StrataKan EXPLORATION

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

Well Name: Morrow 2734H (KOP-LP)
API: 15-077-22179-01-00
Location: SE - SW - SW - NW
License Number: 34975
Region: Harper, KS
Spud Date: 11/10/2018
Drilling Completed: 12/07/2018
Surface Coordinates: 2330' FNL
641' FWL
Bottom Hole Coordinates: ~2291' FSL
~1468' FWL
Ground Elevation (ft): 1375'
K.B. Elevation (ft): 1390'
Logged Interval (ft): 5150' To: RTD
Total Depth (ft): 9050'
Formation: Mississippian Carbonates (Trippolitic Chert & Dolomite)
Type of Drilling Fluid: MudCo. Saltwater & Flozan Sweeps

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

OPERATOR

Company: StrataKan Exploration, LLC
Address: 100 S. Main Street
Plainville, KS 67663-2234

GEOLOGIST

Name: Eli J. Felts & Bruce A. Reed
Company: Felts & Reed (Gravity Oil, LLC / TerraTech Energy Services, LLC)
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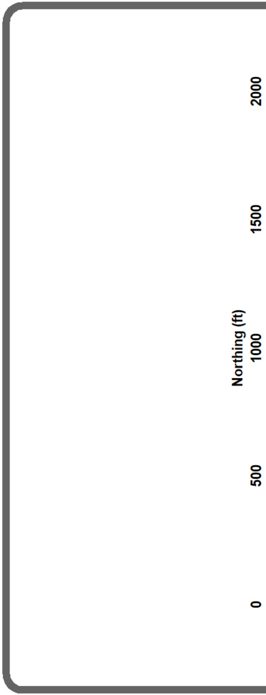
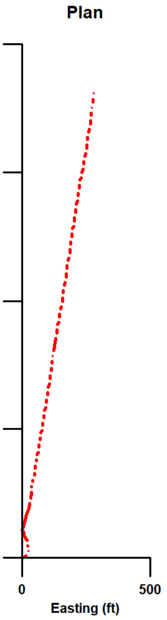
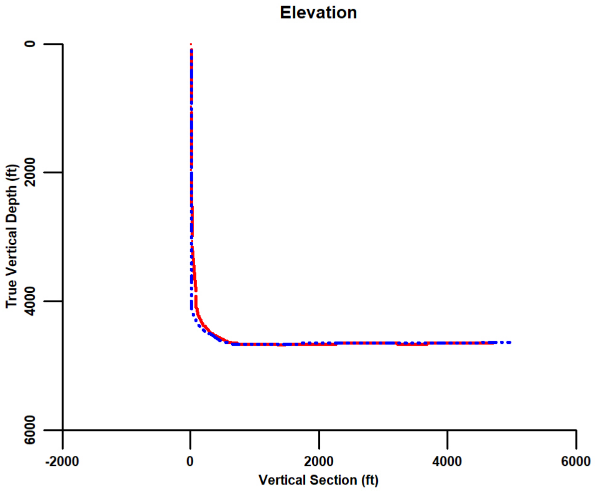
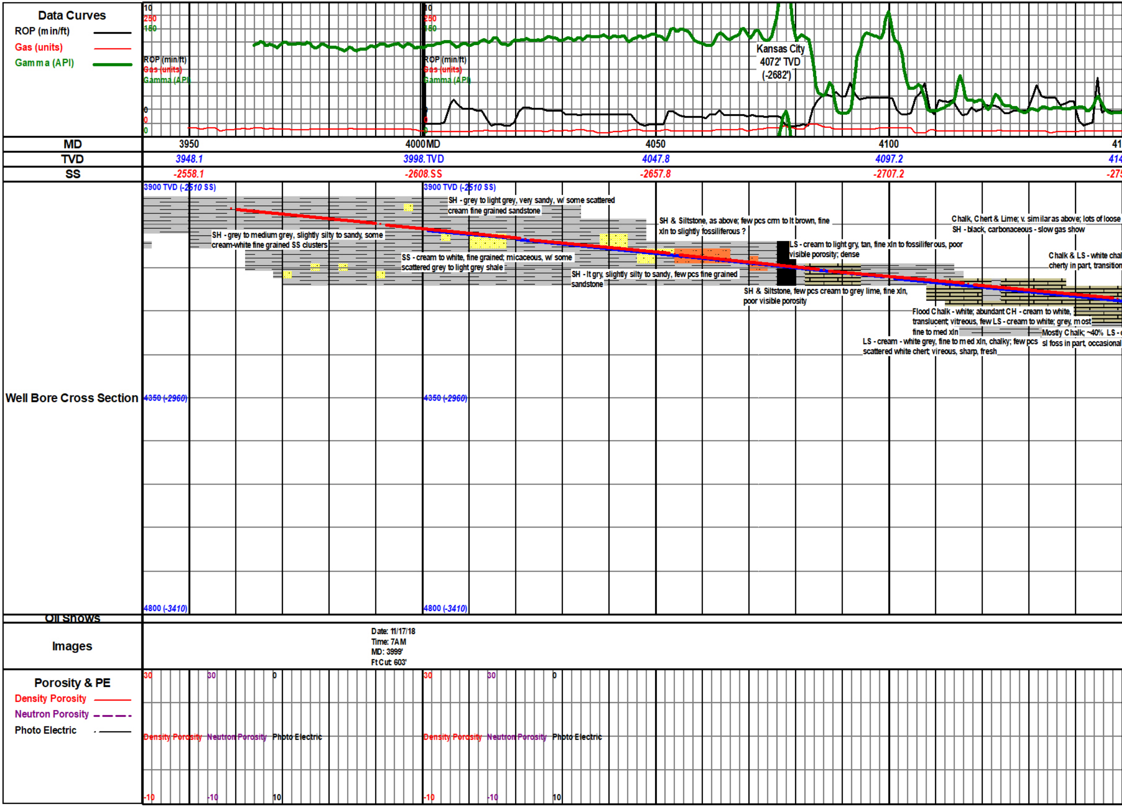
Eli J. Felts
Email : ejfelts47@gmail.com









SH - grey to medium grey, slightly silty to sandy, some cream-white fine grained SS clusters

SH - grey to light grey, very sandy, w/ some scattered cream fine grained sandstone

SS - cream to white, fine grained; micaceous, w/ some scattered grey to light grey shale

SH - lt gry, slightly silty to sandy, few pcs fine grained sandstone

SH & Siltstone, as above; few pcs crm to lt brown, fine xln to slightly fossiliferous ?

LS - cream to light gry, tan, fine xln to fossiliferous, poor visible porosity; dense

SH & Siltstone, few pcs cream to grey lime, fine xln, poor visible porosity

Chalk, Chert & Lime; v. similar as above; lots of loose

SH - black, carbonaceous - slow gas show

Chalk & LS - white chal

cherty in part, transition

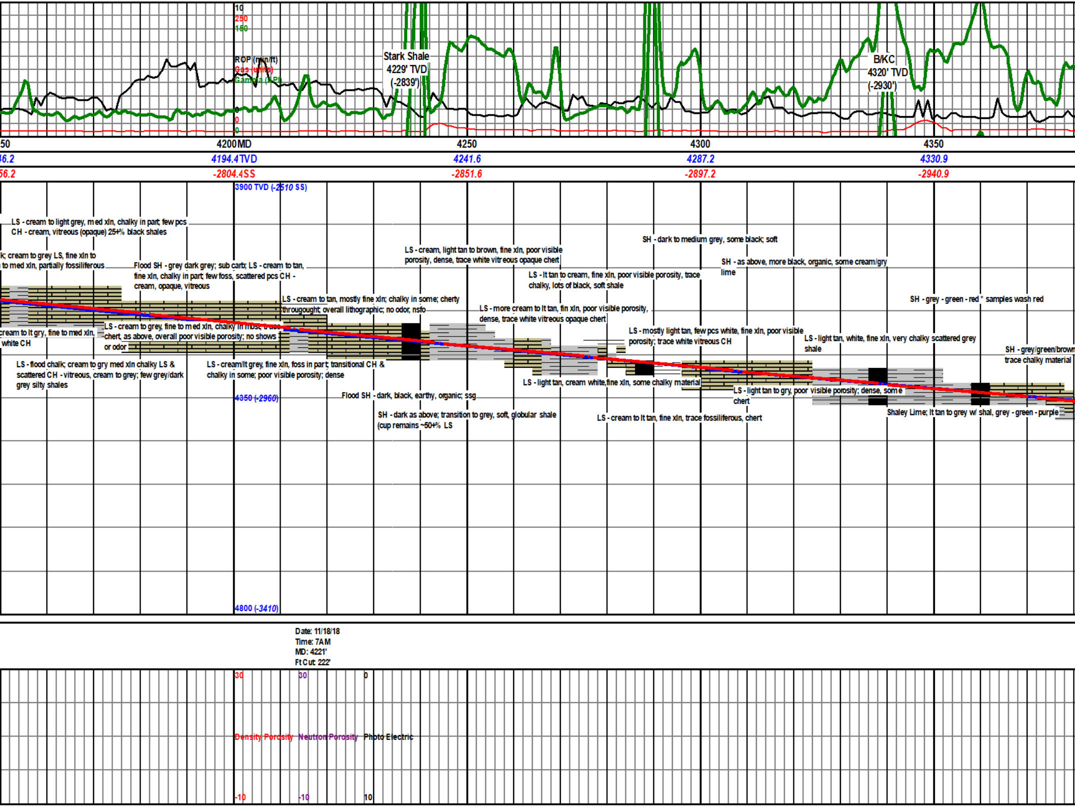
Flood Chalk - white; abundant CH - cream to white, translucent; vitreous, few LS - cream to white; grey, most fine to med xln

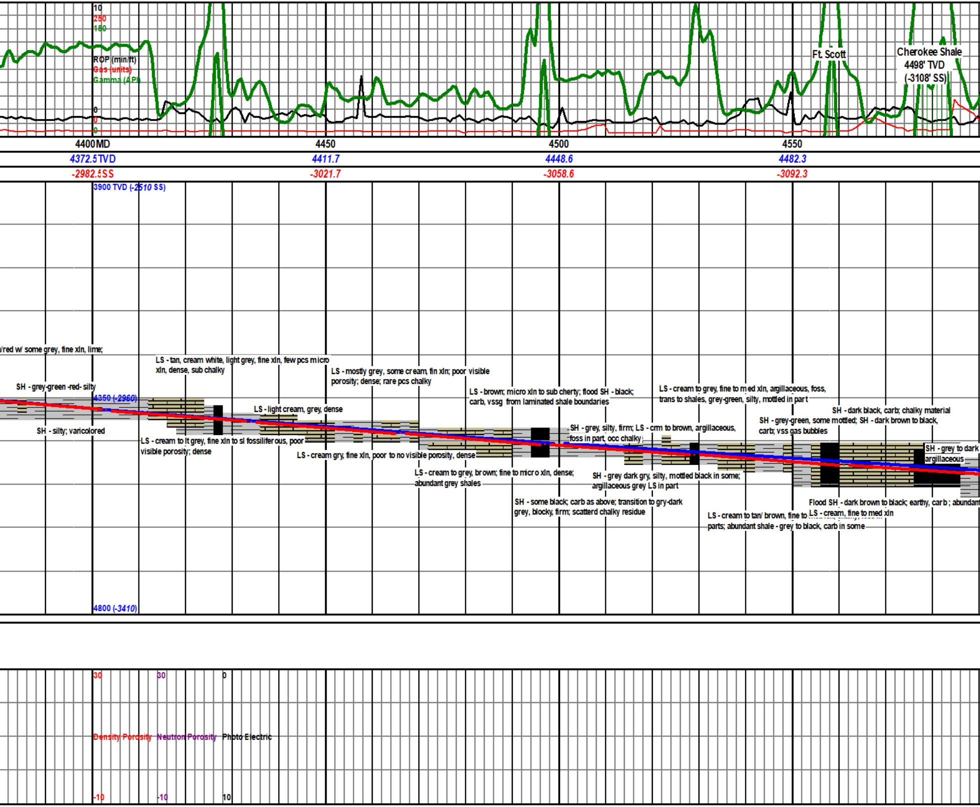
LS - cream - white grey, fine to med xln, chalky; few pcs scattered white chert; vireous, sharp, fresh

