

Robert L. Milford

PETROLEUM GEOLOGIST
Wichita, Kansas

GEOLOGISTS' REPORT
DRILLING TIME AND SAMPLE LOG

OPERATOR Murfin Drilling Company, Inc.		ELEVATIONS	
LEASE Means 'c', #1-10		KB 3,405'	
LOC. SPOT E2 E2 SW		GL 3,400'	

LOC. FOOTAGE 1,320' FSL 2,310' FWL	MEASUREMENTS
SEC. 10 TWSP. 25 RNG. 37W	CASING RECORD
COUNTY Cheyenne STATE Kansas	Conductor
API 15-023-2149-00-00	Surface 8-5/8" @ 345' w/ 285' stocks cement Production none

CONTRACTOR Murfin Drilling Co., Inc.	RIG NO. 24
DRILLING STARTED 9-1-2017	COMPLETED 9-9-2017
MUD DISPLACED 3,501	MUD TYPE Chemical
DRILLING TIME KEPT FROM 3,939'	TO RTD
SAMPLES SAVED FROM 4,010'	TO RTD
SAMPLES EXAMINED FROM 4,010'	TO RTD
GEOLOGICAL SUPERVISION FROM 4,010'	TO RTD

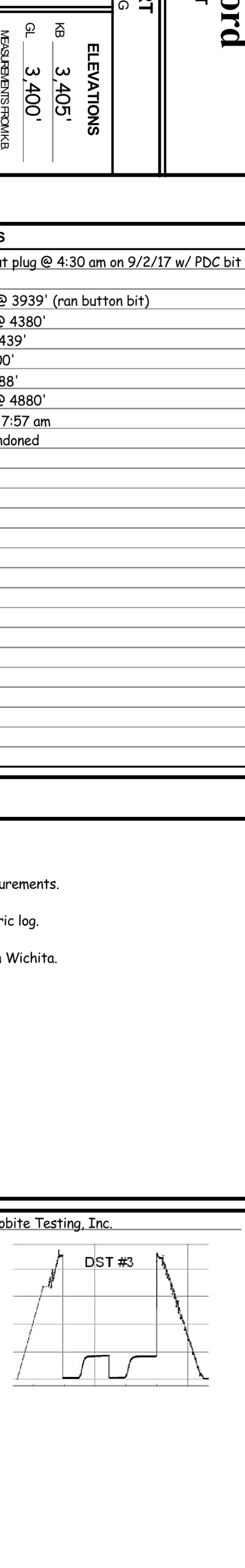
FORMATION NAME	TOP LOG	TOP DATUM	SAMPLE DATUM
Stone Corral	3,316'	+89	3,320' +85
Base Stone Corral	4,134'	-729	4,138' -733
Topeka	4,274'	-869	4,278' -873
Oread	4,354'	-949	4,358' -953
Stark	4,580'	-1175	4,584' -1179
Fort Scott	4,765'	-1360	4,769' -1364
Excello	4,813'	-1408	4,817' -1412
Celia	4,845'	-1440	4,849' -1444
Total Depth	4,919'	-1514	4,920' -1515

FORMATION NAME	TOP LOG	TOP DATUM	SAMPLE DATUM
Stone Corral	3,351'	+54	3,354' +51

Porosity Log

Microresistivity Log

Borehole Compensated



DATE	7:00 AM DEPTH	REMARKS
9-1-17	0'	Spud @ 2:00 pm. Plug down @ 8:30 pm. Drilled out plug @ 4:30 am on 9/2/17 w/ PDC bit
9-2-17	506'	Cut 506' in last 24 hrs.
9-3-17	3,190'	Cut 2,684' in last 24 hrs; 22.5 hrs drlg. Bit trip @ 3939' (ran button bit)
9-4-17	4,070'	Cut 880' in last 24 hrs; 18.25 hrs drlg. DST #1 @ 4380'
9-5-17	4,380'	Cut 310' in last 24 hrs; 15 hrs drlg. DST #2 @ 4439'
9-6-17	4,439'	Cut 59' in last 24 hrs; 3 hrs drlg. DST #3 @ 4500'
9-7-17	4,580'	Cut 141' in last 24 hrs; 9 hrs drlg. DST #4 @ 4588'
9-8-17	4,755'	Cut 175' in last 24 hrs; 10.75 hrs drlg. DST #5 @ 4880'
9-9-17	4,897'	Cut 142' in last 24 hrs; 8 hrs drlg. RTD 4920' @ 7:57 am
9-10-17	4,920'	Cut 23' in last 24 hrs; 1 hr drlg. Plugged and abandoned

