRT FRI MED
CONS WL-MED CMT NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP
FLAM

SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG SLI ARGIL WL-MED SRT FRI P-
MED CONS MED CMT NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP
SPLNTY

SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG SLI ARGIL WL SRT FRI MED
CONS WL-MED CMT NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP
FLAM

SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG SLI ARGIL WL-MED SRT FRI P-
MED CONS MED CMT NO FLUOR

BOTH AGITATORS OUT

MW
9.3i
9.2+o
VIS 29
PH 10

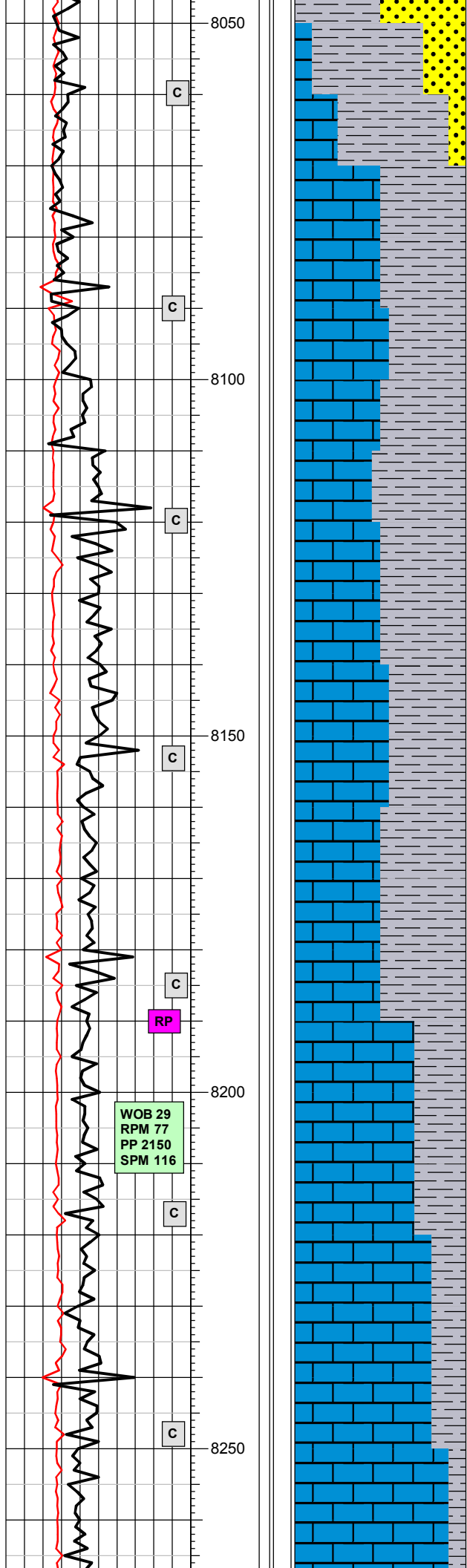
BOTH AGITATORS OUT

REPLACE AGITATOR

GAS 1500 u
H₂S 15 %
150 kppm 10

143u

CG 158u



SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

MD:8187 INC:1.44
AZ:266.94 TVD:8183.05

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

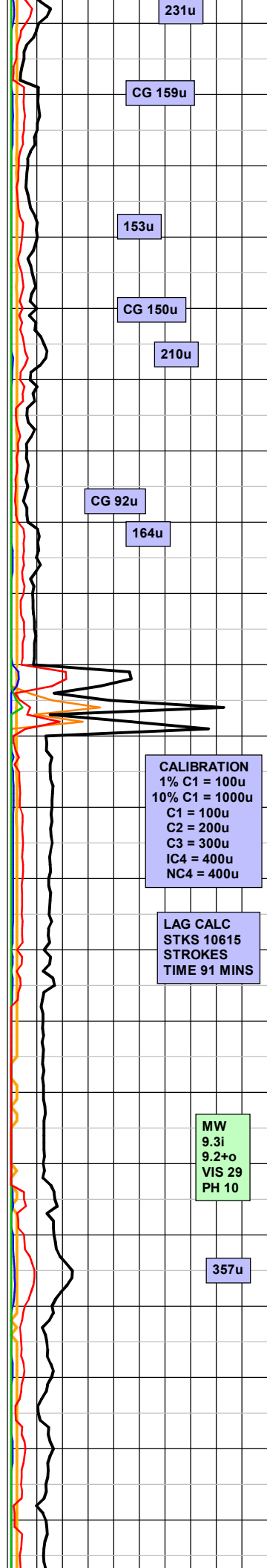
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LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM



CG 159u

153u

CG 150u

210u

CG 92u

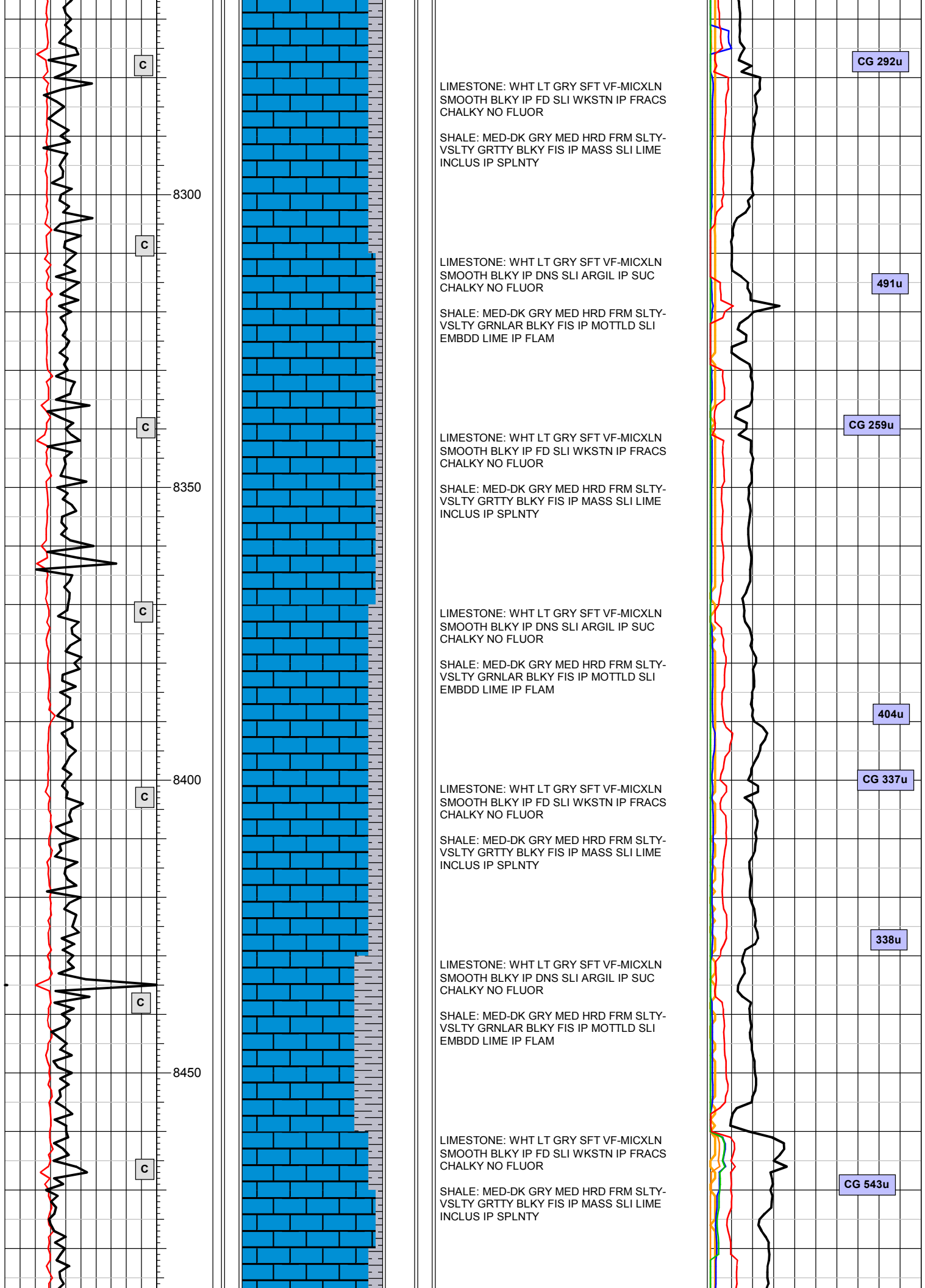
164u

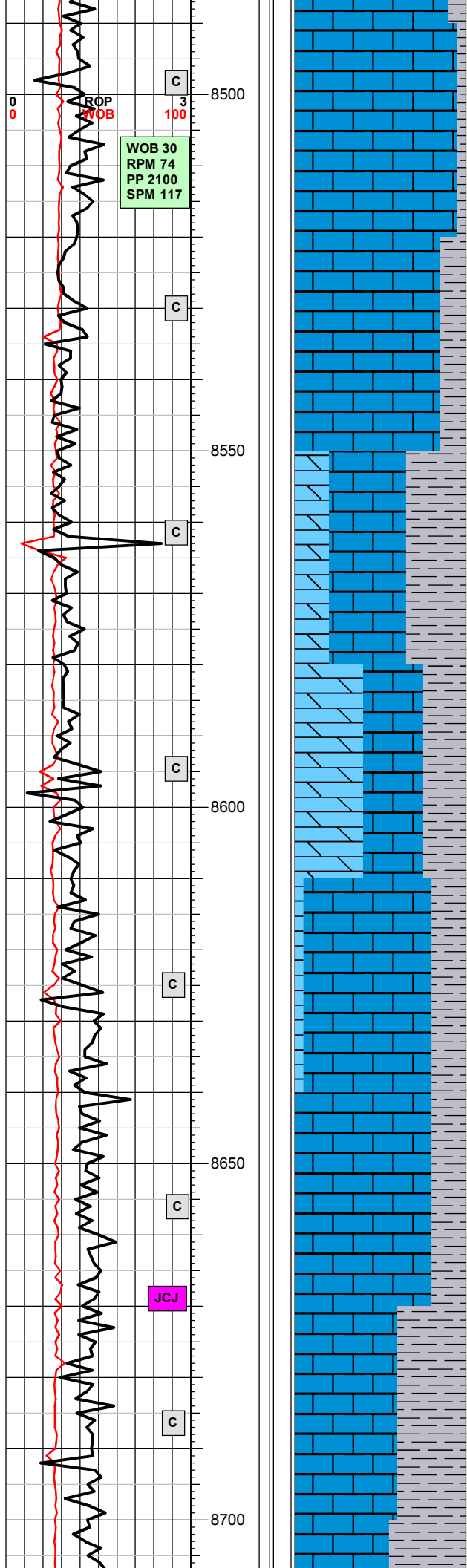
CALIBRATION
1% C1 = 100u
10% C1 = 1000u
C1 = 100u
C2 = 200u
C3 = 300u
IC4 = 400u
NC4 = 400u

LAG CALC
STKS 10615
STROKES
TIME 91 MINS

MW
9.3i
9.2+o
VIS 29
PH 10

357u





LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

DOLOMITE: WHT LT GRY SFT VF-MICXLN
SMOOTH SBBLY SLI FD SLI WKSTN SLI FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR
DOLOMITE: WHT LT GRY SFT VF-MICXLN
SMOOTH SBBLY SLI DNS SLI ARGIL SLI SUC
CHALKY NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

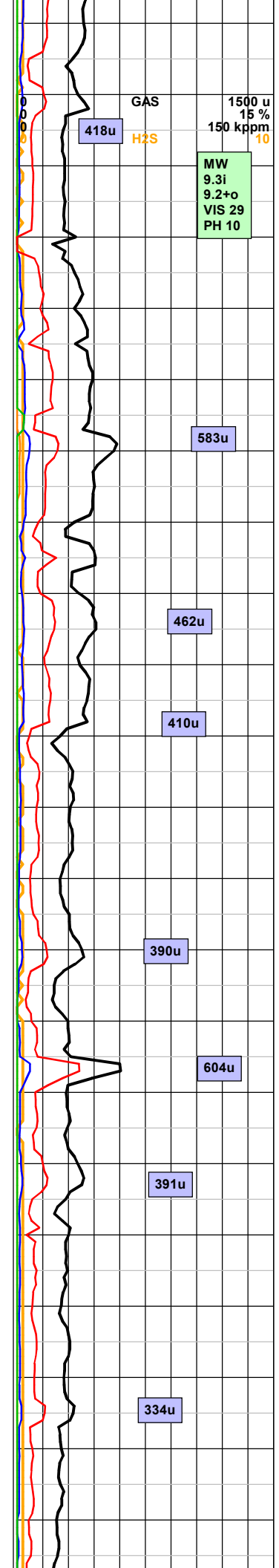
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INCLUS IP SPLNTY

