

IDAHO BUREAU OF MINES AND GEOLOGY . . . E. F. Cook, Director

STATE OF IDAHO . . . Robert E. Smylie, Governor

# Gravity anomalies in Idaho

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### FOREWORD

We in this country are spending a lot of money and energy in the exploration of outer space. Not nearly as much interest is shown in exploration of inner space, that which lies beneath us on this planet. But in some ways, inner space may be as important to us as outer space.

We explore inner space mainly by geophysical means, because the deepest man has so far been able to bore into the earth is a little over five miles, just a mosquito prick compared to the earth's diameter.

In this pamphlet we report results of some pioneer exploration, by gravity methods, of the inner space that underlies the State of Idaho.

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E. F. COOK, Director  
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## GRAVITY ANOMALIES IN IDAHO

William E. Bonini

### ABSTRACT

A reconnaissance Bouguer gravity anomaly map of Idaho (contour interval 10 mgals) is presented as an overprint on a generalized geologic map of Idaho (scale 1:1,000,000). Two cross-sections give the geologic section, Bouguer gravity (density = 2.67 gm/cc in the mass correction) and isostatic anomalies (Airy-Heiskanen system, T = 30 kms).

Descriptions for 22 selected stations in each region of the state and the principal facts for over 1200 observations are given. Anomaly values are estimated to be accurate to two mgals for most stations.

The Snake River Plain shows a broad gravity maximum with positive isostatic anomalies as large as 70 mgals. It is suggested that the downwarp is fault controlled in the western part. The Idaho batholith is a region of negative Bouguer anomalies (as low as -236 mgals), and is approximately in isostatic equilibrium ( $\pm$  20 mgals). The Columbia River Plateau is an area of gravity maxima with slightly positive isostatic anomalies (+23 mgal) in the Idaho portion. The northern Idaho-western Montana section is of modest gravity relief with minima in Montana oriented parallel to the structural grain of the country, probably reflecting broad features related to the structure or to variations in Belt Series density values.

## INTRODUCTION

### PURPOSE AND SCOPE

In 1955 Princeton University initiated a reconnaissance gravity program as part of a study of gravity anomalies and tectonic features of the northwestern United States. In the program over 5000 new reconnaissance stations have been observed in Montana, Wyoming, Idaho, Washington and Oregon. The prominent gravity high in the Snake River Plain was discovered under the Princeton gravity program (Bonini and Lavin, 1957). Further reports have been made on the progress of this study (Lavin and Bonini, 1957; Biehler and Bonini, 1958; and Steinhart, Meyer and Bonini, 1961). The gravity anomaly map as an overlay on the state geologic maps has been exhibited at the meetings of the Geological Society of America in 1957 (Atlantic City), 1959 (Pittsburgh), and 1960 (Denver). A copy of this map covering southern Idaho and southwestern Montana was supplied in May, 1959, to the U. S. Geological Survey at the request of L. C. Pakiser to guide the Survey's more detailed gravity program in the Snake River Plain. The Survey's program was begun in the summer of 1959 and several reports have been published (Hill, Baldwin and Pakiser, 1961; La Fehr and Pakiser, 1962).

Recently the National Science Foundation awarded a grant to Princeton to aid in the analysis of my gravity data in the western United States. Papers and analyses are in preparation which will cover the following:

1. gravity anomalies and isostasy in the northwestern United States;
2. gravity anomalies in western Montana with special reference to the Boulder batholith;
3. gravity anomalies in the Beartooth Range and Big Horn Basin, Montana-Wyoming;
4. gravity anomalies in the Little Belt Mountains, Montana;
5. gravity anomalies and seismic crustal measurements in the Montana Rockies;
6. gravity anomalies and the Teton Range-Jackson Hole, Idaho-Wyoming problem.

Portions of four summers from 1955 through 1958 were spent in Idaho making these measurements and over 1,300 new stations in Idaho were observed.

The striking relations between the gravity anomalies and the geology of Idaho are apparent. This report was prepared as an Idaho Bureau of Mines and Geology publication so that the details of the Idaho data will be readily available, and so that the gravity anomalies could be published as contours on the geologic

map of the state on a large scale. These data should serve to outline areas where greater detail of gravity coverage may prove fruitful in solving some of the interesting geologic problems of the state.

#### ACKNOWLEDGMENTS

I am indebted to the following men who, as students at Princeton University, participated in the Idaho summer field measurements: Peter M. Lavin (1955, 1956); Roy C. Olson (1955); Shawn Biehler (1957, 1958); and Gustave Johansen (1958). John E. Hardaway, William W. Dudley, Jr., and Dr. Bela Csejtey, Jr., assisted in the data reduction. Support to carry out the program came in part from the Higgins Fund of Princeton University, the Penrose Fund of the Geological Society of America, the Standard Oil Company of California (Western Operations), Inc., the California Exploration Co., and the National Science Foundation. Texas Instruments, Inc., generously loaned a Worden gravimeter as a second instrument for the program in 1958. Dr. U. A. Uotila, Department of Geodetic Science, Ohio State University, kindly supplied the isostatic data which were calculated under Ohio State's Air Force Contract No. AF 23(601)-3549.

Dr. E. F. Cook, Director of the Idaho Bureau of Mines and Geology, supplied helpful advice, arranged to have the Idaho Geologic Map drawn for black-and-white printing, and kindly facilitated publication of this report.

### GRAVITY DATA

#### PLAN OF SURVEY

The program was designed primarily as one of reconnaissance. At the initiation of the work the only data available were for thirteen U. S. Coast and Geodetic Survey pendulum stations (Duerksen, 1949) located in Boise, Sandpoint, and eleven in southeastern Idaho. The general plan has been to make observations at five-mile intervals along roads and trails on broad traverses about 20 miles apart. In many areas of special interest, closer spacing was used. Traverses were designed as overlapping loops from primary and secondary control base stations. All data are based on the value of gravity (980.3706) at the Gulf-Wisconsin pendulum station (rear of Hanger No. 2 at the Billings, Montana, Municipal Airport. A series of base stations were observed at locations 50 miles apart on short-time road ties to Billings. These stations are on a circuit including Billings, Boise, Coeur d'Alene, and Missoula.

#### DATA CONTROL

##### Instrumental drift and observed gravity values

A master drift plot was made for each portion of a summer's work which included all reoccupations. In many cases, individual traverse loops took up to three days to complete before a return to a base station, but there were frequent internal reoccupations so that a previous station was reoccupied every four to six hours. In comparing data from the various overlapping loops from different base stations, and with observed gravity values calculated from earlier field seasons, the maximum disagreement was 0.9 mgal.\* Most were closer than 0.5 mgal. Stations were located to minimize terrain effects.

##### Position control

Latitudes and longitudes of stations were determined from the U. S. Coast and Geodetic Survey Aeronautical Charts (1:500,000), although in areas of detailed surveys the U. S. Geological Survey topographic sheets were used where available. Stations were either located at known points or by mileage from them. The relative location of stations should be good to within 0.2 minutes of latitude or roughly 0.2 miles.

##### Elevations

Two Wallace & Tiernan altimeters were read. Elevation control was maintained by observations made roughly every two hours at points where elevations

\*The unit of gravitational acceleration is the gal and is equal to one cm/sec<sup>2</sup>. One milligal is 1/1000 gal and is usually abbreviated mgal.

were known from U. S. Coast and Geodetic Survey and U. S. Geological Survey data at bench marks, railroad stations, etc.

Elevations determined by altimeter are estimated to be accurate to 20 feet; however, a few stations where elevation control was poor may be in error by 100 feet. About 75% of all station elevations were determined by altimeter.

### DATA REDUCTION

Theoretical values of gravity at sea level were determined according to the International Gravity Formula (U.S. Coast and Geodetic Survey, 1942). The combined Bouguer and free air correction value, 0.06 mgal/foot above sea level, was used for all reductions assuming a density of 2.67 gm/cc for material above sea level. Terrain corrections were made only in the Teton Range area.

### INSTRUMENTS AND CALIBRATION

Princeton's Worden W-57 gravimeter was used for most data. A limited number of stations in northern Idaho were observed in 1958 with Worden W-35 on loan from Texas Instruments, Inc.

The calibration of W-57 is 0.42227 mgal/scale division and repeatable reading accuracy is 0.04 mgal. The range without resetting is 280 mgals.

Figure 1 illustrates the agreement between measurements made with the Princeton Instrument during the course of the survey and points observed by others over a total range of 900 mgals. The data shown are a plot of the departure of the Princeton data from others' measurements with the following instruments:

- a) Gulf-Wisconsin pendulum stations (Woppard & Rose, 1960).
- b) LaCoste-Romberg gravimeter (Woppard & Rose, 1960).
- c) Worden gravimeter-Wisconsin program (Woppard & Rose, 1960).
- d) Washington-Ottawa calibration line established with gravimeters by Innes (1958).

The scatter is such that the Princeton calibration is accurate to 1 part in 2000.

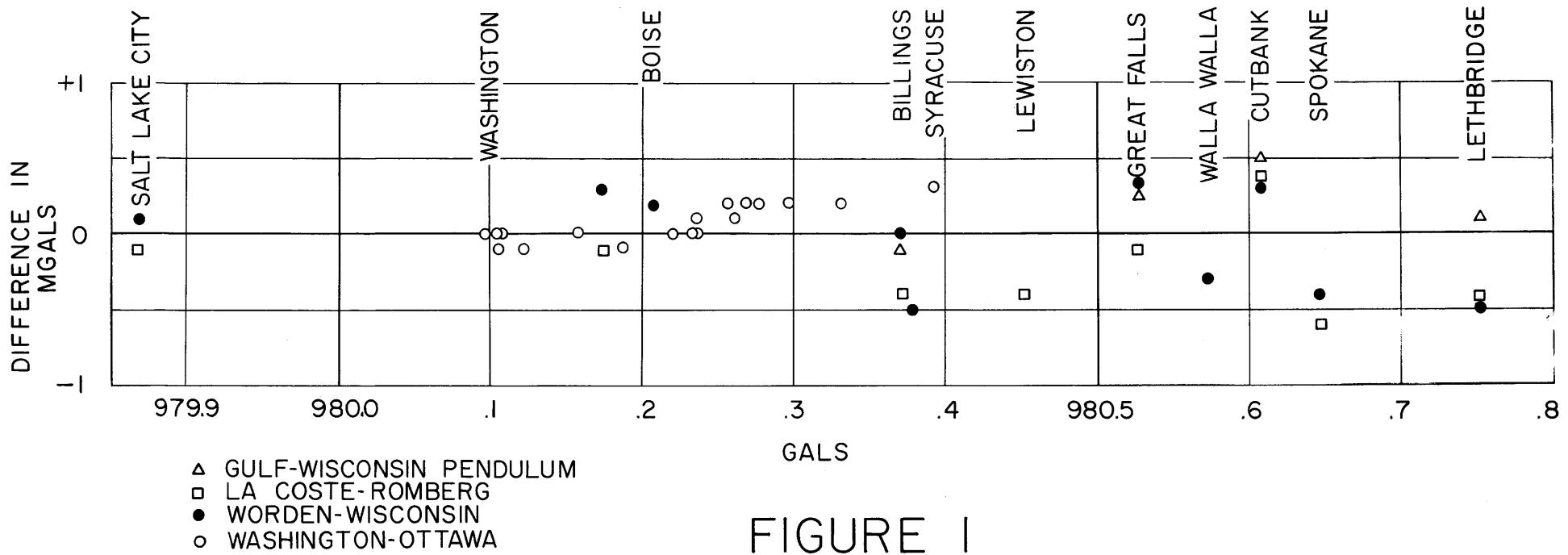


FIGURE I  
Difference in Gravity Values  
Princeton Gravimeter Relative to Others

## ACCURACY OF WORK

Observed gravity values are considered to be accurate to one mgal, or less. Bouguer anomaly values, in which latitude and elevation are important in the calculations, should be good to two mgals for most stations. However, in a few cases where the elevation control was poor some anomalies may contain errors on the order of  $\pm 5$  mgals. The Bouguer anomaly map is contoured on a 10-mgal interval, so that the largest survey errors expected would result in little shift in the lines contoured from these data. However, further detailed work on local anomalies such as the Gem Valley feature (Mabey & Armstrong, 1962) may require modification of the contour map. Because only a small percentage of the stations could be reoccupied, there is always the possibility of observer error. Although large reading errors are easier to find and correct, some smaller ones are possible, as in all such work.

## STATION DESCRIPTIONS

The following list gives station descriptions for selected observations in each region of the state, so that those making further measurements may relate their work to this regional network. The number given in parentheses is the station number. Refer to the Table of Principal Facts (see Appendix) for gravity values at the stations described.

Arco (616), on pavement four feet below bench mark "X-36" in northwest wall of public school.

Ashton (650), track side center of Union Pacific Railroad station.

Boise (783), at bench mark "Boise City," southwest corner of Post Office building, 8th and Bannock Streets.

Burley (1142), at gate to planes, municipal airport.

Challis (520), on ground at base of bench mark "H16" on west entrance, north side of public school.

Glenns Ferry (872), at bench mark "H220" one foot below on sidewalk at northeast corner of high school.

Grand View (856), atop bench mark "Grand View Tri. Sta." in yard at walk to high school.

Grangeville (251), at airport on field side of terminal building on concrete step to waiting room.

Holbrook (1223), on bench mark "H80" at school.

Hailey (716), north end of railroad station, one foot below track level.

Idaho Falls (631), at municipal airport at gate to planes.

Ketchum (714), north end of railroad station.

McCall (399), west end of railroad station.

Montpelier (1340), at base of bench mark "N47" in south end of "War Mother's Memorial Park" across from railroad station.

Moscow (167), at bench mark "B 34-56," on lawn near southwest corner of Post Office.

North Fork (326), on ground in front of Post Office.

Payette (422), at northwest corner of railroad station.

Pocatello (1207), Phillips Field, municipal airport, field side of terminal to right of entrance into building.

Sandpoint (44), on bench mark "A10 1914" at city hall.

Twin Falls (1118), municipal airport, at field entrance to terminal, fifteen feet from gate to planes.

Wallace (129), underneath "Wallace" sign at Northern Pacific Railroad station, on west side on sidewalk.

Wayan (959), at bench mark "W44" at public school.

#### PRINCIPAL FACTS OF STATIONS

The principal facts for all Idaho stations are given in the appendix. Inasmuch as these are data from four field seasons during which observations were made in adjoining states, they have been renumbered for convenience. The order of numbering does not represent order of station observation. Included are the principal facts of stations observed in Utah and Nevada, near the Idaho state line. Sufficient information is given so that, if desired, the reader may contour differently, or make further reductions, such as for free-air anomalies and Bouguer anomalies using a different density in the mass correction.

### BOUGUER ANOMALY MAP AND INTERPRETATION OF RESULTS

The Bouguer anomaly map presented here has been contoured on a 10-mgal interval on the basis of the data presented in this report, except in the Gem Valley, Caribou County, area (the small area just east of Lat.  $42^{\circ}45'$ , Long.  $112^{\circ}00'W$ ) where the data of Mabey and Armstrong (1962) based on 150 stations have been used. Local gravity lows on the order of 10 to 30 mgals have been observed by many geophysicists in detailed surveys over basin and range features where low-density basin sediments are present. The Bear Lake-Bear River Valley gravity low in southeastern Idaho shows up well in the reconnaissance data, whereas more detailed data are needed to outline properly other lows in southeastern Idaho, such as in the valleys in which Rockland and Arbon are located.

