

Mineral Resources Tasmania  
Mineralogical/Petrology Report  
LJN2014-116

# XRD ANALYSES: DRILLCORE, NORTHERN TERRITORY

An unpublished Mineral Resources Tasmania report for  
**NT Geological Survey**

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14 November 2014

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## SUMMARY

The XRD results confirm the presence of glauconite in all the samples.

## INTRODUCTION & BACKGROUND

The Hylogger IR spectroscopic analyses of drillcore being conducted by various Geological Surveys in Australia routinely return analyses indicating various minerals that often cannot be readily confirmed in the hand specimens, and require XRD (X-ray diffraction) or other methods for confirmation.

The objective of this study is mostly to determine the presence or absence of glauconite in samples from these drillholes in the Northern Territory.

## SAMPLES

The details of the drillhole sample, submitted for XRD by Belinda Smith, Northern Territory Geological Survey (NTGS), are given in Table 1 below.

**Table 1: Sample details:**

Client ID	TSG File Name	HyLogger Sample #	Depth (m)	Description	Expected mineralogy
LA14BRS001	Tempe Vale 1	48425	573.94	dolomite / aspectral	glauconite
HB14BRS001	Tent Hill 1	59315	1340.87	aspectral	glauconite
HB14BRS002	Tent Hill 1	60567	1350.29	aspectral	glauconite

The Tent Hill 1 and Tempe Vale 1 drillholes are in the Gardiner Range in southwest Northern Territory.

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## ANALYTICAL TECHNIQUES

The samples were prepared, examined and analysed by XRD and microscopy in the MRT laboratories, Rosny Park, Tasmania.

### XRD

The samples were prepared, examined and analysed in the MRT laboratories, Rosny Park, Tasmania. They were run on an automated Philips X-Ray diffractometer system: PW 1729 generator, PW 1050 goniometer and PW 1710 microprocessor with nickel-filtered copper radiation at 35kV/25mA, a graphite monochromator (PW1752), sample spinner and a proportional detector (sealed gas filled PW1711). Our typical step-size is 0.02 degrees, and the standard scanning speed is 0.02 degrees/second. The PW1710 system is presently driven by the CSIRO XRD software: "VisualXRD" , "PW1710 for Windows" and "XPLOT for Windows". Interpretation and quantification is largely manual, using a series of prepared standards of the more common minerals to enable some semi-quantitative analysis. Quartz, if present, is used as an internal standard; and if not present, it is often added to the sample for a supplementary scan. Our semi-quantitative results are calculated using single-peak calibration factors derived from scans of known mixtures of minerals.

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## RESULTS

The XRD results are attached in Appendix 1 and are summarised in Table 2, with comparison to the Hylogger results. The results are discussed further below.

**Table 2: Results summary**

Drillhole	Depth (m)	Expected mineralogy	Main Results
Tempe Vale 1	573.94	dolomite / aspectral	Quartz, glauconite
Tent Hill 1	1340.87	aspectral	Quartz, glauconite, dolomite
Tent Hill 1	1350.29	aspectral	Quartz, glauconite

The XRD results indicate the presence of subordinate amounts of glauconite in all these samples, with major quartz and minor to trace amounts of apatite, dolomite, K-feldspar and other minerals.

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## Mineral Resources Tasmania Laboratory Report

**Client:** B. Smith, NTGS

**Sample Source:** Tent Hill

**MRT Job Number:** MPR2014/116

**Analysis:** Approximate Mineralogy

**Method:** X-Ray Diffraction

### Results (approx wt %)

<i>TSG File</i>	<i>ID</i>	<i>HyLogger No.</i>	<i>Depth (m)</i>	<i>Minerals Identified</i>
Tempe Vale 1	LA14BRS001	48425	573.94	Quartz (>80%), Glauconite (5%-10%), K-Feldspar <sup>1</sup> (2%-5%), Apatite (2%-5%), Pyrite (2%-5%)
Tent Hill 1	HB14BRS001	59315	1340.87	Quartz (50%-65%), Glauconite (15%-25%), Dolomite (5%-10%), K-Feldspar <sup>1</sup> (5%-10%), Chlorite (2%-5%), Pyrite (<2%), Apatite (<2%), ? (<2%)
Tent Hill 1	HB14BRS002	60567	1350.29	Quartz (65%-80%), Glauconite (15%-25%), Apatite (2%-5%), K-Feldspar <sup>1</sup> (2%-5%), Pyrite (<2%), Dolomite (<2%)

Peak overlap (e.g. K-Feldspar and Clinopyroxene) may interfere with identification and quantitative calculations

Amorphous material (e.g. some hydrous iron oxides, organic matter) and minerals present in trace amounts may not be detected

