



The Republic of Uganda

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

AIRBORNE GEOPHYSICAL DIGITAL DATA DISSEMINATION POLICY

AIRBORNE GEOPHYSICAL DIGITAL DATA DISSEMINATION POLICY

Introduction

The High Resolution Airborne Geophysical Survey Programme involving magnetic, radiometric and electromagnetic surveys that is aimed at assisting and promoting mineral exploration commenced in December 2006.

The large volume of data and the increasing number of requests by mineral investors and other interested parties for data windowed to their areas of interest has necessitated the development of a data dissemination policy which will eventually be transformed into a dedicated online data storage and management system including a customised viewing, handling and archiving system.

The airborne geophysical management system shall store all grid and line archives in a consistent format that guarantees data integrity and facilitates data distribution. Where areas of interest encompass more than one survey, grid data are supplied as individual survey grids and also as windowed supergrids. Supergrids are compilations from all available high-resolution and regional data and are upgraded regularly as new survey data become available.

The current high resolution surveys followed the regional airborne geophysical surveys for mineral exploration that was funded by United Nations Development Programme (UNDP) in 1961 and Government of Uganda in 1980 and achieved almost 50% national coverage. These surveys were typically flown with 1 km line spacing, 10 km ties and 120 m ground clearance. All magnetic data of the regional programme were subsequently compiled into one consistent data set merged during the African Magnetic Mapping Project in 1992. Therefore in addition to the new high resolution airborne geophysical data, the regional airborne geophysical data including magnetic and radiometric data are also available for dissemination.

Due to industry demand, the Ministry of Energy and Mineral Development (MEMD) and Department of Geological Survey and Mines (DGSM) may decide to release certain airborne geophysical data in preliminary form. These data will have been fully processed by Fugro Airborne Surveys, and reviewed independently by DGSM's quality control experts. The final products may contain minor adjustments, and will include additional channels and grids. Any purchase of preliminary data will include a copy of the final data for the same area when those products are released.

Objectives of Establishing Airborne Geophysical Data Dissemination Policy

To put in place efficient, effective and transparent tools for disseminating airborne geophysical data of Uganda so as to attract mineral investment in the Country.

Policy Goal: Increase mineral sector investments as a result of wide dissemination of Airborne geophysical data to potential investors.

Strategic Tools for Disseminating Airborne Geophysical Data

The following comprises the Strategic Tools for Managing Airborne Geophysical Data:

1. Both the old regional geophysical data and the new high resolution data including all data types shall be part of the data archive for dissemination.

2. Data shall be distributed to interested parties upon completing a data requisition form (Annex 1) and payment of a nominal reproduction cost reflected in the price list in Annex 2.
3. Whether an entity (company or individual) has a mineral right or not, he/she is entitled to acquire any data of his/her interest covering any part of the country.
4. Research Institutions shall receive the data free of charge but on condition that they use the data only for the purpose they acquired it. They shall also provide feedback in form of the copies of their thesis or research paper.
5. Before data is handed over, a data Confidentiality Agreement between the individuals/company/organisation who takes the data and the Department of Geological Survey and Mines shall be signed. The data confidentiality agreement (Annex 3) shall be adhered to by all those taking the data.
6. The funds shall accrue to a Fund to be established within Ministry of Energy and Mineral Development to support the promotion of the mining industry.
7. In some cases data may be released in preliminary form after being fully processed and reviewed independently by DGSM's quality control experts. The final products may contain minor adjustments, and will include additional channels and grids. Any purchase of preliminary data will include a copy of the final data for the same area when those products are released.

ANNEX 1

DIGITAL AIRBORNE GEOPHYSICAL DATA REQUISITION AND DELIVERY FORM



The Republic of Uganda

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

DEPARTMENT OF GEOLOGICAL SURVEY AND MINES						
DIGITAL AIRBORNE GEOPHYSICAL DATA REQUISITION AND DELIVERY FORM						
Requested By					Date:	
Company Name:					Time:	
Company Address:						
Telephone:						
E-mail:						
Purpose:	Minerals		Geotechnical		Ground Water	Other
Mode of request:	In Person		Fax		E-mail	Phone
Data Set Name and Format (Grid or Line)	Size of Dataset and area of coverage	Storage Media CD/HD/Tape	Date of Request	Date of Receipt	Name and Signature of DGSM's Geophysicist	Name and Signature of Company's Receiving Officer (also to sign confidentiality agreement)
Comments per data set if any						

ANNEX 2.

