ROBERT R. OLSEN

KCC

CONSULTING GEOLOGIST

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GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY Range Oil Co.

LEASE #1 Snell

FIELD

LOCATION E/2 NE NE

SEC. 11 TWSP 32 RNG 4E

COUNTY Cowley STATE KS

ELEVATIONS

K B 1231

D F

G L 1226

Measurements Are All From KB

CONTRACTOR Range Drilling, Rig 1

SPUD U.S. 10/9/86 COMP 10/14/86

RTD 3084 LTD —

MUD UP 1900 TYPE MUD Chemical

CASING

SURFACE 8⅝" @ 220'

PRODUCTION None

ELECTRICAL SURVEYS

None

SAMPLES SAVED FROM 300 TO TD

DRILLING TIME KEPT FROM 300 TO TD

SAMPLES EXAMINED FROM 1600 TO TD

GEOLOGICAL SUPERVISION FROM 1490 TO TD

GEOLOGIST ON WELL Robert Olsen

FORMATION TOPS	LOG	SAMPLES
Iatan		1893 (-662)
Stalnaker		1917 (-686)
Layton		2343 (-1112)
Kansas City		2492 (-1211)
Base K.C.		2593 (-1362)
Cherokee		2804 (-1573)
Ecas. Miss		3027 (-1796)
Mississippian		3094 (-1863)
TD		3084 (-1853)

