729455

200M 1000 10 53 A 24980

R

Nuclide	Photo peak Axzt	$\bar{\Sigma}$	Intrinsic	$K = \frac{A_0}{\bar{\Sigma}}$	P.Y.	$K/P.Y.$	$K \times P.Y.$	P peak	+25%	-25%
ZN 65	Σ^{120}_{100}	26535	1.86	7.0×10^{-5}	.49	14.29×10^{-5}	3.43×10^{-5}	1.11	4.29	2.57
Cs 137	Σ^{74}_{57}	52825	1.46	2.76×10^{-5}	.86	3.21×10^{-5}	23×10^{-5}	.662	2.96	1.78
Ru 106	Σ^{57}_{46}	10356	1.2	1.16×10^{-4}	.205	5.66×10^{-4}	238×10^{-5}	.513	2.98	1.78
Ce 144	Σ^{16}_{11}	3847	0.44	1.14×10^{-4}	.1	11.4×10^{-4}	1.14×10^{-5}	.134	1.42	.86
I 131	Σ^{42}_{23}			3.1×10^{-5}	.82	~~3.77×10^{-5}~~	~~2.54×10^{-5}~~	~~.366~~	~~3.18~~	~~1.90~~
Co 60	Σ^{138}_{122}		1.14	4.21×10^{-5}	1.	4.21×10^{-5}	4.21×10^{-5}	1.32	5.26	3.16
Zr-Nb 95	Σ^{83}_{68}	20006	0.54	2.7×10^{-5}	.99	2.73×10^{-5}	2.67×10^{-5}	.76	3.34	2.00
Ag 110m	Σ^{100}_{81}	14173	.61	4.3×10^{-5}	.72	5.97×10^{-5}	3.10×10^{-5}	.885	3.88	2.32
TA 182	Σ^{134}_{102}	21943	1.7	7.76×10^{-5}						
I 131	Σ^{44}_{32}			2.49×10^{-5}	.82		2.04×10^{-5}	.364	2.55	1.53
									59	
			$\bar{\Sigma}/P.Y.$	$K = \frac{A}{\bar{\Sigma}}$	78		2.54		134	
ZN 65	Σ^{120}_{100}	26535	54255		156		2.04			
								50		
					51					
					102					

Redacted Version

by

date 7/17/95

REPOSITORY INEL
PAST RECORDS OF DALE OLSON
COLLECTION (BRANCH CHIEF)
CABINET "DOELAD" DRAWER #4
BOX No. RESL CEA-650 ROOM #115
FOLDER HUMAN INGESTION CAPSULE

BEST COPY AVAILABLE

1256725

U. S. ATOMIC ENERGY COMMISSION
Idaho Operations Office, Health and Safety Division
Idaho Falls, Idaho

VOLUNTARY CONSENT FOR PARTICIPATION IN HUMAN STUDIES

SUMMARY OF STUDY

Identification No. 18

Description and Purpose

The whole-body counter in the mobile van must be calibrated before it can be used to give quantitative results. To calibrate the van-counter, the best procedure is to use human subjects with known quantities of radioactive isotopes in their body. The volunteer named below will swallow an insoluble capsule containing 1.2 uc of I 131, and as the capsule passes through the body a number of consecutive counts will be made. Rota-scan counting will be used to measure the body radioactivity from which the calibration will be made.

Nuclide ^{131}I; Quantity 1.2 uc.; Guide value 9.4 uc.; Critical organ L.L.I.; ~~Effective half life~~ Residence Time 0.75 days; ~~Chemical form~~ Polyethylene encapsulated NaI;

Chemical toxicity Non; Physical form Insol. Cap.; Route G.I.

Investigator [signature] Date 9/25/67

VOLUNTARY CONSENT

I, [redacted], do hereby acknowledge that: (1) I have volunteered to participate personally in a scientific investigation promoted by and for the U. S. Atomic Energy Commission; (2) I understand that the study requires me to take internally a small quantity of a radioisotope that has been determined by the investigator and confirmed by a review committee to be less than the radiation guide limits permitted by AECM 0524 for occupational exposure; (3) I understand that expert opinion regards the radiation exposures approved for this study to be so low that no harmful effects are expected; (4) I have read the description of the proposed study above and have been given ample opportunity to discuss and/or clarify any questions that I might have concerning it; (5) I have been informed and assured by my administrative superiors that participation in this study is not in any way a condition of employment, and that I may refuse to participate, or to withdraw my consent at any time during the course of the study, without incurring any adverse reaction to the normal course of my employment; and (6) I understand that a documented record of these studies will be on file in the ID Health and Safety Division as part of my occupational exposure and/or medical record.

[signature] Signature of Witness

[redacted] Signature of Volunteer

9-25-67 Date

REVIEW AND APPROVAL

[signature] acting Chief, Analytical Chemistry Branch 9/25/67 Date

[signature] MD Chief, Medical Branch 9/25/67 Date

Date of Administration 9-25-67 Study Completed _____ Actual Dose _____ Rem.

Investigator _____ Date _____

1256126

U. S. ATOMIC ENERGY COMMISSION
Idaho Operations Office, Health and Safety Division
Idaho Falls, Idaho

VOLUNTARY CONSENT FOR PARTICIPATION IN HUMAN STUDIES

SUMMARY OF STUDY Identification No. 17

Description and Purpose
The whole body counter in the mobile van must be calibrated before it can be used to give quantitative results. To calibrate the van-counter, the best procedure is to use human subjects with known quantities of radioactive isotopes in their body. The volunteer named below will swallow an insoluble capsule containing 2.2 uc of Zn 65, and as the capsule passes hrough the body a number of consecutive counts will be made. Rota-scan counting will be used to measure the body radioactivity from which the calibration will be made.

Nuclide Zn 65; Quantity 2.2 uc.; Guide value 28 uc.; Critical organ (GI); ~~Effective half-life~~ Residence Time 18/24 ~~days~~; Chemical form $ZnCl_2$; Chemical toxicity None; Physical form Insoluble Capsule; Route Oral.

Investigator L. E. Howard Date 6/2/67

VOLUNTARY CONSENT

I, [redacted] do hereby acknowledge that: (1) I have volunteered to participate personally in a scientific investigation promoted by and for the U. S. Atomic Energy Commission; (2) I understand that the study requires me to take internally a small quantity of a radioisotope that has been determined by the investigator and confirmed by a review committee to be less than the radiation guide limits permitted by AECM 0524 for occupational exposure; (3) I understand that expert opinion regards the radiation exposures approved for this study to be so low that no harmful effects are expected; (4) I have read the description of the proposed study above and have been given ample opportunity to discuss and/or clarify any questions that I might have concerning it; (5) I have been informed and assured by my administrative superiors that participation in this study is not in any way a condition of employment, and that I may refuse to participate, or to withdraw my consent at any time during the course of the study, without incurring any adverse reaction to the normal course of my employment; and (6) I understand that a documented record of these studies will be on file in the ID Health and Safety Division as part of my occupational exposure and/or medical record.

Roy E. Howard — Signature of Witness
[redacted] — Signature of Volunteer
6/2/67 — Date

REVIEW AND APPROVAL
Chief, Analytical Chemistry Branch — Date 6-2-67
Chief, Medical ~~Branch~~ — Date 2 June 67

Date of Administration _____ Study Completed _____ Actual Dose _____ Rem.

Investigator _____ Date _____

1256127

I^{131}

Total Body $\quad I_0 = \dfrac{0.3 \times 7\times10^4}{74(1)(7.6)(.44)\left(1-e^{-\frac{.693}{7.6}\cdot 7}\right)} = \dfrac{2.1\times10^4}{247(1-e^{-.64})} = \dfrac{2.1\times10^4}{1.16\times10^2}$

$(1-.53)$
$.47$

$= 1.8\times10^2 = 180$ uc/week

Thyroid $\quad I_0 = \dfrac{0.3 \times 20}{(74)(.3)(7.6)(.23)(.47)} = \dfrac{6}{18.2} = 0.33$ uc/week

$(1-e^{-.34})$
$.47$

G.I. $\quad I_0 = \dfrac{O \quad M' \quad G'}{25.6 \quad \Sigma \quad (h_1-h_0)} = \dfrac{(0.3)(150)(1)}{25.6\ (.25)(.75)} = \dfrac{45}{4.8}$

$= 9.4$ uc/week

1256728

Z # 65

6.5×10^{-3} R/uc

$.45 \times 10^{-3}$

.036
700
584
1160

.603
.636
4158
279
.084

Total Body

$$I_o = \frac{R\ m}{74\ f\ T\ E(1-e^{-\lambda T})}$$

$$= \frac{3 \times 7. \times 10^4}{(74)(1)(194)(.32)\left(1-e^{-\frac{.693}{194}7}\right)}$$

.96

194 x 74 x .32 =
4594
.96
4410
1
441

$$= \frac{2.1 \times 10^4}{4.41 \times 10^2} = .695 \times 10^2$$

$$= 69.5 \text{ or } 70 \text{ uc}$$

70 uc to total Body for 7 day = 0.3 rem/week

GI track LLI

$$D = \frac{\cancel{511}\ 25.6\ \Sigma E\ I_o\ (h_1 - h_0)}{\cancel{2}\ M'\ G'}$$

$$\frac{I_o}{2} = \frac{D\ m'\ G'}{511\ \Sigma E\ (h_1 - h_0)} = \frac{(0.3)(150)(1)}{(25.6)(.084)(18/20)} = \frac{45}{1.6128}$$

2.1504 .75

$$= 27.9 \text{ uc}$$

27.9 uc GI for .75 day = 0.3 rem

2.8 uc GI for .75 day = 1/10 0.3 rem

Res.

1256729

U. S. Atomic Energy Commission
Health and Safety Division

VOLUNTARY CONSENT FOR PERSONAL PARTICIPATION
IN SCIENTIFIC HUMAN STUDIES

I, [redacted] do hereby acknowledge that I have volunteered as an AEC employee to participate personally in a scientific investigation promoted by and for the Atomic Energy Commission. I understand the study requires me to take internally a small quantity or quantities of radioisotopes which has been estimated by the investigators and the ID Medical Branch to deliver less than 10 per cent of the radiation guide limits permitted me for occupational radiation exposure. I understand that a documented record of these isotope studies will be on file with the ID Health and Safety Division as part of my occupational exposure and/or medical record.

[redacted]
Signature

Dec. 19, 1966
Date

Witnesses:

F. O. Cippenley
Signature

J. P. Cusimano
Signature

Experiment No. _____

Nuclide Taken	Quantity, uc.	Date Taken	T 1/2 eff. days	Administration: Chemical Form	Administration: Physical Form	Administration: Route

Approved By: _____ Date: _____
Chief, Analytical Chemistry Branch

_____ Date: _____
Chief, Medical Branch

Study Completed: _____
Date

1256730

U. S. ATOMIC ENERGY COMMISSION
Idaho Operations Office, Health and Safety Division
Idaho Falls, Idaho

VOLUNTARY CONSENT FOR PARTICIPATION IN HUMAN STUDIES

SUMMARY OF STUDY Identification No. 15

Description and Purpose
The whole-body counter in the mobile van must be calibrated before it can be used to give quantitative results. To calibrate the van-counter, the best proceedure is to use human subjects with known quantities of radioactiv isotopes in the body. The volunteer named below will swallow an insoluble capsule containing 1.3 uc of Ru 106, and as the capsule passes through the body a number of consecutive counts will be made. Roto-scan counting will be used to measure the body radioactivity from which the calibration will be made.

Nuclide Ru 106 Quantity 1.3 uc.; Guide value 1.8 uc.; Critical organ (GI) LLI; ~~Effective half-life~~ Residence time 0.75 days; Chemical form RuCl, Capsule; Chemical toxicity none; Physical form Insoluble /; Route G.I. tract, oral

Investigator L.E. Howard Date 4/18/67

VOLUNTARY CONSENT [redacted]

I, [redacted], do hereby acknowledge that: (1) I have volunteered to participate personally in a scientific investigation promoted by and for the U. S. Atomic Energy Commission; (2) I understand that the study requires me to take internally a small quantity of a radioisotope that has been determined by the investigator and confirmed by a review committee to be less than the radiation guide limits permitted by AECM 0524 for occupational exposure; (3) I understand that expert opinion regards the radiation exposures approved for this study to be so low that no harmful effects are expected; (4) I have read the description of the proposed study above and have been given ample opportunity to discuss and/or clarify any questions that I might have concerning it; (5) I have been informed and assured by my administrative superiors that participation in this study is not in any way a condition of employment, and that I may refuse to participate, or to withdraw my consent at any time during the course of the study, without incurring any adverse reaction to the normal course of my employment; and (6) I understand that a documented record of these studies will be on file in the ID Health and Safety Division as part of my occupational exposure and/or medical record.

