

STATE OF ALASKA  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS

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Alaska Open-file Report 138  
TABULATED GRAVITY FIELD DATA, NORTH FLANK OF  
THE ALASKA RANGE, ALASKA

by  
Steve W. Hackett

STATE OF ALASKA  
Department of Natural Resources  
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

According to Alaska Statute 4), the Alaska Division of Geological and Geophysical Surveys is charged with conducting 'geological and geophysical surveys to determine the potential of Alaska lands for production of metals, minerals, fuels, and geothermal resources; the locations and supplies of ground waters and construction materials; the potential geologic hazards to buildings, roads, bridges, and other installations and structures; and shall conduct other surveys and investigations as will advance knowledge of the geology of Alaska.'

In addition, the Division shall collect, evaluate, and publish data on the underground, surface, and coastal waters of the state. It shall also process and file data from water-well-drilling logs.

DGGS performs numerous functions, all under the direction of the State Geologist---resource investigations (including mineral, petroleum, and water resources), geologic-hazard and geochemical investigations, and information services.

Administrative functions are performed under the direction of the State Geologist, who maintains his office in Anchorage (300 Porcupine Dr., 99501, ph 274-9681).

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In 1976 the Alaska Division of Geological and Geophysical Surveys (DGGs) conducted reconnaissance gravity surveys in conjunction with geologic field studies along the north flank of the Alaska Range (Gilbert and Kline, 1976; Gilbert and Bundtzen, 1976; Gilbert, 1977; Bundtzen and Gilbert, 1977). New gravity coverage was obtained with a LaCoste Romberg geodetic gravimeter model LCR G108. The gravimeter-counter readings may be converted to uncorrected milligals by referring to table 1.

Gravity sites were occupied in accessible areas between the West Fork of the Little Delta River and the Yanert Glacier to the east and the Teklanika River to the west. The 1976 gravity data were reduced to a common datum (Morelli and others, 1974) and processed with a modified version of a gravity reduction program used by the U.S. Geological Survey in presenting previous Alaskan gravity data (Barnes, 1972, 1977). The gravity field data are stored on computer tape and are listed by station number and latitude and longitude in table 2. The study area is shown in figure 1.

