

Guidelines for MINERAL EXPLORATION REPORTS ON MINING TENEMENTS

Gazetted December 2006

GENERAL

1. The purpose of the **guidelines**, in accordance with **Section 115A** of the Mining Act 1978, (the Act), is to specify the contents, standards, and the formats required in the preparation and submission of **mineral exploration reports**. These **guidelines** are gazetted with the approval of the Director General and supersede the previous **guidelines** which were gazetted on 3 November 1995.
2. A **mineral exploration report** shall contain information of sufficient standard and detail to substantiate, to the satisfaction of the Minister, the expenditures claimed and the activities undertaken on a mining tenement, as reported in summary on the Form 5 operations report.
3. Under the requirements of **Section 115A of the Act**, mineral exploration reports shall be submitted to the Department of Industry and Resources (DoIR) for the following types of mining tenements:
 - **Exploration Licences**
 - **Mining Leases**
 - **Prospecting Licences**
 - **Retention Licences**

when the following geoscientific activities have been undertaken in the search for minerals:

- (a) programs involving the geological sciences (this includes such activities as data review, assessment and interpretation, and target generation)
- (b) activities involving the collection and assaying of soil, rock, groundwater, and mineral samples
- (c) drilling programs
- (d) technical investigations that follow from mineral exploration on a mining tenement: i.e. pre-feasibility studies, feasibility studies, metallurgical studies, hydrogeological (groundwater) studies, geotechnical studies.

A mineral exploration report is not required to accompany the Form 5 for those Prospecting Licences or Mining Leases where only general prospecting activities have been undertaken and have been claimed in the Form 5 operations report under Prospecting and/or small-scale Mining Activities. If there has been any development work on a Prospecting Licence or a Mining Lease in addition to general prospecting activities, then brief details of the development should be provided in a statement to accompany the Form 5 operations report.

4. For each mining tenement held, the holder is required to submit annual, partial surrender and final surrender reports, as appropriate.

The reports to be submitted shall be the mineral exploration report in accordance with Section 115A (2)(a) (see Notes 6, 11 and 14) and the Form 5 operations report (as specified in the First Schedule of the Mining Regulations as amended).
5. It is the responsibility of the **registered holder** of the mining tenement to submit the Form 5 and the accompanying mineral exploration report by the due date, irrespective of who actually carries out the mineral exploration or other technical investigation.
6. Each mining tenement shall be reported on separately except for certain tenements where approval has been obtained from the Minister to submit one combined mineral exploration report on a group of tenements, in accordance with Section 115A(4) (see Note 16). This approval shall not apply to the submission of Form 5 operations reports (see Notes 10 and 19).
7. **Mineral exploration reports shall be submitted in digital format** in the form required in the “Requirements for Reporting Mineral Exploration Information” (the Reporting Requirements). The Reporting Requirements detail the content, format and data standards required for the reports. These Reporting Requirements may be updated from time to time and it is the responsibility of the tenement operator to ensure that the latest version of the Reporting Requirements is used when preparing a mineral exploration report.
8. Mineral exploration reports shall be submitted to the **Director of the Geological Survey of Western Australia, Department of Industry and Resources, 100 Plain Street, East Perth WA 6004**.
9. Company prospectuses or annual financial reports **will not** be accepted as mineral exploration reports.

SUBMISSION SCHEDULE OF REPORTS

10. The mineral exploration report and the Form 5 operations report shall be submitted no later than **60 days** after each anniversary date and the date of surrender, forfeiture, expiry, or cancellation of a mining tenement.

However, the submission schedule for a mineral exploration report (but not a Form 5 operations report) may be varied to a common reporting date, as specified in **Notes 16 to 24**, for one combined mineral exploration report on two or more tenements in a group. Approval for such a varied schedule must be obtained from **the Minister** acting through **the Director, Geological Survey of Western Australia** in accordance with Section 115A (4) of the Act.

ANNUAL REPORTS

11. The mineral exploration report and Form 5 operations report shall be submitted annually for each tenement type (see Note 3) where mineral exploration activities have been carried out (i.e. geological including assessments and reviews, geochemical, geophysical, geotechnical or drilling activities). For the submission of combined mineral exploration reports see Note 16.

CONFIDENTIALITY OF REPORTS

12. All information in mineral exploration reports on any mining tenement, submitted to the Department in accordance with Section 115A, shall remain confidential until the information is eligible for public release as prescribed in **Regulation 96 of the Act**.

PARTIAL SURRENDER AND FINAL SURRENDER REPORTS

13. Mineral exploration reports on partially surrendered areas of tenements are required for release in accordance with Regulation 96 and with the following Regulations:

Exploration Licence (Regulation 22(1) (b))

Within 60 days of the surrender of any portion of the licence, either for a compulsory reduction of the tenement after the **3rd** and **4th** years for tenements applied for and/or granted prior to 10th February 2006 (whether granted prior to or after that date), after the **5th** year for tenements applied for and granted after 10th February 2006 or for a voluntary reduction at any other time.

Mining Lease (Regulation 32(1) (b))

Within 60 days of the voluntary surrender of any portion of the lease.

These partial surrender reports should include information on all mineral exploration activities conducted on the ground that was surrendered: i.e. all exploration data that have been obtained during the life of the surrendered portion of an Exploration Licence or Mining Lease.

Tenement holders shall have the choice of supplying such partial surrender information as either:

- (a) a separate partial surrender report that contains data only on the relinquished portion of the tenement: i.e. the report does not contain confidential information relating to any retained portion of the tenement, or
 - (b) a written authorization to release previous annual reports that contain information for the whole tenement. Such authorization shall enable the public release to “open file” all information on the tenements, i.e. to release both “open file” information (relinquished portion of a tenement), and “confidential” information (retained portion of a tenement).
14. Mineral exploration surrender reports will not be required on areas that are surrendered partially or surrendered outright when the relinquished portion of an Exploration Licence has been wholly converted (Sections 65 and 67) to a Mining Lease (or Leases) or when a Prospecting Licence has been converted (Section 49) to a Mining Lease. However, surrender reports **are** required if the Exploration Licence or Prospecting Licence has been surrendered or forfeited prior to the grant of a Mining Lease.
15. **Mineral exploration surrender reports on tenement/s where diamond drilling has occurred shall include information on the storage location and current ownership of the drillcore (Mining Regulation 96D (1)).**

COMBINED MINERAL EXPLORATION REPORTS

16. The holder(s) of, or agent for, **a group of granted tenements** may apply for Ministerial approval, in accordance with Section 115A(4), to submit one combined annual mineral exploration report on a common date for a group of two or more contiguous (or nearly contiguous) tenements that are being worked in a common exploration program.
- An application under Section 115A (4) for combined reporting shall be submitted on the form at the end of these guidelines.
17. Combined mineral exploration reports **shall not** be submitted to the Department unless **prior** written approval has been obtained from the Minister, acting through the Director, Geological Survey of Western Australia.
18. Combined mineral exploration reports are due to be submitted on the combined reporting date each year.

19. An approval for combined reporting on a combined reporting group shall not apply to the submission of Form 5 operations reports, which must be lodged individually for each tenement (see **Note 10**) in a particular tenement group. Also, when any part of a combined reporting group is surrendered, a separate surrender report is required to provide details of all work done on the relinquished portion of the group (see **Note 13**).

If a surrender report is not submitted, then all previous annual mineral exploration reports on the combined reporting group may be released to open file in accordance with Regulation 96(7).

20. Each application for combined reporting shall include the following:
- (i) a list of the tenements comprising the proposed combined reporting group showing the ownership of each tenement;
 - (ii) name and contact details of the operator (organization or person preparing and submitting the report);
 - (iii) a map showing the perimeter of the proposed combined reporting group, the boundaries of the constituent tenements in the group, and the simplified solid geology of the area;
 - (iv) the commodity/commodities for which the group is being explored;
 - (v) the proposed 12 month reporting period for the tenement group;
 - (vi) the proposed common reporting date for submitting the combined annual mineral exploration report; such a date shall not be greater than 90 days beyond the end of the proposed 12 month reporting period in **Note 20(v) above**; and
 - (vii) any overdue, or due, mineral exploration reports on individual tenements in the proposed combined reporting group.
21. If a tenement holder (or operator) wishes to add tenements to or remove tenements from a combined reporting group that has been previously approved, or wishes to vary the common reporting date or the operator, then written consent shall again be sought from the Director of the Geological Survey **prior** to the submission of the next combined report on that group. It is also the responsibility of the operator to inform the Geological Survey of WA of any change of contact address.
22. When the Director of the Geological Survey considers each request for consent to combined reporting for a tenement group, the following factors shall be taken into account:
- (a) *The geological target being investigated in a common exploration program:*
the combined reporting group should cover a continuous geological unit or continuous zone of adjacent related geological units and involve a search for one or more mineral commodities.
If the project, or part of the project, is being explored for other commodities by third parties, then the operator must ensure that all exploration data are included in the combined report.
 - (b) *The geographical distribution of the tenements:*
the tenements in a combined reporting group shall be contiguous or nearly contiguous: tenements should not be greater than 5km apart **without adequate justification**; the tenements in a combined reporting group while having a geological basis (**Note 22(a)**), should not extend over very large areas. Proposed tenement groups that involve large areas shall be determined on merit at the discretion of the Director of the Geological Survey.
 - (c) *The previous history of combined reporting on the tenements:*
a proposed combined reporting group, or any tenement within that group, shall not be approved for combined reporting **unless** all overdue reports on individual tenements have been submitted (see **Note 20(vii)**).

- (d) *The common ownership or legal control of all tenements in a group:*
one common holder has 100% shareholding in all tenements;
one common holder has 100% shareholding in some tenements and a majority shareholding in each of the other tenements;
one common holder or an operator has, or has the legal ability to acquire, a controlling interest in each of the tenements;
one common holder or an operator has earned a majority interest, or has legal ability to acquire a controlling interest, in each of the tenements.
23. The Minister's approval for combined reporting of a tenement group is primarily for the purposes of reporting geoscientific mineral exploration data. The approval also establishes a tenement group for the purpose of applying for exemptions from expenditure conditions under Section 102(2)(h) of the Act.
24. Combined reporting for a tenement group may be cancelled, in accordance with Section 115A (5), for the following reasons:
- (i) if the combined annual report for the group is not received within 30 days of the common reporting date;
 - (ii) if tenements in the combined report are different from the tenements for which combined reporting was granted;
 - (iii) if changes that have occurred over time mean that a combined reporting group no longer fulfils requirements as set out under **Note 22**;
 - (iv) if combined reporting was granted for a specific period that has expired;
 - (v) for administrative purposes (in this case a new combined reporting number will be issued for the same group of tenements and no new application is required by the operator).

In the case of (i) to (iv), this will have the effect that individual reports, on each tenement in the group, shall become due within 60 days of the anniversary date of each individual tenement.

APPLICATION FORM FOR COMBINED REPORTING

25. Applications for combined reporting in accordance with Section 115A shall be made on the attached form. SEE FORM BELOW.
(Please note that all applications should be mailed to the Director, Geological Survey of Western Australia).

REPORT REVISION

26. Any mineral exploration report that does not conform to these guidelines and the Requirements for the Submission of Mineral Exploration Data in Digital Format shall be rectified within a 30-day period by the tenement holder or operator, following a written request from the Minister, acting through the Director, Geological Survey of Western Australia.

Reporting requirements under section 115A of the Act shall not be fulfilled until such a report has been rectified.

FORFEITURE FOR NOT SUBMITTING REQUIRED REPORTS

27. If mineral exploration reports are not lodged as required under Section 115A(2), or the reports lodged do not meet the requirements of Section 115A(3), then those tenements are liable to forfeiture. In accordance with the Act:

Prospecting Licences are liable to forfeiture under **Section 96(2) (ba)**

Exploration Licences are liable to forfeiture under **Section 63A (ba)**

Mining Leases are liable to forfeiture under **Section 82(1) (g)**, and

Retention Licences are liable to forfeiture under **Section 70K (ba)**.

If a combined mineral exploration report on a tenement group is not submitted as required, then each individual tenement in the combined group will be liable to forfeiture 60 days after the anniversary of the date of that tenement.

