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This archive consists of 1 DVD-ROM

GPR 2010-1Readme.PDF

for the publication

'Line, grid, and vector data, and maps for the airborne geophysical survey of the Moran Survey Area, Melozitna and Tanana quadrangles, central Alaska'

by

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INTRODUCTION:

Files 'GPR2010-1Readme.pdf' and 'Moran_Linedata.pdf are useful supplements to the metadata for GPR 2010-1. The ReadMe file contains 3 index maps; brief list of equipment and flight information; a list of files names and definitions; summary chart showing which data types (e.g. 7200 coplanar apparent resistivity) are available in which formats and correlation of those with map numbers; summary of the 3 projections used, and more information. 'Moran_Linedata.pdf' contains a list of the channels, definitions, decimal places, a detailed description of the completeness of the linedata, and other items. Some overlap with the metadata is necessary, but largely the metadata file contains different information, particularly about data acquisition and processing. Detailed Entity and Attribute information is also included in the metadata.

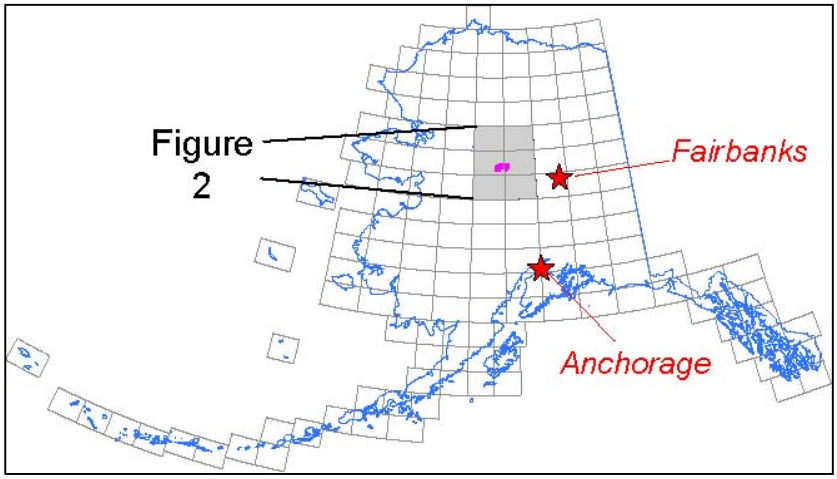

Figure 1 : Index map of Moran Survey Area within Alaska and location of Figure 2.

The digital publication, GPR 2010-1, contains data produced from airborne geophysical surveys conducted in 2009 for the Moran survey area in the south-central Melozitna mining district, Melozitna and Tanana quadrangles, central Alaska (Figures 1, 2, and 3).. Aeromagnetic, electromagnetic (EM), and radiometric data were acquired by helicopter for about 653 sq miles. GPR 2010-1 includes (1) raw and processed linedata; (2) gridded, Google Earth, and GeoTiff formats of the calculated linedata; (3) maps of the data; and (4) vector files of data contours and flight lines. All files are in NAD 27, UTM Zone 5N, except for Google Earth files. The linedata contains WGS 84 coordinates as well as NAD 27, UTM Zone 5. See section 'PROJECTIONS' in this document for more information.

The airborne data were acquired and processed under contract between the State of Alaska, Department of Natural Resources, Division of Geological & Geophysical Surveys (DGGS), and Stevens Exploration Management Corp. Fugro Airborne Surveys, the subcontractor, acquired and processed the data in 2009. A future publication will include the Contractor's project report, interpretation map, and EM anomalies, as well as other files.

The survey was part of the Alaska Airborne Geophysical/Geological Mineral Inventory (AGGMI) project funded by the Alaska State Legislature. The AGGMI project is managed by State of Alaska, Department of Natural Resources (DNR), Division of Geological & Geophysical Surveys (DGGS).