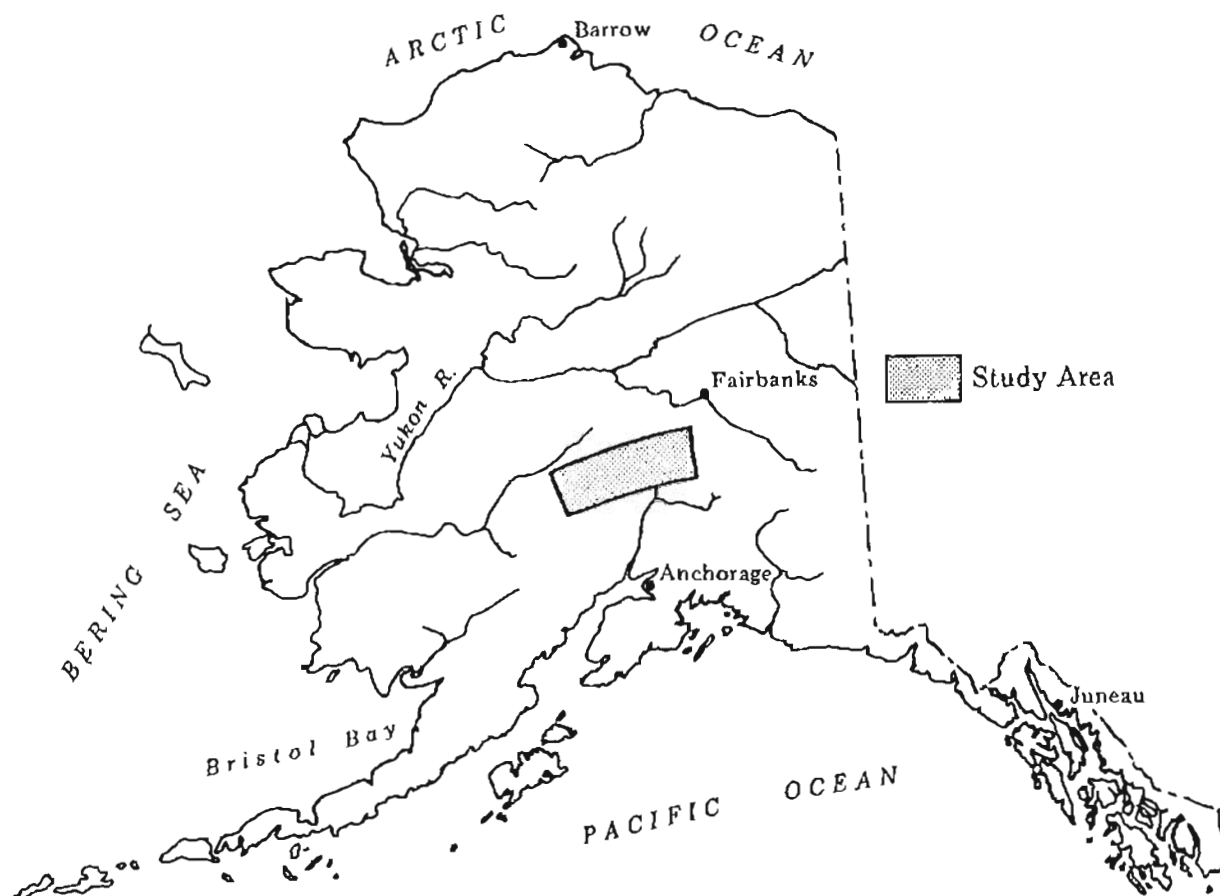


Figure 1. Location of study area.

## INTERPRETATION OF TABLE 2

There are three basic components of the field data contained in table 2---the heading, or project information (H), the base information (B), and the gravity data itself (D). The 80-column printout format for all three components is described below and in Barnes (1968, 1972).

The format for the header card (project information) leads each block of data and is shown first. The rightmost column contains the code 'H.'

The base cards (B) generally have several columns. The leftmost one is a 12-character block: two digits for the GN-AN, a four-digit station identity code, and a six-character base-1 reading. The second column has 10 digits, four for the base-1 time of the reading and six for the base-2 readout. Column 3 has 12 characters, four for the base-2 time and eight for the gravity base reading or for the altimetry reference. The next column has 13 digits, six for latitude and seven for longitude. The remaining card columns contain 12 spaces, four for elevation and the last for general comments. The rightmost column contains the code 'B' (for base information).

The actual tabular part, or data (D), has seven columns. The first is a 15-character block, with the first four designating the station, the next four the time, and the last eight the gravimeter values. Column 2 contains the altimeter readings; column 3 is gravity base identification. Column 4 contains 19 characters: six for elevation, six for latitude, and seven for longitude. Column 5 denotes the altimeter base identification. The sixth column contains the average air temperature in the first three digits and the WDB (wet bulb depression) in the last two. The last column is the card code 'D' for data (gravity station information).

## REFERENCES CITED

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Table 1. Milligal values for LaCoste & Romberg, Inc.  
Model G Gravity Meter 108

