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ABSOLUTE GRAVITY MEASUREMENTS IN THE UNITED STATES OF AMERICA.(U)
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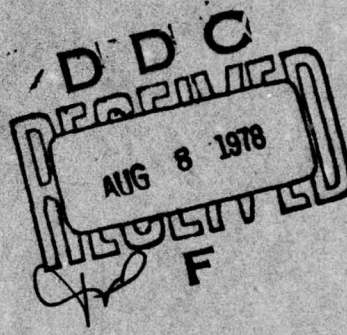
ABSOLUTE GRAVITY MEASUREMENTS IN THE UNITED STATES OF AMERICA

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May 1978



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UNITED STATES AIR FORCE
HANSOM AFB, MASSACHUSETTS 01731

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21. ABSTRACT (Continue on reverse side if necessary and identify by block number) The measurements of gravity acceleration described in the report were performed in 1977 within a grant program sponsored by the US Air Force. The introductory part of the report illustrates the transportable absolute gravimeter and ancillary instrumentation used in measurements, and describes the measurement method applied; uncertainty and errors are analysed as well. Measurements of gravity acceleration made in Europe prior to the USA program are also briefly considered before a detailed account is given of the measurements made in the USA. The numerous tables in the text and at the end of the report form an essential part.		

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of it. Six stations were observed in the USA and approximately 100 measurements made per station. The results show an overall uncertainty in g measurements of the order of 10^{-4} Gal.

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The work described in this final report was developed in the framework of an international grant programme for basic research of the US Air Force Office of Scientific Research, grant n° AFOSR 78-3529.

For the realization of the programme contributions were given by

- Italy : A. Bray, contractor representative, Director of the Istituto di Metrologia "G. Colonnetti" (IMGC), Torino; G. Cerutti, physicist, main investigator, researcher at IMGC; I. Marson, physicist, principal investigator, assistant professor at the University of Trieste; F. Alasia, higher-grade technician at IMGC.
- U.S.A. : B. Szabo, programme manager, Senior Scientist at the Terrestrial Science Division, Air Force Geophysical Laboratory (AFSC), Hanscom AF Base; W. Spita, gravimetrist, Geodetic Survey Squadron, DMATC, Warren AFB, Wyoming; J. Hammond, physicist, Geodesy & Gravity Branch, Terrestrial Sciences Division AFGL.

Measurements in USA were carried out by I. Marson, F. Alasia, W. Spita. G. Cerutti gave his cooperation also in preparing the report.

The Istituto di Metrologia "G. Colonnetti" of the National Research Council of Italy, developed, in cooperation with the Bureau International des Poids et Mesures (BIPM), Sèvres, a new transportable absolute gravity meter, with 10 μ Gal uncertainty. This instrument was used in the past two years to determine the gravity acceleration in 17 European sites to improve the International Gravity Standardization Net (IGSN 71). (*)

In Autumn 1977 measurements were carried out in six sites in the United States : Bedford, MASS; Denver, COLO; Bismark, ND; Alamogordo, NM; San Francisco, CAL; Miami, FLO.

The work was supported by the US Air Force Geophysical Laboratory, Hanscom AFB, Bedford, Mass, under grant n° AFOSR 78-3529.

(*) Cerutti, G.; Cannizzo, L.; Sakuma, A. and Hostache, J.: "A transportable apparatus for absolute gravity measurements". VDI-Berichte n. 212, p. 49-51 (1974).

Cannizzo, L.; Cerutti, G.; Marson, I. : "Absolute gravity measurements in Europe", to appear shortly in Il Nuovo Cimento.

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Symbols and Abbreviations

g	value of gravity acceleration (*)
g_{corr}	value of g corrected for tide effect
g_f	final mean value of gravity acceleration at height h from pillar surface, normalized at a reference fringe number and corrected for electronic delay
g_r	gravity value reduced to reference level (floor or pillar surface)
h	height from ground or pillar surface of the point where g is determined
honk	Honkasalo's corrective term
m	standard deviation
M	standard error
N	number of interference fringes in the trajectory of projected body
N_m	total number of g measurements at each station
N_r	number of reference fringes
t	time interval between the two passages across the higher station during one trajectory
T	time interval between the two passages across the lower station during one trajectory
T.C.	Earth tides correction
U.Time	Greenwich mean time (Universal Time)

(*) The value of g is given by the formula

$$g = \frac{4 \lambda (N - 0.25)}{T^2 - t^2}$$

where $\lambda = 0.632\ 991\ 4156\ \mu\text{m}$ is the wavelength of the He-Ne laser beam.

1. THE IMGC ABSOLUTE GRAVITY METER

1.1. Measurement method

The method adopted consists of the observation of the symmetrical free fall of a body in the gravitational field of the earth.

The advantages of this method are well known: relative freedom from residual air resistance and higher accuracy in time measurements, owing to the symmetry of the motion.

An object is projected vertically upwards and, in its rise and fall, it crosses twice two stations separated by distance L , whose value is accurately determined.

Two time intervals, T and t , corresponding to the two passages across the lower and upper stations respectively, are measured. The value of the acceleration due to the gravity force of the earth is given by

$$g = 8L/(T^2 - t^2) \quad (1)$$

The vertical gradient of the gravity force being assumed as constant along the whole trajectory, the value of g obtained from (1) corresponds to a point situated at height

$$z = L/6 + 1/3 \approx H/6 \quad (2)$$

from the apex of the trajectory downwards (l is the distance between the apex and the upper station and is negligible with respect to L). The repeatability of the trajectory at each station and the determination of the apex are obtained with an uncertainty lower than 1 mm.

1.2. Technical description

The essential parts of the apparatus are a Michelson interferometer and a long-period seismometer (~ 20 s) (Figure 1). On the inertial mass of the seismometer is placed a corner cube (cc1) forming one mirror of the interferometer and the reference fixed point. The radiation from a stabilized HeNe laser is used. A second corner cube (cc2) is projected vertically in a vacuum cylinder (~ 0.1 Pa) and forms the movable mirror of the interferometer. Two photodetectors (Ph a, Ph b) detect the interference fringes during the vertical motion of the corner cube and drive the electronic counters of the flight time and the trajectory length.

1.3. Measurement techniques

No physical standard of length is used, therefore measurements

start at a pre-determined but arbitrary instant on the upward trajectory. At that point, fringe counting begins by means of a bi-directional counter guided by the signals of two photomultipliers. Simultaneously, computation of the total flight time begins as well. Another time counter is reset by each fringe in the rise and is stopped only by the first fringe in the fall motion, owing to phase relation inversion of the photodetector signals at the apex of the trajectory. This time interval is quantity "t" in eq. (1).

The upper station is therefore placed at the last fringe in the upward motion. If N is the total number of fringes recorded in the upward motion and λ the wavelength of the laser radiation, then

$$L = N \frac{\lambda}{2} \quad (3)$$

In the downward motion the counter counts the number of fringes in decreasing order, and when it reaches fringe 0, it stops counting of time T.

1.4. Errors

a) Distance measurement

It is directly connected with the measurement of the value of the laser light wavelength and with its stability. A maximum relative error of 5×10^{-9} , corresponding to $\pm 5 \mu\text{Gal}$, is expected.

Therefore, the laser wavelength is measured before and after each measurement trip. The use of a stabilized iodine laser of IMGC is planned.

Microseisms influence the determination of distance, as they alter the position of the fixed mirror.

These effects have been reduced by ~ 20 times by placing the fixed corner cube on the inertial mass of the seismometer.

The mechanical shocks of the catapult on the movable corner cube can be a source of disturbance for the experiment; for this reason, measurements begin with a pre-determined delay with respect to the STARTING POINT in order to avoid vibration of the corner cube.

b) Laser beam verticality

Verticality is obtained using a mercury pool. The error must be less than 10^{-4} rad in order that errors in "g" measurements can be less than $5 \mu\text{Gal}$. No correction was applied to the g value for this error, but a $\pm 5 \mu\text{Gal}$ uncertainty was introduced in the overall evalua-

tion of measurement uncertainty.

c) Trajectory verticality

Deviation from verticality must be less than 10^{-4} rad over the whole trajectory, to obtain homogeneous visibility ($> 80\%$).

d) Movable corner cube rotation

Rotations must be less than 0.03 rad/s. The corner cube must be adjusted so that the optical and gravity centres coincide within 0.1 mm.

e) Time determination

A rubidium time standard is used, with 10^{-10} stability approximately. A Hewlett-Packard counter, with ± 1 ns resolution is used to determine time T. The "start" and "stop" pulses, obtained from the fringe counter, are affected by the delay-time of the circuits used, which introduce a systematic error in the determination of T of 10 ns ± 0.5 ns. In total, the uncertainty in T measurements is of ± 1.5 ns corresponding to approximately $\pm 6 \mu\text{Gal}$ in g determination (see Table D). The error in the determination of t is much higher, owing to the fact that a counter with ± 100 ns resolution is used. Yet, being

$$t \ll T$$

the error on t becomes negligible.

f) Other influence factors

The presence of magnetic fields induce electrical currents in the metal of the corner cube during flight. To avoid this effect, all the metallic parts are made of amagnetic material.

The elastic of the catapult may have an electrostatic charge, and the movable corner cube may be charged by residual air. The elastic is therefore protected by a grounded metallic tube.

Moreover, if the trajectory is vertical, the tube is perfectly centred with respect to the corner cube, so that the capacitance between them keeps constant during flight and its effect is negligible.

No corrections were made for buoyancy or for reduction of the wavelength of the laser light caused by residual air.

g) The measured g value corresponds to a height of ~ 0.8 m from the ground. To reduce it to this level, the vertical gradient of g has to be measured, and a correction applied. To do this, a relative

gravimeter, type La Coste-Ramberg D-17, was used (W. Spita, operator). The results obtained at the individual stations, together with their measurement uncertainties, are given below. Δh represents the difference in the heights at which the Δg gravity difference was measured.

Vertical gradient of g at the different stations

Site	$\Delta h(m)$	$\Delta g(\mu\text{Gal})$	$\Delta g/\Delta h (\mu\text{Gal/m})$
Bedford	$.677 \pm .001$	205 ± 2	302 ± 2
Denver	$.830 \pm .001$	244 ± 2	294 ± 2
Bismark	$.821 \pm .001$	209 ± 2	255 ± 2
Alamogordo	$.829 \pm .001$	244 ± 4	296 ± 5
San Francisco	$.829 \pm .001$	258 ± 3	311 ± 4
Miami	$.855 \pm .001$	260 ± 3	304 ± 4

A typical example of the evaluation of errors is given below, as well as their overall evaluation.

Source of error	Estimated uncertainty (μGal)
1) Laser wavelength	± 5
2) Beam direction	± 5
3) Time interval T (± 1.5 ns)	± 6
4) Gradient of g	± 2

The uncertainty in the g value is thus $\pm 10 \mu\text{Gal}$, calculated as the square root of the sum of the squares of the individual errors.

2. PREVIOUS MEASUREMENTS

As was said before, 17 European sites had been determined (Figure 2). The results will be published in a special number of the review "Il Nuovo Cimento" in the first months of 1978.

At this point it is interesting to see how the Italian apparatus agrees with Sakuma's absolute gravity meter and what is its repeatability (Table A, B).

3. U.S. MEASUREMENTS

From Oct. 5th to Dec. 5th 1977 the IMGC apparatus was used in the United States. The sites were chosen in order to give the highest contribution to the U.S. portion of the IGSN 71.

The stations are:

- | | |
|------------------------|---|
| 15221 A Boston : | situated on Pier n° 1 in the building 1111 of the HANSCOM AFB, Bedford, Mass. (IGSN 71 point. Table E, N) |
| 11994 H Denver : | situated in room n° 13, Boettcher West, University of Denver, Colo. (Figure 10, Table F) |
| 15560 A Bismark : | in the basement of the Post Office building in Bismark, ND. (Figure 11, Table G) |
| 11926 A Alamogordo : | on the pier in room n° 10, building 1256, Hollomon AFB Alamogordo, NM. (Figure 12, Table H) |
| 12172 A San Francisco: | IGSN 71 point. (Table L) |
| 08150 C Miami : | situated on the U.S. Naval Observatory Time Service Substation, Astrolab building, Miami, FLO. (Figure 13, Table M) |

The microseism noise level was, usually, very high (amplitude $< 2 - 3 \mu\text{m}$ and frequent changes in frequency) except for the station in Boston (amplitude $< 1 \mu\text{m}$). The environment conditions in Miami caused some problems because of the temperature and the air currents of the air conditioning system.

The effects are standard deviations higher than the average ones in Europe, but still acceptable.

Tables C and 1 + 47 show the results of the measurements.

Figures 3 - 9 report the hystograms of the recorded data.

TABLE A Comparison with Sakuma's value of "g" at Sèvres

Station, date	g_r (μ Gal)	m (μ Gal)	M (μ Gal)
Sèvres A ₃ by Sakuma	980 925 900		
Sèvres, May 1976	980 925 892	20	2.0
Sèvres, June 1976	980 925 902	17	1.8
Sèvres, January 1977	980 925 896	19	2.1
Sèvres, March 1977 &	980 925 906	17	1.9

& Owing to the rainy weather, the water level of the Seine river was 4.5 m higher than the normal level. An increase in the g value is thus to be expected. This increase was estimated about 3 μ Gal by Dr. Sakuma.

TABLE B Repeatability of the measurements in the same station

Station, date	g_r (μ Gal)	m (μ Gal)	M (μ Gal)
Sèvres, May 1976	980 925 892	20	2.0
Sèvres, June 1976	980 925 902	17	1.8
Sèvres, January 1977	980 925 896	19	2.1
Sèvres, March 1977	980 925 906	17	1.9
Gävle, July 1976	981 923 527	19	1.6
Gävle, August 1976	981 923 533	17	1.9
Gävle, September 1976	981 923 524	20	3.1
Torino, July 1976	980 534 256	26	3.1
Torino, October 1976	980 534 251	25	4.1
Torino, June 1977	980 534 259	25	2.6
Torino, September 1977	980 534 259	30	3.3

TABLE C Synopsis of measurements in U.S.A.

