



UNITED STATES v. STEPHEN DWYER

175 IBLA 100

Decided July 3, 2008



United States Department of the Interior
Office of Hearings and Appeals
Interior Board of Land Appeals
801 N. Quincy St., Suite 300
Arlington, VA 22203

UNITED STATES
v.
STEPHEN DWYER

IBLA 2007-155

Decided July 3, 2008

Appeal from a decision of Administrative Law Judge Robert G. Holt declaring a lode mining claim null and void for lack of a discovery of a valuable mineral deposit. CACA-43807; CAMC-243701.

Affirmed.

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

For a mining claim to be supported by a discovery of a “valuable mineral deposit,” it must be demonstrated that, as a present fact, considering historic price and cost factors and assuming that they will continue, there is a reasonable likelihood that minerals can be extracted, removed, and marketed from the claim at a profit.

2. Mining Claims: Contests--Mining Claims: Determination of Validity--Mining Claims: Discovery: Generally

If the Government contests the validity of a mining claim, it bears the burden of establishing a prima facie case of invalidity, whereupon the burden shifts to the claimant to overcome that case by a preponderance of the evidence.

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

To overcome a prima facie case of invalidity for lack of a discovery of a valuable mineral deposit, the contestee must

affirmatively show that the estimated revenues are likely to exceed the estimated costs of mining and marketing the mineral.

APPEARANCES: Stephen Dwyer, Thousand Palms, California, *pro se*; Karen D. Glasgow, Esq., Office of the Field Solicitor, U.S. Department of the Interior, Oakland, California, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE HEATH

Stephen Dwyer has appealed from a March 5, 2007, decision of Administrative Law Judge (ALJ) Robert G. Holt (Decision), declaring the Storm Jade Mine (SJM) No. 1 lode mining claim, CAMC-243701, null and void for lack of a discovery of a valuable mineral deposit. For the reasons explained below, we agree that Dwyer has not overcome the Bureau of Land Management's (BLM's) *prima facie* case of invalidity by a preponderance of the evidence. Accordingly, we affirm the Decision.

Background

A. *The Storm Jade No. 1 Claim*

Dwyer, a geologist with many years of experience in the garnet business, located the SJM No. 1 lode mining claim on March 1, 1991. The claim covers approximately 20.66 acres of Federal land in the NW $\frac{1}{4}$ sec. 4, T. 4 S., R. 13 E., San Bernardino Meridian, Riverside County, California, in the Eagle Mountains. Dwyer asserts that he located the claim "upon discovery of large outcrops of crystalline garnet," which is elsewhere identified as andradite garnet.¹ Declaration of Stephen Dwyer dated Feb. 14, 2006, at 1. It is undisputed that the claim encompasses "over 500,000 tons of 93 to 98 percent pure andradite garnet," in two ore bodies, which Dwyer has intended to mine, process, and market primarily for use as an industrial airblasting abrasive.² Decision at 4; *see* Ex. A-1, Vol. I,³ at 15 (Figure 5 (Site Geology

¹ Andradite is the "calcium-iron end member of the garnet group: $\text{Ca}_3\text{Fe}_2(\text{SiO}_4)_3$." Bates and Jackson, *Glossary of Geology*, 2nd Ed. (American Geological Institute, 1980) at 23.

² Were mining to occur by the open pit/cut method, the Mineral Report determined that 638,143 tons of measured, indicated, and inferred mineral resources were available for extraction from the main ore body, and another 63,608 tons from the south ore body. Ex. A-1, Vol. I, at 57-58. *See* n. 3, *infra*. However, were mining to occur by the underground room-and-pillar method, only 373,831 tons of measured, indicated, and inferred mineral resources were deemed to be available for extraction from the main ore body. *Id.* at 56. The average andradite grade in the two ore

(continued...)

Map)), 17, 20, 52, 57-58, 60. *See also* Transcript of Hearing (Tr.), Vol. I, 232-34, 255;⁴ II Tr. 467; V Tr. 19-20.

Dwyer has not mined any andradite from the claim, whether by surface or underground means. He has, over the years, collected a total of from 10 to 20 tons of material (about half of which was andradite) from surface outcroppings on the claim. V Tr. 73-75, 108.

From the March 1, 1991, date of location until October 31, 1994, the land subject to the claim was under the administrative jurisdiction of the BLM Riverside (California) Field Office. On April 28, 1992, under 43 C.F.R. Subpart 3809, BLM approved an initial plan of operations (CA-066-9P2-1), authorizing Dwyer to undertake underground mining operations on the claim. Dwyer states that, based on the approved plan, he “commenced preliminary operations including mapping[] and testing.” Dwyer Declaration at 1. Dwyer further states that, following 1991 certification by the California Air Resources Board (CARB), authorizing use of the garnet for “unconfined sandblasting purposes,” he was allowed to begin to test market the mineral and seek financing for the mine. *Id.* at 2. However, he states that his efforts to obtain financing were hampered “when the NPS [National Park Service] began wilderness studies and attempted to include this portion of the Eagle Mountain Mining District within the proposed Desert Park Bill Expansion of Joshua Tree National Monument to Joshua Tree National Park.” *Id.*

² (...continued)

bodies was said to be 98 percent (main) and 93 percent (south). *Id.* at 52.

³ Exhibit A-1, contained in three separate volumes (Vol. I, Vol. II, and Vol. III), constitutes the Government’s “Mineral Report.” Volume I contains a 67-page analysis by the Government mineral examiner of the validity of the SJM claim, to which is attached three appendices (A through C). Appendices D through F are found in Volume II of the Mineral Report, and Appendices G and H are found in Volume III. The appendices are delineated as follows: Appendix A (Laboratory Reports and Chain-of-Custody Form), Appendix B (Underground Room and Pillar Economic Evaluation), Appendix C (Open Pit/Cut Economic Evaluation), Appendix D (Claimant’s Claim Data and Filings), Appendix E (Claimant’s Mill Equipment Information), Appendix F (Claimant’s Plan of Operations), Appendix G (Claimant’s Garnet and Market Information), and Appendix H (Claimant’s Silicosis Information).

⁴ The hearing generated a transcript consisting of six volumes, each volume covering 1 day’s worth of testimony. The first three volumes, covering the period Feb. 14-16, 2006, are continuously paginated, and each of the remaining three volumes, covering the period Mar. 20-22, 2006, is separately paginated. For ease of reference, we will cite to the transcript by volume (I for Feb. 14, II for Feb. 15, III for Feb. 16, IV for Mar. 20, V for Mar. 21, and VI for Mar. 22), and by page number.

On October 31, 1994, Congress enacted the California Desert Protection Act of 1994, Pub. L. No. 103-433, 108 Stat. 4471. Section 402 of that Act included the land encompassed by the mining claim within the Joshua Tree National Park (JTNP). Section 403 transferred administrative jurisdiction over the land to NPS, and section 405 withdrew the land “from location, entry, and patent under the United States mining laws,” subject to valid existing rights. 108 Stat. 4488. The land has remained withdrawn since that time.

