

PETROGRAPHIC THIN SECTION DESCRIPTION

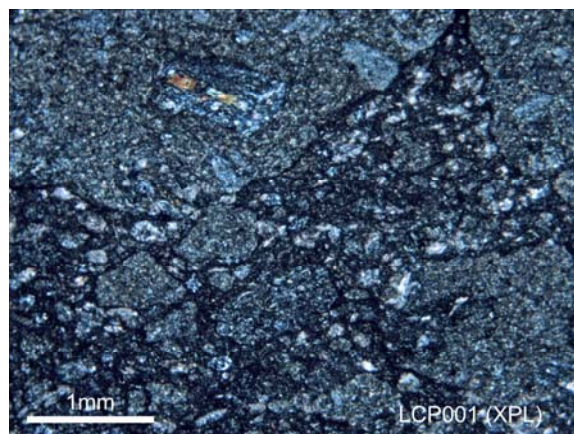
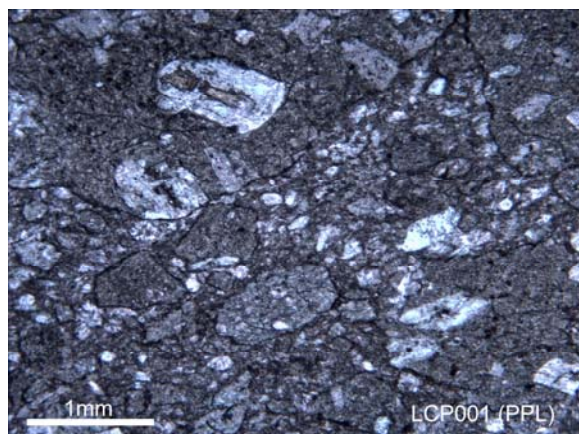
CLIENT: Saracen Gold Mines Pty Ltd
CONTACT: Dilson Montano
SAMPLE No: **LCP001**
NATURE OF THE SAMPLE: Diamond core
DATE: November 2011

This sample is a monomict breccia with clasts varying from subangular lithic fragments (3-15mm) to singular crystals of altered plagioclase. The lithic fragments are dominated by feldspar phyric basalt, where fine to medium-grained, subhedral to euhedral plagioclase phenocrysts occur throughout a very fine-grained altered groundmass of plagioclase laths and fibrous actinolite (after pyroxene). Although the sample is matrix supported, some clasts fit more or less neatly together.

Alteration consists of selective replacement of plagioclase by sericite. Tabular to prismatic forms (in the lithic clasts) of chlorite and epidote are highlighted by Ti-oxides on the margins, and probably represent former pyroxene phenocrysts. The altered matrix is very fine-grained and consists of chlorite, fibrous actinolite and a turgid mass of Ti-oxides (leucoxene). Carbonate (calcite) occurs as a weak pervasive phase in sparse aggregates throughout the groundmass and also with chlorite in fine stringers traversing the section. A few, fine sulphide grains are associated with chlorite and epidote.

FULL ROCK NAME AND CLASSIFICATION:

A sericite-chlorite-epidote-calcite altered basalt breccia



Photomicrographs of LCP001 in PPL and XPL showing the brecciated texture of this altered basalt. The clasts contain altered pyroxene (top middle) and plagioclase phenocrysts throughout a very fine-grained groundmass.

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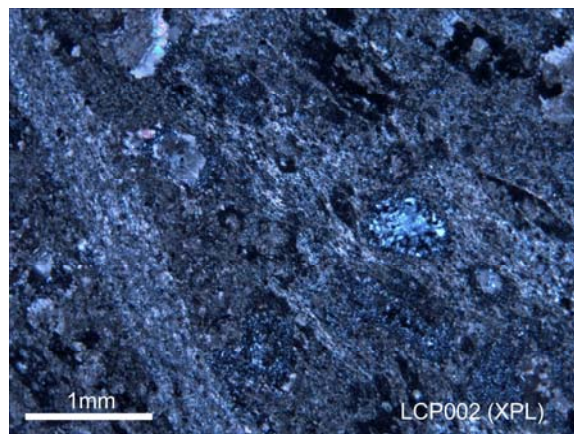
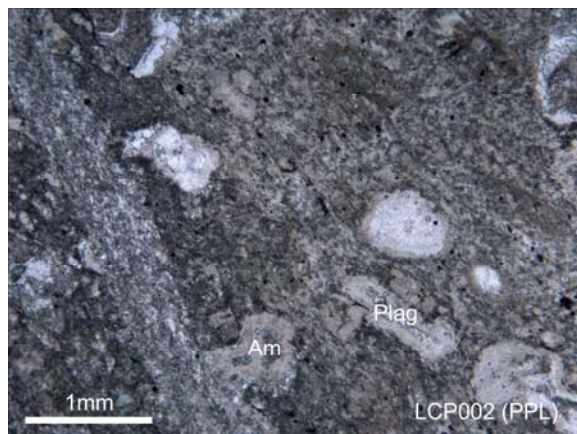
CLIENT: Saracen Gold Mines Pty Ltd
CONTACT: Dilson Montano
SAMPLE No: **LCP002**
NATURE OF THE SAMPLE: Diamond core
DATE: November 2011