MD:8662 INC:1.38
AZ:234.02 TVD:8656.91

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR



GAS

418u

H₂S

1500 u
15 %
150 kppm
10

MW
9.3i
9.2+o
VIS 29
PH 10

583u

462u

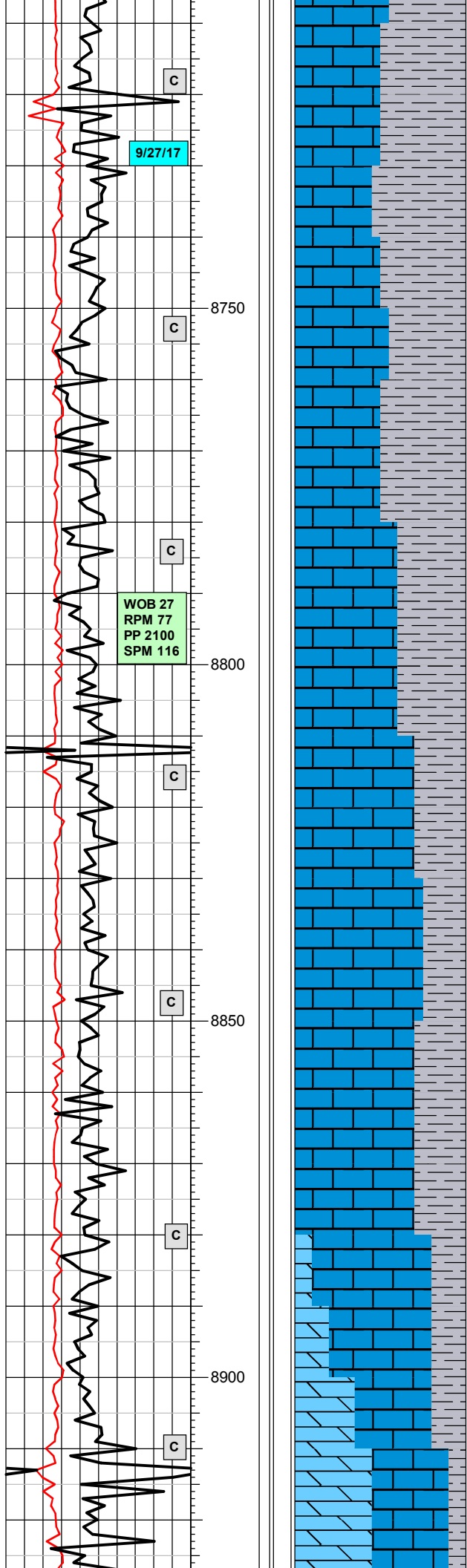
410u

390u

604u

391u

334u



SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

331u

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

380u

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

417u

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

CG 384u

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

MW
9.5i
9.4+o
VIS 31
PH 10

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

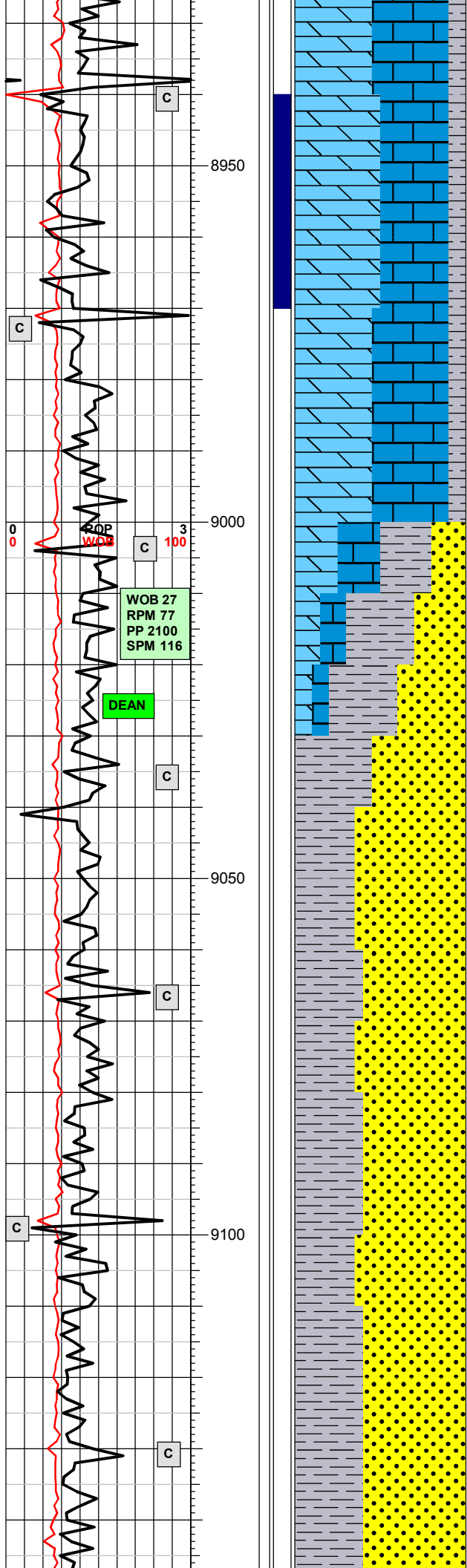
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SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

308u

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

DOLOMITE: WHT LT GRY SFT VF-MICXLN SMOOTH SBBLY SLI FD SLI WKSTN SLI FRACS CHALKY NO FLUOR



SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR
DOLOMITE: WHT LT GRY SFT VF-MICXLN SMOOTH SBBLKY SLI DNS SLI ARGIL SLI SUC CHALKY NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

DOLOMITE: WHT LT GRY SFT VF-MICXLN SMOOTH SBBLKY SLI FD SLI WKSTN SLI FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR
DOLOMITE: WHT LT GRY SFT VF-MICXLN SMOOTH SBBLKY SLI DNS SLI ARGIL SLI SUC CHALKY NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL SRT FRI MED CONS WL-MED CMT NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP FLAM

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL-MED SRT FRI P-MED CONS MED CMT NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP SPLNTY

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL-MED SRT FRI P-MED CONS MED CMT NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP FLAM

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL-MED SRT FRI P-MED CONS MED CMT NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP SPLNTY

MD:9133 INC:1.45
AZ:146.98 TVD:9128.81

436u

633u

593u

CG 591u

521u

GAS
CG 316u

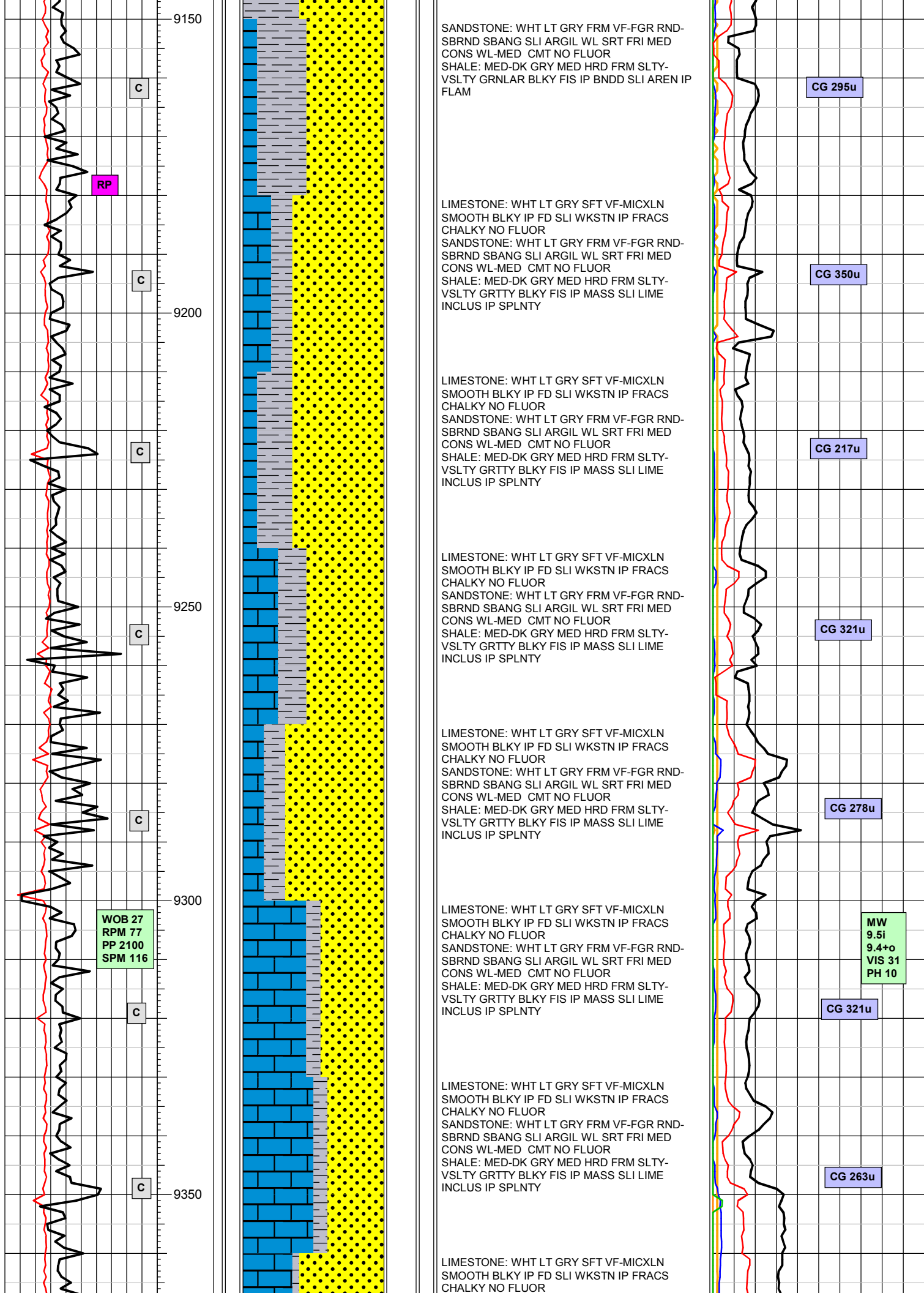
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9.5i
9.4+o
VIS 31
PH 10

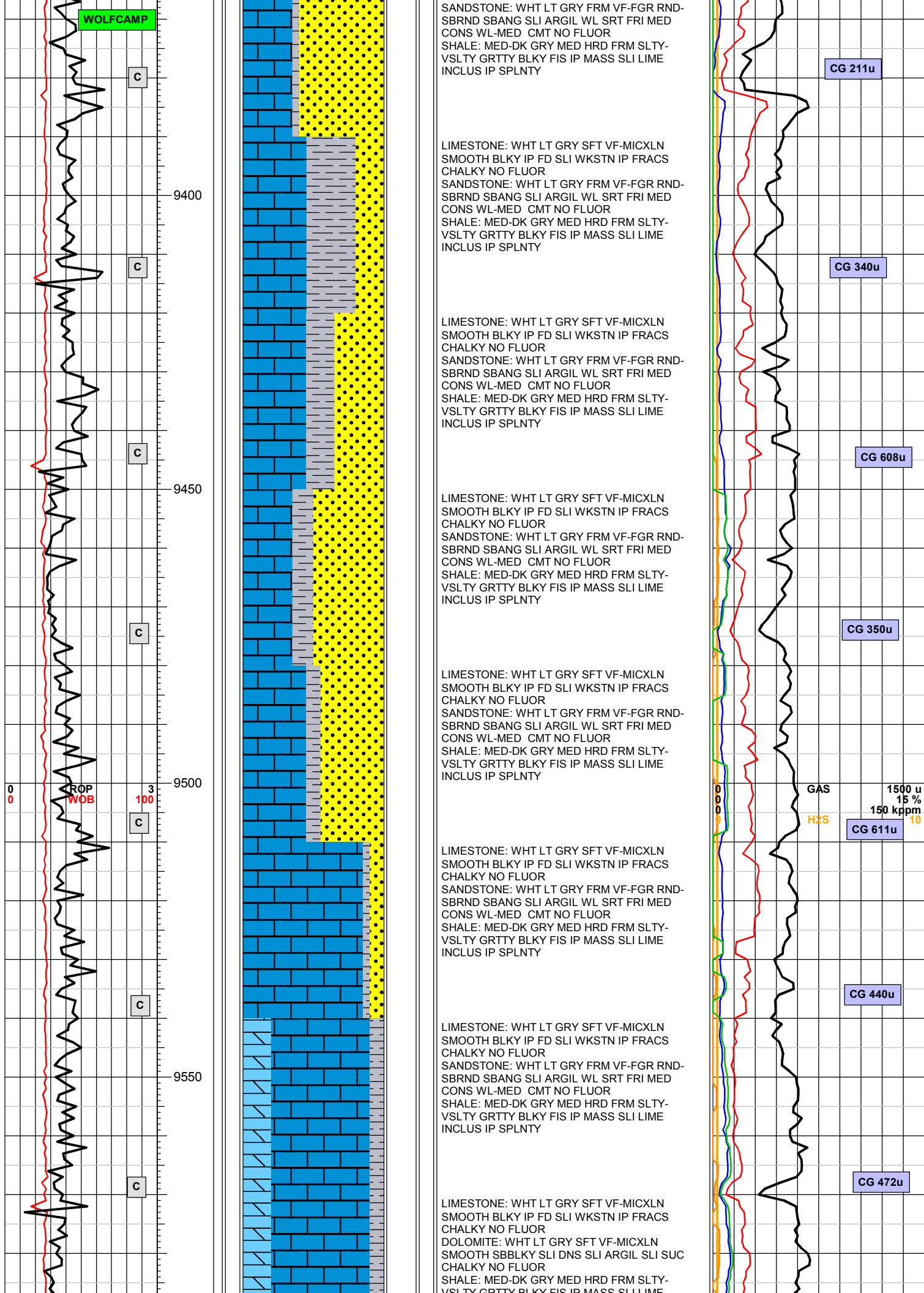
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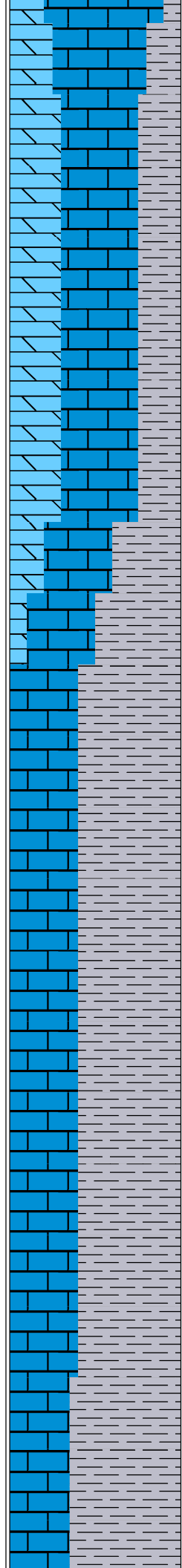
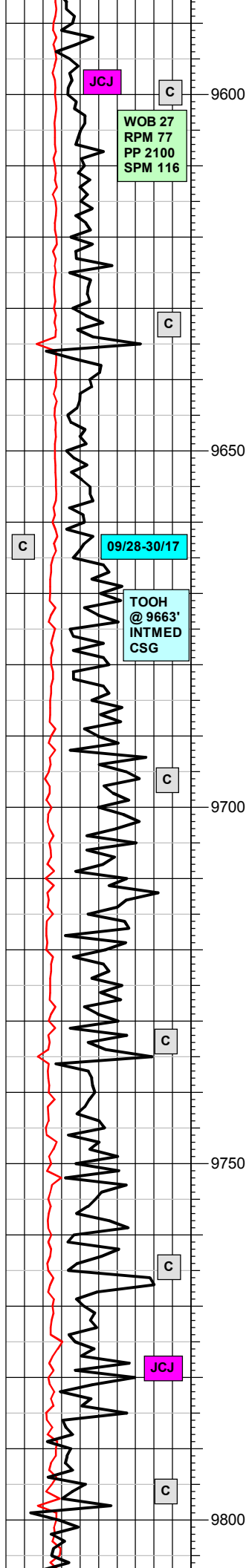
419u

