410944

Air Montior

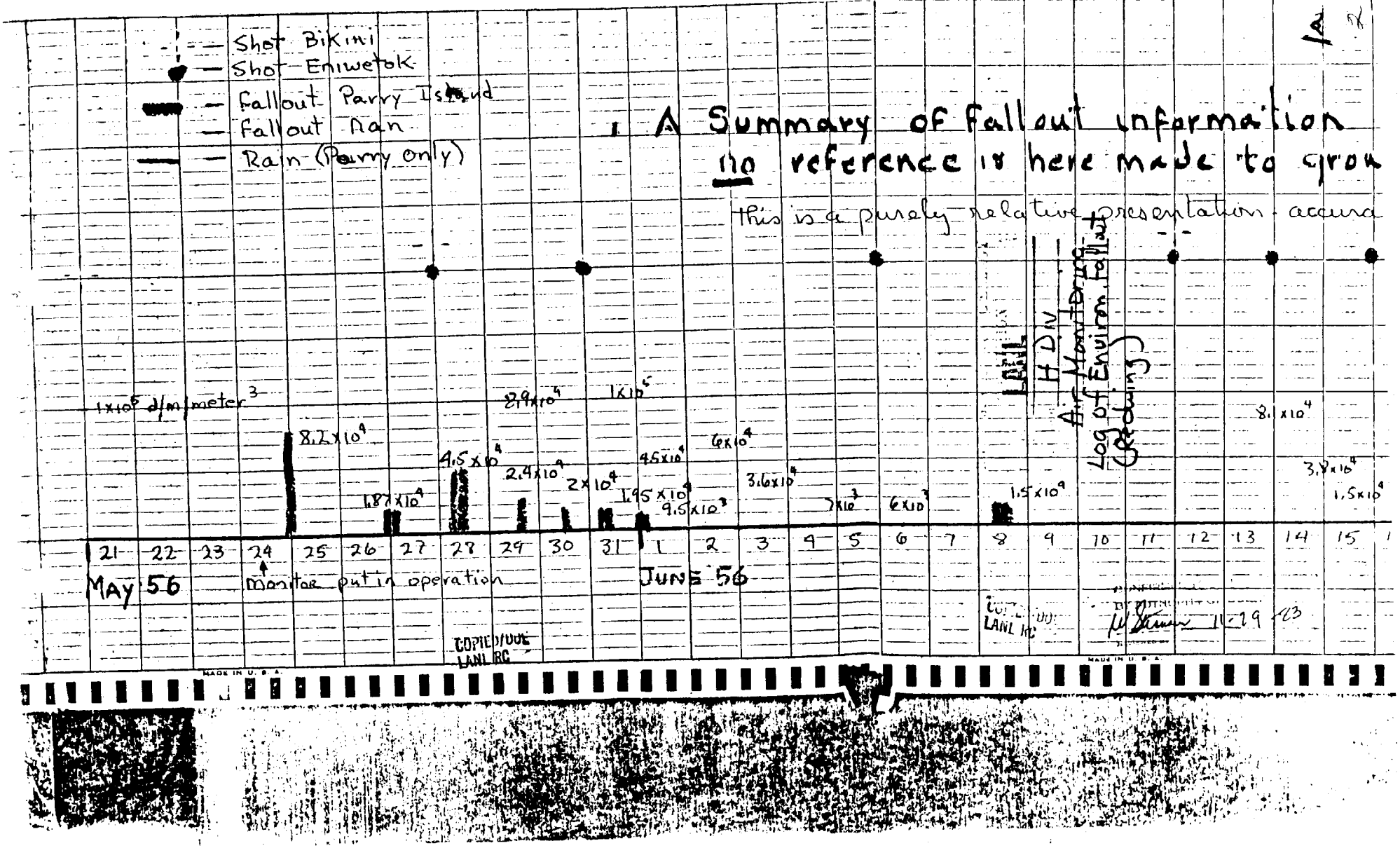
Redwing

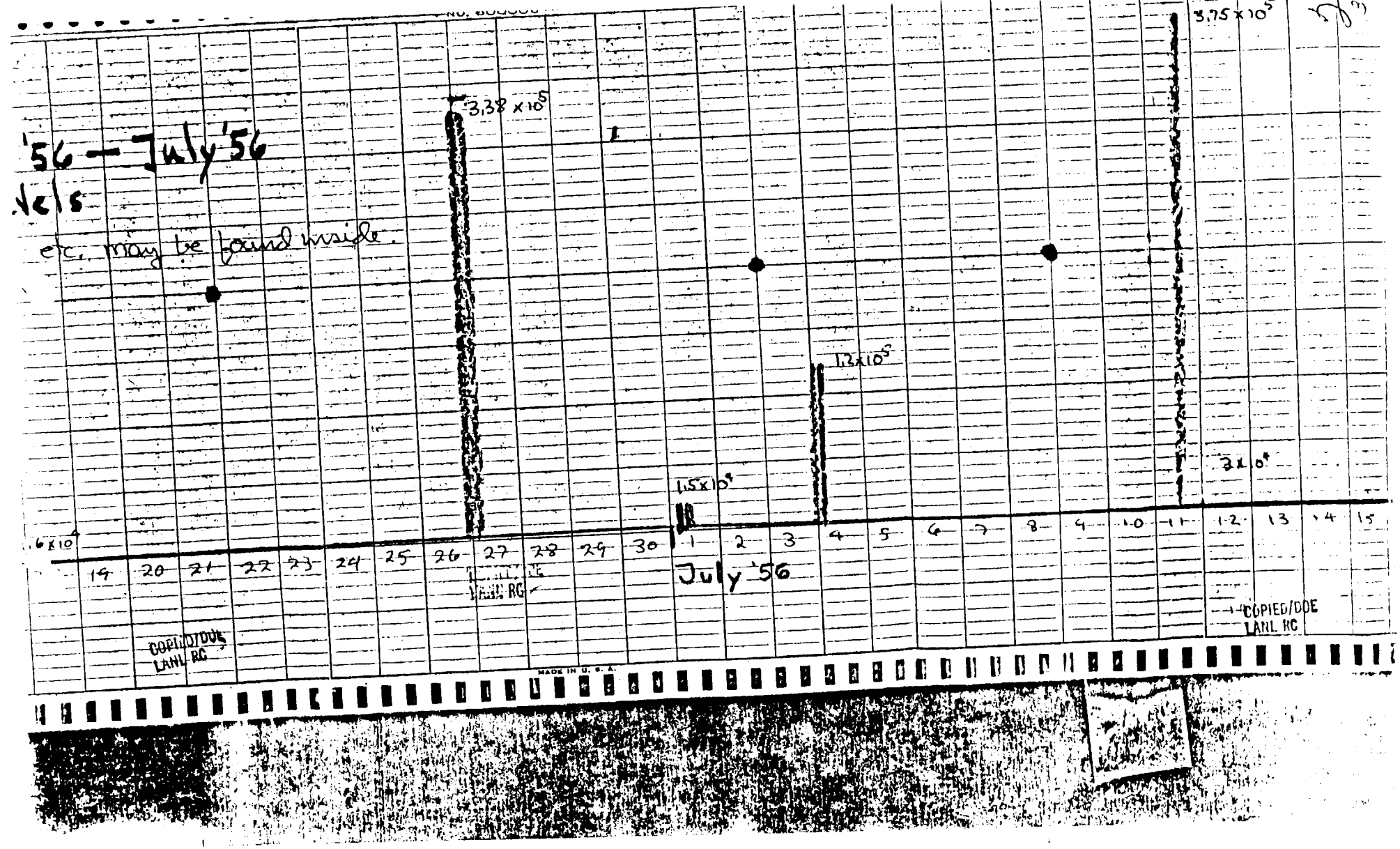
Log of Enviornment Fallout

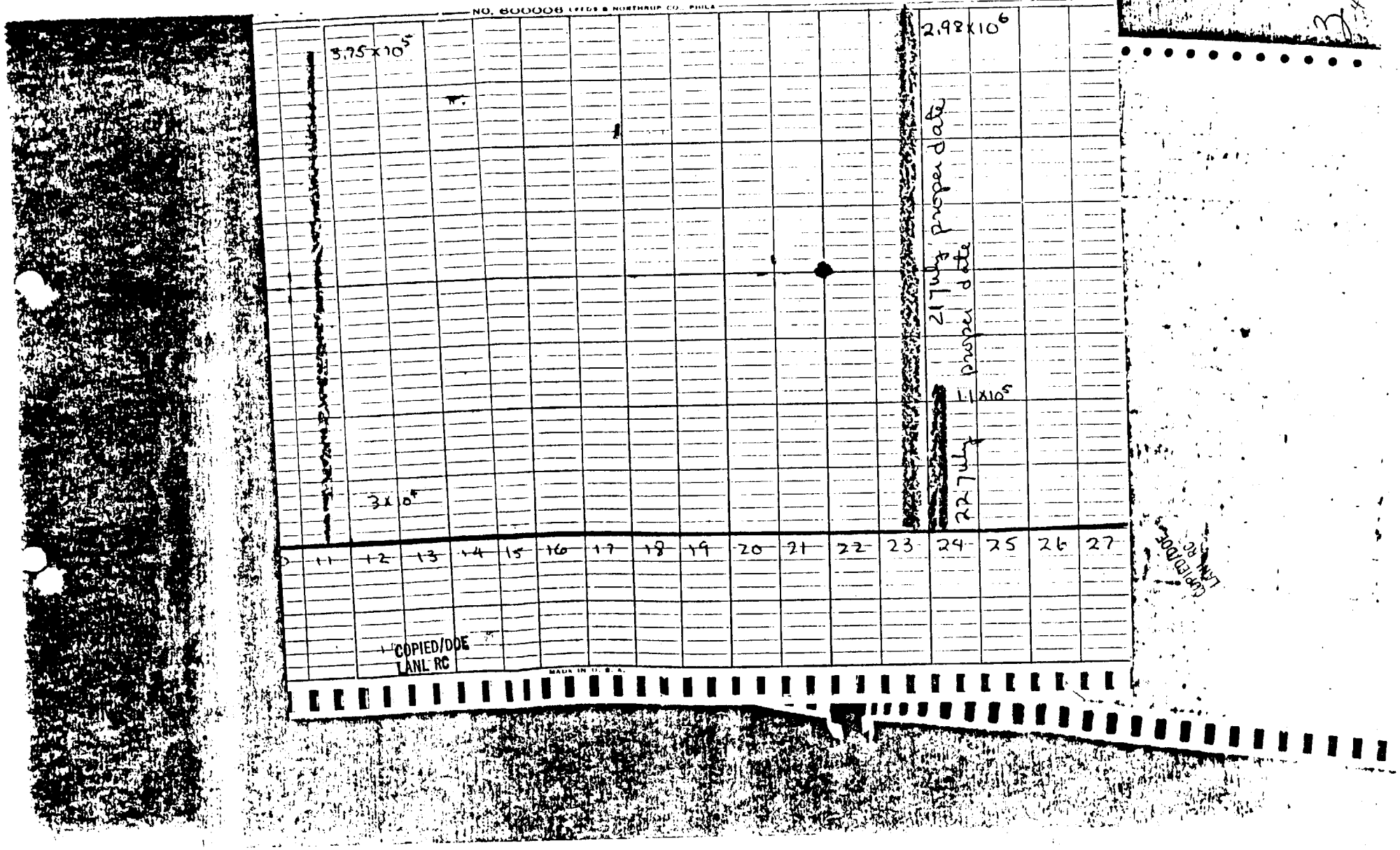
Monitoring Inst.

SINGLE ENTRY LEDGER

G. Stevens 11-29-83


— Shot Bikini
— Shot Eniwetok
— Fallout Parry Island
— Fallout Rain
— Rain (Parry only)
A Summary of fallout information
no reference is here made to grou
This is a purely relative presentation - accura
1x10^5 d/m/meter^3
8.2x10^4
1.87x10^4
9.5x10^4
2.4x10^4
2.9x10^4
2x10^4
1K10^5
4.5x10^4
1.95x10^4
9.5x10^3
6x10^4
3.6x10^4
7x10^3
6x10^3
1.5x10^4
8.1x10^4
3.8x10^4
1.5x10^4
21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
MAY 56
Monitor put in operation
JUNE 56
LANL H Div
Air Monitoring
Log of Environ. Fallout
(Drawings)
COPIED FROM LANL RC
MADE IN U. S. A.


'56 – July '56
els
etc. may be found inside.
3.38 x 10^5
1.2 x 10^5
1.5 x 10^5
3.75 x 10^5
3 x 10^4
6 x 10^4
14 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
July '56
COPIED/DOE LANL RG
COPIED/DOE LANL RG
COPIED/DOE LANL RG
MADE IN U. S. A.


NO. 800006 KEUFFEL & ESSER CO., PHILA.
3.75×10^5
3×10^5
2.98×10^6
21 July proper date
22 July
1.1×10^5
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
COPIED/DOE
LANL RC
MADE IN U. S. A.

General Data

Operation began:

Elmer sampler	—	24 May 1956
Ainsworth "	—	29 May 1956
Sta. # 70 "	—	29 May 1956

All three units were calibrated at the shop (Elmer) before being put in operation. A calibration chart will be found in the rear of this record. The units were found to be quite linear for evenly spaced pulses.

The following may be used to calculate the number of cubic feet of air whose residue is seen by the detector at any given time.

$$N = 3.06 \frac{A}{B}$$

Where:

N = number of cubic feet
A = air flow rate, ft^3/minute
B = filter paper speed, ft/hour

Detector efficiency values taken using the sources supplied with the unit follow.

Source	EFFICIENCY (%)
2.22×10^5	11.25 – 10.45
5.57×10^5	9.72 – 7.65
1.11×10^6	~~7.76~~ – .06

The above figures were arrived at by using a scaler to count monitor's pulse shaped but unintegrated output. No attempt to show coincidence loss etc. was made.

Conversion Factor

$$d/m/meter^3 = (net\ count)\left(\frac{1}{EFF}\right)\left(\frac{1}{ft^3}\right)\left(ft^3/m^3\right)$$

$$= c/m \times d/c \times \frac{1}{ft^3} \times ft^3/m^3$$

$$= c/m\ (8.9)(1/2.7) \times 34.3$$

$$= c/m\ (113)$$

It is felt however that the efficiency is considerably higher at low levels than indicated, a conversion factor of 75 was used in all work.

con't.

the resolution time of the instrument at a tape speed of one foot per hour is about 12 minutes. Many of the 'spikes' appearing on the records were undoubtedly caused by one or two hot particals. Filter tape cutting proved this to be true in a small number of cases checked.

There is also a lag of from 25 - 30 minutes @ 1 ft/hr. filter speed between sampling time and counting. In high level cases the rise in back ground may signal the operator to increase the tape speed and shorten the time lag.

Recommendations

The size and weight of the present air monitors is very unhandy for field use. The necessity of oiling every two days is also not suited to a unit which may be remoted in the field. The filter tape re wind clutch does not work well and mechanical over load protection should be provided for the drive transmission. The Anton Labratory 100-1T alpha-beta tubes claim low background and due to their small length to diameter ratio would reduce the pig size considerably. It is hoped that the logarithic amplifier originally planned for the monitors may be incorporated - if not then remote scale selection is necessary.

Rain & Fallout

It was noticed toward the end of the operational period that rain was often followed by periods of fall out. Rain information was obtained from the weather station on Fred. How closely the start and stop times coincide for the two islands is not known. Cases of coincidence are shown on the summary at the front of the record and covered more carefully at the rear.

No record of rainfall has been procured for Bikini Atoll

After procurement of the data it was noted that both the amount of data and accuracy of readings did not lend themselves to a detailed correlation. It is not difficult to conject that if various layers of air above us are somewhat active that rain will or perhaps will bring a certain amount of it down - It is believed that that may be taken as conclusion for this brief attempt. The data is enclosed hoping that further information may prove useful.

NAN

Time base
- 2 divisions per hour

Scale
- reads directly in counts per minute Times the scale factor

range	Scale factor.
1K	X 100
10K	X 1000
100K	X 10,000

the small conversion scale to be found at the beginning of this record will enable quick conversion to. $l/min/m^3$ using a factor of 75. (Discussed earlier)

07

AVERAGE BACKGROUND
24 may - 1300 to 2300
1 p o c p m

4,5

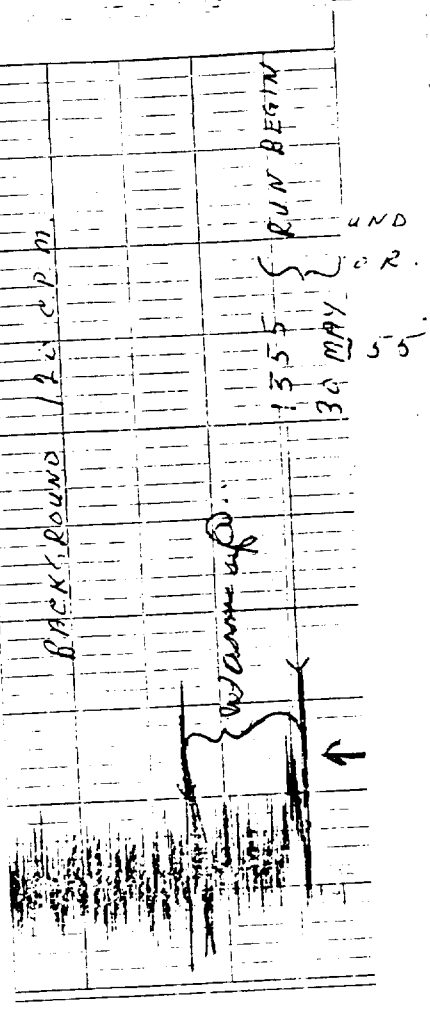
1740
1710

1900 24 may
1625 24 may
1600 24 may
1530 24 may

1500
1445
1430
1345
1315
1245
1130 29 May
1030
945 AM 29 May

No count
Service Machine

10



BACKGRO

NO COUN

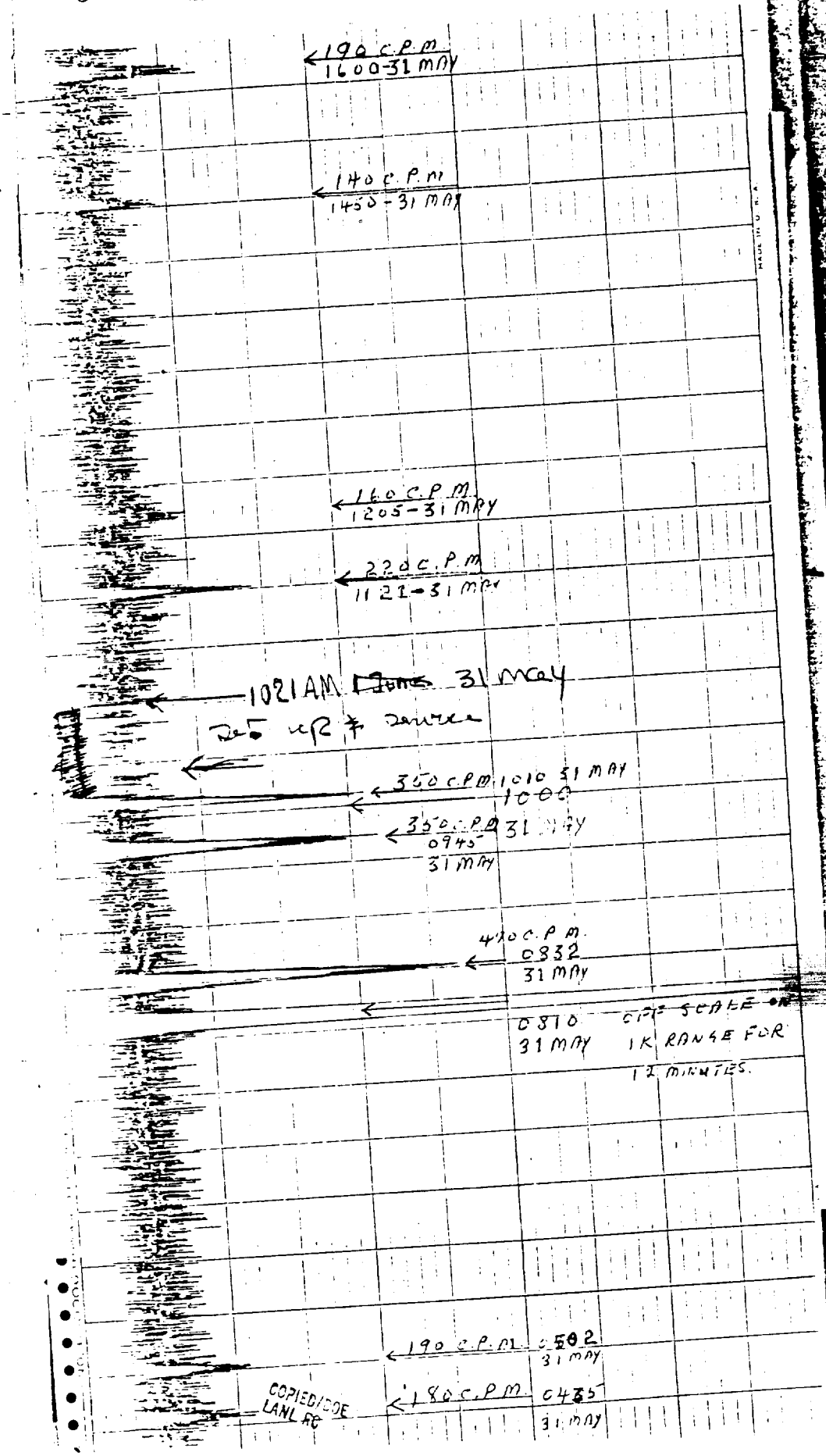
AFTER

MONITOR

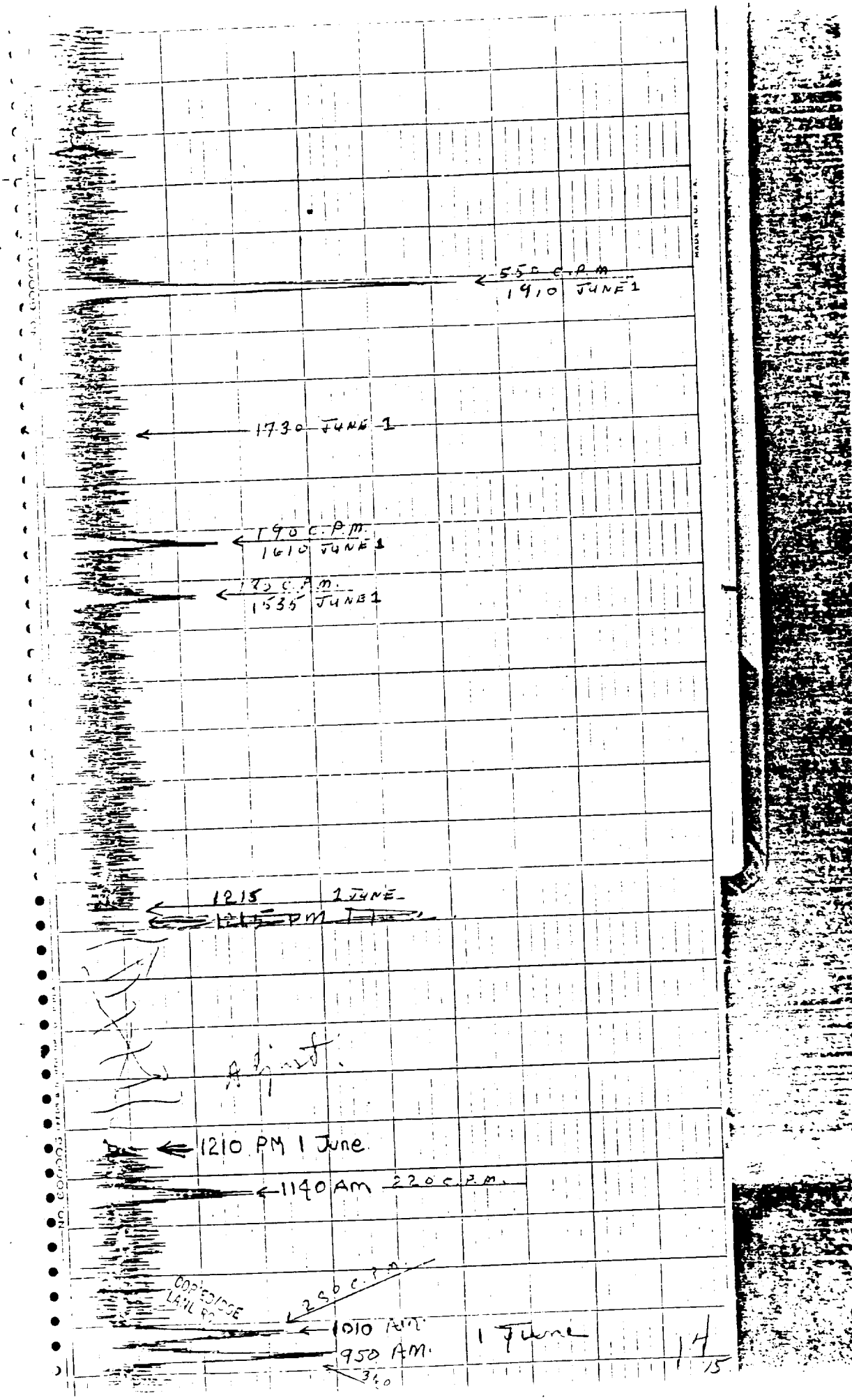
MAY 30

WARM U

1355 T


190 c.p.m
1600-31 MAY
140 c.p.m
1450 - 31 MAY
160 c.p.m
1205 - 31 MAY
220 c.p.m
1121 - 31 MAY
1021 AM 31 May
350 c.p.m 1010 31 MAY
1000
350 c.p.m
0945
31 MAY
430 c.p.m
0832
31 MAY
0810 CPS SCALE ON
31 MAY 1K RANGE FOR
12 MINUTES.
190 c.p.m 0502
31 MAY
180 c.p.m 0435
31 MAY
COPIED/CODE
LANL AG

