

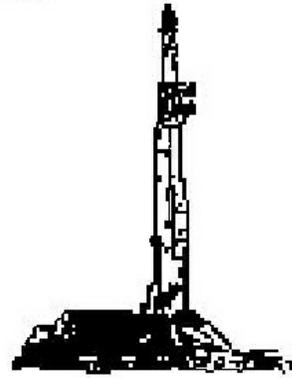
GOOLSBY BROTHERS and associates, inc.

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: JACK CREEK #2
API: 05-121-11079
Location: SENE Sec 4 T2S R51W Washington County, CO. Region: Wild Cat
License Number: Drilling Completed: December 18, 2018
Spud Date: December 15, 2018
Surface Coordinates: 900' FSL, 600' FEL (SESE)
39.905070 N Latitude, -103.089550 W Longitude
Bottom Hole Same
Coordinates:
Ground Elevation (ft): 4,594' K.B. Elevation (ft): 4,614'
Logged Interval (ft): 503' To: 4277' Total Depth (ft): 4285'
Formation: D SAND & J SAND TARGET
Type of Drilling Fluid: Gel Lime/native wtr. surf. - 2506, LGNS 2506' - 4,285' DMTD
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: Phillip Willcox
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 @ 503'
P&A 12/20/18

Contractors

1) Drilling Contractor: WW DRILLING INC.; Rig #20

Toolpusher: John Rouse

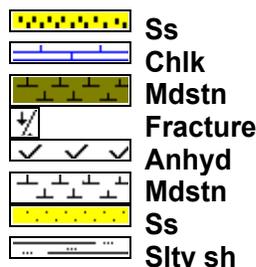
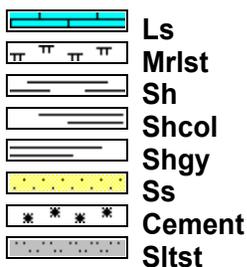
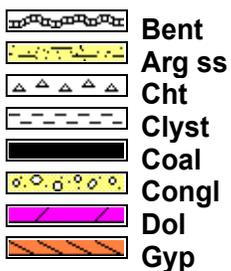
2) Company Man: Tom Thomas, Integrated Petroleum

3) Mud Company: Basin Fluids

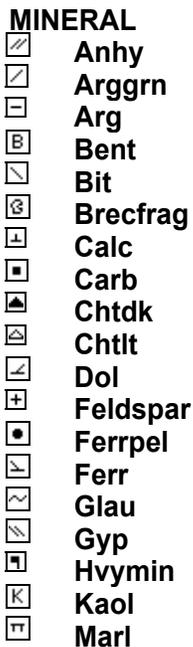
4) Open Hole Logs Schlumberger: Ran AIT, TLD/CNL, ML
Engineer: Ashley Rosacker

Technologies
Mud Engineer Glen Halliday

ROCK TYPES



ACCESSORIES



OTHER SYMBOLS

POROSITY TYPE

- Earthy
- Fenest
- Fracture
- Inter
- Moldic
- Organic
- Pinpoint
- Vuggy

SORTING

- Well
- Moderate
- Poor

ROUNDING

- Rounded
- Subrnd
- Subang
- Angular

OIL SHOWS

- Uniform
- Spotted
- Quiescent
- Dead
- Patchy
- Vspotty

INTERVALS

- Core
- Dst

EVENTS

- Trip_point
- New bit
- Connection(cn)
- Survey(mwd)
- Survey(dropped)
- Survey(wireline)
- Casing_shoe(1)
- Off bottom
- Sidewall core

