

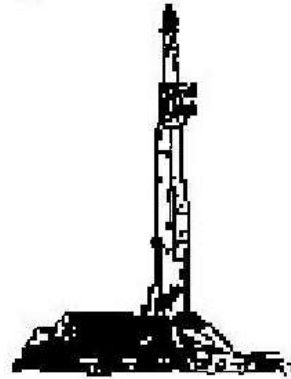
GOOLSBY BROTHERS and associates, inc.

575 Union Blvd, Suite 208
Lakewood, CO 80228
303-945-2860 Office



Geological Wellsite Supervision

www.goolsbybrothers.com



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

Well Name: ROCKY #1
API: 05-121-11085
Location: NWNW Sec 8 T3S R50W Washington County, CO.
License Number: Region: Wild Cat
Spud Date: 06/12/2019 Drilling Completed: 06/15/2019
Surface Coordinates: 600' FNL, 1100' FWL (NWNW)
39.81414 N Latitude, -103.00625 W Longitude
Bottom Hole Same
Coordinates:
Ground Elevation (ft): 4,533' K.B. Elevation (ft): 4,538'
Logged Interval (ft): 3,000' To: 4,100' Total Depth (ft): 4,100'
Formation: D SAND & J SAND TARGET
Type of Drilling Fluid: Water-based Gel

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

OPERATOR

Company: ST CROIX Operating Inc.
Address: Paul Melnychinko
PO Box 13799
Denver, CO. 80201

GEOLOGIST

Name: John Thomas
Company: Goolsby Brothers & Assoc. (GBA), Inc. (www.goolsbybrothers.com)
Address: 575 Union Blvd.
Suite 208,
Lakewood CO. 80228

Logs

Open Hole Logs Schlumberger Ran AI, LDT/CNL, ML, BHC

Casing

8 5/8" Surface Casing set @ 496'
Ran 5 1/2" Production Casing

Contractors

1) Drilling Contractor: WW DRILLING INC.; Rig #10

Toolpusher: John Rouse

2) Company Man: Tom Thomas,
Technologies

Integrated Petroleum

3) Mud Company: Achor Drilling Fluids

Mud Engineer: David Owen

4) Closed Loop Mud System:

4) Open Hole Logs Schlumberger: Ran AIT, TLD/CNL, ML
Engineer: Ali AlRamadhan / Even Grsecki

ROCK TYPES

	Bent
	Arg ss
	Cht
	Clyst
	Coal
	Congl
	Dol
	Gyp

	Ls
	Mrlst
	Sh
	Shcol
	Shgy
	Ss
	Cement
	Sltst

	Ss
	Chlk
	Mdstn
	Fracture
	Anhyd
	Mdstn
	Ss
	Sltly sh

	Arg dol
	Clybasedsltst
	Carb sh
	Carb chalk
	Arg lmy ss

ACCESSORIES

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

	Minxl
	Nodule
	Phos
	Pyr
	Salt
	Sandy
	Silt
	Sil
	Sulphur
	Tuff

FOSSIL	
	Algae
	Amph
	Belm
	Bioclst
	Brach
	Bryozoa
	Cephal
	Coral

	Crin
	Echin
	Fish
	Foram
	Fossil
	Gastro
	Oolite
	Ostra
	Pelec
	Pellet
	Pisolite
	Plant
	Strom

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

POROSITY TYPE

- E Earthy
- F Fenest
- F Fracture
- X Inter
- M Moldic
- O Organic
- P Pinpoint
- V Vuggy

