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QUICKSILVER DEPOSITS IN THE DECOURCY MOUNTAIN AREA, IDITAROD DISTRICT, SOUTHWESTERN ALASKA

By

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INTRODUCTION

Geography

The DeCourcy 1/ Mountain area lies a little northwest of the Yukon-Kuskokwim divide in the southern part of the Iditarod district about 32 miles airline S. 30° W. of the mining town of Flat (see figs. 1-A and 1-B), on Otter Creek, a tributary of the Iditarod River. DeCourcy Mountain (approximately 1700 feet high), the highest point in the area, lies among the rolling hills southeast of the Iditarod River, a tributary of the Innoko River which flows into the lower Yukon. The maximum relief is about 1300 feet. Timberline is at about 1100 feet above sea level. Spruce forests cover most of the country below timberline. The hills above timberline are moss-covered.

The principal quicksilver lodes lie south of DeCourcy Mountain on the north side of Return Creek which flows into Montana Creek, a southeastern tributary of the Iditarod River. The mine is accessible by a 24-mile trail from Crooked Creek, a small native village on the Kuskokwim River, and also by a 40-mile trail from Flat. These trails are passable only on foot or by pack train from late spring to early fall, but after the freeze-up in October or November until the break-up in April or May they are used by dog teams and tractors. The mine also is accessible during times of high water by power boat via Crooked Creek from Crooked Creek village and via the Iditarod River from Iditarod. An old trail leads 8 miles across country to the mine from the Brink cabin on the Iditarod River. Montana Creek is navigable for power boats as far as the mouth of Return Creek where a tractor road leads

1/ Two spellings of this name are in use. "DeCourcy", the spelling used by Matt DeCourcy after whom the mountain was named, has been adopted by the Board on Geographical Names. The spelling "DeCoursey", is used by the local operator, the DeCoursey Mountain Mining Company.

4 miles to the mine. The latter route is open between the break-up and freeze-up except in times of abnormally low water. Small airplanes have landed on a landing strip about 960 feet long and 90 feet wide constructed on the mining company's property but the soft condition of the field after rains, together with its unfavorable location with respect to cross winds and down-draughts, make landings impracticable for weeks at a time. This landing strip is too short for the use of planes equipped with skiis for the winter season. Supplies have been brought in by air and dropped at the mine.

The climate is characterized by long, cold winters and short, mild summers but it is modified considerably because of the proximity of the Bering Sea. The precipitation is about 18 inches a year, most of it falling as rain during the rainy season from the latter part of July to about the middle of September. Rainy spells are expected at intermittent periods throughout the winter months. The winter snowfall seldom exceeds a depth of 3 feet. The temperature ranges from a winter minimum of about -50° F. to a summer maximum of about 85° F.

History and economic setting

The quicksilver deposits near DeCourcy Mountain, discovered in the winter of 1910-1911 by Matt DeCourcy, were first staked by him in 1919. Mining and treatment of the ore continued intermittently from 1920 to 1932 with a total production of 102 flasks of quicksilver. In 1942 operations were started again by the Decoursey Mountain Mining Company, a partnership, leasing with option to buy from Harry Brink of Flat. Thirty-eight flasks of quicksilver were produced in 1942, largely from deposits newly uncovered. In 1943 ninety flasks of quicksilver were produced from float ore collected in 1942. From November 1943 until May 1944 four hundred flasks of quicksilver were produced from ore mined from the Tunnel vein in 1943.

The property comprises eight lode mining claims, adjoining each other in two tiers of four claims each (see fig. 2). Amended location notices were recorded at Flat in October 1943 by Brink after the claim boundaries had been readjusted to eliminate interclaim fractions and overlaps found as the result of mapping of the original claim boundaries.

Most of the ore mined by the early operators was from a surface trench about 7 or 8 feet deep and 50 feet long between the Retort- and Top-vein ore bodies. Fifty-eight flasks of quicksilver are reported to have been produced from this ore with a Johnson-McKay retort furnace. The early operators also mined a small amount of rich ore from the Brush tunnel opened on the Tunnel-vein ore body.

