

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PRINCIPAL FACTS FOR GRAVITY STATIONS IN FLATHEAD, GLACIER,
PONDERA AND TETON COUNTIES, MONTANA

by

Dolores M. Wilson

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Principal facts for gravity stations in Flathead, Glacier, Pondera
and Teton counties, Montana

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Introduction

A gravity survey was made in parts of Flathead, Glacier, Pondera and Teton counties, Montana, to provide information on structural relationships and subsurface geology as part of geologic mapping and resource evaluation projects of the U.S. Geological Survey.

Data Collection

During the summer of 1976, 261 gravity stations were established with Worden^{1/} gravity meter E-134. The gravity stations were referenced to base stations ACIC 1204-0 at Choteau, Montana; ACIC 0508-2 at Cutbank, Montana; and ACIC 1211-0 at East Glacier, Montana, of the International Gravity Standardization Net 1971 (Defense Mapping Agency Aerospace Center, 1974). Secondary base stations were established at Browning, Montana, at the Bear Creek guest ranch west of Marias Pass, and at the Bella Vista Motel in Choteau, Montana. The base station at Browning is located at spot elevation 4362 on the U.S.G.S. 1:24,000 topographic map of Browning, Montana. The elevation is at the intersection where U.S. highway 89 turns west and is northeast of the bend in the highway taken by through traffic. The Browning base station was tied to the bases at Cutbank and East Glacier. The base station designated BEARBASE is located on the northeast corner of the U.S. highway 89 bridge over Bear Creek at the entrance to the Bear

^{1/} Use of brand names in this report is for descriptive purposes only and in no way constitutes endorsement by the U.S. Geological Survey.

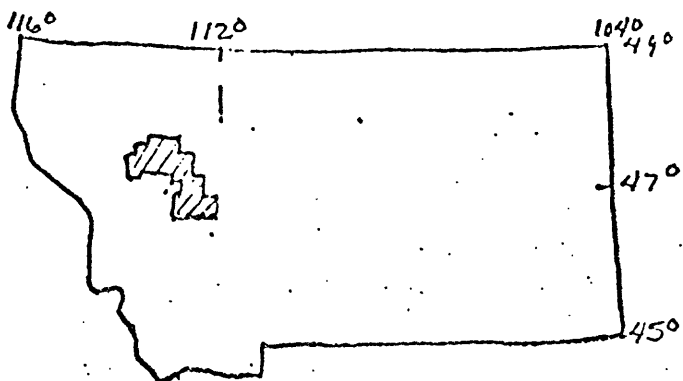
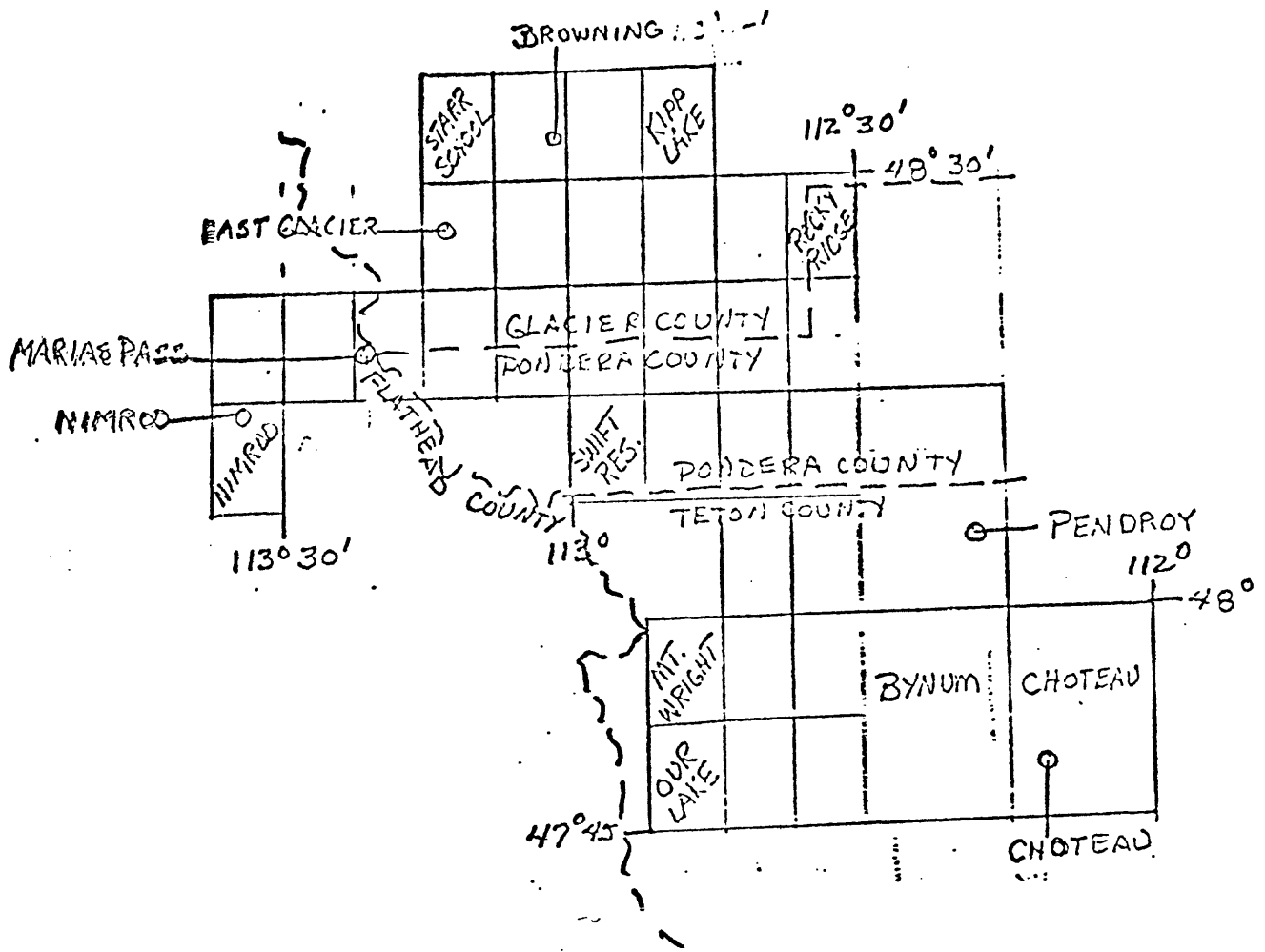


Figure 1. Area of gravity survey in Flathead, Glacier, Pondera and Teton Counties, Montana.

Creek Guest Ranch approximately six miles west of Marias Pass. It is tied to the gravity net base at East Glacier, Montana. The base station designated BELLBASE is located on the concrete porch of unit 17 at the Bella Vista Motel in Choteau, Montana, and was tied to the gravity net base at Choteau. The area covered by the survey is shown in Figure 1.

