

# AUSTRALIAN REQUIREMENTS FOR THE SUBMISSION OF DIGITAL EXPLORATION DATA

VERSION 3

Prepared by  
**Government Geoscience Information Policy Advisory Committee (GGIPAC)**

on instructions of the  
**Chief Government Geologists' Committee**

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# INDEX

<b>SUMMARY</b> .....	<b>1</b>
<b>1. INTRODUCTION</b> .....	<b>2</b>
<b>2. DATA STANDARD SPECIFICATION – GENERAL</b> .....	<b>4</b>
2.1 File Name Convention .....	4
2.2 Acceptable Media .....	4
2.3 Data Types .....	5
<b>Table 1.</b> Acceptable formats for digital data .....	5
2.3.1 Tabular Data .....	8
2.3.2 Report Text .....	8
2.3.3 Maps, plans, figures and photographs not embodied in report text .....	8
2.3.4 GIS data .....	9
2.3.5 Video clips .....	9
2.3.6 Geophysical data (other than seismic) .....	9
2.3.7 Geophysical and other remotely sensed images .....	9
2.3.8 Seismic data .....	9
2.3.9 Petrophysical and geophysical log data .....	9
<b>3. DATA STANDARD SPECIFICATION – TABULAR DATA, METADATA AND TEMPLATES</b> .....	<b>11</b>
3.1 File header format .....	11
<b>Table 2.</b> Version 3 metadata file header information .....	12
3.2 Description of File Templates for Tabular Data .....	19
<b>SL1:</b> Template 1 Data files for surface point locations including drill collars .....	19
<b>SG1:</b> Template 2 Complete data files for surface geochemistry ....	19
<b>SG2:</b> Template 3 Abbreviated data files for surface geochemistry .	20
<b>DG1:</b> Template 4 Data files for downhole geochemistry .....	20
<b>DS1:</b> Template 5 Data files for downhole directional surveys .....	21
<b>DL1:</b> Template 6 Data files for downhole lithological logs .....	21
<b>VL1:</b> Template 7 File verification listing .....	21
<b>DU1:</b> Template 8 Data file for drilling summary.....	23
<b>Table 3.</b> VL1 File Verification Listing hardcopy form showing file abbreviations to be used .....	24
<b>APPENDIX 1</b> .....	<b>25</b>
<b>Example 1</b> SL1 .....	26
<b>Example 2</b> SL1 .....	27
<b>Example 3</b> SG1 .....	28
<b>Example 4</b> SG2 .....	30
<b>Example 5</b> DG1 .....	31
<b>Example 6</b> DS1 .....	32
<b>Example 7</b> DL1 .....	33
<b>Example 8</b> Sample Hardcopy File Verification Listing .....	34
<b>Example 9</b> VL1 .....	35
<b>Example 10</b> DU1 .....	36

**APPENDIX 2**

**37**

**Glossary** ..... **38**

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## SUMMARY

This document presents a minimum National Standard for the receipt of digital data related to mineral exploration activities. Individual State/Territory agencies may have specialised individual requirements in addition to those in this Standard.

The Standard addresses the current uploadability and future utility of digital files by requiring:

- inclusion of metadata,
- submission of data in standard, widely used file formats, including
- submission of drilling and geochemical tabular data in standardised non-proprietary ASCII format.

Software to assist in generating compliant exploration report files is available free of charge from each State/Territory Geological Survey. The MinEx Report Template (MRT) software allows generation of files of tabular drilling and geochemical data including necessary metadata headers, and a listing of all the files in the report.

In general, the process of digital report generation will involve:

- production of files containing the main report text,
- production of related files such as images and geophysical data,
- production of tabular ASCII files of drilling and geochemistry results involving three steps:
  - export of the standardised tabular data to delimited ASCII format
  - generation of the metadata ASCII header using MRT or other software
  - for small datasets (<100 data records), concatenation of the header and data using MRT or other software; for large datasets, the header may be provided as a separate file,
- generation of a file verification listing containing names of all the above files plus the name of the listing file using MRT or other software; all filenames as specified in the Standard.

## 1. INTRODUCTION

The mineral exploration industry in Australia generates a vast amount of geoscientific and resource information each year. This large investment in basic data gathering should be available for future explorers so that similar effort is not duplicated and new exploration models can be developed on the basis of earlier data. State/Territory agencies responsible for archiving statutory information submitted by mineral tenement holders for future access by explorationists therefore play a critical role in promoting effective and efficient mineral exploration in Australia. Acceptance of exploration data in digital format adds a new dimension to this role, but to be effective, requires the adoption of three broad objectives:

- to maximise the amount of digital data of verifiable quality submitted to statutory agencies according to prescribed standards
- to maximise usefulness of statutory digital data released to open file
- to minimise costs associated with acceptance, storage and release of digital information by statutory agencies

The main issues involved in the submission of digital data concern the variety of data received and the lack of "standards" for some of these data. In an attempt to minimise the impact of these issues a system of standards is provided that will facilitate confident interpretation of digital statutory exploration data in the future.

The standards have been designed to allow the future user maximum flexibility and ensure that critical metadata and supporting data such as authority / look-up tables are included. The issue of metadata is by far the most critical for digital data. In the past, companies submitted the metadata as part of the text of a printed report - the current Standard specifies that critical metadata are included in the "header" to the real data. The objective of including the metadata with the "real" data is to remove the reliance on having to search for other data packages (i.e. the report plus the digital data) to build a complete set of data.

This standard is reviewed at least annually by GGIPAC. The rate of technology change is such that some of what is recommended today for formats, file types, media etc. may be old technology in one year.

While there are many data types used in industry that can be presented in digital form, six common types have been identified as requiring templates to assist in the submission of digital data:

1. **Drill collar or surface sample location data:** a format providing all necessary data involved in either hole collar locations or surface geochemistry point sample locations. This format is designated **SL1** (Template 1).
2. **Surface Geochemistry:** Two formats are used:  
**SG1** - a full format (preferred) allowing the inclusion of geographical location information along with the assay data (Template 2).  
**SG2** - an abbreviated format for use where geographical data are submitted as a separate SL1 file. While this format is not preferred it allows for submission of raw assay data provided by laboratories that do not have the geographic data included (Template 3).
3. **Down-hole Geochemistry:** is designed for the submission of either down-hole assays or surface geochemistry results where a variable elevation (z component) is

included (e.g. vertical channel sampling in a mine pit). This format is designated **DG1** (Template 4).

4. **Downhole survey data:** used for submission of down hole deviation survey data, designated **DS1** (Template 5).
5. **Lithological logging data:** used for downhole lithology descriptions, designated **DL1** (Template 6).
6. **File verification listing:** a listing of all the digital files in the exploration report (Template 7). Designation is **VL1**.
7. **Drilling summary:** a summary, for statistical purposes, of all drilling undertaken in the reporting period (Template 8). Designation is **DU1**.

Note that SG1, SG2 and DG1 templates may also be used for submission of heavy mineral or diamond indicator sampling results.

This document was developed by GGIPAC members to provide a common requirement for the submission of digital mineral exploration data across States and Territories. It is recognised that some Agencies have particular needs that exceed the minimal requirements set out in this document. In these cases, the individual Agency may incorporate additional components in its own 'Requirements' document.

XMML, the eXploration and Mining Markup Language, is an XML based encoding for geoscience and exploration information. It is intended to support exchange of exploration information in a wide variety of contexts. This includes between desktop software packages and servers, and between users and organisations. Exploration data submission in XMML format is likely to be introduced at some future time.

## 2. DATA STANDARD SPECIFICATION - GENERAL

### 2.1 File Name Convention

File names should conform with the following file naming convention:

**Tenement id\_YYYY\_[A|P|F]\_##\_ {data type}.eee**

Where:

*Tenement id* is an identifier for the tenement, or, in the case of group reporting, a combined report or project number identifier,

*YYYY* is a four-digit report date representing year,

*[A|P|F]* is one of the letters “A”, “P” or “F” denoting Annual Report, Partial Relinquishment Report or Final Report respectively,

*##* is a two digit sequential integer for each file submitted,

*{data type}* is the data type contained in the file corresponding to one of the abbreviations in Table 3,

*.eee* is the file suffix as shown in Table 1.

Examples:

```
EL99999_2002_A_01_ReportBody.pdf
EL99999_2002_A_02_ProspectGeology.tif
EL99999_2002_A_03_Aeromag.gdf
EL99999_2002_A_04_Aeromag.ecw
EL99999_2002_A_05_Aeromag.ecw
EL99999_2002_A_06_DrillCollars.txt
EL99999_2002_A_07_DrillCollars.txt
EL99999_2002_A_08_Lithologs.txt
EL99999_2002_A_09_DownholeGeochem.txt
EL99999_2002_A_10_SurfaceGeochem.txt
EL99999_2002_A_11_SurfaceLocations.txt
EL99999_2002_A_12_Lithologs.txt
EL99999_2002_A_13_SurfaceGeochem.txt
EL99999_2002_A_14_DownholeSurveys.txt
EL99999_2002_A_15_SurfaceLocations.txt
EL99999_2002_A_16_LithologyCodes.txt
EL99999_2002_A_17_DrillingSummary.txt
EL99999_2002_A_18_FileListing.txt
```

Some geophysical data files have additional naming requirements; refer Section 2.3 of this document.

