

UNITED STATES

v.

NEW YORK MINES, INC.

IBLA 85-801

Decided October 31, 1988

Appeal from a decision of Administrative Law Judge E. Kendall Clarke declaring the New York No. 2 and New York No. 3 lode mining claims null and void. ORMC 470, ORMC 471.

Affirmed.

1. Mining Claims: Determination of Validity--Mining Claims: Discovery: Generally--Mining Claims: Discovery: Marketability--Mining Claims: Marketability

The standard of discovery in a contest of a mining claim is whether minerals have been found in sufficient quantity and quality that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine. Although the profitability at the time of the contest hearing of a mining claim located for a precious metal (gold) need not be proven, evidence of the projected costs and anticipated revenues of mining the claim is properly considered in determining whether a person of ordinary prudence would be justified in the further investment of his labor and capital.

2. Mining Claims: Discovery: Geologic Inference

While geologic inference cannot be used to show the existence of a mineral deposit, where an exposure has been developed which shows high and relatively consistent values, geologic inference can be used to infer

sufficient quantity of similar quality mineralization beyond the actual exposed areas, such that a prudent man may be justified in expending labor and means with a reasonable prospect of success in developing a paying mine. Projection of inferred reserves on the basis of the quantity of ore removed in past mining operations on the vein will not support a discovery where there is evidence of a substantial change in the character of the mineral deposit in the vein from the area previously mined to the deposit remaining.

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

It has been recognized that the concept of "mine" development can contemplate operations on a series of contiguous claims and, hence, assuming exposure of a valuable locatable mineral on each claim, the claims may be considered as a group when determining whether a person of ordinary prudence would be justified in the further expenditure of labor and capital with a reasonable prospect of developing a paying mine. Thus, the existence of reserves on adjacent mining properties controlled by the claimant is relevant to the question of whether there is a reasonable prospect of developing a paying mine.

APPEARANCES: Warde H. Erwin, Esq., Portland, Oregon, for appellant; Robert M. Simmons, Esq., Office of the General Counsel, U.S. Department of Agriculture, Portland, Oregon, for appellee.

OPINION BY ADMINISTRATIVE JUDGE GRANT

New York Mines, Inc., has appealed a decision dated June 14, 1985, by Administrative Law Judge E. Kendall Clarke declaring the New York Nos. 2 and 3 lode mining claims null and void. 1/ The claims were located on lands

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1/ The mining claims are situated in secs. 22 and 27, T. 8 S., R. 35\ E., Willamette Meridian, Grant County, Oregon. Two other claims initially cited in the contest complaint, the New York Nos. 1 and 4, were excluded from the contest proceeding (I Tr. 3-5).

within the Wallowa-Whitman and Umatilla National Forests in the Granite Mining District, Grant County, Oregon.

On September 27, 1978, appellant filed mineral patent applications for the claims at issue. On June 14, 1983, the Bureau of Land Management (BLM) issued contest complaints charging that no discovery of valuable minerals had been made within the limits of the claims. Appellant timely filed an answer and a hearing was held before Judge Clarke, June 11-14, 1984, in Portland, Oregon. 2/

Daniel G. Avery, a Forest Service mining engineer, examined the claims on April 6, 1981, and thereafter prepared several reports of mineral examination. In his initial report, dated February 17, 1982, Avery noted the existence of three veins on the claims: the Alaska vein; the New York No. 1 vein; and the New York No. 2 vein. Most of the development and prior mining has been on the New York No. 1 vein, which is described as a strong fracture varying in width from 2 to over 10 feet, composed of gouge, felsite dike, and breccia fragments. He noted that the original production from the vein was from the oxide zone extending to a depth of about 100 feet below the surface, and that work was stopped when lower-grade sulfide ore was encountered (Exh. B at 7). He noted that the present owners had driven a decline to intersect the New York No. 1 vein approximately 100 feet below the old workings, and had exposed approximately 520 feet of the New York No. 1 vein in the lower level. This exposure was almost entirely within the

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2/ References to the multivolume hearing transcript in this case identify the volume of transcript followed by the page number.

