WELLSITE COMPOSITE LOG

AQUITAINE
Courtesy of Canada Ltd

AQUITAINE ALBERT ET al-33

LAT: 65°32'51.5"N.
LONG: 136°31'56.7"W.

GEOLOGIST THOMAS BOLDARTU, P.Geol.
PI Geological Consultants (1977) Ltd.

PROVINCE NORTH TERRITORY

1) March 8, 1978
2) December 13,1979

1) April 5,1978

PROCESSING (Mud/Gas Logging)
C.Townsend, C. Lundstrom, B. Redford

ELEVATIONS: K.B. 57m (187.8')
D.F. 55.5m (182.1')
G.L. 37.8m (124.1')

RIG CONTRACTOR ALMOND #3

MUD VOLUMES CO. Western Laboratory Services

SCALE - 1:600 & 1:240

LOGGED - ONE DRILLDOWN CARD STRAC DATA SOURCES

CASING RECORD
Pt.Num (30" @ 37.5m (123')
20.8cm (24" @ 57.3m (188')
[illegible] cm (13 3/8" @ 355m (1165')
[illegible] cm (9 5/8" @ 2216 (7272')

RUN NO.
1) Type DIL/BHCS-C/SONIC/GR/SP ran 503 -87m
2) DIL/BHCS-C/Sonic/Gamma/GR/SP 1317-4299m Dec. 27/78
3) DIL/BHCS-C 3923-1323m Feb. 6/79
4) DIL/BHCS-C/Sonic/Gamma/GR/ VELOCITY SURVEY 3691-2700m/-1500m March 27/79
5) 3400-120m (83 shots)

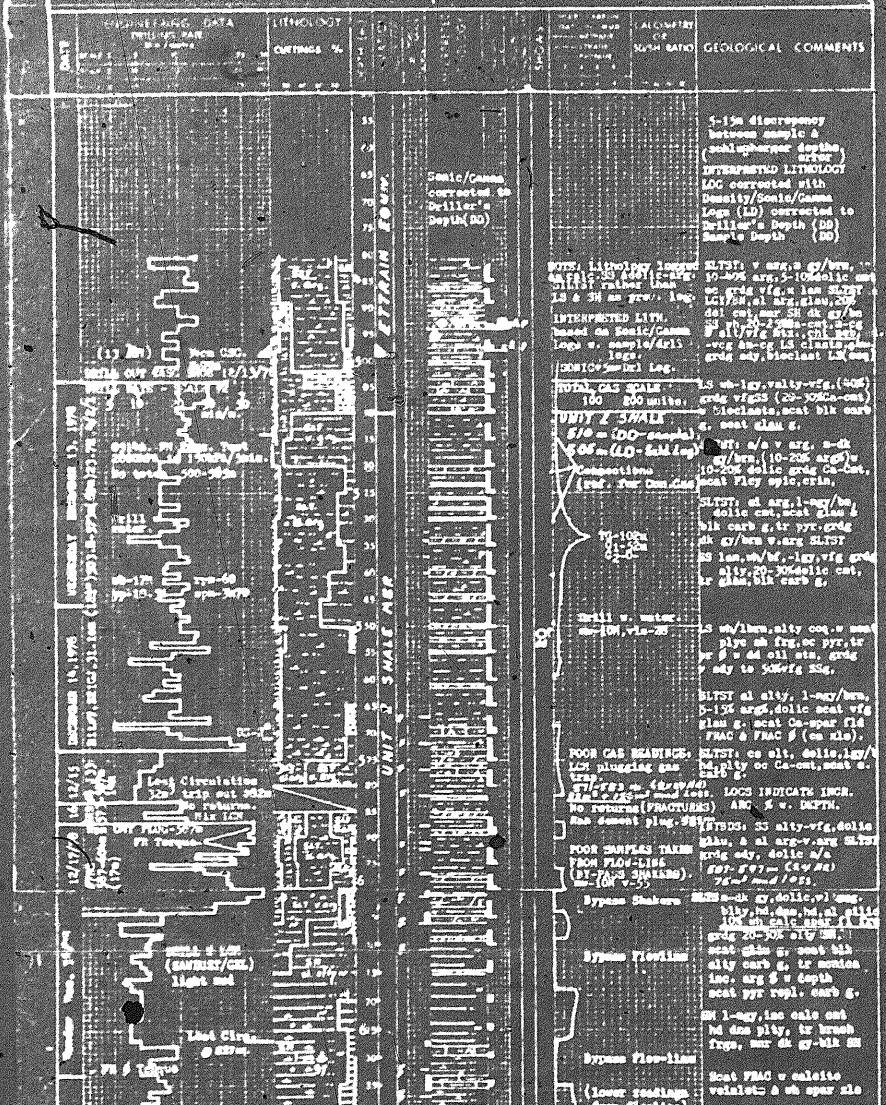
3979-1745m Drill Depth-Sonic/Schlumberger Log Depth.(LD)
1745-1323m Drill Depth-15m
Correction made

CORED INTERVAL
NONE

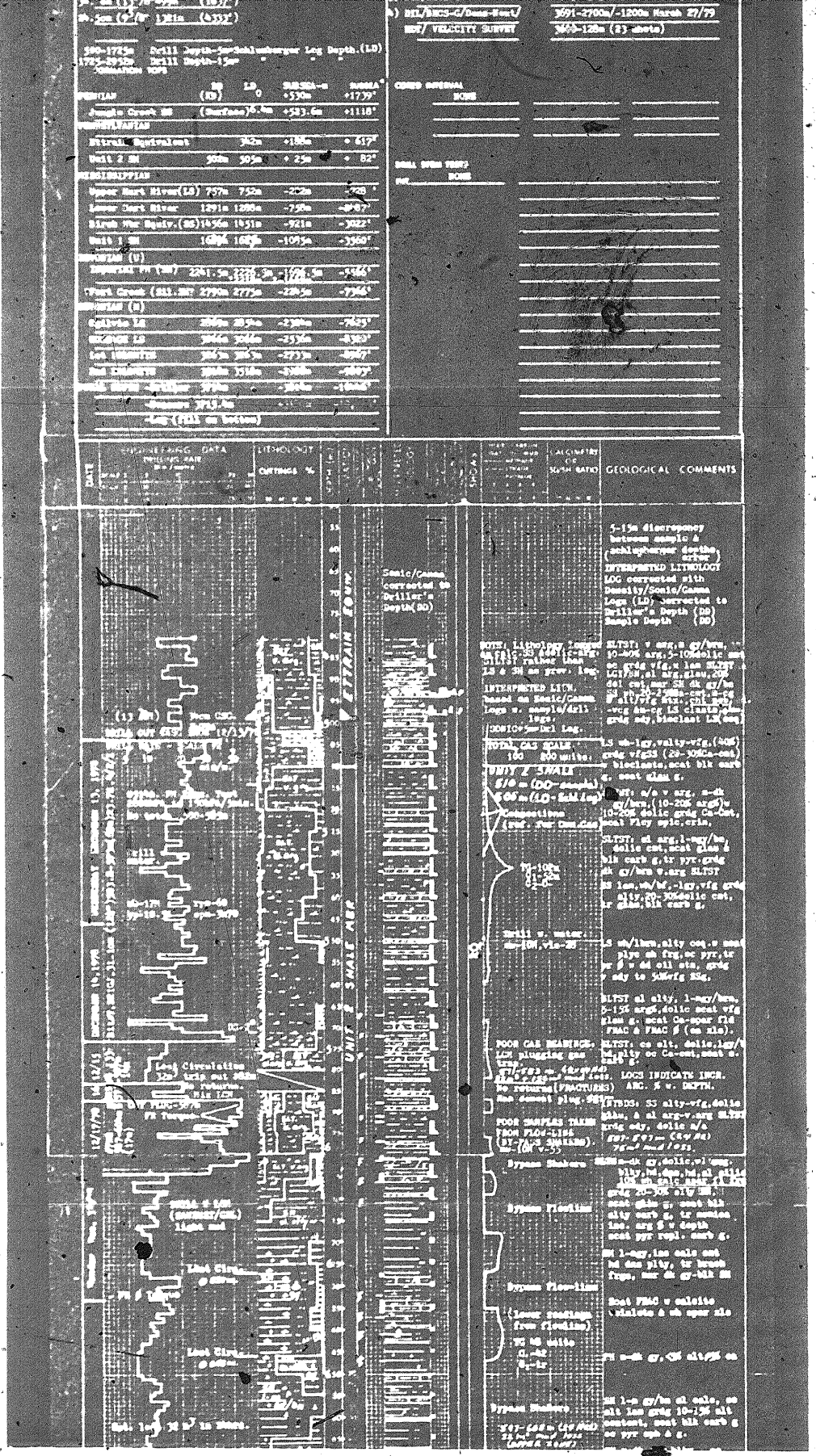
SMALL STEM TESTS
NONE

FORMATION	(BD)	LD	SUBSEA-m	SUBSEA'
Aquifer Creek MB	(Kugaluk) 1.5m		+543.6m	+1118'
UNCONFORMITY				
Natrolik Equivalent	305m		+184.5m	+ 617'
Unit 2 MB	308m	305m	+ 25m	+ 82'
UNCONFORMITY				
Upper Shark River(LD)	757m	752m	-222m	-728'
Lower Shark River	1291m	1280m	-750m	-2457'
Kanguk Fm Equiv.(BD)	1436m	1431m	-921m	-3022'
Unit 1 MB	1645m	1645m	-1095m	-3592'
UNCONFORMITY (U)				
Kanguk Fm (BD)	2261.5m	2237.5m	-1728.5m	-5668'
Hekpa Creek (BD)	2779m	2777m	-2269m	-7445'
UNCONFORMITY (U)				
Kamik Fm	2860m	2859m	-2351m	-7709'
Unconformity	2964m	2964m	-2456m	-8055'
Oil Bearing Fm	3015m	3015m	-2507m	-8223'
Base Unconformity	3048m	3048m	-2540m	-8331'
Total Depth - Driller	3979m		-3471m	-11384'
Total Depth - Logger	3979.5m			
Casing (Bit on Bottom)				

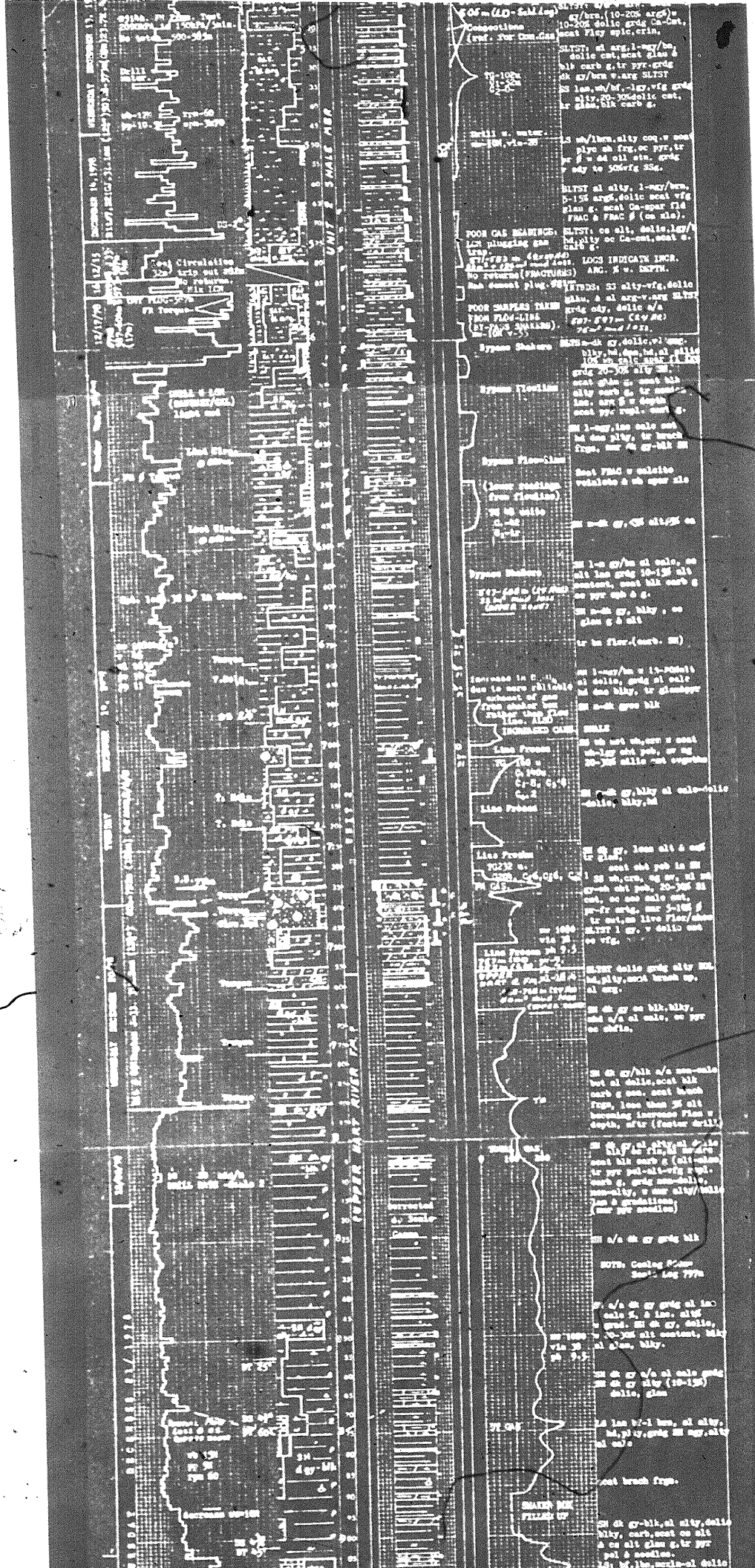
ENGINEERING DATA — DRILLING RATE (m/hr) — LITHOLOGY — CUTTINGS % — ALGOMETRY OF SILT/SH RATIO — GEOLOGICAL COMMENTS

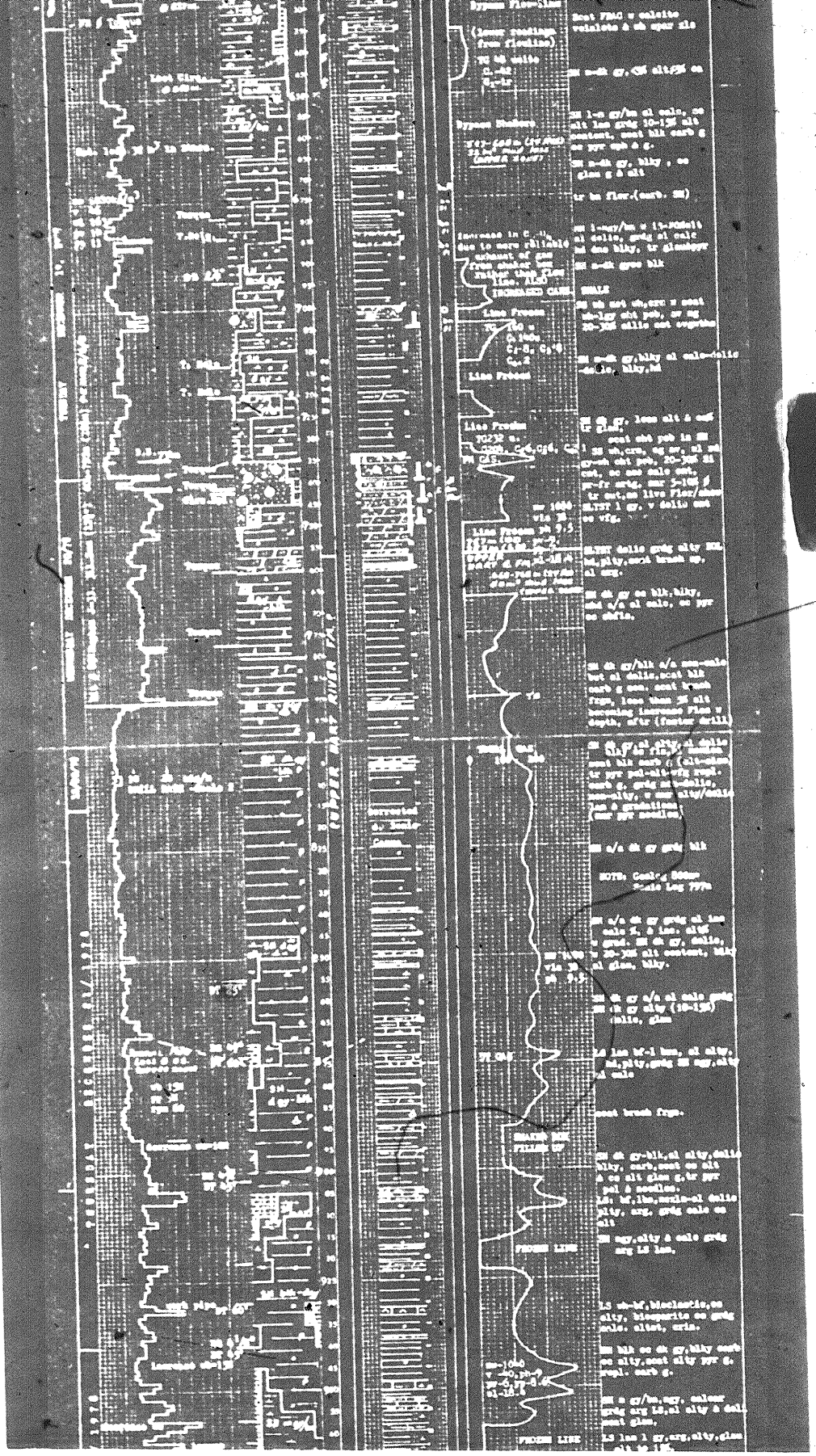


1/OF



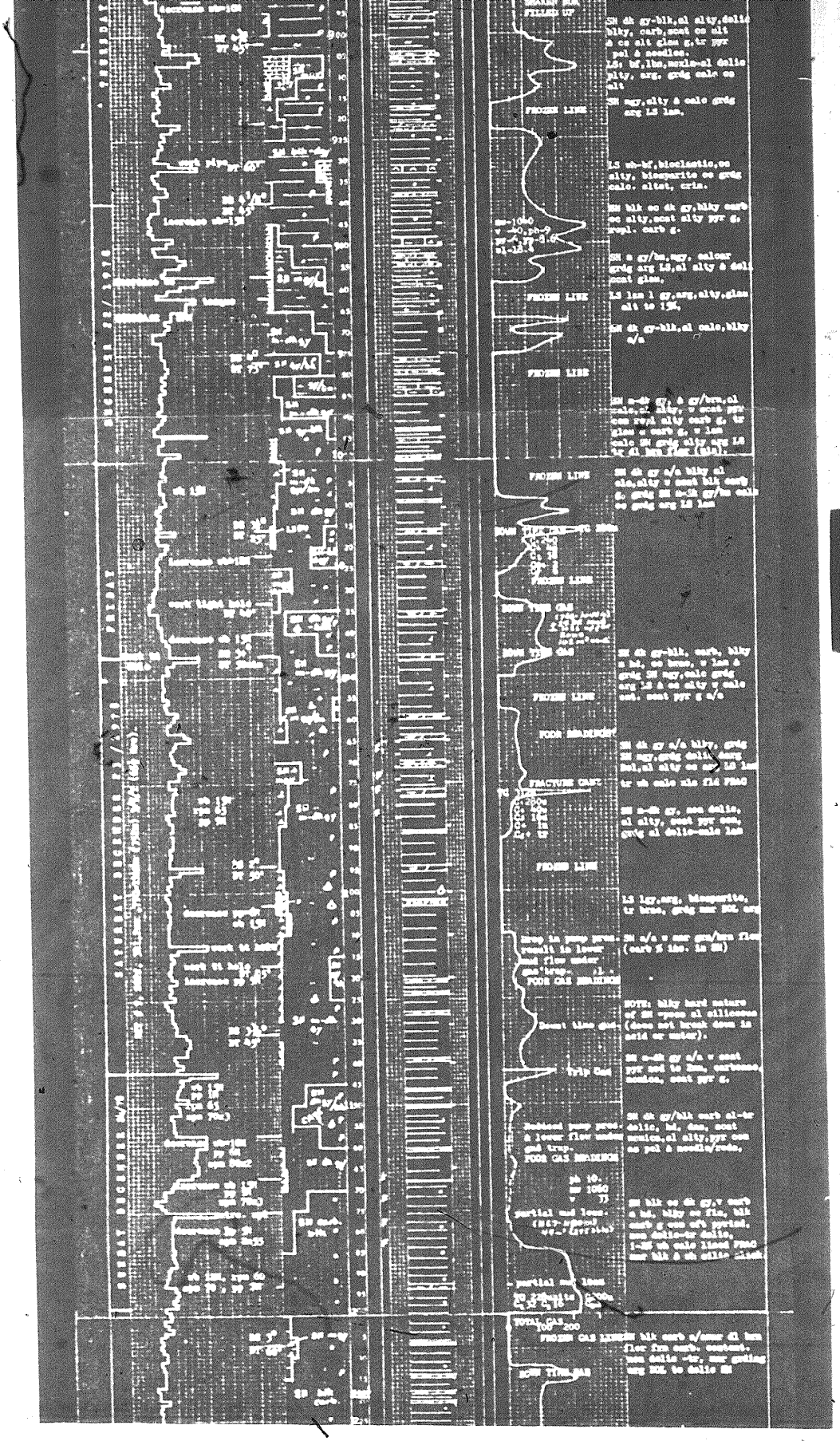
1 OF

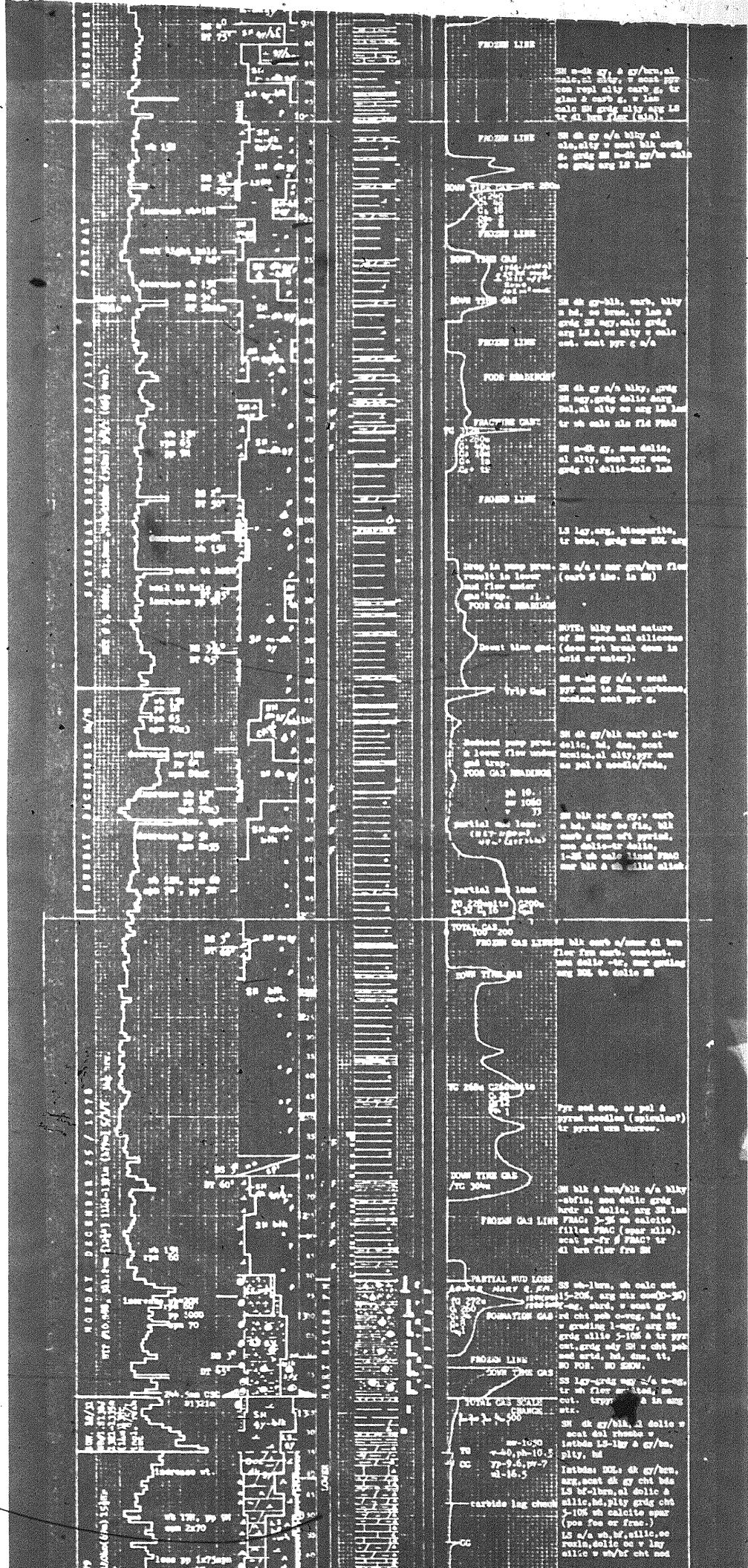

UNIT E SNAKE RIVER
Upper Salt River Fm.
Lime Pressure
Lime Pressure
Lime Pressure
Lime Pressure
Bryozoan Shoalstone
Bryozoan Floodlime
Bryozoan Floodlime
Bryozoan Shoalstone
POOR GAS RECOVERIES:
POOR SAMPLES TAKEN
FROM FLOOD-LIME.
NO returns (FRACTURES)
Coal Circulation
Coal Pressure
Coal Pressure
Coal Pressure



204

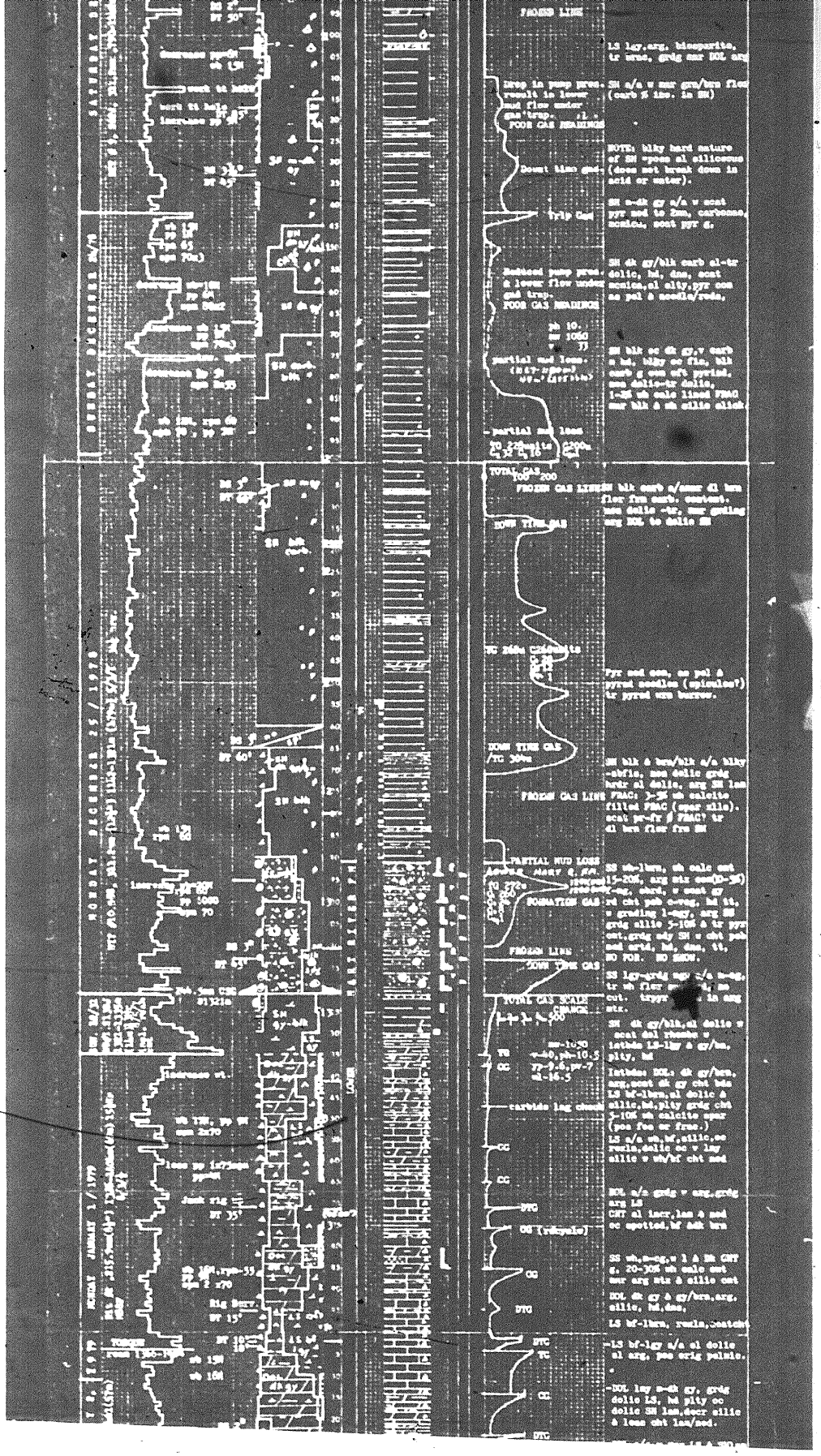
FROZEN LINE
FROZEN LINE
FROZEN LINE


FROZEN LINE
FROZEN LINE
FROZEN LINE


FROZEN LINE
FROZEN LINE
FROZEN LINE
DOWN TIME GAS
DOWN TIME GAS
FROZEN LINE
FOOR READINGS
FRACTURE GAS
FROZEN LINE
FOOR GAS READINGS
Trip Gas
FOOR GAS READINGS
partial mud loss
TOTAL GAS
FROZEN GAS LINE
DOWN TIME GAS
DOWN TIME GAS
FROZEN GAS LINE
PARTIAL MUD LOSS
FORMATION GAS
FROZEN LINE
DOWN TIME GAS
TOTAL GAS SCALE CHANGE
carbide lag check
CC

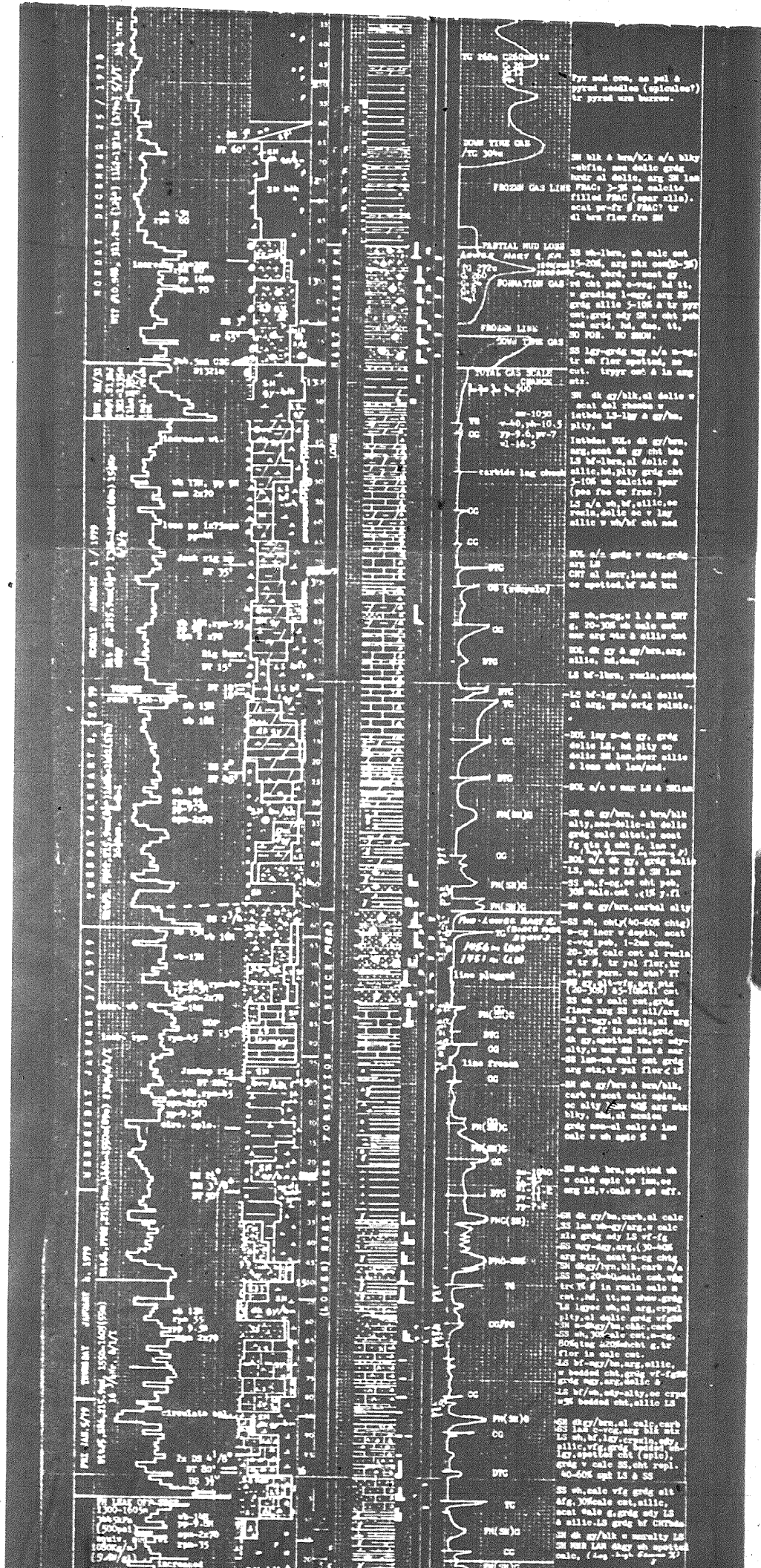
3 OF

4


FROZEN LINE
LS lgy,org, biosparite, tr wstn, grdg ssw MDL sty
SH o/a v sscr grn/brn flec (carb & lmc. in SH)
Drop in pump pres. result in lower mud flow meter gas trap. FOOS GAS READINGS
NOTE: blky hard nature of SH upon al silicones (does not break down in acid or water).
SH o-dk gy o/a v scat pyr nod to 2mm, carbonac, scales, scat pyr s.
Increased pump pres. & lower flow meter gas trap. FOOS GAS READINGS
SH dk gy/blk carb sl-tr dolic, ht, dns, scat scales,sl sily,pyr com as pel & scales/vns,
Partial mud loss.
SH blk sc dk gy,v carb s ht, blky sc flk, blk scat & scm sft pyritd, scm dolicstr dolic, 1-2M sh calc lined FRAC scr blk & sh silic slick
TOTAL GAS 100-200
FROZEN GAS LINE
SH blk carb o/scscr sl lcm flec frm scat, contemb, scm dolic, sft sc, scm grdlag sng MDL to dolic SH
DOWN TIME GAS
DOWN TIME GAS /TC 300+
FROZEN GAS LINE
SH blk & brn/blk o/a blky -shfle, scm dolic grdg brkt sl dolic, sng SH lam fill=t FRAC; 1-3M sh calcite, filled FRAC (spar silc). scat pr-fr f FRAC; tr sl lcm flec frm SH
PYR nod scm. sc pel & pyritd scmblns (spicules) tr pyritd vns burrow.
PARTIAL MUD LOSS
FORMATION GAS
FROZEN LINE
DOWN TIME GAS
SS wh-lt brn, sh calc cmt 15-20%, sng sbi scat(20-30) -ng, chert, v scat gy sl cht peb cvrng, ht st, v grdding l-mgr, sng SH grdg silic 5-10% & tr pyr scat.grdg sdy SH & cht peb scat grvl, ht, dns, st, NO FOR. NO SHOW.
SS lgy-pr/sl scr o/a sndy, tr sh flec [illegible] in sng strs.
SH dk gy/blk,sl dolic v scat dol rhombs v lotsbs LS-lgy & gy/brn, ply, ht
lotsbs DOL: dk gy/brn, sng,scat dk gy cht bds LS bf-lbrn,sl dolic & silic,ht,ply grdg cht 5-10% sh calcite spar (pos foo or frac.) LS o/a wh,bf,silic,sc rwnln,dolic sc v lgy silic v wh/bf cht nod
SH o/a grdg v sng,grdg strs LS
CHT sl lscr,lsn & nod sc spotted,bf dsk brn
SS wh,sl-gy,v l & SH CHT s. 20-30% wh calc cmt scr sng stx & silic cmt
DOL dk gy & gy/brn,sng, silic, ht,dns,
LS bf-lbrn, rwnln,scatchty
-LS bf-lgy o/a sl dolic sl sng, pos orig pelmls.
-DOL lgy v-sh gy, grdg dolic LS, ht pity sc dolic SH lam,scscr silic & lcms cht lam/nod.
carbide lag check
DTC
CC (rdspale)
DTC
TC
CC
DTC
CC
CC
CC
DTC
DTC
TC
CC
DTC
MONDAY DECEMBER 25 / 1978
MONDAY JANUARY 1 / 1979

3 OF —

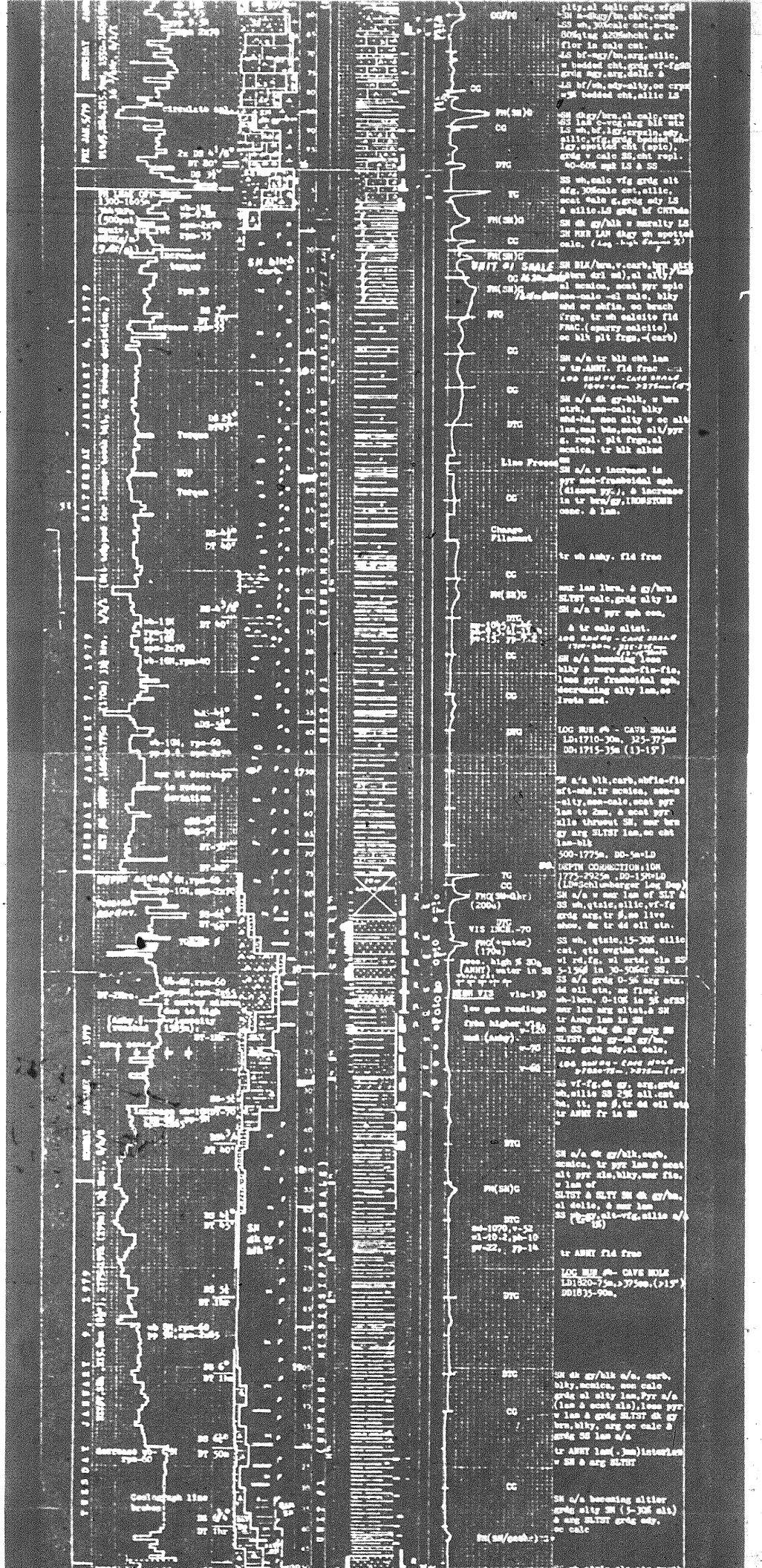
4

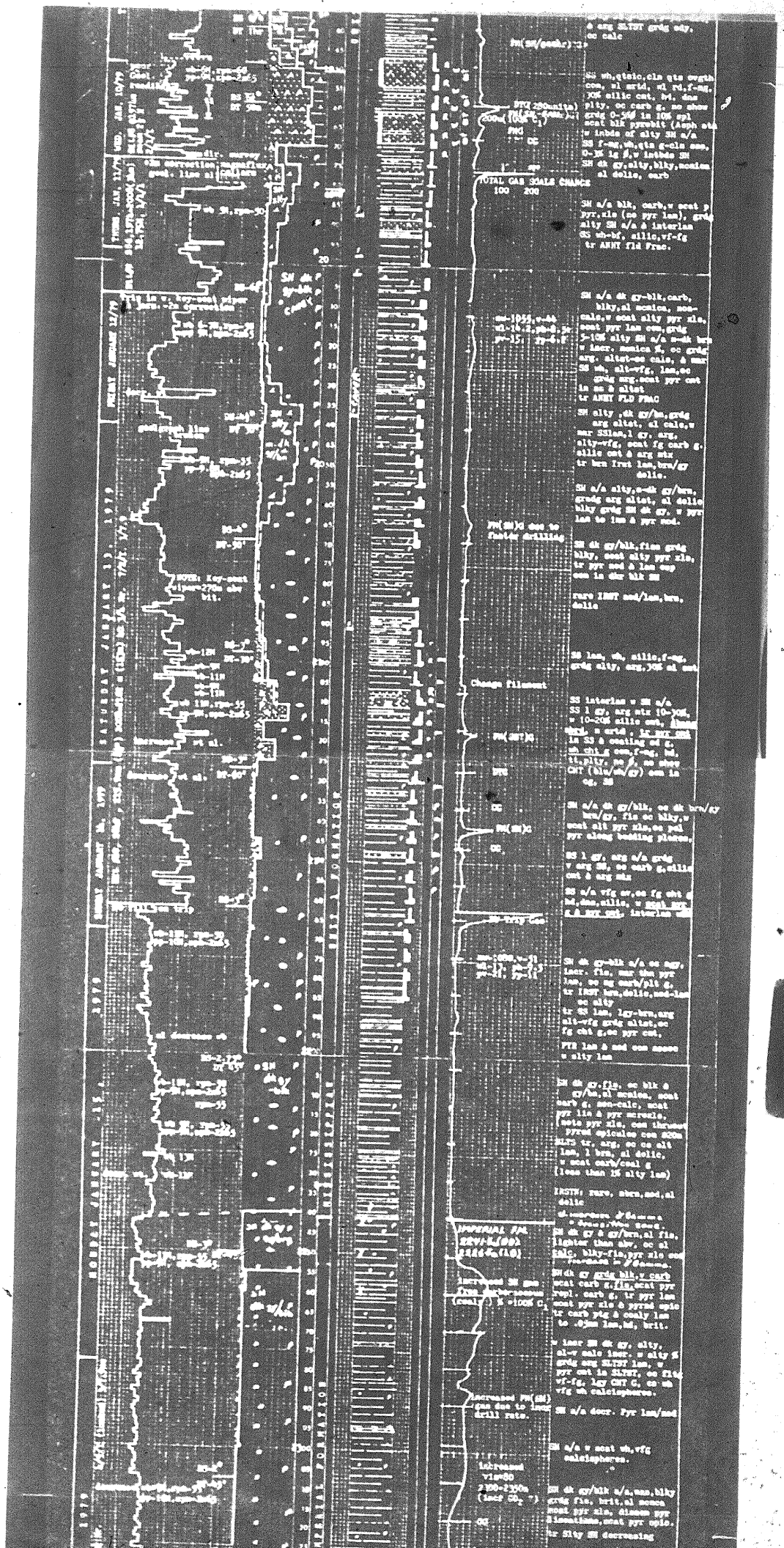


MONDAY DECEMBER 25 / 1978
TUESDAY JANUARY 1 / 1979
WEDNESDAY JANUARY 3 / 1979
THURSDAY JANUARY 4, 1979
FRIDAY JAN. 5/79
DOWN TIME GAS
FROZEN GAS LINE
PARTIAL MUD LOSS
FORMATION GAS
FROZEN LINE
DOWN TIME GAS
TOTAL GAS SCALE CHANGE
carbide lag check
line plugged
line frozen
circulate sal.

