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NSW GOVERNMENT Department of Industry Resources & Energy

GUIDE | PETROLEUM LEGISLATION

Onshore petroleum reporting and data submission

A guide to geoscientific reporting and data submission of onshore petroleum exploration and production in New South Wales

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Foreword

Comprehensive geoscientific records of onshore petroleum exploration and production provides a major competitive advantage to Australia. Access to reports and data on past exploration and production ensures that petroleum exploration investment does not duplicate past effort and can build on accumulated knowledge. Accordingly, the accurate recording of petroleum exploration and production is mandatory.

The Division of Resources and Energy (the division) within NSW Department of Industry is responsible for acquiring, assessing, storing and distributing this information. The department uses this geoscientific data to inform the government, resource industry and community about the state's resources, and to facilitate safe and sustainable development of NSW mineral and energy resources for the benefit of all NSW citizens.

This guideline has been prepared according to the *Petroleum (Onshore) Act 1991* (Act) and the *Petroleum (Onshore) Regulation 2007* (Regulation). The Act legislates onshore petroleum exploration and production activities and as well as safety, environmental protection, royalties and compensation. The purpose of this guideline is to specify the format, contents and standards required to prepare and submit petroleum geoscientific reports and data.

Holders of the following petroleum titles are required to submit reports and data:

- Petroleum Exploration Licence (PEL)
- Petroleum Assessment Lease (PAL)
- Petroleum Production Lease (PPL)
- Petroleum Special Prospecting Authority (PSPA)

Note: this guideline does not apply to safety, environmental management and rehabilitation, or community consultation reporting.

More information on reporting, submission and archiving of petroleum geoscientific reports and data is available on the websites listed below.

Website links for further information

Subject	Division of Resources and Energy website link
Geoscientific reporting	http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/enforcement/exploration-reporting/petroleum
DIGS	http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/geoscience-information/online-services/digs DIGS® (Digital Imaging Geological System) is a digital reporting and archiving system provided by the DRE to store data and information in digital format. This allows reports and data to be searched for, viewed and printed.
EROL	http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/geoscience-information/services/online-services/erol Exploration and Environmental Online Lodgement (EROL) allows title holders to lodge reports and data online. All reports and data lodged are assessed by department geoscientists to ensure compliance with this guideline.

Contacts

NSW Department of Industry
Division of Resources and Energy
Geological Survey of NSW
516 High St Maitland NSW 2320
PO Box 344 HRMC NSW 2310
www.resourcesandenergy.nsw.gov.au

For further information on this guideline or geoscientific reporting contact:

Geological Survey of NSW
Strategic Resource Assessment and Advice
516 High St Maitland NSW 2320
PO Box 344 HRMC NSW 2310
Phone: 02 4931 6689
Email: geoscience.petroleum@industry.nsw.gov.au

Reporting/service	Unit/company	Contact details
Petroleum geoscientific reporting	Strategic Resource Assessment and Advice - Geological Survey of NSW	Phone: (02) 4931 6689 Email: geoscience.petroleum@industry.nsw.gov.au
Geoscience products and regional geophysical surveys	Geoscience Information – Geological Survey of NSW	Phone: (02) 4931 6717 Email: geoscience.products@industry.nsw.gov.au
DIGS and EROL administration	Geoscience Information – Geological Survey of NSW	Phone: (02) 4931 6556 Email: digs.info@industry.nsw.gov.au
Londonderry Core Library	Geoscience Information – Geological Survey of NSW	WB Clarke Geoscience Centre 947-953 Londonderry Rd Londonderry NSW 2753 Phone: (02) 4777 0322 Email: corelibrary.admin@industry.nsw.gov.au
Broken Hill Core Library	Geoscience Information – Geological Survey of NSW	E C Andrews Drillcore Facility 42-56 Pinnacle Pl Broken Hill NSW 2880 Phone: (08) 8087 5143
Seismic field tape/data archiving	KDM SpectrumData	KDM SpectrumData Pty Ltd 357 Oxford St, Mount Hawthorn WA 6016 Phone: (08) 6161 5354, Fax: (08) 9444 7570 Email: perth.datamanagement@katalystdm.com

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Part A: General requirements

1. Introduction

This guideline will assist the holders of petroleum titles in NSW prepare geoscientific reports and data required by the *Petroleum (Onshore) Act 1991* (Act) and the *Petroleum (Onshore) Regulation 2007* (Regulation).

Each report must comply with this guideline and contain all diagrams, plans, and data necessary to satisfactorily interpret and evaluate the report. Reports supplied to the department that provide incorrect or misleading information and/or do not meet all the reporting requirements will be considered unsatisfactory and returned to the author for revision. Data that is incomplete or outstanding can be submitted once received. You must indicate in your submission that there is additional data to come and when it will likely be submitted. The department takes a reasonable approach to incomplete and outstanding data.

2. Submitting reports and statistics

Table 1 provides a summary of all report types required, their due dates, mode of submission and the period of confidentiality. All reports, statistics and data must be submitted in digital form via the relevant mode of submission and in the specified structure outlined in Part B of this guideline. Accompanying data must also be submitted in the format listed under Part D of this guideline.

Table 1: Report types

Report type	Type of title required for	Reporting format	Due date	Mode of submission	Confidentiality period
Annual report – PELs and PALs (and data)	All PELs and PALs	As specified in Part B, Section 1 of guideline	1 calendar month after the grant anniversary date of title	EROL	• Annual report remains confidential while the title is in force. • Any basic data submitted with the report - two years • Any interpretative data submitted with the report - five years
Annual report – PPLs (and data)	All PPLs	As specified in Part B, Section 2 of guideline	1 calendar month after the grant anniversary date of title	EROL	
Annual financial year statistics	All petroleum titles	As specified in Part B, Section 3 of guideline	31 August each year	Email	Always confidential
Partial relinquishment report (and data)	All petroleum titles	As specified in Part B, Section 4 of guideline	One calendar month after notice of the part renewal or cancellation	EROL	None - Open File immediately on relinquishment or cancellation
Final report (and data)	All petroleum titles	As specified in Part B, Section 5	One calendar month after the expiry or cancellation of	EROL	None - Open File immediately on expiry or cancellation

Report type	Type of title required for	Reporting format	Due date	Mode of submission	Confidentiality period
		of guideline	the title		
Well completion report (and data) for all wells drilled including redrills	All petroleum titles	As specified in Part B, Section 6 of guideline	Six months after rig release date	EROL	Two years
Seismic survey report (and data)	All petroleum titles	As specified in Part B, Section 7 of guideline	Six months after data acquisition date	EROL	Two years
Well assessment: gas production and gas testing results	PALs and PPLs where they have this requirement in their licence condition and are producing	As specified in Part B, Section 8 of guideline	Within seven days after the end of each month of production	Email	While the title remains in force
Well status notification	All petroleum titles	As specified in Part B, Section 9 of guideline	Within seven days of any change in well status	Email	Open file immediately
Notification of discovery	All petroleum titles	As specified in Part B, Section 10 of guideline	Within three days of any new discovery of hydrocarbons	Email	While the title remains in force

3. Transitional reporting arrangements

Improved Management of Exploration Regulation (IMER) is a reform of NSW exploration regulation, implemented from 1 July 2015. It applies only to Petroleum Exploration Licences (PELs) and Petroleum Assessment Leases (PALs). For further information about IMER go to: www.resourcesandenergy.nsw.gov.au/miners-and-explorers/codes-and-guidelines/imer.

PELs and PALs granted or renewed after the 1 July 2015 are called IMER titles and are subject to IMER licence conditions. Those titles that have not been renewed under IMER are called non-IMER titles and will continue with their current licence conditions until their next renewal.

Petroleum Production Leases (PPLs) are not covered under IMER and therefore are non-IMER titles.

IMER titles

For PELs and PALs granted or renewed after 1 July 2015, Annual Activity Reports must be submitted as per the Exploration guideline: Annual Activity reporting for prospecting titles.

Annual Activity Reports contain four components, one of which is the annual (geoscientific) report:

- Annual summary activity and expenditure table
- Annual exploration (geoscientific) report
- Annual environmental management and rehabilitation report
- Annual community consultation report.