SITE	DATE	N _m	g _f (μGal)	m (μGal)	M (μGal)	h (mm)	g _r (μGal)
Bedford I	Oct., 8-11, 1977	92	980 378 419	24	2.4	787	980 378 671 ± 10
Bedford II	Dec., 3, 1977	64	980 378 454	29	3.6	682	980 378 675 ± 12
Denver	Oct., 16-19, 1977	101	979 598 033	27	2.7	797	979 598 275 ± 10
Bismark	Oct., 25-27, 1977	101	980 612 681	30	3.0	791	980 612 904 ± 10
Alamogordo	Nov., 3-7, 1977	106	979 139 276	29	2.8	801	979 139 509 ± 11
San Francisco	Nov., 15-17, 1977	103	979 971 810	30	3.0	805	979 972 065 ± 11
Miami	Nov., 21-26, 1977	90	979 004 070	37	3.9	819	979 004 303 ± 10

TABLE D Electronic delay time corrections (d.t.c.) and
reference fringe number N_r

S i t e	d.t.c. (μ Gal)	N_r
Bedford I	- 42 $\pm$ 6	823 043
Bedford II	- 50 $\pm$ 8	600 585
Denver	- 41 $\pm$ 6	880 806
Bismark	- 42 $\pm$ 6	860 116
Alamogordo	- 41 $\pm$ 6	872 542
San Francisco	- 41 $\pm$ 6	872 621
Miami	- 37 $\pm$ 5	1048 096

TABLE E

Site : Bedford I measurements

h	=	$.787 \pm .001$ m
$\frac{\partial g}{\partial h}$	=	302 ± 2 $\mu\text{Gal}/\text{m}$
g_f	=	$980\ 378\ 419 \pm 2$ μGal
Δg_{grad}	=	238 ± 2 μGal
honk	=	14 μGal
net uncertainty	=	± 9 μGal
g_r	=	$980\ 378\ 671 \pm 10$ μGal

TABLE F

Site : Denver

h	=	$.797 \pm .001$ m
$\frac{\partial g}{\partial h}$	=	294 ± 2 $\mu\text{Gal}/\text{m}$
g_f	=	$979\ 598\ 033 \pm 3$ μGal
Δg_{grad}	=	234 ± 2 μGal
honk	=	8 μGal
net uncertainty	=	± 9 μGal
g_r	=	$979\ 598\ 275 \pm 10$ μGal

TABLE G

<u>Site</u> :	Bismark
h	= .790 $\pm$.001 m
$\frac{\partial g}{\partial h}$	= 255 $\pm$ 2 μ Gal/m
g _f	= 980 612 681 $\pm$ 3 μ Gal
Δg_{grad}	= 201 $\pm$ 2 μ Gal
honk	= 22 μ Gal
net uncertainty	= $\pm$ 9 μ Gal
g _r	= 980 612 904 $\pm$ 10 μ Gal

TABLE H

<u>Site</u> :	Alamogordo
h	= .801 $\pm$.001 m
$\frac{\partial g}{\partial h}$	= 296 $\pm$ 5 μ Gal/m
g _f	= 979 139 276 $\pm$ 3 μ Gal
Δg_{grad}	= 237 $\pm$ 5 μ Gal
honk	= -4 μ Gal
net uncertainty	= $\pm$ 9 μ Gal
g _r	= 979 139 509 $\pm$ 11 μ Gal

TABLE L

<u>Site</u> :	San Francisco
h	$= .805 \pm .001 \text{ m}$
$\frac{\partial g}{\partial h}$	$= 311 \pm 4 \text{ } \mu\text{Gal/m}$
g_f	$= 979\ 971\ 810 \pm 3 \text{ } \mu\text{Gal}$
Δg_{grad}	$= 250 \pm 4 \text{ } \mu\text{Gal}$
h_{onk}	$= 5 \text{ } \mu\text{Gal}$
net uncertainty	$= \pm 9 \text{ } \mu\text{Gal}$
g_r	$= 979\ 972\ 065 \pm 11 \text{ } \mu\text{Gal}$

TABLE M

<u>Site</u> :	Miami
h	$= .819 \pm .001 \text{ m}$
$\frac{\partial g}{\partial h}$	$= 304 \pm 4 \text{ } \mu\text{Gal/m}$
g_f	$= 979\ 004\ 070 \pm 4 \text{ } \mu\text{Gal}$
Δg_{grad}	$= 249 \pm 4 \text{ } \mu\text{Gal}$
h_{onk}	$= -16 \text{ } \mu\text{Gal}$
net uncertainty	$= \pm 9 \text{ } \mu\text{Gal}$
g_r	$= 979\ 004\ 303 \pm 10 \text{ } \mu\text{Gal}$

TABLE N

Site : Bedford II measurements

h	=	$.684 \pm .001 \text{ m}$
$\frac{\partial g}{\partial h}$	=	$302 \pm 2 \text{ } \mu\text{Gal/m}$
g_f	=	$980 \ 378 \ 454 \pm 4 \text{ } \mu\text{Gal}$
Δg_{grad}	=	$207 \pm 2 \text{ } \mu\text{Gal}$
h_{onk}	=	$14 \text{ } \mu\text{Gal}$
net uncertainty	=	$\pm 11 \text{ } \mu\text{Gal}$
g_r	=	$980 \ 378 \ 675 \pm 12 \text{ } \mu\text{Gal}$

FIGURE LIST AND CAPTIONS

Figure 1

Schematic drawing of the optical part of gravimeter

Figure 2

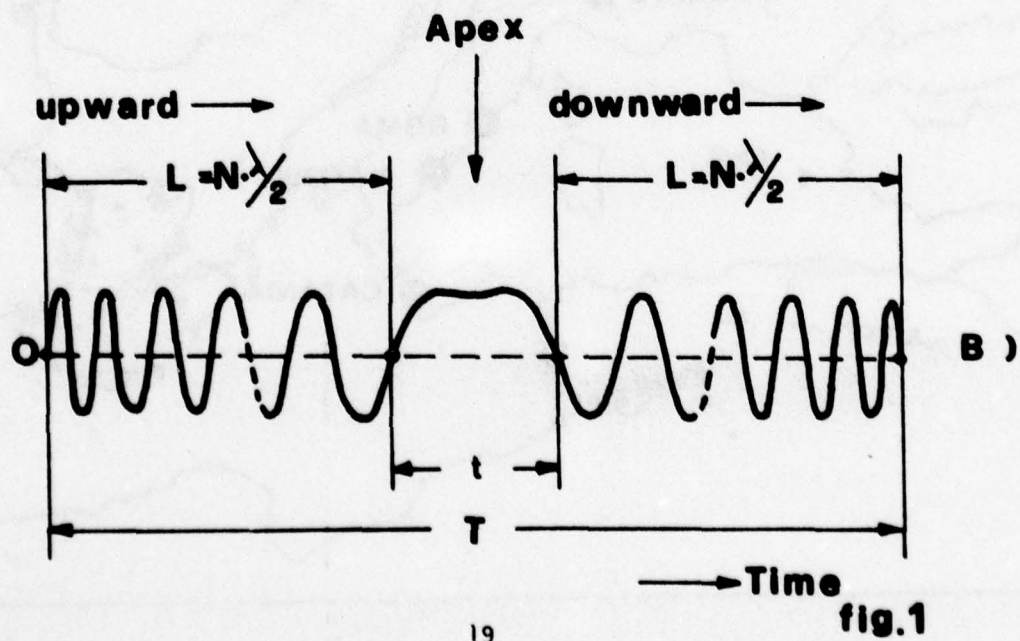
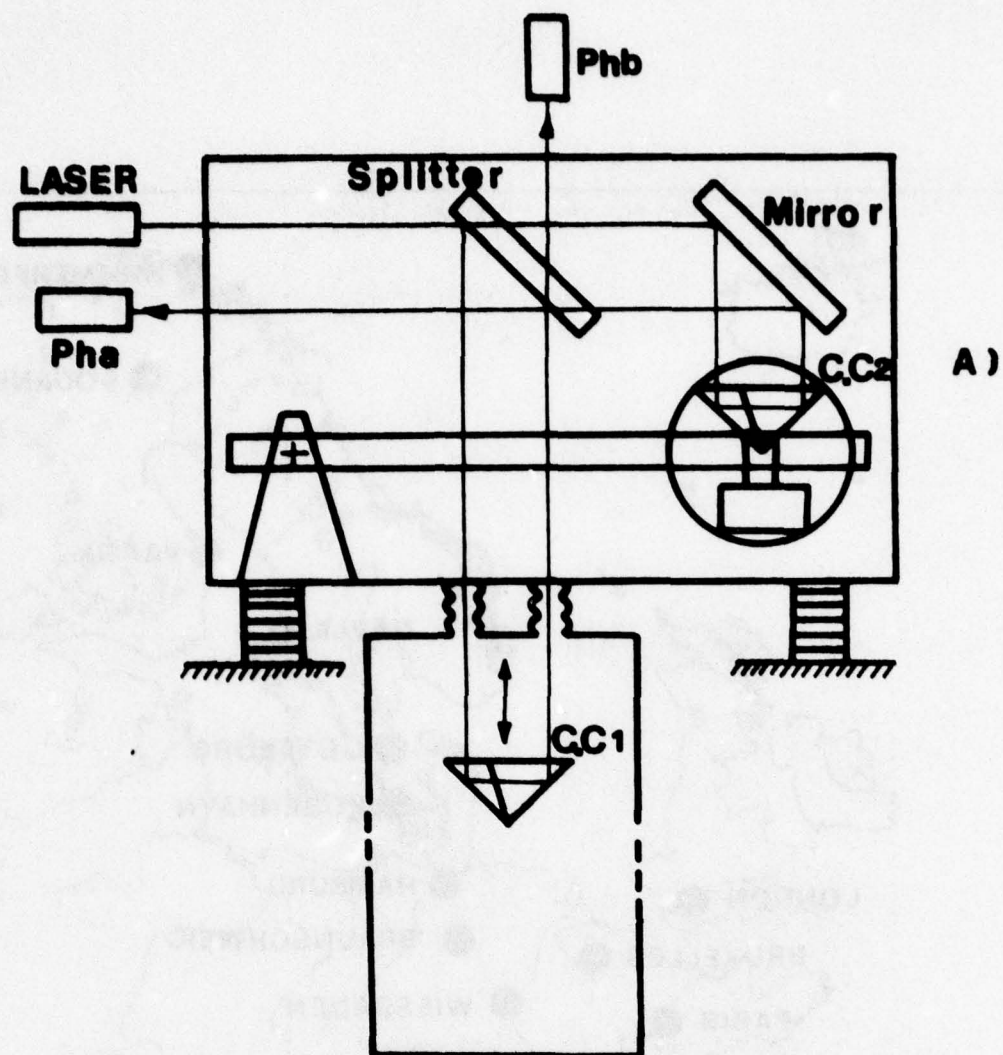
Absolute stations in Europe