Remarks

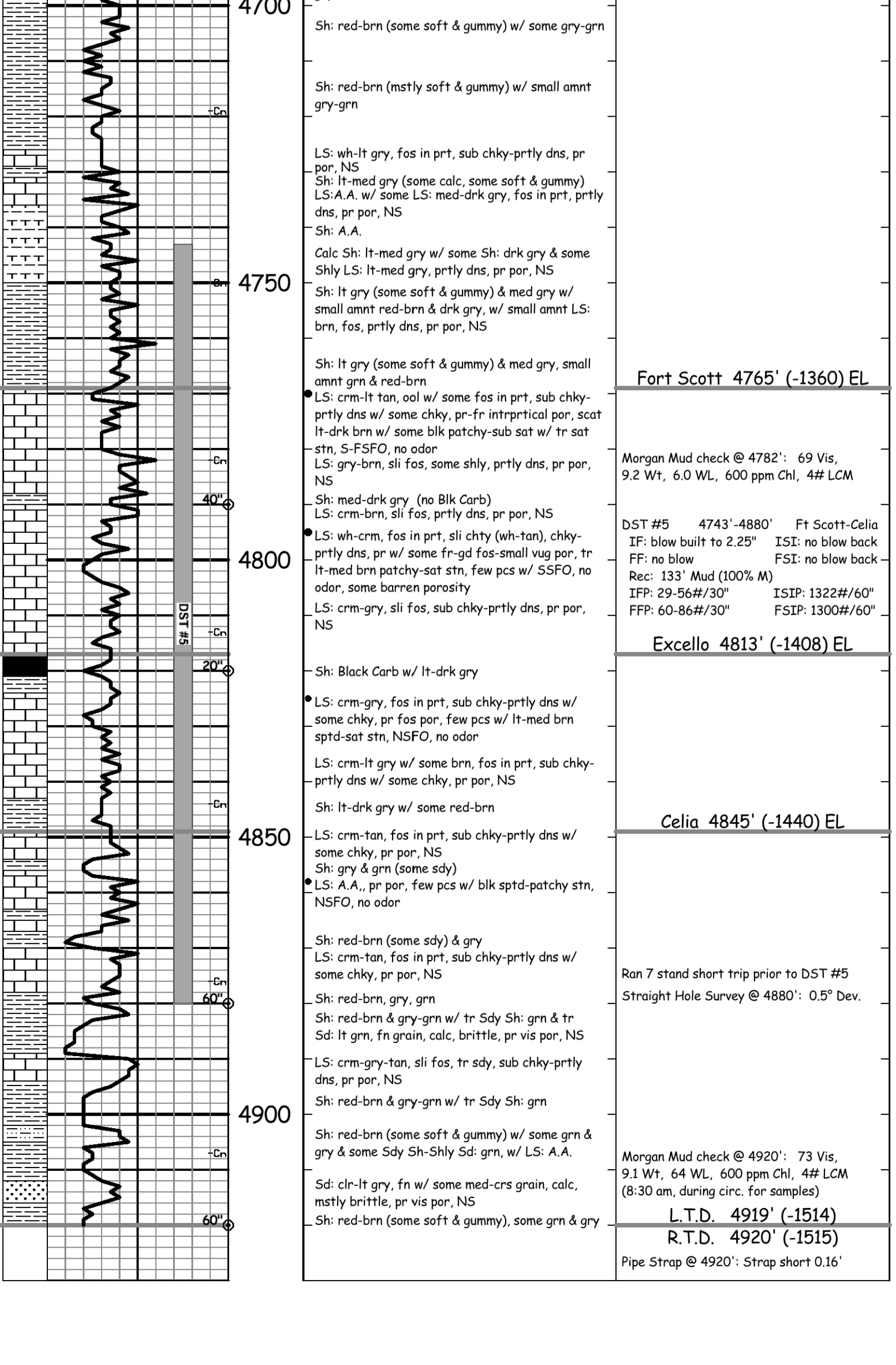
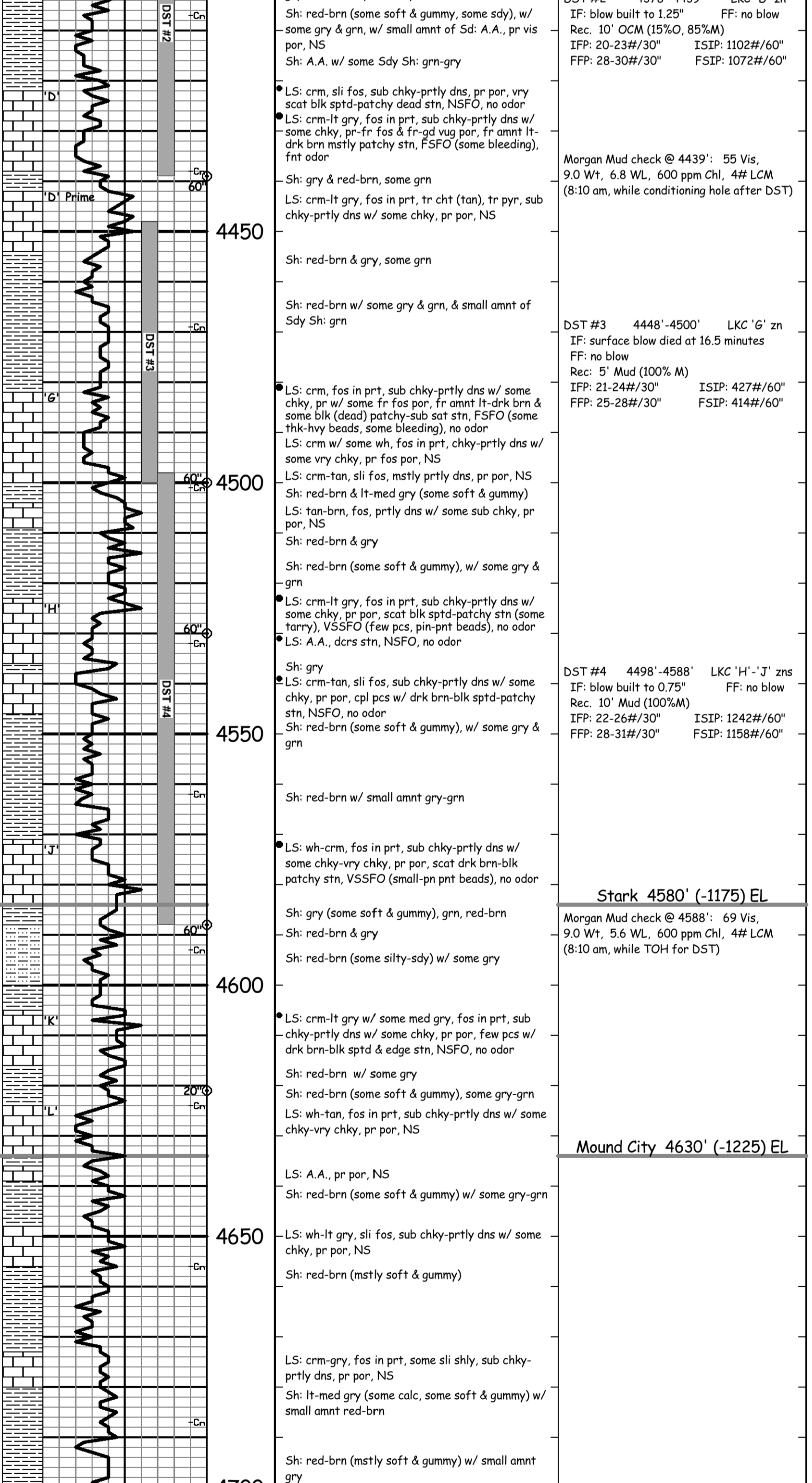