On May 1, 1998, Dwyer filed a new plan of operations with NPS. *See* 36 C.F.R. § 9.9(a) (“No operations shall be conducted within any unit [of the National Park System] until a plan of operations has been submitted by the operator to the Superintendent and approved by the Regional Director”). He proposed underground mining operations, which would begin in September 1998, after initial preparatory work, and continue for 50 years. Ex. A-1, Vol. II, Appendix F, at 9. The mine, which would employ the room-and-pillar method of mining, was expected to produce 100 to 200 tons per day, and a total of 20,000 to 40,000 tons per year, which would be loaded into trucks for transport to a mill for processing.⁵ *Id.* at 9-10, 15. He states that he was not permitted by NPS to “continue any operations until a new plan of operation[s] was approved by NPS[] . . . and the claim validated.” Dwyer Declaration at 3. He notes that the inability to undertake operations has “caused me to lose all potential partners, contractors and financiers.” *Id.*

B. *The Mineral Validity Examination*

NPS commissioned a mineral validity examination to determine whether the SJM No. 1 claim was supported by the discovery of a valuable mineral deposit. On May 11, 2001, Mark A. Arnold, a certified professional geologist and president of American Geological Services, Inc. (AGS), submitted the Mineral Report (Ex. A-1).

Arnold’s examination occurred over a 2-day period (March 1 and 2, 1999). Arnold traversed the claim, accompanied by Dwyer, observing the exposed mineralization and collecting samples of the andradite and other material from the

⁵ Processing, using a grizzly, crushers, screens, conveyors, and other equipment, was to occur on the Gold Dust Mill No. 1 millsite, CAMC-251228, located by Dwyer and Dwyer Consolidated Mines, Inc., on Jan. 4, 1992, in sec. 17, T. 4 S., R. 15 E., San Bernardino Meridian, Riverside County, California, just outside the JTNP, approximately 15.5 miles from the SJM No. 1 claim. While Dwyer worked for some time preparing the mill site, no processing facility was ever finished and put into operation, given the lack of financing, and he allowed the millsite to lapse in the 1990s. V Tr. 40-45, 51, 81-82, 84.

outcrops, which were subjected to testing.⁶ Arnold then calculated the reserve tonnage of andradite. He determined that outcrop material principally consisted of andradite, which would be useful as an industrial abrasive after processing, but that, in the course of processing the material with a jaw and roller crusher, a total of 32 percent of the material would be rendered unusable for such purpose.⁷ Ex. A-1, Vol. I, at 45; *see id.* at 31-32, 44. This still yielded a sizeable tonnage of recoverable andradite in the two ore bodies, on the order of a total of 486,047 tons likely to be extracted by open pit/cut mining, and 259,393 tons likely to be extracted by underground room-and-pillar mining. *Id.* at 56-58.

The samples of andradite taken by Arnold were subjected to physical, chemical, and other tests, to assess the deposit's character and suitability for use as an industrial abrasive.⁸ Ex. A-1, Vol. I, at 1. Such tests revealed that the andradite was, in Arnold's estimation, inferior to almandite (or almandine) garnet, which was

⁶ He noted that neither Dwyer nor any other party had engaged in any "subsurface sampling or drilling" of either of the two andradite ore bodies on the claim. Ex. A-1, Vol. I, at 49; *see* I Tr. 57, 231; II Tr. 317, 330.

⁷ Arnold explained that testing of the samples revealed the following:

Sieving of the 95 pounds of minus 1/4[-inch] crushed garnet yielded 17 pounds of material that was minus 60 mesh and was not useable for the airblasting tests. *The garnet size fractions currently being sold for air[.]blasting uses are between 8 and 60 mesh.* This represents an 18% loss in useable airblasting size material from the initial jaw crushing. Roller crushing of the plus 60 mesh material yielded approximately 65 pounds of minus 16 and plus 60 mesh crushed garnet. . . . *There was a 32% loss of material that was less than 60 mesh from the jaw and roller crushing combined.*

Ex. A-1, Vol. I, at 45 (emphasis added); *see* I Tr. 265 ("[C]ommon airblasting sizes . . . are . . . sieve size 20 to sieve size 60"); II Tr. 295, 302-03.

⁸ The testing of the andradite consisted of (1) x-ray diffraction, which assessed mineral character; (2) thin-section petrographic analysis, which determined "garnet type, size and . . . the presence and types of inclusions"; (3) multi-element inductively coupled plasma spectroscopy, which assessed mineral character, including determining "if any sulfide or other minerals were present which could cause potential environmental problems during mining, or health hazards when used as an air abrasive"; (4) bulk sample crushing, sizing, and separation, which, in conforming to Dwyer's proposed processing method, was used to determine "marketable size fractions for this mineral"; (5) specific gravity analysis; (6) airblasting/breakdown analysis, which assessed the size and distribution of particles and dust generated by "imping[ing] [crushed material] against hot rolled carbon steel"; and (7) microhardness analysis. Ex. A-1, Vol. I, at 29, 30.

in common use as an industrial abrasive.⁹ The andradite therefore was unlikely to command a similar price. *Id.* at 1, 2, 62. Arnold based his conclusion that the andradite was inferior to almandite on differences in Mohs hardness (or strength) and specific gravity,¹⁰ and particularly on the comparative lack of “utility (recyclability).” Further, almandite, in addition to a higher Mohs hardness and specific gravity, has a higher average density of 4.25 grams per cubic centimeter (g/cm^3), versus 3.75 g/cm^3 for andradite: “The greater density is important during air blasting and water jet cutting where the higher density almandite delivers a greater particle velocity and is more efficient in these applications.” *Id.* at 61. Arnold also reported that microscopic examination of the crushed andradite garnet revealed that it was “splintery and generally occurs in elongated flat pieces,” which is “less desirable than the blocky shape associated with alluvial almandite garnet currently being sold for air blasting in the United States.” *Id.* at 45.

With respect to the recyclability of andradite, Arnold reported that “test results indicate between 59% and 63% of the airblasting size material is reduced to a non-recyclable fine mesh size.” Ex. A-1, Vol. I, at 1. Arnold explained that the airblasting/breakdown testing (performed by an independent contractor) revealed that the andradite would break down during airblasting, increasing the percentage of the material that was 100-mesh or smaller, and thus was not reusable for airblasting. *Id.* at 46-47; *see id.* at 30. He noted that the loss in usable material was between 59 percent and 63 percent, in contrast to “[b]etter quality almandite garnet,” of which only 5 to 15 percent would “typically” not be suitable for reuse. *Id.* at 47. *See also id.* at 61 (“The air blasting tests . . . yielded a breakdown rate of 61% and dust generation rate of 20%. This leaves very little material that would be left for recycling.”) He explained that “without the ability to recycle the material it cannot demand the higher product prices.” *Id.* at 61.

The Mineral Report noted that Dwyer has not produced garnet from the claim, except for bulk sampling. Ex. A-1, Vol. I, at 13, 62. As a result, “no sales receipts or other supporting information is available for evaluation of current and historical market performance of garnet from this claim. No contracts or letters of agreement

⁹ Almandine or almandite garnet is the “iron-aluminum end member of the garnet group, characterized by a deep-red to purplish color: $\text{Fe}_3\text{Al}_2(\text{SiO}_4)_3$.” *Glossary of Geology*, 2nd Ed., at 17.