Figures 3-9

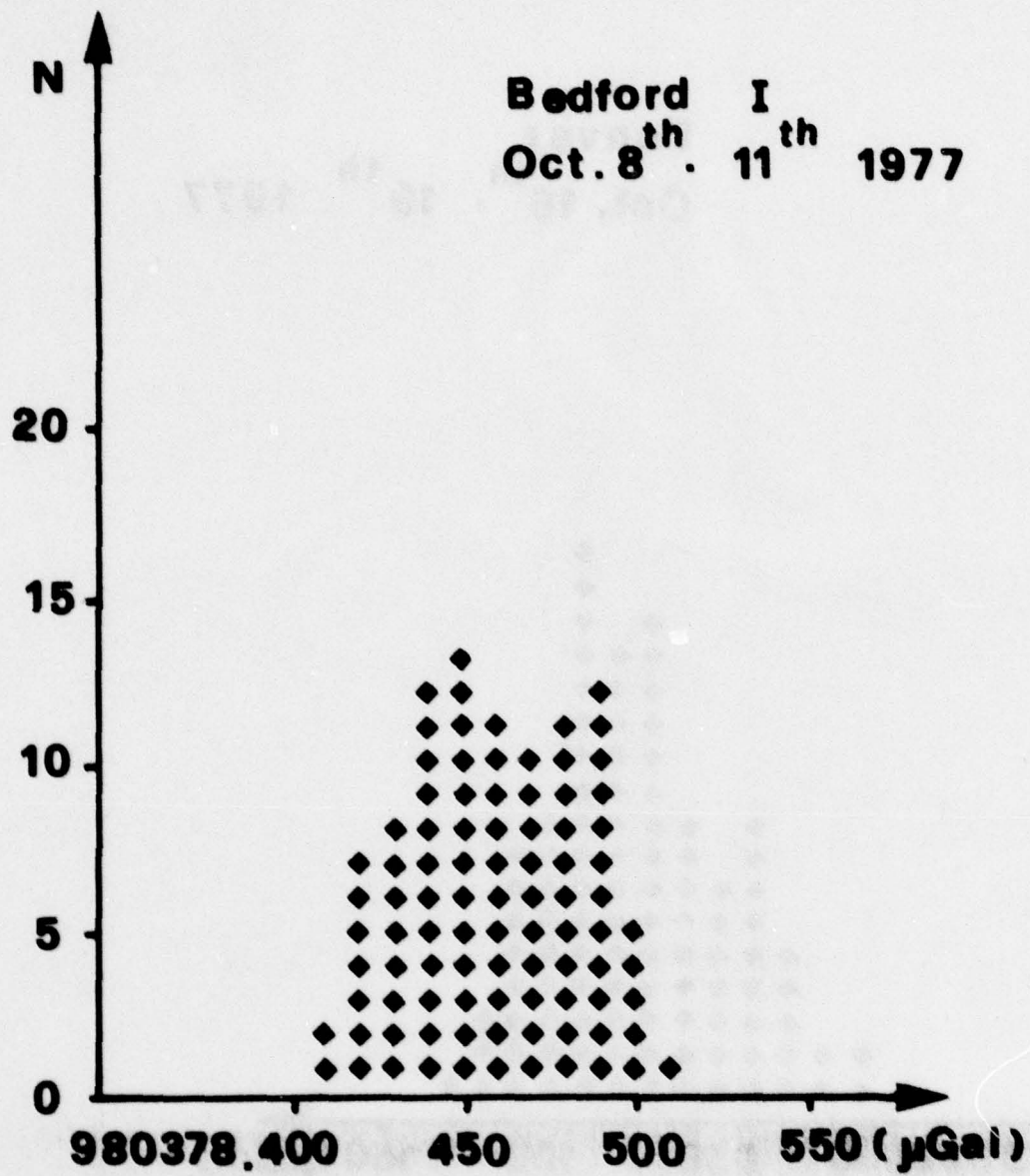
Measurement hystograms for USA stations

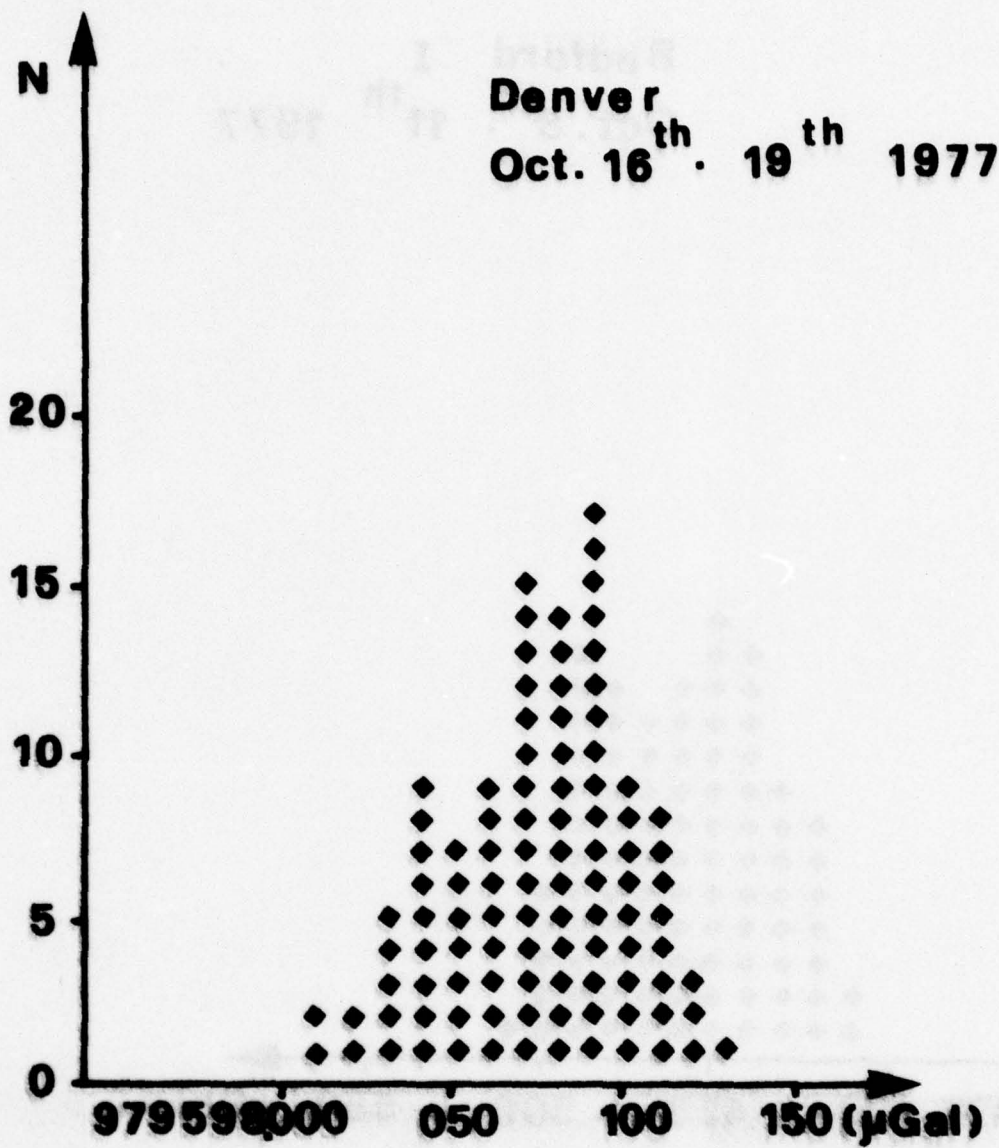
Figures 10-13

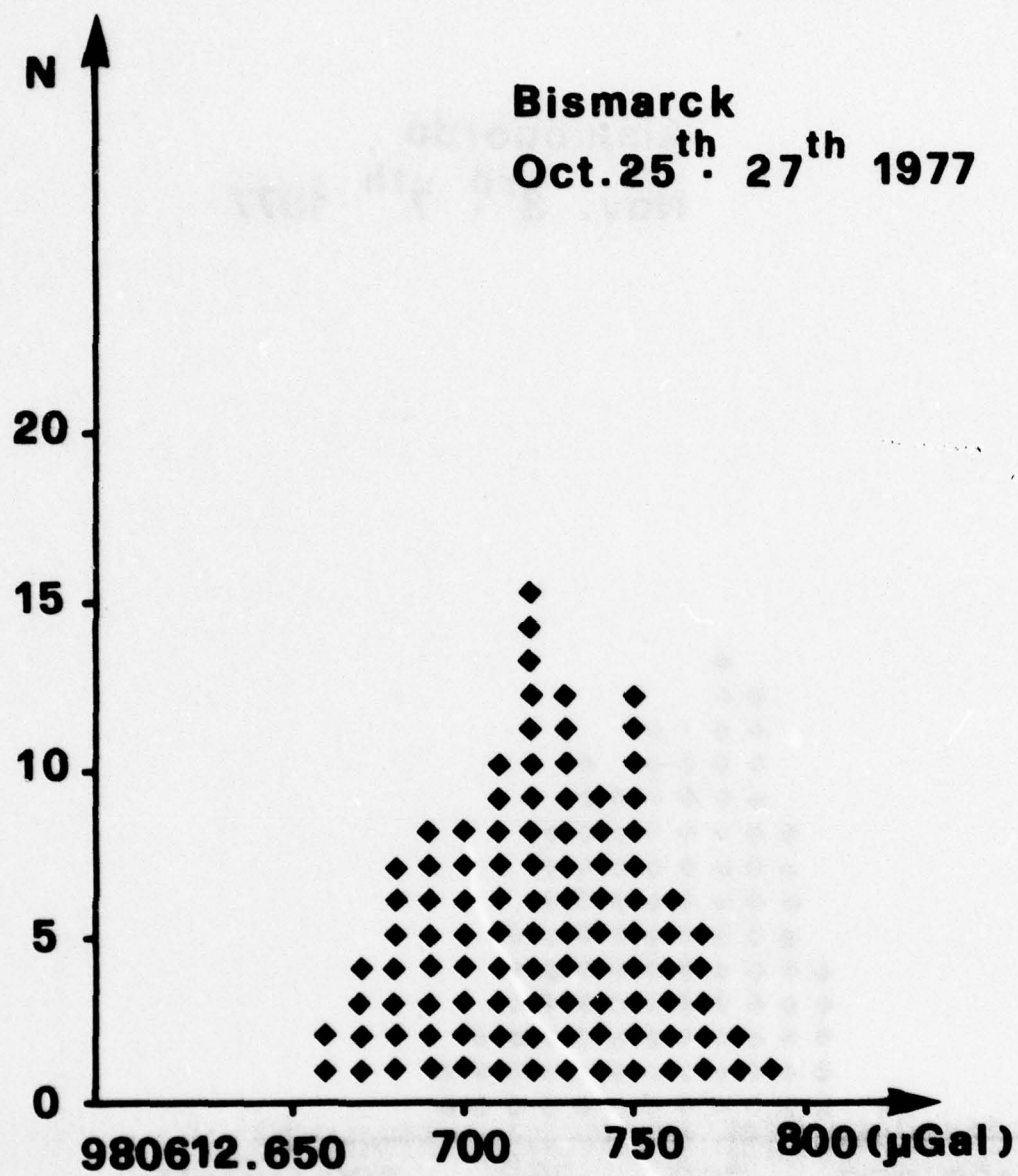
Monographs of USA stations











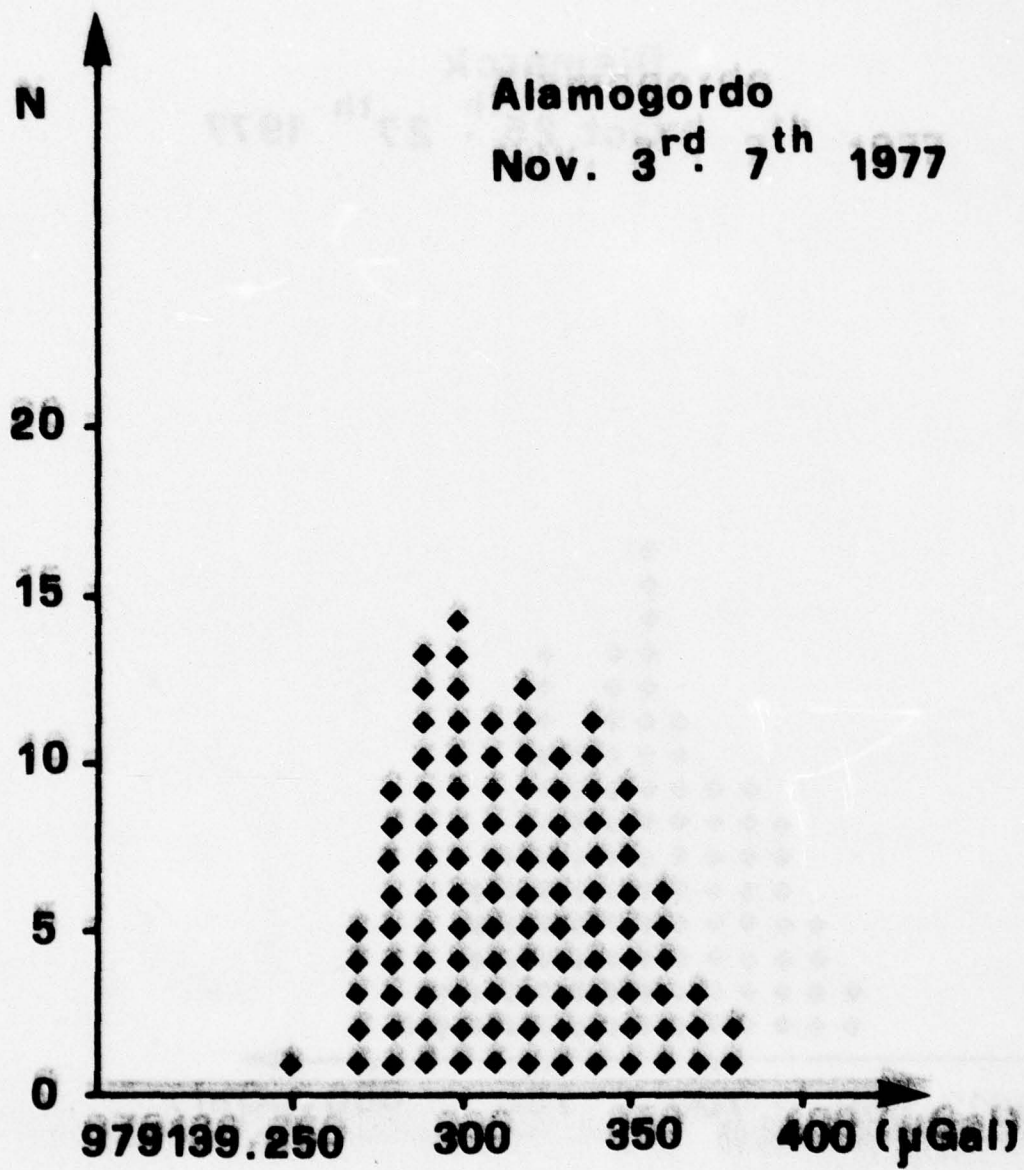
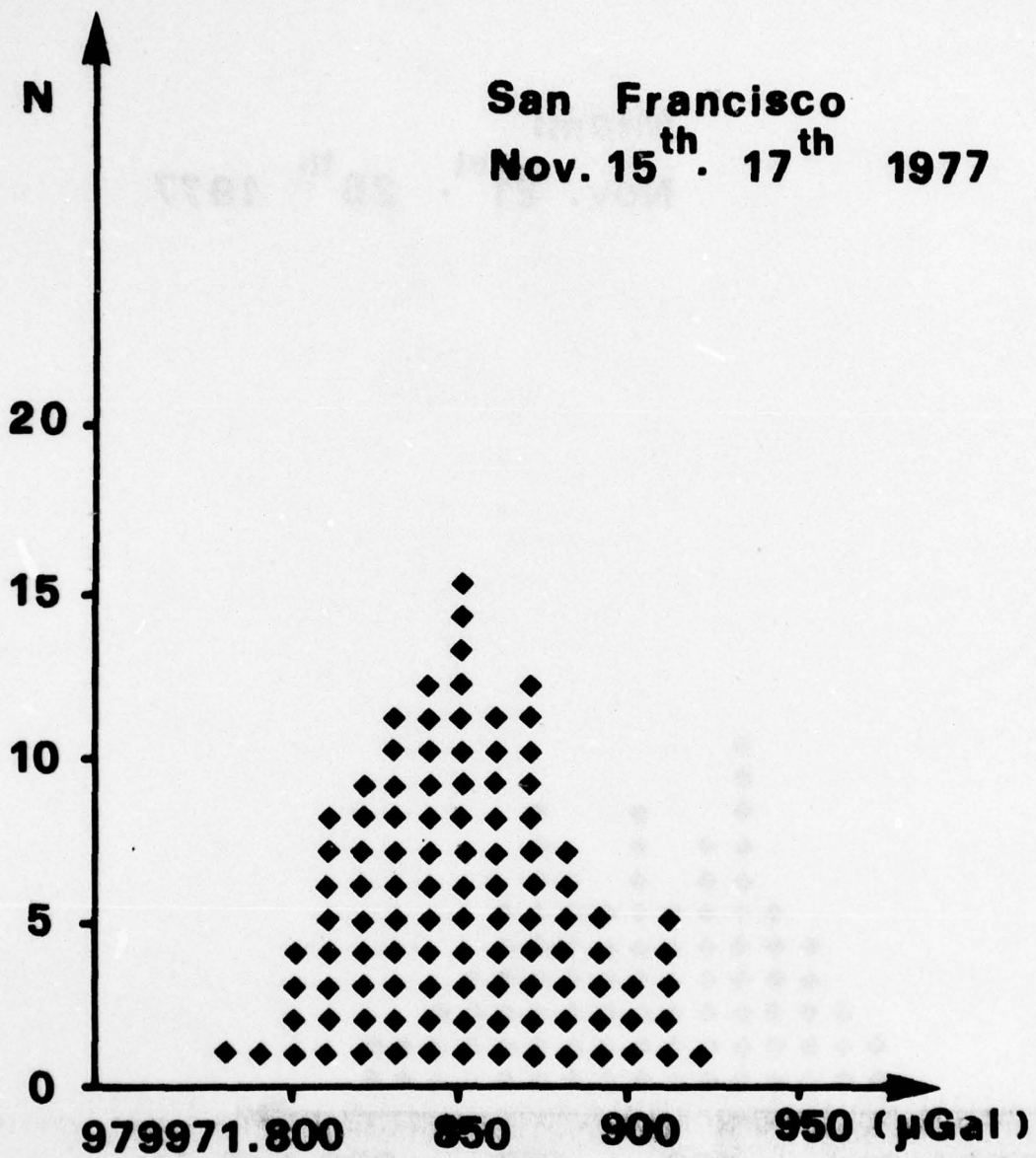
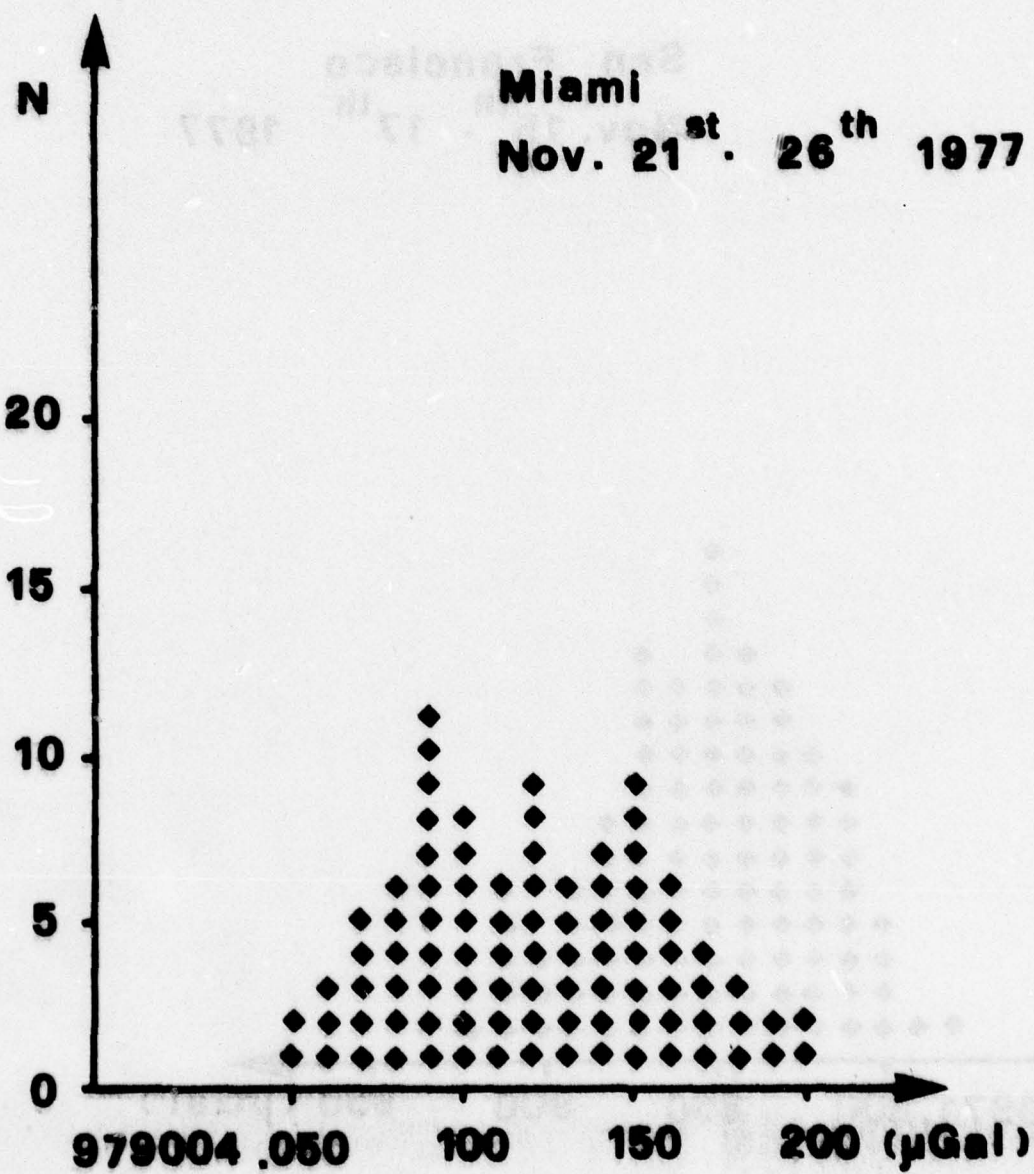
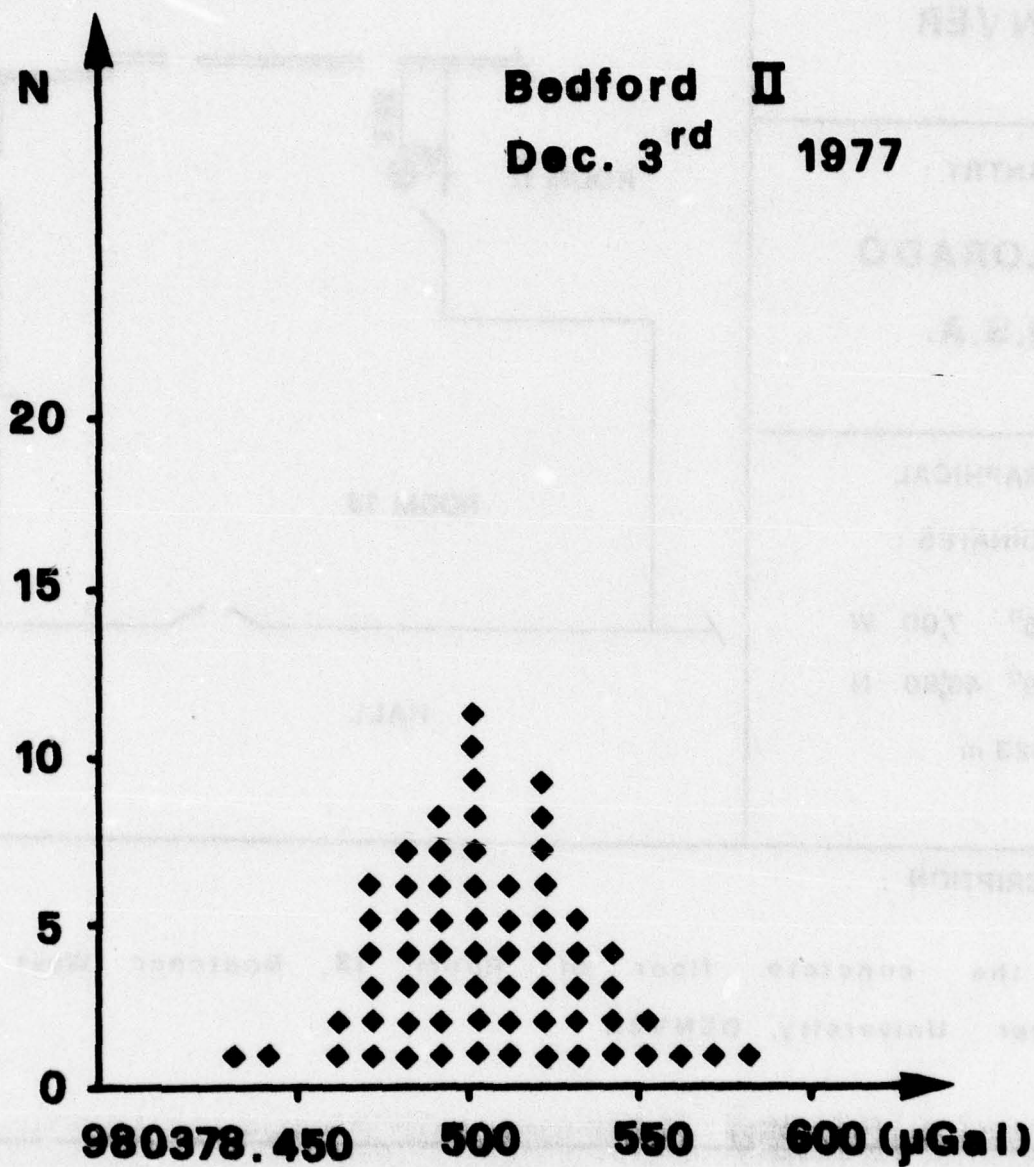