5 of

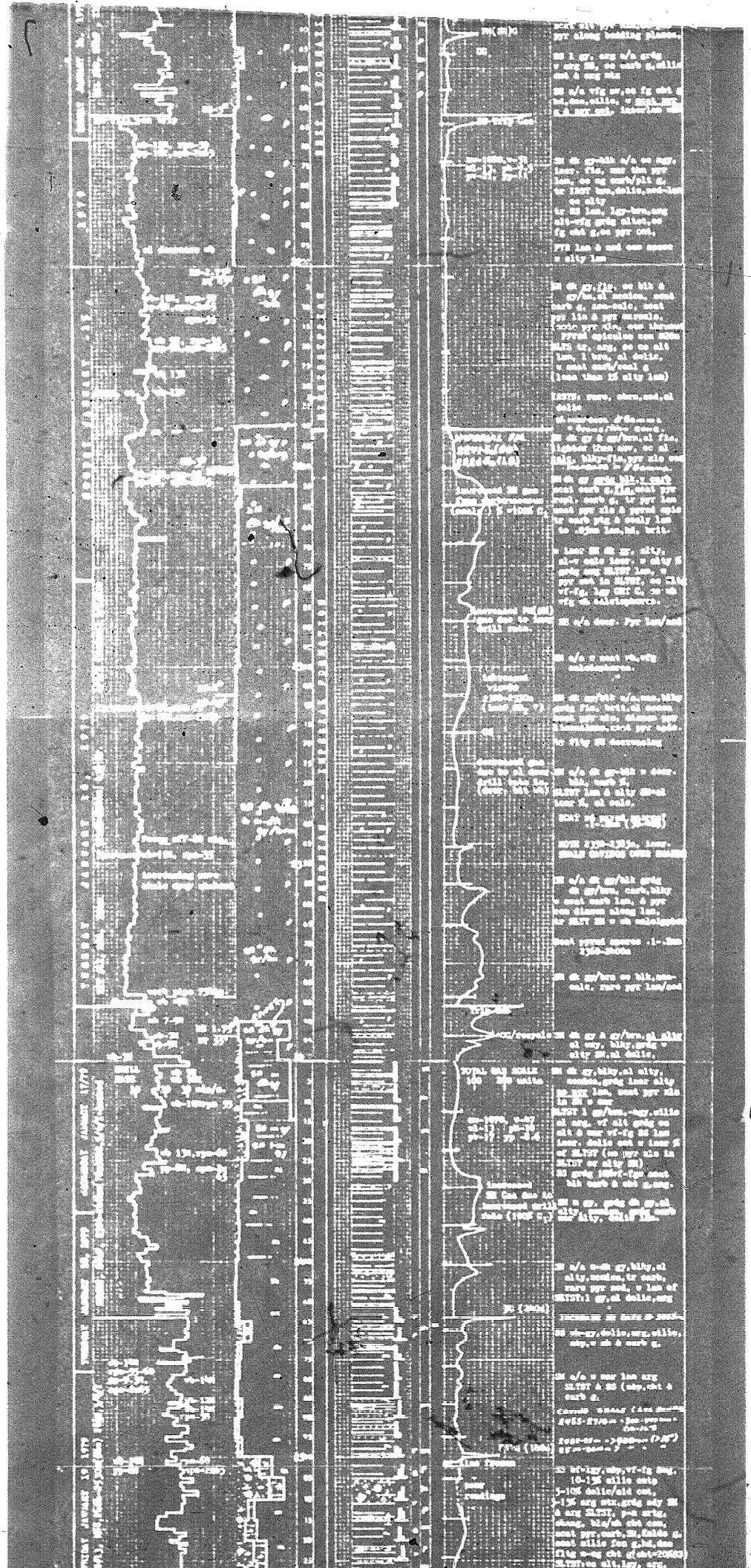
5 of




TOTAL GAS SCALE CHANGES
100 200
Change filament
Increased WOB and rpm due to faster drilling
Increased rpm due to faster drill rate.
Increased WOB and rpm due to faster drilling
Lithology
Abundant
Trace
2300-2350m
(Incr 50m)
SS
SH
LST
CHT
ANHY
Fm(SH)
Fm(ANHY)
Fm(SH/anhy)
Fm(SH/LST)
Fm(SH/CHT)
Fm(SH/LST/CHT)
Fm(SH/CHT/LST)
Fm(SH/LST/CHT/anhy)
Fm(SH/CHT/LST/anhy

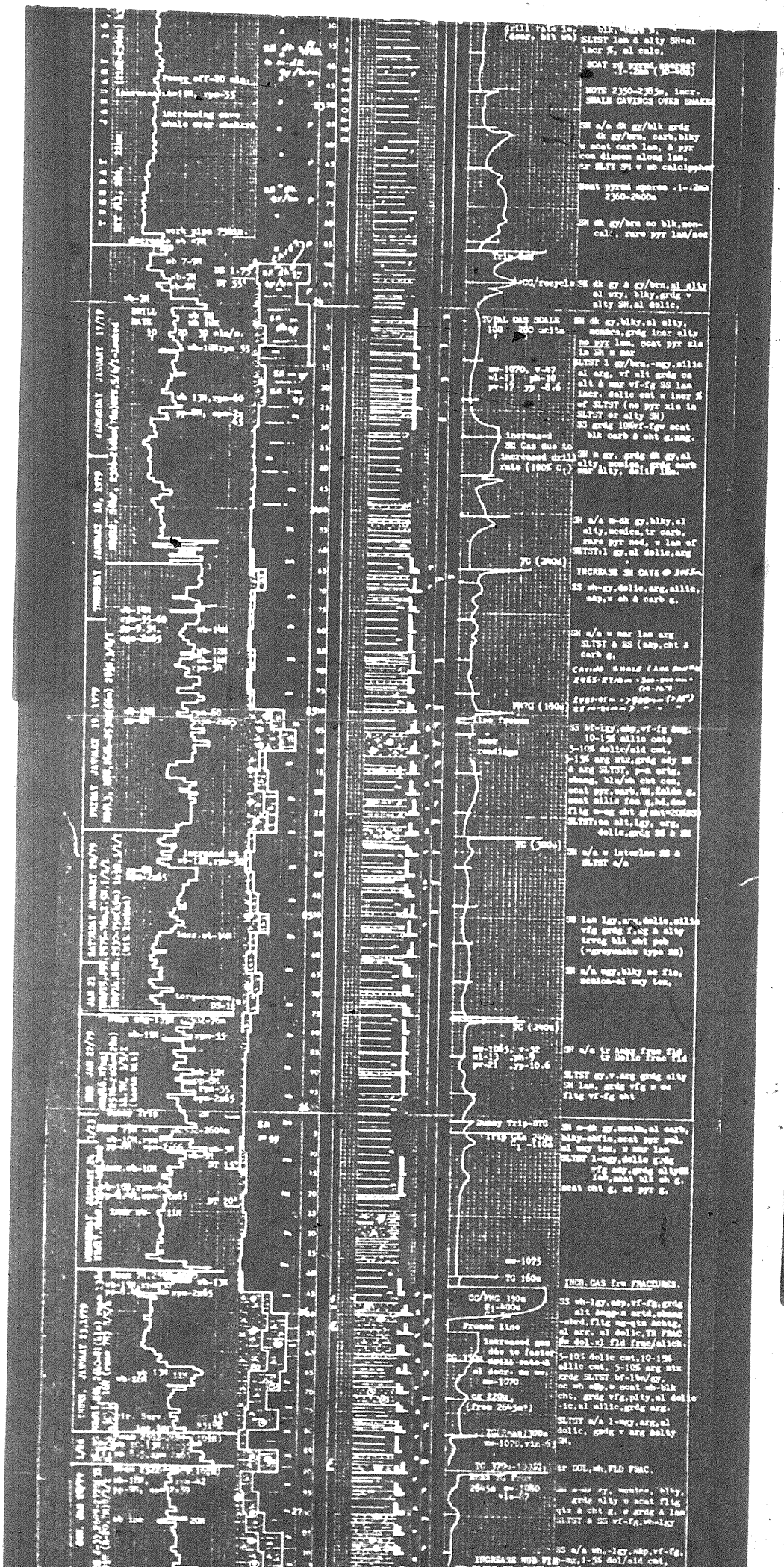
70

69

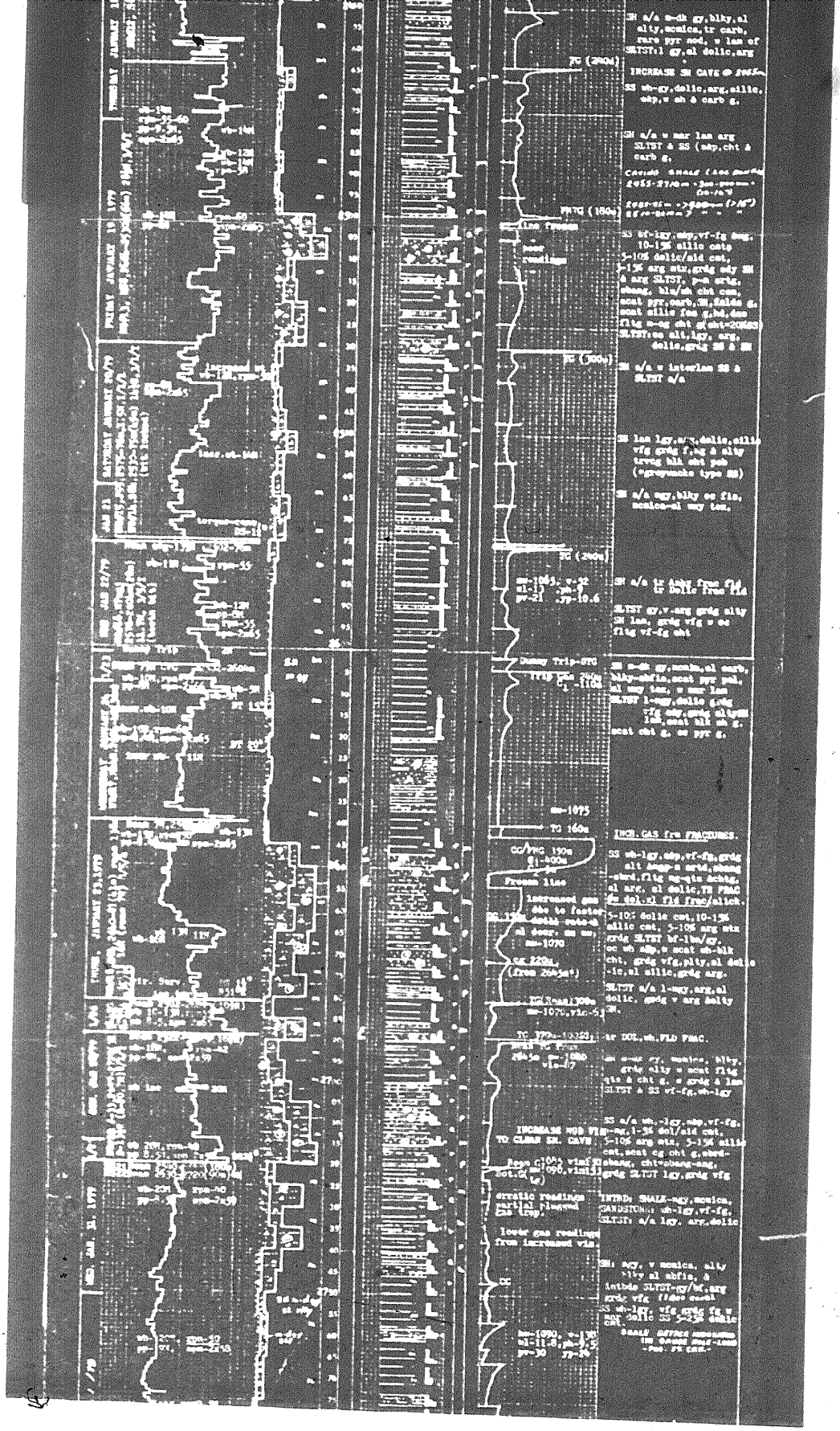


8 OF

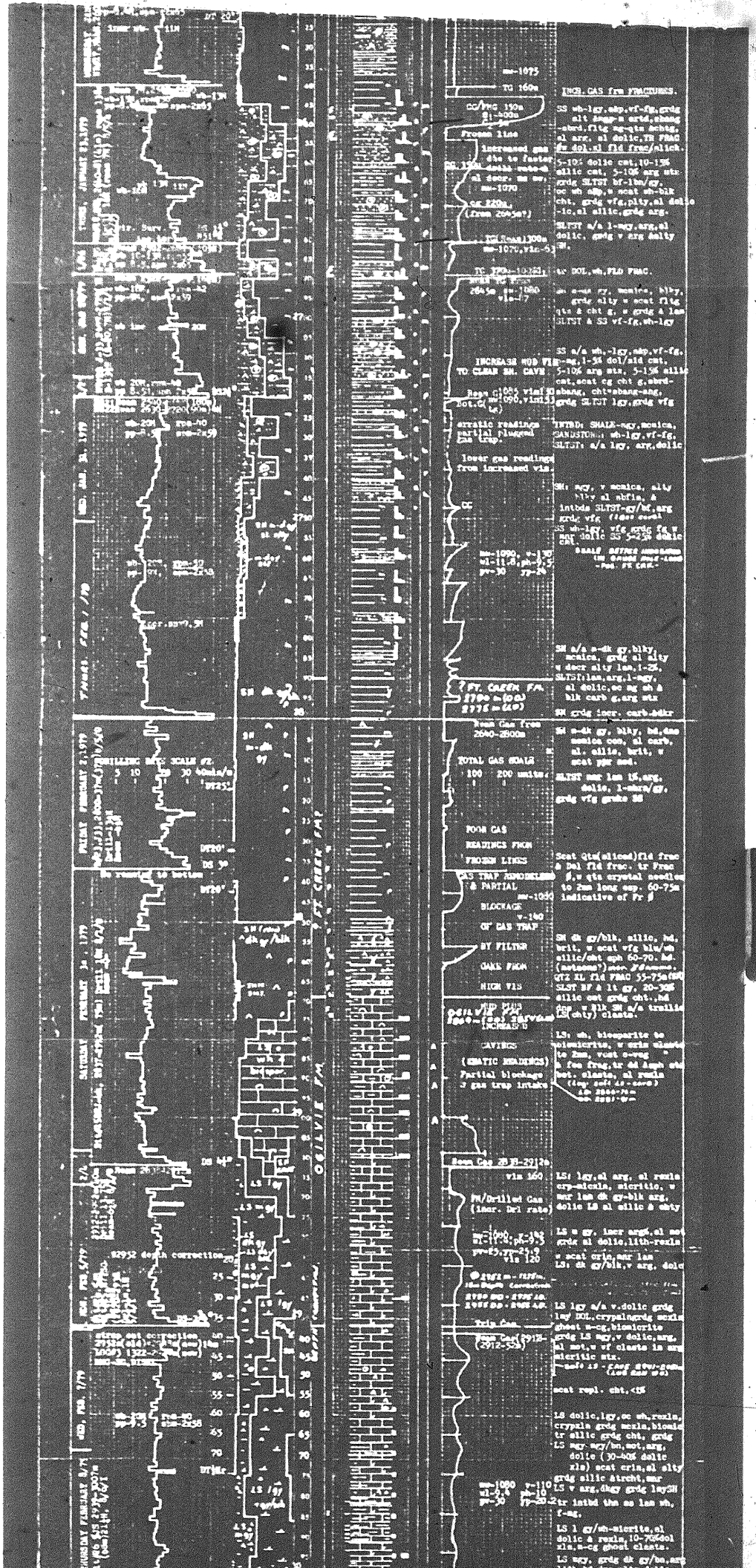
8 OF



9 of



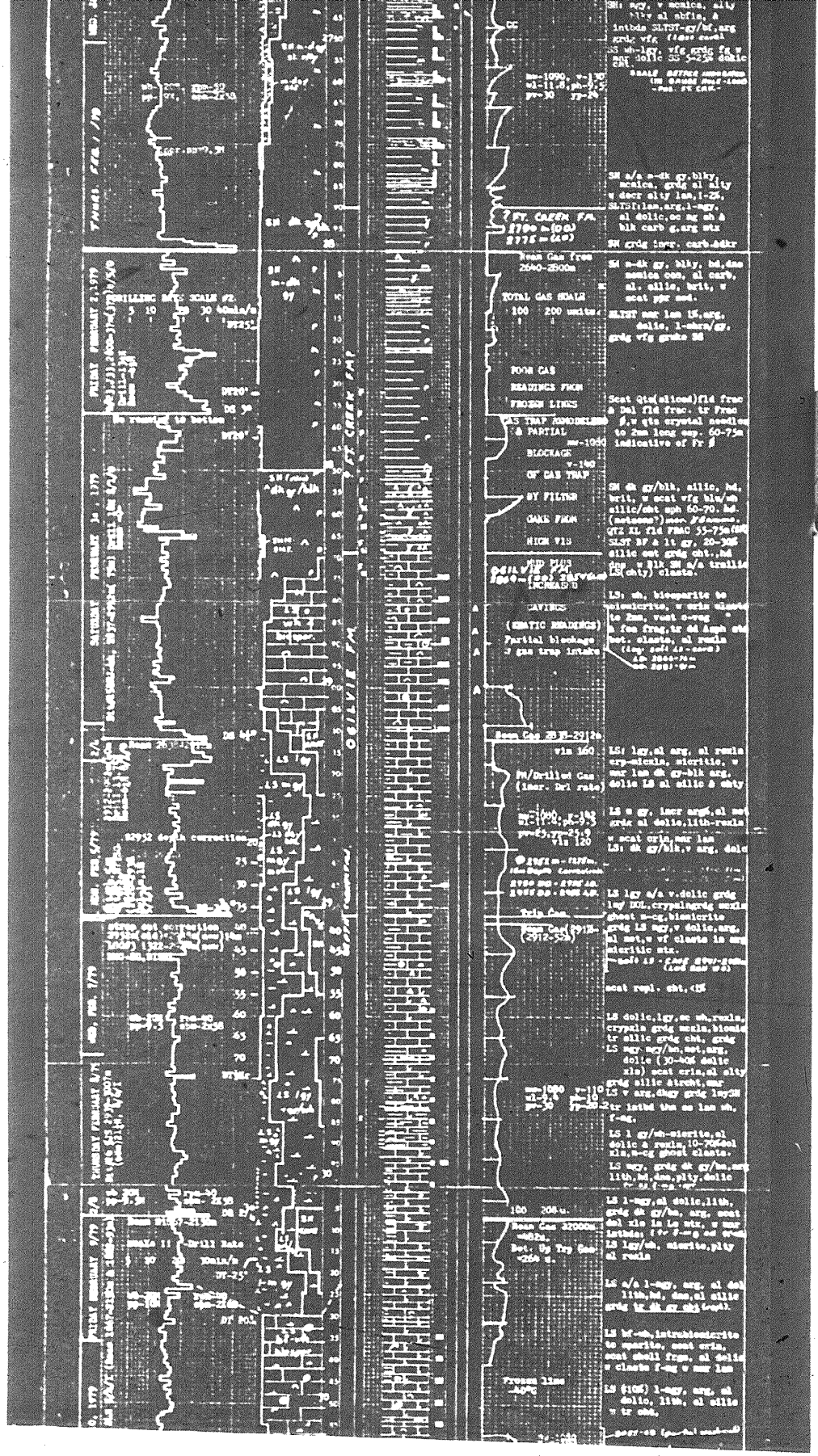
9 of



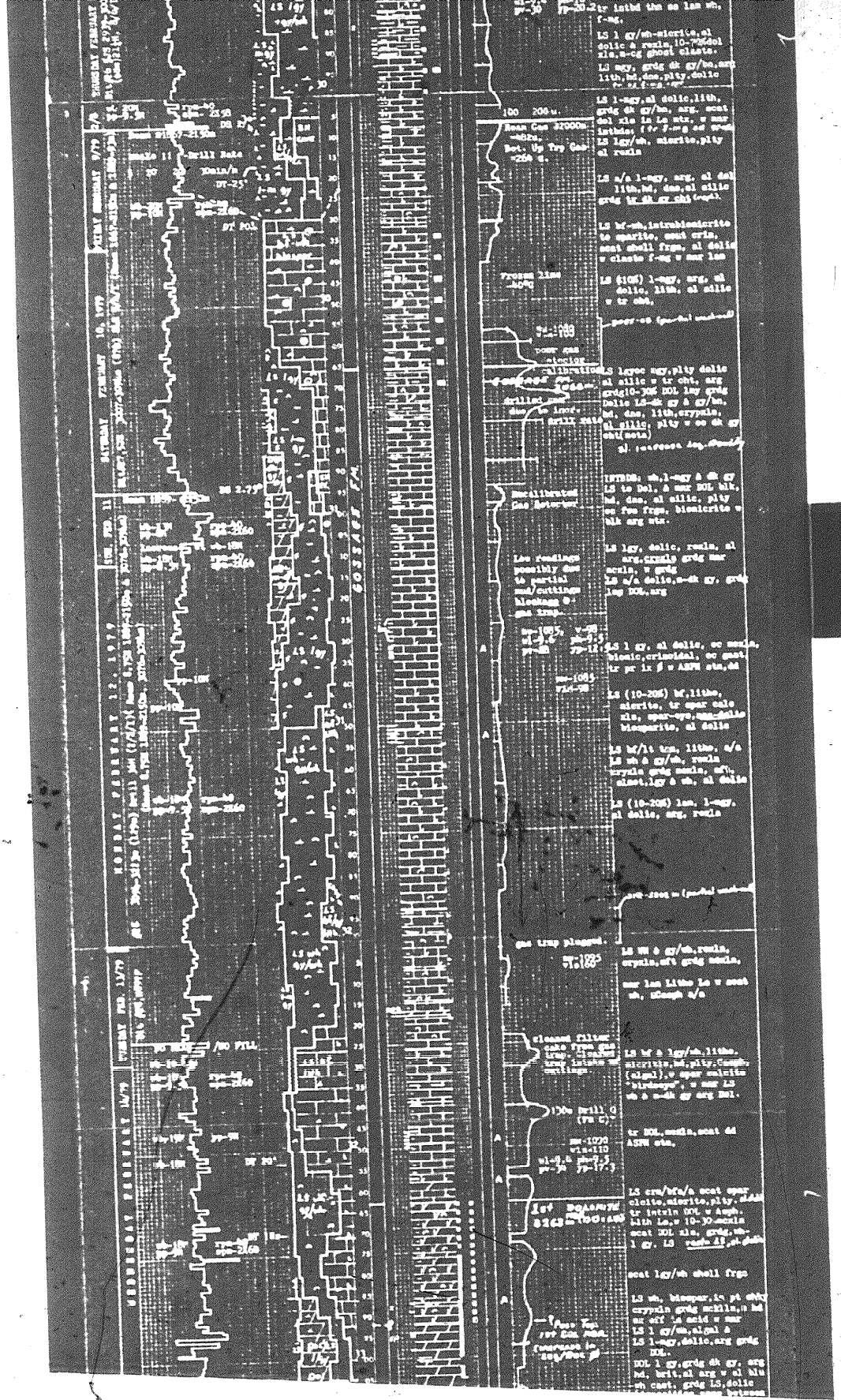
INCR. GAS frm FRACTURES.
TO CLEAR SH. CAVE
erratic readings
partial plugged
gas trap.
lower gas readings
from increased vis.
FT. CREEK FM.
Rem Gas from
2640-2800m
TOTAL GAS SCALE
100 200 units
FOOD GAS
READINGS FROM
FROZEN LINES
GAS TRAP REMODELED
& PARTIAL
BLOCKAGE
OF GAS TRAP
BY FILTER
CAKE FROM
HIGH VIS
INCREASED
CAVINGS
(ERATIC READINGS)
Partial blockage
gas trap intake
OGILVIE FM.
FT. CREEK FM.
Rem Gas 2838-2912m
vis 160
FM/Drilled Gas
(incr. Dri rate)
Trip Gas
Rem Gas(2912-
(2912-52m)

10 of

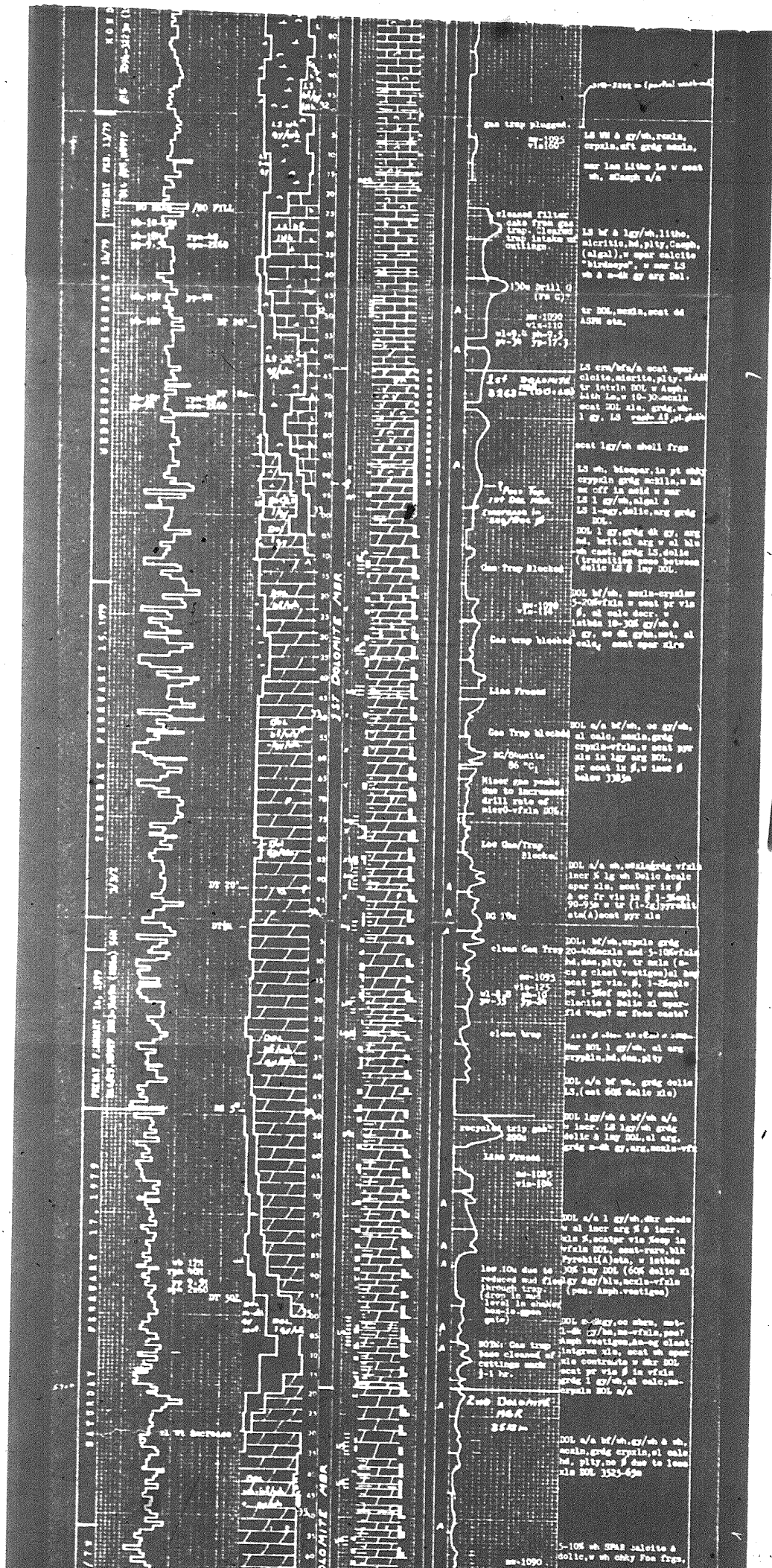
9 of


DRILLING RATE SCALE PT.
TOTAL GAS SCALE
100 200 units
ROOM GAS
READINGS FROM
FROZEN LINES
AS TRAP REMOVED
& PARTIAL
BLOCKAGE
OF GAS TRAP
BY FILTER
GAS FROM
HIGH PIG
MUD PITS
DRILLING FM
INCREASED
SAVINGS
(GRAPHIC READINGS)
Partial blockage
of gas trap intake
Drill Rate
Total Gas
Trip Gas
Bkgd Gas
Conn Gas
Bkgd Gas 3200ft.
Bot. Up Trip Gas
Trip Gas
Conn Gas
Bkgd Gas
Conn Gas
Bkgd Gas
Trip Gas
Conn Gas
Bkgd Gas
Trip Gas
Conn Gas
Bkgd Gas
Trip

CAVINGS
(ERATIC READINGS)
Partial blockage
gas trap intake
Drill Rate
Trip Gas
Background Gas
Connection Gas
Pump Gas
Drilled
No Lime
Gas trap plugged.
cleaned filter
take from gas
trap. Erratic
trap intake
outlage.
Drill G
(Fm C)
SATURDAY
TUESDAY FEB. 13/79
WEDNESDAY FEBRUARY 14, 1979
THURSDAY FEBRUARY 15, 1979
FRIDAY FEBRUARY 16, 1979
SATURDAY FEBRUARY 17, 1979
MONDAY FEBRUARY 12, 1979
TUESDAY FEBRUARY 13, 1979
WEDNESDAY FEBRUARY 14, 1979
THURSDAY FEBRUARY 15, 1979
FRIDAY FEBRUARY 16, 1979
SATURDAY FEBRUARY 17, 1979
MONDAY FEBRUARY 12, 1979
TUESDAY FEB. 13/79

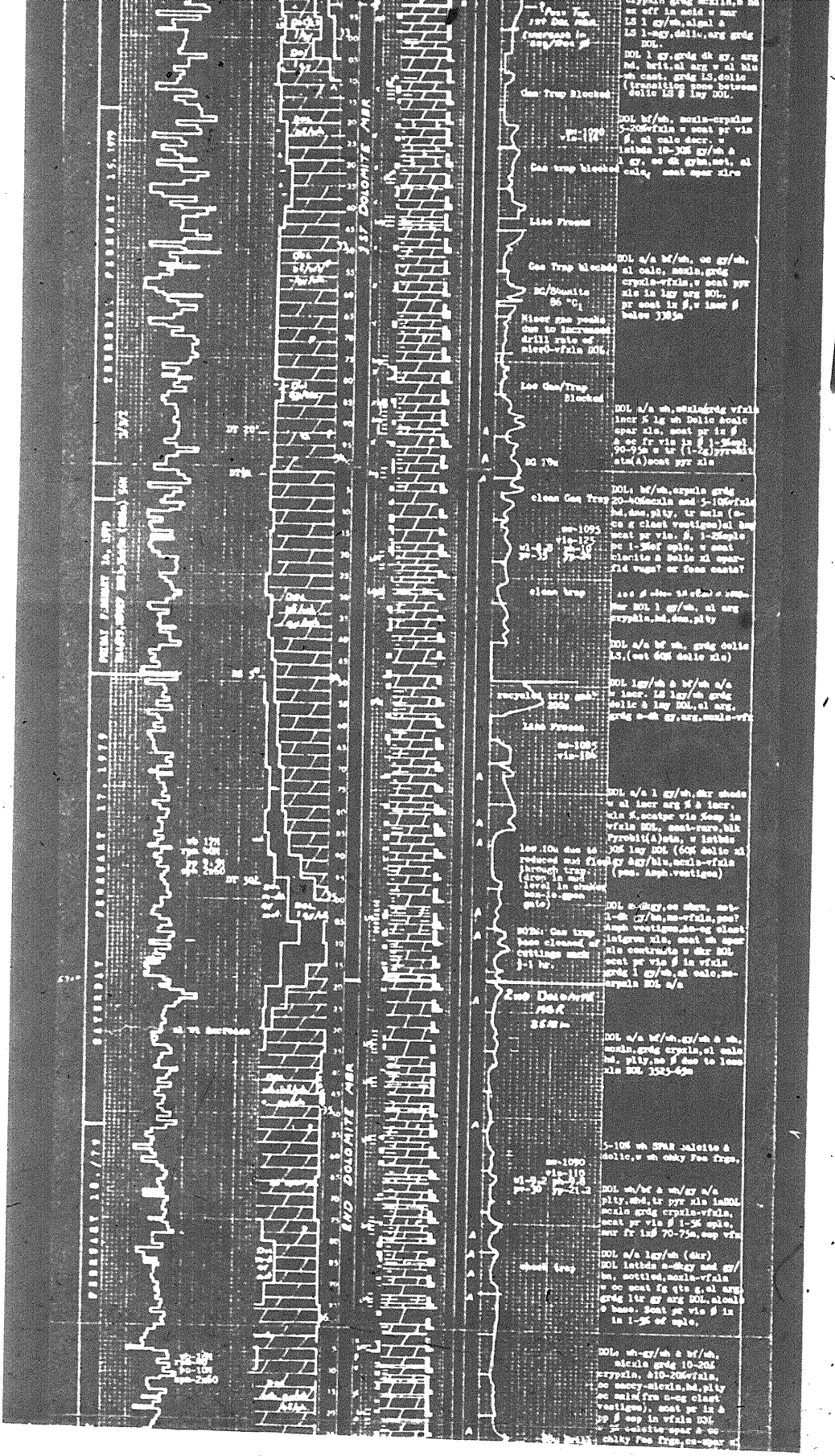


8

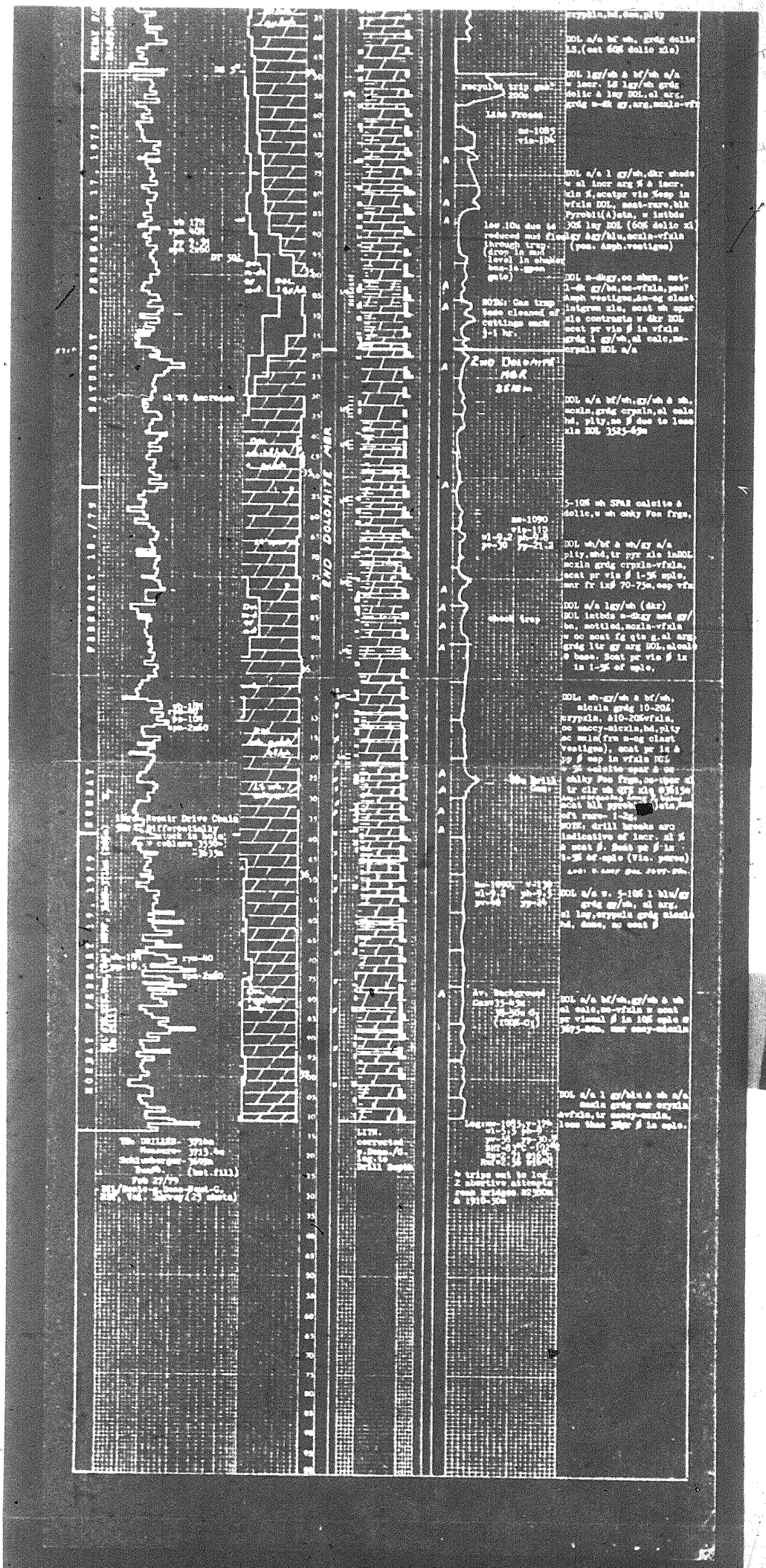


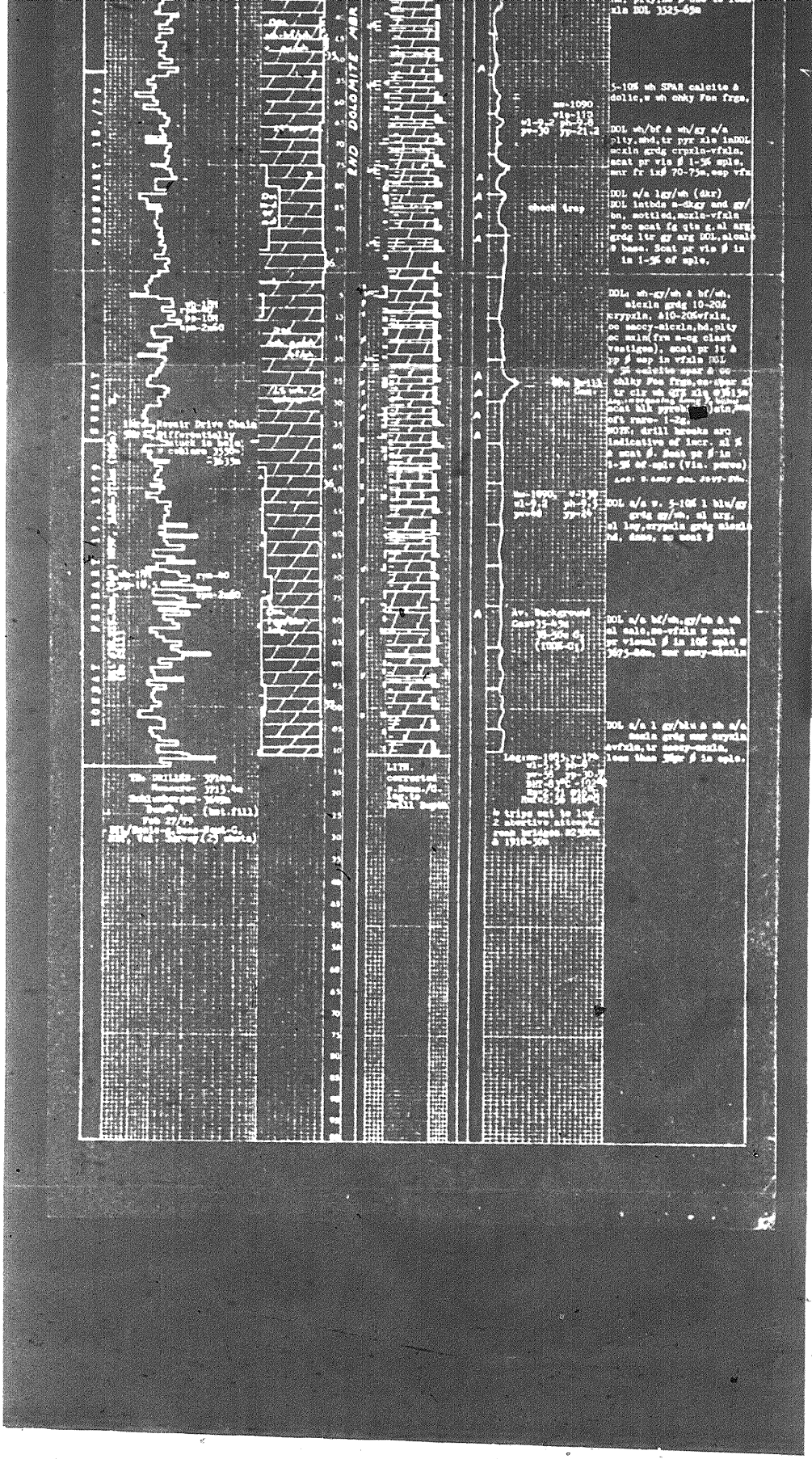
gas trap plugged.
LS WH & gy/wh,rcxls, crpxls,sft grdg mcxls,
mar lam litho Lo w scat wh, mCasph a/a
cleaned filter cake from gas trap. Cleaned trap intake of cuttings.
LS bf & lgy/wh,litho, micritic,hd,plty,Cmsph, (algal),w spar calcite "birdseye", w mar LS wh & m-dk gy arg Dol.
130u Drill Q (Fm C)
tr DOL,mcxls,scat dd ASPH stn.
LS crm/bfa/a scat spar clcite,micrite,plty. tr intxln DOL w Amph. Lith Lo,w 10-30%mcxls scat DOL xls, grdg,wh-l gy. LS
scat lgy/wh shell frgs
LS wh. bicspar,in pt chky crypxln grdg mcxlls,w hd mx off in acid w mar LS l gy/wh,algal & LS l-mgy,dolic,arg grdg DOL.
DOL l gy,grdg dk gy, arg hd, brit,sl arg w sl blu wh cast, grdg LS,dolic (transition zone between dolic LS & lmy DOL.
Gas Trap Blocked
DOL bf/wh, mcxls-crpxlsw 5-20%vfxls w scat pr vis ø, sl calc decr. w intbds 10-30% gy/wh & l gy, sc dk gy/wh,mot, sl calc, scat spar xlrs
Gas trap blocked
Line Freeze
Gas Trap blocked
DOL a/a bf/wh, sc gy/wh, sl calc, mcxls,grdg crpxls-vfxls,w scat pyr xls in lgy arg DOL, pr scat ix ø,w incr ø below 3385m
Miner gas peaks due to increased drill rate of micro-vfxls DOL.
Low Gas/Trap Blocked
DOL a/a wh,mcxls,grdg vfxls incr % lg wh Dolic &calc spar xls, scat pr ix ø & sc fr vis in ø 1-3%spl 90-95m w tr (1-2g)pyrobit stn(A)scat pyr xls
clean Gas Trap
DOL: bf/wh,crpxls grdg 20-40%mcxls and 5-10%vfxls hd,dns,plty, tr mxls (m-cs g clast vestiges)sl arg scat pr vis. ø, 1-2%sple sc 1-3%of sple, w scat clacite & Dolic xl spar-fld vugs? or fess casts?
clean trap
Mar DOL l gy/wh, sl arg crypxls,hd,dns,plty
DOL a/a bf wh, grdg dolic LS,(cst 60% dolic xls)
recycled trip gas
DOL lgy/wh & bf/wh a/a w incr. LS lgy/wh grdg dolic & lmy DOL,sl arg, grdg m-dk gy,arg,mcxls-vfx
Line Freeze
DOL a/a l gy/wh,dkr shads w sl incr arg % & incr. xls %,scatpr vis %esp in vfxls DOL, scat-rare,blk Pyrobit(A)stn, w intbds 30% lmy DOL (60% dolic xl lgy &gy/blu,mcxls-vfxls (pos. Amph.vestiges)
low 10u due to reduced mud flow through trap. (drop in mud level in shaker box-lo.open gate)
DOL m-dkgy,sc mbrn, mot-l-dk gy/wh,mc-vfxls,pos? Amph vestiges,An-eg clast intgrnn xls, scat wh spar xls contrasts w dkr DOL scat pr vis ø in vfxls grdg l gy/wh,sl calc,mc-crpxls DOL a/a
NOTE: Gas trap base cleaned of cuttings much 1-1 hr.
2nd Dolomite MBR
DOL a/a bf/wh,gy/wh & wh, mcxls,grdg crpxls,sl calc hd, plty,no ø due to loss xls DOL 3523-65m
5-10% wh SPAR calcite & dolic,w wh chky Fos frgs,
1st Dolomite MBR
Dolomite MBR

12 of


1ST DOLOMITE MBR
2ND DOLOMITE MBR
Gas Trap Blocked
Gas trap blocked
Line Freeze
Gas Trap blocked
Low Gas/Trap Blocked
clean Gas Trap
clean trap
Line Freeze
2nd Dolomite MBR
sheet trap

12 of


END DOLOMITE MBR
2nd Dolomite MBR
Lime Process
Premier Drive Shale
Cliffordville Ls.
Fall River (Lst.fill)
Fall River (Sandy)
Fall River (Shale)
Fall River (Lst.