¹⁰ Arnold noted the general differences between almandite and andradite in Mohs hardness and specific gravity, respectively, as follows: 7.5+ versus 6.5 (Mohs hardness) and 4.0 to 4.1 versus 3.5 to 3.7 (specific gravity). Ex. A-1, Vol. I, at 62; *see* II Tr. 381, 384. The SJM andradite apparently fared somewhat better in hardness than most andradite, with most of the SJM ore measured at a Mohs hardness of 7 (still less than almandite) and a small fraction at 8.5+. Ex. A-1, Vol. I, at 48.

from potential future buyers were presented with the Plan of Operation.” *Id.* at 62. Dwyer offered Arnold “a list of potential buyers,” labeled “Storm Marketing List” (Ex. A-1, Vol. III, Appendix G, at 81), which simply listed various companies by name, general location, and phone number, without explanation as to whether or to what extent any of the companies was actually interested in purchasing, or willing to purchase, andradite from the SJM claim. Ex. A-1, Vol. I, at 62.

Arnold concluded: “The claimant has not demonstrated that the andradite garnet from the Storm Jade Mine #1 claim is marketable, nor has an accurate selling price been established.” Ex. A-1, Vol. I, at 2; *see id.* at 62 (“In our opinion, no market for the garnet from the Storm Jade Mine #1 mining claim has been established by the claimant”).

Arnold nevertheless undertook to determine a market price for the SJM andradite, on the basis that it was most comparable to non-garnet abrasives: “The Storm Jade Mine #1 garnet is most likely to be marketable in a cost range similar to non-garnet abrasives such as copper slag.” Ex. A-1, Vol. I, at 1; *see also id.* at 62. For purposes of performing an economic analysis of the profitability of mining, processing, and marketing the andradite, Arnold used a price for a non-garnet abrasive “that meet[s] the California Air Resources Board certification requirement.” *Id.* at 2.

Among the non-garnet abrasives, Arnold selected “Sharp Shot” because it was a “slag product that is believed to be the most realistically competitive product to the Storm Jade garnet.” Ex. A-1, Vol. I, at 63. He stated that Sharp Shot was available from Gordon Sand in Compton, California (part of the Los Angeles area), the “closest competing supplier of CARB certified garnet and non-garnet abrasives,” at a free-on-board (FOB) retail price (in bulk unbagged form) of \$113.85 per ton. *Id.* Arnold reported that the listed retail price of Sharp Shot was \$159.69 per ton in 2-ton bags. and \$149.09 per ton for Sharp Shot 20-50 in 100-pound sacks, FOB Los Angeles. *Id.* at 60 (Table 18, Retail Air Abrasive Prices), 63.¹¹

Starting with the \$113.85 per ton retail price for the SJM andradite at Compton, Arnold subtracted trucking costs of \$21.00 per ton to arrive at a retail price at Dwyer’s mill site of \$92.85 per ton. He then assumed a 30 percent discount from the retail price to derive a wholesale price at the mill site of \$65.00 per ton, because entering into a “wholesale marketing agreement” was deemed to be necessary “to gain market entry.”¹² Ex. A-1, Vol. I, at 63. After adding a cost of \$12.00 per ton to

¹¹ Arnold stated at the hearing that these prices were 1999 prices. II Tr. 346.

¹² Arnold explained at the hearing that he had to “back-calculat[e] from the

(continued...)

load the product into 20-cubic-foot one-ton bags for delivery, Arnold concluded that the SJM andradite could be sold at the millsite for a wholesale price of \$77.00 per ton (bagged). *Id.* at 64, 66.¹³

Arnold then performed an economic analysis based on two small-scale mining scenarios (underground room-and-pillar mining and open pit/cut mining). In each case, he projected sales of 10,000 tons of andradite per year based on annual production of 13,158 tons for every year from 1996 through 2005,¹⁴ subject to anticipated mining, milling, transportation, and other costs.

Arnold reported that, at the time of his May 2001 Mineral Report, there were “no mining or milling equipment, or other infrastructure facilities at the Storm Jade Mine #1 claim or on the Gold Dust No. 1 mill site claim.” Ex. A-1, Vol. I, at 20. He thus based his cost calculations on “the claimant’s equipment specifications presented in the claimant[’]s [May 1998] Plan of Operations” (*Id.* at 21), but with some modifications because (as he explained at the hearing) he “felt certain things were undersized or not necessarily the proper piece of equipment to use for a 10,000-ton-a-year operation.” II Tr. 359. He testified that in calculating the estimated costs, he “consulted a number of mining reference databases and reference books that were primarily Western Mine Engineering Cost Books” which are available by annual subscription. II Tr. 347-48.

For the underground room-and-pillar mining method, Arnold projected a cumulative discounted negative cash flow of more than \$2.3 million for the 1996-2005 period. Ex. A-1, Vol. I, at 65 and Appendix B at 1. The Mineral Report stated that Dwyer would have to sell the SJM andradite at a price of \$108.65 per ton (selling at least 10,000 tons annually) to break even. *Id.* at 65.

For the open pit/cut mining method, Arnold projected a cumulative discounted negative cash flow of slightly more than \$587,000 for the 1996-2005

¹² (...continued)

advertised retail price,” in order to determine “what Mr. Dwyer’s selling price might be,” because suppliers would not provide their wholesale price. I Tr. 279; II Tr. 342; see II Tr. 341, 423-24.

¹³ The economic evaluations for the underground and open pit/cut methods in Appendices B and C, respectively, to the Mineral Report use a price of \$76.348 per ton rather than \$77.00 per ton because trucking costs are given as \$21.92 per ton, rather than \$21.00 per ton as stated in the text of the report. Ex. A-1, Vol. I, Appendix B at 2, Appendix C at 2.

¹⁴ See Ex. A-1, Vol. I, Appendix B at 4, Appendix C at 4.

period. Ex. A-1, Vol. I, Appendix C at 1.¹⁵ According to Arnold, Dwyer would have to sell 10,000 tons of SJM andradite annually at a price of \$84.15 per ton to break even. Ex. A-1, Vol. I, at 66. On this basis, Arnold concluded: “Both mining method economic evaluations yielded negative cash flows at a reasonable rate of return.” *Id.* at 1.

Arnold expressed the view that it was “unlikely that a 10,000 ton per year production rate could be achieved,” because such production “would represent approximately 15% of the total U.S. consumption for all industrial garnet usage.” Ex. A-1, Vol. I, at 65.

Arnold also stated, in both his Mineral Report and at the hearing, that he did not include “some equipment and other costs” that would further render mining unprofitable, specifically referring to costs for conveyors and a separation circuit, since “epidote, calcite, quartz and other gangue minerals may have to be separated from the bulk run of mine material in order to produce a marketable product” (Ex. A-1, Vol. I, at 1, 21), “costs for permits,” “costs for repair of the road” to make it suitable for repeated daily truck trips to the millsite, and all “reclamation costs.” II Tr. 354-55. *See also* III Tr. 619, 629 (“There’s a lot of additional costs that would go into a normal feasibility [study] that would pump these costs higher”), 692-94; V Tr. 335-36. He stated that inclusion of the “very large” reclamation costs for the open pit/cut mining scenario would render profitability “extremely negative.” III Tr. 619.