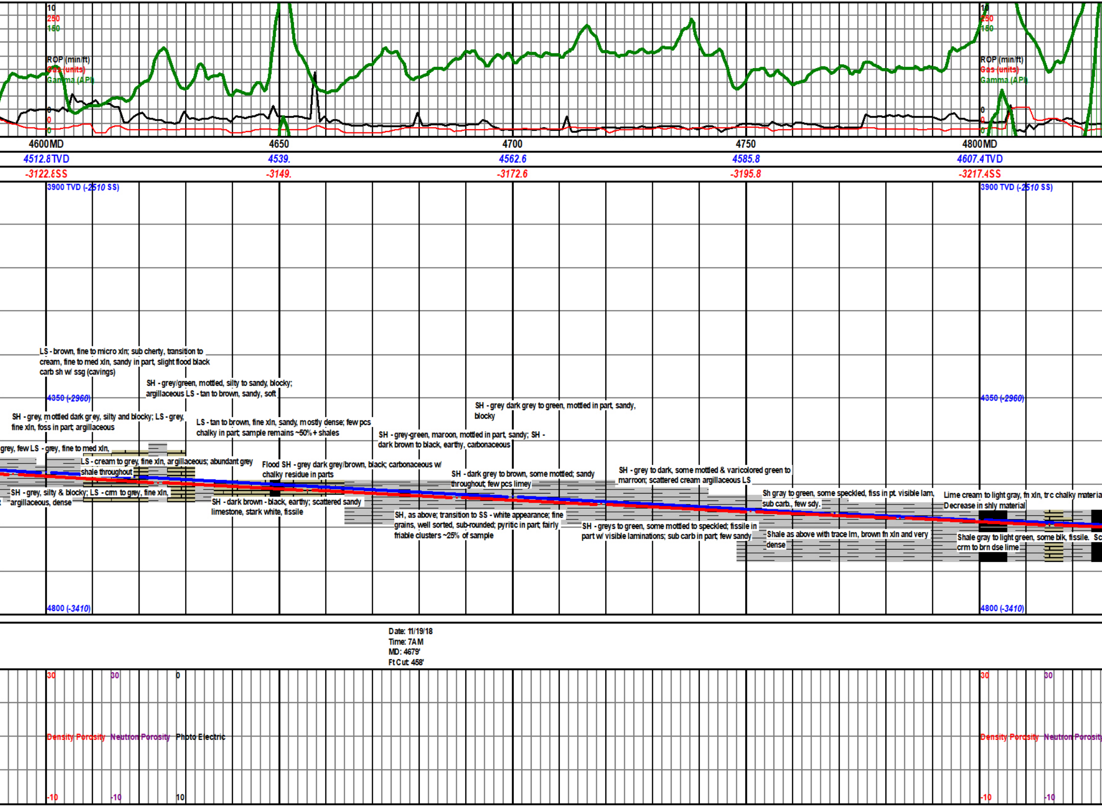
Mostly Chalk; ~40% LS -

sl foss in part, occasional

Date: 11/17/18
Time: 7AM
MD: 3999'
Ft Cut 603'







LS - brown, fine to micro xln; sub cherty, transition to cream, fine to med xln, sandy in part, slight flood black carb sh w/ ssg (cavings)

SH - grey/green, mottled, silty to sandy, blocky; argillaceous LS - tan to brown, sandy, soft

SH - grey, mottled dark grey, silty and blocky; LS - grey, fine xln, foss in part; argillaceous

grey, few LS - grey, fine to med xln,

LS - cream to grey, fine xln, argillaceous; abundant grey shale throughout

SH - grey, silty & blocky; LS - crm to grey, fine xln, argillaceous, dense

LS - tan to brown, fine xln, sandy, mostly dense; few pcs chalky in part; sample remains ~50% + shales

Flood SH - grey dark grey/brown, black; carbonaceous w/ chalky residue in parts

SH - dark brown - black, earthy; scattered sandy limestone, stark white, fissile

SH - grey-green, maroon, mottled in part, sandy; SH - dark brown to black, earthy, carbonaceous

SH - grey dark grey to green, mottled in part, sandy, blocky

SH - dark grey to brown, some mottled; sandy throughout; few pcs limey

SH, as above; transition to SS - white appearance; fine grains, well sorted, sub-rounded; pyritic in part; fairly friable clusters ~25% of sample

SH - grey to dark, some mottled & varicolored green to marroon; scattered cream argillaceous LS

SH - greys to green, some mottled to speckled; fissile in part w/ visible laminations; sub carb in part; few sandy

Sh gray to green, some speckled, fiss in pt. visible lam, sub carb., few sdy.

Shale as above with trace lm, brown fn xln and very dense

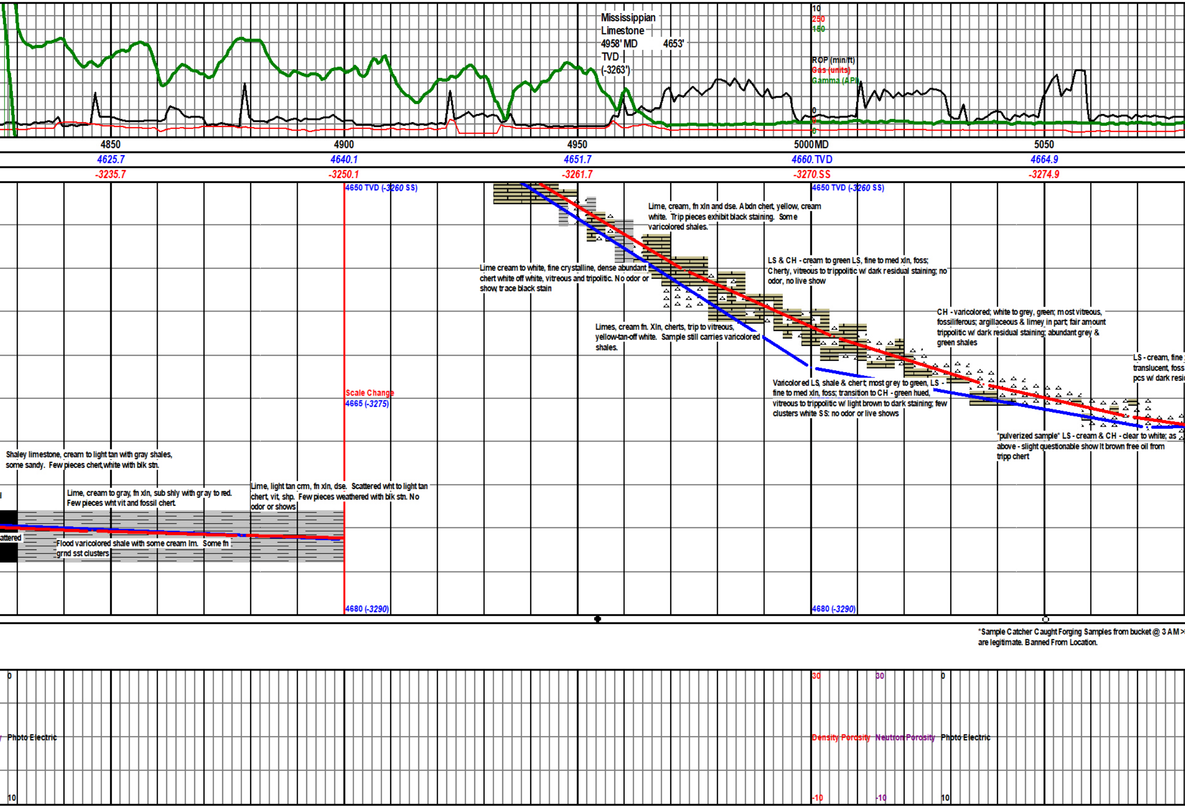
Lime cream to light gray, fn xln, trc chalky materia

Decrease in shly material

Shale gray to light green, some blk, fissile. Sc

crm to brn dse lime

Date: 11/19/18
Time: 7AM
MD: 4679'
Ft Cut: 458'



Shaley limestone, cream to light tan with gray shales, some sandy. Few pieces chert,white with blk stn.

Lime, cream to gray, fn xln, sub shly with gray to red. Few pieces wht vit and fossil chert.

Lime, light tan crm, fn xln, dse. Scattered wht to light tan chert, vit, shp. Few pieces weathered with blk stn. No odor or shows

attered

Flood varicolored shale with some cream lm. Some fn grnd sst clusters

Lime cream to white, fine crystalline, dense abundant chert white off white, vitreous and tripolitic. No odor or show, trace black stain

Lime, cream, fn xln and dse. Abdn chert, yellow, cream white. Trip pieces exhibit black staining. Some varicolored shales.

Limes, cream fn. Xln, cherts, trip to vitreous, yellow-tan-off white. Sample still carries varicolored shales.