In 1942 operations were limited by inadequate equipment and labor. However, three new veins were discovered and stripped and two known veins were exposed more extensively by surface stripping with a tractor. Fragments of weathered and broken ore from the tops of the veins were treated in the Johnson-McKay retort furnace. In 1943 much time was spent in setting up the camp and equipment in preparation for year-around operation. Log framework shelters insulated with moss were erected over the compressor and from the adit portal to the dump. An adit about 180 feet long was driven along the Tunnel vein and two overhand stopes were opened, one of which was completely worked out. Approximately 125 tons of high grade ore were removed from the adit and stopes and treated in two Gould D-type retorts. Ore sorted by hand from the first stope contained 605.6 pounds of quicksilver a ton according to one composite ore-bin sample taken by the Bureau of Mines. The ore was broken by hand and passed through a 2-inch grizzly. Only about 10 percent of the quicksilver content was recovered from the high-grade ore treated in the D-type retorts; presumably the unrecovered quicksilver remained in the condenser soot in the form of a quicksilver sulfide.

The equipment on the property at the time of the writer's investigations included an H-D 10 eighty h. p. Allis-Chalmers diesel tractor with a hydraulic dozer, two large freighting sleds, a gas-powered wood saw, three "go-devils" for tractor hauling of ore to the bin, a model 85 Ingersoll-Rand two-stage compressor, a type 30-T Ingersoll-Rand two-stage compressor, a JB-4 jackhammer, a J-35 jackhammer, a stoper with a 2 3/4 inch piston, a 400-ampere electric welder, a breast drill, a hand forge, a furnace equipped with two Gould D-type retorts with a combined capacity of 1 1/2 tons of ore a day, a partly dismantled 6-tube Johnson-McKay retort furnace with a combined capacity of 2 1/4 tons of ore a day, about 400 feet of narrow-gauge mine track, a mine dump car, about 750 quicksilver flasks, a 2-inch gas-powered Rex pump, a 1500-watt Kohler electric plant, a small jaw crusher, a roofed ore bin with a capacity of 1620 cubic feet, a mess house, a bunkhouse for six men with tool shed adjoining, a tractor garage, a meat house, a wash house, two supply caches, a summer cabin with storeroom, houses for 12 dogs, and shelters for the machinery.

A plentiful supply of spruce timber used for fuel grows on hill slopes and along the valley bottoms in the vicinity of the mine.

Freight landed at Crooked Creek village from Seattle via Bethel costs about $60 a ton. Freight from Seattle is delivered to Flat via St. Michael for $120 a ton and via Seward and Nenana for $140 a ton. Winter freighting with a tractor costs from $1 to $3 a ton mile.

The customary wages paid in the Iditarod district are $10 a day with board but specialized labor may receive as high as $13 a day with board. Native labor is obtainable from the lower Yukon or Kuskokwim Rivers but white labor is preferred. The wages paid to native labor are from $7 to $10 a day with board.

Bare operating costs after payment of royalties and amortization of capital investment, using a modern mine plant, are assumed in this report to be about $25 a ton of ore mined and treated under present conditions of accessibility. At the New Idria-Alaska Quicksilver Mining Company's mine near Sleitmut on the Kuskokwin River costs of similar operations are said to be about $20 a ton. Additional transportation costs account for the difference. In other words ore containing approximately 25 pounds of quicksilver a ton should be workable when the price of quicksilver is $1 or more a pound (see table 1) and ore containing approximately 10 pounds of quicksilver a ton should be workable when the price of quicksilver is $2.50 or more a pound (see table 2)

Field work and acknowledgments

In the late summer of 1942 Edward J. Webber and Wallace H. Cady of the Geological Survey made a preliminary investigation of the DeCourcy Mountain area and recommended a more detailed examination of the quicksilver deposits. In the summer of 1943 the Bureau of Mines, Stuart C. Bjorklund, project engineer, sampled the deposits and partly prospected them. In the summer and fall of 1943 Webber and Joseph M. Hoare of the Geological Survey made detailed topographic and geologic maps of the ore deposits and their vicinity, including on the maps data from operations of both the Bureau of Mines and the mining company. The Geological Survey party also spent $1\frac{1}{2}$ months in areal reconnaissance of adjoining parts of the Georgetown and Iditarod districts. The grade of the ore estimated by the Geological Survey is based on the analytical data furnished by the Bureau of Mines. Most of the analyses were by Arthur E. Glover of the Alaska Territorial Assay Office at Fairbanks. The remainder were by the Alaska Territorial Assay Office at Ketchikan and by the Smith-Emery Company of Los Angeles.