Station elevations were obtained from benchmarks, spot elevations, and contour interpolations on 1:24,000 scale topographic maps. Elevations are accurate to 1-2 m in areas of low relief, but may be in error by 5-10 m in more rugged terrain. The resultant error in Bouguer anomaly is less than 2 mgal.

Data Reduction

The gravity data were reduced by means of a digital computer program by G. I. Evenden and R. R. Wahl (unpub.). Gravity meter readings were converted to observed gravity using the International Gravity Standardization Net 1971 base values. The Geodetic Reference System 1967 formula (International Association of Geodesy, 1967) was used to compute theoretical gravity. The data were reduced to Bouguer anomaly values using an assumed average rock density of 2.67 gm/cm^3 . Terrain corrections were made by hand template through Zone H of Hammer (1939) and to 167 km by digital computer (Wahl, unpub.). The total computed corrections ranged from 0.04 mgal four miles northwest of Choteau to 16.19 mgal at Nimrod. Corrections were made for tidal effects and linear instrument drift.

The principal facts for the gravity stations are listed in Table 1.
Explanation of headings in Table 1:

STATION IDENTIFICATION	Gravity station number
LATITUDE	North latitude in degrees, minutes, and hundredths of minutes.

LONGITUDE	West longitude in degrees, minutes, and hundredths of minutes.
ELEV	Elevation in feet (to convert to meters, multiply by 0.3048).
ST	State where station is located (Montana).
OBSERVED GRAVITY	Observed gravity in milligals.
STD. GRAVITY	Theoretical gravity.
TERRAIN	Terrain correction in milligals.
FREE-AIR	Free-air anomaly in milligals.
BOUGUER	Elevation and curvature correction in milligals.
BOUGUER ANOMALY	Bouguer anomaly in milligals for assumed average density of 2.67 gm/cm^3 .

CHOTEAU-EAST GLACIER
D. M. WILSON 1976
DENSITY: 2.67

STATION IDENTIFICATION	LATITUDE	LONGITUDE	ELEV.	ST.	OBSERVED GRAVITY	STD. GRV.	TERRAIN CORRECTIONS	BOUGUER ANOMALY	SPECIAL	BOUGUER ANOMALY	SPEC. FIELD
GRAVY. BRWRBASE			4362.0	MT	980540.56		0.00				
GRAVY. CH001	48 31.36	-113 4.21	4634.0	MT	980517.01	-980937.17	0.38	435.63		-143.57	
GRAVY. CH002	48 29.65	-113 7.32	4995.0	MT	980493.59	-980934.61	0.58	469.55		-142.57	
GRAVY. CH003	48 28.18	-113 9.02	4957.0	MT	980495.24	-980932.40	0.61	465.98		-141.04	
GRAVY. CH004	48 26.51	-113 13.10	4795.0	MT	980501.93	-980929.90	1.30	450.76		-140.84	
GRAVY. CH005	48 25.45	-113 12.61	4775.0	MT	980502.42	-980928.31	1.36	448.88		-139.89	
GRAVY. CH006	48 25.03	-113 13.22	4782.0	MT	980502.04	-980927.69	1.48	449.54		-139.11	
GRAVY. CH007	48 24.56	-113 14.10	4800.0	MT	980499.02	-980926.98	1.62	451.23		-140.21	
GRAVY. CH008	48 24.08	-113 15.17	4957.0	MT	980488.05	-980926.26	1.38	465.98		-141.32	
GRAVY. EASTBASE			4795.0	MT	980501.54		0.00				
GRAVY. EASTBASE			4795.0	MT	980501.64		0.00				
GRAVY. CH010	48 23.74	-113 15.30	4980.0	MT	980488.30	-980925.75	1.37	468.14		-139.20	
GRAVY. CH011	48 23.46	-113 15.45	4980.0	MT	980487.05	-980925.33	1.37	468.14		-140.03	
GRAVY. CH911	48 23.39	-113 15.54	5000.0	MT	980484.06	-980925.23	1.37	470.02		-141.73	
GRAVY. CH009	48 23.38	-113 15.53	5000.0	MT	980483.73	-980925.21	1.39	470.02		-142.02	
GRAVY. CH012	48 22.59	-113 16.54	5060.0	MT	980478.51	-980924.03	1.55	475.66		-142.31	
GRAVY. BEARRASE			4430.0	MT	980491.88		0.00				
GRAVY. EASTBASE			4795.0	MT	980501.54		0.00				
GRAVY. CH013	48 22.09	-113 16.72	5084.0	MT	980476.45	-980923.28	1.45	477.92		-142.28	
GRAVY. CH014	48 21.45	-113 17.74	4980.0	MT	980481.20	-980922.32	2.29	468.14		-141.95	
GRAVY. CH015	48 20.80	-113 18.82	5072.0	MT	980472.75	-980921.35	2.57	476.79		-143.65	
GRAVY. CH016	48 20.30	-113 19.57	5120.0	MT	980467.30	-980920.60	2.69	481.30		-145.36	
GRAVY. CH017	48 19.43	-113 20.78	5200.0	MT	980461.16	-980919.29	2.68	488.82		-145.42	
GRAVY. CH018	48 18.77	-113 21.47	5740.0	MT	980457.06	-980918.30	2.68	492.58		-146.14	
GRAVY. CH019	48 18.04	-113 22.70	4956.0	MT	980469.06	-980917.21	10.88	465.89		-141.82	
GRAVY. CH020	48 17.49	-113 24.18	4715.0	MT	980478.74	-980916.38	8.88	443.24		-147.71	
GRAVY. CH021	48 16.77	-113 25.54	4520.0	MT	980469.39	-980915.30	6.70	424.92		-149.80	
GRAVY. CH023	48 15.77	-113 26.97	4387.0	MT	980490.12	-980913.80	6.37	412.42		-155.84	
GRAVY. CH024	48 15.11	-113 27.88	4362.0	MT	980488.00	-980912.81	6.68	410.07		-158.16	
GRAVY. CH025	48 14.40	-113 30.26	4220.0	MT	980484.92	-980911.75	15.83	396.72		-159.51	
GRAVY. CH026	48 14.39	-113 34.15	3970.0	MT	980503.07	-980911.73	16.19	373.23		-155.90	
GRAVY. CH027	48 15.62	-113 34.46	4044.0	MT	980500.43	-980913.58	11.56	380.18		-160.61	
GRAVY. CH028	48 16.95	-113 36.60	3860.0	MT	980512.82	-980915.57	10.51	362.89		-162.24	
GRAVY. CH029	48 14.11	-113 32.11	4080.0	MT	980493.51	-980911.31	15.80	383.56		-158.87	
GRAVY. BEARRASE			4430.0	MT	980491.88		0.00				
GRAVY. CH030	48 25.28	-113 11.01	4726.0	MT	980504.16	-980928.06	1.19	444.27		-141.01	
GRAVY. CH031	48 24.99	-113 9.99	4776.0	MT	980500.71	-980927.62	1.05	448.97		-141.17	
GRAVY. CH032	48 24.30	-113 9.56	4554.0	MT	980513.05	-980926.59	1.36	428.11		-140.75	
GRAVY. CH033	48 23.99	-113 8.75	4624.0	MT	980506.37	-980926.13	1.39	434.69		-142.75	
GRAVY. CH034	48 23.67	-113 7.66	4868.0	MT	980491.02	-980925.65	1.25	457.62		-143.19	

