2420 0028

add to ref list

79A

Item 28

GEOLOGY AND EXPLORATION OF THE BURNS BASIN AND PATTANI SPRINGS ORE BODIES, JERRITT CANYON DISTRICT, ELKO, COUNTY, NEVADA

Doe, T.C.; Birak, D.J.; Dahl, A.R.
Freeport McMoRan Gold Company
Mountain City Star Rt.
Elko, Nevada 1440

The Burns Basin and Pattani Springs ore bodies are located in the Independence Range approximately 61 kilometers (38 miles) north-northwest of Elko and 6 kilometers (4 miles) south of the current Enfield Bell Mine area. These are sediment-hosted, disseminated gold occurrences where most of the ore is hosted by limestones of the Silurian-Ordovician Hanson Creek Formation. Other significant ore hosts include siltstones of the Devonian-Silurian Roberts Mountains Formation, jasperoids developed from these sediments, and strongly altered intrusive rocks assumed to be of Tertiary age. Mineralized zones are commonly related to low-angle faults and their intersections with high angle northeast and northwest faults. Alteration consisting of silicification, argillization, decalcification, and supergene oxidation is typical of the sediment-hosted deposits found in Nevada. Gangue minerals within and close to the ore zones include hydrothermal barite, stibnite, orpiment, and realgar.

During the 1940's small amounts of antimony ore were mined in Burns Basin from a brecciated jasperoid with hydrothermal barite and stibnite mineralization. During 1968 four holes were drilled for gold with values reportedly reaching 2.1 grams Au. (0.06 oz/ton Au). FMC staked the open portions of Burns Basin in 1974 and drilled 2 shallow diamond drill holes during 1976 with negative results.

Detailed mapping and sampling carried out by Freeport as operator for the Freeport-FMC joint venture led to an initial drill program during 1979 with targets based primarily on jasperoids developed in favorable lithologies and gold and arsenic anomalies. Target depths for the drill program were generally set in the range of 90 to 120 meters (300 to 400 feet). Drilling was done with conventional rotary rigs and a number of the holes were lost due to problems with circulation and high ground water flows. Results from this initial 23 hole program were encouraging with 6 holes intersecting ore grade mineralization. Drilling during 1980 was planned to both follow up on results from previous drilling and test additional targets. In spite of continuing problems with lost circulation, results from an additional 88 hole program were encouraging with 15 holes intersecting ore grade mineralization including 3 from new target areas. At this point the project had clear potential for an economic deposit, but it was felt that the demonstrated tonnage potential was limited and the grade was somewhat low considering the generally

refractory nature of the material.

The drilling program at Burns Basin was scaled down to 28 holes during 1981 followed by 7 in 1982. Drilling continued with conventional circulation drilling techniques , but target depths of the holes were increased with many planned for 120 to 180 meters (400 to 600 feet). Drilling problems continued and a high proportion of the holes failed to reach target depths. A total of 7 holes drilled during this period intersected ore grade mineralization and enthusiasm for the project was regenerated when the last hole of the 1982 season intersected 15 meters (50 feet) averaging 11.5 grams Au (0.335 oz/ton Au) in a relatively untested area with essentially no surface alteration.

Exploration plans for the 1983 season in Burns Basin included follow-up drilling in areas of known mineralization and additional surface mapping and sampling emphasizing areas of less favorable lithologies and alteration. Reverse circulation drilling equipment had become more available and was used for all drilling on this project. When 5 of the first 11 holes drilled intersected ore grade mineralization, including 21 meters (70 feet) averaging 10.3 grams Au (0.300 oz/ton Au), immediate plans were made for further drilling. The surface mapping and sampling also identified a target based on anomalous values of Au, As, and Hg associated with an unsilicified outcrop of upper Hanson Creek Formation. Drilling on this target resulted in the discovery of the Pattani Springs ore body.

After the 1983 season, inferred geologic resources for the Burns Basin and Pattani Springs projects were estimated at 3.6 million mt (4.0 million short tons) averaging approximately 3.8 grams Au (0.110 oz/ton Au) with clear potential for expansion. The decision was made to pursue delineation level drilling on these projects and a total of 341 holes were drilled during 1984 and 1985 with 163 intersecting ore grade mineralization. At the completion of this program, feasibility studies resulted in a determination of minable ore reserves of over 2.4 million mt (2.6 million short tons) containing in excess of 12,440 kilograms (400,000 ounces) of gold.

Stripping of waste material at Burns Basin began in 1988 with ore production scheduled to begin in 1990. Stripping and ore production at Pattani Springs began in 1988 and will continue through 1990 when this relatively small deposit will be mined out. Production of ore from Pattani Springs to date totals 259,600 mt (286,200 short tons) containing 995 kilograms (32,100 ounces) of gold. Ore reserves in these deposits as of 1 January, 1989 totalled over 2.8 million mt (3.1 million short tons) containing in excess of 12,440 kilograms Au (400,000 ounces Au).