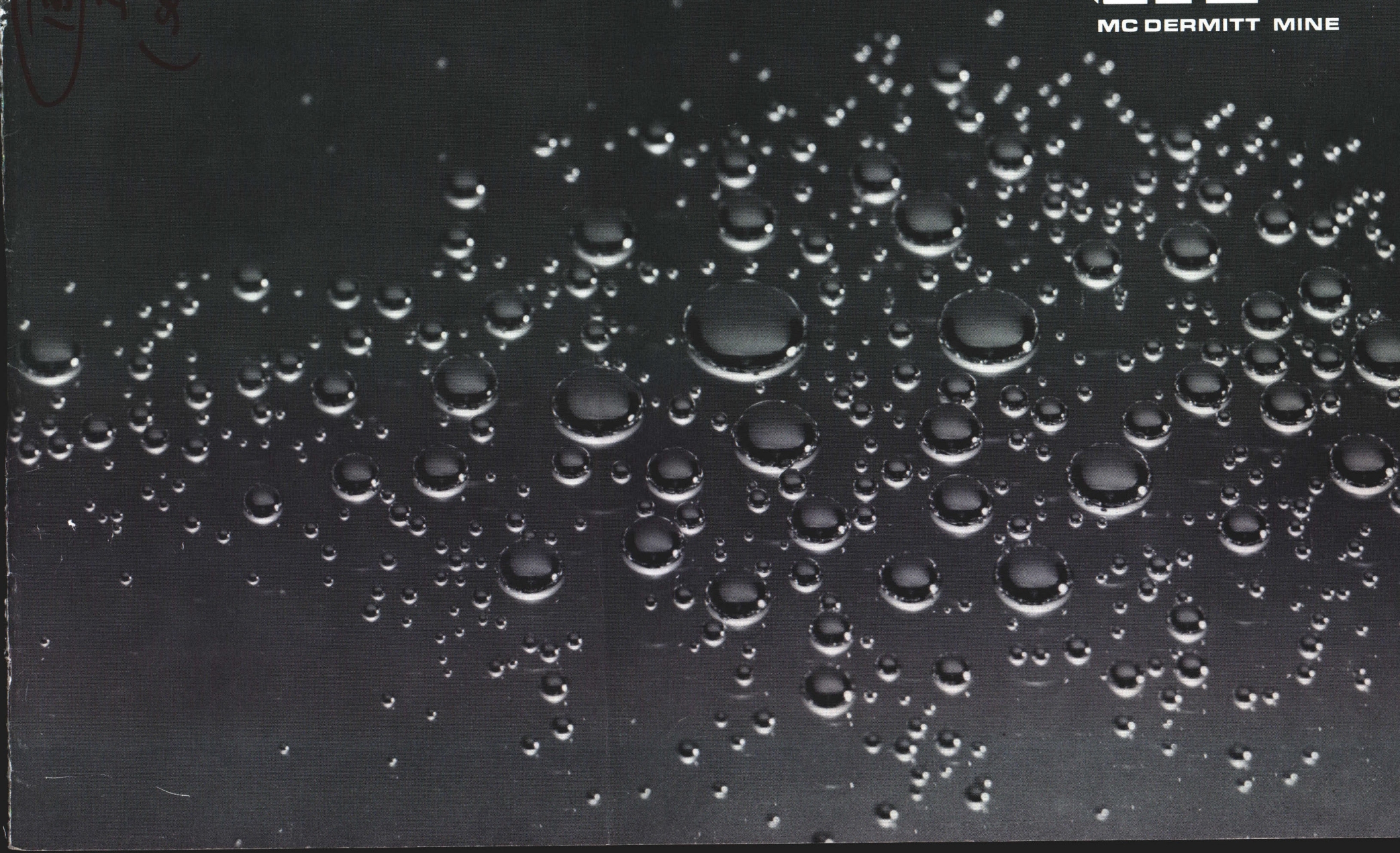
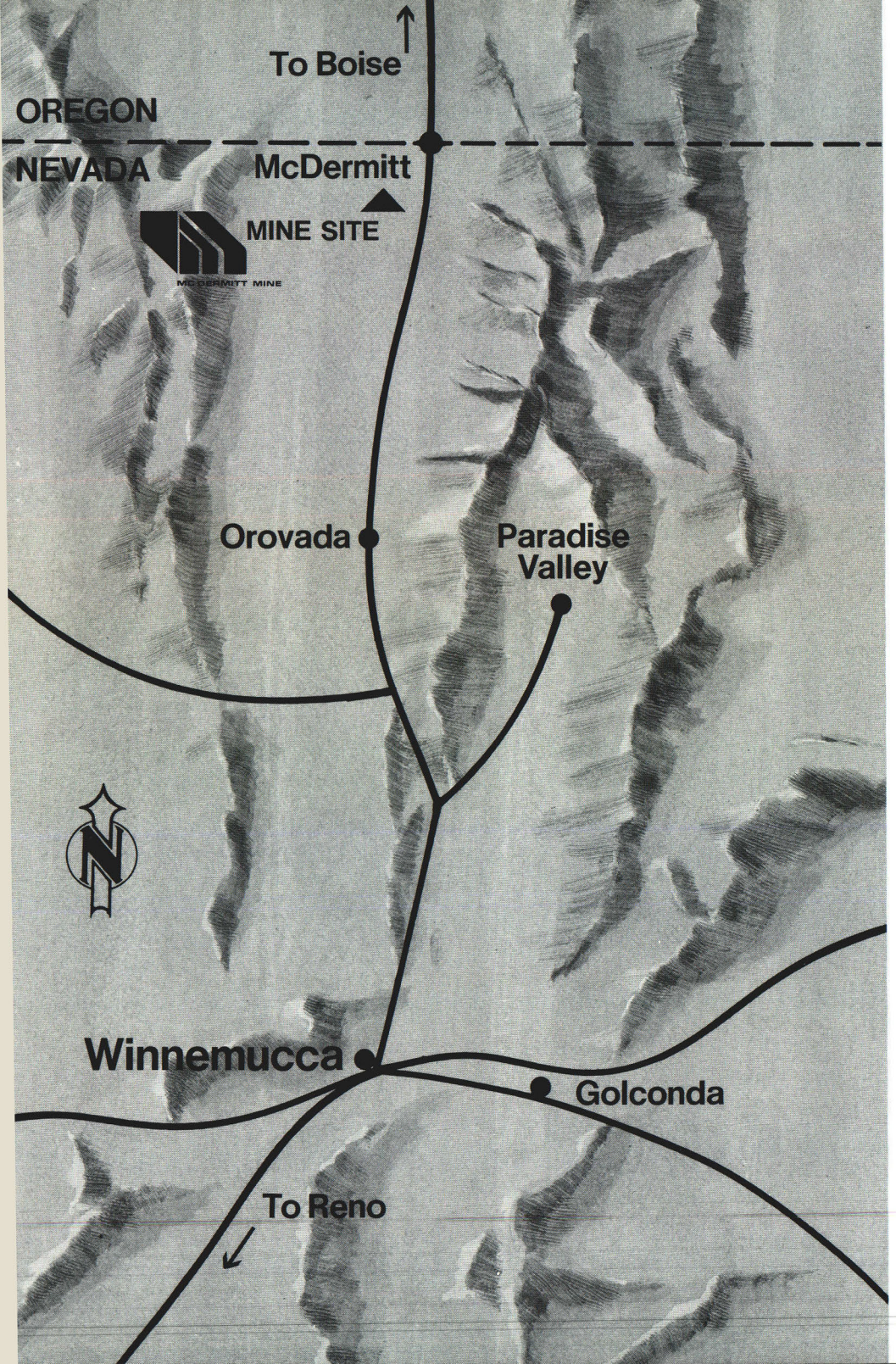
MC DERMITT MINE





