

UNITED STATES
v.
EVELYN M. KIGGINS ET AL.

IBLA 78-473

Decided January 26, 1979

Recommended decision of Administrative Law Judge Harvey C. Sweitzer, declaring the Vermilion and Vermilion No. 2 lode mining claims, Clackamas County, Oregon, null and void. OR 13204.

Recommended decision adopted.

1. Mining Claims: Discovery: Generally--Mining Claims: Lode Claims

To determine whether there has been a discovery of a valuable mineral deposit within a lode claim there must be exposed within the limits of the claim a vein or lode bearing mineral of such quality and quantity as would induce a prudent man to expend his time and means with the expectation of developing a valuable mine.

2. Mining Claims: Discovery: Generally

Evidence of mineralization which may justify further exploration, but not development of a mine, does not establish the discovery of a valuable mineral deposit.

3. Mining Claims: Determination of Validity--Mining Claims: Discovery: Generally

No discovery of a valuable mineral deposit is demonstrated where the amounts of mineral yielded by a claim are so small that mining could never be expected to produce an economic return in any way commensurate with the labor and cost involved in production.

4. Mining Claims: Patent

The Secretary of the Interior is not authorized to issue a patent to a mining claim until the requirements of the law have been met.

APPEARANCES: Arno F. Reifenberg, Esq., U.S. Department of Agriculture, Portland, Oregon, for contestant; John L. Langslet, Esq., Martin, Bischoff, Templeton & Biggs, Portland, Oregon, for contestees.

OPINION BY ADMINISTRATIVE JUDGE FISHMAN

On September 15, 1978, the Board issued an order authorizing the filing of briefs in response to Administrative Law Judge Harvey C. Sweitzer's recommended decision in the above-captioned mining claim contest.

Each party was allotted 30 days to file such brief and 15 additional days to file proof of service thereof upon the opposing party with the Board.

On October 2, 1978, counsel for the Department of Agriculture, filed with the Board a statement agreeing with the judge's recommended decision. No brief has been filed by counsel for contestees.

The Judge's decision sets out correctly the pertinent evidence and the applicable law, and no reasons have been shown to disturb his findings and conclusions. The judge's decision, incorporated herein by reference, is therefore adopted as the final decision of the Department.

Frederick Fishman
Administrative Judge

I concur:

Newton Frishberg
Chief Administrative Judge

I concur specially:

James L. Burski
Administrative Judge

ADMINISTRATIVE JUDGE BURSKI CONCURRING SPECIALLY:

While I agree with the result reached in the cogent and detailed decision of Administrative Law Judge Sweitzer, I do wish to express one caveat concerning the inclusion of a claimant's labor as an item of expense. As Judge Sweitzer noted, this Board has held "there is no reason to treat the value of the labor of a claimant any differently from that of one he might hire." United States v. Gardiner, 18 IBLA 175, 179 (1974). Accord, United States v. Arcand, 23 IBLA 226 (1976); United States v. King, 15 IBLA 210 (1974). I have no difficulty with this proposition when it stands in isolation.

Nor do I disagree with other Departmental precedents which have held that where the profit to the claimant from a mining venture is inconsequential a reasonably prudent man would not invest time or effort in such an enterprise where it offered a profit below the return for a commercial venture. See United States v. Kottinger, 14 IBLA 10 (1973); Atchison, Topeka & Santa Fe Ry. Co. v. Cox, 4 IBLA 279 (1972); United States v. Melluzo, 76 I.D. 181 (1969).

My concern relates to the possibility that these two discrete tests might eventually be wedded with the effect that a mining claimant, who is paying himself the standard wages for his work, must also show more than a de minimis profit from the mining operations. Such a standard would, I believe, do great injury to the concept of a "prudent man" under the mining laws. Moreover, the validity or invalidity of a mining claim might well then turn on the accounting system utilized rather than the ultimate return to the claimant.

Inasmuch, however, as I do not feel that this has occurred in the instant decision, I concur with the disposition of the subject appeal.

James L. Burski
Administrative Judge

June 14, 1978

UNITED STATES OF AMERICA,	:	OR 013204 (IBLA 72-121)
	:	
Contestant	:	Involving the Vermilion
	:	and Vermilion No. 2 lode
v.	:	mining claims situated
	:	in Section 5, T. 6 S.,
EVELYN M. KIGGINS,	:	R. 7 E., W.M., Clackamas
individually and as :	:	County, Oregon, within
administratrix of the	:	the Mount Hood National
estate of DOUGLAS E.	:	Forest.
KIGGINS, MURRAY M.	:	
KIGGINS, JAMES A.	:	
KIGGINS, and ESTER	:	
KIGGINS,	:	
Contestees	:	

RECOMMENDED DECISION

Appearances: Arno F. Reifenberg, Esq., U.S. Department of

Agriculture, Portland, Oregon, for Contestant;

John L. Langslet, Esq., Martin, Bischoff,

Templeton & Biggs, Portland, Oregon, for

Contestees.

Before: Administrative Law Judge Sweitzer

This is a proceeding involving the validity of two lode mining claims located under the General Mining Laws of

1872, as amended, 30 U.S.C. § 22 et seq. The proceeding was initiated by the U.S. Forest Service, Department of Agriculture.

Procedural Background

On March 1, 1963, Douglas E. Kiggins filed application Oregon 013204 for patent to the two claims in question, alleging therein that he, with one George Nisbet, located both claims on June 3, 1933, that the claims contained quicksilver, and that, by virtue of compliance with the applicable laws and regulations and through conveyance, he was the owner of the claims. On March 18, 1963, prior to any action on the application, Mr. Kiggins died and the application was thereafter pursued by his successors in interest.

At the behest of the Forest Service, a contest was initiated by the Bureau of Land Management to determine the validity of the claims by the filing of a complaint by the Oregon Land Office on June 9, 1964. This complaint charged that (1) minerals have not been found within the limits of the claims in sufficient quantities to constitute a valid discovery within the meaning of the mining laws, and (2) the land within the limits of the claims is nonmineral in character. A hearing on these issues was held on October 9, 1964.

By a decision dated August 16, 1965, the Hearing Examiner rejected applicant's patent application and declared the

claims to be null and void, finding from the evidence presented at the hearing that there may be sufficient mineralization to warrant further prospecting but that the evidence did not show the discovery of a valuable mineral deposit. On appeal, the Office of Hearings of the Bureau of Land Management affirmed the decision of the Hearing Examiner. That decision was appealed to the Secretary of the Interior and was affirmed in United States v. Kiggins et al., A-30827 (July 12, 1968).

On or about October 22, 1969, the contestees filed a Petition for Reconsideration of the Secretary's decision. By Opinion dated March 18, 1976, the Interior Board of Land Appeals found the decision of July 12, 1968, supra, "to be correct on the basis of the record as presently constituted." However, the Board remanded the case to the Office of Hearings and Appeals to allow the contestees the opportunity to substantiate their allegation that:

[S]ince the hearing in October 1964 the claims have been mined by lessees who have exposed additional ore and presently have approximately 10,000 tons of minable ore blocked out assaying from 3 to 25 pounds of mercury per ton, and averaging from 6 to 8 pounds of mercury per ton. United States v. Kiggins et al., 24 IBLA 187, 188 (1976).

