EXPLORATION AND MINING DIVISION IRELAND

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THE MINORCO AIRBORNE MAGNETIC SURVEY (1997) OVER THE RATHDOWNEY AREA

December 2002

Department of Communications, Marine and Natural Resources

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Compiled by
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INTRODUCTION

In December 1997 Minorco Lisheen Ltd with joint venture partners Ivernia West Plc and Central Mining Finance (CMF) Ltd. flew a 579 line km magnetic survey over an area between Thurles and Abbeyleix, encompassing approximately 7154 sq km (Figure 1).

Block	**Line km**	**Approx. Area (sq. km)**	**Prospecting Licences covered / partially covered by Survey Areas**
Rathdowney	579	7154	754, 1577, 1578, 1650, 1652, 1653, 1654, 2068, 2069, 2218, 2258, 2286, 2447, 2448, 2625, 3158, 3160, 3246, 3262, 3263, 3312, 3313, 3317, 3318, 3321, 3402, 3404, 3569, 3667, 3688, 3736, 3245R, 586R

This survey was lodged over six years ago and is available to the general public in fulfilment of the 'Open Skies' policy of the Exploration and Mining Division (EMD). The Division acknowledges the cooperation of Minorco Lisheen Ltd.

At this time EMD is primarily concerned with prompt data release and no attempt was made to reprocess or correct survey data. Data is released as submitted and no liability is accepted on the part of the EMD for data quality or accuracy. However, to facilitate ease of use, grids are provided with an Ordnance Survey base map for ease of geographical reference.

Tesla Airborne Geoscience Pty Ltd conducted the survey using a tail-mounted magnetometer. Magnetic, radiometrics, VLF, radar altimeter and navigation data was acquired during the survey. All processing was carried out by Tesla-10 Pty Ltd, which is now part of Fugro Airborne Surveys.

The survey specifications, data acquisition and processing procedures used, are outlined in the survey report. A brief structural interpretation report and map was also lodged for the survey. A listing of all digital and hardcopy data (databases, grids, maps and company reports) lodged with the Exploration and Mining Division is included in this publication and outlined below in the data listings section.

SURVEY EQUIPMENT AND SPECIFICATIONS

Flight Line Spacing	100m
Flight Line Direction	147°
Tie Line Spacing	500m
Mean Terrain Clearance	80 m
Nominal Survey Speed	120 knots (62 m/s)
Total Survey Area	7154 sq. km
Total Line Km	579 line km
Magnetometer	Geometrics G-822A Cesium Vapour
Sensitivity	0.001 nT
Sample Rate	10 samples /sec
Mounting	Tail mounted
Sensor Height above ground	80 m

PROCESSING OVERVIEW AND MAP GENERATION

The information provided in this section was taken from the lodged survey report and readme file (included on CD) and from examination of the data.

Magnetics Processing Sequence

A system lag (parallax) correction of 0.38 seconds was applied followed by noise editing (de-spiking) and filtering. The survey report outlines the field processing sequence in more detail. The diurnal field and IGRF were removed from the data. The data was tie-line leveled and microleveled. Following data reduction to the pole, cultural responses, as determined from topographic maps, were removed. The regional field was also removed.

Grid and Map Generation

Minorco Lisheen submitted grids in ER Mapper format, which were created using a minimum curvature interpolation with a 25m grid cell spacing. These were converted to Geosoft GRD format in EMD. The final magnetics channel (RES_MAG) was re-gridded by EMD using a minimum curvature interpolation (25m grid cell spacing) and is identified by an ‘emd’ label in the filename. This EMD grid was used to generate the final magnetics map on an Ordnance Survey base.

All digital and hardcopy products are in the Irish National Grid (ING) coordinate system:

Datum:	TM65 / Airy Modified 1849
Ellipsoid:	Airy Modified 1849
	Major axis: 6377340.189
	Eccentricity: 0.081673374
	1/f: 299.3249646
Projection	Transverse Mercator
Central Meridian	-8.00.00.000
Latitude of origin	53.30.00.000
False Northing:	250,000 m
False Easting:	200,000 m
Scale factor:	1.000035

DATA LISTING

Geosoft polygon files of survey boundaries

A geosoft polygon file (*.ply) for the survey area is included on the CD. The file is in ASCII format and can be opened in any text editor to view survey boundary coordinates (in ING).

