New Mines and Discoveries in Mexico and Central America

Editors
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Preface

The Mexican mining industry has long been known for its relatively high grade deposits of precious and/or base metals, particularly silver. Mexican ores typically exhibit noble metallurgy, and benefit from relatively low underground mining costs and good infrastructure and working conditions in the Altiplano region. Nevertheless, for several decades prior to 1990, total annual exploration expenditures were limited to a few tens of millions of dollars. This effort was funded almost entirely by Mexican mining companies, with very little spent on grass roots or early stage exploration. Then, in 1991, a new mining law allowing 100 percent non-Mexican ownership of mining operations was introduced. Foreign investment began streaming into the mining sector and exploration expenditures increased by an order of magnitude from earlier levels. Bulk-mineable gold deposits were targeted first, followed shortly thereafter by programs for silver and base metal deposits. Success came fairly quickly and produced a significant number of mineral deposit discoveries during the decade of the 1990s. This volume originated in response to those discoveries.

Many of the articles included in this volume were presented at a Society of Economic Geologists-sponsored special symposium which took place October 20–24, 1997, in Acapulco, Guerrero, in conjunction with the 19th National Convention of the AIMMGM (Asociación de Ingenieros de Minas, Metalurgistas y Geólogos de México, A.C.). Although not all the new discoveries are described in this volume, the examples presented cover a variety of sizes and types of deposits. New discoveries have taken place both in old districts (Fresnillo, Zacatecas; Boleo, Baja California; Tayoltita, Durango; Guadalupe de los Reyes, Sinaloa; Colorada, Zacatecas), as well as in relatively new districts (La Cienega, Durango; San Martín de Bolaños, Jalisco; San Nicolás, Zacatecas; Nukay, Guerrerro; Mulatos, Sonora; Herradura, Sonora). Of the 15 deposits described in Mexico, nine are low-sulfidation epithermal precious metal or polymetallic deposits, reflecting the predominance of these deposit types in Mexico. They are characterized by relatively high grades and amenability to metallurgical treatment. Although high-sulfidation deposits are not common, a few of the new discoveries such as Mulatos, Sonora (Staude, 2001), and El Sauzal, Chihuahua (Charest and Castañeda, 1997), are recognized as belonging to this type. No new important high-temperature carbonate-replacement deposits have been found, reflecting their subtle alteration and geochemical halos, highly unpredictable morphology, and the consequent greater difficulty in discovering blind deposits of this type. Perhaps the most surprising new discovery has been the large (83-million-ton) San Nicolás massive sulfide deposit, which occurs beneath 200 m of cover in the state of Zacatecas (Johnson et al., 1999). San Nicolás is in the center of the Altiplano metallogenic trend, which hosts the world’s largest concentration of silver, primarily in low-sulfidation vein and replacement-type deposits of mid-Tertiary age. The San Nicolás discovery suggests that the province may also be endowed with a spatially coincident trend of massive sulfide deposits related to an early to mid-Cretaceous island-arc belt of submarine mafic volcanics and sediments generally referred to as the Chilitos formation (Larraga, et al., 1999).

New discoveries in Central America, four of which are described in this volume, may also be attributed to increased exploration activity in response to improvements in infrastructure and investment climate. A large porphyry copper district was discovered at Petaquilla in Panama, and a number of million-ounce precious metal resources were put into production (Santa Rosa, Panama; San Andres, Honduras; and Cerro Mojón, Nicaragua). Exploration focused first on the well-known bonanza districts responsible for the bulk of past gold production. New vein and stockwork discoveries were made in the Miramar district in Costa Rica, the El Dorado district in El Salvador, and the Limón district in Nicaragua. Exploration efforts then expanded to include dome fields and related shallow epithermal systems. Stockwork and disseminated gold deposits were discovered in the Veraguas gold belt of Panama and near active hot springs at Cerro Blanco in Guatemala and San Martín in Honduras. Discoveries were also made in areas that have no record of any prior prospecting activity, e.g., Crucitas in Costa Rica.

The individuals listed below critically reviewed the manuscripts. Their time and efforts are greatly appreciated.

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REFERENCES


Table of Contents

Chapter 1
Controls on Formation of Low-Sulfidation Epithermal Deposits in Mexico: Constraints from Fluid Inclusion and Stable Isotope Data
Tawn Albinson, David I. Norman, David Cole, and Beverly Chomiak ........................................ 1

Chapter 2
Timing of Magmatic and Hydrothermal Activity in the San Dimas District, Durango, Mexico
Erme Enriquez and Reynaldo Rivera .................. 33

Chapter 3
Geology of the Santa Rita Ag-Au Deposit, San Dimas District, Durango, Mexico
Erme Enriquez and Reynaldo Rivera .................. 39

