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STATE OF ALASKA AEROMAGNETIC SURVEYS

Revised December 15, 1984

PUBS. REFERENCE



INFORMATION CIRCULAR 20

ALASKA
DIVISION OF GEOLOGICAL &
GEOPHYSICAL SURVEYS

 Alaska Department of
**NATURAL
RESOURCES**

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

According to Alaska Statute 41, 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 water and construction materials; the potential geologic and seismic 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 acquire, process, and file data from well-drilling logs.

DGGS performs numerous functions, all under the direction of the State Geologist—resource investigations (including mineral, petroleum, geothermal, and water), 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. DGGS offices are at:

.794 University Ave. (Basement) Fairbanks, 99701 (907) 474-7147	.3601 C St (8th fl.) Pouch 7-028 Anchorage, 99510 (907) 276-2653
.400 Willoughby Center (4th floor) Juneau, 99801 (907) 465-3400	P.O. Box 772116 Eagle River, 99577 (907) 688-3555

Cover: *Beechcraft Twin Bonanza used in aeromagnetic survey, 1972. Note magnetometer boom extending from tail.*

STATE OF ALASKA AEROMAGNETIC SURVEYS

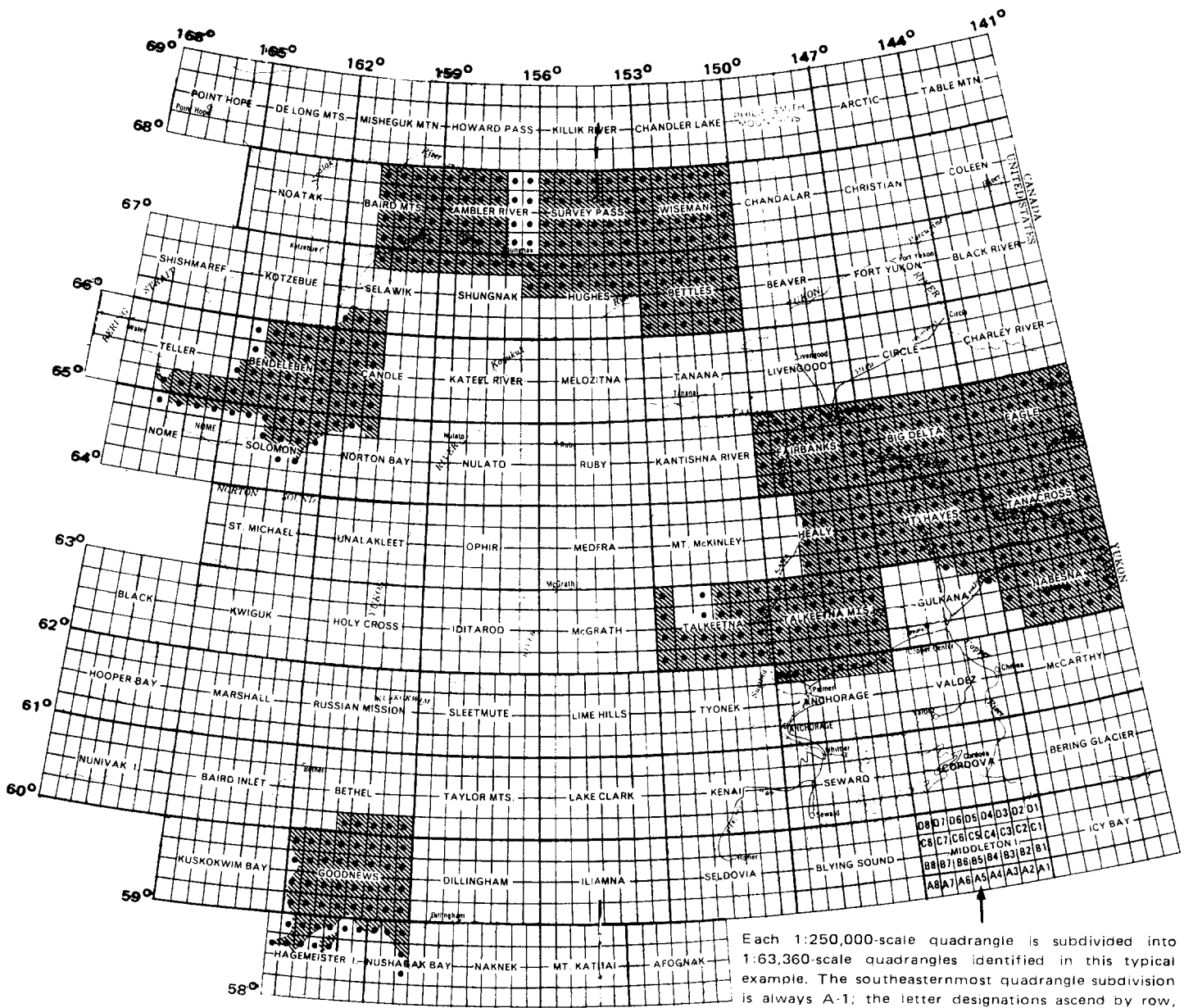
For several years, the Division of Geological and Geophysical Surveys has published maps of aeromagnetic surveys to encourage additional planned development of Alaska's natural resources and to add to the basic geologic knowledge of the state.