Don B. Martin — Signature of Witness
[redacted] — Signature of Volunteer — 4-19-67 Date

REVIEW AND APPROVAL

[signature] — Chief, Analytical Chemistry Branch — 4-25-67 Date

George H. Dodge — Chief, Medical Branch — 4-27-67 Date

Date of Administration 6-1-67 Study Completed _____ Actual Dose _____ Rem.

Investigator _____ Date _____

U. S. ATOMIC ENERGY COMMISSION
Idaho Operations Office, Health and Safety Division
Idaho Falls, Idaho

VOLUNTARY CONSENT FOR PARTICIPATION IN HUMAN STUDIES

SUMMARY OF STUDY Identification No. 12

Description and Purpose

The whole-body counter in the moble van must be calibrated before it can be used to give quantitative results. To calibrate the van counter, the best proceedure is to use human subjects with known quantities of radioactive isotopes in the body. The volunteer named below will swallow an insoluble capsule containing 0.65 uc of Ce 144 , and as the capsule passes through the body a number of consecutive counts will be made. Roto-scan counting will be used to measure the body radioactivity from which the calibration will be made.

Nuclide Ce 144 Quantity 0.65 uc.; Guide value 1.8 uc.; Critical organ GI LLI ; ~~Effective half-life~~ Residence time 0.75 days; Chemical form $CeCl_3$; Chemical toxicity none ; Physical form insoluble/ capsule ; Route G.I. oral tract

Investigator L.E. Howard Date 4/18/67

VOLUNTARY CONSENT

I, [redacted], do hereby acknowledge that: (1) I have volunteered to participate personally in a scientific investigation promoted by and for the U. S. Atomic Energy Commission; (2) I understand that the study requires me to take internally a small quantity of a radioisotope that has been determined by the investigator and confirmed by a review committee to be less than the radiation guide limits permitted by AECM 0524 for occupational exposure; (3) I understand that expert opinion regards the radiation exposures approved for this study to be so low that no harmful effects are expected; (4) I have read the description of the proposed study above and have been given ample opportunity to discuss and/or clarify any questions that I might have concerning it; (5) I have been informed and assured by my administrative superiors that participation in this study is not in any way a condition of employment, and that I may refuse to participate, or to withdraw my consent at any time during the course of the study, without incurring any adverse reaction to the normal course of my employment; and (6) I understand that a documented record of these studies will be on file in the ID Health and Safety Division as part of my occupational exposure and/or medical record.

1256732

C.F. Willis [redacted] 4/19/67
Signature of Witness Signature of Volunteer Date

REVIEW AND APPROVAL

C. Hill 4-25-67
Chief, Analytical Chemistry Branch Date

George L. Voelzer 4-27-67
Chief, Medical Branch Date

Date of Administration 6-2-67 Study Completed _____ Actual Dose _____ Rem.

Investigator _____ Date _____

U. S. ATOMIC ENERGY COMMISSION
Idaho Operations Office, Health and Safety Division
Idaho Falls, Idaho

VOLUNTARY CONSENT FOR PARTICIPATION IN HUMAN STUDIES

SUMMARY OF STUDY

Identification No. 16

Description and Purpose
The whole-body counter in the mobile van must be calibrated before it can be used to give quantitative results. To calibrate the van-counter, ~~for~~ the best procedure is to use human subjects with known quantities of radioactive isotopes in their body. The volunteer named below will swallow an insoluble capsule containing 2.2 μc of Zn 65, and as the capsule passes through the body a number of consecutive counts will be made. Rota-scan counting will be used to measure the body radioactivity from which the calibration will be made.

Nuclide Zn 65; Quantity 2.2 μc.; Guide value 28 μc.; Critical organ (GI) LLI; ~~Effective half life~~ Residence Time 18/24 days; Chemical form $ZnCl_2$; Chemical toxicity None; Physical form Insoluble Capsule; Route GI oral.

Investigator L. E. Howard Date 4/10/67

VOLUNTARY CONSENT

I, [redacted], do hereby acknowledge that: (1) I have volunteered to participate personally in a scientific investigation promoted by and for the U. S. Atomic Energy Commission; (2) I understand that the study requires me to take internally a small quantity of a radioisotope that has been determined by the investigator and confirmed by a review committee to be less than the radiation guide limits permitted by AECM 0524 for occupational exposure; (3) I understand that expert opinion regards the radiation exposures approved for this study to be so low that no harmful effects are expected; (4) I have read the description of the proposed study above and have been given ample opportunity to discuss and/or clarify any questions that I might have concerning it; (5) I have been informed and assured by my administrative superiors that participation in this study is not in any way a condition of employment, and that I may refuse to participate, or to withdraw my consent at any time during the course of the study, without incurring any adverse reaction to the normal course of my employment; and (6) I understand that a documented record of these studies will be on file in the ID Health and Safety Division as part of my occupational exposure and/or medical record.

1256733

K W Rupkal
Signature of Witness

[redacted]
Signature of Volunteer

4-14-67
Date

REVIEW AND APPROVAL

C W Hill
Chief, Analytical Chemistry Branch

4-25-67
Date

George L Sock
Chief, Medical Branch

4-26-67
Date

Date of Administration _____ Study Completed _____ Actual Dose _____ Rem.

Investigator _____ Date _____

U. S. ATOMIC ENERGY COMMISSION
Idaho Operations Office, Health and Safety Division
Idaho Falls, Idaho

VOLUNTARY CONSENT FOR PARTICIPATION IN HUMAN STUDIES

SUMMARY OF STUDY Identification No. 11

Description and Purpose

The whole-body counter in the mobile van must be calibrated before it can be used to give quantitative reslts. To calibrate the van-counter the best proceedure is to ~~give~~ use human subjects with known quantities of radioactive isotopes in the body. The volunteer named below will swallow an insoluble capsule cantaining 1.6 uc of Cs 137 and as the capsule passes through the body a number of consecutive counts will be made. Roto-scan counting will be used to measure the body radioactivity from which the calibration will be made.

Nuclide Cs 137; Quantity 1.6 uc.; Guide value 6.9 uc.; Critical organ GI:LLI; ~~Effective half-life~~ Residence time 0.75 days; Chemical form CsCl; Chemical toxicity none; Physical form insoluble capsule; Route G.I. tract oral

Investigator L.E. Howard Date 4/18/67

VOLUNTARY CONSENT

I, [redacted], do hereby acknowledge that: (1) I have volunteered to participate personally in a scientific investigation promoted by and for the U. S. Atomic Energy Commission; (2) I understand that the study requires me to take internally a small quantity of a radioisotope that has been determined by the investigator and confirmed by a review committee to be less than the radiation guide limits permitted by AECM 0524 for occupational exposure; (3) I understand that expert opinion regards the radiation exposures approved for this study to be so low that no harmful effects are expected; (4) I have read the description of the proposed study above and have been given ample opportunity to discuss and/or clarify any questions that I might have concerning it; (5) I have been informed and assured by my administrative superiors that participation in this study is not in any way a condition of employment, and that I may refuse to participate, or to withdraw my consent at any time during the course of the study, without incurring any adverse reaction to the normal course of my employment; and (6) I understand that a documented record of these studies will be on file in the ID Health and Safety Division as part of my occupational exposure and/or medical record.

C. F. T. Chi — [redacted] — 4/19/67
Signature of Witness — Signature of Volunteer — Date

REVIEW AND APPROVAL

[signature] — 4-25-67
Chief, Analytical Chemistry Branch — Date

George R. Dorf — 4-27-67
Chief, Medical Branch — Date

Date of Administration _____ Study Completed _____ Actual Dose _____ Rem.

Investigator _____ Date _____

1256134

Date	Isotope	Capsule No	Act	Date Taken	Volunteer
5-25-66	Hg 110m	#1	.750 μc		
5-25-66	Hg 110m	#2	.771 μc	8-16-66	[redacted]
5-25-66	Ru 106	1	1.215 μc		
5-25-66	Ru 106	2	1.126 μc		[redacted]
12-15-66	Ru 106	1	1.662 μc		
12-15-66	Ru 106	2	3.806 μc		
12-15-66	Ru 106	3	2.36 μc		
5/25-66	Zr-Nb 95	1	1.225 μc		
5-25-66	Zr-Nb 95	2	1.08 μc	7-27-66	[redacted]
5-13-66	Co^{60}	1	1.15 μc	6-21-66	[redacted]
5-13-66	Co^{60}	2	1.22 μc		
5-13-66	Cs 137	1	1.91 μc		[redacted]
5-13-66	Cs 137	2	1.63 μc		
5-13-66	Ce 144	1	1.49 μc		
5-13-66	Ce 144	2	1.47 μc		[redacted]
12-20-66	Ce 144	1	3.736 μc contam.!		
12-20-66	Ce 144	2	5.117 μc		
12-13-66	Zn 65	1	3.17 μc		
12-13-66	Zn 65	2	3.045 μc		
6-16-66	I 131		1.14 μc	6-20-66 @ 0850	[redacted]

1256735

U. S. Atomic Energy Commission
Health and Safety Division

VOLUNTARY CONSENT FOR PERSONAL PARTICIPATION
IN SCIENTIFIC HUMAN STUDIES

I, [redacted], do hereby acknowledge that I have volunteered as an AEC employee to participate personally in a scientific investigation promoted by and for the Atomic Energy Commission. I understand the study requires me to take internally a small quantity or quantities of radioisotopes which has been estimated by the investigators and the ID Medical Branch to deliver less than 10 per cent of the radiation guide limits permitted me for occupational radiation exposure. I understand that a documented record of these isotope studies will be on file with the ID Health and Safety Division as part of my occupational exposure and/or medical record.

[redacted]
Signature

May 12, 1966
Date

Witnesses:

Donald R. Percival
Signature

Don B. Martin
Signature

Experiment No. 15 ~~10 76~~

Nuclide Taken	Quantity, uc.	Date Taken	T 1/2 eff. days	Administration: Chemical Form	Administration: Physical Form	Administration: Route
Ru 106	1.2		15		Insoluble Capsules	

Approved By: C W Hill
Chief, Analytical Chemistry Branch
Date: 7-26-66

G L Voelzwind
Chief, Medical Branch
Date: 7-27-66

Study Completed: _____
Date

1256736

U. S. Atomic Energy Commission
Health and Safety Division

VOLUNTARY CONSENT FOR PERSONAL PARTICIPATION
IN SCIENTIFIC HUMAN STUDIES

I, [redacted], do hereby acknowledge that I have volunteered as an AEC employee to participate personally in a scientific investigation promoted by and for the Atomic Energy Commission. I understand the study requires me to take internally a small quantity or quantities of radioisotopes which has been estimated by the investigators and the ID Medical Branch to deliver less than 10 per cent of the radiation guide limits permitted me for occupational radiation exposure. I understand that a documented record of these isotope studies will be on file with the ID Health and Safety Division as part of my occupational exposure and/or medical record.

[redacted]
Signature

12 May 1966
Date

Witnesses:

Roy E. Howard
Signature

Ronald H. Stone
Signature

Experiment No. 11

Nuclide Taken	Quantity, uc.	Date Taken	T 1/2 eff. days	Administration: Chemical Form	Administration: Physical Form	Administration: Route
Cs^{137}	1.63		138		Insoluble Capsule	

Approved By: C. Hill
Chief, Analytical Chemistry Branch
Date: 7-26-66

George R. Dobson
Chief, Medical Branch
Date: 7-27-66

Study Completed: _____
Date

1256737

U. S. Atomic Energy Commission
Health and Safety Division

VOLUNTARY CONSENT FOR PERSONAL PARTICIPATION
IN SCIENTIFIC HUMAN STUDIES

I, [redacted], do hereby acknowledge that I have volunteered as an AEC employee to participate personally in a scientific investigation promoted by and for the Atomic Energy Commission. I understand the study requires me to take internally a small quantity or quantities of radioisotopes which has been estimated by the investigators and the ID Medical Branch to deliver less than 10 per cent of the radiation guide limits permitted me for occupational radiation exposure. I understand that a documented record of these isotope studies will be on file with the ID Health and Safety Division as part of my occupational exposure and/or medical record.

[redacted]
Signature

May 12, 1966
Date

Witnesses:

Roy E. Howard
Signature

Jesse L. Anderson
Signature

Experiment No. 12

Nuclide Taken	Quantity, uc.	Date Taken	T 1/2 eff. days	Administration: Chemical Form	Administration: Physical Form	Administration: Route
Ce 144	1.4		243		Insoluble Capsule	

Approved By: [signature] Date: 7-26-66
Chief, Analytical Chemistry Branch

[signature] Date: 7-27-66
Chief, Medical Branch

To have blood count approved before test.

Study Completed: _____
Date

1256738

U. S. Atomic Energy Commission
Health and Safety Division

VOLUNTARY CONSENT FOR PERSONAL PARTICIPATION IN SCIENTIFIC HUMAN STUDIES

I, _____, do hereby acknowledge that I have volunteered as an AEC employee to participate personally in a scientific investigation promoted by and for the Atomic Energy Commission. I understand the study requires me to take internally a small quantity or quantities of radioisotopes which has been estimated by the investigators and the ID Medical Branch to deliver less than 10 per cent of the radiation guide limits permitted me for occupational radiation exposure. I understand that a documented record of these isotope studies will be on file with the ID Health and Safety Division as part of my occupational exposure and/or medical record.