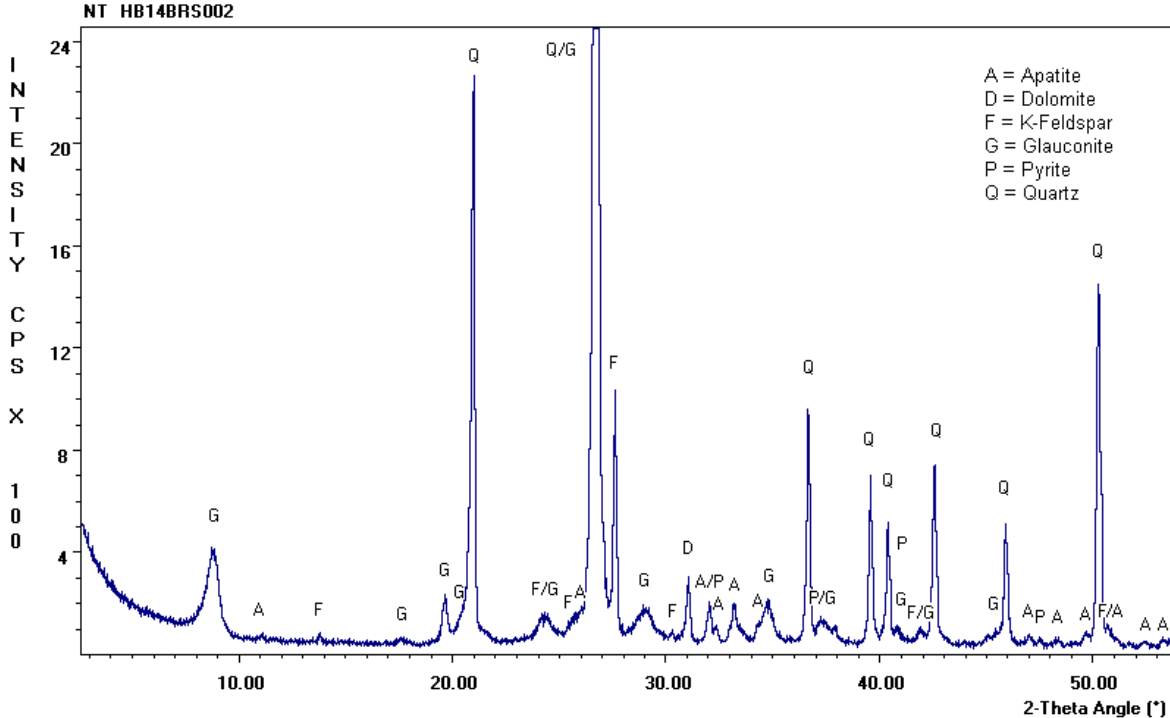
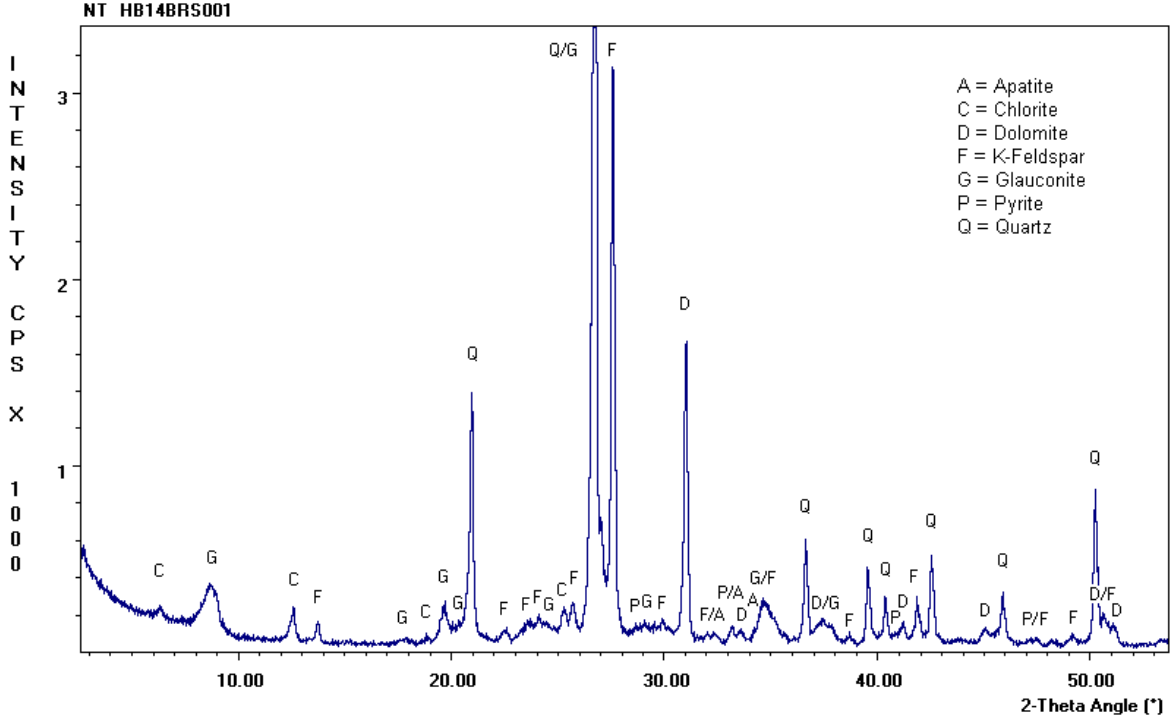
<sup>1</sup> probably Microcline

? = some very small unassigned peaks

**Analyst:** R.N. Woolley

**Date:** 27 October 2014

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