The Board has directed that I submit a recommended decision to it, along with the case record, for consideration and final decision, after affording the parties the

"opportunity to present such additional evidence as they may have to offer pertaining to the validity of the claims."

The hearing commenced on August 5, 1976, at Portland, Oregon, and continued on March 16, 1977. The record was supplemented by a deposition, in accord with stipulation of counsel. An opening brief was submitted by contestees, an answering brief by contestant, and a reply brief by contestees. These briefs have been fully considered in the rendering of this recommended decision.

Issues

Contestant alleges that the Vermilion and Vermilion No. 2 claims are invalid because minerals have not been found within the limits of the claim in sufficient quantities to constitute a valid discovery of a valuable mineral deposit and that the land within the limits of the claims is nonmineral in character.

Contestees raise additional subissues related to their assertion that the claims are valid and entitled to patent. The first issue raised at hearing was whether the marketability test of discovery announced in United States v. Coleman, 390 U.S. 599 (1968), is applicable to this case. Contestees assert that inasmuch as Coleman was decided subsequent to the patent application, the issue of marketability should not govern in

this proceeding. The short answer to this contention is that Coleman did not purport to change the law but merely explained the long-existent prudent man test. Thus, marketability is an important factor in assessing the value of the mineral deposit on these Vermilion claims.

Next, contestees raise the question of timing of the discovery and assert that the question of discovery, with respect to market conditions, should be examined as of the patent application or, at the latest, as of the first hearing. Such a position is untenable because the Department of the Interior is without authority to grant a patent unsupported by a present discovery of a valuable mineral deposit. See Best v. Humbolt Placer Mining Company, 371 U.S. 334 (1963); Mulkern v. Hammitt, 326 F.2d 896 (9th Cir. 1964). In addition, the Board in remanding the case, afforded the opportunity to present new evidence to support the claim of discovery acquired after the patent application and after the initial hearing. It would be incongruous to allow the claimant to indefinitely continue exploration for a discovery based on market conditions fixed as of a given time in the past. Therefore, in order to prevail at this proceeding, contestees must show a present discovery of valuable mineral to support their claim.

I conclude, therefore, that the sole issue for determination is whether the contestees have, since the first hearing,

discovered a valuable mineral deposit within the meaning of the mining laws so as to perfect their locations of the two mining claims in question, or either of them. The test to be applied is whether contestees have discovered an occurrence of mineralization of such quantity and quality as to warrant a person of ordinary prudence in the expenditure of time and money in the extraction of the mineral, i.e., the mineral deposit that has been found must have a present value for mining purposes. Chrisman v. Miller, 197 U.S. 313 (1905); United States v. Coleman, *supra*. And a valuable mineral deposit must be shown to exist on each claim in order for it to be valid. California v. Doria Min. and Eng'g. Co., 17 IBLA 380 (1974).

The record shows the parties to be in agreement that the alleged discovery on each claim is of mercury (quicksilver) that mercury's principal source is cinnabar; and that an accepted mode of pricing mercury is the "flask," which equals 76 pounds of mercury.

Summary of Probative Evidence

Mrs. Evelyn M. Kiggins, one of the contestees, testified as to the status of the two mining claims in question. She stated that the two Vermilion claims and the adjacent Bear claim – which is not subject to these proceedings – have been leased to various persons since the first hearing in 1964.

She has received between \$100 and \$150 per month for all the leases, in addition to an initial payment of \$500 to \$1,000, and royalty interests should production occur. No copies of these leases were offered into evidence. The current lessee is Mr. Clyde C. Austin, and he first obtained the leases in May, 1972, for \$500 initial payment and \$150 per month, plus royalties. Mrs. Kiggins also testified that various of the lessees have made improvements on the property in order to conduct mining operations.

Mr. Rubin Holm was an investor in HG-80, a corporation which leased the contested claims from Mrs. Kiggins during the early 1970's. He said he has no present interest in the claims. He used a retort to test samples from the claims in 1969, as a result of which he invested \$5,000 in the HG-80 Corporation. He was unable to give the exact location of all samples taken, but said that "we took possibly 3 or 4 samples off the Vermilion 1/ [and each sample weighed] 500 pounds." (Tr. 59). Each sample assertedly yielded 4 to 7 pounds of mercury which he computed to 16 to 28 pounds of mercury per ton.

Mr. Holm testified that with financial backing, HG-80 invested in an infrared retort in 1970 or 1971. The retort was

1/ While the witness stated "Vermilion" in this context, he indicated the samples to have been taken near a tunnel existent on the Vermilion No. 2. (See Tr. 59-60).

built on Mr. Holm's land and was presumably built to process ore from the two Vermilion claims and other claims in the area. The retort failed because the high heat from the infrared source vaporized the mercury, thus preventing its recovery. Mr. Holm testified that the HG-80 Corporation lost \$175,000 on the experimental retort.

Mr. Holm observed a Mr. Elton, who also invested in HG-80, conducting core drilling on the two Vermilion claims. Apparently, this drilling was done to assess the property in order to enable a reasoned decision on investing in HG-80. He testified that cores were drilled from 40 to 60 feet deep and that "the deeper they drilled, the richer the cinnabar ore was"; also, that while no retort testing was done on the drilled samples, the cinnabar "was fully compatible with anything that we cooked." (Tr. 38).

Mr. Holm also testified that since the 1964 hearing, an extension of a drift was dug between the existing adit No. 1 and adit No. 2. This extension cut across a vein of calcite ore that measured 4 feet wide by 6 feet high. He said that about 50 tons of material were taken from this vein, although no assays were run on the exposed ore. He said that several other veins were also encountered.

Although Mr. Holm did not profess to be a mining engineer, it was his estimate that "thousands of tons" of cinnabarbearing ore were present on the two claims. (Tr. 49). Further,

he concluded that 90% of all the material sampled yielded 20 to 30 pounds of mercury per ton. Although he maintained that the sampled ore was not "highgraded," he did admit that selective samples were taken.

Relating to the costs of a mining operation for the claims in question, Mr. Holm testified that it would take about 10 gallons of stove oil to run the motor for processing 500 pounds of ore through the retort. He said that stove oil sold for 18 to 20 cents a gallon during the early seventies but gave no present day costs. Other costs, he felt, would primarily be related to labor. Based on this analysis of costs and on his experience, he opined that a reasonably prudent person would be justified in expending his labor and means on these claims in hopes of developing a profitable mine. He said this would be "[v]ery definitely" true if the market value of mercury were \$350 per flask, but that at \$110 per flask of mercury "[y]ou could make wages, but . . . would accumulate no sums of profit . . . 110 [dollars] is almost at a nil point." (Tr. 53).

Mr. Holm testified to his belief that a valuable mine could be developed on the mine. He explained his testimony by saying: "It would not warrant 100-ton-a-day or a 50-ton-a-day operation But for a 2 or 4-man operation to go up there and work that, I believe it would be a profitable mining operation." He indicated that by "profitable" he meant that by selling the mercury at its market price at the time of hearing, he

would be able to pay "the cost of mining and the retorting plus . . . labor." (Tr. 197-98).