_____
Signature

Witnesses:

_____
Date

_____
Signature

_____
Signature

Experiment No. _____

Nuclide Taken	Quantity, uc.	Date Taken	T 1/2 eff. days	Administration Chemical Form	Physical Form	Route

Approved By: _____ Date: _____
Chief, Analytical Chemistry Branch

_____ Date: _____
Chief, Medical Branch

Study Completed: _____
Date

1256739

U. S. Atomic Energy Commission
Health and Safety Division

VOLUNTARY CONSENT FOR PERSONAL PARTICIPATION IN SCIENTIFIC HUMAN STUDIES

I, _____, do hereby acknowledge that I have volunteered as an AEC employee to participate personally in a scientific investigation promoted by and for the Atomic Energy Commission. I understand the study requires me to take internally a small quantity or quantities of radioisotopes which has been estimated by the investigators and the ID Medical Branch to deliver less than 10 per cent of the radiation guide limits permitted me for occupational radiation exposure. I understand that a documented record of these isotope studies will be on file with the ID Health and Safety Division as part of my occupational exposure and/or medical record.

_____
Signature

Witnesses:

_____
Date

_____
Signature

_____
Signature

Experiment No. _____

Nuclide Taken	Quantity, uc.	Date Taken	T 1/2 eff. days	Administration		
				Chemical Form	Physical Form	Route

Approved By: _____ Date: _____
Chief, Analytical Chemistry Branch

_____ Date: _____
Chief, Medical Branch

Study Completed: _____
Date

1256740

Hg 110 253 d

~~1.384~~	~~24~~
~~.764~~	~~23~~
~~.706~~	~~19~~
~~.446~~	~~6~~
~~.937~~	~~34~~
1.56	1.2
~~.745~~	~~2~~
~~.677~~	~~9~~
~~1.504~~	~~12~~
~~.687~~	~~7~~
~~.619~~	~~4~~
~~.885~~	~~72~~
~~1.474~~	~~5~~
~~.815~~	~~7~~
~~.656~~	~~93~~

.446	6
.619	4
.656	93
.677	9
.687	7
.706	19
.745	2
.764	23
.815	7
.885	72
.937	34
1.384	24
1.474	5
1.504	12
1.56	1.2

BR 7 / 72 / 34 / 113

$\frac{7}{113} = .06\ \%$

$\frac{72}{113} = .64\ \%$

$\frac{34}{113} = 30\ \%$

	1/TPA
815	118
885	127
937	134

118 x .06	7
127 x .64	81
134 x .30	40
	128

24
5
12
1.2
42.2

$\frac{24}{42.6} = 57\ \%$

$\frac{5}{42.2} = 12\ \%$

$\frac{12}{42.2} = 28\ \%$

$\frac{1.2}{42.2} = 3\ \%$

	1/TPA
1.384	189
1.474	205
1.504	209
1.56	216

$\sum_{126}^{166} = 11002$

189 x .57 = 107.7
205 x .12 = 24.6
209 x .28 58.5
216 x .03 6.5

1/TPA $\boxed{197.3}$

$\frac{11002 \times 197.3}{42.2 \times 4} = \frac{2.170695 \times 10^6}{1.688}$

BR t

$= 1.286 \times 10^6$ d/m

$\frac{1.286 \times 10^6}{2.22 \times 10^6} = .579$ uc

5-25-66
8-16-66 = 83 day

$\frac{83}{253} = .33$

.796 % Ru

.579 uc X .796 = .461 uc

1256741

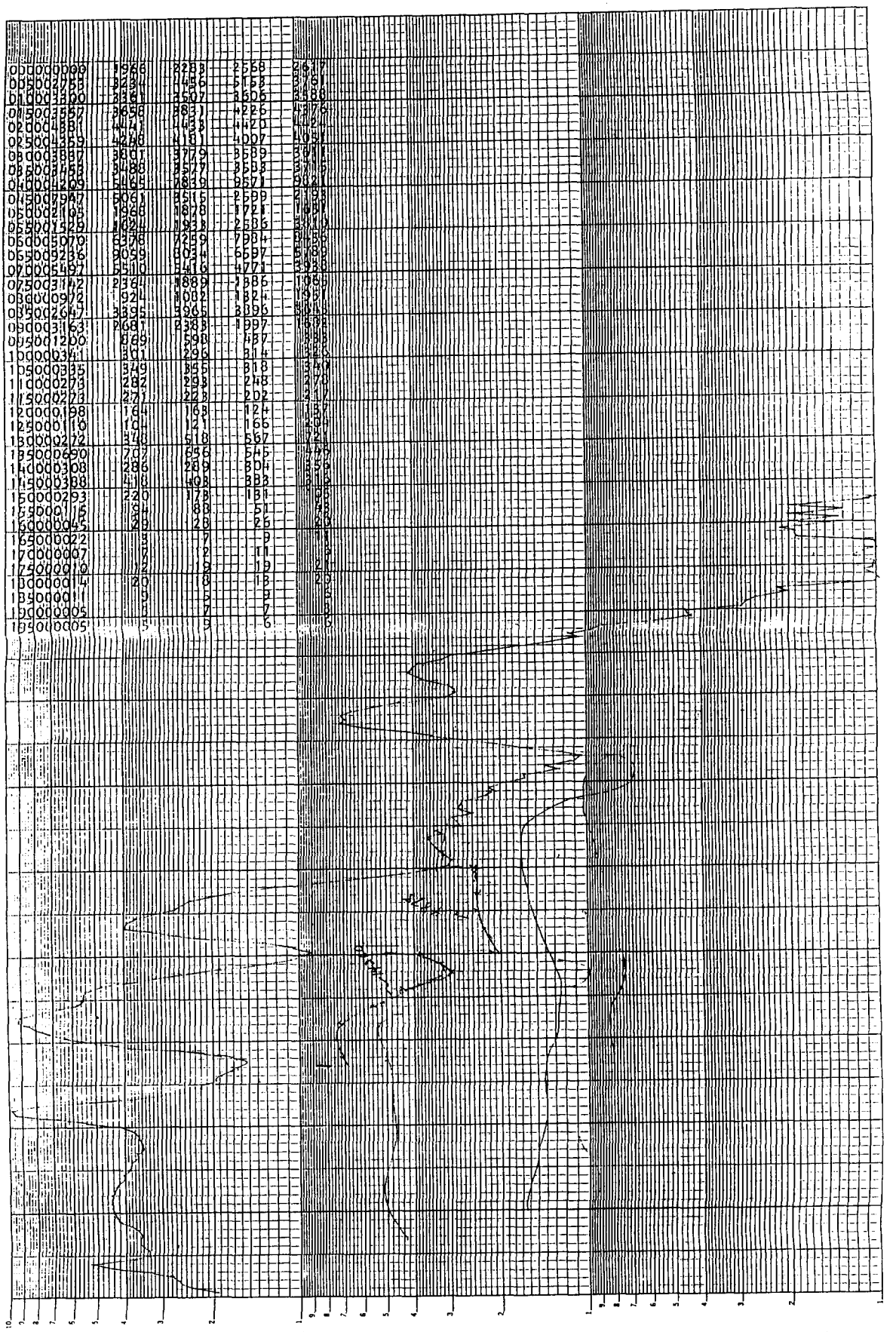
9/25/67 @ 0755 T: 4.0 MIN NET 1-131 CAPSULE FOR MUMAN CALIBRATION OF VAN.

[redacted] WILL TAKE THIS RXKK CAPSULE.

1	4.0	MIN	NET		5	100K	ABS	10.7MS
0	0000000			4437		6310	2773	2162
0	0500216			2382		2055	6052	4297
0	1000219			2219		2275	2260	2502
0	1500348			8167		3330	3664	3804
0	2000438			2988		2418	1917	1800
0	2500688			1960		2964	4587	5113
0	3000082			2526		2043	3062	7741
0	3500856			31421		55777	26842	13227
0	4000078			986		308	247	201
0	4500128			173		168	249	302
0	5000297			237		93	150	77
0	5500097			61		88	21	203
0	6000466			853		179	491	1358
0	6500128			732		401	220	203
0	7000260			330		310	315	256
0	7500140			115		75	32	19
0	8000097			7		2	999995	999936
0	8500005			999998		999995	999998	999995
0	9000000			2		5	1	999957
0	9599997			2		999998		999956
1	0000002			999999		3	3	
1	0599990			999998		999999	999998	2
1	1000000			1		999999	999998	2
1	1599998			999995		3	999998	2
1	2000002			3		999999	2	2
1	2500000			999999		999999	999998	
1	3000000			3		999999	1	
1	3500003			2		999999	1	2
1	4000000			999997		2	999999	
1	4500000			3		1	999997	999999
1	5099999			999999		999999	999997	
1	5499998						999999	
1	6000000					2		
1	6500000					1		999998
1	7099999			999999		1		999999
1	7500002					1		999999
1	8000000			999997		1	999997	
1	8500000					1	999997	
1	9000000						2	
1	9500000			999999		999999		

K&E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 150 DIVISIONS
KEUFFEL & ESSER CO.

1256744



0000000000	1966	2283	2558	2617
0050002753	2234	2456	2753	3261
0100003300	3381	3507	3606	3586
0150003557	3658	3831	4226	4376
0200004381	4447	4433	4420	4424
0250004369	4248	4181	4007	4051
0300003887	3801	3749	3689	3811
0350003458	3488	3577	3683	3715
0400004209	5495	7839	9571	9021
0450007947	5061	8515	2599	2193
0500002103	1966	1878	1721	1651
0550001529	1024	1933	2586	3010
0600005070	8378	7259	7984	8156
0650009236	9059	8034	6697	6789
0700005497	5510	5416	4771	4938
0750003142	2364	1889	2386	1066
0800000972	1924	1002	1824	1957
0850002647	3395	3265	3096	3043
0900003163	2681	2383	1997	1692
0950001200	669	598	487	383
1000000341	301	296	314	322
1050000335	349	355	318	349
1100000273	282	293	248	270
1150000273	271	243	202	217
1200000198	164	163	124	137
1250000110	104	121	166	204
1300000272	348	518	667	721
1350000690	707	656	545	549
1400000308	286	289	304	359
1450000388	418	403	383	310
1500000293	220	173	131	95
1550000115	84	83	51	48
1600000045	29	28	26	20
1650000022	3	7	9	11
1700000007	7	12	11	9
1750000010	12	19	19	21
1800000014	20	18	18	29
1850000011	9	5	9	5
1900000005	5	7	7	5
1950000005	5	9	6	6

K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 180 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.