LS & CH - cream to green LS, fine to med xln, foss; Cherty, vitreous to trippolitic w/ dark residual staining; no odor, no live show

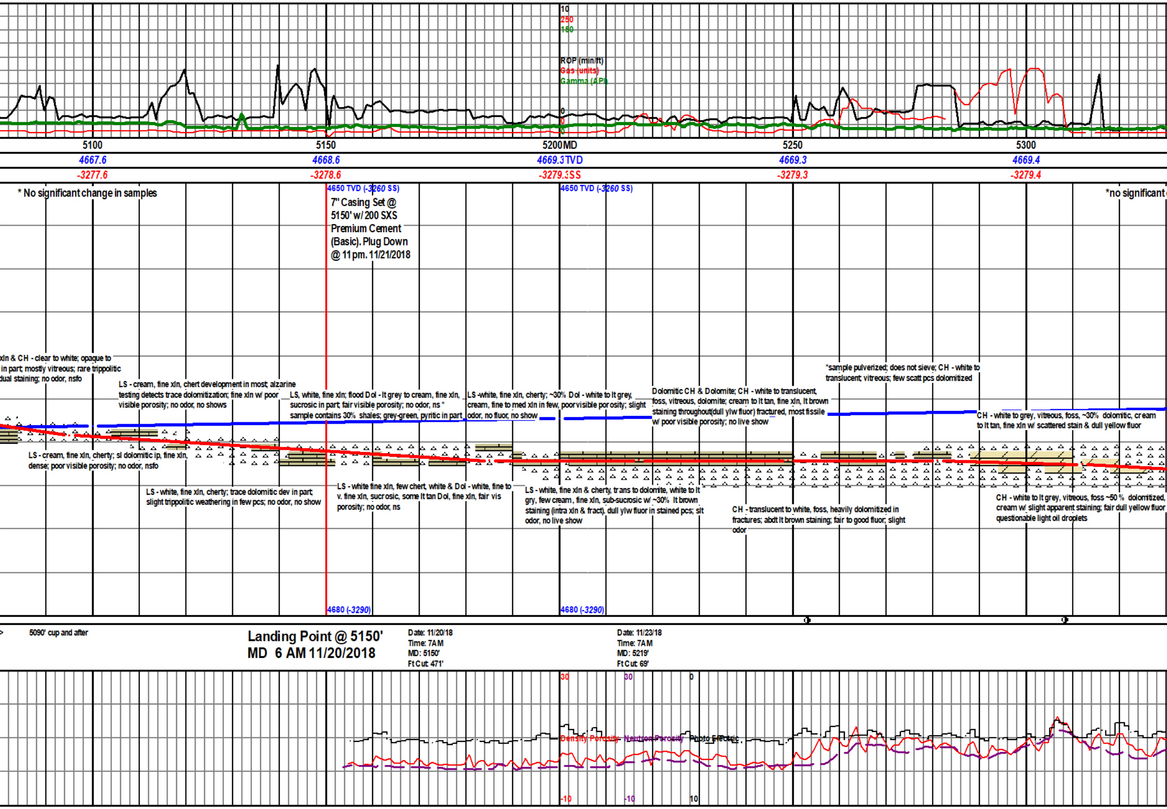
Varicolored LS, shale & chert; most grey to green, LS - fine to med xln, foss; transition to CH - green hued, vitreous to trippolitic w/ light brown to dark staining; few clusters white SS: no odor or live shows

CH - varicolored; white to grey, green; most vitreous, fossiliferous; argillaceous & limey in part; fair amount trippolitic w/ dark residual staining; abundant grey & green shales

LS - cream, fine
translucent, foss
pcs w/ dark resi

pulverized sample LS - cream & CH - clear to white; as above - slight questionable show lt brown free oil from tripp chert

*Sample Catcher Caught Forging Samples from bucket @ 3 AM > are legitimate. Banned From Location.



* No significant change in samples

7" Casing Set @
5150' w/ 200 SXS
Premium Cement
(Basic). Plug Down
@ 11pm. 11/21/2018

*no significant

xln & CH - clear to white; opaque to in part; mostly vitreous; rare trippolitic dual staining; no odor, nsfo

LS - cream, fine xln, cherty; sl dolomitic ip, fine xln, dense; poor visible porosity; no odor, nsfo

LS - cream, fine xln, chert development in most; alzarine testing detects trace dolomitization; fine xln w/ poor visible porosity; no odor, no shows

LS - white, fine xln, cherty; trace dolomitic dev in part; slight trippolitic weathering in few pcs; no odor, no show

LS, white, fine xln; flood Dol - lt grey to cream, fine xln, sucrosic in part; fair visible porosity; no odor, ns * sample contains 30% shales; grey-green, pyritic in part

LS - white fine xln, few chert, white & Dol - white, fine to v. fine xln, sucrosic, some lt tan Dol, fine xln, fair vis porosity; no odor, ns

LS -white, fine xln, cherty; ~30% Dol - white to lt grey, cream, fine to med xln in few, poor visible porosity; slight odor, no fluor, no show

LS - white, fine xln & cherty, trans to dolomite, white to lt gry, few cream, fine xln, sub-sucrosic w/ ~30% lt brown staining (intra xln & fract). dull ylw fluor in stained pcs; slt odor, no live show

Dolomitic CH & Dolomite; CH - white to translucent, foss, vitreous, dolomite; cream to lt tan, fine xln, lt brown staining throughout(dull ylw fluor) fractured, most fissile w/ poor visible porosity; no live show

CH - translucent to white, foss, heavily dolomitized in fractures; abdt lt brown staining; fair to good fluor; slight odor

*sample pulverized; does not sieve; CH - white to translucent; vitreous; few scatt pcs dolomitized

CH - white to grey, vitreous, foss, ~30% dolomitic, cream to lt tan, fine xln w/ scattered stain & dull yellow fluor

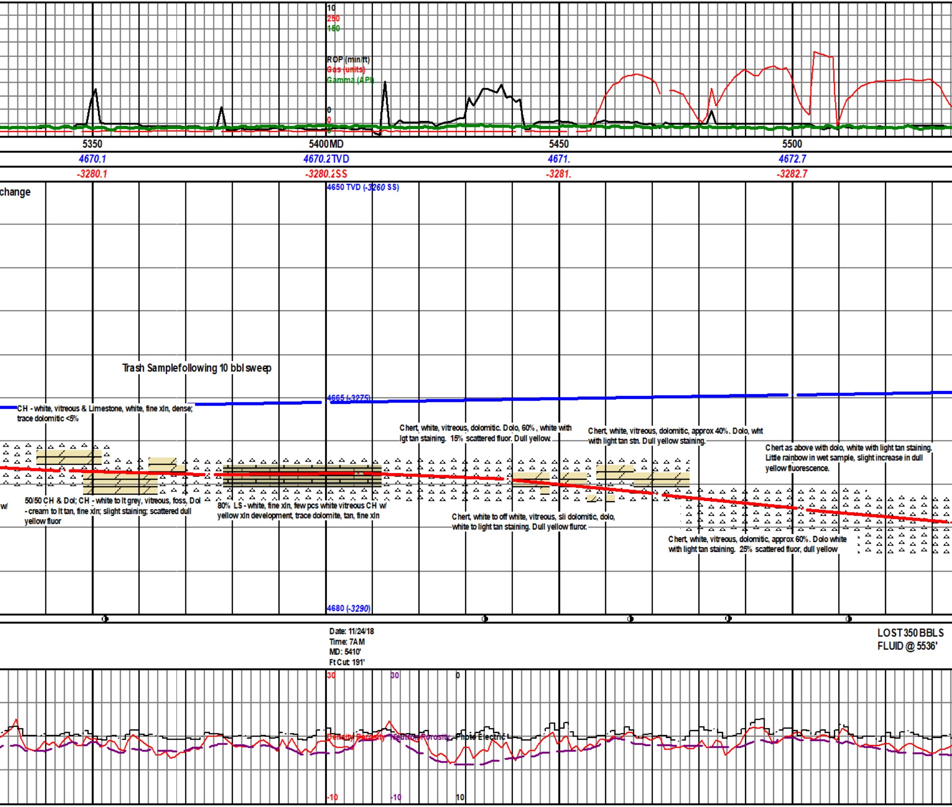
CH - white to lt grey, vitreous, foss ~50 % dolomitized, cream w/ slight apparent staining; fair dull yellow fluor questionable light oil droplets

> 5090' cup and after

Landing Point @ 5150'
MD 6 AM 11/20/2018

Date: 11/20/18
Time: 7AM
MD: 5150'
Ft Cut 471'

Date: 11/23/18
Time: 7AM
MD: 5219'
Ft Cut 69'



Trash Samplefollowing 10 bbl sweep

CH - white, vitreous & Limestone, white, fine xln, dense; trace dolomitic <5%

50/50 CH & Dol; CH - white to lt grey, vitreous, foss, Dol - cream to lt tan, fine xln; slight staining; scattered dull yellow fluor

80% LS - white, fine xln, few pcs white vitreous CH w/ yellow xln development, trace dolomite, tan, fine xln

Chert, white, vitreous, dolomitic. Dolo, 60%, white with lgt tan staining. 15% scattered fluor. Dull yellow.

Chert, white to off white, vitreous, sli dolomitic, dolo, white to light tan staining. Dull yellow fluror.

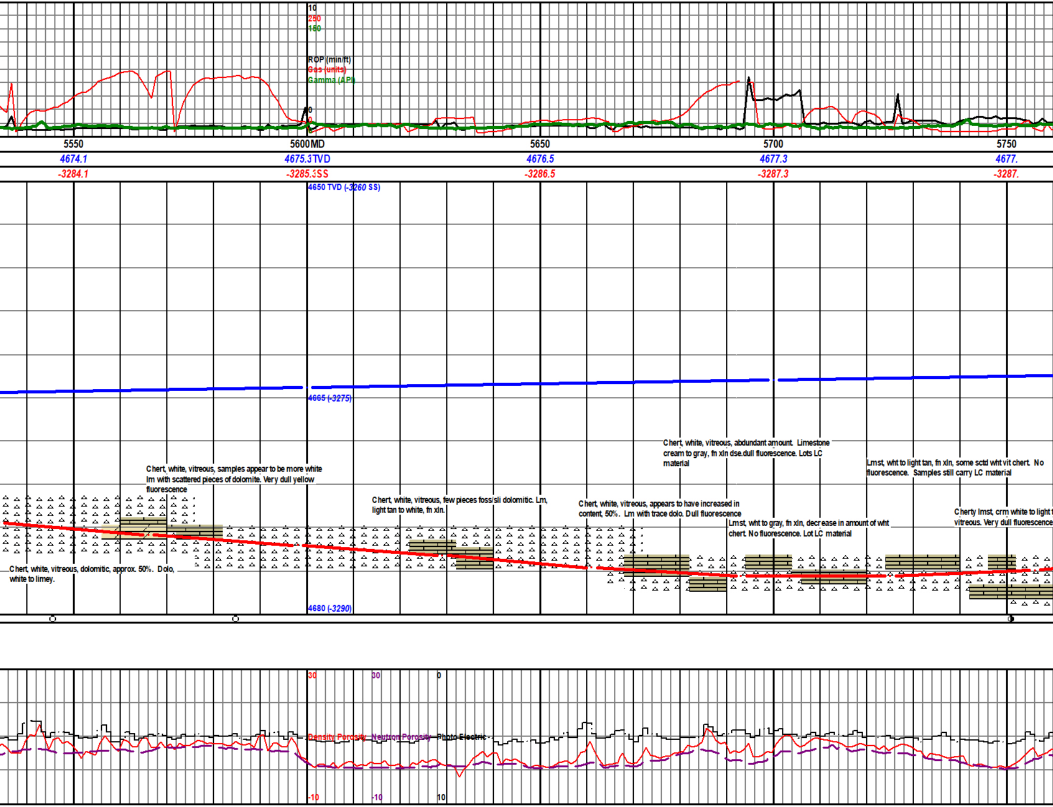
Chert, white, vitreous, dolomitic, approx 40%. Dolo, wht with light tan stn. Dull yellow staining.

Chert, white, vitreous, dolomitic, approx 60%. Dolo white with light tan staining. 25% scattered fluor, dull yellow

Chert as above with dolo, white with light tan staining. Little rainbow in wet sample, slight increase in dull yellow fluorescence.

