

Geoscience information highlights: 2022–23

Tracey Rogers^{1,2}

Data capture of legacy drilling and geochemical data primarily covering the Barkly Region is now completed. Since April 2022, the BONNEY WELL 1:250 000 mapsheet has been completed and the data released. In the Pine Creek area, the data captured from the FERGUSSON RIVER 1:250 000 mapsheet has also been released. The digitising of well logs from all the exploration petroleum wells is complete, and work on digitising logs from production wells has commenced. Digital data is now available for another 15 wells and 9 seismic surveys. During 2022, 35 interpretive petroleum reports were gazetted and released. A new layer providing access to HyLogger™ core photography has been added to STRIKE. Overall, more than 20 NTGS products have been released during 2022–23.

New drilling and geochemistry data

The legacy data capture of geochemistry and drilling data from Tennant Creek and surrounds to the Queensland border and throughout the Barkly Region has been completed. During 2022, data was captured from the BONNEY WELL 1:250 000 mapsheet. Data, including 2959 drillhole collars, 17 689 drillhole samples and 7424 surface samples, were released in June 2022.

In the second half of 2022, the focus for data capture moved to the Pine Creek region, an area with a long history of exploration and mining, and the largest concentration of reports in the Territory. As such, there are a very large number of reports that have been identified for data capture. Data from the FERGUSSON RIVER 1: 250 000 mapsheet

was released in November 2022 and included 3103 drillhole collars, 50 051 drillhole samples and 50 437 surface samples. Of these, 48 925 drillhole and 45 566 surface samples had associated geochemical assays. Data capture from the DARWIN 1:250 000-scale mapsheet has commenced.

Additional data is added to the database through routine open filing, capture of data from early reports on active titles and our own NTGS sampling. As at the November 2022 release, DIP 001 *Northern Territory Geochemical Datasets* contains some 244 000 drillhole collars, 1 622 500 drillhole samples and 448 500 surface samples, most with the associated assay results.

STRIKE

A new layer has been added to STRIKE to display all the drillholes that have had core scanned through the HyLogger. The data attributes for the Hylogged Drillholes layer include a hyperlink to download the core photography generated through the scanning process (**Figure 1**). The hyperlink will download a zip file containing all the images.

Industry reports and digitising petroleum data

The review of older petroleum tenure reports to identify and prepare reports and data for release continued. A total of 35 reports with interpretive information were gazetted and released in July and October 2022.

The project to digitise hard copy seismic sections and well logs has made significant progress. As seismic sections and well logs are digitised, the data is added to records in the Petroleum Exploration Reports (PEX) collections on GEMIS.

¹ Northern Territory Geological Survey, GPO Box 4550, Darwin NT 0801, Australia
² Email: tracey.rogers@nt.gov.au

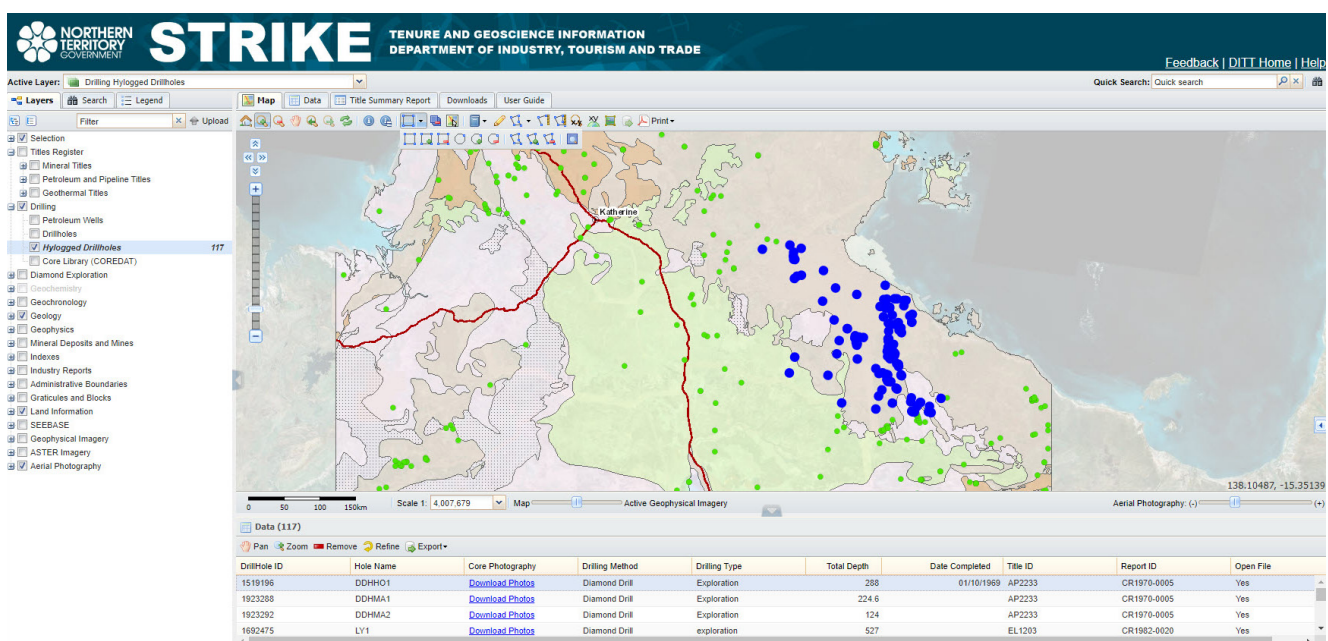


Figure 1. STRIKE Hylogged Drillholes layer.