SORTING

- W Well
- M Moderate
- P Poor

ROUNDING

- R Rounded
- r Subrnd
- a Subang
- A Angular

OIL SHOWS

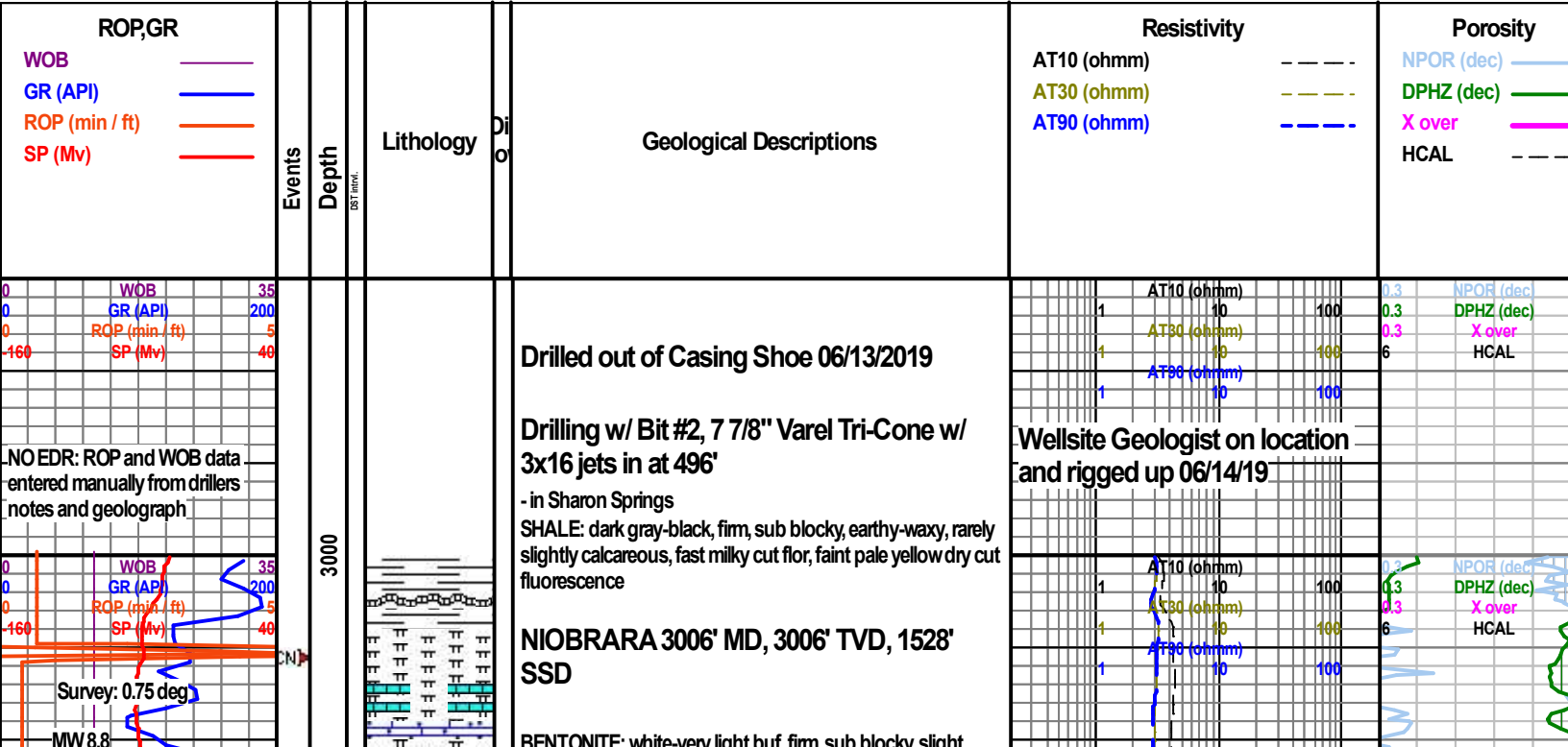
- U Uniform
- S Spotted
- Q Quiescent
- D Dead
- P Patchy
- V Vspotty