Mr. Lynn Marcus Sherman testified for the contestee. Like Mr. Holm, Mr. Sherman was not qualified as an expert geologist nor mining engineer, but was familiar with the two Vermilion claims. He worked with Mr. Holm in evaluating the properties prior to investing in HG-80. Mr. Sherman testified that four to six 500-pound samples were tested in the retort. Seemingly contrary to Mr. Holm's testimony, Mr. Sherman indicated that one or two tests were "high grade" samples 2/ but that the combined tests yielded a total of 150 pounds of mercury.

Mr. Sherman testified that the samples were taken from the "main shaft" of the Vermilion claims, a stockpile on one of the Vermilion claims, and from a hill directly above a tunnel. Some selective samples were taken from an exposed vein in a creek running through the claims. While he could not state with certainty from which of the two Vermilion claims the

2/ This apparent discrepancy may be explained by different subjective meanings the two witnesses attached to the term. Mr. Sherman described "highgrading" as taking small samples of particularly rich-looking ore. (Tr. 69). Mr. Holm testified to taking selective samples but described "highgrading" as using a concentrator or cooking nothing but rich-looking ore. I interpret the taking of selective samples by Mr. Holm and "highgrading" done by Mr. Sherman to mean the same thing and thus attach no major significance to the apparent discrepancy.

samples were taken because he did not survey the boundary line, he thought all these samples may have been taken from Vermilion No. 2 claim.

Mr. Sherman also testified to having observed the drilling of two vertical holes on the claims. The drill holes were approximately 40 feet deep and the samples therefrom showed existence of veins of varying thickness. Although he did not know the results of any assays, he expressed the opinion that the core samples were representative of ore tested on the claims. He also stated that he had observed that blasting had been done in an adit or tunnel, evidently on Vermilion No. 2, and that it had exposed veins of cinnabar 3 or 4 feet wide. He also testified to seeing a drift extending this adit, revealing more cinnabar. It was from this and another adit that some of the ore was taken for retort testing. Mr. Sherman related that he had seen a raise connecting adit No. 1 and adit No. 2, and "it was practically all ore in that area" but that no tests were performed on material exposed in the raise. (Tr. 79).

From his observations, Mr. Sherman estimated that either hundreds or thousands of tons of cinnabar ore were exposed on the two claims. When asked "whether there is sufficient cinnabar mineralization exposed on Vermilion and Vermilion No. 2 such that a reasonably prudent person would be justified in expending his labor and means in the hopes of developing a profitable mine,"

he answered that "handled in the right way, I don't see how anybody could go wrong." He defined "handled in the right way" to mean "somebody with the experience to handle cinnabar – get the mercury out of it, and save the mercury." (Tr. 81).

Mr. Sherman testified to some extent about costs of producing the ore. He estimated that, in addition to labor, it would take 10 to 15 gallons of fuel per 500 pounds of ore for retorting; he also referred to some costs in running a 10-horsepower motor for crushing, and fuel costs to run a compressor operated drill. No costs were given for amortization of equipment. Labor was estimated as requiring two men one hour to recover 500 pounds of ore which translates to eight man-hours per ton. Based on this much data, Mr. Sherman concluded he could "make a living" from mercury production at \$110 per flask; that is, that he could "make enough money to pay [himself] a living wage . . . [after he paid] the costs of production and retorting." (Tr. 84).

Mr. Colver Anderson, a mining engineer, was called as an expert witness for the contestant. He testified to visiting the claims on three days beginning in May, 1976. He talked with Mr. and Mrs. Austin, the current lessees on the claims, on his second visit. Mr. Anderson related that Mr. Austin had done very little mining on the property but was building an infrared retort on the property.

Mr. Anderson located and marked the locations of adits Nos. 1, 2 and 3 on Exhibit 1. By comparing his observations with the report made by Government mineral examiner Plog who examined the claim in preparation for the 1964 hearing, he identified the new workings on the two Vermilion claims; i.e., the work done subsequent to the 1964 hearing. He said the workings consisted of shafts or adits totaling about 250 feet in length. One of these, accounting for about half this total length, is an incline shaft which connects preexisting adits Nos. 1 and 2. The other is at a sublevel beneath adit No. 2, the lower of these two preexisting adits. (Illustrated on Ex. 2).

He related taking two chip samples, consisting of 5 to 6 pounds each, from the area. One of these (A-76-1) was from about the middle of the sublevel from a 6-inch wide exposed mineralized structure. It indicated 3 pounds of mercury per ton. A second sample (A-76-2) was taken from a point near the intersection of the incline adit and adit No. 2 from a vein 18 inches wide. It yielded an assay of 6.4 pounds mercury per ton. A third sample (A-76-3 on Ex. 3) was taken from a muckpile beneath a bin on the claims and Mr. Anderson related that he had been told by lessee Austin that the muckpile had originally been brought from a claim adjoining the Vermilion claims in contest. Although it yielded a value of 36 pounds of mercury

per ton, he did not accord any weight to the sample because of the uncertainty of its source. ^{3/}

Mr. Anderson explained a concept of mining widths used to compute the yield of mercury per ton. He said developmental mining often uses a 5-foot width; "once the development work is done, you can mine down to 18 inches, but that's very difficult mining, and a better width and a more satisfactory width is 30 inches, at least." (Tr. 99-100). He indicated that if the actual ore is less than these mining widths, the yield will be reduced in proportion to the ratio of the ore width to mining width, because of the added country rock recovered along with the ore. He said that on the basis of \$110 per flask of mercury, its market value in August of 1976, sample No. 76-A-1, which was taken at a point where the cinnabar vein was 6 inches wide, would yield \$4.34 per ton of ore, and if adjusted to a 30-inch mining width, would yield \$0.87 per ton of rock mined. At the highest mercury price between the 1964 hearing date and the current hearing, of \$570 per flask (Ex. 4), the yield based on this sample would be \$22.53 per ton of ore in the 6-inch vein and \$4.51 per ton of total material mined in a 30-inch width. Sample No. 76-A-2,

^{3/} Mr. Holm, a witness for contestees, subsequently testified to the probability that this material sampled in fact came from the Vermilion No. 2 claim. (Tr. 195-96). However, in view of the lack of any evidence establishing the actual source of this material – either from or not from the contested claims – the value of this particular sample is not to be considered in my findings, supra.

which was taken at a point where the vein was 18 inches wide, yielded values of \$28.80 per ton of mined rock at \$570 per flask and \$5.56 per ton of mined rock at \$110 per flask. Both of these results were computed on the basis of a 30-inch mining width. Using an average of the two samples weighted to account for the differences in ore widths and yields, Mr. Anderson calculated that a 30-inch mining width would result in \$3.21 per ton at \$110 per flask and \$16.67 per ton at \$570 per flask. He approximated the total quantity of ore between the points on the vein where the two samples were taken as 31 tons. He speculated that following the structure downward would yield lower values.

Mr. Anderson said he also inspected the area around an adit known as No. 3 on the Vermilion No. 2 claim. He stated that he did not believe that any additional excavation had been done in adit No. 3 for 15 to 20 years, but he did see evidence of drilling in the vicinity. He said the drill holes appeared vertical and gave the opinion that vertical drilling would not yield accurate results of vein structures because the veins in the Vermilion claims tend to dip 65 degrees.