LOCATION AND ACCESS

The McDermitt Mine is located 11 road miles southwest of the town of McDermitt, Nevada, which lies on the Nevada-Oregon border. The town is served by Highway 95, a major north-south highway linking Boise, Idaho, 193 miles to the north, with Reno, 237 miles to the south.

Southern Pacific and Western Pacific railroads have trunk lines through Winnemucca, 73 miles to the south.

BACKGROUND

Mercury has been produced in the McDermitt area for almost 50 years. The McDermitt Mine property is adjacent to the former Cordero mine, which began production of mercury in 1941 and was one of the country's leading producers until its closure in 1970. The original claims on which the ore body is located were staked in 1931 by three Basque sheepherders - Esuibio Aznarez, Tomas Alcorta and Juan Ondarza.

They were among many Basques who came to America during the latter half of the 19th century and the early years of the 20th century. Leaving their mountain land in the high Pyrenees between France and Spain, the Basque people came to herd sheep on the inhospitable ranges of the Far West. Now the large range flocks have almost disappeared, but the Basques remain as an integral part of the community.

The discovery of mercury on range land used for grazing sheep was made during the lambing season which led to naming the former mine Cordero - the Basque word for lamb.

Leases on the Cordero mine and surrounding area were acquired in 1970 by Sierra Mineral Management Company as general partner of Mineral Exploration Company Ltd. of New Jersey. An option was granted to Placer Amex Inc. in 1972, resulting in the present joint venture between Mineral Exploration (49%) and Placer Amex (51%). Placer Amex undertook responsibility for exploration which led to the development of the McDermitt ore body, and for the design, construction and operational management of the mine.

GEOLOGY

The principal mercury-bearing minerals are cinnabar and corderoite. Corderoite is the name given to the mineral first identified in 1972 by Eugene Foord, a geology student completing his doctoral thesis at Stanford University. It is a flesh-colored mineral that rapidly turns black when exposed to sunlight.

The ore body occurs in Miocene-age lake sediments within 50-150 ft. of the surface in an irregular area 2,200 ft. by 2,500 ft. Up to 600 ft. of lake-bed sediments predominantly in the form of volcanic ash accumulated during the Miocene epoch. Later, mercury-rich, hot aqueous solutions were added through a system of vents, fractures and faults. These fluids, apparently forced up narrow, near-vertical channels in the fractured host rock from an underlying source, spread out to form a discontinuous, blanket-like, cinnabar-bearing stratum. Subsequently, chlorine-rich ground waters locally transformed up to 30% of the cinnabar to corderoite.

Exploration indicates reserves of about 3 million tons at an average grade of 10 pounds of mercury per ton.

The McDermitt Mine.

MINE AND CONCENTRATOR

The McDermitt ore body will be developed as an open pit using scrapers and bulldozers for both stripping and mining. The ore zone as presently defined encompasses an area of about 135 acres.

Construction at the McDermitt Mine commenced in April, 1974 and was completed in May, 1975. Total cost of construction and open pit preparation was approximately $9 million. The latest technology has been used in the design and selection of equipment in the concentrator, furnace and recovery plant.