A relict porphyritic texture has been preserved within this strong to intensely altered sample. The alteration assemblage consists of strong pervasive carbonate that has completely replaced former plagioclase(?) phenocrysts. Rounded to ellipsoidal forms of carbonate, fine polygonal quartz and chlorite represent amygdales. The groundmass is very fine-grained and is dominated by silica. Sericite, in very fine braids and minor aggregates of fibrous actinolite and chlorite occur throughout the groundmass. The opaque phases include fine, disseminated titanomagnetite completely altered to Ti-oxides (leucoxene) and rare fine magnetite. Carbonate-quartz veinlets are noted.

The carbonate occurs as two phases. Minor calcite generally occurs on the margins of the more massive, very fine-grained, turgid ankerite (?).

FULL ROCK NAME AND CLASSIFICATION:

An intense carbonate-chlorite-sericite altered and silicified amygdaloidal and porphyritic basalt



Photomicrographs of LCP002 in PPL and XPL. The alteration is intense and dominated by carbonate (turgid tan mineral in PPL). Relict forms of plagioclase (Plag) have been preserved and amygdales (Am) consist of carbonate, chlorite and fine silica.

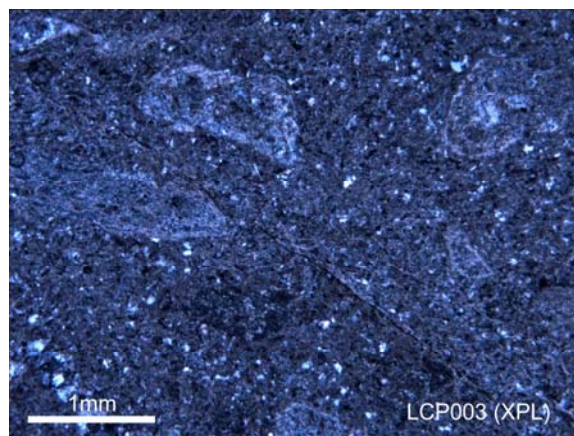
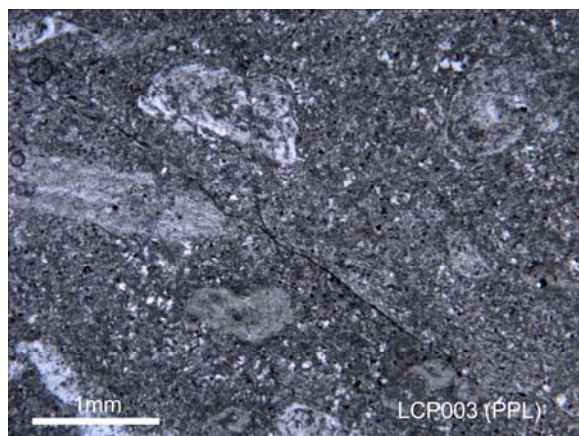
PETROGRAPHIC THIN SECTION DESCRIPTION

CLIENT:	Saracen Gold Mines Pty Ltd
CONTACT:	Dilson Montano
SAMPLE No:	LCP003
NATURE OF THE SAMPLE:	Diamond core
DATE:	November 2011

A porphyritic texture is defined by altered, medium-grained, subhedral plagioclase and subhedral pyroxene phenocrysts throughout a strongly altered, fine-grained groundmass. The plagioclase has been altered to a combination of carbonate and sericite, while the former pyroxene has been totally replaced by chlorite and carbonate. The groundmass is pervasively altered to carbonate, sericite and minor chlorite with interstitial patches of fine-grained quartz. Fine leucoxene forms after titanomagnetite are peppered throughout the groundmass. Quartz-carbonate-chlorite stringers traverse the section.

FULL ROCK NAME AND CLASSIFICATION:

A strong carbonate-sericite-chlorite altered porphyritic basalt



Photomicrographs of LCP003 in PPL and XPL showing the porphyritic texture preserved within this altered basalt.

