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LOCOMOTIVE-TYPE POST-ORE FANGLOMERATES AS EXPLORATION GUIDES FOR PORPHYRY COPPER DEPOSITS

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ABSTRACT

Three porphyry copper districts in southern Arizona are partly overlain by post-ore fanglomerates which share certain physical and petrologic characteristics and which may comprise a distinct and significant class of rock. These units are the Locomotive fanglomerate of Ajo, the Helmet fanglomerate of Twin Buttes-Mission-Pima, and the Cloudburst formation of San Manuel-Kalamazoo, termed "Locomotive-type fanglomerates" herein. Post-ore units at Poston Butte and Lakeshore, Arizona, and Sar Chesmeh, Iran, also appear to fit this class.

"Locomotive-type fanglomerates" are composed of poorly sorted conglomerates, lenticular sandstone beds, andesitic to rhyolitic flows and tuffs, and unique monothologic landslide breccias. They contain fragments of holyokeite - - a rare oligoclase lava of porcellaneous appearance. Their basal contacts are considered to be depositional and overlapping, sometimes complicated by later low-angle faulting. They are quite different than the younger Gila, Pantano, and most "Whitetail" alluvial beds, and the older Amole, Recreation, Claflin Ranch, etc. clastics; in particular they are thinner and less widespread. Their ages are Eocene to late Oligocene.

"Locomotive-type fanglomerates" may be genetically related to porphyry coppers as products of subsequent differentiation and volcanism, and sedimentation in short-lived basins of restricted area and extreme relief. They might be utilized as reconnaissance guides to target areas and as structural guides within target areas in the southwestern U.S., Northern Mexico, and elsewhere.

INTRODUCTION

The concept that a class of distinct post-ore fanglomerates overlies some of the southwestern porphyry copper deposits is an unorthodox notion.

We are calling this class "Locomotive-type fanglomerates", after the Locomotive fanglomerates of the Ajo, Arizona, porphyry copper district. We are defining the class on the basis of similarities between and variations among