AIRBORNE GEOPHYSICAL DIGICAL DATA - PRICING SCHEDULE



The Republic of Uganda

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

High Resolution Airborne Geophysical Survey Programme

Geological Survey and Mines Department

Airborne Geophysical Digital Data Sales – Pricing Schedule

Data Format

Grid data are delivered in Oasis Montaj Geosoft grid file format .

Line data are delivered in Oasis Montaj Geosoft format and ASCII file format and a format description file accompanies each data file.

Data Windowing

Data shall generally be sold on the basis of standard topographical map sheets. However, data can also be windowed to any boundary on request.

Payments

All process stated below are exclusive of shipping charges*.

PROCEDURES FOR ACQUISITION OF AIRBORNE GEOPHYSICAL DATA

1. First get a copy of the airborne Geophysical Data Dissemination Policy.
2. Geophysicist calculates the Total line Km and Amount to be paid.
3. Fill the data requisition form specifying which data is required.
4. Geophysicist fills the Pro forma Invoice indicating the amount to be paid.
5. Obtain Bank Advice Forms (BAF'S) from Accounts Section
6. The filled Bank Advice Forms (BAF'S) are taken to Diamond Trust Bank (DTB)-Kampala Road and money paid to MEMD Bank account.
7. Present the URA Bank Payment receipt and the stamped Copy of the BAF to DGSM Accounts section and a copy to Geophysics Section
8. The receipt is entered in the Hard cover book in Accounts for Accountability
9. The Customer then signs a Confidentiality and Copyright Agreement
10. Lastly, the hard or digital copy of the requested data is handed over to the customer with any guidance that may be required from the Geophysicist.
11. DGSM shall not be liable to any data taken without a Geophysicist's endorsement.

Magnetics and Radiometrics

Complete digital magnetic and radiometric data (line data) are sold for Ug Shs 30 (1 US\$ =Shs 3,500/=) per line-kilometre. In case of grids only the price is calculated on the area covered by the data at Ug Shs 150 per km² for each grid (magnetic and radiometric).

Geotiffs

Digital Geotiffs are produced from the Supergrids, which are compilations of all high resolution and regional data available. Geotiffs are based on the standard 1:50.000 topographical map sheets and are sold at Ug Shs 10,000 per sheet, for magnetics and Ug Shs 10,000 for radiometrics.

Electromagnetics

Electromagnetic data are sold for Ug Shs 300 per line-kilometre including grid and line data.

Regional Geophysical Data

The regional airborne geophysical surveys for mineral exploration which was funded by UNDP from 1960s and achieved almost 50% coverage in the early 1980's. These surveys were typically flown with 1 km line spacing, 10 km ties and 120 m ground clearance. These magnetic and radiometric surveys have been merged and compiled into consistent data grids. Therefore in addition to the new high resolution airborne geophysical data, the regional airborne geophysical data including magnetic and radiometric data are also available for dissemination. The entire data set is sold for Ug Shs 1,500,000.

Contacts:

1. Edwards Katto

Director, Directorate of Geological Survey and Mines

Phone: +256 (0)414 320559

+256(0)312262902

Email: kagimba@hotmail.com

dgsm@minerals.go.ug

2. Zachary M. Baguma

Commissioner, Department of Geological Survey

Phone: 256 414 323432 or +256 (0)414 320656

Email: zach.baguma@gmail.com

dgsm@minerals.co.ug

* A shipping charge shall be included on the cost of data, especially for overseas orders. The prices given above are guaranteed only for a period of 1 year following the date of the release. Prices are subject to change without

notice.