Minister Responsible for the Mining Act 1978
C/- The Director, Geological Survey of Western Australia
Department of Industry and Resources
100 Plain Street
EAST PERTH WA 6004

Dear Sir/Madam,

COMBINED REPORTING REQUEST FOR A TENEMENT GROUP

New application Amendment (*Please tick*)

Name of tenement group/project: _____

Combined reporting date: _____ (Date for submitting report – must not be later than 90 days after the end of the reporting period)

Combined reporting period: _____ to _____ (Period covered in report)

Target commodity (tick box): Gold Iron ore Nickel/Cobalt Copper/Lead/Zinc
Diamond Mineral sand Other (specify) _____

Name of operator:

(Organization or person preparing and submitting report)

Address of operator: _____

Telephone Number: _____ **Contact Name:** _____

Consent is requested for the operator/holder to submit a combined mineral exploration report each year for the following group of mining tenements.

TENEMENT NUMBER

HOLDER

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

(Please attach list if there is insufficient space above)

A map showing the above tenement group and generalized geological boundaries is enclosed.

Where applicable, the following information is also attached (tick box):

Proof of common ownership (if operator is different from tenement holder and /or tenements are held in different names)

Justification if tenements are not contiguous

Justification of group size (required if group is more than 300 km² or more than 1000 km² in areas designated under section 57A(1)).

Yours faithfully

Date: _____

REQUIREMENTS FOR REPORTING MINERAL EXPLORATION INFORMATION

DECEMBER 2006

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SUMMARY

These “*Requirements for reporting mineral exploration information, December 2006*” are issued under Section 115 A of the Mining Act 1978.

They supersede two previous documents, namely the parts 24 to 67 of the “*Guidelines for mineral exploration reports on mining tenements, November 1995*” and the “*Requirements for the submission of mineral exploration information in digital format, third edition, February 2005*”

These *Reporting Requirements* are in two parts:

- (a) details of the content required in mineral exploration reports;
- (b) formats and data standards for the submission of mineral exploration information in digital format.

From the 1st October 2006 reporting in digital format is mandatory and must be in accord with the latest version of this document.

This document sets out the content and standards for the submission of digital data on mineral exploration activities in Western Australia and conforms to the minimum national standard within Australia. It addresses the current needs and future directions of digital data with respect to data transfer by requiring:

- (a) inclusion of metadata;
- (b) submission of data, including drilling and surface-sampling tabular data, in standard non-proprietary ASCII format.

Software to assist in generating compliant exploration data files is available free of charge from the Geological Survey of Western Australia. [The Mineral Exploration Reporting Templates \(MRT\)](#) software allows generation of the necessary metadata headers for drilling and geochemical data and a listing of all the files that comprise the report.

INTRODUCTION

A mineral exploration report shall consist of two parts:

- (a) A document generated in .pdf format containing a detailed description of all the exploration and/or mining activities undertaken on the tenement and claimed on the Form 5 Operations report. Plans and figures should be included in this document.
- (b) Tabular data, (drilling, surface sampling, geophysics) in standard tabular ASCII format with metadata information in a header within the file as detailed in this document.

CONTENT AND STANDARDS FOR MINERAL EXPLORATION REPORTS

GENERAL

- A1.** Reports shall be complete and internally consistent records of all geoscientific activities carried out and all data obtained on the mining tenements during the reporting period.
- A2.** **The activities described and data submitted in the mineral exploration report must substantiate in detail the expenditure/s claimed in the Form/s 5 Operations report.**
- A3.** Reports shall be submitted in digital format (**Notes A50 to A112**) on CD/DVD (**Notes A73 to A75**).
- A4.** Each report shall be accompanied by a verification report (**Notes A111 to A112**).

CONTENT

- A5.** Each report shall include the following:
- (a) Title page/DoIR bibliographic data sheet (**see Appendix 1 Example 1**);
 - (b) Contents list;
 - (c) Location map showing tenements with tie-in to Map grid of Australia or latitude and longitude;
 - (d) Table summarizing mineral exploration activities (**see Note A11**);
 - (e) Index map of exploration activities (**see Note A12**);
 - (f) Summary/Abstract (**see Note A10**);
 - (g) Conclusions and Recommendations;
 - (h) Brief description of regional and local geology;
 - (i) Text containing details of exploration activities (**see Notes A14 to A50**);
 - (j) Reference list;
 - (k) Appendices:
 - Tables of assay data)
 - Drill logs) (**see Notes A52 to A54**);
 - Tables of geophysical data)
 - Petrographic descriptions) (**see Notes A50 to A51**);
 - Photographs)
 - (l) Maps, plans, drill sections and other drawings (**see Notes A50 to A51**).

- A6.** Each report shall state clearly on the title page that the type of report is one of the following:
- (a) annual report;
 - (b) partial surrender report;
 - (c) surrender report.

A mineral exploration report **shall not** be described on the title page as “progress report”, or “summary report”, or “operations report”, or simply as “report”.

- A7.** Reports on separate mineral exploration activities, prepared by consultants, shall be submitted only as appendices to the annual report when the annual report is due: i.e. reports by consultants should not be submitted separately at various times during the reporting period prior to the due date of the annual report.

- A8.** Maps, plans and other illustrations shall be saved to .pdf format and clearly legible.

All maps and plans shall show the following:

- (a) Metric scale bar;
- (b) A north point, or other record of azimuth;
- (c) Datum of the map;
- (d) A tie-in to the Map Grid of Australia (Geocentric Datum of Australia 1994, GDA94).
Note that where a local grid is used then it must be tied into the Map Grid of Australia.

All geological maps and sections shall show, or shall be accompanied by, the following:

- (e) A clear and comprehensive legend, preferably using symbols corresponding to those on the relevant GSWA 1:250 000 or 1:100 000 geological maps;
- (f) All rock units clearly annotated.

TITLE PAGE/ DOIR BIBLIOGRAPHIC DATA SHEET

- A9.** The title page of each report, (**See Example 1, Appendix 1**), shall show the following:

- (a) Name of project/combined reporting group;
- (b) Tenement type and number (for report on single tenement);
or
Combined reporting number and tenement types and numbers (for combined reporting groups previously approved by the Minister);

- (c) Name of operator (organization or person preparing and submitting the report);
- (d) Name of major tenement holder;
- (e) Type of report (annual, partial surrender, surrender);
- (f) Report title;
- (g) Reporting period (period covered in the report);
- (h) Author;
- (i) Date report is written;
- (j) 1:250 000 map sheet and code;
- (k) 1:100 000 map sheet and code;
- (l) Target commodity;
- (m) Keywords;
- (n) Prospects drilled;
- (o) List of elements and compounds assayed;
- (p) Abstract/Summary.

SUMMARY/ABSTRACT

A10. The summary shall include the following: (See **Example 1, Appendix 1**)

- (a) **Location** of the project;
- (b) **Geology** — a brief description;
- (c) **Work done** — brief outline of the work carried out including a table of activities (see Note A11);
- (d) **Results** of the work;
- (e) **Conclusions**.

TABLE OF ACTIVITIES

A11. The table of activities (See **Note A10 above**) shall include a brief outline of work done during the reporting period and for combined reports shall also specify the particular tenements worked in a tenement group. Where surface sampling and drilling programs have been completed, then the table should show the number of samples taken / holes and metres drilled for each prospect or drilling area and a grand total for the tenement group.

All areas of exploration activities in the summary shall be shown on the “exploration index map” (see **Note A12**).

EXPLORATION INDEX MAP

A12. An index map (or maps) at an appropriate scale (e.g. 1:25 000, 1:50 000, 1:100 000) shall be included in each report to show the locations of areas where various exploration activities have been carried out during the reporting period.

Exploration index maps shall show the following areas as polygons:

- (a) Boundaries of tenements or tenement groups covered by the report;
- (b) Boundaries of areas covered by geological mapping (specify the various mapping scales used);
- (c) Boundaries of areas covered by drilling programs (specify type of drilling: DDH, RC etc.);
- (d) Boundaries of areas covered by geochemical surveys (specify type: soil, stream sediment, mineralogical activities e.g. heavy mineral and diamond indicators etc.);
- (e) Boundaries of areas covered by airborne and ground geophysical surveys (specify type: magnetics, gravity, SIROTEM etc.);
- (f) Boundaries of areas covered by aerial photography;
- (g) Position of identified mineral resources or pre-resource mineralization (**Notes A42 to A43**).

TEXT

- A13.** The text of each report shall be generated in .pdf format and shall include details of the various exploration activities undertaken, the specifications for which are in **Notes A14 to A45**.

GEOLOGICAL ACTIVITIES

- A14.** A brief description of the regional and local geology should be included in the report. Where mineralization is discovered then description of the mineralization, host rocks, structural controls etc should be included.
- A15.** The results of office-based activities such as data reviews, geological or geophysical interpretation, project evaluation, target generation and other desktop studies shall be reported if the costs have been claimed as mineral exploration expenditure on the Form 5.
- A16.** Where geological mapping has been carried out, then copies of the geological maps at the original scale of mapping should be included.
- A17.** Where raw data have been obtained from drilling programs (e.g. drill logs, assay values), they must be in tab delimited ASCII files with metadata headers (**see also Notes A36 to A39 and A76 to A110**).
- A18.** Details of petrographic or mineragraphic studies of surface samples or drill samples (core or cuttings) should be included. The locations of surface samples should be shown on geological plans, and the drill samples should be shown on drillhole location plans or sections.

REMOTE SENSING ACTIVITIES

- A19.** Flight diagrams and specifications of aerial photography shall be supplied (i.e. scale, black and white, colour, contractor, date flown etc.) as well as the location and ownership of original source data, in accordance with **Regulations 120 P, Q, R, S**.
- A20.** Specifications of other remote sensing surveys shall be supplied and the ownership, storage location and date of purchase of the original source data are to be reported.
- A21.** Results from remote sensing surveys, such as Landsat, airborne multispectral scanner and radar, shall be reported in the text of the report. Images produced should be submitted as a georeferenced digital file. Where appropriate, the individual bands included in each image and their colour allocation should be identified. A brief description of the processes used to develop the image should also be provided.
Original corrected source data in suitable digital format should also be supplied with format and metadata information.

GEOPHYSICAL ACTIVITIES

- A22.** Specifications of surveys and instruments, together with order of accuracy and units of measurement shall be provided so that another operator can extend or reinterpret the survey. Conversion factors shall be included for any units outside the SI system. Details of downhole geophysical logging should be included in the section of the report which deals with drilling programs (**see Note A37 (i)**).
- A23.** Date of survey and details of any contractor employed shall be included.
- A24.** A map of the area covered by the survey shall be included, showing the position of survey lines etc., and any cultural features (e.g. powerlines) that may affect the results.

- A25.** Basic data should be corrected and levelled, if appropriate, (and provided in ASCII format) together with contoured or appropriately processed maps (each with adequate tie-in to the ground and MGA coordinates).
- A26.** Reports on gravity surveys shall include a list of primary data for each gravity station and shall specify the methods and parameters used to calculate the Bouguer anomalies.
- A27.** Data from any regional airborne geophysical survey, referred to in **Section 155A of the Mining Act 1978**, should be submitted to the Department within a reasonable period after its completion. The public release of any such data shall be at the discretion of the Minister, with the written authorization of the operator or owner of these data (refer to latest version of Airborne Survey Reporting Policy in **Appendix 2**).

GEOCHEMICAL ACTIVITIES

- A28.** These shall be described in sufficient detail and in a format to allow the results to be used by a second operator.
- A29.** The sample locations preferably expressed as MGA coordinates, together with assay results, shall be reported in .txt files with metadata headers included in the files (**see Notes A52 to A54, A76 to A84, A88 to A 97**).
- A30.** The metadata header should include information about the sampling and assays methods: examples of which are given in (a) to (c) below but for precise details of all metadata required and the numbering system see Table 3. Version 3 Metadata File-Header Information:
- (a) Details of sampling procedures such as: material sampled, sample weight, depth of sampling, mesh size analysed, and sample type (e.g. rock chip, soil, stream sediment etc);
 - (b) Methods of sample preparation, including crushing and milling procedures and equipment;
 - (c) Methods of analysis, including:
 - (i) name of analytical laboratory;
 - (ii) elements, and/or compounds analysed;
 - (iii) extraction/digestion techniques, and
 - (iv) analytical methods specifying units of measurement, lower (and if possible upper) limit(s) of detection.
- A31.** Data should include analyses of field and laboratory duplicates (appropriately identified), standards and blanks.
- A32.** Data should include the laboratory reference or batch number.
- A33.** A map of the surveyed area showing sample locations (preferably on a MGA grid) shall be provided.