<u>Counter reading*</u>	<u>Value in milligals</u>	<u>Factor for interval</u>	<u>Counter reading*</u>	<u>Value in milligals</u>	<u>Factor for interval</u>
000	000	1.04480			
100	104.48	1.04475	3600	3762.43	1.04645
200	208.96	1.04470	3700	3867.08	1.04650
300	313.43	1.04465	3800	3971.73	1.04655
400	417.89	1.04460	3900	4076.39	1.04665
500	522.35	1.04455	4000	4181.05	1.04670
600	626.81	1.04455	4100	4285.72	1.04675
700	731.27	1.04450	4200	4390.40	1.04680
800	835.72	1.04450	4300	4495.07	1.04680
900	940.17	1.04450	4400	4599.75	1.04685
1000	1044.62	1.04450	4500	4704.44	1.04685
1100	1149.07	1.04455	4600	4809.12	1.04685
1200	1253.53	1.04460	4700	4913.81	1.04685
1300	1357.99	1.04465	4800	5018.49	1.04680
1400	1462.45	1.04470	4900	5123.17	1.04680
1500	1566.92	1.04475	5000	5227.85	1.04675
1600	1671.39	1.04480	5100	5332.53	1.04675
1700	1775.87	1.04485	5200	5437.21	1.04670
1800	1880.36	1.04490	5300	5541.87	1.04660
1900	1984.85	1.04500	5400	5646.54	1.04655
2000	2089.34	1.04505	5500	5751.19	1.04645
2100	2193.85	1.04515	5600	5855.84	1.04630
2200	2298.36	1.04520	5700	5960.47	1.04620
2300	2402.89	1.04530	5800	6065.09	1.04605
2400	2507.42	1.04535	5900	6169.69	1.04590
2500	2611.95	1.04545	6000	6274.28	1.04575
2600	2716.49	1.04550	6100	6378.86	1.04555
2700	2821.04	1.04560	6200	6483.41	1.04535
2800	2925.60	1.04570	6300	6587.95	1.04510
2900	3030.17	1.04580	6400	6692.46	1.04485
3000	3134.75	1.04590	6500	6796.94	1.04455
3100	3239.34	1.04600	6600	6901.40	1.04425
3200	3343.94	1.04610	6700	7005.82	1.04395
3300	3448.55	1.04620	6800	7110.22	1.04365
3400	3553.17	1.04625	6900	7214.58	1.04335
3500	3657.80	1.04635	7000	7318.92	

\*Note: Right wheel on counter indicates approximately 0.1 milligal.