Databases

The raw and processed data was supplied in ASCII format and imported into Geosoft Database format (GDB) by EMD. Readme files with channel listings are included on the CD and summarised on page 6. The magnetics and digital terrain data is released on CD in Geosoft format.

Raw and Processed Magnetic Data (Geosoft GDB)

Database	Number of Channels	Approx. Size (Mb)	File Name (.gdb)
Magnetics	14	109.3	rathd_mag
Digital Terrain Model	10	80.3	rathd_dtm

Grids

The following grids in grd format were submitted by Minorco Lisheen Ltd and reproduced where required by EMD in Geosoft grid format.

Block	Grid	Grid Name	Grid cell spacing (m)	Format
Rathdowney	Digital terrain model (GPS-altimeter)	terrain	25	grd
	Total magnetic intensity (TMI)	tmi	25	grd
	TMI reduced to pole	rtp	25	grd
	Final magnetics	residual	25	grd
	Final magnetics over minesite area	residual_mine	10	grd
	EMD final magnetics	min97_rmi_emd	25	grd

Maps

All colour hardcopy maps lodged by Minorco Lisheen Ltd for this release were scanned and stored in a compressed TIFF format using LZW compression to keep file sizes manageable, and can be opened in most standard packages. Compression was carried out using Imaging for Windows, which is available under the Accessories menu in Windows. *LZW compressed TIFF images can only be viewed in Geosoft when they are imported as a GeoTIFF file*. Black and white images were compressed using CCIT Group4 compression, which can be opened in all standard packages. Maps produced in EMD, on an Ordnance Survey 1:50,000 base, are available on the release CD as uncompressed images in JPEG format, or in hardcopy format on request.

Supplied by Minorco Lisheen Ltd.

Block	Map Title	Filename	Scale	Format
Rathdowney	Rathdowney Trend Residual Magnetic Intensity (RTP, NW illumination)	min9.1.1	1:25,000	LZW compressed
	Rathdowney Trend Airborne Magnetic Survey - Structural & Geological Interpretation	min9.1.2	1:25,000	CCIT Group 4 compression

Supplied by EMD on Ordnance Survey base

Block	Map	Filename	Scale
Rathdowney	Residual magnetic intensity (IGRF, regional & culture removed)	rath_rmi_emd	1:100,000

This map is available, on an Ordnance Survey 1:50,000 base, as a scanned image (jpeg format) or in hardcopy format.

Company reports

The Tesla-10 logistics and processing report and a structural interpretation report is included on the release CD.

Report Title	Filename (.pdf)	No. of pages
Rathdowney Airborne Magnetic & Radiometric Survey - Logistics and Processing Report	minr9_1	68
Regional structural framework interpreted from aeromagnetic data.	ERA_report	12

GEOSOFT DATABASE CHANNEL LISTING 1

Rathdowney DTM Database

CHANNEL NAME	DESCRIPTION	UNITS
X	Easting (ING)	metres
Y	Northing (ING)	metres
FID	Fiducial	seconds
GPS TIME		seconds
GPS_WEEK		
LAT	Latitude (WGS84)	degrees
LONG	Longitude (WGS84)	degrees
TERRAIN	Corrected to mean seal level (msl)	metres
RAD	Radar altimeter (filtered radar ground clearance)	metres
GPS	GPS elevation	metres

GEOSOFT DATABASE CHANNEL LISTING 2

Rathdowney Magnetics Database

CHANNEL NAME	DESCRIPTION	UNITS
X	Easting (ING)	metres
Y	Northing (ING)	metres
FID	Fiducial	seconds
GPS TIME		seconds
GPS_WEEK		
LAT	Latitude (WGS84, no parallax)	degrees
LONG	Longitude (WGS84, no parallax)	degrees
DIURNAL	Diurnal magnetics	nT
RAW_MAG	Compensated and filtered raw magnetics	nT
LEV_MAG	Total field magnetics (IGRF corrected & leveled)	nT
RTP_MAG	Reduced to pole magnetics	nT
RES_MAG	Residual magnetics (regional gradient & culture removed)	nT
RAD	Radar altimeter (filtered radar ground clearance)	metres
GRID_FLAG	Interpolation flag	