### 2.2 Acceptable Media

Data will be accepted on the following media:

- 1.44 MB 3½" floppy disk
- CD-ROM, no multisession, read only
- DVD-ROM, no multisession, read only
- 5.0 GB 8mm Exabyte Cartridge (2.3GB Cartridges are acceptable but not recommended)

## 2.3 Data Types

**Table 1: Acceptable formats for digital data**

<b>Data Type</b>	<b>Description</b>	<b>Format</b>	<b>Parameter</b>	<b>Suffix</b>
<b>Tabular data*</b>	Point locations, geochemistry, heavy mineral, diamond indicator and drilling data	Delimited ASCII (preferably TAB delimited)	Standard as described in Sections 2.3.1 and 3	.txt
<b>Report text</b>	Documents, figures etc. previously provided only in hardcopy	Adobe Acrobat	See section 2.3.2	.pdf
<b>Maps, plans, figures and photographs not embodied in report text</b>	Files of maps, plans, figures, core photographs, aerial photographs etc.	Adobe Acrobat	See section 2.3.2	.pdf
		GEOTIFF/TIFF (colour)	Reproducible at 300 dpi, 24 bit	.tif
		JPEG	Q>95, reproducible at 300 dpi	.jpg
		GIF	8 bit	.gif
		PNG		.png
<b>GIS data</b>	Data in GIS format	Each State & Territory to determine which format(s) they will accept		
<b>Video clips</b>	Fly-throughs etc	Each State & Territory to determine which format(s) they will accept		
<b>3D mine models</b>	3D mine model data	Each State & Territory to determine which format(s) they will accept		

*continued on next page...*

**Table 1 continued: Acceptable formats for digital data**

<b>Geophysics (other than seismic)</b>	Raw and processed located data, gridded data, magnetics, radiometrics, DTM and gravity data	ASEG GDF2		.gdf
		ASEG GXF		.gxf
		ER Mapper grid		.grd, .ers
		XML (including schema)		.xml, .xsd
<b>Geophysical and other remotely sensed images</b>	Images derived from geophysical / remote sensing surveys, e.g. TMI, Bouguer, radiometrics, Landsat 5 or 7	GEOTIFF/TIFF (colour)	Reproducible at 300 dpi, 24 bit	.tif
		GEOTIFF/TIFF (greyscale)	Reproducible at 300 dpi, 8 bit	.tif
		Compressed ER Mapper	Best quality (least loss)	.ecw
		JPEG GIF PDF PNG	Quality as above 8 bit See section 2.3.2	.jpg .gif .pdf .png
<b>Seismic data</b>	Raw and processed data	SEG Y, preferably Rev. 1		.sgy
		SEG D		.sgd
	Navigation data	UKOOA P1/90		.uka
	Processed sections (refer to Petroleum data submission guidelines for further information, www.ga.gov.au)	CGM+ format with metadata (line number, shotpoint number, ...)  Geophysical image formats as above		.cgm  .tif, .jpg, .gif, .pdf, .png

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**Table 1 continued: Acceptable formats for digital data**

<b>Petrophysical and geophysical log data</b>	Raw and processed wireline and MWD data (refer to Petroleum data submission guidelines for further information, <a href="http://www.ga.gov.au">www.ga.gov.au</a> )	DLIS LIS LAS  Delimited ASCII (format must be explained)  WELLOGML (POSC standard)	As defined by latest Industry Standard	.lis .lis .las  .asc
	Log plots	Adobe Acrobat TIFF (colour) TIFF (greyscale) JPEG GIF PNG	See section 2.3.2 Quality as above Quality as above Quality as above 8 bit	.pdf .tif .tif .jpg .gif .png
	Processed down-hole velocity data	SEG Y, preferably Rev. 1		.sgy

- Where several related database files cover one theme (e.g. surveying data, drill logs, look-up tables etc.) tabular data should be submitted in a **self extracting zip file** containing all relevant files named according to this Standard.

### **2.3.1 Tabular Data**

These data include point locations, geochemistry, diamond indicator observations and drilling data. Data will be submitted as delimited ASCII files with a suffix of .txt. File format details are provided in Section 3 and Appendix 1.

Tab delimited files are strongly preferred over comma delimited, due to the possibility of commas embedded in text fields. It is also much easier for people to read tab-delimited files prior to machine upload. If comma delimited files are submitted, it is recommended that the files use quote-comma delimiters, i.e. text fields (at least) enclosed in quotes. See also Section 3.1 .

The required file format for tabular data is a "flat file" rather than a "relational" file system. This allows more flexibility in the format and also reduces the need for relational keys between files. However, some datasets, particularly drill logs incorporating lithological, geochemical, structural and other data, including authority / lookup tables, may have to be submitted as a series of "linked" flat files, appropriately documented.

The "MRT" software automates many of the processes necessary for compliant tabular file generation. Compliant files of tabular data can be modified manually using any text editor.

Refer to Section 3 and Appendix 1 (examples) for detailed explanation of tabular data formats for submission.

### **2.3.2 Report Text**

Documents, including figures and tables previously provided only in hard copy reports, must be submitted in Adobe Acrobat (.pdf) format with security settings allowing copying from, but not editing of, the document.

This format has been chosen because of its wide acceptance in industry as a standard format, the ease of creation from other formats, the availability of free software to read the files and its ability to be searched for words or phrases.

The commercial version of Adobe Acrobat is normally used to create PDF files.

PDF files created by software other than Adobe Acrobat must be able to be read by Adobe products including Adobe Acrobat Reader. The reader is available free of charge via <http://www.adobe.com>.

### **2.3.3 Maps, plans, figures and photographs not embodied in report text**

Refer Table 1.

### **2.3.4 GIS data**

Currently, no one standard exists for data in GIS format. It is up to each individual Agency to specify acceptable GIS format(s).

### **2.3.5 Video clips**

It is up to each individual Agency to specify acceptable multimedia format(s).

### **2.3.6 Geophysical data (other than seismic)**

These data include magnetic, gravity, radiometric and electromagnetic (including TEM, SIROTEM) surveys. For both raw and processed located data, the standard ASEG GDF2 format is required. It is required that gridded data be submitted in either ASEG GXF or ER Mapper gridded format.

### **2.3.7 Geophysical and other remotely sensed images**

These are primarily derived from geophysical surveys and include TMI and Bouguer images. The submission of images does not exempt companies from submission of the other geophysical data from which the images were derived. Other imagery includes satellite, multispectral scanner and orthoimagery. Sufficient information should be provided to allow correct spatial registration of images where appropriate.

### **2.3.8 Seismic data**

Refer to Petroleum data submission guidelines at <http://www.ga.gov.au> for further details on this section and Section 2.3.9.

International standards exist for seismic data and compliance with the following formats is required:

#### *Raw and processed data*

SEG standards SEG Y (preferably Rev. 1) or SEG D with file names including the survey name and line number where appropriate.

#### *Navigation data*

This will be submitted as a complete UKOOA P1/90 file.

#### *Processed sections*

Submitted as CGM+ complete with metadata, with the line number included within the file name. Images of processed sections may use geophysical image formats specified in Table 1.

### **2.3.9 Petrophysical and geophysical log data**

Data submitted for these logs must comply with the following standards:

*Raw and processed wireline and MWD data*

DLIS, LIS, LAS, delimited ASCII or WELLOGML (POSC standard) formats.

*Log plots*

One of PDF, TIFF, JPEG, GIF, or PNG should be used.

*Processed down-hole velocity data*

SEG Y (preferably Rev. 1) format, with the well name as part of the file name.

### 3. DATA STANDARD SPECIFICATION – TABULAR DATA, METADATA AND TEMPLATES

Metadata are defined as "data about data" and should provide sufficient information about a dataset for it to be used properly. The standard recommended by ANZLIC for metadata should be used where appropriate. However, some data require more information for intelligent use, and some data require specific metadata covered under other international standards.

Metadata are to be presented in a file header at the top of the file of related tabular data (preferred), or as a separate file. Details of the metadata file headers ("templates") are in the following sections.

#### 3.1 File Header Format

The required file header format has a generic numbering format for flexibility. The file header will be delimited ASCII, preferably placed at the top of the data file. Alternatively, with large file sizes, it can be supplied as a separate .hdr file with the same name as the data file. The TAB character (ASCII 9) is the preferred delimiter. Quote-comma delimited format is acceptable but not preferred. The main rules with these file headers are:

1. The header record/line identifier (e.g. "H0100") and descriptor (e.g. "Tenement\_no") are mandatory for data supplied and will be placed in the first and second field positions respectively in each header record/line. Exceptions are the H1000 series in which only the header record/line identifiers appear, followed by the header data fields.
2. Header data fields will be delimited and allow for several separate pieces of information for each header type where necessary.
3. Numbering within a category will be consecutive.
4. Care should be taken that the delimiter used is not embedded in any of the fields. This is the reason for using quote-comma as delimiter rather than comma alone.
5. The delimiter must be used consistently throughout the assemblage of template files in an exploration report. *(Note: In this document, Examples 1 to 7 are inconsistent only for the purpose of demonstrating placement and usage of different delimiters.)*
6. Where a header row is not relevant to the type of data in the file, it should be omitted, e.g. H0800 series (assay information) and H1002 (assay code) would be omitted from a file of type SL1.