ROP,GR	Events	Depth <small>DST (mvt)</small>	Lithology	%Lith	Sorting	Rounding	Geological Descriptions	Resistivity	Porosity
GR (API) — ROP (ft / hr) — SP (Mv) —								AT10 (ohmm) --- AT30 (ohmm) --- AT90 (ohmm) ---	NPOR (dec) --- DPHZ (dec) --- X over --- HCAL ---
0 GR (API) 250 250 ROP (ft / hr) 0 -160 SP (Mv) 40		3450					Drilling w/ Bit #2, 7 7/8", HTC, D505, in at 503', MM, .28 rpg, stabalizer	AT10 (ohmm) 10 100 AT30 (ohmm) 10 100 AT90 (ohmm) 10 100	0.3 NPOR (dec) 0.3 DPHZ (dec) 0.3 X over 6 HCAL
WIPER TRIP at 3911									
Wellsite Geologist on location and rigged up 12/16/18									

<<Shallower Zones of Interest >>
Niobrara 3210' (+1402)

BENTONITE: cream - gray, very very fine smooth texture, sub waxy luster, sub blocky, mod hard - firm, mineral fluorescence

CHALK: light gray white, chalky texture, sub blocky, firm - soft, clean, infer chalky porosity, No Stain, Fluorescence, Oil, Cut

BENTONITE: AS ABOVE

SHALE: dark gray, black, fine smooth texture, platy - sub blocky, firm, carbonaceous, non calcareous, No Stain, Fluorescence, Oil, Cut

ARGILLACEOUS CHALK / CHALKY MARL: mottled dark-medium gray-spotted white, fine smooth - chalky texture, blocky - platy, soft - firm, fossiliferous as imbedded white deformed cocoliths, trace aragonite needle clusters, trace iridescent inocerimous fossil fragments, No Stain, Fluorescence, Oil, Cut

ARGILLACEOUS CHALK / CHALKY MARL: mottled dark-medium gray-spotted white, fine smooth - chalky texture, blocky - platy, soft - firm, fossiliferous as imbedded & deformed white cocoliths, trace aragonite needle clusters, trace iridescent inocerimous fossil fragments, No Stain, Fluorescence, Oil, Cut

CHALK: light gray white, chalky texture, sub blocky, firm - soft, clean, infer chalky porosity, No Stain, Fluorescence, Oil, Cut

BENTONITE: AS ABOVE

MARL: dark gray - occasionally spotted white, fine smooth texture, platy - splintery, very very calcareous w/ estimated 40% micrite, sub carbonaceous, No Stain, Fluorescence, Oil, Cut

MARL: dark grey, fine smooth texture - sub fissile texture, splintery - platy, firm, very very calcareousw/ estimated 40% micrite, No Stain, Fluorescence, Oil, Cut

CHALK: very white, crypto crystalline, sub tabular, brittle, dense, very clean, No Stain, Fluorescence, Oil, Cut, infer tight chalky perm / porosity

FT HAYS 3640' (+922')