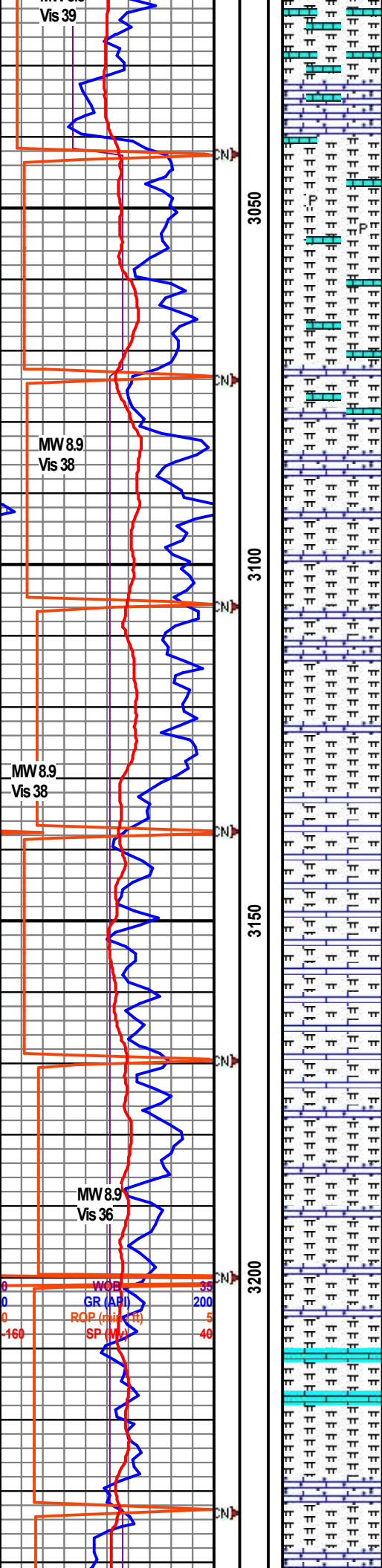
INTERVALS

- C Core
- D Dst

EVENTS

- T Trip_point
- N New bit
- CN Connection(cn)
- S Survey(mwd)
- S Survey(dropped)
- S Survey(wireline)
- C Casing_shoe(1)
- O Off bottom
- P Sidewall core





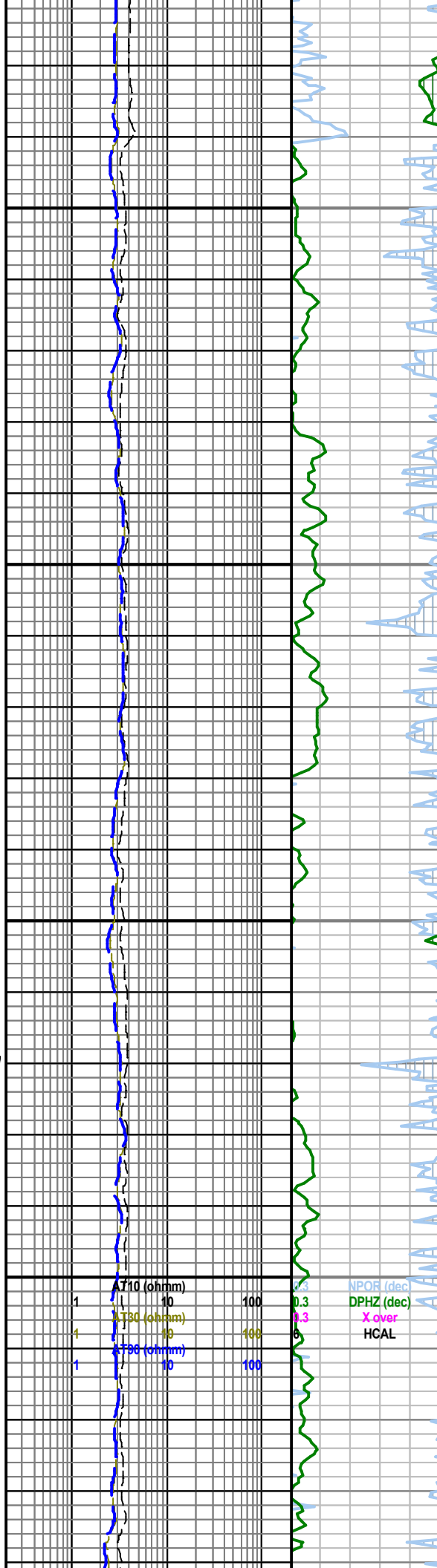
CHALKY MARLSTONE: medium to dark gray, frequent intercalated off-white chalk, occasionally spotted with oil stain, firm, sub blocky, earthy-slightly abrasive, very calcareous, slower milky cut floor, dim yellow dry cut fluorescence

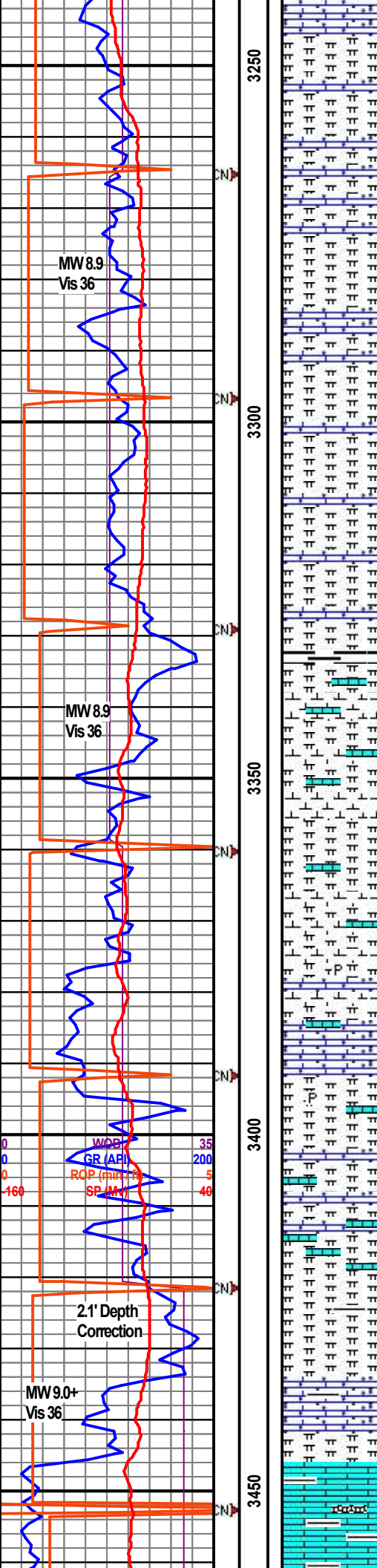
MARLSTONE: medium to dark gray, occasional intercalated milky-white chalk, firm, sub blocky, rare pyrite nodules, earthy-slightly abrasive, very calcareous, no cut fluorescence

