

Improved accessibility to geoscience information

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During the last 12 months, a significant volume of legacy drilling and geochemical data has been captured in the current priority area around Pine Creek. Data capture from the DARWIN mapsheet³ has been completed, comprising the KOOLPINYAH and NOONAMAH mapsheets (released in September 2023), and DARWIN and BYNOE mapsheets (March 2024); the data from the remaining two mapsheets is due for release by AGES 2024. Data has also been captured from three 1:100 000 mapsheets within the PINE CREEK 1:250 000 mapsheet (released in March 2024).

The digitising of well logs from petroleum production wells has been completed. With the digitising of logs from the final 35 wells, plus 5 seismic surveys, the project to digitise hardcopy documents and make digital data available is now complete. Digital data for an additional 18 wells has also been released.

Enhancements to STRIKE are ongoing and in 2023, new base map options and two new layers have been added. In addition, several layers now have pop-up attribute displays available on the map window, and users can now create custom bookmarks. A significant enhancement to GEMIS has simplified and rearranged the record display view, which has made access to the downloadable files more visible.

In the last year, more than 30 NTGS products have been released. They include 15 NTGS Records, the second edition HENBURY 1:250 000 geological map, GIS and explanatory notes, and four new Digital Information Packages (DIP), including DIP 041 – Compilation of 1:250 000 geology map series GIS.

New drilling and geochemistry data

Data from NOONAMAH and KOOLPINYAH mapsheets, covering the central portion of DARWIN mapsheet, was released in September 2023. The dataset is comprised of over 6200 drillhole collars, 21 500 drillhole samples and around 25 100 surface samples. Geochemical assay data for 20 278 of the drillhole samples and 24 289 of the surface samples is also included. Data from the remaining 1:100 000 mapsheets (BYNOE, DARWIN, MARY RIVER and POINT STUART) has been captured. The BYNOE-DARWIN dataset, released via STRIKE in March 2024, is comprised of over 13 800 drill collars, 65 200 drillhole samples, and over 8900 surface samples, including associated geochemistry for around 7350 surface and 63 260 drillhole samples. The MARY RIVER–POINT STUART dataset will be released in the near future.

More recently, the focus for data capture has moved to the PINE CREEK mapsheet. Due to the high concentration of reports in the vicinity of Pine Creek, data capture requires

longer time frames for relatively narrow geographic coverage. To date, capture from the DALY RIVER, REYNOLDS RIVER and TIPPERARY mapsheets has been completed and the data released in March 2024. The dataset for these three Pine Creek mapsheets consists of 3880 drillhole collars, 61 500 drillhole samples and 39 475 surface samples. Of these samples, 59 736 drillhole and 37 362 surface samples have associated geochemical assays.

All the recently released data is available for querying on STRIKE and is included in the download package. An update to DIP 001 – Northern Territory Geochemical Datasets is due for release by AGES 2024.

STRIKE

In July 2023, a new layer for the *Designated Area* as specified under the Petroleum Regulations 2020 was added to STRIKE. This layer determines which petroleum interests must pay an uplift factor in addition to the annual monitoring and compliance levy. Another new layer, *Bottom Hole Temperatures*, which provides information sourced from petroleum well completion reports, was added in December 2023.

Geological Regions is now the initial base layer rather than the *NTG Aerial Photography* image; and *Google Satellite*, *Google Maps*, *Google Hybrid* and *Open Street Map* layers are now available as base maps. The Google Satellite layer provides much more recent imagery, and therefore shows more recent activity than the NTG Aerial Photography layer, enabling a significantly enhanced visualisation of remote areas of the NT.

Some other enhancements include: a right-click context menu on the map windows, an option to Export to Shapefile within the redline tool menu; custom user bookmarks; improved print legend layout; and updated map surround information.

The Map Tip tool has been implemented for two layers: *HyLogged Drillholes* and *Bottom Hole Temperature*. Activating the tool displays pop-up bubbles listing basic attribute information when hovering over objects within the designated layer in the map window.