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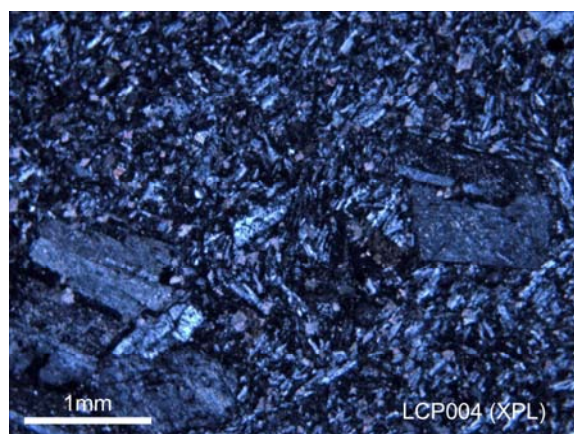
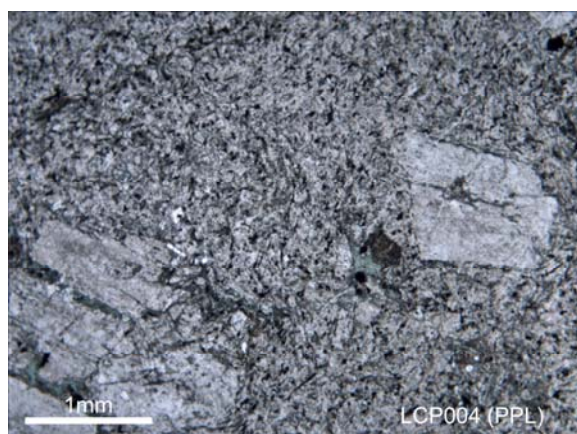
CLIENT: Saracen Gold Mines Pty Ltd
CONTACT: Dilson Montano
SAMPLE No: **LCP004**
NATURE OF THE SAMPLE: Diamond core
DATE: November 2011

This sample has a porphyritic texture where subhedral to euhedral plagioclase phenocrysts occur throughout a fine-grained groundmass dominated by interlocking plagioclase laths, interstitial braids and patches of chlorite (after pyroxene) and scattered fine-grained carbonate rhombs. Sericite has weakly altered the plagioclase. Fine-grained rods and aggregates of Ti-oxides (leucoxene) after titanomagnetite are evenly disseminated throughout the groundmass. Coarser-grained leucoxene pseudomorphs of titanomagnetite occur in close proximity to, or are associated with minor altered possible pyroxene phenocrysts. The pyroxene has been replaced by a very fine-grained composite mass of carbonate and chlorite. Quartz-chlorite-carbonate veinlets are noted.

Based on the grain size only, this sample is classified as a basalt. Contact relationships will determine whether this sample is a basalt (lava) or a dolerite (shallow intrusive).

FULL ROCK NAME AND CLASSIFICATION:

A chlorite-carbonate-sericite altered porphyritic basalt



Photomicrographs of LCP004 in PPL and XPL. The medium-grained colourless (in PPL) phenocrysts are plagioclase.

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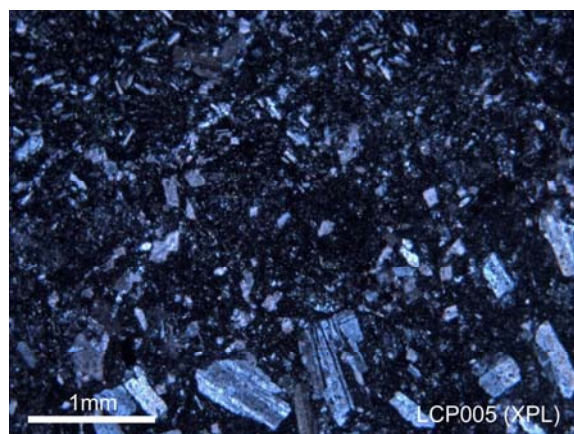
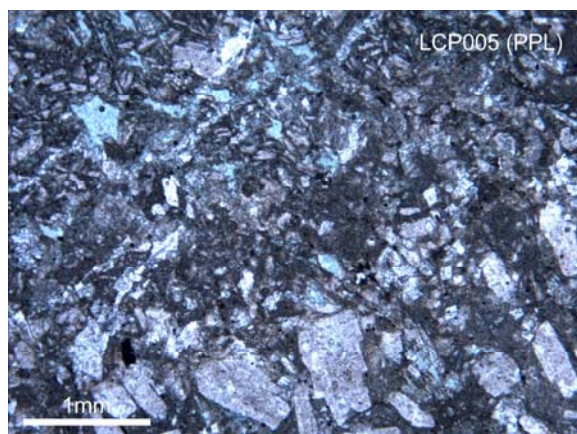
CLIENT: Saracen Gold Mines Pty Ltd
CONTACT: Dilson Montano
SAMPLE No: **LCP005**
NATURE OF THE SAMPLE: Diamond core
DATE: November 2011