New York No. 2 and New York No. 3 claims with the bulk of the mineralization in the New York No. 2 claim. He concluded that very few of the New York claims samples showed ore-grade material. He found, however, that on the New York No. 3 claim there was a small block of mineralized material (approximately 800 tons) in the New York No. 1 vein, which, although too small to be mined by itself, "could be mined in conjunction with other ore at this or a nearby mine." He concluded that the New York No. 3 had a valid discovery and met the requirements for patent (Exh. B at 9-10).

In a memorandum dated August 2, 1982, to the Forest Supervisor, the Baker District Ranger refused to concur with Avery's conclusion that a valid discovery existed on the New York No. 3. His critique of Avery's analysis stated in part as follows:

The examination reflects an added cost per ton for custom milling of ore removed. This figure is more realistic than the speculative cost per ton by using shared milling facilities. At this time there are no "going", operations within the New York[]s vicinity that would conceivably enter into such a venture. A total net loss using these added milling costs would be \$191,008.

(Exh. F).

In a letter dated November 17, 1982, to the Forest Service, the Acting Chief, Branch of Lands and Minerals, Oregon State Office, BLM, expressed similar doubts concerning Avery's initial report. He noted first that, according to Avery's report, mining costs were developed by extrapolating costs from an operation processing 1,000 tons per day to the 800 tons of

mineral in place in the New York No. 3. He felt that an extrapolation of that magnitude should be justified by an independent calculation of mining and milling costs. Secondly, BLM objected to Avery's conclusion that the ore might be mined and milled in conjunction with other properties because, as a general rule, "each claim should stand on its own" (Exh. C; see I Tr. 172-74). Confronted with these objections, Avery reevaluated his data and on April 5, 1983, issued a second report of mineral examination (Exh. D; I Tr. 17).

In his second report, Avery analyzed anticipated smelting as well as mining and milling costs. Based on his reconsideration, he concluded that the "lengths of vein identified by the claimants do not come close to profitability" (Exh. D at 11; I Tr. 155-56). In explaining the basis for his reevaluation, Avery stated that his initial report was based on a 35-foot strike length along the vein exposed in appellant's drift which contained the high-grade samples from which he estimated an 800-ton deposit of mineralized material, which he identified as ore. His second report, on the other hand, analyzed the entire 169-foot strike length of the New York vein exposed in the drift and identified by appellant as ore grade in its patent application (I Tr. 116-17, 155).

Avery prepared a third supplemental report (Exh. H) on June 8, 1984, prior to the hearing. In this third supplement he further analyzed mining, milling, and smelting costs and the cost of transportation from the mine to a smelter. Avery calculated a "break even value" by comparing the sum of the mining, milling, and smelter costs to the value of the net-recovered

gold. 3/ Using the various sample points and assay values presented by appellant, Avery analyzed the value per ton of material in place, based upon assay values, anticipated mining width, and the value of gold in place at various gold prices prevailing between 1979 and 1984. The report reaches the following conclusion regarding discovery:

Utilizing the \$50 per ton mining cost and \$40 per ton milling cost, both of which I feel are justified, 4/ none of the samples in the decline drift would be considered ore grade (see mined grade value calculations). Even the \$30 per ton mining cost and \$15 per ton milling cost produce a break even value well above the average value of the 169 feet of drift claimed to be ore by Bowes. 5/ It is also in excess of all but six samples at the 1979 to 1983 gold price, and all but four samples at the May, 1984 price. I therefore conclude that a discovery of a valuable mineral deposit has not been made on either the New York No. 2 or 3 lode claim on the basis of the material exposed in the decline drifts.

