

Pontifex & Associates Pty Ltd

MINERALOGY – PETROLOGY • SECTION PREPARATION

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MINERALOGICAL REPORT No. 10270

by Ian R. Pontifex MSc.

12 March, 2013

TO :

Kelvin Hussey / Rodney Dean
Arafura Resources
18 Menmuir Street
WINNELLIE NT 0820

YOUR REFERENCE :

Order No. 104452

MATERIAL & IDENTIFICATION :

Three clay samples from Black Hole Tenement
ARA5681, ARA5682, ARA5683

WORK REQUESTED :

XRD Analysis

SAMPLES & SECTIONS :

Returned to you with this report.

DIGITAL COPY :

Emailed 12/03/13 to:
kelvin.hussey@arafuraresources.com.au
Rodney.dean@arafuraresources.com.au

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XRD ANALYSIS THREE CLAY SAMPLES

Three clay samples, numbered ARA5681, ARA5682, ARA5683 were received from Rodney Dean, Arafura Resources on the 15th of February 2013 for XRD analysis.

As previously discussed by telephone, Pontifex subcontracts XRD analysis to AEC Environmental, Michael Till (former AMDEL x-ray mineralogist). The procedure involves an initial semi-quantative analysis, quoting relative mineral abundances, which applies to this particular job, results sheet attached on next page of this report.

If a more specific, fully quantative XRD analysis is required, this can then be arranged as a follow-up with AEC, at a cost of about \$260.00 each, plus GST. My objective comment however is that given the relatively “simple mineralogy reported semiquantitatively, more specific quantitative XRD probably would not offer any significant additional information.

AEC Environmental

MINERAL IDENTIFICATION REPORT No. 71169

1. INTRODUCTION

Samples were received from Ian Pontifex of Pontifex & Associates with a request for determination of their mineralogy. They were reported to be from Nolans Bore REE deposit N.T.

2. PROCEDURE

The whole of each sample was pulverized then analysed by X-ray diffraction to identify the minerals present.

3. RESULTS

The semi-quantitative mineralogy of the samples follows.

Mineral	Composition	Relative abundance		
		ARA 5681	ARA 5682	ARA 5683
Kaolinite	$\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_4$	SD	D	D
Smectite	Silicate	D		
Muscovite	$\text{KAl}_2\text{Si}_3\text{AlO}_{10}(\text{OH})_2$	Tr		Tr-A
Quartz	SiO_2	Tr	Tr	SD
Talc	$\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$	Tr		
?Anatase	TiO_2		Tr	

Semiquantitative Abbreviations

- D = Dominant. Used for the component apparently most abundant, regardless of its probable percentage level.
- SD = Sub-dominant. The next most abundant component(s) providing its percentage level is judged above about 20.
- A = Accessory. Components judged to be present between the levels of roughly 5 and 20%.
- Tr = Trace. Components judged to be below about 5%.

TESTING OFFICER: Michael Till

REPORT DATE: 11 March 2013