IMER titles are also subject to a condition relating to work programs which must be prepared in accordance with the Exploration guideline: work programs for prospecting titles. This requires the submission of the updated work program annually at the same time as an Annual Activity Report, regardless of whether the work program is changing.

Reporting under an Annual Activity Report condition meets requirements of Clause 16B of the Regulation.

Non-IMER titles

PELs and PALs granted or renewed before 1 July 2015 are known as non-IMER titles.

PELs and PALs that do not have a condition relating to Annual Activity reporting must continue to report in accordance with the regulation and this guideline. Environmental management and rehabilitation reports and community consultation reports may be required in accordance with existing licence conditions.

Non-IMER titles do not have to comply with the Exploration guideline: work programs for prospecting titles and do not have to submit work programs annually.

4. Tables to accompany reports

Most reports require tables to be submitted which provide information in standard formats as described in Part C of this guideline. The most up-to-date versions of table templates are available at:

www.resourcesandenergy.nsw.gov.au/miners-and-explorers/enforcement/exploration-reporting/petroleum

5. Assessment of reports and data

You can lodge your reports and data online at the Exploration and Environmental Online Lodgement (EROL) website. All reports and data lodged are assessed by department geoscientists to ensure they comply with this guideline. Reports are also assessed to monitor exploration progress, inform decisions on applications for a new title or the renewal of a title, and to ensure that the results of exploration are fully and clearly recorded for the benefit of future explorers and researchers.

Satisfactory reports are accepted and an email notification advising that the report has been assessed and accepted is sent to the email address of the EROL account through which the report was lodged. Satisfactory reports are accepted and archived to DIGS®.

Reports and data that do not meet the requirements of this guideline are deemed unsatisfactory and sent back to the person who lodged the report for amendment and resubmission. In this case, an email notification is sent to the EROL account through which the report was lodged. The notification will include details of why the report was assessed as unsatisfactory and what action is required. Reports or data that require resubmission must be resubmitted within two weeks after the notification date.

6. Technical manager

All titles must have a nominated technical manager who is responsible for supervising prospecting operations and (geoscientific) exploration reporting. The person may hold tertiary qualifications in geoscience or mining engineering, or have other qualifications or other relevant and appropriate exploration experience for the commodities sought under the title.

Reports must be verified by the technical manager that the report accurately discloses the nature, extent, timing, results and geological interpretation, and that the activity summary accurately discloses expenditure (if relevant), of the exploration conducted during the reporting period, either by a signature or by making this statement. The name and contact details of the nominated technical manager must be provided in any report.

Approval of the technical manager is given on grant or renewal. The department must be notified of any change in the technical manager within 7 working days and approval sought.

7. Extensions and exemptions from reporting

Clause 16H of the Regulation allows for authority holders to apply for an extension of the period within which a report must be lodged, or for an exemption from reporting requirements. However, extensions and exemptions are not generally granted except in cases of extreme hardship.

Applications for extensions or exemptions must be lodged 30 days before the date the report is due using the form Application for extension or exemption from reporting (ER01). Exemption from reporting requirements does not exempt the authority holder from their obligation to fulfil other conditions of authority, especially the requirements to effectively explore, assess or mine the authority area.

8. Group reporting (PPLs only)

Group geoscientific reporting is only available for contiguous PPLs where they are operated as a single project. Group geoscientific reporting of PELs, PALs or PSPAs is not accepted.

Applications for group reporting must be lodged with and approved by the department in letter format via email to geoscience.petroleum@industry.nsw.gov.au.

Group reports must provide information on what activities were conducted on each title within the group and contain a separate expenditure table for each title. If a single activity occurs across more than one title a pro-rata distribution of expenditure across those titles is acceptable.

9. Confidentiality and the release of information

Part 13 of the Act specifies the timing for release of information for reports and data. The following reports remain confidential while a title is in force:

- annual reports
- annual financial year statistics
- well assessment: gas production and gas testing results
- notification of discovery.

The release of other reports and data, relating to specific activities, depends on the type of the report and data. **Basic reports and data** may be made open file after **two (2) years** from completion of acquisition. **Interpretative reports and data** may be made open file after **five (5) years** from completion of interpretive activity.

You may choose to submit all data (basic and interpretative) in a single report. Such reporting will be subject to two year confidentiality period.

Core, cuttings and samples are considered basic data, and are subject to two (2) year confidentiality periods.

When any petroleum title is no longer in force, all reports and data related to that title will immediately become publically available, regardless of any confidentiality periods.

a) Basic reports and data

Basic data is data that is obtained at the time of an acquisition activity. Basic reports are reports on the acquisition of basic data. All contractor and/or acquisition contractor derived data and results are defined as basic data.

All basic data should be included in the relevant completion reports on activities (such as a well completion report or seismic survey report), or as appendices to the relevant annual exploration report for the title period in which the acquisition took place.

Some examples of basic data acquisition activities for which basic report and data submission is required include, but are not limited to (Table 2):

Table 2: Basic data acquisition activities

Geoscientific (geological, geochemical and geophysical) surveys
Geophysical surveys (airborne and ground based)
Geochemical surveys
Geological surveys
Remote sensing
Any other scientific or technical survey data
Analysis and studies undertaken on any rock, liquid or gas samples (whether the sample was obtained by the title holder directly or indirectly)
Sedimentological and petrological analysis
Geomechanical analysis
Palaeontology
Source rock analysis
Routine core analysis
Special core analysis
Liquid or gas analysis
Drilling, workover or testing of, or production from, an exploration, stratigraphic, appraisal, production or monitoring well
Drilling of an exploration, stratigraphic, appraisal, production or monitoring well (including re-drills)
Workover of a well (includes re-entry, repair, recompletion or stimulation of an existing well)
Well testing (includes pilot testing, pressure tests, fluid sampling, build-up tests, drawdown tests)
Production
Processing or reprocessing of any geoscientific data
Seismic processing
Seismic reprocessing
Geophysical data processing
Reprocessed data from any other scientific or technical survey

b) Interpretative reports and data

Interpretive reports and data include any data and conclusions drawn from that data that are considered an interpretation of acquired data.

All interpretative reports and data should be lodged separately to basic data to maintain a confidentiality period of five years, however, a company may elect to submit all data (basic and interpretative) in a single report which will be subject to two-year confidentiality period.

Interpretative reports and data should be submitted as appendices to the relevant annual exploration report for the title period in which the interpretation took place.

Examples of activities which constitute interpretation of acquired data include, but are not limited to (Table 3).

Table 3: Interpretive activities

Interpretation of any basic data (whether obtained by the title holder directly or indirectly)
Well interpretation
Seismic horizon interpretation
Seismic time/depth contour maps
Potential field geophysical data interpretation
Wireline log interpretation and composite logs
Liquid or gas analysis interpretation
Any other interpretation based on basic data

Conclusions drawn from any basic data (whether obtained by the title holder directly or indirectly)
Palaeontological analysis interpretation (eg: biostratigraphic zones, and conclusions drawn from species lists and range charts)
Source rock analysis interpretation/conclusions
Analyses made by companies considered to be commercial-in-confidence
Core analysis studies carried out by titleholder research units utilising proprietary techniques
Water flood test results derived by titleholder research units utilising proprietary techniques
Interpretive reservoir and reservoir engineering data
Interpretation of analytical results from tests data such as formation permeability, drawdown tests and build-up tests
Resource/reserve estimates, structure/isopach maps of reservoir units
Results of a re-evaluation of the commercial viability of the recovery of petroleum from a petroleum lease area
Studies which contribute to the geoscientific knowledge of an area or reservoir
Desktop studies
Liquid or gas studies
Reservoir engineering studies
In-house study results
Regional geology studies
Sedimentological and petrological studies
Other studies

10. Cores and samples

All petroleum title holders must collect, label and preserve all cores, characteristic samples and samples of any petroleum or water discovered in any well for the life of the title (Clause 16I of the Regulation). Cores and samples must be made available for examination and/or sampling by department officers on request.