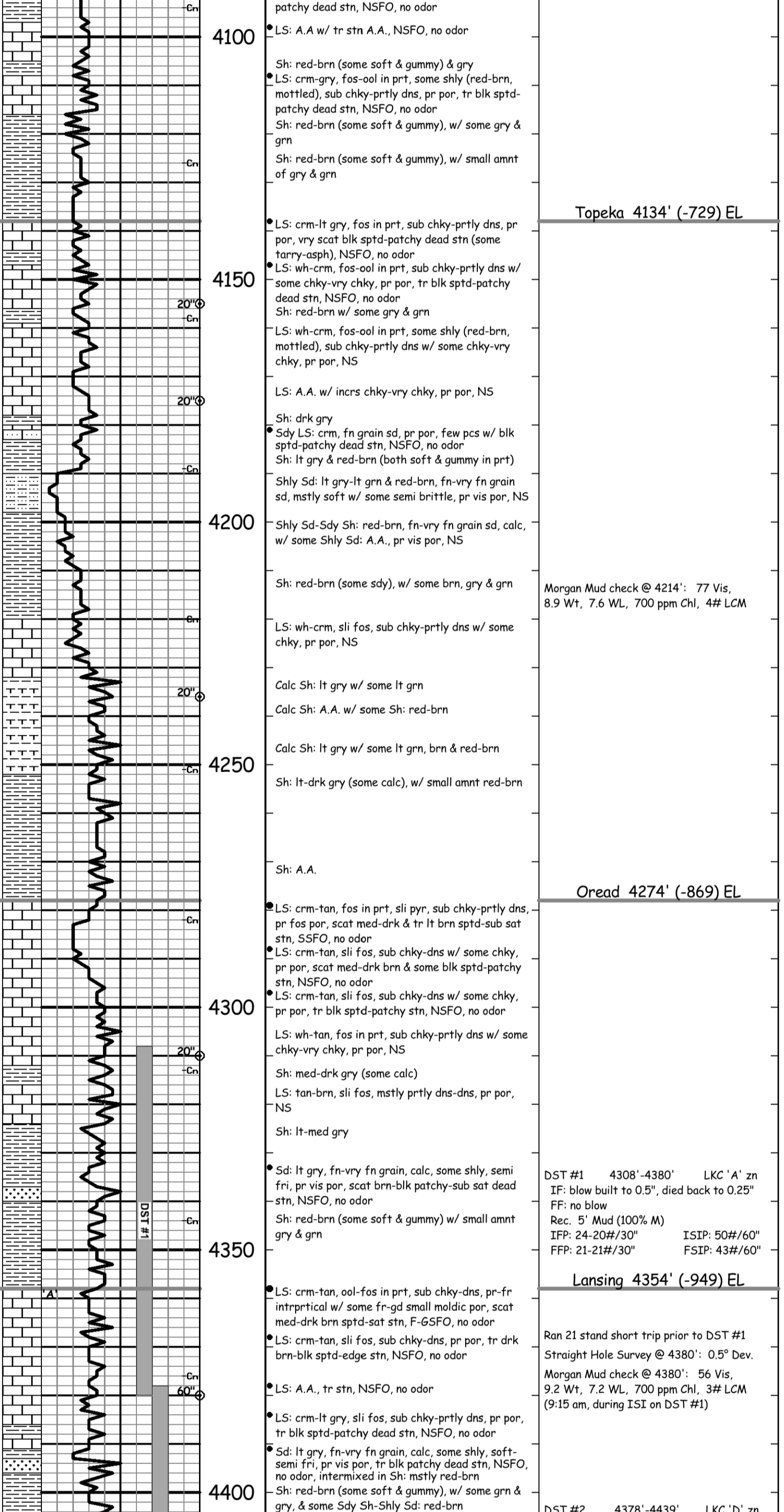