DGGS produces two types of aeromagnetic maps: 1:63,360-scale maps of U.S. Geological Survey (USGS) 15-minute quadrangle subdivisions and 1:250,000-scale maps of entire quadrangles (fig. 1). All maps may be examined at any of the offices listed on the back cover.

Survey flight lines to collect data for the maps were spaced $\frac{3}{4}$ to 1 mile apart and 1,000 feet above ground level where possible. Tie lines were flown at 15-mile intervals normal to the flight lines. The fluxgate-magnetometer signal was recorded in flight on a paper strip-chart recorder. Post-1975 data were recorded with a proton magnetometer digitized on $\frac{3}{8}$ -mile centers. The total magnetic-field intensities at each center were recorded on magnetic tape. Altitude and flight position were monitored throughout each survey. Aerial photographs--at 3-second intervals on 35-mm black-and-white film--were used to plot the aircraft path. The regional field was removed from the magnetic data with the 1965 or 1975 IGRF updated to the year flown.

1:63,360-SCALE MAPS (1 INCH EQUALS 1 MILE)

These maps supplement knowledge of bedrock geology, particularly in extending rock boundaries in areas covered by vegetation and unconsolidated Holocene deposits. They are also useful in selecting areas for additional geophysical and geological programs and may indicate favorable conditions for identifying lithologic, structural, and economic information. The 1:63,360-scale printed maps (table 1) cost 50 cents each. Red contour lines that represent magnetic total-field intensity are superimposed on gray U.S. Geological Survey topographic quadrangles. A small number of the 1:63,360-scale maps (indicated by asterisk in table 1) are available only as diazo blacklines at a charge of \$2 each.



Aeromagnetic maps available from DGGs

- 1:63,360-scale (table 1)
- 1:250,000-scale (table 2)

Figure 1. Index map of part of Alaska showing DGGs aeromagnetic surveys.

Table 1. 1:63,360-scale aeromagnetic maps.
is also shown on figure 1.