Table 1. Principal facts for gravity stations in Flathead, Glacier, Pondera

BOUGUER GRAVITY DATA

CHATEAU-EAST GLACIER

STATION IDENTIFICATION	LATITUDE	LONGITUDE	LOCATION	ELEV.	ST.	OBSERVED GRAVITY	STD. GRV.	TERRAIN FREE-AIR CORRECTIONS	BOUGUER ANOMALY	SPECIAL	BOUGUER ANOMALY	SPEC. FIELD
GRAVITY. CH035	48 23.37	-113 6.34		4807.0	MT	980492.68	-980925.20	1.19	451.89		-165.34	-144.78
GRAVITY. CH036	48 22.48	-113 4.99		4785.0	MT	980491.97	-980923.86	1.15	449.82		-164.59	-145.51
GRAVITY. CH037	48 21.83	-113 3.99		4995.0	MT	980477.25	-980922.89	1.14	469.56		-171.78	-146.72
GRAVITY. CH038	48 21.74	-113 2.90		4844.0	MT	980484.34	-980922.75	1.06	455.36		-166.61	-148.60
GRAVITY. CH039	48 21.62	-113 1.40		4655.0	MT	980493.44	-980922.57	0.98	437.60		-160.13	-150.68
GRAVITY. CH040	48 21.62	-113 0.59		4633.0	MT	980495.64	-980922.57	0.91	435.54		-159.38	-149.80
GRAVITY, BEARBASE				4430.0	MT	980491.88		0.00				
GRAVITY, BEARBASE				4430.0	MT	980491.88		0.00				
GRAVITY, BRNBASE				4362.0	MT	980540.56		0.00				
GRAVITY. CH043	48 30.75	-113 3.46		4480.0	MT	980524.98	-980936.26	0.44	419.28		-153.46	-145.02
GRAVITY. CH042	48 32.28	-113 6.56		4405.0	MT	980535.31	-980938.55	0.59	414.11		-151.57	-140.11
GRAVITY. CH044	48 31.81	-113 5.77		4370.0	MT	980535.73	-980937.84	0.60	410.82		-150.37	-141.06
GRAVITY. CH045	48 28.94	-112 49.86		4295.0	MT	980532.82	-980933.54	0.31	403.77		-147.80	-144.44
GRAVITY. CH046	48 28.34	-112 47.99		3975.0	MT	980551.61	-980932.65	0.35	373.70		-136.83	-143.82
GRAVITY. CH047	48 26.79	-112 43.70		4145.0	MT	980543.56	-980930.32	0.14	389.67		-142.66	-139.51
GRAVITY. CH048	48 25.84	-112 41.72		3918.0	MT	980557.73	-980928.90	0.13	368.34		-134.88	-137.58
GRAVITY. CH049	48 24.67	-112 38.80		4150.0	MT	980543.94	-980927.15	0.31	390.14		-142.83	-135.59
GRAVITY. CH050	48 24.67	-112 38.80		4488.0	MT	980549.74		0.60				
GRAVITY. CH051	48 18.77	-112 31.97		3835.0	MT	980547.10	-980918.30	0.08	365.24		-133.74	-139.62
GRAVITY, BRNBASE				4362.0	MT	980540.56		0.00				
GRAVITY. CH052	48 32.06	-113 0.70		4455.0	MT	980531.29	-980938.22	0.30	418.80		-153.28	-141.11
GRAVITY. CH053	48 30.99	-113 0.38		4545.0	MT	980523.99	-980936.61	0.32	427.26		-156.37	-141.41
GRAVITY. CH054	48 28.37	-112 59.27		4794.0	MT	980501.08	-980932.69	0.45	450.66		-164.89	-145.39
GRAVITY. CH055	48 26.95	-112 59.24		4712.0	MT	980501.62	-980930.56	0.42	442.96		-162.09	-147.65
GRAVITY. CH056	48 25.61	-112 59.37		4186.0	MT	980530.19	-980928.55	1.56	393.53		-144.06	-147.33
GRAVITY. CH057	48 23.62	-113 0.42		4538.0	MT	980505.03	-980925.57	0.75	426.61		-156.13	-149.31
GRAVITY. CH058	48 24.78	-112 57.22		4580.0	MT	980503.83	-980927.31	0.97	430.55		-157.57	-149.53
GRAVITY. CH059	48 25.27	-112 52.95		4063.0	MT	980536.67	-980928.04	1.17	381.97		-139.85	-148.08
GRAVITY. CH060	48 27.03	-112 50.08		4030.0	MT	980542.40	-980930.68	0.39	378.86		-136.72	-147.78
GRAVITY. CH061	48 14.12	-112 31.87		4030.0	MT	980520.85	-980911.33	0.16	378.87		-138.72	-150.17
GRAVITY. CH062	48 11.11	-112 30.84		4176.0	MT	980509.50	-980906.81	0.21	392.59		-143.72	-149.23
GRAVITY. CH063	48 9.81	-112 27.85		4317.0	MT	980506.75	-980904.86	0.32	405.64		-148.55	-140.50
GRAVITY. CH064	48 7.17	-112 22.35		4449.0	MT	980502.06	-980900.90	0.64	418.25		-153.08	-133.03
GRAVITY. CH065	48 5.54	-112 21.03		4416.0	MT	980503.51	-980898.46	0.48	415.15		-151.95	-131.27
GRAVITY. CH066	48 4.40	-112 19.90		4317.0	MT	980511.19	-980896.75	0.39	405.84		-146.55	-127.88
GRAVITY. CH067	48 4.43	-112 22.26		4367.0	MT	980504.82	-980896.79	0.41	410.54		-150.27	-131.29
GRAVITY. CH068	48 4.44	-112 25.78		4581.0	MT	980484.42	-980896.81	0.52	430.65		-157.60	-138.82
GRAVITY. CH069	48 4.43	-112 24.38		4525.0	MT	980491.07	-980896.79	0.47	425.39		-155.68	-135.54
GRAVITY. CH070	48 4.43	-112 25.15		4545.0	MT	980488.80	-980896.79	0.49	427.27		-156.37	-136.60
GRAVITY, BRNBASE				4362.0	MT	980540.56		0.00				
GRAVITY, BEARBASE				4430.0	MT	980491.88		0.00				

