Robert D. Hendrix

Petroleum Geologist

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY Cobalt Energy
LEASE JE Unit 'A' #1-5
FIELD Wildcat
LOCATION 2325' fnl & 69' fwl
SEC 5 TWSP 14s RGE 27w
COUNTY Gove STATE Kansas
CONTRACTOR Murfin Drilling Company Rig # 16
SPUD 2/14/2019 COMP 2/26/2019
RTD 4355' LTD 4348'
MUD UP 3353' TYPE MUD Chemical

SAMPLES SAVED FROM 3600' TO TD
DRILLING TIME KEPT FROM 3600' TO TD
SAMPLES EXAMINED FROM 3600' TO TD
GEOLOGICAL SUPERVISION FROM 3670'
GEOLOGIST ON WELL Robert D. Hendrix

ELEVATIONS

KB 2569'
DF
GL 2564'

Measurements Are All From Kelly Bushing

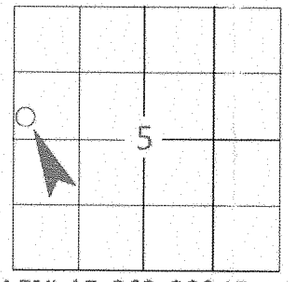
CASING

CONDUCTOR
SURFACE 8-5/8" at 247'
PRODUCTION 5 1/2"

ELECTRICAL SURVEYS

Porosity / Dual Induction
Microlog

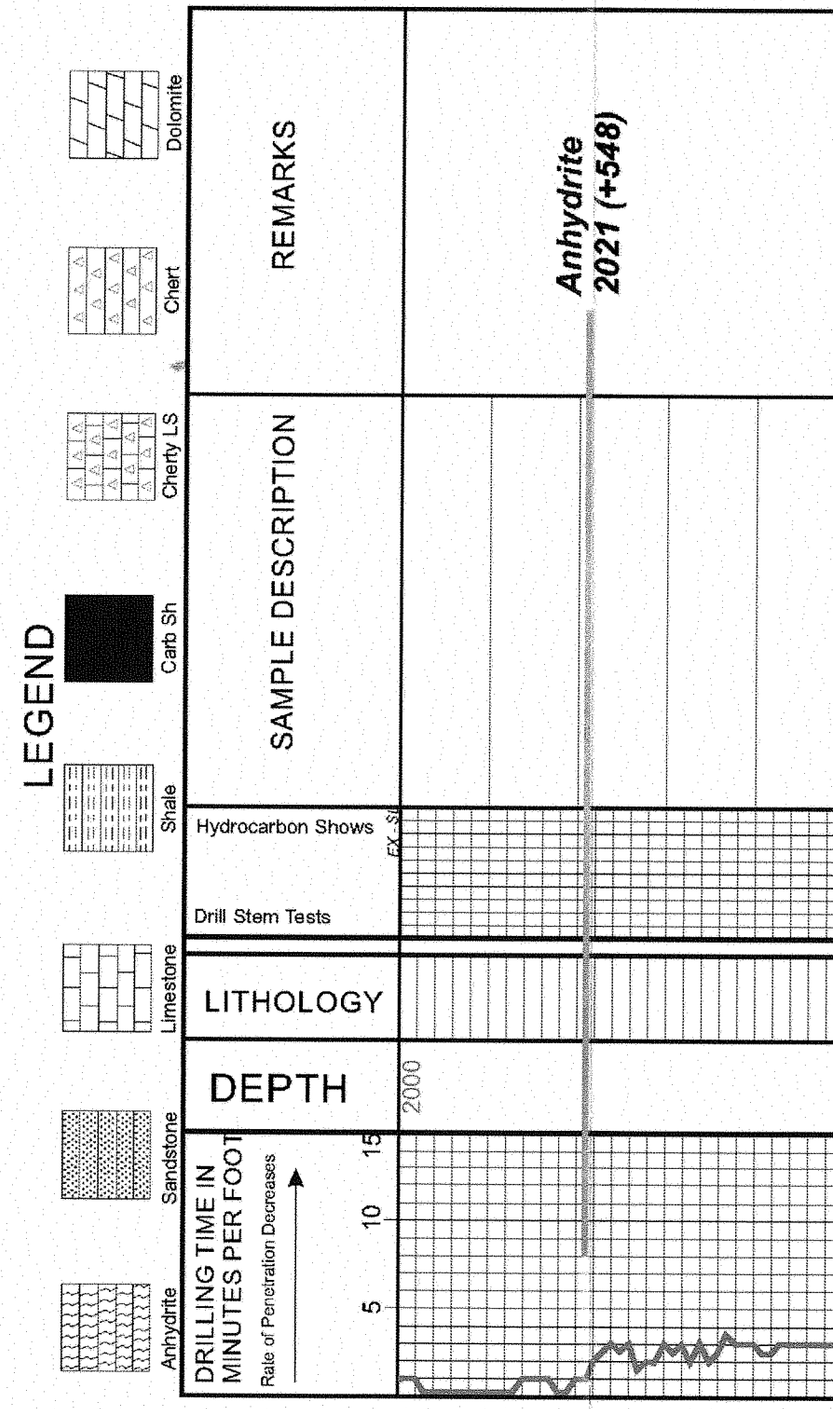
FORMATION TOPS	ELECTRIC LOG	SAMPLE
Anhydrite	2022 (+547)	2021 (+548)
Heebner Shale	3127 (-1158)	3726 (-1157)
Lansing	3765 (-1196)	3764 (-1195)
Stark Shale	3995 (-1426)	3998 (-1429)
BKC	4049 (-1480)	4052 (-1483)
Pawnee	4209 (-1640)	4209 (-1640)
Cherokee Shale	4282 (-1713)	4279 (-1710)
Mississippian	4340 (-1771)	4342 (-1773)