END DOLOMITE MBR
5-10% wh SPAR calcite & dolic,w wh chky Fos frgs.
check trap
Av. Background

13 of 13

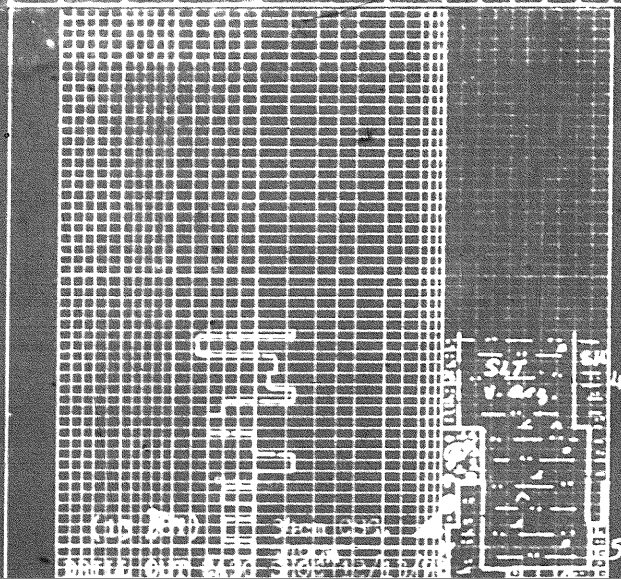
PERMIAN	(KB)	0	+530	+1739
Jungle Creek SS	(Surface)	6.4	+523.6	+1118
PENNSYLVANIAN				
Ettrain Equivalent		342	+188	+ 617
Unit 2 SH	502	505	+ 25	+ 82
Upper Hart River (LS)	757	752	-222	- 728
PENN-MISS				
Lower Hart River	1291	1288	-758	-2487
MISSISSIPPIAN				
Birch Mbr Equiv.(SS)	1456	1451	-921	-3022
Unit 1 SH	1635	1629	-1099	-3605
DEVONIAN (U)				
Imperial Fm (SH)	2241.5	2226.5	-1696.5	-5566
		?2218	?-1668	
? Fort Creek (Sil.SH?)	2790	2275	-2245	-7366
DEVONIAN (M)				
Ogilvie LS	2869	2854	-2324	-7625
Gossage LS	3066	3066	-2536	-8320
1st Dolomite	3263	3263	-2733	-8967
2nd Dolomite	3518	3518	-2988	-9803
TOTAL DEPTH-Driller	3714	-	-3814	-10446
-Measure	3715.4			
-Log (fill on bottom)				

STEM TESTS

NONE

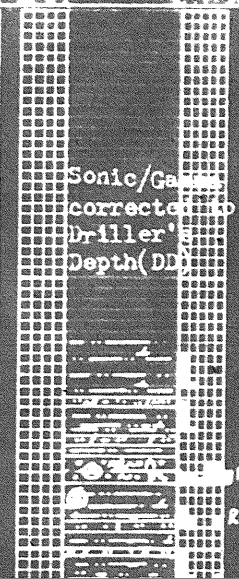
-Log (fill on bottom)

DATE	ENGINEERING DATA — DRILLING RATE Min/metre, SCALE I 5 10 25 50, SCALE II 15 30 75 150	LITHOLOGY — CUTTINGS % 20 40 60 80	DEPTH (m.)	FORMATION	POROSITY TYPE; POROSITY CURVE Por% 30 -12 Ht%	INTERPRETED LITHOLOGY; CRYSTAL GRAIN FRAGMENT SIZE; FOSSILS; DIAG. TYPE; DIAGENESIS; DIAG. DEGREE	SHOWS	HYDROCARBON GAS IN MUD — METHANE, ETHANE, PROPANE 2 4 6 8	CALCIMETRY OR SD/SH RATIO 20 40 60 80	GEOLOGICAL COMMENTS



30 55 60 65 70 75 80 485 90 95 500

ETTRAIN EQUIV.



5-15m discrepency between sample & schlumberger depths, (" error)

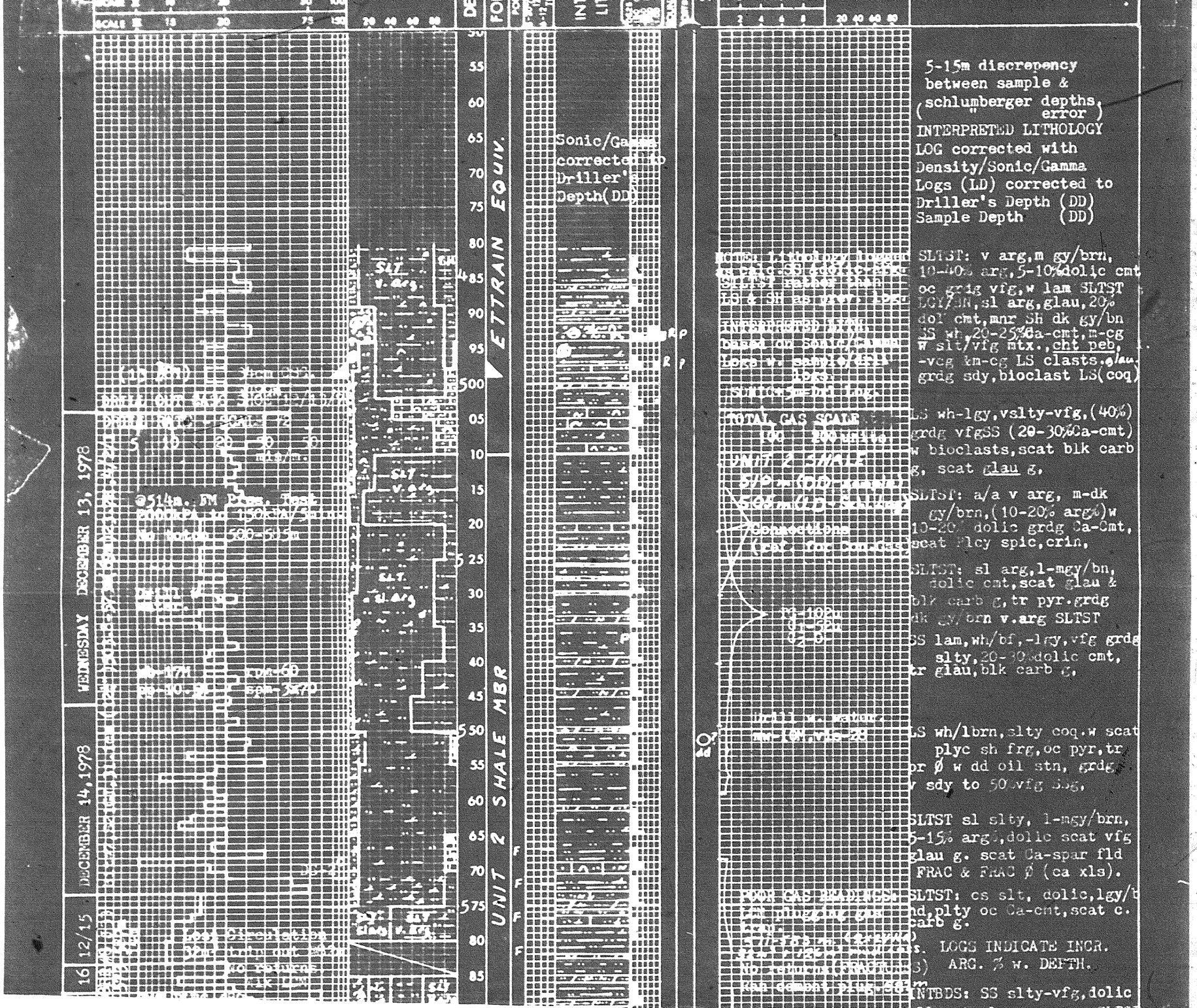
INTERPRETED LITHOLOGY

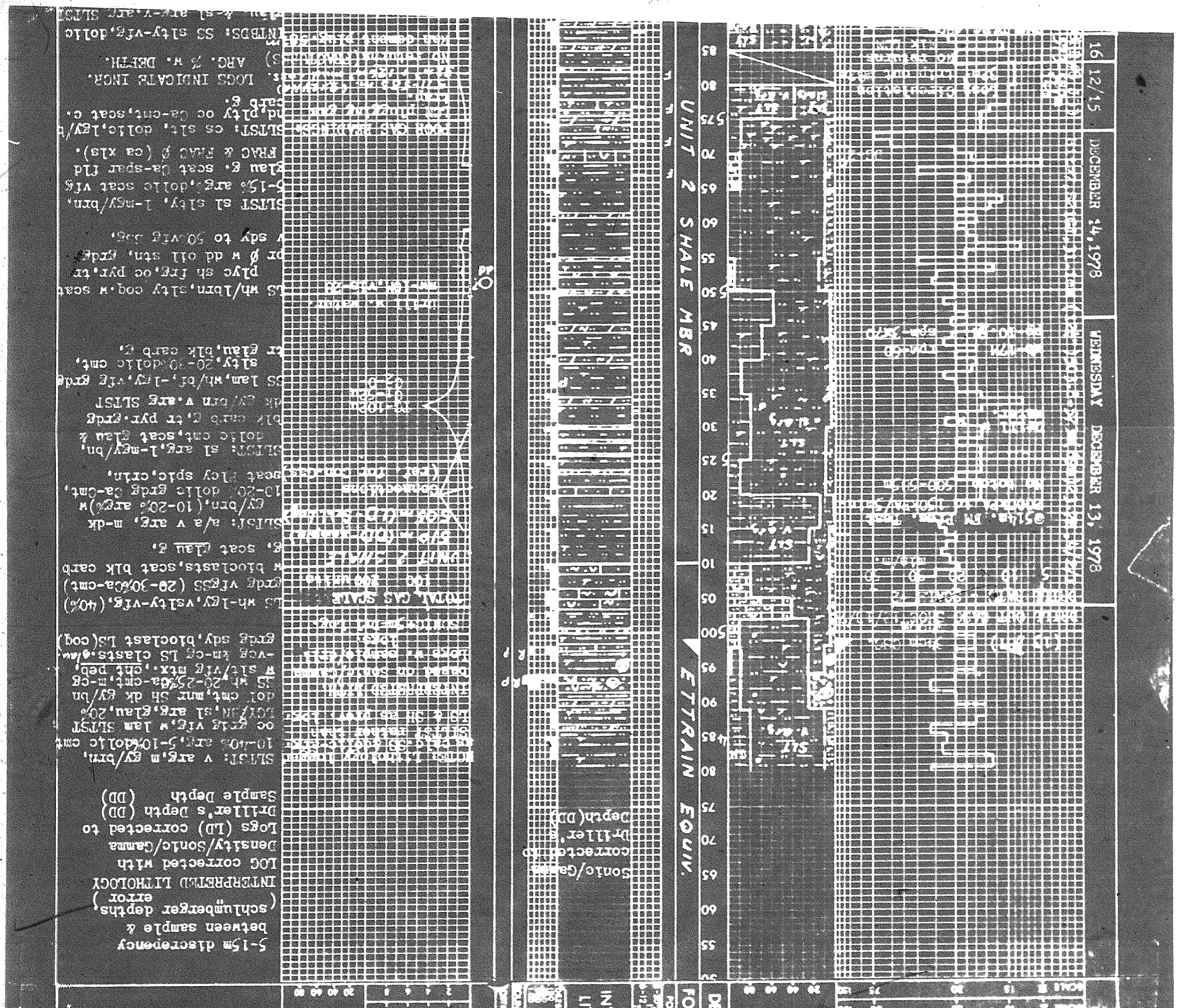
LOG corrected with Density/Sonic/Gamma Logs (LD) corrected to Driller's Depth (DD)

Sample Depth (DD)

SLTST: v arg,m gy/brn, 10-40% arg,5-10%dolic cmt oc grdg vfg,w lam SLTST DGY/BK,sl arg,glau,20% dol cmt,mnr Sh dk gy/bn LS wh,20-25%ca-cmt,m-cg w slt/vfg mtx.,cht peb, -vcg km-cg LS clasts, glau grdg sdy,bioclast LS(coq)

20

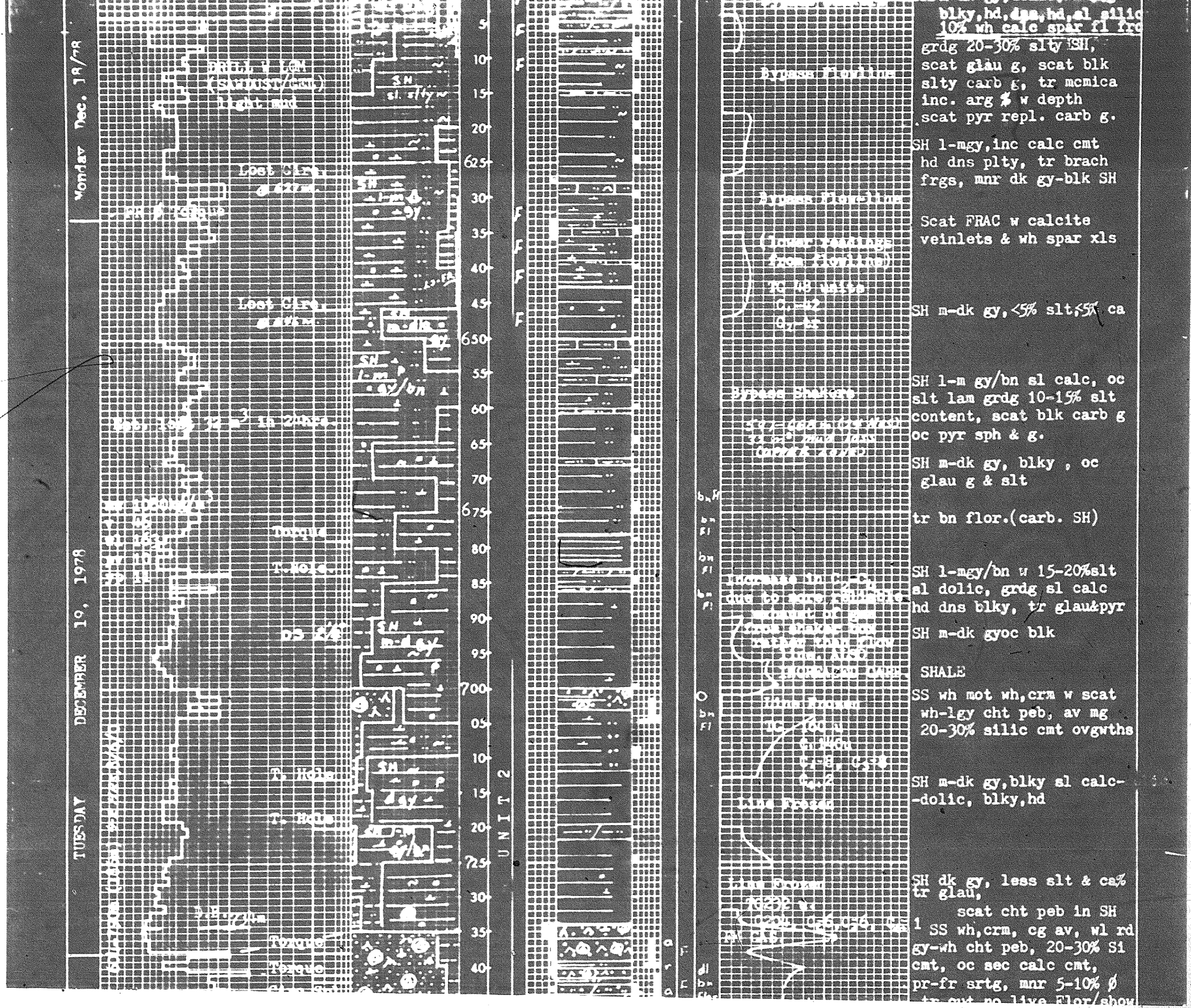

5-15m discrepency
between sample &
schlumberger depths,
(" error)
INTERPRETED LITHOLOGY
LOG corrected with
Density/Sonic/Gamma
Logs (LD) corrected to
Driller's Depth (DD)
Sample Depth (DD)
Sonic/Gamma
corrected to
Driller's
Depth(DD)
ETTRAIN EQUIV.
UNIT 2 SHALE MBR
WEDNESDAY DECEMBER 13, 1978
DECEMBER 14,1978
12/15
16

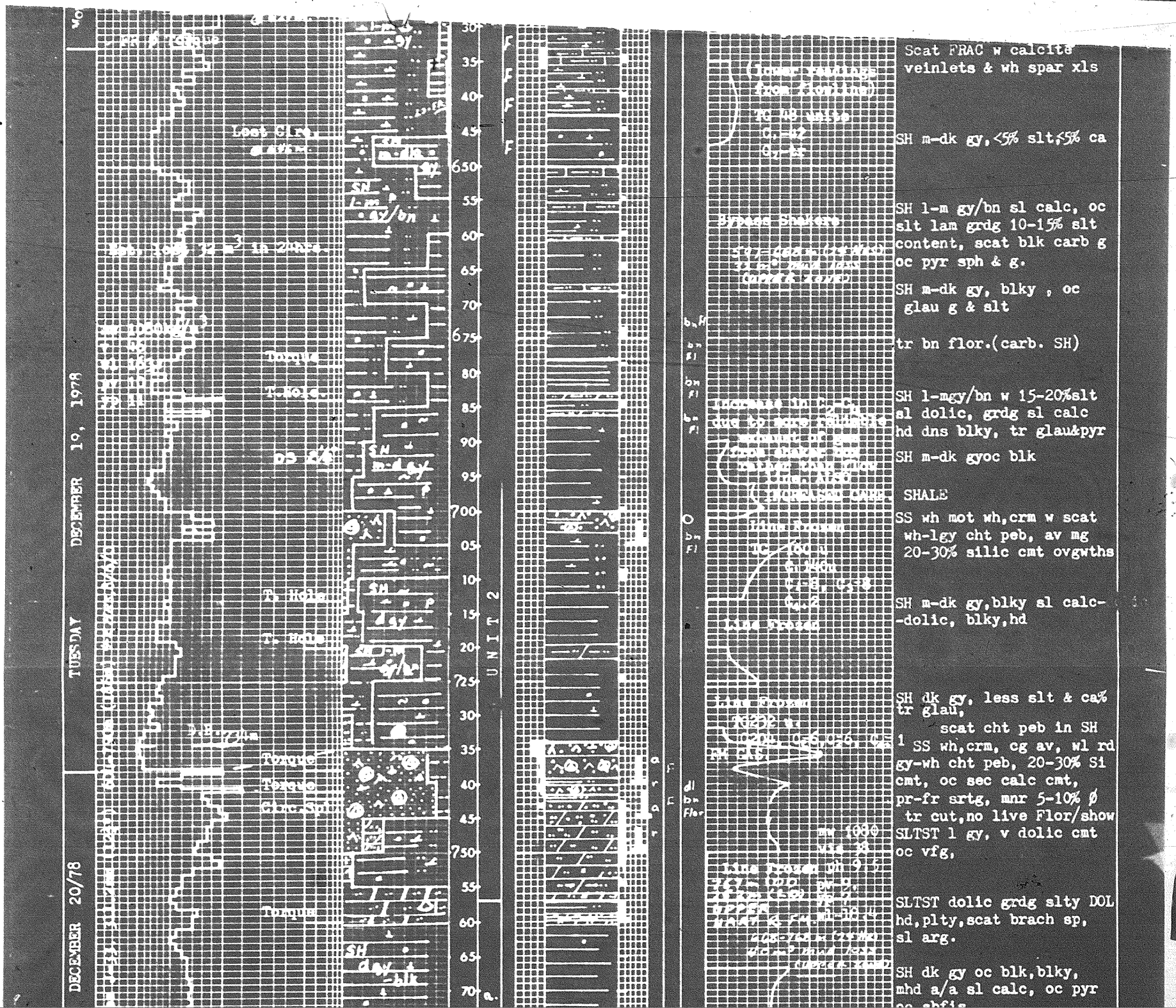


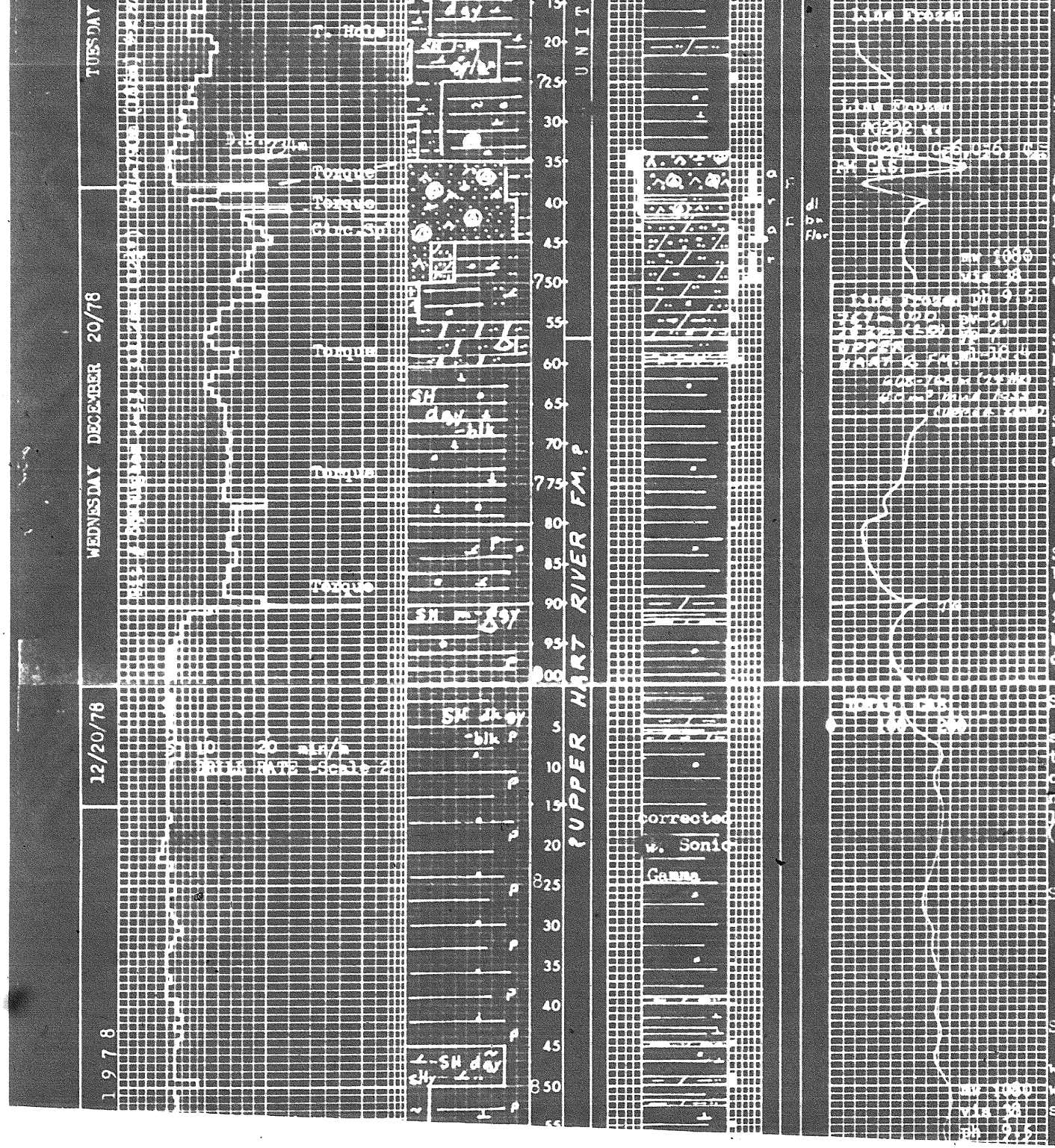
16 12/15
DECEMBER 14, 1978
WEDNESDAY DECEMBER 13, 1978
UNIT 2 SHALE MBR
ETTRAIN EQUIV.
5-15m discrepency
between sample &
(schlumberger depths, error)
INTERPRETED LITHOLOGY
LOG corrected with
Density/Sonic/Gamma
Logs (LD) corrected to
Driller's Depth (DD)
Sample Depth (DD)

WEDNESDAY
DECEMBER 14, 1978
12/15
16
12/17/78
Monday Dec. 18/78
UNIT 2 SHALE MBR
Lost Circ.
Lost Circ.
SH
sl. slty
SH
l-m
gy/bn
blk carb g, tr pyr. grdg
dk gy/brn v.arg SLTST
SS lam, wh/bf, -lgy, vfg grdg
slty, 20-30% dolic cmt,
tr glau, blk carb g,
LS wh/lbrn, slty coq. w scat
plyc sh frg, oc pyr, tr
pr Ø w dd oil stn, grdg
v sdy to 50% vfg SSg,
SLTST sl slty, l-mgy/brn,
5-15% arg%, dolic scat vfg
glau g. scat Ca-spar fld
FRAC & FRAC Ø (ca xls).
SLTST: cs slt, dolic, lgy/b
hd, plty oc Ca-cmt, scat c.
carb g.
LOGS INDICATE INCR.
ARG. % w. DEPTH.
INTBDS: SS slty-vfg, dolic
glau, & sl arg-v.arg SLTST
grdg sdy, dolic a/a
587-597 m (24 HR)
75 m³ mud loss.
m-dk gy, dolic, hd grg.
blky, hd, dns, hd, sl silic
10% wh calc spar fl frg
grdg 20-30% slty SH,
scat glau g, scat blk
slty carb g, tr mcmica
inc. arg % w depth
scat pyr repl. carb g.
SH l-mgy, inc calc cmt
hd dns plty, tr brach
frgs, mnr dk gy-blk SH
Scat FRAC w calcite
veinlets & wh spar xls
SH m-dk gy, <5% slt, <5% ca
SH l-m gy/bn sl calc, oc
slt lam grdg 10-15% slt
content, scat blk carb g
oc pyr sph & g.
SH m-dk gy, blky, oc
glau g & slt

3 0


TUESDAY DECEMBER 10, 1978
Monday Dec. 18/78
UNIT 2
SM
sl. slty
SM
m-dy
SM
m-dgy
SM
m-dgy
SM
m-dg


DECEMBER 20/78
TUESDAY DECEMBER 19, 1978
UNIT 2
Scat FRAC w calcite veinlets & wh spar xls
SH m-dk gy, <5% slt, <5% ca
SH l-m gy/bn sl calc, oc slt lam grdg 10-15% slt content, scat blk carb g oc pyr sph & g.
SH m-dk gy, blky , oc glau g & slt
tr bn flor.(carb. SH)
SH l-mgy/bn w 15-20%slt sl dolic, grdg sl calc hd dns blky, tr glau&pyr
SH m-dk gyoc blk
SHALE
SS wh mot wh,crm w scat wh-lgy cht peb, av mg 20-30% silic cmt ovgwths
SH m-dk gy,blky sl calc--dolic, blky,hd
SH dk gy, less slt & ca% tr glau,
scat cht peb in SH
1 SS wh,crm, cg av, wl rd gy-wh cht peb, 20-30% Si cmt, oc sec calc cmt, pr-fr srtg, mnr 5-10% ø tr cut,no live Flor/show
SLTST l gy, v dolic cmt oc vfg,
SLTST dolic grdg slty DOL hd,plty,scat brach sp, sl arg.
SH dk gy oc blk,blky, mhd a/a sl calc, oc pyr



-dolic, blky, hd

SH dk gy, less slt & ca%
tr glau,
scat cht peb in SH
1 SS wh, crm, cg av, wl rd
gy-wh cht peb, 20-30% Si
cmt, oc sec calc cmt,
pr-fr srtg, mnr 5-10% ø
tr cut, no live Flor/show
SLTST l gy, v dolic cmt
oc vfg,

SLTST dolic grdg slty DOL
hd, plty, scat brach sp,
sl arg.

SH dk gy oc blk, blky,
mhd a/a sl calc, oc pyr
oc sbfis,

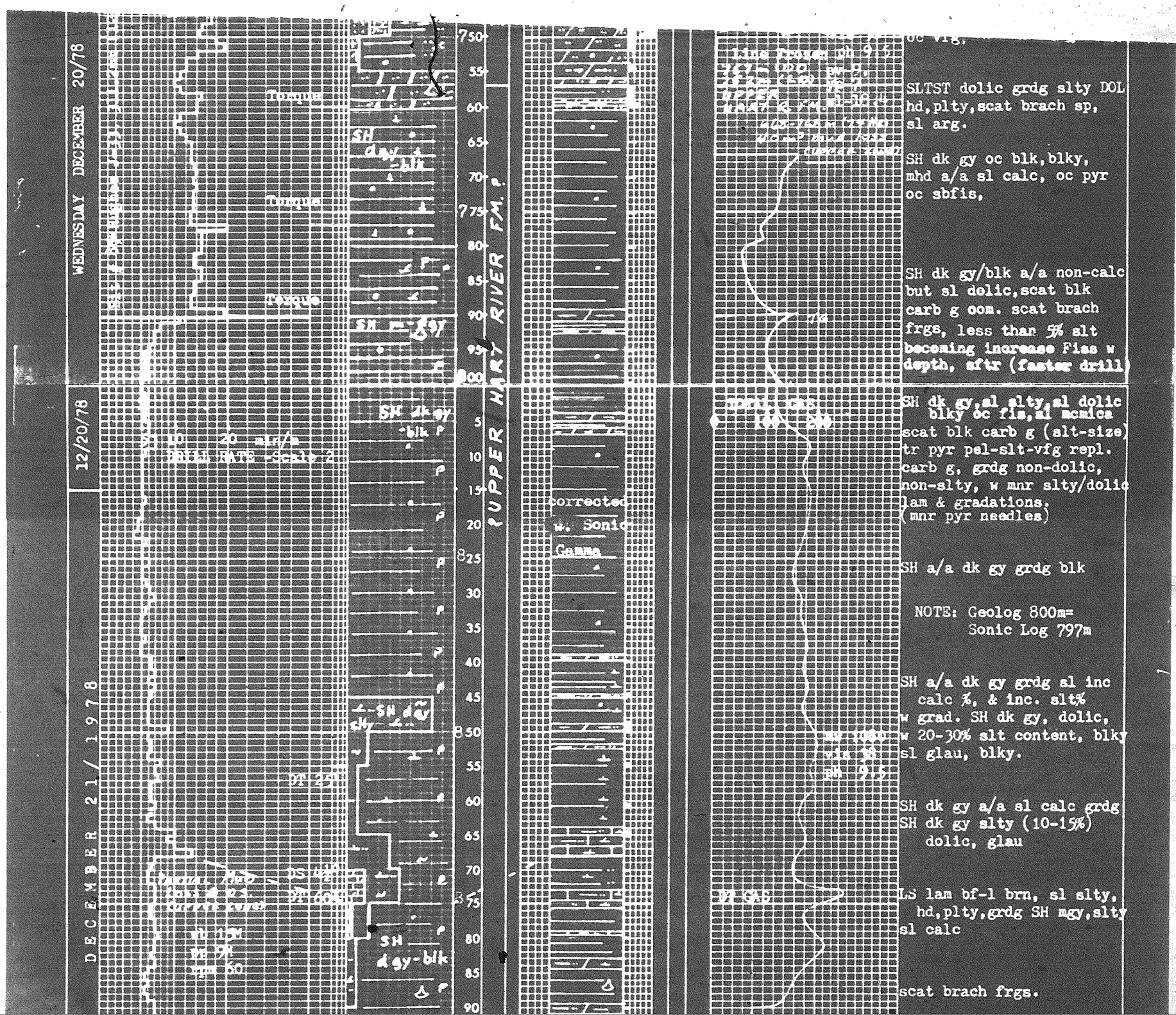
SH dk gy/blk a/a non-calc
but sl dolic, scat blk
carb g com. scat brach
frgs, less than 5% slt
becoming increase Fiss w
depth, sftr (faster drill)

SH dk gy, sl slty, sl dolic
blky oc fis, sl mcmica
scat blk carb g (slt-size)
tr pyr pel-slt-vfg repl.
carb g. grdg non-dolic,
non-slty, w mnr slty/dolic
lam & gradations.
(mnr pyr needles)

SH a/a dk gy grdg blk

NOTE: Geolog 800m=
Sonic Log 797m

SH a/a dk gy grdg sl inc
calc %, & inc. slt%
w grad. SH dk gy, dolic,
w 20-30% slt content, blky
sl glau, blky.


WEDNESDAY DECEMBER 20/78
12/20/78
DECEMBER 21/1978
Torque
Torque
Torque
SH dgy-blk
SH dk gy-blk
SH dgy-blk
SH dgy-blk
750
55
60
65
70
775
80
85
90
95
800
5
10
15
20
825
30
35
40
45
850
55
60
65
70
75
80
85
90
UPPER HART RIVER FM. P.
corrected
w. Sonic
Gamma
oc vfg,
SLTST dolic grdg slty DOL hd,plty,scat brach sp, sl arg.
SH dk gy oc blk,blky, mhd a/a sl calc, oc pyr oc sbfis,
SH dk gy/blk a/a non-calc but sl dolic,scat blk carb g oom. scat brach frgs, less than 5% slt becoming increase Fiss w depth, sftr (faster drill)
SH dk gy,sl slty,sl dolic blky oc fis,sl mcmica scat blk carb g (slt-size) tr pyr pel-slt-vfg repl. carb g, grdg non-dolic, non-slty, w mnr slty/dolic lam & gradations. (mnr pyr needles)
SH a/a dk gy grdg blk
NOTE: Geolog 800m= Sonic Log 797m
SH a/a dk gy grdg sl inc calc %, & inc. slt% w grad. SH dk gy, dolic, w 20-30% slt content, blky sl glau, blky.
SH dk gy a/a sl calc grdg SH dk gy slty (10-15%) dolic, glau
LS lam bf-l brn, sl slty, hd,plty,grdg SH mgy,slty sl calc
scat brach frgs.

5%

NOTE: Geolog 800m=
Sonic Log 797m

SH a/a dk gy grdg sl inc calc %, & inc. slt% w grad. SH dk gy, dolic, w 20-30% slt content, blky sl glau, blky.

SH dk gy a/a sl calc grdg
SH dk gy slty (10-15%) dolic, glau

LS lam bf-l brn, sl slty, hd, plty, grdg SH mgy, slty sl calc

scat brach frgs.

SH dk gy-blk, sl slty, dolic blky, carb, scat cs slt & cs slt glau g, tr pyr pel & needles.
LS: bf, lbn, mcxln-sl dolic plty, arg, grdg calc cs slt

SH mgy, slty & calc grdg arg LS lam,

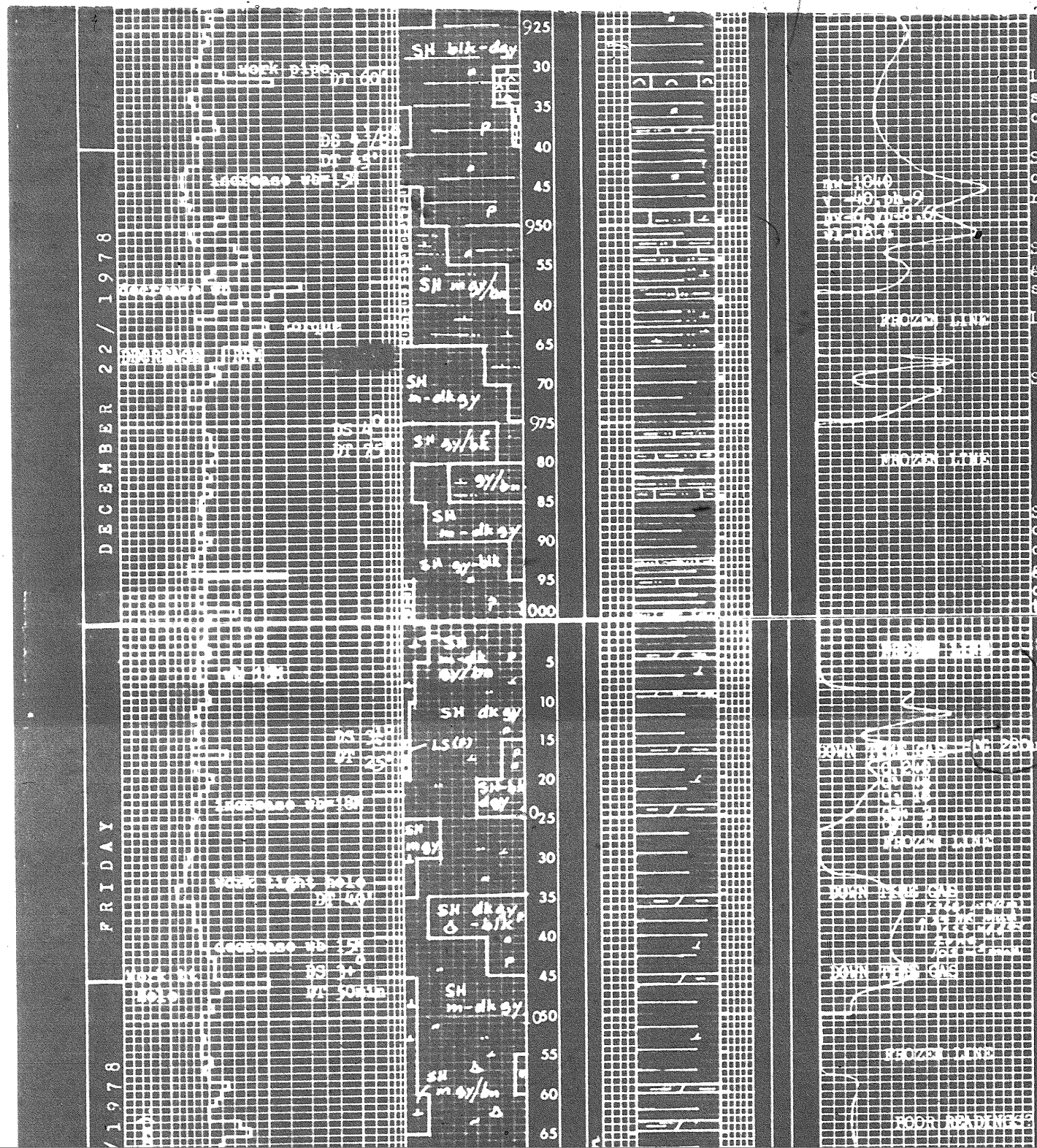
LS wh-bf, bioclastic, oc slty, biosparite oc grdg calc. sltst, crin.