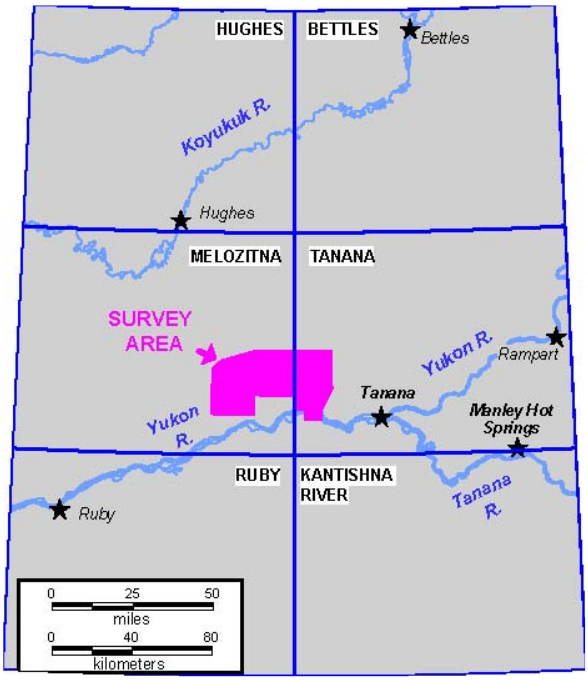

Figure 2: Location of Moran survey area with U.S. Geological Survey (USGS) 1:250,000-scale quadrangles.

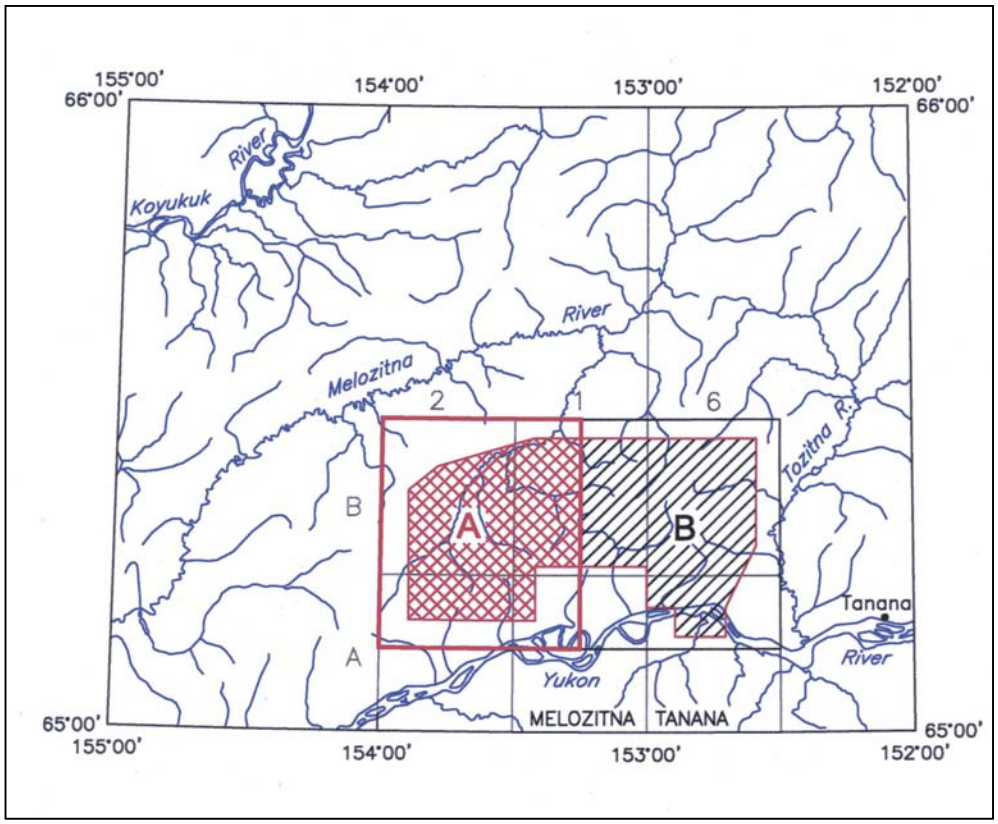

Figure 3: Detailed location of Moran survey area shown with parts of Melozitna and Tanana 1:250,000-scale quadrangles shown. Survey is located in parts of the Melozitna A-1, A-2, B-1, and B-2 and Tanana A-1 and B-1 USGS 1:63,360-scale quadrangles as shown. The red rectangle around the western half of the survey area denotes location of map sheets named with an 'A'. The 'B' sheet is also shown.

