Sci. Rep. Kanazawa Univ.,
Vol.20, No.2 pp.101-123
December 1975

Gravity Survey in the Noto Peninsula, Japan(1) —Method and Data Presentation

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(Received October 10, 1975)

Abstract Gravity measurement were carried out at about 200 stations in northeastern part of the Noto Peninsula. The obtained free-air and Bouguer gravity anomaly patterns of the surveyed area are shown in Figures 2 and 3. Bouguer anomaly pattern of the area is characterized by several regions where Bouguer anomaly is locally low and shows half circular pattern. The centers of these regions are situated near Ukai, Shirosaki, and Wajima. Bouguer anomalies at these regions are lower by 15-20mgals than those of the surrounding areas and their radii are about 3 kilometers. Method of survey, data processing, and evaluation of errors of the gravity anomalies are discussed in detail.

Introduction

Free-air and Bouguer gravity anomalies at about 30 stations in the Noto Peninsula have been reported by the Geographical Survey Institute of Japan (1964). In the present study, we carried out gravity measurements at about 200 stations over an area of 40 x 20 kilometers in the northeastern part of the Noto peninsula (i.e. east of Wajima--Anamizu line, Figure 1), and obtained detailed free-air and Bouguer gravity anomaly patterns of the area. In this report, we present the method of survey, data processing, and the result of the gravity measurements. The evaluation of the precision of the gravity anomalies is also discussed. Discussions on the estimation of the underground structure of the area, and on the characteristic properties of one of the gravimeters used in the present survey (LaCoste and Romberg Model G, No.348 of the Kanazawa University), will be given in other reports.

Method of gravity survey

The gravity survey was carried out at three periods, each using different set of LaCoste and Romberg Geodetic Gravimeter, Model G. Dates of the periods, and numbers

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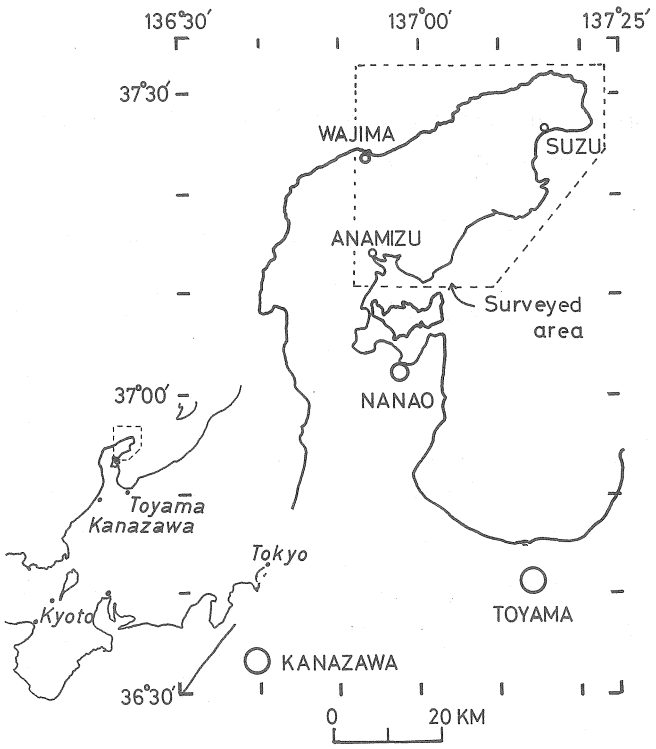

Fig. 1 Index map of the surveyed area.

and owners of the gravimeter sets are as follows:

First period: 21–22 Oct., 1972, No.34
Faculty of Science, Hokkaido University

Second period: 29–31 May, 1973, No.308
Mining College, Akita University

Third period: 7–8 June, 1974, No.348
Faculty of Science, Kanazawa University

1. Reference value of gravity

$g_0 = 979{,}871.746 \pm 0.02$ mgal

latitude: 36°33.9′N, longitude: 136°39.68′E.

(Room No.164, Faculty of Science, Kanazawa University)

This reference value of gravity is based on the following bench mark for first-order geodetic gravity survey of the Geographical Survey Institute of Japan.

$g_0 = 979{,}871.65 \pm 0.02$ mgal

latitude: 36°33.9′N, longitude: 136°39.7′E.

(Room No.130, Faculty of Science, Kanazawa University)

2. Conversion table for the gravimeter

Conversion from the read value of the gravimeter to the gravity value was done using the conversion tables prepared by the LaCoste and Romberg Company.

The reliability of the tables has been checked by the measurements at bench marks for first-order geodetic gravity survey at Kanto district.

3. Latitude and Longitude of the station

Latitude and longitude of the station were read in the topographic map (scale 1:25,000) published by the Geographical Survey Institute of Japan. The precision of the values are within a second.

4. Height of the station

Methods of height determination of the stations and their precision are as follows (the heading numbers are referred to "*" in Table 1):

1.	lst and 2nd order bench marks for levelling survey	1 centimeter
2.	derived from bench mark by levelling apparatus	1 centimeter
3.	triangulation points	1 centimeter
4.	road standard marks	1 centimeter
5.	about bench mark in the topographic map (where bench mark for the 1st or 2nd order levelling survey is missing).	50 centimeters
6.	spot heights	50 centimeters
7.	hand-levelling from the shore line.	100 centimeters
8.	barometer (two barometer system).	100 centimeters
9.	barometer (one barometer system). The variation of atmospheric pressure was corrected by the interporation of the barometer measurements at bench marks near around.	500 centimeters
0.	contour line in the topographic map (1:25,000).	500 centimeters

Corrections for the measured value and the calculation of gravity anomalies

Following corrections were made on the measured gravity value "GOBS" to obtain free-air and Bouguer gravity anomalies. The calculations were made by using the FACOM 230-35 of the Data Processing Center of Kanazawa University and the YHP2100A in the Faculty of Science, Kanazawa University, and the results were output in both table and X-Y plotter illustrations (Table 1, Figures 2 and 3).

(i) standard gravity (γ_o)

$$\gamma_o = 978.049\ (1 + 0.0052884\sin^2\varphi - 0.0000059\sin^2 2\varphi)$$

where φ is latitude (after International Gravity Formula, 1930).

(ii) earth tide correction (ε)

Calculated after the method of Longman (1959). The value of the earth tide

constant (f-value) was supposed to be 1.2.

(iii) free-air correction (δg_o)

$\delta g_o = 0.3068$ h

where h represents height of station in meters added by the height of the gravimeter (ca. 0.23 meters).

(iv) Bouguer correction ($\delta g_o''$)

$\delta g_o'' = 2\pi G\rho h = 0.041929\ \rho h$

In the surveyed area, Tertiary deposits, mainly composed of lavas and volcanic and sedimentary clastic rocks, occupy the upper several hundred meters of the geological section, and the average rock density above sea level (ρ) was taken as 2.5.

Then, the gravity, and gravity anomalies are defined as follows (Italic numbers are referred to in Table 1).

(i) observed gravity OBSERVED=GOBS+ε

(ii) gravity anomaly OB. -ST. =OBSERVED-γ_o

(iii) free-air anomaly FREE-AIR=OBSERVED-γ_o+δg_o

(iv) Bouguer anomaly BOUGUER=OBSERVED-γ_o+δg_o+$\delta g_o''$

The observed gravity includes no drift correction of the gravimeters (see later chapter). The terrain correction was not made, because the surveyed area is in little undulation (average height, about 200 meters above sea level, maximum height, 567 meters above sea level at Takanosuyama).

Measurement of density

Densities of Tertiary clastic rock samples of pumice tuffs, welded tuff, mudstones, and sandstones in the surveyed area were measured (Table 2). The average density of these clastic rocks are about 1.5. On the other hand, densities of andesite and basalt lavas in the area have been reported by Kono *et al.* (1969), which show the average density of lavas to be about 2.62.

The precision of the gravity anomalies

The gravity anomalies obtained in the present work include errors due to (i) reading of the gravimeters, (ii) drift of the gravimeters, (iii) evaluation of height of the stations, (iv) determination of latitude of the stations, (v) estimation of average rock density, and (vi) evaluation of terrain correction.

(i) Errors due to reading of the gravimeters

Nominal error in the reading of the Lacoste and Romberg Model G gravimeter is 0.01 mgal at the best conditions, while it is within 0.04 mgal in the outdoor conditions. The error in the present study is expected to be about 0.02 mgal in respect of the

Table 2 List of density of rocks collected from the surveyed area.

Rock Type	Wet density (gr/cm^3)	Location
Ash flow or punice tuff	1.40	Yanagida
	1.84	〃
	1.24	Hiratai
	1.41	〃
	1.28	Kanayama
mean	1.4	
Diatomaceous mudstone	1.11	Noriki
	1.29	〃
	1.16	Tsubonokuchi
	1.32	〃
mean	1.2	
coarse sandstone	1.50	Hiratai
	1.70	〃
mean	1.6	
Welded tuff	2.37	Yanagida
Andesitic lava*	2.62	Noto Peninsula (13 Locations)

*from Kono *et al.* (1969)

ground tremor and the personal equation.

(ii) Drifts of the gravimeters

Drifts of the gravimeters were checked by repeated measurments at the same stations during survey periods.

The drift rate of the gravimeter of the LaCoste and Romberg, Model G type is said formaly as low as 0.5 mgal per month, though it is observed to be much larger during the initial period of operation of the gravimeter. The gravimeter G348, after operation for three months, and the G308, after operation for five months showed drift rates of 4.0 mgal, and 1.34 mgal per month during the survey periods, respectively. On the other hand, the gravimeter G34, which has been operated for ten years, drifted about 0.5 mgal per month. According to these drift rates, errors due to the drifts of the gravimeters in the present study may be within 0.02 mgal for the first survey period (gravimeter No.34), 0.05 mgal for the second period (No.308), and 0.1 mgal for the third period (No.348).

