



Scale: 5" / 100'
Measured Depth Log

Well Name Brook LC28-77-1HNA(HORZ)

Location SESW SEC 28, T9N, R59W

State COLORADO County WELD

Country USA Rig Number H&P 326

API Number 05-123-38856 Field WILDCAT

Region DJ BASIN Drilling Completed 9/12/2014

Spud Date 9/3/2014

Surface Coordinates 340 FSL, 1506 FWL
40° 42' 53.964 N
103° 59' 13.056 W

Bottom Hole Coordinates 675 FFNLL, 1650 FFWLL

Ground Elevation 4853' K.B. Elevation 4883'

Logged Interval 5500' To 6410 Total Depth 10,411

Formation NIOBRARA-A MARL

Type of Drilling Fluid LSND

Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200
Denver, CO 80202

Geologist

Name EVAN HOWELL

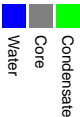
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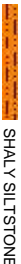














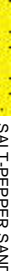





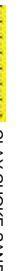
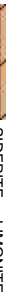
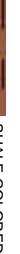



Other

COLUMBINE LOGGING INC. MATT HOPKINS
BRIAN SPITZMILLER


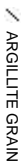
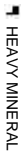




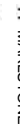




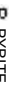
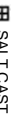



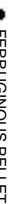




Zone Color Coding



Rock Types

 UNKNOWN	 COAL	 MARLSTONE	 SHALY SANDSTONE
 ANHYDRITE	 CONGLOMERATE	 METAMORPHIC	 SHALY SILTSTONE
 BENTONITE	 DOLOMITE	 NO SAMPLE	 SILTY SHALE
 BRECCIA	 DOLOMITIC LIMESTONE	 SALT	 SILTSTONE
 CHALK	 GRANITE	 SANDSTONE	 TILL
 CEMENT	 GYPSUM	 SALT-PEPPER SANC	 TUFF
 CHERT	 IGNEOUS	 SHALE	 WELDED TUFF
 CLAY CHOKE SANC	 SIDERITE or LIMONITE	 SHALE COLORED	
 CLAYSTONE	 LIMESTONE	 SHALE GRAY	

Accessories







 GASTROPOD	 ARGILLITE GRAIN	 HEAVY MINERAL	 ANHYDRITE STRINGER
 INOCERAMUS	 B BENTONITE	 K KAOLIN	 BENTONITE STRINGER
 OOLITE	 BITUMENOUS SUBSTANCE	 M MARLSTONE	 COAL STRINGER
 OSTRACOD	 BRECCIA FRAGMENTS	 M MICACEOUS	 DOLOMITE STRINGER
 PELECYPOD	 C CALCAREOUS	 M MINERAL CRYSTALS	 GYPSUM STRINGER
 PELLET	 C CARBONACEOUS FLAKES	 N NODULES	 LIMESTONE STRINGER
 PISOLITE	 CHTDK	 P PHOSPHATE PELLETS	 MARLSTONE (CALC) STRG
 PLANT REMAINS	 CHTLT	 P PYRITE	 MARLSTONE (DOL) STRG
 PLANT SPORES	 C COAL - THIN BEDS	 S SALT CAST	 SANDSTONE STRINGER
 SCAPHOPOD	 D DOLOMITIC	 S SANDY	 SHALE STRINGER
 STROMATOPOROID	 F FELDSPAR	 S SILICEOUS	 SILTSTONE STRINGER
 ECHINOID	 F FERRUGINOUS PELLET	 S SILTY	
 FISH	 F FERRUGINOUS	 T TUFFACEOUS	
 FORAMINIFERA	 A ANHYDRITIC	 G GLAUCONITE	
 F FOSSIL	 A ARGILLACEOUS	 G GYPSIFEROUS	

Stringer

Oil Show

-  PINPOINT
-  VUGGY

Engineering

-  DEAD
-  EVEN
-  QUESTIONABLE
-  BIT
-  SPOTTED STAINING
-  CONNECTION (UP)