Robert F. Lyman, the operator, extended many courtesies to the Geological Survey party and furnished information concerning several geologic features in the area.

The Survey party also wishes to express its gratitude to Thomas Belanger of Flat for the use of his cabin on Donlin Creek and for assistance with his dog team in transporting the party's equipment, and to Harry Brink of Flat for copious information concerning the country and the early history of the property.

GEOLOGY

Interbedded graywacke, shale and sandstone of probable early Upper Cretaceous age make up the sedimentary country rock of the area (see fig. 3). Basaltic lava flows, generally less than 100 feet thick are found in the sedimentary sequence, as are a number of hydrothermally-altered sill-like bodies of diabase, locally showing cross-cutting relations with the inclosing sediments. Overlying this sequence, in the northwestern part of the area, are an estimated 1500 feet of both unaltered and propylitized basaltic lava flows. Possibly the latter flows are Tertiary. Local conglomerates at the base of the flows containing boulders more than a foot in diameter suggest that they were poured out over a land surface of considerable relief, but there is no demonstrable angular unconformity below the lavas.

Conglomerates, up to 10 feet thick, composed of water-worn pebbles of basalt cemented by a matrix of carbonate, quartz, and chlorite are interbedded in the lava sequence.

The bedrock is almost everywhere concealed by a mantle of unconsolidated frost-broken fragments.

The structure of the DeCourcy Mountain area, in so far as it could be determined, suggests a homocline striking northeast and dipping in general northwestward. In the vicinity of the ore deposits faulting, marked by slickensided surfaces developed at all orientations throughout the bedrock, appears to be limited to small displacements of less than an inch near the intrusive bodies.

The steep headwalls and sides of the gulches developing in the present cycle of erosion intersect a gently rolling upland surface formed during an older cycle. This physiographic relationship is common throughout the central Kuskokwim and lower Yukon regions.

ORE DEPOSITS

General description

Quicksilver metallization is restricted to the hydrothermally altered sill-like bodies of hypersthene diabase and basalt porphyry and to the sediments immediately enclosing them (see fig. 4). The sill rock, pearl-gray where fresh, weathers to a distinctive yellow-brown color. Some of the adjacent altered graywacke weathers to a similar color and is almost indistinguishable from the sill rock.

The ore mineral is cinnabar which ranges from a dark red, coarse, crystalline material to a scarlet mass of almost indistinguishable crystals. Stibnite is present in considerable abundance in some of the veins. The gangue minerals are mainly quartz and carbonates that line fissures and joints in the center of which cinnabar and stibnite have been deposited. Small, nodular masses of pyrite are found in the ore and in the country rock. Minor quantities of secondary oxides of antimony are present near the ground surface.

Two distinct types of ore bodies are recognized; first, well-defined veins in brecciated zones that generally parallel the strike of the sediments but cut across the dip of the strata and second, zones of short and discontinuous, but locally rich, impregnations and fillings along bedding-plane joints.

Most of the cinnabar is confined between the walls of the large veins or in small, discontinuous bodies adjacent to them. The ore bodies pinch and swell both along the strike and down the dip. The cinnabar is unevenly distributed and "pockety" ore is the rule rather than the exception. Some apparent offsets of the large veins are believed to reflect an irregular fracture pattern rather than post-ore faulting. Ore veins seem to be most abundant in shaly strata.

A third minor type exists locally. In this type cinnabar has selectively replaced ferromagnesian phenocrysts of the altered hypersthene diabase porphyry locally forming small, irregular bodies of "cinnabar porphyry". Estimates based on inspection of this material suggest a maximum quicksilver content of 160 pounds a ton.

The ore bodies are exposed for short distances over a slightly curved belt about 2,000 feet long, 250 feet wide and through a vertical range of 320 feet. Occurrences of cinnabar, not necessarily of ore value, are known over an area about 2,600 feet long, as much as 2,000 feet wide, and through a vertical range of about 420 feet. A lower vein system exposed between elevations 630 and 740 feet includes the A-vein and some associated veinlets. An upper vein system exposed between elevations 760 and 1,000 feet comprises the Decoursey vein, the Tunnel vein, the Retort veins and the Top vein.