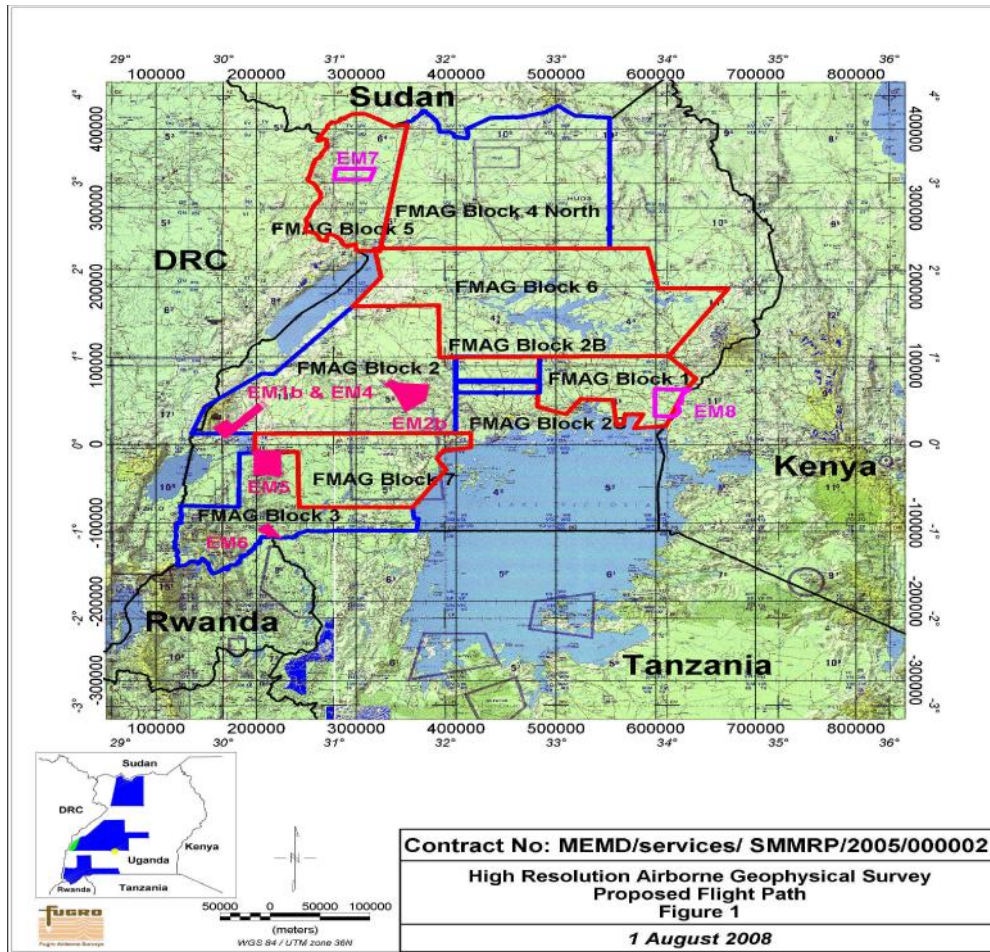


Figure 1. Priority areas for airborne geophysical surveys.

Table 1. Details of Airborne Geophysical Survey Blocks

Blocks 1,2,3,4, 5, 6, and 7 (Magnetic and radiometric surveys)

SURVEY BLOCK	LINE SPACING	TERRAIN CLEARANCE	AREA (sq km) (approx.)	LINE KM (approx.)	Date Release Preliminary data	of of	Date Release Final data	of of
Block 1	200	80 m	10,312	57,961 km	13 th Dec 2007		8 th Jan 2009	
Block 2	200	80 m	29,213	162,552 km	8 th Jan 2009		3 rd Feb 2009	
Block 3	200	80 m	14,864	84,469 km	8 th Jan 2009		3 rd Feb 2009	
Block 4	200	80 m	18,197	101,290 km	8 th Jan 2009		3 rd Feb 2009	
Block 5	200	80 m	10,719	59,989 km	8 th Jan 2009		8 th Jan 2009	
Block 6	500	100 m	38,253	85,330 km	13 th Dec 2007		8 th Jan 2009	
Block 7	200	80 m	14,449	80,531	8 th Jan 2009		8 th Jan 2009	

In addition, there are seven (7) smaller blocks within the same areas as those flown by magnetic and gamma ray spectrometry which were covered by electromagnetic (EM) survey. These include EM1, EM2, EM3, EM4, EM5, EM6 and EM7 covering a total area of 3844 km² and covered by a total of 23,806 line kilometers of EM surveys.