SH blk oc dk gy, blky carb oc slty, scat slty pyr g, repl. carb g.

SH m gy/bn, mgy, calcar grdg arg LS, sl slty & doli scat glau,

LS lam l gy, arg, slty, glau slt to 1%,

SH dk gy-blk, sl calc, blky a/a



LS wh-bf, bioclastic, oc slty, biosparite oc grdg calc. sltst, crin.

SH blk oc dk gy, blky carb oc slty, scat slty pyr g, repl. carb g.

SH m gy/bn, mgy, calcar grdg arg LS, sl slty & doli scat glau,

LS lam l gy, arg, slty, glau slt to 15%,

SH dk gy-blk, sl calc, blky a/a

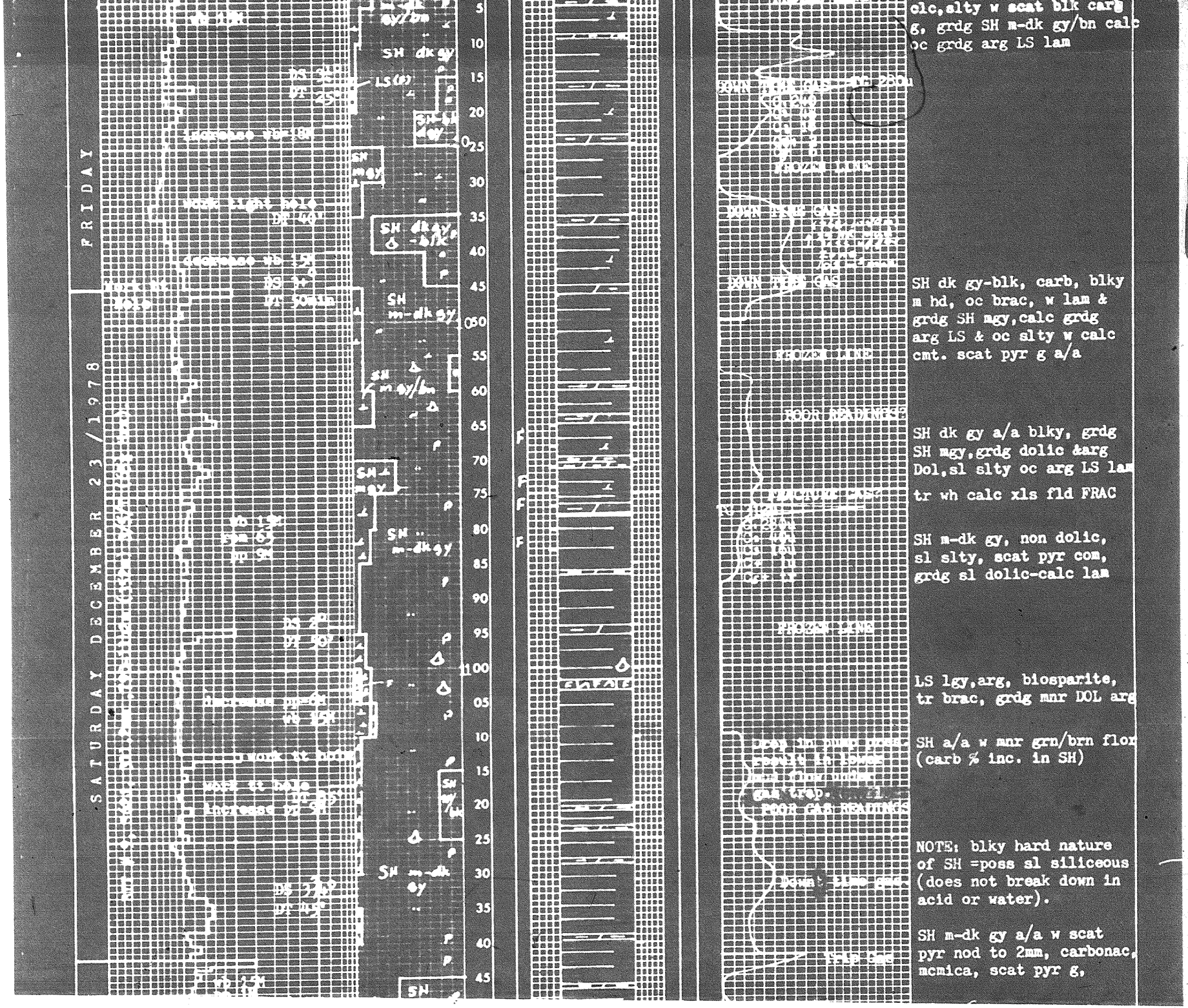
SH m-dk gy, & gy/brn, sl calc, sl slty, w scat pyr com repl slty carb g, tr glau & carb g, w lam calc SH grdg slty arg LS tr dl brn flor (min).

SH dk gy a/a blky sl clc, slty w scat blk carb g, grdg SH m-dk gy/bn calc oc grdg arg LS lam

SH dk gy-blk, carb, blky m hd, oc brac, w lam & grdg SH mgy, calc grdg arg LS & oc slty w calc cmt. scat pyr g a/a

SH dk gy a/a blky, grdg

6 o/-



clc,slty w scat blk carb g, grdg SH m-dk gy/bn calc oc grdg arg LS lam

SH dk gy-blk, carb, blky m hd, oc brac, w lam & grdg SH mgy,calc grdg arg LS & oc slty w calc cmt. scat pyr g a/a

SH dk gy a/a blky, grdg SH mgy,grdg dolic &arg Dol,sl slty oc arg LS lam

tr wh calc xls fld FRAC

SH m-dk gy, non dolic, sl slty, scat pyr com, grdg sl dolic-calc lam

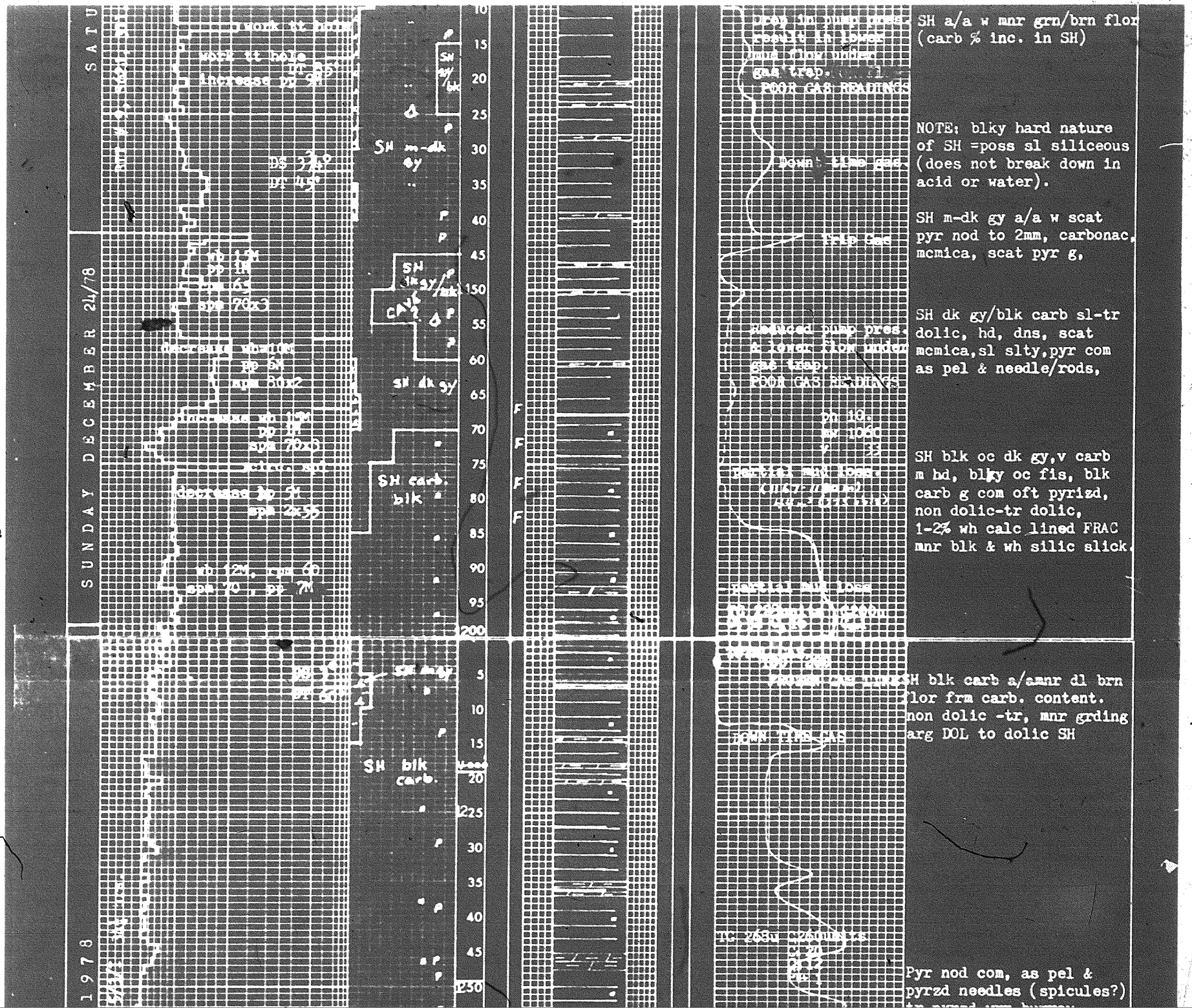
LS lgy,arg, biosparite, tr brac, grdg mnr DOL arg

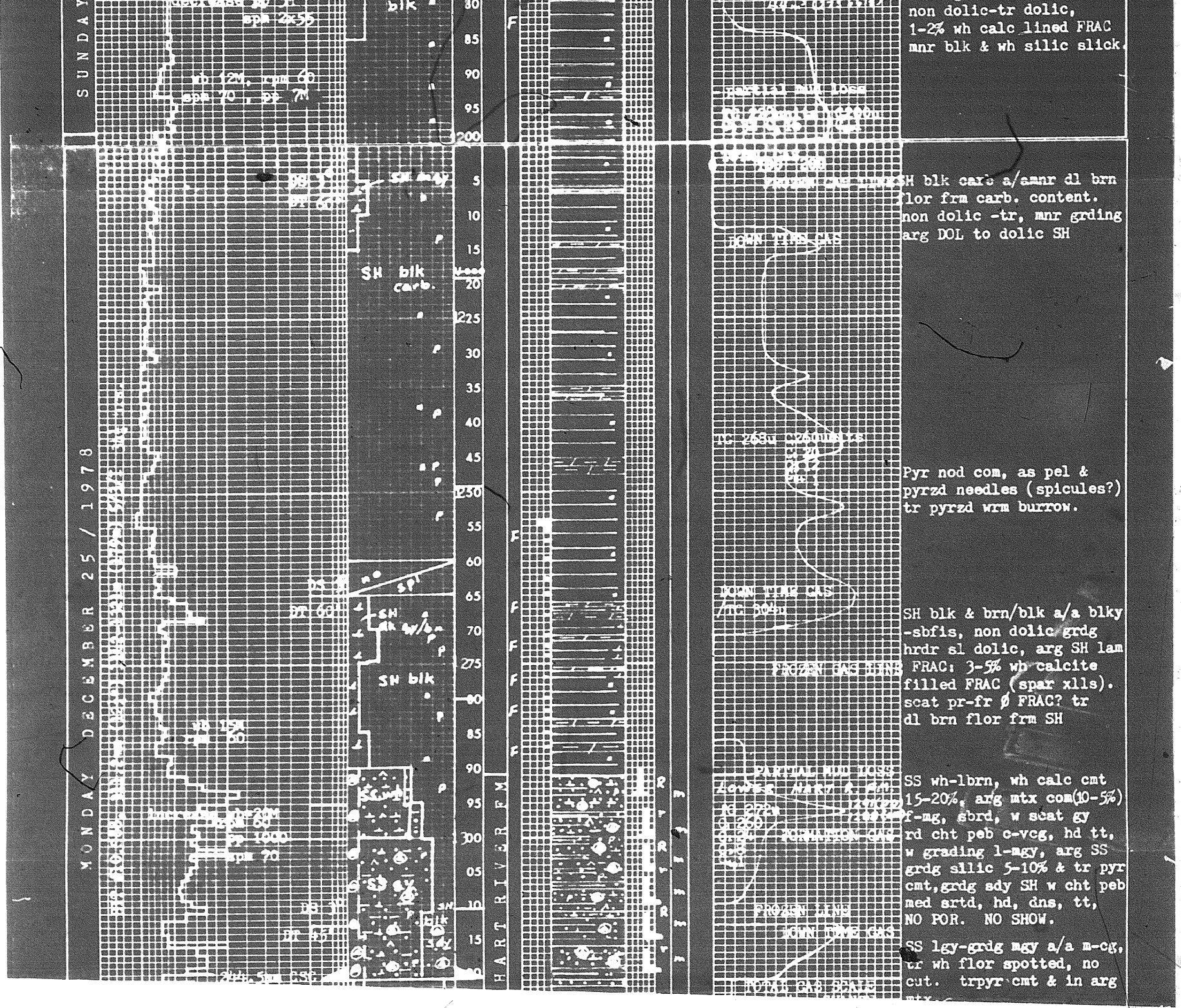
SH a/a w mnr grn/brn flor (carb % inc. in SH)

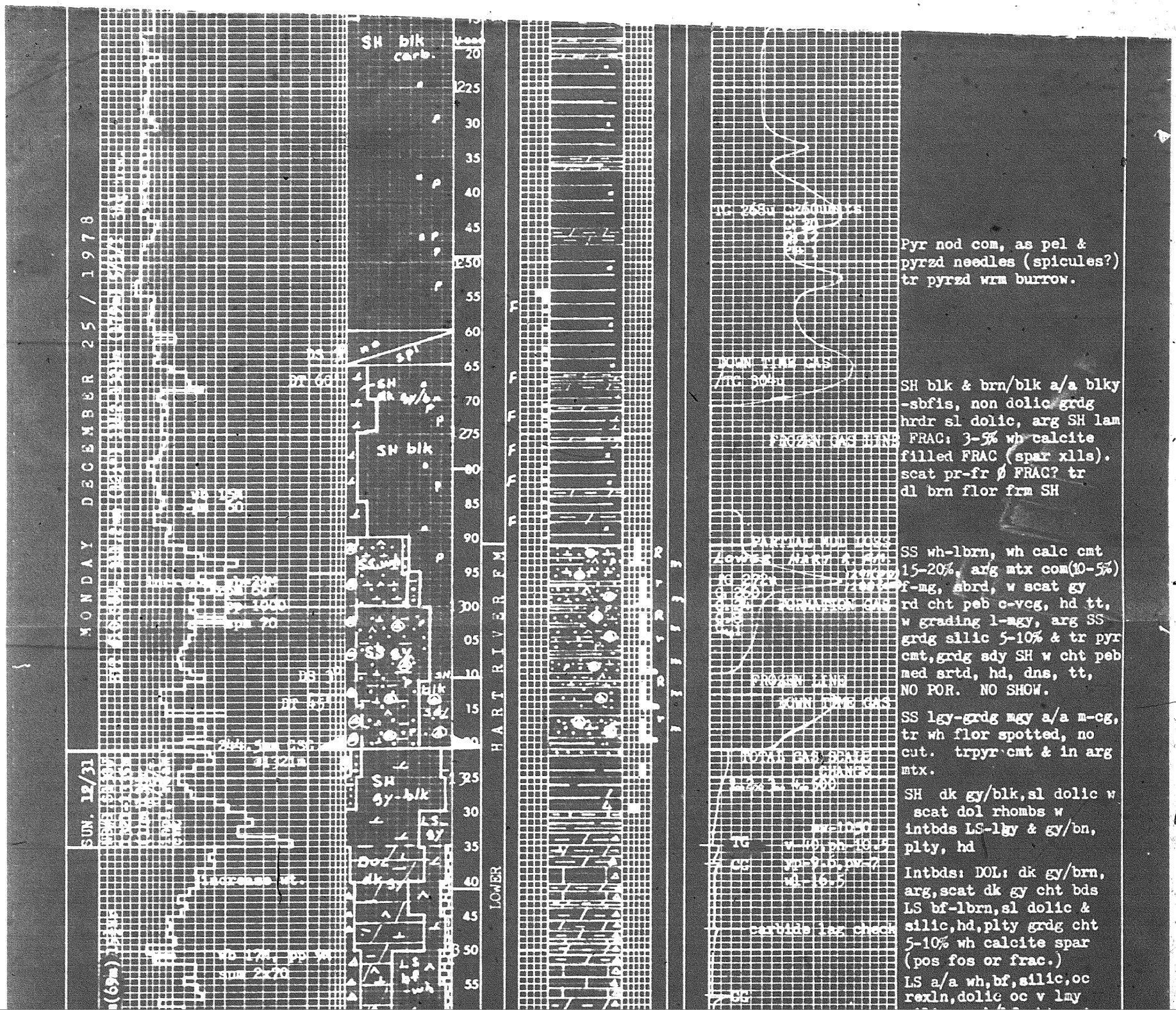
NOTE: blky hard nature of SH =poss sl siliceous (does not break down in acid or water).

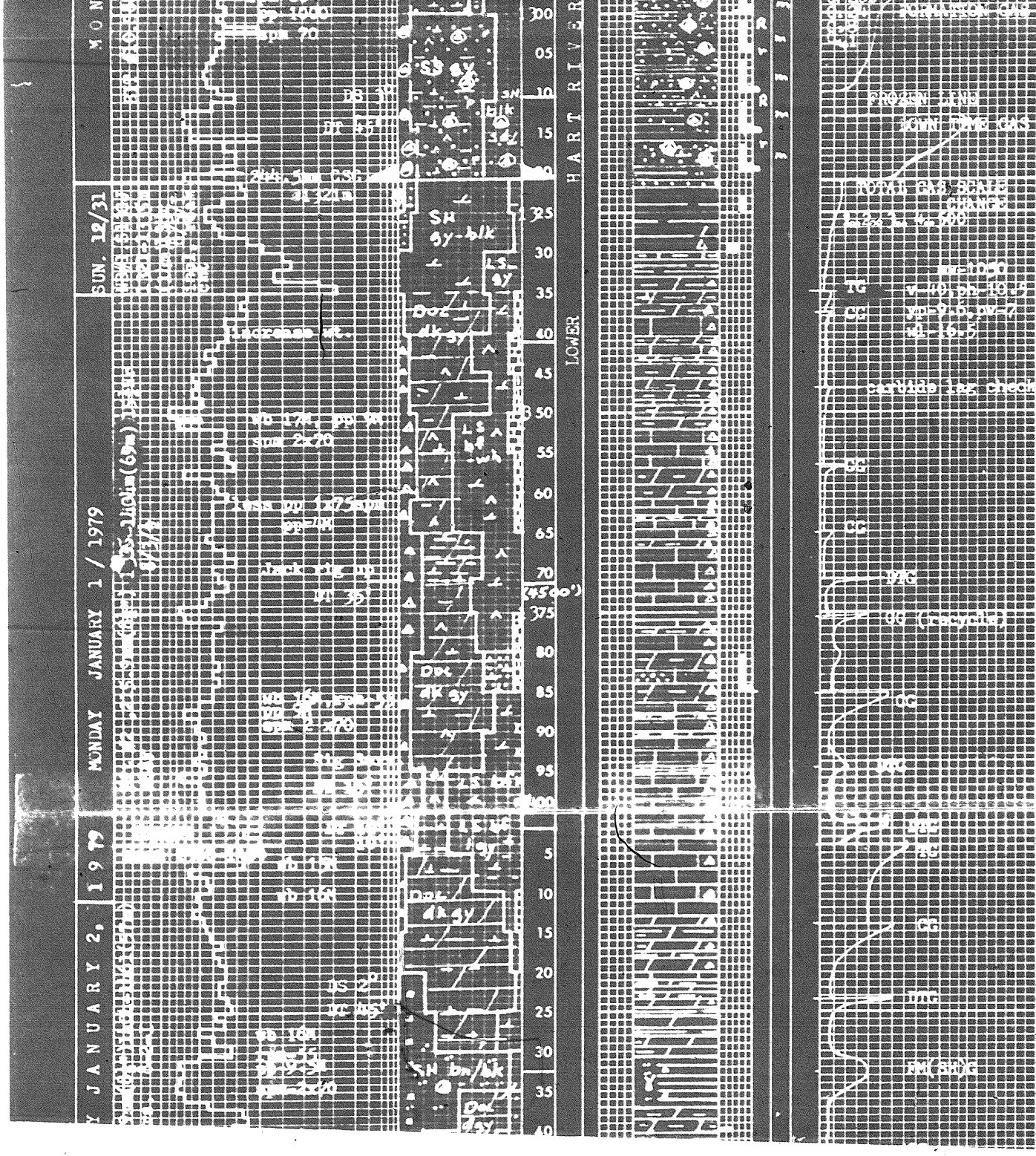
SH m-dk gy a/a w scat pyr nod to 2mm, carbonac, mcmica, scat pyr g,

60/-


SATU
SUNDAY DECEMBER 24/78
1978
SH m-dk gy
SH dk gy/blk carb
SH dk gy
SH carb. blk
SH blk carb.
SH a/a w mnr grn/brn flor (carb % inc. in SH)
NOTE: blky hard nature of SH =poss sl siliceous (does not break down in acid or water).
SH m-dk gy a/a w scat pyr nod to 2mm, carbonac, mcmica, scat pyr g,
SH dk gy/blk carb sl-tr dolic, hd, dns, scat mcmica, sl slty, pyr com as pel & needle/rods,
SH blk oc dk gy, v carb m hd, blky oc fis, blk carb g com oft pyrizd, non dolic-tr dolic, 1-2% wh calc lined FRAC mnr blk & wh silic slick.
SH blk carb a/amnr dl brn lor frm carb. content. non dolic -tr, mnr grding arg DOL to dolic SH
Pyr nod com, as pel & pyrzd needles (spicules?)


SUNDAY
MONDAY DECEMBER 25 / 1978
HART RIVER FM
SH blk carb.
SH blk
SH blk
non dolic-tr dolic,
1-2% wh calc lined FRAC
mnr blk & wh silic slick.
SH blk carb a/amnr dl brn
flor frm carb. content.
non dolic -tr, mnr grdng
arg DOL to dolic SH
Pyr nod com, as pel &
pyrzd needles (spicules?)
tr pyrzd wrm burrow.
SH blk & brn/blk a/a blky
-sbfis, non dolic grdg
hrdr sl dolic, arg SH lam
FRAC: 3-5% wh calcite
filled FRAC (spar xlls).
scat pr-fr Ø FRAC? tr
dl brn flor frm SH
SS wh-lbrn, wh calc cmt
15-20%, arg mtx com(10-5%)
f-mg, sbrd, w scat gy
rd cht peb c-vcg, hd tt,
w grading l-mgy, arg SS
grdg silic 5-10% & tr pyr
cmt,grdg sdy SH w cht peb
med srtd, hd, dns, tt,
NO POR. NO SHOW.
SS lgy-grdg mgy a/a m-cg,
tr wh flor spotted, no
cut. trpyr cmt & in arg


MONDAY DECEMBER 25 / 1978
SUN. 12/31
SH blk carb.
SH blk
SH dk gy/blk
SH gy-blk
Dol
LOWER HART RIVER FM
Pyr nod com, as pel & pyrzd needles (spicules?) tr pyrzd wrm burrow.
SH blk & brn/blk a/a blky -sbfis, non dolic grdg hrdr sl dolic, arg SH lam FRAC: 3-5% wh calcite filled FRAC (spar xlls). scat pr-fr Ø FRAC? tr dl brn flor frm SH
SS wh-lbrn, wh calc cmt 15-20%, arg mtx com(10-5%) f-mg, sbrd, w scat gy rd cht peb c-vcg, hd tt, w grading l-mgy, arg SS grdg silic 5-10% & tr pyr cmt, grdg sdy SH w cht peb med srtd, hd, dns, tt, NO POR. NO SHOW.
SS lgy-grdg mgy a/a m-cg, tr wh flor spotted, no cut. trpyr cmt & in arg mtx.
SH dk gy/blk, sl dolic w scat dol rhombs w intbds LS-lgy & gy/brn, plty, hd
Intbds: DOL: dk gy/brn, arg, scat dk gy cht bds LS bf-lbrn, sl dolic & silic, hd, plty grdg cht 5-10% wh calcite spar (pos fos or frac.)
LS a/a wh, bf, silic, oc rexln, dolic oc v lmy



rd cht peb c-vcg, hd tt, w grading l-mgy, arg SS grdg silic 5-10% & tr pyr cmt, grdg sdy SH w cht peb med srtd, hd, dns, tt, NO POR. NO SHOW.

SS lgy-grdg mgy a/a m-cg, tr wh flor spotted, no cut. trpyr cmt & in arg mtx.

SH dk gy/blk, sl dolic w scat dol rhombs w intbds LS-lgy & gy/bn, plty, hd

Intbds: DOL: dk gy/brn, arg, scat dk gy cht bds LS bf-lbrn, sl dolic & silic, hd, plty grdg cht 5-10% wh calcite spar (pos fos or frac.)

LS a/a wh, bf, silic, oc rexln, dolic oc v lmy silic w wh/bf cht nod

DOL a/a grdg v arg, grdg arg LS
CHT sl incr, lam & nod oc spotted, bf &dk brn

SS wh, m-cg, w l & Dk CHT g, 20-30% wh calc cmt mnr arg mtx & silic cmt

DOL dk gy & gy/brn, arg, silic, hd, dns,

LS bf-lbrn, rexln, scatcht

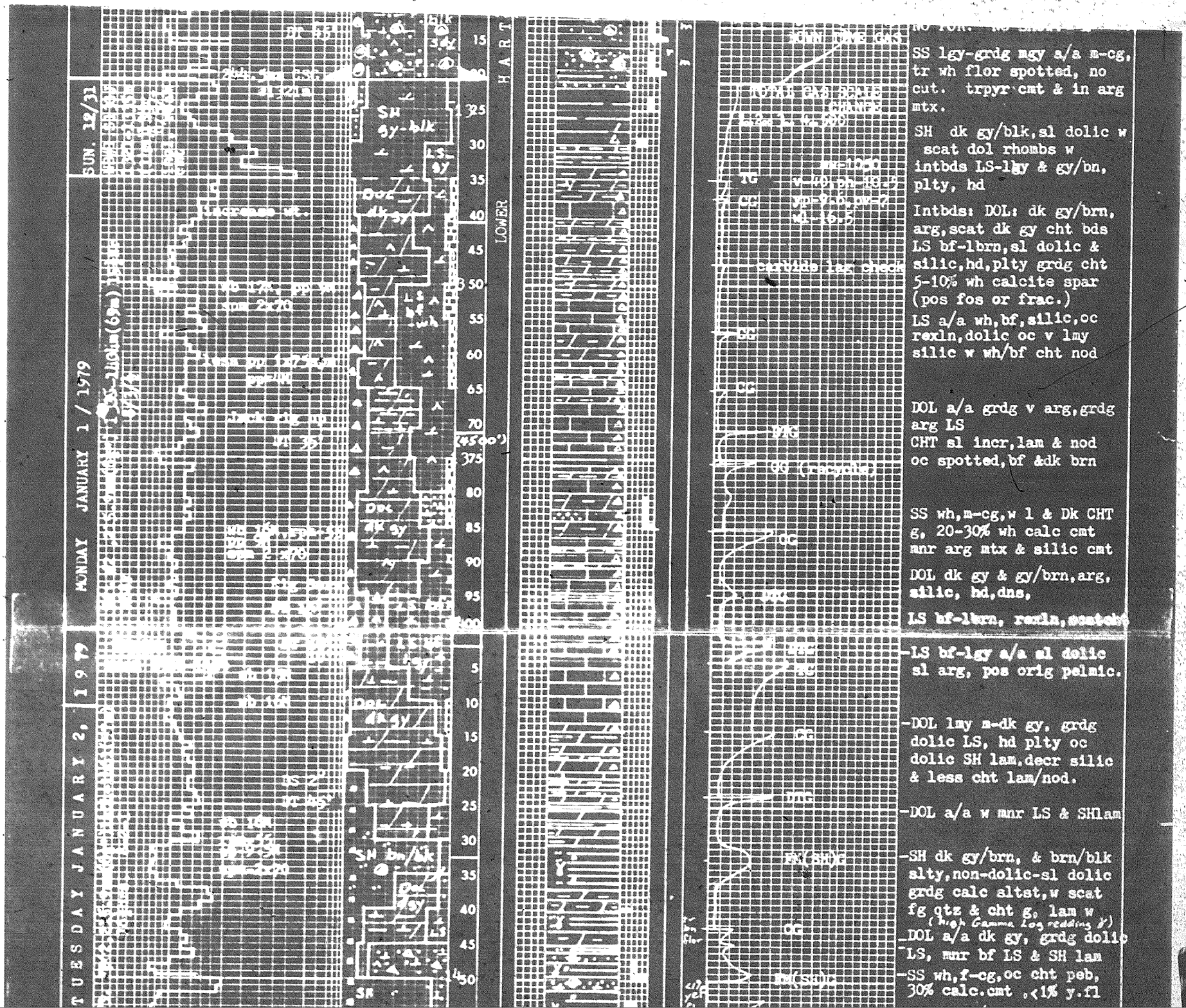
-LS bf-lgy a/a sl dolic sl arg, pos orig pelmic.

-DOL lmy m-dk gy, grdg dolic LS, hd plty oc dolic SH lam, decr silic & less cht lam/nod.

-DOL a/a w mnr LS & SHlam

-SH dk gy/brn, & brn/blk slty, non-dolic-sl dolic grdg calc sltst, w scat fg qtz & cht g, lam w
(high Gamma Log redding γ)

8


SUN. 12/31
MONDAY JANUARY 1 / 1979
TUESDAY JANUARY 2, 1979
HART
LOWER
SH gy-blk
Dol dk gy
Dol dk gy
Dol dk gy
SH bn/blk
Dol dk gy
SS lgy-grdg mgy a/a m-cg, tr wh flor spotted, no cut. trpyr cmt & in arg mtx.
SH dk gy/blk,sl dolic w scat dol rhombs w intbds LS-lgy & gy/bn, plty, hd
Intbds: DOL: dk gy/brn, arg,scat dk gy cht bds LS bf-lbrn,sl dolic & silic,hd,plty grdg cht 5-10% wh calcite spar (pos fos or frac.)
LS a/a wh,bf,silic,oc rexln,dolic oc v lmy silic w wh/bf cht nod
DOL a/a grdg v arg,grdg arg LS
CHT sl incr,lam & nod oc spotted,bf &dk brn
SS wh,m-cg,w l & Dk CHT g, 20-30% wh calc cmt mnr arg mtx & silic cmt
DOL dk gy & gy/brn,arg, silic, hd,dns,
LS bf-lbrn, rexln,
-LS bf-lgy a/a sl dolic sl arg, pos orig pelmic.
-DOL lmy m-dk gy, grdg dolic LS, hd plty oc dolic SH lam,decr silic & less cht lam/nod.
-DOL a/a w mnr LS & SHlam
-SH dk gy/brn, & brn/blk slty,non-dolic-sl dolic grdg calc sltst,w scat fg qtz & cht g, lam w
(high Gamma log reading)
-DOL a/a dk gy, grdg dolic
-LS, mnr bf LS & SH lam
-SS wh,f-cg,oc cht peb, 30% calc.cmt ,<1% y.fl

WEDNESDAY JANUARY 3/ 1979 | TUESDAY JANUARY 2, 19

RT RIVER FORMATION (BIRCH MBR.)

-LS bf-lgy n/a sl dolic sl arg, pos orig pelmic.

-DOL lay m-dk gy, grdg dolic LS, hd plty oc dolic SH lam,decr sltic & less cht lam/nod.

-DOL a/a w mnr LS & SHlam

-SH dk gy/brn, & brn/blk alty,non-dolic-sl dolic grdg calc sltst,w scat fg qtz & cht g, lam w gy

-DOL a/a dk gy, grdg dolic

-LS, mnr bf LS & SH lam

-SS wh,f-cg,oc cht peb, 30% calc.cmt ,<1% y.fl

-SH dk gy/brn,carbal alty

-SS wh, chty(40-60% cht g) m-cg lncr w depth, scat c-vcg peb, 1-2mm com, 20-30% calc cmt sl rodln w tr ø, tr yel flor,tr ct,pr perm. oc stn? TT

-SH gy,slt-vfg arg mtx (20-30%) &5-10%sil cmt SS wh w calc cmt,grdg finer arg SS w sil/arg

-LS l-mgy,sl dolic,sl arg w ex eff in acid,grdg dk gy,spotted wh,oc sdy-alty,w mnr SH lam & mnr

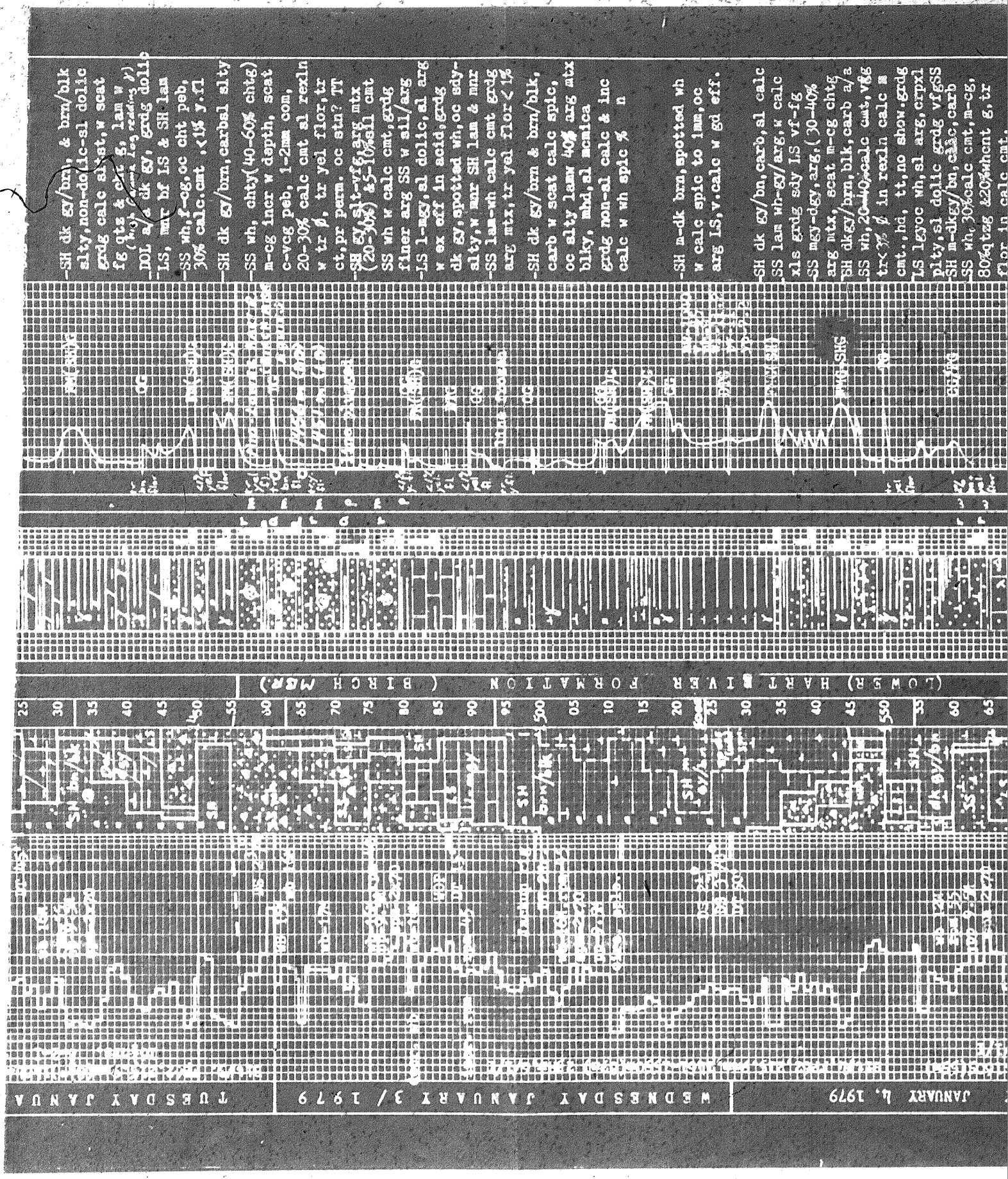
-SS lam-wh calc cmt grdg arg mtx,tr yel flor < 1%

-SH dk gy/brn & brn/blk, carb w scat calc spic, oc alty lamw 40% arg mtx blky, mhd,sl mcaica grdg non-sl calc & inc calc w wh spic % n

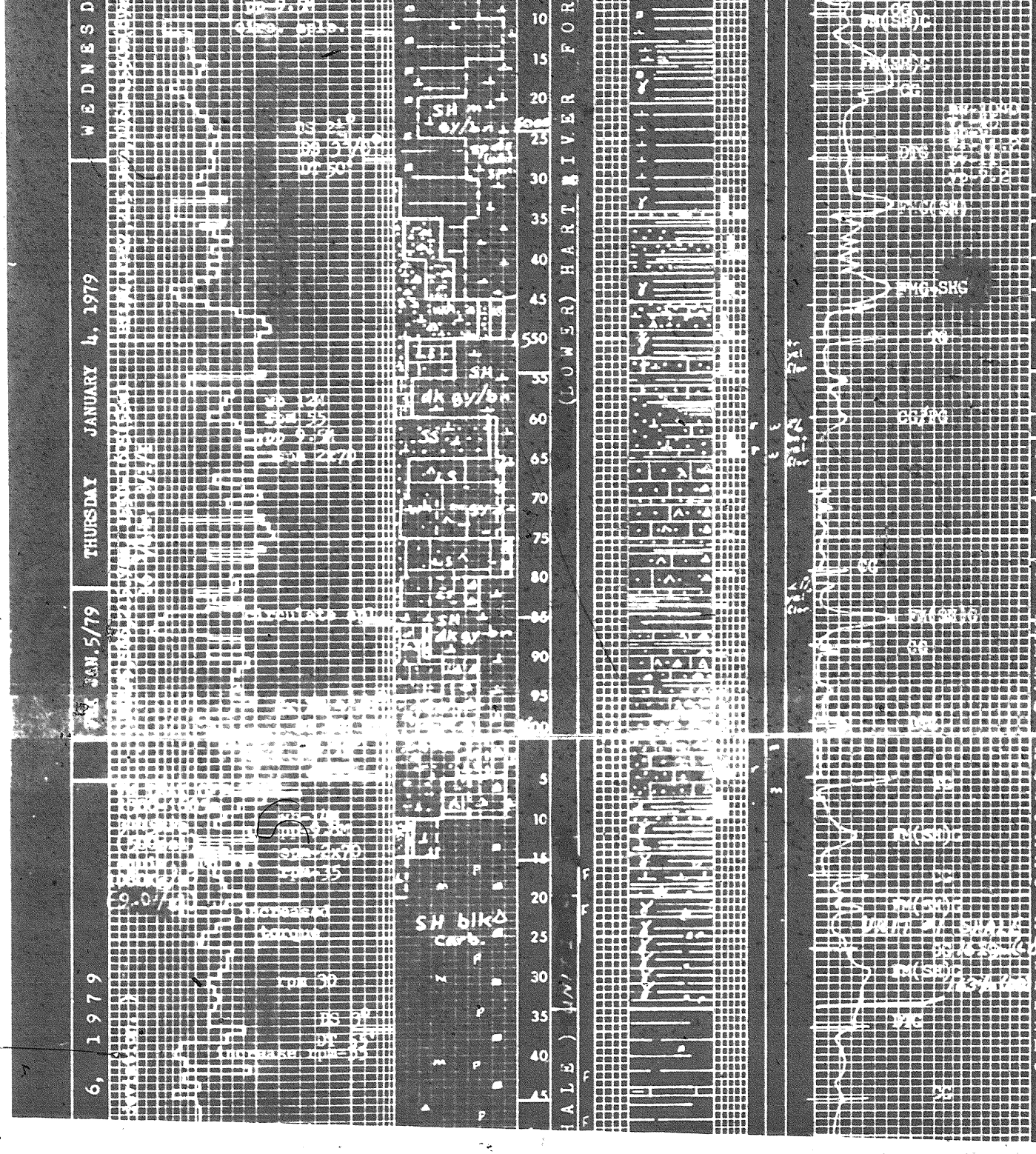
-SH m-dk brn,spotted wh w calc spic to lmm,oc arg LS,v.calc w gd eff.