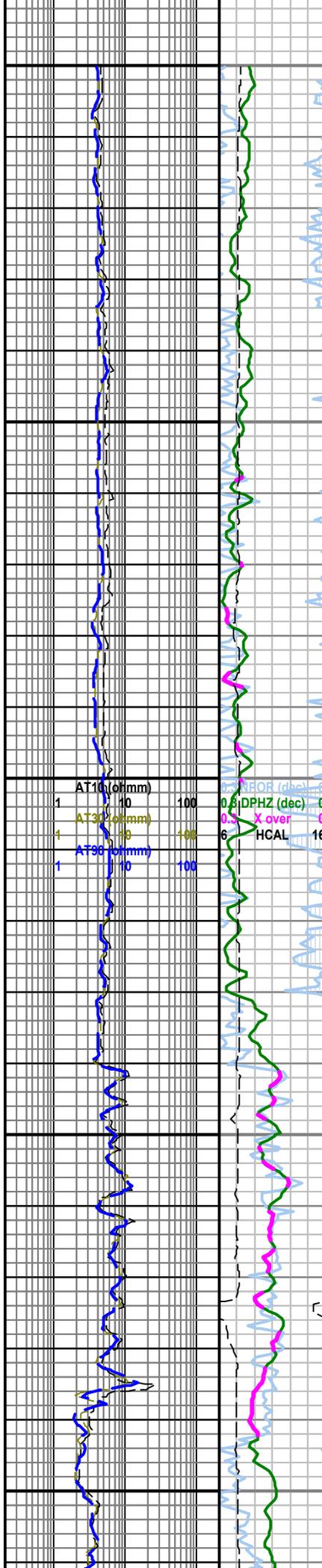
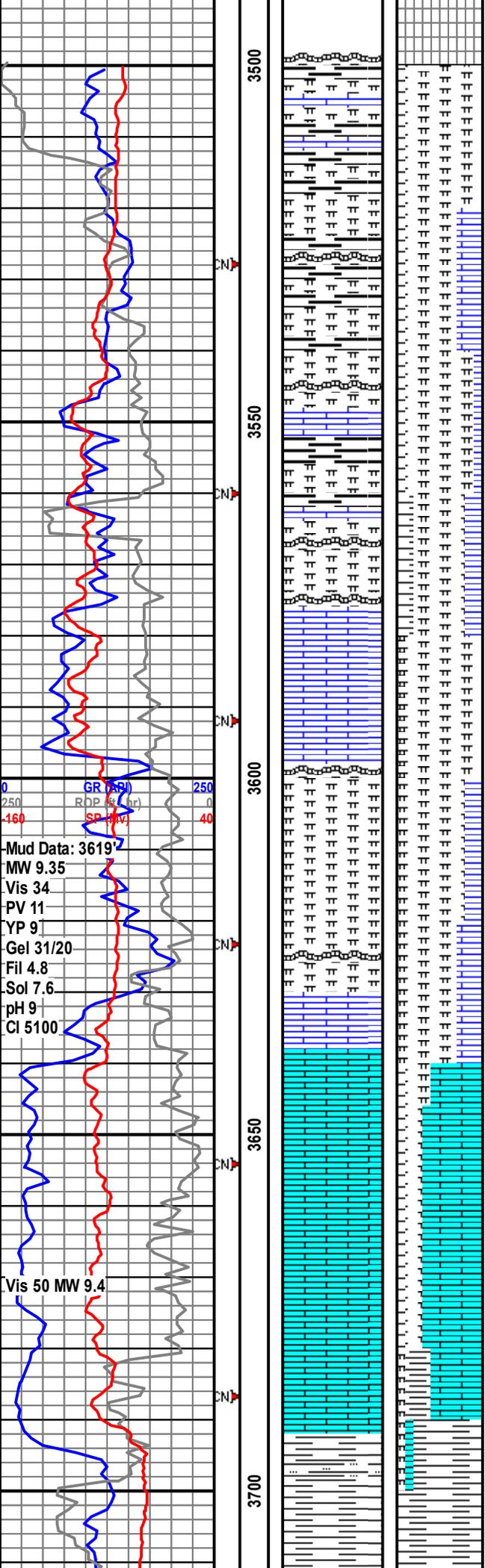
LIMESTONE: very white - medium gray, crypto crystalline, sub tabular, brittle, dense, very clean, No Stain, Fluorescence, Oil, Cut, no visual porosity