Some minor fixes and improvements have also been made to the map surrounds when printing a map, and to attributes for several layers.

GEMIS

Some enhancements to GEMIS were added in the latter half of 2023, including improvements to the display of individual records, changing the default sort order to ‘Date added’ for records in search results, increasing the display number of search results to 50, and improving the email alerts by adding the series or report number ID.

The most substantial change is the rearrangement and simplification of the record display pages (**Figure 1**). With the introduction of a two column format, the downloads

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³ Names of 1:250 000 and 1:100 000 mapsheets are shown in large and small capital letters respectively, eg DARWIN and BYNOE.

section has been moved to the top of the page for quicker access, the number of attributes on the display page has been reduced, and attribute fields with lengthy text have been limited to an eight line display with a scroll bar to see the remainder of the text. The full range of attributes is still accessible by clicking the ‘Show full item record’ button at the bottom of the record.

Industry reports and digitising petroleum data

The digital conversion project to digitise hard copy seismic sections and well logs is now complete. Over the last year, 191 sections from five seismic surveys in the Amadeus, Bonaparte and Ngalia basins were digitised and released. Digitising of some older surveys has not been possible where reports or critical information are missing and/or the original format is not suitable for digitising.

Various logs of 35 production wells in the Amadeus Basin were also digitised. Together with digital logs from another 18 East Mereenie production wells drilled more recently, the digital logs for all 53 wells were released. With the completion of this digitising project, logs from all wells across the NT are now available as digital datasets in LAS format.

All the digitised data has been progressively added to the Petroleum Exploration Reports (PEX) collections on GEMIS.

Petroleum Act amendments – changes to reporting and sample submission

The final amendments to the *Petroleum Act* 1984 and Petroleum Regulations 2020, including implementation of all the remaining recommendations of the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory⁴, came into force on 22 June 2023. As a consequence, the ‘Schedule of Onshore Petroleum Exploration and Production’ was revoked.

The requirements for reporting and sample submission are now much clearer, and release of information is greatly simplified. The Regulations now contain Schedules that list the information to be included in reports. To align with the changes, the ‘Guidelines for Northern Territory Onshore Petroleum Reporting and Data Submission’ have had a significant update. They provide a summary of

⁴ <https://frackinginquiry.nt.gov.au>

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Title: Annual Report for Exploration Licence 24915 Dufaur Lake Mackay Project from 1 November 2015 to 22 September 2016

Title Holder / Company: ABM Resources Independence Group

Report id: CR2016-0560

Tenure: EL24915

Year: 2016

Author: Winzar, DJ

Abstract: Independence Group NL., Perth (IGO) is currently earning in to a joint venture covering this tenement and adjoining tenement applications that encompass ABM's Lake Mackay Project. IGO is currently exploring the Lake Mackay Project for gold and base metals. Exploration during the reporting period consisted of tenement wide geological mapping, 634 infill surface geochemical samples, 50 rock chip samples, 70 4 line logs of magnetic logs

Date Added: 22-Dec-2022

Appears in Collections: Minerals Exploration Reports (MEX)

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Files in this Report: [Select All]

File	Size	Format	Add to Download
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CR2016-0560_EL24915_2016_A_16_File_Listing.pdf	84.29 kB	PDF	<input type="checkbox"/> Add
CR2016-0560_Appendix1.zip	100.62 kB	ZIP	<input type="checkbox"/> Add
CR2016-0560_Appendix2.zip	1.14 MB	ZIP	<input type="checkbox"/> Add
CR2016-0560_Appendix3.zip	2.36 MB	ZIP	<input type="checkbox"/> Add
CR2016-0560_Appendix4.zip	6.4 MB	ZIP	<input type="checkbox"/> Add
CR2016-0560_Appendix7.zip	787.97 kB	ZIP	<input type="checkbox"/> Add
CR2016-0560_Appendix8.zip	73.35 kB	ZIP	<input type="checkbox"/> Add
CR2016-0560_Appendix9.zip	133.35 kB	ZIP	<input type="checkbox"/> Add
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Figure 1. GEMIS Record display.

requirements, including more guidance on the expected content and acceptable data formats, and an overview of submission and release timeframes for the different types of report, data and samples. The current version of the guidelines was published in September 2023.