API# 15-063-22345

REMARKS:

All Shows were tested through the Lansing, Marmaton and Ft. Scott with poor results.
The test in the Mississippian yielded positive results and the decision was made to set production casing.
2/14/2019 through 2/22/2019 drilling as normal with only one breakdown,
2/18/2019, 1:23pm @ 3923' blew out kelly hose
2/22/2019 @ 8:35pm rig was drained up due to impending blizzard conditions
2/23/2019 through 7:30am 2/25/2019 rig was shut down
2/25/2019 while tripping out of hole in preperation for running log's, The Draw works motor failed and replacement was necessary.
2/26/2019 @ 7:00 am motor was replaced and preperation for logging resumed.
7' to 8' of fill was present in bottom of hole limiting log coverage at the bottom of the hole.



2021 (+548)

2050

Base Anhydrite
2059 (+510)

2100

3600

Limestone: white to lt gray, f-mxln, chalky, sl oolitic, fossiliferous, no vis por

Shale: gray, red, blocky
Shale: dark gray, black carbonaceous
Limestone: white to tan, f-mxln, sl chalky, granular, fossiliferous, no vis por

Shale: dark gray, red, black

Limestone: white to gray, fxln, v-chalky, fossiliferous, no vis por

Limestone: white to lt gray, fxln, chalky, sl cherty, fossiliferous, no vis por

Shale: red, lt to dark gray, blocky, silty

50

Limestone: white, fxln, granular, fossiliferous, no vis por

Shale: black, gray, green, red, silty

Limestone: white to gray, f-mxln, sl cherty, granular, fossiliferous, pr interxln por, ns

Shale: gray, green, red, black, silty

Geologist on location 3670' at 1:36 am 2/18/2019

Shale: gray, green, red, brown, silty,

Limestone: tan, fxln, sl chalky, cherty, granular no vis por

Limestone: white to tan, f-mxln, sl chalky, granular, fossiliferous, fr interxln por, ns

Shale: gray, green, red, brown, silty,

3700

Limestone: white to tan, f-mxln, sl chalky, granular, fossiliferous, fr interxln por, ns