Mr. Anderson expressed his view as to the costs of mining the two Vermilion claims. He stated that due to the sloughing nature of the ore, and its clay and water content, "it would be an expensive mining operation." (Tr. 109). He expressed the belief that costs of labor, currently \$6.00 per hour for a miner and \$5 per hour for a miner's helper, would

themselves defeat the project. He estimated costs of labor alone as being \$50 per ton of ore, which he said would exceed any of the most optimistic values. He estimated retorting costs at \$7.20 per ton for fuel based upon an estimate of 10 gallons per 500 pounds and a cost of \$0.18 per gallon ($4 \times \$0.18 \times 10 = \$7.20/\text{ton}$). He estimated capital costs of \$2,000 per ton of production based on a capital investment of \$200,000 on a 100 ton per day plant. ^{4/}

When asked whether a prudent man would be warranted in investing further time and money in the hope of finding a valuable mineral deposit, Mr. Anderson answered:

I do not believe that the prudent man would have a real hope and expectation of finding the deposit. I do believe that it might be worth more exploration, though, if somebody wants to risk the money; and it would be high risk. (Tr. 114).

On cross-examination, Mr. Anderson stated that he believed a statement in "Mineral Facts and Problems" (Bureau of Mines, 1970) at page 646, that "recent production in the United States was from ore averaging 4.1 to 7.2 pounds of mercury per ton" to be authentic. (Tr. 120). He admitted that

^{4/} Apparently, Mr. Anderson arrived at this figure of "\$2,000 per ton of production" (Tr. 111) by dividing the cost of the plant by its daily output, but he did not amortize over the plant or mine life. I therefore deem this figure to be meaningless and give it no weight in my consideration.

the "absolute values" of the samples assayed on the Vermilion claims "exceed" those values. (Tr. 121). He agreed also with the statements from the same publication: (at p. 645) that "Mercury prices tend to fluctuate widely because of erratic demands" (Tr. 126); (at p. 641) that "the bulk of the ore that has been mined [in the United States] has come from depths of less than 1,000 feet" (Tr. 175); and (at p. 642) that "[r]etorts are inexpensive installations for small operations and require only simple firing and condensing equipment. They are best adapted to operations treating 500 pounds to 5 tons per day of high grade sorted ore." (Tr. 175). However, although he agreed the same publication (at p. 646) projected mercury prices of \$1,500 per flask in the year 2000, Mr. Anderson gave as his opinion that the projection "is completely out the window now." (Tr. 127). On redirect examination, he expressed that the projections in the publication had not proved out since its 1970 publication date, "[t]his [being] very largely due to the environmental influences and the EPA and restrictions against turning mercury loose in the air, in streams and so forth; it has cut down the use of mercury very much." (Tr. 184).

Mr. Anderson conceded: that mercury production is concentrated in only a few countries of the world; that said countries could essentially control the world supply of mercury; that they have the ability to cause tremendous fluctuations in the price of mercury; that mercury is recognized as

a strategic material by the United States Government; that mercury is stockpiled to some extent by the Government; and that mercury production in the United States has been declining over the past few years.

He agreed that the average of "6 to 8 pounds [of mercury] per ton" of material on the claims, as expressed in the affidavit of E. D. Elton, an officer of HG-80, Inc., (Ex. P) "is consistent with the work that [Mr. Anderson] and Mr. Plogg did"; although he made it clear that by his response he was not referring to "tonnage value," but rather to "the average of mercury content in the ore." He qualified further: "I just don't like to see these ignore the widths represented by the samples. You need a weighted average to get a true figure of what your tonnage value will be." (Tr. 162).

Concerning the Elton affidavit's declaration of "approximately 10,000 tons of minable ore blocked out," (Ex. P) and whether he had made "any independent calculations of the drillings described by Mr. Elton, making measurements of the drillings and other calculations to independently determine if that figure of 10,000 tons was accurate," Mr. Anderson responded, "I had no information from which I could use this drill information to get a contemplated tonnage of ore." (Tr. 167).

He admitted that small, "poor-man" operations can be quite efficient but expressed the opinion that, even so, he did not believe the Vermilion claims could be operated at a profit even if the mercury were salable at \$500 per flask; this, he stated was due to an insufficient volume of mercury on the claims. Mr. Anderson conceded that a mining width of 18 inches is feasible in a small operation. Using 18 inches as the mining width and \$342 per flask, the average price from 1963 through 1976, the value per ton of ore, based on the results of Sample No. A-76-2, would yield \$28.80. Using 10 pounds per ton, rather than the 6.4 pounds resultant from the Sample No. A-76-2, would yield \$45.00. Mr. Anderson suggested that productivity and efficiency would decline, hence costing about one-third more than mining at a width of 30 inches, because of the tighter working space for men and drilling equipment.

Mr. Randall E. Brown testified for contestees. He has degrees in geology and mining engineering. He worked continuously as a geologist for both the Government and private enterprise from 1941 until 1971. During the mid-1940's, he worked with the U.S. Geological Survey evaluating quicksilver deposits in Oregon, as well as other states. Since 1971, he has been a professor of geology at Central Washington State College and a geological consultant.

As part of his duties with the U.S. Geological Survey Mr. Brown investigated the two Vermilion claims in 1943.
He

and his colleague concluded at that time "with an appropriate efficient management and with an assured reasonable price of quicksilver, that the properties probably could operate as small producers." (Tr. 215). He opined that the property has additional promise at present because "[a]s a result of some of the work that has been done, I feel that additional ore is present above and beyond what we felt was present at the time." (Tr. 215).

Mr. Brown again examined the properties in August, 1976. Referring to Exhibit Q, a map showing the geology and topography of the claims, he explained that there are three principal veins on the two Vermilion claims: The Fall Vein runs northwesterly under the bed of the Oak Grove Fork of the Clackamas River and could not be mined except by expensive technology because of the water. He said that where the Fall Vein is exposed, it averages 1 to 2 feet in width and that an 18-inch sample taken across the width of the vein assayed at 9.5 pounds of mercury per ton. The Stope Vein is the vein opened by adit No. 2, but it has evidently been mined out.

The Vermilion Vein, the "major vein on the property" (Tr. 224), is located on the southwestern portion of a broad, flat bench and runs southeasterly toward the river. This vein is exposed at – and, according to Mr. Brown, apparently runs continuously between – adits Nos. 1 and 3. He testified that,

as mapped in 1943, this vein ranged between 2 and 5 feet in width. Mr. Brown said that all the veins increased in width at greater depth and that this characterization had been measured and is indicated on Exhibit Q. He believed that the Vermilion and Fall Veins would intersect in the vicinity of adit No. 3 and, in his opinion, the convergence would present "favorable areas for exploration." (Tr. 229). This, because he "would expect that the grade of the ore might be consistent with what has been found elsewhere in the Vermilion Vein . . . [and] as the veins converge they provide a thicker area or a wider area in which the mineralization takes place, and so the two veins, a few feet wide at the point of convergence, may form a mineralized area 10 or several 10's of feet in width." (Tr. 231). He explained the reason he would expect the grade of the mineralization to be "consistent" with that found in the adits as follows:

[O]ver the vertical range which these deposits occurred, the deposits have been exposed only for a vertical range of something like 50 feet or so. I would see no basis, lacking specific evidence, that we could expect significant changes in the mineralization at greater depth from what has been encountered at higher levels. In other words, the conditions that caused the minerals to be deposited presumably would be more or less consistent over this vertical range." (Tr. 232).