The milling operation consists of ore grinding, flotation, concentrate dewatering and tailing disposal. It has a design capacity of 100 tons per hour and will be initially operated eight hours a day.

The ore (80% clay and 20% hard siliceous rock) is fed to an autogenous grinding mill where the abrasive action of large rock pieces and the addition of water produces a slurry. The grinding action of the rock on itself and on the ore material produces particles fine enough to allow separation of the cinnabar and corderoite, as a concentrate, by flotation. The concentrate is then thickened and stored as slurry in the stock tank ready for feeding to the furnace section.

The furnace section consists of a concentrate filter, a furnace for vaporizing mercury, a condenser for recovery of mercury, and gas purification towers. If has a design capacity of 1,000 lbs. of concentrate per hour and will operate 24 hours a day to produce pure mercury for sale primarily to eastern United States markets.

Top left: Scrapers remove mineral-bearing ore from the open pit with the aid of bulldozers. Bottom left: Mercury condenser, where metallic mineral is recovered.

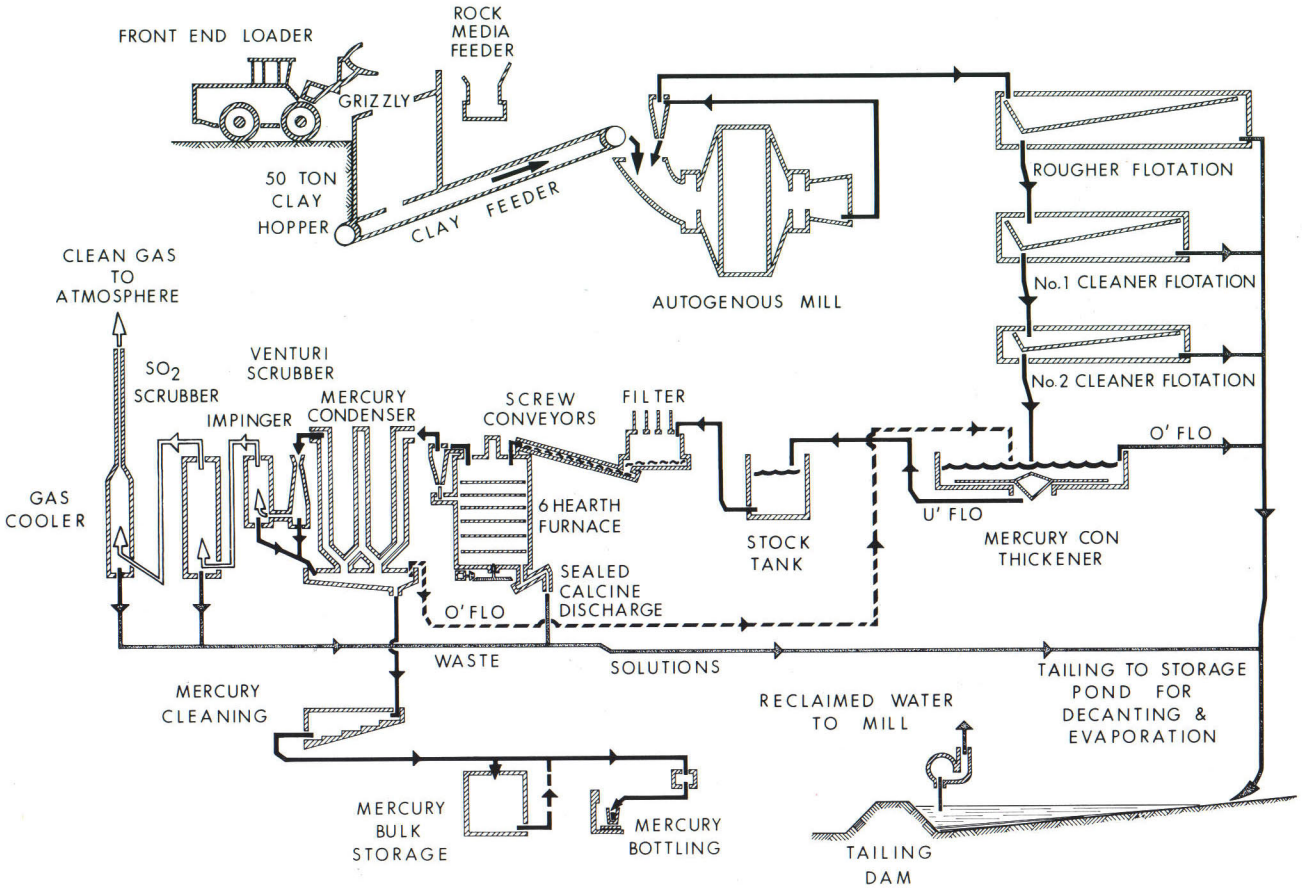
MINE AND ENVIRONMENT

The McDermitt Mine employs modern technology and operating procedures to ensure protection of the environment and personnel.

Fresh water for ore processing and domestic use is drawn from wells on the property. Additional water for ore processing is reclaimed from the tailing ponds.

Finely ground rock remaining in the tailing slurry after extraction of mercury from the ore will be impounded in four tailing ponds. These ponds are built to rigid specifications with impervious walls and floors to prevent the escape of process water. The tailing dams were constructed from overburden mined to expose the ore deposit.

Flow chart showing processing of mercury ore from grinding through to production of Prime Virgin Mercury



TOWN OF McDERMITT AND REGION

The town of McDermitt is situated in Humboldt County, Nevada, approximately 73 miles north of Winnemucca. The community was named after United States Army Lieutenant Colonel Charles McDermitt. A U.S. Army fort of his name was a way station for immigrant wagon trains passing through the area.