Shale/Siltstone: gray, green, red, silty, hard

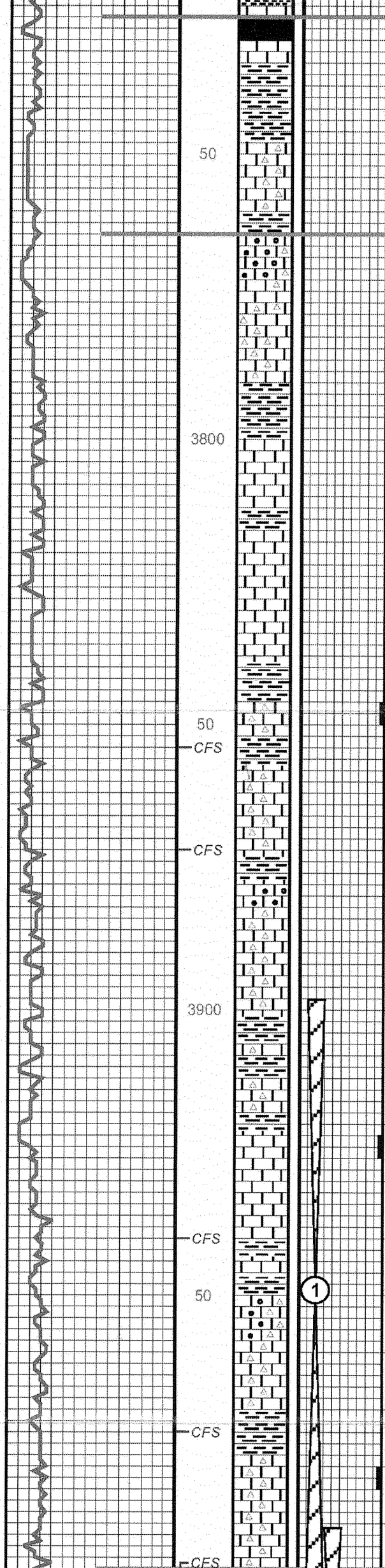
Heebner Shale
3726 (-1157)

Shale: black carbonaceous, dark gray, blocky

Limestone: tan, fxln, dense, fossiliferous, no vis por

Shale: gray, green, red, silty

Limestone: white to tan, f-mxln, sl chalky,



Heebner Shale
3726 (-1157)

Shale: black carbonaceous, dark gray, blocky
Limestone: tan, fxln, dense, fossiliferous, no vis por
Shale: gray, green, red, silty
Limestone: white to tan, f-mxln, sl chalky, cherty, dense, fossiliferous, no vis por
Limestone: tan, fxln, sl chalky, cherty, granualr, fossiliferous, no vis por
Shale: gray, green, red, blocky

Lansing
3764 (-1195)

Limestone: tan to white, f-mxln, sl chalky, cherty (spiculitic), oolitic in part, granular, fossiliferous, pr interxln por, ns
Limestone: tan to white, f-mxln, sl chalky, sl cherty (spiculitic), granular, fossiliferous, no vis por, ns
Shale: gray, green, red, blocky
Shale: gray, green, red, blocky
Limestone: tan, f-mxln, sl chalky, granular, fossiliferous, no vis por
Shale: gray, red, brown, silty
Limestone: tan, fxln, granular, sl fossiliferous, no vis por