Date: 11/24/18
Time: 7AM
MD: 5410'
Ft Cut: 191'

LOST 350 BBLS
FLUID @ 5536'



Chert, white, vitreous, dolomitic, approx. 50%. Dolo, white to limey.

Chert, white, vitreous, samples appear to be more white lm with scattered pieces of dolomite. Very dull yellow fluorescence

Chert, white, vitreous, few pieces foss/sli dolomitic. Lm, light tan to white, fn xln.

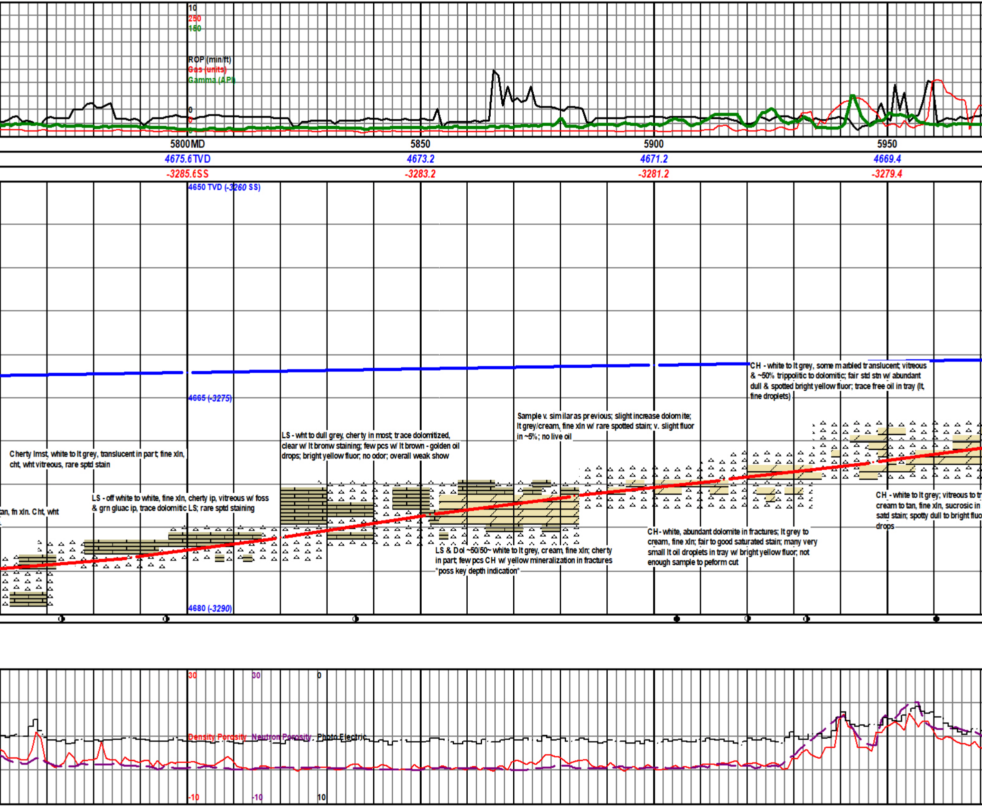
Chert, white, vitreous, appears to have increased in content, 50%. Lm with trace dolo. Dull fluorescence

Chert, white, vitreous, abdundant amount. Limestone cream to gray, fn xln dse.dull fluorescence. Lots LC material

Lmst, wht to gray, fn xln, decrease in amount of wht chert. No fluorescence. Lot LC material

Lmst, wht to light tan, fn xln, some sctd wht vit chert. No fluorescence. Samples still carry LC material

Cherty lmst, crm white to light
vitreous. Very dull fluorescence



tan, fn xln. Cht, wht

Cherty lmst, white to lt grey, translucent in part; fine xln, cht, wht vitreous, rare sptd stain

LS - off white to white, fine xln, cherty ip, vitreous w/ foss & grn gluac ip, trace dolomitic LS; rare sptd staining

LS - wht to dull grey, cherty in most; trace dolomitized, clear w/ lt bronw staining; few pcs w/ lt brown - golden oil drops; bright yellow fluor; no odor; overall weak show

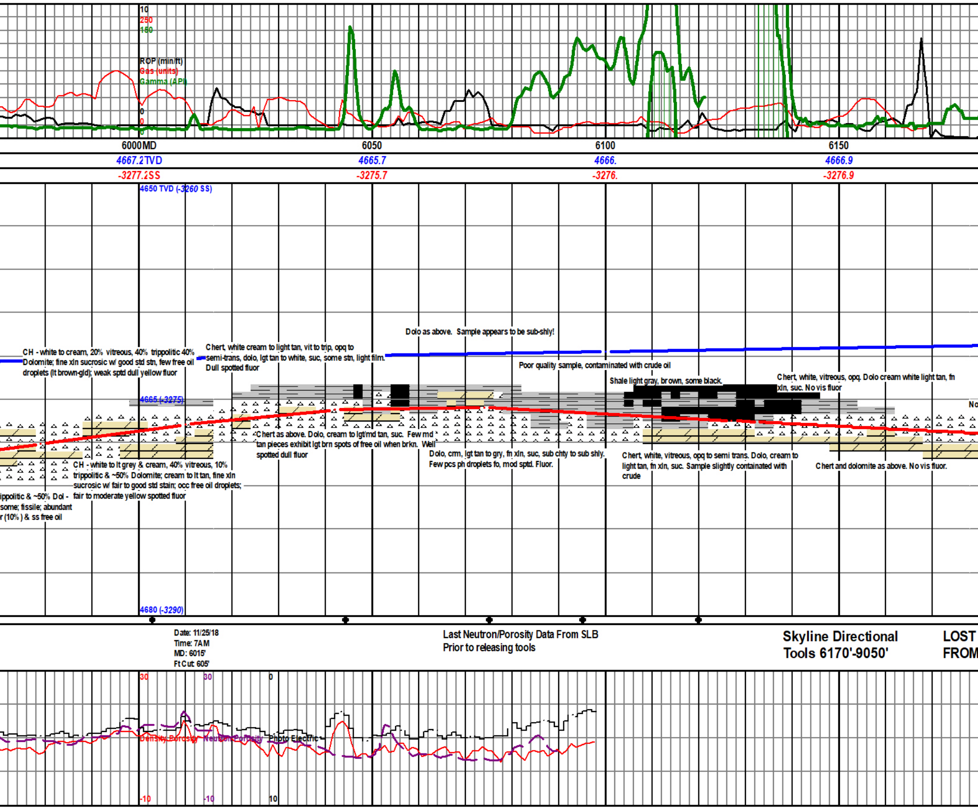
LS & Dol ~50/50~ white to lt grey, cream, fine xln; cherty in part; few pcs CH w/ yellow mineralization in fractures *poss key depth indication*

Sample v. similar as previous; slight increase dolomite; lt grey/cream, fine xln w/ rare spotted stain; v. slight fluor in ~5%; no live oil

CH - white, abundant dolomite in fractures; lt grey to cream, fine xln; fair to good saturated stain; many very small lt oil droplets in tray w/ bright yellow fluor; not enough sample to peform cut

CH - white to lt grey, some marbled translucent; vitreous & ~50% trippolitic to dolomitic; fair std stn w/ abundant dull & spotted bright yellow fluor; trace free oil in tray (lt, fine droplets)

CH - white to lt grey; vitreous to tr
cream to tan, fine xln, sucrosic in
satd stain; spotty dull to bright fluo
drops



ippolitic & ~50% Dol -
some; fissile; abundant
r (10%) & ss free oil

CH - white to cream, 20% vitreous, 40% trippolitic 40% Dolomite; fine xln sucrosic w/ good std stn, few free oil droplets (lt brown-gld); weak sptd dull yellow fluor

CH - white to lt grey & cream, 40% vitreous, 10% trippolitic & ~50% Dolomite; cream to lt tan, fine xln sucrosic w/ fair to good std stain; occ free oil droplets; fair to moderate yellow spotted fluor

Chert, white cream to light tan, vit to trip, opq to semi-trans, dolo, lgt tan to white, suc, some stn, light film. Dull spotted fluor

Chert as above. Dolo, cream to lgt/md tan, suc. Few md tan pieces exhibit lgt brn spots of free oil when brkn. Well spotted dull fluor

Dolo as above. Sample appears to be sub-shly!

Dolo, crm, lgt tan to gry, fn xln, suc, sub chty to sub shly. Few pcs ph droplets fo, mod sptd. Fluor.

Poor quality sample, contaminated with crude oil

Shale light gray, brown, some black.

Chert, white, vitreous, opq to semi trans. Dolo, cream to light tan, fn xln, suc. Sample slightly containated with crude

Chert, white, vitreous, opq. Dolo cream white light tan, fn xln, suc. No vis fluor

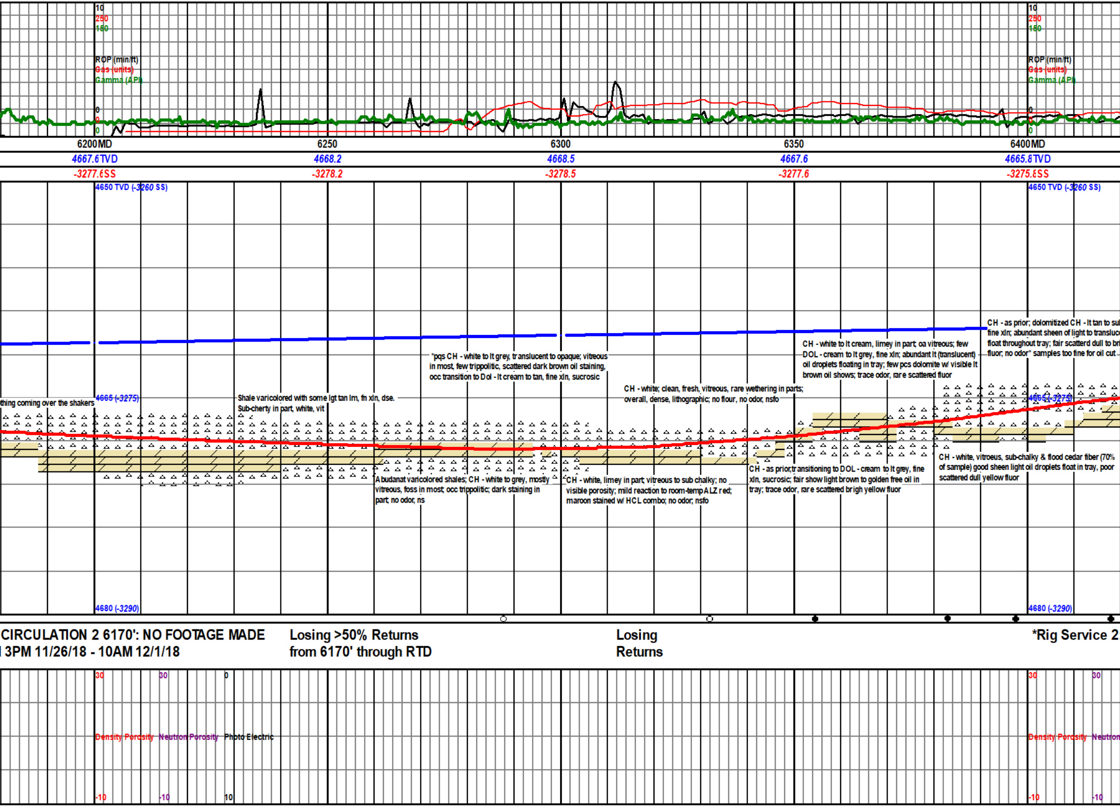
Chert and dolomite as above. No vis fluor.