He expressed that normally a mining drift in ore should be 5 feet in width to provide working space, and stated

that inasmuch as the Vermilion Vein is "about 5 feet [thick] throughout much of its length [mining would involve] mostly the vein and there would be very little country rock involved." (Tr. 229).

Mr. Brown testified that core drilling would be an effective method of obtaining information as to the quantity and quality of "ore" present in the area. Based upon an assumption of results of core drilling done from shallow depths to as deep as 30 to 60 feet, that mineralization occurred in widths of 2 to 8 feet for each vein, and that at the point of convergence of the veins, the width was 16 feet, and that the ore averaged 10 pounds of mercury per ton, he estimated there is "probably in the range of several thousand tons of ore – or mineralized ground that may be present." (Tr. 236). Mr. Brown observed that he had done no drilling himself on the claims, nor had he seen cores or assays of the cores.

When asked whether a prudent man would be justified in working the two claims with a reasonable prospect of success in developing a valuable mine, Mr. Brown responded "that there are considerable opportunities for a carefully operated property to be successful on a limited scale." (Tr. 237). When questioned about the efficiency of a limited or small scale operation on the claims, Mr. Brown related that a 5 to 10 ton of ore per day operation could be operated more efficiently

primarily because of reduced overhead costs. He stated that this conclusion was drawn from his experience with small scale operations in Oregon. He indicated his opinion as to the workability of the claims was based on the March, 1955 price of mercury at \$174 per flask.

Mr. Brown quoted from the 1976 edition of "Mineral Facts and Problems" (U.S. Bureau of Mines), p. 676, that "[I]t is noteworthy that recent production in the United States was from ore averaging 4.8 to 6.5 pounds of mercury per ton," and he observed "the estimates that I made in 1943 indicated that the average grade of ore mined from the Vermilion claims was in the order of 7 pounds per ton; which would be at the upper end of the average grade quoted in [the 1976] 'Mineral Facts and Problems.'" (Tr. 243). He indicated that his opinion as to workability of the claim on a small scale was similar with respect both to his 1943 examination, and his view in 1977, explaining that his present opinion is "somewhat more pessimistic [than his 1943 opinion] in that a somewhat higher grade of ore is necessary because of the increased cost of mining; [but, his present opinion] is somewhat more optimistic because of the indications of somewhat more ore than we had anticipated and in fact, on my last visit to the property, I was rather surprised that production had continued beyond what we thought it would have when we saw it in 1943. So that the pessimism-optimism would seem to perhaps partially offset each other." (Tr. 274).

On cross-examination, Mr. Brown explained the proper procedure for blocking out ore bodies by the use of core drilling. Proper core drilling procedure involves first the determination of the strike and dip of the veins and then determining the optimum depths and targets for core drilling. He stated that the preferred way to drill is to drill at an angle attempting to intersect the vein at a right angle. Each subsequent drill location should be based on previous drilling results. Accurate records should be kept of the location and direction of the drill holes as well as the results of core samples and the type of rock encountered.

Mr. Brown conceded that the small scale operations in Oregon which he observed, and upon which his opinion that a small operation of these claims could succeed was based, were no longer in operation. He also indicated his opinion that a small operation on the claims could succeed was not based upon an economic assessment of costs of production versus market prices. Rather, his opinion was based upon a comparison of the geology and mineralization on the Vermilion claims with other mining properties.

Testimony by deposition was taken on March 15, 1977, of Clyde C. Austin, a witness for the contestees. The transcript of the deposition was received on stipulation to the same effect as if Mr. Austin had testified at the hearing. Mr. Austin is

current lessee of the two Vermilion claims. He is a heavy duty mechanic and welder by profession but has been involved in mining in various aspects throughout most of his 59 years. He has had no formal education in mining engineering but characterized his knowledge of mining as being obtained through practical experience. From 1970 to 1972 he was associated with the HG-80 Corporation and another mining company. In this capacity he assisted in building the retort and in mining on the contested claims. He described the efforts of these companies (during these early 1970 years) as actually mining some 150 tons of "good ore" from the tunnel on the Vermilion claim and doing exploratory work on Vermilion No. 2. The retort they built proved unsuccessful. 5/ He said the companies left the properties because one of their officers absconded with the companies' funds.

Mr. Austin was present, and assisted, when Mr. Elton 6/ conducted core drilling on the Vermilion claims. Mr. Austin produced a hand drawn map of his recollection of this core drilling. (Ex. N). He described the numerous core drillings as being done by a hydraulically powered drill over a period of at least two months or more in late 1969 or early 1970. He also indicated it to have been done as late as March, April,

5/ This evidently refers to the same retort testified to by Mr. Holm, supra.
6/ Mr. Holm also testified concerning Mr. Elton's work.

or May of 1970. The cores were one-half inch in diameter and their depths varied between about 10 and 50 feet. He indicated the intervals between drill holes were about 10 feet when following a vein. Mr. Austin described the materials in the core samples he saw as follows:

There were some of them that were calcite and vermilion cinnabar. There was some that was a dark gray with metacinnabar and some were very black with metacinnabar. There also were some samples that I have taken since I have worked there that are honeycombed rock. It's a lava rock that has native mercury in it. (Deposition Tr. 12).

Concerning these core drilled samples, he also said, "I couldn't estimate the tonnage or the pounds per ton on that because there was so many various types of ore, cinnabar, it's rather difficult to guess. I would say it's rather difficult to guess the amount of mercury per ton unless you did cook it out, assay it, retort it and weigh it." (Deposition Tr. 21-22).

Mr. Austin referred to the existence of "very rich ore" in certain diggings he made on the claims, basing his opinion as to richness on visual observation, plus some chemical testing on two samples that only indicated that mercury existed without showing the amount thereof.

In addition to his observation of core drilling, Mr. Austin described the expansion of existing adits. He described

the rise between adits No. 1 and No. 2 as exposing a vein 12 inches thick and 6-1/2 to 7 feet wide. No assays were taken on this ore body but he said a 1200-pound sample was reduced by chemical reciprocation and yielded approximately 7 pounds of mercury. (This would compute to a yield of about 11-1/2 pounds per ton.) This 1200-pound sample was evidently taken from various points on the two contested claims and in part from a third claim which is not a point of the contest. (See Deposition Tr. 52).

Mr. Austin discussed the lease of the claims he acquired in his own right in February, 1972, following departure of the two mining companies. He said his lease is written and requires payment to Mrs. Kiggins, contestee, of \$150 per month minimum, plus 10 percent of any profits. He indicated he was current on the payments as of the time of his deposition. He declared he has expended approximately \$15,000 in the claims since becoming lessee in exploration, including prospecting and surveying, in improvements of buildings and roads, and in equipment, including a tractor. He has explored the cinnabar veins but has had no samples assayed. As explanation for lack of assaying, he stated, "I have seen the ore that came out of the tunnel previously and I worked with it considerably and experimented with reciprocation and electronic retorting. And I have procured some mercury from it and found that it runs very close to what I consider very good ore." He described "very good ore" as "ore . . . that would be

suitable for mining and in quantity" and "approximately 12 to 14 pounds per ton average." (Deposition Tr. 21).