A-vein ore body

A mineralized zone more than 500 feet long occupies the southern part of the Snowbird No. 4 claim (see fig. 2). A part of the zone near the top of the steep slope northwest of and overlooking the retort furnace (see fig. 4) forms an ore body known as the A-vein.

The A-vein and some associated veinlets have been exposed by surface stripping with a bulldozer over a continuous horizontal distance of 175 feet (see fig. 5-A). Three old prospect pits less than 200 feet south of the A-vein and two pits less than 125 feet east reach bedrock. Two bulldozer trenches lie less than 175 feet south-southwest of the A-vein. The face of a partly-caved adit driven north-northwest into the slope toward the A-vein at an elevation 40 feet below that of the lowest surface exposure is less than 50 feet east of the south end of the downward projected plane of the ore body.

The sedimentary strata strike roughly north and dip from about 30° to about 70° west at the A-vein. The steeply dipping northwestern border of a body of hydrothermally altered hypersthene diabase porphyry at least ½ mile long and probably several hundred feet thick (see fig. 4) appears to cut the bedding of the sedimentary rock at least locally east of the ore body. There the border of the diabase strikes N. 10° W. and dips about 75° east. Fracture cleavage, which strikes roughly north, dips 75° east, and parallels the intrusive contact, is developed in the sedimentary rocks within 10 feet of the diabase. The otherwise nearly straight border of the intrusive forms a sharp curve for a short distance around the south end of the A-vein at which curve the contact dips outward away from the vein.

The A-vein occupies principally a continuous fissure roughly parallel to the strike but dipping about 75° east across shaly graywacke at or near the contact with the diabase. Thick-bedded graywacke is exposed about 5 feet west of the fissure. The vein appears to parallel the contact and the planes of fracture cleavage. The fissure enters the igneous rock at the sharp curve in the contact south of the main vein and pinches out 20 feet farther south; part of the fissure and other small, narrow fractures in the diabase are filled with silica and carbonate. The fissure walls are slickensided horizontally or nearly so. At places the slickensided surfaces are smeared with fine cinnabar apparently ground into paper-thin coatings of polished, greasy-appearing gouge. Small but distinct crystals of cinnabar are also found coating the slickensided surfaces.

The principal quicksilver metallization has taken place in the large fissure that extends lengthwise through the A-vein ore body. The accompanying illustrations (fig's. 5-A and 6-C) show the extent of the ore body and the tenor of the ore in pounds of quicksilver per ton of ore. The southermost 50 feet of the ore body follows a zone of discontinuous, high-grade bodies west of the main fissure. The ore zone continues south in the sediments to the diabase but does not enter it. Cinnabar float has been found both to the north and south of the ore body for considerable distances. Float ore is exposed near the second road cut south of the A-vein. The operator also has reported finding some cinnabar float in a road cut near the diabase contact about 100 feet north of the northernmost exposure of the A-vein; thus the mineralized zone is at least 500 feet long.

The ore of the A-vein is scarlet, fine-grained cinnabar in a dense, siliceous gangue. No stibnite is present. The vein breaks easily and cleanly from both hanging wall and footwall.

Decoursey-vein ore body

A mineralized zone about 300 feet long, including the Decoursey vein is situated in the northern part of the Last Chance No. 1 claim (see fig. 2). The part of the mineralized zone that contains the ore body is about midway up the southern slope of a hill about 1/3 mile northwest of the retort furnace (see fig. 4).

The Decoursey vein and some associated veinlets have been exposed discontinuously for a horizontal distance of about 320 feet. One large bulldozer cut has exposed the mineralized zone for 140 feet. Three bulldozer trenches have further exposed the zone at a point 80 feet north of the large cut and at two points 30 and 60 feet south. A number of other bulldozer trenches farther south were not completed to bedrock because the forzen ground, when stripped of its vegetal cover, thawed to form a mire impassable by the tractor. Bulldozer trenches made in 1944 are reported to have uncovered additional exposures of cinnabar in the mineralized zone.

The sedimentary rocks in the vicinity of the Decoursey vein strike roughly N. 20° E. and dip about 55° west (see fig. 5-B). A large, irregular, intrusive body of hydrothermally altered hypersthene diabase porphyry contains most of the vein. The vein lies in a brecciated zone in the diabase that strikes northeasterly and dips east in some places and west in others and extends into the sediments beyond the diabase as a fracture dipping across the bedding. North of the diabase the mineralized fracture dips steeply east. To the south it dips steeply west. Abrupt irregularities in width and shape of the vein are common in the diabase where they reflect the blocky nature of the brecciated diabase and give the appearance of post-mineral offsets although neither gouge nor brecciated ore were found to substantiate faulting. One cross fracture contained an unbroken continuation of the ore.