CHALKY MARLSTONE: medium to dark gray, frequent intercalated milky-white chalk, rare scattered bentonite, firm, sub blocky, earthy-slightly abrasive, very calcareous, no cut fluorescence

CHALKY MARLSTONE: gray, trace dark gray, ~50% intercalated milky-white to buf chalk, rare scattered bentonite, firm, sub blocky, earthy-slightly abrasive, very calcareous, slow bleeding milky cut fluorescence, no dry cut fluorescence

MARLSTONE: medium to dark gray, occasional intercalated milky-white chalk, occasional free chalk, rare crystalline calcite, firm, sub blocky, earthy-slightly abrasive, very calcareous, no cut fluorescence





CHALKY MARLSTONE: gray, trace dark gray, ~40% interclated milky-white to buf chalk, rare scattered bentonite, firm, sub blocky, eathy-slightly abrasive, very calcareous, slow bleeding milky cut fluorecence, no dry cut fluorecence

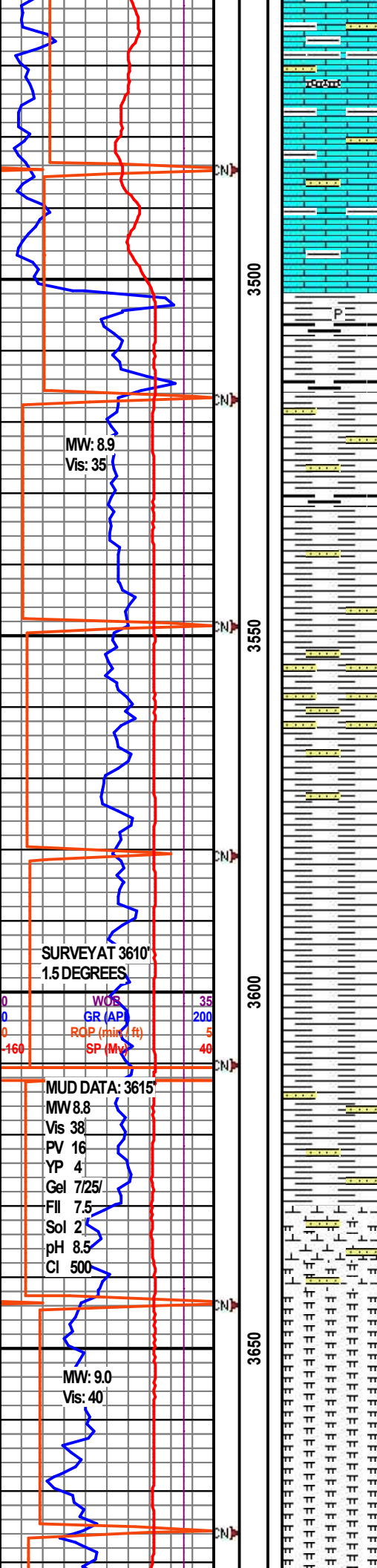
MARLSTONE: medium to dark gray, rare intercalated milky-white chalk and chalk stringers, rare crystalline calcite, firm, sub blocky, eathy-slightly abrasive, occasionally silty in-part, generally calcareous, trace slightly calcareous, no cut fluorecence

MARLSTONE: medium to dark gray, rare intercalated milky-white chalk and chalk stringers, rare crystalline calcite, firm, sub blocky, eathy-slightly abrasive, occasionally silty in-part, generally calcareous, trace slightly calcareous, no cut fluorecence

