Mining Uranium at Namibia's Langer Heinrich Mine

By Dan Oancea

The beautiful but harsh land of Namibia has been the homeland to numerous indigenous peoples, such as the San Bushmen of Kalahari who are considered to be the world's oldest tribes. As history has it, the first European to set foot on the south-western African coast was the Portuguese Diogo Cao in the relatively late time of 1485. For hundreds of years before, the inhospitable land kept explorers at bay.

Unknown to early settlers, easy-to-find diamonds riddled the coast's beaches, marine and submarine terraces. So it is not surprising that in 1908 the diamond mining industry was born in the country when a railway construction worker found the first diamond near Luderitz. A century later and diamond mining is still a mainstay of the Namibian economy.

Prospectors and early settlers have brought back to coastal towns many rocks and ore samples collected during their inland trips. Over time, copper, lead, zinc and gold mines opened mineral coffers that have been locked in some cases for billion of years.

Nowadays, no mineral holds more power than the vividly distinct-looking minerals containing uranium. The first Namibian uranium deposit was discovered in 1928. The Rossing Mine was opened in 1976, a successful conventional open pit operation that mines a granite-hosted, low-grade uranium deposit. Rossing accounts for seven per cent of world's total uranium production.

More interesting uranium finds challenged our understanding of the role of the water in forming sedimentary uranium deposits. Uranium leached from low-grade sources was transported by water on surface or in the ground and was subsequently deposited and concentrated whenever the chemistry of the environment changed.

Calcrete, a calcium carbonate hardened layer which is a characteristic component of the soils of many arid regions around the world, represented an ideal host for uranium pregnant solutions. The resulting uranium and vanadium mineral is carnotite, which occurs as thin

Naukluft National Park from space, Namibia – "High Dunes in the Namib Desert" (From Wikipedia).

films and disseminations in calcretized sediments.

In Namibia, tertiary calcreted valley-fill low-grade uranium accumulations have been identified starting with the early 1970s.

The Langer Heinrich deposit is situated at the eastern edge of the arid Namib Desert within the most northerly part of the Namib-Naukluft National Park. Discovered in 1973, the deposit was the subject of numerous project evaluation researches, including a comprehensive pre-feasibility study. Depressed uranium prices curtailed any development activity and the deposit changed hands several times.

Paladin Resources acquired the mineral title in 2002 and in 2005 finalized a favourable bankable feasibility study. The defined mineral reserves provided for a mine life of 11 years and a process plant life of 15 years. The designed mill throughput of 1.5 Mtpa of calcrete ore would result in the production of 1,180 tpa U_3O_8 at a head feed grade of 0.0875% U_3O_8. Currently, an updated mineral reserve estimate extended the mine life to 27 years.

Mining operations employed at the Langer Heinrich open pit mine are conventional truck and shovel operations followed by beneficiation, alkaline leaching, counter-current decantation, ion exchange, and precipitation and calcining.

The Langer Heinrich uranium project was officially opened by Namibia's President Hifikepunye Pohamba on March 15, 2007.

Favourable economic perspectives and a strong uranium outlook have determined the exploration community to increase budgets and speed up exploration activities, while mining companies fortunate enough to hold feasible uranium deposits are fast-tracking their development.

The most difficult mine to be opened, considering permitting, legal issues and security, is a uranium mine. That is why the opening of the Langer Heinrich Mine represents an important achievement not only for the company that developed the project and brought it to life, but also for the political stable and pro-mining country, Namibia.

Langer Heinrich Mine is also considered to be one of the world's newest uranium mine and mills. ■

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Links and References

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- Buyer's Guide
- Copper
- Deep Sea Mining and Exploration
- Diamond Mining
- Diogo Cao
- Gold
- Kalahari
- The Langer Heinrich deposit
- Langer Heinrich (Official Site)
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