RECEIVED
KANSAS CORPORATION COMMISSION
OCT 24 1986
CONSERVATION DIVISION
Wichita, Kansas

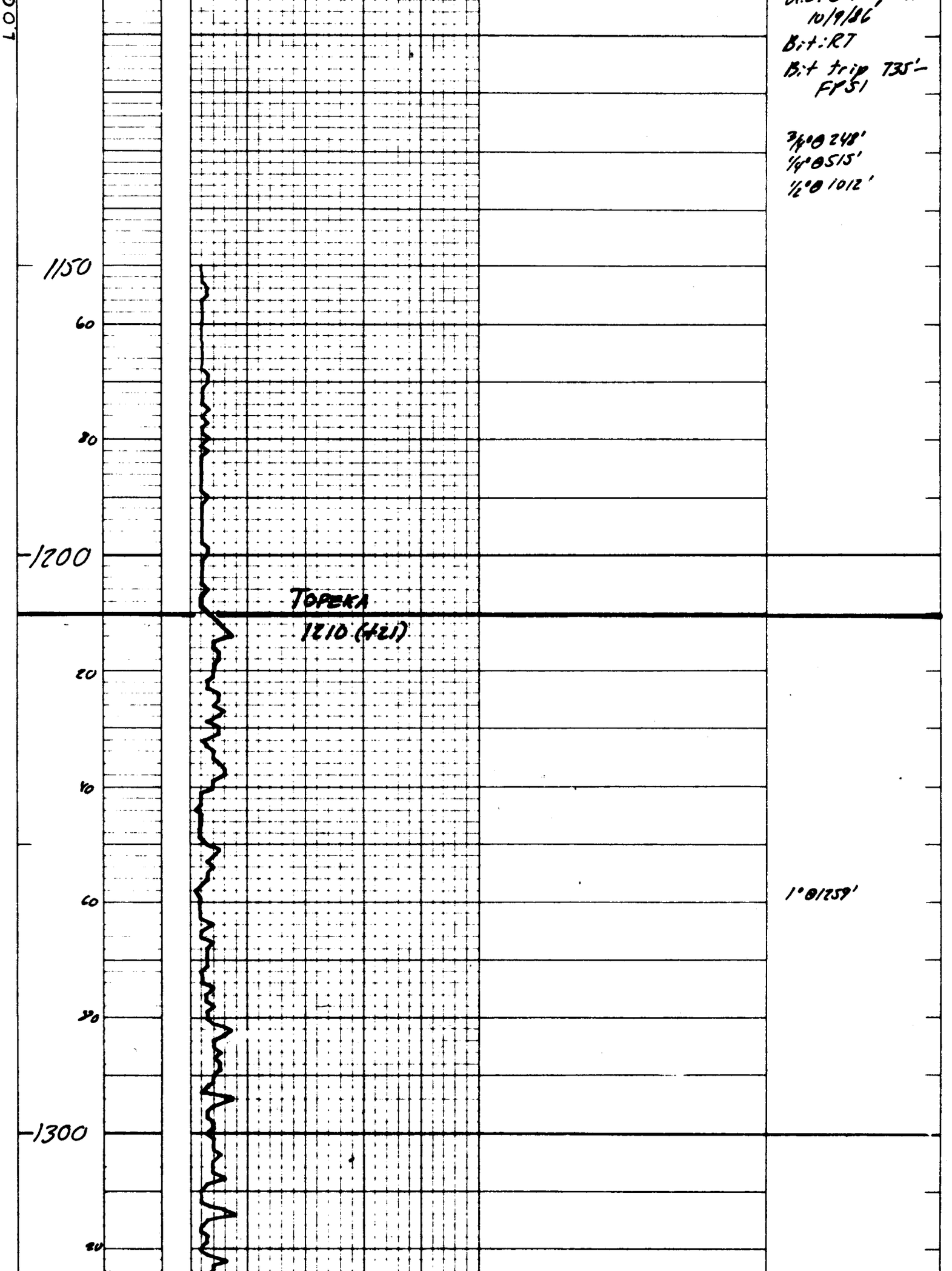
REMARKS

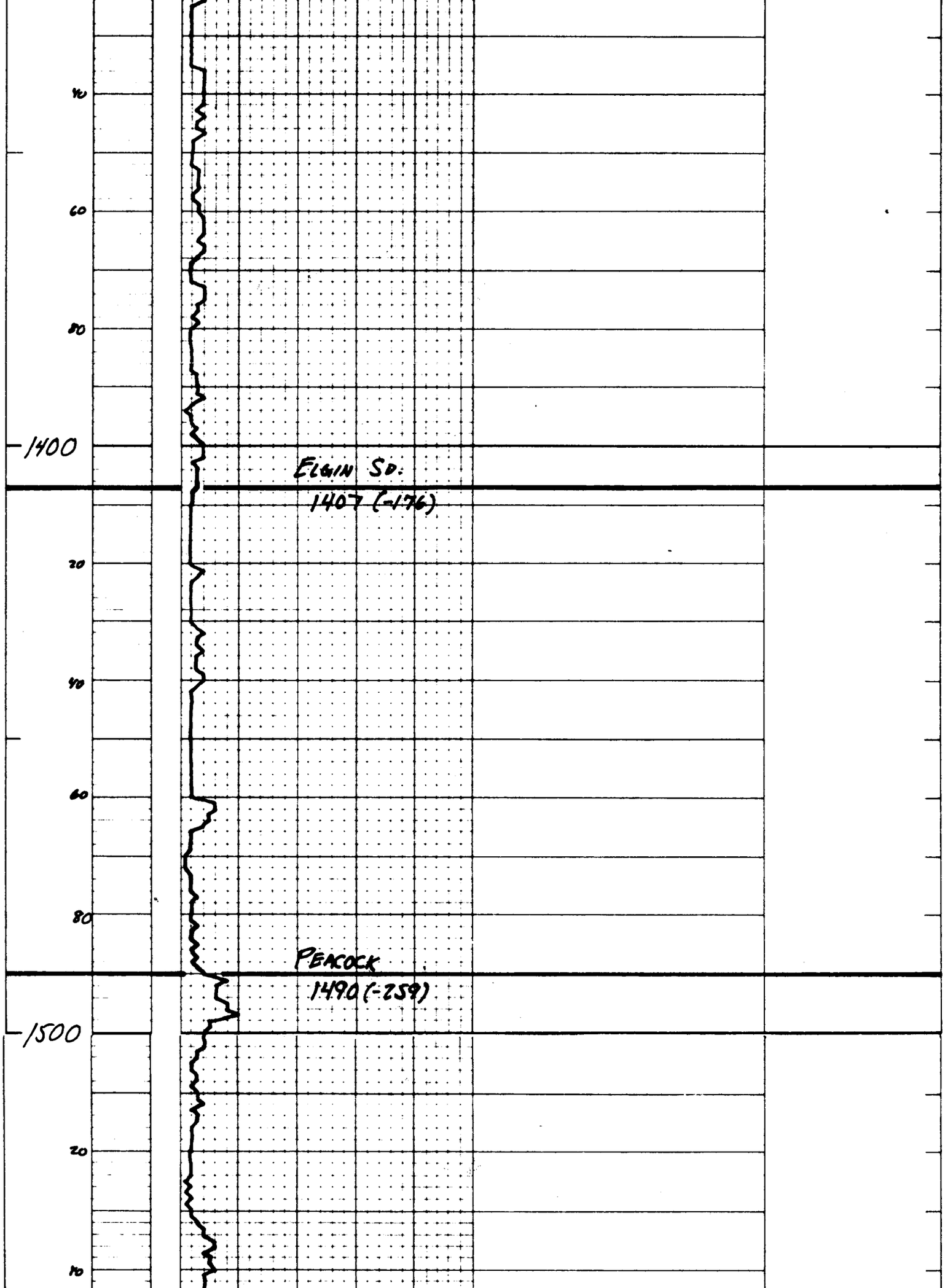
LEGEND

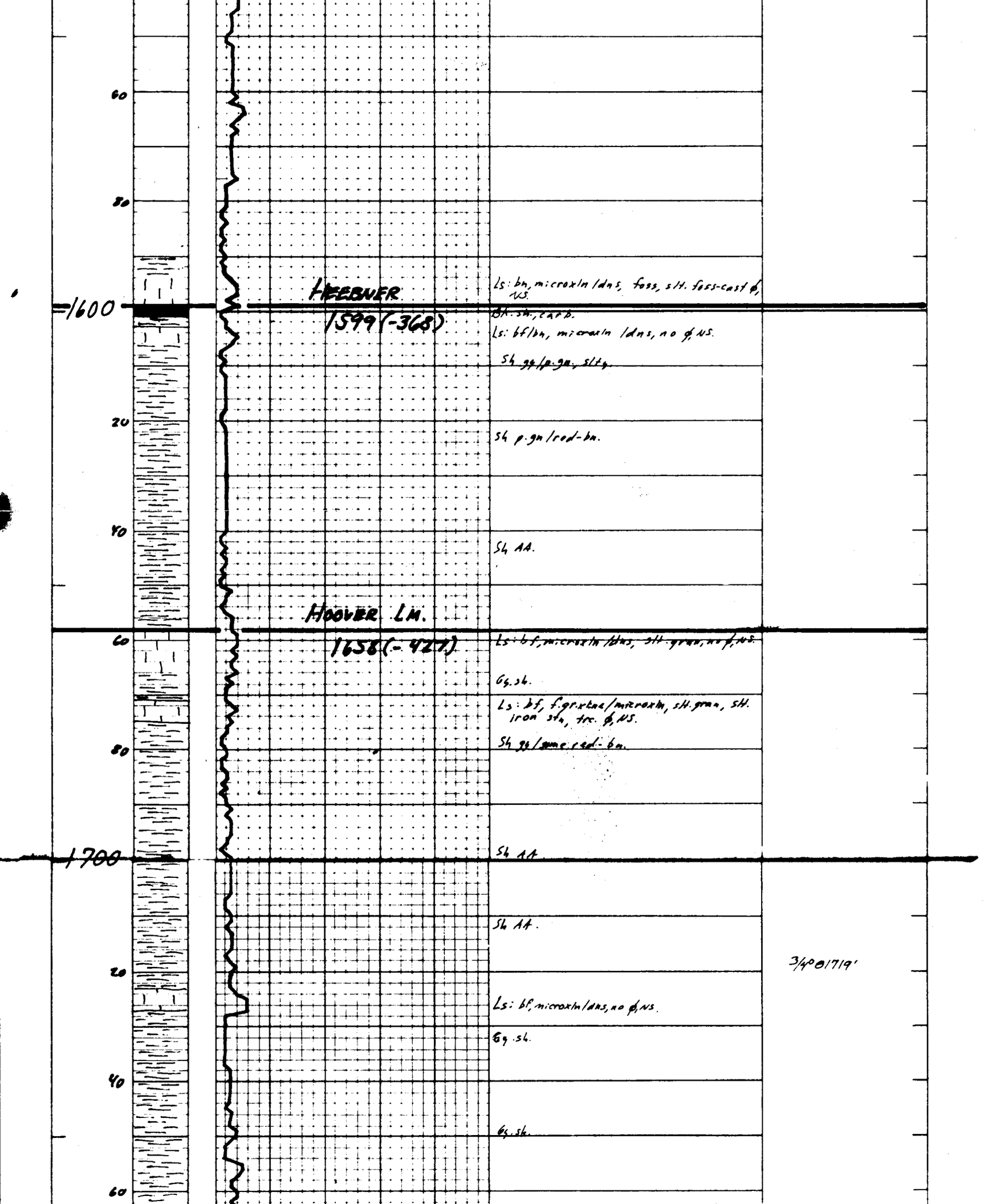
Dolomite
Chert
Ool. Lime
Limestone
Carb. Sh
Shale
Sandstone
Salt
Anhydrite