There is a regional population of approximately 1,000, most of whom are employed in cattle and seed ranching. The McDermitt Mine itself employs about 30 people and provides a strong base to the local economy and contributes substantial tax revenues to local, state and federal governments.

The McDermitt School provides grades 1 - 12 education to students within a 50-mile radius. Other facilities include restaurants, gas stations, shops, motel, hotel, post office, churches and a community center with library.

The Humboldt National Forest, part of which is located about six miles east of McDermitt, has over 2,000,000 acres of rugged mountain peaks, steep-walled canyons and high plateaus. Recreational opportunities include fishing, hunting, camping and winter sports.

PLACER AMEX INC.

Placer Amex Inc. of San Francisco, the managing joint venturer, is 100% owned by Placer Development Limited of Vancouver, British Columbia. Placer Development is a public company whose shares are traded on a number of Canadian stock exchanges as well as the American Stock Exchange.

Placer Amex is engaged in mineral exploration, development and production in the United States. In March, 1967, as the managing joint venturer, it brought into production the Cortez Gold Mine approximately 75 miles southwest of Elko, Nevada at a capital cost of $8 million.

Typical of the region and its economy is this rancher.

TECHNICAL DATA

Clay loading and hauling:	3 Caterpillar 631C scrapers 2 Caterpillar D8H bulldozers
Rock loading and hauling:	1 Caterpillar 966 loader 1 Mack 15-yd. truck
Ore feeding:	1 Telsmith Feeder 51' x 60" 1 Telsmith Feeder 27' x 48" 1 Caterpillar 966 loader
Grinding:	1 Koppers "Hardinge" 18' x 9' autogenous mill
Flotation:	12 Denver 600-cu. ft. cells 6 Denver 200-cu. ft. cells 8 Denver 50-cu. ft. cells
Thickener:	Denver 40' diam. thickener
Filtration:	Denver 6' x 4-disc. multi-leaf filter
Furnace plant:	1 Eimco Envirotech 10' diam. x 6-hearth oil-fired furnace; condensing system and gas scrubbing system.
Tailing disposal:	Four 50-acre ponds with decant and return water system.
Electrical power:	Power from Bonneville Hydro Plant supplied by Harney Electric Cooperative at 115 KV. Connected load 3,000 HP. Distribution voltages: 2.4 KV, 440 volt, 230-115 volt.
Emergency electrical power:	250 KW Diesel-electric generator set. Detroit diesel engine.
Fresh water supply:	Well - 745' deep at 750 g.p.m.