Date: 11/25/18
Time: 7AM
MD: 6015'
Ft Cut 605'

Last Neutron/Porosity Data From SLB
Prior to releasing tools

Skyline Directional
Tools 6170'-9050'

LOST
FROM



thing coming over the shakers

Shale varicolored with some lgt tan lm, fn xln, dse. Sub-cherty in part, white, vit

Abudanat varicolored shales; CH - white to grey, mostly vitreous, foss in most; occ trippolitic; dark staining in part; no odor, ns

*pqs CH - white to lt grey, translucent to opaque; vitreous in most, few trippolitic, scattered dark brown oil staining, occ transition to Dol - lt cream to tan, fine xln, sucrosic

CH - white, limey in part; vitreous to sub chalky; no visible porosity; mild reaction to room-temp ALZ red; maroon stained w/ HCL combo; no odor; nsfo

CH - white; clean, fresh, vitreous, rare wethering in parts; overall, dense, lithographic; no flour, no odor, nsfo

CH - as prior,transitioning to DOL - cream to lt grey, fine xln, sucrosic; fair show light brown to golden free oil in tray; trace odor, rare scattered brigh yellow fluor

CH - white to lt cream, limey in part; oa vitreous; few DOL - cream to lt grey, fine xln; abundant lt (translucent) oil droplets floating in tray; few pcs dolomite w/ visible lt brown oil shows; trace odor, rare scattered fluor

CH - white, vitroeus, sub-chalky & flood cedar fiber (70% of sample) good sheen light oil droplets float in tray, poor scattered dull yellow fluor

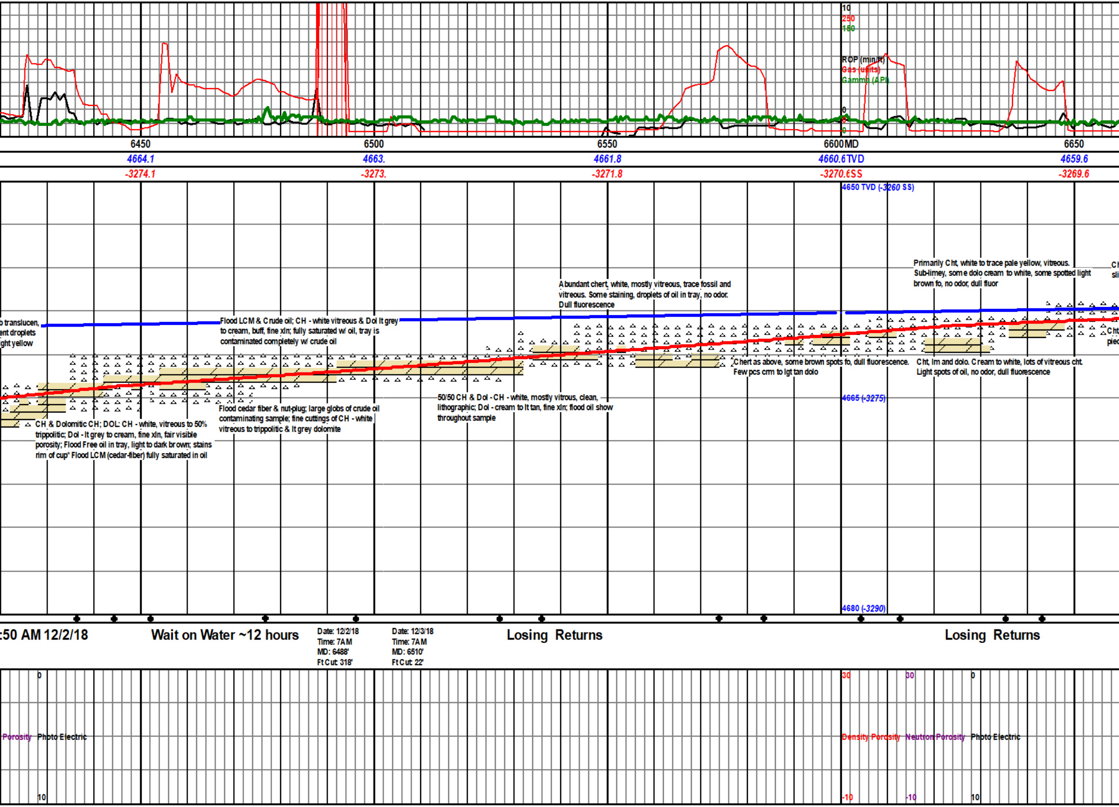
CH - as prior; dolomitized CH - lt tan to su fine xln; abundant sheen of light to transluc float throughout tray; fair scatterd dull to br fluor; no odor* samples too fine for oil cut

CIRCULATION 2 6170': NO FOOTAGE MADE
3PM 11/26/18 - 10AM 12/1/18

Losing >50% Returns
from 6170' through RTD

Losing
Returns

*Rig Service 2



o translucen,
ent droplets
ight yellow

CH & Dolomitic CH; DOL: CH - white, vitreous to 50% trippolitic; Dol - lt grey to cream, fine xln, fair visible porosity; Flood Free oil in tray, light to dark brown; stains rim of cup* Flood LCM (cedar-fiber) fully saturated in oil

Flood LCM & Crude oil; CH - white vitreous & Dol lt grey to cream, buff, fine xln; fully saturated w/ oil, tray is contaminated completely w/ crude oil

Flood cedar fiber & nut-plug; large globs of crude oil contaminating sample; fine cuttings of CH - white vitreous to trippolitic & lt grey dolomite

Date: 12/2/18
Time: 7AM
MD: 6488'
Ft Cut: 318'

Date: 12/3/18
Time: 7AM
MD: 6510'
Ft Cut: 22'

50/50 CH & Dol - CH - white, mostly vitrous, clean, lithographic; Dol - cream to lt tan, fine xln; flood oil show throughout sample

Abundant chert, white, mostly vitreous, trace fossil and vitreous. Some staining, droplets of oil in tray, no odor. Dull fluorescence

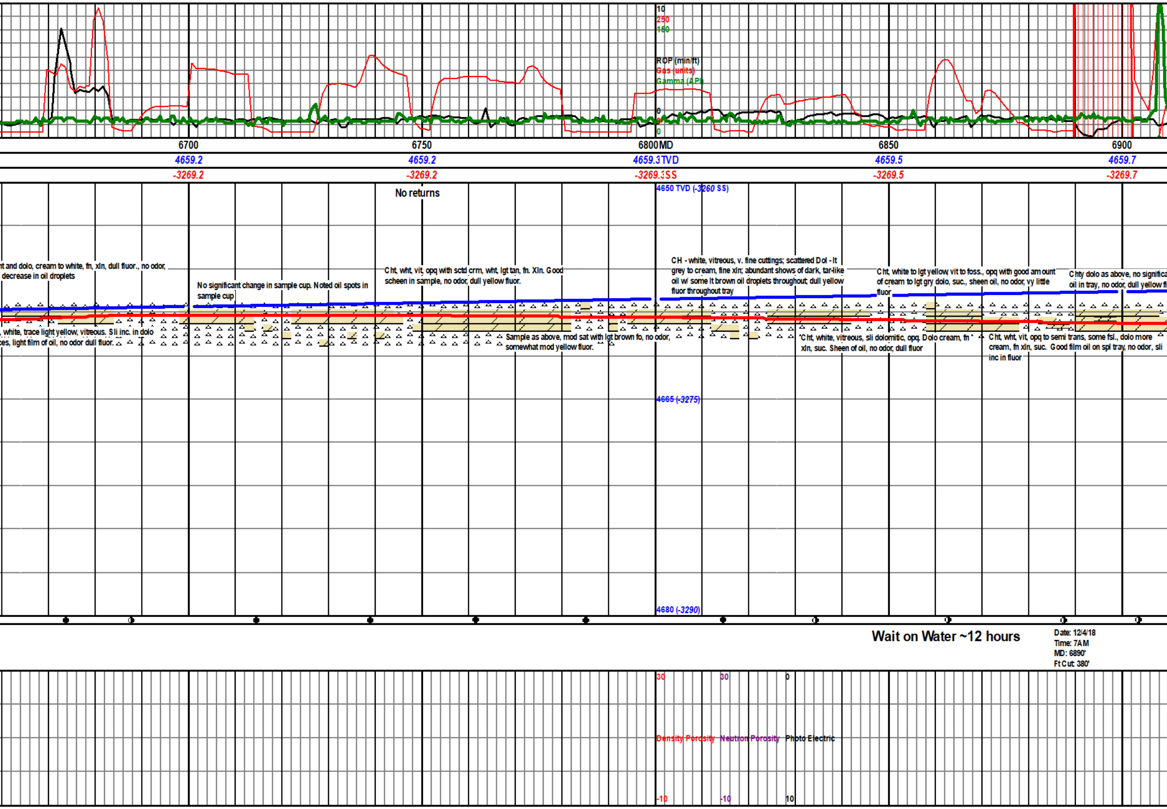
Chert as above, some brown spots fo, dull fluorescence. Few pcs crm to lgt tan dolo

Primarily Cht, white to trace pale yellow, vitreous. Sub-limey, some dolo cream to white, some spotted light brown fo, no odor, dull fluor

Cht, lm and dolo. Cream to white, lots of vitreous cht. Light spots of oil, no odor, dull fluorescence

Cl
sli

Cht
piec



nt and dolo, cream to white, fn, xln, dull fluor., no odor, decrease in oil droplets

, white, trace light yellow, vitreous. Sli inc. in dolo
ces, light film of oil, no odor dull fluor.

No significant change in sample cup. Noted oil spots in sample cup

No returns

Cht, wht, vit, opq with sctd crm, wht, lgt tan, fn. Xln. Good scheen in sample, no odor, dull yellow fluor.

Sample as above, mod sat with lgt brown fo, no odor, somewhat mod yellow fluor.