1256745

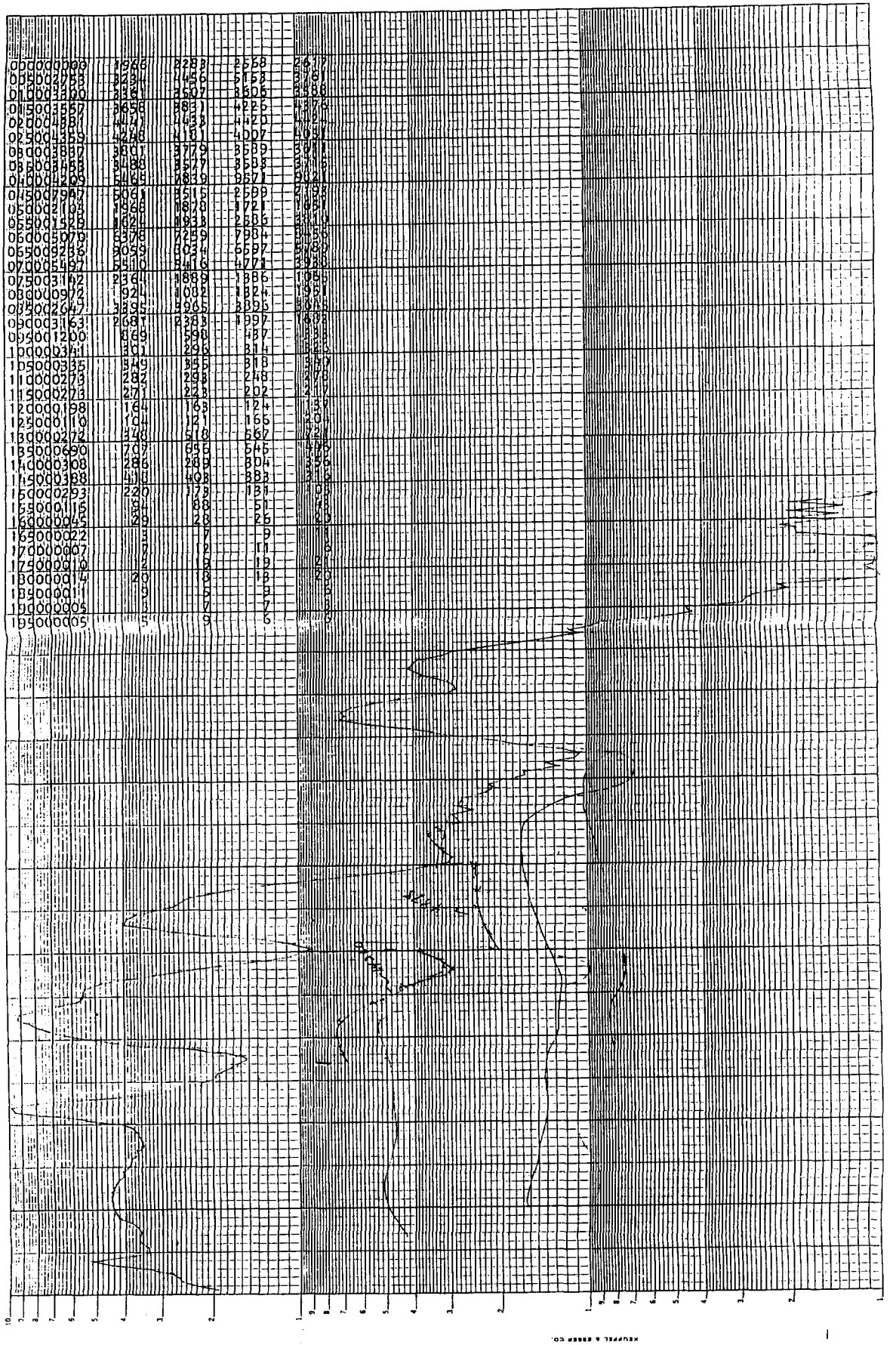
000000000	1939	2846	2583	2540
005002890	3090	4312	4966	3985
010003070	3126	3433	3514	3481
015003418	3572	3738	4039	4160
020004132	4318	4413	4325	4328
025004311	4187	4010	4026	3834
030003838	3882	3636	3563	3824
035003441	3420	3508	3392	3627
040004058	5245	7603	9559	9492
045007628	5056	3390	2971	2189
050001999	1886	1869	1678	1626
055001836	1490	1897	2977	3575
060005038	6122	6953	7638	8304
065008758	8765	7829	6468	5888
070005195	5506	5246	4588	3960
075003055	2386	1861	1401	1083
080000941	1547	1097	1262	1790
085002476	3306	3886	3942	3558
090003248	2677	2224	1901	1547
095001135	878	599	422	844
100000281	294	300	294	307
105000340	340	329	323	303
110000305	297	259	254	333
115000264	245	228	198	182
120000199	178	141	121	150
125000131	114	135	140	200
130000252	352	448	556	636
135000722	696	831	524	421
140000335	282	269	302	366
145000373	413	433	369	315
150000276	192	190	130	105
155000081	77	58	51	56
160000046	24	38	24	23
165000015	14	18	3	2
170000015	8	7	6	4
175000010	10	9	18	9
180000015	7	14	7	7
185000013	13	8	7	7
190000007	7	2	2	2
195000002	5	7	4	4

Sample # 3
Date 1-3-78
Depth
Count Time 4 min
Instrument Type
Time When Counted
Sample Code

SEMI-LOGARITHMIC 47 5450
3 CYCLES X 180 DIVISIONS
KEUFFEL & ESSER CO.

1256746

000000000	1966	2283	2668	2617
005000253	3234	4456	5153	5981
010000300	3361	3507	3606	3588
015000367	3656	3831	4226	4276
020000481	4041	4433	4420	4112
025000459	4246	4101	4007	4081
030000387	3801	3779	3639	3911
035000453	3488	3577	3683	3716
040000209	5465	7839	9571	9021
045000907	5001	3515	2599	2198
050000104	1966	1870	1721	1951
055000129	1624	1933	2386	3310
060000079	6378	7259	7984	8456
065000236	9059	8034	6697	5789
070000497	5510	5416	4771	3938
075000142	2364	1889	1386	1056
080000972	924	1082	1324	1561
085002647	3395	3965	3896	3045
090003163	2681	2383	1997	1608
095001200	869	590	437	333
100000341	301	296	314	325
105000335	349	355	318	347
110000273	282	293	248	278
115000273	271	223	202	217
120000198	164	163	124	137
125000110	104	121	165	208
130000272	548	518	567	724
135000690	707	656	545	478
140000308	286	289	304	356
145000388	410	403	383	319
150000293	220	173	131	105
155000115	94	88	51	48
160000045	29	28	26	20
165000022	3	7	9	8
170000007	7	12	11	6
175000010	2	18	19	21
180000014	20	18	18	20
185000011	9	5	9	6
190000005	3	7	7	8
195000005	5	9	6	8



K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 150 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.

1256745

000000000	1939	2346	2583	2640
005002690	3090	4312	4966	3585
010003070	3126	3433	3514	3441
015003418	3572	3735	4039	4160
020004132	4318	4413	4325	4326
025004211	4197	4010	4026	3834
030003838	3652	3636	3563	3642
035003441	3420	3508	3392	3627
040004058	5245	7603	9559	9492
045007628	5056	3390	2571	2189
050001999	1886	1869	1618	1626
055001536	1490	1897	2577	3575
060005038	6122	6953	7638	8204
065008758	8765	7829	6468	5588
070005195	5606	5246	4588	3960
075003055	2386	1861	1401	1083
080000941	1947	1094	1262	1799
085002476	3306	3888	3942	3558
090003218	2677	2224	1901	1547
095001135	876	599	422	344
100000281	294	300	294	307
105000340	340	329	323	303
110000305	297	258	254	233
115000264	245	228	198	184
120000199	178	141	121	150
125000131	114	135	140	200
130000252	352	448	556	639
135000722	696	631	524	421
140000335	282	269	302	356
145000373	413	433	369	312
150000276	192	190	130	110
155000081	77	58	51	58
160000046	24	38	24	13
165000015	14	9	3	12
170000015	3	7	6	12
175000010	10	9	18	15
180000015	17	14	7	14
185000013	13	8	7	13
190000007	7	2	2	6
195000002	3	7	4	6

Serial # [redacted] Sample # [redacted]
Gain 100 Kev 1 Ch Abs 1 mg/cm
Count Time 4 nat min. Date 5/28/66
Instrument Tac 2 Geometry 10 cm
Time When Counted 1300
Sample Code Nunnee Tungsten Glassula

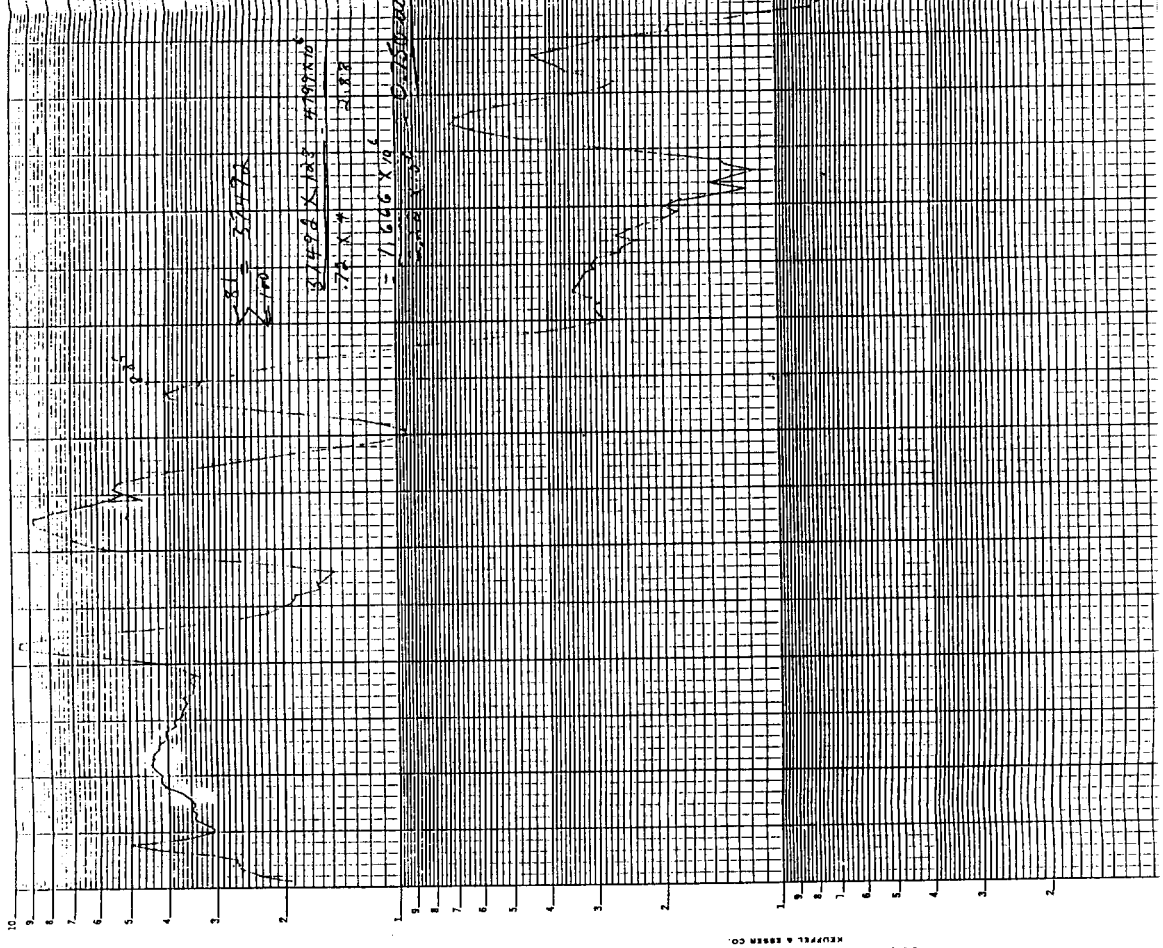
$\sum_{100}^{81} = 31492$

$31492 \times 10^3 \quad 4799 \times 10^6$

$.72 \times 4 \quad 2.88$

$= 1.666 \times 10^6$

0.75×10^6



K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 150 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.