fig. 6







ABSOLUTE GRAVITY STATIONS 1977

SITE :

DENVER

COUNTRY :

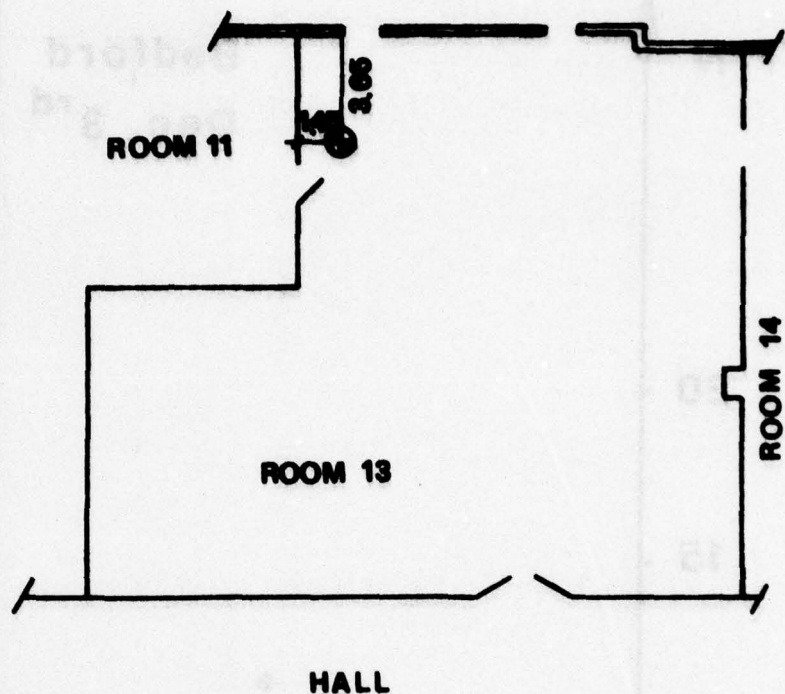
**COLORADO
U.S.A.**

**GEOGRAPHICAL
COORDINATES :**

ϕ 105° 7,00 W

λ 39° 45,60 N

H 1623 m



DESCRIPTION :

On the concrete floor of Room 13, Boetcher West
Denver University, DENVER

REMARKS :

The station is monumented

fig.10

ABSOLUTE GRAVITY STATIONS 1977

SITE :

BISMARCK

COUNTRY :

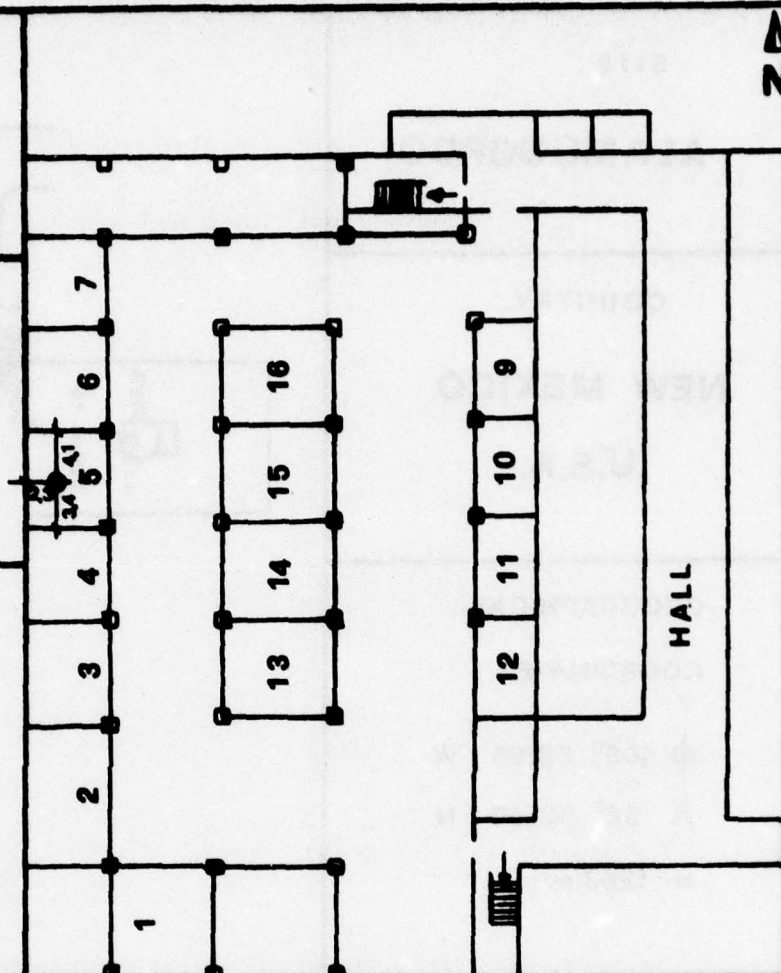
NORTH DAKOTA
U.S.A.

GEOGRAPHICAL
COORDINATES :

ϕ 101° 13'00 W

λ 46° 49'00 N

H 515 m



DESCRIPTION :

On the concrete floor of the basement of the
Post Office Building, BISMARCK

REMARKS :

The station is monumented

ABSOLUTE GRAVITY STATIONS 1977

SITE :

ALAMOGORDO

COUNTRY :

NEW MEXICO

U.S.A.

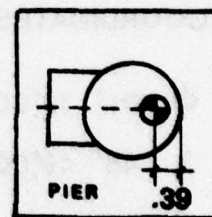
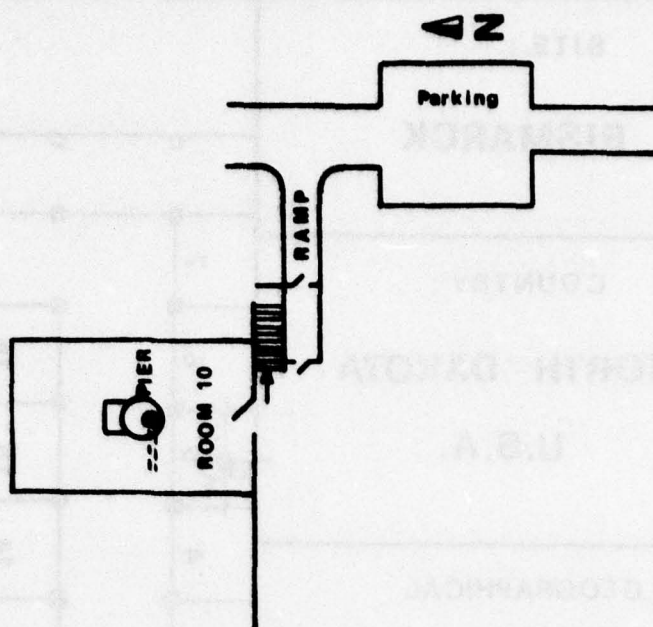
GEOGRAPHICAL

COORDINATES :

ϕ $106^{\circ} 53',95$ W

λ $32^{\circ} 53',60$ N

H 1253 m



DESCRIPTION :

On the pier in Room 10, Building 1256, Holloman
A.F.B. ALAMOGORDO

REMARKS :

The station is monumented.

ABSOLUTE GRAVITY STATIONS 1977

SITE :

MIAMI

COUNTRY :

FLORIDA

U.S.A.

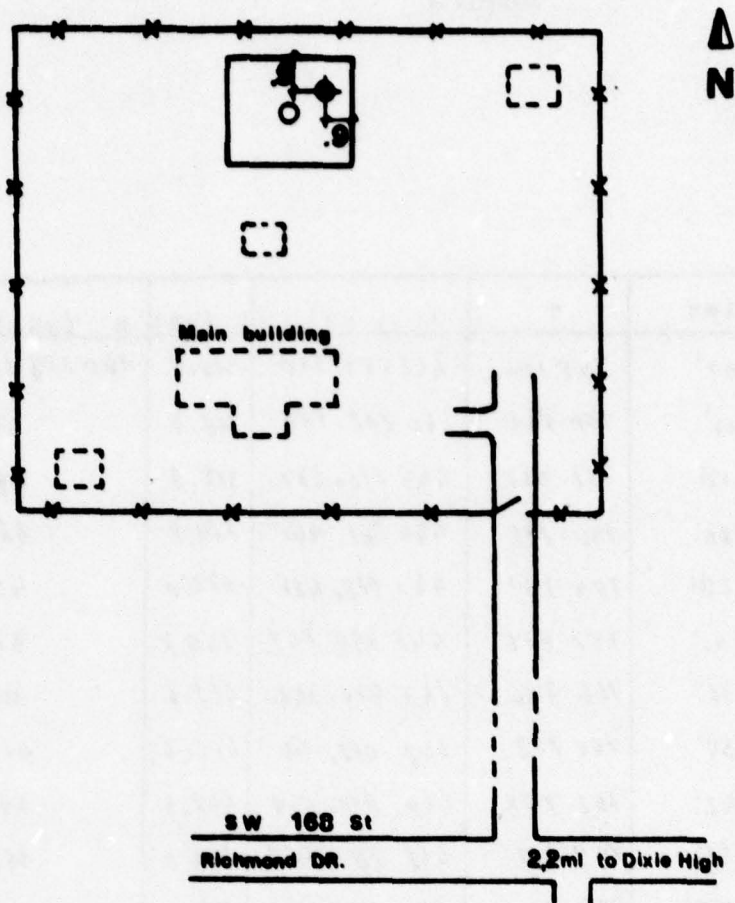
GEOGRAPHICAL

COORDINATES :

Φ 81° 43'00 W

λ 25° 48'00 N

H 6 m



DESCRIPTION :

On the concrete floor of the Astrolab building.

Time service, Substation, u.s. Naval Observatory

REMARKS :

The station is monumented.

The scale in the sketch has not been respected.