BOUGUER GRAVITY DATA

CHOTEAU-EAST GLACIER

STATION IDENTIFICATION	LOCATION		ELEV.	SI.	OBSERVED GRAVITY	STD. GPV.	CORRECTIONS		BOUGUER ANOMALY	SPEC FIELD
	LATITUDE	LONGITUDE					TERRAIN FREE-AIR	SPECIAL		
GRAVITY. CH071	48 21.30	-113 16.63	4940.0	MT	980487.00	-980922.18	2.53	464.38	-138.16	
GRAVITY. CH072	48 20.95	-113 15.79	5798.0	MT	980484.58	-980921.57	2.82	495.03	-138.28	
GRAVITY. CH073	48 20.22	-113 17.09	5395.0	MT	980459.51	-980920.48	3.26	507.14	-136.03	
GRAVITY. CH074	48 19.81	-113 18.15	5083.0	MT	980474.55	-980919.86	3.87	477.62	-138.41	
GRAVITY. CH075	48 21.53	-113 14.72	4919.0	MT	980441.42	-980922.44	1.89	462.41	-135.89	
GRAVITY. CH076	48 21.60	-113 13.70	4900.0	MT	980443.75	-980922.54	1.89	460.63	-134.79	
GRAVITY. CH077	48 21.41	-113 12.72	4977.0	MT	980440.13	-980922.26	1.93	467.86	-133.50	
GRAVITY. CH078	48 21.18	-113 11.97	5280.0	MT	980470.93	-980921.91	1.65	496.33	-134.33	
GRAVITY. CH079	48 20.87	-113 11.60	5430.0	MT	980463.00	-980921.45	1.95	510.43	-132.73	
GRAVITY. CH080	48 20.45	-113 9.87	5974.0	MT	980428.22	-980920.62	2.58	561.55	-131.72	
GRAVITY. BEARBASE			4430.0	MT	980491.68		0.00			
GRAVITY. CH40BASE			4633.0	MT	980495.17		0.00			
GRAVITY. CH081	48 21.05	-112 59.54	4673.0	MT	980490.42	-980921.72	0.68	439.29	-152.08	
GRAVITY. CH082	48 20.43	-112 58.83	4520.0	MT	980497.99	-980920.79	0.77	424.92	-152.62	
GRAVITY. CH083	48 19.68	-112 58.38	4412.0	MT	980502.38	-980919.67	0.99	414.77	-153.34	
GRAVITY. CH084	48 18.96	-112 56.79	4532.0	MT	980493.63	-980918.59	0.87	426.04	-152.97	
GRAVITY. CH085	48 18.94	-112 54.83	4478.0	MT	980497.27	-980918.56	0.71	420.97	-153.88	
GRAVITY. CH086	48 18.82	-112 53.02	4548.0	MT	980494.30	-980918.38	0.57	427.55	-152.43	
GRAVITY. CH087	48 17.87	-112 50.15	4434.0	MT	980498.06	-980916.95	0.51	416.83	-154.11	
GRAVITY. CH088	48 17.00	-112 50.16	4462.0	MT	980495.25	-980915.65	0.68	419.47	-153.77	
GRAVITY. CH089	48 15.65	-112 49.39	4703.0	MT	980478.12	-980913.62	0.76	442.11	-154.41	
GRAVITY. CH090	48 14.93	-112 47.31	4481.0	MT	980490.86	-980912.54	0.74	421.25	-153.86	
GRAVITY. CH091	48 14.43	-112 45.04	4493.0	MT	980490.46	-980911.79	0.63	422.38	-152.91	
GRAVITY. CH092	48 13.94	-112 43.85	4380.0	MT	980497.36	-980911.06	0.47	411.76	-152.18	
GRAVITY. CH093	48 12.31	-112 42.07	4544.0	MT	980465.36	-980908.61	0.47	427.17	-151.94	
GRAVITY. CH094	48 12.74	-112 38.10	4394.0	MT	980495.87	-980909.26	0.35	413.06	-151.15	
GRAVITY. CH095	48 12.71	-112 33.97	4248.0	MT	980503.92	-980909.21	0.24	399.35	-151.89	
GRAVITY. CH096	48 18.68	-112 35.07	3976.0	MT	980533.12	-980918.17	0.26	373.79	-147.88	
GRAVITY. CH097	48 14.56	-112 42.94	4365.0	MT	980503.43	-980911.99	0.40	410.35	-148.01	
GRAVITY. CH098	48 15.21	-112 40.31	4342.0	MT	980505.94	-980912.96	0.41	408.19	-147.63	
GRAVITY. CH099	48 19.82	-112 48.81	4264.0	MT	980515.04	-980919.88	0.35	400.86	-150.37	
GRAVITY. CH100	48 21.98	-112 47.96	4158.0	MT	980527.60	-980923.11	0.28	390.90	-147.44	
GRAVITY. CH101	48 22.84	-112 45.58	4083.0	MT	980535.46	-980924.40	0.21	383.85	-145.41	
GRAVITY. BEARBASE			4430.0	MT	980491.88		0.00			
GRAVITY. BEARBASE			4430.0	MT	980491.88		0.00			
GRAVITY. CH102	48 19.76	-112 59.70	4512.0	MT	980497.45	-980919.79	1.08	424.17	-152.33	
GRAVITY. CH103	48 19.41	-113 0.72	4620.0	MT	980491.25	-980919.26	2.66	434.32	-149.97	
GRAVITY. CH104	48 18.94	-113 0.97	4527.0	MT	980495.94	-980918.56	3.14	425.57	-149.66	
GRAVITY. CH105	48 19.10	-113 2.08	5270.0	MT	980455.14	-980918.80	2.36	495.40	-147.09	
GRAVITY. CH106	48 19.46	-113 3.17	5355.0	MT	980453.75	-980919.34	1.95	503.38	-144.35	
GRAVITY. CH107	48 20.67	-113 0.16	4663.0	MT	980489.05	-980921.15	0.61	438.35	-153.35	