TECHNICAL INFORMATION:

Information on processing and more technical information is given in the metadata.

EQUIPMENT:

Helicopter:	AS350B-3 Squirrel
Magnetometer:	Fugro D1344 cesium magnetometer with Scintrex CS3 cesium censor mounted in bird
EM SYSTEM:	DighemV
Spectrometer:	Radiation Solutions RS-500 gamma-ray spectrometer mounted in helicopter
GPS:	Novatel OEM4-G2L Global Positioning System

Additional equipment: Radar and laser altimeters, 50/60 Hz monitors, and video camera

FLIGHT CHARACTERISTICS:

Nominal helicopter height:	200 feet	
Nominal bird height:	100 feet	
Traverse lines spaced:	one-quarter mile	Orientation: N-S (0 degrees)
Tie lines spaced:	approximately 3 miles	Orientation: E-W (90 degrees)

DATES FLOWN:

August 11th to August 29th, 2009

CONTENTS of the DVD:

This publication, GPR2010-1, consists of 1 DVD with 7 main folders: LINEDATA, GRIDS, GEOTIFFS, KMLS, VECTORS, MAPS, AND METADATA.

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METADATA (Folder)

Metadata for this publication is in three formats

GPR2010-1.faq.html — Hypertext Markup Language format
GPR2010-1.txt — ASCII text
GPR2010-1.xml — Extensible Markup Language format

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LINEDATA (Folder)

Linedata is provided in both Geosoft binary GDB and Geosoft ASCII XYZ format. The data were divided into two files for faster downloading. See file 'Moran_Linedata.pdf' in the LINEDATA folder or zipped with the download for information about the linedata channels.

Moran_EM	Contains location, magnetic, and electromagnetic data
Moran_RAD	Contains location and radiometric data. GDB format version contains arrays of the radiometric final data for each sample point; the arrays cannot be included in the XYZ format.

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GRIDS, GEOTIFFS, GOOGLE EARTH KMZs, VECTORS, and MAPS (5 folders)

FORMATS AND NOTES:

All raster and vector files are in NAD 27, UTM Zone 6N except for Google Earth files.

- GRIDS: All grids are provided in ER Mapper (ERS) and Geosoft binary float (GRD) formats.
- GEOTIFFS: Automatically registers correctly in GIS programs; can be opened in any graphics program and as long as the file is not saved, the registration information will still be valid.
- GOOGLE EARTH KMZS: Google Earth zip format: can drag and drop into 'My Places" in the free downloadable Google Earth program (http://earth.google.com/download-earth.html); data should be automatically registered. See 'PROJECTION' section of this document for more information.
- VECTORS: Most of the vector files are contour files produced from the map image and are provided in Autocad DXF, v. 2000. Importing the DXF files into MapInfo Professional, Geosoft Oasis Montaj, and presumably other GIS programs causes offset of text (e.g. numbers of a contour line). The contour numbers in most, if not all of the contour files, are shifted a small amount to the right and up at about a N70°E. Please use caution when viewing the contour numbers. To fix the text offset with the flight path file, Lyn Vanderstarren of Fugro Airborne Surveys worked laboriously to move every label and fid number. The flight path file is given as an ESRI shape file. A fix for the text layer of the Alaska Section Grid is provided as a MapInfo Professional TAB file. For further information, see the 'Entity_and_Attribute' section of the metadata.
- MAPS: Twenty-eight 1:63,360-scale maps are provided in PDF and HPGL/2 (.prn) formats. Two sheets per map are needed to cover the survey area. Except for the corrected counts for K, Th, U, and TC, all raster file names listed in Table 1 are included as maps with topography. Map versions containing data contours and the Alaska Section Grid and without topography were also produced for many of the data images. The HPGL/2 files were created with HP Design Jet 5000 printer driver v5.32 and will not work with all plotters, but do plot on the DGGS HP Design Jet 5000. The HPGL/2 files have brighter colors and sharper topography than the Adobe Acrobat files. See 'AVAILABILITY AND TECHNICAL REQUIREMENT' section of this document. The Adobe Acrobat format files were created with Adobe Acrobat Distiller v7.0 (PDF 1.5) from postscript files created from the HPGL/2 files.