Users may add specific data fields in addition to the mandatory fields, to the data section of any appropriate template file. This will necessitate addition of header fields to the appropriate records of the H1000 series, corresponding to the additional data fields.

For small datasets (<100 data records), the metadata header and data records should be concatenated into a single .txt file. For large datasets, the metadata header may be provided as a separate file with the filename suffix .hdr and prefix identical to that of the .txt file containing the data records.

**Table 2. Version 3 metadata file header information***Explanation in italics*

Square brackets denote alternatives, e.g. [AAA|BBB] denotes one of AAA or BBB

<b><i>Header Number</i></b>	<b><i>Header Field Title</i></b>	<b><i>Examples of Values</i></b>
H0000	<i>Reserved – used by earlier versions</i>	
H0001	<i>Reserved – used by earlier versions</i>	
<b>H0002</b>	<b>Version</b> <i>(of digital reporting guidelines)</i>	<b>3</b>
<b>H0003</b>	<b>Date_generated</b>	<b>15-Oct-2002</b>
<b>H0004</b>	<b>Reporting_period_end_date</b>	<b>30-Sep-2002</b>
<b>H0005</b>	<b>State</b>	<b>SA</b>

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**Table 2 continued. Version 3 metadata file header information***Explanation in italics*

Square brackets denote alternatives, e.g. [AAA|BBB] denotes one of AAA or BBB

<b>Header Number</b>	<b>Header Field Title</b>	<b>Examples of Values</b>
<b>H0100</b>	[ <b>Tenement_no Combined_rept_no</b> ] <i>(When Combined_rept_no is used , a listing of all tenements under the combined reporting no for that year must be included in the text of the report. In addition, individual tenement numbers should be included in the H1000 and D series, i.e. identifying each row of data as belonging to a particular tenement.)</i>	[ <b>EL99999 C316_99</b> ]
<b>H0101</b>	<b>Tenement_holder</b>	<b>Big Time Mining</b>
<b>H0102</b>	<b>Project_name</b>	<b>Kryptonite</b>
H0103 to H0105	<i>Reserved – used by earlier versions</i>	
<b>H0106</b>	<b>Tenement_operator</b>	<b>Small Time Mining</b>
H0110	Documents( <i>Reserved by SA</i> )	ENV09876
H0113	<i>Reserved – used by earlier versions</i>	
H0123	<i>Reserved – used by earlier versions</i>	
<b>H0150</b>	<b>250K_map_sheet_number</b> ( <i>covered by data</i> )	<b>SH5311</b>
<b>H0151</b>	<b>100K_map_sheet_number</b> ( <i>covered by data</i> )	<b>5936 5937 6037</b>
H0152	50K_map_sheet_number	59361 59373 60374
H0153	25K_map_sheet_number	59361N 59373S 60374N
<b>H0200</b>	<b>Start_date_of_data_acquisition</b>	<b>01-Oct-2001</b>
<b>H0201</b>	<b>End_date_of_data_acquisition</b>	<b>30-Sep-2002</b>
<b>H0202</b>	<b>Template_format</b>	<b>SL1</b>
<b>H0203</b>	<b>Number_of_data_records</b> ( <i>in this file</i> )	<b>7</b>
<b>H0204</b>	<b>Date_of_metadata_update</b>	<b>15-Oct-2002</b>

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**Table 2 continued. Version 3 metadata file header information***Explanation in italics*

Square brackets denote alternatives, e.g. [AAA|BBB] denotes one of AAA or BBB

<b>Header Number</b>	<b>Header Field Title</b>	<b>Examples of Values</b>
<i>H0300 onwards</i>	<i>(Pointers to other files directly related to this file. H0300 and H0308 are always present. Other H03nn records which relate to this file <b>must</b> be present. H03nn records which are not relevant to this file should be omitted. H0318 onward are currently used for variant data files which do not match the main categories listed. Those numbers are subject to reservation for particular data types in future.)</i>	
<b>H0300</b>	<b>Related_data_filenames</b>	<i>Label only, no data in this record</i>
H0301	Location_data_file	EL99999_2002_A_06_DrillCollars.txt
H0302	Downhole_lithology_data_file	EL99999_2002_A_08_Lithologies.txt
H0303	Downhole_geochem_data_file	EL99999_2002_A_09_DownholeGeochem.txt
H0304	Downhole_survey_data_file	EL99999_2002_A_14_DownholeSurveys.txt
H0305	Surface_geochem_comp_data_file	EL99999_2002_A_10_SurfaceGeochem.txt
H0306	Surface_geochem_abbr_data_file	EL99999_2002_A_13_SurfaceGeochem.txt
H0307	Lithology_code_file	EL99999_2002_A_16_LithologyCodes.txt
<b>H0308</b>	<b>File_Verification_Listing</b>	<b>EL99999_2002_A_18_FileListing.txt</b>
H0309	Drilling_summary_data_file	EL99999_2002_A_17_DrillingSummary.txt

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**Table 2 continued. Version 3 metadata file header information***Explanation in italics*

Square brackets denote alternatives, e.g. [AAA|BBB] denotes one of AAA or BBB

<b><i>Header Number</i></b>	<b><i>Header Field Title</i></b>	<b><i>Examples of Values</i></b>
H0310	Water_data_file	EL99999_2002_A_19_Water DataFile.txt
H0311	Hydrodata_in_litholog_flag	[Yes   No]
H0312	Data_dictionary_file	EL99999_2002_A_20_Data_ dictionary_file.txt
H0313	Alteration_data_file	EL99999_2002_A_21_Altera tion_data_file.txt
H0314	Magsusc_data_file	EL99999_2002_A_22_Mags usc_data_file.txt
H0315	Vein_data_file	EL99999_2002_A_23_Vein_ data_file.txt
H0316	Recovery_data_file	EL99999_2002_A_23_Recov ery_data_file.txt
H0317	Weathering_data_file	EL99999_2002_A_23_Weath ering_data_file.txt
H0318 onward	Other_data_file ( <i>name appropriate to content</i> )	EL99999_2002_A_nn_Varia nt_data_file.txt

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**Table 2 continued. Version 3 metadata file header information***Explanation in italics*

Square brackets denote alternatives, e.g. [AAA|BBB] denotes one of AAA or BBB

<b>Header Number</b>	<b>Header Field Title</b>	<b>Examples of Values</b>
<b>H0400</b>	<b>Drill_code</b> <i>(All drilling codes used should be stated here. Where more than one type of drilling is used, an additional column stating the drilling type must be included in the H1000 and D series, i.e. identifying each row of data as applying to a particular drilling type.)</i>	<b>RAB ACR DIA</b>
H0401	<b>Drill_contractor</b> <i>(Drilling contractor used. If more than one, they should also be included in the H1000 and D series, i.e. identifying each row of data as applying to a particular driller.)</i>	Drill Faster Pty Ltd    Drill Well Pty Ltd
<b>H0402</b>	<b>Description</b> <i>(Describe the drilling codes in the order they are shown in the H0400 record, with code/description paired and items separated by the standard delimiter.)</i>	<b>RAB Rotary air blast</b> <b>ACR Aircore</b> <b>DIA Diamond bit – coring</b>

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**Table 2 continued. Version 3 metadata file header information***Explanation in italics*

Square brackets denote alternatives, e.g. [AAA|BBB] denotes one of AAA or BBB

<b>Header Number</b>	<b>Header Field Title</b>	<b>Examples of Values</b>
<b>H0500</b>	<b>Feature_type</b>	<b>Hole_collar</b>
<b>H0501</b>	<b>Geodetic_datum</b>	<b>GDA94</b>
<b>H0502</b>	<b>Vertical_datum</b> ( <i>If an arbitrary vertical datum has been used then this must be stated.</i> )	<b>AHD</b>
<b>H0503</b>	<b>Projection</b> ( <i>Detailed as at right for a projected coordinate system, "None" for a geographic coordinate system.</i> )	<b>UNIVERSAL TRANSVERSE MERCATOR (UTM)</b>
H0504 to H0507	<i>Reserved – used by earlier versions</i>	
H0508	Local_grid_name	Neutron grid
H0510	Local_grid_information ( <i>State specific</i> )	
H0511	Local_grid_information ( <i>State specific</i> )	
H0522 to H0524	<i>Reserved by NSW</i>	
<b>H0530</b>	<b>Coordinate_system</b> [ <i>Geographic Projected</i> ]	<b>Projected</b>
<b>H0531</b>	<b>Projection_zone</b> ( <i>Null for geographic coordinate system, zone specified for UTM. If more than one UTM zone is specified and this template file contains coordinates, an additional column specifying UTM zone must be included in the H1000 and D series, i.e. identifying each row of data as belonging to a particular zone.</i> )	<b>53</b>
<b>H0532</b>	<b>Surveying_instrument</b> ( <i>Where more than 1 instrument applicable to this particular template file is used, an additional column stating the instrument type must be included in the H1000 and D series, i.e. identifying each row of data as applying to a particular survey method.</i> )	<b>GPS Differential Generic GPS Survey Grade</b>
H0533	Surveying_company	Super Surveying Pty Ltd