The title holder must not dispose of cores and samples without approval from the department and without first offering them to the department for archival storage. The department will make a decision whether they wish to keep the cores/samples or not. The department's core libraries contain a selection of representative cores and samples for the benefit of explorers and other researchers.

If directed, the title holder must lodge selected cores and samples with one of the core libraries, in formats as specified in Table 5. Offers of core must be directed in writing to:

Geological Survey of NSW
Strategic Resource Assessment and Advice
516 High St, Maitland NSW 2320
PO Box 344, HRMC NSW 2310
Phone: 4931 6689
Email: geoscience.petroleum@industry.nsw.gov.au

Part B: Structure of reports

1. Annual reports - PELs and PALs

Annual reports for PELs and PALs should present the technical results and interpretation of exploration and assessment activities conducted during the reporting period.

Annual reports for PELs and PALs must contain:

A. **Title page (1 page)**
- report type
- title number
- title holder
- project operator (if applicable)
- project name and location (if applicable)
- the reporting period
- date of report
- author(s) including contact details
- name, contact details and verification signature of the nominated technical manager.

B. **Executive summary or abstract (maximum 1 page)**
- a summary of all exploration activities conducted during the reporting period.

C. **Background (recommended maximum 2 pages of text)**
- location and access
- geology
- literature review (if applicable)
- exploration rationale (the petroleum targets, prospectivity and reasons for considering the area prospective).

D. **Exploration completed in reporting period**
- a detailed description of exploration activities carried out within the reporting period only, including full details and results of all studies, surveys, sampling or drilling programs, or other operations conducted
- a scaled diagram/map showing the locations of exploration activities undertaken during the reporting period. The scaled diagram/map should also include the title boundary, towns and major infrastructure (e.g. railways, highways, roads)
- a results/discussion section which should include plans, sections and data generated to illustrate the exploration results, any interpretation of results and significance of results, geological models, conclusion reached and recommendations.
- Where there have been external studies, such as university thesis, or where research papers have been prepared for publication, the main conclusions of those works should be briefly summarised and a reference to the full work provided.

E. **Tables to accompany report**
- a completed Reserve and Resources Table (if applicable)
- a completed Gas testing and Gas Production Table (if applicable)
- a completed Gas Compositions Table (if applicable).

F. **Data**
- a summary of data being submitted with this report
- a summary of any data which is not being submitted, reasons why, and when and how the data will be submitted i.e. LaFiX.
- completed tables should be submitted as XLS files in a zipped folder as well as in the PDF report.

G. **Proposed exploration in next reporting period (non-MER titles only)**

- a description of the proposed exploration activities within the next reporting period only
- a standard scaled diagram/map showing the locations of proposed exploration activities. The scaled diagram/map should also include the title boundary, towns and major infrastructure (e.g. railways, highways, roads).

H. **Other operations and activities (if applicable)**

Reports and data must also be included in the annual report for any activities undertaken during the reporting period which constitute the acquisition, interpretation or assessment of geoscientific data. Examples of types of activities are included in Part A Section 9 (Table 2 and Table 3). Data requirements are specified in Table 5 to Table 9.

Specific reporting requirements for the completion of certain activities are detailed below.

i. Geophysical survey (excluding seismic) (if applicable)

In addition to required data (as specified in Table 9), reports on geophysical surveys undertaken within the reporting period should include the following as a minimum:

- regional geology
- methodology - parameters details
- interpretation - brief summary on interpretation such as whether the data is of a quality to allow interpretation of stratigraphy and or structures of interest ,etc
- appendices - general information - contractor, survey coverage and duration
- operations - positioning, equipment, calibrations, testing, permitting
- processing sequence
- statistics and personnel
- enclosures - location, data display, interpretation maps, etc
- data.

ii. Seismic survey reprocessing (if applicable)

In addition to required data (as specified in Table 8), reports on seismic reprocessing undertaken within the reporting period should include the following as a minimum:

- summary of processed lines
- acquisition parameters
- scaled diagram/map showing location of reprocessed lines
- data quality
- processing sequence
- images of processed seismic lines.

iii. Seismic interpretation (if applicable)

Reports on seismic interpretation undertaken within the reporting period should include the following as a minimum:

- results of seismic section interpretation and mapping based on such interpretation
- all other information that falls into interpretative data category
- seismic horizons/projects
- project submissions of horizons and faults as ASCII files (XYZ).

iv. Geophysical data interpretation (excluding seismic) (if applicable)

Reports on the interpretation of acquired or reprocessed geophysical data (other than seismic survey) should include the following as a minimum:

- results of geophysical data interpretation
- any mapping based on such interpretation
- all other information that falls into the interpretative data category.

v. Workover of a well (if applicable)

Reports on the workover of any well should include the following as a minimum:

- details of the well/s involved (well name/s and location/s as a minimum)
- details of the work or tests undertaken
- formation/s (geological unit/s) in which the activity took place (if applicable)
- justification/rationale for activity
- results/discussion
- current well status at completion of activity
- any data collected.

* Note – A workover that results in the deepening of a well should be treated as the drilling of a well, and a well completion report is required.

vi. Production from or testing of a well

Reports on the production from or testing of any well should include the following as a minimum:

- details of the well/s involved (well name/s and location/s as a minimum)
- date of production or pilot production testing period
- formation/s (geological unit/s) in which the activity took place (if applicable)
- justification/rationale for activity
- volumes, or estimates of the volumes, of gas, oil and water produced from the testing
- density of any oil produced from testing, measured using the American Petroleum Institute's (API) scale of measuring the specific gravity of oil, commonly known as the 'API gravity' of the oil
- pressure in the well, measured during the period, at which petroleum cannot escape from the wellhead for the well, commonly known as the 'shut-in pressure' of the well
- detail any workover or stimulation of wells undertaken for pilot production testing
- type of perforations in the well (if applicable)
- depth in metres of the top and bottom of perforated intervals (if applicable)
- choke size used for the well
- methodology of data recording and any corrections applied to the data
- brief summary of data quality such as whether the data is of a quality to allow resource estimation, production estimates, reservoir engineering for production etc.
- detail any workover, shut-in or completion activities on wells after the completion of pilot production testing program
- status of each well tested post pilot production testing program
- detailed summary of pilot production results, including conclusions reached regarding the geology of the area and the resource potential or lack of potential. Where resource potential is considered to be low, reasons for determining this must be included. In addition, where further work may increase the resource potential recommendations for future work should be included
- any data collected.

2. Annual reports - PPLs

Annual reports - PPLs should present the technical results and interpretation of production, exploration and associated activities during the reporting period.

Annual reports - PPLs must contain:

A. **Title page (1 page)**
- report type
- title number
- title holder
- project operator (if applicable)
- project name and location (if applicable)
- the reporting period
- date of report
- author(s) including contact details
- name, contact details and verification signature of the nominated technical manager.

B. **Executive summary or abstract (maximum 1 page)**
- a summary of all exploration and/or production activities conducted during the reporting period.

C. **Background (recommended maximum 2 pages of text)**
- location and access
- geology
- literature review (if applicable)
- extraction or exploration rationale (the petroleum targets, prospectivity and reasons for considering the area prospective).

D. **Production/exploration/activities completed in the reporting period**
- a description of production/exploration/activities undertaken during the reporting period
- a scaled diagram/map showing the location of activities undertaken during the reporting period
- a description of any assessment activities carried out during the reporting period
- a summary of geological findings - should include the main results of activities conducted (if any), such as geological and structural mapping and petrological and mineralogical studies
- where there have been external studies, such as university thesis, or where research papers have been prepared for publication, the main conclusions of those works should be briefly summarised and a reference to the full work provided.

E. **Tables to accompany report**
- a completed Expenditure and Statistics Table (expenditure is still required for PPLs)
- a completed Reserve and Resources Table
- a completed Gas Testing and Gas Production Table
- a completed Gas Compositions Table.

F. **Data**
- a summary of data being submitted with this report
- a summary of any data which is not being submitted, reasons why, and when and how the data will be submitted i.e. LaFiX
- completed tables should be submitted as XLS files in a zipped folder as well as in the PDF report.