BOUGUER GRAVITY DATA

CHOTEAU-EAST GLACIER

STATION IDENTIFICATION	LATITUDE	LONGITUDE	LOCATION	ELEV.	ST.	OBSERVED GRAVITY	STD. GRV.	TERRAIN FREE-AIR CORRECTIONS	BOUGUER SPECIAL	BOUGUER ANOMALY	SPEC. FIELD
GRAVITY. CH108	48 20.38	-113 2.67		5100.0	MT	980466.92	-980920.72	1.53	479.42	-175.37	-148.22
GRAVITY. CH109	48 19.85	-113 3.57		5190.0	MT	980465.00	-980919.92	1.88	487.88	-178.45	-143.61
GRAVITY. CH110	48 20.65	-113 1.23		4818.0	MT	980479.41	-980921.12	0.90	452.92	-165.72	-153.61
GRAVITY. BEARBASE				4430.0	MT	980451.88		0.00			
GRAVITY. BEARBASE				4430.0	MT	980491.68		0.00			
GRAVITY. CH111	48 16.86	-112 51.33		4684.0	MT	980461.04	-980915.44	0.84	440.33	-161.13	-154.36
GRAVITY. CH112	48 16.95	-112 52.30		4596.0	MT	980466.07	-980915.57	0.98	432.06	-158.11	-154.57
GRAVITY. CH113	48 16.25	-112 54.21		4824.0	MT	980470.51	-980914.52	1.29	453.49	-165.92	-155.15
GRAVITY. BEARBASE				4430.0	MT	980491.68		0.00			
GRAVITY. BEARBASE				4430.0	MT	980491.68		0.00			
GRAVITY. CH114	48 19.44	-113 18.11		5130.0	MT	980471.98	-980919.31	4.34	482.24	-176.39	-137.14
GRAVITY. CH115	48 18.73	-113 17.26		5184.0	MT	980469.74	-980918.24	4.73	487.31	-178.24	-134.70
GRAVITY. CH116	48 18.20	-113 16.14		5284.0	MT	980465.77	-980917.45	4.99	496.71	-161.66	-131.84
GRAVITY. CH117	48 17.28	-113 15.16		5353.0	MT	980463.55	-980916.97	4.82	503.19	-184.02	-129.43
GRAVITY. CH119	48 17.31	-113 13.14		5492.0	MT	980455.95	-980916.11	3.35	516.26	-168.78	-129.33
GRAVITY. CH120	48 17.07	-113 12.30		5595.0	MT	980450.53	-980915.75	3.56	525.94	-192.30	-128.02
GRAVITY. CH121	48 16.61	-113 11.26		5668.0	MT	980445.65	-980915.06	3.77	532.80	-194.79	-127.43
GRAVITY. CH124	48 18.48	-113 8.47		7016.0	MT	980364.65	-980917.87	7.56	659.44	-240.61	-126.83
GRAVITY. CH122	48 17.29	-113 9.64		6001.0	MT	980426.20	-980919.08	4.52	564.08	-206.17	-127.45
GRAVITY. CH123	48 18.13	-113 9.43		6382.0	MT	980405.61	-980917.34	5.57	599.88	-219.18	-125.46
GRAVITY. BEARBASE				4430.0	MT	980491.68		0.00			
GRAVITY. BEARBASE				4430.0	MT	980491.68		0.00			
GRAVITY. CH125	48 18.68	-112 57.82		4648.0	MT	980485.08	-980918.17	1.16	436.95	-159.89	-154.87
GRAVITY. CH126	48 17.87	-112 57.82		4738.0	MT	980479.61	-980916.95	1.85	445.40	-162.98	-153.07
GRAVITY. CH127	48 17.60	-112 58.76		4804.0	MT	980476.18	-980916.55	1.97	451.61	-165.24	-152.03
GRAVITY. CH128	48 17.28	-112 59.70		5225.0	MT	980449.35	-980916.07	2.12	491.17	-179.65	-153.08
GRAVITY. CH129	48 16.68	-112 59.88		5330.0	MT	980443.16	-980915.17	2.61	501.03	-183.24	-151.61
GRAVITY. CH130	48 17.32	-112 57.94		4908.0	MT	980469.10	-980916.13	2.23	461.38	-158.80	-152.22
GRAVITY. CH131	48 16.83	-112 56.62		5170.0	MT	980451.79	-980915.39	2.25	486.00	-177.76	-153.11
GRAVITY. CH132	48 16.67	-112 54.89		4864.0	MT	980466.74	-980915.15	1.27	457.25	-167.29	-155.18
GRAVITY. CH133	48 15.59	-112 53.19		4970.0	MT	980460.01	-980913.53	1.13	467.21	-170.92	-156.10
GRAVITY. CH134	48 15.74	-112 52.46		4995.0	MT	980458.64	-980913.76	1.15	469.56	-171.78	-155.99
GRAVITY. CH135	48 13.61	-112 53.86		5090.0	MT	980450.03	-980910.56	1.82	478.48	-175.03	-155.26
GRAVITY. CH136	48 13.39	-112 53.56		5077.0	MT	980450.50	-980910.23	1.69	477.26	-174.58	-155.36
GRAVITY. CH137	48 14.25	-112 52.70		4900.0	MT	980462.68	-980911.52	1.10	460.63	-168.52	-155.63
GRAVITY. CH138	48 14.69	-112 51.72		4821.0	MT	980466.62	-980912.18	0.91	453.20	-165.82	-155.27
GRAVITY. CH139	48 15.24	-112 51.24		4920.0	MT	980463.35	-980913.01	0.94	462.51	-169.21	-155.42
GRAVITY. CH140	48 15.60	-112 50.44		4740.0	MT	980476.34	-980913.55	0.79	445.59	-163.05	-153.88
GRAVITY. BEARBASE				4430.0	MT	980491.68		0.00			
GRAVITY. BEARBASE				4430.0	MT	980491.68		0.00			
GRAVITY. CH141	48 18.71	-113 7.59		6548.0	MT	980387.36	-980918.21	5.21	615.48	-224.65	-134.99