The irregular distribution and size of crystals within this sample indicate a volcanoclastic. It is generally fine-grained, crystal rich and dominated by numerous subhedral plagioclase grains throughout a very fine-grained altered groundmass. The texture varies across the section from domains of coarser grained, less concentrated plagioclase laths to very fine-grained masses of plagioclase laths. The groundmass is pervasively altered by chlorite, carbonate and minor sericite. Fine, discontinuous stringers and braids of leucoxene after titanomagnetite occur throughout the groundmass. Carbonate-chlorite stringers are noted.

The term volcanoclastic is used here for descriptive purposes only and does not imply specific clast forming processes or settings.

FULL ROCK NAME AND CLASSIFICATION:

A chlorite-carbonate-sericite altered, fine-grained, crystal rich mafic volcanoclastic



Photomicrographs of LCP005 in PPL and XPL showing the irregular grain size and distribution of plagioclase crystals throughout this volcanoclastic.

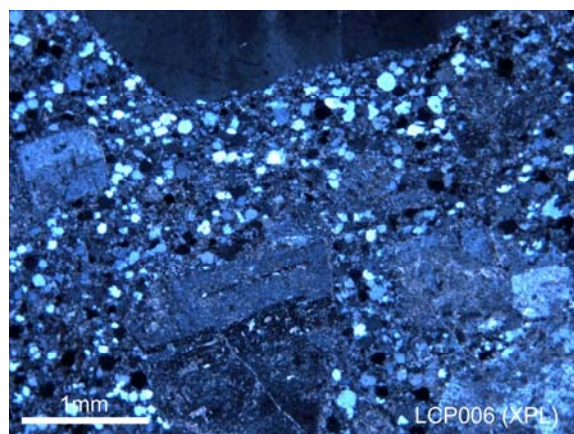
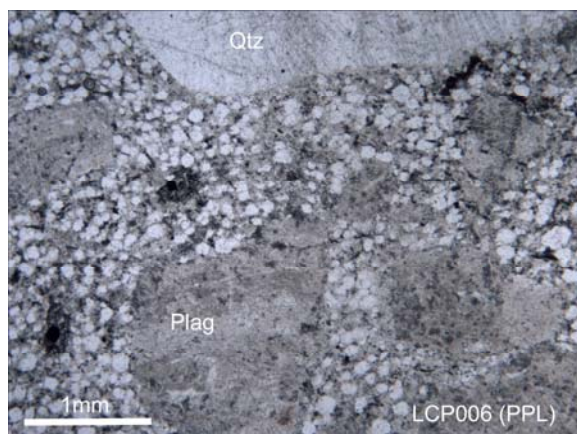
PETROGRAPHIC THIN SECTION DESCRIPTION

CLIENT: Saracen Gold Mines Pty Ltd
CONTACT: Dilson Montano
SAMPLE No: **LCP006**
NATURE OF THE SAMPLE: Diamond core
DATE: November 2011

A strong porphyritic texture is defined by medium to coarse-grained, anhedral to subhedral plagioclase and fewer quartz phenocrysts within a fine-grained groundmass of altered feldspar and quartz. The alteration assemblage consists of pervasive sericite and carbonate, with fine aggregates of leucoxene throughout the groundmass. Very fine Ti-oxides also occur along the cleavage direction of a former ferromagnesian phase (amphibole) that has been completely replaced by sericite, carbonate and minor chlorite. Minor sulphide (pyrite) is associated with the altered possible amphibole.

FULL ROCK NAME AND CLASSIFICATION:

A sericite-carbonate altered feldspar-quartz porphyry of dacitic composition



Photomicrographs of LCP006 in PPL and XPL showing a porphyritic of quartz (Qtz) and plagioclase (Plag) phenocrysts in a fine-grained groundmass. The finer grained dark mineral between the quartz and plagioclase is altered amphibole with an associated grain of pyrite (black).