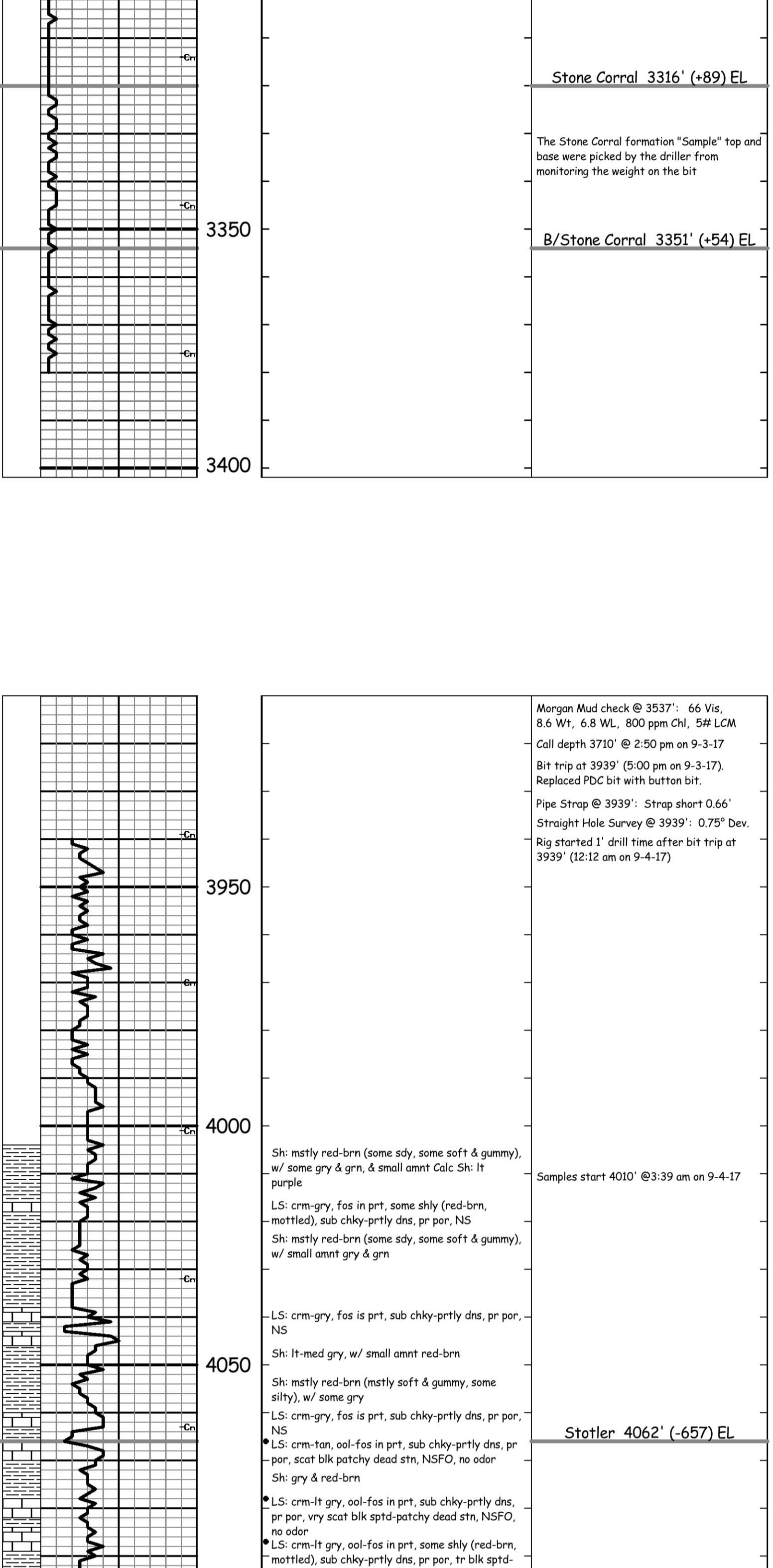
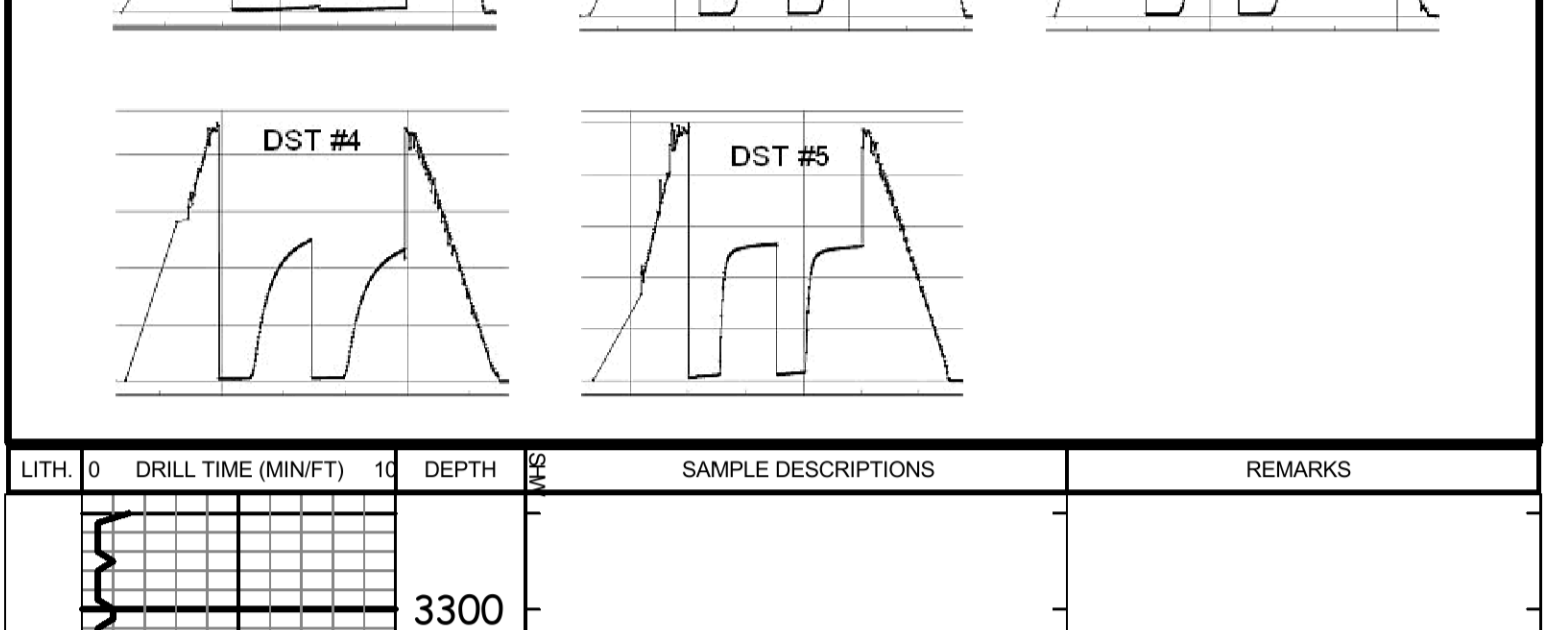
The electric log measurements correlate about 4' higher to the drilling measurements.