G. **Proposed production/exploration/activities in next reporting period**

- a brief description of proposed production/exploration/activities in the next reporting period
- a standard scaled diagram/map showing the locations of proposed activities.

H. **Other operations and activities (if applicable)**

Reports and data must also be included in the annual report for any activities undertaken during the reporting period which constitute the acquisition, interpretation or assessment of geoscientific data. Examples of types of activities are included in Part A Section 9 (Table 2 and Table 3). Data requirements are specified in Table 5 to Table 9.

Specific reporting requirements for the completion of certain activities are detailed below.

i. Geophysical survey (excluding seismic) (if applicable)

In addition to required data (as specified in Table 9), reports on geophysical surveys undertaken within the reporting period should include the following as a minimum:

- regional geology
- methodology - parameters details
- interpretation - brief summary on interpretation such as whether the data is of a quality to allow interpretation of stratigraphy and or structures of interest etc.
- appendices - general information - contractor, survey coverage and duration
- operations - positioning, equipment, calibrations, testing, permitting
- processing sequence
- statistics and personnel
- enclosures - location, data display, interpretation maps etc.
- data.

ii. Seismic survey reprocessing (if applicable)

In addition to required data (as specified in Table 8), reports on seismic reprocessing undertaken within the reporting period should include the following as a minimum:

- summary of processed lines
- acquisition parameters
- scaled diagram/map showing location of reprocessed lines
- data quality
- processing sequence
- images of processed seismic lines.

iii. Seismic interpretation (if applicable)

Reports on seismic interpretation undertaken within the reporting period should include the following as a minimum:

- results of seismic section interpretation and mapping based on such interpretation
- all other information that falls into interpretative data category
- seismic horizons/projects
- project submissions of horizons and faults as ASCII files (XYZ).

iv. Geophysical data interpretation (excluding seismic) (if applicable)

Reports on the interpretation of acquired or reprocessed geophysical data (other than seismic survey) should include the following as a minimum:

- results of geophysical data interpretation
- any mapping based on such interpretation
- all other information that falls into the interpretative data category.

v. Workover of a well (if applicable)

Reports on the workover of any well should include the following as a minimum:

- details of the well/s involved (well name/s and location/s as a minimum)
- details of the work or tests undertaken

- formation/s (geological unit/s) in which the activity took place (if applicable)
- justification/rationale for activity
- results/discussion
- current well status at completion of activity
- any data collected.

* Note: A workover that results in the deepening of a well should be treated as the drilling of a well, and a well completion report is required.

vi. Production from or testing of a well

Reports on the production from or testing of any well should include the following as a minimum:

- details of the well/s involved (well name/s and location/s as a minimum)
- date of production or pilot production testing period
- formation/s (geological unit/s) in which the activity took place (if applicable)
- justification/rationale for activity
- volumes, or estimates of the volumes, of gas, oil and water produced from the testing
- density of any oil produced from testing, measured using the American Petroleum Institute's (API) scale of measuring the specific gravity of oil, commonly known as the 'API gravity' of the oil
- pressure in the well, measured during the period, at which petroleum cannot escape from the wellhead for the well, commonly known as the 'shut-in pressure' of the well.
- detail any workover or stimulation of wells undertaken for pilot production testing
- type of perforations in the well (if applicable)
- depth in metres of the top and bottom of perforated intervals (if applicable)
- choke size used for the well
- methodology of data recording and any corrections applied to the data
- brief summary of data quality such as whether the data is of a quality to allow resource estimation, production estimates, reservoir engineering for production etc.
- detail any workover, shut-in or completion activities on wells after the completion of pilot production testing program
- status of each well tested post pilot production testing program
- detailed summary of pilot production results, including conclusions reached regarding the geology of the area and the resource potential or lack of potential. Where resource potential is considered to be low, reasons for determining this must be included. In addition, where further work may increase the resource potential recommendations for future work should be included
- any data collected.

3. Annual financial year statistics

Annual financial year statistics must be submitted by 31 August each year. The annual collection of this petroleum exploration and production data in NSW enables accurate reporting by the department about the level of exploration investment and petroleum production occurring in the state.

Statistics are to be submitted using the Expenditure and statistics table template.

Where activities and expenditure apply to more than one title, please apportion amounts to each title (using a separate form for each title). Where exploration in a title covers both conventional and unconventional targets, separate submissions are requested for each target.

Completed statistics will be treated as confidential.

Templates and forms for petroleum title holders are available on the department's website:

www.resourcesandenergy.nsw.gov.au/miners-and-explorers/compliance-and-reporting/exploration-reporting/petroleum

4. Partial relinquishment reports

Partial relinquishment reports are required when a title is reduced in area. These reports describe all of the exploration work conducted on the part of the title being relinquished.

Partial relinquishment reports are made open file immediately and therefore must contain all the relevant information that was previously contained in annual reports in addition to a discussion about the results and their significance.

Partial relinquishment reports must contain:

A. **Title page (1 page)**
- report type
- title type and number
- title holder
- grant date
- partial relinquishment date
- area relinquished (blocks and % of title)
- project operator (if applicable)
- project name and location (if applicable)
- date of report
- author(s) including contact details
- name, contact details and verification signature of the nominated technical manager.

B. **Executive summary or abstract (maximum 1 page)**
- a summary of all exploration, assessment and production activities carried out during the full term (since grant) of the area being relinquished
- the reason(s) for relinquishment.

C. **Background (recommended maximum 2 pages of text)**
- location and access
- geology
- title history and previous exploration
- exploration rationale (the petroleum targets, prospectivity and reasons for considering the area prospective).

D. **Exploration/assessment completed**
- a description of all exploration activities carried out on the area being relinquished since the grant of the title
- a scaled diagram/map showing the locations of all activities carried out in the relinquished area
- an inventory and details of all core and samples collected and their storage locations.

E. **Results and discussion**
- plans, maps, diagrams and sections that illustrate the geology including shows, occurrences, resources and reserves where applicable
- a discussion of the exploration results and their significance in the relinquished area, including potential petroleum plays, identified shows or occurrences, recommendations for further exploration or development, reasons for considering the area prospective/un-prospective, and reasons for relinquishment of the area
- details of hydrogeological studies and water monitoring bores
- where there have been external studies, such as university thesis or where research papers have been prepared for publication, the main conclusions of those works should be briefly summarised and a reference to the full work provided.

F. **Tables to accompany report**

- a completed Reserve and Resources Table (if applicable)
- a completed Gas Testing and Gas Production Table (if applicable)
- a completed Gas Compositions Table (if applicable).
-

G. **Additional requirements for partial relinquishment of PALs, PSPAs and PPLs (if applicable)**

- details of economic modelling and feasibility studies carried out
- details of marketing studies carried out
- details of any other assessment activities carried out
- production statistics for the area being relinquished
- a statement of any reserves/resources remaining in place
- an assessment of any future production potential
- a description of completed production activities.

H. **Conclusions and recommendations**

This section must provide conclusions reached regarding the geology of the area and any identified resources, shows or occurrences and implications for future exploration.

5. Final reports

Final reports are the last reports for a title and are submitted after the title is no longer in force. They must provide a summary of all exploration undertaken, a synthesis of the results and a discussion about the results and their significance.

Final reports must contain:

A. **Title page (1 page)**
- report type
- title number
- title grant data
- title holder
- project operator (if applicable)
- project name and location (if applicable)
- date of the report
- author(s) including contact details
- name, contact details and verification signature of the nominated technical manager.

B. **Executive summary or abstract (maximum 1 page)**
- a summary of all exploration, assessment and mining activities conducted during the full term (since the grant) of the title
- the significance of the results.

C. **Background (recommended maximum 2 pages of text)**
- location and access
- geology
- title history
- exploration rationale (the petroleum targets, prospectivity and reasons for considering the area prospective).

D. **Exploration completed**
- a summary of all exploration completed from the grant of the title
- a detailed description of any exploration activities carried out during the last year of the title
- a scaled diagram/map showing the locations of all exploration activities undertaken from the grant of the title. The scaled diagram/map should also include the title boundary, towns and major infrastructure (e.g. railways, highways, roads).
- an inventory of all core and samples collected and their storage locations.