8:00am, 2/18/2019

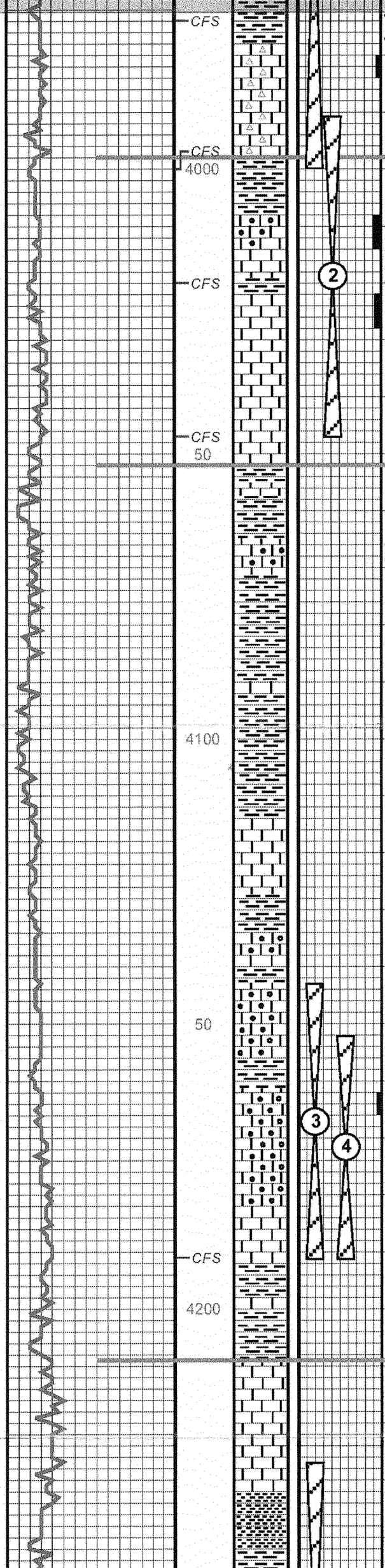
Shale: gray, green, red, silty
Limestone: tan to white, fxln, sl chalky, cherty, granular, fossiliferous, pr interxln por, 5 pieces black streaky spotty stain, nfo, no odor
Shale: gray, green, red, silty
Limestone: tan, fxln, chalky, cherty, granular, fossiliferous, no vis por

wt 9.0, vis. 58, lcm 2#
Mud-Co, Gary Schmidtberger

Shale: gray, brown, red, laminated, blocky
Limestone: tan to white, fxln, oolitic, granular, gd oolicastic por, ns
Limestone: tan to white, fxln, dense, sl cherty, no vis por
Shale: gray, brown, red, laminated, blocky
Limestone: white to gray, fxln, cherty, chalky, fossiliferous, no vis por
Shale: gray, red, green black, blocky, silty
Limestone: white to gray, fxln, cherty, chalky, fossiliferous, no vis por
Shale: gray, red, green black, blocky, silty
Limestone: tan, f-mxln, chalky, granular, 4 pieces pr vug por, dark spotty stain, slsfo on break, no odor
Limestone: tan, fxln, chalky, granular, sl fossiliferous, no vis por
Shale: light to dark gray, red, green, black, blocky
Limestone: tan, fxln, chalky, dense, sl fossiliferous, no vis por
Limestone: tan, fxln, chalky, cherty, oolitic in part, fossiliferous, no vis por, ns
Limestone: tan, fxln, sl chalky, sl cherty, granular, sl pyritic, sl interxln por, ns
Shale: dark to light gray, red, blocky
Shale: dark to light gray, red, blocky
Limestone: tan, fxln, chalky, cherty, mostly dense, fossiliferous, pr interxln por, light sat stain, slsfo, no odor

DST #1
3898-4000
30-45-30-30
1st open: weak surface blow died in 7 min
2nd open: Initial surge died immediately
Rec:
15' mud
hydro: 1909-1903 psi
If: 18-32 psi
ff: 34-41 psi
sip: 1079-1033 psi
bht:127° F

8:00am, 2/19/2019
wt 9.1, vis. 51, lcm 2#
mud-co, Gary Schmidtberger
Pipe Strap: 0.81' long to board



Shale: dark to light gray, red, blocky

Shale: dark to light gray, red, blocky

Limestone: tan, fxln, chalky, cherty, mostly dense, fossiliferous, pr interxln por, light sat stain, slsfo, no odor

8:00am, 2/19/2019
wt 9.1, vis. 51, lcm 2#
mud-co, Gary Schmidtberger
Pipe Strap: 0.81' long to board

Stark Shale
3998 (-1429)

Shale: dark to light gray, red, green, blocky

Limestone: tan to lt gray, f-mxln, sl chalky, oolitic in part, fossiliferous, 3% sample fr interxln por, light to dark sat stain, slsfo more on break,, faint odor, dull green flourescence

Limestone: tan, fxln, mostly dense, sparry calcite, no vis por, ns

Shale: dark gray, green, red, silty

Limestone: tan to white, fxln, granular, sparry calcite, 1% sample no vis por, lt sat stain, v-slsfo, fair odor, dull green/yellow fluorescence