Arnold, therefore, concluded that the claim was not supported by a discovery: “[A] person of ordinary prudence would not be justified in the expenditure of labor and means with a reasonable expectation of developing a valuable garnet deposit within the boundaries of the Storm Jade Mine #1 claim.” Ex. A-1, Vol. I, at 2.

C. *The Contest and the ALJ’s Decision*

On January 24, 2002, on behalf of NPS, BLM filed a complaint charging that Dwyer had failed to find, within the limits of the SJM No. 1 claim, minerals in sufficient quantity or of sufficient quality to constitute a discovery of a valuable mineral deposit, and specifically that no discovery existed because “the mineral present is not actually or prospectively marketable.” Dwyer filed a timely answer, asserting that, since the time of location, the claim had been supported by a discovery.

¹⁵ In the discussion of the open pit/cut method, the text of the Mineral Report (at 66) erroneously repeats the estimated discounted negative cash flow for the underground method of more than \$2.3 million.

A 6-day hearing was held before Judge Holt in Palm Springs, California, on February 14-16, and March 20-22, 2006. The hearing focused on whether there existed, within the boundaries of the claim, a valuable deposit of andradite garnet. At the conclusion of the Government's case in chief, Dwyer moved for dismissal of the contest on the basis that the Government had failed to make a prima facie case of lack of discovery. Judge Holt denied the motion. *See* III Tr. 748-49, 772-73.

In his March 2007 Decision, Judge Holt concluded that Dwyer had failed to overcome, by a preponderance of the evidence, the Government's prima facie case that the Storm Jade Mine No. 1 claim was not supported by the discovery of a valuable mineral deposit. He found that Dwyer had failed to carry his "affirmative burden to demonstrate marketability of the andradite found within the limits of the SJM claim." The ALJ noted that "SJM andradite may be valuable; however, *the price it can command at market is unknown.*" Decision at 21 (emphasis added). The ALJ said that "[t]he testing that may help determine the price has not occurred" principally because "adequate representative samples of SJM andradite have not been taken or milled," *id.*, despite the fact that Dwyer had from the April 1992 approval of his mining plan of operations until the October 1994 withdrawal upon enactment of the California Desert Protection Act to do so.

The ALJ explained that Dwyer had not shown that the "various retail sellers" who had generally expressed an interest in purchasing the andradite, depending on whether it was of requisite quality, would actually purchase the mineral, and at what price. *Id.* at 2. Thus, the ALJ concluded that a person of ordinary prudence would not *develop* the mine "without additional assurance that buyers would actually purchase SJM andradite at a price that exceeds the costs of extracting, milling, and transporting the product to market," *id.* — in other words, without additional assurance that the mineral was actually marketable at a profit. The ALJ found that a person of ordinary prudence may be justified in further exploration, but evidence justifying further exploration does not constitute sufficient evidence of a discovery. *Id.* The ALJ therefore declared the claim null and void.

D. *The Instant Appeal*

Dwyer appealed from the March 2007 Decision, seeking reversal of the decision voiding the SJM No. 1 claim. (Absent such reversal, he will be precluded from relocating the claim, because the land is now withdrawn from mineral entry.)¹⁶

¹⁶ Dwyer asks this Board not only to overturn the invalidation of the claim, but also to "restore the exist[ing] grandfathered valid mining permit[.]" Notice of Appeal (NOA) at 3. Because the ALJ's Decision extends only to the validity of the claim, it is not necessary to address whether the earlier BLM-approved plan of operations has

(continued...)

Dwyer challenges the ALJ's determination that the Government established a prima facie case of lack of a discovery and asserts that, even if it did, he overcame that case by a preponderance of the evidence. According to Dwyer, "[t]he ore was considered valuable [b]eyond measure by all those that had seen the mine" Statement of Reasons (SOR) at 7. He argues that the ALJ misinterpreted the facts, misapplied the mining law, and simply "rubber stamped" the Government's case of invalidity. NOA at 3; *see also* SOR at 15. The following is typical of Dwyer's assertions and reflects his position:

The mine was shown to be well within the parameters of "reasonable probability" of successful mining, milling, and marketing. Most mines have nowhere near the advantages of the Storm mine, nor of the Storm mine vis-à-vis the other garnet mines or even many of the most [sic] of the lesser competitors in the slag and silica markets.

SOR at 15.

Dwyer also asserts, as he has since filing his answer to the contest complaint, that NPS has "hindered" his ability to actually engage in profitable operations on the claim and "harrass[ed]" him in his efforts. Answer to Complaint at 1; SOR at 4, 15. He maintains that, nonetheless, the price for andradite has been and remains sufficient to render mining, processing, and marketing the mineral profitable. *E.g.*, SOR at 2-4; "Rebuttal to NPS Response to Statement of Reasons" (Rebuttal) at 4-7.¹⁷

¹⁶ (...continued)

any continuing effect.

¹⁷ In the instant appeal, Dwyer also asserts that Arnold should have considered the value of epidote, which is also found on the SJM No. 1 claim, arguing that "[t]he reserves at the Storm and the similar ease of mining right into trucks would make consideration of these values worthwhile." SOR at 12; *see* Ex. A-1, Vol. I, at 1 ("The claim was examined for a garnet commodity only, per the claimant's submitted Plan of Operations to the National Park Service"). Dwyer admits, however, that the epidote was "not a part of discussions" regarding the validity of the claim, SOR at 12, and Arnold confirms: "During discussions with the claimant, the claimant indicated that garnet was the only mineral commodity of interest. . . . The epidote on the Storm Jade Mine #1 claim is not considered by the claimant as having any economic value" Ex. A-1, Vol. I, at 19-20.

Analysis

I. *Applicable Legal Standards and Burdens of Proof*

[1] To be valid under 30 U.S.C. § 22 (2000), a mining claim must be supported by the discovery of a “valuable mineral deposit[]” within its boundaries. *See, e.g., Best v. Humboldt Placer Mining Co.*, 371 U.S. 334, 335 (1963); *Cameron v. United States*, 252 U.S. 450, 459 (1920); *Barrows v. Hickel*, 447 F.2d 80, 82 (9th Cir. 1971). Such a deposit exists where minerals are found on the claim of such quality and in such quantity that a person of ordinary prudence is justified in the further expenditure of his labor and means with a reasonable prospect of success in developing a valuable mine. *United States v. Coleman*, 390 U.S. 599 (1968); *Chrisman v. Miller*, 197 U.S. 313, 322-23 (1905); *United States v. Miller*, 165 IBLA 342, 355 (2005); *Castle v. Womble*, 19 L.D. 455, 457 (1894).