MINERALOGICAL ACTIVITIES

(Exploration for diamonds, heavy mineral sands etc.)

- A34.** Reporting requirements are the same as for geochemical activities (**Notes A28 to A33**).

In addition, details of the following shall be provided:

- (a) Mineralogy;
- (b) Analyses of indicator minerals and/or other minerals;
- (c) Results of bulk sampling.

SURVEY GRID ACTIVITIES

A35. Where a survey grid layout has been established as a location control for various exploration activities on the ground, then a grid plan should be included. The plan should show the grid orientation, the grid origin and their relationship to the Map Grid of Australia.

DRILLING ACTIVITIES

A36. Descriptions of drilling programs shall include precise locations of drillholes, which shall be shown on plans with adequate tie-in to tenement boundaries and the Map Grid of Australia (MGA).

A37. Information supplied in drill logs shall include the following:

- (a) Drillhole number;
- (b) MGA coordinates;
- (c) Azimuth, dip and length of each hole and method of downhole survey where applicable;
- (d) Drilling method (e.g. DDH, RC, AC, RAB etc) and drillrig type;
- (e) Date of hole completion;
- (f) Geological log showing thickness and nature of each rock type penetrated. Where rock codes are used for the rock type, then the legend to the codes must be included;
- (g) Drill sampling and sample splitting methods;
- (h) Results of assays, analyses and tests made on drill samples;
- (i) Results of geophysical and other downhole surveys;
- (j) Drilling difficulties record: collar blowout, lost circulation, broken ground, major water inflow;
- (k) Location (and ownership) of drillcore, following completion of the current drilling program.

A38. Hydrogeological information observed during drilling programs is an important source of data for the assessment and delineation of the State's water resources. Most of these data are recorded by the driller in his log book and should also be included in the drill logs and the Geological Event template (**see Notes A107 to A109**):

- (l) Aquifer type;
- (m) Depth to first water zone;
- (n) Depths to additional water zones;
- (o) Lithology or characteristics of the aquifer (fracture zone, rock jointing, oxidized zone, contact etc.);
- (p) Salinity of water;
- (q) Water analysis if carried out;
- (r) Yields;
- (s) Standing water levels after several hours of completion;
- (t) Hole completion details (i.e. cement plug, bore cap, foamit plug etc.).

A39. Geological interpretations from drilling programs should be shown on cross sections and/or longitudinal sections, and accompanied by an adequate geological legend.

A40. Tenement holders must notify the Director of the GSWA prior to disposing of any diamond drillcore to determine the importance of the core and whether it should be archived.

Donations of significant drillcore are encouraged and the selection criteria for the same are available at http://www.doir.wa.gov.au/documents/gsdrec_2002_14.pdf.

REHABILITATION

A41. It is a condition of granting of all mining tenement that surface drillholes are to be made safe after completion. Also, all surface disturbances made as a result of exploration (including costeans, drillpads, grid lines and access tracks) must be rehabilitated no later than 6 months

after excavation (unless otherwise approved by the Environmental Officer). If any exploration activities requiring rehabilitation have been carried out, then the report should include details of the progress made. The statement should list for each tenement, number, type and area (ha) of disturbances (costeans, drillholes etc.) and the state of rehabilitation (e.g. 26 holes were drilled and all have been securely plugged with permanent below-ground plugs and x hectares of disturbance have been rehabilitated including appropriate erosion control measures.).

MINERAL RESOURCES AND ORE RESERVES

- A42.** When estimates of mineral resources, or ore reserves, are first calculated, full details of these should be reported, together with accompanying plans and sections showing ore blocks and ore outlines, and included as a separate appendix or volume to the mineral exploration report. Later major revisions of mineral resources or ore reserves should also be reported in full. However, annual updates and small revisions of resource or reserve estimates may be provided in summary form (see **Note A46**).
- A43.** Reporting requirements for exploration results, mineral resources, or for ore reserves, shall be those recommended in the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, The JORC Code 2004 edition” as issued by the Joint Ore Reserves Committee of The Australian Institute of Mining and Metallurgy, Australian Institute of Geoscientists, and Minerals Council of Australia (JORC), in December 2004, or later versions of the JORC code as it is revised from time to time.

REPORTING OF MINING OPERATIONS

- A44.** Where mining operations are being carried out on Mining Leases, or Special Mining Leases where Mining Act reporting conditions apply, the above guidelines are supplemented or amended as follows in **Notes A45 to A49**.
- A45.** An **annual summary report** on the geology of the mine area shall be provided, together with appropriate maps and sections and descriptions of mineralization and ore controls. A section on mine development work should also be included.
- A46.** Identified mineral resources and/or ore reserves shall be reported annually in **summary form**, based on the recommendations of JORC on the reporting of mineral resources and ore reserves (see **Note A43**).
- A47.** Exploratory drillholes shall be reported in full, including repeat/twinhole, sterilization and water drilling. Grade-control drilling for the purpose of mine planning need not be reported unless such reports are specifically requested by the Department.
- A48.** A statement of the annual production figures should be included in the report.
- A49.** A full reference list of geological, geotechnical, metallurgical, geochemical, and geophysical investigations undertaken with respect to the mining operations during the year shall be supplied as part of the annual summary report (**Note A45**).

FORMAT AND DATA STANDARD SPECIFICATIONS

DATA TYPES

Table 1a. Acceptable formats for digital data (1)

<i>Data Type</i>	<i>Description</i>	<i>Format</i>	<i>Parameter</i>	<i>Suffix</i>
Report text*	Text, documents, figures, etc., previously provided only in hardcopy. Maps should be at original scale†	Portable document format (PDF) with thumbnails (e.g. Adobe Acrobat)	See Note A50 Normal+	.pdf
Maps, plans, figures#	Files of maps, plans, figures	PDF (preferred)	Normal+ See Note A51 Reproducible at 300 dpi, 24 bit	.pdf
Photographs not embedded in report text	Core photographs, aerial photographs, etc.	GEOTIFF/TIFF (colour) PDF JPEG PNG	Q>95, reproducible at 300 dpi	.tif .pdf .jpg .png
Tabular data	Point locations, geochemistry, heavy mineral, diamond indicator and drilling data	Delimited ASCII (preferably TAB delimited)	Standard as described in Notes A52 to A54 and Amira P431# or PPDM	.txt
GIS data	Data in GIS format	ESRI shape files MapInfo tab files	See Notes A55 to A56	.shp .tab
Video clips	Fly-throughs, etc	Video standards MPEG AVI	See Note A57	.mpg .avi
3D models	3D model data	Proprietary formats accepted e.g. Vulcan, Surpac, Datamine	See Note A58	

* Where possible the complete report should be submitted as a single PDF file

PDF files should be created from the original plot file.

REPORT TEXT

A50. Documents, including figures, tables and appendices, must be submitted in PDF format (e.g. Adobe Acrobat), 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.

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>.

MAPS, PLANS, FIGURES AND PHOTOGRAPHS

A51. Those not embedded in report text must also be submitted in .pdf format. Refer to Table 1a.

TABULAR DATA

A52. These data include point locations, geochemistry, diamond indicator and heavy mineral sands observations, and drilling data. Data will be submitted as delimited ASCII files with a suffix of .txt. File format details are provided in **Notes A70 and A72 and Examples 2 to 7, Appendix 1.**

A53. 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 such as authority/lookup tables) may have to be submitted as a series of “linked” flat files with linkages appropriately documented.

A54. Where possible, formats have been devised using existing standards in industry such as SDTS, UKOOA and ANZLIC. Where relational standards are in existence such as PPDM and AMIRA P431, the format has been structured to allow easy importation of data to systems running on those standards.

GIS DATA

A55. Currently, no one international standard exists for data in GIS format. However, the preferred formats are ESRI shape files (SHP) and MapInfo tab files (TAB).

A56. Where practical the symbology of the GIS displayed data should be provided (e.g. ESRI’s layer files (LYR) or legend file (AVI) or for MapInfo’s workspace file (WOR).

VIDEO CLIPS

A57. Until such time as there is industry or international standards, proprietary formats will be accepted. Current preferred formats are MPEG or AVI.

3D MODELS

A58. Until such time as there is industry or international standards, proprietary formats will be accepted.

GEOPHYSICAL DATA (other than seismic)

A59. These data include magnetic, gravity, radiometric and electromagnetic (including TEM and SIROTEM) surveys. For both raw and processed located data, fixed column ASCII with descriptions is the preferred format, but the standard ASEG GDF2 format is also acceptable. Gridded data should be submitted in either ASEG GXF or ER Mapper gridded format. If the original data are in a different format, then please contact the geophysical data officer on (08) 9222 3154.

GEOPHYSICAL AND OTHER REMOTELY SENSED IMAGES

A60. These are primarily derived from geophysical surveys and include magnetic and gravity images. The submission of images does not exempt companies from submission of the located 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. These should be submitted as PDF, TIFF, or EPS files.

Table 1b. Acceptable formats for digital data (2)

<i>Data Type</i>	<i>Description</i>	<i>Format</i>	<i>Parameter</i>	<i>Suffix</i>
Geophysics (other than seismic)	Located raw and processed (corrected and levelled) data	Fixed column ASCII with description and processing report	Includes ASEG GDF2 See Note A59	.dat, .asc .gdf
Geophysical and other remotely sensed images	Images derived from geophysical / remote sensing surveys (e.g. TMI, Bouguer, radiometrics, Landsat 5 or 7)	GEOTIFF/TIFF (colour) TIFF (greyscale) Compressed ER Mapper JPEG GIF PDF EPS PNG	Reproducible at 300 dpi, 24 bit. Reproducible at 300 dpi, 8 bit Best quality (least loss) Quality as above, 8 bit See Note A60	.tif .tif ecw .jpg .gif .pdf .eps .png
Seismic data (refer to Petroleum data submission guidelines for further information, www.doir.wa.gov.au)	Raw and processed data	SEG Y	See Notes A61 to A65	.sgy
	Navigation data	UKOOA P1/90	See Note A64	.uka
	Processed sections	PDF TIFF CGM+ format with metadata (line number, shotpoint number) Geophysical image formats as above	See Note A65	.pdf .tif .cgm .tif, .jpg, .gif, .pdf,
Petrophysical and geophysical log data (refer to Petroleum data submission guidelines for further information, www.doir.wa.gov.au)	Raw and processed wireline and MWD data	DLIS, LIS, LAS, delimited ASCII (format must be explained), WELLOGML (POSC standard)	As defined by latest Industry Standard See Note A67	.dlis .lis .las .asc .xml
	Log plots	PDF TIFF (colour) TIFF (greyscale) JPEG GIF PDS Metafile	Normal+ See Note A68 Quality as above Quality as above Quality as above	.pdf .tif .tif .jpg .gif .pds .mta
	Processed downhole velocity data	SEG Y	See Note A69	.sgy

SEISMIC DATA

- A61.** Refer to Petroleum data submission guidelines at <http://www.doir.gov.au> for further details on this section.
- A62.** International standards exist for seismic data and compliance with the following formats is required:

Raw and processed data

A63. This is required as SEG standard SEG Y with file names including the survey name and line number where appropriate.

Navigation data

A64. This will be submitted as a complete UKOOA P1/90.

Processed sections

A65. These will be submitted as TIFF or PDF or CGM+ complete with side panel information with the line number included within the file name. Images of processed sections may use geophysical image formats specified in Table 1b.

PETROPHYSICAL AND GEOPHYSICAL LOG DATA

A66. Data submitted for these logs must comply with the following standards:

Raw and processed wireline and MWD data

A67. DLIS, LIS, LAS, delimited ASCII or WELLOGML (POSC standard) formats.

Log plots

A68. One of PDF, TIFF, JPEG, GIF, PDS or MTA formats should be used.

Processed downhole velocity data

A69. SEG Y format, with the well name as part of the file name.

RECOMMENDED FILE NAMING CONVENTION

A70. DoIR recommends operators submit digital data using the following file naming convention. The file name should be no longer than 20 characters excluding the suffix.

A71. The **Report file** should include the following elements (see Table 2 for examples):

- the project initials, tenement or combined report number (e.g. Kryptonite project or E63-200 or C316-99);
 - type of report (e.g. A-annual, P-partial, S-surrender);
 - year of report (e.g. 2004);
 - the file extension (e.g. .pdf).