TIME	
	BACKGROUND - 100 c.p.m.
0435	180 c.p.m.
0502	190 c.p.m.
0810	OVER 1000 c.p.m.
0832	470 c.p.m.
0945	350 c.p.m.
1010	350 c.p.m.
	1012 TO 1021 ADJUSTING RECORDER
1121	220 c.p.m.
1205	160 c.p.m.
1450	140 c.p.m.
1600	190 c.p.m.


550 c.p.m.
1910 JUNE 1
1730 JUNE 1
190 c.p.m.
1610 JUNE 1
170 c.p.m.
1535 JUNE 1
1215 1 JUNE
PM
1210 PM 1 June
1140 AM 220 c.p.m.
250 c.p.m.
1010 AM
950 AM.
1 June
14
15

BACKGROUND - 80 C.P.M.

0950 360 C.P.M.

1010 280 C.P.M.

1140 220 C.P.M.

1210 TO 1215 ADJUSTING RECORDER

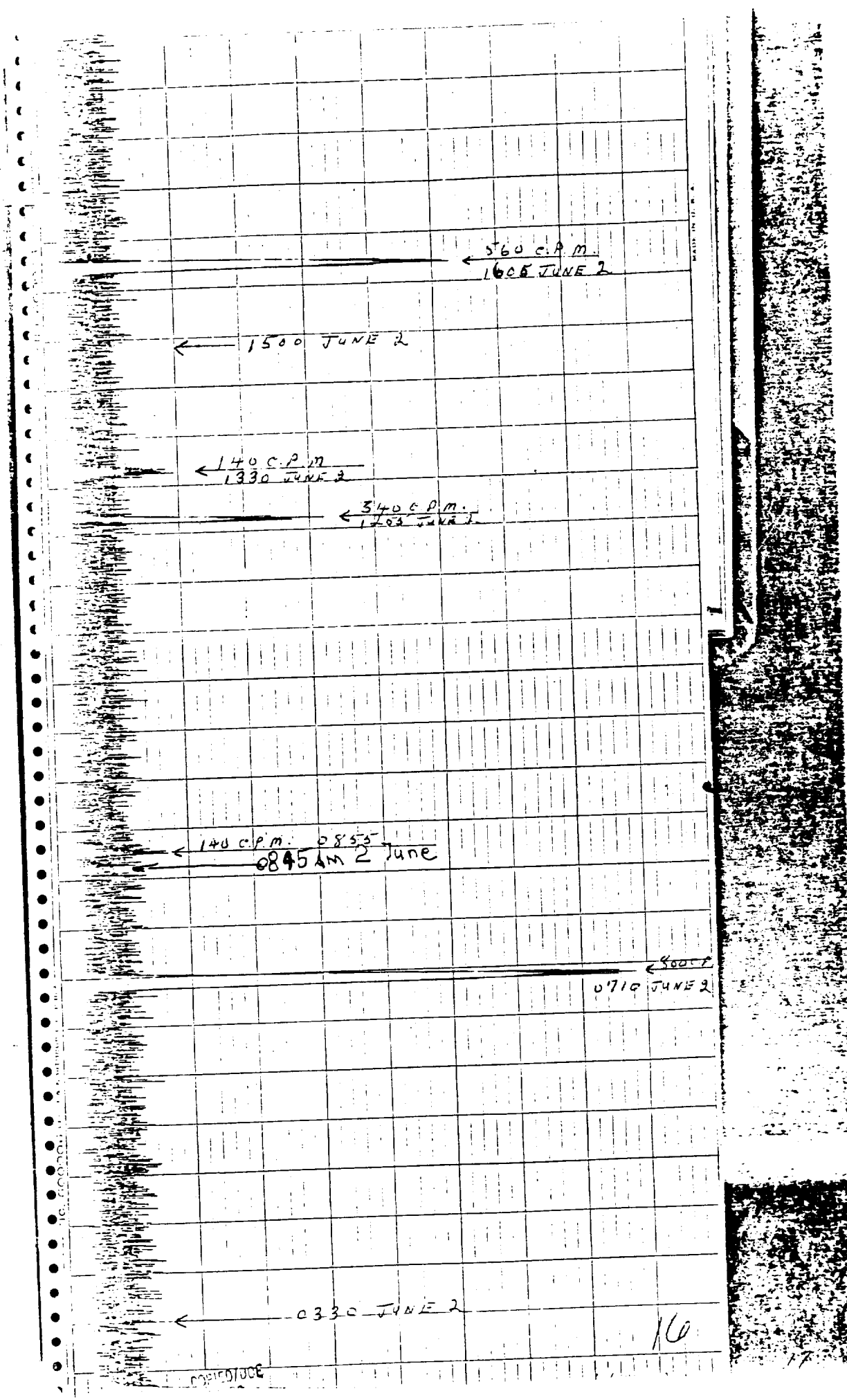
1535 180 C.P.M.

1610 190 C.P.M.

1910 550 C.P.M.

2350 380 C.P.M.

15


560 c.p.m.
1605 JUNE 2
1500 JUNE 2
140 c.p.m
1330 JUNE 2
340 c.p.m.
1203 JUNE 2
140 c.p.m. 0855
0845 AM 2 June
400 c.p.
0710 JUNE 2
0330 JUNE 2
16

BACKGROUND - 80 c.p.m.

0240 660 c.p.m.

0710 800 c.p.m.

0855 140 c.p.m.

1255 340 c.p.m.

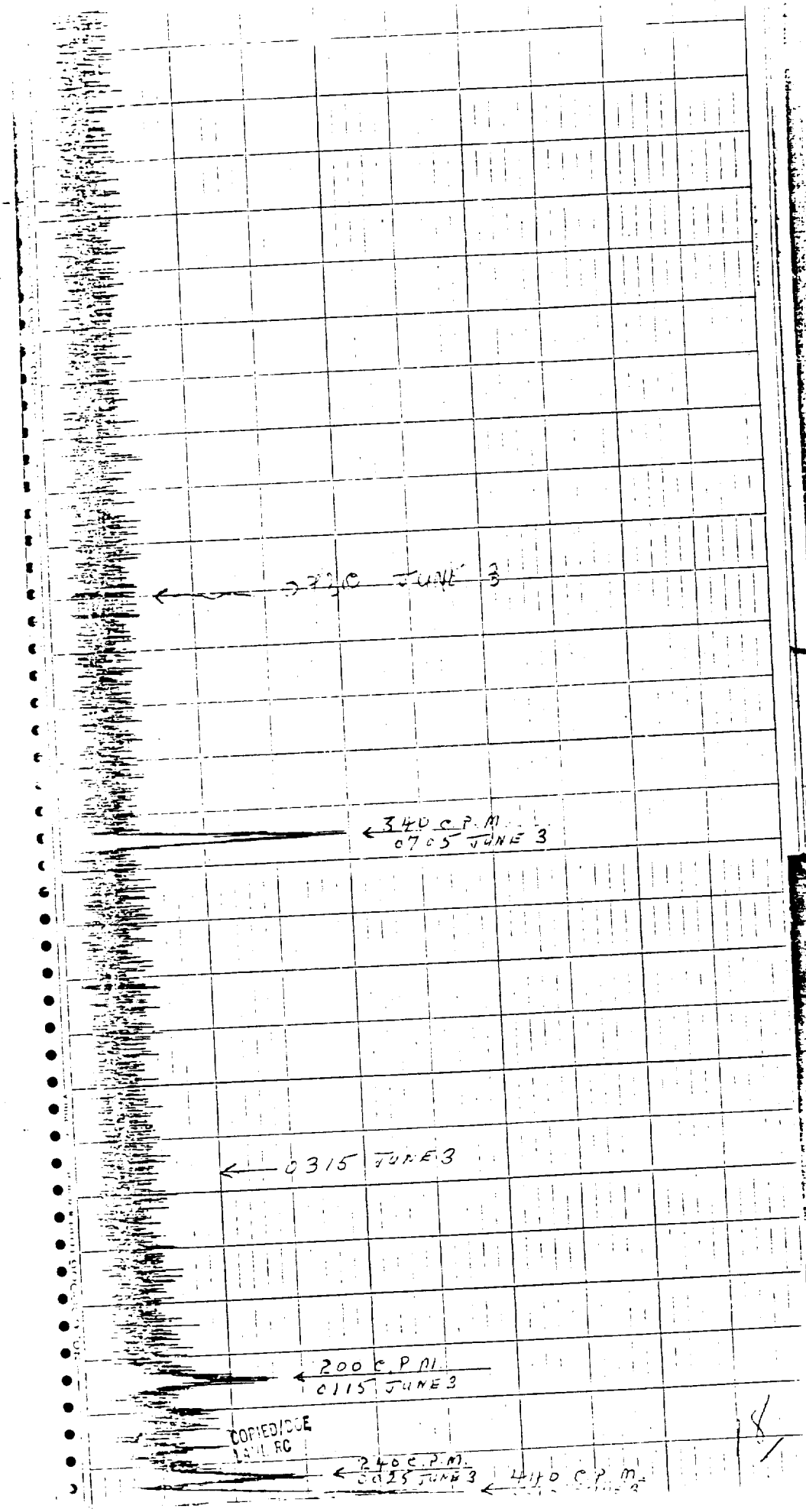
1330 140 c.p.m.

1605 560 c.p.m.

920 240 c.p.m.

320 130 c.p.m.

17.


340 C.P.M
0705 JUNE 3
0315 JUNE 3
200 C.P.M
0115 JUNE 3
COPIED/DOE
240 C.P.M.
0025 JUNE 3
410 C.P.M.

BACKGROUND - 80 c.p.m.

0010 440 c.p.m.

0025 240 c.p.m.

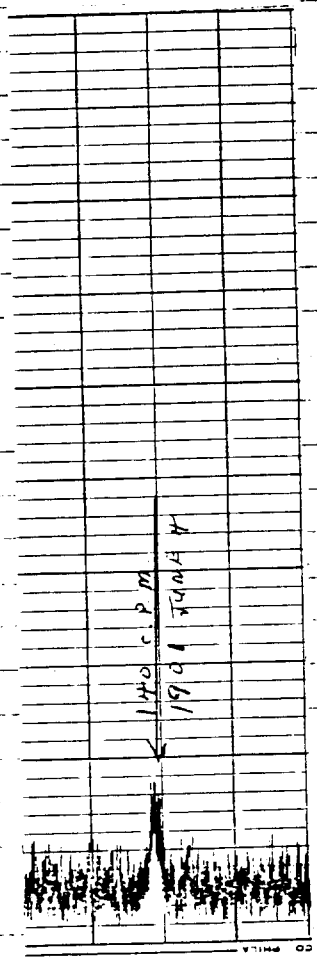
0715 340 c.p.m.

1530 120 c.p.m.

4 JUNE 1956 13

BACKGROUND - 70 c.p.m.

1901 140 c.p.m.

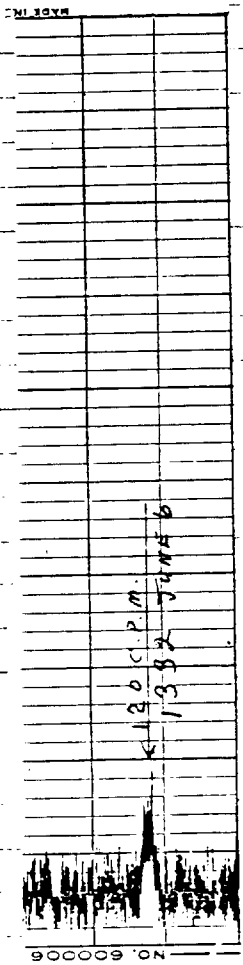


20

6 JUNE 1956 17

BACKGROUND - 60 C.P.M.

1332 120 C.P.M.

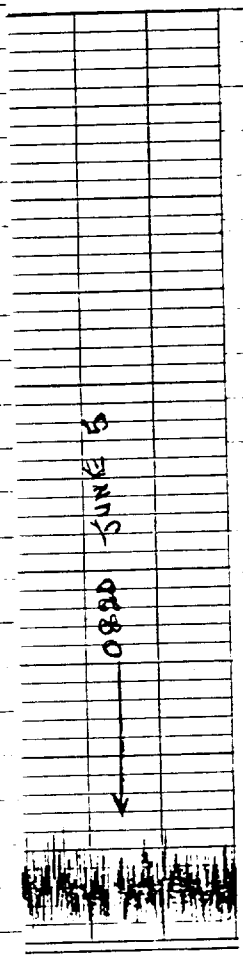


COPIED/DOE
LANL PC

22

BACKGROUND - 60 C.P.M.

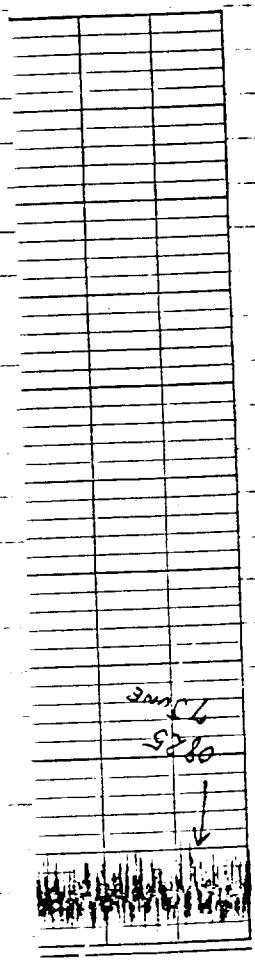
NO COUNTS ABOVE BACKGROUND



7 JUN = 1956 19

BACKGROUND - 55 C.P.M.

NO COUNTS ABOVE BACKGROUND



23

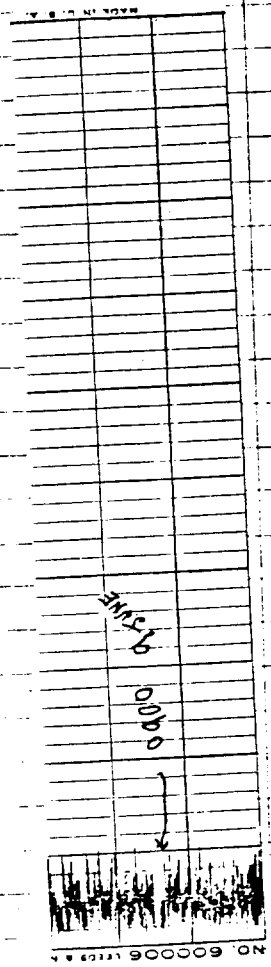
BACKGROUND - 50 C.P.M.

NO COUNTS ABOVE BACKGROUND.

24

BACKGROUND - 50 C.P.M.

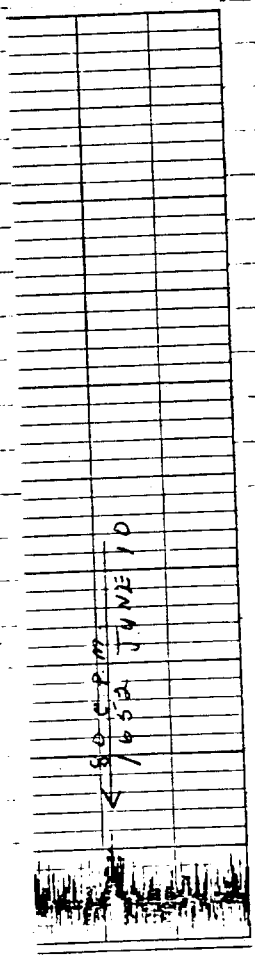
NO COUNTS ABOVE BACKGROUND.



25

BACKGROUND - 50 C.P.M.

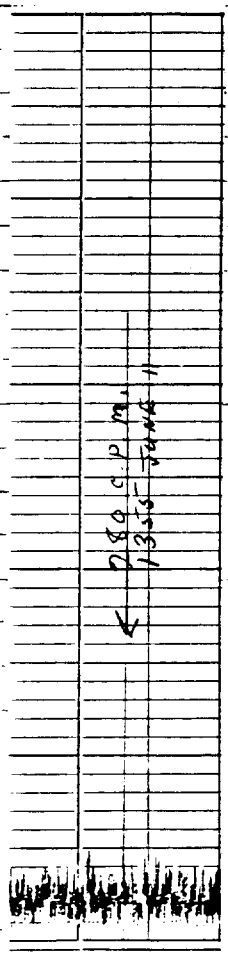
1652 80 C.P.M.



BACKGROUND - 40 C.P.M.

1355 280 C.P.M. (CHECK GRAPH)

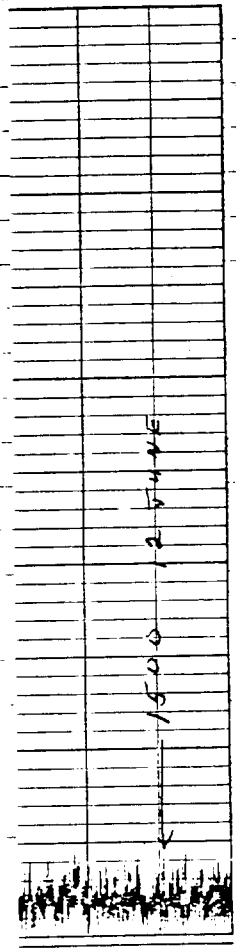
(Meg have been automatic recorder balance)



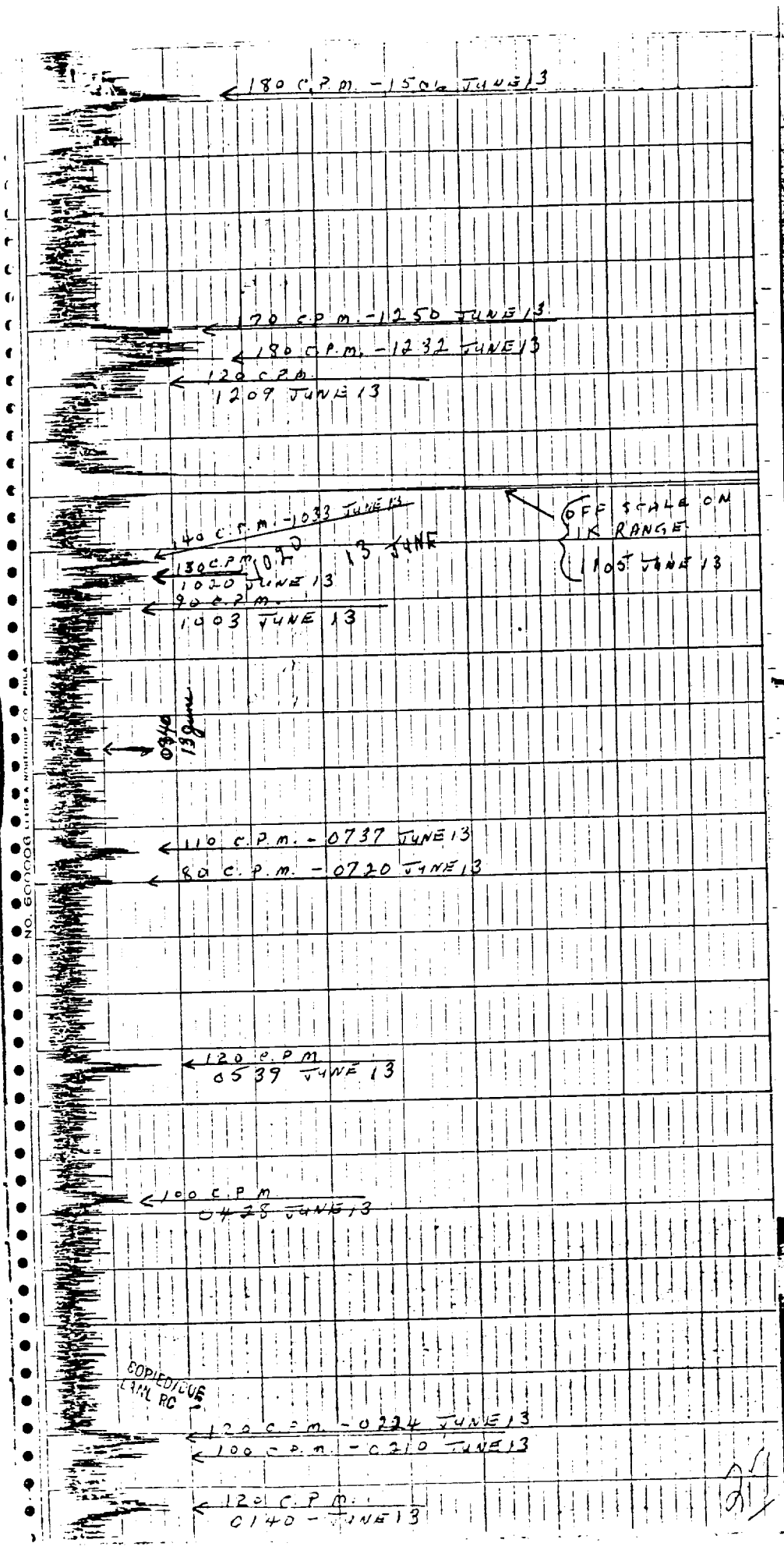
12 JUNE 1956 29

BACKGROUND - 40 C.P.M.