Under a refinement of this “prudent man” test, it must be demonstrated that, as a present fact, considering historic price and cost factors and assuming that they will continue, there is a reasonable likelihood that minerals can be extracted, removed, and marketed from the claim at a profit.¹⁸ It is not required that the claimant be engaged in a profitable mining operation, or even that commercial success be assured: “[A]ctual successful exploitation need not be shown — only the reasonable potential for it.” *United States v. Gillette*, 104 IBLA 269, 274 (1988).¹⁹

In *United States v. E. K. Lehmann & Associates of Montana, Inc.*, 161 IBLA 40 (2004), we explained:

When BLM contests the validity of a mining claim on lands later withdrawn from mineral entry, the evidence must show that a discovery existed within the boundaries of the claim both at the time of withdrawal and at the time of a hearing. *United States v. Boucher*, 147 IBLA 236, 242-43 (1999), *citing Cameron v. United States*, 252 U.S. [450] at 456 [(1920)]; *Clear Gravel Enterprises v. Keil*, 505 F.2d 180

¹⁸ *E.g., United States v. Coleman*, 390 U.S. at 600, 602; *United States v. Martinek*, 166 IBLA 347, 406 (2005); *United States v. Miller*, 165 IBLA at 355; *United States v. Garcia*, 161 IBLA 235, 245 (2004); *United States v. Clouser*, 144 IBLA 110, 113 (1998); *In Re Pacific Coast Molybdenum Co.*, 75 IBLA 16, 29, 90 I.D. 352, 360 (1983).

¹⁹ *See, e.g., Barton v. Morton*, 498 F.2d 288, 289, 291-92 (9th Cir. 1974); *United States v. Miller*, 165 IBLA at 355; *United States v. Gunsight Mining Co.*, 5 IBLA 62, 69 (1972), *aff'd*, *Gunsight Mining Corp. v. Morton*, No. 72-92-TUC-JAW (D. Ariz. Sept. 11, 1973).

(9th Cir. 1974); *United States v. Feezor*, 130 IBLA 146, 190 (1994); and *United States v. Wirz*, 89 IBLA 350, 352-53 (1985); see *United States v. Lara*, 67 IBLA 48, 53 (1982); *United States v. Wichner*, 35 IBLA 240, 243 (1978).

161 IBLA at 44. See also *United States v. Pass Minerals, Inc.*, 168 IBLA 115, 122 (2006); *United States v. Miller*, 165 IBLA at 356-57 and cases cited; *United States v. Hicks*, 162 IBLA 73, 76 (2004), and cases cited.

[2] When the Government contests a mining claim on the basis that the claimant has not discovered a valuable mineral deposit, the Government bears the burden of going forward to establish a prima facie case of invalidity, whereupon the claimant bears the ultimate burden of persuasion to overcome that case by a preponderance of the evidence. In *United States v. Pass Minerals, Inc.*, we explained:

When the Government contests the validity of a mining claim, it bears only the burden of going forward with sufficient evidence to establish a prima facie case. *United States v. Knoblock*, 131 IBLA [48, 81], 101 I.D. 123, 141 (1994). Whether the Government has presented a prima facie case is necessarily limited to the evidence presented by the Government in its case-in-chief. *Id.* A prima facie case is made when, on the basis of probative evidence of the character, quality, and extent of the mineralization, a Government mineral examiner offers his expert opinion that a discovery of a valuable mineral deposit has not been made within the boundaries of a contested claim. *United States v. Winkley*, 160 IBLA 126, 143 (2003). Once a prima facie case is presented, the burden shifts to the claimant to overcome the Government's showing by a preponderance of the evidence, but only with respect to those issues for which the Government has established a prima facie case. *United States v. Miller*, 138 IBLA 246, 268-70 (1997); *United States v. Multiple Use, Inc.*, 120 IBLA 63, 110 (1991).

168 IBLA at 122-23. See also, e.g., *Hallenbeck v. Kleppe*, 590 F.2d 852, 856 (10th Cir. 1979); *United States v. Bechthold*, 25 IBLA 77, 82 (1976).

Further, the party appealing has the burden of showing error in the ALJ's Decision. *United States v. Pass Minerals, Inc.*, 168 IBLA at 149 and cases cited.

Against this background, the principal questions are (1) whether the ALJ correctly concluded that the Government had established a prima facie case that there was not a reasonable likelihood that the andradite garnet could be extracted, removed, and marketed from the SJM No. 1 claim at a profit, and (2) if so, whether

the ALJ correctly concluded that Dwyer had not overcome that prima facie case by a preponderance of the evidence.

II. *The Government's Prima Facie Case*

In the instant case, the contest complaint did not specify whether BLM alleged that there was no discovery of a valuable mineral deposit as of the date of withdrawal or as of the date of the filing of the complaint, or both. It simply stated that “[m]inerals have not been found” in sufficient quantity or quality to constitute a valid discovery, and that “[n]o discovery of a valuable mineral has been made” because the mineral is not actually or prospectively marketable. Complaint at unpaginated 2. The Mineral Report, however, focused its analysis on whether the mine would be profitable under either an underground or an open pit/cut mining scenario during the period 1995 through 2005, while the mineral examination did not begin until 1999 and was not finished until 2001. Arnold’s testimony at the hearing indicated that his examination was focused on whether there was a discovery of a valuable mineral at the time of withdrawal in October 1994 (although he used 1999 price and cost information in his analysis). II Tr. 346.

In *United States v. Willsie*, 152 IBLA 241 (2000), we explained:

The determination of whether or not the Government has presented a prima facie case of invalidity in the contest of a mining claim is made solely on the basis of the evidence introduced in the Government’s case-in-chief, which includes testimony elicited in cross-examination. If, upon the completion of the Government’s presentation, the evidence is such that, were it to remain unrebutted, a finding of invalidity would properly issue, a prima facie case has been presented and the burden devolves on the claimant to overcome this showing by a preponderance of the evidence. *United States v. Knoblock*, *supra* [131 IBLA] at 81-82, 101 I.D. at 141; *United States v. Springer*, 491 F.2d 239, 242 (9th Cir.), *cert. denied*, 419 U.S. 834 (1974).

152 IBLA at 262.

The evidence in the Government’s principal case must be of a sufficiently probative character:

Where a Government mineral examiner offers his expert opinion that discovery of a valuable mineral deposit has not been made within the boundaries of a contested claim, a prima facie case of invalidity has been made, provided that such opinion is formed on the basis of probative evidence of the character, quality and extent of the

mineralization allegedly discovered by the claimant. Mere unfounded surmise or conjecture will not suffice, regardless of the expert qualifications of the witnesses. But an expert's opinion which is premised on his belief or hypothetical assumption of the existence of certain relevant conditions, if evidence is presented that those conditions do exist, is sufficient to establish a prima facie case and to shift the burden of evidence to the contestee.

United States v. Hooker, 48 IBLA 22, 28 (1980), quoting *United States v. Winters*, 2 IBLA 329, 335, 78 I.D. 193, 195 (1971).

The Government's prima facie case depends on whether the evidence it presented would, if unrebutted, show that there is no reasonable expectation that the SJM andradite could be extracted, removed, and marketed at a profit — *i.e.*, that the price that the SJM andradite could be expected to bring would not exceed the costs of mining, processing, marketing, and other costs that Dwyer necessarily would incur.