A72. The **Tabular data files** should include the following elements (see Table 2 for examples):

- project initials (e.g. KP);
- template name (e.g. WASL3);
- data type initials (e.g. COLL—collar, ASS—assays, SUR—survey, GEO—lithology, WATER—water);
- year of report (e.g. 2004);
- type of report (e.g. A-annual, P-partial, S-surrender).

Table 2. Examples of the file-naming convention

<i>Description of file</i>	<i>Name of project, title or combined reporting number</i>	<i>File name</i>
Suggested file names for reports		
Kryptonite 2004 Annual Report	Kryptonite project	KP_2004A.pdf
Annual report for a tenement	E63/200	E63_200_2004A.pdf
Partial surrender report for a tenement	E63/200	E63_200_2004P.pdf
Surrender report for a tenement	E63/200	E63_200_2004S.pdf
Annual report for a combined reporting group	C316/99	C316_99_2004A.pdf
Suggested file names for tabular data		
Drilling location file for 2003/2004 data	Kryptonite project	KP_WASL3_COLL2004A.txt
Geochemical analysis for the above drillholes	Kryptonite project	KP_WADG3_ASS2004A.txt
Downhole survey data for the above drillholes	Kryptonite project	KP_WADS3_SURV2004A.txt
Downhole geological data for above drillholes	Kryptonite project	KP_WADL3_GEO2004A.txt
Surface sampling data including geochemistry and mineralogical data	Kryptonite project	KP_WASG3_SURF2004A.txt
Data on water intersected whilst drilling	Kryptonite project	KP_WADL3_WATER2004A.txt
Geological codes for downhole lithologies	Kryptonite project	SmallTimeLithCodes.pdf

ACCEPTABLE MEDIA AND FORMAT

A73. The Department will accept data on the following media:

- CD, closed session;
- DVD, closed session.

A74. The media must be readable in a 32-bit Windows (NT, 2000, XP) environment. A digital backup copy of the digital data submitted to the Department should be kept by the tenement operator for at least a year to cover the possibility of data corruption in transferring the data to the Department.

MEDIA LABELLING

A75. The media (discs) submitted to the Department must be labelled with the following information both on the disc itself and on the cover:

- company name;
- project name/tenement number;
- type of report;
- year.

DATA STANDARD SPECIFICATIONS — TABULAR DATA, METADATA AND TEMPLATES

- A76.** Metadata are defined as “data about data” and should provide sufficient information about a dataset for it to be used again. 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.
- A77.** Metadata are to be presented in a file header at the top of the file of related tabular data. Details of the metadata file headers (“templates”) are in the following sections. The Mineral Exploration Reporting Templates (MRT) software allows generation of the necessary metadata headers for the drilling and geochemical data and a listing of all the files that make up the report. Copies of this software may be downloaded free of charge from DoIR's web site at <http://mapserver.doir.wa.gov.au/datacentre>. Compliant files of tabular data can be modified manually using any text editor.

Refer to Notes A76 to A112 and Examples 2 to 7, Appendix 1 for detailed explanations of tabular data formats for submission.

FILE HEADER FORMAT

- A78.** The required file header format has a generic numbering format for flexibility.
- A79.** The file header will be tab-delimited ASCII placed at the top of the data file.
- A80.** The main rules with these file headers are:
- The header number/line identifier (e.g. “H0100”) and header field title (e.g. “Tenement_No.”) are mandatory for data supplied and will be placed in the first and second columns respectively. Exceptions are the H1000 series in which only the header number appears (e.g. H1000 followed by the data field names e.g. Hole_ID, MGA_N, MGA_E etc.).
 - Header data fields will be tab delimited and allow for several separate pieces of information for each header type where necessary.
 - The numbering system detailed in Table 3 must be strictly adhered to as this is now a national numbering system and some numbers have been reserved.
 - Care should be taken that the delimiter used is not embedded in any of the fields.
 - 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 collar file of type SL3).
 - Where a piece of metadata is unknown, state “not known” rather than leave a blank space.
- A81.** Users may add specific data fields to the mandatory fields in the data section of any template file. This will require addition of header fields to the H1000 series.

Table 3. Version 3 metadata file-header information

This table gives examples of how the metadata can be completed.

Explanation in italics

<i>Header number</i>	<i>Header field title</i>	<i>Examples of values</i>
H0000		
H0001		
H0002	Version (<i>of digital reporting guidelines</i>)	3
H0003	Date_generated	15-Apr-2004
H0004	Reporting_period_end_date	28-Feb-2004
H0005	State	WA
H0100	Tenement_no or Combined_rept_no (<i>when Combined_rept_no is used, a listing of all tenements under the combined reporting number 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>)	E70/314 or C316_04
H0101	Tenement_holder	Big Time Mining
H0102	Project_name	Kryptonite
H0106	Tenement_operator	Small Time Mining
H0150	250K_map_sheet_number (<i>covered by data</i>)	SH5109
H0151	100K_map_sheet_number (<i>covered by data</i>)	3036, 3136
H0152	50K_map_sheet_number	3036 2, 3136 3
H0153	25K_map_sheet_number	
H0200	Start_date_of_data_acquisition	01-Mar-2003
H0201	End_date_of_data_acquisition	28-Feb-2004
H0202	Template_format	SL3
H0203	Number_of_data_records (<i>in this file</i>)	7
H0204	Date_of_metadata_update	15-Apr-2004

continued

Table 3. Version 3 metadata file-header information (cont.)

Header number	Header field title	Examples of values
<i>H0300 onwards</i>	Related_data_filenames (<i>pointers to other files directly related to this file</i>)	<i>Title only, no file name in this record</i>
H0301	Location_data_file (<i>H0301 should always contain the name and type of the file in which it is contained as a check against inadvertent file-name changes</i>)	KP_WASL3_COLL2004A.txt
H0302	Lithology_data_file	KP_WADL3_GEO.2004A.txt
H0303	Assay_data_file	KP_WADG3_ASS2004A.txt
H0304	Survey_data_file	KP_WADS3_SURV2004A.txt
H0307	Lithology_code_file	SmallTimeLithCodes.pdf
H0308	File Verification List	KP_Verification_List
H0310	Water_data_file	KP_WADL3_WATER.txt
H0311	Water data included in lithology file	Yes/No
H0312	Data_dictionary_file	KP_drilldict.txt
H0313	Alteration_data_file	KP_WADL3_Alteration.txt
H0314	Magsusc_data_file	KP_mag.txt
H0315	Vein_data_file	KP_WADL3_vein.txt
H0316	Recovery_data_file	KP_rec.txt
H0317	Weathering_data_file	KP_WADL3_weather.txt
H0318 onward	Other_data_files (<i>name appropriate to file content and numbering to be confirmed with GSWA if additional files are required</i>)	KP_Other_data_file
H0400	Drill_code (<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>)	RAB, AC, RC, DD
H0401	Drill_contractor (<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
H0402	Description (<i>describe the drilling codes in the order they are shown in the H0400 record</i>)	RAB: rotary air blast, AC: aircore, RC: reverse circulation DD: diamond drilling

continued

Table 3. Version 3 metadata file-header information (cont.)

<i>Header number</i>	<i>Header field title</i>	<i>Examples of values</i>
H0500	Feature_type	Hole_collar, Sample point
H0501	Geodetic_datum	GDA94
H0502	Vertical_datum (if an arbitrary vertical datum has been used then this must be stated)	AHD, Arbitrary RL500, Nominal
H0503	Projection (detailed as at right for a projected coordinate system—“None” for a geographic coordinate system.)	UTM MGA
H0508	Local_grid_name	Neutron grid
H0530	Coordinate_system [Geographic/Projected]	Projected
H0531	Projection_zone (blank 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)	50, 51
H0532	Surveying_instrument (where more than one 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)	DGPS, single shot, multishot, gyro
H0533	Surveying_company	Super Surveying Pty Ltd
H0600	Sample_code	Ssed, RAB, DD, COST
H0601	Sample_type	Stream: Ssed, RAB chips: RAB, DD: Diamond core, Cost: Costean
H0602	Sample_description (describe field and pre-lab dispatch sampling methods)	Quarter core, half splits of cuttings
H0700	Sample_preparation_code (codes used for laboratory sample preparation for assaying)	S031
H0701	Sample_preparation_details (description of lab sample preparation for each code. Where more than one laboratory is specified in H0801, list sample preparation details in order of H0801 lab listing, assuming one sample preparation method per laboratory. If more than one sample preparation method is used per laboratory, this should be indicated in metadata header and in H01000 series)	S031: Fines pulverize to 75µm
H702	Job_no (laboratory job number. Where more than one laboratory is used, show job numbers in the order corresponding to the laboratories in H0801)	G37215, ADL20406

continued

Table 3. Version 3 metadata file-header information (cont.)

<i>Header number</i>	<i>Header field title</i>	<i>Examples of values</i>
H0800	Assay_code (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)	FA50, IC587, AAS
H0801	Assay_company (name and location of laboratory. 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.)	PLP: Phlogiston Laboratories, Perth
H0802	Assay_description (description of assay process in order of codes specified in H0800)	FA50: Aqua regia digest, Fire assay determination, IC587: HClO₄ + HNO₃ + HF digest, Inductively coupled plasma mass spectrometry determination, AAS: HClO₄ + HNO₃ + HF digest, Atomic absorption spectrometry determination
H0900	Comments (free text comments and remarks, enclosed in quotes)	
	<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 and so on.</i>	
H1000	(Data field names)	MGAE, Au1, Cu, Zn
H1001	(Units of measure for each dimensioned field — ensure that a delimiter is present as a placeholder for fields where this is null)	M: metres, ppb: parts per billion, ppm: parts per million, %: percent
H1002	(Assay_code — specify for each analyte)	FA50
H1003	(Lower detection limit as units specified in H1001)	0.01
H1004	(Accuracy — specify for each dimensioned field using the units in H1001)	0.01
H1005	(Upper detection limit as units specified in H1001)	1000
H1006	(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)	P
H1007	(Assay_company_ID: where more than one laboratory is used, a code specified in H0801 identifies assay_code against laboratory)	ALS
D	(Data)	

DESCRIPTION OF FILE TEMPLATES FOR TABULAR DATA

- A82.** All headers require the “Header No”, e.g. “H0100”, to appear in the first field (column) of each header row to enable transcription software to upload the metadata correctly.
- A83.** The underlying data records require the character “D” in the first field to allow transcription software to distinguish the data itself from the metadata on upload.
- A84.** An end of file marker “EOF” must immediately follow the last data record as the final line of the file.

WASL3: HOLE COLLAR TEMPLATE

A85. Location_data_file: Data file for drillhole collars

See Example 2, Appendix 1

Drillhole collar locations require the statement of geodetic datum, coordinate system, projection and spatial accuracy as crucial components of the metadata as well as the drilling and survey details of the holes.

A86. Where a local grid has been used, MGA coordinates must be included in the data as well as the local grid coordinates.

A87. Possible related files:

Lithology_data_file (WADL3)

Assay_data_file (WADG3)

Survey_data_file (WADS3)

WASG3: SURFACE SAMPLING TEMPLATE

A88. Surface_data_file: Data file for surface sampling including surface geochemistry, heavy mineral and diamond indicator mineral sampling.

See Example 3, Appendix 1

A89. A file of surface sampling data should contain both location and assay data and will therefore require metadata on both the spatial and analytical components. Spatial metadata are treated as in the WASL3 header template. The Header Numbers H0600, H0700 and H0800 series contain metadata related to sample collection, preparation, and analysis respectively. H1002, H1003, H1005, H1006 and H1007 are used for analytical metadata.

A90. 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.

A91. 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").

A92. When an analyte was not assayed for a particular sample, it should be shown in the data record as null or not assayed "na".

A93. Each file must be consistent in its usage of "below detection limit" and "not assayed".

A94. Assay results should be tabulated as chemical symbols of elements and then compounds in alphabetical order (e.g. Ag, Au, Cr, Cu, Al₂O₃, SiO₂, etc).

A95. Analyses of field and laboratory duplicates, standards, and blanks should be included in the data. Sample type, codes such as "Std" for standards, "Dup" for duplicates or "Blk" for blanks for quality assurance should be included in the H1000 series at the end of each row of data.

A96. Laboratory reference and batch number should be included in the H1000 series at the end of each row of data.