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BOSTON A

Table 1

Date Oct. 8, 1977

Site Bedford, Hanscom AFB

Bld 1111

U. Time	N	T (us)	t (us)	R (uGal)	T.C. (uGal)	S ₀₀₀ (uGal)	Notes
14 ^h 07'	758 366	442 559.310	306.6	980 378 676.4	+57.4	980 378 533.8	
114'	750 549	440 872.572	368.3	458.1	+56.8	514.9	
117'	762 937	443 716.677	312.8	483.8	+56.4	510.2	
120'	766 278	444 861.910	279.2	446.4	+56.0	500.4	
128'	753 299	441 078.421	376.0	439.1	+54.8	493.9	
131'	757 816	442 398.742	149.7	372.0	+54.3	426.3	
136'	762 886	443 876.346	427.6	351.8			Bad 1205. Rej
139'	756 232	442 087.328	411.3	412.9	+52.6	465.5	
142'	762 798	443 850.769	442.3	396.9	+52.0	446.9	
145'	759 135	442 783.762	408.0	368.1	+51.4	419.5	
150'	771 741	446 444.459	393.1	399.6	+50.1	444.7	
152'	762 559	443 781.106	311.1	370.7	+49.6	420.3	
156'	762 978	443 903.069	378.4	423.0	+48.5	471.5	
159'	755 462	441 711.339	507.6	479.8			Bad 1205. Rejected
15 ^h 02'	773 889	447 065.835	406.3	411.9	+46.9	458.8	
105'	763 051	443 924.186	226.1	398.8	+45.9	444.7	
107'	778 262	448 376.911	434.4	392.6	+45.3	432.9	
110'	772 255	446 593.490	227.0	403.6	+44.4	448.0	
113'	757 772	442 385.969	180.1	419.7	+43.4	473.1	
115'	750 178	440 163.776	396.0	415.3	+42.8	458.1	

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BOSTON A

Table 2

Date Oct. 8, 1977

Site Bedford, Hanscom AFB

Bld 1111

U. Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	gcorr (μGal)	Notes
1600'	285 060	450 281.035	446.0	980 378 420.2	+ 24.6	980 378 444.8	
203'	299 821	454 508.565	346.5	404.5	+23.2	427.7	
210'	279 613	448 216.063	328.2	422.5	+19.8	442.3	
213'	222 595	446 691.262	128.0	441.3	+18.6	459.7	
215'	287 810	454 068.883	387.0	426.8	+17.4	444.2	
220'	278 256	448 325.432	404.3	430.4	+14.9	445.3	
245'	288 932	451 391.261	115.3	483.2	+ 2.1	485.8	

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BOSTON A

Table 3

Date Oct. 10, 1977

Site Bedford, Hanscom AFB

Bld 1111

U. Time	N	T (ps)	t (ms)	g (μGal)	T.C. (μGal)	gcorr (μGal)	Notes
15 ^h 45'	830 569	463 148.281	427.7	980 328 430.0	+48.3	980 328 428.3	Bad 1m Rejects
48'	843 270	466 625.949	430.5	483.2			
50'	816 044	459 081.963	379.1	439.3	+47.1	486.4	
53'	818 975	459 904.352	469.1	406.6	+46.4	453.0	
56'	793 499	452 694.215	506.0	441.1	+45.7	486.8	
16 ^h 00'	819 440	460 037.000	310.0	437.0	+44.8	481.8	
03'	826 522	462 018.482	410.4	421.9	+43.4	465.8	
06'	833 844	464 060.368	334.1	445.5	+43.0	488.5	
12'	828 659	462 615.331	347.0	400.1	+41.2	441.3	
15'	832 581	463 708.683	92.5	408.6	+40.3	448.9	
18'	829 400	462 822.194	426.9	386.8	+39.2	424.0	
21'	820 851	460 430.755	435.2	435.0	+38.1	423.1	
24'	828 888	462 629.168	215.0	401.4	+37.0	438.4	
26'	833 307	463 711.045	471.4	414.2	+36.3	450.5	
28'	815 976	459 061.466	415.1	413.6	+35.5	449.1	
31'	794 889	454 513.664	338.6	443.0	+34.4	427.4	

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BOSTON A

Table 4

Date Oct. 10, 1977

Site Bedford, Hanscom AFB

Bld 1111

U. Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	gcorr (μ Gal)	Notes
17 ^h 24'	827 428	462 285.550	361.7	980 328 469.4	+7.7	980 328 477.6	
27'	833 171	465 540.427	462.3	495.3	+6.6	501.9	
30'	820 224	460 395.136	450.2	499.8	+6.9	506.7	
33'	836 293	464 741.365	358.6	421.1	+3.6	424.2	
36'	825 158	461 637.077	412.9	496.7	+4.4	498.1	
39'	820 661	460 377.508	492.1	492.1	-0.4	491.7	
42'	818 506	459 772.616	451.0	462.3	-2.1	460.2	
47'	819 152	459 95.....	377.2	496.2	-5.1	491.1	
51'	828 501	462 571.131	192.3	419.0			Bad to Reject.
18 ^h 01'	833 888	464 072.523	202.5	498.2	-13.6	484.6	
04'	819 375	460 016.588	417.9	461.8	-15.5	446.3	
09'	826 639	462 051.079	285.2	456.3	-18.6	437.7	
12'	828 718	462 631.710	219.4	450.0	-20.4	429.6	
15'	829 029	462 718.557	323.1	506.3	-22.3	484.0	

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BOSTON A

Table 5

Date Oct. 10, 1977

Site Bedford, Hanscom AFB

Bld 1111

U. Time	N	T (ps)	t (ps)	g (μGal)	T.C. (μGal)	gcorr (μGal)	Notes
19 ^h 07'	821 137	460 510.999	491.1	980 378 503.5	-53.1	980 378 650.4	
20 ^h 10'	831 584	463 431.107	49.2	543.5	-54.7	489.8	
20 ^h 13'	825 884	461 839.951	177.1	548.3	-76.4	491.9	
20 ^h 20'	831 728	463 471.077	167.5	516.6	-60.0	456.6	
20 ^h 21'	818 348	462 528.320	136.4	532.5	-62.1	470.4	
20 ^h 27'	828 650	462 612.878	449.4	522.9	-63.1	459.3	
20 ^h 30'	825 945	461 857.134	380.1	526.8	-65.1	461.7	
20 ^h 35'	832 854	463 784.869	1330	513.1	-67.4	445.7	
20 ^h 39'	837 311	465 074.040	2483	537.0	-69.2	467.8	
20 ^h 51'	830 316	463 072.581	3433	581.4	-74.4	507.1	
20 ^h 54'	833 382	463 931.979	5073	505.2	-75.6	429.6	
20 ^h 50'	824 772	461 530.551	4434	568.8	-78.0	490.8	
20 ^h 55'	832 176	463 545.876	1480	512.8	-79.7	433.1	

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BOSTON A

Table 6

Date Oct. 10, 1977

Site Bedford, Hanscom AFB
Bld 1111

U. Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	gcorr (μ Gal)	Notes
7:05'	850 668	488 118. 452	265.0	980 578 588.1	-92.2	980 378 495.9	
108'	836 851	464 896. 891	266.1	555.3	-92.3	463.0	
113'	836 117	464 642. 284	69.6	527.8	-92.5	485.3	
120'	831 864	463 509. 082	385.7	562.6	-92.4	420.2	
29'	841 278	466 124. 261	81.5	575.6	-92.1	483.5	
31'	851 502	468 948. 128	866.7	529.8	-92.0	436.8	
55'	851 519	468 952. 832	239.2	561.1	-88.3	422.8	
58'	854 050	469 649. 242	188.5	548.6	-82.8	460.8	
22 ^h 02'	826 455	461 999. 584	220.1	575.2	-85.5	489.7	
10'	834 026	464 124. 919	369.0	566.3	-84.2	482.2	
15'	836 524	464 805. 628	483.9	553.2	-83.3	464.9	
20'	842 172	466 323. 446	435.1	573.3	-81.6	491.2	
25'	834 824	464 332. 928	288.4	571.0	-79.4	491.1	

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BOSTON A

Table 7
Date Oct. 11, 1977
Site Bedford, Hanscom AFB
Bld 1111

U. Time	N	T (ms)	t (ms)	g (μGal)	T _C (μGal)	g _{corr} (μGal)	Notes
13 ^h 05'	821 138	460 511.126	301.1	980 378 460.8	-14.4	980 378 445.9	
08'	813 087	458 248.141	486.6	461.4	-13.1	448.8	
11'	800 725	454 751.057	237.3	431.5	-11.3	420.2	
17'	795 007	453 124.542	376.1	451.4	-7.9	443.5	
31'	811 443	457 284.431	223.0	468.7	0.0	468.7	
38'	808 142	456 852.404	324.4	424.9	+3.8	428.7	
14 ^h 07'	823 530	461 181.304	134.7	447.7	+18.2	465.9	
10'	815 901	459 040.341	383.0	411.4	+19.6	431.0	
13'	806 787	456 469.261	355.2	453.0	+21.0	474.0	
15'	805 168	456 010.930	185.7	436.7	+21.9	458.6	
20'	821 796	460 645.620	382.4	414.8	+23.9	438.7	
25'	818 095	459 656.965	59.5	399.4	+25.8	425.2	
29'	807 106	456 559.526	344.3	462.7	+27.4	489.1	
42'	794 811	454 491.398	147.5	455.0	+28.4	483.4	
50'	823 043	461 045.176	490.8	405.2	+29.5	434.7	
15 ^h 00'	837 075	464 958.665	432.7	408.0	+32.9	441.9	

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DENVER

Table 8

Date Oct. 16, 1977

Site University

Boettcher West, Room 13

U. Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	gcorr (μGal)	Notes
20 ^h 51'	896 317	481 322.143	450.0	979 598 090.7	-47.8	979 598 042.9	
21 ^h 07'	897 679	481 687.598	236.8	090.7	-45.8	044.9	
16'	898 200	481 827.346	213.5	107.5	-43.0	064.5	
19'	894 230	480 761.364	281.3	152.0	-42.6	109.4	
22 ^h 42'	917 297	486 922.687	400.1	118.8	-39.6	073.2	
44'	901 398	483 487.044	434.9	146.2	-39.6	106.6	
47'	894 663	480 877.894	448.3	065.2	-39.6	025.6	
50'	899 672	482 222.122	405.6	119.9	-39.7	080.2	
54'	896 283	481 312.985	369.0	131.7	-39.8	091.9	
57'	899 160	482 084.431	458.2	132.9	-39.8	093.1	
23 ^h 00'	891 352	479 487.195	410.5	130.5	-39.9	090.6	
03'	895 268	481 040.457	455.5	100.5	-40.0	060.5	
07'	894 323	480 786.484	438.3	137.6	-40.2	097.4	
07'	889 365	479 451.085	325.1	061.1	-40.3	020.8	
10'	897 903	481 747.848	459.0	115.2	-40.4	074.8	
13'	900 510	482 446.574	299.1	123.3	-40.6	082.7	
15'	904 054	483 395.151	502.5	164.1	-40.7	103.4	
18'	895 242	481 033.404	392.0	149.2	-40.9	108.3	

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DENVER

Table 8 bis
Date Oct. 17, 1977
Site University
Boettcher West
Room 13

U. Time	N	T (ms)	t (ms)	g (μGal)	T.C (μGal)	R _{corr} (μGal)	Note
00 ^h 05'	890 533	479 766 . 682	462.3	979598 116.0	-45.4	979598 020.6	
08'	888 013	479 087. 724	387.3	106.0	-45.8	060.2	
11'	884 614	478 169. 501	308.9	099.0	-46.2	053.6	
13'	889 354	479 448. 940	396.6	076.4	-46.5	029.9	
17'	891 229	479 954. 085	440.1	162.4	-46.9	115.5	
22'	889 255	479 422. 163	295.6	150.4	-47.6	102.8	
26'	888 162	479 127. 560	434.4	087.7	-48.2	039.5	
29'	892 354	480 256. 740	132.7	159.9	-48.6	111.3	
32'	893 739	480 629. 418	352.7	102.5	-49.0	053.5	
35'	886 424	478 658. 540	434.1	087.9	-49.4	038.5	
40'	893 071	480 449. 765	359.1	134.1	-50.2	083.9	
44'	897 255	481 573. 906	365.5	100.9	-50.7	050.1	
47'	898 159	481 816. 402	310.9	102.4	-51.2	056.2	
50'	896 041	481 247. 983	327.9	084.7	-51.6	038.1	
01 ^h 15'	902 203	482 632. 233	389.8	150.5	-55.4	095.1	
18'	913 372	485 879. 671	91.1	123.2	-55.8	062.9	
21'	900 336	482 400. 120	485.5	095.7	-56.2	034.5	
26'	900 262	482 324. 810	354.7	163.1	-56.9	106.2	
30'	902 265	482 911. 286	504.7	141.2	-57.5	053.7	
34'	896 129	481 274. 323	355.9	111.1	-58.0	053.1	
			40				

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DENVER

Table 9

Date Oct. 18, 1977

Site University

Boettcher West, Room 13

U. Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	gcorr (μGal)	Note
14 ^h 06'	901 820	488 797.585	298.5	924 548 011.4	+45.0	924 548 058.4	
10'	884 987	478 220.311	298.4	031.8	+65.2	027.0	
13'	880 475	477 049.593	346.3	2993.5	+43.8	013.7	
15'	877 403	476 216.666	385.4	8038.5	+48.9	081.4	
28'	889 019	479 358.698	447.6	7493.1	+39.0	013.2	
33'	867 953	473 645.178	357.9	8028.8	+34.1	062.9	
37'	886 471	478 671.054	122.1	064.6	+32.1	046.7	
40'	882 150	477 503.269	493.5	006.3	+30.7	032.0	
45'	884 822	478 225.641	106.2	038.3	+28.2	066.5	
47'	877 850	476 337.981	409.1	020.1	+27.2	047.3	
51'	881 146	477 231.269	241.5	001.2	+25.2	026.4	
56'	884 514	478 142.496	327.8	058.5	+22.2	081.2	
59'	883 174	477 780.273	435.9	016.0	+21.2	037.2	
15 ^h 01'	878 086	476 401.866	223.8	088.3	+20.2	108.5	

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DENVER

Table 10

Date Oct. 18, 1977

Site University

Boettcher West, Room 13

U. Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	g _{corr} (μ Gal)	Notes
15 ^h 43'	893 289	480 642.989	494.3	979 598 093.4	-1.2	979 598 094.1	
46'	887 499	478 948.547	216.5	91.2	-2.2	89.0	
49'	879 931	476 902.080	171.0	88.3	-3.6	84.7	
52'	878 052	476 392.615	103.3	31.8	-5.0	26.8	
55'	882 595	477 623.634	461.7	112.9	-6.5	106.4	
58'	884 790	478 217.099	343.4	63.3	-7.9	55.4	
16 ^h 08'	877 303	476 189.583	451.7	131.6	-12.6	119.0	
11'	880 822	478 143.525	208.6	43.5	-14.0	29.5	
14'	872 867	476 342.634	459.0	39.3	-15.4	23.9	
19'	882 092	477 487.458	404.7	188.5	-17.7	170.8	
22'	879 496	476 784.341	420.7	86.3	-19.0	67.3	
24'	879 434	476 867.582	438.6	61.1	-19.9	41.2	

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DENVER

Table 11

Date Oct. 18, 1977

Site University
Boettcher West, Room 13

U. Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	gcorr (μ Gal)	Notes
12 ^h 45'	884 484	428 134.398	370.3	979 598 141.6	-49.7	979 598 091.9	
48'	887 109	428 843.273	164.3	128.9	-50.7	082.2	
52'	882 054	427 427.269	487.9	135.0	-51.7	083.3	
56'	880 188	426 921.719	192.3	121.6	-52.8	068.8	
59'	868 113	423 688.825	322.6	105.8	-53.5	052.3	
18 ^h 02'	879 167	426 694.985	137.9	105.6	-54.3	051.3	
13'	874 806	425 511.452	496.1	139.2	-56.7	082.9	
14'	879 148	426 689.844	199.4	154.0	-57.6	098.4	
19'	882 036	427 422.280	364.0	095.9	-58.0	037.9	
22'	879 076	426 669.828	286.3	144.8	-58.6	086.2	
25'	881 886	427 431.692	398.5	138.0	-59.1	028.9	

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DENVER

Table 12

Date Oct. 19, 1977

Site University

Boettcher West, Room 13

U. Time	N	T (ps)	t (ps)	g (μGal)	T.C. (μGal)	gcorr (μGal)	Notes
14' 46'	884 967	478 264.950	363.3	977 598 028.8	+53.6	977 598 042.4	
49'	890 884	479 861.266	486.7	034.0	+49.0	083.0	
15' 03'	880 417	477 033.905	392.9	040.6	+42.3	082.9	
06'	865 517	472 974.953	224.1	064.9	+46.2	111.1	
09'	883 179	477 781.590	401.3	036.9	+45.0	081.9	
13'	880 651	477 097.207	257.2	020.6	+43.5	064.1	
16'	877 312	476 192.011	428.9	023.0	+42.3	065.3	
21'	854 258	469 893.736	643.5	038.2	+40.2	028.4	
24'	880 026	476 918.037	420.1	036.1	+39.0	025.1	
27'	874 100	475 369.344	456.5 225.5	024.5 +37.7		022.2 122.2	
30'	878 313	476 476.620	456.5	035.0	+36.5	071.5	
33'	866 139	473 149.927	313.2	060.5	+35.2	095.7	
35'	877 223	476 181.226	078.5	079.8	+34.3	114.1	
40'	878 384	476 482.621	113.9	041.0	+32.2	023.2	
44'	875 508	475 702.236	502.9	037.2	+30.4	062.6	
47'	878 024	476 385.038	149.1	004.0	+29.0	033.0	
50'	880.806	477 139.191	274.5	060.9	+27.6	088.5	
54'	893.392	480 536.245	448.8	059.9	+25.8	085.2	
57'	865 578	472 996.609	200.9	062.9	+24.5	092.4	