Only four surface samples have been submitted on cuts beyond the limits of the old underground workings. No information has been given as to the total width of the structure in these areas, so for this analysis I have diluted the values to a 5 foot mining width. Two of the samples are ore grade at this width, but are not representative of material to be found underground, in the lower grade sulfide zone. The erratic distribution of values demonstrated in the decline drift could logically be expected to continue under these surface samples. I therefore conclude that a discovery of a valuable mineral deposit has not been made on the New York No. 2 claim on the basis of surface sampling. [Footnote omitted.]

(Exh. H at 5). Avery concluded, based on his research and analyses, that there was no discovery of a valuable mineral deposit on either of the New York Nos. 2 or 3 mining claims (I Tr. 70; IV Tr. 445).

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3/ Net gold recovery was calculated as 82.026 percent by using a 90-percent mill recovery rate and a smelter payment based upon 93 percent of the contained gold and 98 percent of the London gold price (Exh. D at 9-10).

4/ Avery contacted mine managers, exploration experts, and others knowledgeable in the field to obtain his data (I Tr. 47-60).

5/ W. A. Bowes, Inc., is the operator for the claimants of the New York lode mining claims.

The first witness for the contestee was William A. Bowes, a professional geologist who had undertaken a program of acquisition of mineral properties in the western United States for a group of investors. In the course of this activity he had acquired (by lease or purchase) a number of properties in Oregon's Granite mining district. Among the claim groups acquired were the New York, Cougar-Independence, Ajax, and Magnolia groups, which are contiguous to one another, and other noncontiguous groups. He had also located additional claims around the various properties. He explained his interest in the Granite mining district, which was based upon favorable host rock and a history of past production. He further explained that he acquired the New York and adjacent groups because they covered what he considered to be important mineral bearing structures which could be mined as a logical mining unit. He also described certain of the work conducted to date, consisting primarily of drifting on the Cougar and New York claims and heap leach testing. He noted that, while the oxide ores appeared to be amenable to heap leaching, the results of heap leaching of the primary ores was less than satisfactory.

Steve Aaker, a senior geologist with W. A. Bowes, Inc., testified at some length concerning his interpretation of the mineral reports prepared by Avery. He characterized Avery's figures as being "fairly consistent and in the ball park with what we [claimants] say" (III Tr. 224, 226). Aaker testified that the difference between his projections and those of Avery, which were based upon the same samples, is the amount of dilution encountered in mining the vein (II Tr. 150). He stated ore reserves were difficult to quantify but there could be approximately 70,000 tons of

"possible" reserves on the New York Mine (III Tr. 189). When developing mining and processing cost estimates Aaker relied mostly on the experience of Kenneth B. Henderson and Leslie C. Richards (III Tr. 229-35).

Kenneth B. Henderson, a civil engineer with experience in coal and hard rock mine management, testified that the New York vein could be stoped with a 2-1/2-foot mining width (III Tr. 256, 259-90). He testified that using this mining method and stope width, he anticipated mining costs of about \$40 per ton (III Tr. 258), and mining and milling costs would be approximately \$55 per ton, which he considered a "reasonable amount for a reasonable and prudent person" (III Tr. 269).

Leslie C. Richards, a geologist, engineer, and consultant for W. A. Bowes, Inc., testified that a prudent man would consider a number of things when deciding to mine the New York claims, such as size of the vein, whether the vein held gold, the fact that some gold has been produced, and the fact that there are adjacent mining properties (III Tr. 333). Alluding to the prudent man standard, he stated that the New York No. 1 vein was of minable width encompassing an ore shoot "that constitutes approximately 40 per cent of the strike length." He continued: "So -- and if you -- consider what this -- this block or exposed zone runs in value and what you estimate it would cost to mine it and what it would cost to mill it, it -- it would show a profit. So it fits that category [prudent man standard]" (IV Tr. 355).