A97. Possible related file:

Lithology_code_file (WADL3) when lithology is specified for each sample.

WADG3: DOWNHOLE GEOCHEMISTRY TEMPLATE

A98. Assay_data_file: Data file for downhole geochemistry, heavy mineral and diamond indicator sampling.

See Example 4, Appendix 1

- A99.** In the WADG3 file, only the drillhole identifier, sample code, downhole interval and assay data are required for each sample in the data records, with pointers to the relevant location_data_file(s).
- A100.** Assay results should be tabulated as chemical symbols of elements and then compounds in alphabetical order (e.g. Ag, Au, Cr, Cu, Al₂O₃, SiO₂).
- A101.** Analyses of field and laboratory duplicates, standards, and blanks should be included in the data. Sample type, codes such as “Std” for standards, “Dup” for duplicates or “Blk” for blanks for quality assurance should be included in the H1000 series at the end of each row of data.
- A102.** Laboratory reference and batch number should be included in the H1000 series at the end of each row of data.
- A103. Possible related files:**
Location_data_file (WASL3)
Lithology_data_file (WADL3) when lithology is specified for each sample
Survey_data_file (WADS3) when drillhole has been surveyed downhole

WADS3: DOWNHOLE SURVEY TEMPLATE

- A104. Survey_data_file:** Data file for downhole directional surveys.

See Example 5, Appendix 1

- A105.** H1001 should include the datum for the azimuth as a suffix to the units of measurement, that is Azimuth_Mag (Magnetic), Azimuth_True, Azimuth_Grid.
- A106. Possible related files:**
Location_data_file (WASL3)
Lithology_data_file(WADL3)
Assay_data_file(WADG3)

WADL3: GEOLOGICAL EVENT TEMPLATE

- A107. Lithology_data_file:** Data files for downhole geological events including lithological/regolith logs, watertable data, structure, alteration, etc.

See Example 6, Appendix 1

- A108.** Only the drillhole numbers, depth intervals, and geological event data are required in this file, with pointers to the relevant location, assay, survey, and lithology_code files. As most lithologies are presented as geological codes, a lithology_code_file showing the abbreviated code against the full lithology name must also be provided.
- A109.** Where water is intersected in the drillholes, details of the depth to water, and an estimate of the water flow and the water quality should preferably be included in a water_data_file or otherwise included in the lithology_data_file, with a note in H0311 of the metadata that hydrological data are included in the lithology file.
- A110. Possible related files:**
Location_data_file (WASL3)
Lithology_code_file
Assay_data_file WADG3)
Survey_data_file (WADS3)
Water_data_file (WADL3)

VERIFICATION REPORT

A111. A 3-page verification report should accompany the digital data. This will include:

- (a) DoIR bibliographic data sheet;
- (b) Exploration index map(s);
- (c) File-verification list comprising a list of all digital files submitted as part of the report, including the file type and format (using Verification List Form as in **Example 7, Appendix 1**).

VL3: FILE-VERIFICATION LIST TEMPLATE

A112. Table 2 and Example 7, Appendix 1 show the manner in which file verification data are to be presented as well as the file names that should be used wherever possible.

CONTACTS

Enquiries regarding the submission of digital data should be directed to:

Ms Ann Fitton, senior geologist review: phone 61 8 9222 3840
Facsimile: 61 8 9222 3893
Email: statdata@doir.wa.gov.au

DELIVERY ADDRESS

Address all reports and data to the attention of the “Statutory Exploration Information Group” and then either mail or deliver to:

The Director
Geological Survey of WA
Department of Industry and Resources
100 Plain Street
East Perth WA 6004

REFERENCES

AUSIMM, 2004, Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code (2004 Edition).

DoIR, 2006, Guidelines for the Donation and Acquisition of Mineral Drillcore – Version 1.

DoIR, 2002, Guidelines for the Protection of Surface and Groundwater Resources during Exploration Drilling.

APPENDIX 1

EXAMPLES OF TEMPLATES AND FORMS

EXAMPLE 1: TITLE PAGE AND DOIR BIBLIOGRAPHIC DATA SHEET

Project Name: Kryptonite

Combined Reporting Number: C1999/999

Tenement Numbers: E77/2500–E77/2509, M77/120–M77/134, P77/1234–P77/1240,

Tenement Operator Small Time Minerals NL

Tenement Holder: Big Time Minerals Ltd

Report Type: Annual

Report Title: Annual report for the period 1 January 2005 to 31 December 2005, Kryptonite Project, E77/2500–E77/2509, M77/120–M77/134, P77/1234–P77/1240,

Report Period: 1 January 2005 – 31 December 2005

Author: C. H. Jones

Date of report: 25 January 2006

1:250 000 map sheet: Cue SG 50-15
1:100 000 map sheet: Cue 2443

Target Commodity: Au, Ni

Keywords: Geological mapping, aeromagnetic interpretation, soil and rock-chip sampling, RAB drilling

Prospects drilled: Finch, Swallow

List of Assays: As, Au, Co, Cr, Cu, Ni, Pb, Zn, Cr₂O₃, P₂O₅. (Alphabetical)

ABSTRACT:

Location: The Kryptonite project was 100 km south of the town of Cue in the Murchison Goldfield on the Cue 1:250,000 and 1:100,000 map sheets.

Geology: The project covered part of the Meekatharra – Mt Magnet greenstone belt. The main rock types in the area comprised banded iron-formation, basalt, komatiite, dolerite, and andesite.

Work done: Exploration in 2005 comprised geological mapping, aeromagnetic interpretation, soil (96 samples) and rock-chip (18 samples) sampling, and RAB drilling (35 holes-650 m).

Results: The RAB drilling tested 2 anomalous areas, the Finch and Swallow where the best intersections were 2 m @ 1.4 g/t Au from 18 m in hole F018, and 3 m @ 1.2 g/t Au from 25 m in hole SW025.

Conclusions: The results were encouraging, and further drilling was planned.

EXAMPLE 2: HOLE COLLAR TEMPLATE - KP_WASL3_COLL2004A.txt

H0002	Version	3						
H0003	Date_generated	19-Jan-05						
H0004	Reporting_period_end_date	28-Feb-04						
H0005	State	WA						
H0100	Tenement_no/Combined_rept_no	E70/314						
H0101	Tenement_holder	Big Time Mining Ltd						
H0102	Project_name	Kryptonite						
H0106	Tenement_operator	Small Time Mining NL						
H0150	250K_map_sheet_number	SH 51-9						
H0151	100K_map_sheet_number	3036				3136		
H0152	50K_map_sheet_number							
H0153	25K_map_sheet_number							
H0200	Start_date_of_data_acquisition	01-Mar-03						
H0201	End_date_of_data_acquisition	28-Feb-04						
H0202	Data_format	SL3						
H0203	Number_of_data_records							
H0204	Date_of_metadata_update	19-Jan-05						
H0301	location_data_file	KP_WASL3_COLL2004A.txt						
H0302	lithology_data_file	KP_WADL3_GEO2004A.txt						
H0303	assay_data_file	KP_WADG3_ASS2004A.txt						
H0304	survey_data_file	KP_WADS3_SUR2004A.txt						
H0307	lithology_code_file	SmallTimeLithcodes.pdf						
H0310	water_data_file	KP_WADL3_Water.txt						
H0312	data_dictionary_file	SmallTime_data_dictionary.pdf						
H0313	alteration_data_file	KP_WADL3_ALT2004A.txt						
H0314	magsusc_data_file	KP_WADL3_Magsus.txt						
H0317	weathering_data_file	KP_WADL3_weather.txt						
H0400	Drill_code	AC					RC	
H0401	Drill_contractor	Drill Faster Pty Ltd					Drill Well Pty Ltd	
H0402	Description	Aircore Drilling					Reverse Circulation Drilling	
H0500	Feature_located	Drillhole collar						
H0501	Geodetic_datum	AGD84						
H0502	Vertical_datum	AHD						
H0503	Projection	Universal Transverse Mercator (UTM)						
H0508	Local_grid_name							
H0530	Coordinate_system	Projected						
H0531	Projection_zone	51						
H0532	Surveying_instrument	GPS						
H0533	Surveying_company	Small Time Mining NL						
H0900	Remarks							
H1000	Hole_id	Total_depth	Elevation	MGA_N	MGA_N	Drill_code	Dip	Azimuth_mag
H1001		metres	metres	metres	metres		degrees	degrees
H1004		1	1	1	1		1	1
D	KPAC001	2	320	6589600	392200	AC	90	270
D	KPRC002	24	320	6589600	392300	RC	90	270
D	KPAC003	4	320	6589600	392400	AC	90	270
D	KPAC004	2	320	6589200	392300	AC	90	270
D	KPAC005	9	320	6589200	392400	AC	90	270
D	KPRC006	23	320	6588800	391700	RC	90	270
D	KPRC007	28	320	6588800	391800	RC	90	270
D	KPAC008	12	320	6588800	391900	AC	90	270
D	KPAC009	11	320	6588800	392000	AC	90	270
D	KPAC010	5	320	6588800	392100	AC	90	270
EOF								

EXAMPLE 3: SURFACE GEOCHEMISTRY TEMPLATE - KP_WASG3_SURF2004A.txt

```

H0002 Version 3
H0003 Date_generated 19-Jan-05
H0004 Reporting_period_end_date 28-Feb-04
H0005 State WA
H0100 Tenement_no./Combined_rept_no. E70/314
H0101 Tenement_holder Big Time Mining Ltd
H0102 Project_name Kryptonite
H0106 Tenement_operator Small Time Mining NL
H0150 250K_map_sheet_number SH 51-9
H0151 100K_map_sheet_number 3036 3136
H0152 50K_map_sheet_number
H0153 25K_map_sheet_number
H0200 Start_date_of_data_acquisition 01-Mar-03
H0201 End_date_of_data_acquisition 28-Feb-04
H0202 Data_format SG3
H0203 Number_of_data_records 6
H0204 Date_of_metadata_update 19-Jan-05
H0500 Feature_located Surface location
H0501 Geodetic_datum AGD84
H0502 Vertical_datum AHD
H0503 Projection Universal Transverse Mercator (UTM)
H0531 Projection_zone 51
H0532 Surveying_instrument GPS
H0533 Surveying_company Small Time Mining NL
H0600 Sample_code SOI
H0601 Sample_type SOI:Soil
H0602 Sample_description Soil sample
H0700 Sample_preparation_code SO31
H0701 Sample_preparation_details SO31:Pulverise to 75um
H0702 Job_no G37216
H0800 Assay_code AR
H0801 Assay_company Phlogiston Labs
H0802 Assay_description Aqua regia digest, atomic absorption determination
H0900 Remarks minus sign indicates below detection
H1000 Sample_ID Sample_Code MGA_N MGA_E Ag As Au Cu Ni Pb Zn
H1001 metres metres ppm ppm ppb ppm ppm ppm ppm ppm
H1002 AR AR AR AR AR AR AR AR AR AR
H1003 0.1 5 1 1 1 1 1 1 1
H1004 1 1 0.1 5 1 1 1 1 1 1
H1005
H1006 P P P P P P P P
H1007
D KPS005 Soil 6591197 390447 -0.1 7 3 28 78 5 31
D KPS006 Soil 6591197 390399 -0.1 5 2 25 65 6 40
D KPS007 Soil 6591200 390349 -0.1 13 3 23 513 9 40
D KPS008 Soil 6591193 390311 -0.1 12 4 26 602 7 36
D KPS009 Soil 6591200 390248 -0.1 10 8 24 526 8 35
D KPS010 Soil 6591201 390196 -0.1 12 5 23 542 7 35
EOF