(iii) Height measurement of the stations

Precision of height measurements by various methods have already been mentioned in chapter 2. Assuming the average rock density to 2.5, errors of gravity anomalies due to those of height measurement are as follows.

error of hight (meter)	free-air anomaly (mgal)	Bouguer anomaly (mgal)
5	1.543	1.019
1	0.309	0.204

In the present study, maximum error of height measurement is 5 meters, which results about 1 mgal error of Bouguer anomaly.

(iv) Latitude estimation

Errors of standard gravity due to latitude measurement near 36°N latitude are shown in the followings:

Latitude difference (sec)	standard gravity difference (mgal)	real distance (meters)	distance in map (1:25,000) (centimeters)
1	0.025	30.9	0.1
0.5	0.013	15.4	0.05

In the present study, the accuracy of latitude determination is about 0.5 sec., which in turn is equivalent to error of standard gravity of 0.013 mgal.

(v) Estimation of average rock density

Error in the estimation of average rock density ($\Delta\rho$) results in the error of the Bouguer correction of the amount of 0.0419 $\Delta\rho$h mgal, where h is in meter. Examples of the amount of Bouguer correction errors are as follows (mgal unit):

	Height (meters)				
$\Delta\rho$	1	10	100	200	500
0.05	.002	.021	.210	.419	1.048
0.1	.004	.042	.419	.839	2.096
0.15	.006	.063	.629	1.258	3.145
0.2	.008	.084	.839	1.677	4.193
0.3	.013	.126	1.258	2.516	6.289

It was pointed out in the foregoing chapter that we supposed the average rock density between stations and geoid levels to be 2.5, which is smaller by 0.15 than usually used density of 2.65(*e.g.* gravity data published in the Bulletin of the Geographical Survey Institute of Japan). This amount of difference of average rock density corresponds to the Bouguer correction difference of about 3 mgal at maximum (when the

height of station is about 500 meters) and of about 0.006 mgal at minimum in the present survey.

(vi) Terrain correction

We omitted the terrain correction for the present data. The correction term generally reaches to about 10 mgals in high mountaneous regions. The surveyed area is topographically moderate as mentioned in previous section. The terrain correction term will be within 1 mgal in general and 5 mgals at maximum (near Takanosuyama).

(vii) Error limit of the data

As a whole, error of the Bouguer anomaly in this report is given by the summation of the above errors.

		worst condition		best condition
(i)	0.04	(high ground noise FRC=1)	0.02	(calm FRC=0)
(ii)	0.1	(G348)	0.01	(G34)
(iii)	1.0	(Δh=5meters)	0.002	(Δh=1 centimeter)
(iv)	0.025	($\Delta\varphi$=1.0sec)	0.013	($\Delta\rho$=0.5sec)
(v)	3	(h=500meters, $\Delta\rho$=0.15)	0.004	(h=1 meter, $\Delta\rho$=0.1)
(vi)	5	(near Takanosuyama)	0.5	
sum.	9.2	mgal	0.55	mgal

Result

Results of the calculation are shown in Table 1. The names of the stations in the table, "LOCATION", are abbreviated ones, and their Japanese names were listed in the Appendix. The column "*" represents the method of height determination. The column "FRC" represents the fluctuation of gravimeter during measurement, which is caused by ground tremor. Amount of 1.0 of the FRC means about 0.01 mgal of fluctuation. The column "DATE" represents the Japanese Standard Time (JST).

Bouguer anomaly pattern of northeastern part of the Noto Peninsula

The free-air anomaly and the Bouguer anomaly of the surveyed area are shown in Figure 2, and Figure 3, respectively. The characteristics of the Bouguer anomaly pattern of northeastern part of the Noto Peninsula can be summarized as follows.

(i) Bouguer anomaly of the area is positive and ranges from 38 to 65 mgal. In most of the area the pattern is flat and the anomaly is within the range of 55 to 62 mgal.

(ii) There are several regions where Bouguer anomaly is locally low. Three of such regions are located near the coast, and their contour lines of Bouguer anomaly display

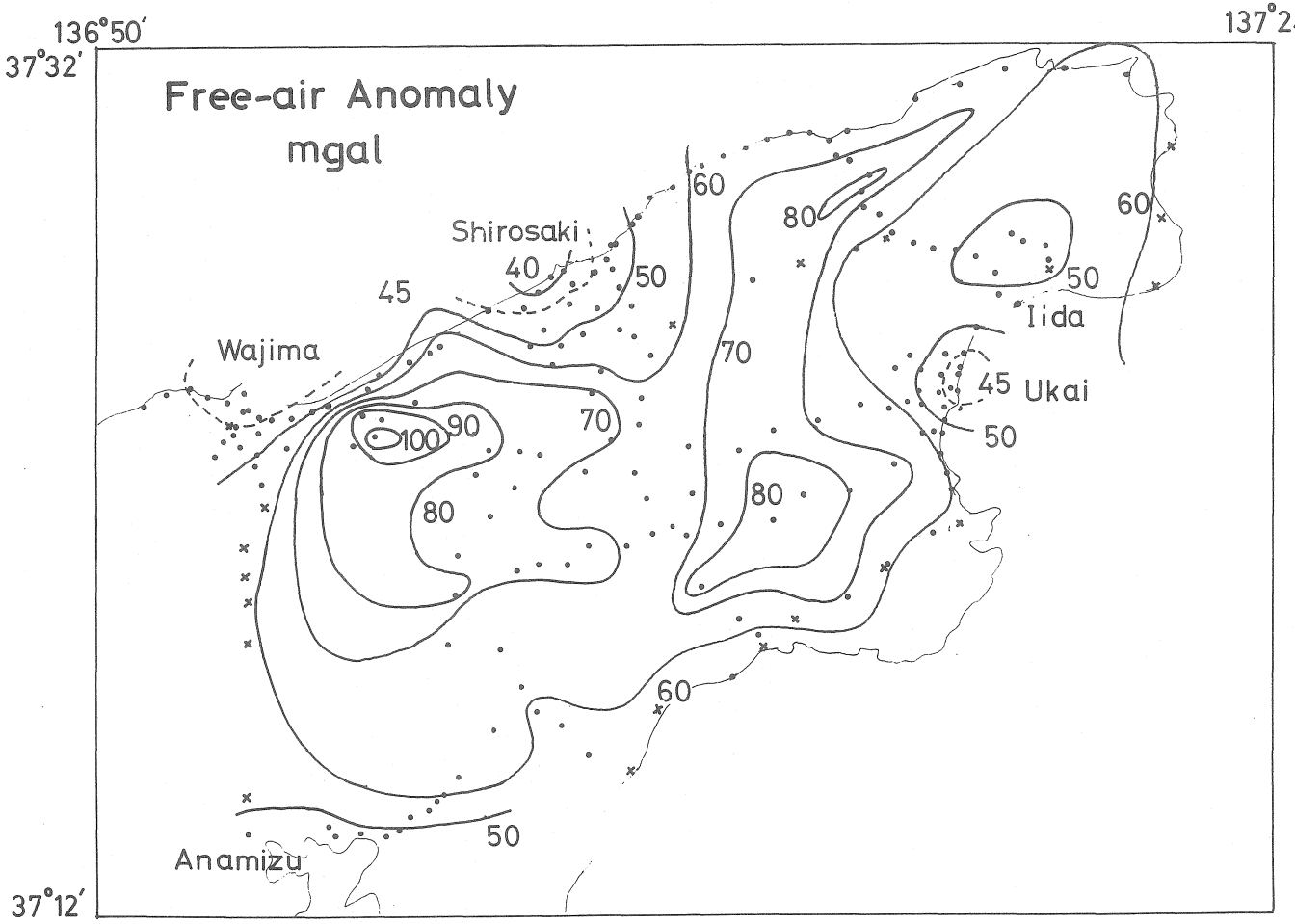

Fig. 2 Free-air gravity anomaly. Dots represent gravity stations in the present survey. Crosses represent gravity stations of Geographical Survey Institute of Japan, which were reffered to draw contour lines.