NO COUNTS ABOVE BACKGROUND.

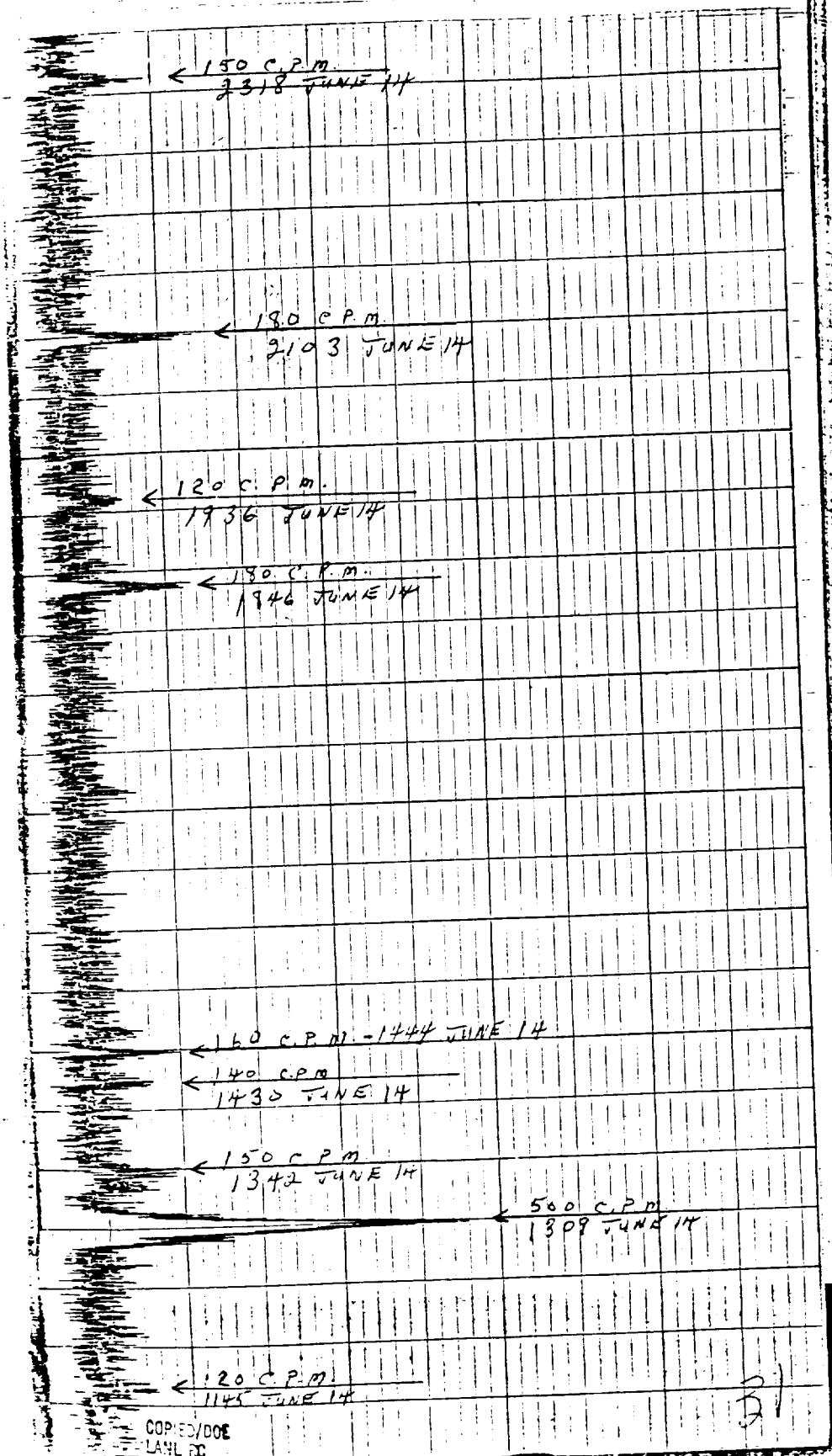


28


180 C.P.M. - 1501 JUNE 13
70 C.P.M. - 1250 JUNE 13
180 C.P.M. - 1232 JUNE 13
120 C.P.M.
1209 JUNE 13
OFF SCALE ON 1K RANGE
1105 JUNE 13
140 C.P.M. - 1033 JUNE 13
130 C.P.M.
1020 JUNE 13
90 C.P.M.
1003 JUNE 13
0340 13 June
110 C.P.M. - 0737 JUNE 13
80 C.P.M. - 0720 JUNE 13
120 C.P.M.
0539 JUNE 13
100 C.P.M.
0428 JUNE 13
COPIED/DUG CANL RC
120 C.P.M. - 0224 JUNE 13
100 C.P.M. - 0210 JUNE 13
120 C.P.M.
0140 - JUNE 13

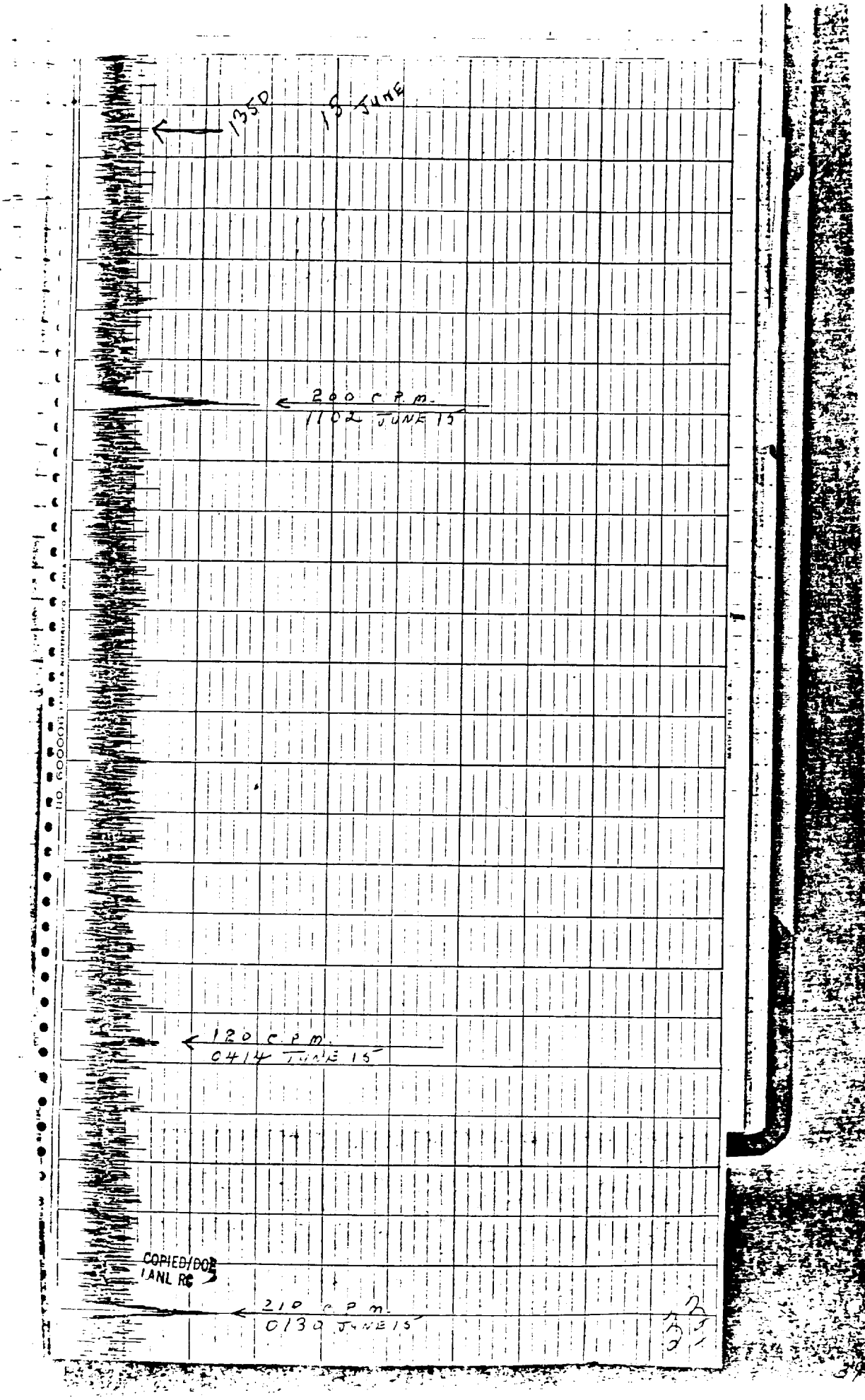
BACKGROUND - 60 C.P.M.

0140	120 c.p.m.
0210	100 c.p.m.
0214	120 c.p.m.
0428	100 c.p.m.
0539	120 c.p.m.
0720	80 c.p.m.
0737	110 c.p.m.
1003	90 c.p.m.
1020	130 c.p.m.
1033	140 c.p.m.
1105	OVER 1000 c.p.m. (CHECK GRAPH)
1204	120 c.p.m.
1232	180 c.p.m.
1250	170 c.p.m.
1506	180 c.p.m.



BACKGROUND - 80 c.p.m.

1145	120 c.p.m.
1309	500 c.p.m.
1342	150 c.p.m.
1430	140 c.p.m.
1444	160 c.p.m.
1846	180 c.p.m.
1936	120 c.p.m.
2103	180 c.p.m.
2318	150 c.p.m.


1350 15 JUNE
200 c.p.m.
1102 JUNE 15
120 c.p.m.
0414 JUNE 15
COPIED/DOE
ANL RC
210 c.p.m.
0130 JUNE 15

BACKGROUND - 70 C.P.M.

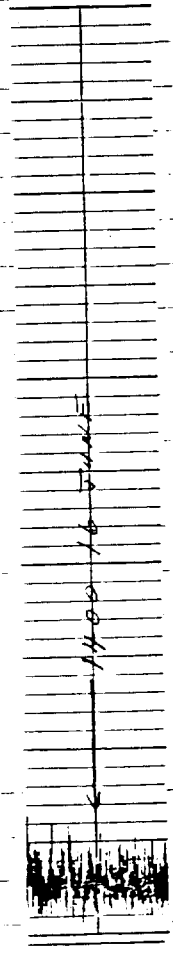
C130	210 C.P.M.
0414	120 C.P.M.
1102	200 C.P.M.

16 JUNE 1956 37

BACKGROUND - 70 C.P.M.

NO COUNTS ABOVE BACKGROUND.

MONITOR WAS TURNED OFF AT 1540 JUNE 16 TO 0846 JUNE 17.



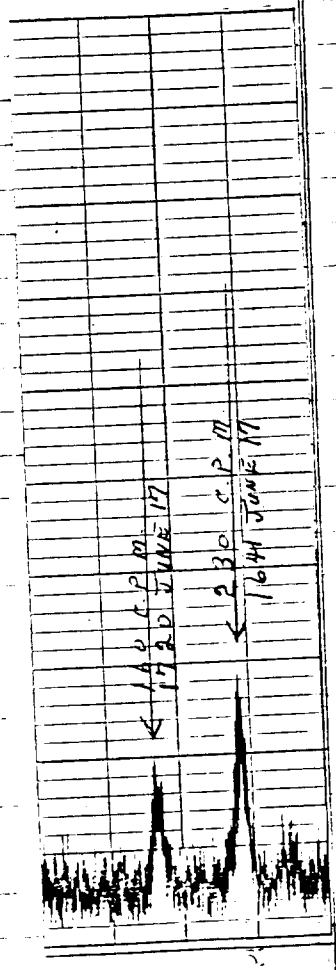
35

BACKGROUND - 60 C.P.M.

0845 MONITOR WARM UP FOR 45 MINUTES

1641 230 C.P.M.

1720 160 C.P.M.



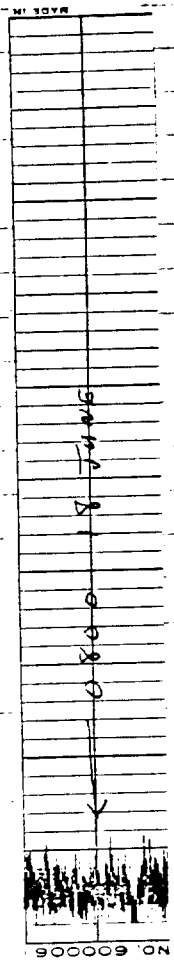
36

37

18 June 41

BACKGROUND - 60 C.P.M.

