

LAST MERCURY MINE CLOSES

by J.D. Schlottmann, Jr.

When the McDermitt Mercury Mine shut down on Feb. 15, it ended a long struggle with a shrinking mercury market, inexpensive foreign imports and, what one company official has called, unfair competition from the U.S. government. Its passing marked the end of one more chapter in American mining.

While some gold mines in Nevada still produce small amounts of mercury as a by-product, the McDermitt Mine, located about 20 miles west of the small northern Nevada town of the same name, was the last mercury mine in the country. For years, it accounted for more than 90 percent of the nation's quick silver output.

Fred Carrillio, minerals information officer for the U.S. Bureau of Mines in Reno, said of the 16,530 flasks produced in the U.S. in 1985, the most recent year figures are available for, the McDermitt mine distilled 16,337.

For several years prior to the closure, Victor Botts, manager of operations in Nevada for Placer U.S., managing partner in the McDermitt joint venture, had complained of continuing auctioning of government stockpiles, a practice, he said last year, that "disrupted the American market and threatened the existence of the mine."

He said then, that the mine could

meet competition from foreign producers like Spain, Algeria and China, but the sales by the government's General Service Administration of the Department of Energy and strategic stockpiles amounted to unfair competition.

"We've spent years lobbying the Congress and the G.S.A.," he said, "but we've been unable to get them to change policy."

Botts said the government not only auctioned off mercury at under-market prices, it offered terms private

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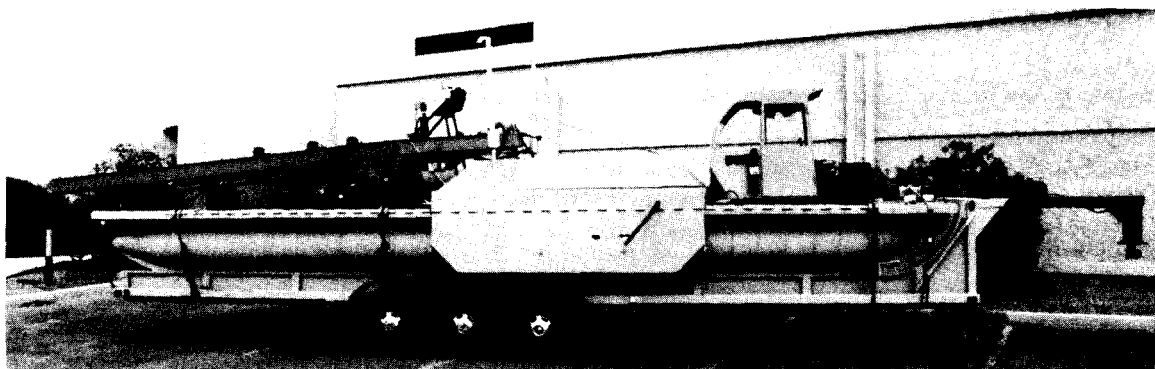
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business was unable to match.

Apparently, mercury buyers at government auctions need only put down 10 percent of the purchase price and pay the remainder when they take delivery, up to 180 days later. Storage until delivery is free, Botts said.

Carrillio said the G.S.A. hasn't sold much mercury, though its goal is to deplete its stockpile by 1,500 flasks each month. In all of fiscal 1985, he said, the government sold 4,499 flasks of primary mercury from strategic stock, and 485 flasks of D.O.E. secondary mercury. The agency also sold

350,875 flasks of mercuric oxide during the year.

Botts figured any government sales were disruptive. He said the G.S.A. sold all of the primary mercury it had available for 1985. Secondary mercury doesn't sell well because its purity is suspect. He also expected the inexpensive mercuric oxides to be refined and find its way back to the market place as primary mercury.

Bott's feelings were echoed, after the announcement of the closure, by Nevada Mining Association Director Bob Warren, who spoke for the association. "We recognize that U.S. mercury mining was faced with heavy competition from foreign producers," he said. "This was an acceptable risk. But we are distressed that our own U.S. government has contributed to the closure of the largest and possibly last mercury mine by dumping mercury stockpile reserves and further depressing the market."