8:00am, 2/20/2019
wt 9.0, vis. 44, lcm 1#
mud-co, Gary Schmidtberger

Limestone: gray to white, f-mxln, chalky, sl fossiliferous, no vis por, ns

BKC
4052 (-1483)

Shale: gray, red, silty, laminated

Limestone: white to tan, fxln, chalky, fossiliferous, no vis por

Shale: gray, black, red

Limestone: gray to white, f-mxln, chalky, oolitic, fossiliferous, no vis por

Shale: gray lt to dark, red, blocky, silty

Shale: gray, black, red, blocky

Limestone: gray, f-mxln, chalky, granular, fossiliferous, no vis por

Shale: lt to dark gray, green, red, silty

DST #2
3991-4047
30-45-60-90
1st open: slow blow built to 4.89"
2nd open: blow built to 11.53"
no returns
Rec:
100' mw -w- oil spots
hydro: 1959-1948 psi
If: 19-41 psi
ff: 43-65 psi
sip: 927-925 psi
bht:131°F
chl: 46,000 ppm
rw: 0.20 @ 50° F

Limestone: gray to tan, fxln, sl chalky, granular, no vis por

DST #3
4143-4191
Mis-Run
Packer Failure
Rec:
80' mud

Shale: lt to dark gray, green, red, silty

Limestone: tan to white, fxln, sl chalky, oolitic, pr interxln por, ns

Shale: gray, green, red, silty

Limestone: tan, fxln, dense, oolitic, no vis por, ns

DST #4
4152-4191
30-45-30-30
1st open: weak surface blow built to 1.28"
2nd open: No Blow
Rec:
3' mud
hydro: 2049-2037 psi
If: 16-16 psi
ff: 17-18 psi
sip: 71-25 psi
bht: 127° F

Shale: gray, green, red, silty

Limestone: tan to white, fxln, granular, oolitic, secondary calcite recrystallization, 8 pieces sample pr interxln por, lt sat stain, slsfo on break only, no odor, dull yellow fluorescence

Limestone: tan, fxln, oolitic, dense, fossiliferous no vis por

Limestone: tan to brown, dense, hard, no vis por

Shale: gray, green, dark red, laminated blocky

8:00am, 2/21/2019
wt 9.0, vis. 59, lcm 2#
mud-co, Gary Schmidtberger

Limestone: brown to tan, v-fmxln, dense, fossiliferous, no vis por

Shale: gray, green, dark red, blocky, silty

Pawnee
4209 (-1640)

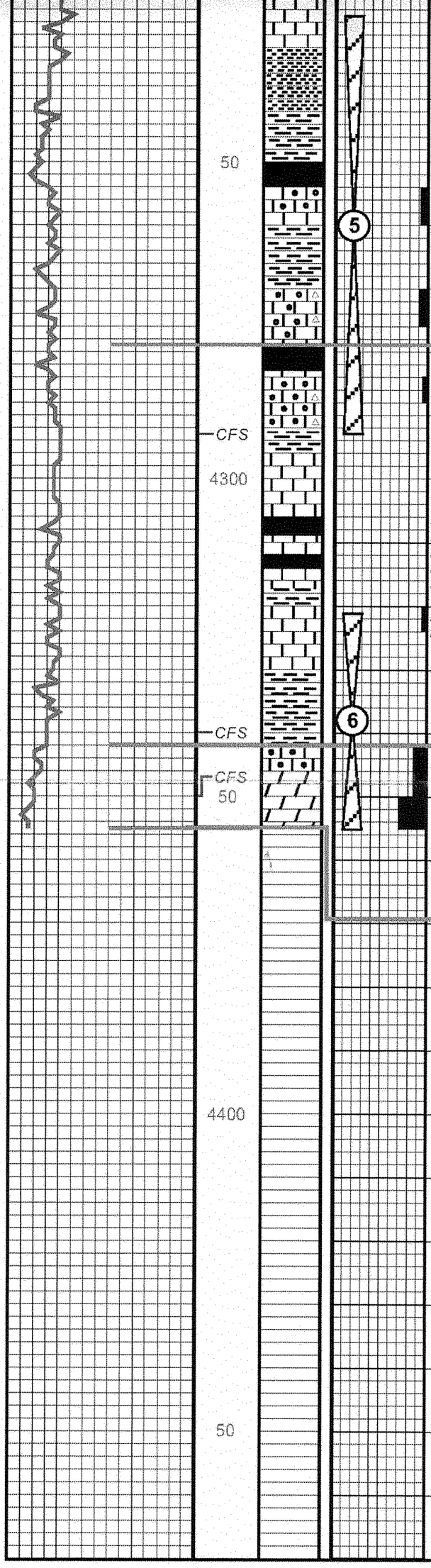
Limestone: tan to gray, fxln, dense, silty, sl fossiliferous, no vis por