MARLSTONE: medium to dark gray, rare intercalated milky-white chalk and chalk stringers, rare crystalline calcite, firm, sub blocky, eathy-slightly abrasive, occasionally silty in-part, rare pyrite nodules, generally calcareous, trace slightly calcareous, no cut fluorecence

FT HAYES 3445' MD/ 3445' TVD / 1092' SS

LIMESTONE: light gray, light gray brown, white-buf-light brown lenticlar crystalline calcite fragments, occasionally shale/ silty in-part, firm, sub blocky-eathy, some tabular text



LIMESTONE: white - frequently clayey, trace buf, occ trace lt gray shaley interbeds, occasional trace very fine-fine sand, rare white-buf-light brown lenticular crystalline calcite fragments, rarely shaley/ silty in-part, firm, some soft

CARLILE 3500' MD/ 3500' TVD / 1036' SS

SHALE: very dark gray to black, frequently carbonaceous, smooth-earthy, trace waxy, rare pyrite, occasionally silty in-part, bleeding milky cut fluorescence, faint blue residual dry cut fluorescence

SHALE: medium to dark gray, trace black carbonaceous shale, scattered grains of light gray SILTY SANDSTONE, firm, sub blocky, earthy-slightly abrasive, occasionally silty in-part, all non-calcareous

SHALE: medium to dark gray, firm, sub blocky, earthy-slightly abrasive, occasionally silty in-part, all non-calcareous

SANDSTONE: light gray shaley/silty matrix, with clear and milky white grains, trace dark mineral grains, very fine, trace-some fine, sub rounded-rounded, some sub angular, moderately sorted, silicious, poor-fair porosity

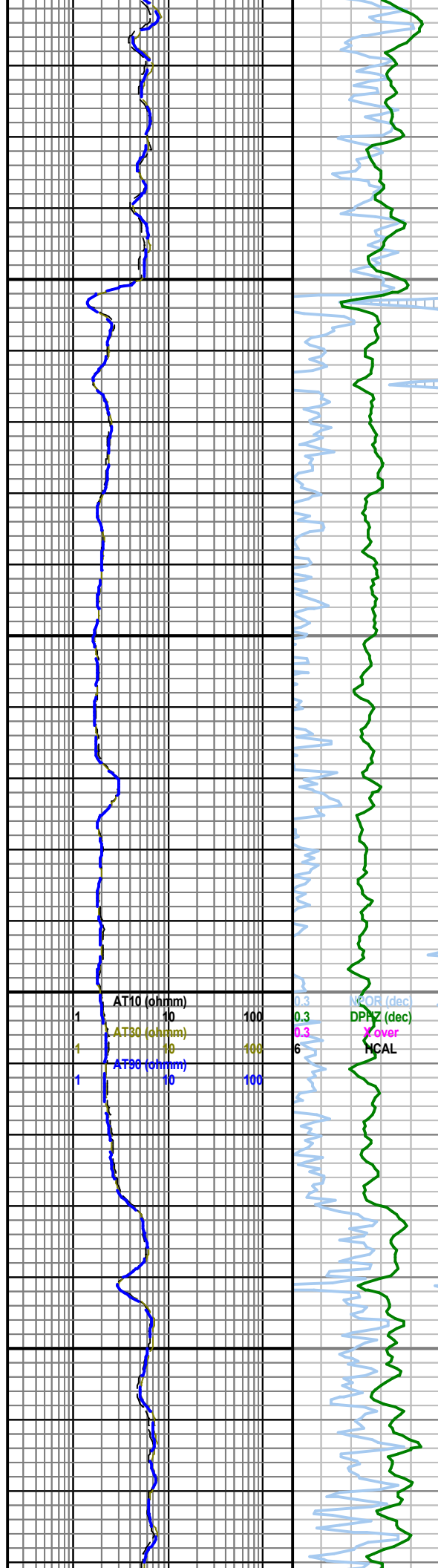
SHALE: medium to dark gray, firm, sub blocky, earthy-slightly abrasive, occasionally silty in-part, all non-calcareous