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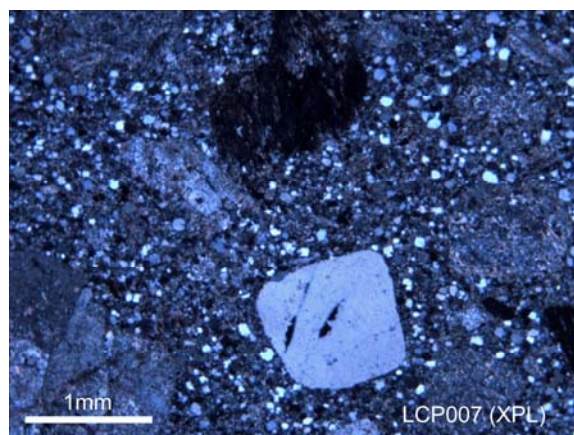
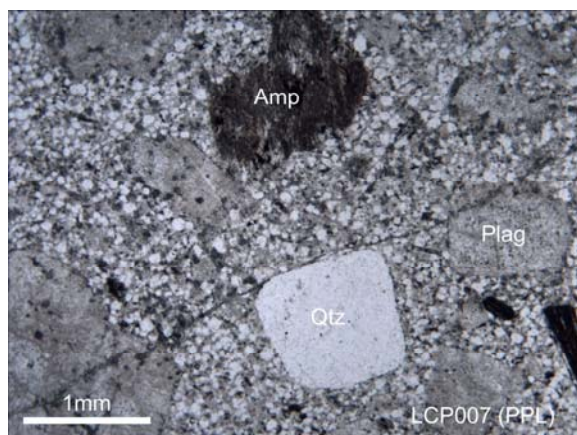
CLIENT: Saracen Gold Mines Pty Ltd
CONTACT: Dilson Montano
SAMPLE No: **LCP007**
NATURE OF THE SAMPLE: Diamond core
DATE: November 2011

This sample is mineralogically and texturally the same as LCP006. It contains medium to coarse-grained phenocrysts of subhedral to euhedral plagioclase and quartz within a fine-grained groundmass of quartz and altered feldspar. Minor, finer grained amphibole phenocrysts have been completely replaced by sericite, carbonate, chlorite and clay material. Fine exsolved opaques from the alteration of this amphibole phase have been pseudomorphed by FeTi-oxides.

The alteration consists of pervasive sericite and carbonate. Fine titanomagnetite throughout the groundmass has been pseudomorphed by leucoxene.

FULL ROCK NAME AND CLASSIFICATION:

A sericite-carbonate altered feldspar-quartz porphyry of dacitic composition



Photomicrographs of LCP007 in PPL and XPL. Minor possible amphibole (Amp) phenocrysts are completely altered to a mass of sericite, carbonate, chlorite and associated fine leucoxene.

PETROGRAPHIC THIN SECTION DESCRIPTION

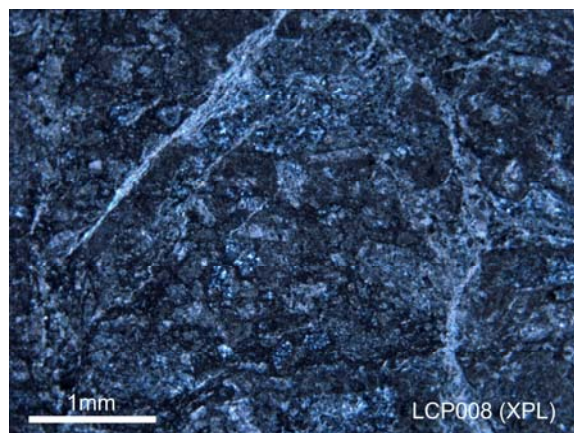
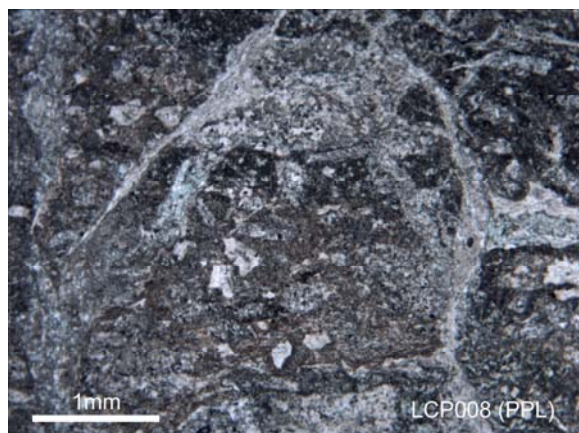
CLIENT:	Saracen Gold Mines Pty Ltd
CONTACT:	Dilson Montano
SAMPLE No:	LCP008
NATURE OF THE SAMPLE:	Diamond core
DATE:	November 2011

This sample is intensely altered and in the core appears to have a clastic texture. In thin section there is a preserved erratic texture and the crystals have fractured forms in places. The texture varies from fine-grained, crystal rich domains to coarser grained domains of less concentrated partly fractured crystals.

The alteration is dominated by carbonate and numerous stringers of sericite. Minor chlorite and fine grained quartz mosaics are generally restricted to the alteration of a former tabular mineral, possibly feldspar. Fine leucoxene forms after titanomagnetite are concentrated in fine stringers and aggregates throughout the groundmass.