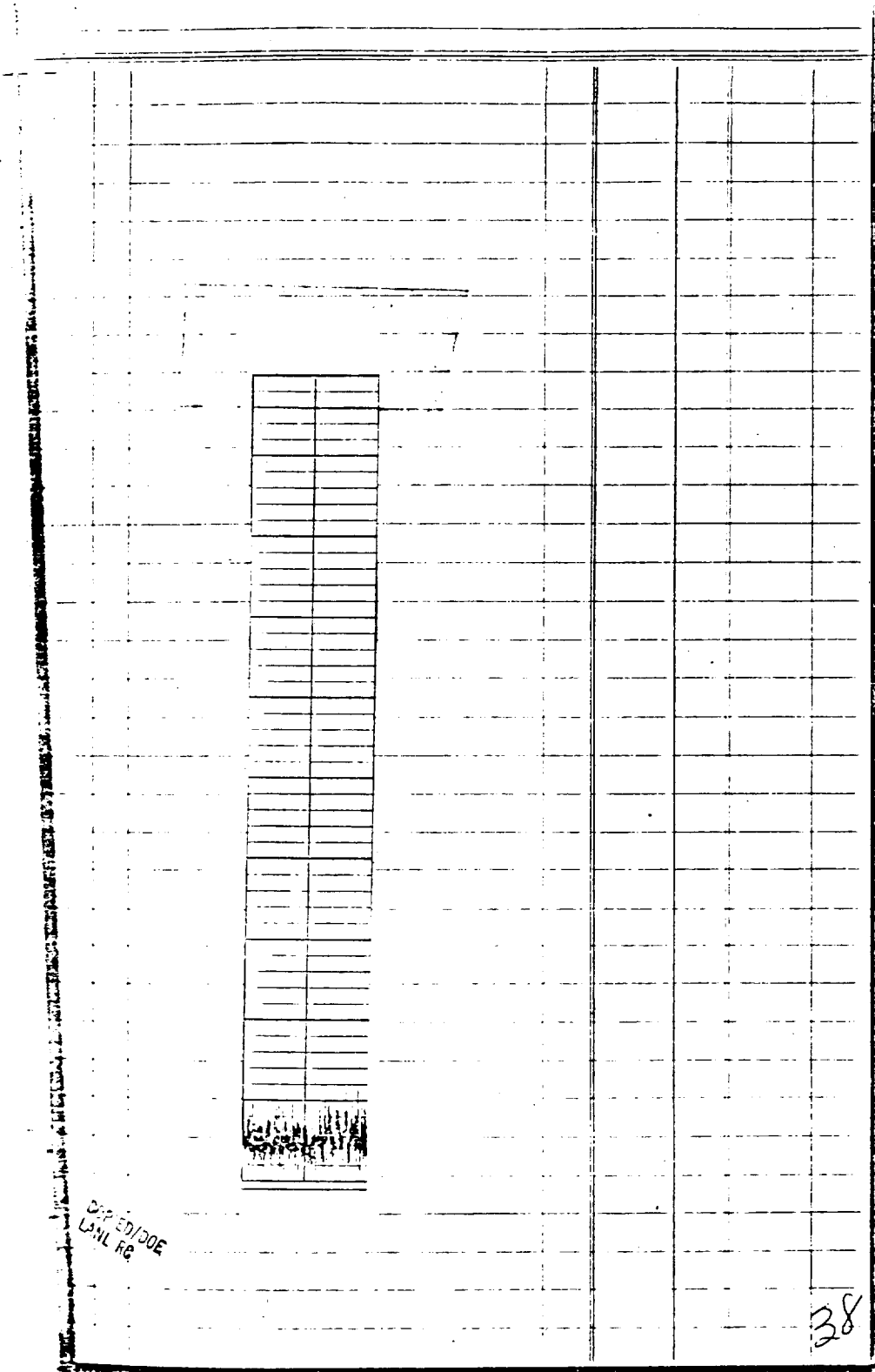
NO COUNTS ABOVE BACKGROUND



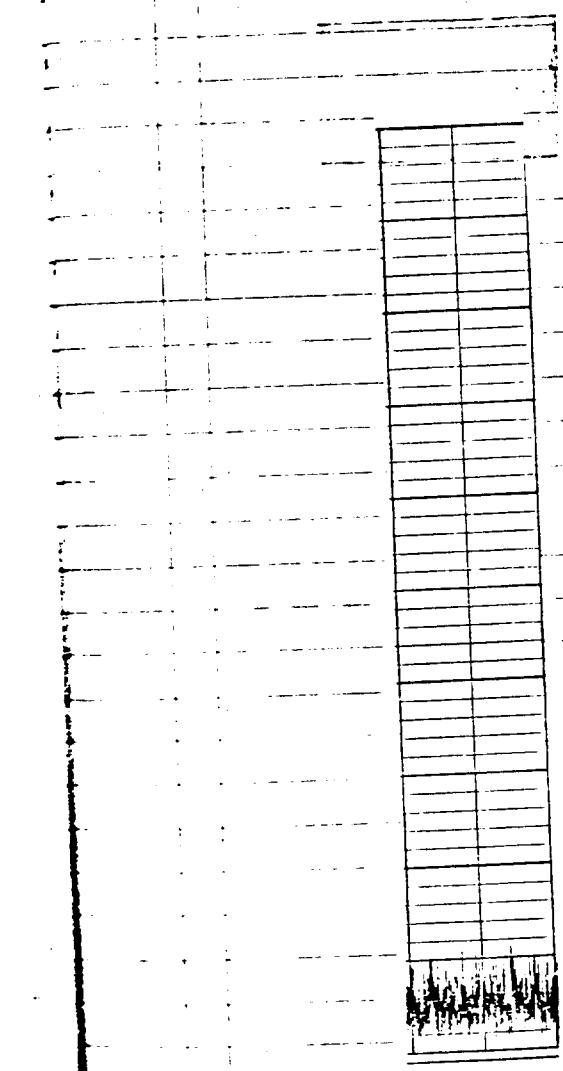
COPIED/DOE
LANL RC

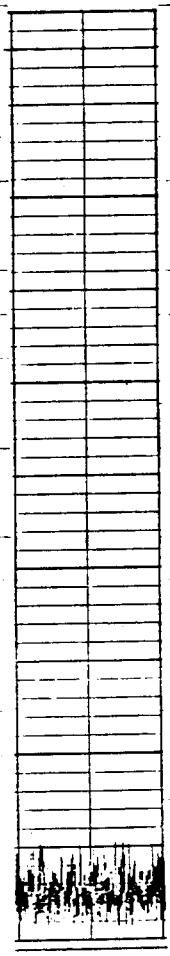
37

19 June 1956



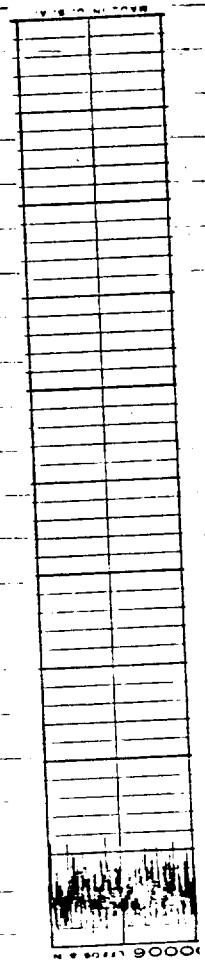
38





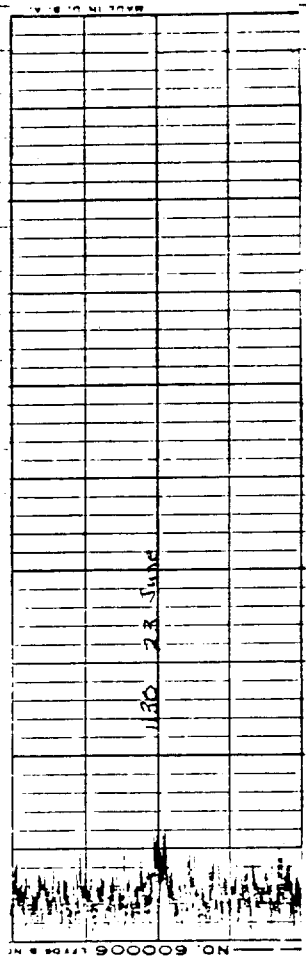
40

22 June 49



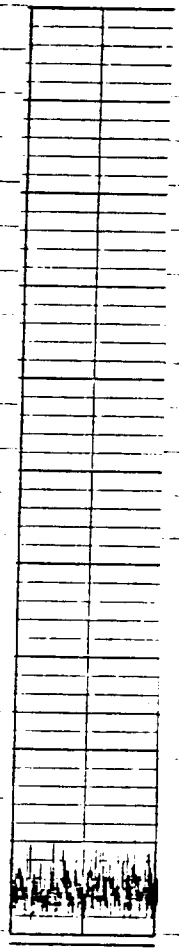
41

28 June 51

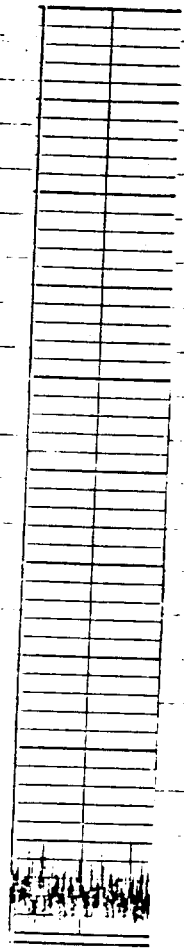


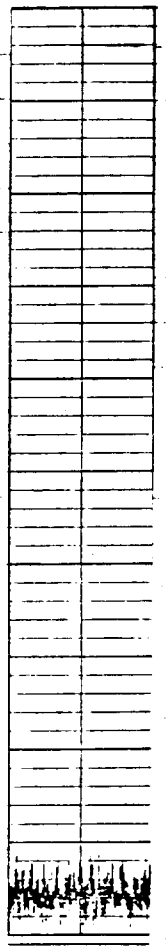
42

24 June 53

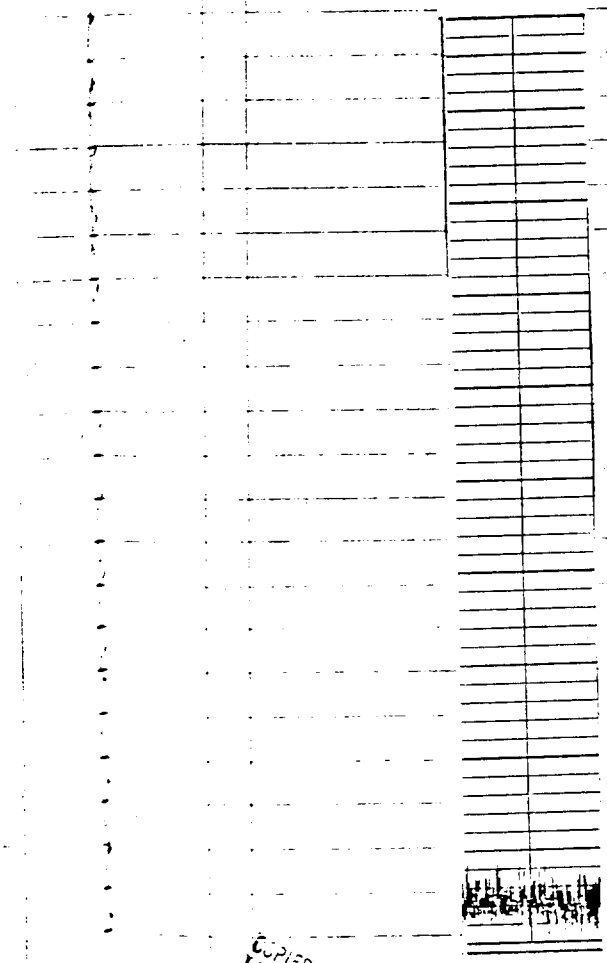


43





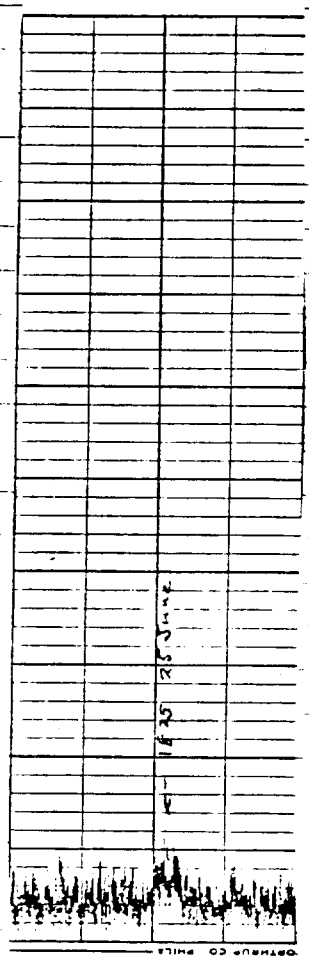
26 June 57



COPIED/DOE
LAINL RC

46

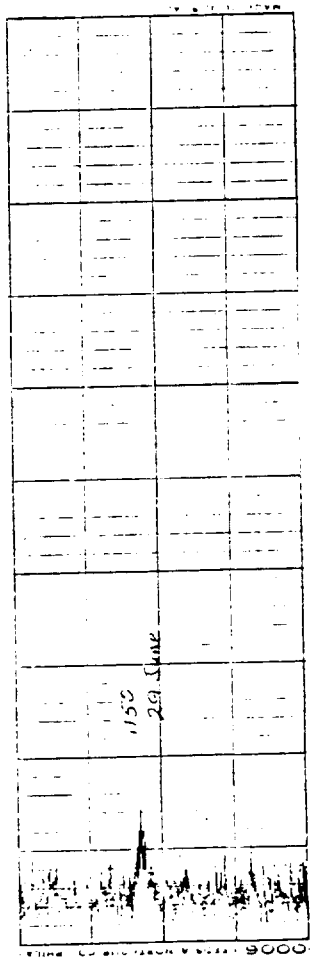
25 June 55



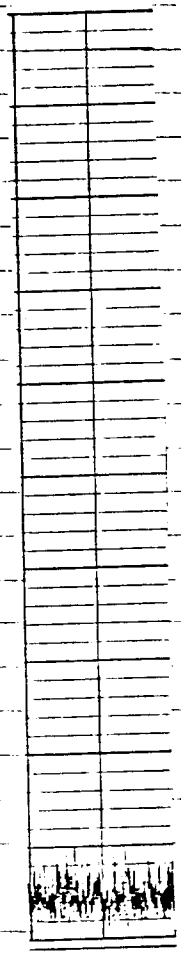
COPIED/DOE
LANL RC

47

29 June 63



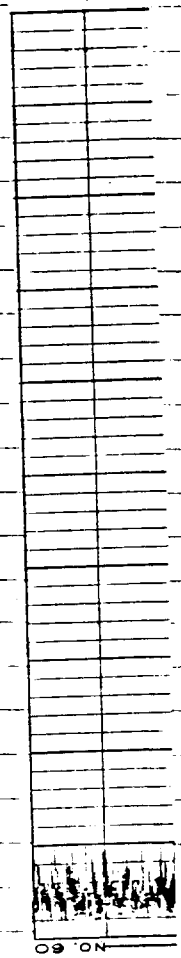
48



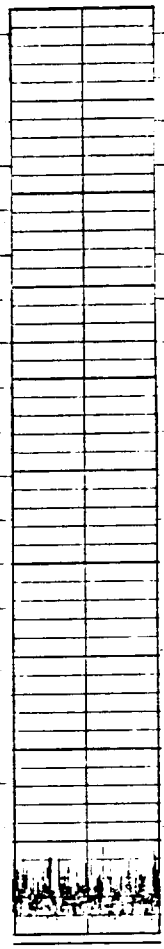
535 1 JULY

COPIED/DOE
L.H. pg.