E. **Results and discussion**
- plans, maps, diagrams and sections that illustrate the geology including shows, occurrences, resources and reserves where applicable
- a discussion of the exploration results and their significance, including potential petroleum plays, identified shows or occurrences, recommendations for further exploration or development, reasons for considering the area prospective/un-prospective, and reasons for relinquishment of the title
- details of hydrogeological studies and water monitoring bores
- where there have been external studies, such as University thesis or where research papers have been prepared for publication, the main conclusions of those works should be briefly summarised and a reference to the full work provided.

F. **Tables to accompany report**
- a completed Reserve and Resources Table (if applicable)
- a completed Gas Testing and Gas Production Table (if applicable)
- a completed Expenditure and Statistics Table – This expenditure data will be for the final annual reporting year only.

- a completed Gas Compositions Table (if applicable).

G. **Additional requirements for PALs (if applicable)**
- details of economic modelling and feasibility studies carried out
- details of marketing studies carried out
- details of any other assessment activities carried out.

H. **Additional requirements for PPLs (if applicable)**
- a statement of any unmined reserves/resources
- an assessment of any future production potential
- a description of completed production activities.

I. **Conclusion**

This section must provide conclusions reached regarding the geology of the area and any identified resources, shows or occurrences and implications for future exploration.

6. Well completion reports

The body of the well completion report is a summary and/or compilation of the data, and the actual raw data is included as appendices. Well data must be submitted in the formats as specified in Table 5.

Analyses that require longer periods of time to finalise (more than 6 months after the completion of the well) must be submitted immediately after relevant reports and data are available via EROL.

Well completion reports must contain:

A. **Title page (1 page)**
- report type
- title number
- title holder
- project operator (if applicable)
- project name and location
- date of well completion and rig release
- date of report
- author(s) including contact details
- name, contact details and verification signature of the nominated technical manager.

B. **Table of contents**
- including tables, figures and/or plates, appendices, enclosures, attachments, additional volumes, digital data etc.

C. **Executive summary or abstract (maximum 1 page)**
- a summary of the activity conducted including reason for activity conducted and new geological concepts and plays discovered.

D. **Background (recommended maximum 2 pages of text)**
- location and access
- a standard scaled diagram/map showing the location of the activity. The scaled diagram/map should also include the title boundary, towns and major infrastructure (e.g. railways, highways, roads)
- title history and previous exploration
- literature review (if applicable)
- exploration rationale (the petroleum targets, prospectivity and reasons for considering the area prospective).

E. **Expenditure table for activity**
- refer to summary template available on website for the activity being conducted. This should be inserted in the PDF report as well as attached separately as XLS (zipped) file.

F. **Well data summary table**
- refer to Well Data Summary Table template available on website.

G. **Well history**
- an ASCII Format file of Well Path for input into ARCGIS should be supplied for all drilling (a shape file if available). It should include XYZ coordinates, azimuth and dip. For horizontal/deviated wells coordinates of azimuth and dip changes and end point coordinates must be included (XYZ coordinates)
- well location plotted on a satellite image in a scale allowing visual verification of the location in relation to features visible on image such as buildings, fence line, water bodies)
- drilling plan (drilling contractor; drilling rig details; blow out preventers etc)
- drilling data (hole size and depth; casing details; drilling fluids; fishing operations, etc)
- mud data (chemicals, additives used, ASCII file)
- formation sampling (cuttings, coring and sidewall cores; drill stem tests; gas detector; etc)

- logging and surveys (geological logging, mud logging, coring, wireline logging; velocity surveys, temperature surveys etc)
- testing (other tests)
- cementing - full details including plugs and depths
- plug and abandonment or suspension.

H. **Geology**

- regional geology/geological setting
- stratigraphy (regional and penetrated) submitted as an ASCII file
- structure
- palaeontological results
- source rock data
- porosity, permeability and formation testing data
- temperature data (including temperature, depth, time since circulation and circulation time)
- hydrocarbon shows.

I. **Data**

- a summary of data being submitted with this report
- a summary of any data which is not being submitted, reasons why, and when and how the data will be submitted i.e. LaFiX.

J. **Results and conclusions**

- a section including plans, sections and data generated to illustrate the exploration results, significance of results, geological models, resource/reserve estimates and anything else that may be relevant
- detailed summary of exploration and/or production results, including conclusions reached regarding the geology of the area and the resource potential or lack of potential. Where resource potential is considered to be low reasons for determining this must be included. In addition, where further exploration work may increase the resource potential recommendations for future exploration should be included.

K. **References**

L. **Appendices**

- location plan and surveyors notes – must contain a figure at an appropriate scale
- composite well log
- drillers logs
- lithology log
- graphic log (strip log)
- core, sidewall core and cutting descriptions
- core/cuttings photos
- core analysis data
- palaeontology and palynology reports
- petrological reports
- perforation logs
- fracture stimulation report and data (must include details of chemical additives and monitoring plan on possible aquifer contamination)
- borehole deviation plots, verticality Logs
- wireline geophysical data (LAS) and borehole scanning data, including digital data and images of wireline logs
- velocity survey
- vertical seismic profiling (VSP)
- DST, RFT, FIT – includes ASCII data, recorded charts and pressure recording
- gas desorption results and gas analysis
- mud log
- detailed well schematic (including completion details).

7. Seismic survey reports

The body of the seismic survey report is a summary and/or compilation of the data and the actual raw data is included as appendices. Seismic data must be submitted in the formats as specified in Table 6 and Table 7.

Seismic survey reports must contain:

A. **Title page (1 page)**
- report type
- title number
- title holder
- project operator (if applicable)
- project name and location (if applicable)
- dates of seismic survey
- date of report
- author(s) including contact details
- name, contact details and verification signature of the nominated technical manager.

B. **Table of contents**
- including tables, figures and/or plates, appendices, enclosures, attachments, additional volumes, digital data etc.

C. **Executive summary or abstract (maximum 1 page)**

D. **Introduction**
- summary of location, operator, parameters, line listing and length, etc.

E. **Geology**
- brief history of exploration including previous seismic, gravity, magnetic and radiometric surveys, wells drilled or any information that was considered before start of the survey.

F. **Objectives of the survey**

G. **Acquisition and processing**
- brief summary of the acquisition and processing. Details to be provided in appendices.

H. **Data quality**
- brief summary of data quality such as whether the data is of a quality to allow interpretation of stratigraphy and or structures of interest etc. Actual interpretation of the seismic data should be reported separately, not within this report.

I. **Results and conclusions**
- a section including plans, sections and data generated to illustrate the results, significance of results, geological models, resource/reserve estimates and anything else that may be relevant.
- detailed summary of exploration and/or production results, including conclusions reached regarding the geology of the area and the resource potential or lack of potential. Where resource potential is considered to be low reasons for determining this must be included. In addition, where further exploration work may increase the resource potential recommendations for future exploration should be included.

J. **References**

K. **Appendices**

- contractor - report coverage, location and duration of survey
- acquisition:
  - positioning (survey report, system, equipment, mapping)
  - data acquisition report (recording system, equipment, layout, energy source, instrument and noise tests, recording parameters, up hole tests, other surveys undertaken)
  - observer's log
  - surveyor's report
  - navigation data
  - QC field operations report
- processing report
- data quality report
- list of key personnel and list of field tapes and shotpoint numbers
- enclosures
  - shotpoint location maps
  - energy source array and spread arrangement figures
  - processing flow charts
  - images of processed seismic.

At the completion of the seismic work, a complete LEGIBLE set of observers logs, uphole records, surveyors notes, ASCII file of shot point location data, must be supplied together with a complete set of field tapes, stacked tapes, final stacks and migrated stacked sections in SEGY format. Field data should be submitted directly to SpectrumData (see seismic field and stack tapes).

8. Well assessment: gas production and gas testing results

Some petroleum titles have a licence condition regarding *Well Assessment* which requires the submission of gas flow rates for each well connected to a gas gathering system and the total gas flow into the treatment facility.