FULL ROCK NAME AND CLASSIFICATION:

An intense carbonate-sericite-chlorite altered, fine-grained, crystal rich mafic volcanoclastic



Photomicrographs of LCP008 in PPL and XPL showing the irregular distribution of partly fractured forms of strongly altered crystals.

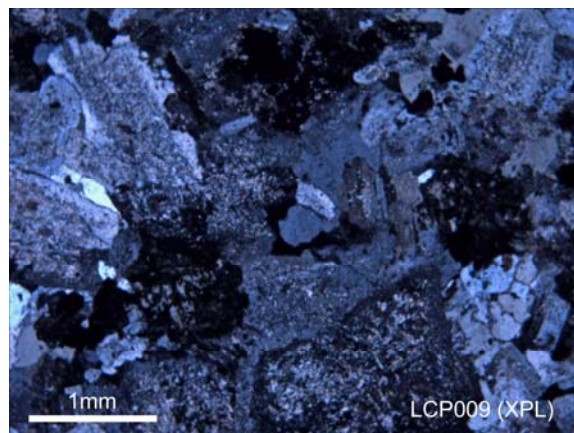
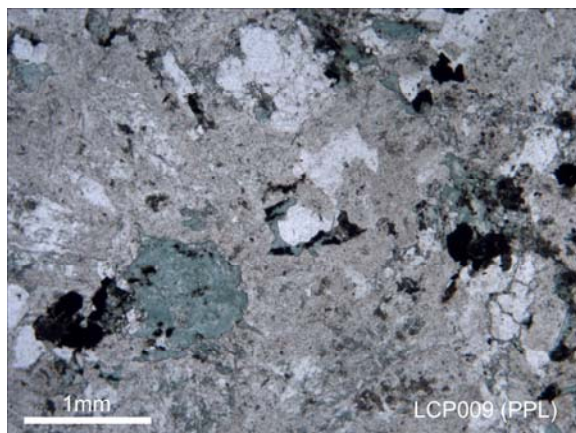
PETROGRAPHIC THIN SECTION DESCRIPTION

CLIENT: Saracen Gold Mines Pty Ltd
CONTACT: Dilson Montano
SAMPLE No: **LCP009**
NATURE OF THE SAMPLE: Diamond core
DATE: November 2011

This sample contains a medium to coarse-grained, interlocking texture of anhedral quartz and subhedral plagioclase. The plagioclase has been partially replaced by sericite and lesser carbonate. A ferromagnesian mineral (possibly hornblende) has been completely altered by chlorite, minor fine-grained, granular epidote and carbonate. Fine-grained magnetite, pseudomorphed by FeTi oxides, is closely associated with chlorite, while minor, fine hematite blebs are associated with the altered feldspar. Carbonate and sericite stringers traverse the section.

FULL ROCK NAME AND CLASSIFICATION:

A sericite-chlorite-carbonate altered granodiorite



Photomicrographs of LCP009 in PPL and XPL showing a medium to coarse-grained texture of predominantly altered plagioclase and quartz. The green coloured mineral in PPL is chlorite after possible amphibole (hornblende).

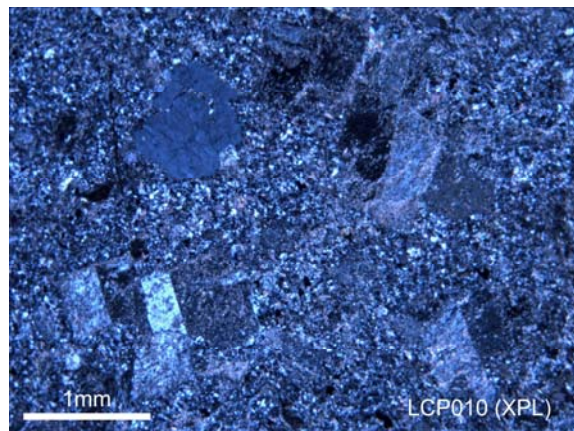
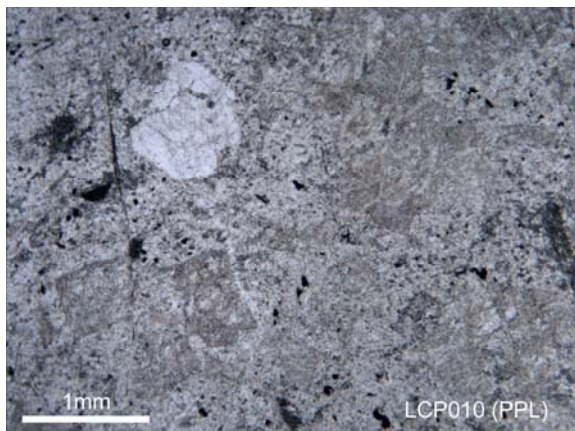
PETROGRAPHIC THIN SECTION DESCRIPTION

