



OTWAY BASIN

PREPARATION OF FOUR THIN SECTIONS AND BRIEF
PETROGRAPHIC DESCRIPTIONS OF 4 CORES. PORT CAMPBELL - 4.

Mr T Scholefield,
Minora Resources N.L.,
55 St Georges Tce,
Perth
WA

4-7-88

1000 0 07 459

o/n 0391

Preparation of four thin sections and
brief petrographic descriptions of four
cores . Port Campbell No 4.

R Townend.

PETROLEUM DIVISION

09 JAN 1989

CONFIDENTIAL

ATTACHMENT TO

WCR

PORT CAMPBELL - 4

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Sample Port Campbell No 4 core 22 7183-7191ft.

Lithology TUFFACEOUS SILTSTONE

Grainsize silt.

Grainshape subangular to subhedral

Constituents

QUARTZ	major	angular, 0.1 to <0.05mm.
FELDSPAR	major	subangular to subhedral K feldspar , often elongate, some perfect rhombs, fresh, 0.1-<0.05mm. Plagioclase fresh subhedral.
MICAS	minor	Biotite >> Muscovite. Fresh semi-oriented biotite both long strips, and equant mass. Occasional coarse single muscovite flake, otherwise sericitic ex ?feldspars.
CHLORITE	major	Ubiquitous, appears as interstitial matrix to clasts, some ex biotite.
OPAQUES	access.	strips that are slightly concentrated in a "layer" plus occasional angular grains, both carbonaceous (SEM).
HEAVIES	trace	zircon, apatite.

Discussion

A siltstone containing a major alkali feldspar content
that may relate it to the three tuffaceous sandstones.

Sample Port Campbell No 4 core 23 7690-7710ft.

Lithology		TUFFACEOUS SANDSTONE
Sorting		V.good
Grainsize		fine to medium sand
Grainshape		euhedral to subangular
Constituents		
Clasts	dominant	
QUARTZ	major	monocrystalline subangular, 0.15-0.4mm. equant and elongate, not well oriented.
FELDSPAR	major	K feldspar and albite both abundant. dimensions as for quartz. Habits are subrhombic to subhedral, commonly fresh.
LITHICS	major	Pelitic sediments and igneous clasts. former are semischistose quartz mica rocks. Volcanics are alkali feldspar rich, some porphyritic, and /or trachytic. Rare intrusives.
MICAS	trace	Biotite deformed fresh.
HEAVIES	trace	zircon, sphene, rutile, opaques.
Matrix	minor	
CHLORITE	major	authigenic radial chlorite lining clasts ubiquitous.
ZEOLITE	major	sporadic as infilling cement, prismatic crystals sometimes semi radial, possibly LAUMONITE. (SEM).
CLAY	minor	possible KAOLIN as remnants of replaced ?feldspar

Discussion

A low quartz sandstone with abundant feldspar and lithic fragments mostly of a volcanic texture. This composition combined with the chlorite and zeolite cement indicates a volcanoclastic. There is very sporadic porosity probably of a secondary nature ex dissolved feldspars. It experienced considerable diagenetic activity and is regarded as of poor reservoir potential.

Sample Port Campbell No 4 core 24 7889-7907ft

Lithology TUFFACEOUS SANDSTONE

Sorting V. good

Grainsize fine to medium sand.

Grainshape euhedral to subangular

Constituents

Clasts dominant

QUARTZ major monocrystalline, subangular, 0.2-0.3mm equant >> elongate, rare evidence of epitaxial growth.

FELDSPAR major K feldspar and albite equally common. both commonly tabular to rhombic euhedra fresh, long dimensions 0.2-0.35mm. Some two feldspar composites. K feldspar is microcline perthite in part.

LITHICS major sediments and igneous, former include fine shaley masses, and possible cherty quartzites. Dominant are igneous rocks of an alkali feldspar microlite rich nature with trachytic texture, some alkali feldspar phenocrysts. Also there are hypabyssal and ?plutonic feldspar +-quartz lithics, with a rare granophyric quartz/feldspar clast visible. Altn. of feldspars in lithics is v minor.

MICAS access. uncommon muscovite and biotite, as elongate distorted oriented 0.25mm fresh flakes.

HEAVIES trace zircon, apatite, sphalerite, leucoxene.

OPAQUES trace includes iron oxides, and ?carbonaceous wisps.

