

Petrography from Core Sample in Tilana-1

AMDEL, Amoco Australia Petroleum Company

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OR-0328



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29 October 1985

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ATT: MR. B. WHEELER

REPORT G 6494/86

YOUR REFERENCE:	Telephone request from Mr. B. Wheeler (21/10/85)
IDENTIFICATION:	Not numbered
MATERIAL:	Core samples
LOCALITY:	Amoco Tilana No. 1, Bit Run No. 17, Junk Sub Samples (3456 m)
DATE RECEIVED:	22 October 1985
WORK REQUIRED:	Petrography (1 M1.1, 1 MA1.3)

Investigation and Report by: Frank Radke

Chief - Geological Services Section: Dr Keith J Henley

Keith Henley

for Dr William G Spencer
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bp

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PETROGRAPHY OF TWO ROCKS

1. INTRODUCTION

A sample of drill core from the Amoco Tilana No. 1 Well was submitted for petrographic examination. The sample consists mainly of dark grey basalt and it was requested that the basalt be examined for suitability for potassium argon dating (AMDEL Code M1.1). The interval was also described as having a possible tuff and a petrographic description of this lithology was requested. The sample contained a few chips of pale grey coloured rock which were assumed to be the possible tuff. The basalt sample taken for petrographic examination was called sample A and the possible tuff sample B.

2. PETROGRAPHY

SAMPLE: A: TS45818

Rock Name:

Basalt

Hand Specimen:

This is a very fine grained medium to dark grey rock. One margin of the sample has a vein-like structure with a dull white incrustation and testing with dilute hydrochloric acid shows that this incrustation consists of calcite.

Thin Section:

This sample consists mainly of plagioclase laths up to 0.3 mm long intergrown with finely granular clinopyroxene which forms small crystals with a typical grain size of 0.1 mm. The rock also contains a significant proportion of chlorite which forms irregular shaped patches up to 0.5 mm in size as well as interstitial fillings between the plagioclase laths. The plagioclase laths exhibit a well developed preferred orientation producing a subtrachytic texture.

Although the major mafic mineral in this rock is pyroxene small amounts of a possible orthorhombic amphibole were noted as crystals up to 0.3 mm wide which have a very pale green, weakly pleochroic colour. Opaques are also disseminated through the rock as anhedral grains and aggregates up to 0.5 mm wide.

The rock contains minor calcite (approximately 1%) which forms anhedral grains generally intergrown with the chlorite aggregates. Calcite is also concentrated along a vein-like structure within one margin of the thin section.

This is a fine grained basaltic rock showing a moderate degree of chloritization as well as minor amounts of calcite. The rock is considered too altered to be suitable for potassium argon dating.

SAMPLE: B: TS45819

Rock Name:

Shale

Hand Specimen:

This is a very pale grey coloured rock with a vague foliated texture. Testing with sodium cobaltinitrite after a hydrofluoric acid etch shows that the rock contains no potash feldspar.

Thin Section:

An optical estimate of the constituents gives the following :

	<u>%</u>
Sericite/clay	70
Quartz	25
Zircon	Tr
Opagues and semi-opaques	3

This sample consists mainly of an argillaceous matrix comprised of weakly birefringent clay intergrown with more birefringent sericite through which fine sand to silt-sized quartz-rich detritus is disseminated. The argillaceous matrix exhibits a well developed foliation produced mainly by preferred orientation of the sericite flakes. A very vague mineralogical banding is also produced by a tendency for the detrital quartz to be concentrated in narrow discontinuous bands and lamellae.

The quartz grains are typically between 0.05 and 0.15 mm in size and exhibit angular to subangular, detrital appearing shapes. The rock also contains traces of zircon as detrital, prismatic grains up to 0.1 mm long.

The rock contains small grains and aggregates of a disseminated titanium mineral which has a translucent reddish-brown colour. Opagues are also disseminated through the rock as anhedral grains and aggregates upto 0.1 mm wide. The argillaceous matrix also contains minor amounts of very finely disseminated opaque to translucent iron and titanium oxides.

This is considered to be a fine grained clay-rich detrital sediment containing a significant proportion of fine sand to silt-sized quartz-rich detritus.