

**GRAND  
MESA****OPERATING COMPANY**

(316) 265-3000  
FAX: (316) 265-3455

1700 N. WATERFRONT PARKWAY  
BLDG. 600  
WICHITA, KANSAS 67206-5514

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

Well Name: Schweizer  
Well Id: 3-35  
Location: 1610' FNL & 1142' FEL, Sec 35-T22S-R10W, Reno County, Kansas  
License Number: API: 15-155-21735 Region: Reno County  
Spud Date: 10/17/2016 Drilling Completed: 10/23/2016  
Surface Coordinates: Lat: 38.0961479  
Long: -98.3849709  
Bottom Hole Vertical hole  
Coordinates:  
Ground Elevation (ft): 1736' K.B. Elevation (ft): 1746'  
Logged Interval (ft): 2400' To: RTD Total Depth (ft): 3730'  
Formation: Viola at RTD  
Type of Drilling Fluid: Chemical

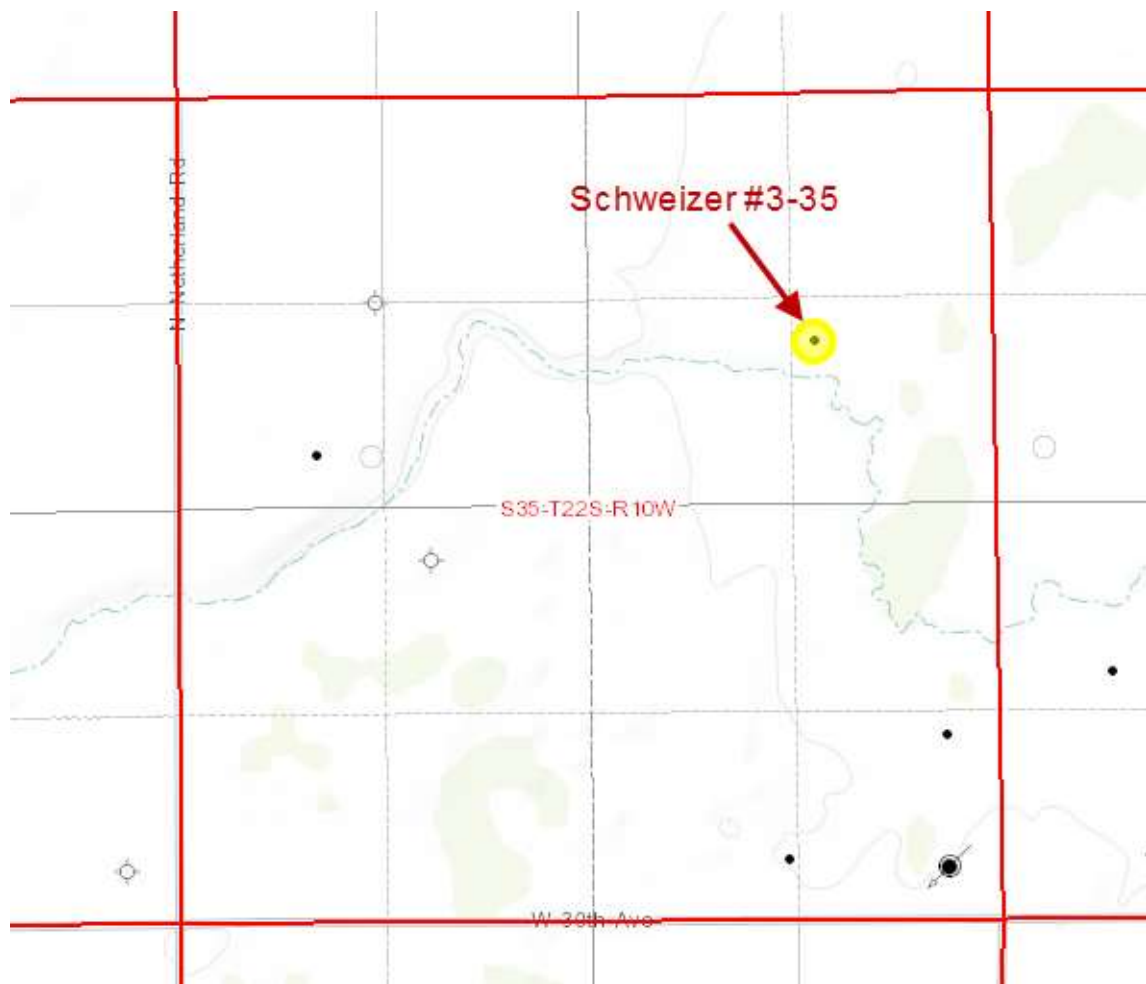
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

**OPERATOR**

Company: Grand Mesa Operating Company  
Address: 1700 N. Waterfront Parkway; Bldg. 600  
Wichita, KS 67206-5514  
316-265-3000

**GEOLOGIST**

Name: Kent R. Matson  
Company: Matson Geological Services, LLC  
Address: 33300 W. 15th Street S.  
Garden Plain, Kansas 67050  
316-644-1975; kent4m@hotmail.com



#### COMMENTS

Grand Mesa Company Geologist: Steve Stribling, 316-265-3000 (office).

Drilling Contractor: Summitt Drilling Company Inc., Rig #1.