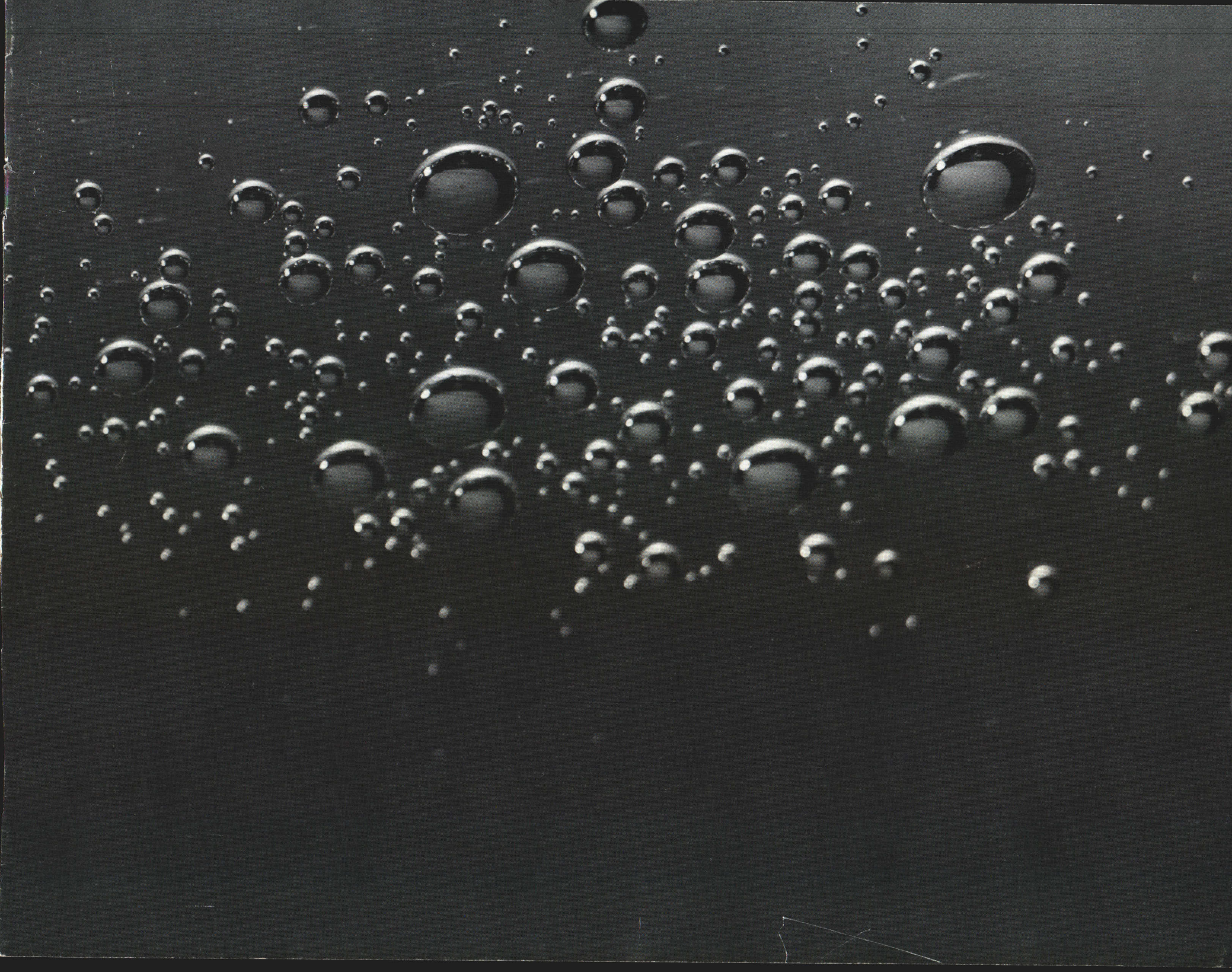
MERCURY

Mercury (quicksilver) is a silvery metal, liquid between -38 and +674 degrees Fahrenheit. The standard unit for sale is a flask, containing 76 lbs. of mercury.

Major uses in the United States are approximately: electrical apparatus, 31%; electolytic preparation of chlorine and caustic soda, 28%; paint, 12%. Other uses include agriculture, dental preparations, industrial and control instruments and general laboratory use.

The United States has been a net importer of mercury for several years and imported 87% of the 60,000 flasks consumed in 1974.

MC DERMITT MINE



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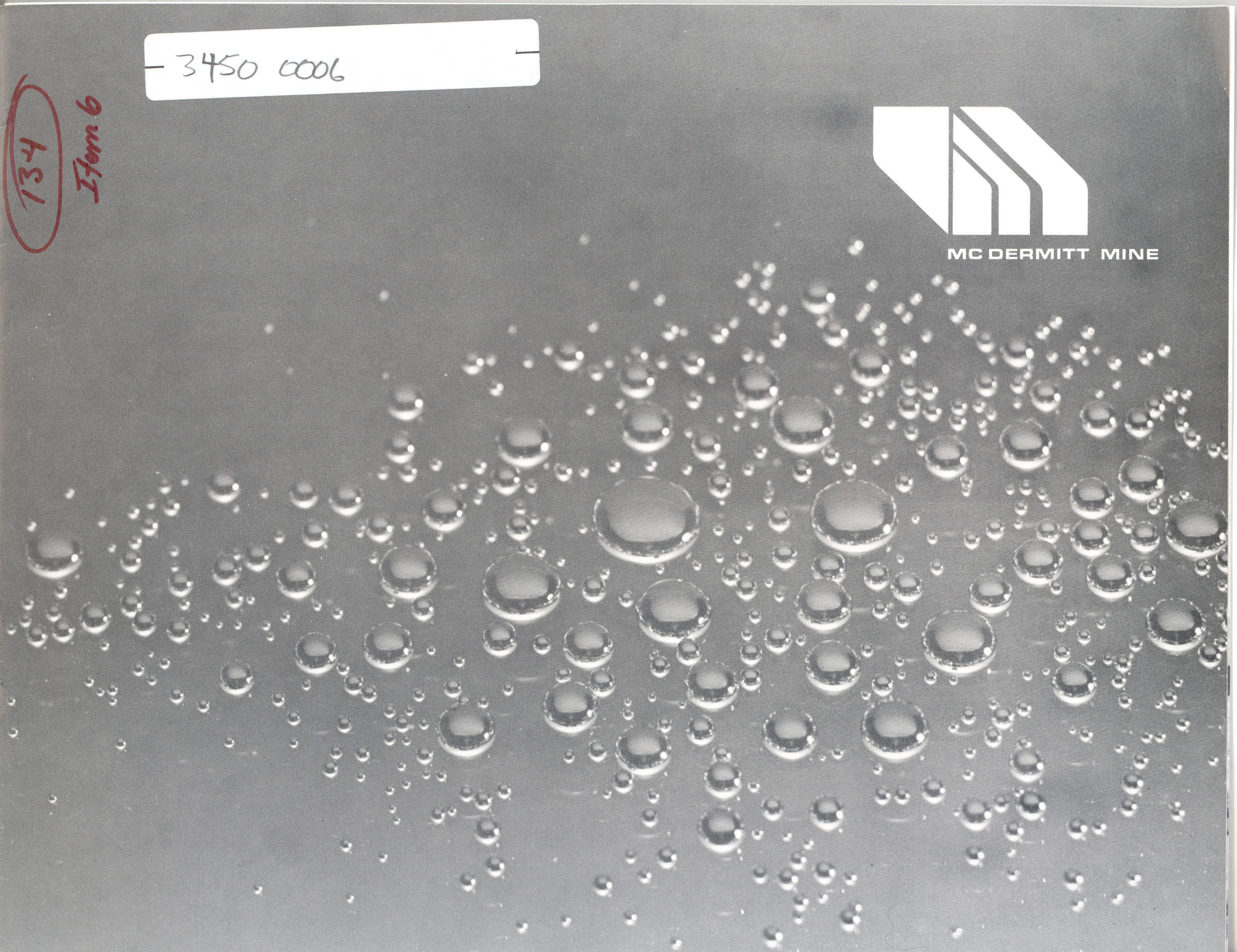