```

EXAMPLE 4: DOWNHOLE GEOCHEMISTRY TEMPLATE - KP_WADG3_ASS2004A.txt

H0002	Version			3						
H0003	Date_generated			19-Jan-05						
H0004	Reporting_period_end_date			28-Feb-04						
H0005	State			WA						
H0100	Tenement_no/Combined_rept_no.			E70/314						
H0101	Tenement_holder			Big Time Mining Ltd						
H0102	Project_name			Kryptonite						
H0106	Tenement_operator			Small Time Mining NL						
H0150	250K_map_sheet_number			SH 51-9						
H0151	100K_map_sheet_number			3036	3136					
H0152	50K_map_sheet_number									
H0153	25K_map_sheet_number									
H0200	Start_date_of_data_acquisition			01-Mar-03						
H0201	End_date_of_data_acquisition			28-Feb-04						
H0202	Data_format			DG3						
H0203	Number_of_data_records			6						
H0204	Date_of_metadata_update			19-Jan-05						
H0301	location_data_file			KP_WASL3_COLL2004A.txt						
H0302	lithology_data_file			KP_WADL3_GEO2004A.txt						
H0303	assay_data_file			KP_WADG3_ASS2004A.txt						
H0304	survey_data_file			KP_WADS3_SUR2004A.txt						
H0307	lithology_code_file			SmallTimeLithcodes.pdf						
H0310	water_data_file			KP_WADL3_Water.txt						
H0312	data_dictionary_file			SmallTime_data_dictionary.pdf						
H0313	alteration_data_file			KP_WADL3_ALT2004A.txt						
H0314	magsusc_data_file			KP_WADL3_Magsus.txt						
H0317	weathering_data_file			KP_WADL3_Weather.txt						
H0400	Drill_code			AC	RC					
H0401	Drill_contractor			Drill Faster Pty Ltd	Drill Well Pty Ltd					
H0402	Description			Aircore Drilling	Reverse Circulation Drilling					
H0600	Sample_code			ACC						
H0601	Sample_type			ACC:AC Chips						
H0602	Sample_description			Aircore chips						
H0700	Sample_preparation_code			SO31						
H0701	Sample_preparation_details			SO31:Fine pulverise to 75um						
H0702	Job_no			G37215						
H0800	Assay_code			AR	BLEG					
H0801	Assay_company			Phlogiston Laboratories- PH	Brimstone Laboratories - BR					
H0802	Assay_description			Aqua regia digest atomic absorption determination	Bulk cyanide leach extractable gold					
H0900	Remarks			na - sample not assayed, below level of detection indicated by a minus sign						
H1000	Hole_id	From	To	Drill_Code	Ag	As	AuAR	AuAR1	AuBLEG	Zn
H1001		metres	metres		ppm	ppm	ppb	ppb	ppb	ppm
H1002					AR	AR	AR	AR	BLEG	AR
H1003					0.1	5	1	1	1	1
H1004		1	1		0.1	5	1	1	1	1
H1005										
H1006					P	P	P			P
H1007					PHL	PHL	PHL	PHL	BR	PHL
D	KPAC001	0	4	AC	-0.1	-5	1	na	1	13
D	KPAC001	4	8	AC	-0.1	-5	1	-1	-1	8
D	KPAC001	8	12	AC	-0.1	-5	2	2	1	27
D	KPRC002	0	4	RC	-0.1	-5	-1	na	-1	12
D	KPRC002	4	8	RC	-0.1	-5	48	46	50	372
D	KPRC002	8	12	RC	-0.1	-5	5	na	na	16
D	EOF									

EXAMPLE 5: DOWNHOLE SURVEY TEMPLATE - KP_WADS3_SUR2004A.txt

H0002	Version	3				
H0003	Date_generated	19-Jan-05				
H0004	Reporting_period_end_date	28-Feb-04				
H0005	State	WA				
H0100	Tenement_no./Combined_rept_no.	E70/314				
H0101	Tenement_holder	Big Time Mining Ltd				
H0102	Project_name	Kryptonite				
H0106	Tenement_operator	Small Time Mining NL				
H0150	250K_map_sheet_number	SH 51-9				
H0151	100K_map_sheet_number	3036				3136
H0152	50K_map_sheet_number					
H0153	25K_map_sheet_number					
H0200	Start_date_of_data_acquisition	01-Mar-03				
H0201	End_date_of_data_acquisition	28-Feb-04				
H0202	Data_format	DS3				
H0203	Number_of_data_records	8				
H0204	Date_of_metadata_update	19-Jan-05				
H0301	location_data_file	KP_WASL3_COLL2004A.txt				
H0302	lithology_data_file	KP_WADL3_GEO2004A.txt				
H0303	assay_data_file	KP_WADG3_ASS2004A.txt				
H0304	survey_data_file	KP_WADS3_SUR2004A.txt				
H0307	lithology_code_file	SmallTimeLithcodes.pdf				
H0310	water_data_file	KP_WADL3_Water.txt				
H0312	data_dictionary_file	SmallTime_data_dictionary.pdf				
H0313	alteration_data_file	KP_WADL3_ALT2004A.txt				
H0314	magsusc_data_file	KP_WADL3_Magsus.txt				
H0317	weathering_data_file	KP_WADL3_Weather.txt				
H0400	Drill_code	AC				RC
H0401	Drill_contractor	Drill Faster Pty Ltd				Drill Well Pty Ltd
H0402	Drill_description	Aircore Drilling				Reverse Circulation Drilling
H0502	Vertical_datum	AHD				
H0532	Surveying_instrument	Single shot camera - SS				
H0533	Surveying_company	Small Time Mining NL				
H0900	Remarks	ns - not surveyed				
H1000	Hole_id	Surveyed Depth	Dip	Azimuth_MGA	Surv. Instrument	Drill_Code
H1001		metres	degrees	degrees		
H1004		1	0.1	1		
D	KPRC0011	0	-60	0	SS	RC
D	KPRC0011	30	-60.3	0	SS	RC
D	KPRC0011	60	-61	0	SS	RC
D	KPRC0012	0	-60	0	SS	RC
D	KPRC0012	25	-61	0	SS	RC
D	KPRC0012	50	-61.3	0	SS	RC
D	KPAC013	7	-90	0	ns	AC
D	KPAC014	17	-90	0	ns	AC
EOF						

EXAMPLE 6: DOWNHOLE GEOLOGICAL EVENT TEMPLATE - KP_WADL3_GEO2004A.txt

H0002	Version			3		
H0003	Date_generated			19-Jan-05		
H0004	Reporting_period_end_date			28-Feb-04		
H0005	State			WA		
H0100	Tenement_no./Combined_rept_no.			E70/314		
H0101	Tenement_holder			Big Time Mining Ltd		
H0102	Project_name			Kryptonite		
H0106	Tenement_operator			Small Time Mining NL		
H0150	250K_map_sheet_number			SH 51-9		
H0151	100K_map_sheet_number			3036		3136
H0152	50K_map_sheet_number					
H0153	25K_map_sheet_number					
H0200	Start_date_of_data_acquisition			01-Mar-03		
H0201	End_date_of_data_acquisition			28-Feb-04		
H0202	Data_format			DL3		
H0203	Number_of_data_records			16		
H0204	Date_of_metadata_update			19-Jan-05		
H0301	location_data_file			KP_WASL3_COLL2004A.txt		
H0302	lithology_data_file			KP_WADL3_GEO2004A.txt		
H0303	assay_data_file			KP_WADG3_ASS2004A.txt		
H0304	survey_data_file			KP_WADS3_SUR2004A.txt		
H0307	lithology_code_file			SmallTimeLithcodes.pdf		
H0310	water_data_file			KP_WADL3_Water.txt		
H0312	data_dictionary_file			SmallTime_data_dictionary.pdf		
H0313	alteration_data_file			KP_WADL3_ALT2004A.txt		
H0314	magsusc_data_file			KP_WADL3_Magsus.txt		
H0317	weathering_data_file			KP_WADL3_Weather.txt		
H0400	Drill_code			AC		RC
H0401	Drill_contractor			Drill Faster Pty Ltd		Drill Well Pty Ltd
H0402	Description			Aircore Drilling		Reverse Circulation Drilling
H0502	Vertical_datum			AHD		
H0532	Surveying_instrument			Downhole depth		
H0533	Surveying_company			Small Time Mining NL		
H0900	Remarks					
H1000	Hole_id	From	To	Rock1	Rock2	Veins
		metres	metres			
H1001		1	1			
H1004		1	1			
D	KPAC001	0	1	TLCY	TLG	
D	KPAC001	1	2	AGI?	TLCY	
D	KPAC002	0	2	TLCY	TLG	
D	KPAC002	2	3	AGI?	TLCY	
D	KPAC003	0	3	TLCY	TLG	
D	KPAC003	3	4	AGI?	TLCY	
D	KPAC004	0	1	TLCY	TLG	
D	KPAC004	1	2	AGI	TLCY	
D	KPAC005	0	2	TLCY	TLG	
D	KPAC005	2	9	ADD?	TLCY	
D	KPRC002	0	3	TLCY	TLG	
D	KPRC002	3	9	TLCY	TLSD	
D	KPRC002	9	15	TLCY	TLSD	
D	KPRC002	15	19	TLCY	AGI?	qz
D	KPRC002	19	20	TLSD	AGI?	
D	KPRC002	20	23	AGI?	TLSD	
EOF						

EXAMPLE 7: VERIFICATION LISTING FORM

<i>Exploration work type</i>	<i>File name</i>	<i>Format</i>
Office studies		
Literature search		
Database compilation		
Computer modelling		
Reprocessing of data		
General research		
Report preparation	KP_A_2004pdf	Pdf
Other (specify)		
Airborne exploration surveys		
Aeromagnetics	Kryptonite.gdf	gdf2
Radiometrics		
Electromagnetics		
Gravity		
Digital terrain modelling		
Other (specify)		
Remote sensing		
Aerial photography	Tenphoto.png	png
LANDSAT		
SPOT		
MSS		
Radar		
Other (specify)		
Ground exploration surveys		
Geological Mapping		
Regional	Tenmap.pdf	pdf
Reconnaissance		
Prospect	Deposit1.pdf	Pdf
Underground		
Costean		
Ground geophysics		
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)		
Geochemical surveys		
Drill sample		
Stream sediment	KP_WASG3_SOIL2004A.txt	WASG3
Soil		
Rock chip		
Laterite		
Water		
Biogeochemistry		
Isotope		
Whole rock		
Mineral analysis		
Other (specify)		
Drilling		
Diamond		
Reverse circulation		
Rotary air blast		
Air-core		
Auger		
Groundwater drilling		
All drilling	KP_WASL3_COLL2004A.txt KP_WADG3_ASS2004A.txt KP_WADS3_SURV2004A.txt KP_WADL3_GEO2004A.txt SmallTimeLithCodes.pdf	WASL3 WADG3 WADS3 WADL3 Pdf

APPENDIX 2

AIRBORNE GEOPHYSICAL SURVEY REPORTING POLICY



AIRBORNE GEOPHYSICAL SURVEY REPORTING POLICY

Policy and requirements for the reporting of airborne geophysical surveys over mining tenements issued under the Mining Act 1978

This document replaces Version 2.2 issued on 20 April 2006

Changes from Version 2.2:

- Initial confidentiality period of five years for ‘policy’ surveys regardless of tenement status.
- ‘Multi-client’ conversion option limited to a maximum of 5 years.
- Location and basic specifications of surveys will be made public unless specifically stipulated otherwise by the reporting company.

Contents

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Queries to: David Howard, Chief Geophysicist
Geological Survey of Western Australia
100 Plain Street, East Perth, WA 6004
Tel: 08 9222 3331 Fax: 08 9222 3633
Email: david.howard@doir.wa.gov.au
Web site: www.doir.wa.gov.au

Summary of the policy provisions

1. Companies or persons subject to the reporting requirements of the Mining Act are requested to **register airborne geophysical surveys immediately on their completion** and submit the data for inclusion in the data repository.
2. All survey data submitted by a company will be held confidential until their public release is authorised, however, unless the company stipulates otherwise, **the survey outline and basic specifications will be included in a publicly available survey register**. Small-scale images of the data may also be publicly displayed.
3. **Surveys and survey data need to be reported only once.**
4. When registering a survey, the reporting company may opt for one of the following conditions under which the survey is reported:
 - *Reporting policy provisions* — once-only reporting; five-year total confidentiality period plus five-year multi-client conversion option.
 - *Strict Mining Act provisions* — multiple reporting; maximum five-year partial confidentiality period; no multi-client conversion option.
 - *Data repository only* — indefinite confidentiality period (option available only for surveys that are not subject to statutory reporting legislation.)
5. Unless specified to the contrary, **Departmental officers shall have access to the data for purposes of GSWA mapping programs.**
6. There will be **no distinction between surveys on the basis of the underlying tenement situation.**
7. At any time up to the expiry of the nominated confidentiality period, **a survey that has been registered under 'reporting policy' conditions may be declared 'multi-client'** by placing the data set with an independent data sales agent for commercial sale to the public. The sale price must not be in excess of the normal market prices prevailing for commercial multi-client data. **While the data are so available for commercial sale, they will not be placed on open file during a period of five years from the expiry of the confidentiality period.** If, during this period, the data are withdrawn from commercial sale or excessively priced, they will become immediately eligible for release to open file.