50



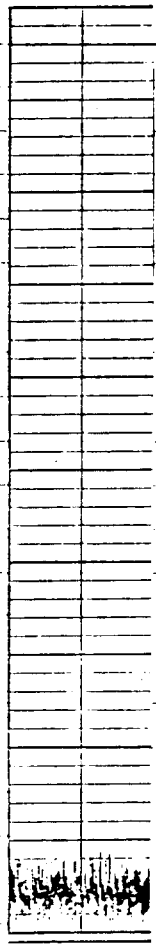
3 July 71



52

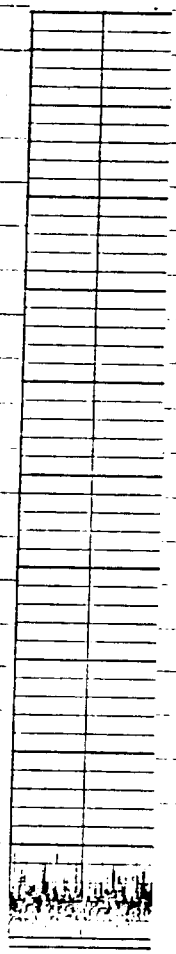
53

4 July 73



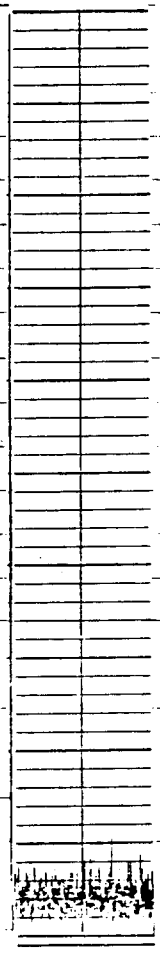
53

5 July 75



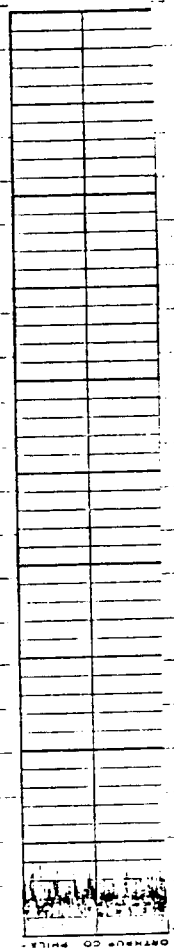
54

6 July 77

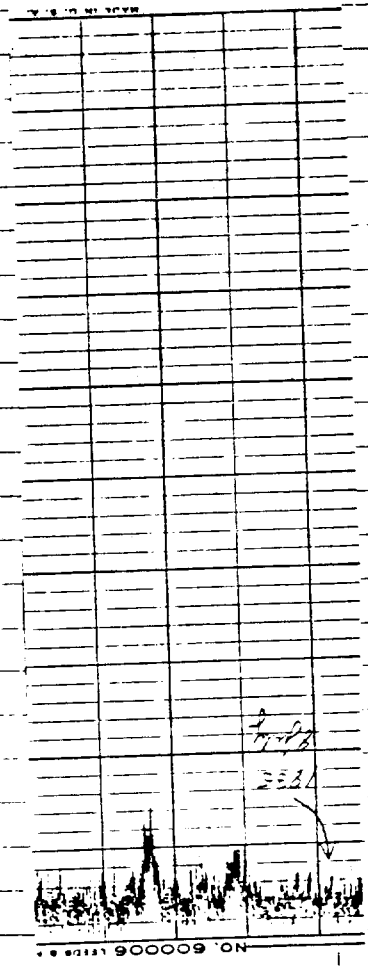


55

7 July 79

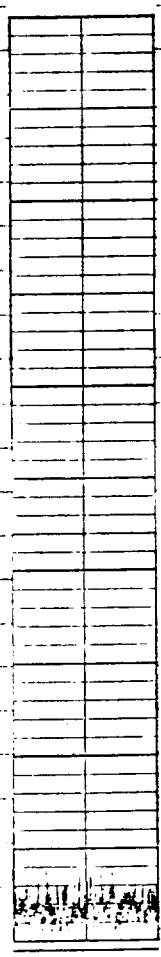


8 July 81



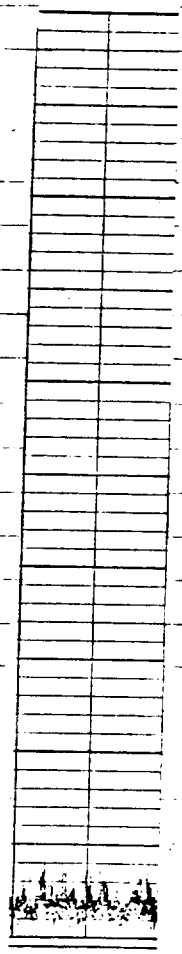
57

9 July 83

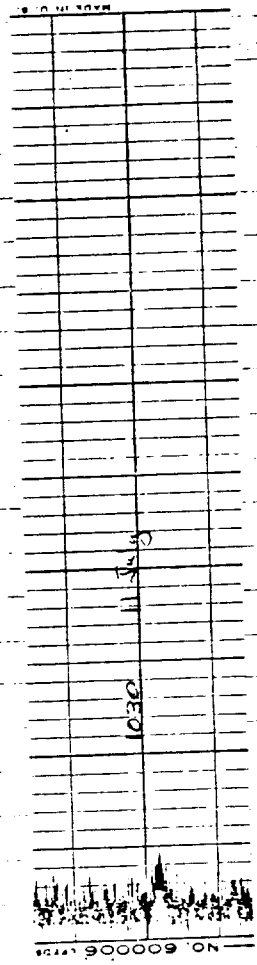


58

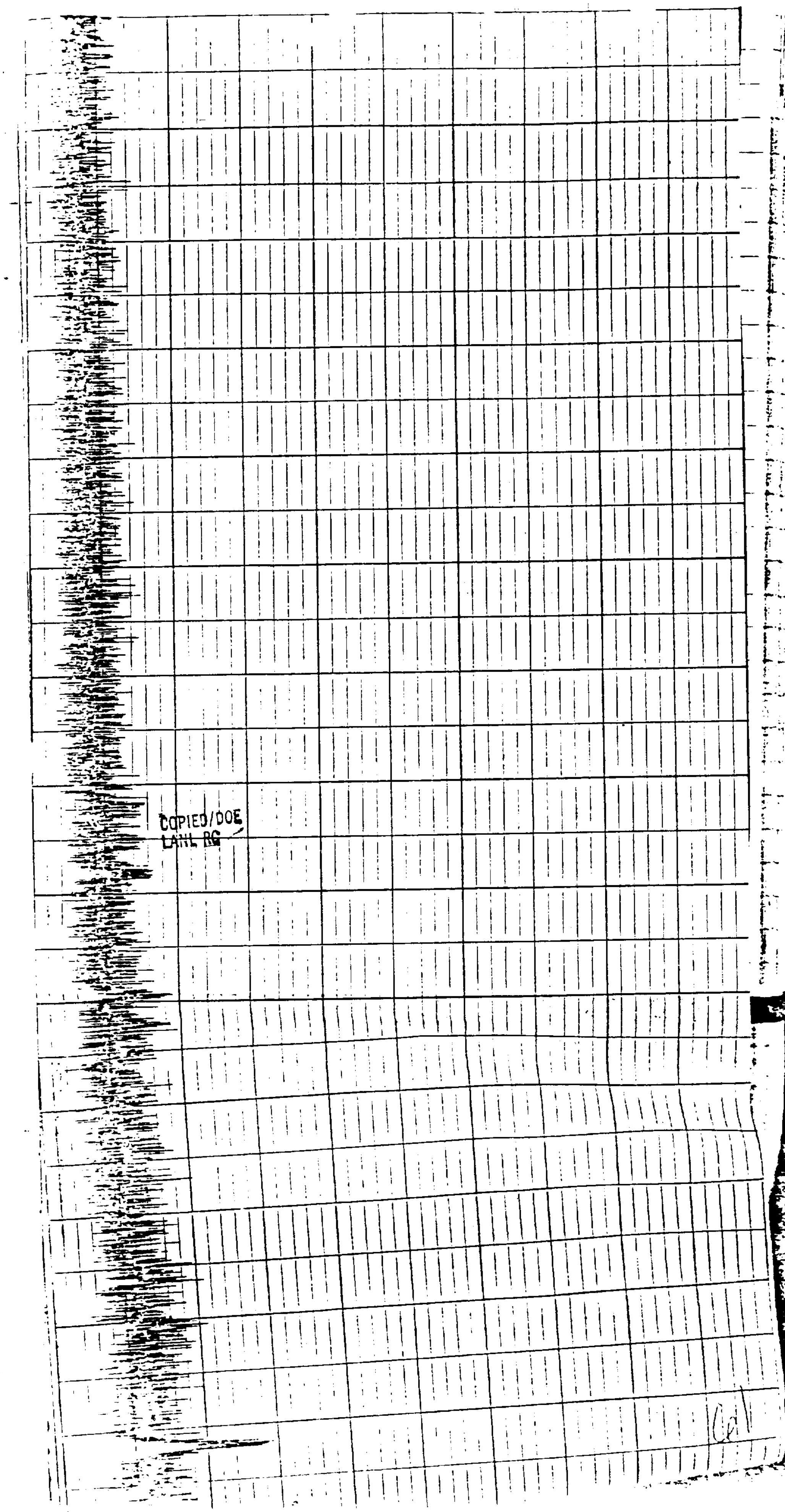
10 July 85

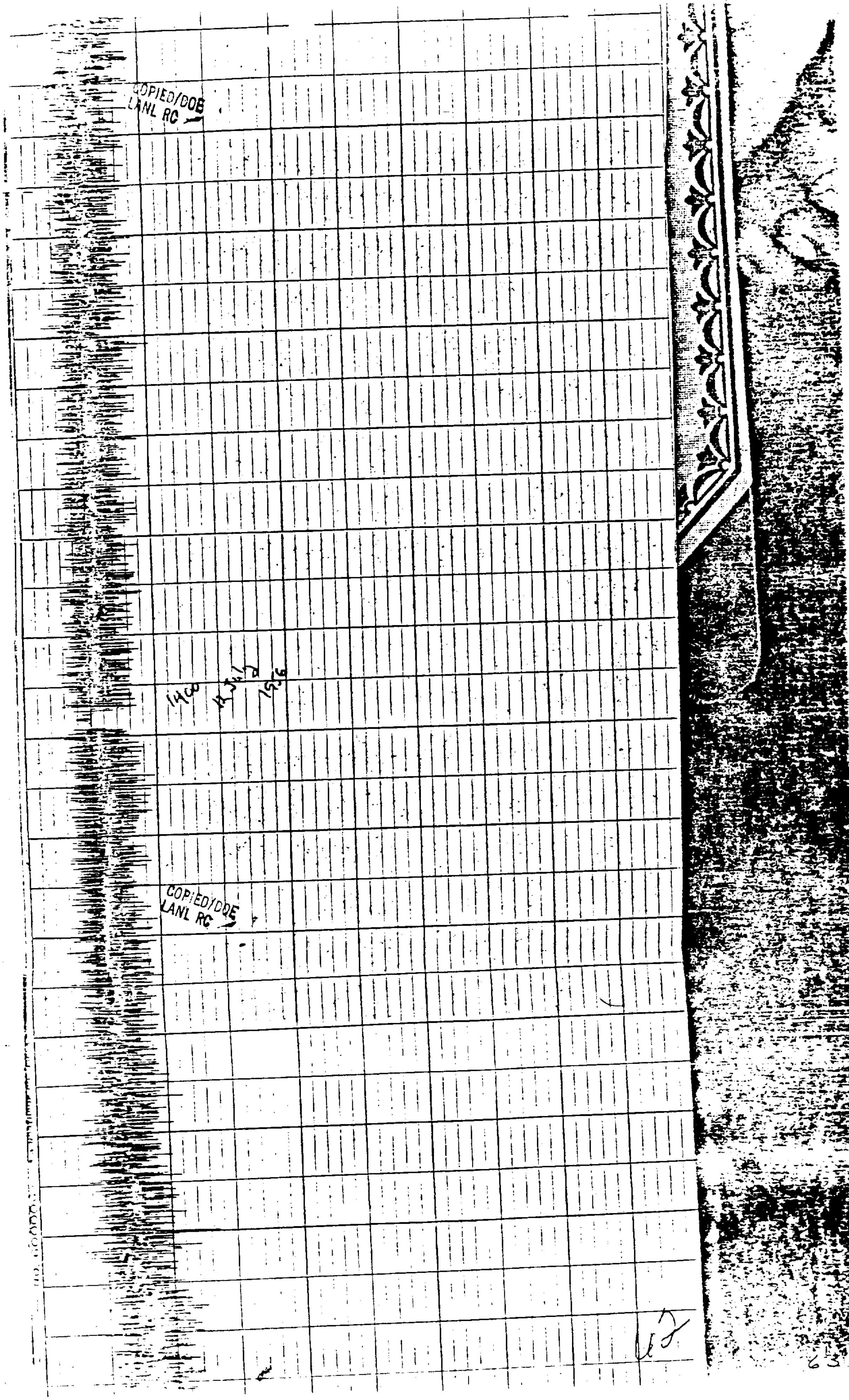


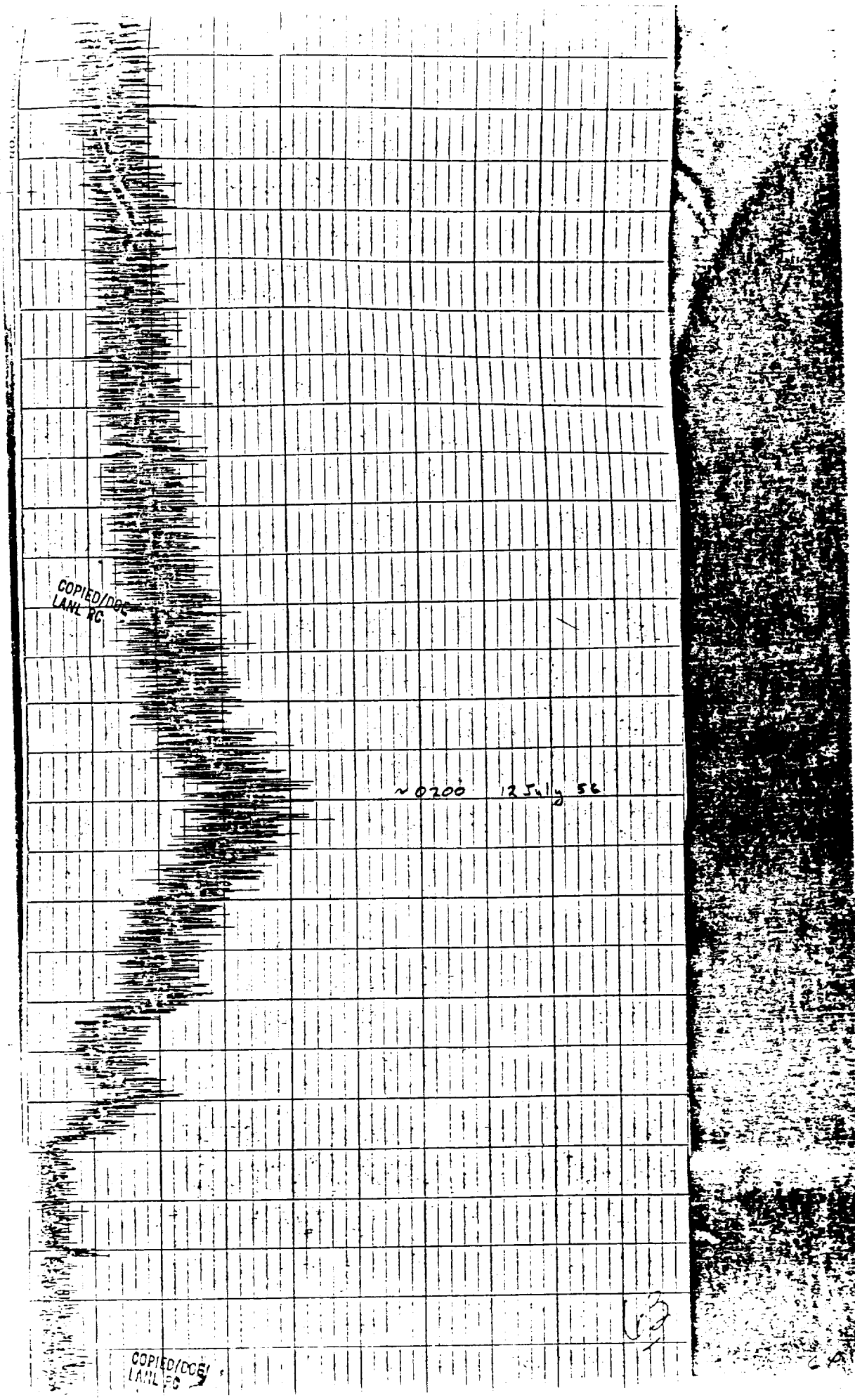
11 July 87



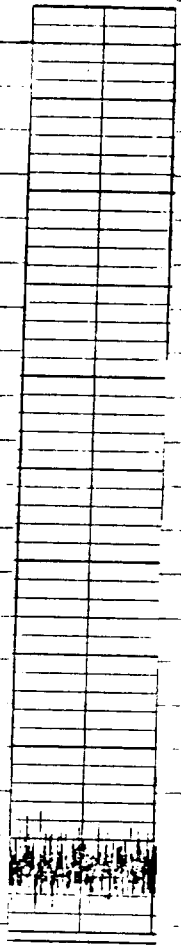
60






COPIED/DOE
LANL RC
~0200 12 July 56
COPIED/DOE
LANL RC

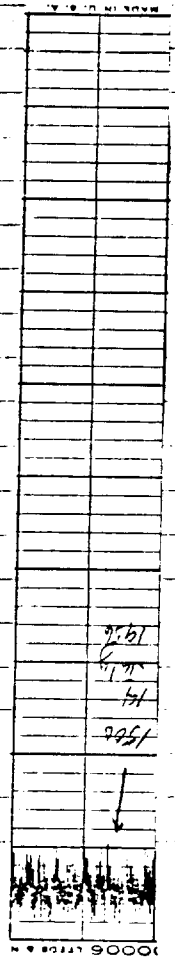
13 July 91



COPIED/DOE
LANL RC

64

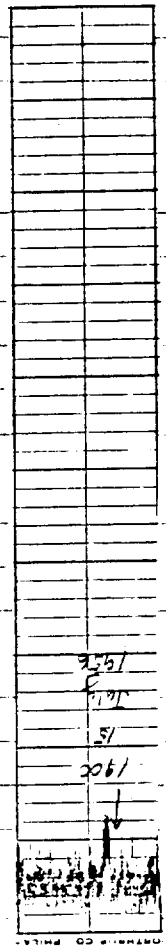
14 July 93



COPIED/DOE
LANL RC

65

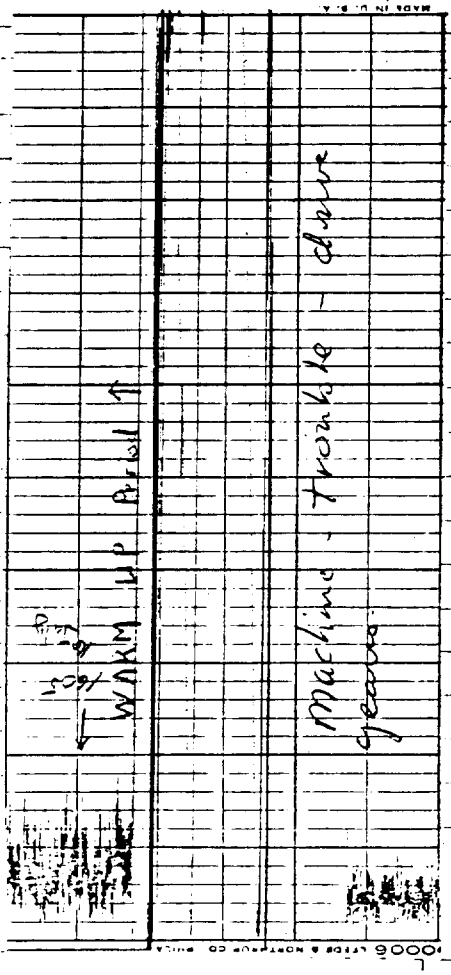
15 July 95



COPIED/DOE
LANL RC

69

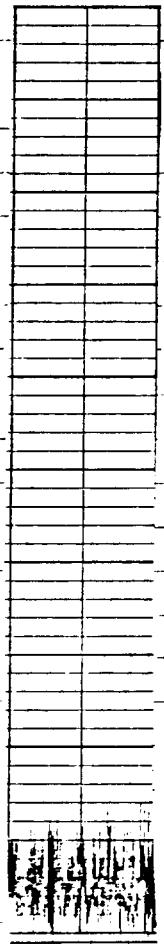
16 July 97



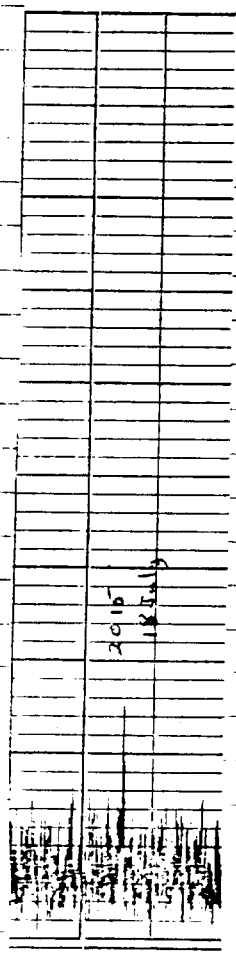
COPIED/DOE
LEVL RQ

67

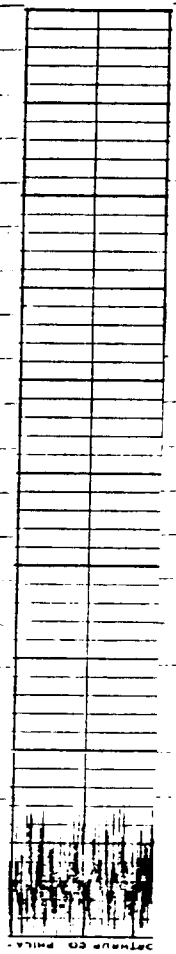
17 July 99

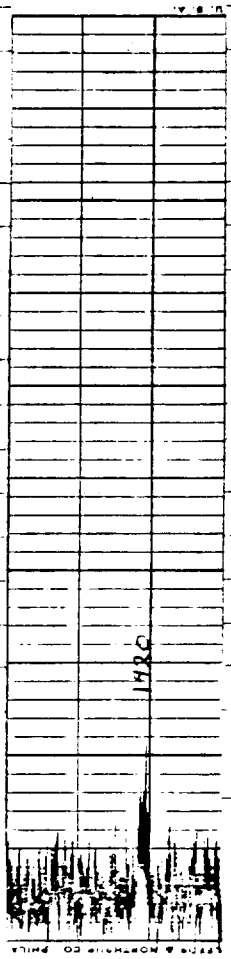


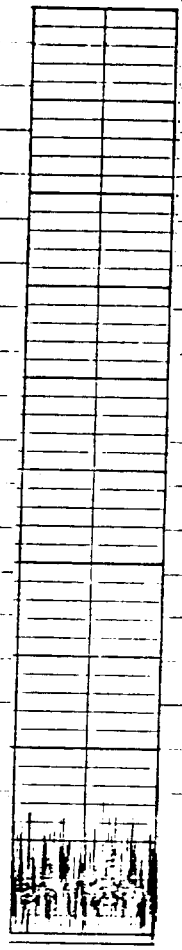
68

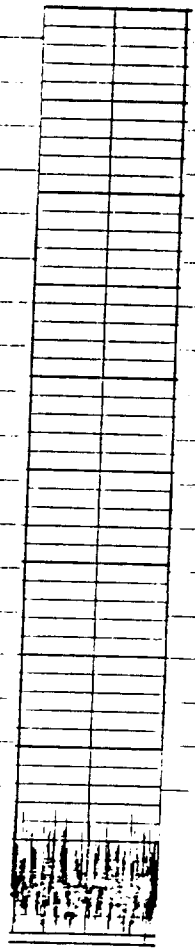


69

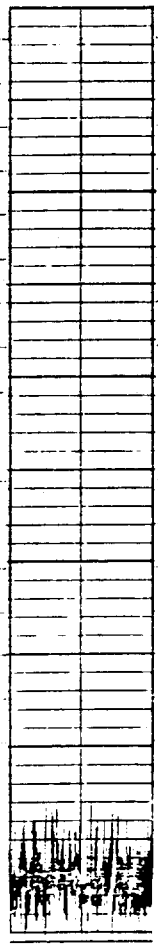




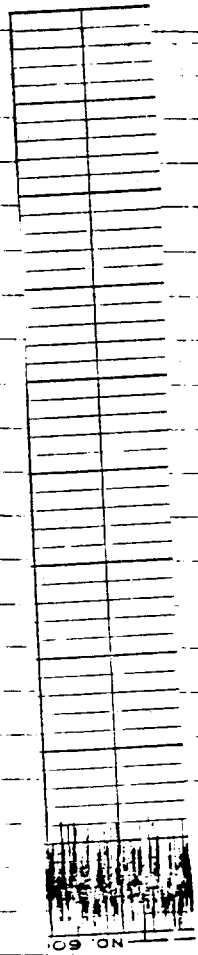




M3



HH



ELMER

#

Tyl

bac

The

of t

76

#1

Typical Source back grounds during the earlier portion of the operation

D&R 1 curie →

#I

#2

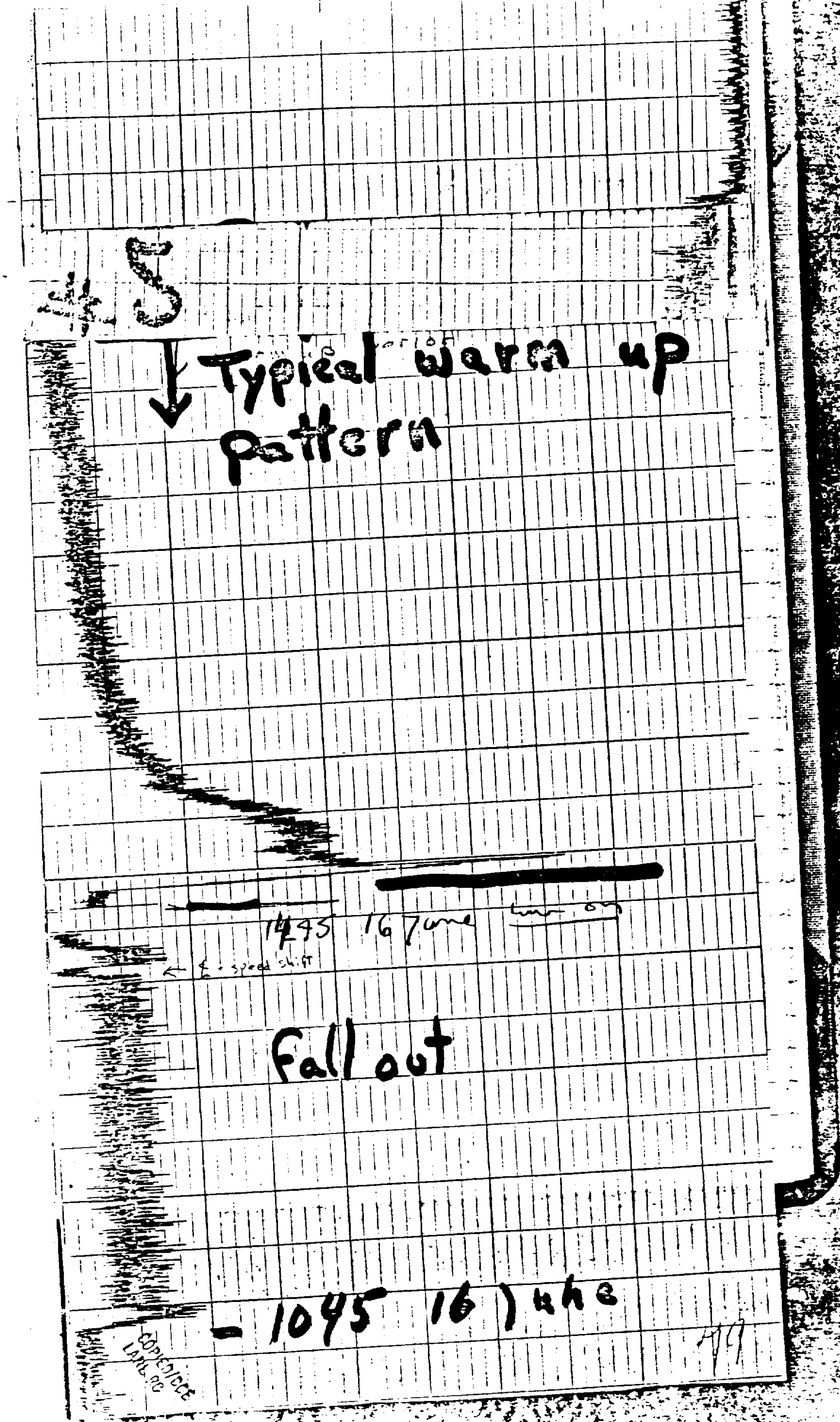
cont. from #1

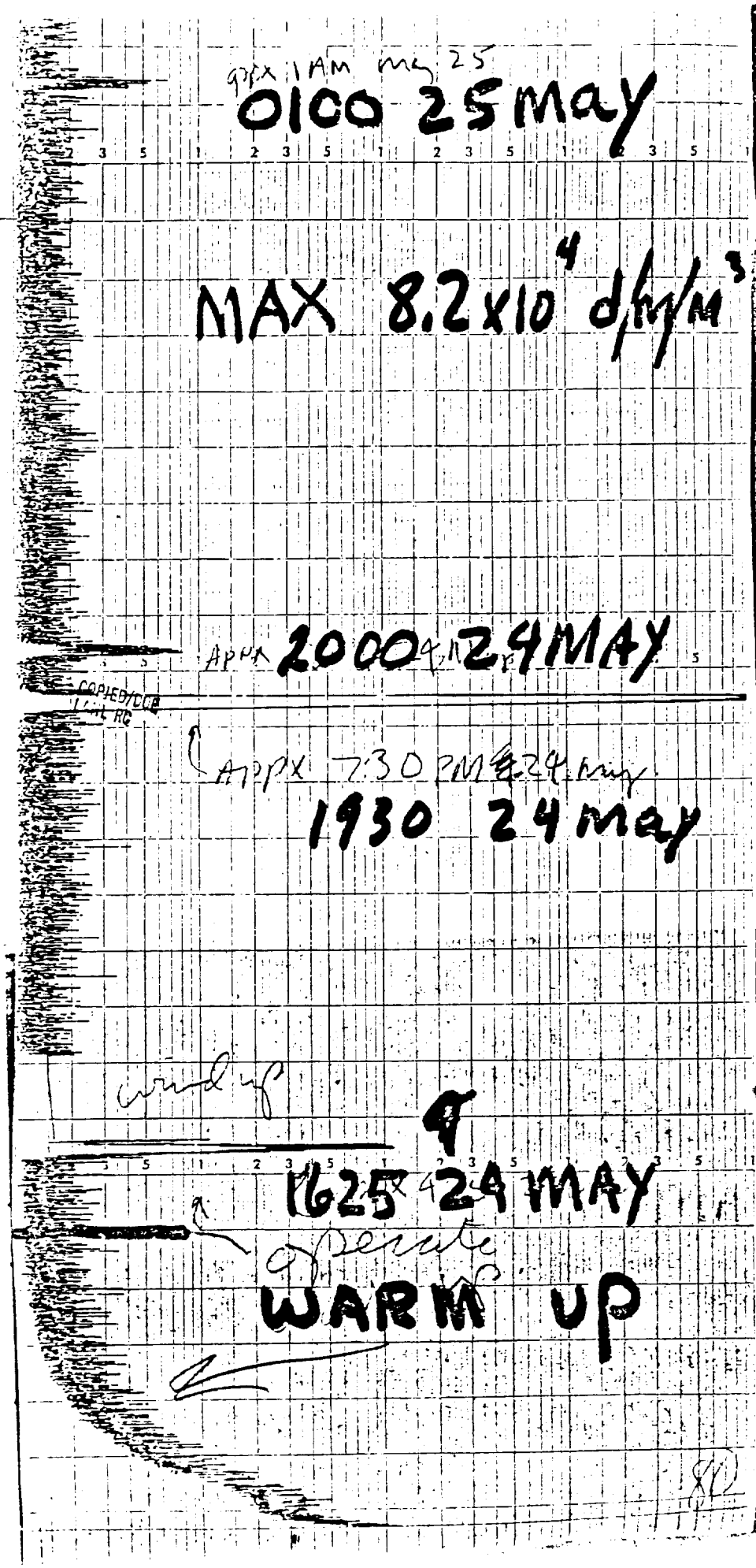
J-Div 287 curie →

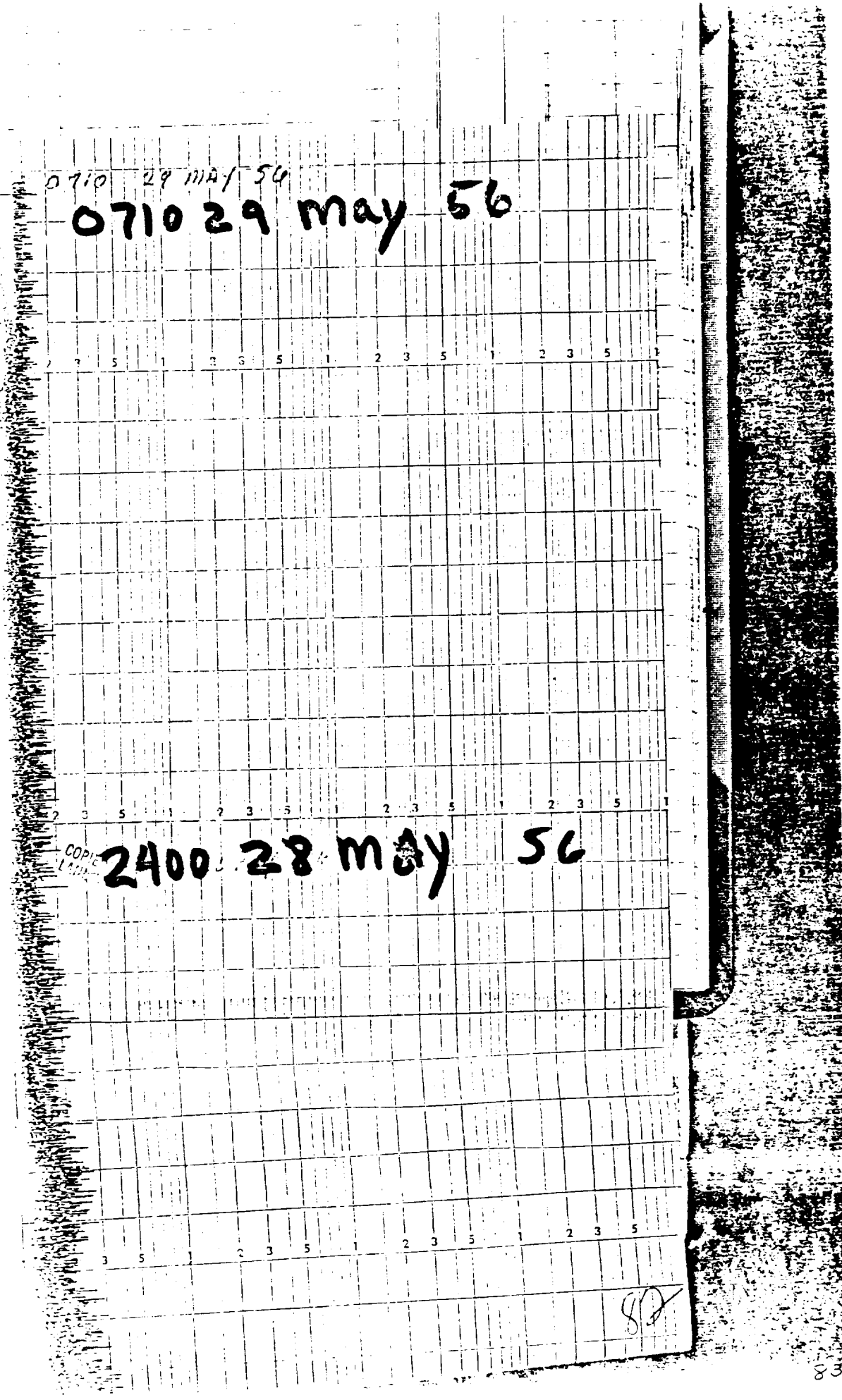
COPIED DUE

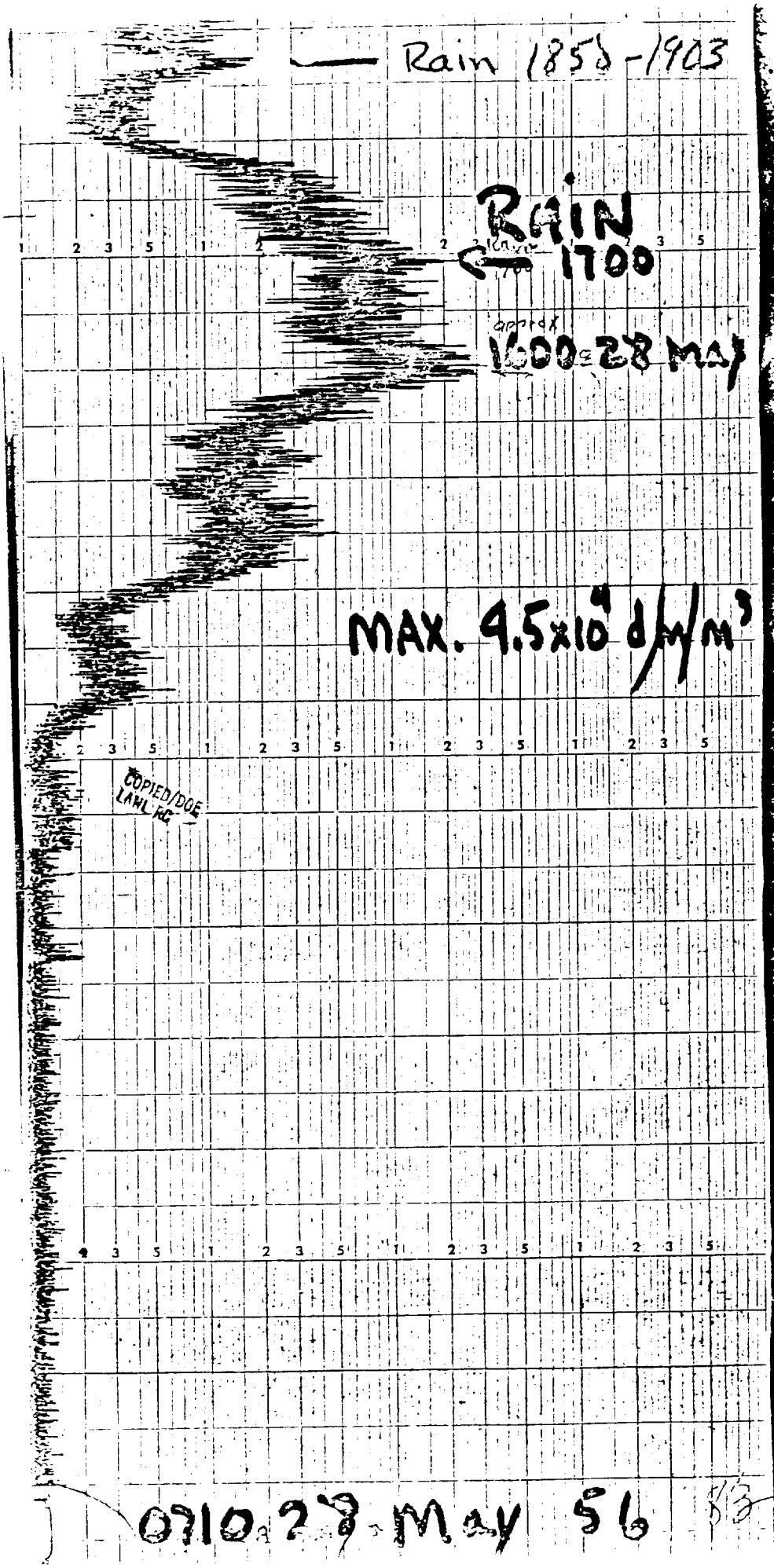
located about 120 yds

78


#5
Typical warm up pattern
1445 16 June
[illegible] on
E - speed shift
Fall out
- 1045 16 June


approx 1AM May 25
0100 25 May
MAX 8.2x10⁴ d/m/m³
Appx 2000 24 MAY
COPIED/DOE
Appx 7:30 PM 24 May
1930 24 May
winding
1625 24 MAY
operate
WARM UP
MA
COPIED/DOE
81