TABLES 1, 2, and 3:

- TABLE 1: File names and general definitions are the same for the files in the grid, GeoTiff, Google Earth KMZ, and vector folders; this information is provided in Table 1.
- TABLE 2: Comparative table showing which formats (grids, GeoTiff, etc.) and maps are available for each file type (e.g. Moran_magigrf); landscape layout for 11" X 17" paper, one sheet.
- TABLE 3: List of maps. Full map titles are similar to the following example of the bibliographic reference for GPR 2910-1.

  Burns, L.E., Fugro Airborne Surveys Corp., and Stevens Exploration Management Corp., 2010, Total magnetic field of the Moran Survey Area, south-central Melozitna mining district, central Alaska, parts of Melozitna and Tanana quadrangles: Alaska Division of Geological & Geophysical Surveys Geophysical Report 2010-1-1A, 1 sheet, scale 1:63,360.

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TABLE 1: FILE NAMES AND DEFINITIONS FOR GRID, GEOTIFF, KMZ, and VECTOR FILES
(More information for each type is provided in the 'Entity and Attribute' sections of the metadata file.)

FILE NAME/ 'DATA TYPE'	GENERAL DEFINITION
Moran_magigrf	Total magnetic field with IGRF removed (nT)
Moran_cvg	Calculated vertical gradient (first vertical derivative) of the total magnetic field with IGRF removed (nT/m)
Moran_analytic_signal	Analytic signal calculated from the total magnetic field with IGRF removed (nT/m)
Moran_tilt_derivative	Tilt derivative of the total magnetic field with IGRF removed (degrees)
Moran_res56k	Apparent coplanar resistivity for 56,000 Hz (56 kHz; ohm-m)
Moran_res7200	Apparent coplanar resistivity for 7200 Hz (ohm-m)
Moran_res900	Apparent coplanar resistivity for 900 Hz (ohm-m)
Moran_dtm	Digital terrain or elevation model (m)
K_cc	Corrected potassium counts
Th_cc	Corrected thorium counts
U_cc	Corrected uranium counts
TC_cc	Corrected total counts
Moran_ratio_eTh_percentK	Equivalent thorium / percent potassium ratio (ppm/%)
Moran_ratio_eU_percentK	Equivalent uranium / percent potassium ratio (ppm/%)
Moran_ratio_eU_eTh	Equivalent uranium / equivalent thorium ratio (ppm/%)
Moran_percentK	Percent potassium (%)
Moran_eTh	Equivalent thorium (ppm)
Moran_eU	Equivalent uranium (ppm)
Moran_nadr	Natural air absorbed dose rate [nGy/h (nanogray per hour)]
Moran_ternary	Radiometric Ternary image
Moran_SecGrid	Alaska PLSS Section Grid for the map sheets
Moran_fp	Flight path

TABLE 2: Comparative table showing formats available for each data type.

