

## SEG-CSM Short Course – March 11-12, 2010

### *Epithermal Gold Deposits*

#### Presenter Biographies

##### **Jeff Hedenquist:**

Jeffrey Hedenquist is based in Ottawa, Canada, as advisor to the mineral exploration industry, governments, and the World Bank. He specializes in the assessment of hydrothermal deposits of gold and copper, and is also extensively involved with in-house professional development. These assignments have taken him to over 40 countries around the world, for fieldwork and the presentation of over 70 short courses. Previously he conducted research with the New Zealand Chemistry Division (1979-89) and the Geological Survey of Japan (1989-98) on geothermal systems and volcanic discharges, respectively, with the insight gained now applied to the understanding of epithermal and porphyry deposits. This research resulted in numerous publications, acknowledged with the Silver Medal from the Society of Economic Geologists, the William Smith Medal from the Geological Society (London), and a Doctor honoris causa from the University of Turku, among others. Jeff served as co-editor of the SEG 100th Anniversary Volume of Economic Geology, and has had other editorial roles with this journal and seven others. He is SEG President in 2010, and is also presently adjunct professor at the University of Ottawa.

##### **Antonio Arribas:**

Antonio Arribas graduated from the University of Salamanca (Spain) with a BSc and an MSc and received a PhD at the University of Michigan in 1992. His dissertation focused on the geology and origin of gold deposits in SE Spain, in particular the Rodalquilar high-sulfidation epithermal deposit. Between 1992 and 1996, Antonio conducted post-doctoral research at the Geological Survey of Japan on subaerial and submarine volcanic-hydrothermal systems and ore deposits of the Pacific Rim region. In 1996 Antonio joined the Long-term Generative Group of Placer Dome Exploration Inc. in San Jose (California) with responsibilities to aid in the generation and evaluation of projects worldwide. Antonio was Exploration Manager for South America for Placer Dome between 2002 and 2006. Currently he is Manager, Generative Exploration with Newmont Mining Corp. based in Denver, Colorado. Antonio has served as Vice-President for Regional Affairs of the Society of Economic Geologists and was Thayer Linsley lecturer of the Society and a member of the Editorial Board of the journals Economic Geology and Geochemistry: Exploration, Environment, Analysis.

## **Outline, SEG short course on epithermal gold deposits, March 11-12, 2010**

The epithermal environment of intrusion-centered hydrothermal systems is highly variable, both in host rocks and tectonic setting; it is a major depositional site of gold and silver, as well as base metals, and commonly overlies porphyry deposits. Active analogues and associated processes can be seen today in geothermal and volcanic-hydrothermal systems, and their study provides insight into the exploration for and interpretation of epithermal deposits. The two presenters have over 50 years experience with the epithermal environment, both active and extinct, and have combined to organize this course for those wishing greater familiarity with these systems and deposits, both in terms of exploration as well as research.

The two-day course will be introduced with a brief review of samples of the alteration types that characterize the various types and parts of epithermal deposits, followed by a review of the evolution in understanding of their formation, examination of their distribution, tectonic setting and related chemical variation, and the insight gained from their active analogues. This will be followed by discussion of the tops, bottoms and sides of epithermal deposits, using case studies as appropriate to illustrate important features and variations. Several virtual field trips will be held, with virtual globe fly-overs combined with geological maps and sections; geophysical case studies will also be reviewed. Samples of characteristic mineralization and alteration types will also be examined at the end of the first day. The course will provide the framework to interpret observations in the field, with implications for exploration and research stressed throughout; it will end with a consideration of the challenges faced in searching for and assessing epithermal deposits.

### Preliminary Schedule:

#### Day 1:

8-8:30: Registration (and coffee)

8:30-9: Introduction and preview rock samples (coffee area)

9-10:15: Continue general introduction

10:15-10:45: Questions, discussions, followed by coffee break

10:45-12: Active system review

12-1: Questions, discussions, followed by sandwiches

1-2:45: Lithocaps and high-sulfidation ore deposits

2:45-3:15: Questions, discussions, followed by break

3:15-5: Margins and roots of lithocaps

5-7: Pizza dinner with questions, discussions, and examination of all rock samples

#### Day 2:

8-8:30: Coffee

8:30-10: Intrusion-related vein systems and their variation

10-10:30: Questions, discussions, followed by coffee break

10:30-12: Veins, including low-sulfidation styles

12-1: Questions, discussions, followed by sandwiches

1-2:45: Case studies, continued

2:45-3:15: Questions, discussions, followed by break

3:15-5: Exploration considerations, and open discussion