Richards described the New York No. 1 vein as being in excess of 2,500 feet long, having an area where "surface samples indicate ore grade

that could be mined and milled profitably." He recommended that development work be continued on the New York No. 1 and other veins in the New York group which are only "part of the picture" with general mines and milling operations taking into account a number of sources of ore, not just the New York No. 1 (IV Tr. 356-57). He indicated that further drifting on the New York No. 1 vein might be justified in the New York No. 2 claim (IV Tr. 359). He could give no definitive data on mining and milling costs and stated that both claims had negligible proven reserves (IV Tr. 361-62, 365-66). Richards could not recommend constructing a mill based on the reserves in the New York Nos. 2 and 3 claims (IV Tr. 374).

Mining geologist William A. Bowes testified that before continuing development on the New York No. 3 claim he would need further information, "positive data," and the promise of greater mineralization at another level (IV Tr. 385). He stated also that conditions "have to be right" before an investment could be made to construct a mill (IV Tr. 393).

In his decision reached after the hearing, the Administrative Law Judge found the Forest Service mineral examiner had testified that a reasonably prudent man would not invest his time and money with a reasonable prospect of success in developing a paying mine because of the lack of evidence of the extent of the reserves and because the material mined would inevitably be diluted by low-grade deposits present in much of the vein material which would preclude recovery of mining and milling costs. Hence, the Administrative Law Judge concluded the Government had presented a prima facie case that the claims were invalid.

In reviewing the case presented by appellant's witnesses, Judge Clarke acknowledged their contention that effective mining widths could be reduced to as little as 2-1/2 feet thus reducing dilution of ore values, but noted the testimony that proven and probable reserves on the claims are very limited. The Administrative Law Judge acknowledged the testimony to the effect that it is reasonable to expect that, based on the history of mining in the area on this and similar veins, other ore shoots will be discovered at other locations in the vein structure, but found compelling the testimony that a prudent operator would not attempt to operate the mines or to construct the mill which is essential to the operation of these claims based on the proven or probable reserves. Hence, Judge Clarke found appellant had failed to rebut the prima facie case and establish the existence of a discovery.

Appellant raises several contentions in the statement of reasons for appeal. First, it is argued that the Administrative Law Judge erred in holding that a discovery must be established as of the date of the hearing as opposed to the date of the claim or the patent application. Hence, appellant asserts the revised opinion of Forest Service mineral examiner Avery regarding validity is irrelevant. Further, appellant contends the Administrative Law Judge erred in denying contestee's motion to dismiss the contest for failure to establish a prima facie case on the ground that proof of immediate profitability (marketability) is not required under the mining law to establish a discovery of a claim located for precious metals such as gold. It is contended that evidence of marketability is required only for claims located for nonprecious minerals of common occurrence. Appellant

contends the correct standard is that a prudent man would under the circumstances expend his time and money in the expectation of "developing" a paying mine. Appellant argues that this same error in the legal standard for discovery caused the Administrative Law Judge to reach an erroneous conclusion regarding the existence of a discovery on the claims. Additionally, appellant contends there was an improper emphasis on the claims at issue in determining the existence of a discovery and that the development of adjacent claims by the contestee was improperly discounted.

Two of the contentions raised by appellant involve well-settled legal precedent in mining contest adjudication and may be disposed of as a threshold matter. In the absence of evidence of prior payment of the purchase price by the claimant and issuance of a receipt therefor, 6/ the validity of a claim must be established as of the time of the hearing. See e.g., United States v. Pool, 74 IBLA 37 (1983). In any event, contrary to appellant's assertion, the revised opinion of Forest Service mineral examiner Avery as to the existence of a discovery on the claims would not be irrelevant. Although the previous opinion may serve to impeach the later opinion, the revised opinion is not irrelevant if sufficient basis is given for the revision.

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6/ In United States v. Whittaker (On Reconsideration), 102 IBLA 162 (1988), the Board recognized that where a mineral patent application has been filed and claimant has paid the full purchase price for a claim, a subsequent inquiry regarding discovery is proper focused on the issue of whether or not a discovery was established at the date of entry, i.e., the date of issuance of the final certificate. We find no evidence in the record before us that payment has been made and a final certificate issued. Further, we find that such an occurrence would make no material difference to the result of this contest proceeding. The Government's prima facie case reflected a range of gold values over the timeframe from 1979 to 1984 and the reasonable prudent man determination is not tied to a particular price of gold within the range.