Chapter 4
Geology and Gold-Silver Mineralization in the Guadalupe de Los Reyes District, Sinaloa, Mexico
Gordon Allen, Brian Thurston, and Wayne Roberts ................................................................. 59

Chapter 5
Geology, Structural Setting, and Mineralization of the Dolores District, Chihuahua, Mexico
William J. Overbay, Tench C. Page, Dennis J. Krasowski, Mark H. Bailey, and Thomas C. Matthews ................................................................. 71

Chapter 6
Geology and Ore Deposits of the La Ciénega Gold District, Durango, México
V. De La Garza, S. Olavide, and R. Villasuso ........... 87

Chapter 7
New Discoveries in the La Colorada District, Zacatecas State, Mexico
Stuart A. Moller, Jorge E. Islas F., and Ramon T. Davila F. ....................................................... 95

Chapter 8
Geology of the Fresnillo Southeast Mine, Fresnillo, Zacatecas, Mexico
Pantaleón Trejo ............................................. 105

Chapter 9
Mineralogic and Thermal Structure of the Zuloaga Vein, San Martín de Bolaños District, Jalisco, Mexico
Tawn Albinson and Marco Antonio Rubio .............. 115

Chapter 10
The La Guitarra Ag-Au Low-Sulfidation Epithermal Deposit, Temascaltepec District, Mexico: Vein Structure, Mineralogy, and Sulfide-Sulfosalt Chemistry
Antoni Camprubí, Àngels Canals, Esteve Cardellach, Rosa María Prol-ledesma, and Reynaldo Rivera ................................................................. 133

Chapter 11
The La Guitarra Ag-Au Low-Sulfidation Epithermal Deposit, Temascaltepec District, Mexico: Fluid Inclusion and Stable Isotope Data
Antoni Camprubí, Esteve Cardellach, Àngels Canals, and Raffaele Lucchini .................................. 159

Chapter 12
Geology of the El Creston Gold Deposit, Sonora State, Mexico
Ross D. Zawada, Tawn Albinson, and Reyna Abeyta ................................................................. 187

Chapter 13
Geology, Geochemistry, and Formation of Au-(Cu) Mineralization and Advanced Argillic Alteration in the Mulatos District, Sonora, Mexico
John-Mark Staude ........................................... 199

Chapter 14
Geology of the Cerro San Pedro Porphyry-Related Gold-Silver Deposit, San Luis Potosi, Mexico
Mark A. Petersen, Michelle Della Libera, Raymond R. Jannas, and Stephen R. Maynard ........... 217

Chapter 15
The Evolution of Magmatism and Mineralization in the Cananea District, Sonora, Mexico
Wojtek A. Wodzicki ........................................ 243
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Lower Cretaceous Precious Metal-Rich, Volcanogenic Massive Sulfide Deposits, Campo, Morado, Guerrero, Mexico</td>
<td>J. Oliver, J. Payne, Dan Kilby, and Mark Rebagliati</td>
<td>265</td>
</tr>
<tr>
<td>17</td>
<td>The Rey de Plata Cretaceous Zn-Pb-Cu-Ag-Au Volcanogenic Massive Sulfide Deposit, Guerrero, Mexico</td>
<td>Miguel A. Miranda-Gasca, Victor de la Garza, Roberto Téllez, and Arturo Hernández</td>
<td>277</td>
</tr>
<tr>
<td>18</td>
<td>Sediment-Hosted Deposits of the Boléo Copper-Cobalt-Zinc District, Baja California Sur, Mexico</td>
<td>Richard J. Bailes, Jan E. Christoffersen, Francisco Escandon V., and Giles R. Peatfield</td>
<td>291</td>
</tr>
<tr>
<td>19</td>
<td>Gold Mineralization in Dome Fields of the Veraguas Belt, Panama</td>
<td>Carl E. Nelson</td>
<td>307</td>
</tr>
<tr>
<td>20</td>
<td>Economic Geology and Ore Controls of the Santa Rosa Mine—An Integrated Structural Analysis Approach: Cañazas, Veraguas, Republic of Panama</td>
<td>C. B. Byington and M. R. Russell</td>
<td>317</td>
</tr>
<tr>
<td>21</td>
<td>Geology and Gold Mineralization at the Cerro Mojon Deposit, La Libertad, Nicaragua</td>
<td>Michael D. Johnson, Richard W. Bybee, and Joseph D. Strapko</td>
<td>331</td>
</tr>
<tr>
<td>22</td>
<td>Mineralization in Northeast Nicaragua—Known Deposits and Exploration Potential</td>
<td>Margaret E. Venable</td>
<td>339</td>
</tr>
<tr>
<td>23</td>
<td>Exploration and Discovery at the Petaquilla Copper-Gold Concession, Panama</td>
<td>Friedrich Speidel, Stéphane Faure, Moira T. Smith, and Gerry F. McArthur</td>
<td>349</td>
</tr>
</tbody>
</table>