The last mercury mine closed leaving reserves enough for several years of production still in place, the remains of an ore body unlike any other in the world.

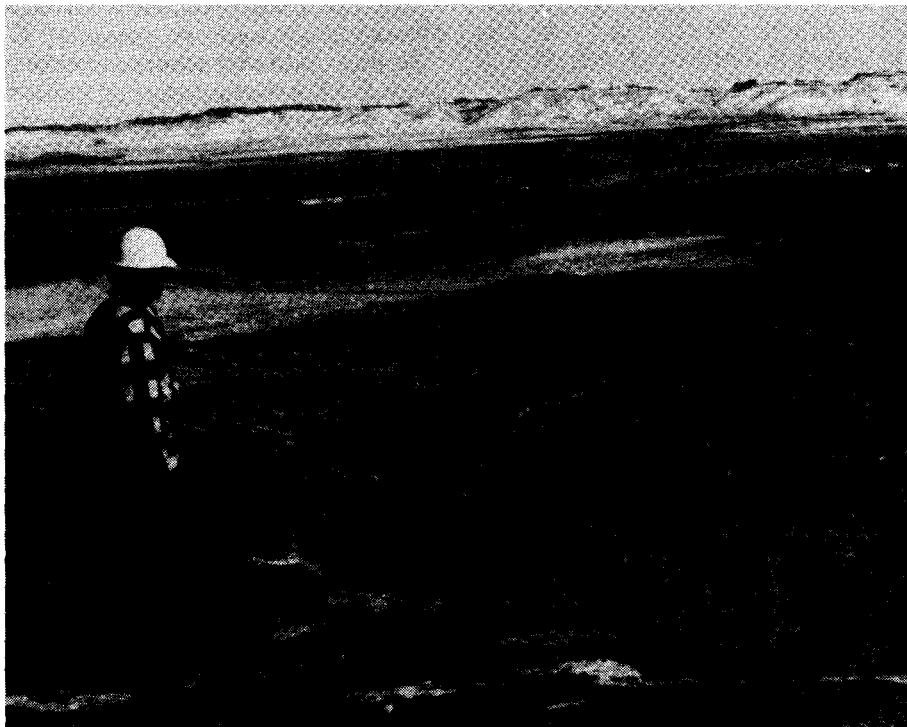
Geologists figure the mercury ore got to its present position via McDermitt Caldera faulting. The fault's hanging wall is of gouge. The foot wall is of volcanics, crushed so as to be permeable, which allowed the mercury-bearing solutions to migrate first vertically up the fault and then laterally to form the lakebed deposit mined by U.S. Placer.

The verticle structure was first discovered in 1931 by Basque sheepherders who named their claims the Cordero (Basque for lamb). The ore was mostly a good grade of cinnabar and was mined conventionally into the early '70s when a sulfide fire broke out in a gob stope at about the 600 foot level.

The fire was doused by flooding the mine. After the flooding, the price of mercury took a dive and the ore which had absorbed a lot of water, was reportedly no longer economically minable.

When the Cordero ceased operation, rumor had it that a large number of flasks of mercury produced during the mine's lifetime had somehow disappeared. It appears no charges of wrong doing were substantiated.

According to Mike Russo, mine superintendent at McDermitt, the unique lateral deposition that would become the McDermitt Mine was dis-



Francis Schultz, who worked as general superintendent for McDermitt, overlooks 300 acre pit.

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covered geochemically by Sierra Minerals, which then uncovered enough of the ore to bring U.S. Placer to the property.

The McDermitt orebody lies in lakebed clays about 30 feet below the surface. The ore and the surrounding waste rock are soft enough that

scrapers were used to remove them from the pit which now covers about 300 acres.

Because the body was removed a foot at a time by the scrapers, panners were able to make "eye ball" assays with each cut. The ore from the spotty body was then selectively milled even from parts of the pit that drill hole data would have branded economically unfeasible.