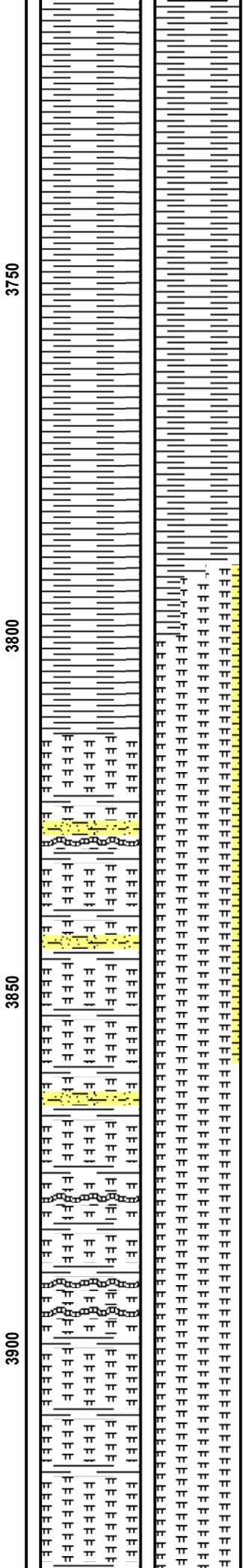
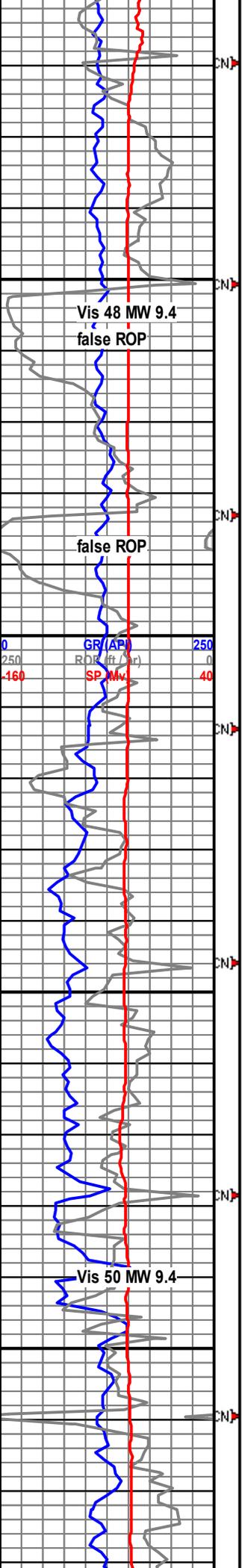
LIMESTONE: light brown gray, buff, amorphous, tabular, brittle / dense, trace floating sand grains, no visual porosity, No Stain, Fluorescence, Oil, Cut, no visual porosity

CARLILE 3692' (+933')

SHALE: medium - medium dark gray, fine smooth texture, blocky - sub platy - sub tabular, firm - soft, slightly - non calcareous, No Stain, Fluorescence, Oil, Cut

SILTY SANDY SHALE: medium brown gray, rough silty sand texture, blocky - soft - mod firm





As Above and grading to clay rich shale

SHALE: medium - medium dark gray, fine smooth texture, blocky - sub platy - sub tabular, firm - soft, slightly - non calcareous, No Stain, Fluorescence, Oil, Cut

SHALE: medium - medium dark gray, fine smooth texture, blocky - sub platy - sub tabular, firm - soft, slightly - non calcareous, No Stain, Fluorescence, Oil, Cut

SHALE: medium - medium dark gray, fine smooth texture, blocky - sub platy - sub tabular, firm - soft, slightly - non calcareous, No Stain, Fluorescence, Oil, Cut

MARL: (poor sample) medium dark gray, brown gray, mottled light gray, firm, some argillaceous very fine grain sandstone, very calcareous, No Stain, Fluorescence, Oil, Cut, no visual porosity

GREENHORN 3810' (+804')

MARL: medium dark gray, brown gray, mottled light gray, firm, some argillaceous very fine grain sandstone, very calcareous, No Stain, Fluorescence, Oil, Cut, no visual porosity

MARL: medium dark gray, brown gray, mottled light gray, firm, some argillaceous very fine grain sandstone, very calcareous, No Stain, Fluorescence, Oil, Cut, no visual porosity