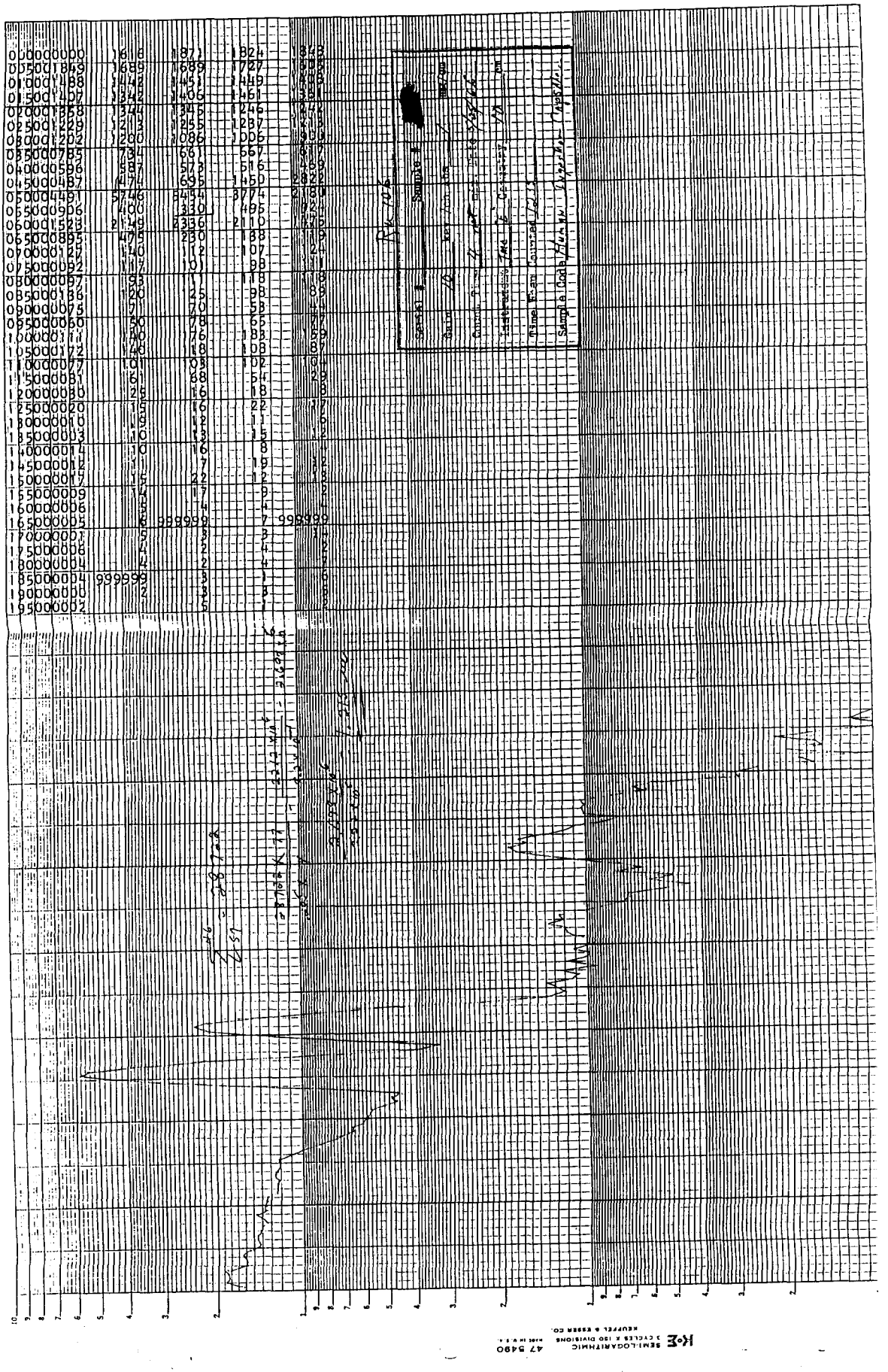
1256746

000000000	1966	2283	2568	2817
005002753	3231	4458	5153	5741
010003300	3361	3907	3606	3588
015005557	3658	3831	4226	4376
020004881	4441	4433	4420	4420
025004359	4248	4181	4007	4051
030008837	3801	3779	3589	3611
035003453	3488	3377	3583	3715
040004209	5465	7339	9571	8821
045007947	5061	3315	2599	2193
050002105	1968	1878	1721	1665
055001529	1624	1933	2586	3810
060005070	6378	7259	7984	8456
065009236	9059	8034	6997	6200
070005497	3516	3478	4771	3337
075003142	2164	1889	1386	1066
080000972	1924	1082	1324	1905
085002647	3359	3965	3896	3612
090003163	2081	2883	1997	1662
095001200	869	558	437	360
100000341	30	298	314	326
105000335	349	365	318	340
110000273	282	293	248	227
115000273	271	225	202	217
120000198	164	163	124	137
125000110	104	121	166	204
130000272	348	518	567	720
135000690	707	645	945	1205
140000308	286	289	304	305
145000388	418	403	383	360
150000293	229	178	131	110
155000115	94	88	51	52
160000045	28	28	26	22
165000022	8	7	9	8
170000007	7	6	11	12
175000010	12	10	19	19
180000014	20	18	13	13
185000011	9	5	9	9
190000005	5	4	7	7
195000005	5	8	6	6

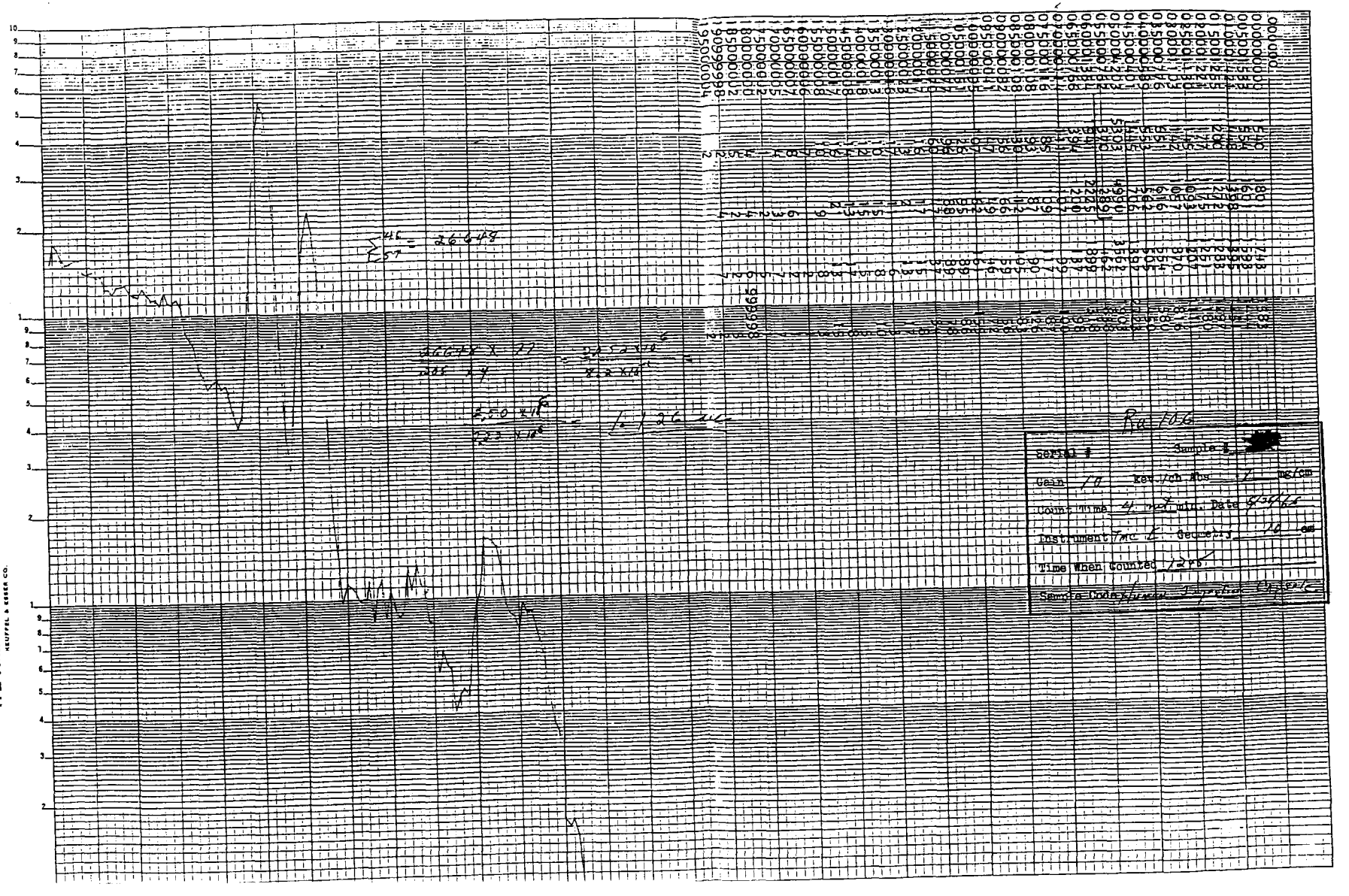
Sample # 7 Date 8-16-88
Count Time 4 min Background 110
Instrument GM Geometry 1.3
Time When Counted 1373
Sample Code Number

K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 190 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.

1256747


Serial #
Sample #
Gain
Time From Counted
Sample Code
Ru 106
K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 180 DIVISIONS
KEUFFEL & ESSER CO.

1256748



K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO.

125 719

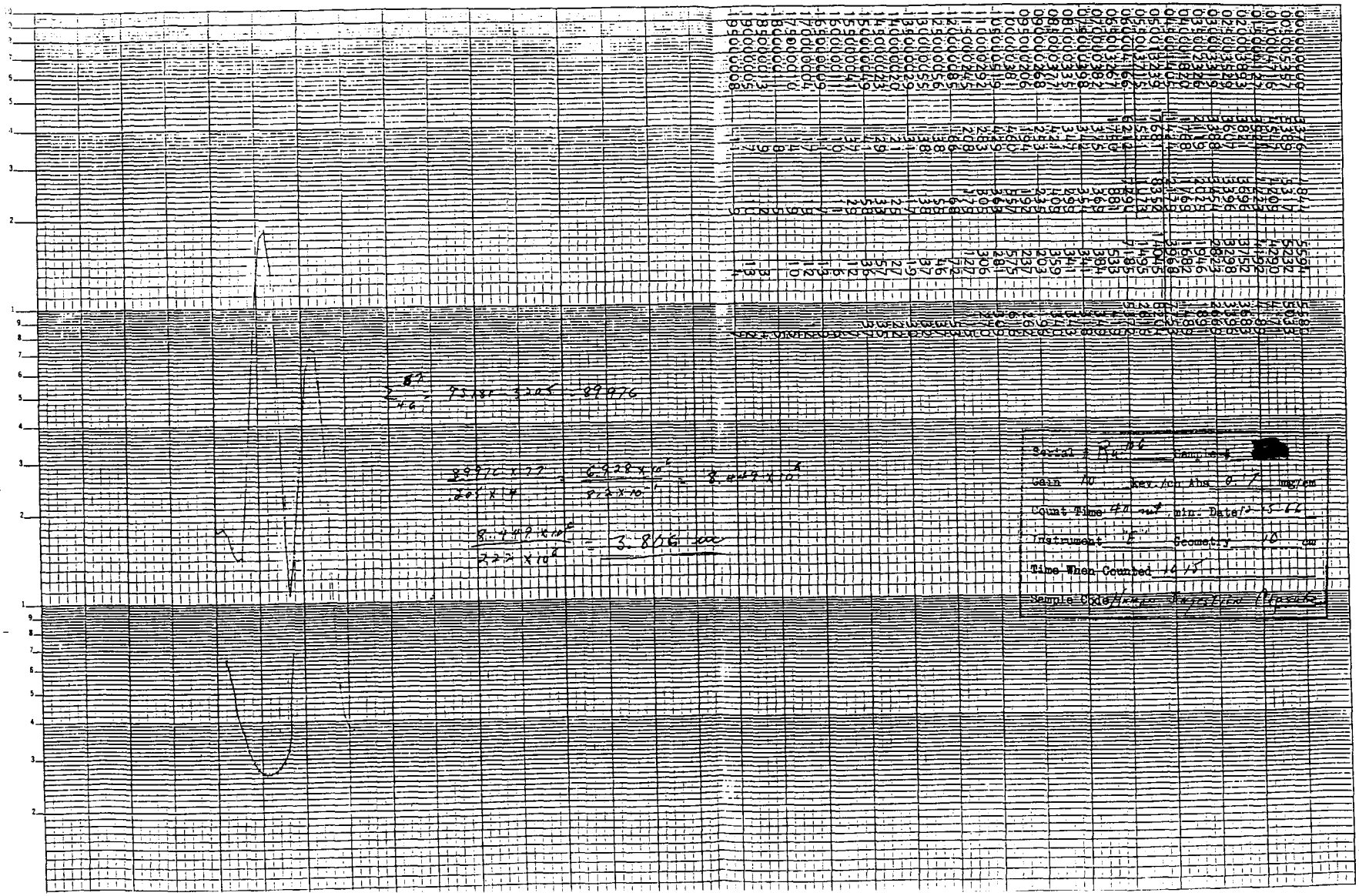
000000000	1443	2105	2479	2558	
005002321	2273	2276	2349	2067	
010002021	2007	1888	1885	1843	
015001716	1702	1807	1868	1780	
020001711	1566	1671	1643	1627	
025001534	1502	1471	1509	1428	
030001465	1411	1366	1279	1150	
035001031	886	847	846	833	
040000770	808	671	708	651	
045000849	642	848	1581	2196	
050005567	1611	7981	6220	3756	
055001711	1480	492	639	1025	
060001772	2587	3247	2960	2867	
065001470	792	890	236	173	
070000187	150	166	163	143	
075000136	115	149	124	143	
080000143	128	161	146	143	
085000176	180	153	158	152	
090000118	102	91	77	72	
095000090	82	99	77	93	
100000137	91	216	263	280	
105000264	92	157	150	142	
110000124	131	121	143	132	
115000109	61	67	81	75	
120000032	27	29	18	28	
125000016	17	18	30	13	
130000021	14	10	16	16	
135000009	15	7	10	9	
140000015	10	12	2	7	
145000009	9	11	15	12	
150000020	27	9	20	24	
155000012	16	17	12	8	
160000002	4	3	2	2	
165000006	8	3	7	3	
170000016	4	4	9	8	
175000007	5	8	1	2	
180000001	2	5	7	999998	
185000003	4	4	7	2	
190000003	5	2	4	5	
195000004	2	2	3	5	

Sample # [redacted] Date 10/1/[illegible]
Serial # [illegible] Test for Rig [illegible]
Main 10 Min. Data [illegible]
Count Time [illegible] Geometry 10
Instrument [illegible]
Time When Counted [illegible]
Sample Code [illegible]

$\Sigma = 7$ 44805 − 1863 = 39342

Keuffel & Esser Co. 47 5480 Semi-Logarithmic 3 Cycles x 150 Divisions

1256750



K+E SEMI-LOGARITHMIC 47 5480
3 CYCLES X 150 DIVISIONS
KEUFFEL & ESSER CO.