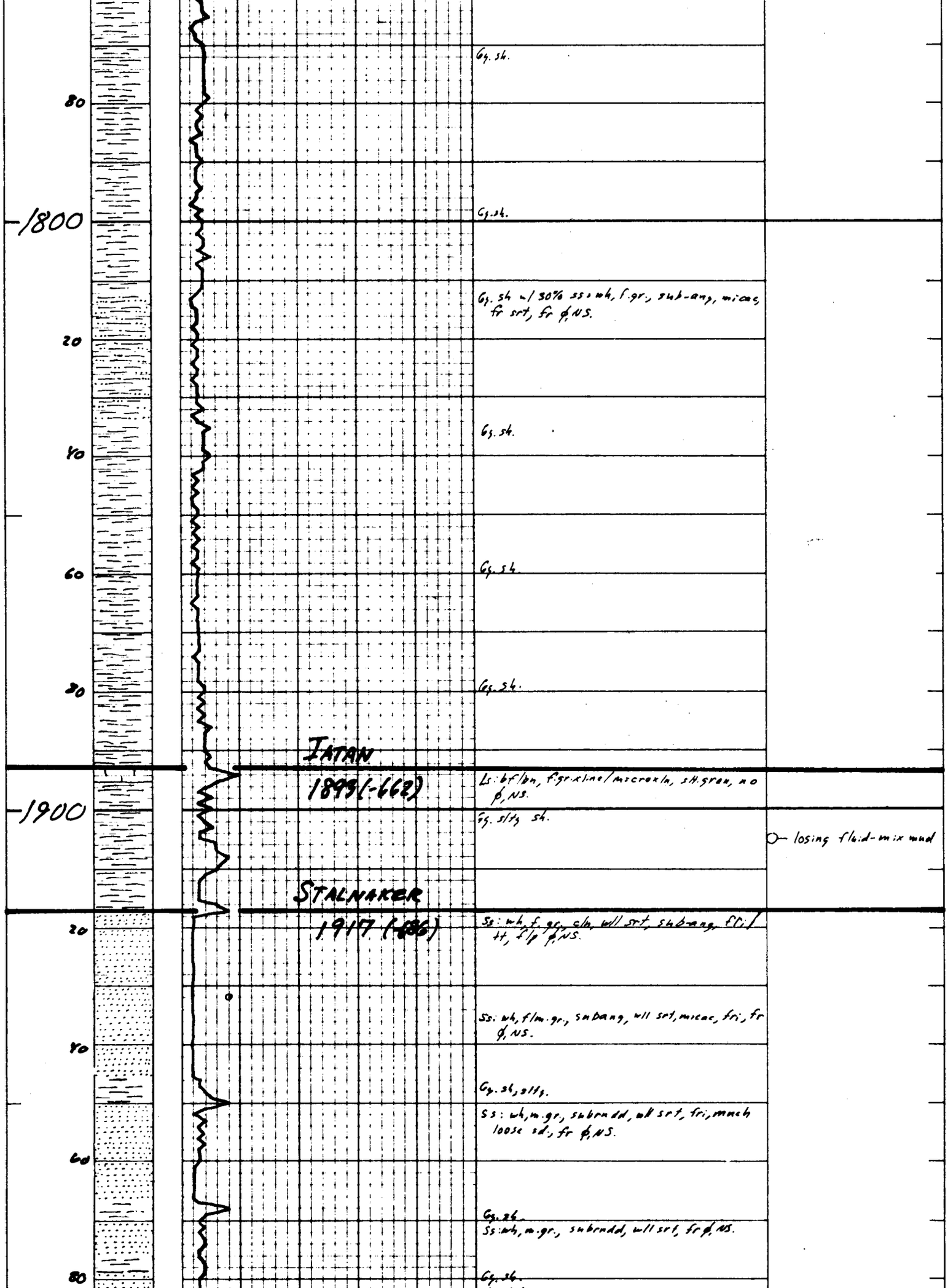
SCALE: 1" = 100'