Tool Pusher: Scott Miller, 620-341-3133 (cell).

Surface Casing: 8 5/8" set at 252' (KB) w/175 sx cement.

Production Casing: Based on field observations of drill cuttings and electric log review, production casing (5.5") was installed to further evaluate potential oil production.

Mud by: Andy's Mud & Chemical Co.; Dennis Rector, 785-656-3039 (cell).

DST's by: Diamond Testing: Mike Cochran, 620-282-2302 (cell). Note: no DSTs were conducted.

Logs by: Weatherford (CND w/PE, DI w/SP, Micro, Sonic), Adam Sill, 620-309-7753 (cell).

RTD= 3730', -1984'.

LTD= 3725', -1979'.

## FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Tarkio	2386'	-640	2384'	-638
Howard	2611'	-865	2612'	-866
Topeka	2717'	-971	2715'	-969
Heebner	3012'	-1266	3012'	-1266
Brown LS	3161'	-1415	3163'	-1417
Lansing	3196'	-1450	3197'	-1451
Stark Shale	3417'	-1671	3417'	-1671
Base KC	3476'	-1730	3476'	-1730
Viola	3622'	-1876	3622'	-1876
RTD	3730'	-1984		
LTD			3725'	-1979

## ROCK TYPES

### LITHOLOGY

	Anhy
	Cht
	Coal
	Congl
	Dol
	Gyp
	Lmst
	Salt
	Shale
	Shcol
	Shgy
	Sltst
	Ss
	Carb sh
	Dol
	Dtd
	Gry sh
	Sandylms
	Shale
	Sltstn
	Shlyslts

	Sitysh
	Sdy dolo
	Silty dolo
	Shy dolo
	Shaly ls

### FOSSIL

	Algae
	Amph
	Belm
	Bioclst
	Brach
	Bryozoa
	Cephal
	Coral
	Crin
	Echin
	Fish
	Foram
	Fossil
	Gastro
	Oolite

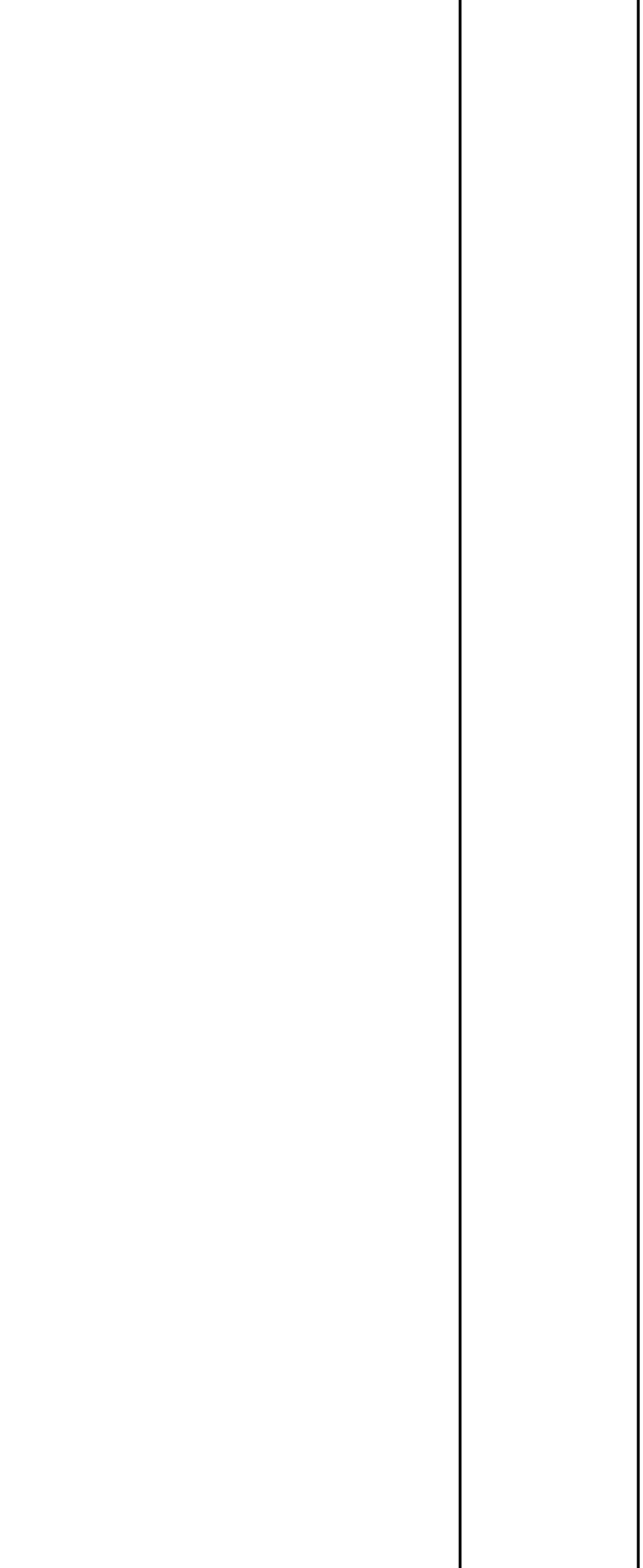
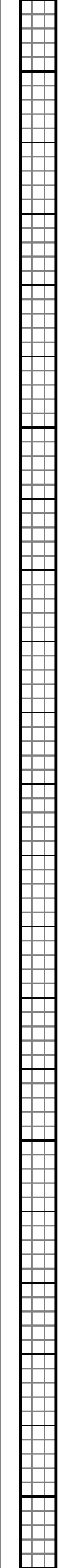
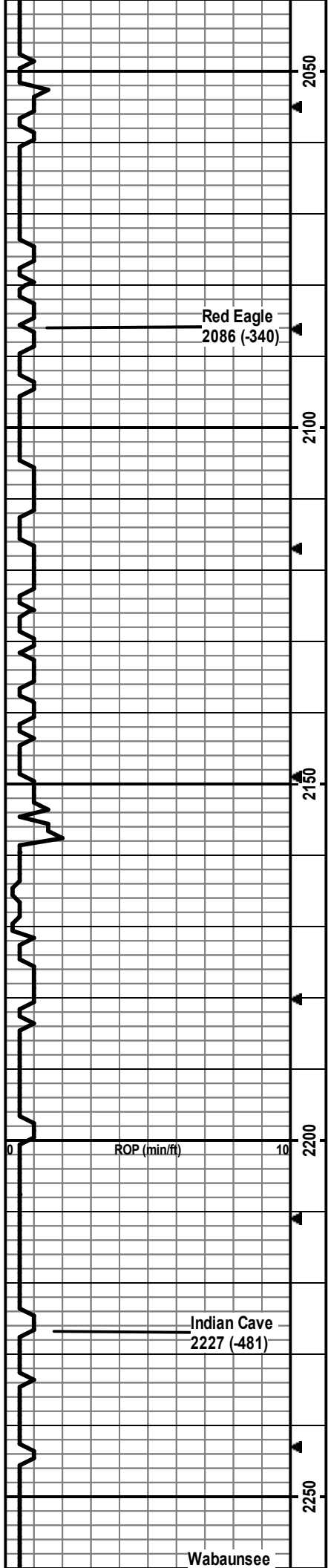
	Ostra
	Pelec
	Pellet
	Pisolite
	Plant
	Strom
	Fuss
	Oomold