CH - white, vitreous, v. fine cuttings; scattered Dol - lt grey to cream, fine xln; abundant shows of dark, tar-like oil w/ some lt brown oil droplets throughout; dull yellow fluor throughout tray

'Cht, white, vitreous, sli dolomitic, opq. Dolo cream, fn ' xln, suc. Sheen of oil, no odor, dull fluor

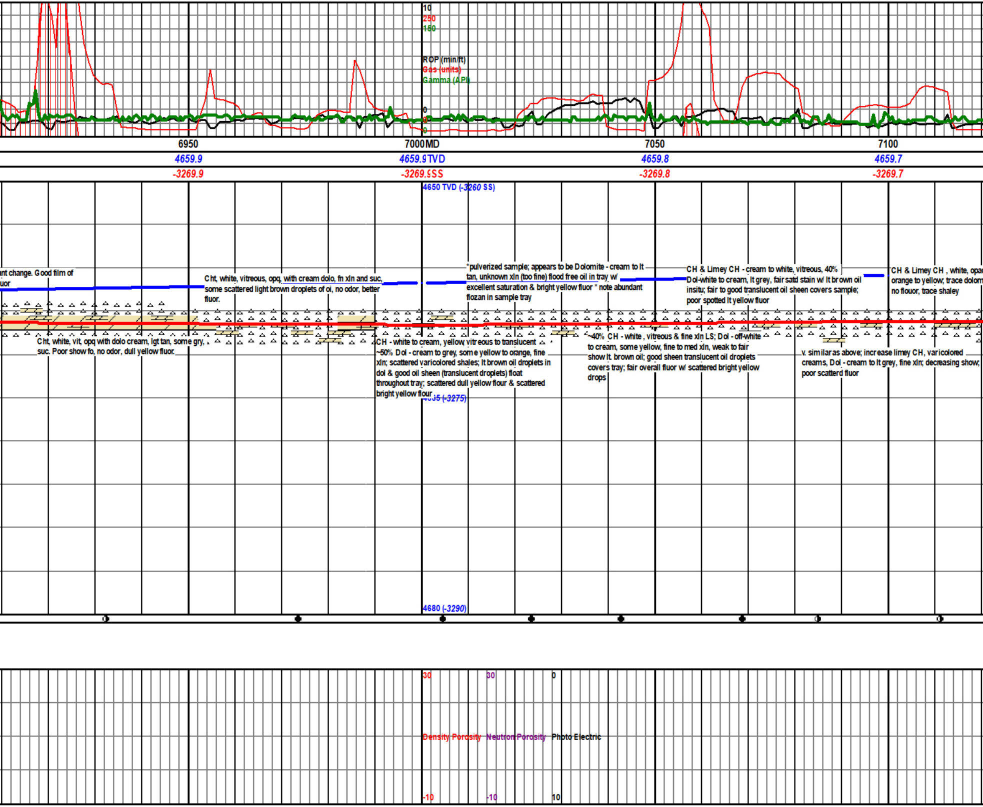
Cht, white to lgt yellow, vit to foss., opq with good amount of cream to lgt gry dolo, suc., sheen oil, no odor, vy little fluor

Cht, wht, vit, opq to semi trans, some fsl., dolo more cream, fn xln, suc. Good film oil on spl tray, no odor, sli inc in fluor

Chty dolo as above, no significa
oil in tray, no odor, dull yellow fl

Wait on Water ~12 hours

Date: 12/4/18
Time: 7AM
MD: 6890'
Ft Cut: 380'



ant change. Good film of
uor

Cht, white, vit, opq with dolo cream, lgt tan, some gry, suc. Poor show fo, no odor, dull yellow fluor.

Cht, white, vitreous, opq, with cream dolo, fn xln and suc, some scattered light brown droplets of oi, no odor, better fluor.

CH - white to cream, yellow vitreous to translucent ~50% Dol - cream to grey, some yellow to orange, fine xln; scattered varicolored shales; lt brown oil droplets in dol & good oil sheen (translucent droplets) float throughout tray; scattered dull yellow flour & scattered bright yellow flour

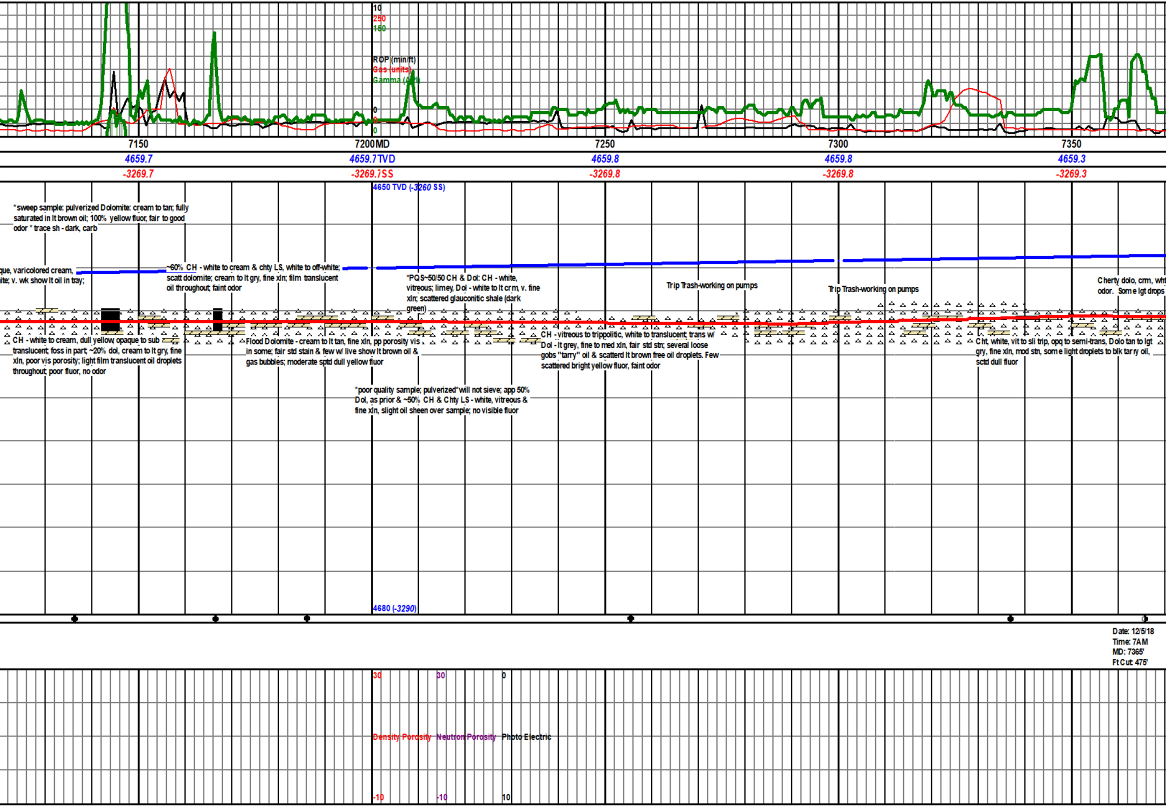
*pulverized sample; appears to be Dolomite - cream to lt tan, unknown xln (too fine) flood free oil in tray w/ excellent saturation & bright yellow fluor * note abundant flozan in sample tray

~40% CH - white, vitreous & fine xln LS; Dol - off-white to cream, some yellow, fine to med xln, weak to fair show lt. brown oil; good sheen translucent oil droplets covers tray; fair overall fluor w/ scattered bright yellow drops

CH & Limey CH - cream to white, vitreous, 40% Dol-white to cream, lt grey, fair satd stain w/ lt brown oil insitu; fair to good translucent oil sheen covers sample; poor spotted lt yellow fluor

v. similar as above; increase limey CH, varicolored creams, Dol - cream to lt grey, fine xln; decreasing show; poor scatterd fluor

CH & Limey CH , white, opa
orange to yellow; trace dolom
no flouor, trace shaley



*sweep sample: pulverized Dolomite: cream to tan; fully saturated in lt brown oil; 100% yellow fluor, fair to good odor * trace sh - dark, carb

que, varicolored cream,
ite; v. wk show lt oil in tray;

~60% CH - white to cream & chty LS, white to off-white; scatt dolomite; cream to lt gry, fine xln; film translucent oil throughout; faint odor

CH - white to cream, dull yellow, opaque to sub translucent; foss in part; ~20% dol, cream to lt gry, fine xln, poor vis porosity; light film translucent oil droplets throughout; poor fluor, no odor

Flood Dolomite - cream to lt tan, fine xln, pp porosity vis in some; fair std stain & few w/ live show lt brown oil & gas bubbles; moderate sptd dull yellow fluor

*PQS~50/50 CH & Dol: CH - white, vitreous; limey, Dol - white to lt crm, v. fine xln; scattered glauconitic shale (dark green)

*poor quality sample; pulverized*will not sieve; app 50% Dol, as prior & ~50% CH & Chty LS - white, vitreous & fine xln, slight oil sheen over sample; no visible fluor

CH - vitreous to trippolitic, white to translucent, trans w/ Dol - lt grey, fine to med xln, fair std stn; several loose gobs "tarry" oil & scatterd lt brown free oil droplets. Few scattered bright yellow fluor, faint odor

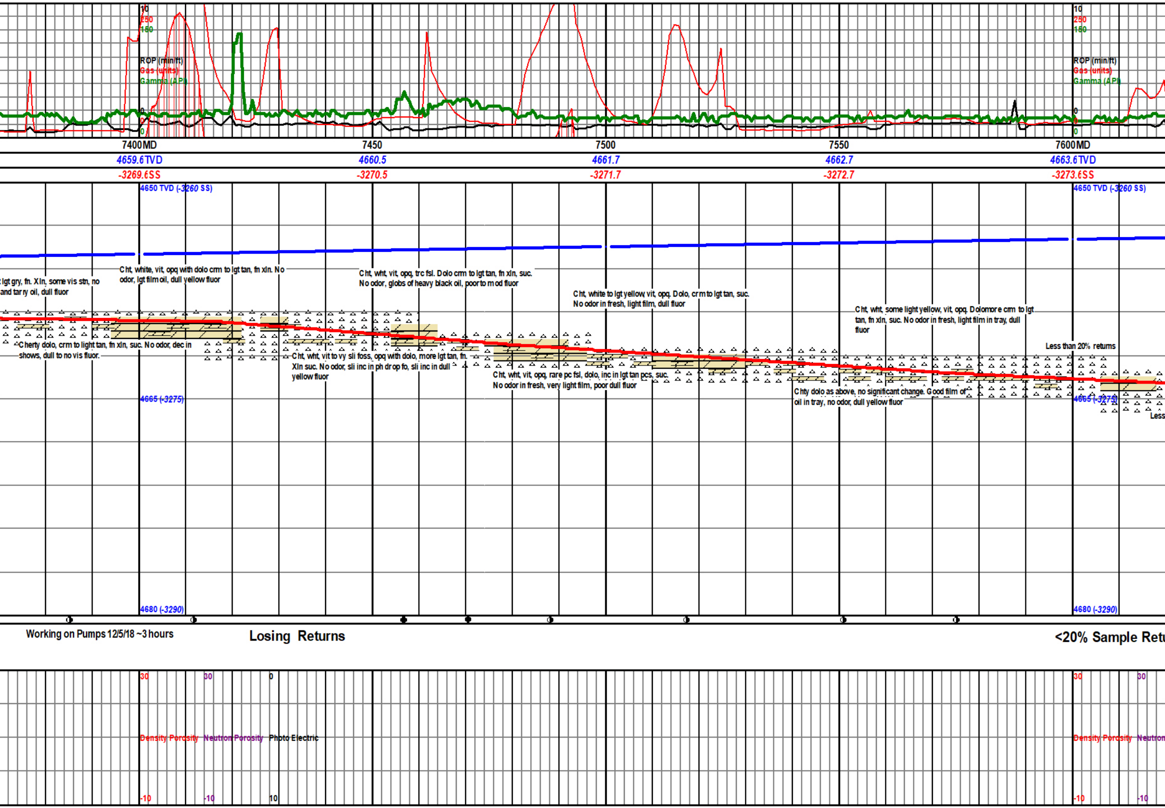
Trip Trash-working on pumps

Trip Trash-working on pumps

Cht, white, vit to sli trip, opq to semi-trans, Dolo tan to lgt gry, fine xln, mod stn, some light droplets to blk tarry oil, sctd dull fluor

Cherty dolo, crm, wh
odor. Some lgt drops

Date: 12/5/18
Time: 7AM
MD: 7365'
Ft Cut: 475'



t lgt gry, fn. Xln, some vis stn, no and tarry oil, dull fluor

Cherty dolo, crm to light tan, fn xln, suc. No odor, dec in shows, dull to no vis fluor.