-SH dk gy/bn,carb,sl calc

-SS lam wh-gy/arg,w calc



-SH dk gy/brn, & brn/blk
slty,non-dolic-sl dolic
grdg calc sltst,w scat
fg qtz & cht g, lam w
(high Gamma log reading γ)
-DOL a/a dk gy, grdg dolic
-LS, mnr bf LS & SH lam
-SS wh,f-cg,oc cht peb,
30% calc.cmt ,<1% y.fl
-SH dk gy/brn,carbsl slty
-SS wh, chty(40-60% chtg)
m-cg incr w depth, scat
c-vcg peb, 1-2mm com,
20-30% calc cmt sl rexln
w tr ø, tr yel flor,tr
ct,pr perm. oc stn? TT
-SH gy,slt-vfg,arg mtx
(20-30%) &5-10%sil cmt
SS wh w calc cmt,grdg
finer arg SS w sil/arg
-LS l-mgy,sl dolic,sl arg
w ex eff in acid,grdg
dk gy,spotted wh,oc sdy-
slty,w mnr SH lam & mnr
-SS lam-wh calc cmt grdg
arg mtx,tr yel flor < 1%
-SH dk gy/brn & brn/blk,
carb w scat calc spic,
oc slty lamw 40% arg mtx
blky, mhd,sl mcmica
grdg non-sl calc & inc
calc w wh spic % n
-SH m-dk brn,spotted wh
w calc spic to 1mm,oc
arg LS,v.calc w gd eff.
-SH dk gy/bn,carb,sl calc
-SS lam wh-gy/arg,w calc
xls grdg sdy LS vf-fg
-SS mgy-dgy,arg,(30-40%
arg mtx, scat m-cg chtg
-SH dkgy/brn,blk,carb a/a
-SS wh,20-40%calc cmt,vfg
tr<3% ø in rexln calc m
cmt.,hd, tt,no show.grdg
-LS lgyoc wh,sl arg,crpxl
plty,sl dolic grdg vfgSS
-SH m-dkgy/bn,calc,carb
-SS wh,30%calc cmt,m-cg,
80%qtzg &20%whcnt g,tr
flor in calc cmt.
(LOWER) HART RIVER FORMATION (BIRCH MBR.)
25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 500 05 10 15 20 25 30 35 40 45 550 55 60 65
TUESDAY JANUA
WEDNESDAY JANUARY 3/ 1979
JANUARY 4, 1979



grdg non-sl calc & inc
calc w wh spic % n

-SH m-dk brn, spotted wh
w calc spic to 1mm, oc
arg LS, v.calc w gd eff.

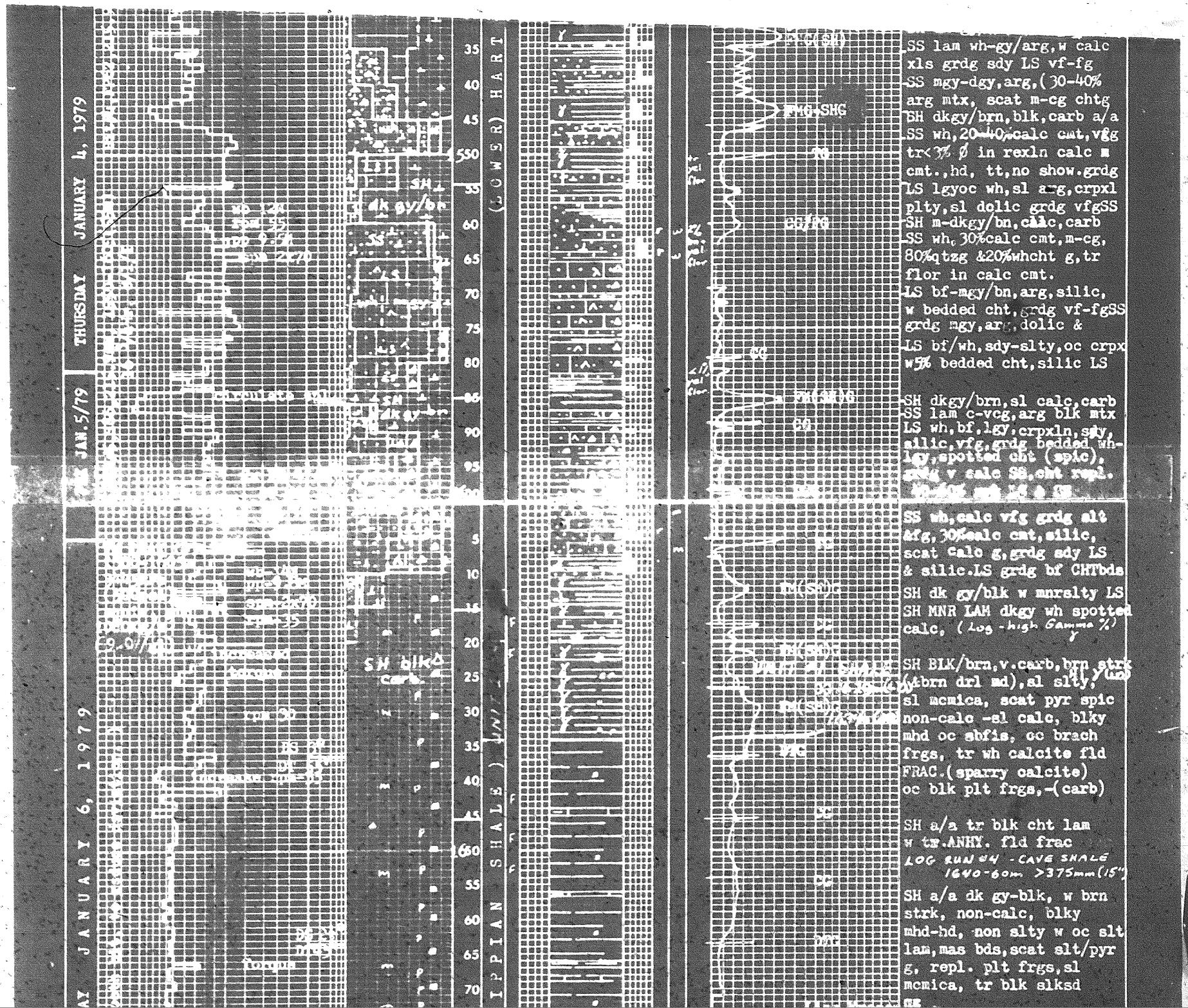
-SH dk gy/bn, carb, sl calc
SS lam wh-gy/arg, w calc
xls grdg sdy LS vf-fg
SS mgy-dgy, arg, (30-40%
arg mtx, scat m-cg chtg
SH dkgy/brn, blk, carb a/a
SS wh, 20-40% calc cmt, vfg
tr<3% ∅ in rexln calc m
cmt., hd, tt, no show. grdg
LS lgyoc wh, sl arg, crpxl
plty, sl dolic grdg vfgSS
SH m-dkgy/bn, calc, carb
SS wh, 30% calc cmt, m-cg,
80% qtzg &20% whcnt g, tr
flor in calc cmt.
LS bf-mgy/bn, arg, silic,
w bedded cht, grdg vf-fgSS
grdg mgy, arg, dolic &
LS bf/wh, sdy-slty, oc crpx
w5% bedded cht, silic LS

SH dkgy/brn, sl calc, carb
SS lam c-vcg, arg blk mtx
LS wh, bf, lgy, crpxln, sdy,
silic, vfg, grdg bedded wh-
lgy, spotted cht (spic),
grdg v calc SS, cht repl.
[illegible] LS & SS

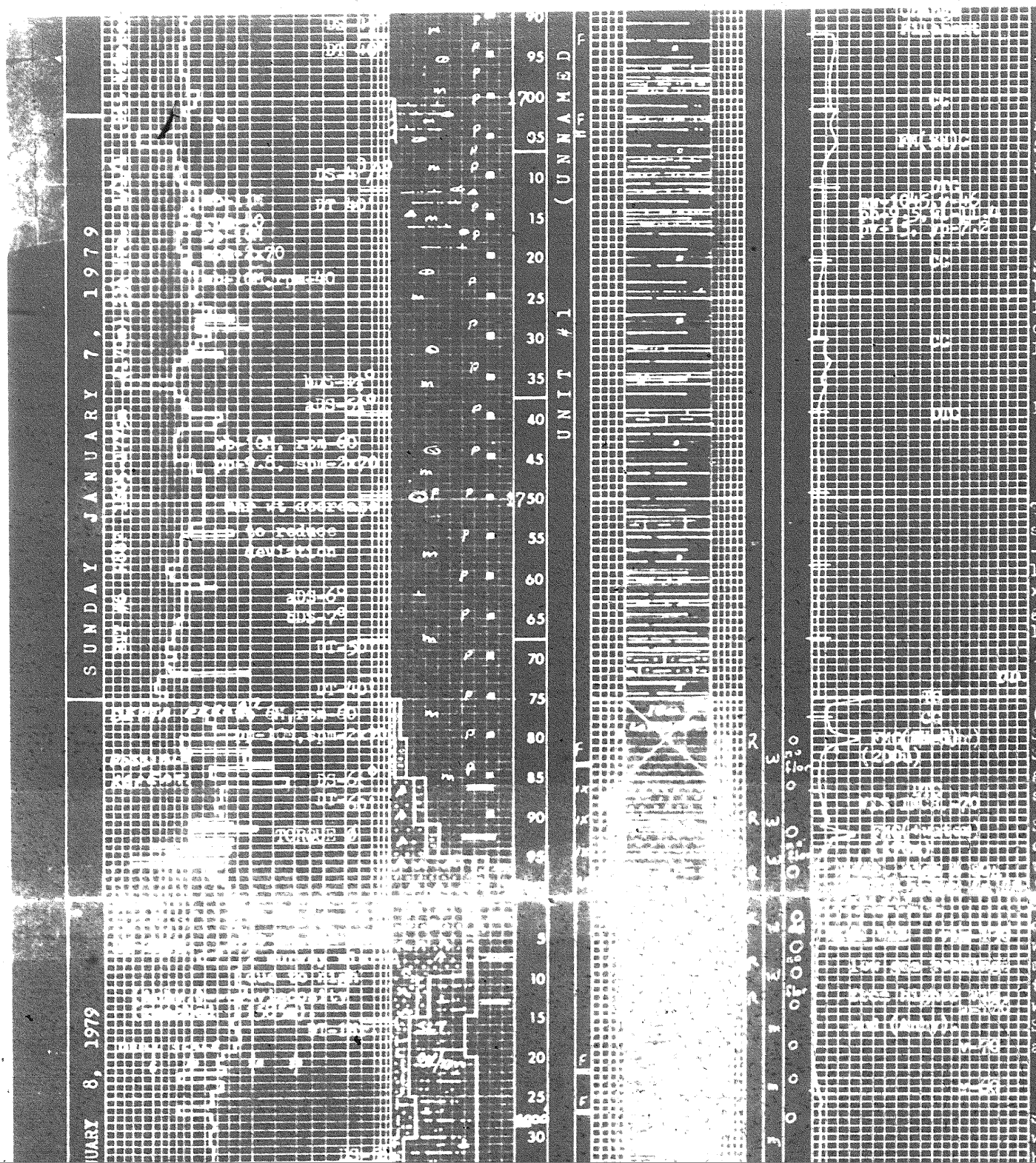
SS wh, calc vfg grdg slt
&fg, 30% calc cmt, silic,
scat calc g, grdg sdy LS
& silic. LS grdg bf CHTbds
SH dk gy/blk w mnrslty LS
SH MNR LAM dkgy wh spotted
calc, (Log - high Gamma %)

SH BLK/brn, v.carb, brn strk
(&brn drl md), sl slty,
sl mcmica, scat pyr spic
non-calc -sl calc, blky
mhd oc sbfis, oc brach
frgs, tr wh calcite fld
FRAC. (sparry calcite)
oc blk plt frgs, -(carb)

SH a/a tr blk cht lam
w tr. ANHY. fld frac


SAT JANUARY 6, 1979
JAN.5/79
THURSDAY JANUARY 4, 1979
(LOWER) HART
IPPIAN SHALE
SH blk carb
SH dk gy/brn
SS lam wh-gy/arg,w calc xls grdg sdy LS vf-fg
SS mgy-dgy,arg,(30-40% arg mtx, scat m-cg chtg
SH dkgy/brn,blk,carb a/a
SS wh,20-40%calc cmt,vfg tr<3% ø in rexln calc cmt.,hd, tt,no show.grdg
LS lgyoc wh,sl arg,crpxl plty,sl dolic grdg vfgSS
SH m-dkgy/bn,calc,carb
SS wh,30%calc cmt,m-cg, 80%qtzg &20%whcht g,tr flor in calc cmt.
LS bf-mgy/bn,arg,silic, w bedded cht,grdg vf-fgSS grdg mgy,arg,dolic &
LS bf/wh,sdy-slty,oc crpx w5% bedded cht,silic LS
SH dkgy/brn,sl calc,carb
SS lam c-vcg,arg blk mtx
LS wh,bf,lgy,crpxln,sdy, silic,vfg,grdg bedded wh-lgy,spotted cht (spic),
SS wh,calc vfg grdg slt &fg,30%calc cmt,silic, scat calc g,grdg sdy LS & silic.LS grdg bf CHTbds
SH dk gy/blk w mnrslty LS
SH MNR LAM dkgy wh spotted calc, (Log - high Gamma %)
SH BLK/brn,v.carb,brn strk (dk brn drl md),sl slty, sl mcmica, scat pyr spic non-calc -sl calc, blky mhd oc sbfis, oc brach frgs, tr wh calcite fld FRAC.(sparry calcite) oc blk plt frgs,-(carb)
SH a/a tr blk cht lam w tr.ANHY. fld frac
LOG RUN #4 - CAVE SHALE 1640-60m >375mm(15")
SH a/a dk gy-blk, w brn strk, non-calc, blky mhd-hd, non slty w oc slt lam,mas bds,scat slt/pyr g, repl. plt frgs,sl mcmica, tr blk slksd
11 of

SATURDAY JANUARY 6, 1979
JANUARY 7, 1979
UNIT #1 (UNNAMED MISSISSIPPIAN SHALE)
SH blk
SH MNR LAM dkgy wh spotted calc. (Log - high Gamma %)
SH BLK/brn,v.carb,brn strk (brn drl md),sl slty, sl mcmica, scat pyr spic non-calc -sl calc, blky mhd oc sbfis, oc brach frgs, tr wh calcite fld FRAC.(sparry calcite) oc blk plt frgs,-(carb)
SH a/a tr blk cht lam w tr.ANHY. fld frac
LOG RUN #4 - CAVE SHALE 1690-60m. >375mm(15")
SH a/a dk gy-blk, w brn strk, non-calc, blky mhd-hd, non slty w oc slt lam,mas bds,scat slt/pyr g, repl. plt frgs,sl mcmica, tr blk slksd
OR
SH a/a w increase in pyr nod-framboidal sph (disdem pyr), & increase in tr brn/gy,IRONSTONE cone. & lam.
tr wh Anhy. fld frac
mnr lam lbrn, & gy/brn SLTST calc,grdg slty LS
SH a/a w pyr sph com,
& tr calc sltst.
LOG RUN #4 - CAVE SHALE 1710-30m, 325-375 mm (13-15" hole
SH a/a becoming less blky & more sub-fis-fis, less pyr framboidal sph, decreasing slty lam,oc Irstn nod.
LOG RUN #4 - CAVE SHALE
LD:1710-30m, 325-375mm
DD:1715-35m (13-15")
SH a/a blk,carb,sbfis-fis sft-mhd,tr mcmica, non-s -slty,non-calc,scat pyr
11 of



tr wh Anhy. fld frac

mnr lam lbrn, & gy/brn
SLTST calc,grdg slty LS
SH a/a w pyr sph com,

& tr calc sltst.
LOG RUN #4 - CAVE SHALE
1710-30m, 325-375mm
(13-15") hole
SH a/a becoming less
blky & more sub-fis-fis,
less pyr framboidal sph,
decreasing slty lam,oc
Irstn nod.

LOG RUN #4 - CAVE SHALE
LD:1710-30m, 325-375mm
DD:1715-35m (13-15")

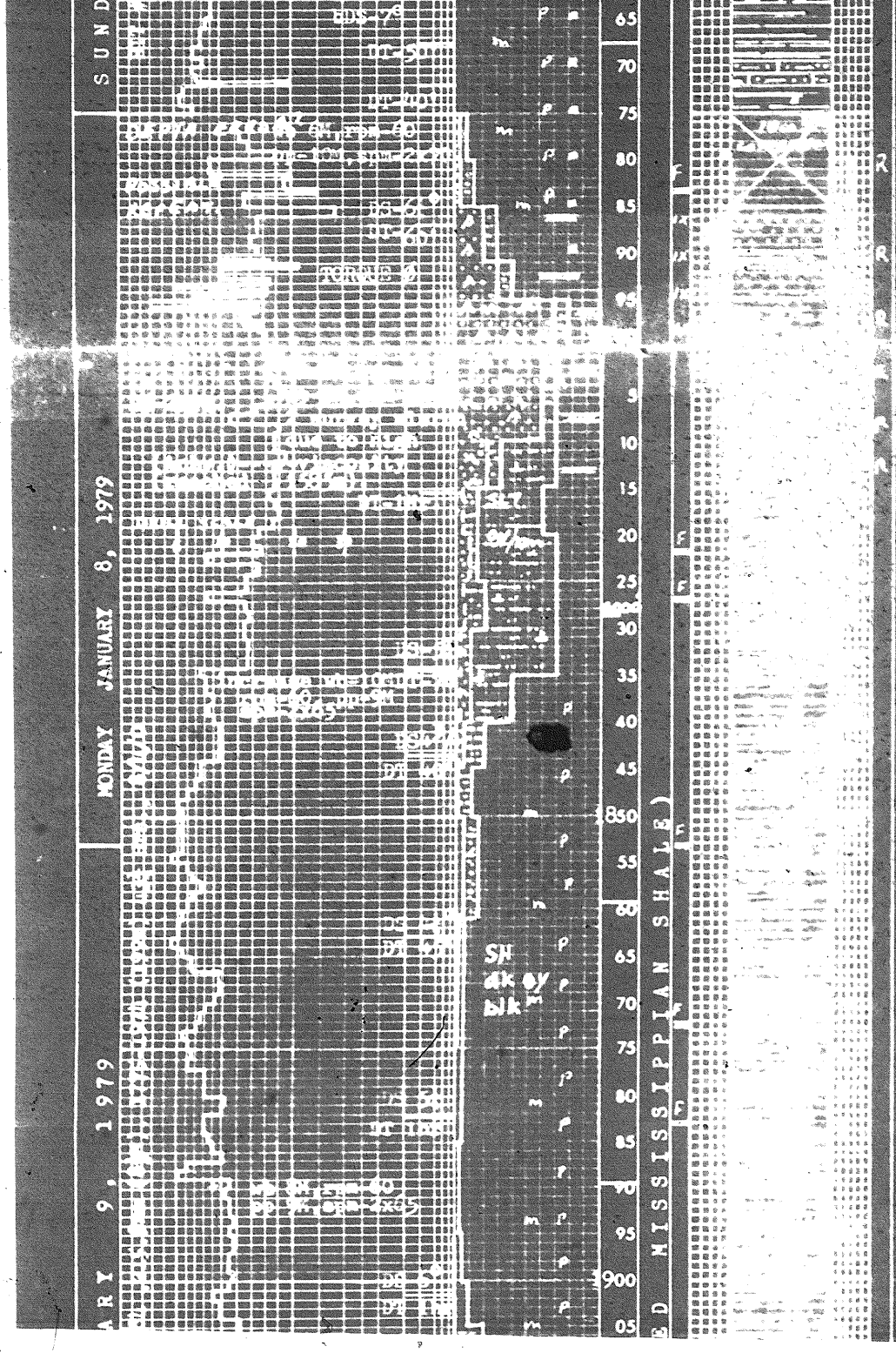
SH a/a blk,carb,sbfis-fis
sft-mhd,tr mcmica, non-s
-slty,non-calc,scat pyr
lam to 2mm, & scat pyr
xlls thruout SH, mnr brn
gy arg SLTST lam,oc cht
lam-blk
500-1775m, DD-5m=LD
DEPTH CORRECTION:10M
1775-2925m ,DD-15M=LD
(LD=Schlumberger Log Dep)
SH a/a w mnr lam of SLT &
SS wh,qtzic,silic,vf-fg
grdg arg,tr Ø,no live
show, tr dd oil stn.

SS wh, qtzic,15-30% silic
cmt, qtz ovgths com,
wl rd,fg, wl srtd, cln SS
5-15% in 30-50% of SS,
SS a/a grdg 0-5% arg mtx.
dd oil stn, no flor,
wh-lbrn, 0-10% in 5% ofSS
mnr lam arg sltst,& SH
tr Anhy lam in SH
wh SS grdg dk gy arg SS
SLTST: dk gy-dk gy/bn,
arg, grdg sdy,sl calc,

LOG RUN #4 - CAVE HOLE
>1820-75m, >375mm (15")

SS vf-fg,dk gy, arg,grdg
wh,silic SS 25% sil.cmt
hd, tt, no Ø,tr dd oil stn

12



gy arg SLTST lam, oc cnt
lam-blk
500-1775m, DD-5m=LD
DEPTH CORRECTION: 10M
1775-2925m, DD-15M=LD
(LD=Schlumberger Log Dep)
SH a/a w mnr lam of SLT &
SS wh, qtzic, silic, vf-fg
grdg arg, tr Ø, no live
show, tr dd oil stn.

SS wh, qtzic, 15-30% silic
cmt, qtz ovgths com,
wl rd, fg, wl srtd, cln SS
5-10% in 30-50% of SS,
SS a/a grdg 0-5% arg mtx.
dd oil stn, no flor,
wh-lbrn, 0-10% in 5% of SS
mnr lam arg sltst, & SH
tr Anhy lam in SH
wh SS grdg dk gy arg SS
SLTST: dk gy-dk gy/bn,
arg, grdg sdy, sl calc,

LOG RUN #4 - CAVE HOLE
>1820-75m, >375mm (15")

SS vf-fg, dk gy, arg, grdg
wh, silic SS 25% sil. cmt
hd, tt, no Ø, tr dd oil stn
tr ANHY fr in SH

SH a/a dk gy/blk, carb,
mcmica, tr pyr lam & scat
slt pyr xls, blky, mnr fis,
w lam of
SLTST & SLTY SH dk gy/bn,
sl dolic, & mnr lam
SS wh-gy, slt-vfg, silic a/a
(tr-1%)

tr ANHY fld frac

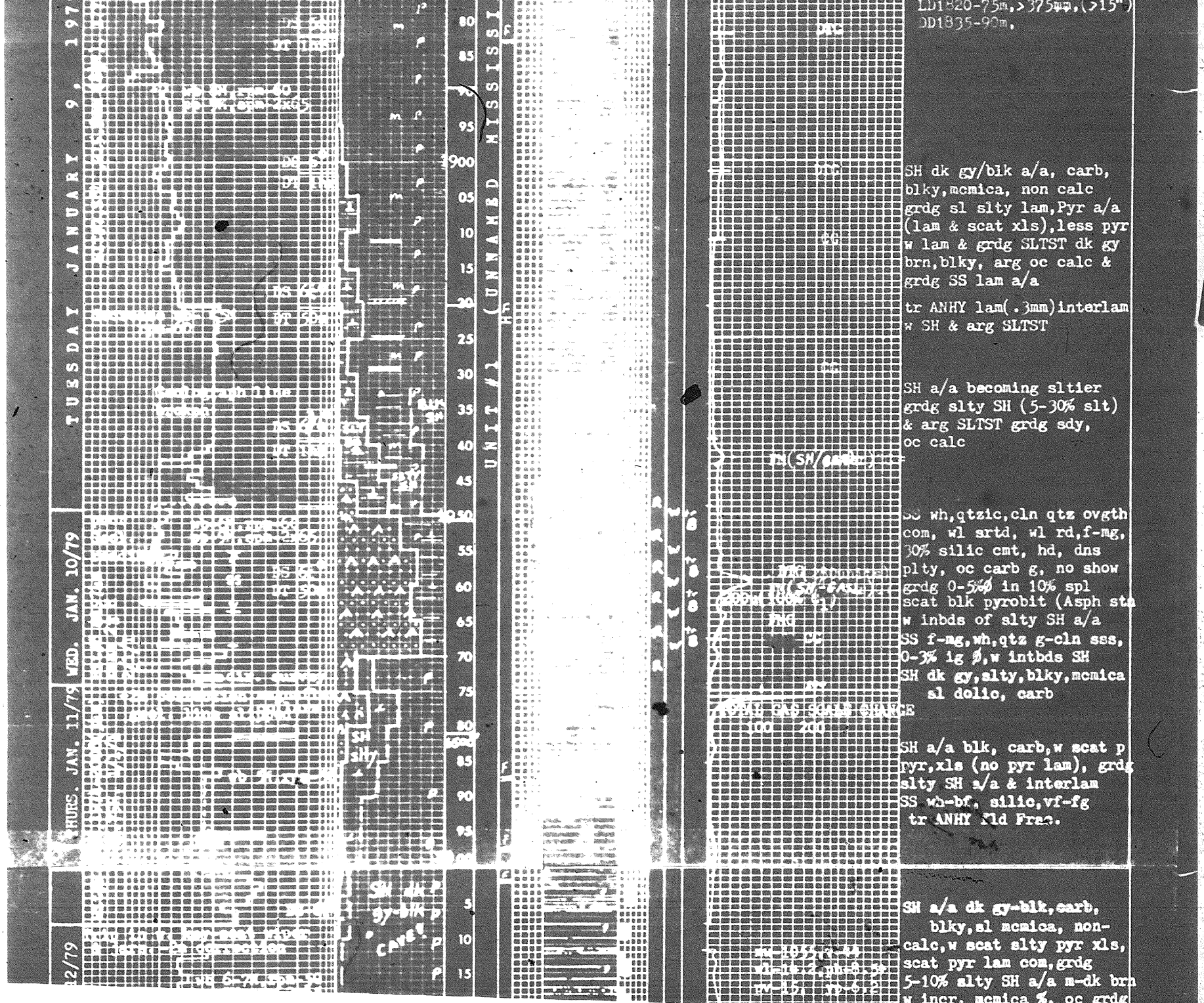
LOG RUN #4- CAVE HOLE
LD1820-75m, >375mm, (>15")
DD1835-90m,

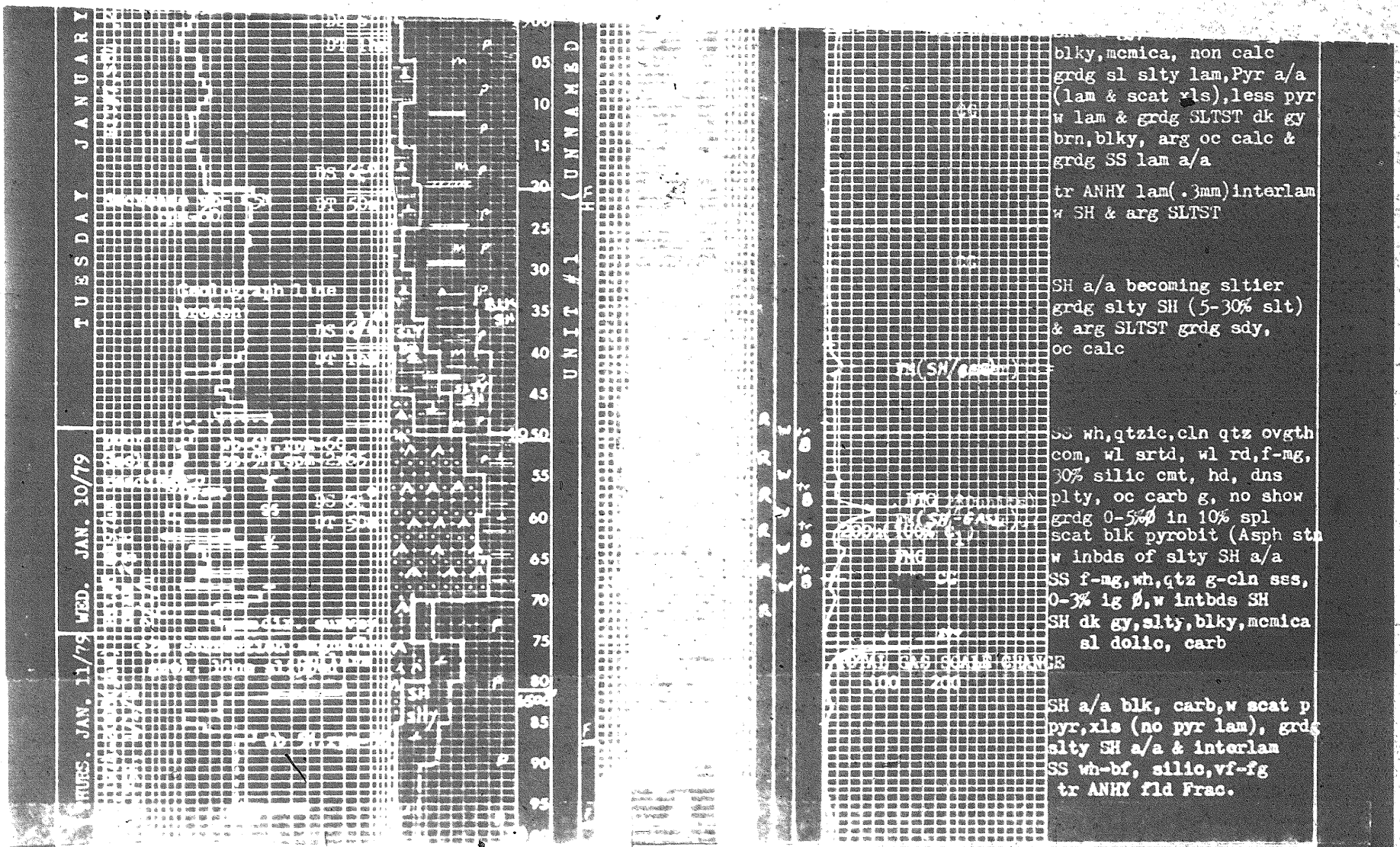
SH dk gy/blk a/a, carb,
blky, mcmica, non calc
grdg sl slty lam, Pyr a/a

12

TUESDAY JANUARY 9, 1979
MONDAY JANUARY 8, 1979
(UNNAMED MISSISSIPPIAN SHALE)
SH dk gy blk
wl rd,fg,
SS vf-fg,dk gy, arg,grdg wh,silic SS 25% sil.cmt hd, tt, no ϕ,tr dd oil stn tr ANHY fr in SH
LOG RUN #4 - CAVE HOLE >1820-75m, >375mm (15")
SH a/a dk gy/blk,carb, mcmica, tr pyr lam & scat slt pyr xls,blky,mnr fis, w lam cf
SLTST & SLTY SH dk gy/bn, sl dolic, & mnr lam SS wh-gy,slt-vfg,silic a/a (tr-1%)
tr ANHY fld frac
LOG RUN #4- CAVE HOLE LD1820-75m,>375mm,(>15") OD1835-90m,
SH dk gy/blk a/a, carb, blky,mcmica, non calc grdg sl slty lam,Pyr a/a (lam & scat xls),less pyr w lam & grdg SLTST dk gy brn,blky, arg oc calc & grdg SS lam a/a
tr ANHY lam(.3mm)interlam w SH & arg SLTST
SH a/a becoming sltier

13 of

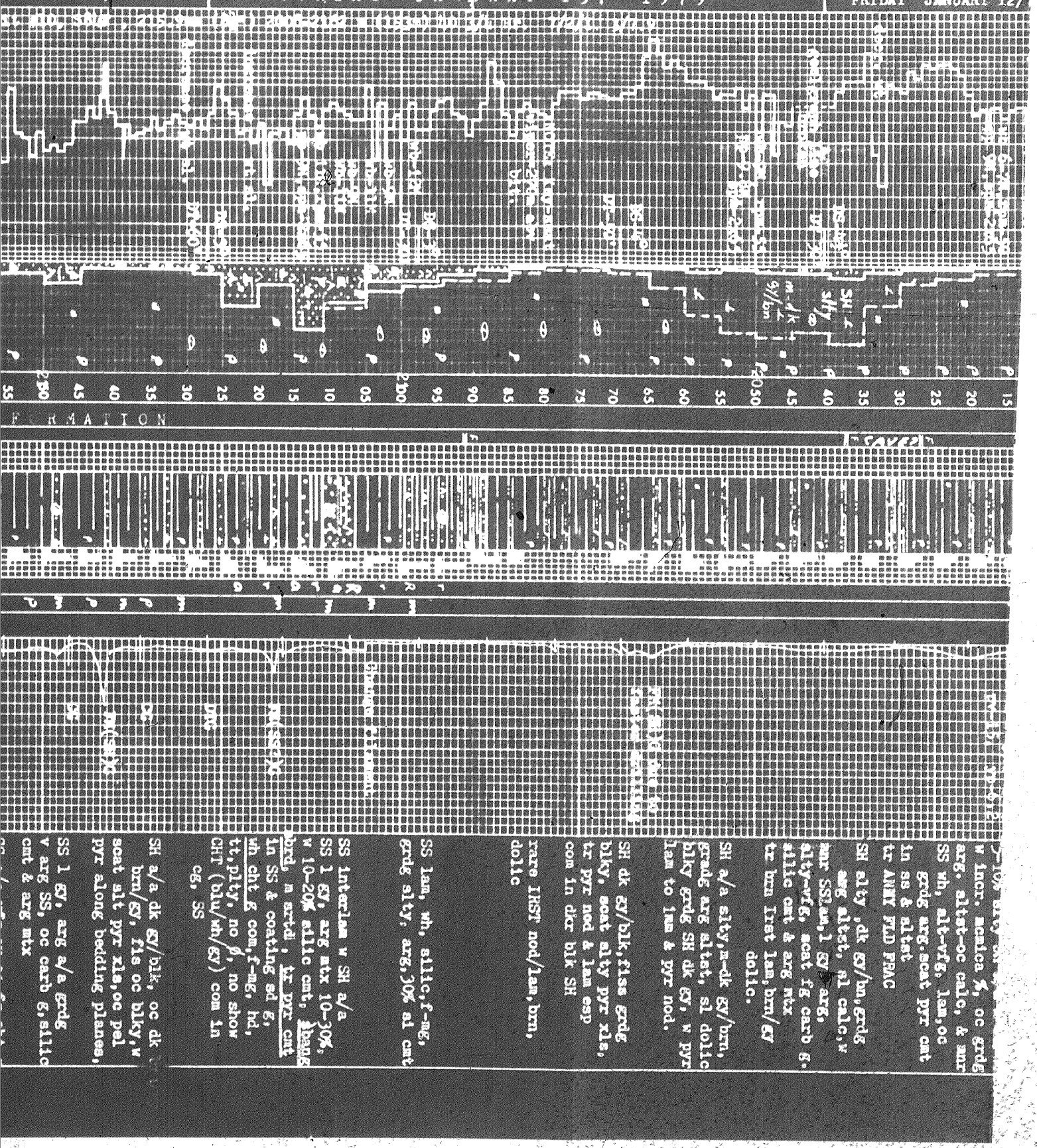

TUESDAY JANUARY 9, 197
WED. JAN. 10/79
THURS. JAN. 11/79
2/79
UNIT #1 (UNNAMED MISSISSI
LD1820-75m,>375mD,(>15")
DD1835-90m,
SH dk gy/blk a/a, carb, blky, mcmica, non calc grdg sl slty lam, Pyr a/a (lam & scat xls), less pyr w lam & grdg SLTST dk gy brn, blky, arg oc calc & grdg SS lam a/a
tr ANHY lam(.3mm) interlam w SH & arg SLTST
SH a/a becoming sltier grdg slty SH (5-30% slt) & arg SLTST grdg sdy, oc calc
SS wh, qtzic, cln qtz ovgth com, wl srtd, wl rd, f-mg, 30% silic cmt, hd, dns plty, oc carb g, no show grdg 0-5%Ø in 10% spl scat blk pyrobit (Asph stn w inbds of slty SH a/a
SS f-mg, wh, qtz g-cln sss, 0-3% ig Ø, w intbds SH
SH dk gy, slty, blky, mcmica sl dolic, carb
SH a/a blk, carb, w scat p pyr, xls (no pyr lam), grdg slty SH a/a & interlam
SS wh-bf, silic, vf-fg
tr ANHY fld Frac.
SH a/a dk gy-blk, carb, blky, sl mcmica, non-calc, w scat slty pyr xls, scat pyr lam com, grdg 5-10% slty SH a/a m-dk brn w incr. mcmica %, oc grdg
13


TUESDAY JANUARY
WED. JAN. 10/79
HURS. JAN. 11/79
UNIT #1 (UNNAMED
blky,mcmica, non calc
grdg sl slty lam,Pyr a/a
(lam & scat xls),less pyr
w lam & grdg SLTST dk gy
brn,blky, arg oc calc &
grdg SS lam a/a
tr ANHY lam(.3mm)interlam
w SH & arg SLTST
SH a/a becoming sltier
grdg slty SH (5-30% slt)
& arg SLTST grdg sdy,
oc calc
SS wh,qtzic,cln qtz ovgth
com, wl srtd, wl rd,f-mg,
30% silic cmt, hd, dns
plty, oc carb g, no show
grdg 0-5%ø in 10% spl
scat blk pyrobit (Asph stn
w inbds of slty SH a/a
SS f-mg,wh,qtz g-cln sss,
0-3% ig ø,w intbds SH
SH dk gy,slty,blky,mcmica
sl dolic, carb
SS
SH a/a blk, carb,w scat p
pyr,xls (no pyr lam), grdg
slty SH a/a & interlam
SS wh-bf, silic,vf-fg
tr ANHY fld Frac.
FRIDAY JANUARY 12/79
SH a/a dk gy-blk,carb,
blky,sl mcmica, non-
calc,w scat slty pyr xls,
scat pyr lam com,grdg
5-10% slty SH a/a m-dk brn
w incr. mcmica %, oc grdg
arg. sltst-oc calc, & mnr
SS wh, slt-vfg, lam,oc
grdg arg.scat pyr cmt
in ss & sltst
tr ANHY FLD FRAC
SH slty ,dk gy/bn,grdg
arg sltst, sl calc,w
mnr SSlam,l gy, arg,

14 of

FRIDAY JANUARY 12/79
SATURDAY JANUARY 13, 1979
SH a/a blk, carb, w scat p pyr, xls (no pyr lam), grdg slty SH a/a & interlam SS wh-bf, silic, vf-fg tr ANHY fld Frac.
SH a/a dk gy-blk, carb, blky, sl mcmica, non-calc, w scat slty pyr xls, scat pyr lam com, grdg 5-10% slty SH a/a m-dk brn w incr. mcmica %, oc grdg arg. sltst-oc calc, & mnr SS wh, slt-vfg, lam, oc grdg arg. scat pyr cmt in ss & sltst tr ANHY FLD FRAC
SH slty, dk gy/bn, grdg arg sltst, sl calc, w mnr SSlam, l gy, arg, slty-vfg, scat fg carb g. silic cmt & arg mtx tr brn Irst lam, brn/gy dolic.
SH a/a slty, m-dk gy/brn, gradg arg sltst, sl dolic blky grdg SH dk gy, w pyr lam to 1mm & pyr nod.
SH dk gy/blk, fiss grdg blky, scat slty pyr xls, tr pyr nod & lam esp com in dkr blk SH
rare IRST nod/lam, brn, dolic
SS lam, wh, silic, f-mg, grdg slty, arg, 30% si cmt
SS interlam w SH a/a SS l gy, arg mtx 10-30%, w 10-20% silic cmt, bbang brd, m srtdi, tr pyr cmt in SS & coating sd g, wh cht g com, f-mg, hd, tt, plty, no Ø, no show CHT (blu/wh/gy) com in
14 of

JANUARY 14, 1979 | SATURDAY JANUARY 13, 1979 | FRIDAY JANUARY 12/7



5-10% slty-dk gy/bn, grdg
w incr. mcmica %, oc grdg
arg. altst-oc calc, & mnr
SS wh, alt-vfg, lam,oc
grdg arg.scat pyr cmt
in ss & altst
tr ANHY FLD FRAC

SH slty ,dk gy/bn,grdg
arg altst, sl calc,w
mnr SSlam,l gy arg,
slty-vfg, scat fg carb g.
silic cmt & arg mtx
tr brn Irst lam,brn/gy
dolic.

SH a/a slty,m-dk gy/brn,
gradg arg altst, sl dolic
blky grdg SH dk gy, w pyr
lam to lam & pyr nod.