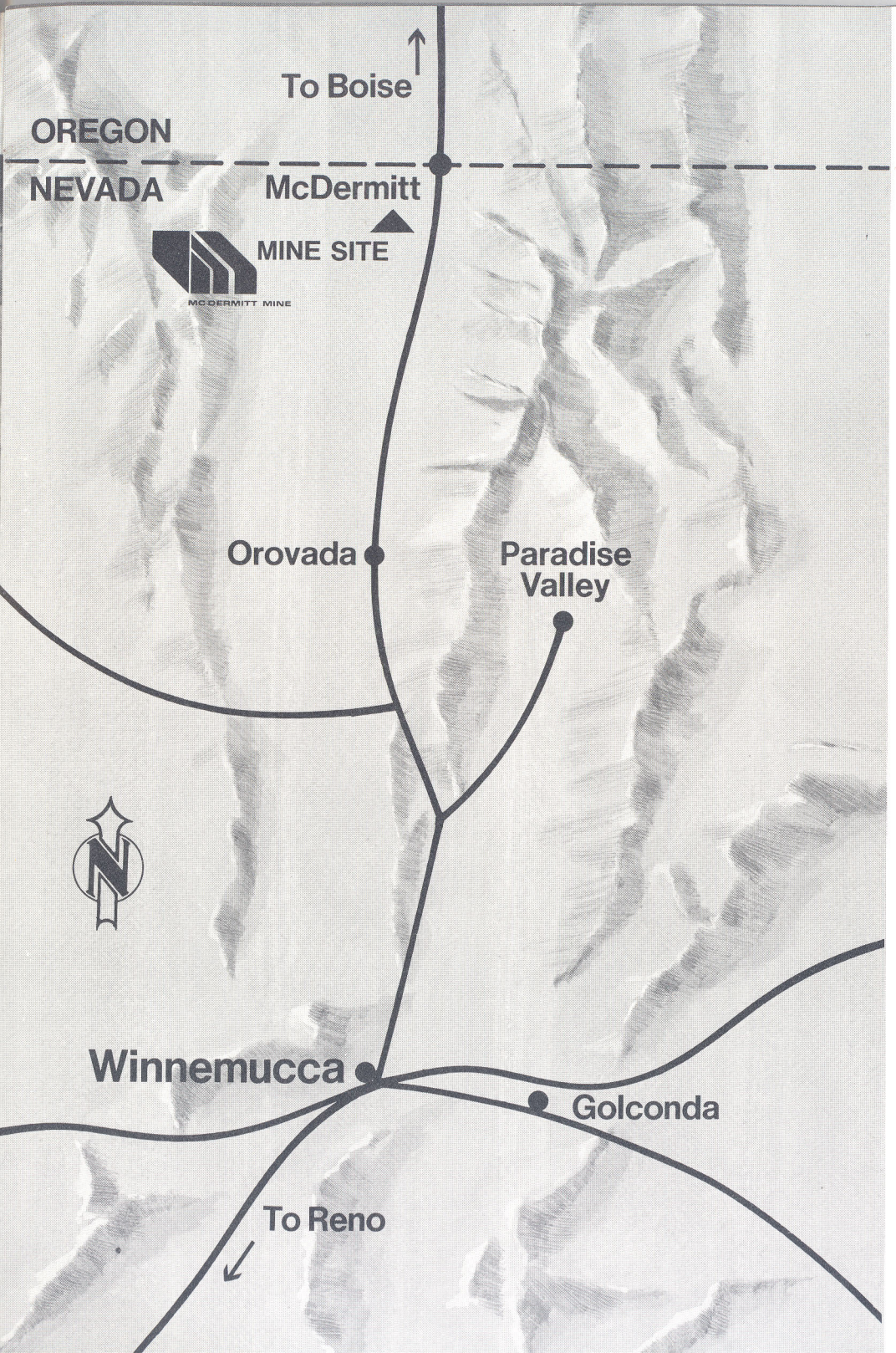

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GEOLOGY

The McDermitt orebody occurs in Miocene-age tuffaceous lake sediments within 200 ft. of the surface and extends over an irregular area 2,200 ft. × 2,500 ft. Because of its mode of deposition - occurring parallel to bedding in volcanic tuffs deposited in a lake environment - the ore is relatively flat laying. It does, however, dip slightly northward, increasing in depth as it follows the slope of the desert floor - but at a slightly steeper angle. Thickness averages about 20 ft. but is extremely variable, depending on the source and location of penetrating solutions.

The deposit has been interpreted as cinnabar deposition in a tuffaceous lakebed environment. The mercury minerals are assumed to have entered the orebody as hot aqueous solutions - perhaps as hot springs deposits - although there are varying schools of thought on their genesis.