*continued on next page...*

**Table 2 continued. Version 3 metadata file header information***Explanation in italics*

Square brackets denote alternatives, e.g. [AAA|BBB] denotes one of AAA or BBB

<b>Header Number</b>	<b>Header Field Title</b>	<b>Examples of Values</b>
<b>H0600</b>	<b>Sample_code</b>	<b>DC CT CS</b>
<b>H0601</b>	<b>Sample_type</b> ( <i>Sample source type code/description pairs, in the order they are shown in the H0600 record.</i> )	<b>DC Drill core CT Drill cuttings CS Core sludge</b>
<b>H0602</b>	<b>Sample_description</b> ( <i>Describe field and pre-lab dispatch sampling methods</i> )	<b>Quarter core Half splits of cuttings</b>
<b>H0700</b>	<b>Sample_preparation_code</b> ( <i>Codes used for laboratory sample preparation for assaying.</i> )	<b>S031</b>
<b>H0701</b>	<b>Sample_preparation_details</b> ( <i>Lab sample preparation code/description pairs. Where more than one laboratory is specified in H0801, list sample prep details in order of H0801 lab listing, assuming one sample prep. method per laboratory. If more than one sample preparation method per laboratory, results should be presented in separate files.</i> )	<b>S031 Fine pulverise to 75µm</b>
<b>H702</b>	<b>Job_no</b> ( <i>Laboratory job number. Where more than one laboratory is used, show job numbers in the order corresponding to the laboratories in H0801.</i> )	<b>G37215 ADL20406</b>
<b>H0800</b>	<b>Assay_code</b> ( <i>All laboratory assay codes used should be stated in the metadata. Where more than one type of assay is used the assay code must also be included in the H1002 row.</i> )	<b>FA50 IC587</b>
<b>H0801</b>	<b>Assay_company</b> ( <i>Lab code/name pairs, name including location. Where more than one laboratory is used, each laboratory name should be preceded by an abbreviation code which is then used in the H1007 record to identify assay_code against laboratory.</i> )	<b>PLP Phlogiston Laboratories, Perth AAL Aardvark Laboratories, Adelaide</b>
<b>H0802</b>	<b>Assay_description</b> ( <i>Assay code/description pairs, in order of codes specified in H0800.</i> )	<b>FA50 Aqua regia digest, Fire assay determination IC587 HClO4 + HNO3 + HF digest, Inductively coupled plasma mass spectrometry determination</b>

*continued on next page...*

**Table 2 continued. Version 3 metadata file header information***Explanation in italics*

Square brackets denote alternatives, e.g. [AAA|BBB] denotes one of AAA or BBB

<b>Header Number</b>	<b>Header Field Title</b>	<b>Examples of Values</b>
<b>H0900</b>	<b>Comments</b> ( <i>Free text comments and remarks, enclosed in quotes.</i> )	<b>“Various general comments, remarks, observations etc.”</b>
<i>H1000 onward</i>	<i>Note that, in the H1000 series, the record name is not shown after the H1nnn designator. Each record passes directly into field names, units etc.</i>	
<b>H1000</b>	<i>(Data field names)</i>	<b>Xcoordinate Au SiO2 Zn</b>
<b>H1001</b>	<i>(Units of measure for each dimensioned field – ensure that a delimiter is present as a placeholder for fields where this is null)</i>	<b>metres ddd.dddddd ddmmss.sss ppm %</b>
<b>H1002</b>	<i>(Assay_code - specify for each analyte)</i>	<b>FA50</b>
<b>H1003</b>	<i>(Lower detection limit as units specified in H1001)</i>	<b>0.01</b>
<b>H1004</b>	<i>(Accuracy - specify for each dimensioned field using the units in H1001)</i>	<b>0.01</b>
H1005	<i>(Upper detection limit as units specified in H1001)</i>	1000
H1006	<i>(Preferred assay indicator (P) for preferred assay where several values are presented for a single sample, null for others. The “preferred assay” field should also be the first listed for that analyte.)</i>	P
<b>H1007</b>	<i>(Assay_company_ID: where more than one laboratory is used, a code specified in H0801 identifies assay_code against laboratory.)</i>	<b>PLP</b>
<b>D</b>	<i>(Data)</i>	

### 3.2 Description of File Templates for Tabular Data

All headers require the “Field type”, e.g. “H0100”, to appear in the first field of each header row to enable transcription software to upload the metadata correctly.

All data records are to contain the character “D” in the first field to allow transcription software to distinguish data from metadata on upload.

An end of file marker “EOF” must immediately follow the last data record as the final line of the file.

**SL1: Template 1** Data files for surface point locations including drill collars.

**Location\_data\_file**

See **Examples 1 and 2**.

Dependent/related file template types:

**Downhole\_lithology\_data\_file** (DL1)

**Downhole\_geochem\_data\_file** (DG1)

**Downhole\_survey\_data\_file** (DS1)

Drillhole collar and sample point locations require specification of certain parameters to ensure completeness, unambiguity and longevity of data. *Geodetic datum, coordinate system, projection and spatial accuracy are crucial components of the metadata.* Detailed explanations of these concepts are available from a number of sources, and are outside the scope of this document.

**SG1: Template 2** Complete data files for surface geochemistry, heavy mineral and diamond indicator sampling.

**Surface\_geochem\_comp\_data\_file**

See **Example 3**.

Dependent/related file type: **Lithology\_code\_file** when lithology is specified for each sample.

A complete file of surface geochemistry contains both location and assay data and will therefore require metadata on both the spatial and analytical components. Spatial metadata are treated as in the SL1 header template. The H0600, H0700 and H0800 series contain metadata related to sample collection, preparation and analysis respectively. H1002, H1003, H1005, H1006 and H1007 are brought into use for analytical metadata.

The H0800 record should contain the assay method code as specified by the laboratory, rather than that used by the client. Description of each analytical method in H0802 should specify sample digestion as well as final analytical determination method.

When an assay result for a particular analyte is below detection limit, it should be shown in the data record as zero “0”, not detected “nd”, or the negative of the detection limit e.g. “-10”.

When an analyte was not assayed for a particular sample, it should be shown in the data record as null or not assayed “na”.

Each file must be consistent in its usage of “below detection limit” and “not assayed”.

**SG2: Template 3** Abbreviated data files for surface geochemistry, heavy mineral and diamond indicator sampling.

**Surface\_geochem\_abbr\_data\_file**

See **Example 4**.

**Mandatory** dependent/related file template type:

**Location\_data\_file (SL1)**

Other dependent/related file type:

**Lithology\_code\_file** when lithology is specified for each sample.

Surface geochemistry data may also be provided as raw assay data from the laboratory with the location data provided in a separate file. If this is the case then SG2 is to be used for the assay data.

Lithology for each surface sample may be specified in either the Location\_data\_file SL1, or in the SG2 file.

The H0150 and H0500 series records do not appear in this file. Essential location metadata are to be included in the related location\_data\_file.

Designation of “below detection limit” and “not assayed” is as for SG1.

**DG1: Template 4** Data files for downhole geochemistry, heavy mineral and diamond indicator sampling.

**Downhole\_geochem\_data\_file**

See **Example 5**.

**Mandatory** dependent/related file template type:

**Location\_data\_file (SL1)**

Other dependent/related file type:

**Lithology\_code\_file** when lithology is specified for each sample.

Downhole geochemical data files require sample location data and metadata to be provided in separate files, i.e. in the location\_data\_file(s). In the DG1 file, only the drillhole identifier, sample code, downhole interval and assay data are provided for each sample in the data records, with pointers to the relevant location\_data\_file(s).

If downhole lithological logs (DL1) are not presented, it is recommended that the lithology of each sample be specified as an extra data field in the DG1 file.

**DS1: Template 5** Data files for downhole directional surveys.

**Downhole\_survey\_data\_file**

See **Example 6**.

**Mandatory** dependent/related file template type:

**Location\_data\_file (SL1)**

H1001 should include the datum for the azimuth as a suffix to the units of measurement, i.e. \_M (Magnetic) or \_T (True).

**DL1: Template 6** Data files for downhole lithological logs.

**Downhole\_lithology\_data\_file**

See **Example 7**.