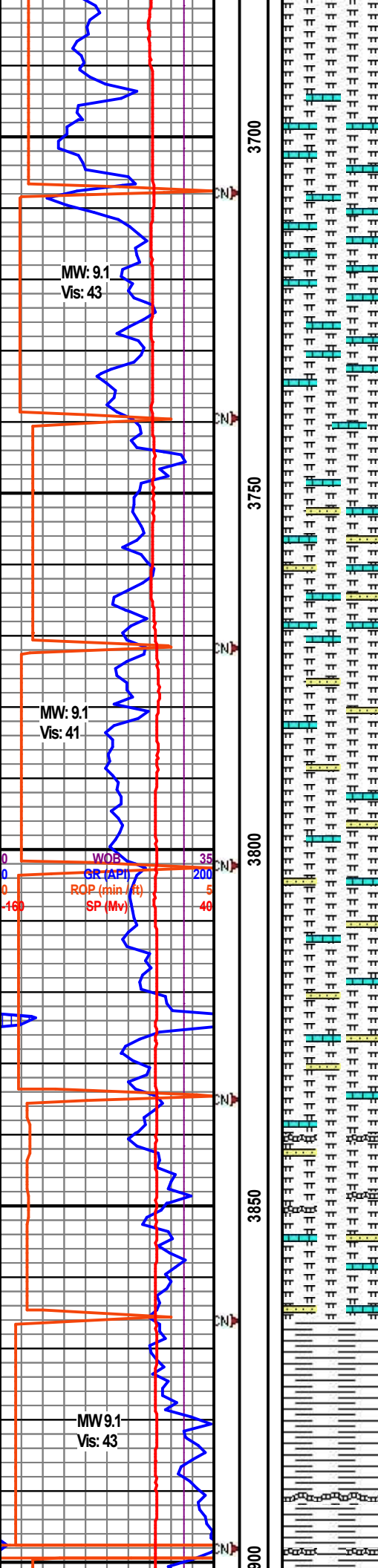
- Wiper Trip out to 2,832'

GREENHORN: 3610' MD / 3600' TVD / 928' SS

MUDSTONE/MARLSTONE: medium to dark gray, soft-firm, sub blocky, earthy-slightly abrasive, slightly calcareous to calcareous, frequently silty in-part, occasional stringers of SANDSTONE: white-opaque, trace clear, trace milky-white, trace gray, sandstone fragmentation, very fine, trace fine, occasionally silty, generally tight calcareous cement with poor porosity

MARLSTONE: medium to dark gray, soft, high plasticity, some firm, sub blocky, earthy-slightly abrasive, calcareous.





containing calcite, earthy slightly abrasive, calcareous, frequently silty in-part

MARLSTONE: medium to dark gray, firm, trace soft, trace-some off-white clayey chalk & occasional fragments of crystalline calcite, sub blocky, earthy-slightly abrasive, very calcareous, frequently silty in-part

MARLSTONE: medium to dark gray, firm, trace soft, trace-some off-white clayey chalk & occasional fragments of crystalline calcite, sub blocky, earthy-slightly abrasive, very calcareous, frequently silty in-part. occasional stringers of SILTY SANDSTONE, occasional tr off-white BENTONITE

MARLSTONE: medium to dark gray, firm, trace soft, trace-some off-white clayey chalk & occasional fragments of crystalline calcite, sub blocky, earthy-slightly abrasive, very calcareous, frequently silty in-part. more frequent stringers of SILTY SANDSTONE, occasional trace off-white BENTONITE

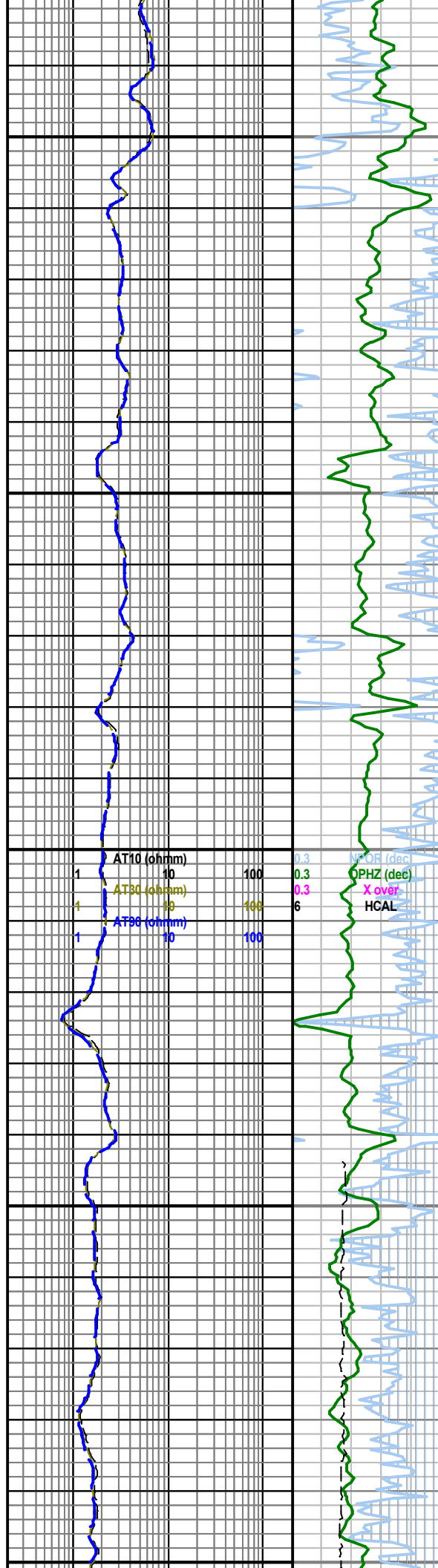
MARLSTONE: medium to dark gray, firm, trace soft, trace-some off-white clayey chalk & occasional fragments of crystalline calcite, sub blocky, earthy-slightly abrasive, very calcareous, frequently silty in-part. rare stringers of SILTY SANDSTONE, increasing trace off-white BENTONITE with yellow mineral fluorescence