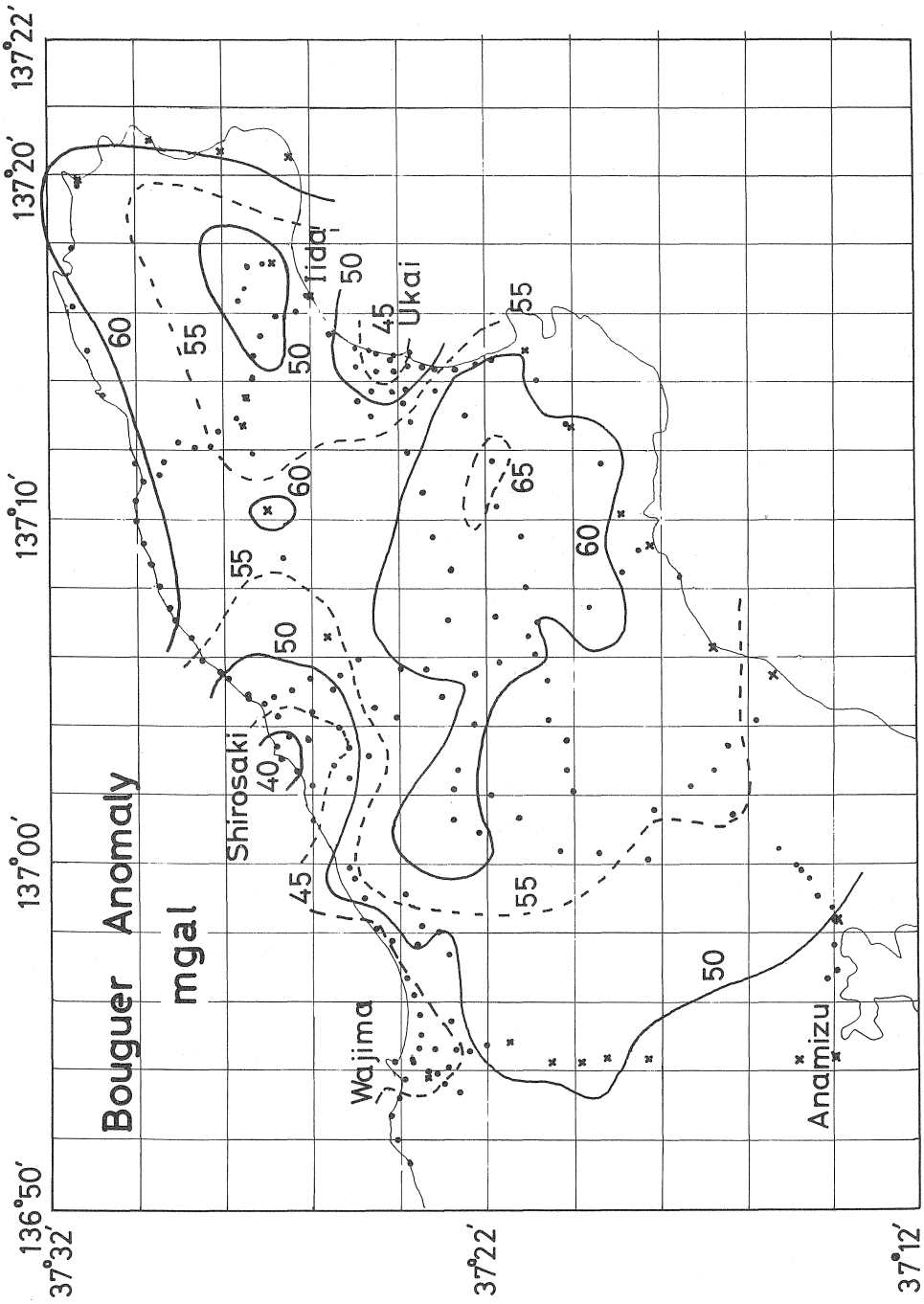

Fig. 3 Bouguer gravity anomaly. Symbols in the figure are the same in Fig.2.

half-circular form. They are near (A) Ukai (B) Shirosaki, and (C) Waijma, respectively. Near Iida, there is also region of weak low Bouguer anomaly, showing circular contour lines. The Bouguer anomalies at these regions are lower by about 15-20 mgal than the average Bouguer anomaly of the area, suggesting the presence of fairly large mass-deficiencies at these regions.

Further discussion on the estimation of the underground structure and on its geological interpretation will be given in the following report.

Acknowledgement

Professor I. Yokoyama of the Hokkaido University kindly lent us the gravimeter (G34) and supervised the gravity survey of the first period. He also allowed us to see his computer program of earth tide calculation. Professors K. Noritomi and H. Kano of the Mining College of Akita University were kind enough to accommodate us with gravimeter (G308) for the second survey. Mr. M. Suzuki of the Mining College of Akita University controlled the gravimeter G308 during the second survey. Professor I. Nakagawa and Dr. M. Satomura of the University of Kyoto informed us about gravity measurement and calculation of earth-tide. Discussion on the geology of the Noto Peninsula by Professors Y. Kaseno and M. Yamasaki of the Kanazawa University were much help for the survey. Professor M. Yamasaki kindly read the manuscript. Miss H. Gannyo of the Data Processing Center of Kanazawa University, helped us in the computer programming and data processing. We are much obliged, and would like to express our sincere thanks to these persons.

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LONGMAN, I. M., 1959, Formulas for computing the tidal accelerations due to the moon and the sun. Jour. Geophys. Res. Vol. 64, 2351-2355.

Table 1 List of gravity data.

LOCATION = Abriviates names. Full Japanese names are shown in Appendix.
OBSERVED = Observed value+(EARTH TIDE correction).
STANDARD = International Standard Formula, 1930.
OB.−ST. = OBSERVED−STANDARD.
FREE-AIR = (OB.−ST.)+(FREE−AIR correction).
BOUGUER = FREE-AIR+(BOUGUER correction).
* = Method of Height Determination.

1 BENCH MARK
2 DERIVED FROM BENCH MARK
3 TRIANGULATION MARK
4 ROAD STANDARD MARK
5 NEARBY 1 TO 4
6 SPOT HEIGHT
7 HANDY LEVELING
8 TWO BAROMETER SYSTEM
9 ONE BAROMETER SYSTEM
0 READ FROM CONTOURS OF 1:25000 MAP

FRC =(Fractuation of Readings of Gravimeter)x10.

SQN	LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y M D H M	GRAV-IMETR	*	FRC
					979,000.	979,000.										
1	1 TODAISIN	35.7112	139.7625	23.00	801.942	806.296	-4.354	2.743	0.332	7.098	-2.411	-0.054	72.10.17.13. 3.	G031	0	0
2	2 RGKB164R	36.5650	136.6613	35.00	871.746	879.613	-7.867	2.934	-0.734	10.801	-3.669	-0.097	72.10.20.15.36.	G031	9	0
3	3 RGKB20KJ	36.5650	136.6613	52.50	866.391	879.613	-13.222	2.980	-2.523	16.201	-5.503	-0.098	72.10.20.15.43.	G031	9	0
4	4 RGKB127R	36.5653	136.6615	35.00	871.652	879.642	-7.989	2.812	-0.857	10.801	-3.669	0.006	72.10.20.12.25.	G031	9	0

SQN	LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y M D H M	GRAV- IMETR	* FRC
1	1001 ANMZ9287	37.2323	136.9068	3.40	979,000. 985.117	979,000. 937.391	47.727	48.776	48.419	1.049	-0.356	0.047	72.10.21.10.21.	G031	1 0
2	1002 HUDOJIBM	37.3345	137.2128	15.60	980,000. 3.365	979,000. 946.270	57.096	61.910	60.275	4.814	-1.635	0.036	72.10.21.11.32.	G031	6 0
3	1003 KINPOJI	37.3997	137.2392	3.00	979,000. 996.769	979,000. 951.938	44.831	45.757	45.442	0.926	-0.314	-0.031	72.10.21.13.28.	G031	6 0
4	1004 KINPOZAN	37.3943	137.2300	5.00	980,000. 1.607	979,000. 951.475	50.132	51.675	51.150	1.543	-0.524	-0.039	72.10.21.13.40.	G031	6 0
5	1005 SAIHOJI	37.3942	137.2147	23.50	6.650	951.460	55.189	62.441	59.978	7.252	-2.463	-0.049	72.10.21.13.55.	G031	9 0
6	1006 SUGASAWA	37.3955	137.1993	57.00	979,000. 999.844	979,000. 951.576	48.268	65.858	59.884	17.590	-5.975	-0.065	72.10.21.14.20.	G031	9 0
7	1007 KOYA-UTU	37.3892	137.1800	80.50	995.483	951.025	44.458	69.300	60.862	24.842	-8.438	-0.070	72.10.21.14.28.	G031	9 0
8	1008 DORONOKI	37.3862	137.1582	123.00	987.054	950.763	36.291	74.248	61.355	37.958	-12.893	-0.077	72.10.21.14.40.	G031	6 0
9	1009 KIRIHATA	37.3787	137.1417	128.00	988.203	950.112	38.091	77.592	64.175	39.501	-13.417	-0.092	72.10.21.15.13.	G031	6 0
10	1010 KOMAO	37.3803	137.1183	23.00	980,000. 9.031	979,000. 950.256	58.775	65.872	63.461	7.098	-2.411	-0.101	72.10.21.15.40.	G031	9 0
11	1011 TOKUNARI	37.3987	137.0938	19.00	7.770	951.852	55.918	61.781	59.790	5.863	-1.992	-0.104	72.10.21.15.55.	G031	6 0
12	1012 HUJIMIBA	37.4427	137.1483	146.50	979,000. 981.267	979,000. 955.681	25.586	70.796	55.439	45.210	-15.356	-0.104	72.10.21.16.35.	G031	9 0
13	1013 NAKA	37.4550	137.1988	56.50	998.401	956.754	41.647	59.082	53.160	17.436	-5.922	-0.094	72.10.21.17.10.	G031	9 0
14	1014 KUNIKANE	37.4573	137.2270	24.00	980,000. 3.370	979,000. 956.957	46.412	53.819	51.303	7.406	-2.516	-0.085	72.10.21.17.30.	G031	6 0
15	1015 MITUKEJI	37.3943	137.2483	0.70	979,000. 996.065	979,000. 951.475	44.590	44.806	44.732	0.216	-0.073	-0.070	72.10.21.17.55.	G031	7 0
16	1016 AZUMABAS	37.4335	137.2752	0.00	980,000. 6.990	979,000. 954.883	52.108	52.108	52.108	0.000	0.000	0.011	72.10.22. 9.52.	G031	7 0
17	1017 BANSYO	37.4253	137.2567	1.70	4.105	954.172	49.932	50.457	50.279	0.525	-0.178	0.016	72.10.22.10. 5.	G031	7 0
18	1018 TAKENAKA	37.4150	137.2502	0.50	979,000. 998.380	979,000. 953.273	45.107	45.261	45.209	0.154	-0.052	0.020	72.10.22.10.20.	G031	7 0
19	1019 HANNYAGA	37.4073	137.2475	0.00	996.263	952.605	43.658	43.658	43.658	0.000	0.000	0.024	72.10.22.10.35.	G031	7 0
20	1020 UKAIGANP	37.4000	137.2468	1.00	995.745	951.968	43.777	44.086	43.981	0.309	-0.105	0.026	72.10.22.10.49.	G031	7 0