ANNEX 3.

**CONFIDENTIALITY AND COPYRIGHT AGREEMENT
FOR THE PURCHASE OF AIRBORNE GEOPHYSICAL DIGITAL DATA OF UGANDA**



The Republic of Uganda

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

CONFIDENTIALITY AND COPYRIGHT AGREEMENT

FOR THE PURCHASE OF AIRBORNE GEOPHYSICAL DIGITAL DATA OF UGANDA

On behalf of the company/organization/myself I hereby called (Name and Address) -----

-----, I agree to the following conditions with respect to use of digital data shown below and acquired from the Department of Geological Survey and Mines, P.O. Box 9, Entebbe, Uganda:

Nature of Data (name of data and area of coverage):-----

Terms, conditions, and covenants agreed to are as follows:

- i. All digital data, delivered by Department of Geological Survey and Mines (DGSM) shall be for the internal use of DATA RECEIVER. Data products may be shown but NOT sold, traded, disposed of, transmitted to or otherwise made available to any individual(s), joint-venture(s) or partner company or companies excepting its parent company, any wholly-owned subsidiary, or affiliate. If any outside consultants are engaged to work on this data, they must be made aware of this agreement and requested to initial one copy.
- ii. Data obtained, whether in digital format, by scanning of hardcopy maps or any other reproduction processes, are licensed for use only for the purpose it was acquired.
- iii. Any derivative maps, interpretation and/or reports made from the original data will be only for internal use of DATA RECEIVER or its affiliates. These second generation products may not, except as detailed under point iv, be sold, traded, disposed of, transmitted to or otherwise made available to third parties who have not acquired the original data from DGSM.

- iv. Keep DGSM informed on any reprocessing of digital data and agrees to provide DGSM with one copy of any reports, maps and enhancements of these data within one year of completion. Such copies will be for the sole use of DGSM, or de facto staff of DGSM, and will not be made available to third parties without the written consent of DATA RECEIVER for a period of two years from the date of receipt of said copies.
- v. Publication of these data or interpretations derived therefrom must be presented to DGSM for technical review. Only then may permission to publish be granted by the Commissioner, DGSM.
- vi. Distribution and/or selling of standard or enhanced digital products by DATA RECEIVER may only be undertaken with the written permission of DGSM.
- vii. DGSM retains all copyrights to acquired survey data and maps. Presentation of these data and maps/images at conferences, websites or in research publications must ensure that DGSM is credited.
- viii. DGSM shall not be liable for any post-processing performed on the DATA RECEIVER.
- ix. Failure to adhere to the above conditions may lead to prosecution under international copyright laws.

IN WITNESS WHEREOF, this agreement is executed as of the dates set forth below :

Name of the Company/organization Representative: -----

Position: -----

Signed: -----Date: -----

On Behalf of (Name of Company/Organisation):-----

Name of the Commissioner Department of Geological Survey and Mines:-----

Signed: -----Date-----

ANNEX 4

PURCHASE OF AIRBORNE GEOPHYSICAL DIGITAL DATA OF UGANDA

PROFORMA INVOICE



The Republic of Uganda

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

PURCHASE OF AIRBORNE GEOPHYSICAL DIGITAL DATA OF UGANDA

PROFORMA INVOICE

Date:

Attention:

(Name of Company/Organisation):

Airborne Geophysical Data for *(Area of coverage):*

Type of Geophysical Data:

	Quantity	Cost each (US\$)	Total (US\$)
Line Data			
Gridded Data (QDS or km²)			
Others <i>(Specify)</i>			
Total Cost			

ANNEX 5

**AIRBORNE MAGNETIC AND RADIOMETRIC SURVEYS
DATA FORMATS**



The Republic of Uganda

MINISTRY OF ENERGY AND MINERAL DEVELOPMENT

AIRBORNE MAGNETIC AND RADIOMETRIC SURVEYS DATA FORMATS

Grid Data

All grid data are delivered in Oasis Montaj Geosoft raster file format.