**Mandatory** dependent/related file/template types:

**Location\_data\_file (SL1)**

**Lithology\_code\_file**

Only the drillhole identifiers, depth intervals and lithological data are provided in this file, with pointers to the relevant Location\_data\_file(s) and lookup / authority / validation / namespace files. In most cases, lithologies are presented as abbreviation codes. A delimited ASCII file showing abbreviation code against full lithology name must be provided if this is the case.

**VL1: Template 7** File verification listing.

**File\_Verification\_Listing**

See **Examples 8 & 9**.

The hardcopy report submitted along with digital data will include:

- Title page
  - a) Type of report (annual, partial relinquishment, final)
  - b) Reporting period (period covered by the report)
  - c) Author of report
  - d) Name of tenement holder(s)
  - e) Name of operator (entity carrying out exploration operations and submitting the report)
  - f) Name of tenement or name of combined reporting group (project name)
  - g) Tenement type(s) and number(s)
  - h) Date of report
- Summary of all activities conducted

The summary of activities should include a brief outline of work carried out, a geological map, a table listing the activities by tenement, and the key results. The table should contain details of the scale of geological mapping, type of sampling, number of samples and elements analysed, type of geophysical survey and number of line kilometres, type of drilling and number of holes and metres drilled etc.

Where surface sampling and/or drilling have been completed a surface sample location plan and/or drill hole location plan and representative cross sections across zones of mineralisation should also form part of the hard copy report.

All areas of exploration activities in the summary should be shown on the “Exploration index map”.

- Exploration index map(s)  
Index maps at an appropriate scale (e.g. 1:25 000, 1:50 000, 1:100 000) should be included to show the areas where the different exploration activities have been carried out during the reporting period.

Exploration index maps should show a standard map grid and major landmarks(e.g. towns, roads, topographic features) and the following types of activities as polygons:

- a) Boundaries of tenements covered by the report
  - b) Boundaries of areas covered by survey grids. It is not necessary to show individual grid lines.
  - c) Boundaries of areas covered by geological mapping(specify the scales of capture used)
  - d) Boundaries of areas covered by drilling programs (specify type of drilling e.g. RAB, RC, DDH)
  - e) Boundaries of areas covered by geochemical surveys (specify type: soil (A,B,C horiz), stream sediment, rock chip etc).
  - f) Boundaries of areas covered by airborne and ground geophysical surveys (specify type: magnetics, gravity, EM (specify technique, radiometrics, EIP/MIP, seismic etc.)
  - g) Boundaries of areas covered by aerial photography, satellite imagery.
  - h) Position of identified mineral resources or pre-resource mineralisation.
- A listing of all digital files submitted as part of the report, including the file type and format (using Verification Listing Form as in Example 8).
  - A hard copy of each file header or metadata for all digital files submitted.
  - Sufficient information on graphics files to ensure valid interpretations can be made.

Table 3 and Examples 8 and 9 show the manner in which file verification data are to be presented.

File names as specified in Table 3 and demonstrated in Examples 8 and 9 should be used wherever possible.

**DU1: Template 8** Data file for drilling summary.

**Drilling\_summary\_data\_file**

See **Example 10**.

**Mandatory** dependent/related file/template type:

**Location\_data\_file (SL1)**

This file provides statistical information on exploration drilling covered by the report. Information required is drilling methods, metres drilled, expenditure and financial year. Results should be presented with each data record having a unique combination of drilling method and financial year as in Example 10.

**Table 3. VL1 File Verification Listing hardcopy form showing file abbreviations to be used.**

*Explanations in italics.*

Refer Table 2 for acceptable file formats.

Exploration Work Type	File Abbreviation	Format / file suffix
<b>Office Studies</b>		
Literature search	<i>Include descriptions in ReportBody</i>	
Database compilation	<i>Include descriptions in ReportBody</i>	
Computer modelling	<i>Include descriptions in ReportBody</i>	
Reprocessing of data	<i>Include descriptions in ReportBody</i>	
General research	<i>Include descriptions in ReportBody</i>	
Report preparation	ReportBody	pdf
Other (specify)	<i>Include descriptions in ReportBody</i>	
<b>Airborne Exploration Surveys</b>		
Aeromagnetics	Aeromag	<i>Refer Table 1</i>
Radiometrics	Radiometrics	<i>Refer Table 1</i>
Electromagnetics	AEM	<i>Refer Table 1</i>
Gravity	AeroGrav	<i>Refer Table 1</i>
Digital terrain modelling	DTM	<i>Refer Table 1</i>
Other (specify)	<i>At discretion of operator</i>	<i>Refer Table 1</i>
<b>Remote Sensing</b>		
Aerial photography	Airphotos	<i>Refer Table 1</i>
LANDSAT	LANDSAT	<i>Refer Table 1</i>
SPOT	SPOT	<i>Refer Table 1</i>
MSS	MSS	<i>Refer Table 1</i>
Radar	Radar	<i>Refer Table 1</i>
Other (specify)	<i>At discretion of operator</i>	<i>Refer Table 1</i>
<b>Ground Exploration Surveys</b>		
<b>Geological Mapping</b>		
Regional	RegGeology	<i>Refer Table 1</i>
Reconnaissance	ReconGeology	<i>Refer Table 1</i>
Prospect	ProspectGeology	<i>Refer Table 1</i>
Underground	UndergroundGeology	<i>Refer Table 1</i>
Costean	CosteanGeology	<i>Refer Table 1</i>
<b>Ground geophysics</b>		
Radiometrics	GroundRad	<i>Refer Table 1</i>
Magnetics	GroundMag	<i>Refer Table 1</i>
Gravity	GroundGrav	<i>Refer Table 1</i>
Digital terrain modelling	GroundDTM	<i>Refer Table 1</i>
Electromagnetics	GroundEM	<i>Refer Table 1</i>
SP/AP/EP	SP/AP/EP	<i>Refer Table 1</i>
IP	IP	<i>Refer Table 1</i>
AMT	AMT	<i>Refer Table 1</i>
Resistivity	Resistivity	<i>Refer Table 1</i>
Complex resistivity	CompResistivity	<i>Refer Table 1</i>
Seismic reflection	SeisReflect	<i>Refer Table 1</i>
Seismic refraction	SeisRefract	<i>Refer Table 1</i>
Well logging	WellLogs	<i>Refer Table 1</i>
Geophysical interpretation	GeophysInterp	<i>Refer Table 1</i>
Other (specify)	<i>At discretion of operator</i>	<i>Refer Table 1</i>
<b>Geochemical Surveying</b>		
Drill sampling	DownholeGeochem ( <i>DG1</i> ) AND DrillCollars ( <i>SLI</i> )	txt
Surface sampling, all types	SurfaceGeochem ( <i>SG1 complete</i> ) OR SurfaceGeochem ( <i>SG2 abbreviated</i> ) AND SurfaceLocations ( <i>SLI</i> )	txt
Other (specify)	<i>As for Stream Sediment above</i>	txt
<b>Drilling</b>		
All drilling	DrillCollars ( <i>SLI</i> ) AND LithoLogs ( <i>DLI</i> ) AND (where used) LithoCodes AND (where carried out) DownholeSurveys ( <i>DS1</i> ) AND DrillingSummary ( <i>DU1</i> )	txt
<b>File Verification Listing (this file)</b>	FileListing	txt

## **APPENDIX 1**

### **EXAMPLES**

In Examples 1 to 7, fields in **bold** are mandatory, fields in *italics* are recommended, and fields in normal face are optional.

**Example 1. SL1** Template 1. Surface locations of drilling using a single drilling method.

Filename EL99999\_2002\_A\_06\_DrillCollars.txt

The example has TABs formatted for easier reading.

```

H0002  Version                3
H0003  Date_generated          15-Oct-2002
H0004  Reporting_period_end_date 30-Sep-2002
H0005  State                   SA
H0100  Tenement_no             EL99999
H0101  Tenement_holder         Big Time Mining Ltd
H0102  Project_name            Kryptonite
H0106  Tenement_operator       Small Time Mining NL
H0150  250K_map_sheet_number   SH5311
H0151  100K_map_sheet_number   5936      5937      6037
H0152  50K_map_sheet_number    59361     59362     59373     60373     60374
H0153  25K_map_sheet_number     59361N    59362N    59362S    59373S    60373N    60374S
H0200  Start_date_of_data_acquisition 01-Oct-2001
H0201  End_date_of_data_acquisition 30-Sep-2002
H0202  Template_format            SL1
H0203  Number_of_data_records     7
H0204  Date_of_metadata_update    15-Oct-2002
H0300  Related_data_filenames
H0301  Location_data_file         EL99999_2002_A_06_DrillCollars.txt
H0302  Downhole_lithology_data_file EL99999_2002_A_08_LithoLogs.txt
H0303  Downhole_geochem_data_file  EL99999_2002_A_12_DownholeGeochem.txt
H0400  Drill_code                  PER
H0401  Drill_contractor           Drill Faster Pty Ltd
H0402  Description                 PER      Rotary - Percussion
H0500  Feature_located             Hole_collar
H0501  Geodetic_datum              GDA94
H0502  Vertical_datum               AHD Arbitrary RL500 Nominal
H0503  Projection                   UTM MGA Zone 53
H0508  Local_grid_name              Neutron Grid
H0530  Coordinate_system            Projected
H0531  Projection_zone              53
H0532  Surveying_instrument         GPS Averaged Position
H0533  Surveying_company            Super Surveying Pty Ltd
H1000  Hole_ID      Xcoordinate  Ycoordinate  Zcoordinate  Maxdepth  Collar_azimuth  Collar_inclination
H1001             metres      metres      metres      metres      degrees      degrees
H1004             10
D      PD01      512920    6626810    240      88.6      0      -90
D      PD02      513000    6626230    230      120.4     275     -73
D      PD03      514970    6625540    210      35.3      0      -90
D      PD04      511110    6623680    180      225.0     0      -90
D      PD05      513160    6625880    270      186.6     36     -82
D      PD06      513320    6624990    220      105.4     0      -90
D      PD07      513280    6624250    220      12.5      0      -90
EOF