125651

000000000	2516	3797	4169	4103
009004000	10	1331	4029	3818
010003668	3535	3302	3345	3256
015002985	2998	3127	3312	3058
020002994	2865	2898	2747	2709
025002737	2783	2568	2578	2584
030002510	2483	2274	2206	1930
039001676	1592	1592	1531	1431
040001384	1380	1349	1197	1158
049001093	1152	1522	3194	6142
050010371	3667	3706	10582	5840
055002575	1182	1858	1175	2[illegible]
060003456	4886	3641	5093	3973
065002398	1251	581	412	322
070000280	289	281	281	279
075000251	263	237	231	257
080000267	248	280	278	277
085000322	323	324	295	211
090000216	193	172	165	174
095000165	149	172	178	221
100000264	334	418	466	465
105000426	329	290	236	195
110000206	233	256	230	208
115000201	160	136	97	72
120000055	62	57	25	45
125000044	33	42	38	40
130000029	34	38	19	28
135000020	17	20	22	24
140000018	22	29	17	18
145000027	17	24	21	33
150000039	37	40	33	19
155000025	17	13	15	18
160000009	6	6	7	7
165000007	8	8	8	13
170000007	1	10	6	8
175000008	3	7	4	2
180000005	4	4	5	7
185000004	6		7	10
190000008	6	6	6	3
195000009	5	7	3	3

Sample 1 Date 8-17-72 Time 1:00 pm
Serial 1 Rock Sample Area
Gain 10 Count time 40 sec Date 8-17-72
Instrument L Geometry 10 cm
Time Then Counted 1:30
Sample Code [illegible]

K+E SEMI-LOGARITHMIC 47 5480
3 CYCLES X 180 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.

1256752

000000000	939	1339	1424	1373
005001407	1573	1590	1725	1722
010001811	1880	1914	2009	2005
015001972	1901	2021	2198	2304
020002613	2511	2487	2440	2416
025002430	2355	2372	2316	2436
030002403	2334	2270	2303	2280
035002265	2199	2234	2206	2181
040002162	2170	2094	2168	2068
045002108	2204	2136	2164	2194
050002213	2113	2149	2004	1841
055001546	1224	929	753	691
060000562	469	434	362	363
065000376	431	569	1001	1636
070002810	4368	6844	9427	12207
075014237	14195	12238	8587	5066
080002298	972	336	103	27
085000005	2	6	5	3
090000005	2	2	4	6
095000003	3	2	4	6
100000001	2	3	5	
105000004	3	1	5	999998
110000003	5	2	4	6
115000000		5	5	3
120000000	999998	1	999999	3
125000006	999998			
130000000	2	999998	999998	
135000000		1	2	
140000000	1	4	999998	

Serial # [redacted] Sample #

Gain 10 Key/cm Abs 1 mg/cm

Count Time 4 min Date 5/25/86

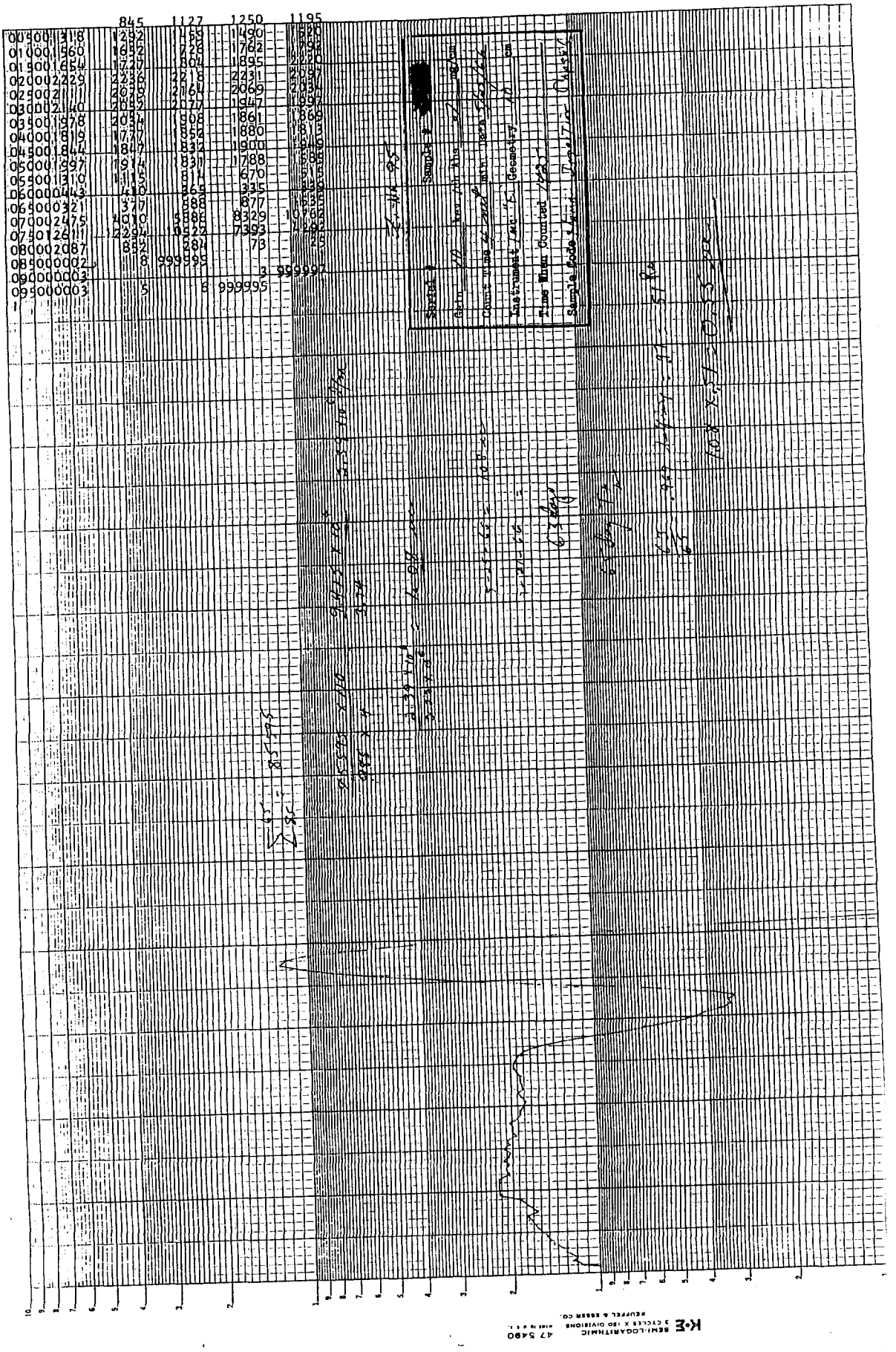
Instrument IMC 4 Geometry 10 cm

Time When Counted 1340

Sample Code Hessen Ingersoll Oppenheim

K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 150 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.

1256753


845 1127 1250 1195
Serial #
Sample #
Gain
Count Time
Instrument
Time When Counted
Sample Code
K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 180 DIVISIONS
KEUFFEL & ESSER CO.

1256154

	369	566	602	546
005000568	653	665	708	698
010000711	725	710	807	785
015000761	834	758	928	1046
020001024	1024	980	950	927
025000980	961	977	923	947
030000916	928	929	847	880
035000950	862	849	889	807
040000807	877	868	881	894
045000920	885	927	853	997
050000941	888	987	866	797
055000645	533	418	358	290
060000224	225	177	162	171
065000168	182	228	420	715
070001184	1902	2948	4050	5308
075006111	6330	5307	3820	2396
080001245	519	216	61	22
085000013	3	999999		
90000000	3	1	1	1
0				

Serial # Sample # [redacted]
Gain 10 kev./ch Abs 1 mg/cm
Count Time 4 mt min. Date 2-22-65
Instrument E Cu 10 cm
Time When Counted 0830
Sample Code [illegible]

Σ_{65}^{85} 43145

$\frac{43145 \times 110}{985 \times 4} = \frac{4.745950 \times 10}{3.94}$

$\frac{1.2046 \times 10^6}{2.22 \times 10^6} = .5426$

K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 150 DIVISIONS
KEUFFEL & ESSER CO.

1256755

000000000	1114	1145	1442	1568	
005001467	1557	1747	1799	1885	
010001886	1972	2045	2000	2025	
015002170	2213	2185	2213	2100	
020002300	2546	2702	2757	2585	
025002644	2695	2523	2466	2396	
030002442	2322	2559	2453	2480	
035002356	2330	2402	2285	2384	
040002382	2202	2218	2187	2218	
045002296	2089	2120	2143	2120	
050002185	2101	2144	2067	2070	
055002092	1965	1979	2028	2052	
060001988	2048	1886	2070	2013	
065001969	2068	2040	2118	2087	
070002077	2129	2167	2123	2145	
075002135	2154	2156	2321	2120	
080002328	2299	2381	2386	2548	
085002527	2314	2412	2534	2428	
090002437	2484	2278	2010	2011	
095001787	1673	1660	1662	1628	
100001582	1560	1495	1531	1489	
105001423	1293	1402	1581	2057	
110002975	4369	6071	7671	8432	
115008539	7313	5892	3991	2509	
120001516	941	735	878	1457	
125002281	3588	4960	6085	6867	
130006943	6383	5108	3706	2520	
135001527	812	390	207	99	
140000057	42	31	29	33	
145000022	14	27	30	35	
150000020	24	26	26	28	
155000023	24	38	24	30	
160000024	23	24	24	31	
165000027	20	27	26	24	
170000021	29	30	12	22	
175000025	23	24	25	20	
180000023	27	15	15	9	
185000018	19	25	18	16	
190000018	21	23	19	20	
195000017	15	25	21	21	

Sample # [redacted] Sample # 48 Date 5-17-82

Date Key Con-ESS Depth 7.0

Count Time 120 Instrument Zero Chemistry Cd

Time When Counted

Sample Code Human Amniotic Fluid

[redacted]

Calc 6 DPM = 1.74 mc

Calc 6 DPM = 1.74 mc

Calc 6 DPM = 1.74 mc

K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 150 DIVISIONS
KEUFFEL & ESSER CO.