Resourcing the Territory website
(www.resourcingtheterritory.nt.gov.au)

In mid-April 2023, the *Resourcing the Territory* website was updated with a new section added for energy commodities in the Northern Territory. These pages are accessed via the new Energy menu and contain information on oil and gas, naturally occurring hydrogen and helium, carbon capture and storage, geothermal energy, onshore sedimentary basin inventories, and a link to uranium commodity information under the Minerals menu. Each sub-section contains information on resources, activity and links to further information, including factsheets and maps.

In November 2023, an implementation plan for the recommendations of the Mineral Development Taskforce final report was added to the Mineral Industry Development pages.

New products

New or updated NTGS products released since April 2023 include one new geological map, GIS database and explanatory notes, three updated and four new Digital Information Packages (DIP), 15 Records, five new HyLogger Data Packages (HDP), and preliminary data for the Pedirka gravity survey.

Records released cover geochronology results, stratigraphic characterisation and related aspects in several basins, several mine assessments for secondary prospectivity, mineralisation timing in the Jervois mineral field, mineral system characterisation in the Rover field, metamorphic evolution of the Aileron Province in the LIMBLA 1:100 000-scale mapsheet, and a Top End basins excursion guide for Central Australian Basins Symposium IV.

In particular, the ‘Metamorphic evolution of the Aileron Province in LIMBLA’ (Record 2023-005) and ‘Timing of the sulfide mineralisation at Reward, Rockface and Bellbird deposits, Jervois mineral field’ (Record 2023-007) were

released in August; and ‘Revised stratigraphic nomenclature in the Beetaloo Sub-basin’ (Record 2023-012) in October 2023.

The ‘Stratigraphic characterisation of the Glyde package, greater McArthur Basin’ (Record 2023-009) was released in November 2023; Record 2023-013, ‘New insights to the lithostratigraphy of the Pedirka Basin’, was released in November 2023.

Released in September 2023, DIP 041 is a compilation of the geological units and structures from the individual 1:250 000 GIS datasets into one consistent dataset for the NT. The original maps were published over a number of years back to the 1960s, therefore there is considerable variation in the mapping approaches. No edge matching between the original individual datasets has been undertaken. The data is presented using the GDA1994 datum in a consistent data structure, in the Esri ArcGIS geodatabase, Esri Shape file and MapInfo TAB formats.

Another two packages in the Warramunga Province mineral deposit series, DIPs 039 and 040, were released in August 2023. These packages relate to the Gecko Corridor and Nobles Nob deposits respectively. DIP 042, released in January 2024, is a compilation of all the geochemical analyses undertaken by NTGS and partner organisations such as Geoscience Australia.

Other releases include the new second edition HENBURY 1:250 000-scale geological map, explanatory notes and GIS dataset, issued in August 2023. The updated edition of the very popular guide to the ‘Critical minerals in the Northern Territory’, first published in 2023, was released in March 2024 and is accessible from the *Resourcing the Territory* website or directly from GEMIS.

Final data for the Pedirka gravity survey, the NT-wide gravity grids, and 2024 version of the NT-wide 1:2.5M Gravity Map are in progress and will be released in the near future.

Reference

Rogers T, 2023. Geoscience information highlights: 2022–23: in ‘*Annual Geoscience Exploration Seminar (AGES) Proceedings, Alice Springs, Northern Territory, 18–19 April 23*’. Northern Territory Geological Survey, Darwin, 28–29.