BOUGUER GRAVITY DATA

CHOTEAU-EAST GLACIER

STATION IDENTIFICATION	LATITUDE	LONGITUDE	LOCATION	ELEV.	ST.	OBSERVED GRAVITY	SID. GRV.	TERRAIN FREE-AIR	CORRECTIONS	BOUGUER	SPECIAL	BOUGUER ANOMALY	SPEC FIEL
GRAVITY. CH142	48 19.01	-113 7.31		6304.0	MT	980410.39	-980918.66	4.89	592.55	-216.52		-127.35	
GRAVITY. CH143	48 19.65	-113 7.38		5678.0	MT	980442.14	-980919.62	3.30	533.73	-195.14		-135.59	
GRAVITY. CH144	48 20.11	-113 6.45		5421.0	MT	980455.05	-980920.31	3.39	509.58	-186.35		-137.84	
GRAVITY. CH145	48 20.31	-113 6.44		5339.0	MT	980459.43	-980920.61	2.19	501.88	-183.55		-140.66	
GRAVITY. CH146	48 20.82	-113 4.04		5158.0	MT	980465.33	-980921.37	1.45	484.87	-177.35		-146.67	
GRAVITY. BEARBASE				4430.0	MT	980491.88		0.00					
GRAVITY. BROWNBASE				4362.0	MT	980540.56		0.00					
GRAVITY. CH147	48 2.26	-112 20.84		4100.0	MT	980531.35	-980993.54	0.33	385.45	-141.12		-115.53	
GRAVITY. CH148	47 58.32	-112 18.27		3960.0	MT	980525.60	-980887.62	0.09	372.29	-136.32		-125.96	
GRAVITY. CH149	47 53.94	-112 15.84		4027.0	MT	980501.67	-980881.05	0.16	376.59	-138.61		-139.24	
GRAVITY. CH150	47 51.54	-112 14.49		3957.0	MT	980492.24	-980877.44	0.04	372.01	-136.21		-149.36	
GRAVITY. CH151	47 53.14	-112 43.11		3820.0	MT	980505.87		0.00					
GRAVITY. CH152	47 53.78	-112 43.45		3820.0	MT	980505.73		0.00					
GRAVITY. CH153	47 54.41	-112 43.58		5088.0	MT	980420.19	-980879.85	12.12	478.30	-174.96		-144.20	
GRAVITY. CH154	47 55.03	-112 44.50		5148.0	MT	980418.70	-980860.61	12.45	483.94	-177.01		-142.73	
GRAVITY. CH155	47 55.54	-112 46.10		5218.0	MT	980415.70	-980881.75	12.22	490.52	-179.41		-142.72	
GRAVITY. CH156	47 55.29	-112 47.39		5297.0	MT	980413.48	-980862.68	12.48	497.94	-182.11		-140.89	
GRAVITY. CH157	47 56.14	-112 48.21		5356.0	MT	980409.43	-980863.45	6.31	503.48	-184.13		-148.36	
GRAVITY. CH158	47 56.75	-112 48.29		5690.0	MT	980383.76	-980863.97	5.81	534.87	-195.55		-149.18	
GRAVITY. CH159	47 57.46	-112 49.19		6244.0	MT	980354.66	-980864.35	4.94	566.92	-214.47		-148.30	
GRAVITY. CH160	47 53.20	-112 42.25		5832.0	MT	980383.30	-980885.27	5.08	548.21	-200.40		-149.08	
GRAVITY. CH161	47 52.96	-112 40.69		5689.0	MT	980386.53	-980886.33	5.57	534.77	-195.51		-152.97	
GRAVITY. CH162	47 53.09	-112 39.83		5100.0	MT	980422.58	-980879.94	8.92	479.43	-175.37		-144.38	
GRAVITY. CH163	47 53.31	-112 39.12		4985.0	MT	980431.21	-980879.58	4.90	468.62	-171.43		-146.28	
GRAVITY. CH164	47 53.20	-112 38.48		4935.0	MT	980430.72	-980879.77	5.09	463.92	-169.72		-149.76	
GRAVITY. CH165	47 52.99	-112 36.64		4908.0	MT	980433.86	-980880.10	4.16	461.38	-168.60		-149.50	
GRAVITY. CH166	47 52.77	-112 37.87		4885.0	MT	980435.00	-980879.94	2.10	459.22	-168.01		-151.63	
GRAVITY. CH167	47 52.23	-112 38.87		4793.0	MT	980439.35	-980679.62	1.21	450.58	-164.86		-153.34	
GRAVITY. BELLBASE				4865.0	MT	980435.32	-980879.29	1.53	457.34	-167.33		-152.43	
GRAVITY. CH168	47 53.06	-112 19.78		4962.0	MT	980423.51	-980878.48	3.04	466.46	-170.65		-150.12	
GRAVITY. CH169	47 53.35	-112 21.98		3820.0	MT	980503.73		0.00					
GRAVITY. CH170	47 53.15	-112 25.45		3820.0	MT	980505.73		0.00					
GRAVITY. CH171	47 53.11	-112 28.85		4133.0	MT	980498.92	-980879.73	0.15	388.55	-142.25		-134.36	
GRAVITY. CH172	47 53.10	-112 32.37		4195.0	MT	980491.30	-980880.16	0.18	394.38	-144.37		-138.67	
GRAVITY. CH173	47 53.17	-112 33.70		4321.0	MT	980473.88	-980879.86	0.27	406.22	-148.69		-142.18	
GRAVITY. CH174	47 52.32	-112 41.70		4462.0	MT	980467.12	-980879.80	0.40	419.47	-153.52		-146.33	
GRAVITY. CH175	47 52.07	-112 42.75		4614.0	MT	980452.58	-980879.79	0.60	433.76	-158.73		-151.60	
GRAVITY. CH176	47 52.07	-112 43.93		4671.0	MT	980450.03	-980879.89	0.73	439.11	-160.68		-150.70	
GRAVITY. CH177	47 52.07	-112 42.75		5170.0	MT	980416.19	-980878.62	8.73	486.01	-177.76		-145.45	
GRAVITY. CH178	47 52.07	-112 42.75		5275.0	MT	980407.43	-980878.24	9.00	495.87	-181.36		-147.30	
GRAVITY. CH179	47 52.07	-112 43.93		5386.0	MT	980401.14	-980878.24	9.12	506.30	-185.15		-146.83	