Two gravity cross sections have been drawn on the same lines as those shown on the Geologic Map of Idaho (Ross and Forrester, 1947). Both Bouguer and isostatic anomalies are plotted.

The isostatic reductions have been calculated for Hayford Zones A-O and 18-1, on the Airy-Heiskanen System,  $T = 30$  km. Isostatic anomalies depend upon the value given for the reference thickness  $T$  of the earth's crust, corresponding to zero elevation (see Heiskanen and Vening Meinesz, 1958, for discussions of isostatic corrections). Analysis of the difference in isostatic anomalies using  $T = 20$  km,  $T = 30$  km, and  $T = 40$  km for the Alps (Heiskanen and Vening Meinesz, 1958) shows that the variation of isostatic anomalies could be as much as 15 mgals more positive for  $T = 20$  vs.  $T = 30$ , and 15 mgals more negative for  $T = 40$  vs.  $T = 30$ . Thus it appears that isostatic anomalies greater than 15 mgals are of some significance.

Although the primary purpose of this report is to present the data for Idaho, certain relations between the gravity anomalies and Idaho geology are pointed out in the following paragraphs.

#### SNAKE RIVER PLAIN

The Snake River Plain is a broad gravity maximum, extending along the axis of the depression from eastern Idaho into Oregon. The eastern Snake River Plain shows anomalies more broad in character than the western portion. A more detailed study of this area by La Fehr and Pakiser (1962) suggests that the accumulations of basalt have been less in the east and have filled troughs or valleys in an undulating floor rather than a large regional graben. Although this explanation, in part, is undoubtedly reasonable, there are broad and large isostatic anomalies (up to +48 mgals) associated with this region indicating a rather broad uncompensated area (see cross section C-C').

In the western portion, the gravity maxima are narrow with steep gradients. Bonini and Lavin (1957) suggested that this portion of the plain was fault controlled.

Malde (1959) gave evidence of high-angle faulting in the vicinity of the steep gravity gradients with 5000 ft. of movement occurring between early and middle Pliocene and 4000 ft. of progressively diminishing movement since then. My analysis of the gravity gradient near Mt. Home (in Malde, 1959) suggests that from 13,000 to 38,000 ft. of rock about as dense as Columbia River basalts have been dropped against the Idaho batholith, the displacement depending upon the density contrast assumed (0.3 to 0.1 gm/cc, resp.). Detailed measurements reported by Hill, Baldwin and Pakiser (1961) show that the gravity maxima consists of three en echelon highs. A fourth high closure is noted to the northwest near Weiser with a high axis extending northeastward to Council over Columbia River Basalt exposures. Cross section D-D' passes near the center of the gravity maximum. The large isostatic anomalies (up to +70 mgals) here are related mostly to the high-gravity axis and the graben proposed by Hill, Baldwin and Pakiser, 1961, suggesting an uncompensated load on the crust.

#### IDAHO BATHOLITH AND AREA TO THE EAST

The most negative Bouguer anomalies in Idaho (-236 mgal) are in this area and the isostatic anomalies for the most part are near zero ( $\pm 20$  mgals). I conclude that this large region is approximately in isostatic equilibrium. There is gravity relief on the order of 20 to 30 mgals, and this relief is probably related to near-surface density variations within the basement rock or low-density valley fill. Detailed gravity data might prove interesting in some of the valleys, such as that of the Pahsimeroi River, and those in which the towns of Chilly and Leadore are located. Indications are that several valleys may have local minima on the order of 10 to 20 mgals.

#### COLUMBIA RIVER PLATEAU

The plateau, in general, is an area of Bouguer gravity maxima, with values as high as -50 mgals near Pasco, Washington. Isostatic anomalies, however, are slightly positive (+23 mgals) in the Idaho portion east of Lewiston. Westward in Washington, isostatic anomalies are zero or slightly negative. Gravity minima separate the Snake River Plain and Columbia River Plateau gravity highs, approximately along the axis of the Blue Mountain uplift.

#### NORTHERN IDAHO-WESTERN MONTANA

In this portion the gravity relief is modest with several gravity minima in Montana which are oriented parallel to the structural grain of the country and probably reflect broad features related to the structure or to variation in density of the Belt Series. Although there is some suggestion of a mild expression of the Osburn fault zone, it does not show up as a prominent feature in the gravity data.

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## APPENDIX

### PRINCIPAL FACTS OF GRAVITY STATIONS IN IDAHO

Observed gravity values are relative to the Gulf-Wisconsin pendulum station located in Hanger No. 2, at the Billings, Montana, Municipal Airport, with a value of 980.3706 gals.

#### Explanation of columns

- Col. 1: Station number.
- Col. 2: Latitude north in degrees and minutes
- Col. 3: Longitude west in degrees and minutes.
- Col. 4: Station elevation in feet above sea level.
- Col. 5: Theoretical gravity at sea level in gals.
- Col. 6: Observed gravity in gals.
- Col. 7: Bouguer anomaly in mgals, using density of 2.67 gm/cc in the mass correction.

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
1	48-59.8	116-29.9.	1794	980.9891	980.7495	-132.0
2	48-59.7	116-27.8	2116	.9890	.7329	-129.1
3	48-59.7	116-10.6	2639	.9890	.6959	-134.8
4	48-57.2	116-24.8	2163	.9853	.7293	-126.2
5	48-56.8	116-17.0	2767	.9847	.6921	-126.6
6	48-55.9	116-10.5	2548	.9834	.6988	-131.7
7	48-53.6	116-21.6	2159	.9799	.7111	-139.3
8	48-51.3	116- 9.6	2441	.9764	.6962	-133.7
9	48-49.7	116-19.9	2068	.9740	.7109	-139.0
10	48-48.5	116-12.6	2754	.9722	.6784	-128.6
11	48-45.8	116-17.2	2307	.9682	.7007	-129.1
12	48-46.9	116- 9.4	2358	.9698	.7021	-126.2
13	48-44.0	116- 6.1	2306	.9656	.6977	-129.5
14	48-43.0	116-13.7	2229	.9641	.7022	-128.2
15	48-41.4	116-18.6	1777	.9617	.7239	-131.2
16	48-41.1	116- 3.3	2218	.9612	.6936	-134.5
17	48-38.8	116-23.1	1842	.9578	.7166	-130.7
18	48-37.0	116- 3.0	1822	.9551	.7121	-133.7
19	48-35.2	116- 9.0	2930	.9524	.6438	-132.8
20	48-33.8	116-15.9	4396	.9503	.5497	-136.8
21	48-34.1	116-24.0	2012	.9508	.6929	-137.2
22	48-39.2	116-57.1	2638	.9584	.6752	-124.9
23	48-34.2	116-57.3	2575	.9509	.6794	-117.0
24	48-30.4	116-54.9	2515	.9452	.6849	-109.4
25	48-28.1	117- 0.8	2507	.9418	.6817	-109.7
26	48-42.2	117- 2.2	2960	.9629	.6559	-129.4
27	48-27.1	116-54.8	2505	.9404	.6893	-100.8

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
28	48-30.2	116-27.2	2114	.980.9449	.980.6870	-131.1
29	48-25.9	116-29.4	2139	.9386	.6856	-124.7
30	48-22.0	116-32.8	2144	.9327	.7275	-118.5
31	48-19.3	116-28.9	2121	.9286	.6790	-122.3
32	48-19.2	116-22.4	2075	.9285	.6760	-128.0
33	48-14.9	116-18.7	2141	.9220	.6659	-127.6
34	48-11.6	116-14.6	2095	.9171	.6620	-129.4
35	48- 8.4	116-10.6	2082	.9124	.6577	-129.8
36	48- 5.5	116- 6.2	2230	.9080	.6550	-119.2
37	48- 2.1	116- 9.2	4381	.9030	.5150	-125.1
38	48- 3.9	116-14.9	4779	.9056	.4864	-132.5
39	48- 0.7	116-19.8	5077	.9008	.4677	-128.5
40	48- 0.4	116-40.0	2340	.9004	.6534	-106.6
41	48- 4.4	116-38.0	2259	.9064	.6625	-108.4
42	48- 8.8	116-36.2	2233	.9130	.6717	-107.3
43	48-12.6	116-33.4	2206	.9186	.6784	-107.8
44	48-16.7	116-33.3	2085	.9248	.6803	-119.4
45	48-15.3	116-39.2	2083	.9226	.6959	-101.7
46	48-12.1	116-43.5	2119	.9178	.7028	- 87.9
47	48- 9.2	116-48.9	2073	.9136	.7001	- 89.1
48	48- 5.2	116-47.5	2203	.9076	.6851	- 90.3
49	48- 1.0	116-48.9	2209	.9013	.6772	- 91.6
50	48- 0.4	116-57.1	2280	.9004	.6810	- 82.6
51	48- 3.1	117- 1.2	2296	.9044	.6870	- 79.6
52	48- 7.0	117- 1.4	2330	.9103	.6875	- 83.0
53	48-10.5	116-55.0	2079	.9154	.7009	- 89.8
54	48-10.7	116-58.8	2192	.9158	.6956	- 88.7
55	48-10.9	117- 2.9	2153	.9160	.7016	- 85.2
56	48-15.6	116-55.9	2338	.9231	.6928	- 90.0
57	48-18.2	116-52.8	2241	.9270	.7094	- 83.1
58	48-19.6	116-59.1	2364	.9291	.6920	- 95.3
59	48-22.4	116-49.8	2450	.9333	.6988	- 87.5
60	48-24.0	116-58.2	2425	.9357	.6882	-102.0
61	47-57.9	116-52.1	2550	.8966	.6540	- 89.6
62	47-56.6	116-48.1	2519	.8947	.6467	- 96.9
63	47-56.8	116-43.0	2390	.8950	.6480	-103.6
64	47-53.3	116-42.9	2330	.8898	.6493	-100.7
65	47-53.2	116-51.0	2421	.8896	.6514	- 92.9
66	47-49.7	116-46.2	2313	.8844	.6417	-103.9
67	47-48.7	116-53.8	2211	.8828	.6614	- 88.7
68	47-45.5	116-47.4	2274	.8780	.6378	-103.8
69	47-42.9	117- 0.0	2124	.8742	.6572	- 89.6
70	47-42.7	116-53.6	2195	.8738	.6462	- 95.9
71	47-41.1	116-46.8	2175	.8715	.6432	- 97.8
72	47-38.5	116-42.9	2209	.8676	.6398	- 95.3
73	47-37.4	116-38.4	2140	.8659	.6367	-100.8
74	47-37.4	116-31.7	2677	.8659	.6040	-101.3
75	47-37.8	116-21.0	2326	.8665	.6162	-110.7

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
76	47-41.7	116-22.8	2520	.980.8724	980.6046	-116.6
77	47-44.3	116-28.2	2778	.8762	.5999	-109.6
78	47-49.7	116-30.0	3050	.8844	.5883	-113.1
79	47-53.4	116-27.3	4900	.8899	.4716	-124.3
80	47-56.8	116-22.3	4853	.8950	.4740	-129.8
81	47-56.7	116-11.4	4428	.8948	.5109	-118.2
82	47-57.2	116- 5.7	3378	.8956	.5766	-116.3
83	47-53.0	116-12.5	2955	.8893	.5962	-115.8
84	47-51.3	116- 6.3	2796	.8868	.6007	-118.3
85	47-47.2	116- 4.5	2669	.8806	.6002	-120.3
86	47-57.2	116- 0.4	4991	.8956	.4699	-126.1
87	47-43.9	116- 0.0	2553	.8756	.5992	-123.2
88	47-39.4	115-58.0	2449	.8689	.6009	-121.1
89	47-38.8	116- 4.3	2324	.8680	.6066	-122.0
90	47-37.7	116-10.8	2236	.8664	.6110	-121.2
91	47-34.1	116-15.5	2180	.8610	.6170	-113.2
92	47-33.1	116-19.9	2143	.8595	.6245	-106.4
93	47-34.5	116-26.3	2162	.8616	.6281	-103.8
94	47-32.7	116-25.4	2173	.8588	.6243	-104.1
95	47-32.3	116-28.9	2151	.8582	.6291	-100.0
96	47-30.2	116-32.6	2136	.8551	.6337	- 93.2
97	47-37.6	116-46.0	2231	.8662	.6386	- 93.7
98	47-33.9	116-47.2	2235	.8606	.6380	- 88.5
99	47-29.6	116-48.6	2141	.8542	.6368	- 88.9
100	47-26.4	116-44.5	2644	.8494	.5993	- 91.5
101	47-27.5	116-36.6	2142	.8510	.6340	- 88.5
102	47-22.7	116-39.5	2760	.8438	.5854	- 92.8
103	47-20.0	116-53.0	2700	.8398	.5862	- 91.6
104	47-16.6	117- 0.3	2558	.8347	.5899	- 91.3
105	47-15.7	116-55.1	2706	.8334	.5740	- 97.0
106	47-11.4	116-56.5	2610	.8269	.5685	-101.8
107	47- 8.0	116-53.3	2575	.8218	.5647	-102.6
108	47- 4.9	116-49.6	2709	.8172	.5491	-105.6
109	47- 0.5	116-53.2	2654	.8106	.5469	-104.5
110	47- 0.3	116-15.4	2826	.8102	.5271	-113.5
111	47- 4.0	116-18.7	2751	.8158	.5355	-115.2
112	47- 6.7	116-24.8	2699	.8198	.5433	-114.6
113	47- 8.9	116-27.1	2671	.8232	.5474	-115.5
114	47-11.7	116-29.0	2803	.8274	.5495	-109.7
115	47-15.7	116-31.4	2765	.8333	.5559	-111.5
116	47-19.2	116-34.3	2212	.8386	.5965	-109.4
117	47-20.6	116-29.1	2136	.8407	.6054	-107.1
118	47-19.8	116-23.5	2138	.8395	.5975	-113.7
119	47-19.7	116-17.4	2157	.8394	.5945	-115.5
120	47-16.2	116-13.2	2177	.8341	.5844	-119.1
121	47-15.9	116- 6.6	2252	.8336	.5784	-120.1
122	47-14.8	116- 1.3	2287	.8320	.5670	-127.8
123	47-14.9	115-54.9	2379	.8322	.5496	-139.9
124	47-15.3	115-48.3	2486	.8328	.5418	-141.8