### MINERAL

	Anhy
	Arggrn
	Arg
	Bent
	Bit
	Brecfrag
	Calc
	Carb
	Chtdk
	Chtlit
	Dol
	Feldspar

	Ferrpel
	Ferr
	Glau
	Gyp
	Hvymin
	Kaol
	Marl
	Minxl
	Nodule
	Phos
	Pyr
	Salt
	Sandy
	Silt
	Sil
	Sulphur
	Tuff
	Chlorite
	Dol
	Sand
	Sly

Rate of Penetration (ROP) ROP (min/ft)	Depth	Lithology	CFS Point	Oil Shows	Geological Descriptions	Remarks
					<p><b>Morning Report Depth/Activity</b>  10/17/2016, Spud.  10/18, @ 259', waiting to drill out under surface casing.  10/19, drill @ 920'.  10/20, drill @ 2023'.  10/21, mud displacement @ 2777'.  10/22, drill @ 3580'.  10/23, TD @ 3730'.</p> <p>ROP Data begins @ 1900' on 10/20/2016.</p>	<p>Andy's Mud Check @ 0'  10/17/16; predrilling  recommedations.</p> <p>Andy's Mud Check @  1142' 10/19/16 10:00am  wt vis pH chl  10 28 NA 78000  Filt LCM  NC NA</p> <p><b>Survey Record  Deg @ Ft</b>  0.0 @ 259'  0.25 @ 796'  1.0 @ 1299'  0.75 @ 1770'  0.50 @ 2274'  1.0 @ 2745'  0.75 @ 3529'  1.5 @ 3730'</p> <p>Short Trip  conducted at  2023'.</p>



2260 (-514)

2300

2350

Tarkio 2386 (-640)

2400

2450

ROP (min/ft)



LS: wht/crm/lt gry, fn-med xtal, foss frags/fusln, some vry silty, hard, min frac por, no odor, ns; SH: lt-dk gry, soft-firm, some vry silty, fissile.

SH: lt-med gry, soft, some silty.

SH: lt-med gry, vry silty, soft.