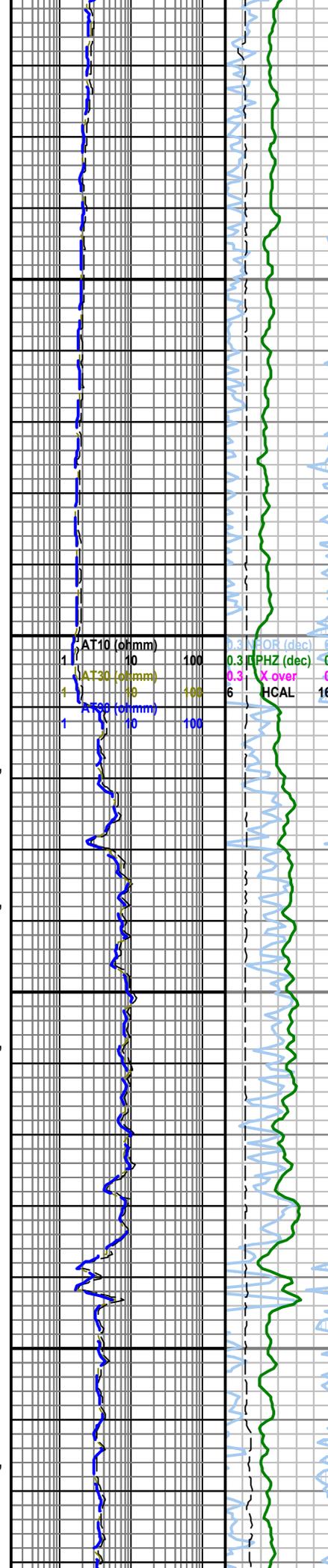
MARL: medium dark gray, brown gray, mottled light gray, firm, some argillaceous very fine grain sandstone, very calcareous, No Stain, Fluorescence, Oil, Cut, no visual porosity

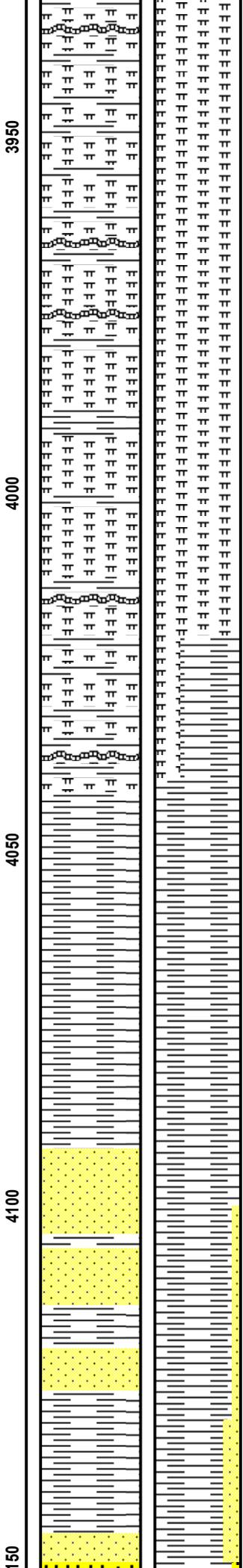
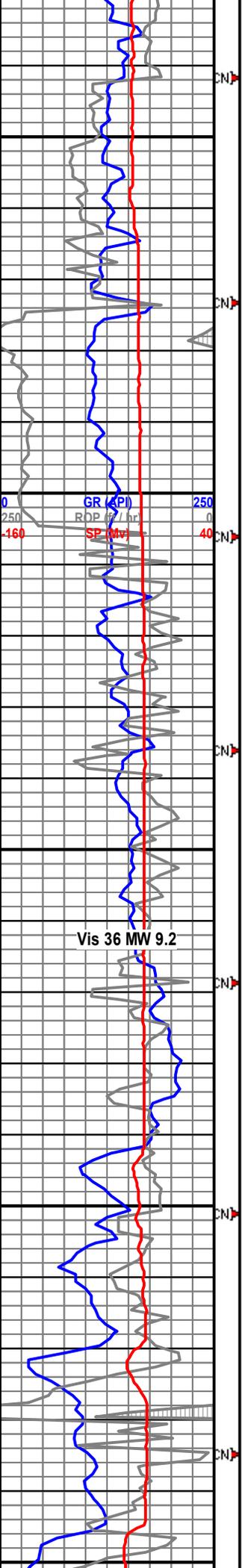
MARL: medium dark gray, brown gray, firm, very calcareous, No Stain, Fluorescence, Oil, Cut, no visual porosity

MARL: medium dark gray, brown gray, firm, very calcareous, No Stain, Fluorescence, Oil, Cut, no visual porosity