At the hearing, Arnold's testimony during the Government's case in chief reinforced the conclusions of his Mineral Report. With respect to the price used in the economic evaluation, he testified that he had no actual evidence of the price for Dwyer's andradite garnet because "[t]here were no sales receipts, no sales contracts, no letters of intent to purchase that would establish a price." II Tr. 338.²⁰ In contacting several garnet producers and suppliers, he found that all of them were selling almandite. II Tr. 338-39. Arnold further stated that there are a number of occurrences of andradite in Southern California, but he could not locate anyone who was mining and marketing andradite garnet. II Tr. 339. He believed that a price for almandite, which is recyclable, was not a representative price for andradite because the andradite material is not recyclable. *Id.*

To try to establish a market price for the andradite, Arnold therefore looked to the most comparable applications for which the andradite might enter the market, which, he testified, were materials that meet the CARB certification for airblasting, and that were not recyclable, specifically, the copper slag byproducts referred to in the Mineral Report (Sharp Shot and Kleen Blast). II Tr. 339-41.²¹

²⁰ Dwyer does not dispute this. See V Tr. 109, 112, 244, 246.

²¹ See also II Tr. 345, 391-98, 414, 415, 417-18, 420, 432-33, 524-25; III Tr. 656. Arnold also further testified as to the reasons why the SJM andradite garnet was not recyclable after initial use as an airblasting abrasive and therefore could not command as high a price as almandite garnet. I Tr. 111, 137-38, 269-70; II Tr. 309-11, 511-12, 516-17, 525.

Arnold then testified that he calculated the wholesale price for the SJM andradite (approximately \$77 per ton) at the mill site based on a \$113.85 per ton retail price for bulk, unbagged Sharp Shot at a nearby supplier of garnet and non-garnet abrasives, Gordon Sand in Compton, California. He explained:

Gordon Sand located in Compton, California, retailed Sharp Shot, the slag product, for \$113.85 a ton at their facility, if you picked it up there at their facility. So I used that as kind of the retail price and tried to back-calculate what Mr. Dwyer's selling price might be. In order to do that, I took the estimate of the trucking costs to get his material to Compton. So it reflected the same sales market area as the material being sold by Gordon Sand and Company.

So I took that \$113 price, subtracted out the \$21 to ship it there, and that left me with \$93.85 a ton retail price. And then I had to assume that by selling through a reseller, there's got to be a discount for that reseller's markup, and I chose 30 percent as a conservative fair markup. A lot of times it's higher than that, but I used 30 percent. And basically reduced the \$92.85 by 30 percent to come up with a price of \$65 for raw material in Compton.

Then I made, in my opinion, probably sold in one-ton sacks. [Sic] That's a common way to market it. So I then added the bag cost of what the actual sack costs to put the material in to come up with the market price of \$76, \$77 range.

II Tr. 342-43. (See also III Tr. 423-36, 644, 651-52, 655, 657-58 (Arnold testimony during cross-examination as part of the Government's case-in-chief).)

Arnold then testified regarding his mining cost model for both the underground and open pit/cut mining scenarios. II Tr. 347-62. Among other things, when asked what would make the mine uneconomic, he testified: "It's a combination of mining and milling costs that exceeds the sale costs of the material. . . ." II Tr. 351. Regarding labor and equipment costs, he testified that he took the labor and equipment costs (both capital and operating) to mine 10,000 tons from Western Mine Engineering's reference books. He used the equipment manufacturers' reference books to determine cycle times and the most optimum equipment and trucks. II Tr. 352-53. Given the expected sales price and costs of mining, processing, and marketing, Arnold determined that the andradite could not be mined, processed, and marketed from the claim at a profit, because the costs would exceed the receipts from the sale of the andradite. I Tr. 280; II Tr. 351, 354, 361.

In his Decision, the ALJ reviewed the Government's prima facie case, but cited the Mineral Report with little mention of subsequent testimony at the hearing. In summary, the ALJ noted that Arnold had found as follows:

1. The SJM andradite is inferior to almandite as an air blasting abrasive, primarily due to the fact that the andradite is mostly non-recyclable.
2. The most comparable non-garnet abrasive in projecting a price for the SJM andradite is the copper slag product "Sharp Shot" because Sharp Shot is non-recyclable and meets the CARB requirements.
3. Sharp Shot could be purchased from the closest supplier (Gordon Sand in Compton, California) at a retail price of \$113.85 per ton.
4. After deducting \$21.00 per ton trucking cost from the mill site to Compton, factoring in a 30 percent discount to derive a wholesale price, and adding a bagging cost of \$12.00 per ton, the andradite was priced at \$77.00 per ton for purposes of the evaluation.
5. On that basis, the room-and-pillar underground method in Dwyer's proposed plan of operations would yield a cumulative discounted negative cash flow of \$2,327,619 over a 10-year period, and the SJM andradite would have to sell at \$108.65 per ton, with minimum annual sales of at least 10,000 tons, to break even. Under an open-pit mining scenario, SJM andradite would have to sell at \$84.15 per ton to break even.²² Decision at 7-10.

The ALJ found that Arnold's opinions were "based on probative evidence of the character, quality, and extent of the mineralization found on the SJM claim." He therefore reaffirmed his original ruling that the Government had established a prima facie case that the SJM No. 1 claim was not supported by the discovery of a valuable mineral deposit. *Id.* at 10.

We agree that the Mineral Report and the evidence presented by Arnold, if un rebutted, result in a finding of invalidity. Therefore, we agree with the ALJ that the Government made a prima facie case. The burden thus devolves on Dwyer to overcome this showing by a preponderance of the evidence.

²² The Decision erroneously repeated the \$2,327,619 cumulative discounted negative cash flow number instead of the correct discounted negative cash flow of \$587,143 given in Ex. A-1, Vol. I, Appendix C at 1.

III. *Overcoming the Prima Facie Case by a Preponderance of the Evidence*

In support of his view that the SJM andradite could not be marketed profitably, Arnold asserted in the Mineral Report that he believed it unlikely that the SJM andradite could capture approximately 15 percent of the total U.S. industrial garnet consumption. Ex. A-1, Vol. I, at 65. He reiterated this point at the hearing: “I gave the mine the benefit of the doubt that it could make market entry in Year One, selling 1/6th of the total U.S. [garnet] production, which is extremely generous.” III Tr. 611 But the argument that the SJM andradite could not capture a large enough share of the portion of the airblasting abrasives market represented by garnet sales is inconsistent with Arnold’s theory that it is most comparable to copper slag abrasives rather than almandite garnet. The mineral examiner maintains on the one hand that the SJM andradite is most comparable to Sharp Shot or some other slag product, and on the other that market entry would be too difficult because the SJM andradite could not displace enough of the almandite garnet as an airblasting abrasive. However, under Arnold’s analysis, the question is whether it could capture a portion of the abrasives market currently represented by slag sales.

Page 54 of Ex. B-2, a table attached to a report prepared for Cominco American Resources captioned “Garnet Market Survey’, July 1991” by Mineral Marketing, Inc. (Ex. B-8 is a clean copy) indicates that the volume of copper slag abrasives sold is several times larger than the volume of garnet abrasives.²³ The evidence in the present record indicates that andradite garnet may be somewhat physically superior to copper slag abrasives in density and material structure, and may have a more efficient cleaning rate as an airblasting abrasive than the copper slag products.²⁴ It is not unreasonable to anticipate that an andradite abrasive such as the SJM andradite could successfully enter the airblasting abrasives market if mining and milling and marketing the andradite for that purpose would be profitable.

²³ Dwyer asserts that slag sales represent a “million-ton market,” IV Tr. 26, but provides no evidence supporting that figure.