SH dk gy/blk,fiss grdg
blky, scat slty pyr xls,
tr pyr nod & lam esp
com in dkr blk SH

rare IRST nod/lam,brn,
dolic

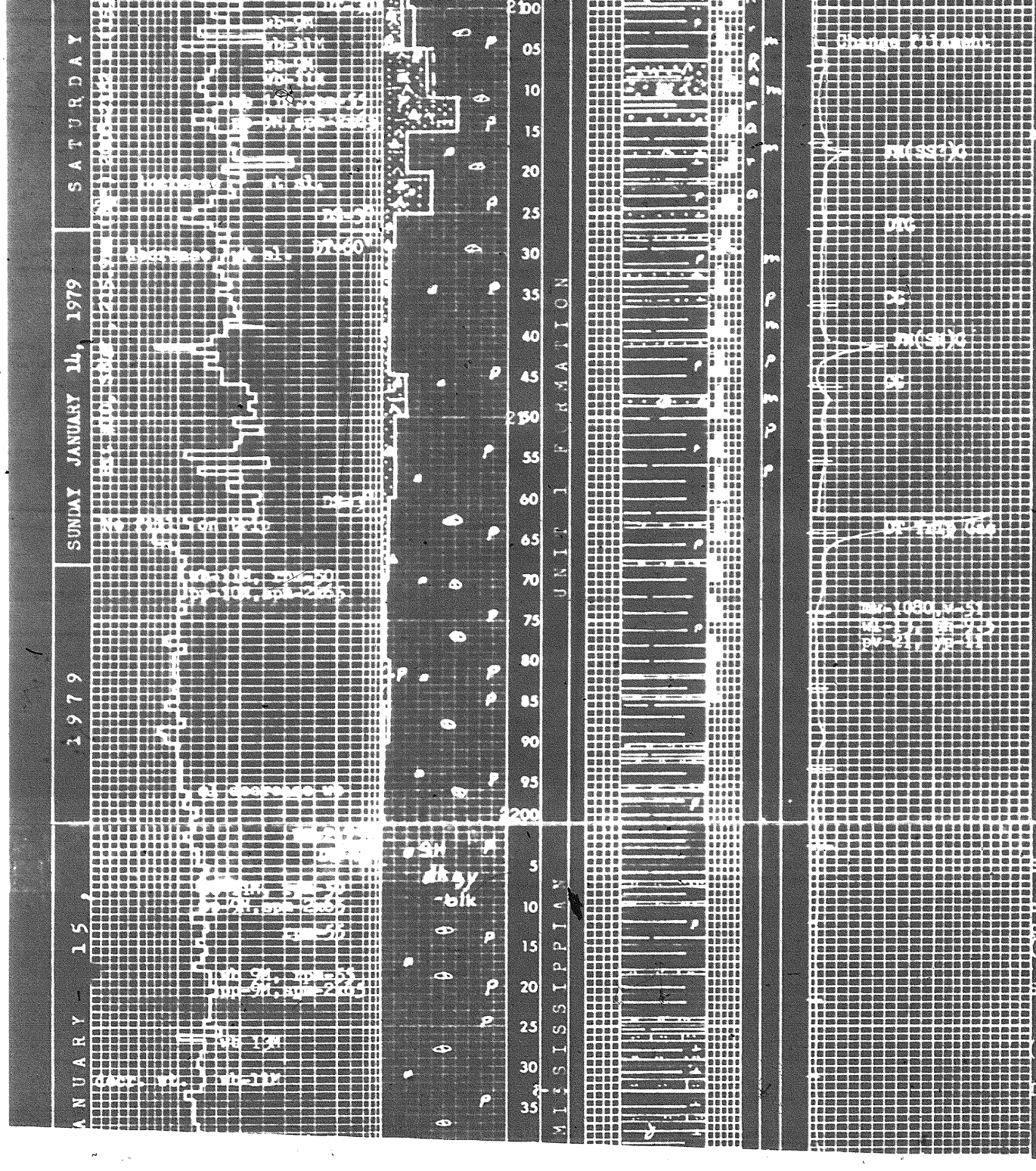
SS lam, wh, silic,f-mg,
grdg slty, arg,30% si cmt

SS interlam w SH a/a
SS l gy, arg mtx 10-30%,
w 10-20% silic cmt, shang
brd, m srtd , tr pyr cmt
in SS & coating sd g,
wh cht g com,f-mg, hd,
tt,plty, no ø, no show
CHT (blu/wh/gy) com in
cg, SS

SH a/a dk gy/blk, oc dk
brn/gy, fis oc blky,w
scat slt pyr xls,oc pel
pyr along bedding planes,

SS l gy, arg a/a grdg
v arg SS, oc carb g,silic
cmt & arg mtx

15 of



SS interlam w SH a/a
SS l gy, arg mtx 10-30%,
w 10-20% silic cmt, ½bang
brd, m srtd , tr pyr cmt
in SS & coating sd g,
wh cht g com,f-mg, hd,
tt,plty, no Ø, no show
CHT (blu/wh/gy) com in
cg, SS

SH a/a dk gy/blk, oc dk
brn/gy, fis oc blky,w
scat slt pyr xls,oc pel
pyr along bedding planes,

SS l gy, arg a/a grdg
v arg SS, oc carb g,silic
cmt & arg mtx

SS a/a vfg av,oc fg cht g
hd,dns,silic, w scat pyr
g & pyr cmt, interlam wSH

SH dk gy-blk a/a oc mgy,
incr. fis, mnr thn pyr
lam, oc mg carb/plt g,
tr IRST brn,dolic,nod-lam
oc slty
tr SS lam, lgy-brn,arg
slt-vfg grdg sltst,oc
fg cht g,oc pyr cmt,

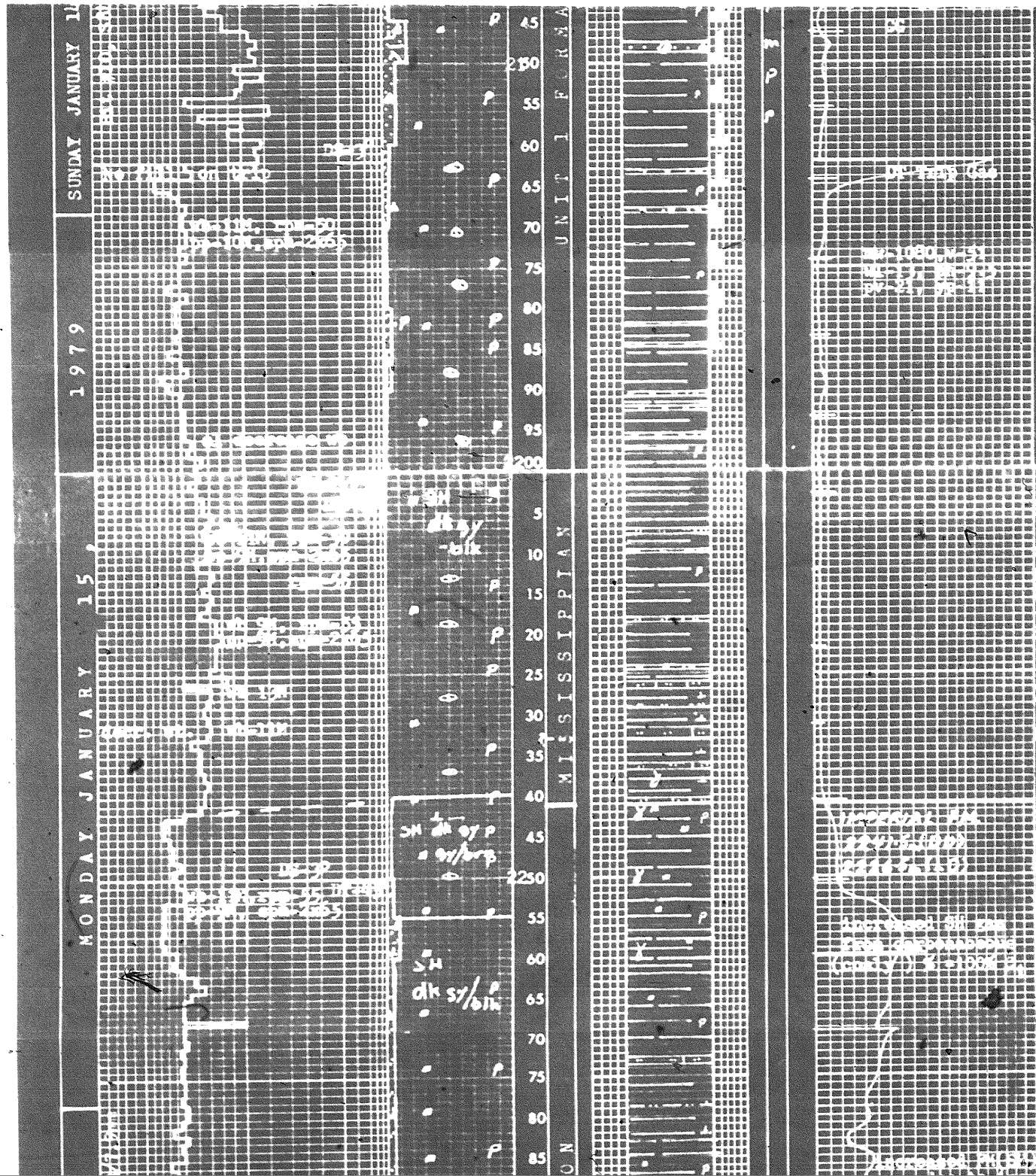
PYR lam & nod com assoc
w slty lam

SH dk gy,fis, oc blk &
gy/bn,sl mcmica, scat
carb g, non-calc, scat
pyr lin & pyr mcroxls,
(note pyr xls, com thruout
pyrzd spicules com @20m
SLTS tr, arg, oc cs slt
lam, l brn, sl dolic,
w scat carb/coal g
(less than 1% slty lam)

IRSTN: rare, mbrn,nod,sl
dolic

sl. increase of Gamma
= transition zone.

150



SS l gy, arg a/a grdg
v arg SS, oc carb g, silic
cmt & arg mtx

SS a/a vfg av, oc fg cht g
hd, dns, silic, w scat pyr
g & pyr cmt, interlam wSH

SH dk gy-blk a/a oc mgy,
incr. fis, mnr thn pyr
lam, oc mg carb/plt g,
tr IRST brn, dolic, nod-lam
oc slty
tr SS lam, lgy-brn, arg
slt-vfg grdg sltst, oc
fg cht g, oc pyr cmt,

PYR lam & nod com assoc
w slty lam

SH dk gy, fis, oc blk &
gy/bn, sl mcmica, scat
carb g, non-calc, scat
pyr lin & pyr mcroxls,
(note pyr xls, com thruout
pyrzd spicules com @20m
SLTS tr, arg, oc cs slt
lam, l brn, sl dolic,
w scat carb/coal g
(less than 1% slty lam)

IRSTN: rare, mbrn, nod, sl
dolic

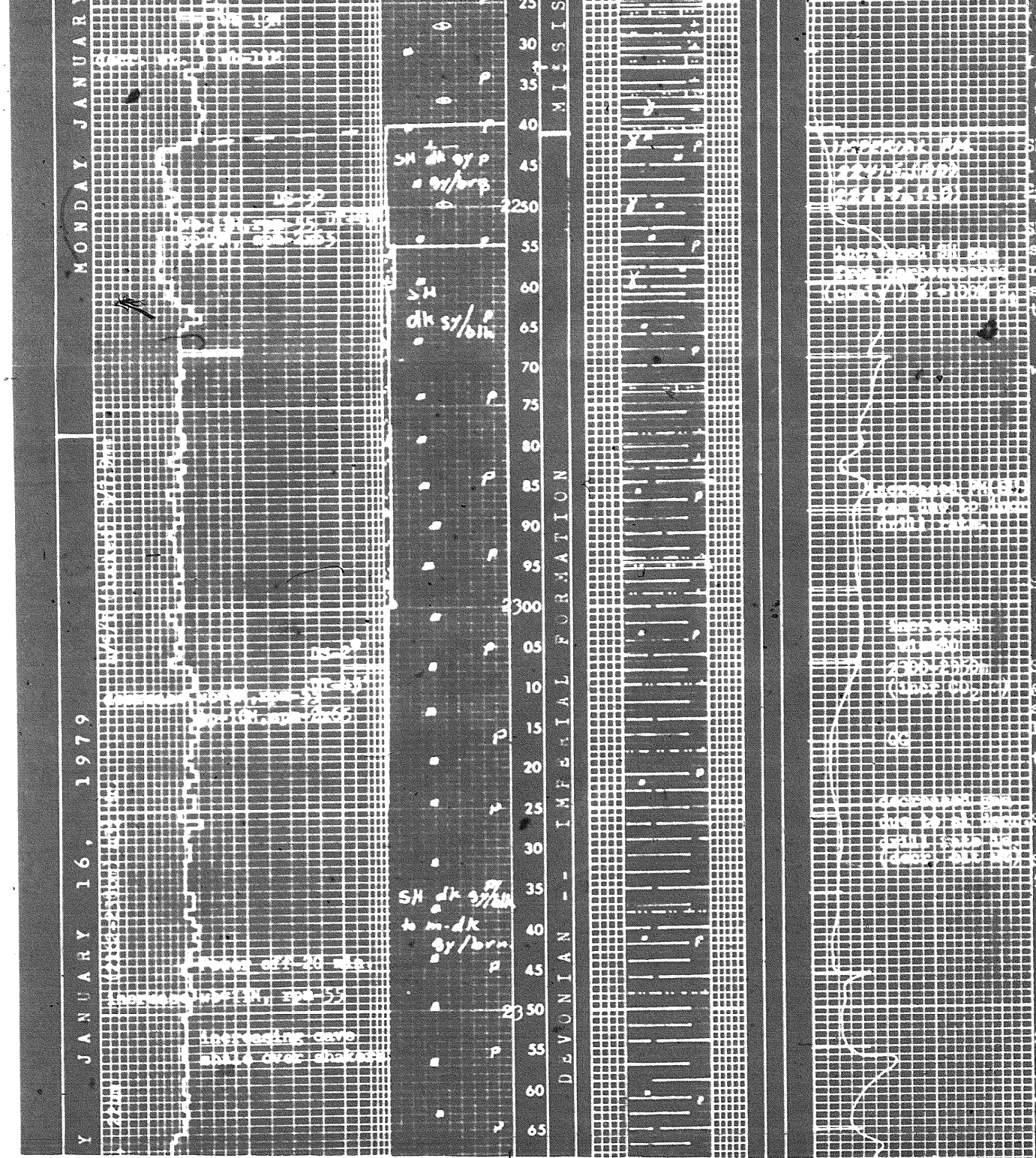
sl. increase γ Gamma
= transition zone.

SH dk gy & gy/brn, sl fis,
lighter than abv, oc sl
calc, blky-fis, pyr xls com
. increase in γ Gamma.

SH dk gy grdg blk, v carb
scat carb g, fis, scat pyr
repl. carb g, tr pyr lam
scat pyr xls & pyrzd spic
tr carb ptg & coaly lam
to .05mm lam, hd, brit.

w incr SH dk gy, slty,
sl-v calc incr. w slty %
grdg arg SLTST lam, w
pyr cmt in SLTST, oc fltg
vf-fg, lgy CHT G, oc wh
vfg wh calcispheres.

16 of



w scat carb/coal g
(less than 1% slty lam)

IRSTN: rare, mbrn,nod,sl
dolic

sl. increase γ Gamma
= transition zone.

SH dk gy & gy/brn,sl fis,
lighter than abv, oc sl
calc, blky-fis,pyr xls com
. increase in γ Gamma.

SH dk gy grdg blk,v carb
scat carb g,fis,scat pyr
repl. carb g, tr pyr lam
scat pyr xls & pyrzd spic
tr carb ptg & coaly lam
to .05mm lam,hd, brit.

w incr SH dk gy, slty,
sl-v calc incr. w slty %
grdg arg SLTST lam, w
pyr cmt in SLTST, oc fltg
vf-fg, lgy CHT G, oc wh
vfg wh calcispheres.

SH a/a decr. Pyr lam/nod

SH a/a w scat wh,vfg
calcispheres.

SH dk gy/blk a/a,mas,blky
grdg fis, brit,sl mcmca
scat pyr xls, dissem pyr
lineations,scat pyr spic.

tr Slty SH decreasing

SH a/a dk gy-blk w decr.
blk, carb %,
SLTST lam & slty SH=sl
incr %, sl calc,

SCAT rd pyrzd spores?
.1-.2mm (30-40m)

NOTE 2350-2385m, incr.
SHALE CAVINGS OVER SHAKER

SH a/a dk gy/blk grdg
dk gy/brn, carb,blky
w scat carb lam, & pyr
com dissem along lam,
tr SLTY SH w wh calcippher

Scat pyrzd spores .1-.2mm

16 of

TUESDAY JANUARY 16, 1979

DEVONIAN - IMPERIAL FORMATION

vfg wh calcispheres.

SH a/a decr. Pyr lam/nod

SH a/a w scat wh,vfg calcispheres.

SH dk gy/blk a/a,mas,blky grdg fi3, brit,sl mcmca scat pyr xls, dissem py- lineatinns,scat pyr splc.

tr Slty SH decreasing

SH a/a dk gy-blk w decr. blk, carb %,
SLTST lam & slty SH=sl incr %, sl calc,

SCAT rd pyrzd spores? .1-.2mm (30-40m)

NOTE 2350-2385m, incr. SHALE CAVINGS OVER SHAKER

SH a/a dk gy/blk grdg dk gy/brn, carb,blky w scat carb lam, & pyr com dissem along lam, tr SLTY SH w wh calcisphere

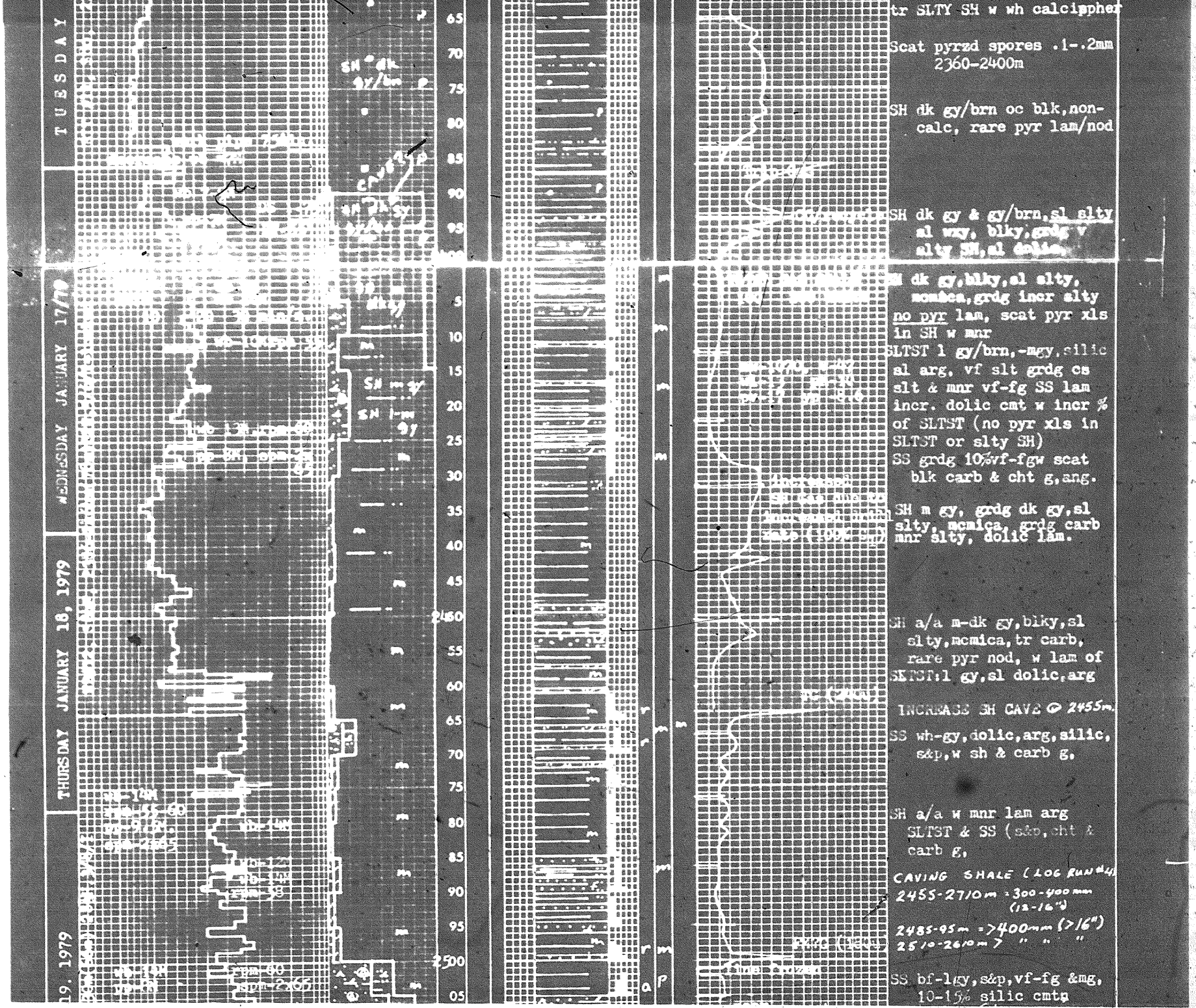
Scat pyrzd spores .1-.2mm 2360-2400m

SH dk gy/brn oc blk,non-calc, rare pyr lam/nod

SH dk gy & gy/brn,sl slty sl wxy, blky,grdg w slty SH,sl dolic

SH dk gy,blky,sl slty, mcmbcm,grdg incr slty no pyr lam, scat pyr xls in SH w mnr
SLTST l gy/brn,-mgy,silic sl arg, vf slt grdg cs slt & mnr vf-fg SS lam incr. dolic cmt w incr % of SLTST (no pyr xls in

1701



tr SLTY SH w wh calcipphe

Scat pyrzd spores .1-.2mm
2360-2400m

SH dk gy/brn oc blk, non-calc, rare pyr lam/nod

SH dk gy & gy/brn, sl slty sl wxy, blky, grdg v slty SH, sl dolic

SH dk gy, blky, sl slty, mcmica, grdg incr slty no pyr lam, scat pyr xls in SH w mnr
SLTST l gy/brn, -mgy, silic sl arg, vf slt grdg cs slt & mnr vf-fg SS lam incr. dolic cmt w incr % of SLTST (no pyr xls in SLTST or slty SH)
SS grdg 10%vf-fgw scat blk carb & cht g, ang.

SH m gy, grdg dk gy, sl slty, mcmica, grdg carb mnr slty, dolic lam.

SH a/a m-dk gy, blky, sl slty, mcmica, tr carb, rare pyr nod, w lam of SLTST: l gy, sl dolic, arg

INCREASE SH CAVE @ 2455m.

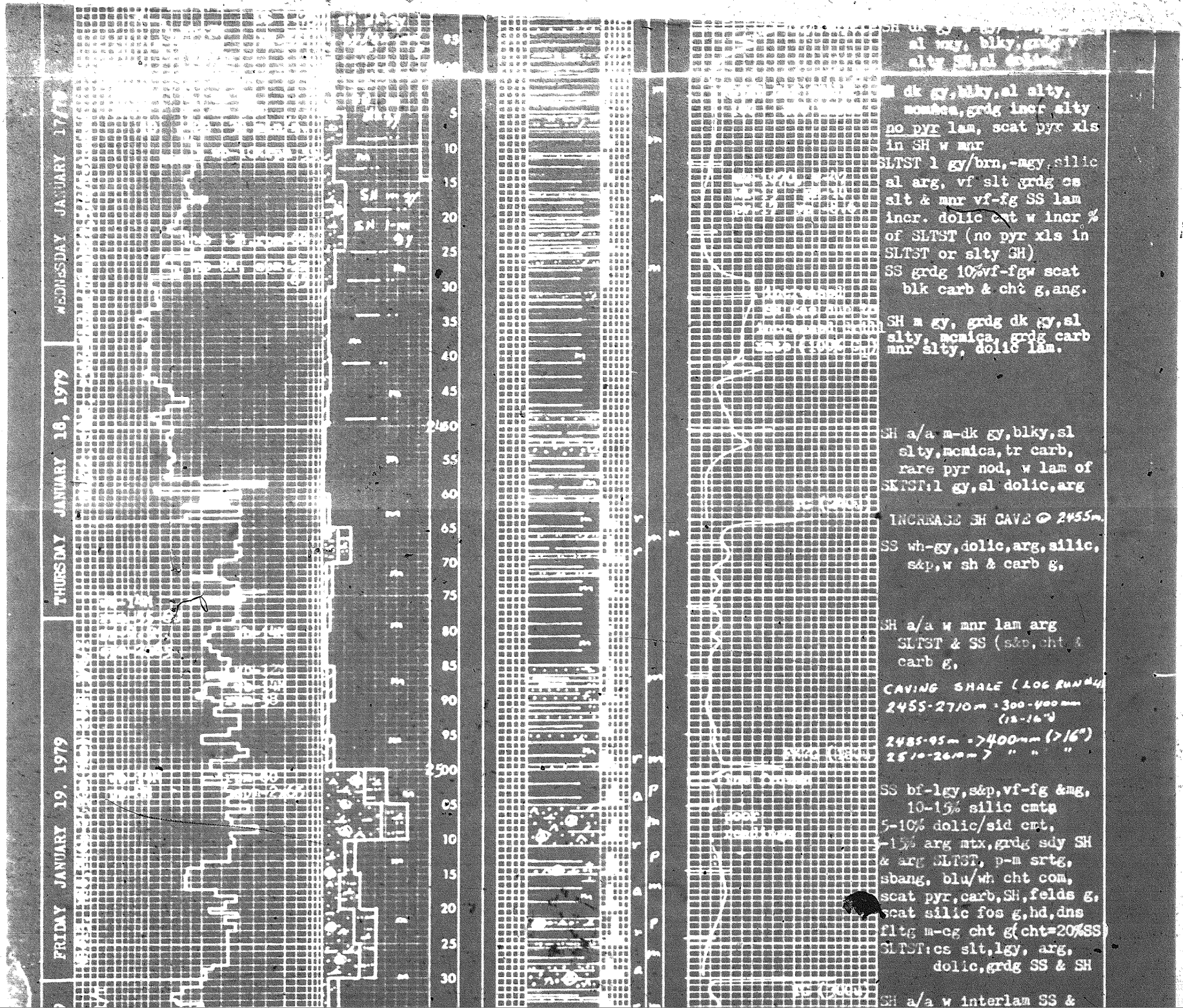
SS wh-gy, dolic, arg, silic, s&p, w sh & carb g.

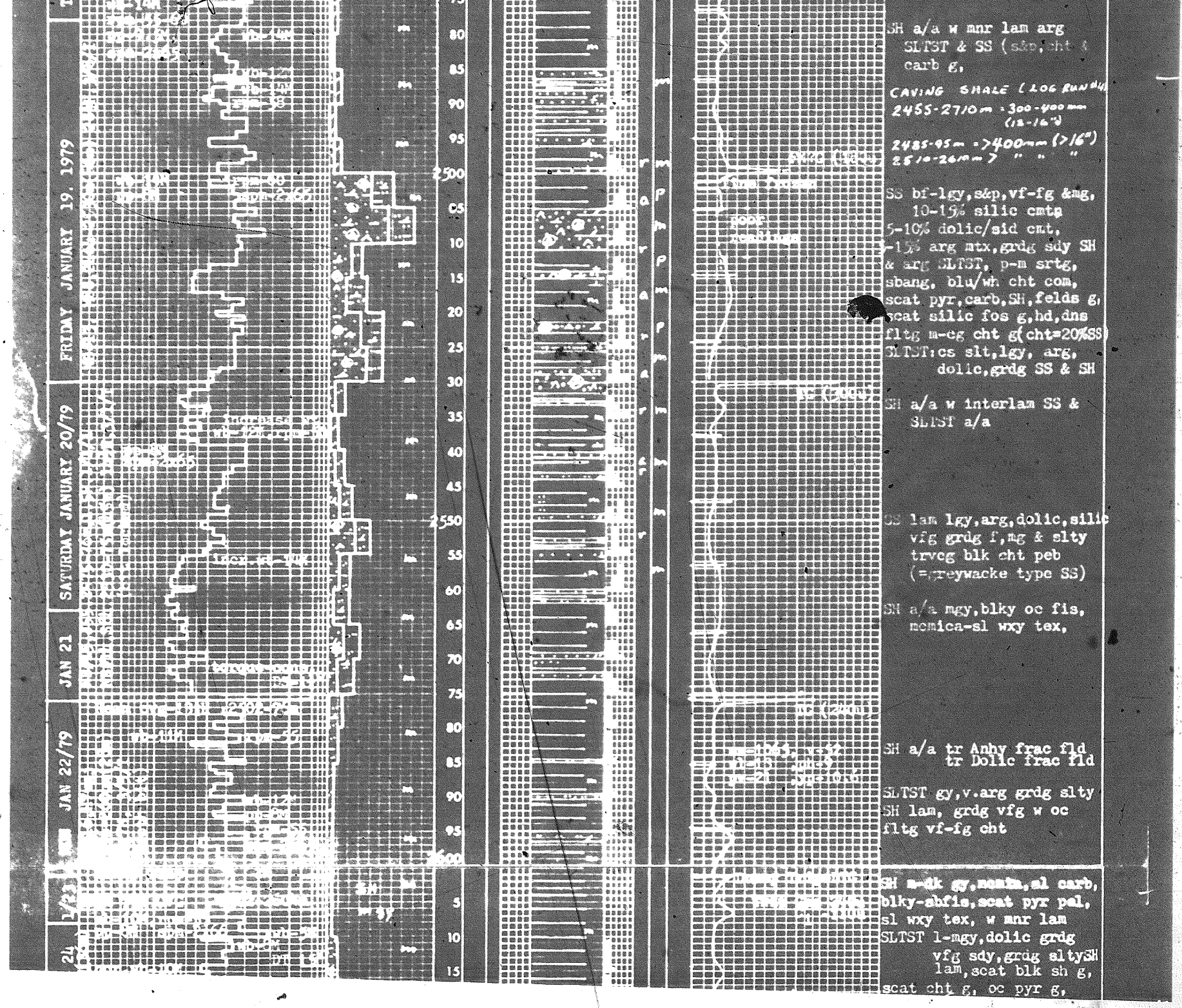
SH a/a w mnr lam arg SLTST & SS (s&p, cht & carb g,

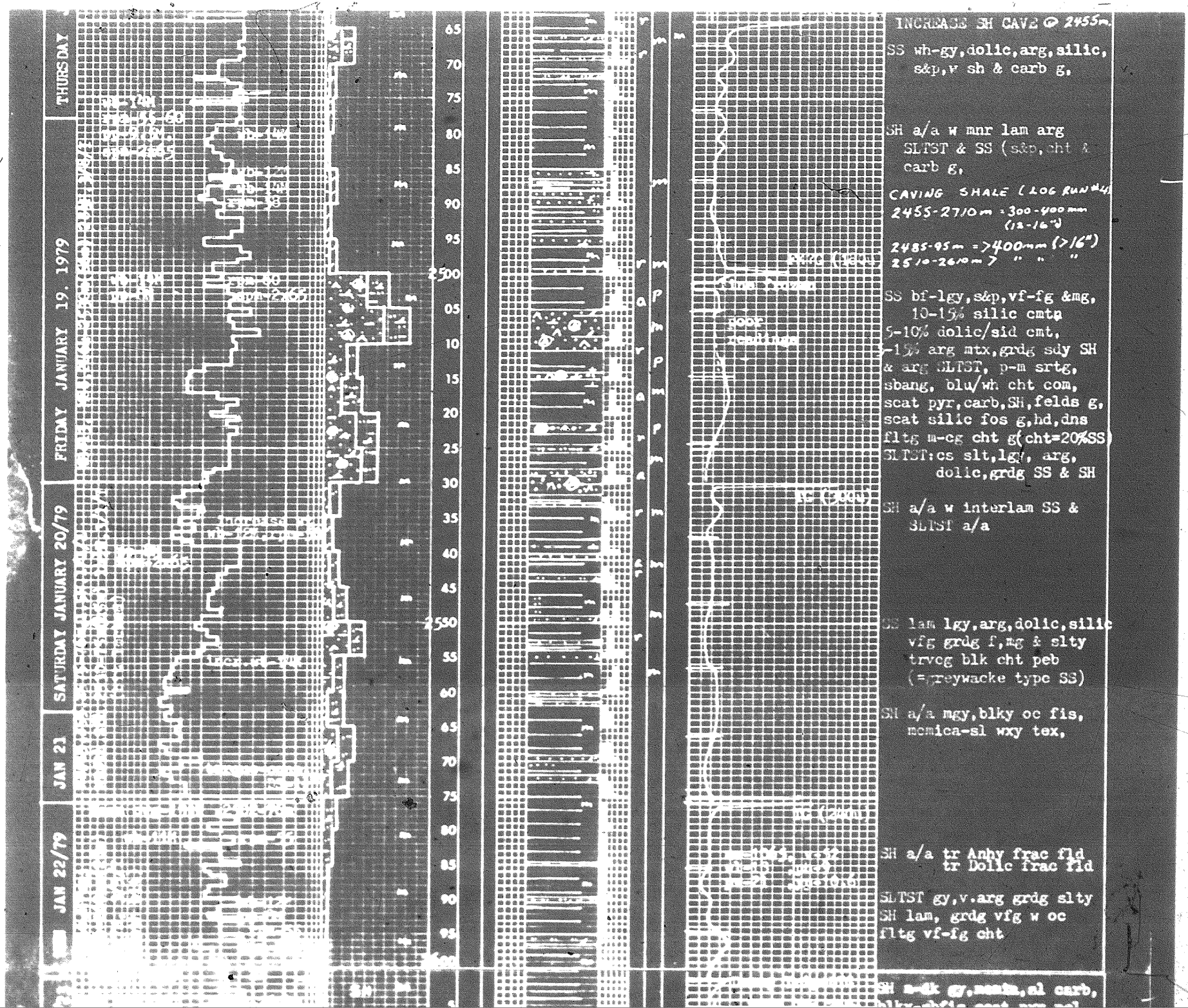
CAVING SHALE (LOG RUN 4)
2455-2710m = 300-400mm (12-16")
2485-95m = >400mm (>16")
2510-2610m > " " "

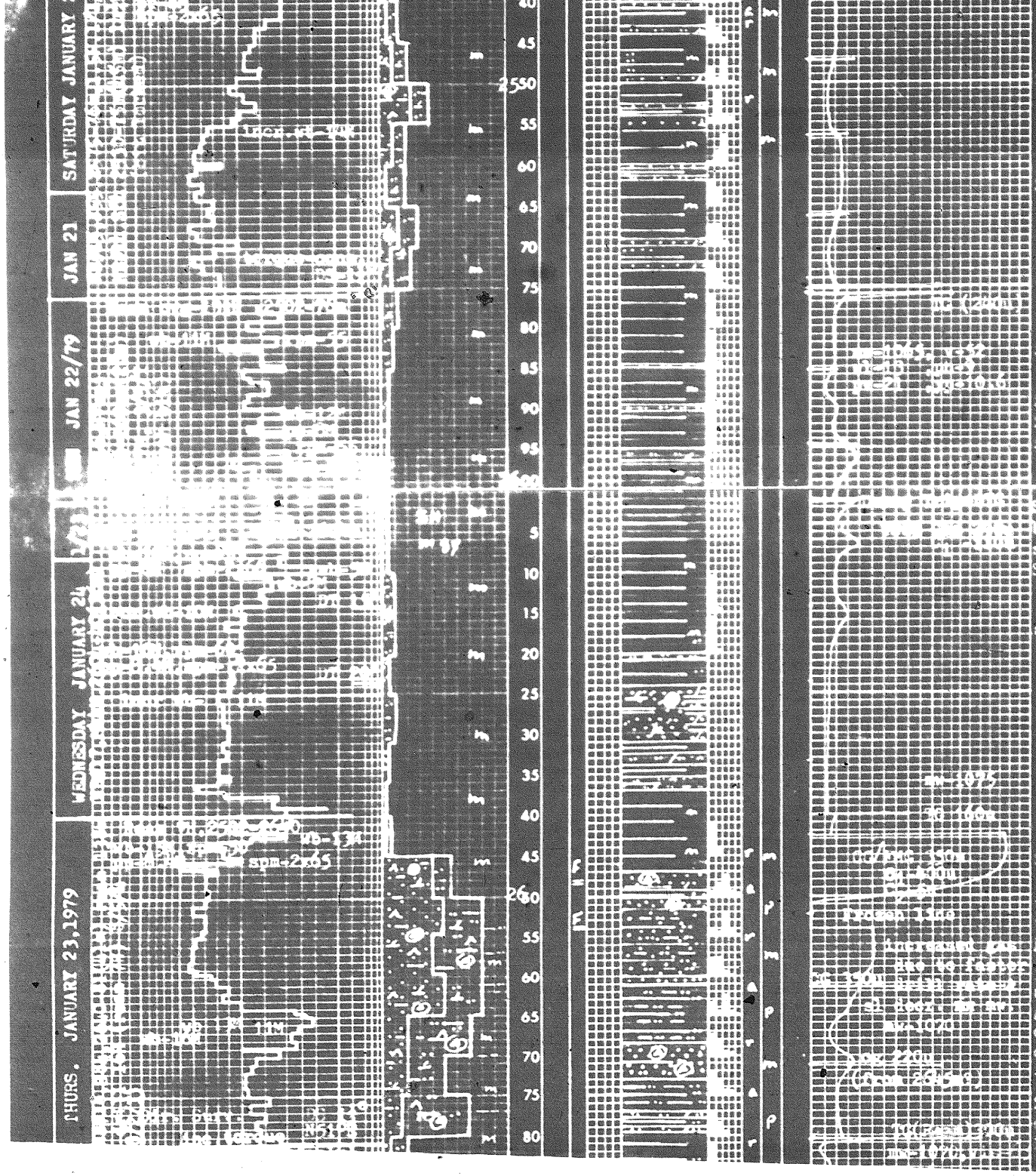
SS bf-lgy, s&p, vf-fg &mg, 10-15% silic cmtg

17/1


WEDNESDAY JANUARY 17
THURSDAY JANUARY 18, 1979
FRIDAY JANUARY 19, 1979
SH dk gy,blky,sl slty, mcmica,grdg incr slty
no pyr lam, scat pyr xls in SH w mnr
SLTST l gy/brn,-mgy,silic sl arg, vf slt grdg cs slt & mnr vf-fg SS lam incr. dolic cmt w incr % of SLTST (no pyr xls in SLTST or slty SH)
SS grdg 10%vf-fgw scat blk carb & cht g,ang.
SH m gy, grdg dk gy,sl slty, mcmica, grdg carb mnr slty, dolic lam.
SH a/a m-dk gy,blky,sl slty,mcmica,tr carb, rare pyr nod, w lam of SLTST:l gy,sl dolic,arg
INCREASE SH CAVE @ 2455m.
SS wh-gy,dolic,arg,silic, s&p,w sh & carb g.
SH a/a w mnr lam arg SLTST & SS (s&p, cht & carb g,
CAVING SHALE (LOG RUN #4)
2455-2710m - 300-400mm (12-16")
2485-95m - >400mm (>16")
2510-20m " " "
SS bf-lgy,s&p,vf-fg &mg, 10-15% silic cmt
5-10% dolic/sid cmt,
-15% arg mtx,grdg sdy SH & arg SLTST, p-m srtg, sbang, blu/wh cht com, scat pyr,carb,SH,felds g, scat silic fos g,hd,dns fltg m-cg cht g(cht=20%SS)
SLTST:cs slt,lgy, arg, dolic,grdg SS & SH
SH a/a w interlam SS &


FRIDAY JANUARY 19. 1979
SATURDAY JANUARY 20/79
JAN 21
JAN 22/79
24
1/21
80
85
90
95
2500
05
10
15
20
25
30
35
40
45
2550
55
60
65
70
75
80
85
90
95
600
5
10
15
SH a/a w mnr lam arg SLTST & SS (s&p, cht & carb g,
CAVING SHALE (LOG RUN 4)
2455-2710m = 300-400mm (12-16")
2485-95m = >400mm (>16")
2510-26m = " " "
SS bf-lgy,s&p,vf-fg &mg, 10-15% silic cmtg 5-10% dolic/sid cmt, -15% arg mtx,grdg sdy SH & arg SLTST, p-m srtg, sbang, blu/wh cht com, scat pyr,carb,SH,felds g, scat silic fos g,hd,dns fltg m-cg cht g(cht=20%SS)
SLTST:cs slt,lgy, arg, dolic,grdg SS & SH
SH a/a w interlam SS & SLTST a/a
SS lam lgy,arg,dolic,silic vfg grdg f,mg & slty trvcg blk cht peb (=greywacke type SS)
SH a/a mgy,blky oc fis, micaceous-sl wxy tex,
SH a/a tr Anhy frac fld
tr Dolic frac fld
SLTST gy,v.arg grdg slty SH lam, grdg vfg w oc fltg vf-fg cht
SH m-dk gy,micaceous,sl carb, blky-shfis,scat pyr pel, sl wxy tex, w mnr lam SLTST l-mgy,dolic grdg vfg sdy,grdg slty SH lam,scat blk sh g, scat cht g, oc pyr g,


THURSDAY
FRIDAY JANUARY 19, 1979
SATURDAY JANUARY 20/79
JAN 21
JAN 22/79
65
70
75
80
85
90
95
2500
05
10
15
20
25
30
35
40
45
2550
55
60
65
70
75
80
85
90
95
INCREASE SH CAVE @ 2455m.
SS wh-gy,dolic,arg,silic, s&p,w sh & carb g,
SH a/a w mnr lam arg SLTST & SS (s&p, cht & carb g,
CAVING SHALE (LOG RUN #4)
2455-2710 m = 300-400 mm (12-16")
2485-95 m = >400 mm (>16")
2510-2600 m > " " "
SS bf-lgy,s&p,vf-fg &mg, 10-15% silic cmtn 5-10% dolic/sid cmt, -15% arg mtx,grdg sdy SH & arg SLTST, p-m srtg, sbang, blu/wh cht com, scat pyr,carb,SH,felds g, scat silic fos g,hd,dns fltg m-cg cht g(cht=20%SS)
SLTST:cs slt,lgy, arg, dolic,grdg SS & SH
SH a/a w interlam SS & SLTST a/a
SS lam lgy,arg,dolic,silic vfg grdg f,mg & slty trvcg blk cht peb (=greywacke type SS)
SH a/a mgy,blky oc fis, micaceous-sl wxy tex,
SH a/a tr Anhy frac fld
tr Dolic frac fld
SLTST gy,v.arg grdg slty
SH lam, grdg vfg w oc fltg vf-fg cht
SH m-dk gy,micac,sl carb,



SS lam lgy,arg,dolic,silic
vfg grdg f,mg & slty
trvcg blk cht peb
(=greywacke type SS)

SH a/a mgy,blky oc fis,
memica-sl wxy tex,

SH a/a tr Anhy frac fld
tr Dolic frac fld

SLTST gy,v.arg grdg slty
SH lam, grdg vfg w oc
fltg vf-fg cht

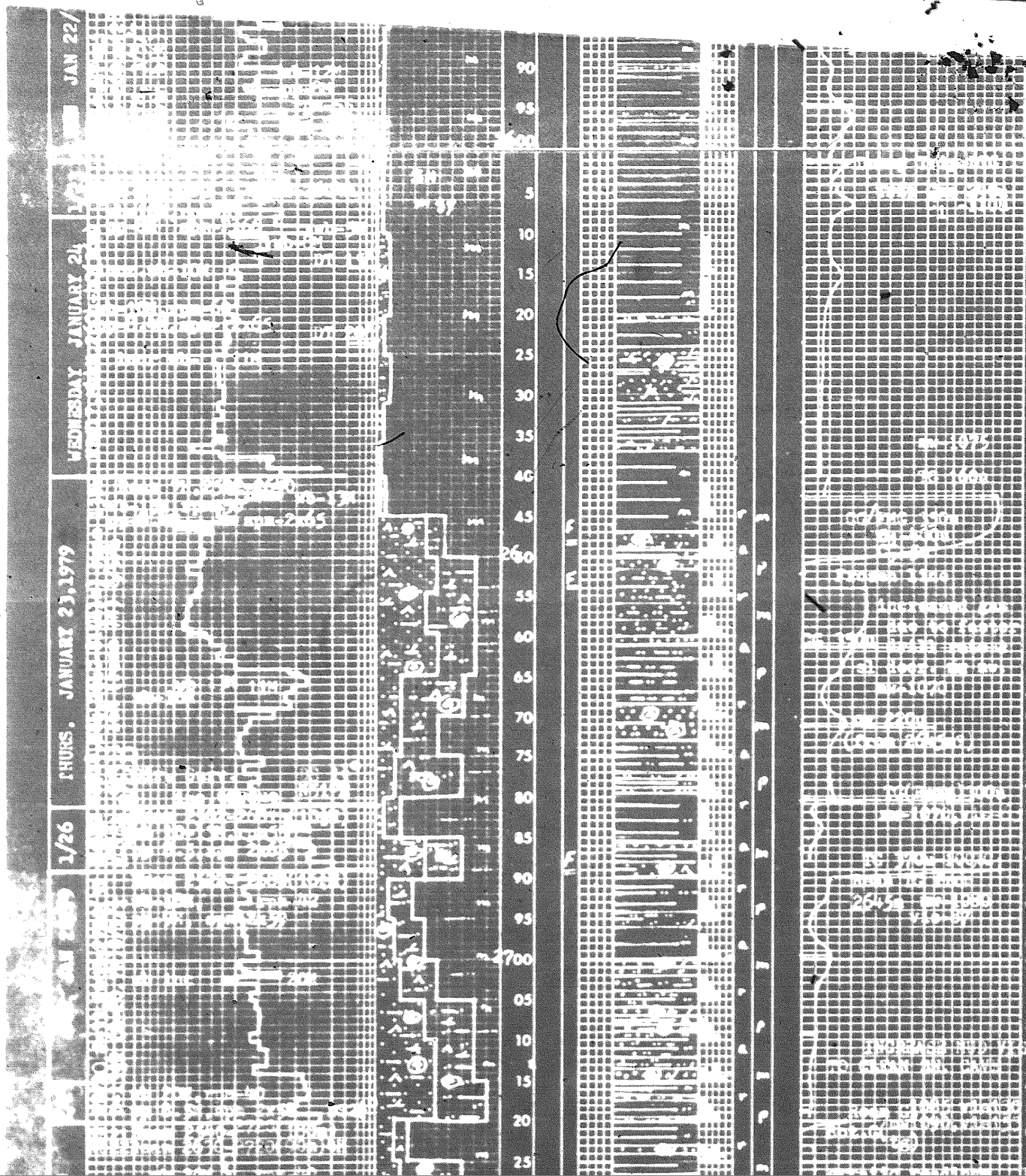
SH m-dk gy,memica,sl carb,
blky-sbfis,scat pyr pel,
sl wxy tex, w mnr lam
SLTST l-mgy,dolic grdg
vfg sdy,grdg sltySH
lam,scat blk sh g,
scat cht g, oc pyr g,

INCR. GAS frm FRAC.