These provisions are described in more detail and in the wider context of the survey reporting policy in the main body of this document where they are enclosed in boxes to facilitate identification.

Synopsis of reporting process

- A company that flies or commissions a (mineral) exploration airborne survey registers it at the Department by submitting details of the survey location and specifications together with the complete digital data set.
- The company may opt to have the survey registered under the provisions of this policy (once-only reporting; five-year total confidentiality period; five-year multi-client conversion option) or under the strict conditions of the Mining Act (multiple reporting; maximum five-year confidentiality period; no multi-client option).
- The Department will acknowledge submission of the survey with notification of a survey registration number and confirmation of the data confidentiality and optional multi-client sales periods. The survey location, specifications and data access information will be made public immediately on the MAGIX register (unless the reporting company specifically requests otherwise). The data will be held in a confidential archive until the agreed release date.
- If the survey has been registered under 'policy' conditions, no further data submission will be required to comply with Mining Act reporting requirements in respect of the survey; reference to the registration number will suffice. For surveys registered under 'Mining Act' provisions, relevant subsets of the data will have to be submitted in future relinquishment and surrender reports.
- At any time up to the expiry of the initial confidentiality period for 'policy condition' surveys, the company may place the data with a third party agent for unrestricted commercial sale to the public. When the Department receives written advice of this occurrence it will change the data status in the MAGIX register from '*confidential*' to '*multi-client*' and the confidentiality period will be extended for five years from the date of expiry of the initial confidentiality period. While the data are so available for multi-client sale at prevailing market prices, they will not be released to open file during the extended confidentiality period. (For 'Mining Act' registered surveys, data will be released at the expiry of the initial confidentiality period in accordance with the prevailing statutory reporting conditions.)
- If the Department receives no notification of the change of status by the expiry of the initial confidentiality period, the data will become eligible for release to open file (with a corresponding change in the status shown in the MAGIX register) on that date.

Policy objectives

1. Reduce (ideally, eliminate) the chance of survey data being lost or otherwise becoming inaccessible by maintaining a central data repository of all airborne geophysical surveys flown in Western Australia — an "archive of last recourse".
2. Reduce (ideally, eliminate) unnecessary duplication of airborne geophysical surveys by encouraging wider availability of survey data without compromising their strategic and commercial value to their owners.
3. Improve the cost efficiency of reporting and data management (for industry and the Department).

Background

In October 1995, amendments to the WA Mining Act 1978 resulted in significant changes to the status of airborne geophysical survey reporting in Western Australia.

The main thrusts of the changes were:

- Explicit recognition that nothing in the Act prevented or restricted explorers from acquiring airborne survey data over any land, including that of their competitors.
- The requirement that digital data from **all** airborne geophysical surveys be submitted to the Department, where they are to be held confidential unless public release is authorised by the owner of the data.

The implications of these changes, from a reporting perspective, are that airborne geophysical surveys could be effectively divorced from the underlying tenement situation; thus leading to the concept of a separate **airborne survey report** as distinct from a **tenement report** that includes, incidentally, an account of an airborne survey.

To take account of these changes, a new policy for reporting of airborne geophysical surveys was adopted in January 1997.

Key features

The four key features of the policy have been designed to achieve the three objectives of data preservation, data availability and reporting efficiency without undermining the strategic and commercial value of data to their owners. These features are:

1. Survey data repository and public survey register

2. Once-only survey reporting
3. Reporting company choice of data confidentiality period (limited options).
4. Multi-client conversion option.

Survey data repository and the public survey register

The requirement that data from all airborne geophysical surveys are to be submitted to the Department provides the statutory basis for the establishment and maintenance of a survey data repository. The Department may not release the survey data without the written authorisation of the owner (who is, generally, the reporting company).

Companies or persons subject to the reporting requirements of the Mining Act are requested to **register airborne geophysical surveys immediately on their completion** and submit the data for inclusion in the data repository.

All survey data submitted by a company will be held confidential until their public release is authorised; however, the survey location, specifications, data access information and, perhaps, small-scale images of the data will be made public immediately on the MAGIX register unless the reporting company specifically requests otherwise.

In some cases companies may wish to have the location of a survey held confidential but it is not expected that this will apply to many surveys.

Public survey register

The MAGIX database contains information on surveys for which digital data have been submitted to the Department. The information contained consists of: survey locations, basic specifications, data access information and, if authorised, small-scale images of the survey data.

A sub-set of the MAGIX register, containing surveys for which public release of information has been authorised, is available in an interactive map display on the Department's web site. The index files are also available for free download.

Once-only survey registration and reporting

An airborne geophysical survey, once flown, is fixed in time and space whereas the tenement situation in the same area may be fluid. Because the location of a survey is not constrained by the underlying tenement situation, the airborne survey report may be considered to be independent of any technical report on the underlying tenements.

Once a survey report has been submitted, the requirement to report the same survey as part of a separate tenement report on technical activities is redundant and imposes unnecessary data management costs on the reporting company and the Department alike.

Therefore, **surveys (and survey data) need to be reported only once** unless companies opt to do otherwise as described in the section on *Reporting Conditions and Confidentiality Periods*.

Survey registration

Registration involves the submission of a form that describes the basic survey specifications, together with the survey data and other relevant information.

Receipt of the registration form and data at the Department will be acknowledged with the allocation of a unique identification number. This number may be used to refer to the survey in all subsequent tenement reports.

Transferable registration number

The registration number is linked to the survey and not to the reporting party or the underlying tenement(s). Hence, **the registration number is transferable**. Thus, if the reporting party changes, as might be the case in a change of tenement ownership, joint venture agreement or even sale of data, the new reporting party can make reference to all or part of the survey dataset by quoting the registration number.

Reporting conditions and confidentiality periods

When registering a survey, the reporting company may opt for one of three conditions under which the survey is reported.

- Reporting policy provisions (the Department's preferred reporting condition);
- Strict Mining Act provisions;
- Data repository only.

The reporting condition **will determine the maximum confidentiality period** (Table 1) before the data become eligible for public release:

Table 1: Variation of confidentiality period with reporting conditions

Reporting conditions	<u>Reporting Policy</u>	<u>Mining Act</u>	<u>Repository-only</u>
Confidentiality period	5 years after survey completion (or as agreed)	Maximum 5 years from submission ¹	indefinite

¹ Data submissions are required in tenement relinquishment or surrender reports for release after 6 months. Data may be released after all tenements have been surrendered or cancelled as described in the Act.

Reporting policy provisions

This is the Department's preferred reporting condition.

The initial confidentiality period will be **five years from completion of survey flying**, unless otherwise agreed with the owner of the data. In general, extensions to the five-year period will only be granted in the case of surveys with high strategic or commercial value that would not otherwise be submitted under Mining Act conditions.

During the agreed confidentiality period all the data will be held confidential even in relinquished or surrendered areas.

On the expiry of this period all the data will become eligible for release, unless the confidentiality period is extended as described in the section describing the *Multi-client Conversion Option*.

No further data reporting on a registered survey will be required — whether in annual, partial relinquishment or final surrender reports. Reference to the survey registration number will be sufficient for all data reporting purposes. Even when a tenement is taken out subsequent to the survey — as might be the case in open range surveys — tenement reports on the airborne survey data need only contain a reference to the survey registration number.

Strict Mining Act provisions

Under the Act, information in a report that has been submitted to the Department may be released after a maximum period of **five years** regardless of the tenement situation.

However, if this option is selected, **the reporting company is obliged to continue to submit digital survey data in relinquishment and surrender reports** for public release after three months as specified in the Act. (Note that this requirement supersedes the once-only reporting provision of the reporting policy.)

Furthermore, data from surveys submitted under these conditions will be released to open file after five years.

It should be noted that these provisions might be affected by any subsequent changes that may be made to the Act, Regulations or Reporting Guidelines.

Data repository only

Surveys submitted under repository-only conditions will be held confidential indefinitely unless their public release is authorised by the owner of the data.

This option is available only for:

1. surveys that are not required to be included in statutory tenement reports, ie. for which expenditure will not be claimed — e.g. open range or off-tenement surveys; or
2. past surveys for which data reporting is not required.

Submission of data for surveys that fall into the first category is obligatory under the basic survey reporting requirements of the Act; companies are encouraged to submit data from past surveys for inclusion in the data repository.

General provisions

Although the survey data will be held confidential during the nominated period determined by the reporting conditions, unless the reporting company stipulates otherwise, the survey outline and basic specifications will be displayed in the public survey register to satisfy policy objectives 2 and 3 (page 3).

Unless specified to the contrary, Departmental officers shall have access to the data as required for purposes of the GSWA mapping programs; however, the data shall not be released or published while they remain confidential.

Survey types related to tenement situation

There will be no distinction between surveys on the basis of the underlying tenement situation.

Data custodianship and survey status

A distinction is made between the company that owns a survey and the **custodian** of the survey data.

Because it is a requirement that data for all airborne surveys are lodged with the GSWA, it follows that the GSWA will always be a custodian of these data. However, the GSWA will only be the **primary custodian** of data that have been placed on open file. For all other data sets, the primary custodian will be either the owner of the data (normally the company that commissioned the survey) or the appointed agent who is handling sales of those data that have

been declared multi-client as described in the *Multi-client Conversion Option*. The change of primary custodian with survey status is summarised in Table 2.

Table 2: Change of primary custodian with survey status

	Confidential survey	Multi-client survey	Open file survey
Primary Custodian	Data owner	Sales agent	GSWA

Multi-client conversion option

At any time during the nominated initial confidentiality period, a survey that has been registered under 'reporting policy' conditions may be made 'multi-client' and have the confidentiality period extended for up to 5 years beyond the initial confidentiality expiry date, by placing the data set with an **independent** data sales agent for unrestricted commercial sale to the public. The sale price must not be in excess of the normal market prices prevailing for commercial multi-client data. **While the data are so available for commercial sale, they will not be placed on open file during the extended confidentiality period.** If the data are withdrawn from commercial sale, they will become immediately eligible for release to open file.

It is the responsibility of the company that owns the survey to advise the Department when the data become multi-client. The Department requires written notification of the change of status with a copy of the sales agreement from the sales agent. If these are not received by the agreed release date, the data will become eligible for release to open file (with a corresponding change in the status shown in the MAGIX register) on that date.

There is nothing to prevent the owner of the survey from making private data sales or exchanges outside the ambit of the multi-client sales process (or during the confidentiality period). By the same token, there is nothing to prevent owners of survey data that have been registered under the 'Mining Act' or 'repository-only' conditions to commercialise or otherwise deal with their data. However, **'Mining Act' survey data will be released to open file after the expiry of the five-year confidentiality period.**

'Repository-only' data will be released only with the consent of the owner.

Commercial multi-client surveys

Commercial multi-client surveys are those undertaken by individuals or companies for the purposes of resale. Although these surveys, too, should be submitted to the Department under

'repository-only' status (Guidelines A27), at this time the Department is not seeking to have data from these surveys submitted.

Companies buying these data and reporting the purchase as an expenditure claim against a tenement are required to submit standard reports that comply with the reporting guidelines; however, under the Act, these data may not be placed on open file without the consent of the copyright holder.

Currently, the Department does not require companies to submit commercial multi-client data with technical reports on tenements; however, the Department does reserve the right to request submission of these data. The same conditions apply to the purchase of exclusive exploration surveys that have been declared multi-client under the provisions of this policy. In these cases, the purchasing company should obtain the survey registration number and use this in making reference to the survey in its tenement reports.

