



FRIENDS OF MINERALOGY - Colorado Chapter
Newsletter No. 20 August 14, 1995

Next meeting September 7 VIP room DMNH 7:30
The board will meet at 6:30

Our speaker will be Ed Raines. He will present a program on early mining methods. Ed has always presented entertaining and informative programs. This one will not include a single or double jack drilling contest except in slides.

"Colorado Mineral and Mineral Fuel Activities, 1994" prepared by James Capper and Carol Tremain for the Colorado Geological Survey

Challenger Gold, Inc. discontinued its gold exploration program on the Baca Land Grant property along the foothills of the Sangre de Cristo Mountains in Saguache County after finding "live" oil in the drill cuttings of some of their exploration drillholes. Further investigation indicated the source of the oil is Cretaceous age sedimentary rocks buried under shallow valley alluvium. Prior to this discovery, it was thought there were no Cretaceous age rocks in this part of the Sangre de Cristo Mountains. Challenger is currently assessing the opportunity for an oil exploration program in the area.

Hendricks Minerals Canada Ltd. completed 14,000 feet of surface and underground diamond drilling at the Cross Mine in the Caribou district, Boulder County. The Cross Mine is thought to be a stockwork vein gold deposit associated with the contact of a Tertiary age quartz monzonite intrusive and surrounding Precambrian rocks. Also, a 5,000 sample, surface soil geochemical sampling program and an induced polarization survey were completed. Preliminary reserve calculations indicate 1.1 million tons at a grade of 0.08 ounce per ton including a high grade zone of 387,000 tons at a grade of 0.21 ounces per ton.

Royal Gold Inc. of Denver has entered into an agreement with Union Pacific Minerals Inc. to conduct exploration for precious metal deposits in Colorado and Wyoming on Union Pacific lands. Royal Gold was to have selected 50,000 acres by the end of August, 1994. The agreement calls for an initial term of 15 months and a minimum expenditure of \$400,000.

Summo Corporation, a partnership consisting of Denver-based St. Mary Minerals Inc., MLP Associates, and other investors, completed several exploration drillholes on the Cashin sandstone-hosted copper deposit in Montrose County. A preliminary ore reserve calculation indicates that there are 11 million tons at a grade of 0.6% copper. Metallurgical tests confirm that the ore is amenable to a solution extraction-electrowinning process. More drilling is planned for the 1995 exploration season.

The Powderhorn district in Gunnison County is estimated to contain approximately 500 million tons of titanium ore. Most of the titanium resource is in perovskite, a mineral that presents unique processing problems. Teck Resources has been conducting an evaluation program on the Powderhorn titanium resource since 1990. In 1994 Teck completed the purchase of a 100% interest in the property.

Mountain forecasts 1995 production will decrease to 68,000 ounces due to lower ore grades.

The Cripple Creek and Victor Gold Mining Company, a joint venture partnership between Pikes Peak Mining Company (a subsidiary of Independence Mining Company) and Golden Cycle Gold Corporation, produced 55,000 ounces of gold from the Ironclad open pit in 1994. Processing improvements lead to an approximate 10% increase in gold recovery from the 1993 level of 49,000 ounces. The Ironclad Mine was closed in the fall of 1994. Both the Ironclad and Globe Hill open pits are currently being reclaimed.

Cripple Creek and Victor Gold Mining Company received their amended permit for the new Cresson Mine in April 1994. Construction of the open pit mine, mill, beneficiation facility, and the valley-leach pad began in May and was completed in February 1995. The first gold bar from the Cresson Mine was poured in the third week of February. Estimated total construction cost is \$86 million.

The Cresson Mine has a 1994 proven and probable reserve of 73 million tons at a grade of 0.03 ounce of gold per ton for a total of 2.2 million ounces. There is an additional 1.4 million ounces of gold at the mine that have been classified as a resource. The deposit has an overall strip ratio of 1.7:1 and a leach pad recovery of 70 to 80%. The current mine plan calls for a daily mining rate of 60,000 tons with an estimated 1995 recovery of 100,000 ounces rising to 165,000 ounces in 1996.