[1] The basic standard of discovery under the mining laws was set forth by the Department long ago:

[W]here minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine, the requirements of the statute have been met.

Castle v. Womble, 19 L.D. 455, 457 (1894); followed, Chrisman v. Miller, 197 U.S. 313, 322 (1905). This standard has been supplemented by the "marketability test" requiring a showing that the mineral deposit can be extracted, removed, and marketed at a profit. United States v. Coleman, 390 U.S. 599 (1968). Although the Court of Appeals for the Ninth Circuit (Oregon is located within the Ninth Circuit) has held that a mining claimant need not show the profitability of a mining claim located for a precious metal (gold) at the time of the hearing and, hence, a showing that the gold can presently be extracted, removed, and marketed at a profit is not required, it has held that evidence of the costs and profits of mining the claim should be considered in determining whether a person of ordinary prudence would be justified in the further investment of his labor and capital. Lara v. Secretary of the Interior, 820 F.2d 1535, 1541 (9th Cir. 1987). Accordingly, we find the Administrative Law Judge did not err when he took into consideration the reasonably anticipated costs of mining and processing the gold and the projected return when determining whether a prudent man would be justified in the further expenditure of his labor and means.

It is well established that when the Government contests the validity of a mining claim on the basis of lack of discovery, it bears the burden of presenting sufficient evidence to establish a prima facie case. However, once a prima facie case is presented, the claimant must present evidence sufficient to overcome the Government's case by a preponderance of the evidence on those issues raised. United States v. Springer, 491 F.2d 239, 242 (9th Cir.), cert. denied, 419 U.S. 834 (1974); Foster v. Seaton, 271 F.2d 836 (D.C. Cir. 1959); United States v. Whittaker, 95 IBLA 271 (1987).

The essence of the issue on appeal in this case is twofold. The first question involves the existence of mineral in place of sufficient quantity and quality to justify a prudent man's investment of his time and money. This determination can be made by examining the samples of the vein material taken by appellant, the nature of the vein, and the history of workings on the same vein and similar veins in nearby mines. The second issue is whether the reserves on adjacent mining properties owned or controlled by appellant which, together with the subject claims might be operated as a single mining unit, are sufficient to warrant a prudent man in expending his labor and capital with a reasonable prospect of developing a paying mine.

The record supports the finding of the Administrative Law Judge that a prima facie case of lack of discovery of a valuable mineral deposit was established. Avery, the Forest Service mining engineer, found the average mined grade values to be below the break even value for the 169 feet of drift claimed by Bowes to contain ore grade even using the \$30 per ton

mining cost and the \$15 per ton milling cost estimates made by appellant (Exh. H). <sup>7/</sup> Avery's report also concluded that oxide zone samples were not representative of "material to be found underground, in the lower grade sulfide zones" (Exh. H at 5). Hence, he testified that in his opinion there was no discovery on either claim (I Tr. 70). Accordingly, we must affirm the Administrative Law Judge's holding that the Forest Service made a prima facie case of lack of discovery of a valuable mineral deposit. Thus, the issue before the Board is whether contestee's evidence is sufficient to rebut the prima facie case of no discovery.

Contestee's witnesses took issue with the dilution assumed by Avery in his calculations. Appellant's witness Aaker testified that mining the vein by open-stope method in a width as narrow as 2-1/2 feet is feasible (III Tr. 278). Appellant's witness Henderson concurred in this judgment (III Tr. 256). In his testimony Aaker limited his analysis to the higher grade mineralization found in approximately 40 feet of strike length of the New York No. 1 vein exposed in the Bowes' drift, rather than either the full length of the exposed vein or the full width of the vein, when calculating ore-grade (III Tr. 205-06, 224-25). Richards testified that it would not be necessary to take the full width of the vein or mine the entire strike length of the vein structure. Rather he proposed selective mining of the ore-grade shoots with an allowance for overbreak (III Tr. 326-27). Proper sampling and assaying was cited as the key to mining ore grade and