Quadrangle	Subdivision
Ambler River	A-1 thru A-6 B-1 thru B-6 C-1 thru C-6 D-1 thru D-6
Anchorage	D-1 thru D-8
Baird Mts.	A-1 thru A-4 B-1 thru B-4 C-1 thru C-4 D-1 thru D-4
Bendeleben	A-1 thru A-6 B-1 thru B-6 C-1 thru C-5 D-1 thru D-5
Bethel	A-1 thru A-5
Bettles	A-5 thru A-6* B-4 thru B-6* C-4 thru C-6* D-4 thru D-6*
Big Delta	A-1 thru A-6 B-1 thru B-6 C-1 thru C-6 D-1 thru D-6
Candle	A-4 thru A-6 B-4 thru B-6 C-4 thru C-6 D-4 thru D-6
Eagle	A-1 thru A-6 B-1 thru B-6 C-1 thru C-6 D-1 thru D-6
Fairbanks	A-1 thru A-6 B-1 thru B-6 C-1 thru C-6 D-1 thru D-6
Goodnews	A-1 thru A-8 B-1 thru B-8 C-1 thru C-8 D-1 thru D-8
Gulkana	C-1 D-1 thru D-3
Hagemeister Island	C-3 thru C-7 D-1 thru D-6

Table 1. (con.)

Healy	A-1 thru A-4 B-1 thru B-4 C-1 thru C-4 D-1 thru D-4
Hughes	C-1 thru C-6* D-1 thru D-6
Mount Hayes	A-1 thru A-6 B-1 thru B-6 C-1 thru C-6 D-1 thru D-6
Nabesna	A-1 thru A-5 B-1 thru B-6 C-1 thru C-6 D-1 thru D-6
Nushagak Bay	B-4 C-4 D-4 thru D-6
Nome	D-1 thru D-4
Norton Bay	D-4 thru D-6
Selawik	A-4 thru A-6 D-1 thru D-4
Shungnak	C-1* D-1 thru D-6
Solomon	B-2 thru B-3 C-1 thru C-4 D-1 thru D-6
Survey Pass	A-1 thru A-6 B-1 thru B-6 C-1 thru C-6 D-1 thru D-6
Talkeetna	A-1 thru A-6 B-1 thru B-6 C-1 thru C-4 C-6 D-1 thru D-4 D-6
Talkeetna Mts.	A-1 thru A-6 B-1 thru B-6 C-1 thru C-6 D-1 thru D-6
Tanacross	A-1 thru A-6 B-1 thru B-6 C-1 thru C-6 D-1 thru D-6
Teller	A-1 thru A-4
Wiseman	A-4 thru A-6* B-2 thru B-6* C-2 thru C-6* D-2 thru D-6*

*Available only as diazo blacklines.

1:250,000-SCALE MAPS (1 INCH EQUALS 4 MILES)

The 1:250,000-scale aeromagnetic map is a compilation of the aeromagnetic data from individual 15-minute quadrangles and shows the total magnetic-field intensity over an entire quadrangle. The 1:250,000-scale maps are part of the Division open-file-report (AOF) series and may be ordered by report number (table 2). The maps cost \$2 each.

Table 2. 1:250,000-scale aeromagnetic maps. Coverage is also shown on figure 1.

<u>AOF</u>	<u>Quadrangle</u>
1	Selawik (SW part)
2	Teller (SE part)
3	Bendeleben (except NW corner)
4	Candle (W half)
5	Nome (NE part)
6	Solomon (N part)
7	Norton Bay (NW part)
8	Fairbanks
9	Healy (E 2/3)
10	Mt. Hayes
11	Tanacross
12	Gulkana (NE part)
13	Nabesna (except SW part)
14	Bethel (SE part)
15	Goodnews
16	Hagemeister Is. (NE part)
17	Nushagak Bay (NW part)
18	Eagle
19	Talkeetna
20	Talkeetna Mts.
21	Anchorage (N quarter)
73	Big Delta
76	Ambler River (W 2/3)
77	Baird Mts. (E 2/3)
78	Selawik (NE part)
79	Shungnak (NW part)
175	Survey Pass
176	Wiseman
177	Shungnak (N part)
178	Hughes (N half)
179	Bettles

Additional information on federally funded aeromagnetic and airborne radioactivity maps and profiles in Alaska may be obtained at:

U.S. Geological Survey, 4230 University Drive,
Anchorage, AK 99508-4664