12-15-65

LH



N	FLANK	MOOD	RIVER	AK	07/31/76	G108	0	09267	HACKETT	THACKETT	1455	BASE	ALT	NO	1	07007	NF76H		
	G2HEAS	543886	092154	3882	192098	207810	6351	1351	1485	790	1455	BASE	ALT	NO	1	06304	NF76B		
	A2HEAS	02091	09210	2262	192000	001455	6351	1351	1485	790	1455	BASE	ALT	NO	2	06209	B		
	A3HEAS	02091	09210	2251	192000	001455	6351	1351	1485	790	1455	BASE	ALT	NO	2	06506	B		
	HEA01	102255	153883		014575	06334	1358	1475	5790	A2	A2	A2	A2	A2	07005	D			
	HEA02	110495	21793		050600	6334	2281	1480	140	A2	A2	A2	A2	A2	07107	D			
	HEA03	110335	19829		047580	6334	2381	1481	170	A2	A2	A2	A2	A2	07304	D			
	HEA04	111752	22228		050800	6334	2341	1481	180	A2	A2	A2	A2	A2	07303	D			
	HEA05	112451	17010		055400	6335	2514	1481	1315	A2	A2	A2	A2	A2	07608	D			
	HEA06	115055	36695		025160	6335	3411	1475	030	A2	A2	A2	A2	A2	07010	D			
	HEA07	120553	5013		025760	6335	0701	1475	5475	A2	A2	A2	A2	A2	06002	D			
	HEA08	125253	34284		027650	6334	3835	1480	0050	A2	A2	A2	A2	A2	06406	D			
	HEA09	140853	33584		029110	6334	5591	1475	5892	A2	A2	A2	A2	A2	06805	D			
	HEA10	141853	11422		032260	6334	5301	1474	890	A2	A2	A2	A2	A2	07210	D			
	HEA11	142952	79950		037750	6334	4489	1473	3800	A2	A2	A2	A2	A2	07309	D			
	HEA12	144225	16850		056500	6334	4062	1473	255	A2	A2	A2	A2	A2	06601	D			
	HEA13	150501	567		056500	6334	1791	1473	252	A2	A2	A2	A2	A2	06604	D			
	HEA14	151751	6032		045000	6334	2941	1472	627	A2	A2	A2	A2	A2	07208	D			
	HEA15	155052	33394		044000	6334	3314	1472	645	A2	A2	A2	A2	A2	07310	D			
	HEA16	160652	33822		043220	6334	3391	1472	665	A2	A2	A2	A2	A2	07409	D			
	HEA17	162152	41624		042600	6334	3661	1472	688	A2	A2	A2	A2	A2	07207	D			
	HEA18	164225	25232		041800	6334	3981	1472	725	A2	A2	A2	A2	A2	07309	D			
	HEA19	170052	5577		040550	6334	4421	1472	763	A2	A2	A2	A2	A2	06908	D			
	HEA20	172552	5577		039420	6334	4941	1472	794	A2	A2	A2	A2	A2	06601	D			
	HEA21	174552	61904		038500	6334	5431	1472	785	A2	A2	A2	A2	A2	06604	D			
	HEA22	181152	269346		037650	6334	6021	1472	668	A2	A2	A2	A2	A2	07608	D			
	HEA23	182052	14238		034800	6334	8571	1472	668	A2	A2	A2	A2	A2	06604	D			
	HEA24	183651	114		061300	6334	8101	1474	042	A2	A2	A2	A2	A2	07608	D			
	HEA25	192054	3882		045800	6334	3781	1475	623	A2	A2	A2	A2	A2	06604	D			
	FLANK	TEKLANIKAA	AK	08/01/76	G108	0	0145	506	351	09267	HACKETT	THACKETT	1455	BASE	ALT	NO	1	07608	NF76H
	GIHEAL	544520	0819	544510	090098	208465	6351	1401	485	780	1335	BASE	ALT	NO	1	07813	NF76B		
	G2HEAL	5543877	0856	543868	135098	207810	6351	1351	1485	790	1455	BASE	ALT	NO	2	07206	NF76B		
	A2HEAL	02323	0819	02210	135000	001335	6351	1401	485	780	1335	BASE	ALT	NO	1	07303	B		
	A3HEAS	02323	0856	02386	135000	001455	6351	1351	1485	790	1455	BASE	ALT	NO	2	07512	B		
	HEAL08	19544520	02300	HLVHG1	013350	6351	1401	485	780	A1	A1	A1	A1	A1	07303	D			
	HEAL09	20544521	02220	HLVHG1	014550	6351	1401	485	790	A1	A1	A1	A1	A1	07512	D			
	HEAL10	2075448710	02150	HLVHG1	012370	66400401	4933	330	0	A1	A1	A1	A1	A1	07606	D			
	HEAL11	20940535893	04214	HLVHG1	033690	663557081	4933	295	0	A2	A2	A2	A2	A2	07618	D			
	HEAL12	20950535602	04330	HLVHG1	035210	663553791	4933	863	0	A2	A2	A2	A2	A2	07905	D			
	HEAL13	210005541762	03280	HLVHG1	023880	663550181	4947	35	0	A2	A2	A2	A2	A2	08105	D			
	HEAL14	2125426739	03800	HLVHG1	020190	663550181	4947	35	0	A2	A2	A2	A2	A2	08208	D			
	HEAL15	214535352085	02818	HLVHG1	030000	663551481	4933	880	0	A2	A2	A2	A2	A2	08510	D			
	HEAL16	210365542492	02819	HLVHG1	019060	663551251	4933	723	0	A2	A2	A2	A2	A2	08210	D			
	HEAL17	210453533461	04100	HLVHG1	019300	663551481	4933	165	0	A2	A2	A2	A2	A2	08510	D			
	HEAL18	215505054386	02386	HLVHG1	014755	5063351	351	1485	780	A2	A2	A2	A2	A2	08510	D			