0710 29 MAY 56
0710 29 may 56
2400 28 may 56


Rain 1850-1903
RAIN
1700
approx
1600 = 28 May
MAX. 9.5x10⁹ d/m/m³
COPIED/DOE
LAHL NG
0710 29 May 56

1930 29 May

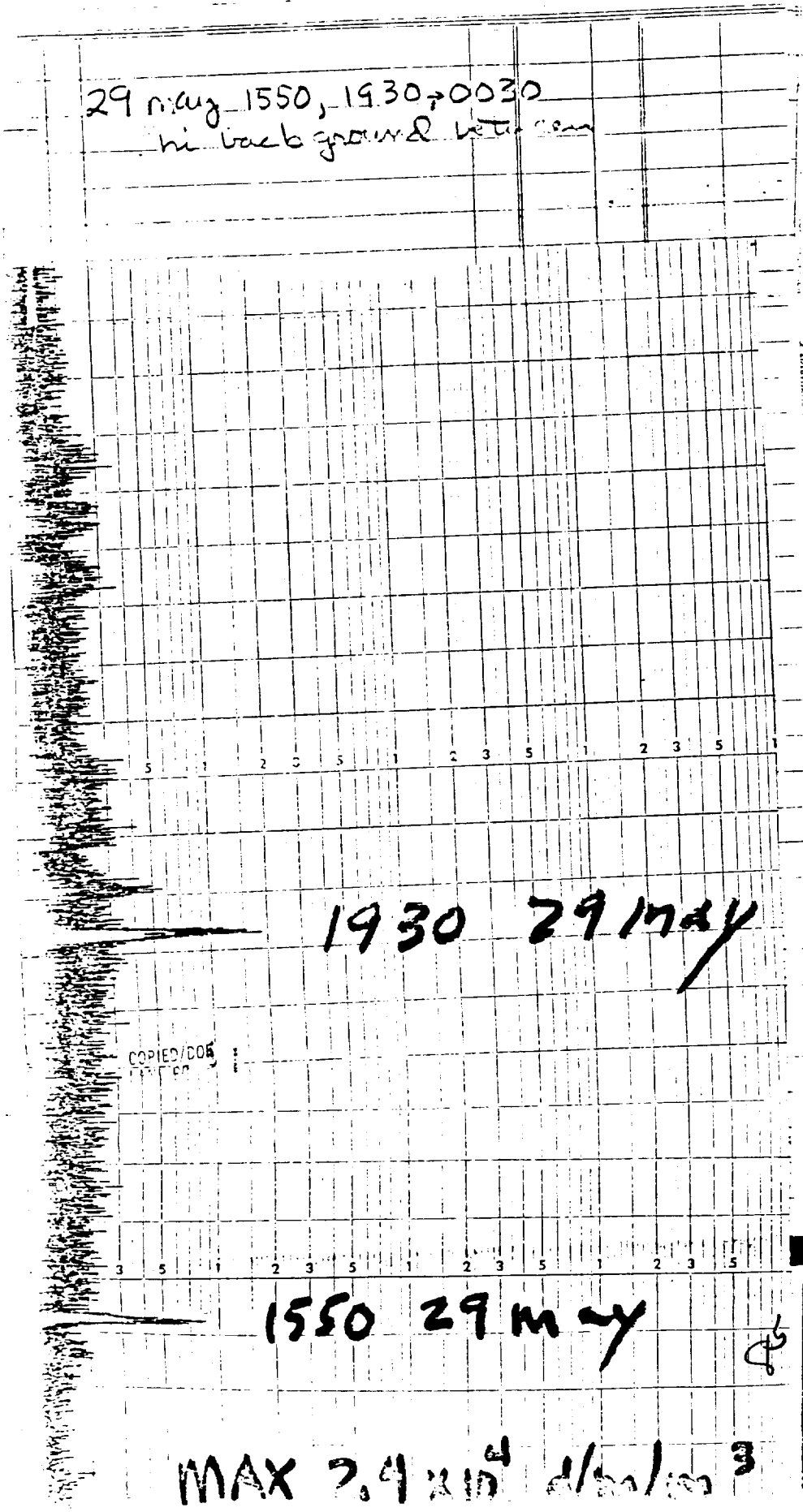
1550 29 May

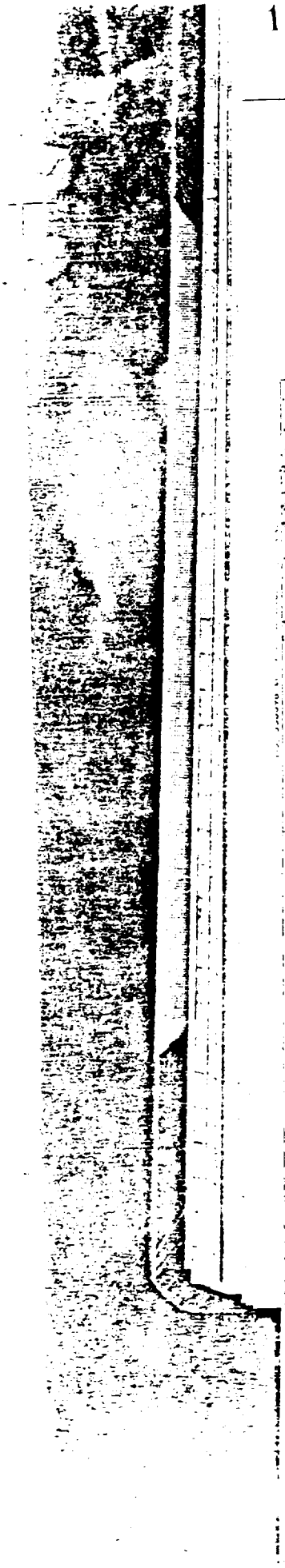
MAX 2.4×10^4 d/m/m^3

0710 29 May 56

0710 29 MAY 56

84


29 may 1550, 1930 + 0030
hi background
1930 29 may
COPIED/DOE
1550 29 may
MAX 2.9 x 10^4 d/m/cc 3



COPIED/DOE
LANL RC

1215 30 MAY

MAX 1.95×10^4 d/m/m

66
S.L.
150

1215 30 MAY

MAX 1.95×10^{4} d/m/m³

1330 30 MAY

1330 - 30 May 91

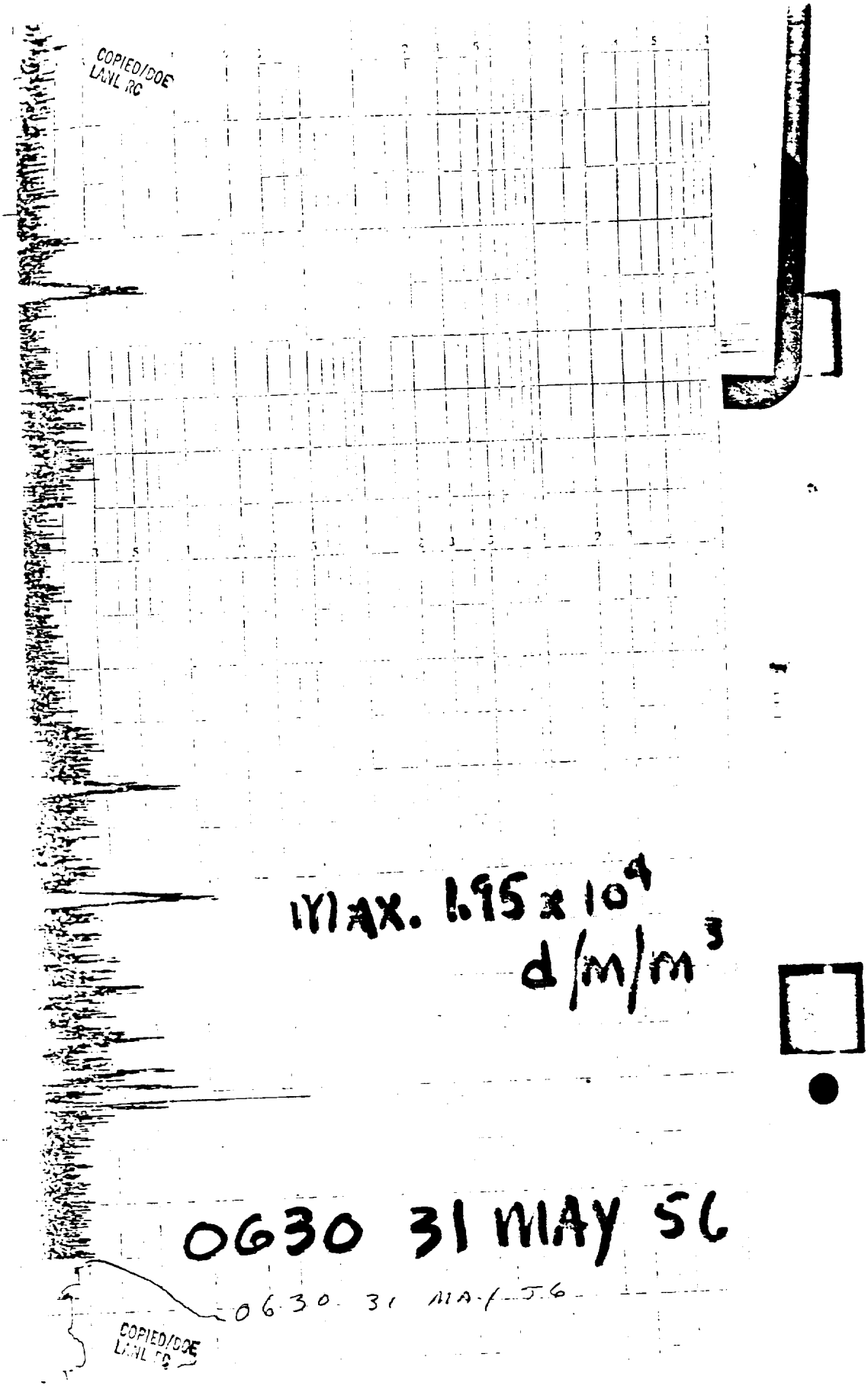
0830 30 MAY

0830 - 30 MAY

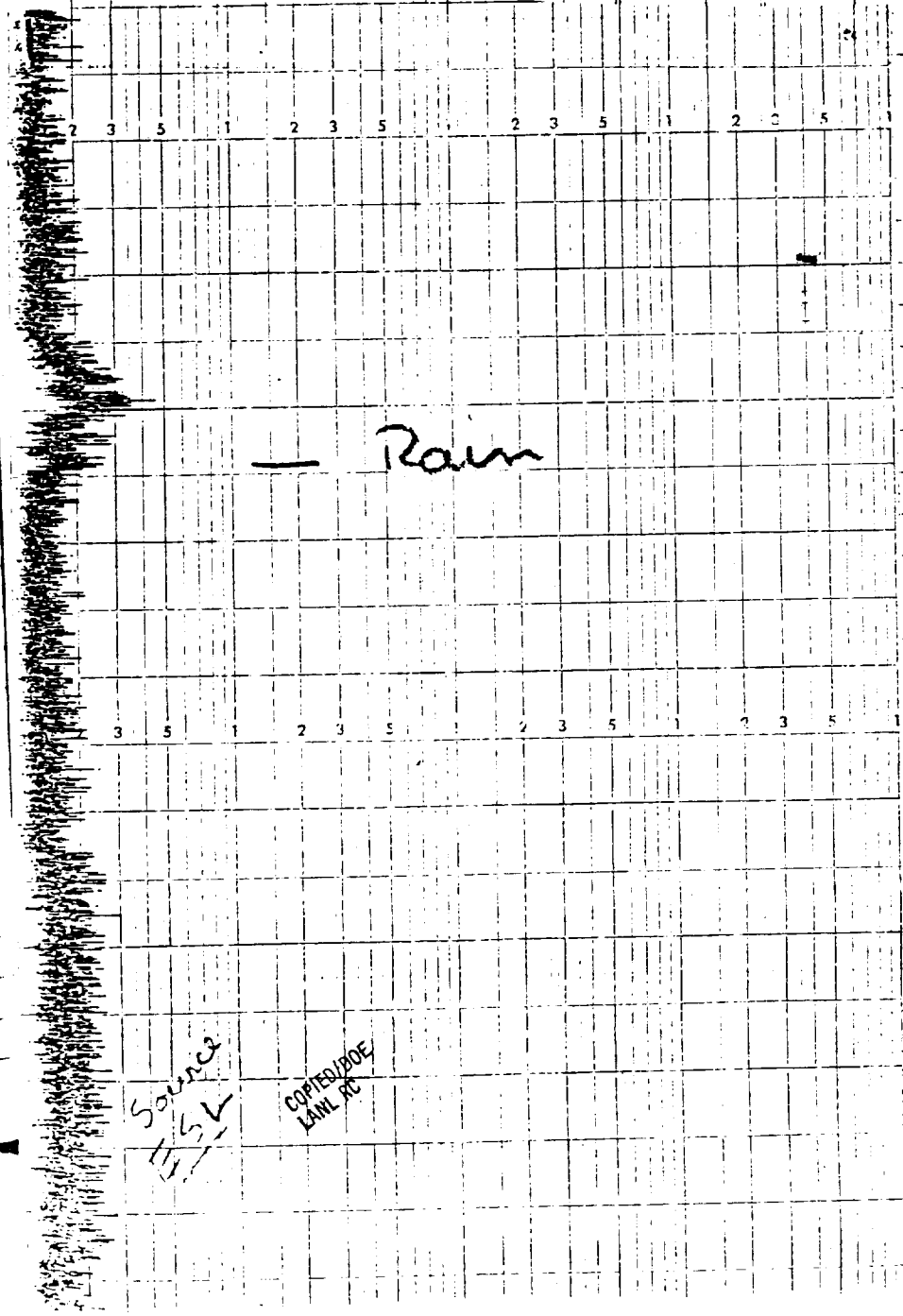
31 May 0730 hrs 1415

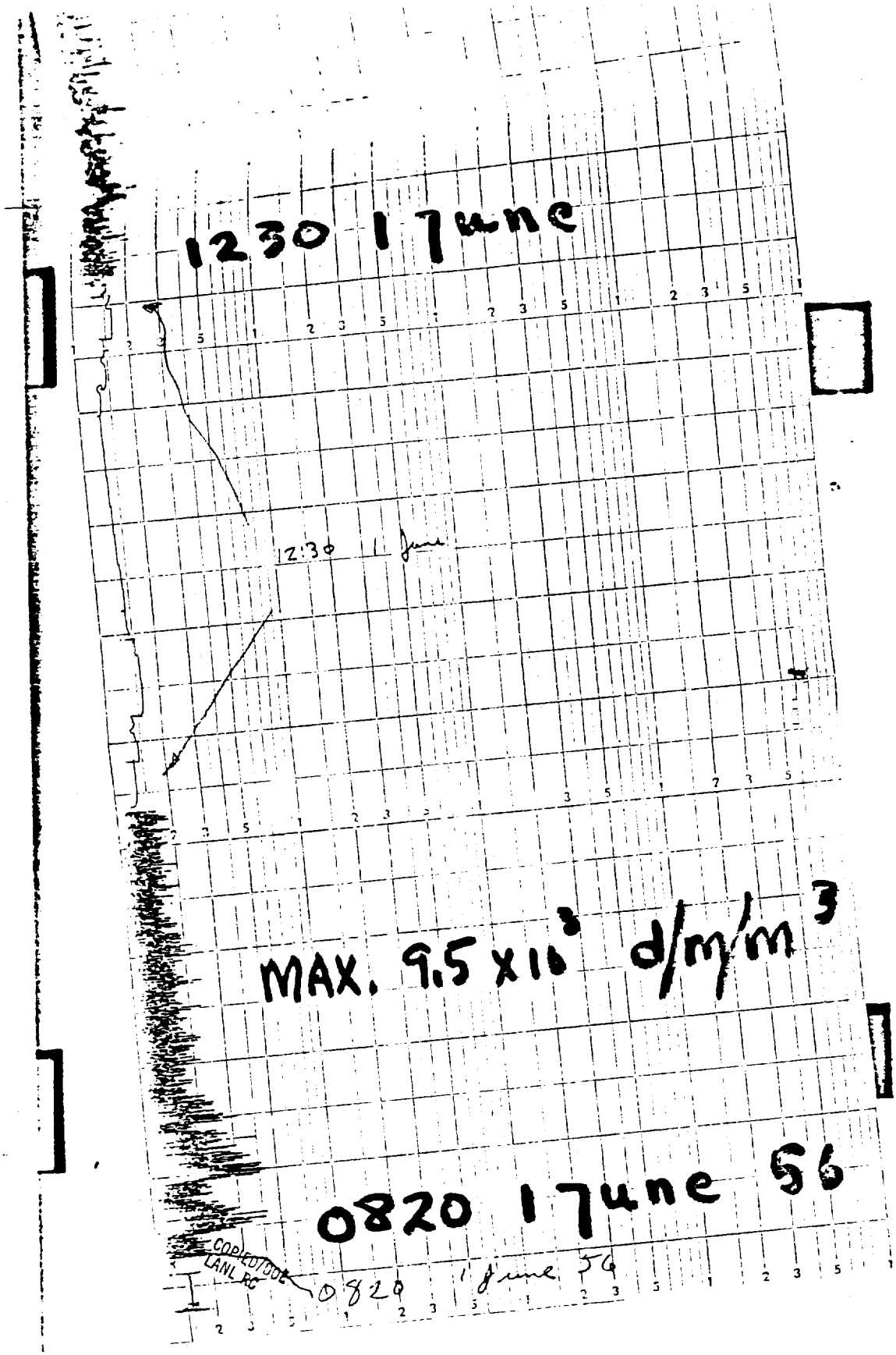
— Ram 2050

88


COPIED/DOE
LANL RC
MAX. 1.95 x 10^9
d/m/m^3
0630 31 MAY 56
0630 31 MAY 56
COPIED/DOE
LANL RC

17 June 0820 thru 1230
2200 thru 2300




1230 1 June
12:30 1 June
MAX. 9.5 x 10³ d/m/m³
0820 1 June 56
CODE LOTODE
LANL RC
0820 1 June 56