Matrix minor

CHLORITE major authigenic radial crusts lining clasts, less ubiquitous than other sands, some chlorite infills pores.

ZEOLITE minor sporadic infilling as semi radial bladed crystals, ?LAUMONTITE.

CLAY access. occasional ?kaolin pockets ex ?feldspar

Discussion

Identical to the 7690ft sample.

Port Campbell No 4 core 26 8279-8299ft.

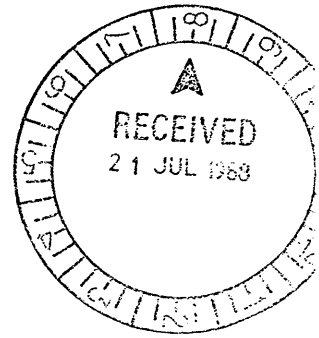
Lithology		TUFFACEOUS SANDSTONE
Sorting		v. good
Grainsize		fine sand
Grainshape		euhedral to subangular.
Constituents		
Clasts	dominant	
QUARTZ	major	monocrystalline, subangular to sub-rounded., 0.15-0.25mm.
FELDSPAR	major	K feldspar and albite, tabular euhedral to sub angular, lengths 0.2-0.3mm, fresh microcline and well twinned albite.
LITHICS	major	Sediments, and igneous clasts, dimensions as quartz. Former micaceous shales. Volcanic material ? dominant varies from feldspar microlite-rich and more microcrystalline types. Dimensions as quartz.
MICAS	access.	Biotite and muscovite. Rare 0.3mm clots of fresh biotite, narrow strips of oriented muscovite.
HEAVIES	trace	zircon, tourmaline, apatite, plus spots of barite. (SEM)., some opaques probably part carbonaceous.
Matrix	minor	
CHLORITE	major	ubiquitous authigenic chlorite lining clasts as radial crusts, rarely filling cavity.
CLAY	minor	a few pores have a clay-like filling, not optically typical kaolin.
CARBONATE	access.	rare replacement.

Discussion

This is a low quartz "sandstone" that differs from the other sands above by the apparent lack of the zeolitic cement. It has isolated porosity of a dissolution nature, with porous clay patches ex feldspar. The major diagenetic activity was the precipitation of the chlorite

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18-7-88



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Three modal analyses.

Port Campbell No. 4.

%	23/7690-7710	24/7889-7907	26/8279-8299
CLASTS	78.4	83.3	76.3
QUARTZ	17.5	13.8	32.7
FELDSPAR	25.9	21.2	24.4
LITHICS	56.6	65.0	42.0
MATRIX	21.6	16.7	23.7
CHLORITE	51.5	66.7	87.3
CLAY	16.7	13.7	7.0
ZEOLITE	31.8	19.6	
POROSITY	5.6	1.0	4.1

26/8279-99 HAS ALSO 0.9% MICA, AND 5.7% CARBONATE IN THE MATRIX.

R TOWNEND.

A handwritten signature in black ink, appearing to be 'R Townend', written over the typed name.

PE907181

This is an enclosure indicator page.
The enclosure PE907181 is enclosed within the
container PE907180 at this location in this
document.

The enclosure PE907181 has the following characteristics:

ITEM_BARCODE = PE907181
CONTAINER_BARCODE = PE907180
 NAME = Photomicrograph, Photo 1 & 2
 BASIN = OTWAY
 PERMIT = PEP6
 TYPE = WELL
 SUBTYPE = PHOTOMICROGRAPH
 DESCRIPTION = Photomicrograph, (Photo 1 & 2 from
 Petrographic Report), for Port
 Campbell-4
 REMARKS =
 DATE_CREATED = 4/07/88
 DATE_RECEIVED = 9/01/89
 W_NO = W484
 WELL_NAME = PORT CAMPBELL-4
 CONTRACTOR = MINORA RESOURCES NL
 CLIENT_OP_CO = FROME-BROKEN HILL COMPANY

(Inserted by DNRE - Vic Govt Mines Dept)