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DENVER

Table 13

Date Oct. 19, 1977

Site University

Boettcher West, Room 13

U. Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	g _{corr} (μ Gal)	Notes
18 ^h 00'	899 850	426 880.359	506.9	929 598 126.0	-32.5	929 598 0 93.5	
03'	880 459	427 045.204	314.7	102.2	-33.7	023.5	
08'	902 789	483 056.725	374.1	125.3	-35.8	089.5	
11'	892 162	481 550.284	363.1	116.8	-32.0	029.2	
14'	894 739	480 898.342	494.1	131.2	-38.3	092.9	
16'	884 118	428 035.326	238.8	149.3	-39.1	110.2	
18'	885 235	428 337.314	343.1	126.0	-39.9	136.0	

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BISMARCK

Table 14
Date Oct. 25, 1977
Site Post Office Building
Bismarck

U. Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
4 ⁵⁵	888 448	428 956 . 535	140.1	980 612 246.1	-44.6	980 612 201.5	
15 ⁰⁰	886 504	428 432 . 454	465.8	751.9	-44.2	707.7	
03'	877 024	425 880. 880	280.2	766.2	-43.0	723.2	
06'	871 025	424 250. 218	390.5	752.2	-41.9	710.8	
09'	865 469	422 222. 034	94.2	735.2	-40.2	695.5	
16'	877 242	426 062. 068	241.6	719.0	-38.0	681.0	
30'	864 800	422 539. 514	466.5	656.5	-32.8	623.7	Bad 1st. Rejected
33'	872 265	424 524. 566	412.5	767.3	-31.2	736.6	
36'	860 276	421 301. 820	386.9	785.9	-30.6	755.3	
39'	855 646	420 031. 898	437.2	720.3	-29.6	690.7	
41'	837 729	465 084. 589	320.4	759.8	-28.8	731.0	
44'	852 134	464 066. 214	371.2	722.4	-27.8	744.6	
47'	855 823	420 025. 533	378.4	704.2	-26.2	678.5	
52'	850 365	468 523. 491	219.2	757.5	-25.1	732.4	

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BISMARCK

Table 15
Date Oct. 25, 1977
Site Post Office
Bismarck

Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
6 ^h 50'	893717	480 324.682	163.4	980 612 762.9	-9.0	980 612 753.9	
16 ^h 55'	870 032	423 966.736	412.3	705.2	-8.1	697.1	
58'	884 260	427 896.979	343.6	762.3	-7.5	754.8	
02'	881 453	427 067.392	286.2	756.8	-6.8	750.0	
05'	885 457	428 149.624	212.8	729.6	-6.4	723.2	
08'	880 012	426 627.254	252.4	724.5	-6.0	718.5	
15'	876 478	425 219.125	226.2	758.9	-5.0	753.9	
18'	870 413	426 070.402	227.2	712.0	-4.7	713.3	
23'	829 091	426 427.722	228.4	740.1	-4.3	735.8	
35'	865 669	420 721.364	417.2	736.3	-3.4	732.9	
40'	875 983	425 584.348	429.7	710.4	-3.2	707.2	
43'	874 792	425 261.450	336.5	737.9	-3.1	734.8	
45'	876 400	425 698.121	426.8	728.2	-3.0	723.2	
47'	875 521	425 479.907	117.5	742.0	-3.0	739.0	
50'	873 150	424 815.169	290.5	755.8	-3.0	752.8	

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BISMARCK

Table 16
Date Oct. 25, 1977
Site Post Office
Bismarck

Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
Time	N	T [μs]	t [μs]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
1 ¹⁰	8F3 461	474 899.255	336.3	980 612 742.8	-58.8	980 612 684.0	
2 ¹⁵	870 279	474 033.868	257.1	839.8	-60.0	779.8	
2 ¹	866 169	472 913.258	351.6	857.9	-62.2	795.7	
24 ¹	876 948	475 846.668	258.5	878.6	-62.3	815.3	
27 ¹	878 924	476 382.517	307.3	817.1	-64.4	752.7	
30 ¹	877 908	476 107.153	368.6	764.7	-65.6	699.1	
36 ¹	872 506	474 640.027	302.6	818.2	-67.6	750.6	
41 ¹	875 026	475 325.119	476.7	783.3	-69.3	714.0	
45 ¹	876 375	475 691.259	354.1	818.7	-70.7	748.0	
48 ¹	872 250	474 520.401	308.1	788.7	-71.7	717.0	
53 ¹	868 771	473 623.152	461.5	820.8	-73.3	747.5	
2 ⁰⁰	872 356	474 599.272	343.8	741.7	-75.5	666.2	

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BISMARCK

Table 17
Date Oct. 25, 1977
Site Post Office
Bismarck

Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	Scorr (μGal)	Notes
TIME	N	T [ms]	t [ms]	g [μGal]	T.C.	Scorr [μGal]	NOTES
3:00'	878 843	476 362.210	351.4	980 612 260.1	-87.4	980 612 272.7	
3:03'	879 705	476 594.275	481.1	779.7	-87.6	699.1	
06'	876 888	475 830.458	350.7	838.1	-87.8	750.3	
13'	870 600	471 121.383	408.0	864.1	-88.2	775.9	
15'	877 378	475 963.484	457.9	806.3	-88.3	718.0	
20'	879 295	476 483.116	400.1	817.8	-88.3	729.5	
23'	882 199	477 269.218	272.1	761.3	-88.2	673.1	
26'	871 252	474 298.766	172.5	766.8	-88.2	678.6	
29'	879 665	476 578.011	471.3	783.4	-88.2	695.2	
33'	874 944	475 302.800	440.7	833.4	-87.6	745.8	

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BISMARCK

Table 18

Date Oct. 26, 1977

Site Post Office

Bismarck

U. Time	N	T (μs)	t (μs)	g (μGal)	T.C (μGal)	g _{corr} (μGal)	Notes
U. TIME	N	T [μs]	t [μs]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
14 ^h 43'	889 697	479 239.247	239.4	980 612 F39.8	-68.0	980 612 661.7	
45'	880 356	476 F20.517	406.9	F33.6	-67.8	715.8	
55'	883 110	477 515.608	329.0	F92.6	-66.4	F25.9	
15 ^h 07'	870 808	474 127.982	321.5	F34.2	-59.4	624.2	
12'	877 948	476 117.984	352.5	F77.4	-58.5	718.3	
15'	861 947	471 F59.298	360.2	814.2	-57.5	F56.7	
18'	866 700	473 058.308	459.2	F68.4	-56.4	F12.0	
21'	859 790	471 168.720	428.8	744.6	-55.3	689.2	
30'	870 382	474 062.011	353.4	715.0	-52.1	662.9	
34'	873 355	474 599.002	353.3	762.2	-50.7	711.5	
37'	875 969	475 575.565	249.4	812.3	-49.6	762.7	
43'	877 545	476 008.818	491.0	F82.4	-47.4	F35.0	
47'	863 991	472 318.667	482.6	784.5	-46.0	718.5	
50'	870 719	474 153.665	143.3	806.5	-44.9	761.6	
53'	868 845	473 643.305	427.7	762.3	-43.8	718.5	
56'	862 586	471 934.166	264.7	786.1	-42.7	743.4	

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BISMARCK

Table 19

Date Oct. 26, 1977

Site Post Office
Bismarck

Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	gcorr (μGal)	Notes
U. TIME	N	T [μs]	t [μs]	g [μgal]	T.C.	gcorr [μgal]	NOTES
17 ⁰⁵	894 573	480 606 .453	466.5	980 612 824.6	-21.8	980 612 802.8	
08'	884 847	477 984 .881	81.4	815.2	-21.0	794.1	
12'	877 662	476 040 .322	48.9	685.4	-20.0	665.3	
20'	879 018	476 407.948	229.0	805.2	-18.5	786.7	
23'	881 535	477 089.530	148.3	711.9	-17.9	694.0	
26'	886 068	478 311.580	136.7	753.9	-17.3	736.6	
30'	883 267	477 558.062	277.7	702.1	-16.6	685.5	
32'	878 077	476 153.084	475.3	712.7	-16.3	696.4	
35'	873 422	474 889.192	376.7	705.7	-15.9	689.8	
38'	874 102	475 071.093	458.3	691.3	-15.5	675.8	
43'	878 463	476 257.565	211.2	692.7	-14.8	676.1	
49'	869 829	473 911.489	466.8	706.2	-14.1	692.1	
52'	867 174	473 187.688	697.4	764.8	-13.8	751.0	
55'	878 218	476 191.207	359.5	728.4	-13.6	714.8	
58'	878 586	476 290.311	292.4	764.9	-13.3	751.6	
18 ⁰¹	873 783	474 988.825	194.5	779.8	-13.0	766.8	
03'	873 393	475 153.197	506.9	765.1	-12.8	752.3	

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BISMARCK

Table 20
Date Oct. 26, 1977
Site Post Office
Bismarck

Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
Time	N	T [μs]	t [μs]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
81 ^h 35'	883 551	477 634.950	466.8	980 612 746.2	-60.7	980 612 685.5	
38'	888 973	479 098.181	429.7	817.3	-61.7	755.6	
41'	882 261	477 285.984	284.1	809.8	-62.7	747.1	
44'	874 595	475 208.068	483.3	788.1	-63.7	724.4	
47'	880 219	476 868.886	477.3	786.6	-64.9	721.7	
50'	877 581	476 018.374	200.1	767.7	-65.8	701.9	
52'	875 466	475 444.183	331.6	801.8	-66.5	735.3	
56'	873 481	474 905.067	107.2	816.8	-67.8	749.0	
59'	872 607	474 667.486	276.5	801.6	-68.8	732.8	
2 ^h 09'	870 208	474 014.548	267.8	794.4	-71.9	722.5	
12'	871 124	474 264.019	353.4	788.0	-72.8	715.2	
17'	870 507	474 095.934	179.7	775.4	-74.3	721.1	
21'	874 420	475 160.466	428.1	804.5	-75.3	729.2	

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BISMARCK

Table 21
Date Oct. 27, 1977
Site Post Office
Bismarck

Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	gcorr (μGal)	Notes
Li. Time	N	T [ms]	t [ms]	g [μGal]	T.C.	gcorr [μGal]	NOTE
13 ⁵⁸	848 436	468 047.226	247.3	980 612 762.7	-85.6	980 612 877.1	
4 ⁰¹	840 151	465 756.567	504.2	818.3	-85.3	733.0	
04'	849 769	468 414.694	68.4	796.6	-85.0	711.6	
12'	848 738	468 130.626	463.8	791.6	-84.2	707.4	
15'	860 116	471 257.444	394.6	774.7	-83.9	690.8	
32'	863 727	472 246.117	298.4	813.1	-81.1	732.0	
40'	875 575	475 474.448	430.7	850.3	-79.6	770.7	

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ALAMOGORDO

Table 22
Date Nov. 3, 1977
Site Holloman AFB
Alamogordo

Time	N	T (ps)	t (ps)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
Li. Time	N	T [μGal]	t [μGal]	g [μGal]	T.C.	g _{corr}	NOTE
17 ^h 13'	879 699	426 950.894	206.4	979 134 348.3	-23.1	979 134 324.6	
16'	864 835	422 904.268	141.3	369.0	-24.6	344.6	
19'	868 132	423 804.862	206.5	353.0	-25.5	327.4	
21'	869 530	424 186.120	79.1	341.4	-26.1	315.3	
24'	859 118	421 338.840	482.5	338.1	-27.1	311.0	
33'	859 284	421 521.488	469.9	324.5	-29.2	294.8	
40'	851 019	469 111.886	473.0	353.3	-31.2	321.6	
43'	865 296	423 030.299	104.9	300.2	-32.3	268.0	
45'	854 355	420 030.306	243.6	330.1	-33.1	292.3	
48'	855 744	420 412.299	328.3	318.0	-33.8	284.2	
53'	851 489	464 329.026	323.2	324.2	-35.1	289.1	
56'	854 885	420 126.130	363.2	302.1	-35.8	271.3	
59'	861 720	422 065.609	302.9	360.0	-36.1	323.4	
18 ^h 00'	852 110	469 412.289	181.9	338.1	-36.8	301.3	
06'	863 012	422 405.640	243.0	306.5	-38.1	288.4	

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ALAMOGORDO

Table 23
Date Nov. 3, 1977
Site Holloman AFB
Alamogordo

U. Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
L. Time	N	T [μs]	t [μs]	g [μGal]	T. C.	g _{corr}	NOTES
19 ^h 57'	880 096	477 078.046	394.6	979 134 344.3	-48.8	979 134 302.5	
20 ^h 07'	872 198	475 076.505	307.0	351.6	-48.4	303.2	
05'	865 557	472 828.285	220.8	374.2	-48.3	325.9	
08'	844 133	467 210.127	467.5	341.9	-48.1	293.8	
10'	868 743	473 971.519	51.3	381.7	-48.0	333.7	
13'	863 304	472 485.560	262.9	324.0	-47.9	276.1	
16'	858 707	471 225.966	315.1	331.6	-47.7	283.9	
19'	854 254	470 007.666	457.2	372.1	-47.5	324.6	
21'	855 397	470 316.886	346.3	346.7	-47.3	299.4	
24'	861 511	471 994.705	349.7	334.9	-47.1	287.8	
26'	865 985	473 218.772	443.1	357.8	-46.9	310.9	
29'	862 072	472 148.662	456.6	361.0	-46.7	314.3	

ALAMOGORDO

Table 24

Date Nov. 3, 1977

Site Holloman AFB

Alamogordo

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Time	N	T (ps)	t (ps)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
U. Time	N	T [μs]	t [μs]	g [μgal]	T. C.	g _{corr}	NOTES
9:32'	860 555	421 732.755	333.1	424 139 214.6	-32.5	424 139 232.5	Bad tag.
40'	853 276	464 733.504	403.7	250.5	-36.4	213.6	" "
49'	866 898	423 457.122	253.2	259.7	-36.5	223.0	" "
49'	865 159	422 942.982	384.7	340.1	-35.1	305.0	
52'	826 189	425 948.562	395.1	323.6	-34.5	289.0	
55'	870 283	424 391.577	275.4	308.3	-34.0	274.3	
58'	857 886	421 000.641	340.6	331.7	-33.4	298.3	
2:00'	860 616	421 744.662	357.6	343.5	-32.0	310.5	
03'	864 256	422 745.462	180.9	311.9	-32.4	279.5	
06'	865 260	423 020.524	271.0	308.7	-31.8	276.9	
11'	857 593	420 920.193	333.6	348.2	-30.9	317.3	
13'	860 100	421 608.152	491.8	336.3	-30.5	305.8	
15'	846 068	467 745.044	155.2	360.8	-30.1	330.7	
18'	860 293	421 660.914	316.6	325.4	-29.4	296.0	
25'	861 316	421 941.186	183.9	355.9	-28.0	327.9	
27'	860 834	421 809.252	342.0	319.4	-27.6	292.3	
30'	855 409	420 320.222	640.5	303.9	-27.0	276.9	
39'	865 072	422 920.685	271.8	323.2	-26.5	296.6	
34'	856 669	420 666.571	486.2	322.6	-26.2	296.4	
37'	860 713	421 726.040	395.8	340.5	-25.6	314.9	
40'	865 342	423 042.963	327.7	351.3	-24.9	326.4	
44'	872 255	424 928.823	418.0	309.7	-24.1	285.6	
50'	866 947	423 481.163	330.8	301.0	-22.9	278.1	