This data must be submitted within seven days after the end of each month using the Gas Testing and Gas Production Table template available at:

www.resourcesandenergy.nsw.gov.au/miners-and-explorers/enforcement/exploration-reporting/petroleum

The table must be submitted via email to geoscience.petroleum@industry.nsw.gov.au

Well status notification

If there is any change in the status of a well, **the department must be notified within seven days**.

You must submit this notification via email to geoscience.petroleum@industry.nsw.gov.au using only the approved definitions provided in Table 4 below.

Table 4: Well status definitions

Well status	Definition
Under construction	Yet to be completed well
Active	Constructed well with activity taking place (e.g. Work over, pumping, production etc). Please specify the activity taking place within the notification
Shut in	A constructed well with surface valves closed to stop it flowing. The well may be under pressure and may flow gas and/or fluids if valves were opened
Suspended	A constructed well that is not capable of flowing gas and/or fluids to the surface through the installation of at least 2 barriers (e.g. a pressure tested mechanical device and a full column of fluid) or a well that has temporarily discontinued operations
Plugged and decommissioned	A well that is fitted with cement and/or mechanical plugs that effectively seal the well from open petroleum bearing formations, potential leak points, freshwater aquifers and the surface, and decommissioned (removed from service) after cessation of function. The well is closed permanently

9. Notification of discovery

Section 27 of the Act requires that if there is any new discovery of hydrocarbons within a petroleum title, **the department must be notified within 3 days**.

This notification is must be submitted in letter or report format via email to geoscience.petroleum@industry.nsw.gov.au.

The notification should include the following as a minimum:

- title type and number
- title holder
- project operator (if applicable)
- project name and location (if applicable)
- date of discovery
- date of notification
- author(s) including contact details
- details of the discovery, including but not limited to:
  - location of the discovery (eg: well name and coordinates)
  - formation (geological unit) in which the discovery was made (if known)
  - measurement of quantity or rate of production of hydrocarbon and water from the well (if known)
  - physical and chemical properties of the hydrocarbon (if assessed)
  - preliminary estimation of quantities of hydrocarbon discovered (if assessed)
  - plans for the analysis and measurement of the hydrocarbon
  - plans for the well in which the discovery was made
  - plans for further testing of the region/geological unit in which the discovery was made.

Part C: Tables to accompany reports

Most reports require tables which provide information in standard formats that can be easily extracted for use by the department.

All tables must be in PDF format and inserted into the report, as well as XLS format and zipped as an attachment to the report in EROL.

Tables required are:

- Expenditure and Statistics Table
- Gas Compositions Table
- Gas Testing and Gas Production Table
- Reserves and Resources Table
- Well Data Summary Table

Templates can be found at:

www.resourcesandenergy.nsw.gov.au/miners-and-explorers/enforcement/exploration-reporting/petroleum

Part D: Submitting digital data

1. Online lodgement

a) Digital Imaging Geological System – DIGS®

DIGS® is an online archive that holds reports, publications and other important documentary material held by the department.

The department requires the submission of data in digital format. This allows the department to provide useful non-confidential data to industry, either via data packages or directly from DIGS®.

Digital data provided to the department will be held in the DIGS® system in its native format. Native formats as defined by DIGS® are: PDF, ASCII (TXT, DAT, LAS, CSV), JPG, TIFF and ZIP.

b) Exploration and Environmental Reports Online Lodgement – EROL

Exploration and Environmental Reports Online Lodgement (EROL) allows titleholders to lodge reports online for verification by the department. A satisfactory report lodged in EROL is submitted electronically to DIGS®.

For more information on how to submit petroleum reports (including instructions for applying for a user account) using EROL, refer to the department website:

www.resourcesandenergy.nsw.gov.au/miners-and-explorers/geoscience-information/services/online-services/erol

The maximum limit of a single digital file attached to a report is 32 MB. Each report can have up to 200 digital files of up to 32 MB each attached.

For help with using EROL call (02) 4931 6556 or email digs.info@industry.nsw.gov.au.

c) Large File Exchange Service - LaFix

the department's Large File Exchange Service (LaFiX) is used where data needs to be submitted that exceeds 32 MB (for a single file) or where there are more than 200 files to attach to a report.

http://lafix.minerals.nsw.gov.au/Lafix?app=trade.resenergy.petroleum

This data is to be submitted in addition to a report submitted via EROL. Data to be added to an existing report can be submitted via LaFix.

2. File formats for digital data submission

The primary format for the submission of digital reports is Adobe Acrobat PDF format. All textural documents, most figures, plans etc and small amounts of tabular data should be supplied in PDF format. Documents that cannot be supplied (or it would be inappropriate to be supplied) in PDF format should be supplied in the formats set out in sections (a) to (k) below.

All files must be virus free and not have any form of password or other security protection.

a) Reports

Reports must be provided as PDF documents. This includes the title page, summary, list of contents, references, and any figures and tables that are interleaved with the text, appendices and plans. Reports must contain the sections headings outlined in Part B of this Guideline.

When using PDF format, the report text (including tables of contents, abstract etc) and any figures, plans etc that form part of the body of the report should be compiled as a single PDF file. Each appendix to the report should be a single separate PDF file where possible. However, if creating one PDF file would create an excessively large PDF file (>32 MB), the report should be split into a small number of logically named PDF files.

b) Images

All graphics should be provided in PDF, JPEG or JPG or TIFF or TIF format. They must be readable, of good print quality, and the colour and spatial data of the original plan or image should be maintained. Resolution should be generally 300 dpi or better.

Most small to medium size graphics can be accommodated in PDF. These may be included in the main report PDF file, particularly if they are interleaved with the text.

For larger plans, or where PDF is not considered appropriate, JPEG and TIFF may be used.

File names should be logical (e.g. Figure1.tif, Appendix1_Figure1a.jpg).

c) Tables

All tables must be included in the relevant report in PDF format, as well as provided as Microsoft Excel files in the 'XLS' format. 'XLS' format files must be zipped and submitted as an attachment to the report lodged via EROL (EROL will not allow the submission of 'XLS' format files unless they are within a zipped folder). Further details about the type of tables are provided in Part C.

d) Tabular data

Tabular data should be supplied in fixed width, space delimited ASCII format (if the data is a small table in the body of a report it may be provided as part of the relevant PDF file). Acceptable ASCII formats are: TXT, DAT, LAS, CSV.

Files should have names that indicate which part of the report they are and/or what they contain. The files should also include a header with column headings, units, and explanations of abbreviations etc (or a separate file containing such information).

Example of fixed width, space delimited ASCII format:

Line	Shot	Elev.	Longitude	Latitude
DMR98-02	100	345.67	149.4523567	-30.4512634
DMR98-02	110	346.23	149.4654456	-30.4545675
DMR98-02	120	345.13	149.4724465	-30.4612459
DMR98-02	130	344.67	149.4756397	-30.4656346

e) Lithology logs (English logs)

Textural lithological descriptions should be supplied as PDF or ASCII (if in a table form they should be fixed width, space delimited) format. Acceptable ASCII formats are: TXT, DAT, LAS, CSV. Each well/borehole should be a separate file.

f) Geophysical logs (Wireline)

Digital logs files must be supplied in LAS version 2.0 format. In the case of imaged logs, data should be supplied as in LIS or TIF format. Log curves should be treated as images (see above), and provided preferably in PDF. File names should indicate the well name, the tool type and the run number where practical (e.g.Bohena2h_Gamma_r2.las).

g) Seismic sections

Final stack and migrated stack seismic sections should be supplied digitally as PDF, JPEG or TIFF format files. File names should include the line name (e.g.BohenaSS_98FSG_AAA.PDF, GunnedahSS_80-M3.PDF).

h) Seismic field and stack tapes

The raw seismic field data and stack tapes must be supplied on the latest industry standard storage media e.g. high quality DVD/CD, high density durable storage media (LTO or DLT) in SEG standard format. No other format or media will be accepted.

The field data should be sent directly to SpectrumData with clear instruction that data should be archived as CONFIDENTIAL in the department archives (NOT in petroleum company archives).