PHOTO 1 P.CAMPBELL 4 CORE 22 7183-7191FT.FELDSPATHIC SILTSTONE.
NIC CROS. FIELD WIDTH 1.8MM

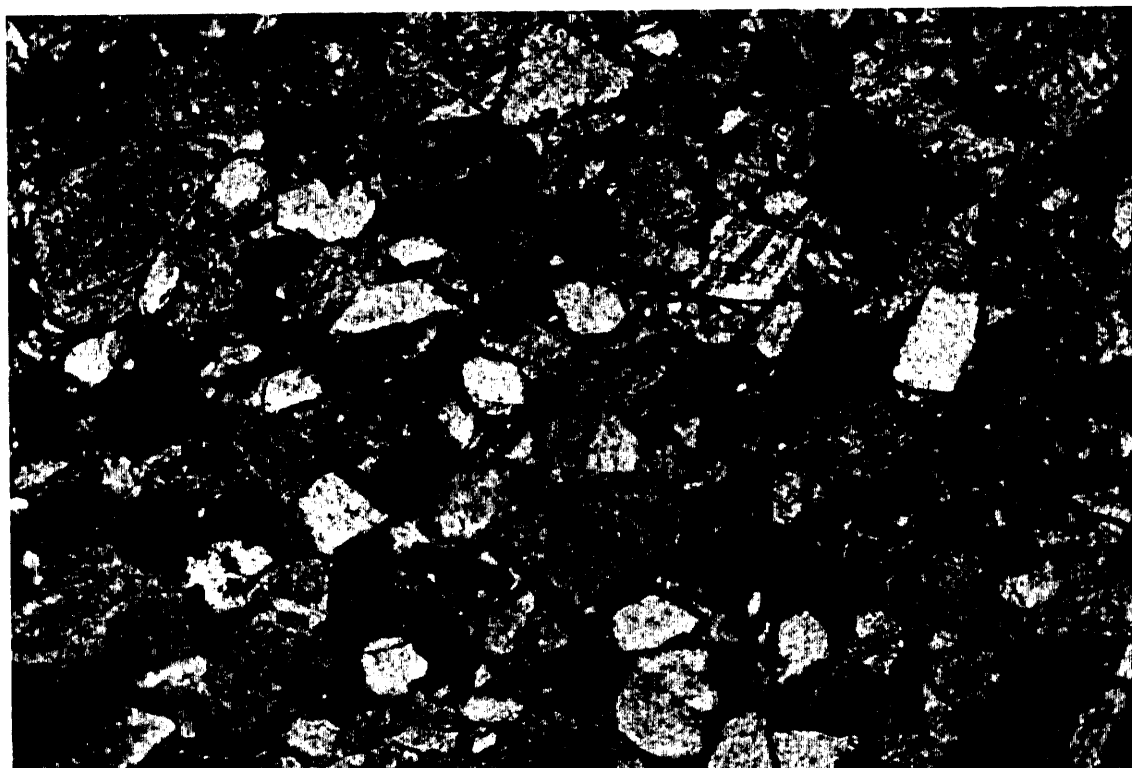
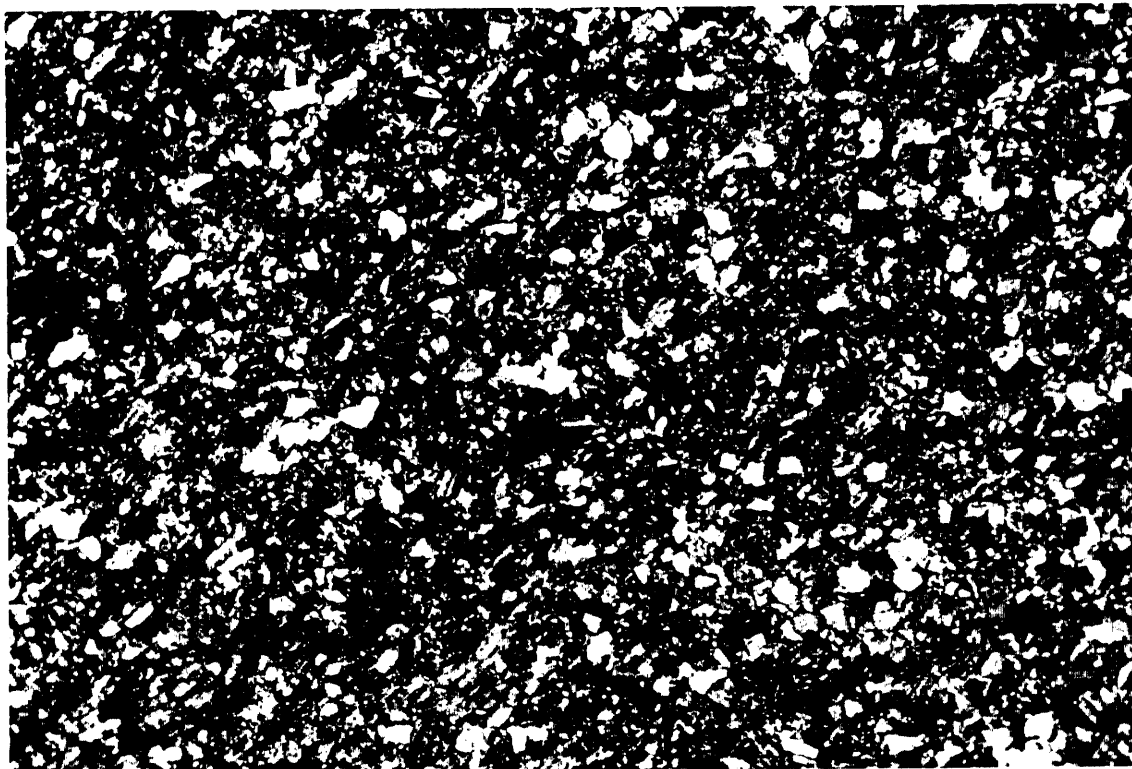