	GRIDS		GEOTIFFS*	KMZS*	MAPS*	VECTORS		
DATUM	NAD 27		NAD 27	WGS 84	NAD 27	NAD 27		
PROJECTION	UTM 5N		UTM 5N	LAT/LON (PLATE CAREE)	UTM 5N	UTM 5N		
FORMAT	ER MAPPER	GEOSOFT BINARY GRD	GEOTIFF	ZIPPED VERSION OF KML	HPGL/2 and ADOBE ACROBAT FILES FOR ALL MAPS LISTED BELOW.	AUTOCAD DXF v. 2000	MAPINFO TAB FILE	ESRI SHAPE FILE
# of FILES per FILE TYPE	2	3	1	1	1	1	4	5
EXTENSIONS	ERS and blank	GRD, GI, XML	TIF	KMZ	PRN and PDF maps**	DXF***	TAB, MAP, ID, DAT	SHP, SHX, DBF, PRJ
					Map sheet numbers shown; 2 sheets needed per map. A = west, B = east.			
					Maps with topography	Maps with data contours		
Moran_magigrf	yes	yes	yes	yes	1A, 1B	2A, 2B	yes	
Moran_cvg	yes	yes	yes	yes	3A, 3B			
Moran_analytic_signal	yes	yes	yes	yes	10A, 10B	11A, 11B	yes	
Moran_tilt_derivative	yes	yes	yes	yes	12A, 12B	13A, 13B	yes	
Moran_res56k	yes	yes	yes	yes	4A, 4B	5A, 5B	yes	
Moran_res7200	yes	yes	yes	yes	6A, 6B	7A, 7B	yes	
Moran_res900	yes	yes	yes	yes	8A, 8B	9A, 9B	yes	
Moran_dtm	yes	yes	yes	yes				
Moran_K_cc	yes	yes	yes	yes				
Moran_Th_cc	yes	yes	yes	yes				
Moran_U_cc	yes	yes	yes	yes				
Moran_TC_cc	yes	yes	yes	yes				
Moran_ratio_eTh_percentK	yes	yes	yes	yes	14A, 14B	15A, 15B	yes	
Moran_ratio_eU_percentK	yes	yes	yes	yes	16A, 16B	17A, 17B	yes	
Moran_ratio_eU_eTh	yes	yes	yes	yes	18A, 18B	19A, 19B	yes	
Moran_percentK	yes	yes	yes	yes	20A, 20B	21A, 21B	yes	
Moran_eTh	yes	yes	yes	yes	22A, 22B	23A, 23B	yes	
Moran_eU	yes	yes	yes	yes	24A, 24B	25A, 25B	yes	
Moran_nadr	yes	yes	yes	yes	26A, 26B	27A, 27B	yes	
Moran_ternary			yes	yes	28A, 28B			
Moran_SecGrid****							yes	
Moran_SecGrid_GridText****								yes
Moran_fp_Z; Z = digits								4 shape files

* Geophysical images shown in the Geotiff and the KMZ files are the same images that are shown on the maps.

** HPGL/2 files (PRN) should be used if possible. They have brighter, more gradational colors and sharper topography than the PDF files.See Technical_Prerequisites in metadata file about free printer software.

*** The DXF files are included on the maps with data contours.

**** Four layers (BORDER, GRIDTEXT, SECTION_GRID, and TWP_GRID) are contained in the DXF Section Grid file. A different version of the GRIDTEXT layer is given as MAPINFO TAB file.

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TABLE 3: LIST OF MAJOR MAP TYPES

Two sheets (A−western and B−eastern) are needed to cover the survey area at 1:63,360-scale (Figure 2).