Over the last year, 169 sections from 9 seismic surveys in the Amadeus, Bonaparte and Eromanga basins were digitised and released. Various logs of 15 wells in the McArthur Basin/Beetaloo Sub-basin, and Amadeus and Georgina basins were also digitised and released. Digitising of the logs from exploration wells was completed in 2022; now all logs from exploration wells across the NT are available in digital format.

Work is progressing on the well logs from production wells drilled in the Amadeus Basin. Digitising of seismic survey data from the Amadeus and Bonaparte basins is continuing.

Petroleum Act amendments – changes to reporting and sample submission

Amendments to the *Petroleum Act 1984* passed during the parliamentary sittings on 1 December 2022 and received assent on 16 December 2022. The amendments implement recommendations from the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory³ and significantly improve the regulatory framework for the onshore petroleum industry. These latest changes, which are found in the *Petroleum Legislation Amendment Act 2022*, incorporate requirements currently in the ‘Schedule of Onshore Petroleum Exploration and Production’, including some relating to submission of reports, data and samples. These changes will commence pending the amendment of the Petroleum Regulations 2020 later in 2023. Once the amended Act and Regulations come into force, the Ministerial direction requiring compliance with the ‘Schedule of Onshore Petroleum Exploration and Production’ will be revoked.

The amendments to the Act have made requirements for reporting and sample submission much clearer; and the somewhat confusing section dealing with the release of information (s61) has been greatly simplified. In line with practice in other jurisdictions, all technical reporting has been separated from the annual reports, and some timeframes adjusted. Main changes include:

- Both initial and final well completion reports to be released 2 years after rig release.
- Geoscience studies and reprocessing reports and data to be submitted 12 months after study or reprocessing completed (ie not attached to annual report).
- Interpretative reports and data to be released 4 years after the report was due to be submitted; therefore geophysical interpretation reports and data will be released 5 years after the survey was completed (previously 6 years).
- Clarification on the release of reports and data when titles cease or parts thereof are relinquished – unless the holder is granted a new licence replacing the old title – the information may be immediately released.
- Core and cutting samples must be offered to the Minister within 6 months after rig release – the Minister may determine that the samples are not required, or when they are to be submitted. Release to the public is due 2 years after rig release.
- Release of interpretative reports no longer requires advertising in the Government Gazette.

The Regulations will provide further detail on requirements, including contents of reports. The ‘Guidelines for Northern Territory Onshore Petroleum Reporting and Data Submission’ will be updated to reflect the changes.

***Resourcing the Territory* website⁴**

Branding of the *Resourcing the Territory* initiative has been refreshed and the entire website has been updated. In tandem with the change, information on the Mineral Development Taskforce has been added under the Minerals menu. This section will expand when the recommendations of the Taskforce are published. Website information, including factsheets and maps, is actively updated; work is also progressing on expanding energy-focused content.

Northern Territory Geological Survey products

New or updated NTGS products released since April 2022 include one new geological map and explanatory notes, 4 updated and 4 new Digital Information Packages (DIP), 8 Records, 3 new HyLogger Data Packages (HDP), the Brunette Downs gravity survey data and grids, and the 2022 edition of the Metallogenic map of the Northern Territory.

Records released cover geochronology results, characterisation of the VMS mineralisation at the Home of Bullion deposit in the Aileron Province, and spectral reflectance rock characteristics in Tennant Creek. Record 2004-011, Amadeus Basin seismic interpretation, was re-released with the Kingdom™ data project updated to Kingdom 2017 format.

DIP 035, released in August 2022, was produced in collaboration with CSIRO and provides a geological and structural analysis of the northwest Aileron and southwest Davenport provinces, including solid geology GIS dataset and geophysical images. DIP 036, containing analysis of the NTGS McDonnell Ranges stream sediment samples and data using the UltraFine+® Next Gen Analytics soil analysis method and workflow, was released in October 2022. This work was part of a collaborative research project conducted by CSIRO in conjunction with LabWest and other organisations.

Two additional packages have also been released for the Warramunga Province mineral deposit series, DIPs 037 and 038 relating to the Juno and Northern Star deposits respectively, were released in November 2022. A third package in the Warramunga Province mineral deposit series, covering the Gecko Corridor, is in progress.

Other releases include the JINKA 1:100 000-scale geological map, explanatory notes and GIS dataset, released in November 2022. A guide to the Critical Minerals in the Northern Territory was released in March 2023 and is accessible from the *Resourcing the Territory* website or directly from GEMIS.

The geological units and structures from the individual GIS datasets for the 1:250 000 mapsheets are being compiled into one dataset for the NT. The dataset will be released as DIP 040 in the near future.

³ <https://frackinginquiry.nt.gov.au>

⁴ www.resourcingtheterritory.nt.gov.au