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ALAMOGORDO

Table 25

Date Nov. 4, 1977

Site Holloman AFB
Alamogordo

U. Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
U. Time	N	T [μs]	t [μs]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
16 ^h 28'	868 514	473 909.185	231.2	979 139 275.3	+15.6	979 139 290.9	
31'	865 364	473 049.007	359.2	319.7	+14.3	334.0	
34'	865 181	472 999.103	491.3	326.0	+13.0	339.0	
37'	833 522	464 264.202	269.6	338.1	+11.2	349.3	
43'	859 379	471 410.442	495.3	352.0	+9.1	361.1	
45'	861 045	471 867.008	314.5	341.5	+8.2	349.7	
48'	854501	471 443.791	379.9	368.3	+6.9	375.2	
50'	854 616	470 102.185	420.9	368.3	+6.0	374.3	
58'	861 763	472 063.875	503.8	316.8	+2.6	319.4	
17 ^h 00'	858 740	471 235.162	466.3	247.9	+1.7	249.6	
03'	856 184	470 533.288	468.5	246.6	+1.4	248.0	
06'	854 200	469 987.837	485.2	287.4	-1.9	286.5	
12'	862 300	472 210.936	497.9	278.9	-3.5	275.4	
15'	857 167	470 803.216	317.4	302.7	-4.8	297.9	

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ALAMOGORDO

Table 26
Date Nov. 4, 1977
Site Hollomon AFB
Alamogordo

U. Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
18 ^h 16'	850 907	464 080.832	218.5	929 139 342.4	-29.3	929 139 313.1	
19'	864 464	472 804.276	247.5	319.0	-30.4	288.6	
24'	883 502	477 980.783	272.6	326.7	-32.1	294.6	
26'	864 938	474 297.540	364.1	340.2	-37.8	302.4	
34'	870 536	474 460.608	450.8	383.0	-35.5	347.5	
30 ^h 29'	874 548	476 923.536	242.2	391.4	-56.3	335.0	
31'	878 388	476 595.380	201.3	342.5	-58.4	284.1	
33'	877 919	476 468.703	361.3	402.9	-58.5	344.4	
37'	877 561	476 320.972	222.6	380.1	-58.4	321.7	
46'	870 307	474 397.985	142.8	410.4	-58.4	352.0	
48'	870 658	474 293.800	412.8	399.2	-56.3	342.9	
53'	862 627	472 300.197	97.5	335.4	-56.0	279.4	
55'	871 573	474 74 3.020	340.9	345.9	-55.9	290.0	
58'	858 126	471 066.680	467.4	365.4	-55.8	309.6	
21 ^h 00'	869 812	474 274.457	225.0	358.4	-55.7	302.7	
02'	870 765	474 522.989	440.7	365.2	-55.5	309.6	
04'	870 816	474 536.867	428.2	392.7	-55.3	337.4	
06'	865 088	472 973.525	336.3	408.4	-55.1	353.3	
09'	868 455	473 893.075	357.5	404.9	-54.9	350.0	

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ALAMOGORDO

Table 27
Date Nov. 4, 1977
Site Holloman AFB
Alamogordo

Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	g _{corr} (μ Gal)	Notes
U. TIME	N	T [μ s]	t [μ s]	g [μ Gal]	T.C.	g _{corr} [μ Gal]	NOTES
22 ^h 25'	894 481	480 941.421	195.9	979 133 380.1	-41.2	979 139 328.9	
27'	887 185	478 976.164	486.3	374.1	-40.7	333.4	
30'	881 017	477 308.045	181.5	380.2	-34.9	340.3	
32'	875 891	475 317.547	316.4	359.4	-39.4	320.0	
34'	881 881	477 542.147	372.3	391.5	-38.8	352.7	
37'	878 176	476 538.022	451.1	397.1	-38.0	359.1	
39'	820 795	474 531.134	399.9	336.7	-37.4	299.3	
42'	877 981	476 485.024	340.5	377.7	-36.6	341.1	
44'	875 155	475 173.734	422.1	371.0	-36.1	334.9	
47'	876 367	476 046.724	193.8	390.6	-35.3	355.3	
50'	874 332	475 493.720	92.0	354.1	-34.3	319.8	
52'	875 114	475 706.368	227.7	354.8	-33.7	321.1	
56'	877 890	476 460.351	368.1	326.9	-32.5	344.4	

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ALAMOGORDO

Table 28
Date Nov. 7, 1977
Site Holloman AFB
Alamogordo

U. Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
U. TIME	N	T [ms]	t [ms]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
16 ⁴⁵ '	890 026	474 742.240	92.1	979 139 299.6	+60.4	979 139 360.0	
49'	884 118	478 147.436	336.6	281.0	+54.6	340.6	
52	873 559	475 283.585	296.8	269.3	+59.0	328.3	
56'	873 611	475 297.866	477.7	314.6	+58.1	377.7	
17 ⁰⁰ '	872 435	474 977.666	201.7	266.3	+57.3	323.6	
03'	874 113	475 434.195	122.5	263.7	+56.5	320.2	
09	874 962	475 666.609	480.1	276.7	+54.8	331.5	
12'	872 850	475 090.716	345.5	217.6	+56.0	271.6	
15'	862 395	472 236.808	351.6	310.4	+53.2	363.6	
18'	868 267	473 841.810	357.7	261.3	+52.1	313.4	
21'	873 492	475 265.281	143.4	296.4	+51.1	345.5	
25'	872 542	475 006.883	368.5	304.0	+49.7	353.7	
28'	847 150	468 044.317	466.5	288.5	+48.7	337.2	

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Table 29

Date Nov. 15, 1977

Site Accademy of Sciences

U. Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
U. TIME	N	T [μs]	t [μs]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
18 ^h 50'	892 224	480 131.754	505.5	474 471 955.5	-78.1	474 921 872.4	
54'	854 662	469 715.136	477.5	484.2	-78.0	906.2	
57'	880 840	477 057.506	454.1	446.4	-78.0	868.4	
14 ^h 00'	873 336	475 020.909	93.3	829.2	-78.0	801.7	Bad trj.
05'	872 376	474 759.916	406.4	907.1	-77.7	829.4	
08'	874 476	475 330.853	205.5	470.6	-77.6	893.0	
11'	868 974	473 833.224	316.5	949.1	-77.4	821.7	
13'	867 875	473 533.589	472.1	915.6	-77.3	838.3	
16'	876 061	466 773.283	385.3	927.9	-77.1	850.8	
20'	865 604	472 914.989	427.8	953.6	-76.7	826.4	
23'	858 060	470 848.790	391.6	955.9	-76.4	829.5	
26'	865 928	473 002.166	466.1	928.8	-76.1	852.7	
32'	871 569	474 540.145	278.4	950.8	-75.5	875.3	
35'	863 561	472 355.057	199.7	951.3	-75.1	826.2	
40'	864 903	472 722.027	340.5	930.8	-74.4	856.4	
45'	869 413	473 953.070	503.1	903.2	-73.8	829.4	
50'	868 644	473 743.305	374.8	891.3	-72.9	818.4	
58'	870 640	474 300.960	449.3	906.6	-71.5	835.1	
20 ^h 01'	871 767	474 594.038	207.3	935.9	-71.0	864.9	
03'	872 028	474 665.208	408.8	936.7	-70.6	866.1	

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Table 30
Date Nov. 15, 1977
Site Accademy of Sciences

Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
4. Time	N	T [ms]	t [ms]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
91 ⁰⁰	872 426	424 787.118	416.4	929 921 925.7	-50.6	929 921 925.1	
30'	875 315	425 558.312	354.6	961.2	-49.8	911.9	
33'	872 806	424 876.815	263.4	824.6	-49.0	875.6	
36'	872 580	424 815.396	324.1	907.3	-48.3	859.0	
39'	874 453	425 324.657	315.1	991.3	-42.5	948.8	Bad traj.
43'	870 932	424 366.756	308.6	909.5	-46.5	863.0	
46'	872 312	424 712.427	335.4	982.9	-45.7	937.2	Bad traj.
49'	871 979	424 651.867	404.5	942.1	-45.0	897.1	
52'	868 526	423 111.053	274.7	894.8	-46.3	850.5	
54'	874 939	426 813.355	329.6	939.6	-43.8	895.8	
57'	876 284	425 822.148	443.1	938.5	-43.1	895.4	
2 ⁰⁰	863 706	422 394.865	389.1	888.2	-42.4	845.8	
03'	877 169	426 062.270	302.0	824.1	-41.2	832.4	
06'	871 980	424 652.241	503.8	913.7	-41.0	872.7	
09'	868 785	423 781.105	306.6	820.1	-40.4	829.7	
12'	868 984	423 835.401	400.4	891.7	-39.7	852.0	
19'	872 576	424 814.282	350.0	938.3	-38.2	899.1	

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Table 31

Date Nov. 15, 1977

Site Accademy of Sciences

Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	g _{corr} (μ Gal)	Notes
U. TIME	N	T [μ s]	t [μ s]	g [μ Gal]	T.C.	g _{corr} [μ Gal]	NOTES
23 ^h 28'	883 206	477 860.062	488.5	974 971 888.8	-27.6	974 971 861.2	
31'	877 141	476 054.836	491.8	849.5	-27.3	822.2	
34'	869 163	473 884.770	304.4	847.5	-27.1	820.4	
44'	881 901	477 344.759	455.2	851.5	-26.5	825.0	
46'	880 125	476 863.815	398.7	844.0	-26.4	847.6	
19'	876 042	475 756.388	357.5	858.1	-26.3	831.8	
24 ^h 04'	878 781	476 499.431	117.9	849.5	-25.8	823.7	

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Table 32

date Nov. 16, 1977

Site Accademy of Sciences

Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	g _{corr} (μ Gal)	Notes
U. Time	N	T [μ s]	t [μ s]	g [μ Gal]	T.C.	g _{corr} [μ Gal]	NOTES
7 ^h 46'	816 743	459 372.247	230.3	979 971 865.0	-47.5	979 971 817.5	Bad trj.
48'	894 006	454 356.853	170.9	875.7	-48.2	827.5	
11 ^h 10'	820 848	460 525.376	125.3	904.4	-56.1	848.3	
26'	826 687	462 110.490	166.4	850.2	-61.5	788.7	Bad trj
39'	814 028	460 014.510	351.9	896.0	-64.4	831.6	
48'	824 512	461 552.057	346.7	841.1	-66.6	774.5	Bad trj.

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Table 33

Date Nov. 16, 1977

Site Accademy of Sciences

Time	N	T (ps)	t (ps)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
u. Time	N	T [μs]	t [μs]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
22 ^h 36'	893 151	480 379.654	361.3	979 921 881.0	-46.9	979 971 834.1	
38'	883 359	477 739.906	483.4	859.2	-46.1	813.1	
42'	880 024	476 836.287	111.5	923.4	-48.3	878.1	
45'	864 340	473 932.988	293.3	935.5	-44.5	890.8	
48'	873 788	475 143.908	326.0	957.3	-43.7	913.6	
51'	879 266	476 630.952	289.9	951.0	-47.9	908.1	
55'	874 813	475 422.478	237.6	852.1	-41.9	810.2	
57'	875 739	475 674.076	360.5	945.7	-41.4	954.3	Bad traj.
23 ^h 00'	870 883	474 516.791	505.6	900.8	-40.6	860.2	
03'	873 374	475 031.290	264.7	953.7	-39.8	913.9	
00 ^h 35'	889 728	479 458.242	347.0	844.1	-20.3	823.8	
46'	875 745	475 675.771	328.1	841.3	-18.7	822.6	
49'	876 686	475 931.177	272.6	828.3	-18.3	810.0	
52'	877 033	476 025.491	460.1	868.6	-17.9	850.7	
55'	877 803	476 234.407	447.8	835.8	-17.6	818.2	
57'	865 466	473 006.916	196.3	825.6	-17.4	808.2	
1 ^h 00'	866 881	473 262.418	500.3	892.3	-17.0	875.3	
04'	871 032	474 394.089	422.5	857.2	-16.7	840.5	
07'	873 809	475 149.559	198.3	821.7	-16.4	805.3	
10'	864 803	474 059.150	194.3	835.3	-16.1	819.2	

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Table 34
Date Nov. 17, 1977
Site Accademy of Sciences

U. Time	N	T (ms)	t (ms)	g (μGal)	T.C (μGal)	g _{corr} (μGal)	Notes
U. TIME	N	T [ms]	t [ms]	g [μGal]	T.C.	g _{corr} [μGal]	NOTE
17 ^h 46'	892 210	480 126.584	436.1	979 971 892.5	-22.6	979 971 869.4	
50'	886 988	478 719.548	503.5	887.0	-24.4	802.6	
53'	885 562	478 334.474	408.8	881.2	-25.8	855.4	
57'	882 459	477 495.586	156.2	816.1	-27.6	788.5	
10 ^h 00'	878 250	476 355.497	271.8	906.2	-28.0	878.2	
03'	883 609	477 806.648	305.1	894.7	-30.3	864.4	
06'	880 501	476 965.516	142.5	889.0	-31.6	857.4	
09'	878 364	476 386.368	150.0	866.5	-33.0	833.5	
11'	874 037	475 211.608	311.3	871.3	-33.8	837.5	
15'	878 887	476 528.211	241.6	865.5	-35.6	829.9	
18'	875 627	475 643.613	252.0	883.3	-36.8	846.5	
23'	878 495	476 477.021	348.7	920.9	-38.9	882.0	
25'	878 164	476 332.263	392.9	885.8	-39.7	846.1	
28'	878 651	476 464.197	178.1	878.4	-41.0	837.4	
31'	879 570	476 713.520	444.5	927.3	-42.2	885.1	
34'	876 633	475 916.741	183.0	855.7	-43.3	812.4	
36'	876 163	475 789.278	422.0	931.0	-44.1	886.9	
38'	875 854	475 706.819	507.6	906.3	-44.9	861.4	
42'	877 578	476 173.303	394.3	911.0	-46.4	864.6	
45'	879 648	476 734.508	249.0	874.3	-47.6	826.7	

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Table 35

Date Nov. 17, 1977

Site Accademy of Sciences

Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
Li. Time	N	T [ms]	t [ms]	g [μGal]	T.c	g _{corr} [μGal]	NOTE
14 ⁴⁴	814 836	480 832.603	348.8	924 921 892.2	-66.4	929 921 831.3	
55'	883 182	427 691.160	240.6	846.3	-62.5	778.8	
58'	881 049	427 114.113	466.3	932.8	-68.1	864.7	
10 ⁴⁰	824 913	476 806.400	434.6	918.3	-68.2	844.6	
03'	825 304	475 556.022	458.1	901.8	-64.0	832.8	
06'	827 518	476 157.045	424.3	933.6	-69.4	864.2	
08'	822 142	426 696.154	289.4	903.3	-69.2	833.6	
11'	824 192	425 253.822	481.1	922.0	-70.2	851.8	
14'	824 412	475 313.590	400.1	940.2	-70.6	870.1	
17'	822 026	426 627.689	359.4	930.4	-71.0	859.4	
20'	868 853	423 800.121	181.5	914.1	-71.3	842.8	
23'	823 824	425 153.405	219.8	939.2	-71.6	868.1	
26'	823 202	425 120.622	434.1	889.4	-71.9	817.5	
28'	824 263	425 408.913	290.9	894.8	-72.1	822.7	
31'	825 366	425 522.824	420.2	911.9	-72.6	839.5	
34'	824 886	426 294.092	431.0	824.9	-72.5	801.6	
36'	881 541	427 247.158	251.4	901.0	-72.7	828.3	
40'	822 621	426 826.486	286.5	924.1	-72.9	851.2	
42'	824 238	425 402.163	325.2	944.2	-73.0	876.2	