Francis Schultz, who worked as general superintendent at the mine, said the body lies relatively flat with a slight dip to the north and varies between 20 and 30 feet in thickness.

It contains cinnabar and corderoite. The latter is an ore that has been found nowhere else, though the Russians claim to have found the mineral microscopically.

Russo said the mineral is an alteration product of cinnabar, a sulfide that probably because of immersion in salt water after deposition, picked up a secondary chlorine component. The mineral was created in a laboratory several years before it was discovered occurring naturally at McDermitt.

The unique chlorine-bearing ore has caused special metallurgical problems. While the mine was still in the hands of Sierra Minerals, the problems almost caused a law suit.

Russo explained the cons from the pit contain about 70 percent cinnabar. The rest is corderoite. When the cons are heated to vaporize the mercury, an unexpected HCL gas is released which unites with the mercury to form calomel, a mercury chloride. The calomel forms on the wall of the condenser tubes making them ineffective.

Russo said when the people from Sierra Minerals first discovered ore on the property, they encountered a deposit of the highest grade corderoite. The ore reportedly assayed 300 pounds of mercury per ton. Russo said the mining company, looking to raise some money for operating expenses, loaded the ore into trucks and took it to the Cahill furnace in near-by Paradise Valley for processing.

When the furnace yielded no mercury, the Sierra people figured the Paradise Valley company had ripped them off. Soon thereafter, the particular problems in extracting mercury from corderoite became apparent.

Corderoite is highly photo sensitive. It's a flesh-colored ore in-situ, but once exposed to sunlight, it becomes black. The corderoite continued to be



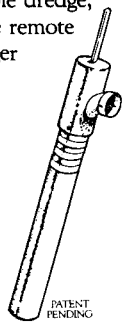
Scrapers at work at McDermitt Mine.

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a problem after U.S. Placer took over the property though it was milled and retorted along with the more prevalent cinnabar.

While the process yielded mercury, it wasn't coming from the corderoite. That component kept coating the titanium tubes that the company used for condensing.

Russo said the only way to remove the calomel was to beat on the tubes with hammers. He said the repeated beatings from 1975-77 cleaned the tubes but also destroyed them. When the replacement tubes were installed, they were of mild steel. "If you have to

replace them anyway," he asked, "why not replace them with something cheaper?"

The answer, a flux of sodium sulfide and lime, was discovered, apparently by accident, by a Vancouver metallurgist. Following his discovery the mine was able to extract mercury from all of the ore, but Russo said the processors still don't know why the flux works.

Maybe as unique as the ore, is the amazing purity of the quicksilver the mine produced. In many applications, the prime virgin mercury from McDermitt would function in the place of triple-distilled mercury. Although the

purity was there, the law would have frowned had the mine called the product "triple-distilled". Instead, the mine labeled its product "acid cleaned."

Now the fine grade of mercury will remain in the ground, awaiting a reduction in the world's supply. Innovations, particularly in the battery manufacturing process and a shift away from mercury cells in the chlorine-caustic soda process, probably guarantee the mine will never open again.

There is an irony in its passing underscored by something Botts said nearly a year ago.

"The McDermitt Mine is a world-class mine, the only one in the western hemisphere. It's the second or third largest operating mercury mine in the world and one of the most efficient and most modern. It's the only free enterprise funded major mercury mine in the world.

"With a record like that," he said, "you'd think we could write our own ticket, wouldn't you..." □

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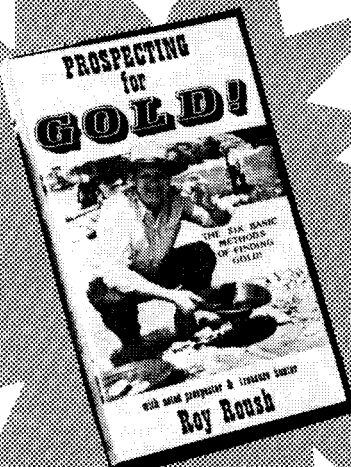
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