Frequently asked questions

- Are the *Guidelines for Mineral Exploration Reports on Mining Tenements* optional?
- Why are airborne geophysical surveys treated differently from other exploration survey techniques?
- Are we obliged to submit digital data?
- Do we have to register all surveys, even open-range surveys or parts of surveys that are off our tenements?
- What about surveys that were flown before the policy was released?
 - a) *Surveys flown over tenement that are still current:*
 - b) *Surveys flown over tenements that have lapsed*
- Do we have to submit multi-client data that we have purchased from other companies?
- How does one declare a survey 'multi-client'?
- What happens if we do not want to make the data 'multi-client'?
- What happens if we do not tell the Department that a survey has been made 'multi-client'?
- What is the maximum period that a survey is considered 'multi-client' before it reverts to open file?
- Can a sales agent provide a single 'multi-client' sales agreement covering all of the exploration company's data?
- If, following an airborne survey, a company revises its tenement holdings by surrendering its original tenements and replaces them by a set of fresh tenements, which are the "related tenements", the original set or the new ones?
- Does submitting an airborne survey report and the data free us from the other reporting requirements of the Mining Act?
- What happens when a company changes ownership or ceases to exist?
- Can we have a confidentiality period greater than five years and still take advantage of the once-only reporting and multi-client conversion provisions of the reporting policy?
- In the MAGIX register, how will we be able to tell the difference between surveys that have been reported under different conditions?

- **Are the *Guidelines for Mineral Exploration Reports on Mining Tenements* optional?**

No. The *Guidelines* are linked to Section 115a of the *Mining Act* and, hence, have the full force of legislation.

- **Why are airborne geophysical surveys treated differently from other exploration survey techniques?**

Airborne geophysical surveys are different from other types of activity because of Section 155a of the *Mining Act* that permits aerial surveys to be undertaken over any area (subject to normal civil aviation and other relevant regulations) regardless of tenement status and holdings.

- **Are we obliged to submit digital data?**

Yes.

- **Do we have to register all surveys, even open-range surveys or parts of surveys that are off our tenements?**

Yes. The *Guidelines* require you to submit data from all airborne surveys regardless of your tenement situation.

- **What about surveys that were flown before the policy was released?**

Submission of full survey reports and data to the repository is required for all surveys flown after November 1995. We encourage the submission of data from earlier surveys. It may be better to consider the question in terms of the tenement reporting status.

a) *Surveys flown over tenements that are still current:*

We prefer that the surveys be registered (that is by submission of specifications and digital data) and included on the MAGIX database under the 'reporting policy' conditions rather than the 'Mining Act' conditions. Registration in this form will ensure that you will not be required to submit data from this survey again. The data will be held confidential for a period of five years regardless of the tenement status. However, you may opt to register them under 'Mining Act' conditions and continue to submit data in relinquishment and surrender reports. The latter option will mean more work for you and for us.

b) *Surveys flown over tenements that have lapsed*

We would appreciate the submission of digital data for all these surveys for inclusion in the central repository. Where companies have extensive survey holdings, we recognise that copying of the survey data might represent an onerous task. In such cases we suggest that you give us an index of surveys from which we will request only those that we feel still have value to the State, in particular where they have not been overflown by later surveys.

We would also like your authorisation to display the location and specifications of all your surveys in the MAGIX register.

- **Do we have to submit multi-client data that we have purchased from other companies?**

Yes and no. The Mining Act requires that these data be reported by a tenement holder if they are integral part of the exploration activities undertaken on the tenement. However, the Department cannot release these data unless so authorised by the owner of the copyright, generally the company that flew the survey.

Under the reporting policy and the objective of simplifying the reporting process, the Department will not generally require such data to be submitted. However, the Department does reserve the right to request submission of these data at any time.

- **How does one declare a survey as 'multi-client'?**

Advise us (in writing) that the data from a registered survey have been placed with an agent and include a copy of your sales agreement with that agent. This may be done at any time up to the expiry of the agreed initial confidentiality period. We will then change the survey status on the MAGIX register from "confidential" to "multi-client" and the custodian's name from that of the owner of the data to that of the agent.

- **What happens if we do not want to make the data 'multi-client'?**

Multi-client conversion of your surveys is at your option. If you do not wish to exercise this option the survey will become open file on expiry of the agreed confidentiality period.

- **What happens if we do not tell the Department that a survey has been made 'multi-client'?**

Multi-client conversion only has effect once you have advised us in writing of the change of status of a survey. Thus, the Department would not normally issue reminders other than, perhaps, as a courtesy to a company. It is your responsibility to advise the Department in writing that the survey has changed its status to multi-client. If such advice is not received, the survey will become open file when the confidentiality period expires.

- **What is the maximum period that a survey is considered 'multi-client' before it reverts to open file?**

Multi-client surveys that have been registered under 'reporting-policy' conditions will have their confidentiality period extended for up to a maximum of 5 years from the expiry of the originally agreed confidentiality period. As long as the data are available through a third-party agent for unrestricted sale to anybody at prevailing commercial rates, the Department will not release them to open file during the extended period.

Surveys registered under 'Mining Act' conditions will be placed on open file when the confidentiality period expires.

Surveys registered under 'repository only' conditions will not be released without the consent of the owner of the data.

- **Can a sales agent provide a generic 'multi-client' sales agreement covering all of the exploration company's data?**

No. The Department requires specific notification for each survey that has had the 'multi-client' option exercised.

- **If, following an airborne survey, a company revises its tenement holdings by surrendering its original tenements and replaces them by a set of fresh tenements, which are the "related tenements", the original set or the new ones?**

Once a confidentiality period has been agreed for surveys registered under the 'reporting policy' conditions (normally five years), then that is when the data become eligible for release and not before, regardless of tenement status — unless otherwise agreed. For surveys registered under 'Mining Act' conditions, the answer is determined by the prevailing conditions governing statutory reporting.

- **Does submitting an airborne survey report and the data free us from the other reporting requirements of the Mining Act?**

No. The Airborne Geophysical Survey Reporting Policy does not in any way negate the requirements of the Mining Act and the necessity for your compliance with these requirements. You are still required to submit a report of any technical activity undertaken over your tenements and of any activity for which you are claiming expenditure. However, because the Guidelines also require you to report on all airborne surveys regardless of the tenement situation, the policy has been designed to reduce duplication of reporting airborne surveys in tenement reports.

- **Can we have a confidentiality period greater than five years and still take advantage of the once-only reporting and multi-client conversion provisions of the reporting policy?**

The Department will consider requests for confidentiality periods greater than five years for surveys that have significant commercial or strategic value and that would not otherwise be submitted under Mining Act conditions.

- **What happens when a company changes ownership or ceases to exist?**

An airborne survey dataset is a transferable Intellectual Property asset. It is the responsibility of the company that owns the data to inform the Department of any changes in data ownership. Data will be released to open file on the date agreed with the original owner.

- **In the MAGIX register, how will we be able to tell the difference between surveys that have been reported under different conditions?**

For any given survey shown in the register there are five attributes that completely describe the reporting status and data access conditions:

- *Reporting conditions* — 'policy', 'Mining Act' or 'repository only'.
- *Company* — the company that originally commissioned the survey (generally the reporting company).
- *Data status* — 'confidential', 'multi-client' or 'open file'
- *Confidentiality period* — dependent on reporting conditions (Table 1).
- *Data custodian* — the data owner, nominated sales agent or GSWA, dependent on data status (Table 2).

Key applicable clauses in the Mining Act, Regulations and Guidelines

Reporting

- Mining Act* s.115A (3) A mineral exploration report is to be filed with the Department at Perth and is to be in the form required by the guidelines and is to contain information of the kind required by the guidelines.
- Guidelines* 2 A mineral exploration report shall contain information of sufficient standard and detail to substantiate the expenditures claimed and the activities undertaken on a mining tenement, as reported in summary on the Form 5 operations report.
- A22 Specifications of surveys and instruments shall be provided
- A25 Basic data should be corrected and levelled ... (and provided in ASCII format)
- A27 Data from any regional airborne geophysical survey should be submitted ...

Copyright

- Regulations* 96A (1) If the copyright in a mineral exploration report or part of a mineral exploration report is owned by a person other than the holder of the mining tenement to which the report relates, the holder shall, before filing the report, take all reasonable steps to obtain the authorization of the owner of the copyright to the release of information contained in the report in accordance with regulation 96.
- 96A (2) When filing a mineral exploration report at the Department, the holder of a mining tenement shall ... authorize in writing the release of information ... (and/or identify that part of the report for which the tenement holder does not own copyright).

Confidentiality

- Regulations* 96 (2) The Minister may only release (information contained in a mineral exploration report)
- (a) with the written consent of the holder
 - (b) after the expiry of the period of 3 months immediately following the surrender, forfeiture, expiry or cancellation of the mining tenement....;
 - (c) (that has been held at the Department for a period of 5 years or more.)
- Guidelines* 12 All information in mineral exploration reports on any mining tenement, submitted to the Department in accordance with Section 115A, shall remain confidential until the information is eligible for public release as prescribed in Regulation 96 of the Act.

Expenditure

- Mining Act* s.62 During the currency of an exploration licence the holder thereof shall comply with the prescribed expenditure conditions relating thereto, unless in accordance with this Act total or partial exemption therefrom is granted.
- Regulations* s.21 (1) The holder of an exploration licence shall expend, or cause to be expended, in mining on or in connection with mining on the licence during each year of the term of the licence (note: "mining" includes exploration).

Flying outside tenement boundaries

Mining Act s.155a Nothing in this Act has the effect of restricting or preventing the obtaining of data in respect of any land by means of aerial surveys.

APPENDIX 3

GLOSSARY OF TERMS

<i>Abbreviation</i>	<i>Description</i>	<i>Used as</i>
AMIRA	Australian Mineral Industry Research Association	Organization
ANZLIC	Australia and New Zealand Land Information Council	National organization
ASCII	American Standard Code for Information Interchange	International standard
ASEG	Australian Society of Exploration Geophysicists	Organization
AVI	Audio Video Interleave	File format
BIL	Band Interleaved by Line	File format
CGM	Concatenated Graphics Metafile	File type
CGGC	Chief Government Geologists Committee	Organization
CSIRO	Commonwealth Scientific and Industrial Research Organisation	Organization
DAT	Data file	File format
DATAMINE	Company name	Proprietary software mineral resource modelling
DLIS	Digital Logging International Standard	International standard
DoIR	Department of Industry and Resources, Western Australia	Organization
ECW	Enhanced compressed wavelet	File format
EPS	Encapsulated postscript	File format
ER Mapper	Company name	Proprietary software, desktop image processing
ESRI	Company name	Proprietary software, geographic information system
GDF2	General Data Format (Version 2)	National standard
GEO TIFF	Geo-referenced Tagged Image File Format	File type
GGIPAC	Government Geoscience Information Policy Advisory Committee	Organization—advisory to CGGC
GIF	Graphics Interchange Format	File type
GML	Geography Markup language	International standard
GSWA	Geological Survey of Western Australia	Organization
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
LYR	ESRI layer file	File format
MapInfo	Company Name	Proprietary software map production
MGA	Map Grid Australia	Spatial specification using UTM projection relative to Geocentric

<i>Abbreviation</i>	<i>Description</i>	<i>Used as</i>
		Datum of Australia 1994
MPEG	Moving pictures export group	File format
MRT	Mineral Exploration Reporting Templates	Preferred software for producing compliant metadata headers for tabular data files
MTA	MapInfo data file	File format
MWD	Measurement While Drilling	Logging technique
OGC	Open GIS Consortium	Organization (see http://www.opengis.org)
P1/90	Navigation data standard format	International standard
PDF	Portable Document Format	File format
PDS	Picture Description System	File format
PNG	Portable Network Graphics	File type
POSC	Petrotechnical Open Software Consortium	Organization (see http://www.posc.org)
PPDM	Public Petroleum Data Model	International standard database model
SDTS	Spatial Data Transfer System	International standard
SEG	Society of Exploration Geophysicists	Organization
SGML	Standard Generalized Markup Language	International standard
SGY		File format
SHP	ESRI Shape data file	File format
SIROTEM	CSIRO Transient ElectroMagnetics	Geophysical method developed by CSIRO
SPS	Shell Processing System	International standard
SURPAC	Company name	Proprietary software for mineral resource modelling
TAB	MapInfo data file	File format
TEM	Transient ElectroMagnetics	Geophysical technique
TIF, TIFF	Tagged Image File Format	File type
TMI	Total Magnetic Intensity	Geophysical measurement
TXT	Text	File format
UKOOA	United Kingdom Offshore Operators Association	International organization
UTM	Universal Transverse Mercator	International spatial specification / map projection
VULCAN	Company name	Proprietary software for mineral resource modelling
WOR	Mapinfo workspace file	File format
XMML	Exploration and Mining Markup Language	Standard under development by CSIRO
XSD	XML schema definition	A method to describe and validate in XML