CLIENT: Saracen Gold Mines Pty Ltd
CONTACT: Dilson Montano
SAMPLE No: **LCP010**
NATURE OF THE SAMPLE: Diamond core
DATE: November 2011

A porphyritic texture is defined by medium-grained, subhedral to euhedral plagioclase and minor, partly embayed quartz phenocrysts throughout a fine-grained quartzofeldspathic groundmass. Sericite and carbonate occur as a moderate to strong pervasive alteration throughout the sample. Possible, minor amphibole phenocrysts are completely altered to a fine-grained composite mass of chlorite, carbonate, sericite and clay material. Fine opaques (leucoxene) occur associated with the alteration of the amphibole and are also sparsely disseminated throughout the groundmass. Sericite-carbonate stringers are noted.

FULL ROCK NAME AND CLASSIFICATION:

A sericite-carbonate-chlorite altered feldspar-quartz porphyry of dacitic composition



Photomicrographs of LCP010 in PPL and XPL showing a porphyritic texture of plagioclase and quartz (clean, colourless in PPL) phenocrysts throughout a fine-grained groundmass.

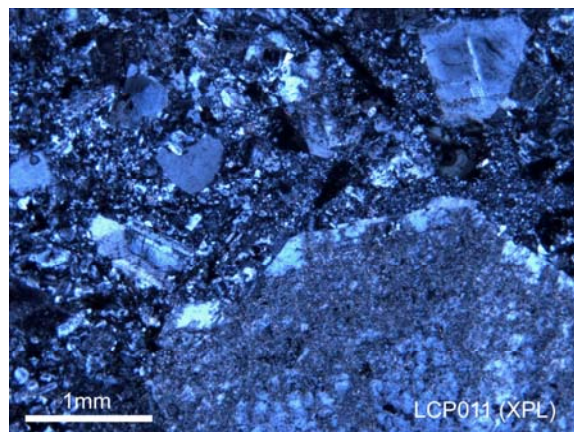
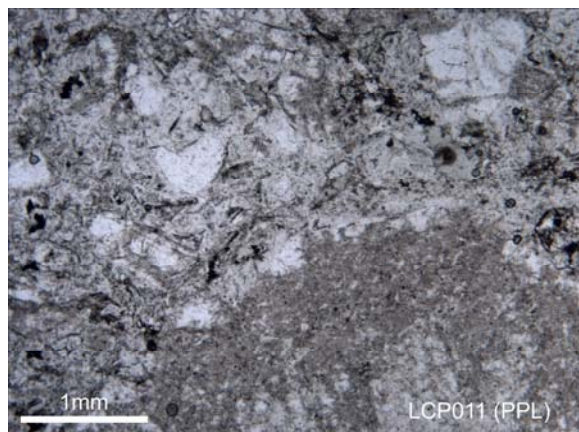
PETROGRAPHIC THIN SECTION DESCRIPTION

CLIENT: Saracen Gold Mines Pty Ltd
CONTACT: Dilson Montano
SAMPLE No: **LCP011**
NATURE OF THE SAMPLE: Diamond core
DATE: November 2011

Rare, coarse-grained phenocrysts of subhedral to euhedral feldspar (up to 5mm) are surrounded by numerous, medium-grained, zoned, subhedral to euhedral plagioclase and minor quartz, contained within a very fine-grained, quartzofeldspathic groundmass. Very fine myrmekitic intergrowths of plagioclase and vermicular quartz are found on the margins of the some plagioclase crystals. Amphibole (hornblende) has been completely altered to chlorite, rare epidote and associated opaques. Fine needles of rutile outline the former cleavage in some altered amphibole grains. The opaque assemblage consists of sparsely disseminated leucoxene forms after titanomagnetite and minor aggregates of sulphide (pyrite). The alteration consists of pervasive carbonate and sericite. Minor acicular actinolite is associated with the chlorite.

FULL ROCK NAME AND CLASSIFICATION:

A weak sericite-carbonate-chlorite altered andesitic porphyry



Photomicrographs of LCP011 in PPL and XPL. Coarse-grained feldspar (lower right) phenocryst is surrounded by finer-grained plagioclase and quartz.