```

**Example 2. SL1** Template 1. Surface locations. Example shows drilling using multiple drilling methods.

Filename EL99999\_2002\_A\_06\_DrillCollars.txt

In this example, “\t” shows placement of TAB characters (normally hidden from view) in the file. The actual file to be submitted would contain only the TAB delimiters, not “\t”.

```

H0002\t Version\t 3
H0003\t Date_generated\t 15-Oct-2002
H0004\t Reporting_period_end_date\t 30-Sep_2002
H0005\t State\t SA
H0100\t Tenement_no\t EL99999
H0101\t Tenement_holder\t Big Time Mining Ltd
H0102\t Project_name\t Kryptonite
H0106\t Tenement_operator\t Small Time Mining NL
H0150\t 250K_map_sheet_number\t SH5311
H0151\t 100K_map_sheet_number\t 5936\t 5937\t 6037
H0152\t 50K_map_sheet_number\t 59361\t 59362\t 59373\t 60373\t 60374
H0153\t 25K_map_sheet_number\t 59361N\t 59362N\t 59362S\t 59373S\t 60373N\t 60374S
H0200\t Start_date_of_data_acquisition\t 01-Oct-2001
H0201\t End_date_of_data_acquisition\t 30-Sep-2002
H0202\t Template_format\t SL1
H0203\t Number_of_data_records\t 7
H0204\t Date_of_metadata_update\t 15-Oct-2002
H0300\t Related_data_filenames
H0301\t Location_data_file\t EL99999_2002_A_06_DrillCollars.txt
H0302\t Downhole_lithology_data_file\t EL99999_2002_A_08_LithoLogs.txt
H0303\t Downhole_geochem_data_file\t EL99999_2002_A_12_DownholeGeochem.txt
H0304\t Downhole_survey_data_file\t EL99999_2002_A_14_DownholeSurveys.txt
H0400\t Drill_code\t RAB\t DIA
H0401\t Drill_contractor\t Drill Faster Pty Ltd\t Drill Well Pty Ltd
H0402\t Description\t RAB\t Rotary Air Blast\t DIA\t Diamond Bit - Coring
H0500\t Feature_located\t Hole_collar
H0501\t Geodetic_datum\t GDA94
H0502\t Vertical_datum\t AHD Arbitrary RL500 Nominal
H0503\t Projection\t None
H0508\t Local_grid_name\t Neutron Grid
H0530\t Coordinate_system\t Geographic
H0532\t Surveying_instrument\t GPS Multi Base Wide Area Differential
H0533\t Surveying_company\t Super Surveying Pty Ltd
H1000\t Hole_ID\t Xcoordinate\t Ycoordinate\t Zcoordinate\t Maxdepth\t Collar_azimuth\t Collar_inclination\t Drill_code
H1001\t \t ddmss.sss\t \t ddmss.sss\t metres\t metres\t degrees\t degrees\t
H1004\t \t 0.001\t 0.001\t 0.5\t 0.1\t 1\t 1\t
D\t RD01\t 1350804.553\t -302927.212\t 243.5\t 88.6\t 0\t -90\t RAB
D\t RD/DD02\t 1350806.376\t -302933.853\t 230.0\t 120.4\t 275\t -73\t RAB,DIA
D\t RD03\t 1350809.987\t -302938.002\t 211.5\t 35.3\t 0\t -90\t RAB
D\t RD04\t 1350811.701\t -302940.066\t 181.5\t 225.0\t 0\t -90\t RAB
D\t RD/DD05\t 1350815.552\t -302943.949\t 279.0\t 186.6\t 36\t -82\t RAB,DIA
D\t DD06\t 1350816.153\t -302948.508\t 222.0\t 105.4\t 0\t -90\t DIA
D\t RD07\t 1350818.454\t -303050.351\t 211.5\t 12.5\t 0\t -90\t RAB
EOF

```

**Example 3. SG1** Template 2. Complete surface geochemistry.

Filename EL99999\_2002\_A\_13\_SurfaceGeochem.txt

The example has TABs formatted for easier reading. For demonstration purposes only, it includes all methods of specifying “below detection limit” or “not assayed”; files actually submitted must be consistent in usage of “below detection limit” or “not assayed” designators.

H0002	Version	3
H0003	Date_generated	15-Oct-2002
H0004	Reporting_period_end_date	30-Sep-2002
H0005	State	SA
H0100	Tenement_no	EL99999
H0101	Tenement_holder	Big Time Mining Ltd
H0102	Project_name	Kryptonite
H0106	Tenement_operator	Small Time Mining NL
H0150	250K_map_sheet_number	SH5311
H0151	100K_map_sheet_number	5936
H0152	50K_map_sheet_number	59361 59364
H0153	25K_map_sheet_number	59361N 59361S 59364N
H0200	Start_date_of_data_acquisition	01-Oct-2001
H0201	End_date_of_data_acquisition	30-Sep-2002
H0202	Template_format	SG1
H0203	Number_of_data_records	7
H0204	Date_of_metadata_update	15-Oct-2002
H0300	Related_data_filenames	
H0305	Surface_geochem_comp_data_file	EL99999_2002_A_13_SurfaceGeochem.txt
H0307	Lithology_code_file	EL99999_2002_A_16_LithologyCodes.txt
H0500	Feature_located	Surface_location
H0501	Geodetic_datum	GDA94
H0502	Vertical_datum	AHD Arbitrary RL500 Nominal
H0503	Projection	UTM MGA Zone 53
H0508	Local_grid_name	Neutron Grid
H0530	Coordinate_system	Projected
H0531	Projection_zone	53

*(continued on next page)*



**Example 4. SG2** Template 3. Abbreviated surface geochemistry. Filename EL99999\_2002\_A\_10\_SurfaceGeochem.txt  
 The example uses quote-comma delimiters (not the preferred delimiter).

```
"H0002","Version","3"
"H0003","Date_generated","15-Oct-2002"
"H0004","Reporting_period_end_date","30-Sep-2002"
"H0005","State","SA"
"H0100","Tenement_no","EL99999"
"H0101","Tenement_holder","Big Time Mining Ltd"
"H0102","Project_name","Kryptonite"
"H0106","Tenement_operator","Small Time Mining NL"
"H0200","Start_date_of_data_acquisition","01-Oct-2001"
"H0201","End_date_of_data_acquisition","30-Sep-2002"
"H0202","Template_format","SG2"
"H0203","Number_of_data_records","7"
"H0204","Date_of_metadata_update","15-Oct-2002"
"H0300","Related_data_filenames"
"H0301","Location_data_file","EL99999_2002_A_15_SurfaceLocations.txt"
"H0306","Surface_geochem_abbr_data_file","EL99999_2002_A_10_SurfaceGeochem.txt"
"H0600","Sample_code","RO","SS"
"H0601","Sample_type","RO","Rock outcrop / float","SS","Stream sediment"
"H0602","Sample_description","2kg grab samples","Screened -80# ASTM 500g samples split to 250g for lab dispatch"
"H0700","Sample_preparation_code","S031","R040"
"H0701","Sample_preparation_details","S031","Pulverise to 50um","R040","Tungsten steel ring mill pulverise to 70 um"
"H0702","Job_no","ADL12345","02A1234"
"H0800","Assay_code","FA3","IC587","AAS1"
"H0801","Assay_company","PLP","Phlogiston Laboratories, Perth","AAL","Aardvark Laboratories, Adelaide"
"H0802","Assay_description","FA3","Aqua regia digest, fire assay / carbon rod determination","IC587","HClO4+HNO3+HF digest, inductively coupled plasma mass spectrometry determination","AAS1","HClO4+HNO3+HF digest, atomic absorption spectrometry determination"
"H1000","Sample_ID","Sample_code","Lithology","Au","Au","Ca","Cu","Pb","Zn"
"H1001","","","","ppb","ppb","ppm","ppm","ppm","ppm"
"H1002","","","FA3","AAS1","IC587","","IC587","IC587"
"H1003","","","1","10","10","10","10","10"
"H1004","","","1","1","10","5","5","5"
"H1005","","","10000","500000","500000","200000","200000","200000"
"H1006","","","P","","",""
"H1007","","","PLP","AAL","PLP","PLP","PLP","PLP"
"D","A111","RO","GRDI","12","15","125000","75","15","30"
"D","A112","RO","SLST","nd","nd","11420","10","nd","10"
"D","A113","SS","","2","nd","1530","nd","nd","10"
"D","A114","SS","","4","nd","3770","15","10","25"
"D","A115","SS","","76","50","18460","30","85","160"
"D","A116","RO","LMST","na","na","na","55","30","65"
"D","A117","RO","GBRO","na","na","na","10","10","20"
"EOF"
```