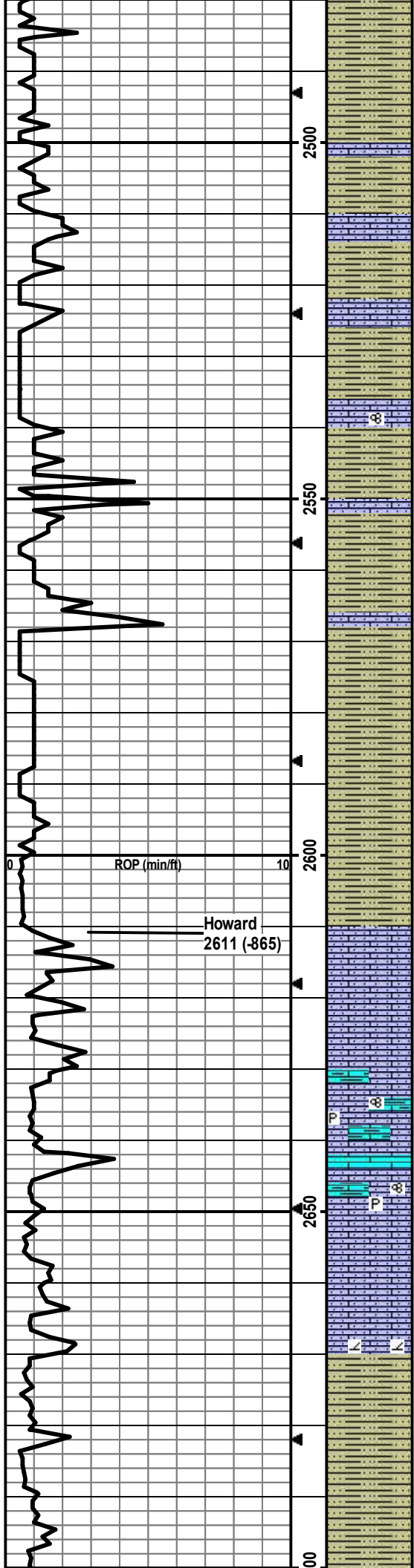
LS: crm/lt brn, vf-med xtal, some vry silty, no vis por, some foss frags, no odor, ns.

LS: crm/lt brn/lt gry, vf-med xtal, some vry silty/sndy, foss frags, no vis por, no odor, ns.

SH: lt-med gry, some vry silty, soft.

LS: wht/crm/lt-med brn/lt gry, micro-med xtal, some vry silty, wht easily crushed, foss frags, min frac por, no odor, ns.

**Drill cutting samples at 20' intervals start at 2400'.**



SH: lt-med gry/some brn-gry, some vry silty, soft.

SH: as above w/some lt green. Some LS: wht/crm/lt gry, micro-fn xtal, some vry silty, min foss frags, some ppt-fn in-xtal por, no odor, ns.

LS: lt gry/crm/brn, vf-med xtal, some vry silty, foss frags, min frac por, no odor, ns.

SH: lt-med gry/min lt green, some vry silty, slit carb, soft.

LS: lt gry/crm/lt-med brn, vf-med xtal, some vry silty/sndy, some foss frags/min fusln, hard-some easily crushed, some ppt-fn in-xtal por, no odor, ns.

SH: lt-med gry, some vry silty, soft.

LS: wht/crm/lt-med brn, vf-med xtal, some vry silty, foss frags, min frac por, no odor, ns.

SH: lt-med gry/med brn-gry, vry silty, soft.

SH: lt-med gry/min yel-brn, some vry silty, soft.

SH: lt-med gry/min brn-gry, vry silty, soft.

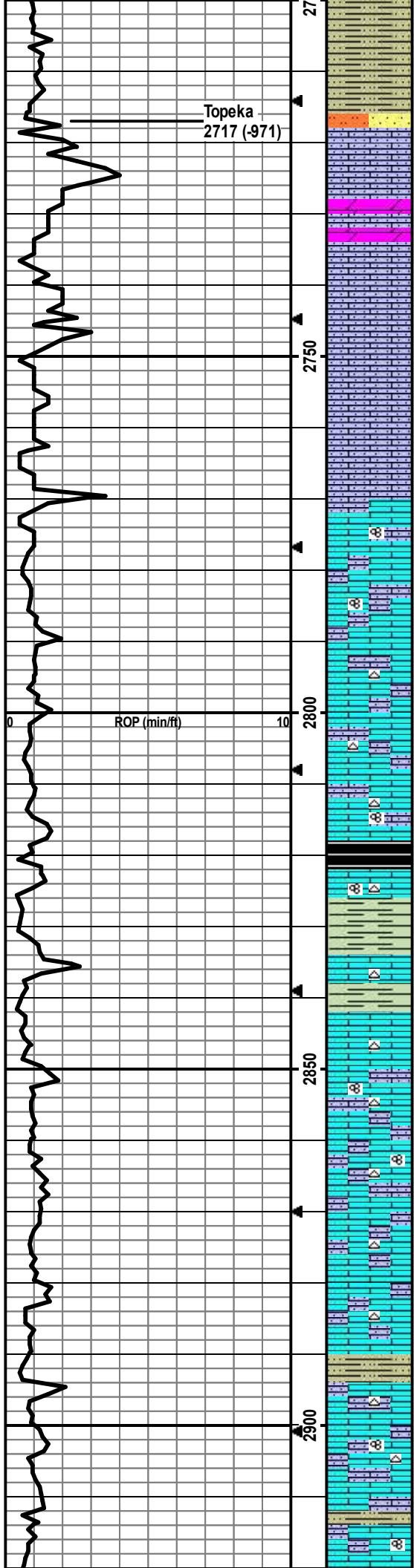
Flood of SH as above; some LS: lt gry, crm, lt brn, vf-f, some vry silty, some foss frags, some ppt in-xtal por, no odor, ns.

LS: crm/lt gry/lt brn, vf-med, some vry silty, some arg, some foss frags/min fusln, min pyrite, no vis por, no odor, ns.

LS: as above w/some crm/lt brn silty DOLO, no odor, ns.

SH: lt-dk gry, some vry silty, soft-firm, fissile.

SH: lt-med gry/brn gry, some vry silty, soft.