KDM SpectrumData address:

Library, Logistics and Vault Team Lead
KDM SpectrumData
357 Oxford St, Mount Hawthorn WA 6016
Phone: +61 (08) 6161 5354
Fax: +61 (08) 9444 7570

A transmittal acknowledging that SpectrumData received field data should be sent to:

Strategic Resource Assessment and Advice
Division of Resources and Energy
516 High St, Maitland NSW 2320
PO Box 344 HRMC NSW 2310
Email: geoscience.petroleum@industry.nsw.gov.au

Seismic data submission requirements have been outlined in Table 6 to Table 8.

i) Geophysical survey data (non-seismic)

Raw, processed and final located data files should comply with the ASEG-GDF2 standard for a wide range of located data, or the ASEG-ESF standard for electrical surveys. Should the ASEG-GDF2 or ASEG-ESF standards be inappropriate for a particular survey type, the digital data should be delivered in a format complying with those listed in Table 9.

Derived data such as grids, images or models created from data are to be submitted in the appropriate file format specified in Table 9.

All coordinate data must also include clearly stated datum, spheroid and projection, clearly stated transformation parameters if not in same coordinate system as was acquired in the field. All elevation values must be AHD.

j) Location co-ordinates and plans

All coordinates are to be for the GDA94 geocentric datum and GRS80 spheroid.

Wherever location grid co-ordinates (including grids on plans, figures etc) are used, complete spheroid, datum, grid system and projection details **must** be stated (e.g.GDA94 Lat/long, GDA94 MGA zone 55). The department requires locations to be supplied in Decimal degrees Latitude\Longitude to a minimum of 6 decimal places (ddd.ddddddddd).

k) File compression

Files may be submitted in compressed form in ZIP format. Compressed files must be self-extracting or instructions for decompression must be included. Compressed files must decompress into a single directory with no subdirectories. Compressed files must not be recompressed into another compressed file. File names used in lists of contents etc. must be the decompressed file names not the compressed file names.

Part E: Data formats

Table 5: Well data formats

Field and processed digital data

Data required	Format	Remarks
Edited field data and processed data for all wireline logs, MWD or LWD tools. Includes well test raw data.	LIS, DLIS, LAS	With verification listing of the data supplied. The data shall include full header information
Edited field and processed data for borehole deviation surveys.	LIS, DLIS, ASCII, LAS, XLS	The data shall include full header information
Mud logging data	ASCII, LAS	With a header giving field names, curve names and units of measure
Downhole seismic and GPR	SEGY	
Velocity surveys		To include verification header file
-raw	DLIS, SEGY	
-processed	ASCII	
-checkshot and time/depth analysis	(Checkshot data)	
Core, side wall core natural light photography – UV light to be done in fluorescent sections	JPEG, PNG or TIF	Provide minimum 300 DPI image in 24-bit colour. High-resolution images able to be magnified (zoom in) without pixilation

Reports and images (Digital format required for all lodgements)

Data required	Format	Remarks
Well completion report	PDF	Image files and logs included in reports must be submitted as separate JPEG or TIF files
Log displays	PDS/ META/ PDF	Software to be provided. Continuous page at a readable scale
Mudlog	TIF/ PDF	Continuous page at a readable scale
Well data summary table	PDF and XLS (zipped)	As per template provided on website
Petrophysical, geochemical or other sample analyses	ASCII/ XLS	As a space or tab delimited ASCII file with metadata included
Composite well log	TIF/JPEG/PDF	
Velocity log displays	TIF/JPEG/PDF	

Samples

Data required	Format	Remarks
Ditch cuttings		One set of washed and dried cuttings stored in the standard soil sample/pulp envelope or vials/bottles (minimum of 100g) labelled with the well name and depth intervals
Core and cuttings from any drilling activities		Selected core and cuttings must be lodged in standard modular core boxes/chip trays. Information on the hole and drilling depths must be clearly and permanently indicated on both the inside and the outside of each box
Fluid hydrocarbon samples (in an API approved safety container)		Consultation with the department recommended (1ltr if available)
Sidewall core material (if recovered)		
Palynological slides and residues Palaeontological material Petrological slides		As prepared

Table 6: Seismic data 2D formats

Field data

Data required	Format	Remarks
Navigation data Includes final processed navigation, elevation and bathymetry data	UKOOA	P1/90 or subsequent format with header information of navigation / shotpoint location data including elevations or bathymetry. Header data must include geodetic datum, spheroid, projection and clearly stated transformation parameters
Raw navigation data	UKOOA	P2/94 or subsequent format
Seismic field data	SEG Standard	
Seismic support data	PDF	Observers logs, surveyors notes, chaining diagrams, intersections
Uphole data	ASCII	
Itemised field tape listing	Digital (ASCII)	Field data showing tape number, survey name, line number, shotpoint range

Processed data

Data required	Format	Remarks
Raw and final stacked data, near/mid/far sub-stacks - if generated	SEG-Y	Includes fully annotated EBCDIC header
Raw and final migrated data including PSDM / PSTM, near/mid/far sub-stacks - if generated	SEG-Y	Includes fully annotated EBCDIC header
Fully annotated image of final processed migrated data. (Onshore)	TIFF, JPEG, PDF	The image must have a vertical scale of not less than 5cm/sec, and a resolution of minimum 300dpi
Shotpoint to CDP relationship	ASCII	Sufficient SP/CDP data for workstation interpretation. At least SOL and EOL relationships for each line and a listing of equivalent CDP/SP pairs for each line
Itemised process tape listing	ASCII	Showing tape number, survey name, line number, shotpoint range, data type
Velocity data	ASCII	Including line number, shotpoint, time versus RMS pairs for both stacked and migrated velocities

Final reports

Data required	Format	Remarks
Final report (operations and navigation)	PDF	Location map included. Onboard processing and any retained outputs to be documented in report
Final processing report	PDF	To include sample print out of SEGY EBCDIC header
Final interpretation report	PDF	
Digital images of interpretation maps	TIF	These include TWT structure maps at key horizons and representative sections showing seismic horizon picks as Geo-referenced TIF images
Interpreted horizons and faults	ASCII	X, Y and Z values

Table 6 Seismic data 3D formats

Field data

Data required	Format	Remarks
Final processed navigation data includes elevation and bathymetry data	UKOOA	All associated data sufficient to re-process seismic data including shot and receiver coordinates
Raw navigation data	UKOOA	P2/94 or subsequent format
Seismic field data	SEG Standard	To be submitted on high density media
Seismic support data	PDF	Must include observer's logs
Uphole data	ASCII	Includes line number, shotpoint and time depth pairs for each uphole
Itemised field tape listing	ASCII	Showing tape number, survey name, line number, shotpoint range, data type in ASCII format

Processed data

Data required	Format	Remarks
Raw stacked data, near/mid/far sub-stacks - if generated	SEG- Y	Includes fully annotated EBCDIC header
Raw and final migrated data including PSDM / PSTM, near/mid/far sub-stacks - if generated	SEG-Y	Includes fully annotated EBCDIC header
Final processed (grid) bin coordinates	UKOOA 3D binning grids	
Polygonal position data (Full Fold Outline and Surface Outline)	ASCII space or tab delimited	Listing major inflection points of a polygon describing the location of the survey providing survey name, polygon point, inline/crossline nomenclature, latitude and longitude
Velocity data	ASCII (Western Format)	Including bin number and time versus RMS velocity pair for both stacked and migrated velocities
2D data subset (non-exclusive surveys)	SEG-Y	Final migrated data
Itemised process tape listing	ASCII	Showing tape number, survey name, in-lines and crosslines, cdps, data type

Final reports

Data required	Format	Remarks
Final report (operations and navigation)	PDF	Location map included. Operations and Navigation Reports can be supplied as separate volumes. Onboard processing and any retained outputs to be documented in report
Final processing report including grid definition	PDF	To include sample print out of SEGY EBCDIC header, 3D grid definition details used for loading SEGY into interpretation work stations
Final interpretation report	PDF	
Digital images of interpretation maps	TIF	These include TWT structure maps at key horizons and representative sections showing seismic horizon picks as Georeferenced TIF images.
Interpreted horizons and faults	ASCII	X, Y and Z values