Cht, white, vit, opq with dolo crm to lgt tan, fn xln. No odor, lgt film oil, dull yellow fluor

Cht, wht, vit to vy sli foss, opq with dolo, more lgt tan, fn. Xln suc. No odor, sli inc in ph drop fo, sli inc in dull yellow fluor

Cht, wht, vit, opq, trc fsl. Dolo crm to lgt tan, fn xln, suc. No odor, globs of heavy black oil, poor to mod fluor

Cht, wht, vit, opq, rare pc fsl, dolo, inc in lgt tan pcs, suc. No odor in fresh, very light film, poor dull fluor

Cht, white to lgt yellow, vit, opq. Dolo, crm to lgt tan, suc. No odor in fresh, light film, dull fluor

Chty dolo as above, no significant change. Good film of oil in tray, no odor, dull yellow fluor

Cht, wht, some light yellow, vit, opq. Dolomore crm to lgt tan, fn xln, suc. No odor in fresh, light film in tray, dull fluor

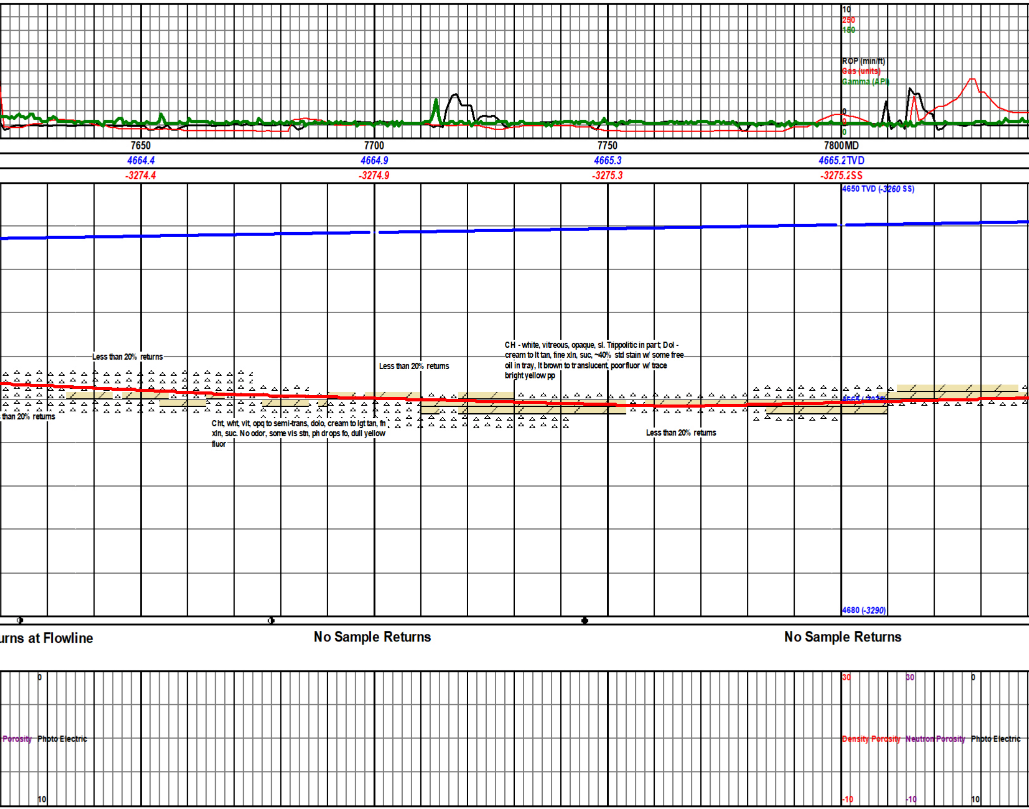
Less than 20% returns

Less

Working on Pumps 12/5/18 ~3 hours

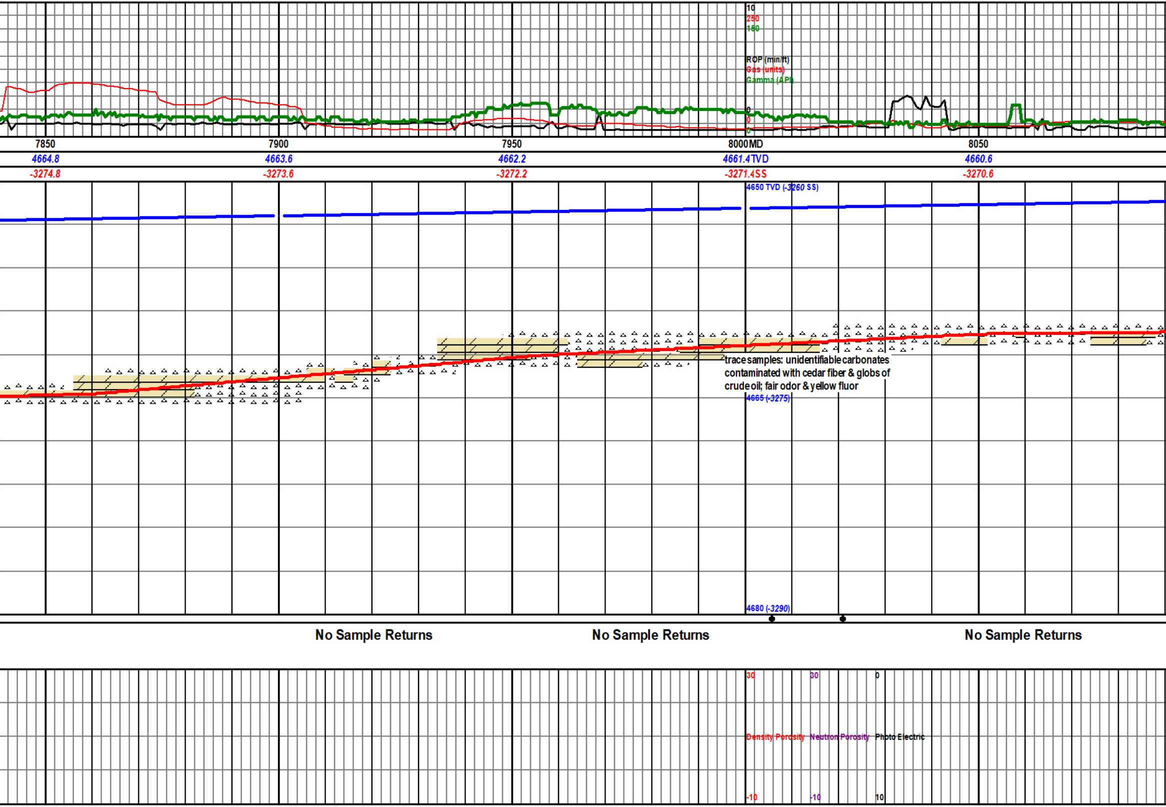
Losing Returns

<20% Sample Ret



Cht, wht, vit, opq to semi-trans, dolo, cream to lgt tan, fn xln, suc. No odor, some vis stn, ph drops fo, dull yellow fluor

CH - white, vitreous, opaque, sl. Trippolitic in part; Dol - cream to lt tan, fine xln, suc, ~40% std stain w/ some free oil in tray, lt brown to translucent, poor fluor w/ trace bright yellow pp

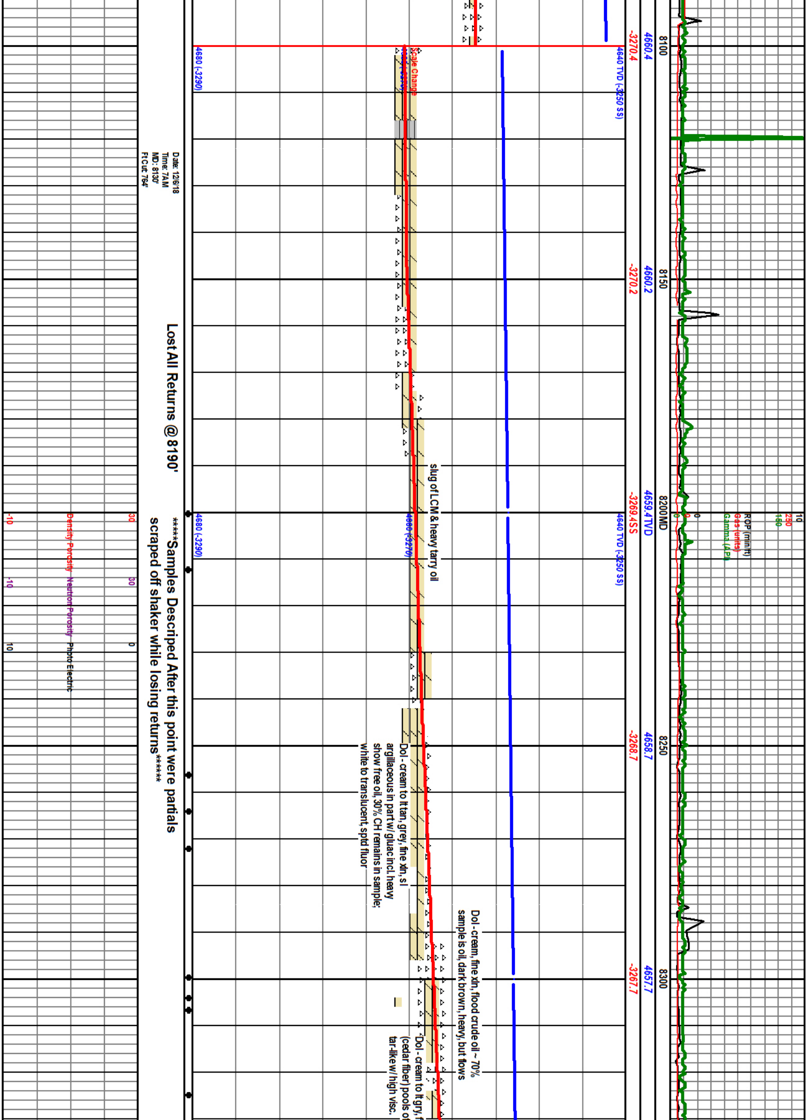


trace samples: unidentifiable carbonates contaminated with cedar fiber & globs of crude oil; fair odor & yellow fluor

No Sample Returns

No Sample Returns

No Sample Returns



Date: 12/6/18
Time: 7AM
MD: 8130'
Ft Cut: 764'

Lost All Returns @ 8190'

