

U. S. DEPARTMENT OF THE INTERIOR

**Geologic Maps and Block Diagrams of the Barite Hill Gold-Silver Deposit and Vicinity, South Carolina and Georgia**

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Barite Hill is a metavolcanic-rock-hosted, stratiform gold-silver deposit located in the Piedmont physiographic province in McCormick County, South Carolina. The deposit is in the Lincolnton-McCormick district, which includes other mines and prospects for gold, silver, copper, zinc, lead, kyanite, and manganese, in rocks of the southern Carolina slate belt (pl. 1). The Barite Hill deposit was mined from 1990 to 1994, and, during this time, approximately 1,835,000 grams of gold and 3,390,280 grams of silver were produced (S. Wilkerson and D.W. Halverson, Nevada Goldfields, oral commun., 1994), mainly from oxidized ores in the Main and Rainsford Pits (pl.2)

The purpose of this report is to make available a regional geologic map (pl. 1), and geologic maps (pl. 2) and block diagrams (pl. 3) of the Barite Hill mine to supplement a brief summary of the geology of the deposit (Clark, 1997) and a more detailed report by Clark, Gray, and Back (in press). The maps in this report supersede geologic maps that appear in preliminary reports on geochemical profiles (Clark and others, 1993) and results of petrographic studies (Back and Clark, 1993).

Host rocks for the Barite Hill deposit are sericitically-altered, felsic metavolcanic and metasedimentary rocks of the Late Proterozoic Persimmon Fork Formation, which consists of the Lincolnton metaryholite and the overlying lower and upper pyroclastic units. The Barite Hill deposit lies stratigraphically below an overturned contact between the upper and lower pyroclastic units. The Main Pit contains four parallel zones of gold-silver mineralization: footwall, middle, hanging wall, and Red Hill ore zones. The Rainsford Pit contains only one gold-silver-rich zone, which is the stratigraphic equivalent of the footwall ore zone in the Main Pit. Gold-silver-rich zones in the Main Pit are partly coincident with lenses of siliceous barite rock, but not confined to them, and occur more commonly in pyrite-quartz altered fragmental rock. The stratigraphically uppermost of the four ore zones in the Main Pit is overlain by a zone of barite and base-metal enrichment, which is, in turn, overlain by a talc-tremolite alteration zone. Siliceous barite zones are absent in the Rainsford Pit, and gold-silver minerals are associated with silicified rocks and chert.

The Barite Hill deposit is interpreted to be the result of Kuroko-type submarine volcanogenic base-metal sulfide mineralization followed by precious metal deposition under epithermal conditions. The stages of evolution of the Barite Hill deposit as related to the regional volcanic, tectonic, and thermal history are summarized in Table 1.

Table 1. Summary of stages of evolution of the Barite Hill gold deposit.

<b>Sequence of Events Recorded at Barite Hill</b>	<b>Results</b>	<b>Probable Correlation with Regional Events</b>
Submarine volcanism; hydrothermal fluids moved through, altered, and mineralized the volcanic pile, and were exhaled onto the seafloor.	Deposition massive sulfide, barite, and fine-grained silicic exhalites in pyroclastic sequence. Alteration of volcanic host rocks and sediments near the seawater interface.	Late Proterozoic to Cambrian volcanism and sedimentation related to plate convergence and subduction, possibly in a microcontinental or island-arc setting distant from the ancestral North American continental plate.
Waning stages of hydrothermal activity in a failed massive sulfide system or a separate epithermal event.	Au-Ag-Te and base- and precious-metal telluride-selenide-bismuth mineralization.	Late stages of the volcanic phase or a later event.
Greenschist facies metamorphism, folding and thrust faulting.	Development of pervasive cleavage parallel to axial planes of tight to isoclinal folds, shearing of folds, development of greenschist-facies mineral assemblage, recrystallization of siliceous-barite and massive sulfide minerals in lenses that are elongate parallel to regional cleavage.	Middle to Late Ordovician Taconic collision of the Carolina terrane with the North American continent.
Late- to post-tectonic remobilization of quartz, barite, and gold.	Cross-cutting quartz and barite veins.	Late phases of Taconic orogeny, Middle Paleozoic thermal events, and (or) the Alleghanian orogeny.
High-angle faulting.	Offset of orebodies.	Mesozoic rifting.
Deep weathering and oxidation.	Removal of base-metal sulfides and precipitation of ferric oxide-hydroxide gossans and barite crystals in upper part of mineralized zone.	Quaternary exposure to ground water and atmospheric conditions.

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