PHOTO 2 P. CAMPBELL 4. CORE 23 7690-7710FT. VOLCANOCLASTIC
SHOWING SPORADIC SECONDARY POROSITY.NIC UNC.
FIELD WIDTH 1.8MM

PE907182

This is an enclosure indicator page.
The enclosure PE907182 is enclosed within the
container PE907180 at this location in this
document.

The enclosure PE907182 has the following characteristics:

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CONTAINER_BARCODE = PE907180
NAME = Photomicrograph, Photo 3 & 4
BASIN = OTWAY
PERMIT = PEP6
TYPE = WELL
SUBTYPE = PHOTOMICROGRAPH
DESCRIPTION = Photomicrograph, (Photo's 3 & 4 from
Petrographic Report), for Port
Campbell-4
REMARKS =
DATE_CREATED = 4/07/88
DATE_RECEIVED = 9/01/89
W_NO = W484
WELL_NAME = PORT CAMPBELL-4
CONTRACTOR = MINORA RESOURCES NL
CLIENT_OP_CO = FROME-BROKEN HILL COMPANY

(Inserted by DNRE - Vic Govt Mines Dept)

PHOTO 3 P. CAMPBELL 4 CORE 24 7889-7907FT SLIGHTLY FOLIATED
VOLCANOCLASTIC SHOWING MODERATE QUARTZ CONTENT. (CLEAR)
NIC UNC. FIELD WIDTH 1.8MM