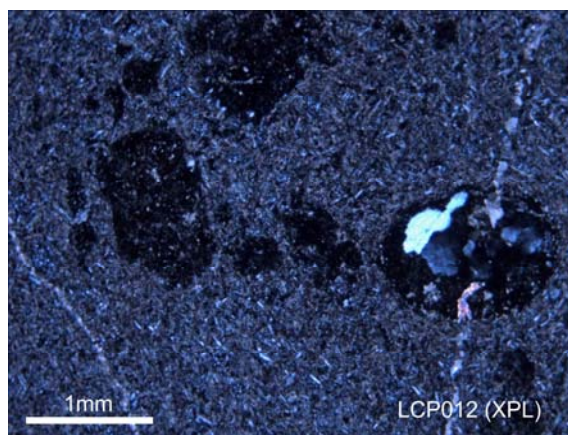
PETROGRAPHIC THIN SECTION DESCRIPTION

CLIENT: Saracen Gold Mines Pty Ltd
CONTACT: Dilson Montano
SAMPLE No: **LCP012**
NATURE OF THE SAMPLE: Diamond core
DATE: November 2011

This sample has a porphyritic texture where minor, medium-grained altered phenocrysts (plagioclase) occur throughout a very fine-grained groundmass of randomly oriented plagioclase laths. The phenocryst phase has been completely altered to chlorite, sericite and carbonate. The groundmass is partly silicified and pervasively altered to carbonate and sericite. Fine leucoxene forms after titanomagnetite are peppered throughout the groundmass. Rounded to ellipsoidal amygdales are infilled with quartz, chlorite, sericite and carbonate. Quartz-carbonate veinlets and stringers are noted.

FULL ROCK NAME AND CLASSIFICATION:

A carbonate-sericite-chlorite altered, porphyritic and amygdaloidal basalt



Photomicrographs of LCP012 in PPL and XPL. The phenocryst (P) is altered by chlorite, sericite and carbonate, while the amygdale (A) is infilled with chlorite (green) and quartz (colourless).

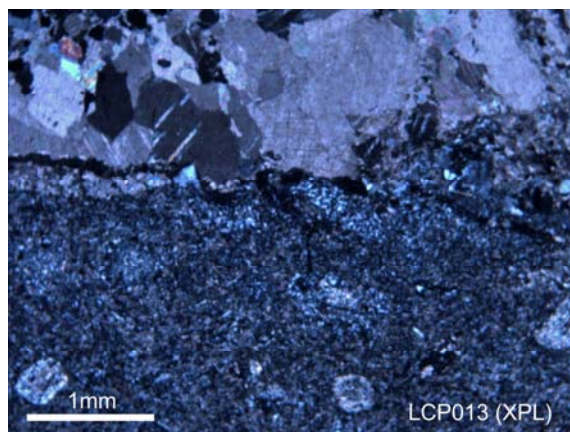
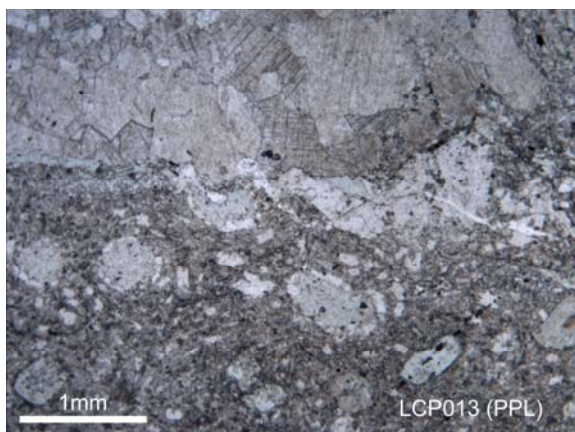
PETROGRAPHIC THIN SECTION DESCRIPTION

CLIENT:	Saracen Gold Mines Pty Ltd
CONTACT:	Dilson Montano
SAMPLE No:	LCP013
NATURE OF THE SAMPLE:	Diamond core
DATE:	November 2011

This sample is brecciated and the large subrounded fragments of amygdaloidal basalt are separated by veins of carbonate (calcite) and quartz. The basalt clasts are intensely altered and have a weak porphyritic texture. The alteration is pervasive and dominated by carbonate with lesser sericite and chlorite replacing the phenocrysts, the fine-grained groundmass and infilling amygdales. Prismatic quartz crystals also occur in some of the amygdales. Fine leucoxene forms are sparsely disseminated throughout the groundmass.

FULL ROCK NAME AND CLASSIFICATION:

An intense carbonate-sericite-chlorite altered and brecciated porphyritic, amygdaloidal basalt.



Photomicrographs of LCP013 in PPL and XPL showing a contact between a carbonate-quartz vein (top) and an altered amygdaloidal and porphyritic basalt fragment (bottom).