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125	47-19.5	115-46.0	2822	980.8390	980.5271	-142.6
126	47-23.2	115-46.3	3104	.8446	.5183	-140.1
127	47-24.8	115-52.2	4850	.8470	.4245	-131.5
128	47-28.1	115-47.5	3273	.8520	.5216	-134.0
129	47-28.4	115-55.4	2730	.8524	.5605	-128.1
130	47-30.8	116- 0.7	2461	.8560	.5870	-121.3
131	47-32.0	116- 7.1	2305	.8578	.6022	-117.3
132	47-35.4	115-56.0	2634	.8629	.5834	-121.5
133	47-37.7	115-51.5	2762	.8664	.5745	-126.2
134	47-35.7	115-45.5	3351	.8634	.5253	-137.0
135	47-32.4	115-53.3	4106	.8584	.4845	-127.5
136	47-10.3	115-19.1	5039	.8252	.3729	-150.0
137	47- 9.0	115-24.3	3343	.8233	.4658	-156.9
138	47-11.4	115-29.2	3069	.8269	.4884	-154.4
139	47-13.7	115-34.7	2841	.8304	.5113	-148.6
140	47-14.4	115-39.5	2710	.8314	.5214	-147.4
141	47-14.0	115-43.7	2586	.8308	.5260	-149.6
142	47-11.9	115-48.8	4636	.8276	.4142	-135.2
143	47- 9.2	115-43.7	5097	.8236	.3819	-135.9
144	47- 5.9	115-49.3	4848	.8186	.3966	-131.1
145	47- 2.1	115-52.1	5485	.8130	.3536	-130.2
146	46-59.1	115-51.2	5712	.8084	.3236	-142.1
147	46-56.7	115-52.6	3877	.8048	.4383	-133.9
148	46-53.8	115-54.8	2654	.8005	.5133	-128.0
149	48-25.5	116-50.1	2590	.9380	.6899	- 92.7
150	46-52.0	116- 0.1	3305	.7978	.4784	-121.1
151	46-50.3	116- 6.2	3332	.7952	.4745	-120.8
152	46-46.9	116-10.7	2898	.7902	.4967	-119.6
153	46-46.3	116-15.6	2849	.7892	.4998	-118.5
154	46-48.6	116-20.4	2898	.7927	.5052	-113.6
155	46-51.3	116-23.8	2872	.7958	.5085	-115.0
156	46-54.4	116-23.5	2894	.8014	.5052	-122.6
157	46-57.8	116-19.9	3035	.8065	.4994	-125.0
158	46-48.7	116-27.4	2859	.7928	.5129	-108.4
159	46-48.3	116-33.7	2861	.7922	.5120	-108.5
160	46-50.1	116-38.8	2758	.7950	.5142	-115.3
161	46-51.7	116-43.0	2796	.7974	.5132	-116.4
162	46-55.0	116-44.1	2564	.8030	.5375	-111.7
163	46-54.8	116-50.5	2517	.8020	.5364	-114.6
164	46-55.2	116-57.2	2479	.8026	.5449	-109.0
165	46-51.6	117- 1.1	2737	.7972	.5231	-109.9
166	46-47.5	117- 0.1	2815	.7910	.5062	-115.9
167	46-43.7	116-59.9	2561	.7854	.5238	-107.9
168	46-42.8	116-52.8	2591	.7840	.5265	-102.0
169	46-44.0	116-46.2	2459	.7864	.5318	-107.1
170	46-45.5	116-41.8	2643	.7880	.5210	-108.4
171	46-46.4	116-37.5	2850	.7894	.5167	-101.7
172	46-39.2	117- 0.5	2649	.7786	.5295	- 90.2
173	46-35.7	116-57.0	2717	.7734	.5174	- 93.0
174	46-30.9	116-56.9	2699	.7662	.5177	- 86.6

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175	46-26.3	116-54.4	735	.980.7592	980.6164	- 98.7
176	46-25.6	117- 0.2	870	.7581	.6210	- 84.9
177	46-24.8	117- 0.8	738	.7569	.6234	- 89.2
178	46-22.4	116-56.0	1516	.7533	.5663	- 96.0
179	46-18.3	116-53.4	2026	.7471	.5387	- 86.8
180	46-13.3	116-51.2	3083	.7396	.4672	- 87.4
181	46-10.0	116-47.7	4732	.7347	.3447	-106.1
182	46- 9.4	116-42.0	4584	.7338	.3415	-117.3
183	46- 8.0	116-36.3	4334	.7317	.3473	-124.4
184	46- 7.2	116-30.5	4097	.7305	.3683	-116.4
185	46- 4.4	116-25.0	3925	.7263	.3848	-106.0
186	46- 2.1	116-19.8	3422	.7229	.4172	-100.4
187	46- 5.3	116-20.7	3587	.7277	.4058	-106.7
188	46- 9.1	116-23.1	3693	.7334	.3993	-112.5
189	46-11.6	116-24.2	3323	.7371	.4215	-116.2
190	46-14.4	116-27.8	3722	.7413	.4043	-113.7
191	46-14.2	116-33.8	3901	.7310	.3931	-103.8
192	46-15.3	116-37.5	3959	.7427	.3984	-106.8
193	46-19.9	116-38.3	3598	.7496	.4314	-102.3
194	46-21.4	116-45.8	1233	.7518	.5950	- 82.8
195	46-22.7	116-40.7	1609	.7538	.5683	- 89.0
196	46-24.4	116-47.9	970	.7563	.6125	- 85.6
197	46-27.4	116-48.6	700	.7608	.6170	-101.8
198	46-29.3	116-43.1	845	.7638	.6197	- 93.4
199	46-31.4	116-37.7	903	.7669	.6227	- 90.0
200	46-36.8	116-39.3	1213	.7750	.6084	- 93.8
201	46-40.0	116-43.0	2606	.7798	.5279	- 95.5
202	46-36.0	116-34.1	2439	.7738	.5324	- 95.1
203	46-30.3	116-31.5	932	.7652	.6253	- 84.0
204	46-36.2	116-28.4	2847	.7741	.5086	- 94.7
205	46-32.3	116-25.7	2813	.7682	.4985	-100.9
206	46-30.7	116-21.4	1292	.7658	.5921	- 96.2
207	46-28.9	116-15.3	1020	.7632	.6053	- 96.7
208	46-26.1	116-13.2	1055	.7588	.5999	- 95.6
209	46-23.5	116-10.1	1077	.7550	.5845	-105.9
210	46-23.1	116- 3.6	2967	.7544	.4674	-109.0
211	46-19.3	116- 8.6	1119	.7486	.5616	-119.9
212	46-15.6	116- 5.1	1145	.7431	.5642	-110.2
213	46-22.7	115-56.4	2961	.7538	.4706	-105.5
214	46-26.4	115-52.7	3119	.7593	.4639	-108.3
215	46-29.6	115-47.7	3087	.7642	.4667	-112.3
216	46-33.8	115-49.5	3254	.7705	.4639	-111.4
217	46-37.9	115-48.3	3251	.7766	.4566	-124.9
218	46-30.0	115-42.4	4566	.7648	.3678	-123.0
219	46-28.0	115-36.4	5147	.7618	.3098	-143.2
220	46-26.8	115-30.6	5987	.7599	.2438	-156.9
221	46-25.3	115-25.1	5527	.7576	.2670	-159.0
222	46-25.3	115-18.8	6001	.7576	.2409	-156.6

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223	46-27.2	115-12.9	6179	980.7605	980.2273	-162.5
224	46-30.2	115- 8.2	5888.	.7651	.2457	-166.1
225	46-40.2	115- 4.1	3775	.7801	.4095	-144.1
226	46-32.3	115- 2.2	6420	.7682	.2048	-178.2
227	46-33.6	114-5 6.2	6348	.7702	.2095	-179.8
228	46-36.0	114-50.6	5398	.7738	.2858	-164.1
229	42-54.0	114-19.0	4046	.4400	.0823	-114.9
230	46-34.5	114-42.3	5800	.7716	.2525	-171.1
231	46-34.7	114-36.5	4694	.7718	.3229	-167.3
232	46-38.2	114-34.9	5235	.7771	.2934	-169.6
233	46-30.3	114-43.1	3406	.7652	.3851	-175.7
234	46-12.8	116- 0.0	1245	.7389	.5554	-108.8
235	46- 8.5	115-58.6	1248	.7324	.5366	-120.9
236	46- 5.2	115-58.3	1315	.7275	.5329	-115.7
237	46- 1.5	115-58.0	1521	.7220	.5262	-104.5
238	46- 8.7	115-52.2	1299	.7328	.5387	-116.2
239	46- 7.4	115-46.6	1403	.7308	.5161	-130.5
240	46- 8.3	115-40.7	1456	.7322	.5036	-141.2
241	46- 8.5	115-35.5	1499	.7324	.5028	-139.7
242	46- 5.4	115-31.7	1530	.7278	.4843	-151.7
243	46- 4.5	115-25.1	1584	.7264	.4635	-167.9
244	46- 3.3	115-19.0	1659	.7246	.4510	-174.1
245	45-58.1	116-21.7	2249	.7167	.4697	-112.1
246	45-54.8	116-24.3	1310	.7118	.5132	-120.0
247	45-52.7	116-27.8	4352	.7086	.3194	-128.1
248	45-48.9	116-27.7	4181	.7030	.3223	-129.8
249	45-59.0	116-17.8	3335	.7182	.4167	-101.4
250	45-56.8	116-12.7	3273	.7148	.4092	-109.2
251	45-55.9	116- 7.5	3295	.7135	.4019	-113.9
252	45-57.7	115-57.5	1591	.7162	.5047	-116.0
253	45-53.2	116- 2.4	2022	.7094	.4475	-140.6
254	45-53.1	116-11.3	3570	.7072	.3738	-121.2
255	45-50.8	116- 4.4	4976	.7058	.2641	-143.1
256	45-49.7	116-14.8	3485	.7041	.3720	-123.0
257	45-46.1	116-17.6	1593	.6987	.4728	-130.3
258	45-41.8	116-18.7	1497	.6923	.4740	-128.5
259	45-38.0	116-16.8	1560	.6866	.4594	-133.6
260	45-34.0	116-18.2	1611	.6805	.4426	-141.2
261	45-29.5	116-18.8	1671	.6737	.4186	-154.8
262	45-25.4	116-18.8	1800	.6676	.4000	-159.6
263	45-22.3	116-21.4	2022	.6629	.3751	-166.5
264	45-19.1	116-21.3	2332	.6581	.3462	-172.0
265	45-15.3	116-20.0	2704	.6524	.3131	-177.1
266	45-11.3	116-18.2	3185	.6448	.2852	-168.5
267	45- 6.8	116-18.1	3802	.6396	.2390	-172.5
268	45- 2.5	116-16.8	3824	.6331	.2405	-163.2
269	45- 4.3	116- 2.9	5174	.6358	.1550	-170.4
270	45- 8.6	116- 0.8	5567	.6423	.1330	-175.3

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271	45-11.9	115-57.5	6357	980.6473	980.0805	-185.4
272	45-15.9	115-53.8	6020	.6534	.1002	-192.0
273	45-18.6	115-55.9	6249	.6574	.0921	-190.4
274	45-22.3	115-58.2	6477	.6629	.0893	-185.0
275	45-25.0	116- 2.3	2010	.6670	.3481	-198.3
276	45-24.1	116- 6.7	1889	.6656	.3553	-197.0
277	45-24.1	116-12.7	1813	.6656	.3743	-182.5
278	45-30.4	116- 1.6	5887	.6751	.1403	-181.6
279	45-34.2	116- 1.6	5368	.6808	.1831	-175.6
280	45-38.0	116- 1.3	5215	.6866	.2047	-169.0
281	45-38.3	116- 5.9	3390	.6866	.3073	-176.3
282	45-38.0	116-11.3	2289	.6870	.3851	-164.2
283	45-42.6	116- 1.4	5551	.6935	.2007	-159.7
284	45-47.0	116- 1.2	4927	.7001	.2585	-146.0
285	45-50.0	115-56.7	2292	.7046	.4148	-152.3
286	45-49.3	115-50.6	2510	.7036	.3824	-170.6
287	45-47.9	115-45.8	2923	.7015	.3496	-176.5
288	45-48.9	115-40.4	3458	.7030	.3245	-171.0
289	45-49.6	115-34.9	3785	.7040	.3208	-156.1
290	45-49.7	115-29.8	3846	.7042	.3163	-157.1
291	45-49.7	115-26.2	4010	.7042	.3034	-160.2
292	45-47.5	115-23.4	4254	.7009	.2832	-162.5
293	45-43.8	115-23.2	4260	.6953	.2710	-168.7
294	45-41.8	115-20.0	4427	.6923	.2470	-179.7
295	45-42.5	115-15.2	6457	.6934	.1196	-186.4
296	45-41.5	115-10.8	6922	.6919	.0894	-187.2
297	45-43.3	115- 6.9	6764	.6946	.1025	-186.3
298	45-44.1	115- 1.8	4973	.6958	.2092	-188.2
299	45-42.4	114-59.6	6876	.6932	.0954	-185.2
300	45-41.2	114-56.4	6738	.6914	.1045	-182.6
301	45-38.7	114-55.7	7532	.6877	.0440	-191.8
302	45-38.2	114-52.9	7458	.6869	.0469	-192.5
303	45-38.4	114-50.0	7778	.6872	.0284	-192.1
304	45-41.1	114-45.8	5578	.6913	.1686	-188.0
305	45-43.9	114-45.6	3704	.6955	.2821	-191.2
306	45-42.0	114-39.7	4655	.6851	.2239	-181.9
307	45-42.4	114-35.0	5200	.6857	.1942	-179.5
308	45-43.1	114-30.0	6588	.6943	.1155	-183.5
309	45-30.4	114-23.7	7108	.6751	.0377	-210.9
310	45-27.6	114-22.2	8100	.6709	979.9640	-220.9
311	45-22.3	114-41.6	2980	.6629	980.2772	-206.9
312	45-19.4	114-38.2	3009	.6585	.2593	-218.7
313	45-18.3	114-33.7	3055	.6569	.2512	-222.4
314	45-18.9	114-28.9	3133	.6579	.2531	-216.8
315	45-19.3	114-23.8	3212	.6584	.2452	-220.5
316	45-20.8	114-19.9	3309	.6607	.2305	-231.7
317	45-22.9	114-16.3	3384	.6639	.2365	-224.4

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318	45-23.9	114-15.0	3408	980.6654	980.2383	-222.6
319	45-27.1	114-18.6	6184	.6701	.0783	-220.8
320	45-24.5	114- 9.3	3458	.6662	.2413	-217.4
321	45-22.8	114- 5.3	3538	.6637	.2344	-217.0
322	45-41.1	113-57.4	7015	.6912	979.0670	-203.3
323	45-37.9	113-58.8	5224	.6865	980.1698	-203.3
324	45-33.3	113-56.0	4456	.6794	.2111	-200.9
325	45-29.2	113-58.9	3988	.6733	.2270	-207.0
326	45-24.6	113-59.5	3617	.6664	.2416	-207.8
327	45-21.5	113-56.7	3672	.6617	.2375	-203.9
328	45-18.3	113-54.2	3764	.6571	.2295	-201.8
329	45-14.6	113-53.9	3838	.6514	.2142	-206.9
330	45-10.0	113-53.6	3952	.6444	.1970	-210.3
331	45- 7.9	113-48.5	4184	.6413	.1749	-215.3
332	45- 5.0	113-43.8	4415	.6369	.1628	-209.2
333	45- 1.2	113-40.0	4635	.6312	.1409	-212.2
334	45- 5.5	113-53.7	4041	.6377	.1830	-212.2
335	45- 1.6	113-55.0	4150	.6318	.1704	-212.4
336	45- 4.5	114- 0.1	5253	.6362	.1085	-212.5
337	45- 6.0	114- 7.2	7397	.6384	979.9773	-217.1
338	45- 9.6	114-10.0	5698	.6438	980.0850	-216.9
339	45-16.3	114-19.8	3431	.6539	.2263	-221.7
340	45-12.2	114-18.9	3799	.6477	.1831	-236.7
341	45- 9.9	114-15.3	4369	.6443	.1506	-231.6
342	45- 7.0	114-13.1	4960	.6399	.1169	-225.4
343	45- 4.9	114-16.1	5222	.6368	.0958	-227.6
344	45- 0.1	114-19.9	5612	.6296	.0681	-224.7
345	44- 5.9	114-20.1	6223	.6233	.0103	-239.6
346	44-52.4	114-24.2	5733	.6180	.0412	-232.8
347	44-50.0	114-29.9	5148	.6143	.0814	-224.0
348	44-51.7	114-17.5	7100	.6170	979.9720	-218.9
349	44-47.8	114-15.0	6497	.6107	980.0016	-219.3
350	44-43.0	114-16.0	5881	.6038	.0316	-219.3
351	44-39.2	114-12.8	5308	.5981	.0609	-218.7
352	44-34.3	114-11.3	4862	.5908	.0864	-212.6
353	44-29.4	114-19.5	6205	.5834	.0004	-210.7
354	44-29.4	114-25.9	6983	.5834	.9584	-206.0
355	44-29.5	114-31.0	8298	.5836	.8569	-228.8
356	44-28.0	114-34.9	7306	.5813	.9115	-231.4
357	44-25.2	114-37.5	6816	.5770	.9431	-224.9
358	44-23.2	114-42.2	6469	.5740	.9602	-225.7
359	44-19.9	114-43.1	6227	.5691	.9723	-223.1
360	44-16.0	114-51.0	6088	.5632	.9755	-222.4
361	44-14.7	115- 0.2	6350	.5613	979.9614	-218.8
362	44-18.1	115- 2.2	6523	.5664	.9583	-216.7
363	44-20.8	115- 6.2	6657	.5704	.9585	-212.5
364	44-23.5	115-10.0	6504	.5742	.9730	-210.9
365	44-21.5	115-14.8	6798	.5712	.9546	-208.7