Mr. Austin explained the purpose of the core drilling as being to "block out" or "outline" the veins on the claims, and he expounded that in his opinion these three veins were thus "blocked out." As to whether he had an estimate as to the amount of "minable cinnabar ore that was blocked out" he stated:

This is difficult. Even though you block out a vein of ore, you couldn't drill through a vein. Any strata will vary in thickness and depth and will vary in length, and it's difficult if you block out an area – you may drill in a straight line and there may be eight or ten feet in one place and you may drill eight feet wide, you can guess it's eight feet wide.

There is, I would venture, 150,000 tons of ore under that floor that we have explored there now. (Deposition Tr. 23).

He expressed his opinion with regard to both claims that there is a sufficient mineralization "that a person of ordinary prudence would be justified in further expenditures of labor and money with a reasonable prospect of success in developing a valuable and profitable mine" and expanded that otherwise "I wouldn't be investing money in it." (Deposition Tr. 24). As explanation of why he has not yet mined it he advised:

I have been working and I had my son and another fellow up there for quite a

period of time and I had them working to develop a workable retort that I have developed – that another man and I have designed and developed and until you can get a suitable retort to produce adequate mercury, it wouldn't be prudent for me to forsake my profession and go into it.

I had an understanding with Mrs. Kiggins that I would work this way and design and develop it until such time as I could make a retort that would produce adequate mercury to make it prudent to go ahead and make a continuous mining operation of it. (Deposition Tr. 24).

He emphasized that he is in the process of constructing the retort.

Mr. Austin described his plan for a small scale operation and concluded that he could operate the mine at a profit with a mercury market price of \$167 per flask. He estimated operating costs at \$150 per day for powder and \$11.70 per month for electricity. He did not include capitalization or expenses for equipment in his calculation, stating merely that they already have all their equipment. Neither did he estimate costs of labor, stating he would begin with a two-man operation of himself and his son. He did state that miners' wages were about \$6.00 per hour. (See Deposition Tr. 52). He estimated initial mining production at 3 to 5 tons per day. He said this would go on for 3 or 4 months "with barely making ends meet." (Deposition Tr. 28). His plans to thereafter expand his operation by addition of crew and equipment in order to

produce 20 tons per day. He believes the retort he is now building would handle a ton and a half to two tons per 24-hour day.

Mr. Colver Anderson, Government mining engineer (who testified previously), appeared as a rebuttal witness. He related that he observed only two or three of the drill holes referred to by Mr. Austin, but that the stirring and mixing of the surface area in the 6 or 7 years between the time Mr. Austin testified to their having been emplaced and the time of Mr. Anderson's examination could have covered the surface of the holes. He also said that he observed only one of the apexes of veins testified to by Mr. Austin.

Mr. Anderson analyzed the costs of mining the claims based on Mr. Austin's figures. He estimated \$96 per day for labor (2 men for 8 hours at \$6.00 per hour). He estimated supply costs at \$43.00 per day, based on a formula "taken from some of the mining engineering books," which assumes labor costs to be 69% of total mining costs and other mining supply costs to be 31% of the total. (Tr. 279). With mercury at \$175.00 per flask, or \$2.30 per pound, it would require a production of 60 pounds of mercury per day to meet costs. Assuming production of 5 tons per day, the quality of ore would have to yield 12 pounds of mercury per ton. Using Mr. Austin's figure of \$150 per day for powder costs (which Mr. Anderson thought

was too high), he said the ore would have to yield 21 pounds of mercury per ton to cover costs. Mr. Anderson said that these analyses by him do not include amortization of equipment nor costs of transporting mercury to the market; also, that additional costs would include insurance and electricity. He conceded he was relying on memory that the "31%" was for "direct mining costs" only and not "indirect or non-variable costs such as depreciation, amortization, capital, that sort of thing," he not having with him a mining publication which would explain the "31%" figure." (Tr. 289-90). He felt that water would impede mining on the claims to a greater degree the deeper they went. This, he said would increase expenses, as by requiring pumping of the water.

Mr. Anderson agreed in general with Mr. Brown's description of the geology on the claims, specifically as respects the locations of the three veins. He also agreed with Mr. Brown that core drilling is a recognized procedure to locate vein mineralization.

On cross-examination, the question was asked "if the core drilling described by Mr. Austin was accomplished and was done in the manner in which he described, and if the veins found were as described by Mr. Austin, is it not true that . . . there have been found on Vermilion and Vermilion No. 2 significant additional deposits of cinnabar?" Mr. Anderson responded,

"According to his suppositions, yes" (Tr. 286), and Mr. Anderson conceded that "these claims could be operated at a profit provided you had competent miners, you had a small operation, and they produced enough mercury per day to cover their costs"; elaborating, by affirmative response, "if the price of mercury stays at \$175 per flask [its approximate value at the March, 1977 segment of the hearing], . . . if they averaged 10 pounds [of mercury] per ton, [the small scale operation] . . . could make a living by simply increasing the amount of tonnage then per day from 5 tons up to 7 or 8 or perhaps even 10 tons a day, [and] . . . a 7 or 8-ton a day operation would still be in the range of a small man's operation . . . [if the vein were at least of] a 5-foot width." (Tr. 290-91).

Two additional exhibits which I believe merit brief comment are Exhibits O and P, each an affidavit submitted to the Board with contestees' petition for reconsideration. Each was received on proffer by contestees over objection by contestant, subject to later determination of weight, if any, to be accorded each, in view of contestant's inability to subject each to cross examination. (See Tr. 209). Exhibit O, written by Albert Q. Bartell, a mining engineer, was introduced for the limited purpose of showing the basis for the reconsideration order of the Board. As the Board remanded the case for this hearing, the subject of the affidavit is of no further use and consequently is not considered regarding this recommended

decision. Exhibit P, written by E. D. Elton, an officer and manager of HG-80 Corporation, was offered for the same purpose as Exhibit O and additionally for the substantive evidence which it contains because, despite a diligent search, the witness could not be located and was hence unavailable to testify. The affidavit contained references to additional work done on the claims by Mr. Elton which are duplicative of testimony of witnesses found in the record. Other affidavit testimony relates to Mr. Elton's affirmative opinion as to the discovery of a valuable mineral deposit. The bases of that opinion being critical to a reasoned consideration of a matter which bears on the ultimate issue in this case and not being subject to cross-examination, I afford it no weight. The affidavit also contains assay results from samples submitted in 1965 and 1967. One of the samples is indicated to have come from a claim other than the two in conflict and is irrelevant. As to the other samples, which are indicated to have been taken from the Vermilion claims, specification is not made as to whether or not they were taken from mineralization exposed prior to or subsequent to the first hearing, and hence, I cannot ascertain the relevance to this hearing. Moreover, specific information is lacking as to the place and manner of taking and size of these samples. Weighing these factors along with the hearsay aspect causes me to find that I can give no consideration to these assay results.

