Alteration associated with the gold mineralization at the Lapa Mine, Quebec, Canada.

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INTRODUCTION

The Lapa mine, owned and operated by Agnico Eagle Mines Ltd., is located 50 km west of the city of Val d'Or, along the Cadillac-Larder Lake Fault Zone (CLLFZ) in the Archean Abitibi greenstone belt (Fig. 1). This orogenic gold deposit is hosted by three major groups of rocks: Pontiac, Cadillac, and Peltie Groups. The Pontiac Group is located on the south-west of the CLLFZ and consists of greyschists. The Cadillac Group occurs on the north side of the fault and consists of greyschist and conglomerates. The Peltie Group is along the fault and is consisistently at the greenstone belt from ultramafic to felsic rocks. They are the host of the majority of the mineralization and show prominent schistosity and intense alteration. Major minerals of ore is also hosted by the Cadilacta group. The ore is divided into twelve zones based on the type of ore bodies, gold grade and the occurrence of gold.

We examined samples representing different lithologies collected at depths from 500 to 1400 meters below the surface in Zones 7, 8 and 9 at the mine working. Zones 7 and 8 are newly discovered high grade ore bodies hosted by felsic rocks and quartz veins. This study focuses alteration in Zone 7 and Zone 8 to evaluate the possible factors affecting gold grade and the sulphides in two similar ore bodies.

ANALYTICAL METHODS

1. Mapping of alteration in the field, sampling of representative samples
2. Petrography using a transmitted and incident light microscope
3. Bulk rock chemical analysis, including major, minor and trace elements
4. Scanning electron microscopy (SEM) for identification of small grains
5. SEM energy dispersive spectroscopy (EDS) for semi-quantitative analysis of minerals

RESULTS

This study identified two styles of alteration. Biotite-actinolite alteration is higher temperature alteration than talc-chlorite-carbonate alteration, and occurs proximal to veins. This relationship between the distance from veins and alteration is consistent with the work by Simard (2011).

SUMMARY

This summary describes the alteration types that are present at the Lapa Mine and their relationship with the gold mineralization. The different alteration styles include talc-chlorite-carbonate alteration, and biotite-actinolite alteration. The talc-chlorite-carbonate alteration is characterized by the presence of talc and chlorite minerals, while the biotite-actinolite alteration is characterized by the presence of biotite and actinolite minerals. These alteration styles are associated with the presence of gold mineralization at the Lapa Mine.

REFERENCE