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366	44-25.0	115-17.2	6365	980.5767	979.9899	-204.9
367	44-24.9	115-21.8	6434	.5766	.9867	-203.8
368	44-25.4	115-26.4	6415	.5773	.9904	-202.0
369	44-29.6	115-31.7	6271	.5837	.9973	-210.1
370	44-26.9	115-35.5	5579	.5796	980.0387	-206.1
371	44-31.3	115-34.8	6178	.5863	.0044	-211.2
372	44-35.2	115-32.0	6713	.5921	979.9823	-207.0
373	44-39.6	115-32.3	6623	.5987	.9935	-207.8
374	44-43.9	115-33.2	6524	.6052	980.0092	-204.5
375	44-47.2	115-31.2	5339	.6101	.0836	-206.2
376	44-52.1	115-30.1	5108	.6100	.0972	-206.3
377	44-56.5	115-29.3	4868	.6242	.1184	-213.7
378	44-53.7	115-19.9	6539	.6200	.0253	-202.3
379	44-57.0	115-21.0	5702	.6249	.0676	-215.2
380	44-57.6	115-25.7	5280	.6258	.0940	-215.0
381	45- 1.7	115-23.8	6567	.6320	.0294	-208.5
382	45- 4.2	115-22.0	6615	.6357	.0286	-210.2
383	45- 8.1	115-19.0	5755	.6416	.0930	-203.2
384	45-10.5	115-34.4	2956	.6451	.2386	-229.1
385	45-13.4	115-36.8	6736	.6496	.0399	-205.5
386	45-15.9	115-40.0	5914	.6534	.1007	-197.9
387	45-15.2	115-43.8	6017	.6523	.0924	-198.9
388	45-13.9	115-48.0	5816	.6504	.1007	-200.7
389	44-57.4	115-34.5	4324	.6255	.1491	-217.1
390	44-58.0	115-39.2	4083	.6264	.1734	-208.0
391	45- 1.0	115-41.3	3803	.6309	.2003	-202.4
392	45- 4.2	115-45.7	4212	.6357	.1844	-198.6
393	45- 3.6	115-51.4	5371	.6348	.1094	-203.1
394	45- 1.3	115-56.9	6677	.6314	.0502	-180.5
395	44-57.0	115-56.9	5585	.6249	.1068	-183.0
396	44-55.5	116- 1.1	5408	.6227	.1235	-174.7
397	45- 0.0	116- 4.3	5019	.6294	.1591	-169.2
398	44-57.7	116-10.4	4739	.6259	.1822	-159.4
399	44-54.6	116- 6.0	5022	.6213	.1468	-173.2
400	44-51.0	116- 5.3	4990	.6159	.1440	-172.5
401	44-47.5	116- 4.8	4904	.6106	.1315	-184.8
402	44-44.0	116- 5.0	4863	.6053	.1255	-189.0
403	44-39.5	116- 2.8	4862	.5986	.1315	-175.3
404	44-34.8	116- 2.2	5085	.5915	.1137	-172.7
405	44-31.5	116- 2.7	4745	.5866	.1307	-171.1
406	44-22.3	116- 0.0	4749	.5727	.1166	-171.1
407	44-23.3	116- 0.8	4745	.5592	.1188	-155.6
408	44-20.1	116- 3.5	4636	.5694	.1274	-163.8
409	44-16.5	116- 4.9	4442	.5640	.1353	-162.1
410	44-12.9	116-12.5	5245	.5585	.1096	-134.2
411	44-13.2	116- 6.9	4042	.5590	.1581	-158.4
412	44- 9.1	116- 7.3	3361	.5529	.1946	-156.6
413	44-10.4	116-17.2	3013	.5548	.2483	-125.7

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414	44- 6.2	116-18.7	2875	.980.5485	.980.2504	-125.6
415	44- 1.9	116-19.8	2691	.5420	.2619	-118.6
416	43-55.9	116-26.4	2463	.5329	.2789	-106.2
417	43-52.3	116-35.7	2329	.5275	.2786	-109.2
418	43-54.2	116-40.8	2278	.5304	.2940	- 99.7
419	43-55.9	116-46.1	2297	.5329	.3011	- 94.0
420	43-58.3	116-49.0	2245	.5365	.3062	- 95.6
421	43-58.0	116-54.9	2276	.5361	.3036	- 95.9
422	44- 4.9	116-56.1	2148	.5465	.3193	-103.2
423	44- 7.8	116-54.0	2139	.5509	.3288	- 93.4
424	44-12.0	116-54.9	2137	.5572	.3365	- 92.5
425	44-14.8	116-51.8	2174	.5667	.3385	-123.5
426	44-18.3	116-46.3	2223	.5632	.3310	- 98.8
427	44-16.2	116-40.1	3494	.5635	.2349	-119.0
428	44-17.3	116-35.2	3551	.5651	.2301	-121.9
429	44-21.8	116-32.0	3225	.5719	.2612	-117.2
430	44-25.0	116-28.6	3311	.5767	.2622	-115.8
431	44-28.6	116-25.5	3386	.5822	.2586	-120.4
432	44-32-6	116-26.0	3038	.5882	.2870	-118.9
433	44-36.4	116-26.7	2978	.5939	.2936	-121.6
434	44-39.8	116-26.8	2988	.5991	.2996	-120.2
435	44-43.8	116-26.8	2913	.6050	.3120	-118.2
436	44-47.5	116-26.0	3043	.6105	.3091	-118.8
437	44-50.9	116-23.0	3559	.6158	.2680	-134.3
438	44-54.0	116-23.8	3748	.6204	.2512	-144.3
439	44-57.2	116-23.2	4102	.6252	.2199	-159.2
440	44-58.6	116-16.8	3869	.6273	.2367	-158.5
441	44-47.2	116-30.1	3131	.6101	.3075	-114.7
442	44-49.6	116-35.0	3611	.6137	.2744	-122.6
443	44-52.5	116-38.9	4600	.6181	.2076	-134.5
444	44-57.3	116-39.8	4320	.6253	.2225	-143.6
445	45- 1.3	116-40.2	4366	.6313	.2289	-140.4
446	45- 4.7	116-43.4	4092	.6364	.2512	-139.7
447	45- 2.8	116-48.4	1676	.6336	.3752	-157.8
448	44-59.0	116-51.7	1719	.6279	.3774	-147.4
449	44-54.4	116-51.0	1834	.6210	.3669	-144.1
450	44-51.5	116-53.7	1811	.6166	.3773	-129.6
451	44-47.9	116-56.1	1845	.6112	.3731	-126.4
452	44-47.1	116-54.5	2362	.6099	.3263	-141.9
453	44-43.9	116-50.7	3864	.6051	.2215	-151.8
454	44-38.5	116-49.7	3449	.5970	.2415	-148.6
455	44-36.6	116-45.2	2916	.5942	.2984	-120.8
456	44-34.3	116-40.3	2651	.5907	.3174	-114.2
457	44-34.0	116-36.0	2698	.5903	.3104	-118.0
458	44-35.2	116-31.3	2812	.5921	.3051	-118.3
459	44-30.2	116-42.8	2635	.5846	.3097	-116.8
460	44-27.5	116-45.7	2636	.5804	.3116	-110.6
461	44-25.0	116-50.2	3156	.5767	.2840	-103.3

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462	44-21.3	116-52.8	2612	980.5711	980.3193	- 95.1
463	44-18.0	116-55.3	2358	.5662	.3399	- 84.8
464	44-14.8	116-58.7	2145	.5614	.3433	- 89.4
465	44-13.6	117- 1.9	2164	.5596	.3422	- 87.6
466	44-15.8	117- 7.2	2122	.5629	.3579	- 77.7
467	44-16.8	117-12.9	2107	.5644	.3508	- 87.2
468	44-25.0	117-14.1	2040	.5767	.3483	-106.0
469	44-28.0	117-13.9	2022	.5813	.3428	-117.2
470	44-31.5	117-11.3	1980	.5865	.3433	-124.4
471	44-34.7	117- 8.9	1950	.5913	.3458	-128.5
472	44-38.0	117- 6.8	1946	.5963	.3485	-131.0
473	44-41.8	117- 5.0	1901	.6020	.3604	-127.5
474	44-45.6	117- 0.3	1871	.6077	.3695	-125.9
475	44-31.4	115-57.0	4895	.5864	.1083	-184.4
476	44-34.0	115-53.8	5129	.5903	.0904	-192.2
477	44-36.8	115-50.3	5384	.5945	.0698	-201.7
478	44-38.2	115-45.5	5985	.5966	.0296	-207.9
479	44-39.7	115-40.8	5192	.5989	.0789	-208.4
480	44-38.8	115-36.9	6183	.5875	.0146	-211.9
481	44-28.4	115-37.2	5488	.5819	.0429	-209.7
482	44-19.2	115-38.9	5322	.5680	.0480	-199.7
483	44-15.6	115-40.6	5805	.5626	.0150	-199.3
484	44-12.7	115-42.7	5343	.5583	.0421	-195.6
485	44- 8.3	115-44.0	7045	.5517	979.9297	-199.2
486	44- 4.1	115-45.0	3379	.5454	980.1539	-188.7
487	44- 1.2	115-36.5	5514	.5409	.0201	-190.0
488	44- 5.4	115-36.5	3832	.5473	.1257	-191.7
489	44- 9.4	115-34.0	4644	.5533	.0742	-200.5
490	44-12.5	115-30.8	5357	.5577	.0323	-204.0
491	44-16.8	115-29.0	6632	.5644	979.9584	-208.1
492	44-20.6	115-25.3	6534	.5701	.9704	-207.7
493	44-13.2	114-56.2	6219	.5590	.9634	-222.5
494	44- 9.0	114-53.0	6465	.5527	.9360	-228.8
495	44- 5.3	114-51.0	6617	.5472	.9185	-231.6
496	44- 1.2	114-50.0	6827	.5409	.8971	-234.2
497	43-56.9	114-49.0	7004	.5345	.8828	-231.4
498	43-52.9	114-46.2	7310	.5285	.8601	-229.7
499	43-52.2	114-39.5	7289	.5274	.8587	-231.4
500	43-48.9	114-35.8	6920	.5225	.8779	-229.4
501	43-48.0	114-29.3	6479	.5211	.9094	-223.0
502	43-45.0	114-24.0	6163	.5166	.9371	-209.7
503	43-44.3	114-18.0	6277	.5156	.9276	-211.3
504	43-48.4	114-15.8	7494	.5217	.8506	-221.5
505	43-52.3	114-12.1	7337	.5276	.8757	-211.6
506	43-55.4	114- 7.2	6907	.5322	.9097	-208.1
507	43-59.8	114- 3.0	6662	.5388	.9293	-209.8
508	44- 4.4	113-59.0	6609	.5458	.9292	-220.1
509	44- 6.5	114- 1.8	7471	.5490	.8846	-216.1

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510	44- 9.5	114- 4.8	7137	980.5535	979.9106	-214.6
511	44-10.0	114-11.0	6224	.5542	.9714	-209.4
512	44-12.2	114-16.5	5615	.5575	980.0124	-208.2
513	44-16.3	114-44.0	5968	.5637	979.9778	-227.8
514	44-15.6	114-37.5	5822	.5626	.9889	-224.4
515	44-15.5	114-32.0	5657	.5625	980.0089	-214.1
516	44-16.0	114-25.6	5484	.5632	.0209	-213.3
517	44-16.2	114-19.4	5375	.5633	.0353	-205.4
518	44-20.2	114-16.9	5247	.5695	.0432	-211.5
519	44-24.5	114-15.0	5153	.5760	.0537	-213.1
520	44-30.0	114-13.9	5245	.5843	.0554	-214.2
521	44-27.6	114- 9.7	5178	.5806	.0567	-213.2
522	44-23.9	114- 5.9	5635	.5751	.0263	-210.6
523	44-20.0	114- 3.0	6081	.5692	979.9941	-210.2
524	44-15.8	114- 1.0	6599	.5629	.9586	-208.4
525	44-12.4	113-51.5	6804	.5578	.9390	-210.6
526	44- 9.1	113-53.0	6663	.5529	.9328	-220.3
527	44-13.1	113-50.5	8317	.5589	.8483	-211.5
528	44-17.1	113-48.0	7097	.5649	.9274	-211.6
529	44-21.0	113-46.0	6541	.5707	.9665	-211.7
530	44-23.5	113-43.1	5945	.5745	.9889	-228.8
531	44-26.2	113-48.0	5585	.5785	980.0225	-220.9
532	44-30.2	113-50.2	5304	.5846	.0348	-231.6
533	44-32.6	113-54.1	5122	.5882	.0594	-221.5
534	44-36.2	113-55.0	5069	.5936	.0595	-230.0
535	44-38.5	113-59.1	4976	.5971	.0747	-223.8
536	44-38.0	114- 7.4	4731	.5963	.0991	-213.3
537	44-41.4	114- 2.6	4648	.6014	.1130	-209.5
538	44-44.8	113-59.3	4564	.6065	.1128	-219.9
539	44-48.9	113-59.8	4458	.6127	.1275	-217.7
540	44-54.0	113-58.0	4364	.6204	.1440	-214.6
541	44-57.5	113-57.0	4249	.6257	.1515	-219.2
542	44-58.0	113-32.4	5471	.6264	.0871	-211.0
543	44-58.2	113-27.0	7267	.6267	979.9829	-207.8
544	44-57.3	113-38.1	4840	.6254	980.1162	-218.7
545	44-53.2	113-37.3	5058	.6192	.1084	-207.3
546	44-49.2	113-34.7	5349	.6131	.0770	-215.2
547	44-46.2	113-29.9	5614	.6086	.0452	-226.6
548	44-43.4	113-25.0	5811	.6044	.0387	-217.0
549	44-44.7	113-16.1	6641	.6064	979.9984	-209.5
550	44-40.6	113-21.5	5981	.6002	980.0143	-227.0
551	44-36.5	113-18.9	6220	.5941	979.9692	-251.5
552	44-32.0	113-18.0	6508	.5873	.9746	-222.2
553	44-27.8	113-16.1	7222	.5809	.9347	-211.1
554	44-24.2	113-12.6	6834	.5755	.9407	-224.8
555	44-21.6	113- 8.8	6769	.5716	.9356	-229.0
556	44-19.8	113- 4.0	6643	.5689	.9489	-221.4