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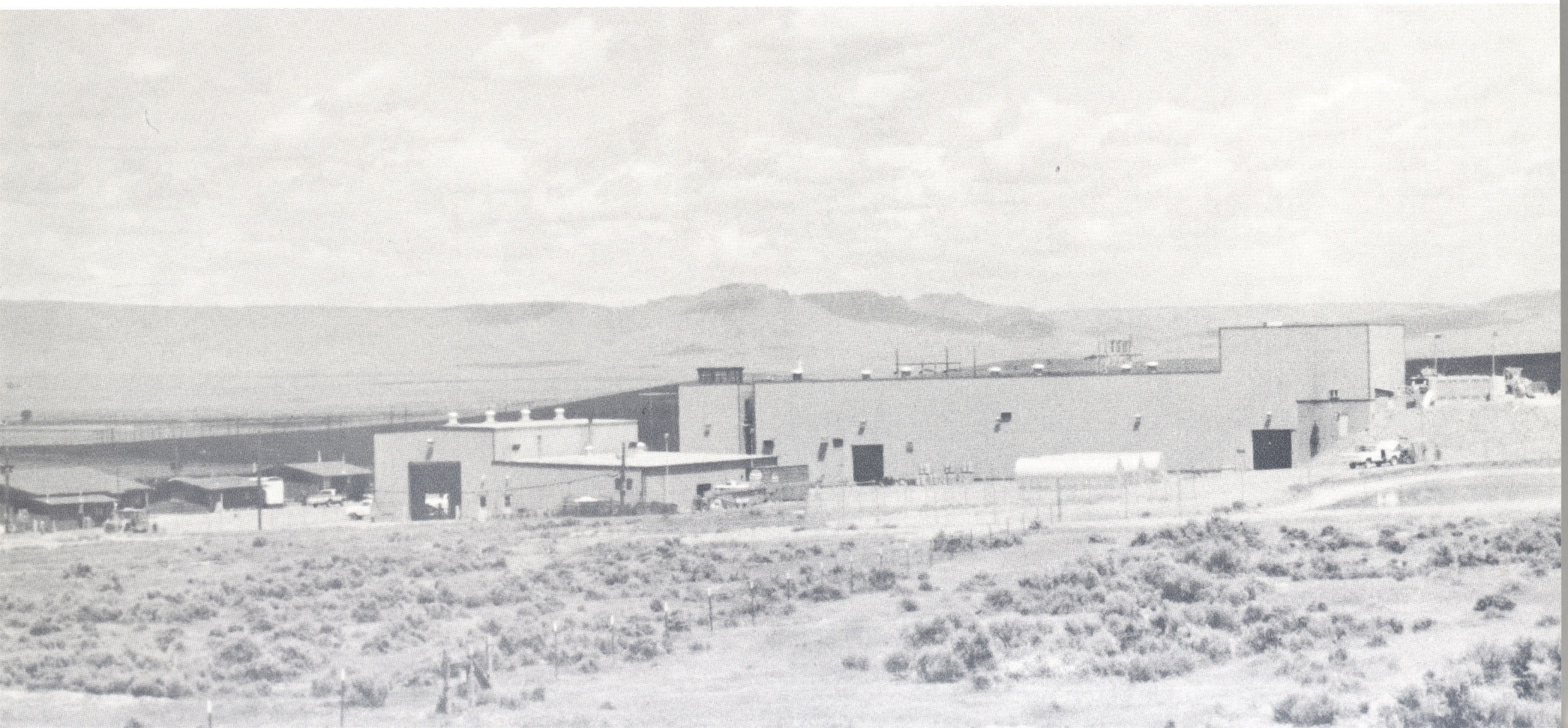
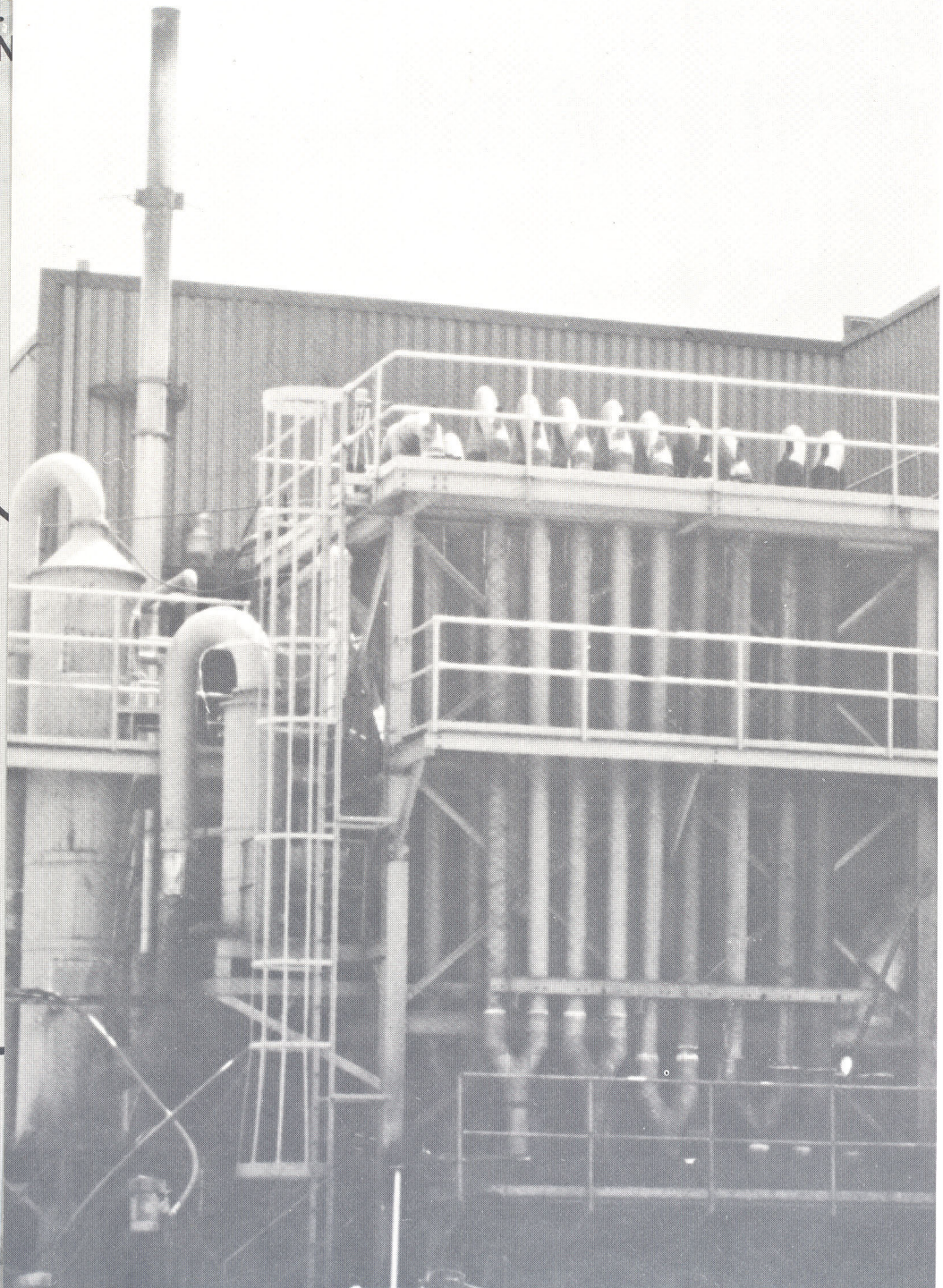
McDermitt Mine plant site