Quicksilver metallization has been confined chiefly to the brecciated zone in the diabase. The accompanying illustrations (fig's 5-B and 6-B) show the extent of the ore body and the tenor of the ore.

The ore is a dark red, coarse, crystalline cinnabar, with minor quantities of stibnite, in a coarse siliceous gangue. Numerous vugs are scattered through the ore. The vein breaks moderately well from both hanging wall and footwall.

Tunnel-vein ore body

A mineralized zone about 250 feet long known as the Tunnel vein lies in the west central part of the Last Chance No. 3 claim (see fig. 2). The part of the mineralized zone that contains the ore body is about 1/2 mile northwest of the retort (see fig. 4).

One bulldozer trench crosses the northernmost extension of the mineralized zone. Forty feet to the south the zone is exposed continuously for 200 feet by two large bulldozer cuts and an old adit, known as the Brush tunnel, now partly caved. In 1943 a drift adit 180 feet long was driven for 115 feet along the ore body. In 1944 the adit was reported to have been driven farther along the vein and additional overhand stopes opened.

The graywacke and shale are intruded by sill-like bodies of hydrothermally altered hypersthene diabase porphyry generally less than 10 feet wide (see figs. 5-B and 5-C). The strata strike about N. 10° E. and dip 75° west. A discontinuous fissure containing the Tunnel vein strikes about N. 10° E. and dips in general about 65° east across the strata. The fissure seems to be formed by a persistent shaly zone. Its continuity is broken by barren fractures which cross the vein but strata of interbedded shale and graywacke on either side of the cross fractures are not offset with respect to each other. The strikes of the north end of the Tunnel vein and south ends of the Retort veins are roughly parallel at the surface and the veins dip toward each other suggesting the possibility of ore concentrations at depth.

The accompanying illustrations (fig's 5-B, 5-C, 6, and 7) show the amount of ore mined through 1943, the estimated extent of the remaining ore body, and the tenor of the ore.

The ore is composed of a dark red, coarse, crystalline cinnabar with varying quantities of stibnite in a dense siliceous gangue. The vein breaks away from both walls moderately well.

Ore bodies of the Top-vein and Retort-veins

A mineralized zone about 300 feet long lies in the central part of the Last Chance No. 3 claim (see fig. 2). The northern 100 feet of this zone is known as the Top-vein and the southern 200 feet as the Retort veins. The ore bodies are near the top of a hill about 1/2 mile north and a little west of the retort (see fig. 4). The mineralized zone has been exposed by surface stripping with a bulldozer for a horizontal length of 300 feet.

Irregular sill-like bodies of hydrothermally altered hypersthene diabase porphry intrude graywacke, shale and shaly graywacke, striking about N. 30° E. and dipping from 55° to 75° west (see fig. 5-B). Cinnabar is localized in discontinuous bedding-plane joints and in a fracture which strikes N. 20° E. and dips about 80° west at a slight angle to the bedding. The bedding-plane joints are in shale interbedded with massive graywacke. The fracture extends from a body of diabase into the adjacent sediments. Its continuity is broken at a barren cross fracture with apparent offset, but, inasmuch as the latter break does not offset the igneous contact which it also crosses, it is unlikely that post-mineral faulting has taken place.

The Top-vein ore body includes the main fracture, a number of mineralized bedding plane-joints west of the main vein and some smaller fracture-fillings in the diabase. The body of ore, including the Retort veins, comprises a zone of cinnabar-filled, bedding-plane joints. The accompanying illustrations (figs. 5-B and 6-A) show the extent of the ore bodies and the tenor of the ore. The mineralized zone, including the Top vein and the Retort veins, is probably continuous. At the surface, however, the continuity is obscure for a short distance at a place where ore was mined years ago.

The ore is dark red, coarse, crystalline cinnabar with varying quantities of stibnite in a coarse, siliceous gangue. Vugs are present in the ore of the Top vein.