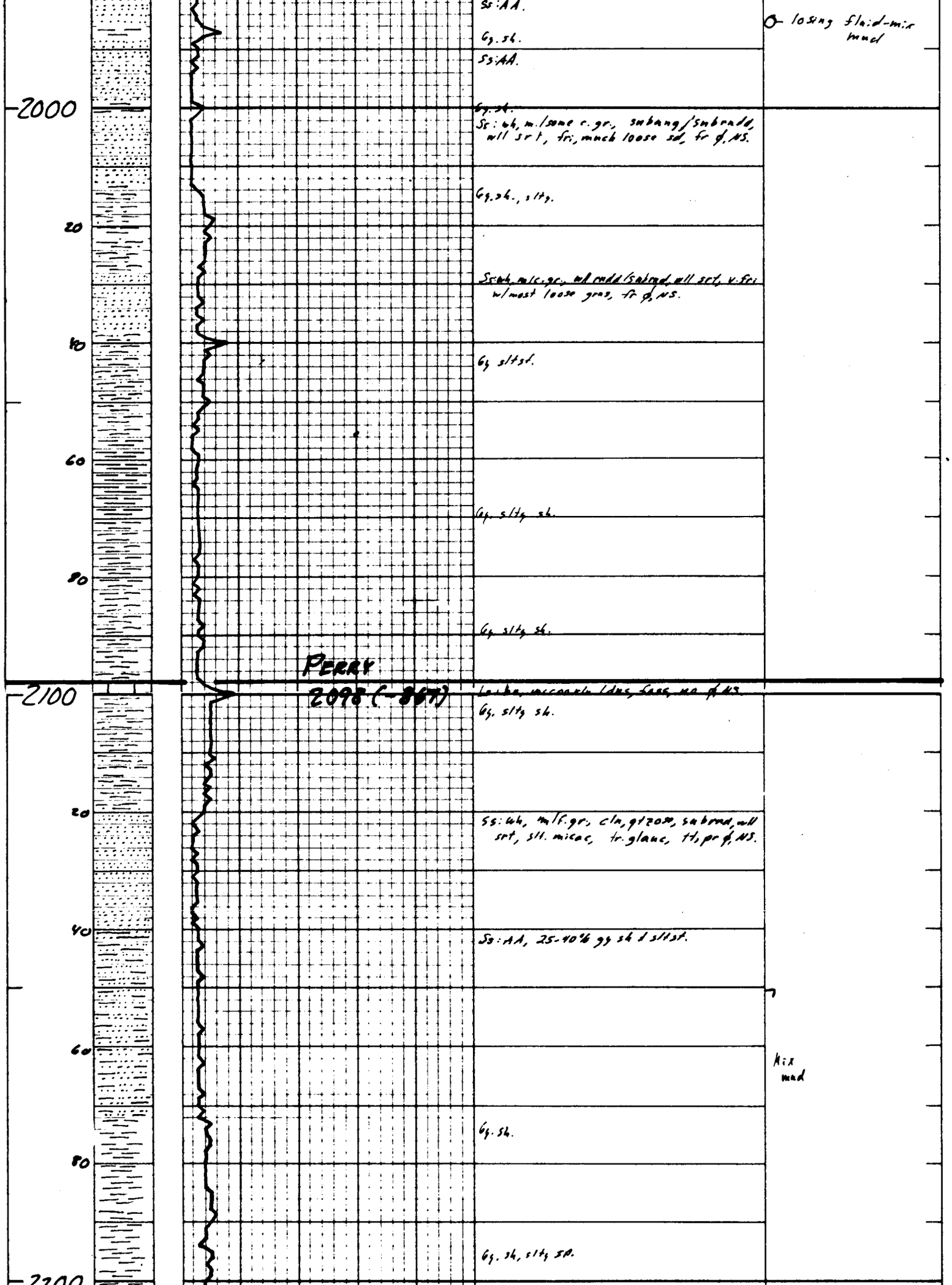
REMARKS
SAMPLE DESCRIPTIONS
DRILLING TIME - Minutes Per Foot
Rate of Penetration Decreases →
5" 10" 15" 20"
DST's
LITHOLOGY
DEPTH