CG 347u

CG 193u







VSLTY GRNTY BERT FIS IP MASS SLI LIME
INCLUS IP SPLNTY

**MD:9605 INC:0.86
AZ:164.65 TVD:9600.72**

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

DOLOMITE: WHT LT GRY SFT VF-MICXLN
SMOOTH SBLKY SLI FD SLI WKSTN SLI FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

DOLOMITE: WHT LT GRY SFT VF-MICXLN
SMOOTH SBLKY SLI DNS SLI ARGIL SLI SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

TOOH @ 9663' FOR INTMED CSG @0600 HRS
ON 9/28/2017. BOB @ 1815 HRS ON 9/30/2017.

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

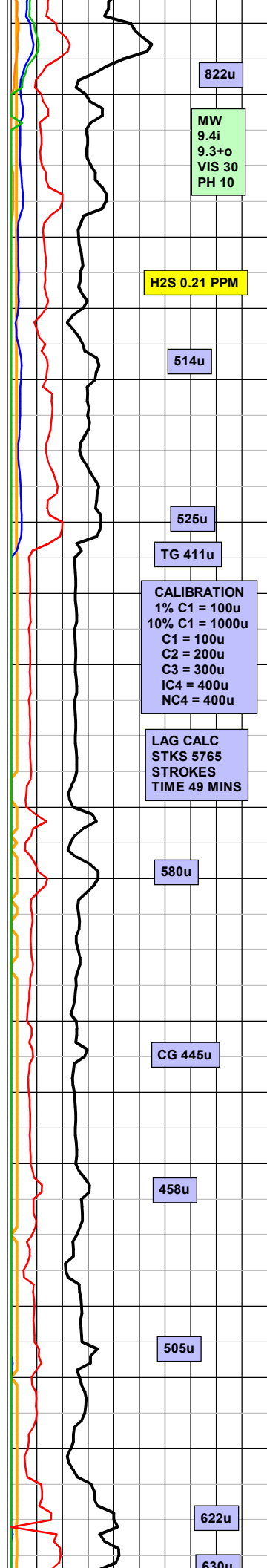
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VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

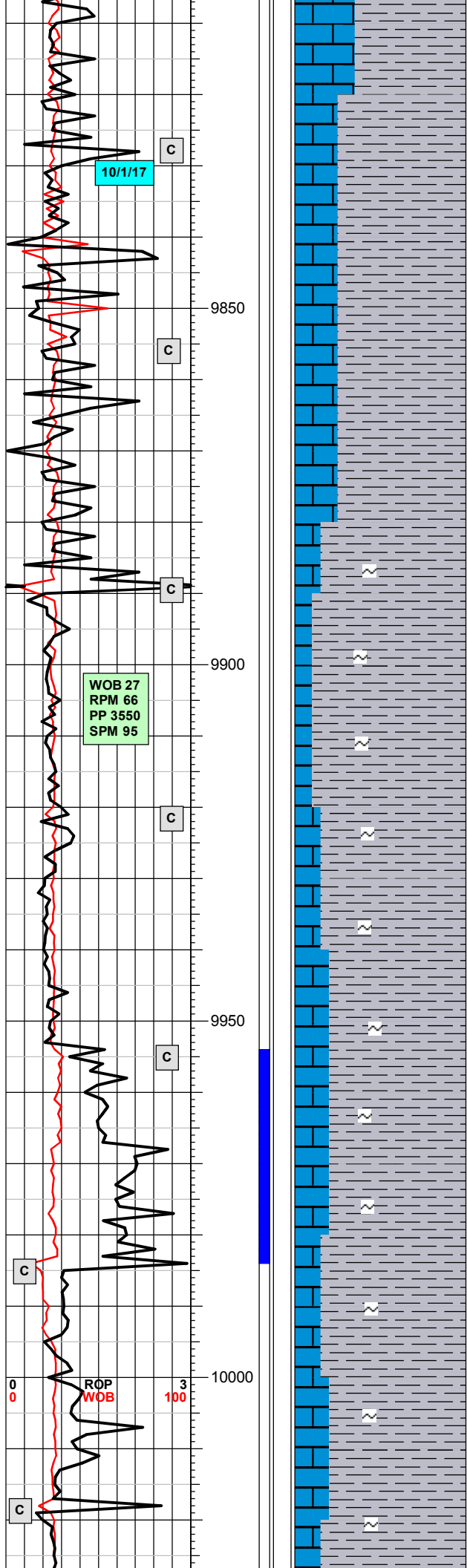
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SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM





LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP CLY INTLAMS

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP CLY INTLAMS

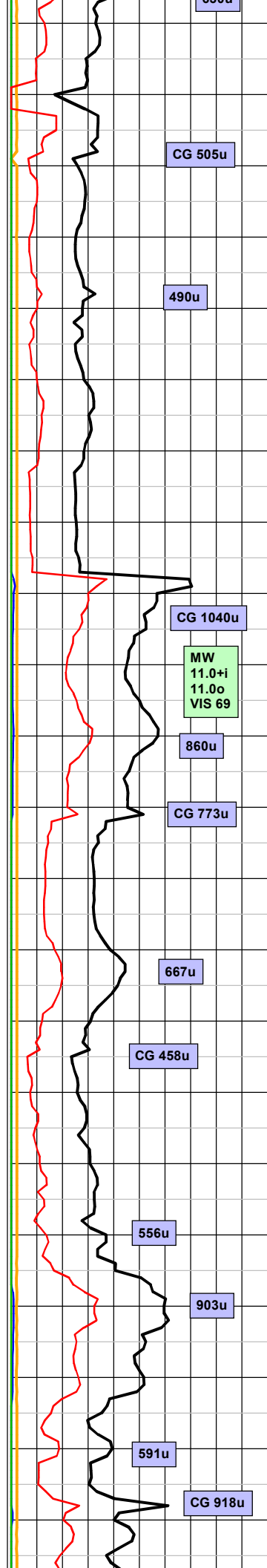
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SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP CLY INTLAMS

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR



CG 505u

490u

CG 1040u

MW
11.0+i
11.0o
VIS 69

860u

CG 773u

667u

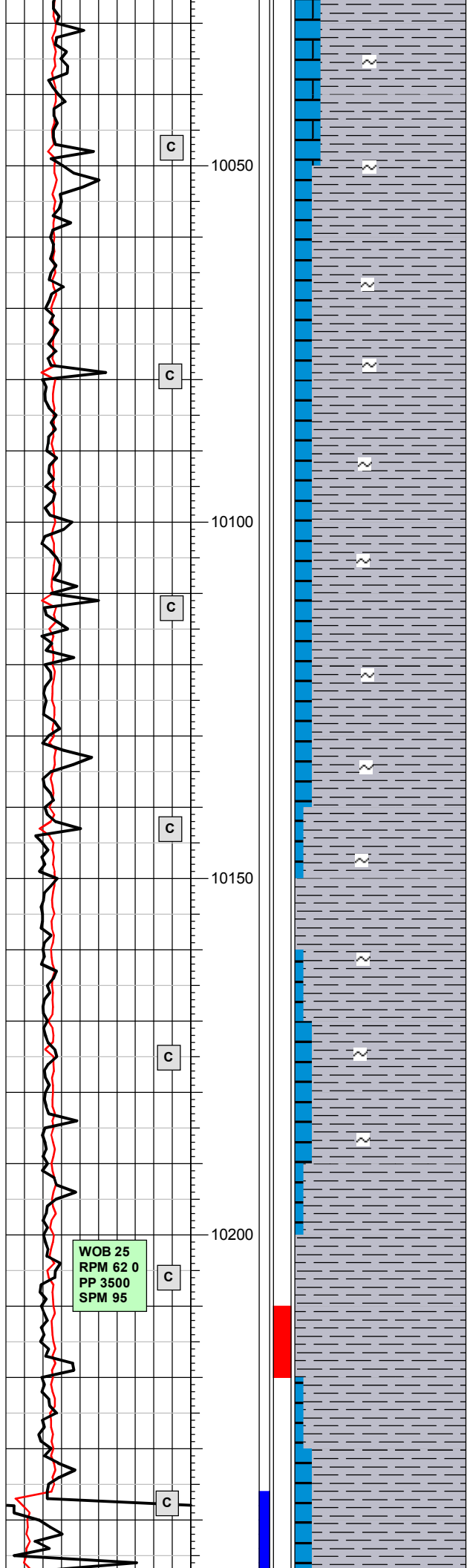
CG 458u

556u

903u

591u

CG 918u



SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP CLY INTLAMS

MD:10080 INC:1.24
AZ:281.14 TVD:10074.67

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP CLY INTLAMS

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

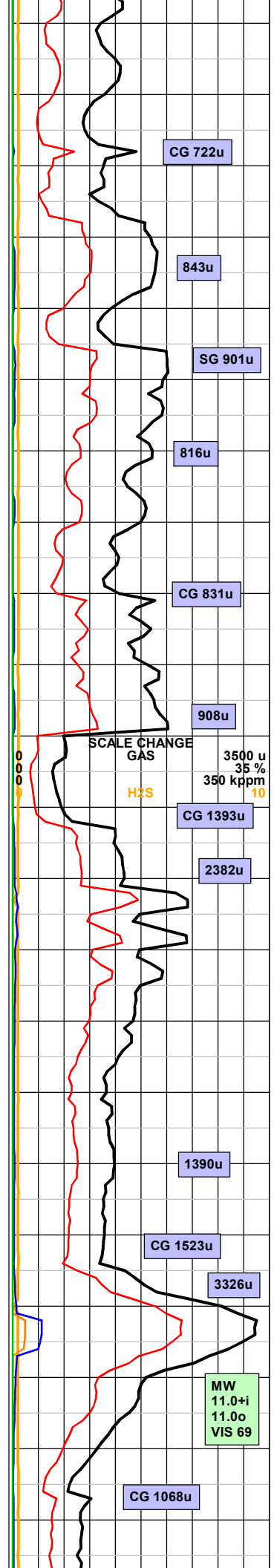
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LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD CLY IP FLAM SLI INTGRN POR

