Volume Label: CDVD00251
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This publication consists of 1 DVD or other similar media.

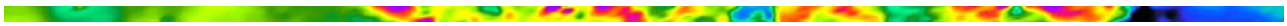
GPR 2008-3Readme.PDF
for the publication

Burns, L.E., Fugro Airborne Surveys, and Stevens Management Corp., 2008, Line, grid, and vector data, and maps for the airborne geophysical survey data of the Styx River Survey, parts of the Lime Hills and Tyonek quadrangles, southcentral Alaska: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2008-3.

This 'readme' file contains

- basic and technical information about the airborne geophysical survey,
- DVD organization and contents (including file names),
- and projection information for the digital data.

More information is included in the metadata included on this publication.



BASIC INFORMATION:

This DVD publication, GPR 2008-3, contains final airborne geophysical data for the entire Styx River Survey conducted in 2007 and 2008 in the Lime Hills and Tyonek quadrangles in south-central Alaska. Final processed linedata, gridded data, associated vector files, and plot files of currently published (1:63,360-scale) maps are included. A future publication will include maps at 1:31,680-scale containing electromagnetic (EM) anomalies and the Contractor's Project Report and interpretation. GPR 2008-3 supersedes the partial dataset, GPR 2008-2, which contained only the northeastern most survey area and was released in January 2008.

Funding was provided by the Alaska State Legislature as part of the DGGS Airborne Geophysical/Geological Mineral Inventory (AGGMI) program and by a contribution by Anglo America Exploration (USA) Inc (hereafter Anglo American). The contribution from Anglo American allowed us to acquire data for about 180 square miles of the 715 sq mile survey, all included in this DVD.

The maps were compiled and drawn under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS), and Stevens Exploration Management Corp. Airborne geophysical data for the area were acquired and processed by Fugro Airborne Surveys in 2007 and 2008. Acquisition of survey data was temporarily suspended for several months at the request of DGGS when the opportunity to acquire additional data due to the funding contribution by Anglo American arose. It was deemed that acquiring significantly more data was worth delaying release of the larger dataset for several months.

The digital data and the map products are available at the DGGS website (http://www.dggs.alaska.gov/pubs/project-orderform/266) and are downloadable for free.

TECHNICAL NOTES:

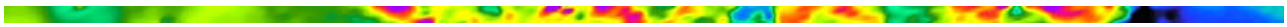
The geophysical data were acquired with a DIGHEM V Electromagnetic (EM) system, and a Fugro D1344 cesium magnetometer. Both were flown at a height of 100 feet. In addition, the survey recorded data from a radar altimeter, GPS navigation system, 50/60 Hz monitors and a video camera. Flights were performed with an AS350B-3 Squirrel helicopter at a mean terrain clearance of 200 feet along NE-SW (70°) flight lines with one-quarter mile line spacing. Tie lines were flown perpendicular to the flight lines at intervals of approximately 3 miles.

A Novatel OEM4 Global Positioning System was used for navigation. The helicopter position was derived every 0.5 seconds using post-flight differential positioning to a relative accuracy of better than 5 m. Flight path positions were projected onto the Clarke 1866 (UTM zone 5) spheroid, 1927 North American datum using a central meridian of 153°, a north constant of 0 and an east constant of 500,000. Positional accuracy of the presented data is better than 10 m with respect to the UTM grid.

The DIGHEM V EM system measured inphase and quadrature components at five frequencies. Two vertical coaxial-coil pairs operated at 1125 (1000) and 5454 (5500) Hz while three horizontal coplanar-coil pairs operated at 875 (900), 7153 (7200), and 55,400 (56,400) Hz. The EM data were sampled at 0.1 second intervals. The EM system responds to bedrock conductors, conductive overburden, and cultural sources. The power line monitors and the flight track video were examined to locate cultural sources.

The total magnetic field data were acquired with a sampling interval of 0.1 seconds, and were (1) corrected for measured system lag, (2) corrected for diurnal variations by subtraction of the digitally recorded base station magnetic data (saved as mag-diu in Styx-Linedata.xyz), (3) adjusted for regional variations using date of flight and altimeter adjusted IGRF, (4) leveled to the tie line data (saved as mag-rmi in Styx-Linedata.xyz), and (5) interpolated onto a regular 80m grid using a modified Akima (1970) technique. A constant of 55 624 was added to mag-rmi to create magigrf in Styx-Linedata.xyz.

Akima, H., 1970, A new method of interpolation and smooth curve fitting based on local procedures: Journal of the Association of Computing Machinery, v. 17, no. 4, p 589-602.



PROJECTION INFORMATION:

IMPORTANT NOTE: The Styx-Linedata.xyz file has location columns with two different datums and coordinate systems: Fields 'X' and 'Y' are in UTM zone 5, NAD27, while fields 'Longitude' and 'Latitude' are in WGS84.