Pikes Peak Mining Company conducted 12,500 feet of reverse circulation drilling on exploration targets in the Cripple Creek district during 1994. The exploration drilling intersected several zones of favorable mineralization. The 1995 exploration plan calls for 55,000 feet of drilling.

Sunshine Mining Company has entered into a lease agreement on the presently-closed Revenue-Virginus Mine near Ouray, Colorado. Over 14.5 million ounces of silver were produced during the mine's history from narrow, high-grade, tetrahedrite veins. The company began a reserve delineation program with seven surface and underground drillholes during 1994. Silver is found in association with the tetrahedrite, a complex copper-antimony sulfide, which can be successfully treated using Sunshine's patented hydro-metallurgical process. Proven and probable reserves at the Virginus Mine are 410,000 tons of ore containing approximately 5 million ounces of silver.

Other mines in the state that produced minor amounts or by-product gold in 1994 include the Black Cloud Mine in Leadville and the Franklin Mine near Idaho Springs, Colorado.

The Black Cloud Mine near Leadville is the state's sole significant base metal producer. The mine has a capacity of 900 tons per day and operates from two underground shafts. Staffing at the mine will remain at 135 to 150 employees as long as metal prices remain at current levels.

The orebody is a complex massive sulfide replacement deposit in the Mississippian age Leadville Limestone. The ore grade is 7-9% lead, 3-5% zinc, 2 ounces per ton silver, and 0.08 ounces per ton gold.

MOLYBDENUM

Cyprus-Amax announced in January 1993 that it was planning to cut production at the Henderson Mine by 40% because of an oversupply of molybdenum, low prices, and weakened demand due to the recession of 1991-1992. Production in 1993 was 24 million pounds of molybdenum oxide, down substantially from the 1992 figure of 33 million pounds (Figure 3). The price of molybdenum oxide in 1993 rose from \$1.90 per pound to \$2.75 at year's end. During the first half of 1994, European economies became more robust as they climbed out of recession. Demand for molybdenum increased, and by the end of 1994 the price of molybdenum oxide had skyrocketed to over \$15 per pound. As of March 1995, the price on the London Metal Exchange is stable at about \$14-\$15 per pound.

Cyprus-Amax began to increase production at the Henderson Mine, Clear Creek County, in mid-1994 and ended the year with a production of 26.5 million pounds of molybdenum oxide. Approximately 9 million pounds were produced in the fourth quarter alone. The company began planning for further increases in production in 1994 by replacing worn out equipment at the Henderson Mine and announcing the reopening of the Climax Mine in Lake County.

Industry analysts forecast a 1995 molybdenum oxide production in Colorado of approximately 50 million pounds due to increased production at the Henderson Mine and the scheduled April reopening of the open pit mine at Climax. There are about 440 employees at the Henderson Mine. The Climax Mine will employ about 100 Cyprus-Amax staff in the mill and plant. About 50 contract miners will operate in the Climax open pit.

Gold production in Colorado increased approximately 7% from 136,000 ounces in 1993 to an estimated 145,000 ounces in 1994. Gold production had declined to approximately 65,000 ounces in 1991 (Figure 4) due primarily to the exhaustion of minable reserves at the Summitville Mine in Rio Grande County. Production increases since then are due to two new significant gold producers in the state, the San Luis Gold Mine which has attained its planned production level, and the Pikes Peak Mining Company's deposits in the Cripple Creek district. Gold is also produced as a by-product of base metal mining at the Black Cloud Mine in the Leadville district.