Line Data

All data are stored in the geosoft database format. Line data are also delivered as ASCII files to be imported into any software able to handle large spreadsheet-type data sets.

FORMAT OF GEOSOFT MAGNETIC DATABASE

X (WGS84, UTM ZONE 36S)
Y (WGS84, UTM ZONE 36S)
X_ARC1960 (ARC 1960, UTM ZONE 36S)
Y_ARC1960 (ARC 1960, UTM ZONE 36S)
LATITUDE (WGS84 WORLD) (DDD.MM.SS.SS)
LONGITUDE (WGS84 WORLD) (DDD.MM.SS.SS)
FID Fiducial
LINE
DATE (YYYY/MM/DD)
FLIGHT
GPS_TIME (seconds)
RADAR_ALTIMETER (m)
GPS_HEIGHT (m)
BARO_ALTIMETER (m)
FluxgateX
FluxgateY
FluxgateZ
FluxgateTF
RAW_LEFT_SENSOR (nT)
RAW_RIGHT_SENSOR (nT)
RAW_TAIL_SENSOR (nT)
RAW_HORIZONTAL_GRADIENT (nT)
LEVELLED_MAGNETICS (nT)

PROCESSED_HORIZONTAL_GRADIENT (nT/m)
TERRAIN (m)
DIURNAL (nT)

FORMAT OF GEOSOFT RADIOMETRIC DATABASE

X (WGS84, UTM ZONE 36S)
Y (WGS84, UTM ZONE 36S)
X_ARC1960 (ARC 1960, UTM ZONE 36S)
Y_ARC1960 (ARC 1960, UTM ZONE 36S)
LATITUDE (WGS84 WORLD) (DDD.MM.SS.SS)
LONGITUDE (WGS84 WORLD) (DDD.MM.SS.SS)
FID Fiducial
LINE
DATE (YYYY/MM/DD)
FLIGHT
GPS_TIME (seconds)
RADAR_ALTIMETER (m)
GPS_HEIGHT (m)
PRESSURE (mb)
TEMPERATURE (degrees C)
COSMIC (counts)
URANIUM_UP (counts)
STIME Sample Time
LTIME Live Time
RAW_TOTALCOUNT_NASVD (counts)
RAW_POTASSIUM_NASVD (counts)
RAW_URANIUM_NASVD (counts)
RAW_THORIUM_NASVD (counts)
PROCESSED_TOTALCOUNT_NASVD (cps)
PROCESSED_POTASSIUM_NASVD (%)
PROCESSED_URANIUM_NASVD (ppm)
PROCESSED_THORIUM_NASVD (ppm)
DOSE_RATE (nGy/h)

FORMAT OF GEOSOFT MAGNETIC ARCHIVE (XYZ)

X (WGS84, UTM ZONE 36S)
Y (WGS84, UTM ZONE 36S)
Z1 X_ARC1960 (ARC 1960, UTM ZONE 36S)
Z2 Y_ARC1960 (ARC 1960, UTM ZONE 36S)
Z3 LATITUDE (WGS84 WORLD) (DDD.MM.SS.SS)
Z4 LONGITUDE (WGS84 WORLD) (DDD.MM.SS.SS)
Z5 FID Fiducial
Z6 LINE
Z7 DATE (YYYY/MM/DD)
Z8 FLIGHT

Z9 GPS_TIME (seconds)
Z10 RADAR_ALTIMETER (m)
Z11 GPS_HEIGHT (m)
Z12 BARO_ALTIMETER (m)
Z13 FluxgateX
Z14 FluxgateY
Z15 FluxgateZ
Z16 FluxgateTF
Z17 RAW_LEFT_SENSOR (nT)
Z18 RAW_RIGHT_SENSOR (nT)
Z19 RAW_TAIL_SENSOR (nT)
Z20 RAW_HORIZONTAL_GRADIENT (nT)
Z21 LEVELLED_MAGNETICS (nT)
Z22 PROCESSED_HORIZONTAL_GRADIENT (nT/m)
Z23 TERRAIN (m)
Z24 DIURNAL (nT)