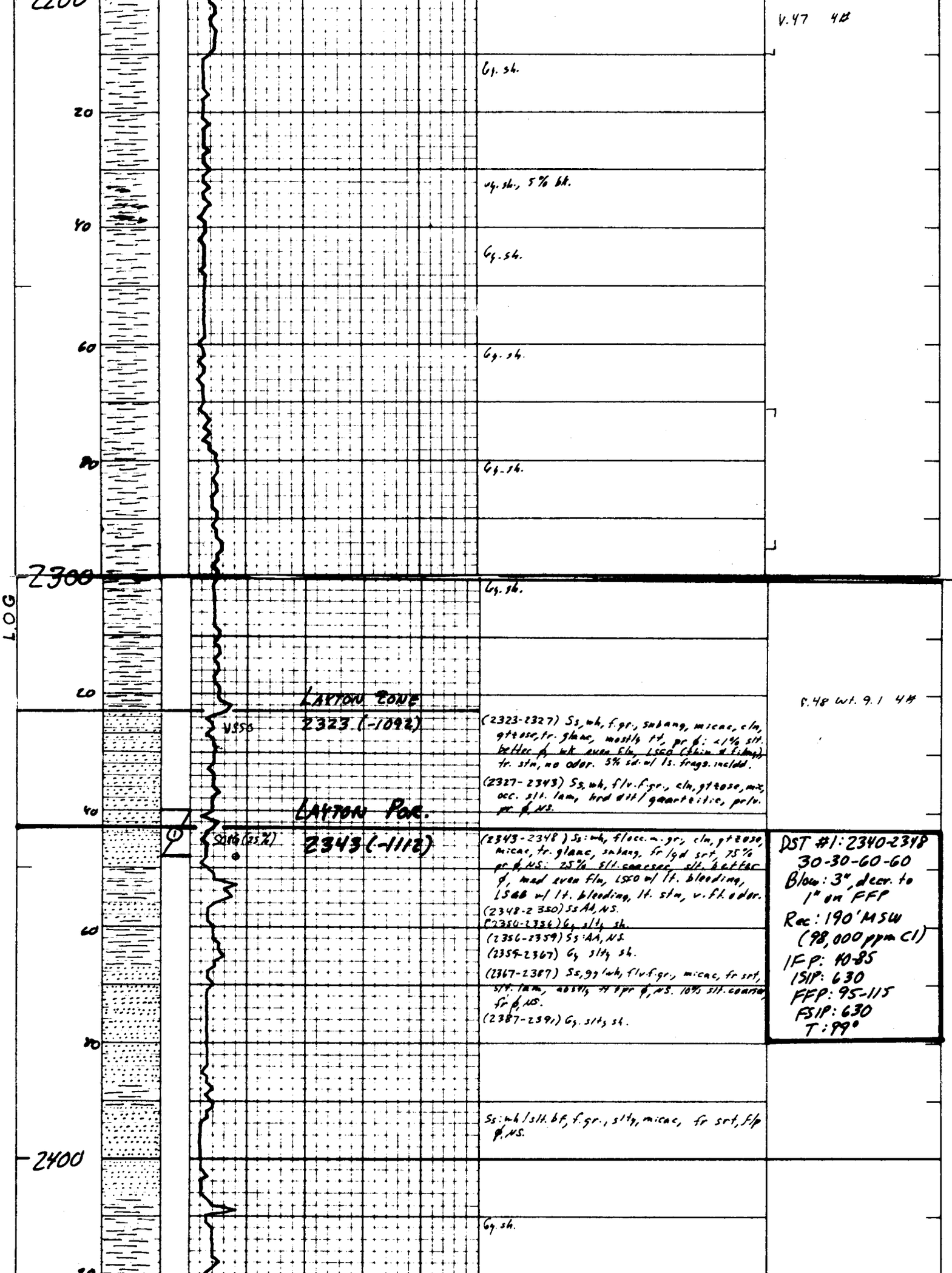

10/9/86
Bit: RT
Bit trip 735'–FFS1
3/4° @ 248'
1/4° @ 515'
1/2° @ 1012'
1150
60
80
1200
TOPEKA
1210 (+121)
20
40
60
80
1300
20
1° @ 1259'