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP CLY INTLAMS



CG 722u

843u

SG 901u

816u

CG 831u

908u

SCALE CHANGE

GAS

H₂S

3500 u
35 %
350 kppm
10

CG 1393u

2382u

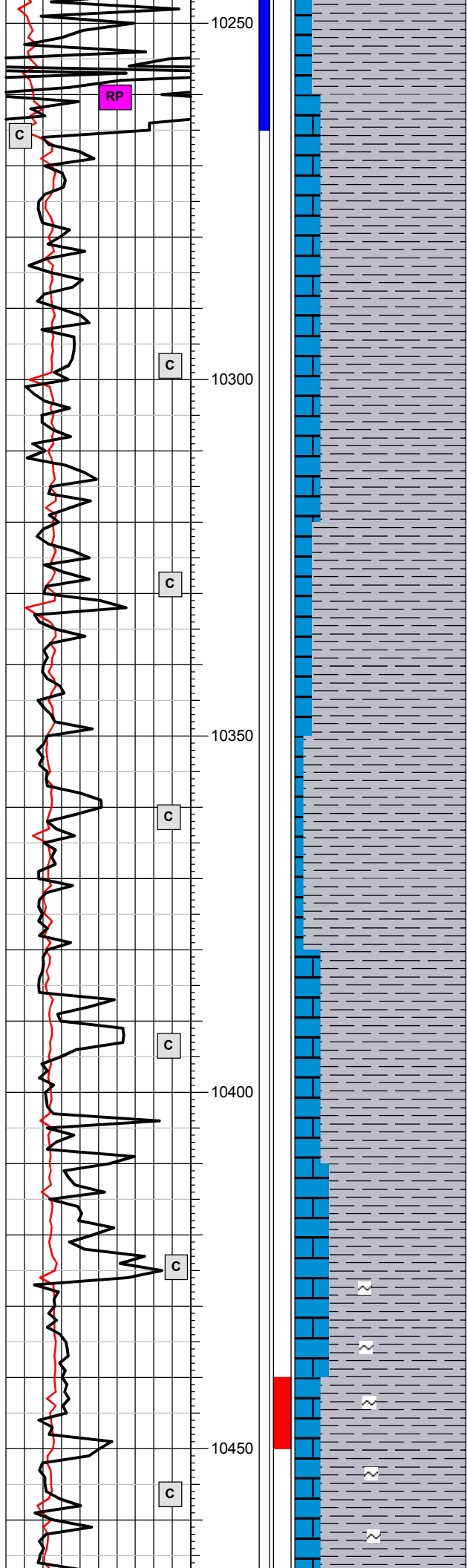
1390u

CG 1523u

3326u

MW
11.0+i
11.0o
VIS 69

CG 1068u



SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

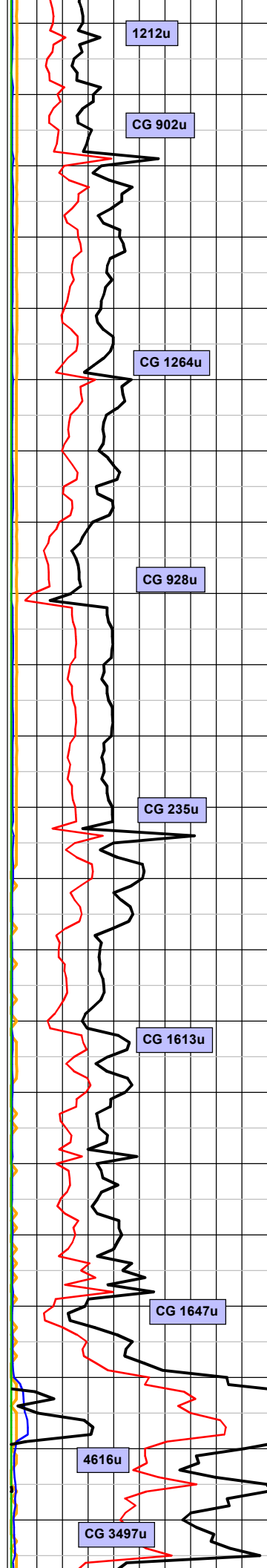
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VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

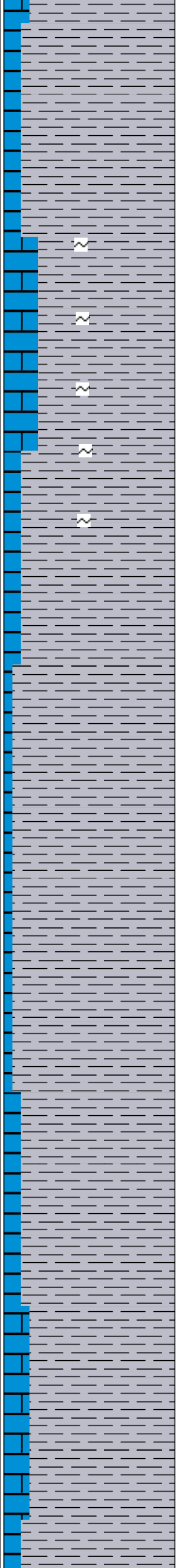
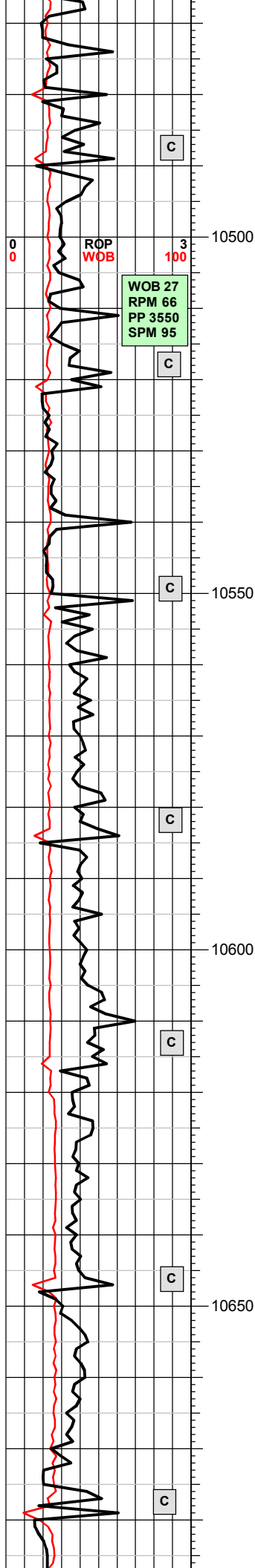
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SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD CLY IP FLAM





LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLR BLKY FIS IP MOTTLD SLI
EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

MD:10552 INC:2.08
AZ:343.76 TVD:10547.50

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLR BLKY FIS IP MOTTLD SLI
EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

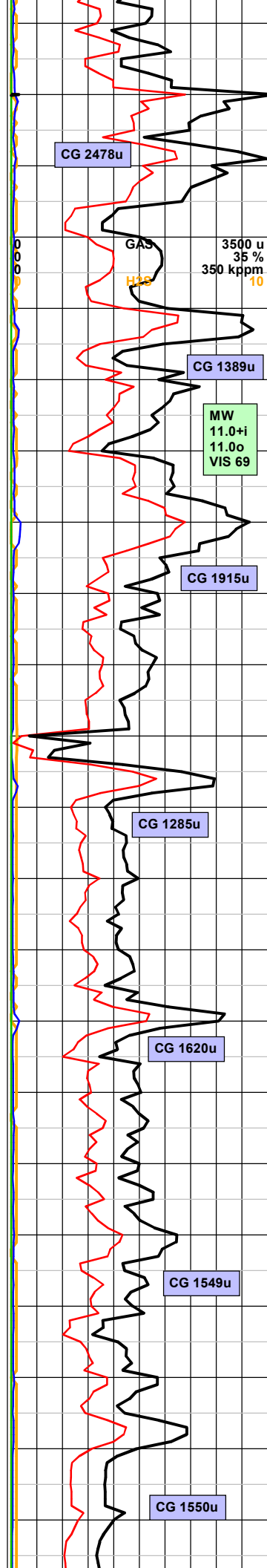
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SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

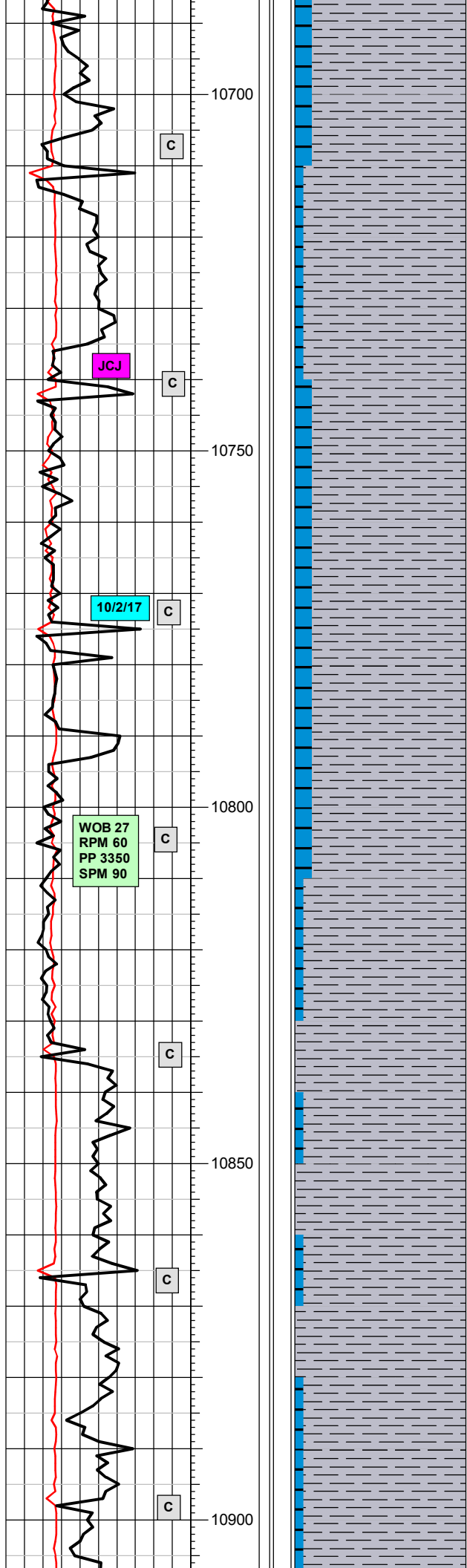
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VSLTY GRNLR BLKY FIS IP MOTTLD SLI
EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR





SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD CLY IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

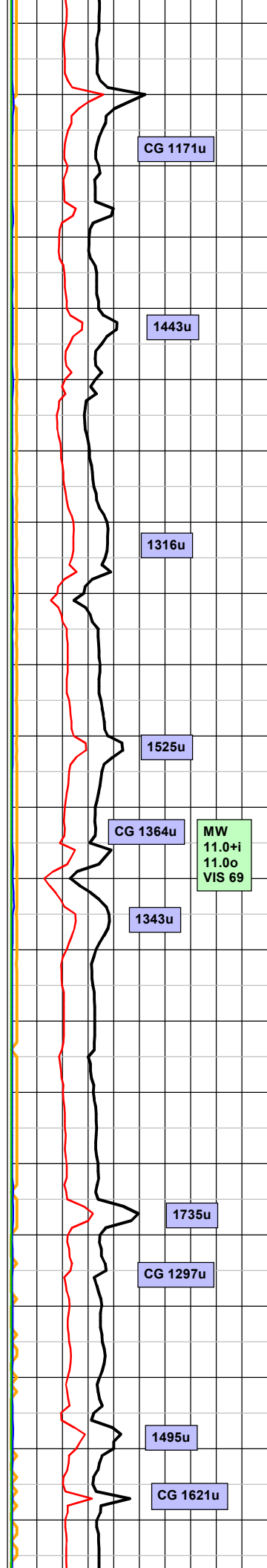
SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

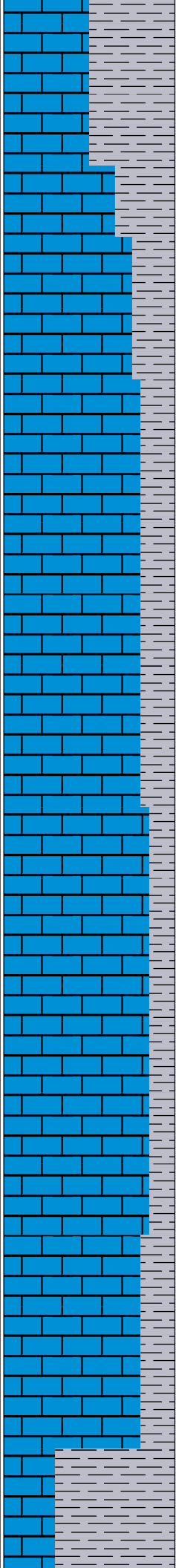
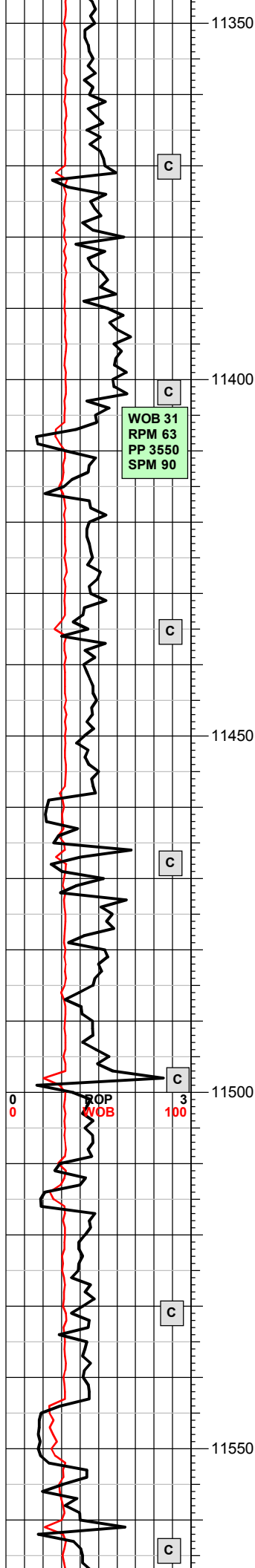
LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY





SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

MD:11498 INC:1.43
AZ:21.78 TVD:11493.15

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

CG 892u

CG 194u

MW
11.0+i
11.0o
VIS 69

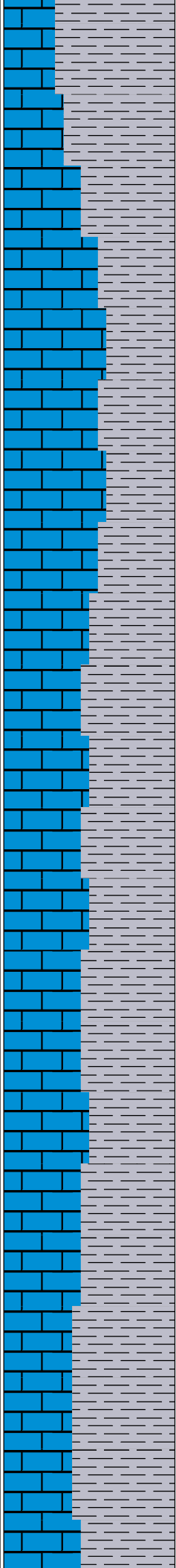
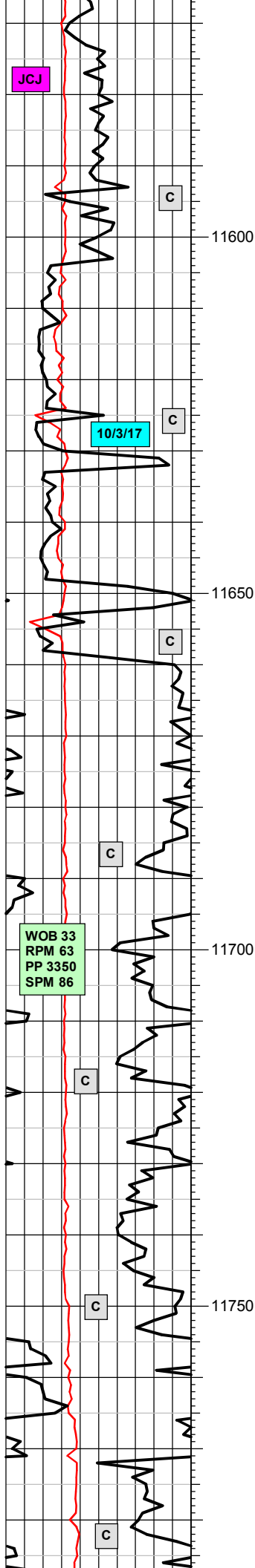
CG 879u

CG 833u

CG 788u

GAS 3500 u
H₂S 35 %
350 kppm
10

CG 858u



SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

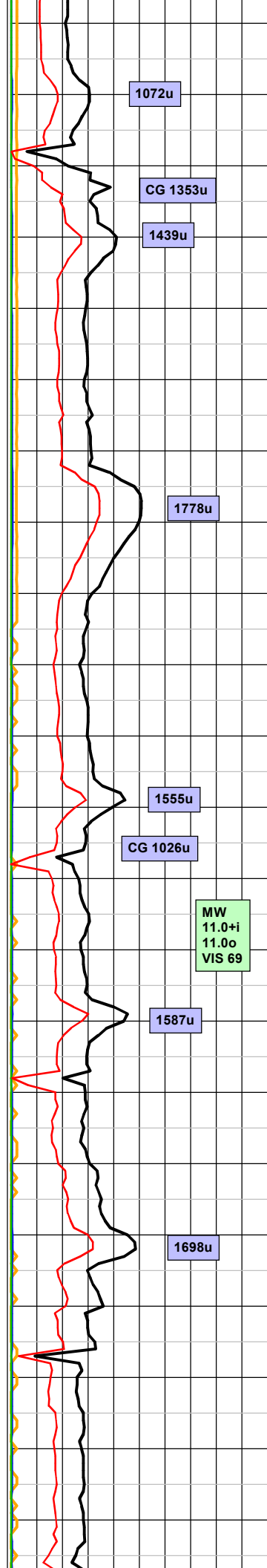
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INCLUS IP
SPLNTY

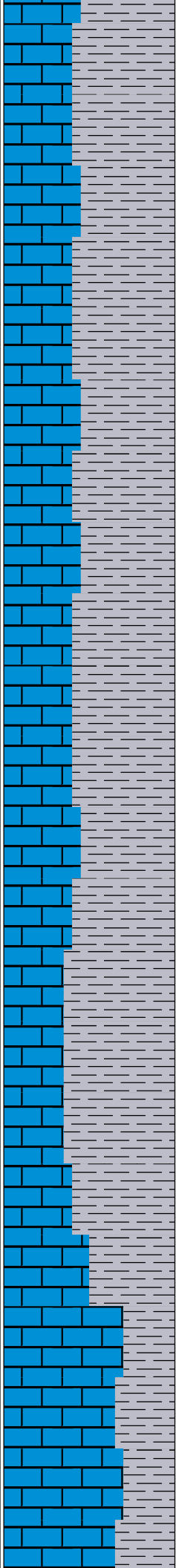
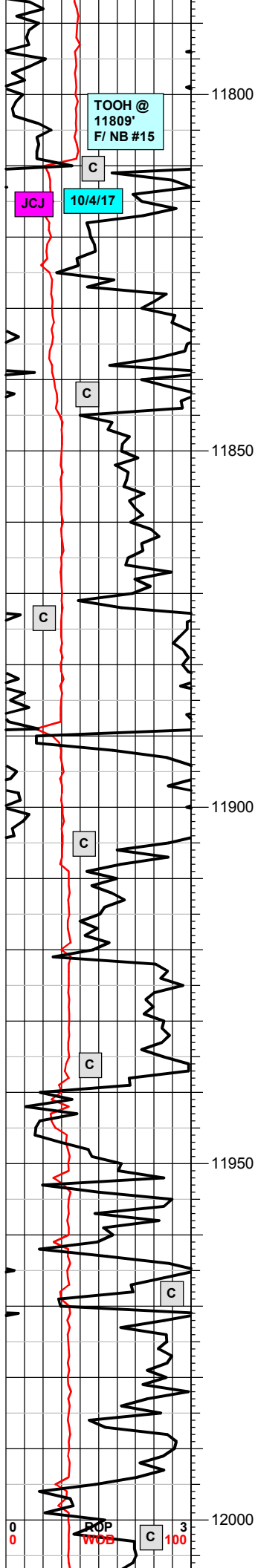
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SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM





LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

TOOH @ 0945 HRS ON 10/3/2017. BOB @ 2345
HRS ON 10/3/2017.

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

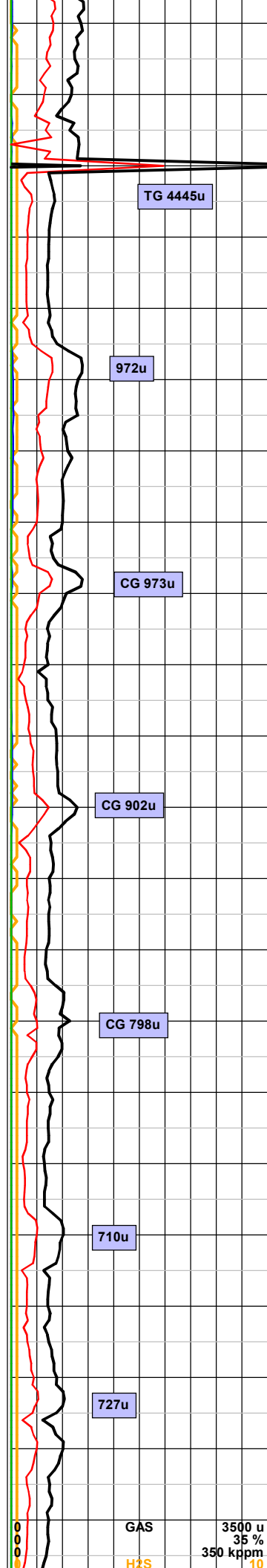
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EMBDD LIME IP FLAM

MD:11971 INC:2.06
AZ:30.05 TVD:11965.93

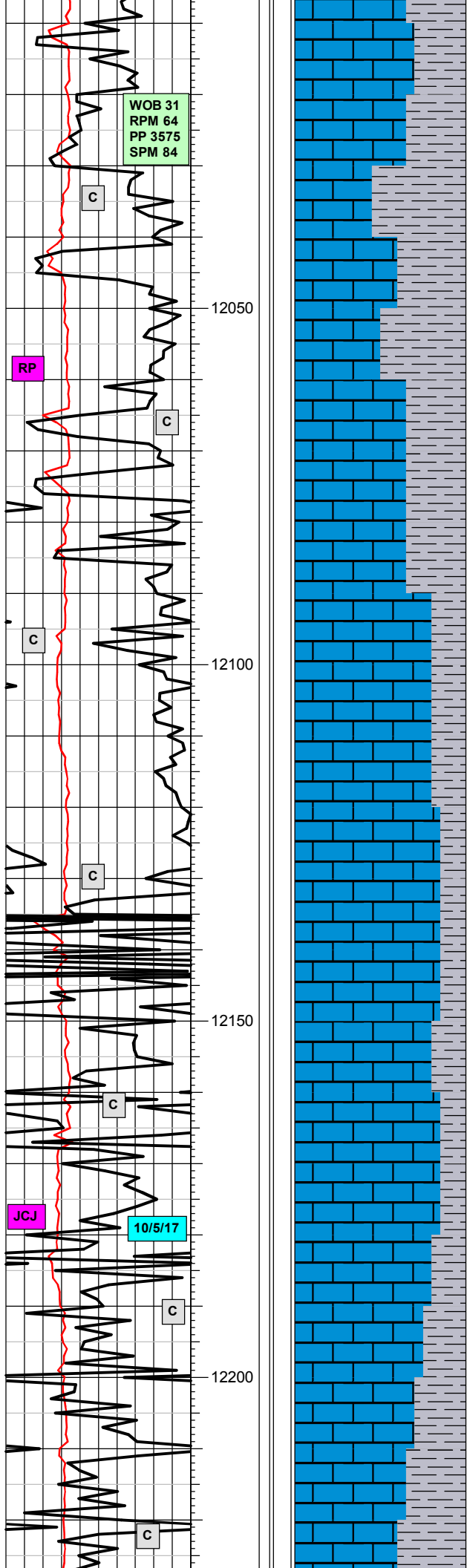
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SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR



GAS 3500 u
35 %
350 kppm
H₂S 10



SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

MW
11.0+i
11.0o
VIS 81

614u

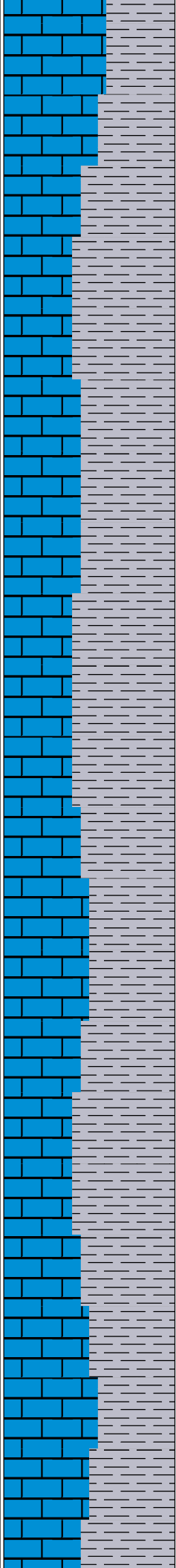
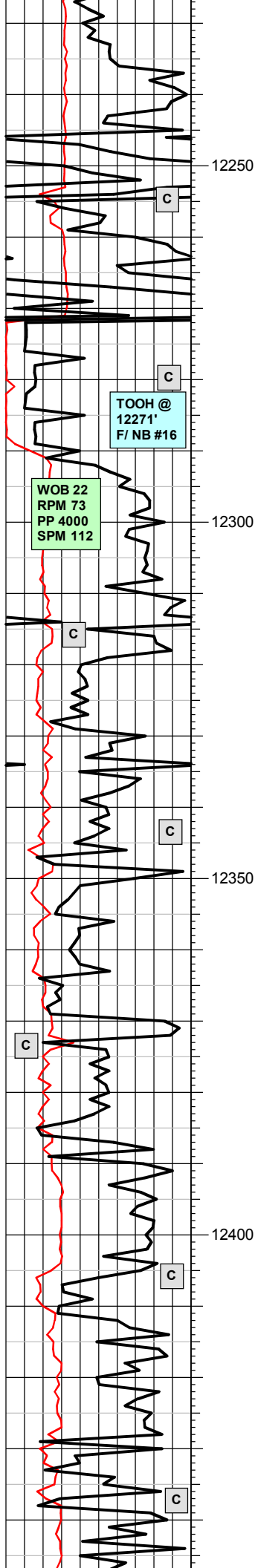
CG 680u

880u

767u

700u

CG 1442u



SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

TOOH FOR NB #16 @ 2145 HRS ON 10/5/2017.