SH: lt-med gry/brn-gry, some vry silty, soft.

SH: lt-med gry w/min dk gry and dk brn, some vry silty, soft-firm, fissile; some SltStn/SS: lt gry, sr-wr, pred qtz, ppt-vf in-xtal por, arg, hard, friable, no odor, ns.

LS: crm/lt brn, vf-med xtal, min foss frags, vry silty, no vis por; some DOLO: crm/lt brn, vf-f, vf-med in-xtal por; no odor, ns.

LS: crm/lt brn/lt gry, vf-f, some foss frags, some silty, some crushes easily, no vis por; min DOLO: crm/lt brn, vf-f, vf-f in-xtal por; no odor, ns.

Poor sample quality; assume LS.

LS: crm/lt-med brn/lt gry, vf-med xtal, min foss frags/fusln, some silty, min ppt-fn in-xtal por, no odor, ns.

LS: crm/lt brn/lt gry, vf-f xtal, some foss frags, some vry chalky, some silty, min lt gry chert, min frac por, no odor, ns.

LS: crm/lt-med brn, vf-med, some vry chalky, foss frags/fusln, min crm/lt gry chert, no vis por, no odor, ns.

SH: dk gry/blk, carb, firm, fissile.

SH: lt-med gry, soft-firm, carb.

LS: crm/lt gry, micro-med xtal, some chalky, some foss frags, some crm chert, no vis por, no odor, ns. SH: med-dk gry, soft-firm, some carb, fissile.

LS: crm/lt brn/lt gry, vf-med, some vry chalky, some silty, some foss frags/fusln, min lt gry chert, no vis por, no odor, ns.

LS: crm/lt gry-brn/lt brn, vf-med, some foss frags, some chalky, some crushes easily, some silty, min lt gry chert, no vis por, no odor, ns.

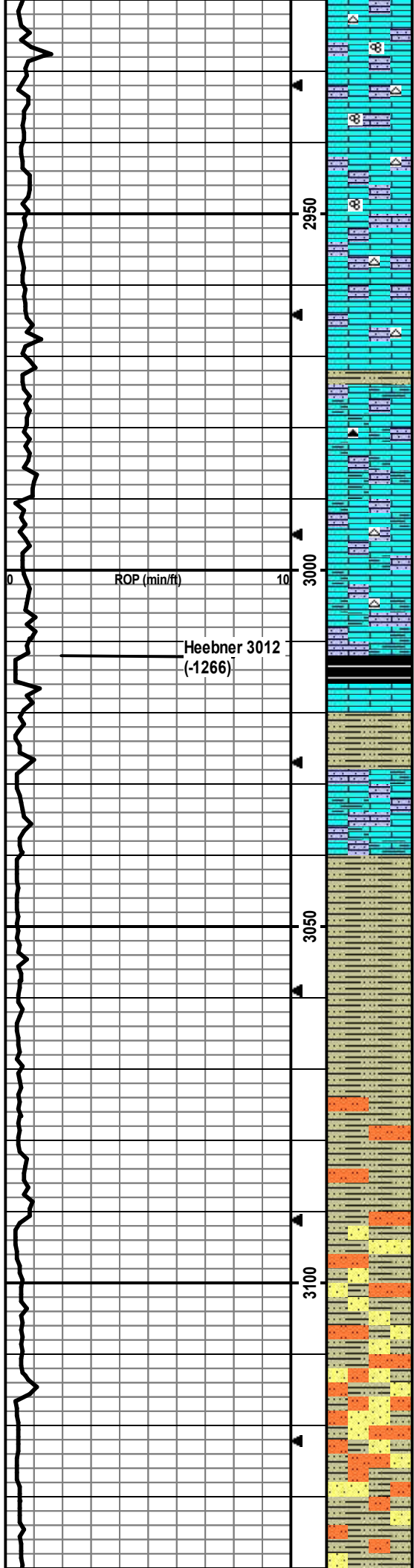
LS: as above w/some fusln, no odor, ns. Some SH: med-dk brn-gry, soft, some silty.

LS: crm/lt-med gry, vf-med xtal, some silty, some chalky, foss frags/fusln. min wht chert, no vis por. ns. Min SH: med-dk arv. soft.

**Drilling mud displacement performed at 2777' (550 bbls).**

Andy's Mud Check #1  
 @ 2817' 10/21/16  
 02:00pm  
 wt vis pH chl  
 8.7 48 11 4500  
 Filt LCM  
 8 NA





LS: crm/lt brn, vf-med xtal, some silty, some chalky, min foss frags/fusln, min wht chert, no vis por, ns.

LS: as above w/increase in chalk, no odor, ns.

LS: crm/lt brn/lt-med gry, vf-med xtal, some vry chalky, some arg, some silty, min dk gry chert, foss frags, no vis por, ns. Min SH: med-dk gry, soft.

LS: as above w/min gry chert, no odor, ns.

SH: dk gry/blk, carb, firm, fissile.

LS: crm/lt-med brn, vf-med, vry silty, some arg, vry chalky, min foss frags, no vis por, no odor, ns.

SH: med-dk gry, carb, some silty, soft-firm, fissile.

LS: crm/lt-med brn/lt-med gry, micro-med xtal, some chalky, some silty/arg, foss frags, no vis por, no odor, ns.