Porosity

-  CONNECTION (DOWN)
-  CONNECTION GAS
-  CONNECTION GAS
-  FENESTRAL
-  TRIP GAS
-  FRACTURE
-  TRIP GAS (LEFT)
-  INTERCRYSTALLINE
-  DOWN TIME GAS
-  INTEROOLITIC
-  DOWN TIME GAS (
-  MOLDIC
-  CORE - LOST
-  ORGANIC
-  CORE - RECOVERED

Other Symbols

 DST INTERVAL  WIRELINE TESTED - LEFT **E** EARTHY

 FAULT  WIRELINE TESTED - RT **FX** FINELYXLN

 FORMATION TOP  DRILL STEM TEST **GS** GRAINSTONE

 GAS SHOW  **MINDEPTH** MN DEPTH **L** LITHOGRAPHIC


 OIL SHOW  **MINDEPTH** MN DEPTH **MX** MICROXLN


 **MINDEPTH** MN DEPTH UP **MS** MUDSTONE

Rounding


 **MINDEPTH** MN DEPTH (DOWN) **AX** ANGULAR **PS** PACKSTONE

 NORMAL FAULT **R** ROUNDED **WS** WACKESTONE

 **(LEFT)** OVERTURNED STRATA **B** SUBANG

 REVERSE FAULT **R** SUBRND

Sorting

 CASING **M** MODERATE

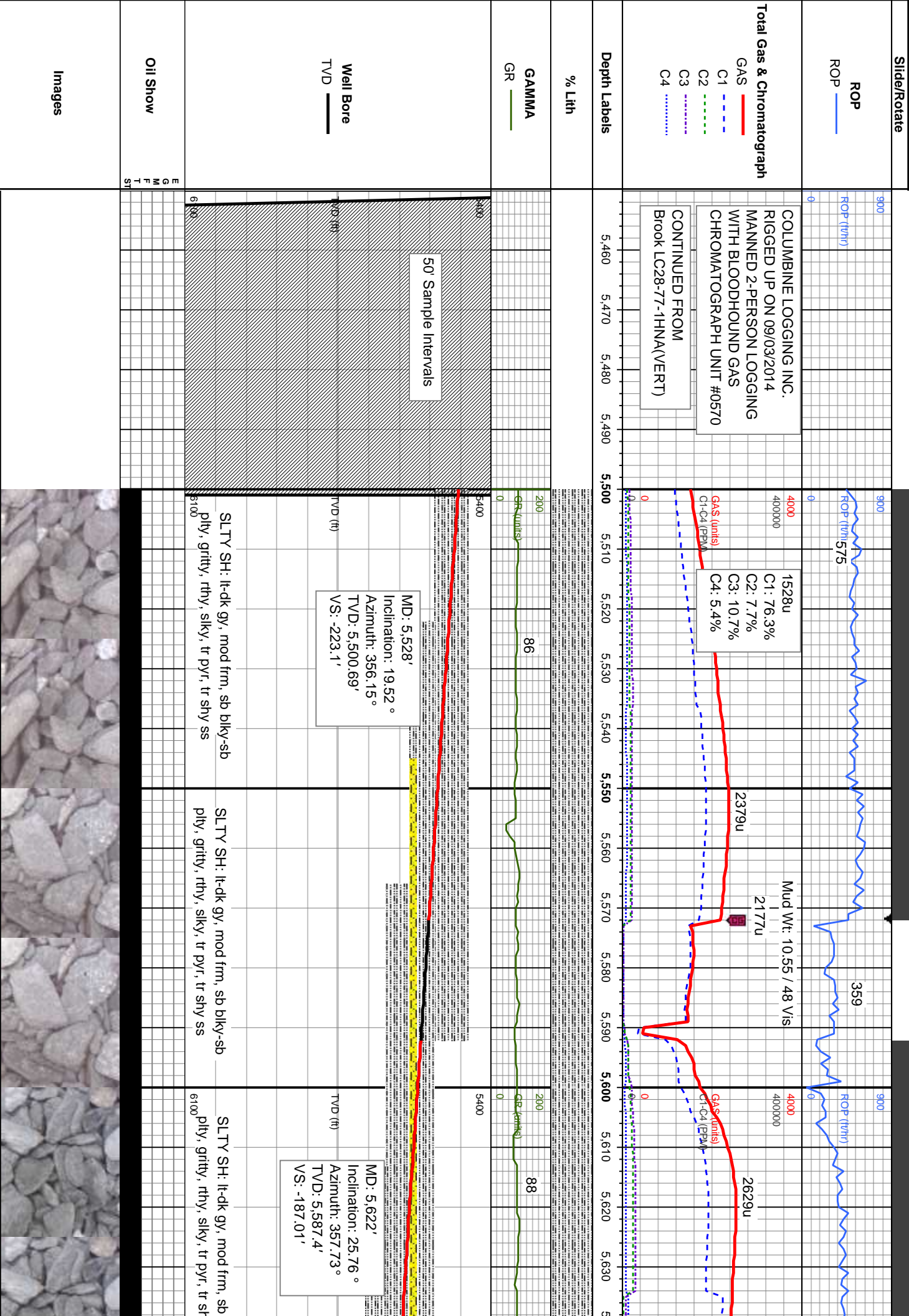
Textures