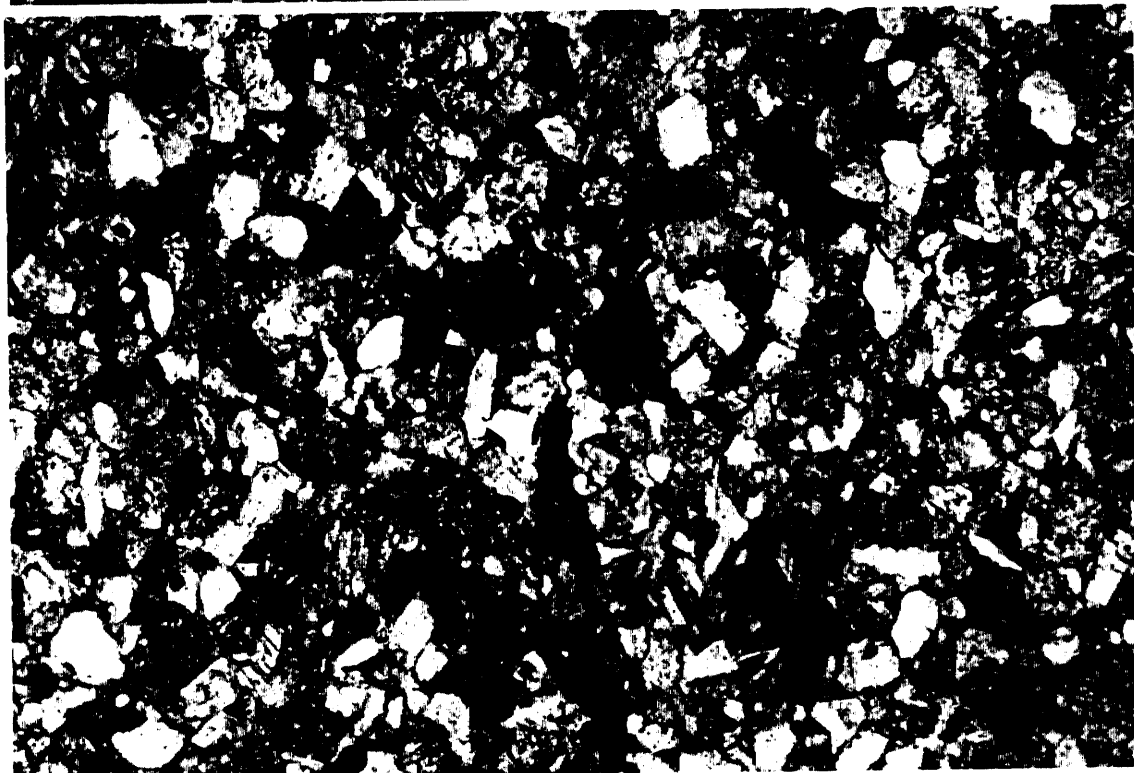
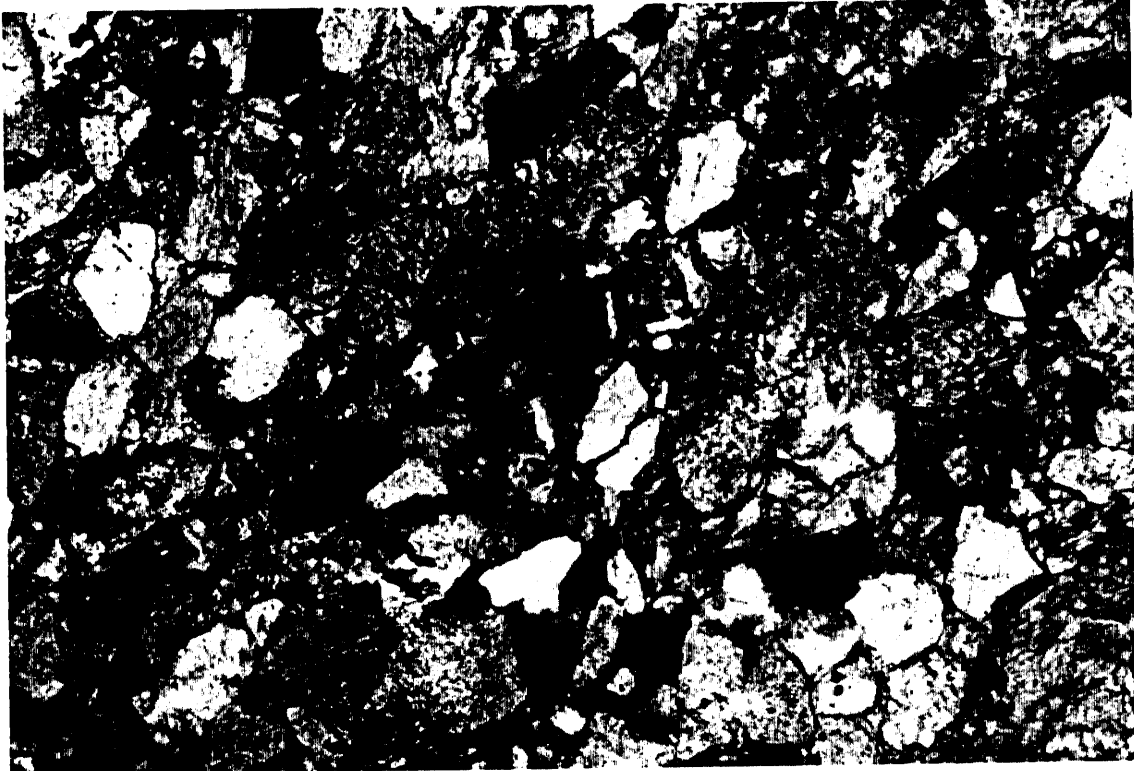


PHOTO 4 P. CAMPBELL 4 CORE 26 8279-8299FT WELL SORTED
TUFACEOUS SANDSTONE WITH CARBONACEOUS STRIP.
NIC UNC. FIELD WIDTH 1.8MM.