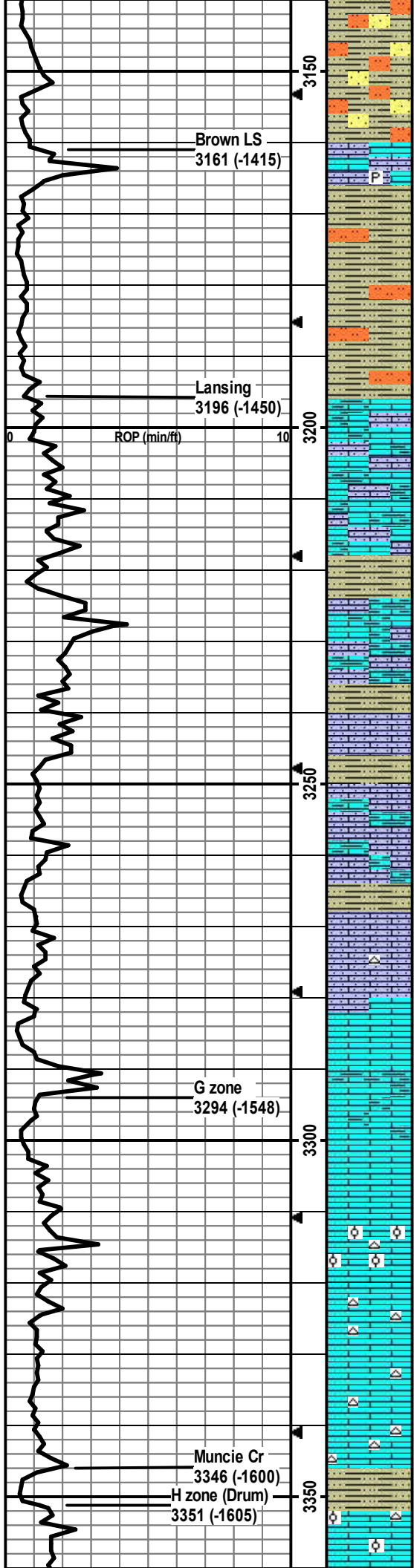
SH: med-dk gry/blk, some carb, some silty, soft-firm, fissile.

SH: med-dk gry/lt green-gry, some carb, some silty, soft-firm, fissile.

SH: as above w/min Slstn/SS: lt gry, pred qtz, soft, friable, no odor, ns.

SH: as above w/increase in Slstn/SS: lt gry, pred qtz, soft-firm, friable, some SS vf-f, sr-wr, carb matrix, no odor, ns.

SH/Slstn/SS mix as above, no odor, ns.



SH/Sltstn/SS mix as above w/decrease in Sltstn/SS content, no odor, ns.

LS: crm/lt-med brn, vry fn-med xtal, foss frags, silty, chalky, min pyrite, no vis por, no odor, ns.

SH: med-dk gry, silty, some carb, soft-firm, fissile; min Sltstn/SS: lt gry, firm-hard, friable; no odor, ns.

LS: lt-med brn/lt-med gry, micro-med xtal, some silty/sndy, some chalky/arg, some foss frags, no vis por, no odor, ns.

SH: lt-med gry, silty, soft-firm, slt carb, fissile.

LS: crm/lt-med brn/lt-med gry, vf-med xtal, some vry silty/arg, some vry chalky, foss frags/fusln, no vis por, no odor, ns.

SH: lt-med gry, slt carb, silty, soft.

LS: crm/lt gry/lt gry-brn, vf-med xtal, some chalky, silty, foss frags, no vis por, no odor, ns.

SH: lt-med gry, slt carb, vry silty, soft.

LS: crm/mottled lt brn/lt gry, f-med xtal, foss frags, arg, chalky, silty, some crushes easily, no vis por, no odor, ns.

SH: med-dk gry, slt carb, some silty, soft-firm, fissile.

LS: crm/lt brn/lt gry, vf-med, min foss frags, some chalky, 1 pce w/med in-xtal por w/sfo, dull yel flor, slt odor, ssfo.

LS: crm/lt brn, vf-med xtal, foss frags, min lt brn chert, some chalky, no vis por, slt crush odor, nsfo.

LS: crm/lt-med brn, micro-med xtal, foss frags, chalky, some crushes easily, no vis por, no odor, ns.

LS: crm/lt-med brn/lt-med gry, micro-med, foss frags, chalky, some arg, some crushes easily, no vis por, no odor, ns.

LS: crm/lt brn/lt gry-brn, micro-med xtal, some vry chalky, foss frags, no vis por, no odor, ns.

LS: crm/lt brn, micro-med xtal, foss frags/ool, some vry chalky, min wht chert, no vis por, no odor, ns.

LS: crm/lt brn, micro-med xtal, min foss frags, some vry chalky, increase in wht chert from above, no vis por, no odor, ns.