RESERVES

A close approximation of the tonnage and grade of ore thus far found at the deposits near DeCourcy Mountain may be made from exposures at the property and from analytical data based on numerous channel samples cut by the Bureau of Mines.

Reasonably assured ore is here defined to include the "backs" of workable ore between underground openings and surface exposures. Indicated ore is determined by multiplying the exposed width and length by the average known height, in most instances one-half the exposed vertical dimension. Inferred ore includes blocks of ore assumed on geologic evidence to extend to a depth 1/2 the strike length beneath reasonably assured or indicated ore and also includes other ore upon which specific data are conjectural, but the existence of which is suggested by geologic conditions. The dimensions of the ore bodies are shown in figure 6. They are calculated on two bases; one on an assumed cutoff grade of approximately 25 pounds of quicksilver a ton and the other on an assumed cutoff grade of about 10 pounds a ton. A summary of the probable dimensions on each of these bases is shown in table 1 and table 2 respectively. Although quicksilver values may not be distributed throughout, a width of at least 3.0 feet is used in calculating tonnages, this being considered the approximate minimum stoping width.

In the following paragraphs are detailed the calculations used to obtain the reserve figures shown in Table 1 for reasonably assured and indicated ore of an assumed cutoff grade of 25 pounds a ton. The other figures in the tables were obtained by similar calculations.

The A-vein ore body is 105 feet long, averages 3.1 feet wide, and is exposed through a vertical range of 23 feet (see fig. 6-c). The grade, based on analyses by the Bureau of Mines, is 24.4 pounds of quicksilver a ton. Float ore near the second road cut south of the A-vein (see fig. 4) suggests a quicksilver content of 60 pounds a ton over a vein width of 0.3 foot.

The Decoursey-vein ore body is 98 feet long, averages 6.1 feet wide, and is exposed over a vertical range of 20 feet (see fig. 6-B). According to Bureau of Mines analyses the ore contains 29.1 pounds of quicksilver a ton.

The Tunnel vein, shown by samples to contain most of the quicksilver in the ore body, is 184 feet long, averages 3.2 feet wide, and is known through a vertical range of 71 feet. The ore, according to Bureau of Mines samples, contains approximately 50 pounds of quicksilver a ton. Parts of the ore body exposed within 30 feet of the present face of the new adit contain abundant stibnite and lesser amounts of cinnabar. The cinnabar-stibnite ratio of the ore there appears on inspection to be about 2:3.

For purposes of estimating tonnage the ore body has been divided into four blocks (see fig's. 6-A and 7). Block A is 65 feet long, and averages 3.0 feet wide and 20 feet high. The ore contains 53.1 pounds of quicksilver a ton.* Block B is 35 feet long, and averages 3.0 feet wide and 51.0 feet high. The ore contains 31.9 pounds of quicksilver a ton.* Block C is 63 feet long and averages 3.7 feet wide and 66.0 feet high. The ore contains 41.6 pounds of quicksilver a ton.* Block D is 184 feet long, averages 3.2 feet wide, but has not been exposed vertically. The ore contains 51.0 pounds of quicksilver a ton.*

*All grade figures are from analyses by the Bureau of Mines.

The ore body at the Retort veins is 113 feet long, averages 3.7 feet wide and is exposed through a vertical range of 27 feet (see fig. 6-A). The ore contains 27.0 pounds of quicksilver a ton according to analyses by the Bureau of Mines. The Top-vein ore body is 72 feet long, averages 8.2 feet wide, and is exposed through a vertical range of 8.0 feet (see fig. 6-A). The ore, from Bureau of Mines data, contains 27.3 pounds of quicksilver a ton. Picked ore, mined from a rich pocket about 50 feet long in the area between the Top and Retort veins, was estimated from ore selvages to have contained about 100 pounds of quicksilver a ton over a vein width of 0.8 foot.

Reserves of reasonably assured, indicated, and inferred quicksilver ore are sufficient for rather steady operation of a 30-ton rotary furnace over a period of about 3 years. Quicksilver valued at $900,000 would be produced if a price of $1 a pound prevailed. At a price of $2.50 a pound such a furnace could be operated for about 10 years producing quicksilver valued at $3,750,000.

RECOMMENDATIONS

It is likely that other mineralized zones comparable to those thus far disclosed, or extensions of zones already known, may be found by further prospecting. The thick mantle of loose overburden south of the upper vein system should be removed to trace a possible southward extension of the ore bodies.