N	FLANK	SSA	3835	WDD	TRAV	AK	08/03/76	G108	0	09267	HACKETT	1455	BASE	THACKETT	76	NF76H
	G2HEAS0	54	3835		091854	3869	1208	9820	7810	09267	HACKETT	1455	BASE	THACKETT	76	NF76H
	A3HEAS0	22	214		09180	2379	1208	0000	1455	1351	1485	790	ALT		1	NF76B
	A3HEAS0	43	4609		09180	2379	1208	0000	1455	1351	1485	790	ALT		2	NF76B
	HEA0918	55	346	09	02225		0145	5063	351	1351	1485	790	A2		06502	D
	WT02110	32	535	66	03325		0267	6063	351	1351	1485	790	A2		06406	D
	WT02310	40	553	88	03325		0249	8063	351	1351	1485	790	A2		06506	D
	WT03110	20	854	69	03379		0232	3063	351	1351	1485	790	A2		06807	D
	WT11111	26	546	73	02379		0141	5066	409	147	3410		A2		06909	D
	WT10111	18	554	37	02180		0116	2306	406	351	147	3380	A2		06908	D
	WT09111	25	541	62	02519		0174	3064	401	101	47	3380	A2		06908	D
	WT08111	08	554	32	02608		0181	7064	402	561	47	3645	A2		06707	D
	WT07111	02	554	02	02692		0190	7066	401	571	47	3960	A2		06505	D
	WT06110	56	539	17	02829		0202	3063	559	314	74	332	A2		06506	D
	WT05105	05	539	07	02920		0209	8066	358	521	47	4528	A2		06506	D
	WT04104	55	391	70	02990		0221	1106	357	411	47	4838	A2		06506	D
N	FLANK	SSA	3879	TEKLANIKAR	AK	08/04/76	G108	0	09267	HACKETT	1455	BASE	THACKETT	76	NF76H	
	G2HEAS0	54	3879		1344	3873	1537	9820	7810	09267	HACKETT	1455	BASE	THACKETT	76	NF76H
	A3HEAS0	22	225		1344	2242	1537	0000	1455	1351	1485	790	ALT		1	NF76B
	A3HEAS0	43	3879		1344	2235	1537	0000	1455	1351	1485	790	ALT		2	NF76B
	HEA1014	06	542	80	02225		0145	5066	355	1351	1485	790	A2		06707	D
	TR10141	42	543	20	02495		0170	5066	352	161	49	3120	A2		06803	D
	TR11141	42	546	28	02355		0158	0066	354	721	49	2990	A2		06805	D
	TR12141	43	055	32	03631		0181	5066	355	651	49	2230	A2		06803	D
	TR14141	43	055	42	02531		0182	3063	552	201	49	22410	A2		06803	D
	TR15141	49	534	01	02970		0292	5066	352	471	49	1347	A2		06902	D
	TR16141	56	528	08	04665		0394	4066	349	901	49	1600	A2		06802	D
	TR17151	45	540	07	03005		0222	5066	355	435	14	90820	A2		06501	D
	TR18152	05	536	17	03605		0228	0066	351	150	14	90710	A2		06605	D
	HEAS153	54	3873	HINES	02242		0145	5066	351	1351	1485	790	A2		06702	D
N	FLANK	SSA	3873	HINES	CK	08/04/76	G108	0	09267	HACKETT	1455	BASE	THACKETT	76	NF76H	
	G2HEAS0	54	3873		1537	543887	1830	9820	7810	09267	HACKETT	1455	BASE	THACKETT	76	NF76H
	A3HEAS0	22	242		1537	022235	1830	0000	1455	1351	1485	790	ALT		1	NF76B
	A3HEAS0	43	3873		1537	022245	1830	0000	1455	1351	1485	790	ALT		2	NF76B
	HEA1161	19	533	42	02242		0145	5066	355	1351	1485	790	A2		06702	D
	HC02163	75	330	65	03503		0270	0066	343	811	48	1735	A2		06906	D
	HC03164	55	334	68	03622		0280	5066	346	681	48	2920	A2		07006	D
	HC04165	15	335	60	03622		0279	0066	345	221	48	2907	A2		06903	D
	HC05165	59	335	80	03370		0255	5066	343	761	48	2810	A2		07107	D
	HC06170	65	337	08	03370		0197	5066	341	104	14	82720	A2		07105	D
	HC07171	85	337	02	02850		0214	4606	337	010	14	81420	A2		07004	D
	HC08172	65	334	29	03014		0241	3066	335	441	48	0060	A2		06905	D
	HC09173	65	331	39	03532		0274	0066	335	651	47	5260	A2		06905	D
	HC10175	45	524	98	04442		0394	0066	335	151	47	4375	A2		06702	D
	HEAS183	30	554	388	02245		0322	2006	333	97	781	48	0962	A2	06R00	D
					02245		0145	5066	351	1351	1485	790	A2		06702	D

Table 2 (cont.)