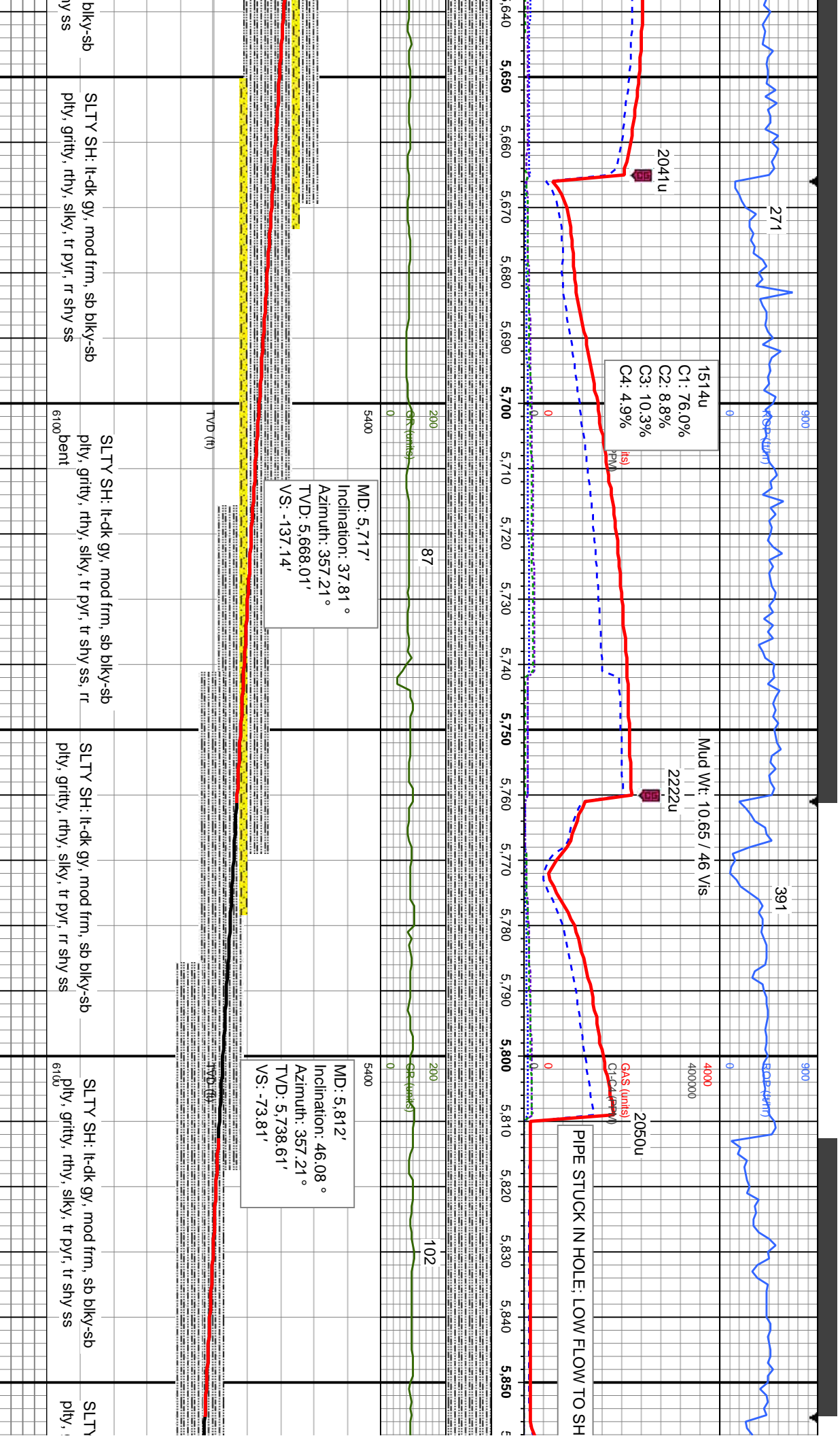
 SIDEWALL CORE (LEFT) **P** POOR

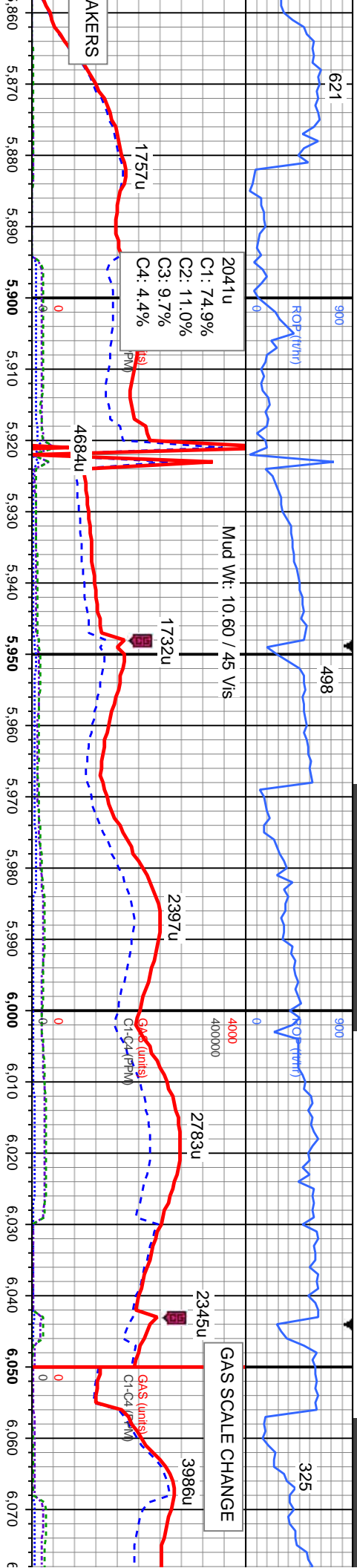
 **(LEFT)** SIDEWALL CORE (RIGHT) **BS** BOUNDSTONE **W** WELL

 SLIDE **C** CHALKY

 **SD** SURVEY **CX** CRYPTOXLN







MD: 5,906'
Inclination: 50.65 °
Azimuth: 357.21 °
TVD: 5,801.04'
VS: -3.7'

25' Sample Intervals

MD: 6,001'
Inclination: 53.02 °
Azimuth: 357.21 °
TVD: 5,859.74'
VS: 70.85'