FORMAT OF GEOSOFT RADIOMETRIC ARCHIVE (XYZ)

X (WGS84, UTM ZONE 36S)
Y (WGS84, UTM ZONE 36S)
Z1 X_ARC1960 (ARC 1960, UTM ZONE 36S)
Z2 Y_ARC1960 (ARC 1960, UTM ZONE 36S)
Z3 LATITUDE (WGS84 WORLD) (DDD.MM.SS.SS)
Z4 LONGITUDE (WGS84 WORLD) (DDD.MM.SS.SS)
Z5 FID Fiducial
Z6 LINE
Z7 DATE (YYYY/MM/DD)
Z8 FLIGHT
Z9 GPS_TIME (seconds)
Z10 RADAR_ALTIMETER (m)
Z11 GPS_HEIGHT (m)
Z12 PRESSURE (mb)
Z13 TEMPERATURE (degrees C)
Z14 COSMIC (counts)
Z15 URANIUM_UP (counts)
Z16 STIME Sample Time
Z17 LTIME Live Time
Z18 RAW_TOTALCOUNT_NASVD (counts)
Z19 RAW_POTASSIUM_NASVD (counts)
Z20 RAW_URANIUM_NASVD (counts)
Z21 RAW_THORIUM_NASVD (counts)
Z22 PROCESSED_TOTALCOUNT_NASVD (cps)
Z23 PROCESSED_POTASSIUM_NASVD (%)
Z24 PROCESSED_URANIUM_NASVD (ppm)
Z25 PROCESSED_THORIUM_NASVD (ppm)
Z26 DOSE_RATE (nGy/h)

GEOSOFT GRIDS (Arc 1960 and WGS84)

Magnetic Horizontal Gradient Enhanced_IGRF_corrected.grd (nT)
Potassium_NASVD.grd (%)
Terrain.grd (m)
Thorium_NASVD.grd (ppm)
TotalCount_NASVD.grd (cps)
Uranium_NASVD.grd (ppm)

SURVEY SPECIFICATIONS

Magnetic Data Recording Interval	0.1 seconds
Radiometric Data Recording Interval	1 second
Sensor Mean Terrain Clearance	80 metres (for Blocks 1, 2, 3, 4, 5 and 7) 100 metres (for Block 6)
Flight Line Spacing	200 metres (for Blocks 1, 2, 3, 4, 5 and 7) 500 metres (for Block 6)
Tie Line Spacing	2000 metres (for Blocks 1, 2, 3, 4, 5 and 7) 5000 metres (for Block 6)
Flight Line Trend	035 degrees
Tie Line Trend	125 degrees

EQUIPMENT SPECIFICATIONS

Magnetometers	3 x Scintrex CS3 Cesium Vapour
Data Acquisition System	FASDAS
Magnetic Counter	FASDAS
Radar Altimeter	KING KR405/KING KR405B
Barometric Altimeter	ENVIRO BARO/DIGIQUARTZ
Radiometric Crystal Volume - Down	32 litres
Radiometric Crystal Volume - Up	8 litres
Radiometric Crystals	GPX 1024/256
Radiometric Data Acquisition	GR-820-3

NAVIGATION SPECIFICATIONS

Flight Path Tracking	Digital
Flight Path Navigation	Novatel 3151R/Omnistar RTDGPS
Flight Path Recovery	Digital
Flight Path Processing	Real Time Differential GPS
Aircraft Supplied By	Fugro Airborne Surveys
Aircraft	Cessna Caravan 208B ZS-FSA
Aircraft	Cessna Caravan 208 ZS-MSJ
Aircraft	Cessna 406 ZS-SSC

PLOTTING SPECIFICATIONS

Projection	Universal Transverse Mercator
Spheroid	Clarke 1880 (Modified)
Central Meridian	33 Degrees East
Central Scaling Factor	0.9996
Datum	Arc 1960
X Bias	500 000 metres
Y Bias	0 metres
Grid Mesh Size	50 metres
Survey Date	07/12/06 - 31/05/07
Data Acquisition By	Fugro Airborne Surveys
Data Processing By	Fugro Airborne Surveys