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Table 36

Date Nov. 22, 1977

Site U.S. Naval Observatory

Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
U. Time	N	T [ms]	t [ms]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
11 ⁵⁵	925 172	484 156.584	285.2	479 004 110.5	+58.8	479 004 161.3	
15 ⁰⁰	913 803	486 141.936	454.6	049.3	+57.8	102.1	
10'	924 944	489 096.471	500.2	142.6	+59.0	201.6	
13'	906 752	484 262.715	444.5	128.5	+54.3	182.8	
26'	910 078	485 150.042	412.1	017.0	+60.0	077.0	
35'	920 986	488 048.242	311.5	084.2	+60.0	144.2	
44'	912 138	485 198.228	311.5	048.7	+54.7	102.4	
47'	905 530	483 936.357	486.6	013.2	+59.5	022.2	
50'	906 118	484 093.423	511.0	024.2	+54.1	058.3	
53'	909 022	484 808.356	188.7	005.3	+58.7	064.0	
55'	902 786	483 202.960	292.4	070.3	+58.5	128.8	
54'	906 661	484 238.405	410.5	026.5	+58.0	084.5	
02 ⁰¹	901 910	482 967.842	88.6	028.2	+57.5	085.7	

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Table 37
Date Nov. 22, 1977
Site U.S. Naval Observatory

Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	g _{corr} (μ Gal)	Notes
U. TIME	N	T [μ s]	t [μ s]	g [μ Gal]	T.C.	g _{corr} [μ Gal]	NOTE:
6 ^h 40'	920 346	487 859.269	472.7	979 004 059.6	+47.4	979 004.126.8	
43'	908 660	484 771.830	281.8	073.6	+46.4	120.0	
52'	904 936	483 777.396	218.0	76.4	+40.8	117.2	
55'	905 161	483 837.538	478.8	13.6	+41.6	055.2	
58'	899 476	482 315.774	278.3	26.4	+40.4	66.8	
17 ^h 00'	901 966	482 383.031	445.1	34.8	+39.6	74.4	
03'	913 818	486 145.943	471.7	27.1	+38.2	65.3	
17.57'	908 878	484 830.145	496.7	097.2	+9.0	106.2	
18.00'	903 628	483 427.738	394.1	139.8	+7.2	147.0	
03'	899 241	482 252.911	498.0	162.1	+5.3	167.4	
06'	896 935	481 634.106	408.7	94.7	+3.4	98.1	
08'	898 468	482 045.329	205.7	156.4	+2.2	158.6	
11'	895 078	481 135.105	56.4	49.0	+0.3	49.3	
14'	894 303	480 926.443	425.9	80.2	-1.6	78.6	

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Table 38

Date Nov. 22, 1977

Site U.S. Naval Observatory

Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
U. TIME	N	T [μs]	t [μs]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
18 ^h 52'	892 831	480 530.742	461.2	924 004 157.7	-25.5	924 004 132.2	
54'	891 875	480 300.461	287.3	122.3	-30.0	42.3	
19 ^h 05'	896 376	481 483.979	405.3	158.3	-25.5	124.8	
08'	899 242	482 253.112	445.0	203.9	-35.4	168.5	
11'	904 260	484 931.966	632.5	88.8	-32.2	51.6	
15'	901 110	482 753.810	481.3	103.0	-34.6	63.4	
18'	896 778	481 591.760	116.1	225.0	-41.3	183.7	
21'	896 053	481 397.180	353.4	163.7	-43.0	120.7	
23'	894 377	480 946.741	335.2	191.2	-44.1	147.1	
26'	892 068	480 325.605	457.1	235.1	-46.0	189.3	
30'	864 197	472 762.646	466.6	197.4	-48.0	149.4	
37'	902 288	483 069.128	344.8	132.2	-52.1	85.1	
40'	900 206	482 511.459	327.3	142.0	-53.5	84.5	
43'	905 590	483 952.110	76.6	178.3	-56.9	123.4	
45'	895 354	481 209.431	412.9	138.3	-55.0	82.5	
50'	896 260	481 452.691	219.0	206.1	-58.1	148.0	
55'	898 150	481 960.284	503.6	156.5	-60.5	96.0	
58'	896 365	481 482.134	452.6	186.6	-61.9	124.7	
20 ^h 02'	895 326	481 201.905	432.1	213.3	-63.6	149.7	
06'	890 494	479 901.475	189.9	187.9	-65.2	122.7	

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Table 39

Date Nov. 23, 1977

Site U.S. Naval Observatory

U. Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	g _{corr} (μ Gal)	Notes
U. TIME	N	T [μ s]	t [μ s]	g [μ Gal]	T.C.	g _{corr} [μ Gal]	NOTE
16 ^h 10'	941 865	493 542.862	328.1	979 004 006.8	+56.2	979 004 061.0	
19 ^h 50'	970 015	500 820.920	135.4	129.7	-45.4	134.3	
21 ^h 10'	1053 146	521 892.342	238.7	151.5	-79.7	021.8	
13'	971 190	501 174.326	420.6	251.2	-80.4	170.8	
16'	1052 121	521 650.829	435.3	154.3	-81.2	023.2	
25'	1034 980	517 371.625	228.0	156.8	-82.4	024.4	

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Table 40

Date Nov. 25, 1977

Site U.S. Naval Observatory

U. Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	g _{corr} (μ Gal)	Notes
U. TIME	N	T [μ s]	t [μ s]	g [μ Gal]	T.C.	g _{corr} [μ Gal]	NOTE
14 ^h 52'	1043 109	519 431.441	476.9	979 004 154.6	- .3	979 004 154.3	
18 ^h 37'	1032 447	516 750.784	408.3	047.9	+26.3	074.2	
45'	1038 375	518 219.587	326.0	49.4	+22.7	72.1	
50'	1015 321	512 434.666	483.0	59.8	+20.2	80.0	
58'	992 193	506 566.616	459.3	121.2	+16.2	137.4	
19 ^h 06'	932 462	492 079.980	267.9	43.5	+11.9	105.4	
40'	1033 768	517 068.662	311.8	108.6	-7.7	100.9	
43'	995 244	507 342.897	492.3	100.0	-9.5	90.5	
53'	1036 420	517 731.500	374.5	167.5	-15.6	151.9	

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Table 41

Date Nov. 25, 1977

Site U.S. Naval Observatory

U. Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Note
U. Time	N	T [μs]	t [μs]	g [μGal]	T.C.	g _{corr} [μGal]	NOT.
20 ^h 50'	1024345	515 961.463	445.7	979 004 155.3	-49.7	979 004 105.6	
59'	1033 384	516 972.668	411.1	185.4	-54.7	130.7	
21 ^h 46'	1050778	521 305.256	195.0	150.6	-75.2	075.4	
22 ^h 25'	1059646	523 500.582	469.7	205.3	-83.6	121.7	
30'	1043 203	519 423.008	484.1	199.6	-84.3	115.2	
52'	1068 617	525 711.864	459.1	220.1	-84.1	135.9	
54'	1030 843	516 336.619	346.3	219.6	-84.0	135.4	
58'	1065 673	524 987.219	480.3	244.9	-83.6	161.3	
23 ^h 14'	1063 182	524 373.175	307.0	166.3	-81.0	085.3	
42'	1075 401	527 378.226	495.4	174.4	-72.3	102.1	
46'	1073 389	526 884.427	508.0	143.2	-70.6	72.8	
50'	1063 948	524 562.124	449.0	219.4	-68.5	150.9	
53'	1055 766	522 541.244	456.7	217.2	-67.1	150.1	
56'	1049 226	520 920.152	245.1	146.0	-65.6	080.4	
00 ^h 02'	1043 342	519 470.007	435.1	210.8	-62.6	148.2	
04'	1043 978	519 615.912	477.3	159.7	-61.4	098.3	
09'	1067 531	500 229.236	277.6	258.7	-58.5	200.2	
11'	1055 191	522 398.767	133.4	141.2	-57.4	083.8	

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MIAMI

Table 42
Date Nov. 26, 1977
Site U.S. Naval Observatory

U. Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
U. Time	N	T [μs]	t [μs]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
00 ^h 30'	1069 618	525 158.086	507.8	979 004 178.0	-39.8	979 004 138.2	
3 ^h 00'	1055 391	522 448.451	425.0	054.8	-92.4	147.2	
04'	1050 493	521 234.658	324.5	006.2	+96.0	102.2	
07'	1037 426	517 982.672	264.8	042.4	+98.6	141.5	
15 ^h 18'	1005190	509 871.460	211.5	147.3	-5.5	141.8	
26'	995 098	507 305.682	443.5	106.5	-0.6	105.9	
29'	1048 046	520 634.606	300.6	101.2	+1.3	102.5	
55'	1014 171	512 144.368	505.8	104.1	+14.3	118.4	
58'	1014 774	512 281.279	272.8	98.3	+15.5	113.8	
16 ^h 04'	988 013	505 496.267	177.6	109.8	+18.2	128.0	

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BOSTON A

Table 43

Date Dec. 2, 1977

Site Hanscom AFB
Bedford

J. Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	g _{corr} (μ Gal)	Note
U. Time	N	T' [μ s]	t' [μ s]	g [μ Gal]	T.C.	g _{corr} [μ Gal]	NOT.
14 ^h 45'	807 736	456 737 .612	322.7	980 378 502.3	-62.3	980 378 440.0	
The cutputt system has been changed. Therefore the average number of fringes is changed. and <u>Dec 3rd 1977</u>							

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BOSTON A

Table 44
Date Dec. 3, 1977
Site Hanscom AFB
Bedford

Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
U. Time	N	T [ms]	t [ms]	g [μGal]	T.C.	g _{corr} [μGal]	NOTES
19 ^h 46'	584 612	388 588.586	167.4	980 378 588.3	-46.4	980 378 541.4	
46'	488 602	355 231.853	314.7	525.7	-45.8	529.9	
52'	522 346	384 464.026	285.7	545.5	-61.5	503.0	
10 ^h 06'	554 872	380 256.349	351.2	521.7	-39.8	481.4	
12'	558 543	374 804.635	182.4	521.0	-38.0	533.0	
14'	564 139	381 202.242	274.0	494.2	-37.4	461.8	
24'	558 485	374 784.920	128.2	533.5	-34.3	699.2	
19'	521 424	384 176.086	346.3	538.3	-32.8	505.5	
31'	465 296	348 654.542	434.1	522.7	-32.2	490.5	
42'	550 595	377 092.888	454.0	602.3	-28.8	573.5	
45'	552 495	377 742.842	324.2	518.3	-27.9	580.4	
47'	541 825	374 094.752	316.5	534.9	-27.3	507.6	
49'	548 345	376 338.522	212.7	488.0	-26.7	461.3	
54'	431 041	333 669.208	481.2	691.5	-25.2	666.3 Bad traj.	
56'	543 232	376 584.580	280.4	513.6	-24.6	489.0	
20 ^h 00'	551 624	377 463.802	387.6	500.2	-23.4	476.8	
05'	554 324	378 384.620	349.5	490.6	-21.4	468.2	
09'	564 436	381 922.204	398.5	517.2	-20.8	526.4	

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BOSTON A

Table 45
Date Dec. 3, 1977
Site Hanscom AFB
Bedford

U. Time	N	T (μ s)	t (μ s)	g (μ Gal)	T.C. (μ Gal)	g _{corr} (μ Gal)	Notes
U. Time	N	T [μ s]	t [μ s]	g [μ Gal]	T.C.	g _{corr} [μ Gal]	NOTES
27' 10"	468 182	347 277.716	420.3	980 378 574.3	-4.8	980 378 569.5	*
16'	599 345	393 444.096	278.0	528.0	-3.5	524.5	
18'	609 625	396 292.459	272.6	514.7	-3.1	516.6	
22'	605 681	395 506.245	38.3	544.1	-2.3	541.8	
25'	546 964	392 650.352	392.7	506.2	-116	504.6	
27'	601 023	393 999.562	376.7	480.1	-1.2	488.3	
30'	592 867	391 300.742	268.2	473.8	-0.6	473.2	
32'	592 140	391 060.232	243.1	498.2	-0.2	498.0	
35'	597 946	392 973.395	408.3	472.0	+0.3	472.3	
38'	596 126	392 374.944	477.1	552.8	+0.8	553.6	
40'	541 600	390 882.449	396.1	514.6	+1.2	510.8	
45'	585 765	388 949.924	147.0	490.4	+2.1	492.5	
49'	603 389	394 757.994	477.1	495.9	+2.7	498.6	
52'	590 916	390 656.347	240.2	486.9	+3.2	490.1	
53'	582 143	387 245.741	467.7	440.2	+4.2	444.4	
23' 01"	593 424	391 484.685	458.2	494.4	+4.7	499.1	
04'	600 207	393 715.724	464.1	482.8	+5.0	487.8	
06'	591 726	390 923.443	113.2	494.0	+5.3	499.3	
10'	604 881	395 245.522	191.3	459.3	+5.8	465.1	
15'	610 535	397 088.523	302.8	508.2	+6.5	514.7	
17'	600 820	393 916.551	272.3	461.9	+6.7	468.6	

* The delay time at the start has been changed at this point

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BOSTON A

Table 46

Date Dec. 3, 1977

Site Hanscom AFB
Bedford

U. Time	N	T (ms)	t (ms)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)	Notes
U. TIME	N	T [ms]	t [ms]	g [μGal]	T.C.	g _{corr} [μGal]	NOTE
23 ^h 14'	539 765	373 365.714	318.0	980 378 496.6	+6.9	980 378 503.3	
21'	612 021	397 587.789	381.4	464.3	+7.1	421.4	
23'	591 527	390 858.487	489.2	520.7	+7.4	528.1	
25'	592 246	391 112.235	237.6	513.2	+7.6	520.8	
27'	602 845	394 580.014	485.5	514.0	+7.8	521.8	
24 ^h 05'	605 369	395 404.843	138.2	980 378 513.6	+10.3	980 378 523.9	
07'	525 705	368 420.756	186.6	488.0	+10.4	498.4	
10'	553 998	378 256.184	119.3	507.8	+10.5	518.3	
13'	617 677	399 404.232	131.0	522.2	+10.5	532.7	
15'	610 761	397 162.192	420.7	420.9	+10.6	431.5	
17'	566 383	382 462.658	252.5	471.4	+10.6	502.0	
19'	584 540	388 542.159	87.9	540.9	+10.6	551.5	
22'	582 186	387 760.094	464.5	482.6	+10.7	493.3	
24'	598 085	393 019.087	439.7	546.8	+10.7	557.5	
26'	604 477	398 764.217	101.3	487.4	+10.7	498.1	
28'	538 569	372 152.028	488.5	465.7	+10.7	476.4	
30'	584 333	390 134.524	408.5	473.6	+10.7	484.3	
32'	596 503	392 498.797	258.7	527.0	+10.7	537.7	
35'	528 520	346 805.368	257.7	466.0	+10.6	476.6	
37'	591 391	390 813.533	464.7	469.5	+10.5	480.0	

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BOSTON A

Table 47

Date Dec. 3, 1977

Site Hanscom AFB
Bedford

U. Time	N	T (μs)	t (μs)	g (μGal)	T.C. (μGal)	g _{corr} (μGal)
U. TIME	N	T [μs]	t [μs]	g [μGal]	T.C.	g _{corr} [μGal]
24 ^h 40'	566 260	382 414.586	367.0	480 378 518.6	+10.5	480 378 524.1
42'	589 678	390 247.007	373.0	520.4	+10.5	530.9
45'	788 432	389 834.392	242.9	495.0	+10.4	505.4
48'	600 585	393 839.481	243.1	495.6	+10.3	505.9
50'	532 595	370 877.814	494.7	485.9	+10.3	496.2
54'	583 650	388 247.135	244.3	443.5	+10.2	503.7
57'	592 861	391 298.818	344.3	513.5	+10.1	523.6