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

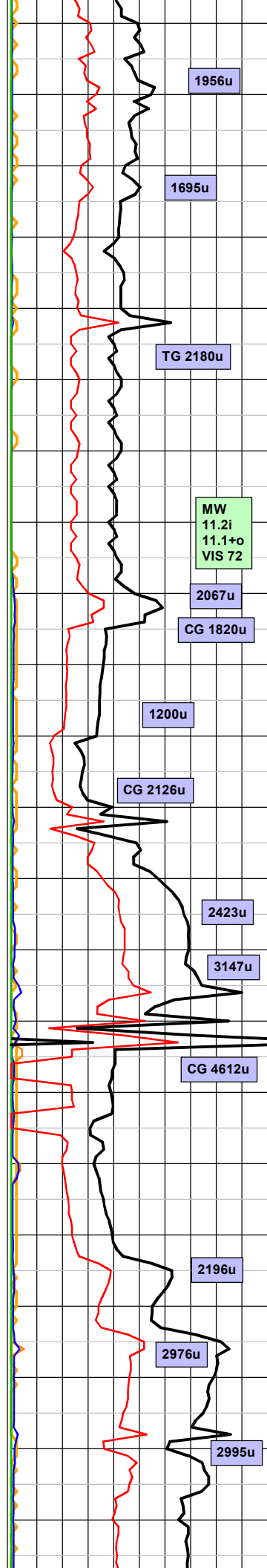
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VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

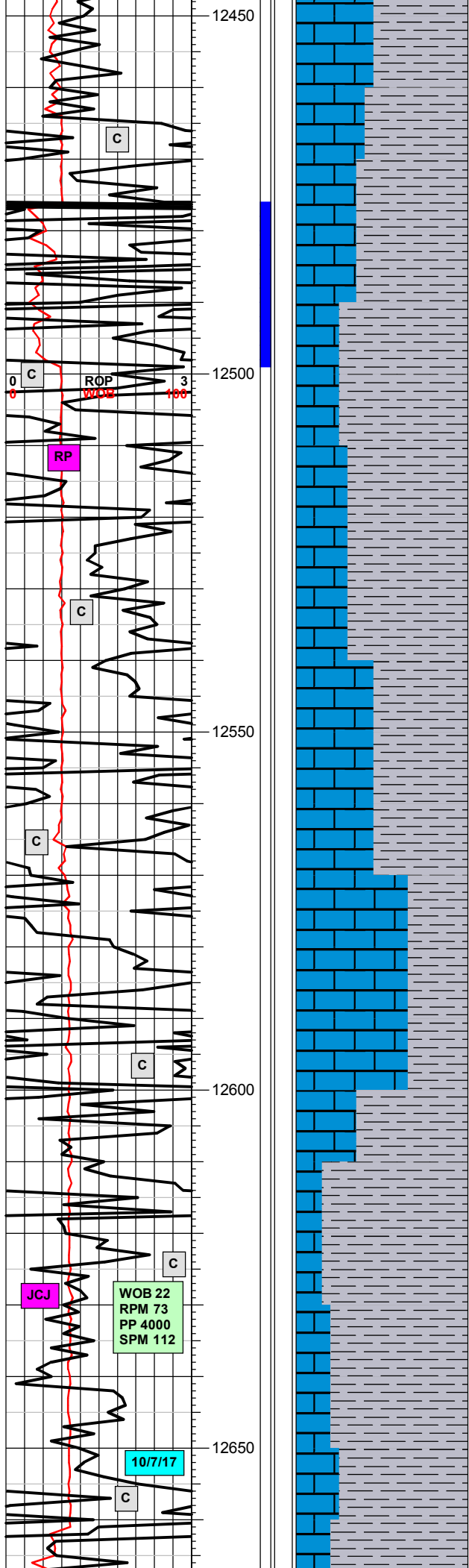
LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM





LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

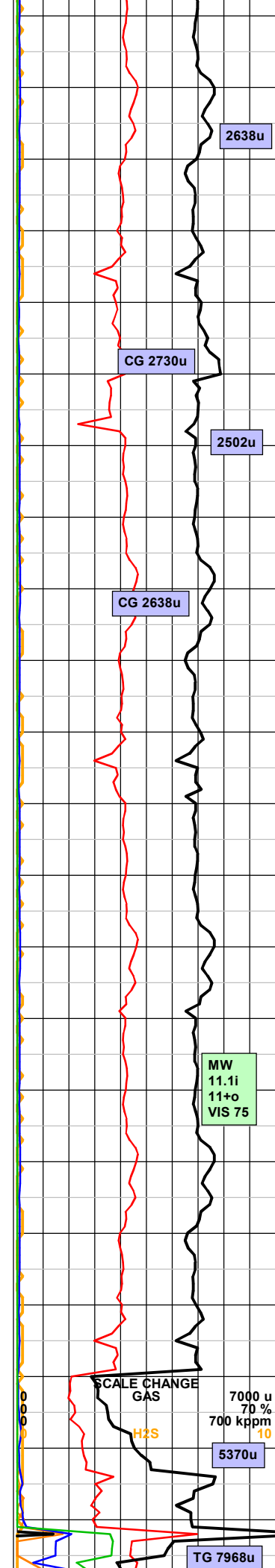
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

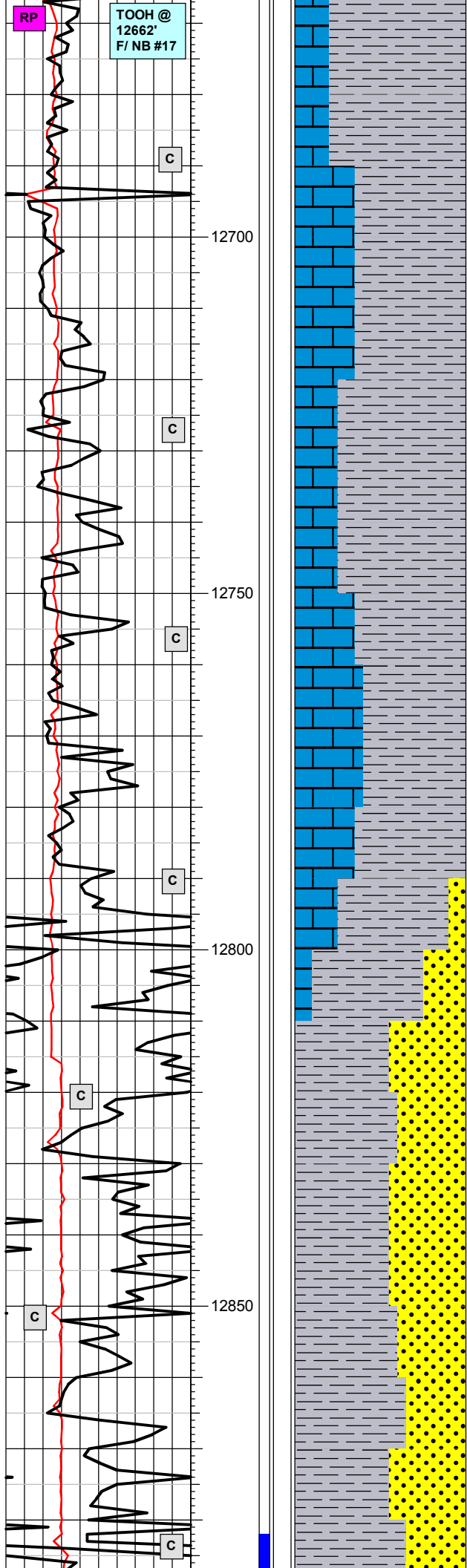
LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

TOOH @ 0400 HRS ON 10/7/2017. BOB @ 1900
HRS ON 10/7/2017.

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR





SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL-MED SRT FRI P-MED CONS MED CMT NO FLUOR

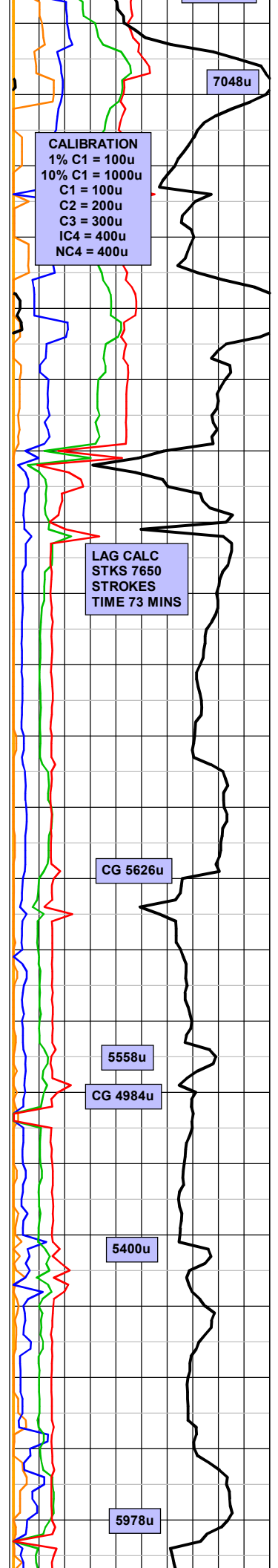
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SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL-MED SRT FRI MED CONS WL-MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP FLAM

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL-MED SRT FRI P-MED CONS MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP SPLNTY



CALIBRATION
1% C1 = 100u
10% C1 = 1000u
C1 = 100u
C2 = 200u
C3 = 300u
IC4 = 400u
NC4 = 400u

LAG CALC
STKS 7650
STROKES
TIME 73 MINS

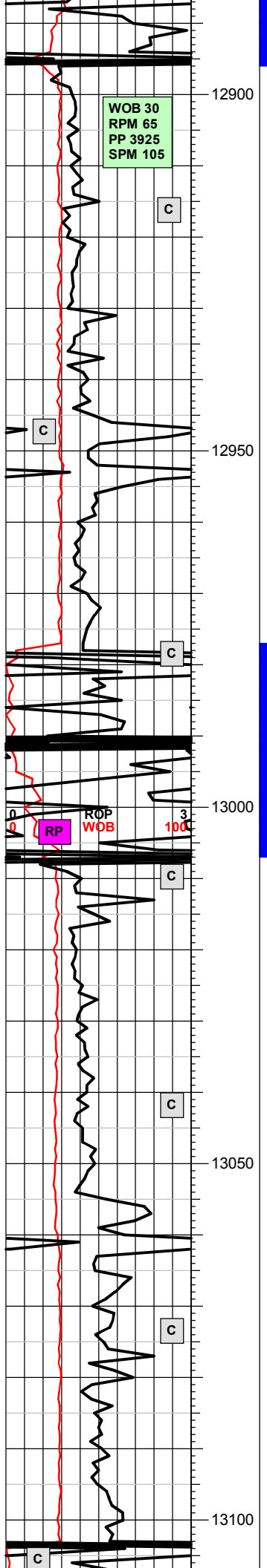
CG 5626u

5558u

CG 4984u

5400u

5978u



WOB 30
RPM 65
PP 3925
SPM 105

C

12900

12950

13000

13050

13100

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL SRT FRI MED CONS WL-MED CMT NO FLUOR

MD:12914 INC:3.49
AZ:40.01 TVD:12907.74

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP FLAM

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL-MED SRT FRI P-MED CONS MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP SPLNTY

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL SRT FRI MED CONS WL-MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP FLAM

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL-MED SRT FRI P-MED CONS MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP SPLNTY

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL SRT FRI MED CONS WL-MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP FLAM

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL-MED SRT FRI P-MED CONS MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SANDSTONE: WHT LT GRY FRM VF-FGR RND-SBRND SBANG SLI ARGIL WL SRT FRI MED CONS WL-MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP FLAM

5757u

MW
11.3+i
11.3o
VIS 74

5896u

4890u

GAS

H₂S

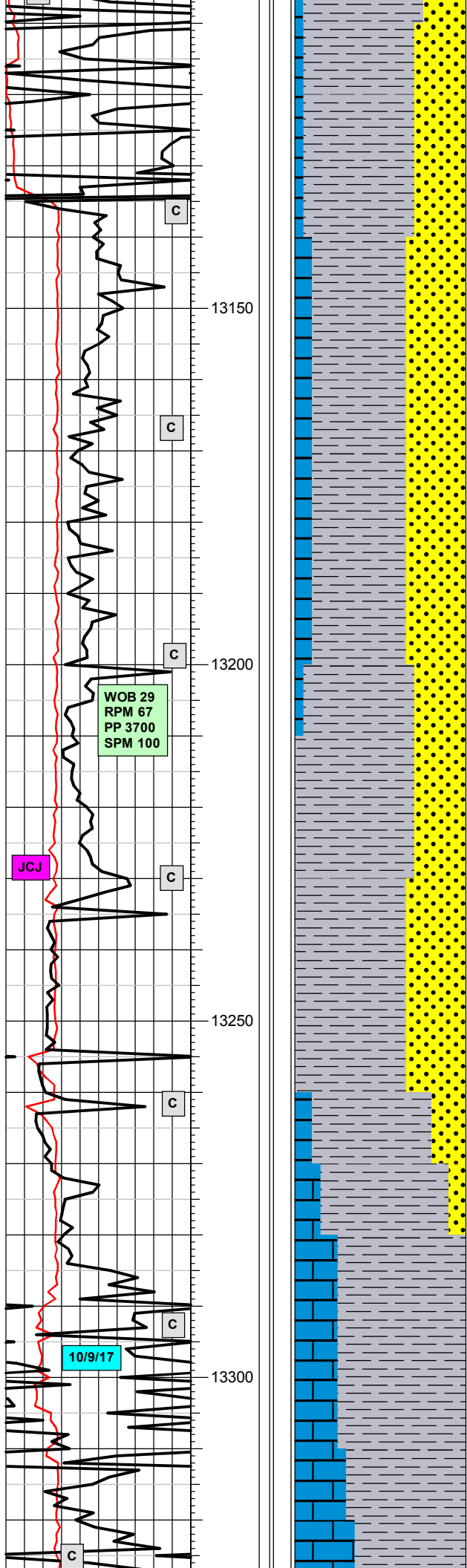
7000 u
70 %
700 kppm
10

CG 4354u

CALIBRATION
1% C1 = 100u
10% C1 = 1000u
C1 = 100u
C2 = 200u
C3 = 300u
IC4 = 400u
NC4 = 400u

CG 4677u

CG 4385u



LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG SLI ARGIL WL-MED SRT FRI P-
MED CONS MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG SLI ARGIL WL SRT FRI MED
CONS WL-MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP
FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG SLI ARGIL WL-MED SRT FRI P-
MED CONS MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG SLI ARGIL WL-MED SRT FRI MED
CONS WL-MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP BNDD SLI AREN IP
FLAM

SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG SLI ARGIL WL-MED SRT FRI P-
MED CONS MED CMT NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI AREN IP
SPLNTY

SANDSTONE: WHT LT GRY FRM VF-FGR RND-
SBRND SBANG SLI ARGIL MED SRT FRI P-MED
CONS WL-MED CMT NO FLUOR

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

CG 3900u

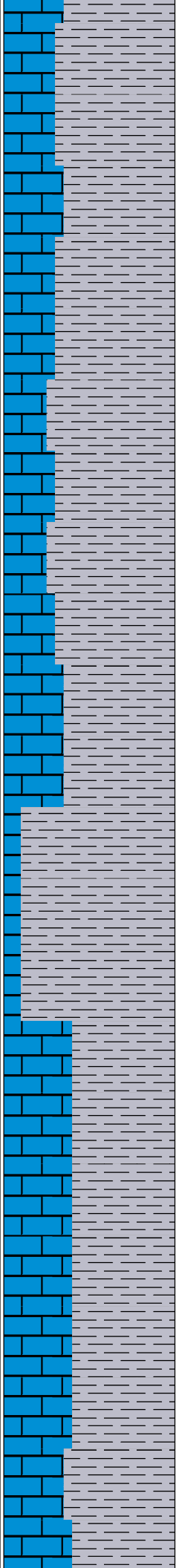
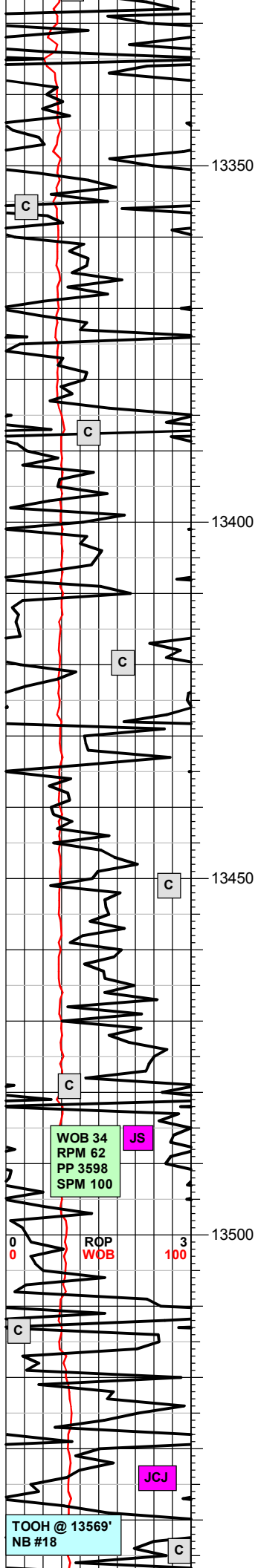
CG 4490u

CG 4276u

MW
12.6i
12.0o
VIS 71

5029u

5113u



SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

MD:13387 INC:2.78
AZ:68.54 TVD:13380.05

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP DNS SLI ARGIL IP SUC CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRNLAR BLKY FIS IP MOTTLD SLI EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN SMOOTH BLKY IP FD SLI WKSTN IP FRACS CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-VSLTY GRTTY BLKY FIS IP MASS SLI LIME INCLUS IP SPLNTY

SHALE: GY-DKGY MEDHD-HD
SUBLKY/SUBPLATY SLTY GRTTY MASS TXT SL CALC NO FLUOR TR MKY CUT NO RING

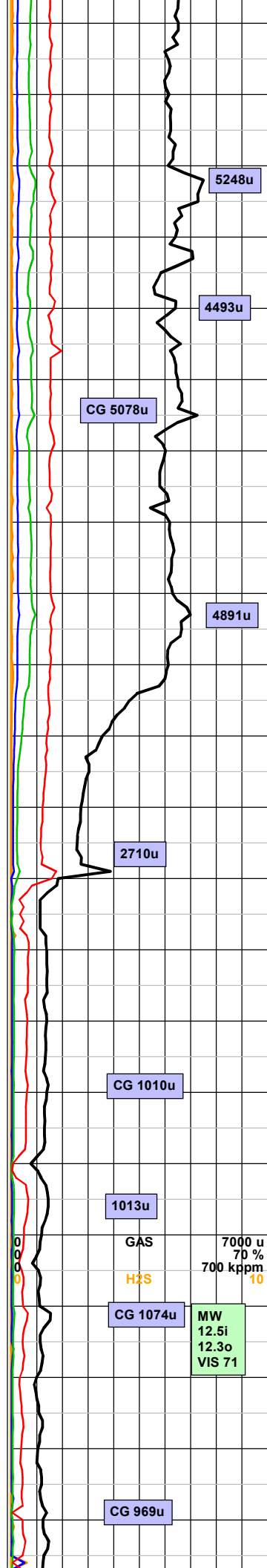
LIMESTONE: OFFWHT-LTGY SFT-FRM SUBBLKY MCR-VFNXLN ARG IN PRT NO FLUOR TR MKY CUT NO RING

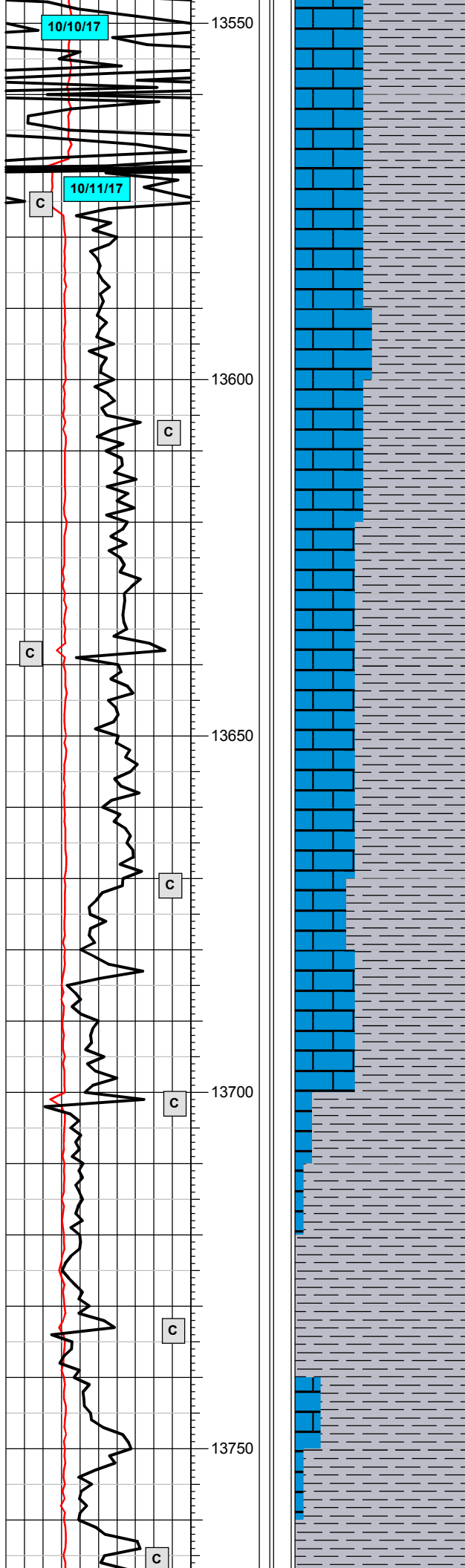
SHALE: LT-DKGY SPCKLD N PRT FRM-BRTT SUBBLKY SLTY-VSLTY GRTTY SL CALC N PRT NO FLUOR TR MKY CUT NO RING

LIMESTONE: WH-OFFWH-LTGY BLTCHY FRM MCR-FNXLN SLTY/ARG N PRT MSTLY MASS TXT SOME FN LAMS V TR PALE LT BLU FLUOR TR MKY CUT NO RING

SHALE: GY-DKGY W/ WH SPCKLD FRM-MEDHD SUBBLKY-SUBPLATY SLTY GRTTY NON-SL CALC MASS TXT V WK MKY CUT NO RING

LIMESTONE: WH-OFFWH MOTT N PRT FRM-HD SUBBLKY MCR-FNXLN MASS/XLN TXT SLTY N PRT RARE LAMS FNT PALE BLU FLUOR V WK MKY CUT NO RING





MRT CUTTING RING

TOOH FOR NB #18 @ 0400 HRS ON 10/10/2017.
NB #18 8 1/2" ULTERRA CF 716
SN 36719 JETS 7X14

BOB @ 23:55 HRS 10/10/2017.
LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

1104u

TG 1224u

CALIBRATION
1% C1 = 100u
10% C1 = 1000u
C1 = 100u
C2 = 200u
C3 = 300u
IC4 = 400u
NC4 = 400u

LAG CALC
STKS 8115
STROKES
TIME 80 MINS

616u

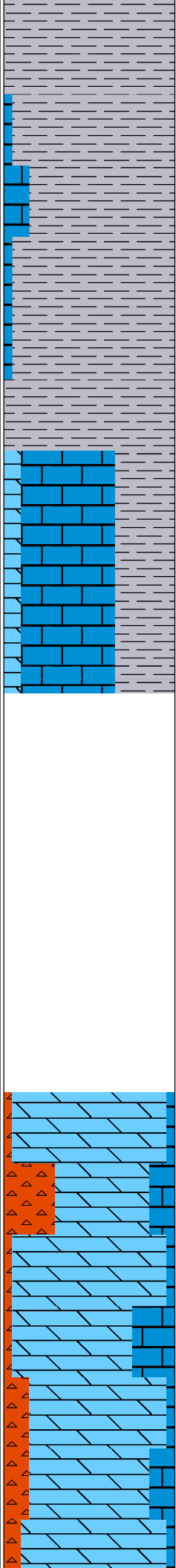
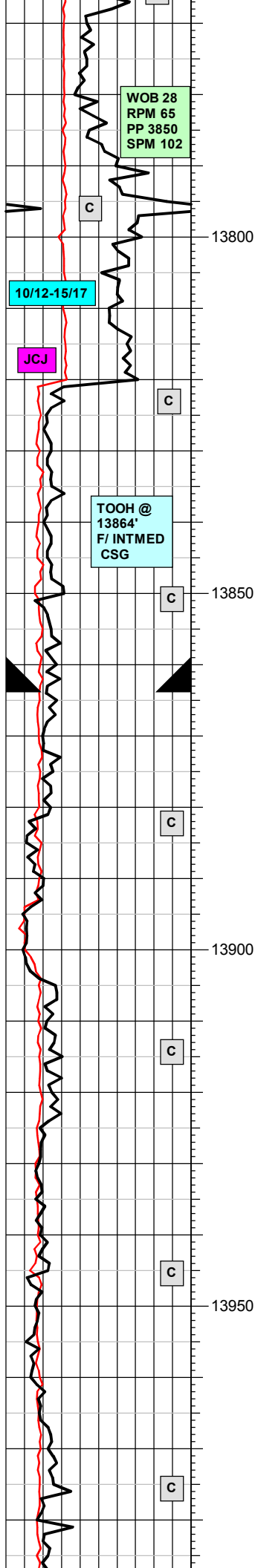
596u

648u

659u

1060u

990u



LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

MD:13858 INC:4
AZ:36.33 TVD:13850.26

TOOH @ 1200 HRS ON 10/11/2017 FOR INTMED
CSG & CMT. L/D PIPE & TIH. BOB @ 0815 HRS
ON 10/15/2017.
7" CSG SET @ 13864' USING NB #19 6"
ULTERRA 613M SN 34874 JETS 6X16. DRILLING
W/ MUD.