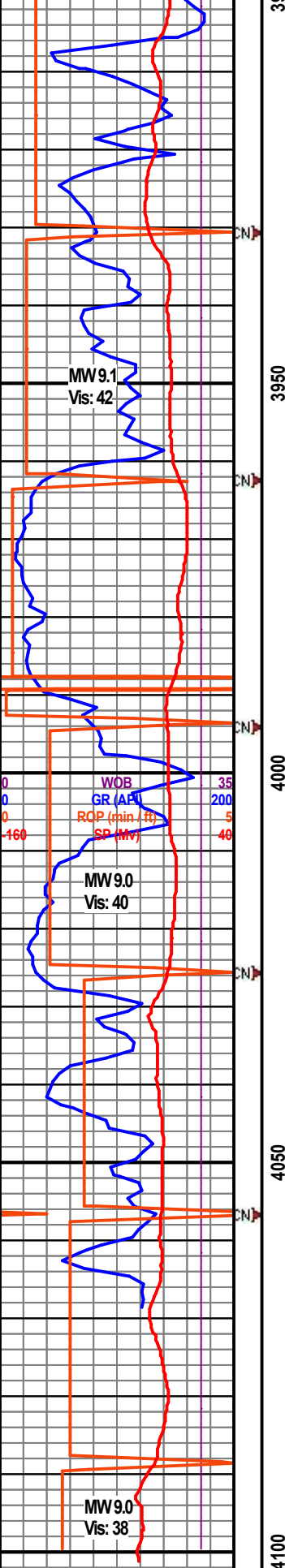
SHALE: medium-dark gray, firm, sub blocky-sub platy, smth, trace earthy

X-Bentonite 3890' MD / 648' SS

Bentonite: milky-white, soft-firm, trace calcite crystals, bright yellow mineral fluorescence

Wiper trip at 3,898' to 2,979'





D SAND 3905' MD / 6633' SS

SS: cl, tr wh-op, occ tr blk sh frags, vf, sb rd-rd, w srt, tt silc cmt, p por, stmg mky cut flor, fnt gd-yel dry cut flor

SS: cl, tr w/ lt bm, stn, f, tr vf, sb rd-rd, w srt, silc, v sl calc-silc, fr-g por, stmg mky cut flor, fnt gd-yel dry cut flor

HUNTSMAN SH 3934' MD / 604' SS

SH: gy, firm, sb blk, rthy-sl abs, freq sly ip, sl calc-silc, occ tr yl-bm calcite, occ tr milky-wh BENT w yel mnrl flor

J SAND 3960' MD / 578' SS

SS: cl, f, tr vf, tr med, sb rd-rd, w srt, silc, uncon, porosity est 16-20% w high permeability, bright bleeding milky cut flor, some gold-yellow dry cut flor

SLTY/ARG SS: lt gy, w ind, f, some vf, sb rd-rd, mod srt, silc silty/arg mt, p por

Circulate Bottom-up

SS: cl, f, some med, tr vf, sb rd-rd, w srt, silc, uncon, porosity est 18-22% w high permeability, brt bldg mky cut flor, some gd-yel dry cut flor

SS: cl, tr v lt bm stn, f, some med, tr vf, sb rd-rd, tr sb ang, w srt, all qtz, uncon, porest 16-20%, bldg mky cut flor, no resd dry cut flor