Table 7: Reprocessed seismic data formats

Processed data

Data required	Format	Remarks
Raw stacked data 2D and 3D, near/mid/far sub-stacks – if generated	SEG-Y	Includes fully annotated EBCDIC header
Raw and final migrated data including PSDM / PSTM (2D and 3D), near/mid/far sub-stacks - if generated	SEG-Y	Includes fully annotated EBCDIC header
Final processed (grid) bin coordinates	UKOOA 3D binning grids	To be completed using UKOOA
Polygonal positions for 3D data (Full Fold Outline for offshore; Full Fold Outline and Surface Outline for onshore)	ASCII tab or space delimited	Listing major inflection points of a polygon describing the location of the survey providing survey name, polygon point, inline/crossline nomenclature, latitude and longitude
Itemised tape listing	ASCII	Showing the tape number, survey name, line number, shotpoint, data-type and what original tapes are on the copy tapes
Fully annotated image of final reprocessed migrated data. (Onshore only)	TIFF, JPEG or CGM+	The image must have a vertical scale of not less than 5cm/sec
Velocity data	ASCII	Include line number, shotpoint, Time versus RMS pairs for both stacked and migrated velocities

Final reports

Data required	Format	Remarks
Final report (Reprocessing)	PDF	
Final report (Interpretive)	PDF	
Digital images of interpretation maps	TIF	These include TWT structure maps at key horizons and representative sections showing seismic horizon picks as Georeferenced TIF images

Table 8: Geophysical data formats

Field data

Data required	Format	Remarks
Geophysical data (magnetic, radioelement, gravity) Located data and derived grids.	ASEG-GDF2 ER Mapper Grid If data not covered by above formats, submit as tab delimited ASCII data text file with header text file.	Components must be submitted in a ZIP or RAR file. Gravity field data must include raw loop data, raw elevations plus measurement times and dates. Aeromagnetic data must include descriptive headers, flight number, line number, date and time, fiducial, raw magnetic reading, processed magnetic reading, radar and GPS or barometric altimeter, and base station reading
Electrical geophysical data (DC Resistivity, Time Domain EM, Frequency Domain EM, CSAMT, SP and MT)	ASEG-ESF ER Mapper Grid	Located data and derived grids. Components must be submitted in a ZIP or RAR file
Altimeter, storm monitor, etc. (aeromagnetic only)	ASCII	One copy of analog monitor records, diurnal records and altimeter records in an appropriate format
3D models	See national standard	DXF and ASCII preferred plus a 3D PDF
Ground Penetrating Radar (GPR)	All formats accepted with text header file	SEGY preferred
Other types of surveys		Submission and format details to be negotiated with the department
Digital images of interpretation maps	TIF	These include any maps included in the Interpretation report as separate Georeferenced TIF images

Processed data

Data required	Format	Remarks
Field and processed data	ASCII	ASCII data includes ASEG- GDF2 format
Geophysical data (magnetic, radioelement, gravity)	ASEG-GDF2 ER Mapper Grid	Aeromagnetic processed data must include pre and post microlevelling data. Gravity processed data must include descriptive headers, station, XY lat/long coordinates, meter reading, observed gravity value, elevation value calculation errors, final processed gravity value
Electrical geophysical data (DC Resistivity, Time Domain EM, Frequency Domain EM, CSAMT, SP and MT)	ASEG-ESF ER Mapper Grid	Components must be submitted in a ZIP or RAR file
3D models	DXF, U3D PDF	See national standard; DXF / ASCII preferred plus a 3D PDF
GIS data	Any format acceptable.	ESRI formats preferred
Geophysical inversion and numerical modelling	See national standard	Models and pseudosections
Geophysical images	PDF	

Final reports

Data required	Format	Remarks
Final report (operations, navigation and processing)	PDF	Must include location map and flight line map. Aeromagnetic surveys: Including aircraft and survey equipment details and specifications, flight line directions and terrain clearance, line spacing, total line kilometres. Gravity surveys: Including meter type, scale factor for meter. Data must be tied to an Isogal station in the Australian Fundamental Gravity Network. Processing report must include company details and processing parameters
Digital images of interpretation maps	TIF	These include any maps included in the Interpretation report as separate Georeferenced TIF images

Part F: Glossary

Table 10 Definitions

Term	Description	Category
department	NSW Department of Industry, Skills and Regional Development	NSW Department of Industry
the division	Division of Resources and Energy	NSW Department of Industry
GSNSW	Geological Survey of NSW	NSW Department of Industry
SRAA	Strategic Resource Assessment and Advice	NSW Department of Industry
DIGS	Digital Imaging Geological System	Digital Data Storage and Exchange
EROL	Exploration and Environmental Reports Online Lodgement	Digital Data Storage and Exchange
LaFix	Large File Exchange Service	Digital Data Storage and Exchange
Act	Petroleum (Onshore) Act 1991	Legislation
Regulation	Petroleum (Onshore) Regulation 2007	Legislation
PAL	Petroleum Assessment Lease	Title Type
PEL	Petroleum Exploration Lease	Title Type
PPL	Petroleum Production Lease	Title Type
PSPA	Petroleum Special Prospecting Authority	Title Type
Open File	A document/report and/or data that is able to be viewed by the public, no longer subject to confidentiality under the *Petroleum (Onshore) Act 1991*	Confidentiality /Release of Data
Confidential	A document/report and/or data that is not able to be viewed by the public, subject to confidentiality under the *Petroleum (Onshore) Act 1991*	Confidentiality /Release of Data
CSV	Comma Separated Values	File Extension
DAT	Data File	File Extension
DXF	Drawing eXchange Format	File Extension
ESF	External Source Format	File Extension
JPG/JPEG	Joint Photographic Experts Group	File Extension
PDF	Portable Document Format	File Extension
PNG	Portable Network Graphics	File Extension
RAR	Roshal Archive	File Extension
TIFF/TIF	Tag Image File Format	File Extension
TXT	Text File	File Extension
U3D	Universal 3D	File Extension
XLS/XLSX	eXceL Spreadsheet	File Extension
ZIP	Compressed File Format	File Extension
CSAMT	Controlled Source Audio-Frequency Magnetotellurics	Geophysics
DC Resistivity	Direct Current Resistivity	Geophysics
DLT	Digital Linear Tape	Geophysics
Frequency Domain EM	Finite Element Method	Geophysics
GPR	Ground Penetrating Radar	Geophysics
MT	Magnetotellurics	Geophysics
PSDM	Pre-Stack Depth Migration	Geophysics
PSTM	Pre-Stack Time Migration	Geophysics
SP	Shot point	Geophysics
Time Domain EM	Time-Domain Electromagnetics	Geophysics
TWT	two-way-time	Geophysics

Term	Description	Category
VSP	Vertical Seismic Profiling	Geophysics
LTO	Linear Tape Open	Geophysics
DPI	Dots Per Inch	Image Resolution
ASCII	American Standard Code for Information Interchange	International Standard
EBCDIC	Extended Binary Coded Decimal Interchange Code	International Standard
GDF2	General Data Format (version 2)	International Standard
LAS	Log ASCII Standard	International Standard
LIS/DLIS	Digital Logging International Standard	International Standard
P1/90	Navigation data standard format	International Standard
P2/94	Navigation data standard format	International Standard
SEGY/SEG-Y	Society of Exploration Geophysicists (SEG) geophysical data standard	International Standard
AHD	Australian Height Datum	Locational Data
GDA94	Geocentric Datum of Australia 1994	Locational Data
GIS	Geographic Information System	Locational Data
GPS	Global Positioning System	Locational Data
GRS80	Geodetic Reference System 1980	Locational Data
MGA	Map Grids Australia	Locational Data
LWD	Logging while drilling	Logging technique
MWD	Measurement While Drilling	Logging technique
ASEG	Australian Society of Exploration Geophysicists	Organisation
ESRI	Geographic Information System Company	Organisation
SEG	Society of Exploration Geophysicists	Organisation
UKOOA	UK Offshore Operators Association	Organisation
DST	Drill Stem Test	Well Test
FIT	Formation Integrity Test	Well Test
RFT	Repeat Formation Tester	Well Test