SHORT TRIP @ 3911', 9 Stands

MARL: medium dark gray, brown gray, fine - rough texture, firm - soft, very fine grain argillaceous sandstone, very calcareous, No Stain, Fluorescence, Oil, Cut, no visual porosity





MARL: medium dark gray, brown gray, firm, very calcareous, No Stain, Fluorescence, Oil, Cut, no visual porosity

BENTONITE: medium gray - tan, very very fine smooth texture, sub waxy luster, platy, mineral fluorescence in parts

MARL: medium dark gray, brown gray, fine - rough texture, firm - soft, very fine grain argillaceous sandstone, very calcareous, No Stain, Fluorescence, Oil, Cut, no visual porosity

X BENTONITE 4015' (+599')

BENTONITE: medium gray - tan, very very fine smooth texture, sub waxy luster, platy, mineral fluorescence in parts

SHALE: dark gray, fine smooth texture, platy, soft, non calcareous

SHALE: dark gray, fine smooth texture, platy, soft, non calcareous

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SHALE: dark gray, fine smooth texture, platy, soft, non calcareous

D SAND 4092' (+522')

SANDSTONE: light brown gray, upper - lower very fine grain, sub round, well sorted, well consolidated, siliceous cement, well consolidated, clean, NSFOC

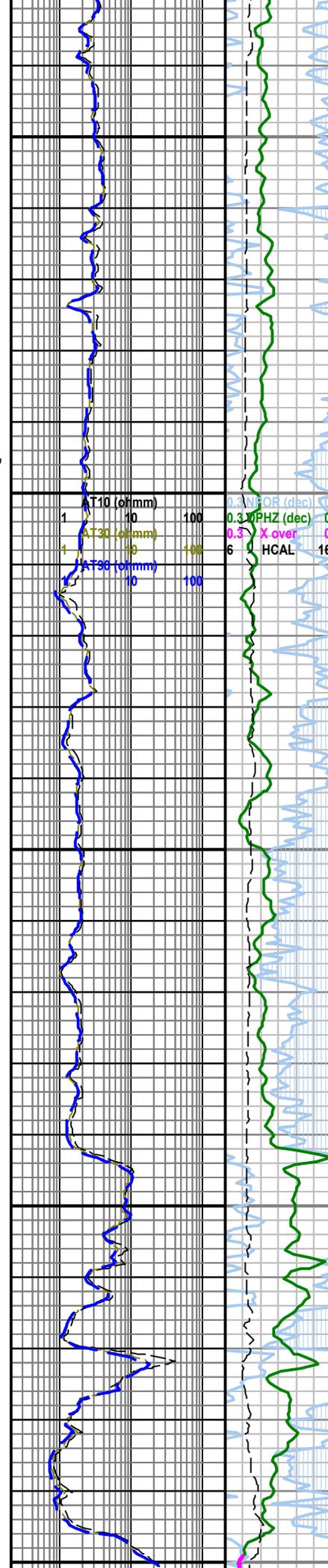
SANDSTONE: light brown gray, upper - lower very fine grain, sub round, well sorted, well consolidated, siliceous cement, well consolidated, clean, NSFOC