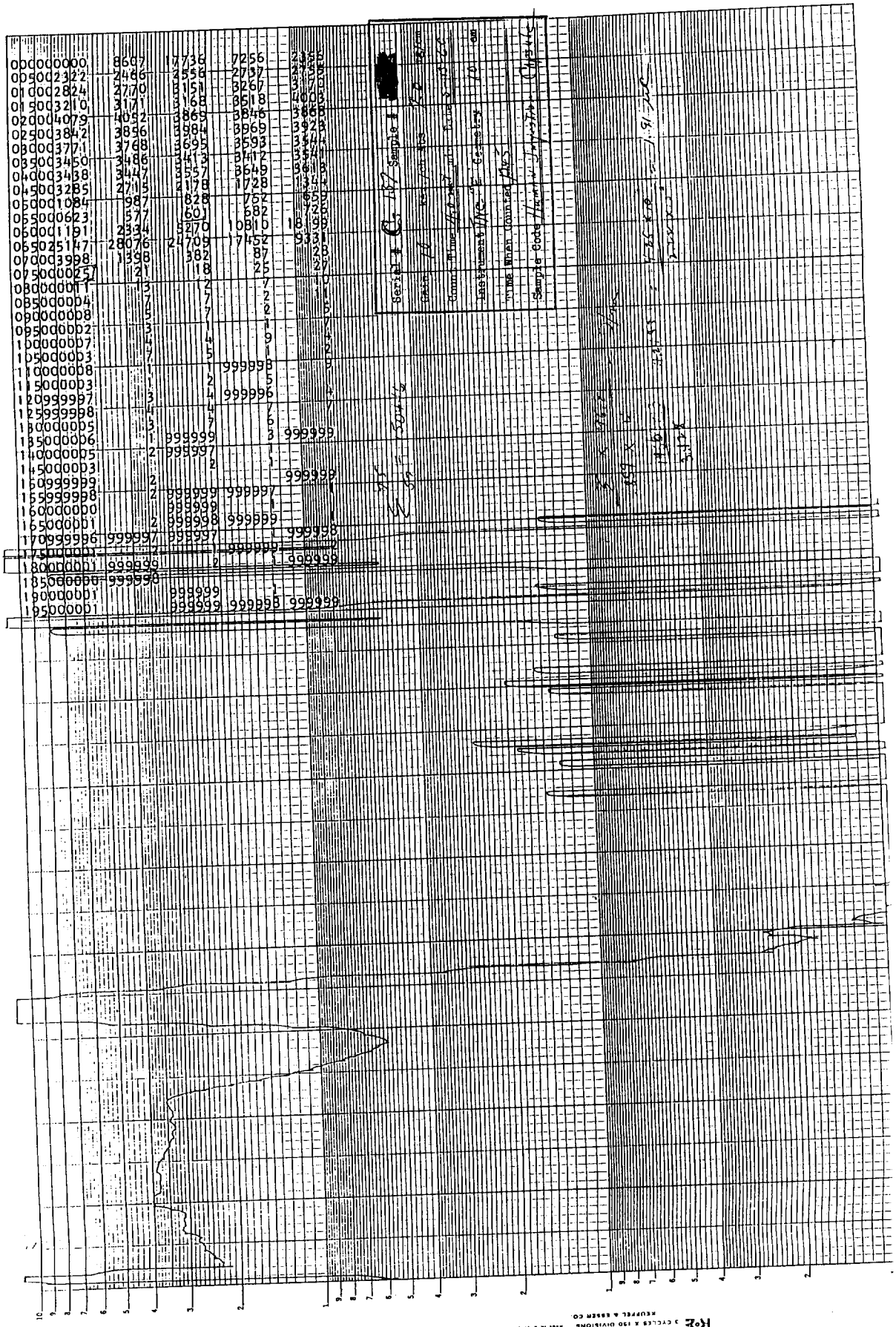
125b75b

000000000	1167	1151	1496	1652
005001700	1641	1783	1926	1938
010001992	2049	2121	2204	2235
015002306	2330	2224	2354	2366
020002446	2660	3017	2931	2850
025002809	2622	2634	2605	2650
030002571	2692	2616	2614	2570
035002634	2572	2530	2493	2383
040002427	2479	2328	2345	2214
045002297	2199	2232	2154	2252
050002135	2233	2185	2108	2075
055002173	2212	2136	2088	2144
060002172	2059	2052	2134	2129
065002101	2188	2165	2231	2208
070002239	2194	2170	2196	2284
075002263	2379	2401	2392	2392
080002481	2445	2622	2644	2648
085002618	2625	2755	2708	2578
090002577	2406	2309	2249	2052
095001870	1830	1723	1594	1765
100001689	1636	1609	1632	1571
105001504	1417	1468	1680	2200
110003198	4749	6580	8068	9046
115009020	7700	6133	4291	2534
120001449	989	1786	1021	1694
125002576	3784	5293	6507	7361
130007396	6762	5275	3727	2560
135001450	853	395	218	106
140000057	39	37	37	44
145000032	24	32	32	43
150000026	41	36	32	35
155000034	23	26	32	26
160000021	34	29	30	22
165000032	21	33	28	24
170000025	26	18	27	22
175000034	23	22	30	25
180000022	16	27	16	21
185000024	24	31	25	24
190000026	18	17	27	30
195000030	21	18	26	24

Serial # Ca 60 Sample # [redacted]
Gain 10 Kev/ch Abs 2.0 mg/cm
Count Time 4.0 min Data Selected
Instrument TAC E Geometry 10 cm
Time When Counted 1075
Sample Code Human Depositing Deposits

K+E SEMI-LOGARITHMIC 3 CYCLES X 150 DIVISIONS KEUFFEL & ESSER CO. 47 5490 MADE IN U.S.A.

1256757


Serial # C 137
Sample # [redacted]
Gain
Conn. Time
Instrument
Time When Counted
Sample Code
K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 190 DIVISIONS
KEUFFEL & ESSER CO.

1256758

000000000	7225	15070	6103	1964	
005000080	2124	2134	2326	2360	
010002286	2257	2606	2704	2730	
015002735	2739	2815	3019	[illegible]	
020008479	3376	3883	3193	3225	
025008260	3234	3357	3369	3213	
030008289	3134	3177	3105	3072	
035008004	2959	2900	2908	2986	
040002876	2975	2967	2962	2983	
045002759	2412	1926	511	1123	
050000988	815	735	595	591	
055000475	522	548	503	668	
060000946	2036	4879	9226	15590	
065021548	23875	20760	14686	7866	
070008348	1142	290	93	37	
075000019	17	6	18	20	
080000017	1	1	7		
085000002	6	2			
090000001	2	7	999998		
095000001	3	8	7		
100000004	9	999999	2		
105000001	6	2	2	8	
110000000	999999	0	2		
115999999	1	3	1	2	
120000005			1		
125000001		5	1		
130000004	4	2	1		
135000001	999998	999996	999999	2	
140999998	1	2	1		
145000000	999997			999999	
150000001		1	999998	999998	
155000000	999999				
160000001	999999			999999	
165999999	999999			1	
170000002	999999	999998		2	
175000001		1	999998		
180999999	999999	999998	1	2	
185000000		1	999999		
190000000	999998		999998	2	
195999999	1	999999		999998	

K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 150 DIVISIONS
KEUFFEL & ESSER CO.

1256759

000000000	2838	8737	9512	2668
005001362	1261	1636	3135	2769
010001979	2209	2297	6845	14124
015005729	739	326	306	326
020000244	221	224	218	175
025000164	156	165	167	139
030000135	141	127	109	126
035000080	118	120	87	98
040000086	70	95	87	89
045000081	69	71	74	68
050000068	75	59	63	55
055000052	52	43	29	33
060000037	36	37	39	50
065000068	111	158	216	224
070000227	208	109	59	48
075000024	14	17	22	4
080000029	30	18	18	2
085000010	20	26	15	17
090000018	13	12	15	12
095000013	8	13	12	11
100000012	20	23	10	8
105000004	6	13	8	6
110000008	16	2	9	9
115000012	10	17	5	
120000013	11	6	12	12
125999999	8	9	3	7
130000008	9	7	10	9
135000002	8	4	4	6
140000012	12	15	18	24
145000024	32	13	1	7
150000004	11	5	6	3
155000004	5	6	7	3
160000005	15	6	8	5
165000010	7	4	6	1
170000007	2	4	7	3
175000006	6	6	9	6
180000010	8	5	11	5
185000004	2	5	5	7
190000000	4	2	2	2
195999998	1	5	1	

Sample # [redacted]
Sample Type
Log Int. 100
Date 6-13-76
Count Time 100 sec
Geometry
Instrument TMC
Time When Counted 12 35
Sample Code

K&E SEMI-LOGARITHMIC 47 3490
3 CYCLES X 150 DIVISIONS
KEUFFEL & ESSER CO.

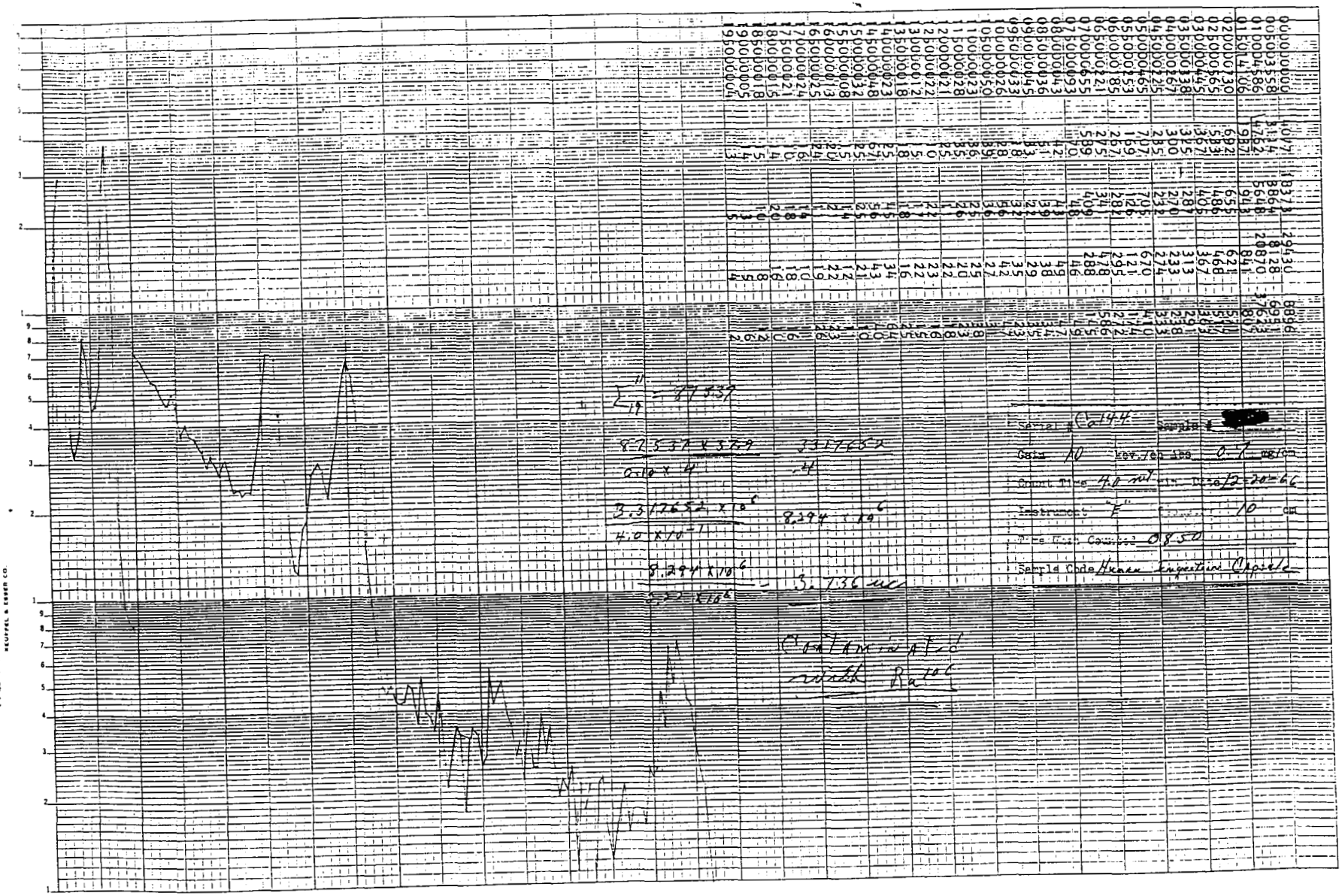
1256760

000000000	2744	8521	9850	2679
005001335	1162	1642	3109	2863
010001978	2124	2270	6462	13912
015000016	232	317	300	261
020000225	240	213	200	178
025000169	150	144	152	125
030000128	128	118	124	108
035000101	88	94	86	86
040000100	80	69	87	61
045000082	68	82	78	73
050000069	62	50	49	45
055000046	51	33	39	26
060000025	26	32	41	37
065000061	104	132	211	248
070000193	74	139	63	39
075000020	31	17	22	27
080000019	19	30	23	9
085000011	12	7	11	4
090000019	24	15	3	14
095000012	13	10	9	15
100000007	12	16	6	13
105000002	10	13	11	3
110000008	7	4	6	16
115000013	14	6	5	10
120000003	11	3	3	2
125000005	5	8	6	6
130000002	7	10	13	11
135000006	999999	13	6	4
140000012	18	16	16	15
145000023	12	22	1	13
150000006	15	13	2	4
155000002	7	999998	5	3
160000008	9	10	8	11
165000006	14	9	4	8
170000008	4	12	4	8
175000005	5	7	6	8
180000005	7	7	6	6
185000005	5	6	5	8
190000006	2	3	5	2
195000001	4	2	5	1

Serial # 114-1 Sample # 110 mg/cm
Date 10 Area Job Ain
Counter Time 440 min Date 5-3-66
Instrument MC 2 Geometry cm
Time Wgm Counted 1114
Sample Code Fluorite

K+E SEMI-LOGARITHMIC 47 5480
3 CYCLES X 150 DIVISIONS
KEUFFEL & ESSER CO.