**Example 5. DG1** Template 4. Downhole geochemistry. Filename EL99999\_2002\_A\_09\_DownholeGeochem.txt  
 The example has TABs formatted for easier reading.

```

H0002  Version                3
H0003  Date_generated          15-Oct-2002
H0004  Reporting_period_end_date 30-Sep-2002
H0005  State                   SA
H0100  Tenement_no              EL99999
H0101  Tenement_holder         Big Time Mining Ltd
H0102  Project_name             Kryptonite
H0106  Tenement_operator       Small Time Mining NL
H0200  Start_date_of_data_acquisition 01-Oct-2001
H0201  End_date_of_data_acquisition 30-Sep-2002
H0202  Template_format         DG1
H0203  Number_of_data_records  7
H0204  Date_of_metadata_update  15-Oct-2002
H0300  Related_data_filenames
H0301  Location_data_file      EL99999_2002_A_06_DrillCollars.txt
H0303  Downhole_geochem_data_file EL99999_2002_A_09_DownholeGeochem.txt
H0600  Sample_code              DC          CT          CS
H0601  Sample_type              DC          Drill core  CT          Drill cuttings CS      Core sludge
H0602  Sample_description        Quarter core Half splits of cuttings  Approx 100g sample of sludge
H0700  Sample_preparation_code    S031       R040
H0701  Sample_preparation_details S031       Pulverise to 50um          R040      Tungsten steel ring mill pulverise to 70 um
H0702  Job_no                    ADL12345   02A1234
H0800  Assay_code                FA3        IC587          AAS1
H0801  Assay_company             PLP        Phlogiston Laboratories, Perth  AAL        Aardvark Laboratories, Adelaide
H0802  Assay_description         FA3        Aqua regia digest, fire assay / carbon rod determinationIC587HClO4+HNO3+HF digest,
inductively coupled plasma mass spectrometry determination  AAS1        HClO4+HNO3+HF digest, atomic absorption
spectrometry determination
H1000  Hole_ID  Depfrom  Depto  Sample_ID  Sample_code  Au  Au  Ca  Cu  Pb  Zn
H1001  1001  metres  metres  1001  FA3  ppb  ppb  ppm  ppm  ppm  ppm
H1002  1002  1002  1002  1002  AAS1  FA3  AAS1  IC587  IC587  IC587  IC587
H1003  1003  1003  1003  1003  1  10  10  10  10  10
H1004  1004  0.1  0.1  1004  1  1  10  5  5  5
H1005  1005  1005  1005  1005  10000  500000  500000  200000  200000  200000
H1006  1006  1006  1006  1006  P
H1007  1007  1007  1007  1007  PLP  AAL  PLP  PLP  PLP  PLP
D      RD111  12  14  A111  CT  12  15  125000  75  15  30
D      RD111  14  16  A112  CT  nd  nd  11420  10  nd  10
D      RD111  16  18  A113  CT  2  nd  1530  nd  nd  10
D      DD112  123.4  123.5  A114  DC  4  nd  3770  15  10  25
D      DD112  120.0  121.0  A115  CS  76  50  18460  30  85  160
D      DD112  273.0  273.7  A116  DC  na  na  na  55  30  65
D      DD112  354.6  355.1  A117  DC  na  na  na  10  10  20
EOF

```

**Example 6. DSI** Template 5. Downhole directional survey. Filename EL99999\_2002\_A\_14\_DownholeSurveys.txt

The example has TABs formatted for easier reading.

```

H0002  Version                3
H0003  Date_generated          15-Oct-2002
H0004  Reporting_period_end_date 30-Sep-2002
H0005  State                   SA
H0100  Tenement_no              EL99999
H0101  Tenement_holder         Big Time Mining Ltd
H0102  Project_name            Kryptonite
H0106  Tenement_operator       Small Time Mining NL
H0200  Start_date_of_data_acquisition 01-Oct-2001
H0201  End_date_of_data_acquisition 30-Sep-2002
H0202  Template_format        DS1
H0203  Number_of_data_records  4
H0204  Date_of_metadata_update 15-Oct-2002
H0300  Related_data_filenames
H0301  Location_data_file      EL99999_2002_A_06_DrillCollars.txt
H0304  Downhole_survey_data_file EL99999_2002_A_14_DownholeSurveys.txt
H0532  Surveying_instrument    Eastman multishot camera
H0533  Surveying_company         Drill Faster Pty Ltd
H1000  Hole_ID  Depth  Inclination  Azimuth
H1001          metres degrees  degrees_M
H1004          0.1   0.1      0.1
D      DD112  10.0  -89.9      285.2
D      DD112  120.0 -87.3      276.0
D      DD112  275.0 -82.1      273.4
D      DD112  445.3 -79.7      268.9
EOF

```

**Example 7. DL1** Template 6. Downhole lithological logs. Filename EL99999\_2002\_A\_12\_Lithologs.txt  
The example has quote-comma delimiters (not the preferred delimiter).

```
"H0002", "Version", "3"
"H0003", "Date_generated", "15-Oct-2002"
"H0004", "Reporting_period_end_date", "30-Sep-2002"
"H0005", "State", "SA"
"H0100", "Tenement_no", "EL99999"
"H0101", "Tenement_holder", "Big Time Mining Ltd"
"H0102", "Project_name", "Kryptonite"
"H0106", "Tenement_operator", "Small Time Mining NL"
"H0200", "Start_date_of_data_acquisition", "01-Oct-2001"
"H0201", "End_date_of_data_acquisition", "30-Sep-2002"
"H0202", "Template_format", "DL1"
"H0203", "Number_of_data_records", "7"
"H0204", "Date_of_metadata_update", "15-Oct-2002"
"H0300", "Related_data_filenames"
"H0301", "Location_data_file", "EL99999_2002_A_06_DrillCollars.txt"
"H0302", "Downhole_lithology_data_file", "EL99999_2002_A_12_Lithologs.txt"
"H0307", "Lithology_code_file", "EL99999_2002_A_16_LithologyCodes.txt"
"H0400", "Drill_code", "RAB", "DIA"
"H0402", "Description", "RAB", "Rotary Air Blast", "DIA", "Diamond Bit - Coring"
"H1000", "Hole_ID", "Depfrom", "Deppto", "Drill_code", "Recovery", "Lithology", "Description"
"H1001", "", "metres", "metres", "", "%", "", ""
"H1004", "", "0.1", "0.1", "", "5", "", "", ""
"D", "RD111", "0", "2", "RAB", "90", "SAND", "Fine to medium grained sand, red-brown"
"D", "RD111", "2", "4", "RAB", "85", "SAND, CALC", "Fine to medium grained sand 30%, red-brown, with calcrete 70%, off-white to buff"
"D", "RD111", "4", "6", "RAB", "80", "GRNT", "Granite, weathered"
"D", "DD112", "123.4", "123.7", "DIA", "100", "LMST", "Massive limestone with traces of pyrite and chalcopyrite"
"D", "DD112", "123.7", "136.2", "DIA", "90", "GBRO", "Medium and coarse layered gabbro, layers 10 to 50 cm thick"
"D", "DD112", "136.2", "136.4", "DIA", "20", "FBRC", "Clayey, highly weathered fault breccia"
"D", "DD112", "136.4", "137.7", "DIA", "100", "KOMT", "Spinifex-textured komatiite with minor sulphides"
"EOF"
```