SQN	LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y M D H M	GRAV-IMETR	* FRC
21	1021 MITUKEJI	37.3943	137.2427	4.80	996.661	951.475	45.186	46.667	46.164	1.481	-0.503	0.027	72.10.22.11. 5.	G031	5 0
					980,000.	979,000.									
22	1022 MINAMIKU	37.3838	137.2402	0.00	4.729	950.561	54.168	54.168	54.168	0.000	0.000	0.026	72.10.22.11.25.	G031	7 0
23	1023 USIMA-BM	37.3772	137.2393	4.20	8.925	949.980	58.945	60.241	59.801	1.296	-0.440	0.024	72.10.22.11.40.	G031	1 0
24	1024 KOIJI-BM	37.3692	137.2422	2.70	8.456	949.285	59.171	60.004	59.721	0.833	-0.283	0.022	72.10.22.11.50.	G031	1 0
25	1025 KOIJI	37.3633	137.2450	9.20	6.687	948.778	57.909	60.748	59.784	2.839	-0.964	-0.012	72.10.22.13.10.	G031	5 0
					979,000.	979,000.									
26	1026 NAKANO	37.4062	137.2393	2.00	996.787	952.504	44.283	44.900	44.690	0.617	-0.210	-0.024	72.10.22.13.30.	G031	6 0
27	1027 SIMOTORI	37.4133	137.2240	64.00	990.481	953.128	37.353	57.103	50.394	19.750	-6.709	-0.040	72.10.22.13.55.	G031	6 0
28	1028 TAKAI	37.4087	137.2240	64.00	990.097	952.722	37.375	57.125	50.417	19.750	-6.709	-0.049	72.10.22.14.10.	G031	6 0
29	1029 TAKAI	37.4080	137.2312	6.50	999.167	952.664	46.503	48.509	47.828	2.006	-0.681	-0.056	72.10.22.14.21.	G031	9 0
30	1030 ZUINEN	37.4148	137.2417	8.00	998.181	953.258	44.922	47.391	46.553	2.469	-0.839	-0.065	72.10.22.14.35.	G031	6 0
					980,000.	979,000.									
31	1031 GO	37.3957	137.2233	11.50	3.215	951.591	51.624	55.173	53.967	3.549	-1.205	-0.074	72.10.22.14.50.	G031	9 0
32	1032 KUROMARU	37.3887	137.2413	1.50	0.532	950.981	49.551	50.013	49.856	0.463	-0.157	-0.085	72.10.22.15.10.	G031	7 0
33	1033 MINAMIKU	37.3847	137.2295	33.00	1.381	950.634	50.748	60.932	57.472	10.184	-3.459	-0.096	72.10.22.15.35.	G031	6 0
34	1034 HUDOJIBM	37.3345	137.2128	15.60	3.388	946.270	57.118	61.932	60.297	4.814	-1.635	-0.109	72.10.22.16.55.	G031	6 0

SQN	LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y M D H M	GRAV-IMETR	* FRC
					979,000.	979,000.									
1	2001 RGKB164R	36.5650	136.6613	35.00	871.746	879.613	-7.867	2.934	-0.735	10.801	-3.669	0.099	73. 5.29. 7.35.	G308	9 0
2	2002 ANMZ9287	37.2323	136.9068	3.40	985.165	937.391	47.774	48.823	48.467	1.049	-0.356	0.130	73. 5.29.10.34.	G308	1 0
3	2003 SIMOSOYA	37.2450	136.9972	74.80	975.417	938.491	36.926	60.009	52.168	23.083	-7.841	0.116	73. 5.29.11. 4.	G308	9 0
4	2004 HONKISIM	37.2713	137.0237	78.00	979.972	940.779	39.193	63.263	55.087	24.071	-8.176	0.106	73. 5.29.11.20.	G308	5 0
5	2005 TANIYA	37.2617	137.0693	11.00	991.516	939.939	51.577	54.972	53.819	3.395	-1.153	0.099	73. 5.29.11.32.	G308	5 0

SQN		LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y	M	D	H	M	GRAV-IMETR	* FRC	
6	2006	USITU	37.3072	137.1517	4.00	980.000. 1.967	979.000. 943.894	58.073	59.307	58.888	1.234	-0.419	0.038	73.	5.	29.	12.	50.	G308	6	0
7	2007	MITIDA	37.3133	137.1410	43.30	979.000. 995.268	979.000. 944.429	50.838	64.201	59.662	13.362	-4.539	0.028	73.	5.	29.	13.	2.	G308	9	0
8	2008	TATUGATA	37.3258	137.1242	180.00	972.552	945.516	27.036	82.584	63.716	55.548	-18.868	0.001	73.	5.	29.	13.	35.	G308	6	0
9	2009	WAZUMIUE	37.3455	137.1172	69.00	992.699	947.226	45.473	66.766	59.533	21.293	-7.233	-0.014	73.	5.	29.	13.	55.	G308	6	0
10	2010	WAZUMISI	37.3493	137.1105	65.00	993.785	947.559	46.225	66.284	59.471	20.059	-6.813	-0.022	73.	5.	29.	14.	6.	G308	6	0
11	2011	TENSAKA	37.3468	137.1013	65.30	994.953	947.343	47.610	67.762	60.917	20.152	-6.845	-0.031	73.	5.	29.	14.	20.	G308	6	0
12	2012	GOROSAEM	37.3420	137.0892	81.00	989.795	946.922	42.872	67.869	59.378	24.997	-8.491	-0.041	73.	5.	29.	14.	35.	G308	6	0
13	2013	KAMIWAZU	37.3418	137.0692	141.00	976.374	946.908	29.466	72.978	58.198	43.513	-14.780	-0.052	73.	5.	29.	14.	55.	G308	6	0
14	2014	HIRADO	37.3352	137.0600	147.00	971.942	946.328	25.614	70.979	55.570	45.364	-15.409	-0.056	73.	5.	29.	15.	3.	G308	6	0
15	2015	USIYAJI	37.3347	137.0453	171.00	967.688	946.284	21.404	74.174	56.250	52.771	-17.925	-0.064	73.	5.	29.	15.	20.	G308	6	0
16	2016	TANIUTIM	37.3325	137.0352	183.50	961.641	946.096	15.545	72.173	52.938	56.628	-19.235	-0.070	73.	5.	29.	15.	35.	G308	9	0
17	2017	SASAGAWA	37.3602	137.0975	39.00	980.000. 1.312	979.000. 948.502	52.810	64.845	60.757	12.035	-4.088	-0.075	73.	5.	29.	15.	55.	G308	6	0
18	2018	NODA	37.3693	137.0918	40.00	1.606	949.299	52.307	64.651	60.458	12.344	-4.193	-0.078	73.	5.	29.	16.	10.	G308	9	0
19	2019	KAMINOYA	37.3703	137.0673	59.00	979.000. 999.725	979.000. 949.387	50.338	68.545	62.361	18.207	-6.185	-0.080	73.	5.	29.	16.	24.	G308	6	0
20	2020	TATEIWAJ	37.3768	137.0453	103.60	989.850	949.952	39.898	71.869	61.009	31.971	-10.860	-0.081	73.	5.	29.	16.	35.	G308	6	0
21	2021	SIMOKOTI	37.3783	137.0217	174.00	978.416	950.083	28.333	82.029	63.790	53.696	-18.239	-0.081	73.	5.	29.	16.	48.	G308	6	0
22	2022	SIMOKOTI	37.3780	137.0358	127.00	985.413	950.053	35.359	74.551	61.239	39.192	-13.312	-0.080	73.	5.	29.	17.	0.	G308	6	0
23	2023	HIUGA	37.3633	137.0333	144.00	977.090	948.778	28.313	72.751	57.657	44.438	-15.094	-0.079	73.	5.	29.	17.	15.	G308	6	0
24	2024	TASIRO	37.3687	137.0152	169.00	975.575	949.241	26.334	78.488	60.773	52.153	-17.715	-0.076	73.	5.	29.	17.	35.	G308	6	0
25	2025	GOKURAKU	37.3530	137.0222	151.00	972.881	947.879	25.002	71.600	55.772	46.599	-15.828	-0.073	73.	5.	29.	17.	46.	G308	6	0
26	2026	SIRITA	37.3378	137.0062	189.00	964.932	946.560	18.372	76.697	56.886	58.325	-19.811	-0.070	73.	5.	29.	18.	0.	G308	6	0
27	2027	SAKURATO	37.3230	137.0048	236.00	953.292	945.271	8.021	80.851	56.113	72.830	-24.738	-0.065	73.	5.	29.	18.	15.	G308	9	0
28	2028	KAMISAKE	37.3047	137.0000	125.50	973.563	943.676	29.887	68.616	55.461	38.729	-13.155	-0.060	73.	5.	29.	18.	30.	G308	9	0
29	2029	MIYAJI	37.3015	137.0258	74.50	983.185	943.401	39.784	62.774	54.965	22.991	-7.809	-0.057	73.	5.	29.	18.	38.	G308	9	0