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557	44-16.1	113. 0.0	6511	980.5634	979.9540	-218.7
558	44-11.8	112-56.5	6182	.5569	.9797	-206.3
559	44- 7.5	112-53.0	5902	.5505	980.0051	-191.2
560	44- 3.5	112-49.0	5574	.5445	.0377	-172.4
561	44- 2.9	112-40.2	4932	.5436	.0876	-160.0
562	44- 5.5	112-35.2	5061	.5475	.0787	-165.1
563	44- 8.7	112-29.8	4916	.5523	.0982	-159.1
564	44-10.8	112-18.5	5079	.5553	.0920	-158.5
565	44-15.0	112-22.9	5385	.5617	.0736	-165.0
566	44-16.7	112-27.8	5625	.5643	.0595	-167.2
567	44-19.0	112-33.1	5879	.5677	.0201	-194.9
568	44-22.8	112-36.2	6248	.5734	979.9950	-203.5
569	44-26.1	112-41.2	6718	.5784	.9667	-208.6
570	44-28.9	112-46.2	7573	.5827	.9237	-204.6
571	44-33.4	112-19.0	6789	.5894	.9813	--200.8
572	44-29.0	112-13.5	6496	.5828	.9994	-193.6
573	44-25.6	112-12.4	6262	.5776	980.0173	-184.6
574	44-21.4	112-11.0	5884	.5713	.0452	-173.1
575	44-17.7	112-13.8	5569	.5658	.0640	-167.6
576	44-14.0	112-15.2	5331	.5602	.0763	-164.0
577	44- 9.9	112-18.4	5130	.5541	.0918	-154.4
578	44-10.1	112-12.0	5122	.5544	.0827	-164.3
579	44- 6.0	112-14.1	4961	.5482	.0921	-158.4
580	44- 1.5	112-14.1	4862	.5414	.0968	-152.8
581	43-57.7	112-13.6	4805	.5357	.0967	-150.6
582	43-50.6	112-18.0	4794	.5250	.0798	-157.6
583	43-50.6	112-24.0	4790	.5250	.0720	-165.6
584	43-50.6	112-30.0	4788	.5250	.0773	-160.4
585	43-53.7	112-34.9	4794	.5297	.0886	-153.4
586	43-56.5	112-39.3	4816	.5339	.0926	-152.3
587	43-59.4	112-14.1	5116	.5382	.0810	-150.2
588	43-55.4	112-47.4	4971	.5322	.0789	-155.0
589	43-51.0	112-49.0	4924	.5256	.0717	-158.5
590	43-47.5	112-53.5	4788	.5204	.0645	-168.6
591	43-51.0	113- 3.1	4970	.5256	.0455	-181.9
592	43-54.5	113- 6.2	5156	.5309	.0401	-181.4
593	43-58.3	113- 9.5	5370	.5366	979.9986	-214.2
594	44- 1.5	113-12.0	5617	.5414	980.0015	-201.2
595	44- 7.0	113-14.4	5833	.5497	.0007	-199.0
596	44-11.5	113-17.5	6056	.5565	979.9688	-224.3
597	44-14.1	113-22.1	6252	.5604	.9613	-223.9
598	44-16.5	113-28.0	6439	.5640	.9634	-214.2
599	44-19.3	113-32.1	6650	.5682	.9540	-215.1
600	44-21.3	113-37.5	6246	.5712	.9758	-220.6
601	44- 4.9	113-52.8	6281	.5466	.9458	-223.9
602	44- 4.0	113-57.0	6440	.5452	.9402	-218.6
603	44- 1.9	113-47.9	6315	.5421	.9408	-222.3
604	43-58.4	113-44.0	6135	.5367	.9554	-213.2

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605	43-56.2	113-39.0	5947	980.5334	979.9665	-210.1
606	43-53.6	113-34.0	5849	.5295	.9593	-219.3
607	43-53.4	113-28.1	5739	.5292	.9652	-219.7
608	43-57.5	113-26.3	6562	.5354	.9347	-206.9
609	44- 2.0	113-27.0	7370	.5422	.8883	-211.7
610	44- 5.0	113-24.0	6709	.5467	.9304	-213.8
611	44- 8.3	113-20.0	6287	.5517	.9671	-207.4
612	43-48.8	113-25.0	5619	.5223	.9864	-198.8
613	43-45.0	113-22.9	5507	.5166	.9956	-190.6
614	43-40.9	113-21.2	5394	.5105	980.0021	-184.7
615	43-38.1	113-18.0	5320	.5063	.0123	-174.8
616	43-36.7	113-13.9	5324	.5042	.0220	-162.7
617	43-36.3	113- 8.8	5358	.5036	.0272	-154.9
618	43-47.0	113- 0.0	4831	.5196	.0654	-166.3
619	43-38.0	113- 1.6	4951	.5061	.0566	-152.4
620	43-39.0	113- 4.2	5151	.5076	.0411	-157.4
621	43-34.1	113- 3.1	5111	.5003	.0327	-160.9
622	43-32.6	112-57.8	4966	.4980	.0485	-151.5
623	43-30.0	112-52.0	4959	.4941	.0527	-143.9
624	43-30.6	112-45.0	5179	.4950	.0325	-151.8
625	43-31.9	112-39.4	5250	.4970	.0288	-153.1
626	43-32.4	112-34.0	5309	.4977	.0238	-155.4
627	43-33.1	112-27.9	5121	.4988	.0394	-152.1
628	43-32.3	112-22.1	5088	.4976	.0381	-154.2
629	43-31.5	112-16.3	4866	.4964	.0496	-154.8
630	43-30.2	112-10.6	4754	.4944	.0566	-152.6
631	43-30.5	112- 4.4	4731	.4949	.0571	-153.9
632	43-35.0	112- 5.1	4795	.5016	.0626	-151.3
633	43-39.2	112- 5.5	4768	.5079	.0792	-142.6
634	43-43.0	112- 7.9	4775	.5136	.0916	-135.5
635	43-46.9	112- 9.6	4766	.5195	.0962	-137.3
636	43-50.0	112-11.9	4890	.5241	.0865	-144.2
637	43-53.9	112-11.9	4849	.5300	.0920	-147.0
638	44-20.9	112- 5.8	5953	.5706	.0387	-174.7
639	44-20.8	112- 0.0	6177	.5704	.0158	-184.0
640	44-19.7	111-54.5	6212	.5688	.0156	-180.5
641	44-15.0	111-55.0	6200	.5617	.0155	-174.2
642	44-13.4	111-51.0	5961	.5593	.0232	-178.4
643	44- 9.9	111-50.0	5678	.5541	.0471	-166.4
644	44- 6.3	111-48.1	5338	.5487	.0709	-157.5
645	44- 2.1	111-47.2	5092	.5424	.0875	-149.3
646	43-58.0	111-46.7	4928	.5361	.0833	-157.1
647	43-56.5	111-41.9	4972	.5339	.0728	-162.7
648	43-58.7	111-37.9	5039	.5372	.0689	-165.9
649	44- 1.0	111-32.0	5182	.5406	.0611	-168.6
650	44- 4.2	111-26.8	5256	.5455	.0582	-171.9
651	44- 4.2	111-21.1	5555	.5455	.0319	-180.3
652	44- 8.4	111-17.8	5567	.5518	.0322	-185.6

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653	44-12.4	111-20.0	5946	980.5578	980.0126	-188.4
654	44-16.3	111-24.0	6206	.5637	.0076	-183.7
655	44-21.0	111-25.5	6143	.5707	.0147	-187.4
656	44-25.6	111-22.2	6292	.5776	.0078	-192.3
657	44-28.3	111-26.4	6367	.5815	.0137	-185.8
658	44-26.3	111-30.3	6401	.5787	.0073	-187.3
659	44-25.7	111-35.8	6324	.5778	.0138	-184.6
660	44-26.0	111-40.9	6354	.5782	.0194	-177.6
661	44-25.5	111-47.3	6386	.5775	.0107	-183.6
662	44-24.0	111-54.2	6290	.5752	.0120	-185.8
663	44-35.8	111-30.8	7056	.5930	979.9925	-177.1
664	44-42.7	111-28.2	6828	.6034	980.0019	-191.8
665	44-40.1	111-23.6	6527	.5995	.0129	-195.0
666	44-40.5	111-16.4	7078	.6001	979.9790	-196.4
667	44-37.8	111-19.8	6604	.5960	980.0050	-194.8
668	44-36.8	111-26.9	6555	.5945	.0214	-179.8
669	44-33.7	111-20.1	6444	.5899	.0054	-197.9
670	44-30.2	111-20.2	6388	.5846	.0103	-191.0
671	44- 3.2	111- 9.9	5955	.5440	979.9876	-199.1
672	44- 3.2	111- 5.3	6336	.5441	.9622	-201.7
673	43-55.7	111-43.0	4971	.5327	980.0714	-163.0
674	43-53.0	111-37.2	5087	.5286	.0533	-170.1
675	43-52.2	111-30.0	5620	.5274	.0144	-175.8
676	43-52.4	111-24.0	5864	.5277	979.9938	-182.1
677	43-52.4	111-17.9	6088	.5277	.9702	-192.2
678	43-49.9	111-13.0	5929	.5240	.9693	-198.9
679	43-48.8	111- 6.9	6199	.5223	.9496	-200.8
680	43-44.2	111- 6.7	6130	.5154	.9419	-205.7
681	43-43.7	111- 6.4	6136	.5146	.9423	-204.1
682	43-40.2	111- 6.7	6140	.5094	.9429	-198.1
683	43-39.0	111- 6.6	6154	.5076	.9380	-200.4
684	43-39.0	111- 4.3	6382	.5076	.9259	-198.8
685	43-38.9	111- 3.2	6556	.5074	.9133	-200.8
686	43-38.1	111- 2.5	6771	.5063	.8954	-204.6
687	43-36.2	111- 6.9	6198	.5034	.9325	-199.0
688	43-32.6	111- 2.7	6690	.4980	.8910	-205.6
689	43-34.9	111- 4.8	6360	.5014	.9181	-201.7
690	43-33.8	111- 4.0	6480	.4998	.9093	-201.7
691	43-33.1	111- 3.5	6612	.4988	.8979	-204.2
693	43-35.0	111-11.1	6186	.5016	.9397	-190.7
694	43-33.9	111-17.0	5976	.5000	.9591	-182.3
695	43-30.5	111-21.6	5763	.4949	.9743	-174.8
696	43-29.1	111-26.5	5313	.4928	.9834	-190.6
697	43-32.4	111-30.0	5677	.4977	.9736	-183.5
698	43-35.2	111-35.0	5468	.5019	980.0046	-169.2
699	43-36.6	111-40.1	5101	.5040	.0427	-155.2
700	43-38.0	111-46.0	4982	.5061	.0491	-158.1
701	43-40.6	111-55.1	4858	.5100	.0587	-159.8

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702	43-45.3	111-51.3	4858	980.5171	980.0604	-165.2
703	43-49.1	111-47.9	4865	.5228	.0605	-170.3
704	43-52.3	111-45.5	4892	.5276	.0657	-168.4
705	43-46.0	113-27.7	5747	.5181	979.9822	-191.1
706	43-43.6	113-31.8	5952	.5145	.9695	-187.9
707	43-40.4	113-34.8	6147	.5097	.9535	-187.4
708	43-40.5	113-41.0	6702	.5099	.9071	-198.8
709	43-44.1	113-44.0	6927	.5153	.8866	-213.1
710	43-47.1	113-46.9	8263	.5198	.8113	-212.7
711	43-50.0	113-51.5	7671	.5241	.8437	-220.1
712	43-53.1	113-55.9	7368	.5288	.8699	-216.8
713	43-53.7	114- 2.0	7147	.5297	.8892	-211.6
714	43-40.8	114-22.1	5818	.5103	.9540	-207.4
715	43-35.8	114-20.8	5541	.5028	.9752	-195.1
716	43-31.4	114-18.5	5338	.4961	.9928	-183.0
717	43-39.3	114-27.3	6064	.5081	.9331	-211.1
718	43-38.9	114-33.5	6396	.5075	.9144	-209.3
719	43-36.7	114-37.0	6760	.5042	.8855	-213.0
720	43-34.7	114-44.9	6251	.5012	.9179	-208.2
721	43-32.5	114-49.2	5743	.4979	.9495	-203.8
722	43-28.4	114-48.6	5563	.4917	.9652	-192.7
723	43-24.4	114-47.0	5341	.4856	.9897	-175.4
724	43-36.6	114-52.0	5428	.5040	.9703	-208.0
725	43-35.3	114-57.5	5200	.5021	.9830	-207.0
726	43-36.0	115- 3.7	4992	.5031	.9952	-208.4
727	43-36.7	115- 9.0	4726	.5042	980.0211	-199.5
728	43-28.9	115-18.5	4219	.4925	.0682	-171.1
729	43-32.7	115-16.8	4348	.4982	.0575	-179.8
730	43-36.8	115-15.2	4527	.5043	.0412	-191.5
731	43-41.2	115-17.2	5196	.5109	.0026	-196.5
732	43-45.9	115-14.6	6996	.5172	979.8954	-202.0
733	43-48.2	115- 9.9	5161	.5214	980.0039	-207.8
734	43-49.2	115-15.8	4788	.5229	.0342	-201.4
735	43-48.9	115-21.4	4408	.5225	.0651	-192.9
736	43-47.2	115-26.1	4120	.5199	.0798	-192.9
737	43-46.5	115-31.9	3878	.5189	.1050	-181.2
738	43-44.7	115-36.0	3575	.5162	.1261	-175.6
739	43-41.5	115-40.1	3417	.5114	.1377	-168.6
740	43-38.7	115-44.3	3259	.5072	.1532	-158.4
741	43-35.1	115-42.0	3665	.5018	.1255	-156.3
742	43-33.5	115-36.9	4407	.4994	.0791	-155.8
743	43-29.1	115-35.1	4696	.4928	.0603	-150.7
744	43-25.5	115-35.0	4528	.4874	.0745	-141.2
745	43-19.7	115-33.7	4741	.4786	.0603	-133.8
746	43-21.5	115-57.2	3300	.4813	.1544	-128.8
747	43-19.0	116- 1.9	3152	.4775	.1709	-117.5
748	43-24.7	116- 1.5	3415	.4861	.1529	-128.3
749	43-27.9	116- 5.8	3374	.5000	.1698	-127.8