Findings and Conclusions

The order of remand provided the contestees an opportunity to present additional evidence acquired since 1964 pertaining to the validity of the Vermilion and Vermilion No. 2 mining claims. The contestees have the burden of proving that such additional evidence establishes that there has been a discovery of an occurrence of mineralization of such quantity and quality as to warrant a person of ordinary prudence in the expenditure of time and money in the extraction of the mineral. See United States v. Springer, 491 F.2d 239 (9th Cir. 1974). I will now discuss my findings with respect to each essential element of the test for the discovery of a valuable mineral deposit.

The quality of material on the claims.

The only evidence of any results of samples definitely from the contested claims which were taken from workings exposed since the first hearing consisted of those taken by the Government's mineral examiner. The two samples of ore that came from the contested claims assayed, respectively, 3 pounds of mercury per ton for the sample cut across 6 inches, and 6.4 pounds per ton for the sample cut across 18 inches. A third sample yielded 36 pounds per ton but the origin of the stockpile from which taken was not established as being from either of the contested claims,

and I find that the sample is therefore not probative evidence of the quality of the mineral on either of the Vermilion claims.

Contestees' evidence as to the quality of new ore found by drilling on the claims is from the subjective opinions of witnesses to the drilling. There is not objective evidence, from assays or other reliable testing, as to the quality of the "ore" allegedly "blocked out" by drilling. Instead, contestees ask that the newly exposed material be presumed to be of the same quality as "ore" exposed earlier and urges the use of samples by the Government taken as early as 1943. Mr. Brown had an assay showing of 9.5 pounds per ton from an 18-inch sample taken in 1943. Mr. Plog's nine samples taken in preparation for the 1964 hearing averaged in the neighborhood of 8 pounds of mercury per ton. Mr. Anderson's two samples taken in preparation for this hearing yielded a weighted average of 5.55 pounds per ton. Combined with Mr. Anderson's samples, these assays compute to an average of somewhat under 8 pounds per ton.

Mr. Anderson testified, and I so find, that averages should be weighted by the appropriate ratio of vein width to mining width. Although there was some testimony that proper mining width would be between 3 and 5 feet, Mr. Anderson admitted that it was possible to mine down to 18 inches in a small operation. Assuming, without deciding, that all veins on the claims are at least 18 inches in width, the above average assay should

represent the quality of minable ore. This assumption, although of questionable accuracy, is favorable to the contestees' position. The calcite structure of the veins is not uniformly laden with cinnabar and the description of vein widths as being 2 to 5 feet must be taken to refer to the calcite structure as opposed to the actual cinnabar mineralization. I have no way of deciding actual mineralization widths from the testimony other than by the calculations of Mr. Anderson relating to the mineralization of the structure between the sublevel and the incline adit. In any event, employing assumptions most favorable to the contestees' evidence and position, it may be considered for the purposes of this decision that the average mercury content of the mineralized structures on the two claims is some 8 pounds of mercury per ton of material in place and that the mineralization extends throughout the minable widths.

The quantity of material on the claims.

The order of remand provided contestees the opportunity to establish that "... the claims have been mined by lessees who have exposed additional ore and presently have approximately 10,000 tons of minable ore blocked out"

"Blocked-out ore" is defined in pertinent part by A Dictionary of Mining, Mineral, and Related Terms, Bureau of Mines, U.S. Department of the Interior (1968), at 114, as:

a. Ore, 7/ the amount, content, and mineability of which have been proven by development work or by drilling developed ore.

The evidence presented by contestees falls short of this meaning for "blocked-out." The drilling done on the claims lacks accurate recordation of drill-hole locations and directions; moreover, evidence was not presented as to the extent or quality of materials recovered from the core samples taken. All that can be said is that the evidence indicates "ore" bodies of unknown quality extend from the old workings. Although witnesses described the "ore" as being of equal quality to other exposed "ore," there is no real evidence that such is the case. In short, the drilling is not shown to have established the "amount, content, and mineability" required to characterize "blocked-out ore."

Mr. Brown testified that from the information he acquired about the claims he would expect to find mineralization in the area drilled by Mr. Elton and the evidence is convincing

7/ Among the definitions of "ore" in this same publication, at 772, are "A natural mineral compound of the elements of which at least one is a metal. Applied more loosely to all metalliferous rock . . ." and "A mineral of sufficient value as to quality and quantity which may be mined with profit." The manner in which I may use "ore" in this recommended decision, does not thereby imply by definition a "mineral . . . which may be mined with profit."

that some unknown quality and quantity of mineralization in fact exists in the general area of adit No. 3. However, this knowledge does not suffice to establish that a prudent person would invest his time and money in the prospect of developing a paying mine. The evidence signifies that more exploration, and attendant recordation of results, appears warranted. The drilling done by Mr. Elton might have sufficed to elevate the properties from an exploration stage to a developmental stage, but without supportive records, i.e., logs and assays, the extent and quality of the "ore" remains an unknown.

Geologic inference may, in a proper case, be utilized in establishing the extent and potential value of a mineral deposit. See Barton v. Morton, *infra*, at 292, N. 6; United States v. Relyea, A-30909 (June 25, 1968), *aff'd*, Relyea v. Udall, Civil No. 3-58-20 (D. Idaho, February 9, 1970); United States v. Kinsley Ranch Resort, Inc., 20 IBLA 14 (1975). Yet, in view of the foregoing findings, it perforce follows that such geological inference may not be here employed to show discovery. As was stated in United States v. Larson and Minerals Trust Corp., 9 IBLA 247, 261-62 (1973):

[I]n order to demonstrate the discovery of a valuable mineral deposit on a lode mining claim, there must be physical exposure within the limits of the claim of a lode or vein bearing mineral of such quality and in such quantity as to invite the expenditure of money and

effort If there is not such an exposure, no showing, regardless of the strength of the evidence, of the likelihood of the existence of a valuable ore body will suffice to demonstrate a discovery.

See also United States v. Bechthold, 25 IBLA 77, 89-90 (1976), and United States v. The American Fluorspar Group, Inc., 25 IBLA 136, 143 (1976).

Prospects of Profitability

Even if the evidence were sufficient to support a contention of the blocking out 10,000 tons of ore averaging 6 to 8 pounds of mercury per ton, the claims would nevertheless fail the test of validity because contestees have not shown a reasonable prospect of developing a profitable mine.

While the law does not require "a sure thing," it does require that there appears to the man of ordinary prudence to be a reasonable prospect of success in developing a paying mine. Best v. Humboldt Placer Mining Co., 371 U.S. 334, 335-36 (1963). As explained in United States v. Woolsey, 13 IBLA 120, 123-24 (1973):

[Although] the existence of ore in commercial quantities need not be proved beyond a reasonable doubt . . . proof that further exploration may be justified is not proof of a discovery of a valuable mineral deposit. What is necessary is

proof that a prudent man would be justified in beginning actual development of the property with a reasonable prospect of success in developing a paying mine.

The contestees rely on two main contentions as to the prospects of profitability on the claims. The first is the opinions of various witnesses that a prudent person would be warranted in attempting to develop a profitable mine. The second is based on the premise that the quality of the ore exceeds those of other paying mines as evidenced by the statement in "Mineral Facts and Problems" (1976), at p. 676, that "recent production in the United States was from ore averaging 4.8 to 6.5 pounds of mercury per ton." I find that neither of these reasons supports the conclusion.