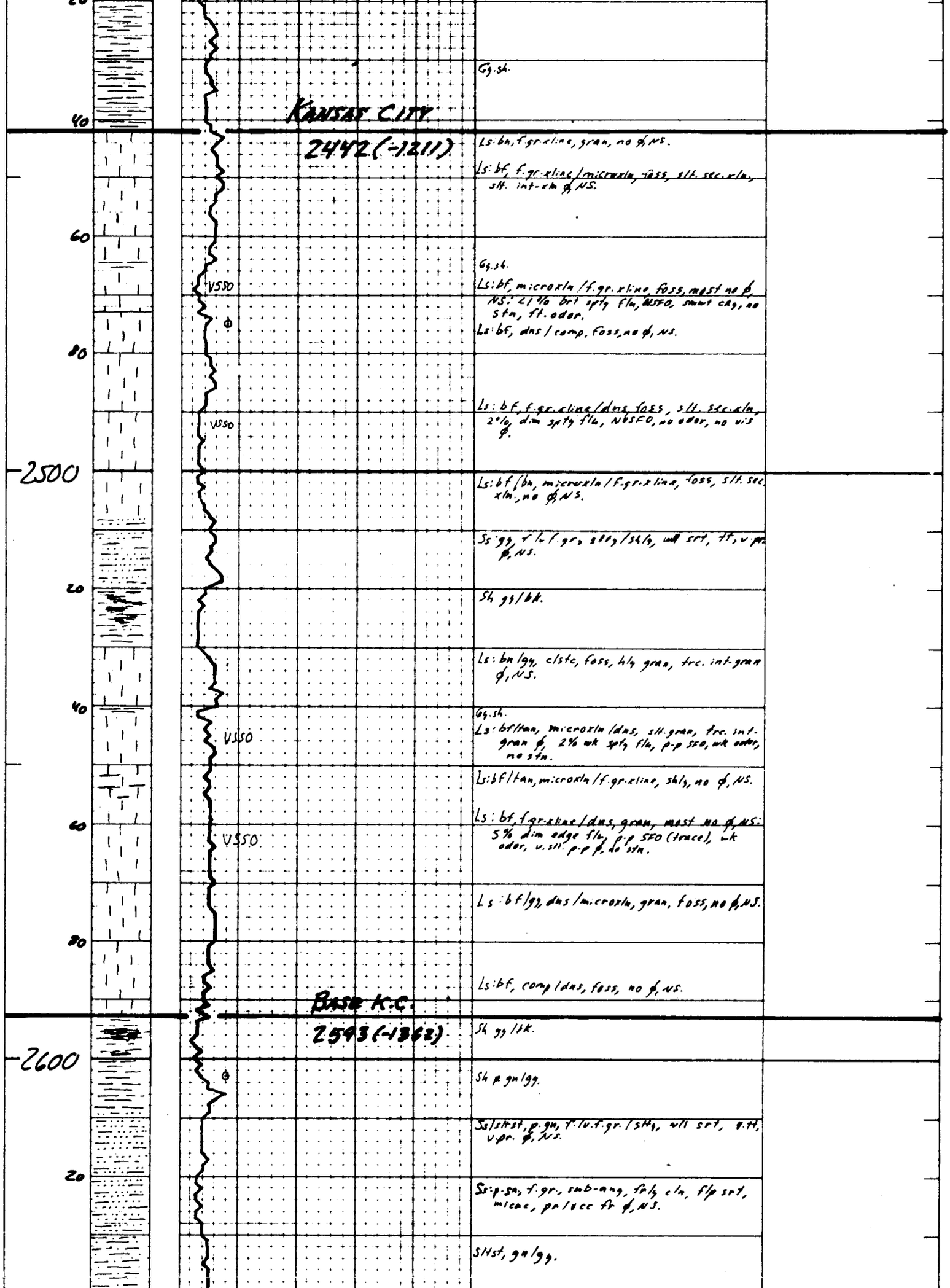

40
60
80
1400
ELGIN SD.
1407 (-176)
20
40
60
80
PEACOCK
1490 (-259)
1500
20
40

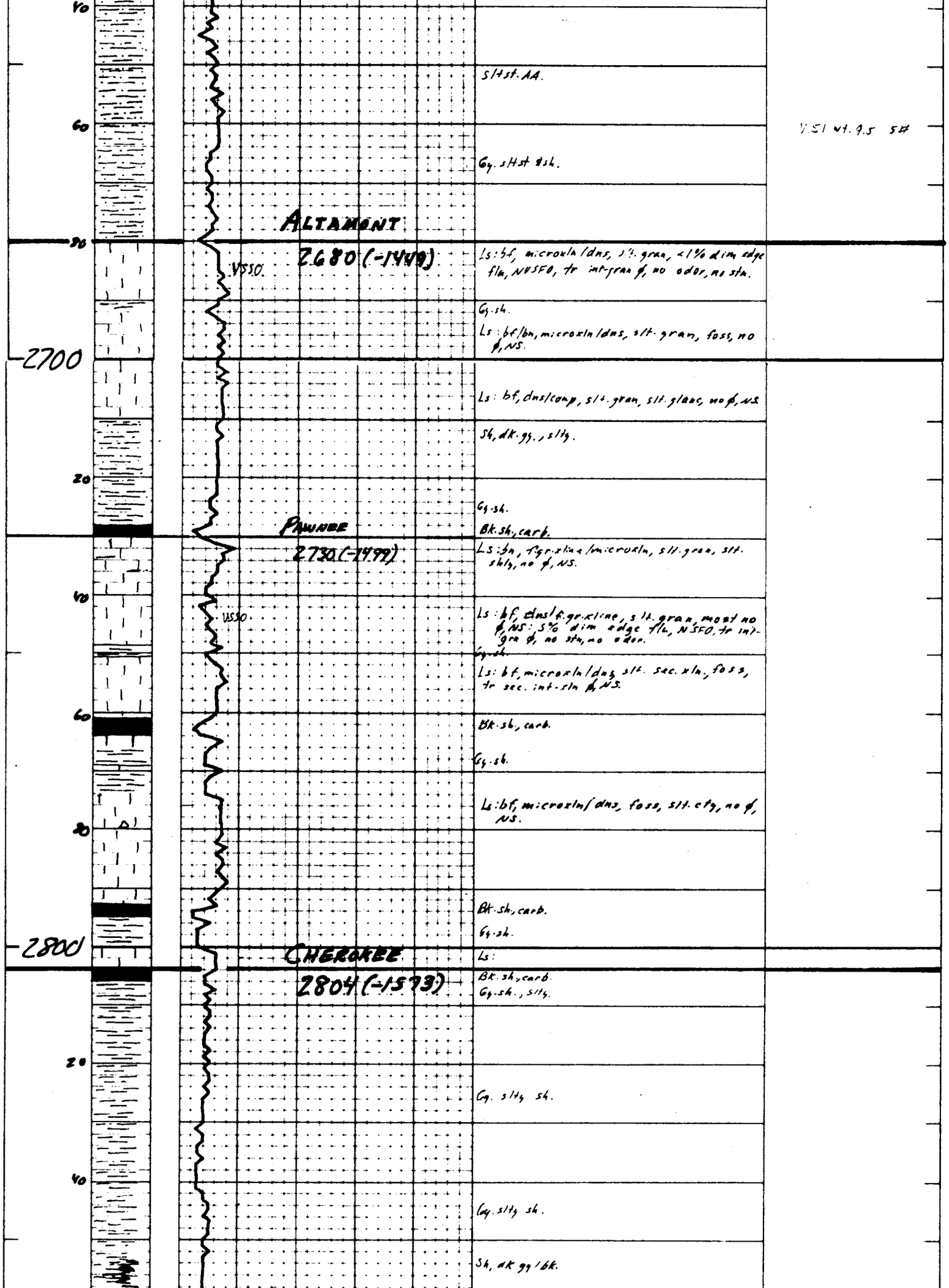

60
80
1600
HEEBNER
1599 (-368)
Ls: bn, microxln/dns, foss, slt. foss-cast ϕ, NS.
Bk. sh., carb.
Ls: bf/bn, microxln/dns, no ϕ, NS.
Sh gy/lp.gn, slty.
20
Sh p.gn/rod-bn.
40
Sh AA.
HOOVER LM.
1658 (-427)
60
Ls: bf, microxln/dns, slt. grn, no ϕ, NS.
Gy. sh.
Ls: bf, f.gr.xtal/microxln, slt. grn, slt. iron sh, trc. ϕ, NS.
80
Sh gy/sme. red-bn.
1700
Sh AA.
Sh AA.
3/4 01719'
20
Ls: bf, microxln/dns, no ϕ, NS.
Gy. sh.
40
Gy. sh.
60


80
-1800
Gy. sh.
Gy. sh.
Gy. sh w/ 30% ss: wh, f. gr., sub-ang, micac, fr srt, fr ϕ, NS.
20
40
Gy. sh.
60
Gy. sh.
80
Grs. sh.
JATAN
1895 (-662)
Ls: bf/bn, f-gr. xline/microxln, sli. grau, no ϕ, NS.
-1900
Gy. s/ty sh.
losing fluid-mix mud
STALNAKER
1917 (-686)
20
Ss: wh, f. gr., c/a, wll srt, sub-ang, fri/tt, fr ϕ, NS.
Ss: wh, f/m. gr., sub-ang, wll srt, micac, fri, fr ϕ, NS.
40
Gy. sh, s/ty.
Ss: wh, m. gr., sub-rndd, wll srt, fri, much loose sd, fr ϕ, NS.
60
Gy. sh.
Ss: wh, m. gr., sub-rndd, wll srt, fr ϕ, NS.
80
Gy. sh.