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
750	43-27.3	116- 9.5	3160	980.4900	980.1853	-115.1
751	43-31.6	116- 9.0	3051	.4965	.1957	-117.7
752	43-31.5	116- 4.0	2865	.4961	.2090	-115.1
753	43-35.5	115-59.2	3160	.5024	.1855	-127.2
754	43-39.3	115-58.8	3165	.5080	.1797	-138.4
755	43-44.0	115-56.8	3344	.5151	.1692	-145.3
756	43-47.1	115-53.0	3688	.5198	.1502	-154.3
757	43-49.5	115-50.0	3902	.5234	.1291	-160.1
758	43-52.0	115-45.0	4311	.5271	.1007	-167.7
759	43-54.9	115-41.1	5390	.5315	.0260	-182.0
760	43-57.8	115-37.0	5404	.5358	.0244	-187.2
761	43-58.1	115-50.8	4365	.5363	.1055	-168.9
762	43-54.3	115-54.0	4180	.5306	.1212	-158.5
763	43-51.3	115-52.8	4878	.5261	.0737	-159.7
764	43-53.5	116- 0.4	5051	.5291	.0750	-151.0
765	43-52.4	116- 6.0	3633	.5277	.1637	-146.0
766	43-57.0	116-11.0	2680	.5346	.2437	-130.1
767	44- 1.0	116- 8.3	2790	.5406	.2325	-140.7
768	44- 5.0	116- 6.4	2812	.5467	.2297	-150.3
769	44- 5.4	116- 1.5	2963	.5473	.2067	-162.8
770	44- 5.2	115-57.2	3144	.5470	.1916	-166.8
771	44- 2.7	115-52.0	3245	.5433	.1774	-171.1
772	43-53.8	116-12.0	2664	.5298	.2413	-128.7
773	43-54.9	116-16.0	2564	.5314	.2550	-122.6
774	43-56.5	116-19.9	2541	.5340	.2591	-122.4
775	43-52.6	116-29.3	2377	.5280	.2704	-115.0
776	43-48.5	116-28.8	2787	.5218	.2335	-121.1
777	43-31.2	116-14.2	3096	.4959	.1968	-113.3
778	43-45.4	116-27.7	2686	.5172	.2397	-116.3
779	43-41.5	116-27.7	2485	.5113	.2666	- 95.6
780	43-49.6	116-15.0	3823	.5235	.1665	-129.6
781	43-45.5	116-16.1	3071	.5171	.2125	-120.3
782	43-41.5	116-18.6	2675	.5111	.2278	-122.7
783	43-37.3	116-12.0	2704	.5050	.2168	-126.0
784	43-37.3	116-17.3	2687	.5050	.2249	-118.9
785	43-35.9	116-13.1	2965	.5030	.2128	-113.2
786	43-34.3	116-13.5	2858	.5006	.2084	-120.7
787	43-36.6	116-23.1	2607	.5040	.2533	- 94.3
788	43-29.2	116-25.0	2685	.4929	.2308	-101.0
789	43-36.1	116-29.0	2518	.5033	.2691	- 83.1
790	43-35.0	116-34.1	2481	.5016	.2592	- 93.5
791	43-36.8	116-37.0	2441	.5043	.2654	- 92.4
792	43-41.7	116-32.5	2442	.5116	.2730	- 92.1
793	43-42.1	116-36.8	2400	.5122	.2817	- 86.5
794	43-43.8	116-42.0	2460	.5148	.2840	- 83.2
795	43-47.8	116-44.2	2428	.5208	.2891	- 86.0

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796	43-52.0	116-45.7	2489	.980.5271	980.2831	- 94.7
797	43-51.3	116-57.2	2273	.5261	.2973	- 92.4
798	43-47.0	116-56.4	2224	.5196	.2869	- 99.3
799	43-44.6	116-51.5	2285	.5010	.2855	- 78.4
800	43-43.0	116-46.0	2329	.5136	.2871	- 86.8
801	43-39.8	116-40.5	2369	.5088	.2787	- 88.0
802	43-36.1	116-42.4	2516	.5032	.2524	- 99.8
803	43-36.1	116-47.2	2522	.5032	.2463	-105.6
804	43-37.1	116-56.1	2238	.5047	.2602	-110.2
805	43-37.5	116-59.6	2403	.5051	.2502	-110.7
806	43-33.0	116-53.3	2322	.4986	.2513	-108.0
807	43-32.9	116-48.1	2293	.4984	.2524	-108.4
808	43-29.4	116-51.8	2648	.4932	.2244	-109.9
809	43-27.9	116-47.0	2314	.4909	.2426	-109.5
810	43-24.0	116-52.5	3643	.4850	.1418	-124.6
811	43-21.2	116-57.1	4155	.4808	.1009	-130.6
812	43-17.0	116-59.3	4121	.4745	.1002	-127.0
813	43-25.2	116-44.0	2275	.4869	.2462	-104.2
814	43-21.9	116-39.8	2361	.4818	.2327	-107.4
815	43-18.9	116-38.6	2593	.4773	.2135	-108.2
816	43-15.9	116-42.2	3867	.4728	.1217	-119.1
817	43-11.7	116-44.6	3910	.4665	.0935	-138.4
818	43-10.8	116-39.0	3732	.4652	.1076	-133.7
819	43- 8.8	116-33.2	3408	.4622	.1210	-136.7
820	43-10.0	116-30.0	3206	.4640	.1464	-125.2
821	43-13.0	116-33.2	2802	.4685	.1859	-117.5
822	43-17.5	116-33.9	2475	.4753	.2181	-108.8
823	43-21.3	116-35.9	2399	.4810	.2310	-106.0
824	43-25.5	116-34.2	2668	.4874	.2333	- 94.0
825	43-30.0	116-34.2	2564	.4941	.2489	- 91.4
826	43-29.0	116-29.8	2637	.4926	.2415	- 93.3
827	43-20.8	116-25.1	2867	.4802	.2210	- 87.2
828	43-25.2	116-25.0	2879	.4869	.2205	- 93.7
829	43-27.3	116-20.3	2788	.4900	.2184	-104.3
830	43-27.3	116-14.2	3008	.4900	.1985	-111.0
831	43-17.0	115-57.2	3171	.4745	.1704	-113.8
832	43-12.0	115-57.2	3077	.4670	.2062	- 76.2
833	43- 7.6	115-57.7	3018	.4604	.2108	- 68.5
834	43- 5.1	115-52.9	3028	.4567	.2054	- 69.6
835	43- 3.4	115-58.2	2927	.4541	.1969	- 81.6
836	43- 2.0	116- 2.8	2749	.4520	.1906	- 96.5
837	43- 1.4	116-10.7	2411	.4516	.2016	-105.3
838	43- 2.8	116-15.1	2547	.4532	.1868	-113.6
839	43- 4.0	116-21.6	2723	.4550	.1649	-126.7
840	43- 6.0	116-27.0	3030	.4580	.1502	-125.2
841	43- 5.0	116-35.4	4117	.4565	.0677	-141.8
842	43- 3.8	116-39.2	4578	.4547	.0360	-144.0

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
843	43- 1.1	116-44.0	6179	980.4506	979.9411	-138.8
844	43- 1.5	116-49.3	5428	.4512	.9920	-133.5
845	43- 2.8	116-54.7	5237	.4532	.9906	-148.4
846	43- 5.6	116-58.8	4784	.4574	980.0315	-138.9
847	43-11.4	117- 2.2	4145	.4661	.0966	-120.8
848	43- 7.0	117- 2.3	4531	.4595	.0659	-121.7
849	42-54.0	116-59.4	4452	.4400	.0427	-130.2
850	42-51.0	117- 1.4	4616	.4355	.0170	-141.5
851	42-46.8	117- 1.8	5030	.4292	979.9892	-138.2
852	42-39.8	117- 0.0	4979	.4187	.9857	-134.3
853	42-49.7	116-55.8	4815	.4335	.9918	-152.8
854	42-48.9	116-50.4	5499	.4323	.9479	-154.5
855	42-59.8	116-19.2	2659	.4487	980.1603	-128.9
856	42-59.5	116- 5.9	2370	.4483	.2015	-104.5
857	43- 0.5	115-45.2	3045	.4497	.1891	- 77.9
858	43- 4.5	115-43.1	3078	.4557	.1929	- 78.1
859	43- 6.6	115-47.1	3173	.4589	.1924	- 76.1
860	43- 8.2	115-41.2	3140	.4613	.1703	-102.6
861	43-11.0	115-46.9	3194	.4655	.1775	- 96.4
862	43-14.2	115-50.2	3241	.4703	.1528	-123.0
863	43-18.0	115-53.8	3242	.4760	.1590	-122.5
864	43-15.8	115-31.0	4802	.4727	.0489	-135.7
865	43-12.7	115-33.7	4054	.4680	.0935	-131.3
866	43-10.8	115-37.1	3456	.4652	.1283	-129.5
867	43- 4.2	115-39.2	3066	.4553	.1779	- 93.4
868	43- 0.4	115-36.4	3059	.4496	.1760	- 90.1
869	42-57.9	115-32.8	2914	.4458	.1885	- 82.5
870	42-56.8	115-27.9	2555	.4442	.2139	- 77.0
871	42-57.2	115-22.8	2524	.4448	.2077	- 85.7
872	42-57.0	115-17.9	2563	.4445	.2010	- 89.7
873	43- 1.5	115-20.1	3339	.4512	.1324	-118.5
874	43- 5.5	115-18.1	3754	.4572	.0968	-135.2
875	43- 9.1	115-18.0	4794	.4626	.0257	-149.3
876	43-11.6	115-20.5	5667	.4664	979.9712	-155.2
877	43-19.2	115-26.5	4750	.4778	980.0541	-138.7
878	43-18.9	115-22.1	4992	.4773	.0311	-146.7
879	43-17.3	115-19.1	5514	.4749	979.9902	-153.9
880	43-17.3	115-14.4	5258	.4749	980.0012	-158.2
881	43-17.5	115- 8.5	5069	.4752	.0140	-157.
882	43-18.1	115- 3.0	5085	.4761	.0142	-156.8
883	43-20.5	114-58.1	5083	.4797	.0048	-169.9
884	43-20.6	114-53.0	5066	.4798	.0019	-173.3
885	43-20.3	114-47.2	5056	.4794	.0032	-172.8
886	43-20.3	114-41.3	5037	.4794	.0064	-170.8
887	43-20.5	114-35.5	5015	.4797	.0025	-176.3
888	43-21.0	114-30.0	4943	.4805	.0116	-172.3
889	43-20.8	114-22.7	4796	.4802	.0310	-161.4

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
890	43-27.5	114-15.1	5166	980.4904	980.0105	-169.9
891	43-24.0	114-12.9	5031	.4850	.0190	-164.1
892	43-28.0	114- 9.2	5771	.4911	979.9653	-179.5
893	43-30.5	114- 4.0	5463	.4949	.9770	-190.1
894	43-29.3	114- 0.4	5583	.4931	.9681	-190.0
895	43-25.9	114- 0.0	5235	.4880	980.0020	-171.8
896	43-31.3	113-56.9	5833	.4961	979.9515	-194.6
897	43-21.6	113-59.9	4930	.4814	980.0218	-163.8
898	43-20.6	113-52.0	4837	.4799	.0259	-163.8
899	43-21.9	113-47.0	4976	.4819	.0233	-160.0
900	43-23.0	113-41.1	5232	.4835	.0124	-157.2
901	43-24.9	113-37.0	5743	.4865	979.9733	-168.6
902	43-29.0	113-32.8	5829	.4926	.9624	-180.5
903	43-33.0	113-28.8	5417	.4986	980.0015	-172.1
904	43-35.4	113-23.1	5340	.5022	.0068	-174.9
905	43-27.5	112-48.7	5000	.4904	.0499	-140.4
906	43-23.2	112-46.3	4904	.4838	.0532	-136.4
907	43-20.0	112-42.0	4741	.4790	.0602	-134.3
908	43-17.5	112-37.8	4621	.4753	.0653	-132.7
909	43-15.4	112-32.1	4507	.4721	.0598	-141.9
910	43-11.6	112-31.3	4475	.4514	.0529	-130.0
911	43-13.9	112-26.5	4470	.4699	.0452	-156.5
912	43-12.2	112-20.5	4485	.4673	.0409	-157.3
913	43- 9.2	112-23.3	4478	.4628	.0395	-154.6
914	43-12.0	112-16.0	4464	.4670	.0448	-154.3
915	43-11.7	112-12.0	4522	.4666	.0422	-153.1
916	43-15.3	112-15.2	4523	.4720	.0388	-161.8
917	43-18.5	112-11.2	4571	.4768	.0422	-160.3
918	43-22.9	112- 7.1	4629	.4834	.0494	-156.2
919	43-26.5	112- 5.0	4683	.4889	.0570	-150.9
920	43-35.5	111-58.1	4801	.5024	.0587	-158.6
921	43-35.9	111-52.0	4867	.5030	.0557	-157.2
922	43-32.7	111-58.0	4783	.4982	.0576	-153.6
923	43-24.8	111-50.0	5882	.4862	979.9708	-162.5
924	43-23.9	111-43.7	6004	.4849	.9608	-163.8
925	43-19.5	111-48.0	6023	.4783	.9491	-167.8
926	43-23.2	111-32.7	6463	.4838	.9234	-172.6
927	43-22.4	111-31.8	5904	.4826	.9536	-174.8
928	43-24.8	111-26.0	5461	.4862	.9785	-180.0
929	43-27.1	111-20.3	5276	.4898	.9879	-185.5
930	43-24.4	111-17.8	5328	.4856	.9744	-191.5
931	43-21.5	111-13.5	5391	.4813	.9576	-200.2
932	43-18.6	111- 8.9	5658	.4769	.9320	-205.4
933	43-14.4	111- 7.0	5544	.4706	.9452	-192.8
934	43-10.8	111- 2.7	5630	.4652	.9278	-199.6
935	43-10.7	111- 8.0	5750	.4651	.9297	-190.3
936	43- 9.7	111-14.1	6164	.4636	.9004	-193.3