²⁴ Arnold admits that garnet’s greater weight and density would augment its comparative suitability as an airblasting abrasive. II Tr. 291. Regarding comparative bulk density and specific gravity of garnet and the slag products, *see* Ex. A-1, Vol. III, at 30 (same as Ex. B-4); Ex. B-2 at 53 and Ex. B-7; IV Tr. 44; VI Tr. 78-79, 82-83; Ex. B-3 at 17, 101-04. Page 11 of Ex. B-3 contains information on an andradite garnet abrasive called “Brownblast,” supplied by Virginia Materials in Norfolk, Virginia. It states: “Although slightly more friable than Almandite, Brownblast still gives you the hard, heavy and angular crystal that out performs silica sand and the slag abrasives.” According to this supplier, the andradite abrasive also has a lower consumption rate. *See* Ex. B-3 at 12; IV Tr. 54.

The mineral examiner concluded that it would not be. The question is whether Dwyer has demonstrated to the contrary by a preponderance of the record evidence.

With respect to the costs of mining and milling, Dwyer disputes the ALJ's rejection of his arguments that the costs included in Arnold's evaluation could be reduced through various measures. These include, *inter alia*, using different equipment, buying used (instead of new) equipment, leasing equipment, cross-utilizing equipment, maximizing equipment use, and contracting for mining operations with a third party. For a variety of reasons addressed in the Decision, at 16-17, the ALJ found that "many of Dwyer's proposed cost savings are as likely to increase operating costs as to reduce them" and that his "proposed measures for reducing costs and increasing profits amount to speculation. Mr. Dwyer's arguments in this regard . . . are not much more than unsubstantiated suggestions and have little probative value." *Id.*

Dwyer argues that the geologic nature of the andradite deposit, particularly the lack of overburden, lowers the costs of mining and that less processing is required because the garnet is unusually pure. SOR at 5, 13. He further argues that designing the mine's operation and obtaining actual bids from experienced contract miners is a more reliable method and that the ALJ improperly rejected the contractor bids Dwyer had obtained that showed lower costs. *Id.* at 11, Rebuttal at unpaginated 6-7. Dwyer also argues that Arnold's calculations used "improperly sized, mismatched expensive equipment" and that Dwyer could process the andradite using "a small [c]ustom crushing, grinding, and specialty size screening plant," which could be "custom assembled from existing equipment." SOR at 4.

In our view, Dwyer has not shown on the present record that any of the mining or milling equipment selected by Arnold for his economic analysis was mismatched or otherwise not suited to the mining and milling operation Dwyer envisioned. Dwyer also has not demonstrated how the geologic nature of the deposit or the purity of the andradite translates into lower costs than Arnold estimated. It is not sufficient to offer general cost estimates for mining or milling operations with no effort made to determine whether such costs are applicable to the specific operation at issue. While we may generally assume that actual bids for a particular operation are likely to offer a better assessment of expected costs, Dwyer did not offer any evidence of actual bids for any mining or milling work in connection with production specifically from the SJM No. 1 claim which would contradict Arnold's cost analysis. Dwyer has not shown that the ALJ's Decision is in error in regard to the costs that were addressed in the Mineral Report and at the hearing.

On the potential revenue side of the economic analysis, Dwyer's calculations regarding the mine's expected profitability started with a retail price of \$300 per ton, apparently bagged, based on a quotation from an east coast supplier for andradite

mined in New York. II Tr. 30-31 and Ex. B-2 at 7-8, 16. Dwyer represented that this price was “cheaper than Barton almandine [almandine],” II Tr. 31, so that the andradite would be competitive with that product. However, we agree with the ALJ, *see* Decision at 13, that Dwyer did not sufficiently establish a basis for assuming that the SJM andradite would command a similar price in the California airblasting abrasives market.

The premise of the Mineral Report is that the SJM andradite would sell for essentially the same price as the Sharp Shot copper slag abrasive. The Government demonstrated that andradite is not comparable to almandite, and Dwyer has introduced nothing that would show the contrary. While the Mineral Report’s economic analysis necessarily is a hypothetical one because there have been no mining operations or sales of SJM andradite or any other andradite as an airblasting abrasive in this region, Dwyer has not shown that the Mineral Report’s premise is unreasonable or erroneous.

As explained above, the Government’s *prima facie* case is based on an economic analysis that begins with a bulk, unbagged retail price for Sharp Shot of \$113.85 per ton. From that, the mineral examiner derived an estimated wholesale price for the SJM andradite of \$76.35 per ton at the mill site. On that basis, he concluded that mining the SJM andradite would be unprofitable under any mining method or scenario.

The record in this case does not leave us without questions regarding the \$113.85 per ton price for Sharp Shot used in the analysis as the basis for estimating a price for the SJM andradite. On direct examination during the Government’s rebuttal case on the fifth day of the hearing, Arnold testified that the price was quoted to him by Gordon Sand in Compton, California (in the Los Angeles area). V Tr. 314. This price was substantially below the prices for Sharp Shot given in the table of “Retail Air Abrasives Prices” in the Mineral Report, which also included prices for Sharp Shot from Gordon Sand.²⁵ Arnold testified that the prices given in Table 18 were taken from retail price sheets faxed to him by suppliers, and described those prices as “their market price.” V Tr. 315. When asked to explain the difference between the quote used in his analysis and the prices given in Table 18, Arnold stated: “Many suppliers set out a retail price list that is the price they set their materials at. But my experience is that as a, a Contractor and environmental cleanup contractor is that’s their preferred price, but what they were actually willing to sell it at is a different figure.” V Tr. 316. *See also* V Tr. 317. On cross-examination by Dwyer, Arnold admitted that he requested and obtained the \$113.85 per ton quote by telephone, did not remember certain specifics of the quote, and had not documented it in the Mineral Report. V Tr. 321-22, 324-25.

²⁵ Ex. A-1, Vol. I, at 60 (Table 18).

It is not clear whether Arnold was asserting (1) that the sellers were not selling any of the identified products at the listed prices, and that in all cases the listed prices were simply points at which price negotiations would begin, or (2) that the sellers were selling some of their product at the listed retail or market prices, even though they might be willing to negotiate with a particular purchaser to sell some of it for less. If Sharp Shot actually sells at the listed retail prices, even some of the time, Arnold's own premise would imply that the SJM andradite should command a similar price in the airblasting abrasives market, and Arnold's price calculation would seem to be artificially low.²⁶ If, on the other hand, none of the copper slag abrasive products were selling at the prices included in Table 18, then a lower price is an appropriate starting point to derive an estimated price for the andradite. The question of whether any of the copper slag products sold at the listed prices does not seem to be resolvable on the present record, and the ALJ did not discuss or make any finding on the issue. However, under either reading of Arnold's testimony, Dwyer has not met his burden of proof.