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<sup>7/</sup> Appellant's expert, Henderson, conceded that combined mining and milling costs would total \$55 per ton (III Tr. 269; Exh. 73).

restricting dilution (III Tr. 328). <sup>8/</sup> Of importance to our decision is the apparent inconsistency between the testimony regarding the anticipated cost of mining and later testimony regarding selective mining. The anticipated mining costs were based on open-stope mining with an occasional stull to support the ribs. We find the evidence regarding the incompetency of the vein material to be convincing. Clearly, any attempt to mine less than the full width in a shear zone will result in either a marked increase in mining costs, or dilution. The upper oxide stopes indicated that the wall rock was competent and would stand with little support. However, the assay map submitted at the hearing describes the vein in the area where the selective mining would occur as being a "complex fault zone of clay gouge." Thus, while we might be willing to accept appellant's estimates of the mining cost based upon removal of the full vein width, we cannot accept the proposition that the cost of mining less than the full vein width would be the same.

Even if it is assumed that it would be feasible to limit mining operations to the high-grade portion of the vein with mine widths as narrow

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<sup>8/</sup> The Forest Service mining engineer, Avery, disputed the feasibility of limiting mining to a narrow and selective width of the vein structure. Based upon his analysis of the samples taken from the vein structure, Avery concluded that mineral values are distributed throughout the entire width of the structure and that higher grade portions of the vein could not be selectively mined (I Tr. 68; IV Tr. 435). Avery noted:

"New York Mines do not allow for any dilution in their analysis of ore grade. They selectively took ore grade samples from their sample locations. They are not consistently on one wall or another. There are various parts within the structure and in some cases even included a waste in between values which apparently wasn't considered and they assumed that they could mine that ore grade material without taking any lower grade along with it." (I Tr. 64).

Additionally, Avery contended that the vein was in an incompetent shear zone, causing him to conclude that the effective mine width would have to be the width of the vein (I Tr. 159, IV Tr. 437).

as 2-1/2 feet the issue remains whether the exposed mineralization is of sufficient quantity and grade to justify a reasonably prudent man in further investment with a reasonable prospect of success in developing a paying mine. Richards stated in his testimony that the values in the ore shoot in the New York No. 1 vein exposed in the Bowes drift exceed his estimate of the costs of mining and milling the ore (IV Tr. 355). <sup>9/</sup> Richards indicated that surface samples along the vein in the New York No. 2 indicate ore grade that could be mined and milled profitably (IV Tr. 356). However, Avery concluded that the surface samples were not representative of material to be found underground in the lower-grade sulfide zone (IV Tr. 442; Exh. H at 5, quoted supra). <sup>10/</sup> This is supported by the discussion of the New York Mine in G. S. Koch, Jr., Lode Mines of the Central Part of the Granite Mining District, Grant County, Oregon (State of Oregon, Department of Geology and Mineral Industries, 1959) (Exh. 28):

Near the face of the lowest adit the vein changes from oxide ore to sulfide ore, containing the minerals quartz, arsenopyrite, chalcopyrite, and gold. Grove [J. Grove, The New York Mine, Granite, Oregon (Washington Univ. (Seattle) 1940) (unpublished thesis)] states that the New York and Cougar veins are alike. From Grove's report and map (Figure 24) it is clear that the New York No. 1 vein has not been completely explored below the surface outcrop and that almost all exploration was confined to the oxide zone.

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<sup>9/</sup> Although Richards referred to the high-grade shoot as comprising approximately 40 percent of the exposed strike length of the New York No. 1 vein exposed in the Bowes drift (IV Tr. 355), Avery described the high-grade shoot exposed by appellant as constituting about 40 feet or 7.7 percent of the 520-foot exposure in the Bowes drift (Exh. D at 8; IV Tr. 441). This latter description is consistent with the 40-foot high-grade shoot identified in the testimony of appellant's experts Richards (III Tr. 177, 205-06) and Aaker (II Tr. 158).