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
937	43- 9.2	111-20.0	6417	980.4628	979.8805	-197.3
938	43- 4.0	111-22.3	6424	.4550	.8718	-197.8
939	43- 8.8	111-25.7	6424	.4622	.8802	-196.6
940	43- 4.4	111-29.5	6435	.4556	.8743	-195.2
941	43- 8.4	111-31.2	6400	.4616	.8861	-191.5
942	43- 6.4	111-36.0	6528	.4586	.8803	-186.6
943	43-11.5	111-35.5	6386	.4663	.8995	-183.6
944	43-13.0	111-40.6	6388	.4685	.9085	-176.7
945	43-15.3	111-45.0	6132	.4720	.9276	-176.4
946	43-15.9	111-50.0	6361	.4729	.9256	-165.6
947	43-17.0	111-56.2	5929	.4745	.9584	-160.4
948	43-17.1	112- 7.2	4645	.4747	980.0356	-160.4
949	43-15.2	112- 1.4	4833	.4718	.0138	-168.0
950	43- 8.2	112- 8.9	4750	.4613	.0175	-158.8
951	43- 5.5	112- 4.0	5960	.4573	979.9321	-167.6
952	43- 3.7	111-57.0	5520	.4546	.9453	-178.1
953	43- 4.0	111-51.8	6325	.4550	.8877	-187.8
954	43- 5.0	111-47.0	6225	.4565	.9005	-182.5
955	43- 6.8	111-41.8	6484	.4592	.8845	-185.7
956	42-59.0	111- 2.6	5772	.4475	.8949	-206.3
957	42-59.4	111- 9.9	5914	.4481	.8970	-196.3
958	42-58.0	111-16.7	6503	.4460	.8570	-198.0
959	42-59.6	111-22.5	6434	.4484	.8600	-202.4
960	43- 0.0	111-26.4	6404	.4490	.8692	-195.6
961	43- 0.9	111-30.5	6361	.4504	.8777	-191.0
962	42-59.0	111-38.9	6199	.4475	.8857	-189.9
963	42-59.3	111-44.3	6079	.4480	.9005	-182.7
964	43- 0.8	111-49.5	5872	.4502	.9180	-179.9
965	43- 1.0	111-59.2	5458	.4505	.9411	-181.9
966	43- 3.0	112- 9.2	5432	.4535	.9698	-157.8
967	43- 2.6	112-15.0	5034	.4529	980.0000	-150.9
968	43- 2.4	112-20.6	4665	.4526	.0091	-163.6
969	43- 5.7	112-25.4	4456	.4575	.0465	-143.6
970	43- 8.2	112-35.1	4456	.4613	.0560	-137.9
971	43- 5.3	112-38.1	4431	.4569	.0463	-144.7
972	43- 1.9	112-26.0	4445	.4518	.0396	-145.5
973	42-58.3	112-27.4	4447	.4464	.0321	-147.5
974	43- 5.3	112-44.2	4433	.4569	.0439	-147.0
975	43- 3.5	112-48.4	4427	.4542	.0375	-151.1
976	42-58.8	112-49.7	4424	.4472	.0224	-159.4
977	42-54.9	112-52.2	4422	.4413	.0266	-149.4
978	42-50.7	112-53.6	4414	.4350	.0251	-145.1
979	42-47.7	112-57.3	4527	.4305	.0135	-145.4
980	42-45.2	113-29.3	4282	.4268	.0316	-138.3
981	42-46.5	113-34.1	4278	.4288	.0361	-136.1
982	42-47.5	113-39.1	4279	.4303	.0386	-134.9
983	42-48.6	113-43.7	4336	.4319	.0415	-130.2

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
984	42-50.5	113-48.0	4273	980.4348	980.0551	-123.3
985	42-52.1	113-52.0	4220	.4372	.0694	-114.6
986	42-53.4	113-56.1	4211	.4391	.0726	-113.7
987	42-54.0	114- 2.2	4211	.4400	.0703	-117.0
988	42-54.0	114- 8.2	4190	.4400	.0676	-121.0
989	42-54.9	114-13.5	4046	.4414	.0788	-119.8
990	43- 1.0	114-14.0	4171	.4505	.0846	-115.6
991	43- 2.8	114- 8.9	4291	.4532	.0750	-120.7
992	43- 6.2	114- 5.1	4414	.4583	.0624	-131.1
993	43-10.3	114- 2.7	4554	.4645	.0571	-134.1
994	43-13.9	114- 0.0	4690	.4699	.0405	-147.9
995	43-18.5	113-56.5	4791	.4768	.0332	-156.1
996	43-18.7	114- 3.9	4831	.4771	.0388	-150.4
997	43-21.0	114- 8.5	4916	.4805	.0295	-156.0
998	43-19.9	114-16.8	4862	.4788	.0217	-166.4
999	43-16.3	114-18.0	4944	.4734	.0140	-162.8
1000	43-12.6	114-18.9	4663	.4679	.0362	-151.9
1001	43- 8.4	114-19.7	4550	.4616	.0433	-145.3
1002	43- 4.9	114-22.1	4321	.4563	.0631	-133.9
1003	43- 0.5	114-23.5	4033	.4497	.0926	-115.1
1004	42-57.4	114-18.5	4041	.4451	.0902	-112.4
1005	42-56.3	114-24.2	3965	.4435	.0969	-108.7
1006	42-56.2	114-30.8	3818	.4433	.1023	-111.9
1007	42-56.5	114-37.0	3637	.4437	.1078	-117.7
1008	42-56.2	114-42.7	3569	.4433	.1118	-117.4
1009	43- 0.4	114-42.7	3657	.4496	.1016	-128.6
1010	43- 4.8	114-41.2	4170	.4562	.0641	-141.9
1011	43- 8.8	114-39.8	4972	.4622	.0126	-151.3
1012	43-13.2	114-40.8	5553	.4688	979.9795	-156.1
1013	43-16.9	114-41.3	5030	.4743	980.0099	-162.6
1014	43-14.1	115- 2.0	5180	.4702	.0096	-149.7
1015	43-11.0	115- 1.0	5273	.4655	979.9990	-150.1
1016	43- 8.0	114-57.6	4771	.4610	980.0202	-154.5
1017	43- 3.9	114-56.8	3891	.4548	.0771	-144.2
1018	42-59.8	114-57.4	3555	.4487	.1037	-131.7
1019	42-55.0	114-46.3	3695	.4415	.1068	-113.0
1020	42-55.5	114-52.0	3360	.4422	.1366	-104.0
1021	42-55.7	114-57.0	3262	.4425	.1458	-101.0
1022	42-57.2	115- 2.5	3127	.4448	.1578	- 99.4
1023	42-58.0	115- 8.0	2936	.4460	.1177	-105.1
1024	43- 0.0	115-12.4	2524	.4490	.1956	-102.0
1025	42-55.0	115-13.1	3059	.4415	.1622	- 95.8
1026	42-51.6	115-10.9	3152	.4364	.1450	-102.3
1027	42-49.1	115- 8.2	3367	.4327	.1121	-118.5
1028	42-45.4	115- 4.0	3533	.4271	.0889	-126.2
1029	42-41.4	115- 0.7	3689	.4211	.0677	-132.1
1030	42-37.3	114-58.6	3793	.4150	.0552	-132.2
1031	42-34.1	115- 3.0	3951	.4102	.0404	-132.7

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
1032	42-33.5	115- 9.0	4161	980.4093	980.0190	-140.6
1033	42-34.7	115-14.1	3932	.4111	.0386	-136.5
1034	42-37.1	115-19.0	3840	.4147	.0492	-135.0
1035	42-39.8	115-23.0	3789	.4037	.0606	-115.8
1036	42-40.8	115-28.9	3782	.4202	.0637	-129.6
1037	42-43.8	115-38.5	3533	.4247	.0885	-124.2
1038	42-47.0	115-41.9	2734	.4295	.1488	-116.7
1039	42-50.0	115-44.5	2596	.4340	.1609	-117.3
1040	42-56.3	115-45.0	2463	.4434	.2000	- 95.6
1041	42-52.7	115-47.5	2559	.4318	.1689	-109.3
1042	42-48.5	115-52.2	2472	.4317	.1736	-109.8
1043	42-55.4	115-56.5	2627	.4421	.1638	-120.7
1044	42-56.6	116- 2.5	2479	.4439	.1726	-122.6
1045	42-55.6	116-16.7	3280	.4424	.1114	-134.2
1047	42-47.8	116-13.7	3774	.4307	.0604	-143.9
1048	42-44.9	116-18.1	4612	.4264	979.9947	-155.0
1049	42-42.1	116-22.7	5925	.4221	.9104	-156.2
1050	42-39.4	116-27.3	6028	.4181	.9022	-154.2
1051	42-37.0	116-31.9	5712	.4145	.9037	-168.1
1052	42-35.8	116-37.3	5411	.4127	.9205	-167.5
1053	42-35.2	116-42.3	5276	.4118	.9248	-170.4
1054	42-49.5	116- 9.3	3249	.4332	980.1029	-135.4
1056	42-48.1	115-59.2	2954	.4311	.1378	-116.1
1057	42-50.9	115-53.0	2594	.4354	.1567	-123.0
1058	42-46.5	115-54.8	2848	.4288	.1459	-112.0
1059	42-41.9	115-54.3	3412	.4219	.0924	-124.7
1060	42-37.9	115-54.1	4137	.4159	.0244	-142.6
1061	42-34.4	115-54.0	4666	.4106	979.9770	-153.6
1062	42-29.6	115-53.2	4914	.4034	.9511	-157.5
1063	42-24.7	115-53.1	5130	.3962	.9315	-156.8
1064	42-20.0	115-54.0	5199	.3891	.9153	-161.9
1065	42-17.2	115-59.5	5740	.3849	.8759	-164.6
1066	42-13.2	116- 3.8	5739	.3789	.8697	-164.9
1067	42- 9.6	116- 6.9	5374	.3735	.8869	-164.2
1068	42- 5.5	116- 7.2	5313	.3674	.8845	-164.1
1069	42- 1.1	116- 8.2	5352	.3608	.8693	-170.3
1070	41-56.9	116- 5.8	5421	.3545	.8585	-170.2
1071	42-40.0	115-35.0	3928	.4190	980.0605	-122.8
1072	42-36.4	115-32.5	4016	.4139	.0481	-124.8
1073	42-33.2	115-29.5	4102	.4088	.0229	-139.8
1074	42-30.7	115-26.6	4350	.4051	.0005	-143.5
1075	42-28.0	115-22.3	4329	.4010	979.9922	-149.1
1076	42-24.4	115-23.0	4671	.3957	.9623	-153.1
1077	42-20.4	115-21.1	4941	.3897	.9380	-155.2
1078	42-16.8	115-18.9	5227	.3843	.9112	-159.5
1079	42-13.1	115-17.1	5333	.3788	.8951	-163.7
1080	42- 9.7	115-15.5	5416	.3737	.8741	-174.6

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
1081	42- 5.4	115-14.6	5578	980.3672	979.8502	-182.3
1082	42- 4.4	115- 9.3	5480	.3656	.8571	-179.7
1083	42- 6.3	115- 3.6	5808	.3686	.8371	-183.0
1084	42- 9.2	114-58.6	5645	.3729	.8589	-175.3
1085	42-11.1	114-52.9	5285	.3758	.8939	-164.7
1086	42-11.7	114-48.7	5249	.3767	.8984	-163.3
1087	42-13.0	114-42.2	5002	.3786	.9070	-171.5
1088	42-16.7	114-48.0	4881	.3842	.9343	-157.0
1089	42-19.8	114-51.2	4722	.3888	.9612	-144.3
1090	42-23.3	114-54.5	4463	.3941	.9923	-134.0
1091	42-26.2	114-51.5	4137	.3983	980.0183	-131.8
1092	42-31.1	114-52.8	3845	.4057	.0434	-131.5
1093	42-33.0	114-57.9	3751	.4085	.0528	-130.6
1094	42-32.2	114-46.4	3926	.4073	.0401	-131.6
1095	42-35.8	114-45.1	3793	.4127	.0571	-128.0
1096	42-35.6	114-39.1	3695	.4124	.0659	-124.8
1097	42-40.2	114-31.0	3643	.4193	.0762	-124.5
1098	42-43.5	114-31.3	3781	.4243	.0736	-123.8
1099	42-44.2	114-37.0	3497	.4253	.0984	-117.1
1100	42-46.2	114-42.4	3419	.4283	.1118	-111.4
1101	42-52.2	114-25.8	4004	.4373	.0835	-113.6
1102	42-47.9	114-26.0	3933	.4309	.0726	-122.3
1103	42-43.4	114-26.5	4043	.4241	.0528	-127.3
1104	42-36.6	114-27.3	3674	.4139	.0713	-122.5
1105	42-33.2	114-28.9	3781	.4088	.0608	-121.2
1106	42-32.8	114-34.9	3905	.4082	.0500	-123.9
1107	42-28.1	114-34.5	4267	.4012	.0194	-125.7
1108	42-23.9	114-34.5	4483	.3950	979.9845	-141.5
1109	42-19.5	114-34.5	4581	.3884	.9658	-147.7
1110	42-16.0	114-34.5	4732	.3831	.9454	-153.8
1111	42-12.5	114-35.8	4892	.3778	.9163	-168.0
1112	42-51.6	114-43.1	3656	.4364	980.1203	- 96.7
1113	42-10.0	114-39.9	5021	.3741	979.9008	-172.0
1114	42- 5.9	114-41.4	5278	.3680	.8780	-173.3
1115	42- 2.5	114-40.2	5458	.3629	.8721	-163.3
1116	41-58.9	114-40.2	5247	.3575	.8739	-168.7
1117	42-12.8	114-29.5	5279	.3783	.9041	-162.2
1118	42-29.2	114-29.0	4148	.4028	980.0268	-127.1
1119	42-33.3	114-23.1	3870	.4090	.0544	-122.3
1120	42-28.2	114-23.2	4013	.4013	.0293	-131.2
1121	42-32.0	114-13.4	4161	.4070	.0302	-127.1
1122	42-29.6	114-10.0	4083	.4034	.0264	-132.0
1123	42-28.4	114- 3.5	4117	.3867	.0142	-125.5
1124	42-31.9	114-18.4	4022	.4069	.0398	-125.7
1125	42-24.9	114-17.5	4211	.3965	979.9984	-145.4
1126	42-24.9	114-10.9	4243	.3965	980.0024	-139.5
1127	42-24.0	114- 5.3	4312	.3951	979.9974	-139.0
1128	42-20.6	114- 2.6	4502	.3900	.9704	-149.5

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
1129	44-10.5	114-25.0	5740	980.3749	979.8694	-161.0
1130	42-13.2	114-20.3	5959	.3789	.8604	-161.0
1131	42-11.4	114-17.0	6742	.3761	.8049	-166.7
1132	42- 9.4	114-13.2	6718	.3732	.8028	-167.3
1133	42- 9.8	114- 9.0	7124	.3738	.7676	-178.8
1134	42-11.6	114- 4.0	6803	.3765	.7853	-185.0
1135	42-12.4	113-58.3	5279	.3777	.8757	-185.3
1136	42-17.8	113-58.6	4589	.3858	.9474	-163.1
1137	42-29.4	113-57.0	4358	.4031	980.0105	-131.1
1138	42-32.0	113-51.5	4159	.4070	.0264	-131.1
1139	42-42.7	113-33.2	4167	.4231	.0322	-140.8
1140	42-39.3	113-37.3	4161	.4179	.0283	-139.9
1141	42-36.2	113-40.9	4155	.4133	.0261	-137.9
1142	42-32.4	113-46.1	4150	.4076	.0197	-138.9
1143	42-28.4	113-47.6	4131	.4016	.0007	-153.0
1144	42-25.2	113-49.3	4302	.3969	979.9802	-158.6
1145	42-21.9	113-52.2	4368	.3920	.9659	-164.0
1146	42-18.1	113-52.8	4457	.3862	.9427	-176.1
1147	42-14.1	113-53.9	4542	.3803	.9263	-181.4
1148	42-10.0	113-53.2	5010	.3741	.8992	-174.3
1149	42- 6.7	113-54.7	5051	.3691	.8893	-176.7
1150	42- 2.5	113-56.8	4872	.3628	.8891	-181.4
1151	42- 7.3	113-46.9	5713	.3700	.8496	-177.6
1152	42-11.1	113-49.3	5021	.3757	.9039	-170.5
1153	42-14.8	113-48.0	4846	.3813	.9136	-176.9
1154	42-14.8	113-42.2	7009	.3813	.7938	-167.0
1155	42-15.2	113-37.6	5721	.3819	.8846	-154.0
1156	42-14.6	113-33.3	5139	.3810	.9104	-162.3
1157	42-11.6	113-33.8	5604	.3765	.8701	-170.2
1158	42- 8.1	113-35.0	5382	.3712	.8750	-173.3
1159	42- 5.1	113-37.9	5348	.3667	.8766	-169.2
1160	42- 4.1	113-42.2	6011	.3652	.8282	-176.3
1161	42- 4.0	113-32.3	5135	.3651	.8719	-185.1
1162	42- 4.5	113-26.7	5000	.3658	.8935	-172.3
1163	42- 7.2	113-22.1	4854	.3699	.9003	-178.4
1164	42-11.0	113-20.9	4696	.3756	.9193	-174.5
1165	42-15.0	113-21.9	4587	.3816	.9343	-172.1
1166	42-16.8	113-25.4	4793	.3843	.9398	-156.9
1167	42-16.9	113-27.9	4925	.3845	.9413	-147.7
1168	42-20.9	113-31.3	5586	.3905	.9050	-150.3
1169	42-24.8	113-34.9	4719	.3963	.9676	-145.6
1170	42-27.8	113-37.7	4353	.4007	980.0025	-135.3
1171	42-31.2	113-40.8	4193	.4058	.0057	-148.5
1172	42-31.7	113-34.9	4267	.4065	.0198	-130.7
1173	42-32.5	113-29.3	4482	.4077	979.9850	-153.8
1174	42-31.1	113-25.5	4518	.4056	.9777	-156.8
1175	42-36.9	113-35.3	4150	.4143	980.0241	-141.2

