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2007 GSA Denver Annual Meeting (28–31 October 2007)

Paper No. 25

Presentation Time: 1:30 PM-5:30 PM

QUANTITATIVE MINERAL RESOURCE ASSESSMENT OF UNDISCOVERED PORPHYRY COPPER RESOURCES IN SOUTH AMERICA

[CUNNINGHAM, Charles G.](#)¹, SINGER, Donald A.², ZAPPETTINI, Eduardo O.³, VIVALLO S, Waldo⁴, CELADA, Carlos Mario⁵, QUISPE, Jorge⁶, BRISKEY, Joseph A.² and SUTPHIN, David M.², (1)US Geol Survey, 954 National Ctr, Reston, VA 20192, (2)USGS, (3)SEGEMAR (Argentina), (4)SERNAGEOMIN (Chile), (5)INGEOMINAS (Colombia), (6)INGEMMET (Peru), cunningham@usgs.gov

A quantitative resource assessment to be published this fall identifies and evaluates 26 tracts in South America where the geology is considered permissive for the occurrence of porphyry copper deposits. For each tract, information is provided on: (1) the rationale for delineating the tract, (2) examples of important deposits in the tract, (3) the rationale for choosing the mineral deposit model used for the assessment, (4) exploration history, and (5) expected spatial distribution of undiscovered deposits in the tract. The scale used to evaluate geologic information and define tracts is 1:1,000,000.

There are about 600 million tonnes of copper in known porphyry copper deposits in South America. This study estimates there are approximately 720 million tonnes of additional copper in undiscovered porphyry copper deposits, yielding a combined endowment of about 1.3 billion tonnes of copper. There are about 69 known porphyry copper deposits using the criteria adopted here to define a well-explored deposit. This study estimates that a mean of about 140 deposits remain to be found. In other words, about twice as many new deposits might be found as have already been found. Overall, deposit densities in South America are comparable to those in the rest of the world but differ in important details that are reflected in mapped distributions of deposits, metal densities, and percentages of undiscovered deposits in each tract. The deposits in the tracts that include Chuquicamata and El Teniente are significantly larger in tonnage and grade and are reported in a separate model that is more representative of their characteristics. The results of the assessment affirm that not all porphyry copper deposits in South America are located in the Andes. Geologic indications support the presence of undiscovered deposits in Patagonia as well as the Amazon of Brazil. A preliminary 1:4,000,000 map of the 26 tracts will be displayed.

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[Economic Geology \(Posters\)](#)

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