SQN		LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y	M	D	H	M	GRAV- IMETR	* FRC	
30	2030	YAMADA	37.2875	137.0377	45.00	988.363	942.184	46.180	60.067	55.350	13.887	-4.717	-0.049	73.	5.	29.	19.	0.	G308	9	0
31	2031	HATINOTA	37.2728	137.0568	22.90	991.710	940.909	50.801	57.868	55.467	7.067	-2.400	-0.048	73.	5.	29.	19.	5.	G308	6	0
32	2032	TANIYA	37.2617	137.0693	11.00	991.458	939.939	51.519	54.914	53.761	3.395	-1.153	-0.045	73.	5.	29.	19.	12.	G308	6	0
33	2033	MITUKEJI	37.3942	137.2483	0.30	995.998	951.460	44.538	44.630	44.599	0.093	-0.031	0.143	73.	5.	30.	8.	45.	G308	7	0
34	2034	NORIKI	37.3730	137.2173	91.50	994.921	949.618	45.303	73.540	63.949	28.237	-9.591	0.170	73.	5.	30.	9.	50.	G308	9	0
35	2035	KORESAWA	37.3625	137.1950	138.50	986.238	948.705	37.533	80.274	65.756	42.741	-14.518	0.171	73.	5.	30.	10.	0.	G308	9	0
36	2036	UMAWATAR	37.3610	137.1732	171.50	978.159	948.575	29.584	82.509	64.532	52.925	-17.977	0.172	73.	5.	30.	10.	12.	G308	9	0
37	2037	KOMAWATA	37.3517	137.1585	216.00	965.832	947.762	18.070	84.727	62.086	66.658	-22.642	0.172	73.	5.	30.	10.	24.	G308	6	0
38	2038	OGINOMAT	37.3502	137.1340	115.00	986.513	947.632	38.881	74.370	62.315	35.489	-12.055	0.171	73.	5.	30.	10.	35.	G308	9	0
39	2039	USIDA	37.3617	137.1197	85.00	990.557	948.633	41.924	68.155	59.245	26.231	-8.910	0.159	73.	5.	30.	11.	15.	G308	6	0
40	2040	NAGAOKIT	37.3885	137.0933	17.00	980,000. 9.582	979,000. 950.967	58.615	63.861	62.079	5.246	-1.782	0.147	73.	5.	30.	11.	38.	G308	6	0
41	2041	WAKAKUWA	37.4143	137.0983	13.00	6.581	953.215	53.367	57.378	56.016	4.012	-1.363	0.140	73.	5.	30.	11.	48.	G308	6	0
42	2042	GORIWAKE	37.4217	137.0918	16.00	2.476	953.853	48.623	53.561	51.883	4.938	-1.677	0.134	73.	5.	30.	11.	58.	G308	6	0
43	2043	TERAJI	37.4332	137.0900	17.00	0.844	954.855	45.989	51.235	49.453	5.246	-1.782	0.126	73.	5.	30.	12.	9.	G308	6	0
44	2044	MINAMITO	37.4400	137.0840	16.00	0.294	955.448	44.845	49.783	48.106	4.938	-1.677	0.117	73.	5.	30.	12.	20.	G308	6	0
45	2045	SIMOTOKI	37.4468	137.0798	10.00	1.636	956.043	45.592	48.678	47.630	3.086	-1.048	0.110	73.	5.	30.	12.	28.	G308	9	0
46	2046	MINATO	37.4500	137.0758	3.00	2.500	956.320	46.180	47.105	46.791	0.926	-0.314	0.104	73.	5.	30.	12.	36.	G308	7	0
47	2047	SOSOGI	37.4565	137.0802	6.00	3.017	956.886	46.131	47.983	47.354	1.852	-0.629	0.059	73.	5.	30.	13.	24.	G308	6	0
48	2048	MAURA	37.4665	137.0915	9.00	6.791	957.756	49.035	51.813	50.869	2.777	-0.943	0.053	73.	5.	30.	13.	30.	G308	6	0
49	2049	NAKATAHA	37.4787	137.1098	0.50	15.847	958.815	57.032	57.186	57.134	0.154	-0.052	0.031	73.	5.	30.	13.	52.	G308	7	0
50	2050	KATAIWA	37.4905	137.1338	0.50	21.047	959.846	61.201	61.356	61.303	0.154	-0.052	0.018	73.	5.	30.	14.	5.	G308	7	0
51	2051	SUEMITUY	37.4990	137.1657	4.50	22.901	960.586	62.315	63.703	63.232	1.389	-0.472	0.120	73.	3.	80.	14.	21.	G308	6	0
52	2052	AKAGAMI	37.5003	137.1940	0.10	23.587	960.702	62.886	62.916	62.906	0.031	-0.010	-0.011	73.	5.	30.	14.	36.	G308	6	0
53	2053	WANISAKI	37.5122	137.2270	0.50	23.012	961.733	61.279	61.433	61.381	0.154	-0.052	-0.023	73.	5.	30.	14.	50.	G308	7	0
54	2054	TAKAYA	37.5178	137.2488	0.10	25.538	962.226	63.312	63.343	63.332	0.031	-0.010	-0.035	73.	5.	30.	15.	4.	G308	7	0
55	2055	KINOURA	37.5232	137.2698	65.50	10.837	962.691	48.145	68.359	61.493	20.213	-6.866	-0.042	73.	5.	30.	15.	13.	G308	9	0

SQN		LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y	M	D	H	M	GRAV-IMETR	*	FRC
56	2056	KAWAURAK	37.5233	137.2985	0.10	20.543	962.706	57.836	57.867	57.857	0.031	-0.010	-0.051	73.	5.	30.	15.	25.	G308	7	0
57	2057	NOROSI	37.5217	137.3285	4.00	18.877	962.560	56.317	57.552	57.133	1.234	-0.419	-0.060	73.	5.	30.	15.	38.	G308	9	0
						979,000.	979,000.														
58	2058	KAWAHARA	37.4457	137.0712	8.00	998.455	955.942	42.512	44.981	44.143	2.469	-0.839	-0.098	73.	5.	30.	17.	22.	G308	6	0
59	2059	OKAWA	37.4462	137.0572	0.50	994.452	955.985	38.467	38.621	38.569	0.154	-0.052	-0.098	73.	5.	30.	17.	30.	G308	7	0
60	2060	MITUGOHA	37.4383	137.0442	0.10	994.760	955.303	39.456	39.487	39.476	0.031	-0.010	-0.098	73.	5.	30.	17.	41.	G308	7	0
61	2061	UEJI	37.4242	137.0472	27.50	994.346	954.071	40.275	48.762	45.879	8.486	-2.883	-0.097	73.	5.	30.	17.	56.	G308	6	0
62	2062	HONAKITA	37.4220	137.0658	118.00	973.294	953.883	19.411	55.826	43.457	36.415	-12.369	-0.096	73.	5.	30.	18.	6.	G308	6	0
63	2063	YASIRO	37.4323	137.0730	26.00	995.953	954.781	41.171	49.195	46.469	8.024	-2.725	-0.094	73.	5.	30.	18.	19.	G308	6	0
64	2064	NISIDAKA	37.4322	137.0207	3.90	997.847	954.767	43.080	44.284	43.875	1.204	-0.409	-0.089	73.	5.	30.	18.	38.	G308	7	0
65	2065	WAJIMASO	37.3975	136.8958	48.50	985.066	951.750	33.316	48.283	43.200	14.967	-5.084	0.157	73.	5.	31.	9.	23.	G308	9	0
66	2066	WAJIMASA	37.4022	136.9035	3.50	995.768	952.156	43.612	44.692	44.325	1.080	-0.367	0.172	73.	5.	31.	9.	45.	G308	1	0
67	2067	WAJIMAEK	37.3858	136.9095	7.30	992.140	950.734	41.406	43.659	42.894	2.253	-0.765	0.181	73.	5.	31.	10.	3.	G308	9	0
68	2068	SIBUTA	37.4327	137.0378	0.50	996.091	954.811	41.280	41.434	41.382	0.154	-0.052	0.193	73.	5.	31.	10.	38.	G308	7	0
69	2069	MAKISAKA	37.4448	137.0508	44.00	984.976	955.869	29.106	42.685	38.073	13.578	-4.612	0.194	73.	5.	31.	10.	50.	G308	9	0
70	2070	OKAWA	37.4415	137.0612	87.00	977.470	955.580	21.890	48.738	39.619	26.848	-9.120	0.194	73.	5.	31.	11.	2.	G308	6	0
71	2071	MAKINO	37.4338	137.0598	92.00	977.724	954.912	22.812	51.203	41.560	28.391	-9.644	0.194	73.	5.	31.	11.	12.	G308	9	0
72	2072	HONAKITA	37.4182	137.0553	50.10	988.878	953.548	35.330	50.791	45.539	15.461	-5.252	0.189	73.	5.	31.	11.	35.	G308	6	0
73	2073	NANAKENJ	37.4183	137.0412	20.00	996.901	953.562	43.339	49.511	47.414	6.172	-2.096	0.186	73.	5.	31.	11.	45.	G308	6	0
74	2074	HIGASIIN	37.4110	137.0513	50.20	996.919	952.925	43.994	59.486	54.224	15.492	-5.262	0.182	73.	5.	31.	11.	53.	G308	6	0
75	2075	KANEKURA	37.4003	137.0705	136.00	981.157	951.997	29.160	71.130	56.874	41.970	-14.256	0.176	73.	5.	31.	12.	6.	G308	6	0
76	2076	KANAYAMA	37.3828	137.0805	142.50	978.877	950.474	28.403	72.379	57.442	43.975	-14.937	0.169	73.	5.	31.	12.	19.	G308	9	0
77	2077	KANEKURA	37.4083	137.0755	53.00	998.085	952.693	45.393	61.748	56.193	16.356	-5.556	0.107	73.	5.	31.	13.	33.	G308	9	0
						980,000.	979,000.														
78	2078	MEIJIBAS	37.4242	137.0843	13.00	0.340	954.071	46.269	50.280	48.918	4.012	-1.363	0.152	73.	5.	31.	12.	42.	G308	6	0
79	2079	NAHUNE	37.4270	137.0117	4.50	0.610	954.317	46.293	47.682	47.210	1.389	-0.472	0.083	73.	5.	31.	13.	56.	G308	6	0
						979,000.	979,000.														
80	2080	ROKUKENJ	37.4190	136.9982	59.00	995.458	953.621	41.838	60.045	53.860	18.207	-6.185	0.070	73.	5.	31.	14.	8.	G308	6	0