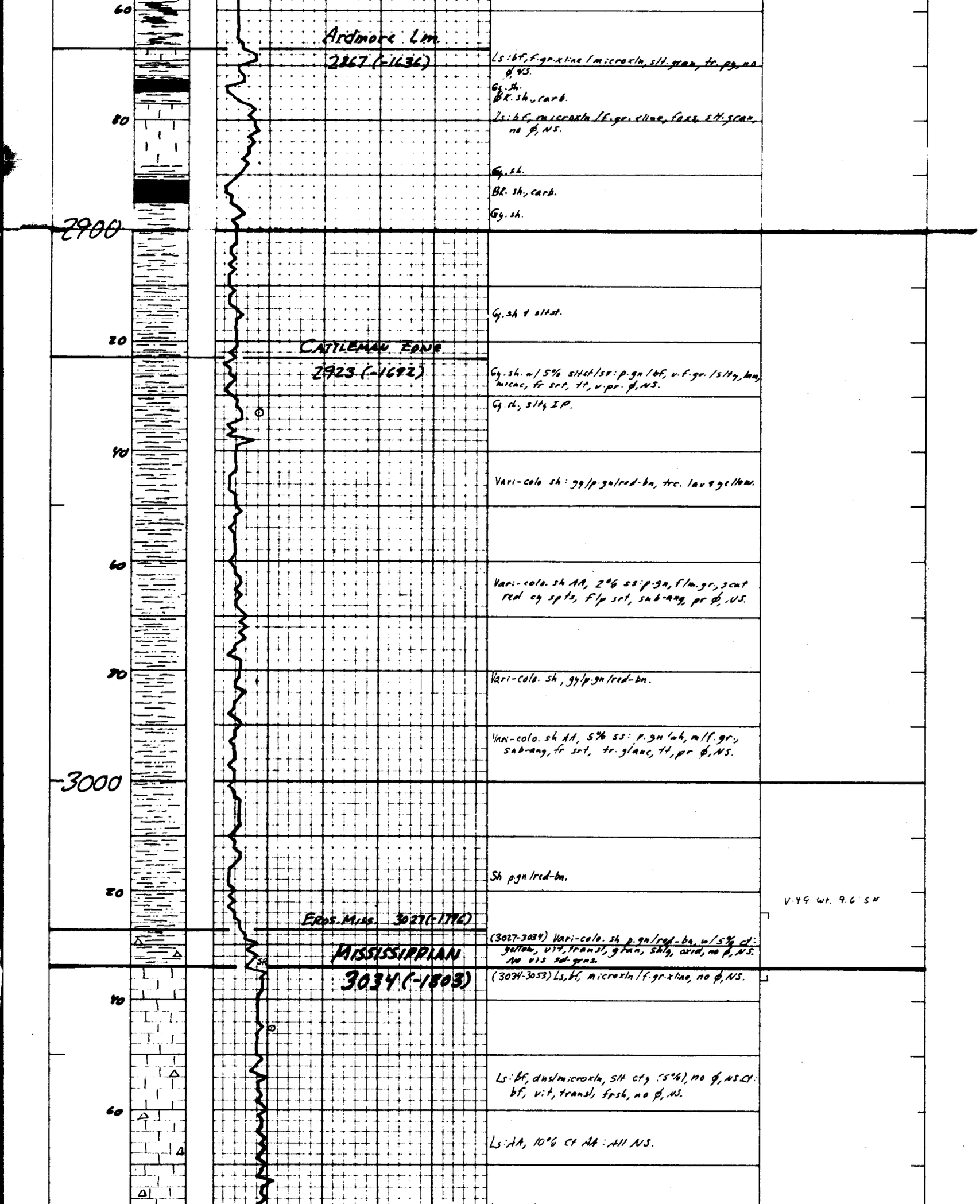

losing fluid-mix mud
Ss: AA.
Gy. sh.
Ss: AA.
-2000
Gy. sh.
Ss: wh, m./fine c. gr., subang/subrnd, mll srt, fri, much loose sd, fr ϕ, NS.
Gy. sh., silty.
20
Ss: wh, m/c. gr., wl rndd/subrnd, mll sort, v. fri w/most loose grns, fr ϕ, NS.
40
Gy silt st.
60
Gy. silty sh.
80
Gy silty sh.
PERRY
2098 (-867)
-2100
Lo-ho, micaceous ldse, fine, no ϕ NS.
Gy. silty sh.
20
Ss: wh, m/f. gr, cln, qtzose, subrnd, mll srt, sli. micac, tr. glauc, tt, por ϕ, NS.
40
Ss: AA, 25-40% gy sh & silt st.
60
Mix mud
Gy. sh.
80
Gy. sh, silty SA.
-2200


2200
20
40
60
80
2300
LOG
20
40
60
80
2400
LAYTON ZONE
2323 (-1092)
VSSG
LAYTON POR.
2343 (-1112)
SSVG (25%)
Gy. sh.
wk. sh., 5% bk.
Gy. sh.
Gy. sh.
Gy. sh.
Gy. sh.
(2323-2327) Ss, wh, f.gr., subang, micac, cln, gtzose, fr. glauc, mostly ff, pr ϕ: 4/% silt. better ϕ, wk even fln, LSCA (thin d fingr) fr. stn, no odor. 5% sd. w/ ls. frags. included.
(2327-2343) Ss, wh, f/v.f.gr., cln, gtzose, mx, occ. slt. lam, hrd dtt/ quartzitic, pr/v. pr ϕ, NS.
(2343-2348) Ss: wh, f/occ. m.gr., cln, gtzose, micac, fr. glauc, subang, fr/gd srt, 75% pr ϕ, NS: 25% slt. coarser slt. better ϕ, mod even fln, LSCO w/ lt. bleeding, LSGB w/ lt. bleeding, lt. stn, v.fl. odor.
(2348-2350) Ss AA, NS.
(2350-2356) Gy slty sh.
(2356-2359) Ss: AA, NS.
(2359-2367) Gy slty sh.
(2367-2387) Ss, 99% wh, f/v.f.gr., micac, fr srt, slt. lam, abdt ff ppr ϕ, NS. 10% slt. coarser fr ϕ, NS.
(2387-2391) Gy. slty sh.
Ss: wh/slt. bf, f.gr., slty, micac, fr srt, f/p ϕ, NS.
Gy. sh.
V.47 4#
S.48 wt. 9.1 4#
DST #1: 2340-2348
30-30-60-60
Blow: 3", decr. to 1" on FFP
Rec: 190' MSW (98,000 ppm Cl)
IFP: 40-85
ISIP: 630
FFP: 95-115
FSIP: 630
T: 99°