[3] As the ALJ correctly noted: "Mr. Dwyer must affirmatively show a reasonable probability that SJM andradite can be profitably mined," Decision at 15, because a contestee bears the burden of proof by a preponderance of the evidence and cannot prevail only on the basis of weaknesses in the Government's case (citing *United States v. Rosenberger*, 71 IBLA 195, 201 (1983)). See also *United States v. Jones*, 67 IBLA 225, 231 (1982). As this Board held in *United States v. Dotson*, 10 IBLA 146, 149E (1972), once the Government has made a prima facie case of a lack of a discovery, it "becomes the burden of the mining claimant to affirmatively show that there has been a valid discovery. *Foster v. Seaton*, 271 F. 2d 836 ([D.C. Cir.] 1959)." Thus, Dwyer must show that the expected costs of mining and marketing (including costs such as reclamation, road maintenance, etc., that Dwyer necessarily would incur) are likely to be less than the expected revenues from selling the andradite garnet as an abrasive.

This is particularly so in view of the fact that other circumstances shown in the record indicate that mining the andradite likely is not profitable. Arnold testified, as quoted previously, that none of the garnet producers and suppliers he contacted were producing andradite garnet. He testified (and Dwyer does not dispute) that andradite occurs fairly commonly in that region of Southern California, but he could not locate anyone who was mining and marketing andradite. II Tr. 338-39. The fact that no one else has produced and sold andradite in this region, notwithstanding its

²⁶ We note that during his direct testimony in opposition to the Government's case, Dwyer introduced a written price quote addressed to him from Blast/Coat Systems, Inc., in Rancho Cucamonga, California, dated February 23, 2006, quoting a bulk price of \$161.05 per ton for Sharp Shot, which is consistent with the prices in Table 18. Ex. B-2 at 17. See IV Tr. 31-33.

relative abundance, is significant evidence bearing on the issue of whether andradite can be mined profitably.

In *United States v. Willsie*, 152 IBLA 241 (2000), we quoted an earlier decision in *United States v. Oneida Perlite*, 57 IBLA 167, 88 I.D. 772 (1981), regarding the determination of whether a mineral deposit is marketable at a profit under the Supreme Court's decision in *United States v. Coleman*:

In the making of this determination, it is appropriate to consider the quantity of the claimant's other holdings of this same mineral, and the limitations of the market, and the claimant's share of that market. *Clear Gravel Enterprises v. Keil*, [505 F.2d 180 (9th Cir. 1974), cert. denied, 421 U.S. 930 (1975)]. *It is also appropriate to consider the magnitude and sources of other supplies of that mineral to the same market. Melluzzo v. Morton*, [534 F.2d 860 (9th Cir. 1976)].

152 IBLA at 258, quoting 57 IBLA at 95, 88 I.D. at 787-88 (emphasis added). In *Melluzzo v. Morton*, the court considered whether a valuable deposit of sand and gravel had been discovered before July 23, 1955 (the date of enactment of the Common Varieties Act, 30 U.S.C. § 611 (2000)), where, as here, there had been no mineral produced and sold from the claim. In discussing what is necessary to show marketability, the court explained:

Two profit factors can be drawn into question in considering whether a claimant's material, although it had not been marketed at a profit, nevertheless could have been marketed at a profit:

1. The cost factor. It must appear that the cost of extraction, preparation for market and transportation to market will, in the claimant's case, provide a value increment or profit comparable to that which attaches to the material being successfully marketed by others.
2. The demand factor. It must appear that the local demand was able to absorb additional material such as the claimant's and still permit an attractive profit to be realized. It is for that profit that the newcomer, under *Barrows*, must be permitted to compete. In order to ascertain whether a demand existed for hitherto unmarketed material a hypothetical market must be created in which the new material plays its part. If the profitability of the market for such material is realistically to be ascertained by setting the factor of demand opposite that of supply, *the new material must be included with that from all other known potentially competitive sources in calculating the factor of supply*. If supply so calculated amounts to a superabundance and so overwhelms

the existing demand as to reduce the value or profit increment to a level below that which would prove attractive to a prudent man, the material cannot be said to be marketable at a profit.

534 F.2d at 864 (footnotes omitted, emphasis added).

These principles apply here. In the instant case, there is no evidence contrary to Arnold's testimony that andradite garnet occurs fairly commonly in the region — in other words, there is a more than adequate supply of andradite to meet any demand for it as an airblasting abrasive. Yet no one has produced andradite and sold it into the airblasting abrasives market in that region.

If Dwyer must show a reasonable likelihood that the garnet can be mined and marketed at a profit, he must show that the estimated revenue likely would exceed the estimated total costs. He has not done so for either an underground method (which he proposed) or an open pit method (which he did not propose but which the mineral examiner analyzed).

Dwyer therefore has not established by a preponderance of the evidence that the andradite likely can be mined and sold in the airblasting abrasives market or in any other market profitably, and therefore he has not met his overall burden to show a discovery.

Dwyer raised a number of other arguments. We have concluded after a review of the record that none of them are supported, and accordingly reject them. Those include (1) a supposed conflict of interest on the part of Arnold;²⁷ (2) Arnold's alleged lack of qualifications;²⁸ (3) allegedly anomalous SJM andradite testing results;²⁹ (4) alleged failure to compare the SJM andradite with other andradite being produced and marketed in the eastern United States for use as an abrasive;³⁰

²⁷ NOA at 3; SOR at 4-5, 14.

²⁸ NOA at 2; SOR at 4.

²⁹ SOR at 2-3, 6, 8. We note that the result of the airblasting/breakdown test, which revealed that 59 percent of the post-blast particles were 100 mesh or smaller (indicating that little of the material would be re-usable), is not inconsistent with the result of the CARB certification test, which revealed that blasting would not produce material smaller than 5 microns (approximately 2,500 mesh) in sufficient quantity to exceed permissible safety standards. See Ex. A-1, Vol. I, at 46-47 and Appendix A; II Tr. 298-99, 469-83.

³⁰ SOR at 12-13.

(5) alleged government interference, harassment, and intimidation;³¹ and
 (6) whether the SJM andradite could be profitably sold in the building stone or gem
 stone market.³²

Conclusion

Therefore, pursuant to the authority delegated to the Board of Land Appeals
 by the Secretary of the Interior, 43 C.F.R. § 4.1, the decision appealed from is
 affirmed.

_____/s/_____
 Geoffrey Heath
 Administrative Judge

I concur:

_____/s/_____
 T. Britt Price
 Administrative Judge

³¹ *E.g.*, NOA at 2; SOR at 2, 4, 9, 18-19; III Tr. 791-96.

³² The ALJ addressed this question at length in the Decision, concluding that Dwyer had failed to show that the andradite from the SJM No. 1 claim could be mined, processed, and sold in these other markets at a profit. Decision at 18; *see id.* at 18-21. We agree with the ALJ's analysis of this issue. Further, we note that if the lands within the SJM No. 1 claim were deemed to be "chiefly valuable for building stone," it would follow that the claim was improperly located as a lode claim, because such lands are, by virtue of the Building Stone Act, 30 U.S.C. § 161 (2000), subject to location only as a placer mining claim. *United States v. Haskins*, 59 IBLA 1, 42-43, 49, 88 I.D. 925, 945-46, 949 (1981), *aff'd*, No. CV-82-2112-CBM (C.D. Cal. Oct. 30, 1984). As also noted in that case, "[a] placer discovery will not sustain a lode location[.]" 59 IBLA at 44, 88 I.D. at 946 (*quoting Cole v. Ralph*, 252 U.S. 286, 295 (1920)).