BOUGUER ANOMALY SPEC FIEI

BOUGUER GRAVITY DATA

CHOTEAU-EAST GLACIER

CORRECTIONS FREE-AIR BOUGUER SPECIAL

STATION IDENTIFICATION	LATITUDE	LONGITUDE	ELEV.	ST.	OBSERVED GRAVITY	STD. GRV.	TERRAIN	CORRECTIONS FREE-AIR	BOUGUER	SPECIAL
CH177	47 51.83	-112 45.44	5533.0	MT	980392.52	-980877.98	5.94	520.12	-190.18	-149.38
GRAVITY.										
CH178	47 51.25	-112 46.54	5689.0	MT	980379.02	-980877.01	6.98	534.77	-195.51	-151.75
GRAVITY.										
CH179	47 50.85	-112 46.98	5794.0	MT	980371.14	-980876.41	7.35	544.64	-199.10	-152.38
GRAVITY.										
CH180	47 55.05	-112 35.64	4791.0	MT	980442.36	-980882.71	0.97	450.39	-164.79	-153.78
GRAVITY.										
CH181	47 55.57	-112 37.23	4937.0	MT	980434.50	-980883.50	1.32	464.11	-169.79	-153.30
GRAVITY.										
CH182	47 55.43	-112 38.66	5080.0	MT	980424.85	-980883.28	2.17	477.55	-174.68	-153.39
GRAVITY.										
CH183	47 55.93	-112 38.53	5045.0	MT	980429.80	-980884.04	2.17	474.26	-173.49	-151.30
GRAVITY.										
CH184	47 55.23	-112 39.51	5325.0	MT	980409.77	-980882.98	2.42	500.57	-183.07	-152.89
GRAVITY.										
CH185	47 55.16	-112 41.06	6100.0	MT	980371.18	-980882.88	3.59	573.39	-209.55	-144.27
GRAVITY.										
CH186	47 56.77	-112 39.61	5340.0	MT	980414.29	-980885.30	2.99	501.98	-183.58	-149.62
GRAVITY.										
CH187	47 56.89	-112 41.36	6275.0	MT	980361.92	-980885.48	4.07	589.83	-215.53	-145.19
GRAVITY.										
GRAVITY, BELLEBASE			3820.0	MT	980505.73		0.00			-150.62
GRAVITY, BELLEBASE			3820.0	MT	980505.73		0.00			-149.83
GRAVITY, BELLEBASE			4417.0	MT	980492.17	-980906.41	0.36	415.24	-151.98	-151.74
GRAVITY.	48 10.84	-112 36.18	4434.0	MT	980491.21	-980905.78	0.47	416.83	-152.56	-152.04
GRAVITY.	48 10.42	-112 39.49	4600.0	MT	980479.22	-980905.84	0.69	432.44	-158.25	-152.37
GRAVITY.	48 10.46	-112 43.95	4673.0	MT	980474.68	-980906.06	0.79	439.30	-160.75	-152.63
GRAVITY.	48 10.61	-112 45.67	4720.0	MT	980471.33	-980906.05	1.00	443.71	-162.36	-152.94
GRAVITY.	48 10.60	-112 47.60	4765.0	MT	980468.14	-980905.99	1.18	447.94	-163.90	-151.80
GRAVITY.	48 10.56	-112 48.25	4684.0	MT	980471.95	-980905.73	1.64	440.33	-162.70	-136.39
GRAVITY.	48 10.39	-112 50.15	4730.0	MT	980469.00	-980905.02	2.27	444.65	-167.56	-123.85
GRAVITY.	48 9.91	-112 51.94	4288.0	MT	980506.37	-980900.85	0.34	403.11	-147.56	-135.68
GRAVITY.	48 7.00	-112 26.94	4114.0	MT	980514.75	-980888.94	0.18	386.76	-141.60	-148.44
GRAVITY.	47 59.20	-112 23.76	4241.0	MT	980500.27	-980888.97	0.27	396.70	-145.95	-149.22
GRAVITY.	47 59.22	-112 27.54	4524.0	MT	980470.95	-980889.62	0.58	425.30	-155.65	-148.99
GRAVITY.	47 59.65	-112 33.39	4635.0	MT	980465.06	-980891.26	0.68	435.73	-159.45	-150.66
GRAVITY.	48 0.74	-112 35.01	4668.0	MT	980464.30	-980892.26	0.72	436.83	-160.58	-152.76
GRAVITY.	48 1.41	-112 34.68	4808.0	MT	980454.84	-980893.21	0.89	451.99	-165.37	
GRAVITY.	48 2.04	-112 36.64	5033.0	MT	980441.49	-980895.28	0.98	473.13	-173.08	
GRAVITY, BELLEBASE	48 3.42	-112 39.00	3820.0	MT	980505.73		0.00			-151.27
GRAVITY, BELLEBASE			3820.0	MT	980505.73		0.00			-141.40
GRAVITY, BELLEBASE			3945.0	MT	980534.45	-980925.20	0.40	370.88	-135.80	-141.39
GRAVITY.	48 23.37	-112 42.07	4119.0	MT	980535.23	-980922.35	0.26	387.23	-141.77	-148.00
GRAVITY.	48 21.47	-112 42.03	4127.0	MT	980533.54	-980921.12	0.25	387.98	-142.04	
GRAVITY.	48 20.65	-112 41.66	4268.0	MT	980515.72	-980918.47	0.34	401.23	-146.68	-145.42
GRAVITY.	48 18.68	-112 44.65	4114.0	MT	980522.89	-980913.80	0.33	386.76	-141.60	-143.63
GRAVITY.	48 15.77	-112 36.92	4350.0	MT	980495.79	-980900.08	0.51	410.35	-150.20	-146.37
GRAVITY.	48 6.62	-112 30.81	4650.0	MT	980475.58	-980899.79	0.66	437.14	-159.96	-147.27
GRAVITY.	48 6.43	-112 33.98	4684.0	MT	980472.68	-980899.64	0.69	440.33	-161.13	-149.40
GRAVITY.	48 6.46	-112 35.70	4656.0	MT	980471.85	-980899.51	0.67	437.70	-160.17	
GRAVITY.	48 6.24	-112 38.34	4856.0	MT	980456.86	-980899.03	1.08	456.50	-167.02	-151.61
GRAVITY.	48 5.92	-112 39.65								
GRAVITY.										