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
1176	42-36.9	113-29.2	4284	980.4143	980.0093	-148.0
1177	42-36.9	113-23.2	4286	.4143	.0155	-141.6
1178	42-36.2	113-17.4	4265	.4133	.0086	-148.8
1179	42-36.3	113-11.4	4387	.4134	.0104	-139.8
1180	42-31.0	113-19.4	4414	.4055	979.9819	-158.8
1181	42-32.3	113-14.4	4304	.4074	.9991	-150.1
1182	42-27.0	113-24.1	4378	.3995	.9739	-162.9
1183	42-22.8	113-22.2	4424	.3933	.9673	-160.6
1184	42-18.8	113-22.2	4514	.3873	.9509	-165.6
1185	42-19.9	113-16.3	4618	.3890	.9518	-160.1
1186	42-19.9	113- 9.9	4887	.3890	.9360	-159.8
1187	42-16.2	113- 8.4	5017	.3834	.9264	-156.0
1188	42-13.4	113- 3.4	5256	.3792	.9102	-153.6
1189	42-10.5	113- 0.5	5299	.3748	.9010	-155.9
1190	42- 8.5	112-56.9	4979	.3718	.9039	-169.2
1191	42-10.2	112-51.3	5466	.3741	.8841	-162.3
1192	42-10.7	112-45.7	5197	.3751	.8953	-168.0
1193	42-16.2	112-45.9	5149	.3684	.9064	-153.1
1194	42-19.5	112-48.5	5468	.3898	.8917	-170.0
1195	42-23.8	112-50.1	5010	.3948	.9149	-179.3
1196	42-28.0	112-50.0	4885	.4010	.9223	-185.6
1197	42-32.4	112-51.8	4721	.4076	.9542	-170.1
1198	42-36.0	112-52.9	4609	.4130	.9706	-165.9
1199	42-40.8	112-52.9	4802	.4202	.9775	-154.6
1200	42-37.3	113- 5.8	4226	.4149	980.0267	-134.6
1201	42-39.6	113- 1.1	4213	.4184	.0198	-145.8
1202	42-42.1	112-57.1	4373	.4221	.0087	-151.0
1203	42-45.5	112-52.9	4404	.4272	.0206	-142.4
1204	42-47.9	112-49.5	4404	.4299	.0281	-137.6
1205	42-50.5	112-46.1	4390	.4347	.0196	-151.7
1206	42-52.6	112-41.3	4422	.4379	.0161	-156.5
1207	42-54.2	112-36.0	4447	.4403	.0284	-145.1
1208	42-55.0	112-30.3	4436	.4415	.0219	-153.4
1209	42-55.0	112-28.0	4490	.4415	.0160	-156.1
1210	42-49.0	112-38.1	4513	.4325	.0018	-159.9
1211	42-51.5	112-27.3	4457	.4362	.0239	-144.9
1212	42-48.3	112-36.9	4648	.4314	979.9982	-154.3
1213	42-40.5	112-35.4	4851	.4197	.9738	-154.8
1214	42-36.9	112-35.0	4947	.4143	.9641	-154.4
1215	42-33.9	112-33.2	5024	.4098	.9382	-170.2
1216	42-30.5	112-33.4	5024	.4062	.9097	-187.7
1217	42-27.2	112-34.2	5165	.3998	.9152	-174.7
1218	42-23.9	112-33.5	5158	.3949	.9156	-169.8
1219	42-20.9	112-40.7	5639	.3919	.8867	-166.9
1220	42-20.7	112-36.3	5228	.3916	.9050	-172.9
1221	42-16.8	112-42.0	5570	.3833	.8843	-164.8
1222	42-12.9	112-42.1	4881	.3784	.9241	-161.4
1223	42- 9.6	112-39.2	4779	.3735	.9207	-166.1

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
1224	42- 5.0	112-39.8	4692	980.3666	979.9167	-168.4
1225	42- 2.0	112-42.1	4582	.3621	.9122	-175.0
1226	41-58.0	112-43.1	4547	.3561	.9195	-163.8
1227	41-58.0	112-49.2	4474	.3561	.9381	-149.6
1228	41-58.0	112-55.2	4440	.3561	.9262	-163.5
1229	41-58.0	113- 1.0	4705	.3561	.9241	-149.7
1230	41-58.2	113- 6.9	4970	.3564	.9075	-150.7
1231	42- 0.6	113-12.4	5272	.3600	.8905	-153.2
1232	42- 4.4	113-15.4	5064	.3657	.8916	-170.3
1233	42- 7.2	113-19.2	4750	.3699	.9036	+181.3
1234	42- 9.6	112-33.9	5038	.3735	.9065	-164.7
1235	42- 9.8	112-28.0	5539	.3738	.8774	-164.1
1236	42- 9.3	112-22.9	4832	.3730	.9227	-160.4
1237	42- 9.4	112-17.2	4476	.3732	.9229	-181.7
1238	42-12.4	112-15.0	4553	.3777	.9186	-185.9
1239	42-13.6	112-19.2	4730	.3795	.9110	-184.7
1240	42-17.0	112-23.3	4919	.3846	.9224	-167.1
1241	42-18.4	112-24.7	5023	.3867	.9216	-163.7
1242	42-36.8	112-30.0	5230	.4142	.9368	-163.6
1243	42-40.1	112-28.2	5714	.4191	.9168	-159.5
1244	42-43.7	112-24.9	5109	.4245	.9610	-157.0
1245	42-46.5	112-24.0	4744	.4287	.9911	-153.0
1246	42-49.0	112-22.3	4590	.4325	980.0028	+154.3
1247	42-48.3	112-16.7	4612	.4314	.0026	+152.1
1248	42-46.2	112-12.9	4578	.4283	979.9935	-160.1
1249	42-42.8	112-12.1	4725	.4232	.9754	-164.3
1250	42-39.0	112-11.3	4751	.4175	.9568	-175.6
1251	42-34.8	112-11.2	4738	.4112	.9528	-174.1
1252	42-34.5	112-14.7	4875	.4107	.9391	-179.1
1253	42-34.0	112-20.3	5741	.4100	.9029	-162.6
1254	42-35.1	112-24.9	5627	.4116	.9198	-154.2
1255	42-29.6	112- 9.9	4801	.4034	.9278	-187.5
1256	42-25.8	112- 7.2	4856	.3977	.9144	-191.9
1257	42-23.1	112-12.0	4925	.3937	.9043	-193.9
1258	42-19.3	112-12.4	5363	.3880	.8918	-174.4
1259	42-15.3	112-13.0	4943	.3820	.9076	-176.0
1260	42-11.5	112- 9.1	5303	.3763	.8777	-180.4
1261	42- 6.9	112-13.9	4434	.3695	.9181	-185.4
1262	42- 7.4	112- 7.5	5480	.3702	.8652	-177.1
1263	42- 2.5	112-13.4	4425	.3628	.9259	-171.4
1264	41-58.5	112-11.7	4403	.3568	.9117	-180.9
1265	42- 4.5	112- 2.8	4980	.3658	.8969	-170.1
1266	42- 2.4	111-57.8	4607	.3627	.8997	-186.6
1267	41-58.7	111-54.0	4512	.3571	.8908	-195.6
1268	41-55.7	111-48.4	4604	.3527	.8774	-199.1
1269	42- 0.0	111-48.7	4501	.3591	.9014	-187.6
1270	42- 3.5	111-48.8	4579	.3643	.8969	-192.7

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
1271	42- 5.9	111-52.7	4714	980.3680	979.8857	-199.5
1272	42- 7.5	111-54.4	4529	.3703	.9043	-194.3
1273	42- 9.9	111-49.3	4690	.3740	.9176	-175.0
1274	42-11.5	111-55.2	4760	.3763	.9036	-187.1
1275	42-15.0	111-57.2	4808	.3816	.9177	-175.4
1276	42-18.6	112- 0.0	4783	.3870	.9229	-177.1
1277	42-22.0	112- 3.5	4757	.3921	.9325	-174.2
1278	42- 7.8	111-45.0	4839	.3708	.8971	-183.4
1279	42-15.0	111-50.5	5029	.3816	.9078	-172.1
1280	42-16.7	111-42.4	5300	.3841	.8769	-189.2
1281	42-18.8	111-47.0	5437	.3873	.8844	-176.7
1282	42-18.6	111-38.3	6530	.3870	.8011	-194.1
1283	42-21.8	111-42.8	4958	.3918	.8984	-195.9
1284	42-21.8	111-34.7	7375	.3918	.7546	-194.7
1285	42-26.0	111-44.4	5083	.3980	.8936	-199.4
1286	42-30.5	111-44.9	5415	.4047	.8747	-205.1
1287	42-34.5	111-44.8	5537	.4107	.8941	-184.4
1288	42-39.5	111-42.8	5732	.4182	.9002	-174.1
1289	42-39.8	111-39.1	5732	.4187	.8988	-176.0
1290	42-41.0	111-47.7	5597	.4205	.8966	-188.1
1291	42-43.1	111-53.2	5420	.4236	.9202	-178.2
1292	42-37.3	112- 5.2	4981	.4149	.9496	-166.4
1293	42-38.9	112- 0.0	5120	.4174	.9338	-176.4
1294	42-42.5	112- 0.9	5228	.4227	.9348	-174.2
1295	42-46.0	111-57.6	5372	.4280	.9373	-168.4
1296	42-47.9	111-53.1	5409	.4309	.9038	-195.4
1297	42-51.9	111-53.0	5371	.4369	.9272	-187.4
1298	42-52.5	111-58.9	5399	.4377	.9327	-181.1
1299	42-56.8	112- 0.3	5361	.4442	.9502	-172.3
1300	42-56.3	111-35.8	6104	.4435	.8855	-191.8
1301	42-54.7	111-31.7	6132	.4411	.8805	-192.6
1302	42-50.5	111-33.0	6180	.4347	.8610	-202.9
1303	42-46.8	111-33.9	6182	.4142	.8566	-186.7
1304	42-43.1	111-33.9	6053	.4236	.8750	-185.4
1305	42-39.5	111-35.5	5769	.4182	.8882	-183.9
1306	42-42.2	111-31.5	6396	.4223	.8496	-188.9
1307	42-45.0	111-28.8	6379	.4265	.8526	-191.2
1308	42-47.6	111-24.3	6302	.4304	.8559	-196.4
1309	42-50.5	111-20.9	6420	.4347	.8472	-202.3
1310	42-53.7	111-19.1	6583	.4395	.8395	-205.0
1311	42-37.4	111- 6.1	6442	.4151	.8156	-213.0
1312	42-34.0	111-15.0	7175	.4100	.7674	-212.1
1313	42-32.1	111-24.3	6190	.4071	.8309	-204.8
1314	42-34.2	111-28.3	5949	.4103	.8429	-210.5
1315	42-37.7	111-31.1	6008	.4155	.8498	-205.2
1316	42-30.0	111-18.1	6335	.4040	.8142	-209.7
1317	42-28.3	111-23.8	5906	.4014	.8042	-242.8
1318	42-26.2	111-20.5	6054	.3983	.8119	-223.2

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
1319	42-22.8	111-19.0	6017	980.3933	979.8116	-220.7
1320	42-22.2	111-30.0	6414	.3909	.8028	-203.3
1321	42-19.2	111-27.2	6004	.3879	.8252	-202.5
1322	42-18.6	111-21.2	5928	.3870	.8094	-221.9
1323	42-17.5	111-23.9	5935	.3853	.8146	-214.6
1324	42-14.0	111-24.0	5965	.3801	.8075	-214.7
1325	42-10.1	111-23.9	5960	.3742	.8017	-214.9
1326	42- 5.8	111-32.2	7014	.3678	.7358	-211.2
1327	42- 6.7	111-27.8	6146	.3691	.7906	-209.7
1328	42- 7.6	111-23.3	5955	.3705	.8003	-212.9
1329	42- 4.0	111-23.5	5958	.3651	.7958	-210.2
1330	42- 0.0	111-24.7	5948	.3591	.7884	-213.8
1331	41-57.0	111-23.8	5957	.3546	.7813	-215.9
1332	42- 6.9	111-15.9	5953	.3695	.7863	-226.0
1333	42- 6.0	111-11.7	7022	.3681	.7258	-221.0
1334	42- 8.3	111- 7.9	6033	.3715	.7968	-212.7
1335	42-11.2	111- 5.0	6051	.3759	.8003	-212.5
1336	42-12.8	111- 3.0	6064	.3783	.8003	-214.2
1337	42-12.3	111-11.9	6002	.3775	.8023	-215.1
1338	42-13.4	111- 7.7	6113	.3792	.8002	-212.2
1339	42-15.6	111-15.5	5978	.3825	.8010	-222.8
1340	42-19.1	111-18.7	5943	.3877	.8062	-224.9
1341	42-20.4	111-12.5	6353	.3897	.7939	-214.6
1342	42-20.4	111- 7.9	6653	.3897	.7778	-212.7
1343	42-21.8	111- 3.2	6194	.3918	.8071	-213.1
1344	42-33.8	111-10.1	6682	.4097	.7925	-216.3
1345	42- 7.4	111-19.6	5921	.3702	.7799	-235.0

# BOUGUER GRAVITY ANOMALY CONTOUR MAP

by W. E. Bonini, Princeton University

Contour interval 10 mgals  
Sea level datum  
 $d = 2.67 \text{ gm/cc}$  in mass correction  
● Gravity station

## EXPLANATION

(Simplified from state geologic map)

Quaternary Snake River Basalt	KI	Cretaceous Idaho batholith and related rocks
QTs		Mesozoic sedimentary rocks
Cenozoic sedimentary rocks		Tertiary silicic volcanic rocks
		Triassic and Permian volcanic rocks
		Tertiary Columbia River Basalt
		Paleozoic sedimentary rocks
		Tertiary granitic intrusive rocks
		Pre cambrian sedimentary and metamorphic rocks
		Tertiary Challis Volcanics