SQN	LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y	DATE M	DATE D	DATE H	DATE M	GRAV-IMETR	*	ERC
81	2081 NOMI	37.4165	136.9930	50.10	998.424	953.403	45.021	60.482	55.230	15.461	-5.252	0.063	73.	5.	31.	14.	15.	G308	5	0
82	2082 WASIDAKE	37.4127	136.9830	60.30	992.917	953.070	39.847	58.455	52.135	18.609	-6.321	0.055	73.	5.	31.	14.	22.	G308	5	0
83	2083 ITIJYOBU	37.3968	136.9850	140.50	979.649	951.692	27.957	71.316	56.588	43.358	-14.728	0.038	73.	5.	31.	14.	38.	G308	9	0
84	2084 UTIKOSI	37.4078	136.9680	27.80	990.495	952.649	37.846	46.425	43.511	8.579	-2.914	0.023	73.	5.	31.	14.	52.	G308	5	0
85	2085 SORYO	37.4025	136.9622	72.30	983.648	952.186	31.462	53.774	46.195	22.312	-7.579	0.014	73.	5.	31.	15.	0.	G308	1	0
86	2086 TANOURA	37.3965	136.9442	31.00	989.361	951.664	37.697	47.264	44.014	9.567	-3.249	0.003	73.	5.	31.	15.	11.	G308	5	0
87	2087 TAKANOSU	37.3810	136.9563	432.00	910.909	950.315	-39.405	93.910	48.626	133.315	-45.283	-0.021	73.	5.	31.	15.	35.	G308	9	0
88	2088 TAKANOS1	37.3842	136.9668	517.50	893.655	950.590	-56.935	102.766	48.520	159.700	-54.246	-0.044	73.	5.	31.	16.	0.	G308	6	0
89	2089 TAKANOS2	37.3907	136.9692	444.00	910.677	951.155	-40.479	96.540	49.999	137.018	-46.541	-0.052	73.	5.	31.	16.	10.	G308	9	0
90	2090 TAKANOS3	37.3928	136.9610	310.00	938.116	951.344	-13.228	82.438	49.943	95.666	-32.495	-0.059	73.	5.	31.	16.	18.	G308	9	0
91	2091 KOMOSAWA	37.3940	136.9367	28.70	989.765	951.446	38.319	47.176	44.167	8.857	-3.008	-0.071	73.	5.	31.	16.	35.	G308	5	0
92	2092 KOISIHAM	37.3917	136.9262	6.10	991.640	951.243	40.398	42.280	41.641	1.882	-0.639	-0.075	73.	5.	31.	16.	41.	G308	5	0
93	2093 KUTEKAWA	37.3798	136.9238	98.00	976.228	950.213	26.015	56.258	45.985	30.243	-10.273	-0.082	73.	5.	31.	16.	53.	G308	6	0
94	2094 KANNONMA	37.3913	136.9168	7.80	993.423	951.214	42.209	44.616	43.798	2.407	-0.818	-0.087	73.	5.	31.	17.	2.	G308	9	0
95	2095 SIGEKURA	37.3923	136.9098	2.30	993.949	951.300	42.650	43.359	43.118	0.710	-0.241	-0.090	73.	5.	31.	17.	10.	G308	7	0
96	2096 WAJIMAKO	37.3955	136.9048	2.00	994.985	951.576	43.409	44.026	43.816	0.617	-0.210	-0.096	73.	5.	31.	17.	22.	G308	7	0
97	2097 WAJIMAKO	37.3950	136.9043	0.80	995.302	951.532	43.769	44.016	43.932	0.247	-0.084	-0.097	73.	5.	31.	17.	27.	G308	7	0
98	2098 HIGASIDE	37.4000	136.8863	3.70	996.987	951.968	45.019	46.161	45.773	1.142	-0.388	-0.101	73.	5.	31.	17.	37.	G308	7	0
99	2099 SYOSENGA	37.4030	136.8775	0.00	996.942	952.229	44.712	44.712	44.712	0.000	0.000	-0.103	73.	5.	31.	17.	46.	G308	7	0
100	2100 DAISENGA	37.4010	136.8657	24.50	991.302	952.054	39.248	46.809	44.241	7.561	-2.568	-0.105	73.	5.	31.	17.	53.	G308	9	0
101	2101 UIRI	37.3965	136.8552	24.00	992.554	951.664	40.890	48.297	45.781	7.406	-2.516	-0.106	73.	5.	31.	18.	0.	G308	6	0
102	2102 WAJIMASA	37.3887	136.8987	4.70	994.228	950.981	43.247	44.697	44.204	1.450	-0.493	-0.108	73.	5.	31.	18.	31.	G308	1	0
103	2103 KOISEBAS	37.3827	136.8932	10.50	993.434	950.459	42.974	46.215	45.114	3.240	-1.101	-0.107	73.	5.	31.	18.	39.	G308	9	0
104	2104 INAYA	37.3765	136.8885	14.70	992.871	949.923	42.948	47.485	45.944	4.536	-1.541	-0.107	73.	5.	31.	18.	44.	G308	9	0
105	2105 HUTATUYA	37.3812	136.9010	26.00	989.188	950.329	38.858	46.882	44.157	8.024	-2.725	-0.106	73.	5.	31.	18.	50.	G308	6	0
106	2106 MUKAITAB	37.3777	136.9095	13.00	992.066	950.024	42.042	46.054	44.691	4.012	-1.363	-0.105	73.	5.	31.	18.	57.	G308	9	0

SQN	LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y	DATE M	DATE D	DATE H	DATE M	GRAV-IMETR	* FRC
	2107 YOKOJI	37.3723	136.9092	14.40	996.282	949.561	46.721	51.165	49.656	4.444	-1.509	-0.104	73.	5.	31.	19.	3.	G308	5 0
	2108 OGAWA	37.3660	136.9122	20.00	997.578	949.010	48.568	54.740	52.644	6.172	-2.096	-0.104	73.	5.	31.	19.	7.	G308	9 0
	2109 WAJIMAKE	37.4022	136.9035	3.50	995.724	952.156	43.568	44.648	44.281	1.080	-0.367	-0.100	73.	5.	31.	19.	24.	G308	1 0
110	2110 ANMZ9287	37.2323	136.9068	3.50	985.056	937.391	47.666	48.746	48.379	1.080	-0.367	-0.065	73.	5.	31.	20.	55.	G308	1 0
111	2111 RGKB164R	36.5650	136.6613	35.00	871.696	879.613	-7.917	2.884	-0.785	10.801	-3.669	-0.025	73.	5.	31.	23.	40.	G308	9 0

SQN	LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED 979,000.	GRAVITY STANDARD 979,000.	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y	DATE M	DATE D	DATE H	DATE M	GRAV-IMETR	* FRC
1	3001 RGKB166R	36.5650	136.6613	35.00	871.747	879.613	-7.866	2.935	-0.734	10.801	-3.669	-0.068	74.	6.	7.	6.	53.	G348	9 0
2	3002 ANMZ9287	37.2323	136.9068	3.40	985.130	937.391	47.740	48.789	48.433	1.049	-0.356	0.026	74.	6.	7.	9.	21.	G348	1 0
3	3003 SIMOD037	37.2350	136.9442	7.90	984.394	937.621	46.772	49.210	48.382	2.438	-0.828	0.067	74.	6.	7.	10.	12.	G348	5 0
4	3004 NAKAI038	37.2312	136.9467	1.90	985.475	937.288	48.187	48.773	48.574	0.586	-0.199	0.078	74.	6.	7.	10.	27.	G348	5 0
5	3005 HIRA-039	37.2323	136.9605	2.30	985.803	937.391	48.412	49.122	48.881	0.710	-0.241	0.093	74.	6.	7.	10.	47.	G348	5 0
6	3006 AWAZU040	37.2320	136.9725	1.50	986.439	937.361	49.078	49.541	49.383	0.463	-0.157	0.106	74.	6.	7.	11.	7.	G348	5 0
7	3007 TAKAO041	37.2328	136.9785	14.90	984.823	937.433	47.390	51.988	50.426	4.598	-1.562	0.116	74.	6.	7.	11.	25.	G348	5 0
8	3008 B249-042	37.2387	136.9845	39.00	981.124	937.941	43.183	55.219	51.131	12.035	-4.088	0.124	74.	6.	7.	11.	41.	G348	5 0
9	3009 SIMOS043	37.2417	136.9930	66.50	977.322	938.200	39.121	59.643	52.673	20.522	-6.971	0.128	74.	6.	7.	11.	52.	G348	5 0
10	3010 SIMOS044	37.2465	136.9995	81.90	975.938	938.621	37.317	62.591	54.006	25.274	-8.585	0.133	74.	6.	7.	12.	3.	G348	5 0
11	3011 SOYAM045	37.2537	137.0077	101.20	971.931	939.244	32.687	63.917	53.309	31.230	-10.608	0.137	74.	6.	7.	12.	17.	G348	1 0
12	3012 HONKI048	37.2712	137.0235	77.70	981.066	940.765	40.302	64.280	56.135	23.978	-8.145	0.143	74.	6.	7.	12.	59.	G348	5 0
13	3013 HATTAMIZ	37.2782	137.0457	32.00	990.405	941.372	49.033	58.908	55.554	9.875	-3.354	0.142	74.	6.	7.	13.	7.	G348	5 0
14	3014 YANAK064	37.2912	137.1392	3.30	999.113	942.502	56.611	57.630	57.284	1.018	-0.346	0.122	74.	6.	7.	14.	25.	G348	5 0
15	3015 YAMAN071	37.3213	137.1938	78.20	990.975	945.125	45.850	69.982	61.785	24.133	-8.197	0.104	74.	6.	7.	14.	58.	G348	5 0