BOUGUER GRAVITY DATA

CHOTEAU-EAST GLACIER

STATION IDENTIFICATION	LATITUDE	LONGITUDE	ELEV.	ST.	OBSERVED GRAVITY	STD. GRV.	TERRAIN FREE-AIR CORRECTIONS	BOUGUER ANOMALY	SPECIAL	BOUGUER ANOMALY	SPEC FIEL
GRAVITY. CH214	48 5.76	-112 41.14	4780.0	MT	980460.95	-980898.82	1.18	449.35	-164.41	-151.75	
GRAVITY. CH215	48 4.48	-112 33.99	4593.0	MT	980476.97	-980896.87	0.63	431.78	-156.01	-145.50	
GRAVITY. CH216	48 4.46	-112 30.75	4566.0	MT	980480.88	-980896.84	0.56	429.24	-157.09	-143.25	
GRAVITY. CH217	48 4.05	-112 28.39	4365.0	MT	980494.21	-980895.22	0.42	412.23	-150.89	-140.25	
GRAVITY. BELLBASE			3820.0	MT	980505.73		0.00				
GRAVITY. BELLBASE			3820.0	MT	980505.73		0.00				
GRAVITY. CH218	48 16.94	-113 21.61	5137.0	MT	980461.70	-980915.56	3.76	482.90	-176.63	-143.83	
GRAVITY. CH219	48 16.19	-113 21.42	5345.0	MT	980443.76	-980914.43	3.86	502.45	-183.75	-146.11	
GRAVITY. CH220	48 15.55	-113 21.06	5583.0	MT	980437.92	-980913.47	3.85	524.61	-191.89	-136.76	
GRAVITY. CH221	48 13.82	-113 19.81	5018.0	MT	980436.48	-980910.66	4.44	471.72	-172.56	-137.60	
GRAVITY. CH222	48 12.32	-113 18.20	5590.0	MT	980436.74	-980908.63	4.41	525.47	-192.13	-132.14	
GRAVITY. CH223	48 12.87	-113 19.50	5125.0	MT	980462.71	-980909.45	4.66	481.77	-176.22	-136.53	
GRAVITY. CH224	48 14.45	-113 20.32	5205.0	MT	980459.13	-980911.82	4.27	489.29	-176.96	-136.09	
GRAVITY. CH225	48 17.18	-113 20.91	5405.0	MT	980445.60	-980915.92	4.03	506.08	-185.80	-144.01	
GRAVITY. CH226	48 16.79	-113 19.78	5705.0	MT	980430.13	-980915.33	3.92	535.27	-196.06	-141.07	
GRAVITY. BELLBASE			3820.0	MT	980505.73		0.00				
GRAVITY. BELLBASE			3820.0	MT	980505.73		0.00				
GRAVITY. CH227	47 46.88	-112 17.14	4106.0	MT	980481.82	-980870.45	0.11	386.20	-141.39	-143.71	
GRAVITY. CH228	47 46.65	-112 20.87	4144.0	MT	980474.91	-980870.10	0.14	389.58	-142.63	-148.10	
GRAVITY. CH229	47 47.48	-112 24.04	4256.0	MT	980469.69	-980871.35	0.21	400.11	-146.46	-147.80	
GRAVITY. CH230	47 49.18	-112 26.17	4490.0	MT	980455.53	-980873.90	0.39	422.10	-154.48	-150.36	
GRAVITY. CH231	47 49.21	-112 30.32	4431.0	MT	980458.14	-980873.94	0.52	416.56	-152.46	-151.18	
GRAVITY. CH232	47 49.21	-112 32.41	4521.0	MT	980450.56	-980873.94	0.70	425.02	-155.54	-153.20	
GRAVITY. CH233	47 49.62	-112 33.74	4586.0	MT	980444.99	-980874.56	0.87	431.12	-157.77	-153.35	
GRAVITY. CH234	47 50.76	-112 34.76	4626.0	MT	980445.74	-980876.27	1.02	434.88	-159.14	-153.77	
GRAVITY. CH235	47 51.48	-112 35.34	4716.0	MT	980441.34	-980877.35	1.03	443.34	-162.22	-153.86	
GRAVITY. CH236	47 52.36	-112 35.66	4759.0	MT	980439.81	-980878.68	1.03	447.38	-163.70	-154.10	
GRAVITY. CH237	47 47.80	-112 32.82	4627.0	MT	980440.55	-980871.83	0.74	434.98	-159.18	-154.74	
GRAVITY. CH238	47 47.04	-112 33.80	4716.0	MT	980432.87	-980870.69	0.87	443.34	-162.22	-155.83	
GRAVITY. CH239	47 46.17	-112 33.79	4753.0	MT	980427.52	-980869.38	0.86	446.82	-163.49	-157.67	
GRAVITY. CH240	47 46.19	-112 35.80	4693.0	MT	980420.08	-980869.41	1.21	459.96	-168.28	-156.42	
GRAVITY. BELLBASE			3820.0	MT	980505.73		0.00				
GRAVITY. BELLBASE			3820.0	MT	980505.73		0.00				
GRAVITY. CH241	48 0.01	-112 34.02	4568.0	MT	980468.07	-980890.16	0.62	429.43	-157.16	-149.20	
GRAVITY. CH242	48 1.07	-112 37.37	4778.0	MT	980453.23	-980891.75	0.94	449.16	-164.35	-152.77	
GRAVITY. CH243	48 0.60	-112 42.35	5433.0	MT	980413.17	-980891.05	5.19	510.72	-166.76	-146.73	
GRAVITY. CH244	48 1.80	-112 42.18	5340.0	MT	980414.31	-980892.85	2.77	501.98	-163.58	-157.37	
GRAVITY. CH245	48 2.62	-112 43.23	5570.0	MT	980410.73	-980894.08	2.93	523.59	-191.44	-148.27	
GRAVITY. CH246	48 3.31	-112 42.78	5180.0	MT	980433.93	-980895.11	2.72	486.94	-176.11	-149.63	
GRAVITY. CH247	48 2.90	-112 41.32	5070.0	MT	980439.25	-980894.50	1.45	476.61	-174.34	-151.53	
GRAVITY. CH248	48 2.11	-112 39.15	4874.0	MT	980446.77	-980893.31	1.11	458.19	-167.63	-152.67	

CHOITEAU-EAST GLACIER										BOUGUER GRAVITY DATA				BOUGUER ANOMALY		SPEI FILE
STATION IDENTIFICATION	LATITUDE	LONGITUDE	ELEV.	ST.	OBSERVED GRAVITY	STD. GRV.	TERRAIN CORRECTIONS	FREE-AIR	BOUGUER	SPECIAL	BOUGUER ANOMALY	SPEI FILE				
GRAVITY. CH249	48 1.51	-112 40.06	5018.0	MT	980438.97	-980892.41	1.42	471.72	-172.56		-152.80					
GRAVITY. BELLBASE			3820.0	MT	980505.73		0.00									
GRAVITY. BELLBASE	48 5.40	-112 26.17	3820.0	MT	980505.73		0.00	396.73	-145.23		-140.21					
GRAVITY. CH250	48 3.56	-112 24.23	4220.0	MT	980506.17	-980898.25	0.37	426.42	-156.06		-133.21					
GRAVITY. CH251			4536.0	MT	980451.41	-980695.49	0.51									
GRAVITY. CH252	48 3.12	-112 28.44	4390.0	MT	980452.28	-980894.63	0.38	412.70	-151.06		-140.53					
GRAVITY. CH253	48 1.88	-112 28.81	4270.0	MT	980459.38	-980892.97	0.41	401.43	-146.94		-138.69					
GRAVITY. CH254	48 0.54	-112 28.83	4298.0	MT	980496.33	-980890.96	0.32	404.06	-147.90		-138.15					
GRAVITY. CH255	47 59.64	-112 35.80	4654.0	MT	980460.52	-980889.80	0.83	437.51	-160.10		-150.84					
GRAVITY. CH256	48 3.33	-112 44.35	5950.0	MT	980389.72	-980895.14	4.36	559.29	-204.43		-146.20					
GRAVITY. CH257	48 4.06	-112 43.43	5100.0	MT	980440.40	-980896.24	2.78	479.42	-175.37		-149.01					
GRAVITY. CH258	48 3.81	-112 44.32	5310.0	MT	980429.10	-980895.86	5.54	499.16	-182.55		-144.61					
GRAVITY. CH259	48 4.74	-112 43.27	5022.0	MT	980445.82	-980897.26	2.22	472.10	-172.70		-149.82					
GRAVITY. CH260	48 5.35	-112 43.95	5070.0	MT	980444.42	-980898.17	2.26	476.61	-174.34		-149.22					
GRAVITY. CH261	48 5.64	-112 42.65	4824.0	MT	980458.38	-980898.61	1.58	453.49	-165.92		-151.08					
GRAVITY. BELLBASE			3820.0	MT	980505.73		0.00									

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