Production of gold in 1994 at Battle Mountain's San Luis Gold Mine in Costilla County was 73,000 ounces, up slightly from 72,000 ounces in 1992. The San Luis deposit (also known as El Plomo) contained about 12,149,000 tons of ore at 0.04 ounce per ton gold prior to the commencement of mining in 1991. Current minable reserves are 222,000 ounces of gold, enough at the current production rate for three more years of mining. The mine and mill are currently operating at their planned capacity. The total operating cost in 1994 was \$317 per ounce as compared to \$329 in 1993 and \$463 in 1992. Battle

Colorado Diamond Co., a subsidiary of Redaurum Red Lakes Mines Ltd. of Toronto, announced encouraging results from a 10,000 ton bulk sampling program on their Kelsey Lake kimberlite prospect in the State Line district of Larimer County. Over 60% of the diamonds recovered are of gem quality including a 14.2 carat white diamond, the largest ever discovered in the State Line district and the eighth largest found in North America. In 1995 the company plans to construct a 275,000 ton per year processing plant for a trial mining program. The produced diamonds will be sold to test their market value. There are eight kimberlite pipes on the Kelsey Lake prospect. Pipe no. 2, with a surface area of 9.5 acres, will supply the ore for the 1995 trial mining program.

Royalstar Resources Ltd. completed a 3,300 ton, Phase 1 bulk sampling program from their Sloan 2 pipe test adit at their Sloan kimberlite prospect in the State Line district. A total of 8,842 diamonds aggregating 327 carats were recovered from 3,000 tons of processed ore. The grade ranges from 16 to 23 carats per hundred tons. The largest recovered stone is a 5.5 carat, good clarity diamond. Plans for 1995 include an additional 700 feet of drifting and crosscutting below high grade zones indicated by surface sampling. Testing in the 1980s yielded over 21,000 diamonds from the Sloan kimberlites.

Phelps Dodge is actively looking at mineral opportunities in Colorado. BHP is conducting a base metals exploration program in undisclosed areas.

CALL FOR HELP AT MINERAL BOOTHS AT DENVER SHOW

We can use help at two booth at the Denver Show: Mineral Identification (the tradition activity run by FM), and the "Kid's Corner", a special booth where we show and explain rocks and minerals to children. To help at the kid's booth, you don't have to be an expert mineralogist—you just need to be able to show kids about cleavage, hardness, etc. We'd like volunteers to sign up for at least 2-hour shifts at one or both of these booths; signing up as a volunteer gets you a free admission to the entire show. Please contact Pete Modreski at 978-9926(home) or 236-5639(office).

FM DISPLAY CASE AT LOCAL SHOWS

It has been suggested that FM should, on a continuing basis, make an FM-oriented exhibit available to all the local gem & mineral shows. Pete and Regina Modreski prepared such a case and brought it to the Fort Collins show in March; it contained information about FM, chapter publications (including the Mount Antero book), an assortment of mineral specimens, and alongside the case, a stack of FM membership applications were made available. We missed offering this case to two shows held since (Colorado Springs and the RAMS show), but we plan to put the case in the Denver Show, and to offer it to all other local shows. Additional volunteers to help organize and set up the case at each show would be welcome.

LAYOFFS AT USGS

The recently announced layoffs at the Geologic Division of the U.S. Geological Survey have had a serious impact on people who are FM members, as well as on the ability of the USGS to carry out geologic research nationwide. Eugene Foord, Karen Wenrich, Earl Verbeek, and Regina Modreski, all FM members, have lost their jobs at the USGS; the layoffs become effective Oct. 15. Mike and Isabelle Brownfield, Pete Modreski, Dan Unruh, and Craig Brunstein, all of whom also work in the Geologic Division, still have jobs. The layoffs affect only the Geologic Division; other FM members who work for the Water Resources and National Mapping divisions (Dan Kile, Bill Chirnside, and Marcus Lieberman) were not affected. Of several other USGS employees who are former FM members or who belong to other local mineral clubs, Tom Michalski and Joe Taggart are keeping their jobs, but Rick Collins, Tom Kohnen, and Bob Zartman are losing theirs. Nationwide, some 540 out of about 2190 USGS employees are losing their jobs; here in Denver, it is 167 out of 666 employees.

PA, FM Chapter Symposiun "Phosphates" Nov. 3,4,5 for more info
call George Rambo (302)798-4163

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The annual dues for the Friends of Mineralogy Denver Chapter are
\$13.00 which includes the \$5.00 for the National Chapter. They are
due January of each year.

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