The coordinate system for all grids and the 'X' and 'Y' fields in the Styx-Linedata.XYZ file is described as follows:

Datum	NAD27 Spheroid	Northern parallel	N/A
	Clarke 1866	Base parallel	N/A
Projection	UTM Zone 5N	WGS84 to local	Molodensky
Central meridian	-153	conversion method	
False easting	500000	Delta X shift	+5
False northing	0	Delta Y shift	-135
Scale factor	0.9996	Delta Z shift	-172

The coordinate system for the "LATITUDE" and "LONGITUDE" fields in the Styx-Linedata.XYZ file is described as follows:

Datum	WGS84	Base parallel	N/A
Projection	UTM Zone 5N	WGS84 to local	Molodensky
Central meridian	-153	conversion method	
False easting	500000	Delta X shift	+0
False northing	0	Delta Y shift	+0
Scale factor	0.9996	Delta Z shift	+0
Northern parallel	N/A		

DVD ORGANIZATION

There is one DVD in this set and are 5 Main directories: LINEDATA, GRIDS, VECTORS, PLOT_FILES, and METADATA. A few files are contained at the DVD level.

FILES AT THE DVD LEVEL:

gpr2008_003_readme.pdf — this file; description for this publication
GPR2008-3LocMap63360.jpg — Index map for the 63,360-scale map sheets on this publication

LINEDATA

Styx-Linedata.XYZ	— ASCII line data archive in Geosoft XYZ format
Styx-Linedata.TXT	— text description file for the XYZ data archive

GRIDS\ (in Geosoft binary float .grd and ER Mapper binary .ers format)

Grids and supporting files are provided in Geosoft binary (GRD) format and ER Mapper (ERS) format. A Geosoft projection (.GI) file is included for both the Geosoft grids (.GRD.GI) and the ER Mapper grids (.ERS.GI). When the projection files are placed in the same directory as the main grid file, Geosoft and ER Mapper automatically register the grids correctly.

Styx-magigrf	— Total Magnetic Field (TMF) — IGRF removed (nT)
Styx-cvg	— Calculated Vertical Gradient of TMF — IGRF removed (nT/m) (First vertical derivative)
Styx-res56k	— 56000 Hz Apparent Resistivity (ohm·m)
Styx-res7200	— 7200 Hz Apparent Resistivity (ohm·m)
Styx-res900	— 900 Hz Apparent Resistivity (ohm·m)
Styx-dtm	— Digital Elevation Model (m)

VECTORS (in AutoCAD 13 DXF format)
The magnetic and resistivity files below contain the contour files produced from the gridded data. All of the dxf files are at a scale of 1:63360.

Styx-magigrf.dxf	— Total Magnetic Field contours —IGRF removed (nT)
Styx-res56k.dxf	— 56000 Hz Apparent Resistivity (ohm·m) contours
Styx-res7200.dxf	— 7200 Hz Apparent Resistivity (ohm·m) contours
Styx-res900.dxf	— 900 Hz Apparent Resistivity (ohm·m) contours
Styx-fp.dxf	— Flight Path
Styx-SecGrid-A.dxf	— Alaska Section Grid - western Styx River Survey
Styx-SecGrid-B.dxf	— Alaska Section Grid - southern Styx River Survey
Styx-SecGrid-C.dxf	— Alaska Section Grid - eastern Styx River Survey

METADATA Metadata for this publication is in three formats

GPR2008-3.faq.html	— Hypertext Markup Language format
GPR2008-3.txt	— ASCII text
GPR2008-3.xml	— Extensible Markup Language format

PLOTFILES of published maps: [provided in HPGL2 (.prn) and Adobe Acrobat (.pdf) formats]

The HPGL2 files were created with HP Designjet 5000 printer driver v5.32 and will not work with all plotters, but do plot on the DGGS HP DesignJet 5000. The HPGL/2 files have brighter colors and sharper topography than the Adobe Acrobat files. The Adobe Acrobat format files were created with Adobe Acrobat Distiller v7.0 (PDF 1.3) from postscript files created from the HPGL/2 files.

All map files are provided in two subdirectories as below:

\HPGL2 — all files have a .prn extension
\PDF — all files have a .pdf extension

Three sheets are needed to cover the area at 1:63,360-scale (see GPR2008-3LocMap63360.jpg location index above). The main map number, e.g. GPR 2008-3-1, refers to a particular type of map; the subscript 'A', 'B', and 'C' refers to the western, southern and eastern sheet respectively.

Publication Number	Type of 1:63,360-scale maps	With
GPR2008-3-1	Total magnetic field, IGRF removed	topography
GPR2008-3-2	Total magnetic field, IGRF removed	magnetic contours
GPR2008-3-3	First vertical derivative of total magnetic field, IGRF removed	topography
GPR2008-3-4	56K Hz coplanar apparent resistivity	topography
GPR2008-3-5	56K Hz coplanar apparent resistivity	56K contours
GPR2008-3-6	7200 Hz coplanar apparent resistivity	topography
GPR2008-3-7	7200 Hz coplanar apparent resistivity	7200 contours
GPR2008-3-8	900 Hz coplanar apparent resistivity	topography
GPR2008-3-9	900 Hz coplanar apparent resistivity	900 contours