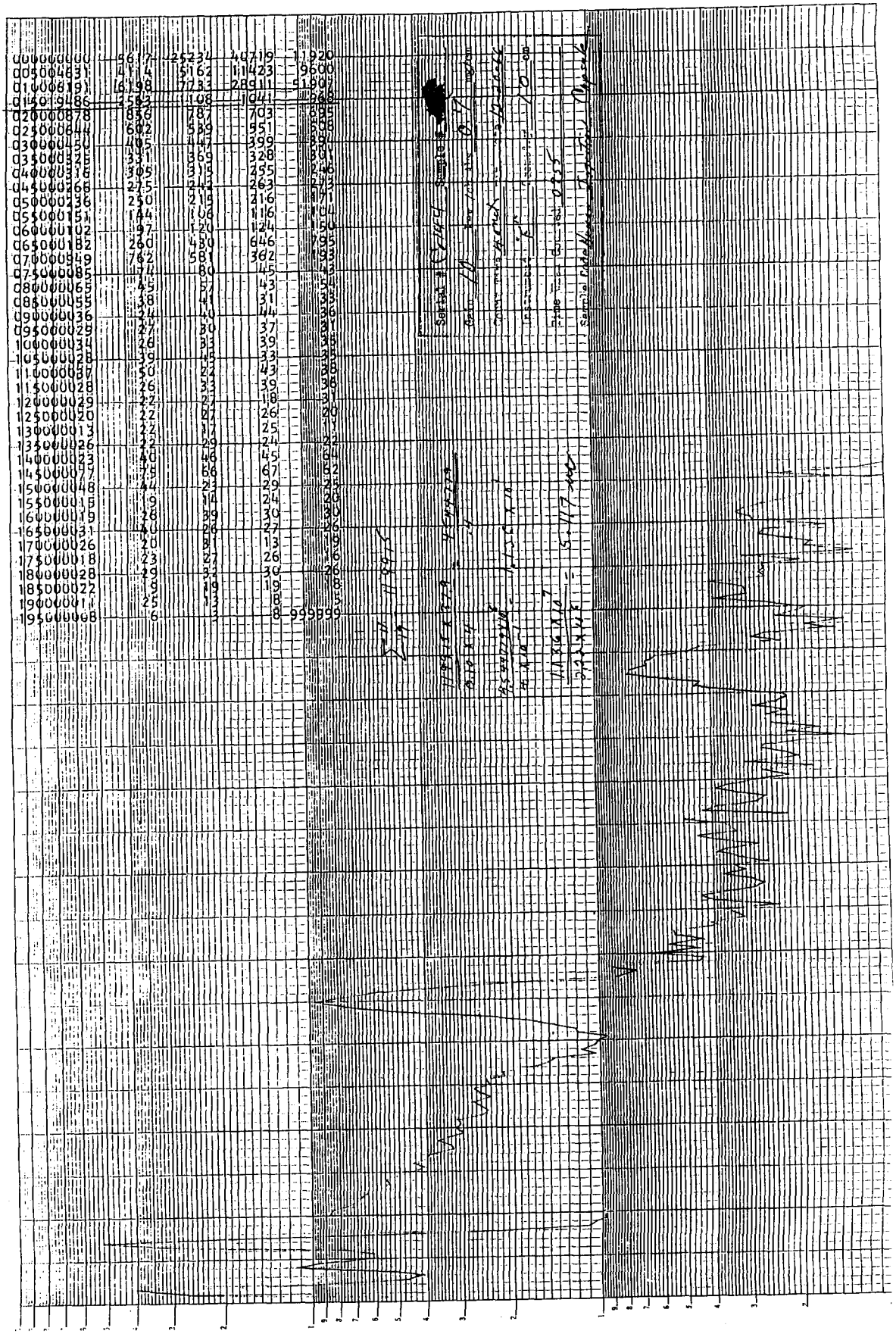
1256761



K+E SEMI-LOGARITHMIC 47 5490
3 CYCLES X 180 DIVISIONS
KEUFFEL & ESSER CO.

125 b 7 b 2

000000000	5617	25234	40719	11920
005004831	4114	5162	11423	9600
010008391	6198	7733	28911	51867
015019486	2583	1108	1041	868
020000878	850	787	703	895
025000844	602	559	551	588
030000450	405	447	399	892
035000325	331	369	328	891
040000316	305	315	255	246
045000268	275	242	263	273
050000236	250	219	216	171
055000151	144	106	116	110
060000102	97	120	124	150
065000182	260	430	646	795
070000949	762	581	362	793
075000085	74	80	45	43
080000065	45	57	43	54
085000055	38	41	31	35
090000036	24	40	44	36
095000029	27	30	37	31
100000034	28	33	39	35
105000028	39	45	33	35
110000037	50	22	43	38
115000028	26	33	39	36
120000029	22	27	18	31
125000020	22	27	26	20
130000013	22	17	25	19
135000026	22	29	24	22
140000023	40	46	45	64
145000077	78	66	67	52
150000048	44	23	29	25
155000015	19	14	24	20
160000019	28	39	30	30
165000031	40	26	27	26
170000026	20	31	13	18
175000018	23	27	26	16
180000028	19	32	30	26
185000022	9	19	19	8
190000014	25	13	8	5
195000008	6	3	8	999999

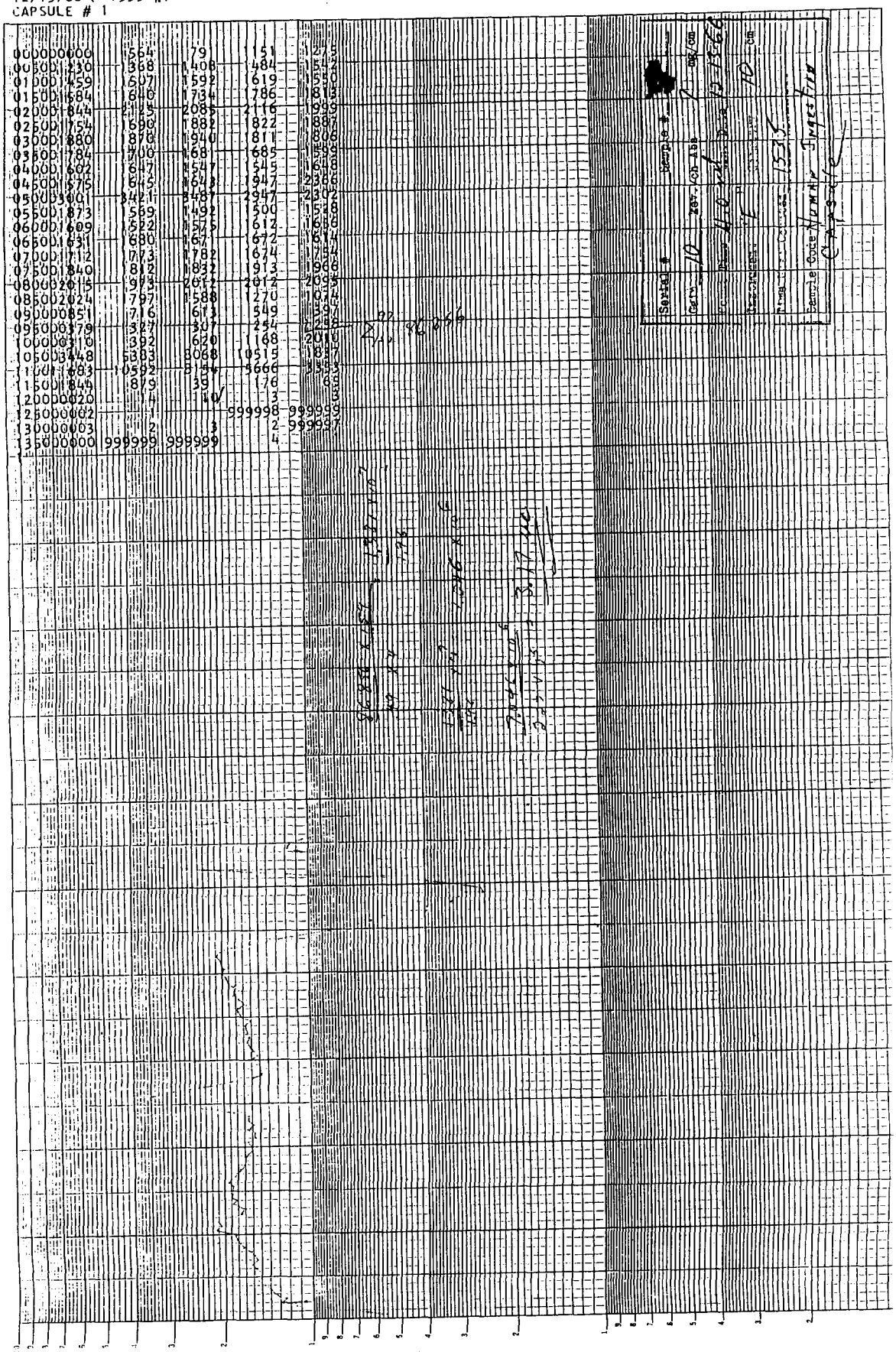


K+E SEMI-LOGARITHMIC 47 5480
3 CYCLES X 190 DIVISIONS
KEUFFEL & ESSER CO.

1256763

12/13/66 @ 1535 W:4 0 MINNET ZN 65 HUMAN INGESTION CAPSULE B
CAPSULE # 1

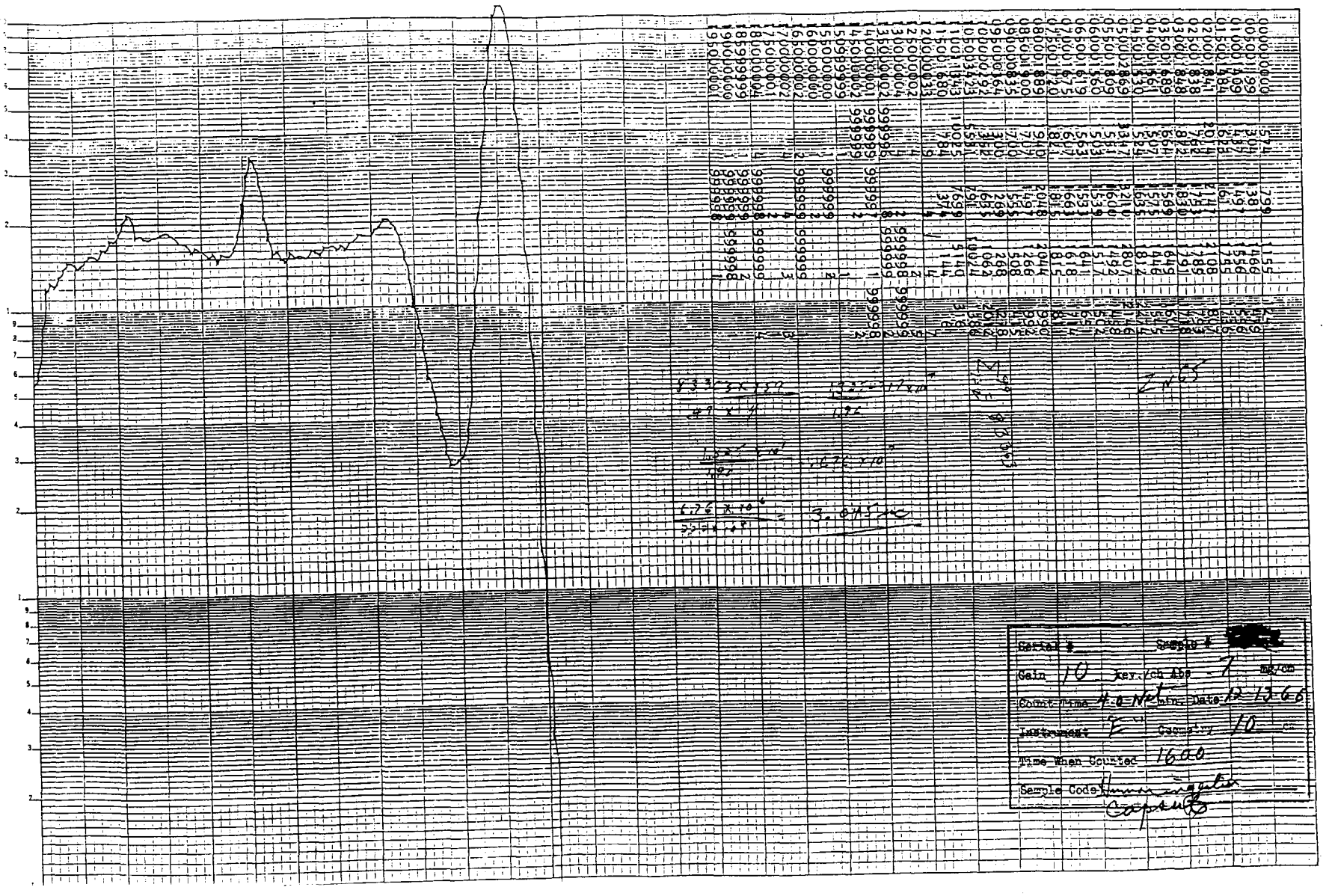
000000000	1564	79	1151	1275
005001230	1368	1408	1484	1542
010001459	1507	1592	1619	1550
015001584	1640	1734	1786	1813
020001844	2125	2085	2116	1999
025001754	1690	1882	1822	1887
030001880	1870	1940	1811	1806
035001784	1700	1681	1685	1599
040001602	1647	1547	1545	1648
045001575	1645	1643	1947	2366
050003001	3421	3487	2947	2302
055001873	1569	1492	1500	1528
060001609	1522	1575	1612	1656
065001631	1680	1671	1672	1614
070001712	1773	1782	1674	1754
075001840	1812	1832	1913	1966
080002015	1973	2012	2012	2095
085002024	1797	1588	1270	1074
090000851	716	613	549	1397
095000379	327	307	254	2258
100000310	392	620	1168	2010
105003448	5383	8068	10515	1837
110011683	10592	8154	5666	3353
115001844	879	39	176	69
120000020	14	10	3	3
125000002	1		999998	999999
130000003	2	3	2	999997
135000000	999999	999999	4	



Serial # [redacted] Sample # [redacted]
Gain 10 Rev./Ch Abs 2 mg/cm
Hole Dia 4.0 ml Date 12-13-66
Dissolution "E" Dissolution 10 cm
Time Dissolution 1535
Sample Code Human Ingestion Capsule

K+E SEMI-LOGARITHMIC 3 CYCLES X 150 DIVISIONS KEUFFEL & ESSER CO. 47 5490

1256764



K+E SEMI-LOGARITHMIC 47 5480
3 CYCLES X 150 DIVISIONS
KEUFFEL & ESSER CO.

1251165