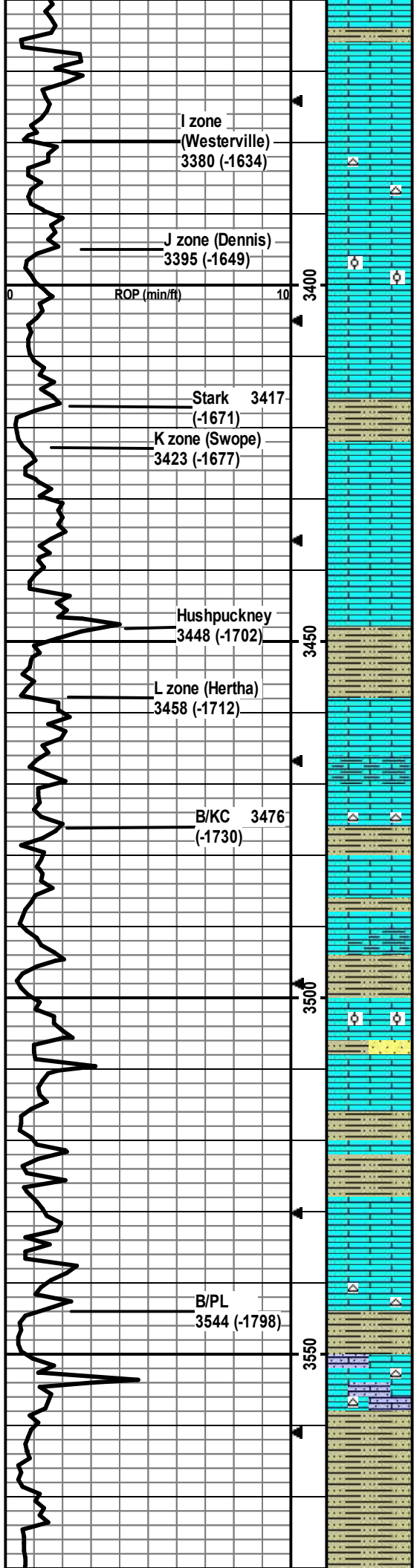
LS: crm/lt brn, micro-fn xtal, min foss frags, some chalky, some wht chert, no vis por, no odor, ns.

LS: wht/crm/lt brn, micro-med xtal, foss frags, some vry chalky, increase in wht/crm chert, no vis por, no odor, ns.

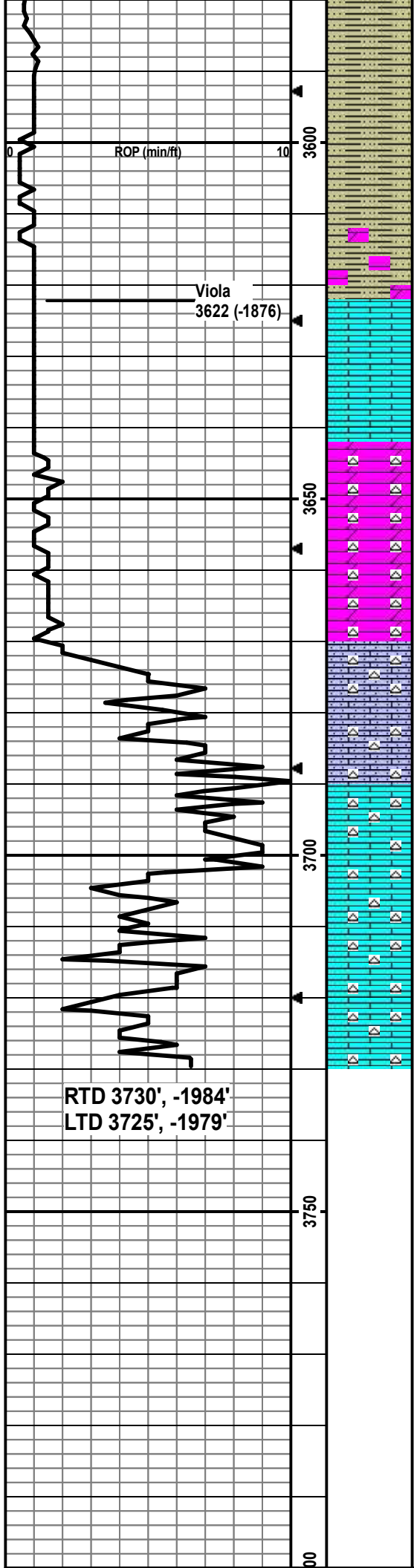
SH: lt-med gry, some vry silty, soft-firm, slt carb; no odor, ns.

LS: wht/crm/lt brn, micro-med xtal, min foss frags/few ool pcs, some chalky, some wht chert, no vis por, no odor, ns.

Drill cutting samples at 10' intervals start at 3200'.