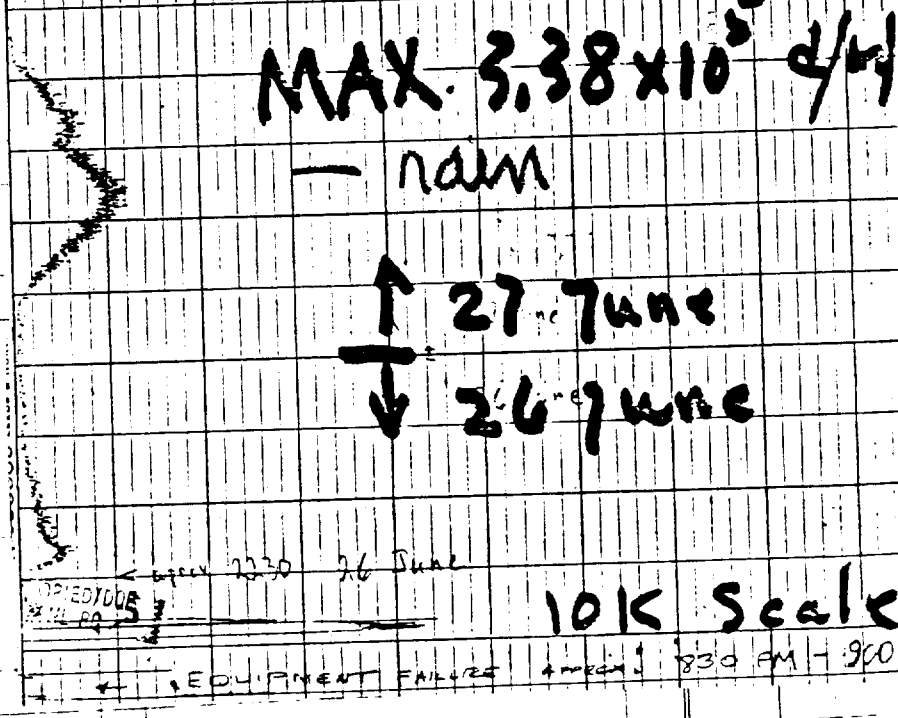
91

8 June 1345, 1530 & 1630

MAX. 1.5×10^4 d/m/m^3
Rain

1345 8 June

26 June 1730 Thru →
27 June 0215



93

17July 0900

10 30 17July

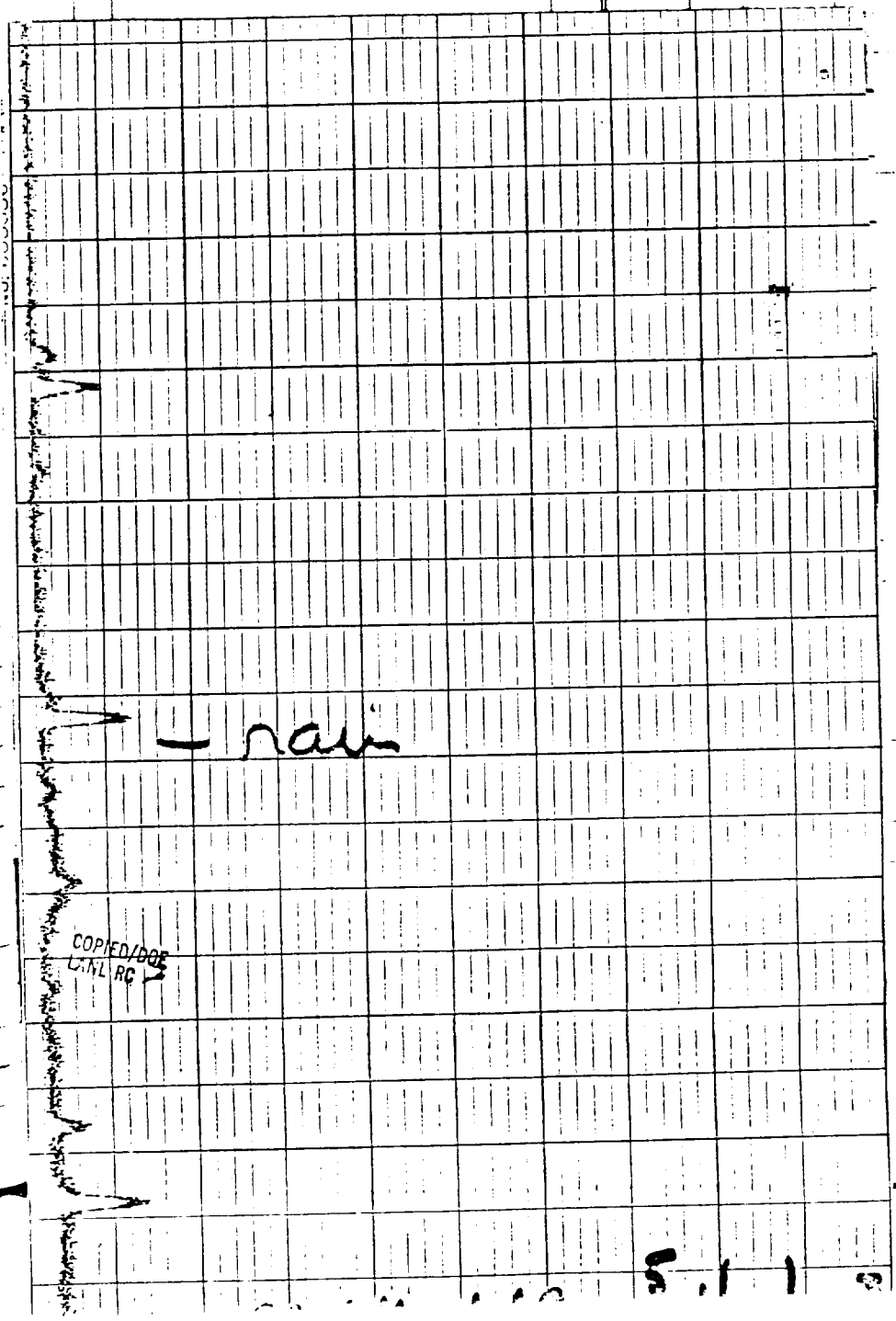
0900 17July

Rain

MAX 1.5×10^4 d/m/m^3

900 PM

97uly 0795 all day
decay pattern



MAX 1.12×10^5 d/m/m^3

0845 - 10K scale

10K scale 0845

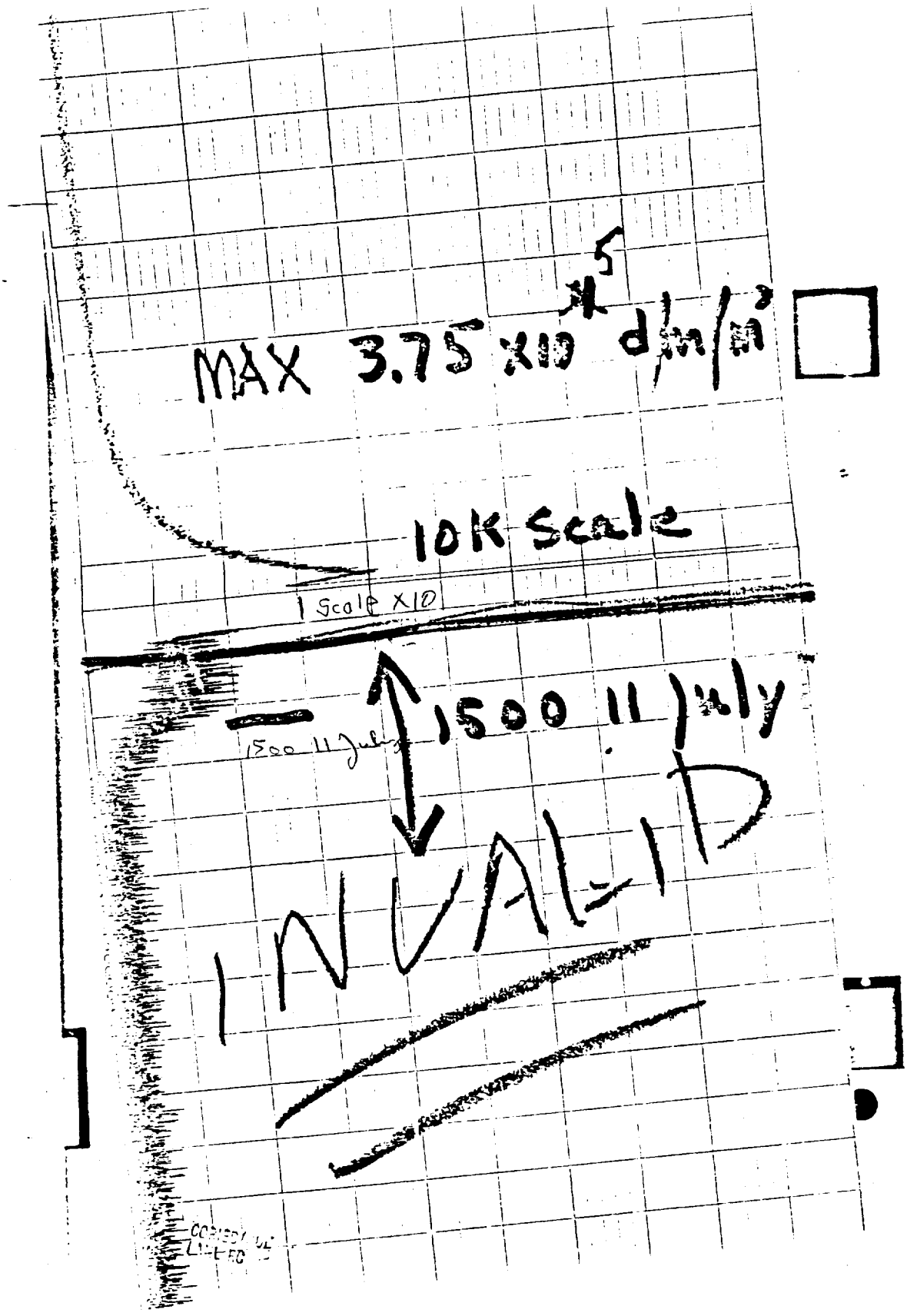
0807 9 July

4 July

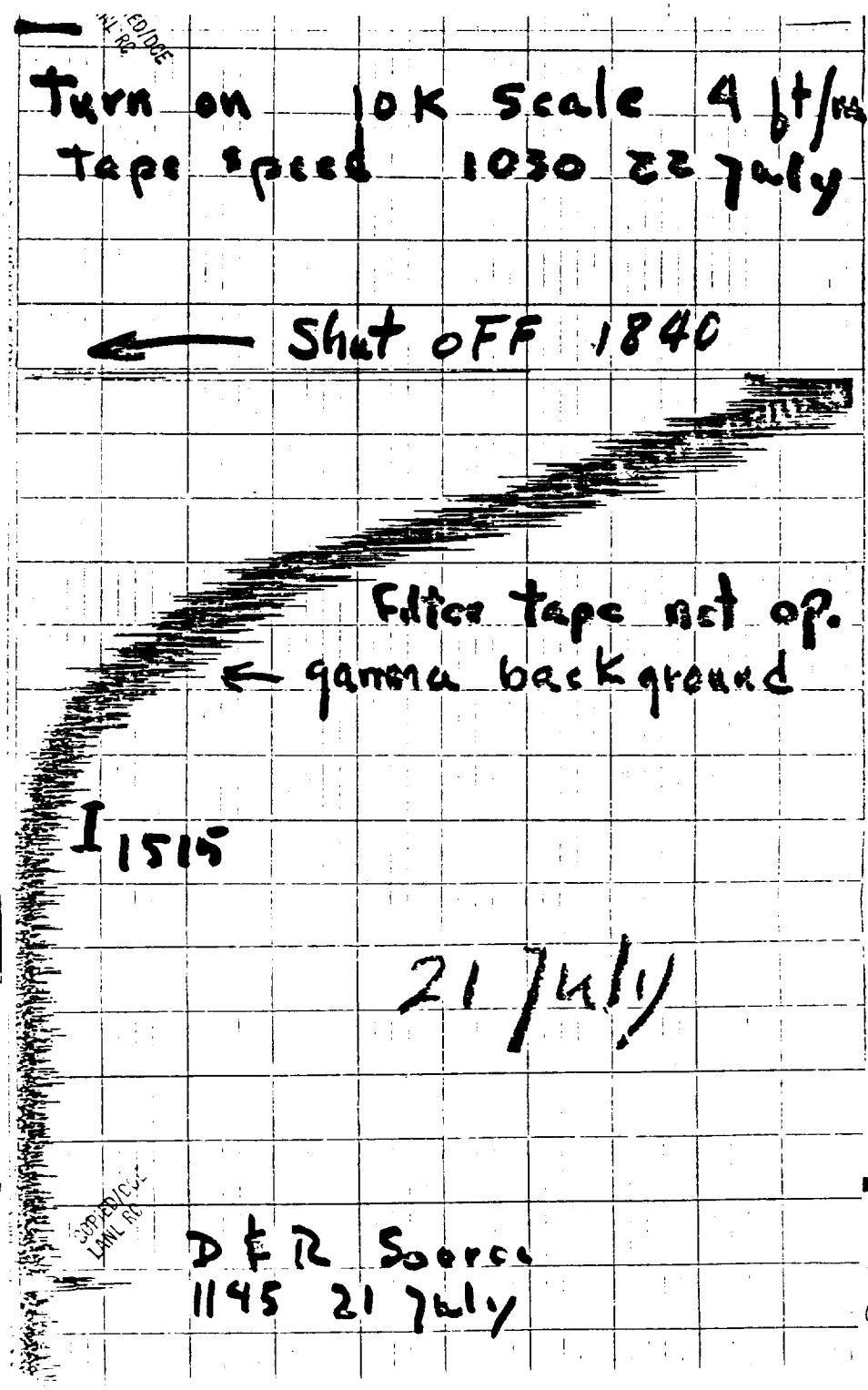
11 July [illegible] – 1700

decay pattern

97

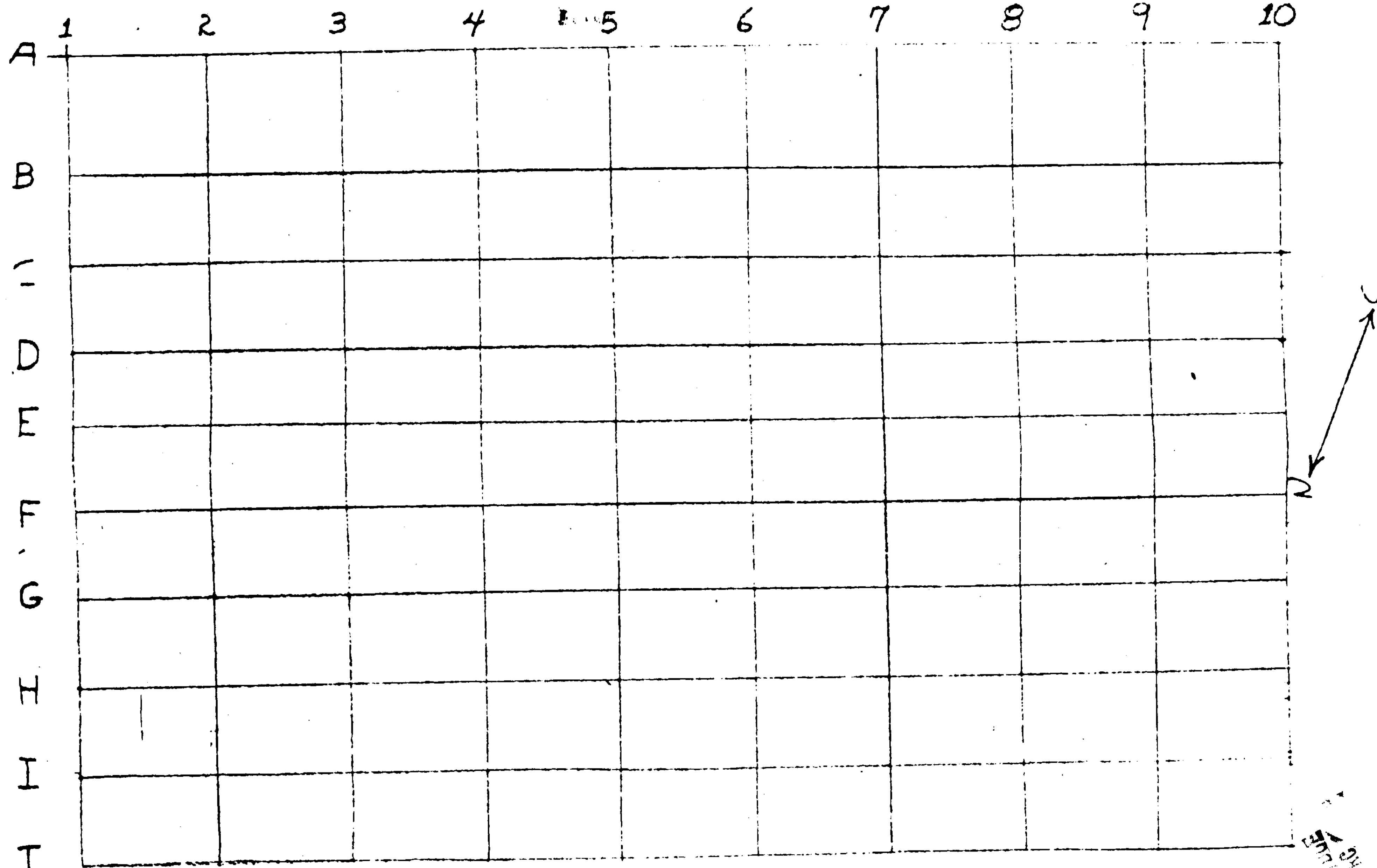

MAX 3.75 x10^5 d/m/m²
10K Scale
1 Scale X10
1500 11 July
1500 11 July
INVALID

21 July


Turn on 10K Scale 4 ft/m
Tape speed 1030 22 July
← Shut OFF 1840
Edico tape not op.
← gamma background
I 1515
21 July
DER Source
1145 21 July

Weather Data -
Calibration Charts -

100



1
2
3
4
5
6
7
8
9
10
A
B
D
E
F
G
H
I
J
N
S

Rains following heavy fallout 24 July.

Rain #1 2100 - 3 July - 5.5×10^7 dis/l

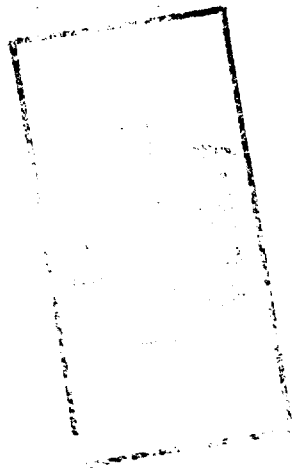
Rain #2 2230 - 3 July - 9.041×10^6 dis/l

Rain #3 0720 - 4 July -

2300 samples [illegible] 0720

1/2 life 14 [illegible] appx.

Rain #4 [illegible] - 4 [illegible]



Recommendations

a. Size

b. Weight

c. Filter rewind clutch (redesign)

d. Overload protection for the main drive transmission.

e. Hinged doors rather than snap on fasteners.

f. Scale selector for remote operation.

g. The original logarithmic amplifier?

h. Possibility of using short, end window detector tubes - Anton Lab #1001T (low background & reduction of pig size)

i. Future units to record background level (mr./hr.)

j. Pump oiling requirements every 2 days - not satisfactory for field use.

k. Laboratory determination of the unit's physical constants and incorporation of the data into the instruction manual - detector efficiency, number of cubic feet of air whose residue is seen by the detector etc.

l. More light in the pump compartment.

m. Brass stack locking nut unsatisfactory due to corrosion.

N - External plugs incl recorder

O - Weather shield & filter screen (bugs)

AIR MONITOR

Recommendations

a. Size

b. Weight

c. Filter rewind clutch (redesign)

d. Overload protection for the main drive transmission.

e. Hinged doors rather than snap on fasteners.

f. Scale selector for remote operation.

g. The original logarithmic amplifier?

h. Possibility of using short, end window detector tubes - Anton Lab #100IT (low background & reduction of pig size)

i. Future units to record background level (mr./hr.)

j. Pump oiling requirements every 2 days - not satisfactory for field use.

k. Laboratory determination of the unit's physical sonstants and incorporation of the data into the instruction manual - detector efficiency, number of cubic feet of air whose residue is seen by the detector etc.

l. More light in the pump compartment.

m. Brass stack locking nut unsatisfactory due to corrosion.

n. External plugs for remote hook up including the recorder.

o. Weather shield and filter screen for intake stack (bug intake often breaks the tape)

Monitor all 3 prior to shipment to E.

DENSITOMETER

Recommendations

(1) Light port in front

(2) Larger zero knob

(3) Badge holder that remains attached to unit.

(4) #3 - Possibility of a feed through holder for continuous or automatic processing.

(5) Range selection - (0 - 1 full scale)

(6) Black on white read out register.

(7) Proper ventilation for projector lamp. (180°F-145°F)

(8) Possible use of concentrated arc lamp to accomplish #9.

(9) Reduction of hunting and over shoot.

(10) Parts mounted on power switches subject to damage in shipment.

(11) Mirror alignment difficult.

(12) Set screws in mechanical section often come loose and fall out.

(13) Zero adjust drive alignment subject to shipping troubles.

(14) Possibility of dynode by-pass capacitors as noise reduction measure.

(15) Drive speed & stability characteristics drift considerably on a weekly basis requiring frequent adjustment.

(16) Present badge holders warp and often break directly behind the badge slot.

INTEGRON

These instruments were used little due to several factors.

(1) It was difficult due to time restrictions to advertise and aquaint personnel with their operation and usefulness.

(2) Personnel generally dislike hauling around an extra piece of equipment, especially in hot areas where speed is necessary. The pocket dosimeters often provide enough information for the needs of the party.

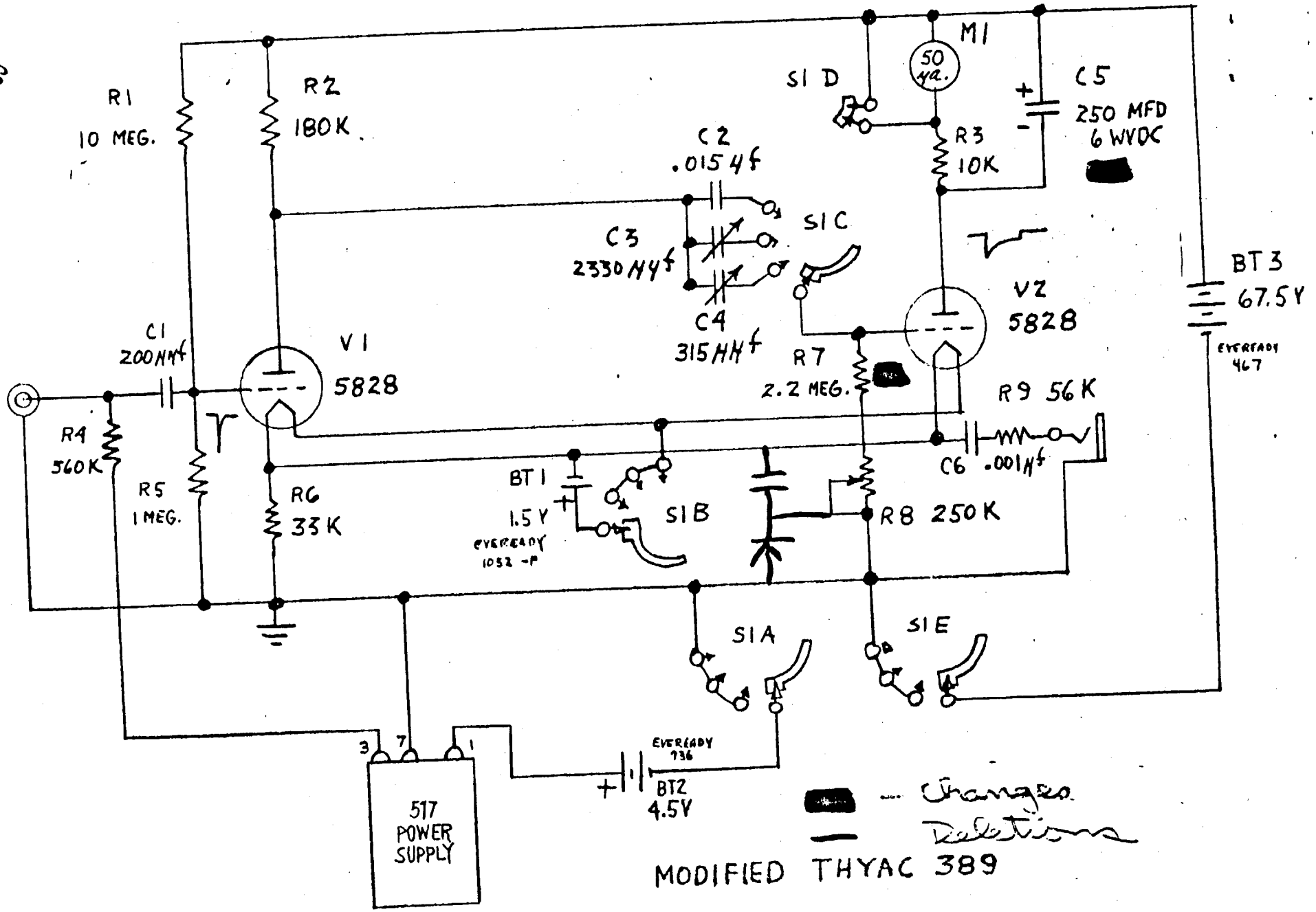
Upon arrival only four units were operable. The relatively heavy warning system batteries are not adequately supported causing the whole chassis structure to bend. Chamber plug damage during shipping resulted. Moisture sensitivity was noticed; it was however not of a really serious nature. Calibration was done every month with 20 - 25% corrections necessary.

The future usefulness of the integron will depend upon creating a need for such an instrument amongst project leaders etc.

THYAC (ALPHA CONVERTED)

The converted thyac with circuit changes to increase the trigger period and integration constant seems to be a very good field unit. It has not shown itself to be moisture or temperature sensitive. The probe must be handled gently and a rather high photo multiplier mortality rate has been noted. A guard ring should be added as further protection of the very thin mylar window. The probe may be used for short periods of time in any desired position due to the high viscosity of the silicone coupling compound and shape of its cavity in the light pipe.