Circulate Bottom-up

SS: cl, rar tr lt bm stn, mky-wh sl calc cmt where pres, f, tr vf, rare med, occ cmt frags ar pred vf, sb rd-rd, tr sb ang, w srt, por range est 12-20%, slow mky cut flor, occ yel dry cut flor

BENT STRGRS: mky-wh, tr lt buf, soft, tr fm, sb blk, smth, yel mnrl flor

SLTY SS: lt gy, lt rd-bm, lt bm, vf, tr f, sb ang-ang, occ some sb rd, silty, occ arg, tt silc cmt, pr por, slow mky cut flor, some yel resd dry cut flor

Increasing BENT STRGRS: mky-wh, tr lt buf, soft, tr fm, sb blk, smth, yel mnrl flor

SH: med-dk gy, fm, sb plty, smth, tr rthy, non-calc

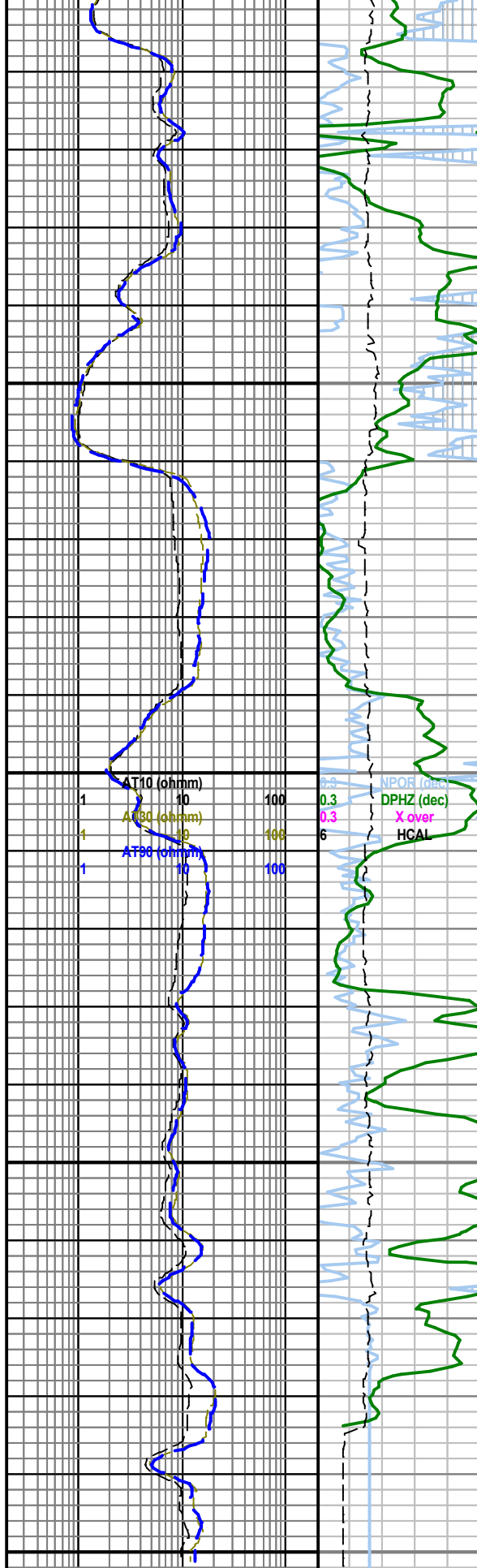
SS: cl, tr-some wh-op, tr dk mnrl grs/occ carb sh, wh-opq, sil cmt, occ imb pyr nods, vf, occ sly, p por, slow bldg mky cut flor, no dry cut flor

SH: lt-mgy, fm-hd, sb blk-sb plty, smth-rthy, silc

SS: cl, occ tr lt gy stst/sh frags/arg mt, rar tr lt bm stn, vf, tr f, one fragment of f-m w rd ss w 18-22% por (uphole?), predy calc, most frags p-fr por, no cut flor

SAMPLE TOPS

	MD	SSD
NIORARA	3006	+1522



Reached DMTD
4100' @ 22:45
hrs on 06/15/19

			FT HAYS	3445'	+1092'			
			CARLILE	3502'	+1036'			
			GREENHORN	3610'	+928'			
			X BENTONITE	3890'	+648'	THANK YOU!		
			D SAND	3905'	+633'	John G. Thomas, CPG		
			HUNTSMAN	3934'	+604'	Goolsby Brothers & Associates		
			J1 SAND	3960'	+578'			
			LMTD	4102'	+436'			