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Mercury Condenser, where metallic mercury is recovered

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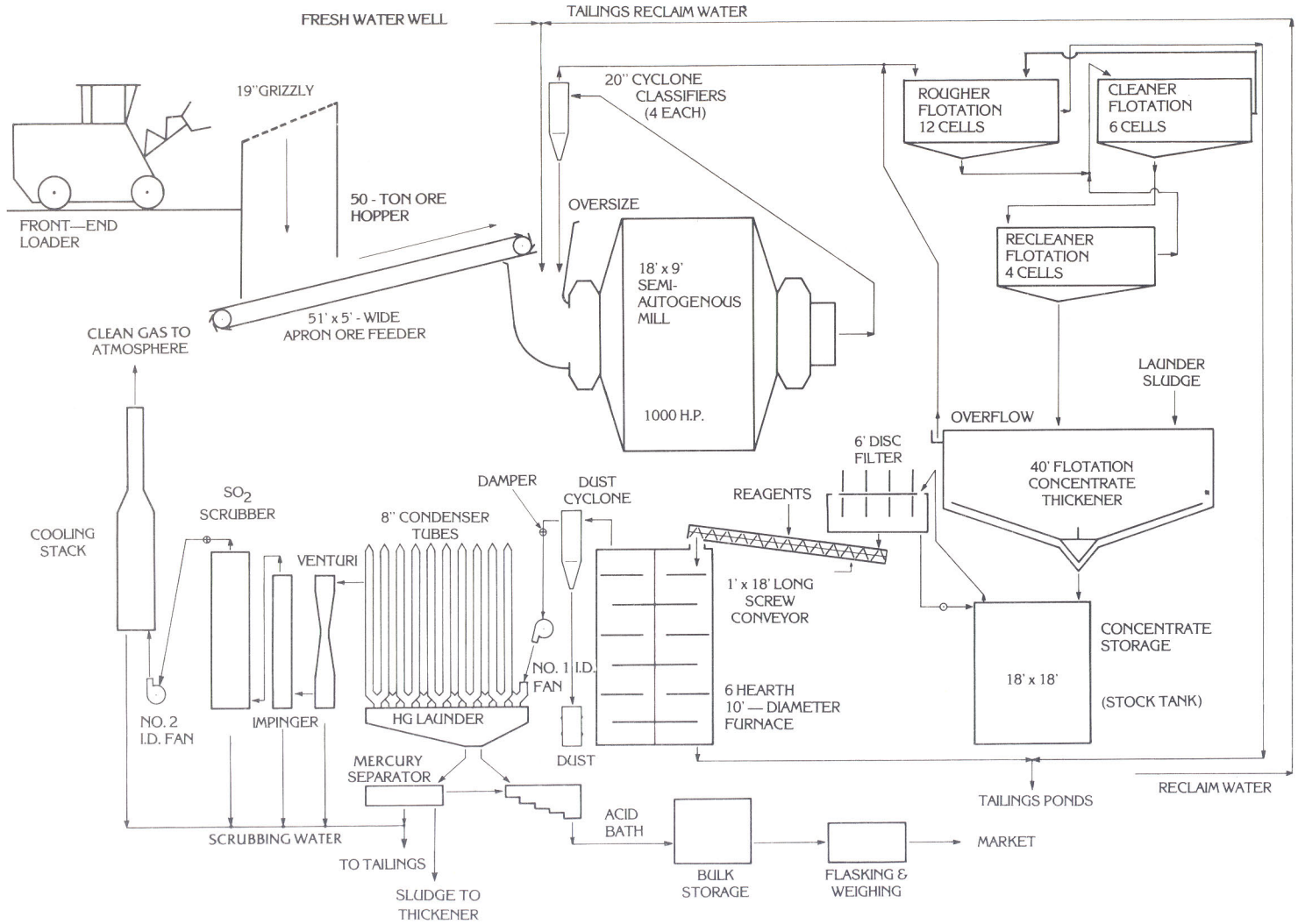

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Cat D8K loading Cat 631-C Scraper

TECHNICAL DATA

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Rock Loading and Hauling:	1 Terex 22 ton End-dump Truck 1 Caterpillar 966-C Loader
Mill Loader:	1 Caterpillar 966-C Loader
Ore feeding:	1 Telsmith Feeder 5' x 51' long
Grinding:	1 Koppers "Hardinge" 18' x 9' autogenous mill
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Cat 966-C Loader feeding ore into mill