- SH: lt-dk gry, some silty, soft-firm, fissile.
- LS: crm/lt-med brn/med gry, micro-med xtal, foss frags, some chalky, no vis por, no odor, ns.
- LS: crm, micro-f xtal, min foss frags, some chalky, no vis por, no odor, ns.
- LS: crm/lt-med brn, micro-med xtal, foss frags, some chalky, wht/crm chert, no vis por, no odor, ns.
- LS: crm/lt brn, micro-med xtal, foss frags/some dense ool pcs, some vry chalky, no vis por, no odor, ns.
- LS: crm/lt gry, micro-f xtal, min foss frags, vry chalky, no vis por, no odor, ns.
- SH: med gry/lt gry-green, some silty, some carb, soft-firm, fissile.
- LS: crm/lt brn, micro-fn xtal, some foss frags, some vry chalky, no vis por, no odor, ns.
- LS: crm/lt-med brn, micro-med xtal, foss frags, some vry chalky, no vis por, no odor, ns.
- LS: crm/lt brn, micro-fn xtal, some chalky, no vis por, no odor, ns.
- SH: med-dk gry, some silty, slt carb, firm, fissile.
- LS: crm/lt brn, micro-med xtal, some foss frags, some chalky, no vis por, no odor, ns.
- LS: as above w/some dk brn arg LS; no odor, ns.
- LS: crm/lt brn/lt gry-brn, micro-fn xtal, some vry chalky, some crm chert, no vis por, no odor, ns.
- SH: med-dk gry/dk brn, some vry silty, some carb, firm, fissile.
- SH: lt-dk gry/blk, some silty, firm, fissile.
- LS: crm/lt-med brn, micro-med xtal, some foss frags/ool, some chalky/arg, no vis por, no odor, ns.
- SH: lt-dk gry/blk/lt-med brn, some vry silty, carb, soft-firm, fissile.
- SH: lt-dk gry, slt carb, some vry silty, soft; min SS: lt gry, pred qtz, f-m, sr-wr, friable, no odor, ns. LS: crm/lt brn, micro-med xtal, some foss frags/dense ool, some chalky, no vis por, no odor, ns.
- LS: crm w/red brn mottling/lt gry, f-med xtal, some chalky, min foss frags, some frac por, no odor, ns.
- SH: lt-dk gry/red brn, silty, soft; LS: crm/lt brn/red mottling, vf-med, min foss frags, no vis por, no odor, ns.
- LS: wht/crm/lt gry, micro-med xtal, foss frags, some chalky, some crushes easily, no vis por, no odor, ns.
- LS: crm/lt brn, vf-f xtal, vry sndy, dolomitic, yel-orange chert, abund pcs w/ppt-fn in-xtal por w/sfo, crushes easily, slt crush odor, no flor but dul yel cut, gsfo.
- LS: wht/crm, micro-fn xtal, grainy, sndy, some yel-orange chert, mostly dense w/min ppt-fn in-xtal por, no odor, ns.
- SH: med gry/maroon, some carb, some vry sndy, soft-firm, fissile.
- SH: med-dk gry/maroon/brn, some carb, some vry sndy, soft-firm, fissile.



No sample at 3600', assume SH as above and below.

SH: lt-med gry/maroon/lt green-gry/brn, some vry silty, slt carb, soft-firm, fissile.

SH: red brn/lt-med gry, some vry silty, slt carb, soft-firm.

SH: red brn/lt-med gry/mustard yel/lt green-gry/maroon, some vry silty, soft-firm; min DOLO: lt green-gry, vf-f, no odor, ns.

SH: same as above w/min DOLO, no odor, ns.

SH: as above w/min brn DOLO; LS: wht/crm, vf-med xtal, chalky, easily crushed, some vf-f in-xtal por, no odor, ns.

LS: wht/crm/lt brn, vf-med xtal, some chalky, some easily crushed, no vis por, no odor, ns.

DOLO: crm, vf-f xtal, ppt-f in-xtal por, abund wht/crm chert, approx 25% of sample w/so, staining on smpl surface but oil droplets when crushed, yel flor/cut, strong cup odor, vgsfo.

DOLO: wht/crm, vf-f xtal, ppt-f in-xtal por, abund wht/crm chert, 3 pcs w/lt brn staining and droplets when crushed, yel flor/cut, slt cup odor, ssfo.

LS: crm, vf-f xtal, grainy, silty/sndy, abund wht/lt gry chert, dense, no vis por, no odor, ns.

LS: same as above, no odor, ns.

LS: crm/some lt-med brn, micro-fn xtal, abund wht chert, dense no vis por, slt crush odor, no flor, nfo.

LS: crm/lt brn, micro-fn xtal, abund wht chert, dense no vis por, no odor, ns.

LS: crm, micro-fn xtal, some chalky and easily crushed, abund wht chert, dense no vis por, no odor, ns.

LS: crm/lt brn, micro-med xtal, some chalky - easily crushed, abund wht chert, dense, min frac por, no odor, ns.

TD @ 3730'.

Cir at 3625' to correct ROP, talk w/office, and form a plan for cutting the Viola.

Andy's Mud Check #2 @ 3640' 10/22/16 11:00am  
wt vis pH chl  
9.2 33 10 6000  
Filt LCM  
12 NA

CFS @ 3640', Stop/30"/60".

CFS @ 3660', Stop/30"/60".

CFS @ 3670', Stop/30"/60".

Note: set up for a DST on the Viola but lost circulation while bit was still on bottom at 3670' so aborted test and drilled another 60' to TD.

Andy's Mud Check #3 @ 3730' 10/23/16 09:00am  
wt vis pH chl  
8.7 48 9.5 5600  
Filt LCM  
8.8 4

CFS @ 3730' Stop/30"/60". Conducted short trip, then cir 1.5 hrs total to clean hole. Logger encountered obstruction at about 1674' while tripping in hole and was able to work tools down about 100' further before stopped completely. So logger removed tools and drill rig went back to bottom with the bit to ream hole. Second attempt to log hole was successful.

RTD 3730', -1984'  
LTD 3725', -1979'