Limestone: tan to white, fxln, chalky, granular in part, dense in part, no vis por

Limestone: tan to gray, fxln, chalky, dense in part, no vis por

Shale/Siltstone: dark to light gray, laminated and blocky

DST #5
4227-4293
30-45-30-30
1st open: weak surface blow built to 1.83"



Limestone: tan to gray, fxln, chalky, dense in part, no vis por

Shale/Siltstone: dark to light gray, laminated and blocky

Shale: gray, black carbonaceous

Limestone: tan, f-mxln, oolitic, mostly dense, sl fossiliferous, 1% sample no vis por, lt sat stain, slsfo more on break, fair odor, dull yellow fluorescence

Shale: gray, red, blocky, silty

Limestone: tan to gray, f-mxln, sl cherty, oolitic, fossiliferous, 3% sample pr pp to vug por, lt to dark sat stain, frsfo, good odor, bright yellow/green fluorescence

Shale: black carbonaceous

Limestone: tan to white, f-mxln, sl cherty, oolitic, fossiliferous, pyritic, 1% sample no vis por, lt sat stain, nfo, no odor, dull yellow fluorescence

Shale: dark to lt gray, black, laminated, pyritic

Limestone: tan to white, fxln, sl chalky, fossiliferous, pyritic, 5 pieces no vis por, lt sat stain, nfo, no odor, dull yellow fluorescence

Shale: dark to lt gray, black, laminated

Limestone: tan to white, fxln, hard, dense, fossiliferous, secondary calcite recrystallization no vis por

Shale: dark to lt gray, black, laminated

Limestone: gray to tan, fxln, dense, hard, fossiliferous, no vis por, 2 pieces dark spotty stain, slsfo on break, no odor

Shale: gray, black, red

Limestone: tan to white, fxln, hard, sl chalky, oolitic & fossiliferous, pr oolicastic por, dark sat stain, frsfo more on break, gd odor

Dolomite: tan, f-mxln, granular, sl fossiliferous, 10% sample fr pp to vug por, gd lt to dark sat stain, frsfo, gd odor

Dolomite: tan, f-mxln, granular, 70% sample gd pp to vug por, lt to dark sat stain, gdsfo, strong odor

DST #5
4227-4293
30-45-30-30
1st open: weak surface blow built to 1.83"
2nd open: No Blow
Rec:
10' mud
hydro: 2094-2074 psi
If: 18-23 psi
ff: 25-26 psi
sip: 95-46 psi
bht: 115° F

Cherokee Shale
4279 (-1710)

8:00am, 2/22/2019

Mississippian
4342 (-1773)

wt 9.3, vis. 45, lcm 4#
mud-co, Gary Schmidtberger

RTD
4355 (-1786)

Geologist off location at 6:30pm, 2/26/2019

DST #6
4321-4355
30-45-60-90
1st open: blow built to 9.10"
1st close: no return
2nd open: bob 49 min
2nd close: very weak surface blow
Rec:
125' hmco 45/55
50' co
80' gip
hydro: 2124-2104 psi
If: 20-52 psi
ff: 52-81 psi
sip: 932-919 psi
bht: 122° F
gravity: 38°

Cobalt Energy
JE Unit 'A' #1-5
2310'fsl & 1000'fwl
5-14-27w, Gove County, Kansas
KB=2569', GL=2564'
API: 15-063-22345

Cobalt Energy
JE Unit 'A' #1-5
2310'fsl & 1000'fwl
5-14-27w, Gove County, Kansas
KB=2569', GL=2564'
API: 15-063-22345

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