SQN	LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y	DATE M	DATE D	DATE H	DATE M	GRAV-IMETR	* FRC	
					980,000.	979,000.														
16	3016 FUDOJ074	37.3343	137.2128	18.80	2.566	946.255	56.311	62.113	60.142	5.802	-1.971	0.094	74.	6.	7.	15.	13.	G348	1	0
17	3017 KAMIH075	37.3458	137.2345	16.60	0.392	947.256	53.136	58.259	56.519	5.123	-1.740	0.072	74.	6.	7.	15.	45.	G348	5	0
18	3018 KOIJIBEN	37.3690	137.2422	2.00	8.641	949.270	59.371	59.988	59.778	0.617	-0.210	0.041	74.	6.	7.	16.	25.	G348	7	0
19	3019 USIMA082	37.3770	137.2393	4.15	8.953	949.967	58.986	60.266	59.831	1.281	-0.435	0.022	74.	6.	7.	16.	49.	G348	1	0
					979,000.	979,000.														
20	3020 UKAIH085	37.4020	137.2450	2.68	995.843	952.142	43.701	44.528	44.247	0.827	-0.281	0.007	74.	6.	7.	17.	9.	G348	1	0
21	3021 KAMAN086	37.4097	137.2492	11.10	993.870	952.808	41.062	44.487	43.324	3.425	-1.164	-0.013	74.	6.	7.	17.	36.	G348	5	0
					980,000.	979,000.														
22	3022 IIDAS090	37.4380	137.2682	2.43	6.061	955.274	50.786	51.536	51.281	0.750	-0.255	-0.028	74.	6.	7.	17.	58.	G348	1	0
23	3023 IWASAKAS	37.4600	137.2730	15.00	1.121	957.190	43.931	48.560	46.988	4.629	-1.572	-0.040	74.	6.	7.	18.	17.	G348	6	0
24	3024 IWASAKAH	37.4575	137.2793	8.00	1.274	956.972	44.302	46.771	45.932	2.469	-0.839	-0.046	74.	6.	7.	18.	29.	G348	6	0
25	3025 IIZUKASY	37.4565	137.2895	7.00	1.881	956.886	44.995	47.155	46.422	2.160	-0.734	-0.056	74.	6.	7.	18.	48.	G348	6	0
26	3026 IIZUKAMI	37.4510	137.2910	5.00	1.710	956.406	45.304	46.847	46.323	1.543	-0.524	-0.060	74.	6.	7.	18.	57.	G348	6	0
					979,000.	979,000.														
27	3027 MITUKEJI	37.3938	137.2492	0.70	996.035	951.431	44.604	44.820	44.746	0.216	-0.073	-0.038	74.	6.	8.	8.	17.	G348	7	0
					980,000.	979,000.														
28	3028 IIDAS090	37.4380	137.2682	2.43	6.154	955.274	50.879	51.629	51.374	0.750	-0.255	0.017	74.	6.	8.	9.	42.	G348	1	19
29	3029 WAKAY091	37.4458	137.2655	6.96	2.671	955.957	46.714	48.862	48.132	2.148	-0.730	0.024	74.	6.	8.	9.	52.	G348	1	0
30	3030 WAKAY092	37.4517	137.2565	12.20	1.541	956.465	45.076	48.841	47.562	3.765	-1.279	0.035	74.	6.	8.	10.	8.	G348	5	0
31	3031 IBAYA093	37.4543	137.2468	14.10	2.609	956.697	45.912	50.263	48.785	4.351	-1.478	0.044	74.	6.	8.	10.	20.	G348	5	0
32	3032 WAKAY094	37.4550	137.2352	19.00	5.814	956.754	49.060	54.923	52.931	5.863	-1.992	0.060	74.	6.	8.	10.	43.	G348	1	0
33	3033 KUNIK095	37.4577	137.2262	27.05	3.191	956.987	46.204	54.552	51.716	8.348	-2.835	0.068	74.	6.	8.	10.	54.	G348	1	0
34	3034 UTUYA096	37.4613	137.2163	46.30	0.458	957.305	43.152	57.441	52.587	14.288	-4.853	0.083	74.	6.	8.	11.	17.	G348	5	0
					979,000.	979,000.														
35	3035 BOKUJ097	37.4680	137.2095	140.90	982.264	957.886	24.378	67.860	53.090	43.482	-14.769	0.095	74.	6.	8.	11.	38.	G348	5	0
36	3036 BOKUJ098	37.4712	137.2023	176.90	977.164	958.162	19.002	73.593	55.050	54.591	-18.543	0.104	74.	6.	8.	11.	55.	G348	5	0
37	3037 BOK-0099	37.4770	137.2013	230.80	968.118	958.670	9.448	80.673	56.480	71.225	-24.193	0.113	74.	6.	8.	12.	16.	G348	5	0
38	3038 OTANI100	37.4835	137.2040	193.80	977.378	959.236	18.142	77.949	57.634	59.807	-20.315	0.121	74.	6.	8.	12.	39.	G348	5	0
39	3039 NORIS101	37.4880	137.1945	144.20	989.449	959.628	29.821	74.321	59.206	44.500	-15.115	0.126	74.	6.	8.	13.	5.	G348	5	0

SON	LOCATION	LATITUDE (DEG.)	LONGITUDE (DEG.)	HEIGHT (M.)	GRAVITY OBSERVED	GRAVITY STANDARD	GRAVITY ANOMALY OB.-ST.	GRAVITY ANOMALY FREE-AIR	GRAVITY ANOMALY BOUGUER	CORRECTIONS FREE-AIR	CORRECTIONS BOUGUER	CORRECTIONS EARTH TIDE	DATE Y	DATE M	DATE D	DATE H	DATE M	GRAV-IMETR	* FRC	
40	3040 NORIN102	37.4898	137.1880	92.50	999.855	959.787	40.068	68.613	58.917	28.545	-9.696	0.127	74.	6.	8.	13.	16.	G348	5	0
					980,000.	979,000.														
41	3041 TORIK103	37.4963	137.1855	14.40	18.927	960.354	58.574	63.017	61.508	4.444	-1.509	0.128	74.	6.	8.	13.	30.	G348	5	0
42	3042 AGEHA104	37.4992	137.1757	4.60	23.544	960.601	62.943	64.363	63.881	1.420	-0.482	0.127	74.	6.	8.	13.	50.	G348	5	0
43	3043 AGE-K105	37.4988	137.1643	5.10	22.719	960.572	62.148	63.722	63.187	1.574	-0.535	0.126	74.	6.	8.	13.	58.	G348	5	0
44	3044 KURAS106	37.4965	137.1552	12.30	20.241	960.368	59.873	63.668	62.379	3.796	-1.289	0.125	74.	6.	8.	14.	9.	G348	5	0
45	3045 AKASI107	37.4937	137.1450	5.40	21.193	960.121	61.072	62.738	62.172	1.666	-0.566	0.121	74.	6.	8.	14.	24.	G348	5	0
46	3046 KATAI108	37.4907	137.1348	3.50	20.818	959.861	60.958	62.038	61.671	1.080	-0.367	0.117	74.	6.	8.	14.	39.	G348	5	0
47	3047 SIMIZ109	37.4868	137.1238	6.20	19.391	959.527	59.864	61.777	61.127	1.913	-0.650	0.114	74.	6.	8.	14.	47.	G348	5	0
48	3048 YOSIM110	37.4832	137.1168	5.11	17.830	959.207	58.624	60.200	59.665	1.577	-0.536	0.106	74.	6.	8.	15.	6.	G348	1	0
49	3049 YUS-T112	37.4747	137.0987	6.30	9.705	958.467	51.238	53.183	52.522	1.944	-0.660	0.090	74.	6.	8.	15.	37.	G348	5	0
50	3050 TARUM114	37.4638	137.0898	5.64	6.143	957.523	48.620	50.360	49.769	1.741	-0.591	0.087	74.	6.	8.	15.	42.	G348	1	0
51	3051 SOSOG115	37.4577	137.0823	4.78	3.422	956.987	46.435	47.910	47.409	1.475	-0.501	0.080	74.	6.	8.	15.	53.	G348	1	0
					979,000.	979,000.														
52	3052 SORYO130	37.4025	136.9622	72.28	983.959	952.186	31.774	54.079	46.503	22.306	-7.577	0.024	74.	6.	8.	17.	15.	G348	1	0
53	3053 KOISI134	37.3918	136.9262	6.10	991.993	951.257	40.735	42.618	41.979	1.882	-0.639	0.007	74.	6.	8.	17.	39.	G348	5	0
54	3054 ANMZ9287	37.2323	136.9068	3.40	985.314	937.391	47.924	48.973	48.616	1.049	-0.356	-0.019	74.	6.	8.	18.	19.	G348	1	0
55	3055 RGKB166R	36.5650	136.6613	35.00	871.927	879.613	-7.685	3.116	-0.553	10.801	-3.669	-0.074	74.	6.	8.	20.	46.	G348	9	0