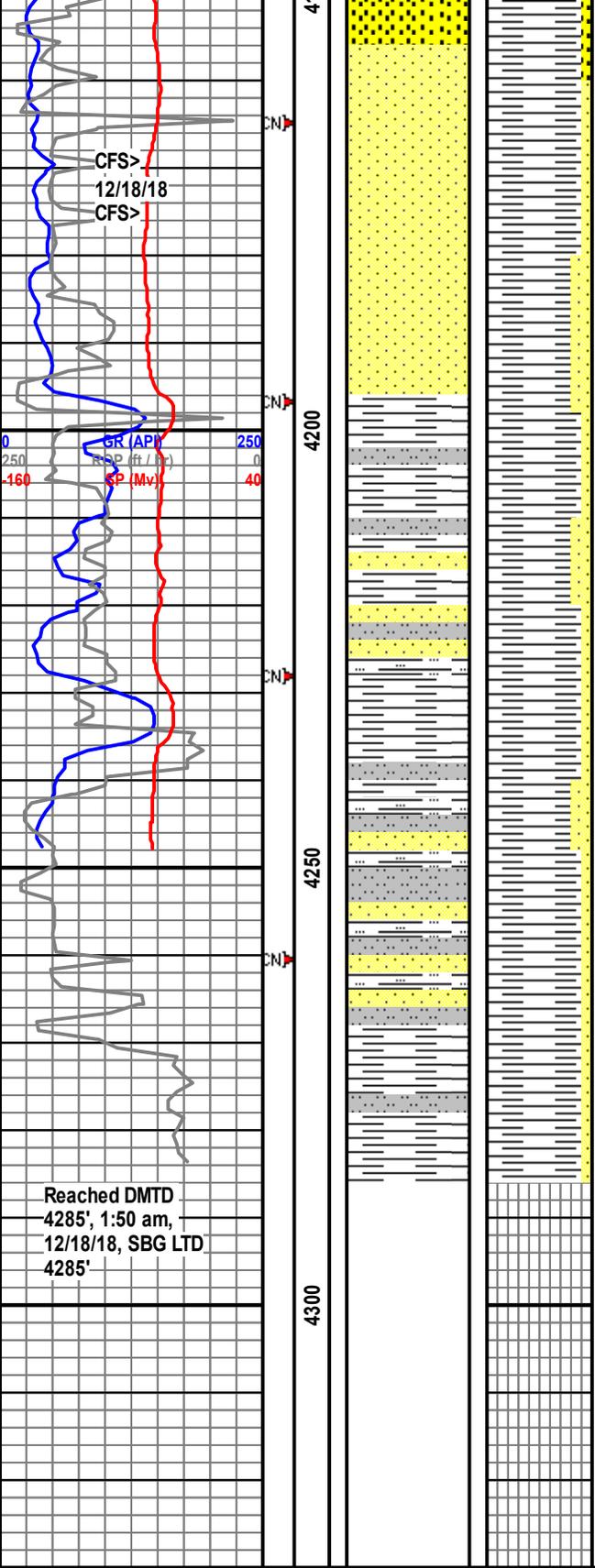
HUNTSMAN 4126' (+488')

SHALE: dark gray, fine smooth texture, platy, firm, non calcareous

J SAND 4146' (+468')

As Above w/ some upper fine - lower medium grain





Sandstone: (4169') light brown gray, translucent, upper - lower fine - unconsolidated lower medium grain, sub round, moderately sorted, moderately consolidated - unconsolidated, siliceous, clean, 10% w/ bright yell uniform fluorescence, poor cut, trace tan patchy oil stain

very poor sample 4175' LCM, 4170' As above
Sandstone as below w/o fluorescence

Sandstone: light brown gray, translucent, upper - lower fine - very fine grain in parts, sub round, moderate - well sorted, moderate - well consolidated, siliceous, clea, 30% moderate to bright yellow
SKULL CREEK 4195' MD, (+419')

SHALE: dark gray, fine smooth texture, platy - blocky, firm, sub carbonaceous, non - slightly calcareous

Sandstone: translucent, gray - gray white, lower - upper fine - upper very fine grain, sub round - sub angular, moderately sorted, moderately consolidated - unconsolidated, poor siliceous cement, clean - white clay fill in part, est 22% visual porosity, NSFOC

SILTSTONE: medium - dark gray, sandy, argillaceous, slightly calcareous, interbedded w/ shale

SHALE: dark gray, fine smooth texture, platy - blocky, firm, sub carbonaceous, non - slightly calcareous

GEOPHYSICAL LOG TOPS BELOW

FT HAYS	3640'	922'
CARLILE	3692'	933'
GREENHORN	3810'	804'
X BENTONITE	4015'	599'
D SAND	4092'	522'
J SAND	4126'	488'
SKULL CREEK	4195'	419'

THANK YOU!!!
Phillip Willcox, Goolsby Brothers