Geologic conditions similar to those at the DeCourcy Mountain deposits indicate the possible existence of lode deposits at other places within this general area. The geology of the DeCourcy Mountain area is comparable to that at Sleitmut, about 45 miles southeast, and Cinnabar Creek, about 85 miles south of the DeCourcy Mountain area and both areas of major quicksilver reserves. These widely separated deposits in the Central Kuskokwim region, were discovered as a result of a relatively small amount of prospecting directed specifically in search of quicksilver. This also suggests that the region contains other comparable deposits yet to be found. Furthermore, prospecting for placer-gold deposits in this large area has revealed the presence of cinnabar at a number of places in unconsolidated deposits.

TABLE 1
SUMMARY OF RESERVES
(Cut off grade approximately 25 pounds of quicksilver a ton)

	A-vein body	Decoursey-vein body	Tunnel-vein body Block A	Tunnel-vein body Block B	Tunnel-vein body Block C	Tunnel-vein body Block D	Body at the Retort veins	1/	Top-vein body	Total
Pounds of quicksilver a ton 2/	24.4	29.1	53.1	31.9	41.6	51.0	27.0	25	27.3	
Length of ore body in feet	105	98	65	35	63	184	113	250	72	
Average width of ore body	3.1	6.1	3.0	3.0	3.7	3.2	3.7	5.5	8.2	
Average known height of ore body	11.5	10.0	20.0	51.0	66.0		13.5		4.0	
Tons of reasonably assured ore 3/			320	450						770
Tons of indicated ore 3/	310	490			1280		470		200	2750
Tons of inferred ore 3/	1400	2400				4500	2000	14000	1800	26100
Flasks of quicksilver from reasonably assured and indicated ore	100	190	220	190	700		170		70	1640
Flasks of quicksilver from inferred ore	450	920				3020	710	4600	650	10350
Number of analyses available for estimating grade of ore body	19	17	13	11	18	46	13		22	

1/ Additional inferred ore is believed to exist beneath the inferred ore of the Top vein and Retort veins and also beneath the surface in the interval separating the south end of the Top-vein body from the north end of the body at the Retort veins. This body of inferred ore extends from the north end of the Top-vein ore body to the south end of the ore body at the Retort veins. It is 250 feet long (see fig. 6-A) and averages 5.5 feet wide (determined by weighting the average widths of the ore bodies of the Top vein and Retort veins). Although the upper part of the latter block would be reduced by the amount of the inferred ore separately delimited at the Top and Retort veins, the intervening portion of the block, which extends to the surface, about balances such a reduction and the total volume of inferred ore for the whole block is roughtly a body 250 feet by 5.5 feet by 125 feet. The ore is estimated to contain at least 25 pounds of quicksilver a ton.

2/ Quicksilver content based on analyses by Bureau of Mines.

3/ 12 cubic feet of ore a ton.

TABLE 2
SUMMARY OF RESERVES
(Cutoff grade approximately 10 pounds of quicksilver a ton)

	A-Vein body	DeCoursey-vein body	Tunnel-vein body Block A	Block B	Block C	Block D	Body at the Retort veins	1/	Top-vein body	Total
Pounds of quicksilver a ton 2/	17.0	18.2	53.1	31.9	41.6	51.0	11.1	10	18.7	
Length of ore body in feet	125	315	65	35	63	184	148	310	100	
Average width of ore body	4.0	3.9	3.0	3.0	3.7	3.2	11.6	12.9	14.7	
Average known height of ore body	13.0	35.5	20.0	51.0	66.0		17.5		5.0	
Tons of reasonably assured ore 3/			320	450						770
Tons of indicated ore 3/	540	3630			1280		2500		610	8560
Tons of inferred ore 3/	2600	16100				4500	10600	52000	6100	91900
Flasks of quicksilver from reasonably assured and indicated ore	120	870	220	190	700		360		150	2610
Flasks of quicksilver from inferred ore	580	3850				3020	1550	6800	1500	17300
Number of analyses available for estimating grade of ore body	25	25	13	11	18	46	33		41	

1/ See note 1, table 1.
2/ Quicksilver content based on analyses by Bureau of Mines.
3/ 12 cubic feet of ore a ton.