SURVEY LOCATION

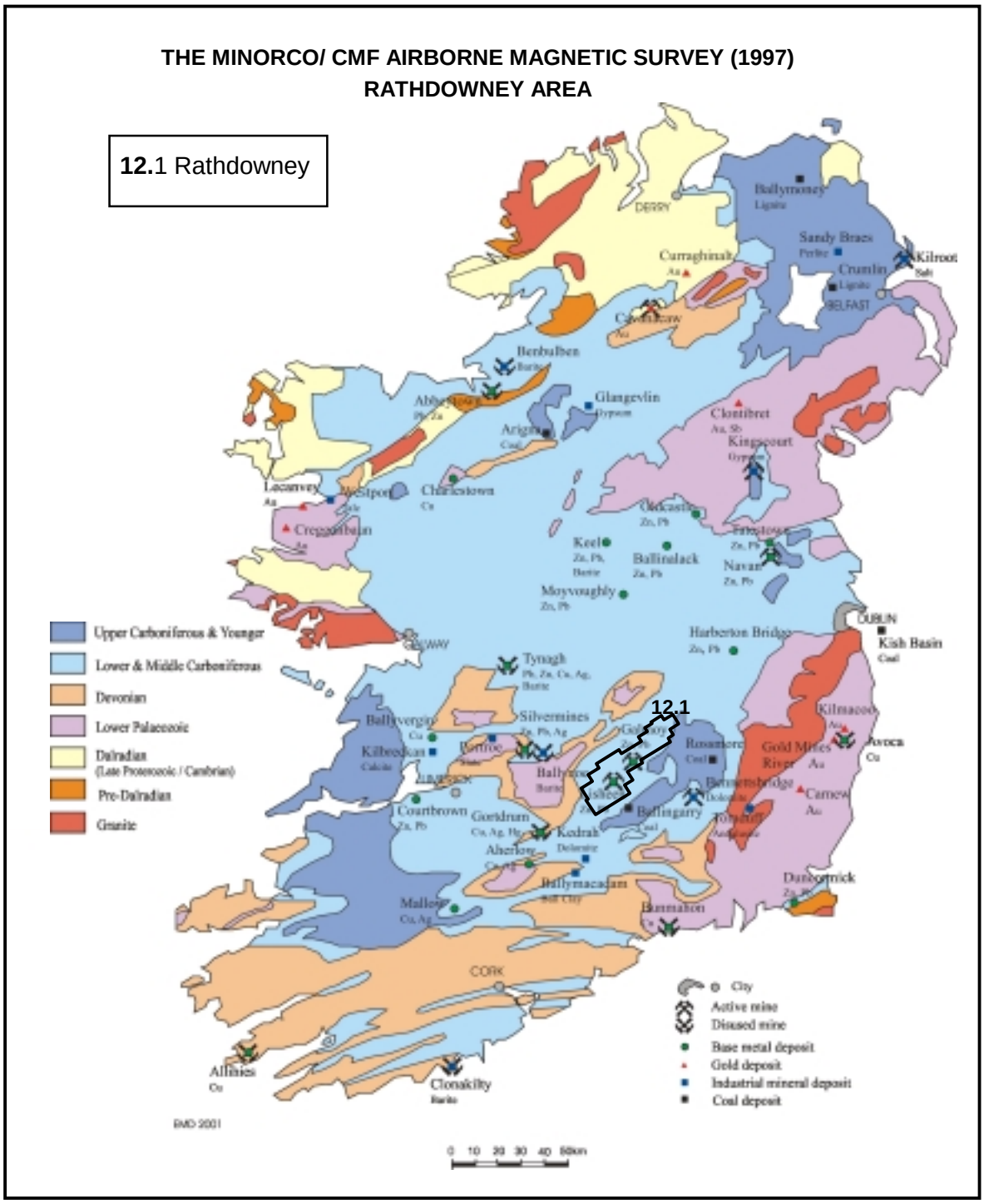

Figure 1. Location of the survey area on a simplified geology map of Ireland.