Formation tops and lithology on this report have been corrected to the electric log.

The drilling samples were deposited at the Kansas Geological Survey office in Wichita.

Respectfully submitted,

Robert L. Milford



Morgan Mud check @ 3537': 66 Vis, 8.6 Wt, 6.8 WL, 800 ppm CHL, 5# LCM
Call depth 3710' @ 2:50 pm on 9-3-17
Bit trip at 3939' (5:00 pm on 9-3-17). Replaced PDC bit with button bit.
Pipe Strap @ 3939': Strap short 0.66'
Straight Hole Survey @ 3939': 0.75" Dev.
Rig started 1' drill time after bit trip at 3939' (12:12 am on 9-4-17)

Samples start 4010' @ 3:39 am on 9-4-17

Morgan Mud check @ 4214': 77 Vis, 8.9 Wt, 7.6 WL, 700 ppm CHL, 4# LCM

Morgan Mud check @ 4439': 55 Vis, 9.0 Wt, 6.8 WL, 600 ppm CHL, 4# LCM (8:10 am, while conditioning hole after DST)

DST #1 4308'-4380' LKC 'A' zn
IF: blow built to 0.5" FF: no blow
Rec: 5' Mud (100% M)
IFF: 24-20#/'30" ISIP: 50#/'60"
FFP: 21-21#/'30" FSIP: 43#/'60"

DST #2 4378'-4439' LKC 'D' zn
IF: blow built to 1.25" FF: no blow
Rec: 10' Mud (100% M)
IFF: 22-26#/'30" ISIP: 1102#/'60"
FFP: 28-31#/'30" FSIP: 1072#/'60"

DST #3 4448'-4500' LKC 'G' zn
IF: blow built to 0.75" FF: no blow
Rec: 5' Mud (100% M)
IFF: 21-24#/'30" ISIP: 427#/'60"
FFP: 25-28#/'30" FSIP: 414#/'60"

DST #4 4498'-4588' LKC 'H'-J' zn
IF: blow built to 2.25" ISIP: no blow back
Rec: 10' Mud (100% M)
IFF: 22-26#/'30" ISIP: 1242#/'60"
FFP: 28-31#/'30" FSIP: 1158#/'60"

Morgan Mud check @ 4782': 69 Vis, 9.2 Wt, 6.0 WL, 600 ppm CHL, 4# LCM

DST #5 4743'-4880' Ft Scott-Celia
IF: blow built to 2.25" ISIP: no blow back
Rec: 133' Mud (100% M)
IFF: 29-56#/'30" ISIP: 1322#/'60"
FFP: 60-86#/'30" FSIP: 1300#/'60"

Morgan Mud check @ 4920': 73 Vis, 9.0 Wt, 6.4 WL, 600 ppm CHL, 4# LCM (8:30 am, during circ. for samples)
L.T.D. 4919' (-1514)
R.T.D. 4920' (-1515)
Pipe Strap @ 4920': Strap short 0.16'