<sup>10/</sup> A number of these samples were taken from points on the vein directly above old stopes. Those samples shed light on what was there before mining but are of hardly any value when trying to estimate the amount of mineral in place.

Id. at 36-37. Indeed, Bowes acknowledged in his testimony that the samples taken on the upper levels were in an oxide zone, but that primary sulfide mineral was encountered in the headings he drove in the Cougar Mine and in the Bowes drift on the New York No. 1 vein (II Tr. 105). 11/

Appellant's expert Aaker described in his testimony how ore reserves were projected by contestee on the basis of historical workings and production:

[W]e quantified the available working and the percentage of ore that occurred through those workings as evidenced by historical stope production, and the results are that at Cougar we find that to be 39 per cent of the available area that has been opened up by drifting and so forth turned out to be ore grade material.

(III Tr. 187). Bowes confirmed that the reserve estimate was based on the mineralized zones previously mined (IV Tr. 397). For the New York Mine, the historical data indicated that 54 percent of the available vein area had been mined (III Tr. 187). Aaker explained that this technique was used to estimate the "shooting occurrences" along the vein so that "we can come up with possible ore reserves based on this type percentage of the vein as ore" (III Tr. 188).

On this basis, Bowes estimated "potential" reserves on the New York claims as approximately 150,000 tons (IV Tr. 399-400). Appellant's witness Richards, on the other hand, was much more conservative in his tonnage

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11/ Although the oxidized ore samples from the upper levels were amenable to separation of the gold through the heap leaching process, this technique was not successful with the unoxidized ore (II Tr. 105). This latter type of ore required "regular milling--flotation type operations" (II Tr. 108).

estimates. Richards testified that in the New York No. 3 claim there were negligible proven reserves, in the range of 2,000 tons of probable reserves, and probably under 10,000 tons of possible reserves (IV Tr. 365-66). He testified that proven reserves in the New York No. 2 claim were negligible, probable reserves in the range of 4 to 5 thousand tons, and possible reserves in the range of 15 to 20 thousand tons (IV Tr. 366). Bowes acknowledged that proven reserves are negligible (IV Tr. 428).

[2] While geologic inference cannot be used to show the existence of a mineral deposit, where an exposure has been developed which shows high and relatively consistent values, geologic inference can be used to infer sufficient quantity of similar quality mineralization beyond the actual exposed areas, such that a prudent man may be justified in expending labor and means with a reasonable prospect of success in developing a paying mine. United States v. Feezor, 74 IBLA 56, 79, 90 I.D. 262, 274-75 (1983).

We find no fault in appellant's projection of the strike length of the New York No. 1 vein. However, we find a fundamental flaw in the projections made by appellant when estimating the potential quantity and quality of the mineralization in the New York Nos. 2 and 3 claims based upon the size of the stopes and reported mined grade of the ore from the stopes. A careful examination of the description of the New York, Cougar, Independence, Ajax, and Magnolia mines set out in Exhibit 28, leaves little doubt that prior mining activity on these claims was from the oxide zone. The author notes that, for the Independence Mine, there is a strong suggestion "that this increase in value is to be attributed to the downward enrichment, following

weathering and erosion of the superficial portion of the vein" (Exh. 28 at 34-35). The same report notes that the production in the above-mentioned mines was almost entirely oxide ore. What has been described is almost a classic textbook example of supergene enrichment. <sup>12/</sup> In the face of such strong evidence that the past production came from a zone of supergene enrichment, it would not be prudent to project the size or grade of the ores previously mined to the underlying mineral deposit, when the exposures in that deposit show it to be composed of primary mineralization. By increasing the grade of the mineral in place the process of supergene enrichment also increases the amount of mineral which can be mined and processed at a profit. The evidence suggests that the supergene enrichment ore deposits have been mined out years ago. After acknowledging the fact that negligible proven reserves existed in the New York Nos. 2 and 3 claims, appellant's witnesses, Aaker and Bowes, sought to project the occurrence of further ore shoots such as the 40-foot deposit found in the Bowes drift based on the percentage of ore-grade material previously mined from the New York No. 1 vein. However they gave no basis for projecting a similar percentage of ore-grade material in the sulfide zones, based on prior mining activity. Indeed, in discussing the projected occurrence of ore shoots, Aaker recognized the distinction in his testimony: "[I]n the New York, in the historical data, again not with the Bowes level decline, it turned out to be 54 per cent of the available area" (III Tr. 187 (emphasis added)).