SH: lt-dk gy, mod frm, sb blk-ss
gritty, rthy, sl str, silky, rr shy ss

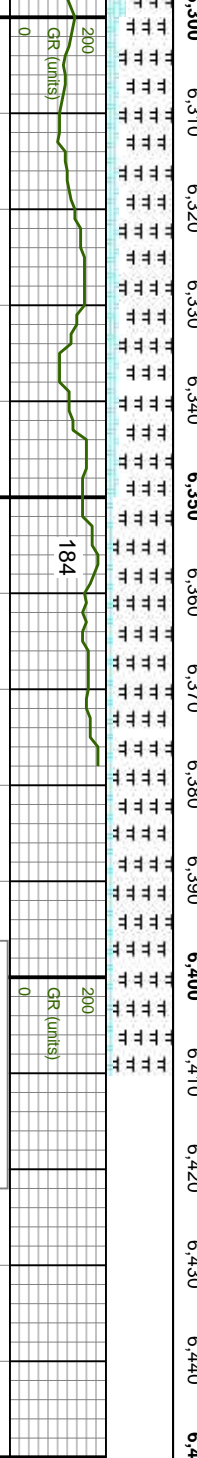
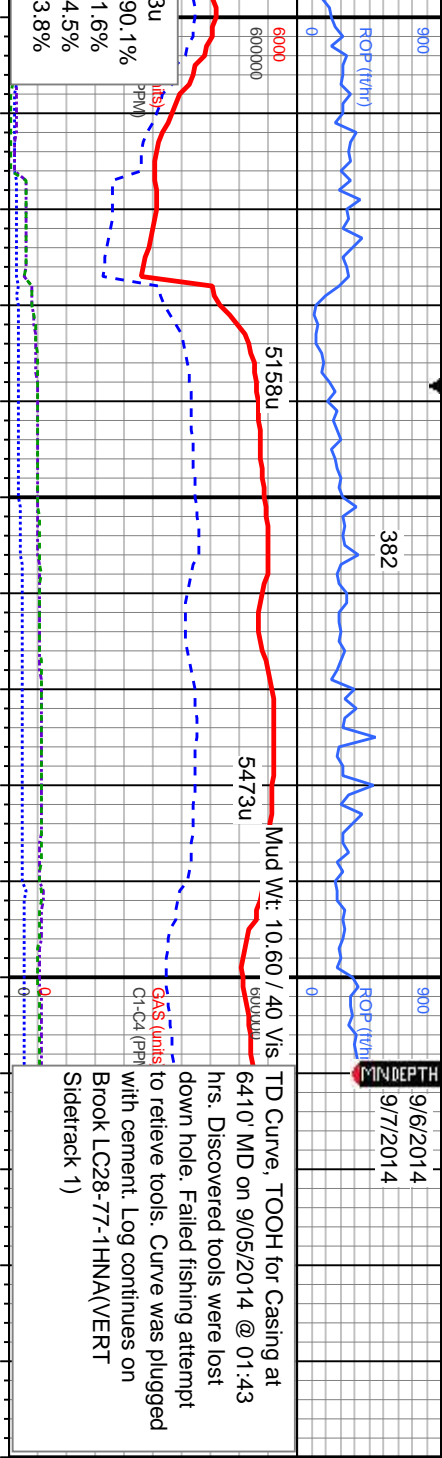
SLTY SH: lt-dk gy, mod frm, sb blk-ss
gritty, rthy, sl str, silky, rr shy ss

SLTY SH: lt-dk gy, mod frm, sb blk-ss
gritty, rthy, sl str, silky, rr shy ss, rr bent

SLTY SH: lt-dk gy, mod frm, sb blk-ss
gritty, rthy, sl str, silky, rr shy ss, rr bent

SLTY SH: lt-dk gy, mod frm, sb blk-ss
gritty, rthy, sl str, silky, rr shy ss, rr bent





MD: 6,367'
Inclination: 82.92 °
Azimuth: 357.91 °
TVD: 6,010.19'
VS: 400.58'

MD: 6,410'
Inclination: 86 °
Azimuth: 357 °
TVD: 6,014.35'
VS: 443.3'

MRLST: med-dk gy, occ mot, sb blkly - sb plty, mod frm, arg, rthy tex, calc, CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blkly, sb wxy-rthy tex, v calc, rr bent

MRLST: med-dk gy, occ mot, sb blkly - sb plty, mod frm, arg, rthy tex, calc, CHK: lt gy-off wh crm, gy brn mot, sft-mod frm, sb plty-sb blkly, sb wxy-rthy tex, v calc, rr bent

6200