SS wh-lgy,s&p,vf-fg,grdg
slt &mg,p-m srtd,sbang
-sbrd,fltg mg-qtz &chtg,
sl arg, sl dolic,TR FRAC
&w dol.xl fld frac/slick.

5-10% dolic cmt,10-15%
silic cmt, 5-10% arg mtx
grdg SLTST bf-lbn/gy,
oc wh s&p,w scat wh-blk
cht, grdg vfg,plty,sl dolic
-ic,sl silic,grdg arg.

SLTST a/a l-mgy,arg,sl
dolic, grdg v arg &slty
SH,



SLTST gy,v...
SH lam, grdg vfg w oc
fltg vf-fg cht

SH m-dk gy,mcmkm,sl carb,
blky-sbfis,scat pyr pel,
sl wxy tex, w mnr lam
SLTST l-mgy,dolic grdg
vfg sdy,grdg sltySH
lam,scat blk sh g,
scat cht g, oc pyr g,

INCR. GAS frm FRAC.

SS wh-lgy,s&p,vf-fg,grdg
slt &mgp-m srtd,sbang
-sbrd,fltg mg-qtz &chtg,
sl arg, sl dolic,TR FRAC
&w dol.xl fld frac/slick.

5-10% dolic cmt,10-15%
silic cmt, 5-10% arg mtx
grdg SLTST bf-lbn/gy,
oc wh s&p,w scat wh-blk
cht, grdg vfg,plty,sl dolic
-ic,sl silic,grdg arg.

SLTST a/a l-mgy,arg,sl
dolic, grdg v arg &slty
SH,

tr DOL,wh,FLD FRAC.

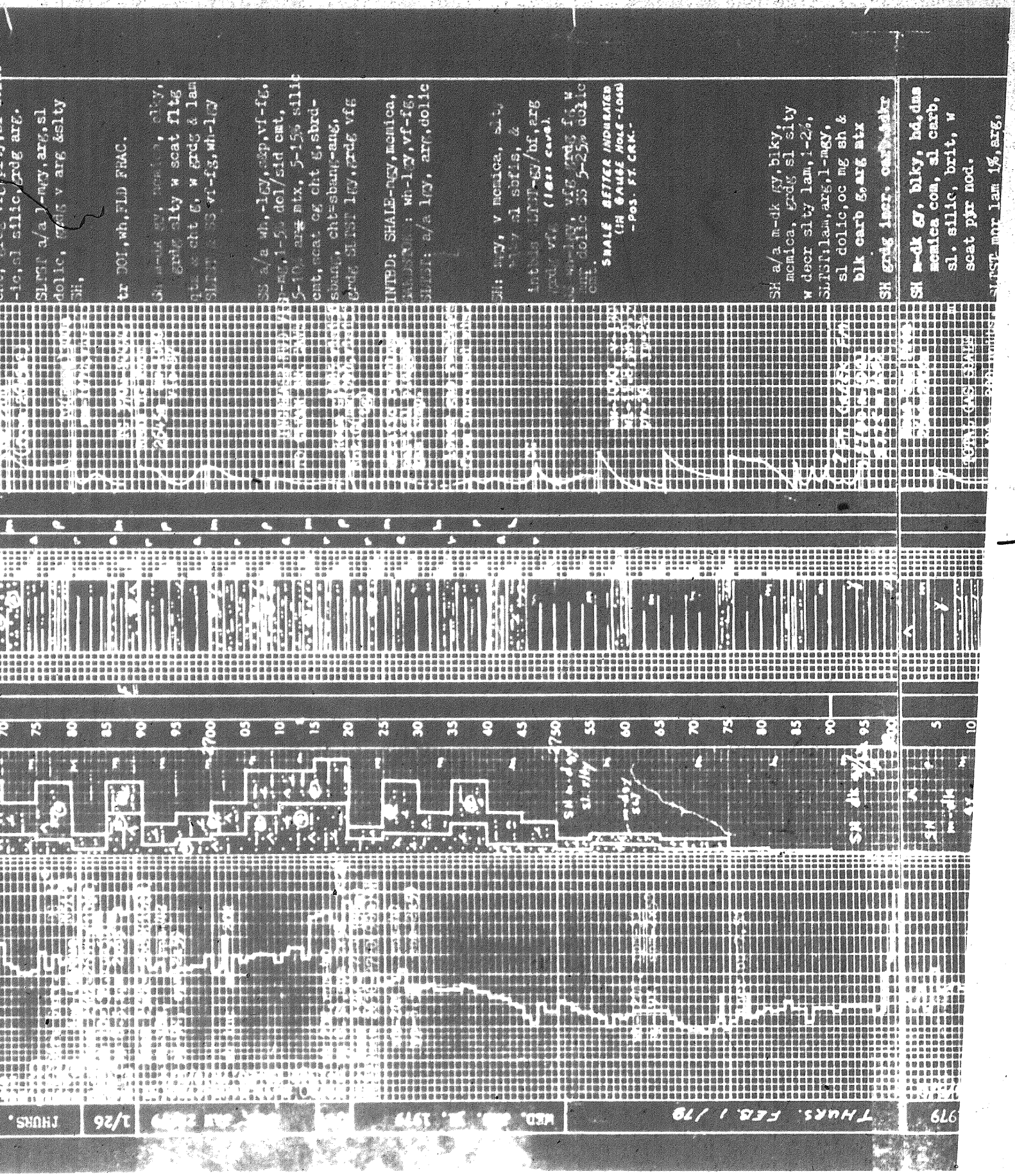
Sh m-dk gy, mcmica, blky,
grdg slty w scat fltg
qtz & cht g, w grdg & lam
SLTST & SS vf-fg,wh-lgy

SS a/a wh,-lgy,s&p,vf-fg,
p-mg,1-5% dol/sid cmt,
5-10% arg mtx, 5-15% silic
cmt,scat cg cht g,sbrd-
sbang, cht=sbang-ang,
grdg SLTST lgy,grdg vfg

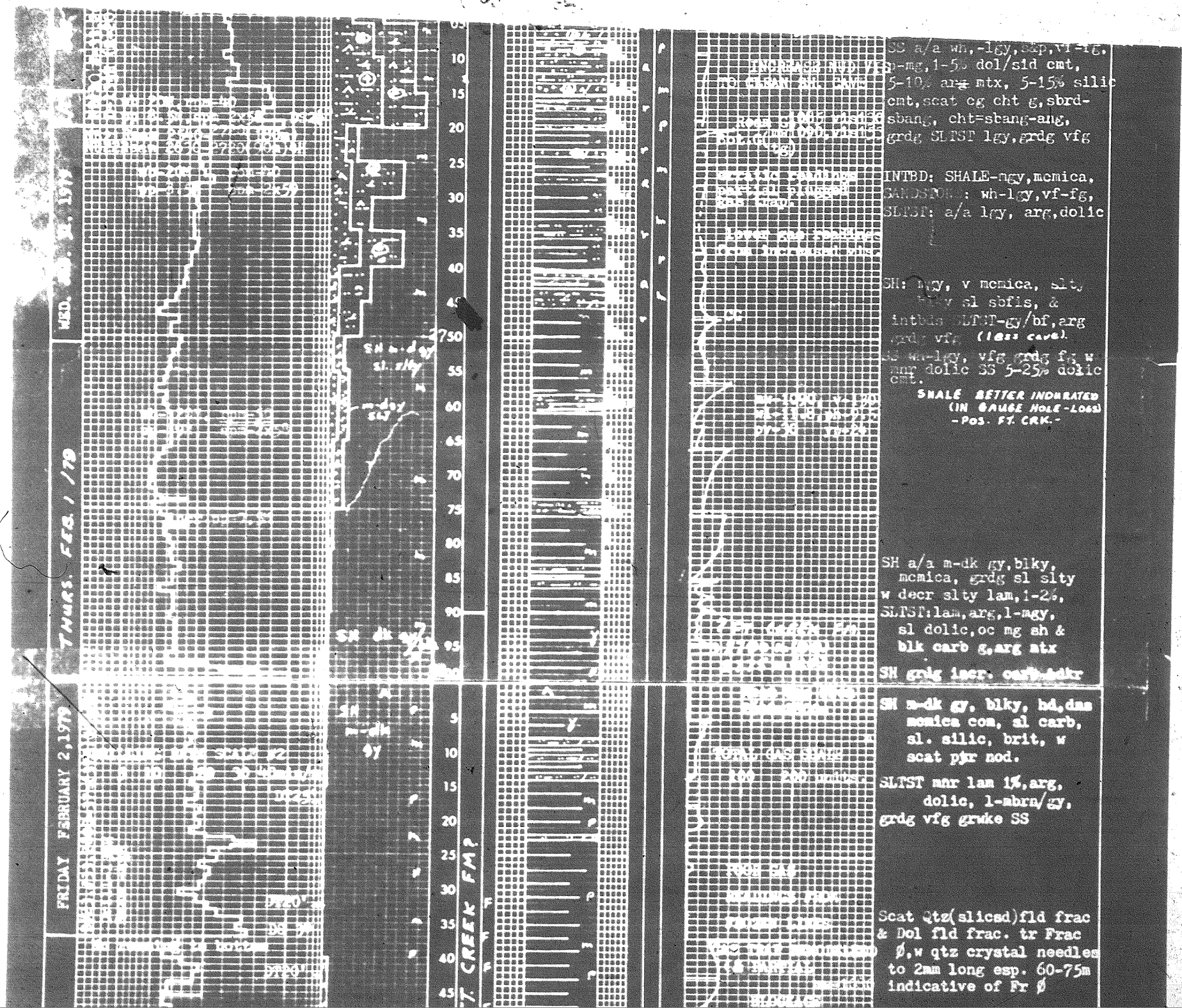
INTRD. SHALE-mgy mcmica

200

20

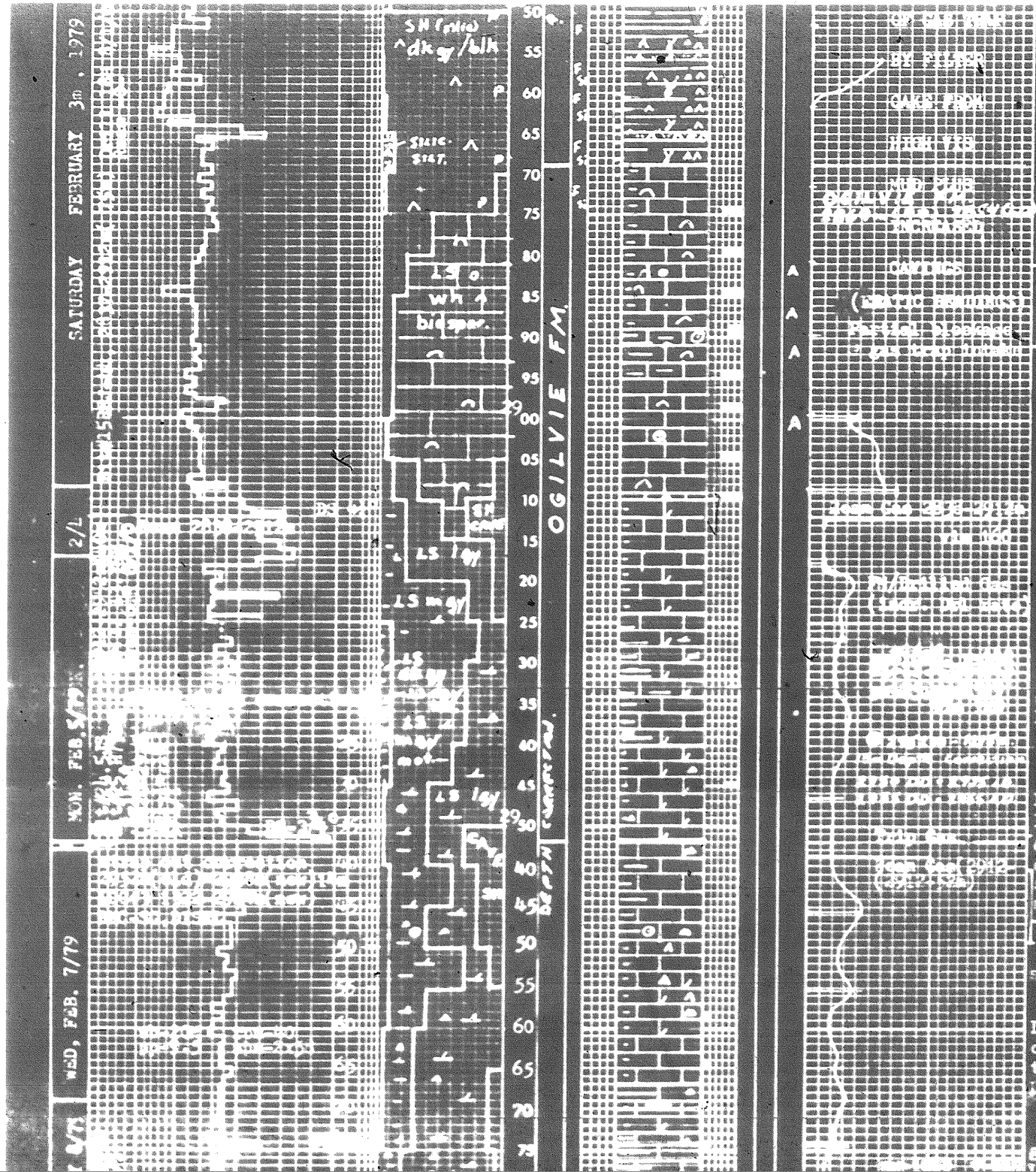


-ic,sl silic,grdg arg.
SLTST a/a l-mgy,arg,sl
dolic, grdg v arg &slty
SH,
tr DOI,wh,FLD FRAC.
SS a/a wh,-lgy,s&p,vf-fg,
5-10% arg mtx, 5-15% silic
cmt,scat cg cht g,sbrd-
sbang, cht=sbang-ang,
grdg SLTST lgy,grdg vfg
INTBD: SHALE-mgy,mcmica,
SLTST: a/a lgy, arg,dolic
SH: mgy, v mcmica, slty
sl sbfis, &
int SLTST-gy/bf,arg
(1055 cave)
SHALE BETTER INDURATED
(IN GAUGE HOLE-LOSS)
-POS. FT. CRK.-
SH a/a m-dk gy,blky,
mcmica, grdg sl slty
w decr slty lam,1-2%,
SLTST:lam,arg,l-mgy,
sl dolic,oc mg sh &
blk carb g,arg mtx
SH grdg incr. carb.
SH m-dk gy, blky, hd,dns
mcmica com, sl carb,
sl. silic, brit, w
scat pyr nod.
SLTST mor lam 1%,arg,
THURS. FEB. 1 /79
1/26


THURS. FEB. 1 /79
FRIDAY FEBRUARY 2,1979
SH m-dk gy
SH dk gy
SH m-dk gy
CREEK FM?
SS a/a wh,-lgy,sdp,vf-fg,
sp-mg,1-5% dol/sid cmt,
5-10% arg mtx, 5-15% silic
cmt,scat cg cht g,sbrd-
sbang, cht=sbang-ang,
grdg SLTST lgy,grdg vfg
INTBD: SHALE-mgy,mcmica,
SANDSTONE: wh-lgy,vf-fg,
SLTST: a/a lgy, arg,dolic
SH: mgy, v mcmica, slty
sl sbfis, &
intbds SLTST-gy/bf,arg
grdg vfg (less cave).
SS wh-lgy, vfg grdg fg w
mnr dolic SS 5-25% dolic
cmt.
SHALE BETTER INDURATED
(IN GAUGE HOLE-LOGS)
-POS. FT. CRK.-
SH a/a m-dk gy,blky,
mcmica, grdg sl slty
w decr slty lam,1-2%,
SLTST:lam,arg,l-mgy,
sl dolic,oc mg sh &
blk carb g,arg mtx
SH grdg incr. carb.&dkr
SH m-dk gy, blky, hd,dns
mcmica com, sl carb,
sl. silic, brit, w
scat pyr nod.
SLTST mnr lam 1%,arg,
dolic, l-mbrn/gy,
grdg vfg grwke SS
Scat Qtz(slicsd)fld frac
& Dol fld frac. tr Frac
Ø,w qtz crystal needles
to 2mm long esp. 60-75m
indicative of Fr Ø

21 op

SH a/a m-dk gy,blky,
mcmica, grdg sl slty
w decr slty lam,1-2%,
SLTST:lam,arg,l-mgy,
sl dolic,oc mg sh &
blk carb g,arg mtx
SH grdg incr. carb,mdkr
SH m-dk gy, blky, hd,dns
mcmica com, sl carb,
sl. silic, brit, w
scat pyr mod.
SLTST mnr lam 1%,arg,
dolic, l-mbrn/gy,
grdg vfg grwke SS
Scat Qtz(slicsd)fld frac
& Dol fld frac. tr Frac
Ø,w qtz crystal needles
to 2mm long esp. 60-75m
indicative of Fr Ø
SH dk gy/blk, silic, hd,
brit, w scat vfg blu/wh
silic/cht sph 60-70. hd.
(metsomc?) incr. γ Gamma.
QTZ XL fld FRAC 55-75m(SH)
SLST BF & lt gy, 20-30%
silic cmt grdg cht.,hd
dns w Blk SH a/a trsilic
LS(chty) clasts.
LS: wh, biosparite to
biomicrite, w crin clasts
to 2mm, vest c-vcg "
& fos frag,tr dd Asph str
bet. clasts, sl rexln
(Log: soft LS-cave)
LD: 2866-76m
OD: 2881-91m
LS: lgy,sl arg, sl rexln
crp-micxln, micritic, w
OGILVIE FM.
? FT. CREEK FM?
THURS. FEB. 1 /79
FRIDAY FEBRUARY 2,1979
SATURDAY FEBRUARY 3m, 1979
2/L



SH dk gy/blk, silic, hd, brit, w scat vfg blu/wh silic/cht sph 60-70. hd. (metsomc?) incr. γ gamma.
QTZ XL fld FRAC 55-75m (SH)
SLST BF & lt gy, 20-30% silic cmt grdg cht., hd dns w Blk SH a/a trsilic LS(chty) clasts.

LS: wh, biosparite to biomicrite, w crin clasts to 2mm, vest c-vcg " & fos frag, tr dd Asph str bet. clasts, sl rexln
(Log: soft LS - cave)
LD: 2806-76m
DO: 2881-91m

LS: lgy, sl arg, sl rexln crp-micxln, micritic, w mnr lam dk gy-blk arg, dolic LS sl silic & chty

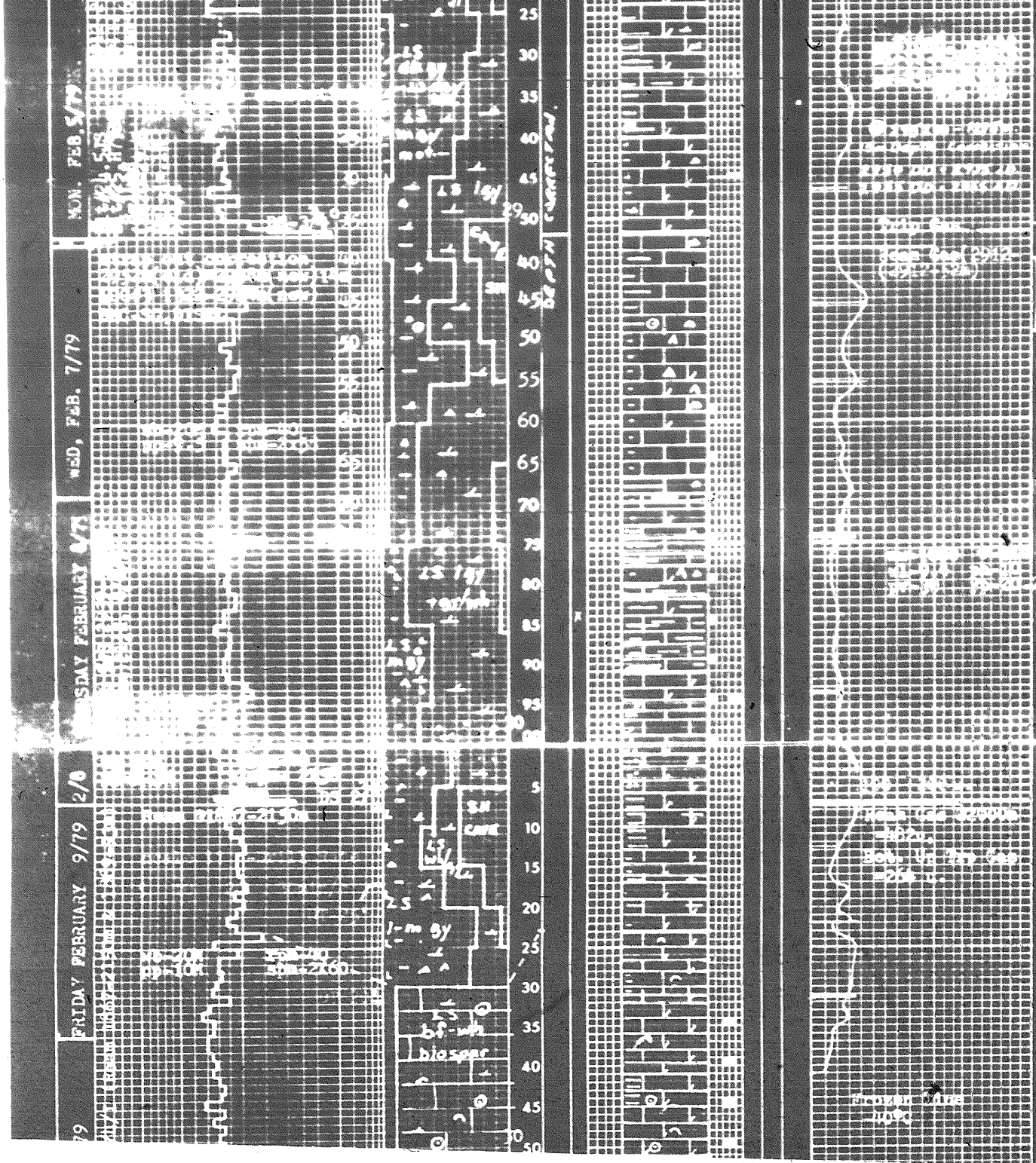
LS m gy, incr arg%, sl mot grdg sl dolic, lith-rexln w scat crin, mnr lam
LS: dk gy/blk, v arg, dolc

LS lgy a/a v.dolic grdg lmy DOL, crypxlngrdg mcxln ghost m-cg, biomicrite grdg LS mgy, v dolic, arg, sl mot, w vf clasts in arg micritic mtx.
Soft LS - CAVE 2941-2951m (LOG RUN #4)

scat repl. cht, <1%

LS dolic, lgy, oc wh, rexln, crypxln grdg mcxln, biomic tr silic grdg cht, grdg LS mgy-mgy/bn, mot, arg, dolic (30-40% dolic xls) scat crin, sl slty grdg silic &trcht, mnr

22



LS m gy, incr arg%, sl mot
grdg sl dolic, lith-rexln
w scat crin, mnr lam
LS: dk gy/blk, v arg, dolc

LS lgy a/a v.dolic grdg
lmy DOL, crypxlngrdg mcxln
ghost m-cg, biomicrite
grdg LS mgy, v dolic, arg,
sl mot, w vf clasts in arg
micritic mtx.
soft LS - CAVE 2941-2951
(LOG RUN #4)

scat repl. cht, <1%

LS dolic, lgy, oc wh, rexln,
crypxln grdg mcxln, biomic
tr silic grdg cht, grdg
LS mgy-mgy/bn, mot, arg,
dolic (30-40% dolic
xls) scat crin, sl alty
grdg silic &trcht, mnr
LS v arg, dkgy grdg lmySH
tr intbd thn ss lam wh,
f-mg,

LS l gy/wh-micrite, sl
dolic & rexln, 10-70%dol
xls, m-cg ghost clasts.

LS mgy, grdg dk gy/bn, arg
lith, hd, dns, plty, dolic
tr sl f-mg sgy

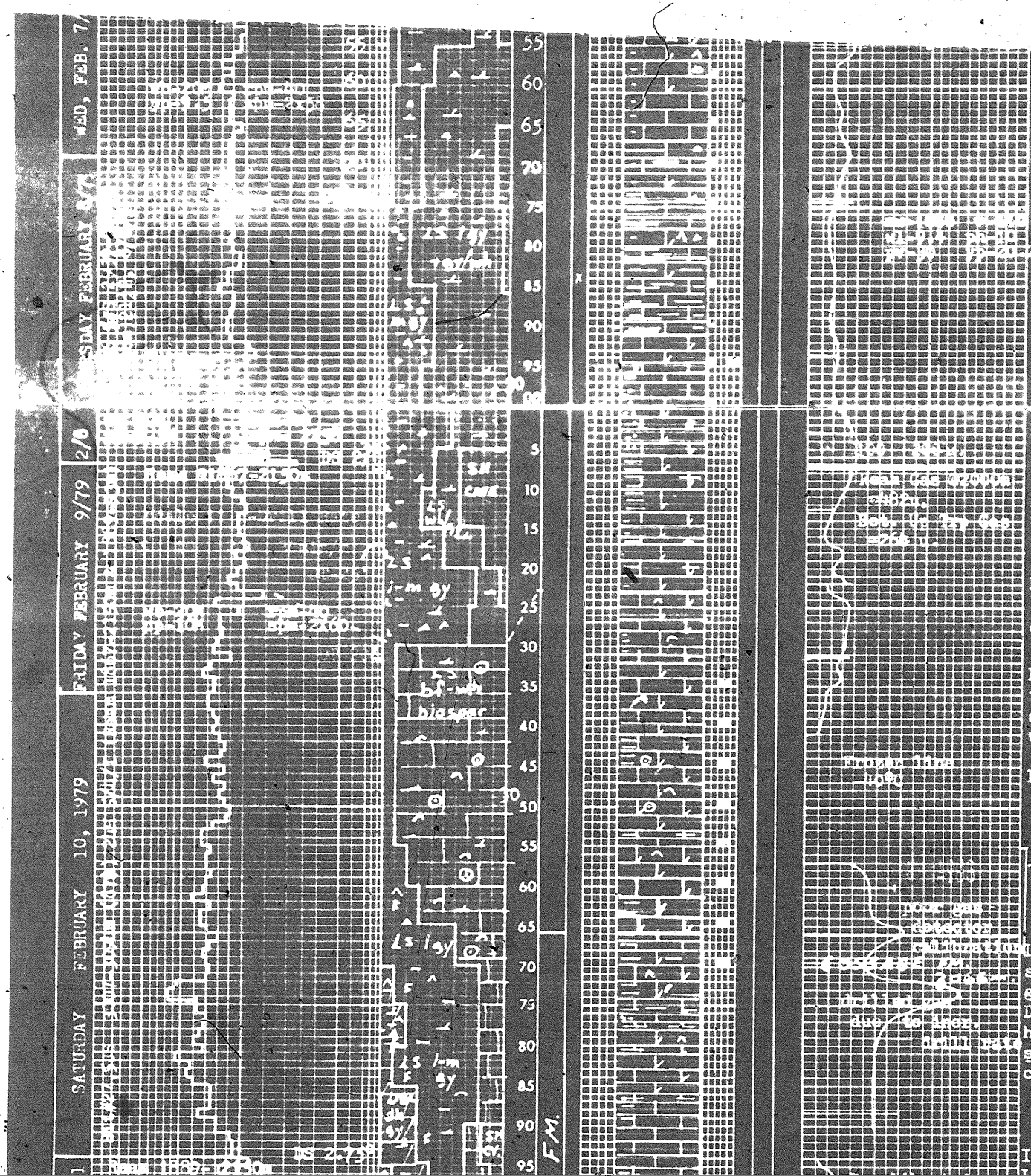
LS l-mgy, sl dolic, lith,
grdg dk gy/bn, arg, scat
dol xls in Ls mtx, w mnr
intbds: (tr f-mg sd 95-05
LS lgy/wh, micrite, plty
sl rexln

LS a/a l-mgy, arg, sl dol
lith, hd, dns, sl silic
grdg tr dk gy cht (repl.).

LS bf-wh, intrabiomicrite
to sparite, scat crin,
scat shell frgs, sl dolic
w clasts f-mg w mnr lam

LS (<10%) l-mgy, arg, sl
dolic, lith, sl silic
w tr cht,

22



LS dolic, lgy, oc wh, rexln, crypxln grdg mcxln, biomic tr silic grdg cht, grdg

LS mgy-mgy/bn, mot, arg, dolic (30-40% dolic xls) scat crin, sl slty grdg silic &trcht, mnr

LS v arg, dkgy grdg lmySH

tr intbd thn ss lam wh, f-mg,

LS l gy/wh-micrite, sl dolic & rexln, 10-70% dol xls, m-cg ghost clasts.

LS mgy, grdg dk gy/bn, arg lith, hd, dns, plty, dolic

LS l-mgy, sl dolic, lith, grdg dk gy/bn, arg, scat dol xls in Ls mtx, w mnr intbds: (tr f-mg sd 95-05%

LS lgy/wh, micrite, plty sl rexln

LS a/a l-mgy, arg, sl dol lith, hd, dns, sl silic grdg tr dk gy cht (repl.)

LS bf-wh, intrabiomicrite to sparite, scat crin, scat shell frgs, sl dolic w clasts f-mg w mnr lam

LS (<10%) l-mgy, arg, sl dolic, lith, sl silic w tr cht,

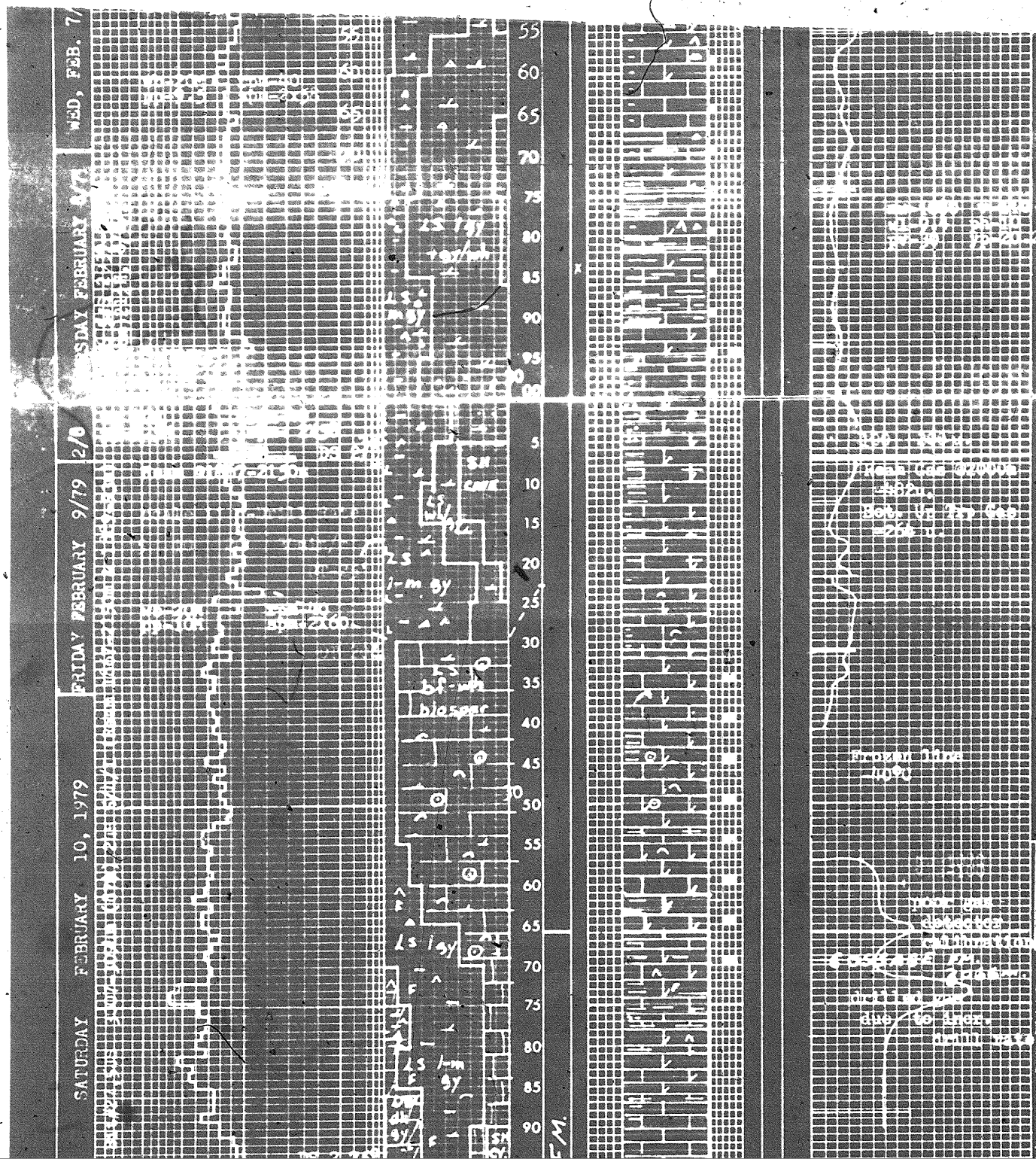
3055-68 (partial wash-out)

LS lgyoc mgy, plty dolic sl silic w tr cht, arg grdg10-30% DOL lmy grdg Dolic LS-dk gy & gy/bn, hd, dns, lith, crypxln, sl silic, plty w oc dk gy cht(meta)

sl. increase Log. Density

INTBDS: wh, l-mgy & dk gy

23



LS dolic, lgy, oc wh, rexln, crypxln grdg mcxln, biomic tr silic grdg cht, grdg
LS mgy-mgy/bn, mot, arg, dolic (30-40% dolic xls) scat crin, sl slty grdg silic &trcht, mnr
LS v arg, dkgy grdg lmySH
tr intbd thn ss lam wh, f-mg,

LS l gy/wh-micrite, sl dolic & rexln, 10-70% dol xls, m-cg ghost clasts.

LS mgy, grdg dk gy/bn, arg lith, hd, dns, plty, dolic

LS l-mgy, sl dolic, lith, grdg dk gy/bn, arg, scat dol xls in Ls mtx, w mnr intbds: (tr f-mg sd 95-05
LS lgy/wh, micrite, plty sl rexln

LS a/a l-mgy, arg, sl dol lith, hd, dns, sl silic grdg tr dk gy cht (repl.)

LS bf-wh, intrabiomicrite to sparite, scat crin, scat shell frgs, sl dolic w clasts f-mg w mnr lam

LS (<10%) l-mgy, arg, sl dolic, lith, sl silic w tr cht,

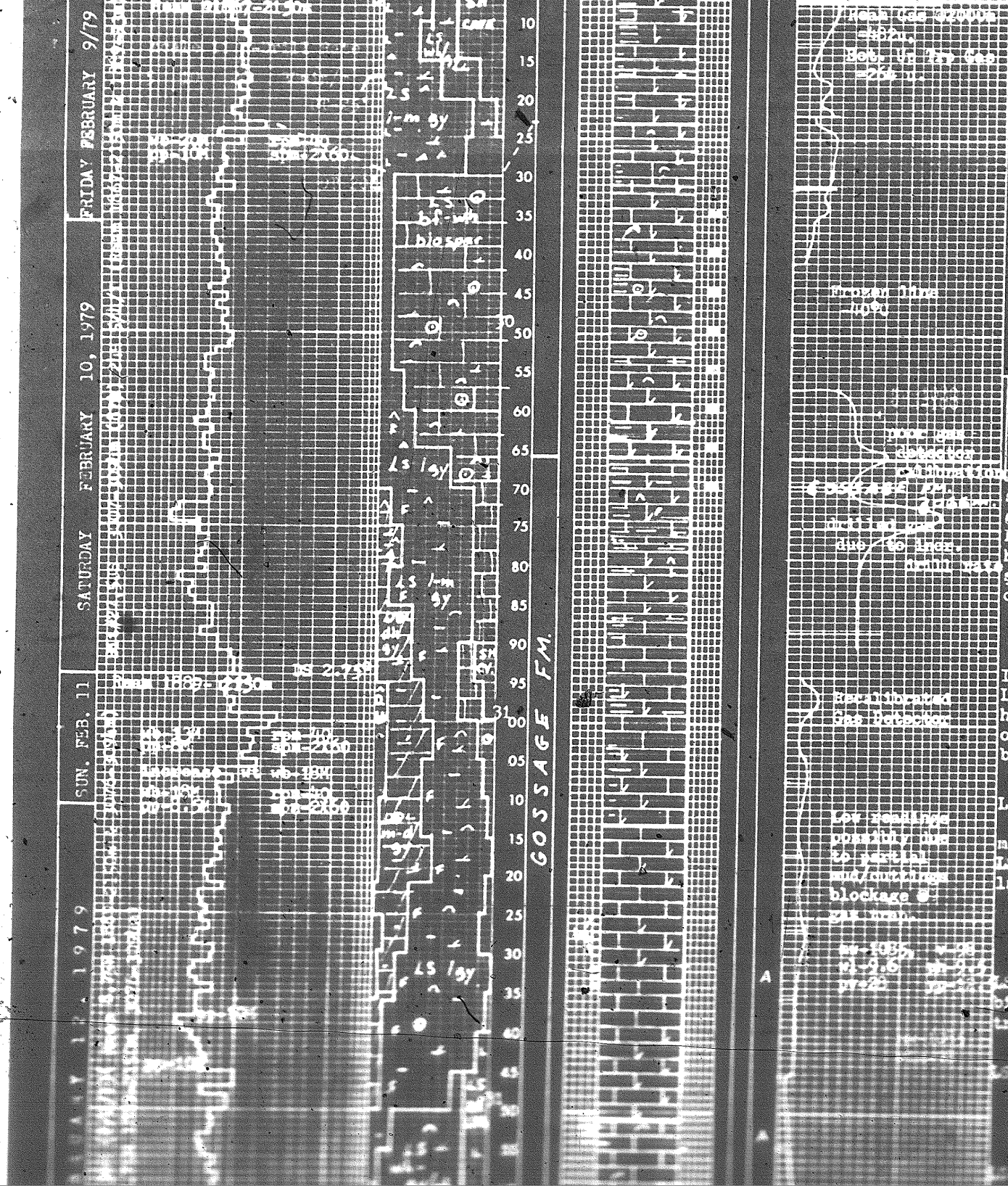
3055-68 (partial wash-out)

LS lgyoc mgy, plty dolic sl silic w tr cht, arg grdg10-30% DOL lmy grdg Dolic LS-dk gy & gy/bn, hd, dns, lith, crypxln, sl silic, plty w oc dk gy cht(meta)

sl. increase Log. Density

INTBDS: wh, l-mgy & dk gy

23



dol xls in Ls mtx, w mnr intbds: (tr f-mg sd 95-05
LS lgy/wh, micrite, plty sl rexln

LS a/a l-mgy, arg, sl dol lith, hd, dns, sl silic grdg tr dk gy cht (repl.)

LS bf-wh, intrabiomicrite to sparite, scat crin, scat shell frgs, sl dolic w clasts f-mg w mnr lam

LS (<10%) l-mgy, arg, sl dolic, lith, sl silic w tr cht,

3055-68 (partial wash-out)

LS lgyoc mgy, plty dolic sl silic w tr cht, arg grdg10-30% DOL lmy grdg Dolic LS-dk gy & gy/bn, hd, dns, lith, crypxln, sl silic, plty w oc dk gy cht(meta)
sl. increase Log. Density

INTBDS: wh, l-mgy & dk gy LS to Dol, & mnr DOL blk, hd, dns, sl silic, plty oc fos frgs, biomicrite w blk arg mtx.