**Example 8: Sample Hardcopy File Verification Listing**

Exploration Work Type	Filename	Format
<b>Office Studies</b>		
Literature search	EL99999_2002_A_01_ReportBody.pdf	pdf
Database compilation		
Computer modelling	EL99999_2002_A_01_ReportBody.pdf	pdf
Reprocessing of data		
General research	EL99999_2002_A_01_ReportBody.pdf	pdf
Report preparation	EL99999_2002_A_01_ReportBody.pdf	pdf
Other (specify)		
<b>Airborne Exploration Surveys</b>		
Aeromagnetics	EL99999_2002_A_03_Aeromag.gdf EL99999_2002_A_04_Aeromag.ecw EL99999_2002_A_05_Aeromag.ecw	gdf, ecw
Radiometrics		
Electromagnetics		
Gravity		
Digital terrain modelling		
Other (specify)		
<b>Remote Sensing</b>		
Aerial photography		
LANDSAT		
SPOT		
MSS		
Radar		
Other (specify)		
<b>Ground Exploration Surveys</b>		
<b>Geological Mapping</b>		
Regional		
Reconnaissance		
Prospect	EL99999_2002_A_02_ProspectGeology.tif	tif
Underground		
Costean		
<b>Ground geophysics</b>		
Radiometrics		
Magnetics		
Gravity		
Digital terrain modelling		
Electromagnetics		
SP/AP/EP		
IP		
AMT		
Resistivity		
Complex resistivity		
Seismic reflection		
Seismic refraction		
Well logging		
Geophysical interpretation		
Other (specify)		
<b>Geochemical Surveying</b>		
Drill sampling	EL99999_2002_A_09_DownholeGeochem.txt EL99999_2002_A_06_DrillCollars.txt	txt
Surface sampling	EL99999_2002_A_10_SurfaceGeochem.txt EL99999_2002_A_11_SurfaceLocations.txt EL99999_2002_A_13_SurfaceGeochem.txt EL99999_2002_A_15_SurfaceLocations.txt	txt
Other (specify)		txt
<b>Drilling</b>		
All drilling	EL99999_2002_A_06_DrillCollars.txt EL99999_2002_A_07_DrillCollars.txt EL99999_2002_A_08_Lithologs.txt EL99999_2002_A_12_Lithologs.txt EL99999_2002_A_14_DownholeSurveys.txt EL99999_2002_A_16_LithologyCodes.txt EL99999_2002_A_17_DrillingSummary.txt	txt
<b>File Verification Listing</b> ( <i>this file</i> )	EL99999_2002_A_18_FileListing.txt	txt

**Example 9: VL1** Template 7. Digital File Verification Listing.

Filename EL99999\_2002\_A\_17\_FileListing.txt

Example uses quote-comma delimiters (not the preferred delimiter).

```

"Verification Listing","VL1"
"Exploration Work Type","File_Name","Format","Description"
"Office Studies"
"Literature search","EL99999_2002_A_01_ReportBody.pdf","pdf","Search of past exploration reports"
"Computer modelling","EL99999_2002_A_01_ReportBody.pdf","pdf","Fuzzy logic modelling"
"General research","EL99999_2002_A_01_ReportBody.pdf","pdf","Miscellaneous research"
"Report preparation","EL99999_2002_A_01_ReportBody.pdf","pdf","Main report body"
"Airborne Exploration Surveys"
"Aeromagnetics","EL99999_2002_A_03_Aeromag.gdf","gdf","Raw geophysics, all areas"
"Aeromagnetics","EL99999_2002_A_04_Aeromag.ecw","ecw","Aeromag image Fred's Tank area"
"Aeromagnetics","EL99999_2002_A_05_Aeromag.ecw","ecw","Aeromag image Neutron Grid area"
"Ground Exploration Surveys"
"Geological Mapping"
"Prospect","EL99999_2002_A_02_ProspectGeology.tif","tif","Geology of Neutron Grid area"
"Geochemical Surveying"
"Drill sampling","EL99999_2002_A_09_DownholeGeochem.txt","txt","Sampling / analysis results for all areas and drill sample types"
"Drill sampling","EL99999_2002_A_06_DrillCollars.txt","txt","Collar locations for drillholes with analysed samples, Neutron Grid"
"Surface sampling","EL99999_2002_A_10_SurfaceGeochem.txt","txt","Rock outcrop and stream sediment sampling analysis results for Fred's Tank area"
"Surface sampling","EL99999_2002_A_11_SurfaceLocations.txt","txt","Location of rock outcrop samples for Fred's Tank area"
"Surface sampling","EL99999_2002_A_15_SurfaceLocations.txt","txt","Location of stream sediment samples for Fred's Tank area"
"Surface sampling","EL99999_2002_A_13_SurfaceGeochem.txt","txt","Location and analysis results of rock outcrop and stream sediment samples for Neutron Grid"
"Drilling"
"All drilling","EL99999_2002_A_06_DrillCollars.txt","txt","Collar locations for drillholes, Neutron Grid"
"All drilling","EL99999_2002_A_07_DrillCollars.txt","txt","Collar locations for drillholes, Fred's Tank area"
"All drilling","EL99999_2002_A_08_Lithologs.txt","txt","Drillhole lithological logs, Neutron Grid"
"All drilling","EL99999_2002_A_12_Lithologs.txt","txt","Drillhole lithological logs, Fred's Tank area"
"All drilling","EL99999_2002_A_14_DownholeSurveys.txt","txt","Downhole directional surveys, Neutron Grid"
"All drilling","EL99999_2002_A_16_LithologyCodes.txt","txt","Lookup table of lithology codes"
"All drilling","EL99999_2002_A_17_DrillingSummmmary.txt","txt","Summary of drilling in this report"
"File Verification Listing","EL99999_2002_A_18_FileListing.txt","txt","This file"

```

**Example 10: DU1** Template 8. Drilling Summary.

Filename EL99999\_2002\_A\_17\_DrillingSummary.txt

The drilling details shown here are illustrative only. In a real exploration report, they would correspond to the details in drilling-related SL1 files within the report.

```

H0002  Version                3
H0003  Date_generated          15-Oct-2002
H0004  Reporting_period_end_date 30-Sep_2002
H0005  State                   SA
H0100  Tenement_no              EL99999
H0101  Tenement_holder          Big Time Mining Ltd
H0102  Project_name             Kryptonite
H0106  Tenement_operator         Small Time Mining NL
H0200  Start_date_of_data_acquisition 01-Mar-2001
H0201  End_date_of_data_acquisition 30-Sep-2002
H0202  Template_format          DU1
H0203  Number_of_data_records    5
H0204  Date_of_metadata_update   15-Oct-2002
H0300  Related_data_filenames
H0301  Location_data_file         EL99999_2002_A_06_DrillCollars.txt
H0301  Location_data_file         EL99999_2002_A_07_DrillCollars.txt
H0309  Drilling_summary_data_file  EL99999_2002_A_17_DrillingSummary.txt
H0400  Drill_code                  RAB  DIA
H0402  Description                  RAB  Rotary Air Blast          DIA  Diamond Bit - Coring
H1000  Drill_code  DrilledLength  Expenditure  FinancialYear  ExplorationType
H1001           metres          AU$
H1004           10              100
D      RAB      4950          34400          2000-2001
D      RAB      2210          16100          2001-2002
D      DIA      2260          213600         2001-2002
EOF

```

**APPENDIX 2****GLOSSARY**

<b>Abbreviation</b>	<b>Description</b>	<b>Used as</b>
AMIRA	Australian Mineral Industry Research Association	Organisation
ANZLIC	Australia and New Zealand Land Information Council	National organisation
ASCII	American Standard Code for Information Interchange	International standard
ASEG	Australian Society of Exploration Geophysicists	Organisation
BIL	Band Interleaved by Line	File format
CGGC	Chief Government Geologists' Committee	Organisation – Chief Geologists from Australian Commonwealth, State and Territory geoscience agencies, plus New Zealand and Papua New Guinea
CGM	Concatenated Graphics Metafile	File type
CSIRO	Commonwealth Scientific and Industrial Research Organisation	Organisation
DLIS	Digital Logging International Standard	International standard
GDF2	General Data Format (Version 2)	National standard
GEOTIFF	Geo-referenced Tagged Image File Format	File type
GGIPAC	Government Geoscience Information Policy Advisory Committee	Organisation – advisory to CGGC
GIF	Graphics Interchange Format	File type
GML	Geography Markup Language	International standard
GXF	Grid Exchange Format	International standard
JPG, JPEG	Joint Photographic Experts Group	File type
LAS	Log ASCII Standard	International industry standard
LIS	Logging International Standard (binary format)	International industry standard
MGA	Map Grid of Australia	Spatial specification using UTM projection relative to Geocentric Datum of Australia 1994
MRT, MINEX	Mineral Reporting Template	Preferred software for producing compliant metadata headers for tabular data files
MWD	Measurement While Drilling	Logging technique
OGC	Open GIS Consortium	Organisation (see <a href="http://www.opengis.org">http://www.opengis.org</a> )
P1/90	Navigation data standard format	International standard
PDF	Portable Document Format	File type
PNG	Portable Network Graphics	File type

POSC	Petrotechnical Open Software Consortium	Organisation (see <a href="http://www.posc.org">http://www.posc.org</a> )
PPDM	Public Petroleum Data Model	International standard database model
SDTS	Spatial Data Transfer System	International standard
SEG	Society of Exploration Geophysicists	Organisation
SGML	Standard Generalized Markup Language	International standard
SIROTEM	CSIRO Transient ElectroMagnetics	Geophysical method developed by CSIRO
SPS	Shell Processing System	International standard
TEM	Transient ElectroMagnetics	Geophysical technique
TIF, TIFF	Tagged Image File Format	File type
TMI	Total Magnetic Intensity	Geophysical measurement
UKOOA	United Kingdom Offshore Operators Association	International organisation
UTM	Universal Transverse Mercator	International spatial specification / map projection
XML	Extensible Markup Language	International standard
XMML	Exploration and Mining Markup Language	Standard under development by CSIRO