NO RETURNS
NO SAMPLE

NO RETURNS
NO SAMPLE

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI DNS SLI ARGIL SLI SUC
CHALKY DULL YL FLUOR FR MILKY CUT

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI FD EMBDD WKSTN SLI
FRACS CHALKY DULL YL FLUOR FR MILKY CUT

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI DNS SLI ARGIL SLI SUC
CHALKY DULL YL FLUOR FR MILKY CUT

MW
12.4+i
12.4o
VIS 59

TG 265u

CALIBRATION
1% C1 = 100u
10% C1 = 1000u
C1 = 100u
C2 = 200u
C3 = 300u
IC4 = 400u
NC4 = 400u

LAG CALC
STKS 3300
STROKES
TIME 32 MINS

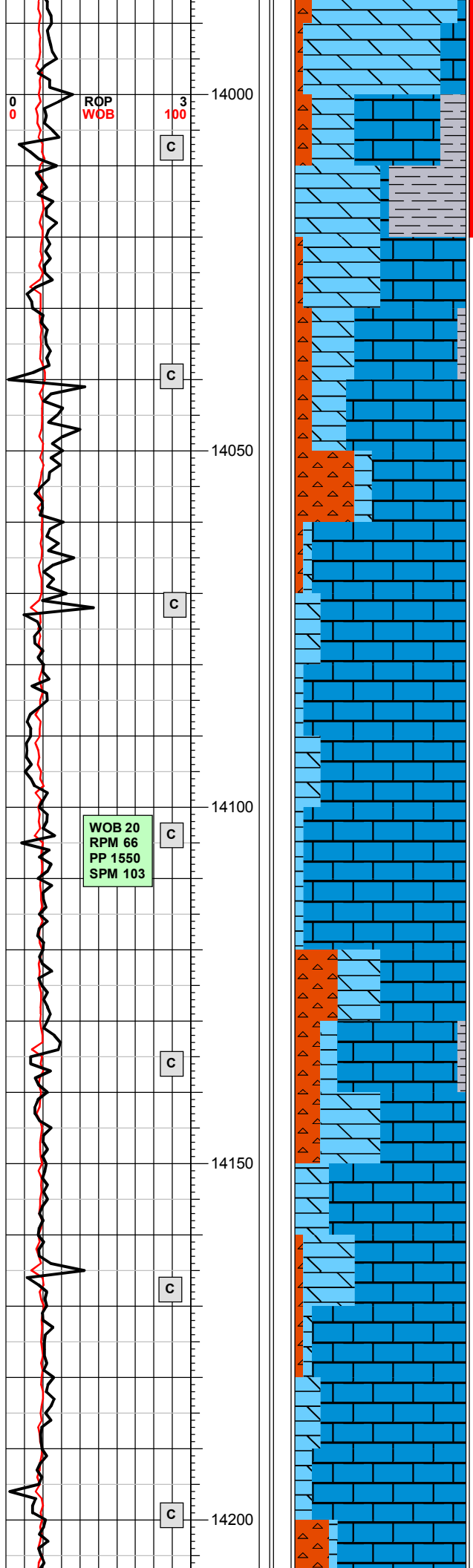
NO RETURNS

267u

6200u

CG 3987u

5473u



LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI FD EMBDD WKSTN SLI
FRACS CHALKY DULL YL FLUOR FR MILKY CUT

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI DNS SLI ARGIL SLI SUC
CHALKY DULL YL FLUOR FR MILKY CUT

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI FD EMBDD WKSTN SLI
FRACS CHALKY DULL YL FLUOR FR MILKY CUT

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI DNS SLI ARGIL SLI SUC
CHALKY DULL YL FLUOR FR MILKY CUT

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI FD EMBDD WKSTN SLI
FRACS CHALKY DULL YL FLUOR FR MILKY CUT

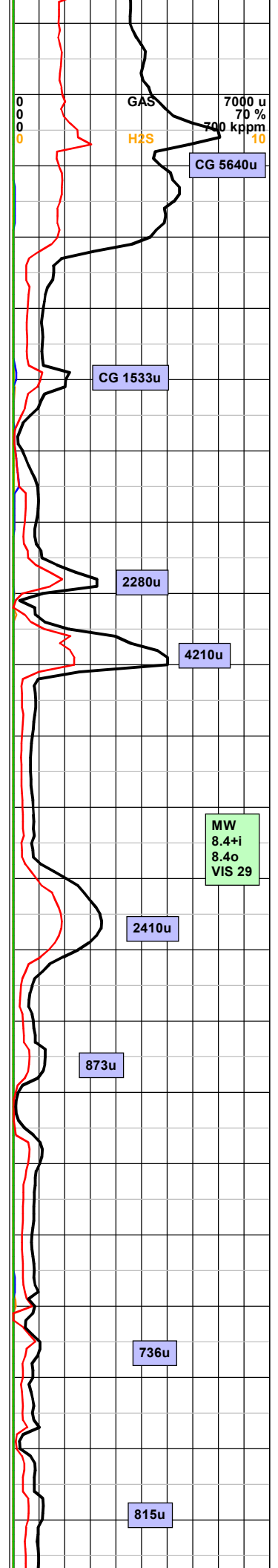
LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI DNS SLI ARGIL SLI SUC
CHALKY DULL YL FLUOR FR MILKY CUT

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI FD EMBDD WKSTN SLI
FRACS CHALKY DULL YL FLUOR FR MILKY CUT

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR



GAS 7000 u
H₂S 70 %
CG 5640u

CG 1533u

2280u

4210u

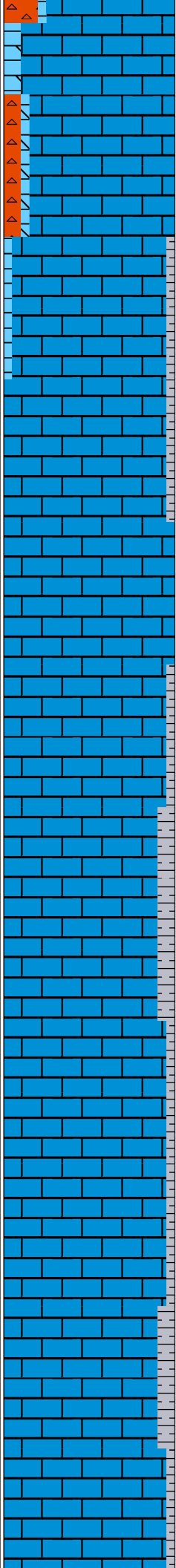
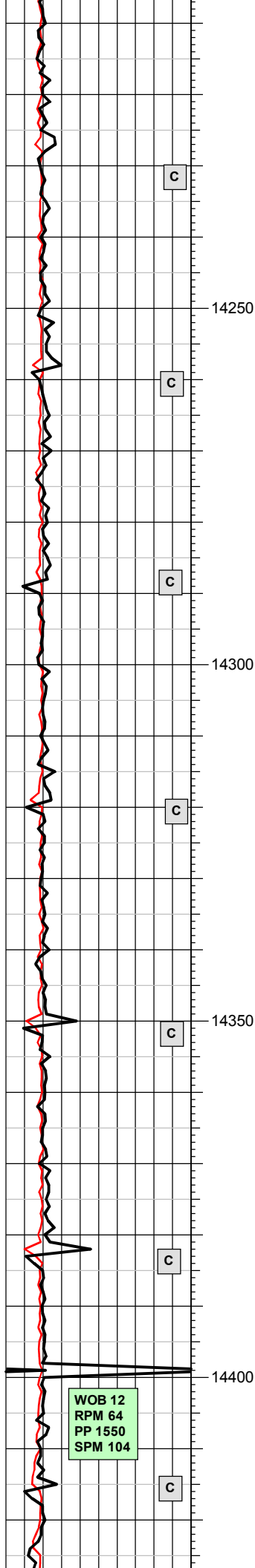
MW
8.4+i
8.4o
VIS 29

2410u

873u

736u

815u



LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

MD:14265 INC:3.76
AZ:21.63 TVD:14256.34

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

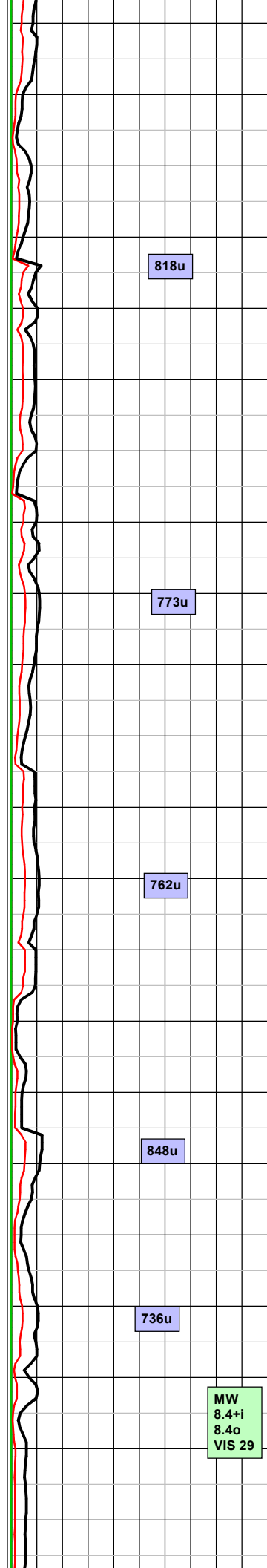
SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY

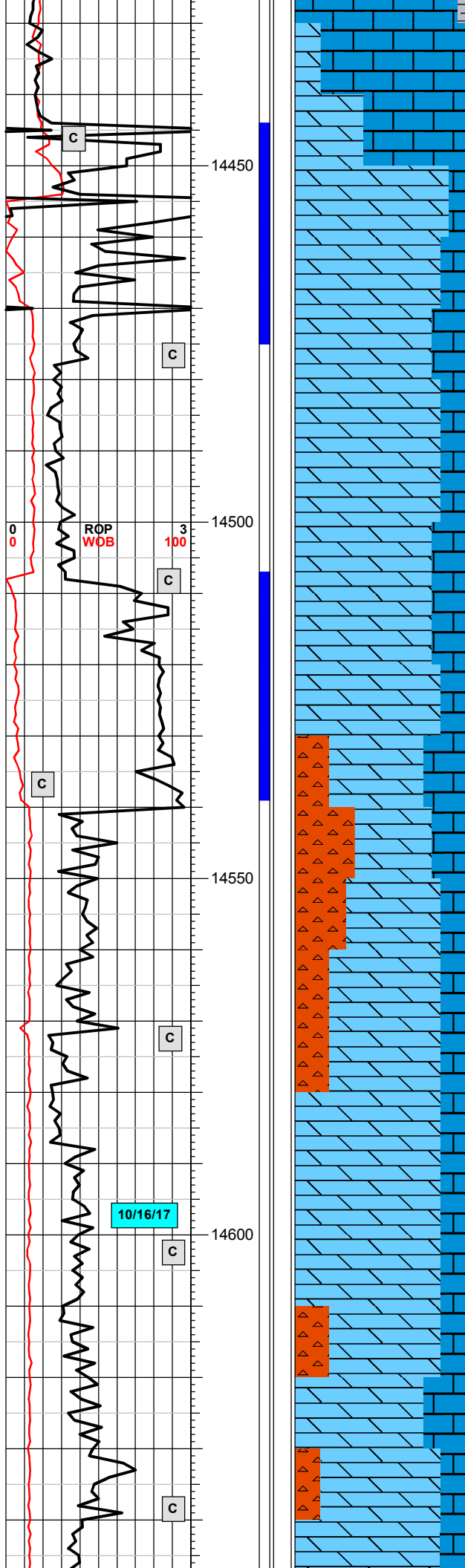
LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRNLAR BLKY FIS IP MOTTLD SLI
EMBDD LIME IP FLAM

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP FD SLI WKSTN IP FRACS
CHALKY NO FLUOR

SHALE: MED-DK GRY MED HRD FRM SLTY-
VSLTY GRTTY BLKY FIS IP MASS SLI LIME
INCLUS IP
SPLNTY





DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI FD EMBDD WKSTN SLI
FRACS CHALKY DULL YL FLUOR FR MILKY CUT

LIMESTONE: WHT LT GRY SFT VF-MICXLN
SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

DOLOMITE: WHT-OFWHT MED HRD F-VFXLN SLI
SMOOTH SBBLKY SLI DNS SLI ARGIL SLI SUC
CHALKY DULL YL FLUOR FR MILKY CUT

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CHALKY DULL YL FLUOR FR MILKY CUT

CG 707u

1159u

1498u

1228u

GAS

H₂S

7000 u
70 %
700 kppm
10

CG 928u

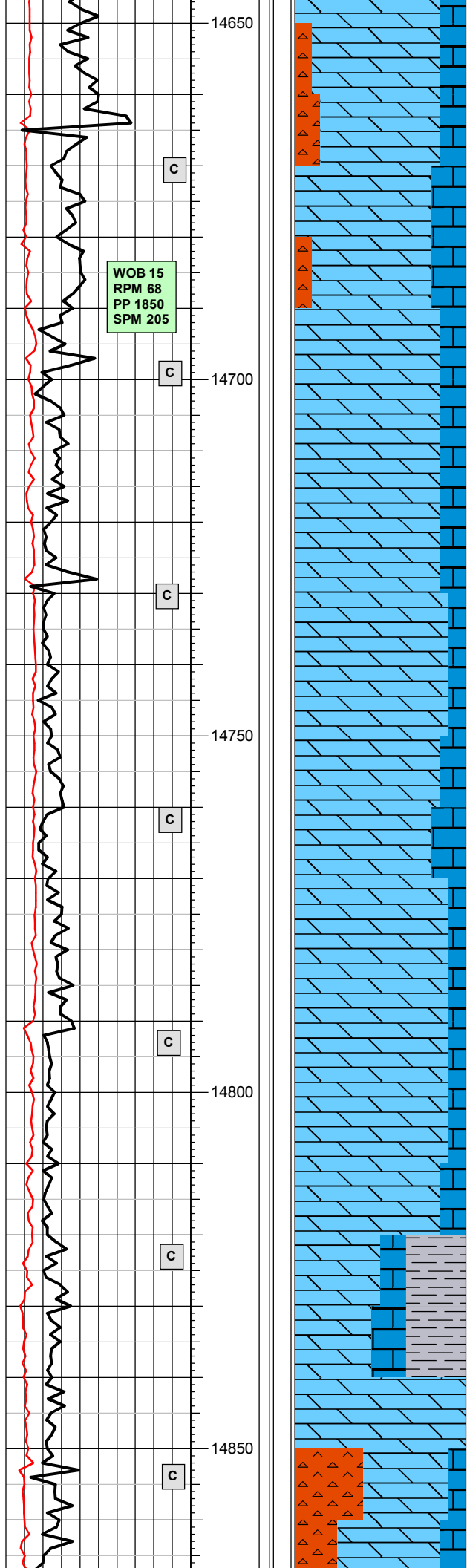
1544u

960u

752u

774u

CG 814u



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SMOOTH BLKY IP FD SLI WKSTN IP FRACS
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SMOOTH BLKY IP DNS SLI ARGIL IP SUC
CHALKY NO FLUOR

812u

832u

MW
8.4+i
8.4o
VIS 29

795u

CG 704u

748u

860u

940u

871u