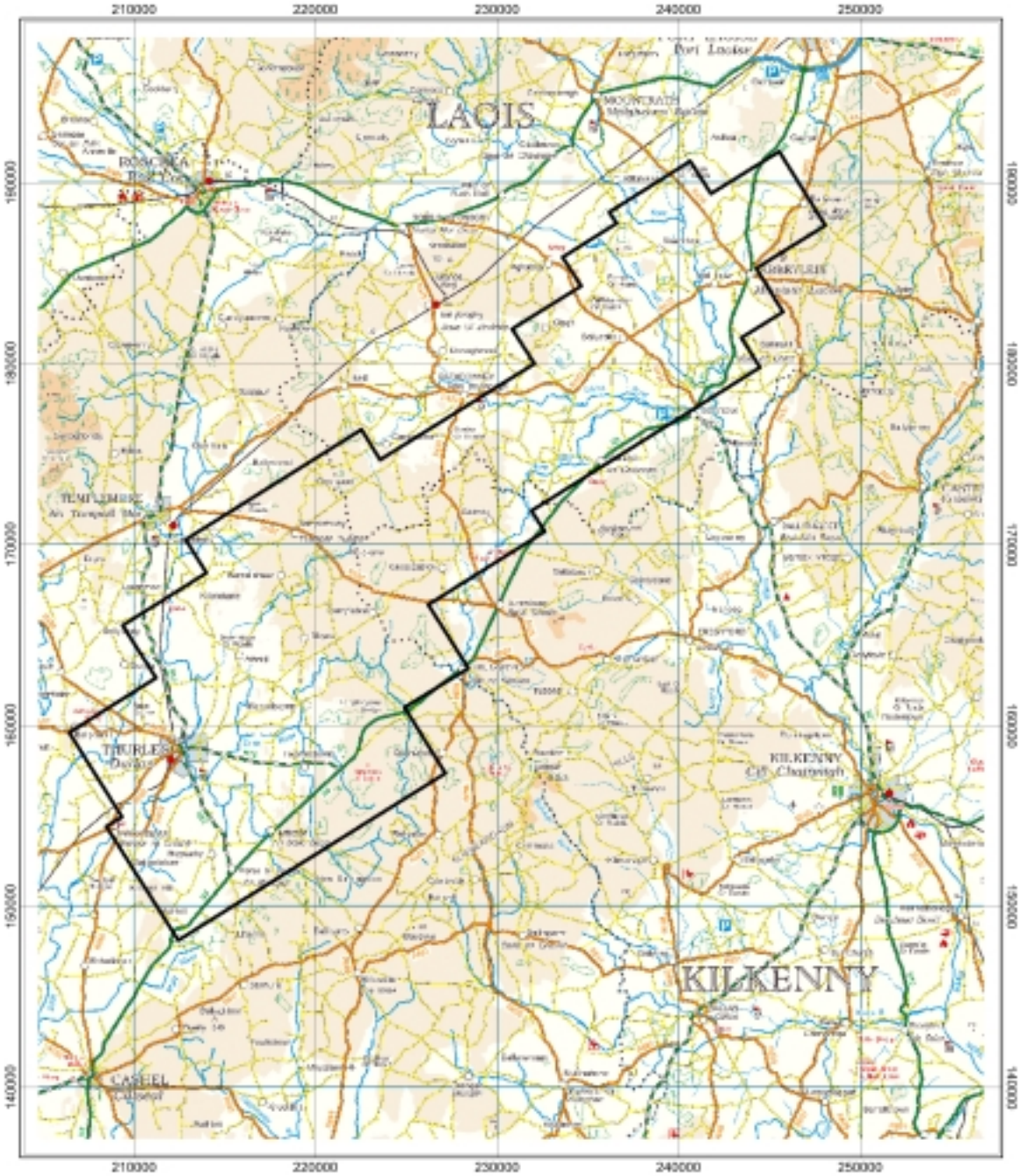

Figure 2. The Rathdowney survey area on a 1:250,000 Ordnance Survey base.