The unit is capable of calibration to provide 4π readings with reasonable accuracy. Due to our lack of range in alpha sources they have only been checked at 400, 1800, 8800 and 3320 d/m.


R1
10 MEG.
R2
180K
C2
.015 μf
C3
2330 MMf
C4
315 MMf
S1C
S1D
M1
50 μa.
C5
250 MFD
6 WVDC
R3
10K
BT3
67.5 V
EVEREADY
467
V2
5828
R7
2.2 MEG.
R9 56K
C6 .001 μf
C1
200 MMf
V1
5828
R4
560K
R5
1 MEG.
R6
33K
BT1
1.5 V
EVEREADY
1032-P
S1B
R8 250K
S1A
S1E
EVEREADY
736
BT2
4.5V
517
POWER
SUPPLY
3
7
1
— Changes
Deletions
MODIFIED THYAC 389
FOR USE WITH ALPHA SCINTILLATION PROBE

RESISTANCE CALIBRATION OF AN-PDR-39's

The Tl-B or PDR-39 instruments rely on the accuracy of their hi-meg or chamber load resistances for scale decading. A single calibration control (meter series resistance) performs calibration of all scales at once.

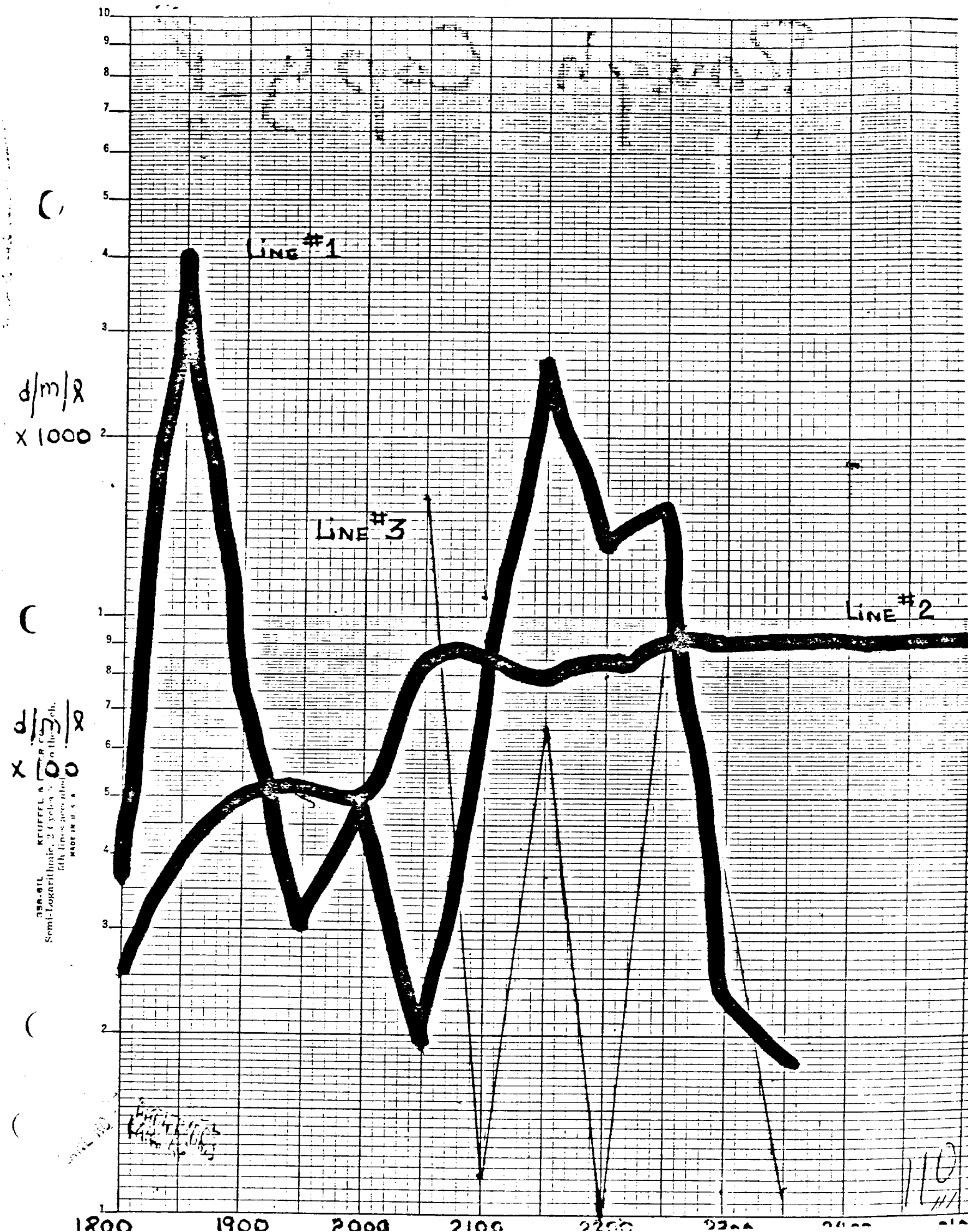
It was felt that some method of assuring hi-meg accuracy should be used to check all instruments before they met field use. It was also felt that the Victoreen deposited carbon hi-meg resistances might be highly voltage sensitive and should be checked under circumstances approximating their actual operating potentials. Commercial hi-meg ohm meters often use potentials up to 1000 volts making them unsuitable for this application. An Applied Physics Corp. vibrating reed electrometer was used to measure the potential across a 100 megohm standard resistance (calibrated to value $\pm$ .3%) in series with the unknown hi-meg (in place in the instrument). All resistors varying more than 5% were replaced. No attempt to calibrate the 0 to 5 mr. range was made.

The standard Bendix bridge and sub miniature tube tester supplied by the Army for use with the instruments uses a potential of 16 volts across the unknown resistance. It is felt that the Bendix unit serves the purpose well - better perhaps than the electrometer technique which is of a laboratory nature.

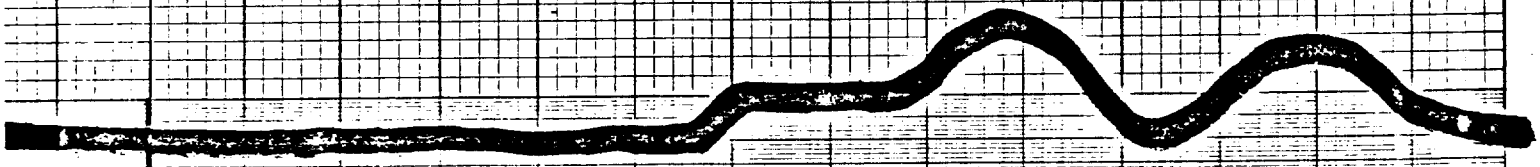
For most accurate results each instrument should be calibrated on the scale representing the mean deviation (since each scale varies $\pm$ a few percent). Time was not available for this purpose. Each Tl-B carries within it a card giving the deviations for future use.

The PDR-39 schematic places the 5 mr and 50 mr scales in parallel. This results in a 10% deviation (low) it was noticed however that the 10% deviation was not always forthcoming when the instruemnt was radiation calibrated. Further study should reveal use-ful characteristic information.

The deviation percentage given on the cards in the instruments pertains to scale error when radiation is read.


LINE #1
LINE #3
LINE #2
d/m/x
x 1000
d/m/x
x 100
1800
1900
2000
2100
2200
2300
2400

Line #1 - airborne d/m/l ground level
Line #2 - ground mr/hr
Line #3 - airborne d/m/l 8 feet above #1

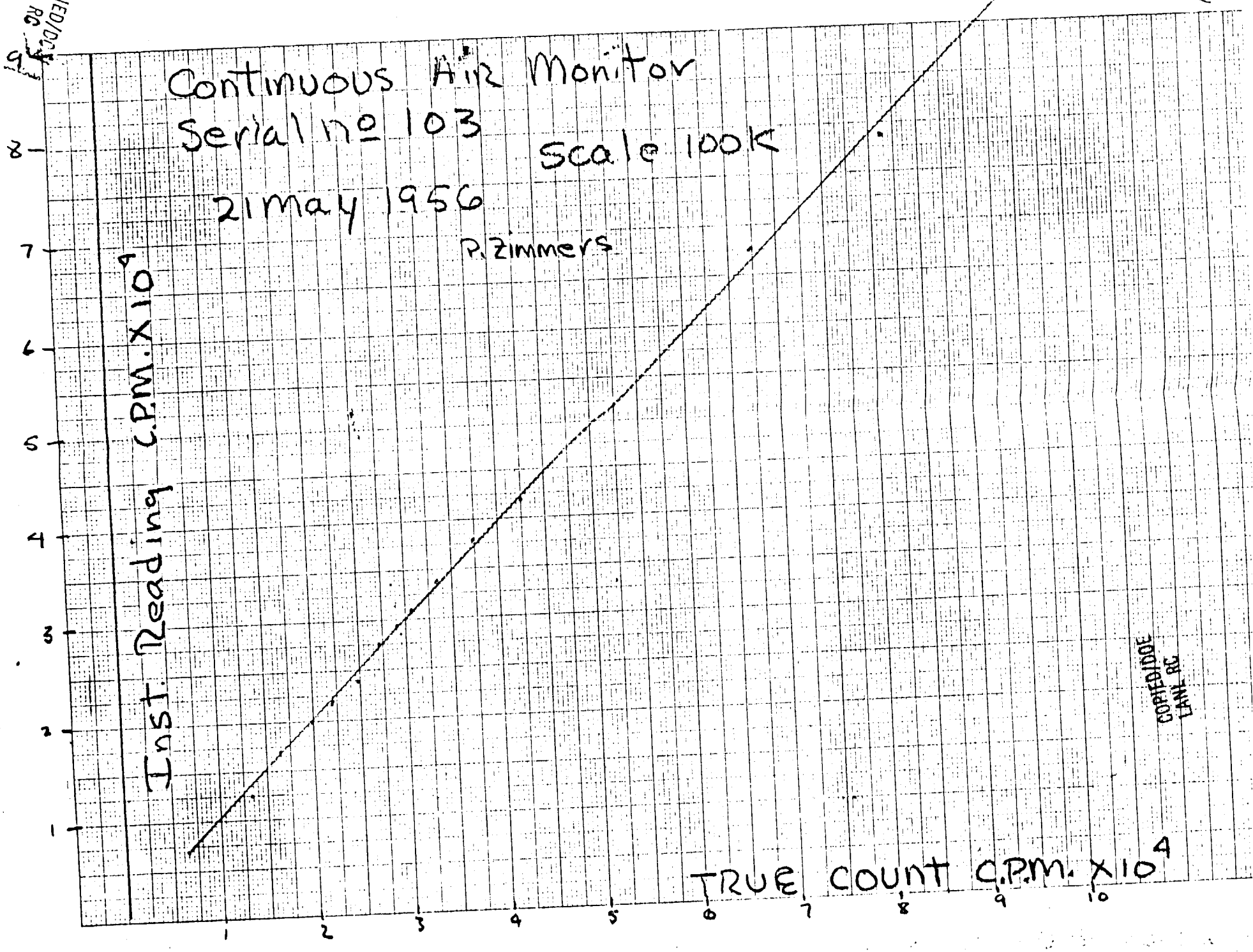


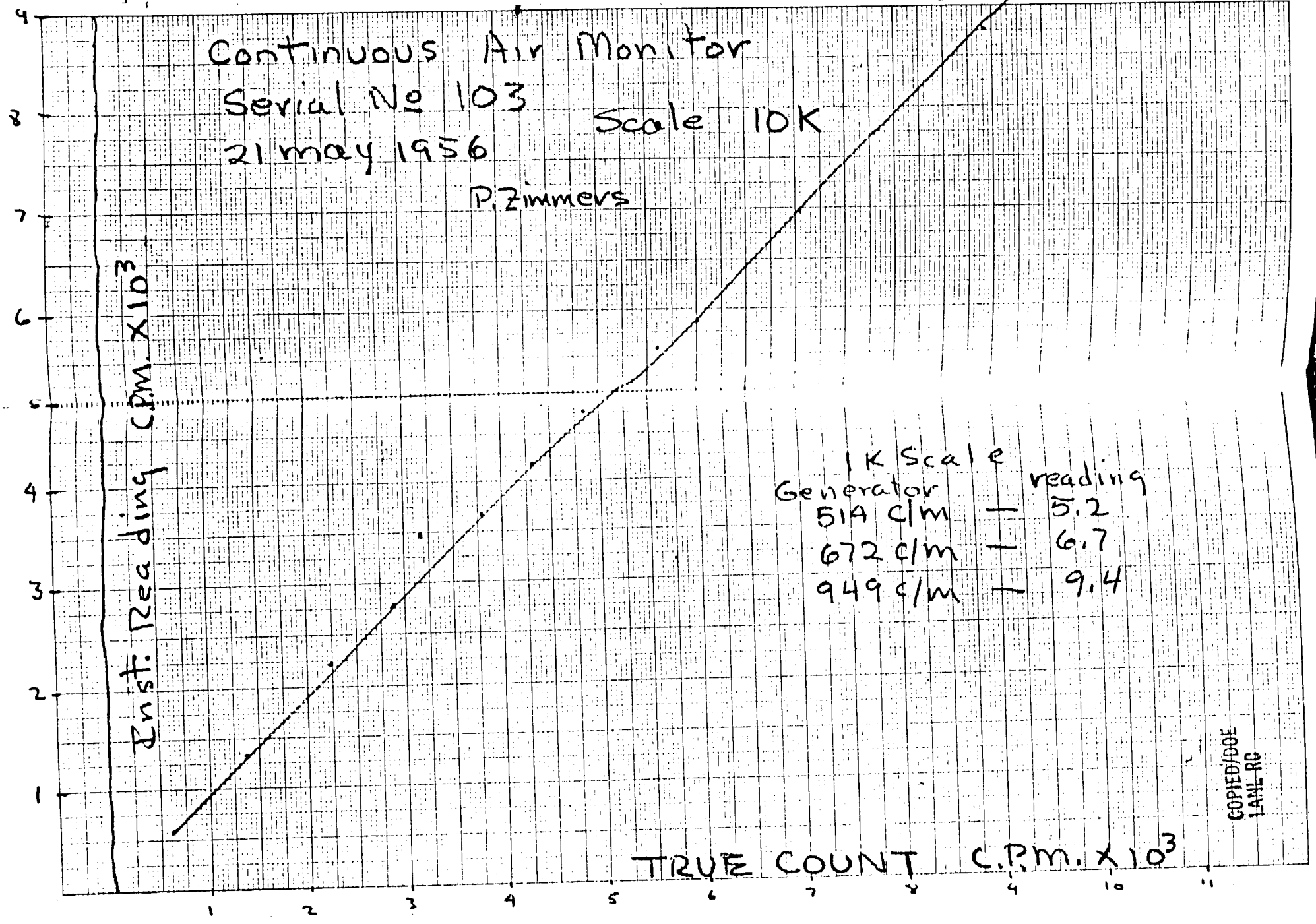
Background.

July	21	0600	2 mr
	22	"	90+
	23	"	60
	24	"	35
	25	"	19
	26	"	10

1800 0000 0600 1200 1800
21 July 22 July

the proper folding
of this chart presents
a challenge -
if duties press
and time flies then
Perhaps the pleasently
infuriating moments
spent unraveling the
simple logic of the
fold are well spent-





TO: MR. ZIMMERS - RADSAFE ELMER

MAY 26, 1956

TYPE	BEGAN	ENDED
RW-	0543	0549
RW--	0627	0634
RW-	1307	1309
RW	1309	1325
RW-	1325	1328
RW--	1328	1339
R--	1349	1368
RW-	2354	2356

MAY 27, 1956

TYPE	BEGAN	ENDED
RW-	0219	0223

MAY 28, 1956

TYPE	BEGAN	ENDED
RW--	0320	0123
RW-	0509	0514
RW--	1730	1734
RW--	1858	1903

MAY 29, 1956

TYPE	BEGAN	ENDED
RW-	0158	0201
RW	0201	0213
RW-	0213	0217
RW	0217	0221
RW-	0221	0232
RW	0232	0238
RW--	0238	0246
RW-	0320	0326
RW-	0337	0340
RW-	0341	0349
RW-	0349	0354
RW--	0354	0402
RW--	0431	0437

MAY 31, 1956

TYPE	BEGAN	ENDED
RW--	2044	2103
RW--	2140	2154
RW--	2205	2214
RW--	2303	2310
RW--	2329	2342

JUN 1, 1956

TYPE	BEGAN	ENDED
RW--	0232	0234
RW--	0633	0638
RW--	0811	0817
RW-	1002	1006
RW	1248	1257
RW--	1257	1312
RW-	1710	1724
RW--	1924	1931
RW-	1936	1940
RW--	1940	1945
RW--	1958	2001
RW-	2001	2008
RW-	2240	2245
R--	2245	2306

JUN 2, 1956

TYPE	BEGAN	ENDED
RW--	0434	0457
RW-	0457	0505
RW--	0505	0513
RW-	0513	0524
RW--	0524	0555
RW-	0555	0638
RW--	0638	0735
RW--	0740	0745
RW-	1113	1226
RW--	1226	1228
R	1228	1233
R+	1234	1316
R	1316	1523
R--	1523	1545
R-	1545	1557
R	1608	2304 ~~2304~~
R-	2104	2244
R--	2244	2334

JUN 3, 1956

TYPE	BEGAN	ENDED
R--	0003	0109
R--	0141	0314
R--	0447	0657
R-	0657	0706
R--	0706	0720
R--	0730	0937

JUN 4, 1956

TYPE	BEGAN	ENDED
RW--	2350	2355

JUN 5, 1956

TYPE	BEGAN	ENDED
R--	0538	0545
R--	0545	0609
R-	1241	1346
R--	1346	1357
RW--	1426	1444

JUN 6, 1956

TYPE	BEGAN	ENDED
RW--	2249	2304
RW--	2354	2356
RW	2356	CONTINUED

JUN 7, 1956

TYPE	BEGAN	ENDED
RW--	1849	1909
RW-	1944	1949
RW	1949	1953
RW-	1953	2063
RW	CONTINUED	0014
RW-	0014	0019
RW--	0019	0029
RW-	0029	0034
RW	0034	0039
RW	0039	0049
RW	0049	0114
RW-	0114	0124
RW--	0124	0139
RW--	0213	0217
RW-	0254	0302
RW--	0529	0535
RW--	0556	0608
RW--	0624	0633
RW--	1757	1804
RW--	1824	1827
RW-	1827	1830
RW	1830	1835
RW-	1835	1842

JUN 8, 1956

TYPE	BEGAN	ENDED
RW-	0721	0741
RW+	0741	0744
RW-	0744	0748
RW-	1534	1656
RW--	2010	2012
RW-	2012	2014
RW	2014	2016
RW+	2016	2024
RW	2024	2026
RW-	2026	2030
RW--	2030	2119

JUN 9, 1956

TYPE	BEGAN	ENDED
RW--	1925	1928

JUN 10, 1956

TYPE	BEGAN	ENDED
RW--	1947	1949
RW-	1949	1952
RW-	1952	2004
RW--	2129	2134

JUN 25, 1956

TYPE	BEGAN	ENDED
RW--	0445	0504
RW--	1513	1519
RW-	1519	1522

JUN 26, 1956

TYPE	BEGAN	ENDED
RW-	1156	1159

JUN 27, 1956

TYPE	BEGAN	ENDED
RW--	0147	0201
RW--	0259	0310
RW	0310	0314
RW-	0314	0321
RW--	0321	0331
RW--	0729	0736
RW-	0736	0748

28 JUN, 1956

TYPE	BEGAN	ENDED
RW--	0112	0118
RW-	0118	0125
RW--	0125	0151
RW-	1013	1015
RW-	1057	1103
	1909	1911

JUN 29, 1956

TYPE	BEGAN	ENDED
RW-	0250	0257
RW	0257	0301
RW--	0301	0312
RW--	0412	0419
RW--	1807	1815
RW--	2328	2332

JUN 30, 1956

TYPE	BEGAN	ENDED
RW--	0145	0155
RW-	0155	0157
RW--	0157	0206
RW--	0624	0634
RW-	0641	0648
RW-	0648	0656
RW	0822	0834
RW--	1334	1352
RW--	1944	1947

Jul 1, 1956

TYPE	BEGAN	ENDED
RW	0330	0348
RW--	0348	0410
RW-	0410	0419
RW--	0419	0431
RW--	0610	0629
RW--	0629	0632
RW-	0632	0639
RW-	0639	0706
RW--	0706	0826
RW-	0936	0949
RW--	0949	1012
RW-	1322	1325
RW	1325	1332
RW--	1744	1804
RW--	1840	1911
RW-	1911	1913
RW	1914	1918
RW--	1918	1926
RW	1926	1934
RW-	1934	1937
RW--	1937	1944

Jul 2, 1956

TYPE	BEGAN	ENDED
RW--	1357	1400
RW--	1429	1433
RW-	1433	1441
RW--	1829	1839
RW--	1843	1907
RW--	1949	1951
RW	1951	1953
RW-	1953	1956
RW	1956	2003
RW-	2003	2016
RW--	2026	2104
RW--	2144	2200
RW-	2332	2339
RW+	2339	2341
RW	2341	CONTINUED

Jul 3, 1956

TYPE	BEGAN	ENDED
RW	CONTINUED	0227
RW--	0329	0511
R-	0727	1214
RW--	1445	1600

Jul 4, 1956

TYPE	BEGAN	ENDED
RW--	0359	0404
RW--	1529	1539
R--	2001	2019

Jul 5, 1956

TYPE	BEGAN	ENDED
RW--	0539	0632
RW-	0656	0706
RW-	1149	1200
RW--	1303	1318
RW--	1510	1611
RW-	1756	1757
RW+	1757	1804
RW	1804	1810
RW-	1810	1814
R--	1902	1949

Jul 20, 1956

TYPE	BEGAN	ENDED
RW--	1207	1211
RW-	1215	1219
RW+	1219	1239
RW-	1239	1249
RW--	1304	1312
RW-	1442	1514

Jul 21, 1956

TYPE	BEGAN	ENDED
RW--+	2158	2204
RW--	2254	2302

Jul 22, 1956

TYPE	BEGAN	ENDED
RW--	0338	0348
RW--	0707	0723
RW--	0739	0745
RW-	0900	1009
RW	1200	1213
RW--	1414	1418
RW-	1716	1740
RW--	1947	2003
RW--	2014	2109

Jul 22, 1956

TYPE	BEGAN	ENDED
R--	0005	0025
R--	0126	0306
R--	0356	0408
R	0408	0428
R-	0428	0431
R--	0431	0534
R--	0600	0650
R	0650	0653
R-	0653	0657
R	0657	0708
R--	0708	0712
RW--	1146	1156
RW--	1304	1310
RW--	2337	2346