Gy.sh.
KANSAS CITY
2442 (-1211)
Ls: bn, f.gr.xline, gran, no ϕ, NS.
Ls: bf, f.gr.xline/microxln, foss, slt. sec.xln, slt. int-xln ϕ, NS.
Gy.sh.
Ls: bf, microxln/f.gr.xline, foss, most no ϕ, NS; <1% brt spty flu, NSFO, smear cut, no stn, ft. odor.
Ls: bf, dns/comp, foss, no ϕ, NS.
Ls: bf, f.gr.xline/dns foss, slt. sec.xln, 2% dim spty flu, NSFO, no odor, no vis ϕ.
Ls: bf/bn, microxln/f.gr.xline, foss, slt. sec. xln., no ϕ, NS.
Ss: gy, vf to f.gr, slty/sdy, well srt, ff, v.pr ϕ, NS.
Sh gy/blk.
Ls: bn/gy, clstc, foss, hly grad, trc. int-gran ϕ, NS.
Gy.sh.
Ls: bf/tan, microxln/dns, slt.gran, trc. int-gran ϕ, 2% wk spty flu, p-p SFO, wk odor, no stn.
Ls: bf/tan, microxln/f.gr.xline, shly, no ϕ, NS.
Ls: bf, f.gr.xline/dns, gran, most no ϕ, NS; 5% dim edge flu, p-p SFO (trace), wk odor, v.slt. p-p ϕ, no stn.
Ls: bf/gy, dns/microxln, gran, foss, no ϕ, NS.
Ls: bf, comp/dns, foss, no ϕ, NS.
Base K.C.
2593 (-1362)
Sh gy/blk.
Sh p gn/gy.
Ss/sltst, p.gn, f.lu.f.gr./slty, well srt, ff, v.pr. ϕ, NS.
Ss: p.sa, f.gr., sub-ang, frly cln, f/p srt, micac, pr/occ ft ϕ, NS.
SltSt, gn/gy.
VSSO
VSSO
VSSO
VSSO
ϕ
ϕ
ϕ
40
60
80
2500
20
40
60
80
2600
20


80
Slt st. AA.
60
Gy. sltst & sh.
ALTAMONT
2680 (-1449)
VSSO.
Ls: bf, microxln/dns, slt. gran, <1% dim edge flu, NVSFO, tr int-gran ϕ, no odor, no sta.
Gy. sh.
Ls: bf/bn, microxln/dns, slt. gran, foss, no ϕ, NS.
2700
Ls: bf, dns/comp, slt. gran, slt. glauc, no ϕ, NS
Sh, dk. gy., silty.
20
Gy. sh.
Bk. sh, carb.
PAWNEE
2730 (-1499)
Ls: bn, fgr. xline/microxln, slt. gran, slt. shly, no ϕ, NS.
40
VSSO
Ls: bf, dns/fgr. xline, slt. gran, most no ϕ, NS: 5% dim edge flu, NSFO, tr int-gran ϕ, no sta, no odor.
Gy. sh.
Ls: bf, microxln/dns, slt. sec. xln, foss, tr sec. int-xln ϕ, NS.
60
Bk. sh, carb.
Gy. sh.
Ls: bf, microxln/dns, foss, slt. chty, no ϕ, NS.
80
Bk. sh, carb.
Gy. sh.
2800
CHEROKEE
Ls:
2804 (-1573)
Bk. sh, carb.
Gy. sh., silty.
20
Gy. silty sh.
40
Gy. silty sh.
Sh, dk gy/blk.

VSI wt. 9.5 sec


60
Ardmore Lm.
2867 (-1636)
Ls: bf, f-gr. xline / microxln, slt. gran, tr. pg, no ϕ, NS.
Gy. Sh.
Bk. sh., carb.
80
Ls: bf, microxln / f. gr. xline, foss, slt. gran, no ϕ, NS.
Gy. sh.
Bk. sh., carb.
Gy. sh.
2900
Gy. sh & slt st.
20
CATTLEMAN ZONE
2923 (-1692)
Gy. sh. w/ 5% slt st/ss: p. gn / bf, v. f. gr. / s/ty, lam, micac, fr srt, ft, v. pr. ϕ, NS.
Gy. sh., s/ty IP.
40
Vari-colo sh: gy/p. gn/red-bn, trc. lav & gel/bent.
60
Vari-colo. sh AA, 2% ss: p. gn, f/m. gr., scat red cg spks, f/p srt, sub-ang, pr ϕ, NS.
80
Vari-colo. sh, gy/p. gn/red-bn.
Vari-colo. sh AA, 5% ss: p. gn / sh, m/f. gr., sub-ang, fr srt, tr. glauc, ft, pr ϕ, NS.
3000
Sh p. gn/red-bn.
20
V-49 wt. 9.6 sec
Eros. Miss. 3027 (-1776)
(3027-3034) Vari-colo. sh p. gn/red-bn, w/ 5% cl: yellow, v/t, transl, g/sub, s/ty, arid, no ϕ, NS. No vis sd. grns.
MISSISSIPPIAN
3034 (-1803)
(3034-3053) Ls, bf, microxln / f. gr. xline, no ϕ, NS.
40
Ls: bf, dns/microxln, slt cty (5%), no ϕ, NS. Cl: bf, v/t, transl, frsb, no ϕ, NS.
60
Ls: AA, 10% cl AA: all NS.

Ls: bf, dns/microxln, ctg (15%AA), tr. glauc, no Φ, NS.

RTD

3084' (-1853)

-3100

RANGE OIL #1 SNELL
E/2 NENE 11-32-4E
1231 KB
DFA 10/14/86