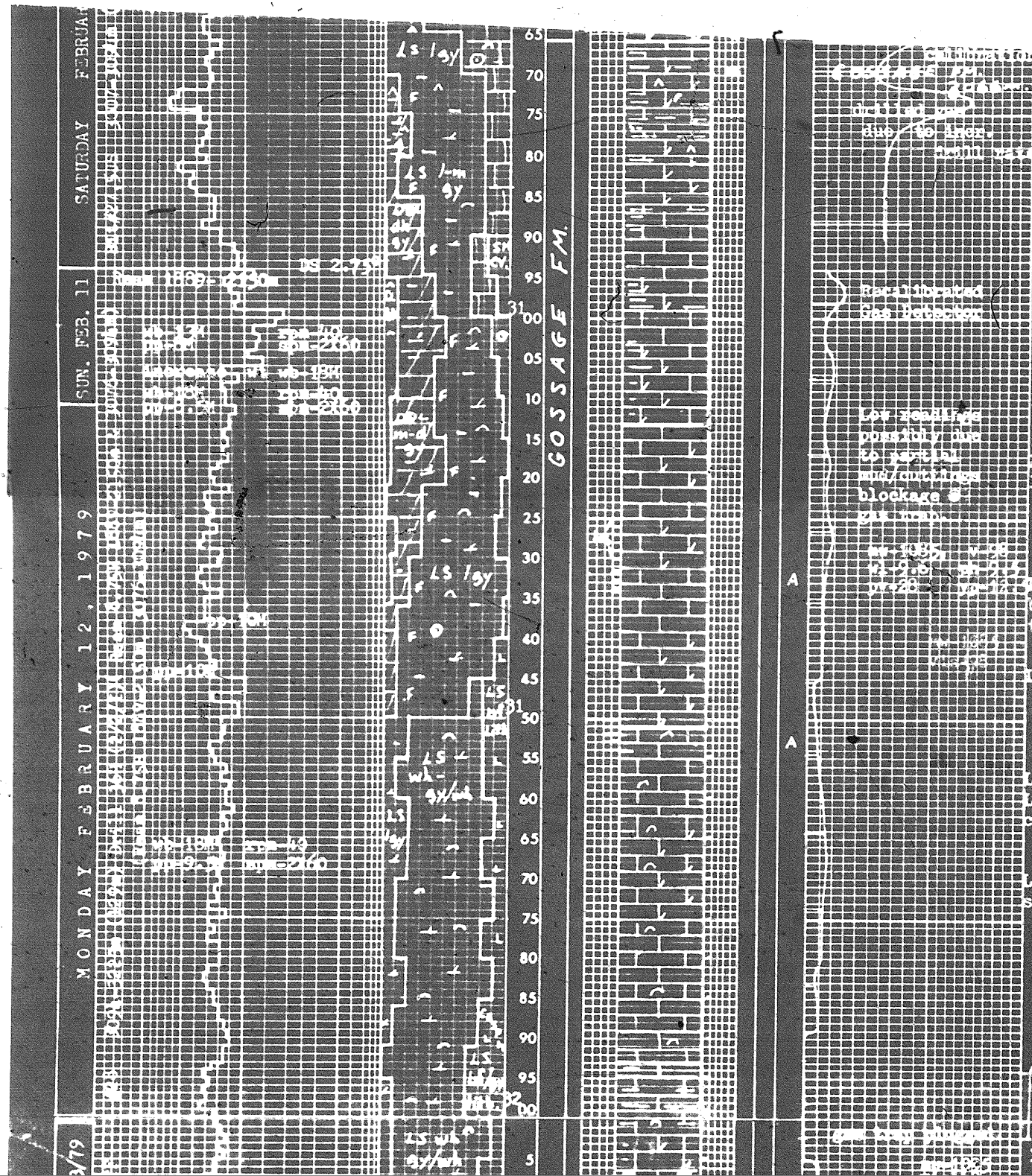
LS lgy, dolic, rexln, sl arg, crpxln grdg mnr mcxln, w grdg
LS a/a dolic, m-dk gy, grdg lmy DOL, arg

LS l gy, sl dolic, oc mcxln, biomic, crinoidal, oc gast, tr pr ix ø w ASPH stn, dd

LS (10-20%) bf, litho, micrite, tr spar calc xls, spar-eye, sp-dolic biosparite, sl dolic

LS bf/lt gy, litho, a/a

23



LS lgyoc mgy, plty dolic sl silic w tr cht, arg grdg10-30% DOL lmy grdg Dolic LS-dk gy & gy/bn, hd, dns, lith, crypxln, sl silic, plty w oc dk gy cht(meta)

sl. increase Log. Density

INTBDS: wh, l-mgy & dk gy LS to Dol, & mnr DOL blk, hd, dns, sl silic, plty oc fos frgs, biomicrite w blk arg mtx.

LS lgy, dolic, rexln, sl arg, crpxln grdg mnr mcxln, w grdg

LS a/a dolic, m-dk gy, grdg lmy DOL, arg

LS l gy, sl dolic, oc mcxln, biomic, crinoidal, oc gast, tr pr ix Ø w ASPH stn, dd

LS (10-20%) bf, litho, micrite, tr spar calc xls, spar-eys, non-dolic biosparite, sl dolic

LS bf/lt tan, litho, a/a

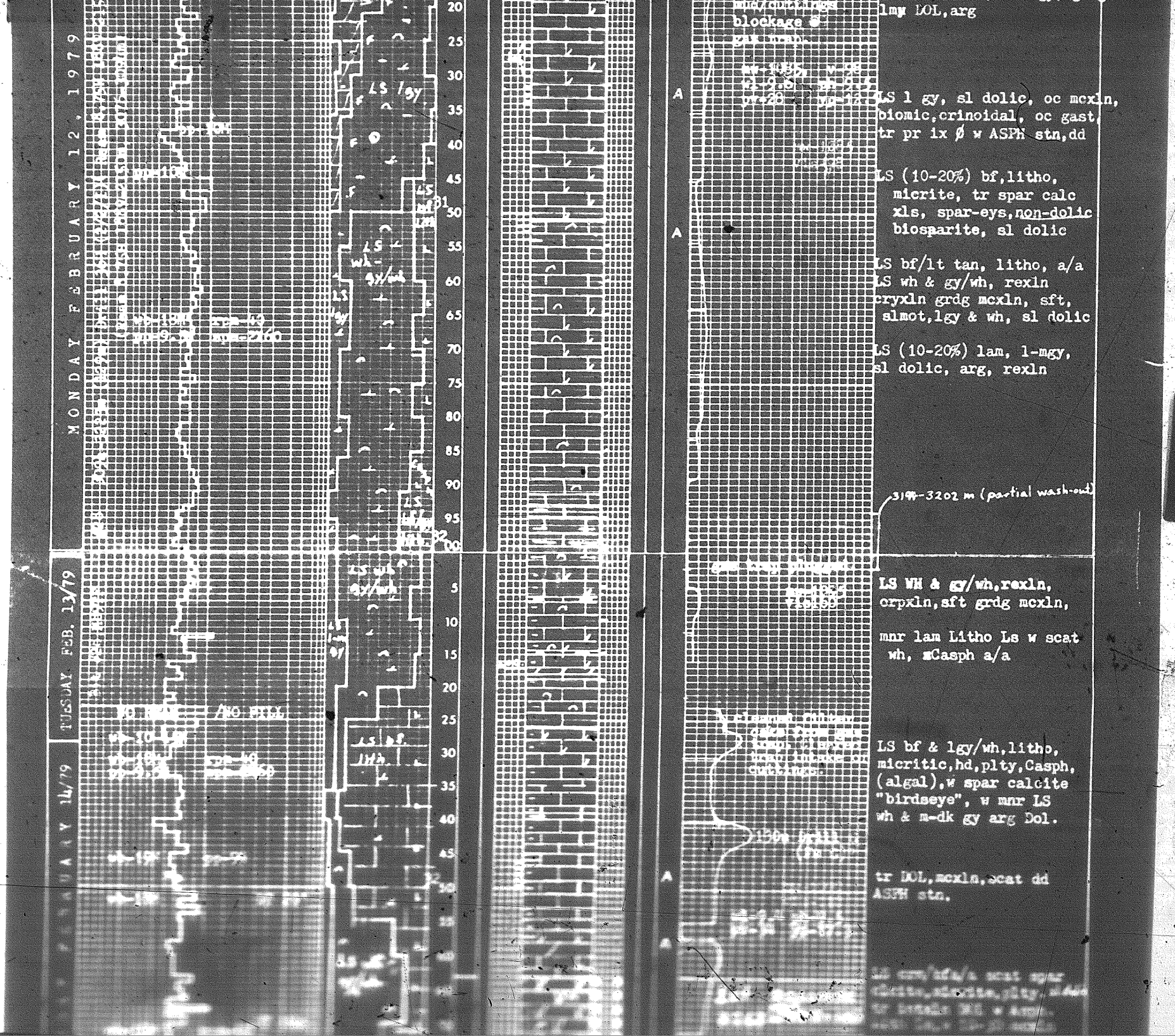
LS wh & gy/wh, rexln cryxln grdg mcxln, sft, slmot, lgy & wh, sl dolic

LS (10-20%) lam, l-mgy, sl dolic, arg, rexln

3194-3202 m (partial wash-out)

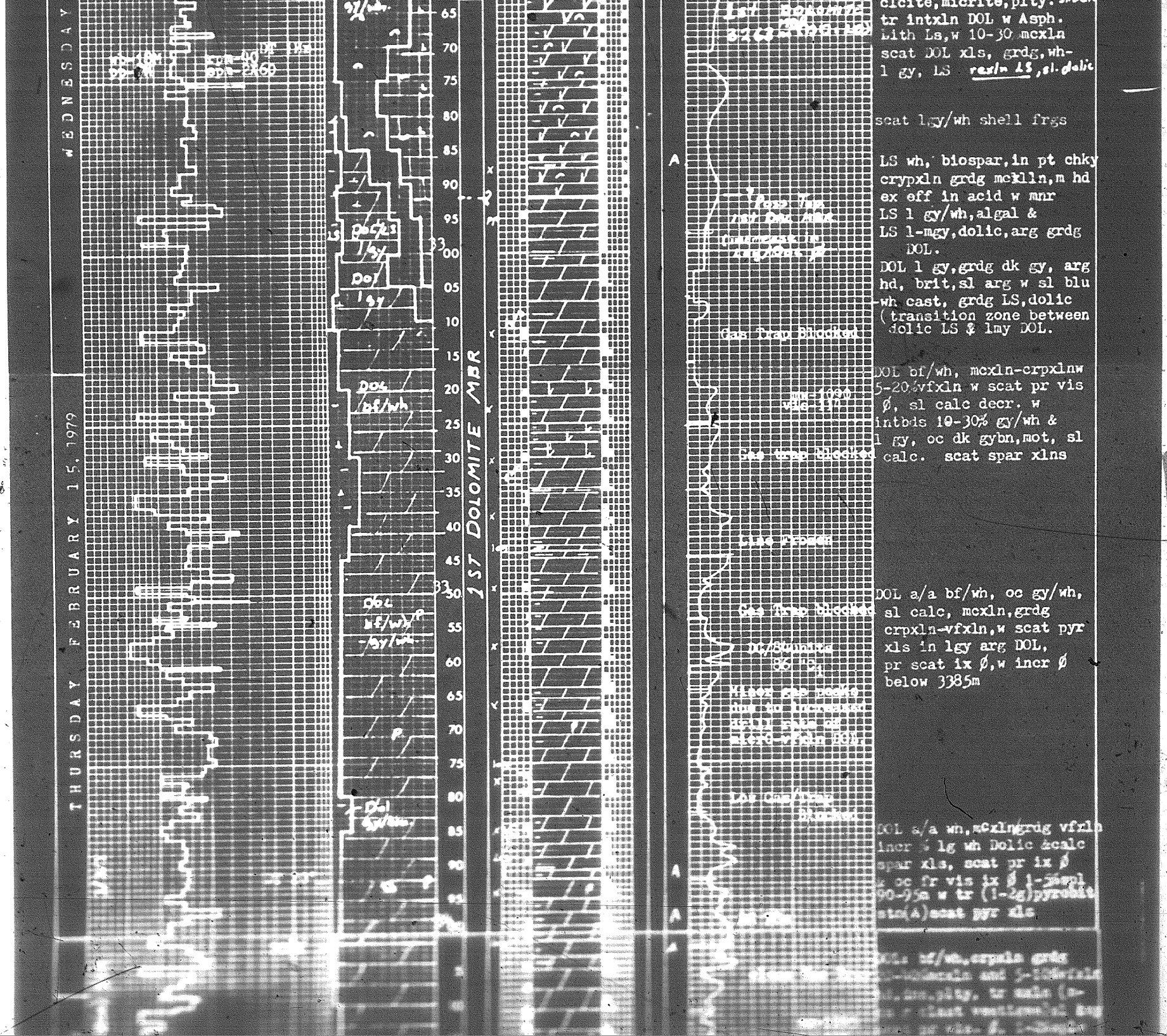
LS WH & gy/wh, rexln,

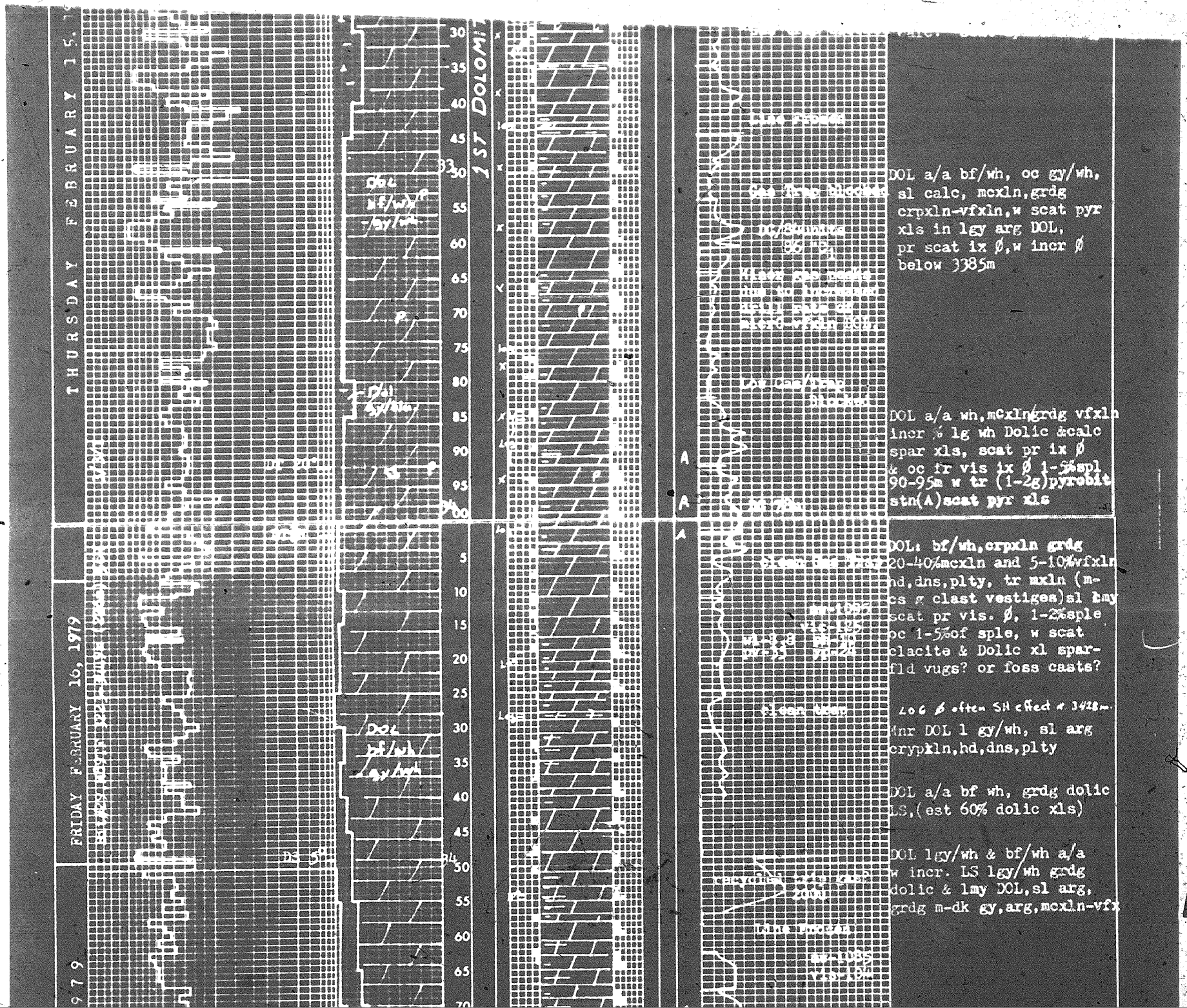
24 op

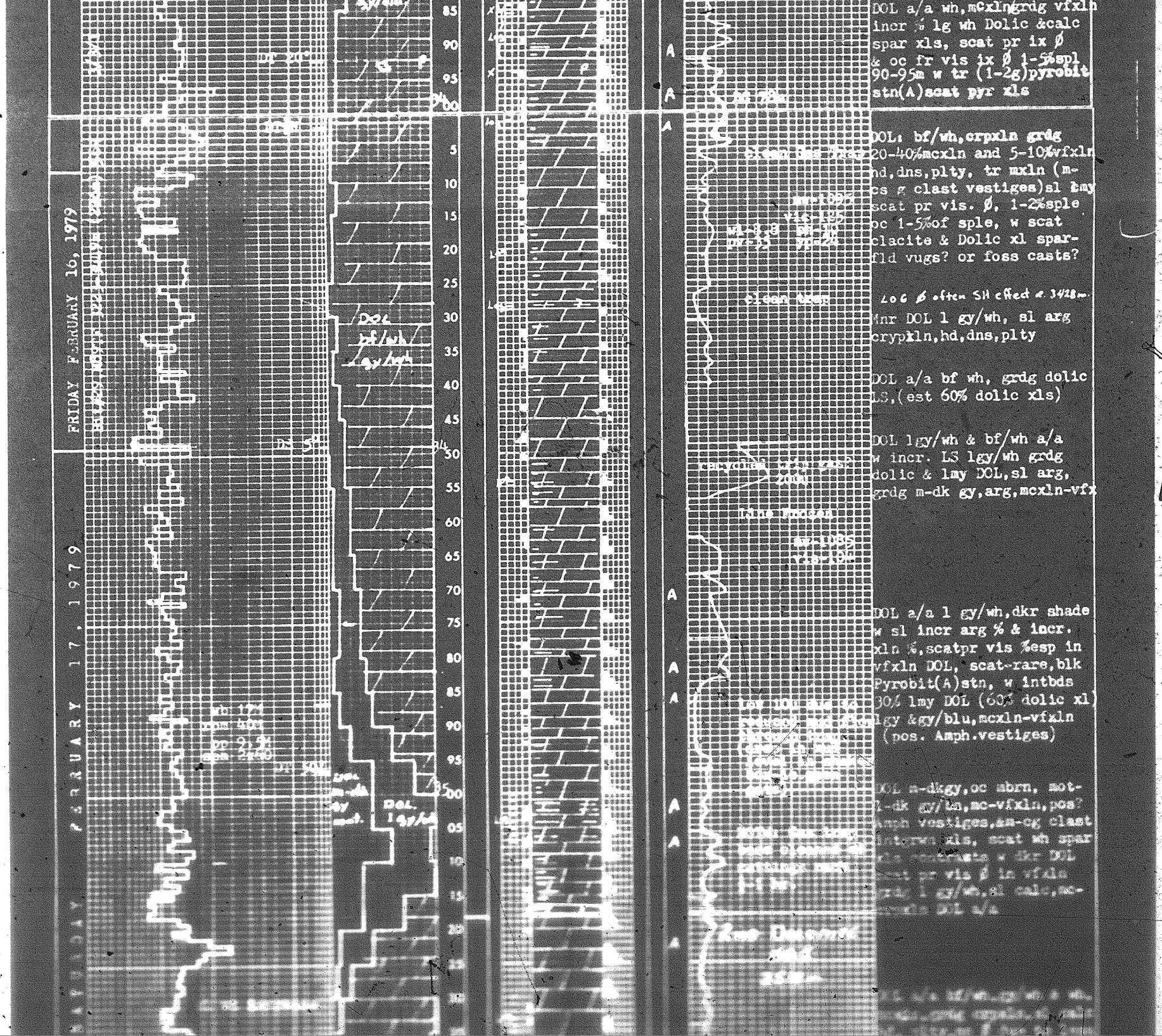

MONDAY FEBRUARY 12, 1979
TUESDAY FEB. 13/79
14/79
blockage
LS lgy
LS wh-gy/wh
LS lgy
LS wh gy/wh
LS bf lwh
A
A
A
A
lmy DOL,arg
LS l gy, sl dolic, oc mcxln, biomic,crinoidal, oc gast, tr pr ix Ø w ASPH stn,dd
LS (10-20%) bf,litho, micrite, tr spar calc xls, spar-eys,non-dolic biosparite, sl dolic
LS bf/lt tan, litho, a/a
LS wh & gy/wh, rexln cryxln grdg mcxln, sft, slmot,lgy & wh, sl dolic
LS (10-20%) lam, l-mgy, sl dolic, arg, rexln
3194-3202 m (partial wash-out)
LS WH & gy/wh,rexln, crpxln,sft grdg mcxln,
mnr lam Litho Ls w scat wh, Casph a/a
LS bf & lgy/wh,litho, micritic,hd,plty,Casph, (algal),w spar calcite "birdseye", w mnr LS wh & m-dk gy arg Dol.
tr DOL,mcxln,scat dd ASPH stn.

24

WEDNESDAY FEBRUARY 14/79
TUESDAY FEBRUARY 15, 1979
1ST DOLOMITE MBR
LS bf & lgy/wh,litho, micritic,hd,plty,Casph, (algal),w spar calcite "birdseye", w mnr LS wh & m-dk gy arg Dol.
tr DOL,mcxln,scat dd ASPH stn.
LS crm/bfa/a scat spar clcite,micrite,plty. sl.dolic tr intxln DOL w Asph.
Lith Ls,w 10-30 mcxln scat DOL xls, grdg,wh-l gy, LS rexln LS,sl.dolic
scat lgy/wh shell frgs
LS wh, biospar,in pt chky crypxln grdg mcxln,m hd ex eff in acid w mnr LS l gy/wh,algal & LS l-mgy,dolic,arg grdg DOL.
DOL l gy,grdg dk gy, arg hd, brit,sl arg w sl blu-wh cast, grdg LS,dolic (transition zone between dolic LS & lmy DOL.
DOL bf/wh, mcxln-crpxlnw 5-20%vfxln w scat pr vis ø, sl calc decr. w intbds 10-30% gy/wh & l gy, oc dk gybn,mot, sl calc. scat spar xlns
DOL a/a bf/wh, oc gy/wh, sl calc, mcxln,grdg crpxln-vfxln,w scat pyr xls in lgy arg DOL, pr scat ix ø,w incr ø below 3385m


WEDNESDAY
THURSDAY FEBRUARY 15, 1979
1ST DOLOMITE MBR
DOL bf/wh, mcxln-crpxlnw 5-20%vfxln w scat pr vis ø, sl calc decr. w intbds 10-30% gy/wh & lgy, oc dk gybn,mot, sl calc. scat spar xlns
DOL a/a bf/wh, oc gy/wh, sl calc, mcxln,grdg crpxln-vfxln,w scat pyr xls in lgy arg DOL, pr scat ix ø,w incr ø below 3385m


THURSDAY FEBRUARY 15, 1979
FRIDAY FEBRUARY 16, 1979
1ST DOLOMI
DOL a/a bf/wh, oc gy/wh, sl calc, mcxln, grdg crpxln-vfxln, w scat pyr xls in lgy arg DOL, pr scat ix ∅, w incr ∅ below 3385m
DOL a/a wh, mcxln grdg vfxln incr % lg wh Dolic &calc spar xls, scat pr ix ∅ & oc fr vis ix ∅ 1-5%mpl 90-95m w tr (1-2g)pyrobit stn(A)scat pyr xls
DOL: bf/wh, crpxln grdg 20-40%mcxln and 5-10%vfxln hd, dns, plty, tr mxln (m-cs g clast vestiges)sl lmy scat pr vis. ∅, 1-2%sple oc 1-5%of sple, w scat clacite & Dolic xl spar-fld vugs? or foss casts?
Lmnr DOL l gy/wh, sl arg crypxln, hd, dns, plty
DOL a/a bf wh, grdg dolic LS, (est 60% dolic xls)
DOL lgy/wh & bf/wh a/a w incr. LS lgy/wh grdg dolic & lmy DOL, sl arg, grdg m-dk gy, arg, mcxln-vfx
A
A


FRIDAY FEBRUARY 16, 1979
SATURDAY FEBRUARY 17, 1979
DOL a/a wh,mcxln grdg vfxln incr % lg wh Dolic &calc spar xls, scat pr ix Ø & oc fr vis ix Ø 1-5%spl 90-95m w tr (1-2g)pyrobit stn(A)scat pyr xls
DOL: bf/wh,crpxln grdg 20-40%mcxln and 5-10%vfxln hd,dns,plty, tr mxln (m-cs g clast vestiges)sl lmy scat pr vis. Ø, 1-2%sple oc 1-5%of sple, w scat clacite & Dolic xl spar-fld vugs? or foss casts?
Log Ø often SH effect @ 3428m
incr DOL l gy/wh, sl arg crypXln,hd,dns,plty
DOL a/a bf wh, grdg dolic LS,(est 60% dolic xls)
DOL lgy/wh & bf/wh a/a w incr. LS lgy/wh grdg dolic & lmy DOL,sl arg, grdg m-dk gy,arg,mcxln-vfx
DOL a/a l gy/wh,dkr shade w sl incr arg % & incr. xln %,scatpr vis %esp in vfxln DOL, scat-rare,blk Pyrobit(A)stn, w intbds 30% lmy DOL (60% dolic xl) lgy &gy/blu,mcxln-vfxln (pos. Amph.vestiges)
DOL m-dkgy,oc sbrn, mot-dk gy/bn,mc-vfxln,pos? Amph vestiges,sm-cg clast
DOL a/a lgy/wh,sl calc,mc-
DOL lgy/wh
DOL
DOL
DOL

18./79 SATURDAY FEBRUARY 17, 1979 FRIDAY F.R

VD DOLOMITE MBR

DOL a/a bf wh, grdg dolic
LS,(est 60% dolic xls)

DOL lgy/wh & bf/wh a/a
w incr. LS lgy/wh grdg
dolic & lmy DOL, sl arg,
grdg m-dk gy, arg, mcxln-vfx

DOL a/a l gy/wh, dkr shade
w sl incr arg % & incr.
xln %, seatpr vis %esp in
vfxln DOL,
seat-rare, blk
Pyrobit(A)stn, w intbds
30% lmy DOL (60% dolic xl
ley &gy/blu, mcxln-vfxln
(pos. Amph vestiges)

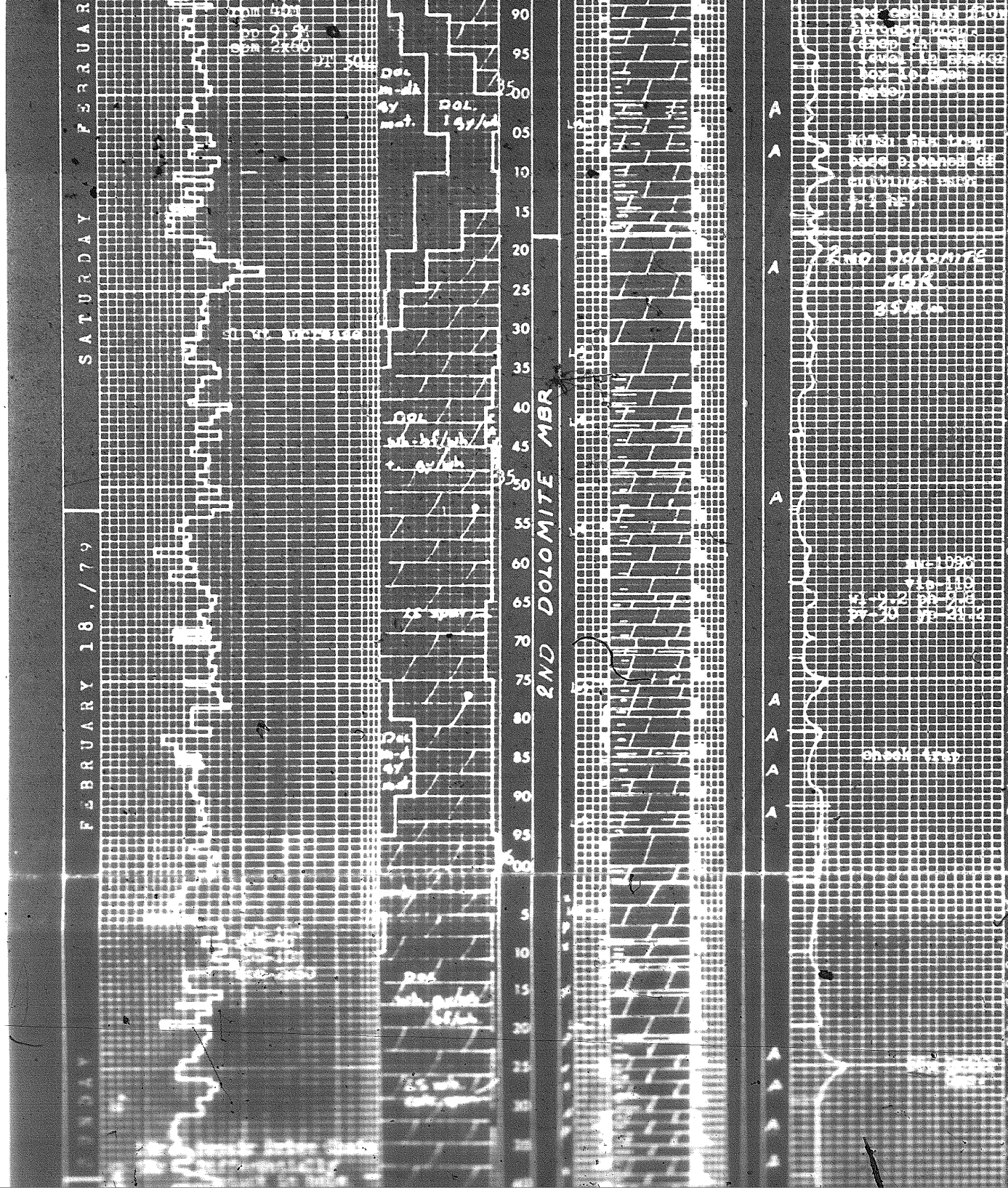
DOL, m-dkgy, oc mbrn, mot-
l-dk gy/bn, mc-vfxln, pos?
Amph vestiges, m-cg clast
intgrwn xls, scat wh spar
xls contrasts w dkr DOL
scat pr vis ø in vfxln
grdg l gy/wh, sl calc, mc-
crpxln DOL a/a

DOL a/a bf/wh, gy/wh & wh,
mcxln, grdg crpxln, sl calc
hd, plty, no ø due to less
xln DOL 3525-65m

5-10% wh SPAR calcite &
dolic, w wh chky Fos frgs,

DOL wh/bf & wh/gy a/a
plty, mld, tr pyr xls in DOL
mcxln grdg crpxln-vfxln,
scat pr vis ø 1-5% sole

9 10/



lgy &gy/blu,mcxln-vfxln (pos. Amph.vestiges)

DOL m-dkgy,oc mbrn, mot-l-dk gy/bn,mc-vfxln,pos? Amph vestiges,&m-cg clast intgrwn xls, scat wh spar xls contrasts w dkr DOL scat pr vis Ø in vfxln grdg l gy/wh,sl calc,mc-crpxln DOL a/a

DOL a/a bf/wh,gy/wh & wh, mcxln,grdg crpxln,sl calc hd, plty,no Ø due to less xln DOL 3525-65m

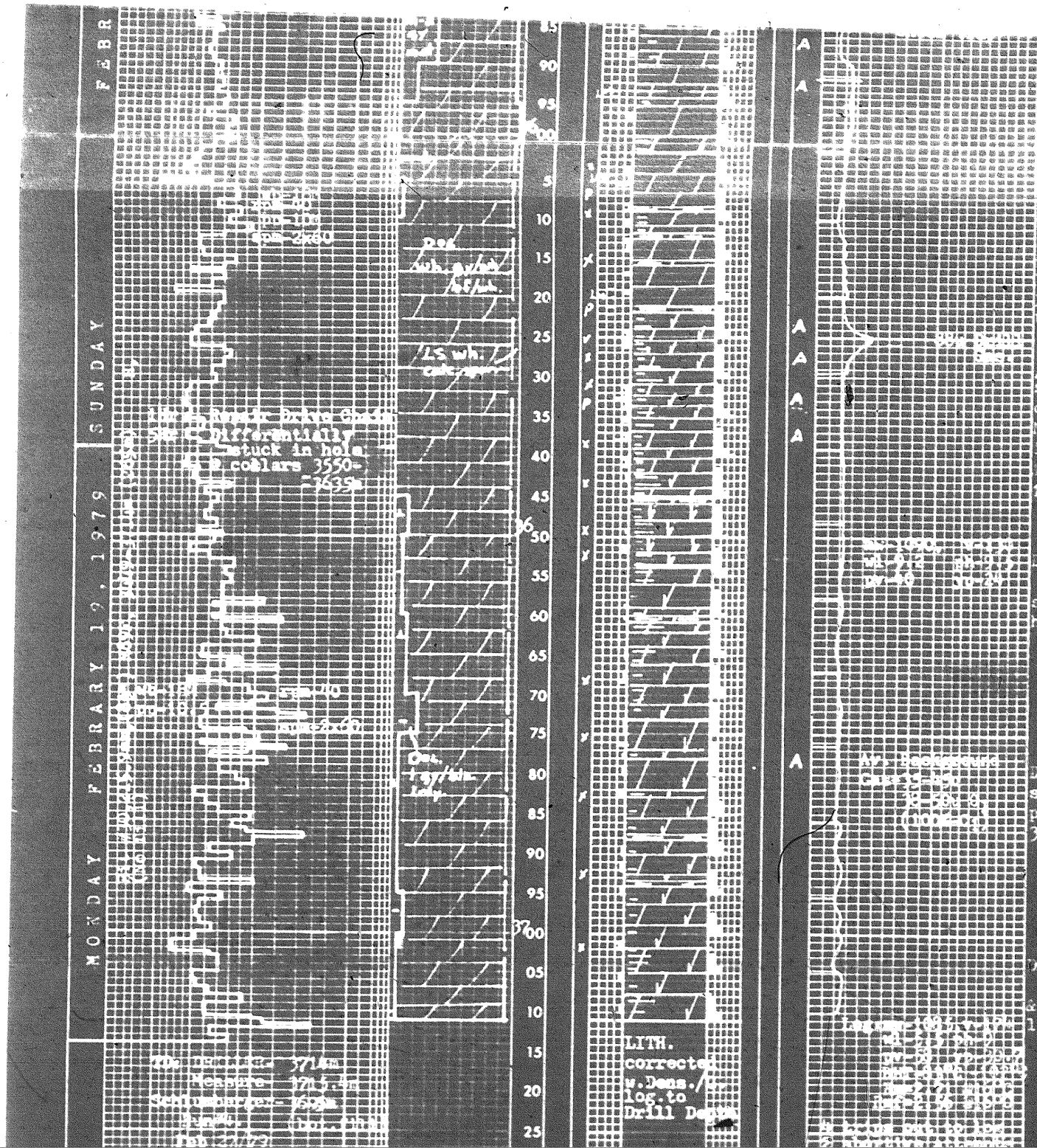
5-10% wh SPAR calcite & dolic,w wh chky Fos frgs,

DOL wh/bf & wh/gy a/a plty,mhd,tr pyr xls inDOL mcxln grdg crpxln-vfxln, scat pr vis Ø 1-5% sple, mnr fr ixØ 70-75m,esp vfx

DOL a/a lgy/wh (dkr) DOL intbds m-dkgy and gy/bn, mottled,mcxln-vfxln w oc scat fg qtz g,sl arg, grdg ltr gy arg DOL,slcalc @ base. Scat pr vis Ø ix in 1-5% of sple,

DOL: wh-gy/wh & bf/wh, micxln grdg 10-20% crypxln, &10-20%vfxln, oc saccy-micxln,hd,plty oc mxln(frm m-cg clast vestiges), scat pr ix & pp Ø esp in vfxln DOL w 5% calcite spar & oc chlky Fos frgs,cs-spar xl tr clr wh QTZ xls @3615m
Log increasing limy % below
scat blk pyrobit(A)stn,3632
Oft rare- 1-2g,
DOL: drill breaks are indicative of incr. xl &

270



bn, mottled,mcxln-vfxln w oc scat fg qtz g,sl arg grdg ltr gy arg DOL,slcalc @ base. Scat pr vis Ø ix in 1-5% of sple,

DOL: wh-gy/wh & bf/wh, micxln grdg 10-20% crypxln, &10-20%vfxln, oc saccy-micxln,hd,plty oc mxln(frm m-cg clast vestiges), scat pr ix & pp Ø esp in vfxln DOL w 5% calcite spar & oc chlky Fos frgs,cs-spar xl tr clr wh QTZ xls @3615m Log: increasing Limy % below scat blk pyrobit(A)stn,3622 oft rare- 1-2g,
NOTE: drill breaks are indicative of incr. xl % & scat Ø. Scat pr Ø in 1-5% of sple (Vis. poros)

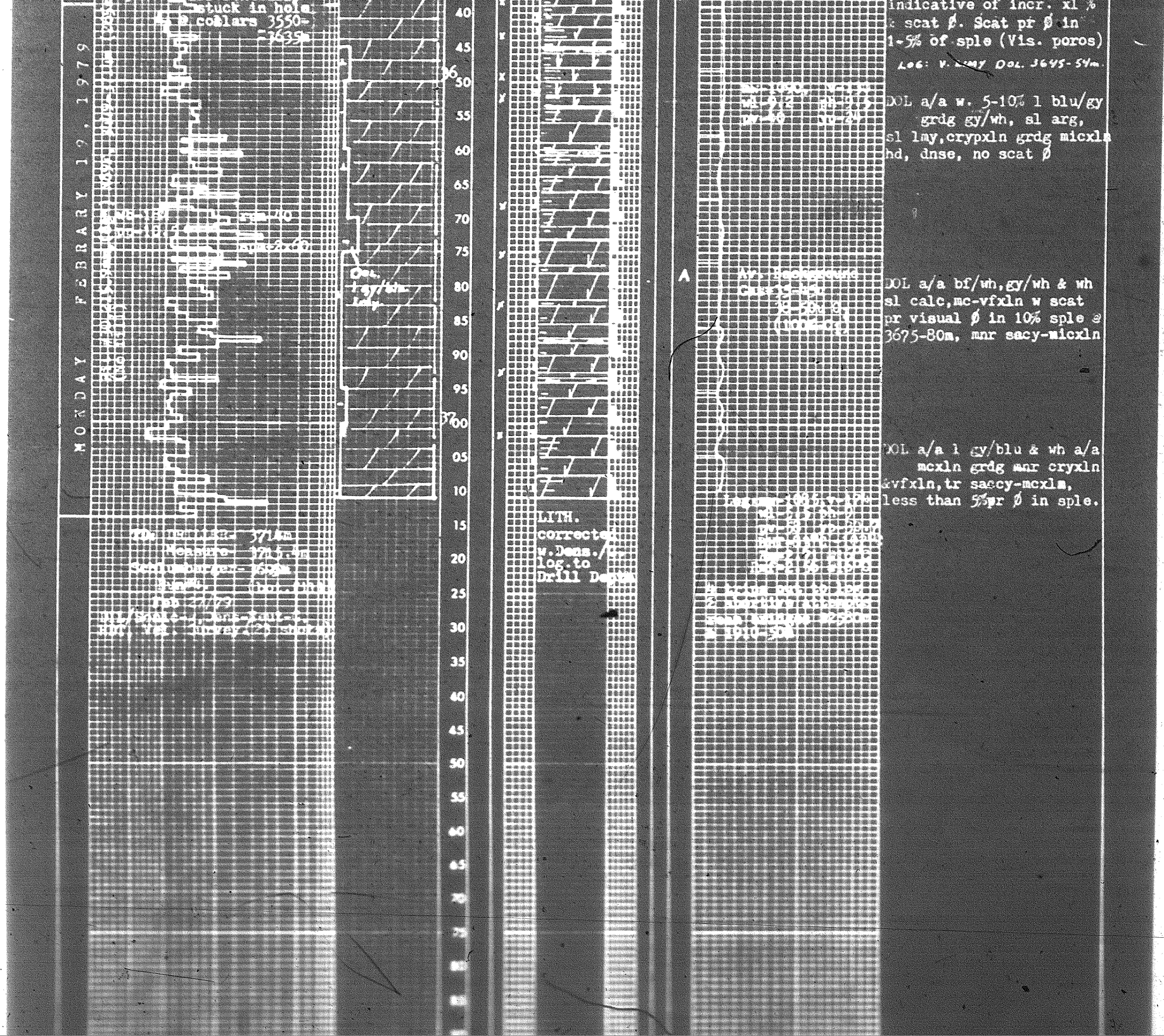
LOG: V. LIMY DOL. 3645-54m.

DOL a/a w. 5-10% l blu/gy grdg gy/wh, sl arg, sl lmy,crypxln grdg micxln hd, dnse, no scat Ø

DOL a/a bf/wh,gy/wh & wh sl calc,mc-vfxln w scat pr visual Ø in 10% sple @ 3675-80m, mnr sacy-micxln

DOL a/a l gy/blu & wh a/a mcxln grdg mnr cryxln &vfxln,tr saccy-mcxln, less than 5%pr Ø in sple.

28 of


MONDAY FEBRARY 19, 1979
stuck in hole
collars 3550-
3635m
LITH.
corrected
w.Dens./
log.to
Drill Depth
A
indicative of incr. xl %
scat Ø. Scat pr Ø in
1-5% of sple (Vis. poros)
LOG: V. LIMY DOL. 3645-54m.
DOL a/a w. 5-10% l blu/gy
grdg gy/wh, sl arg,
sl lmy,crypxln grdg micxln
hd, dnse, no scat Ø
DOL a/a bf/wh,gy/wh & wh
sl calc,mc-vfxln w scat
pr visual Ø in 10% sple @
3675-80m, mnr sacy-micxln
DOL a/a l gy/blu & wh a/a
mcxln grdg mnr cryxln
&vfxln,tr saccy-mcxln,
less than 5%pr Ø in sple.

28 of