Publication No.	Type of 1:63,360-scale maps	With
GPR2010-1-1	Total magnetic field, IGRF removed	topography
GPR2010-1-2	Total magnetic field, IGRF removed	magnetic contours
GPR2010-1-3	First vertical derivative of total magnetic field, IGRF removed	topography
GPR2010-1-4	56K Hz coplanar apparent resistivity	topography
GPR2010-1-5	56K Hz coplanar apparent resistivity	56K contours
GPR2010-1-6	7200 Hz coplanar apparent resistivity	topography
GPR2010-1-7	7200 Hz coplanar apparent resistivity	7200 contours
GPR2010-1-8	900 Hz coplanar apparent resistivity	topography
GPR2010-1-9	900 Hz coplanar apparent resistivity	900 contours
GPR2010-1-10	Analytic Signal	topography
GPR2010-1-11	Analytic Signal	analytic signal contours
GPR2010-1-12	Magnetic tilt derivative	topography
GPR2010-1-13	Magnetic tilt derivative	tilt derivative contours
GPR2010-1-14	Thorium/Potassium (eTh/%K)	topography
GPR2010-1-15	Thorium/Potassium (eTh/%K)	eTh/%K contours
GPR2010-1-16	Uranium/Potassium (eU/%K)	topography
GPR2010-1-17	Uranium/Potassium (eU/%K)	eU/%K contours
GPR2010-1-18	Uranium/Thorium (eU/eTh)	topography
GPR2010-1-19	Uranium/Thorium (eU/eTh)	eU/eTh contours
GPR2010-1-20	Potassium (K%)	topography
GPR2010-1-21	Potassium (K%)	percent K contours
GPR2010-1-22	Thorium (eTh)	topography
GPR2010-1-23	Thorium (eTh)	eTh contours
GPR2010-1-24	Uranium (eU)	topography
GPR2010-1-25	Uranium (eU)	eU data contours
GPR2010-1-26	Natural air absorbed dose rate (nGy/h)	topography
GPR2010-1-27	Natural air absorbed dose rate (nGy/h)	NADR contours
GPR2010-1-28	Radioelement-Ternary image	topography

PROJECTION INFORMATION:

TABLE 4: PROJECTION INFORMATION

DATUM & PROJECTION ITEMS	GRIDS, GEOTIFFS, & VECTORS	LINEDATA: HORIZONTAL LOCATION CHANNELS		KMZ FILES
		X_NAD27z5n Y_NAD27z5n	LAT_WGS84 LON_WGS84	
DATUM	NAD27 Spheroid; Clarke 1866		WGS84	WGS84
PROJECTION	UTM Zone 5N		UTM Zone 5N	Simple Cylindrical / LAT/LON WGS 84
CENTRAL MERIDIAN	-153		-153	
FALSE EASTING	500000		500000	
FALSE NORTHING	0		0	
SCALE FACTOR	0.9996		0.9996	
NORTHERN PARALLEL	N/A		N/A	
BASE PARALLEL	N/A		N/A	
WGS84 TO LOCAL	Molodensky conversion method		Molodensky conversion method	
DELTA X SHIFT	+5		+0	
DELTA Y SHIFT	-135		+0	
DELTA Z SHIFT	-172		+0	

AVAILIBILITY and TECHNICAL REQUIREMENTS

- DVD-ROM: Purchased by mail, e-mail (mailto:dggspubs@alaska.gov), or in person from DGGS, 3354 College Road, Fairbanks, Alaska, 99709-3707 for $10 plus postage; 1 DVD-ROM.
- ON-LINE: All parts of this publication can be downloaded from the DGGS Web link www.dggs.alaska.gov/pubs/pubs?reqtype=citation&ID=20561 in data groups, e.g. MapsAsPDFS. The downloadable groups are near the bottom of the web page. Note that the 'Read Me' file available for each link is not the same file as this document.
- MAPS: The PDF version of the maps may also be viewed, downloaded, or printed individually from www.dggs.alaska.gov/pubs/pubs?reqtype=citation&ID=20561. Maps are also available on paper or Mylar through the DGGS office for $13/sheet plus mail costs. Please ask for the maps to be printed from HPGL/2 files to ensure the best quality image.

Software with ability to use, import, or convert Geosoft float GRD, Geosoft binary GDB or ASCII XYZ files, Autocad DXF files, ESRI Shape files, MapInfo Professional TAB files, Adobe Acrobat PDF, Google Earth files, and text files. Free downloadable interfaces to view or convert the gridded and dxf files are available at the Geosoft Web site (http://www.geosoft.com; Oasis Montaj viewer). The KMZ files can be dragged and dropped into the 'My Places' folder of the free downloadable 'Google Earth' software. Freeware software 'printfile' (http://www.lerup.com/printfile/) prints HPGL/2 files easily on compatible printers. The HPGL/2 files have brighter colors and sharper topography than the PDF maps and should be used for printing when possible. The PDF format maps are the only maps digitally viewable in this publication.

If you have any problems with this archive please Laurel Burns or the current geophysicist at the DGGS office.

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