All investors in the claims have lost money thereby. Although the losses may be explained by factors other than the nature of the claims, this lends no support to the asserted extent and quality of mineralization on the claims. The results of the retort sampling is of little help. Samples relied on by contestees appear to be from previously mined sections, and evidence does not show samples to have been taken, and appropriately assayed core drillings relied upon, in the petition for reconsideration.

Mr. Brown is the witness for contestees whose expertness is without question. But his conclusion regarding the prudent

man test was based on hypothetical questions, the factual bases of which are not borne out by the evidence. Mr. Brown expressly conditioned his response upon the fact that he had no personal knowledge of the quantity and quality of the "ore."

While 6 to 8 pounds of mercury per ton may clearly constitute minable ore given appropriate circumstances, there is no evidence that, assuming ore of this quality exists in some quantity on the claims, it can be profitably mined from the location of these claims. Evidence was not adduced as to the types and sizes of the mines, referenced in the "Mineral Facts and Problems" publication, nor the types of ore reduction technology, or the distances to market, as would allow an informed comparison of the Vermilion claims with any of the mines patented by the publication.

The evidence, moreover, suggests that the mine cannot be operated at a profit. Utilizing the price of mercury at \$174 per flask (\$2.29 per pound), the highest market value shown as of any segment of the hearing, permits making the cost analysis set out below.

Preliminarily, it should be pointed out that the decisions have made clear that claimants' labor must be considered an item of expense. United States v. Arcand, 23 IBLA 226, 228 (1976). As stated in United States v. Gardener, 18 IBLA 175, 179 (1974):

Labor costs must clearly be considered in determining whether a mining operation has a reasonable prospect of success, and there is no reason to treat the value of the labor of a claimant any differently from that of one he might hire. Either one must be taken into consideration in determining the likelihood of a profitable venture being established.

Also, costs of equipment, including depreciation and maintenance, must be considered as expenses. See United States v. Arcand, supra; United States v. King, 15 IBLA 210 (1974).

Rounded to \$2.30 per pound, and assuming that one ton of ore would yield 8 pounds of mercury per ton, the average ore value on the claims would be \$18.40 per ton. Different estimates are given for the costs of production, none of which are complete. However, Mr. Anderson's estimated labor costs and his statement that these generally constitute 69% of total direct costs are unrefuted. His estimated labor costs of mining using two miners at \$6 per hour, would be \$96 per day. Adding overhead costs based on an assumption that labor constitutes 69% of total direct costs yields a per day cost of about \$139 per day exclusive of amortization of capital expenditures such as retorts and equipment. To break even, some 7-1/2 tons of ore would have to be mined, reduced, and marketed, even if capital and transportation costs are not included. Mr. Sherman estimated that it would take two men one hour to mine 500 pounds

of "ore." §/ Using this estimate of productivity, two men could mine only 2 tons per day, and this excludes time and labor for retorting. Thus, even if the value of the ore were quadrupled, the operation could only be approximately a break-even operation.

Ultimate Findings and Conclusions

1. In view of the IBLA Opinion of March 18, 1976, that on the basis of the record made at the 1964 hearing, the claims were properly held invalid, any finding that they, or either of them, are valid must rely on the additional evidence received at the 1976-1977 hearing.

2. While the March 18, 1976 Opinion prefaces its order for rehearing on the allegation that since the 1964 hearing, the claims have been mined resulting in the blocking out of some 10,000 tons of ore averaging 7 pounds of mercury per ton; assuming arguendo that this were shown by the evidence, the Board's Opinion should not be construed as requiring such evidence would per se validate the claims. Rather, regardless of

§/ This 500 pounds by two men in one hour estimate is "[b]y hand, without any power tools." (Tr. 85). I recognize the possibility of the estimate being low, or that appropriate use of power tools could increase the quantity mined substantially. Yet, without evidence in these regards, and particularly without substantial evidence as to costs and efficiency of power tools in the mining process, I have nothing on which to base a finding more favorable to contestees.

the showing in this respect, for validity, with respect to each claim, there would have to be shown the discovery of a valuable mineral deposit as defined by the law, that is, an occurrence of mineralization of such quality and quantity as to warrant a person of ordinary prudence in the expenditure of time and money in the development of a mine and the extraction of a mineral.

Chrisman v. Miller, 197 U.S. 313 (1905); United States v. Coleman, *supra*; Barton v. Morton, *infra* (at footnote 9).

3. The evidence fails to meet the legal test of discovery as described above. Despite admirable efforts by contestees' counsel, the evidence simply appeared not to exist as would show discovery of a valuable mineral deposit under the governing law. Noteworthy in this regard is the extensive core drilling evidently accomplished at a time when a decision by the Secretary of the Interior had been issued holding both claims null and void, and presumably the only hope for contestees' cause (other than possible judicial review) was their petition for reconsideration of the Secretary's decision (which was subsequently granted). A more opportune time for recording logs and assays of the drillings can hardly be imagined, yet, for some inexplicable reason, this was apparently not done. Also noteworthy, is the failure of contestees to produce costs of extraction, processing and transportation of the recovered mineral, in the form of evidence sufficiently comprehensive as to permit analysis of such costs as respects the question of whether a person of ordinary prudence would be

justified in the further expenditure of his time and means to develop the mining claims. See United States v. Coleman, *supra*. Evidence as to such costs would necessarily include amortization costs of equipment used and also labor costs. See United States v. Gayer, 30 IBLA 42, 67 (1977) and decisions cited therein. As previously indicated herein, such evidence as there was regarding costs served to require a negative response to the "prudent man" question.

4. The July 12, 1968 decision stated at page 10, "The most that appellants [contestees herein] have shown . . . is . . . that further exploration may disclose the existence of other deposits of mercury within the limits of the [Vermilion and Vermilion No. 2] claims." On the basis of the record as now further constituted, I feel constrained to find that this finding of the earlier decision still applies. Thus, also still applicable is the conclusion in the sentence following the one just quoted, "This is not a discovery, for, as we stated in United States v. Kenneth O. Watkins and Harold E. L. Barton . . . it is the finding of, rather than the undisclosed existence of, a mineral deposit which constitutes its discovery." ^{9/}

^{9/} Subsequently, the United States Court of Appeals, Ninth Circuit, affirmed said Watkins and Barton decision on Judicial review, quoting its following language with approval:

[Footnote 9 continued on page 46.]

5. The Secretary of the Interior is not authorized to issue a patent to a mining claim until the requirements of the law have been met. United States v. New Jersey Zinc Co., 74 I.D. 191 (1967). Moreover, rights do not exist under mining claims unless a valuable mineral deposit has been discovered within the limits of each claim. Cole v. Ralph, 252 U.S. 286, 295 (1920).

Accordingly, I recommend that the Vermilion and Vermilion No. 2 claims be declared null and void.

Harvey C. Sweitzer

Administrative Law Judge

9/ [Continued from page 45.]

The evidence does not . . . establish any mineral quality of any consistent extent. Although appellants have found [gold and silver] ore samples with indicated values exceeding \$70 per ton, the record does not support a finding that they have found a deposit yielding ore or [sic – "of" used in Departmental decision] that quality, or of any other quality, the exploitation of which may be contemplated." (Emphasis in original.) Barton v. Morton, 498 F.2d 288, 291 (9th Cir. 1974).