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<sup>12/</sup> See Hugh E. McKinsty, Mining Geology (Prentice-Hall, Inc., 1959) at 392-93.

When considering the quantity of mineral necessary to establish a discovery of a valuable mineral deposit, the Board has recognized that a reasonable estimate of inferred reserves may be considered when there is strong geologic evidence to support the inference. United States v. Feezor, supra at 85, 90 I.D. at 278. However, when the record reveals that the character of the vein deposit changes from oxidized ore to sulfide ore, strongly indicating supergene enrichment, the facts will not support a downward projection of the ore-grade oxide deposits to sulfide deposits lying below the water table. Therefore we are unable to conclude from the record that the evidence supports the application of geologic inference to project reserves which would justify a reasonably prudent man in further expenditure of his labor and capital with a reasonable prospect of success in developing a paying mine.

One of the arguments raised by contestee in this appeal is that the decision of the Administrative Law Judge improperly focused solely on the claims being contested. As previously noted Bowes testified that appellant controlled 32 mining claims in the vicinity of the New York Mine (II Tr. 89). Leslie Richards testified it would be necessary to unitize several previously independent properties in order to establish sufficient reserves to make milling economic (IV Tr. 356-57). Bowes based his conclusion that a reasonably prudent man would be justified in further expenditure of his labor and capital with a reasonable prospect of success in developing a paying mine on the existence of an entire group of properties controlled by appellant including the Cougar, Independence, Ajax, Magnolia, and New York claims and the LaBellevue and Ben Harrison claims (which are not

contiguous) which would feed into a single mill (IV Tr. 389-92). Bowes stated that a minimum of four stopes in the Cougar, four in the Independence, and four in the New York Mine would be necessary for the envisioned operation (IV Tr. 392). Bowes projected potential reserves on the Cougar-Ajax extension of 700,000 tons, on the LaBellevue Mine as 300,000 tons, on the Independence-Magnolia claims as 300,000 tons, and on the Ben Harrison claims as 130,000 tons (IV Tr. 401-02).

[3] It has been recognized that the concept of "mine" development can contemplate operations on a series of contiguous claims and, hence, assuming exposure of a valuable locatable mineral on each claim, the claims may be considered as a group when determining whether a person of ordinary prudence would be justified in the further expenditure of labor and capital with a reasonable prospect of developing a paying mine. United States v. Foresyth, 100 IBLA 185, 94 I.D. 453 (1987). Thus, the existence of reserves on adjacent mining properties controlled by claimant is relevant to the question of whether there is a reasonable prospect of developing a paying mine. However, the only testimony submitted by appellant was to the "projected" reserves based on previous mining in the oxidized zone of the various veins. The same formula was used by appellant to calculate projected reserves (ore shoots) on the adjacent claims as was used for the New York No. 1 vein, i.e., calculating the percentage of the vein material previously mined along the strike length of a vein, and projecting the reserves at depth based upon the percentage of the total vein mined in the upper levels (III Tr. 187; IV Tr. 401). As noted above, use of this approach to project inferred ore reserves is simply not demonstrated on the record in this case to be reliable.

IBLA 85-801

Accordingly, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decision appealed from is affirmed.

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C. Randall Grant, Jr.  
Administrative Judge

I concur:

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R. W. Mullen  
Administrative Judge

105 IBLA 192