Appendix

SQN	LOCATION	JAPANESE
Preliminary Period		
1	1 TODAISIN	東京大学地震研究所一等重力点
2	2 RGKB164R	金沢大学理学部 164 号室
3	3 RGKB2OKJ	金沢大学理学部 2 号館屋上
4	4 RGKB127R	金沢大学理学部 127 号室
First Period		
1	1001 ANMZ9287	穴水ＢＭ 9287
2	1002 HUDOJIBM	不動寺ＢＭ 3.4 付近
3	1003 KINPOJI	金峰寺（バス停）ＳＨ（３）
4	1004 KINPOZAN	金峰山ＳＨ（５）
5	1005 SAIHOJI	西峰寺
6	1006 SUGASAWA	管沢神社前
7	1007 KOYA-UTU	小屋・打品中間三叉路
8	1008 DORONOKI	泥ノ木ＳＨ（123）
9	1009 KIRIHATA	桐畑ＳＨ（128）
10	1010 KOMAO	小間生三叉路
11	1011 TOKUNARI	徳成ＳＨ（19）
12	1012 HUJIMIBA	藤見橋の東端
13	1013 NAKA	中，小彦名神社前
14	1014 KUNIKANE	国兼ＳＨ（24）
15	1015 MITUKEJI	見付島つけね
16	1016 AZUMABAS	吾妻橋下流
17	1017 BANSYO	番匠，仮名橋
18	1018 TAKENAKA	竹中橋
19	1019 HANNYAGA	般若川川口
20	1020 UKAIGANP	鵜飼漁港岩壁
21	1021 MITUKEJI	見付島西，旧ＢＭ 4.8
22	1022 MINAMIKU	南黒丸の海岸
23	1023 USIMA-BM	鵜島ＢＭ 249―082
24	1024 KOIJI-BM	恋路ＢＭ 249―081
25	1025 KOIJI	恋路ＢＭ 9.2
26	1026 NAKANO	中野ＳＨ（２）
27	1027 SIMOTORI	下鳥越，三叉路ＳＨ（64）
28	1028 TAKAI	高井ＳＨ（64）
29	1029 TAKAI	高井，東方の橋
30	1030 ZUINEN	随念ＳＨ（８）
31	1031 GO	郷三叉路
32	1032 KUROMARU	黒丸の海岸
33	1033 MINAMIKU	南黒丸西方ＳＨ（33）
34	1034 HUDOJIBM	不動寺ＢＭ
Second Period		
1	2001 RGKB164R	理学部 2 号館 164
2	2002 ANMZ9287	穴水ＢＭ 9287
3	2003 SIMOSOYA	下曾山
4	2004 HONKISIM	本木・下曾山間
5	2005 TANIYA	谷屋
6	2006 USITU	宇出津
7	2007 MITIDA	道田
8	2008 TATUGATA	柳田村立ヶ谷内峠トンネル
9	2009 WAZUMIUE	和住上
10	2010 WAZUMISI	和住下
11	2011 TENSAKA	天坂
12	2012 GOROSAEM	五郎左エ門
13	2013 KAMIWAZU	神和佳
14	2014 HIRADO	平渡
15	2015 USIYAJI	丑屋地
16	2016 TANIUTIM	谷内村北
17	2017 SASAGAWA	笹川
18	2018 NODA	野田
19	2019 KAMINOYA	上之屋
20	2020 TATEIWAJ	立岩地
21	2021 SIMOKOTI	下河内西
22	2022 SIMOKOTI	下河内東
23	2023 HIUGA	日向
24	2024 TASIRO	田代
25	2025 GOKURAKU	極楽寺
26	2026 SIRITA	尻田
27	2027 SAKURATO	桜峠
28	2028 KAM	上鮭尾
29	2029 MIYAJI	宮地（谷地）
30	2030 YAMADA	山田
31	2031 HATINOTA	八ノ田三叉路
32	2032 TANIYA	谷屋
33	2033 MITUKEJI	見付島つけね
34	2034 NORIKI	乗木三叉路
35	2035 KORESAWA	是久三叉路
36	2036 UMAWATAR	馬渡三叉路
37	2037 KOMAWATA	駒渡の西
38	2038 OGINOMAT	小木ノ又三叉路
39	2039 USIDA	丑田三叉路
40	2040 NAGAOKIT	長尾北輪島と柳田村境界
41	2041 WAKAKUWA	若桑三叉路

42	2042	GORIWAKE	五里分北
43	2043	TERAJI	寺地
44	2044	MINAMITO	南時国
45	2045	SIMOTOKI	下時国三叉路
46	2046	MINATO	港三叉路
47	2047	SOSOGI	曾々木
48	2048	MAURA	真浦
49	2049	NAKATAHA	中田浜波打際
50	2050	KATAIWA	片岩波打際
51	2051	SUEMITUY	末光山北（道路上）
52	2052	AKAGAMI	赤神の東
53	2053	WANISAKI	鰐崎波打際
54	2054	TAKAYA	高屋の東波打際
55	2055	KINOURA	木ノ浦三叉路
56	2056	KAWAURAK	川浦海岸波打際
57	2057	NOROSI	狼煙（前川橋北端）
58	2058	KAWAHARA	河原三叉路ＳＨ.8
59	2059	OKAWA	大川
60	2060	MITUGOHA	三ツ子浜
61	2061	UEJI	上地三叉路
62	2062	HUNAKITA	舟木谷峠
63	2063	YASIRO	矢代
64	2064	NISIDAKA	西田海岸岸壁
65	2065	WAJIMASO	輪島荘
66	2066	WAJIMASA	輪島崎水準点
67	2067	WAJIMAEK	輪島駅前
68	2068	SIBUTA	渋田下流
69	2069	MAKISAKA	巻坂の峠
70	2070	OKAWA	大川向
71	2071	MAKINO	真喜野北
72	2072	HUNAKITA	舟木谷峠西
73	2073	NANAKENJ	七軒地三叉路
74	2074	HIGASIIN	東院内
75	2075	KANEKURA	金蔵の西三叉路峠
76	2076	KANAYAMA	金山南三叉路
77	2077	KANEKURA	金蔵寺西四辻
78	2078	MEIJIBAS	明治橋
79	2079	NAHUNE	名舟海岸
80	2080	ROKUKENJ	六軒地
81	2081	NOMI	納見
82	2082	WASIDAKE	鷲嶽
83	2083	ITIJYOBU	一乗部落
84	2084	UTIKOSI	打越
85	2085	SORYO	惣領ＢＭ
86	2086	TANOURA	田ノ浦
87	2087	TAKANOSU	高洲山
88	2088	TAKANOS1	高洲山東
89	2089	TAKANOS2	高洲山東三叉路
90	2090	TAKANOS3	高洲山東北
91	2091	KOMOSAWA	菰沢
92	2092	KOISIHAM	小石浜
93	2093	KUTEKAWA	久手川
94	2094	KANNONMA	観音町の橋
95	2095	SIGEKURA	重蔵神社うら海岸
96	2096	WAJIMAKO	輪島港防波堤先端
97	2097	WAJIMAKO	輪島港つけね
98	2098	HIGASIDE	東出
99	2099	SYOSENGA	小尖岩の下，波打際
100	2100	DAISENGA	大尖岩西
101	2101	UIRI	鵜入
102	2102	WAJIMASO	輪島測候所
103	2103	KOISEBAS	小伊勢橋
104	2104	INAYA	稲屋三叉路
105	2105	HUTATUYA	二ツ屋
106	2106	MUKAITAB	向田橋西
107	2107	YOKOJI	横地
108	2108	OGAWA	小川三叉路
109	2109	WAJIMAKE	輪島験潮所一等水準点
110	2110	ANMZ9287	穴水ＢＭ 9287
111	2111	RGKB164R	理学部２号館 164

Third Period

1	3001	RGKB166R	理２号館岩石物性実（166）
2	3002	ANMZ9287	穴水ＢＭ 9287
3	3003	SIMOD037	下出三叉路
4	3004	NAKAI038	国鉄なかい三叉路
5	3005	HIRA-039	比良のカーブ
6	3006	AWAZU040	粟津三叉路
7	3007	TAKAO041	たかおばし（川尻川）
8	3008	B249-042	同上
9	3009	SIMOS043	下曾山南橋のわき
10	3010	SIMOS044	下曾山三叉路
11	3011	SOYAM045	曾山ＢＭ
12	3012	HONKI048	本木バス停
13	3013	HATTAMIZ	八ツ田瑞穂郵便局前
14	3014	YANAK064	柳倉三叉路
15	3015	YAMAN071	能登山中バス停
16	3016	FUDOJ074	不動寺公民館角ＢＭ
17	3017	KAMIH075	上東三叉路
18	3018	KOIJIBEN	恋路海岸弁天島

19	3019	USIMA082	鵜島ＢＭ
20	3020	UKAIH085	鵜飼本町ＢＭ
21	3021	KAMAN086	釜ノ山（谷崎）
22	3022	IIDAS090	北鉄バス飯田車庫前ＢＭ
23	3023	IWASAKAS	岩坂三叉路ＳＨ15
24	3024	IWASAKAH	岩坂東方三叉路ＳＨ８
25	3025	IIZUKASY	飯塚小学校角
26	3026	IIZUKAMI	飯塚南ＳＨ.5
27	3027	MITUKEJI	見付島先端
28	3028	IIDAS090	北鉄バス飯田車庫前
29	3029	WAKAY091	若山町出田
30	3030	WAKAY092	若山小学校前三叉路
31	3031	IBAYA093	井林（能登縫製ＫＫ前）
32	3032	WAKAY094	若山町
33	3033	KUNIK095	国兼（国鉄バス延式の西）
34	3034	UTUYA096	宇都山
35	3035	BOKUJ097	市営牧場入口南150 m
36	3036	BOKUJ098	牧場—大谷峠
37	3037	BOK-O099	大谷峠南
38	3038	OTANI100	大谷峠北
39	3039	NORIS101	則貞
40	3040	NORIN102	則貞西
41	3041	TORIK103	鳥川川口
42	3042	AGEHA104	上浜
43	3043	AGE-K105	上浜—鞍崎
44	3044	KURAS106	鞍崎トンネル東
45	3045	AKASI107	赤島（神社前）
46	3046	KATAI108	片岩
47	3047	SIMIZ109	清水
48	3048	YOSIM110	吉森
49	3049	YOS-T112	吉森—垂水
50	3050	TARUM114	垂水
51	3051	SOSOG115	曾々木
52	3052	SORYO130	惣領Ｂ.Ｍ.
53	3053	KOISI134	小石浜Ｂ.Ｍ.
54	3054	ANMZ9287	穴水Ｂ.Ｍ.
55	3055	RGKB166R	理・２号館岩石物性実験室（Room No. 166）