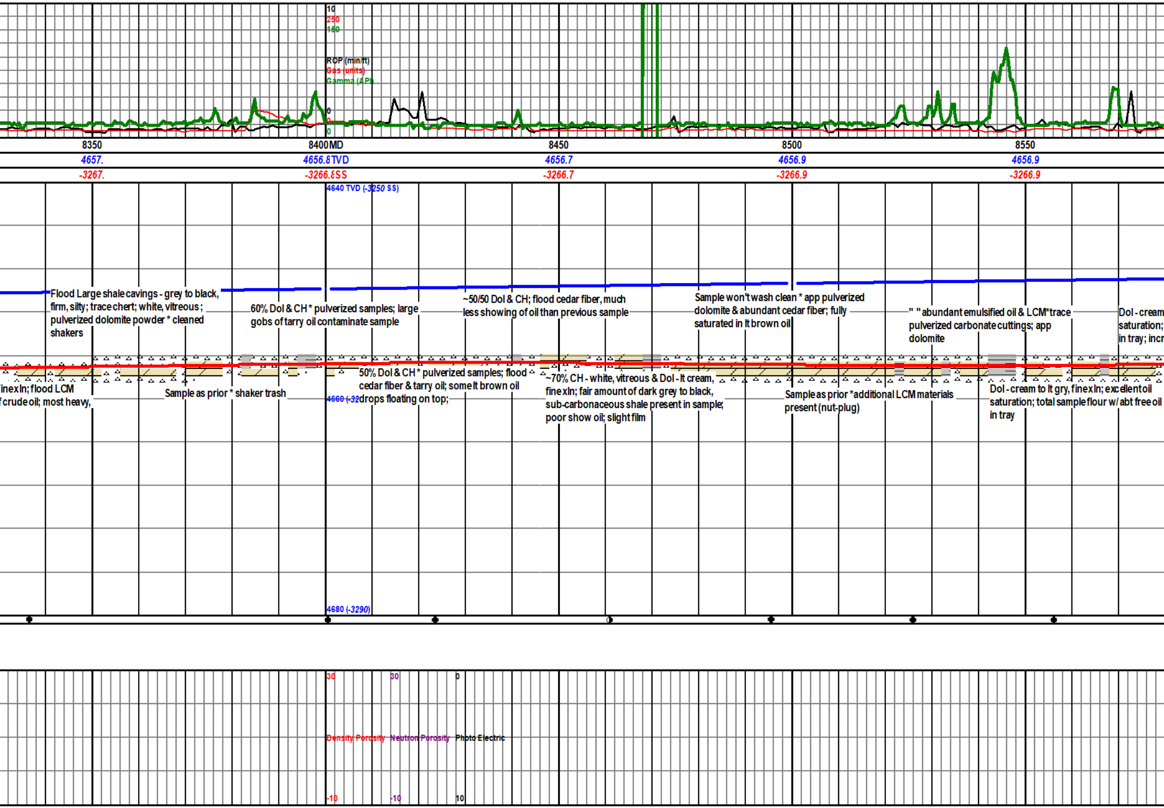
*****Samples Descriped After this point were partials scraped off shaker while losing returns*****

slug of LCM & heavy tarry oil

Dol - cream to lt tan, grey, fine xln, sl argillaceous in part w/ gluac incl. heavy show free oil, 30% CH remains in sample; white to translucent, sptd fluor

Dol - cream, fine xln, flood crude oil ~ 70% sample is oil, dark brown, heavy, but flows

Dol - cream to lt gry,
(cedar fiber) pools of
tar-like w/ high visc.



Flood Large shale cavings - grey to black, firm, silty; trace chert; white, vitreous; pulverized dolomite powder * cleaned shakers

inexln; flood LCM
f crude oil; most heavy,

60% Dol & CH * pulverized samples; large gobs of tarry oil contaminate sample

Sample as prior * shaker trash

50% Dol & CH * pulverized samples; flood cedar fiber & tarry oil; some lt brown oil drops floating on top;

~50/50 Dol & CH; flood cedar fiber, much less showing of oil than previous sample

~70% CH - white, vitreous & Dol - lt cream, fine xln; fair amount of dark grey to black, sub-carbonaceous shale present in sample; poor show oil; slight film

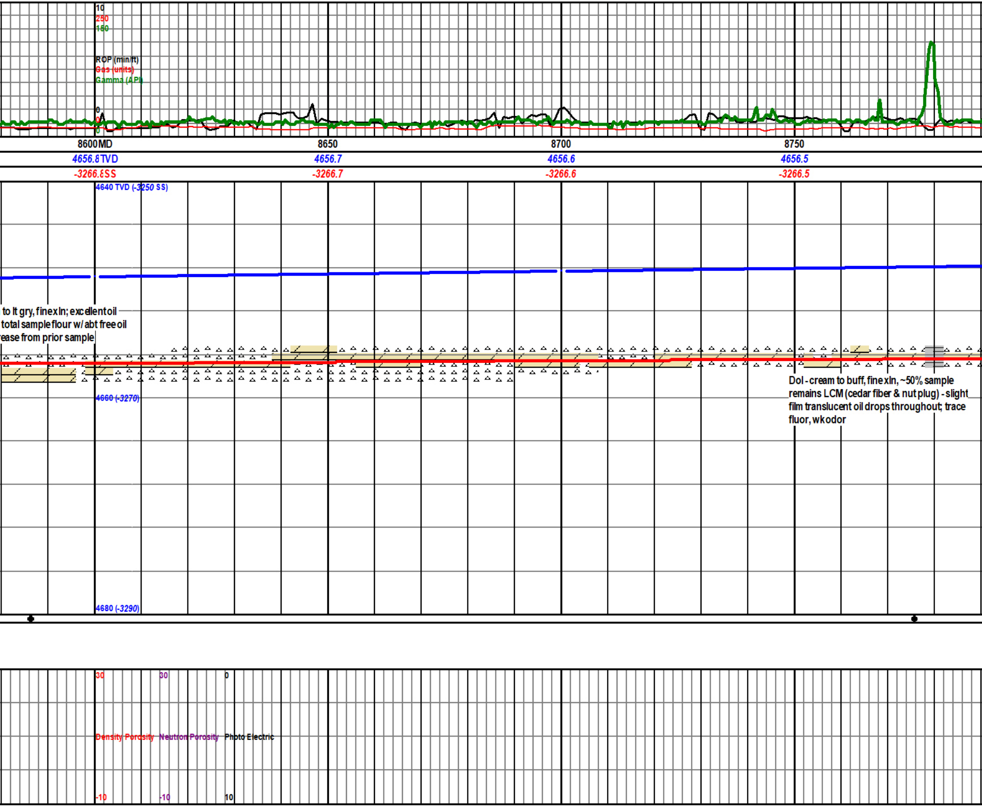
Sample won't wash clean * app pulverized dolomite & abundant cedar fiber; fully saturated in lt brown oil

Sample as prior *additional LCM materials present (nut-plug)

" " abundant emulsified oil & LCM*trace pulverized carbonate cuttings; app dolomite

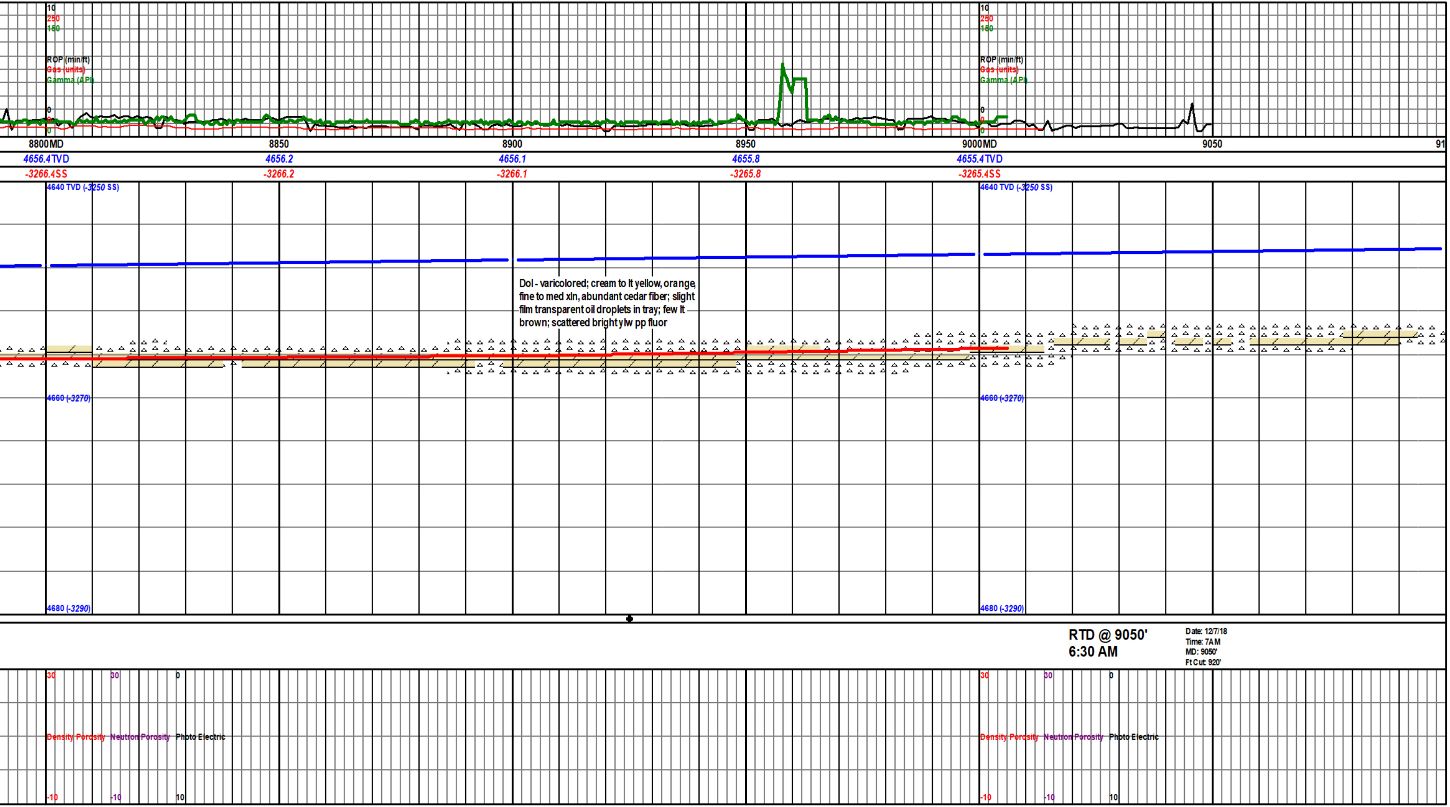
Dol - cream to lt gry, fine xln; excellent oil saturation; total sample flour w/ abt free oil in tray

Dol - cream
saturation;
in tray; incr



to lt gry, fine xln; excellent oil
total sample flour w/ abt free oil
ease from prior sample

Dol - cream to buff, fine xln, ~50% sample remains LCM (cedar fiber & nut plug) - slight film translucent oil drops throughout; trace fluor, wk odor



Dol - varicolored; cream to lt yellow, orange, fine to med xln, abundant cedar fiber; slight film transparent oil droplets in tray; few lt brown; scattered bright ylw pp fluor

RTD @ 9050'
6:30 AM

Date: 12/7/18
Time: 7AM
MD: 9050'
Ft Cut: 920'